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SOLICITATION AMENDMENT
MODIFICATION DE L'INVITATION

The referenced document is hereby revised; unless otherwise indicated, all other terms and conditions of the Solicitation remain the same.

Ce document est par la présente révisé; sauf indication contraire, les modalités de l'invitation demeurent les mêmes.

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Title - Sujet CCTV installation at Grierson Insti	
Solicitation No. - N° de l'invitation 21120-172847/A	**Amendment No. - N° modif.** 003
Client Reference No. - N° de référence du client 21120-17-2532847	**Date** 2017-06-12
GETS Reference No. - N° de référence de SEAG PW-$$HN-461-72848	
File No. - N° de dossier hn461.21120-172847	**CCC No./N° CCC - FMS No./N° VME**
Solicitation Closes - L'invitation prend fin **at - à 02:00 PM** **on - le 2017-06-28**	**Time Zone** **Fuseau horaire** Eastern Daylight Saving Time EDT
F.O.B. - F.A.B. **Plant-Usine:** ☐ **Destination:** ☐ **Other-Autre:** ☐	
Address Enquiries to: - Adresser toutes questions à: Hallman, Patti	**Buyer Id - Id de l'acheteur** hn461
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Solicitation No. - N° de l'invitation	Amd. No. - N° de la modif.	Buyer ID - Id de l'acheteur
21120-172847/A	003	hn361
Client Ref. No. - N° de réf. du client	File No. - N° du dossier	CCC No./N° CCC - FMS No./N° VME
21120-172847	hn361.21120-172847	

La modification 003 est émise pour fournir le plan de gestion de l'amiante.

1) voir le document ci-joint. Une version française sera fournie sur demande.

Tous les autres termes et conditions demeurent inchangés.

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Asbestos Management Plan
Correctional Service Canada
Grierson Institution Center

Prepared for:
Public Works and Government Services Canada

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March 31st, 2017
File 16-00544-00

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1.0 INTRODUCTION AND SCOPE OF WORK

Millennium EMS Solutions Ltd. (MEMS) and EGE Engineering Ltd. (EGE) were retained by Public Works and Government Services Canada (PWGSC) to prepare an Asbestos Management Plan (AMP) for asbestos containing materials (ACMs) identified at the Correctional Service Canada (CSC) Grierson Institution located at 9530 – 101 Street in Edmonton, Alberta. The ACMs were identified in a draft Asbestos Survey report dated March 31st, 2017, following a building survey conducted on January 10th to 13th, 17th and March 16th, 2017.

1.1 Purpose

Part 4, Section 21 of the Alberta Occupational Health and Safety Code requires that an employer identify health hazards of harmful substances, at a work site, to which workers may be exposed. Additionally, workers must be informed of the health hazards associated with exposure to the harmful substance and trained in the procedures, developed by the employer, to minimize worker exposure.

The objectives of this Asbestos Management Plan are to:

- monitor the condition of ACMs, identified in the Grierson Institution Asbestos Survey Report;
- prevent the release of asbestos fibres by minimizing the disturbance and/or damage of ACMs;
- ensure systems are in place to address observed damage or deterioration of ACMs; and
- ensure systems are in place to address and protect the health and safety of building occupants when planned or unplanned disturbances occur.

The Asbestos Management Plan outlines the framework for administration of the program, training requirements and details the mitigation and work procedures for asbestos specific to the ACMs at the Grierson Institution.

The Grierson Institution Asbestos Survey Report and the Asbestos Management Plan (herein referred to as the "Plan") shall be made available to all employees, contractors and other personnel, who are likely to work in close proximity to, disturb or handle ACMs.

1.2 Scope

The scope of the Plan includes all existing ACMs, both confirmed and suspected, identified in the Grierson Institution Asbestos Survey Report. The Plan in present form, or revised, shall remain in effect until all ACMs have been abated from the building.

1.3 Regulatory Requirements

The Grierson Institution is a federally-regulated institution and therefore both Federal and Provincial legislation apply regarding the Plan.

Applicable legislation includes:

- *Canada Occupational Health and Safety Regulations;*
- *Hazardous Products Act and General Regulations;*
- *Asbestos Products Regulations;*
- *Transportation of Dangerous Goods (TDG) Regulations;*
- *Alberta Asbestos Abatement Manual and*
- *Alberta Occupational Health and Safety Act, Regulations and Code.*

1.4 Background

Asbestos is a group of fibrous, naturally occurring minerals that was previously incorporated into numerous building and construction materials to provide strength, durability and incombustibility. The presence of asbestos in building materials does not necessarily indicate a risk to the health of building occupants since asbestos fibres must be released and inhaled to cause disease. In Alberta, the occupational exposure limit (OEL) of all forms of asbestos must be as close to zero as is reasonably practicable, but shall not exceed the OEL of 0.1 fibres per cubic centimeter of air (fibres/cc).

When ACMs remain in good condition and are undisturbed, exposure is unlikely. When working near or with ACMs (handling or removing materials) controls must be implemented to ensure any airborne fibres are contained and the risk of employee, contractor and building occupant exposure is maintained as low as reasonably practicable.

Abatement is not necessarily a preferential course of action to reduce potential asbestos exposure since removal involves the active disturbance of materials. If done incorrectly, abatement may lead to an increased risk of exposure to individuals in the vicinity. Full-scale asbestos abatement is generally considered in situations to prevent significant exposure to airborne asbestos fibres during building demolition or renovations. Additionally, abatement may be considered where a high risk of unintentional fibre release exists, such as damaged, friable materials in high-traffic areas.

2.0 INVENTORY OF ASBESTOS CONTAINING MATERIALS (ACMS)

A survey report of ACMs within the Grierson Institution was prepared by MEMS and EGE in March 2017, following a room-by-room survey and subsequent destructive and non-destructive sampling of

building materials. The Grierson Institution Survey Report confirmed the presence of asbestos, and identified materials suspected to contain asbestos, at the Grierson Institution.

The materials listed below were identified in the survey as suspected or confirmed to be ACMs.

2.1 Building 1

- Vinyl flooring, middle layer throughout corridor 1-021;
- Wall texture coat in rooms 1-013, 1-014 and 1-015;
- Mortar compound of a small patch on the concrete block, above the acoustical ceiling tiles in room 1-013;
- Pipe insulation in Rooms 1-022, 1-127 and 1-242 and corridor 1-007; and
- Asbestos-containing debris above the acoustical ceiling tiles throughout the south wing of the main floor.

2.2 Building 2

- Pipe insulation material in corridor 2-003.

2.3 Building 3

- Duct insulation material in room 3-001;
- Pipe insulation material in rooms 3-001, 3-002, 3-003, 3-005, 3-006 3-009 and 3-010;
- Rope material in room 3-001;
- Mortar compound on the west wall of the roof; and
- Mechanical flanges/gaskets in rooms 3-001 and 3-002.

