1 General

1.1 REGULATORY REQUIREMENTS

.1 Comply with applicable regulatory requirements when disposing of waste materials.

.2 Obtain permits from authorities having jurisdiction and pay disposal fees where required for disposal of waste materials and recyclables.

1.2 GENERAL CLEANING REQUIREMENTS

.1 Provide adequate ventilation during use of volatile or noxious substances. Do not rely on building ventilation systems for this purpose.

.2 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

.3 Prevent cross-contamination during cleaning process.

.4 Notify Consultant of the need for cleaning caused by Owner or Other Contractors.

.5 Assign cleaning duties to special dedicated crew with own foreman and of sufficient size and skill to prevent accumulation of waste, debris and dirt at Place of the Work.

1.3 PROGRESSIVE CLEANING AND WASTE MANAGEMENT

.1 Maintain the Work in tidy and safe condition, free from accumulation of waste materials and construction debris.

.2 Provide appropriate, clearly marked, containers for collection of waste materials and recyclables. Locate containers where they will not hinder the progress of the Work and Owner's continuing operations.

.3 Owner's existing waste containers at Place of the Work may not be used during construction.

.4 Owner's custodial equipment and supplies may not be used during construction.

.5 Remove waste materials and recyclables from work areas, separate and deposit in designated containers at end of each Working Day. Collect packaging materials for recycling or reuse.

.6 Remove waste materials and recyclables from Place of the Work at regular intervals.

.7 Clean interior building areas prior to start of finish work and maintain free of dust and other contaminants during finishing operations.

.8 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly finished surfaces nor contaminate building systems.

1.4 FINAL CLEANING

.1 Before final cleaning, arrange a meeting at Place of the Work to determine the acceptable standard of cleaning. Ensure Owner, Consultant, Contractor and cleaning Subcontractor are in attendance.

.2 Remove from Place of the Work surplus Products, waste materials, recyclables, Temporary Work and Construction Equipment not required to perform any remaining work.

.3 Provide professional cleaning by a recognized, established cleaning company.

.4 Lock or otherwise restrict access to each room or area after completing final cleaning in that area.

.5 Re-clean as necessary areas that have been accessed by Contractor's workers prior to Ready-for-Takeover.

.6 Remove stains, spots, marks and dirt from finished surfaces, mechanical and electrical fixtures, furniture, fitments, walls and floors.

.7 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate and other finished surfaces, including mechanical and electrical fixtures. Replace broken, scratched or otherwise damaged glass.

.8 Remove dust from lighting reflectors, lenses, lamps, bulbs and other lighting surfaces.

.9 Vacuum clean and dust exposed wall, floor and ceiling surfaces, above suspended ceiling tiles, and behind grilles, louvres and screens.

.10 Clean mechanical, electrical, and other equipment. Replace filters for mechanical equipment if equipment has been used during construction.

.11 Remove waste materials and debris from crawlspaces and other accessible concealed spaces.

.12 Remove stains, spots, marks and dirt from exterior facades.

.13 Clean exterior and interior window glass and frames.

.14 Clean and sweep roofs, and clear roof drains.

.15 Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.

.16 Power wash exterior paved surfaces.

.17 Use leaf blower to clean landscaped surfaces.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Dispose of waste materials and recyclables at appropriate municipal landfills and recycling facilities in accordance with applicable regulatory requirements.

.2 Do not burn or bury waste materials at Place of the Work.

.3 Do not dispose of volatile and other liquid waste such as mineral spirits, oil, paints and other coating materials, paint thinners, cleaners, and similar materials together with dry waste materials or on the ground, in waterways, or in storm or sanitary sewers. Collect such waste materials in appropriate covered containers, promptly remove from Place of the Work, and dispose of at recycling facilities or as otherwise permitted by applicable regulatory requirements.

.4 Cover or wet down dry waste materials to prevent blowing dust and debris.

1.6 HAZARDOUS WASTE DISPOSAL

.1 Refer to Section 02 81 00.

.2 If and when required, remove and dispose of hazardous or contaminated waste materials in accordance with applicable regulatory requirements.

.3 Hazardous or contaminated waste materials must be transported by a licensed waste hauling company.

.4 Submit a copy of hauling company's Certificate of Approval to authority having jurisdiction prior to transporting any hazardous or contaminated waste materials.

.5 Stockpile suspected hazardous or contaminated waste material temporarily in neat and secure stockpiles overlying a double layer of 0.20 mm thick high density polyethylene.

.6 Isolate stockpiles from remainder of Place of the Work and cover with a single layer of 0.20 mm thick polyethylene to prevent entry, wind disturbance or collection of surface water.

.7 Do not transport potentially hazardous or contaminated waste materials until such materials have been properly identified by appropriate authority having jurisdiction.

END OF SECTION

1 General

1.1 PROTECTION OF EXISTING PROPERTY

.1 Protect Owner's existing property and property adjacent to Place of the Work from damage.

.2 Make Good damage to Owner's existing property resulting from performance of the Work.

.3 Do not undertake to Make Good damage to any property located adjacent to Place of the Work, or acknowledge that such damage was caused or occasioned by Contractor, without first consulting with Owner and receiving written instructions as to the course of action to be followed.

.1 Under such circumstances, where there is danger to life or property, Contractor may take such emergency action as he deems necessary to remove the danger.

.2 Contractor shall indemnify and hold harmless Owner and Consultant, including their agents and employees from and against claims, demands, losses, costs, damages, actions, suits, or proceedings by third parties that arise out of, or are attributable to, such emergency action.

1.2 PROTECTION OF COMPLETED WORK AND WORK IN PROGRESS

.1 Adequately protect parts of the Work completed and in progress from any kind of damage.

.2 Do not load or permit to be loaded any part of the Work with a weight or force that will endanger the safety or integrity of the Work.

.3 Refer to Product Specifications for material-specific protection requirements.

.4 Unless specified otherwise, maintain protection until Ready-for-Takeover.

.5 Remove protection and protective coverings upon expiry of specified duration.

.6 Promptly Make Good parts of the Work damaged as a result of inadequate protection.

END OF SECTION

1 General

1.1 READY-FOR-TAKEOVER

.1 Prerequisites to attaining Ready-for-Takeover of the Work are described in General Conditions of the Contract.

.2 Ready-for-Takeover is required on or before March 21, 2025.

1.2 INSPECTION AND REVIEW BEFORE READY-FOR-TAKEOVER

.1 Contractor's Inspection: Before applying for Consultant's review to establish Ready-for-Takeover of the Work:
.1 Ensure specified prerequisites for Ready-for-Takeover of the Work are completed.
.2 Conduct an inspection of the Work to identify defective, deficient, or incomplete work.
.3 Prepare a comprehensive and detailed list of items to be completed or corrected.
.4 Submit an anticipated schedule and costs for items to be completed or corrected.

.2 Consultant's Review: Upon receipt of Contractor's application for review, together with Contractor's list of items to be completed or corrected, Consultant will review the Work. Consultant will advise Contractor whether or not the Work is Ready-for-Takeover and will prepare and give Contractor a list of items, if any, to be added to Contractor's list of items to be completed or corrected. Submit to Consultant a revised list of items to be completed or corrected.

.3 Maintain the list of items to be completed or corrected and promptly correct or complete defective, deficient and incomplete work. Contractor's inspection and Consultant's review procedures specified above shall be repeated until the Work is Ready-for-Takeover and no items remain on Contractor's list of items to be completed or corrected.

.4 When Consultant determines the Work is Ready-for-Takeover, Consultant will notify Contractor and Owner in writing to that affect.

1.3 PREREQUISITES TO FINAL PAYMENT

.1 After Ready-for-Takeover of the Work and before submitting an application for final payment in accordance with General Conditions of the Contract:
.1 Correct or complete all remaining defective, deficient, and incomplete work.
.2 Remove from Place of the Work surplus Products, Construction Equipment, and Temporary Work.
.3 Perform final cleaning and waste removal necessitated by Contractor's work performed after Ready-for-Takeover, as specified in Section 01 74 00.

1.4 PARTIAL USER OCCUPANCY

.1 If partial Owner occupancy of a part of the Work is required before the date of Ready-for-Takeover of the Work of the Contract, the provisions of this Section shall apply to the extent applicable, to that part of the Work that Owner intends to occupy.

1.5 SUBSTANTIAL PERFORMANCE OF THE WORK

.1 Prerequisites to, and procedures for, attaining Substantial Performance of the Work shall be:
.1 Independent of those for attaining Ready-for-Takeover of the Work.
.2 In accordance with lien legislation applicable at Place of the Work.

