Project Title: **PAINT ABATEMENT AND DEBRIS DISPOSAL**
**MICHIPICOTEN ISLAND EAST END SITE**
**MICHIPICOTEN ISLAND, LAKE SUPERIOR, ONTARIO**
**DFRP NO. 67652**

Project Number: **R.083149.031**

Project Date: **2017-05-15**

**END OF SECTION**

**Part 1 Specifications**

**Part 2 Appendices**

**2.1 Figures**



**2.2 Summary of Project**

.1 Summary of Project, East End Light Station, Michipicoten Island, Ontario, DFRP NO. 67652, PWGSC NO. R.083149.031, FCSI NO. 67652001 & 67652002, BluMetric Environmental Inc., June 9, 2017

**2.3 Environmental Effects Evaluation**

.1 Environmental Effects Evaluation Checklist

**2.4 Designated Substance Survey**

.1 Comprehensive Designated Substances and Hazardous Materials Survey (DSHMS), Environmental Services Stream 3 – Standing Offer Agreement EQ447-141528/A, Michipicoten Island East, Near Wawa, ON, BluMetric Environmental Inc., June 6, 2017.

**2.5 Marine Engineering Assessment**

.1 Marine Assessment, Michipicoten Island Lightstation, Lake Superior, Shoreplan Engineering, May 11, 2017.

**2.6 Structural Engineering Assessment**

.1 Michipicoten Island – East End Lightstation – Lighthouse and Other Buildings, Structural Condition Review, Novatech Engineering, March 16, 2017.

**2.7 Environmental Reports**

.1 Michipicoten Island, Ecological Risk Assessment of East End Light Station and Surrounding Area, Bowfin Environmental Consulting Inc., March, 2017.

.2 Summary of East End Light Station, Shallow Soils Sampling Program, Michipicoten Island, Ontario, BluMetric Environmental Inc., June 8, 2017.

.3 Human Health and Ecological Risk Assessment, East End Light Station, Michipicoten Island, Ontario, BluMetric Environmental Inc., March 31, 2017.

**2.8 Mitigation Measures**

.1 Summary of Mitigation Measures, BluMetric Environmental Inc., March 31, 2017.

**END OF SECTION**

## Part 1 General

### 1.1 SUMMARY

.1 Work of this Contract comprises lead paint and asbestos abatement and debris removal, located at the Michipicoten Island East End property; and further identified as PWGSC Project Number R.083149.031.

### 1.2 PRECEDENCE

.1 For Federal Government projects, Division 01 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

### 1.3 WORK COVERED BY CONTRACT DOCUMENTS

.1 The main purpose of this project is to abate lead – based paint from the exterior of structures at the Michipicoten Island East End lighthouse compound. A secondary purpose is to remove debris as well as asbestos-containing materials. The main phases of this project are:

- .1 Abatement of lead-based exterior paint on the lighthouse structure, as well as repainting of the lighthouse exterior.
- .2 Abatement of asbestos containing caulking on the lighthouse structure, and re-application of joint seal.
- .3 Abatement of asbestos containing tar paper and transite cladding ($2^{nd}$ floor facing) on the living quarters structure, as well as replacement of cladding.
- .4 Abatement of lead-based exterior paint on the stairs/railing of living quarters building, as well as repainting of the exterior.
- .5 Abatement of lead-based exterior paint on the garage/former living quarters building, as well as repainting of the exterior.
- .6 Abatement of asbestos containing caulking on the garage/former living quarters building, and re-application of joint seal.
- .7 Abatement of lead-based exterior paint on former building foundation.
- .8 Abatement of lead-based exterior paint on handrails along path to helipad and from northern walkway.
- .9 Abatement of lead-based exterior paint from lighthouse sign base, northern outhouse, and navigation aid bases.
- .10 Removal of debris from a shallow landfill dump found up-stream from the lighthouse compound and removal of general debris from the site area. Access to dump site may require some removal of vegetation to clear pathway.
- .11 Removal of asbestos-containing debris from a shallow landfill dump found up-stream from the lighthouse compound, from pile in southern outhouse, and pile in former building foundation.
- .12 Removal of any other suspected asbestos-containing debris from a general site area.

.13 Removal of painted debris from a general site area.

.14 Safe removal and disposal of a 60 gallon plastic drum containing diesel fuel, located on the north dock.

.15 At no time during abatement or repainting of the lighthouse exterior can the upper floor and lamp be obstructed from view.

**1.4 CONTRACT FORM**

.1 Combined Price Form and Unit Price Table.

**1.5 WORK SEQUENCE**

.1 Project task are to be scheduled in the following sequence.

.1 Mobilization to the site on Michipicoten Island.

.2 Erection of scaffolding and barriers completed.

.3 Lead-based paint abatement completed.

.4 Abatement of asbestos containing caulking and transite cladding & tar paper backing completed.

.5 Re-painting completed.

.6 Re-cladding & re-backing of living quarters upper floor facing completed.

.7 Re-caulking completed.

.8 Deconstruction of scaffolding completed.

.9 Debris removal from site.

.10 Demobilization from site on Michipicoten Island.

.11 Waste disposal at certified landfill or recycling facility.

.12 Certificate of Substantial Performance.

**1.6 CONTRACTOR USE OF PREMISES**

.1 Contractor has use of site until Substantial Performance.

.2 Contractor shall limit use of premises for Work, to allow;

.1 On-going lighthouse operations.

.3 Coordinate use of premises under direction of Departmental Representative.

**Part 2 PRODCUTS**

**2.1 Not used.**

**Part 3 EXECUTION**

**3.1 NOT USED**

**END OF SECTION**

## Part 1 General

### 1.1 MINIMUM STANDARDS

.1 Execute work to meet or exceed:

- .1 Rules and regulations of authorities having jurisdiction.
- .2 Occupational Health and Safety Act and Regulations for Construction Projects, Revised Statutes of Ontario 1990, Chapter O.1 as amended, Workplace Safety and Insurance Act and municipal statutes and authorities.
- .3 Environmental Protection Act, Revised Statutes of Ontario 1990, Chapter E19 as amended, O. Reg. 102/94, Waste Audits and Waste Reduction Work Plans, and O. Reg. 103/94, Industrial, Commercial and Institutional Source Separation Programs.
- .4 CCME (Canadian Council of Ministers of the Environment) Contaminated Sites, Contaminated Soil and Groundwater, and Remediation of Contaminated Sites most current publications.
- .5 Canadian Environmental Assessment Act.
- .6 Canadian Environmental Protection Act (New Substance Notification Regulations).
- .7 Canada Consumers Product Act (Sc. 2010, c.21) as amended
  - .1 Surface Coating Materials regulations SOR 2016/123.
- .8 Transportation of Dangerous Goods Act.
- .9 Fisheries Act.
- .10 Migratory Birds Convention Act.
- .11 Migratory Birds Regulations.

### 1.2 SITE CONDITIONS

.1 Existing Conditions:

- .1 Reports and information pertaining to debris to be handled, removed, or otherwise disturbed and disposed of during this Project bound into this specification.
- .2 Remote Site Access:
  - .1 Site is not accessible by road.
  - .2 Site can be accessed by either watercraft or helicopter.
  - .3 For potential waterborne access, refer to the following report attached to this specification:
    - .1 Marine Assessment, Michipicoten Island Lightstation, Lake Superior, Shoreplan Engineering, January 12, 2017.

**1.3 AUTHORITIES HAVING JURISDICTION**

.1 PWGSC is the sole authority having jurisdiction over this project with regards fire standards.

.2 The contractor needs to have a fire protection plan for the site.

**1.4 TAXES**

.1 Pay applicable Federal, Provincial, and Municipal taxes.

**1.5 FEES, PERMITS, CERTIFICATES, AND LETTERS**

.1 Provide authorities having jurisdiction with information requested.

.2 Pay fees and obtain certificates, permits and letters required.

.3 Furnish certificates, permits and letters when requested.

**1.6 EXAMINATION**

.1 Examine existing conditions and determine conditions affecting work.

.2 Notify Departmental Representative in writing of any discrepancies between contract documents and site conditions.

.3 Attend kick-off meeting with Departmental Representative.

**1.7 DOCUMENTS**

.1 Keep one copy of contract documents on site including:

.1 Contract drawings.
.2 Specifications.
.3 Amendments and addenda.
.4 Change orders.
.5 Reviewed shop drawings, product data and samples.
.6 Other modification to contract.
.7 Copy of the approved work schedule.
.8 Scaffolding Design Plans.
.9 Field test records.
.10 Inspection certificates.
.11 Certificates (inspections, manufacturer's).
.12 MSDS.
.13 All applicable permits

**1.8 ELECTRONIC SUBMITTALS**

.1 Submit number of hard copies specified for each type and format of submittal and also submit in electronic format as pdf files. Forward pdf, NMSEdit Professional spp, MS Word, MS Excel, and Autocad dwg files; on USB compatible with PWGSC encryption

requirements or through email or alternate electronic file sharing service such as ftp, as directed by Departmental Representative.

**1.9 CONTRACTOR'S AS-BUILT DRAWINGS, SPECFICATIONS AND AERIAL PHOTOGRAPHS**

.1 As work progresses, neatly record significant deviations from the Contract drawings, specifications and aerial photographs using fine, red marker on full size white prints and specifications. Make the same changes on the electronic files.

.2 Neatly print lettering and numbers in size to match original. Lines may be drawn free-hand but shall be neat and accurate. Add at each title block note: "AS BUILT". Also circle on List of Drawings/Photographs each title and number of drawing/photograph marked with "AS-BUILT" information. Circle on Table of Contents each specification section number and title of specification sections marked with "AS-BUILT" information.

.3 Departmental Representative will provide one electronic set of drawings, schedules, specifications and aerial photographs for as-built drawing and specification purposes.

.1 Drawings are in pdf format.

.2 Aerial Photographs are in pdf format.

.3 Specifications are in pdf format.

.4 Amendments and addenda are in MS Word.

.4 Record following significant deviations:

.1 Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvement.

.2 Location of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure.

.3 Field changes of dimension.

.4 Alternative materials and systems installed replacing original materials and systems specified by trade name.

.5 Turn one set, paper copy and electronic copy, of AS-BUILT drawings, specifications and aerial photographs over to Departmental Representative on completion of work.

.6 If project is completed without significant deviations from Contract drawings, specifications and aerial photographs submit to Departmental Representative one set of drawings marked "AS-BUILT".

**1.10 SHOP DRAWINGS AND PRODUCT DATA SHEETS**

.1 Prior to submission check and certify as correct, shop drawings and product data sheets. Issue to Departmental Representative each submission at least 14 days before dates reviewed submission will be needed.

.2 Where technical sections specify that shop drawings bear the stamp of a Registered Professional Engineer, the Engineer must be registered in the Province of Ontario.

.3 Submit 3 prints and 1 electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.

.4 Submit 3 prints and 1 electronic copy of Submit 3 prints and 1 electronic copy of requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.

.5 The review of shop drawings by Public Works and Government Services Canada (PWGSC) is for sole purpose of ascertaining conformance with general concept. This review shall not mean that PWGSC approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting all requirements of construction and Contract Documents. Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of all sub-trades.

.6 Submit 3 prints and 1 electronic of product data sheets for standard manufactured items. Indicate VOC's in g/l for adhesives, primers, sealants, paints, curing and sealing compounds, sealers, particleboard, plywood, preserved wood, and any other product that emits more than 25 g/l VOC during application, curing, initial off gassing or end use.

.7 Responsibility for errors, omissions or deviations from requirements of Contract Documents is not relieved by Departmental Representative's review of submittals.

**1.11 CONSTRUCTION PHOTOGRAPHS**

.1 Submit electronic copy of digital photography in jpg format, standard resolution.

.2 Identification: name and number of project and date of exposure indicated.

.3 Number of viewpoints and location of viewpoints determined by Departmental Representative.

.4 Frequency:

.1 Baseline/preconstruction of all site buildings and work locations.

.2 At completion of:

.1 Scaffold erection.

.2 Debris removal.

.3 Lead paint abatement and associated asbestos abatement.

.3 Regular intervals during work progress.

.4 As directed by Departmental Representative.

**1.12 SAMPLES**

.1 Submit duplicate samples of new materials (i.e. exterior paints) being installed under this contract.

.2 Identify manufacturer's name and product.

.3 Installed work shall match reviewed sample.

**1.13 ADDITONAL DRAWINGS/PHOTOGRAPHS**

.1 Departmental Representative may furnish additional drawings/aerial photographs to clarify work.

.2 Such drawings/aerial photographs become part of Contract Documents.

**1.14 PROTECTION**

.1 Protect existing work from damage.

.2 Replace damaged existing work with material and finish to match original.

.3 Protect existing trees and plants on site and adjacent properties.

**1.15 EXISTING SERVICES**

.1 Use of existing water, sanitary, and electrical systems, if any, is not permitted.

.2 Contractor is to establish location, protect and maintain existing utility lines.

.3 Contractor is to supply own temporary water, sanitary, and electrical services for duration of work program.

**1.16 METRIC SIZED MATERIALS**

.1 SI metric units of measurement are used exclusively on the drawings and in the specifications for this project.

.2 The Contractor is required to provide metric products in the sizes called for in the Contract Documents except where a valid claim can be made that a particular product is not available on the Canadian market.

.3 Claims for exemptions from use of metric sized products shall be in writing and fully substantiated with supportive documentation. Promptly submit application to Departmental Representative for consideration and ruling. Non-metric sized products may not be used unless Contractor's application has been approved in writing by the Departmental Representative.

.4 Difficulties caused by the Contractor's lack of planning and effort to obtain modular metric sized products which are available on the Canadian market will not be considered sufficient reasons for claiming that they cannot be provided.

.5 Claims for additional costs due to provision of specified modular metric sized products will not be considered.

**1.17 MATERIAL AND EQUIPMENT**

.1 Use new products unless otherwise specified.

.2 Deliver and store material and equipment to manufacturer's instructions with manufacturer's labels and seals intact.

.3 When material or equipment is specified by standard or performance specifications, upon request of Departmental Representative, obtain from manufacturer an independent testing

laboratory report, stating that material or equipment meets or exceeds specified requirements.

**1.18 CUTTING AND REMEDIAL WORK**

.1 Co-ordinate work to keep cutting work to a minimum.

.2 Match work to adjoining construction and finishes.

.3 Make good surfaces exposed or disturbed by work with material and finish to match existing adjoining surfaces.

**1.19 INSPECTIONS AND TESTING**

.1 When initial tests and inspections reveal work not to contract requirements, pay for tests and inspections required by Departmental Representative on corrected work.

**1.20 COST BREAKDOWN**

.1 Within 48 hours of notification of acceptance of bid furnish a cost breakdown by Section aggregating Contract Amount.

.2 Within 48 hours of acceptance of bid submit a list of subcontractors.

**1.21 SCHEDULING**

.1 On Award of Contract submit bar chart construction schedule for work in accordance with Section 01 32 16.

**1.22 CLEANING**

.1 Maintain project free of accumulated waste and rubbish.

.2 Final cleaning:

.1 Remove temporary protection.

.2 Remove dust, dirt and foreign matter from surfaces.

.3 Broom clean paved exterior surfaces, rake clean other exterior surfaces.

**1.23 CONSTRUCTION AND DEMOLITION WASTE**

.1 Carefully deconstruct and source separate materials/equipment and divert from abatement waste destined for landfill to maximum extent possible. Reuse, recycle or sell material off site for reuse except where indicated otherwise. On site sales are not permitted.

.2 For construction and demolition projects, even for those not over 2,000 $m^2$ total floor area, source separate waste and maintain waste audits in accordance with the Environmental Protection Act, Ontario Regulation 102/94 and Ontario Regulation 103/94.

.1 Provide facilities for collection, handling and storage of source separated wastes.

.2 Source separate the following waste:

.1 Brick and portland cement concrete.

.2 Corrugated cardboard.

.3 Wood, not including painted or treated wood or laminated wood.

.4 Gypsum board, unpainted.

.5 Steel.

.3 Submit a waste reduction workplan indicating the materials and quantities of material that will be recycled and diverted from landfill.

.1 Indicate how material being removed from the site will be reused or recycled.

.4 Submit proof that all waste is being disposed of at a licensed land fill site or waste transfer site. A copy of the disposal/waste transfer site's license and a letter verifying that said landfill site will accept the waste must be supplied to Departmental Representative prior to removal of demolition waste from the site.

**1.24 DESIGNATED SUBSTANCES**

.1 The project site has been surveyed for the presence of designated substances referred to in the Occupational Health and Safety Act and Regulations for Construction Projects, O.Reg. 213/91 as amended.

.2 The list of designated substances present at the project site is provided in the following report attached at the end of this specification package.

.1 Comprehensive Designated Substances and Hazardous Materials Survey , Michipicoten Island East End, BluMetric Environmental Inc., March 21, 2017.

.3 Provide copies of this list to each prospective subcontractor prior to entering into contract with them.

.4 Post prominent notices identifying and warning of the hazardous agent in the part of the workplace in which the agent is found or used. Notices shall be in English and other languages prescribed under the Act.

**1.25 SPECIAL PROTECTION AND PRECAUTIONS**

.1 Comply with the requirements of the Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and the provision of material safety data sheets acceptable to ESDC - Labour Program.

**1.26 POLLUTION CONTROL**

.1 Spills of deleterious substances:

.1 Immediately contain, limit spread and clean up in accordance with provincial regulatory requirements.

.2 Report immediately to Ontario Spills Action Centre: 1-800-268-6060.

.3 Further information on dangerous goods emergency cleanup and precautions including a list of companies performing this work can be obtained from the Transport Canada 24-hour number (613) 996-6666 collect.

.4 Inform Departmental Representative.

**1.27 OPSS AND OPSD**

OPSS Ontario Provincial Standard Specifications and OPSD Ontario Provincial Standard Drawings quoted in these specifications are available online at http://www.raqsa.mto.gov.on.ca/techpubs/ops.nsf/OPSHomepage

**1.28 PROJECT MEETINGS**

.1 Administrative:

.1 Schedule and administer project meetings throughout the progress of the work at the call of Departmental Representative.

.2 Prepare agenda for meetings.

.3 Distribute written notice of each meeting four days in advance of meeting date to Departmental Representative.

.4 Provide physical space and make arrangements for meetings.

.5 Preside at meetings.

.6 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.

.7 Reproduce and distribute copies of minutes within three days after meetings and transmit to meeting participants and, affected parties not in attendance Departmental Representative.

.8 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

.2 Preconstruction meeting:

.1 Within 15 working days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.

.2 Departmental Representative, Contractor, major Subcontractors, field inspectors and supervisors will be in attendance.

.3 Establish time and location of meeting and notify parties concerned minimum 5 working days before meeting.

.4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.

.5 Agenda to include:

.1 Appointment of official representative of participants in the Work.

.2 Schedule of Work: in accordance with Section 01 32 16.

.3 Schedule of submission of shop drawings, samples, colour chips. Submit submittals.

.4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities and fences.

.5 Site security.

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

.7 Record drawings, specifications and arial photographs.

.8 Acceptance, warranties.

.9 Monthly progress claims, administrative procedures, photographs, hold backs.

.10 Insurances, transcript of policies.

.3 Progress meetings:

.1 During course of Work and 1 week prior to project completion, schedule progress meetings monthly.

.2 Contractor, major Subcontractors involved in Work and Departmental Representative are to be in attendance.

.3 Notify parties minimum 5 working days prior to meetings.

.4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within 2 working days after meeting.

.5 Agenda to include the following:

.1 Review, approval of minutes of previous meeting.

.2 Review of Work progress since previous meeting.

.3 Field observations, problems, conflicts.

.4 Problems which impede construction schedule.

.5 Corrective measures and procedures to regain projected schedule.

.6 Revision to construction schedule.

.7 Progress schedule, during succeeding work period.

.8 Review submittal schedules; expedite as required.

.9 Maintenance of quality standards.

.10 Review proposed changes for affect on construction schedule and on completion date.

.11 Other business.

## 1.29 TEMPORARY FACILITIES AND SERVICES

.1 Provide and maintain temporary facilities and services required to carry out work.

.2 Remove temporary facilities and services on completion of work.

**Part 2 PRODCUTS**

**2.1 Not used.**

**Part 3 EXECUTION**

**3.1 NOT USED**

**END OF SECTION**

## Part 1 General

### 1.1 DEFINITIONS

.1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.

