



**Canadian Food  
Inspection Agency**

**Agence canadienne  
d'inspection des aliments**

**ISSUED FOR TENDER**

**JANUARY 29, 2020**

**PROJECT:**

**CANADIAN FOOD INSPECTION AGENCY (CFIA)  
CALGARY LABORATORY, CALGARY, AB**

**ROOF REPLACEMENT**

**PRIME CONSULTANT:**

**STANTEC ARCHITECTURE LTD.  
200 – 325 25TH STREET SE,  
CALGARY, ALBERTA  
T2A 7H8**



STANTEC ARCHITECTURE LTD.  
PERMIT No. 536  
ISSUED PURSUANT TO THE  
ARCHITECTS ACT OF ALBERTA

JANUARY 29, 2020

**END OF SECTION**

**DIVISON 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS**

00 01 01	Project Title Page
00 01 07	Seals Page
00 01 10	Table of Contents
00 01 15	List of Drawing Sheets

**DIVISION 01 – GENERAL REQUIREMENTS**

**Summary**

01 11 00	Summary of Work
----------	-----------------

**Administrative Requirements**

01 31 13	Project Coordination
01 31 19	Project Meetings
01 33 00	Submittal Procedures
01 35 13	Special Project Procedures
01 35 14	Project Security and Safety Procedures
01 35 16	Alteration and Renovation Procedures
01 35 29	Work Site Safety

**Quality Requirements**

01 41 00	Regulatory Requirements
01 45 00	Quality Control

**Temporary Facilities and Controls**

01 50 00	Temporary Facilities and Controls
----------	-----------------------------------

**Product Requirements**

01 62 00	Product Options and Substitutions
----------	-----------------------------------

**Execution and Closeout Requirements**

01 73 00	Execution
01 73 30	Cutting and Patching
01 74 23	Final Cleaning
01 77 00	Closeout Procedures
01 78 23	Operation and Maintenance Data and Manuals
01 78 39	Project Record Documents
01 79 00	Equipment and Systems Demonstration and Instruction

**DIVISION 02 – EXISTING CONDITIONS**

02 41 19 Selective Demolition

**DIVISION 06 – WOOD, PLASTICS, AND COMPOSITES**

06 10 00 Rough Carpentry

**DIVISION 07 – THERMAL AND MOISTURE PROTECTION**

07 21 19 Foam In Place Insulation  
07 50 05 Preparation for Re-Roofing  
07 55 52 Modified Bituminous Protected Membrane Roofing  
07 60 00 Metal Flashing  
07 90 00 Sealants

**APPENDIX**

Pinchin Ltd - Hazardous Building Materials Assessment, Roof, Canadian Food Inspection Agency, 3650 36 Street NW, Calgary, Alberta – November 14, 2019 – 43 Pages

**END OF SECTION**

**1 DRAWINGS**

The following is a list of the Drawings:

<b>NUMBER</b>	<b>NAME/TITLE</b>	<b>DATE</b>	<b>REVISION</b>
A000	COVER PAGE	2020.01.29	0
<b>ARCHITECTURAL</b>			
A101	GENERAL NOTES AND VICINITY PLAN	2020.01.29	0
A102	DEMOLITION ROOF PLAN	2020.01.29	0
A103	RENOVATION ROOF PLAN	2020.01.29	0
A201	ROOF DETAILS	2020.01.29	0
A202	ROOF DETAILS	2020.01.29	0
<b>STRUCTURAL</b>			
S101	GENERAL NOTES AND ROOF DETAILS	2020.01.29	0

**END OF SECTION**

**1 WORK UNDER THE CONTRACT**

- .1 The Work comprises the following:
  - .1 Demolition of existing roofing structures with the supply and installation of new SBS modified bituminous membranes protected roofing systems.
  - .2 Municipal Address: Canadian Food and Inspection Agency (CFIA) Calgary Laboratory, 3650 36<sup>th</sup> Street NW, Calgary, Alberta, T2L 2L1.

**2 CONTRACTOR'S USE OF PROJECT SITE**

- .1 The Contractor will have partial use of the Project Site for performance of the Work.
- .2 The Contractor shall limit its use of the Project Site to the following areas:
  - .1 Areas required to perform the Work.
- .3 The Contractor shall limit its use of the Project Site to allow for:
  - .1 CFIA occupancy.

**3 CFIA OCCUPANCY**

- .1 CFIA will occupy premises during the Contract Time. The Contractor will cooperate with CFIA and Departmental Representative to minimize conflict and to facilitate usage.

**END OF SECTION**

## **1 GENERAL COORDINATION**

- .1 The Contractor will coordinate all construction activities as required to ensure efficient and orderly installation of each part of the Work.
- .2 If installation of one part of the Work is dependent on installation of other components, the Contractor will coordinate construction activities in the sequence required to obtain the best results.
- .3 If availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair.

## **2 ADMINISTRATIVE PROCEDURES**

- .1 The Contractor will coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of the Work. Administrative activities include, but are not limited to:
  - .1 Preparation of schedules;
  - .2 Installation and removal of temporary facilities;
  - .3 Delivery and processing of submittals;
  - .4 Progress meetings; and
  - .5 Contract acceptance procedures.

## **3 GENERAL INSTALLATION PROVISIONS**

The Contractor will:

- .1 require the installer of each major component to inspect both the substrate and conditions under which Work is to be performed, and ensure unsatisfactory conditions have been corrected in an acceptable manner before the Work proceeds;
- .2 ensure compliance with manufacturer's installation instructions and recommendations, to the extent those instructions and recommendations are more explicit or stringent than requirements contained in the Contract;
- .3 inspect Materials immediately upon delivery and prior to installation, rejecting damaged and defective items;
- .4 provide attachment and connection devices and methods necessary for securing the Work, ensuring it is secured true to line and level with allowance for expansion and building movement;
- .5 provide uniform joint widths in exposed Work, arrange joints in exposed Work to obtain the best visual effect and refer questionable choices to the Departmental Representative for final decision;

- 
- .6 install each component during weather conditions and Project status that will ensure the best possible results;
  - .7 isolate each part of the completed construction from incompatible material, as necessary to prevent deterioration;
  - .8 coordinate temporary enclosures with required inspections and tests to minimize the necessity of uncovering completed construction for that purpose;
  - .9 install individual components at standard mounting heights recognized within the industry for the particular application indicated, unless indicated otherwise in the Drawings, referring questionable mounting height decisions to the Departmental Representative for final decision; and
  - .10 supervise construction activities to ensure that no part of the Work, completed or in progress, is subject to harmful, dangerous, damaging or otherwise deleterious exposure during the construction period.

#### **4 DEPARTMENTAL REPRESENTATIVE**

- .1 CFIA will appoint a Departmental Representative to be the Contractor's contact regarding all facets of the work which directly or indirectly affect the function of the facility.
- .2 Contractor shall comply with all instructions and directions given by the Departmental Representative so as to minimize disruption to the functions of the building.

**END OF SECTION**



## 1 PRE-CONSTRUCTION MEETING

- .1 The Contractor will schedule a pre-construction meeting to take place no more than 14 days after the date of commencement of the Contract and prior to commencement of activities at the Project Site.
- .2 This meeting will be chaired by the Departmental Representative.
- .3 The location of the meeting will be determined by the Contractor to allow all stakeholders the maximum opportunity to participate.
- .4 Attendees
  - .1 Contractor: Senior management, Project manager, site superintendent, representatives of major Subcontractors, and others as necessary.
  - .2 Departmental Representatives as determined by CFIA.
- .5 Agenda
  - .1 Introduction of Departmental Representatives and Contractor representatives and a review of their respective assignments.
  - .2 Review of the significant contractual / execution responsibilities and administrative and procedural requirements.
  - .3 Other business.

## 2 CONSTRUCTION PROGRESS MEETINGS

- .1 Unless otherwise directed by the Departmental Representative, the Contractor will schedule bi-weekly construction progress meetings during the course of the Work to monitor construction progress and identify problems, and decide actions required for their solution, to expedite the Work.
- .2 This meeting will be chaired by the Departmental Representative.
- .3 The location of the meeting will be on-site, within a room booked by CFIA.
- .4 Attendees
  - .1 Contractor: Project manager, site superintendent and, when requested by the Departmental Representative, Subcontractors and other parties involved in the Work, all of whom will be qualified and authorized to act on behalf of the party each represents.
  - .2 Departmental Representatives as determined by CFIA.
- .5 Agenda:
  - .1 Review and approval of minutes of previous meeting.

- 
- .2 Review of items of significance that could affect progress.
  - .3 Other topics for discussion, as appropriate to the current status of the Work.
  - .6 Departmental Representative will record minutes and distribute copies to all attendees no more than seven days after the meeting.

### 3 WARRANTY MEETINGS

- .1 Warranty meetings will be held on an 'as needed' basis between Substantial Performance of the Work and Total Performance of the Work to bring to Contractor's attention Deficiencies identified during warranty period, determine action required for their correction, and monitor progress of Contract Deficiency correction.
- .2 This meeting will be chaired by the Departmental Representative.
- .3 The location of these meetings will be as agreed between the Departmental Representative and the Contractor.
- .4 Attendees
  - .1 Contractor: Project manager, site superintendent and, when requested by the Departmental Representative, Subcontractors and other parties involved in the Work, all of whom will be qualified and authorized to act on behalf of the party each represents.
  - .2 Departmental Representatives as determined by CFIA.
- .5 Agenda
  - .1 Review and approval of minutes of previous meeting.
  - .2 Review of progress of Deficiency correction.
  - .3 Identification of problems impeding Deficiency correction.
  - .4 Review of outstanding Deficiencies.
  - .5 Other business.
- .6 Departmental Representative will record minutes and distribute copies to all attendees no more than seven days after the meeting.

**END OF SECTION**

## **1 WORKERS' COMPENSATION BOARD CERTIFICATE**

- .1 Before commencement of activities at the Project Site, the Contractor will obtain and submit to Departmental Representative a certificate of account with the Workers' Compensation Board.

## **2 CASH FLOW FORECAST**

- .1 Before submission of first application for payment, the Contractor will submit a forecast of approximate monthly progress payments for the duration of the Contract to the Departmental Representative for approval.
- .2 This cash flow forecast will be revised by the Contractor as the Work progresses, as required, or when requested by the Departmental Representative.
- .3 At the beginning of the Project, the Contractor will submit to the Departmental Representative a cost breakdown outlining the cost of each discipline and scope of work included in the Drawings and Specifications.

## **3 SUBMITTAL PROCEDURES**

- .1 Submittals shall be submitted to the Departmental Representative through the Contractor.
- .2 Submittals shall be made in electronic format (pdf).
- .3 Coordinate each submittal required for the Construction with requirements of the Construction and Contract Documents. Individual submittals must include all related information.
- .4 Contractor shall distribute copies of submittals to parties whose work is affected by submittals before final submission for review by Departmental Representative.
- .5 Accompany submittals with transmittal letter, in duplicate, containing:
  - .1 Date.
  - .2 Construction title and number.
  - .3 Contractor's name and address.
  - .4 Sub-Contractor's name and address.
  - .5 Identification and quantity of each submittal.
  - .6 Other pertinent data.
- .6 Each submittal shall be identified numerically by relevant specification section number with a numeric indicator for multiple submittals by that section followed by revisions number, for example 07 55 52-01-R0.

- 
- .7 Make submittals with reasonable promptness and in an orderly sequence to cause no delay in the Construction. Be responsible for delays, make up time lost and pay added costs, at no additional cost to CFIA, incurred because of not making submittals in due time to permit proper review by Departmental Representative.
    - .1 If, at any time, the Contractor submits a large enough number of submittals such that Departmental Representative cannot process these submittals within 10 Business Days, the Departmental Representative, within 3 Business Days of receipt of such submittal, will provide CFIA with an estimate of the time necessary for processing same. Contractor shall accommodate such necessary time at no increase in the Contract Time and at no additional cost to the CFIA.
  - .8 Make any changes in submittal that Departmental Representative may require, consistent with Contract Documents, and resubmit as directed by Departmental Representative.
  - .9 Notify Departmental Representative, in writing, when resubmitting, of any revisions other than those requested by Departmental Representative.
  - .10 Submittals that contain substitutions will be rejected. Substitutions shall be permitted only in accordance with Section 01 62 00.
  - .11 Do not proceed with work affected by a submittal, including ordering of products, until relevant submittal has been reviewed by Departmental Representative.
  - .12 Prepare submittals using SI (metric) units.
  - .13 Contractor's responsibility for errors and omissions in submittals is not relieved by Departmental Representative's review of submittals.
  - .14 Contractor's responsibility for deviations in submittal from requirements of Contract Documents is not relieved by Departmental Representative's review of submittal, unless Departmental Representative gives written acceptance of specific deviations.
  - .15 Keep copies of reviewed submittals at the Project Site in a neat, orderly condition. Only submittals that have been reviewed by the Departmental Representative and are marked with Departmental Representative's review stamp, as applicable, are permitted at the Project Site.
  - .16 The Construction shall conform to reviewed submittals subject to the requirements of this section. Remove and replace materials or assemblies not matching reviewed submittals at no increase in the Contract Time and at no additional cost to the CFIA.

#### 4 REVIEW OF SUBMITTALS

- .1 Contractor's review of submittals:
  - .1 Contractor will review submittals for conformity to Contract Documents before submitting to Departmental Representative. Submittals shall bear stamp of Contractor and signature of a responsible official in Contractor's organization indicating in writing that such submittals have been checked and coordinated by Contractor.

- 
- .2 Contractor shall check and sign each submittal and make notations considered necessary before submitting to Departmental Representative for review. Where submittal is substantially and obviously in conflict with requirements of Contract Documents, reject submittal without submitting to Departmental Representative and request resubmission.
  - .2 Departmental Representative's review of submittals:
    - .1 Review of submittals by Departmental Representative is for the sole purpose of ascertaining conformance with the general design concepts and the general intent of the Contract Documents. This review shall not mean that Departmental Representative approves the detail design inherent in the submittals, responsibility for which shall remain with the Contractor. Such review shall not relieve the Contractor of responsibility for errors or omissions in the submittals, or responsibility for meeting requirements of Contract Documents.
    - .2 Contractor shall be responsible for dimensions to be confirmed and correlated at the Project Site for information that pertains solely to fabrication processes or to techniques of construction and installation, and for coordination of the Construction.
    - .3 Departmental Representative's review and markings on submittals do not authorize changes in the Construction or the Contract Time and will be accommodated at no additional cost to the Contractor. If, in the opinion of the Contractor, the Departmental Representative's markings on submittals constitute a change in the Construction or will effect a change in the Contract Time, then the Contractor shall so notify the Departmental Representative in writing and request an interpretation. If the Departmental Representative finds the markings on submittals do constitute a change in the Construction or will effect a change in the Contract Time, then a Change Order will be prepared. The time taken to process such a request for interpretation shall not, in and of itself, constitute a change in the Construction nor increase the Contract Time.
    - .4 Submittals received but not required by the Contract Documents or requested by the Departmental Representative will not be reviewed by the Departmental Representative and will be marked 'NOT REVIEWED' by the Departmental Representative and returned to the Contractor.
    - .5 Departmental Representative's markings and resulting action required:
      - .1 Submittals requiring no changes will be marked 'REVIEWED' and shall be submitted with closeout submittals in accordance with Section 01 77 00.
      - .2 Submittals requiring several changes will be marked 'REVIEWED AS NOTED' and shall be revised and submitted with closeout submittals in accordance with Section 01 77 00.
      - .3 Submittals requiring substantial changes will be marked 'REVISE AND RE-SUBMIT' and shall be revised and resubmitted until Departmental Representative stamps submittal with 'REVIEWED' or 'REVIEWED AS NOTED'.
  - .3 Keep copies of reviewed submittals at the Project Site in a neat, orderly condition. Only submittals that have been reviewed by the Departmental Representative and are marked with Departmental Representative's review stamp, as applicable, are permitted at the Project Site.

- 
- .4 The Construction shall conform to reviewed submittals subject to the requirements of this section. Remove and replace materials or assemblies not matching reviewed submittals at no increase in the Contract Time and at no additional cost to the CFIA.

## 5 SCHEDULE OF SUBMITTALS

- .1 Before commencement of the Construction, submit a detailed schedule of submittals required by the Contract Documents and Departmental Representative.
  - .1 Schedule shall be accompanied by a checklist, correlated to the schedule of submittals, listing the following:
    - .1 Shop drawings.
    - .2 Product data.
    - .3 Samples.
    - .4 Reviews, tests and inspections by, as required:
      - .1 Manufacturers.
      - .2 Authorities having jurisdiction.
      - .3 Contractor.
      - .4 Departmental Representative.
      - .5 CFIA/Independent inspection and testing companies.
    - .5 Demonstration and instruction.
  - .2 Indicate dates for submitting, review time, resubmission time, float time, and last date for meeting construction schedule.
  - .3 Departmental Representative will review submittal schedule and advise Contractor if volume and timing of submittals will permit timely review and response. Departmental Representative may require modifications to submittals schedule in order to allow adequate time for review of submittals. Adjust submittals schedule and construction schedule as required to comply with Departmental Representative's needs.
  - .4 Make provisions in schedule for at least 10 Business Days for Departmental Representative's review of submittals.
  - .5 If the Departmental Representative requires resubmission of submittals, allow for an additional 10 Business Days review for each resubmission.
  - .6 Periodically resubmit the submittal schedule to correspond to changes in the construction schedule. Such resubmissions shall maintain the minimum 10 Business Day period for the Departmental Representative's review.
  - .7 Schedule submissions of submittals well in advance of scheduled dates for installation, to provide lead time for reviews and possible resubmissions and for placing orders and securing delivery to avoid delays in the Construction and the Project.

## 6 SHOP DRAWINGS

- .1 The Contractor will submit to Departmental Representative all shop drawings called for by the Scope Documents and for any other items the Departmental Representative reasonably requests. The Contractor is not permitted to proceed with the Work until those submissions have been reviewed.

- 
- .2 Submit shop drawings data sheet electronically in pdf format.
    - .1 Engineered shop drawings to have electronic stamp.
  - .3 Lettering on shop drawings shall be not less than 3 mm (1/8") high.
  - .4 Where requirements of Contract Documents are more stringent than design proposed on shop drawings, the requirements of the Contract Documents take priority.
  - .5 Shop drawing size shall be multiple of 213 mm and 275 mm (8-1/2" and 11") excluding 38 mm (1-1/2") binding margin and not larger than 838 mm x 1117 mm (33" x 44"). Leave minimum 150 mm x 100 mm (6" x 4") clear space for Departmental Representative's comments.
  - .6 Upon completion of review by Departmental Representative, marked sets of shop drawings will be returned to Contractor electronically for reproduction and distribution.
  - .7 Retain complete sets of prints of reviewed shop drawings for issuance to Departmental Representative immediately prior to Substantial Performance of the Work, in an acceptable, bound manner and in accordance with Section 01 77 00.
  - .8 Submit copies of reviewed shop drawings to authorities having jurisdiction as required in format acceptable to the authority having jurisdiction.
  - .9 Shop drawings shall include:
    - .1 Fabrication and erection dimensions.
    - .2 Plans, sections, elevations, arrangements and enough full-size details which indicate complete construction, components, methods of assembly as well as interconnections with other parts of the Construction.
    - .3 Design calculations prepared by professional engineer, as required, substantiating sizes for members and connections based on design loads.
    - .4 Location and type of exposed anchors, attachments and locations and types of fasteners, including concealed reinforcements to accept mounted fasteners.
    - .5 Adhesives, joinery methods and bonding agents.
    - .6 Kinds and grades of materials, their characteristics relative to their purpose, detailed description of finishes and other fabrication information.
    - .7 Configurations, types and sizes required; identify each unit type on drawing and on product.
    - .8 Descriptive names of equipment and mechanical and electrical characteristics when applicable.
    - .9 Data verifying that superimposed loads will not affect function, appearance and safety or work shown on shop drawings, as well as other interconnected work.
    - .10 Assumed design loadings, dimensions of elements and material specifications for load-bearing members.
    - .11 Proposed chases, sleeves, cuts and holes in structural members.
    - .12 Wall thicknesses of extrusions, shapes and dimensions.
    - .13 Location and types of welds. For structural welds use AWS symbols and clearly show net weld lengths and sizes.
    - .14 Materials, gauges, and sizes being supplied including connections, attachments, reinforcement, anchorage and locations of exposed fastenings.
    - .15 Installation instructions and details for products to be installed, including function of each part.

- .16 A list of products covered by, or included on, the shop drawing. List of products shall be complete and show manufacturer's name, product name, generic description, standard certification where specified, manufacturer's complete installation data and precautions against wrong installation, operation and maintenance.
- .17 Refer to individual sections of the specifications for more requirements for shop drawings.

## 7 PRODUCT DATA SHEETS

- .1 The Contractor will submit to Departmental Representative all product data sheets called for by the Scope Documents and for any other items the Departmental Representative reasonably requests. The Contractor is not permitted to proceed with the Work until those submissions have been reviewed.
- .2 Product data is standard printed information describing materials, products, equipment and systems; not specially prepared for the Work, and includes manufacturers' standard schematic drawings, catalogue sheets, diagrams, schedules, performance charts, illustrations and descriptive data. Product data will be accepted in lieu of Shop Drawings, provided that:
  - .1 information not applicable to the Work is deleted, and
  - .2 standard information is supplemented with information specifically applicable to the Work, as applicable.
- .3 Submit product data sheet electronically in pdf format.
- .4 Submit product data sheets for requirements requested in the Contract Documents and as the Departmental Representative may reasonably request where shop drawings will not be prepared due to a standardized manufacture of a product. Manufacturers' catalogue cuts will be acceptable in such cases, providing that they are 213 mm x 275 mm (8-1/2" x 11") originals, and that they indicate choices including sizes, colours, model numbers, option and other pertinent data, including installation instructions. Submissions showing only general information are not acceptable.
- .5 Where requirements of Contract Documents are more stringent than design proposed on product data sheets, the requirements of the Contract Documents take priority.
- .6 Upon completion of review by Departmental Representative, marked sets of product data sheets will be returned to Contractor electronically for reproduction and distribution.
- .7 Retain complete sets of prints of reviewed product data sheets for issuance to Departmental Representative immediately prior to Substantial Performance of the Work, in an acceptable, bound manner and in accordance with Section 01 77 00.

## 8 SAMPLES

- .1 The Contractor will submit to Departmental Representative all samples called for by the Scope Documents and for any other items the Departmental Representative reasonably requests. The Contractor is not permitted to proceed with the Work until those submissions have been reviewed.



- .2 Before submitting samples, verify that samples submitted represent current production, colours, textures, etc, and are available in enough quantities for the Construction.
- .3 Prepare a list of samples with sample submission dates. Allow adequate time for review, and possible resubmission without causing delay to the construction schedule.
- .4 Deliver 3 samples to Departmental Representative's office with expenses, including carrying costs, prepaid, unless otherwise instructed.
- .5 Identify samples or assemblies by Project number and name, name of Departmental Representative and Contractor, and date of submission. Identify location, specified material reference and any other pertinent information. Show construction by layered method if necessary, clearly displaying textures and patterns.
- .6 Resubmit samples until written acceptance is obtained from Departmental Representative.

**END OF SECTION**

## 1 INTENT

- .1 Due to the nature of the Project Site, Contractor will ensure the Work is performed in accordance with the listed special procedures, required for the Work.

## 2 DEFINITIONS

The following definition applies only to this section.

- .1 “**Contractor Personnel**” means all personnel who require access to the Project Site for the purpose of performing part of the Work.

## 3 HOURS OF WORK

- .1 The Contractor will make appropriate arrangements with the Departmental Representative for access to the Work and will coordinate schedule of Work and sequence with the Departmental Representative before Work begins.
- .2 Carry out Work during regular business hours while also coinciding with staggered work hours of facility staff, which may mean starting/stopping Work a little earlier or later. Facility’s staff staggered work schedule is from 7:00 AM to 4:00 PM. Coordinate with Departmental Representative.
- .3 Weekend and after-hours Work needs prior approval from the Departmental Representative.
- .4 The facility’s functions are to proceed uninterrupted during course of the Work.

## 4 MECHANICAL AND ELECTRICAL SERVICE OUTAGES

- .1 The Contractor will coordinate service outages and revisions with the Departmental Representative, minimizing disruptions to the facility operations and building system functions.

## 5 SMOKING / DRINKING

- .1 Smoking, drinking of alcohol, and the consumption of cannabis or other illegal substances is strictly prohibited anywhere on the Project Site.

## 6 CELLULAR TELEPHONES

- .1 Use of cellular phones and portable radio communication devices is not permitted within buildings on the Project Site. All cellular phones must be turned off, and all portable radio communication devices must be in the ‘receive’ mode only, when located within buildings. Cellular phones and portable radio communication devices are permitted outside of buildings on the Project Site.

---

**7 PHOTOGRAPHS**

- .1 Photographs of the site of the Work and construction details are permitted for Contractor and CFIA construction purposes only. Photographs of CFIA personnel and operations are strictly prohibited.

**8 SECURITY**

- .1 The Contractor will equip perimeter access doors / gates to the site of the Work with hardware and locks, and will implement measures and systems, as appropriate, to secure the site of the Work against illegal entry at all times.

**9 USE OF EXISTING PREMISES**

- .1 CFIA may refuse permission for, or implement permanent or temporary restrictions on, any or all Contractor Personnel use of any existing facility.
- .2 The Contractor will time deliveries and unloading to prevent traffic congestion and will keep entrances and exits of existing buildings clear at all times.
- .3 The Contractor will schedule hours, means and methods of Work to allow any staff and visitors, who are not at the Project Site in respect of the Work, continuous access to the Project Site. If Work is required outside normal working hours due to scheduling requirements or interference with facility operations, the Contractor will carry out this Work as directed by the Departmental Representative.

**10 PARKING**

- .1 Parking will be available on the Project Site for Contractor use.

**END OF SECTION**

**1. INTENT**

- .1 Due to the nature of the facility where the Work is being performed, special procedures must be followed during course of the Work.
- .2 Comply with the requirements specified in this Section and as otherwise determined by the Departmental Representative to maintain the required degree of security and safety for Contractor's Personnel, CFIA's personnel and the public.

**2. DEFINITIONS**

- .1 Contractor's Personnel: means all members of Contractor's work force and all other persons who require access to the facility for performance of the Work.
- .2 Departmental Representative: means the person delegated by the CFIA's Project Manager.

**3. PRE-CONSTRUCTION BRIEFING**

- .1 The Contractor and all Contractor's Personnel must attend an initial orientation seminar.
- .2 Only those persons who have attended this initial orientation seminar are permitted to commence work.

**4. ENTRY/EXIT AND IDENTIFICATION**

- .1 Upon each Project Site entry and exit, Contractor's Personnel will be required to follow sign-in and out procedures.
- .2 CFIA will issue identification badges to all Contractor Personnel working at the Project Site, which must be worn at all times while on the Project Site.
- .3 The Contractor will furnish a directory listing companies and Contractor Personnel employed on the Project Site, including their addresses and telephone numbers.

**5. SECURITY AND SAFETY REGULATIONS**

- .1 Comply with all security and safety regulations in force at the facility, at the Contractor's cost.
  - .1 An escort will be provided by CFIA to accompany the Contractor during construction.

