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 Division 1 and the General Conditions of the Contract.

.2 Related work specified elsewhere:

Section 02 82 00.01	Asbestos Abatement – Type 1 (Low Risk) Procedures
Section 02 82 00.02	Asbestos Abatement – Type 2 (Moderate Risk) Procedures
Section 02 82 00.03	Asbestos Abatement – Type 3 (High Risk) Procedures
Section 02 82 00.04	Asbestos Abatement – Type 2 Glove Bag Method

.3 Site Conditions identifies all known hazardous building materials within the Project Area. The information provided is for general reference only. Each Contractor must confirm existing conditions on site prior to tender close.

.1 The specification fulfils the requirements of Part 36 and 37 of Manitoba Workplace Safety and Health Regulation 217/2006.

.4 The Outline of Work identifies the location, condition, and quantities of hazardous building materials to be removed as part of this project.

.1 It is the intent that work prescribed this Section will result in the removal of all hazardous materials as outlined and the decontamination of all surfaces or materials which may have been or become contaminated by hazardous materials either during or prior to work of this Contract.

1.2 Site Conditions

.1 Refer to the Asbestos Inventory Control prepared by the City of Winnipeg.

.2 Refer to Drawings E1-E8, A0-A9 and M1-M8 for the extent of the renovation Areas.

.3 Asbestos

.1 The following materials have been confirmed to contain asbestos:

.1 Fibrous sprayed fireproofing, containing amosite asbestos, is present as follows:

.1 Inside Q decking flutes around the perimeter of the Apparatus Bay. The material is covered with orange rip proof poly and is not part of this contract.

.2 Parging cement, containing chrysotile asbestos, is present on pipe fittings and rainwater leaders throughout the building.

.3 12” x 12” vinyl floor tiles, containing chrysotile asbestos, are present throughout various areas of the building.
.4 9” x 9” vinyl floor tiles, containing chrysotile asbestos, are present throughout various areas of the building.
.5 Black mastic on straight runs of pipe insulation, containing chrysotile asbestos, is present throughout the building
.6 Interior and exterior caulking around windows, containing chrysotile asbestos, are present throughout the building.
.7 Vermiculite insulation, containing actinolite/tremolite asbestos, is present within hollow core block walls around the Apparatus Bay and exterior walls.
.8 Vermiculite insulation may be present as debris on top of suspended and mechanically fastened ceiling tiles and tracking around the perimeter hollow core block walls.
.9 Exterior mortar joints on Tyndall stone, containing chrysotile asbestos, is present on the exterior walls of the building.

.4 General Building Conditions

.1 Heat and smoke detectors to remain live throughout work.

.2 Sprinklers to remain live throughout work.

.3 Steam and condensate pipes to remain live throughout work.

1.3 Outline of Work

.1 Coordinate the following items with the City of Winnipeg’s Project Manager and the Construction Manager, including but not limited to: electrical isolations, GFI connection, water connections, HVAC and exhaust ventilation system isolation, bin placement, schedule, disconnects, etc.

.2 Refer to Drawings E1-E8, A0-A9 and M1-M8 for the extent of the renovation Areas.

.3 Using procedures prescribed in the Section identified in Related Work, remove, and dispose of the following.

.1 Phase 1 Work Area:

.1 9” x 9” and 12” x 12” vinyl floor tiles scheduled for removal.
.2 Exterior/Interior caulking around windows scheduled for removal.
.3 Parging cement fittings scheduled for removal.
.4 Rainwater leader within the storage room scheduled for removal.
.5 Black mastic on straight runs of piping scheduled for removal.

.2 Phase 2 Work Area:

.1 9” x 9” and 12” x 12” vinyl floor tiles scheduled for removal.
.2 Exterior/Interior caulking around windows scheduled for removal.
.3 Parging cement fittings scheduled for removal.
.4 Black mastic on straight runs of piping scheduled for removal.

.4 Refer to Specification Sections identified in the Related Work for specified personnel protective measures for the safe handling, removal, clean-up, enclosure, or repair of hazardous materials in each phase or work area.

.5 Visit the site prior to tender close to confirm the location and extent of any hazardous building materials or materials contaminated by hazardous materials.

.6 Protect surfaces, building fabrics and items remaining within the Abatement Work Area.

.7 Isolate the Abatement Work Area from adjoining Occupied and Non-Occupied Areas whether present at an interior or exterior location.

.8 Maintain emergency and fire exits from Abatement Work Area, or establish alternative exits satisfactory to Provincial Fire Marshall and local authorities having jurisdiction. Maintain extra routes from occupied areas. Place emergency exit signs at locations to clearly mark exit route. Seal emergency exit doors so as not to impede use of door during emergency evacuation.

.9 Perform selective demolition of mechanical and electrical equipment, building components, materials and items scheduled for demolition at locations required to facilitate asbestos removal. Refer to all Contract Documents for responsibility of demolition work and disposal.

.10 Remove and dispose of as appropriate waste, building components, materials and items contaminated by hazardous materials that cannot be effectively cleaned.

.11 Encapsulation will not be permitted where removal of building materials or structures scheduled for demolition will facilitate access to the asbestos materials in question.

.12 Final clean work area to remove visible signs of asbestos and other hazardous materials, other debris or settled dust.

.13 Apply lock-down agent to exposed surfaces throughout the work area and to surfaces from which any hazardous materials have been removed.

.1 Do not apply lock-down to materials which would be damaged by its application.

.14 Unless otherwise specified, the handling, removal, clean-up or repair of hazardous materials or surfaces contaminated with hazardous materials is to be performed following wet removal techniques.

1.4 Schedule

.1 Provide necessary manpower, supervision, equipment, and materials to maintain and complete the project on schedule.

.2 Work Hours:

.1 Coordinate all work, scheduling, and phasing with the City of Winnipeg.

.2 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 Abatement Consultant.

.3 Provide 48 hours written notice to the Abatement Consultant of any request to work outside normal working hours. Obtain written approval before proceeding.

1.5 Definitions

.1 Abatement Consultant: City of Winnipeg's Representative providing inspection and air monitoring.

.2 Abatement Contractor: Contractor or sub-contractor performing work of this section.

.3 Abatement Work Area: Area where work takes place which will, or may, disturb hazardous materials.

.4 Amended Water: Water with wetting agent added for the purpose of reducing surface tension to allow thorough wetting of materials.

.5 Asbestos: Any of the fibrous silicates defined in Regulation 217/2006 including: actinolite, amosite, anthophyllite, chrysotile, crocidolite and tremolite.

.6 Asbestos-Containing Material (ACM): Material identified under Site Conditions including any debris, overspray, fallen material and settled dust.

.7 Authorized Visitors: City of Winnipeg employees, Abatement Consultant, or designated representative, and persons representing regulatory agencies.

.8 Competent Worker: A worker who is qualified because of knowledge, training, and experience to perform the work, is familiar with applicable regulations and guidelines, and has knowledge of the potential or actual danger to health and safety in the work.

.9 Contaminated Waste: Material identified under Site Conditions, including fallen material, settled dust, other debris and materials or equipment deemed to be contaminated by the Abatement Consultant.

.10 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.

.11 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 on site where units are to be installed. Refer to the Environmental Abatement Council of Ontario (EACO) DOP/PAO Testing Guideline 2013 or ANSI/ASME N510-2007.

.12 Fitting: Individual segments or pieces of a mechanical service line which may include but is not limited to the hangers, tees, elbows, joints, valves, unions, etc.

.13 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.

.14 HEPA Filter: High Efficiency Particulate Aerosol filter that is at least 99.97 percent efficient in collecting a 0.3 micrometre aerosol.

.15 Milestone Inspection: Inspection of the Abatement Work Area at a defined point in the abatement operation.

.16 Negative Pressure: A reduced pressure within the Abatement Work Area (> 0.02 inches of water column) established by extracting air directly from Abatement Work Area and discharging it to exterior of building.

.17 Non-Friable Material: Material that when dry cannot be crumbled, pulverized, or powdered by hand pressure.

.18 Occupied Area: Any area of the building or adjoining space outside the Abatement Work Area.

.19 Personnel: All Contractor's employees, sub-contractors' employees, supervisors.

.20 PCM: Phase Contrast Microscopy.

.21 Remove: Remove means remove and dispose of (as applicable type of waste) unless followed by other instruction (e.g. remove and turn over to the City of Winnipeg).

1.6 Regulations and Guidelines

.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.

.2 Where regulations are not present, follow accepted industry standards and applicable Guideline documents.

.3 Regulations and Guidelines include but are not limited to the following:

.1 Workplace Safety and Health Act W210.

.2 Workplace Safety and Health Regulation M.R. 217/2006.

.3 Safe Work Manitoba Guide for Asbestos Management.

.4 The Dangerous Goods Handling and Transportation Act C.C.S.M c. D12.

.5 Hazardous Waste Regulation, M.R. 195/2015.

.6 Dangerous Goods Handling and Transportation Regulation, M.R. 55/2003.

.7 Transportation of Dangerous Goods Regulation (SOR 219/2019-101).

1.7 Quality Assurance

.1 Removal and handling of hazardous materials is to be performed by persons trained in the methods, procedures, and industry practices for 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 Abatement 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 Abatement Work Area at no cost to the City of Winnipeg.

.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 Supervision

.1 Provide on site for each work shift, a Shift Superintendent(s), 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 (3 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, 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 of Winnipeg.

.4 Replace supervisory personnel, with approved replacements, within three (3) working days of a written request from the City of Winnipeg. The City of Winnipeg reserves the right to request replacement of supervisory personnel without explanation.

.5 Do not replace supervisory personnel without written approval from the City of Winnipeg.

1.9 Notification

.1 Not later than 5 days before commencing asbestos abatement work on this project, notify the local office of the Manitoba Workplace Safety and Health Division.

.2 Notify Sanitary Landfill site as per local requirements.

.3 Inform all trades on site of the presence and location of hazardous materials identified in the Contract documents.

.4 Notify the City of Winnipeg or the City of Winnipeg's Representative, if suspected asbestos-containing materials not identified in the contract documents are discovered during the course of the work. Stop work in these areas immediately.

