

**Lead-Based Paint and Associated Asbestos
Abatement and Debris Removal
Michipicoten Island East End Site**

Project No. R.090052.020

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1 GENERAL

1.1 PRECEDENCE

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

1.2 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.

1.3 SITE DESCRIPTION

- .1 The Michipicoten Island East End Site is located on Michipicoten Island in the eastern portion of Lake Superior, approximately 70 km southwest of Wawa, Ontario.
- .2 The Site property occupies approximately 40 ha, with 1.5 ha that is developed with Site structures.
- .3 The Site consists of approximately 18 structures connected by concrete pathways. The structural features include an unmanned lighthouse that is a designated Classified Federal Heritage Building (Parks Canada, 2017). Other buildings include a living quarters building, a garage / former living quarters building, an equipment shed, and a generator shed. Other structures include the foundations of a former duplex dwelling and former radio beacon building, a radio tower base, navigational aids, a concrete pad, a concrete dyke, two tank cradle locations (without tanks), northern and southern outhouses, an outhouse foundation, and various other structures. Two concrete docks are located to the east and north of the equipment and generator sheds. A helipad is located on the south portion of the Site.
- .4 Historically, debris was dumped and piled on-site at two identified concentrated locations within the Site. In addition, debris has been identified at two other concentrated areas on Site, within the foundations of former structures. Debris including, but not limited to, scrap metal, paint cans, potentially lead containing materials, glass, plastic, concrete building materials, household appliances, asbestos containing Transite board, shingles, tar paper, partially burned materials, etc. were observed in the concentrated debris areas. These areas of concentrated debris are as follows:
 - .1 Debris Pile 1: Debris pile 1 is located in a wooded area approximately 40 m west of the living quarters building. The debris pile has an estimated area of 50 m² and volume of 50 in-situ m³.
 - .2 Debris Pile 2: Debris pile 2 has an approximate area of 10 m² and estimated volume of 5 in-situ m³. This debris pile is located approximately 10 m southeast of the radio beacon building foundation.

- .3 Radio Beacon Building Foundation: Debris was noted to be contained within the foundation of the former radio beacon building. The debris is estimated to have a collective area of 25 m² and an estimated volume of 25 in-situ m³.
- .4 Duplex Dwelling Foundation: Building material, including material coated with lead-based paint was observed to be contained within the foundation of the former duplex dwelling. The debris is estimated to have an area of 50 m² and volume of 50 in-situ m³.
- .5 In addition, there is debris scattered in an un-concentrated manner throughout the Site.
- .6 The undeveloped areas of the Site consist primarily of exposed bedrock, cobble beach and forested areas. The Site is surrounded by open water of Lake Superior to the north and east.

1.4 PROJECT PURPOSE

- .1 To complete the abatement of hazardous materials, including lead-based paint and associated asbestos, from the Site structures in accordance with Sections 02 82 00.01.02, 02 83 10.02 and 02 83 11.02 and to complete the debris removal from concentrated debris areas and un-concentrated debris located within the Site in accordance with Section 31 00 99.
- .2 To reinstate with non-lead containing and non-asbestos containing materials in accordance with Sections 02 82 00.01.02, 02 83 10.02, 07 46 23, 07 92 00 and 09 21 16 and repainting of all abated surfaces in accordance with Section 09 91 99.
- .3 To complete a comprehensive assessment of the lighthouse parging and underlying concrete. Based on this assessment, complete repair to parging coating in conjunction with lead-based paint abatement work.

1.5 WORK COVERED BY CONTRACT DOCUMENTS

- .1 Work under this Contract is comprised of the abatement of hazardous materials and the removal of debris, which includes performing the following tasks:
 - .1 Hazardous materials abatement including lead-based paint and associated asbestos containing materials (ACMs) present on the Site in accordance with the Drawings provided:
 - .1 Remove lead-based paint and associated ACMs from exteriors of designated structures in accordance with Sections 02 82 00.01.02, 02 83 10.01.02 and 02 83 11.02.02
 - .2 The complete removal of the four existing areas of concentrated debris located within the Site in accordance with Section 31 00 99 and removal of un-concentrated debris scattered throughout the Site.
 - .3 Containerization and loading of debris and structure removal materials onto appropriate transportation mode due to the nature of the Site location surrounded by Lake Superior.

- .4 Transporting all waste materials to an authorized facility for disposal in accordance with R.R.O. 1990, Regulation 347 – General – Waste Management (as amended) under the Environmental Protection Act R.S.O. 1990, c. E. 19 (Reg. 347).
 - .1 Characterize all waste materials in accordance with Reg. 347.
 - .2 All waste materials are to be containerized and transported to a recycling facility or an approved landfill/disposal facility depending on waste classification.
 - .3 Perform waste containerization, transportation, and disposal in accordance with the federal Transportation of Dangerous Goods Act, 1992 (TDGA) and provincial regulations (e.g. Reg. 347).
- .5 Reinstatement of abated surfaces with non-lead containing and non-asbestos containing materials in accordance with Sections 02 82 00.01.02, 02 83 10.02, 02 83 11.02, 07 46 23 and 07 92 00.
- .6 Repaint abated surfaces, including exterior surfaces of structures as indicated in the Drawings, upon successful lead-based paint removal after verification from the Department Representative, in accordance with Section 09 91 99.
- .2 All tasks to be performed in accordance with construction technical specifications sections and Drawings enclosed, codes, regulations, and technical standards, in addition to Departmental Representative directions.
- .3 All work to be done to applicable federal and provincial codes and regulations.

1.6 WORK BY OTHERS

- .1 Co-operate with other Contractors in carrying out their respective works and carry out instructions from Departmental Representative.
- .2 The Contractor shall for the purpose of the Ontario Occupational Health and Safety Act and Regulations for Construction Projects, and for the duration of the Work of the Contract:
 - .1 Assume the role of Constructor in accordance with the Authority Having Jurisdictions.
- .3 No standby time will be paid for sample analysis by Departmental Representative at any stage of the project.

1.7 WORK SEQUENCE

- .1 Maintain fire access/control.
 - .2 Contractor to follow the work sequence in this document, or submit a proposed alternate work sequence plan that is suitable for the Site and expected work conditions. Contractor's work sequence plan to be submitted within 48 hours of contract award for review and acceptance in accordance with Submittals Section 01 33 00.
 - .3 Site Preparations and Mobilization
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- .1 Provide a safe and accessible access plan in accordance with Section 01 14 00 to deliver machinery, equipment, materials and workers, including Departmental Representative, to and from the Site, considering the Site location is surrounded by Lake Superior and inaccessible wooded areas.
 - .1 Coordinate with Departmental Representative in regards the location and set up of loading/offloading area at the shoreline within the Site.
 - .2 Contractor to ensure that all transportation activities to and from the Site through Lake Superior waterways are in compliance with Transport Canada Local Authorities' Guide (Vessel Operation Regulations) under The Vessel Operation Restrictions Regulations (VORR), established under the Canada Shipping Act, 2001 (CSA 2001).
 - .3 Contractor to ensure that all transportation activities to and from the island through the air, such as using helicopter, are in compliance with Air Transportation Regulations (SOR/88-58).
 - .2 Verify and locate all underground and above ground utility services within the Site. The locations of Site infrastructure and services shown on Drawings are approximate and may not be complete, actual locations may vary.
 - .3 Confirm with Departmental Representative any areas of potential environmental concerns, conditions and limitations.
 - .4 Start mobilization and Site set-up and installation of temporary utilities and facilities in accordance with Section 01 52 00.
 - .1 The Site and surrounding area are accessible only by water or air and there are no significant developments or infrastructure in other areas near the Site.
 - .2 The site is situated outside the eastern edge of a Provincial Park.
 - .3 Installation of scaffolding shall be in accordance with Section 01 54 23. Contractor to allow for Departmental Representative full access to complete a parging assessment once scaffolding has been erected.
 - .5 Develop and implement a Site-Specific Erosion and Sedimentation Control (ESC) plan in accordance with Section 31 25 00. ESC to include the following:
 - .1 Erosion control structures (silt fence/ curtains and sediment traps as required).
 - .2 Polyethylene sheeting is to be used, as appropriate, to prevent surface soil and water contamination from gel applications during lead abatement activities in accordance with Section 31 25 00.
 - .3 Selection of a non-toxic, environmentally friendly paint removal product, as applicable, for lead abatement activities.
 - .6 Trees and Shrubs Clearing works at debris dumpsites areas:
 - .1 Clear trees and shrubs only if absolutely required to complete Work. Preference will be given to methodologies that minimize disturbance to the environment as directed by Departmental Representative.
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- .2 If required, perform on-Site trees and shrubs clearing to provide an access to perform the work in accordance with Section 31 11 00, under the direction of the Departmental Representative.
 - .7 Protect existing services located within the Site.
 - .8 Perform Work in accordance with Section 01 35 29.06
 - .4 Hazardous Material Abatement
 - .1 Hazardous materials listed in Section 02 81 01.01 are present, but not limited to the following structures:
 - .1 The lighthouse, equipment shed, generator shed, a concrete dyke, navigational aids, the helipad, foundations from a former radio beacon building, radio tower base, north and south outhouses, garage/former living quarters, living quarters building, the foundation of the former duplex dwelling and other site structures.
 - .2 Confirm the locations of areas assigned for hazardous material abatement with Departmental Representative before starting the work.
 - .2 Perform the abatement of hazardous materials from designated areas on the Site structures in accordance with Sections 02 82 00.01.02, 02 83 10.02, and 02 83 11.02, and the supplied Drawings.
 - .3 Remove lead-based paint from all exteriors of the existing structures on Site as per the Drawings provided.
 - .4 Remove asbestos from only identified structures on Site as per the Drawings provided.
 - .5 Remove hazardous materials from all exterior surfaces of the existing structures, walls and floors, as per Drawings.
 - .6 Proper containerization of all removed hazardous materials.
 - .5 If paint on panelling, or caulking, Transite, plaster compound, as per the Drawings all substrate is to be removed and disposed as asbestos and lead-containing waste under asbestos removal and containerization procedures.
 - .6 All identified substrate that are removed for abatement and disposed is to follow appropriate abatement procedures and is to be re-instated with new materials in accordance with Sections 02 83 10. 02, 02 83 11.02, 07 46 23, 07 92 00 and 09 21 16 only after Department Representative has verified and confirmed abatement has been completed.
 - .7 Provide designated area(s) within the Site for temporary stockpiling/storage of hazardous materials before off-Site transportation based upon the acceptance of Departmental Representative. No waste to be stored within 30 metres of a watercourse.
 - .1 Install 60 mil HDPE liner below proposed stockpile location to prevent contact between stockpile materials and the Site ground.
 - .2 Ensure stockpiled materials on the Site are protected from weather conditions, surface water drainage and other environmental elements.
 - .3 All waste loads to be containerized and fully covered during hauling/transportation.
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- .8 Complete the removal of the existing four concentrated debris areas located within the Site, as shown on Drawings, and un-concentrated scattered debris throughout the Site.
 - .1 Coordinate the schedule for the debris piles removal with Departmental Representative in advance to allow at least one day for soil inspection and potential soil sampling before covering the exposed soil in these areas with geotextile.
- .9 Repainting of abated surfaces following abatement/reinstatement of new materials, as indicated in the Drawings provided.
 - .1 Existing on Site structures exteriors to be repainted in accordance with Section 09 91 99 once lead-based paint removal activities are completed as confirmed by Departmental Representative.
- .10 Install new siding of living quarters building in accordance with Section 07 46 23.
- .11 Concentrated Debris Pile Reinstatement:
 - .1 Reinstatement areas of disturbed soil underneath the debris piles upon debris removal, and as confirmed by Departmental Representative.
 - .1 Leave exposed soils underneath these debris piles uncovered for at least one day to permit soil inspection and potential soil sampling by Departmental Representative.
 - .2 Place a layer of woven geotextile over exposed soils under the debris pile areas, after the completion of soil inspection and potential sampling by Departmental Representative, in accordance with Section 31 00 99.
 - .2 Perform Site restoration work in accordance with Section 31 00 99.

1.8 CONTRACTOR USE OF PREMISES

- .1 All exterior areas will be accessible throughout the duration of work.
 - .2 Execute work with least possible interference or disturbance to normal use of premises and the surrounding environment. Make arrangements with Department Representative to facilitate work as stated.
 - .3 Repair or replace portions of existing work which have been altered during the abatement and debris removal operations to match existing or adjoining work, as directed by Departmental Representative at no additional cost.
 - .4 Contractor has unrestricted use of site, the access road and the former east harbour until Substantial Performance.
 - .5 Coordinate use of premises under direction of Departmental Representative.
 - .6 Access to the Site is given to the Contractor solely and exclusively for the completion of Work activities.
 - .7 Locate staging area within the Work areas for storage as approved by Departmental Representative.
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1.9 EXISTING SERVICES

- .1 Contractor to provide all services to complete work. If any services are discovered, Contractor is not permitted their use. If discovered, Contractor to identify size, depth and location of all above ground and below ground utilities on Site at no additional cost to Departmental Representative. If discovered, services are not to be interrupted and contractor may not break into or connect into existing services.
- .2 Information pertaining to temporary facilities and services for workers is provided in 01 11 06 Section 1.10 and work restrictions are provided in 01 14 00.
- .3 Establish location and extent of service lines in area of Work before starting Work. Notify Departmental Representative of findings.
- .4 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.
- .5 Protect and maintain existing active services.
- .6 Record locations of discovered service lines.

1.10 DOCUMENTS REQUIRED

- .1 Maintain at job site, one copy of each document as follows:
 - .1 Contract Drawings.
 - .2 Specifications and Attachments.
 - .3 Amendments and addenda.
 - .4 Permits.
 - .5 Site-Specific Health and Safety Plan and Other Safety Related Documents.
 - .6 Environmental Protection Plan.
 - .7 Notice of Project.
 - .8 Inspector reports.
 - .9 Change Orders.
 - .10 Other Modifications to Contract.
 - .11 Field Test Reports.
 - .12 Copy of Accepted Work Schedule.
 - .13 Other documents as specified.
 - .14 Scaffolding Design Plans.
 - .15 Certificates

END OF SECTION

1 GENERAL

1.1 MINIMUM STANDARDS

- .1 National Building Code of Canada 2015, National Fire Code of Canada 2015, Canadian Electrical Code 2018, Ontario Building Code 2012, Ontario Electrical Safety Code 2015 and all bulletins (Ontario), and any other code of federal, provincial or local application, including all amendments and addenda up to project date, provided that in any case of conflict or discrepancy, the more stringent requirements shall apply as directed by Departmental Representative.
- .2 Rules and regulations of authorities having jurisdiction.
- .3 Occupational Health and Safety Act and Regulations for Construction Projects, Revised Statutes of Ontario 1990, Chapter 0.1 as amended, Workplace Safety and Insurance Act and municipal statutes and authorities.
- .4 If accommodations and facilities are to be provided to workers on the Site, Ontario Regulation 502/17: Camps in Unorganized Territory under the Health Protection and Promotion Act, including all amendments and addenda up to project date, provided that in any case of conflict or discrepancy, the more stringent requirements shall apply as directed by Departmental Representative.
- .5 CCME (Canadian Council of Ministers of the Environment) Contaminated Sites, Contaminated Soil and Groundwater, and Remediation of Contaminated Sites most current publications.
- .6 Canadian Environmental Assessment Act.
- .7 Canadian Environmental Protection Act (New Substance Notification Regulations).
- .8 Ontario Environmental Protection Act.
- .9 Transportation of Dangerous Goods Act.
- .10 Fisheries Act.
- .11 Migratory Birds Convention Act.
- .12 Migratory Birds Regulations.

1.2 AUTHORITIES HAVING JURISDICTION

- .1 PSPC is the sole authority having jurisdiction over this project.
- .2 PSPC Fire Protection Program is the sole authority having jurisdiction over this project with regards fire standards.
- .3 Fire Testing requirements are for ULC or WHIMS listed and labelled products.

1.3 TAXES

- .1 Pay applicable Federal, Provincial and Municipal taxes.
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1.4 FEES, PERMITS, CERTIFICATES AND LETTERS

- .1 Provide authorities having jurisdiction with information requested.
- .2 Pay fees and obtain certificates, permits and letters required.
- .3 Obtain PSPC Fire Protection Inspection Letter of Deficiencies from Departmental Representative. Submit a copy of the letter with a list of remedial measures taken to correct deficiencies.
- .4 Furnish certificates, permits and letters when requested.

1.5 EXAMINATIONS

- .1 Examine all existing conditions within 24 hours of mobilizing to Site and determine conditions affecting work including the Site location surrounded by Lake Superior.
- .2 Verify all field measurements within 72 hours of mobilizing to Site. If discrepancy is discovered between contract documents and field measurements, Contractor must notify Departmental Representative in writing within 24 hours of discovery of any discrepancies between contract documents and site conditions. Do not disturb such materials pending instructions from Departmental Representative.
- .3 Confirm affected adjacent work is coordinated.

1.6 DOCUMENTS

- .1 Departmental Representative will provide one electronic set of drawings, schedules, specifications and aerial photographs for as-built drawing and specification purposes.
- .2 Keep one copy of contract documents on the Site during Work.

1.7 ACTION AND SUBMITTALS

- .1 Submit formal submittals in accordance with Section 01 33 00.
- .2 Submit number of hard copies specified for each type and format of submittal and also submit in electronic format as pdf files as directed by Departmental Representative.
- .3 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.
- .4 If project is completed without significant deviations from Contract drawings and specifications submit to Departmental Representative one set of drawings and specifications and aerial photographs marked "AS-BUILT".

1.8 ADDITIONAL DRAWING/PHOTOGRAPHS

- .1 Departmental Representative may furnish additional drawings/aerial photographs to clarify work.
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- .2 Such drawings/aerial photographs become part of Contract Documents.

1.9 PROTECTION

- .1 Protect existing trees, not assigned by Departmental Representative to be removed, and plants on Site and adjacent properties. Efforts must be employed to minimize impacts to the environment at the Site.
- .2 Protect existing structures on Site.
- .3 Establish location, protect and maintain existing utility lines.
- .4 Maintain existing services in occupied areas.
- .5 Replace damaged existing work with material and finish to match original at no additional cost.

1.10 TEMPORARY FACILITIES AND SERVICES

- .1 Use of any existing on-Site services (e.g. water, sanitary, and electrical) is not permitted.
- .2 Provide and maintain all temporary facilities and services required to carry out work, including accommodations measures if Contractor provides on-site worker accommodations during project.
- .3 Remove temporary facilities and services on completion of work.
- .4 Temporary structures for accommodations, facilities and services erected by the Contractor shall be within the previously disturbed boundaries of the Site.
- .5 Provide and maintain temperature and enclosure required to prevent frost damage to work, as well as for workers, as required.
- .6 Provide temporary means to maintain Site security and to protect workers from potential of wildlife encounters throughout execution of work, and for any accommodations required on Site.
- .7 Contractor may use existing structures (i.e. living quarters building and garage/living quarters building) for worker accommodations.
 - .1 Interior rooms used by the Contractor will require cleaning (e.g. HEPA vacuuming) and disinfection prior to use due to the presence of potentially hazardous substances, such as peeling lead-based paint, mould and rodent feces.
 - .2 If accommodations, facilities and meals are to be provided to workers on the Site, the Contractor shall provide the same facilities and services to the Departmental Representative and, as required, the Owner's Team (i.e., Owner, Consultant personnel and PSPC Representative(s)). As a minimum, but not limited to, the Contractor shall provide to the Departmental Representative and Owner's team throughout the project, access to sufficient and suitable accommodation (Accommodations for Departmental Representative and Owner's Team are to be provided as a separate, private facility.), washing (shower, toilet, laundry), all meals, potable water (including other hydration throughout each day, e.g.

isotonic drinks, juice, etc.), field office space (desk, chair, lighting, electrical power supply).

- .8 Contractor is to remove from Site and appropriately dispose of all waste materials generated as part of the project or generated for on-Site accommodations to complete the project, including human waste.
- .9 Maintain facilities access and exits.

1.11 CUTTING AND REMEDIAL WORK

- .1 Co-ordinate work to keep cutting and remedial work to a minimum.
- .2 Execute cutting and remedial work required. Notify Departmental Representative before cutting, boring or sleeving structural members.
- .3 Use specialists in affected material to execute cutting and remedial work.
- .4 Make good surfaces exposed or disturbed by work with material and finish to match existing adjoining surfaces.

1.12 MATERIAL AND EQUIPMENT

- .1 Use new products unless otherwise specified.
- .2 Deliver and store material and equipment according to manufacturer's instructions with manufacturer's labels and seals intact.
- .3 When material or equipment is specified by standard or performance specifications, at least 14 calendar days prior to use of material or equipment and in accordance with Submittals 01 33 00, provide from manufacturer an independent testing report stating that material or equipment meets or exceeds specified requirements.

1.13 CLEANING

- .1 Maintain project free of accumulated waste and rubbish.
- .2 Contractor is to remove from Site and appropriately dispose all waste materials generated as part of the project or generated for on-site accommodations to complete the project, including human waste.
- .3 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.

1.14 INSPECTION 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 at no additional cost.
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1.15 DESIGNATED SUBSTANCES

- .1 The 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 Refer to Hazardous Materials Schedule A in Section 02 81 01.01 for list of all designated and hazardous substances that have the potential to be encountered during work activities. Also refer to the DSS documentation provided.
- .3 Provide copies of this list to each prospective subcontractor prior to entering into a contract with them.

