

# **APPENDIX**



# HAZARDOUS BUILDING MATERIALS ASSESSMENT

WABUSH AIRPORT  
WABUSH, NL

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## EXECUTIVE SUMMARY

Conestoga-Rovers & Associates (CRA) was retained by Transport Canada (TC) to conduct a Hazardous Building Materials Assessment (HBMA) at the Wabush Airport in Newfoundland and Labrador (NL). The Site Location Map is presented as Figure 1.

The HBMA was completed at the Wabush Airport on December 16, 2011, which included the Air Terminal Building (ATB) and Combined Services Building (CSB). The HBMA was performed in accordance with CRA's Proposal dated November 2011.

Based on the Government of Newfoundland and Labrador Occupation Health and Safety Act (OC98-730), materials containing 1.0 percent or more of asbestos is legislated to be managed in accordance with the Asbestos Abatement Regulations (111/98).

Of the 27 potential asbestos-containing material (ACM) samples collected at the Wabush Airport, 14 were submitted for ACM analysis of which 10 samples were reported as asbestos-containing with concentrations ranging from 1.9 to 65 percent Chrysotile. Two bulk samples collected from elbow pipe insulation in the ATB mechanical room had asbestos content reported as 40 percent and 65 percent. One sample collected from the drywall plaster in the Janitor's closet had an asbestos content reported at 5 percent. Six samples collected from the CSB were reported asbestos concentrations ranging from 1.9 percent to 60 percent Chrysotile. Two bulk samples collected from the cast iron elbow insulation and insulation from the first floor mechanical room had asbestos content reported as 60 percent and 50 percent, respectively; two samples from the sprinkler line and elbow wrap insulation reported asbestos content as 60 percent and 40 percent, respectively; one sample of tan vinyl floor tile from the first level warehouse reported asbestos content of 1.9 percent; and one sample from the roof drain elbow insulation of the second level fire hall reported asbestos content as 60 percent. ACMs observed by CRA during the Site visit were noted to be in good condition and do not require any action, repairs, or encapsulation at this time.

Through discussions with the TC representative at the Wabush Airport, it was determined that all painted building surfaces were latex and newly replaced within the past 15 years; therefore, it was unlikely that a layer of lead-based paint (LBP) existed under the top coat of latex paints. Therefore collection of paint samples for lead analysis at this facility was not warranted.

Based on the results of the HBMA, CRA recommends that an Asbestos Management Plan (AMP) be developed and implemented for the Wabush Airport facility. The AMP should be used to manage TC and other airport employees, including contractors,

maintenance and custodial personnel, and the public to minimize their exposure to asbestos fibres. A detailed Site survey should also be conducted in developing the AMP, which would include a review of As-Built drawings in comparison to current conditions at the facility.

Minor, localized water damage and mould was identified throughout the buildings of the Wabush Airport, mostly on acoustic ceiling tiles and window sills. Although any discovered leaks have been repaired and any damage is due to isolated incidents, the mould impacted areas should be mitigated by cleaning and/or removal following practices outlined in the Canadian Construction Association's "Mould Guidelines for the Canadian Construction Industry."

Although the use of petroleum hydrocarbons is common and frequent at the Airport, no evidence existed to indicate potential contamination.

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## 1.0 INTRODUCTION

Conestoga-Rovers & Associates (CRA) was retained by Transport Canada (TC) to conduct a Hazardous Building Material Assessment (HBMA) of selected buildings located at the Wabush Airport in Newfoundland and Labrador (Figure 1).

The HBMA involved two buildings at the Wabush Airport and was performed in accordance with CRA's November 2011 proposal. The purpose of the HBMA was to identify, sample, and quantify potential Asbestos-Containing Material (ACM) and Lead-Based Paint (LBP) as well as note any potential issues related to Polychlorinated Biphenyls (PCBs), mould, mercury, and petroleum hydrocarbons at the Site, prepare a report documenting the results of the HBMA, and provide recommendations regarding the management of HBMs within the buildings.

### 1.1 SITE DESCRIPTION

The HBMA was completed on two buildings at the Wabush Airport, which is located 3.2 km from the Town of Wabush and 7.2 km from Labrador City. The following two buildings were assessed at the Wabush Airport:

- Air Terminal Building (ATB)
- Combined Services Building (CSB)

The ATB is used mainly for the inbound and outbound travelers. The ATB is a concrete block and metal clad, two storey building constructed in 1980. It contains a passenger waiting area, baggage drop-off and retrieval area, service desks for represented airlines, freight storage, café, boiler and mechanical rooms as well as a security area for outbound travelers on the first floor. The second floor is mostly comprised of office space with an HVAC and communication rooms. The roof for the ATB was reported to have been replaced in 2011.

The CSB is a two storey metal clad structure with concrete block construction and slab-on-grade concrete floor constructed in 1980. It is mostly used for the storage and maintenance of heavy equipment in half of the building while the other half was previously used as a Fire Hall. The Fire Hall is still used for storage of Fire Engines and has office space and a minor storage area. The Equipment side of the CSB houses a boiler/mechanical room and fuel storage rooms containing three steel 163,660 Litre (L)

(noted as 36,000 gallon) aboveground storage tanks (ASTs). The diesel AST is still on-Site, but has been decommissioned.

## **1.2 SCOPE OF WORK**

The objectives identified by TC in the TOR released October 27, 2011 included the following:

- Determine if asbestos is present in the identified buildings or building materials
- Collect and analyze paint chips located on interior walls and floors, as applicable, of the identified buildings to determine if lead is present
- Identify any other possible hazardous building materials or environmental hazards including, but not limited to: PCBs, mould, mercury, and petroleum hydrocarbons
- Produce a report outlining the methodology used, in obtaining the samples, sample Quality Assurance/Quality Control (QA/QC), findings, and recommendations
- Complete the work and report within the required time frame.

As outlined in CRA's Proposal of November 2011, the following scope of work was completed:

- Collection of representative bulk samples from building materials that potentially contained ACM, including, but not limited to, the following materials:
  - Insulation and textile wrap (pipe and fitting insulation)
  - Floor coverings
  - Wall and ceiling surfaces and surface coatings
  - Drywall plaster
- Collection and submission of representative interior and exterior paint samples of each colour from the above noted buildings located at the airport where finishes were suspect of being more than 30 years old.
- Based on lead analytical results from paint samples, analysis of select samples for leachability, if required.
- Identify other potential hazardous building materials such as PCBs, mould, mercury, and petroleum hydrocarbons.
- Preparation of a report with floor plans showing sample locations and a detailed description of all materials surveyed and sampled by CRA. Preparation of a summary table of confirmed ACMs including sample location, quantity, asbestos

content and type, friability, and overall condition. Preparation of a summary table of confirmed lead in paint including location, quantity, colour and overall condition. Provide recommendations regarding abatement or repairs to damaged ACM or LBP surfaces with peeling or scaling paint. Preparation of a detailed photographic log of the ACM/LBP samples.

### **1.3        PREVIOUS STUDIES**

The scope of work was developed based on solicitation documents issued by TC Solicitation # T2012-110029.

It is noted that a previous environmental baseline study was completed at the Wabush Airport and did not identify any ACMs; however, asbestos was recently identified in pipe insulation in the CSB.

## **2.0 FIELD INVESTIGATION METHODOLOGY**

The Site inspection at the Wabush Airport was completed by Mr. Jason Wall on December 16, 2011. Mr. Harold Horwood of TC provided building access to CRA during the field work activities and offered some insight to some of the previous building renovations completed at the Wabush Airport.

The HBMA did not include the inspection of materials that were concealed and/or could not be accessed by existing access panels, below floors, below grade, associated with mechanical and electrical equipment, or on the roof. It is also noted that TC representatives indicated certain rooms were not accessible during the Survey for security reasons; however, each room was reported by site contacts to be similar to surrounding rooms.

### **2.1 ASBESTOS CONTAINING MATERIALS SAMPLE COLLECTION**

Samples were collected using a utility knife or hammer and chisel after wetting down the material. Once collected, samples were placed in zip lock baggies, sealed and labeled, and submitted to an accredited analytical laboratory under chain-of-custody protocols. Photographs of the ACM sample locations are presented in Appendix A.

A total of 27 potential ACM samples were collected at the Wabush Airport from pipe insulation, drywall plaster, acoustic ceiling tiles, and vinyl floor tiles (16 from the ATB and 11 from the CSB). Sample locations at the Wabush Airport buildings are presented on Figures 2 to 4 for the ATB first and second levels as well as the CSB, respectively. The Wabush Airport ACM Sampling Summary is provided in Table 1.

### **2.2 PAINT SAMPLE COLLECTION**

Through discussions with TC representatives at Wabush Airport, it was determined that all painted building surfaces were latex and newly replaced within the past 15 years; therefore, it was unlikely that a layer of LBP existed under the top coat of latex paints. As a result, it was determined in the field that collection of paint samples for lead analysis was not warranted.

### **2.3 ANALYTICAL PROGRAM**

A total of 14 representative potential ACM building material samples were collected during the field program. A number of samples were considered to be representative of similar building materials throughout the facilities; therefore, one or two of each sample type were generally submitted to EMSL Analytical Inc. (EMSL) in Mississauga, Ontario for asbestos content and identification based on NIOSH 9002 method.

All potential ACM samples collected and not submitted to EMSL for analysis have been archived by CRA for a 12 month period. Copies of the Laboratory Certificates of Analysis are included in Appendix B.

### 3.0 ANALYTICAL RESULTS AND DISCUSSION

#### 3.1 ASSESSMENT CRITERIA

##### ACM

Asbestos materials are defined in the Newfoundland and Labrador Asbestos Abatement Regulations, 1998(NLR 111/98) under the Occupational Health and Safety Act (O.C.98 730) as materials containing greater than 1 percent of asbestos by dry weight, which can be found on-line at the following website address:

<http://assembly.nl.ca/Legislation/sr/regulations/rc980111.htm>

In addition to Provincial requirements, a number of federal departmental directives and guidelines have been adopted for the protection of occupants from asbestos exposure. One of these documents is the Canada Occupational Health and Safety Regulations (SOR/86-304) Part XI as it relates to asbestos management, which can be found on-line at the following website address:

<http://www.njc-cnm.gc.ca/directive/index.php?sid=261&lang=eng>

Another such directive is the Public Works and Government Services Canada Deputy Minister Directive (DIR:057) – Asbestos Management respecting asbestos management in federally owned or leased buildings or facilities containing asbestos, March 12, 1997, which can be found on-line at the following website address:

[http://www.njc-cnm.gc.ca/aux\\_bin.php?auxid=575](http://www.njc-cnm.gc.ca/aux_bin.php?auxid=575)

An ACM Management Plan is a regulatory requirement in Newfoundland and Labrador. For an ACM Management Plan to be effective, it needs to be prepared based on an asbestos survey and implemented in accordance with the procedures and protocols in the plan.

##### Lead-Based Paint (LBP)

In 1976, the lead content of interior paint was limited to 0.5 percent by weight (5,000 mg/kg) under the Federal Hazardous Products Act, which can be found on-line at the following web site address:

[http://www.hc-sc.gc.ca/cps-spc/pubs/indust/reference\\_guide-consultation\\_rapid/index-eng.php](http://www.hc-sc.gc.ca/cps-spc/pubs/indust/reference_guide-consultation_rapid/index-eng.php)

All consumer paints produced and imported into Canada are virtually lead free as of 1991. In 2005, the above guidelines were replaced by the Surface Coating Materials Regulations (published in the Canada Gazette Part II, Vol. 139, No. 9 (SOR/2009 109) on April 19, 2005). In the Surface Coating Materials Regulations, production of surface coating products was limited when dry to 0.06% (600 mg/kg) lead, which can be found on-line at the following web site address:

<http://www.gazette.gc.ca/rp-pr/p2/2010/2010-11-10/pdf/g2-14423.pdf>

These guidelines apply to the production of all surface coating materials including paint, however, they do not apply to older paints (manufactured prior to April 19, 2005).

Health Canada has identified lead levels in paint chips exceeding 5,000 mg/kg or 1 mg/cm<sup>2</sup> as indicative of “lead based paint” and recommends precautions for sensitive individuals (such as children and pregnant women) during renovations or if the paint is peeling or in otherwise poor condition.

The Newfoundland and Labrador Department of Environment and Conservation (NLDOEC) has established guidelines that restrict certain materials (e.g., lead) from municipal landfills and C&D (Construction and Demolition) waste disposal sites that could potentially leach/migrate into the groundwater and create an adverse environmental effect, which can be found on-line at the following website address:

[http://www.env.gov.nl.ca/env/env\\_protection/waste/constructdemo.pdf](http://www.env.gov.nl.ca/env/env_protection/waste/constructdemo.pdf)

NLDOEC suggests that materials with a total lead concentration exceeding 5,000 mg/kg undergo leachate testing to assess whether or not the leachate exceeds the Transportation of Dangerous Goods (TDG) regulatory limit of 5 mg/L lead, which can be found on-line at the following website address:

<http://www.tc.gc.ca/eng/tdg/clear-tofc-211.htm>

The material tested may consist of paint and substrate if the paint is in good condition, or paint chips only if the paint is peeling or in poor condition and will be disposed of separately.

Materials with a total lead concentration below 5,000 mg/kg do not require leachate analysis and may be disposed of as a solid, non hazardous waste at a permitted municipal landfill. Materials with a total lead concentration exceeding 5,000 mg/kg, but

with a leachable lead concentration of less than the regulatory limit of 5 mg/L can also be disposed of at a permitted municipal landfill.

Material that exhibits a lead leachate concentration above 5 mg/L is considered hazardous waste based on being “lead leachate toxic” and must be disposed of at a permitted hazardous waste treatment, storage, disposal facility (TSDF). There are currently no hazardous waste TSDFs in Newfoundland and Labrador capable of accepting lead leachate toxic materials and out of province disposal is required. Lead leachate toxic paint that becomes separated from its substrate (i.e., loose chips and flaking) or other lead toxic material are also considered “leachable toxic” dangerous goods and are subject to the TDG Act.

### **3.2 ACM ANALYTICAL RESULTS AND DISCUSSION**

Eleven of the 14 potential ACM samples submitted for the Wabush Airport reported ACM levels as Chrysotile ranging from 0.6 percent (ASB-15) to 65 percent (ASB-14). Reported ACM exceedances are summarized below.

#### **ATB**

- Drywall plaster in the Janitor’s Closet (ASB-7 and its field duplicate ASB-27) reported 5 percent ACM content, which is considered representative of all drywall plaster throughout the ATB including samples ASB-3, ASB-5, ASB-6, ASB-9, and ASB-10
- Cast iron water line elbow insulation in the Mechanical Room (ASB-13) reported 40 percent ACM content, which is considered representative of all cast iron water line elbow insulation throughout the ATB including sample ASB-12
- Domestic water line elbow insulation in the Mechanical Room (ASB-14) reported 65 percent ACM content, which is considered representative of all domestic water line elbow insulation throughout the ATB

The following samples reported non-detectable or ACM contents below the Provincial regulatory limit of 1 percent:

- Brown/red acoustic ceiling tile in the Equipment Room (ASB-4) reported non-detectable ACM content
- Green/beige vinyl floor tile in the Janitor’s Closet (ASB-8) reported non-detectable ACM content
- Beige vinyl floor tile throughout the second level (ASB-15) reported 0.5 percent ACM content

Based on the ACM analytical results and Site observations in the Wabush ATB, it appears that all plastered drywall surfaces on the first and second levels as well as all mechanical insulation on heating and domestic water lines should be considered as ACM. Due to the extent of acoustic ceiling tiles and wide spread distribution of pipes throughout the ATB, an accurate quantity of fittings and pipe insulation could not be provided as inaccessible and/or hidden areas were not visually inspected during the HBMA. Based on As-Built drawings provided by TC and assuming that all ACM drywall plaster and mechanical insulation are still in place, estimated quantities of ACMs confirmed in the ATB may be as high as follows:

- 300 Fittings on first floor associated with heating lines
- 50 Fittings on first floor associated with domestic plumbing lines
- 100 Fittings on first floor associated with sprinkler lines
- 50 Fittings on second floor associated with heating lines
- 10 Fittings on first floor associated with domestic plumbing lines
- 150 square metres (m<sup>2</sup>) on first floor of drywall with plaster
- 650 m<sup>2</sup> on second floor of drywall with plaster

### **CSB**

- Cast iron water line elbow insulation in the Mechanical Room on the first level (ASB-18) reported 60 percent ACM content, which is considered representative of all cast iron water line elbow insulation throughout the CSB
- Cast iron water line insulation in the Mechanical Room on the first level (ASB-19) reported 50 percent ACM content, which is considered representative of all cast iron water line insulation throughout the CSB
- Sprinkler line elbow insulation in the Warehouse/Maintenance area (ASB-21) reported 60 percent ACM content, which is considered representative of all sprinkler line insulation throughout the CSB
- Sprinkler line insulation in the Warehouse/Maintenance area (ASB-22) reported 40 percent ACM content, which is considered representative of all sprinkler line elbow insulation throughout the CSB
- Tan vinyl floor tile in the Warehouse/Maintenance area (ASB-23) reported 1.9 percent ACM content, which is considered representative of all tan vinyl floor tile throughout the CSB
- Roof drain elbow insulation in the second level of the Firehall (ASB-26) reported 60 percent ACM content, which is considered representative of all roof drain elbow insulation throughout the CSB

One sample reported a non-detectable ACM content, which was the furnace insulation wrap on the first level of the Trades Workshop/Storage Room (ASB-24).

The CSB and ATB were reportedly constructed at the same time; therefore, CRA have assumed that drywall plaster, insulation, floor tiles, etc. in both buildings were supplied from the same source. Based on the ACM analytical results from the ATB and CSB along with Site observations in the CSB, it appears that all plastered drywall surfaces and all mechanical insulation on heating and domestic water lines should be considered as ACM. Due to the extent of acoustic ceiling tiles and wide spread distribution of pipes throughout the CSB, an accurate quantity of fittings and pipe insulation cannot be provided as inaccessible and/or hidden areas were not visually inspected during the HBMA. Based on As-Built drawings provided by TC and assuming that all ACM drywall plaster and mechanical insulation are still in place, estimated quantities of ACMs in the CSB may be as high as follows:

- 1,000 m<sup>2</sup> of drywall plaster
- 115 Fittings on first floor associated with heating lines
- 150 metres of heating and domestic water line insulation
- 75 metres of sprinkler line insulation
- 10 Fittings on sprinkler line elbow insulation
- 50 m<sup>2</sup> of tan vinyl floor tile in office areas
- 150 metres on roof drain insulation
- 25 Fittings on roof drain elbow insulation

Asbestos analytical results are presented in Table 1 for the Wabush Airport and Laboratory Certificates of Analysis are included in Appendix B.

### **3.3 LBP ANALYTICAL RESULTS AND DISCUSSION**

Since the TC representative at the Wabush Airport indicated complete interior renovations were completed with the last 15 years, paint samples were not collected as all painted interior surfaces were renovated and replaced more than 15 years following the cessation of lead-based additives in paint.

#### 4.0 SPECIAL ATTENTION ITEMS

Evidence of potential PCBs was not identified during the HBMA at the Wabush Airport. Since the facilities were constructed in 1980 or later, the use of PCB containing light ballasts in fluorescent lighting had already been discontinued.

Minor, localized water damage and mould was identified throughout the buildings of the Wabush Airport, mostly on acoustic ceiling tiles and window sills. The TC representative advised CRA that any discovered leaks have been repaired and any observed damage was due to isolated incidents. None of the identified areas were wet during the HBMA's and mould growth was minor, where present.

Although the use of petroleum hydrocarbons is common and frequent at the Airport, visual evidence of potential contamination was not observed.

## 5.0 CONCLUSIONS

Conestoga-Rovers & Associates (CRA) was retained by Transport Canada (TC) to conduct a Hazardous Building Material Assessment (HBMA) of selected buildings located at the Wabush Airport in Newfoundland and Labrador.

Based on the analytical results reported for potential ACM samples collected at the Wabush Airport from the Air Terminal Building and Combined Services Building, several building materials were confirmed to contain asbestos. The cast iron elbow wrap and insulation from the first floor mechanical room of the ATB and CSB, insulation from the sprinkler line and elbow wrap at the CSB, vinyl floor tile from the first level at the CSB, drywall plaster at the ATB, and roof drain elbow wrap from the second level Fire Hall at the CSB reported concentrations of asbestos at levels greater than 1 percent content.

Through discussions with the TC representative at the Wabush Airport, it was determined that all paint was latex and added within the past 15 years. Given the extent of recent renovations it is unlikely that lead based product exist on Site and as such, further investigation or management practices are not required at this time.

Minor, localized water damage and mould was identified throughout the buildings of the Wabush Airport, mostly on acoustic ceiling tiles and window sills. The TC representative advised CRA that any discovered leaks have been repaired and any damage is due to isolated incidents. None of the identified areas were wet during the HBMA and mould growth was minor, where present.

Although the use of petroleum hydrocarbons is common and frequent at the Wabush Airport, visual evidence of potential contamination was not observed.

## 6.0 RECOMMENDATIONS

Based on the results of the HBMA, it is recommended that an Asbestos Management Plan (AMP) be developed and implemented for the Wabush Airport facility. The AMP should be used to manage TC and airport employees, including contractors, maintenance and custodial personnel, and the public to minimize their exposure to asbestos fibres. ACMs observed by CRA during the Site visit were noted to be in good condition and do not require any action, repairs, or encapsulation at this time. A detailed Site survey should also be conducted in developing the AMP, which would include a review of As-Built drawings in comparison to current conditions at the facility.

Minor, localized water damage and mould was identified throughout the buildings of the Wabush Airport, mostly on acoustic ceiling tiles and window sills. Although any discovered leaks have been repaired and any damage is due to isolated incidents, the mould impacted areas should be mitigated by cleaning and/or removal following practices outlined in the Canadian Construction Association's "Mould Guidelines for the Canadian Construction Industry."

7.0 **CLOSURE**

All of Which is Respectfully Submitted,

CONESTOGA-ROVERS & ASSOCIATES

A handwritten signature in blue ink, appearing to read 'B. Luffman', is written over a faint, light blue circular stamp or watermark.