1.10 Submittals

.1 Submit prior to starting work:

.1 Provincial Workers' Compensation Board Clearance Certificate.

.2 Insurance certificates.

.3 Copy of Company Health and Safety Policy and applicable programs.

.4 Provincial Regulator Notice of Project form.

.5 Copy of Certificate of Approval for disposal of hazardous materials waste and location of landfill.

.6 Pre-removal damage survey of the Abatement Work Area(s), waste transport routes, and bin storage areas.

.2 Submit the following information regarding personnel prior to starting work:

.1 Resumes of the supervisory personnel.

.2 Proof in the form of a certificate that supervisory personnel have attended a training course on asbestos (3 day minimum duration).

.3 Written statement that personnel have had instruction on hazards of exposure to hazardous materials identified within this scope, the use of respirator, protective clothing, worker and waste decontamination procedures, and all aspects of work procedures and protective measures.

.4 Written statement that personnel have had instruction on hazards of exposure to hazardous materials identified within this scope, the use of respirator, protective clothing, worker and waste decontamination procedures, and all aspects of work procedures and protective measures.

.5 WHMIS training certificates for all personnel.

.6 Certificate proving that each worker on site has been fit tested for the respirator appropriate for the work being performed.

.7 Proof, satisfactory to the Consultant, that all persons involved in the transport and disposal hazardous materials have been trained in accordance with the requirements of Federal and Provincial Transportation of Dangerous Good Acts and Regulations.

.3 Submit the following information regarding HEPA filtered devices prior to construction of enclosure or asbestos abatement:

.1 Performance data on HEPA filtered vacuums including DOP tests no more than 3 months old.

.2 Performance data on negative air units including DOP tests which must be no more than 3 months old if the unit is vented outdoors or which must be performed on site immediately prior to initial usage and when HEPA filters are changed if the unit is vented indoors.

.3 DOP tests to be performed by an independent testing company.

.1 DOP testing company is required to submit a detailed technical report of testing protocol, including Introduction, Methodology, Results, Conclusions, and Recommendations, including results of the Air-Aerosol Mixing Uniformity test as per ASME N510-1989 (1995).

.2 DOP testing company must also provide calibration certificates from an independent calibration firm or from the manufacturer of the testing equipment for both the aerosol photometer and the pressure gauge on the aerosol generator dated within 1 calendar year from the on-site testing date.

.3 DOP testing company must also provide the National Sanitation Foundation (NSF) certification name and number of the on-site technician performing the testing.

.4 Proof of calibration of DOP testing equipment.

.4 Submit the following prior to isolating the work area:

.1 Safety Data Sheets for chemicals or material used in the course of the Abatement Project.

.5 Submit the following upon completion of the work.

.1 Manifests, waybills, bills of ladings etc. as applicable for each type of waste.

1.11 Insurance

.1 Maintain a Commercial General Liability Policy with an insurance company acceptable to Pinchin Ltd. and the City of Winnipeg. The intent of this policy is to hold Pinchin Ltd. and the City of Winnipeg harmless as it relates to claims for Bodily Injury or Property Damage or both, relating to the contract. Commercial General Liability insurance shall be provided on an “occurrence” basis to cover injury or damage (whether detected or not during the policy period) which happens during the policy period.

.2 Maintain an Automobile or Fleet Policy, and Non-owned Automobile Policy with an insurance company acceptable to Pinchin Ltd. and the City of Winnipeg. The intent of these policies is to hold Pinchin Ltd. and the City of Winnipeg harmless as it relates to claims for Bodily Injury or Property Damage or both, relating to the contract.

.3 Maintain a Pollution Liability Policy (or asbestos liability policy or specific coverage under the CGL for asbestos abatement) with an insurance company acceptable to Pinchin Ltd. and the City of Winnipeg. The intent of this policy is to hold Pinchin Ltd. and the City of Winnipeg harmless as it relates to claims for Bodily Injury or Property Damage or both, relating to the contract. Pollution Liability shall be provided on an "occurrence" basis to cover injury or damage (whether detected or not during the policy period) which happens during the policy period. Without limiting the generality of the foregoing, the policy shall insure the operations of abatement and shall not contain any environmental and/or health hazard exclusions relating to remediation operations.

.4 Forward all certificates to Pinchin Ltd. and the City of Winnipeg before work is commenced, showing Pinchin Ltd. and the City of Winnipeg as additional insured as their interest may appear.

.5 Pinchin Ltd. and the City of Winnipeg may request a certified true copy of the policies.

.6 The limits will not be less than:

.1	Commercial General Liability	$5,000,000.00
.2	Automobile	$2,000,000.00
.3	Pollution Policy	$5,000,000.00

1.12 Inspection

.1 From commencement of work until completion of clean-up operations, the Abatement Consultant is empowered by the City of Winnipeg to inspect for compliance with the requirements of governing authorities, adherence to specified procedures and materials, and to inspect for final cleanliness and completion.

.2 The Abatement Consultant is empowered by the City of Winnipeg to order a shutdown of work when leakage of asbestos from the controlled work area has occurred or is likely to occur.

.3 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 of Winnipeg.

.4 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 of Winnipeg.

.5 Inspection and air monitoring performed as a result of Contractor's failure to perform satisfactorily regarding quality, safety, or schedule, shall be back-charged to the Contractor.

.6 Facilitate inspection and provide access as necessary. Make good work disturbed by inspection and testing at no cost to the City of Winnipeg.

.7 Refer to the Sections identified in Related Work for specified milestone inspections which are to take place at defined points throughout the abatement operation specific to each phase or work area.

.8 Provide 24 hours written notice to the Abatement Consultant of any request for scheduling of milestone inspections or transportation of waste through Occupied Areas.

.9 The following Milestone Inspections may take place, at the City of Winnipeg's cost, as outlined in each related specification section OR which will be confirmed at the initial start-up meeting:

.1 Milestone Inspection - Clean Site Preparation

.1 Inspection of preparations and set-up prior to contaminated work in the Abatement Work Area.

.2 Milestone Inspection – Bulk Removal Inspection

.1 Inspection during asbestos removal, monitoring removal methods, site deficiencies, performing occupied air monitoring, etc.

.3 Milestone Inspection - Visual Clearance

.1 Inspection of Abatement Work Area after completion of all abatement, but prior to application of lock-down agents or dismantling of enclosure.

.4 Milestone Inspection – Clearance Sampling

.1 Air monitoring performed following removal of asbestos and application of slow drying sealer to ensure fibre levels inside the enclosure(s) are within the acceptable limits.

.10 Refer to the Sections identified in Related Work for specified milestone inspections which are to take place at defined points throughout the abatement operation specific to each phase or work area.

.11 Do not proceed with next phase of work until written approval of each milestone is received from the Abatement Consultant.

1.13 Air Monitoring - Asbestos

.1 Air monitoring will be performed using Phase Contrast Microscopy (PCM) following the National Institute for Occupational Safety and Health Method 7400.

.2 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.

.3 Results of PCM samples of 0.05 fibres per cubic centimeter of air (fibre/cc) or greater, outside an Abatement Work Area, or from within the Abatement Work Area during or following Glove Bag Work, will indicate asbestos contamination of these areas. Respond as follows:

.1 Suspend work within the adjoining Abatement Work Area until written authorization to resume work has been received from the Abatement Consultant.

.2 Isolate and clean area in the same manner applicable to the Abatement Work Area.

.3 Maintain work area isolation, and repeat clean-up operations until visual inspection and air monitoring results are at a level equal to that specified.

.4 At the discretion of the Abatement Consultant provide additional negative air units at locations specified in response to elevated fibre levels being detected in the Clean Change Room or Occupied Areas.

.4 Results of PCM samples at or greater than 0.01 fibres per cubic centimeter of air (fibre/cc), collected within the Abatement 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: 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.

.5 When results exceed 50% of maximum use concentration for the respirator being used within the work area respond as follows:

.1 Immediately stop work within the Abatement Work Area.

.2 Instruct workers to exit the Abatement Work Area via the Worker Decontamination Facility while observing specified personnel exiting procedures.

.3 Contractor's forces shall not re-enter the Abatement Work Area for a period of 8 hours or until authorized by the Abatement Consultant.

.4 Upon re-entry to the Abatement Work Area, mist the air, any fallen debris or exposed surfaces with amended water using an airless sprayer.

.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 of Winnipeg.

.7 Cost of additional inspection and sampling performed as a result of elevated fibre levels in areas outside the Abatement Work Area or from within the work area following completion of work, will be back-charged to the Contractor.

1.14 Worker Protection

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

.2 Workers shall not eat, drink, chew gum or tobacco, or smoke in the Abatement Work Area.

.3 Workers shall be fully protected at all times when possibility of disturbance of hazardous materials exists.

.4 Provide soap, towels, and facilities for washing of hands and face, which shall be used by all personnel when leaving the Abatement Work Area.

.5 Respiratory Protection

.1 Refer to each particular Section of the Specification for specified type of respiratory equipment specific to each phase or work area.

.2 Respirators shall be:

.1 Certified by the National Institute of Occupational Safety and Health (NIOSH) or other testing agency acceptable to the Provincial regulator.
.2 Fitted so that there is an effective seal between the respirator and the worker’s face. Ensure that no person required to enter an Abatement Work Area has facial hair which affects the seal between respirator and face.
.3 Assigned to a worker for their exclusive use.
.4 Maintained in accordance with manufacturer’s specifications.
.5 Cleaned, disinfected, and inspected by a competent person after use on each shift, or more often if required.
.6 Repaired or have damaged or deteriorated parts replaced.
.7 Stored in a clean and sanitary location.
.8 Provided with new filters as necessary, according to manufacturer's instructions.
.9 Worn by personnel who have been fit checked by qualitative or quantitative fit-testing.
.10 Instruction on proper use of respirators must be provided by a competent person as defined by the Occupational Health and Safety Act.

