

1.0 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 Division 1 and the General Conditions of the Contract.
- .2 Related work specified elsewhere:

Division 13, Section 13081 Asbestos Abatement – Type 1
Division 13, Section 13082 Asbestos Abatement – Type 2
- .3 Site Conditions identifies the location and asbestos content of all known asbestos-containing materials (ACMs) to be disturbed by work of this Contract. The information provided is for general reference only. Contractor must confirm existing conditions on site prior to Bid Opportunity close.
- .4 This Section shall govern over all work of the Contract which will, or may, disturb ACMs 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 intent that work performed as per this Section will result in the removal of all ACM and the decontamination of all surfaces or materials which may have been or become contaminated by ACM either during or prior to work of this Contract.

1.2 Outline of Work

- .1 Refer to Sections 13081 and 13082 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 Protect surfaces, building fabrics and items remaining within the Asbestos Work Area.
- .3 Isolate the Asbestos Work Area from adjoining Occupied and Non-Occupied Areas whether present at an interior or exterior location.
- .4 Encapsulate edges of remaining ACMs at locations where removal was conducted.
- .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 ACMs or surfaces contaminated with asbestos is to be performed following wet removal techniques.

1.3 Site Conditions

- .1 Trowel applied plaster present on walls is known to contain Chrysotile asbestos.
- .2 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 **Schedule**

- .1 Work Hours:
 - .1 **Normal Work Hours**: 08:00 through 17:00 (Mon. - Fri.).
 - .2 **Quiet Hours**: As directed by Contract Administrator.
 - .3 **NOTE**: Duration for which HVAC systems may remain shutdown to accommodate quiet hours work will vary in accordance with outside weather conditions and internal demand. Duration of quiet hours work will have to be scheduled accordingly and in consultation with the Contract Administrator.
- .2 Provide necessary manpower, supervision, equipment and materials to maintain and complete the project on schedule.
- .3 Provide 48 hours written notice to the Contract Administrator of any request to work outside normal working hours. Obtain written approval before proceeding.

1.5 **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 ACM.
- .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 ACM.
- .5 **Authorized Visitors**: 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 (2) 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 **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.
- .9 **HEPA Filter**: High Efficiency Particulate Aerosol filter that is at least 99.97 percent efficient in collecting a 0.3 micrometre aerosol.
- .10 **Milestone Inspection**: Inspection of the Asbestos Work Area at a defined point in the abatement operation.
- .11 **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 (1) 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.

- .12 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.
- .13 Occupied Area: Any area of the building or adjoining space outside the Asbestos Work Area.
- .14 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.

1.6 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.

1.7 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.
- .5 All work of this Section involving electrical, mechanical, carpentry, glazing, etc., shall be performed by licensed persons experienced and qualified for the work required.

1.8 Inspection

- .1 Provide and pay for site inspection services as specified herein from the established cash allowance.
- .2 Retain the services of the Contract Administrator to perform at a minimum, one (1) randomly scheduled site inspection per 8 hour work shift during all active removal, repair or clean-up of asbestos-containing or asbestos-contaminated materials.
- .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.
- .4 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.

- .5 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.
- .6 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.
- .7 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.
- .8 Facilitate inspection and provide access as necessary. Make good work disturbed by inspection and testing at no cost to the City.
- .9 Refer to Sections 13081 and 13082 of the Specification for specified milestone inspections which are to take place in addition to the above noted random inspections, and at defined points throughout the abatement operation specific to each phase or work area.
- .10 Provide 24 hours written notice to the Contract Administrator of any request for scheduling of milestone inspections or transportation of waste through Occupied Areas.
- .11 Do not proceed with next phase of work until written approval of each milestone is received from the Contract Administrator.