1.16 SCHEDULING

- .1 Submit bar (GANTT) chart construction schedule for work in accordance with Section 01 32 16 within 48 hours of contract award.
- .2 Site Work to be limited to daylight hours only.

1.17 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.

1.18 POLLUTION CONTROL

- .1 Spills of deleterious or hazardous substances:
 - .1 Immediately contain, limit spread and clean up in accordance with provincial regulatory requirements.
 - .2 Inform Departmental Representative and Authority with Jurisdiction immediately.
 - .3 Report immediately to Ontario Spills Action Centre: 1-800-268-6060.
 - .4 Further information on dangerous goods emergence 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)

END OF SECTION

1 GENERAL

1.1 EXISTING CONDITIONS

- .1 Remote Site Access: Site is only accessible by water and air, no direct access to emergency services.
- .2 Extreme weather conditions including, but not limited to, high winds, precipitation, variable temperatures, and high or choppy wave conditions on Lake Superior are to be expected. Contractor is to consider these conditions when selecting equipment and/or materials for work.
- .3 Contractor to provide all requirements to complete work including, but not limited to, own water, power, light, telephone and other communication, sanitary. If Contractor plans on resuming on-Site, Contractor also to provide own accommodation measures and meals. If any services are discovered, Contractor is not permitted their use. Services are not to be interrupted and contractor may not break into or connect into existing services.
- .4 Contractor may use existing structures (i.e. living quarters building and garage/living quarters building) for worker accommodations
 - .1 Interior rooms used by the Contractor will require cleaning (e.g. HEPA vacuuming) and disinfection prior to use due to the presence of potentially hazardous substances, such as peeling lead-based paint, mould and rodent feces.
 - .2 If accommodations, facilities and meals are to be provided to workers on the Site, provide the same facilities and services to Departmental Representatives. Accommodations for Departmental Representatives are to be provided as a separate, private facility.
- .5 Contractor is to remove from Site and appropriately dispose of all waste materials generated as part of the project or generated from on-Site accommodations to complete the project, including human waste.
- .6 Provide temporary means to protect workers from potential encounters with wildlife (e.g. wolves) and/or noxious plants throughout execution of work.

1.2 ACCESS AND EGRESS

- .1 Design, construct and maintain temporary "access to" and "egress from" work areas, including barges/boats, scaffolds, stairs, or ladders independent of ground surfaces and in accordance with relevant provincial and other regulations at no additional cost.
 - .2 Contractor shall provide transportation for the Departmental Representative, all workers and all equipment (including Departmental Representative equipment) to and from the mainland (Wawa or other acceptable location) and Site. Contractor shall also provide transit to and from Site for the Departmental Representative and Owner's Team upon initial mobilization, including transportation of the Departmental Representative's equipment as may be required, and on regular shift changes estimated to be every 12 days or less. Additional transportation of samples/equipment and/or staff will be required
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throughout the project and provision must be included for up to ten (10) additional transportation trips. The Departmental Representative will endeavor to coincide shift change dates with Contractor worker travel dates, though this cannot be guaranteed. Departmental Representative/Consultant shift changes will include a replacement worker mobilizing to the site, a maximum of 2 hours of worker overlap, and demobilization of previous Departmental Representative from the Site.

- .3 Contractor to submit a site access plan suitable to the Site for machinery, equipment and workers (inclusive of the Departmental Representative and Departmental Representative equipment) within 7 calendar days of contract award in accordance with Submittals Section 01 33 00. Site access is by water or air only. Site access may not be initiated until Departmental Representative has accepted the proposed plan.
 - .1 Contractor to consider the location of the Site surrounded by Lake Superior and the potential need for transportation by water and air to and from the Site.
 - .2 Contractor to consider all environmental requirements per Section 01 35 43.
 - .3 Copies of registration and applicable certifications/licenses to be submitted to Departmental Representative at least 5 calendar days prior to start of field work.
 - .4 Access to Site is given to Contractor solely for the completion of work activities.
 - .5 Indicate location and set up of offloading areas at the shoreline of the Site.
 - .6 Identify staging areas.

1.3 SPECIAL REQUIREMENTS

- .1 Consider the use of water and/or air transportation methods to transfer equipment, workers, materials and debris removed from the Site. An assessment of the Site access options is provided as the Marine Assessment.
- .2 Submit schedule in accordance with Section 01 32 16
- .3 Ensure Contractor's personnel employed on Site become familiar with and obey regulations including those pertaining to safety, environmental protection, fire and security regulations.
- .4 Keep within limits of work and avenues of ingress and egress.

1.4 SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions. Smoking is not permitted at or near the Site buildings or within the Work areas.

END OF SECTION

1 GENERAL

1.1 ADMINISTRATIVE

- .1 Schedule and administer project meetings 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 When meetings are to occur on Site, 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 draft copies of minutes within three days after meetings and transmit to meeting participants for comment.
- .8 Finalize meeting minutes within one week of distribution of the draft minutes.
- .9 Representative of Contractor attending meetings will be qualified and authorized to act on behalf of the party each represents.

1.2 PRECONSTRUCTION MEETING

- .1 Within 10 calendar 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.
- .4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.
- .5 Agenda to include, but not limited to:
 - .1 Appointment of official representative of participants in the Work.
 - .2 Schedule of Work: in accordance with Section 01 32 16.07.
 - .3 Schedule of submission of shop drawings. Submit submittals in accordance with Section 01 33 00.
 - .4 Requirements for temporary facilities, site signage, offices, storage sheds, utilities, fences in accordance with Section 01 52 00.
 - .5 Site security in accordance with Section 01 56 00.
 - .6 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.

- .7 Maintenance manuals in accordance with Section 01 78 00.
- .8 Health and safety precautions or concerns.
- .9 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00.
- .10 Monthly progress claims, administrative procedures, photographs, hold backs.
- .11 Appointment of inspection and testing agencies or firms.
- .12 Insurances, transcript of policies.

1.3 PROGRESS MEETINGS

- .1 During the course of Work prior to project completion, schedule progress meetings.
- .2 Contractor, major Subcontractors involved in Work and Departmental Representative are to be in attendance.
- .3 Record minutes of meetings and circulate to attending parties and affected parties not in attendance.
- .4 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 Health and safety concerns, corrective actions and incident reports.
 - .5 Problems which impede construction schedule.
 - .6 Corrective measures and procedures to regain projected schedule.
 - .7 Progress schedule, during succeeding work period.
 - .8 Review submittal schedules: expedite as required.
 - .9 Review proposed changes for effect on construction schedule and on completion date.
 - .10 Other business.

END OF SECTION

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 Charts should be derived from commercially available computerized project management systems.
- .3 Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.
- .4 Construction Work Week: Monday to Friday, inclusive, will provide five-day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.
- .5 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.
- .6 Master Plan: summary level schedule that identifies major activities and key milestones.
- .7 Milestone: significant event in project, usually completion of major deliverable.
- .8 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.
- .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 Detail Schedules are practical and remain within specified Contract duration.
- .2 Plan to complete the Work in accordance with prescribed milestones and time frames
- .3 Limit activity durations to maximum of approximately 10 working days, to allow for progress reporting.
- .4 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Certificate of Substantial Performance and Certificate of completion as defined times of completion are of essence of this contract.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00.
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- .2 Submit to Departmental Representative within 5 calendar days of Contract Award initial Master Plan (i.e. Bar (GANTT) Chart) as Detailed Project Schedule for planning, monitoring and reporting of project progress. Ensure GANTT Chart reflects all Project Milestones, the submittals schedule, as well as reflects detailed breakdown for various stages of abatement, reinstatement of materials and repainting.
- .3 Re-Submit Project Schedule to Departmental Representative within 5 calendar days of receipt of acceptance with changes as requested.

1.4 PROJECT MILESTONES

- .1 Project milestones form interim targets for Project Schedule.:
 - .1 Award.
 - .2 All Shop Drawings, Samples, and Other Submittals in accordance with Submittals Schedule and Section 01 33 00.
 - .3 Mobilization and site preparation, including scaffolding erection, within 30 calendar days of Contract Award.
 - .4 Clearing and Grubbing within 30 calendar days of Contract Award.
 - .5 Hazardous Materials Abatement within 65 calendar days of Contract Award.
 - .6 Reinstating exterior abated surfaces and repainting within 75 calendar days of Contract Award.
 - .7 Debris extraction and containerization within 82 calendar days of Contract Award.
 - .8 Waste removal and transport offsite to disposal facilities within 89 calendar days of Contract Award.
 - .9 Certificate of Substantial Performance within 90 calendar days of Contract Award.

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 calendar days.
- .3 Revise impractical schedule and resubmit within 5 calendar days.
- .4 Ensure revised schedule will become Master Plan and be used as baseline for updates.

1.6 PROJECT SCHEDULE REPORTING

- .1 Update Project Schedule on a 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.
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1.7 PROJECT MEETINGS

- .1 Discuss Project Schedule at regular site meetings specified in Section 01 31 19, 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.

1.8 SCHEDULE REVISIONS DUE TO ADDITIONAL SCOPE

- .1 Change orders that require extra time to schedule should be submitted with revised schedule that clearly shows how change affects the critical path schedule.

END OF SECTION

1 GENERAL

1.1 ADMINISTRATIVE

- .1 Submit to Departmental Representative submittals listed for review in accordance with Submittal Schedule provided. Submit promptly and in orderly sequence so as to not cause delay in the Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
 - .2 Departmental Representative will review Contractor's submittal plans submitted in accordance with the Submittal Schedule and will provide comments to Contractor within 5 calendar days after receipt of plan. Contractor to review the plan as appropriate and resubmit it to Departmental Representative within 5 calendar days after receipt of comments from Departmental Representative. Contractor not permitted to proceed with Work affected by a submittal until review and acceptance is complete and until Contractor has written authorization from Departmental Representative to proceed. If Departmental Representative does not accept submittal because of lack of information or detail, or if submittal does not meet necessary requirements, this is not considered sufficient reason for extension of contract time and no claim for extension by reason of such default will be allowed.
 - .3 Present shop drawings, product data, samples in SI Metric units.
 - .4 Where items or information is not produced in SI Metric units, converted values are acceptable.
 - .5 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
 - .6 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
 - .7 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review and acceptance of submittals. Departmental Representative's review and acceptance of Contractor's final plan should not be construed as approval and does not reduce the Contractor's overall responsibility for project.
 - .8 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review and acceptance of submittals.
 - .9 Keep one reviewed copy of each submission on Site.
 - .10 Submit number of hard copies specified for each type and format of submittal and also submit in electronic format as PDF files. Forward unlocked PDF, MS Word, MS Excel, MS Project and/or AutoCAD files on compact disk (CD) compatible with PSPC
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encryption requirements or through email or alternate electronic file sharing service, as directed by Departmental Representative.

1.2 PROGRESS PHOTOGRAPHS

- .1 Submit progress photographs for all milestone and stages of work completed, to be submitted at the completion of each stage.

1.3 CONSTRUCTION PHOTOGRAPHS

- .1 Submit electronic copies of colour digital photography in .jpg format, standard resolution.
- .2 Identification: name and number of project and date of exposure indicated.
- .3 Number of viewpoints: minimum 4 locations.
- .4 Viewpoints and their location sufficient to document the conditions at the time of the photograph.
- .5 Frequency: prior to initiation of work at the various worksites, weekly with progress statement and at completion of work.
- .6 Representative close-up photographs of work areas before and after activities. Photograph any pre-existing damages or deficiencies prior to work.
- .7 Upon completion of: scaffolding erection, clearing and grubbing, exterior abatement for each surface of each structure, re-instatement of materials required for each surface for structure, repainting of surfaces, debris removal, containerization, transportation of wastes. and as directed by Departmental Representative
- .8 Submit pre-construction photographs of all work areas and site conditions.
- .9 Quantity: Provide sufficient number of photographs to adequately show the work activities carried out during the reporting period.
- .10 Submit final photographs with final progress payment request

1.4 FEES, PERMITS AND CERTIFICATES

- .1 Provide authorities having jurisdiction with information requested.
- .2 Pay fees and obtain certificates and permits required.
- .3 Furnish certificates and permits.

1.5 CERTIFICATES AND TRANSCRIPTS

- .1 Within 48 hours after award of Contract, submit WSIB status.
- .2 Submit transcription of insurance within 48 hours after award of Contract.

1.6 SAMPLES

- .1 Submit for review samples (i.e. reinstatement materials, paint) in duplicate as requested in respective specification Sections. Label samples with origin and intended use.
 - .2 Deliver samples prepaid to Departmental Representative's business address.
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- .3 Notify Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.
- .4 Where colour, pattern or texture is criterion, submit full range of samples.
- .5 Adjustments made on samples by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in samples which Departmental Representative may require, consistent with Contract Documents. Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.7 SHOP DRAWINGS

- .1 The term 'Shop Drawings' includes all drawings, diagrams, illustrations, schedules, performance charts, brochures, plans and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .3 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .4 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
- .5 Accompany submissions with transmittal letter, in duplicate, containing:
 - .1 Date/revision dates.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Contractor's stamp signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .6 Other pertinent data including, but not limited to:
 - .1 Subcontractor name and address; Supplier name and address; Manufacturer's name and address; Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
 - .2 Details of appropriate portions of Work as applicable: fabrication; layout showing dimensions, including identified field dimensions, and

- clearance; setting or erection details; capacities; performance characteristics; standards; single line and schematic diagrams; relationship to adjacent work; report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
- .3 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .1 Testing of product or material must have been within 3 years of date of contract award of project.
- .7 After Departmental Representative's review and acceptance distribute final copies.
- .8 Shop Drawings must be dated after award of project contract complete with project name.
- .1 The review of shop drawings by Public Services and Procurement Canada (PSPC) is for sole purpose of ascertaining conformance with general concept. This review shall not mean that PSPC approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.
- .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

END OF SECTION

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 Regulation 347, Environmental Protection Act – Waste Management.
- .5 Ontario Regulation 153/04 under the Environmental Protection Act as amended.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00.
- .2 Submit within 15 calendar days of contract award, prior to mobilization, plan detailing management of hazardous wastes. Include with Environmental Protection Plan submission in accordance with Section 01 35 43. Submit written documentation of weekly hazardous waste inspections throughout duration of the Work.
- .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 filter changes on HEPA vacuums, and other engineering controls.
 - .5 Other information required by Departmental Representative or relevant to agenda for upcoming progress meeting.
- .4 Site Layout: within 7 calendar days after date of Contract Award and prior to mobilization to Site, submit site layout drawings showing existing conditions and facilities, fuel storage area, construction facilities and temporary controls provided by Contractor including following:
 - .1 Equipment and personnel decontamination areas.
 - .2 Means of ingress and egress considering the Site location surrounded by Lake Superior. Refer to Section 01 56 00.
 - .3 Location of loading barges/boats.

- .4 Equipment and material staging areas.
- .5 Temporary debris stockpile areas.
- .6 Wastewater storage tank areas.
- .7 Exclusion Zones, Contaminant Reduction Zones, and other zones specified in Contractor's site-specific health and safety plan.
- .5 Equipment Decontamination Pad: submit equipment decontamination pad design to Departmental Representative for review and acceptance prior to commencing construction within 7 calendar days of contract award.
- .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 within 7 calendar days of contract award.

1.3 REGULATORY REQUIREMENTS

- .1 Develop and implement a Site-specific Erosion and Sedimentation Control (ESC) plan in accordance with Section 31 25 00.
- .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 the 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 Prior to commencing work involving equipment contact with potentially contaminated materials, construct equipment decontamination pad to accommodate largest piece of on-Site potentially contaminated equipment.
- .2 Provide, operate and maintain any necessary equipment or services required to decontaminate equipment.

1.6 DRUM STAGING PAD

- .1 Provide, maintain, and operate drum staging pad as required.
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- .2 Construct drum staging pad with sump capable of collecting leachate and rain runoff. Place polyethylene sheeting such that sheeting contours over top of berm, and leachate and runoff from staging pad is directed solely to sump on staging pad.

1.7 DEBRIS STOCKPILING FACILITIES

- .1 Provide, maintain, and operate storage/stockpiling facilities as required.
- .2 Install a liner in accordance with Section 31 32 20 below proposed stockpile locations to prevent contact between stockpile material and ground. Equip facility with tarps capable of covering stockpiled material and staying secure until Departmental Representative advises Contractor to dispose of material off Site.

1.8 WASTEWATER STORAGE TANK

- .1 Provide, operate, and maintain wastewater storage tanks to store wastewaters.
 - .2 Wastewater includes hand basin, shower, and laundry wastewaters from Personnel Hygiene; and water collected from Equipment Decontamination, where applicable.
 - .3 Store wastewaters from Equipment Decontamination in separate tank from wastewater from Personnel Hygiene.
 - .4 If toilet facilities are provided in Personnel Hygiene, store wastewater from these toilets with wastewater from hand basins, showers, and laundry for ultimate disposal off site.
 - .5 Discharges: comply with applicable discharge limitations and requirements, and obtain Departmental Representative's acceptance prior to discharge of wastewater.
 - .6 Install wastewater storage tanks.
 - .7 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.
 - .8 Do not operate wastewater storage tanks until inspected and approved by Departmental Representative.
 - .9 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. Allow 7 day rush turnaround time for sample results.
 - .2 Departmental Representative will determine appropriate disposition of wastewaters based on sample analysis.
 - .10 Transport and dispose of wastewaters at off-site disposal facility as identified by Contractor and approved by Departmental Representative.
 - .11 Payment for transporting and disposing of wastewater to off-site disposal facility will be part of lump sum.
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1.9 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.

1.10 VEHICULAR ACCESS AND PARKING

- .1 Prevent contamination of traveling surfaces. Immediately scrape up debris or material on travelling surfaces which is suspected to be contaminated as determined by Departmental Representative; for transport and dispose of in appropriate off-site disposal facility.
- .2 Departmental Representative may collect soil samples for chemical analyses from traveling surfaces of constructed and existing access routes prior to, during, and upon completion of Work. Excavate and dispose of clean soil contaminated by Contractor's activities at no additional cost to Departmental Representative.

1.11 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 immediately during construction and in accordance with Province of Ontario regulations.
 - .3 Provide positive means to prevent airborne dust from dispersing into atmosphere. Use water for water misting system for dust and particulate control.
 - .4 As minimum, use appropriate covers on trucks hauling fine or dusty material. Use watertight vehicles or containers to haul wet materials.
 - .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.
 - .8 Use chemical means for water misting system for dust and particulate control only with Departmental Representative's prior written approval.
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1.12 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 Authority having jurisdiction or interest in spill or release including Ontario Ministry of Environment Spills Action Centre, conservation authority, water supply authorities, drainage authority, road authority, and fire department.
 - .2 Owner of pollutant, if known.
 - .3 Person having control over pollutant, if known.
 - .4 Departmental Representative.
- .4 Contact manufacturer of pollutant if known and ascertain hazards involved, precautions required, and measures used in cleanup or mitigating action.
- .5 All paint debris and contaminated soils must be disposed of in a provincially approved manner so as to mitigate potential effects generated by leachate entering the adjacent waters.
- .6 Take immediate action using available resources to contain and mitigate effects on environment and persons from spill or release.
- .7 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.

1.13 EQUIPMENT DECONTAMINATION

- .1 Commence Work involving equipment contact with potentially contaminated material only after a Decontamination Pad/Area is established and accepted by Departmental Representative.
 - .2 Decontaminate equipment after working in potentially contaminated work areas and prior to subsequent work or travel on clean areas.
 - .3 Perform equipment decontamination on Contractor-constructed equipment decontamination pad.
 - .4 Maintain inspection record on site which includes: equipment descriptions with identification numbers; time and date equipment was decontaminated; and name of inspector with comment stating that decontamination was performed and completed. Submit inspection record as part of closeout submittal in accordance with 01 33 00.
 - .5 Each piece of equipment may be inspected by Departmental Representative after decontamination and prior to removal from site and/or travel on clean areas.
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Departmental Representative will have the right to require additional decontamination to be completed if deemed necessary.

- .6 At minimum, perform following steps during equipment decontamination:
 - .1 Mechanically remove packed dirt, grit, and debris by scraping and brushing without using steam or high-pressure water to reduce amount of water needed and to reduce amount of contaminated restate generated.
 - .2 Use water supplemented by detergents or solvents as appropriate.
 - .3 Scrub surfaces with long handle scrub brushes and cleaning agent. Rinse off and collect cleaning agent. Air dry equipment in Clean Zone before removing from site or travelling on clean areas.
 - .4 Take appropriate measures necessary to minimize drift of mist and spray during decontamination including provision of wind screens.
 - .5 Transfer water and sediments into 200 L steel drums in accordance with above sections 1.6 and 1.9 prior to moving to drum staging area or wastewater storage tanks.
- .7 Furnish and equip personnel engaged in equipment decontamination with protective equipment including suitable disposable clothing, respiratory protection, and face shields as required.

1.14 REMOVAL AND DISPOSAL

- .1 Remove debris materials and temporary facilities from Site.
- .2 Dispose of hazardous and non-hazardous waste in accordance with Section 01 74 20.
- .3 Dispose of non-contaminated waste materials, litter, debris, and rubbish off Site.
- .4 Do not burn or bury rubbish and waste materials on Site.
- .5 Do not dispose of volatile or hazardous wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains or septic systems.
- .6 Do not discharge wastes into streams or waterways.
- .7 Dispose of the following materials at an appropriate off-Site facility identified by Contractor and approved by Departmental Representative:
 - .1 Debris including excess construction material.
 - .2 Non-contaminated litter and rubbish.
 - .3 Disposable PPE.
 - .4 Wastewater generated from decontamination operations including wastewater storage tank cleaning.

