

The following changes to the tender documents are effective immediately and will form part of the contract documents:

This Addendum forms part of the Contract Documents and amends the original Drawings and Specifications dated 2015-09-04, previous Addenda if applicable and as noted below. This Addendum consists of 5 pages and attached Specification and Drawings and Attachments as listed below. Ensure that all parties are aware of all items included in this Addendum.

The following revised or additional Specifications and Attachments accompany and form an integral part of this Addendum:

Section No.	Title	Pages
00 31 26.1	EXISTING HAZARDOUS MATERIAL INFORMATION	1
08 11 16	ALUMINUM DOORS AND FRAMES	4
09 22 16	NON-STRUCTURAL METAL FRAMING	3

Dwg. No.	Title	Date of Issue
AR3.1	PARTITION TYPE P10	2016-02-03

Attachment	Pages
ASBESTOS HAZARD ASSESSMENT REVISED SURVEY REPORT on the RCMP North District Building, Prince Albert, SK” dated January 2016.	16
Appendix ‘A’	25

A-4-1 REF. SECTION 00 31 26 EXISTING HAZARDOUS MATERIAL INFORMATION

- .1 Delete this section in its entirety and replace with Section 00 31 26.1, Existing Hazardous Material Information attached to this addendum.
- .2 Update reference report ‘Asbestos Hazard Assessment report dated April 2009’ with ‘Asbestos Hazard Assessment Revised Survey Report dated January 2016’.

A-4-2 REF. SECTION 02 41 99 DEMOLITION FOR MINOR WORKS

- 2.7 Delete this section in its entirety and replace with the following:

“2.7 ASBESTOS ABATEMENT

- .1 Specifications regarding the abatement, removal and disposal of asbestos containing material is contained in ‘Appendix A’ of this specification.
- .2 Coordinate asbestos abatement work with all other Sections of this specification and drawings.
- .3 Asbestos abatement, removal and disposal shall be done as part of the Work in this contract.

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- .4 Remove Asbestos material to the extent required to perform the Work described in the contract documents.
- .5 Third testing described in 'Appendix A' performed by Bersch & Associates Ltd will be covered by the owner unless noted in 'Appendix A'.

A-4-3 REF. SECTION 06 40 00 ARCHITECTURAL WOODWORK

- 2.1.6 Revise to include: "Colour & Finish: from manufacturer's complete range."
- 2.1.8 Revise to include: "Colour: from manufacturer's complete range."
- 2.2.4.2 Revise to read: "Quartz Countertop: 2cm thick countertop with 4cm thick edge material by maximum practical length. Backsplash and sidesplash to match countertop. Colour based on Caesarstone 6600 "Nougat". Final selection will be made from manufacturer's similar price range."

A-4-4 REF. SECTION 09 11 16 ALUMINUM DOORS AND FRAMES

- .1 Add section 09 11 16 Aluminum Doors and Frames attached to this addendum.

A-4-5 REF. SECTION 09 84 00 ACOUSTIC TREATMENT

- 2.2.8 Add the following: "Acceptable manufacturers: Armstrong, Wallworks, Fabri-Lok, Sound Concepts."

A-4-6 REF. SECTION 22 42 20

- 2.3 SHOWER SH-2 (Dog Wash):
 - .1 Revise "base with square drain" to "base with round drain".

A-4-7 REF. 230500 GENERAL MECHANICAL REQUIREMENTS

Item:	Specified:	Equal:
Pumps	Taco	Grundfos Wilco
Air Separator	Bell & Gossett	Amtrol Flexcon Caleffi
Circuit Balance Valves	Armstrong	M.A. Stewart
Expansion Tank	Amrtrol	Flexcon
Sidestream Filter	Filterite	Viqua
Radiant Panels	TWA	Aero Tech

A-4-8 REF. DRAWING A0.2 SITE DETAILS

- .1 Reference detail one-Parking Lot Modification:
 - .1 Revise note 4 to read: "Provide light duty granular paving surfacing material where asphalt removed (area shown hatched)."

A-4-9 REF. DRAWING A1.1 LOWER FLOOR DEMOLITION PLAN PHASE ONE AND TWO

- .1 Add general notes to details 1 and 2:
 - .1 Add General Note A: "Remove existing flooring where new finishes are scheduled."
 - .2 Add General Note B: "Refer to 'Appendix A' for locations of hazardous materials."

A-4-10 REF. DRAWING A1.2 MAIN FLOOR DEMOLITION PLAN PHASE ONE AND TWO

- .1 Add general notes to details 1 and 2:
 - .1 Add General Note A: "Remove existing flooring where new finishes are scheduled."
 - .2 Add General Note B: "Refer to 'Appendix A' for locations of hazardous materials."

A-4-11 REF. DRAWING A2.2 MAIN FLOOR PLAN, WALL/PARTITIONS TYPES

- .1 Reference Partition Schedule:
 - .1 Revise - P10 partition steel mesh fastening to be 4.8mm (3/16") steel rivets @ 200mm o.c. as per attached drawing AR3.1.
 - .2 Revise P10 partition steel stud framing to be 152 – 43 MIL steel stud spaced @ 300 o.c.
 - .3 Revise P10 partition steel top and bottom track fastening to be spaced @ 300 o.c.

A-4-12 REF. DRAWING M2.3 – LOWER LEVEL PLUMBING PLAN

- .1 Trim serving Shower SH-1 in Room 022 and Room 024 to be installed on side of shower so that the shower head does not spray directly at the shower opening.

A-4-13 REF. DRAWING M2.1, M2.2, M2.5 AND M2.6 – PLUMBING DEMOLITION PLANS

- .1 Remove all asbestos elbows, assume approximately 300 total locations throughout the building in pipe sizes ranging from 12mm to 150mm. Refer to plumbing plans for approximate location and sizes of asbestos elbows. Quantity of asbestos elbows and exact locations to be confirmed on site. Refer to 'Appendix A'.

- .2 Existing storm piping within building is constructed of Transite drainpipe. All existing storm piping from drain to discharge out of building to be removed and replaced. Refer to 'Appendix A'.

A-4-14 REF. GENERAL QUESTIONS

- .1 Q: Request for substitution on 09 54 26 Linear Wood Ceiling.
A: Refer to addendum three, item A-3-9.
- .2 Q: Specification for PLam1 and PLam2.
A: Refer to Specification section 06 40 00 item 2.1.6 & 2.1.7.
- .3 Q: Under Specifications, section 06 40 0.2.3.4.2 indicates quartz countertops are required. Please provide specification quartz countertop. There are many suppliers and pricing levels in quartz.
A: Refer to section 06 40 00 noted above.
- .4 Q: Under Specifications, section 08 11 00, confirm the insulated core material.
A: The insulated core material is covered in the section under item 2.2.2 & 2.2.2.1.
- .5 Q: Under specifications, section 10 71 13, request for equal on the Aluminum Sunshade.
A: As long as the sunshade product meet the specifications then they are acceptable.
- .6 Q: Under drawings, Structural drawings show bollards on the upper left hand of the drawing S-2 but are not shown on the Architectural, are these required?
A: Bollards required around equipment pads as noted on detail 3/A0.1 and detail 1/A2.1.
- .7 Q: Under Drawings, Phasing plans show Phase 1 work on the lower and main levels. Will these occur at the same time?
A: Yes.
- .8 Q: Under drawings, Structural drawings show bollards on the upper left hand of the drawing S-2 but are not shown on the Architectural, are these required?
A: Bollards required around equipment pads as noted on detail 3/A0.1 and detail 1/A2.1.
- .9 Q: Under specifications asbestos flooring is found in room 005. Is this to be removed or left?
A: Refer to the finish schedule in section 09 06 01.
- .10 Q: Electrical Drawings – Please confirm panel feeder and breaker size for 20K.
A: Refer to addendum #3 item A-3-33.

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- .11 Q: Under drawings, please clarify the finish of the cabinet bases which are 230mm high?
A: As per details, PL-1 on all exposed cabinet faces and edges.
- .12 Q: Under drawings, is the contractor required to hire a moving company?
A: Refer to section 01 11 00 item 1.5.1.
- .13 Q: Under specifications, do the security clearances have to be in place prior to performing work on the site and/or exterior of the building?
A: Refer to RCMP Security Requirements following section 01 14 00.
- .14 Q: Under Specifications, section 07 50 10 Concrete Face Insulated panels- Where are these used on the project? Detail 2/A4.1?
A: No locations noted on drawings. Disregard this section.
- .15 Q: Under specifications, who is to carry the cost of the asbestos consultant?
A: Refer to item A-4-2 noted above.

END OF ADDENDUM NO. 4

Part 1 General

1.1 EXISTING HAZARDOUS MATERIAL INFORMATION REPORT

- .1 A copy of an existing hazardous material information report with respect to the building has been attached for the information of Bidders as follows:
 - .1 The report is titled as follows:

 “Asbestos Hazard Assessment Revised Survey Report” dated January 2016 and prepared by Bersch and Associates Ltd.
 - .2 This report records findings of hazardous material investigation at the referenced building location. Any recommendations given shall not be construed as a requirement of this Contract unless also contained in the Contract Documents.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Aluminum Association (AA).
 - .1 DAF 45-03, Designation System for Aluminum Finishes.
- .2 American Architectural Manufacturers Association (AAMA).
 - .1 AAMA CW-10, Care And Handling of Architectural Aluminum from Shop to Site
 - .2 AAMA 611, Voluntary Specifications for Anodized finishes Architectural Aluminum
 - .3 AAMA 609-93, Voluntary Guide Specification for Cleaning and Maintenance of Architectural Anodized Aluminum.
- .3 American Society for Testing and Materials International, (ASTM).
 - .1 ASTM B209M, Aluminum and Aluminum-Alloy sheet and Plate Metric
 - .2 ASTM E330-02, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

1.2 SUBMITTALS

- .1 Product Data:
 - .1 Submit catalogue details for each type of frame illustrating profiles, dimensions and methods of assembly.
- .2 Shop Drawings
 - .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
 - .1 Indicate materials and profiles and provide scaled details of components for each type of door and frame.
- .3 Closeout Submittals
 - .1 Conform to Section 01 78 00 - Closeout Submittals.

1.3 DELIVERY, STORAGE, AND HANDLING

- .1 Storage and Protection:
 - .1 Apply temporary protective coating to finished surfaces. Remove coating after erection. Do not use coatings that will become hard to remove or leave residue.
 - .2 Leave protective covering in place until final cleaning of building.

