

## **PART 1 GENERAL**

### **1.1 General and Related Work**

- .1 Read this Section in conjunction with all drawings and all other Sections so as to comply with the requirements of the General Conditions of the Contract.
- .2 Related work specified elsewhere:

Division 2,	Section 02 82 16	Asbestos Abatement – Type 3
Division 2,	Section 02 82 18	Asbestos Abatement – Type 3 Outdoor
- .3 Site conditions identifies the location and asbestos content of all known asbestos-containing materials (ACM) to be disturbed by work of this Contract. The information provided is for general reference only. Contractor must confirm existing conditions onsite prior to bid close.
- .4 This Section shall govern over all work of the Contract which will, or may, disturb asbestos-containing materials or surfaces or materials which may have been or become contaminated by ACM either during or prior to work of this Contract.
- .5 It is the intention that after the Asbestos Abatement, the building is scheduled for demolition
- .6 Work is to proceed in two phases, the first being units 914-922 and the second phase being the remainder of the units.
- .7 Upon completion of Phase 1 the Contractor will demobilize and then the abated section will be demolished and removed from the Site.
- .8 Upon the completed demolition of Phase 1, the remainder of the units will be abated under Phase 2.

### **1.2 Outline of Work**

- .1 Refer to Sections 02 82 16 and 02 82 18 of the specification for a specific outline of work and specified personnel protective measures for the safe handling, removal and clean-up of asbestos specific to each phase or work area.
- .2 Isolate the Asbestos work area from adjoining occupied and non-occupied areas whether present at an interior or exterior location.
- .3 Remove and dispose of as asbestos-containing waste, building components, materials and items contaminated by asbestos that cannot be effectively cleaned.
- .4 Encapsulate remaining asbestos-containing materials at locations where removal is deemed impractical by the Contract Administrator.
- .5 Final clean work area to remove visible signs of asbestos, other debris or settled dust.
- .6 Apply lock-down agent to exposed surfaces throughout the work area, and to surfaces from which any asbestos had been removed.

- .7 Unless otherwise specified, the handling, removal, clean-up or repair of asbestos-containing materials or surfaces contaminated with asbestos is to be performed following wet removal techniques.
- .8 Co-ordinate Site inspection and air monitoring services specified herein.

### **1.3 Site Conditions**

- .1 Beige 12” x 12” vinyl floor tiles present in unit 918 in three washrooms and the sink room;
- .2 Grey vinyl sheet flooring present in unit 914 in the front desk area and washrooms;
- .3 Vermiculite present in exterior hollow core block walls in units 914 to 950;
- .4 Parging cement on pipe fittings present in the mezzanine and by the water metre in unit 914;
- .5 Parging cement on pipe fittings present above washroom and on rainwater leader in unit 922;
- .6 Parging cement on pipe fittings present in the rear area in unit 928;
- .7 Parging cement on pipe fittings on rainwater leader in unit 942;
- .8 Parging cement on pipe fittings and rainwater leader present in the rear area of unit 948B;
- .9 Parging cement on pipe fittings present in the mezzanine in unit 950;
- .10 24” x 48” acoustic lay-in ceiling tiles present in units 914 and 916;
- .11 Drywall joint compound present in units 916 and 918;
- .12 Vinyl Sheet Flooring in rear washroom of unit 928;
- .13 Grey 12” x 12” vinyl floor tiles present in rear area of unit 928;
- .14 Grey 12” x 12” vinyl floor tiles present in unit 930;
- .15 Grey 12” x 12” vinyl floor tiles present in rear area of unit 934;
- .16 Brown 9” x 9” vinyl floor tiles present in centre area of unit 934;
- .17 Brown 9” x 9” vinyl floor tiles present in centre area of unit 936;
- .18 Plaster on upper portion of wall along the east side of the building;
- .19 Transite panels on exterior soffits along the east side of the building;
- .20 All electrical and water services will not be available as they have been disconnected;
- .21 Immediately stop work in the area and notify the Contract Administrator should unexpected materials, or materials suspected of containing asbestos be encountered. Do not resume work in the area until it has been determined if the material encountered contains asbestos, and authorization to resume work is given.

