1.0 INTRODUCTION

1.1 Background

Asbestos is a fibrous mineral that was used extensively in the past in the manufacture of construction and industrial products. As a result, asbestos-containing materials (ACM) were used in Humber buildings constructed prior to the mid-1980's. Intact and undisturbed asbestos presents no direct health hazard to building occupants but does present a potential exposure hazard should fibres be released as a result of disturbance or deterioration. Proper control measures must be in place to prevent the disturbance of asbestos and prevent the potential exposure to airborne asbestos at Humber College.

1.2 Objectives of the Asbestos Management Program:

The objective of Humber College's Asbestos Management Program (AMP) is to establish procedures and criteria to manage all asbestos-containing materials in College buildings and to protect employees, students, visitors and contractors from harmful exposure to airborne asbestos fibres.

- The information, procedures and work practices in the AMP complies with the requirements of the Occupational Health and Safety Act of Ontario and the Designated Substance Regulation respecting Asbestos on Construction Projects and in Buildings and Repair Operations (Ontario Regulation 278/05). This regulation requires that an asbestos management program be implemented in any building where the owner of a building knows, or ought reasonably to know, that ACM has been used in a building for any purpose related to the building, including insulation, and fireproofing.
- The AMP is a management system to control all facility maintenance, alteration, repair or other activities at the college campuses which may disturb asbestos. The management system provides for ongoing re-assessment of asbestos materials. If the assessment indicates continuing disturbance or severe deterioration of asbestos, such material will be assessed for action and will be removed or encapsulated. Prior to any **major** renovation, the project will also be assessed for asbestos materials. If any asbestos is identified, it will be removed and/or encapsulated.
- The AMP was prepared by Facilities Management, in consultation with Health and Safety Services and Humber's Joint Occupational Health and Safety Committee (JOHSC).

1.3 Elements of the Asbestos Management Program:

Given the potential health risks associated with exposure to harmful levels of asbestos fibres, Humber has established a written AMP that incorporates the following to ensure that asbestos-containing materials on campus are safely and effectively managed:

- Maintenance of an up-to-date asbestos inventory of all suspect or confirmed ACMs within college buildings and structures.
- Annual asbestos surveys to regularly assess the condition of identified ACMs.
- Identification of potential asbestos hazards on all work orders, through the Facilities Work Order System.
- Prompt abatement of damaged or deteriorating ACMs.
- Maintenance of records and reports of asbestos in buildings, including figures, reports, inspections, and analytical results.
- Classification of all asbestos-related work as Type 1, 2 or 3 in accordance with O.Reg. 278/05.
- Development of written asbestos procedures to ensure safe work practices and emergency measures are in place.
- Properly trained and qualified staff or contractors who may conduct asbestos work.
- Written notification to contractors and constructors of the presence, location and type of asbestos containing materials, and Humber's Asbestos Management Program prior to the commencement of work.

2.0 BACKGROUND INFORMATION

2.1 Asbestos

"Asbestos" is a general term used to describe a group of naturally occurring fibrous minerals. Asbestos was used in many building and commercial products because of its strength, insulation properties, ability to withstand high temperatures, and resistance to chemicals.

2.1.1 Types of asbestos:

Asbestos is divided into two mineral groups: serpentines (long flexible fibres) and amphiboles (brittle sharp fibres). Serpentine asbestos is generally considered less hazardous than the amphibole asbestos. Within these groups, there are six types of asbestos that are of commercial significance.

• Chrysotile, which belongs to the serpentine group, is the most common asbestos found in building materials. Must of the asbestos found at Humber

is chrysotile.

• Amosite and crocidolite, both belonging to the amphibole group, are the next most common types found in building materials. Actinolite, anthophyllite and tremolite, also of the amphibole group, may be found as contaminants within building products.

2.1.2 During construction from the 1930's to the 1970's, asbestos products were commonly used in building materials. The use of such materials declined significantly in the mid-1970's because of the increasing concern over the health effects of asbestos. Legislative requirements put an end to the use of many asbestos products at the time.

Given the past widespread use of asbestos, many Humber buildings that were constructed or renovated prior to the early 1980's still contain some form of asbestos.

2.2 Health Effects of Asbestos

Asbestos minerals are made up of long, thin fibres that can be separated into finer and finer fibres along their length. These fine fibers are generally invisible to the naked eye, and can be inhaled if they become airborne.

The inhalation of harmful levels of asbestos fibres is associated with the following diseases:

- **Asbestosis** is a disease which involves scarring of the lung tissue. It results in breathing difficulties and will continue to progress over time. Asbestosis is seen in workers who have had long term exposure to high levels of airborne asbestos.
- **Mesothelioma** is a rare cancer that generally develops in the pleural lining of the lungs. It can also arise in the peritoneal lining of the abdominal abdomen. This rare cancer is generally associated with exposure to asbestos.
- **Lung Cancer** can be due to a variety of exposures, including exposure to asbestos. The risk of getting lung cancer increases with the amount of asbestos exposure. The risk is further increased in those who smoke, so that asbestos workers who are smokers have a higher risk of developing lung cancer.

Asbestos diseases generally develop decades after prolonged exposure to higher

levels of asbestos. The time period between exposure to asbestos fibres and the development of disease can range from 15 to 55 years. This is known as the latency period.

2.3 Types of Asbestos-Containing Materials (ACMs):

Asbestos was widely used in a wide range of building materials. These materials can be separated into two groups – friable and non-friable materials. A friable material is a material that can be easily crumbled by hand pressure alone. A non-friable material is much more durable because is generally held together by a binder such as cement, vinyl, or asphalt.

Reference Note: *The information in the following section was taken from the Infrastructure Health & Safety Association's "Ontario: Asbestos Controls for Construction, Renovation, and Demolition".*

2.3.1 Friable materials

1 **Sprayed-on fireproofing:** This material was widely used to fireproof steel structures. It can be found on beams, columns, trusses, joists, and steel pan floors. Sprayed material was also used as a decorative finish and as acoustical insulation on ceilings. The material can be loose, fluffy, and lumpy in texture or, if more gypsum or cement was used, it may be quite hard and durable.

2 **Pipe and boiler insulation:** Much of the insulation on older heating systems and industrial processes was asbestos. Some types were pre-formed blocks or sections while others (commonly called "air cell" insulation) were corrugated and resemble cardboard. Often these materials are covered by painted canvas or sheet material.

Site-mixed asbestos cement was often used to insulate valves and elbows on piping and on the rounded ends of boilers and pressure vessels.

3 **Loose fill insulation:** This application was relatively rare and usually limited to tank insulation where the asbestos is held in place by light gauge wire mesh and then covered with sheet metal.

4 **Vermiculite:** Vermiculite is a mineral. It has been used in insulation and many commercial and consumer products for well over 50 years. Vermiculite itself is not asbestos and has not been shown to pose a

health problem. Vermiculite, however, can be contaminated with asbestos since mineral deposits of the two substances can occur together underground.

Not all vermiculite contains asbestos fibres. It is recommended that buildings with vermiculite based insulation be tested to determine if asbestos is present. If you don't test the material, assume that it contains some asbestos.

2.3.2 Typical locations – non-friable materials

1 **Asbestos cement products:** this type of material contains cement to bind the asbestos fibres together and was used in pipe form for sewers and water supply. In sheet form it was used for roofing and siding, as well as some types of firewall construction—for example, behind stoves and fireplaces and in high-rise construction.

2 **Acoustical plaster:** Acoustical plaster may be friable – it depends on the exact mixture. This material was mixed on site and applied like conventional plaster. It was used in schools, auditoriums, hospitals, and commercial buildings where acoustical properties were required.

3 **Acoustical tiles:** Some of the older acoustical tiles may contain significant amounts of asbestos. Some tiles were stapled or glued in place whereas others were suspended on T-bar. Some tiles can be considered friable because they can be crumbled by hand pressure. They are generally considered to be nonfriable, however, since they are usually intact when they're handled.

4 **Vinyl asbestos products:** These products were widely used in flooring as both tiles and sheets. The vinyl served to lock in the asbestos fibres.

5 **Roofing felts/shingles:** Some roofing felts used in built-up asphalt or pitch roofing contained asbestos. Asphalt or pitch was used to saturate the felts and bind the fibres in place.

6 **Asphalt/asbestos limpet spray:** This black tarry mixture was sprayed onto tanks and other equipment primarily in petrochemical plants and heavy industry. The application was very similar to sprayed-on fireproofing except that asphalt was used as the binder. In some applications a surface coat of asphalt was used to cover asbestos

insulation on tanks, hoppers, and other storage or process equipment. Asbestos was added to asphalt and used for road construction.

7 **Drywall joint-filling compound:** Early drywall joint-filling compounds contained significant amounts of asbestos fibre. This particular use was specifically prohibited in 1980 by the Hazardous Products Act. Still, it may be found in buildings constructed several years afterwards.

8 **Coatings and mastics:** Since asbestos was relatively inexpensive and withstood weathering, it was widely used as a filler in many coatings and mastic products such as roofing cement, caulking materials, and flooring adhesives.

9 **Gaskets and packings:** Several different types of gasket material contained asbestos. One common type was a rubber/vinyl/asbestos mixture which could be cut to size or came in standard sizes and patterns. Woven or pressed asbestos material was also widely used on doors and other openings on boilers, furnaces, and kilns. A third type consisted of a metal outer ring and an asbestos inner ring and was used on high pressure steam lines and similar processes. A fourth type was often used as packing for pumps and valves.

10 **Refractory brick:** High temperature refractory brick and mortar containing asbestos material were previously used in the construction of structures required to withstand high temperatures such as in boiler rooms and furnace rooms.

3.0 RESPONSIBILITIES

The Asbestos Management Program is prepared by Facilities Management, in consultation with Health and Safety Services and Humber's Joint Health and Safety Committee. This section outlines the responsibilities of all departments and individuals who may perform or contract work involving or around asbestos, as well as all individuals who occupy buildings with asbestos in them.

3.1 Facilities Management

- Develop and maintain the AMP and ensure that it complies with all legislative requirements, in consultation with Health and Safety Services, and Humber's Joint Health and Safety Committee.
- Ensure that a current copy of the AMP including the asbestos inventory is readily

available and accessible to Humber staff, students, tenants and visitors.