Part 2 Products

2.1 MATERIALS

- .1 Aluminum extrusions: Aluminum Association alloy AA6063-T5 anodizing quality.
- .2 Fasteners: stainless steel where exposed
- .3 Isolation coating: bituminous paint.
- .4 Glass: refer to Section 08 80 50 – Glazing

2.2 ALUMINUM FRAMES

- .1 Interior aluminum frames:
 - .1 Extruded aluminum frames nominal size 100 x 45 mm, front glazed system.
 - .2 Thickness: 3 mm
 - .3 Kawneer: Trifab 450 series or approved alternate.

2.3 ALUMINUM WINDOW FRAME HARDWARE (ANTI-VAULT)

- .1 All components to be heavy duty.
- .2 Horizontal Sliding Panel: Suspended by two heavy duty roller brackets, each having self-lubricating nylon wheel and ball bearing assembly; running in an extruded aluminum track assembly. Provide continuous extruded aluminum door glides and retainer clips along bottom for positive guide no-sway operation.
- .3 Recessed pull handle (installed on office side).
- .4 Cylinder thumb turn (non key design) locking device with one hand operation. Interior side Locking device to be self-activating upon closing, slam latch operation.
 - .1 Device: Spring loaded Transom latch Model #865 manufactured by Sobinco (as supplied by Anotec MFG Inc.)
 - .2 Locate lock so it cannot be reached through the adjacent opening. Confirm location with Consultant.
- .5 Pass through latch: Heavy duty, spring loaded mechanical latch.
- .6 Rubber faced door stop to restrict window movement at maximum window opening.

2.4 HARDWARE

- .1 Hardware to match colour of aluminum frames.

2.5 ALUMINUM FINISHES

- .1 Finish exposed surfaces of aluminum components in accordance with Aluminum Association Designation System for Aluminum Finishes.
 - .1 Finish: Clear anodized AA-M12C22A31, 0.7 mil thickness, Class 1.

2.6 FABRICATION

- .1 Framing to be by same manufacturer.
- .2 Fabricate frames to profiles and maximum face sizes as shown. Provide minimum 22 mm bite for insulating glazed units.
- .3 Reinforce mechanically joined corners and components areas of aluminum framing with interior steel clips to provide strength, stiffness and rigidity in the completed installation.
- .4 Fit joints tightly and secure mechanically.
- .5 Conceal fastenings.
- .6 Mortise, reinforce, drill and tap frames and reinforcements to receive hardware.
- .7 Isolate aluminum from direct contact with dissimilar metals, concrete and masonry.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 WINDOW INSTALLATION

- .1 Install windows in accordance with manufacturer's instructions. Set frames plumb, square, level at correct elevation in alignment with adjacent work.
- .2 Anchor securely.
- .3 Adjust operable parts for correct function and smooth friction free operation.
- .4 Make allowances for deflection of structure to ensure that structural loads are not transmitted to frames.
- .5 Seal joints between window frame and other building components with clear silicone caulking.

3.3 GLAZING

- .1 Glaze aluminum doors and frames in accordance with Section 08 80 50 – Glazing.

3.4 CAULKING/SEALING

- .1 Apply sealant in accordance with Section 07 92 00 - Joint Sealing. Conceal sealant within the aluminum work except where exposed use is permitted by Consultant.

3.5 CLEANING

- .1 Perform cleaning of aluminum components in accordance with AAMA 609.1 - Voluntary Guide Specification for Cleaning and Maintenance of Architectural Anodized Aluminum.
- .2 Clean aluminum with damp rag and approved non-abrasive cleaner.
- .3 Remove traces of primer, caulking, epoxy and filler materials; clean doors and frames.
- .4 Clean glass and glazing materials with approved non-abrasive cleaner.
- .5 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM).
 - .1 ASTM A627-03: Standard Test Methods for Tool-Resisting Steel Bars, Flats, and Shapes for Detention and Correctional facilities.
 - .2 ASTM C645-11a, Specification for Nonstructural Steel Framing Members.
 - .3 ASTM C754-11, Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
 - .4 ASTM F2367-07: Standard Specification for Metal Expanded Steel
- .2 Canadian Standards Association (CSA International)
 - .1 CSA W59-03(R2008), Welded Steel Construction (Metal Arc Welding).
- .3 Expanded Metal Manufacturers Association (EMMA)
 - .1 EMMA 557-99 Standard for Expanded Metal

1.2 QUALITY ASSURANCE

- .1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.3 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Divert unused metal materials from landfill to metal recycling facility.

Part 2 Products

2.1 MATERIALS

- .1 Non-load bearing channel stud framing: to ASTM C645, stud size as noted on drawings and Partition Schedule, roll formed from 0.478 mm steel (25ga) and from 1.146 steel (18ga) as noted on drawings and Partition Schedule for Secure Demising Wall (SDW); hot dipped galvanized steel sheet, for screw attachment of gypsum board. Knock-out service holes at 460 mm centres.
- .2 Floor and ceiling tracks: to ASTM C645, in widths to suit stud sizes, 32 mm flange height. Thickness as noted for studs in Partition Schedule.
- .3 Metal channel stiffener: cold rolled steel, coated with rust inhibitive coating.

- .4 Expanded Mesh: To EMMA 557-99. Style 19mm-9F. 19mm #9/10 roll-flattened steel mesh. Nominal strand thickness of 3mm. Diamond opening of 14mm x 43mm.
- .5 Acoustical sealant: in accordance with Section 07 92 00 – Joint Sealants.
- .6 Insulating strip: rubberized, moisture resistant 3 mm thick closed cell neoprene strip, 12 mm wide, with self sticking permanent adhesive on one face, lengths as required.
- .7 Welding materials: to CSA W59.

Part 3 Execution

3.1 ERECTION

- .1 Align partition tracks at floor and ceiling and secure at 400 mm on centre maximum for normal partitions.
- .2 For Secure Demising Wall (SDW) partitions: secure top and bottom tracks at 300mm on centre using expanding (preferably double expanding) mechanical fastener. Non-expanding (e.g. Tapcon”) screws are NOT acceptable.
- .3 Install damp proof course under stud shoe tracks of partitions on slabs on grade.
- .4 For normal partitions: place studs vertically at 600 mm on centre (refer to drawings) and not more than 50 mm from abutting walls, and at each side of openings and corners. Position studs in tracks at floor and ceiling. Cross brace steel studs as required to provide rigid installation to manufacturer's instructions. Attach studs to bottom track using screws.
- .5 For SDW partitions: place studs vertically at 300mm on centre (refer to drawings) and secure to top and bottom tracks with welds or rivets (not screws). Install double studs at door frame openings. Install door frame as per HMMA 840-07 part 3 A,B,C,D, and E except that screws shall be replaced with steel rivets. Install anti-spread bracing approximately 1200mm on centre vertically from the bottom of the wall between the door jamb and adjacent stud on both sides of the frame. Construct corners with double studs.
- .6 Erect metal studding to tolerance of 1:1000.
- .7 For SDW partitions: Install expanded mesh on “attack” side of partition. Support all edges using anti-spread bracing or studs. Align edges to centre of supports. Secure to studs by welding or use of rivets. Fillet (3mm) weld at 200mm on centre along strand to stud or rivet to studs (preferred) using 4.8mm (3/16”) steel pop rivet with 38mm outside diameter/ 4.8mm inside diameter fender washer at 200mm on centre. Do not overlap mesh at supports. Fasten each sheet separately.
- .8 Co-ordinate simultaneous erection of studs with installation of service lines. When erecting studs ensure web openings are aligned.
- .9 Co-ordinate erection of studs with installation of door/window frames and special supports or anchorage for work specified in other Sections.

- .10 Provide two studs extending from floor to ceiling at each side of openings wider than stud centres specified. Weld studs together, placed alongside frame anchor clips.
- .11 For SDW partitions: Install 16 ga steel sheet to face of studs for 1200mm each side of door jamb and 1200mm above head of door on inside of room. This is in addition to the expanded mesh on the “attack” exterior side of the partition. Attach as per rivet requirements for mesh.
- .12 Do welding work in accordance with CSA W59 unless specified otherwise
- .13 Erect track at head of door/window openings and sills of sidelight/window openings to accommodate intermediate studs. Secure track to studs at each end, in accordance with manufacturer's instructions. Install intermediate studs above and below openings in same manner and spacing as wall studs.
- .14 Frame openings and around built-in equipment, cabinets, access panels, on four sides. Extend framing into reveals. Check clearances with equipment suppliers.
- .15 Install steel studs or furring channel between studs for attaching electrical and other boxes.
- .16 Extend partitions to ceiling height except where noted otherwise on drawings.
- .17 Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs. Use double track slip joint.
- .18 Install continuous insulating strips to isolate studs from uninsulated surfaces.
- .19 Install two continuous insulating strips between ceiling track and floor slab and around perimeter of sound control partitions.
- .20 Install purpose made foam gasket between top of track and fluted metal deck at sound control partitions.
- .21 Install proprietary fire stop material between top of track and fluted metal deck at fire rated partitions.

3.2 CLEANING

- .1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION



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**ROYAL CANADIAN MOUNTED POLICE
2020 9th Avenue West, Prince Albert**

**ASBESTOS HAZARD ASSESSMENT
REVISED SURVEY REPORT**

January 2016

**Prepared by: Bersch & Associates Ltd.
Prepared for: RCMP - Bryan Aubert
Project No. B01.16**

1.0 INTRODUCTION

Bersch & Associates Ltd. was retained by Bryan Aubert to provide an updated survey of the Royal Canadian Mounted Police Station located at 2020 9th Avenue West in Prince Albert, Saskatchewan. The purpose of the survey was to locate and identify the accessible asbestos containing material (ACM) to facilitate the planned renovations.

Brad Berschiminsky conducted the site visit on January 11, 2016 to provide the updated report from the survey in April 2009. The following is a detailed account of the results of the inspection.

A review of this report should be conducted with the staff and various personnel/contractors entering the building to perform maintenance/renovation activity. This directive will: **1)** Ensure they are familiar with the types and locations of the Asbestos Containing Material present within your facility. **2)** Prevent an uncontrolled disturbance of the asbestos material and possible exposure to asbestos fibres.

The recommendations contained in this report are based on Asbestos Abatement Industry standards in Canada and the U.S.A. and in particular from the referenced standards in Section 5 of this report.