## 1.4 Definitions

- .1 Airlock: Temporary chamber which permits ingress or egress from an Asbestos work area without permitting air movement through to non-contaminated areas.
- .2 Amended Water: Water with wetting agent added for the purpose of reducing surface tension to allow thorough wetting of asbestos-containing material.
- .3 Asbestos-Containing Material (ACM): Material identified under Site Conditions including any debris, overspray, fallen material and settled dust.
- .4 Asbestos work area: Area where work takes place which will, or may, disturb asbestos-containing material.
- .5 Authorized Visitors: The City, Contract Administrator, or designated representative, and persons representing regulatory agencies.
- .6 Contaminated Waste: Material identified under Site Conditions, including fallen material, settled dust, other debris and materials or equipment deemed to be contaminated by the Contract Administrator.
- .7 Curtained Doorway: Doorway consisting of two overlapping flaps of rip-proof polyethylene arranged to permit ingress and egress from one room to another while permitting minimal air movement between rooms.
- .8 DOP Test: A testing method used to determine the integrity of the Negative Pressure unit or vacuum using a Dispersed Oil Particulate (DOP) or Poly Alpha Olefin (PAO) HEPA filter leak test. This test is to be conducted onsite where units are to be installed.
- .9 Friable Material: Material that when dry can be crumbled, pulverized or powdered by hand pressure and includes such material that is crumbled, pulverized or powdered.
- .10 HEPA Filter: High Efficiency Particulate Aerosol filter that is at least 99.97 percent efficient in collecting a 0.3 micrometre aerosol.
- .11 Milestone Inspection: Inspection of the Asbestos work area at a defined point in the abatement operation.
- .12 Negative Pressure: A reduced pressure within the Asbestos work area (>0.04 in.) established by extracting air directly from Asbestos work area and discharging it to exterior of building. Volume of air extracted must be sufficient to provide one air change every 20 minutes during wet removal and once every 15 minutes during dry removal while ensuring that at all times, air movement flows into the Asbestos work area as determined by visual or smoke testing to the satisfaction of the Contract Administrator.

- .13 **Non-Friable Material:** Material that when dry cannot be crumbled, pulverized or powdered by hand pressure. Including but not limited to the following ACM: vinyl tiles; asbestos cement tiles; gaskets; seals; select packings; friction products; drywall joint compound; and asbestos cement products. Exclude from the above categorization any material that is or may become crumbled, pulverized or powdered by handling as described herein.
- .14 **Occupied Area:** Any area of the building or adjoining space outside the Asbestos work area.
- .15 **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 to underlying surfaces and to prevent the escape of airborne fibres.

## **1.5 Regulations**

- .1 Comply with Federal, Provincial, and local requirements, provided that in any case of conflict among those requirements or with these specifications, the more stringent requirements shall apply. Work shall be performed under regulations in effect at the time work is performed.

## **1.6 Quality Assurance**

- .1 Removal and handling of asbestos-containing or asbestos-contaminated materials is to be performed by persons trained in the methods, procedures and industry practices for Asbestos Abatement.
- .2 Ensure work proceeds to schedule, meeting all requirements of this specification.
- .3 Complete work so that at no time airborne dust, visible debris, or water runoff contaminate areas outside the Asbestos work area.
- .4 Any contamination of surrounding area (indicated by visual inspection or air monitoring) shall necessitate the clean-up of affected area, and in the same manner applicable to an Asbestos work area at no cost to the City.

## **1.7 Inspection**

- .1 Co-ordinate Site inspection services as specified herein.
- .2 The Contract Administrator shall perform at minimum:
  - .1 One (1) scheduled Site inspection prior to work being performed in accordance with Section 02 82 16 and 02 82 18.
  - .2 One (1) scheduled Site inspection upon completion of all work performed in accordance with Section 02 82 16 and 02 82 18.