1.15 RECORD KEEPING

- .1 Maintain adequate records to support information provided to Departmental Representative regarding exception reports.
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- .2 Maintain asbestos and lead waste shipment records for minimum of 3 years from date of shipment, or a longer period if required by applicable laws or regulations.
- .3 Maintain bills of ladings for minimum of 375 days from date of shipment, or a longer period if required by applicable laws or regulations.

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 2015 (NBC):
 - .1 NBC 2015, Division B, Part 8 Safety Measures at Construction and Demolition Sites.
- .3 National Fire Code 2015 (NFC):
 - .1 NFC 2015, Division B, Part 5 Hazardous Processes and Operations, subsection 5.6.1.3 Fire Safety Plan.
- .4 Health Canada/Workplace Hazardous Materials Information System (WHMIS):
 - .1 Material Safety Data Sheets (MSDS).
- .5 Province of Ontario:
 - .1 Workplace Safety and Insurance Act, 1997.
 - .2 Occupational Health and Safety Act Revised Statutes of Ontario 1990, Chapter O.1 as amended, and Regulations for Construction Projects.
 - .1 O. Reg. 490/09, Designated Substances.
 - .2 O. Reg. 213/91: Construction Projects.
 - .1 Working at Heights Training Program
- .6 Municipal statutes and authorities.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00.
- .2 Submit site-specific Health and Safety Plan: Within 7 calendar days after date of Contract Award and prior to commencement of Work.
 - .1 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.
 - .3 Measures and controls to be implemented to address identified safety hazards and risks.
 - .2 Fire Safety Plan, specific to the work location, in accordance with NBC, Division B, Article 8.1.1.3 prior to commencement of work. Deliver two copies of the Fire Safety Plan to the Departmental Representative as part of the Health and Safety Plan or together with the Health and Safety Plan.

- .3 Contractor's and Sub-contractors' Safety Communication Plan as part of the Health and Safety Plan or together with the Health and Safety Plan.
- .4 Contingency and Emergency Response Plan as part of the Health and Safety Plan or together with the Health and Safety Plan, addressing standard operating procedures specific to the project site to be implemented during emergency situations.
 - .1 Contractor to include an Emergency Plan that shall include accommodations for workers on Site for an appropriate period, considering the Site isolation and transportation difficulties to and from the Site. The Site is accessed by helicopter and boat only, weather permitting.
 - .2 Contractor to submit emergency rescue plans to cover the requirements of both working at heights and working near waterbodies.
- .3 Submit names of personnel and alternates responsible for site safety and health as part of the Health and Safety Plan or together with the Health and Safety Plan.
- .4 Submit records of Contractor's Health and Safety meetings when requested.
- .5 Submit 2 copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative weekly.
- .6 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for Site personnel prior to commencement of Work, and submit additional certifications for any new Site personnel to Departmental Representative.
- .7 Submit copies of valid marine certification for personnel(s) engaged in sailing or working on boats to be used for transportation to and from the Site through Lake Superior waterway during Work activities as part of the Health and Safety Plan or together with the Health and Safety Plan.
- .8 Submit copies of valid flight (aircraft) or boating certification for personnel(s) engaged in operation or working on aircraft (e.g. helicopters, planes) or water vessels (e.g. boats or barges) to be used for transportation to and from the Site during Work activities as part of the Health and Safety Plan or together with the Health and Safety Plan.
- .9 Submit copies of orders, directions or reports issued by health and safety inspectors of the authorities having jurisdiction.
- .10 Submit copies of incident and accident reports within 24 hours of occurrence.
- .11 Submit MSDS - Material Safety Data Sheets for all products utilized during construction activities within 15 calendar days of Contract Award.

1.3 FILING OF NOTICE

- .1 File Notice of Project with Provincial authorities prior to commencement of Work and submit in accordance with 01 33 00 within 14 calendar days of Contract Award.
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1.4 WORK PERMIT

- .1 Obtain building permits related to project prior to commencement of Work and submit in accordance with 01 33 00 within 14 calendar days or Contract Award.

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.
- .3 Complete Work in accordance with Section 01 41 00.

1.8 PROJECT/SITE CONDITIONS

- .1 Perform a thorough Site investigation and locate areas of potential slip and fall hazards during Work performance.
- .2 Work at Site will involve the following:
 - .1 Contact with designated substances, including asbestos, benzene, lead, mercury, silica, Polychlorinated Biphenyls (PCBs), halocarbons and mould.
 - .2 Working adjacent to water bodies.
 - .3 Project site is remote and accessible only by water or air with no direct access to emergency response.
 - .4 Working at heights on site structures.
 - .5 Uneven rocky terrain with few established roads.
 - .6 Rugged terrain with areas of potential fall and slip hazards.
 - .7 Could involve contact with potentially noxious plants and wildlife (i.e., wolves).

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
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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 RESPONSIBILITY

- .1 Contractor shall be responsible for health and safety of persons on Site, safety of property on Site and for protection of persons and environmental features at and adjacent to the Site to extent that they may be affected by conduct of Work.
- .2 Contractor shall comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.
- .3 Where applicable the Contractor shall be designated "Constructor", as defined by Occupational Health and Safety Act for the Province of Ontario.
- .4 Contractor shall have appropriate PPE available for all workers and visitors on Site at all times. Contractor shall give visitors proper procedures for entering and leaving work area.
- .5 Eating, drinking and smoking only permitted in designated areas.

1.11 COMPLIANCE REQUIREMENTS

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

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 Employee 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, a competent and authorized representative as Health and Safety Co-ordinator. The Health and Safety Co-ordinator must:
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- .1 Have site-related working experience specific to activities associated with project.
- .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 that do not successfully complete the required training are not permitted to enter Site to perform Work.
- .4 Be responsible for implementation, daily enforcement and monitoring of Contractor's site-specific Health and Safety Plan.
- .5 Be on site during execution of Work and report directly to and be under direction of 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 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 Response Plan.
 - .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.
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- .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 WORK STOPPAGE

- .1 Give precedence to safety and health of public and Site personnel and protection of the 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.

END OF SECTION

1 GENERAL

1.1 REFERENCES

- .1 Reference Standards:
 - .1 U.S. Environmental Protection Agency (EPA)/Office of Water
 - .1 EPA 832/R-92-005-92, Storm Water Management for Construction Activities, Chapter 3.

1.2 DEFINITIONS

- .1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade environment aesthetically, culturally and/or historically.
- .2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction. Control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00.
- .2 Product Data:
 - .1 Submit 2 copies of WHMIS MSDSs in accordance with Section 01 35 29 for all materials to be used on Site during the abatement and debris removal activities.
- .3 Submit an Environmental Protection Plan for review by Departmental Representative within 15 calendar days of Contract Award Date.
- .4 The Environmental Protection Plan must include a comprehensive overview of known or potential environmental issues to be addressed during Work.
- .5 Address topics at a level of detail commensurate with environmental issues and required for the Work.
- .6 Include in Environmental Protection Plan:
 - .1 Name of the person responsible for ensuring adherence to the Environmental Protection Plan.
 - .2 Name and qualifications of the person responsible for manifesting hazardous waste to be removed from Site.
 - .3 Name and qualifications of the person responsible for training Site personnel with regards to Environmental Protection.
 - .4 Description of the environmental protection personnel training program.

- .5 An Erosion and Sediment Control plan and Contingency Plan in accordance with Section 31 25 00, identifying the type and location of erosion and sediment controls to be provided; including monitoring and reporting requirements to ensure that control measures are in compliance with erosion and sediment control plan, federal, provincial, and municipal laws and regulations and EPA 832/R-92-005, Chapter 3.
- .6 Drawings indicating the locations of proposed temporary structures, sanitary facilities, and stockpiles of debris and spoil materials including methods to control runoff and to contain materials on Site.
- .7 A Transportation Plan to and from the Site, as well as on the Site, including measures to reduce erosion of temporary equipment movement, especially during wet weather.
- .8 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use.
 - .1 Plan to include measures for marking limits of use areas and methods for protection of features to be preserved within authorized work areas.
- .9 Spill Control Plan to include procedures, instructions, and reports to be used in the event of unforeseen spill of a regulated substance.
- .10 Hazardous Waste Disposal Plan and Non-Hazardous Solid Waste Disposal Plan, identifying methods and locations for solid waste disposal including clearing debris, including a letter of acceptance from the MOECC approved waste disposal facility or facilities that will accept the material.
- .11 Contaminant Prevention Plan identifying potentially hazardous substances to be used on the Site; intended actions to prevent introduction of such materials into air, water, or ground; and detailing provisions for compliance with federal, provincial, and municipal laws and regulations for storage and handling of these materials.
- .12 Waste Water Management Plan identifying methods and procedures for management and discharge of waste waters which are directly derived from the Work activities.
- .13 Historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands.
 - .1 Archaeologically significant material, if found on the property, remains the property of the Crown and shall not be removed from the site. Stop work and notify the Departmental Representative immediately upon discovering any archaeological or historical artifacts.

1.4 FIRES

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

1.5 DISPOSAL OF WASTES

- .1 Burying rubbish and waste materials on site is not permitted.
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- .2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.
- .3 Do not discharge wastes into streams or water ways.
- .4 Contractor to remove from Site and appropriately dispose of all waste materials generated as part of the project activities and generated from on-Site accommodations. Separate and dispose of accumulated waste materials off-site in accordance with R.R.O. 1990, Reg. 347 General Waste Management, to MOECC approved disposal facilities or approved transfer stations, including, but no limited to, the following:
 - .1 Debris including excess construction material.
 - .2 Non-contaminated litter and rubbish.
 - .3 Disposable PPE.
 - .4 Wastewater removed from wastewater storage tank.
 - .5 Wastewater generated from final decontamination operations including wastewater storage tank cleaning.
 - .6 Lumber from decontamination pads.
 - .7 Waste generated from on-site accommodations, including human waste.
- .5 Appropriate procedures shall be implemented for handling, temporary storage, transport and disposal of impacted soil containing paint chip debris during all phases of the project. Refer to Land Disposal Restrictions in O. Reg. 347 - General Waste Disposal under Ontario EPA and MOE Fact Sheet "Summary of Land Disposal Restrictions, Treatment and Notification Requirements for Waste Generators". Off-site disposal will be by licensed haulers to a MOECC-approved disposal facility.
- .6 Disposal/recycling of other waste generated during the project shall be done in compliance with Ontario Waste Regulations and the facilities used will be approved by the Departmental Representative.

1.6 DRAINAGE

- .1 Erosion and Sediment Control in accordance with Section 31 25 00.
 - .2 Ensure pumped or released water into waterways, sewer or drainage systems is free of suspended materials and contamination.
 - .3 Contractor is responsible for sampling and analysis of wastewater to confirm appropriate method of disposal to meet MOECC requirements. Contractor to submit analytical results to Departmental Representative for review and acceptance. Departmental Representative to direct disposition of disposal prior to disposing. Departmental Representative to complete Quality Control in accordance with 01 45 00.
 - .4 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.
 - .5 Prevent soil runoff containing suspended material towards Lake Superior.
 - .6 Do not direct water flow in a manner which would cause erosion to existing areas.
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1.7 EXISTING SITE CONDITIONS

- .1 The Site is surrounded by Lake Superior, Site structures and some debris dumpsites and piles are very close to the lake. Contractor to ensure project activities do not result in debris entering nearby freshwater environment.
- .2 Temporary stored equipment, debris stockpiles and potential runoff from paint removal activities during lead abatement may cause potential contamination of surface water.
 - .1 Use a Polyethylene sheeting, as appropriate, to prevent surface water contamination during lead abatement and associated activities.
 - .2 Selection of a non-toxic, environmentally friendly paint removal product, if available, for lead abatement activities.
 - .3 Minimize the exposed soil area by limiting the disturbance to vegetation within and surrounding the work area.
 - .4 All stockpiled debris must be covered to prevent erosion and release of contaminant-laden water.
 - .5 Work must be scheduled to avoid periods of heavy precipitation, when possible to avoid paint removal product runoff during lead abatement, and to avoid sediment erosion during debris removal.
 - .6 All paint debris and waste materials must be disposed of in as per O.Reg 347, so as to mitigate potential effects generated by leachate entering the adjacent waters.
 - .7 Contractor to ensure no construction debris or material to enter the aquatic environment.
 - .8 Ensure that machinery arrives on site in a clean condition and is maintained free of fluid leaks, invasive species and noxious weeds.

1.8 SITE CLEARING AND PLANT PROTECTION

- .1 Protect trees and plants on Site and adjacent properties and only clear and grub under direction of the Departmental Representative where required in accordance with 31 11 00.
- .2 Protect roots of trees to dripline during excavation and Site grading to prevent disturbance or damage. Avoid unnecessary traffic, dumping and storage of materials over root zones.
- .3 Obtain approval from Departmental Representative in advance of any operations that will result in erosion or sedimentation including removal of vegetation.
- .4 Minimize stripping of topsoil and vegetation.
- .5 Restrict tree removal to areas indicated or designated by Departmental Representative.
- .6 Any vegetation removal will be completed as indicated in the attached Basic Project Evaluation Report and EEE mitigation checklist.

1.9 WORK ADJACENT TO WATERWAYS

- .1 Do not operate construction equipment in waterways.
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- .2 Do not use waterway beds for borrow material.
- .3 Do not dump excavated fill, waste material or debris in waterways.
- .4 Design and construct temporary crossings to minimize erosion to waterways.
- .5 Do not skid logs or construction materials across waterways.
- .6 Avoid spawning beds. Spawning beds cannot be impacted by construction activities.

1.10 POLLUTION CONTROL

- .1 Maintain temporary erosion and pollution control features installed under this Contract.
- .2 Vehicles and equipment must be maintained in good working condition, equipped with emission controls as applicable to local authorities emission requirements.
- .3 Control emissions from equipment and facilities in accordance with local authorities' emission requirements.
- .4 Implement dust abatement measures, as required to control dust.
- .5 Prevent lead based paints from contaminating air and waterways beyond the removal area. Lay an impervious polyethylene 6 mil thick tarp around the base of the structures to collect any paint chips and debris during exterior paint abatement. Carefully wrap up tarp to contain paint chips and other small debris without spillage and dispose of off-site.
- .6 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.
- .7 Ensure hazardous substances (including fuel) are stored, handled and applied in a manner to prevent release to the environment and in a legal manner in accordance with hazardous waste regulations.
- .8 Secure all materials at non-productive times (night and shut-down).
- .9 Vehicles shall be shut off when not in use. No vehicle idling on-site.
- .10 Store hazardous or toxic substances in a designated area.
- .11 Comply with requirements of WHIMIS regarding use, handling, storage and disposal of hazardous materials; and regarding labelling and provision of MSDS acceptable to Labour Canada.

1.11 SPILL CONTROL

- .1 Develop and implement a Spill Prevention and Spill Response Plan for the project activities, instructions, and reports to be used in the event of unforeseen spill of a regulated substance.
 - .1 Machinery must be checked for leakage of lubricants or fuel and must be in good working order.
 - .2 Refueling must be done at least 30 m from any water body and on an impermeable surface. Basic petroleum spill clean-up equipment must be on-Site.

- .3 An emergency spill kit will be kept on Site and a response plan will be developed so that it may be immediately implemented in the event that a spill of a deleterious substance occurs, or sediment releases.
- .4 Any equipment remaining on site overnight shall have appropriately placed drip pans.
- .5 All spills or leaks must be promptly contained, cleaned up at no additional cost and reported to the 24-hour environmental emergencies reporting system (1-800-565-1633), to Departmental Representative and Authority with Jurisdiction immediately.

1.12 NOTIFICATION

- .1 Departmental Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.
- .2 Contractor: after receipt of such notice, inform Departmental Representative of proposed corrective action and take such action as approved by Departmental Representative.
- .3 Departmental Representative will issue stop order of work until satisfactory corrective action has been taken.
- .4 No time extensions will be granted or equitable adjustments allowed to Contractor for such suspensions.

1.13 SPECIES AT RISK

- .1 Should a species at risk or its critical habitat be encountered, measures are to be implemented to avoid destruction, injury or interference with the species, its residence and/or habitat (e.g. through siting, timing or design changes). If the foregoing cannot be avoided the Contractor should cease work and contact Departmental Representative for advice regarding mitigation measures.
- .2 In the event that it is determined that the project likely may have unexpected adverse effects on species at risk, the Contractor shall notify the Departmental Representative immediately.
- .3 Refer to the Basic Project Evaluation for species at risk that may be encountered on Site

1.14 MIGRATORY BIRDS/WILDLIFE HABITAT

- .1 Ensure all works are in compliance with the Migratory Bird Convention Act.
 - .2 Restrict activities to construction areas and existing walkways and avoid harassment of animals.
 - .3 Refer to the Basic Project Evaluation and Mitigation Checklist for migratory bird and related mitigation issues.
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1.15 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 a surface water body.

END OF SECTION

1 GENERAL

1.1 REFERENCES AND CODES

- .1 Perform Work in accordance with National Fire Code of Canada (NFC 2015), including amendments up to tender closing date, and other codes of provincial or local application provided that, in case of conflict or discrepancy, more stringent requirements apply.
- .2 Meet or exceed requirements of:
 - .1 Contract documents.
 - .2 Specified standards, codes and referenced documents.

1.2 HAZARDOUS MATERIAL DISCOVERY

- .1 Asbestos: removal of spray or trowel-applied asbestos is hazardous to health. Unless it is included in Work, stop work immediately when material resembling spray or trowel-applied asbestos is encountered during Work. Notify Departmental Representative.
- .2 Stop work immediately and notify Departmental Representative if materials which may contain designated substances or PCBs, other than those identified in the tender documents, are discovered in course of work.

1.3 WORKING AT HEIGHTS SAFETY REQUIREMENTS

- .1 Providing the sufficient training for all workers on Site is mandatory in accordance with Occupational Health and Safety Act (OHSA) under O.Reg. 213/91 – Construction Projects.

1.4 WORKING CLOSE TO LAKE SUPERIOR WATERWAY

- .1 Providing the sufficient training for all workers on Site in accordance with Occupational Health and Safety Act (OHSA) under O.Reg. 213/91 – Construction Projects.

1.5 BUILDING SMOKING ENVIRONMENT

- .1 Smoking is prohibited within the work sites.

END OF SECTION

1 GENERAL

1.1 INSPECTION

- .1 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2 Contractor shall facilitate transportation to and from the Site during Work via water or air for Departmental Representative with reasonable timely notice.
- .3 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative, or law of place of work.
- .4 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, Contractor shall uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .5 Departmental Representative will order part or whole of Work to be examined if any part of the Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, Contractor shall correct such Work and pay costs associate with the examination and correction.
- .6 Provide equipment required for executing inspection and testing.
- .7 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.

1.2 ACCESS TO WORK

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

1.3 PROCEDURES

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

1.4 REJECTED WORK

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents at no additional cost.
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- .2 Make good other Contractor's work damaged by such removals or replacements promptly, to the satisfaction of the Departmental Representative at no additional cost.
- .3 Make good any damage to existing property or assets damaged by such removal or replacements promptly to the satisfactions of the Departmental Representative at no additional cost.
- .4 If, in opinion of the Departmental Representative, it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, a deduction from Contract Amount will be made that represents the difference in value between Work performed and that called for by Contract Documents, the amount of which will be determined by Departmental Representative.

1.5 REPORTS

- .1 Submit two copies of inspection and test reports to Departmental Representative.
- .2 Provide copies and notification to subcontractors of Work being inspected or tested.

END OF SECTION

1 GENERAL

1.1 REFERENCES

- .1 U.S. Environmental Protection Agency (EPA) / Office of Water
- .1 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.2 EXISTING CONDITIONS

- .1 Contractor to provide all requirements to complete Work including but not limited to own water, power, light, telephone and other communication, sanitary, and any temporary utilities for accommodation measures and meals if Contractor plans on resuming on-site. If any services are discovered, Contractor is not permitted to use. If discovered, services are not to be interrupted and contractor may not break into or connect into existing services.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00.
- .2 Submit Temporary Utilities Plan within 10 calendar days of Contract Award. Temporary Utilities plan to include installation and removal, water supply plan, temporary power and lights, fire protection, sanitary, and any temporary utilities for accommodations measures and meals if Contractor plans on resuming on-Site, or other as required to complete Work.

1.4 INSTALLATION AND REMOVAL

- .1 Provide temporary utilities controls in order to execute work expeditiously.
- .2 Remove from Site all such work after use.

1.5 WATER SUPPLY

- .1 Contractor shall provide continuous supply of water for construction use.

1.6 TEMPORARY POWER AND LIGHT

- .1 Contractor shall provide temporary power during construction for temporary lighting and operating of power tools, s as required to run the equipment on Site during work.
 - .1 Contractor to confirm their generator compliance with the Ministry of the Environment and Climate Change (MOECC) registry requirements.
 - .2 Generators will be operated in a fashion consistent with the manufacturer's specifications and in accordance with all Electrical Safety Authority requirements, as applicable.

1.7 TEMPORARY COMMUNICATION FACILITIES

- .1 Provide and pay for temporary telephone access and other communication (i.e. internet) necessary for own use and use of Departmental Representative.