2.0 METHODOLOGY

April 3, 2009 Brad Berschiminsky and Dustin Fraess of Bersch & Associates Ltd. arrived on site to commence with the survey of the building. The primary documents for guidance and criteria in this survey were the Province of Saskatchewan “Occupational Health and Safety Act 1993 and Occupational Health & Safety Regulations 1996”, Province of Saskatchewan, “Management of Asbestos”, and the U.S. Environmental Protection Agency “Guidance for Controlling Asbestos Containing Materials in Buildings. The USEPA document identifies factors associated with the “condition” and the “potential for disturbance or erosion” of asbestos containing materials (ACM). These factors help to define potential for exposure of ACM and were used to make a qualitative evaluation of the material. It should be noted that the recommendation of a “Management” Asbestos Abatement Action is based upon the premise that renovations are not scheduled in that area that will require disturbing or violating the asbestos containing material.

In total, 27 bulk samples of the suspect asbestos containing materials were collected from the facility. Twenty-one (21) of the samples were confirmed as containing “Chrysotile” asbestos. Refer to Appendix I for a copy of the Bulk Sample Analysis Report. All bulk samples collected were analyzed by Bersch & Associates Ltd. laboratory in accordance with the current U.S. 40 CFR Part 763, Vol. 52, No.210 for the analysis of asbestos in building materials using polarized light microscopy and dispersion staining techniques. The detection limit of this method is listed as > 1% by volume.

3.0 EXECUTIVE SUMMARY

The survey of the building entailed the inspection of all suspect ACM. Laboratory results indicated that “Chrysotile” asbestos is present within the building. Refer to Appendix I for the Bulk Sample Analysis Report. As a result of our site inspection, Asbestos Containing Materials (ACM) were identified in the following forms:

- *Pipeline fitting compound on the mechanical systems throughout the building. The pipeline fittings containing asbestos are present within the ceiling space of the main floor, within the ceiling space of the basement level and visible throughout various areas of the basement level.*
- *Fire-stop material in wall penetrations above the suspended ceiling of the basement level.*
- *Transite drainpipe throughout the main level ceiling space and B32.*
- *Mud compound at the roof drain locations. ACM material remains on the underside surrounding the roof drains and the debris on the surfaces within the ceiling space below each roof drain location. This item was abated in 2009.*
- *Texture Ceiling material. This item was abated in 2009.*
- *Asbestos sheet floor covering. Refer to the floor plan in appendix II for the locations.*

The **accessible** asbestos pipeline fittings and fire-stop material located throughout the RCMP detachment was identified with a **red painted “Dot”**. The asbestos containing transite drainpipe was identified with **red-stenciled “Asbestos”**. The mud compound at the roof drain locations was not identified with red paint due to the condition of the material. The sheet flooring is identified on the floor plan in appendix II. **Note: all areas, which are inaccessible at this time shall be suspect of asbestos containing material until bulk sampling proves otherwise. Areas, where destructive sampling would be required to obtain a bulk sample of suspect material, were deemed as being inaccessible at this time.**

The concrete block was cored into in five areas throughout the building. No vermiculite insulation was encountered within the block walls in the locations tested. The locations tested included B2, B3, B11 and B33. If vermiculite insulation is encountered, stop the work activity until bulk sampling determines whether or not the material contains asbestos.

4.0 RECOMMENDATIONS:

The following areas have been identified for removal as a result of the scheduled demolition / renovations to the facility:

A. Main Floor

1. **Transite Roof Drainpipe** – Transite roof drainpipe was identified as ACM within the ceiling space of the first floor rooms along the north, south and west walls. The pipeline runs east to west adjacent the north and south walls. The following rooms present the transite roof drainpipe within the ceiling space: 104, 109A, 113, 114, 116, 118, 122, 131, 144, 150. Refer to bulk sample B15 in the bulk sample report in appendix 1.
2. **Pipeline Fittings above ceiling tile** – Pipeline fittings were identified as ACM within the ceiling space of the first floor. The fittings are present in the following rooms: 101, 109A, 112 corridor and 141 corridor. Pipeline fittings were also identified within the ceiling space of the 100 Vestibule but were inaccessible to identify. Refer to bulk sample B18 in the bulk sample report (appendix 1).
3. **Asbestos Sheet Flooring** – Vinyl sheet floor covering was identified as ACM. The sheet flooring exists within rooms 110, 111, 126, 133 stairway landing, 136, 137, 138 and 147. The sheet floor covering is identified on the floor plan in appendix II. Refer to bulk sample B12 and B22 (appendix I).

B. BASEMENT LEVEL

1. **Visible Pipeline Fittings** – Pipeline fittings were identified as ACM within the basement: B1 corridor adj. B35, B1 corridor adj. B39, B21 Corridor, B22, B23, B24, B25, B26, B30, B33.
2. **Asbestos Sheet Floor Covering** – Vinyl asbestos sheet floor covering is present within rooms: B1, B22, B23, B24, B25, B26, B27, B28, B29, B30, B31, B36, B37, B39, B40, B21 Corridor, B1 Corridor adj. B35, B1 Corridor adj. B39. Refer to bulk samples B12 and B22 (appendix I).
3. **Asbestos Firestop** – Firestop material was identified within the B1 corridor within the ceiling space above the doorway leading to the corridor adjacent B35. Refer to bulk sample B23 (appendix I).
4. **Transite Roof Drainpipe** – A section of Transite drainpipe was identified in B32 along west side of the boiler in the upper slab penetration.

5.0 ASBESTOS ABATEMENT DISCUSSION

Asbestos is a known carcinogen and is listed in the Province of Saskatchewan under the Occupational Health and Safety Regulations, Table 20 as a Designated Chemical Substance and any release of asbestos fibres into the atmosphere creates a potential health hazard. Although the mechanism and epidemiology of asbestos carcinogenesis is not yet well defined, accumulating evidence suggests the significance of exposure at even very low fibre concentrations and hence human exposure should be kept to a minimum. It should be noted however that asbestos is a natural mineral and a measurable background concentration can be detected in any location sampled (inside buildings, outside buildings, urban, rural, etc.). The recommendations of the report are therefore intended to keep the potential exposure to an absolute minimum with the knowledge that a zero exposure is not possible.

Asbestos containing materials have been used in a wide variety of applications. Of particular concern, is the group of so called friable products. A friable product is one that can be crumbled or reduced to powder or smaller fragments by hand pressure. Publications from the U.S.E.P.A. as early as 1977 have indicated the potential hazard of asbestos exposure in buildings containing these friable products. The two main uses of friable asbestos products are as spray insulation (thermal, acoustic or fireproofing) on deck and/or beams or as thermal insulation on piping or mechanical equipment. A large amount of non-friable asbestos-containing materials have also been used in building construction such as asbestos cement board and asbestos containing vinyl flooring.

The mere presence of a friable asbestos containing material does not imply that there is an actual presence of elevated airborne fibre. As numerous studies have indicated, elevated asbestos fibre levels are generally found when settled dust or the actual asbestos containing material itself is disturbed by maintenance, renovation, inadvertent contact or vibration. The factors considered in the Environmental Protection Agency (USEPA) exposure assessment (condition of material, water damage, activity, movement, exposed surface area, accessibility, friability and presence in an air stream) often give some indication of the likelihood of fibre release but are not in any way definitive in determining whether a hazard exists or not. That is, even if the most friable product exists in a building, elevated fibre levels will not likely occur unless there is some disturbance by physical contact, vibration or an air stream. Also asbestos containing pipe or mechanical insulation is not considered friable unless the jacketing is deteriorated or is disturbed by maintenance or renovation.

There are four possible approaches to control exposure to airborne asbestos once a friable material is identified in a building. These methods briefly are as follows:

- A) Removal** - Asbestos material is removed and disposed of by burial and replaced by non-asbestos materials.
- B) Encapsulation** - Asbestos material is coated with a bridging or penetrating sealant.
- C) Enclosure** - Asbestos containing materials are separated from the building environment by physical airtight and waterproof barriers.

D) Management and Custodial Control - The Province of Saskatchewan Human Resources, Labor and Employment Branch under the Occupational health and Safety Regulations publish a document outlining “The Management of Asbestos”. In the guide for compliance, an action plan is outlined for management of the asbestos materials identified and in summary is:

1. Identification - The Occupational Health & Safety Regulations state that all asbestos containing building materials are clearly marked in “red” paint (where practical) to warn others of the possible exposure to asbestos fibres if disturbed.
2. Inspection on regular basis is conducted to determine the ongoing condition of the material. As per the Occupational Health & Safety Regulations, 1996 an employer shall ensure that all friable asbestos containing material are regularly inspected by the employer, or owner and are inspected at least annually by a competent person to confirm that the material is not releasing, and is not likely to release, asbestos dust into the atmosphere. Maintenance staff should be instructed to bring to attention any problem areas they note during daily activities.
3. Development of Written Work Procedures for maintenance personnel to Control the Hazard of Asbestos, or often arrangements are made for a qualified contractor to conduct the necessary removal/repair prior to the regular staff conducting maintenance. An Asbestos Control Plan needs to be developed that protects the health and safety of all workers in the event of the dispersal of asbestos dust into the atmosphere at a place of employment or work site. A brief summary of the Asbestos Control Plan is found under Section 337 (2) of the Occupational Health and Safety Regulations, 1996.
4. Asbestos Abatement Awareness and Process Training if the regular maintenance personnel are required to conduct asbestos related activities. Bersch & Associates Ltd. will train maintenance staff on Low Risk Asbestos Process if requested.

For the specifics of this report Removal of the asbestos containing materials is the recommended planned activities as a result of the renovation scheduled throughout the facility.

6.0 REFERENCES

- .1 Province of Saskatchewan "The Occupational Health and Safety Act and The Occupational Health and Safety Regulations", December, 1996.
- .2 Province of Saskatchewan Human Resources, Labor, and Employment "The Management of Asbestos" January 1991.
- .3 USEPA, 1985. U.S. Environmental Protection Agency, "Guidance for Controlling Asbestos-Containing Materials in Buildings". Washington, DC: Office of Toxic Substances, USEPA.
- .4 Environment Management and Protection Act, Saskatchewan Environment, October 2002
- .5 Hazardous Substances and waste Dangerous Goods Regulations, Saskatchewan Environment, April 1989
- .6 Transportation of Dangerous Goods Regulations, Transport Canada 2002

APPENDIX I

BULK SAMPLE ANALYSIS

BERSCH & ASSOCIATES LTD.