- .3 From commencement of work until completion of clean-up operations, the Contract Administrator will be empowered by the City to inspect for compliance with the requirements of governing authorities, adherence to specified procedures and materials, and to inspect for final cleanliness and completion.
- .3 The Contract Administrator is empowered by the City to order a shutdown of work when leakage of asbestos from the controlled work area has occurred, or is likely to occur.
- .4 Any deviation from the requirements of the specifications or governing authorities that is not approved in writing may result in a stoppage of work, at no cost to the City.
- .5 Additional labour or materials expended by the Contractor to rectify unsatisfactory conditions, and to provide performance to the level specified, shall be at no additional cost to the City.
- .6 Any inspections performed as a result of Contractor's failure to perform satisfactorily regarding quality, safety, or schedule, shall be back-charged to the Contractor.
- .7 Facilitate inspection and provide access as necessary. Make good work disturbed by inspection and testing at no cost to the City.
- .8 Refer to Sections 02 82 16 and 02 82 18 of the specification for specified milestone inspections which are to take place in addition to the above noted inspections and at defined points throughout the abatement operation specific to each phase or work area.
- .9 Provide 24 hour written notice to the Contract Administrator of any request for scheduling of milestone inspections or transportation of waste through Occupied areas.
- .10 Do not proceed with next phase of work until written approval of each milestone is received from the Contract Administrator.

## **1.8 Air Monitoring**

- .1 Co-ordinate air monitoring services as specified herein.
- .2 The Contract Administrator shall complete the following level of air monitoring:
  - .1 Collection and analysis of one (1) PCM air sample, to be collected within each separate Asbestos work area for work performed in accordance with Section 02 82 16.
- .3 Air monitoring will be performed using Phase Contrast Microscopy (PCM) following the National Institute for Occupational Safety and Health Method 7400.

- .4 Results of PCM samples in excess of 0.01 f/mL within a Type 3 enclosure after the Site has passed a visual inspection, and an acceptable coat of lock-down agent has been applied, will indicate asbestos contamination of these areas. Respond as follows:
  - .1 Re-clean entire work area.
  - .2 Repeat above measures until visual inspection and air monitoring results are at a level equal to that specified.
- .5 Additional labour or materials expended by the Contractor to rectify unsatisfactory conditions and to provide performance to the level specified shall be at no additional cost to the City.
- .6 Cost of additional inspection and sampling performed as a result of elevated fibre levels in areas outside the Asbestos work area or from within the work area following completion of work, will be back-charged to the Contractor.

### **1.9 Supervision**

- .1 Provide onsite for each work shift, a shift superintendent, who has authority regarding all aspects related to manpower, equipment and production.
- .2 Supervisory personnel must hold a recognized certificate proving attendance at an asbestos removal training course (2 day minimum duration) and have performed supervisory functions on at least five (5) other asbestos abatement projects of similar size and complexity.
- .3 At all times during work at risk of disturbing asbestos, the shift superintendent must be onsite. Failure to comply with this requirement will result in a stoppage of all work, at no cost to the City.
- .4 Replace supervisory personnel, with approved replacements, within three (3) working days of a written request from the City. The City reserves the right to request replacement of supervisory personnel without explanation.
- .5 Do not replace supervisory personnel without written approval from the City.

### **1.10 Notification**

- .1 Not later than five (5) days before commencing work on this project, notify in writing the local office of the Manitoba Labour and Immigration, Workplace Safety and Health Division. Provide telephone notification again immediately prior to start of work.
- .2 Notify sanitary landfill Site as per local requirements.
- .3 Inform all trades onsite of the presence and location of asbestos-containing materials identified in the contract documents.

## **1.11 Submittals**

- .1 Submit prior to starting work:
  - .1 Proof of required licensing for transportation of asbestos waste.
  - .2 Names and credentials for each shift superintendent.
  - .3 Proof in the form of a certificate that supervisory personnel have attended training courses on asbestos removal (2 day minimum duration) and have performed supervisory function on at least five (5) other asbestos projects of similar size and complexity.
  - .4 Proposed schedule (prepared in chart format) detailing the duration of Site preparation, contaminated preparation, removal, clean-up and Site dismantlement for each phase area.
  - .5 Documentation including test results, fire and flammability data, samples, and Material Safety Data Sheets for chemicals or material used in the course of the Asbestos Abatement project including or not limited to:
    - .1 Encapsulants.
    - .2 Wetting agents.
    - .3 Lock-down agent.
    - .4 Rip-proof polyethylene.
    - .5 Polyurethane foam.
    - .6 Chemicals or materials used in the course of asbestos abatement.
  - .6 Negative air unit performance data and results of D.O.P. tests as required.
  - .7 Proof that all employees have been fit-tested for the respirator appropriate for the work being performed.
  - .8 Proof that all employees have had instruction on hazards of asbestos exposure, use of respirator and all aspects of work procedures and protective measures.
  - .9 Proof that all employees are listed on an asbestos work report and have been given required medical examinations.
  - .10 Pre-removal survey of damage in all areas where asbestos abatement work will take place or waste will be transported.
  - .11 Copy of notification to governing authorities of commencement of work.