- 
- .2 Be aware of and comply with the facility's standing orders in case of fire and other emergencies.
  - .3 Contractor's Personnel shall confine themselves to their particular duties and areas of work and shall not converse nor fraternize with facility inhabitants.

**6. VEHICLE ACCESS AND PARKING**

- .1 Restrict construction traffic to access routes designated by the Departmental Representative. Obtain the Departmental Representative's permission before using alternative routes.
- .2 Place directional signs along designated traffic route, to the Departmental Representative's satisfaction.
- .3 Restrict loading and unloading operations to areas designated by the Departmental Representative.
- .4 Restrict parking for Contractor's Personnel to areas designated by the Departmental Representative.
- .5 Maintain parking areas in good condition during construction period. After completion of Work, restore parking areas to condition equal to that at start of the Work.

**7. VEHICLE OPERATION AND SECURITY**

- .1 Observe posted speed limits and other traffic control signs on facility grounds.
- .2 Do not leave any vehicle running and unattended, regardless of how long the operator intends to be absent from the vehicle.
- .3 Do not leave keys in any unattended vehicle. Secure vehicles left unattended.
- .4 Do not park vehicles in fire lanes or access areas unless absolutely necessary for the purpose of carrying out the Work.
- .5 Secure vehicles left on site after normal working hours or overnight. Leave in designated parking area only.
- .6 Secure tools, ladders, materials etc. when left in or on vehicles. Secure tools out of sight, not in passenger compartment of vehicle.

---

**8. BARRIERS**

- .1 Enclose and secure work area with barriers as specified in Section 01 50 00. Locate barriers as designated by the Departmental Representative.
- .2 Ensure work area gates and accesses are locked and secured at end of each workday.

**9. TOOLS, EQUIPMENT AND MATERIAL CONTROL**

- .1 CFIA is not responsible for theft or loss of tools, equipment, and materials. The Contractor is responsible to properly store items and for security controls of the site of the Work.
- .2 Contractor's Personnel will be personally responsible and accountable for tools carried onto the site, upon entry and upon departure each workday, and upon completion of the Work.
- .3 Tools carried into an inhabited secure area must be accounted for, upon entry to and upon departure from such areas.
- .4 All tools must be permanently marked with the owner's name.
- .5 The CFIA may request that an inventory be provided of a tradesman's personal tools and may inspect such tools at any time to confirm count.
- .6 Maintain visual control of, and closely monitor use and location of, tools, equipment and materials at all times. Keep tools in immediate work area.
- .7 Do not leave tools and equipment unattended at any time without being shut off and properly secured.
- .8 Leave tools, equipment and materials in a secure storage area or otherwise secured to the CFIA's satisfaction when not in use during the workday and at the completion of each workday.
- .9 Tools that present a high security risk, such as saws, hammers, chisels, screw drivers, power nail drivers, crowbars, etc., must be removed from work areas upon the completion of each workday.
- .10 Use of explosive actuated fastening devices is prohibited.
- .11 Do not deposit or allow to accumulate outside confines of work area, unused and waste material, rubbish, and debris, including nails, screws, etc. Remove material so deposited from site immediately.

---

**10. PROCEDURES IN EVENT OF LOSS**

- .1 If a key, tool, piece of equipment or item of personal property is lost or missing, or there is an unexplained material shortage, take the following action immediately:
  - .1 Notify Departmental Representative and advise them of the loss. Do not attempt to search for the lost item(s) prior to this notification.
  - .2 Provide Departmental Representative with as much detail about the lost item as possible, including where it was lost and for how long it has been missing.
  - .3 Account for all other keys, tools, equipment and materials.

**END OF SECTION**

## 1 GENERAL

### .1 Scope of Work

- .1 The scope of work of this Section is the performance of alteration work which applies to the contract in general, and miscellaneous items to be administered by the Contractor.

### .2 Delivery of Materials

- .1 Time deliveries and unloading to prevent traffic congestion.
- .2 Do not obstruct the use of the existing buildings. Keep entrances and exits of existing buildings clear at all times.

### .3 Quality Assurance

- .1 All electrical equipment and fixtures are to be CSA approved and carry the appropriate CSA label.
- .2 Ensure all work performed and materials used, are of the same standard of quality as that of the existing finished building, as a minimum, unless otherwise scheduled or indicated.

### .4 Responsibility and Assignment to Trades

- .1 The General Contractor will assign the work of moving, removal, cutting, patching and repair to trades under his supervision, so as to cause the least damage to each type of work encountered, and so as to return the building as much as possible to the appearance of new work.
- .2 Assign patching and finishing materials to mechanics skilled in the Work of the finish trade involved.

### .5 Special Requirements

- .1 Maintain regular operation of the existing adjacent areas occupied by CFIA at all times with a minimum of conflict and disruption.
- .2 Do not interrupt essential services in the building. Schedule all necessary disconnections and reconnections of services 72 hours in advance, with the Departmental Representative.
- .3 Perform Work creating smoke or fumes in significant quantity, and work involving pneumatic hammer or drills or other equipment creating excessive noise or vibrations, only during the time agreed to by the Departmental Representative.



- 
- .4 Perform Work, including demolition or removal of materials, within acceptable limits of noise, as per City of Calgary bylaws. If, in the opinion of CFIA, noise due to construction activities becomes a problem, Departmental Representative reserves the right to request immediate cessation of the noisy activities, at no extra cost to CFIA.

## 2 PRODUCTS

### .1 Materials

- .1 Refer to the individual specification sections for other materials.

## 3 EXECUTION

### .1 Alterations/Renovations

- .1 Do all Work as indicated on drawings and as specified in the applicable specification Section.
- .2 Schedule and co-ordinate Work with the Departmental Representative before commencement.
- .3 Where structural changes are required to be made, carry out proper investigations to determine whether the required changes can be made safely. Immediately advise the Departmental Representative when existing conditions differ from the drawings.
- .4 Temporarily protect portions of the existing building where work is to be demolished, cut or removed and where new work is to be done, connections made, materials handled, or equipment moved and relocated. Provide temporary protection to protect and secure the interior of the building at all times from dust and interior environmental conditions are maintained.
- .5 Furnish and install adequate guards and other temporary protection to prevent injury to persons.
- .6 Where alterations occur, or where new and existing work join, cut, remove, patch, repair or refinish, the immediate adjacent surfaces, or so much thereof as is required by the involved conditions, and leave in as good a condition as existed prior to the commencing of the work. Ensure that the materials and workmanship employed in the alterations involving new construction, unless otherwise shown or specified, matches that of the original work. Perform each portion of the alteration work using trades which generally perform these portions. Maintain the integrity of fire rated construction.
- .7 Ensure that operations will not interfere with existing fire safety measures and arrangements, including supply of water, electric power, gas and other services, alarm systems, and approaches to the building which may be needed for fire fighting.

- 
- .8 If it becomes necessary for performance of contract work to interfere with the fire safety measures or arrangements, make application to the Departmental Representative for directions including any alternative fire safety precautions to be taken.
  - .9 Maintain safe passage to and from exits. Maintain access to and from the building at all times.
  - .10 Where work of this contract is required to be performed in adjoining areas, such as for mechanical and electrical connections, co-ordinate Work with Departmental Representative. Repair all damage due to work of this contract, clean up and leave area in a clean, tidy condition.
- .2 Preparation of Surfaces
- .1 After demolition of existing finishes, and the like, prepare surfaces for the new finishes. Include all work required to produce surfaces suitable to receive the new construction, or new finishes.
  - .2 Repair all surfaces affected by demolition or otherwise requiring preparation and leave ready to receive new finish.
- .3 Patching, Extending and Making Good to Existing Work
- .1 Skill:
    - .1 Patch, extend and make good existing work to match existing remaining surfaces. The quality of work must match existing and as specified in the Sections of this Specification.
    - .2 Where new materials are specified to be patched into or are to be installed adjacent to existing materials that are to remain as a part of the finished Work, ensure the new materials matches the existing as closely as possible in colour, texture, pattern and thickness. Provide tight joints or seamed joints as applicable. Provide a sample area(s) for Departmental Representative's review prior to proceeding with the work.
  - .2 Patching:
    - .1 In all areas where a portion of an existing finished surface is damaged, lifted, stained or otherwise imperfect, patch or replace the imperfect portion of the surface with matching material, to Departmental Representative's acceptance. Finish to match existing finishes unless specified otherwise. When existing material cannot be matched, salvaged material may be used subject to acceptance by Departmental Representative.
    - .2 If the patched or imperfect surface was originally painted, repaint the entire surface area to logical boundaries.

- 
- .3 Transitions:
    - .1 Where new work abuts or finishes flush with existing work, make the transition as smooth and workmanlike as possible. Install patched work to match existing adjacent work in texture and appearance so as to make the patch or transition acceptable to the Departmental Representative.
    - .2 All means and methods must be to the Departmental Representative's acceptance.
  - .4 Matching:
    - .1 Restore existing Work that is to remain in place but which is damaged during construction, to condition equal to that at the time of the start of work, to the satisfaction of the Departmental Representative.
  - .5 Overall Requirements:
    - .1 Where an existing product or type of construction occurs in the existing building, which is required to be patched and made good, but which is not specified as part of the new work, provide such products or types of construction as needed to patch, and match the existing work, as noted in this Section.

.4 Special Patching Requirements

- .1 In areas where any portion of an existing fire or acoustically rated finished surface structure is damaged, lifted, stained or otherwise made or found to be imperfect as a result of Work of this Contract, patch or replace the damaged area of the surface with matching material to provide same or better rating.
- .2 Provide solid support or substrate for patching of finishes.

.5 Work to Existing and Reuse of Existing Materials

- .1 Perform all work to existing as required to accommodate new construction.
- .2 Remove concrete pavers ballast and all related accessories for reinstallation on new roofing systems.
- .3 Perform all other work to existing as required to complete the project.

**END OF SECTION**

**1. WORK SITE SAFETY - THIS CONTRACTOR IS "PRIME CONTRACTOR"**

- .1 The Contractor shall, for the purposes of the *Occupational Health and Safety Act* (Alberta), and for the duration of the Work of this Contract:
  - .1 be the "prime contractor" for the "work site", and
  - .2 do everything that is reasonably practicable to establish and maintain a system or process that will ensure compliance with the Act and its regulations, as required to ensure the health and safety of all persons at the "work site".
- .2 The Contractor shall direct all Subcontractors, Sub-subcontractors, Other Contractors, employers, workers and any other persons at the "work site" on safety related matters, to the extent required to fulfill its "prime contractor" responsibilities pursuant to the Act, regardless of:
  - .1 whether or not any contractual relationship exists between the Contractor and any of these entities, and
  - .2 whether or not such entities have been specifically identified in this Contract.
- .3 CFIA does not anticipate that there will be any contractors, other than those performing the Work of this Contract, engaged in work at the "work site" during the performance of the Work of this Contract.

**END OF SECTION**

## 1 DEFINITIONS

The following definition applies only to this section.

- .1 “**Regulatory Requirements**” means laws, by-laws, ordinances, rules, regulations, codes, and orders of authorities having jurisdiction, and other legally enforceable requirements applicable to the Work and which are in, or come into, force during the Contract Time.

## 2 GENERAL

- .1 The Contractor will comply with Regulatory Requirements, unless specifically directed otherwise in the Request for Bids.
- .2 Except as otherwise specified, the Contractor will apply for, obtain and pay all fees associated with permits, licenses, certificates and approvals required by Regulatory Requirements and the proposed Contract, based on:
  - .1 Regulatory Requirements and fees in force at Closing; and
  - .2 any change in Regulatory Requirements or fees scheduled to become effective after Closing and of which public notice has been given before Closing.
- .3 CFIA will obtain permanent easements and rights of servitude which may be required for performance of the Work.
- .4 The Contractor shall give all notices required by Regulatory Requirements.

## 3 ALBERTA BUILDING CODE

- .1 The Contractor will conform to, and perform Work in accordance with, the Alberta Building Code, except as otherwise indicated in the Request for Bids.

**END OF SECTION**

**1. TESTING BY CONTRACTOR**

- .1 Contractor shall furnish to the CFIA, upon request, test results from testing performed by Contractor.

**2. TESTING BY CFIA**

- .1 CFIA reserves the right to employ services of independent testing agencies to establish if work complies with Contract Documents. CFIA will appoint and pay for services of such testing agency.
- .2 Where tests or inspections, by the CFIA appointed testing agency, indicate work is not in accordance with the Contract Documents, additional tests or inspections, as CFIA may require, to verify acceptability of corrected work, shall be paid for by Contractor.

**3. REFERENCE STANDARDS**

- .1 Within the text of these specifications, reference may be made to the following standards:
  - .1 ANSI - American National Standards Institute
  - .2 ASTM - American Society for Testing and Materials
  - .3 CGSB - Canadian General Standards Board
  - .4 CSA - Canadian Standards Association
  - .5 CAN - National Standard of Canada (published by CGSB)
  - .6 FM - Factory Mutual Engineering Corporation
  - .7 ULC - Underwriters Laboratories of Canada
- .2 The referenced standard and any amendments in force on the day of receipt of bids shall be applicable to the work during the duration of the Contract.

**END OF SECTION**

## 1 INTENT

- .1 The Contractor will provide temporary facilities and controls specified in this section and as otherwise required for performance of the Work.

## 2 FIELD OFFICES AND SHEDS

- .1 Contractor's office: During the entire period of performance of the Work, provide and maintain a suitable office for Contractor's use, with suitable tables or benches for storage and examination of Project drawings, specifications and other documents, and where all notices and instructions from CFIA may be received and acknowledged. This office will not be located within the facility itself. Location will be provided on the Project Site, as indicated on the Drawings, for accommodation of a site trailer to contain the Contractor's office.
- .2 Materials storage: Materials are not to be stored within the facility itself. Location will be provided on the Project Site, as indicated on the Drawings, for accommodation of materials storage.

## 3 UTILITIES

- .1 All utility services essential to CFIA continuous occupation and operation of all areas within the Project Site will be maintained in operation by CFIA, who will have unfettered access to these services where they pass through the Project Site.
- .2 The Contractor is responsible for upkeep and maintenance of utilities for own use within the Project Site areas.
- .3 Sanitary Facilities  

Sanitary facilities to be provided by the Contractor for their own personnel. Washrooms will not be provided by CFIA within the facility itself or otherwise.
- .4 Water Supply  

The Contractor will be permitted use of existing water supply for construction purposes, at no cost to the Contractor. Contractor will be responsible for all connections, disconnections, service lines, valves, etc. required to provide water supply service, and their removal on completion of the Work to the satisfaction of CFIA.
- .5 Temporary Light and Power  

The Contractor will be permitted use of existing light and power for construction purposes, at no cost to the Contractor. The Contractor will be responsible for all connections, disconnections, switches, service lines, etc., to provide light and power, and their removal on completion of the Work to the satisfaction of CFIA.
- .6 Should the Contractor abuse or misuse the utility services provided by CFIA, CFIA may revoke its permission to use these utility services. The Contractor will then be responsible to provide for these services at their own expense.

---

#### **4 SITE HOARDING AND FENCING**

- .1 The Contractor will supply, erect and maintain barricades, catch platforms and accessories, as required by authorities having jurisdiction. When no longer required, remove from the Project Site, with demolished material becoming property of the Contractor.

#### **5 TEMPORARY ENCLOSURES**

- .1 The Contractor will provide temporary barriers and enclosures, as required to ensure that construction Work may be carried out under temperature-controlled conditions and continues unhampered by adverse weather conditions through to completion of the Work.
- .2 Cold Weather Conditions
  - .1 In advance of expected cold weather and freezing temperatures, Contractor will take necessary action to protect construction from adverse effects of weather and to maintain temperatures at specified levels.
  - .2 During storage, handling and installation, maintain Materials at specified temperatures, ensuring Materials are not allowed to freeze or become coated with ice and snow.

#### **6 ENCLOSURE OF BUILDING**

- .1 Temporarily enclose and protect openings in envelope by means of temporary barriers and screens.

#### **7 PROTECTION OF THE PUBLIC AND FIRE SAFETY**

- .1 Comply with requirements of the Alberta Building Code, Part 8, except as specified otherwise.

#### **8 ACTIVITIES GENERATING VIBRATION, NOISE OR SAFETY CONCERNS**

- .1 Operations considered by CFIA to generate vibration, noise or safety concerns include, but are not limited to:
  - .1 Noise generating activities (in excess of 80 db)
- .2 For these activities, the Contractor will:
  - .1 provide the Departmental Representative with 48 hours advance notice for the planned activity and request approval to carry out this Work, scheduling timing of this Work with the Departmental Representative.
  - .2 stop Work generating vibration, noise or safety concerns, when instructed verbally or in writing by Departmental Representative. This stopped Work is not permitted to be resumed until authorized by the Departmental Representative.



---

## 9 ENVIRONMENTAL CONTROLS

- .1 The Contractor will provide all necessary dust, noise, fume and odour barriers to adequately protect the existing facilities from environmental effects of the Work.

## 10 PREVENTING MOULD DURING CONSTRUCTION

- .1 If using temporary heaters, use a type that exhausts combustion products directly to the exterior of building enclosures. Use of temporary heaters that exhaust combustion products into building enclosures is not permitted.
- .2 Protect all organic construction Materials from the elements, before, during and after their installation.
- .3 Refer to CCA 82 - 2004 "Mould Guidelines for the Canadian Construction Industry", published by the Canadian Construction Association, for additional information about mould, its implications and recommendations on its prevention.
- .4 The Contractor will promptly report to the Departmental Representative any mould growth observed at the Project Site. If CFIA determines that mould growth was caused by the Work, the Contractor shall promptly remove the mould in accordance with procedures prescribed by CFIA, at no cost to CFIA.

## 11 CLEANING DURING CONSTRUCTION

The Contractor will:

- .1 at regular intervals during progress of Work, clean-up the Project Site and dispose of waste material, rubbish, and debris;
- .2 not allow waste material, rubbish and debris to accumulate and become an unsightly or hazardous condition. The Project Site will be maintained in a clean and orderly condition;
- .3 remove debris and rubbish from pipe chases, plenums, attics, crawl spaces and other closed or remote spaces, prior to enclosing the space;
- .4 not allow waste material, rubbish and windblown debris to contaminate adjacent properties;
- .5 sprinkle dusty debris with water, as required; and
- .6 lower waste material in a controlled manner; not permitting waste material to be dropped or thrown from heights.

## 12 WASTE DISPOSAL REQUIREMENTS

The Contractor will:

- .1 comply with Laws pertaining to disposal operations;

- .2 provide on-site metal containers with lids for collection and temporary storage of waste material, rubbish and debris;
- .3 dispose of waste material, rubbish and debris at disposal areas away from the Project Site;
- .4 not burn or bury waste material, rubbish or debris at the Project Site, or dispose of wastes into brooks, streams, rivers, waterways, lakes or ponds; and
- .5 not dispose of volatile wastes, such as mineral spirits, oil or paint thinner, in storm or sanitary drains.

**13 CLEANING OF STREETS AND SIDEWALKS**

- .1 The Contractor will take precautions to prevent depositing of mud or debris on roadways, sidewalks and paved areas, promptly cleaning up any mud or debris so deposited.
- .2 Neglect of these requirements will cause CFIA to have necessary clean-up work carried out and to charge all costs to the Contractor.

**END OF SECTION**

## **1 RELATED REQUIREMENTS**

- .1 Substitutions during bidding period: Instructions to Bidders.

## **2 DEFINITIONS**

- .1 Proprietary specification means a specification which includes one or more proprietary names of products or manufacturers, or both, and may also include descriptive, reference standard, or performance requirements, or any combination thereof.
- .2 Non-proprietary specification means a specification which includes descriptive, reference standard or performance requirements, or any combination thereof, but does not include proprietary names of products or manufacturers.
- .3 Substitution means a product or manufacturer not specified by proprietary name which may be equivalent in place of a product or manufacturer which is specified by proprietary name.

## **3 PRODUCT OPTIONS**

- .1 For products specified by non-proprietary specification:
  - .1 select any product by any manufacturer, which meets requirements of Contract Documents.
- .2 For products specified by proprietary specification:
  - .1 select any product or manufacturer named, or
  - .2 substitute an unnamed product or manufacturer in accordance with Article 4. of this Section.
- .3 For products specified by proprietary specification and accompanied by words indicating that substitutions will not be accepted:
  - .1 select any product or manufacturer named; substitutions are not permitted.

## **4 SUBSTITUTIONS**

- .1 Substitute Products: Where substitute products are permitted, unnamed products will be accepted by the Departmental Representative, subject to the following:
  - .1 Substitute products shall be the same type as, be capable of performing the same functions as, and meet or exceed the standards of quality and performance of the named product(s). Substitutions shall not require revisions to Contract Documents nor to work of Other Contractors.

- 
- .2 Substitute Manufacturers: Where substitute manufacturers are permitted, unnamed manufacturers will be accepted by the Departmental Representative, subject to the following:
    - .1 Substitute manufacturers shall have capabilities equivalent to those of the named manufacturer(s). Substitutions shall not require revisions to Contract Documents nor to work of Other Contractors.
  - .3 In making a substitution Contractor represents that:
    - .1 he has investigated substitute product or manufacturer, or both, and has determined that it meets the criteria specified in 4.1 or 4.2, or both, and
    - .2 he will make any changes to the Work necessitated by the substitution as required for the Work to be complete in all respects, and
    - .3 he waives claims for additional costs and time caused by substitution which may subsequently become apparent.
  - .4 Substitutions shall not be ordered nor installed without Departmental Representative's acceptance.
  - .5 If in Departmental Representative's opinion, a substitution does not meet requirements of Contract Documents, Contractor shall, at no extra cost to CFIA, provide a product which, in Departmental Representative's opinion, does meet requirements of Contract Documents.

## **5 PROPRIETARY SPECIFICATIONS**

- .1 Notwithstanding specified proprietary names of either or both products or manufacturers, products provided shall meet other applicable requirements of Contract Documents. Modify products if necessary to ensure compliance with all requirements of Contract Documents.

## **6 CHANGES TO ACCEPTED PRODUCTS AND MANUFACTURERS**

- .1 Products and manufacturers accepted by Departmental Representative for use in performance of Work of Contract shall not be changed without Departmental Representative's written consent.
- .2 Submit requests to change accepted products and manufacturers to Departmental Representative in writing, including product data indicated in article 7.

## **7 PRODUCT DATA**

- .1 When requested by Departmental Representative, submit complete data substantiating compliance of a product with requirements of Contract Documents. Include the following:
  - .1 Product identification, including manufacturer's name and address.

- .2 Manufacturer's literature providing product description, applicable reference standards, and performance and test data.
- .3 Samples, as applicable.
- .4 Name and address of projects on which product has been used and date of each installation.
- .5 For substitutions and requests for changes to accepted products, include in addition to the above, the following:
  - .1 Itemized comparison of substitution with named product(s). List significant variations.
  - .2 Designation of availability of maintenance services and sources of replacement materials.

**END OF SECTION**

## **1 RELATED SECTIONS**

- .1 Section 01 11 00 – Summary of Work
- .2 Section 01 31 13 – Project Coordination
- .3 Section 01 33 00 – Submittal Procedures
- .4 Section 01 35 16 – Alteration and Renovation Procedures
- .5 Section 01 45 00 – Quality Control
- .6 Section 01 62 00 – Product Options and Substitutions
- .7 Section 01 73 30 – Cutting and Patching
- .8 Section 02 41 19 – Selective Demolition
- .9 Section 07 50 05 – Preparation for Reroofing
- .10 Section 07 55 52 – Modified Bituminous Protected Membrane Roofing
- .11 Section 07 60 00 – Metal Flashing

## **2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit written request in advance of cutting or alteration which affects:
  - .1 Structural integrity of elements of project.
  - .2 Integrity of weather-exposed or moisture-resistant elements.
  - .3 Efficiency, maintenance, or safety of operational elements.
  - .4 Visual qualities of sight-exposed elements.
  - .5 Work of CFIA.
- .3 Include in request:
  - .1 Identification of project.
  - .2 Location and description of affected Work.
  - .3 Statement on necessity for cutting or alteration.
  - .4 Description of proposed Work, and products to be used.
  - .5 Alternatives to cutting and patching.

- 
- .6 Effect on Work of CFIA.
  - .7 Date and time work will be executed.

### **3 MATERIALS**

- .1 Required for original installation.
- .2 Change in Materials: Submit request for substitution in accordance with Section 01 62 00 - Product Options and Substitutions.

### **4 PREPARATION**

- .1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
- .2 After uncovering, inspect conditions affecting performance of Work.
- .3 Beginning of cutting or patching means acceptance of existing conditions.
- .4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.
- .5 Provide protection from elements for areas which are to be exposed by uncovering work.

### **5 EXECUTION**

- .1 Execute cutting, fitting, and patching to complete Work.
- .2 Fit several parts together, to integrate with other Work.
- .3 Remove and replace defective and non-conforming Work.
- .4 Remove samples of installed Work for testing when required.
- .5 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
- .6 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- .7 Employ skilled and experienced installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
- .8 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed without prior approval.
- .9 Restore work with new products in accordance with requirements of Contract Documents.

- .10 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .11 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with fire rated material, to full thickness of the construction element.
- .12 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.

**END OF SECTION**



**1 SECTION INCLUDES**

- .1 Requirements and limitations for cutting and patching of Work.

**2 RELATED SECTIONS**

- .1 Section 01 11 00 – Summary of Work
- .2 Section 01 31 13 – Project Coordination
- .3 Section 01 33 00 – Submittal Procedures
- .4 Section 01 35 16 – Alteration and Renovation Procedures
- .5 Section 01 45 00 – Quality Control
- .6 Section 01 62 00 – Product Options and Substitutions
- .7 Section 01 73 00 – Execution
- .8 Section 02 41 19 – Selective Demolition
- .9 Section 07 50 05 – Preparation for Reroofing
- .10 Section 07 55 52 – Modified Bituminous Protected Membrane Roofing
- .11 Section 07 60 00 – Metal Flashing
- .12 Individual Product Specification Sections:
  - .1 Cutting and patching incidental to work of the Section.
  - .2 Advance notification to other sections of openings required in Work of those sections.
  - .3 Limitations on cutting structural members.

**3 SUBMITTALS**

- .1 Submit written request in advance of cutting or alteration which affects:
  - .1 Structural integrity of any element of Project.
  - .2 Integrity of weather exposed or moisture resistant element.
  - .3 Efficiency, maintenance, or safety of any operational element.
  - .4 Visual qualities of sight exposed elements.
  - .5 Work of CFIA.

- 
- .2 Include in request:
    - .1 Identification of Project.
    - .2 Location and description of affected Work.
    - .3 Necessity for cutting or alteration.
    - .4 Description of proposed Work and Products to be used.
    - .5 Alternatives to cutting and patching.
    - .6 Effect on work of CFIA.
    - .7 Date and time work will be executed.

#### **4 MATERIALS**

- .1 Primary Products: Those required for original installation.
- .2 Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 62 00.

#### **5 EXAMINATION**

- .1 Examine existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching.
- .2 After uncovering existing Work, assess conditions affecting performance of Work.
- .3 Beginning of cutting or patching means acceptance of existing conditions.

#### **6 PREPARATION**

- .1 Provide temporary supports to ensure structural integrity of the Work. Provide devices and methods to protect other portions of Project from damage.
- .2 Provide protection from elements for areas which may be exposed by uncovering work.