Brian Luffman, P.Eng.

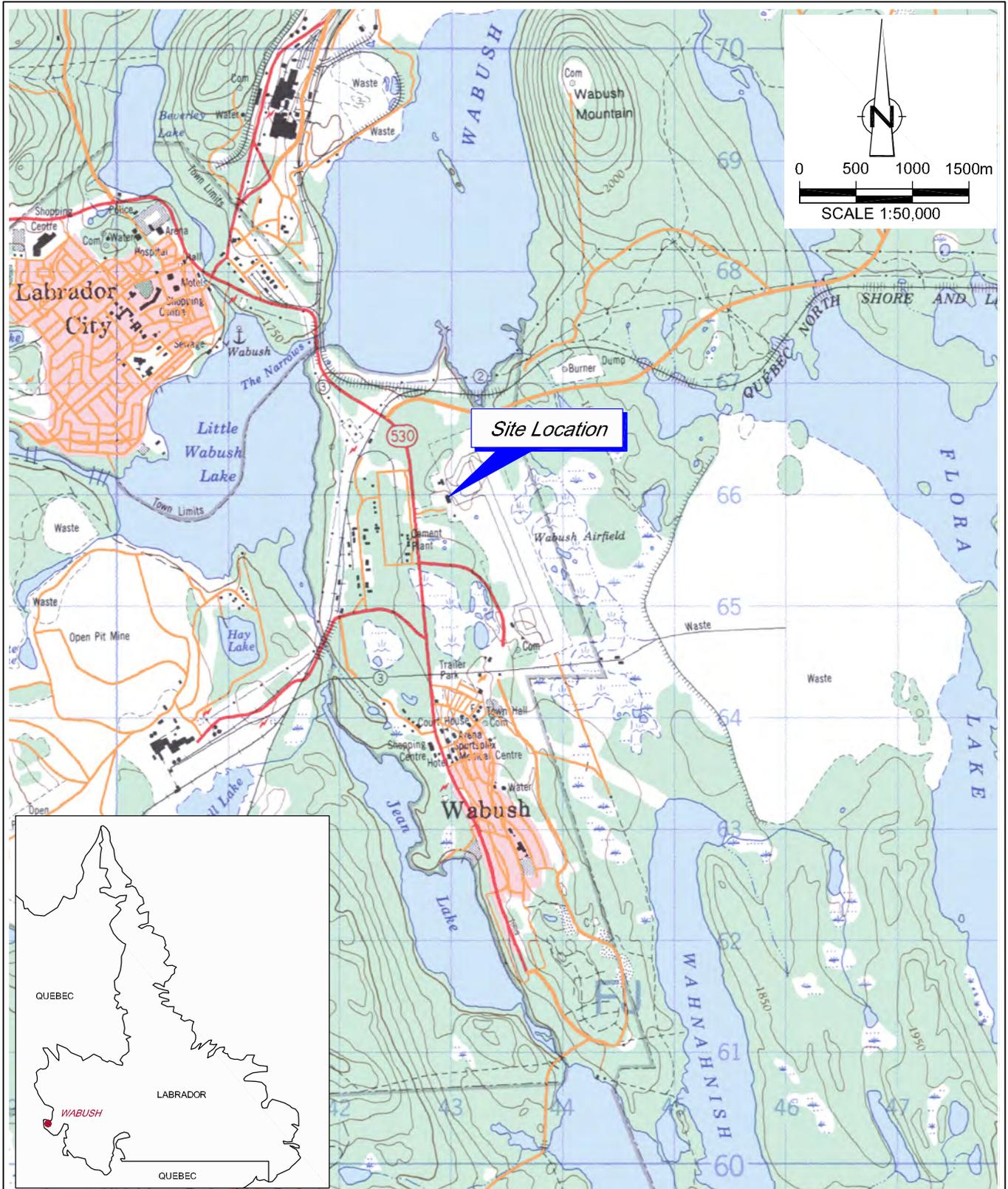
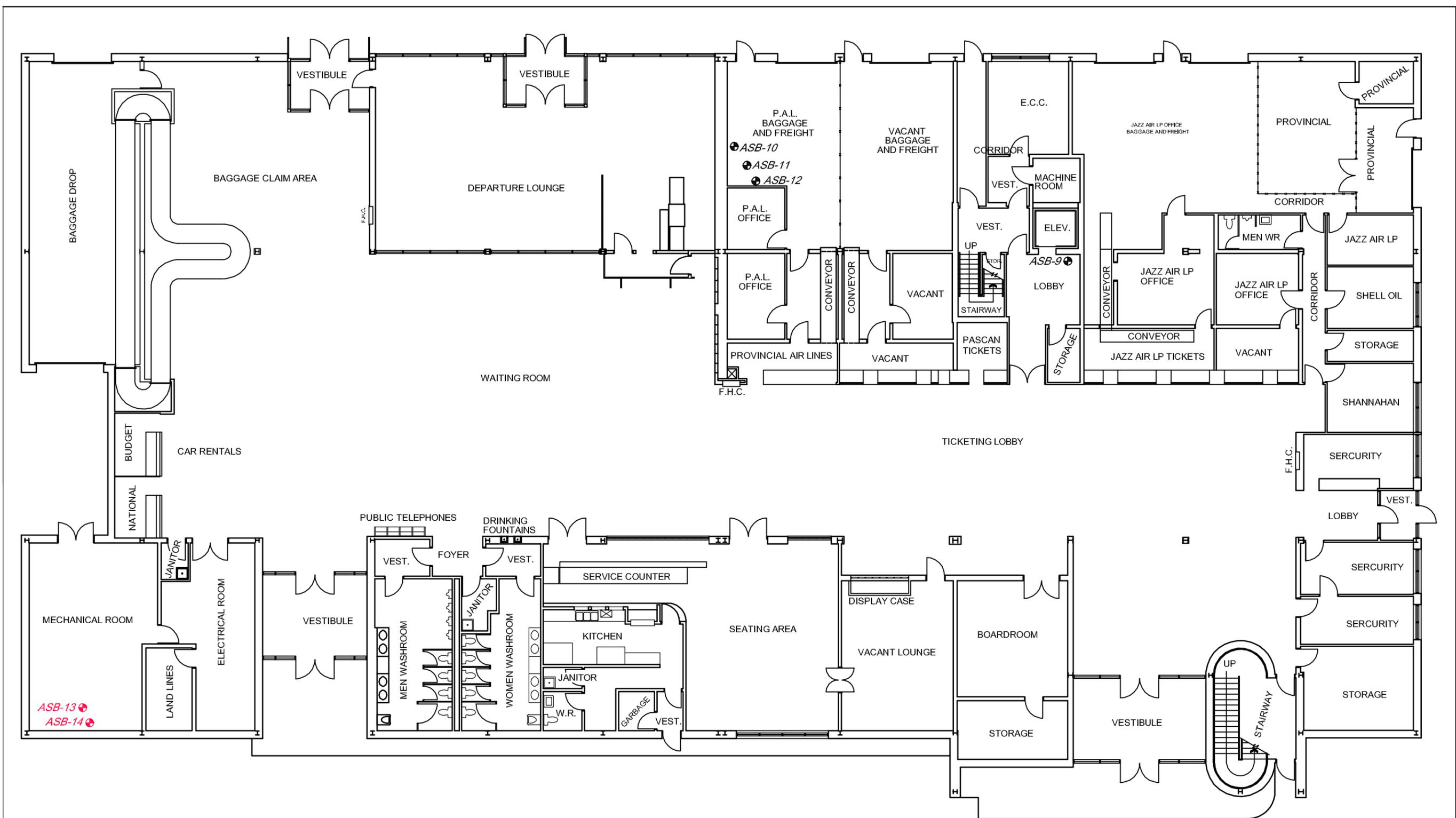


figure 1

SITE LOCATION MAP  
 HAZARDOUS BUILDING MATERIALS ASSESSMENT  
 TRANSPORT CANADA  
 Wabush Airport, Wabush, NL

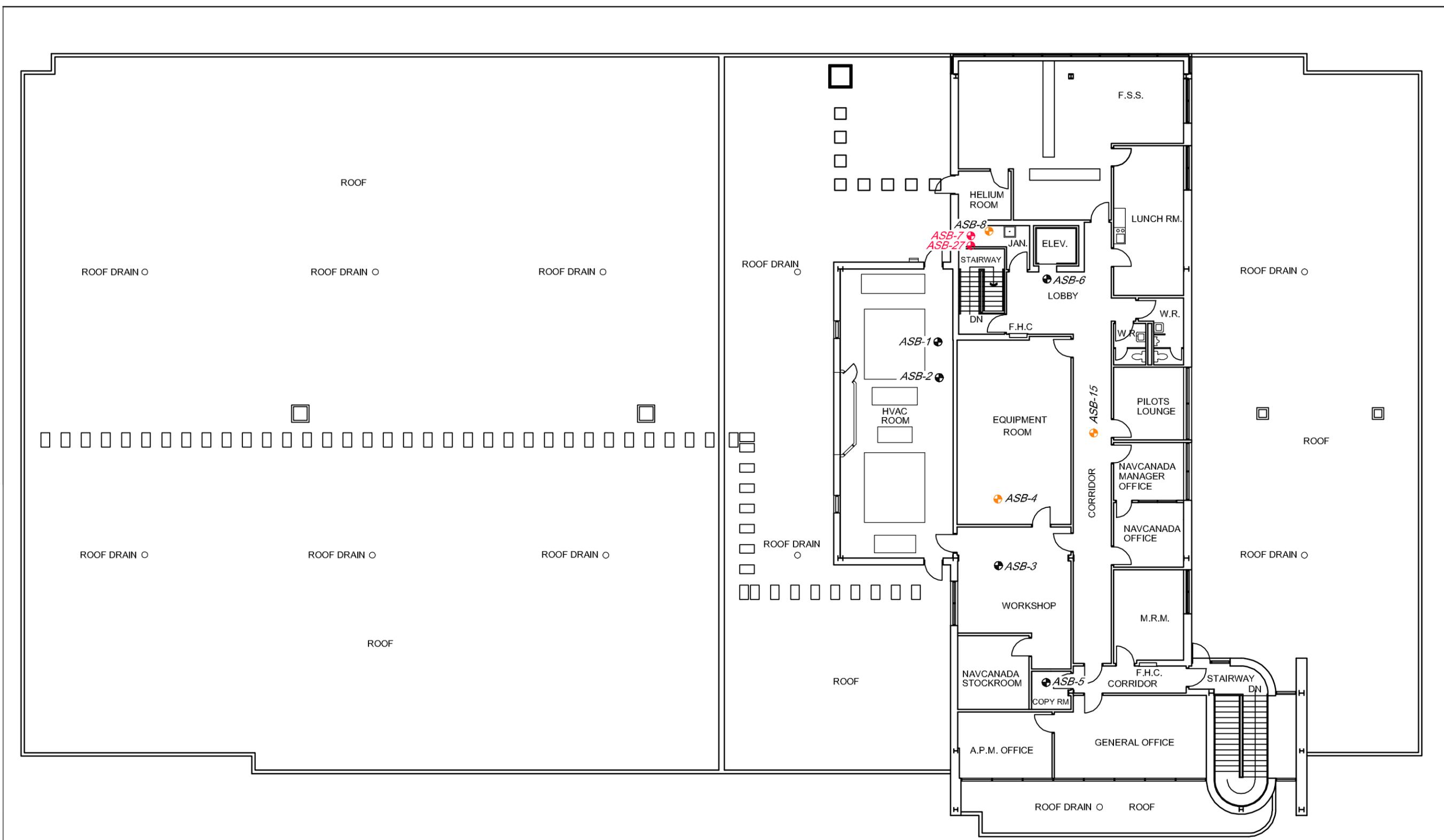




**LEGEND:**  
 ASB ● ASBESTOS SAMPLE LOCATION (CRA 2011)  
 ASB ◐ ASBESTOS SAMPLE LOCATION - NOT SUBMITTED (CRA 2011)  
 ASB ◑ CONFIRMED ASBESTOS SAMPLE LOCATION (CRA 2011)

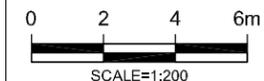
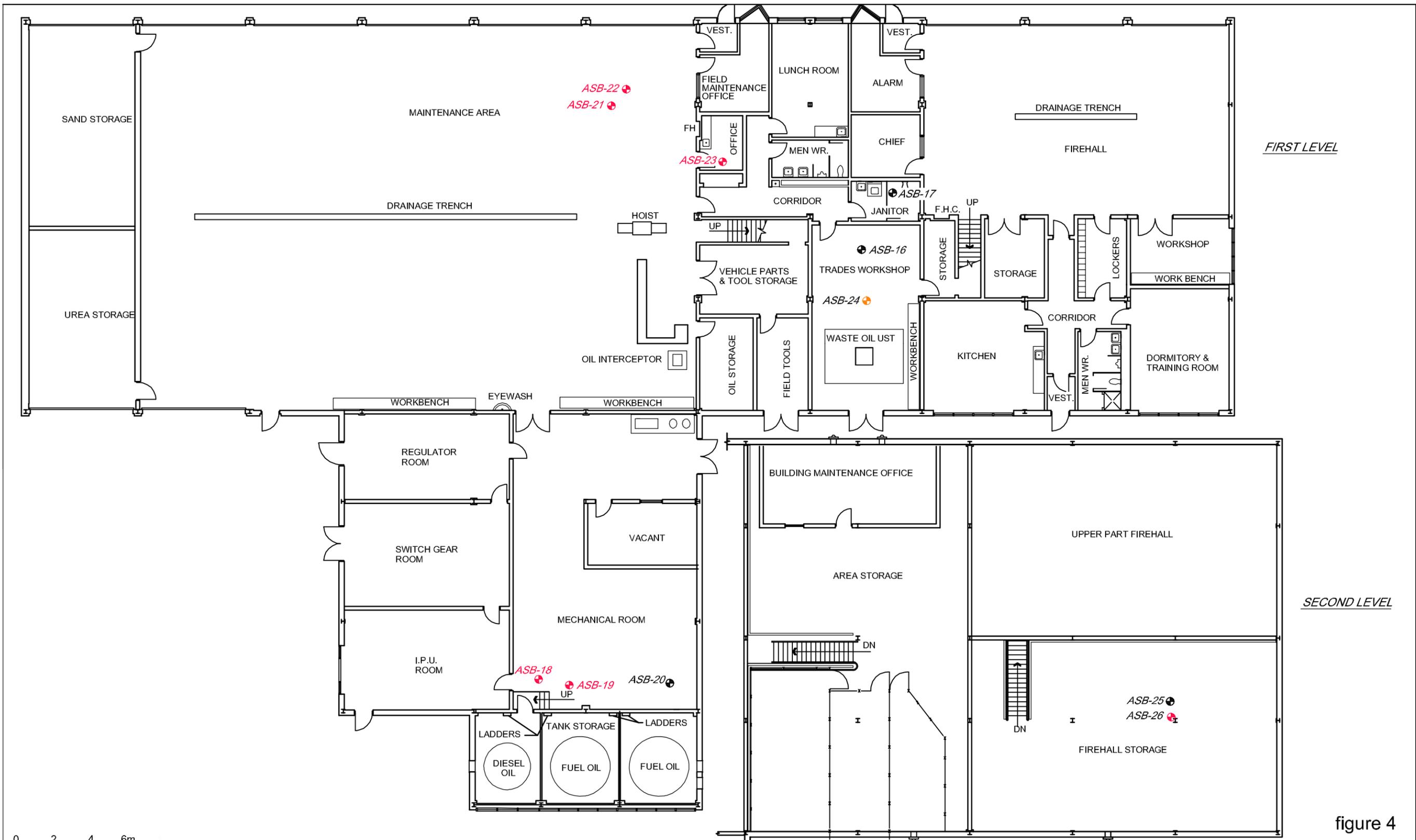


figure 2  
 SITE PLAN - AIR TERMINAL BUILDING FLOOR PLANS (FIRST LEVEL)  
 HAZARDOUS BUILDING MATERIALS ASSESSMENT  
 TRANSPORT CANADA  
 Wabush Airport, Wabush, NL



**LEGEND:**  
 ASB + ASBESTOS SAMPLE LOCATION (CRA 2011)  
 ASB + ASBESTOS SAMPLE LOCATION - NOT SUBMITTED (CRA 2011)  
 ASB + CONFIRMED ASBESTOS SAMPLE LOCATION (CRA 2011)

figure 3  
 SITE PLAN - AIR TERMINAL BUILDING FLOOR PLANS (SECOND LEVEL)  
 HAZARDOUS BUILDING MATERIALS ASSESSMENT  
 TRANSPORT CANADA  
 Wabush Airport, Wabush, NL



- LEGEND:**
- ASB (orange circle with cross) ASBESTOS SAMPLE LOCATION (CRA 2011)
  - ASB (black circle with cross) ASBESTOS SAMPLE LOCATION - NOT SUBMITTED (CRA 2011)
  - ASB (red circle with cross) CONFIRMED ASBESTOS SAMPLE LOCATION (CRA 2011)

figure 4  
**COMBINED SERVICE BUILDING - FIRST AND SECOND LEVELS**  
**HAZARDOUS BUILDING MATERIALS ASSESSMENT**  
**TRANSPORT CANADA**  
*Wabush Airport, Wabush, NL*

TABLE 1

**SUMMARY OF ASBESTOS SAMPLES  
HAZARDOUS BUILDING MATERIALS ASSESSMENT  
WABUSH AIRPORT, WABUSH, NL**

SAMPLE ID	SAMPLE DATE	SAMPLE LOCATION	MATERIAL SAMPLED	ASBESTOS CONTENT (% and Type)	QUANTITY	FRIABLE	CONDITION
<b>AIR TERMINAL BUILDING</b>							
ASB-1	Dec 16, 2011	HVAC Room	Pipe Elbow Insulation	NS	50 Fittings	Y	Good
ASB-2	Dec 16, 2011	HVAC Room	Pipe Wrap and Insulation	NS	?	Y	Good
ASB-3	Dec 16, 2011	Workshop	Drywall Plaster	NS	50 m <sup>2</sup>	Y	Good
ASB-4	Dec 16, 2011	Equipment Room	Ceiling Tile (Brown/Red)	None Detected	-	-	Good
ASB-5	Dec 16, 2011	Photocopy Room	Drywall Plaster	NS	15 m <sup>2</sup>	Y	Good
ASB-6	Dec 16, 2011	2nd Level - Corridor	Drywall Plaster	NS	90 m <sup>2</sup>	Y	Good
ASB-7	Dec 16, 2011	Janitor's Closet	Drywall Plaster	<b>5% Chrysotile</b>	30 m <sup>2</sup>	Y	Good
ASB-27*	Dec 16, 2011	Janitor's Closet	Drywall Plaster	<b>5% Chrysotile</b>	-	Y	Good
ASB-8	Dec 16, 2011	Janitor's Closet	Floor Tile (Green/Beige)	None Detected	-	-	Good
ASB-9	Dec 16, 2011	1st Floor - Elevator Lobby	Drywall Plaster	NS	35 m <sup>2</sup>	Y	Good
ASB-10	Dec 16, 2011	Pascan Freight	Drywall Plaster	NS	15 m <sup>2</sup>	Y	Good
ASB-11	Dec 16, 2011	Pascan Freight	Pipe Insulation and Wrap	NS	40 Metres	Y	Good
ASB-12	Dec 16, 2011	Pascan Freight	Pipe Elbow Insulation	NS	30 Fittings	Y	Good
ASB-13	Dec 16, 2011	Mechanical Room	Cast Iron Water Elbows Insulation	<b>40% Chrysotile</b>	60 Fittings	Y	Good
ASB-14	Dec 16, 2011	Mechanical Room	Domestic Water Pipe Elbow Insulation	<b>65% Chrysotile</b>		Y	Good
ASB-15	Dec 16, 2011	2nd Level - Various Areas	Floor Tile (Beige)	0.6% Chrysotile	-	-	Good
<b>COMBINED SERVICES BUILDING</b>							
ASB-16	Dec 16, 2011	1st Level - Mechanics Shop	Drywall Plaster	NS	15 m <sup>2</sup>	Y	Good
ASB-17	Dec 16, 2011	1st Level - Janitor's Closet	Pipe Insulation	NS	10 Metres	Y	Good
ASB-18	Dec 16, 2011	1st Level - Mechanical Room	Cast Iron Water Elbows Insulation	<b>60% Chrysotile</b>	60 Fittings	Y	Good
ASB-19	Dec 16, 2011	1st Level - Mechanical Room	Cast Iron Water Insulation	<b>50% Chrysotile</b>	20 Metres	Y	Good
ASB-20	Dec 16, 2011	1st Level - Mechanical Room	Incoming Water Insulation	NS	20 Metres	Y	Good
ASB-21	Dec 16, 2011	1st Level - Warehouse/Maintenance	Sprinkler Line Elbow Insulation	<b>60% Chrysotile</b>	75 Metres	Y	Good
ASB-22	Dec 16, 2011	1st Level - Warehouse/Maintenance	Sprinkler Line Insulation	<b>40% Chrysotile</b>	10 Fittings	Y	Good
ASB-23	Dec 16, 2011	1st Level - Warehouse Office	Floor Tile (Tan)	<b>1.9% Chrysotile</b>	50 m <sup>2</sup>	N	Good
ASB-24	Dec 16, 2011	1st Level - Trades Workshop/Storage	Wrap on Furnace	None Detected	-	-	Good
ASB-25	Dec 16, 2011	2nd Level - Firehall	Roof Drain Insulation	NS	150 Metres	Y	Good
ASB-26	Dec 16, 2011	2nd Level - Firehall	Roof Drain Elbow Insulation	<b>60% Chrysotile</b>	25 Fittings	Y	Good

**NOTES:**

NS = Sample collected, but not submitted for analysis

None Detected - Asbestos was not detected in the sample

**Bold**-Indicates sample contains asbestos at a concentration of 1% or greater.

Newfoundland and Labrador Occupational Health and Safety Act, Asbestos Regulations indicate that building materials with an asbestos content of 1% or greater shall be removed by a certified abatement contractor and disposed in an approved facility.