- Ensure that inspections of asbestos-containing materials at the College are conducted annually.
- Ensure that copies of asbestos inventories for buildings leased by Humber are obtained from the owner.
- Ensure that all work conducted at Humber on building or structures are reviewed to determine whether any asbestos-containing materials may be disturbed.
- Classify all asbestos-related work as Type 1, 2 or 3 in keeping with the Asbestos Regulation (O.Reg. 278/05), and maintain records of all such work.
- Provide information regarding the type of asbestos containing material to contractors during the tendering of building project work.
- Report to the appropriate authorities any disturbance of previously-unknown asbestos-containing materials during project work, and ensure that appropriate cleanup and abatement are conducted promptly.
- Maintain a record of all employees who work with asbestos and the asbestos work they have conducted, and submit an Asbestos Work Report annually to the Ministry of Labour.
- Ensure that all employees who conduct asbestos work have received proper training on asbestos.
- Ensure that all employees who conduct asbestos work are provided with proper respiratory protection training and fit-testing.
- Ensure that only competent, properly trained, and qualified asbestos contractors are used to conduct asbestos work on campus.
- Provide advance notice to local Departments, Health and Safety Services, and Humber's Joint Health and Safety Committee of all Type 3 asbestos work or other significant asbestos work.
- Enforce the requirements of the AMP for all work that may impact on asbestos containing materials at Humber.
- Review and update the AMP annually.

3.2 Divisional Deans, Directors and Managers

- Consult with Facilities Management prior to contracting or authorizing any work involving building structure, fabric or materials, to determine whether any asbestos-containing materials are present and may be disturbed.
- Ensure that any employee who works around asbestos-containing materials is informed of the presence of such materials, and is properly trained on how to safely conduct such work.
- Inform local building occupants of any scheduled asbestos-related work and precautions within their workplace.

- Ensure that all employees, students and visitors comply with their responsibilities under the AMP.

3.3 Staff, Students and Visitors

- Comply with the requirements of the AMP.
- Conduct activities in a manner which does not disturb or damage any asbestos-containing materials in buildings.
- Notify supervisor, instructor or school of any suspected damage or deterioration of asbestos-containing material in their work or study environment.

3.4 Contractors

- Conduct all work in compliance with Humber's AMP, and the Regulation respecting Asbestos on Construction Projects and in Building and Repair Operations (O.Reg. 278/05).
- Inform all employees and subcontractors about the presence of asbestos-containing materials in the footprint of the work project.
- Ensure that all asbestos workers under their control are properly trained in asbestos hazards and control measures as required.
- Ensure that employees immediately stop all work and inform Facilities Management in cases where previously unidenfitied asbestos-containing materials are discovered.
- Dispose of all asbestos waste in compliance with regulatory requirements.

3.5 Health and Safety Services

- Provide legislative and technical advice and recommendations regarding the identification, assessment and control measures related to asbestos-containing materials at Humber.
- Assist in providing asbestos training and education, and respiratory protection programs.
- Coordinate the disposal of asbestos waste in accordance with regulatory requirements.
- Audit the Asbestos Management Program on a regular basis, and make recommendations for changes where needed.

4.0 ASBESTOS SURVEYS AND ASSESSMENTS

A key component of the Asbestos Management Program is the maintenance of a detailed inventory of all known or suspect asbestos-containing building materials. This is a

requirement under the Asbestos Regulation (O.Reg. 278/05). Regular assessments of these materials allow the condition of such materials to be evaluated in order to determine whether any damage or deterioration has occurred.

4.1 Humber Asbestos Inventory

- Facilities Management will maintain an up-to-date inventory of all asbestos-containing materials in Humber buildings. The inventory information will include the location, type, friability and condition of all suspect or confirmed asbestos-containing materials within these buildings. It will be kept current based on results of regularly conducted asbestos surveys, and information regarding abatement of asbestos materials from asbestos work records.
- The asbestos inventory will be accessible to all who use Humber facilities, including staff, students, tenants, visitors, and contractors.
- A hard copy of the AMP and the Asbestos Inventory will be housed in the libraries at the North and Lakeshore campuses.
- For buildings or facilities leased by Humber, Facilities Management will obtain the asbestos inventory from the building owner.
- Through the Facilities Work Order System, all rooms/areas contain ACMs as identified in the asbestos inventory database will be identified to College staff by "PAH" (Potential Asbestos Hazard) on the work order.
- Facilities Management will provide written notification to contractors and constructors of the presence, location and type of asbestos containing materials ("Contractor Notification and Acknowledgement Form" attached in Appendix D). Contractors shall be made aware of the Humber College Asbestos Management Program prior to the commencement of work.

4.2 Asbestos Surveys and Assessments:

- Asbestos surveys to assess asbestos-containing materials at Humber will be conducted annually through Facilities Management.
- All surveys will be conducted by a competent person in accordance with the Asbestos Regulation (O.Reg. 278/05) and incorporating steps to ensure the safety of all contractors or employees during the survey process.
- Bulk samples to determine presence of asbestos in a suspect building material will be collected in accordance with the requirements of O.Reg. 278/05.
- The findings of the asbestos surveys will be reviewed and appropriate repair or abatement of damaged or deteriorating materials will be conducted.
- Prior to any building project work, Facilities Management will conduct an assessment to determine the scope of any asbestos work that will need to be included in the project.
- Past History of Asbestos Surveys:

- The College retained Pinchin & Associates Ltd. to conduct an initial asbestos survey for all College property. The survey was performed in October 1991, and April 1993, and reported November 25, 1991 and May 1993. All areas constructed prior to 1981 were surveyed on a room-by-room basis. Sprayed fire proofing and acoustic plaster formulated with asbestos were discontinued in the late 1970's. Mechanical insulation containing asbestos was not in general use in the early 1980's.
- Audit update was carried out by Pinchin & Associates Ltd. in 2000, and 2004.
- In 2006, Frontline Environmental Management Inc. audit entitled "Asbestos Audit – Humber Institute of Technology and Advanced Learning" November 28, 2006.
- In 2009, MTE Consultants Inc. was retained by the Humber Institute of Technology and Advanced Learning (Humber College), to conduct an asbestos audit update at the North Campus, located at 205 Humber College Blvd., Toronto, Ontario and Lakeshore Campus, 3199 Lakeshore Blvd. West.
- In 2011, an asbestos audit update was conducted by Safetech Environmental Limited.

5.0 IDENTIFICATION & CONTROL OF ASBESTOS RELATED WORK

5.1 Classification of Asbestos Containing Material

According to Ontario Regulation 278/05, asbestos-containing materials are classified by two categories, friable and non-friable.

- **Friable asbestos** containing materials are those that when dry can be crumbled, pulverized or powdered by hand pressure, or is crumbled pulverized or powdered.
- **Non-Friable asbestos** containing materials contain a binder such as cement, vinyl or asphalt used to hold the product together, and therefore fibers are not readily crumbled or pulverized by hand pressure. As such, non-friable ACMs generally represent a lower exposure hazard than friable materials.

  It must be noted that work activities, environmental conditions, site conditions or material condition can cause a Non-friable asbestos to become or be re-classified as Friable. These conditions must be observed and considered on a case-by-case basis when working on or near asbestos.

5.2 Classification of Work Involving Asbestos Containing Materials

Ontario Regulation 278/05 lists the following three work classifications for asbestos abatement.

- Type 1
- Type 2 – (including glove bag)
- Type 3

These categories have been established according to the risk of asbestos exposure they present to the abatement workers and building occupants. These classifications are summarized and paraphrased below. A copy of Ontario Regulation 278/05 has been provided in Appendix C for convenience only. The reader is referred to read off the official copy prepared by and obtained from the Queen's Printer for Ontario when determining the operation required for specific tasks related to the disturbance of ACM.

• ***Type 1 Operations:***

1. Installation or removal of ceiling tiles that are asbestos containing, but only if the tiles cover an area less than 7.5 m^2 and are installed or removed without being broken, cut, drilled, abraded, ground, sanded or vibrated.

2. Installation of removal of non-friable asbestos containing material, other than ceiling tiles, if the material is installed or removed without being broken, cut, drilled, abraded, ground, sanded or vibrated.

3. Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non friable asbestos containing material if the material is wetted to control the spread of dust or fibers and if the work is done only by means of non-powered hand-held tools.

4. Removal of less than 1 m^2 of drywall in which joint-filling compounds that are asbestos containing are used.

• ***Type 2 Operations:***

1. Removal of all or part of a false ceiling to obtain access to a work area, if asbestos containing material is likely to be lying on the surface of the false ceiling.

2. The removal or disturbance of 1 m^2 or less of friable asbestos containing material during the repair, alteration, maintenance or demolition of all or part of machinery or equipment or a building, aircraft, locomotive, railway car, vehicle

or ship.

3. Enclosing friable asbestos containing materials.

4. Applying tape or sealant or a sealant or other covering to pipe or boiler insulation that is asbestos containing material.

5. Installation or removal of ceiling tiles that area asbestos containing, if the tiles cover an area of 7.5 m^2 or more and are installed or removed without being broken, cut, drilled, abraded, ground, sanded or vibrated.

6. Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non friable asbestos containing material if the material is not wetted to control the spread of dust or fibers and if the work is done only by means of non-powered hand-held tools.

7. Removal of 1 m^2 or more of drywall in which joint-filling compounds that are asbestos-containing are used.

8. Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non friable asbestos containing material if the work is done by means of power tools that are attached to dust collecting devices equipped with HEPA filters.

9. Removing insulation that is asbestos containing material from a pipe, duct or similar structure using a glove bag.

10. Cleaning or removing filters used in air handling equipment in a building that has sprayed fireproofing that is asbestos containing material.

11. Any other activity that is not classifies as a Type 2 or 3 Operation and that may expose a worker to asbestos.

• ***Type 3 Operations:***

1. The removal or disturbance of more than 1 m^2 of friable asbestos containing material during the repair, alteration, maintenance or demolition of all or part of a building, aircraft, ship, locomotive, railway car or vehicle or any machinery or equipment.

2. The spray application of a sealant to friable asbestos containing material.

3. Cleaning or removing air handling equipment , including rigid ducting but not including filters, in a building that has sprayed fireproofing that is asbestos containing material.