1.9 Air Monitoring

- .1 Provide and pay for air monitoring services as specified herein from the established cash allowance.
- .2 Retain the services of the Contract Administrator to complete at a minimum, the following level of air monitoring:
 - .1 Collection and analysis of one (1) PCM air sample within each Asbestos Work Area following the completion of all asbestos removal, repairs or clean-up, but prior to re-occupancy of the area by non-protected personnel.
- .3 Air monitoring will be performed using Phase Contrast Microscopy (PCM) following the National Institute for Occupational Safety and Health Method 7400.
- .4 Co-operate in the collection of air samples, including providing workers to wear sample pumps for up to full-shift periods. Contractor will be responsible for the cost of testing equipment repairs or resampling resulting from the actions of the Contractor's forces.
- .5 Results of PCM samples in excess of 0.05 fibres per millilitre of air (fibre/mL), collected within a Type 2 Asbestos Work Area 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 Maintain work area isolation and re-clean entire work area. Then apply another acceptable coat of lock-down agent to exposed surfaces throughout the work area.
 - .2 Repeat above measures until visually inspected and air monitoring results are at a level equal to that specified.
- .6 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.

- .7 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.

1.10 Supervision

- .1 Provide on site 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 on site. 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.

1.11 Notification

- .1 Not later than ten (10) days before commencing work on this project, notify in writing the local office of 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 on site of the presence and location of ACMs identified in the Contract documents.

1.12 Submittals

- .1 Submit prior to starting work:
 - .1 Proof of required licensing for transportation of asbestos waste.
 - .2 Names and credentials of the 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 following:
 - .1 Duration of site preparation, contaminated preparation, removal, clean-up and site dismantlement for each phase area.
 - .2 Proposed average daily work force and shifting.
 - .5 Shop drawings for each Asbestos Work Area detailing the following:
 - .1 Location of Waste and Worker Decontamination Facilities.
 - .2 Any proposed deviation from specifications, procedures, or drawings.

- .3 Platform layout, hoarding and details to be submitted to Contract Administrator for review prior to commencing work.
- .4 Installation of negative air discharge panels.
- .6 Documentation including test results, fire and flammability data, samples, and Material Safety Data Sheets for chemicals or materials 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
- .7 Negative air unit performance data and results of DOP tests as required.
- .8 Proof that all employees have been fit-tested for the respirator appropriate for the work being performed.
- .9 Proof that all employees have had instruction on hazards of asbestos exposure, use of respirator and all aspects of work procedures and protective measures.
- .10 Proof that all employees are listed on an asbestos work report and have been given required medical examinations.
- .11 Pre-removal survey of damage in all areas where asbestos abatement work will take place or waste will be transported.
- .12 Copy of notification to governing authorities of commencement of work.
- .2 Submit on a weekly basis, and at completion of work:
 - .1 Completed Waste Manifest forms.

1.13 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 13081 and 13082 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 on site.
- .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 on site.
 - .2 Replace PAPR cartridge filters every 8 hours of wear unless tested on site.
 - .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 on site. 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 and Exit Procedures

- .1 Refer to Sections 13081 and 13082 of the Specification for specified work area entry and exit procedures specific to each phase or work area.

1.14 Visitor Protection

- .1 Provide clean protective clothing, equipment and approved respirators to Authorized Visitors.
- .2 Instruct Authorized Visitors in the use of protective clothing, respirators, and Asbestos Work Area entry and exit procedures.

1.15 Signage

- .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 high)
- .2 Do Not Mishandle (19 mm high)