END OF SECTION

1 General

1.1 OPERATION AND MAINTENANCE MANUAL

.1 Prepare a comprehensive operation and maintenance manual, in the language of the Contract, using personnel qualified and experienced for this task.

.2 Submit an initial draft of operation and maintenance manual for Consultant's review. If required by Consultant's review comments, revise manual contents and resubmit for Consultant's review. If required, repeat this process until Consultant accepts draft manual in writing.

.3 Submit final version of operation and maintenance manual to Owner in digital format.

1.2 OPERATION AND MAINTENANCE MANUAL FORMAT

.1 Organize data in the form of an instructional manual.

.2 Arrange content by systems, under Section numbers and sequence of Table of Contents.

.3 Prepare operation and maintenance manual as a portable document format (.pdf) file.

.4 When multiple files are used, correlate data into related consistent groupings. Identify contents of each file in file name.

.5 Submit operation and maintenance manual on electronic media type acceptable to Owner.

.6 Include electronic bookmarks for each separate Product and system, with description of Product and major component parts of equipment.

.7 Include digital copy of Shop Drawings in manual as portable document format (.pdf) files.

1.3 OPERATION AND MAINTENANCE MANUAL - GENERAL CONTENT

.1 Table of Contents for each volume.

.2 Introductory information, including:
.1 Date of manual submission.
.2 Complete contact information for Consultant, subconsultants, other consultants, and Contractor, with names of responsible parties identified for each.
.3 Schedule of Products and systems indexed to content of volume.

.3 For each Product or system, include complete contact information for Subcontractors, Suppliers and manufacturers, including local sources for supplies and replacement parts.

.4 Product Data: Mark each sheet to clearly identify specific Products, options, and component parts, and data applicable to installation. Delete or strike out inapplicable information. Supplement with additional information as required.

.5 Reviewed Shop Drawings.

.6 Permits, certificates, letters of assurance and other relevant documents issued by or required by authorities having jurisdiction.

.7 Warranties.

.8 Operating and maintenance procedures, incorporating manufacturer's operating and maintenance instructions, in a logical sequence.

.9 Training materials as specified in Section 01 79 00.

1.4 OPERATION AND MAINTENANCE MANUAL - EQUIPMENT AND SYSTEMS CONTENT

.1 Each Item of Equipment and System: Include description of unit or system and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.

.2 Panel Board Circuit Directories: Include electrical service characteristics, controls, and communications.

.3 Include installed colour coded wiring diagrams.

.4 Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

.5 Maintenance Requirements: Include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

.6 Include servicing and lubrication schedule, and list of lubricants required.

.7 Include manufacturer's printed operation and maintenance instructions.

.8 Include sequence of operation by controls manufacturer.

.9 Include original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

.10 Include Contractor's coordination drawings, with installed colour coded piping diagrams.

.11 Include charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

.12 Include list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

.13 Include testing and balancing reports.

.14 Include additional content as specified in Product Specifications.

1.5 OPERATION AND MAINTENANCE MANUAL - PRODUCTS AND FINISHES

.1 Include Product data, with catalogue number, options selected, size, composition, and colour and texture designations. Include information for re-ordering custom manufactured Products.

.2 Include instructions for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.

.3 Include an outline of requirements for routine and special inspections and for regular maintenance to ensure that on-going performance of building envelope will meet initial building envelope criteria.

.4 Include additional content as specified in Product Specifications.

1.6 OPERATION AND MAINTENANCE MANUAL - WARRANTIES CONTENT

.1 Separate each warranty with index tab sheets keyed to Table of Contents listing.

.2 List each warrantor with complete contact information.

.3 Verify documents are in proper form and contain full information. Ensure warranties are for correct duration and are in Owner's name.

1.7 PROJECT AS-BUILT RECORD DRAWINGS

.1 Transfer information marked up on the as-built record drawings during progress of the Work to a master set of electronic drawing files obtained from Consultant.

.2 Mark revised drawings as "AS-BUILT DRAWINGS".

.3 Submit completed record drawings in hard copy and electronic forms to Owner. Submit three hard copies.

.4 Submit electronic copies as both Autodesk AutoCAD (.dwg) files and portable document format (.pdf) files.

1.8 SPARE PARTS, EXTRA STOCK MATERIALS AND SPECIAL TOOLS

.1 Supply spare parts, extra stock materials and special tools in quantities specified in technical specification Sections.

.2 Ensure spare parts and extra stock materials are new, not damaged or defective, and of same quality, manufacturer, and batch or production run as installed Products.

.3 Include tags for special tools identifying their function and associated Product.

.4 Deliver to and store items at location directed by Owner at Place of the Work. Store in original packaging with manufacturer's labels intact and in a manner to prevent damage or deterioration.

.5 Catalogue items and submit to Consultant an inventory listing organized by specification Section numbers. Include Consultant reviewed inventory listing in operation and maintenance manual.

END OF SECTION

1 General

1.1 ADMINISTRATIVE REQUIREMENTS

.1 Demonstrate and train Owner's personnel on operation and maintenance of equipment, building envelope and systems prior to scheduled date of Ready-for-Takeover.

.2 Owner will prepare a list of personnel to receive training, and will coordinate their attendance at agreed upon times.

.3 Coordinate and schedule demonstration and training given by Subcontractors and Suppliers.

1.2 SUBMITTALS

.1 Submit proposed dates, times, durations, and locations for demonstration and training of each item of equipment and each system for which demonstration and training is required. Allow sufficient time for training and demonstration for each item of equipment or system, or time as may be specified in technical specification Sections.

.2 Consultant and Owner will review submittal and advise Contractor of any necessary revisions.

.3 Submit reports within 5 Working Days after completion of demonstration and training:
.1 Identifying time and date of each demonstration and training session.
.2 Summarizing the demonstration and training performed.
.3 Including a list of attendees.

.4 Submit video recordings of demonstration and training sessions together with reports.

1.3 PREREQUISITES TO DEMONSTRATION AND TRAINING

.1 Ensure testing, adjusting and balancing has been performed in accordance with Contract Documents.

.2 Ensure equipment and systems are fully operational.

.3 Ensure a copy of the completed operation and maintenance manual is available for use in demonstration and training.

.4 Ensure conditions for demonstration and training comply with requirements specified in technical specification Sections.

1.4 DEMONSTRATION AND TRAINING

.1 Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, and maintenance of each item of equipment and system.

.2 Review operation and maintenance manual in detail to explain all aspects of operation and maintenance.

.3 Prepare and insert additional data in operation and maintenance manual if required.

END OF SECTION

1 General

1.1 RELATED SECTIONS

.1 Section 02 81 00 - Hazardous Materials - General Provisions.

.2 Section 02 82 00.01 - Asbestos Abatement - Type 1 (Low Risk) Procedures.

.3 Section 02 82 00.02 - Asbestos Abatement - Type 2 (Moderate Risk) Precautions.

.4 Section 02 82 00.04 - Asbestos Abatement - Glove Bag.

1.2 REFERENCES

.1 CSA S350-M1980 (R2003): Code of Practice for Safety in Demolition of Structures.

.2 CSA Z783-12: Deconstruction of Buildings and Their Related Parts.

1.3 SEQUENCING

.1 Schedule deconstruction activities to minimize disruption to existing facility operations.

.2 Verify deconstruction schedule with Consultant prior to commencement of the Work.

.3 Protect existing facility occupants from dust and from any danger arising from deconstruction operations. Refer to Section 01 56 00.

.4 Coordinate deconstruction activities with designated substance abatement operations, as specified in Section 02 81 00.

1.4 SPECIAL PROCEDURE SUBMITTALS

.1 Submit three copies of each photograph taken of existing conditions to Consultant.

1.5 QUALIFICATIONS

.1 Demolition Supervisor: An individual experienced in building deconstruction, capable of ensuring deconstruction is carried out safely, expeditiously and without unnecessary damage to materials and surfaces that are designated to remain.

1.6 FIELD CONDITIONS

.1 Inspect and photograph existing adjacent surfaces and assemblies.

.2 Record conditions and stability in a manner suitable for evaluation of possible damage caused by deconstruction operations.

.3 Approximate locations of existing facility services may be indicated on Drawings. Owner and Consultant assume no responsibility for accuracy of such information.

2 Products

2.1 REGULATORY REQUIREMENTS

.1 Permits and Fees: Include tipping charges and other related fees necessary for completion of deconstruction operations.

.2 Utilities: Obtain approval from authorities having jurisdiction prior to commencing deconstruction operations.

.3 Hazardous Waste: Conform to authorities having jurisdiction.

2.2 EQUIPMENT

.1 Deconstruction: Appropriate equipment for type of deconstruction being contemplated.