2.4 Building 4

- Pipe insulation material in rooms 4-010, 4-014, 4-015, 4-016, 4-018, 4-020, 4-022, 4-025, 4-024, 4-026, 4-027, 4-029 and corridors 4-007, 4-013, 4-028 and 4-031;
- Tank insulation material in room 4-025;
- Backer plate material on the ceiling of rooms 4-202, 4-203, 4-204, 4-205, 4-206, 4-207, 4-208, 4-215, 4-216, 4-217, 4-218, 4-219, 4-220, 4-221, 4-222, 4-223, 4-224, 4-225, 4-226, 4-227, 4-228, 4-229 and 4-230;
- Ceiling texture coating in corridor 4-201;
- Wall board material in rooms 4-215 and 4-216;
- Vibration dampener material in room 4-024; and
- Mechanical flanges/gaskets in room 4-025.

2.5 Utility Tunnel

- Pipe insulation material.

3.0 ACM EXPOSURE ASSESSMENT

Asbestos fibres must be inhaled to cause disease. While intact, undisturbed asbestos does not present a direct health risk, a potential exposure risk exists with all ACMs. Health risks of ACMs that are in good condition, inaccessible and protected from damage are considered minimal. In such cases, managing the ACMs in place is a safe and cost-effective risk mitigation. However, where disturbance or deterioration of ACMs cannot be reasonably controlled, management of ACMs in place is difficult and other mitigations must be considered.

Eight factors, included in the Alberta Asbestos Abatement Manual exposure assessment algorithm, are considered when evaluating potential asbestos exposure risk:

- Asbestos content (% of each asbestos type);
- Condition of the material (rated as good, fair or poor in the Grierson Institution Asbestos Survey Report);
- Accessibility (reachability or subject to accidental damage or vandalism);
- Friability (easily crumbled by hand-pressure);
- Ability to enter air distribution system;
- Activity (potential causes of disturbance);
- Potential or presence of water damage; and
- Exposed surface area.

None of the confirmed and suspected ACMs identified in the Grierson Institution Asbestos Survey Report were located in or near an air distribution system therefore the factor of ability to enter the air distribution system is not further discussed in the Plan.

3.1 Building 1

3.1.1 Vinyl Flooring

The middle layer of vinyl flooring in the basement corridor 1-021, contains 20% chrysotile asbestos, and although it is in an area fully accessible to all building occupants, the asbestos is non-friable and bound within the matrix of the tile. Additionally, the ACM is beneath two layers of non-asbestos flooring and therefore is not exposed, protected from air movement and potential water damage.

Considering there is little risk of unintentional disturbance, damage or vandalism resulting in asbestos fibre release during regular building activities, it is recommended the material be managed in place until renovation or demolition work is required.

3.1.2 Wall texture Coat

The wall texture coat on the basement level of Building 1 (in Rooms1-013, 1-014 and 1-015), contains 2% chrysotile asbestos with an exposed surface area of approximately 139 m^2. Although the ACM is in an area reachable to room occupants, access to the rooms is restricted and the asbestos is non-friable and bound within the matrix texture coat material. The wall texture coat is not located in an air plenum or in an area of water damage.

Considering there is little risk of unintentional disturbance, damage or vandalism, resulting in asbestos fibre release during regular building activities, it is recommended the material be managed in place until renovation or demolition work is required.

3.1.3 Mortar Compound

The mortar compound patch on the east concrete block wall of room 1-013 contains 2% chrysotile asbestos with an exposed surface area of less than 1 m^2. The ACM is limited to the patched area of the wall and is located above the acoustical ceiling tiles and is reachable, by ladder, to room occupants. Access to the room is restricted and the asbestos is non-friable and bound within the matrix of the mortar compound. The mortar compound is not located in an air plenum or in an area of water damage.

Considering there is little risk of unintentional disturbance, damage or vandalism, resulting in asbestos fibre release during regular building activities, it is recommended the material be managed in place until renovation or demolition work is required.

3.1.4 Pipe Insulation

Pipe insulation was confirmed in room 1-022 and corridor 1-007 containing 60% - 65% chrysotile asbestos and was located overhead and is reachable, by ladder, to room occupants. The room and corridor are fully accessible but the material is non-friable since it is fully enclosed in pipe wrap material. The pipe insulation is not located in an air plenum or in an area of water damage. Considering the risk of unintentional disturbance or damage, resulting in asbestos fibre release, is low during regular building activities, it is recommended the material be managed in place until renovation or demolition work is required.

The pipe insulation in room 1-127 the material was not fully enclosed in pipe wrap and open ends with friable material were observed. However, the pipe insulation was located above the acoustical

ceiling tiles and was not reachable, even with a 6' ladder and therefore inaccessible. The pipe insulation is not located in an air plenum or in an area of water damage. Considering there is little risk of unintentional disturbance, damage or vandalism, resulting in asbestos fibre release during regular building activities, it is recommended the material be managed in place until renovation or demolition work is required.

The pipe insulation in room 1-242 containing 80% chrysotile asbestos partially enclosed within a wall but visible from a wall cavity near the floor. The insulation material was fully enclosed in pipe wrap but water damage was evident in the area. The material is reachable by room occupants and the room is fully accessible. Considering there exists a risk of unintentional disturbance, damage or vandalism, resulting in asbestos fibre release, it is recommended access to the material be immediately restricted (wall patched) and abatement of the material scheduled within a reasonable timeframe.

3.1.5 Asbestos-Containing Debris

Asbestos-containing debris containing 70% chrysotile asbestos was located above the acoustical ceiling tiles throughout the south wing of the main floor. The area is reachable by use of a ladder and the debris is friable since it is not fully enclosed in pipe wrap material. The pipe insulation is not located in an air plenum or in an area of water damage. Considering the area is moderately accessible and the material is friable, it is recommended clean up/abatement of the material be scheduled within a reasonable timeframe and the material be managed in place until abatement is completed.

Additionally, work requiring access to the above ceiling space of the south wing that could potentially disturb the debris materials requires adherence to low risk abatement procedures and notification.

3.2 Building 2

3.2.1 Pipe Insulation

Pipe insulation containing 50% - 70% chrysotile asbestos was located in the basement corridor 2-003. The pipe insulation material is located within reach of corridor occupants, however, access to the corridor is restricted to maintenance personnel or similar. The condition of the material ranged from good to poor however, the material is non-friable since it is fully enclosed in pipe wrap material. Evidence of water damage was observed in one area. Considering the risk of unintentional disturbance or damage, resulting in asbestos fibre release, is low during regular building activities, it is recommended the material be managed in place until renovation or demolition work is required.

3.3 Building 3

3.3.1 Rope

Approximately 20 lineal meters of rope material, containing 95% chrysotile asbestos was located in a fire cabinet in room 3-001. The rope material is easily removed without much disturbance to the material. Therefore, it is recommended the rope material be disposed of as asbestos waste.