.3 Provide protective clothing, to all personnel which:

.1 Is made of a material that does not readily retain nor permit penetration of asbestos fibres.
.2 Consists of head covering and full body covering that fits snugly at the ankles, wrists, and neck.

.3 Once coveralls are worn, treat and dispose of as contaminated waste.
.4 Is replaced or repaired if torn or ripped.

.4 Use hard hats, safety footwear and other protective equipment and apparel required by applicable construction safety regulations.

1.15 Visitor Protection

.1 Instruct Authorized Visitors in the use of protective clothing and Abatement Work Area entry and exit procedures.

.2 Authorized visitors are required to be fit tested on respirators, prior to entering Abatement Work Area.

1.16 Signage

.1 Asbestos Abatement Signs: Post signs at access points to the Abatement Work Area, stating at minimum, the following:

.1 There is an asbestos dust hazard.

.2 Access to the work area is restricted to persons wearing protective clothing and equipment.

.2 Bins and Asbestos Waste Containers: Post signs on both sides of every asbestos waste and on every asbestos waste container. Signs must display thereon in large, easily legible letters that contrast in colour with the background the word "CAUTION" in letters not less than ten centimetres in height and the words:

.1 CONTAINS ASBESTOS FIBRES.

.2 Avoid Creating Dust and Spillage.

.3 Asbestos May be Harmful To Your Health.

.4 Wear Approved Protective Equipment.

.3 Place placards in accordance with Transportation of Dangerous Goods Act.

1.17 Waste and Material Handling

.1 Waste bins must be placed on grade or in receiving.

.2 All bins for hazardous materials must be covered and locked when waste transfer is not being performed.

.3 Ensure redundant non-ACM, rubble, debris, etc. removed during contaminated work are treated, packaged, transported, and disposed of as appropriate waste.

.4 Clean, wash and apply Post Removal Sealant to metal waste prior to removal from Abatement Work Area. Recycle metals.

.5 Clean, wash and apply Post Removal Sealant to non-porous materials prior to disposal as clean waste. Obtain prior written approval from the Abatement Consultant for each individual type of material.

.6 Clean and wash equipment prior to removal from Abatement Work Area if removed prior to completion.

.7 Place all equipment, tools and unused materials that cannot be cleaned in Abatement Waste Containers.

.8 As work progresses, and at regular intervals, transport the sealed and labelled waste containers from the Abatement Work Area to waste bin.

.9 Place items in bins according to waste classification. Place asbestos waste, metals, non-asbestos waste, etc. in separate bins.

.10 Removal of waste containers and decontaminated tools and materials from the Abatement Work Area shall be performed as follows:

.1 Remove any visible contamination from the surface of non-porous or cleanable waste being removed from the Abatement Work Area. If the item can be cleaned, remove it from the site as clean waste.

.2 Place waste or item in Waste Container and seal closed.

.3 Wet wipe outside of Waste Container.

.4 Within Decontamination Facility, Transfer Room or at the perimeter of the Abatement Work Area, place in second Waste Container. Seal closed.

.5 Remove waste containers and transport to appropriate bin.

.11 Transport waste and materials via the predetermined routes and exits. Arrange waste transfer route with the City of Winnipeg. Use a closed, covered cart to transport through Occupied Areas.

.12 Use Low Risk Procedures while transporting asbestos waste through facility.

.13 Provide workers transporting waste with means to access full personal protective equipment and all tools required to properly clean up spilled material in the case of a rupture of a Waste Container.

.14 Pick-up and drop off of garbage bin shall be at pre-approved times and must not interfere with the City of Winnipeg's operations.

.15 Transport hazardous waste to landfill or waste transfer station in accordance with provincial requirements.

.16 Cooperate with inspectors from the provincial regulator and immediately carry out instructions for remedial work at dump to maintain environment, at no additional cost to the City of Winnipeg.

PART 2 PRODUCTS AND FACILITIES

2.1 Materials and Equipment

.1 Refer to the Sections identified in Related Work 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 debris and fibrous materials. Disposable items must be of new materials only.

.3 Airless Sprayer: AC powered pressure washer that allows wetting agent to mix with water, uses no air or compressed air, and has a nozzle to regulate power and pressure.

.4 Amended Water: Water with wetting agent added for purpose of reducing surface tension to allow thorough wetting of materials.

.5 Asbestos Waste Container: A container acceptable to disposal site, and the provincial regulator comprised of the following:

.1 Dust tight.

.2 Suitable for the type of waste.

.3 Impervious to asbestos.

.4 Identified as asbestos waste.

.6 Differential Pressure Monitor: a high precision instrument for measuring and controlling pressure differences in the low range, between the Abatement Work Area and Occupied Area. Calibrate regularly to manufacturer's instructions.

.7 Discharge Ducting: Polyethylene Tubing. Reinforced with wire. Diameter to equal negative pressure machine discharge. Not to be longer than required, or so long that negative pressure is compromised.

.8 Ground Fault Panel: Electrical panel as follows:

.1 Ground fault circuit interrupters of sufficient capacity to power temporary electrical equipment and lights in Asbestos Work Area.

.2 Interrupters to have a 5 mA ground fault protection.

.3 Necessary accessories including main switch disconnect, ground fault interrupter lights, test switch to ensure unit is working, and reset switch.

.4 Openings sealed to prevent moisture or dust penetration.

.5 Inspected by the Electrical Safety Authority.

.6 Panel uses CSA approved parts and been constructed, inspected, and installed by a licensed electrician.

.7 Provide one Ground Fault Panel for each 5,000 square feet (500 square metres) of Abatement Work Area.

.9 HEPA Filtered Negative Pressure Machine: Portable air handling system which extracts air directly from the Abatement Work Area and discharges the air to the exterior of the building. Equipped as follows:

.1 Prefilter 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 prefilter.

.10 HEPA Vacuum: Vacuum with necessary fittings, tools, and attachments. Discharged air must pass through a HEPA filter.

.11 Hose: Leak-proof, minimum busting strength of 500 PSI or greater if required, abrasion resistant covering, reinforcing, and machined-brass couplings. Maintained and tested. Hose to be temperature resistant if it is to carry domestic hot water.

.12 Polyethylene Sheeting: 6 mil (0.15 mm) minimum thickness unless otherwise specified, in sheet size to minimize joints.: 6 mil (0.15 mm) minimum thickness unless otherwise specified, in sheet size to minimize joints.

.13 Post Removal Sealant (or Lockdown): Sealant that when applied to surfaces serves the function of trapping residual asbestos fibres or other dust. Product must have flame spread and smoke development ratings both less than 50. Product shall leave no stain when dry. Post Removal Sealant shall be compatible with replacement insulation or fireproofing where required and capable of withstanding service temperature of substrate. Apply to manufacturer's instructions.

.14 Protective Clothing: Disposable coveralls complete with head covering and full body covering that fits snugly at the ankles, wrists, and neck.

.15 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.

.16 Shower Hose: Water lines for supply of hot & cold water to shower facilities to be rated for use at 200 PSI (1380 kPa) or twice the working pressure whichever is greater. Supply lines to be continuous and free of fittings, joints, or couplings.

.17 Sprayer: Garden type portable manual sprayer or water hose with spray attachment if suitable.

.18 Tape: Duct tape or tape suitable for sealing polyethylene to surfaces under both dry and wet conditions in the presence of Amended Water.

.19 Wetting Agent: Non-sudsing surfactant added to water to reduce surface tension and increase wetting ability.

PART 3 EXECUTION

.1 Refer to the Sections identified in Related Work for specified procedures for work area preparation, maintenance, site dismantlement, application of lock-down agent and all other procedures for the safe handling, removal, and clean-up of hazardous materials specific to each phase or work area.

END OF SECTION

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 Division 1 and the General Conditions of the Contract.

.2 Requirements specified elsewhere:

.1 Section 02 81 00 Hazardous Materials – General Provisions

1.2 Outline of Work

.1 Refer to Section 02 81 00 Hazardous Materials – General Provisions for the Outline of Work.

.1 Refer to Drawings E1-E8, A0-A9 and M1-M8 for the extent of the renovation Areas.

.2 Isolate the Abatement Work Area from adjoining spaces through the installation of temporary barriers and partitions as specified herein.

.3 The intent of this Section is to provide safe work practices and procedures to govern the handling, removal, clean-up and disposal of asbestos-containing materials following Type 1 (Low Risk) procedures, and Pinchin and Owner specific requirements.

1.3 Instruction and Training

.1 Provide instruction and training to all workers including the following:

.1 Hazards of asbestos.

.2 Use, care and disposal of protective equipment (including but not limited to respirators and filters) and clothing that would be used and worn during abatement work, including:

.1 Limitations of equipment.

.2 Inspection and maintenance of equipment.

.3 Proper fitting of equipment.

.4 Disinfecting and cleaning of equipment.

.3 Personal hygiene to be observed when performing the work.

.4 Measures and procedures prescribed in the regulation and decontamination of the worker.

.2 Instruction and training must be provided by a competent person.

1.4 Personal Protection

.1 Protect all personnel at all times when possibility of disturbance of ACM exists.

.1 Provide non-powered half-face respirators with P100 high efficiency (HEPA) cartridge filters when requested by personnel.

.2 When requested by personnel, provide protective clothing.

1.5 Inspections

.1 Refer to Part 1.12 Inspections in Section 02 81 00 – General Provisions.

.2 The following Milestone Inspections are to be scheduled:

.1 Milestone Inspection - Visual Clearance.

.2 Milestone Inspection – Clearance Sampling.

PART 2 PRODUCTS AND FACILITIES

.1 Refer to Section 02 81 00.

PART 3 EXECUTION

3.1 Site Preparation

.1 Moving of equipment, tools, supplies, and stored materials that can be performed without disturbing ACM will be performed by others.

.2 Remove visible dust and friable material from all surfaces in the work area including those to be worked on, using HEPA Vacuums or wet wiping.

.3 Install polyethylene drop sheets below areas of work.

.4 Install polyethylene sheeting on openings in walls and floors (as required) and seal.

.5 Install signage in clearly visible locations and in sufficient numbers to adequately warn of an asbestos dust hazard.