\*ASB-27 = Field Duplicate of ASB-7

APPENDIX A

SITE PHOTOGRAPHS



PHOTO 1: EXTERIOR SHOT OF ATB.



PHOTO 2: MAIN WAITING AREA OF ATB.

figure P1

PHOTOLOG  
HAZARDOUS BUILDING MATERIALS ASSESSMENT  
TRANSPORT CANADA  
*Wabush Airport, Wabush, NL*



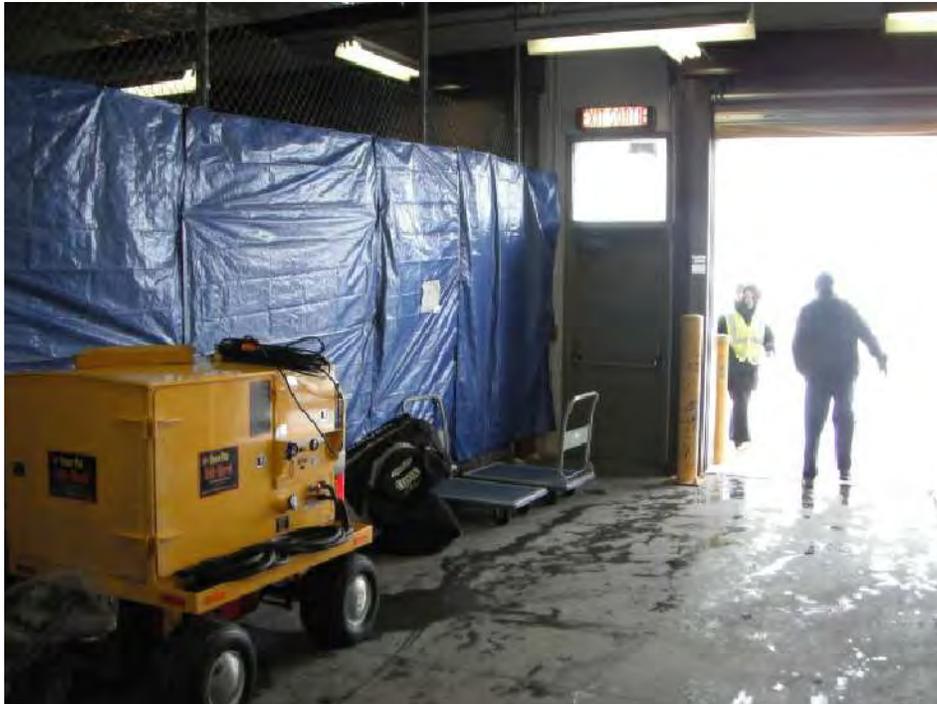


PHOTO 3: TYPICAL AIRLINE FREIGHT AREA.



PHOTO 4: BAGGAGE STORAGE.

figure P2

PHOTOLOG  
HAZARDOUS BUILDING MATERIALS ASSESSMENT  
TRANSPORT CANADA  
*Wabush Airport, Wabush, NL*





PHOTO 5: BOILER/MECHANICAL ROOM IN ATB.



PHOTO 6: HVAC ROOM ON 2ND FLOOR OF ATB.

figure P3

PHOTOLOG  
HAZARDOUS BUILDING MATERIALS ASSESSMENT  
TRANSPORT CANADA  
*Wabush Airport, Wabush, NL*





PHOTO 7: TYPICAL HALLWAY 2ND FLOOR OF ATB.



PHOTO 8: EXTERIOR SHOT OF CSB.

figure P4

PHOTOLOG  
HAZARDOUS BUILDING MATERIALS ASSESSMENT  
TRANSPORT CANADA  
*Wabush Airport, Wabush, NL*





PHOTO 9: CSB WAREHOUSE AND EQUIPMENT STORAGE.



PHOTO 10: BOILER/MECHANICAL ROOM IN CSB.

figure P5

PHOTOLOG  
HAZARDOUS BUILDING MATERIALS ASSESSMENT  
TRANSPORT CANADA  
*Wabush Airport, Wabush, NL*





PHOTO 11: DIESEL STORAGE ROOM OFF BOILER/MECHANICAL ROOM IN CSB.



PHOTO 12: TYPICAL FLUID STORAGE IN CSB.

figure P6

PHOTOLOG  
HAZARDOUS BUILDING MATERIALS ASSESSMENT  
TRANSPORT CANADA  
*Wabush Airport, Wabush, NL*





PHOTO 13: TYPICAL TOOL STORAGE IN CSB.



PHOTO 14: TYPICAL OFFICE SPACE IN CSB/FIRE HALL.

figure P7

PHOTOLOG  
HAZARDOUS BUILDING MATERIALS ASSESSMENT  
TRANSPORT CANADA  
*Wabush Airport, Wabush, NL*



APPENDIX B

LABORATORY CERTIFICATES OF ANALYSIS





**EMSL Canada Inc.**

10 Falconer Drive, Unit #3, Mississauga, ON L5N 3L8

Phone: 289-997-4602 Fax: (289) 997-4607 Email: torontolab@emsl.com

Attn: **Joyce MacDonald**  
**Conestoga-Rovers & Assoc. (CRA)**  
**45 Akerley Boulevard**  
**Dartmouth, NS B3B 1J7**

Customer ID: 55CRAS62  
Customer PO: 076653  
Received: 12/21/11 11:38 AM  
EMSL Canada Or 551104663

Fax: (519) 725-1394 Phone: (902) 468-1248  
Project: 076653

EMSL Canada Pr  
Analysis Date: 12/28/2011

**Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy**

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
4 551104663-0001	WA-ACM-CEILING TILE	Brown/Red Fibrous Heterogeneous	30% Cellulose 45% Min. Wool	25% Non-fibrous (other)	None Detected
7 551104663-0002	WA-ACM-PLASTER	Gray/Various Non-Fibrous Heterogeneous		95% Non-fibrous (other)	5% Chrysotile
19 551104663-0005	WA-ACM-PIPE INSULATION	Gray/White/Various Fibrous Heterogeneous		50% Non-fibrous (other)	50% Chrysotile
18 551104663-0006	WA-ACM-PIPE ELBOW	White Fibrous Heterogeneous		40% Non-fibrous (other)	60% Chrysotile
21 551104663-0007	WA-ACM-PIPE ELBOW	Gray Fibrous Heterogeneous		40% Non-fibrous (other)	60% Chrysotile
22 551104663-0008	WA-ACM-PIPE INSULATION	Gray/Various Fibrous Heterogeneous		60% Non-fibrous (other)	40% Chrysotile
24 551104663-0010	WA-ACM-WRAP	Tan/Various/Silver Fibrous Heterogeneous	15% Cellulose 25% Min. Wool	60% Non-fibrous (other)	None Detected

Initial report from 12/28/2011 12:43:49

Analyst(s)  

---

Lisa Podzyhun (19)

---

Kevin Pang  
or other approved signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Samples received in good condition unless otherwise noted. Estimated accuracy, precision and uncertainty data available upon request.  
Samples analyzed by EMSL Canada Inc. Mississauga, ON NVLAP Lab Code 200877-0



**EMSL Canada Inc.**

10 Falconer Drive, Unit #3, Mississauga, ON L5N 3L8

Phone: 289-997-4602 Fax: (289) 997-4607 Email: torontolab@emsl.com

Attn: **Joyce MacDonald**  
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**Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 and/or EPA 600/M4-82-020 Method(s) using Polarized Light Microscopy**

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
26 551104663-0011	WA-ACM-PIPE ELBOW	Gray/Variou s Fibrous Heterogeneous		40% Non-fibrous (other)	60% Chrysotile
27 551104663-0012	WA-ACM- PLASTER	Gray/Variou s Non-Fibrous Heterogeneous		95% Non-fibrous (other)	5% Chrysotile
14 551104663-0013	WA-ACM-PIPE ELBOW	Gray/Variou s Fibrous Heterogeneous		35% Non-fibrous (other)	65% Chrysotile
13 551104663-0014	WA-ACM-PIPE ELBOW	Gray/Variou s Fibrous Heterogeneous		60% Non-fibrous (other)	40% Chrysotile
16 551104663-0016	STA-ACM- PLASTER	Gray/White/Variou s Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
14 551104663-0017	STA-ACM- PLASTER	White/Variou s Non-Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected
12 551104663-0019	STA-ACM- INSULATION	Gray Fibrous Heterogeneous	60% Cellulose	40% Non-fibrous (other)	None Detected

Initial report from 12/28/2011 12:43:49

Analyst(s)

Lisa Podzyhun (19)

Kevin Pang  
or other approved signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Samples received in good condition unless otherwise noted. Estimated accuracy, precision and uncertainty data available upon request.  
Samples analyzed by EMSL Canada Inc. Mississauga, ON NVLAP Lab Code 200877-0

# **ASBESTOS MANAGEMENT PLAN**

for

## **WABUSH AIRPORT**



**July 2014**

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ANNEX A – Inventory of known Asbestos Containing Materials at Wabush Airport

ANNEX B – Removal / Maintenance Activity Notification Form

ANNEX C - Example of an Asbestos Containing Materials Label

ANNEX D – Asbestos Containing Materials Removal Procedures

## 1.0 INTRODUCTION

Asbestos is the generic name for a variety of fibrous minerals found naturally in rock formations around the world. Because asbestos fibres are strong, durable and non-combustible, they were widely used by industry, mainly in construction and friction materials. During renovations and repairs to older buildings, construction workers, tradespeople and other building maintenance workers may be exposed to very high concentrations of asbestos fibres. To ensure the health and safety of building occupants, tradespeople involved in the removal of asbestos must be trained in the proper handling and abatement of asbestos-containing materials.

Asbestos Containing Materials (ACM) are classed as either as friable or non-friable. Friable ACM are materials that when dry, can be crumbled, pulverized or powdered with hand pressure and are a potential health concern should the asbestos fibres become exposed and airborne. Friable ACM can remain in a building as long as it is appropriately managed. Examples of friable ACM are drywall plaster and pipe insulation. Non-friable ACM are where the asbestos fibres are bound or locked into the product matrix, so the fibres are not readily released. Non-friable ACM are materials that when dry, cannot easily be crumbled, pulverized or reduce to a powder by hand or moderate pressure. Non-friable asbestos may be considered friable if disturbed. Non-friable ACM would only present a risk for fibre release when it is subject to significant abrasion through activities such as sanding or cutting with electrical power tools. Examples of non-friable ACMs are vinyl asbestos floor tiles, acoustic ceiling tiles, and asbestos cement products.

Asbestos is a hazardous material when airborne and if handled without precaution may cause serious chronic health issues. Adverse health effects can be caused by long term exposure to airborne asbestos fibres such as: asbestosis of the lung, lung cancer, and mesothelioma, a rare cancer of the pleural lining (chest wall).

In 2011, an asbestos survey was completed at the Wabush Airport at the Air Terminal Building (ATB) and Combined Services Building (CSB) by Conestoga Rovers & Associates on behalf of Transport Canada. The survey identified the presence of ACM at both buildings. An additional room by room survey was completed by ALL-TECH Environmental Services Ltd. in February 2014. This survey identified all asbestos containing materials in each room of both buildings as well as their specific quantities and locations. The intent is to manage the ACM until such time as removal is required.

This management plan was developed to ensure that ACM is maintained, controlled and handled, thus retaining a safe environment for staff, clients, visitors and leasees who occupy the facilities. The purpose of this management plan is to ensure that neither individuals nor the environment are adversely affected by the presence of ACM within the facilities.

## 2.0 REGULATORY REQUIREMENTS

The following outlines regulatory requirements concerning asbestos containing materials. In the National Joint Council's Occupational Health and Safety Directive Part XI – Hazardous Substances <http://www.njc-cnm.gc.ca/directive/index.php?sid=261&lang=eng> it states that: as a minimum requirement, departments and agencies will comply with Public Works and Government Services Canada Policy DP 057 and attached code of practice on asbestos management: [http://www.njc-cnm.gc.ca/aux\\_bin.php?auxid=575](http://www.njc-cnm.gc.ca/aux_bin.php?auxid=575)

In Newfoundland and Labrador, ACM is any material containing greater than 1% of asbestos by dry weight. Disposal and removal of Asbestos and ACM is regulated under the following;

- Province of Newfoundland and Labrador's *Occupational Health and Safety Act - Asbestos Abatement Regulations (NLR 111/98)*  
<http://assembly.nl.ca/legislation/sr/regulations/rc980111.htm>;
- Asbestos Waste Disposal Directive (PPD98-03)  
[http://www.env.gov.nl.ca/env/env\\_protection/waste/asbestos.html](http://www.env.gov.nl.ca/env/env_protection/waste/asbestos.html), and;
- Canada Labour Code Part II <http://laws-lois.justice.gc.ca/eng/acts/L-2/>

## 3.0 ACM INVENTORY

An ACM inventory of known materials greater than 1% asbestos has been created for the Wabush Airport (ATB & CSB only have been examined) where ACM has been positively identified through investigation, sampling and laboratory analysis. This inventory is outlined in Annex A. This inventory will be maintained and updated as necessary and is further detailed in Section 4.4.



*Mechanical Room in Air Terminal Building – the Pipe Insulation contains Asbestos*

## **4.0 MANAGEMENT STRATEGY**

### *4.1 Regional Asbestos Management Coordinator*

The Manager of Environmental Affairs and Aboriginal Consultation Unit, Programs Atlantic Region, will designate an employee to be the *Regional Asbestos Management Coordinator*. This person will be responsible for the creation of the Wabush Airport Asbestos Management Plan and ensure that it is updated on a regular basis and will serve as the primary contact with regulatory authorities on asbestos related issues and provide information and technical support to staff as required.

The Regional Asbestos Coordinator will also be responsible for an annual review of this management plan which will include the following:

- Effectiveness of the Management Plan
- Updating ACM inventories, when required
- Compliance with legislation and policies
- Training requirements
- Maintenance of all records and their availability

#### 4.2 *Wabush Airport Asbestos Coordinator*

The Wabush Airport Manager will designate an employee to be the *Wabush Airport Asbestos Coordinator*. This person will be responsible for the surveying/inspection of ACM and for maintaining the inventory of the ACM. As well, along with the Wabush Airport Manager, they will also be responsible to ensure that the appropriate information on ACM at the Airport is provided to staff, occupants, contractors and other parties as necessary.

#### 4.3 *Inspections*

The Wabush Airport Asbestos Coordinator will conduct an inspection at least once a year of the areas with confirmed ACM (see Annex A) and more frequently if the potential for damage to the ACM is high. Airport Maintenance staff shall be directed to report immediately to the Wabush Airport Asbestos Coordinator upon becoming aware of any damage to ACM. Any material that is suspected of containing asbestos will be handled as asbestos until it is confirmed through laboratory analysis.

#### 4.4 *ACM Inventory*

An inventory by building of all known or suspected asbestos-containing materials and their locations will be maintained by the Wabush Airport Asbestos Coordinator and updated on an annual basis. The inventory will include the following:

- Location: where in the building is the ACM is located, and is indicated by description such as “ceiling tile in the janitor’s closet” and on a floor plan.
- A floor plan indicating the location of all confirmed ACM.
- Condition of the ACM material.
- Water Damage – if there is any water (or other liquids) damage; as this can disturb friable ACM that are otherwise in good condition.
- Exposed surface area: An estimate of the surface area of friable material.
- Accessibility of the ACM – can it be easily reached by normal activities and subject to contact and damage.
- Activity and Movement – the level of activity in the area with ACM. Higher level of activity may increase the chance of contact and the potential of future exposure.
- Friability: the more friable the material, the greater potential for asbestos fibre release.
- Asbestos Content – a total percentage of all types of asbestos in a sample of the material involved.
- Need for general repairs or maintenance of ACM or abatement/removals.
- Identification and labeling of ACM material or areas has been completed.

#### 4.5 *ACM Identification*

The Wabush Airport Asbestos Coordinator will ensure that ACM is identified by a label. These labels should be highly visible and permanent. See Annex B for example.

ACM materials in public areas will not be directly labeled unless there is substantial potential for its damage and the release of friable asbestos. Service areas where friable ACM is present will be labeled at or inside their entrance and warning labels will be placed on the ACM at appropriate intervals.



*Hallway on second floor of ATB – drywall plaster may contain asbestos.*

#### 4.6 *Repairs and Maintenance*

The Wabush Airport Asbestos Coordinator will ensure that regular inspection of the condition of all accessible ACM is completed. Maintenance or repairs will be undertaken as soon as the deterioration or damage is identified.

Operational staff, that is appropriately trained and provided with personal protective equipment (PPE), may perform minor repairs and maintenance involving small areas of ACM. The PPE required will depend on the type of job performed, for instance a glove bag (bags that have built in gloves) may be used when working with asbestos containing pipe insulation. At a minimum, staff must wear a half-face respirator with P100 (HEPA) cartridges and disposal Tyvek coveralls along with other protective equipment such as eye protection, hard hats, hearing protection and steel toe footwear as site conditions or regulations require.

Any material that is suspected of containing asbestos must be handled as asbestos until its composition is confirmed through laboratory analysis. If asbestos is likely to be affected by maintenance, repairs, or modification, applicable procedures must be implemented to protect the safety of all persons occupying or working in the affected area to prevent contamination (See ANNEX C for ACM Removal Procedures).

#### 4.7 *Construction Activities and Abatement*

During any building renovations, alterations, demolitions or other construction activities, the Contractor completing the Work must be made aware that ACM is present and be given a copy of the most recent Asbestos Management Plan (AMP) (this document). The Regional Manager of Technical Services will ensure for any Capital Construction Contracts that the Contractor is aware that ACM is present and any Contracting documents including project specifications make reference to ACM being present. For all other smaller contracts (O&M) administered by the Wabush Airport, the Wabush Airport Manager will ensure that any Contractor working in the area where ACM is confirmed to be present are aware that ACM is present.

ACM in service must be replaced with other more appropriate materials (non-ACM), on an opportunistic basis, such as when those materials become redundant due to renovations or alterations of affected systems. ACM must be removed as part of and prior to major renovations or demolitions, when the ACM will be disturbed.

Other than minor repairs or maintenance, a contracted asbestos abatement company must undertake all asbestos work. Any asbestos removal/abatement will only be done by a holder of a valid asbestos abatement contractor's certificate as outlined in the Province of Newfoundland and Labrador's *Occupational Health and Safety Act - Asbestos Abatement Regulations* (NLR 111/98) <http://assembly.nl.ca/legislation/sr/regulations/rc980111.htm>. Air sampling for asbestos must be undertaken during any abatement procedure. The Removal / Maintenance Activity Form outlined in ANNEX B should be completed prior to, and after completion, of any work performed in areas with ACM.

Any planned removal shall be completed utilizing the following general procedures. More in depth procedures are outlined in ANNEX D – Asbestos Containing Materials Removal Procedures.

Various types of asbestos containing materials have been identified in the Air Terminal Building and Combined Services Building and bulk samples have been obtained at a number of locations. It is recommended that in areas scheduled for repairs or renovations that the reader consults the attached inventory of asbestos containing materials (ANNEX A) to determine if the material is identified as containing asbestos. If a material is not included in the report, but there is reason to assume that it may contain asbestos, this material must be tested for confirmation or treated as asbestos containing.

**UNDER NO CIRCUMSTANCES SHALL REMOVAL BE ATTEMPTED BY UNQUALIFIED PERSONNEL OR BY PERSONNEL WHO WILL NOT FOLLOW THE SPECIFICATIONS.**

*4.7.1 Planned Removal of Pipe Fitting Insulation*

Asbestos insulation on pipe fittings is best removed using the glove bag method. As with full enclosure removals, only suitably qualified personnel should conduct this sort of work. Removal of this insulation will not be necessary unless:

1. it deteriorates appreciably.
2. renovations are planned that will impact upon the asbestos.
3. the asbestos must be removed for some unspecified reason.

A specification for removal of asbestos pipe insulation using the glove bag method is provided in **ANNEX D**.

*4.7.2 Planned Removal of Straight Run Pipe Insulation*

Asbestos insulation on straight run pipe insulation is best removed using Type III Asbestos removal procedures. Since these specifications involve full enclosure removals, only suitably qualified personnel should conduct this sort of work. Removal of this insulation will not be necessary unless:

1. it deteriorates appreciably.
2. renovations are planned that will impact upon the asbestos.
3. the asbestos must be removed for some unspecified reason.

A specification for removal of asbestos pipe insulation using Type III methods are provided in **ANNEX D**.

*4.7.3 Planned Removal of Drywall Material*

Depending on the scope of the project, asbestos containing drywall is best removed using Type II or Type III asbestos abatement procedures. Since these specifications involve full enclosure removals, only suitably qualified personnel should conduct this sort of work. Removal of plaster material will not be necessary unless:

1. it deteriorates appreciably.
2. renovations to the space are planned that will impact upon the asbestos.
3. the asbestos must be removed for some unspecified reason.

A specification for removal of asbestos drywall material using the Type II and Type III methods are provided in **ANNEX D**.

#### *4.7.4 Planned Removal of Floor Tiles*

Depending on the scope of the project, asbestos containing floor tile is best removed using Type I or Type II asbestos abatement procedures. Since these specifications may involve full enclosure removals, only suitably qualified personnel should conduct this sort of work. Removal of floor tiles will not be necessary unless:

1. it deteriorates appreciably.
2. renovations to the space are planned that will impact upon the asbestos.
3. the asbestos must be removed for some unspecified reason.

A specification for removal of asbestos Floor Tile using the Type I and Type II methods are provided in **ANNEX D**.

#### *4.7.5 Planned Removal of Window Caulking/Putty*

Asbestos containing window caulking/putty is best removed using Type I asbestos abatement procedures. These procedures do not involve the setup of an enclosure and can be performed by maintenance staff with appropriate training and equipment. Removal of window caulking/putty will not be necessary unless:

1. it deteriorates appreciably.
2. renovations to the space are planned that will impact upon the asbestos.
3. the asbestos must be removed for some unspecified reason.

