1 General

1.1 SUMMARY

.1 Section includes:
  .1 Storage and management of hazardous materials on site.

.2 Work is to be performed in accordance with Section 01 35 43 – Environmental Procedures.

1.2 RELATED REQUIREMENTS

.1 Not used.

1.3 REFERENCES

.1 Definitions:
  .1 Dangerous Goods: product, substance, or organism specifically listed or meeting 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 on 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).
  .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS):
    .1 Material Safety Data Sheets (MSDS).
  .4 National Research Council Canada Institute for Research in Construction (NRC-IRC):
    .1 National Fire Code of Canada 2010.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:
  .1 Submit Hazardous Materials Management Plan to Departmental Representative that identifies hazardous materials, location, personal protective equipment requirements, and disposal arrangements.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Transport hazardous materials and wastes in accordance with Transportation of Dangerous Goods Act, Transportation of Dangerous Goods Regulations, and applicable provincial regulations.

.2 Storage and Handling Requirements:

.1 Coordinate 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 of Factory Mutual seal of approval.

.2 Storage of quantities of flammable and combustible liquids exceeding 45 litres for work purposes requires the written approval of the Departmental Representative.

.5 Transfer of flammable and combustible liquids is prohibited within buildings.

.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 flashpoint above 38°C.

.8 Store flammable and combustible waste liquids for disposal in approved containers located in safe, ventilated area. Keep quantities to minimum.

.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 not 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, quantities, and date when storage began.

.11 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 the 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 DISPOSAL

.1 Leave work area clean at the end of each day.

.2 Final Cleaning: upon completion, remove surplus materials, rubbish, tools and equipment.

.3 Dispose of hazardous waste in accordance with applicable federal and provincial acts, regulations, and guidelines.

.4 Recycle hazardous wastes for which there is an approved, cost-effective recycling process available.

.5 Send hazardous wastes to authorized hazardous waste disposal or treatment facilities.

.6 Burning, diluting, or mixing hazardous wastes for purpose of disposal is prohibited.

.7 Disposal of hazardous materials in waterways, storm or sanitary sewers, or in municipal solid waste landfills is prohibited.

.8 Dispose of hazardous wastes in timely fashion in accordance with applicable provincial regulations.

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

END OF SECTION

1 General

1.1 SUMMARY

.1 Remove and dispose of small amounts of friable asbestos containing material on existing 150 mm, 200 mm and 250 mm diameter sanitary asbestos cement (AC) pipes, located at the Potato Research Centre, 850 Lincoln Road, P.O. Box 20280, Fredericton, New Brunswick.

1.2 SECTION INCLUDES

.1 Requirements and procedures for abatement of friable asbestos containing materials (also known as Type II abatement). All products labelled on the drawings as AC Pipe are deemed asbestos-containing and are to be handled and disposed as such.

.2 The Contractor will be responsible for accurately verifying and calculating the amount of each asbestos product/material and ensuring the removal and disposal of all those identified materials or products. If there are discrepancies found, notify Departmental Representative immediately.

1.3 RELATED REQUIREMENTS

.1 Not used.

1.4 REFERENCES

.1 Canadian General Standards Board (CGSB):
- .1 CAN/CGSB-1.205-94, Sealer for Application of Asbestos Fiber Releasing Materials.

.2 New Brunswick Summary of Regulations and Guidelines for Hazardous Materials.

.3 New Brunswick Clean Environment Act.

.4 Department of Justice Canada (Jus):
- .1 Canadian Environmental Protection Act, 1999 (CEPA).

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

.6 Transport Canada (TC):
- .1 Transportation of Dangerous Goods Act, 1992 (TDGA).

.7 Underwriters' Laboratories of Canada (ULC).

.8 WorkSafe New Brunswick Regulations.

1.5 DEFINITIONS

.1 Amended Water: water with non-ionic surfactant wetting agent added to reduce water tension to allow wetting of fibers.

.2 Asbestos-Containing Materials (ACMs): materials that contain 0.5 – 0.1 provincial regulated amount percent or more asbestos by dry weight and are identified under Existing Conditions including fallen materials and settled dust.

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

.4 Authorized Visitors: Departmental Representatives, or designated representatives, and representatives of regulatory agencies.

.5 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.

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

.7 Glove Bag: prefabricated glove bag as follows:
- .1 Minimum thickness 0.25 mm (10 mil) polyvinyl-chloride bag.
- .2 Integral 0.25 mm (10 mil) thick polyvinyl-chloride gloves and elastic ports.
- .3 Equipped with reversible double pull double throw zipper on top and at approximately mid-section of the bag.
- .4 Straps for sealing ends around pipe.

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

.9 Non-Friable Material: material that when dry cannot be crumbled, pulverized or powdered by hand pressure. Asbestos cement pipe is considered non-friable material as the cement acts as a binder which holds the fibers in place.

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

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

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

.13 Type I Asbestos Work: Also known as Low Risk Work or Minimum Precautions non-friable asbestos related activities or abatements. Work conducted in the proximity to friable ACM, where that ACM is not disturbed, removal of non-friable ACM's or using hand tools equipped with a HEPA filter to affect non-friable ACM's.

.14 Type II Asbestos Work: Also known as Medium Risk Work or Moderate Precautions asbestos related activities or abatement. Work involving the handling of small amounts of friable ACM (less than 1.5 sq. m), or working in proximity of friable ACM, where a disturbance may occur.