April 13, 2009

Kadam Developments
304 Isabella Street West
Saskatoon, Sask
S7K 4L4

ATTENTION: Ed Wilkinson

SUBJECT: Bulk Material Identification Report

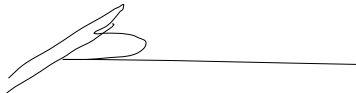
Please find attached our laboratory's results for the bulk samples collected in April 2009 throughout the Prince Albert RCMP detachment. The samples were forwarded to our Laboratory for the identification of asbestos.

The results for the bulk samples collected were obtained by examination in accordance with the current U.S. 40 CFR Part 763, Vol. 52, No.210 for the analysis of asbestos in building materials using polarized light microscopy and dispersion staining techniques. The detection limit of this method is listed as greater than 1% by volume.

This test report relates only to the materials collected for examination and any use or extension of the information by the client of these results is the responsibility of the client.

If any questions arise on the results of the attached information please contact me at 222-7477.

Sincerely,



Brad Berschiminsky
Bersch & Associates Ltd.
File: B01BLD03

Bersch & Associates Ltd.

B01BAD03

Box 3568

Humboldt, Sask. S0K 2A0

BULK SAMPLE ANALYSIS REPORT**PROJECT: P.A. RCMP DETACHMENT****CLIENT: Kadam Developments
304 Isabella Street West
Saskatoon, SK. S7K 4L4**

NO.	DATE	SAMPLE INFORMATION	ASBESTOS	%	ANALYST
B1	03-03-09	B32 Mechanical Room Small domestic overhead pipeline fitting in the northwest corner adjacent the the boiler	Chrysotile	60	WB
B2	03-03-09	B32 Mechanical Room Small overhead hot water pipeline fitting in the northwest corner adj. the boiler	Chrysotile	60	WB
B3	03-03-09	B32 Mechanical Room Small overhead hot water circ. pipeline fitting in the northwest corner adj. the boiler	Chrysotile	70	WB
B4	03-03-09	B32 Mechanical Room Small overhead cold water pipeline fitting in the northwest corner adj. the boiler	Chrysotile	60	WB
B5	03-03-09	B32 Mechanical Room HWS pipeline fitting west of the boiler	Chrysotile	70	WB
B6	03-03-09	B32 Mechanical Room HWR pipeline fitting west of the boiler	Chrysotile	70	WB
B7	03-03-09	B32 Mechanical Room Overhead transite pipeline to the west of the boiler	Chrysotile	40	WB

Bersch & Associates Ltd.

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304 Isabella Street West
Saskatoon, SK. S7K 4L4**

NO.	DATE	SAMPLE INFORMATION	ASBESTOS	%	ANALYST
B8	03-03-09	B32 Mechanical Room Pipeline fitting on backup generator exhaust to the west of the hot water heater	None detected		WB
B9	03-03-09	B33 Vehicle Storage Small overhead heat return pipeline fitting on the west side of the room adjacent the overhead heating unit	Chrysotile	60	WB
B10	03-03-09	B33 Vehicle Storage Small overhead heat supply pipeline fitting on the west side of the room adjacent the overhead heating unit	Chrysotile	60	WB
B11	03-03-09	B33 Vehicle Storage Small overhead domestic hot water supply pipeline in the southeast corner of the room adjacent the entry	Chrysotile	70	WB
B12	03-03-09	B23 Exercise Room Sheet floor covering beneath carpet	Chrysotile	30	WB
B13	03-03-09	B3 Provost Parging material in the wire mesh above the ceiling access panel adjacent B17	None detected		WB
B14	03-03-09	B3 Provost Small pipeline fitting above the ceiling access panel adjacent the east exit door	Chrysotile	70	WB

Bersch & Associates Ltd.

B01BAD03

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304 Isabella Street West
Saskatoon, SK. S7K 4L4**

NO.	DATE	SAMPLE INFORMATION	ASBESTOS	%	ANALYST
B15	03-03-09	136 Staff Room Mud compound debris below the roof drain within the ceiling space in the northeast corner	Chrysotile	60	WB
B16	03-03-09	Corridor adjacent Room 119 2' x 4' ceiling tile	None detected		WB
B17	03-03-09	Room 113 Transite roof drainpipe within the ceiling space	Chrysotile	40	WB
B18	03-03-09	112 Corridor Small pipeline fitting within the ceiling space adjacent the exit door	Chrysotile	60	WB
B19	03-03-09	101 Entry Texture ceiling material adjacent room 128	Chrysotile	10	WB
B20	03-08-09	B32 Mechanical Room Small pipeline fitting in the southwest corner to the west of the backup generator	Chrysotile	70	WB
B21	03-08-09	B1 Corridor adjacent B19 Small pipeline fitting above the suspended ceiling to the right of the B19 doorway	Chrysotile	70	WB

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304 Isabella Street West
Saskatoon, SK. S7K 4L4**

NO.	DATE	SAMPLE INFORMATION	ASBESTOS	%	ANALYST
B22	03-08-09	B1 Corridor adjacent B19 Sheet floor covering	Chrysotile	30	WB
B23	03-08-09	B1 Corridor adjacent B19 Firestop material at the pipeline penetration within the ceiling space above the doorway leading to the corridor adj.	Chrysotile	40	WB
B24	03-08-09	B22 Womens Change Room Pipeline coating material on the domestic hot water above the shower	None detected		WB
B25	03-08-09	B26 Interview Room Pipeline fitting above the suspended ceiling in the southeast corner	Chrysotile	60	WB
B26	03-08-09	Room 124 Floor tile	None detected		WB
B27	03-08-09	Room 101.1 Sheet floor covering	None detected		WB

APPENDIX II

FLOOR PLANS



Legend

Asbestos Sheet Flooring -

- RELOCATE AREA TO REMAIN AS IS
- RADIO TECH
- CONTAINMENT
- PA DETACHMENT
- FITNESS AREA
- STORAGE
- ADMINISTRATION

LOWER LEVEL PLAN

RCMP NORTH DISTRICT BLDG

MAY 10, 2010

**OPTION A
PHASE 1**

SEPW Architecture Inc.

APPENDIX A
Asbestos Abatement

By

Bersch & Associates Ltd. 2016

1.0 GENERAL

.1 SCOPE

The Royal Canadian Mounted Police intends and this specification covers the removal of the Asbestos Containing Materials (ACM) for the Royal Canadian Mounted Police Detachment located at 2020 9th Avenue West in Prince Albert, Saskatchewan. The abatement includes the removal of ACM: Mud Compound along the mechanical pipelines, Firestop Material in wall penetrations, Transite Drainpipe and Sheet Floor Covering. Low-Risk and High-Risk asbestos abatement procedures shall be utilized to conduct the abatement project.

The scope of work includes but not limited to the following:

- A. Mobilization of isolation containments to conduct the High-Risk Asbestos Abatement of the Asbestos Containing Sheet Floor Covering.
- B. The removal of the asbestos containing Transite Drainpipe as a Low-Risk asbestos process. Refer to *Appendix I* for the removal process.
- C. Glove Bag Removal to conduct the Low-Risk Asbestos Abatement of the Mud Compound on the fittings along the mechanical pipelines and the Firestop Material in the wall penetrations. Refer to *Appendix II* for the removal process.
- D. The High-Risk Asbestos Abatement Area shall be thoroughly cleaned including but not limited to walls, floor, piping, electrical services, beams etc.
- E. The High-Risk Asbestos Abatement Area shall be isolated from the adjacent areas with the use of poly, tape, glue, caulking /or similar material providing an airtight and waterproof barrier.
- F. Any restrictions to the building due to the abatement activities shall be with the owner's consent.
- G. Certification of the High Efficiency Particulate Air (HEPA) filtered negative air fans in place, if venting indoors, to ensure they are functioning properly as specified in the Occupational Health & Safety Regulations, Part XXII Asbestos, Section 339(2).
- H. Following asbestos removal activity, apply a post removal sealant to all surfaces within the removal area - TowerThon 20-300 Elastomeric coating post-removal sealant is recommended.
- I. A disposal bin may be placed on site at a location approved by the owner. The owner shall designate parking.
- J. Provide unit pricing as per 1.3 Unit Price for asbestos containing material that may be concealed within enclosed wall/ceiling/floor cavities or pipe chases. The accessible asbestos containing materials have been identified by the previous Asbestos Survey Report dated April 2009 and shall be excluded from the unit pricing request.
- K. It will be the tenderer's responsibility to perform all takeoffs and inspections to fully acquaint themselves with the quantities, location and site conditions pertaining to the removal project. Bersch & Associates Ltd. - Asbestos Hazard Assessment Survey Report 2016 may be used as, a reference only, to provide approximate locations of the asbestos containing materials.

.2 POLLUTION LIABILITY INSURANCE:

- .1 This policy shall provide Contractors Pollution Liability Insurance covering environmental liabilities associated with the *Work*, including coverage for bodily injury and property damage resulting from asbestos abatement operations. The policy shall provide for a limit of liability of not less than \$5,000,000.00 inclusive per claim or occurrence and must be endorsed to include the *Owner* and *Contractor* as additional insured. Prior to commencement of the *Work*, the *Contractor* shall promptly provide the *Owner* with confirmation of coverage and, if required, a certified true copy of the policies certified by an authorized representative of the insurer together with copies of any amending endorsements.
- .2 This insurance shall be maintained continuously from commencement of the *Work* until 12 months after Substantial Performance of the Asbestos Abatement *Work*.

.3 UNIT PRICES

Provide Unit Pricing with the Tender Package itemizing each unit price as per below:

- .1 **UP1** - Unit price, as a cost per square metre, for the removal of asbestos containing sheet floor covering beyond the extent of work indicated in accordance with section 028233 – asbestos abatement.
- .2 **UP2** - Unit price, as a cost per fitting, for the removal of asbestos pipeline fittings (break down various sizes if applicable) beyond the extent of work indicated in accordance with section 028233 – asbestos abatement.

.4 DESCRIPTION OF WORK (High-risk Process)

The work shall include, but not be limited to, the provision of all supervision; labour, goods, plant, services and facilities specified and/or required to perform the following:

- .1 Design and erect an enclosure for High-risk asbestos abatement activity. The Enclosure will be designed in a manner that minimizes any disruption of daily activities. Bersch & Associates Ltd. must approve the enclosure design prior to any activity.
- .2 Ensure the maintenance and security of the hoarding and asbestos removal equipment.
- .3 Supply and operation of venting systems to constantly maintain negative pressure relative to adjacent areas. A minimum of 0.02 H₂O is required. Negative air units must be certified and vented to the outdoor environment. If venting to the outdoors is not feasible, then in place certification is required. **The contractor is required to record the negative air pressure level in hourly intervals within the enclosure/containment during active abatement periods and twice daily during off/inactive days.**
- .4 Cap all return / supply air vents with 6 mil polyethylene sheeting and duct tape.
- .5 Isolate supply air ducts from the asbestos removal area with 6 mil polyethylene sheeting and duct tape and dependent on the velocity of airflow a rigid cap may be required to be installed over top of the poly cap.