1.16 Waste and Material Handling

- .1 Provide the City with a copy of each completed waste transportation manifest verifying the safe transportation of waste to an authorized disposal site.
- .2 Refer to Sections 13081 and 13082 of the Specification for specified waste and material handling procedures specific to each phase or work area.
- .3 Asbestos-containing or asbestos-contaminated materials removed during the work shall be treated, packaged, transported and disposed of as asbestos-contaminated waste.
- .4 Materials that could tear or puncture a 6 mil (0.15mm) polyethylene bag shall be packaged and disposed of in sealed rigid waste containers specified.
- .5 Redundant non-ACMs, 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.
- .6 Waste must be transported by a hauler licensed for the transportation of waste containing asbestos by Manitoba Conservation.
- .7 Transportation of all waste and materials through Occupied Areas of the building is limited to quiet hours along predetermined routes and must be covered or placed within unmarked carts. Clean-up waste routes and loading area after each load. Use asbestos abatement precautions if appropriate or requested by the Contract Administrator.
- .8 Garbage bins shall be dropped at designated locations and shall remain covered and enclosed (locked) while at the building site.
- .9 Pick-up and drop off of garbage bin(s) shall be at pre-approved times, and must not interfere with building operations.

1.17 Re-establishment of Objects and Systems

- .1 Re-establish objects and items relocated by the Contractor's workforce to facilitate work.
- .2 Re-establish electrical, communication, HVAC and other services previously disconnected or otherwise isolated to accommodate work by this Section.
- .3 Make good at completion of work, all damage not identified in pre-removal survey.

1.18 Dump Monitoring

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

2.0 PRODUCTS AND FACILITIES

2.1 Materials and Equipment

- .1 Refer to Sections 13081 and 13082 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 ACM 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 or approved equal.
- .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 and smoke development ratings of less than 50 and shall leave no stain when dry. Acceptable product: Serpiflex Shield or approved equal.
- .7 Polyethylene Sheeting: 6 mil (0.15 mm) minimum thickness unless otherwise specified, in sheet size to minimize joints.
- .8 Protective Coveralls: Disposable full body coveralls complete with hoods. Acceptable material: Tyvek coveralls or approved equal.
- .9 Rip-Proof Polyethylene Sheeting: 8 mil (0.20 mm) fabric made up from 5 mil (0.13 mm) weave and two (2) layers of 1.5 mil (0.05 mm) poly laminate or approved equal. In sheet size to minimize on-site seams and overlaps.
- .10 Wetting Agent: Non-sudzing surface active agent. Acceptable product: Aqua-Gro or approved equal.

3.0 EXECUTION

- .1 Refer to Sections 13081 and 13082 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.

End of Section

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1.0 GENERAL

1.1 General & Related Work

- .1 Read this Section in conjunction with all drawings and all other sections so as to comply with the requirements of Division 1 and the General Conditions of the Contract.
- .2 Related work specified elsewhere:
Division 13, Section 13080 Asbestos Abatement – General Provisions
- .3 The intent of this Section is to provide safe work practices and procedures to govern the handling, removal and disposal of asbestos-containing plaster to be disturbed by work of this Contract.

1.2 Outline of Work

- .1 Supply all labour, material, plant and equipment necessary to safely execute and complete all work of this Section while in conjunction with work specified, required or implied under Section 13080, Asbestos Abatement - General Provisions.
- .2 Isolate the Asbestos Work Area from adjoining spaces through the placement of specified barriers and partitions at the perimeter of each phase or work area.
- .3 Perform all removal of approximately five (5) signs and approximately four (4) locations of conduit fasteners from asbestos-containing plaster required to complete work of this Contract.
- .4 Protect surfaces throughout the work area and prevent the spread of dust, by use of polyethylene drop sheets or other suitable materials.

1.3 Inspection

- .1 The following Milestone Inspection is to take place during work of this Section:
 - .1 Milestone Inspection A - Site Dismantlement
Visual Inspection within the Asbestos Work Area following completion of work but prior to site dismantlement.

1.4 Worker Protection

- .1 Provide, if requested by worker(s), protective coveralls and non-powered half-face respirators with high efficiency (HEPA) cartridge filters. Respirators and protective coveralls are not mandatory for work with non-friable asbestos-containing materials (ACMs).
- .2 Provide facilities for washing of hands and face to the worker(s) which shall be used by every worker when leaving the asbestos work area.