#### **7 CUTTING**

- .1 Execute cutting and fitting to complete the Work.
- .2 Remove and replace defective or non-conforming Work.
- .3 Remove samples of installed Work for testing when requested.
- .4 Provide openings in the Work for penetration of mechanical and electrical work.
- .5 Employ skilled and experienced installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.

- 
- .6 Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

## 8 PATCHING

- .1 Execute patching to complement adjacent Work.
- .2 Fit Products together to integrate with other Work.
- .3 Execute work by methods to avoid damage to other Work, and which will provide appropriate surfaces to receive patching and finishing.
- .4 Employ skilled and experienced installer to perform patching for weather exposed and moisture resistant elements, and sight-exposed surfaces.
- .5 Restore work with new Products in accordance with requirements of Contract Documents.
- .6 Fit work air-tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .7 At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material, to full thickness of the penetrated element.
- .8 Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.

**END OF SECTION**

## **1 RELATED SECTIONS**

- .1 This section pertains to final cleaning of the facilities only. Cleaning during construction and waste disposal are described in section 01 50 00 – Temporary Facilities and Controls.

## **2 DELIVERY, STORAGE AND HANDLING**

The Contractor will:

- .1 protect packaging during delivery, storage and handling to prevent development of mould and mildew on packaging and on products.
- .2 request that suppliers provide cleaning materials which minimize packaging and equipment and deliver cleaning materials in recyclable or reusable packaging, such as cardboard, wood paper or reusable blankets, which will be reclaimed by supplier or manufacturer for recycling.

## **3 CLEANING MATERIALS**

- .1 Use only cleaning materials recommended by the manufacturer of the Material to be cleaned.
- .2 Use cleaning materials only on the surfaces recommended by cleaning material manufacturer, following manufacturers' printed instructions and ensuring that cleaning agents and methods do not remove finishes and permanent protective coatings on surfaces being cleaned.

## **4 FINAL CLEANING**

- .1 Perform final cleaning operations prior to request for inspection for Facility Takeover.
- .2 Remove grease, dirt, dust, stains, labels, fingerprints and other foreign matter from interior and exterior surfaces.
- .3 Repair, patch and touch-up marred surfaces to match adjacent finishes.
- .4 Replace cracked and broken glass.
- .5 Thoroughly reclean all affected surfaces during correction of Deficiencies.
- .6 Leave all surfaces in perfectly clean and unsoiled condition to CFIA's satisfaction.
- .7 Remove all waste generated during cleaning operations from the Project Site.

**END OF SECTION**

**1. CONTRACT ACCEPTANCE PROCEDURES**

- .1 Prior to requesting the Departmental Representative's inspection for Interim Acceptance, Contractor shall do the following:
  - .1 Ensure that the Work is ready for use for the purpose intended.
  - .2 Review Contract Documents and inspect Work to confirm that prerequisites to Interim Acceptance of Work have been fulfilled and that Work is ready for inspection for Interim Acceptance.
- .2 Submit written request to the Departmental Representative for inspection for Interim Acceptance of the Work, certifying that prerequisites have been fulfilled and specifying known exceptions in the form of a list of items to be completed, corrected or submitted.
- .3 Results of the Departmental Representative's inspection for Interim Acceptance will form initial Contract Deficiency list.
- .4 Following inspection, the Departmental Representative will:
  - .1 issue a Letter of Interim Acceptance stating effective date of Interim Acceptance of the Work, with a copy of the Contract Deficiency list attached thereto, or
  - .2 advise Contractor that prerequisites to Interim Acceptance are not fulfilled and repeat inspection for Interim Acceptance as necessary.
- .5 Upon issuance of Letter of Interim Acceptance, the Departmental Representative will assume responsibility for care, custody and control of the Work, including responsibility for:
  - .1 Facility operation, including all systems and equipment.
  - .2 Maintenance.
  - .3 Security.
  - .4 Property insurance.
  - .5 Utility costs.
- .6 Prior to requesting the Departmental Representative's inspection for Final Acceptance, Contractor shall do the following:
  - .1 Ensure that the entire Work, except those items arising from the warranty provisions of the Contract Documents, has been performed to the requirements of the Contract Documents.
  - .2 Review Contract Documents and inspect Work to confirm that prerequisites for Final Acceptance of Work have been met and that Work is ready for inspection for Final Acceptance.

- .7 Submit written request to the Departmental Representative for inspection for Final Acceptance of Work, including copy of the Departmental Representative's most recent Contract Deficiency list, and certifying that each Contract Deficiency has been corrected or otherwise resolved in a manner agreed to between the Departmental Representative and Contractor. List known exceptions, if any, in request.
- .8 Following inspection, the Departmental Representative will:
  - .1 issue a Letter of Final Acceptance, stating effective date of Final Acceptance of Work, or
  - .2 advise Contractor of Contract Deficiencies which must be corrected prior to issuance of Letter of Final Acceptance.

**2. FINAL CLEANING**

- .1 Refer to Section 01 74 23 Final Cleaning.

**3. OPERATION AND MAINTENANCE DATA**

- .1 Refer to Section 01 78 23 Operation and Maintenance Data and Manuals.

**4. PROJECT RECORD DOCUMENTS**

- .1 Refer to Section 01 78 39 Project Record Documents.

**5. SPARE PARTS AND MAINTENANCE MATERIALS**

- .1 Deliver specified spare parts and maintenance materials before request for inspection for Interim Acceptance.
- .2 Use unbroken cartons, or if not supplied in cartons, they shall be securely packaged. Clearly mark as to content.
- .3 If applicable, identify colour, room number or area where materials are used.

**END OF SECTION**

## **1 INTENT**

- .1 The Contractor shall obtain all specified operation and maintenance data, and using this data, shall prepare and submit 3 hard copy sets of operation and maintenance manuals, as well as one electronic copy in PDF format.

## **2 DESCRIPTION OF TYPES OF OPERATION AND MAINTENANCE DATA**

- .1 Data on Contractor-supplied equipment and systems, including:
  - .1 system design criteria;
  - .2 system and controls descriptions;
  - .3 system and controls schematics; and
  - .4 operating instructions.
- .2 Installation instructions: manufacturer's printed instructions describing manufacturer's recommended installation procedures.
- .3 Operating instructions: manufacturer's printed instructions describing proper operation.
- .4 Equipment identification: name plate information for each piece of equipment.
- .5 Maintenance instructions: manufacturer's printed instructions describing manufacturer's recommended maintenance.
- .6 Spare parts lists: parts lists and manufacturer's recommended spare parts.
- .7 Suppliers and Subcontractors list: list of Subcontractors and suppliers who supplied and installed equipment, systems, Materials or finishes, organized by division and system, and including company name, address and telephone number.
- .8 Tag directories: directory identifying tag number and equipment description and location.
- .9 Drawings list: list of Drawings.
- .10 Shop Drawings: final reviewed/stamped shop drawings.
- .11 Product data: manufacturer's product data for equipment, systems, Materials and finishes.
- .12 Certifications, including:
  - .1 Copies of inspection reports prepared by authorities having jurisdiction;
  - .2 Certified copies of test reports prepared by independent testing agencies; and
  - .3 Any other certificates required by the Contract.

- 
- .13 Warranties and bonds: CFIA's copy of manufacturer's warranties, maintenance bonds and service contracts.
  - .14 Reports: including, as required by the Contract:
    - .1 Reports documenting system performance testing methods and results; and
    - .2 Documentation of other Materials, equipment or system related information.

### **3 GENERAL ORGANIZATION OF CONTRACTOR PREPARED OPERATION AND MAINTENANCE MANUALS**

- .1 The Contractor will include the following in each volume:
  - .1 Title page.
  - .2 Table of contents. Identify volume number where listed information is located.
  - .3 Ten percent free space for additional data.
- .2 Textual information, schematics and data will be presented on on 21.5cm x 28cm, 75g/m<sup>2</sup>, white bond paper.
- .3 Document Binding Methods:
  - .1 Standard 21.5cm x 28cm sheets: punch sheets to fit binder.
  - .2 Sheets up to 28cm x 41.5cm: punched and neatly folded to allow use without removing from binder.
  - .3 Drawings larger than 28cm x 41.5cm: insert drawings in sturdy vinyl envelopes with reinforced binding holes, open on one side and overall folded size not exceeding 21.5cm x 28cm. Do not punch holes in drawings.
- .4 Binders:
  - .1 Commercial quality, fabric coated, hard covers attached to spine with metal piano hinges, three post, designed to accommodate 21.5cm x 28 cm paper. Maximum 100mm thick.
  - .2 Silk-screen Project title and identification, in white on front cover and spine of binder.
  - .3 Binder fabric and colour:
    - Architectural: white
    - Mechanical: green
    - Electrical: orange



---

.5 Divider Tabs:

- .1 Light card stock, mylar laminated with tab number and title printed on tab
- Main divisions: white tabs, labeled with division name, two bank tab length.
  - Sections of a main division: colour coded tabs, labeled with section name, four bank tab length.
  - Subsections: tabs of same colour as section, printed label, eight bank tab length.
- .2 Coordinate tab colour codes and labeling format with Departmental Representative.

#### 4 MANUAL CONTENTS ORGANIZATION

- .1 For each major equipment, system, Materials or finishes area, organize operation and maintenance data as follows:
- .1 Operation division: include the following, as applicable:
- System design criteria.
  - System and controls descriptions.
  - System and controls schematics.
  - Operating instructions.
  - Equipment data.
- .2 Maintenance division: include the following, as applicable:
- Maintenance tasks and schedules.
  - Spare parts.
  - Suppliers and Subcontractors.
  - Tags and directories.
- .3 Contract division: include the following, as applicable:
- Drawings List.
  - Shop Drawings and product data.
  - Certifications.
  - Warranties and bonds.
  - Maintenance brochures.
  - Reports.

---

**5 SUBMISSION OF OPERATION AND MAINTENANCE MANUALS**

- .1 Prior to Substantial Performance of the Work submit three hard copies of the completed operation and maintenance manuals, and one electronic copy in PDF format, to the Departmental Representative for review. Substantial Performance of the Work will not be ratified until all complete sets of manuals are approved by the Departmental Representative and are ready for submission to CFIA.

**END OF SECTION**

## **1 INTENT**

- .1 The Contractor shall continuously maintain and update a marked-up, accurate, hard-copy record of:
  - .1 all changes from the initial Drawings made during construction; and
  - .2 the location of concealed systems.

## **2 DESIGNATION OF PROJECT RECORD DOCUMENTS**

- .1 At commencement of the Work, the Contractor will request from the Departmental Representative the following documents, to be designated and retained as the Project record documents:
  - .1 One copy of the Request for Bids;
  - .2 Two complete sets of Drawings; and
  - .3 One set of all Addenda issued.

## **3 MAINTENANCE OF PROJECT RECORD DOCUMENTS**

- .1 Store the Project record documents in the site office apart from sets of documents used for construction.
- .2 Label each document "PROJECT RECORD" in neat, large printed letters.
- .3 Maintain record documents in a clean, dry and legible condition. Do not use record documents for construction purposes.
- .4 Keep record documents continuously available for review by the Departmental Representative upon request.

## **4 RECORDING INFORMATION ON PROJECT RECORD DRAWINGS**

- .1 Record changes to, and variations from, the Drawings concurrently with construction process. Do not conceal any construction Work until the required information, including all information contained in Change Orders and all other physical changes to the Work, is recorded.
- .2 Legibly mark one set of the hard-copy Project record drawings to record actual construction, including:
  - .1 field changes of dimension and detail;
  - .2 changes to equipment layout and services, including changes to accommodate substituted equipment; and

---

.3 all items contained in Site Instructions issued during the Work (not just references to Change Orders, etc.).

.3 Record information as follows:

.1 Use coloured erasable pencils to record information; and

.2 Use a unique colour to record the information pertaining to each major system.

## **5 RECORD DOCUMENTS REVIEW AT CONSTRUCTION PROGRESS MEETINGS**

.1 The Contractor shall bring the current set of the record drawings to each regular construction progress meeting for review with the Departmental Representatives at the meeting.

## **6 SUBMISSION OF PROJECT RECORD DOCUMENTS**

.1 Submit completed Project record documents to the Departmental Representative for review and approval before, or with the, application for Substantial Performance of the Work. Substantial Performance of the Work will not be ratified until documents gain Departmental Representative approval.

.2 Each submission will include a covering letter, stating:

.1 date of submission;

.2 Project title, plan no. and centre code;

.3 Contractor's name, address and telephone number;

.4 number and title of each record document; and

.5 signature of authorized representative of the Contractor.

**END OF SECTION**

**1. RELATED SECTIONS**

- .1 Modified Bituminous Protected Membrane Roofing: Section 07 55 52

**2. CONTRACTOR LED SEMINARS**

- .1 Contractor shall organize system seminars for the following:
- .1 Section 07 55 52 - Modified Bituminous Protected Membrane Roofing
- .2 Contractor shall chair the seminars and be responsible for the following, as specified in this Section:
- .1 Preparation of agendas and outlines.
  - .2 Seminar organization.
  - .3 System demonstrations.
  - .4 Seminar and demonstration questions.

**3. AGENDAS AND OUTLINES**

- .1 Prepare agendas and outlines including the following:
- .1 Systems which will be included in seminars.
  - .2 Name of companies and representatives presenting at seminars.
  - .3 Outline of each seminar's content.
  - .4 Time and date allocated to each system.

**4. SEMINAR ORGANIZATION**

- .1 Coordinate content and presentations for seminars.
- .2 Coordinate individual presentations and ensure representatives scheduled to present at seminars are in attendance.
- .3 Arrange for presentation leaders familiar with the design, operation, maintenance and troubleshooting of the systems. Where a single person is not familiar with all aspects of the system, arrange for specialists familiar with each aspect.
- .4 Coordinate proposed dates for seminars with the Departmental Representative and select mutually agreeable dates.

**5. SYSTEM DEMONSTRATIONS**

- .1 Demonstrate operation of systems. Include the following in demonstration:
  - .1 Operation.
  - .2 Scheduled and preventative maintenance.
  - .3 Troubleshooting.

**6. SEMINAR AND DEMONSTRATION QUESTIONS**

- .1 Be prepared to answer all questions raised by the Departmental Representatives at demonstrations and seminars. If unable to satisfactorily answer questions immediately, provide written response within three days.

**END OF SECTION**

**1. GENERAL**

1.1 General Requirements

- .1 The General Conditions of Contract, Division 01 General Requirements and all Addenda thereto form an integral part of and must be read in conjunction with the requirements of this Section.
- .2 Cooperate and coordinate with the requirements of other units of work specified in other Sections.

1.2 Section Includes

- .1 Work of this Section includes, but is not limited to the following:
  - .1 Demolition of existing roofing and flashing to accommodate new roofing and flashing.
  - .2 Removal of existing concrete pavers ballast and related accessories for reinstallation on new roofing as indicated.
  - .3 Removal of all other existing items as indicated and as required to accommodate new Work.
  - .4 Alteration project procedures.
  - .5 Requirements and limitations for cutting and patching of Work.
  - .6 Removal of designated construction.
  - .7 Disposal of materials.

1.3 Related Sections

- .1 Summary of Work: Section 01 11 00
- .2 Submittal Procedures: Section 01 33 00

1.4 Reference Standards

- .1 Alberta Building Code (2014).
  - .1 The Workers' Compensation Act, Safety Regulations Governing Building Construction and Demolition (Alberta Building Code).
  - .2 Safety Regulations Governing General Accident Prevention (Alberta Building Code).
  - .3 Alberta Regulation 117/2007 (Alberta Building Code).
- .2 American National Standards Institute (ANSI):
  - .1 ANSI A10.8-2001: Safety Requirements for Scaffolding.

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

1.5 Visit and Examine Site

- .1 Visit and examine the site during Tender period and become familiar with all existing features and characteristics affecting the Work. Extra payments will not be authorized for Work required by situations which could have been determined by a careful examination of existing conditions during the Tender period.
- .2 Inspect the premises to determine the conditions under which the Work is to be done and the amount of materials and debris to be removed.
- .3 Provide at least one person who is familiar with the scope and intent of the Work and ensure that he is present at all times during all phases of the demolition.

1.6 Protection

- .1 Do not interfere with use of adjacent building nor portions of existing building to remain in use. Maintain free and safe passage to and from occupied buildings.
- .2 Prevent movement or settlement of structure(s) and parts of existing building to remain. Provide and place bracing or shoring and be responsible for safety and support of structure. Be liable for any such movement or settlement and any damage or injury caused.
- .3 Cease operations and notify the Departmental Representative immediately, if safety of structure appears to be endangered. Take all precautions to properly support structure. Do not resume operations until reviewed with the Departmental Representative.
- .4 Ensure safety of persons in area not enclosed with barriers preventing entrance of the public or other Workers. Provide, erect and maintain hoardings, barricades, lighting and guard rails as required by local authority's regulations and by-laws to provide full protection for occupants of building and Workers.
- .5 Prevent debris from blocking drainage systems and inlets, mechanical and electrical systems which remain operational.
- .6 Protect electrical and mechanical system components which are intended to remain or required to serve areas not being demolished. Do not demolish any electrical or mechanical components before they have been identified. If mechanical or electrical components or systems whose disposition (to be demolished or to be retained) is not described in the Drawings are encountered, notify the Departmental Representative.



1.7 Sequence of Operations

- .1 Demolish existing roofing systems and flashings.
- .2 Provide a level and smooth substrate suitable for the installation of new roofing system.
- .3 Take into consideration, prevailing weather conditions and weather forecasts. Do not proceed with demolition Work when weather conditions constitute a hazard to the Workers and site.
- .4 Take whatever precautions are required, in event of a sudden rainstorm, to prevent entry of rainwater into building interiors.
- .5 Leave the roof water-tight at the end of each Working day. Any damage caused to building interiors or to contents of buildings as a result of entry of rainwater during the roof replacement process, will be the responsibility of the Contractor to repair or replace at no cost to the CFIA.

1.8 Responsibility for Existing Property

- .1 Assume responsibility for the care, custody and control of property which is assigned for performance of the Work.
- .2 The Contractor shall be fully responsible for prevention of damage to existing finishes and furnishings. Damaged items shall be satisfactorily repaired or the damaged item shall be removed and equal, acceptable, new items provided at no additional expense to the CFIA.

1.9 Alteration Project Procedures

- .1 Quality Assurance
  - .1 Ensure all work performed and materials used, are of the same standard of quality as that of the existing finished building, as a minimum, unless otherwise scheduled or indicated.
  - .2 Patch, extend and make good existing work to match existing remaining surfaces. The quality of work must match existing and as specified in the Sections of this Specification.
  - .3 Unless noted otherwise, where new materials are specified to be patched into or are to be installed adjacent to existing materials that are to remain as a part of the finished Work, ensure the new materials matches the existing as closely as possible in colour, texture, pattern and thickness. Provide tight joints or seamed joints as applicable.

- .4 Restore existing Work that is to remain in place but which is damaged during construction, to condition equal to that at the time of the start of work, to the satisfaction of the Departmental Representative.
- .2 Furnish and install adequate guards and other temporary protection to prevent injury to persons.
- .3 Close openings in exterior surfaces to protect existing work from weather and extremes of temperature and humidity.
- .4 Remove, cut, and patch Work in a manner to minimize damage and to provide means of restoring Products and finishes to original condition.
- .5 Where new Work abuts or aligns with existing, provide a smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.
- .6 When finished surfaces are cut so that a smooth transition with new Work is not possible, terminate existing surface along a straight line at a natural line of division and submit recommendation to Departmental Representative for review.
- .7 Where a change of plane of 6 mm or more occurs, submit recommendation for providing a smooth transition to Departmental Representative for review.

1.10 Administrative Requirements

- .1 Scheduling: Schedule work to requirements of Section 01 11 00.
  - .1 Schedule Work to precede new construction.
  - .2 Describe demolition removal procedures and schedule.
- .2 Noisy, malodorous, and dusty work:
  - .1 Perform as per requirements of Section 01 50 00.

1.11 Submittals For Review

- .1 Section 01 33 00: Submittal Procedures.
- .2 Submit written request in advance of cutting or alteration which affects:
  - .1 Structural integrity of any element of Project.
  - .2 Integrity of weather exposed or moisture resistant element.
  - .3 Efficiency, maintenance, or safety of any operational element.
  - .4 Include in request:
    - .1 Identification of Project.
    - .2 Location and description of affected Work.
    - .3 Necessity for cutting or alteration.
    - .4 Description of proposed Work and Products to be used.
    - .5 Alternatives to cutting and patching.
    - .6 Effect on work of CFIA or separate contractor.
    - .7 Written permission of affected separate contractor.

.8 Date and time work will be executed.

.3 Shop Drawings: Indicate demolition and removal sequence and location of salvageable items; location and construction of temporary work.

1.12 Submittals For Information

.1 Section 01 33 00: Submittal Procedures.

1.13 Closeout Submittals

.1 Section 01 78 39: Project Record Documents.

1.14 Regulatory Requirements

.1 Conform to applicable code for demolition work, dust control, products requiring electrical disconnection and reconnection.

.2 Obtain required permits from authorities.

.3 Do not close or obstruct egress width to any building or site exit.

.4 Do not disable or disrupt building fire or life safety systems without three (3) days prior written notice to CFIA.

1.15 Hazardous Materials

.1 Hazardous Building Materials Assessment has been completed and is attached to this specification as an appendix.

.2 Only hazardous material identified is lead-based paint on the existing metal roof flashings. No monitoring is required for removal of these roof flashings if the metal is not torched or significantly ground during removal.

.3 Removed metal roof flashings to be recycled or disposed of correctly with respect to their lead-based paint covering.

.4 Conform to applicable regulatory procedures if any additional hazardous or contaminated materials are discovered and immediately notify the Departmental Representative.

**2. PRODUCTS**

2.1 Salvageable Materials

.1 Except where noted otherwise, take possession of all materials being demolished. Immediately remove from site.

2.2 Reuse of Demolished Materials

- .1 CFIA has first right of refusal for all demolished materials that are salvageable and able to be reused.
- .2 Existing concrete pavers ballast and related accessories being removed are to be stored appropriately and reinstalled on new roofing systems as indicated.

2.3 New Materials

- .1 Refer to individual specification sections for other materials.

**3. EXECUTION**

3.1 Safety

- .1 Unless otherwise specified, carry out demolition Work in accordance with CSA S350-M1980 Code of Practice in Demolition of Structures and Alberta Building Code 2014, and all other applicable provincial regulations.
- .2 Provide bracing and shoring as required to adequately support the Work until permanent construction is installed.

3.2 Existing Services

- .1 Provide adequate notice to the CFIA where Work on mechanical and electrical equipment requires temporary shut-down of services to the existing building.
- .2 When removing existing roofing, take care not to damage or disrupt existing electrical or other services occurring in or on roofing system.

3.3 Examination and Preparation

- .1 Examine existing conditions prior to commencing Work, including elements subject to damage or movement during demolition.
- .2 Report unanticipated conditions to the Departmental Representative.
- .3 Erect and maintain weatherproof closures for exterior openings.
- .4 Erect and maintain temporary partitions to prevent spread of dust, odours, and noise to permit continued CFIA occupancy.
- .5 Protect existing materials and surfaces which are not to be demolished.
- .6 Prevent movement of structure; provide bracing and shoring.

- .7 Provide appropriate temporary signage including signage for exit or building egress.

3.4 Demolition - General

- .1 Completely demolish the items indicated and as required to accommodate new Work, and remove all resulting materials from the premises, except as noted otherwise.
- .2 Carry out demolition in an orderly and careful manner using tradesperson qualified to perform demolition and removal Work.
- .3 Carry out demolition in a manner to cause as little inconvenience as possible to portions of the building and site that remain occupied to the public.
- .4 Lower waste materials in a controlled manner; do not drop, allow to fall, or throw materials from heights. Use garbage chute or other means of removing materials as directed by the Departmental Representative.
- .5 Do not pile debris on existing structure, in excess of the live load limit for the existing structure.
- .6 Immediately as demolition progresses, repair any resulting damage to existing parts intended to remain.
- .7 Eliminate double handling where possible.
- .8 Where unexpected conditions are encountered during demolition, stop Work in the area immediately, consult the Departmental Representative, and follow all instructions.
- .9 Remove all demolition debris and rubbish away from site at regular intervals.
- .10 Remove and dispose of demolished materials except where noted otherwise and in accordance with authorities having jurisdiction.

3.5 Demolition - Partial

- .1 Demolish to extent indicated on Drawings and required to accommodate new roof replacement Work and the like. Demolish in an orderly and careful manner.
- .2 Perform demolition in accordance with applicable local and provincial authorities having jurisdiction.
- .3 Where new Work is shown in the same location as existing Work, remove existing Work as required to accommodate new Work.
- .4 Repair all demolition performed in excess of that indicated or required, to the approval of the Departmental Representative and at no expense to the CFIA.

- .5 Carefully remove existing roofing materials, curbs, blocking, plywood, parapets, insulation, and the like, as required to accommodate new Work.
- .6 When the existing roofing is removed down to the existing roof deck, review existing roof decking for damage and corrosion. Where damage and corrosion occurs, remove damaged and corroded roof decking, and install new pieces of roof decking, extending minimum 300 mm beyond edges of areas where existing roofing is removed, and weld into place. Use new roof decking material for patches, of type and thickness and profile to match existing.
- .7 Remove all demolished materials, tools and equipment from site upon completion of Work. Leave site in a condition acceptable to the Departmental Representative.

**END OF SECTION**

**1. GENERAL**

1.1 General Requirements

- .1 The General Conditions of Contract, Division 01 General Requirements and all Addenda thereto form an integral part of and must be read in conjunction with the requirements of this Section.
- .2 Cooperate and coordinate with the requirements of other units of work specified in other Sections.

1.2 Section Includes

- .1 Work of this Section includes, but is not limited to the following:
  - .1 Miscellaneous wood blocking for roofing and flashings.
  - .2 Miscellaneous blocking and strapping where required.
  - .3 Preservative treatment of wood members.

1.3 Related Sections

- .1 Modified Bituminous Protected Membrane Roofing: Section 07 55 52
- .2 Metal Flashing: Section 07 60 00

1.4 References

- .1 ASTM Standards:
  - .1 ASTM A307-12: Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
  - .2 ASTM A653/A653M-13: Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanealed) by the Hot-Dip Process.
  - .3 ASTM D1761-12: Standard Test Methods for Mechanical Fasteners in Wood.
  - .4 ASTM D5456-14: Standard Specification for Evaluation of Structural Composite Lumber Products.
  - .5 ASTM D5582-00(2006): Standard Test Method for Determining Formaldehyde Levels from Wood Products using Desiccator.
  - .6 ASTM F1667-13: Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.
  - .7 ASTM F2403-09: Standard Specification for Inch Series Machine Screws, Carbon Steel, 60 000 psi Tensile Strength.

- .2 CSA Standards:
  - .1 CAN/CSA O80-Series-08(R2012): Wood Preservation.
  - .2 CSA O112 Series-M1977 (R2006): CSA Standards for Wood Adhesives.
  - .3 CSA O121-08(R2013): Douglas Fir Plywood.
  - .4 CAN/CSA O141-05(R2014): Softwood Lumber.
  - .5 CSA O151-09(R2014): Canadian Softwood Plywood.
  - .6 CAN/CSA-O325-07(R2012): Construction Sheathing.
- .3 ABC: Alberta Building Code 2014.
- .4 NLGA Standard Grading Rules for Canadian Lumber, current edition.