.2 Do not use heavy equipment for making openings in existing walls or in confined spaces where damage to other parts of the Work or adjacent property may result.

3 Execution

3.1 EXAMINATION

.1 Refer to Section 01 71 00.

.2 Verify locations and construction of structures to be demolished.

.3 Verify construction and details of other existing and adjacent property.

.4 Verify location of utility and facility services.

.5 Undertake x-ray investigations of existing building elements designated for selective demolition to determine locations of concealed components.

3.2 PREPARATION

.1 Erect shoring, bracing and other temporary structures to prevent collapse, settlement and movement of property. Refer to Section 01 56 00.

.2 Provide and maintain dust protection screen as specified in Section 01 56 00.

.3 Provide and maintain weather enclosures as specified in Section 01 56 00.

.4 Barricade access by unauthorized persons to areas in which deconstruction is in-progress.

.5 Post danger signs in conspicuous locations to warn persons that deconstruction is in-progress.

.6 Erect protection to ensure safe access that must be maintained to existing areas still occupied by the public.

.7 Protect adjacent property from damage caused by deconstruction operations.

.8 Remove flammable and contaminated materials, and refuse from area before deconstruction operations commence.

.9 Arrange for disconnection, capping and plugging of facility services that may be affected by deconstruction operations.

3.3 DECONSTRUCTION

.1 Perform deconstruction work in an expeditious and safe manner.

.2 Conform to CSA S350-M and CSA Z783.

.3 Confine deconstruction operations to only those areas required.

.4 Prevent and contain the spread of dust.

.5 Do not drop debris more than one storey unless in an enclosed chute. Lower large components carefully, under control and fully supported at all times.

.6 Withdraw or flatten protruding nails as deconstruction operations proceed.

3.4 SALVAGE

.1 Carefully remove materials scheduled for salvage to CSA Z783.

.2 Refer to Drawings for list of items scheduled for salvage.

.3 Clean and prepare salvaged items for use by others.

.4 Store salvaged materials in secure locations, protected from damage.

.5 Items not scheduled for salvage become property of Contractor.

3.5 CLEANING

.1 Leave Place of the Work in a clean and orderly condition, ready for use by others.

.2 Remove waste and debris as specified in Section 01 74 00 and in accordance with authorities having jurisdiction.

.3 Remove protections, barricades and other temporary constructions on completion of deconstruction operations.

.4 Make Good property and materials damaged during deconstruction operations.

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 the General Conditions of the Contract.

.2 Related work specified elsewhere:

.1 Section 02 82 00.01 Asbestos Abatement – Type 1 Procedures

.2 Section 02 82 00.02 Asbestos Abatement – Type 2 Procedures

.3 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. It is recommended each Contractor confirm existing conditions on site prior to tender close.

.1 The specification fulfils the requirements of Section 30 of the Ontario Occupational Health and Safety Act.

.2 The specification fulfils the requirements of the Section 10 of Ontario Regulation 278/05.

.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 report entitled “Hazardous Building Materials Assessment (Pre-Construction, Gym Renovations, Rosedale Elementary School, 25 Erindale Avenue, Hamilton, Ontario”, dated March 28, 2024, prepared by Pinchin Ltd., file number 336572.005.

1.3 Outline of Work

.1 Coordinate the following items with the Owner’s Project Manager and the Construction Manager, which is to be included in the abatement contractor’s scope of work, 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 the Contract Drawings for the extent of construction work and the Work Areas.

.3 Install Hoarding Walls between Abatement Work Areas and Occupied Areas as required.

.4 Using Type 1 procedures prescribed in the Section identified in Related Work, remove and dispose of asbestos-containing vinyl floor tiles from the Gym, Stage/Under Stage, Kitchen, and Storage (Locations 8325, 8324, 8327, and 8329).

.5 Using Type 2 procedures, with full enclosure, prescribed in the Section identified in Related Work, remove and dispose of the following using power tools equipped with an efficient HEPA filtered dust collection device where scheduled to be removed:

.1 Transite ceiling tiles, light fixtures, grids, supports, hangers, fibreglass insulation on top of tiles, and all items affixed to Transite ceiling tiles.

.1 Turn over items removed to owner as required.
.2 Items not scheduled for removal and attached to the Transite ceilings, are to be disconnected, supported and protected during work.
.3 Clean all surfaces above the ceilings.

.6 Using Glove Bag procedures prescribed in the Section identified in Related Work, remove and dispose of the following:

.1 All asbestos-containing pipe insulation from the Gym, Stage/Under Stage, Washroom 125D, Kitchen, Vestibule, Storage, and Washroom 125H (Locations 8325, 8324, 8326, 8327, 8328, 8329 and 8330).

.1 Include to remove all concealed asbestos pipe insulation.
.2 Allow for approximately 50 fittings and 300 linear feet of pipe insulation on straight sections which is expected to be present above Transite ceilings.

.2 If for reasons of pipe 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 following Type 3 procedures in accordance with Ontario Regulation 278/05 for greater than 1 square meter.

.7 Follow lead procedures prescribed in the Sections identified in Related Work when disturbing lead materials, lead paint and/or materials with lead paint.

.8 Follow mercury procedures prescribed in the Sections identified in Related work when removing all light fixtures and fluorescent light tubes. Place all light fixtures into containers to avoid breakage.

.9 Following Polychlorinated Biphenyls (PCB) procedures, remove and dispose of PCB-containing ballasts.

.10 Provide and pay for site inspection and air monitoring services specified herein.

.11 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.

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

.13 Without disturbing hazardous materials, perform removals where required, prior to abatement work.

.1 Maximize waste diversion by use of resale of building materials, or recycling.

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

.15 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.

.16 Remove, clean, store and replace at completion of work, non-operating mechanical and electrical equipment, ducts, building components, materials or items removed to accommodate asbestos removal.

.17 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.

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

.19 Encapsulate remaining hazardous materials at locations where removal is deemed impractical by the Abatement Consultant.

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

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

.22 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.

.23 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 Owner.

.2 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 and Owner.

.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: Owner'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 278/05 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: Building Owner, 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 Regulation 278/05 and the Occupational Health and Safety Act, 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 Canada (EACC) 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: High Efficiency Particulate Aerosol filter that is at least 99.97 percent efficient in collecting a 0.3 micrometre aerosol.

.15 Lead-Containing: The Ontario Ministry of Labour (MOL) has not established a lower limit for concentrations of lead in paint, below which precautions do not need to be considered during construction projects. Pinchin follows the recommendations of the Environmental Abatement Council of Canada (EACC) Lead Guideline for Construction, Renovation, Maintenance or Repair. The Guideline suggests that 0.1% (1,000 ppm) lead in paint represents a de minimis concentration of lead in paint for construction hygiene purposes, that is a concentration below which the lead content is not the limiting hazard in any disturbance of leaded paint for non-aggressive disturbance of painted finishes, (hand powered demolition, chipping, scraping, light sanding, etc.).

.16 Lead-containing: Paints containing lead at a concentration of 0.009% (90 ppm) or greater.

.17 Lead Waste: Waste generated from removal of lead-containing materials, or the substrate and paint finish where left intact.

.18 Mercury Waste: Equipment, materials or items containing mercury or contaminated with mercury.

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

.20 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.

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

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

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

.24 PCBs: Monochlorinated or Polychlorinated Biphenyls (or any mixture of both).

.25 PCB Material: means solid material containing PCBs at a concentration of more than fifty milligrams per kilogram (mg/kg) or 50 parts per million (ppm), or liquid with greater than 2 mg/kg or ppm.

.26 PCB Waste: PCB Equipment, PCB Material, PCB Liquids and materials or items contaminated with PCBs.

.27 PCM: Phase Contrast Microscopy.

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

.29 TEM: Transmission Electron Microscopy.

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 Ministry of Labour Occupational Health and Safety Act Regulations for Construction Projects including Revised Statutes of Ontario 1990, Chapter 0.1 and Ontario Regulation 278/05.

.2 Ministry of the Environment and Climate Change Regulation for the disposal of waste, including R.R.O. 1990, Reg. 347 as amended.

.3 PCB Regulations, SOR 2008-273 and R.R.O. 1990, Reg 362.

.4 Regulation 490/09 Designated Substances.

.5 Environmental Abatement Council of Canada (EACC), Lead Guideline For Construction, Renovation, Maintenance or Repair, October 2014.

.6 Ministry of Labour, Guideline, Silica on Construction Projects, 2011.

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 Owner.

.5 All work 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.

.3 At all times during work, the Shift Superintendent(s) must be on site. Failure to comply with this requirement will result in a stoppage of all work, at no cost to the Owner.

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

.5 Do not replace supervisory personnel without written approval from the Owner.