3.3.2 Pipe and Duct Insulation

Pipe and duct insulation containing 5% - 70% chrysotile asbestos was located in the basement rooms 3-001, 3-002, 3-003, 3-005, 3-006, 3-009, 3-010. Sections of the pipe insulation material is located within reach of room occupants, however, access to the rooms is restricted to maintenance personnel or similar. The material was in good condition and the material was non-friable since it was fully enclosed in pipe wrap material. There was no evidence of water damage and the material was no in a air plenum or an area of excessive air movement. Considering the risk of unintentional disturbance or damage, resulting in asbestos fibre release, is low during regular building activities, it is recommended the material be managed in place until renovation or demolition work is required.

3.3.3 Mortar Compound

The mortar compound patch on the west, exterior, red brick wall of the roof contains 5% chrysotile asbestos with an exposed surface area of less than 1 m^2. The ACM is limited to the patched area of the wall and is located within reach of individuals accessing the roof however access to the roof is restricted. The asbestos is non-friable and bound within the matrix of the mortar compound. The mortar compound is located in an area exposed to environmental elements but the material was in good condition. Considering there is little risk of unintentional disturbance, damage or vandalism, resulting in asbestos fibre release during regular building activities, it is recommended the material be managed in place until renovation or demolition work is required.

3.3.4 Pipe Gaskets / Mechanical Flanges

Pipe gaskets and mechanical flanges were observed in rooms 3-001 and 3-002 and were not sampled but assumed to contain non-friable asbestos. Considering there is little risk of unintentional disturbance or damage, resulting in asbestos fibre release during regular building activities, it is recommended the material be managed in place until renovation or demolition work is required.

3.4 Building 4

3.4.1 Pipe and Tank Insulation

Pipe insulation containing 5% - 70% chrysotile asbestos was located in the basement rooms 4-010, 4-014, 4-015, 4-016, 4-018, 4-020, 4-022, 4-025, 4-024, 4-026, 4-027, 4-029 and four corridors 4-007, 4-013, 4-028 and 4-031. Tank insulation material containing 15% chrysotile asbestos was located in the Mechanical room 4-025.

Pipe insulation materials located in rooms 4-015, 4-016, 4-018, 4-022, 4-024, 4-029 and corridors 4-007 and 4-031 were all reachable only using a ladder or concealed above acoustical ceiling tiles. Portion of the pipe and tank insulation materials located in the Mechanical room 4-025 and corridor 4-028 were within reach of room occupants however access to the room and corridor is restricted to maintenance or similar personnel. The, above listed, materials were in good condition and non-friable since they were fully enclosed in pipe or tank wrap material. There was no evidence of water damage and the materials were not in an air plenum or an area of excessive air movement. Considering the risk of unintentional disturbance or damage, resulting in asbestos fibre release, is low during regular building activities, it is recommended the materials be managed in place until renovation or demolition work is required.

Pipe insulation materials located in rooms 4-010, 4-014, 4-020 and corridor 4-013 were all reachable only using a ladder or concealed above acoustical ceiling tiles. The materials were in good or fair condition however the material is considered friable since it open ends were observed and the material was not fully enclosed in pipe wrap material. There was no evidence of water damage and the material was not in an air plenum or an area of excessive air movement. Considering the risk of unintentional disturbance or damage, resulting in asbestos fibre release, is low during regular building activities, it is recommended the material be managed in place until renovation or demolition work is required. Application of an encapsulating material or sealant to the open ends may be considered to further reduce the potential of fibre release.

Sections of pipe insulation materials in Recreation rooms (4-026 and 4-027) were within reach and accessible to room occupants. The materials were in good condition and non-friable since they were fully enclosed in pipe wrap material. There was no evidence of water damage and the materials were not in an air plenum or an area of excessive air movement. Due to the accessibility of the ACMs and the potential for disturbance it is recommended that abatement of materials be scheduled within a reasonable time frame and management of the materials is implemented until abatement is completed.

3.4.2 Ceiling Backer Plate and Texture Coat Material

Backer plate material containing 10% chrysotile asbestos was located on the ceiling in dormitory rooms (4-202, 4-204, 4-205, 4-206, 4-207, 4-208, 4-215, 4-216, 4-217, 4-218, 4-219, 4-220, 4-221, 4-222, 4-223, 4-224, 4-225, 4-226, 4-227, 4-228, 4-229 and 4-230) and texture coat material containing 5% chrysotile asbestos was located on the ceiling of corridor 4-201. Both materials were friable, in good condition and only accessible to room occupants by use of a ladder. The ACMs were not located in an air plenum or an area of water damage.

3.4.3 Wall Board

Wall board (transite) materials were observed in rooms 4-215 and 4-216 and were not sampled but assumed to contain non-friable asbestos. The material, while accessible to room occupants is non-friable and in good condition. Considering there is little risk of unintentional disturbance or damage, resulting in asbestos fibre release during regular building activities, it is recommended the material be managed in place until renovation or demolition work is required.

3.4.4 Vibration Dampeners, Pipe Gaskets, Mechanical Flanges

Vibration dampeners, pipe gaskets and mechanical flanges were observed in rooms 4-025 and 4-029 and were not sampled but assumed to contain non-friable asbestos. Considering there is little risk of unintentional disturbance or damage, resulting in asbestos fibre release during regular building activities, it is recommended the material be managed in place until renovation or demolition work is required.

3.5 Utility Tunnel

3.5.1 Pipe Insulation

Pipe insulation containing 70% - 80% chrysotile asbestos was located throughout the Utility Tunnel. The pipe insulation material is located within reach of tunnel occupants, however, access to the corridor is restricted and rarely accessed by personnel. The condition of the material was poor and the material is friable since it was not fully enclosed in pipe wrap material. Evidence of water damage was observed but the material is not in an air plenum or an area of excessive air movement. Considering the risk of unintentional disturbance or damage, resulting in asbestos fibre release, is low due to the tunnel's inaccessibility, it is recommended the material be managed in place until renovation or demolition work is required.

4.0 LABELLING OF ACMS

Labelling functions as a final line of defence to warn building occupants and prevent unprotected or unauthorized people from:

- risks associated with exposure to ACMs;
- disturbing materials containing asbestos; and
- entering an area where maintenance or abatement activities involving ACMs are occurring.

4.1 Survey Drawings

Survey drawings, that were created and included as part of the Grierson Institution Institution Asbestos Survey Report, indicate the locations of samples taken during the survey in January and March 2017. Copies of the drawings are attached for reference. Samples and areas (walls, floors, ceilings) containing ACMs are indicated on the drawings in red. Furthermore, ACMs on pipes are indicated with a red circle containing the letter "P" and on ductwork with a red circle containing the letter "D".

4.2 On Site Labelling

There are three types of situations on site that require labelling or postage of warning signage:

- labelling directly applied to ACMs;
- area signage where routine maintenance is occurring near ACMs; and
- area signage where asbestos abatement is occurring.