.2 Bar Chart (GANTT Chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.

.3 Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.

.4 Construction Work Week: Monday to Friday, inclusive, will provide five day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.

.5 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.

.6 Master Plan: summary-level schedule that identifies major activities and key milestones.

.7 Milestone: significant event in project, usually completion of major deliverable.

.8 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.

.9 Project Planning, Monitoring and Control System: overall system operated by Departmental Representative to enable monitoring of project work in relation to established milestones.

### 1.2 REQUIREMENTS

.1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.

.2 Plan to complete Work in accordance with prescribed milestones and time frame.

.3 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Certificate of Substantial Performance and Certificate of Completion as defined times of completion are of essence of this contract.

### 1.3 SUBMITTALS

.1 Provide submittals in accordance with Section 01 11 06.

.2 Submit to Departmental Representative within 5 working days of Award of Contract a Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.

.3 Submit Project Schedule to Departmental Representative within 3 working days of receipt of acceptance of Master Plan.

**1.4 PROJECT MILESTONES**

.1 The project start date is set as on or after August 1, 2017.

.1 Any delay of the project start date by over 5 working days will require written approval of the client.

.2 The project end date is set as a maximum 40 days from the actual project start date.

.3 Project milestones form interim targets for Project Schedule.

.1 Mobilization to the site
.2 Erection of scaffolding and barriers completed.
.3 Lead-based paint and associated asbestos abatement completed.
.4 Re-painting completed.
.5 Deconstruction of scaffolding completed.
.6 Debris removal from site.
.7 Demobilization from site.
.8 Waste disposal at certified landfill or recycling facility.
.9 Certificate of Substantial Performance.

**1.5 MASTER PLAN**

.1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).

.2 Departmental Representative will review and return revised schedules within 5 working days.

.3 Revise impractical schedule and resubmit within 5 working days.

.4 Accepted revised schedule will become Master Plan and be used as baseline for updates.

**1.6 PROJECT SCHEDULE**

.1 Develop detailed Project Schedule derived from Master Plan.

.2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:

.1 Award.
.2 Shop Drawings, Samples.
.3 Permits / Notice of project.

.3 Mobilization.

.4 Lead Paint and Asbestos Containing Materials Abatement.

.5 Repainting.

.6 Removal of debris from shallow landfill/dump.

.7 Demobilization.

.8 Waste transfer to landfill or recycling facility on mainland.

.9 Testing and Commissioning.

**1.7 PROJECT SCHEDULE REPORTING**

.1 Update Project Schedule on weekly basis reflecting activity changes and completions, as well as activities in progress.

.2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

**1.8 PROJECT MEETINGS**

.1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.

**Part 2 PART 2 – PRODUCTS**

**2.1 NOT USED**

.1 .1 Not used.

**Part 3 PART 3 – EXECUTION**

**3.1 3.1 NOT USED**

.1 Not used.

**END OF SECTION**

## Part 1 General

### 1.1 REFERENCES

.1 Canadian General Standards Board (CGSB)

.1 CGSB 51-GP-51M-81, Polyethylene Sheet for Use in Building Construction.

.2 Transportation and Dangerous Goods Act (1999).

.3 Canadian Council of Ministers of the Environment (CCME) Documentation.

.4 Ontario

.1 Environmental Protection Act.

.2 O.Reg 153/04 Record of Site Condition

### 1.2 SUBMITTALS

.1 Submittals: in accordance with Section 01 11 06.

.2 Submit, prior to start of work, plan detailing management of hazardous wastes. Submit written documentation of weekly hazardous waste inspections on a monthly basis.

.3 Submittals for Progress Meetings: make submittals at least 24 hours prior to scheduled progress meetings as follows:

.1 Updated progress schedule detailing activities. Include review of progress with respect to previously established dates for starting and stopping various stages of Work, major problems and action taken, injury reports, equipment breakdown, and material removal.

.2 Copies of transport manifests, trip tickets, and disposal receipts for waste materials removed from work area.

.3 Weekly copies of site entry and work area logbooks with information on worker and visitor access.

.4 Weekly logs documenting engineering controls.

.5 Weekly results of collected air sampling data, including compliance air monitoring results.

.6 Other information required by Departmental Representative or relevant to agenda for upcoming progress meeting.

.4 Site Layout: within 7 days after date of Notice to Proceed and prior to mobilization to site, submit site layout drawings showing existing conditions and facilities, construction facilities and temporary controls provided by Contractor including following:

.1 Equipment and personnel decontamination areas.

.2 Means of ingress and egress.

.3 Equipment and material staging areas.

.4 Debris stockpile areas.

.5 Exclusion Zones, Contaminant Reduction Zones, and other zones specified in Contractor's site-specific Health and Safety Plan.

.6 Grading, including contours, required to construct temporary facilities.

.5 Equipment Decontamination Pad: submit equipment decontamination pad design to Departmental Representative for review prior to commencing construction.

.6 Submit documentation verifying that hazardous materials employees have been trained, tested, and certified to safely and effectively carry out their assigned duties in accordance with Section 01 35 29.

## 1.3 REGULATORY REQUIREMENTS

.1 Provide erosion and sediment control in accordance with regulations.

.2 Comply with federal, provincial, and local anti-pollution laws, ordinances, codes, and regulations when disposing of waste materials, debris, and rubbish.

.3 Work to meet or exceed minimum requirements established by federal, provincial, and local laws and regulations which are applicable.

.1 Contractor: responsible for complying with amendments as they become effective.

.4 In event that compliance exceeds scope of work or conflicts with specific requirements of contract notify Departmental Representative immediately.

## 1.4 SEQUENCING AND SCHEDULING

.1 Do not commence Work involving contact with potentially contaminated materials until decontamination facilities are operational and approved by Departmental Representative.

## 1.5 EQUIPMENT DECONTAMINATION FACILITY

.1 Construct equipment decontamination pad to accommodate largest piece of on-site potentially contaminated equipment.

.2 Facility will include:

.1 Clean wash water.

.2 Drip collection tray or platform.

.3 Waste water tank.

.4 Assorted sized brushes and brooms.

## 1.6 STOCKPILING FACILITIES

.1 Provide, maintain, and operate storage/stockpiling facilities.

.2 Install HDPE of a minimum thickness 0.2 mm, liner below proposed stockpile locations to prevent contact between stockpile material and ground. Equip facility with tarps capable of covering stockpiled material until Departmental Representative advises Contractor to dispose of material off site.

## 1.7 WASTEWATER STORAGE TANK

.1 Provide, operate, and maintain wastewater storage tanks to store wastewaters.

.2 Wastewater includes handbasin, shower, and wastewaters from Personnel Hygiene/Decontamination Facility; water collected from dewatering operations; and water collected from Equipment Decontamination Facility.

.3 Store wastewaters from dewatering operations and Equipment Decontamination Facility in separate tank from wastewater from Personnel Hygiene/Decontamination Facility.

.4 If toilet facilities are provided in Personnel Hygiene/Decontamination Facility, store wastewater from these toilets with wastewater from handbasins, and showers for ultimate disposal off site.

.5 Discharges: comply with applicable discharge limitations and requirements; do not discharge wastewaters to site sewer systems.

.6 Provide pumps and piping to convey collected wastewaters to designated wastewater storage tanks.

.7 Install wastewater storage tanks in locations as directed by Departmental Representative.

.8 Support tanks on temporary aboveground foundations.

.9 Connect pumps, piping, valves, miscellaneous items, and necessary utilities as required for operation of facilities; and protect tanks, valves, pumps, piping, and miscellaneous items from freezing.

.10 Do not operate wastewater storage tanks until inspected and approved by Departmental Representative.

.11 Notify Departmental Representative 72 hours minimum in advance of when wastewater storage tank is anticipated to be full.

.1 Do not discharge additional liquids to filled tank following sampling by Departmental Representative.

.2 Departmental Representative will determine appropriate disposition of wastewaters based on sample analysis.

.12 Transport and dispose of wastewaters at off-site disposal facility as identified by Contractor and approved by Departmental Representative.

## 1.8 DRUMS

.1 Storage of Liquid Waste: 200 L steel drums meeting Transportation and Dangerous Goods Act, closable lids, complete with labels for marking contents and date filled.

.2 Storage of Solid Waste: 200 L steel drums meeting Transportation and Dangerous Goods Act, closable lids, complete with labels for marking contents and date filled.

## 1.9 DUST AND PARTICULATE CONTROL

.1 Execute Work by methods to minimize raising dust from construction operations.

.2 Implement and maintain dust and particulate control measures as determined necessary by Departmental Representative during construction and in accordance with Provincial regulations.

.3 Provide positive means to prevent airborne dust from dispersing into atmosphere.

.4 Use chemical means for water misting system for dust and particulate control only with Departmental Representative's prior written approval.

.5 Prevent dust from spreading to adjacent property sites.

.6 Departmental Representative will stop work at any time when Contractor's control of dusts and particulates is inadequate for wind conditions present at site, or when air quality monitoring indicates that release of fugitive dusts and particulates into atmosphere equals or exceeds specified levels.

.7 If Contractor's dust and particulate control is not sufficient for controlling dusts and particulates into atmosphere, stop work. Contractor must discuss procedures that Contractor proposes to resolve problem. Make necessary changes to operations prior to resuming excavation, handling, processing, or other work that may cause release of dusts or particulates.

**1.10 POLLUTION CONTROL**

.1 Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious toxic substances and pollutants produced by construction operations.

.2 Be prepared to intercept, clean up, and dispose of spills or releases that may occur whether on land or water. Maintain materials and equipment required for cleanup of spills or releases readily accessible on site.

.3 Promptly report spills and releases potentially causing damage to environment to:

.1 Ontario the Ministry of Environment Spills Action Centre (1-800-268-6060).

.2 Owner of pollutant, if known.

.3 Person having control over pollutant, if known.

.4 Departmental Representative.

.5 Contact manufacturer of pollutant if known and ascertain hazards involved, precautions required, and measures used in cleanup or mitigating action.

.4 Take immediate action using available resources to contain and mitigate effects on environment and persons from spill or release.

.5 Provide spill response materials including, containers, adsorbent, shovels, and personal protective equipment. Make spill response materials available at all times in which hazardous materials or wastes are being handled or transported. Spill response materials: compatible with type of material being handled.

## 1.11 EQUIPMENT DECONTAMINATION

.1 Equipment that comes in contact with potentially contaminated material, after working in potentially contaminated work areas, and/or prior to subsequent work or travel on clean areas will at minimum, be decontaminated using the following steps:

.1 Mechanically remove packed dirt, grit and debris by scraping and brushing without using steam or high pressure water.

.2 Use clean water appropriately to rinse; each piece of equipment will be inspected by the Departmental Representative after decontamination and prior to removal from site and or travel on clean areas.

.3 Wastewater and sediment needs to be collected and transferred to drums for appropriate offsite disposal at an MOECC licensed facility.

.4 Departmental Representative will have right to require additional decontamination to be completed if necessary. Take appropriate measures to minimize drift of mist and spray during decontamination.

## 1.12 EROSION AND SEDIMENT CONTROL

.1 Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas, from stockpiles, staging areas, and other work areas. Prevent erosion and sedimentation.

.1 Plan needs to be submitted as part of submittals for review and approval. Plan needs to include monitoring and reporting requirements to assure control measures are sufficient with the plan and regulations.

.2 Minimize amount of bare soil exposed at one time. Stabilize disturbed soils as quickly as practical. Strip vegetation, regrade, or otherwise develop to minimize erosion. Remove accumulated sediment resulting from construction activity from adjoining surfaces, drainage systems, and water courses, and repair damage caused by soil erosion and sedimentation as directed by Departmental Representative.

.3 Provide and maintain temporary measures which may include, silt fences, hay or straw bales, ditches, geotextiles, drains, berms, terracing, riprap, temporary drainage piping, sedimentation basins, vegetative cover, dikes, and other construction required to prevent erosion and migration of silt, mud, sediment, and other debris off site or to other areas of site where damage might result, or that might otherwise be required by Laws and Regulations. Make sediment control measures available during construction.

.4 Hay or Straw Bale: wire bound or string tied; securely anchored by at least 2 stakes or rebars driven through bale 300 mm to 450 mm into ground; chinked (filled by wedging) with hay or straw to prevent water from escaping between bales; and entrenched minimum of 100 mm into ground.

.5 Silt Fence: assembled, ready to install unit consisting of geotextile attached to driveable posts. Geotextile: uniform in texture and appearance, having no defects, flaws, or tears that would affect its physical properties; and contain sufficient ultraviolet ray inhibitor and stabilizers to provide minimum 2-year service life from outdoor exposure.

.6 Net Backing: industrial polypropylene mesh joined to geotextile at both top and bottom with double stitching of heavy-duty cord, with minimum width of 750 mm.

.7 Posts: sharpened wood, approximately 50 mm square, protruding below bottom of geotextile to allow minimum 450 mm embedment; post spacing 2.4 m maximum. Securely fasten each post to geotextile and net backing using suitable staples.

.8 Plan construction procedures to avoid damage to work or equipment encroachment onto water bodies or drainage ditch banks. In event of damage, promptly take action to mitigate effects. Restore affected bank or water body to existing condition.

.9 Installation:

.1 Construct temporary erosion control items as indicated. Actual alignment and/or location of various items as directed by Departmental Representative.

.2 Do not construct bale barriers and silt fence in flowing streams or in swales.

.3 Check erosion and sediment control measures weekly after each rainfall; during prolonged rainfall check daily.

.4 Bales and/or silt fence may be removed at beginning of work day, replace at end of work day.

.5 Whenever sedimentation is caused by stripping vegetation, regrading, or other development, remove it from adjoining surfaces, drainage systems, and watercourses, and repair damage as quickly as possible.

.6 Prior to or during construction, Departmental Representative may require installation or construction of improvements to prevent or correct temporary conditions on site. Improvements may include berms, mulching, sediment traps, detention and retention basins, grading, planting, retaining walls, culverts, pipes, guardrails, temporary roads, and other measures appropriate to specific condition.

.7 Temporary improvements must remain in place and in operation as necessary or until otherwise directed by Departmental Representative.

.8 Repair damaged bales, end runs, and undercutting beneath bales.

.9 Unless Departmental Representative, remove temporary erosion and sediment control devices upon completion of Work. Spread accumulated sediments to form a suitable surface for seeding or dispose of, and shape area to permit natural drainage to satisfaction of Departmental Representative. Materials once removed become property of Contractor.

.10 Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.

.11 Do not disturb existing embankments or embankment protection.

.12 Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

.13 If soil and debris from site accumulate in low areas, storm sewers, roadways, gutters, ditches, or other areas where in Departmental Representative's determination it is undesirable, remove accumulation and restore area to original

**1.13 PROGRESS CLEANING**

.1 Maintain cleanliness of Work and surrounding site to comply with federal, provincial, and local fire and safety laws, ordinances, codes, and regulations.

.2 Co-ordinate cleaning operations with disposal operations to prevent accumulation of dust, dirt, debris, rubbish, and waste materials.

**1.14 FINAL DECONTAMINATION**

.1 Perform final decontamination of construction facilities, equipment, and materials which may have come in contact with potentially contaminated materials prior to removal from site.

.2 Perform decontamination as specified to satisfaction of Departmental Representative. Departmental Representative will direct Contractor to perform additional decontamination if required.

**1.15 REMOVAL AND DISPOSAL**

.1 Remove surplus materials and temporary facilities from site.

.2 Dispose of non-contaminated waste materials, litter, debris, and rubbish off site.

.3 Do not burn or bury rubbish and waste materials on site.

.4 Do not dispose of volatile or hazardous wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.

.5 Do not discharge wastes into streams or waterways.

.6 Dispose of following materials at appropriate off-site MOECC licensed landfill facility identified by Contractor and approved by Departmental Representative. Separate and dispose of accumulated waste materials off-site, in accordance with R.R.O. 1990 Reg. 347 General waste management, including but not limited to:

.1 Debris including excess construction material.

.2 Non-contaminated litter and rubbish.

.3 Disposable PPE worn during final cleaning.

.4 Wastewater removed from a wastewater storage tank.

.5 Non-hazardous material.

.6 Hazardous material.

.7 Dispose of materials as directed by Departmental Representative and submit proof that all waste material has been disposed of at an appropriate landfill facility.

.8 Minimize generation of hazardous waste to maximum extent practicable. Take necessary precautions to avoid mixing clean and contaminated wastes.

.9 Identify and evaluate recycling and reclamation options as alternatives to land disposal, such as:

.1 Hazardous wastes recycled in manner constituting disposal;

.2 Hazardous waste burned for energy recovery;

.3 Lead-acid battery recycling;

.4 Hazardous wastes with economically recoverable precious metals.

**1.16 NOISE CONTROL**

.1 All construction equipment shall be operated with exhaust systems in good repair to minimize noise.

.2 Ensure that noise control devices (i.e. mufflers, silencers) on construction equipment are properly maintained.

**1.17 HISTORICAL/ ARCHAEOLOGICAL CONTROL**

.1 Provide historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands known to be on project site: and/or identifies procedures to be followed if historical archaeological, cultural resources, biological resources and wetlands not previously known to be onsite or in area are discovered during construction.

.2 Plan: include methods to assure protection of known or discovered resources and identify lines of communication between Contractor personnel and Departmental Representative.

.3 If archaeological deposits are discovered during the project work shall stop immediately and the Departmental Representative shall immediately be notified.

.4 Archaeologically significant material, if found on the property, remains the property of the Crown and shall not be removed from the site.

.5 Management of the archaeological materials will be coordinated through Departmental Representative.

**1.18 MIGRATORY BIRDS/WILDLIFE HABITAT**

.1 Disturbance and destruction of habitat should be timed outside of breeding season of mid-April to end of July.

.2 Ensure all works are in compliance with the Migratory Birds Convention Act.

.3 Restrict vehicle movements to construction areas and access roads and avoid harassment of animals.

**1.19 FISH/ FISH HABITAT**

.1 All materials and equipment used will be operated and stored in a manner that prevents any deleterious substance (e.g., petroleum products, silt, etc.) as defined by the Fisheries Act from entering the surface water.

**1.20 RECORD KEEPING**

.1 Maintain adequate records to support information provided to Departmental Representative regarding exception reports, annual reports, and biennial reports.

.2 Maintain lead waste shipment records for minimum of 3 years from date of shipment or longer period required by applicable law or regulation.

.3 Maintain bills of ladings for minimum of 375 days from date of shipment or longer period required by applicable law or regulation.

**Part 2 Products**

**2.1 NOT USED.**

.1 Not used.

**Part 3 Execution**

**3.1 NOT USED.**

.1 Not used.

**END OF SECTION**

# 1 GENERAL

## 1.1 REFERENCES

.1 Canadian Standards Association (CSA): Canada
- .1 CSA S350-M1980(R2003), Code of Practice for Safety in Demolition of Structures.

.2 National Building Code 2010 (NBC):
- .1 NBC 2010, Division B, Part 8 Safety Measures at Construction and Demolition Sites.

.3 National Fire Code 2010 (NFC):
- .1 NFC 2010, Division B, Part 5 Hazardous Processes and Operations, subsection 5.6.1.3 Fire Safety Plan.

.4 Province of Ontario:
- .1 Occupational Health and Safety Act Revised Statutes of Ontario 1990, Chapter O.1 as amended, and Regulations for Construction Projects, O. Reg. 213/91 as amended.
- .2 O. Reg. 490/09, Designated Substances.
- .3 O. Reg. 278/05 Designated Substances.
- .4 Workplace Safety and Insurance Act, 1997.
- .5 Municipal statutes and authorities.

.5 Treasury Board of Canada Secretariat (TBS):
- .1 Treasury Board, Fire Protection Standard April 1, 2010 www.tbs-sct.gc.ca/pol/doc-eng.aspx ?id=17316&section=text.

## 1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit site-specific Health and Safety Plan: Within five (5) working days days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
- .1 Results of site specific safety hazard assessment.
- .2 Results of safety and health risk or hazard analysis for site tasks and operations found in work plan.
- .3 Measures and controls to be implemented to address identified safety hazards and risks.

.2 Provide a Fire Safety Plan, specific to the work location.

.3 Contractor's and Sub-contractors' Safety Communication Plan.