1.8 FIRE PROTECTION

- .1 Provide and maintain temporary fire protection equipment during performance of Work required by governing codes, regulations and bylaws.
- .2 Burning rubbish and construction waste materials is not permitted on site.

END OF SECTION

1 GENERAL

1.1 REFERENCES

- .1 Canadian Standards Association (CSA International)
 - .1 CSA-S269.2 (R2003), Access Scaffolding for Construction Purposes.
 - .2 CAN/CSA-Z321-96(R2001), Signs and Symbols for the Occupational Environment.
- .2 U.S. Environmental Protection Agency (EPA) / Office of Water
 - .1 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00.
- .2 Submit Construction Facilities Plan within 10 calendar days of Contract Award. Construction Facilities plan to include proposal for installation and removal of temporary facilities, storage, loading and offloading, staging areas, site security measures, office requirements, sanitary, signage and any temporary provisions for accommodation measures and meals if Contractor plans on resuming on-site, or other as required to complete work.

1.3 INSTALLATION AND REMOVAL

- .1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.
- .2 Indicate use of supplemental or other staging areas.
- .3 Remove from Site all such work after use.

1.4 SITE STORAGE/LOADING AND OFFLOADING

- .1 Confine work and operations of employees within approved work area. Do not encumber premises with products and materials.
 - .2 Provide area for loading and offloading of impacted building materials and existing debris/contaminated soils onto vessel for removal by air or water, in accordance with all applicable federal, provincial and municipal regulations considering the nature of the site location surrounded by Lake Superior.
 - .3 Do not load or permit to load any part of Work with weight or force that will endanger Work.
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1.5 STAGING AREA

- .1 Equipment and machinery parking will be permitted on Site provided it does not disrupt performance of Work and site operation.
- .2 Provide a safe and accessible access to deliver machinery, equipment and workers to and from the Site, considering the Site location surrounded by Lake Superior and inaccessible wooded areas. The Marine Assessment provides information regarding access to the Site.
 - .1 Coordinate with Departmental Representative in regards the location and set up of offloading/loading area at the shoreline at the Site.

1.6 SCAFFOLDING

- .1 Scaffolding in accordance with CSA-S269.2 and Section 01 54 23.
- .2 Provide and maintain scaffolding, ramps, ladders, swing staging, platforms and temporary stairs.

1.7 SECURITY

- .1 Site security is Contractor's responsibility.
- .2 Provide means to maintain site security and to protect workers from potential of wildlife encounters throughout execution of work, and for any accommodation measures required on Site .

1.8 OFFICES

- .1 Provide marked and fully stocked first-aid case in a readily available location.

1.9 EQUIPMENT, TOOL AND MATERIALS STORAGE

- .1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials (non-waste) where designated by the Departmental Representative.
- .2 Locate materials not required to be stored in weatherproof sheds on Site in a manner to cause the least amount of interference with work activities.
- .3 Ensure that all requirements are coordinated with Departmental Representative and workers.

1.10 SANITARY FACILITIES

- .1 Sanitary facilities for use by Contractor's personnel and Department Representatives will be provided by the Contractor in accordance with governing regulations and ordinances. Facilities are to be kept clean.
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1.11 CONSTRUCTION SIGNAGE

- .1 No other signs or advertisements, other than warning signs, are permitted on Site.
- .2 Signs and notices for safety and instruction in both official languages. Graphic symbols to CAN/CSA-Z321-96(R2001).
 - .1 Signs to be placed at the trail to the Lighthouse area to limit access during Work activities.
- .3 Maintain approved signs and notices in good condition for duration of project, and dispose of off Site on completion of project, or earlier if directed by Departmental Representative.

1.12 PROTECTION AND MAINTENANCE OF TRANSPORTATION

- .1 Protect travelling public from damage to person and property.
- .2 Verify adequacy of existing docks and helipads and allowable load limit on these structures to host the loading and offloading. Contractor responsible for repair of damage to existing helipads and docks that occurred during Work operations.
- .3 Construct access and haul pathways as necessary upon Departmental Representative approval. Ensure access and haul pathways conformity with the EEE mitigation measures detailed in the attached Basic Project Evaluation and Checklists.

1.13 CLEAN-UP

- .1 Remove construction debris, waste materials, packaging material from work site daily.
- .2 Store materials resulting from decommissioning activities that are salvageable

END OF SECTION

1 GENERAL

1.1 SECTION INCLUDES

- .1 This section covers the requirements for the installation of access to permit work to be carried out.
- .2 Access to permit work to be carried out shall be by means of standard scaffolding.

1.2 DEFINITION

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

1.3 MEASUREMENT

- .1 Items under this section will be covered under the lump sum portion of the Work.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00.
- .2 Submit Scaffolding Plan within 10 calendar days of Contract Award. Scaffolding Plan to include scaffolding design. Scaffolding shall be designed, drawn and inspected by a registered professional engineer experienced in this work. Provide shop drawings together with Scaffolding Plan for review. All drawings shall be stamped and signed by a registered professional engineer.

2 PRODUCTS

2.1 MATERIALS

- .1 Scaffolding materials shall be new, or used materials in good condition.
- .2 Provide five sets of shop drawings to the Departmental Representative for review and comments.

3 EXECUTION

3.1 SCAFFOLDING AND BARRIERS

- .1 Provide all scaffolding, ladders, access, lifting equipment, etc. both inside the structures and outside 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 of the Province of Ontario. Contractor to ensure that scaffolding is in compliance with the most
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recent version of Ontario Regulation (O. Reg.) 213/91 for suspended work platforms
Field measure to ensure proper fit of all works. Areas include but not limited to:

- .1 Exterior of Site buildings/structures.
- .2 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 Scaffolding shall not be anchored into the concrete of the lighthouse. If anchorage is necessary; Contractor to ensure all anchor points are installed in structurally appropriate locations. Do not cut or damage the embedded reinforcement steel when creating anchor points. Contractor to repair anchor holes using concrete patch repair materials and curing techniques that match the original structure. Contractor to use non-corroding materials for all anchorage and remove all anchorage upon completion of work.
- .4 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 workers and materials can easily enter.
- .5 Where required by jurisdictional regulations, scaffolding shall be designed, drawn and inspected by a registered professional engineer experienced in this work. 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.
- .6 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 of the Province of Ontario.

END OF SECTION

1 GENERAL

1.1 INSTALLATION AND REMOVAL

- .1 Provide temporary controls in order to execute Work expeditiously.
- .2 Remove from Site all such work after use.

1.2 HOARDING

- .1 Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.
- .2 Provide and install temporary braces, struts, encasements, partitions, supports and other installations necessary for protection of the Fresnel Lens and associated equipment to ensure integral preservation of existing material and Fresnel Lens.
- .3 The lighthouse is a designated Classified Federal Heritage Building (Parks Canada, 2017) based on its design and the relatively unchanged and remote nature of the Site. Contractor to ensure project activities do not impact the design and integrity of the lighthouse tower.
- .4 Remove from site all such work after use.

1.3 GUARD RAILS AND BARRICADES

- .1 Provide barriers around the Work areas, as required, to limit access to non-workers, the public, and wildlife, as per Mitigation Measures Checklist. Ensure barrier may be erected with consideration of shallow, exposed and uneven bedrock at the site. Maintain barrier in good repair.
- .2 Provide secure barricades at the top of steep slopes or where overhead hazards are present.
- .3 Provide as required by governing authorities on land and marine vessels.

1.4 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.

1.5 PROTECTION OF FINISHES

- .1 Provide protection for finished and partially finished surfaces and equipment during performance of Work.
- .2 Provide necessary screens, covers, and hoardings.
- .3 Be responsible for damage incurred due to lack of, or improper, protection.

END OF SECTION

1 GENERAL

1.1 PROJECT CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by Owner or other Contractors.
- .2 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.
- .3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .4 Provide designated areas within the site for temporary stockpiling/storage of hazardous materials before disposing of upon the approval of Departmental Representative.
- .5 Provide on-site containers for collection of waste materials and debris.
- .6 Provide and use marked separate bins for recycling. Refer to Section 01 74 20.
- .7 Remove waste material and debris from site and deposit in waste container at end of each working day.
- .8 Dispose of waste materials and debris off site.
- .9 Store volatile waste, including paints and paint removal products, in covered metal containers, and remove from premises at end of each working day.
- .10 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .11 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.
- .12 Use only cleaning materials recommended by manufacturer for the surface to be cleaned, and as recommended by the cleaning material manufacturer.

1.2 FINAL CLEANING

- .1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
 - .2 Prior to final review, remove surplus products, tools, construction machinery and equipment.
 - .3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
 - .4 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
 - .5 Sweep and wash clean paved or concrete areas.
-

1.3 WASTE MANAGEMENT AND DISPOSAL

- .1 Contractor is to separate waste materials and remove from site and appropriately reuse, recycle and dispose all waste materials generated as part of the project or generated from on-site accommodations to complete the project, including human waste, in accordance with Section 01 74 20.

END OF SECTION

1 GENERAL

1.1 WASTE MANAGEMENT GOALS

- .1 Accomplish maximum control of solid construction waste.
- .2 Preserve environment and prevent pollution and environment damage.

1.2 DEFINITIONS

- .1 Non-hazardous waste - construction renovation and demolition waste, except those identified as containing hazardous materials.
- .2 Inert waste - exclusively asphalt and concrete.
- .3 Materials Source Separation Program (MSSP): consists of a series of ongoing activities to separate reusable and recyclable waste material into material categories from other types of waste at the point of generation.
- .4 Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into a new product for reuse.
- .5 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.
- .6 Recycling: process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit Hazardous Waste Disposal Plan, Non-Hazardous Waste Disposal Plan and Waste Reduction Plan within 15 calendar days of Contract Award Date including a letter of acceptance from the MOECC approved waste disposal facility or facilities that will be accepting the waste material. Include with Environmental Protection Plan submission in accordance with Section 01 35 43. Submit in accordance with Section 01 33 00.
 - .2 Submit before final payment summary of waste materials salvaged for reuse or recycling by project using a deconstruction/disassembly material audit form as approved by Department Representative. An example deconstruction/disassembly material audit form provided.
 - .1 Failure to submit could result in hold back of final payment.
 - .2 Provide receipts, scale tickets, waybills, and show quantities and types of all materials reused, recycled, co-mingled and separated off-Site or disposed of.
 - .3 For each material reused, sold or recycled from project, include quantities by number, type and size of items and the destination.
 - .4 For each material land filled or incinerated from the project, include the amount of material and identity of landfill, incinerator or transfer station.
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1.4 STORAGE, HANDLING AND PROTECTION

- .1 Store materials to be reused, recycled and salvaged in locations as directed by Departmental Representative. No waste is to be stored within 30 metres of a watercourse.
 - .2 Unless specified otherwise, materials for removal do not become Contractor's property.
 - .3 Protect, stockpile, store and catalogue salvaged items. All waste loads to be containerized and fully covered during hauling/transportation.
 - .4 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.
 - .5 Transportation of all non-hazardous waste, hazardous waste and salvageable materials in accordance with applicable Federal and provincial legislation and regulations.
 - .6 Support affected structures. If safety of a building/structure could be compromised, cease operations and immediately notify Departmental Representative.
 - .7 Separate and store materials produced during Work in designated areas.
 - .8 Characterize, separate and dispose of accumulated waste materials off-site in accordance with R.R.O. 1990, Reg. 347 General Waste Management, to MOECC approved disposal facilities or approved transfer stations.
 - .1 Provide Departmental Representative with copies of waste characterization data, including leachate testing results, prior to waste disposal.
 - .9 Prevent contamination of materials to be salvaged and recycled, and handle materials in accordance with requirements for acceptance by designated facilities.
 - .1 On-Site source separation is recommended.
 - .2 Remove co-mingled materials to off-Site processing facility for separation.
 - .3 Provide waybills for separated materials.
 - .10 Transport hazardous wastes to authorized hazardous waste disposal or treatment facilities.
 - .11 Burning, diluting, or mixing hazardous wastes for purpose of disposal is prohibited.
 - .12 Disposal of any non-hazardous or hazardous materials in waterways, storm or sanitary sewers, or in municipal solid waste landfills is prohibited.
 - .13 Dispose of any non-hazardous or hazardous wastes in timely fashion in accordance with applicable provincial regulations.
 - .14 Minimize generation of hazardous waste to maximum extent practicable. Take necessary precautions to avoid mixing clean and contaminated wastes.
 - .15 Identify and evaluate recycling and reclamation options as alternatives to land disposal, such as:
 - .1 Hazardous wastes recycled in manner constituting disposal.
 - .2 Lead-acid battery recycling.
 - .3 Hazardous wastes with economically recoverable precious metals.
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1.5 DISPOSAL OF WASTES

- .1 Do not bury rubbish or waste materials.
- .2 Do not dispose of waste into Lake Superior or any other waterways.
- .3 Contractor is to remove from site and appropriately dispose all waste materials generated as part of the project, including human waste and any on-Site accommodations.

1.6 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises and surrounding areas.

1.7 SCHEDULING

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

END OF SECTION

1 GENERAL

1.1 ADMINISTRATIVE REQUIREMENTS

- .1 Contractor's Inspection: Contractor and Subcontractors: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
 - .2 Request Departmental Representative's Inspection.
- .2 Departmental Representative's Inspection: Departmental Representative and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor to correct Work accordingly.
- .3 Completion: submit written certificate that the following have been performed:
 - .1 Work has been completed and inspected for compliance with Contract Documents.
 - .2 Defects have been corrected and deficiencies have been completed.
 - .3 Equipment and systems have been tested and are fully operational.
 - .4 Work is complete and ready for final inspection.
- .4 Final Inspection: when items noted above are completed, request final inspection of Work by Departmental Representative and Contractor. If Work is deemed incomplete by Departmental Representative, complete outstanding items and request another inspection.
- .5 Declaration of Substantial Completion: when the Departmental Representative considers that the deficiencies and defects have been corrected, and it appears that the requirements of the Contract have been substantially performed, make application for Certificate of Substantial Completion.
- .6 Commencement of Warranty Periods: date of acceptance of submitted declaration of Substantial Completion shall be date for commencement for warranty period.
- .7 Final Payment: when the Departmental Representative considers that the final deficiencies and defects have been corrected, and it appears that the requirements of the Contract have been totally performed, make application for Certificate of Completion. If Work is deemed incomplete by Departmental Representative, complete outstanding items and request re-inspection.

1.2 CLEANING

- .1 Remove waste and surplus materials, rubbish and construction facilities from the Site.

END OF SECTION

1 GENERAL

1.1 REFERENCES

- .1 Canadian Environmental Protection Act (CEPA)

1.2 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-warranty Meeting:
 - .1 Convene meeting one week prior to contract completion with Contractor's representative and Departmental Representative in accordance with Section 01 31 19 to:
 - .1 Verify Project requirements.
 - .2 Departmental Representative to establish communication procedures for:
 - .1 Notifying Contractor of construction warranty defects.
 - .2 Determine priorities for type of defects.
 - .3 Determine reasonable response time.
 - .3 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.
 - .4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Closeout Submittals: in accordance with Section 01 33 00.
- .2 Revise content of documents, as required, prior to final submittal.
- .3 Furnish evidence, if requested, for type, source and quality of products provided.

1.4 FORMAT

- .1 Organize data as project report.
- .2 Arrange content by systems and sequence of Table of Contents.
- .3 Submit hard copies and also submit in electronic format as pdf files. Forward unlocked PDF, MS Word, MS Excel, MS Project files and provide as-built 1:1 CAD AutoCAD files in dwg format on compact disk (CD) compatible with PSPC encryption requirements or through email or alternate electronic file sharing service, as directed by Departmental Representative.

1.5 CONTENTS

- .1 Closeout submittals should include copy of all final project submittals submitted and that have been accepted by Departmental Representative.
 - .2 Closeout submittals should include all product and maintenance information, manifests, weigh bills, bills of lading, provide details on lessons learned, photograph log of
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construction activities, all health and safety reports, and inspection reports and final as-builts.

- .3 For each product or system:
 - .1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- .4 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .5 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- .6 Typewritten Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

1.6 MATERIALS AND FINISHES

- .1 Moisture Protection and Weather Exposed Products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .2 Additional Requirements: as specified in individual specifications sections.

1.7 WARRANTIES AND BONDS

- .1 Without restricting any warranty or guarantee implied or imposed by law or contained in the Contract, the Contractor shall, at the Contractor's expense:
 - .1 Rectify any defect or fault that appears in the Work or comes to the attention of Canada with respect to those parts of the Work accepted in connection with the Certificate of Substantial Performance within 12 months from the date of Substantial Performance; and
 - .2 Rectify any defect or fault that appears in or comes to the attention of Canada in connection with those parts of the Work described in the Certificate of Substantial Performance within 12 months from the date of the Certificate of Completion.
 - .3 Transfer and assign, to Canada, any subcontractor, manufacturer or supplier extended warranties or guarantees implied or imposed by law or contained in the Contract covering periods beyond the 12 months stipulated above. Extended warranties or guarantees referred to herein shall not extend the 12-month period whereby the Contractor, except as may be provided elsewhere in the Contract, must rectify and make good any defect or fault that appears in the Work or comes to the attention of Canada.
 - .4 Provide, to Canada prior to the issuance of the Certificate of Completion, a list of all extended warranties and guarantees referred to above.
 - .2 Closeout submittals should include a warranty management plan section to contain information relevant to warranties.
 - .3 Warranty management plan to include required actions and documents to assure that Owner receives warranties to which it is entitled.
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- .4 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.
- .5 Submit, warranty information made available during construction phase, to Departmental Representative for approval.
- .6 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
- .7 Include information contained in warranty management plan as follows:
 - .1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers or suppliers involved.
 - .2 Provide list for each warranted equipment, item, feature of construction or system indicating:
 - .1 Name of item.
 - .2 Name and phone numbers of manufacturers or suppliers.
 - .3 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.
 - .4 Cross-reference to warranty certificates as applicable.
 - .5 Starting point and duration of warranty period.
 - .6 Organization, names and phone numbers of persons to call for warranty service.
 - .3 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.
- .8 Respond in a timely manner to oral or written notification of required construction warranty repair work.
- .9 Written verification will follow oral instructions. Failure to respond will be cause for the Departmental Representative to proceed with action against Contractor.

END OF SECTION

1 GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 02 81 01.01: Hazardous Materials Schedule A
- .2 Section 02 82 00.01.02: Exterior Asbestos Abatement – Intermediate Precautions
- .3 Section 02 83 10.02: Exterior Lead-Based Paint Abatement – Minimum Precautions
- .4 Section 02 83 11.02: Exterior Lead-Based Paint Abatement –Intermediate Precautions

1.2 REFERENCES

- .1 Definitions:
 - .1 Dangerous Goods: product, substance, or organism specifically listed or meets hazard criteria established in Transportation of Dangerous Goods Regulations.
 - .2 Hazardous Material: product, substance, or organism used for its original purpose; and is either dangerous goods or material that will cause adverse impact to environment or adversely affect health of persons, animals, or plant life when released into the environment.
 - .3 Hazardous Waste: hazardous material no longer used for its original purpose and that is intended for recycling, treatment or disposal.
- .2 Reference Standards:
 - .1 Canadian Environmental Protection Act, 1999 (CEPA 1999)
 - .1 Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations (SOR/2005-149).
 - .2 Department of Justice Canada (Jus)
 - .1 Transportation of Dangerous Goods Act, 1992 (TDG Act) 1992, (c. 34).
 - .2 Transportation of Dangerous Goods Regulations (T-19.01-SOR/2001-286).
 - .3 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
 - .4 Material Safety Data Sheets (MSDS).
 - .5 National Research Council Canada Institute for Research in Construction (NRC-IRC)
 - .6 National Fire Code of Canada-2015

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for hazardous materials and include product characteristics, performance criteria, physical size, finish and limitations.

- .2 Submit two copies of WHMIS MSDS to Departmental Representative for each hazardous material required prior to bringing hazardous material on site.
- .3 Submit hazardous materials management plan to Departmental Representative that identifies hazardous materials, usage, location, personal protective equipment requirements, and disposal arrangements.
- .3 Sustainable Design Submittals:
 - .1 Low-Emitting Materials: submit listing of adhesives and sealants and paints and coatings used in structure, comply with VOC and chemical component limits or restrictions requirements.