.6 Shut down HVAC systems serving the Abatement Work Area.

.1 HVAC to remaining areas of building must not be disrupted during work of this section.

.2 System shall remain inoperative until completion of work, unless ducts can be effectively capped.

.3 Perform work at scheduled times after shutting down HVAC systems affecting the Abatement Work Area.

.7 Provide power from ground fault interrupt circuits.

.8 Provide amended water for wetting ACM, and adequate method of wetting (garden sprayers, airless sprayers, etc.).

3.2 Maintenance of Abatement Work Area

.1 Inspect polyethylene sheeting and ensure it is effectively sealed and taped. Repair damage and remedy defects immediately.

.2 Inspect electrical panels and ensure locks and tags are on panels prior to entering the Abatement Work Area.

.3 Maintain Abatement Work Area in tidy condition.

.4 Remove any standing water on polyethylene/floor at the end of every shift.

.5 Turn off water supply to any hoses and reduce pressure in hose, prior to leaving the Abatement Work Area at end of shift.

3.3 Asbestos Removal - General

.1 Do not use powered tools or non-hand held tools.

.2 Do not use compressed air to clean or remove dust or debris.

.3 Do not break, cut, drill, abrade, grind, sand or vibrate ACM if it cannot be wetted. Type 2 (Moderate Risk) procedures would be required if the material cannot be wetted due to hazard or damage.

.4 Wet ACM prior to work and keep ACM wet throughout the removal process.

.5 Frequently and at regular intervals during the work, clean up dust and waste using HEPA vacuums and/or wet sweeping or mopping.

.6 Frequently and at regular intervals, place all waste in asbestos waste containers.

.7 Immediately upon completion of work, clean area with HEPA vacuum and/or wet sweeping or mopping.

3.4 Asbestos Removal - Vinyl Asbestos Tile

.1 Wedge a heavy duty scraper in seam of two adjoining tiles and gradually force edge of one tile up and away from floor. Do not break off pieces of tile, but continue to force balance of tile up.

.2 Place tile, without breaking into smaller pieces, into Asbestos Waste Container.

.3 Force scraper through tightly adhered areas by striking scraper handle with a hammer.

.4 Heat tile thoroughly with a hot air gun until heat penetrates through tile and softens adhesive in areas where scraper will not remove tile.

.5 Scrape up adhesive remaining on floor with a hand scraper until only a thin smooth film remains.

.6 Use a hot air gun where deposits are heavy or difficult to scrape.

.7 Deposit scrapings into asbestos waste disposal bag.

.8 HEPA vacuum floor on completion of work in area.

3.5 Asbestos Removal - Removal of Other Non-Friable Asbestos Materials

.1 Wet all material to be disturbed.

.2 Undo fasteners if necessary to remove material.

.3 Break material only if unavoidable, and wet material if broken during work.

.4 Use only non-powered hand-held tools to remove ACM.

.5 Scrape to remove material adhered to substrate.

.6 Place removed ACM directly into an asbestos waste container.

3.6 Abatement Work Area Dismantling

.1 Do not commence site dismantlement until authorized by the Asbestos Abatement Consultant.

.2 Wash or HEPA vacuum equipment and tools used in contaminated Abatement Work Area to remove all asbestos contamination, or place in Asbestos Waste Containers prior to being removed from Abatement Work Area.

.3 Place tools and equipment used in contaminated work site but not cleaned in polyethylene bags prior to removal from Abatement Work Area.

.4 Clean polyethylene sheeting and drop sheets which with HEPA vacuum or wet cleaning methods at completion of work.

.5 Wet drop sheets and polyethylene sheeting.

.6 Carefully roll polyethylene sheeting and drop sheets toward the centre. As polyethylene is rolled away, immediately remove visible debris beneath with a HEPA vacuum.

.7 Remove remaining polyethylene sheeting and tape.

.8 Place polyethylene sheeting, drop sheets, tape, disposal clothing and other contaminated waste in asbestos waste containers, wet wipe and place in second asbestos waste container.

3.7 Waste and Material Handling

.1 Refer to Section 02 81 00.

END OF SECTION

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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 Division 1 and the General Conditions of the Contract.

.2 Requirements specified elsewhere:

.1 Section 02 81 00 Hazardous Materials – General Provisions

1.2 Outline of Work

.1 Refer to Section 02 81 00 Hazardous Materials – General Provisions for the Outline of Work.

.2 Refer to Drawings E1-E8, A0-A9 and M1-M8 for the extent of the renovation Areas.

.3 The intent of this Section is to provide safe work practices and procedures to govern the handling, removal, clean-up and disposal of asbestos-containing materials following Type 2 or Moderate Risk procedures, and Pinchin and Owner specific requirements.

.4 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.

.5 Install Hoarding Walls between Abatement Work Area boundaries as shown on drawings.

1.3 Instruction and Training

.1 Provide instruction and training to all workers including the following:

.1 Hazards of asbestos.

.2 Use, care and disposal of protective equipment (including but not limited to respirators and filters) and clothing that would be used and worn during abatement work, including:

.1 Limitations of equipment.

.2 Inspection and maintenance of equipment.

.3 Proper fitting of equipment.

.4 Disinfecting and cleaning of equipment.

.3 Personal hygiene to be observed when performing the work.

.4 The measures and procedures prescribed by this section including decontamination of the worker.

.5 Instruction and training must be provided by a competent person.

1.4 Personal Protection

.1 Protect all personnel at all times when possibility of disturbance of ACM exists.

.1 Provide workers, at a minimum, with full face respirators with P100 high efficiency (HEPA) cartridge filters, for work inside a negative pressure enclosure.

.2 Provide workers, at a minimum, with non-powered half-face respirators with P100 high efficiency (HEPA) cartridge filters for work where no enclosure is required.

.3 Provide protective clothing, to all personnel entering the Abatement Work Area.

.4 Wear hard hats, safety shoes and other personal protective equipment required by applicable construction safety regulations

1.5 Inspections

.1 Refer to Part 1.12 Inspections in Section 02 81 00 – General Provisions.

.2 The following Milestone Inspections are to be scheduled:

.1 Milestone Inspection - Clean Site Preparation.

.2 Milestone Inspection – Bulk Removal Inspection.

.1 Milestone Inspection - Visual Clearance.

.2 Milestone Inspection – Clearance Sampling.

PART 2 PRODUCTS AND FACILITIES

.1 Refer to Section 02 81 00.

2.2 Hoarding Walls

.1 Type A Hoarding Wall: 38 mm x 89 mm wood or metal studs at 400 mm o/c with continuous sill and top plate, covered with one layer of rip-proof polyethylene sheeting on each side of wall.

1.2 Transfer Room

.1 Transfer Room to be generally 2000 mm x 2000 mm x 2200 mm high. Increase size accordingly to accommodate number of workers.

.2 Install walls as follows:

.1 Install 38 x 89 mm wood framing at 610 mm o/c with continuous top and sill plates.

.2 Install one layer rip-proof polyethylene sheeting on each side of walls of Transfer Room.

1.1 Curtained Doorways

.1 Construct as follows:

.1 Install two flap doors, full width and height of door opening at all doors to Abatement Work Area and both ends of Transfer Room.

.2 Construct each flap door of two layers of polyethylene sheeting with all edges reinforced with tape. Use wood strapping to securely fasten flap doors to head and alternate jambs.

.3 Install weights attached to bottom edge of each door flap.

.4 Provide direction arrows on flaps to indicate opening.

PART 3 EXECUTION

3.1 Site Preparation - General

.1 Moving of equipment, tools, supplies, and stored materials that can be performed without disturbing ACM will be performed by others.

.2 Remove visible dust and friable material from all surfaces in the work area including those to be worked on, using HEPA Vacuums or wet wiping.

.3 Isolate, at panel, and disconnect existing power supply to Abatement Work Area. Power supply to remaining areas of building must not be disrupted during work of this section.

.1 Lock-out/tag-out power at electrical panels.

.2 Mark/tag any items within or passing through the Abatement Work Area that are to remain live including but not limited to cable, conduit, wire, fixtures, equipment panels, etc.

.4 Shut down HVAC systems serving the Abatement Work Area.

.1 Install polyethylene sheeting over openings in ducts and diffusers and seal.

.2 HVAC to remaining areas of building must not be disrupted during work of this section.

.3 System shall remain inoperative until completion of work, unless ducts can be effectively capped.

.4 Perform work at scheduled times after shutting down HVAC systems affecting the Abatement Work Area.

.5 Provide power from ground fault interrupt circuits.

.6 Provide amended water for wetting ACM, and adequate method of wetting (garden sprayers, airless sprayers, etc.).

3.2 Site Preparation –Enclosure Required

.1 Install polyethylene enclosure complete with Abatement Work Areas for the following work:

.1 Removal of friable asbestos-containing materials (less than 1 square metre).

.2 Construct Type A Hoarding Walls between Abatement Work Area perimeter and occupied areas.

.3 Install Curtained Doorways.

.4 Seal openings in floor using tape, caulking, polyethylene, etc. Floor openings are to be sealed independently prior to installation of floor polyethylene.

.5 Install polyethylene sheeting on floors of Abatement Work Area. Use sufficient layers to provide adequate protection for carpeting and equipment.

.1 Minimum requirement over carpet is one layer of 6 mil polyethylene under one layer of rip-proof polyethylene.

.2 Cover floors first so that polyethylene on walls is overlapped by at least 305 mm.

.6 Install polyethylene sheeting at openings in walls (as required) and seal.

.7 Install 6 mil polyethylene sheeting on walls within the Abatement Work Area., including existing walls that make up, or are within, the Abatement Work Area.

.8 Install one layer of 6 mil polyethylene sheeting so as to protect all equipment and finishes in the Abatement Work Area that may be damaged. Items to remain include but are not limited to:

.1 Millwork.

.2 Doors.

.3 Plumbing fixtures.

.4 Electrical Equipment.

.5 Mechanical Equipment.

.9 Provide a completely sealed polyethylene top for free standing enclosures.

.10 Extend to underside of ceiling system, enclosures for access into ceilings.