.4 Contingency and Emergency Response Plan addressing standard operating procedures specific to the project site to be implemented during emergency situations.

.5 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within five (5) working days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within five (5) days after receipt of comments from Departmental Representative.

.6 Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.

.7 Submit names of personnel and alternates responsible for site safety and health.

.8 Submit records of Contractor's Health and Safety meetings when requested.

.9 Submit one copy of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative, as requested.

.10 Submit one copy of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative, as requested by the Departmental Representative.

.11 Submit copies of orders, directions or reports issued by health and safety inspectors of the authorities having jurisdiction.

.12 Submit copies of incident and accident reports.

.13 Submit Material Safety Data Sheets (MSDS).

.14 Submit Workplace Safety and Insurance Board (WSIB)- Experience Rating Report.

.15 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel, in accordance with O. Reg. 490,] prior to commencement of Work, and submit additional certifications for any new site personnel to Departmental Representative.

## 1.3 FILING OF NOTICE

.1 File Notice of Project with Provincial authorities prior to commencement of Work.

## 1.4 WORK PERMIT

.1 Obtain building permits related to project prior to commencement of Work.

## 1.5 SAFETY ASSESSMENT

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

## 1.6 MEETINGS

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

## 1.7 REGULATORY REQUIREMENTS

.1 Comply with the Acts and regulations of the Province of Ontario.

.2 Comply with specified standards and regulations to ensure safe operations at site.

## 1.8 PROJECT/SITE CONDITIONS

.1 Work at site will involve contact with:
- .1 Silica in concrete.
- .2 Mercury in exterior paint.

.3 Asbestos in exterior caulking, and exterior transite cladding. Refer to Appendix 2.4 Designated Substance Survey for locations of materials.
.4 Lead in paint.
.5 Mouse guano in building interiors.
.6 Mould on in building interiors.
.7 Ozone depleting substances in two domestic refrigerator units
.8 Work at heights
.9 Project site is remote, accessible only by water or helicopter with no direct access to emergency response
.10 Work at site could involve the contact with noxious plants.
.11 Encounters with wildlife (i.e. wolves and caribou).

## 1.9 GENERAL REQUIREMENTS

.1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.

.2 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns either accepting or requesting improvements.

.3 Relief from or substitution for any portion or provision of minimum Health and Safety standards specified herein or reviewed site-specific Health and Safety Plan shall be submitted to Departmental Representative in writing.

## 1.10 COMPLIANCE REQUIREMENTS

.1 Comply with Ontario Occupational Health and Safety Act, R.S.O. 1990 Chapter 0.1, as amended.

## 1.11 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 applicable the Contractor shall be designated "Constructor", as defined by Occupational Health and Safety Act and Regulations for Construction Projects for the Province of Ontario.

## 1.12 UNFORSEEN HAZARDS

.1 Should any unforeseen or peculiar safety-related factor, hazard, or condition become evident during performance of Work, immediately stop work and advise Departmental Representative verbally and in writing.

.2 Follow procedures in place for Employees Right to Refuse Work as specified in the Occupational Health and Safety Act for the Province of Ontario.

## 1.13 HEALTH AND SAFETY CO-ORDINATOR

.1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:

- .1 Have site-related working experience specific to activities associated with abatement of lead, mercury, and asbestos containing materials.
- .2 Have working knowledge of occupational safety and health regulations.
- .3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
- .4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
- .5 Be on site during execution of Work and report directly to and be under direction of the site supervisor.

## 1.14 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 of Ontario, and in consultation with Departmental Representative.

- .1 Contractor's Safety Policy.
- .2 Contractor's Violence and Harassment Policies.
- .3 Constructor's Name.
- .4 Notice of Project.
- .5 Name, trade, and employer of Health and Safety Representative or Joint Health and Safety Committee members (if applicable).
- .6 Ministry of Labour Orders and reports.
- .7 Occupational Health and Safety Act and Regulations for Construction Projects for Province of Ontario.
- .8 Address and phone number of nearest Ministry of Labour office.
- .9 Material Safety Data Sheets.
- .10 Written Emergency Procedures.
- .11 Site Specific Safety Plan.
- .12 Valid certificate of first aider on duty.
- .13 Inspection card for first-aid box.
- .14 Location of nearest hospital and map.
- .15 WSIB "In Case of Injury At Work" poster.
- .16 Location of toilet and cleanup facilities.
- .17 DANGER signs in hazardous areas.

## 1.15 CORRECTION OF NON-COMPLIANCE

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

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

.3 Departmental Representative may stop Work if non-compliance of health and safety regulations is not corrected.

**1.16 BLASTING**

.1 Blasting or other use of explosives is not permitted.

**1.17 POWDER ACTUATED DEVICES**

.1 Use powder actuated devices only after receipt of written permission from Departmental Representative.

**1.18 WORK STOPPAGE**

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

.2 Assign responsibility and obligation to Health and Safety Coordinator to stop or start Work when, at Health and Safety Coordinator's discretion, it is necessary or advisable for reasons of health or safety. Departmental Representative may also stop Work for health and safety considerations.

.3 Health and safety officer should have site related work experience specific to activities associated with The Work, should have working knowledge of occupational safety and health regulations, is responsible for ensuring personnel who have not completed required health and safety training are not permitted to enter site to perform work, is responsible for enforcing and implementing daily site specific health and safety plan, officer should be on site during execution of entire work

**2 PRODUCTS**

**2.01 NOT USED**

.1 Not used.

**3 EXECUTION**

**3.01 NOT USED**

.1 Not used.

**END OF SECTION**

## Part 1 General

### 1.1 SUMMARY

.1 This section covers the requirements for the installation of scaffolding access to permit work to be carried out.

.2 Access to permit work to be carried out shall be by means of standard scaffolding.

.3 Provide shop drawings of all methods and locations.

### 1.2 REFERENCES

.1 Comprehensive Designated Substances and Hazardous Materials Survey , Michipicoten Island East End, BluMetric Environmental Inc., March 21, 2017.

.2 Structural Review, Michipicoten Island East End Lighthouse, Novatech Engineering, March, 2017.

### 1.3 DEFINITIONS

.1 Scaffolding: any method used for access to carry out the work such as rigid framed scaffolding, ladders, etc.

### 1.4 RESPONSIBILITIES

.1 Contractor is responsible for costs associated with the failure to properly select or abide by the appropriate regulatory required precautions.

## Part 2 Products

### 2.1 PRODUCTS

.1 Scaffolding materials shall be new, or used materials in good condition.

.2 Provide shop drawings to the Departmental Representative for review and comments.

## Part 3 Execution

### 3.1 SCAFFOLDING AND BARRIERS

.1 Provide all scaffolding, ladders, access, lifting equipment, etc. outside the structures as necessary to carry out the work of all trades and as per the requirements of the work. All work to be in accordance with Occupational Health and Safety Act. Field measure to ensure proper fit of all works.

.2 Field Scaffolding shall be erected on wood sills which are placed on continuous sheets of plywood under the scaffolding to protect the existing ground area from damage and, tarps in other areas to prevent discolouration or contamination of surfaces.

.3 Provide suitable ladders to scaffolding at each face of the structure or per each section of scaffold isolated from other sections, for full height of scaffold. Access from the ladder(s) to the scaffolding shall be clear of obstructions and cross bracing so men and materials can easily enter.

.4 Scaffolding shall be designed, drawn and inspected by a registered professional engineer experienced in this work. Provide shop drawings for review. All drawings shall be stamped and signed by a registered professional engineer. Make all changes required by Ontario Ministry of Labour officials. Prior to using the scaffolding for carrying out the work, the design engineer for the scaffolding shall complete an inspection of the installation and shall provide the Departmental Representative with a letter stating that the installation conforms with his/her design and is suitable for the Contractor's use. Provide for periodic inspections monthly as scaffolding and work progresses.

.5 Install, maintain and remove all barriers around the site to prevent access by the Public to the immediate work areas. All barriers to be in accordance with the Occupational Health and Safety Act.

**END OF SECTION**

## Part 1 General

### 1.1 MEASUREMENT

.1 Supply and installation of temporary fence, of 200 m in length, for site and environmental protection. Work will be measured as lump sum.

### 1.2 INSTALLATION AND REMOVAL

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

.2 Remove from site all such work after use.

### 1.3 HOARDING FOR ENTIRE SITE

.1 Erect temporary site enclosure using modular freestanding fencing: galvanized, minimum 1.8 m high, chain link or welded steel mesh, pipe rail. Maintain fence in good repair.

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

### 1.4 TREE PROTECTION

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

### 1.5 EMERGENCY HELICOPTER LANDING

.1 Maintain a suitable area on the property clear of loose debris for use in the event of an emergency response via helicopter.

### 1.6 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

.1 Protect surrounding private and public property from damage during performance of Work.

.2 Be responsible for damage incurred.

### 1.7 PROTECTION OF FINISHES

.1 Provide protection for building finishes, site furnishings, and equipment during performance of Work.

.2 Provide necessary screens, covers and hoardings.

.3 Confirm with Departmental Representative or Consultant locations and installation schedule 10 days prior to installation.

.4 Be responsible for damage incurred due to lack of or improper protection.

**Part 2 PRODUCTS**

**2.1 NOT USED**

.1 Not Used.

**Part 3 EXECUTION**

**3.1 NOT USED**

.1 Not Used.

**END OF SECTION**

## Part 1 General

### 1.1 SUMMARY

.1 Section includes:

.1 Debris removal and off-site disposal.

.2 Removal and safe disposal of plastic 60 gallon diesel fuel drum, located on north dock.

.2 Work Includes:

.1 Provide portable equipment required for debris and drum removal.

.2 Transportation of all equipment, staff, contaminated materials and Departmental Representative, to and from site as required.

.3 Co-ordination, supervision and preparation for removal of debris, drum, potentially impacted by both lead paint and asbestos. Departmental Representative requires one (1) week notice prior to the commencement of Site work for provision of site supervision.

.4 Removal of debris and drum to a MOECC licensed landfill or recycling centre.

.5 Implementation of safety work zones, site Health and Safety Plans and Emergency Response Plans.

### 1.2 MEASUREMENT PROCEDURES

.1 Removal and disposal of debris shall be measured in metric tonnes of the actual weight disposed material (as hazardous and non-hazardous based on waste classification results). Measurement shall be based on the net weight of debris delivered at the MOECC licensed landfill site and substantiated by certified weigh bills from the MOECC licensed landfill site.

.1 Remove, segregate and dispose of debris to the extent and limits as directed on Site by Departmental Representative. Material from beyond limits specified will be not be measured for payment.

.2 Price shall include: Preparatory tasks including obtaining the required permits and certificates; quality control/quality assurance; other required equipment; implementation of safety work zones; excavation; loading/containerization of debris for disposal; decontamination of construction equipment used in removal procedures in accordance with required storage and delivery of debris to the MOECC licensed landfill site; grading; and making good all disturbed surfaces.

.2 All remaining Work under this section is to be included as part of the lump sum price and shall include, but is not limited to, the following tasks:

.1 Locating and protecting any buried and above ground utilities, structures and features.

.2 Diesel drum removal and safe disposal.

.3 Mobilisation and demobilisation to the site.

.4 Grubbing to access debris pile.

.3 Reference the following while completing the work:

.1 Shallow Soils Investigation and Further Remediation, East End Light Station, Michipicoten Island, BluMetric Environmental Inc., March 23, 2017.

.2 Comprehensive Designated Substances and Hazardous Materials Survey , Michipicoten Island East End, BluMetric Environmental Inc., March 21, 2017.

.3 Structural Review, Michipicoten Island East End Lightstation, Novatech Engineering, March 16, 2017.

## 1.3 REFERENCE STANDARDS

.1 Applicable environmental and health and safety laws and regulations for Ontario.

.2 National Research Council Canada (NRC)

.1 National Building Code of Canada 2015 (NBC).

.2 National Fire Code of Canada 2015 (NFC).

## 1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide quality assurance and quality control submittals in accordance with Section 01 11 06 as follows:

.1 Description of emergency plans in case of breakdown, spill or other problem.

.2 Description of contingency plan in case of variations of critical parameters during system operation.

.3 Waste management plan and complete list of wastes, including waste registration numbers as required by provincial regulations, that will be generated by activities.

.4 Copy of letter from a MOECC licensed landfill or recycling centre indicating their willingness to accept the debris. This letter is to be submitted prior the debris removal from the site.

.5 Copies of transport manifests, trip tickets and disposal receipts for waste materials removed from Work Area.

.2 Closeout Submittals:

.1 Provide Closeout Submittals as follows:

.1 Provide written proof that waste, and debris have been sent to licensed waste disposal site or recycling centre authorized by MOECC for Province of Ontario.

## 1.5 QUALITY ASSURANCE

.1 Regulatory Requirements:

.1 Perform work in accordance with:

.1 Acts, Regulations, Laws, guidelines codes of practice, directives and policies of government authorities pertaining to: handling and disposing of contaminated soil; environment; noise; water supply; waste water; air quality; health and safety; transportation; and waste management. WHMIS.

.2 Ontario regulation 558 – Waste Management

.3 Canadian Environmental Assessment Act.

.4 Canadian Environmental Protection Act (New Substance Notification Regulations).

.5 Transportation of Dangerous Goods Act.

.6 National Building Code of Canada (NBC).

.7 National Fire Code of Canada (NFC).

.8 The Fisheries Act.

.9 Migratory Birds Convention Act.

.10 Migratory Birds Regulations.

## 1.6 DELIVERY, STORAGE, AND HANDLING

.1 Debris:

.1 Will be carried from site in suitable containers with a watertight liner.

.2 Transport and disposal of debris must conform according to current provincial regulations.

.3 Segregate granular materials for reuse in the final excavation.

.4 Segregate recyclable materials for appropriate disposal.

.2 New Materials and Equipment:

.1 Ship, store and preserve in original packaging with manufacturer's seal and label remain intact.

.2 Ensure materials and equipment are not damaged, altered or soiled during shipment, handling and storage.

.3 Transport rejected equipment and materials from work site immediately.

.4 Store materials and equipment according to manufacturer's and supplier's instructions.

.5 Establish quality management system for materials and equipment.

## 1.7 SITE CONDITIONS

.1 Existing Conditions:

.1 Reports and information pertaining to debris to be handled, removed, or otherwise disturbed and disposed of during this Project bound into this specification.

.2 Restore excavated portion non-impacted material and grade to match surrounding grade.

.3 Remote Site Access:

.1 Site is not accessible by road.

.2 Site can be accessed by either watercraft or helicopter.

.3 For potential waterborne access, refer to the following report attached to this specification:

.1 Marine Assessment, Michipicoten Island Lightstation, Lake Superior, Shoreplan Engineering, January 12, 2017.

**1.8 SEQUENCING**

.1 Establish location and extent of underground utility lines in area beforehand and arrange for relocation or protection.

.2 Lead based paint abatement (including preliminary cleanup of loose paint chips on the ground in immediate vicinity of the lighthouse and on access routes to Work area, as well as abatement of lead based paint on lighthouse exterior) expected to be completed in advance of debris removal.

.3 Decontaminate equipment used in procedures before removing equipment from job site.

## Part 2 Products

**2.1 MATERIALS**

.1 Waste:

.1 Disposed in accordance with provincial regulations.

**2.2 EQUIPMENT**

.1 Leave equipment and machinery running only while in use, except where extreme temperatures prohibit shutting down.

## Part 3 EXECUTION

**3.1 DEBRIS REMOVAL SUPERVISION**

.1 Site Verification of Conditions:

.1 The Departmental Representative will direct the depth and extent of any required excavation.

**3.2 PREPARATION**

.1 Protection:

.1 Keep excavation sites water free throughout work.

.2 Protect excavation from rainwater.

.3 Provide safety measures to ensure worker and public safety.

.4 Consult Departmental Representative regarding potential site specific geotechnical considerations.

**3.3 APPLICATION**

.1 Debris Removal:

.1 Grub vegetation cover as required in order to access western debris pile, upon approval of Departmental Representative.

.2 Remove, store, transport, and eliminate off-site in accordance with applicable provincial standards, requirements, and regulations.

**3.4 RESTORATION**

.1 Re-instate surface grading to give site same appearance as before work.

**3.5 ENVIRONMENTAL PROTECTION**

.1 Refer 00 00 01 article 2.8 – Mitigation measures.

**END OF SECTION**

## Part 1 General

### 1.1 SUMMARY

.1 The Contractor is charged with abatement or remediation of hazardous materials solely where they must be altered, renovated, or damaged as part of the overall project.

.2 Comply with requirements of this Section when performing following work:

.1 Break, cut, grind, sand, drill, scrape, vibrate or abrade paint off of non-friable asbestos containing materials (i.e. exterior transite cladding) using non-powered hand-held tools, and the material is wetted to control the spread of dust or fibres.

.3 Reference the following while completing the work:

.1 Comprehensive Designated Substances and Hazardous Materials Survey (DSHMS), Environmental Services Stream 3 – Standing Offer Agreement EQ447-141528/A, Michipicoten Island East, Near Wawa, ON, BluMetric Environmental Inc., June 6, 2017.

.4 Locations of known/identified asbestos containing material within the proposed area site that are to be abated (refer to 1.1.3.1 for the locations of known/identified asbestos containing material):

.1 Lighthouse:

.1 Exterior windows and doors – caulking (10 m). See figure C-4.

.2 Living Quarters Building:

.1 Exterior second story transite cladding façade and underlying tar paper (123 $m^2$). See figure C-5.

.3 Garage/Living Quarters Building:

.1 Exterior pink caulking (10 m). See figure C-6.

.4 General Site Debris including:

.1 Transite panels in western debris pile (~2 $m^3$). See figure C-2.

.2 Transite panel debris pile in southern outhouse (~1 $m^3$). See figure C-2.

.3 Transite debris pile in former foundation. (~1 $m^3$) See figure C-2.

.4 Miscellaneous small pieces of debris found around site. See figure C-2.

.5 Pile of roof shingles in Shed 2. See figure C-2.

.5 Locations of other known/identified potential asbestos containing material at the site that will NOT be abated during this work program:

.1 Southern Outhouse

.1 Roofing shingles and tarpaper.

.2 Living Quarters Building

.1 Roofing shingles and tarpaper beneath tin roof.

.3 Garage/Living Quarters Building

.1 Interior, room 6, drywall filler compound.

.6 The contractor is required to communicate the following in the submittal of Hazardous Materials Management Plan.

.7 The Contractor is responsible for costs associated with the failure to properly select or abide by the appropriate regulatory required abatement precautions

**1.2 REFERENCE STANDARDS**

.1 Ontario Ministry of Labour
.1 O.Reg. 278/05 (as amended): Regulation Respecting Asbestos on Construction Projects and in Buildings and Repair Operations.
.2 O.Reg. 490/09 (as amended): Designated Substances.
.3 A Guide to the Regulations respecting Asbestos on Construction Projects and in Buildings and Repair Operations released in November 2007, http://www.labour.gov.on.ca/english/hs/ asbestos/index.html.
.4 Ontario Occupational Health and Safety Act.

.2 Ontario Ministry of the Environment and Climate Change
.1 O. Reg, 347/90 General – Waste Management as amended by O. Reg. 304/14.
.2 Environmental Protection Act.

.3 Public Works and Government Services Canada.
.1 Annex C - Appendix 6 - Work Procedures of PWGSC DM Directive 057 Asbestos Management.

.4 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-1.205-2003, Sealer for Application to Asbestos-Fibre-Releasing Materials.

.5 Department of Justice Canada
.1 Canadian Environmental Protection Act (CEPA), 1999.

.6 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
.1 Material Safety Data Sheets (MSDS).

.7 Transport Canada (TC)
.1 Transportation of Dangerous Goods Act, 1992 (TDGA).

.8 U.S. Department of Health and Human Services/Centers for Disease Control and Prevention (CDC)/National Institute for Occupational Safety and Health (NIOSH)
.1 NIOSH 94-113, NIOSH Manual of Analytical Methods (NMAM), 4th Edition.

.9 U.S. Department of Labour - Occupational Safety and Health Administration - Toxic and Hazardous Substances
.1 29 CFR 1910.1001-2010, Asbestos Regulations.

**1.3 DEFINITIONS**

.1 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with filter system capable of collecting and retaining fibres greater than 0.3 microns in any direction at 99.97% efficiency.