1.4 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 Transport hazardous materials and wastes in accordance with Transportation of Dangerous Goods Act, Transportation of Dangerous Goods Regulations, and applicable provincial regulations.
 - .4 Storage and Handling Requirements:
 - .1 Co-ordinate storage of hazardous materials with Departmental Representative and abide by internal requirements for labelling and storage of materials and wastes.
 - .2 Store and handle hazardous materials and wastes in accordance with applicable federal and provincial laws, regulations, codes, and guidelines.
 - .3 Store and handle flammable and combustible materials in accordance with National Fire Code of Canada requirements.
 - .4 Keep no more than 45 litres of flammable and combustible liquids such as gasoline, kerosene and naphtha for ready use.
 - .1 Store flammable and combustible liquids in approved safety cans bearing the Underwriters' Laboratory of Canada or Factory Mutual seal of approval.
 - .2 Storage of quantities of flammable and combustible liquids exceeding 45 litres for work purposes requires the written acceptance of the Departmental Representative.
 - .5 Transfer of flammable and combustible liquids is prohibited within structures.
 - .6 Transfer flammable and combustible liquids away from open flames or heat-producing devices.
 - .7 Solvents or cleaning agents must be non-flammable or have flash point above 38 degrees C.
 - .8 Store flammable and combustible waste liquids for disposal in approved containers located in safe, ventilated area. Keep quantities to minimum.
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- .9 Observe smoking regulations, smoking is prohibited in areas where hazardous materials are stored, used, or handled.
- .10 Storage requirements for quantities of hazardous materials and wastes in excess of 5 kg for solids, and 5 litres for liquids:
 - .1 Store hazardous materials and wastes in closed and sealed containers.
 - .2 Label containers of hazardous materials and wastes in accordance with WHMIS.
 - .3 Store hazardous materials and wastes in containers compatible with that material or waste.
 - .4 Segregate incompatible materials and wastes.
 - .5 Ensure that different hazardous materials or hazardous wastes are stored in separate containers.
 - .6 Store hazardous materials and wastes in secure storage area with controlled access.
 - .7 Maintain clear egress from storage area.
 - .8 Store hazardous materials and wastes in location that will prevent them from spilling into environment.
 - .9 Have appropriate emergency spill response equipment available near storage area, including personal protective equipment.
 - .10 Maintain inventory of hazardous materials and wastes, including product name, quantity, and date when storage began.
 - .11 When hazardous waste is generated on site:
 - .1 Ensure personnel have been trained in accordance with Workplace Hazardous Materials Information System (WHMIS) requirements.
 - .12 Report spills or accidents immediately to Departmental Representative. Submit a written spill report to Departmental Representative within 24 hours of incident.

2 PRODUCTS

2.1 MATERIALS

- .1 Description:
 - .1 Bring on site only quantities of hazardous material required to perform Work.
 - .2 Maintain MSDS in proximity to where materials are being used. Communicate this location to personnel who may have contact with hazardous materials.

3 EXECUTION

3.1 CLEANING

- .1 In accordance with Section 01 74 11 and 01 74 20.

END OF SECTION

SCHEDULE A: DESIGNATED SUBSTANCES/HAZARDOUS MATERIALS

Environmental Issue¹	Area of Concern	Action
Asbestos	<p>Non-friable asbestos is present within the project areas.</p> <p>Materials scheduled for abatement are presented in the attached Drawings and additional information regarding locations of non-friable asbestos containing materials are provided in DSS reports.</p> <p>Any disturbance or removal of these materials shall be performed by a qualified contractor.</p> <p>Asbestos abatement is part of the project scope.</p>	<p>Appropriate asbestos abatement practices must be utilized during the removal of asbestos-containing materials, including the use of proper personal protective equipment, as per Ontario Occupational Health and Safety Act, R.S.O., 1990, O. Reg. 278/05, Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations, as amended. Asbestos waste is to be disposed of in accordance with Reg. 347, as amended, General Waste Management.</p> <p>Abatement efforts must be completed on exterior of the site structures and includes associated debris as outlined in the reference drawings</p> <p>Perform asbestos disturbance or removal in accordance with the requirements of Sections 02 82 00.01.02 and 02 82 00.02.01.</p>
Benzene	<p>Various fuel storage tanks, oil and lubricants containers may be encountered inside the Site structures and may be used by the Contractor during work.</p>	<p>All petroleum-based fluids and fuels encountered, if applicable, are to be drained and contents disposed of in accordance Reg. 347, as amended, General Waste Management and the Transportation of Dangerous Goods Act.</p>

Environmental Issue ¹	Area of Concern	Action
Lead	<p>The majority of paints in the project areas contain detectable concentrations of lead and are considered to be lead-based.</p> <p>Solder used on copper pipes throughout the project area are assumed to contain lead.</p> <p>Joints of cast iron drain pipes are assumed to contain lead.</p> <p>Emergency light batteries are assumed to contain lead.</p> <p>Abatement of lead painted surfaces is part of the project scope.</p>	<p>Lead removal will be completed on all exterior lead-based painted surfaces, including paint chip debris and debris containing lead-based painted surfaces as outlined in the reference document.</p> <p>The removal or disturbance of lead requires precautionary measures outlined in O. Reg. 490/09, Designated Substances, as amended; and, and Ontario Ministry of Labour - Guideline: Lead on Construction Projects². Lead is to be disposed of in accordance with Reg. 347, as amended, General Waste Management.</p> <p>Perform lead disturbance or removal in accordance with the requirements of Section 02 83 10.02 and 02 83 11.02</p>
Mercury	<p>Mercury is present in selected lead-based painted surfaces</p> <p>Liquid mercury is also present in glass ampoules in thermostats within the Site buildings.</p> <p>It was also noted mechanical equipment that may contain mercury in equipment switches is present onsite.</p>	<p>Mercury abatement is present in selected lead-based painted surfaces that require abatement.</p> <p>Follow lead precaution as outlined in section above for lead when disturbance or abatement is undertaken.</p>
Silica	<p>Free crystalline silica is present within concrete elements, drywall, foundations and brick mortar throughout the Site buildings and structures.</p>	<p>Appropriate work practices must be utilized during the Work in accordance with O. Reg. 490/09 Designated Substances, as amended; and Ontario Ministry of Labour - Guideline: Silica on Construction Projects³.</p>

Environmental Issue¹	Area of Concern	Action
Halocarbons	Equipment containing suspected Halocarbons were observed within the site buildings, within refrigerators and freezers.	Halocarbon abatement is not part of the project. The handling, transport and disposal of ODSs are governed by Reg. 463/10: Ozone Depleting Substances and Other Halocarbons, and Federal Halocarbon Regulation 2003.
Mould / animal feces	Mould impacted building materials may be concealed where water damage/infiltration has occurred. Animal feces were observed within most Site structures	Mould abatement is not part of the project, although disturbance of mould-contaminated building materials may be required as part of other identified abatement. Animal feces may also be encountered or disturbed as part of work. If disturbance of mould impacted building materials and/or animal feces is required during work, appropriate Personal Protective Equipment (PPE) (e.g. respiratory and dermal protection) will be required (for mould, refer to CCA 82-2004 ³). Any required mould remediation should follow precautions appropriate to the scope of work as prescribed in the CCA 82-2004. Refer to Section 01 11 06 if using Site buildings as worker accommodations for cleaning requirements of animal feces. Cleaning worker accommodations should, at minimum, follow HEPA vacuuming techniques as outlined in the reference guideline above.

1 Guideline Lead on Construction Projects, Ontario Ministry of Labour, September 2004 (rev.).

2 Guideline Silica on Construction Projects, Ontario Ministry of Labour, September 2004 (rev.).

3 Mould Guidelines for the Canadian Construction Industry (CCA 82-2004) published by the Canadian Construction Association.

4. Comprehensive Designated Substance and Hazardous Material Survey, Michipicoten Island East End Site, Near Wawa, Ontario, PWGSC, BluMetric Environmental, Project Reference 160528-00-00, June 6, 2017.

5. Asbestos and Lead Summary Results Table, DST Consulting.

END SECTION

1 GENERAL

1.1 MEASUREMENT PROCEDURES

- .1 All work required to remove and dispose of the non-friable asbestos containing materials (i.e. Transite and underlying tar paper), replaced with non-asbestos containing materials, and painted as required, will be measured in accordance with Section 07 46 23. All work is to be completed in conjunction with applicable lead abatement procedures.
- .2 All work required to remove and dispose of the non-friable asbestos containing materials (i.e. tar paper not covered by Transite), replaced with non-asbestos containing materials and painted as required, will be paid under unit rate. All work is to be completed in conjunction with applicable lead abatement procedures.
- .3 All work required to remove and dispose of the non-friable asbestos containing materials (i.e. shingles), and replaced with non-asbestos containing materials will be paid under unit rate. All work is to be completed in conjunction with applicable lead abatement procedures.
- .4 All work required to remove and dispose of the non-friable asbestos containing materials (i.e. caulking), and replaced with non-asbestos containing materials will be paid under unit rate. All work is to be completed in conjunction with applicable lead abatement procedures. This unit rate is to include any painting of these new materials.
- .5 All work required to remove and dispose of the non-friable asbestos containing materials (i.e. debris: Transite, shingles) will be paid under unit rate.

1.2 SUMMARY

- .1 Comply with the requirements of this Section when performing the following work:
 - .1 Removal of any asbestos-containing exterior caulking associated with windows, doors, etc., if the material is wetted to control the spread of dust or fibres and removed without the use of power tools.
 - .2 Removal of asbestos-containing exterior Transite and Transite debris, if the material is wetted to control the spread of dust or fibres and removed without the use of power tools.
 - .3 Removal of asbestos-containing exterior tar paper, if the material is wetted to control the spread of dust or fibres and removed without the use of power tools.
 - .4 Removal of asbestos-containing exterior roofing shingles on the northern outhouse, and shingle debris, if the material is wetted to control the spread of dust or fibres and removed without the use of power tools.
 - .5 Breaking, cutting, drilling, abrading, grinding, sanding or vibrating above-noted and other non-friable asbestos-containing material if,
 - .1 the material is 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 Refer to Item 1.9 Existing Condition below and the following documents for details on asbestos-containing materials, quantities and locations requiring, as indicated, abatement, disposal, re-instatement and painting:
 - .1 Drawings
 - .2 BluMetric Environmental, Comprehensive Designated Substance and Hazardous Materials Survey, Michipicoten Island East End Site, Near Wawa, Ontario, PWGSC, Project reference 160528- 00-00, June 6, 2017
 - .3 DST Consulting Engineers, Summary of Findings – Asbestos and Lead Sample Results, Michipicoten Island East End Site, PSPC No. R.090052.001, February 2018.

1.3 RELATED REQUIREMENTS

- .1 Section 01 11 00: Summary of Work
- .2 Section 02 81 01: Hazardous Materials Schedule A
- .3 Section 02 83 10.02: Exterior Lead-Based Paint Abatement – Minimum Precautions
- .4 Section 02 83 11.02: Exterior Lead-Based Paint Abatement – Intermediate Precautions
- .5 Section 07 92 00: Joint Sealant
- .6 Section 07 46 23: Siding
- .7 Section 09 91 99: Painting
- .8 Section 31 00 99: Earthwork

1.4 REFERENCES

- .1 Department of Justice Canada (Jus)
 - .1 Canadian Environmental Protection Act, 1999 (CEPA).
 - .2 Canada Labour Code- Occupational Health and Safety
 - .1 Canada Occupational Health and Safety Regulations (SOR/2017-312)
 - .3 Public Services and Procurement Canada (PSPC)
 - .1 Asbestos Management Standard, June 5, 2017
 - .4 Transport Canada (TC)
 - .1 Transportation of Dangerous Goods Act, 1992 (TDGA).
 - .5 O. Reg. 278/05, Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations.
 - .6 O. Reg. 490/09, Designated Substances.
 - .7 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>.
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- .8 O. Reg. 247/90, Environmental Protection Act, General Waste Management.

1.5 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 Representative, Consultants or designated representatives, and representatives of regulatory agencies.
- .6 Non-Friable Material: material that when dry cannot be crumbled, pulverized or powdered by hand pressure.
- .7 Friable Material: material that when dry can be crumbled, pulverized or powdered by hand pressure.
- .8 Occupied Area: any area of the building or work site that is outside Asbestos Work Area.
- .9 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.
- .10 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must have appropriate capacity for work.

1.6 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00.
- .2 Submit Exterior Asbestos Abatement Plan for Items Requiring Minimum Precautions within 15 calendar days of Contract Award which must include but is not limited to the following:
 - .1 Method of exterior asbestos abatement
 - .2 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.
 - .3 Provincial and/or local requirements for Notice of Project Form.
 - .4 All necessary permits with proof of approval for transportation and disposal of asbestos-containing waste and proof that asbestos-containing waste has been received and properly disposed of.

- .5 Proof satisfactory to Departmental Representative 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.
- .6 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.
- .7 Submit proposed method to prevent spread of dust from asbestos work areas.

1.7 QUALITY ASSURANCE

- .1 Regulatory Requirements: comply with Federal, Provincial/Territorial, 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 Work occupational health and safety in accordance with Section 01 35 29.06.
 - .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 Contractor to provide 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.
- .7 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.

1.8 WASTE MANAGEMENT AND DISPOSAL

- .1 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, packaging material in appropriate on-site bins for recycling in accordance with Section 01 74 20 - Construction/Demolition Waste Management and Disposal.
 - .2 Place materials defined as hazardous or toxic in designated containers.
 - .3 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA and Regional regulations.
 - .4 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 0.15 mm thick (6 mil) bags or leak proof drums. Label containers with appropriate warning labels. All waste bags or drums containing asbestos-containing materials shall be kept inside the containment or in the staging area until pick-up for transportation to licensed landfill.
 - .5 Provide manifests describing and listing waste created. Transport containers by approved means to landfill licensed to accept the waste created.
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- .6 Provide documentation that a licensed landfill is willing to accept the waste previous to transporting the waste from the site.

1.9 EXISTING CONDITIONS

- .1 Asbestos-containing materials scheduled for abatement include but are not limited to grey, white and pink caulking, exterior Transite, tar paper, roofing shingles on Northern Outhouse and associated shingle debris surrounding the northern outhouse and living quarters, and Transite debris in debris piles and southern outhouse. Asbestos-containing materials for abatement are identified in the Drawings.
- .2 Notify Departmental Representative of any material suspected to contain asbestos that is discovered during Work, within 24 hours of discovery, and not apparent from drawings, specifications, or report pertaining to Work. Do not disturb such material until instructed by Departmental Representative.
- .3 Materials abated and disposed from beyond limits specified will not be measured and paid, unless Departmental Representative provides written authorization for additional abatement beforehand.

1.10 OWNER'S INSTRUCTION

- .1 Instruction and training related to respirators includes, at a minimum:
 - .1 Fitting of equipment.
 - .2 Inspection and maintenance of equipment.
 - .3 Disinfecting of equipment.
 - .4 Limitations of equipment.
- .2 Instruction and training must be provided by a competent, qualified person.

2 PRODUCTS

2.1 MATERIALS

- .1 Drop Sheets: 0.15 mm thick polyethylene.
 - .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. Inner container: 0.15 mm thick sealable polyethylene waste bag. Outer container: sealable metal or fibre type where there are sharp objects included in the waste material; otherwise outer container may be a sealable metal or fibre type or a second 0.15 mm thick sealable polyethylene
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- bag. Labelling requirements: Affix a pre-printed cautionary asbestos warning in both official languages that is clearly 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.

3 EXECUTION

3.1 PROCEDURES

- .1 Before beginning work, isolate Asbestos Work Area using, at a minimum, pre-printed cautionary asbestos warning signs in both official languages that are clearly visible at all access routes to the Asbestos Work Area. Remove visible dust from surfaces in the work area where dust is likely to be disturbed during course of work. Use HEPA vacuum, or damp cloths where damp cleaning does not create a hazard and is otherwise appropriate. Do not use compressed air to clean up or remove dust from any surface.
 - .2 Prevent the spread of dust from Asbestos Work Area using measures appropriate to the work to be done.
 - .3 Wet materials containing asbestos to be removed unless wetting creates a hazard or causes damage. Use garden reservoir type low-velocity, fine-mist sprayer. Perform work in a manner to reduce dust creation to lowest levels practicable. All work will be subject to visual inspection. Any contamination of surrounding areas indicated by visual inspection will require the complete enclosure and clean-up of the affected areas.
 - .4 Secure appropriately packaged asbestos-containing waste in covered bins when waste is stored on site.
 - .5 Debris shall be placed in a sealed dust-tight waste bag. A HEPA Vacuum can be used to clean up debris.
 - .6 Clean-Up:
 - .1 Frequently during the work and immediately after completion of work, clean up dust and asbestos-containing waste using a HEPA vacuum or by damp mopping to the satisfaction of the Departmental Representative.
 - .2 Place dust and asbestos-containing waste in sealed dust-tight waste bags. Treat drop sheets and disposable protective clothing as an asbestos waste; wet and fold these items to contain dust, then place in plastic bags.
 - .3 Clean the exterior of each waste-filled bag using damp cloths or a HEPA vacuum and place in second clean waste bag immediately prior to removal from Asbestos Work Area.
 - .4 Seal waste bags and remove 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.
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- .5 Perform final thorough clean-up of work areas and adjacent areas affected by the work using HEPA vacuum.

3.2 INSPECTION

- .1 Perform inspection of Asbestos Work Area to confirm compliance with specification and governing authority requirements. Deviation(s) from these requirements that have not been approved in writing by Departmental Representative may result in Work stoppage, at no cost to the Client .
- .2 Departmental Representative may inspect Work at any time during the project 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 asbestos leakage from Asbestos Work Area has occurred, or is likely to occur Departmental Representative may order Work shutdown.

3.3 AIR MONITORING

- .1 From beginning of Work until completion of cleaning operations, Departmental Representative may take air samples outside of Asbestos Work Area.
- .2 If air monitoring shows that areas outside Asbestos Work Area are contaminated, enclose, maintain and clean these areas in same manner as that applicable to Asbestos Work Area.
- .3 Ensure that respiratory safety factors are not exceeded.
- .4 The Departmental Representative may collect clearance/post-abatement air samples following a final visual inspection of the Asbestos Work Area by the Departmental Representative. Samples will be analyzed and compared to applicable regulations.

END OF SECTION

1 GENERAL

1.1 MEASUREMENT PROCEDURES

- .1 All work required to abate the lead-based painted surfaces (exterior surfaces), and repaint with non lead-based paint will be paid under unit rate.
- .2 All work required to remove and dispose of the lead-based painted materials on exterior surfaces, replacement and re-painting of new materials will be paid under the same unit rate as 1.1.1 above.

1.2 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. Lead-containing surface coatings requiring abatement are outlined in the attached Drawings.
 - .2 Comply with requirements of this Section when performing following work:
 - .1 Removal of exterior lead-containing coatings with a chemical gel or paste and fibrous laminated cloth wrap on exterior walls.
 - .2 Removal of lead-containing coating on exterior painted surfaces using a power tool with an effective dust collection system equipped with a HEPA filter;
 - .3 Removal of lead-containing exterior coatings or materials with non-powered hand tool, other than manual scraping and sanding or manual striking of surfaces such as with a sledge hammer.
 - .4 Manual removals/disturbance/handling/disposal of lead-based coated architectural elements on the exterior of the project buildings, structures and features as required to accommodate the project scope as outlined in the reference documents.
 - .5 Removal/handling/disposal of paint debris as outlined in reference documents.
 - .3 Should the use of chemical gel or paste and fibrous laminated cloth wrap be the chosen method of abatement, various testing of surfaces shall be completed to verify best product. Up to seven (7) products shall be used for testing, witnessed by the Departmental Representative.
 - .4 Multiple layers and types of lead-containing surface coatings may be present on painted surfaces of the project site. These include oil-based paints, water-based paints, and primers. The use of chemical gel or paste should assume up to 3 applications/removals of the product(s) to obtain the required level of lead-containing surface coatings abatement and is to be witnessed and accepted by the Departmental Representative.
 - .5 Selected method of lead-containing surface coating removal must consider the preparation of surfaces to allow effective surface coating removal, including but not limited to the need to remove coated & concealed nails and/or screws from substrate surfaces. Any removed nails and/or screws are to be replaced with new, similar materials following abatement but before application of new primers/paints.
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- .6 Refer to the following documents for details on Lead-containing materials to be abated:
 - .1 Drawings
 - .2 BluMetric Environmental, Comprehensive Designated Substance and Hazardous Materials Survey, Michipicoten Island East End Site, Near Wawa, Ontario, PWGSC, Project reference 160528- 00-00, June 6, 2017
 - .3 DST Consulting Engineers, Summary of Findings – Asbestos and Lead Sample Results, Michipicoten Island East End Site, PSPC No. R.090052.001, February 2018.
- .7 Lead-based Paint Abatement procedures that require maximum precautions, including removal of lead-containing using power tools without an effective HEPA dust collection system OR abrasive blasting of lead-containing coating or material are not permitted.

1.3 RELATED REQUIREMENTS

- .1 Section 01 11 00: Summary of Work
- .2 Section 02 81 01: Hazardous Materials Schedule A
- .3 Section 02 82 00.01.02: Exterior Asbestos Abatement – Minimum Precautions
- .4 Section 02 83 11.02: Exterior Lead-Based Paint Abatement – Intermediate Precautions
- .5 Section 07 92 00: Joint Sealant
- .6 Section 07 46 23: Siding
- .7 Section 09 91 99: Painting
- .8 Section 31 00 99: Earthwork

1.4 REFERENCES

- .1 Ontario Ministry of Labour
 - .1 Occupational Health and Safety Branch, Guideline Lead On Construction Projects, September 2004,
 - .2 O.Reg. 490/09 respecting Designated Substances - Lead made under the Occupational Health and Safety Act as amended by O. Reg. 148/12 and O. Reg. 149/12.
 - .2 Department of Justice Canada
 - .1 Canadian Environmental Protection Act, 1999 (CEPA).
 - .3 Health Canada
 - .1 Workplace Hazardous Materials Information System (WHMIS), Material Safety Data Sheets (MSDS).
 - .4 Human Resources and Social Development Canada (HRSDC)
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- .1 Canada Labour Code Part II, - SOR 86-304 - Occupational Health and Safety Regulations.
- .5 Transport Canada (TC)
 - .1 Transportation of Dangerous Goods Act, 1992 (TDGA).
- .6 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).
- .7 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.
- .8 Underwriters' Laboratories of Canada (ULC)
- .9 O. Reg. 247/90, Environmental Protection Act, General Waste Management.