2.0 PRODUCTS AND FACILITIES

2.1 Materials and Equipment

- .1 Sprayer: Garden-type portable manual sprayer or water hose with spray attachment.
- .2 Prohibit the use of power tools that are not equipped with HEPA filtered dust collection device. Immediately cease the use of such power tools if any visible dust escapes from HEPA filtered dust collection device.

3.0 EXECUTION

3.1 Site Preparation

- .1 Moving of equipment, tools, supplies, and stored materials which can be performed without disturbing asbestos will be performed by others.
- .2 Segregate Asbestos Work Area and parts of building required to remain in use by closing doors, placing of barricades or tape barrier, etc.
- .3 Provide tools, equipment, vacuum, materials and waste receptors within the Asbestos Work Area.
- .4 Post signs in all areas where access to the Asbestos Work Area is possible.
- .5 HEPA vacuum or wet wipe dust from surfaces within the Asbestos Work Area.
- .6 Cover floor and furnishings in the vicinity of the work with polyethylene before disturbing asbestos-containing plaster.
- .7 Do not commence contaminated work until authorized by the Contract Administrator.

3.2 Removal of Signs and Conduit from Non-Friable Asbestos Materials

- .1 Wet, where possible, all material to be disturbed.
- .2 Undo fasteners, if necessary, to remove material. Break material only if unavoidable.
- .3 Wet freshly exposed edges of broken materials.
- .4 Wet material and use hand scraping to remove adhering material where sections are adhered to substrate.
- .5 Place removed material into asbestos waste container.
- .6 Clean Asbestos Work Area frequently and again at completion of work with HEPA vacuum or with wet methods.
- .7 Apply a heavy coat of encapsulant to all exposed edges from which ACM has been disturbed.
- .8 At completion of work, clean drop sheets to be reused with HEPA vacuum or wet methods.
- .9 Dispose of, as asbestos waste, drop sheets not cleaned.
- .10 Schedule and obtain written approval of Milestone Inspection A (Site Dismantlement) before proceeding with the removal of perimeter barricades, etc.

End of Section

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1.0 GENERAL

1.1 General & Related Work

- .1 Read this Section in conjunction with all drawings and all other sections so as to comply with the requirements of Division 1 and the General Conditions of the Contract.
- .2 Requirements specified elsewhere:
Division 13, Section 13080 Asbestos Abatement – General Provisions
- .3 The intent of this Section is to provide safe work practices and procedures to govern the handling of **minor** amounts of asbestos-containing material (ACM) or surfaces which may have been or become contaminated by asbestos either during or prior to work by this Contract.

1.2 Outline of Work

- .1 Supply all labour, material, plant and equipment necessary to safely execute and complete all work of this Section while in conjunction with work specified, required or implied under Section 13080, Asbestos Abatement - General Provisions.
- .2 Isolate the Asbestos Work Area from adjoining spaces through the installation of specified hoardings, seals and enclosures at the perimeter of each phase or work area.
- .3 Facilitate localized access within contaminated spaces (ceilings, crawlspaces, etc.) through the installation of temporary barriers and partitions as specified herein.
- .4 Remove and dispose of minor amounts (< 4 sq. ft.) of asbestos-containing plaster present at locations required to facilitate work of this Contract performed as indicated on Drawing No. A5.1 R-0 dated June 22, 2009.

1.3 Inspection

- .1 The following Milestone Inspections are to take place during work of this Section:
 - .1 Milestone Inspection A - Site Dismantlement
Inspection and air sampling within the Asbestos Work Area following completion of work but prior to site dismantlement.

1.4 Worker Protection

- .1 Respiratory Protection
 - .1 During wet removal, clean-up or repair of ACMs performed within a sealed Type 2 enclosure supply and use full face-piece powered air purifying positive pressure dust respirators with HEPA filters.
 - .2 During site dismantlement and clean-up of the Asbestos Work Area, supply and use negative pressure non-powered half-face respirators with HEPA filters.
- .2 Asbestos Abatement Work Area Entry Procedures
 - .1 Access asbestos work area by utilizing additional scissor lift type mechanical lift to transport workers.
 - .2 Raise lift to same level as enclosure lift and secure mechanical lifts together to facilitate access.