At the Grierson Institution, all confirmed or suspected ACMs shall be directly identified with the below label.

DANGER: CONTAINS ASBESTOS FIBRES

CANCER AND LUNG DISEASE HAZARD

DO NOT DISTURB

The below area signage shall be posted, at all entrances, just prior to routine maintenance near ACMs and removed upon completion.

CAUTION

ASBESTOS PRESENT IN WORK AREA

DO NOT ENTER WITHOUT

PROPER TRAINING,

EQUIPMENT AND AUTHORITY

Additional area signage shall be posted at the entrance and around the perimeter just prior to an asbestos abatement containment or work area and removed upon completion. See Section 7.0 for further guidance.

5.0 ROLES AND RESPONSIBILITIES

5.1 Asbestos Program Coordinator

A designated Asbestos Program Coordinator will need to be assigned to ensure the effective implementation of the Asbestos Management Plan at the Grierson Institution and ongoing monitoring of on-site activities that may impact the Plan and corresponding Asbestos Survey Report such as building renovations.

Responsibilities of the Asbestos Program Coordinator include, but are not limited to:

- ensuring competency in role as Asbestos Program Coordinator by completing required training (refer to Section 5.2 of the Plan) and applying a full working knowledge of the Grierson Institution Asbestos Survey, legislated requirements and the Plan;
- providing overall leadership, ownership and support of the Plan;
- allocation of resources and assignment of responsibilities for the implementation, operation and ongoing monitoring of the Plan;
- identifying employees and contractors who may be required to work near or with ACMs;
- ensuring adequate training is developed, documented and provided to employees and contractors who may work near or with ACMs (refer to Section 5.2 of the Plan);
- ensuring the maintenance of a current list of employees and contractors who have received training;

- ensuring ACM monitoring and inspections are completed and documented annually, or more regularly, as required by the Plan;
- ensuring Grierson Institution employees and contractors are familiar and comply with the Plan and associated safe work practices;
- ensuring Grierson Institution employees and contractors utilize appropriate personal protective equipment (PPE) when working near or with ACMs;
- ensuring the Grierson Institution Asbestos Survey Report, Plan and ACM monitoring and inspection reports are current and copies are maintained on-site and available to all trained personnel;
- generating contingency plans to respond to emergency situations involving unintentional release of fibres (refer to Section 7.0 of the Plan); and
- ensuring all incidents of unintentional release of asbestos fibres are investigated and that all the facts necessary to take corrective action are part of the investigation process.

5.2 Maintenance, Custodial Staff and Contractors Working on ACMs

Specific responsibilities associated with the Plan are:

- only commencing working on ACMs after completion of required training appropriate to the work, including but not limited to, General Asbestos Awareness Training and Worker and/or Supervisor Training for Working on Asbestos (refer to Section 5.2 of the Plan);
- applying a full working knowledge of the Plan to the scope of work that is executed;
- gaining authorization from the Grierson Institution Asbestos Program Coordinator, or designate, prior to conducting work on ACMs;
- documenting inspections of work areas prior to conducting work on ACMs;
- utilizing proper procedures, including posting appropriate signage, utilizing PPE and fibre/dust minimization practices when conducting work on ACMs; and
- notifying the Grierson Institution Asbestos Program Coordinator of any observed damage or deterioration of ACMs or unplanned asbestos fibre release events that occur and to support the investigation into the same.

5.3 Workplace Safety and Health Committee Representatives

Specific responsibilities associated with the Plan that rest with the Workplace Safety and Health Committee representative(s) are:

- assisting the Grierson Institution Asbestos Program Coordinator to ensure the implementation of the Plan; and

- supporting the communication of the Plan by relaying information to and from representative areas.

5.4 Employees and Contractors

Specific responsibilities associated with the Plan that rest with employees and contractors are:

- attending and applying General Asbestos Awareness Training;
- refusing to perform unsafe work or operate unsafe tools and equipment believed to be hazardous;
- understanding and applying the Plan and legislated safety requirements;
- gaining authorization from the Grierson Institution Asbestos Program Coordinator, or designate, prior to conducting work near ACMs;
- documenting inspections of work areas prior to conducting work near ACMs;
- utilizing proper procedures, including posting appropriate signage when conducting work near ACMs;
- using the correct tools and equipment for all tasks;
- using the required safety equipment and protective clothing (PPE); and
- notifying the Grierson Institution Asbestos Program Coordinator of any observed damage or deterioration of ACMs or unplanned asbestos fibre release events that occur and to support the investigation into the same.

6.0 OPERATIONS AND MAINTENANCE

6.1 Occupant Notification

Each occupant who may be affected by confirmed or suspected ACMs must be informed of their location and be provided with basic information on how to avoid potential ACM hazards. Building occupants, maintenance and custodial staff, outside contractors and others are less likely to disturb ACMs, once informed of their presence.

Building occupants can be notified through facility-specific communication methods, such as memos or bulletins, the Facility Workplace Safety and Health Committee and labelling of suspected and confirmed ACMs.

The presence of materials containing asbestos shall be identified on any tenders and drawings provided to contractors during project-planning phases of work. All contractors must be notified, prior to commencing work, of the location of ACMs that they may disturb or be affected by, either directly or indirectly.

Building occupants need to know:

- the condition of the existing materials containing asbestos;
- the intended action for each location where asbestos is found (*e.g.* abatement, encapsulation, ongoing monitoring);
- the health hazards associated with asbestos exposure and the conditions upon which it can create a hazard;
- directions not to disturb or damage any material containing asbestos;
- reporting procedures for any disturbance or change in the condition (*e.g.* crumbling, dust or debris accumulation) of ACMs to the Grierson Institution Asbestos Program Coordinator; and
- contact information of the Grierson Institution Asbestos Program Coordinator.

6.2 Training

At a minimum, three levels of training are required based on the building occupant's role within Grierson Institution:

- general asbestos awareness training for all Grierson Institution employees and contractors performing maintenance, repair or renovation work near ACMs;
- worker training for Grierson Institution maintenance, custodial or contract personnel who may perform work on (and potentially disturb) ACMs; and
- supervisor training for Grierson Institution maintenance, custodial or contract supervisory personnel who may perform work on (and potentially disturb) ACMs, including the Grierson Institution Asbestos Program Coordinator and designate(s).

6.2.1 General Asbestos Awareness Training

General asbestos awareness training must be completed prior to the commencement of work and, at a minimum, must include:

- sources of asbestos, exposure and risks;
- health effects associated with exposure to asbestos;
- locations of confirmed and suspected ACMs identified in Section 2.0 of the Plan and the associated Grierson Institution Asbestos Survey Report;
- location of the Grierson Institution Asbestos Survey Report, the Plan and ongoing ACM monitoring and inspection reports;
- asbestos labelling and signage and it's meaning;
- avoiding the disturbance of ACMs;

- recognition of, and reporting procedures for, damage to ACMs;
- safe work procedures in case of emergencies involving asbestos (leaving the site and reporting the emergency);
- names and telephone numbers of people responsible for asbestos related activities in the building; and
- prohibited activities.