4. Repairing, altering or demolishing all part of a kiln, metallurgical furnace or similar structure that is made in part of refractory materials that are asbestos containing materials.

5. Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non friable asbestos containing material if the work is done by means of power tools that are not attached to dust collecting devices equipped with HEPA filters.

6. Repairing, altering or demolishing all or part of any building in which asbestos is or was used in the manufacture of products, unless the asbestos was cleaned up and removed before March 16, 1986.

   Before commencing a Type 3 operation, the constructor, in the case of a project, and the employer, in any other case, shall notify, orally and in writing, an inspector at the office of the Ministry of Labour nearest the workplace of the operation. O. Reg. 278/05, s. 11 (1), and the College's Joint Occupational Health and Safety Committee (JOHSC).

5.3 Asbestos Abatement Options

Type 1 and 2 asbestos work must be conducted by trained and experienced individuals or asbestos abatement contractor to ensure the health and safety of employees and building occupants. Any Type 3 asbestos work must be performed by trained, experienced and "certified" individuals, or asbestos abatement contractor as outlined in Section 20 of Ontario Regulation 278/05 made under the Occupational Health and Safety Act. The following paragraphs discuss the various abatement options.

3.3.1 Pre-Renovation Testing

For the purposes of future renovations, alterations, demolition, construction, and maintenance, minor removal or disturbances of less than one square meter (m^2) or ten square feet (ft^2) of i) drywall finished with asbestos-containing joint compound or; ii) plaster finished with asbestos containing skim coat are classified as a Type 1 Operation as per Ontario Regulation 278/05.

Removal or disturbance of greater than 1 m^2 (10 ft^2) of i) drywall finished with asbestos-containing joint compound or; ii) plaster finished with asbestos containing skim coat is classified as a Type 2 Operation in accordance to Ontario Regulation 278/05, and require the use of respiratory protection and other personal protective equipment.

In order to comply with O. Reg. 278/05, for minor maintenance renovations requiring Type 1 work, it is prudent to assume all drywall joint compound and plaster not sampled to contain asbestos. Should a Type 2 Operation be necessary based on the extent of proposed work, it is recommended that additional sampling be considered on a case-by-case basis to rule out asbestos content where possible and reduce unnecessary expenses related to abating non-ACM as ACM. All visible asbestos waste should be removed in accordance Ontario Regulation 347 and the Environmental Protection Act.

3.3.2 Cleaning

Cleaning of ACM is appropriate when damaged materials have left debris and dust on surfaces. The cleaning and removing of asbestos-containing debris and dust can be accomplished by damp wiping or using a vacuum equipped with High Efficiency Particulate Air (HEPA) filters. When using damp wiping techniques, surface wetting should be conducted prior to material collection. All visible pieces of ACM and dust should be removed in accordance with O. Reg. 278/05 and properly disposed of in accordance with O. Reg. 347 and the Environmental Protection Act. Care should be taken to minimize disturbance of ACM in order to keep asbestos fibers from becoming airborne. In situations where material is observed to be damaged and continued deterioration is anticipated, additional abatement should be conducted.

3.3.3 Repair

This option should be used in situations where damage to ACM and/or coverings is minor and is not likely to reoccur. Repair of ACM and/or coverings should only be conducted when repair activities are not likely to cause significant exposure to asbestos fibers or cause asbestos fibers to become airborne. Typically, repair to thermal insulation involves the application of an adhesive compound and canvas wrap.

3.3.4 Encapsulation/Encasement

This option is typically used when the removal of the ACM is:

- not practical;
- cost prohibitive; or
- the damage to ACM is likely to occur without the presence of a protective barrier. The principle intent of encapsulation or encasement is to contain asbestos behind an inaccessible barrier using a sealer agent

(encapsulant) or physical barrier (drywall). This containment eliminates the exposure pathway to workers and building occupants and controls fiber discharge thereby reducing the risk of occupant exposure. This process does not render the asbestos non-hazardous and requires ongoing monitoring and the eventual removal for renovation or demolition activities.

3.3.5 Removal

The removal of ACM is recommended in situations where:

- The material is damaged beyond repair;
- Control of worker exposure by in-place management is not possible or practical;
- Continued damage or disturbance due to surrounding activities or conditions is expected or likely; and
- Construction, renovation, demolition, or maintenance is anticipated or required and the asbestos will be or is likely to be disturbed.

Appropriate measures, procedures and personal protective equipment prescribed by O. Reg 278/05 must be taken at all times during any of the above-mentioned cleanings, repairs, encapsulations, encasements, or removals to ensure control of exposure to asbestos fibers. Air Clearance is required after all Type 3 operations and must be conducted prior to the dismantling of work site containment. Any Type 3 removal will be performed by outside contractors who have completed required asbestos abatement training, specialize in such work and have a well-established reputation for quality workmanship in the field of asbestos control and remediation.

For the purposes of the Asbestos Management Plan, standard records detailing the above mentioned activities should be prepared and maintained.

6.0 EMPLOYEE TRAINING AND ASBESTOS WORK REPORTS

6.1 Asbestos Training

- All Humber employees who oversee or who conduct asbestos work must be properly trained and instructed in accordance with the Asbestos Regulation (O.Reg. 278/05), to include training on:
    - Identification of potential ACM
    - Hazards of asbestos exposure

  - Types and locations of asbestos-containing material at Humber
  - Personal hygiene
  - Use, care and disposal of personal protective equipment
  - Appropriate Type 1 and 2 work practices and procedures, as outlined in the AMP and in O.Reg. 278/05.
- Managers will keep a record of attendance for all of their employees who conduct asbestos work.
- Asbestos awareness training will be presented to staff who may work around asbestos materials, but who should not have reasons to disturb it. This training will be sufficient to allow identification and avoidance of asbestos contact. All external general service contractors shall provide general awareness training for their employees to allow employees to identify suspect asbestos-containing materials if found during work activities.
- Bulk sampling of asbestos materials shall only be conducted by those who have received proper training on collecting samples.
- For work performed by external contractors, Facilities Management will obtain written documentation that the contractors and their employees have received appropriate training and education as required under the Asbestos Regulation (O.Reg. 278/05).
- The removal and/or repair of ACM will be performed by independent contractors who are qualified and trained in asbestos abatement. Unskilled and/or untrained employees of Humber, as well as unqualified independent contractors, are not allowed, under any circumstances, to handle ACM.

6.2 Asbestos Work Reports

- Facilities Management will prepare an Asbestos Work Report (see Appendix F) for each of their employees who conduct Type 2 asbestos work. Humber employees do not conduct Type 3 asbestos work as such work is contracted out to qualified external contractors. These work reports will be completed annually and immediately upon termination of employment.
- A copy of each work report will be submitted to the Ministry of Labour, and a copy provided to the individual employee.

7.0 DISCOVERY OF PREVIOUSLY UNIDENTIFIED ACM DURING MAINTENANCE WORK

Should a worker or a contractor unexpectedly discover a material that may be asbestos containing, the following procedures shall be immediately followed:

7.1 **Procedure for Humber College Staff:**

1. Stop work and do not disturb the material;
2. Prevent unauthorized and public access to the affected area by appropriate means such as putting up signs, locking doors or barricading the area; and,
3. Immediately notify the immediate supervisor.

7.2 **Procedure for Humber College Contractor:**

1. Stop work and do not disturb the material;
2. Prevent unauthorized and public access to the affected area by appropriate means such as putting up signs, locking doors or barricading the area;
3. Immediately notify the Contractor's Site Supervisor; and,
4. The Contractor's Site Supervisor shall immediately notify Humber's project coordinator or the supervisor who is responsible for the project.

7.3 **Procedure for Humber College Sub-Contractor:**

1. Stop work and do not disturb the material;
2. Prevent unauthorized and public access to the affected area by appropriate means such as putting up signs, locking doors or barricading the area;
3. Immediately notify the Sub Contractor's Project Manager;
4. The Sub Contractor's Project Manager shall contact the General Contractor's Site Supervisor; and
5. The Contractor's Site Supervisor shall notify Humber's project coordinator or the supervisor who is responsible for the project.

7.4 **Procedure for Humber College Supervisor:**

1. Immediately visually inspect the material;
2. Take any reasonable additional steps to minimize worker and public exposure;

3. Refer to the Humber College Asbestos Audit Database to determine if material has been previously identified;

4. If the material has been previously identified in the database as "Asbestos Containing Material", "Non-Asbestos Containing Material", "Suspect Asbestos Containing Material" or "Deemed Asbestos Containing Material", treat it accordingly

5. If material has not been previously identified in the database, assess the situation and determine which of the following actions is most appropriate:

   5.1 Do Not Sample: treat the material as containing asbestos of a type other than Chrysotile and treat it accordingly; or

   5.2 Sample: Contact a qualified contractor to sample the material to determine asbestos content. Contractors should follow the following procedures:

      i) The number of samples collected shall meet the requirements of Table 1 of Ontario regulation 278/05.

      ii) Make sure no one else is in the room when sampling is done to minimize exposure.

      iii) Wear disposable gloves and half face air purifying respirators with P100 filters.

      iv) Do not disturb the material any more than is needed to take the sample (a volume of material the size of a dime is sufficient).

      v) Place a plastic sheet on the floor below the area to be sampled.

      vi) Carefully cut a piece of suspect material from the entire depth of the material using a small knife, corer, or other sharp tool. Place the sample into a re-sealable plastic bag (zip-lock bag).

      vii) Carefully dispose of the plastic sheet.

      viii) Use a damp paper towel to clean up any material on the outside of the container and around the area sampled.

      ix) Label the container with identification number and clearly

state when and where the sample was taken.

x) Patch the sampled area with a piece of duct tape to prevent fiber release.

xi) Submit the sample to an accredited Laboratory for analysis.

6. If sample results determine the material is not asbestos containing, proceed with maintenance/renovation/construction activity.

7. If analysis establishes that any of the samples collected contains 0.5% or more asbestos, all of the material from which the bulk material sample was collected is deemed to be asbestos containing and shall be treated accordingly.

8. Update the database following the "Sample Update Procedures".

9. Should the required asbestos abatement be a Type 1 or a Type 2 Operation for which Humber staff has been trained and has a procedure for, then proceed with appropriate procedure.