1.9 Instruction and Training

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

.2 All workers completing Type 1, 2 or 3 asbestos abatement must be trained in compliance with Section 19 of O.Reg. 278/05.

.1 For Type 3 asbestos abatement, workers must be trained and certified per Section 20 of O.Reg. 278/05.

1.10 Notification

.1 Before commencing work, notify orally and in writing, an inspector at the office of the Ontario Ministry of Labour nearest the project site, where required.

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

.3 Notify the Owner or Owner's Representative, the Joint Occupational Health and Safety Committee and the Provincial Ministry of Labour, 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.

.4 Notify Sanitary Landfill site as per O.Reg. 347/90 as amended.

1.11 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 Ministry of Labour 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:

.2 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.

.3 WHMIS training certificates for all personnel.

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

.5 Proof of training for the following site specific hazards or conditions identified:

.1 Working at Heights
.2 Elevated Work Platform.

.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.

1.12 Inspection

.1 From commencement of work until completion of clean-up operations, the Abatement Consultant is empowered by the Owner 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 Owner 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 Owner.

.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 Owner.

.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 Owner.

.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 Owner's cost, as outlined in each related specification section:

.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.

.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 at or exceeding 0.05 fibres per cubic centimeter of air (fibre/cc) or greater, outside an Abatement Work Area, 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:

.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

.3 Alternate to items above, the Asbestos Abatement Contractor can pay for analysis of PCM samples by Transmission Electron Microscopy (TEM) at NVLAP accredited laboratory.

.1 Enclosure to remain sealed, with negative pressure maintained, and subject to required daily inspections until TEM results are received.

.5 Additional labour or materials expended by the Contractor to rectify unsatisfactory conditions and to provide performance to the level specified shall be at no additional cost to the Owner.

.6 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, vape 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 Ministry of Labour.
.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 or lead/silica dust.

.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 Provide clean protective clothing and equipment to Authorized Visitors.

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

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

.1 Respirator worn must be compliant with Section 13 and Table 2 of O.Reg. 278/05.

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 Vehicles, Bins and Asbestos Waste Containers: Post signs on both sides of every vehicle used for the transportation of 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, lead 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 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 material in the case of a rupture of a Waste Container.

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

.14 Transport hazardous waste to landfill or waste transfer station licensed by the provincial Ministry of the Environment.

.15 Cooperate with the provincial Ministry of the Environment inspectors and immediately carry out instructions for remedial work at dump to maintain environment, at no additional cost to the Owner.

1.18 Re-establishment of Objects and Systems

.1 Re-establish objects and items relocated by the Contractor's workforce to facilitate work.

.2 Re-establish electrical, communication, HVAC and other services previously disconnected or otherwise isolated to accommodate work by this Section.

.3 Make good at completion of work, all damage not identified in pre-removal survey.

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, Ministry of the Environment, and Ministry of Labour, comprised of the following:

.1 Dust tight.

.2 Suitable for the type of waste.

.3 Impervious to asbestos.

.4 Identified as asbestos waste.

.6 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.

.7 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.

.8 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.

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

.10 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.

.11 Lead Waste Container: An impermeable container acceptable to disposal site and Ministry of the Environment, that is:

.1 Dust tight.

.2 Suitable for the type of waste.

.3 Evaluated for leachable lead content, and disposed of in accordance with applicable regulations.

.1 Where lead waste exceeds 5.0 mg/L of lead in the TCLP analysis, label as lead waste and dispose of as leachate toxic hazardous waste.

.2 Where lead waste is below 5.0 mg/L of lead in the TCLP analysis, disposed of as construction waste.

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

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

.18 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 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 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 or Low Risk procedures, and Pinchin and Owner specific requirements.

1.3 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.

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

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

1.4 Inspections

.1 Refer to 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

PART 2 PRODUCTS AND FACILITIES

.1 Refer to Section 02 81 00.

PART 3 EXECUTION

3.1 Site Preparation

.1 Remove stored or non-fixed items from the Abatement Work Area including but not limited to equipment, furniture, waste etc. Store in area provided by Owner.

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

.3 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.

.4 Install one layer of polyethylene sheeting on walls, floors, finishes, millwork, electrical equipment, equipment and furnishings remaining in the Abatement Work Area.

.5 Install polyethylene drop sheets below areas of work.

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

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

.8 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.

.9 Provide power from ground fault interrupt circuits.

.10 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.

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

.12 Without disturbing asbestos-containing materials, remove and dispose of non-hazardous materials as clean waste prior to asbestos removal work, where possible.

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 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 Place directly into asbestos waste container.

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

3.5 Abatement Work Area Dismantling

.1 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.

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

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

.4 Wet drop sheets and polyethylene sheeting.

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

.6 Remove remaining polyethylene sheeting and tape.

.7 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.

3.6 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 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 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.

1.3 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 Full face respirators with P100 high efficiency (HEPA) cartridge filters, for:

.1 Removal of all or part of a ceiling if asbestos is likely lying on the surface.

.2 Use of a HEPA filtered power tool on non-friable ACM if the material is not wetted.

.2 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.

1.4 Inspections

.1 Refer to 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

PART 2 PRODUCTS AND FACILITIES

.1 Refer to Section 02 81 00.

2.2 Hoarding Walls

.1 Type A Hoarding Wall: One layer of rip-proof polyethylene sheeting installed floor to ceiling, secured with telescopic poles, clips, or other suitable methods.

2.3 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 interior walls of Transfer Room.

.3 Install one layer of rip-proof polyethylene sheeting over one layer of 6 mil polyethylene sheeting beneath entire Transfer Room.

.4 Install one layer rip-proof polyethylene sheeting over roof.

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

.6 Install a fire extinguisher, mount to wall.

2.4 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 Remove stored or non-fixed items from the Abatement Work Area including but not limited to equipment, furniture, waste etc. Store in area provided by Owner.

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

.3 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.

.4 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.

.5 Provide power from ground fault interrupt circuits.

.6 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.

.7 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 Windows at Abatement Work Areas for the following work:

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

.2 Removal of a false ceiling (or part of) where asbestos-containing material is presumed or known to be present on the surface.

.2 Install Transfer Room where duration of work is to last longer than one 8 hour shift.

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

.4 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.

.5 Construct Hoarding Walls between Abatement Work Area perimeter and occupied areas, as required.

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

.9 Extend to underside of ceiling system, enclosures for access into ceilings. Enclosure may be supported from the ceiling system if ceiling can support the polyethylene.

.10 Install Curtained Doorways.

.11 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.

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

.13 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 Provide weighted flaps in perimeter Hoarding Walls as necessary to provide make-up air.

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

.6 Replace prefilters to maintain specified flow rate.

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

.8 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.

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

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

3.3 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.

3.4 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.

3.5 Asbestos Removal – Thermal Systems 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*.

.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 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.

3.6 Asbestos Removal - Transite Ceiling Tiles with HEPA Filtered Power Tools

.1 Use the procedures described above under *Site Preparation – Enclosure Required*.

.2 Wet all material to be disturbed.

.3 Turn on HEPA vacuum. Vacuum to remain operational throughout work.

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

.5 If power tool can disconnect from HEPA vacuum, remove tool, and HEPA vacuum tool and bit, blade, etc, and shrouds.

.6 Wet clean or HEPA vacuum the entire Abatement Work Area, including surfaces not covered with polyethylene sheeting. Any materials or equipment removed to access ACM that are to be reused, must be wet cleaned or vacuumed prior to reinstatement.

3.7 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.

3.8 Abatement Work Area Dismantling

.1 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.

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

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

.4 Wet drop sheets and polyethylene sheeting.

.5 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.

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

.7 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.

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

.9 Remove Transfer Room.

.10 Remove seals, tape, Signage etc.

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

.12 Seal openings in HEPA vacuums.

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

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

.15 Remove temporary lights.

.16 Remove ground fault panels.

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

3.9 Waste and Material Handling

.1 Refer to Section 02 81 00.

3.10 Re-Establishment of Items

.1 Upon completion of work:

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

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

.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 Decontamination Facilities.

.6 Enable building air handling systems.

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 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 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.

.3 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 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.

1.4 Inspections

.1 Refer to 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

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, and

.5 a high strength double throw zipper and removable straps, if the bag is to be moved during the removal operation.

.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 Remove to the extent necessary to access piping, stored or non-fixed items from the Abatement Work Area including but not limited to equipment, furniture, waste etc. Store in area provided by Owner.

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

.3 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.

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

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

.6 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.

.7 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.

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

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

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

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

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

.13 Post Notice of Project, where required by O.Reg. 278/05.

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 manufacturer's 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 glove bags designed to be moved may be re-used on other sections of pipe or moved down same section of pipe (e.g. Safe-T-Strip).