A specification for removal of asbestos window caulking/putty using the Type I methods are provided in **ANNEX D**.

#### *4.7.6 Planning and Coordination*

Prior to the work being completed, the Contractor's Plan must be submitted to the Regional Asbestos Management Coordinator and the Wabush Airport Asbestos Coordinator for review. Record of the work undertaken and the sampling results must be filed with the Regional Asbestos Management Coordinator and Wabush Airport Asbestos Coordinator. The report shall state the specifics of the work that was completed, methods used, disposal information and laboratory results.

A plan will be developed by the Wabush Airport Manager and Wabush Airport Asbestos Coordinator in order to communicate the removal of ACM to staff and tenants at the Wabush Airport, when required.



*Air Sampling in Air Terminal Building in the Public Waiting Area*

#### 4.8 *Asbestos Waste*

Asbestos waste generated must be handled as hazardous waste and comply with the Newfoundland and Labrador Department of Environment and Conservation's Asbestos Waste Disposal Directive (PPD98-03)

[http://www.env.gov.nl.ca/env/env\\_protection/waste/asbestos.html](http://www.env.gov.nl.ca/env/env_protection/waste/asbestos.html)

Requirements for handling and disposal of asbestos waste from any contracted asbestos abatement or construction projects are to be defined in the contract by the Regional Manager of Technical Services.

#### 4.9 *Communications*

The Wabush Airport Manager must be aware of this Asbestos Management Plan and be provided a copy of this Plan. The Wabush Airport Manager must acknowledge the receipt of and understanding of the contents of this Plan.

All persons normally occupying the facility or occasionally working at the facility in areas where ACM is present and may be disturbed must have the ACM (known or suspected) in their work areas identified to them by the Wabush Airport Asbestos Coordinator.

Prior to workers (maintenance, repair, construction) undertaking work in spaces containing ACM, they must be instructed on the presence of ACM and in the avoidance

of damage to the ACM and procedures to follow if ACM is disturbed or likely to be disturbed. This is to be outlined in the Contract for any work completed on site.

The Wabush Airport Manager is to notify all occupants in the building of any asbestos abatement program, including the location and schedule.

#### *4.10 Emergency Response*

The Wabush Airport Manager shall notify personnel at the facility and other organizations involved in emergency response when there may be a threat to asbestos exposure.

#### *4.11 Training*

All personnel (trades staff and others) that may be working in areas where ACM is contained are required to take asbestos awareness training. Any personnel that may be working on minor repairs on ACM will be required to take an asbestos abatement training course. Employees are required to show proof that they have completed the training. The Wabush Airport Asbestos Coordinator is to coordinate this training and to maintain records of who has completed the training and to review the information once a year to determine if there are any lapses in training.



*Mechanical Room in Combined Services Building – the Pipe Insulation contains Asbestos*

## 5.0 ROLES & RESPONSIBILITIES

The roles and responsibilities for asbestos management at the Wabush Airport are listed below:

<b>Position</b>	<b>Responsibility</b>
Regional Director, Programs	<ul style="list-style-type: none"> <li>• Supports and ensures that the overarching AMP is implemented and provides financial resources to ensure activities related to the management of asbestos at the Airport can be undertaken.</li> </ul>
Wabush Airport OSH Committee	<ul style="list-style-type: none"> <li>• Brings forward any concerns from employees at the Airport to the Wabush Airport Manager to be addressed.</li> </ul>
Regional Manager, Environmental Affairs	<ul style="list-style-type: none"> <li>• Appoints the Regional Asbestos Management Coordinator.</li> </ul>
Regional Asbestos Management Coordinator	<ul style="list-style-type: none"> <li>• Serves as primary contact with regulatory authorities on asbestos related issues.</li> <li>• Monitors the AMP activities and updates the AMP as required.</li> <li>• Reviews contractor's plans for abatement of asbestos, verifies that they are certified and reviews final reports.</li> <li>• Provides information and technical support as required.</li> </ul>

Wabush Airport Manager	<ul style="list-style-type: none"> <li>• Appoints Wabush Airport Asbestos Coordinator.</li> <li>• Ensures that for any O&amp;M contracts administered by the Wabush Airport, that any Contractor working where ACM is present, are made aware of its presence.</li> <li>• Ensures that any minor repairs on ACM carried out by employees that they have been trained and have the adequate PPE.</li> <li>• Notifies all occupants in the building of any asbestos abatement program.</li> <li>• If required, notifies emergency response personnel on the presence of ACM.</li> </ul>
Wabush Airport Asbestos Coordinator	<ul style="list-style-type: none"> <li>• Ensures that asbestos inventories and assessments are undertaken as required.</li> <li>• Reviews contractor's plans for abatement of asbestos, verifies that they are certified and reviews final reports.</li> <li>• Ensures that workers/occupants are informed of ACM and activities as appropriate.</li> <li>• Ensures records are prepared and maintained.</li> <li>• Coordinates Asbestos Awareness Training as required.</li> </ul>
Regional Manager, Technical Services	<ul style="list-style-type: none"> <li>• Ensures that any Capital Contract work involving construction activities or abatement of asbestos, identifies that ACM is present and ensures that abatement is carried out according to legislation.</li> </ul>



*Office space in Combined Services Building – Floor Tiles contain Asbestos*

## 6.0 REFERENCES

Asbestos Air Sampling Program – March 21, 2012 – Wabush Airport, Wabush, NL. Conestoga-Rovers & Associates.

Asbestos Assessment - Air Terminal and Combined Services Buildings - Wabush Airport, Wabush, NL. ALL-TECH Environmental Services Limited. February 2014.

Canada Labour Code Part II <http://laws-lois.justice.gc.ca/eng/acts/L-2/>

Hazardous Building Materials Assessment. Wabush Airport, Wabush, NL. Conestoga-Rovers & Associates. March 2012.

National Joint Council's Occupational Health and Safety Directive Part XI – Hazardous Substances  
<http://www.njccnm.gc.ca/directive/index.php?sid=261&lang=eng>

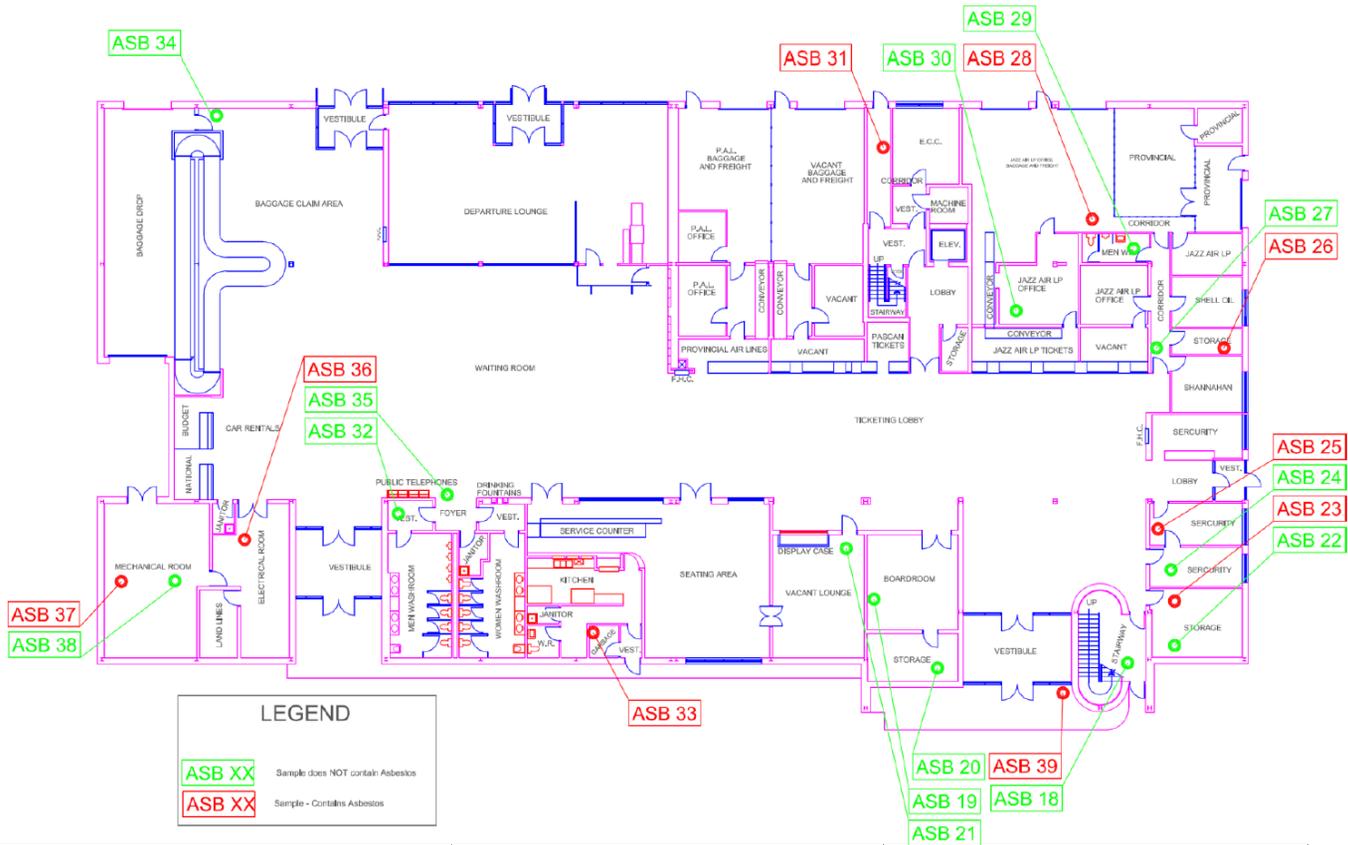
Province of Newfoundland and Labrador, Occupational Health and Safety Act - Asbestos Abatement Regulations (NLR 111/98)  
<http://assembly.nl.ca/legislation/sr/regulations/rc980111.htm>  
and Asbestos Waste Disposal Directive (PPD98-03)  
[http://www.env.gov.nl.ca/env/env\\_protection/waste/asbestos.html](http://www.env.gov.nl.ca/env/env_protection/waste/asbestos.html)

Province of Newfoundland and Labrador Guidance Document for Asbestos Abatement Projects  
[http://www.servicenl.gov.nl.ca/ohs/safety\\_info/pdf/newfoundland\\_acm\\_procedures.pdf](http://www.servicenl.gov.nl.ca/ohs/safety_info/pdf/newfoundland_acm_procedures.pdf)

Public Works and Government Services Canada Deputy Minister Directive (DP 057) Asbestos Management [http://www.njc-cnm.gc.ca/aux\\_bin.php?auxid=575](http://www.njc-cnm.gc.ca/aux_bin.php?auxid=575)

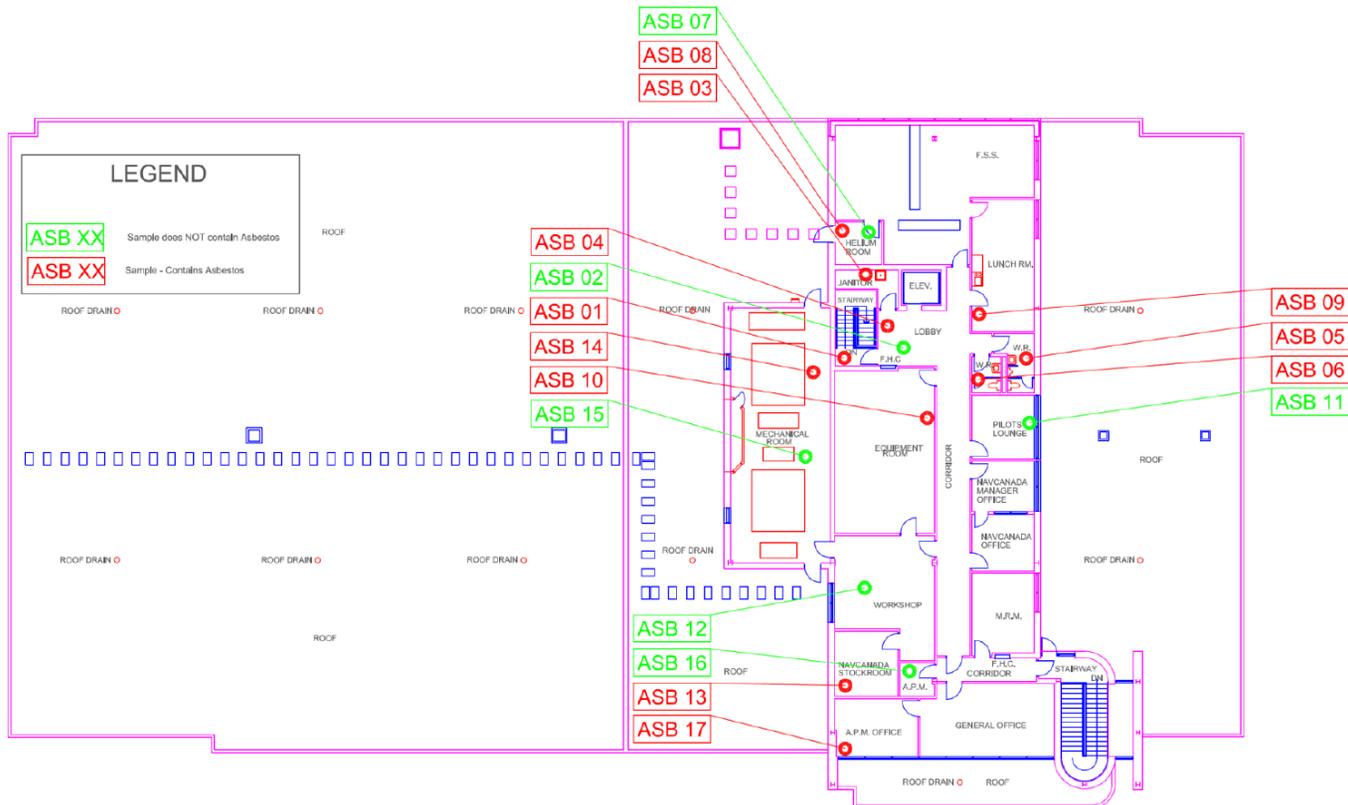
## **ANNEX A**

# **Inventory of known Asbestos Containing Materials at the Wabush Airport**

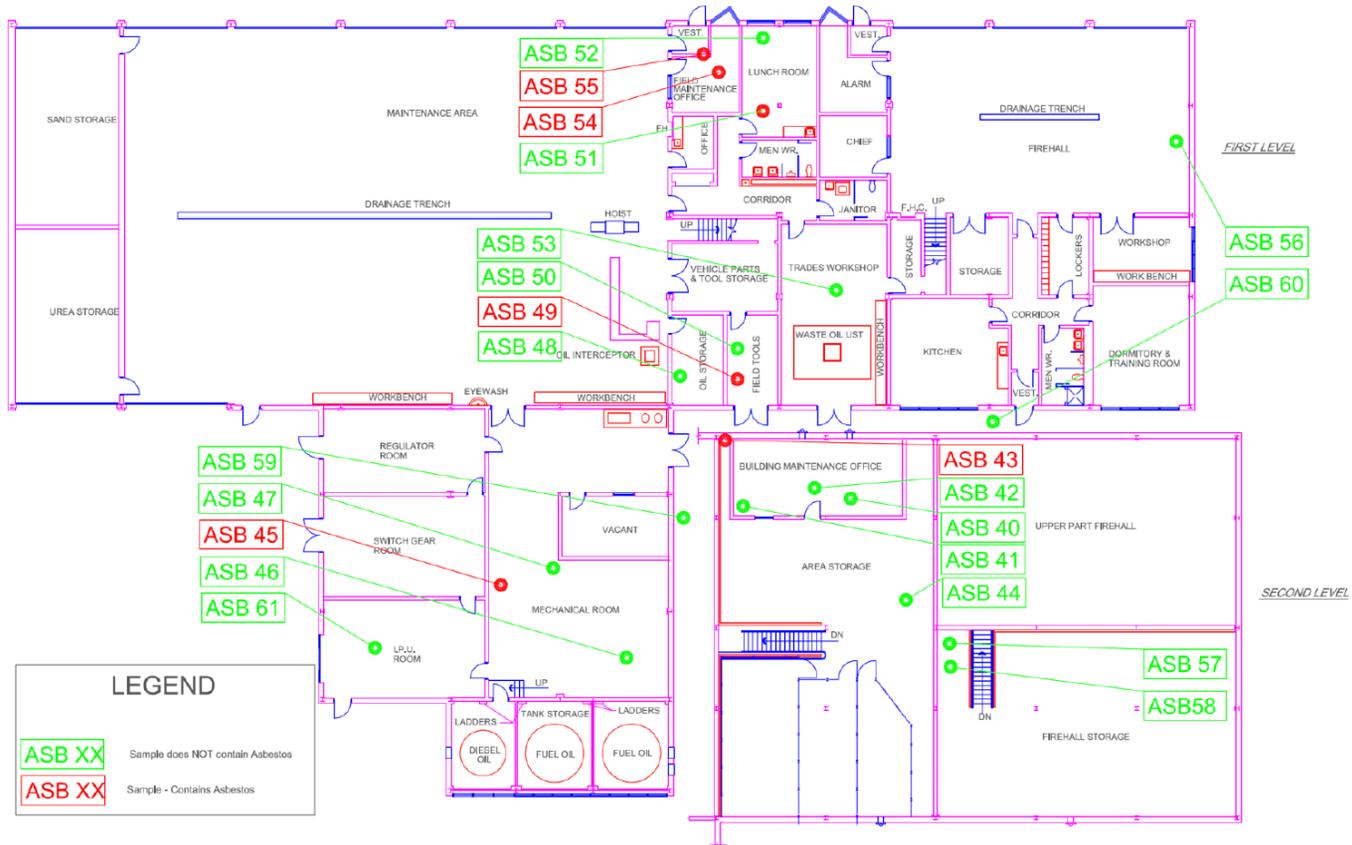


 Drawn By: O. Newhook Drawing 1 of 3	Air Terminal Building Main Level	Project Number: 19142
	Wabush Airport, Wabush, NL	Scale: NOT TO SCALE

Asbestos Management Plan for Wabush Airport, Wabush, NL



 Drawn By: O. Newhook Drawing 2 of 3	Air Terminal Building Second Level	Project Number: 19142
	Wabush Airport, Wabush, NL	Scale: NOT TO SCALE



 Drawn By: O. Newhook Drawing 3 of 3	Combined Service Building Main and Second Level's	Project Number: 19142
	Wabush Airport, Wabush, NL	Scale: NOT TO SCALE

# Assessment Report

(sorted by asset ID)

UPPER(BUILD:BuildingNumber) = '19142 (ATB)'

Registered user: All-TECH Environmental services

Design	Description	Quantity	Cond.	Sample	Asbestos type	Access.	Action
<b>Building Number :19142 (ATB)</b>		<b>Survey date:</b>		<b>Building name or address</b> Air Terminal Building			
<b>Level : Exterior of Building</b>		<b>Asbestos present : Yes</b>					
<b>Room :</b>							
Window	Caulking		good	19142-39	Chrysotile 4.00%		
<b>Comments:</b> Roofing Redone 3 years ago (not sampled)							
<b>Level : 1 - Main Floor</b>		<b>Asbestos present : No</b>					
<b>Room : Air Canada Counter</b>							
Ceiling	drywall - joint compound	176.0 ft <sup>2</sup>	good	V-30			C
Wall	drywall - joint compound		good	V-30			A
<b>Comments:</b>							
<b>Level : 1 - Main Floor</b>		<b>Asbestos present : Yes</b>					
<b>Room : Air Canada Office</b>							
Ceiling	2' x 4' ceiling tile	192.0 ft <sup>2</sup>	good	V-19			C
Floor	12" x 12" floor tile	192.0 ft <sup>2</sup>	good	V-22			A
Wall	drywall - joint compound		good	19142-30	Chrysotile 2.00%		A
<b>Comments:</b>							
<b>Level : 1 - Main Floor</b>		<b>Asbestos present : No</b>					
<b>Room : Air Inuit Hallway</b>							
Ceiling	2' x 4' ceiling tile	64.0 ft <sup>2</sup>	good	19142-21			C
<b>Comments:</b>							
<b>Level : 1 - Main Floor</b>		<b>Asbestos present : No</b>					
<b>Room : Air Inuit Lounge</b>							
Ceiling	2' x 4' ceiling tile	240.0 ft <sup>2</sup>	good	V-19			C
<b>Comments:</b>							
<b>Level : 1 - Main Floor</b>		<b>Asbestos present : Yes</b>					
<b>Room : Air Liason Counter</b>							

# Assessment Report

(sorted by asset ID)

UPPER(BUILD:BuildingNumber) = '19142 (ATB)'

Registered user: All-TECH Environmental services

Design	Description	Quantity		Cond.	Sample	Asbestos type	Access.	Action
Ceiling	drywall - joint compound	128.0	ft²	good	V-01	Chrysotile 2.00%		C
Wall	drywall - joint compound			good	V-01	Chrysotile 2.00%		A
<b>Comments:</b>								
<b>Level :</b> 1 - Main Floor				<b>Asbestos present :</b> No				
<b>Room :</b> Baggage Claim								
Wall	Panel Board	1,600.0	ft²	good	19142-34			A
<b>Comments:</b> No access into ceiling								
<b>Level :</b> 1 - Main Floor				<b>Asbestos present :</b> Yes				
<b>Room :</b> Baggage Drop								
Pipe	parging	22.0	unit(s)	good	V-28	Chrysotile 40.00%		C
<b>Comments:</b>								
<b>Level :</b> 1 - Main Floor				<b>Asbestos present :</b> Yes				
<b>Room :</b> Board Room								
Ceiling	2' x 4' ceiling tile	462.0	ft²	good	19142-19			C
Wall	drywall - joint compound			good	V-01	Chrysotile 2.00%		A
<b>Comments:</b>								
<b>Level :</b> 1 - Main Floor				<b>Asbestos present :</b> Yes				
<b>Room :</b> Cain's Cafe (all)								
Ceiling	2' x 4' ceiling tile	2,048.0	ft²	good	V-32			C
Floor	12" x 12" floor tile			good	19142-33	Chrysotile 4.00%		A
<b>Comments:</b>								
<b>Level :</b> 1 - Main Floor				<b>Asbestos present :</b> Yes				
<b>Room :</b> Car Rentals								
Ceiling	drywall - joint compound	160.0	ft²	good	V-01	Chrysotile 2.00%		A
Wall	drywall - joint compound	322.0	ft²	good	V-01	Chrysotile 2.00%		A

