

**Part 1 - General**

**1.01 Description**

- .1 This Section specifies requirements for breaking, cutting, drilling, abrading, grinding, sanding, non-friable asbestos-containing transite cement pipe, bridge infrastructure and electrical conduits and ducts using wetting techniques to control fibre release and the work is only done by means of mechanized heavy equipment or non-powered hand held tools.

**1.02 Existing Conditions**

- .1 Watermain and/or sanitary sewer pipes, bridge infrastructure and electrical conduits and ducts as specified or shown on the Contract Drawings, are presumed to be non-friable asbestos-containing materials.

**1.03 Regulations**

- .1 Occupational Health & Safety Act R.S.O. 1990 (as amended).
- .2 Ontario Ministry of Labour - O. Reg. 278/05 - Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations, under the Occupational Health & Safety Act.
- .3 Ontario Ministry of Labour - R.R.O. 1990, Reg. 837 - Designated Substances – Asbestos, as amended by O. Reg 279/05.
- .4 Ontario Ministry of The Environment, Conservation and Parks - R.R.O. 1990, Reg. 347 - General - Waste Management, under the Environmental Protection Act, as amended to O. Reg. 395/07.
- .5 Ontario Ministry of Transportation - R.R.O. 1990, Regulation 261 - General, under the Dangerous Goods Transportation Act, as amended to O.Reg. 252/02.
- .6 Ontario Regulation 406/19 made under the Environmental Protection Act – On-site and Excess Soil Management
- .7 CSA Standard Z94.4-02 (R2007): Selection, Use, and Care of Respirators.

**1.04 Definitions**

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- .1 HEPA vacuum: High Efficiency Particulate Aerosol 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 non-ionic surfactant wetting agent added to reduce water tension to allow thorough wetting of fibres.
  - .3 Asbestos-Containing Materials (ACM): material that contains 0.5% per cent or more asbestos by dry weight.
  - .4 Asbestos Work Area: area where work takes place which will, or may, disturb ACM.
  - .5 Authorized Visitors: Region of Durham, Consulting Engineer or designated representative, and representative of regulatory agencies.
  - .6 Non-Friable Material: material that cannot be crumbled, pulverized or powdered by hand pressure.
  - .7 Occupied Area: any area of the work site that is outside the Asbestos Work Area.
  - .8 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.
  - .9 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must have appropriate capacity for work.
  - .10 Worker Decontamination Area: must consist of a designated area adjacent the Asbestos Work Area suitable for changing into protective clothing and for storing contaminated protective clothing and equipment.
  - .11 Type 1: Operation whereby non-friable asbestos-containing materials are broken, cut, drilled, abraded, grinded, sanded or vibrated and the material is wetted to control the spread of dust or fibres and the work is done only by means of non-powered hand-held tools.
  - .12 Type 2: Operation whereby non-friable asbestos-containing materials are broken, cut, drilled, abraded, grinded, sanded or vibrated by means of power tools attached to HEPA filtered dust collection devices.
  - .13 Type 3: Operation whereby non-friable asbestos-containing materials are broken, cut, drilled, abraded, grinded, sanded or vibrated by means of power tools that are not attached to HEPA filtered dust collection devices.

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**1.05 Submittals**

- .1 Submit to Contract Administrator necessary permits for transportation and disposal of asbestos-containing waste and upon completion of work proof that asbestos-containing waste has been received and properly disposed. Submit proof of Contractor's Asbestos Liability Insurance.
- .2 Submit proof satisfactory to the Contract Administrator that all employees working within the Asbestos Work Area have been qualitatively fit tested with respirators fit for the work to be performed in accordance with the requirements of CSA Z94.4-02 (*R2007*) *Selection, Use, and Care of Respirators* and Table 2 of Ontario Regulation 278/05.