.2 Amended Water: water with nonionic surfactant wetting agent added to reduce water tension to allow thorough wetting of fibres.

.3 Asbestos-Containing Materials (ACMs): materials that contain 0.5 per cent or more asbestos by dry weight and are identified under Existing Conditions including fallen materials and settled dust.

.4 Asbestos Work Area: area where work takes place which will, or may, disturb ACMs.

.5 Authorized Visitors: Departmental Representatives, and/or representatives of regulatory agencies.

.6 Competent worker: in relation to specific work, means a worker who:

.1 Is qualified because of knowledge, training and experience to perform the work.

.2 Is familiar with the regulations that apply to the work.

.3 Has knowledge of all potential or actual danger to health or safety in the work.

.7 Friable material: means material that:

.1 When dry, can be crumbled, pulverized or powdered by hand pressure, or

.2 is crumbled, pulverized or powdered.

.8 Non-Friable Material: material that when dry cannot be crumbled, pulverized or powdered by hand pressure.

.9 Occupied Area: any area of the building or work site that is outside Asbestos Work Area.

.10 Polyethylene: polyethylene sheeting or rip-proof polyethylene sheeting with tape along edges, around penetrating objects, over cuts and tears, and elsewhere as required to provide protection and isolation.

.11 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must have appropriate capacity for work.

**1.4 ACTION AND INFORMATIONAL SUBMITTALS**

.1 Submit proof satisfactory to Departmental Representative that suitable arrangements have been made to dispose of asbestos-containing waste in accordance with requirements of authority having jurisdiction.

.2 Submit Provincial Notice of Project Form.

.3 Submit to Departmental Representative necessary permits for transportation and disposal of asbestos-containing waste and proof that asbestos-containing waste has been received and properly disposed.

.4 Submit proof that all asbestos workers and/or supervisor have received appropriate training and education by a competent person in the hazards of asbestos exposure, good personal hygiene and work practices while working in Asbestos Work Areas, and the use, cleaning and disposal of respirators and protective clothing.

.5 Submit proof satisfactory to Departmental Representative that employees have respirator fitting and testing. Workers must be fit tested (irritant smoke test) with respirator that is personally issued.

**1.5 QUALITY ASSURANCE**

.1 Regulatory Requirements: comply with Federal, Provincial, and local requirements pertaining to asbestos, provided that in case of conflict among these requirements or with these specifications, more stringent requirement applies. Comply with regulations in effect at time Work is performed.

.2 Health and Safety:

.1 Perform construction occupational health and safety in accordance with Section 01 35 29.

.2 Safety Requirements: worker protection.

.1 Protective equipment and clothing to be worn by workers while in Asbestos Work Area include:

.1 Air purifying half-mask respirator with N-100, R-100 or P-100 particulate filter, personally issued to worker and marked as to efficiency and purpose, suitable for protection against asbestos and acceptable to Provincial Authority having jurisdiction. The respirator to be fitted so that there is an effective seal between the respirator and the worker's face, unless the respirator is equipped with a hood or helmet. The respirator to be cleaned, disinfected and inspected after use on each shift, or more often if necessary, when issued for the exclusive use of one worker, or after each use when used by more than one worker. The respirator to have damaged or deteriorated parts replaced prior to being used by a worker; and, when not in use, to be stored in a convenient, clean and sanitary location. The employer to establish written procedures regarding the selection, use and care of respirators, and a copy of the procedures to be provided to and reviewed with each worker who is required to wear a respirator. A worker not to be assigned to an operation requiring the use of a respirator unless he or she is physically able to perform the operation while using the respirator.

.2 Disposable-type protective clothing that does not readily retain or permit penetration of asbestos fibres. Protective clothing to be provided by the employer and worn by every worker who enters the work area, and the protective clothing shall consist of a head covering and full body covering that fits snugly at the ankles, wrists and neck, in order to prevent asbestos fibres from reaching

the garments and skin under the protective clothing to include suitable footwear, and to be repaired or replaced if torn.

.2 Eating, drinking, chewing, and smoking are not permitted in Asbestos Work Area.

.3 Before leaving Asbestos Work Area, the worker can decontaminate his or her protective clothing by using a vacuum equipped with a HEPA filter, or by damp wiping, before removing the protective clothing, or, if the protective clothing will not be reused, place it in a container for dust and waste. The container to be dust tight, suitable for asbestos waste, impervious to asbestos, identified as asbestos waste, cleaned with a damp cloth or a vacuum equipped with a HEPA filter immediately before removal from the work area, and removed from the work area frequently and at regular intervals.

.4 Facilities for washing hands and face shall be provided within or close to the Asbestos Work Area.

.5 Ensure workers wash hands and face when leaving Asbestos Work Area.

.6 Ensure that no person required to enter an Asbestos Work Area has facial hair that affects seal between respirator and face.

**1.6 MEASUREMENT**

.1 Provide unit price per $m^2$ to abate exterior ACM transite siding & tar paper backing that has been painted over.

.2 Provide unit price per m to abate exterior ACM caulking that has been painted over, and replacement of joint sealants in accordance with section 07 92 00.

.3 Provide unit price per $m^3$ to remove and dispose of ACM debris.

**1.7 WASTE MANAGEMENT AND DISPOSAL**

.1 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.2 Collect and separate for disposal corrugated cardboard and packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.

.3 Separate for recycling and place metal and plastic waste in designated containers in accordance with Waste Management Plan.

.4 Place materials defined as hazardous or toxic in designated containers.

.5 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.

.6 Fold up metal banding, flatten and place in designated area for recycling.

.7 Disposal of asbestos waste generated by removal activities must comply with Federal, Provincial, Territorial and Municipal regulations. Dispose of asbestos waste in sealed double thickness 6 mils bags or leak proof drums. Label containers with appropriate warning labels.

.8 Provide manifests describing and listing waste created. Transport containers by approved means to licensed landfill for burial.

**1.8 EXISTING CONDITIONS**

.1 Reports and information pertaining to ACMs to be handled, removed, or otherwise disturbed and disposed of during this project are bound into this specification.

.2 Notify Departmental Representative or Consultant of friable material discovered during Work and not apparent from drawings, specifications, or report pertaining to Work. Do not disturb such material pending instructions from Departmental Representative or Consultant.

**1.9 PERSONNEL TRAINING**

.1 Before beginning Work, Departmental Representative or Consultant satisfactory proof that every worker has had instruction and training in hazards of asbestos exposure, in personal hygiene and work practices, and in use, cleaning, and disposal of respirators and protective clothing.

.2 Instruction and training related to respirators includes, following minimum requirements:

.1 Fitting of equipment.

.2 Inspection and maintenance of equipment.

.3 Disinfecting of equipment.

.4 Limitations of equipment.

.3 Instruction and training must be provided by a competent, qualified person.

**Part 2 Products**

**2.1 MATERIALS**

.1 Drop Sheets:

.1 Polyethylene: 0.15 mm thick.

.2 FR polyethylene: 0.15 mm thick woven fibre reinforced fabric bonded both sides with polyethylene.

.2 Wetting Agent: 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with water in a concentration to provide thorough wetting of asbestos-containing material.

.3 Waste Containers: contain waste in two separate containers.

.1 Inner container: 0.15 mm thick sealable polyethylene waste bag.

.2 Outer container: sealable metal or fibre type where there are sharp objects included in waste material; otherwise outer container may be sealable metal or fibre type or second 0.15 mm thick sealable polyethylene bag.

.3 Labelling requirements: affix pre-printed cautionary asbestos warning in both official languages that is visible when ready for removal to disposal site.

.4 Slow - drying sealer: non-staining, clear, water - dispersible type that remains tacky on surface for at least 8 hours and designed for purpose of trapping residual asbestos fibres.

.5 Tape: fibreglass - reinforced duct tape suitable for sealing polyethylene under both dry conditions and wet conditions using amended water.

## Part 3 Execution

### 3.1 PROCEDURES

.1 Do construction occupational health and safety in accordance with Section 01 35 29.

.2 Before beginning Work, isolate Asbestos Work Area using, minimum, preprinted cautionary asbestos warning signs in both official languages that are visible at access routes to Asbestos Work Area.

.1 Remove visible dust from surfaces in the work area where dust is likely to be disturbed during course of work.

.2 Use HEPA vacuum or damp cloths where damp cleaning does not create a hazard and is otherwise appropriate.

.3 Do not use compressed air to clean up or remove dust from any surface.

.3 Prevent spread of dust from Asbestos Work Area using measures appropriate to work to be done.

.1 Use FR polyethylene drop sheets over flooring such as carpeting that absorbs dust and over flooring in Asbestos Work Area where dust and contamination cannot otherwise be safely contained. Drop sheets are not to be reused.

.4 Wet materials containing asbestos to be cut, ground, abraded, scraped, drilled, or otherwise disturbed unless wetting creates hazard or causes damage.

.1 Use garden reservoir type low - velocity fine - mist sprayer.

.2 Perform Work to reduce dust creation to lowest levels practicable.

.3 Work will be subject to visual inspection and air monitoring.

.4 Contamination of surrounding areas indicated by visual inspection or air monitoring will require complete enclosure and clean-up of affected areas.

.5 Frequently and at regular intervals during Work and immediately on completion of work:

.1 Dust and waste to be cleaned up and removed using a vacuum equipped with a HEPA filter, or by damp mopping or wet sweeping, and placed in a waste container, and

.2 Drop sheets to be wetted and placed in a waste container as soon as practicable.

.6 Cleanup:

.1 Place dust and asbestos containing waste in sealed dust-tight waste bags. Treat drop sheets and disposable protective clothing as asbestos waste; wet and fold these items to contain dust, and then place in plastic bags.

.2 Clean exterior of each waste-filled bag using damp cloths or HEPA vacuum and place in second clean waste bag immediately prior to removal from Asbestos Work Area.

.3 Seal waste bags and remove from site. Dispose of in accordance with requirements of Provincial/Territorial and Federal Authority having jurisdiction. Supervise dumping and ensure that dump operator is fully aware of hazardous nature of material to be dumped and that the appropriate guidelines and regulations for asbestos disposal are followed.

.4 Perform final thorough clean-up of Work areas and adjacent areas affected by Work using HEPA vacuum.

**END OF SECTION**

## Part 1 General

### 1.1 SUMMARY

.1 The Contractor is charged with abatement or remediation of hazardous materials solely where they must be altered, renovated, or damaged as part of the overall project.

.2 Comply with requirements of this Section when performing following Work:

- .1 Removing non-friable asbestos containing materials by breaking, cutting, drilling, abrading, grounding, sanding or vibrating if:
  - .1 The material is not wetted to control the spread of dust or fibres, and
  - .2 The work is done only by means of non-powered hand-held tools.
- .2 Removing non-friable asbestos containing materials by breaking, cutting, drilling, abrading, grounding, sanding or vibrating if the work is done by means of power tools that are attached to dust-collecting devices equipped with HEPA filters.

.3 Reference the following while completing the work:

- .1 Comprehensive Designated Substances and Hazardous Materials Survey (DSHMS), Environmental Services Stream 3 – Standing Offer Agreement EQ447-141528/A, Michipicoten Island East, Near Wawa, ON, BluMetric Environmental Inc., June 6, 2017.

.4 Locations of known/identified asbestos containing material within the proposed area site that are to be abated (refer to 1.1.3.1 for the locations of known/identified asbestos containing material):

- .1 Lighthouse:
  - .1 Exterior windows and doors – caulking (10 m). See figure C-4.
- .2 Living Quarters Building:
  - .1 Exterior second story transite cladding façade and underlying tar paper (123 $m^2$). See figure C-5.
- .3 Garage/Living Quarters Building:
  - .1 Exterior pink caulking (10 m). See figure C-6.
- .4 General Site Debris including:
  - .1 Transite panels in western debris pile (~2 $m^3$). See figure C-2.
  - .2 Transite panel debris pile in southern outhouse (~1 $m^3$). See figure C-2.
  - .3 Transite debris pile in former foundation. (~1 $m^3$) See figure C-2.
  - .4 Miscellaneous small pieces of debris found around site. See figure C-2.
  - .5 Pile of roof shingles in Shed 2. See figure C-2.

.5 Locations of other known/identified potential asbestos containing material at the site that will NOT be abated during this work program:

- .1 Southern Outhouse
  - .1 Roofing shingles and tarpaper.

.2 Living Quarters Building

.1 Roofing shingles and tarpaper beneath tin roof.

.3 Garage/Living Quarters Building

.1 Interior, room 6, drywall filler compound.

.6 The contractor is required to communicate the following in the submittal of Hazardous Materials Management Plan.

.7 The Contractor is responsible for costs associated with the failure to properly select or abide by the appropriate regulatory required abatement precautions

## 1.2 REFERENCE STANDARDS

.1 Ontario Ministry of Labour

.1 O.Reg. 278/05 (as amended): Regulation Respecting Asbestos on Construction Projects and in Buildings and Repair Operations.

.2 O.Reg. 490/09 (as amended): Designated Substances.

.3 A Guide to the Regulations respecting Asbestos on Construction Projects and in Buildings and Repair Operations released in November 2007, http://www.labour.gov.on.ca/english/hs/ asbestos/index.html.

.4 Ontario Occupational Health and Safety Act.

.2 Ontario Ministry of the Environment and Climate Change

.1 O. Reg, 347/90 General – Waste Management as amended by O. Reg. 304/14.

.2 Environmental Protection Act.

.3 Public Works and Government Services Canada.

.1 Annex C - Appendix 6 - Work Procedures of PWGSC DM Directive 057 Asbestos Management.

.4 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-1.205-2003, Sealer for Application to Asbestos-Fibre-Releasing Materials.

.5 Department of Justice Canada

.1 Canadian Environmental Protection Act (CEPA), 1999.

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

.1 Material Safety Data Sheets (MSDS).

.7 Transport Canada (TC)

.1 Transportation of Dangerous Goods Act, 1992 (TDGA).

.8 U.S. Department of Health and Human Services/Centers for Disease Control and Prevention (CDC)/National Institute for Occupational Safety and Health (NIOSH)

.1 NIOSH 94-113, NIOSH Manual of Analytical Methods (NMAM), 4th Edition.

.9 U.S. Department of Labour - Occupational Safety and Health Administration - Toxic and Hazardous Substances

.1 29 CFR 1910.1001-2010, Asbestos Regulations.

**1.3 DEFINITIONS**

.1 Amended Water: water with nonionic surfactant wetting agent added to reduce water tension to allow thorough wetting of fibres.

.2 Asbestos-Containing Materials (ACMs): materials that contain 0.5 per cent or more asbestos by dry weight and are identified under Existing Conditions including fallen materials and settled dust.

.3 Asbestos Work Area: area where work takes place which will, or may disturb ACMs.

.4 Authorized Visitors: Engineer[s], or designated representative[s], and representative[s]of regulatory agencies.

.5 Competent worker: in relation to specific work, means a worker who:

.1 Is qualified because of knowledge, training and experience to perform the work.

.2 Is familiar with the provincial federal laws and with the provisions of the regulations that apply to the work.

.3 Has knowledge of all potential or actual danger to health or safety in the work.

.6 Friable Materials: material that when dry can be crumbled, pulverized or powdered by hand pressure and includes such material that is crumbled, pulverized or powdered.

.7 Glove Bag: prefabricated glove bag as follows:

.1 Minimum thickness 0.25 mm (10 mil) polyvinyl-chloride bag.

.2 Integral 0.25 mm (10 mil) thick polyvinyl-chloride gloves and elastic ports.

.3 Equipped with reversible double pull double throw zipper on top and at approximately mid-section of the bag.

.4 Straps for sealing ends around pipe.

.8 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with filter system capable of collecting and retaining fibres greater than 0.3 microns in any dimension at 99.97% efficiency.

.9 Non-Friable Material: material that when dry cannot be crumbled, pulverized or powdered by hand pressure.

.10 Occupied Area: any area of building or work site that is outside Asbestos Work Area.

.11 Polyethylene: polyethylene sheeting or rip-proof polyethylene sheeting with tape along edges, around penetrating objects, over cuts and tears, and elsewhere as required to provide protection and isolation.

.12 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must have appropriate capacity for scope of work.

**1.4 ACTION AND INFORMATIONAL SUBMITTALS**

.1 Submit proof satisfactory to Departmental Representative that suitable arrangements have been made to dispose of asbestos containing waste in accordance with requirements of authority having jurisdiction.

.2 Submit Provincial Notice of Project Form.

.3 Submit to Departmental Representative necessary permits for transportation and disposal of asbestos containing waste and proof that asbestos containing waste has been received and properly disposed.

.4 Submit proof satisfactory to Departmental Representative that all asbestos workers have received appropriate training and education by a competent person in the hazards of asbestos exposure, good personal hygiene, entry and exit from Asbestos Work Area, aspects of work procedures and protective measures while working in Asbestos Work Areas, and the use, cleaning and disposal of respirators and protective clothing.

.5 Submit proof that supervisory personnel have attended asbestos abatement course, of not less than two days duration, approved by Departmental Representative. Minimum of one supervisor for every ten workers.

.6 Submit Worker's Compensation Board status and transcription of insurance.

.7 Submit documentation including test results, fire and flammability data, and Material Safety Data Sheets (MSDS) for chemicals or materials including:

.1 Amended water;

.8 Submit proof satisfactory to Departmental Representative that employees have respirator fitting and testing. Workers must be fit tested (irritant smoke test) with respirator that is personally issued.

**1.5 QUALITY ASSURANCE**

.1 Regulatory Requirements: comply with Federal, Provincial, and local requirements pertaining to asbestos, provided that in case of conflict among these requirements or with these specifications more stringent requirement applies. Comply with regulations in effect at the time work is performed.

.2 Health and Safety:

.1 Perform construction occupational health and safety in accordance with Section 01 35 29.

.2 Safety Requirements: worker and visitor protection.

.1 Protective equipment and clothing to be worn by workers while in Asbestos Work Area include:

.1 Air purifying half-mask respirator with N-100, R-100 or P-100 particulate filter, personally issued to worker and marked as to efficiency and purpose, suitable for protection against asbestos and acceptable to Provincial Authority having jurisdiction. The respirator to be fitted so that there is an effective seal between

the respirator and the worker's face, unless the respirator is equipped with a hood or helmet. The respirator to be cleaned, disinfected and inspected after use on each shift, or more often if necessary, when issued for the exclusive use of one worker, or after each use when used by more than one worker. The respirator to have damaged or deteriorated parts replaced prior to being used by a worker; and, when not in use, to be stored in a convenient, clean and sanitary location. The employer to establish written procedures regarding the selection, use and care of respirators, and a copy of the procedures to be provided to and reviewed with each worker who is required to wear a respirator. A worker not to be assigned to an operation requiring the use of a respirator unless he or she is physically able to perform the operation while using the respirator.

.2 Disposable type protective clothing that does not readily retain or permit penetration of asbestos fibres. Protective clothing to be provided by the employer and worn by every worker who enters the work area, and the protective clothing to consist of a head covering and full body covering that fits snugly at the ankles, wrists and neck, in order to prevent asbestos fibres from reaching the garments and skin under the protective clothing. It includes suitable footwear, and it to be repaired or replaced if torn.

.3 Eating, drinking, chewing, and smoking are not permitted in Asbestos Work Area.

.4 Before leaving Asbestos Work Area, the worker can decontaminate his or her protective clothing by using a vacuum equipped with a HEPA filter, or by damp wiping, before removing the protective clothing, or, if the protective clothing will not be reused, place it in a container for dust and waste. The container to be dust tight, suitable for asbestos waste, impervious to asbestos, identified as asbestos waste, cleaned with a damp cloth or a vacuum equipped with a HEPA filter immediately before removal from the work area, and removed from the work area frequently and at regular intervals.

.5 Facilities for washing hands and face shall be provided within or close to the Asbestos Work Area.

.6 Ensure workers wash hands and face when leaving Asbestos Work Area.

.7 Ensure that no person required to enter an Asbestos Work Area has facial hair that affects seal between respirator and face.

.8 Visitor Protection:

.1 Provide protective clothing and approved respirators to Authorized Visitors to work areas.

.2 Instruct Authorized Visitors in the use of protective clothing, respirators and procedures.

.3 Instruct Authorized Visitors in proper procedures to be followed in entering into and exiting from Asbestos Work Area.