#### 1.5 Submittals

- .1 Submit product data in accordance with Section 01 33 00.

#### 1.6 Quality Assurance

- .1 Provide all lumber bearing the grading stamp of an agency certified by the Canadian Lumber Standards Administration Board.
- .2 Supply lumber and panel components marked with a recognized, visible grade stamp.
- .3 In lieu of grade stamping exposed to view lumber and plywood, submit manufacturer's certificate certifying that products meet or exceed specified requirements.

#### 1.7 Product Handling

- .1 Protect materials from weather while in transit and on job site.
- .2 Store materials on site to prevent deterioration or loss or impairment of structural or other essential properties. Store materials on raised supports. Avoid rapid changes in moisture content. Provide adequate air circulation and ventilation.
- .3 Cover materials with tarpaulins or polyethylene sheets to prevent moisture absorption and impairment of structural or aesthetic properties.
- .4 Do not store seasoned materials in wet or damp areas.
- .5 Damaged material will be rejected and must be removed from site.



## 2. PRODUCTS

### 2.1 Materials

- .1 Use only wood composite products and adhesives that are free of added urea formaldehyde.
- .2 Lumber for blocking and strapping: S-P-F species, construction grade.
- .3 Moisture content of dimension lumber: Dimension lumber to meet dry service conditions with a maximum moisture content of 15% (fifteen percent) at the time of installation of the surfacing material.
- .4 Sheathing plywood: Douglas Fir or Canadian softwood, sheathing grade, to CSA O121 or O151; 19 mm thick unless indicated otherwise on the drawings.
- .5 Nails, spikes and staples: to ASTM F1667, galvanized for exterior work and preservative treated lumber. To locations where ACQ pressure treated lumber is used, use corrosion resistant type fasteners which are specially manufactured for use with ACQ pressure treated lumber.
- .6 Screw fasteners into metal framing: stainless steel or ceramic coated galvanized steel, self-drilling screws of lengths to suit application. Ensure fasteners are compatible with ACQ pressure treated wood and plywood where applicable.
- .7 Rough Hardware and proprietary fasteners: bolts, nuts, toggle bolts, expansion shields, washers, lag bolts, pins, screws (hot dip) galvanized to ASTM A123/A123M where exposed to corrosive conditions, and lead or inorganic fibre plugs; recommended for purpose by manufacturer. To locations where ACQ pressure treated lumber is used, use corrosion resistant type fasteners which are specially manufactured for use with ACQ pressure treated lumber.
- .8 Wood preservative: to CSA O80, alkaline copper quaternary (ACQ) content, no chromium or arsenic allowed.

## 3. EXECUTION

### 3.1 Workmanship

- .1 Produce joints which are tight, true and well nailed, with members assembled in accordance with the Drawings and with pertinent codes and regulations.
- .2 Select individual pieces so that knots and obvious defects will not interfere with placing of bolts, or proper nailing, and will allow making of proper connections.
- .3 Cut out and discard defects which render a piece of wood unable to serve its intended function.

- .4 Lumber may be rejected by the Departmental Representative, whether or not it has been installed, for excess warp, twist, bow, crook, mildew, fungus, our mould, as well as for improper cutting and fitting.
- .5 Do not shim any framing components.
- .6 Sequence work to minimize use of temporary HVAC to dry out building and to control humidity

### 3.2 Preservative Treatment

- .1 Pressure preservative treat wood in the following locations:
  - .1 Wood associated with roofing and flashings.
  - .2 Wood in or on exterior walls.
  - .3 Where indicated on the drawings.
  - .4 Note: ensure that pressure treated surfaces are suitable to accept asphalt-based products such as roof membranes, air/vapour barrier membranes, self-adhered exterior sheathing membranes and the like, without deteriorating or damaging the membranes.
- .2 Treat components in accordance with CSA-O80 series, and as follows:
  - .1 CSA-O80.15 using ACQ water borne preservative treatment to S-P-F materials.
- .3 Following water borne preservative treatment, dry material to maximum moisture content of 15%.
- .4 Treatment for site sawn ends and edges: two brushed coats, or three-minute immersion.
- .5 Treat individually all cuts or holes made after general treatment, before installation of items.

### 3.3 Fire Retardant Treated Wood

- .1 Fire retardant treated wood: pressure treated to CSA-O80-Series, to provide flame spread rating and smoke developed rating to meet all Alberta Building Code 2014 requirements, and to the satisfaction of the Authority Having Jurisdiction.
  - .1 To exterior locations: "FRX" as manufactured by Chemco Inc., P.O. Box 875, Ferndale, WA, 98248; telephone (360) 366-3500, or preapproved product.
- .2 Fire retardant treat all wood members where required by Code and to the satisfaction of the Authority Having Jurisdiction.

### 3.4 Fastening & Attachment Methods/Devices

- .1 Unless otherwise required, fastening methods to conform to Section 9.23 Residential Standards (Table 23A and 23B) and Part 4 of the Alberta Building Code. Minimize splitting by staggering nails in the direction of the grain and by keeping them well away from edges.

- .2 Adequately mechanically fasten all wood products used in connection with roofing.
- .3 Only use galvanized nails where nailing is an approved method of attachment, except where ACQ treated wood is used, use stainless steel nails.
- .4 When fastening wood products to concrete, concrete block and similar cementitious/masonry material, use only lag bolts or Hilti "Hit" type fastening system. Use Hilti "hit" when fastening to block and lag bolts for fastening to concrete at 450 mm o.c. each way. In no case use lag bolt less than 10 mm diameter. Hilti "HPS" and other types of fasteners are not approved for fastening wood, blocking, and the like.
- .5 When fastening wood products to metal decks, use only Ucan "tek screws" in a size and quantity pattern to be determined by the Departmental Representative, but in no case to less than at 300 mm o.c. each way.

### 3.5 Miscellaneous Blocking, Bucks, and Plates

- .1 Provide blocking and plates for roofing and related sheet metal work according to indicated details. Provide wood curbs around roof penetrations, unless metal is indicated.
- .2 Place members true to lines and levels and secure rigidly in place.
- .3 Install plywood blocking where indicated.
- .4 All blocking in fire rated assemblies is to conform to Alberta Building Code requirements.
- .5 Install other blocking where indicated.

### 3.6 Sheathing

- .1 Apply sheathing to locations indicated, perpendicular to supports using specified screws at 150 mm o/c along edges and 300 mm o/c in the middle of the sheet. Butt joints tightly together. Support all edges of sheathing with blocking. Leave ready to receive finish.

### 3.7 Carpentry in Connection with Roofing

- .1 Curb all roof penetrations (except drains). Construct wood curbs for roof mounted equipment and anchors, and for roof penetrations (except drains). Curb heights measured from highest point of roof adjacent to curb to be 200 mm.
- .2 Mechanically fasten plywood facing to parapets, and walls at roof-wall junctions.
- .3 Screw top 38 mm x 89 mm plates of building control joint box to plywood sides. For roofing control joint box use nails. Leave 25 mm gap between top plate ends every 2400 mm.

- .4 Attach curbs, control joint boxes, blocking and framing directly to structure.
- .5 Install continuous 400 mm wide plywood sheathing below parapet walls at roof/parapet locations on steel deck as detailed. Ensure that plywood is the same thickness as adjacent sheathing on metal decking at roofs.
- .6 Provide roof dividers or control joints as detailed on the drawings, at each intersection of roof directional change, and as may be required for proper performance of the work in order to ensure the roofing systems installed are not unduly subjected to expansion and contraction forces by building movement.
- .7 Ensure design of edge detailing, sleepers, cants, roof control joints and related design details, generally conforms to ARCA standards (where detail drawings are not provided in the bidding documents), and is consistent with the contract documents, and of the highest standards possible, in the opinion of the Departmental Representative.
- .8 Ensure all wood products incorporated into the work are new and in conformance with the materials standard in the specifications. Re-use of existing wood products such as cants, curbs etc. is expressly forbidden.
- .9 Arrange trades so as to ensure that work of this Section is not unduly delayed or hinders the progress of the work.

**END OF SECTION**

**1. GENERAL**

1.1 General Requirements

- .1 The General Conditions of Contract, Division 01 General Requirements and all Addenda thereto form an integral part of and must be read in conjunction with the requirements of this Section.
- .2 Cooperate and coordinate with the requirements of other units of work specified in other Sections.

1.2 Section Includes

- .1 Work of this Section includes, but is not limited to the following:
  - .1 Foam-in-place insulation to provide continuity of insulation.

1.3 Related Sections

- .1 Modified Bituminous Protected Membrane Roofing: Section 07 52 00

1.4 Source Quality Control

- .1 Submit test reports in accordance with Section 01 33 00, verifying properties of foam-in-place insulation meet or exceed the requirements of this specification.

1.5 Environmental Requirements

- .1 Apply foam-in-place insulation only when substrate and ambient temperatures are within the prescribed limits.
- .2 Ensure that the temperature is maintained throughout the curing period.
- .3 The use of insulation products manufactured with CFCs and HCFCs as blowing agents is prohibited.

1.6 Protection

- .1 Provide temporary enclosures to prevent spray and noxious vapour from contaminating air beyond application area.
- .2 Protect workers as recommended by insulation manufacturer.

- .3 Protect adjacent surfaces and equipment from damage by overspray, fall-out, and dusting of insulation materials in accordance with Alberta Human Resources & Employment and all applicable regulations.
- .4 Dispose of waste foam daily in location designated by Departmental Representative and decontaminate empty drums in accordance with foam manufacturer's instructions.

## 2. PRODUCTS

### 2.1 Materials

- .1 Insulation: one or two component rigid urethane foam, one of with the following manufacturers:
  - .1 Froth Pak as manufactured by Dow Chemical Co.
  - .2 "EnerFoam" as manufactured by Dow Chemical Co.
  - .3 "Versi-Foam" as manufactured by RHH Foam Systems Inc.
  - .4 CF812 as manufactured by Hilti Corporation.
  - .5 "Handi-Seal Window & Door Sealant" as manufactured by Fomo Products Inc.
  - .6 Or equivalent product in accordance with Section 01 62 00.

## 3. EXECUTION

### 3.1 Surface Preparation/Existing Conditions

- .1 Clean spaces which are to receive insulation, of dirt, dust, grease, loose material or other foreign matter which may inhibit adhesion.
- .2 Provide sufficient ventilation during and until insulation has cured, to ensure safe working conditions. Introduce fresh air and exhaust air continuously during the 24 hour period after application to maintain non-toxic, unpolluted, safe working conditions.
- .3 Prior to application, slightly moisten surfaces to which foam in place insulation is being applied, to accelerate curing.
- .4 Temporarily brace frames as may be required to prevent possible bowing of frames due to over expansion of the foam-in-place insulation.

### 3.2 Installation/General

- .1 Where foam-in-place insulation is used to maintain continuity of thermal barrier, and is installed in conjunction with air/vapour barrier membrane around frames including metal and aluminum frames or protrusions, ensure that the foam-in-place insulation is installed on the exterior side of the air/vapour barrier membrane.

3.3 Installation/Around Protrusions Through Air Seal

- .1 Install foam-in-place insulation around all protrusions including mechanical and electrical protrusions through exterior envelope, and elsewhere as required to achieve and maintain continuity of thermal barrier around such protrusions.

3.4 Clean-Up

- .1 Cut back excess foam-in-place insulation once cured, flush with surrounding surfaces, or recess back for application of sealant as specified in Section 07 90 00.
- .2 Upon completion of foam-in-place insulation work, clean adjacent surfaces of overspray and dusting to the satisfaction of the Departmental Representative.

**END OF SECTION**

1. GENERAL

1.1 General Requirements

- .1 The General Conditions of Contract, Division 01 General Requirements and all Addenda thereto form an integral part of and must be read in conjunction with the requirements of this Section.
- .2 Cooperate and coordinate with the requirements of other units of work specified in other Sections.

1.2 Section Includes

- .1 Partial removal of existing roofing systems in preparation for installation of new modified bituminous protected membrane roofing system.

1.3 Related Sections

- .1 Summary of Work: Section 01 11 00
- .2 Selective Demolition: Section 02 41 19
- .3 Modified Bituminous Protected Membrane Roofing Section 07 55 52

1.4 Systems Description

- .1 Existing Roof Assembly on Concrete Deck
  - .1 Remove metal flashings as required.
  - .2 Remove precast concrete pavers ballast and all related accessories and save for later reinstallation.
  - .3 Remove filter cloth.
  - .4 Remove rigid insulation.
  - .5 Existing roofing membrane to remain.
  - .6 Existing concrete deck to remain.
  - .7 Remove and replace roof drains as required.
- .2 Existing Roof Assembly on Metal Deck
  - .1 Remove roof mounted penetration enclosures as indicated on Drawings.
  - .2 Remove metal flashings as required.
  - .3 Remove precast concrete pavers ballast and all related accessories and save for later reinstallation.
  - .4 Remove filter cloth.
  - .5 Remove rigid insulation.
  - .6 Remove roofing membrane.
  - .7 Remove gypsum sheathing.
  - .8 Existing metal deck to remain.



- 
- .9 Remove and replace roof drains as required.
  - .10 Patch exposed holes in metal roof deck, caused by removal of roof penetration enclosures and otherwise, as indicated on Drawings.

1.5 Field Quality Control

- .1 Conduct quality control in accordance with Section 01 45 00 and as follows:
  - .1 Entire condition of existing roof assemblies to be inspected and confirmed by Contractor at time of preparation for re-roofing.
  - .2 Inspection will identify the exact limits to material removal.
  - .3 Inspection and testing will identify the exact condition of existing materials and their possible reuse, repair or removal. Unit prices required and specified in this Section to aid Departmental Representative in making these decisions.
  - .4 Inspection and testing reports indicating existing insulation moisture content and existing quality of all roofing materials will be submitted to the Departmental Representative for review prior to commencement of installation of new roofing system.

1.6 Administrative Requirements

- .1 Section 01 31 13: Project management and coordination procedures.
- .2 Coordination:
  - .1 Coordinate with other work having a direct bearing on work of this Section.
  - .2 Schedule work to coincide with commencement of installation of new roofing system.
  - .3 Coordinate the work with other affected mechanical and electrical work associated with roof penetrations.
- .3 Pre-Installation Meeting:
  - .1 Conduct a pre-installation meeting, in accordance with Section 01 31 19, one (1) week prior to commencing work of this Section.
    - 1. Require attendance of representatives from General Contractor, independent inspection and testing company, manufacturer and applicator, Departmental Representative, and parties directly affecting work of this Section.
    - 2. Review preparation and installation procedures and methods related to roofing installation, including manufacturer's written instructions.
    - 3. Review, coordinate and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
    - 4. Examine substrates and existing conditions for compliance with requirements, including flatness and fastening. Establish manufacturer's requirements for approval of substrate.
    - 5. Review structural loading limitations of roof deck during and after roofing.

6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.
10. Forecasted weather conditions.

1.7 Quality Assurance

- .1 Materials Removal: Conform to the requirements of Alberta Roofing Contractors Association (ARCA).

1.8 Environmental Requirements

- .1 Do not remove existing roofing membrane when weather conditions threaten the integrity of the building contents or intended continued occupancy.
- .2 Maintain continuous temporary protection prior to and during installation of new roofing system.

**2. PRODUCTS**

2.1 MATERIALS

- .1 Temporary Protection: Sheet fibre reinforced plastic; provide weights to retain sheeting in position.
- .2 Roof Drains: Existing roof drains to be inspected, with any damaged roof drains removed and replaced with the following:
  - .1 Watts Drainage Model RD-100-D-E-GSS epoxy coated cast iron roof drain with deep sump, wide serrated flashing flange, flashing clamp device with integral gravel stop and self-locking polyethylene dome strainer, underdeck clamp, adjustable extension, and stainless-steel ballast guard.
  - .2 Contractor to verify outlet pipe type and size of existing outlet pipes prior to ordering roof drains.

**3. EXECUTION**

3.1 Examination

- .1 Section 01 70 00: Verify existing conditions before starting work.
- .2 Verify deck is clean and smooth, free of depressions, waves, or projections, properly sloped to drains.

- 
- .3 Verify deck surfaces are dry and free of snow or ice. Verify flutes of metal deck are clean and dry.
  - .4 Verify roof openings, curbs, pipes, conduit, sleeves, ducts, and vents through roof are solidly set, and are in place.
  - .5 Verify roof drains are set to achieve weep drainage at membrane level and top grating of drains at finish deck level.
  - .6 Verify that existing roof surface is clear and ready for work of this section.
  - .7 Examine substrates, areas, and conditions, with roofing installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:
    - .1 Verify that roof openings and penetrations are in place and curbs are set and braced and that roof drain bodies are securely clamped in place.
    - .2 Verify that blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
    - .3 Verify that surface plane flatness and fastening of steel roof deck complies with requirements in Section 05 31 00.
    - .4 Proceed with installation only after unsatisfactory conditions have been corrected.
  - .8 Ensure that expansion joints are located and installed as required by plans and specifications. Report defects to the Departmental Representative.
  - .9 Prior to installation of roof decks, check and confirm that roof drains are to be located at least 800 mm from roof edges, and that all curbs, gum cups, etc. (usually for mechanical and electrical items) are located at least 800 mm from perimeters, except where clearly dimensioned otherwise.

### 3.2 Preparation – General

- .1 Sweep roof surface clean of loose matter. Remove loose refuse and dispose off site.
- .2 Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

### 3.3 Materials Removal – Existing Concrete Deck Roof Assembly

- .1 Remove metal flashings as required and as indicated on the Drawings. Fold up metal counter flashings which are to remain, as indicated on the Drawings, to permit access to top edge of base flashings.
- .2 Remove precast concrete pavers ballast and all related accessories and save for later reinstallation.

- 
- .3 Remove filter cloth and all related accessories.
  - .4 Remove rigid insulation and all related accessories.
  - .5 Inspect roof drains and remove any that are damaged.
  - .6 Existing roofing membrane on concrete deck to remain. New modified bituminous protected roofing membranes to be applied directly to this existing roofing membrane.

3.4 Materials Removal – Existing Metal Deck Roof Assembly

- .1 Remove roof mounted penetration enclosures as indicated on the Drawings.
- .2 Remove metal flashings as required and as indicated on the Drawings. Fold up metal counter flashings which are to remain, as indicated on the Drawings, to permit access to top edge of base flashings.
- .3 Remove precast concrete pavers ballast and all related accessories and save for later reinstallation.
- .4 Remove filter cloth and all related accessories.
- .5 Remove rigid insulation and all related accessories.
- .6 Remove roofing membrane, associated membrane flashings, and all related accessories.
- .7 Remove gypsum sheathing and all related accessories.
- .8 Inspect roof drains and remove any that are damaged.
- .9 Existing metal deck to remain. Existing metal deck to be repaired, new gypsum sheathing applied, and new modified bituminous protected roofing membranes to be applied directly to new gypsum sheathing.

3.5 Preparation – Existing Roofing Membrane on Concrete Deck

- .1 Sweep clean and remove all debris from existing roofing membrane surface on concrete deck before commencement of modified bituminous protected membrane roofing system work of Section 07 55 52. Apply roofing over clean, dry surfaces.
- .2 Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing manufacturer's written instructions. Remove sharp projections.
- .3 Prior to commencement of roofing operations, clean up and remove all combustible waste materials and debris. Remove saw dust, scrap wood, wood shavings, paper and the like from adjacent wall cavities and the like, to prevent combustion of such materials during torching and other roof operations.

- 
- .4 Verify deck is supported and secured.
  - .5 Install specified roof drains as required and to manufacturer's recommendations.
  - .6 Curb all deck openings except roof drains. Construct curbs minimum of 200 mm above the surface membrane. Mount curbs on and attach directly to the structural deck.
  - .7 Cut and lay flat any blisters of existing roofing membrane on concrete deck surface.
  - .8 Examine all surfaces to receive modified bituminous roofing for defects.
  - .9 Repair existing roofing membrane on concrete deck surface to provide smooth working surface for new roof system, as per manufacturer's recommendations.
  - .10 Notify the Departmental Representative of surfaces which are considered unacceptable to receive the work of Section 07 55 52.

### 3.6 Preparation – Existing Metal Deck

- .1 Sweep clean and remove all debris from existing metal deck surface before commencement of modified bituminous protected membrane roofing system work of Section 07 55 52. Apply roofing over clean, dry surfaces.
- .2 Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing manufacturer's written instructions. Remove sharp projections.
- .3 Prior to commencement of roofing operations, clean up and remove all combustible waste materials and debris. Remove saw dust, scrap wood, wood shavings, paper and the like from adjacent wall cavities and the like, to prevent combustion of such materials during torching and other roof operations.
- .4 Verify deck is supported and secured.
- .5 Install specified roof drains as required and to manufacturer's recommendations.
- .6 Curb all deck openings except roof drains. Construct curbs minimum of 200 mm above the surface membrane. Mount curbs on and attach directly to the structural deck.
- .7 Examine all surfaces to receive modified bituminous roofing for defects.
- .8 Repair existing metal deck surface to provide smooth working surface for new roof system, as indicated on Drawings.
- .9 Notify the Departmental Representative of surfaces which are considered unacceptable to receive the work of Section 07 55 52.

- 3.7      Protection of Finished Work
- .1      Provide temporary protective sheeting over uncovered deck surfaces.
  - .2      Turn sheeting up and over parapets and curbing. Retain sheeting in position with weights or temporary fasteners.
  - .3      Provide for surface drainage from sheeting to existing drainage facilities.
  - .4      Do not permit traffic over unprotected or repaired deck surfaces.

**END OF SECTION**

**1. GENERAL**

1.1 General Requirements

- .1 The General Conditions of Contract, Division 01 General Requirements and all Addenda thereto form an integral part of and must be read in conjunction with the requirements of this Section.
- .2 Cooperate and coordinate with the requirements of other units of work specified in other Sections.

1.2 Section Includes

- .1 Modified bituminous waterproofing consisting of:
  - .1 Two-ply styrene-butadiene-styrene (SBS) modified bituminous protected membrane roofing system with base sheet torch applied to either existing roofing membrane/existing concrete deck or new gypsum sheathing/existing metal deck and cap sheet torch applied to base sheet.
  - .2 Drainage mat.
  - .3 Rigid insulation.
  - .4 Ballast control fabric under existing precast concrete pavers ballast.
  - .5 Warranties.
  - .6 Cooperation with independent quality assurance review firm.

1.3 Related Sections

- .1 Selective Demolition Section 02 41 19
- .2 Rough Carpentry: Section 06 10 00
- .3 Foam-In-Place Insulation Section 07 21 19
- .4 Preparation for Re-Roofing: Section 07 50 05
- .5 Metal Flashing: Section 07 60 00
- .6 Sealants: Section 07 90 00

1.4 Reference Standards

- .1 ARCA: Alberta Roofing Contractors Association Manual.

- 
- .2 CSC TEK.AID REFERENCE on Modified Bituminous Roofing 1993.
  - .3 DOW TECH SOLUTIONS 508.2 Ballast Design Guide for PMR Systems
  - .4 ASTM Standards:
    - .1 ASTM C177-04: Test Method for Steady State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded Hot Plate Apparatus.
    - .2 ASTM C578-08: Rigid, Cellular Polystyrene Thermal Insulation.
    - .3 ASTM C612-14 (2019): Mineral Fiber Block and Board Thermal Insulation.
    - .4 ASTM D751-19: Standard Test Methods for Coated Fabrics.
    - .5 ASTM C1002-07: Steel Self Piercing, Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
    - .6 ASTM C1177/C1177M-06: Glass Mat Gypsum Substrate for Use as Sheathing.
    - .7 ASTM C1396/C1396M-06a: Gypsum Board.
    - .8 ASTM D1621-16: Test Method for Compressive Properties of Rigid Cellular Plastics.
    - .9 ASTM D2842-19: Test Method for Water Absorption of Rigid Cellular Plastics.
    - .10 ASTM D4716/D4716M-14: Test Method for Determining the (In-plane) Flow Rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head.
    - .11 ASTM D6162-00a (2008): Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements.
    - .12 ASTM D6163-00 (2008): Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements.
    - .13 ASTM D6164/D6164M-11: Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements.
    - .14 ASTM D6241-14: Test Method for Static Puncture Strength of Geotextiles and Geotextile-Related Products Using a 50-mm Probe.
    - .15 ASTM D6298-05e1: Fiberglass Reinforced Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet with a Factory Applied Metal Surface.
  - .5 CGSB Standards:
    - .1 CGSB 37-GP-56M plus Amendments No. 1 and 2 dated October 1985: Standard for Membrane, Modified, Bituminous, Prefabricated and Reinforced for Roofing.
    - .2 CAN2-51.32-M77: Sheathing, Membrane, Breather Type
  - .6 CSA Standards:
    - .1 CAN/CSA A82.27-M91: Gypsum Board.
    - .2 CSA A231.1-06/A231.2-06: Precast Concrete Paving Slabs/Precast Concrete Pavers.
    - .3 CSA O121-08: Douglas Fir Plywood.
    - .4 CSA O151-04: Canadian Softwood Plywood.
  - .7 ULC Standards:
    - .1 CAN/ULC S101-14: Fire Endurance Tests of Building Construction and Materials.



- 
- .2 CAN/ULC S107-03: Methods of Fire Tests of Roof Coverings.
  - .3 CAN/ULC S107-10: Fire Tests of Roof Coverings.
  - .4 CAN/ULC S126-06: Standard Method of Test for Fire Spread Under Roof-Deck Assemblies
  - .5 CAN/ULC S701-05: Thermal Insulation, Polystyrene, Boards and Pipe Covering.
  - .6 CAN/ULC S702-14: Mineral Fibre Thermal Insulation for Buildings.
  - .7 ULC (Underwriters Laboratories of Canada) List of Equipment and Materials for:
    - 1. Building Materials.
    - 2. Fire Resistance.
    - 3. Firestop Systems and Components.

- .8 U.S. Federal Specification:
  - .1 UU-B-790a: Building Paper, Vegetable Fiber: (Kraft, Waterproofed, Water Repellent and Fire Resistant)

#### 1.5 System Description

- .1 Modified Bituminous Waterproofing System: Two-ply styrene-butadiene-styrene (SBS) modified bituminous protected membrane roofing system with base sheet torch applied to either existing roofing membrane/existing concrete deck or new gypsum sheathing/existing metal deck and cap sheet torch applied to base sheet, with drainage mat loose laid over cap sheet, and polystyrene insulation loose laid over drainage mat. Install ballast control fabric over insulation. Install existing precast concrete pavers ballast over ballast control fabric.

#### 1.6 Administrative Requirements

- .1 Section 01 31 13: Project Coordination.
- .2 Coordination:
  - .1 Coordinate with other work having a direct bearing on work of this section.
  - .2 Coordinate the work with the installation of associated metal flashings, as the work of this section proceeds.
  - .3 Coordinate to ensure roof drains are suitable for roofing system design.
  - .4 Coordinate with installers of roof mounted items, equipment, and mechanical and electrical work at roof so that installation will not subvert the integrity of the roofing system.

#### 1.7 Submittals

- .1 Submit under provisions of Section 01 33 00.