- .6 The construction of physical barriers to isolate asbestos removal areas from adjacent areas. The barrier shall be both airtight and waterproof.
- .7 The pre-cleaning, isolation, and enclosure of all equipment that does not require removal.
- .8 Wetting and removal of the asbestos containing materials prior to removal. Removal shall be conducted using High-Risk and Low-Risk Removal Procedures.
- .9 Decontamination of contaminated areas following asbestos removal. Decontamination shall include:
 - thorough pick up and HEPA vacuum cleaning of all debris.
 - cleaning of visible debris from all surfaces.
 - sealing of all surfaces.
 - removal and disposal of all hoarding membranes as asbestos waste.
- .10 Application of a post removal sealant to all surfaces with Tower Thon 20-300 Elastomeric coating following asbestos abatement activities. To be applied by an airless sprayer within containments and hand held sprayer for glovebag removal.
- .11 Transportation of contaminated materials to the approved disposal site along with all permits and arrangements for disposal.
- .12 Supply and operation of decontamination and material handling facilities.
- .13 Supply and maintenance of laundry, lunchroom and sanitary facilities required for the work.
- .14 Supply and maintenance of respirator equipment.
- .15 Dismantling and removal from site of hoarding, scaffolding and asbestos removal equipment and materials.
- .16 Site Cleanup.
- .17 All work will be subject to frequent inspection and air monitoring by Bersch & Associates Ltd.

.5 INTENT OF SPECIFICATION

These specifications describe and specify the scope of work in broad terms only. It shall be the Contractor's responsibility, from his experience and standard practices, to detail and complete the work so as to satisfy the owner with respect to design, performance, durability, operation and safety. By submitting a proposal on this Contract, the tenderer shall certify that they have performed all takeoffs and inspections to fully acquaint themselves with quantities and site conditions involved.

.6 INSPECTIONS

Bersch & Associates Ltd. will conduct the follow-up site inspections for the asbestos abatement activities. It will be the contractor's responsibility to notify the designated representative when they are prepared for the inspections under .1, .3, and .4. **Forty-eight (48) hour notification is required** for the inspections and if not received by Bersch & Associates Ltd. it will be at their earliest availability. **One-week notification** is mandatory for the .1 Precontamination Inspection to allow Bersch & Associates Ltd sufficient time to coordinate the project startup. The Owner reserves the right to have Bersch & Associates Ltd. charge the contractor for any additional asbestos consulting services required beyond two inspections for each of items .1 and .3 below.

- .1 Precontamination Inspection - Site visit to ensure that the contractor has fully prepared the site, personnel are trained and equipment-materials are on hand as per specifications prior to the start of asbestos abatement activity.
- .2 Site Inspections - Site visits and air monitoring may be conducted during the removal to ensure work procedures are being followed, proper equipment is being used, and to ensure site security. Prepare written report to identify concerns that require corrective action and document the findings of the visit.
- .3 Visual Inspection - Site visit and air monitoring for substantial completion to ensure that the removal area is clean and free of asbestos fibres.
- .4 Final Inspection - Visual inspection and air monitoring following demobilization to ensure that the work area is clean and free of visible debris prior to occupancy.

.7 TERMINOLOGY (Definitions)

- .1 Building Owner – Royal Canadian Mounted Police.
- .2 Authorized Visitor - The Building Owner, or a representative of any regulatory or other agency having jurisdiction over the project.
- .3 Abatement - Procedures to control fiber release from asbestos-containing material. Includes encapsulation, enclosure, and removal.
- .4 Removal - All herein specified procedures necessary to strip all asbestos-containing materials from the designated areas and to dispose of these materials at an acceptable site.
- .5 Encapsulation - All herein specified procedures necessary to coat all asbestos-containing materials with a sealant to control the possible release of asbestos fibers into the ambient air.
- .6 Enclosure - All herein specified procedures necessary to complete enclosure of all asbestos-containing materials behind airtight, impermeable, permanent barriers.
- .7 Air Monitoring - The process of measuring the fiber content of a specific volume of air in a stated period of time.
- .8 HEPA Vacuum Equipment - High Efficiency Particulate Air filtered vacuuming equipment with a filter system capable of collecting and retaining asbestos fibers. Filters should be of 99.97% efficiency for retaining fibers of 0.3 microns or larger.

- .9 Surfactant - A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.
- .10 Amended water - A water to which a surfactant has been added. (See 3.2 Asbestos Removal .2)
- .11 Airlock - A system for permitting ingress or egress without permitting air movement between a contaminated area and an uncontaminated area, typically consisting of two curtained doorways at least 1.8 meters (6 feet) apart.
- .12 Curtained doorway - A device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms, typically constructed by placing two overlapping sheets of plastic over an existing or temporarily framed doorway, securing each along the top of the doorway, securing the vertical edge of one sheet along one vertical side of the doorway, and securing the vertical edge of the other sheet along the opposite side of the doorway. Two curtained doorways spaced minimum of 1.8 meters apart, form an airlock.
- .13 Decontamination Enclosure System - A series of connected rooms, with curtained doorways between any two adjacent rooms, for the decontamination of workers or of materials and equipment. A decontamination enclosure system always contains at least one airlock.
- .14 Worker Decontamination Enclosure System - A decontamination enclosure system for workers, typically consisting of a cleanroom, a shower room, and an equipment room.
- .15 Equipment Decontamination Enclosure System - A decontamination enclosure system for materials and equipment, typically consisting of a designated area of the work area, a washroom, a holding area, and an uncontaminated area.
- .16 Cleanroom - An uncontaminated area or room that is part of the worker decontamination enclosure system, with provisions for storage of workers' street clothes and protective equipment.
- .17 Shower Room - A room between the cleanroom and the equipment room in the worker decontamination enclosure system, with hot and cold or warm running water and suitable arrangements for complete showering during decontamination. The shower room comprises an airlock between contaminated and clean areas.
- .18 Equipment Room - A contaminated area or room that is part of the worker decontamination enclosure system, with provisions for storage of contaminated clothing.
- .19 Washroom - A room between the work area and the holding area, in the equipment decontamination enclosure system. The washroom comprises an airlock.
- .20 Holding Area - A chamber between the washroom and an uncontaminated area in the equipment decontamination enclosure system. The holding area comprises an airlock.
- .21 Fixed Object - A unit of equipment or furniture in the work area which cannot be removed from the work area.
- .22 Movable Object - A unit of equipment or furniture in the work area which can be removed from the work area.

- .23 HEPA filter - A High Efficiency Particulate Absolute (HEPA) filter capable of trapping and retaining 99.97% of asbestos fibers greater than 0.3 microns in length.
- .24 Encapsulant (Sealant) - A liquid material which can be applied to asbestos-containing material that controls the possible release of asbestos fibers from the material either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant).
- .25 Wet Cleaning - The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with water, and by afterwards disposing of these cleaning tools as asbestos-contaminated waste.
- .26 Venting System - When asbestos debris is disturbed, proper ventilating equipment must be used to exhaust air to the outside air.
- .27 Negative Pressure - Air pressure within a work area resulting from air movement equipment, installed in the work area capable of maintaining a minimum pressure differential of 0.5mm (0.02 in) of water column relative to adjacent unsealed areas.
- .28 Certification - The testing of air movement equipment in accordance with the Province of Saskatchewan's Occupational Health & Safety Regulations Part XXIII Asbestos, section 339.
- .29 ACM - Asbestos Containing Material.

.8 APPLICABLE REFERENCE DOCUMENTS

- .1 The current issue of each document shall govern. Where conflict among requirements or with these specifications exists, the more stringent requirements shall apply:
 - A. Regulations: Comply with applicable Federal, Provincial, municipal, and local regulations. Province of Saskatchewan, Occupational Health and Safety Act and The Occupational Health and Safety Regulations December 1996.
 - B. Transportation of Dangerous Goods Act Regulations and/or Waste Management Act Regulations. Province of Saskatchewan Dept. of Environment Regulations.
 - C. U.S. Federal Standard 209B “Cleanroom and Work Station Requirements, Controlled Environment”

.2 Codes and Standards

A. CSA-Canadian Standards Association.

- .1) CSA Standard Z94.4-M1982 Selection, Care and Use of Respirators
- .2) CSA Standard Z180.1-M85 Compressed Breathing Air And Systems
- .3) ANSI Z88.2 - 1980 Practices for Respiratory Protection

B. Province of Saskatchewan

- .1) Occupational Health & Safety Act, 1993
- .2) Occupational Health & Safety Regulations, 1996 Part XXIII - Asbestos

C. United States Environmental Protection Agency

- 1) EPA 560/5-85-024 Guidance for Controlling Asbestos Containing Material in Buildings

.9 SUBMITTALS AND NOTICES

.1 Prior to Commencement of Work Contractor shall:

- .1 Provide in writing, details of proposed **High Risk Asbestos Abatement Procedures** (Notice of Project if applicable) covering all aspects of the contract with copies to; the Building Rep/Owner and Saskatchewan Dept. of Occupational Health and Safety two weeks prior to start of project.
- .2 Submit a Control Plan to the Building Owner or his authorized representative, pursuant to The Occupational Health and Safety Regulations, 1996 Part XXIII Section 337. The Control Plan shall be site specific and placed at each abatement location on site.
- .3 Submit proof, satisfactory to the Building Owner or his authorized representative, that all required permits and arrangements for transport and disposal of asbestos-containing or contaminated materials have been obtained.
- .4 Submit to the Building Owner or his authorized representative a copy of Pollution Insurance policy regarding hazardous materials specifically stating asbestos abatement activity coverage.
- .5 Submit to the Building Owner or his authorized representative a description of the plans for construction of decontamination enclosure systems.
- .6 Submit documentation to the Building Owner or his authorized representative indicating employee instruction on the hazards of asbestos exposure, on use and fitting of respirators, on protective dress, on use of showers, on entry and exit from work areas including emergency evacuation procedures and on all aspects of work procedures and protective measures.
- .7 Post warning signs where access to the work area is possible. Such signs shall be located on the Cleanroom and on the Holding Area of the Equipment Decontamination Enclosure System and shall delineate entry and protective equipment requirements and provide warning of the potential health consequences of exposure to asbestos.
- .8 Submit names of supervisory personnel who will be responsible for work on each site. One of these supervisors must remain on site outside of the contaminated area while asbestos related work is occurring. Contractor shall submit proof that supervisory personnel have attended a training course on asbestos removal and have performed supervisory functions on at least two comparable projects. Substitution of these supervisors will only be allowed with written permission of the Building Owner or his authorized representative.
- .9 For the removal area, submit for review drawings showing layout and construction of decontamination facilities and proposed location of negative pressure unit or units. Simple line

drawings may be considered adequate, but must include details regarding walls, ceilings, doorways, water and service hookups.