In addition to general asbestos awareness training, maintenance and custodial staff required to conduct work on materials containing asbestos must receive training relevant to that work. Training is role-specific and shall be completed prior to the commencement of work. These additional levels of training, at a minimum, must include the items listed in Sections 5.2.2 and 5.2.3 of the Plan below, as applicable.

6.2.2 Training for Supervisors Working on Asbestos

- must hold a record of attendance for general asbestos awareness training;
- must hold a record of their attendance at an asbestos removal training course;
- must have demonstrated knowledge of asbestos work of all Types (1 (Low Risk), 2 (Medium Risk) and 3 (High Risk)); and
- must be able to evaluate worker competency.

6.2.3 Training for Workers Working on Asbestos

- must hold a record of attendance for general asbestos awareness training;
- must hold a record of attendance for training on the procedures for working with asbestos;
- must be able to demonstrate knowledge in each Type of asbestos work procedure they will be assigned to carry out (1 (Low Risk), 2 (Medium Risk) and 3 (High Risk); and
- must be directly supervised on all new procedures until deemed competent.

All training programs must be reviewed annually, or as changes in working conditions occur.

6.3 Work Authorization and Permitting

All work near or on ACMs must be authorized by the Grierson Institution Asbestos Program Coordinator. Work authorization must be permitted, in writing, to provide a record and ensure proper tracking of all work on or near ACMs at the Grierson Institution.

The Grierson Institution Asbestos Program Coordinator must ensure the Grierson Institution Asbestos Survey Report is updated to reflect any and all renovations, construction and demolition conducted.

6.3.1 Information Provided to Outside Contractors

Prior to conducting work near or on ACMs, outside contractors must be provided with information about the location of materials in the building known or suspected to contain asbestos. The Grierson Institution Asbestos Program coordinator or representative should require proof that the contractor is familiar with the Plan, has experience working with or near ACMs and is adequately trained. A trained member of the building custodial or maintenance staff should be present to oversee all maintenance performed by outside contractors on ACMs.

6.4 Prohibited Activities

Grierson Institution employees and contractors must ensure that their activities do not damage or disturb materials containing asbestos. To ensure the risk of exposure to airborne asbestos fibres remains as low as reasonably practicable the following activities shall be prohibited:

- conducting any unauthorized construction, renovation and or demolition on or near ACMs;
- drilling holes into or sanding and grinding ACMs;
- moving furniture or equipment in such a way that may damage ACMs;
- using compressed air to clean ACM surfaces;
- unauthorized lifting/moving acoustical ceiling tiles;
- dry buffing ACM flooring materials; and
- cleaning ACM debris using vacuum or dry sweeping/dusting.

6.5 Monitoring and Inspection of ACMs

6.5.1 Inspection Frequency

Provided the above recommended encapsulating sealant is applied to open ends of pipe insulation and the asbestos containing rope is disposed of, all confirmed and suspected ACMs identified in the Grierson Institution Asbestos Survey Report must be inspected annually, at a minimum, with the exception of pipe insulation materials in the Recreation rooms (4-026 and 4-027) of Building 4 which must be inspected every six months until abatement is completed. However, if working or environmental conditions change, or damage or deterioration is identified the frequency shall be increased before any exposure risk occurs.

It is recommended that the pipe insulation in room 1-242 of Building 1 and the Utility Tunnel be enclosed. Once enclosed the ACMs cannot be inspected visually but the enclosure systems must be inspected annually to ensure they do not sustain damage.

At the time of the survey, the condition of all confirmed and suspected ACMs was noted. If the condition of any ACMs is observed to have changed the inspection frequency may need to be increased. The Grierson Institution Asbestos Program Coordinator shall assign appropriately trained personnel to complete a documented inspection of all building ACMs.

6.5.2 Inspection Elements

When inspecting, the following information, at a minimum, must be recorded:

- the location of the ACM;
- the specific ACM being inspected;
- evidence of physical damage;
- evidence of water damage;
- changes to the degree of material accessibility; and
- changes to the level of work activity near the material.

All ACM monitoring and inspection records must be retained and available for review by any Grierson Institution employees, contractors or building occupants who may be affected by the ACMs.

Although the formal ACM monitoring and inspection program outlined above will be assigned to specific personnel to execute, all Grierson Institution employees and contractors shall be obligated to report observed damage or deterioration to ACMs immediately to the Grierson Institution Asbestos Program Coordinator. The Grierson Institution Asbestos Program Coordinator must initiate a documented investigation into all reports of ACM damage and deterioration and ensure, wherever possible, that asbestos fibre release is prevented by taking appropriate corrective action(s).

If the ACMs that are managed in place are observed to have minor amounts of deterioration over time, the materials shall be re-evaluated per the algorithm described in Section 3.0 to determine if encapsulation of the ACM using an applied sealant material is feasible to prevent further deterioration. However, if at any time the ACMs sustain considerable damage removal/abatement shall be conducted (see Building Demolition, Section 7.1 of the Plan and Major Fibre Release, Section 7.2 of the Plan).

6.6 Building Renovations Not Directly Involving ACMs

Building renovation, for the purposes of this Section is considered "alteration where the material containing asbestos is not intended to be removed or controlled, but may be accidentally disturbed as part of the renovation activity." Examples of a renovation may include:

- partial building demolition;

- moving interior walls; or
- remodelling where the activities may contact the materials containing asbestos.

Note: Work done in proximity to friable ceiling materials on the second floor of Building 1 or above the acoustical ceiling tiles in the south wing of the main floor of Building 1 is classified as working with asbestos and procedures in section 7.0 below shall be implemented.

Where renovation involves direct contact but not removal of materials containing asbestos (ex: moving wallboard partitions) special precautions must be taken not to create dust. A review of the Grierson Institution Asbestos Survey Report must be conducted before planning any renovation, minor or major.

The Grierson Institution Asbestos Program Coordinator must review plans for renovation, remodelling or maintenance work near materials containing asbestos before work begins. A written request and work authorization must be granted prior to the execution of work (see Section 6.3 of the Plan) to ensure proper procedures and precautions will be in place to prevent asbestos contamination.

7.0 WORKING WITH ASBESTOS

Asbestos work is categorized into three types depending on the type, condition and quantity of ACMs and removal methods:

- Type 1 (Low Risk);
- Type 2 (Moderate Risk); and
- Type 3 (High Risk).

Despite the abatement procedures listed in Section 7.1.2 below, work sites, environmental conditions and risk classifications may change, therefore any work area is capable of becoming a restricted area and High Risk procedures must be implemented.