.11 Install temporary lighting in enclosure to a level that will provide for safe and efficient use of work area - minimum 550 LUX.

.12 Establish negative pressure in Abatement Work Areas as follows:

.1 Provide sufficient HEPA filtered negative pressure machines to exchange a volume of air equivalent to that of the Abatement Work Area a minimum of every 20 minutes.

.2 Provide additional HEPA filtered negative pressure machines as required to ensure air flow from Occupied Area into Abatement Work Area.

.3 Arrange negative air units to maximize the distance between units and decontamination facilities.

.4 Operate HEPA filtered negative pressure machines continuously from first disturbance of ACM until completion of dismantling.

.5 Replace prefilters to maintain specified flow rate.

.6 Replace HEPA filter as required to maintain flow rate and integrity of unit.

.7 Discharge HEPA filtered negative air machines as follows:

.1 To building exterior.

.1 Direct discharge away from building access points.

.13 Place required tools to complete the abatement with the Abatement Work Area.

.14 Install Signage in clearly visible locations and in sufficient numbers to adequately warn of an asbestos dust hazard.

.15 Schedule and obtain written approval of Milestone Inspection - Clean Site Preparation before proceeding.

3.3 Site Preparation – No Enclosure Required

.1 Cover walls, floors, finishes, millwork, equipment, and furnishings remaining in the Abatement Work Area with polyethylene sheeting before disturbing ACM to control the spread of dust.

.2 Install one layer of 6 mil polyethylene sheeting so as to protect all equipment and finishes in the Abatement Work Area that may be damaged. Items to remain include but are not limited to:

.1 Millwork.

.2 Doors.

.3 Bulkheads.

.4 Toilet Partitions.

.5 Plumbing fixtures.

.6 Electrical Equipment.

.7 Mechanical Equipment.

.8 Kitchen Equipment.

.3 Install caution tape around work area where existing walls are not present.

.4 Install Signage in clearly visible locations and in sufficient numbers to adequately warn of an asbestos dust hazard.

.5 Install temporary lighting in enclosure to a level that will provide for safe and efficient use of work area - minimum 550 LUX.

.6 Establish negative pressure in Abatement Work Areas as follows:

.1 Provide sufficient HEPA filtered negative pressure machines to exchange a volume of air equivalent to that of the Abatement Work Area a minimum of every 20 minutes.

.2 Provide additional HEPA filtered negative pressure machines as required to ensure air flow from Occupied Area into Abatement Work Area.

.3 Arrange negative air units to maximize the distance between units and decontamination facilities.

.4 Operate HEPA filtered negative pressure machines continuously from first disturbance of ACM until completion of dismantling.

.5 Replace prefilters to maintain specified flow rate.

.6 Replace HEPA filter as required to maintain flow rate and integrity of unit.

.7 Discharge HEPA filtered negative air machines as follows:

.1 To building exterior.

.1 Remove existing glazing where necessary and replace with a 19 mm plywood panel.

.2 Install panel securely in window frame so that it cannot be pushed into the building and make weather-tight with caulking.

.3 For each negative pressure unit, provide a 300 mm diameter, screened, duct opening through panel.

.4 Direct discharge away from building access points.

.5 Reinstall glazing to match existing upon completion of work.

.2 Into Occupied Areas as required.

.1 Install and make airtight all negative air discharge ducting.

.2 Use metal reinforced polyethylene discharge ducting in locations where the ducting must be protected from damage or collapse.

.7 Place required tools to complete the abatement with the Abatement Work Area.

.8 Do not commence contaminated work until authorized by the Abatement Consultant.

3.4 Schedule and obtain written approval of Milestone Inspection - Clean Site Preparation before proceeding.

3.5 Maintenance of Abatement Work Area

.1 Inspect polyethylene sheeting and ensure it is effectively sealed and taped. Repair damage and remedy defects immediately.

.2 Inspect electrical panels and ensure locks and tags are on panels prior to entering the Abatement Work Area.

.3 Inspect HEPA filtered negative pressure machines including discharge ducting at the beginning and end of each working period. Inspection must be performed by competent person.

.4 Maintain Abatement Work Area in tidy condition.

.5 Remove standing water on polyethylene/floor at the end of every shift.

.6 Turn off water supply to any hoses and reduce pressure in hose, prior to leaving the Abatement Work Area at end of shift.

3.6 Asbestos Removal - General

.1 Do not use compressed air to clean or remove dust or debris.

.2 Frequently and at regular intervals during the work, clean up dust and waste using HEPA vacuums and/or wet sweeping or mopping.

.3 Frequently and at regular intervals, place all waste in asbestos waste containers.

.4 Immediately upon completion of work, clean area with HEPA vacuum and/or wet sweeping or mopping.

3.7 Asbestos Removal - Mechanical Insulation (less than 1 Square Metre)

.1 Construct an enclosure around Abatement Work Area and use the procedures described above under *Site Preparation –Enclosure Required*. Adequately wet exterior of the ACM with amended water to suppress dust.

.2 Adequately wet exterior of the ACM with amended water to suppress dust.

.3 Remove asbestos-containing mechanical insulations in layers, maintaining all exposed surfaces of insulation in a wet condition.

.4 Remove wetted ACM directly into waste containers. Do not allow ACM to fall to the floor of the Abatement Work Area.

.5 Clean all surfaces from which ACM has been removed with scouring pads, vacuuming or wet-sponging to remove all visible material after completion of removal of ACM.

.6 Remove visible dust and debris.

.7 Seal exposed ends of asbestos-containing pipe insulation to remain, with canvas and lagging.

.8 HEPA vacuum or wet clean entire Abatement Work Area, including any surfaces not covered with polyethylene sheeting. Any materials removed to access ACM that are to be re-used, and any abatement equipment, must be wet cleaned or HEPA vacuumed prior to completion.

.9 Apply Post Removal Sealant to all surfaces within the Abatement Work Area including those from which ACM has been removed.

.10 Schedule and obtain written approval of Milestone Inspection – Clearance Sampling before proceeding.

3.8 Asbestos Removal - Dust and Debris

.1 Use the procedures described above under *Site Preparation –No Enclosure Required*.

.2 Remove visible dust and debris from the top side of suspended ceiling tiles and mechanically fastened ceiling tiles around all perimeter hollow core block walls using HEPA vacuums or wet cleaning methods.

.3 Dispose of ceiling tiles as non asbestos waste once cleaned.

.4 Proceed with the dismantlement of all barricades, etc. following receipt of authorization to proceed from the Abatement Consultant.

.5 Schedule and obtain written approval of Milestone Inspection – Clearance Sampling before proceeding.

3.9 Application of Post Removal Sealant

.1 Apply one coat of Post Removal Sealant with an airless sprayer, in accordance with Manufacturer's Instructions, to cover all surfaces on all items in the Abatement Work Area, including but not limited to polyethylene, ACM substrate, structural steel, and surfaces scheduled for demolition.

.2 Do not apply post removal sealant to materials that will be damaged by its application.

3.10 Abatement Work Area Dismantling

.1 Do not commence site dismantlement until authorized by the Abatement Consultant.

.2 Wash or HEPA vacuum equipment and tools used in contaminated Abatement Work Area to remove all asbestos contamination, or place in Asbestos Waste Containers prior to being removed from Abatement Work Area.

.3 Place tools and equipment used in contaminated work site but not cleaned in polyethylene bags prior to removal from Abatement Work Area.

.4 Clean polyethylene sheeting and drop sheets which with HEPA vacuum or wet cleaning methods at completion of work.

.5 Wet drop sheets and polyethylene sheeting.

.6 Carefully roll polyethylene sheeting and drop sheets toward the centre of enclosure. As polyethylene is rolled away, immediately remove visible debris beneath with a HEPA vacuum.

.7 Remove remaining polyethylene sheeting and tape, and dispose of as asbestos waste.

.8 Place polyethylene sheeting, drop sheets, tape, disposal clothing and other contaminated waste in asbestos waste containers, wet wipe and place in second asbestos waste container.

.9 Remove remaining site isolation, seals, tape, etc.

.10 Remove Transfer Room.

.11 Remove seals, tape, Signage etc.

.12 Immediately upon shutting down negative air units, seal air inlet grill and exhaust vent with polyethylene and tape.

.13 Seal openings in HEPA vacuums.

.14 Remove and dispose of the pre-filters from HEPA filtered negative pressure machines as asbestos waste.

.15 Remove HEPA filtered negative pressure machines and discharge ducting or HEPA vacuums.

.16 Remove temporary lights.

.17 Remove ground fault panels.

.18 Place contaminated materials including polyethylene sheeting, drop sheets, seals, tape, disposable coveralls, and other contaminated waste in asbestos waste containers.

3.11 Waste and Material Handling

.1 Refer to Section 02 81 00.

END OF SECTION

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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 Division 1 and the General Conditions of the Contract.

.2 Requirements specified elsewhere:

.1 Section 02 81 00 Hazardous Materials – General Provisions

1.2 Outline of Work

.1 Refer to Section 02 81 00 Hazardous Materials – General Provisions for the Outline of Work.

.2 Refer to Drawings E1-E8, A0-A9 and M1-M8 for the extent of the renovation Areas.

.3 Isolate the Abatement Work Area from adjoining spaces through the installation of temporary barriers and partitions as specified herein.

.4 The intent of this Section is to provide safe work practices and procedures to govern the handling, removal, clean-up and disposal of asbestos-containing materials following Glove Bag procedures, and Pinchin and Owner specific requirements.

.5 If for reasons of pipe temperature, geometry or access, Glove Bag procedures cannot be used, remove and dispose of asbestos-containing insulations as per Section 02 82 11 for less than 1 square meter, or Section 02 82 13 for greater than 1 square meter.

1.3 Instruction and Training

.1 Provide instruction and training to all workers including the following:

.1 Hazards of asbestos.

.2 Use, care and disposal of protective equipment (including but not limited to respirators and filters) and clothing that would be used and worn during abatement work, including:

.1 Limitations of equipment.

.2 Inspection and maintenance of equipment.