- .10 Submit to the Building Owner, documentation, including test results, of sealant materials proposed for use. TowerThon 20-300 Elastomeric Coating required.
- .11 Submit certification that vacuums and other equipment required to contain airborne fibres conform to the Province of Saskatchewan Occupational Health & Safety Regulations Part XXIII Asbestos Section 339. Certification must prove that the High Efficiency Particulate Air Vacuums and Negative Air Machines do not exceed a D.O.P. (di-2-ethyl hexyl phthalate) penetration of 0.01 percent at any point. Certification of negative air units must be performed on site or if vented outdoors must show proof of certification within the last twelve (12) months. Certification of HEPA vacuums used outside a containment must show proof of certification within the last twelve (12) months.
- .12 The Contractor and the Owner shall agree in writing on the condition of the building and fixtures, prior to commencement of the work.
- .13 It is the contractor responsibility to ensure that the abatement area is inaccessible to the public. If locks are used on the enclosure, a key must be supplied to the Owner and the Owner's Representative. Contact information shall be posted at the abatement entrances.

.10 TEST RESULTS

- .1 Results of tests of asbestos-containing materials taken from the rooms are available for review at the office of Bersch & Associates Ltd. The material to be removed was identified as containing "Chrysotile" Asbestos.

.11 PERSONNEL PROTECTION (High Risk Process)

- .1 Prior to commencement of work, the workers shall be instructed, and shall be knowledgeable, in the areas described in this section.
- .2 Provide workers with personally issued and marked respiratory equipment approved by the Province of Saskatchewan Occupational Health and Safety Branch. Category II Powered air purifying positive-pressure respirator will be worn to conduct the high-risk asbestos abatement activity. Category III Half Face-piece respirators equipped with HEPA filters may be used to conduct low risk asbestos processes. An additional respirator must be available for every three workers during the removal in the event of damage or failure of one of the three respirators. A review of respiratory requirements may be necessary, as dictated by air monitoring results obtained by the consultant. The provisions of CSA Standard Z94.4-M1982 regarding the care, use and selection of respirators shall apply. A current list of persons utilizing respiratory equipment shall be displayed in the cleanroom. Filters shall be replaced every twelve hours of work or more frequently as indicated by on site manufacturers approved filter and flow testing equipment. No supervisors, workers or authorized visitors shall wear facial hair, which affects respirator to face seal. Contractor shall provide sanitizing tablets or equivalent sanitizing agent.
- .3 A respirator cleaning/storage room shall be constructed as part of the cleanroom. The respirator cleaning station will require a washtub, cleaning agent, toweling and an area to store the respirators when not in use.

- .4 Perform and record respirator fit testing including positive/negative checks and irritant smoke testing.
- .5 Provide authorized visitors with suitable respirators with new filters or cartridges whenever they are required to enter the work area, to a maximum of one (1) per day.
- .6 Provide workers with sufficient sets of protective full body impervious clothing. Such clothing shall consist of full body coveralls and headgear. Disposable type protective clothing, headgear, and footwear may be provided.

.7 Protection Procedures

- .1 Each worker and authorized visitor shall, upon entering the job site, remove street clothes in the clean change room, fit/wear a respirator with new filters and clean protective clothing, before entering the equipment room or the work area.
- .2 Each worker or authorized visitor shall, each time he leaves the work area remove gross contamination from clothing, proceed to the equipment room and remove all clothing except respirator. Still wearing the respirator proceed naked to the showers, clean the outside of the respirator with soap and water while showering, remove the respirator, thoroughly shampoo and wash themselves, remove filters and dispose of filters in the container provided for the purpose; and wash and rinse the inside of the respirator.
- .3 Following showering and drying off, each worker and authorized visitor shall proceed directly to the clean change room and dress in clean clothes at the end of each day's work, or before eating, smoking, or drinking. Before re-entering the work area from the clean change room, each worker and authorized visitor shall fit/wear a clean respirator with filters and shall dress in clean protective clothing, except the workers intending to re-use contaminated protective clothing stored in the equipment room shall enter the equipment room wearing only the respirator.
- .4 Contaminated work footwear shall be stored in the equipment room when not in use in the work area. Upon completion of asbestos abatement, dispose of footwear as contaminated waste or clean thoroughly inside and out using soap and water before removing from work area or from equipment and access area. Store contaminated protective clothing in the equipment room for re-use or place in receptacles for disposal with other asbestos contaminated materials.
- .5 Workers removing waste containers from the equipment decontamination enclosure shall enter the holding area from outside wearing full-body disposable coveralls and a Category III half-face respirators with approved HEPA filter cartridges. No worker shall use this system as a means to leave or enter the washroom or the work area.
- .6 Workers shall not eat, drink, smoke, chew gum or tobacco at the work site except in designated areas.
- .7 Workers shall be fully protected with respirators and protective clothing immediately prior to the first disturbance of asbestos-containing or contaminated materials and until final cleanup is complete.
- .8 Workers performing duties at risk of causing elevated airborne asbestos fibre levels shall be fully protected with respirators and protective clothing prior to the commencement of work.

- .9 At all times, during asbestos removal activity, the contractor will have a contact person outside the asbestos removal area. This person should be knowledgeable in all aspects of the asbestos removal activity being performed.
- .10 The negative air within the removal area will be recorded hourly on the form provided by the consultant located next to the manometer stationed on the removal area enclosure.

.12 BUILDING PROTECTION (High Risk Containment)

- .1 Provide lockable doors sufficient to ensure work area security to the Cleanroom and in the Holding area of the Equipment Decontamination Enclosure Systems of the Specified Work Areas.
- .2 A Decontamination Facility must be constructed from suitable framing (either wood or metal) isolated from the rest of the building with posted warning signs identifying asbestos abatement in progress.
- .3 The facility must be lined with one layer of 6 mil plastic sheeting secured at the upper wall perimeter with wood lath sealed to the wall with duct tape. At minimum the floors will be lined with one layer of 6-mil poly-weaved sheeting and one underlying layer of CAN/CGSB-51.34-M86 6 MIL RALSTON QUALITY FILM plastic sheeting. Underlying layer of CAN/CGSB poly to be sealed at joints with Canadian Technical Tape (Tuck Tape) to ensure proper tape adhesion. Lay the floor linings in continuous sheets extending 300mm (12 inches) up the walls and seal in place along all free edges. Bond floor linings with two-sided adhesive tape to prevent lifting. Wrap 4' x 8' sheets of plywood (min 3/8 inch) to be placed on top of CAN/CGSB polyethylene prior to installing poly-weaved sheeting in order to properly secure floor linings. Overlap floor linings with wall linings and seal in place along all free edges. Ensure that the plastic linings provide a continuous barrier and that a seal is maintained around penetrating objects, over cuts and tears and elsewhere as required by consultant. Install an additional polyethylene drop sheet to be removed during enclosure final cleaning activity.
- .4 The decontamination facility must contain a cleanroom, a respirator maintenance area, a shower room, dirty room within the personnel transfer section. The equipment and waste transfer section must contain a transfer room equipped with a washtub and a holding room.
- .5 The doorways separating the rooms of the facility must be made of poly sheeting with two overlapping layers closing upon themselves with weighting along the bottom edge in order to isolate each room.
- .6 At minimum 1 negative air unit operating within the high-risk containment must be connected to an emergency backup power supply, in the event of a power outage minimal negative air pressure will be maintained until the power is restored.
- .7 The negative air units shall be exhausted to the outdoor environment. If exterior exhausting is not feasible, the contractor shall ensure the HEPA filtered negative air fans are certified on site by a competent person to ensure HEPA filter performance and prevent contamination of the adjacent building environment. The exhaust tubing shall be attached to the negative air exhaust port with a mechanical fastener to ensure the tubing is secured to the negative air unit.

- .8 The abatement contractor shall supply and install a manometer to record the negative air pressure within the asbestos removal containment. The negative air pressure differential relative to the adjacent area shall be recorded daily in hourly intervals, at minimum, and posted next to the manometer fixed to the containment.
- .9 Upon contaminating the removal containment, any days of which the workers are away from site, the abatement contractor shall ensure a competent person is selected to perform a visual inspection of the removal containment both inside and out to verify the integrity of the isolation. This person shall perform the inspection at minimum, once daily (more is preferred) and record the negative air pressure on the posted manometer recording during the site visit.
- .10 Contact information shall be posted on the exterior of the enclosure at all times. Information shall include: contractor, consultant and contact names and phone numbers. A key to the enclosure shall be made available to the building owner and/or Bersch and Associates.

.13 BUILDING PROTECTION (Low Risk)

- .1 Use barrier tape or similar isolation material to isolate the work area to a distance of 5 meters (15 feet) from the asbestos process activity.
- .2 Place a drop sheet consisting of 6-mil plastic sheeting immediately below the work area.
- .3 Place warning signs and danger asbestos warning banner guard at all entries informing of an asbestos process taking place and the danger to health if exposed to asbestos fibres, in order to prevent any unauthorized access by occupants of the building.
- .4 Ensure all tools and equipment necessary to conduct the removal are within the work area.

.14 SCHEDULE

- .1 The contractor shall provide the Owner or the authorized representative with a Schedule which clearly indicates major proposed sectors of work, depicts and describes manpower loadings and the sequences and interdependence of all his activities in sufficient detail to satisfy the owner in regards to the planning of the work and evaluating progress.
- .2 The contractor shall provide Bersch & Associates Ltd. with a Schedule that clearly indicates major proposed sectors of work. At minimum a **Weekly Schedule** shall be delivered at the start of each week and updated more frequent if changes are required.