**1.06 Quality Assurance**

- .1 Regulatory Requirements: comply with Provincial requirements pertaining to asbestos, provided that in case of conflict with these specifications, more stringent requirement applies. Comply with regulations in effect at time Work is performed.
- .2 Health and Safety:
  - .1 Safety Requirements: Worker Protection.
    - .1 Protective equipment and clothing to be worn by workers while in Asbestos Work Area include:
      - .1 Non-powered reusable air-purifying half-mask respirator equipped with P-100 HEPA filter cartridges, personally issued to worker and marked as to efficiency and purpose, suitable for protection against asbestos and acceptable to Provincial Authority having jurisdiction.
      - .1 Workers must have respirators fit-tested qualitatively or quantitatively prior to use. Instruction must be provided on the use, care and maintenance of respirator being used.

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- .2 Written procedures regarding the selection, care and use of respirators must be established. A copy of the procedures shall be given to and reviewed with each worker who is required to wear a respirator.
  - .3 Ensure that no person required to enter an Asbestos Work Area has facial hair that affects seal between respirator and face.
  - .2 Disposable-type protective clothing that does not readily retain or permit penetration of asbestos fibres, consisting of full-body covering including head covering with snug-fitting cuffs at wrists, ankles, and neck.
  - .3 Suitable footwear that does not readily retain or permit penetration of asbestos fibres, such as high top rubbers boots or other conventional safety boots or safety shoes.
  - .2 Eating, drinking, chewing, and smoking are not permitted in Asbestos Work Area.
  - .3 Before leaving Asbestos Work Area, dispose of protective clothing as contaminated waste as specified in Part 3 – Execution.

### **1.07 Instruction and Training**

- .1 Before beginning Work, provide the Contract Administrator satisfactory proof that every worker has had instruction and training in hazards of asbestos exposure, in personal hygiene and work practices, and in use, cleaning, and disposal of respirators and protective clothing.
- .2 Instruction and training related to respirators includes, following minimum requirements:
  - .1 Fitting of equipment.
  - .2 Inspection and maintenance of equipment.
  - .3 Disinfecting of equipment.
  - .4 Limitations of equipment.

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

### **1.08 Basis of Payment**

- .1 Payment at the Contract Price for the Asbestos Abatement Training and for the Removal and Disposal of Asbestos-Cement Pipe shall be full compensation for all labour, equipment and material to do the work of this Section
- .2 Where the Contract does not contain separate items for this work, this work will be deemed to be included in the Contract Price(s) for those items for pipe removal.

## **Part 2 - Products**

### **2.01 Materials**

- .1 Drop Sheets:
  - .1 Polyethylene: 0.15 mm thick.
  - .2 Fire Rated Polyethylene: 0.15 mm thick woven fibre reinforced fabric bonded both sides with polyethylene.
- .2 Wetting Agent: 50% polyethylene ester and 50% polyethylene ether mixed with water in a concentration to provide thorough wetting of asbestos-containing material.
- .3 Asbestos waste containers: as impermeable container acceptable to disposal site and Ministry of The Environment, Conservation and Parks (MECP). New materials only. Labelled as required by the MECP.
  - .1 Debris and broken pieces should be sealed in a 0.15mm polyethylene bag, inside a second 0.15 mm polyethylene bag with appropriate warning labels.
  - .2 Large sections awaiting removal should be wrapped and sealed at both ends with 0.15mm polyethylene inside a second 0.15 mm polyethylene layer with appropriate warning labels.

## **Part 3 - Execution**

**3.01 General**

- .1 Removal of all asbestos-containing pipe (Transite) shall be conducted as a Type 1 operation as defined in O.Reg. 278/05

**3.02 Preparation**

- .1 Before beginning Work, isolate Asbestos Work Area using, minimum, pre-printed cautionary asbestos warning signs that are visible at access routes to Asbestos Work Area. Signs must clearly say access to the work area is restricted to persons wearing protective clothing and equipment.
- .2 Before beginning Work, isolate temporary Asbestos waste lay down area using 0.15 mm thick polyethylene and pre-printed cautionary asbestos warning signs.
- .3 Ensure worker decontamination area has been established adjacent to Asbestos Work Area. Facilities for washing hands and face shall be provided to workers. As a minimum, hygiene measures including soap, water, and wash cloths must be provided.
- .4 Ensure an asbestos labelled waste receptacle is available within or directly adjacent to the worker decontamination area to allow for disposal of personal protective clothing.