- 
- .2 Shop Drawings: General:
    - .1 Prior to commencement of work, submit the following plans, elevations, sections, details, and attachments to other work for the following:
      1. Base flashing details and membrane terminations, including layout of seams and direction of laps.
      2. Insulation setting and fastening patterns.
      3. Wood blocking substrates details for metal flashings and fastening methods.
      4. Metal flashing details attachment and fastening methods.
      5. Roof ballasting requirements and details to resist wind uplift, displacement or scour of ballasted assemblies.
  - .3 Provide list of products proposed for use on project where such products are not specified by trade name or where specification permits choice, substitution or alternatives. Include manufacturer or supplier descriptive literature.
  - .4 Product Data: Submit two copies of manufacturer's standard product data indicating materials to be used, performance criteria, physical characteristics, surface treatments, reinforcement and all other pertinent information. Strike out all inapplicable items in manufacturer's product data. Submit manufacturer's product data sheets for each type of product indicated, including membrane materials, base flashings, and insulation. Include product characteristics and their use.
  - .5 Manufacturer's Instructions: Submit manufacturer's installation instructions under provisions of Section 01 33 00:
    - .1 Indicate special procedures for interfacing with adjacent membranes and air/vapour barriers, requiring additional instructions.
  - .6 Declaration of Materials Compatibility: Submit written declaration stating that materials are compatible with the membrane and substrates and adjacent air/vapour barrier membrane and are acceptable to the membrane manufacturer. Include a list of materials, suppliers and manufacturers.
  - .7 Manufacturer's Certificates: Submit manufacturer's certificates indicating that products meet or exceed specified requirements.
  - .8 Letters of Assurance: Submit professional Letters of Assurance for the work of this section.
  - .9 Closeout Submittals:
    - .1 Submit under provisions of Section 01 77 00, Section 01 78 23, and Section 01 78 39.
    - .2 Operation and maintenance data:
      1. Submit manufacturer's maintenance instructions for incorporation into the operation and maintenance manuals.

---

1.8 Quality Assurance

- .1 Perform Work in accordance with Alberta Roofing Contractors Association Manual and manufacturer's instructions.
- .2 Maintain one (1) copy of each document on site.
- .3 Use materials compatible with the membrane and substrates and acceptable to the membrane manufacturer.

1.9 Qualifications

- .1 Applicator: Approved by the membrane manufacturer for application of its products.
  - .1 Use applicators who have successfully completed the membrane manufacturer's applicator training program and the Alberta Roofing Contractors Association Torch Safety Training Program. Use ARCA registered torch mechanics. Upon request, present an ARCA training Certificate verifying torch mechanics competency prior to operating torching equipment at the work site.
  - .2 Use only trained mechanics to apply all membranes.
  - .3 Maintain a ratio of maximum three (3) non-journeyman for each journeyman roofer.
  - .4 Use only factory trained roofers for torch applying seams, membrane stripping, cap sheet and cap sheet stripping.

1.10 Field Quality Control

- .1 Apply roofing over clean, dry and warm surfaces during fair weather, and in accordance with the Alberta Roofing Contractors Association (ARCA) Specifications and as amended herein.

1.11 Regulatory Requirements

- .1 Conform to ARCA requirements applicable to the Work.
- .2 Conform to DOW Tech Solutions 508.2 Ballast Design Guide for PMR Systems requirements applicable to the Work and for roofing materials subjected to wind uplift.
- .3 Conform to applicable code for roof assembly fire hazard requirements.

1.12 Delivery, Storage, and Handling

- .1 Deliver, store and handle materials in strict accordance with manufacturer's recommendations.
- .2 Deliver all materials to the job site, handle and store in original packages and containers with manufacturers seals and labels intact. Ensure labels indicate the manufacturer's name, brand, weight, specification number and lot number.

- 
- .3 Store materials off ground in weatherproof shelters. Provide heated storage to store materials where weather conditions are below 0°C. Store surface conditioner at temperature above 5°C.
  - .4 At all times, adequately protect materials and store in a dry and properly ventilated area, away from any welding flame or spark and sheltered from the elements or any harmful substance.
  - .5 Bring roofing materials up to roof level from heated storage on an as needed basis only. Return all roofing materials not used same day to heated storage for overnight warming.
  - .6 Do not store more material on roof in concentrations which exceed the safe live load of the deck.
  - .7 Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Prevent compression of insulation panels at any point and breakage of edges and corners. Discard wet, cupped, bowed, or otherwise damaged insulation from Construction Site.
  - .8 Store solvent-base liquids and surface conditioner away from excessive heat and open flame. Post 'No Smoking' signs in areas where solvent-base materials are stored.
  - .9 Protect edges of roll goods from damage during handling, and store rolls on end to prevent flattening.
  - .10 Protect edges and corners of precast concrete pavers to prevent damage.
  - .11 Place plywood runways over work to enable movement of material and other traffic.
  - .12 Transport roof materials from roof edge to placing site using rubber-tired carts. Place plywood runways over the work to enable the movement of materials and other traffic during construction of roofing.

1.13 Environmental Requirements

- .1 Weather limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.
- .2 Do not apply membrane during inclement weather or when the ambient temperature is below -18°C for 24 hours before, during and after installation. For self-adhered membranes, do not apply membranes below temperatures recommended by the manufacturer.
- .3 Do not apply membrane when wind chill effect would set roofing materials before proper adhesion occurs.

- 
- .4 Provide forced air circulation or adequate natural ventilation during installation for enclosed application.
  - .5 Do not expose materials vulnerable to water or sun damage in quantities greater than can be installed the same day. Protect insulation from the sun's rays, in accordance with manufacturer's recommendations.
  - .6 Install roofing on dry surfaces, free of snow and ice. Discard all materials which have been saturated with water. Use dry materials and during weather that will not introduce moisture into roofing system.

1.14 General Precautions

- .1 Contractor to ensure roof is not overloaded beyond bearing capacity while moving existing precast concrete pavers and placing other heavy equipment and materials. All damage incurred due to roof overloading is to be made good at Contractor's own cost.
- .2 Protect the building and work from dropping or spillage of roofer's materials and replace or correct any damaged work or surfaces without charge. Furnish special protection and covering to completely protect exterior wall faces, projections, etc., and where materials are to be hoisted.
- .3 Protect roofs from damage during roofing work. Be responsible for requiring adequate protection by other trades working on roof during roofing work. Immediately inspect where damage by others is suspected. Make good any surfaces damaged or covered with roofing products.

1.15 Fire Safety

- .1 Comply with all ARCA torch safety procedures and fire safety recommendations of the manufacturer.
- .2 Inform the Departmental Representative of unforeseen fire hazards and obtain instructions before proceeding or continuing with torch application.
- .3 Throughout roofing installation, maintain the Construction Site in a clean condition and have one approved ABC fire extinguisher within 6 m (19.7') of each roofing torch. Torches must never be placed near combustible or flammable products.
  - .1 Secure propane cylinders to secure anchorage. At end of each workday, secure fire extinguishers. Remove debris from roof area; weigh down insulation board.
- .4 Never apply the torch directly to any wood surfaces.
- .5 Do not use torches near roof-mounted air intakes, wall cladding, combustible building paper and other combustible materials and finishes.
- .6 Take additional precautions against fire as needed to provide adequate fire safety.

- 
- .7 Maintain fire watch for 2 hours after each day's roofing operations cease, and during lunch breaks and coffee breaks. All fire watch duties to be performed by a qualified applicator who has the qualifications specified in item 1.10.2.
  - .8 Use infrared gun to check for fire and combustion. Provide a checklist of all locations where readings are taken, and what the readings are. Submit completed log to the Departmental Representative.
  - .9 Follow all other procedures regarding fire watch, as recommended by ARCA.

1.16 Surface Examination

- .1 Section 07 50 05 Preparation for Re-Roofing.

1.17 Quality Assurance Review

- .1 The Departmental Representative will appoint an independent quality assurance review firm to carry out quality assurance reviews of the roofing installation. Provide free access to all portions of the work and cooperate with the appointed firm. Costs for appointed firm will be paid for by the CFIA.
- .2 Quality assurance reviews of roofing system are to be performed to provide assurance of conformance with the requirements specified herein. If defects are revealed, the Departmental Representative may request that the roofing system be subject to further quality assurance reviews and testing to ascertain full degree of defects. Contractor to pay for all costs incurred.
- .3 Transmit copies of quality assurance review reports to the Departmental Representative.
- .4 The Contractor is fully responsible for his own quality control program. Quality assurance reviews, tests, etc., that may be performed by, or on behalf of the CFIA or his representatives, in no way relieves the Contractor of his responsibilities in accordance with the contract documents and requirements.

1.18 Warranty Certificate

- .1 Provide a written ARCA Warranty Certificate in the name of the CFIA, using ARCA standard form warranty, stating that the roofing system, including flashing, will remain weather tight for a minimum period of ten (10) years from date of Substantial Performance of the work, and that any and all damage resulting from failure to provide above stated performance will be repaired to the satisfaction of the Departmental Representative at no additional cost.
- .2 Final payment for roofing will be contingent upon receipt of the above warranty.

---

1.19 Environmental Considerations

- .1 The use of insulation products manufactured with CFC's or HCFC's as blowing agents is prohibited.
- .2 Plan and coordinate the insulation and roofing membrane work to minimize the generation of offcuts and waste. Sequence the work to maximize use of insulation and roofing membrane.

**2. PRODUCTS**

2.1 Performance/Design Requirements – General

- .1 Roofing system: The roofing system shall include roofing system materials required to achieve roofing membrane manufacturer's warranty and comply with the current ARCA Roofing Application Standards Manual.
- .2 Roofing materials, components, and assemblies shall resist environmental and wind (uplift) loads, and seismic loads, and effects of those loads in accordance with the building code.
- .3 General performance: Installed roofing system and base flashings shall withstand wind uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roofing system and base flashings shall remain watertight.
- .4 Material compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing manufacturer based on testing and field experience.
- .5 Single source responsibility: Each roofing component to be by one manufacturer.
- .6 Roofing system: Prevent water from entering building through roofing membrane.
- .7 Roof covering classification: Roof assembly shall have a Class A classification as determined in conformance with CAN/ULC S107-03 "Standard Methods of Fire Tests of Roof Coverings".
- .8 Fire resistance: The roof assembly shall meet the conditions of acceptance of CAN/ULC S126-06: Standard Method of Test for Fire Spread Under Roof-Deck Assemblies.

2.2 Manufacturers – Membrane Materials

- .1 Roofing membrane to be manufactured by one of the following:
  - .1 IKO Industries
  - .2 Soprema
  - .3 Siplast
  - .4 Or equivalent manufacturer in accordance with Section 01 62 00.

---

2.3 Metal Deck Covering

- .1 Glass-mat faced substrate board in accordance with roofing manufacturer's written requirements and recommendations for use as substrate for adhering roofing membrane components.
- .2 Gypsum roof deck sheathing: to ASTM C1177/C1177M-08, 13 mm thickness, 1220 mm x 2440 mm sized sheets, glass mat surfacing, moisture resistant, factory primed.
  - .1 Basis of design:
    - 1. Georgia Pacific 'DensDeck Prime'.
    - 2. Or equivalent product in accordance with Section 01 62 00.
  - .3 Gypsum board fasteners: to ASTM C1002-07, fasteners of the type and quantity to suit fastening through gypsum roof deck sheathing into metal deck and must be installed in an approved pattern as detailed in ARCA.

2.4 Membranes for Protected Membrane Waterproofing

- .1 Base sheet: to CGSB 37-GP-56M, Styrene-Butadiene-Styrene (SBS) elastomeric polymer, prefabricated sheet, 2.2 mm minimum thickness, non-woven fiberglass reinforcement or 180 g/m<sup>2</sup> non-woven polyester or woven glass fibre scrim reinforcement.
  - .1 Type 2, fully adhered.
  - .2 Class C – plain surfaced.
  - .3 Grade 1 – standard duty service.
  - .4 Top and bottom surfaces:
    - 1. Thermofusible plastic film/thermofusible plastic film.
  - .5 Products:
    - 1. Torchflex TP-180 as manufactured by IKO.
    - 2. Sopralene Flam 180 as manufactured by Soprema.
    - 3. Paradiene 20 TG as manufactured by Siplast.
    - 4. Or equivalent product in accordance with Section 01 62 00.
- .2 Base sheet flashing: to CGSB 37-GP-56M, Styrene-Butadiene-Styrene (SBS) elastomeric polymer, prefabricated sheet, 3 mm to 3.2 mm thick, non-woven polyester or woven glass fibre scrim reinforcement.
  - .1 Type 2, fully adhered.
  - .2 Class C – plain surfaced.
  - .3 Grade 2 – heavy duty service
  - .4 Top and bottom surfaces:
    - 1. Thermofusible plastic film/thermofusible plastic film.
  - .5 Products:
    - 1. Torchflex TP-180 as manufactured by IKO.
    - 2. Sopralene Flam 180 as manufactured by Soprema.
    - 3. Paradiene 20 TG as manufactured by Siplast.
    - 4. Or equivalent product in accordance with Section 01 62 00.



- .3 Cap sheet: to CGSB 37-GP-56M, Styrene-Butadiene-Styrene (SBS) elastomeric polymer, prefabricated sheet, 2.2 mm minimum thickness, non-woven fiberglass reinforcement or 180 g/m<sup>2</sup> non-woven polyester or woven glass fibre scrim reinforcement.
- .1 Type 2, fully adhered.
  - .2 Class C – plain surfaced.
  - .3 Grade 2 – heavy duty service
  - .4 Top and bottom surfaces:
    1. Thermofusible plastic film/thermofusible plastic film.
  - .5 Products:
    1. Torchflex TP-180 Cap as manufactured by IKO.
    2. Sopralene Flam 180 as manufactured by Soprema.
    3. Paradiene 20 TG as manufactured by Siplast.
    4. Or equivalent product in accordance with Section 01 62 00.
- .4 Cap sheet flashing: to CGSB 37-GP-56M, Styrene-Butadiene-Styrene (SBS) elastomeric polymer, prefabricated sheet, 2.2 mm minimum thickness, non-woven fiberglass reinforcement or 180 g/m<sup>2</sup> non-woven polyester or woven glass fibre scrim reinforcement.
- .1 Type 2, fully adhered.
  - .2 Class C – plain surfaced.
  - .3 Grade 2 – heavy duty service
  - .4 Top and bottom surfaces:
    1. Thermofusible plastic film/thermofusible plastic film or sand (granule faced if membrane is exposed above ballast).
  - .5 Products:
    1. Torchflex TP-180 Cap as manufactured by IKO.
    2. Sopralene Flam 180 as manufactured by Soprema.
    3. Paradiene 20 TG as manufactured by Siplast.
    4. Or equivalent product in accordance with Section 01 62 00.

## 2.5 Drainage Mat

- .1 Drain board: Prefabricated drainage composite, polypropylene core with non-woven polypropylene geotextile fabric fully bonded to top dimples of the core.
- .1 Thickness: 10 mm
  - .2 Compressive strength: 527 kN/m<sup>2</sup> (11,000 psf), to ASTM D1621-16.
  - .3 Water flow rate: 224 L/min/m, to ASTM D4716/D4716M-14.
  - .4 Fabric puncture resistance: 1.41 kN, to ASTM D6241-14.
  - .5 Basis of design:
    1. Bakor DB 2000 as manufactured by Henry Company.
    2. Or equivalent product in accordance with Section 01 62 00.

---

2.6 Insulation

- .1 General: Preformed roof insulation boards manufactured or approved by roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated.
- .2 Insulation to protected membrane roofs; rigid polystyrene insulation:
  - .1 Extruded type polystyrene board (XPS) to CAN/ULC S701-05, Type 4, closed cell type.
  - .2 Thermal resistance: Long term aged RSI value of 0.88/25 mm (R5/inch).
  - .3 Board size: 610 mm x 1220 mm (24" x 48").
  - .4 Compressive strength: Minimum 240 kPa (35 psi).
  - .5 Water absorption: 0.70 % by volume maximum, to ASTM D2842-19.
  - .6 Edges: Ship lapped.
  - .7 Water vapour permeance: Maximum 50 ng/Pa.s.m<sup>2</sup> (0.87 Perm), to ASTM E96/E96M-05.
  - .8 Thickness as indicated on the drawings.
  - .9 Basis of design:
    - 1. Owens Corning 'FOAMULAR 350 Rigid Foam Board Insulation'.
    - 2. Or equivalent product in accordance with Section 01 62 00.
- .3 Insulation accessories: roof insulation accessories recommended by insulation manufacturer for intended use and compatible with roofing assembly.

2.7 Ballast

- .1 Precast concrete pavers: Existing concrete pavers to be removed and reused as required.
- .2 Ballast control fabric:
  - .1 Woven polyethylene fabric in 3.66 m x 100 m rolls, resistant to water and ultraviolet degradation, of sufficient strength to prevent displacement of insulation boards under flotation conditions.
  - .2 Unit weight of 86 g/m<sup>2</sup>, tensile grab strength of Warp 465 N/Weft 490 N to ASTM D751-19, approved by roof insulation manufacturer for protected membrane roofing systems.
  - .3 Basis of design:
    - 1. Fabrene V.I.E. as manufactured by Fabrene Inc.
    - 2. Or equivalent product in accordance with Section 01 62 00.

2.8 Metal Flashings

- .1 Prefinished metal flashings in accordance with Section 07 60 00.

---

2.9 Expansion Joints

- .1 Description:
  - .1 Manufactured from a proprietary copolymer with internal polyester reinforcement, monolithic seam vulcanization.
  - .2 Movement and fabrication: Tri-directional movement capability, joint waterproofing system shall be factory fabricated in one piece for the entire contiguous expansion joint or where length of joint exceeds manufacturer's shipping and handling guidelines shall be lapped and vulcanized by manufacturer's mechanics on site, repair of damaged materials shall be performed by manufacturer's mechanics.
  - .3 Compatible with adhesives and membranes associated with expansion joint construction in accordance with manufacturer's installation instructions.
  - .4 Warranted by manufacturer to cover full warranty duration specified in this section.
- .2 Basis of design; to suit type of roofing assembly and movement design requirements:
  - .1 Soprema 'Soprajoint Plus 20'; torch grade.
  - .2 Or equivalent product in accordance with Section 01 62 00.

2.10 Complementary Roofing Materials

- .1 General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing system.
- .2 Semi-rigid, mineral wool-fibre insulation board:
  - .1 Description: Mineral wool-fibre insulation of basalt rock and slag, non-combustible, lightweight, water repellent, conforming to CAN/ULC S702-14, Type 1, and to ASTM C612-14 (2019), Type IVB, dual density, outer layer density 100 kg/m<sup>3</sup> (6.2 lb/ft<sup>3</sup>), inner layer density 65 kg/m<sup>3</sup> (4.1 lb/ft<sup>3</sup>).
  - .2 Basis of design:
    - 1. Rockwool 'CAVITYROCK DD'.
    - 2. Or equivalent product in accordance with Section 01 62 00.
- .3 Semi-permeable membrane:
  - .1 Description: Heavy kraft paper, saturated with asphalt, conforming to CAN2-51.32-M77 and UU-B-790a, Type I, Grade "D", Style 2, 60-minute water resistant barrier, 8.4 kg per roll weight, 1016 mm roll width.
  - .2 Basis of design:
    - 1. Hal Industries Inc. 'HAL-TEX 60'.
    - 2. Or equivalent product in accordance with Section 01 62 00.

- 
- .4 Waterproofing mastic; where exposed to direct sunlight:
    - .1 Description: Mastic made of synthetic rubbers, plasticized with bitumen, aluminum pigments, and solvents.
    - .2 Basis of design:
      1. Soprema 'SOPRAMASTIC ALU'.
      2. Or equivalent product in accordance with Section 01 62 00.
  - .5 Waterproofing mastic; where not exposed to direct sunlight:
    - .1 Description: Mastic made of synthetic rubbers, plasticized with bitumen, and solvents.
    - .2 Basis of design:
      1. Soprema 'SOPRAMASTIC'.
      2. Or equivalent product in accordance with Section 01 62 00.
  - .6 Waterproofing sealer:
    - .1 Description: Composed of a bitumen/polyurethane waterproofing mono-component and polyester reinforcements. Designed to finish upstands and details (no-flame installation).
    - .2 Basis of design:
      1. Soprema 'ALSAN FLASHING'.
      2. Or equivalent product in accordance with Section 01 62 00.
  - .7 Adhesive: as recommended by the roof membrane manufacturer.
  - .8 Adhesive for adhering gypsum board sheathing to metal deck (at locations where underside of steel deck is exposed): Non-combustible type, Thermostik 840-10 as manufactured by Bakor Inc. or equivalent product in accordance with Section 01 62 00.
  - .9 Drain Flashing: Lead sheet, minimum 24 kg/m<sup>2</sup>.
  - .10 Vent and drain rubberized cement: as recommended by the roof membrane manufacturer.
  - .11 Caulking: compatible with adjacent membranes and as recommended by the roof membrane manufacturer.
  - .12 Roofing Nails: Galvanized, hot dipped type, size and configuration as required to suit application.
  - .13 Protective Paint: White colour latex, residential quality.
  - .14 Fire Prevention Tape:
    - .1 Description: To meet ARCA requirements, 200 mm wide self-adhesive fire stop membrane tape composed of a glass fleece reinforcement and SBS modified bitumen.

- 
- .2 Fire prevention tape is a safety precaution and must be installed prior to installation of base sheets or stripping plies; apply and bond at roof junctions by removing the release film.
  - .3 Basis of design:
    - 1. Soprema 'SOPRAGUARD TAPE'.
    - 2. Or equivalent product in accordance with Section 01 62 00.

### 3. EXECUTION

#### 3.1 Examination

- .1 Section 07 50 05 Preparation for Re-Roofing.

#### 3.2 Preparation

- .1 Section 07 50 05 Preparation for Re-Roofing.

#### 3.3 Workmanship – General

- .1 Prepare surfaces and complete roofing work in conformance with roofing manufacturer's written requirements and in compliance with ARCA warranty requirements.
- .2 Before roofing work begins, the Departmental Representative and roofing foreman will inspect and approve deck conditions (including wood blocking) as well as upstands and parapets, construction joints, roof drains, plumbing vents, ventilation outlets and others. If necessary, a non-conformity notice will be issued to the Contractor so that required corrections can be made. The start of roofing work will mean roofing conditions are acceptable to commence work.
- .3 Install roofing elements on clean and dry surfaces, in conformance with manufacturer's instructions and recommendations. Do not begin any work before surfaces are smooth, dry, and exempt of ice and debris. Do not use calcium or salt for ice or snow removal.
- .4 Do not perform work of this Section when the temperature at the place of the work is less than -18°C. Do not apply self-adhered membranes below temperatures recommended by the manufacturer.
- .5 Provide materials and workmanship of highest quality to provide a long lived, fully adhered, attractive finished roof. Ensure materials and workmanship are free of defects and deficiencies upon completion. Air-pockets, wrinkles, fishmouths, tears, convex or concave irregularities, delaminated layers, damaged materials, incomplete bonding, ridges, or similar irregularities are unacceptable.
- .6 Lay roofing membrane free from wrinkles, air pockets, fishmouths, tears, and prominent lap joints. Full bond cap sheet to base sheet. Seams shall be lapped and fully bonded.

- 
- .7 Correction of the aforementioned deficiencies at no cost to the CFIA using method of correction not less than to the initial contract standards. Remove and replace deficiencies where they are excessive.
  - .8 All work in accordance with specifications and applicable details of ARCA manual and to roofing manufacturer's recommendations to achieve a class "A" roof in accordance with ARCA and CAN/ULC S107.
  - .9 Supply to the various subcontractors as may be required in ample time all inserts, reglets and accessories required to be built into the work of other trades. Instruct as to the proper location and position of such items.
  - .10 Check if the work of other trades has been properly completed. Co-operate with and coordinate work with mechanical trades to ensure watertight junctions at roof drains, vents, and other items passing through the roofing and waterproofing.
  - .11 Maintain roofing equipment in good order.
  - .12 Ensure that all materials are dry (as manufactured) at the time of application.
  - .13 Minimize exposure of the roof deck to the elements by proceeding as soon as the roof deck is ready for roofing. Do not work during rain, fog, sleet, ice or snow. Move warm roofing materials from heated storage on an as needed basis only and ensure that they be no less than 1°C before using in cold weather.
  - .14 Ensure roof drains are installed at the proper elevation relative to the finished roof surface and that roofs slope to drains.
  - .15 Cover drains so as to prevent the entrance of foreign materials during the course of the work. At the end of each working day ensure drains can alleviate any roof moisture build-up.
  - .16 Review deck surface to ensure that no deflected or depressed areas exist, which may cause ponding water to occur.
  - .17 Perform moisture checks using an electronic moisture meter if work under way has become wet. Do not continue roofing until moisture content is reduced to levels acceptable to the Departmental Representative.
  - .18 Install water cutoffs to all insulation at perimeter edges at walls, parapets and control joints, plus all openings such as roof hatches and exhaust ducts. Construct cutoff by wrapping the perimeter edge of the insulation as recommended by ARCA. Do not install permanent cutoffs other than described.
  - .19 Roofing work must be completed in a continuous fashion as surfaces are readied and weather conditions permit.

- 
- .20 Seal seams that are not covered by a cap sheet membrane in the same day. Do not install cap sheet when moisture is present at/in the base sheet seams.
  - .21 Complete any section of the roofing on the same day started. Install temporary water cutoffs at the end of the day's work if conditions do not permit completing of waterproofing of any section that day.
  - .22 Complete roofing up to line of termination for each day's work.
  - .23 Commence roofing at outside parapets and eaves and work inward.
  - .24 Ensure control joints are located and installed as detailed.
  - .25 Rest the lower rolled edge of flashing on top of the granules to allow moisture to escape from under the flashing.
  - .26 Extend roofing to outer edges of roof and up vertical surfaces at least 200 mm (8") above horizontal roofing, and full height beneath counter flashing and top of curb flashing.
  - .27 Do not use rolling equipment to lay membranes.
  - .28 Prime the decks prior to the installation of the membrane and in sufficient quantities.
  - .29 Flash off all primers prior to application of membranes. Do not use torches to flash off primers.
  - .30 Relax membranes by unrolling and allowing the material to achieve equilibrium with its installed shape, prior to its application. The duration of relaxation is subject to ambient temperature conditions, but in no case less than 30 minutes.
  - .31 Prior to installation of base sheet and cap sheet, allow sheet to relax after unrolling. Relax time to be as recommended by manufacturer based on concurrent ambient temperature.
  - .32 Whenever membranes are torch-applied, a continuous and even bead of molten bitumen must be visible as the membrane is unrolled and torched.
  - .33 Wherever possible, ensure mechanical systems are shut down, to ensure that negative air pressure will not cause torch flames from igniting concealed materials.
  - .34 Roofing systems with adhered field base sheet, insulation, and / or sheathing board with oxidized asphalt: Mechanical attachments (screws and plates) shall be affixed, at 305 mm (12") centres, at the base of the upstand. If the deck is concrete, continuous fastening bar and anchors may be installed on the base of the vertical upstand instead of screws and plates.