## **1.12 Worker Protection**

- .1 General
  - .1 Instruct workers before allowing entry to the Asbestos work area. Instruction shall include training in use of respirators, dress, showering, entry and exiting from an Asbestos work area, and all other aspects of work procedures and protective measures.

- .2 Workers shall not eat, drink, smoke or chew gum or tobacco except in established locations outside the Asbestos work area.
  - .3 Workers shall be fully protected at all times when possibility of disturbance of asbestos exists.
  - .4 Provide and post at access points to the Asbestos work area, the procedures described under Worker Protection.
- .2 Respiratory Protection
- .1 Refer to Sections 02 82 16 and 02 82 18 of the specification for specified type of respiratory equipment specific to each phase or work area.
  - .2 Provide and ensure the use of respiratory equipment appropriate for the work being performed for persons who are required to enter the Asbestos work area.
  - .3 Respiratory protective devices shall be certified by the National Institute of Occupational Safety and Health (NIOSH) or other testing agency acceptable to governing authorities.
  - .4 Maintain respiratory equipment in proper functioning and clean condition or remove from Site.
  - .5 Respiratory equipment shall be identified with permanent markings with current list of persons utilizing such equipment displayed in a clean area onsite.
  - .6 Filters used shall be tested following each use in accordance with manufacturer's specifications or replaced at the following minimum frequency:
    - .1 Replace cartridge filters for negative pressure respirator every 16 hours of wear unless tested onsite.
    - .2 Replace PAPR cartridge filters every 8 hours of wear unless tested onsite.
    - .3 Mark filters for rotation and regular replacement. Once worn in an Asbestos work area filters may not be removed from the project Site except for disposal.
  - .7 Ensure that no person required to enter an Asbestos work area has facial hair which affects the seal between respirator and face.
  - .8 Store respirators, and tested filters that will be reused, in an established clean area onsite. Charge batteries in this area.
- .3 Protective Clothing and Equipment
- .1 All personnel required to enter the Asbestos work area must use disposable full body coveralls with attached head covering. Once coveralls are worn, treat and dispose of as asbestos-contaminated waste.



- .2 Use hard hats, safety shoes and other protective apparel required by applicable construction safety regulations.
- .4 Asbestos Abatement Work Area Entry & Exit Procedures
  - .1 Refer to Sections 02 82 16 and 02 82 18 of the specification for specified work area entry & exit procedures specific to each phase or work area.

### **1.13 Signage/Labeling**

- .1 Work Area Signs: Post signs in both official languages at access points to the Asbestos work area. Where possible, provide signage immediately prior to entering Asbestos work area but out of public view. Letters on signs shall be in upper case "HELVETICA MEDIUM" and read as follows:
  - .1 CAUTION (25 mm high).
  - .2 Asbestos Hazard Area (19 mm high).
  - .3 Unauthorized Entry Prohibited (19 mm high).
  - .4 Wear Assigned Protective Equipment (19 mm high).
  - .5 Breathing Asbestos Dust May Cause Serious Bodily Harm (19 mm high).
- .2 Container Signs: Label containers for the disposal of asbestos as follows:
  - .1 CAUTION CONTAINS ASBESTOS FIBRES (25 mm).
  - .2 Do Not Mishandle (19 mm high).

### **1.14 Waste and Material Handling**

- .1 Refer to Sections 02 82 16 and 02 82 18 of the specification for specified waste and material handling procedures specific to each phase or work area.
- .2 Asbestos-containing or asbestos-contaminated materials removed during the work shall be treated, packaged, transported and disposed of as asbestos-contaminated waste.
- .3 Materials that could tear or puncture a 6 mil (0.15mm) polyethylene bag shall be packaged and disposed of in sealed rigid waste container specified.
- .4 Redundant non asbestos-containing materials, rubble and debris removed during contaminated work shall be treated, packaged, and disposed of as asbestos-contaminated waste. With written approval of the Contract Administrator, non-porous materials may be cleaned, sprayed with a sealer and disposed of as clean waste.
- .5 Clean-up waste routes and loading area after each load. Use asbestos abatement precautions if appropriate or requested by the Contract Administrator.