7.1 Building Demolition or ACM Renovation

If building renovations of ACMs or building demolition is required, ACMs must be first abated/removed. The sections below provide additional guidance on abatement classifications and procedures. The Grierson Institution Asbestos Program Coordinator must ensure building occupants are notified if they may be affected when ACMs are likely to be disturbed or when work is to be carried out on or near ACMs.

Additionally, a project specific safety plan must be developed, prior to the commencement of ACM renovation or demolition work, detailing, but not limited to, work scope, risks, mitigations, and emergency procedures.

7.1.1 Notification of Demolition or ACM Renovation

Alberta Occupational Health and Safety must be notified, at least 72 hours notice before beginning the work to alter, renovate or demolish a building or components that contains ACMs that may release asbestos fibres into the atmosphere (Type 1, 2 or 3 work). Notification can be accomplished online or over the phone.

7.1.2 Abatement Procedures

7.1.2.1 Ceiling Backer Plate and Texture Coat Material

All asbestos-containing ceiling backer plate and texture coat material at the Grierson Institution was friable, in good condition and capable of being managed in place. However, if demolition or renovations are undertaken that could disturb the material, the material must be removed using Type 3 (High Risk) procedures.

Furthermore, work done in proximity to the friable ceiling materials, that does not contact the ACM requires the implementation of Type 1 (Low Risk) procedures. For further guidance on Type 1 procedures see Section 7.1.2.5.

Minimum requirements for Type 3 (High Risk) abatement include:

- Submit notification to Alberta Occupational Health and Safety at least 72 hours in advance;
- Communicate the planned abatement work to Grierson Institution WHS Committee;
- A project specific safety plan shall be implemented (refer to Section 7.1 of the Plan);
- Clearly mark the boundary of the work area by placing barricades, fencing or similar structures around it;
- Enclose the entire work area in a containment, including an adjoining Dirty Room, Shower Room and Clean Room, using at least 6 mil polyethylene sheeting or a similar material;
- The enclosure and abatement equipment must be inspected by a competent person prior to commencing work and repeated at regular intervals;
- Post warning signage including the contact information for the Grierson Institution Asbestos Program Coordinator and the below verbiage:
    - Authorized Entry Only
    - Caution Asbestos Dust Hazard
    - Avoid Breathing Dust, Wear Protective Equipment
    - Breathing Asbestos Dust May Cause Cancer
    - Eating, Drinking and Smoking are Prohibited

- Abatement workers must have valid Alberta Asbestos Worker certifications;
- Install a HEPA-filtered exhaust unit (tested on-site prior to commencing work) with the exhaust directed outdoors;
- All existing electrical circuits or lighting must be physically locked-out and only power sources with ground fault circuit interrupters (GFCI) used;
- Where possible, remove all furniture, equipment and fittings from the asbestos removal area;
- Immovable items must be sealed in suitable plastic sheeting;
- Abatement workers must wear Powered Air Purifying Respirators (PAPR) or better, equipped with P100 cartridges and protective clothing that resists penetration by asbestos fibres;
- Wet abatement methods shall be used, continually misting materials with water, if practicable;
- Vacuum cleaners used must be fitted with a HEPA filter;
- After completing the removal of asbestos-containing materials, and cleaning, exposed surfaces must be treated with a sealant;
- Air monitoring must be conducted including, at a minimum, background samples (before the work starts), on a daily basis outside the enclosure and the floor below, in the clean room, and personal sampling every shift;
- Prior to dismantling the containment, an inspection must be completed to ensure removal is complete and clearance samples must be collected using aggressive techniques.

7.1.2.2 Pipe, Duct and Tank Insulation

Except for pipe insulation in Recreation Rooms (4-026 and 4-027) in building 4, all asbestos-containing pipe, tank and duct insulation material at the Grierson Institution was capable of being managed in place. However, if demolition or renovations are undertaken that could disturb the material, the material must be removed. Smaller portions of pipe insulation can be removed using glove bag (Moderate Risk) techniques. Glove bag must only be used on pipe insulation that is completely covered with wrap material. Larger portions of pipe insulation and the tank and duct insulation may be removed using Type 3 (High Risk) procedures. For more information on Type 3 procedures see Section 7.1.2.1.

Minimum requirements for Type 2 (Moderate Risk) glove bag abatement include:

- Submit notification to Alberta Occupational Health and Safety at least 72 hours in advance;
- Communicate the planned abatement work to Grierson Institution WHS Committee;
- Identify and barricade the boundary of the work area with visible signs warning of the asbestos work and hazard, signage should include information listed in section 7.1.2.3 below;

- Abatement workers must be competent and wear, at a minimum, half masks with p-100 cartridges and disposable coveralls;
- Place a polyethylene drop sheet beneath the area in which the glove bag is to be installed and seal any loose insulation by wrapping it with polyethylene;
- Prior to starting the removal, clean up any loose asbestos debris on or around the pipe with a vacuum cleaner fitted with a HEPA filter;
- Wet exposed insulation continually during removal to reduce fibre release and using abrasive hand tool, clean asbestos residue from the pipe/fitting;
- Exposed ends must be wetted and sealed. Sealant should also be applied to the inside upper section of the bag prior to removal of the bag;
- Tools and asbestos waste should be sealed in separate sections and air removed from the glove bag;
- Asbestos waste must be disposed of according to section 7.3;
- All work equipment, including work clothing, should be cleaned by damp wiping or with a vacuum cleaner fitted with a HEPA filter.
- Workers should wash their hands and face before leaving the work area.
- The surfaces from which asbestos has been removed should be visually inspected after removal of the glovebag to ensure that there is no remaining asbestos residue; and
- Background and area air samples must be collected and personal or breathing zone air samples should be taken at least once per shift during abatement.

7.1.2.3 Mortar Compound

All asbestos-containing concrete block and red brick mortar at the Grierson Institution was in good condition and not friable. However, if demolition or renovations are undertaken that could disturb the material, the material must be removed. Prior to abatement all work authorization and permits must be obtained (refer to Section 6.3 of the Plan) and a project specific safety plan shall be implemented (refer to Section 7.1 of the Plan). Abatement of the material during renovation and/or demolition would require the implementation of Type 2 (Moderate Risk) procedures.