**1.6 MEASUREMENT**

.1 Provide unit price per $m^2$ to abate exterior ACM transite siding & tar paper backing that has been painted over.

.2 Provide unit price per m to abate exterior ACM caulking that has been painted over, and replacement of joint sealants in accordance with section 07 92 00.

.3 Provide unit price per $m^3$ to remove and dispose of ACM debris.

**1.7 WASTE MANAGEMENT AND DISPOSAL**

.1 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.2 Collect and separate for disposal corrugated cardboard and packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.

.3 Separate for recycling and place metal and plastic waste in designated containers in accordance with Waste Management Plan.

.4 Place materials defined as hazardous or toxic in designated containers.

.5 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.

.6 Fold up metal banding, flatten and place in designated area for recycling.

.7 Disposal of asbestos waste generated by removal activities must comply with Federal, Provincial, Territorial and Municipal regulations. Dispose of asbestos waste in sealed double thickness 6 mils bags or leak proof drums. Label containers with appropriate warning labels.

.8 Provide manifests describing and listing waste created. Transport containers by approved means to licensed landfill for burial.

**1.8 EXISTING CONDITIONS**

.1 Reports and information pertaining to ACMs to be handled, removed, or otherwise disturbed and disposed of during this project are bound into this specification.

.2 Notify Departmental Representative or Consultant of friable material discovered during Work and not apparent from drawings, specifications, or report pertaining to Work. Do not disturb such material pending instructions from Departmental Representative or Consultant.

**1.9 PERSONNEL TRAINING**

.1 Before beginning Work, Departmental Representative or Consultant satisfactory proof that every worker has had instruction and training in hazards of asbestos exposure, in personal hygiene and work practices, and in use, cleaning, and disposal of respirators and protective clothing.

.2 Instruction and training related to respirators includes, following minimum requirements:

.1 Fitting of equipment.

.2 Inspection and maintenance of equipment.

.3 Disinfecting of equipment.

.4 Limitations of equipment.

.3 Instruction and training must be provided by a competent, qualified person.

## Part 2 Products

### 2.1 MATERIALS

.1 Drop and Enclosure Sheets:

.1 Polyethylene: 0.15 mm thick.

.2 FR polyethylene: 0.15 mm thick woven fibre reinforced fabric bonded both sides with polyethylene.

.2 Wetting Agent: 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with water in concentration to provide thorough wetting of asbestos containing material.

.3 Waste Containers: contain waste in two separate containers.

.1 Inner container: 0.15 mm thick sealable polyethylene bag

.2 Outer container: sealable metal or fibre type where there are sharp objects included in waste material; otherwise outer container may be sealable metal or fibre type or second 0.15 mm thick sealable polyethylene bag.

.3 Labelling requirements: affix preprinted cautionary asbestos warning, in both official languages, that is visible when ready for removal to disposal site.

.4 Tape: tape suitable for sealing polyethylene to surfaces under both dry and wet conditions using amended water.

.5 Slow - drying sealer: non-staining, clear, water - dispersible type that remains tacky on surface for at least 8 hours and designed for purpose of trapping residual asbestos fibres.

.1 Sealer: flame spread and smoke developed rating less than 50 [and be compatible with new fireproofing].

## Part 3 Execution

### 3.1 SUPERVISION

.1 Minimum of one Supervisor for every ten workers is required.

.2 Approved Supervisor must remain within Asbestos Work Area during disturbance, removal, or other handling of asbestos-containing materials.

### 3.2 PROCEDURES

.1 Do construction occupational health and safety in accordance with Section 01 35 29.

.2 Before beginning Work, at each access to Asbestos Work Area, install warning signs in both official languages in upper case 'Helvetica Medium' letters reading as follows, where number in parentheses indicates font size to be used: 'CAUTION ASBESTOS HAZARD

AREA (25 mm) / NO UNAUTHORIZED ENTRY (19 mm) / WEAR ASSIGNED PROTECTIVE EQUIPMENT (19 mm) / BREATHING ASBESTOS DUST MAY CAUSE SERIOUS BODILY HARM (7 mm)'.

.3 Before beginning Work remove visible dust from surfaces in work area where dust is likely to be disturbed during course of work.

.1 Use HEPA vacuum or damp cloths where damp cleaning does not create hazard and is otherwise appropriate.

.2 Do not use compressed air to clean up or remove dust from any surface.

.4 Prevent spread of dust from Asbestos Work Area using measures appropriate to work to be done.

.1 Use FR polyethylene drop sheets over flooring such as carpeting that absorbs dust and over flooring in work areas where dust or contamination cannot otherwise be safely contained.

.5 Remove loose material by HEPA vacuum; thoroughly wet friable material containing asbestos to be removed or disturbed before and during Work unless wetting creates hazard or causes damage.

.1 Use garden reservoir type low - velocity sprayer or airless spray equipment capable of producing mist or fine spray.

.2 Perform Work in a manner to reduce dust creation to lowest levels practicable.

.6 Work is subject to visual inspection. Contamination of surrounding areas indicated by visual inspection or air monitoring will require complete enclosure and clean-up of affected areas.

.7 Cleanup:

.1 Frequently during Work and immediately after completion of work, clean up dust and asbestos containing waste using HEPA vacuum or by damp mopping.

.2 Place dust and asbestos containing waste in sealed dust tight waste bags. Treat drop sheets and disposable protective clothing as asbestos waste and wet and fold to contain dust and then place in waste bags.

.3 Immediately before their removal from Asbestos Work Area and disposal, clean each filled waste bag using damp cloths or HEPA vacuum and place in second clean waste bag.

.4 Seal and remove double bagged waste from site. Dispose of in accordance with requirements of Provincial and Federal authority having jurisdiction. Supervise dumping and ensure that dump operator is fully aware of hazardous nature of material to be dumped and that guidelines and regulations for asbestos disposal are followed.

.5 Perform final thorough clean-up of Asbestos Work Areas and adjacent areas affected by Work using HEPA vacuum.

**END OF SECTION**

## Part 1 General

### 1.1 SUMMARY

.1 The Contractor is charged with abatement or remediation of hazardous materials solely where they must be altered, renovated, or damaged as part of the overall project.

.2 Comply with requirements of this Section when performing following Work:

- .1 Disturbance or removal of lead-containing coatings or materials using a power tool with an effective dust collection system equipped with a HEPA filter.
- .2 Removal of lead-containing coatings with a chemical gel or paste and fibrous laminated cloth wrap.
- .3 Removal of lead-containing coatings or materials with non-powered hand tool, other than manual scraping and sanding.

.3 Reference the following while completing the work:

- .1 Comprehensive Designated Substances and Hazardous Materials Survey , Michipicoten Island East End, BluMetric Environmental Inc., June 6, 2017.
- .2 Structural Review, Michipicoten Island East End Lightstation, Novatech Engineering, March, 2017.

.4 Locations of known/identified lead-based paints/coatings on site to be removed as part of this contract (refer to 1.1.3.1 for the locations of known/identified lead base paint):

- .1 Lighthouse:
  - .1 Exterior Walls - white paint (230 $m^2$).
  - .2 Exterior window trim, doors, parapet railing, and stairwells – red paint (41 $m^2$).
  - .3 Lighthouse sign base – white paint (3 $m^3$)
- .2 Living Quarters:
  - .1 Exterior stairs/deck railing. – red paint (10 $m^2$).
- .3 Garage/Former Living Quarters Building:
  - .1 Exterior foundation – white paint (24 $m^2$).
  - .2 Exterior door – grey paint (4 $m^2$). Note this paint is leachate toxic.
- .4 Helipad:
  - .1 Walkway railing – red paint (2 $m^2$). Note this paint is leachate toxic.
- .5 Former Building Foundation:
  - .1 Foundation wall – white paint (3 $m^2$)
- .6 Northern Walkway
  - .1 Northern walkway railing – red paint (2 $m^2$). Note this paint is leachate toxic.
- .7 Northern Outhouse
  - .1 Outhouse walls – white paint (10 m2).

.8 Navigation Aids

.1 Two corrugated metal bases (4 $m^2$). Note this paint is leachate toxic.

.9 General Site Debris (~43$m^2$) including:

.1 Paint chips found surrounding lighthouse – white.

.2 Concrete debris found northwest of lighthouse – white.

.3 Concrete debris found north of helicopter pad – white.

.4 Wood debris found throughout – white and/or red.

.5 Debris found throughout – red.

.5 The contractor is required to communicate the following in the submittal of Hazardous Materials Management Plan:

.1 Which type of precautions will be required at each location is to be based on the Contractors chosen remediation strategy. For their selection, they must conform to required regulations and should refer to the following Specifications in this document:

.1 028310 – Lead-Base Paint Abatement –Minimum Precautions.

.2 028211 – Lead-Base Paint Abatement –Intermediate Precautions.

.3 028212 – Lead-Base Paint Abatement – Maximum Precautions.

.6 The Contractor is responsible for costs associated with the failure to properly select or abide by the appropriate regulatory required abatement precautions.

.7 Material removed beyond specifications will be not be measured for payment.

## 1.2 REFERENCE STANDARDS

.1 Department of Justice Canada

.1 Canadian Environmental Protection Act, 1999 (CEPA).

.2 Health Canada

.1 Workplace Hazardous Materials Information System (WHMIS), Material Safety Data Sheets (MSDS).

.3 Human Resources and Social Development Canada

.1 Canada Labour Code Part II, SOR 86-304 – Occupational Health And Safety Regulations.

.4 Ontario Ministry of Labour

.1 O Reg 490/09, Designated Substances as amended by O. Reg. 148/12 and O. Reg. 149/12.

.2 Health and Safety Guideline “Lead on Construction Projects”, April 2011.

.5 Ontario Ministry of the Environment and Climate Change

.1 O. Reg, 347/90 General – Waste Management as amended by O. Reg. 304/14.

.2 Environmental Protection Act.

.6 Transport Canada (TC)

.1 Transportation of Dangerous Goods Act, 1992 (TDGA).

.7 Health Canada

.1 Workplace Hazardous Materials Information System (WHMIS), Material Safety Data Sheets (MSDS).

.8 U.S. Environmental Protection Agency (EPA)

.1 EPA 747-R-95-007-1995 (as amended), Sampling House Dust for Lead.

.9 U.S. Department of Health and Human Services/Centers for Disease Control and Prevention/National Institute for Occupational Safety and Health (NIOSH)

.1 NIOSH 94-113 - NIOSH Manual of Analytical Methods (NMAM), 4th Edition (1994).

.10 Underwriters' Laboratories of Canada (ULC)

.11 U.S. Department of Labour – Occupational Safety and Health Administration (OSHA) - Toxic and Hazardous Substances

.1 Lead in Construction Regulation - 29 CFR 1926.62-1993.

**1.3 DEFINITIONS**

.1 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with a filter system capable of collecting and retaining fibres greater than 0.3 microns in any direction at 99.97% efficiency.

.2 Authorized Visitors: Departmental Representative, Consultant, or Regulatory Agency representatives.

.3 Polyethylene: polyethylene sheeting or rip-proof polyethylene sheeting with tape along edges, around penetrating objects over cuts and tears, and elsewhere as required to provide protection and isolation. For protection of underlying surfaces from damage and to prevent lead dust entering in clean area.

.4 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must be appropriate capacity for scope of work.

.5 Action level: employee exposure, without regard to use of respirators, to airborne concentration of lead of 50 micrograms per cubic metre of air (50 $ug/m^3$) calculated as 8-hour time-weighted average (TWA). Minimum precautions for lead abatement are based on airborne lead concentrations less than 0.05 milligrams per cubic metre of air for removal of lead based paint by methods noted in paragraph 1.1.

.6 Competent person: Departmental Representative capable of identifying existing lead hazards in workplace taking corrective measures to eliminate them.

.7 Lead dust: wipe sampling on vertical surfaces and/or horizontal surfaces, dust and debris is considered to be lead contaminated if it contains more than 40 micrograms of lead in dust per square foot.

## 1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide proof satisfactory to Departmental Representative that suitable arrangements have been made to dispose of lead based paint waste in accordance with requirements of authority having jurisdiction. Provide this proof in accordance with Section 01 11 06.

.2 Provide: provincial requirements for Notice of Project Form.

.3 Provide proof of Environmental Liability and Contractor's General Insurance.

.4 Quality Control:

.1 Provide Departmental Representative necessary permits for transportation and disposal of lead based paint waste and proof that lead based paint waste has been received and properly disposed.

.2 Provide proof satisfactory to Departmental Representative that employees have had instruction on hazards of lead exposure, respirator use, dress, and aspects of work procedures and protective measures.

## 1.5 QUALITY ASSURANCE

.1 Regulatory Requirements: comply with Federal, Provincial, and local requirements pertaining to lead paint, provided that in case of conflict among those requirements or with these specifications more stringent requirement applies. Comply with regulations in effect at time work is performed.

.2 Health and Safety:

.1 Do construction occupational health and safety in accordance with Section 01 35 29.

.2 Safety Requirements: worker and visitor protection.

.1 Protective equipment and clothing to be worn by workers and visitors in work Area include:

.1 Respirator NIOSH approved and equipped with replaceable HEPA/.N95 filter cartridges with an assigned protection factor of 10, acceptable to Authority having jurisdiction. Suitable for type of lead and level of lead dust exposure. Provide sufficient amount of filters.

.2 Half mask respirator: half-mask particulate respirator with HEPA/.N95 filters could be provided.

.2 Eating, drinking, chewing, and smoking are not permitted in work area.

.3 Ensure workers wash hands and face when leaving work area.

.4 Visitor Protection:

.1 Provide approved respirators to Authorized Visitors to work areas.

.2 Instruct Authorized Visitors procedures to be followed in entering and exiting work area.

## 1.6 MEASUREMENT

.1 Provide unit cost per $m^2$ to abate exterior lead-based paint.

.2 Provide unit cost per $m^3$ for removal and transport of misc. painted debris and paint chips for off-site hauling and disposal.

**1.7 WASTE MANAGEMENT AND DISPOSAL**

.1 Handle and dispose of hazardous materials in accordance with CEPA, TDGA, Regional and Municipal regulations.

.2 Disposal of lead waste generated by removal activities must comply with Federal, Provincial, Territorial and Municipal regulations. Dispose of lead waste in sealed double thickness 0.15 mm bags or leak proof drums. Label containers with appropriate warning labels.

.3 Provide manifests describing and listing waste created. Transport containers by approved means to licensed landfill for burial.

.4 Separate waste material for reuse and recycling where possible.

**1.8 EXISTING CONDITIONS**

.1 Reports and information pertaining to lead based paint to be handled, removed, or otherwise disturbed and disposed of during this Project bound into this specification.

.2 Notify Departmental Representative of lead based paint discovered during Work and not apparent from drawings, specifications, or report pertaining to Work. Do not disturb such material until instructed by Departmental Representative.

**1.9 SCHEDULING**

.1 Not later than two days before beginning Work on this Project notify following in writing:

.1 Appropriate Regional or Zone Director of Medical Services Branch, Health Canada.

.2 Provincial Ministry of Labour.

.3 Disposal Authority.

.2 Inform sub trades of presence of lead-containing materials identified in Existing Conditions.

.3 Provide Departmental Representative copy of notifications prior to start of Work.

**1.10 PERSONNEL TRAINING**

.1 Provide Departmental Representative satisfactory proof that every worker has had instruction and training in hazards of lead exposure, in personal hygiene, in aspects of work procedures, and in use, cleaning, and disposal of respirators.

.2 Instruction and training related to respirators includes, at minimum:

.1 Proper fitting of equipment.

.2 Inspection and maintenance of equipment.

.3 Disinfecting of equipment.

.4 Limitations of equipment.

.3 Instruction and training must be provided by competent, qualified person.

.4 Supervisory personnel to complete required training.

## Part 2 Products

### 2.1 MATERIALS

.1 Polyethylene 0.15 mm thick unless otherwise specified; in sheet size to minimize joints.

.2 Tape: fibreglass - reinforced duct tape suitable for sealing polyethylene under dry conditions and wet conditions using amended water.

.3 Slow - drying sealer: non-staining, clear, water - dispersible type that remains tacky on surface for at least 8 hours and designed for purpose of trapping residual lead paint residue.

.4 Lead waste containers: type acceptable to dump operator with tightly fitting covers and 0.15 mm thickness sealable polyethylene liners.

.1 Label containers with pre-printed bilingual cautionary Warning Lead clearly visible when ready for removal to disposal site.

## Part 3 Execution

### 3.1 SUPERVISION

.1 One Supervisor for every ten workers is required.

.2 Supervisor must remain within work area during disturbance, removal, or handling of lead based paints.

### 3.2 PREPARATION

.1 Remove and store items to be salvaged or reused.

.1 Protect and wrap items and transport and store in area specified by Departmental Representative.

.2 Work Area:

.1 Pre-clean fixed casework and equipment within work area, using HEPA vacuum and cover and seal with polyethylene sheeting and tape.

.2 Clean work area using HEPA vacuum. If not practicable, use wet cleaning method. Do not raise dust.

.3 Seal off openings (i.e. windows/doors) with polyethylene sheeting and seal with tape.

.4 Establish polyethylene sheets at grade to capture removed paint chips.

.5 Establish dust netting to minimize paint chip migration due to wind.

.6 Maintain emergency fire exits or establish alternatives satisfactory to Authority having jurisdiction.

.7 Where water application is required for wetting lead containing materials, provide temporary water supply appropriately sized for application of water as required.

.8 Provide electrical power and shut off. 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 cables and equipment.

.3 Do not start work until:

.1 Arrangements have been made for disposal of waste.

.2 Tools, equipment, and materials waste containers are on site.

.3 Notifications have been completed and preparatory steps have been taken.

**3.3 LEAD ABATEMENT**

.1 Removal of lead-containing coatings with a chemical gel or paste and fibrous laminated cloth wrap; or removal equipped with HEPA filters; or removal with using power tools non-powered hand tool, other than manual scraping and sanding.

.2 Remove lead based paint in small sections and pack as it is being removed in sealable 0.152 mm thick plastic bags and place in labelled containers for transport.

.3 Seal filled containers. Clean external surfaces thoroughly by wet sponging. Remove from immediate working area to staging area. Clean external surfaces thoroughly again by wet sponging. Wash containers thoroughly pending removal to outside. Ensure containers are removed by workers who have entered from uncontaminated areas dressed in clean coveralls.

.4 After completion of stripping work, wire brush and wet sponge surface from which lead based paint has been removed to remove visible material. During this work keep surfaces wet.

.5 After wire brushing and wet sponging to remove visible lead based paint, and after encapsulating lead containing material impossible to remove, wet clean entire work area, and equipment used in process. After inspection by Departmental Representative apply continuous coat of slow drying sealer to surfaces of work area. Do not disturb work area for 8 hours no entry, activity, ventilation, or disturbance during this period.

**3.4 INSPECTION**

.1 Perform inspection to confirm compliance with specification and governing authority requirements. Deviations from these requirements not approved in writing by Departmental Representative will result in work stoppage, at no cost to Owner.

.2 Departmental Representative will inspect work for:

.1 Adherence to specific procedures and materials.

.2 Final cleanliness and completion.

.3 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.

**3.5 LEAD SURFACE SAMPLING - WORK AREAS**

.1 Final lead surface sampling to be conducted as follows:

.1 After work area has passed a visual inspection for cleanliness approved and accepted by Departmental Representative. Apply coat of lock-down agent to surfaces within enclosure, and appropriate setting period of 8 hours has passed Departmental Representative will perform lead wipe sampling.

.1 Final lead wipe sampling results from horizontal and vertical surfaces must show lead levels of less than 40 micrograms of lead in dust per square foot. Samples collected and analyzed in accordance with EPA 747-R-95-007.

.2 If wipe sampling results show levels of lead in excess of 40 micrograms per square foot, re-clean work area at contractor's expense and apply another acceptable coat of lock-down agent to surfaces.

.3 Repeat as necessary until fibre levels are less than 40 micrograms per square foot.

**3.6 FINAL CLEANUP**

.1 Following cleaning and when lead wipe surfaces sampling are below acceptable concentrations, proceed with final cleanup.

.2 Remove polyethylene sheet by rolling it away from walls to centre of work area. Vacuum visible lead containing particles observed during cleanup, immediately, using HEPA vacuum.

.3 Place polyethylene sheets, tape, cleaning material, clothing, and contaminated waste in plastic bags and sealed labelled waste containers for transport.