- 
- .35 Roofing systems adhered with cold adhesive, bitumen, asphalt, and where insulation at bottom of vertical upstand is greater than 150 mm (6") in thickness: Install continuous fastening bar and anchors at bottom of vertical upstand (screws and plates with length greater than 150 mm (6")) are not permitted).
  - .36 Self-adhesive and liquid (cold) adhesive applied membranes are pressure sensitive, and membranes must be rolled with manufacturer recommended rollers, in accordance with roofing manufacturer's written requirements.

### 3.4 Application of Gypsum Sheathing to Steel Deck

- .1 Check that all decking is clinched at seams and is anchored to supporting members as specified. Check that all openings cut in the deck are supported at the cut edges as specified. Report defects to Departmental Representative.
- .2 Lay gypsum board sheathing with tightly butted joints. Longitudinal joints must be at right angles to flute direction. Joints occurring along widths of board to be continuously supported on top flange of metal deck. Stagger end joints of adjacent board by 1/2 the board width.
- .3 Apply gypsum board sheathing to steel deck roofs using screw type fasteners complete with plates. Install screws and plates as required to meet ARCA requirements.
- .4 Mechanical fasteners to penetrate top flutes only; by no less than 19 mm (3/4") and by no more than 25.4 mm (1"). Check underside of deck before installation to eliminate damaging existing conditions below deck.
- .5 At locations where underside of deck is exposed, do not use any screw fasteners. Apply adhesive to top of each upper flute of metal deck in accordance with manufacturer's recommendations and adhere gypsum board in place. Walk over gypsum board to ensure complete adhesion to deck.
- .6 Trim sheets as required to ensure that edges terminate on centerlines of supporting upstanding flutes.
- .7 Cover entire metal deck with gypsum board sheathing, except provide and install a 250 mm wide by 12.5 mm thick plywood strip at edge of parapet as detailed.
- .8 NOTE: A number of factors must be considered in determining the placing of sheathing relative to span direction of metal deck. Configuration of roof and span of deck relative to slope of roof, plus other factors, will influence the decision as to which direction the length of the sheathing will run. The Contractor must determine in which direction sheathing will run. Whichever direction chosen, parallel or perpendicular to the deck flutes, the laying must be done so the edges of all sheets terminate on upstanding flutes at end of day's work, in order that a satisfactory temporary water cut-off can be installed. Cut-off must prevent water or snow from entering the flutes.
- .9 Prime surface of sheathing prior to the application of membranes.



- .10 Ensure substrate board is immediately protected with membrane.

### 3.5 Application of Fire Prevention Tape

- .1 Fire prevention tape shall be installed in strict accordance with ARCA requirements and at the transition of horizontal to vertical if there is a combustible material below the primary membrane base sheet and at any gaps or voids in the substrate where a flame could penetrate and reach a combustible material when torch applying membrane.
- .2 Remove release paper from the back of the roll and install in continuous lengths. Overlap ends a minimum 50 mm. At angle changes, fold tape length in half, remove release sheet, and tightly fit into joint by applying half width to the horizontal surface and half width to the vertical surface.

### 3.6 Application of Primer

- .1 Roofing substrate surfaces shall receive a coat of primer at a rate required by roofing manufacturer's printed installation instructions.
- .2 Surfaces to be primed must be free of rust, dust or any residue that may hinder adherence.
- .3 Cover primed surfaces with roofing membrane as soon as possible (same day coverage for self-adhesive membranes).

### 3.7 Installation of Roofing Membranes – General

- .1 Install two-ply prefabricated and elastomeric bituminous membrane to roof surfaces.
- .2 Provide smooth applications, free of air pockets, wrinkles, fishmouths, and tears. Provide a 6 mm bleed out to ensure seal at laps.
- .3 Seal around all protrusions through the roof membrane in accordance with manufacturer's recommendations to form a waterproof seal.

### 3.8 Installation of Torch-Applied Base Sheet Membrane

- .1 Prepare surfaces to receive torch on membrane, in accordance with manufacturer's directions. Prime surfaces as recommended by the manufacturer.
- .2 Unroll base sheet at drain level with first side lap lined up with drain centre (parallel to roof edge).
- .3 Torch apply base sheet entirely onto prepared substrate in strict accordance with manufacturer's directions.

- 
- .4 Torch apply base sheet in straight even rows, using torches approved by the membrane manufacturer, and approved mechanics. Ensure that torch heat is sufficient to totally bond base membrane to gypsum board and other surfaces, but not so hot as to excessively liquidize, melt, leach out, or oxidize the bitumen.
  - .5 Torch sufficiently and continuously to avoid wrinkles, air pockets or fishmouths. In cold weather, adjust welding time to obtain homogenous seam.
  - .6 Side laps to be overlapped no less than 75 mm (3"), along lines provided for this purpose, and end laps to be overlapped no less than 150 mm (6") and staggered. Stagger end laps by a minimum 1800 mm (6'-0").
  - .7 Cut off corners at end laps to be covered by the next roll.
  - .8 Terminate base sheet at minimum 200 mm (8") up vertical surfaces.
  - .9 Ensure the base membrane is fully bonded when installed.
  - .10 Obtain review of the base membrane by the roofing inspector prior to placement of any cap sheet.

### 3.9 Installation of Torch-Applied Base Sheet Flashing Membrane

- .1 Upon completion of the first ply of the roof membrane, but before application of the second ply, provide membrane stripping at the intersection of the roof membrane and walls, parapets, curbs, and where vertical members pass through the roofing and waterproofing.
- .2 Ensure that substrates are dry, smooth, even, fully adhered, and primed where required. Apply base sheet flashing only after primer coat is dry.
- .3 Weld base sheet membrane directly to the prepared surface, proceeding from top to bottom, using a propane torch.
- .4 The bottom surface of the base sheet membrane shall be softened but not overheated, in order to ensure total, uniform adherence over the entire surface. Install free of wrinkles, blisters, and fishmouths.
- .5 Make provision for attachment of membrane strippings with mechanical fasteners where required, and that a reglet, if required, is provided to receive the upper edge of metal counterflashings at walls.
- .6 Install stripping at wall junctions the same as parapets unless otherwise directed by the Departmental Representative. Extend stripping to top of walls such as around roof access hatch locations and the like. Continue stripping over concrete block fire walls to ensure that all vertical and horizontal surfaces of concrete block fire walls above roof are covered with roofing membrane.

- 
- .7 Install one ply of stripping using a propane torch to the vertical surface, down to the bottom of the vertical surface, and extending onto the flat of the roof a minimum of 125 mm from the bottom of the vertical surface. Lap side joints no less than 75 mm. Carry base stripping up vertical surfaces minimum 300 mm above membrane surface.
  - .8 Ensure stripping pieces do not exceed one metre in width.
  - .9 For parapet or related details, install the stripping membrane using a propane torch, extending a minimum of 125 mm onto the flat of the roof, up the adjacent vertical surface and parapet wall, over the parapet and down the face of the parapet to 25 mm below the bottom most portion of the edge detail/plate/blocking. Lap side joints no less than 75 mm.
  - .10 Stagger joints in membrane stripping minimum 300 mm.
  - .11 At end laps, angle-cut the corners that will be covered by the following roll.

### 3.10 Installation of Torch-Applied Cap Sheet Membrane

- .1 Install the cap sheet no later than seven (7) days from the date of installation of the base membrane. Do not leave any portion of the base membrane exposed without cap sheet for longer than the specified time.
- .2 Once base sheet, base sheet flashing, and stripping are applied and do not show defects, and installation has been reviewed and approved by the roofing system manufacturer and the inspection and testing company, cap sheet can then be laid.
- .3 Cap sheet shall be unrolled starting from lowest point of roof. Cap sheet shall be rerolled from both ends prior to torching. Care must be taken to ensure alignment of first roll (parallel with edge of roof).
- .4 Lay rolls such that minimum end lapping is achieved, throughout the work. Use full rolls wherever possible to reduce to a minimum of end laps.
- .5 Cap sheet shall be torch welded on to base sheet membrane. During this application, both surfaces shall be simultaneously melted, forming an asphalt bead that shall be pushed out in front of cap sheet. Maintain a consistent 3 mm (1/8") wide asphalt bead at seams.
- .6 Over the membrane base sheet, fully torch the membrane cap sheet. Overlap side laps by 90 mm (3 1/2") and overlap end laps by 150 mm (6"). Stagger end joints and stagger joints between plies of membrane so that at no location will the distance between seams of the base sheet and the cap sheet be less than a minimum of 300 mm (12"). Stagger end laps no less than 1800 mm.

- 
- .7 Torch apply cap sheet in straight even rows, and in the same direction as the base membrane, using torches approved by the membrane manufacturer, and approved mechanics. Ensure that torch heat is sufficient to totally bond cap sheet to base membrane but not so hot as to excessively liquidize, melt, leach out or oxidize the bitumen.
  - .8 Make sure the two membranes are properly welded without unwelded areas. Torch welding speed varies depending on weather. In cold conditions, it slows down, in warm and dry conditions, it speeds up.
  - .9 Extend cap sheet up vertical surfaces as recommended by the membrane manufacturer.
  - .10 Ensure that the cap sheet selvage is fully covered by each adjacent cap sheet. Exposed selvage is considered a deficiency.
  - .11 After installation of cap sheet, check lap seams on cap sheet.

### 3.11 Installation of Torch-Applied Cap Sheet Flashing Membrane

- .1 Upon completion of cap sheet, install cap sheet stripping.
- .2 Cap sheet flashing shall be laid in strips a maximum of one metre wide.
- .3 Cap sheet flashing shall be torch welded onto the membrane, proceeding from bottom to top. Torching shall soften the two membranes and ensure a uniform weld.
- .4 Install one ply of stripping using a propane torch to the vertical surfaces, down to bottom of vertical surfaces, and extending onto the flat of the roof a minimum of 150 mm from the bottom of the vertical surfaces.
- .5 Stagger joints of the flashing cap sheet and membrane cap sheet a minimum of 300 mm.
- .6 Side laps shall be no less than 75 mm (3").
- .7 Extend cap sheet stripping up vertical surfaces no less than 200 mm, and wrap over curbs, parapets, roof edges, and the like. Terminate cap sheet stripping a minimum of 75 mm onto top of parapet. Trowel seal leading edge of membrane. To walls around roof hatch locations and the like, extend cap sheet stripping to top of wall.
- .8 Nail through the top of the completed flashings where required, using large head galvanized nails at 150 mm (6") oc. Locate nails not closer than 50 mm from the top edge of membrane flashings.
- .9 Ensure the cap sheet stripping selvage is fully covered by each adjacent cap sheet stripping. Exposed selvage is considered a deficiency.

---

3.12 Installation of Waterproof Expansion Joints

- .1 Install all components of the system in strict accordance with the manufacturer's printed instructions and recommendations.
- .2 Construct expansion joints as detailed on the drawings, using expansion joint membrane specified.
- .3 The system is to be wholly encapsulated between the plies of the modified bitumen membrane in a roofing system.

3.13 Installation of Roof Drains, Vents & Lead Flashings

- .1 Supply roof drains, vents and lead flashings, set in place and connected.
- .2 Ensure that roof drains are set to permit drainage, located at lowest possible location, and properly secured. Cut and slope insulation at each drain to form a sump and to accommodate flashing immediately surrounding drain. Review final locations with Departmental Representative prior to installation of drains.
- .3 Set roof drain outlets at membrane level and top grating at finish deck level to permit drainage of all water from the roof.
- .4 Temporarily block drainpipes during application of membrane. Remove blocking when work is not in progress and after work of this section is completed.
- .5 Carry membrane and insulation to edge of drain base and trim around drain opening. Top ply to be cap sheet flashing to minimum 200 mm (8") from edge of drains.
- .6 Ensure that installation of drain and membrane is performed in accordance with recommendations of drain manufacturer.
- .7 Use 24 kg/m sq. (2 mm thick) lead sheet for flashing roof drains.
- .8 Prime top surface of flange or metal flashing and allow 24 hours to dry.
- .9 Set flange or metal flashing in manufacturer's recommended adhesive and secure in place.
- .10 Over flange or metal flashing, apply 1 m square of flashing base sheet (centred over drain or protrusion) and fully torch in place.
- .11 Embed first felt ply in a coat of waterproofing mastic and extend plies of felt into the drain opening of drains, and trim as required.
- .12 Caulk between the plies and the clamping ring with flexible seal caulking.

- 
- .13 Apply a bead of flexible seal caulking between the membrane and the metal flashing to direct water away from the joint.
  - .14 Fill void between drain body and roof insulation board with two-component polyurethane foam insulation

3.14 Installation of Roof Penetrations

- .1 All roof penetrations, except roof drains, to be curbed.
- .2 Metal flashings to be broken and fastened over curbs.
- .3 Roof membranes shall not be adhered to metal flashings.

3.15 Application of Drainage Mat

- .1 Over roofing membrane cap sheet installation, and below insulation, install drainage mat unbonded with filter fabric side up.
- .2 Commence installation of drainage mat at lowest point to ensure sound positive drainage. Edge of the core with the flange should be at higher edges of substrate, away from drains.
- .3 Overlaps: Pull back loose fabric to expose drain core. Position core of second panel over the overlap flange of first panel. Overlap in direction of waterflow and adhere overlapped fabric with adhesive or duct tape as necessary to prevent materials from entering the drainage layer during construction. Tuck fabric behind core at all outside edges.
- .4 Corners: Bend drain to make inside corners. For outside corners, cut to reach corner and provide 100 mm (4") of extra fabric to wrap around corner. Attach drain to wall and overlap fabric at joint.
- .5 If any of the core material becomes exposed, cover with filter fabric.
- .6 Follow all manufacturer's recommendations for installation of drainage mat.

3.16 Application of Insulation

- .1 Comply with roofing manufacturer's written instructions for installing roof insulation.
- .2 Do not install insulation until roof membrane has been reviewed.
- .3 Protect and keep insulation dry (in new condition). Do not install insulation which is not in dry condition.
- .4 Install insulation unbonded over drainage mat. Lay insulation loose on top of the drainage mat, all ship lapped joints butted tightly together. Gaps are not acceptable.

- 
- .5 In multiple-layer applications, lay each succeeding layer of insulation with vertical joints staggered and offset from layers below, by at least 305 mm (12").
    - .1 Lay rigid insulation in layers, with each layer of equal thickness.
  - .6 Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.
  - .7 Cut insulation to fit blocking, upstands, and penetrations through roof. Gaps are not acceptable.
  - .8 Vertical insulation to be held in place by girts or flashings.
  - .9 Ensure chimneys and other hot items are contained within curbs to keep insulation away from heat emitting devices.
  - .10 Apply a heavy coat of light coloured exterior acrylic latex paint where insulation may become exposed, such as at roof drains.
  - .11 Install insulation just prior to application of ballast control fabric. Apply no more insulation than can be covered by ballast in same day.
  - .12 Use maximum possible sizes of insulation where cuts must be made. Minimum dimension of cut materials is 150 mm in width by 300 mm in length.

### 3.17 Application of Ballast Control Fabric

- .1 Install single layer of ballast control fabric unbonded over insulation boards prior to application of ballast, and in accordance with manufacturer's written instructions. This fabric controls the rise and fall of the insulation and ballast in the event of flotation conditions.
- .2 Fabric to be installed over entire area of insulation. Slit fabric to fit over roof penetrations. Cut out around roof drains and other openings.
- .3 Overlap all edges minimum 300 mm (12").
- .4 Minimum size of fabric shall be 2440 mm x 2440 mm (96" x 96") if small pieces must be used.
- .5 Extend fabric up roof perimeter edges and roof protrusions a minimum of 100 mm (4") and secure in place un-bonded under counter flashing.

### 3.18 Installation of Ballast - Existing Concrete Pavers

- .1 Loose laid over ballast control fabric, install reused, existing precast concrete pavers.
- .2 Install precast concrete pavers ballast to suit wind uplift requirements.

- .3 Do not use pavers with chips, cracks, voids, stains, or other defects which might be exposed to view in the finished work.
- .4 Shim or adjust to level as necessary to prevent rocking of pavers. Level pavers in succeeding rows.
- .5 Install pavers straight with joints in line, each way. Form minimum joint widths. Align the top cap joint spacers with paver edges.
- .6 Machine cut pavers neatly as necessary to fit the conditions indicated and to fit irregularly shaped areas and around protrusions. Joints shall be no wider than the typical paver to paver joint.
- .7 Install pavers to achieve a reasonably level surface. Do not exceed 10 mm in 3 m level tolerance. Space pavers 3 mm apart.
- .8 Installation tolerances:
  - .1 Step in face alignment between paver faces: Plus or minus 1.5 mm (1/16").
  - .2 Jog in joint alignment between paver sections: Maximum 1.5 mm (1/16").

3.19 Installation of Semi-Rigid, Mineral Wool-Fibre Insulation Board

- .1 Mechanically fasten to substrate per insulation board manufacturer's written instructions.

3.20 Installation of Semi-Permeable Membrane

- .1 Install semi-permeable membrane horizontally, weather lapping edges minimum 100 mm and ends 150 mm.

3.21 Installation of Metal Flashings

- .1 Install prefinished metal flashings in accordance with Section 07 60 00.

3.22 Roofing Details

- .1 Install as indicated on drawings and with various roofing details illustrated in roofing manufacturer's printed installation instructions.

3.23 Field Quality Control

- .1 Conduct quality control in accordance with Section 01 45 00 and as follows:
  - .1 Quality assurance review:
    - 1. Prior to installation of cap sheet membrane, base sheet membrane installation shall be reviewed by independent quality assurance review firm, who shall submit field review reports to the Departmental Representative.



- 
- .2 If quality assurance reviews show roofing does not comply with requirements, remove and replace or repair the roofing as recommended in writing by independent quality assurance review firm and manufacturer, and make further repairs as required by follow-up quality assurance reviews until roofing installation passes.

3.24 Completion

- .1 Prior to completion of the work and prior to the Departmental Representative's and roofing inspector's review of Substantial Performance, trowel check all laps, seams, and the like, to ensure total bonding is achieved. Repair minor situations as required and report any outstanding deficiencies to the Departmental Representative. Obtain manufacturer's written review of the completed project. Correct such deficiencies as the manufacturer's representative may additionally determine.
- .2 Upon completion of the work ensure the following:
  - .1 All drains are not blocked. Obtain services of a firm such as roto-rooter to clear any blockage or restriction, as required.
  - .2 Remove all waste and construction material from site.
  - .3 Repair any damage to building or grounds.
  - .4 Clean off to original condition any spills or visible bitumen.

3.25 Adjusting and Cleaning

- .1 Remove applicator's equipment and debris as work progresses, and at completion of the work of this section in accordance with Sections 01 74 23 and 01 77 00.
- .2 Rainwater leader (RWL) lines are to have their insides thoroughly cleaned as required to ensure proper rainwater flow.
- .3 Remove bituminous markings from finished surfaces.
- .4 In areas where finished surfaces are soiled by bitumen, or any other source of soiling caused by work of this section, consult manufacturer of surfaces for cleaning advice and conform to their documented instructions.
- .5 Repair or replace defaced or disfigured finishes caused by work of this section.

3.26 Protection of Finished Work

- .1 Where traffic must continue over finished roof membrane, protect surfaces.

**END OF SECTION**

**1. GENERAL**

1.1 General Requirements

- .1 The General Conditions of Contract, Division 01 General Requirements and all Addenda thereto form an integral part of and must be read in conjunction with the requirements of this Section.
- .2 Cooperate and coordinate with the requirements of other units of work specified in other Sections.

1.2 Section Includes

- .1 This Section includes, but is not limited to the following:
  - .1 Metal flashings to roofs, where indicated.
  - .2 Formed metal expansion joint upstands, parapet tops, and upstand around metal roofing.
  - .3 Flashing to protrusions through roofing.
  - .4 Caulking to flashing.
  - .5 Flashing to exterior walls and elsewhere as indicated.

1.3 Related Sections

- .1 Modified Bituminous Protected Membrane Roofing: Section 07 55 52
- .2 Sealants Section 07 90 00

1.4 Reference Standards

- .1 ARCA: Alberta Roofing Contractors Association Manual.
- .2 ASTM Standards:
  - .1 ASTM A653/A653M-13: Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - .2 ASTM A924/A924M-13: Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
- .3 CGSB Standards:
  - .1 CAN/CGSB-19.13-M87: Sealing Compound, One Component, Elastomeric, Chemical Curing.
- .4 Sheet Metal and Air Conditioning Contractors National Association Inc. (SMACNA) "Architectural Sheet Metal Manual", 7<sup>th</sup> Edition, Published in 2012.

1.5 Submittals

- .1 Submit shop drawings, product data and samples in accordance with Section 01 33 00.
- .2 Submit duplicate full-size samples of each joint and profile when requested by the Departmental Representative. Include fasteners, cleats, clips, closures and other attachments. Indicate flush jointing at parapet faces, including backer plates, thermal movement, hemmed edges, and methods of attachment.
- .3 Submit duplicate samples, 100 mm square of each type of metal flashing to be used, at least 2 weeks prior to the installation of metal work.
- .4 Submit samples of trim, including fasteners and other exposed accessories.
- .5 Submit shop drawings for flashing detail acceptance, before commencement of work of this type.
- .6 Clearly indicate bending, folding, jointing, fastening installation details and materials, thickness, weight and finishes. Indicate profiles, shapes, seams and dimensions. Provide details of expansion joint covers.

1.6 Performance Requirements

- .1 Install sheet metal flashing and trim to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failing, rattling, leaking, and fastener disengagement.
- .2 Install metal flashings on all surfaces such as cant edges, sleepers, parapets and cap type, wall junctions, roof dividers, curbs, roof control joints, through roof penetrations and the like, and as otherwise are required to provide flashing type protection to details. Unless otherwise directed extend all flashings down and onto the horizontal portion of the roof. Additionally install counter and base flashings unless otherwise directed by the Departmental Representative.
- .3 Sheet metal flashings are intended to protect the roof membrane from accelerated deteriorating effects of the elements, and to limit mechanical damage of the membrane, and are not intended to protect the work from direct migration of moisture. Ensure that the roofing system membrane terminations are fully water-tight, without reliance on covering flashing.

- 
- .4 Fasten and install roof edge flashing and copings capable of all resisting according to recommendations of FMG Loss Prevention Data Sheet 1-49, for wind conditions as outlined in the Alberta Building Code for the Calgary area.
  - .5 Provide sheet metal flashing and trim that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects:
    - .1 Provide clips that resist rotation and avoid shear stress as a result of sheet metal and trim thermal movements.
    - .2 Base engineering calculations on surface temperatures of materials due to both solar heat gain and nighttime sky heat loss.
    - .3 Temperature change (range): 67°C ambient; 100°C material surfaces.
  - .6 Provide sheet metal flashing and trim to create a rain screen assembly to the completed air/vapour and roofing membrane termination details.
  - .7 Call for inspection by roofing inspector, of completed roofing work prior to the installation of any metal flashings. Provide other flashing inspections, such as at start-up and periodic inspections, by the roofing inspector at frequencies recommended by ARCA.
  - .8 Coordinate installation of flashing work of this Section with flashing work of other Sections which ties into this work. Coat surfaces of different metals such as aluminum and galvanized steel which are in contact to each other, with bituminous paint to prevent electrolysis.
- 1.7 Qualifications
- .1 Use only competent and qualified tradesmen to execute the work of this Section, using adequate plant and equipment.
- 1.8 Sample Installation
- .1 Perform a sample installation of flashing, with at least one corner and two joints, for acceptance, before proceeding further. Perform sample installation work in conformance with submitted samples and shop drawings as per submittal requirements specified in item 1.5 of this Section.
- 1.9 Delivery/Storage
- .1 Store off ground and under cover in a dry, well ventilated enclosure.

- .2 Stack pre-formed material in a manner to prevent twisting, bending and rubbing.
- .3 Provide protection for galvanized or pre-coated surfaces.
- .4 Prevent contact of dissimilar metals during storage. Protect from acids, flux, and other corrosive materials and elements.

1.10 Protection

- .1 Exercise care when working on roof surfaces to avoid damage to roofing.

1.11 Warranty

- .1 Refer to Section 07 55 52 for Warranty which includes work of this Section. Provide warranty to CFIA, agreeing to repair or replace specified materials or Work that has failed within the warranty period. Failures include, but are not limited to the following:
  - .1 Rain Screen function.
  - .2 Flashing displacement, blow off, ripping and tearing
  - .3 Oil-canning.
  - .4 Material incompatibility with other materials.
  - .5 Deterioration or corrosion of finishes.
  - .6 Defective workmanship or objectionable appearance resulting from defective or non-conforming materials.

1.12 Special Reviews

- .1 Items subject to special reviews are as follows:
  - .1 Inspect all flexible roof flashing before metal flashing is applied. Includes curbs for mechanical items.
  - .2 Review caulking locations, applicator, and sealant before any caulking work is done.

**2. PRODUCTS**

2.1 Materials

- .1 Metal flashing: 0.61 mm thick base metal, commercial quality sheet steel to ASTM A653/A653M with Z275 designation zinc coating to ASTM A924/A924M, prepainted with baked enamel, to CSSBI Technical Bulletin No. 20M, Baycoat Perspectra Series coating or Vicwest Weather-X series coating, colour as selected by the Departmental Representative from the manufacturer's standard range.

- .2 Cleats: of same material as sheet metal, not less than 50 mm wide, sized to suit application or as detailed.
- .3 Flashing nails: #12 hot dipped galvanized, annular ringed. For fastening to wood.
- .4 Flashing screws: 300 series stainless steel, non-corrosive self-tapping, pan head. For fastening to metal.
- .5 Fasteners: 'pop' rivets or sheet metal screws of length and thickness suitable for metal flashing application.
- .6 Plastic cement: to CAN/CGSB-37.5-M89.
- .7 Lap Cement: CAN/CGSB-37.4-M89.
- .8 Bituminous Paint: alkali resistant bituminous paint.
- .9 Sealant: type 1 as specified in Section 07 90 00.
- .10 Recessed reglets: Preformed 0.61 mm galvanized steel channel with face and ends covered with plastic tape.

## 2.2 Fabrication/Flashings

- .1 Fabricate metal flashing and other sheet metal work to applicable ARCA and SMACNA specifications and according to details from 0.61 mm (24 gauge) thick material.
- .2 Form all flashing components in 2400 mm maximum length, unless acceptance of intermediate fastening is obtained, and accepted sample installation.
- .3 Form sections square, true and accurate to size, free from distortions and other defects detrimental to appearance or performance.
- .4 Form metal rake and eave edge flashings, curb metal flashings, flashing and counterflashing for penetrations, cap-flashings, copings and fascias, sheet steel roof drain sleeves, air-stops, air-fire stop below control joint box, and the like, from 0.61 mm (24 gauge) prefinished steel to exposed locations.
- .5 Overbrake rake and eave flashings slightly so that when installed, fascia flashings are sprung tightly to fascia boards or wall fascia panels.