10. Should the required asbestos abatement be a Type 3, inform Humber's JOHSC and the Humber Supervisor.

Contractors shall contact Facilities Management project coordinator or the supervisor who is responsible for the project **immediately** in the event that suspect asbestos-containing materials are discovered during work activities.

8.0 ASBESTOS ABATEMENT AND WORK PROCEDURES

8.1 Ceiling access & assessment procedure:

Asbestos-containing materials that are in good condition and are not damaged or disturbed present little risk to building occupants. If the fibers are not dislodged, they cannot become airborne or be inhaled and thus the risk is absent.

Ceiling Access & Assessment Procedure:

The intent of this procedure is to gain access and assess ceiling spaces where sprayed fireproofing has been used on structural steel beams. In such areas the

following procedures shall be taken:

Prior to the start of the assessment the facilities management supervisor shall be notified of:

1. The name of the worker performing assessment;
2. The dates and the time of the assessment; and
3. The location and type of the assessment to be conducted.

Procedures

1. Refer to asbestos audit to determine location and general condition of asbestos fire spray;
2. If fire spray and other asbestos is reported in good condition proceed, if condition of asbestos is reported as damaged use Type 2 procedures;
3. Ensure assessment is done during times of low or no occupancy in affected areas;
4. Carefully remove a ceiling tile that is located at least 2 meters (6.5 feet) away from fire sprayed beams;
5. Using a flashlight carefully inspect the area where work will be done;
6. Ensure fire spray is fully encapsulated, is in good condition and is not damaged,
7. Ensure there is no asbestos debris in the area to be worked on;
8. If asbestos debris is found, do not disturb, clean-up, cover, move or touch material. Carefully replace the ceiling tile(s) and notify supervisor or proceed using Type 2 precautions;
9. If no debris or damage is present, assigned assessment may proceed, provided the distance from asbestos containing material (ACM) is equal to or greater than arm's length plus the length of any tools/equipment required for the job, and the work will not disturb asbestos;
10. The use of respiratory protection (half face air purifying respirator with N, R or P 100 filters) is optional.
11. Complete assessment in the ceiling space without disturbing asbestos; and

12. Reinstall ceiling tile(s).

8.2 Removal and installation of asbestos ceiling tile less than 7.5m^2 (or 80ft^2) procedure - Type 1:

Prior to the start of the work the facilities management supervisor shall be notified of:

1. The name of the worker performing work;
2. The dates and the time of the work; and
3. The location and type of the work to be conducted.

<u>The following Personal Protective Equipment (PPE) shall be used:</u>

1. Use of respiratory protection is not required however if a worker requests to wear a respirator it shall be at minimum a half face air purifying respirator with N-100, R-100 or P-100 particulate filter (HEPA filters);
2. Use of protective clothing is not required however if a worker requests to wear protective clothing it shall be at minimum a disposable suit with a hood;
3. Protective gloves; and
4. Eye protection.

<u>The following equipment shall be used:</u>

1. Polyethylene drop sheets to prevent the spread of dust from the work area;
2. Duct Tape;
3. Vacuum equipped with a HEPA-filter;
4. Asbestos disposal bags (6 mil) with asbestos warnings clearly printed on the bag;
5. A utility knife;
6. Clean rags;
7. Tools as required.

Procedures:

1. This applies only to tiles which can be removed intact, or in sections, without breaking, cutting, drilling, abrading, grinding, sanding or vibrating;
2. Using a HEPA vacuum clean up any visible dust or debris;
3. Do not use compressed air to clean up and remove any dust from any surface;
4. Eating, drinking, chewing gum or smoking is not permitted in the work area;
5. Ensure work is done during times of low or no occupancy;
6. Place a polyethylene drop sheet beneath area of work. Tape drop sheet in place.
7. Don (put on) Personal Protective Equipment (PPE) if worker chooses to wear PPE;
8. Carefully remove ceiling tile(s) intact as required without breaking, cutting, drilling, abrading, grinding, sanding or vibrating.
9. Immediately place removed tile(s) in an asbestos waste bag if it is not to be re-installed; otherwise place neatly and carefully on polyethylene drop sheet;
10. Thoroughly HEPA vacuum all dust and debris from lay-in T-bar grid and other surfaces, items and things;
11. Conduct other assigned work as required;
12. Install new or re-install removed ceiling tiles, without breaking, cutting, drilling, abrading grinding, sanding or vibrating or tape seal polyethylene sheeting over hole(s).
13. Immediately upon completion of the work, thoroughly clean all surfaces, items, tools and things including drop sheets within the work area using a HEPA filtered vacuum; Place used drop sheet(s) in asbestos waste bag;
14. Clean all surfaces of protective clothing (if worn) with HEPA filtered vacuum or damp cloth, remove protective clothing (with respirator still on) and place protective clothing in asbestos waste bag; and seal bag with tape;
15. Using HEPA vacuum or damp wipe methods, clean exterior of the sealed waste bag;
16. Place sealed waste bag in a secondary waste bag, seal secondary waste bag

with tape and dispose of waste;

17. Proceed to wash facility and thoroughly wash hands, face and respirator (if worn);

18. Return area to service,

19. Ensure updated information of activities have been made to asbestos Management Program (AMP) including retaining hard copy of documents when required.

8.3 Removal of asbestos ceiling tile more than 7.5m^2 (80ft^2) procedures - Type 2

Prior to the start of the work the facilities management supervisor shall be notified of:

1. The name of the worker performing work;

2. The dates and the time of the work; and

3. The location and type of the work to be conducted.

The following Personal Protective Equipment (PPE) shall be used:

1. Half face air purifying respirator with N-100, R-100 or P-100 particulate filter (HEPA filters);

2. Protective disposable suit with a hood;

3. Protective gloves; and

4. Eye protection.

The following equipment shall be used:

1. A sprayer containing water and a wetting agent;

2. Signs warning of the asbestos hazard;

3. Polyethylene sheeting (6 mil);

4. Duct Tape;

5. Vacuum equipped with a HEPA-filter;
6. Negative Air Unit;
7. Asbestos disposal bags (6 mil) with asbestos warnings clearly printed on the bag;
8. A utility knife;
9. Clean rags;
10. A flash light; and
11. Tools as required.

Procedures:

1. Eating, drinking, chewing gum or smoking is not permitted in the work area;
2. Ensure work is done during times of low or no occupancy;
3. Removal all contents from work area or cover and seal using polyethylene and tape all items, contents and things that will remain in the work area.
4. Construct a polyethylene enclosure, to the underside of finished ceiling ensuring that all walls, floors and other surfaces are fully covered. Seal all seams and joints of polyethylene using tape. Ensure a clear polyethylene window has been constructed as part of the enclosure;
5. Construct polyethylene double flap or zipper doors at all entrances and exits to the enclosure;
6. Post asbestos warning signs at entrance(s) to the work area;
7. Seal, using polyethylene and tape, all vents and grills etc within the work area;
8. Disable all ventilation serving the work area;
9. Although negative pressure is not required for this work it is recommended to aid in the control of general dust. If negative pressure is to be used connect negative air unit to enclosure. Ensure that exhaust from negative air unit is exhausted to the building exterior using flex duct. Measure pressure differential between enclosure and adjacent area to ensure that 0.02 inches of water column or 5 Pascal's of pressure differential have been achieved.

10. Don (put on) Personal Protective Equipment (PPE);
11. Enter enclosure and clean any existing debris/dust with a HEPA filtered vacuum;
12. Do not use compressed air to clean up and remove any dust from any surface;
13. Wet ceiling tiles to be removed;
14. Carefully remove one ceiling tiles without breaking, cutting, drilling, abrading, grinding, sanding, or vibrating.
15. Clean any debris lying on top of ceiling tiles using a HEPA vacuum.
16. Immediately place ceiling tiles in an asbestos waste bag. Seal waste bag with tape when full. If tiles are to be re-installed place them carefully on a polyethylene drop sheet and cover with another drop sheet;
17. Immediately upon completion of removal, thoroughly HEPA vacuum all dust and debris from lay-in T-bar grid and other surfaces, items and things;
18. Immediately upon completion of the work, thoroughly clean all surfaces, items, tools and things including enclosure within the work area using a HEPA filtered vacuum;
19. Using HEPA vacuum or damp wipe methods, clean exterior of the sealed waste bags,
20. Place sealed waste bag in a secondary waste bag, seal secondary waste bag with tape and remove from enclosure;
21. Clean all surfaces of protective clothing with HEPA filtered vacuum or damp cloth, remove protective clothing (with respirator still on) and place protective clothing in asbestos waste bag and seal waste bag with tape;
22. Repeat steps 19 and 20 to dispose of protective clothing.
23. Exit enclosure and remove respirator;
24. Proceed to wash facility and thoroughly wash hands, face and respirator;

Proceeding with Non-asbestos Work

Asbestos ceiling tiles will not be reinstalled. They will be replaced with new and non-asbestos tiles.

1. Dismantle enclosure
2. Proceed to wash facility and thoroughly wash hands, face and respirator;
3. Return area and ventilation to service (if applicable),
4. Proceed with non-asbestos work as required provide work will not disturb or damaging other asbestos. Use of respiratory protection is not required (however is optional) as removal is complete at this time.
5. Ensure updated information of activities have been made to asbestos Management Program (AMP) including retaining hard copy of documents when required.

8.4 Glove bag removal procedures - Type 2

Glove bag removal is often used to remove a section of pipe wrap. Procedures must be followed when performing glove bag removal:

Prior to the start of the work the facilities management supervisor shall be notified of:

1. The name of the worker performing work;
2. The dates and the time of the work; and
3. The location and type of the work to be conducted.

The following Personal Protective Equipment (PPE) shall be used:

1. Half face air purifying respirator with N-100, R-100 or P-100 particulate filter (HEPA filters);
2. Protective disposable suit with a hood;
3. Protective gloves; and
4. Eye protection.

The following equipment shall be used:

1. Tape: Suitable for sealing polyethylene to surface encountered under both wet conditions using amended water, and dry conditions;
2. Wetting Agent: Non-foaming surface active agent; mixed with water in

concentration to provide thorough wetting of asbestos fibre: Asbesto-Wet or equivalent.