Minimum requirements for Type 2 (Moderate Risk) abatement include:

- Submit notification to Alberta Occupational Health and Safety at least 72 hours in advance;
- Communicate the planned abatement work to Grierson Institution WHS Committee;
- Identify and barricade the boundary of the work area with visible signs warning of the asbestos work and hazard, signage should include the contact information of the Grierson Institution Asbestos Program Coordinator and the below messages;

  - Authorized Entry Only
  - Caution Asbestos Dust Hazard
  - Avoid Breathing Dust, Wear Protective Equipment
  - Breathing Asbestos Dust May Cause Cancer
  - Eating, Drinking and Smoking are Prohibited
- Before abatement work commences, remove dust and contaminated debris, if any, using Cleaning Procedures (Section 7.1.12 of the Plan);
- Clean and remove movable equipment from the work site as above;
- Clean (as above) and cover all fixed equipment with 6 mm impermeable sheeting and seal with tape;
- All air handling and ventilation systems should be shut down before work begins to prevent distribution of fibres released during abatement;
- Lock-out and isolate all electrical and mechanical equipment within the work area.
- Electrical power for abatement work should be supplied through a ground fault circuit interrupter (GFCI);
- For outside work, a containment should be constructed using six mil thick polyethylene sheeting with a HEPA filtered exhaust unit to protect the materials from environmental elements. A slow drying sealant such as glue spray shall be applied to surfaces and a final air test conducted;
- For inside work plastic drop sheets and barriers to prevent the spread of asbestos-containing dust to other work areas;
- Air monitoring samples are shall be taken prior to work starting (baseline or background samples), during abatement activities and upon completion of the job (airborne asbestos levels should remain below 0.1 f/cc).
- If work is conducted outdoors air monitoring should occur downwind from abatement activities; and
- Inspections should be conducted of containments, if used, and the work area upon work completion.

7.1.2.4 Wall Texture Coat

All asbestos-containing wall texture coat material at the Grierson Institution was in good condition and not friable. However, if demolition or renovations are undertaken that could disturb the material, the material must be removed. Prior to abatement all work authorization and permits must be obtained (refer to Section 6.3 of the Plan) and a project specific safety plan shall be implemented (refer to Section 7.1 of the Plan). Abatement of the material during renovation and/or demolition

would require the implementation of Type 2 (Moderate Risk) procedures. For further guidance on Type 2 procedures see section 7.1.2.3 above.

7.1.2.5 Flooring material

All asbestos-containing flooring material at the Grierson Institution was in concealed and not friable. However, if demolition or renovations are undertaken that could disturb the material, the material must be removed. Prior to abatement all work authorization and permits must be obtained (refer to Section 6.3 of the Plan) and a project specific safety plan shall be implemented (refer to Section 7.1 of the Plan). Abatement of the material during renovation and/or demolition would require the implementation of Type 1 (Low Risk) procedures. Prior to removal, the planned abatement work should be communicated to the Grierson Institution WHS Committee; and the contaminated area must be identified with visible signs warning of the asbestos work and hazard.

General precautions for Type 1 (Low Risk) would apply including:

- Workers shall wear proper PPE, including half mask air purifying respirator with P100 particulate filter, disposable coveralls and other PPE as required;
- Place barriers and warning signs to control access to the work site;
- Use hand tools for asbestos material removal;
- Use plastic drop sheets to collect the waste and prevent the spread of asbestos dust;
- Double bag and seal the waste for disposal as asbestos waste;
- Clean-up the dust and waste by vacuuming with HEPA filtration, wet sweeping or damp mopping;
- Wet drop sheets, fold and dispose as asbestos waste;
- Perform baseline air monitoring, and monitor during abatement and after abatement to ensure all results remain below 0.01 fibres/cc during all phases of work; and
- Dispose of the PPE and other contaminated items as asbestos waste.

7.1.2.6 Wall board

All asbestos-containing wall board (transite) material at the Grierson Institution was in good conditions and not friable. However, if demolition or renovations are undertaken that could disturb the material, the material must be removed. Prior to abatement all work authorization and permits must be obtained (refer to Section 6.3 of the Plan) and a project specific safety plan shall be implemented (refer to Section 7.1 of the Plan). Abatement of the material during renovation and/or demolition would require the implementation of Type 1 (Low Risk) procedures. Prior to removal, the planned abatement work should be communicated to the Grierson Institution WHS Committee; and

the contaminated area must be identified with visible signs warning of the asbestos work and hazard. General precautions for Type 1 (Low Risk) would apply. For further guidance on Type 1 procedures see section 7.1.2.5 above.

7.1.2.7 Asbestos debris

Workers moving acoustical ceiling tile to enter the above ceiling space of the south wing of the ground floor of Building 1 requires implementation of Type 1 procedures outlined in Section 7.1.2.5 and removal of the acoustical ceiling requires implementation of Type 2 procedures outlined in Section 7.1.2.3.

7.1.2.8 Boiler Gaskets, Mechanical Flanges and HVAC Vibration Dampeners

All suspected asbestos containing boiler gaskets, mechanical flanges and HVAC vibration dampeners at the Grierson Institution are in good condition and are not friable. However, if demolition or renovations are undertaken that could disturb the material, the material must be removed. Prior to abatement all work authorization and permits must be obtained (refer to Section 6.3 of the Plan) and a project specific safety plan shall be implemented (refer to Section 7.1 of the Plan). Removal could be completed by disassembling the equipment and removing and bagging the gaskets, seals, flanges and vibration dampeners as asbestos waste. Prior to removal, the planned abatement work should be communicated to the Grierson Institution WHS Committee; and the contaminated area must be identified with visible signs warning of the asbestos work and hazard.

ACM material should be wetted to minimize dust release and surfaces cleaned using a vacuum with HEPA filtration or wet cloths. General precautions for Type 1 (Low Risk) would apply. For further guidance on Type 1 procedures see section 7.1.2.5 above.

7.1.2.9 Rope

It is recommended the asbestos-containing rope in the Mechanical room (010) of Building 3 be disposed of which does not require adherence to abatement procedures but must comply with disposal procedures as listed in Section 7.3.

7.1.2.10 Wall Plaster

The wall plaster base coats identified above the acoustical ceiling tiles on the ground floor of Building 1, wall plaster base coat on the ground floor and wallboard in the Carpentry Shop (Room 010) of Building 3 and plaster base coats on the ground and second floors of Building 4 were determined to be non-asbestos containing. However, if large scale demolition of these materials occurs, dust control measures (wet methods, hand tools) shall be followed to ensure fibre release is appropriately controlled.

7.1.3 General Cleaning Procedures

The main objective of the Grierson Institution Asbestos Management Program is to maintain ACMs in good condition to prevent fibre release; however, cleaning of asbestos contamination following a minor asbestos fibre release incident may be necessary. Only appropriate trained and competent workers may conduct asbestos cleaning activities, using appropriate procedures. Only wet mopping/wiping or specialized HEPA vacuuming may be used to clean surfaces that may be contaminated with asbestos.

A HEPA vacuum cleaner has an efficient filter that traps the microscopic asbestos fibres while ordinary vacuum cleaners may allow asbestos fibres to pass through the unit and be spread throughout the work area. Irregular surfaces (furniture and carpeting) shall be cleaned using a HEPA vacuum.

Wet mopping/wiping is performed by gently spraying surfaces with either water (or amended water) before cleaning. Wetting surfaces reduces the potential for asbestos fibres and debris to become airborne. If cleaning asbestos debris using a spray container, it must be equipped with a very fine spray output to saturate the debris thoroughly with amended water. Surfaces, such as walls, non-carpeted floors, and exteriors of mechanical elements and cabinets shall be cleaned using mops and dust cloths or rags that are wetted with amended water.