.4 Conduct final check to ensure no dust or debris remains on surfaces as result of dismantling operations.

**3.7 RE-ESTABLISHMENT OF OBJECTS AND SYSTEMS**

.1 Repair or replace objects damaged in course of work to their original state or better, as directed by Departmental Representative.

**END OF SECTION**

## Part 1 General

### 1.1 SUMMARY

.1 The Contractor is charged with abatement or remediation of hazardous materials solely where they must be altered, renovated, or damaged as part of the overall project.

.2 Comply with requirements of this Section when performing following Work:

.1 Removal of all exterior lead based paint by scraping or sanding using non-powered hand tools or chemical stripping.

.3 Reference the following while completing the work:

.1 Comprehensive Designated Substances and Hazardous Materials Survey , Michipicoten Island East End, BluMetric Environmental Inc., June 6, 2017.

.2 Structural Review, Michipicoten Island East End Lightstation, Novatech Engineering, March, 2017.

.4 Locations of known/identified lead-based paints/coatings on site to be removed as part of this contract (refer to 1.1.3.1 for the locations of known/identified lead base paint):

.1 Lighthouse:

.1 Exterior Walls - white paint (230 $m^2$).

.2 Exterior window trim, doors, parapet railing, and stairwells – red paint (41 $m^2$).

.3 Lighthouse sign base – white paint (3 $m^3$)

.2 Living Quarters:

.1 Exterior stairs/deck railing. – red paint (10 $m^2$).

.3 Garage/Former Living Quarters Building:

.1 Exterior foundation – white paint (24 $m^2$).

.2 Exterior door – grey paint (4 $m^2$). Note this paint is leachate toxic.

.4 Helipad:

.1 Walkway railing – red paint (2 $m^2$). Note this paint is leachate toxic.

.5 Former Building Foundation:

.1 Foundation wall – white paint (3 $m^2$)

.6 Northern Walkway

.1 Northern walkway railing – red paint (2 $m^2$). Note this paint is leachate toxic.

.7 Northern Outhouse

.1 Outhouse walls – white paint (10 m2).

.8 Navigation Aids

.1 Two corrugated metal bases (4 $m^2$). Note this paint is leachate toxic.

.9 General Site Debris (~43 $m^2$) including:

.1 Paint chips found surrounding lighthouse – white.

.2 Concrete debris found northwest of lighthouse – white.

.3 Concrete debris found north of helicopter pad – white.

.4 Wood debris found throughout – white and/or red.

.5 Debris found throughout – red.

.5 The contractor is required to communicate the following in the submittal of Hazardous Materials Management Plan:

.1 Which type of precautions will be required at each location is to be based on the Contractors chosen remediation strategy. For their selection, they must conform to required regulations and should refer to the following Specifications in this document:

.1 028310 – Lead-Base Paint Abatement –Minimum Precautions.

.2 028211 – Lead-Base Paint Abatement –Intermediate Precautions.

.3 028212 – Lead-Base Paint Abatement – Maximum Precautions.

.6 The Contractor is responsible for costs associated with the failure to properly select or abide by the appropriate regulatory required abatement precautions.

.7 Material removed beyond specifications will be not be measured for payment.

**1.2 REFERENCE STANDARDS**

.1 Department of Justice Canada

.1 Canadian Environmental Protection Act, 1999 (CEPA).

.2 Health Canada

.1 Workplace Hazardous Materials Information System (WHMIS), Material Safety Data Sheets (MSDS).

.3 Human Resources and Social Development Canada

.1 Canada Labour Code Part II, SOR 86-304 – Occupational Health And Safety Regulations.

.4 Ontario Ministry of Labour

.1 O Reg 490/09, Designated Substances as amended by O. Reg. 148/12 and O. Reg. 149/12.

.2 Health and Safety Guideline “Lead on Construction Projects”, April 2011.

.5 Ontario Ministry of the Environment and Climate Change

.1 O. Reg, 347/90 General – Waste Management as amended by O. Reg. 304/14.

.2 Environmental Protection Act.

.6 Transport Canada (TC)

.1 Transportation of Dangerous Goods Act, 1992 (TDGA).

.7 Health Canada

.1 Workplace Hazardous Materials Information System (WHMIS), Material Safety Data Sheets (MSDS).

.8 U.S. Environmental Protection Agency (EPA)

.1 EPA 747-R-95-007-1995 (as amended), Sampling House Dust for Lead.

.9 U.S. Department of Health and Human Services/Centers for Disease Control and Prevention/National Institute for Occupational Safety and Health (NIOSH)

.1 NIOSH 94-113 - NIOSH Manual of Analytical Methods (NMAM), 4th Edition (1994).

.10 Underwriters' Laboratories of Canada (ULC)

.11 U.S. Department of Labour – Occupational Safety and Health Administration (OSHA) - Toxic and Hazardous Substances

.1 Lead in Construction Regulation - 29 CFR 1926.62-1993.

**1.3 DEFINITIONS**

.1 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with filter system capable of collecting and retaining fibres greater than 0.3 microns in any direction at 99.97% efficiency.

.2 Authorized Visitors: Departmental Representative, Consultant, or Regulatory Agency representatives.

.3 Occupied Area: areas of building or work site that is outside Work Area.

.4 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must be appropriate capacity for scope of work.

.5 Airlock: ingress or egress system, without permitting air movement between contaminated area and uncontaminated area. Consisting of two curtained doorways at least 2 m apart.

.6 Curtained doorway: arrangement of closures to allow ingress and egress from one room to another. Typically constructed as follows:

.1 Place two overlapping polyethylene sheets over existing or temporarily framed doorway, securing each along top of doorway, securing vertical edge of one sheet along one vertical side of doorway, and secure other sheet along opposite vertical side of doorway.

.2 Reinforce free edges of polyethylene with duct tape and add weight to bottom edge to ensure proper closing.

.3 Overlap each polyethylene sheet at openings 1.5 m on each side.

.7 Action level: employee exposure, without regard to usage of respirators, to an airborne concentration of lead of 50 micrograms per cubic metre of air calculated as 8 hour time-weighted average (TWA). Intermediate precautions for lead abatement are based on airborne lead concentrations greater than 0.05 milligrams per cubic metre of air within Work Area.

.8 Competent person: Departmental Representative capable of identifying existing lead hazards in workplace taking corrective measures to eliminate them.

.9 Lead in Dust: wipe sampling on vertical and/or horizontal surfaces, dust and debris is considered to be lead contaminated if it contains more than 40 micrograms of lead in dust per square foot.

**1.4 ACTION AND INFORMATIONAL SUBMITTALS**

.1 Provide proof satisfactory to Departmental Representative that suitable arrangements have been made to dispose of lead based paint waste in accordance with requirements of authority having jurisdiction. Provide this proof in accordance with Section 01 11 06.

.2 Provide: provincial requirements for Notice of Project Form.

.3 Provide proof of Contractor's General and Environmental Liability Insurance.

.4 Quality Control:

.1 Provide Departmental Representative necessary permits for transportation and disposal of lead based paint waste and proof that lead based paint waste has been received and properly disposed.

.2 Provide proof satisfactory to Departmental Representative that employees have had instruction on hazards of lead exposure, respirator use, dress, and aspects of work procedures and protective measures.

.3 Provide proof that supervisory personnel have attended lead abatement course, of not less than two days duration, approved by Departmental Representative or Consultant. Minimum of one supervisor for every ten workers.

.5 Product data:

.1 Provide documentation including test results, fire and flammability data, and Material Safety Data Sheets (MSDS) for chemicals or materials used.

**1.5 QUALITY ASSURANCE**

.1 Regulatory Requirements: comply with Federal, Provincial/Territorial and local requirements pertaining to lead paint, in case of conflict among those requirements or with these specifications more stringent requirement applies. Comply with regulations in effect at time work is performed.

.2 Health and Safety:

.1 Do construction occupational health and safety in accordance with Section 01 35 29.

.2 Safety Requirements: worker and visitor protection.

.1 Protective equipment and clothing to be worn by workers and visitors in Work Area includes:

.1 Respirator NIOSH approved and equipped with filter cartridges with assigned protection factor of 50, acceptable to Authority having jurisdiction. Suitable for type of lead and level of lead dust exposure in Lead Work Area. Provide sufficient filters so workers can install new filters following disposal of used filters and before re-entering contaminated areas.

.2 Disposable type protective clothing that does not readily retain or permit skin contamination, consisting of full body covering including head covering with snug fitting cuffs at wrists, ankles, and neck.

.2 Requirements for workers:

.1 Remove street clothes in clean change room and put on respirator with new filters or reusable filters, clean coveralls and head covers before entering Equipment and Access Rooms or Work Area. Store street clothes, uncontaminated footwear, towels, and similar uncontaminated articles in clean change room.

.2 Remove gross contamination from clothing before leaving work area. Place contaminated work suits in receptacles for disposal with other lead - contaminated materials. Leave reusable items except respirator in Equipment and Access Room. When not in use in Work Area, store work footwear in Equipment and Access Room. Upon completion of lead abatement, dispose of footwear as contaminated waste or clean thoroughly inside and out using soap and water before removing from Work Area or from Equipment and Access Room.

.3 Enter unloading room from outside dressed in clean coveralls to remove waste containers and equipment from Holding Room of Container and Equipment Decontamination Enclosure system. Workers not to use this system as means to leave or enter work area.

.3 Eating, drinking, chewing, and smoking are not permitted in Work Area.

.4 Ensure workers are fully protected with respirators and protective clothing during preparation of system of enclosures prior to commencing actual lead abatement.

.5 Ensure workers wash hands and face when leaving Work Area.

.6 Provide and post in Clean Change Room and in Equipment and Access Room the procedures described in this Section, in both official languages.

.7 Ensure no person required to enter Work Area has facial hair that affects seal between respirator and face.

.8 Visitor Protection:

.1 Provide protective clothing and approved respirators to Authorized Visitors to Work Areas.

.2 Instruct Authorized Visitors in use of protective clothing, respirators and procedures.

.3 Instruct Authorized Visitors in proper procedures to be followed in entering into and exiting from Work Area.

## 1.6 MEASUREMENT

.1 Provide unit cost per $m^2$ to abate exterior lead-based paint.

.2 Provide unit cost per $m^3$ for removal and transport of misc. painted debris and paint chips for off-site hauling and disposal.

**1.7 WASTE MANAGEMENT AND DISPOSAL**

.1 Handle and dispose of hazardous materials in accordance with CEPA, TDGA, Regional and Municipal regulations.

.2 Disposal of lead waste generated by removal activities must comply with Provincial, Municipal, and Federal regulations. Dispose of lead waste in sealed double thickness 0.15 mm bags or leak proof drums. Label containers with appropriate warning labels.

.3 Provide manifests describing and listing waste created. Transport containers by approved means to licensed landfill for burial.

**1.8 EXISTING CONDITIONS**

.1 Reports and information pertaining to lead based paint to be handled, removed, or otherwise disturbed and disposed of during this Project are bound into this specification.

.2 Notify Departmental Representative of lead based paint discovered during Work and not apparent from drawings, specifications, or report pertaining to Work. Do not disturb such material until instructed by Departmental Representative.

**1.9 SCHEDULING**

.1 Not later than two days before beginning Work on this Project notify the following in writing, where appropriate:

.1 Appropriate Regional or Zone Director of Medical Services Branch, Health Canada.

.2 Provincial Ministry of Labour.

.3 Disposal Authority.

.2 Inform sub trades of presence of lead-containing materials identified in Existing Conditions.

.3 Provide Departmental Representative copy of notifications prior to start of Work.

**Part 2 Products**

**2.1 MATERIALS**

.1 Polyethylene: 0.15 mm unless otherwise specified; in sheet size to minimize joints.

.2 FR polyethylene: 0.15 mm woven fibre reinforced fabric bonded both sides with polyethylene.

.3 Tape: fibreglass - reinforced duct tape suitable for sealing polyethylene under dry conditions and wet conditions using amended water.

.4 Slow - drying sealer: non-staining, clear, water - dispersible type that remains tacky on surface for at least 8 hours and designed for trapping residual lead paint residue.

.5 Lead waste containers: type acceptable to dump operator with tightly fitting covers and 0.15mm sealable polyethylene liners.

.1 Label containers with pre-printed bilingual cautionary Warning Lead clearly visible when ready for removal to disposal site.

## Part 3 Execution

### 3.1 SUPERVISION

.1 Approved Supervisor must remain within Lead Work Area during disturbance, removal, or other handling of lead based paints.

### 3.2 PREPARATION

.1 Remove and wrap items to be salvaged or reused, and transport and store in area specified by Departmental Representative.

.2 Work Area:

.1 Pre-clean fixed casework, and equipment within work areas, using HEPA vacuum and cover with polyethylene sheeting sealed with tape.

.2 Clean work areas using HEPA vacuum. If not practicable, use wet cleaning method. Do not use methods that raise dust, such as dry sweeping, or vacuuming using other than HEPA vacuum.

.3 Seal off openings (i.e. windows/doors) with polyethylene sheeting and seal with tape.

.4 Establish polyethylene sheets at grade to capture removed paint chips.

.5 Establish dust netting to minimize paint chip migration due to wind.

.6 Build dedicated entrances and exits in dust netting to ensure work areas are always closed off by one curtained doorway when workers enter or exit.

.7 At point of access to work areas install warning signs in both official languages in upper case "Helvetica Medium" letters reading as follows where number in parentheses indicates font size to be used:

.1 CAUTION LEAD HAZARD AREA (25 mm).

.2 NO UNAUTHORIZED ENTRY (19 mm).

.3 WEAR ASSIGNED PROTECTIVE EQUIPMENT AND RESPIRATOR (19 mm).

.4 BREATHING LEAD CONTAMINATED DUST CAUSES SERIOUS BODILY HARM (7 mm).

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

.9 Where water application is required for wetting lead containing materials, provide temporary water supply by use of appropriately sized hoses for application of water as required.

.10 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.

.3 Worker Decontamination Enclosure System:

.1 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 suite, 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.

.4 Construction of Decontamination Enclosures:

.1 Construct framing for enclosures or use existing rooms. 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 closures comprising doorway always remains closed.

.5 Separation of Work Areas from Occupied Areas

.1 Barriers between Work Area and occupied area to be constructed as follows:

.1 Construct floor to ceiling stud framing, cover with polyethylene sheeting and seal with duct tape. Apply plywood over polyethylene sheeting. Seal plywood joints and between adjacent materials with surface film forming sealer, to create airtight barrier.

.2 Cover plywood with polyethylene sheeting and sealed with duct tape.

.6 Maintenance of Enclosures:

.1 Maintain enclosures in clean condition.

.2 Ensure barriers and polyethylene linings are effectively sealed and taped. Repair damaged barriers and remedy defects immediately.

.3 Visually inspect enclosures at beginning of each work day.

.4 Use smoke test method to test effectiveness of barriers as directed by Departmental Representative.

## 3.3 LEAD - BASE PAINT ABATEMENT

.1 Removal of lead based paint to be performed by scraping or sanding using non-powered hand tools, or manual demolition of lead-painted plaster walls or building components by striking a wall with sledgehammer or similar tool.

.2 Remove lead based paint in small sections and pack as it is being removed in sealable 0.15mm plastic bags and place in labelled containers for transport.

.3 Seal filled containers. Clean external surfaces thoroughly by wet sponging. Remove from immediate working area to Staging Area. Clean external surfaces thoroughly again by wet sponging before moving containers to decontamination Washroom. Wash containers thoroughly in decontamination Washroom, and store in Holding Room pending removal to Unloading Room and outside. Ensure containers are removed from Holding Room by workers who have entered from uncontaminated areas dressed in clean coveralls.

.4 After completion of stripping work, wire brush and wet sponge surface from which lead based paint has been removed to remove visible material. During this work keep surfaces wet.

.5 After wire brushing and wet sponging to remove visible lead based paint, and after encapsulating lead containing material impossible to remove, wet clean work area including equipment and access room, and equipment used in process. After inspection by Departmental Representative or Consultant, apply continuous coat of slow drying sealer to surfaces. Do not disturb work for 8hours with no entry, activity, ventilation or disturbance during this period.

.6 After enclosing lead painted surfaces, wet clean work area and equipment and access room. During settling period no entry, activity, or ventilation will be permitted.

## 3.4 INSPECTION

.1 Perform inspection to confirm compliance with specification and governing authority requirements. Deviations from these requirements not approved in writing by Departmental Representative will result in work stoppage, at no cost to Departmental Representative.

.2 Departmental Representative will inspect work for:

.1 Adherence to specific procedures and materials.

.2 Final cleanliness and completion.

.3 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.

.3 When lead dust leakage from Work Area occurs Departmental Representative may order Work shutdown.

.1 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.

## 3.5 LEAD SURFACE SAMPLING - WORK AREAS

.1 Final lead surface sampling to be conducted as follows:

.1 After Work Area has passed a visual inspection for cleanliness approved by Departmental Representative and acceptable coat of lock-down agent has been applied to surfaces within enclosure, and appropriate setting period of 8 hours has passed. Departmental Representative will perform lead wipe sampling in Work Area.

.1 Final lead wipe sampling results from horizontal and vertical surfaces where lead based paints have been removed must show lead levels of less than 40 micrograms of lead in dust per square foot. Samples must be collected and analyzed in accordance with EPA 747-R-95-007.

.2 If wipe sampling results show levels of lead in excess of 40 micrograms per square foot, re-clean work area at contractor's expense and apply another acceptable coat of lock-down agent to surfaces.

.3 Repeat as necessary until fibre levels are less than 40 micrograms per square foot.

**3.6 FINAL CLEANUP**

.1 Following specified cleaning procedures, and when lead wipe sampling is below acceptable concentrations proceed with final cleanup.

.2 Remove polyethylene sheet by rolling it away from walls to centre of work area. Vacuum visible lead containing particles observed during cleanup, immediately, using HEPA vacuum equipment.

.3 Place polyethylene seals, tape, cleaning material, clothing, and other contaminated waste in plastic bags and sealed labelled waste containers for transport.

.4 Clean-up Work Areas, Equipment and Access Room, and other contaminated enclosures.

.5 Clean-up sealed waste containers and equipment used in Work and remove from work areas, via Container and Equipment Decontamination Enclosure System, at appropriate time in cleaning sequence.

.6 Conduct final check to ensure no dust or debris remains on surfaces as result of dismantling operations.

**3.7 RE-ESTABLISHMENT OF OBJECTS AND SYSTEMS**

.1 Repair or replace objects damaged in course of work to their original state or better, as directed by Departmental Representative.

**END OF SECTION**

## Part 1 General

### 1.1 SUMMARY

.1 The Contractor is charged with abatement or remediation of hazardous materials solely where they must be altered, renovated, or damaged as part of the overall project.

.2 Comply with requirements of this Section when performing following Work:

.1 Removal of lead based paint from walls using power tools with an effective dust collection system equipped with HEPA filter.

.3 Reference the following while completing the work:

.1 Comprehensive Designated Substances and Hazardous Materials Survey , Michipicoten Island East End, BluMetric Environmental Inc., June 6, 20176.

.2 Structural Review, Michipicoten Island East End Lighthouse, Novatech Engineering, March, 2017.

.4 Locations of known/identified lead-based paints/coatings on site to be removed as part of this contract (refer to 1.1.3.1 for the locations of known/identified lead base paint):

.1 Lighthouse:

.1 Exterior Walls - white paint (230 $m^2$).

.2 Exterior window trim, doors, parapet railing, and stairwells – red paint (41 $m^2$).

.3 Lighthouse sign base – white paint (3 $m^3$)

.2 Living Quarters:

.1 Exterior stairs/deck railing. – red paint (10 $m^2$).

.3 Garage/Former Living Quarters Building:

.1 Exterior foundation – white paint (24 $m^2$).

.2 Exterior door – grey paint (4$m^2$). Note this paint is leachate toxic.

.4 Helipad:

.1 Walkway railing – red paint (2 $m^2$). Note this paint is leachate toxic.

.5 Former Building Foundation:

.1 Foundation wall – white paint (3 $m^2$)

.6 Northern Walkway

.1 Northern walkway railing – red paint (2 $m^2$). Note this paint is leachate toxic.

.7 Northern Outhouse

.1 Outhouse walls – white paint (10 m2).