1.5 DEFINITIONS

- .1 Authorized Visitors: Departmental Representative, or designated representatives, and representatives of regulatory agencies.
 - .2 Competent worker person: 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 and 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.
 - .3 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with filter system capable of collecting and retaining particles greater than 0.3 microns in any dimension at 99.97% efficiency.
 - .4 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.
 - .5 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must be appropriate capacity for scope of work.
 - .6 Action level: employee exposure, without regard to use of respirators, to airborne concentration of lead of 50 micrograms per cubic meter of air ($50 \mu\text{g}/\text{m}^3$) 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 meter of air for removal of lead based paint by methods noted in paragraph 1.1.
 - .7 Competent person: Departmental Representative capable of identifying existing lead hazards in workplace taking corrective measures to eliminate them.
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- .8 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.
- .9 Lead-based Paint: Paint and Primer containing lead that is to be disrobed or removed as outlined in the attached Drawings.

1.6 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00.
- .2 Submit Exterior Lead-Based Paint Abatement Plan for items requiring Minimum Precautions within 15 calendar days of Contract Award which must include but is not limited to the following:
 - .1 Method of exterior lead abatement precautions and identification of all surfaces/locations where minimum lead abatement methods will be applied based on Contractor's chosen precautions.
 - .2 Proof satisfactory to Departmental Representative that suitable arrangements have been made to dispose of lead containing paint waste in accordance with requirements of authority having jurisdiction.
 - .3 Proof of Contractor's General and Environmental Liability Insurance.
 - .4 All necessary permits with proof of approval for transportation and disposal of lead based paint waste and proof that lead based paint waste has been received and properly disposed.
 - .5 Proof satisfactory to Departmental Representative that all workers have had instruction on hazards of lead exposure, in personal hygiene and work practices, respirator use (including passing a fit test), dress, and all aspects of work procedures and protective measures, including use, cleaning, and disposal of respirators.
 - .6 Work Plan must indicate the qualified onsite supervisor (name), and proof of completion of required training
 - .7 Documentation including test results, fire and flammability data, and Material Safety Data Sheets (MSDS) for chemicals or materials used must be included in the Work plan

1.7 QUALITY ASSURANCE

- .1 Regulatory Requirements: comply with Federal, Provincial and local requirements pertaining to lead paint, 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 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 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 N - series filter, and 95% efficiency could be provided.
- .2 Ensure no one enters work area with facial hair affecting seal of protective respirator.
- .3 Eating, drinking, chewing, and smoking are not permitted in work area.
- .4 Ensure workers wash hands and face when leaving work area. Facilities for washing are determined by the Departmental Representative.
- .3 Visitor Protection:
 - .1 Provide protective clothing and approved respirators to Authorized Visitors to work areas.
 - .2 Instruct Authorized Visitors in proper procedures to be followed in entering into and exiting Work Area.

1.8 WASTE MANAGEMENT AND DISPOSAL

- .1 In accordance with Section 01 74 20 - Construction/Demolition Waste Management and Disposal:
 - .1 Separate waste materials for reuse and recycling.
 - .2 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, packaging material in appropriate on-site bins for recycling in accordance with Departmental Representative directions.
 - .3 Place materials defined as hazardous or toxic in designated containers.
 - .4 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.
 - .5 Fold up any metal bands from material packaging, flatten and place in designated area for recycling.
 - .6 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 thick (6 mil) bags or leak proof drums. Label containers with appropriate warning labels.
 - .7 Provide manifests describing and listing waste created. Transport containers by approved means to licensed landfill for burial.

1.9 EXISTING CONDITIONS

- .1 Lead-containing materials scheduled for abatement are presented in the attached Drawings. Contractor is to refer to the drawings for quantity, location, condition, and substrate surfaces.
 - .2 Select lead containing materials shall be considered hazardous for disposal, as outlined in the attached Drawings, unless leachate (TCLP) analysis confirms otherwise.
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- .3 Notify Departmental Representative of all material suspected to contain lead that is discovered during Work and not apparent from drawings, specifications, or report pertaining to Work, within 24 hours of discovery. Do not disturb such material until instructed by Departmental Representative.
- .4 Materials abated and disposed from beyond limits specified will not be measured and paid unless Departmental Representative provides written authorization for additional abatement beforehand

1.10 OWNER'S INSTRUCTIONS

- .1 Instruction and training related to respirators includes, at minimum:
 - .1 Fitting of equipment.
 - .2 Inspection and maintenance of equipment.
 - .3 Disinfecting of equipment.
 - .4 Limitations of equipment.
- .2 Instruction and training must be provided by competent, qualified person.
- .3 Supervisory personnel to complete required training.

2 PRODUCTS

2.1 MATERIALS

- .1 Polyethylene: 0.15 mm thick.
- .2 FR Polyethylene: 0.15 mm woven fibre reinforced fabric bonded both sides with polyethylene.
- .3 Tape: tape suitable for sealing polyethylene to surfaces under both dry 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 purpose of trapping residual lead-containing dust.
- .5 Lead waste containers: metal 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.

3 EXECUTION

3.1 SUPERVISION

- .1 Minimum of one Supervisor for every ten workers is required.
 - .2 Qualified Supervisor must remain within Work Area during disturbance, removal, or other handling of lead-based paints.
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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 to structure interiors with polyethylene sheeting and seal with tape.
 - .4 Establish polyethylene sheets at grade to capture removed paint chips.
 - .5 Where water application is required for wetting lead-containing materials, provide temporary water supply appropriately sized for application of water as required.
 - .6 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 cables and equipment.
- .3 Do not start work until:
 - .1 Arrangements have been made for the disposal of the waste.
 - .2 Tools, equipment, and materials waste containers are on site.
 - .3 Arrangements have been made for building security.
 - .4 Notifications have been completed and preparatory steps have been taken.

3.3 LEAD ABATEMENT

- .1 Remove lead-containing coatings on all exterior building surfaces and structures including areas of debris on bedrock, gravel, stone and soil.
 - .2 Remove lead-containing debris (debris and paint chip debris) to extent practical up to scraping of top layer (5 cm depth) of soil in areas where debris is present.
 - .3 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.
 - .4 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 of work area. Ensure containers are removed by workers who have entered from uncontaminated areas dressed in clean coveralls.
 - .5 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.
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- .6 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. Consider weather forecast to ensure that slow drying sealer does not get wet during drying period. Do not disturb work area for a minimum of 8 hours or following manufacturers instruction for drying/curing period for sealant to the satisfaction of the Departmental Representative. 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 additional cost.
- .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 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 Ensure lock-down agent is compatible with paint to be applied.
 - .2 Final lead wipe sampling results from horizontal and vertical surfaces must show lead levels of 40 micrograms of lead in dust per square foot. Samples collected and analyzed in accordance with EPA 747-R-95-007.
 - .3 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.
 - .4 Repeat as necessary until lead levels are less than 40 micrograms per square foot.
 - .5 Results from samples collected from the Departmental Representative will be provided within 7 calendar days. Contractor is to schedule all work accordingly.
 - .6 Contractor cannot charge standby time for sample analysis.

3.6 FINAL CLEANUP

- .1 Following cleaning and when lead wipe surfaces sampling are below acceptable concentrations, proceed with final cleanup.
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- .2 Remove polyethylene sheeting. 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-ESTABLISH MENT 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 at no additional cost.

END OF SECTION

1 GENERAL

1.1 MEASUREMENT PROCEDURES

- .1 All work required to abate the lead-based painted surfaces (exterior surfaces), and repaint with non lead-based paint will be paid under unit rate.
- .2 All work required to remove and dispose of the lead-based painted materials on exterior surfaces, replacement and re-painting of new materials will be paid under the same unit rate as 1.1.1 above.

1.2 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. Lead-containing surface coatings requiring abatement are outlined the attached Drawings.
 - .2 Comply with requirements of this Section when performing following Work:
 - .1 Removal of exterior lead-containing surface coatings by scraping or sanding using non-powered hand tools.
 - .2 Removal of exterior lead-containing materials by manual striking of surfaces such as with a sledge hammer.
 - .3 Multiple layers and types of lead-containing surface coatings may be present on painted surfaces of the project site. These include oil-based paints, water-based paints, and primers.
 - .4 Selected method of lead-containing surface coating removal must consider the preparation of surfaces to allow effective surface coating removal, including but not limited to the need to remove coated & concealed nails and/or screws for substrate surfaces. Any removed nails and/or screws are to be replaced with new, similar materials following abatement but before application of new primers/paints.
 - .5 Refer to the following documents for details on Lead-containing materials to be abated:
 - .1 Drawings
 - .2 BluMetric Environmental, Comprehensive Designated Substance and Hazardous Materials Survey, Michipicoten Island East End Site, Near Wawa, Ontario, PWGSC, Project reference 160528- 00-00, June 6, 2017
 - .3 DST Consulting Engineers, Summary of Findings – Asbestos and Lead Sample Results, Michipicoten Island East End Site, PSPC No. R.090052.001, February 2018.
 - .6 The Contractor is responsible for cost associated with the failure to properly select or abide by the appropriate required abatement precautions.
 - .7 Lead-based Paint Abatement procedures that require maximum precautions, including removal of lead-containing using power tools without an effective HEPA dust collection system OR abrasive blasting of lead-containing coating or material are not permitted.
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1.3 RELATED REQUIREMENTS

- .1 Section 01 11 00: Summary of Work
- .2 Section 02 81 01: Hazardous Materials Schedule A
- .3 Section 02 82 00.01.02: Exterior Asbestos Abatement – Minimum Precautions
- .4 Section 02 83 10.02: Exterior Lead-Based Paint Abatement – Minimum Precautions
- .5 Section 07 92 00: Joint Sealant
- .6 Section 07 46 23: Siding
- .7 Section 09 91 99: Painting
- .8 Section 31 00 99: Earthwork

1.4 REFERENCES

- .1 Ontario Ministry of Labour
 - .1 Occupational Health and Safety Branch, Guideline Lead On Construction Projects, September 2004,
 - .2 O.Reg. 490/09 respecting Designated Substances - Lead made under the Occupational Health and Safety Act as amended by O. Reg. 148/12 and O. Reg. 149/12.
- .2 Department of Justice Canada
 - .1 Canadian Environmental Protection Act, 1999 (CEPA).
- .3 Health Canada
 - .1 Workplace Hazardous Materials Information System (WHMIS), Material Safety Data Sheets (MSDS).
- .4 Human Resources and Social Development Canada (HRSDC)
 - .1 Canada Labour Code Part II, - SOR 86-304 - Occupational Health and Safety Regulations.
- .5 Transport Canada (TC)
 - .1 Transportation of Dangerous Goods Act, 1992 (TDGA).
- .6 U.S. Environmental Protection Agency (EPA)
 - .1 EPA 747-R-95-007-1995, Sampling House Dust for Lead.
- .7 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).

- .8 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.
- .9 Underwriters' Laboratories of Canada (ULC)
- .10 O. Reg. 247/90, Environmental Protection Act, General Waste Management.

1.5 DEFINITIONS

- .1 Authorized Visitors: Engineers, or designated representatives, and representatives of regulatory agencies.
 - .2 Competent worker person: 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 and 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.
 - .3 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with filter system capable of collecting and retaining particles greater than 0.3 microns in any dimension at 99.97% efficiency.
 - .4 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.
 - .5 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must be 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 2m apart.
 - .7 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 Reinforced 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 use of respirators, to airborne concentration of lead of 50 micrograms per cubic meter of air (50 ug/m³) 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 meter of air for removal of lead based paint by methods noted in paragraph 1.1.
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- .9 Competent person: Departmental Representative capable of identifying existing lead hazards in workplace taking corrective measures to eliminate them.
- .10 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.
- .11 Lead-based Paint: Paint and Primer containing lead that is to be disrobed or removed as outlined in the attached Drawings.

1.6 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00.
- .2 Submit Exterior Lead Based Paint Abatement Plan for Items Requiring Intermediate Precautions within 15 calendar days of Contract Award which must include but is not limited to the following:
 - .1 Method of exterior lead abatement and identification of all surfaces/locations where intermediate lead abatement methods will be applied based on Contractor's chosen precautions.
 - .2 Proof satisfactory to Departmental Representative that suitable arrangements have been made to dispose of lead containing paint waste in accordance with requirements of authority having jurisdiction.
 - .3 Proof of Contractor's General and Environmental Liability Insurance.
 - .4 All necessary permits with proof of approval for transportation and disposal of lead based paint waste and proof that lead based paint waste has been received and properly disposed.
 - .5 Proof satisfactory to Departmental Representative that all workers have had instruction on hazards of lead exposure, in personal hygiene and work practices, respirator use (including passing a fit test), dress, and all aspects of work procedures and protective measures, including use, cleaning, and disposal of respirators.
 - .6 Work Plan must indicate the qualified onsite supervisor (name), and proof of completion of required training
 - .7 Documentation including test results, fire and flammability data, and Material Safety Data Sheets (MSDS) for chemicals or materials used must be included in the Work plan

1.7 QUALITY ASSURANCE

- .1 Regulatory Requirements: comply with Federal, Provincial/Territorial and local requirements pertaining to lead, 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 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 filter cartridges with an assigned protection factor of 50, acceptable to Authority having jurisdiction. Suitable for type of lead and level of lead dust exposure. Provide sufficient amount of filters.
 - .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 Requirement 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 rooms.
 - .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 wash hands and face when leaving work area. Facilities for washing are determined by the Departmental Representative.
 - .5 Provide and post in Clean Change Room and in Equipment and Access Room the procedures described in this Section, in both official languages.
 - .6 Ensure no person required to enter Work Area has facial hair that affects seal between respirator and face.
 - .7 Visitor Protection:
 - .1 Provide protective clothing and approved respirators to Authorized Visitors to work areas.
 - .2 Instruct Authorized Visitors in proper procedures to be followed in entering into and exiting from Work Area.
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1.8 WASTE MANAGEMENT AND DISPOSAL

- .1 In accordance with Section 01 74 20 - Construction/Demolition Waste Management and Disposal:
 - .1 Separate waste materials for reuse and recycling.
 - .2 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, packaging material in appropriate on-site bins for recycling in accordance with Departmental Representative directions.
 - .3 Place materials defined as hazardous or toxic in designated containers.
 - .4 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.
 - .5 Fold up any metal bands from material packaging, flatten and place in designated area for recycling.
 - .6 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 thick (6 mil) bags or leak proof drums. Label containers with appropriate warning labels.
 - .7 Provide manifests describing and listing waste created. Transport containers by approved means to licensed landfill for burial.

1.9 EXISTING CONDITIONS

- .1 Lead-containing materials scheduled for abatement are presented in the attached Drawings. Contractor is to refer to the drawings for quantity, location, condition, and surfaces.
- .2 Select lead contain materials shall be considered hazardous for disposal, as outlined in the attached Drawings, unless leachate (TCLP) analysis confirms otherwise.
- .3 Notify Departmental Representative of all material suspected to contain lead that is discovered during Work and not apparent from drawings, specifications, or report pertaining to Work, within 24 hours of discovery. Do not disturb such material until instructed by Departmental Representative.
- .4 Materials abated and disposed from beyond limits specified will not be measured and paid unless Departmental Representative provides written authorization for additional abatement beforehand.

1.10 OWNER'S INSTRUCTIONS

- .1 Instruction and training related to respirators includes, at minimum:
 - .1 Fitting of equipment.
 - .2 Inspection and maintenance of equipment.
 - .3 Disinfecting of equipment.
 - .4 Limitations of equipment.
 - .2 Instruction and training must be provided by competent, qualified person.
 - .3 Supervisory personnel to complete required training.
-

2 PRODUCTS

2.1 MATERIALS

- .1 Polyethylene: 0.15 mm thick.
- .2 FR Polyethylene: 0.15 mm woven fibre reinforced fabric bonded both sides with polyethylene.
- .3 Tape: tape suitable for sealing polyethylene to surfaces under both dry 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 purpose of trapping residual lead-containing dust.
- .5 Lead waste containers: metal 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.

3 EXECUTION

3.1 SUPERVISION

- .1 Minimum of one Supervisor for every ten workers is required.
- .2 Qualified Supervisor must remain within Work Area during disturbance, removal, or other 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 within work area to structure interiors with polyethylene sheeting and seal with tape.
 - .4 Establish polyethylene sheets at grade to capture removed paint chips.
 - .5 Construct work area isolation enclosure FR Polyethylene, reinforcing it as required to protect it from adverse weather conditions, sufficient to prevent the spread of dust and lead-based paint chips to outside of the Lead Work Area.
 - .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 indicate front side 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 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 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 cables and equipment.
- .3 Worker Decontamination System:
 - .1 Worker Decontamination System includes Equipment and Access Area and Clean Area, as follows:
 - .1 Equipment and Access Room: create an Equipment and Access Area at entrance to Lead Work Area, Install a waste receptor and storage facilities for workers' shoes and protective clothing to be reworn in Lead Work Area. Ensure Equipment and Access Area is large enough to accommodate specified facilities, other equipment needed, and at least one worker allowing him /her sufficient space to undress comfortably.
 - .2 Clean Area: construct outside of Lead Work Area. Provide protected area to store workers' street clothes and personal belongings. Provide storage for clean protective clothing and respiratory equipment. Install a mirror to permit workers to fit respiratory equipment properly.
- .4 Maintenance of Enclosures:
 - .1 Maintain enclosures in clean conditions
 - .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.

3.3 LEAD ABATEMENT

- .1 Remove lead-containing coatings using method accepted by Departmental Representative, including all exterior building surfaces and structures and debris on bedrock, gravel, stone, on soil and Debris Piles 1 and 2.
 - .2 Remove lead-containing surface coatings 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 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 of work area. Ensure containers are removed by workers who have entered from uncontaminated areas dressed in clean coveralls.
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- .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. Consider weather forecast to ensure that slow drying sealer does not get wet during drying period. Do not disturb work area for a minimum of 8 hours or following manufacturers instruction for drying/curing period for sealant to the satisfaction of the Departmental Representative. No entry, activity, ventilation or disturbance during this period.
- .6 After enclosing lead painted surface, wet clean work area and equipment and access area. 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 additional cost.
- .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 a leakage of liquid, dust or fume from the project area and/or Lead Work Area(s) has occurred or is likely to occur the 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 accepted by Departmental Representative. Apply coat of lock-down agent, compatible to the paint that will be applied, 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 lead dust levels are less than 40 micrograms per square foot.
- .4 Results from samples collected from the Departmental Representative will be provided within 7 calendar days. Contractor is to schedule all work accordingly.
- .5 Contractor cannot charge standby time for sample analysis.

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.
- .5 Include in clean-up Work areas, Equipment and Access Room, Shower Room, and other contaminated enclosures.
- .6 Include in clean-up sealed waste containers and equipment used in Work and remove from work areas, at appropriate time in cleaning sequence.
- .7 A final check may be carried out to ensure that no lead dust or debris remains on surfaces as a 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 at no additional cost.

END OF SECTION

1 GENERAL

1.1 SUMMARY OF WORK

- .1 Work covered by this section includes the installation of new siding system to replace removed tar paper and Transite siding with lead-based paint from the living quarters building exterior. New siding system to consist of backer board, water resistive barrier wrap, and fiber cement board.

1.2 MEASUREMENT PROCEDURES

- .1 All work required to remove and dispose of the existing Transite siding with lead-based paint and associated asbestos containing tar paper from the living quarters building exterior; installation of backer board; water resistive barrier wrap and installation of fiber cement board lap siding in a style to match existing are to be paid under unit rate. This unit rate to include any repainting of these new materials as defined in the specification.
- .2 Reinstatement or replacement of eaves trough, downspout, soffit and fascia, and other exterior features are to be included as a lump sum.

1.3 REFERENCES

- .1 National Building Code of Canada (2015)
- .2 American National Standards Institute (ANSI)
 - .1 ANSI A135.6-2012, Engineered Wood Siding
- .3 ASTM International
 - .1 ASTM D5116-10, Standard Guide For Small-Scale Environmental Chamber Determinations of Organic Emissions From Indoor Materials/Products.
 - .2 ASTM C920-14a-Standard Specification for Elastomeric Joint Sealants
- .4 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-51.32-M77, Sheathing, Membrane, Breather Type.
- .5 CSA International
 - .1 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.
 - .2 CSA O121-08 (R2013), Douglas Fir Plywood.
- .6 Environmental Choice Program (ECP)
 - .1 CCD-045-95, Sealants and Caulking Compounds.
- .7 Underwriters Laboratories of Canada (ULC)
 - .1 ASTM E136-11/CAN ULC114-05
 - .2 CAN/ULC-S102-10

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00, more than 15 calendar days prior to initiating siding installation work.
 - .1 Product Data:
 - .1 Manufacturer's instructions, printed product literature and data sheets for wood siding and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Two copies of WHMIS MSDS in accordance with Section 01 35 29 Indicate VOC's for caulking materials during application.
 - .3 Shop Drawings.
 - .4 Dimensions, siding profiles, attachment methods, schedule of wall elevations, trim and closure pieces.
 - .2 Submit final as built as part of Closeout Submittals.

1.5 DESIGN CRITERIA

- .1 Fastener type and spacing to design wind loads and shear values to NBC 2015, Division B.

1.6 QUALITY ASSURANCE

- .1 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .2 Where aluminum or steel is to be used, use either aluminum or steel, not a combination of both. Complete soffit, fascia and roof drainage work shall be of the same material.

1.7 GUARANTEE

- .1 Provide a manufacturer's written material guarantee stating that the fiber cement siding and trim will remain free of manufacturing defects and deterioration for a period of fifteen years from the date of Certificate of Completion.