- .6 Construct flashing joints to allow for flashing movement, using flat "S" lock seams. Maintain minimum of 25 mm lap on all joints. Maintain anchor projection of the "S" lock to 25 mm. At inside and outside corners, mitre the joint, and use upstanding seams, 25 mm minimum height and 25 mm minimum lap. Use standing seams only on top flashing; side laps to be "S" locked in conjunction with standing seams.
- .7 All counter flashings over 450 mm high must be cross-broken in 1520 mm lengths to insure it is backed firmly against its backing during windy conditions.
- .8 Form flashings over 600 mm high in standing seam construction in 600 mm widths.
- .9 Maintain 1:5 minimum slope on horizontal surfaces of all flashings, parapets and control joints.
- .10 Hem all exposed edges of flashings on underside 12 mm.
- .11 Fabricate cap flashing to have a drip leg, minimum 106 mm high unless detailed otherwise.
- .12 Fabricate cap flashings to lap 100 mm over base flashings, unless noted otherwise on the Drawings.
- .13 Fit flashings together so that one end of each section is free to move in the joint.
- .14 Do not set base flashing screws lower than 200 mm from top of the roof membrane, unless otherwise directed.
- .15 Properly flash around all projections through deck.
- .16 Install flashings free of buckle and warp due to installation methods or dimensional changes due to 100°C temperature range.
- .17 Brake form sections to profiles indicated. Lap metal in runs and at corners and securely screw pieces together and seal with sealant.

### 3. EXECUTION

#### 3.1 Examination of Surfaces

- .1 Examine all surfaces to receive flashings.
- .2 Notify the Departmental Representative of surfaces which are considered unacceptable to receive the work of this Section.
- .3 Commencement of flashing work will imply unconditional acceptance of surfaces and substrate to which flashing is to be affixed.

3.2 Workmanship

- .1 Form sections true and accurate to size, free from distortion and other defects detrimental to appearance and performance.

3.3 Installation/Flashings

- .1 Install flashings not later than seven days after installation of the membrane on any particular section of the roof.
- .2 Perform work of this Section using competent mechanics experienced in this type of work. Make adequate provision for expansion and contraction. Install flashing in lengths not exceeding 2400 mm and fabricate to allow for 5 mm expansion between sections.
- .3 Install sheet metal work according to drawings, reviewed shop drawings, and to ARCA and SMACNA recommended practice.
- .4 Locate and install recessed reglets where applicable. Install level and true to line, free of waves and imperfections. Install flashing into reglets and completely and continuously seal in place to provide a waterproof installation.
- .5 Seal flashing into reglet with bond breaker and sealant compound. Bond sealant on two surfaces only.
- .6 Use S-lock joints unless otherwise accepted by the Departmental Representative. Cap and lock seams, exposed edges folded back 13 mm mitre and caulk corners. Use slip seams for vertical seams.
- .7 Use concealed fastenings and intermediate clips unless otherwise accepted by the Departmental Representative.
- .8 Fasten flashings of 1200 mm length and shorter through the extended "S" locks. Fasten flashings over 1200 mm length through the extended "S" locks and at the mid-length with a 150 mm long, 0.792 mm thick (22 gauge) thick galvanized steel clip.
- .9 Fit flashings together so that one end of each section is free to move in the joint. Do not use any caulking or other sealant at joints.
- .10 Do not caulk between top of flashing and adjacent exterior finishing materials above flashing, so that moisture can escape through space between flashing and adjacent materials above.
- .11 Lap, cap or counter flashings with base flashing, minimum 100 mm.
- .12 Where possible, do not set base flashing screws lower than 200 mm from top of the roof membrane.



- 
- .13 Join all prefinished steel components with stainless steel screws.
  - .14 Do not apply sealant to S-lock joints or exposed joints. Use sealant at other joints only with prior acceptance of Departmental Representative.
  - .15 Back paint sheet metal with bituminous paint on surfaces in contact with concrete, masonry, other cementitious materials, or dissimilar metal, including aluminum flashing.
  - .16 For reglet detail seal flashing into reglet with ethafoam bond breaker and caulking sealant. Caulk reglets using specified caulking. Reglet depth to be at least 38 mm and height to be sufficient to fit metal and uncompressed bond breaker.
  - .17 Provide continuous hook strips or inserts where flashings built into vertical or horizontal surfaces. Wedge flashings in reglets in masonry or concrete with lead wedges and caulk. Install continuous hook strips with 190 mm splayed drip fascias, copings, and at tops of parapets to receive flashings, secured at not over 450 mm o.c. Co-ordinate installation of this flashing with prefinished flashing to Metal Cladding to form a weather tight assembly.
  - .18 At parapets, install flashings to top of coping and lock over hook strip at the exterior bottom of coping. Dress flashings over top of coping, and on the roof side locked to a base flashing crimped out over the roof edge at roof level and finished with a hemmed edge. Form expansion joint in coping flashing at approximately 7600 mm o.c. Where different metals are in contact, coat the surfaces in contact to prevent electrolysis.
  - .19 Install cap and base flashings where roofing abuts parapets, walls, and other vertical surfaces, in lengths not exceeding 2400 mm. Secure cap flashings not less than 300 mm above finished roofing. Lock base flashing to cap flashing and crimp out over cant strip to roof level and finish with a hemmed edge.
  - .20 Install flashings to all curbs, concrete roof pads and control joints.
  - .21 Properly flash around all projections through roofing, including vents, stacks, hatches, mechanical equipment, louvres, and the like, which is not otherwise flashed, to form a watertight installation.
  - .22 Screw sheet metal fabrications to substrate, rigid and secure.
  - .23 Install metal flashings at intersections of roofing with walls, and service penetrations.
  - .24 Install flashing extending 100 mm up the wall behind the wall cladding.
  - .25 Install prefinished flashings to all other locations as detailed or as otherwise required.

3.4           Sealing

- .1       Perform all caulking using trained mechanics skilled in the use of materials used.
- .2       Caulk all locations as specified, and as required to meet reference standards, consistent with the contract documents. Use caulking type specified.
- .3       Match colour of caulking to surfaces to be applied to. Obtain Departmental Representative's direction if colour match unobtainable.
- .4       Thoroughly clean and prime all surfaces to receive caulking, following manufacturer's recommendations.
- .5       Call for inspection of the reglet detail prior to caulking.

3.5           Clean Up

- .1       Remove all metal scraps and cuttings from roof upon completion of flashing work. Leave roof area in a clean tidy condition acceptable to the Departmental Representative.
- .2       Remove temporary protective coverings and strippable films.
- .3       Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair, by finish touch-up or similar minor repair procedures.

**END OF SECTION**

**1. GENERAL**

1.1 General Requirements

- .1 The General Conditions of Contract, Division 01 General Requirements and all Addenda thereto form an integral part of and must be read in conjunction with the requirements of this Section.
- .2 Cooperate and coordinate with the requirements of other units of work specified in other Sections.

1.2 Section Includes

- .1 Work of this Section includes, but is not limited to the following:
  - .1 Preparing sealant substrate surfaces.
  - .2 Placement of joint fillers, backing and sealants.

1.3 Related Sections

- .1 Foam-in-Place Insulation: Section 07 21 19
- .2 Modified Bituminous Protected Membrane Roofing: Section 07 55 52
- .3 Metal Flashing: Section 07 60 00

1.4 Reference Standards

- .1 ASTM Standards:
  - .1 ASTM C603-04(2008): Standard Test Method for Extrusion Rate and Application Life of Elastomeric Sealants.
  - .2 ASTM C919-14: Standard Practice for Use of Sealants in Acoustical Applications.
  - .3 ASTM C920-14a: Standard Specification for Elastomeric Joint Sealants.
  - .4 ASTM C1193-13: Standard Guide for Use of Joint Sealants.
  - .5 ASTM C1518-04(2009): Standard Specification for Precured Elastomeric Silicone Joint Sealant.

- .2 CGSB Standards
  - .1 CAN/CGSB-19.13-M87: Sealing Compound, One Component, Elastomeric, Chemical Curing.
  - .2 CAN/CGSB-19.17-M90: One Component, Acrylic Emulsion Base Sealing Compound.
  - .3 CAN/CGSB-19.24-M90: Multi-Component, Chemical Curing Sealing Compound.

1.5 Qualifications

- .1 Perform Caulking using parties recognized for ability in the trade, having at least five (5) years proven satisfactory experience, to carry out the work and supervise skilled mechanics thoroughly trained and competent in the use of caulking and sealing materials using pressure operated equipment.
- .2 Perform Work in accordance with the sealant manufacturer's requirements for preparation of surfaces and materials installation instructions.

1.6 Submittals

- .1 Submit product data in accordance with Section 01 33 00.
- .2 Submit duplicate copies of manufacturer's product literature for each type of sealant material specified.
- .3 Submit a certified statement attesting that all areas and surfaces were satisfactorily prepared to receive sealants as per manufacturer's instructions and requirements.

1.7 Protection

- .1 If sealant can be damaged before it has cured sufficiently, provide adequate protection. If damaged, remove sealant and renew the application.

1.8 Delivery/Storage

- .1 Deliver all materials and store in original wrappings and containers with manufacturer's seals and labels intact, and as recommended by the manufacturer of the sealant.
- .2 Maintain containers and labels in undamaged condition.

1.9 Environmental Conditions

- .1 Do not work at temperatures greater or less than those recommended by the manufacturer.
- .2 Maintain air temperature range of 4°C to 27°C in areas to receive sealants, 24 hours before, during application, and until sealants have cured.
- .3 Should it become necessary to apply sealants at temperatures below or above this range, advise the Departmental Representative and consult sealant manufacturer and follow the latter's recommendations.
- .4 Protect all work against damage and disfigurements and work of other trades against soiling and damage arising out of this work. Upon completion, replace and repair all defective work.
- .5 Examine substrate materials, joint voids, and note temperature/humidity conditions. Report unacceptable conditions to the Departmental Representative.
- .6 Commencement of work implies acceptance of conditions.

1.10 Safety Requirements

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of material safety data sheets acceptable to Labour Canada and Alberta Occupational Health and Safety.
- .2 Ventilate area of work as using acceptable portable supply and exhaust fans.

1.11 Compatibility

- .1 Ensure that all materials used are compatible.
- .2 Declaration of Materials Compatibility: Submit written declaration stating that sealant materials are compatible with adjacent materials and substrates, including adjacent existing sealant materials to remain, where new sealant is sealed to existing, and are acceptable to the sealant manufacturer. Include a list of materials, suppliers and manufacturers.

1.12 Guarantee

- .1 Provide a written guarantee endorsed and issued in the name of the CFIA stating that all sealant and caulking work is guaranteed against leakage, cracking and deterioration, shrinkage, loss of cohesion, loss of adhesion, staining of adjacent surfaces, integral staining or failure to provide intended seal; for a period of five (5) years from date of Substantial Performance of the contract and that any defects will be replaced including related materials and damage to the building due to sealant failure, at no cost to the CFIA.

**2. PRODUCTS**

2.1 General

- .1 Use the least toxic sealants, adhesives, sealers, and finishes necessary to comply with the requirements of this Section.

2.2 Materials

- .1 Note: all sealants to have matte finish; high gloss finish will not be acceptable.
- .2 Sealant Type 1: one component silicone sealant to CAN/CGSB-19.13-M87, type 2, Class 25, shore A hardness of 25 - 30, non-sag, neutral curing, one of the following:
  - .1 Dow Corning 795.
  - .2 SCS2000 Silpruf as manufactured by GE.
  - .3 Spectrum 2 as manufactured by Tremco.
  - .4 Or equivalent product in accordance with Section 01 62 00.
- .3 Joint Cleaner: Non-corrosive solvent recommended by sealant manufacturer for applicable substrate materials.
- .4 Primer: Non-staining type recommended by sealant manufacturer.
- .5 Joint Filler: Round closed cell, non-staining, non-absorbent foam, extruded polyethylene shore hardness 20, tensile strength 138-207 KPa oversized 30-50%. For backup to large joints, cavities or voids, use fibreglass wool.
- .6 Bond Breaker: Pressure sensitive polyethylene or PVC tape, not bondable to sealant.

2.3 Colours

- .1 Colours: to match adjacent material, as selected by the Departmental Representative.

**3. EXECUTION**

**3.1 Preparation**

- .1 Surface Cleaning: Clean all surfaces required to be caulked, removing all loose particles, dust, oil, wax, protective coatings, mould release agents, and the like, using brush, solvents, or acid etching methods.
- .2 Primer Application: Prior to application of primer where required, test primers for possible yellowing, discolouration, and dirt pick-up when applied over face of porous substrates.
- .3 Following testing apply primers to joints following manufacturer's recommendations.
- .4 When tests indicate discolouration, dirt pick-up and the like on surfaces, take special precautions when applying, by masking surfaces not required to be primed.
- .5 Ensure that the sealant manufacturer's representative reviews site conditions, joint design and installer's qualifications. Report unsatisfactory conditions to the Departmental Representative. Ensure that sealants are compatible with adjoining materials.
- .6 Ensure that the sealant manufacturer's representative checks container labels, random inspect preparation of substrate materials and random test installed work.

**3.2 Application – General**

- .1 Use sealant Type 1 for exterior caulking except where indicated otherwise.
- .2 Apply substrate foam bead or backer rod to within 10 mm of face of joint.
- .3 Ensure all surfaces are clean. Caulk only when surface temperature is between 4°C and 26°C.
- .4 Apply sealant in accordance with manufacturer's instructions.
- .5 Use pressure gun fitted with suitable nozzle.
- .6 Ensure finished surfaces of sealant are smooth and free from ridges, wrinkles, or foreign matter.
- .7 Prime joints when recommended by manufacturer. Use a brush that will reach all parts of the joints.
- .8 Wire brush loose surfaces (such as brick and masonry).

- .9 Ensure bead is solid, filling entire space between sides and bedding material, and exerting sufficient pressure on sides to obtain maximum bond, by allowing sealant to bulge out in advance of nozzle.

### 3.3 Application of Sealants

- .1 Apply sealants in accordance with manufacturer's directions, using a pressure air gun with proper size nozzle. Use sufficient pressure to fill voids and joints solid. Superficial pointing with skin bead is not acceptable.
- .2 Apply Sealant Type 1 to exterior at joints between dissimilar materials, control joints, to metal flashing, and to all other exterior joints to render areas of application weather tight.
- .3 Do not apply sealant between metal flashing and an adjacent material on the top side, so as to prevent moisture drainage out of wall or window assembly.
- .4 Apply sealant Type 1 to all locations required to be bedded in caulking compound where not exposed to view, such as below thresholds, bedding where called for, in joints and elsewhere as required.
- .5 Joint Design: Fill all spaces that are deeper than width of joint with approved backup material. Ensure that the backup material fills the joint out to a dimension that is equal to the width of the joint, but in no case less than half the width of the joint.
- .6 Sealant Application: Gun apply sealants through a nozzle opening of such shape and diameter that the full bead of sealant is gunned into the joint, filling the joint completely; to the approval of the Departmental Representative.
- .7 A superficial or skin bead in joints will not be acceptable and is to be corrected to manufacturer's recommended joint profile at no additional cost to the CFIA.
- .8 Tool all beads immediately after application to ensure firm, full contact with the inner faces of the joint. Strike off excess material with tooling stick or knife.
- .9 Upon completion ensure caulking surfaces are smooth, even, free from ridges, wrinkles, air pockets, and embedded foreign matter.
- .10 Joint Finishes: Finish joints in flush surfaces; fill joints full in internal angles, except as otherwise detailed. Use wet tool as required. Avoid the use of face fillet (or angle bead) joints. Convex joints will be rejected.
- .11 Where sharp, exact bead lines are desired, use masking tape. When taping, avoid touching cleaned and primed areas to which sealant is to be applied. Remove masking tape immediately after bead is placed and tooled, to avoid damage to developing surface skin.



- .12 Completely fill void with compound into which they are installed. Remove excess immediately following installation. Void depth to be 12 mm maximum and 6 mm minimum.

3.4 Bond Breaker

- .1 Use foam bead as specified, to limit depth of sealant and to act as bond breaker at back of joint (adhesion is to be prevented at back of joint).
- .2 Where depth of joint does not permit the use of foam bead, apply tape to the back of the joint to act as bond breaker.

3.5 Cleaning

- .1 Promptly as work proceeds remove all excess material or smears from surfaces beyond joint or surface to be caulked, using solvents as recommended by the manufacturer's representative. If sealant or caulking has set up, employ mechanical removal.
- .2 During application, maintain areas of work in clean condition daily removing from the premises and site all rubbish and surplus material.
- .3 Clean immediately soiled non-porous materials.
- .4 On porous surfaces, remove any excess sealant as recommended by manufacturer.

**END OF SECTION**



## **Hazardous Building Materials Assessment**

Roof

Canadian Food Inspection  
Agency

3650 36 Street NW, Calgary,  
Alberta

Prepared for:

**Canadian Food Inspection  
Agency**

59-1E-208 Camelot Drive  
Ottawa, Ontario K1A 0Y9

Attention: David Fauteux, A.Sc.T  
Planning, Design and Construction

November 14, 2019

Pinchin File: 249694.000



**Hazardous Building Materials Assessment**

Canadian Food Inspection Agency, 3650 36 Street NW, Calgary, Alberta  
Canadian Food Inspection Agency

November 14, 2019  
Pinchin File: 249694.000

**Issued to:** Canadian Food Inspection Agency  
**Contact:** David Fauteux, A.Sc.T  
Planning, Design and Construction  
**Issued on:** November 14, 2019  
**Pinchin File:** 249694.000  
**Issuing Office:** Calgary, AB  
**Pinchin Contact:** Shawn Ralph, Project Manager

---

Author: 

---

Mike Lucyk, B.Sc.  
Project Coordinator  
403.723.2623  
[mlucyk@pinchin.com](mailto:mlucyk@pinchin.com)

Project Manager: 

---

Shawn Ralph, Dipl. EVM  
Project Manager  
403.723.2606  
[sralph@pinchin.com](mailto:sralph@pinchin.com)

Reviewer: 

---

Kenton Hogarth  
Operations Manager - Alberta  
780.580.7000  
[khogarth@pinchin.com](mailto:khogarth@pinchin.com)



## EXECUTIVE SUMMARY

Canadian Food Inspection Agency (Client) retained Pinchin Ltd. (Pinchin) to conduct a hazardous building materials assessment at the Canadian Food Inspection Agency Building located 3650 36 Street NW, Calgary, Alberta. Pinchin performed the assessment on October 21, 2019.

The objective of the assessment was to identify specified hazardous building materials in preparation for installation of a new roof membrane over the existing roof. The results of this assessment are intended for use with a properly developed scope of work and performance specification.

The assessed area was limited to the roof of the building.

## SUMMARY OF FINDINGS

Asbestos: Asbestos-containing materials (ACM) were not identified in the assessed area.

Lead: Lead is present as follows:

- Green paint on metal.
- Lead sheeting and roof drains.

Silica: Crystalline silica is present in concrete.

Mercury: Mercury-containing materials were not identified in the assessed area.

Polychlorinated Biphenyls (PCBs): Samples of caulking are non-PCB solid based on the threshold (50 ppm).

## SUMMARY OF RECOMMENDATIONS

The following is a summary of significant recommendations; refer to the body of the report for detailed recommendations.

1. Do not disturb suspected hazardous building materials discovered during the planned work, which have not been identified in this report. Notify Pinchin immediately to conduct further testing.
2. Follow appropriate safe work procedures when handling or disturbing silica and lead.

*This Executive Summary is subject to the same standard limitations as contained in the report and must be read in conjunction with the entire report.*



## TABLE OF CONTENTS

1.0	INTRODUCTION AND SCOPE .....	1
1.1	Scope of Assessment.....	1
2.0	BACKGROUND INFORMATION .....	2
2.1	Building Description.....	2
3.0	FINDINGS .....	2
3.1	Asbestos .....	3
3.2	Lead.....	5
3.3	Silica .....	6
3.4	Mercury.....	6
3.5	Polychlorinated Biphenyls .....	7
4.0	RECOMMENDATIONS.....	8
4.1	General.....	8
4.2	Renovation Work .....	8
5.0	TERMS AND LIMITATIONS .....	9
6.0	REFERENCES.....	9

## APPENDICES

APPENDIX I	Drawing
APPENDIX II-A	Asbestos Analytical Certificates
APPENDIX II-B	Lead Analytical Certificates
APPENDIX II-C	PCB Analytical Certificates
APPENDIX III	Methodology
APPENDIX IV	Location Summary Report
APPENDIX V	Hazardous Materials Summary Report
APPENDIX VI	All Data Report



## **1.0 INTRODUCTION AND SCOPE**

Canadian Food Inspection Agency (Client) retained Pinchin Ltd. (Pinchin) to conduct a hazardous building materials assessment at the Canadian Food Inspection Agency Building located at 3650 36 Street NW, Calgary, Alberta.

Mike Lucyk, B.Sc., Project Coordinator, performed the assessment on October 21, 2019. The surveyor was accompanied by the Building Operator during the assessment. The assessed area was unoccupied at the time of the assessment.

The objective of the assessment was to identify specified hazardous building materials in preparation for installation of a new roof membrane over the existing roof. This assessment is intended to be used for pre-construction purposes only and may not provide sufficient detail for long term management of hazardous materials as required by Health and Safety regulations. The results of this assessment are intended for use with a properly developed scope of work and performance specification.

### **1.1 Scope of Assessment**

The assessment was performed to establish the location and type of specified hazardous building materials incorporated in the structures and its finishes. The assessed area was limited to the roof of the building.

For the purpose of the assessment and this report, hazardous building materials are defined as follows:

- Asbestos
- Lead
- Silica
- Mercury
- Polychlorinated Biphenyls (PCBs)



## 2.0 BACKGROUND INFORMATION

### 2.1 Building Description

Description Item	Details
Use	Canadian Food Inspection Agency Building
Total Area	The assessed area is approximately 29,700 square feet.
Year of Construction	The building was constructed in approximately the late 1980's.
Structure	Concrete
Exterior Cladding	Concrete
HVAC	Not assessed, out of scope
Roof	Built-up roof, Metal
Flooring	Not assessed, out of scope
Interior Walls	Not assessed, out of scope
Ceilings	Not assessed, out of scope

## 3.0 FINDINGS

The following section summarizes the findings of the assessment and provides a general description of the hazardous materials identified and their locations. For details on approximate quantities, assessment and locations of hazardous materials; refer to the Hazardous Material Summary Report and All Data Report in Appendix V and VI.



### 3.1 Asbestos

#### 3.1.1 Suspect Building Materials Not Found

The following types of building materials may historically contain asbestos but were not observed in the assessed area and are not discussed in the report findings:

- Spray-applied insulations (fireproofing, thermal or acoustic)
- Texture finishes (decorative)
- Thermal systems insulation (pipes, ducts and mechanical)
- Acoustic ceiling tiles
- Plaster and Stucco
- Drywall joint compound
- Asbestos cement products (e.g. Transite)
- Vinyl sheet flooring
- Vinyl floor tiles

#### 3.1.2 Sealants, Caulking, and Putty

The following table presents a summary of caulking, sealants and putties present:

Material and Colour	Location (Location #)	Quantity	Sample Number	Asbestos Type
Caulking, Light grey	North Roof and South Roof	9 Linear Feet	S0002	None detected
Caulking, White	North Roof and Northwest Roof	13 Linear Feet	S0003	None detected
Tar, Black	North Roof	2 ft <sup>2</sup>	S0004	None detected
Caulking, Brown	North Roof	1 ft <sup>2</sup>	S0005	None detected





Non-asbestos light grey (sample S0002) caulking found on the roof.



View of non-asbestos white caulking (sample S0003) surrounding a pipe.



Non-asbestos black tar (sample S0004).



Non-asbestos brown caulking (sample S0005).

### 3.1.3 Roofing Products

The built-up roof consisted of Styrofoam insulation, a plastic sheet with pre-cast concrete slabs on top and therefore the roof is presumed to be non-asbestos.



View of the concrete slabs on the roof and a roof drain.



Close-up view of the roof drain shows non-asbestos Styrofoam insulation and plastic sheeting.

### 3.1.4 Other Building Materials

Brown oakum was used to seal piping on top of the roof and was determined to be non-asbestos (samples S0001A-C).



Non-asbestos brown oakum on a rooftop pipe

### 3.1.5 Presumed Asbestos Materials

The methodology identifies a list of materials which may contain asbestos, which were not to be sampled, based on limitations of the scope. The following is a list of materials which may contain asbestos, which were not observed during the assessment, but based on site conditions may be present. If determined to be present during building renovation, these materials are presumed to contain asbestos until otherwise proven by sampling and analysis:

- Roofing felts, mastics
- Paper products
- Metal clad finishes
- Materials concealed or outside the assessed area

## 3.2 Lead

### 3.2.1 Paints and Surface Coatings

Refer to the Hazardous Materials Summary Report in Appendix V for details on paints sampled and their locations.

Results above 0.009% are lead-based in accordance with the Surface Coating Materials Regulation. Green paint on metal was determined to lead-based. The paint determined to be lead-based was found to be in good condition and not flaking, peeling or delaminating.



Lead-based green paint on the roof.

### 3.2.2 Lead Products and Applications

Lead sheeting (a total of approximately 30 ft<sup>2</sup>) was identified on the roof along with 13 presumed lead-containing roof drains.



Example of lead sheeting found on the roof.



Presumed lead-containing roof drain.

### 3.3 Silica

Crystalline silica is a presumed component of the pre-cast concrete slabs found on the roof.

### 3.4 Mercury

Mercury-containing devices were not found during the assessment.

### 3.5 Polychlorinated Biphenyls

#### 3.5.1 Caulking

The following table presents a summary of caulking present:

Material and Colour	Location	Quantity	Sample Number	PCB concentration (ppm)
Caulking, Light grey	North Roof and South Roof	9 Linear Feet	P0001	<0.50
Caulking, White	North Roof and Northwest Roof	13 Linear Feet	P0002	<0.50
Caulking, Brown	North Roof	1 ft <sup>2</sup>	P0003	<0.50

All caulking sampled is a non-PCB solid based on the threshold (50 ppm).



Non-PCB light grey caulking.



Non-PCB white caulking.



Non-PCB brown caulking.



## **4.0 RECOMMENDATIONS**

### **4.1 General**

1. If suspected hazardous building materials are discovered during the planned work, which are not identified in this report, do not disturb and inform Pinchin immediately to conduct further testing.
2. Provide this report to the contractor prior to bidding or commencing work.

### **4.2 Renovation Work**

The following recommendations are made regarding renovation involving the hazardous materials identified.

#### *4.2.1 Lead*

Construction disturbance of lead in paint and coatings (or other materials) may result in over-exposure to lead dust or fumes. The need for work procedures, engineering controls and personal protective equipment will need to be assessed on a project-by-project basis and must comply with provincial standards or guidelines. Performing an exposure assessment during work that disturbs lead in paints and coatings may be able to alleviate the use of some of the precautions specified by these standards or guidelines.

Well adhered paints containing elevated levels of lead on metal substrates do not require leachable lead analysis as the materials can be recycled with the paint intact.

Lead-containing items lead sheeting and roof drains should be recycled when taken out of service.

#### *4.2.2 Silica*

Construction disturbance of silica-containing products may result in excessive exposures to airborne silica, especially if performed indoors and dry. Cutting, grinding, drilling or demolition of materials containing silica should be completed only with proper respiratory protection and other worker safety precautions that comply with provincial standards or guidelines.



## 5.0 TERMS AND LIMITATIONS

This work was performed subject to the Terms and Limitations presented or referenced in the proposal for this project.

Information provided by Pinchin is intended for Client use only. Pinchin will not provide results or information to any party unless disclosure by Pinchin is required by law. Any use by a third party of reports or documents authored by Pinchin or any reliance by a third party on or decisions made by a third party based on the findings described in said documents, is the sole responsibility of such third parties. Pinchin accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted. No other warranties are implied or expressed.