.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 If bag is to be moved along pipe for use on adjacent section of insulation:

.1 Wash inner surface of Glove Bag.

.2 Wash tools and place tools in pouch.

.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 closure strip.

.6 Loosen securing straps to maintain a loose seal of Glove Bag to insulation or pipe.

.7 Use double throw zipper as necessary to pass hangers.

.8 Tighten straps once bag is in new position and continue insulation removal until Glove Bag is full, work is completed on the pipe or an obstruction prevents further movement of the bag.

.11 If bag is to be removed from a pipe for use on a new section of pipe, perform the following:

.1 Wash inner surface of Glove Bag.

.2 Wash tools and place tools in pouch.

.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.

.7 Wash top section of Glove Bag and tool pouch thoroughly.

.8 Undo securing straps, unfasten zipper and carefully move bag to new section of pipe.

.12 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 Undo straps and unzipper, or 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.

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

.14 Cover exposed ends of any remaining asbestos insulation with canvas and lagging using Type 2 Procedures.

3.4 Clean-Up and Dismantling

.1 Clean and remove from Abatement Work Area:

.1 Equipment and tools.

.2 Temporary lighting if used.

.3 Polyethylene seals from HVAC systems.

.2 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.

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

.4 Seal openings in HEPA vacuums.

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

.6 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 Remove tags and locks from electrical panels and re-energize equipment and items.

.3 Enable building air handling systems.

.4 Clean and vacuum Abatement Work Area.

END OF SECTION

J:\336000s\0336572.000 HAMILTON-WENT,Various2024Pr,ASB,CONS\0336572.005 HWDSB,RosedaleES,GymReno,HAZ,ASSMT\Deliverables\Specs\336572.005 02 82 00.04 Glove Bag Rosedale ES HWDSB April 11 2024.docx

1 General

1.1 PRODUCT DATA

.1 Submit Product data as specified in Section 01 33 00.

.2 Product Data: Manufacturer's standard data sheets, indicating Product composition, physical and chemical properties, Product limitations and installation guidelines, and warranty details.

1.2 CLOSEOUT SUBMITTALS

.1 Submit closeout submittals as specified in Section 01 78 00.

.2 Maintenance Data: Manufacturer's standard maintenance guidelines, including precautions for avoiding staining; sufficient quantity for inclusion in operation and maintenance manual.

1.3 QUALIFICATIONS

.1 Applicator: A firm specializing in applying concrete floor sealers, having minimum 5 years documented experience.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Refer to Section 01 60 00.

.2 Store Products protected from harmful environmental conditions. Conform to manufacturer's recommended temperature and humidity conditions.

.3 Store and handle Products protected from dirt, corrosion, oil, grease and other contaminants.

1.5 AMBIENT CONDITIONS

.1 Do not apply Products when air, material and surface temperatures are expected to fall below 4 degrees C within four hours of completed application.

.2 Ensure adequate temporary heating is available during cold weather work.

2 Products

2.1 MANUFACTURERS

.1 Manufacturers having Product considered acceptable for use:
.1 CPD Construction Products.
.2 Degussa.
.3 W. R. Meadows of Canada Limited.

.2 Substitution Procedures: Refer to Section 01 25 00.

2.2 MATERIALS

.1 Concrete Floor Sealer: One-component; urethane / acrylic polymer based, high solids, liquid sealer; clear and transparent, non-yellowing formulation; chemical-resistant; maximum 200 g/L VOC content; eg. Decra-Seal W/B by W. R. Meadows of Canada Limited.

.2 Slip-Resistant Additive: Finely ground polymer, silica-free aggregate; eg. Sure-Step by W. R. Meadows of Canada Limited.

2.3 MIXING

.1 Mix slip-resistant additive into sealer at manufacturer's recommended rate.

.2 Occasionally stir mixture to keep particles well suspended within coating.

3 Execution

3.1 EXAMINATION

.1 Refer to Section 01 71 00.

.2 Verify concrete has not been previously treated with chlorinated rubber-based cure and seal compounds.

.3 Verify new concrete has cured for minimum 28 days.

3.2 PREPARATION

.1 Sweep and wash floors to remove debris, grease, oil and wax.

.2 Remove stains and discolourations.

.3 Completely remove incompatible cure and seal compounds. Allow concrete to dry.

3.3 APPLICATION

.1 Spray apply Product, completely wetting concrete surface without producing drips, puddles or rundown.

.2 Apply Product to achieve Medium sheen finish.

.3 Spray apply two coats to prepared concrete slab.

.4 Allow first coat to dry before applying second coat.

.5 Apply Product evenly, without ponding.

.6 Avoid puddling in low areas.

3.4 PROTECTION

.1 Refer to Section 01 76 00.

.2 Restrict foot traffic for 12 hours.

END OF SECTION

1 General

1.1 RELATED SECTIONS

.1 Section 04 05 10 - Masonry Mortaring and Grouting.

.2 Section 04 05 19 - Masonry Anchorage and Reinforcing.

.3 Section 04 05 23 - Masonry Accessories.

.4 Section 04 21 00 - Clay Unit Masonry.

.5 Section 04 22 00 - Concrete Unit Masonry.

.6 Section 05 50 00 - Metal Fabrications.

.7 Section 08 12 13 - Hollow Metal Frames.

.8 Section 08 51 13 - Aluminum Windows.

1.2 REFERENCES

.1 CAN/CSA-A371-14 (R2019): Masonry Construction for Buildings.

.2 CSA S304-14: Design of Masonry Structures.

1.3 SAMPLES

.1 Submit samples as specified in Section 01 33 00.

.2 Samples: As follows:
.1 Two samples of each type of specified masonry unit, illustrating colour, texture and extremities of colour range;
.2 One sample of each type of masonry reinforcement and wall tie specified in Section 04 05 19;
.3 One sample of each type of masonry accessory specified in Section 04 05 23; and
.4 As required for testing purposes.

1.4 TEST AND EVALUATION REPORTS

.1 Submit test reports as specified in Section 01 33 00.

.2 Test Reports: Manufacturer's standard masonry analysis and testing reports, indicating compressive strength, initial rate of absorption, maximum water absorption, maximum saturation coefficient, and density for each type of specified masonry unit; prepared by independent agency.

1.5 QUALIFICATIONS

.1 Installer: A firm specializing in installing commercial masonry, having minimum 5 years documented experience and a member of OMCA.

1.6 MOCK-UPS

.1 Construct mock-up as specified in Section 01 40 00.

.2 Mock-Up Panel: One 1 220 x 1 830 mm size mock-up panel, demonstrating exterior veneer cladding types, textures and colours; exterior mortar joint thickness, tooled profile and colour. Include structural back-up materials, air/vapour barriers, through-wall flashings, weep vents, cavity wall insulation, wall ties, connectors and movement joints.

.3 Report mortar colour loading rate for acceptable panel.

.4 Accepted mock-ups will be used as the standard for acceptance of the Work.

.5 Remove and replace installed Product that does not conform to accepted mock-up.

.6 Remove mock-ups from Place of the Work upon Ready-for-Takeover.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Refer to Section 01 60 00.

.2 Deliver Products to Place of the Work in dry condition.

.3 Keep Products dry until use.

.4 Store Products under waterproof cover on pallets or plank platforms held off ground by means of plank or timber skids.

.5 Protect masonry units from damage.

1.8 AMBIENT CONDITIONS

.1 Conform to CAN/CSA-A371.

.2 Provide heated enclosures and heat as necessary during cold weather construction.

.3 Protect freshly laid masonry from drying too rapidly during hot weather, by means of waterproof, non-staining coverings.

2 Products

2.1 SOURCE QUALITY CONTROL

.1 Perform shop testing by independent inspection agency as specified in Section 01 40 00.

.2 Refer to Product Specifications for Product-specific shop testing requirements.

3 Execution

3.1 QUALITY OF WORK

.1 Construct masonry plumb, level and true to line, with vertical joints in alignment.

.2 Lay out coursing and bond to achieve correct coursing heights, and continuity of bond above and below openings, with minimum of cutting.

.3 Maintain masonry courses to uniform width.

.4 Lay masonry in full bed of mortar, properly jointed with other work.

.5 Buttering corners of joints, and deep or excessive furrowing of mortar joints are not permitted.

.6 Maintain dry masonry beds and lay only dry masonry units. Do not pre-soak masonry units in cold weather.

.7 Fully bond intersections, and external corners.

.8 Do not use chipped, cracked or otherwise damaged units in exposed and loadbearing masonry walls.

.9 Build in items required to be built into masonry.