.8 Navigation Aids

.1 Two corrugated metal bases (4 $m^2$). Note this paint is leachate toxic.

.9 General Site Debris (~43$m^2$) including:

.1 Paint chips found surrounding lighthouse – white.

.2 Concrete debris found northwest of lighthouse – white.

.3 Concrete debris found north of helicopter pad – white.

.4 Wood debris found throughout – white and/or red.

.5 Debris found throughout – red.

.5 The contractor is required to communicate the following in the submittal of Hazardous Materials Management Plan:

.1 Which type of precautions will be required at each location is to be based on the Contractors chosen remediation strategy. For their selection, they must conform to required regulations and should refer to the following Specifications in this document:

.1 028310 – Lead-Base Paint Abatement –Minimum Precautions.

.2 028211 – Lead-Base Paint Abatement –Intermediate Precautions.

.3 028212 – Lead-Base Paint Abatement – Maximum Precautions.

.6 The Contractor is responsible for costs associated with the failure to properly select or abide by the appropriate regulatory required abatement precautions.

.7 Material removed beyond specifications will be not be measured for payment.

**1.2 REFERENCE STANDARDS**

.1 Department of Justice Canada

.1 Canadian Environmental Protection Act, 1999 (CEPA).

.2 Health Canada

.1 Workplace Hazardous Materials Information System (WHMIS), Material Safety Data Sheets (MSDS).

.3 Human Resources and Social Development Canada

.1 Canada Labour Code Part II, SOR 86-304 – Occupational Health And Safety Regulations.

.4 Ontario Ministry of Labour

.1 O Reg 490/09, Designated Substances as amended by O. Reg. 148/12 and O. Reg. 149/12.

.2 Health and Safety Guideline “Lead on Construction Projects”, April 2011.

.5 Ontario Ministry of the Environment and Climate Change

.1 O. Reg, 347/90 General – Waste Management as amended by O. Reg. 304/14.

.2 Environmental Protection Act.

.6 Transport Canada (TC)

.1 Transportation of Dangerous Goods Act, 1992 (TDGA).

.7 Health Canada

.1 Workplace Hazardous Materials Information System (WHMIS), Material Safety Data Sheets (MSDS).

.8 U.S. Environmental Protection Agency (EPA)

.1 EPA 747-R-95-007-1995 (as amended), Sampling House Dust for Lead.

.9 U.S. Department of Health and Human Services/Centers for Disease Control and Prevention/National Institute for Occupational Safety and Health (NIOSH)

.1 NIOSH 94-113 - NIOSH Manual of Analytical Methods (NMAM), 4th Edition (1994).

.10 Underwriters' Laboratories of Canada (ULC)

.11 U.S. Department of Labour – Occupational Safety and Health Administration (OSHA) - Toxic and Hazardous Substances

.1 Lead in Construction Regulation - 29 CFR 1926.62-1993.

**1.3 DEFINITIONS**

.1 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with a filter system capable of collecting and retaining fibres greater than 0.3 microns in any direction at 99.97% efficiency.

.2 Authorized Visitors: Departmental Representative, Consultant, or Regulatory Agency representatives.

.3 Occupied Area: area of building or work site outside Work Area.

.4 Dioctyl Phthalate (DOP) Test: testing method used to evaluate particle penetration and air flow resistance properties of filtration materials - HEPA filter leak test.

.5 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Appropriate capacity for scope of work.

.6 Airlock: ingress or egress system without permitting air movement between contaminated area and uncontaminated area. Consisting of two curtained doorways at least 2 m apart.

.7 Curtained doorway: arrangement of closures to allow ingress and egress from one room to another while permitting minimal air movement between rooms, typically constructed as follows:

.1 Place two overlapping sheets of polyethylene over existing or temporarily framed doorway, secure each along top of doorway, secure vertical edge of one sheet along one vertical side of doorway, and secure vertical edge of other sheet along opposite vertical side of doorway.

.2 Reinforce free edges of polyethylene with duct tape and add weight to bottom edge to ensure proper closing.

.3 Overlap each polyethylene sheet at openings 1.5 m on each side.

.8 Action level: employee exposure, without regard to usage of respirators, to an airborne concentration of lead of 50 micrograms per cubic metre of air calculated as an 8-hour time-weighted average (TWA). Maximum precautions for lead abatement are based on airborne lead concentrations greater than 1.25 milligrams per cubic metre of air within Work Area.

.9 Competent person: Departmental Representative capable of identifying existing lead hazards in workplace taking corrective measures to eliminate them.

.10 Lead in Dust: wipe sampling on the vertical and/or horizontal surfaces, dust and debris is considered to be lead contaminated if it contains more than 40 micrograms of lead in dust per square foot.

.11 Negative Air Pressure Machine: extracts air directly from work area and filters extracted air through a HEPA filter, discharge air to exterior of building.

.1 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.

## 1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide proof satisfactory to Departmental Representative that suitable arrangements have been made to dispose of lead based paint waste in accordance with requirements of authority having jurisdiction. Provide this proof in accordance with Section 01 11 06.

.2 Provide: Provincial requirements for Notice of Project Form.

.3 Provide proof of Contractor's General and Environmental Liability Insurance.

.4 Quality Control:

.1 Provide Departmental Representative necessary permits for transportation and disposal of lead based paint waste and proof it has been received and properly disposed.

.2 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.

.3 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.

.5 Product data:

.1 Provide documentation including test results, fire and flammability data, and Material Safety Data Sheets (MSDS) for chemicals or materials including:

.1 Encapsulants.

.2 Amended water.

.3 Slow drying sealer.

## 1.5 QUALITY ASSURANCE

.1 Regulatory Requirements: comply with Federal, Provincial/Territorial and local requirements pertaining to lead, in case of conflict among those requirements or with these specifications the more stringent requirement applies. Comply with regulations in effect at time work is performed.

.2 Health and Safety:

.1 Do construction occupational health and safety in accordance with Section 01 35 29.

.2 Safety Requirements: worker and visitor protection.

.1 Protective equipment and clothing to be worn by workers while in Lead Work Area includes:

.1 Leads removal using power tool: respirator NIOSH approved and equipped with filter cartridges with assigned protection factor of 50, acceptable to Authority having jurisdiction. Suitable for type of lead and level of lead dust exposure in Lead Work Area. Provide sufficient filters so workers can install new filters following disposal of used filters and before re-entering contaminated areas.

.2 Abrasive blasting of lead paint: NIOSH approved and equipped with filter cartridges with assigned protection factor of 1000, acceptable to Authority having jurisdiction. Suitable for type of lead and level of lead dust exposure in Lead Work Area. Respirator to be equivalent Type CE abrasive blast supplied air respirator operated in a pressure demand or positive pressure mode with a tight-fitting half-mask or full-face-piece. Compressed air used to supply supplied air respirators to meet breathing air purity requirements of CAN/CSA-Z180.1. Where an oil-lubricated compressor is used to supply breathing air, a continuous carbon monoxide monitor/alarm to be provided.

.3 Disposable protective clothing that does not readily retain or permit skin contamination, consisting of full body covering including head covering with snug fitting cuffs at wrists, ankles, and neck.

.2 Requirements for workers:

.1 Remove street clothes in clean change room and put on respirator with new filters or reusable filters, clean coveralls and head covers before entering Equipment and Access Rooms or Work Area. Store street clothes, uncontaminated footwear, towels, and similar uncontaminated articles in clean change room.

.2 Remove gross contamination from clothing before leaving work area. Place contaminated work suits in receptacles for disposal with other lead contaminated materials. Leave reusable items except respirator in Equipment and Access Room. When not in use in work area, store work footwear in Equipment and Access Room. Upon completion of lead abatement, dispose of footwear as contaminated waste or clean thoroughly inside and out using soap and water before removing from work area or from Equipment and Access Room.

.3 Enter unloading room from outside dressed in clean coveralls to remove waste containers and equipment from Holding Room of Container and Equipment Decontamination Enclosure system.

Workers not use this system as means to leave or enter Work Area.

.3 Eating, drinking, chewing, and smoking are not permitted in Work Area.

.4 Ensure workers are fully protected with respirators and protective clothing during preparation of system of enclosures prior to commencing actual lead abatement.

.5 Ensure workers wash hands and face when leaving Lead Work Area.

.6 Provide and post in Clean Change Room and in Equipment and Access Room the procedures described in this Section, in both official languages.

.7 Ensure no person required to enter Work Area has facial hair that affects seal between respirator and face.

.8 Visitor Protection:

.1 Provide protective clothing and approved respirators to Authorized Visitors to work areas.

.2 Instruct Authorized Visitors in use of protective clothing, respirators and procedures.

.3 Instruct Authorized Visitors in proper procedures to be followed in entering into and exiting from Work Area.

## 1.6 MEASUREMENT

.1 Provide unit cost per $m^2$ to abate exterior lead-based paint.

.2 Provide unit cost per $m^3$ for removal and transport of misc. painted debris and paint chips for off-site hauling and disposal.

## 1.7 WASTE MANAGEMENT AND DISPOSAL

.1 Handle and dispose of hazardous materials in accordance with CEPA, TDGA, Regional and Municipal regulations.

.2 Disposal of lead waste generated by removal activities must comply with Provincial, Municipal, and Federal regulations. Dispose of lead waste in sealed double thickness 0.15 mm bags or leak proof drums. Label containers with appropriate warning labels.

.3 Provide manifests describing and listing waste created. Transport containers by approved means to licensed landfill for burial.

## 1.8 EXISTING CONDITIONS

.1 Reports and information pertaining to lead based paint to be handled, removed, or otherwise disturbed and disposed of during this project are bound into this specification.

.2 Notify Departmental Representative of lead based paint discovered during Work and not apparent from drawings, specifications, or report pertaining to Work. Do not disturb such material until instructed by Departmental Representative.

**1.9 SCHEDULING**

.1 Not later than two days before beginning Work on this Project notify the following in writing; where appropriate.

.1 Appropriate Regional or Zone Director of Medical Services Branch, Health Canada.

.2 Provincial Ministry of Labour.

.3 Disposal Authority.

.2 Inform sub trades of presence of lead-containing materials identified in Existing Conditions.

.3 Provide Departmental Representative copy of notifications prior to start of Work.

**Part 2 Products**

**2.1 MATERIALS**

.1 Polyethylene 0.15 mm unless otherwise specified; in sheet size to minimize joints.

.2 FR polyethylene: 0.15 mm woven fibre reinforced fabric bonded both sides with polyethylene.

.3 Tape: fibreglass - reinforced duct tape suitable for sealing polyethylene under dry conditions and wet conditions using amended water.

.4 Slow - drying sealer: non-staining, clear, water - dispersible type that remains tacky on surface for at least 8 hours and designed for trapping residual lead paint residue.

.5 Lead waste containers: type acceptable to dump operator with tightly fitting covers and 0.15 mm sealable polyethylene liners.

.1 Label containers with pre-printed bilingual cautionary Warning Lead clearly visible when ready for removal to disposal site.

**Part 3 Execution**

**3.1 SUPERVISION**

.1 Approved Supervisor must remain within Work Area during disturbance, removal, or handling of lead based paints.

**3.2 PREPARATION**

.1 Remove and wrap items to be salvaged or reused, and transport and store in area specified by Departmental Representative.

.2 Work Area:

.1 Pre-clean fixed casework, and equipment within work areas, using HEPA vacuum and cover with polyethylene sheeting sealed with tape.

.2 Clean work areas using HEPA vacuum. If not practicable, use wet cleaning method. Do not use methods that raise dust, such as dry sweeping, or vacuuming using other than HEPA vacuum.

.3 Establish polyethylene sheets at grade to capture removed paint chips.

.4 Establish dust netting to minimize paint chip migration due to wind.

.5 Build dedicated entrances and exits in dust netting to ensure work areas are always closed off by one curtained doorway when workers enter or exit.

.6 At point of access to work areas install warning signs in both official languages in upper case "Helvetica Medium" letters reading as follows where number in parentheses indicates font size to be used:

.1 CAUTION LEAD HAZARD AREA (25 mm).

.2 NO UNAUTHORIZED ENTRY (19 mm)

.3 WEAR ASSIGNED PROTECTIVE EQUIPMENT AND RESPIRATOR (19 mm).

.4 BREATHING LEAD CONTAMINATED DUST CAUSES SERIOUS BODILY HARM (7 mm).

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

.8 Where water application is required for wetting lead containing materials, 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.

.3 Worker Decontamination Enclosure System:

.1 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 suite, 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.

.4 Construction of Decontamination Enclosures:

.1 Construct framing for enclosures or use existing rooms. 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.

.5 Separation of Work Areas from Occupied Areas:

.1 Barriers between Work Area and occupied area to be constructed as follows:

.1 Construct floor to ceiling stud framing, cover with polyethylene sheeting and seal with duct tape. Apply plywood over polyethylene sheeting. Seal plywood joints and between adjacent materials with surface film forming sealer, to create airtight barrier.

.2 Cover plywood with polyethylene sheeting and sealed with duct tape.

.6 Maintenance of Enclosures:

.1 Maintain enclosures in tidy condition.

.2 Ensure barriers and polyethylene linings are effectively sealed and taped. Repair damaged barriers and remedy defects immediately.

.3 Visually inspect enclosures at beginning of each working day.

.4 Use smoke test method to test effectiveness of barriers as directed by Departmental Representative.

## 3.3 LEAD - BASE PAINT ABATEMENT

.1 Removal of lead based paint to be performed using power tools that are attached to dust-collecting vacuums with HEPA filters.

.2 Remove lead based paint in small sections and pack as it is being removed in sealable 0.15 mm plastic bags and place in labelled containers for transport.

.3 Wet method to be used to reduce dust generation. Examples of wet methods include wetting surfaces, wet scraping, and wet shovelling. Wet method not be used if it creates a hazard or cause damage to equipment or to project. Power tools to be equipped with a shroud, and to be kept flush with surface.

.4 Seal filled containers. Clean external surfaces thoroughly by wet sponging. Remove immediate from working area to staging area. Clean external surfaces thoroughly again by wet sponging before moving containers to decontamination Washroom. Wash containers thoroughly in decontamination Washroom, and store in Holding Room pending removal to Unloading Room and outside. Ensure containers are removed from

Holding Room by workers who have entered from uncontaminated areas dressed in clean coveralls.

.5 After completion of stripping work, wire brush and wet sponge surface to remove visible material. During this work keep surfaces wet. After wire brushing and wet sponging, wet clean and HEPA vacuum entire work area including Equipment and Access Room. Compressed air or dry sweeping not be used to clean up lead-containing dust or waste. After inspection and approval by Departmental Representative apply continuous coat of slow drying sealer to surfaces. Do not disturb work area for 8 hours, no entry, activity, or ventilation other than operation negative air machine during this period.

.6 After enclosing lead painted surfaces, wet clean work area and equipment and access room. During settling period no entry, activity, or ventilation will be permitted.

**3.4 INSPECTION**

.1 Perform inspection to confirm compliance with specification and governing authority requirements. Deviations from requirements not been approved in writing by Departmental Representative will result in Work shutdown, at no cost to Departmental Representative.

.2 Departmental Representative will inspect work for:

.1 Adherence to specific procedures and materials.

.2 Final cleanliness and completion.

.3 No additional costs will be allowed for additional labour or materials required to provide specified performance level.

.3 When lead dust leakage from Work Area occurs Departmental Representative will order Work shutdown.

.1 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.

**3.5 LEAD SURFACE SAMPLING - WORK AREAS**

.1 Final lead surface sampling conducted as follows:

.1 After Work Area has passed a visual inspection for cleanliness approved by Departmental Representative and acceptable coat of lock-down agent has been applied to surfaces within enclosure, and appropriate setting period of 8 hours has passed, Departmental Representative will perform lead wipe sampling in Work Area.

.1 Final lead wipe sampling results from horizontal and vertical surfaces must show lead levels of less than 40 micrograms of lead in dust per square foot. Samples collected and analyzed in accordance with EPA 747-R-95-007.

.2 If wipe sampling results show levels of lead dust in excess of 40 micrograms per square foot, re-clean work area at contractor's expense and apply another acceptable coat of lock-down agent to surfaces.

.3 Repeat as necessary until lead dust levels are less than 40 micrograms per square foot.

.2 Dust wipe sample will be collected and transported from the island by the Departmental Representative. Due the isolated nature of the site, results are not be expected to be relayed to the Contractor until seven (7) working days after collection.

**3.6 FINAL CLEANUP**

.1 Following specified cleaning procedures, and when lead wipe sampling is below acceptable concentrations proceed with final cleanup.

.2 Remove polyethylene sheet by rolling it away from walls to centre of work area. Vacuum visible lead containing particles observed during cleanup, immediately, using HEPA vacuum.

.3 Place polyethylene sheets, tape, cleaning material, clothing, and contaminated waste in plastic bags and sealed labelled waste containers for transport.

.4 Clean up Work areas, Equipment and Access Room, and other contaminated enclosures.

.5 Remove sealed waste containers and equipment used in Work and remove from work areas at appropriate time in cleaning sequence.

.6 Conduct final check to ensure no dust or debris remain on surfaces as result of dismantling operations.

**3.7 RE-ESTABLISHMENT OF OBJECTS AND SYSTEMS**

.1 Repair or replace objects damaged in course of work to their original state or better, as directed by Departmental Representative.

**END OF SECTION**

PART 1

1.1 SECTION INCLUDES

. 1 Materials, preparation and application for installation of plastic exterior wall siding.

.2 Work to be completed on exterior facing of upper storey of Living Quarters building.

.3 Provide unit price in $m^2$ for installation of exterior cladding of Living Quarters building second story façade. Estimated siding quantity is 123 $m^2$.

1.2 REFERENCES

.1 American Society of Mechanical Engineers (ASME)

.1 ASME B18.6.3-2011, Machine Screws, Tapping Screws, and Metallic Drive Screws (Inch Series).

.2 ASTM International

.1 ASTM A653/A653M-15, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 ASTM D2369-10(2015)e1, Test Method for Volatile Content of Coatings.

.3 ASTM D2832-92(2016), Standard Guide for Determining Volatile and Nonvolatile Content of Paint and Related Coatings.

.4 ASTM D5116-10, Standard Guide For Small-Scale Environmental Chamber Determinations of Organic Emissions From Indoor Materials/Products.

.3 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-41.24-95, Rigid Vinyl Siding, Soffits and Fascia.

.2 CAN/CGSB-51.32-M77, Sheathing, Membrane, Breather Type.

.4 CSA International

.1 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.

.5 Environmental Choice Program (ECP)

.1 CCD-045-95, Sealants and Caulking Compounds.

.2 CCD-126-2006, Polyethylene Plastic Film Products.

.6 Green Seal Environmental Standards (GS)

.1 GS-36-11, Standard for Commercial Adhesives.

.7 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards

.1 SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.

1.3 ACTION AND

.1 Submit in accordance with Section 01 11 06.

INFORMATIONAL SUBMITTALS

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for plastic siding and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit 2 copies of WHMIS MSDS in accordance with Section 01 11 06.

.1 Indicate VOC's for caulking materials during application.

.3 Shop Drawings:

.1 Submit drawings stamped and signed by professional engineer registered or licensed in Ontario.

.2 Indicate dimensions, siding profiles, attachment methods, schedule of wall elevations, trim and closure pieces, soffits , fascia, and related work.

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 and handle materials in accordance with manufacturer's written instructions.

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

.3 Storage and Handling Requirements:

.1 Store materials off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect plastic siding from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

.1 Rigid vinyl: extruded polyvinyl chloride to CAN/CGSB-41.24Ma smooth surface satin sheen finish, horizontal bevel profile, 200 mm wide x maximum permissible length, of white colour, with insulating 10 mm thick wood fiberboard backing.

.2 Accessories: internal corners, external corners, cap strip, drip cap, undersill trim, starter strip and window/door trim of extruded plastic, same material and colour as siding, with nailing strip pre-punched.

.3 Exterior wall sheathing paper: to CAN/CGSB-51.32, single ply type.

.1 Adhesives and sealants: in accordance with Section 07 92 00.
.2 Test for acceptable VOC emissions in accordance with ASTM D2369 and ASTM D2832.

.4 Fasteners: nails to CSA B111, screws to ASME B18.6.3 galvanized steel purpose made.

.5 Galvanized steel sheet: commercial grade to ASTM A652M with Z275 zinc coating.