- .3 Before entering Asbestos Work Area, don respirator with new or tested filters, coveralls and head covers. Protective clothing shall cover hair and any reusable clothing.
- .4 Notwithstanding the above, and wherever an attached airlock has been provided, ensure workers reseal curtained doorway leading from out of the airlock upon entry to the Asbestos Work Area.
- .3 Asbestos Abatement Work Area Exiting Procedures
 - .1 Before leaving Asbestos Work Area, remove contamination from protective clothing and equipment using HEPA vacuum or damp cloth.
 - .2 Immediately after exiting the Asbestos Work Area complete the following:
 - .1 Notwithstanding the above, and wherever an attached airlock has been provided, ensure workers reseal curtained doorway upon exiting the Asbestos Work Area.
 - .2 Remove contaminated clothing and place it into a sealed asbestos waste container for disposal.
 - .3 Clean contaminated footwear, hard hats, etc., or place into a sealed polyethylene bag for reuse.
 - .4 Wash hands in wash bucket provided for this purpose.
 - .3 Following the above, remove respirator then proceed directly to wash area and complete the following:
 - .1 Notwithstanding the above, and wherever an attached airlock has been provided, ensure workers exit the airlock and reseal curtain doorway before removing their respirator.
 - .2 Wash exposed skin and respirator with soap and water.
 - .3 Seal inlet side of respirator filters with tape then remove filters for testing or dispose of as asbestos contaminated waste.
 - .4 Access asbestos work area by utilizing additional scissor lift type mechanical lift to transport workers.
 - .5 Unhook mechanical lifts from each other and lower transport lift to ground level.

2.0 PRODUCTS AND FACILITIES

2.1 Materials and Equipment

- .1 Sprayer: Garden reservoir type, low velocity, capable of producing mist or fine spray.

2.2 Hoarding Walls

- .1 Walls separating an Asbestos Work Area from an Occupied Area or another work area shall be constructed as follows:
 - .1 Construct 2" x 4" (50 mm x 100 mm) wood or metal stud framework with continuous sill and top plate of sufficient strength to support polyethylene.
 - .2 Cover inside of framework with one (1) layer polyethylene. Install additional layer of rip-proof polyethylene on exterior side of framework in non-construction areas.
 - .3 Free standing enclosures must have a completely sealed polyethylene top.

- .4 Affix free standing enclosure to a scissor lift type mechanical lift.

2.3 Airlock

- .1 Where required to provide an attached airlock to permit movement of workers or materials between Occupied Areas and the Asbestos Work Area, construct each airlock as follows:
 - .1 Construct 2" x 4" (50 mm x 100 mm) wood or metal studs framework with continuous sill and top plate of sufficient strength to support polyethylene (minimum size 4' x 4').
 - .2 Cover inside of framework with one (1) layer of polyethylene. Install additional layer of rip-proof polyethylene on exterior side of framework in non-construction areas.
 - .3 Free standing airlocks shall have a completely sealed polyethylene top.
 - .4 Install curtained doorways at opposing ends to permit ingress or egress of workers and materials.
 - .5 Construct curtained doorways as follows:
 - .1 Place two (2) overlapping sheets of polyethylene (use rip-proof polyethylene in non-construction areas) over an existing or temporarily framed doorway.
 - .2 Secure the vertical edge of one (1) sheet along one (1) jamb of the doorway and the vertical edge of the second sheet along the opposite jamb. Then secure both sheets to the head jamb of the framed opening.
 - .3 All edges of polyethylene shall be reinforced with duct tape and the bottom edge shall be weighted to ensure automatic closing. Provide directional arrows indicating opening.