# Assessment Report

(sorted by asset ID)

UPPER(BUILD:BuildingNumber) = '19142 (ATB)'

Registered user: All-TECH Environmental services

Design	Description	Quantity	Cond.	Sample	Asbestos type	Access.	Action
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**Comments:**

<b>Level :</b> 1 - Main Floor	<b>Asbestos present :</b> No
<b>Room :</b> CATSA Office	

Ceiling	2' x 4' ceiling tile		good	V-19		C
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**Comments:**

<b>Level :</b> 1 - Main Floor	<b>Asbestos present :</b> No
<b>Room :</b> Elevator Lobby	

Ceiling	2' x 4' ceiling tile	240.0 ft <sup>2</sup>	good	V-19		C
Wall	drywall - joint compound		good	V-30		A

**Comments:**

<b>Level :</b> 1 - Main Floor	<b>Asbestos present :</b> No
<b>Room :</b> Female Washroom	

Ceiling	2' x 4' ceiling tile	364.0 ft <sup>2</sup>	good	V-32		C
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**Comments:**

<b>Level :</b> 1 - Main Floor	<b>Asbestos present :</b> Yes
<b>Room :</b> Jazz Air Corridor	

Ceiling	2' x 4' ceiling tile	104.0 ft <sup>2</sup>	good	19142-27		C
Wall	drywall - joint compound		good	V-25	Chrysotile 2.00%	A

**Comments:**

<b>Level :</b> 1 - Main Floor	<b>Asbestos present :</b> Yes
<b>Room :</b> Mechanical Room	

Ceiling	drywall - joint compound		good	V-01	Chrysotile 2.00%	C
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**Comments:**

<b>Level :</b> 1 - Main Floor	<b>Asbestos present :</b> Yes
<b>Room :</b> PAL Cargo	

# Assessment Report

(sorted by asset ID)

UPPER(BUILD:BuildingNumber) = '19142 (ATB)'

Registered user: All-TECH Environmental services

Design	Description	Quantity		Cond.	Sample	Asbestos type	Access.	Action
Pipe	parging	15.0	unit(s)	good	V-28	Chrysotile 40.00%		C
Wall	drywall - joint compound	800.0	ft <sup>2</sup>	good	V-31	Chrysotile 2.00%		A

**Comments:**

<b>Level : 1 - Main Floor</b>	<b>Asbestos present : No</b>
<b>Room : PAL Lounge</b>	

Ceiling	2' x 4' ceiling tile	160.0	ft <sup>2</sup>	good	V-19			C
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**Comments:**

<b>Level : 1 - Main Floor</b>	<b>Asbestos present : Yes</b>
<b>Room : PAL Office</b>	

Ceiling	2' x 4' ceiling tile	168.0	ft <sup>2</sup>	good	V-19			C
Wall	drywall - joint compound			good	V-31	Chrysotile 2.00%		A

**Comments:**

<b>Level : 1 - Main Floor</b>	<b>Asbestos present : Yes</b>
<b>Room : PAL Service Corridor</b>	

Ceiling	2' x 4' ceiling tile	104.0	ft <sup>2</sup>	good	V-19			C
Wall	drywall - joint compound			good	V-31	Chrysotile 2.00%		A

**Comments:**

<b>Level : 1 - Main Floor</b>	<b>Asbestos present : Yes</b>
<b>Room : PAL Service Counter</b>	

Ceiling	drywall - joint compound	160.0	ft <sup>2</sup>	good	V-31	Chrysotile 2.00%		C
Wall	drywall - joint compound			good	V-31	Chrysotile 2.00%		A

**Comments:**

<b>Level : 1 - Main Floor</b>	<b>Asbestos present : Yes</b>
<b>Room : PASCAN Corridor</b>	

Ceiling	2' x 4' ceiling tile			good	V-19			C
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# Assessment Report

(sorted by asset ID)

UPPER(BUILD:BuildingNumber) = '19142 (ATB)'

Registered user: All-TECH Environmental services

Design	Description	Quantity	Cond.	Sample	Asbestos type	Access.	Action
Wall	drywall - joint compound	168.0 ft <sup>2</sup>	good	V-31	Chrysotile 2.00%		A
<b>Comments:</b>							
<b>Level : 1 - Main Floor</b>				<b>Asbestos present : Yes</b>			
<b>Room : PASCAN Luggage Area</b>							
Pipe	parging	10.0 unit(s)	good	V-28	Chrysotile 40.00%		C
<b>Comments:</b>							
<b>Level : 1 - Main Floor</b>				<b>Asbestos present : No</b>			
<b>Room : PASCAN Service Counter</b>							
Ceiling	drywall - joint compound	176.0 ft <sup>2</sup>	good	V-01	Chrysotile 2.00%		C
Wall	drywall - joint compound		good	V-01	Chrysotile 2.00%		A
<b>Comments:</b>							
<b>Level : 1 - Main Floor</b>				<b>Asbestos present : Yes</b>			
<b>Room : Pilot Entrance AC</b>							
Ceiling	drywall - joint compound	120.0 ft <sup>2</sup>	good	V-31	Chrysotile 2.00%		C
Wall	drywall - joint compound		good	19142-31	Chrysotile 2.00%		A
<b>Comments:</b>							
<b>Level : 1 - Main Floor</b>				<b>Asbestos present : No</b>			
<b>Room : Ramp Lunch Room</b>							
Ceiling	2' x 4' ceiling tile	112.0 ft <sup>2</sup>	good	V-19			C
<b>Comments:</b>							
<b>Level : 1 - Main Floor</b>				<b>Asbestos present : Yes</b>			
<b>Room : Staff Room (Security)</b>							
Wall	drywall - joint compound	160.0 ft <sup>2</sup>	good	19142-25	Chrysotile 2.00%		A
<b>Comments:</b>							

# Assessment Report

(sorted by asset ID)

UPPER(BUILD:BuildingNumber) = '19142 (ATB)'

Registered user: All-TECH Environmental services

Design	Description	Quantity	Cond.	Sample	Asbestos type	Access.	Action
<b>Level : 1 - Main Floor</b>		<b>Asbestos present : Yes</b>					
<b>Room : Stairwell to NAV Canada</b>							
Wall	drywall - joint compound	1,050.0 ft <sup>2</sup>	good	V-17	Chrysotile 2.00%		C
Wall	wallboard	400.0 ft <sup>2</sup>	good	19142-18			C
<b>Comments:</b>							
<b>Level : 1 - Main Floor</b>		<b>Asbestos present : No</b>					
<b>Room : Storage (Off Boardroom)</b>							
Wall	drywall - joint compound	122.0 ft <sup>2</sup>	fair	19142-20			A
<b>Comments:</b>							
<b>Level : 1 - Main Floor</b>		<b>Asbestos present : Yes</b>					
<b>Room : Ticketing Lobby</b>							
Ceiling	2' x 4' ceiling tile	240.0 ft <sup>2</sup>	good	V-19			C
Wall	drywall - joint compound	700.0 ft <sup>2</sup>	good	V-35	Chrysotile 2.00%		A
Wall	Panel Board	1,600.0 ft <sup>2</sup>	good				A
<b>Comments:</b> No access into ceiling							
<b>Level : 1 - Main Floor</b>		<b>Asbestos present : Yes</b>					
<b>Room : Vestibule (Security)</b>							
Wall	drywall - joint compound	200.0 ft <sup>2</sup>	good	V-25	Chrysotile 2.00%		A
<b>Comments:</b>							
<b>Level : 1 - Main Floor</b>		<b>Asbestos present : Yes</b>					
<b>Room : Waiting Room</b>							
Wall	drywall - joint compound	800.0 ft <sup>2</sup>	good	19142-35	Chrysotile 2.00%		A
Wall	Panel Board	200.0 ft <sup>2</sup>	good	V-34			A
<b>Comments:</b> No access into ceiling							

# Assessment Report

(sorted by asset ID)

UPPER(BUILD:BuildingNumber) = '19142 (ATB)'

Registered user: All-TECH Environmental services

Design	Description	Quantity	Cond.	Sample	Asbestos type	Access.	Action
<b>Level : 1 - Main Floor</b>		<b>Asbestos present : Yes</b>					
<b>Room : 26 - Hallway to E.C.C.</b>							
Ceiling	drywall - joint compound	16.0 ft <sup>2</sup>	good	V-01	Chrysotile 2.00%		C
Floor	12" x 12" floor tile		good	V-04	Chrysotile 6.00%		A
Wall	drywall - joint compound		good	V-01	Chrysotile 2.00%		A
<b>Comments:</b>							
<b>Level : 1 - Main Floor</b>		<b>Asbestos present : Yes</b>					
<b>Room : 28 - E.C.C.</b>							
Ceiling	2' x 4' ceiling tile	224.0 ft <sup>2</sup>	good	V-27			C
Floor	12" x 12" floor tile		good	V-04	Chrysotile 6.00%		A
Wall	drywall - joint compound		good	V-01	Chrysotile 2.00%		A
<b>Comments:</b>							
<b>Level : 1 - Main Floor</b>		<b>Asbestos present : Yes</b>					
<b>Room : 3 - Electrical Room</b>							
Ceiling	drywall - joint compound	420.0 ft <sup>2</sup>	good	V-36	Chrysotile 2.00%		C
Wall	drywall - joint compound	161.0 ft <sup>2</sup>	good	19142-36			A
<b>Comments:</b>							
<b>Level : 1 - Main Floor</b>		<b>Asbestos present : Yes</b>					
<b>Room : 35 - Storage Closet</b>							
Floor	12" x 12" floor tile	70.0 ft <sup>2</sup>	good	19142-26	Chrysotile 2.00%		A
Wall	drywall - joint compound		good	V-25	Chrysotile 2.00%		A
<b>Comments:</b>							
<b>Level : 1 - Main Floor</b>		<b>Asbestos present : Yes</b>					
<b>Room : 37 - Male Washroom</b>							
Ceiling	drywall - joint compound	84.0 ft <sup>2</sup>	good	19142-29	Chrysotile 2.00%		A

# Assessment Report

(sorted by asset ID)

UPPER(BUILD:BuildingNumber) = '19142 (ATB)'

Registered user: All-TECH Environmental services

Design	Description	Quantity	Cond.	Sample	Asbestos type	Access.	Action
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**Comments:**

<b>Level :</b> 1 - Main Floor	<b>Asbestos present :</b> Yes
<b>Room :</b> 41 - Manager & Operations	

Ceiling	2' x 4' ceiling tile	160.0	ft <sup>2</sup>	good	V-19		C
Floor	12"x 12" vinyl acoustic tile	160.0	ft <sup>2</sup>	good	19142-24		A
Wall	drywall - joint compound			good	V-01	Chrysotile 2.00%	A

**Comments:**

<b>Level :</b> 1 - Main Floor	<b>Asbestos present :</b> Yes
<b>Room :</b> 44 - PAL Office	

Ceiling	drywall - joint compound			good	V-01	Chrysotile 2.00%	C
Floor	12" x 12" floor tile	68.0	ft <sup>2</sup>	good	19142-22		A
Floor	12" x 12" floor tile	285.0	ft <sup>2</sup>	good	19142-23	Chrysotile 3.00%	A
Wall	drywall - joint compound			good	V-01	Chrysotile 2.00%	A

**Comments:**

<b>Level :</b> 1 - Main Floor	<b>Asbestos present :</b> Yes
<b>Room :</b> 5 - Land Lines	

Ceiling	drywall - joint compound			good	V-36	Chrysotile 2.00%	C
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**Comments:**

<b>Level :</b> 1 - Main Floor	<b>Asbestos present :</b> Yes
<b>Room :</b> 50	

Ceiling	drywall - joint compound			good	V-01	Chrysotile 2.00%	C
Floor	12" x 12" floor tile	50.0	ft <sup>2</sup>	good	V-03	Chrysotile 3.00%	A
Wall	drywall - joint compound			good	V-01	Chrysotile 2.00%	A

**Comments:**

# Assessment Report

(sorted by asset ID)

UPPER(BUILD:BuildingNumber) = '19142 (ATB)'

Registered user: All-TECH Environmental services

Design	Description	Quantity	Cond.	Sample	Asbestos type	Access.	Action
<b>Level : 1 - Main Floor</b>		<b>Asbestos present : Yes</b>					
<b>Room : 52 - Air Canada/ PAL Cargo</b>							
Pipe	parging	50.0	unit(s)	good	19142-28 Chrysotile 40.00%		C
<b>Comments:</b>							
<b>Level : 1 - Main Floor</b>		<b>Asbestos present : No</b>					
<b>Room : 56 - Vestibule/Male Washroom</b>							
Ceiling	2' x 4' ceiling tile	424.0	ft <sup>2</sup>	good	19142-32		C
<b>Comments:</b>							
<b>Level : 1 - Main Floor</b>		<b>Asbestos present : Yes</b>					
<b>Room : 6 - Mechanical Room</b>							
Gasket	Rope Gasket	2.0	unit(s)	good	19142-38		B
Pipe	parging	50.0	unit(s)	good	19142-37 Chrysotile 20.00%		C
<b>Comments:</b>							
<b>Level : 1 - Main Floor</b>		<b>Asbestos present : Yes</b>					
<b>Room : 60 - Janitor's Closet</b>							
Ceiling	2' x 4' ceiling tile	60.0	ft <sup>2</sup>	good	V-32		C
Wall	drywall - joint compound			good	V-31 Chrysotile 2.00%		A
<b>Comments:</b>							
<b>Level : 1 - Main Floor</b>		<b>Asbestos present : Yes</b>					
<b>Room : 87 - Stairwell to NAV Canada</b>							
Ceiling	drywall joint compound	384.0	ft <sup>2</sup>	good	V-01 Chrysotile 2.00%		C
Wall	drywall joint compound			good	19142-01 Chrysotile 2.00%		A
<b>Comments:</b>							
<b>Level : 1 - Main Office</b>		<b>Asbestos present : Yes</b>					
<b>Room : PASCAN Office</b>							
Ceiling	2' x 4' ceiling tile	140.0	ft <sup>2</sup>	good	V-19		C

# Assessment Report

(sorted by asset ID)

UPPER(BUILD:BuildingNumber) = '19142 (ATB)'

Registered user: All-TECH Environmental services

Design	Description	Quantity	Cond.	Sample	Asbestos type	Access.	Action
Wall	drywall - joint compound		good	V-31	Chrysotile 2.00%		A

**Comments:**

<b>Level : 1 - Main Office</b>	<b>Asbestos present : Yes</b>
<b>Room : Shell Office</b>	

Ceiling	2' x 4' ceiling tile	168.0	ft <sup>2</sup>	good	V-27		C
Floor	12" x 12" floor tile	168.0	ft <sup>2</sup>	good	V-23	Chrysotile 3.00%	A
Wall	drywall - joint compound			good	V-25	Chrysotile 2.00%	A

**Comments:**

<b>Level : 1 - Main Office</b>	<b>Asbestos present : Yes</b>
<b>Room : 34 - Air Consol</b>	

Ceiling	2' x 4' ceiling tile	168.0	ft <sup>2</sup>	good	V-19		C
Floor	12" x 12" floor tile	168.0	ft <sup>2</sup>	good	V-23	Chrysotile 3.00%	A
Wall	drywall - joint compound			good	V-25	Chrysotile 2.00%	A

**Comments:**

<b>Level : 2 - Transport Canada Offices</b>	<b>Asbestos present : Yes</b>
<b>Room : Copy/ Storage Room</b>	

Ceiling	drywall joint compound	56.0	ft <sup>2</sup>	good	V-10	Chrysotile 2.00%	C
Floor	12" x 12" floor tile	56.0	ft <sup>2</sup>	good	V-04	Chrysotile 6.00%	A
Wall	drywall with covering			good	19142-16	Chrysotile 2.00%	A

**Comments:**

<b>Level : 2 - Transport Canada Offices</b>	<b>Asbestos present : Yes</b>
<b>Room : Equipment Room</b>	

Ceiling	2' x 4' ceiling tile			good	V-07		C
Floor	12"x 12" vinyl acoustic tile	608.0	ft <sup>2</sup>	good	V-08	Chrysotile 5.00%	A
Wall	drywall joint compound			good	19142-10	Chrysotile 2.00%	A

# Assessment Report

(sorted by asset ID)

UPPER(BUILD:BuildingNumber) = '19142 (ATB)'

Registered user: All-TECH Environmental services

Design	Description	Quantity	Cond.	Sample	Asbestos type	Access.	Action
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**Comments:**

<b>Level :</b> 2 - Transport Canada Offices	<b>Asbestos present :</b> Yes
<b>Room :</b> Flight Service Station	

Ceiling	2' x 4' ceiling tile	720.0		good	V-02		C
Wall	drywall joint compound			good	V-06	Chrysotile 2.00%	A

**Comments:**

<b>Level :</b> 2 - Transport Canada Offices	<b>Asbestos present :</b> Yes
<b>Room :</b> Janitor Closet	

Floor	12"x 12" floor tile (beige)	44.0	ft <sup>2</sup>	good	19142-03	Chrysotile 3.00%	A
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**Comments:**

<b>Level :</b> 2 - Transport Canada Offices	<b>Asbestos present :</b> Yes
<b>Room :</b> Lunch Room	

Ceiling	2' x 4' ceiling tile	312.0		good	V-02		C
Wall	drywall joint compound			good	19142-09	Chrysotile 2.00%	A

**Comments:**

<b>Level :</b> 2 - Transport Canada Offices	<b>Asbestos present :</b> Yes
<b>Room :</b> Main Corridor	

Ceiling	2' x 4' ceiling tile (Pinhole/ Fissure)	528.0	ft <sup>2</sup>	good	19142-02		
Floor	12"x 12" floor tile (Beige)	528.0	ft <sup>2</sup>	good	19142-03	Chrysotile 3.00%	D
Roof Drain	Drain			good	V-42		C
Wall	drywall joint compound			good	V-01	Chrysotile 2.00%	A

**Comments:** Floor tiles present under carpet.

<b>Level :</b> 2 - Transport Canada Offices	<b>Asbestos present :</b> Yes
<b>Room :</b> 72 - Airport Administration	

Ceiling	2' x 4' ceiling tile	336.0		good	V-02		C
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# Assessment Report

(sorted by asset ID)

UPPER(BUILD:BuildingNumber) = '19142 (ATB)'

Registered user: All-TECH Environmental services

Design	Description	Quantity	Cond.	Sample	Asbestos type	Access.	Action
Floor	12" x 12" floor tile		Unknown	V-04	Chrysotile 6.00%		D
Wall	drywall - joint compound		good	V-17	Chrysotile 2.00%		A

**Comments:** Floor tiles present under carpet.

<b>Level :</b> 2 - Transport Canada Offices	<b>Asbestos present :</b> Yes
<b>Room :</b> 74 - Stock Room	

Ceiling	2' x 4' ceiling tile	120.0	ft <sup>2</sup>	good	V-02		C
Floor	12"x 12" vinyl acoustic tile	10.0	ft <sup>2</sup>	good	19142-13	Chrysotile 5.00%	A
Wall	drywall joint compound			good	V-10	Chrysotile 2.00%	A

**Comments:**

<b>Level :</b> 2 - Transport Canada Offices	<b>Asbestos present :</b> Yes
<b>Room :</b> 75 - Work Shop	

Ceiling	2' x 4' ceiling tile	136.0	ft <sup>2</sup>	good	19142-12		
Floor	12" x 12" floor tile	480.0	ft <sup>2</sup>	good	V-07		A
Wall	drywall joint compound			good	V-10	Chrysotile 2.00%	A

**Comments:**

<b>Level :</b> 2 - Transport Canada Offices	<b>Asbestos present :</b> Yes
<b>Room :</b> 76 - Manager, Finance & Admin	

Ceiling	2' x 4' ceiling tile	168.0	ft <sup>2</sup>	good	V-07		C
Wall	drywall - joint compound			good	V-17	Chrysotile 2.00%	A

**Comments:**

<b>Level :</b> 2 - Transport Canada Offices	<b>Asbestos present :</b> Yes
<b>Room :</b> 77 - NAV Canada Office	

Ceiling	2' x 4' ceiling tile	120.0	ft <sup>2</sup>	good	V-07		C
Floor	12" x 12" floor tile	120.0	ft <sup>2</sup>	Unknown	V-04	Chrysotile 6.00%	D
Wall	drywall - joint compound			good	V-17	Chrysotile 2.00%	A

# Assessment Report

(sorted by asset ID)

UPPER(BUILD:BuildingNumber) = '19142 (ATB)'

Registered user: All-TECH Environmental services

Design	Description	Quantity	Cond.	Sample	Asbestos type	Access.	Action
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**Comments:** Floor tiles present under carpet.