.15 Type III Asbestos Work: Also known as High Risk Work or Maximum Precautions asbestos related or abatement projects. Work involving the handling of friable ACM or work in proximity of friable ACM, where there is a high level of control necessary to prevent exposure of excessive concentrations of airborne asbestos fibers. Also included in this are: use of hand tools not equipped with a HEPA filter to affect non-friable ACM's.

1.6 SUBMITTALS

.1 Submittals in accordance with Section 01 33 00 – Submittal Procedures.

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

.3 Submit provincial and/or local requirements for Notice of Project Form.

.4 Submit proof of Contractor's Asbestos Liability Insurance.

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

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

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

.8 Submit WorkSafe NB status and transcription of insurance.

.9 Submit documentation including test results, fire and flammability data, and Material Safety Data Sheets (MSDS) for chemicals or materials including:
- .1 Encapsulates;
- .2 Amended water; and
- .3 Slow drying sealer.

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

1.7 QUALITY ASSURANCE

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

.2 Health and Safety:
- .1 Do construction occupational health and safety in accordance with Section 01 35 28 – Health and Safety Requirements.
- .2 Safety Requirements: worker protection.
  - .1 Protective equipment and clothing to be worn by workers while in Asbestos Work Area includes:
    - .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 is 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 fibers. Protective clothing to be provided by the employer and worn by every worker who enters the work area, and the protective clothing to consist of a head covering and full body covering that fits snugly at the ankles, wrists and neck, in order to prevent asbestos fibers from reaching the garments and skin under the protective clothing. It includes suitable footwear and is to be repaired or replaced if torn.

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

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

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

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

1.8 WASTE MANAGEMENT AND DISPOSAL

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

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

.3 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, regional and municipal regulations.

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

.5 Disposal of asbestos waste generated by removal activities must comply with federal, provincial and municipal regulations. Dispose of asbestos waste in sealed double thickness 0.15 mm (6 mil) bags or leak proof drums. Label containers with appropriate warning labels.

.6 Provide manifests describing and listing waste created that was ultimately removed from site, and properly disposed. Transport containers by approved means to licensed facility for treatment.

1.9 EXISTING CONDITIONS

.1 Notify Departmental Representative of friable material discovered during work and not apparent from drawings, specifications, or report pertaining to work. Do not disturb such material until instructed by Departmental Representative.

1.10 SCHEDULING

.1 Hours of work: perform work during normal working hours.

1.11 OWNER'S INSTRUCTIONS

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

.2 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.

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

1.12 MEASUREMENT AND PAYMENT

.1 Payment shall be based on the length of asbestos cement pipe removed and disposed of in metres.

2 Products

2.1 MATERIALS

.1 Drop and Enclosure Sheets:
- .1 Polyethylene: 0.15 mm (6 mil) thick.
- .2 FR polyethylene: 0.15 mm (6 mil) thick woven fiber reinforced fabric bonded both sides with polyethylene.

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

.3 Waste Containers: contain waste in two separate containers.
- .1 Inner container: 0.15 mm (6 mil) thick sealable polyethylene bag or where glove bag method is used, glove bag itself.
- .2 Outer container: sealable metal or fiber type where there are sharp objects included in waste material; otherwise outer container may be sealable metal or fiber type or second 0.15 mm (6 mil) thick sealable polyethylene bag.
- .3 Labeling requirements: affix preprinted cautionary asbestos warning, in both official languages, that is visible when ready for removal to disposal site.

.4 Glove Bag:
- .1 Acceptable materials: Safe-T-Strip products in configuration suitable for work, or alternative material approved by addendum during tendering period in accordance with Instructions to Tenderers.
- .2 The glove bag to be equipped with:
  - .1 Sleeves and gloves that are permanently sealed to the body of the bag to allow the work to access and deal with the insulation and maintain a sealed enclosure throughout the work period.
  - .2 Valves or openings to allow insertion of a vacuum hose and the nozzle of a water sprayer while maintaining the seal to the pipe, duct or similar structure.
  - .3 A tool pouch with a drain.
  - .4 A seamless bottom and a means of sealing off the lower portion of the bag.
  - .5 A high strength double throw zipper and removable straps, if the bag is to be moved during the removal operation.

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

.6 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 fibers.

.7 Encapsulant: surface film forming type conforming to CAN/CGSB-1.205 ULC listed.

3 Execution

3.1 SUPERVISION

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

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

3.2 PROCEDURES

.1 Do construction occupational health and safety in accordance with Section 01 35 28 – Health and Safety Requirements.

.2 Before beginning work, at each access to Asbestos Work Area, install warning signs in both official languages in upper case 'Helvetica Medium' letters reading as follows, where number in parentheses indicates font size to be used: 'CAUTION ASBESTOS HAZARD AREA (25 mm) / NO UNAUTHORIZED ENTRY (19 mm) / WEAR

ASSIGNED PROTECTIVE EQUIPMENT' (19 mm) / BREATHING ASBESTOS DUST MAY CAUSE SERIOUS BODILY HARM' (7 mm)'.

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

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

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

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

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

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

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

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

.5 Pipe Removal:

.1 Do not use sanding, sawing, grinding, chipping or the use of power tools on asbestos cement pipe. Snap cutters or blade cutters are permitted.

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

.7 Cleanup:

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

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

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

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

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