.3 Proper fitting of equipment.

.4 Disinfecting and cleaning of equipment.

.3 Personal hygiene to be observed when performing the work.

.4 The measures and procedures prescribed by this section and decontamination of the worker.

.5 Instruction and training must be provided by a competent person.

1.4 Personal Protection

.1 Protect all personnel at all times when possibility of disturbance of ACM exists.

.2 Provide the following minimum respiratory protection to all personnel:

.1 Non-powered half-face respirators with P100 high efficiency (HEPA) cartridge filters.

.3 Provide protective clothing, to all personnel entering the Abatement Work Area.

.4 Wear hard hats, safety shoes and other personal protective equipment required by applicable construction safety regulations.

1.5 Inspections

.1 Refer to Part 1.12 Inspections in Section 02 81 00 – General Provisions.

.2 The following Milestone Inspections are to be scheduled:

.1 Milestone Inspection - Visual Clearance.

.2 Milestone Inspection – Clearance Sampling.

PART 2 PRODUCTS AND FACILITIES

2.1 Materials and Equipment

.1 Refer to Section 02 81 00.

.2 Glove Bag: Prefabricated bag which provides a completely sealed envelope surrounding a given section of piping to permit the removal of asbestos-containing insulation from within the bag while maintaining the integrity of the bag and preventing the spread of airborne asbestos fibres. The glove bag shall be equipped with,

- .1 sleeves and gloves that are permanently sealed to the body of the bag to allow the worker 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.

.3 Securing Straps: For some types of Glove Bag, reusable nylon straps at least 25mm wide with metal tightening buckle for sealing ends of bags around pipe and/or insulation.

PART 3 EXECUTION

3.1 Site Preparation - General

.1 Moving of equipment, tools, supplies, and stored materials that can be performed without disturbing ACM will be performed by others.

.2 Shut down HVAC systems serving the Abatement Work Area.

- .1 Install polyethylene sheeting over openings in ducts and at diffusers and seal.
- .2 HVAC to remaining areas of building must not be disrupted during work of this section.
- .3 System shall remain inoperative until completion of work, unless ducts can be effectively capped.
- .4 Perform work at scheduled times after shutting down HVAC systems affecting the Abatement Work Area.

.3 Install caution tape around work area where existing walls are not present.

.4 Install Signage in clearly visible locations and in sufficient numbers to adequately warn of an asbestos dust hazard.

.5 Remove visible dust and friable material from all surfaces in the work area including those to be worked on, using HEPA Vacuums or wet wiping.

.6 Cover walls, floors, finishes, millwork, equipment and furnishings below the pipe to be worked on in the Abatement Work Area with polyethylene sheets before disturbing ACM. Drop sheets shall extend a minimum of 1,800 mm from pipe.

.7 Use existing lighting or install temporary lighting to a level that will provide for safe and efficient use of work area - minimum 550 LUX.

.8 Provide Amended Water for wetting ACM, in garden sprayers. Provide one garden sprayer for each worker.

.9 Do not used compressed air to clean or remove and dust or debris when completing work of this section.

.10 Place HEPA Vacuum in Abatement Work Area for each worker.

.11 Place required tools to complete the abatement within the Abatement Work Area.

.12 Install Signage in clearly visible locations and in sufficient numbers to adequately warn of an asbestos dust hazard.

.13 Do not commence contaminated work until authorized by the Abatement Consultant.

3.2 Maintenance of Abatement Work Area

.1 Maintain Abatement Work Area in tidy condition.

3.3 Glove Bag Removal

.1 Do not use Glove Bags on hot pipes that may damage Glove Bag. Refer to manufacturers limitations.

.2 Prior to use of Glove Bag on damaged or unjacketed insulation:

- .1 Spray any areas of damaged insulation jacketing with mist of Amended Water.
- .2 Tape over damaged insulation to provide temporary repair.
- .3 Mist areas of insulation with no jacketing and wrap with polyethylene sheeting and seal with tape.

.3 Place any tools necessary to remove insulation in tool pouch built into Glove Bag.

.4 Inspect the Glove Bag for damage and defects immediately before it is attached to the pipe or duct.

- .1 If damage or defects are observed, dispose of Glove Bag.

.5 Install Glove Bag as per manufacturer's instructions.

.6 Remove metal jacketing or banding carefully. Do not damage the Glove Bag.

.7 Remove insulation from pipe as per manufacturer's directions.

- .1 Volume and weight of insulation must not exceed capacity of the Glove Bag or supports.
- .2 Arrange insulation in the Glove Bag to maximize use of the Glove Bag.

.8 Only single use glove bags are permitted.

.9 At regular intervals during its use, if damage or defects are observed during the use of the Glove Bag, which cannot be readily repaired with tape and not affect the integrity or strength of the glove bag.

- .1 Discontinue use of Glove Bag.
- .2 Wash inner surface of Glove Bag.
- .3 Wet insulation.
- .4 Pull an Asbestos Waste Container over Glove Bag before removing from pipe.
- .5 Remove Glove Bag and Asbestos Waste Container, seal with tape.
- .6 Place in a second Asbestos Waste Container and seal with tape.
- .7 Clean immediate area with a HEPA Vacuum prior to resuming work.

.10 Glove bags may not be moved along pipe for use on adjacent sections of insulation:

.11 To remove bag after completion of insulation removal operation:

- .1 Wash inner surface of Glove Bag.
- .2 Wash and place all tools in one hand (glove), pull hand out inverted, twist to create a separate pouch, tape inverted hand at two separate locations 25 mm apart so as to seal pouch.
  - .1 Remove inverted hand and tools by cutting between the two tape seals.
  - .2 Place inverted hand pouch and tools into the next clean Glove Bag to be used or into a water bucket, open pouch underwater and clean tools.
- .3 Wet surface of insulation in lower section of bag and any exposed end of asbestos insulation remaining on pipe with Amended Water.
- .4 Insert nozzle of HEPA filtered vacuum cleaner into bag through valve and evacuate air from bag.
- .5 Seal valve cover on valve Glove Bags.
- .6 Seal closure strip if equipped with one. Twist bag at tapered point and secure with tape.
- .7 Pull an Asbestos Waste Container over Glove Bag before removing from pipe.
  - .1 Cut upper portion of single-use Glove Bag.
  - .2 Seal Asbestos Waste Container with tape.
- .8 Ensure pipe is clean of all residue after removal of Glove Bag. If necessary, after removal of each section of asbestos, vacuum all surfaces of pipe, using HEPA vacuum or wipe with wet cloth.

.12 Seal all surfaces of freshly-exposed pipe with Post Removal Sealer.

.13 Cover exposed ends of any remaining asbestos insulation with canvas and lagging using Type 2 or Moderate Risk Procedures.

3.4 Clean-Up and Dismantling

.1 Remove equipment and tools.

.2 Remove temporary lighting if used.

.3 Remove polyethylene seals from HVAC systems.

.4 Place polyethylene sheeting, drop sheets, seals, tape, clothing and other contaminated waste in asbestos waste containers, wet wipe and place in second asbestos waste container.

.5 Clean Abatement Work Area with HEPA vacuums or wet wiping/mopping.

.6 Seal openings in HEPA vacuums.

.7 Schedule and obtain written approval of Milestone Inspection – Clearance Sampling before proceeding with the removal of all barricades, etc..

.8 Remove barricades, fencing, caution tape, signs, etc.

3.5 Waste and Material Handling

.1 Refer to Section 02 81 00.

3.6 Re-Establishment of Items

.1 Upon completion of work:

.1 Move all items that were removed from Abatement Work Area prior to work, back into same location within Abatement Work Area.

.2 Enable building air handling systems.

.3 Clean and vacuum Abatement Work Area.

END OF SECTION

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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 Division 1 and the General Conditions of the Contract.

.2 Requirements specified elsewhere:

.1 Section 02 81 00 Hazardous Materials – General Provisions

1.2 Outline of Work

.1 Refer to Section 02 81 00 Hazardous Materials – General Provisions for the Outline of Work.

.2 Refer to Drawings E1-E8, A0-A9 and M1-M8 for the extent of the renovation Areas.

.3 Install Hoarding Walls between Abatement Work Area boundaries as shown on drawings.

.1 Install Type A Hoarding Walls between the Abatement Work Area and unoccupied areas.

.4 Using Type 3 (High Risk) procedures of this section, remove and dispose of the following:

.1 Asbestos-containing vermiculite insulation from within concrete block walls scheduled for demolition/renovation.

1.3 Personal Protection

.1 Protect all personnel at all times when possibility of disturbance of ACM exists.

.2 Provide the following respiratory protection to all personnel:

.1 Full Face Air Purifying Respirators with P100 high efficiency (HEPA) cartridge filters during projects when performing wet abatement asbestos-containing or contaminated materials specified in this section.

.2 Non-powered half-face respirators with P100 high efficiency (HEPA) cartridge filters for dismantling of Type 3 [High Risk] enclosures, using Type 2 [Moderate Risk] Procedures.

.3 Provide protective clothing, to all personnel entering the Abatement Work Area.

.4 Wear hard hats, safety shoes and other personal protective equipment required by applicable construction safety regulations.

1.4 Differential Pressure Monitoring

.1 Install differential pressure monitor at a location chosen by the Abatement Consultant.

.2 Co-operate with the Abatement Consultant in collection of pressure monitoring data.

.3 Maintain specified differential pressure at monitoring location. Negative air pressure is to be -0.02 inches of water, relative to the area outside the enclosed area.

1.5 Inspections

.1 Refer to Part 1.12 Inspections in Section 02 81 00 – General Provisions.

.2 The following Milestone Inspections are to be scheduled:

.1 Milestone Inspection - Clean Site Preparation.

.2 Milestone Inspection – Bulk Removal Inspection.

.3 Milestone Inspection - Visual Clearance.

.4 Milestone Inspection – Clearance Sampling.

PART 2 PRODUCTS AND FACILITIES

2.1 Materials and Equipment

.1 Refer to Section 02 81 00.