<b>Level :</b> 2 - Transport Canada Offices	<b>Asbestos present :</b> Yes
<b>Room :</b> 79 - NAV Canada Office	

Ceiling	2' x 4' ceiling tile	120.0	ft <sup>2</sup>	good	V-07		C
Floor	12" x 12" floor tile	120.0	ft <sup>2</sup>	Unknown	V-04	Chrysotile 6.00%	D
Wall	drywall - joint compound			good	V-17	Chrysotile 2.00%	A

**Comments:** Floor tiles present under carpet.

<b>Level :</b> 2 - Transport Canada Offices	<b>Asbestos present :</b> Yes
<b>Room :</b> 80 - Pilot's Lounge	

Ceiling	2' x 4' ceiling tile	144.0	ft <sup>2</sup>	good	V-07		C
Floor	12" x 12" floor tile	144.0	ft <sup>2</sup>	good	V-04	Chrysotile 6.00%	D
Wall	drywall joint compound			good	19142-11		A

**Comments:** floor tiles present under carpet

<b>Level :</b> 2 - Transport Canada Offices	<b>Asbestos present :</b> Yes
<b>Room :</b> 81 - Airport Manager	

Ceiling	2' x 4' ceiling tile	154.0	ft <sup>2</sup>	good	V-02		C
Floor	12" x 12" floor tile	154.0	ft <sup>2</sup>	Unknown	V-04	Chrysotile 6.00%	D
Wall	drywall - joint compound			good	19142-17	Chrysotile 2.00%	A

**Comments:** Floor tiles present under carpet.

<b>Level :</b> 2 - Transport Canada Offices	<b>Asbestos present :</b> Yes
<b>Room :</b> 82 - Female Washroom	

Ceiling	drywall joint compound	48.0	ft <sup>2</sup>	good	19142-06	Chrysotile 2.00%	C
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**Comments:**

<b>Level :</b> 2 - Transport Canada Offices	<b>Asbestos present :</b> Yes
<b>Room :</b> 83 - Male/ Female Washroom	

# Assessment Report

(sorted by asset ID)

UPPER(BUILD:BuildingNumber) = '19142 (ATB)'

Registered user: All-TECH Environmental services

Design	Description	Quantity	Cond.	Sample	Asbestos type	Access.	Action
Ceiling	drywall joint compound	72.0 ft <sup>2</sup>	good	19142-05	Chrysotile 2.00%		C

**Comments:**

<b>Level :</b> 2 - Transport Canada Offices	<b>Asbestos present :</b> Yes
<b>Room :</b> 88 - HVAC Room	

Ceiling	drywall joint compound		good	V-10	Chrysotile 2.00%		C
Duct	flex.	240.0 ft <sup>2</sup>	N/A	19142-15			B
Pipe	parging	58.0 unit(s)	good	19142-14	Chrysotile 50.00%		C

**Comments:**

# Assessment Report

(sorted by asset ID)

UPPER(BUILD:BuildingNumber) = '19142 (CSB)'

Registered user: All-TECH Environmental services

Design	Description	Quantity	Cond.	Sample	Asbestos type	Access.	Action
<b>Building Number :</b> 19142 (CSB)		<b>Survey date:</b>		<b>Building name or address</b> Combined Services Building			
<b>Level :</b>		<b>Asbestos present :</b> Potential					
<b>Room :</b> Building Exterior							
Siding			good	19142-59			C
Window	Caulking		good	19142-60	Chrysotile < 1%		A
<b>Comments:</b>							
<b>Level :</b> 1 - Main Floor		<b>Asbestos present :</b> Yes					
<b>Room :</b> Boiler Room							
Gasket	Rope Gasket	2.0 unit(s)	good	19142-46			A
Pipe	parging	60.0 unit(s)	good	19142-45	Chrysotile 45.00%		C
Wall	drywall - joint compound	416.0 ft <sup>2</sup>	N/A	19142-47			A
<b>Comments:</b>							
<b>Level :</b> 1 - Main Floor		<b>Asbestos present :</b> Yes					
<b>Room :</b> Field Maintenance Office							
Ceiling	2' x 4' ceiling tile	144.0 ft <sup>2</sup>	good	V-51			C
Floor	12" x 12" floor tile	144.0 ft <sup>2</sup>	poor	19142-54	Chrysotile 2.00%		A
Floor	Mastic under floor tile	144.0 ft <sup>2</sup>	N/A	19142-54			A
Wall	drywall - joint compound		good	V-53	Chrysotile < 1%		A
<b>Comments:</b>							
<b>Level :</b> 1 - Main Floor		<b>Asbestos present :</b> Yes					
<b>Room :</b> Field Tool Storage							
Duct	insulation	10.0 ft	good	19142-50			
Duct	Mastic over insulation	10.0 ft	good	19142-50			
Pipe	parging	15.0 unit(s)	good	19142-49	Chrysotile 35.00%		C
<b>Comments:</b>							
<b>Level :</b> 1 - Main Floor		<b>Asbestos present :</b> No					
<b>Room :</b> I.P.U. Room							

# Assessment Report

(sorted by asset ID)

UPPER(BUILD:BuildingNumber) = '19142 (CSB)'

Registered user: All-TECH Environmental services

Design	Description	Quantity		Cond.	Sample	Asbestos type	Access.	Action
Ceiling	drywall - joint compound			good	V-47			C
Exhaust	Generator	14.0	ft	good	19142-61			
Exhaust	Mastic on Insulation	14.0	ft	good	19142-61			

**Comments:**

<b>Level : 1 - Main Floor</b>	<b>Asbestos present : Yes</b>
<b>Room : Janitor's Closet</b>	

Duct	insulation	7.0	ft	good	V-50			C
Pipe	parging	20.0	unit(s)	good	V-49	Chrysotile 35.00%		C

**Comments:**

<b>Level : 1 - Main Floor</b>	<b>Asbestos present : No</b>
<b>Room : Lunch Room</b>	

Ceiling	2' x 4' ceiling tile	320.0	ft <sup>2</sup>	fair	19142-51			C
Wall	drywall - joint compound	96.0	ft <sup>2</sup>	good	19142-52	Chrysotile < 1%		A

**Comments:**

<b>Level : 1 - Main Floor</b>	<b>Asbestos present : No</b>
<b>Room : Lunch Room Corridor</b>	

Ceiling	2' x 4' ceiling tile	178.0	ft <sup>2</sup>	good	V-51			C
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**Comments:**

<b>Level : 1 - Main Floor</b>	<b>Asbestos present : Yes</b>
<b>Room : Maintenance Area</b>	

Pipe	parging	75.0	unit(s)	good	V-43	Chrysotile 35.00%		C
Pipe	Wrap on Insulation	110.0	ft	N/A	V-44			C
Roof Drain	insulation	4.0	unit(s)	good	V-42			C
Wall	drywall - joint compound	780.0	ft <sup>2</sup>	good	V-41			A

**Comments:**

# Assessment Report

(sorted by asset ID)

UPPER(BUILD:BuildingNumber) = '19142 (CSB)'

Registered user: All-TECH Environmental services

Design	Description	Quantity	Cond.	Sample	Asbestos type	Access.	Action
<b>Level : 1 - Main Floor</b>		<b>Asbestos present : No</b>					
<b>Room : Men's Washroom</b>							
Ceiling	2' x 4' ceiling tile	72.0 ft <sup>2</sup>	good	V-51			C
<b>Comments:</b>							
<b>Level : 1 - Main Floor</b>		<b>Asbestos present : Potential</b>					
<b>Room : Office/Workshop</b>							
Ceiling	drywall - joint compound	70.0 ft <sup>2</sup>	good	V-53	Chrysotile < 1%		C
<b>Comments:</b>							
<b>Level : 1 - Main Floor</b>		<b>Asbestos present : Potential</b>					
<b>Room : Oil Storage</b>							
Ceiling	drywall - joint compound		good	19142-48	Chrysotile < 1%		C
<b>Comments:</b> No access into ceiling							
<b>Level : 1 - Main Floor</b>		<b>Asbestos present : Yes</b>					
<b>Room : Oil Tank Storage</b>							
Ceiling	drywall - joint compound	800.0 ft <sup>2</sup>	good	V-47			C
Pipe	parging	13.0 unit(s)	good	V-45			C
<b>Comments:</b>							
<b>Level : 1 - Main Floor</b>		<b>Asbestos present : No</b>					
<b>Room : Regulator Room</b>							
Duct	insulation	8.0 ft	good	V-44			C
<b>Comments:</b>							
<b>Level : 1 - Main Floor</b>		<b>Asbestos present : Yes</b>					
<b>Room : Sand Storage</b>							
Pipe	parging	1.0 unit(s)	good	V-45	Chrysotile 45.00%		C
Wall	drywall - joint compound	352.0 ft <sup>2</sup>	good	V-48	Chrysotile < 1%		C

# Assessment Report

(sorted by asset ID)

UPPER(BUILD:BuildingNumber) = '19142 (CSB)'

Registered user: All-TECH Environmental services

Design	Description	Quantity	Cond.	Sample	Asbestos type	Access.	Action
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**Comments:**

<b>Level :</b> 1 - Main Floor	<b>Asbestos present :</b> Potential
<b>Room :</b> Trades Workshop	

Ceiling	drywall - joint compound	540.0	ft <sup>2</sup>	good	19142-53	Chrysotile < 1%	C
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**Comments:**

<b>Level :</b> 1 - Main Floor	<b>Asbestos present :</b> Yes
<b>Room :</b> Vestibule	

Pipe	parging	2.0	unit(s)	good	19142-55	Chrysotile 45.00%	A
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**Comments:**

<b>Level :</b> 1 - Main Floor (Fire Hall)	<b>Asbestos present :</b> Potential
<b>Room :</b> Alarm Room	

Wall	drywall - joint compound	132.0	ft <sup>2</sup>	good	V-53	Chrysotile < 1%	D
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**Comments:**

Original Drywall Behind New Construction

<b>Level :</b> 1 - Main Floor (Fire Hall)	<b>Asbestos present :</b> No
<b>Room :</b> Fire Chief's Office	

Wall	drywall - joint compound	120.0	ft <sup>2</sup>	good	V-56		A
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**Comments:**

<b>Level :</b> 1 - Main Floor (Fire Hall)	<b>Asbestos present :</b> No
<b>Room :</b> Fire Hall Area	

Wall	drywall - joint compound	286.0	ft <sup>2</sup>	good	19142-56		C
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**Comments:**

<b>Level :</b> 1 - Main Floor (Fire Hall)	<b>Asbestos present :</b> No
<b>Room :</b> Kitchen	

Wall	drywall - joint compound	640.0	ft <sup>2</sup>	good	V-56		A
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# Assessment Report

(sorted by asset ID)

UPPER(BUILD:BuildingNumber) = '19142 (CSB)'

Registered user: All-TECH Environmental services

Design	Description	Quantity	Cond.	Sample	Asbestos type	Access.	Action
<b>Comments:</b> new renovation							
<b>Level :</b> 1 - Main Floor (Fire Hall)		<b>Asbestos present :</b> No					
<b>Room :</b> Storage Room							
Wall	drywall - joint compound	32.0 ft <sup>2</sup>	good	V-56			C
<b>Comments:</b>							
<b>Level :</b> 2 - Fire Hall Mezzanine		<b>Asbestos present :</b> No					
<b>Room :</b>							
Duct	flex.	1.0 ft	good	19142-58			A
Duct	insulation	50.0 ft	good	19142-57			C
Duct	Mastic on insulation	50.0 ft	N/A	19142-57			C
<b>Comments:</b>							
<b>Level :</b> 2 - Maintenance Mezzanine		<b>Asbestos present :</b> Yes					
<b>Room :</b> Mezzanine Storage							
Pipe	insulation	60.0 ft	good	19142-44			A
Pipe	Mastic on Pipe Insulation	60.0 ft	N/A	19142-44			A
Pipe	parging	25.0 unit(s)	good	19142-43	Chrysotile 35.00%		C
Roof Drain	insulation	1.0 unit(s)	good	V-42			C
<b>Comments:</b>							
<b>Level :</b> 2 - Maintenance Mezzanine		<b>Asbestos present :</b> Yes					
<b>Room :</b> 57 - Maintenance Office							
Ceiling	2' x 4' ceiling tile	420.0 ft <sup>2</sup>	fair	19142-40			A
Pipe	parging	2.0 unit(s)	good	V-45	Chrysotile 45.00%		C
Roof Drain	insulation	1.0 unit(s)	good	19142-42			C
Roof Drain	Mastic on insulation	1.0 unit(s)	N/A	19142-42			C
Wall	drywall - joint compound	406.0 ft <sup>2</sup>	good	19142-41			A

**Comments:**

Asset ID : 19142 (CSB)

Page: 5 of 5

Printed: MAR 28,2014

## **ANNEX B**

### **Removal / Maintenance Activity Notification Form**

**Wabush Asbestos Management Plan  
Removal / Maintenance Activity Notification Form**

This form is to be completed and forwarded to the Wabush Airport Manager prior to disturbing or removal any identified Asbestos Containing Materials (ACM). The form will be stored in RDIMS and used to track all activities associated with ACM at Wabush Airport.

**Part A - To be completed prior to work commencement**

**Building Affected:**

**Area Affected** (cross reference with Annex A of AMP):

**Contact Name & Number:**

**Proposed Removal Method (if applicable):**

**Proposed Maintenance Activity (if applicable):**

**Proposed Date of Activity:**

**Proposed Completion Date:**

**Wabush Asbestos Management Plan  
Removal / Maintenance Activity Notification Form**

**Sign-Off:**

**Date**

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**Wabush Airport Manager**

*The above has approved the work to proceed given that it meets the criteria set out in the Wabush Asbestos Management Plan.*

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**Part B - To be completed once work is completed**

**Works Completed** (please adequate description):

**Completion Date:**

**Sign-Off:**

**Date**

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**Wabush Airport Manager**

*The above has confirmed that the work has been completed as proposed and completed in manner consistent with the proper methods prescribed in the Wabush Asbestos Management Plan.*

## **ANNEX C**

### **Example of an Asbestos Containing Materials Label**



Transport  
Canada

Transports  
Canada

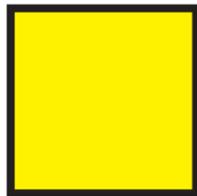
**CAUTION**



**This room has material that contains asbestos.**



Workplace Hazardous Materials Information System  
Toxic Material Class D2



- 1- Asbestos in \_\_\_\_\_
- 2- Asbestos in drywall compound
- 3- Asbestos in floor tiles
- 4- Asbestos in pipe runs
- 5- Asbestos in insulation

Please contact the Airport Manager (ph: 709-282-5341)  
prior to disturbing any **asbestos containing material**.

**CAUTION**

Canada



Transports Canada Transport Canada

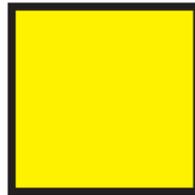
# ATTENTION



**Cette pièce du bâtiment renferme de l'amiante**



Système d'information sur les matières dangereuses utilisées au travail  
Catégorie D - division 2 Matière toxiques et infectieuses



Il y a présence d'amiante dans :

- 1- \_\_\_\_\_
- 2- les matériaux des composés à cloisons sèches
- 3- les matériaux du plancher
- 4- la tuyauterie
- 5- les matériaux d'isolation

**AVANT d'entamer toute activité de démolition, de réparation ou d'entretien des matériaux contenant de l'amiante, vous devez communiquer avec le directeur d'aéroport au (709) 282-5341**

# ATTENTION

Canada

## **ANNEX D**

# **Asbestos Containing Materials Removal Procedures**

The following is from the Service NL's web site  
[http://www.servicenl.gov.nl.ca/ohs/safety\\_info/pdf/newfoundland\\_acm\\_procedures.pdf](http://www.servicenl.gov.nl.ca/ohs/safety_info/pdf/newfoundland_acm_procedures.pdf)  
These guidelines are to be followed when asbestos abatement occurs at the Wabush Airport.

## **Newfoundland and Labrador Guidance Document for Low Risk Asbestos Abatement Projects.**

### **Type I**

- Installing or removing non friable asbestos containing materials without breaking.
- Using non powered hand tools to disturb, cut or abrade non friable asbestos containing materials when wet.
- Removal of 1.5m<sup>2</sup> (16ft<sup>2</sup>) or less of asbestos containing ceiling tiles if they are not broken or cut.
- Removal of 0.93 m<sup>2</sup> (10ft<sup>2</sup>) or less of drywall with asbestos containing joint compound.

### **Procedures**

- Dry removal is not permitted.
- Warning Signs and barricades must be erected.
- 6 mil Polyethylene drop sheets must be utilized.
- If materials cannot be adequately wetted Type II abatement procedures must be used.
- Encapsulate exposed surfaces upon completion.

### **Decontamination**

- HEPA vacuum any dust and debris off clothing and drop sheets.
- Wet Wiping of personal protective equipment and tools.

### **Air Monitoring**

- Initial sampling to confirm airborne levels during low risk activities.
- Periodic sampling completed over each 12 month period to validate the exposure prediction.

### **Personal Protective Equipment (PPE)**

- Respirators are to be selected based upon a risk assessment as required under Section 85 of the *Newfoundland and Labrador Occupational Health and Safety Regulations 70/09*. Respiratory protection shall meet or exceed the protection factor provided by a ½ Face Respirator equipped with P100 filters.
- Full body coveralls, as well as appropriate footwear and gloves.
- PPE appropriate to other hazards at the work site.

### **Visual Inspection**

- Required upon completion, written documentation to be maintained and shall include details regarding controls, PPE utilized and conditions at the time of completion.

# Newfoundland and Labrador Guidance Document for Moderate Risk Asbestos Abatement Projects.

## Type II

- Hand tools to cut, drill or abrade dry non friable materials.
- Using power tools equipped with HEPA filtration. If power tools are not equipped with a HEPA filter work must proceed to Type III abatement procedures.
- Removing ceiling tiles which may contain friable ACM on the surface.
- Removing less than 0.09 m<sup>2</sup> (1ft<sup>2</sup>) friable materials.
- Removal using a glove bag.
- Dry buffing and stripping ACM floor tiles.
- Renovation or demolition of drywall joint compound, stucco, mortar or plaster.
- Repairing or enclosing friable ACM.
- Removal of greater than 0.93 m<sup>2</sup> (10ft<sup>2</sup>) and less than 9.29m<sup>2</sup> (100 ft<sup>2</sup>) ACM ceiling tiles.
- Containments less than 9.29m<sup>2</sup> (100 ft<sup>2</sup>) for all abatement other than ACM floor tiles.

## Procedures

- Containment must be achieved through sealing openings and doors or through the use of a mini enclosure. Please note: Containments may not be required for glove bag operations or the use of power tools equipped with HEPA filtration. This shall be determined during the site specific risk assessment by a competent individual.
- Warning Signs and barricades must be erected.
- HEPA Exhaust, negative pressure of -0.02 inches of water must be maintained.
- Materials must be adequately wetted.
- 6 mil Polyethylene drop sheets must be utilized.
- Encapsulate exposed surfaces upon completion.
- If airborne asbestos concentrations are not maintained as low as reasonably achievable, work shall advance to Type III Abatement.

## Personal Protective Equipment (PPE)

- Respirators are to be selected based upon a risk assessment as required under Section 85 of the *Newfoundland and Labrador Occupational Health and Safety Regulations 70/09*. Respiratory protection shall meet or exceed the protection factor provided by a ½ Face Respirator equipped with P100 filters.
- Full body coveralls, as well as appropriate footwear and gloves.
- PPE appropriate to other hazards at the work site.

## Decontamination

- A separate decontamination room must be constructed at entrance to the work area.

### **Air Monitoring**

- Clearance Monitoring is required prior to removing controls.
- The need for Personal and perimeter samples shall be evaluated based upon the specific task, as well as the size and duration of the project.

### **Visual Inspection**

- Required upon completion, written documentation to be maintained and shall include details regarding controls, PPE utilized and conditions at the time of completion.

These guidelines are to be used for all low and moderate risk asbestos abatement activities in this province. High risk activities or those outside the scope of these guidelines must follow the *Asbestos Abatement Regulations, 1998*.

These guidelines are intended for guidance purposes only. All projects will require the completion of a risk assessment by a competent individual and the work procedures must be modified accordingly.

The Occupational Health and Safety Division may require additional controls than those included in this guidance document.

Government of Newfoundland and Labrador  
Department of Government Services  
Occupational Health and Safety Division

July, 2010

*The following are procedures for asbestos abatement that ALL-TECH Environmental Services Limited provided to TC in March 2014. These guidelines along the previous Service NL Guidance are to be followed when asbestos abatement occurs at the Wabush Airport. In the event, there is conflicting advice, the Service NL Guidance is to be followed.*

## **MINOR RISK ENCLOSURE WORK (Type I)**

### **Description of Minor Risk Enclosure Work:**

Minor risk enclosure work involves the disturbance of non-friable asbestos materials. Generation of debris is permissible as long as the debris is well-wetted before it is removed. It is assumed that minor risk work will produce a trivial amount of loose dry dust. If more than a trivial amount of dry loose dust will be released, it may be considered moderate risk.

### **Examples of Minor Risk Enclosure Work**

- Installing or removing manufactured products containing non-friable asbestos, such as: vinyl floor tiles, adhesives, gaskets, seals, packing, asbestos cement sheet and pipe products.

### **Procedures for Minor Risk Enclosure Work**

#### **1.0 Equipment Required**

- Hand-powered tools; and, mechanical or electrical power tools, fitted with a HEPA filter dust collector, to cut, shape, drill, grind or remove manufactured products containing asbestos. Before this equipment is first used, the consultant will be asked to investigate this procedure to approve the asbestos containment and capture.
- A vacuum is optional. Wet cleaning methods (pump sprayer with mister nozzle or alternative method to wet material) may be used instead. Vacuums must be equipped with high efficiency particulate air (HEPA) filters and all brushes, fittings, etc.
- 0.15 mm (6 mil) polyethylene plastic sheet may be used as a drop sheet.
- Use 015 mm (6 mil) labelled yellow asbestos waste bags for all asbestos waste.
- The use of small tools and cleaning supplies (scouring pads, sponges, brushes, buckets, etc.) is permitted.

- All equipment must be on site before proceeding.

## **2.0 Personal Protection Measures**

- Respirators must be NIOSH approved disposable units. The Contractor will consult with the workers assigned to the task to establish if a respirator is required. Workers must be trained to use respirators according to written procedures and must know how to fit-test their respirators. Filters use must not exceed 24 hours. Change the filter, immediately, if breathing resistance increases and treat used filters as asbestos waste. Persons using a respirator may not have facial hair that interferes with the facial seal.
- Reusable or disposable clothing may be used. Clean non-disposable clothing, with visible asbestos contamination, using a HEPA vacuum and launder. Treat disposable clothing as asbestos waste.
- Do not eat, drink or smoke in the work area.
- Immediately after leaving the work area, wash all exposed skin on hands and face in the nearest washroom.