.6 Aluminum sheet: mill finish plain utility sheet, 0.80 mm thick.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

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

### 3.2 MANUFACTURER'S

.1 Compliance: comply with manufacturer's written data, including

INSTRUCTIONS

product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.3 INSTALLATION

.1 Install one layer sheathing paper horizontally by stapling or nailing lapping edges 75 mm.

.2 Install metal sill as indicated.

.3 Window/door opening flashings, starter strips, inside corners, edgings, drip and cap.

.4 Install siding sequentially from starter strip up, in accordance with manufacturer/fabricators written instructions.

.5 Install exterior corners, fillers and closure strips with carefully formed and profiled work.

.6 Maintain joints in exterior panels, true to line, tight fitting, hairline joints.

.7 Seal junctions with dissimilar materials with sealant. Do work in accordance with Section 07 92 00.

.8 Attach components in manner not restricting thermal movement. Conceal fasteners where possible.

3.4 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 11 06.
.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 11 06.

.3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 11 06.
.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.5 PROTECTION

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

.2 Repair damage to adjacent materials caused by plastic siding

installation.

END OF SECTION

# 1 GENERAL

## 1.01 SECTION INCLUDES

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

.2 Work to be performed on exterior of Lighthouse structure and Former Living Quarters/Garage building.

## 1.02 REFERENCES

.1 American Society for Testing and Materials International, (ASTM)
- .1 ASTM C919-12, Standard Practice for Use of Sealants in Acoustical Applications.
- .2 ASTM C920-14a, Standard Specification for Elastomeric Joint Sealants.

.2 Canadian General Standards Board (CGSB)
- .1 CGSB 19-GP-5M-1984, Sealing Compound, One Component, Acrylic Base, Solvent Curing (Issue of 1976 reaffirmed, incorporating Amendment No. 1).
- .2 CAN/CGSB-19.13-M87, Sealing Compound, One-component, Elastomeric, Chemical Curing.
- .3 CGSB 19-GP-14M-1984, Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing (Reaffirmation of April 1976).
- .4 CAN/CGSB-19.17-M90, One-Component Acrylic Emulsion Base Sealing Compound.
- .5 CAN/CGSB-19.24-M90, Multi-component, Chemical Curing Sealing Compound.

.3 Department of Justice Canada (Jus)
- .1 Canadian Environmental Protection Act, 1999 (CEPA).

.4 General Services Administration (GSA) - Federal Specifications (FS)
- .1 FS-SS-S-200-E(2)1993, Sealants, Joint, Two-Component, Jet-Blast-Resistant, Cold Applied, for Portland Cement Concrete Pavement.

.5 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
- .1 Material Safety Data Sheets (MSDS).

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

## 1.03 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.

.6 Submit manufacturer's instructions.
- .1 Instructions to include installation instructions for each product used.

## 1.04 DELIVERY, STORAGE, AND HANDLING

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

## 1.05 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with Section 01 35 13.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.

.4 Place materials defined as hazardous or toxic in designated containers.

.5 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.

.6 Unused sealant material must not be disposed of into sewer system, into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.

.7 Divert unused joint sealing material from landfill to official hazardous material collections site approved by Departmental Representative.

.8 Empty plastic joint sealer containers are not recyclable. Do not dispose of empty containers with plastic materials destined for recycling.

.9 Fold up metal banding, flatten, and place in designated area for recycling.

## 1.06 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.

## 1.07 ENVIRONMENTAL REQUIREMENTS

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to Labour Canada.

.2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

## 2 PRODUCTS

### 2.01 SEALANT MATERIALS

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

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

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

### 2.02 SEALANT SELECTION

.1 Exterior joints in horizontal wearing surfaces (vinyl cladding).

.2 Seal interior perimeters of exterior openings.

### 2.04 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.

## 3 EXECUTION

### 3.01 PROTECTION

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

### 3.02 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.

**3.03 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.

**3.04 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.

**3.05 MIXING**

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

**3.06 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 SUMMARY

.1 The Contractor is charged with the re-painting of the five (5) site structures (i.e. lighthouse, living quarters, garage/former living quarters, Helipad walkway railing, and northern walkway railing) after lead-based paint abatement has been completed.

.2 Comply with requirements of this Section when performing following Work:

Repainting exterior surfaces of building structures.

.3 Reference the following while completing the work:

.1 Comprehensive Designated Substances and Hazardous Materials Survey , Michipicoten Island East End, BluMetric Environmental Inc., June 6, 2017.

.2 Structural Review, Michipicoten Island East End Lighthouse, Novatech Engineering, March, 2017.

.4 Locations of known/identified lead-based paints/coatings in the site building to be removed and repainted (refer to 1.1.3.1 for the locations of known/identified lead base paint):

.1 Lighthouse:

.1 Exterior Walls - white paint (230 $m^2$).

.2 Exterior window trim, doors, parapet railing, and stairwells – red paint (41 $m^2$).

.2 Living Quarters:

.1 Exterior stairs/deck railing. – red paint (10 $m^2$).

.3 Garage/Former Living Quarters Building:

.1 Exterior foundation – white paint (24 $m^2$).

.2 Exterior door – grey paint (4 $m^2$). Note this paint is leachate toxic.

.4 Helipad:

.1 Walkway railing – red paint (2 $m^2$). Note this paint is leachate toxic.

.5 Northern Outhouse

.1 Northern walkway railing – red paint (2 $m^2$). Note this paint is leachate toxic.

.6 Navigation Aids

.1 Two corrugated metal bases (4 $m^2$). Note this paint is leachate toxic.

.5 Related sections:

1. 015423 – Scaffolding and Protection
2. 028200.01 – Asbestos Abatement –Minimum Precautions
3. 028200.02 – Asbestos Abatement –Intermediate Precautions
4. 028310 – Lead-Base Paint Abatement –Minimum Precautions
5. 028211 – Lead-Base Paint Abatement –Intermediate Precautions
6. 028212 – Lead-Base Paint Abatement –Maximum Precautions

**1.2 REFERENCE STANDARDS**

.1 Health Canada/Workplace Hazardous MaterialsInformation System (WHMIS).

.1 Material Safety Data Sheets (MSDS).

.2 The Master Painters Institute (MPI)

.1 Maintenance Repainting Manual 2004, Master Painters Institute (MPI), including Identifiers, Evaluation, Systems, Preparation and Approved Product List.

.3 National Fire Code of Canada, 2015 (NFC).

.4 Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, Method 24 (for Surface Coatings) of the Environmental Protection Agency (EPA).

**1.3 MEASUREMENTS**

.1 Provide unit price per $m^2$ for repainting structures identified in 1.1.4.

**1.4 QUALITY ASSURANCE**

.1 Conform to latest MPI requirements for exterior repainting work including cleaning, preparation and priming.

.2 Materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, and solvents) to be in accordance with the latest edition of the MPI Approved Product List and to be from a single manufacturer for each system used.

.3 Paint materials such as linseed oil, shellac, and turpentine, to be the highest quality product of an approved manufacturer listed in MPI Maintenance Repainting Manual and shall be compatible with other coating materials as required.

.4 Retain purchase orders, invoices and other documents to prove conformance with noted MPI requirements when requested by Departmental Representative.

**1.5 PERFORMACE REQUIREMENTS**

.1 Environmental Performance Requirements:

.1 Provide paint products meeting MPI "Environmentally Friendly" ratings based on VOC (EPA Method 24) content levels.

**1.6 SCHEDULING**

.1 Submit work schedule for various stages of painting to Departmental Representative for review a minimum of 48 hours in advance of proposed operations.

.2 Obtain written authorization from Departmental Representative for changes in work schedule.

.3 Schedule repainting operations to prevent disruption by other trades if applicable.

**1.7 ACTION AND INFORMATIONAL SUBMITTALS**

.1 Provide samples in accordance with Section 01 11 06.

.1 Submit full range colour sample chips for review and selection. Indicate where colour availability is restricted. Colour chips to match existing colours.

.2 Submit two 18 cm by 25 cm colour sample chips for each colour used to Departmental Representative for approval before application of paint to site structures.

.3 Maintain one 18 cm by 25 cm colour sample chip for each colour used in Contractor’s records.

.2 Provide product data and manufacturer's installation/application instructions for paints and coating products to be used.

.3 Provide WHMIS Material Safety Data Sheets (MSDS) for paints and coating materials to be used.

.4 Quality Assurance Submittals:

.1 Manufacturer's Instructions: manufacturer's installation instructions.

.5 Closeout Submittals:

.1 Provide maintenance data for incorporation into project Close-Out Report.

.2 Provide records of products used. List products in relation to finish system and include following:

.1 Product name, type and use (i.e. materials and location).

.2 Manufacturer's product number.

.3 Colour code numbers.

.4 MPI Environmentally Friendly classification system rating.

.5 Manufacturer's Material Safety Data Sheets.

## 1.8 DELIVERY, STORAGE, AND HANDLING

.1 Packing, shipping, handling, unloading:

.1 Deliver, store and handle materials as follows:

.1 Deliver and store materials in original containers, sealed, with labels intact.

.2 Labels to 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.

.3 Remove damaged, opened and rejected materials from site.

.4 Store and handle in accordance with manufacturer's recommendations.

.5 Store materials and equipment in secure, dry, well-ventilated area with temperature range between 7 degrees C to 30 degrees C. Store materials and supplies away from heat generating devices and sensitive products above minimum temperature as recommended by manufacturer.

.6 Keep areas used for storage, cleaning and preparation, clean and orderly to approval of Departmental Representative. Upon completion of operations, return areas to clean condition to approval of Departmental Representative.

.7 Remove paint materials from storage in quantities required for same day use.

.8 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.

.9 Fire Safety Requirements:

.1 Provide one 9 kg Type ABC 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 daily.

.3 Handle, store, use and dispose of flammable and combustible materials in accordance with National Fire Code of Canada.

.2 Waste Management and Disposal:

.1 Separate waste materials for reuse and recycling.

.2 Paint, stain and wood preservative finishes and related materials are hazardous products and are subject to regulations for disposal. Information on these controls can be obtained from Provincial Ministries of Environment and Regional levels of Government.

.3 Materials that cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.

.4 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.

.5 To reduce the amount of contaminants entering waterways, sanitary/storm drain systems or into the ground the following procedures shall be strictly adhered to:

.1 Retain cleaning water for water-based materials to allow sediments to be filtered out. In no case shall equipment be cleaned using free draining water.

.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 an approved legal manner in accordance with hazardous waste regulations.

.5 Empty paint cans are to be dry prior to disposal or recycling (where available).

.6 Close and seal tightly partly used cans of materials including sealant and adhesive containers and store protected in well ventilated fire-safe area at moderate temperature.

.6 Where paint recycling is available, collect waste paint by type and provide for delivery to recycling or collection facility.

.7 Set aside and protect surplus and uncontaminated finish materials. Deliver to or arrange collection for verifiable re-use or re-manufacturing.

**1.9 AMBIENT CONDITIONS**

.1 Temperature, Humidity and Substrate Moisture Content Levels:

.1 Unless specifically pre-approved by specifying body, Paint Inspection Agency and, applied product manufacturer.

.2 Do not perform repainting work when:

.1 Ambient air and substrate temperatures are below 10 degrees C.

.2 Substrate temperature is over 32 degrees C unless paint is specifically formulated for application at high temperatures.

.3 Substrate and ambient air temperatures are expected to fall outside paint manufacturer's prescribed limits.

.4 Relative humidity is above 85% or when dew point is less than 3 degrees C variance between air/surface temperature.

.5 Rain or snow is forecast to occur before paint has thoroughly cured.

.6 It is foggy, misty, raining or snowing at site.

.3 Conduct moisture tests using properly calibrated electronic Moisture Meter, except test existing painted concrete floors for moisture using simple "cover patch test" on failed areas.

.4 Do not perform repainting work when maximum moisture content of substrate exceeds:

.1 12% for concrete and masonry (clay and concrete brick/block).

.2 15% for wood.

.5 Test painted concrete, masonry, and plaster surfaces for alkalinity as required.

.2 Application Requirements:

.1 Apply paint finish in areas where dust is no longer being generated by related construction operations or when wind conditions are such that airborne particles will affect quality of finished surface.

.2 Apply paint to adequately prepared surfaces and to surfaces within moisture limits noted.

.3 Apply paint when previous coat of paint is dry or adequately cured, unless otherwise pre-approved by specific coating manufacturer.

.4 Apply paint finishes 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 10 degrees C 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 repainting 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.

## Part 2 PRODUCTS

### 2.1 MATERIALS

.1 Paint pigment to match existing.

.1 Exterior red paint: CGSB Red 509-111.

.2 Exterior white paint: CGSB Red 513-201.

## Part 3 EXECUTION

### 3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

### 3.2 PREPARATION

.1 Perform preparation and operations for exterior painting in accordance with MPI Maintenance Repainting requirements except where specified otherwise.

.2 Apply paint materials in accordance with paint manufacturer's written application instructions.

.3 Clean and prepare exterior surfaces to be repainted in accordance with MPI Maintenance Repainting Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:

.1 Remove dust, dirt, and surface debris by brushing, wiping with dry, clean cloths.

.2 Wash surfaces with a biodegradable detergent (and bleach where applicable) and clean warm water using a stiff bristle brush to remove dirt, oil and surface contaminants.

.3 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.

.4 Use trigger operated spray nozzles for water hoses.

.5 Allow surfaces to drain completely and to dry thoroughly.

.6 Use water-based cleaners in place of organic solvents where surfaces will be repainted using water based paints.

.7 Many water-based paints cannot be removed with water once dried. However, minimize the use of kerosene or such organic solvents to clean up water-based paints.

.4 Where required, pressure wash exterior surfaces prior to repainting in accordance with MPI standards for type of surfaces and recommended pressures to ensure complete removal of loose paint, stains, dirt, and foreign matter. This work to be carried out by qualified workers experienced in pressure water cleaning. Use of spray equipment such as water hose cleaning will not be considered satisfactory unless specified. Allow sufficient drying time and test surfaces using an electronic moisture meter before commencing work.

.5 Clean metal surfaces to be repainted by removing rust, dirt, oil, grease and foreign substances in accordance with MPI requirements. Remove such contaminates from surfaces, pockets and corners to be repainted by brushing with clean brushes, blowing with clean dry compressed air, or brushing/vacuum cleaning as required.

.6 Prevent contamination of cleaned surfaces by salts, acids, alkalis, corrosive chemicals, grease, oil and solvents before priming and between applications of remaining coats. Touch-up, spot prime, and apply primer, paint, or pre-treatment as soon as possible after cleaning and before deterioration occurs.

.7 Do not apply paint until prepared surfaces have been accepted by Departmental Representative or Consultant.

.8 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects from previously painting (e.g. runs, and sags) that are visible from distance up to 1000 mm.

**3.3 EXISTING CONDITIONS**

.1 Prior to commencing work, examine site conditions and existing exterior substrates to be repainted and report in writing to Departmental Representative damages, defects, unsatisfactory or unfavourable conditions of surfaces that will adversely affect this 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 Departmental Representative. Maximum moisture content not to exceed specified limits.

.3 No repainting work to commence until such adverse conditions and defects have been corrected and surfaces and conditions are acceptable to Painting Subcontractor and Inspection Agency.

.4 Degree of surface deterioration (DSD) to be assessed using MPI Identifiers and Assessment criteria indicated in the MPI Maintenance Repainting Manual. MPI DSD ratings and descriptions are as follows:

| Condition | Description |
|---|---|
| DSD-0 | Sound Surface ( includes visual (aesthetic) defects that do not affect film's protective properties). |
| DSD-1 | Slightly Deteriorated Surface (indicating fading; gloss reduction, slight surface contamination, minor pin holes and scratches). |
| DSD-2 | Moderately Deteriorated Surface (small areas of peeling, flaking, slight cracking, and staining). |
| DSD-3 | Severely Deteriorated Surface (heavy peeling, flaking, cracking, checking, scratches, scuffs, abrasion, small holes and gouges). |
| DSD-4 | Substrate Damage (repair or replacement of surface required). |

**3.4 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 Departmental Representative.

.2 Protect items that are permanently attached such as Fire Labels on doors and frames.

.3 Protect factory finished products and equipment.

.4 Protect windows 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 Departmental Representative.

.5 Protect general public and building occupants in and about the building.

.6 Removal of light fixtures, surface hardware on doors, and surface mounted equipment, fittings and fastenings to be done prior to undertaking painting operations. Store items and re-install after painting is completed.

.7 Move and cover exterior furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.

.8 As painting operations progress, place "WET PAINT" signs in pedestrian and vehicle traffic areas to approval of Departmental Representative.

**3.5 APPLICATION**

.1 Apply paint by method that is best suited for substrate being repainted using brush, roller, air sprayer, and/or airless sprayer. Conform to manufacturer's application instructions unless specified otherwise. In each case method of application to be as pre-approved by Departmental Representative before commencing work.

.2 Brush and Roller Application:

.1 .1 Apply paint in a uniform layer using brush and/or roller of types suitablefor 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 to be free of roller tracking and heavy stipple unless approved by Departmental Representative.

.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 Provide workers with appropriate PPE.

.3 Keep paint ingredients properly mixed in containers during paint application either by intermittent agitation as frequently necessary.

.4 Apply paint in uniform layer, with overlapping at edges of spray pattern.

.5 Back roll spray applications and brush out runs and sags immediately.

.6 Use brushes to work paint into cracks, crevices and places that are not adequatelypainted by spray.

.7 Ensure plan is in place to contain spray and account for wind.

.4 Use dipping, sheepskins or daubers when no other method is practical in places of difficult access and when specifically authorized by Departmental Representative.

.5 Apply paint coats in a continuous manner and allow surfaces to dry and cure between coats for minimum time period as recommended by manufacturer. Minimum dry film thickness of coats not less than that recommended by manufacturer. Repaint thin spots or bare areas before next coat of paint is applied.

.6 Sand and dust between coats to remove visible defects.

.7 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as projecting ledges.

.8 Finish to doors include all edges including top and bottom edges. Surfaces concealed by door hardware be repainted unless otherwise pre-approved.

**3.6 MECHANICAL / ELECTRICAL EQUIPMENT**

.1 Unless otherwise noted, repainting to include exposed to view/previously painted exterior mechanical and electrical equipment and components (panels, conduits, piping, hangers, and ductwork).

.2 Touch up scratches and marks and repaint such mechanical and electrical equipment and components with colour and finish to match existing finish unless otherwise noted or scheduled.

.3 Do not paint over name plates or instruction labels.

**3.7 STANDARD OF ACCEPTANCE**

.1 Standard of Acceptance: when viewed using natural prevailing sunlight at peak period of the day (mid-day) on surface viewed, surfaces to indicate following:

.1 Walls: no defects visible from a distance of 1000 mm at 90 degrees to surface.

.2 Soffits: no defects visible from grade at 45 degrees to surface.

.3 Final coat to exhibit uniformity of colour and sheen across full surface area.

**3.8 FIELD QUALITY CONTROL**

.1 Advise Departmental Representative when each surface and applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.

**3.9 CLEANING**

.1 Proceed in accordance with 01 11 06.

.2 Remove paint where spilled, splashed, splattered or sprayed as work progresses using means and materials that are not detrimental to affected surfaces.

.3 Keep work area free from unnecessary accumulation of tools, equipment, surplus materials and debris.

.4 Remove combustible rubbish materials and empty paint cans each day and safely dispose of same in accordance with requirements of authorities having jurisdiction.

.5 Clean equipment and dispose of wash water used for water borne materials, solvents used for oil based materials as well as cleaning and protective materials (e.g. rags, drop cloths, and masking papers), paints, thinners, paint removers/strippers in accordance with the safety requirements of authorities having jurisdiction and as specified.

.6 Clean painting equipment in leak-proof containers that will permit particulate matter to settle out and be collected. Sediment remaining from cleaning operations disposed of in manner acceptable to authorities having jurisdiction.

.7 Recycle paint and coatings in excess of repainting requirements as specified.

**3.10 RESTORATION**

.1 Clean and re-install 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 affected exposed surfaces. Remove smears and spatter immediately as operations progress, using compatible solvent.

.4 Protect freshly completed surfaces from paint droppings and dust to approval of Departmental Representative. Avoid scuffing newly applied paint.

.5 Restor areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Departmental Representative.

**END OF SECTION**