.10 Brace door frames to maintain plumb. Fill spaces between frame jambs and masonry with masonry grout.

.11 Prevent displacement of built-in items during construction. Check plumb, location and alignment frequently, as work progresses.

3.2 JOINTING

.1 Make vertical and horizontal joints equal and of uniform thickness.

.2 Tooled Joints: Allow joints to set just enough to remove excess water, then tool joints with round jointer to result in smooth, tightly compressed, uniformly concave joints.

.3 Flush Joints: Strike flush joints that will be concealed within the wall or which will receive a coating of plaster, tile, insulation, resilient base, bituminous foundation protection or other joint-concealing finish. Do not strike flush mortar joints designated to receive painted or other thin finishes.

3.3 CUTTING

.1 Cut out masonry neatly for recessed or built-in objects.

.2 Make cuts straight, clean and free from uneven edges.

.3 Make Good masonry which has cracked or broken as a result of cutting in built-in objects.

3.4 PROVISIONS FOR MOVEMENT

.1 Unless specified or shown otherwise, Provide the following space to accommodate movement:
.1 Deflection Space Below Shelf Angles: 10 mm.
.2 Between Masonry and Vertical Structural Elements: 10 mm.
.3 Between Top of Non-loadbearing Partitions and Structural Elements: 12 mm.

.2 Fill space with compressible material and seal both sides as specified in Section 07 92 00. Do not use wedges.

.3 Provide continuous movement control joints, properly sealed with backing rod and joint sealant, as specified in Section 04 05 23.

3.5 LOOSE STEEL LINTELS

.1 Install loose steel lintels.

.2 Centre lintel over opening width.

3.6 TEMPORARY WALL BRACING

.1 Provide engineered temporary bracing for masonry walls to resist wind pressure and other lateral loads during and after erection until permanent lateral support is in place.

3.7 PROTECTING MASONRY

.1 Refer to Section 01 76 00.

.2 Keep masonry dry using waterproof, non-staining coverings that extend over walls and down sides sufficient to protect walls from wind-driven rain, until masonry is completed and protected by flashings or other permanent construction.

.3 Protect masonry and other work from marking and other damage.

.4 Protect completed work from mortar droppings. Use non-staining coverings.

3.8 FIELD QUALITY CONTROL

.1 Field Inspection: Consultant will inspect installed masonry and reject masonry that is chipped, cracked, or blemished (streaked, stained or otherwise damaged), as described below.

.2 Unless specified otherwise, masonry will be inspected to be free of chips, cracks or other blemishes on the finished face or front edges of the masonry units exceeding 10 mm or that can be seen from a distance of 3 000 mm. Masonry units supplied with a rusticated face will be inspected for cracks and blemishes only.

.3 Make Good rejected masonry as directed by Consultant.

3.9 TOLERANCES

.1 Conform to CAN/CSA-A371.

3.10 CLEANING

.1 Clean masonry as work progresses.

.2 Allow mortar droppings on masonry to partially dry, then remove by means of brushing with a stiff fibre brush.

.3 Post-Construction Cleaning: Test clean one-half of mock-up panel and leave for one week. Proceed with cleaning operations only if no harmful effects appear, and only after mortar and sealants have properly set and cured.

.4 Clean masonry as follows:
- .1 Remove large particles without damaging surface. Saturate masonry with clean water and flush off loose mortar and dirt.
- .2 Scrub with solution of 25 mL trisodium phosphate and 25 mL household detergent dissolved in 1 Litre of clean water using stiff fibre brushes, then clean off immediately with clean water using hose.
- .3 Repeat cleaning process as often as necessary to remove mortar and other stains.

.5 Use alternative cleaning solutions and methods for difficult to clean masonry only after consultation with masonry unit manufacturer.

END OF SECTION

1 General

1.1 RELATED SECTIONS

.1 Section 04 05 00 - Common Work Results for Masonry.

.2 Section 04 21 00 - Clay Unit Masonry.

.3 Section 04 22 00 - Concrete Unit Masonry.

.4 Section 08 12 13 - Hollow Metal Frames.

1.2 REFERENCES

.1 ASTM C207-18: Standard Specification for Hydrated Lime for Masonry Purposes.

.2 ASTM C979/C979M-16: Standard Specification for Pigments for Integrally Colored Concrete.

.3 CAN/CSA-A179-14: Mortar and Grout for Unit Masonry.

.4 CSA A3001-18: Cementitious Materials for Use in Concrete.

.5 CSA A3002-18: Masonry and Mortar Cement.

.6 CSA S304-14: Design of Masonry Structures.

.7 NCMA TEK 3-2A-2005: Grouting Concrete Masonry Walls.

1.3 PRODUCT DATA

.1 Submit Product data as specified in Section 01 33 00.

.2 Product Data: On design mix, indicating Proportion or Property specification method used, required environmental conditions and admixture limitations.

1.4 SAMPLES

.1 Submit samples as specified in Section 01 33 00.

.2 Verification Samples: Two ribbons of mortar, illustrating colour and colour range.
.1 Complete upon acceptance, confirmation of site-mixed colour additive proportional to site-mixed batch.
.2 Prepare and submit sample colour ribbons for each days work for review of consistency.

1.5 FIELD QUALITY CONTROL SUBMITTALS

.1 Submit field quality control submittals as specified in Section 01 40 00.

.2 Verification Samples: Sample cubes for laboratory testing, to CAN/CSA-A179.

.3 Test Reports: Clearly indicating test result data, to CAN/CSA-A179.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Refer to Section 01 60 00.

.2 Deliver Products in original unbroken and undamaged packages with manufacturer's name and brand clearly indicated.

.3 Store Products in weatherproof shed until ready for use.

.4 Store or pile sand on a plank platform and protect from dirt and rubbish.

.5 Store Products in a manner to prevent deterioration or contamination by foreign materials.

1.7 AMBIENT CONDITIONS

.1 Maintain materials and surrounding air temperature between 5 degrees C and 50 degrees C prior to, during and 48 hours after completion of masonry installation.

.2 Do not use anti-freeze, liquid salts or other substances to lower freezing point of mortar or grout. Conform to CAN/CSA-A179.

2 Products

2.1 MANUFACTURERS

.1 Manufacturers of cements having Product considered acceptable for use:
.1 Essroc.
.2 Holcim.
.3 Lafarge Construction Materials.
.4 St. Marys Cement.

.2 Manufacturers of hydrated lime having Product considered acceptable for use:
.1 Graymont Dolime (OH) Inc.
.2 Rockwell Lime Co.

.3 Manufacturers of dry, plant-batched mortar mixtures having Product considered acceptable for use:
.1 Daubois.
.2 Graymont Dolime (OH) Inc.
.3 King Packaged Materials Company.

.4 Manufacturers of mortar pigment having Product considered acceptable for use:
.1 Bayer Pigments.
.2 Elementis Pigments.
.3 Interstar.
.4 Hamburger Company.

.5 Substitution Procedures: Refer to Section 01 25 00.

2.2 MATERIALS

.1 Portland Cement: To CSA A3001, Type GU; Grey colour.

.2 Masonry Cement: To CSA A3002, Type N.

.3 Hydrated Lime: To ASTM C207, Type S-Special.

.4 Mortar Aggregate: To CAN/CSA-A179, natural sand, standard masonry type; clean, dry, protected against dampness, freezing and foreign matter.

.5 Grout Coarse Aggregate: To CAN/CSA-A179, maximum 10 mm size; 27 percent by volume.

.6 Grout Fine Aggregate: To CAN/CSA-A179, clean well graded sharp sand; 54 percent by volume.

.7 Water: Potable, clean and free of deleterious amounts of acids, alkalies or organic materials.

2.3 ADMIXTURES

.1 Plasticizer: Water reducing type, reducing porosity and absorption to increase bond strength.

.2 Water Repellent: Mixture of calcium carbonate and hydrous magnesium aluminum silicate powders; eg. Hydrocide Powder by Degussa Building Systems.

.3 Pigment: To ASTM C979/C979M; liquid-manufactured or natural oxide pigment, colours as selected by Consultant.

2.4 MORTAR MIXES

.1 Mortar for Use with Loadbearing Concrete Unit Masonry: To CAN/CSA-A179, Type S using Property specification method; Portland cement-masonry cement-sand mix, having minimum compressive strength of 8.5 MPa at 28 days; complete with water repellent admixture.

.2 Mortar for Use with Non-Loadbearing Concrete Unit Masonry: To CAN/CSA-A179, Type N using Property specification method; masonry cement-sand mix, having minimum compressive strength of 3.5 MPa at 28 days; complete with water repellent admixture.