## **3.0 Preparation**

- When practical, before disturbing non-friable asbestos materials, cover floor and surfaces below work with six mil polyethylene sheeting to catch debris.
- Remove surface asbestos dust with an HEPA vacuum or damp cloth.

## **4.0 Execution of Minor Risk Enclosure Work**

General Procedures for Removal of Non-friable Asbestos Materials:

- If possible, wet all materials to be disturbed with amended water applied by airless sprayers.
- Place all waste material in an asbestos waste receptor, immediately.
- Work small areas at a time, and clean the work area frequently using a HEPA vacuum or a wet mop.
- On completion of the removal project work, using a HEPA vacuum or wet

cleaning methods, clean the entire work area and clean re-usable drop sheets and equipment.

- Dispose of non re-usable drop sheets, cleaning cloths, mops, etc., as asbestos waste.

## **5.0 Transport and Disposal of Asbestos Contaminated Waste**

- Asbestos waste generated must be handled as hazardous waste and comply with the Newfoundland and Labrador Department of Environment and Conservation's Asbestos Waste Disposal Directive (PPD98-03) [http://www.env.gov.nl.ca/env/env\\_protection/waste/asbestos.html](http://www.env.gov.nl.ca/env/env_protection/waste/asbestos.html)
- Place waste into an asbestos labelled disposal bag and seal with tape. Clean the exterior of the bag with a clean cloth and place into a second clean bag. Use a barrel, fibre drum, cardboard or wooden box, instead of a second bag, when the waste material is likely to tear the inner bag. Seal the outer bag or container.
- Provide a secure storage area, near the work site, for holding minor amounts of asbestos waste in sealed, labelled containers that are assigned for asbestos waste, exclusively. Periodically, transfer waste containers to a secure location until a sufficient quantity of waste accumulates for waste pick-up.
- Retain copies of waste waybills from the disposal firm as waste is removed from the site.

## **MODERATE RISK ENCLOSURE WORK (Type II)**

### **Description of Moderate Risk Enclosure Work**

Moderate Risk Enclosure Work involves:

- Removal of drywall materials that can be completed within one working shift (8 hours or less)
- Removal of less than approximately 3.05 m (10') or 10 fittings of asbestos mechanical insulation. Limitations on the amount of material permitted to be removed or disturbed as moderate risk will be determined by the Contractor.
- Repair, to any extent, of asbestos mechanical insulation.
- Disturbance of less than approximately 1.0 square metre of friable ACM.
- Entering ceilings, bulkheads, pipe chases, and crawl spaces containing asbestos debris from Sprayed on Fireproofing or mechanical insulation. To determine if moderate risk enclosure procedures are required, gently lift one side of the tile, access panel or hatch. If asbestos debris is visible, replace the tile, panel or hatch and follow moderate risk procedures for entry. If there is no visible asbestos debris, enter the ceiling space and inspect the area further. If asbestos debris is visible, leave the area and follow moderate risk enclosure procedures for future entry.
- Removal of any part of a false ceiling or bulkhead if friable asbestos debris, from plaster or mechanical insulation, is likely to be on the surface of a false ceiling or bulkhead.

### **Procedures for Moderate Risk Enclosure Work**

#### **1.0 Equipment Required**

- HEPA Negative Pressure Fan: A fan which extracts air directly from work area and discharges this air directly outside work area to exterior of building. This air extraction system to be equipped so that all air extracted has to pass to HEPA filtering system before discharge. This system shall maintain a minimum pressure differential of 5 Pa or 0.02 inches of water to adjacent areas outside of the work area.

- An asbestos-approved vacuum (HEPA filtered), equipped with brushes, fittings, etc. Vacuum must not be opened except by fully protected worker within enclosure as described below.
- Use 0.15 mm (6 mil) polyethylene plastic sheet to erect a total enclosure.
- Tape may be used to fasten a plastic enclosure to the ceiling or to tape drop sheets to the floor. Use ½" double-sided tape to attach polyethylene to T-bar ceilings.
- Use 0.15mm (6 mil) labelled yellow asbestos waste bags for all asbestos waste.
- Use an airless pump sprayer containing a wetting agent solution for wetting asbestos, as required. Dilute using 2 oz. wetting agent per gallon of water.
- Small tools and cleaning supplies (scouring pads, sponges, brushes, buckets, etc.)
- Insulation repair supplies (lagging compound, cloth, PVC covers)
- Encapsulating sealer for brush or airless spray application.
- Asbestos warning signs.
- Equipment required for work must be on site before proceeding.

## **2.0 Personal Protection Measures**

- Approved respirators and filters, provided by the employer, will be individually assigned to workers. Respirators shall be the half-face type with high efficiency filters. Workers must be trained to use respirators according to written procedures and must know how to fit-test their respirators. Respirators must be kept in position throughout the entire time the worker is in the work area, from the first disturbance of the ceiling tile or asbestos material, until the final cleaning of the area and bagging of waste is complete. Filters use must not exceed 24 hours. Change the filter, immediately, if breathing resistance increases and treat used filters as asbestos waste. Persons using a respirator may not have facial hair that interferes with the facial seal.
- Workers shall wear a disposable suit with an attached head cover in position until the worker leaves the work area or the enclosure is dismantled. Suits may be vacuumed or wet wiped clean for re-use.

Dispose of suits as asbestos waste after eight hours of cumulative use.

- Do not eat, drink or smoke in the work area.
- Immediately after completing the clean-up of the work area, use the vacuum or a wet cloth to suit, respirator and boots. Remove protective equipment, leave the work site and wash all exposed skin on hands and face in the nearest washroom.

### **3.0 Preparation**

- Shut down ventilation systems, serving the work area, and seal all adjacent ventilation openings, diffusers, grilles, etc., with plastic and tape.
- Clear the work area of movable furnishings and equipment, where practical. Items not removed shall be adequately covered and sealed, using 0.15 mm (6 mil) polyethylene and tape, to provide an airtight envelope to protect items from airborne dust or splashed debris.
- Put negative pressure system in operation and operate continuously from the time the first polyethylene is installed to seal openings until final completion of the work including final cleanup.
- Post signs or barrier tape indicating: that there is an asbestos hazard; and that protective clothing must be worn by persons entering the area.
- In small rooms, cover walls with 015 mm (6 mil) polyethylene to make the entire room the work area. For larger rooms, use 0.15 mm (6 mil) polyethylene to erect an enclosure of sufficient dimensions to enclose the work area and/or the scaffolds and ladders below the work area. For suspended ceilings, extend the enclosure to the top of the ceiling space. Make the enclosure as airtight as conditions permit and employ a double overlapping entrance flap. The floor of the work area shall be covered with a layer of 6 mil polyethylene, sealed to the plastic walls of the enclosure.
- Workers must be wearing protective clothing and a respirator before removing ceiling tile; or, disturbing pipe jacketing or texture plaster.

### **4.0 Scheduling of Work**

- Schedule work after office hours if necessary. Do not start work if occupants are present.

- If work above the ceiling is required on an emergency basis when the area is occupied, ask the **Wabush Airport Manager** to instruct occupants to vacate the area until the work is complete and clearance is given to return.

## **5.0 Execution of Moderate Risk Enclosure Work**

### **General Procedures for Execution of Moderate Risk Enclosure Work**

- First remove all visible dust and loose friable material with a HEPA vacuum or first wet all visible dust and loose friable material with amended water applied by an airless sprayer and remove by damp wiping.
- As wetted asbestos material is removed, place pieces directly into six mil polyethylene bags. Avoid dropping material to the floor. After bulk removal is complete, wet wash exposed surfaces.
- Frequently, and at regular intervals, place waste in disposal bags and clean up dust in the work area by wet mopping or by HEPA vacuuming.
- After asbestos removal is complete, seal exposed ends of fireproofing, texture plaster, or mechanical insulation, with a heavy layer of encapsulating sealer. Apply sealer coat to surfaces exposed by the removal of the asbestos material.
- After the work is complete, decontaminate equipment, tools and materials used in the work area by wet cleaning or by HEPA vacuum.
- Dispose of drop sheets and enclosures by wetting the polyethylene and folding it into disposal bags. Do not reuse drop sheets or enclosures.
- Before leaving the work area, decontaminate respirator, shoes and protective clothing by damp wiping or by using a HEPA vacuum. When protective clothing is disposed of, placed in labelled disposal bags, after decontaminating, as above. Vacuum exposed skin. Wash hands and face in a nearby washroom after leaving the work site.

### **Procedures for Specific Moderate Risk Enclosure Projects**

- To remove sprayed on fireproofing, saturate with a wetting agent solution, using an airless pump sprayer. Do not remove the asbestos material until it is thoroughly wetted to the substrate. Do not use the solution if there is a nearby electrical hazard.
- To remove pipe insulation, wet insulation with a wetting agent solution and carefully cut the jacket. Keep the insulation surface wetted as it is cut.

Do not attempt to fully saturate pipe insulation. Remove the insulation jacket in large sections and place them into a disposal bag, immediately. After all large sections have been removed, saturate the debris on the mechanical equipment and clean all exposed surfaces with abrasive pads, sponges, cloths, etc.

- To repair pipe insulation, install a drop sheet under the work area to aid in clean-up: a plastic enclosure is not required. Mist exposed insulation with a wetting agent solution and apply lagging paint and canvas or PVC jacketing, as required.
- For removal of suspended ceiling tiles (when it is known that there is asbestos debris on top of tiles), remove the first tile carefully and vacuum all surfaces. Vacuum the upper surface of each subsequent tile prior to removal. Store tiles in the work area.

## **6.0 Waste Transport and Disposal**

- Asbestos waste generated must be handled as hazardous waste and comply with the Newfoundland and Labrador Department of Environment and Conservation's Asbestos Waste Disposal Directive (PPD98-03) [http://www.env.gov.nl.ca/env/env\\_protection/waste/asbestos.html](http://www.env.gov.nl.ca/env/env_protection/waste/asbestos.html)
- Place waste into an asbestos labelled disposal bag and seal with tape. Clean the exterior of the bag with a clean cloth and place into a second clean bag. Use a barrel, fibre drum, cardboard or wooden box, instead of a second bag, when the waste material is likely to tear the inner bag. Seal the outer bag or container.
- Provide a secure storage area, near the work site, for holding minor amounts of asbestos waste in sealed, labelled containers that are assigned for asbestos waste, exclusively. Periodically, transfer waste containers to a secure location until a sufficient quantity of waste accumulates for waste pick-up.
- Retain copies of waste waybills from the disposal firm, as waste is removed from the site.

## **HIGH RISK ENCLOSURE WORK (Type III)**

### **Description of High Risk Enclosure Work:**

High Risk work involves:

- Removal of asbestos mechanical insulation in a boiler room or penthouse.
- Removal of pipe insulation and duct work insulation. The work area is to be an unoccupied part of the building that can be isolated from the building occupants.
- Removal of sprayed on fireproofing containing asbestos.

### **Procedures for High Risk Enclosure Work:**

#### **1.0 Equipment Required**

- An asbestos-approved vacuum (HEPA filtered), equipped with brushes, fittings, etc. *Vacuum must not be opened except by fully protected worker within enclosure as described below.*
- HEPA Negative Pressure Fan: A fan which extracts air directly from work area and discharges this air directly outside work area to exterior of building. This air extraction system to be equipped so that all air extracted has to pass to HEPA filtering system before discharge. This system shall maintain a minimum pressure differential of 5 Pa or 0.02 inches of water to adjacent areas outside of the work area.
- Polyethylene: minimum 0.15 mm (6 mil) thick unless otherwise specified; in sheet size to minimize joints.
- FR polyethylene: minimum 0.15 (6 mil) thick, woven fibre reinforced fabric bonded both sides with polyethylene.
- Protective clothing, coveralls, hoods, gloves, and boots: disposable type.
- Respirators: full face powered air purifying type. Fitted with high efficiency HEPA filters rated for filtering asbestos particles down to 0.3 µm in size and complete with rechargeable batteries that have a minimum 6 hour battery life.
- Signs: Helvetica medium type letters, upper case: "**CAUTION, ASBESTOS HAZARD AREA**" (25 mm) "**NO UNAUTHORIZED ENTRY**" (19 mm), "**BREATHING ASBESTOS DUST MAY CAUSE**

## **SERIOUS BODILY HARM" (7 mm).**

- Sprayers: garden reservoir type, low velocity, capable of producing mist or fine spray, with hypodermic type nozzle for penetration through outer covering jackets.
- Waste Bags: 0.15 mm (6 mil) minimum thickness polyethylene.
- Wetting agent: 50% polyoxyethylene ester and 50% polyoxyethylene ether, or other material approved by Consultant, mixed with water in a concentration to provide adequate penetration and wetting of asbestos-containing material.
- Slow drying sealer: non-staining, clear, water dispersal type that remains tacky on surface for at least 8 hours and designed for the purpose of trapping residual asbestos fibres. Sealer shall have flame spread and smoke developed rating less than 50 (and be compatible with new fireproofing).
- Small tools and cleaning supplies (scouring pads, sponges, brushes, buckets, etc.).
- Insulation repair supplies (lagging compound, cloth, PVC covers).
- Other materials: provide all other materials such as lumber, nails, hardware, etc., which may be required to construct and dismantle the barriers that isolate the decontamination areas and the work areas.
- Equipment required for work must be on site before proceeding.

## **2.0 Personal Protection Measures**

- Approved respirators and filters, provided by employer, will be individually assigned to workers. Respirators shall be full face powered purifying type, fitted with high efficiency filters. Workers must be trained to use respirators according to written procedures and must know how to fit-test their respirators. Respirators must be kept in position throughout the entire time the worker is in the work area, for the first disturbance of the ceiling tile or asbestos material, until the final cleaning of the area and bagging of waste is complete. Filters use must not exceed 24 hours. Treat used filters as asbestos waste. Persons using a respirator may not have facial hair that interferes with the facial seal.
- Workers shall wear a disposable suit with an attached head cover in position until the worker leaves the work area or the enclosure is

dismantled. Suits may be vacuumed or wet wiped clean for re-use. Dispose of suits, as asbestos waste, after eight hours of cumulative use.

- Do not eat, drink or smoke in the work area.
- Before leaving work area, decontaminate respirator, shoes and protective clothing by damp wiping or by using a HEPA vacuum. When protective clothing is disposed of, place in labelled disposal bags, after decontaminating. Vacuum exposed skin.
- Remove gross contamination from clothing before leaving the work area then proceed to the equipment and access area and remove all clothing except respirators. Still wearing the respirator, proceed naked to the showers. Clean the outside of the respirator with soap and water while showering: remove the respirator and wash and rinse the inside of the respirator. When not in use in the work area, store work footwear in the equipment and access 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. Place contaminated work suits in receptacles for disposal with other asbestos contaminated materials.
- Following showering and drying off, proceed to the clean change room and dress in street clothes at the end of each day.

### **3.0 Preparation**

- Shut down ventilation and air handling systems to prevent contamination and fibre dispersal to other areas of the building during work phase. This can be done manually at the fan disconnect or through the computer. Be sure there is not an over ride computer program in the building that brings the ventilation back on line.
- Pre-clean movable objects and carpeting within proposed work areas using HEPA vacuum and remove such objects from work areas to a temporary location.
- Pre-clean fixed casework, plant, and equipment within proposed work areas, using HEPA vacuum and cover with polyethylene sheeting sealed with tape.
- Clean proposed work areas using, where practicable, HEPA vacuum cleaning equipment. If not practicable, use a wet cleaning method. Do not use methods that raise dust, such as dry sweeping, or vacuuming using other than HEPA vacuum equipment.

- Put negative pressure system in operation and operate continuously from the time the first polyethylene is installed to seal openings until final completion of the work including final cleanup.
- Seal off all openings such as corridors, doorways, windows, skylights, ducts, grilles and diffusers, with polyethylene sheeting sealed with tape.
- Cover floor and wall surfaces with polyethylene sheeting sealed with tape. Use two layers of polyethylene on floors. Use two layers of FR polyethylene on carpeted floors. Cover floors first so that polyethylene extends at least 300 mm up walls when cover walls to overlap floor sheeting.
- Build air locks at all entrances to and exits from work areas so that work areas are always closed off by one curtained doorway when workers enter or exit.
- At each access to work areas install warning signs in upper case "Helvetica Medium" letters reading as follows:

**"CAUTION ASBESTOS HAZARD (25 mm) NO UNAUTHORIZED ENTRY (19 mm) WEAR ASSIGNED PROTECTIVE EQUIPMENT (19 mm) BREATHING ASBESTOS DUST MAY CAUSE SERIOUS BODILY HARM (7 mm)".**

- After work area isolation, remove heating, ventilating, and air conditioning filters, pack in sealed plastic bags 0.15 mm minimum thick and treat as contaminated asbestos waste. Remove ceiling mounted objects such as lights, partitions, other fixtures not previously sealed off, and other objects that interfere with asbestos removal, as directed by the Consultant. Use localized water spraying during fixture removal to reduce fibre dispersal.
- Where application of water is required for wetting asbestos-containing materials, shut off electrical power, provide 24 volt safety lighting and ground fault interrupter circuits on power source for electrical tools, in accordance with applicable CSA Standard. Ensure safe installation of electrical lines and equipment.
- Construct worker decontamination enclosure system which comprises of: Equipment and Access room; Shower room; and Clean room.
- Separate parts of the building required to remain in use from parts of the building used for asbestos abatement by means of an airtight barrier system. Determine what areas will be affected by the abatement activity.

- Shafts, vertical duct work and pipe chases have a natural air movement that may cause difficulties in sealing areas. This air movement may result in asbestos contamination in areas not contained.
- Calculate the work area room volume and determine the required air changes. There should be a minimum of 4 air changes per hour.

#### **4.0 Scheduling of Work**

- Schedule work after office hours if necessary. Do not start if occupants are present.
- If work above the ceiling is required on an emergency basis when the area is occupied, ask the **Wabush Airport Manager** to instruct occupants to vacate the area until the work is complete and clearance is given to return.

#### **5.0 Execution of High Risk Enclosure Work:**

##### **General Procedures for Execution of High Risk Enclosure Work**

- First remove all visible dust and loose friable material with a HEPA vacuum or first wet all visible dust and loose friable material with amended water applied by an airless sprayer and remove by damp wiping.
- Seal off all openings such as corridors, doorways, windows, skylights, ducts, grilles, and diffusers. Cover floor and wall surfaces with polyethylene sheeting sealed with tape. Construct worker decontamination enclosure system.
- As wetted asbestos material is removed, place pieces directly into six mil polyethylene bags. Avoid dropping material to the floor. After bulk removal is complete, wet wash exposed surfaces.
- Frequently, and at regular intervals, place waste in disposal bags and clean up dust in the work area by wet mopping or by HEPA vacuuming.
- After asbestos removal is complete, seal exposed ends of fireproofing, texture plaster, or mechanical insulation, with a heavy layer of encapsulating sealer. Apply sealer coat to surfaces exposed by the removal of the asbestos material.
- After the work is complete, decontaminate equipment, tools and materials used in the work area by wet cleaning or by HEPA vacuum.

- Dispose of drop sheets and enclosures by wetting the polyethylene and folding it into disposal bags. Do not reuse drop sheets or enclosures.

### **Procedures for Specific High Risk Removal Projects**

Before removing asbestos:

- Prepare site.
- Spray asbestos material with water containing the specified wetting agent, using airless spray equipment capable of providing a "mist" application to prevent release of fibres. Saturate the asbestos material sufficiently to wet it to the substrate without causing excess dripping. Spray the asbestos material repeatedly during work process to maintain saturation and to minimize asbestos fibre dispersion.
- Remove the saturated asbestos material in small sections. Do not allow saturated asbestos to dry out. As it is being removed, pack the material in proper asbestos waste bags 0.15 mm minimum thick and place in labelled containers for transport.
- Seal filled containers. Clean external surfaces thoroughly by wet sponging. Remove from immediate working area to Equipment and Access Room. Clean external surfaces thoroughly again by wet sponging before moving containers to clean room. Wash containers thoroughly in clean room, and store in holding room pending removal. Ensure that asbestos waste containers are removed from the holding room by workers who have entered from uncontaminated areas dressed in clean coveralls.
- After completion of stripping work, all surfaces from which asbestos have been removed shall be wired brushed and wet-sponged to remove all visible material. During this work, the surfaces shall be kept wet.
- When an Asbestos Consultant decides complete removal of asbestos-containing material is impossible due to obstructions such as structural members or major service elements, or because asbestos-containing material was originally applied to an asphaltic coating and provides a written direction, seal the material as directed by Consultant.
- After wire brushing and wet sponging to remove visible asbestos, and after sealing asbestos, wet clean the entire work area including the Equipment and Access Room, and equipment used in the process. After, to allow for dust settling, wet clean these areas and objects again. During this settling period, no entry, activity, or ventilation will be permitted. Under the same conditions, clean these areas and objects again using HEPA vacuum

followed by wet cleaning. After inspection by the Consultant, apply continuous coat of slow-drying sealer to all surfaces of work space. Operation of negative pressure units during this period is continuous.

## **6.0 Waste Transport and Disposal**

- Asbestos waste generated must be handled as hazardous waste and comply with the Newfoundland and Labrador Department of Environment and Conservation's Asbestos Waste Disposal Directive (PPD98-03) [http://www.env.gov.nl.ca/env/env\\_protection/waste/asbestos.html](http://www.env.gov.nl.ca/env/env_protection/waste/asbestos.html)
- Place waste into a proper asbestos disposal bag and seal with tape. Clean the exterior of the bag with a clean cloth and place into a second clean bag. Use a barrel, fibre drum, cardboard or wooden box, instead of a second bag, when the waste material is likely to tear the inner bag. Seal the outer bag or container.
- Provide a secure storage area, near the work site, for holding minor amounts of asbestos waste in sealed, labelled containers that are assigned for asbestos waste, exclusively. Periodically, transfer waste containers to a secure location until a sufficient quantity of waste accumulates for waste pick-up.
- Retain copies of waste waybills from the disposal firm, as waste is removed from the site.

## **GLOVE BAG WORK**

Glove Bag procedures are **not** used for major asbestos removal projects. The Contractor will advise when Glove Bag procedures are applicable.