3.0 EXECUTION

3.1 Site Preparation

- .1 Submit pre-removal damage survey to Contract Administrator.
- .2 Perform all work during scheduled times approved by the Contract Administrator, after shutting down HVAC systems affecting the Asbestos Work Area.
- .3 Moving of equipment, tools, supplies, and stored materials which can be performed without disturbing ACM will be performed by others.
- .4 Protect electrical and mechanical systems within work area which may be affected by work of this Section.
- .5 Where removal of minor amounts of ACMs is to be performed, erect hoarding walls at locations required to isolate the Asbestos Work Area from Occupied Areas.
- .6 Isolate or otherwise disable HVAC system, vents and diffusers located within the Asbestos Work Area. System shall remain disabled until completion of work and clean-up of Asbestos Work Area.
- .7 Install temporary lighting at a level so as to provide for safe and efficient use of work area - minimum 550 LUX.
- .8 Seal opening within the asbestos work enclosure to the wall using tape.
- .9 Cover floor within the enclosure with a polyethylene drop sheet.

- .10 At locations where a sealed Type 2 enclosure has been provided, establish negative pressure within the Asbestos Work Area as follows:
 - .1 Provide a minimum of two (2) HEPA vacuums or required number of negative pressure units within each work area.
 - .2 Operate vacuums continuously from this point until completion of site dismantlement.
 - .3 Provide additional vacuums as necessary to maintain specified pressure drop and to ensure at all times air movement at perimeter of enclosure flows inward into the Asbestos Work Area.
 - .4 Distribute negative air source evenly throughout the site.
 - .5 Provide weighted flaps as necessary to provide make-up air.
- .11 Provide required tools, equipment, vacuums, materials and waste receptacles within the Asbestos Work Area.
- .12 Post signs at perimeter of Asbestos Work Area.
- .13 Do not commence contaminated work until authorized by the Contract Administrator.

3.2 Maintenance of Asbestos Work Area

- .1 Maintain Asbestos Work Area in a clean and tidy condition.
- .2 Ensure barriers and enclosures are effectively maintained. Repair damaged barriers and remedy defects immediately upon discovery.

3.3 Cutting or Drilling of Asbestos-containing Plaster

- .1 Wet, where possible, all materials to be disturbed.
- .2 Use hand-powered tools for all cutting, drilling, or shaping, or use power tools with HEPA filtered dust collection device as necessary for work. Cease using power tools if any visible dust escapes from HEPA filtered dust collection device.
- .3 Immediately place waste in Asbestos Waste Container.
- .4 Clean Asbestos Work Area frequently and again at completion of work with HEPA vacuum or with wet methods.
- .5 Wet clean entire enclosure, including equipment, floor, ceiling and wall surfaces, mechanical equipment and similar items not covered with polyethylene sheeting.
- .6 Apply a heavy coat of encapsulant to all exposed edges from which ACM has been removed.
- .7 Schedule and obtain written approval of Milestone Inspection A (Site Dismantlement) before proceeding.

3.4 Site Dismantlement and Clean-up

- .1 Teardown of Sealed Type 2 Enclosures
 - .1 Do not commence site dismantlement until authorized by the Contract Administrator.

- .2 Carefully roll polyethylene drop sheet towards the centre of the enclosure. As polyethylene is rolled away, immediately remove visible debris with a HEPA vacuum.
- .3 Place polyethylene, tape, cleaning material, clothing and other contaminated waste in containers and dispose of as asbestos waste.

.2 Clean-up

- .1 Equipment used in contaminated Asbestos Work Area shall be washed to remove any visible signs of asbestos contamination.
- .2 Dismantle and remove from the area, temporary framework used to support polyethylene.
- .3 Immediately upon shutting down of HEPA vacuums, seal vacuum hoses with polyethylene tape.
- .4 Seal vacuum hoses and fittings, flexible ductwork and all tools used in contaminated work site in 6 mil polyethylene bags prior to removal from work area.
- .5 Wash with clean water all surfaces in the work area.

End of Section

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