3. Amended Water: Water with wetting agent added;

4. Asbestos Waste Receptors: Two separate containers of which at least one shall consist of 0.15 mm (6 mil) minimum thickness sealable polyethylene bag. Other container may be 0.15 (6 mil) minimum thickness polyethylene bag. Other container shall be adequate to prevent perforating rips, or tears during filling, transport or disposal. Containers must be acceptable to disposal site selected and Ministry of Environment, and shall be clearly marked to indicate that contents contain asbestos;

5. Sealer: Sealer for purpose of trapping residual fibre debris. Product must have flame spread and smoke development ratings both less than 25. Product shall leave no stain when dry. Chil-Abate CP 210, Childers Products Company, Mississauga, Ontario;

6. Glove Bag: Prefabricated, 0.25 mm (10 mil) minimum thickness polyvinyl chloride bag with integral 0.25 mm (10 mil) thick polyvinyl chloride gloves and elasticized ports. Bag equipped with reversible double pull double throw zipper on top to facilitate installation on pipe and progressive movement along pipe and with straps for sealing ends to bag around pipe: Safe T Strip manufactured by Hazmasters Equipment Inc., Pickering Ontario, in configurations suitable for work;

7. Sprayer: Garden type portable manual sprayer, low velocity, capable of producing of fine spray;

8. HEPA Vacuum: Vacuum with all necessary fittings, tools and attachments. Air must pass HEPA filter before discharge;

9. Securing Straps: For glove bag, reusable nylon straps at least 1" wide with metal tightening buckle for sealing ends of bags around pipe and/or insulation.

10. Knife: Knife with fully retractable blade for use inside glove bag;

11. Signs warning of the asbestos hazard;

12. Polyethylene sheeting (6 mil);

13. Clean rags;

14. Tools as required.

Procedures:

1. Ensure all work is conducted in accordance with Section 17 of Ontario Regulation 278/05.

2. Ensure work is done during times of low or no occupancy;

3. Isolate asbestos work area with tape barriers, saw horses, or other barriers posted with notices marking area as asbestos removal area. Workers performing glove bag removal shall wear half face piece air purifying respirators with P100 HEPA filter cartridges.

4. Eating, drinking, chewing gum or smoking is not permitted in the work area;

5. Pre-clean surface of fitting of fallen or damaged insulation by HEPA vacuuming or damp wiping. Do not use compressed air to clean up and remove any dust from any surface;

6. Spray areas of damaged jacketing with mist of amended water. Tape over damage, or wrap with polyethylene sheeting, to provide temporary repair.

7. If fitting insulation is not jacketed spray surface with mist of amended water and wrap entire length of fitting with 0.15 mm (6 mil) polyethylene sheeting taped in place.

8. Place tools necessary to remove insulation in tool pouch. Zip bag onto fitting and seal all openings to fitting with cloth securing straps. For valve bags seal valve cover with wire tie or equivalent.

9. Place hands into gloves and use necessary tools to remove insulation. Arrange insulation in bag to obtain full capacity of bag. Roll jacketing carefully to minimize possibility of ripping or puncturing bags.

10. Insert nozzle of spray pump into bag through valve and wash down fitting and interior of bag thoroughly. Use one hand to aid washing process. Wet surface of insulation in lower section of bag and exposed end of asbestos insulation remaining on fitting by spraying with water prior to moving bag.

11. If bag is to be moved along fitting, move bag, re seal to fitting using double pull zipper to pass hangers. Repeat stripping operation.

12. If bag is removed from fitting for use on new fitting, seal interior zip lock.

Reinstall in new location before opening zip lock.

13. If glove bag is ripped, cut or opened in any way, cease work and repair with tape before continuing work. If opening is not easily repaired, workers in area shall put on disposable coveralls. Clean spilled material with HEPA vacuum or wet washing.

14. To remove bag once filled, wash top section and tools thoroughly. Place tools in one hand (glove), pull hand out inverted, twist to create separate pouch, double tape to seal. Cut between tape and place pouch with tools in next glove bag; or into water bucket, open pouch underwater, clean tools and allow to dry.

15. Pull waste disposal bag over glove bag before removing from fitting. Remove securing straps. Unfasten zipper.

16. After removal of bag ensure fitting is clean of residue. If necessary, after removal of each section of asbestos, HEPA vacuum surfaces of fitting or wipe with wet cloth. Ensure that surfaces are kept free of wet sludge.

17. Before completion of shift, apply sealer to all surfaces of freshly exposed fitting. Apply heavy coat of sealer to exposed ends of asbestos insulation to remain.

18. Place sealed glove bag in a secondary waste bag, seal secondary waste bag with tape.

19. Using HEPA vacuum or damp wipe methods, clean exterior of the sealed waste bags,

20. Once bag filled dispose of as contaminated waste. Do not reuse bag.

21. Proceed to wash facility and thoroughly wash hands and face;

22. Return area to service,

23. Ensure updated information of activities have been made to asbestos Management Program (AMP) including retaining hard copy of documents when required.

8.5 Removal of drywall containing asbestos, drywall joint compound less than 1m^2(10ft^2) "of drywall" procedure - Type 1

Prior to the start of the work the Facilities Management supervisor shall be notified

of:

1. The name of the worker performing work;
2. The dates and the time of the work; and
3. The location and type of the work to be conducted.

The following Personal Protective Equipment (PPE) shall be used:

1. Use of respiratory protection is not required however if a worker requests to wear a respirator it shall be at minimum a half face air purifying respirator with N-100, R-100 or P-100 particulate filter (HEPA filters);
2. Use of protective clothing is not required however if a worker requests to wear protectiveclothing it shall be at minimum a disposable suit with a hood;
4. Protective gloves; and
5. Eye protection.

The following equipment shall be used:

1. Polyethylene drop sheets to prevent the spread of dust from the work area;
2. A sprayer containing water and a wetting agent;
3. Duct Tape;
4. Vacuum equipped with a HEPA-filter;
5. Asbestos disposal bags (6 mil) with asbestos warnings clearly printed on the bag;
6. A utility knife;
7. Clean rags;
8. Tools as required.

Procedures:

1. This applies only to drywall with drywall joint compound containing asbestos and refers to the disturbance of less than 1m2 or (10ft2) of “drywall” and not the accumulation of 1m2 or (10ft2) of “drywall joint compound”.
2. Using a HEPA vacuum clean up any visible dust or debris;

3. Do not use compressed air to clean up and remove any dust from any surface;
4. Eating, drinking, chewing gum or smoking is not permitted in the work area;
5. Ensure work is done during times of low or no occupancy;
6. Place a polyethylene drop sheet beneath area of work. Tape drop sheet in place to floor or wall(s).
7. Don (put on) Personal Protective Equipment (PPE) if worker chooses to wear PPE;
8. Using sprayer wet mist material(s) to be removed (do not soak);
9. Using utility knife or hand held non-powered drywall saw carefully remove required section of drywall while continuing to mist with water;
10. Immediately place removed drywall in an asbestos waste bag;
11. Thoroughly HEPA vacuum all dust and debris from all surfaces, items and things;
12. Conduct other assigned work as required;
13. Immediately upon completion of the work, thoroughly clean all surfaces, items, tools and things including drop sheets within the work area using a HEPA filtered vacuum;
14. Place used drop sheet(s) in asbestos waste bag;
15. Clean all surfaces of protective clothing (if worn) with HEPA filtered vacuum or damp cloth, remove protective clothing (with respirator still on) and place protective clothing in asbestos waste bag; and seal bag with tape;
16. Using HEPA vacuum or damp wipe methods, clean exterior of the sealed waste bag;
17. Place sealed waste bag in a secondary waste bag, seal second waste bag with tape and dispose;
18. Proceed to wash facility and thoroughly wash hands, face and respirator (if worn);
19. Repair finish as required;

20. Return area to service,

21. Ensure updated information of activities have been made to asbestos Management Program (AMP) including retaining hard copy of documents when required.

8.6 Removal of drywall containing asbestos, drywall joint compound more than 1m^2 (10ft^2) procedures - Type 2

Prior to the start of the work the facilities management supervisor shall be notified of:

1. The name of the worker performing work;
2. The dates and the time of the work; and
3. The location and type of the work to be conducted.

<u>The following Personal Protective Equipment (PPE) shall be used:</u>

1. Half face air purifying respirator with N-100, R-100 or P-100 particulate filter (HEPA filters);
2. Protective disposable suit with a hood;
3. Protective gloves; and
4. Eye protection.

<u>The following equipment shall be used:</u>

1. A sprayer containing water and a wetting agent;
2. Signs warning of the asbestos hazard;
3. Polyethylene sheeting (6 mil);
4. Duct Tape;
5. Vacuum equipped with a HEPA-filter;
6. Negative Air Unit;
7. Asbestos disposal bags (6 mil) with asbestos warnings clearly printed on the

bag;

8. A utility knife;

9. Clean rags;

10. A flash light; and

11. Tools as required.

Procedures:

1. Eating, drinking, chewing gum or smoking is not permitted in the work area;

2. Ensure work is done during times of low or no occupancy;

3. Removal all contents from work area or cover and seal using polyethylene and tape all items, contents and things that will remain in the work area.

4. Construct a polyethylene enclosure, to the underside of finished ceiling or under side of structural deck (as required to access drywall) ensuring that all walls, floors, ceilings and other surfaces are fully covered. Seal all seams and joints of polyethylene using tape.

5. Ensure a clear polyethylene window has been constructed as part of the enclosure;

6. Construct polyethylene double flap or zipper doors at all entrances and exits to the to the enclosure;

7. Post asbestos warning signs at entrance(s) to the work area;

8. Seal, using polyethylene and tape, all vents and grills etc within the work area;

9. Disable all ventilation serving the work area;

10. Although negative pressure is not required for this work it is recommended to aid in the control of general dust. If negative pressure is to be used connect negative air unit to enclosure. Ensure that exhaust from negative air unit is exhausted to the building exterior using flex duct. Measure pressure differential between enclosure and adjacent area to ensure that 0.02 inches of water column or 5 Pascal's of pressure differential have been achieved.