### **Glove Bag Procedures**

#### **1.0 Equipment Required**

- Prefabricated min. 0.25 mm (10 mil) thick polyvinyl chloride (PVC) bag with: integrated 0.25 mm (10 mil) thick PVC gloves and elasticized port; a reversible double-pull double-throw zipper on top; and, incorporating an internal closure strip, if it is to be removed from pipe for re-use. Provide size and configuration appropriate for project requirements. The bag must not be emptied and reused, dispose of bag and contents.
- Reusable nylon straps, at least one inch wide with metal buckle for sealing the ends of the bags around pipe and/or insulation.
- Garden reservoir-type, low velocity, sprayer capable of producing a mist or fine spray, for applying a wetting agent solution (2 oz. wetting agent per gallon of water).
- 0.05 mm (2 mil) polyethylene plastic sheeting to cover exposed or damaged sections of pipe, prior to attaching glove bag; and, tape to fasten plastic to pipe, if required.
- Use 0.15 mm (6 mil) labelled asbestos waste bags for all asbestos waste.
- Asbestos warning signs.
- Wire cutters, snips, and knife with fully retractable blade for use inside the glove bag.
- Small tools and cleaning supplies (scouring pads, sponges, brushes, buckets, etc.).
- High temperature sealer.

#### **2.0 Personal Protection Measures**

- Workers shall wear a disposable suit with an attached head cover in position until the worker completes cleaning of pipe. Suits may be

vacuumed or wet wiped clean for reuse. Dispose of suits as asbestos waste, after eight hours of cumulative use.

- Do not eat, drink or smoke in the work area.
- Approved respirators and filters, provided by the employer, will be individually assigned to workers. Respirators shall be the half-face type with high efficiency HEPA filters. Workers must be trained to use respirators according to written procedures and must know how to fit-test their respirators. Respirators must be kept in position throughout the entire time the worker is in the work area, from the first disturbance of the ceiling tile or asbestos material, until the final cleaning of the area and bagging of waste is complete. Filters use must not exceed 24 hours. Change the filter immediately, if breathing resistance increases and treat used filters as asbestos waste. Persons using a respirator may not have facial hair that interferes with the facial seal.
- Immediately after completing the clean-up of the work area, use the vacuum or a wet cloth to suit, respirator and boots. Remove protective equipment, leave the work site and wash all exposed skin on hands and face in the nearest washroom.

### **3.0 Scheduling of Work**

- Schedule work after office hours if necessary. Do not start work if occupants are present.

### **4.0 Preparation**

- Where practical, clear the area below the pipe of movable furnishings or equipment.
- Provide ladders, stages or scaffolding to reach the pipe.
- Post an asbestos warning sign at all entrances to the room where the work site is located. If necessary, use rope or tape barriers to isolate the work site.
- Pre-clean pipe with a HEPA vacuum or use wet cleaning methods. Remove loose material on the surface of the pipe or on the floor. If there is a significant amount of material on the floor, moderate risk enclosure procedures may be required for clean-up.
- Check the condition of the pipe insulation where removal will occur. If

the insulation has minor isolated damage, mist surface and patch with tape. If the damage is more extensive, wrap the pipe with plastic and "candy stripe" it with duct tape. If pipe insulation is severely damaged, glove bag is not appropriate, use moderate risk enclosure procedures.

- Place the required tools in the bottom of the glove bag.

## **5.0 Execution of Glove Bag Procedures:**

- Zip the bag onto the pipe and seal each end to the pipe with the securing straps. Do not pull the bag tightly to the ends, a small amount of slack allows for better manoeuvrability in the bag. For vertical bags, ensure that the lower strap passes through the plastic grommet and cloth tab on the zipper.
- Place hands into gloves and use the tools to remove the insulation from the pipe. Arrange the insulation at the bottom of the bag to allow the bag to be filled to capacity. Roll the metal jacketing carefully, to minimize the possibility of ripping or puncturing the bag.
- Insert the nozzle of the sprayer into the bag through the valve and wash the pipe and the interior of the upper section of the bag thoroughly. Use one hand to aid in the washing process. Wet the surface of the insulation in the lower section of the bag and wet the exposed ends of asbestos insulation remaining on the pipe.
  - If the bag will be moved to another pipe, seal the internal zip-lock closure, re-install the bag on the next pipe and reseal in the new location, before reopening the closure.
  - If the bag is to be moved along the same length of pipe, loosen the securing straps and slide the bag to the new location using the double-pull zipper to pass the pipe hangers.
  - If the glove bag is ripped, cut or opened during use, cease work and repair the damaged bag before resuming work. Clean all spilled material with a HEPA vacuum or by wet cleaning.
  - To remove the bag after completing the work, thoroughly wash the top section of the bag and tools. Place the tools in one glove, pull hand out inverted, twist to create a separate pouch, and tape the inside-out glove at two separate locations, one inch apart, to seal the pouch. Remove the inside-out glove and tools by cutting between the tape seal.

- Pull a 0.15 mm (6 mil) asbestos waste bag over the glove bag before removing from the pipe. Remove the securing straps and unfasten the zipper. Seal the glove bag and seal the 0.15 mm (6 mil) asbestos bag to create an asbestos waste container.
- Place the glove pouch and tools into the next clean glove bag to be used. Alternatively, place the tool pouch into a water bucket, open the pouch underwater, clean the tools, and allow them to dry.
- After removal of the bag, ensure that the pipe is clean of all residue. After removal of each section of asbestos, vacuum all surfaces of pipe, if necessary, using a HEPA filtered vacuum or by wiping with a wet cloth.
- Seal all residual surface dust on freshly exposed pipe with an encapsulating sealer and cover exposed ends of remaining asbestos insulation with lagging cloth or tape.
- Before leaving the work area, decontaminate respirator, shoes and protective clothing by damp wiping or by using a HEPA vacuum. When protective clothing is disposed, place it in labelled disposal bags, after decontaminating, as above. Vacuum exposed skin. Wash hands and face in a nearby washroom after leaving the work site.

## **6.0 Waste Transport and Disposal**

- Asbestos waste generated must be handled as hazardous waste and comply with the Newfoundland and Labrador Department of Environment and Conservation's Asbestos Waste Disposal Directive (PPD98-03) [http://www.env.gov.nl.ca/env/env\\_protection/waste/asbestos.html](http://www.env.gov.nl.ca/env/env_protection/waste/asbestos.html)
- Place waste into a proper asbestos disposal bag and seal with tape. Clean the exterior of the bag with a clean cloth and place into a second clean bag. Use a barrel, fibre drum, cardboard or wooden box, instead of a second bag, when the waste material is likely to tear the inner bag. Seal the outer bag or container.
- Provide a secure storage area, near the work site, for holding minor amounts of asbestos waste in sealed asbestos disposal bags. Periodically, transfer waste containers to a secure location until a sufficient quantity of waste accumulates for waste pick-up.
- Retain copies of waste waybills from the disposal firm, as waste is removed from the site.

# Cab Glazing Standards

## Control Tower Cab Glazing design standards

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## 1. INTRODUCTION

This document provides specific requirements to ensure that Control Tower Cab Glazing is designed and specified to meet Operations requirements and any required code and legislation set out by federal and provincial regulatory bodies.

## 2. CAB WINDOW GLAZING REQUIREMENTS

Control tower cab glass shall be specified to meet the requirements in this document to ensure Air Traffic Control quality visual acuity through all glass used in the control of aircraft from a control Tower or FSS.

### 2.1 Visual Criteria

The ideal cab window material would:

- provide undiminished visual performance for the unaided eye and when binoculars are used;
- be invulnerable to accumulations of vision reducing deposits such as liquid or frozen condensation (rain, snow);
- provide protection from weather;
- provide protection from non-visible light (ultra-violet and infra-red);
- provide protection from glare;
- be free of inner reflections;
- allow undistorted colour transmission;
- be durable and relatively maintenance-free; and
- provide this ideal performance at all times of day, including twilight.

Since this ideal material is not readily available, it is necessary to find a reasonably balanced compromise. The following paragraphs discuss various aspects of the above criteria.

### 2.2 Cab Glass Specifications

A study on cab glazing conducted by the then Public Works Canada concluded that single laminated glass meets the required optical tolerances and is the most satisfactory glazing material available when laminated with a vinyl-interlayer that has minimum colour tint.

Further details are provided in the report entitled *Air Traffic Control Tower Glazing Study, ATR-010*, dated May 1991, which is available from OSR.

- 2.2.1. In order to provide adequate downward viewing angles, the cab window sill shall have a maximum height of 106.7 cm (42 in).
- 2.2.2. From the cab window sill, the glazing lites shall be inclined outward from the vertical plane at an angle of 22.5 to 30 degrees, the closer to 30 degrees the better.
- 2.2.3. Double-pane or multi-pane windows are not recommended because the air space between the panes causes double images that are impossible to correct and it is impossible to melt ice off the exterior surface from the inside.
- 2.2.4. Project managers are cautioned **NOT** to order “tempered” float glass for greater strength, as it does not meet visual deviation criteria.

### 2.3 Laminated Glass

Single laminated glass is manufactured using two sheets of float glass with a clear or minimum colour tinted Poly Vinyl Butyral (PVB) interlayer sandwiched between them. Laminated glass is the solution to some of the problems inherent in modern cab designs such as 30°-sloped windows which result in taller window panes. This, in turn, leads to thicker glass for greater strength and consequently, greater weight. Laminated glass provides the following performance features:

- 2.3.1. safety;
- 2.3.2. ultra violet screening;
- 2.3.3. solar energy control;
- 2.3.4. sound control;
- 2.3.5. structural performance; and
- 2.3.6. distortion free viewing.

The safety performance of laminated glass is one of its major assets. While laminated glass is no stronger than single pane glass, it is considered to have safer breakage characteristics; similar to automobile windshield glass. Accidental impact may cause the laminated glass to crack but it will remain integral with sharp fragments and splinters adhering to the vinyl-interlayer.

There is also a greater chance that the broken glass will remain integral in the frame, providing continued protection to the interior of the cab. This performance characteristic is important not only to the continuous operation of the cab, but also to reduce damage to the interior environment until repairs can be done.

The vinyl-interlayer provides excellent protection from UV-A and UV-B emissions as well as reducing solar energy transmittance; thus reducing cooling loads. In the winter it reduces heating requirements nominally. It also reduces sun and snow reflected glare although glare problems associated with low sun or reflected sunlight should be controlled by the use of sunglasses and/or moveable window shades.

A comparison follows of the performance of a single pane of glass with the laminated version that is typically installed in our cabs (Tx = Transmittance):

Glass	Visible Light Tx	Solar Energy Tx	UV Tx
1.27 cm (0.5") Optifloat Clear	84%	64%	48%
2 x 1.27 cm (0.5") Laminated + 0.15 cm (.06") clear Saflex vinyl interlayer	77%	44%	0%

The lamination of the vinyl interlayer sheet with the glass, which has its own inherent colour, provides the light overall neutral tint required for cab glazing. The light neutral tint is a compromise between the degree of thermal transmission reduction and the loss of night time visibility, and has no adverse effect on coloured light definition. The caulking used between the window lites must be compatible with the vinyl interlayer to avoid deterioration of the vinyl interlayer along the edges of the glass.

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Laminated glass increases acoustical performance due to the vibration dampening characteristics of the vinyl interlayer. Each laminated glazing shall be a minimum of 22 mm (0.9 in) thick to attenuate external noise.

Until they are installed, the glass panes must be protected from the weather as exposure to moisture will cause delamination.

## 2.4 Glass Tinting

Although the cab window glass or the vinyl interlayer could be tinted for light or heat reduction purposes, this is not recommended. Clear windows have been recommended for several years as the option with the most flexibility since they can be used with or without sunglasses and translucent window shades, as required. In contrast, the light reducing performance of tinted windows cannot be altered; it exists whether it is required or not. With clear windows, there is no degradation of overcast, night, dawn, or dusk vision whereas a combination of tinted windows and sunglasses or tinted windows and translucent window shades might screen out an excessive amount of light. Also, windows that are tinted dark enough to have a significant effect on solar radiation heating would reduce visibility at night to an unacceptable degree.

## 2.5 Glass Inspections

Laminated glass has not come up to the high visual standards commonly met by single pane glass. Defects in the glass or the PVB; be they inherent or created during the manufacture, transport or installation process, may interfere with controllers'/specialists' view. Therefore, it is important that a local operational representative carefully inspect each new glazing before accepting it. During the construction of a new facility, this should occur as soon as practicable, ideally before the caulking is applied, but definitely before Construction Services hands the building over to Operations.

The glazings must be cleaned on both sides before the inspection. The glazing panels should be checked from the typical controller/specialist eye-level position, approximately 91 cm (36 in) back from the perpendicular glass line. Look for visible defects which will impair the viewable surface, including but not limited to, the following:

- 2.5.1. chips, cracks, scratches or flaws in the glass;
- 2.5.2. inclusions (foreign matter) or other visible imperfections;
- 2.5.3. ripples or other distortions which blur normal visual acuity;
- 2.5.4. mottling or discolouration of the laminating film;
- 2.5.5. bubbles larger than 1 mm (1/24 in);
- 2.5.6. strings, lines or groups of bubbles in the laminating film, regardless of bubble size; and
- 2.5.7. signs of delamination, as in this photo:

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**Photo 1**

Minor defects in areas of the glazings that do not affect the controllers'/specialists' lines-of-sight may be considered acceptable. Replacement is the only way to correct deficiencies as polishing to remove scratches is not usually recommended since it may result in distortions in the glass.

Note 1: The manufacturer's logo and telephone number should be clearly etched on the lower left corner after their final testing and approval of each laminated pane. This etched identification should be readable from inside the cab and should also mention "Clear Float Glass" and "Tint and Make of Vinyl Interlayer".

Note 2: Up to four (4) extra glazing panes may be supplied; two (2) panes for contingency use during construction and two (2) to be reserved for future maintenance. Contingency panes not used during construction may be accepted as additional spares for maintenance but if not accepted, the contractor must dispose of them. The spare panes should be stored packaged in their original containers with the manufacturer's labels and seals intact. They must be stored vertically, blocked off the floor in a weatherproof enclosure to avoid exposure to moisture.

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### 3. MAINTENANCE

#### 3.1 Cab Window Cleaning

Provision shall be made to ensure that the interior and exterior of the cab windows can be cleaned on a regular basis. The required frequency of cab window cleaning will vary according to local conditions.

### 4. CAB TRANSLUCENT (Mylar) WINDOW SHADES

#### 4.1 Optimum Characteristics

The perfect window shades might be expected to:

- 4.1.1. screen-out bright haze;
- 4.1.2. prevent solar heating of isolated areas of the cab;
- 4.1.3. allow continued observation of the required viewing area;
- 4.1.4. not alter colours, such as the colour of light gun signals viewed by pilots or vehicle drivers;
- 4.1.5. not visually distort viewed objects and scenes; and
- 4.1.6. be extremely resistant to wear and scratching, easy to clean and keep clean, and not deteriorate from extended exposure in the sun's rays.

In actual practice it is difficult to achieve some of these characteristics, and perhaps impossible to achieve others.

The first five items above are obtainable but some require scientific knowledge and testing to determine. The sixth item seems impossible to achieve; replacement is usually required at approximately five (5) year intervals. Generally, tinted shades are reasonably effective for shielding localized sections of the cab from the heating effects of direct sunlight but they degrade image quality somewhat and have to be used judiciously to ensure that vision is not too seriously degraded.

#### 4.2 Glare and Solar Heating

Since the cab is equipped with clear glass windows, it is desirable to cut out glare or control the heating effect of the sun's rays at certain times. Environmental heat control with window shades is possible by their absorption or reflection of infra-red (IR). So far, due to problems caused both inside and outside the cab by reflective surfaces, it has been found impractical to use the 'reflection' method. It is, however, quite possible to have the blinds absorb infrared if the heat is removed from the blinds by the air conditioning system.

Window shades can be effective in controlling the rapid localized build-up of heat in the working areas of the cab. This may be done by lowering the shades on the sunny side only, leaving the others up.

#### 4.3 Unbalanced Radiation Screening

Previous versions of this document (formerly *NP210*) reported that if the amount of passage of 'visible' light is considerably less than that of 'infra-red' light there is said to be a danger of sustaining retinal damage by looking too directly into the sun. This happens as the low passage of visible light allows the iris of the eye to open wider, which, in turn, could result in an overly intense exposure to infra-red light. It has subsequently been determined that it is unlikely the IR

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in natural sunlight would be a problem because the maximum values for IR exposure from natural sunlight are 100 times less than the threshold for potential damage (*E. Casson, PhD, Eye Institute, Ottawa Hospital, University of Ottawa – September 27, 2002/Jeff Hovis, OD, PhD, School of Optometry, University of Waterloo – March 4, 2002*). Nevertheless, one should never stare at the sun, even through translucent window shades and/or sunglasses.

#### 4.4 Translucent (Mylar) Window Film Quality

While there are many distributors, fabricators and installers of translucent window shade film, there appear to be only two manufacturers of ATC grade film in North America: Madico Inc., Woburn, MA and CP Films, Martinsville, VA. These films must be special ordered and are typically produced in 500 foot rolls with a minimum order of 7,000 linear feet. Solar-Screen, Corona, NY and Plastic-View, Simi Valley, CA. are two distributors who purchase these rolls of film from the manufacturers and supply it to the fabricators and installers.

There are several types of film and although they are called a variety of names, the types used typically fall into three general categories based on their Visible Light Transmittance (VLT), which is a measurement of the amount of light that passes through the film:

- 4.4.1. light – VLT:  $\approx$  11 % (Madico's Eclipse and Smoke/Smoke);
- 4.4.2. medium – VLT: 6 to 8 % (Madico's SSLW500SR (FAA) (6 %) plus their KOOL VUE Silver Smoke #327 and CP Film's Triplex Eclipse which are both  $\approx$  8 %); and
- 4.4.3. dark – VLT: 2.4 % (CP Film's F72SR Grey).

Note: Ultraviolet transmittance ranges from less than 1 % to 4 %.

Translucent window films shall not be polarized so that specular reflections from aircraft fuselages (i.e., glint) are not selectively filtered out. Filtering out scattered and reflected light with polarized translucent window films may make it more difficult to see aircraft at a distance, especially the smaller ones. Currently, neither Madico nor CP Films has the capability of making polarized translucent window film.

Selection of the proper type of translucent (Mylar) window film is very important and will depend on geographical location, cab orientation and air traffic (aircraft) characteristics. Several types of translucent window shade material were tested by the NRC in the late 70s and early 80s and more recently by INO in 2001. Based upon the results of these tests, it seems reasonable to conclude that, while the window shades provide quite effective relief from glare, most, if not all, degrade to some extent the quality of images seen through the bare window glass. Therefore the translucent window shades should only be used if absolutely necessary and if used should be set to cover the least amount of window possible. It is especially important to minimize the total coverage of the window shades at dusk to allow a fairly normal night vision adaptation process.

Translucent window shades should not change the colour of viewed objects. This requires a 'neutral grey' tint. Note that neutral grey shades do not necessarily look grey. As directed in *ATC MANOPS Part 3*, light gun signals must not be projected through the window shade as the color and intensity of the light signal may be affected.

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#### 4.5 Installation of Translucent (Mylar) Window Blinds

Motorized translucent window shades shall be installed on all cab windows as follows:

- 4.5.1. unless the type of translucent window film required is known, a sample of a light, medium and dark mylar film material (VLT approximately 11%, 6 - 8% and 2.4% respectively) shall be provided for the staff to choose the one appropriate to their operation. Samples are available from OSR;
- 4.5.2. most types of translucent window film have a scratch-resistant (SR) coating on one side. These films shall be installed with the SR coating facing out (the glass side) as it is glossier and therefore more reflective. The side which has the coating can be determined by folding the film over on itself and trying to move (slide) the two overlapped parts. The non-coated side will move much more freely than the coated side;
- 4.5.3. each shade shall be electrically operated and separately controlled from a central location;
- 4.5.4. the drive controls shall allow the shades to be positioned/stopped at any height on the window (without having to be pressed continuously) and be configured to operate each window shade individually. This can be achieved by utilizing switches that maintain continuous travel until either the switch is pressed to stop the movement or until preset limits have been reached;
- 4.5.5. each shade should have a manual override capability;
- 4.5.6. the stored roller blinds and mechanisms should not reduce the upward viewing angle;
- 4.5.7. the blinds shall be installed at the top of the windows and unroll downward over the glass. The gap between the roller assembly and the top of the window glass shall be minimized so that the rollers meet the glass within approximately 30 cm (12 in) from the top. This will allow the shade to follow the angle of the glass rather than hanging vertically so that reflections are minimized. Care must be taken to ensure that the shades do not overlap and that the gap between each window shade is kept to a minimum;
- 4.5.8. the roller assemblies should be easily removable for maintenance and frequent cleaning;
- 4.5.9. the roller blind motors shall operate quietly (AC powered motors are recommended as they have proven to be quieter than DC) and should have a quick disconnect for cleaning purposes; and
- 4.5.10. all components required for mounting the window blinds shall be non-reflective, matte black or other dark colour.

#### 4.6 Mylar Film Cleaning Procedures

The transparent Mylar window shades in AOF cabs require regular cleaning to prevent film build-up and scratching. Detailed cleaning instructions can be found in Construction and Facilities Management Books - *B3S6D8 Mylar Shade Cleaning*.

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## 5. REFERENCES

- 5.1 Standard maintenance procedures are available in Construction & Facility Book 3, Section 6.
- 5.2 A list of all legislated maintenance requirements including code references is available in Construction & Facility Book 3, Section 3.  
Document is titled 'B3S3D5 – Legislated Equipment Reference Information'
- 5.3 All relevant codes and standards are available in Construction & Facility Book 3, Section 2.  
Document is titled 'B3S2D1 – Code Library'
- 5.4 A listing of all job plans available in Maximo is available in Construction & Facility Book 3, Section 3.  
Document is titled 'B3S3D4 - Job Plan Listing'
- 5.5 Report entitled *Air Traffic Control Tower Glazing Study, ATR-010*, dated May 1991