.3 Mortar for Use with Masonry Veneers: To CAN/CSA-A179, Type N using Proportion specification method; Portland cement-hydrated lime-sand mix, complete with integral colours as selected by Consultant.

2.5 MORTAR MIXING

.1 Thoroughly mix ingredients in proper measured quantities needed for immediate use, to CAN/CSA-A179.

.2 Coloured Mortar: Pigment dosage as selected by Consultant, but not to exceed 10 percent of cement content by mass, as defined in ASTM C979/C979M.

.3 Provide uniformity of mix and colouration.

.4 Take representative samples for testing consistency of strength and colour to CAN/CSA-A179.

.5 Use mortar within 1-1/2 hours after mixing at temperature of 25 degrees C or higher, or 2-1/2 hours after mixing at temperatures less than 25 degrees C.

.6 Discard mortars exceeding time limits specified above.

2.6 GROUT MIXES

.1 Grout for Use in Spaces 50 mm or Wider: To CAN/CSA-A179, Coarse Grout using Property Specification method; Portland cement-sand-coarse aggregate mix.

.2 Grout for Use in Spaces Narrower than 50 mm: To CAN/CSA-A179, Fine Grout using Property Specification method; Portland cement-sand mix.

.3 Match grout's 28 day compressive strength to compressive strength of concrete masonry unit being filled.

2.7 GROUT MIXING

.1 Thoroughly mix ingredients accurately in proper measured quantities needed for immediate use, to CAN/CSA-A179.

.2 Use grout within 1-1/2 hours after mixing.

.3 Discard grout exceeding time limit specified above.

3 Execution

3.1 EXAMINATION

.1 Refer to Section 01 71 00.

.2 Request Consultant inspection of spaces to be grouted.

3.2 PREPARATION

.1 Apply bonding agent to existing concrete surfaces.

.2 Plug clean-out holes with masonry units to prevent leakage of grout materials.

.3 Brace masonry for wet grout pressure.

.4 Install grout dams below voids designated to be filled with grout. Keep dams 25 mm back from faces of units.

.5 Remove excess mortar from grout spaces.

3.3 APPLICATION

.1 Install mortar as specified in Sections 04 21 00 and 04 22 00.

.2 Install grout to NCMA TEK 3-2A.

.3 Fill unit cores with grout fill where hollow concrete masonry units are used instead of solid concrete masonry units.

.4 Place grout as required to maintain an adequate level of structural bearing surface with no voids and to a depth as indicated on Drawings.

.5 Prevent grout from entering acoustically-insulated cores of acoustic concrete masonry units.

3.4 FIELD QUALITY CONTROL

.1 Perform inspection and testing of mortar and grout mixes as specified in Section 01 40 00.

.2 Test Property specification mortars for compressive strength to CAN/CSA-A179, and as follows:
- .1 Test three 50 mm cubes at 7 days and three 50 mm cubes at 28 days.
- .2 Mortar for Concrete Unit Masonry: Perform one test for every 500 m^2 of wall, but not less than one set of tests for each storey height of each building.

.3 Test grout for slump and compressive strength to CAN/CSA-A179, and as follows:
- .1 Slump at Time and Point of Placement: 225 mm, plus or minus 25 mm.
- .2 Take one set of grout cylinders at least daily for each 20 m^3 of grout poured and whenever the mix design changes.
- .3 Cylinder Sets: Comprised of minimum three cylinders.
- .4 Test one cylinder at 7 days and two cylinders at 28 days.

3.5 NON-CONFORMING WORK

.1 Make Good portions of the Work constructed with mortar or grout that does not meet specified criteria.

.2 Remove and reconstruct affected walls using new Product.

END OF SECTION

1 General

1.1 RELATED SECTIONS

.1 Section 04 05 00 - Common Work Results for Masonry.

.2 Section 04 05 10 - Masonry Mortaring and Grouting.

.3 Section 04 05 23 - Masonry Accessories.

.4 Section 04 21 00 - Clay Unit Masonry.

.5 Section 04 22 00 - Concrete Unit Masonry.

.6 Section 05 50 00 - Metal Fabrications.

1.2 REFERENCES

.1 ASTM A123/A123M-17: Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

.2 ASTM A153/A153M-23: Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

.3 ASTM A641/A641M-19: Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.

.4 ASTM A951/A951M-22: Standard Specification for Steel Wire for Masonry Joint Reinforcement.

.5 ASTM A1011/A1011M-18a: Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability and Ultra-High Strength.

.6 CSA A370-14 (R2018): Connectors for Masonry.

.7 CAN/CSA-A371-14 (R2019): Masonry Construction for Buildings.

.8 CSA G30.18-09 (R2014): Carbon Steel Bars for Concrete Reinforcement.

.9 CSA S304-14: Design of Masonry Structures.

1.3 MOCK-UPS

.1 Supply Product for construction of mock-up panel as specified in Section 04 05 00.

2 Products

2.1 MANUFACTURERS

.1 Manufacturers of horizontal joint reinforcement and anchors having Product considered acceptable for use:
.1 Blok-Lok.
.2 WireLock.

.2 Manufacturers of wall ties having Product considered acceptable for use:
.1 Blok-Lok.
.2 Fero Corporation.

.3 Substitution Procedures: Refer to Section 01 25 00.

2.2 REGULATORY REQUIREMENTS

.1 Seismic Requirements: Provide seismic restraint as required by applicable regulatory requirements, to CSA A370.

2.3 MATERIALS

.1 Steel Plate: To ASTM A1011/A1011M, Commercial Steel (CS) Grade, Type B; galvanized finishes, sizes and thicknesses as specified below.

.2 Steel Wire: To ASTM A951/A951M; galvanized finishes and diameters as specified below.

2.4 HORIZONTAL JOINT REINFORCEMENT

.1 Exterior Wall Horizontal Joint Reinforcement: To CSA A370; Ladder-type, Extra Heavy Duty; hot dipped galvanized steel wire; width to suit concrete masonry unit bed depth; BL-10 by Blok-Lok.

.2 Interior Wall Horizontal Joint Reinforcement: To CSA A370; and as follows:
.1 Loadbearing Walls, Single-Wythe: Ladder-type, Extra Heavy Duty; mill galvanized steel wire; width to suit concrete masonry unit bed depth; BL-10 by Blok-Lok.
.2 Non-Loadbearing Walls, Single-Wythe: Ladder-type, Standard Duty; mill galvanized steel wire; width to suit concrete masonry unit bed depth; BL-10 by Blok-Lok.

.3 Exterior Veneer Bed Joint Reinforcement: To CSA A370; single 4.8 mm OD hot dipped galvanized steel wire.

2.5 WALL TIES

.1 Wall Tie (CMU Back-up): Adjustable, dual component, shear connector system; as follows:
.1 Block Plate: 1.52 mm thick hot dipped galvanized steel plate; length to suit air space and CMU width dimension, less 6 mm; complete with a series of eight 5.8 mm OD holes punched along leading edge to receive V-Tie.
.2 V-Tie: 4.76 mm OD hot dipped galvanized steel wire; complete with seismic clip; length to provide placement of tie legs at centerline of veneer.
.3 Manufacturer and Product Name: Fero Thermal Tie - Block Shear Masonry Connector by Fero Corporation.

.2 Wall Tie (C-i-P Concrete Back-up): Adjustable, dual component, rod adjustable plate tie system; as follows:
.1 L-Plate: 1.52 mm thick hot dipped galvanized steel plate; length to suit air space dimension; complete with a series of five 5.8 mm OD holes punched along leading edge to receive V-Tie.
.2 V-Tie: 4.76 mm OD hot dipped galvanized steel wire; complete with seismic clip; length to provide placement of tie legs at centerline of veneer.
.3 Fastener: Tapcon-style hex head self-tapping screws, complete with blue climaseal coating; 6.35 mm OD, 83 mm long; minimum two screws per tie.
.4 Manufacturer and Product Name: Fero Thermal Tie - Holed Rap-Tie Masonry Connector by Fero Corporation.

.3 Wall Tie (Structural Steel Back-up): Adjustable, dual component, rod adjustable plate tie system; suitable for welded attachment; as follows:
.1 L-Plate: 1.52 mm thick hot dipped galvanized steel plate; length to suit air space dimension; complete with a series of five 5.8 mm OD holes punched along leading edge to receive V-Tie.
.2 V-Tie: 4.76 mm OD hot dipped galvanized steel wire; complete with seismic clip; length to provide placement of tie legs at centerline of veneer.
.3 Manufacturer and Product Name: Fero Thermal Tie - Holed Rap-Tie Masonry Connector by Fero Corporation.

2.6 ACCESSORIES

.1 Seismic Clip: 14 x 25 mm size C-shaped clip with 11 mm inside width and 5 mm opening, fabricated from 1.37 mm thick hot dipped galvanized steel; eg. Lateral Tie-Clip by Fero Corporation.