**3.03 Removal**

- .1 Machine excavate overburden to expose transite pipe creating a trench for the section of repair or removal.
- .2 Hand excavate areas under pipe where cuts and/or breaks are planned.
- .3 Excavation operations should be carefully executed to minimize damage to pipe prior to removal.
- .4 Prevent spread of dust from Asbestos Work Area using measures appropriate to work to be done.
- .5 Use fire rate polyethylene drop sheets in Asbestos Work Area where dust and contamination cannot otherwise be safely contained.
- .6 Use only non-powered hand tools (manual pipe cutter or equivalent tool) to cut/break pipe and drain residual liquids or to remove concrete around electrical conduits/ducts, as applicable.

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- .7 Plan pipe cuts/breaks as necessary to accommodate the size/weight of pipe being removed.
  - .8 Wet materials containing asbestos, using a garden-type, low velocity, fine mist sprayer, unless wetting creates hazard or causes damage.
  - .9 Remove pipe sections from trench using lifting straps or equivalent methods that do not damage the pipe.
  - .10 Perform work to reduce dust creation to lowest levels practicable.
  - .11 Large debris and broken pieces should be collected as asbestos-containing waste in sealed dust-tight waste bags with appropriate warning labels. Treat drop sheets and disposable protective clothing as asbestos waste; wet and fold these items to contain dust, and then place in disposable bags with appropriate warning labels.
  - .12 Perform final thorough clean-up of Work areas and adjacent areas affected by Work using HEPA vacuum.
  - .13 Contamination of surrounding areas indicated by visual inspection or air monitoring will require complete enclosure and clean-up of affected areas.

### **3.04 Waste Management and Disposal**

- .1 Handle and dispose of asbestos waste in accordance with the Occupational Health & Safety Act, the Environmental Protection Act, the Dangerous Goods Transportation Act, federal and provincial regulations and applicable Regional and Local Municipalities regulations.
- .2 Dispose of asbestos waste in two sealed, polyethylene drop sheets or two 0.15 mm thick polyethylene bags.
- .3 Provide fully enclosed and lockable shipping containers for storage and transportation of asbestos-containing waste materials.
- .4 Keep shipping containers locked at all times and labeled in accordance with applicable Acts and Regulations.
- .5 Remove properly sealed and stored asbestos-containing waste materials from site using Ministry of the Environment licensed and certified vehicles and operators
- .6 Dispose of asbestos-containing waste materials at a disposal site licensed for such disposal by the Ministry of the Environment.

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- .7 Provide Contract Administrator with copies of all receipts/disposal forms from Ministry of the Environment-licensed disposal site accepting the asbestos-containing waste materials within seven calendar days of removal from the site.
  - .8 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.

### **3.05 Clean-Up**

- .1 Frequently during Work and immediately after completion of Work, remove visibly contaminated soil around the breakage area as asbestos-containing waste.
- .2 Clean exterior of each waste-filled bag using damp cloths or HEPA vacuum and place in second clean waste bag immediately prior to removal from Asbestos Work Area.
- .3 Large sections of the pipe removed should be wrapped and both ends should be sealed with 0.15mm polyethylene inside a second 0.15 mm polyethylene layer with appropriate warning labels.

### **3.06 Worker Decontamination**

- .1 Ensure each worker washes hands and face when leaving Asbestos Work Area. Provide clean washcloth, wash basin, soap and potable water in the worker decontamination area for each individual worker.
- .2 All workers shall, before leaving the Asbestos work Area, decontaminate the protective clothing using a vacuum equipped with a HEPA filter, or by damp wiping, before removing the protective clothing. Protective clothing that will not be reused must be disposed of as asbestos waste. The strict separation of clean and contaminated clothing must be maintained.



**3.07 Inspection**

- .1 At the completion of Work and cleaning operations, Consultant may perform site inspection for final cleanliness and completion as well as to monitor contractor compliance with specification and governing authority requirements. Deviation from these requirements that have not been approved in writing by Consultant or Region of Durham may result in Work stoppage, at no cost to Owner.
- .2 Work may be subject to visual inspection and air monitoring by the Contract Administrator.

END OF SECTION