1.8 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 in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
-

- .2 Store and protect wood siding from nicks, scratches, and blemishes.
- .3 Replace defective or damaged materials with new.
- .4 Develop Construction Waste Management Plan related to Work of this Section.
- .5 Packaging Waste Management: remove for reuse by manufacturer of pallets, crates, padding, and packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 20.

2 PRODUCTS

2.1 MATERIALS

- .1 Fibre Cement Siding: horizontal to ASTM C1186, Grade II, Type A, and ISO standard 8336 (Category 3 Type A) non-combustible to CAN/ULC-S114, white colour, wood grain pattern. Flame spread 0 and smoke developed 0 to CAN/ULC-S102.
- .2 Accessories: casing, internal and external corners, cap strip, drip cap, undersill trim, starter strip, door and window trim of same material and finish as siding.
- .3 If required for residence, vented soffit, fascia and accessories: including casing of same material and finish as siding.
- .4 Downspout: for residence material to match existing eaves trough.
- .5 Sealant: paintable, one-part silicone to ASTM C920, primerless, Type S, Grade NS, Class 25, SWRI validated, colour to match siding, Ecologo certified.
- .6 Nails: stainless steel, spiral shank, 9 mm diameter head, to CSA B111, minimum 25 mm penetration into framing.
- .7 Staples: galvanized wire, minimum 12 mm leg.
- .8 Sheet metal: of same material and finish as siding 0.457 mm sheet steel, Z275 zinc coating designation to ASTM A653/A653M, pre-finished to CAN/CGSB-93.3, Class F1S, colour to match siding.
- .9 Air barrier: 0.152 mm thick, breather type, water resistant sheet of spunbonded olefin and 66 mm wide self-adhering pressure-sensitive polypropylene tape specially formulated for air barrier.
- .10 Use plywood or OSB sheathing 11.1 mm (7/16") thick as backer board for air barrier and lap siding.
- .11 Sheathing membrane and sheathing membrane flashing: asphalt coated kraft paper to CAN/CGSB-51.32.

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 EXAMINATION

- .1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be sided. Report to Department Representative damages, defects, unsatisfactory or unfavorable conditions before proceeding with work.

3.3 INSTALLATION

- .1 Remove and dispose of existing Transite siding and underlaying tar paper in accordance with Section 02 82 00.01.02.
- .2 Install plywood or OSB sheathing.
- .3 Conceal fasteners where possible.
- .4 Apply continuous air barrier over sheathing in accordance with manufacturer's instructions. Seal joints with pressure-sensitive tape.
- .5 Install sheet metal drip cap over horizontal surfaces projecting through or beyond siding.
- .6 Install siding and accessories in accordance with CAN/CGSB-41.33 and National Building Code of Canada , Division B, Section 9.27.
- .7 Install level, plumb and straight to a tolerance of 1:500.
- .8 Stagger adjoining laps minimum 1000 mm.
- .9 Siding minimum 500 mm long.
- .10 Apply sealant where detailed, at junction with other materials and around door and window perimeters in accordance with Section 07 92 00.
- .11 Wash down surfaces with mild detergent.
- .12 Paint siding in accordance with Section 09 91 99.

3.4 EAVESTROUGH AND DOWNSPOUT

- .1 Reinstall existing eaves trough on living quarters.
 - .2 Secure to building at 600 mm centers with eaves trough spikes through spacer sleeves.
 - .3 Install downspout, connect to trough.
 - .4 Secure downspout to wall with straps or brackets at 1800 mm centers, minimum 2 per downspout.
 - .5 Install spill outlet, direct away from wall.
 - .6 Seal joints.
 - .7 Install strainer in trough over downspout.
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3.5 CLEANING

- .1 Progress cleaning: clean in accordance with Section 01 74 11
 - .1 Leave Work area clean at end of each day.
 - .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11.
 - .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 20.

3.6 PROTECTION

- .1 Report damages to adjacent materials to Departmental Representative. Repair damages to adjacent materials caused by siding installation at no additional cost.
- .2 Protect installed products and components from damage during construction activities.

END OF SECTION

1 GENERAL

1.1 SUMMARY OF WORK

- .1 Comply with the requirements of this section when performing the following work:
 - .1 Preparation and application of caulking and sealants on applicable surfaces.

1.2 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM C 919-12, 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 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.
- .4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00, more than 15 calendar days prior to initiating joint sealant work.
 - .1 Product Data:
 - .1 Manufacturer's instructions, printed product literature and data sheets for all caulking, primers, sealants, include characteristics, performance criteria, physical size, finishes and limitations.
 - .2 Manufacturer's product to describe:
 - .1 Caulking compound

- .2 Primers
 - .3 Sealing compounds, each type, including compatibility when different sealants are in contact with each other.
 - .2 Submit two copies of WHMIS MSDS in accordance with Section 01 35 29. Indicate VOC's for caulking materials during application.
- .2 Samples:
 - .1 Submit two samples of each type of material and colour.
 - .2 Cured samples of exposed sealants for each colour are required to match adjacent material.
- .3 Sustainable Design Submittals:
 - .1 Construction Waste Management:
 - .1 Submit project Waste Management Plan highlighting recycling and salvage requirements.
 - .2 Submit listing of recycled content products used, including details of required percentages or recycled content materials and products.
- .4 Manufacturer's Instructions:
 - .1 Submit instructions to include installation instructions for each product used.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's written instruction.
- .2 Delivery and Acceptance Requirements: deliver and store materials in original factory packaging, with manufacturer's seals and labels, intact.
- .3 Storage and Handling Requirements:
 - .1 Store materials off the ground, indoors, in a dry location and in accordance with manufacturer's recommendations in a well-ventilated area. Protect from freezing, moisture and water.
 - .2 Store and protect from nicks, scratches and blemishes.
 - .3 Replaced defective or damaged materials with new.
- .4 Packaging Waste Management: remove for reuse by manufacturer of packaging materials as specified in Section 01 74 20.

1.5 SITE CONDITIONS

- .1 Ambient Conditions:
 - .1 Proceed with installation of joint sealants only when:
 - .1 Ambient and substrate temperature conditions are within limits permitted by manufacturer.
 - .2 Joint substrates are dry.

- .3 Confirm to manufacturer's recommended temperature, relative humidity, and substrate moisture content for applications and curing including special conditions governing use.
- .2 Joint Width Conditions:
 - .1 Proceed with installation only where widths are within those allowed by manufacturer for applications indicated.
- .3 Joint-Substrate Conditions:
 - .1 Proceed with installation of joint sealants only after contaminants capable of interfering with adhesion are removed from substrates.

1.6 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 Sheet (MSDS) accepted by Health Canada.

2 PRODUCTS

2.1 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 are off gas to exterior, are behind air barriers, or are applied several months before occupancy to maximize off gas time.
- .3 Where sealants are qualified with primers use only these primers.

2.2 SEALANT SELECTION

- .1 Exterior joints in horizontal wearing surfaces.
- .2 Seal interior perimeters of exterior openings.

2.3 JOINT CLEANER

- .1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.
 - .2 Primer: in accordance with sealant manufacturer's written recommendations.
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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 EXAMINATION

- .1 Verification of Condition: verify that conditions of substrate previously installed are acceptable for joint sealants installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Departmental Representative.
 - .2 Inform Departmental Representative of unfavorable conditions immediately upon discovery and prior to beginning work.
 - .3 Proceed with installation only after unacceptable conditions have been remedied and after approval to proceed from Departmental Representative.

3.3 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.

3.4 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.

3.5 BACKUP MATERIAL

- .1 Apply bond breaker tape where required to manufacturer's instructions.
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- .2 Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

3.6 MIXING

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

3.7 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.

3.8 CLEANING

- .1 Progress cleaning: clean in accordance with Section 01 74 11
 - .1 Leave Work area clean at end of each day.
 - .2 Clean adjacent surfaces immediately.
 - .3 Remove excess and droppings, using recommended cleaners as work progresses.
 - .4 Remove masking tape after initial set of sealant.
 - .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11.
 - .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 20.
-

3.9 PROTECTION

- .1 Protect installed products and components from damage during construction. Report any damages immediately to Departmental Representative.
- .2 Repair any damage to adjacent materials caused by joint sealant installation.

END OF SECTION

1 GENERAL

1.1 SUMMARY

- .1 Comply with the requirements of this section when performing the following work:
 - .1 Priming and painting the surfaces affected by the lead/asbestos work to match existing conditions.

1.2 REFERENCES

- .1 Green Seal Environmental Standards (GS)
 - .1 GS-11-11, Third Edition, Paints and Coatings.
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS)
- .3 The Master Painters Institute (MPI)
 - .1 Maintenance Repainting Manual (most current edition), Master Painters Institute (MPI), including Identifiers, Evaluation, Systems, Preparation and Approved Product List.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00.
 - .1 Product Data more than 15 calendar days prior to initiating painting work, including:
 - .1 Manufacturer's instructions, printed product literature and data sheets for paint and coating products and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Two copies of WHMIS MSDS in accordance with Section 01 35 29.
- .2 Samples more than 15 calendar days prior to initiating painting work including:
 - .1 Submit for review and acceptance of each unit.
 - .2 Samples will be returned for inclusion into work.
 - .3 Submit duplicate 200 x 300 mm sample panels of each paint and stain with specified paint or coating in colours, gloss/sheen and textures required to MPI Painting Specification Manual standards.
- .3 Certificates more than 15 days prior to initiating painting work: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.4 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 Provide and maintain dry, temperature controlled, secure storage.
 - .2 Store painting materials and supplies away from heat generating devices.
 - .3 Store materials and equipment in well ventilated area within temperature as recommended by manufacturer.
- .4 Fire Safety Requirements:
 - .1 Supply 9 kg Type B dry chemical fire extinguisher adjacent to storage area.
 - .2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
 - .3 Handle, store, use and dispose of flammable and combustible materials in accordance with National Fire Code of Canada requirements.
- .5 Develop Construction Waste Management Plan related to Work of this Section.
- .6 Packaging Waste Management: remove for reuse by manufacturer of packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 20.

1.5 SITE CONDITIONS

- .1 Temperature, Humidity and Substrate Moisture Content Levels:
 - .1 Apply paint finishes when ambient air and substrate temperatures at location of installation can be satisfactorily maintained during application and drying process, within MPI and paint manufacturer's prescribed limits.
 - .2 Test concrete, masonry and plaster surfaces for alkalinity as required.
 - .3 Apply paint to adequately prepared surfaces, when moisture content is below paint manufacturer's prescribed limits.
- .2 Additional 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 not affect quality of finished surface.

2 PRODUCTS

2.1 MATERIALS

- .1 Supply paint materials for paint systems from single manufacturer.
- .2 Conform to latest MPI requirements for painting work including preparation and priming.
- .3 Materials in accordance with MPI - Maintenance Repainting Manual "Approved Product" listing.
 - .1 Primer: VOC limit 100 g/L maximum to GS-11.
 - .2 Paint: VOC limit 100 g/L maximum to GS-11.
- .4 Colours for exterior painting:
 - .1 Submit proposed Colour Schedule to Departmental Representative for review.
 - .2 Base colour schedule to match existing walls colours as confirmed by Departmental Representative.
 - .3 Exterior Red- CGSB Red 509-211
 - .4 Exterior White - 513-201
- .5 Mixing and tinting:
 - .1 Perform colour tinting operations prior to delivery of paint to site, in accordance with manufacturer's written recommendations. Obtain written approval from Departmental Representative for tinting of painting materials.
 - .2 Use and add thinner in accordance with paint manufacturer's recommendations.
 - .1 Do not use kerosene or similar organic solvents to thin water-based paints.
 - .3 Thin paint for spraying in accordance with paint manufacturer's written recommendations.
 - .4 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.

2.2 EXTERIOR PAINTING SYSTEMS

- .1 REX 3.1 - Concrete Vertical Surfaces: (including horizontal soffits).
 - .1 REX 3.1H - Water Repellent (paintable).
 - .2 REX 3.2 - Concrete Horizontal Surfaces:
 - .1 REX 3.2G - Concrete Floor Sealer (Solvent Based).
 - .3 REX 4.1 - Clay Masonry Units: (Pressed and Extruded Brick).
 - .1 REX 4.1G - Water repellent (paintable).
 - .4 REX 4.2 - Concrete Masonry Units: (Concrete Block and Brick).
 - .1 REX 4.2J - Water Repellent (paintable).
-

- .5 REX 5.3 - Galvanized Metal: High Contact/High Traffic Areas (Doors, Frames, Railings, Pipes, and Handrail. Low Contact/Low Traffic Areas (Overhead Decking, Eavestrough (Gutters), Downpipes, and Ducts.
 - .1 REX 5.3C - 2 Component Epoxy.
- .6 REX 6.2 - Dimension Lumber: (columns, beams, exposed joists, underside of decking, siding, and fencing).
 - .1 REX 6.2H - High Performance Acrylic satin finish.
- .7 REX 6.3 - Dressed Lumber: (doors, door and window frames, casings, battens, and smooth fascia).
 - .1 REX 6.3A - High Performance Acrylic satin finish.
- .8 REX 6.4 - Wood Panelling: (plywood/presswood/wood siding, fascia, and soffits).
 - .1 REX 6.4E - Fire Retardant, Pigmented.
- .9 REX 6.6 - Wood Shingle and Shake Siding.
 - .1 REX 6.6B - Alkyd satin finish.

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 EXAMINATION

- .1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Departmental Representative damages, defects, unsatisfactory or unfavourable conditions before proceeding with work.
- .2 Conduct moisture testing of surfaces to be painted using properly calibrated electronic moisture meter, except test concrete floors for moisture using simple "cover patch test". Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.

3.3 PREPARATION

- .1 Protection of in-place conditions:
 - .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 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.
- .2 Surface Preparation:
 - .1 Remove electrical cover plates, light fixtures, surface hardware on doors, and other surface mounted equipment, fittings and fastenings prior to undertaking painting operations. Identify and store items in secure location and re-installed after painting is completed.
 - .2 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.
 - .3 Clean and prepare surfaces in accordance with MPI - Maintenance Repainting Manual specific requirements and coating manufacturer's recommendations.
 - .4 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint, or pre-treatment as soon as possible after cleaning and before deterioration occurs.
 - .5 Where possible, prime non-exposed surfaces of new wood surfaces before installation. Use same primers as specified for exposed surfaces.
 - .1 Apply vinyl sealer to MPI #36 over knots, pitch, sap and resinous areas.
 - .2 Apply wood filler to nail holes and cracks.
 - .3 Tint filler to match stains for stained woodwork.
 - .6 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.
 - .7 Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements.
 - .8 Touch up of shop primers with primer as specified.

3.4 EXISTING CONDITIONS

- .1 Prior to commencing work, examine Site conditions and existing 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 All areas where lead paint abatement was completed are to be repainted. The areas where lead paint abatement are to occur are provided in the attached Drawings.
 - .3 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.
 - .4 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.
-

- .5 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	<u>Substrate Damage (repair or replacement of surface required).</u>

3.5 APPLICATION

- .1 Paint only after prepared surfaces have been accepted by Departmental Representative.
- .2 Use method of application approved by Departmental Representative.
 - .1 Conform to manufacturer's application recommendations.
- .3 Apply coats of paint in continuous film of uniform thickness.
 - .1 Repaint thin spots or bare areas before next coat of paint is applied.
- .4 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
- .5 Sand and dust between coats to remove visible defects.
- .6 Finish surfaces both above and below sight lines as specified for surrounding surfaces

3.6 CLEANING

- .1 Proceed in accordance with Section 01 74 11.
 - .2 Remove paint where spilled, splashed, splattered or sprayed as work progresses using means and materials that are not detrimental to affected surfaces or the environment.
-

- .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 to be disposed of in manner acceptable to authorities having jurisdiction.
- .7 Recycle paint and coatings in excess of repainting requirements as specified.

END OF SECTION

1 GENERAL

1.1 SUMMARY

- .1 Comply with the requirements of this section when performing the following work:
 - .1 Debris removal and disposal from the four concentrated debris piles (Debris Pile 1, Debris Pile 2, Duplex Dwelling Foundation and Radio Beacon Building Foundation), and unconcentrated scattered debris removal.
 - .2 Debris removal and disposal from all other identified locations on Site.

1.2 MEASUREMENT PROCEDURES

- .1 Debris removal, containerization and disposal of the four concentrated debris areas will be measured and paid under unit rate upon receipt of disposal slips, ticket, and manifests.
- .2 Placement and securing of geotextile over exposed soil remaining in the debris areas following debris removal will be paid under same unit rate as 1.2.1 above.
- .3 Debris removal, containerization and disposal of the scattered debris will be paid as part of the lump sum items.

1.3 RELATED REQUIREMENTS

- .1 Section 01 74 20: Construction/Demolition Waste Management and Disposal
- .2 Section 31 11 00: Clearing and Grubbing.
- .3 Section 31 25 00: Erosion and Sediment Control
- .4 Section 31 32 19 Geotextile for Soil Stabilization
- .5 Section 31 32 20: Geomembranes
- .6 Section 02 82 00 .01.02: Exterior Asbestos Abatement – Minimum Precautions
- .7 Section 02 83 10.01.02: Exterior Lead- Based Paint Abatement – Minimum Precautions
- .8 Section 02 83 11.02.02: Exterior Lead- Based Paint Abatement – Intermediate Precautions

1.4 REFERENCES

- .1 Ontario Ministry of the Environment, 2011. Soil, Groundwater and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act.
 - .2 U.S. Environmental Protection Agency (EPA)/Office of Water .1 EPA 832/R-92-005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.
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1.5 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 within 10 calendar days of Contract Award an Earthworks Plan which will include type of equipment that will be brought to Site and used, and an outline of non-contaminating materials that will be used to secure the geotextile.

2 PRODUCTS

2.1 MATERIALS

- .1 Geotextile in accordance with Section 31 32 19

3 EXECUTION

3.1 EXAMINATION

- .1 Verification of Site conditions:
 - .1 Before commencing work verify locations of any buried services on and adjacent to the Site.
- .2 Evaluation and Assessment
 - .1 Arrange with appropriate authority for relocation of buried services that interfere with execution of work. Pay costs of relocating services.
 - .2 Before commencing work, conduct, with Departmental Representative, condition survey of existing structures, trees and plants, poles, wires, and survey bench marks which may be affected by work. Submit documentation of survey to Department Representative within 72 hours of completion. Include in final Closeout Submittals in Closeout Report.

3.2 PREPARATION

- .1 Equipment:
 - .1 Provide necessary equipment required to perform work.
 - .2 Temporary Erosion and Sedimentation Control:
 - .1 Implement the site-specific temporary Erosion and Sedimentation Control (ESC) plan in accordance with Section 31 25 00. ESC to include the installation of silt fence around areas to be cleared and grubbed in accordance with Section 31 11 00.
 - .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction.
-

- .3 Remove temporary erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
- .4 Regrade exposed areas where trees and shrubs needed to be removed in order to perform Work.
- .3 Protection of in-place conditions:
 - .1 Protect natural and man-made features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by new construction, protect existing trees from damage.
 - .2 Protect buried services that are to remain undisturbed.
- .4 Removal:
 - .1 Remove obstructions from surfaces to be excavated within limits indicated.
 - .1 Clear and grub only if absolutely required to complete Work. Preference will be given to methodologies that minimize disturbance to the environment as directed by Departmental Representative and in accordance with Section 31 11 00.
 - .2 Remove and set aside as directed by Departmental Representative, for the purposes of gaining access: trees, stumps, logs, brush, shrubs, bushes, vines, undergrowth, rotten wood, dead plant material, and exposed boulders within areas where debris removal is to occur.

3.3 EXCAVATION

- .1 The locations and material descriptions of the of the four concentrated debris piles is provided in the Drawings provided.
- .2 Do not excavate below the debris depth at each concentrated debris area as listed below:

Debris Dumpsite/Pile	Estimated Depth (m)	Estimated Area (m ²)	Approximate Volume (in-situ m ³)
Debris Pile 1*	1	50	50
Debris Pile 2*	0.5	10	5
Radio Beacon Tower Foundation	1	25	25
Duplex Dwelling Foundation	0.5	50	25
Scattered	NA	NA	NA

Notes: * The removal of lead containing debris and ACM debris is included in the estimated volumes for the applicable debris piles.

- .3 Coordinate the schedule for the removal of these concentrated debris areas with Departmental Representative one week in advance. Allow at least one day for soil inspection and potential sampling underneath these areas by Departmental Representative before placing geotextile.
-

.4 Debris Removal

- .1 Remove any debris present at each debris dumpsite and pile as listed in the table above in addition to any debris scattered throughout the Site.
- .2 Attempt to reduce the volume of removed debris quantities before containerization by using debris crushing machine or a compactor.

.5 Stockpiling:

- .1 Stockpile removed debris in area accepted by Departmental Representative. Confirm waste stockpile areas with Departmental Representative before beginning work.
- .2 Containerize debris in lined bulk bags, or other container as accepted by the Departmental Representative, to prevent impacts from weather elements while stockpiled and to facilitate movement and transport of the material.
- .3 Implement sufficient erosion and sediment control measures to prevent sediment release outside of Work areas and/or into water bodies.

.6 Characterize, handle, store, transport and dispose of all waste in accordance with Section 01 74 20.

.7 Refer to Sections 02 81 01.01 regarding the proper handling and disposal of hazardous waste.