11. Do (put on) Personal Protective Equipment (PPE);

12. Enter enclosure and clean any existing debris/dust with a HEPA filtered

vacuum;

13. Do not use compressed air to clean up and remove any dust from any surface;
14. Wet drywall to be removed and allow several minutes for water to absorb,
15. Carefully remove drywall minimizing breaking, cutting, drilling, abrading, grinding, sanding, or vibrating.
16. Immediately place removed drywall in an asbestos waste bag and seal waste bag with tape when full.
17. Immediately upon completion of the work, thoroughly clean wall cavity and all surfaces, items, tools and things including enclosure within the work area using a HEPA filtered vacuum;
18. Using HEPA vacuum or damp wipe methods, clean exterior of the sealed waste bags,
19. Place sealed waste bag in a secondary waste bag, seal secondary waste bag with tape and remove from enclosure;
20. Clean all surfaces of protective clothing with HEPA filtered vacuum or damp cloth, remove protective clothing (with respirator still on) and place protective clothing in asbestos waste bag and seal waste bag with tape;
21. Repeat steps 17 and 19 to dispose of protective clothing.
22. Exit enclosure and remove respirator;
23. Proceed to wash facility and thoroughly wash hands, face and respirator
24. Dismantle enclosure
25. Proceed to wash facility and thoroughly wash hands, face and respirator;
26. Return area and ventilation to service (if applicable),
27. Ensure updated information of activities have been made to asbestos Management Program (AMP) including retaining hard copy of documents when required.

8.7 Asbestos flooring removal procedure - Type 1

Prior to the start of the work the facilities management supervisor shall be notified of:

1. The name of the worker performing work;
2. The dates and the time of the work; and
3. The location and type of the work to be conducted.

The following Personal Protective Equipment (PPE) shall be used:

1. Use of respiratory protection is not required however if a worker requests to wear a respirator it shall be at minimum a half face air purifying respirator with N-100, R-100 orP-100 particulate filter (HEPA filters);
3. Use of protective clothing is not required however if a worker requests to wear protective clothing it shall be at minimum a disposable suit with a hood;
4. Protective gloves; and
5. Eye protection.

The following equipment shall be used:

1. Polyethylene drop sheets to prevent the spread of dust from the work area;
2. A sprayer containing water and a wetting agent;
3. Duct Tape;
4. Vacuum equipped with a HEPA-filter;
5. Asbestos disposal bags (6 mil) with asbestos warnings clearly printed on the bag;
6. A utility knife;
7. A heavy Duty scraper;
8. Clean rags;
9. Tools as required.

Procedures:

1. Using a HEPA vacuum clean up any visible dust or debris;

2. Do not use compressed air to clean up and remove any dust from any surface;
3. Do not use electric powered scrapers.
4. Eating, drinking, chewing gum or smoking is not permitted in the work area;
5. Ensure work is done during times of low or no occupancy;
6. Don (put on) Personal Protective Equipment (PPE) if worker chooses to wear PPE;
7. Wet flooring to be removed. Allowing water to absorb into flooring for extended time periods may help loosen adhesive and make removal easier. Ensure water damage does not occur to other areas of the building.
8. Removal can be aided by heating flooring thoroughly with a hot air gun to soften the adhesive.
9. Start removal by wedging a heavy duty scraper in the seam of tiles or in pre-cut groves and gradually forcing the edge up and away from floor. Be careful not to break off pieces of flooring.
10. Continue removal of flooring using hand tools, removing floor tiles intact wherever possible.
11. Immediately place removed flooring in an asbestos waste bag.
12. After removal is complete, scrape up adhesive and backing remaining on floor with a hand scraper until only a thin smooth film remains and place in waste bag. Do not dry scrape flooring. Do not use powered electric scrapers.
13. Immediately upon completion of the work, thoroughly clean all surfaces, items, tools and things within the work area using a HEPA filtered vacuum;
14. Clean all surfaces of protective clothing (if worn) with HEPA filtered vacuum or damp cloth, remove protective clothing (with respirator still on) and place protective clothing in asbestos waste bag; and seal bag with tape;
15. Using HEPA vacuum or damp wipe methods, clean exterior of the sealed waste bag;
16. Place sealed waste bag in a secondary waste bag, seal second waste bag with tape and dispose;
17. Proceed to wash facility and thoroughly wash hands, face and respirator (if

worn);

18. Return area to service,

19. Ensure updated information of activities have been made to asbestos Management Program (AMP) including retaining hard copy of documents when required.

8.8 Air filter change procedures, coils - Type 2

Prior to the start of the work the facilities management supervisor shall be notified of:

1. The name of the worker performing work;
2. The dates and the time of the work; and
3. The location and type of work to be conducted

The following Personal Protective Equipment (PPE) shall be used:

1. Half face air purifying respirator with N-100, R-100 or P-100 particulate filters (HEPA filters);
2. Protective disposable suit with a hood;
3. Protective gloves; and
4. Eye protection.

The following equipment shall be used:

1. A sprayer containing water and a wetting agent;
2. Signs warning of the asbestos hazard;
3. Polyethylene sheeting (6 mil);
4. Duct Tape;
5. Vacuum equipped with a HEPA-filter;
6. Asbestos disposal bags (6 mil) with asbestos warnings clearly printed on the bag;

7. A utility knife;
8. Clean rags;
9. A flash light; and
10. Tools as required.

Procedures:

1. Eating, drinking, chewing gum or smoking is not permitted in the work area;
2. Ensure work is done during times of low or no occupancy in the area;
3. Disable all ventilation systems to be worked on;
4. Secure drop sheet of polyethylene sheeting beneath work area.
5. Post asbestos warning signs;
6. Don (put on) Personal Protective Equipment (PPE);
7. Carefully remove ceiling tile(s) required to access filter(s);
8. Carefully remove air filter(s) while spraying water on filter to control dust;
9. Immediately place the removed filter in an asbestos waste bag;
10. Thoroughly HEPA vacuum all accessible areas of ductwork interior;
11. Do not use compressed air to clean up and remove any dust from any surface;
12. Insert new filter and replace ceiling tile(s);
13. Immediately upon completion of the work, thoroughly clean all surfaces, items, tools and things within the work area using a HEPA filtered vacuum;
14. Clean all surfaces of protective clothing with HEPA filtered vacuum or damp cloth, remove protective clothing (with respirator still on) and place protective clothing in asbestos waste bag;
15. Using HEPA vacuum or damp wipe methods, clean exterior of the sealed waste bag;
16. Place sealed waste bag in a secondary waste bag and seal secondary waste bag with tape;

17. Proceed to a wash facility and thoroughly wash hands, face and respirator;

18. Return area and ventilation to service.19. Ensure updated information of activities have been made to asbestos Management Program (AMP) including retaining hard copy of documents when required.

8.9 Air filter change procedures, fan room - Type 2

Prior to the start of the work the facilities management supervisor shall be notified of:

1. The name of the worker performing work;
2. The dates and the time of the work; and
3. The location and type of work to be conducted.

The following Personal Protective Equipment (PPE) shall be used:

1. Half face air purifying respirator with N-100, R-100 or P-100 particulate filters (HEPA filters);
2. Protective disposable suit with a hood;
3. Protective gloves; and
4. Eye protection.

The following equipment shall be used:

1. A sprayer containing water and a wetting agent;
2. Signs warning of the asbestos hazard;
3. Polyethylene sheeting (6 mil);
4. Duct Tape;
5. Vacuum equipped with a HEPA-filter;
6. Asbestos disposal bags (6 mil) with asbestos warnings clearly printed on the bag;
7. A utility knife;

8. Clean rags;
9. A flash light; and
10. Tools as required.

Procedures

1. Eating, drinking, chewing gum or smoking is not permitted in the work area;
2. Ensure work is done during times of low or no occupancy in the affected areas;
3. Disable all ventilation systems to be worked on;
4. Enclose area with polyethylene sheeting and tape were practical;
5. Seal, using polyethylene and tape, all vents and grills within the work area;
6. Post asbestos warning signs at entrance(s) to the work area;
7. Tape seal doors to and from the work area;
8. Don (put on) Personal Protective Equipment (PPE);
9. Enter enclosure and close zipper door or flap door;
10. Clean any existing debris/dust with a HEPA filtered vacuum;
11. Do not use compressed air to clean up and remove any dust from any surface;
12. Pre-wet the filters with water using the sprayer, allow water to soak in;
13. Carefully remove air filters; continue spray wetting to control dust;
14. Place removed filter directly in asbestos waste bag; seal bag when full;
15. HEPA vacuum or damp wipe the waste bag prior to removal from work area;
16. Immediately upon completion of the work, thoroughly clean the accessible areas of the duct and air handler with the HEPA filtered vacuum;
17. Thoroughly clean all surfaces, items, tools and things within the work area using a HEPA filtered vacuum;
18. Install new filters;
19. Clean all surfaces of protective clothing with HEPA filtered vacuum or damp

cloth, remove protective clothing (with respirator on) and place protective clothing in asbestos waste bag and seal the bag with tape;

20. Using HEPA vacuum or damp wipe methods, clean exterior of the sealed waste bag,

21. Place sealed waste bag in a secondary waste bag and seal secondary waste bag with tape and remove waste from enclosure;

22. Exit enclosure and remove respirator;

23. Dismantle enclosure;

24. Proceed to wash facility and thoroughly wash hands, face and respirator;

25. Return ventilation system to service.

8.10 Working with asbestos debris laying on top of ceiling procedures - Type 2

Prior to the start of the work the facilities management supervisor shall be notified of:

1. The name of the worker performing work;

2. The dates and the time of the work; and

3. The location and type of the work to be conducted.

The following Personal Protective Equipment (PPE) shall be used:

1. Full face air purifying respirator with N-100, R-100 or P-100 particulate filter (HEPA filters);

2. Protective disposable suit with a hood;

3. Protective gloves; and

4. Eye protection.

The following equipment shall be used:

1. A pre-constructed polyethylene enclosure to prevent the spread of dust from the work area;

2. A sprayer containing water and a wetting agent;
3. Signs warning of the asbestos hazard;
4. Polyethylene sheeting (6 mil);
5. Duct Tape;
6. Vacuum equipped with a HEPA-filter;
7. Asbestos disposal bags (6 mil) with asbestos warnings clearly printed on the bag;
8. A utility knife;
9. Clean rags;
10. A flash light; and
11. Tools as required.