2.2 Hoarding Walls

.1 Type A Hoarding Wall: 38 mm x 89 mm wood or metal studs at 400 mm o/c with continuous sill and top plate, covered with one layer of rip-proof polyethylene sheeting on each side of wall.

2.3 Decontamination Facilities

.1 Workers' Decontamination Facility: A decontamination facility comprised of three linked rooms, Contaminated Change Room, a Shower Room, and a Clean Change Room.

.1 Rooms, Occupied Areas and Abatement Work Areas, shall be separated by curtained doorways at each door.

.2 Contaminated Change Room: Room between Shower Room and Abatement Work Area.

.1 Locate on contaminated side of Shower Room.

.2 Install asbestos waste container for asbestos contaminated protective clothing.

.3 Install storage facilities for any personal protective equipment to be reused in Abatement Work Area including boots, hard hats, etc., but excluding respirators.

.4 Minimum size of generally 2 m x 2 m. Increase size accordingly to accommodate number of workers.

.3 Shower Room: Room between Clean Change Room and Contaminated Change Room.

.1 Install one walk through shower unit for every six workers.

.2 Install constant supply of hot and cold water, controllable at each shower. Water supply must be sufficient to provide water at a minimum temperature of 40 degrees Celsius (maximum 50 degrees) in a volume required for all workers to properly decontaminate.

.1 Install individual hot and cold shut-off valves on water supply located on clean side of Shower Room. Connect shower to these valves.

.2 Install individual controls inside the shower to regulate water flow and temperature.

.3 Install rigid piping or Shower Hose with watertight connections for supply and drains.

.4 Install a sealed drip pan under and around the showers, 150 mm deep.

.5 Install sump pumps, sufficient for volume of waste shower water from showers and drip pan. Direct waste shower water to sanitary drains.

.6 Install ground fault protected power switch on clean side of shower for sump pumps, or timed for shut off.

.7 Provide adequate quantity of soap, shampoo, clean towels

.8 Install an Asbestos Waste Container for disposal of used respirator filters, on the contaminated side of the Shower Room.

.4 Clean Change Room: A room between the Shower Room and Occupied Areas.

.1 Install hooks and shelves on clean side of shower in clean Change Room for storage of respirators.

.2 Install hose bib on domestic cold water pipe for connection on clean side of Abatement Work Area.

.3 Minimum size of generally 2m x 2m. Increase size accordingly to accommodate number of workers.

.5 Waste and Equipment Decontamination Facility: Waste and Equipment Decontamination Facility comprised of three linked rooms: a Container Cleaning Room, a Holding Room and a Transfer Room.

.1 Purpose of Waste and Equipment Decontamination Facility is to provide a means to decontaminate asbestos waste containers, scaffolding, vacuums, and other tools and equipment and materials required in the Abatement Work Area.

.2 Rooms, Occupied Areas and Abatement Work Areas, shall be separated by curtained doorways at each door.

.6 Container Cleaning Room: Room between Abatement Work Area and Holding Room of sufficient size to allow proper washing of equipment and waste containers or double bagging of asbestos waste. All wash water shall be treated as asbestos contaminated waste.

.7 Holding Room: Room between Container Cleaning Room and Transfer Room, of sufficient size to accommodate at least two asbestos waste containers and two workers double bagging waste, or for largest item of equipment used.

.1 Install a fire extinguisher mounted to wall.

.8 Transfer Room: Room between Holding Room and Occupied Area, acting as an air lock for the transfer of waste.

.9 Construction of Decontamination Facilities

.1 Install floor protection as follows:

.1 Install one layer of rip-proof polyethylene sheeting over two layers of 6 mil polyethylene sheeting beneath entire decontamination facility.

.2 Turn 600 mm of polyethylene up the sides of the decontamination facility and overlap with the polyethylene sheeting covering the walls.

.3 Install plywood with taped and caulked joints between layers of 6 mil polyethylene where required to protect surfaces from water damage (e.g. carpet).

.2 Install walls as follows:

.1 Around all rooms, between all rooms, at entrance to Abatement Work Area and at entrance to Occupied Area.

.2 Install 38 x 89 mm wood framing at 610 mm o/c with continuous top and sill plates.

.3 Install one layer rip-proof polyethylene sheeting on interior walls of Decontamination Facility.

.4 Install one layer rip-proof polyethylene sheeting both sides on interior dividing walls of Decontamination Facility.

.5 Install one layer rip-proof polyethylene sheeting over one layer of 6 mil polyethylene sheeting on walls exposed to the Abatement Work Area.

.6 Install one layer rip-proof polyethylene sheeting over one layer of 6 mil polyethylene sheeting on walls exposed to the Occupied Area.

.3 Install roof as follows:

.1 Install joists. Size of joists is to be determined by clear span. Consult Provincial Building Code. For clear spans up to 2850 mm use SPF Select 38 x 140 mm wood joist at 400 mm o/c with continuous 38 x 140 mm wood headers, and install strapping beneath joists.

.2 At the Contaminated Change Room and where roof is exposed to the Abatement Work Area, install 19 mm plywood or OSB over joists. Caulk and tape joints and install one layer rip-proof polyethylene sheeting over 2 layers of 6 mil polyethylene sheeting.

.3 Where roof is not exposed to the Abatement Work Area, install one layer rip-proof polyethylene sheeting over joists.

.4 Turn 600 mm of polyethylene down the sides over polyethylene on the perimeter walls.

.5 At underside of joists in all rooms, install one layer of polyethylene sheeting.

.6 Minimum interior clear height 2000 mm to underside of joist.

.10 Curtained Doorways

.1 Construct as follows:

.1 Install two flap doors, full width and height of door opening at all doors between chambers, facilities and Abatement Work Area.

.2 Construct each flap door of two layers of polyethylene sheeting with all edges reinforced with tape. Use wood strapping to securely fasten flap doors to head and alternate jambs.

.3 Install weights attached to bottom edge of each door flap.

.4 Provide direction arrows on flaps to indicate opening.

PART 3 EXECUTION

3.1 Clean Site Preparation

.1 Moving of equipment, tools, supplies, and stored materials that can be performed without disturbing ACM will be performed by others.

.2 Remove visible dust and friable material from all surfaces in the work area including those to be worked on, using HEPA Vacuums or wet wiping using Type 2 (Moderate Risk) Procedures.

.3 Remove surface mounted fixtures specified to be reused or turned over to Owner.

.4 Install Hoarding Walls between Abatement Work Area and Occupied Area.

.5 Install Worker Decontamination facility.

.1 Worker Decontamination Facility to be located within the Abatement Work Area.

.2 Waste Decontamination Facility to be located within the Abatement Work Area.

.6 Install one layer of rip-proof polyethylene sheeting over two layers of 6 mil polyethylene sheeting so as to protect all equipment and finishes in the Abatement Work Area that may be damaged. Items to remain include but are not limited to:

.1 Millwork.

.2 Doors.

.7 Seal openings (excepting electrical trenches) in floor using tape, caulking, polyethylene, etc. Openings in floor are to be sealed independently prior to installation of polyethylene sheeting on floor. Include floors of duct and service shafts.

.8 Seal openings in walls below ceiling level using polyethylene, tape, caulking, etc. including but not limited to windows, doors, vents, diffusers, etc.

.9 Seal openings in ceiling, using polyethylene, tape, caulking, etc. including diffusers, grills, etc.

.10 Install one layer of rip-proof polyethylene sheeting over two layers of 6 mil polyethylene sheeting, on floor surfaces in Abatement Work Area.

.1 Extend floor protection a minimum of 300 mm up all vertical surfaces in the Abatement Work Area.

.11 On walls within and forming the perimeter of the Abatement Work Area install two layers of 6 mil polyethylene sheeting.

.1 At junction of floor and wall surface overlap floor polyethylene with wall polyethylene by a minimum of 300 mm at each layer. One layer of wall polyethylene must always overlap the top layer of floor polyethylene.

.12 Establish negative pressure in Abatement Work Areas as follows:

.1 Discharge HEPA filtered negative pressure machines as follows:

.1 To building exterior.

.1 Direct discharge away from building access points or fresh air intakes.

.2 Use metal reinforced polyethylene discharge ducting in locations where the ducting must be protected from damage or collapse.

.3 Install and make airtight all negative air discharge ducting.

.4 Discharge ducting is not to be longer than required, and to be straight, so that the length of the ducting does not reduce the flow from negative pressure machines.

.5 Install in-line booster fans along the length of discharge ducting wherever site conditions require negative air unit discharge to be directed over distances greater than 12 m (40 ft.). Position booster fans so as to avoid any disruption to operations in Occupied areas.

.2 Leak test in place using DOP method, negative pressure units which discharge directly into Occupied Areas.

.3 Discharge into Occupied Areas only with written approval of the Asbestos Abatement Consultant.

.13 Provide one specified ground fault electrical panel for each 300 square metres of Asbestos Work Area. All electrical apparatus including temporary heating equipment shall be supplied from a ground fault system. Ensure safe installation of electrical lines and equipment by skilled tradesmen.

.14 Install temporary lighting in all work areas at levels that will provide for a safe and efficient use of the work area.

.15 Isolate, at panel, and disconnect existing power supply to Abatement Work Area. Power supply to remaining areas of building must not be disrupted during work of this section.

.1 Lock-out/tag-out power at electrical panels.

.2 Mark/tag any items within or passing through the Abatement Work Area that are to remain live including but not limited to cable, conduit, wire, fixtures, equipment panels, etc.

.16 Install hose bib on domestic cold water pipe for connection of hoses for wetting.

.1 Install hoses with watertight connections and airless sprayers to wet asbestos-containing materials.

.17 Shut down HVAC systems serving the Abatement Work Area.

.1 Disable any exhaust/return systems at induction units, washrooms, etc.

.2 Seal and protect induction units with one layer of 6 mil polyethylene sheeting.

.18 Perform clean demolition of non-asbestos materials as specified.

.19 Install signage in clearly visible locations and in sufficient numbers to adequately warn of an asbestos dust hazard.

.20 Notify Abatement consultant Milestone Inspection - Clean Site Preparation. Obtain written approval for this Milestone Inspection before proceeding.