.15 GENERAL OVERVIEW:

- .1 Work involving entry into inaccessible areas such as wall cavities, plenums, ceiling spaces etc.. may require asbestos abatement upon the discovery of suspect material.**

2.0 MATERIALS AND EQUIPMENT

.1 MATERIALS

- .1 Deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name.
- .2 Store all materials subject to damage off the ground, away from wet or damp surfaces, and under cover sufficient to prevent damage or contamination.
- .3 Damaged or deteriorating materials shall not be used and shall be removed from the premises. Material that becomes contaminated with asbestos shall be disposed of in accordance with the applicable regulations.
- .4 Plastic sheet - Of 0.15mm (6 mil) thick polyethylene, unless otherwise specified, sized to minimize frequency of joints. CAN/CGSB – 51.34-M86 required for initial floor lining in order to protect floor finish and prevent escape of water during asbestos abatement activity.
- .5 Tape - Capable of sealing joints of adjacent plastic sheets and for attachment of plastic sheet to finished or unfinished surfaces of dissimilar materials and capable of adhering under dry and wet conditions, including use of amended water. Canadian Technical Tape (Tuck Tape) required to ensure proper adhesion to CAN/CGSB-51.34-M86 polyethylene.
- .6 Surfactant (wetting agent) - Shall consist of 50% polyoxyethylene ether and 50% of polyoxyethylene ester, or equivalent, and shall be mixed with water to provide a concentration of 1.25 kg/cubic meter, (one ounce of surfactant to five gallons of water).
- .7 Impermeable containers - Suitable to receive and retain any asbestos-containing or contaminated materials until disposal at an approved site. Two separate polyethylene bags of 0.15mm (6 mil) thickness or one bag used to line uncontaminated metal or fibre drums shall be used as appropriate. Containers must be air and watertight and individually labeled.
- .8 Warning labels and signs - Delineating entry and protective equipment requirements and providing warning of the potential health effects of exposure to airborne asbestos fibres.
- .9 Encapsulants - Bridging type, slow drying, compatible with re-spray fireproofing materials, approved by the authority having jurisdiction and meeting the requirements of CGSB 1-GP-205M Type 2. TowerThon 20-300 Elastomeric Coating required.
- .10 Other Materials - Provide all other materials, such as lumber, nails and hardware, which may be required to construct and dismantle the decontamination area and the barriers that isolate the work area.

.2 TOOLS AND EQUIPMENT

- .1 Provide all suitable tools for asbestos removal and encapsulation. Submit a list of the equipment that will be provided to execute this contract.
- .2 Air movement equipment - High Efficiency Particulate Air Filtration Systems shall be equipped with filtration equipment in compliance with ANSI Z9.2, Local Exhaust Ventilation. No air movement system or air equipment shall discharge asbestos fibers outside the work area.

- .3 Breathing air equipment - Shall meet the following requirements;
 - 1) Approved by the Province of Saskatchewan Occupational Health and Safety Branch.

3.0 EXECUTION

.1 PREPARATION

.1 Work Area:

- .1 For High Risk removal activity, identify all electrical devices, outlets, lines or junction boxes which will remain energized during the removal period. Provide temporary lighting and a temporary power supply incorporating ground fault interrupter circuits within the work area. A minimum of two 100-watt lamps for every 300 sq. ft. of floor area, must be provided at all times.
- .2 Seal off all openings, including but not limited to corridors, doorways, ducts, grilles, diffusers, and any other penetrations of the work areas, with 6 mil plastic sheeting sealed with tape. Doorways and corridors, which will not be used for passage during work, must be sealed with barriers.
- .3 Build airlocks at entrances to and exits from the work areas.
- .4 Maintain emergency and fire exits from the work areas, or establish alternative exits.
- .5 Isolate all ventilation units by sealing with 6 mil plastic sheeting, and duct tape all openings or joints to ensure total isolation of ventilation equipment.
- .6 If the contractor does not have a portable decontamination facility the contractor will erect a rigid decontamination enclosure, constructed of 50mm x 100mm (2 in. x 4 in.) timber studs on 600mm (24 inch) centers, sheathed in two layers of plastic sheeting, the top layer of 6 mil (0.15mm) woven polyethylene, and the bottom layer of 6 mil (0.15mm) polyethylene all securely fastened to the timber frame. Rigid hoarding of 12mm (1/2 inch) plywood is recommended.
- .7 For the Work Areas, set up negative air units to ensure sufficient access for the replacement of primary and secondary filters and duct the exhaust air to a location removed from potential inhalation of the exhaust. The negative air units will be tested for flow and are to have sufficient capacity to exchange the volume of the contaminated area 4 times per hour and maintain a negative air pressure in the contaminated area of 0.02" H₂O.
- .8 Once venting equipment is in operation, construct the necessary walls to separate the Asbestos Removal Area from occupied or maintained areas as required.
- .9 Any and all unsafe conditions or concerns shall be reported to the building owner or the authorized representative immediately.

.2 Decontamination Enclosure Systems:

- .1 For the Specified Work Areas build a suitable framed Decontamination Enclosure. Line with plastic and sealed with tape at all lap joints.
- .2 In all cases access between contaminated and uncontaminated rooms or areas shall be through an airlock as described in Section 1.14. In all cases access between any two rooms within the decontamination enclosure systems shall be through a curtained doorway.
- .3 Worker Decontamination Enclosure System: Construct a worker decontamination enclosure system for High Risk removals consisting of three totally enclosed chambers as follows:
 - .1 A shower room with two curtained doorways, one to the equipment room and one to the cleanroom. The shower room shall contain at least one shower for every five (5) workers in the area, with hot and cold or warm running water. Water supply will be taken from a suitable water source, (example: washroom) and will be disconnected at the end of every shift. Careful attention shall be paid to the shower enclosure to insure against leaking of any kind. Ensure an adequate supply of soap at all times in the shower room. Ensure that adequate drainage from the shower/waste handling facility to the building sewer system is through a filtering device capable of filtering out particles 5 microns in size and larger.
 - .2 A respirator room with one curtained doorway into the shower and one into the cleanroom. Provide a washbasin for cleaning respirators.
 - .3 A cleanroom with one curtained doorway into the shower and one entrance or exit to non-contaminated areas. The cleanroom shall have sufficient space for storage of the worker's street clothes, towels, and other non-contaminated items as well as provide room for a minimum of four (4) workers. Provide workers with lockers or hangers, benches, respirator storage space and mirror(s) to facilitate dressing/undressing and equipment adjustment and maintenance.
- .4 Equipment Decontamination Enclosure System: Provide or construct an equipment decontamination enclosure system consisting of two totally enclosed chambers as follows:
 - .1 A washroom with sump pump, constituting an airlock, with a curtained doorway to a designated area of the work area and a curtained doorway to the holding area.
 - .2 A holding area, constituting an airlock, with a curtained doorway to an uncontaminated area and a curtained doorway to the washroom (asbestos waste double-bag room).
- .5 Separate asbestos removal work areas from Occupied Areas which will remain in use during the asbestos removal by means of airtight barriers, constructed as follows:
 - .1 Build suitable wood or metal framing.
 - .2 Cover sheathing with plastic sheet, sealed with tape as specified on work area side.

- .6 Maintenance of Enclosure Systems:
 - .1 Ensure that barriers and plastic linings are effectively sealed and taped. Repair damaged barriers and remedy defects immediately upon discovery. Ensure that, prior to every shift start, the shift foreman inspects the enclosure barrier for leaks and that any leaks discovered are repaired before workers are allowed to enter work area.
- .7 Asbestos abatement work shall not commence until:
 - .1 Arrangements have been made for disposal of waste at an acceptable site.
 - .2 Arrangements have been made for containing and disposal of wastewater resulting from wet stripping.
 - .3 Work areas and decontamination enclosure systems (and parts of the building required to remain in use) are effectively segregated.
 - .4 Tools, equipment and material waste receptors are on hand.
 - .5 Arrangements have been made for building security.
 - .6 Precontamination Inspection has been conducted by the consultant.
 - .7 All other preparatory steps have been taken and applicable notices posted and permits obtained.

.2 ASBESTOS REMOVAL

- .1 The primary method removal of the asbestos containing materials shall be by manual handling and packaging. High-risk removal procedures will be used to conduct the asbestos removal of the sheet floor covering.
- .2 Spray asbestos material with amended water, using spray equipment capable of providing a "mist" application to reduce the release of fibres. Saturate the material sufficiently to wet it to the substrate without causing excess dripping or delaminating of the material. Spray the asbestos material repeatedly during work process to maintain it in a wet condition and to minimize asbestos fibre dispersion.
- .3 Remove the saturated asbestos material in small sections. As it is removed, pack material in sealable yellow plastic bags of 0.15mm (6 mil) minimum thickness and place in labeled containers for transport. Material shall not be allowed to accumulate or dry out prior to the insertion into the container
- .4 Seal filled containers. Clean external surfaces of containers thoroughly by wet sponging in the designated work area, which is part of the equipment decontamination enclosure system. Move containers to washroom, wet clean each container thoroughly, and double bag then move to holding area pending removal to uncontaminated areas. Bags or containers must have caution labels in accordance with applicable regulations governing the transport and disposal of asbestos wastes. Black bags (6 mil) may be used for the initial bagging of the material, but the factory labeled (yellow) asbestos bags must be used for double bagging to identify the bags that have been double bagged. Ensure that containers are removed from the holding area by workers who have entered from

uncontaminated areas dressed in coveralls and equipped with a Category 3 Respirator. Asbestos waste will be removed from the work area once a day at the end of each shift. Ensure that workers do not enter from uncontaminated areas into the washroom or the work area; ensure that contaminated workers do not exit the work area through the equipment decontamination enclosure system.

- .5 After completion of stripping work, clean all surfaces by means of wire brushes, scouring pads, scrapers or alternate tools to remove all visible asbestos materials. During this work the surfaces being cleaned shall be kept wet. Following this cleanup all surfaces should again be vacuumed to ensure a thorough cleanup has been completed.