Dry brooms, mops, dust cloths and standard household or shop vacuum cleaners are prohibited for cleaning asbestos (see Section 5.4 of the Plan).

7.2 Decontamination

Decontamination must occur under all circumstances when leaving a work area. Personnel must clean protective equipment and clothing before removing it from the work area using a vacuum cleaner fitted with a HEPA filter or wipe the equipment and clothing with a damp cloth. Protective clothing used during abatement shall remain in the work area; and, unless laundered using proper procedures shall be disposed of as asbestos waste. All exposed skin surfaces shall be washed prior to removing respirators.

7.3 Waste Disposal

The transportation of asbestos waste, generated from an abatement project, must be done using sealed, impervious containers and is considered a low-risk (Type 1) abatement activity. Asbestos wastes include contaminated clothing, equipment and debris. Asbestos waste must be wetted in order to minimize the creation of airborne asbestos fibres and be placed in an asbestos waste container. The label on containers of asbestos waste shall indicate:

- a product identifier (contains asbestos);

- asbestos is carcinogenic; and
- asbestos fibres must not be inhaled.

Asbestos waste containers must be cleaned according to Section 7.1.12 above, prior to transport and must be stored to maintain their integrity and ensure they will not be damaged. Asbestos waste must not be mixed with other wastes having no special disposal requirements.

8.0 UNPLANNED DISTURBANCE OF ACMS

As long as material containing asbestos remains in the building, a fibre release incident may occur. Any type of unplanned fibre release increases the risk of exposure to asbestos fibres and must be reported immediately to the Grierson Institution Asbestos Program Coordinator and investigated accordingly.

While a formal monitoring and inspection of ACMs is part of the Grierson Institution Asbestos Management Plan, custodial and maintenance staff must remain alert for debris on the floor, water, or physical damage to the ACMs or other evidence of possible fibre release. Fibre release may occur with normal breakdown of material containing asbestos or during maintenance or renovation activities.

Where fibre release or damage has occurred, the damage must be repaired and the area decontaminated by appropriately trained staff or abatement contractors as soon as possible. The minor and major incidents discussed in this section are not planned asbestos abatement projects, but accidental disturbances of materials containing asbestos.

8.1 Minor Unplanned Fibre Release Incidents

Examples of minor unplanned incidents include:

- accidental puncture of a vibration dampener or pipe insulation;
- fallen debris from above acoustical tile ceiling space;
- breakage of a small section of mortar, wall board or non-friable wall texture, where a small amount of material containing asbestos is dislodged or exposed.

Minor unplanned incidents of fibre release can be cleaned with standard wet cleaning or HEPA vacuuming techniques detailed in the General Cleaning Procedures (Section 7.1.12 of the Plan).

Following a minor unplanned fibre release incident, the following personal protective equipment and procedures must be used:

- immediately control all access to the affected area. Unauthorized people shall not be allowed entry to the area;
- workers must wear, at a minimum, a half mask respirator equipped with p-100 cartridges;
- ACM debris must be carefully placed in a doubled 6-millimetre plastic bag (total thickness 12 millimetres) properly labelled as asbestos waste for disposal (see Waste Disposal, Section 7.2 of the Plan). The debris area must be thoroughly cleaned with a damp cloth or mop, or be vacuumed with a HEPA vacuum (refer to Cleaning Procedures, Section 7.1.12 of the Plan); and
- the damaged material containing asbestos must be repaired with asbestos-free sealant or other asbestos free materials.

8.2 Major Unplanned Fibre Release Incidents

Major unplanned incidents of fibre release are very serious. Disturbing a large amount of material containing asbestos may contaminate an entire building with asbestos fibres. An example of a major unplanned incident includes:

- Water, fire or physical damage to pipe or duct wrap material or insulation resulting in missing sections;
- Damage to non-friable wall texture coat, wallboard, flooring material or mortar resulting in missing sections; and
- Visible damage to friable ceiling texture coat or backer plate material.

In the case, of a major unplanned fibre release, contractors trained and equipped to deal with asbestos decontamination may need to be utilized.

The following procedures must be used in the event of a major unplanned release of asbestos fibres:

- notify the Grierson Institution Asbestos Program Coordinator of the asbestos fibre release incident;
- notify Alberta Occupational Health and Safety Contact Centre of the incident immediately by calling 1-866-415-8690;
- notify affected building occupants that an asbestos fibre release has occurred and that corrective measures are being implemented;
- isolate the affected area as soon as possible after the incident is discovered;
- the air handling system must be shut off or temporarily isolated to prevent the distribution of fibres throughout the building;

- openings such as doors, windows and air registers leading to the contaminated area must be sealed with two layers of 6 mm plastic sheets and tape;
- appropriate warning signs must be posted to prevent unauthorized entry; and
- an investigation into circumstances surrounding the asbestos fibre release incident must be initiated.

Any further actions regarding inspection or cleaning of the contaminated area are considered "working with asbestos" and must be done in accordance with the procedures outlined in Section 7.0 of the Plan.

8.3 Asbestos Fibre Release Incident Investigation

Each unplanned incident of fibre release, whether minor or major, must be investigated and documented. The report shall include information regarding the location, a description of the incident, circumstances leading to the incident, the causes of the incident and a detailed account showing immediate actions taken and who executed them following the incident. This report must be communicated to the Grierson Institution Workplace Safety and Health committee.

9.0 RECORD KEEPING

Copies of the Grierson Institution Asbestos Survey Report, the Plan and the annual inspection of the asbestos-containing materials must be retained for 30 years from the date the records are made; and made available for reference by occupants at Grierson Institution. These documents must be reviewed annually, or more often, as working conditions and/or legislative requirements change and updated accordingly.

10.0 LIMITATIONS OF LIABILITY AND CLOSURE

This report has been prepared by MEMS and EGE for the use of PWGSC and CSC (the Client) for the specific application described in Section 1.0. The information and data contained herein are considered confidential and are intended for the sole use of the client, and may not be relied upon by any other persons or entity without the express written consent of the Client. Any use of this report by a third party or any reliance on decisions made based on it, are the responsibility of such third parties. MEMS does not accept any responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken based on this report.

The work has been conducted in accordance with generally accepted industry standards and practices. Although every effort has been made to confirm that the information and data presented, including without limitation the results of any sampling and analyses conducted by MEMS, is factual, complete and accurate, MEMS makes no guarantees or warranties whatsoever, whether expressed or implied, with respect to such information or data.

The conclusions presented in this report are based on the conditions which existed on site at the time the work was conducted. MEMS cannot warrant against undiscovered environmental liabilities.

Should additional information become available, MEMS requests that this information be brought to our attention so that we may re-evaluate the findings and conclusions of this report. Alterations to this document must be reviewed and approved by the MEMS Project Manager.

Yours truly,

Millennium EMS Solutions Ltd.

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