Procedures:

1. Eating, drinking, chewing gum or smoking is not permitted in the work area;
2. Ensure work is done during times of low or no occupancy;
3. Disable all ventilation systems to be worked on;
4. Seal, using polyethylene and tape, all vents and grills within the work area;
5. Erect pre-constructed polyethylene enclosure, to underside of finished ceiling; Where the pre-constructed enclosure is not appropriate constructed a custom enclosure using polyethylene and tape;
6. Post asbestos warning signs at entrance(s) to the work area;
7. Connect HEPA filtered vacuum to pre-constructed enclosure to provide negative pressure within enclosure (draw air from inside enclosure through vacuum and exhaust to the exterior of the enclosure). Turn on HEPA vacuum and observe inward deflection of polyethylene;
8. Don (put on) Personal Protective Equipment (PPE);
9. Enter enclosure and clean any existing debris/dust with a HEPA filtered vacuum;

10. Do not use compressed air to clean up and remove any dust from any surface;
11. Wet asbestos, which will be disturbed with water using the sprayer. Do not wet asbestos which will be cleaned-up using the HEPA vacuum;
12. Carefully remove one ceiling tile being careful not to spill asbestos debris. Clean ceiling tile using the HEPA vacuum and immediately place tile in an asbestos waste bag;
13. Thoroughly HEPA vacuum all debris from remaining tile(s), surfaces, items and things prior to removal or disturbance;
14. Temporarily repair or encapsulate damaged asbestos, where possible, using a spray sealant or duct tape;
15. Conduct assigned work as required provide work will not disturb or damaging asbestos further.
16. Immediately upon completion of the work, thoroughly clean all surfaces, items, tools and things including enclosure within the work area using a HEPA filtered vacuum;
17. Install new ceiling tiles or tape seal polyethylene sheeting over hole(s);
18. Clean all surfaces of protective clothing with HEPA filtered vacuum or damp cloth, remove protective clothing (with respirator still on) and place protective clothing in asbestos waste bag;
19. Using HEPA vacuum or damp wipe methods, clean exterior of the sealed waste bag,
20. Place sealed waste bag in a secondary waste bag, seal secondary waste bag with tape and remove from enclosure;
21. Exit enclosure and remove respirator;
22. Dismantle the enclosure;
23. Proceed to wash facility and thoroughly wash hands, face and respirator;
24. Return area and ventilation to service,
25. Ensure updated information of activities have been made to asbestos Management Program (AMP) including retaining hard copy of documents when required.

8.11 General emergency procedures - asbestos clean-up

If Type 2 procedures cannot be strictly observed due to the urgency of the situation, some judgment will be required by the staff and supervisor on site to evaluate worker health and safety. The general intent of this work should be to protect the worker(s) performing the repair and to minimize the exposure of others to asbestos.

Procedures

1. **Immediately notify facilities management supervisor of the situation;**
2. Prevent unauthorized and public access to the affected area. Lock doors and place asbestos warning signs at entrances to the area;
3. Shut down or disable ventilation system serving the area;
4. Don Personal Protective Equipment including:
   a. Half face air purifying respirator with N-100, R-100 or P-100 particulate filters (HEPA filters);
   b. Protective disposable suit with a hood;
   c. Protective gloves; and
   d. Eye protection.
5. Seal all vents and grills in the area using polyethylene and tape;
6. Obtain asbestos equipment and perform emergency repair with minimum disturbance of asbestos;
7. HEPA vacuum asbestos dust and debris;
8. Wet bulk asbestos debris and place immediately in asbestos waste container. Seal container when full;
9. Perform a thorough clean-up of work area using HEPA filtered vacuum or wet cleaning;
10. Decontaminate protective coveralls and clothes using HEPA filtered vacuum or wet cleaning, remove protective clothing (with respirator still

on) and place protective clothing in asbestos waste bag;

11. Using HEPA vacuum or damp wipe methods, clean exterior of the sealed waste bag,

12. Place sealed waste bag in a secondary waste bag and seal secondary waste bag with tape and remove waste from enclosure;

13. Remove and thoroughly clean respirator;

14. Proceed to wash facility and thoroughly wash hands and face; and

15. Return at appropriate time and with appropriate equipment/contractor to complete required asbestos repair or removals;

16. Ensure updated information of activities have been made to asbestos Management Program (AMP) including retaining hard copy of documents when required.

9.0 ASBESTOS INVENTORY DATABASE & FIGURES

10.0 RECORD KEEPING

Facilities Management maintains all written records and reports as part of the record keeping process. These include:

- Humber College's AMP
- Asbestos inventory database and layouts (section 9.0 of this report)
- Record of asbestos removal work
- Records of Waste Disposal – the original bill of lading or waste manifest with a weigh bill ticket from the landfill site. A copy will be sent to the Environmental Health and Safety Coordinator
- Contractor Notification Form (template enclosed in Appendix D)
- A copy of all employee training records. The original records will be kept by Human Resources Department
- The following procedures will be followed when performing audit update:

10.1 Sample Update Procedures for Asbestos Audit Updates - Microsoft Excel Procedures

Notes: Prior to entering data, the person(s) must know either the Room Number. You should also have the laboratory report and any and all associated abatement documentation, pictures, etc. saved in the appropriate file folders. Ensure that sampling was conducted in accordance with Table 1 of Ontario Regulation 278/05 and that the prescribed minimum numbers of bulk samples were collected and analyzed.

1. Open "North Campus Asbestos Audit Database 2009.xls" from the "Database" folder.
2. Select the tab at the bottom of the page which corresponds to the building in which the sampling has occurred.
3. Scroll up or down the worksheet until you find the room number for the room in which the sample was taken. Alternatively select Edit|Find from the menu bar (ctrl+f) and enter the appropriate room number in the field.
4. Once the room is found, locate the item which has been sampled. If the item that has been sampled does not exist in the database, insert a new row in the appropriate location (alphanumerical order by floor, then

room). Insert one row for each sample taken. Copy or fill in all applicable existing information from the existing records into the blank rows.

5. Locate columns "Q" to "U".

6. Under column "Q" ("Sample Taken"), enter "Yes".

7. Under column "R" ("Sample ID"), enter the sample ID (one sample per row). The sample name MUST match exactly what is reported on the laboratory certificate of analysis.

8. Under column "S" ("% Asbestos"), enter the percent asbestos and asbestos type (Chrysotile, Amosite, Crocidolite) as indicated on the laboratory report. If no asbestos was detected in the sample, enter "None Detected".

9. Under column "T" ("Asbestos Classification") enter "ACM" if the sample contained greater than 0.5% asbestos and "Non-ACM" if the sample contained less than 0.5% asbestos, or no asbestos was detected. For homogeneous sample materials (materials that are uniform in colour and texture_) such as plaster, texture coat, stipple coat, etc. if one of the samples is ACM by default (according to O. Reg. 278/05) the remainder of the samples, and thus the remainder of the material, are classified as "ACM". In these cases enter "ACM" for all associated sample and materials entries .

10. Under column "U" ("Laboratory Report") enter the laboratory Report Title. Next, select the green checkmark beside the formula bar. Then, select Insert|Hyperlink from the menu bar (ctrl+k). On the "Insert Hyperlink" window, ensure that "Existing File or Web Page" is selected under "Link to:". Next, beside "Look in:", select the "Up One Folder" button. Select the "Lab Data" folder. Select the appropriate file to link to. Select the "OK" button.

11. Repeat steps 5 to 10 for each sample taken.

12. Save your work. Close.

10.2 Typical Repair Work Update Procedures for Asbestos Audit Updates - Microsoft Excel Procedures

Note: Prior to entering data, the person(s) must know either the Room

Number. You should also have the "Asbestos Abatement Form" and any and all associated laboratory data, pictures, etc. saved in the appropriate file folders.

1. Obtain all documentation detailing the abatement including but not limited to inspections forms, laboratory data (bulk and air samples), photographs, clearance reports, clearance air testing (if applicable), etc.

2. Ensure all documentation is complete and accurate.

3. Convert all abatement documentation into a single PDF document and using the following file name nomenclature:

   Building_Floor_Room#(s)/Name(s)_DD-MMM-YYYY_Abatement_Project Name.

4. Save the above document in the "Abatement Documentation" folder located on the GXT 2 gigabyte USB Memory Stick.

5. Open "North Campus Asbestos Audit Database 2009.xls" from the "Database" folder located on the GXT 2 gigabyte USB Memory Stick. The asbestos Database (Table 1) will appear as a Microsoft Excel file.

6. Select the tab at the bottom of the screen which corresponds to the building in which the abatement has occurred.

7. Scroll up or down the worksheet until you find the room number for the room in which the abatement has occurred. Alternatively select Edit|Find from the menu bar (ctrl+f) and enter the appropriate room number in the field.

8. Once the room is found, locate the item which has been repaired.

9. Scroll to the right to locate column "N" (the "Condition" column). Edit from current condition of "Fair" or "Poor" to "Good".

10. Scroll right and locate column "V" (the "Abatement Required" column). Change from its current value to "Continue Monitoring".

11. Add a descriptive note to the "General Notes" column (column "X"), to include; Material, Location, Action and Date. For example, "Pipe fitting on the domestic hot water line repaired on April 1, 2009 by ABC Contracting. Inspected by [name of Humber staff /consulting firm]. Feel free to add any other information which would be useful or important.

12. Hyperlink the appropriate abatement documentation (which was

converted to PDF and saved in Steps 3 and 4) to the "Abatement Documentation" column (column "W") by first selecting the appropriate cell in that column. Next, select Insert|Hyperlink from the menu bar (ctrl+k). On the "Insert Hyperlink" window, ensure that "Existing File or Web Page" is selected under "Link to:". Next, beside "Look in:" select the "Up One Folder" button. Select the "Abatement Documentation" folder. Select the appropriate file you created in Steps 3 and 4 to link to. Select the "OK" button.

13. Repeat this procedure for all other items that were removed.

14. Save your work by selecting File|Save on the menu bar (ctrl+s).

15. If applicable, proceed to "Procedure for AutoCAD Drawing Navigation and Edit Update" and edit AutoCAD drawings appropriately.

10.3 Full Removal Update Procedures for Asbestos Audit Updates - Microsoft Excel Procedures

Notes: This procedure is intended for updating areas which have been fully abated after April 2009. For rooms in which removals have occurred, but asbestos-containing materials still remain, see the "Partial Removal Update" procedure.