.3 CLEAN UP

- .1 Following the removal of the asbestos containing materials, remove all visible accumulations of asbestos material and debris with HEPA vacuum.
- .2 HEPA filtered negative air pressure systems, air filtration, and decontamination enclosure systems shall remain in service at this time.
- .3 Clean all surfaces in the work area and in any other contaminated areas with HEPA filtered vacuum equipment. Upon completion of the cleaning operation, perform a visual inspection of the work area to ensure that the work area is free of visible asbestos contaminated debris.
- .4 All equipment used in the work area shall be included in the cleanup and shall be removed from work areas at an appropriate time in the cleaning sequence.
- .5 If the consultant finds visible accumulations of asbestos debris in the work area, the Contractor shall repeat the cleaning process at the Contractor's expense until the work area is, in the opinion of the consultant in an acceptably clean condition.
- .6 Work area clearance shall be based largely on a visual inspection of the work area by the Consultant. Final clearance shall be based on air monitoring undertaken by the Consultant. When the visual inspection determines the abatement area is free of accumulations of asbestos debris, all surfaces within the work area shall be sprayed with an approved colorless sealer to give a consistent coverage to all surfaces. TowerThon 20-300 Elastomeric Coating is required for this activity. Contractor shall wear full body disposable coveralls, gloves, goggles and Category 3 respirators during encapsulation. Following an adequate stand down time to allow for air exchange and fibre settling, air clearance of the work area will be granted by the building owner or his authorized representative, pending documentation of airborne fibre levels of less than 0.01 f/cc (fibres per cubic centimetre of air). It may be required that the hoarding be left in place until the new insulation has been installed (if applicable).
- .7 Following the Consultant's approval, the decontamination enclosure systems shall be removed, the area thoroughly wet cleaned and materials from the equipment room and shower room disposed of as contaminated waste. A final check shall be carried out to ensure that no dust or debris remains on surfaces as a result of dismantling operations. Low risk procedures will be used during enclosure decommissioning. Enclosure to be disposed of as asbestos waste.
- .8 Following the final cleanup a visual inspection will be conducted and Air Monitoring as per 3.3.6 to ensure the cleanup is complete.

.4 DISPOSAL

- .1 As the work progresses, the contractor will not exceed available enclosed storage capacity on site, will remove asbestos waste to disposal in an enclosed transport unit and dispose of same at an authorized disposal site in accordance with the requirements of the disposal authority. Obtain, complete and submit appropriate manifest documentation regarding disposal to the building owner. The personnel assigned to transport will be fully informed and equipped to handle a broken container in transport or disposal.
- .2 Ensure landfill operator is fully aware of hazardous material being disposed of and that all equipment operators are informed of appropriate disposal procedures.
- .3 Cooperate and comply with Federal, Provincial and Municipal authorities regarding the transport and disposal of asbestos waste materials.
- .4 Ensure that all transport and disposal activities are supervised by a representative of the contractor to ensure compliance with all applicable regulations.

.5 CIRCUMSTANCES RESULTING IN AN IMMEDIATE SHUTDOWN

- .1 **High Fibre Concentration** - The fibre level must be maintained at a level below the Occupational Health and Safety's acceptable level of 0.01 f/cc in both the Cleanroom and the adjacent areas to the removal process. Elevated levels in either area shall require immediate cleanup and air clearance prior to work commencing. The air clearances shall be performed at the contractor's expense.
- .2 **Insufficient Negative Air Differential** - The negative air differential between the removal area and the adjacent areas must be maintained at a level no lower than 0.02" H₂O.
- .3 **Water Leakage** - Any leakage of water from the removal area or decontamination facilities will not be tolerated.
- .4 **Faulty Equipment** - All equipment involved in the asbestos abatement activities must be maintained in good working order.
- .5 **Inadequate Supply of Materials** - An adequate supply of materials must be available on site at all times (e.g. disposable coveralls, respirators, HEPA filters, towels).
- .6 **Unsafe Activities** - Any other circumstances, which the site inspector feels, are unsafe to the workers or occupants of the building.

END OF SECTION

APPENDIX I

ASBESTOS TRANSITE PIPELINE REMOVAL PROCEDURE

Bersch & Associates Ltd.

Asbestos Transite Pipeline Removal

The following procedures shall be implemented for the removal of Asbestos Containing Transite Pipe. This work is classified as "Low Risk" meaning an asbestos process activity where exposure is intermittent and infrequent. All work shall be conducted in accordance with the Saskatchewan Occupational Health & Safety Act - 1993, and the Occupational Health & Safety Regulations – 1996.

Procedures:

1. Enclose or Isolate the Work Area

- a. Use barrier tape or similar isolation material to isolate the work area to a distance of 5 meters (15 feet) from the asbestos process activity.
- b. In order to prevent unauthorized access, place warning signs at all entries into the abatement area informing of the asbestos process taking place and the danger to health if exposed to asbestos fibres.
- c. Place a drop sheet on the surface below the abatement area.
- d. Ensure all tools and equipment necessary to conduct the removal are within the work area.

2. Worker Protection

- a. Workers shall be provided with a Category 3 half-face respirator equipped with HEPA cartridges.
- b. The workers shall be trained in the use of the half-face respirator and fit tested by the use of an irritant smoke or banana oil if a combination Organic/HEPA filter is available.
- c. White disposable coveralls with elasticized hoods shall be worn during the asbestos process. On exiting the work area the worker will remove his/her coveralls and dispose of them into a 6-mil yellow asbestos disposal bag. Prior to leaving the asbestos process area ensure that no visible debris is on your clothing or foot wear.

- d. On leaving the asbestos process area the worker shall remove his/her respirator and at the earliest opportunity wash their face and hands.

3. Minimize Fiber Production

- a. Remove the transite pipe (depending on pipe diameter) by either wiggling back and forth to pull apart at the collars and removed in 10-foot lengths or with the aid of a plumber's breaking tool. Cutting or grinding of the material will create unacceptable fibre levels.
- b. If a breaking tool is used to break the pipeline into manageable sections; prior to breaking, the transite pipeline shall be wrapped with several layers of 6-mil poly at each break location. The opposite end of the transite pipeline shall be sealed with 6-mil poly and duct taped.
- c. Following the break, the poly wrap shall be cut open to gain access to the break area and the loose debris be HEPA vacuumed. The exposed ends should again be wrapped with several layer of poly and sealed with duct tape.
- d. If any pieces of the asbestos-containing pipeline dislodge and fall to the area below, they shall be immediately picked up prior to the continuation of any further activity.
- e. The pipeline material shall not be allowed to accumulate; it should be moved to the wrapping area and immediately wrapped with 6-mil poly sheeting.

4. Cleanup

- a. The pipeline shall be double wrapped with 6-mil polyethylene sheeting with the appropriate tag identifying the asbestos containing material as "ASBESTOS".
- b. The total work area shall be continuously inspected for the presence of asbestos containing debris and picked up and placed in 6-mil disposal bags. All bags shall be double bagged and sealed with duct tape.
- c. The wrapped pipeline and/or bagged material shall be disposed of as per Province of Saskatchewan Occupational Health & Safety Regulations and transported in accordance with the Federal Regulations respecting the Transportations of Dangerous Goods.

Brad Berschiminsky,
Bersch & Associates Ltd.

APPENDIX II

GLOVEBAG REMOVAL PROCEDURE

Bersch & Associates Ltd.

Glove-bag Asbestos Pipe Insulation Removal

The following procedures will be implemented for the removal of asbestos containing pipe insulation. This work is classified as "Low Risk" meaning an asbestos process activity where exposure is intermittent and infrequent. All work will be conducted in accordance with the Saskatchewan Occupational Health & Safety Act - 1993, and the Occupational Health & Safety Regulations – 1996.

Procedures:

A. Enclose or Isolate the Work Area

1. Isolate the area of glove bag removal if possible to a perimeter of 5 meters (15 feet) from the work zone with barrier tape and signage to prevent entrance to the work zone and to warn others of the possible asbestos exposure.
2. Isolate ventilation equipment operating in the area and cover, with 6 mil plastic, any ventilation grills.
3. Choose the correct size and type of glove bag. Different pipe sizes are available; there are horizontal and vertical type bags for horizontal and vertical pipe insulation removal.
4. HEPA Vacuum the area one meter by one meter around the pipe insulation or asbestos containing materials to be removed to ensure that any fibres are cleaned up that have previously been released by violation of the material.
5. Lay a drop sheet in the immediate work area of the glove bag removal.
6. Place the required tools inside the glove bag.
7. Place a wrap of duct tape around the insulation covering at each end of the glove bag to ensure a good seal at each end.
8. Position the glove bag on the pipe starting at the end if possible with a taped isolation to a wall or ceiling.
9. Seal the ends with the straps provided or with duct tape. If necessary the bag may have to be additionally supported by a hanger provision or similar device.
10. Ensure all the materials and equipment are in the removal area.

2. Worker Protection

1. Workers will be provided with disposable coveralls with elasticized hood.
2. Workers shall wear a Category 3 Respirators equipped with HEPA filters. Conduct the necessary checks to ensure the respirator is fully functional. Conduct negative/positive pressure tests and smoke fit test to ensure proper fit.

3. Minimize Fiber Production

1. Place wetting nozzle through port if available or cut a slit in the bag, secure with duct tape and wet the insulation to be removed by misting with a water amended with a wetting agent. Place HEPA Vacuum nozzle into the bag either through a custom port or cut a slit for insertion and secure with duct tape.
2. Cut the insulation covering along the storage side of the bag and around each end of the pipe section contained within the glove bag.
3. Mist the asbestos material as it is exposed.
4. Wet down the inside walls of the glove bag and tools.
5. Scrape - Scour - Wet the pipe to remove any visible debris.
6. Again, wet down inside of bag and wet-wipe pipe and top section of the bag.
7. If the bag is to be moved to next section, seal the removed material in the bottom storage section. Start the HEPA Vacuum Cleaner and vent the bag. With the vacuum running, free the ends to move the bag to the next section of removal. Two people required to ensure proper move, minimize openings, for proper venting and a smooth move.

4. Cleanup and Disposal

1. When removal is completed, clean the tools by wetting and wiping. Place the tools in a sleeve for removal. Double tape the glove sleeve allowing space to cut off tool sleeve. Further cleaning of the tools may be accomplished by submerging the cut off sleeve in water and releasing the tools for clean up.
2. Remove glove bag and place in a 6 mil Asbestos Material Disposal Bag. Tightly seal.
3. Seal the pipe or component with an approved encapsulant.

4. HEPA Vacuum the area of any visible debris. Remove disposable coveralls, fold up drop sheet, outer corners in and place in disposal bag.
5. Remove respirators, wash face and hands at the first opportunity. Wash and disinfect respirator and place in a suitable plastic bag.
6. Move disposal bags to the designated storage area for asbestos waste.
7. Ensure asbestos waste is disposed of as per Province of Saskatchewan Regulations and transported in accordance with the “Federal Regulations respecting the Transportation of Dangerous Goods.”

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Bersch & Associates Ltd.