3.2 Maintenance Of Contaminated Abatement Work Area

.1 Inspect Abatement Work Area perimeter Hoarding Walls and Upper Perimeter Seals at the beginning and end of each working period and once on each day work does not take place. Inspection must be performed by competent person.

.2 Inspect HEPA filtered negative pressure machines including discharge ducting at the beginning and end of each working period. Inspection must be performed by competent person.

.3 Perform Differential Pressure Monitoring on a frequent basis and record pressure at start and end of shift at a minimum.

.4 Inspect polyethylene sheeting and ensure it is effectively sealed and taped. Repair damage and remedy defects immediately.

.5 Inspect electrical panels and ensure locks and tags are on panels prior to entering the Abatement Work Area.

.6 Maintain Abatement Work Area in tidy condition.

.7 Remove waste and debris frequently.

.8 Remove standing water on polyethylene/floor at the end of every shift.

.9 Turn off water supply to hoses and reduce pressure in hose, prior to leaving the Abatement Work Area at end of shift.

.10 Turn off water supply to showers, at the end of every shift.

.11 Ensure shower pans are pumped out at the end of every use and shift.

3.3 Wet Removal

.1 Do not use compressed air to clean or remove dust or debris.

.2 Conduct selective demolition as required to remove door frame from section of hollow core block wall.

.3 Saturate asbestos-containing vermiculite to prevent release of airborne fibres during removal.

.4 All dislodged vermiculite shall be maintained in wet state until placed in asbestos waste containers for disposal.

.5 As work progresses, and at regular intervals, place waste in asbestos waste containers and remove from the Abatement Work Area.

.6 After completion of hollow core wall demolition, perform the following:

.1 Completely seal using spray foam exposed sections of hollow core wall cavities.

.2 Wet clean surfaces which vermiculite has fallen on using stiff bristle brushes, vacuums, wet-sponges etc. to remove all visible residue and asbestos-containing materials

.3 Wet clean other surfaces in the Abatement Work Area, including the decontamination facilities, equipment, polyethylene sheeting on floor and walls surfaces etc., and similar items not covered with polyethylene sheeting.

.4 Remove wash water as contaminated waste.

.5 Remove waste.

.6 Level of cleanliness must be acceptable to Abatement Consultant.

.7 Remove and dispose of the pre-filters from all negative air units as asbestos-contaminated waste.

.7 Notify Abatement Consultant to the need for Milestone Inspection - Visual Clearance.

3.4 Waste and Material Handling

.1 Waste bins must be placed on grade or in receiving.

.2 All bins must be covered and locked when waste transfer is not being performed.

.3 Ensure redundant non-ACM, rubble, debris, etc. which was not cleaned and which was removed during contaminated work are treated, packaged, transported and disposed of as asbestos waste.

.4 Clean, wash and apply Post Removal Sealant to metal waste prior to removal from Abatement Work Area.

.5 Clean and wash equipment prior to removal from Abatement Work Area if removed prior to completion.

.6 Place all equipment, tools and unused materials that cannot be cleaned in Asbestos Waste Containers.

.7 As work progresses, and at regular intervals, transport the sealed and labelled asbestos waste containers from the Abatement Work Area to waste bin.

.8 Place items in bins according to waste classification. Place asbestos waste, metals, non-asbestos waste, etc. in separate bins.

.9 Removal of waste containers and decontaminated equipment and materials from the Abatement Work Area shall be performed using the Waste and Equipment Decontamination Facility as follows:

.1 Prior to entering the Waste and Equipment Decontamination Facility Container Cleaning Room, the first worker (fully protected inside the Abatement Work Area) shall remove any visible contamination from the surface of the item or waste container being removed from the Abatement Work Area.

.2 The first worker then carries the item into the Container Cleaning Room and wet sponges the item prior to passing the item through the curtained doorway to a second worker in the Holding Room. (The second worker shall be fully protected with respirator and disposable clothing and may only leave the decontamination facility via the Abatement Work Area.)

.3 The second worker in the Holding Room double bags or wraps and seals the item. Without entering the Transfer Room, the second worker passes the item through the curtained doorway into the Transfer Room.

.4 A third worker enters the Transfer Room from the clean area. (The third worker must never enter the Holding Room.) The third worker removes the item from the Transfer Room and transports it to the disposal bin.

.10 Dispose of any asbestos-contaminated waste that could tear a 6 mil (0.15 mm) polyethylene bag in sealed rigid Asbestos Waste Container.

.11 Transport waste and materials via the predetermined routes and exits. Arrange waste transfer route with Owner. Use a closed, covered cart to transport through Occupied Areas.

.12 Provide workers transporting waste with means to access full personal protective equipment and all tools required to properly clean up spilled ACM in the case of a rupture of an Asbestos Waste Container.

.13 Bin loading area and waste routes shall be kept clean at all times. Use Type 2 asbestos abatement procedures if appropriate or requested by Owner's Representative.

.14 Pick-up and drop off of garbage bin shall be at pre-approved times, and must not interfere with the Owners operations.

.15 Transport asbestos contaminated waste to landfill licensed by Manitoba Conservation and Climate.

.16 Co-operate with inspectors from the provincial regulator and immediately carry out instructions for remedial work at dump to maintain environment, at no additional cost to the Owner.

3.5 Application Of Post Removal Sealant

.1 Wet Removal

.1 Obtain Abatement Consultant's written permission to proceed.

.2 Apply one coat of Post Removal Sealant with an airless sprayer, in accordance with Manufacturer's Instructions, to cover all surfaces on all items in the Abatement Work Area, including but not limited to polyethylene, ACM substrate, structural steel, and surfaces scheduled for demolition.

.1 Do not apply post removal sealant to materials that will be damaged by its application.

.3 Notify Abatement Consultant to the need for Milestone Inspection – Clearance Sampling.

3.6 Air Clearance Monitoring

.1 Site must be dry prior to Air Clearance Monitoring.

.2 The number of Air Clearance Monitoring samples will be as follows:

.1 One sample for every 250 square metres of enclosure volume, minimum of one.

.3 Restrict access to Abatement Work Area and operate negative air units for a 12 hour period prior to Milestone Inspection – Clearance Sampling.

.4 The HEPA filtered negative pressure machines shall be in operation during clearance air monitoring.

.5 PCM samples will be collected as per Air Monitoring Section.

.6 Restrict access to Abatement Work Area and operate negative air units for a 12 hour period prior to Milestone Inspection – Clearance Sampling.

.7 The HEPA filtered negative pressure machines shall be in operation during clearance air monitoring.

.8 In the presence of the Abatement Consultant, immediately prior to air clearance monitoring, use a leaf blower to dislodge loose fibre.

.1 Direct leaf blower against walls, ceilings, floors, and other surfaces.

.2 Perform this for at least five minutes per 1,000 sq. ft. of Abatement Work Area.

.9 PCM samples will be collected as per Air Monitoring Section.

3.7 Abatement Work Area Dismantling

.1 Continue to restrict access by other trades, unauthorized personnel, etc., to the Asbestos Work Area, until approval of Milestone - Dismantling Inspection is obtained.

.2 Maintain hoardings, decontamination facilities and negative air unit(s) fully functional during teardown and removal of asbestos contaminated polyethylene, tape, etc.

.3 Use Type 2 (Moderate Risk) worker precautions during dismantling.

.4 Operate negative air units during dismantling.

.5 Phase the removal of polyethylene, tape, polyurethane foam, caulking and enclosures from the Asbestos Work Area so as to maintain perimeter isolation as long as possible.

.6 Polyethylene, tape, cleaning material, etc. to be treated as asbestos waste.

.7 Wash remaining equipment and tools used in contaminated Abatement Work Area to remove all asbestos contamination, or place in Asbestos Waste Containers prior to being removed from Abatement Work Area.

.8 Clean Abatement Work Area, Equipment and Access area, washing/Showering Room.

.9 Remove upper seals, and seals over tops of walls, on deck, at columns, etc. within the Abatement Work Area.

.10 Remove top layer of polyethylene sheeting from surfaces protected by two or more layers of polyethylene sheeting. The bottom layer of polyethylene will remain until all re-fireproofing is complete. Remove outer layer as follows:

.1 Remove asbestos contaminated Polyethylene by carefully rolling away from walls to centre of Abatement Work Area.

.2 Cut the lower layer of polyethylene sheeting to expose the baseboards, window sills, cabinets, shelves and other horizontal surfaces that may be contaminated by fallen ACM.

.3 Remove visible fibres or residue found during removal of polyethylene using a HEPA vacuum.

.4 Remove polyethylene protection and hoarding walls where hoarding walls separate occupied areas from work area. Hoarding walls to remain are identified on asbestos demolition drawings.

.11 Remove top layer of polyethylene on walls, finishes, and equipment.

.12 Remove remaining polyethylene sheeting.

.13 Remove water hoses and shut off at source.

.14 Remove Signs, Hoarding Walls, Decontamination Facilities, Equipment Enclosures, Tunnels, Platforms.

.15 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.

.16 Remove temporary lights.

.17 Remove negative air unit prefilters. Dispose of as asbestos contaminated waste.

.18 Remove HEPA filtered negative pressure machines and discharge ducting.

.19 Immediately upon shutting down negative air units, seal air inlet grill and exhaust vent with polyethylene and tape.

.20 Notify Abatement Consultant to the need for Milestone Inspection - Dismantling Inspection.

3.8 Re-Establishment of Items

.1 Upon completion of work:

.1 Remove and disconnect Ground fault Panel, tags and locks from electrical panels and re-energize equipment and items.

.2 Remove hose bibs installed and repair pipe.

.3 Remove negative air discharge panel and reinstall glazing to match existing.

.4 Reinstall ducts removed to perform cleaning of ducts or to access ACM.

.5 Clean, mop and vacuum Abatement Work Area and area beneath any tunnels, platform and Decontamination Facilities.

.6 Enable building air handling systems.

.2 Notify Abatement Consultant to the need for Milestone Inspection – Re-establishment Inspection.

END OF SECTION

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