Prior to entering data, the person(s) must know the appropriate Room Number. You should also have the "Asbestos Abatement Form" and any and all associated laboratory data, pictures, etc. saved in the appropriate file folders. This data may be internal documentation prepared by Humber or documentation prepared by an outside consulting firm.

All applicable files must be linked to the database and must be saved on the GXT 2 gigabyte USB memory stick labeled "HUMBER NORTH CAMPUS ASBESTOS AUDIT UPDATE 2009" before using this procedure. The following steps must be performed from the GXT 2 gigabyte USB Memory Stick labeled "HUMBER NORTH CAMPUS ASBESTOS AUDIT UPDATE 2009".

Removal of Abated Items from Database

1. Obtain all documentation detailing the abatement including but not limited to inspections forms, laboratory data (bulk and air samples), photographs, clearance reports, clearance air testing (if applicable), etc.

For internal Humber documentation the purposes (Abatement documented by Humber only) use the "Asbestos Abatement Form"; which can be found electronically on the GXT 2 gigabyte USB Memory Stick labeled "HUMBER NORTH CAMPUS ASBESTOS AUDIT UPDATE 2009" in Forms/Asbestos Abatement Form.doc.

2. Ensure all documentation is complete and accurate.

3. Convert all abatement documentation into a single PDF document and using the following file name nomenclature:

   Building_Floor_Room#(s)/Name(s)_DD-MMM-YYYY_Abatement_Project Name.

4. Save the above document in the "Abatement Documentation" folder located on the GXT 2 gigabyte USB Memory Stick.

5. Open "North Campus Asbestos Audit Database 2009.xls" from the "Database" folder located on the GXT 2 gigabyte USB Memory Stick. The asbestos Database (Table 1) will appear as a Microsoft Excel file.

6. Select the tab at the bottom of the screen which corresponds to the building in which the abatement has occurred.

7. Scroll up or down the worksheet until you find the corresponding room number(s) for the area in which the abatement has occurred. Alternatively select Edit|Find from the menu bar (ctrl+f) and enter the appropriate room number(s) in the field.

8. Once the area is found, locate the asbestos materials which have been removed.

9. Select the entire row by clicking on the left-most column (your cursor should change to a black arrow which points to the right).

10. Copy the entire row by selecting Edit|Copy from the menu bar (ctrl+c). A moving border should encircle the selected row.

11. Select the "Abatements" tab from the bottom of the screen.

12. Scroll down to find the next available (blank) row on the Abatements tab.

13. Select the entire row by following the same procedure as step 9.

14. Paste the item information into that row by selecting Edit|Paste from the

menu bar (ctrl+v).

15. At this point, it is a good idea to double check with the original item to ensure that all the information has been properly copied over.

16. Under the "Abatements" tab, locate column "V" which should contain the sub-heading "Is the Room Fully Abated or Partially Abated?" Follow column "V" down to your recently inputted line. Change the corresponding cell to read "Fully".

17. Add a descriptive note to the "General Notes" column (column "X"), to include; Material, Location, Action and Date. For example, "Pipe fitting on the domestic hot water line repaired on April 1, 2009 by ABC Contracting. Inspected by [name of Humber staff member/consulting firm] .Feel free to add any other information which would be useful or important.

18. Hyperlink the appropriate abatement documentation (which was converted to PDF and saved in Steps 3 and 4) to the "Abatement Documentation" column (column "W"). First select the appropriate cell in that column. Next, select Insert|Hyperlink from the menu bar (ctrl+k). On the "Insert Hyperlink" window, ensure that "Existing File or Web Page" is

    selected under "Link to:". Next, beside "Look in:", select the "Up One Folder" button. Select the "Abatement Documentation" folder. Select the file you created and saved in Steps 3 and 4 to link to. Select the "OK" button.

19. At this point, it is a good idea to click on the newly created link to test it. The file should open automatically.

20. Return to the original asbestos entry/entries identified in Step 7 (this is the areas where abatement has occurred). Select the entire row by following the procedure in step 9 and delete the item by selecting Edit|Delete from the menu bar. Note that pressing the "Delete" key will not delete the row, but merely erase the contents of each cell.

21. Repeat this procedure for all other rows where asbestos containing materials have been removed.

Addition of "No Identified ACM" Space

22. Select the first row of the room following the room number you wish to insert, by following the procedure listed in step 9.

23. Select Insert|Rows from the menu bar. A new blank row should appear above the row you had selected. The new row should now be highlighted.

24. While the new row is still highlighted, select Format|Row|Height from the menu bar.

25. Change the row height to 25 and select "OK"

26. Select the Items tab from the bottom of the screen.

27. Select row 22 (which should say "Room" in the "Inspected Room Finish" column). Copy the row over to the new blank row you just created

28. Link the appropriate abatement documentation into the "Abatement Documentation" column following the procedure in step 14.

29. Fill in the missing information (Site Location, Building, Floor, Room Number, and Room Description).

30. Repeat steps 22 to 29 as required inserting the "No Identified ACM" note into all areas where abatement has occurred.

31. Save your work by selecting File|Save on the menu bar (ctrl+s). Proceed to "Procedure for AutoCAD Drawing Update Procedures for Asbestos Audit Updates" and edit AutoCAD drawings appropriately.

10.4 Partial Removal Update Procedures for Asbestos Audit Updates - Microsoft Excel Procedures

Notes: This procedure is intended for updating rooms which have had removals since April 2009, but still contain asbestos-containing materials. For rooms in which all asbestos-containing material has been removed see the "Full Removal Update" procedure.

Prior to entering data, the person(s) must know the appropriate Room Number. You should also have the "Asbestos Abatement Form" and any and all associated laboratory data, pictures, etc. saved in the appropriate file folders. This data may be internal documentation prepared by Humber or documentation prepared by an outside consulting firm.

All applicable files must be linked to the database and must be saved on the GXT 2 gigabyte USB memory stick labeled "HUMBER NORTH CAMPUS ASBESTOS AUDIT UPDATE 2009" before using this procedure. The following

steps must be performed from the GXT 2 gigabyte USB Memory Stick labeled "HUMBER NORTH CAMPUS ASBESTOS AUDIT UPDATE 2009".

1. Obtain all documentation detailing the abatement including but not limited to inspections forms, laboratory data (bulk and air samples), photographs, clearance reports, clearance air testing (if applicable), etc.

   For internal Humber documentation the purposes (Abatement documented by Humber only) use the "Asbestos Abatement Form"; which can be found electronically on the GXT 2 gigabyte USB Memory Stick labeled "HUMBER NORTH CAMPUS ASBESTOS AUDIT UPDATE 2009" in Forms/Asbestos Abatement Form.doc.

2. Ensure all documentation is complete and accurate.

3. Convert all abatement documentation into a single PDF document and using the following file name nomenclature:

   a. Building_Floor_Room#(s)/Name(s)_DD-MMM-YYYY_Abatement_Project Name.

   b. Print a store a hard copy of this document in the "Asbestos Abatement Binder".

4. Save the above document in the "Abatement Documentation" folder located on the GXT 2 gigabyte USB Memory Stick.

5. Open "North Campus Asbestos Audit Database 2009.xls" from the "Database" folder.

6. Select the tab at the bottom of the screen which corresponds to the building in which the abatement has occurred.

7. Scroll up or down the worksheet until you find the corresponding room number(s) for the area in which the abatement has occurred. Alternatively select Edit|Find from the menu bar (ctrl+f) and enter the appropriate room number(s) in the field.

8. Once the room(s) has been found, locate the item which has been removed.

9. Locate column "V" which should contain the sub-heading "Is the Room Fully Abated or Partially Abated?". Change the corresponding cell to read "Partially".

10. Add a descriptive note to the "General Notes" column (column "X"), to include; Material, Location, Action and Date. For example, "Pipe fitting on the domestic hot water line repaired on April 1, 2009 by ABC Contracting. Inspected by [name of Humber staff /consulting firm] . Feel free to add any other information which would be useful or important.

11. Hyperlink the appropriate abatement documentation (which was converted to PDF and saved in Steps 3 and 4) to the "Abatement Documentation" column (column "W") by first selecting the appropriate cell in that column. Next, select Insert|Hyperlink from the menu bar (ctrl+k). On the "Insert Hyperlink" window, ensure that "Existing File or Web Page" is selected under "Link to:" Next, beside "Look in:", select the "Up One Folder" button. Select the "Abatement Documentation" folder. Select the appropriate file to link to. Select the "OK" button.

12. At this point, it is a good idea to click on the newly created link to test it. The file should open automatically.

13. Locate column "M" which is the "Approx. Quantity" column. Enter in the approximate quantity of the asbestos containing material which remains.

14. Repeat this procedure for all other asbestos containing materials that were removed.

15. Save your work by selecting File|Save on the menu bar (ctrl+s).

16. Save your work by selecting File|Save on the menu bar (ctrl+s). Proceed to "Procedure for AutoCAD Drawing Update Procedures for Asbestos Audit Updates" and edit AutoCAD drawings appropriately.

10.5 Procedure for AutoCAD Drawing Update

Notes: This procedure explains how to update AutoCAD figures in areas of interest.

• This procedure is to be used to update information on the drawings after asbestos abatement has occurred or new information has become available.

• Ensure you have all relevant information regarding updates entered into the database prior to updating the drawings.

• All applicable files must be linked to the database and must be saved on the GXT 2 gigabyte USB memory stick labeled "HUMBER NORTH CAMPUS ASBESTOS AUDIT UPDATE 2009" before using this procedure. The following

steps must be performed from the GXT 2 gigabyte USB Memory Stick labeled "HUMBER NORTH CAMPUS ASBESTOS AUDIT UPDATE 2009".

1. Open the appropriate drawing which requires updating from the GXT 2 gigabyte USB memory stick labeled "HUMBER NORTH CAMPUS ASBESTOS AUDIT UPDATE 2009"

2. Locate the area and asbestos containing materials which require updates and editing.

3. Make the appropriate changes by:

   a. Deleting asbestos containing materials that have been removed; or

   b. Adding known or suspect; asbestos containing materials that have been newly identified.

4. Ensure that you follow an update using the existing legend. Follow all existing drawing layers, structures, hatches, scale colours etc.

5. Save the file by overwriting the existing file. This is essential to ensure a single source accurate set of drawings exist and are linked to the Database (Table 1). DO NOT save drawings under alternate names.

TABLE OF APPENDICES