.8 Excavate and trench as required to carry out work. Do not disturb soil or rock below bearing surfaces. Notify Departmental Representative when excavations are complete.

3.4 SITE QUALITY CONTROL

- .1 Upon completion of debris removal, areas to be inspected and approved by Departmental Representative.
- .2 Departmental Representative may collect soil samples from areas of debris removal.

3.5 GEOTEXTILE

- .1 Supply geotextile for stabilization of areas of concentrated debris piles in accordance with Section 31 32 19.

3.6 RESTORATION

- .1 Upon completion of Work, correct defects as directed by Departmental Representative.
- .2 Protect newly graded areas from erosion and maintain free of trash or debris.

3.7 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11.
-

- .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 20.

END OF SECTION

1 GENERAL

1.1 SUMMARY

- .1 Comply with the requirements of this section when performing the following work:
 - .1 When clearing, close-cut clearing, grubbing and clearing isolated trees from Work Area during debris removal activities.

1.2 MEASUREMENT PROCEDURES

- .1 Any clearing and grubbing will be included in the lump sum.

1.3 RELATED REQUIREMENTS

- .1 Section 31 00 99: Earthwork
- .2 Section 31 25 00: Erosion and Sediment Control

1.4 DEFINITIONS

- .1 Clearing consists of cutting off trees and brush vegetative growth to not more than specified height above ground and disposing of previously fallen trees, previously uprooted trees and stumps, and surface organic debris.
- .2 Clearing isolated trees consists of cutting off to not more than specified diameter or height above ground of designated trees, and disposing of felled trees and debris.
- .3 Grubbing consists of excavation and disposal of stumps and roots, boulders and rock fragments of specified size, as directed by Departmental Representative.

1.5 QUALITY ASSURANCE

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

1.6 PROTECTION

- .1 Protect trees at the Site as directed by the Departmental Representative. Any removal of trees or shrubs shall be completed in a manner consistent with the mitigation measures presented as part of the EEE checklist in the appended reference document.
 - .2 Restrict trees and shrub removal and grubbing to the immediate areas of the concentrated debris piles, only as required, and as directed by the Departmental Representative.
 - .3 Do not proceed with trees removal before coordinating with authority having jurisdiction and obtain any permit, if required, for the tree removal.
 - .1 Contractor to pay any fees associated with the permit application.
-

- .4 Where possible, limit excavation around the drip zone of trees which are not being removed.
- .5 Damage to trees designated to remain, will require replacement at the discretion of the Departmental Representative at no additional cost.

1.7 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for recycling in accordance with Section 01 74 20.
- .2 Trim limbs and tops, and saw into saleable/usable lengths (approximately 2 m) for saw logs or firewood, as directed by Departmental Representative.
 - .1 Stock on Site at designated areas as directed by Departmental Representative.

2 PRODUCTS

2.1 MATERIALS

- .1 Provide necessary materials, tools, equipment and labour required to perform work.

3 EXECUTION

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- .1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction and in accordance to Section 31 25 00.
- .2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until areas have been stabilized.

3.2 PREPARATION

- .1 Inspect the concentrated debris areas within the Site and verify with Departmental Representative, items designated to remain.
- .2 Notify Departmental Representative if any utility lines were observed within the debris areas before starting clearing.

3.3 CLEARING

- .1 Clearing includes felling, trimming, and cutting of trees into sections and satisfactory disposal of trees and other vegetation approved for removal, including previously downed timber, snags, brush, and vegetative rubbish occurring within cleared areas.
-

- .2 Clear as directed by Departmental Representative, by cutting at height of not more than 150 mm above ground.
- .3 In approved tree removal areas, cut standing trees smaller than 250 mm in trunk diameter. Only cut trees marked by Departmental Representative.
- .4 Cut off branches overhanging area cleared as directed by Departmental Representative.
- .5 Cut off unsound branches on trees designated to remain as directed by Departmental Representative.

3.4 UNDERBRUSH CLEARING

- .1 Clear underbrush from areas as indicated at ground level to within 100 mm of ground surface.

3.5 GRUBBING

- .1 Tree grubbing is permitted only at designated locations on Site as directed by the Departmental Representative.
- .2 Grub out visible rock fragments and boulders, greater than 0.3 meters in greatest dimension from the debris pile areas.

3.6 REMOVAL AND DISPOSAL

- .1 Stockpile cleared above ground vegetative material at designated locations on Site as directed by Departmental Representative.
- .2 Remove grubbed materials and stockpile at designated locations on Site as directed by Departmental Representative.
- .3 Burning of materials is not permitted.

3.7 CLEANING

- .1 Proceed in accordance with Section 01 74 11.
- .2 On completion and verification of performance of work, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

1 GENERAL

1.1 SUMMARY

- .1 Comply with the requirements of this section when performing the following work:
 - .1 Developing, implementing and monitoring Erosion and Sediment Control measures and Erosion and Sedimentation Control contingency measures associated with debris removal and abatement activities.

1.2 MEASUREMENT PROCEDURES

- .1 Erosion and Sediment Control activities will be paid as a lump sum.

1.3 RELATED REQUIREMENTS

- .1 Section 31 00 99: Earthwork
- .2 Section 31 11 00: Clearing and Grubbing
- .3 Section 31 32 19: Geotextile Soil Stabilization

1.4 REFERENCES

- .1 Ontario Provincial Standard Specification (OPSS)
 - .1 OPSS 182, (Nov. 2012), General Specification for Environmental Protection for Construction in Waterbodies and on Waterbody banks.
 - .2 OPSS 805, (Nov. 2015), Construction Specification for Temporary Erosion and Sediment Control Measures.
 - .3 OPSS 1860, (Nov. 2010), Material Specification for Geotextiles.
- .2 Ontario Provincial Standard Drawings (OPSD)
 - .1 OPSD 219.110, (Nov, 2015), Light-Duty Silt Fence Barrier
- .3 United States Environmental Protection Agency Office of Water:
 - .1 Document EPA 832/R-92-005 (September 1992) Storm water Management for Construction Activities, Chapter 3 Sediment and Erosion Control.

1.5 DEFINITIONS

- .1 **Erosion:** deterioration, displacement, or transportation of land surface by wind or water, intensified by land clearing practices related to construction activities.
 - .2 **Sediment:** particulate matter transported and deposited as a layer of solid particles within a body of water.
-

1.6 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00.
 - .1 Prepare and submit to Departmental Representative for acceptance within 15 calendar days of Contract Award, the Erosion and Sedimentation Control (ESC) Plan.
 - .1 As part of the ESC Plan, submit a Contingency Plan to include measures that will be in place to minimize the risk or consequence of failure of the erosion and sediment control works. The ESC Contingency Plan shall include, but not limited to, the following items:
 - .1 Contact list for emergency situations including discharge of sediment laden runoff to sensitive/significant areas identified above; and
 - .2 Additional erosion and sediment control materials such as: heavy duty silt fence and stakes.
 - .2 Submit Erosion and Sediment Control Inspection Log as part of Closeout Submittals as per 01 78 00.
 - .3 Contingency Plan and Erosion and Sediment Control Plan to be included as components of the larger environmental procedures as per Section 01 35 43.

1.7 EROSION AND SEDIMENTATION CONTROL PLAN

- .1 Develop and implement an Erosion and Sedimentation Control (ESC) plan specific for the Site. ESC plan must include as a minimum the installation of a silt fence around Work areas. Meet or exceed best management practices of the USEPA Document EPA-832/R92-005 for sediment and erosion control as outlined in chapter 3 of Stormwater Management for Construction Activities. ESC plan is to identify the type and location of erosion and sediment control provided, and monitoring and reporting requirement. Contractor to ensure control measures are in compliance with ESC plan.
- .2 If local standards are more stringent than those of the USEPA, these must be followed.
- .3 Designate an on-site Erosion and Sedimentation Control Coordinator responsible for implementing and maintaining the ESC plan during all phases of Work.
 - .1 ESC Coordinator will be responsible for inspecting the silt fence daily and/or after each rainfall; during periods of prolonged rainfall, check more frequently.
 - .1 Repair areas where runoff has eroded channels under or around the fence, or areas where the fence may have sagged or collapsed.
 - .2 Remove and properly dispose of sediment trapped behind the fence. Sediment removed will be stored and disposed of in accordance with Section 01 35 13.43.
 - .3 Replace areas where the fabric has been clogged with sediment and no longer allows runoff to flow through the fence.

- .4 The ESC plan shall include but not be limited to:
 - .1 Evaluation of existing conditions:
 - .1 Surface areas to be disturbed
 - .2 Services (sewer, water).
 - .3 Site slopes.
 - .4 Proximity of water bodies.
 - .5 Soil types.
 - .2 Summary of proposed completed Site, stating that no areas with potential for erosion will remain after Work completion.
 - 1. Environmental Procedures:
 - 2. Sediment control:
 - 3. Stabilization measures
- .5 Work Sequencing:
 - 1. Ensure that stockpiled materials (e.g. debris or other waste materials), which are susceptible to erosion and are stored on site, are protected from the wind and rain.
 - 2. Ensure all stockpiled materials are covered and lined to prevent erosion and release of impacted water or sediment.

2 PRODUCTS

2.1 MATERIALS

- .1 Silt Fence per OPSS 805 and OPSD 219.110. Silt fence shall be assembled, ready to install unit consisting of geotextile attached to drivable posts.
 - .2 Silt Fence Geotextile per OPSS 1860, Table 3. Geotextile shall be uniform in texture, free of holes and defects, tears or punctures that would affect its physical properties.
 - .3 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.
 - .4 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.
 - .5 Ground stabilizing geotextile: to cover areas where concentrated debris has been removed per OPSS 1860, Table 1 for Class I geotextiles. 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.
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3 EXECUTION

3.1 CONSTRUCTION

- .1 Prior to construction, provide for the installation or construction of temporary erosion and sedimentation control devices. Temporary controls must remain in place and in operation for the duration of the project. Actual alignment and/or location of various items as directed by Departmental Representative.
 - .2 Prior to or during Work, Departmental Representative may require installation or construction of improvements to prevent or correct temporary conditions on site. Improvements may include berms, sediment traps, detention and retention basins, guardrails, and other measures appropriate to specific condition. Temporary improvements must remain in place and in operation as necessary or until otherwise directed by Departmental Representative at no additional cost.
 - .3 Whenever sedimentation is caused by stripping vegetation, regrading or other development, remove it from adjoining surfaces, drainage systems and water courses and repair damage immediately at no additional cost. Report all damages to Departmental Representative.
 - .4 Shape area to permit natural drainage to the satisfaction of the Departmental Representative. Materials, once removed, become property of Contractor.
 - .5 Inspect earthwork daily to detect evidence of erosion and sedimentation; promptly apply corrective measures at no additional cost.
 - .6 Construct sediment control measures as per OPSS 805 and OPSS 182 and the Contract Documents.
 - .7 Plan and execute debris removal on Site in accordance with Section 31 00 99 and Section 31 11 00.
 - .8 Minimize amount of bare soil exposed at one time. Stabilize disturbed soils as quickly as practical. Regrade, or otherwise develop to minimize erosion whenever sedimentation is caused by stripping vegetation, regarding or other development. Remove accumulated sediment resulting from the debris removal activity from adjoining surfaces, drainage systems, and water courses, and repair damage caused by soil erosion and sedimentation at no additional cost.
 - .9 Provide and maintain temporary measures which include, but are not limited to, silt fences as required to prevent erosion and migration of silt, mud, sediment, and other debris toward Lake Superior. Make sediment control measures available during the debris removal activities.
 - .10 Remove temporary erosion and sedimentation control devices upon completion of Work. Dispose of accumulated sediments as hazardous or non-hazardous waste, as applicable, in accordance with Section 01 74 20.
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3.2 SILT FENCE

- .1 Silt fences are to be installed along the landscape contours of the top of bank to collect and/or filter sediment from sheet flow runoff and prevent contamination of sensitive areas including Lake Superior.
- .2 Anchor the bottom of the fabric in a small trench along the entire length of the barrier. The trench shall be backfilled and compacted to existing grade to hold the base of the geotextile firmly in place.
- .3 Install wood support posts on the downstream side of the fence.
- .4 The geotextile shall be attached firmly, without sagging, to the upstream side of the stakes. It shall be placed without gaps or breaks along its length. Where the geotextile is joined to provide a continuous run, the ends shall be securely fastened and overlapped a minimum of 500 mm.

3.3 MONITORING

- .1 Contractor shall ensure that erosion and sediment control measures are in effective working order, their condition shall be monitored prior to any forecast storm event and following a storm event.
 - .2 Inspect Erosion and Sedimentation Control measures daily or based on Departmental Representative requirements, to ensure that they are functioning properly and not damaged. Contractor to include erosion and sediment control measure inspections on site daily reports.
 - .1 Photograph observations during inspections.
 - .2 Record damages or deficiencies in ESC measures. In the event of damage, promptly take action to mitigate effects and restore affected area to existing condition at no additional cost.
 - .3 Record actions taken to correct damages and deficiencies in ESC measures.
 - .4 Record significant weather events: heavy rain, long continuous periods of rain, strong winds, snow, above-freezing temperatures when snow or ice is present on Site.
 - .3 Contractor shall have a spill prevention and response contingency plan and a spill kit available on Site in the event of a spill within development areas, to ensure surface water protection during the Work. The accidental release of sediment to a water body is considered a release and shall be reported and rectified immediately by Contractor at no extra costs to owner. Contractor shall assume full responsibility for regulatory compliance (i.e. Fisheries Act, Environmental Protection Act, DFO Act, etc.)
 - .4 All spills should be reported to the MOECC Spills Action Centre (1-800-268-6060) immediately, and to Departmental Representative and to Authority with Jurisdiction.
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3.4 MAINTENANCE

- .1 All measures installed under the terms and conditions of this specification section are to be maintained in an effective, functioning and stable condition.
- .2 An emergency spill response kit shall be in on Site in accordance with Section 01 35 43 – Environmental Procedures, at all times and in the event that a spill occurs, proper containment, clean up and reporting, in accordance with provincial requirements is required.
- .3 Contractor shall take all necessary precautions to prevent the accumulation of litter and construction debris within any natural areas outside of the construction grading limits.
- .4 Assess all ESC controls and practices before and after significant rainfall events.
- .5 All ESC controls to remain in place until Work has ended, the Site has been cleaned, and the exposed areas are permanently stabilized.
- .6 ESC measures, disturbed areas, material storage areas shall be inspected by Contractor initially during installation, every week during Work, and after significant rainfall events.
- .7 If Departmental Representative determines that any of the controls are either ineffective or in poor condition, Contractor shall repair or replace with a suitable alternative control at no additional cost.
- .8 Contractor shall maintain a log for all ESC measures. The log shall record dates and descriptions of work activities including installation, inspection, monitoring, maintenance, and decommissioning.
- .9 If there is any release of sediment to Lake Superior, Contractor shall immediately take steps to stop any on-going sediment transport and correct damages at no additional cost. Record the incident in the log, and notify Departmental Representative.

3.5 SEDIMENT REMOVAL

- .1 Inspect ESC measures daily to ensure that they are functioning properly and not damaged.
 - .2 Sediment that is accumulated by sediment barriers shall be removed in a manner that avoids escape to the downstream side of the control measures and avoids damage to the control measures.
 - .3 Sediment shall be removed to the level of the grade existing at the time of acceptance of the site.
 - .4 For all control measures, accumulated sediment shall be removed as necessary to perform maintenance repairs.
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- .5 Accumulated sediment shall be removed immediately prior to the removal of the control measures.

3.6 REMOVAL

- .1 Examination
 - .1 Examine stabilization of the Site and confirm with Departmental Representative prior to starting removal of temporary control measures.
- .2 Removal
 - .1 All temporary control measures shall be removed and disposed of off Site once confirmed by Departmental Representative.
 - .2 Erosion and sediment control measures shall be removed using hand-held equipment in a manner that avoids entry by other equipment.
 - .3 Erosion and sediment control measures shall be removed in such a way as to prevent release of sediment and debris downstream or to any watercourse.

END OF SECTION

1 GENERAL

1.1 SUMMARY

- .1 Comply with the requirements of this section when performing the following work:
 - .1 Placement and securement of geotextile over exposed soil remaining in the concentrated debris areas following debris removal.

1.2 RELATED REQUIREMENTS

- .1 Section 31 00 99: Earthwork
- .2 Section 31 11 00: Clearing and Grubbing
- .3 Section 31 32 20: Geomembrane

1.3 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM D4491-99 (2009), Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
 - .2 ASTM D4595-09, Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method.
 - .3 ASTM D4751-04, Standard Test Method for Determining Apparent Opening Size of a Geotextile
- .2 Ontario Provincial Standard Specification (OPSS)
 - .1 OPSS 1860- (November 2010), Material Specification for Geotextiles

1.4 ACTIONS AND INFORMATIONAL SUBMITTALS

- .1 Provide certificate from the manufacturer stating the name of the product, style, number, chemical composition and other pertinent information to the Departmental Representative for acceptance within 21 calendar days of Contract Award

2 PRODUCTS

2.1 MATERIALS

- .1 Geotextile: OPSS 1860, Table 1 for Class I geotextiles. Non-woven synthetic fibre fabric, supplied in rolls. Uniform in texture and appearance, having no defects, flaws or tears that would affect its physical properties.
 - 1. Composed of: minimum 85% by mass of polyester or polypropylene with inhibitors added to base plastic to resist deterioration by ultraviolet and heat exposure for a minimum of 2-year service life from outdoor exposure. The edge of the geotextile shall be finished to prevent the outer yarn from pulling away from the geotextile.

- .2 Securing pins and washers: to CST G40, 21, Grade 300W, hot-dipped galvanized with minimum zinc coating of 600 g/m² to ASTM A123/A123M
- .3 Factory seams: the edge of the geotextile shall be finished to prevent the outer yarn from pulling away from the geotextile and sewn in accordance with manufacturer's recommendation.

3 EXECUTION

3.1 INSTALLATION

- 1. Apply geotextile for stabilization of underlying soils in areas of concentrated debris piles following inspection and acceptance of the debris removal and sampling, as applicable, by the Departmental Representative.
- 2. Place geotextile material by unrolling onto surface in orientation and manner indicated by Departmental Presentative over area of exposed soil.
- 3. Place geotextile material smooth and free of tension stress, folds, wrinkles and creases.
- 4. Place geotextile material on sloping surfaces in one continuous length from toe of slope to upper extent of geotextile.
- 5. Overlap each successive strip of geotextile 600 mm over previously laid strip.
- 6. Join successive strips of geotextile by pinning according to manufacturers specifications.
- 7. Pin successive strips of geotextile with securing pins at mid point of lap until secure. Do not move cobble, boulders or other material elsewhere on Site to secure geotextile
- 8. Replace damaged or deteriorated geotextile to acceptance of Departmental Representative.

3.2 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11.
 - .1 Leave Work area clean at end of each day.
 - .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11.
 - .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 20.

END OF SECTION

1 GENERAL

1.1 SUMMARY

- .1 Comply with the requirements of this section when performing the following work:
 - .1 Installation of geomembranes in the staging areas, waste stockpiling areas, and equipment decontamination area.

1.2 MEASUREMENT PROCEDURES

- .1 The installation and removal of geomembranes in the staging areas, waste stockpiling areas, and equipment decontamination area will be paid as a lump sum.

1.3 RELATED REQUIREMENTS

- .1 Section 31 00 99: Earthwork
- .2 Section 31 11 00: Clearing and Grubbing

1.4 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM D792-13, Standard Test Method for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
 - .2 ASTM D1238-13, Standard Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer.
 - .3 ASTM D1593-13, Standard Specification for Non-rigid Vinyl Chloride Plastic Film and Sheeting.

2 PRODUCTS

2.1 MATERIALS

- .1 Geomembrane: extruded synthetic sheet.
 - .1 Composed of high density polyethylene resin.
 - .2 Physical properties:
 - .1 Specific gravity of resin: to ASTM D792, Method A, minimum 0.93.
 - .2 Melt index of resin: to ASTM D1238, Condition E, minimum 0.14 g/min.
 - .3 Thickness: to ASTM D1593, minimum 2 mm.
 - .4 Geomembrane: free of striations, roughness, pinholes, bubbles, blisters, undispersed raw materials and any sign of contamination by foreign matter.
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3 EXECUTION

3.1 INSTALLATION

- .1 Maintain area of installation free of water and snow accumulations.
- .2 Do not proceed with panel placement and seaming when ambient temperatures are below minus 5°C or above 40°C, during precipitation.
- .3 Place and seam panels in accordance with manufacturer's recommendations on graded surface in orientation and locations indicated. Minimize wrinkles, avoid scratches and crimps to geomembranes.
- .4 Protect installed membrane from displacement, damage or deterioration before, during and after placement of material layers.
- .5 Replace damaged, torn or permanently twisted panels to approval of Departmental Representative.
- .6 Keep field seaming to minimum. Locate field seams up and down slopes, with no horizontal field seam less than 1.5 m beyond toe of slope.
- .7 Keep seam area clean and free of moisture, dust, dirt, debris and foreign material.
- .8 Repair minor tears and pinholes by patching until non-destructive testing is successful. Patches to be round or oval in shape, made of same geomembrane material, and extend minimum of 75 mm beyond edge of defect.

3.2 CLEANING

- .1 Remove construction debris from Project site and dispose of debris in an environmentally responsible and legal manner.

3.3 PROTECTION

- .1 Do not permit vehicular traffic directly on membrane.

END OF SECTION