### **1.15 Dump Monitoring**

- .1 Co-operate with Manitoba Conservation inspectors and immediately carry out instructions for remedial work at dump, at no additional cost to the City.

- .2 Ensure each shipment of containers is accompanied by a representative who will supervise dumping of containers and ensure all guidelines and regulations are followed.
- .3 Equip each shipment of containers with full personal protective equipment and tools required to properly clean-up spilled asbestos in the case of a failure in an Asbestos Waste Container.

## **PART 2 PRODUCTS AND FACILITIES**

### **2.1 Materials and Equipment**

- .1 Refer to Sections 02 82 16 and 02 82 18 of the specification for specified materials, equipment or facilities specific to each phase or work area.
- .2 Materials and equipment must be in good condition and free of asbestos, asbestos debris, and fibrous materials. Disposable items must be of new materials only.
- .3 Asbestos Waste Container: Impermeable container acceptable to Manitoba Conservation and disposal site. Labelled as required, comprised of the following:
  - .1 A sealed 6 mil (0.15 mm) polyethylene bag, inside a second 6 mil (0.15 mm) sealed polyethylene bag.
  - .2 A sealed 6 mil (0.15 mm) polyethylene bag, positioned inside or outside a rigid sealed container of sufficient strength to prevent perforation of the container during filling, transportation and disposal.
- .4 Bridging Encapsulant: Bridging encapsulant for purpose of encapsulating remaining asbestos-containing material at locations deemed to be inaccessible by the Contract Administrator. Product shall be colour coded bright red and be capable of withstanding surface temperature of substrate. Product must have flame spread and smoke development ratings both less than 50. Apply product uniformly to minimum thickness of 10 mil. Acceptable product: Serpiflex Shield.
- .5 HEPA Vacuum: Vacuum with necessary fittings, tools and attachments. Discharged air must pass through a HEPA filter.
- .6 Lock-down Agent: Sealant for purpose of trapping residual dust and shall be capable of withstanding surface temperature of substrate. Product must be compatible with replacement materials and must have flame spread & smoke development ratings of less than 50 and shall leave no stain when dry. Acceptable product: Serpiflex Shield.
- .7 Negative Air Exhaust Ducting (Flexible): Air tight tubing with metal reinforcement. Mechanically affix each exhaust duct to the unit's exhaust with metal hose clamp. Diameter of duct to equal negative air discharge. Acceptable product: Thermalflex S-LP 10 flexible ducting as manufactured by Flexible Technologies.

- .8 Negative Air Unit: Portable air handling system which extracts air directly from the Asbestos work area and discharges air to exterior of building. Equipped as follows:
  - .1 Pre-filter and HEPA filter. Air must pass HEPA filter before discharge.
  - .2 Pressure differential gauge to monitor filter loading.
  - .3 Auto shut off and warning system for HEPA filter failure.
  - .4 Separate hold down clamps to retain HEPA filter in place during change of pre-filter.
- .9 Polyethylene Sheeting: 6 mil (0.15 mm) minimum thickness unless otherwise specified, in sheet size to minimize joints.
- .10 Protective Coveralls: Disposable full body coveralls complete with hoods. Acceptable material: Tyvek coveralls.
- .11 Rip-Proof Polyethylene Sheeting: 8 mil (0.20 mm) fabric made up from 5 mil (0.13 mm) weave and 2 layers of 1.5 mil (0.05 mm) poly laminate. In sheet size to minimize seams and overlaps.
- .12 Wetting Agent: Non-sudzing surface active agent. Acceptable product: Aqua-Gro.

### **PART 3 EXECUTION**

- .1 Refer to Sections 02 82 16 and 02 82 18 of the specification for specified procedures for work area preparation, maintenance, Site dismantlement, waste handling, application of lock-down agent and all other procedures for the safe handling, removal and clean-up of asbestos specific to each phase or work area.

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END OF SECTION

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