.2 Reinforcing Steel: To CSA G30.18, Grade 400R; new billet steel, deformed bars; sizes as indicated on Drawings.

.3 Strap Anchors: 6.0 mm thick, 38 mm wide steel plate with 50 mm long Z-shaped bends; hot dipped galvanized; lengths to suit application; eg. BLT-11Z by Blok-Lok.

.4 Anchor-Type Fasteners: To CSA A370, hot dipped galvanized steel, purpose made for substrate.

2.7 FINISHES

.1 Hot Dipped Galvanized Coating: To ASTM A123/A123M and ASTM A153/A153M, Class B2; minimum 458 g/m^2 zinc coating on all surfaces, except as specified below:
.1 Strap Anchors: To ASTM A123/A123M, Coating Grade 75; minimum 503 g/m^2 zinc coating on all surfaces.

.2 Mill Galvanized Coating: To ASTM A641/A641M, Regular; minimum 30 g/m^2 zinc coating on all surfaces.

3 Execution

3.1 PREPARATION

.1 Supply metal anchors to appropriate Subcontractors for placement. Direct correct placement.

.2 Verify anchorages embedded in concrete or attached to structural steel members are properly placed. Embed anchorages in every second joint.

3.2 INSTALLATION

.1 Install masonry connectors and reinforcement to CSA A370.

.2 Place horizontal joint reinforcement continuous in every second bed joint, with minimum 300 mm lapped splices.

.3 Place horizontal joint reinforcement in first and second bed joints above and below openings. Extend minimum 600 mm each side of opening.

.4 Place horizontal joint reinforcement continuous in first and second bed joints below top of walls.

.5 Reinforce joint corners and intersections with strap anchors spaced at 400 mm OC vertically.

.6 Place bed joint reinforcement along bed joints of masonry veneer, spaced vertically at 400 mm OC. Attach to V-tie with seismic clips.

.7 Place bed joint reinforcement at 200 mm OC vertically in bed joints of stack bonded masonry units.

.8 Provide reinforcing supported and secured against displacement as indicated on Drawings, and as follows:
.1 Maintain minimum 12 mm clearance from masonry and not less than one bar diameter between bars.

.2 Provide two 15M reinforcing bars grouted vertically into CMU cores both sides of masonry openings.
.3 Provide clean out openings at bottom of cores containing vertical reinforcement at each grout lift or pour.

.9 Grout reinforcing and anchorages into masonry as specified in Section 04 05 10.

.10 Secure wall ties to structural back-up at maximum 400 x 600 mm OC spacing.

.11 Double quantity of wall ties within 200 mm of wall corners, wall openings and along parapet walls.

END OF SECTION

1 General

1.1 RELATED SECTIONS

.1 Section 04 05 00 - Common Work Results for Masonry.

.2 Section 04 05 10 - Masonry Mortaring and Grouting.

.3 Section 04 05 19 - Masonry Anchorage and Reinforcing.

.4 Section 04 21 00 - Clay Unit Masonry.

.5 Section 04 22 00 - Concrete Unit Masonry.

.6 Section 05 50 00 - Metal Fabrications.

.7 Section 07 21 19.13 - Foamed-in-Place Urethane Insulation.

.8 Section 07 27 00 - Air Barriers.

.9 Section 07 62 00 - Sheet Metal Flashing and Trim.

.10 Section 07 92 00 - Joint Sealants.

1.2 REFERENCES

.1 ASTM A123/A123M-17: Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

.2 ASTM A153/A153M-23: Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

.3 ASTM A653/A653M-23: Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.4 BIA Technical Note on Brick Construction 18A: Accommodating Expansion of Brickwork.

.5 CAN/CSA-A371-14 (R2019): Masonry Construction for Buildings.

.6 NCMA TEK 10-2C-2010: Control Joints for Concrete Masonry Walls - Empirical Method.

1.3 MOCK-UPS

.1 Supply Product for construction of mock-up as specified in Section 04 05 00.

2 Products

2.1 MATERIALS

.1 Flexible Membrane Flashing: 1.0 mm thick self-adhering SBS rubberized asphalt membrane with cross-laminated HDPE top surface, sheet width to suit application; eg. Blueskin TWF by Henry (a Carlisle Company).

.2 Metal Drip Edge Flashing: To ASTM A653/A653M, Commercial Steel (CS) Types A, B, & C; cold-rolled galvanized sheet steel, 0.61 mm thick before galvanizing.

.3 Flashing Tape: 75 mm wide, self-adhesive sealing tape; eg. X-Seal Tape by Blok-Lok.

.4 Mortar Dropping Control Device: Purpose made open weave nylon and polyester mesh, top hat profile, complete with insect barrier.

.5 Weep Vent: Open weave polyester mesh complete with insect barrier, size to suit mortar joint width and depth; colour as selected by Consultant.

.6 Cavity Wall Filler: To ASTM A653/A653M, Commercial Steel (CS) Types A, B, & C; cold-rolled galvanized sheet steel, 1.2 mm thick before galvanizing.

.7 Nailing Inserts: 0.6 mm thick purpose made galvanized steel inserts for setting in mortar joints.

.8 Primer: As recommended by sheet membrane manufacturer.

.9 Compressible Filler: Closed cell neoprene; eg. Neoprene Sponge by Blok-Lok.

.10 Building Paper: No. 15 asphalt saturated felt.

.11 Joint Sealant: Exterior weatherseal sealant, Type SEAL-EXT as specified in Section 07 92 00.

2.2 FINISHES

.1 Galvanized Coating on Steel Components: To ASTM A123/A123M, Coating Grade 55; hot dipped zinc alloy coating.

.2 Galvanized Coating on Steel Hardware: To ASTM A153/A153M, Classes B3, C or D; hot dipped zinc alloy coating.

.3 Galvanized Coating on Steel Sheet: To ASTM A653/A653M, Coating Designation Z275; hot dipped zinc alloy coating.

3 Execution

3.1 PREPARATION

.1 Apply primer to porous surfaces scheduled to receive self-adhering sheet membranes.

3.2 INSTALLATION

.1 Install vertical cavity wall fillers at external corners to prevent wind driven moisture from crossing cavity. Seal cavity wall filler airtight to outer wythe with continuous bead of sealant.

.2 Install nailing inserts in mortar joints at 400 mm OC each way, for attachment of wall strapping.

.3 Provide mortar dropping control devices at base of wall cavities.

.4 Provide weep vents in head joints, immediately above through-wall flashing membranes, spaced at maximum 800 mm OC.

.5 Provide weep vents in head joints, along top of wall cavities, spaced at maximum 800 mm OC.

3.3 FLASHING

.1 Provide flashings in masonry to CAN/CSA-A371.

.2 Install flashings under exterior masonry walls bearing on foundation walls or slabs; shelf angles, steel lintels at wall openings and as indicated on Drawings.

.3 In double-wythe masonry walls and masonry veneers, carry flashings from front edge of masonry, under outer wythes, then up backing not less than 150 mm, and as follows:
.1 Masonry Backing: Embed flashing 25 mm in joint.
.2 Concrete Backing: Insert flashing into reglets and seal joint.

.4 Lap joints 150 mm and seal watertight.

.5 Form flashing over openings with end dams at both ends to prevent water from travelling horizontally past flashing ends.

.6 Return horizontal base flashing minimum 100 mm around corner to overlap abutting flashing. Seal watertight.

.7 Connect flexible membrane flashing to metal drip edge flashing within wall construction. Extend metal drip edge flashing 10 mm beyond face of masonry veneer.

3.4 MOVEMENT AND CONTROL JOINTS

.1 Provide movement joints in masonry veneers to BIA Technical Note on Brick Construction 18A.
- .1 Form movement joints by leaving head joints between stacked units void of mortar and reinforcing.
- .2 Provide compressible filler in joint, set back from face to accommodate application of backer rod and joint sealant.
- .3 Seal movement joints as specified in Section 07 92 00.

.2 Provide control joints in concrete unit masonry walls and partitions to NCMA TEK 10-2C.
- .1 Form control joints by installing a building paper bond breaker fitted to one side of hollow contour of block end.
- .2 Fill created core solid with grout.
- .3 Rake joint at exposed faces to accommodate application of backer rod and joint sealant.
- .4 Seal control joints as specified in Section 07 92 00.

.3 Do not continue horizontal joint reinforcing across movement joints and control joints.

.4 Size movement joints and control joints for sealant performance as specified in Section 07 92 00.

3.5 PROTECTION

.1 Protect flashings from mortar droppings.

END OF SECTION