## 6.0 REFERENCES

1. Alberta Asbestos Abatement Manual, Ministry of Labour and Immigration.
2. Occupational Health and Safety Act, Regulations and Code, Province of Alberta.
3. Environmental Protection and Enhancement Act, Waste Control Regulation, Alberta Regulation 192/96.
4. Alberta User Guide for Waste Managers, Alberta Environment and Sustainable Resource Development, 1996.
5. Guidelines for the Disposal of Asbestos Waste, Alberta Environment and Sustainable Resource Development, 1989.
6. PCB Regulations, SOR/2008-273, Canadian Environmental Protection Act.
7. Transportation of Dangerous Goods Regulations SOR/2008-34, Transportation of Dangerous Goods Act.
8. Workplace Health and Safety Bulletin, Lead at the Work Site, Government of Alberta, Human Services, November 2013.
9. Best Practices Mould at the Work Site, Government of Alberta, Employment and Immigration, July 2009.

\\fscalfjob\249000s\0249694.000 CanadianFood, 3650 36 St, HAZ Assessment\Deliverables\249694.000 HAZ Assessment Report CanadianFood 3650 36 St NW Nov 2019 FINAL.docx

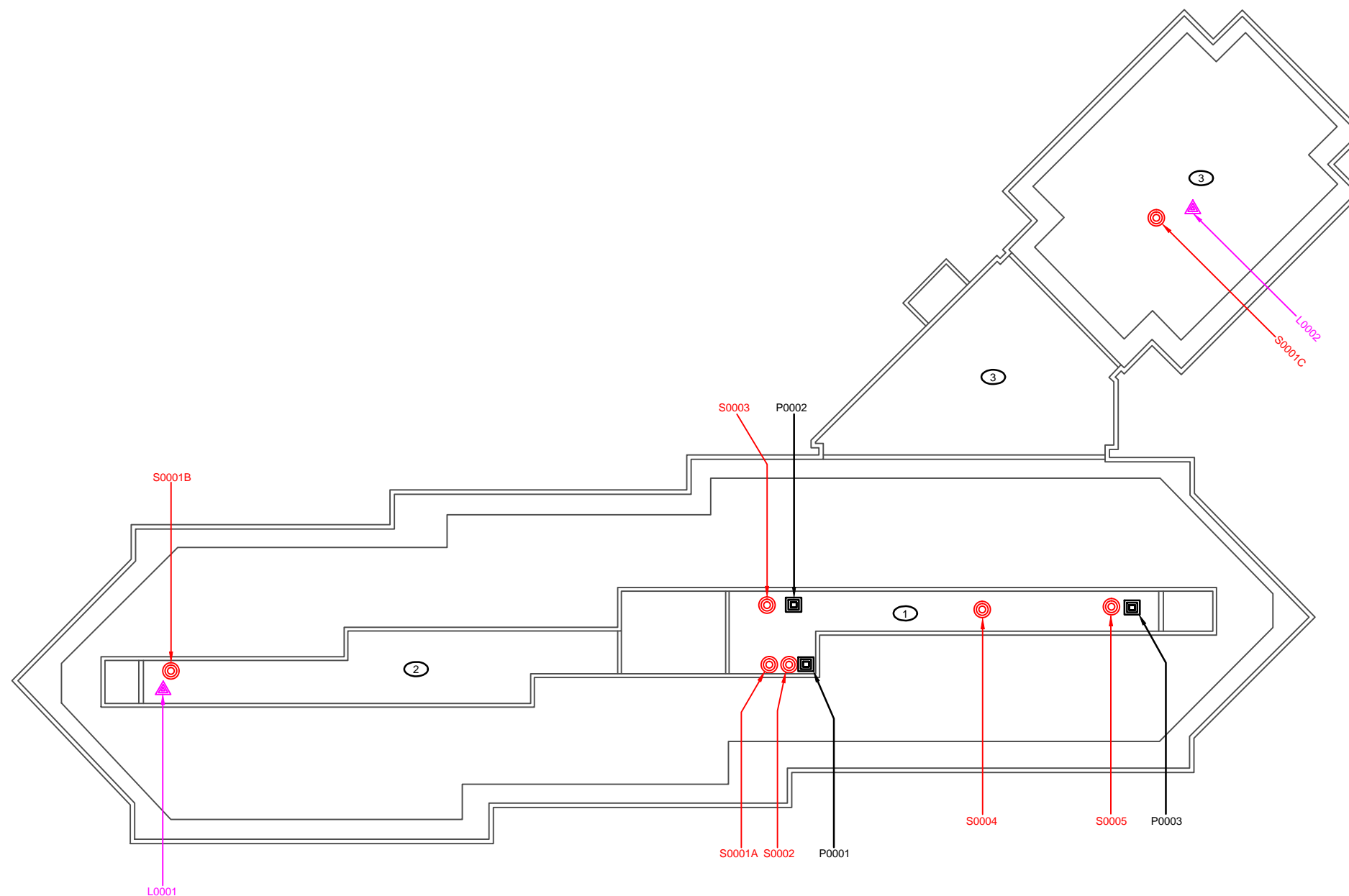
Template: Master Report for Hazardous Materials Assessment (Pre-Construction), HAZ, April 23, 2019

**APPENDIX I**  
**Drawing**



LEGEND

- (X) PINCHIN LOCATION NUMBER
- ⊙ ASBESTOS BULK SAMPLE
- ▲ LEAD BULK SAMPLE
- PCB BULK SAMPLE



NOTE:  
NOT ALL KNOWN OR SUSPECTED HAZARDOUS BUILDING MATERIALS MAY BE DEPICTED ON THE DRAWING. REFER TO THE HAZARDOUS BUILDING MATERIALS ASSESSMENT REPORT FOR A COMPLETE LIST OF KNOWN AND SUSPECTED HAZARDOUS BUILDING MATERIALS.

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.



PROJECT NAME:  
HAZARDOUS BUILDING MATERIALS ASSESSMENT

CLIENT NAME:  
CANADIAN FOOD INSPECTION AGENCY

PROJECT LOCATION:  
3650 - 36TH STREET NW,  
CALGARY, ALBERTA

FIGURE NAME:  
ROOF

PROJECT NUMBER: 249694.000	SCALE: NOT TO SCALE
DRAWN BY: BPC	REVIEWED BY: SR
DATE: NOV. 4/19	FIGURE NUMBER: 1 OF 1



**APPENDIX II-A**  
**Asbestos Analytical Certificates**



# Bulk Asbestos Analysis

By Polarized Light Microscopy  
 EPA Method: 600/R-93/116 and 40 CFR, Part 763, Subpart E,  
 App.E



**Customer:** Pinchin Ltd.  
 111, 11505-35 Street SE  
 Calgary, AB T2Z 4B1

**Attn:** Mike Lucyk  
 Shawn Ralph

**Lab Order ID:** 71927088  
**Analysis ID:** 71927088\_PLM  
**Date Received:** 10/22/2019  
**Date Reported:** 10/25/2019

**Project:** Canadian Food Inspection Agency Building


Sample ID	Description	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes
Lab Sample ID	Lab Notes				Treatment
S0001A	Oakum, Brown, Loc:1, North Roof	None Detected	70% Cellulose	30% Other	Gray Fibrous Heterogeneous
71927088PLM_1					Ashed
S0001B	Oakum, Brown, Loc:2, South Roof	None Detected	70% Cellulose	30% Other	Gray Fibrous Heterogeneous
71927088PLM_2					Ashed
S0001C	Oakum, Brown, Loc:3, Northwest Roof	None Detected	70% Cellulose	30% Other	Gray Fibrous Heterogeneous
71927088PLM_3					Ashed
S0002	Caulking, Light Grey, Loc:1, North Roof	None Detected		100% Other	Gray Non Fibrous Homogeneous
71927088PLM_4					Ashed
S0003	Caulking, White, Loc:1, North Roof	None Detected		100% Other	White Non Fibrous Homogeneous
71927088PLM_5					Ashed
S0004	Black Tar, Loc:1, North Roof	None Detected	3% Cellulose	97% Other	Black Non Fibrous Heterogeneous
71927088PLM_6					Dissolved
S0005	Caulking, Brown, Loc:1, North Roof	None Detected		100% Other	Brown Non Fibrous Homogeneous
71927088PLM_7					Ashed

**Disclaimer:** Due to the nature of the EPA 600 method, asbestos may not be detected in samples containing low levels of asbestos. We strongly recommend that analysis of floor tiles, vermiculite, and/or heterogeneous soil samples be conducted by TEM for confirmation of "None Detected" by PLM. This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAL. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. government. Analytical uncertainty available upon request. Scientific Analytical Institute participates in the NVLAP Proficiency Testing program. Unless otherwise noted blank sample correction was not performed. Estimated MDL is 0.1%.

Bobby Wheatley (7)

Analyst

Approved Signatory

<b>Client:</b>	Pinchin Ltd.	<b>*Instructions:</b> Use Column "B" for your contact info	71927088
<b>Contact:</b>	Mike Lucyk		
<b>Address:</b>	Calgary	To See an Example Click the bottom Example Tab.	7
<b>Phone:</b>			
<b>Fax:</b>			
<b>Email:</b>	<a href="mailto:mlucyk@pinchin.com">mlucyk@pinchin.com</a> <a href="mailto:sralph@pinchin.com">sralph@pinchin.com</a> <a href="mailto:calgaryadmin@pinchin.com">calgaryadmin@pinchin.com</a>	<b>Begin Samples with a "&lt;&lt;" above the first sample and end with a "&gt;&gt;" below the last sample. Only Enter your data on the first sheet "Sheet1"</b>	Scientific Analytical Institute
<b>Project:</b>	Canadian Food Inspection Agency		
<b>Client Notes:</b>		<i>Note: Data 1 and Data 2 are optional fields that do not show up on the official report, however they will be included in the electronic data returned to you to facilitate your reintegration of the report data.</i>	 <b>4604 Dundas Dr. Greensboro, NC 27407 Phone: 336.292.3888 Fax: 336.292.3313 Email: lab@sailab.com</b>
<b>P.O. #:</b>	249694.000		
<b>Date Submitted:</b>	10-21-2019		
<b>Analysis:</b>	PLM BULK EPA 600		
<b>TurnAroundTime:</b>	4 days		

Sample Number	Data 1 (Lab use only)	Sample Description	Data 2 (Lab use only)
<<			
S0001A		Oakum, Brown, Loc:1, North Roof	
S0001B		Oakum, Brown, Loc:2, South Roof	
S0001C		Oakum, Brown, Loc:3, Northwest Roof	
S0002		Caulking, Light Grey, Loc:1, North Roof	
S0003		Caulking, White, Loc:1, North Roof	
S0004		Black Tar, Loc:1, North Roof	
S0005		Caulking, Brown, Loc:1, North Roof	
>>			

**Accepted**

**Rejected**

*N. Kang 10/22 10:30A*

**APPENDIX II-B**  
**Lead Analytical Certificates**



# Analysis for Lead Concentration in Paint Chips

by Flame Atomic Absorption Spectroscopy  
EPA SW-846 3050B/6010C/7000B



**Customer:** Pinchin Ltd.  
111, 11505-35 Street SE  
Calgary, AB T2Z 4B1

**Attn:** Mike Lucyk  
Shawn Ralph

**Lab Order ID:** 71927086  
**Analysis ID:** 71927086\_PBP  
**Date Received:** 10/22/2019  
**Date Reported:** 10/28/2019

**Project:** Canadian Food Inspection Agency Building

Sample ID	Description	Mass (g)	Concentration (ppm)	Concentration (% by weight)
Lab Sample ID	Lab Notes			
L0001	Floor, Metal, Green,Loc:2,South Roof	0.0596	2500	0.25%
71927086PBP_1				
L0002	Floor, Metal, Green,Loc:3,Northwest Roof	0.0602	79	0.0079%
71927086PBP_2				


Unless otherwise noted blank sample correction was not performed on analytical results. Scientific Analytical Institute participates in the AIHA ELPAT program. ELPAT Laboratory ID: 173190. This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAI. Analytical uncertainty available upon request. The quality control samples run with the samples in this report have passed all EPA required specifications unless otherwise noted. RL: (Report Limit for an undiluted 50ml sample is 4µg Total Pb).

Athena Summa (2)

Analyst

Scientific Analytical Institute, Inc. 4604 Dundas Dr. Greensboro, NC 27407 (336) 292-3888

Laboratory Director

<b>Client:</b> <b>Contact:</b> <b>Address:</b> <b>Phone:</b> <b>Fax:</b> <b>Email:</b> <b>Project:</b> <b>Client Notes:</b> <b>P.O. #:</b> <b>Date Submitted:</b> <b>Analysis:</b> <b>TurnAroundTime:</b>	Pinchin Ltd. Mike Lucyk Calgary  <a href="mailto:mlucyk@pinchin.com">mlucyk@pinchin.com</a> <a href="mailto:sralph@pinchin.com">sralph@pinchin.com</a> <a href="mailto:calgaryadmin@pinchin.com">calgaryadmin@pinchin.com</a> Canadian Food Inspection Agency	<b>*Instructions:</b> Use Column "B" for your contact info  To See an Example Click the bottom Example Tab.  2 <b>Begin Samples with a "&lt;&lt;" above the first sample                  and end with a "&gt;&gt;" below the last sample.                  Only Enter your data on the first sheet "Sheet1"</b>  Note: Data 1 and Data 2 are optional fields that do not show up on the official report, however they will be included in the electronic data returned to you to facilitate your reintegration of the report data.	<div style="font-size: 2em; color: blue; font-family: cursive;">71927086</div>  <p><b>4604 Dundas Dr.                  Greensboro, NC 27407                  Phone: 336.292.3888                  Fax: 336.292.3313                  Email: lab@sailab.com</b></p>
--	--	--	---

Sample Number	Data 1 (Lab use only)	Sample Description	Data 2 (Lab use only)
<<			
L0001		Floor, Metal, Green, Loc:2, South Roof	
L0002		Floor, Metal, Green, Loc:3, Northwest Roof	
>>			

**Accepted**

**Rejected**

N. Franco 10/22 10:30A

**APPENDIX II-C**  
**PCB Analytical Certificates**



Pinchin Ltd.  
ATTN: Mike Lucyk  
111 - 11505 35 Street SE  
CALGARY AB T2Z 4B1

Date Received: 22-OCT-19  
Report Date: 24-OCT-19 18:09 (MT)  
Version: FINAL

Client Phone: 403-819-0537

## Certificate of Analysis

Lab Work Order #: L2369482  
Project P.O. #: NOT SUBMITTED  
Job Reference: 249649  
C of C Numbers:  
Legal Site Desc: Canadian Food Inspection Agency

Ryan Smyth, B.A.Sc.  
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298  
ALS CANADA LTD Part of the ALS Group An ALS Limited Company



## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2369482-1 P0001 - LIGHT GREY CAULKING, BOILER STACK, NORTH ROOF Sampled By: Mike Lucyk on 21-OCT-19 Matrix: Solid							
<b>PCBs</b>							
Aroclor 1016	<0.10		0.10	mg/kg		23-OCT-19	R4881451
Aroclor 1221	<0.10		0.10	mg/kg		23-OCT-19	R4881451
Aroclor 1232	<0.10		0.10	mg/kg		23-OCT-19	R4881451
Aroclor 1242	<0.10		0.10	mg/kg		23-OCT-19	R4881451
Aroclor 1248	<0.10		0.10	mg/kg		23-OCT-19	R4881451
Aroclor 1254	<0.10		0.10	mg/kg		23-OCT-19	R4881451
Aroclor 1260	<0.10		0.10	mg/kg		23-OCT-19	R4881451
Aroclor 1262	<0.10		0.10	mg/kg		23-OCT-19	R4881451
Aroclor 1268	<0.10		0.10	mg/kg		23-OCT-19	R4881451
Total PCBs	<0.50		0.50	mg/kg		23-OCT-19	R4881451
Surrogate: Decachlorobiphenyl	96.4		39.6-148.1	%		23-OCT-19	R4881451
L2369482-2 P0002 - WHITE CAULKING, SEWER VENT, NORTH ROOF Sampled By: Mike Lucyk on 21-OCT-19 Matrix: Solid							
<b>PCBs</b>							
Aroclor 1016	<0.10		0.10	mg/kg		23-OCT-19	R4881451
Aroclor 1221	<0.10		0.10	mg/kg		23-OCT-19	R4881451
Aroclor 1232	<0.10		0.10	mg/kg		23-OCT-19	R4881451
Aroclor 1242	<0.10		0.10	mg/kg		23-OCT-19	R4881451
Aroclor 1248	<0.10		0.10	mg/kg		23-OCT-19	R4881451
Aroclor 1254	<0.10		0.10	mg/kg		23-OCT-19	R4881451
Aroclor 1260	<0.10		0.10	mg/kg		23-OCT-19	R4881451
Aroclor 1262	<0.10		0.10	mg/kg		23-OCT-19	R4881451
Aroclor 1268	<0.10		0.10	mg/kg		23-OCT-19	R4881451
Total PCBs	<0.50		0.50	mg/kg		23-OCT-19	R4881451
Surrogate: Decachlorobiphenyl	110.2		39.6-148.1	%		23-OCT-19	R4881451
L2369482-3 P0003 - BROWN CAULKING, PIPE, NORTH ROOF Sampled By: Mike Lucyk on 21-OCT-19 Matrix: Solid							
<b>PCBs</b>							
Aroclor 1016	<0.10		0.10	mg/kg		23-OCT-19	R4881451
Aroclor 1221	<0.10		0.10	mg/kg		23-OCT-19	R4881451
Aroclor 1232	<0.10		0.10	mg/kg		23-OCT-19	R4881451
Aroclor 1242	<0.10		0.10	mg/kg		23-OCT-19	R4881451
Aroclor 1248	<0.10		0.10	mg/kg		23-OCT-19	R4881451
Aroclor 1254	<0.10		0.10	mg/kg		23-OCT-19	R4881451
Aroclor 1260	<0.10		0.10	mg/kg		23-OCT-19	R4881451
Aroclor 1262	<0.10		0.10	mg/kg		23-OCT-19	R4881451
Aroclor 1268	<0.10		0.10	mg/kg		23-OCT-19	R4881451
Total PCBs	<0.50		0.50	mg/kg		23-OCT-19	R4881451
Surrogate: Decachlorobiphenyl	106.2		39.6-148.1	%		23-OCT-19	R4881451

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## Reference Information

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
PCB-TAR-ED	Misc.	PCBs	EPA 3550/8082-GC-ECD

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Methods 3500, 3620, 3665 & 8082, published by the United States Environmental Protection Agency (EPA). The procedure involves extraction of the filter, swab or solid material with hexane followed by one or more of the following extract clean-up procedures (if required): florisil clean-up and/or sulphuric acid clean-up. The final extract is analysed by capillary column gas chromatography with electron capture detection (GC/ECD).

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

Laboratory Definition Code	Laboratory Location
ED	ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA

### Chain of Custody Numbers:

### GLOSSARY OF REPORT TERMS

*Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.*

*mg/kg - milligrams per kilogram based on dry weight of sample*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight*

*mg/L - unit of concentration based on volume, parts per million.*

*< - Less than.*

*D.L. - The reporting limit.*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



## Quality Control Report

Workorder: L2369482

Report Date: 24-OCT-19

Page 1 of 2

Client: Pinchin Ltd.  
 111 - 11505 35 Street SE  
 CALGARY AB T2Z 4B1

Contact: Mike Lucyk

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PCB-TAR-ED</b>		<b>Misc.</b>						
<b>Batch</b>	<b>R4881451</b>							
<b>WG3198676-3</b>	<b>DUP</b>	<b>L2369482-3</b>						
Aroclor 1016		<0.10	<0.10	RPD-NA	mg/kg	N/A	50	23-OCT-19
Aroclor 1221		<0.10	<0.10	RPD-NA	mg/kg	N/A	50	23-OCT-19
Aroclor 1232		<0.10	<0.10	RPD-NA	mg/kg	N/A	50	23-OCT-19
Aroclor 1242		<0.10	<0.10	RPD-NA	mg/kg	N/A	50	23-OCT-19
Aroclor 1248		<0.10	<0.10	RPD-NA	mg/kg	N/A	50	23-OCT-19
Aroclor 1254		<0.10	<0.10	RPD-NA	mg/kg	N/A	50	23-OCT-19
Aroclor 1260		<0.10	<0.10	RPD-NA	mg/kg	N/A	50	23-OCT-19
Aroclor 1262		<0.10	<0.10	RPD-NA	mg/kg	N/A	50	23-OCT-19
Aroclor 1268		<0.10	<0.10	RPD-NA	mg/kg	N/A	50	23-OCT-19
<b>WG3198676-2</b>	<b>LCS</b>	<b>LCS_A1016</b>						
Aroclor 1016			112.6		%		50-150	23-OCT-19
<b>WG3198676-1</b>	<b>MB</b>							
Aroclor 1016			<0.10		mg/kg		0.1	23-OCT-19
Aroclor 1221			<0.10		mg/kg		0.1	23-OCT-19
Aroclor 1232			<0.10		mg/kg		0.1	23-OCT-19
Aroclor 1242			<0.10		mg/kg		0.1	23-OCT-19
Aroclor 1248			<0.10		mg/kg		0.1	23-OCT-19
Aroclor 1254			<0.10		mg/kg		0.1	23-OCT-19
Aroclor 1260			<0.10		mg/kg		0.1	23-OCT-19
Aroclor 1262			<0.10		mg/kg		0.1	23-OCT-19
Aroclor 1268			<0.10		mg/kg		0.1	23-OCT-19
Surrogate: Decachlorobiphenyl			81.7		%		39.6-148.1	23-OCT-19

# Quality Control Report

Workorder: L2369482

Report Date: 24-OCT-19

Page 2 of 2

## Legend:

---

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

---

## Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

---

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



### Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878



L2369482-COFC

COC Number: 17 -

Page of

<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>		<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>													
Company: Pinchin		Select Report Format: <input checked="" type="checkbox"/> PDF <input type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)		Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply													
Contact: Mike Lucyk		Quality Control (QC) Report with Report <input type="checkbox"/> YES <input type="checkbox"/> NO		<b>PRIORITY</b> (Business Days)	<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked	4 day [P4-20%] <input type="checkbox"/>		<b>EMERGENCY</b>	1 Business day [E1 - 100%] <input type="checkbox"/>								
Phone: 403.723.2623		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			3 day [P3-26%] <input type="checkbox"/>		Same Day, Weekend or Statutory holiday [E2 -200%] <input type="checkbox"/>										
Company address below will appear on the final report		Email 1 or Fax mlucyk@pinchin.com			2 day [P2-50%] <input type="checkbox"/>		(Laboratory opening fees may apply)										
Street: 111, 11505 - 35 Street SE		Email 2 catgaryadmin@pinchin.com		Date and Time Required for all E&P TATs:													
City/Province: Calgary, Alberta		Email 3 sralph@pinchin.com		For tests that can not be performed according to the service level selected, you will be contacted.													
Postal Code: T2Z 4B1				<b>Analysis Request</b>													
<b>Invoice To</b> Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		<b>Invoice Distribution</b>		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below													
Copy of Invoice with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX															
Company:		Email 1 or Fax sralph@pinchin.com															
Contact:		Email 2															
<b>Project Information</b>				<b>Oil and Gas Required Fields (client use)</b>													
ALS Account # / Quote #:				AFE/Cost Center:				PO#									
Job #: 249649				Major/Minor Code:				Routing Code:									
PO / AFE:				Requisitioner:													
LSD: Canadian Food Inspection Agency				Location:													
ALS Lab Work Order # (lab use only): L2369482				ALS Contact:		Sampler:		Mike Lucyk									
<b>ALS Sample #</b> (lab use only)	<b>Sample Identification and/or Coordinates</b> (This description will appear on the report)			<b>Date</b> (dd-mm-yy)	<b>Time</b> (h:mm)	<b>Sample Type</b>	<b>PCBS</b>										
	P0001 - Light grey caulking, Boiler stack, North roof			21-10-19		Solid											
	P0002 - White caulking, Sewer vent, North roof			21-10-19		Solid											
	P0003 - Brown caulking, Pipe, North roof			21-10-19		Solid											
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>				<b>Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)</b>				<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>									
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input type="checkbox"/> NO								Frozen <input type="checkbox"/>		SIF Observations		Yes	<input type="checkbox"/>	No	<input type="checkbox"/>		
Are samples for human consumption/ use? <input type="checkbox"/> YES <input type="checkbox"/> NO								Ice Packs <input type="checkbox"/>		Ice Cubes <input type="checkbox"/>		Custody seal intact		Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
								Cooling Initiated <input type="checkbox"/>									
								INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C					
								20									
<b>SHIPMENT RELEASE (client use)</b>				<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>				<b>FINAL SHIPMENT RECEPTION (lab use only)</b>									
Released by: Mike Lucyk		Date: October 21, 2019		Time:		Received by:		Date: 10/22		Time: 10:50		Received by:		Date:		Time:	

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

**APPENDIX III**  
**Methodology**



## **1.0 GENERAL**

Pinchin conducts a room-by-room survey (rooms, corridors, service areas, exterior, etc.) to identify the hazardous building materials as defined by the scope of work. All work is conducted in accordance with our own internal Standard Operating Procedures.

Information regarding the location and condition of hazardous building materials encountered and visually estimated quantities are recorded. The locations of any samples collected are recorded on small-scale plans.

As-built drawings and previous reports are referenced where provided.

### **1.1 Limitations on Scope**

The assessment excludes the following:

- Articles belonging to the owner, tenant or occupant (e.g. stored items, furniture, appliances, etc.);
- Underground materials or equipment (e.g. vessels, drums, underground storage tanks, pipes, etc.);
- Energized systems (e.g. internal boiler components, elevators, mechanical or electrical components);
- Controlled products (e.g. stored chemicals, operational or process-related substances); and
- Materials not typically associated with construction (e.g. settled dust, spills, residual contamination from prior spills, etc.).

Demolition of exterior building finishes, masonry walls (chases, shafts etc.), and structural items is not conducted.

### **1.2 Asbestos**

An inspection is conducted for the presence of friable and non-friable asbestos-containing materials (ACM). A friable material is a material that when dry can be crumbled, pulverized or powdered by hand pressure.

A separate set of samples is collected of each type of homogenous material suspected to contain asbestos. A homogenous material is defined by the US EPA as material that is uniform in texture and appearance, was installed at one time, and is unlikely to consist of more than one type or formulation of

material. The homogeneous materials are determined by visual examination and available information on the phases of construction and prior renovations.

Samples are collected at a rate that is in compliance with the requirements of local regulations and guidelines. The sampling strategy is also based on known ban dates and phase out dates of the use of asbestos; sampling of certain building materials is not conducted after specific construction dates. In addition, to be conservative, several years past these dates are added to account for some uncertainty in the exact start / finish date of construction and associated usage of ACM.

In some cases, manufactured products such as asbestos cement pipe are visually identified without sample confirmation.

Sampling of roofing felts is conducted at the client's request using a qualified roofer retained by the Client to assist in collection of the samples and to properly patch the roof in the sample locations.

Limited demolition of masonry block walls (core holes) is conducted to investigate for loose fill vermiculite insulation. The core holes are temporarily patched with expanding foam or caulking.

The following materials (if present) are not sampled and will be presumed to contain asbestos.

- Roofing felts
- Paper products under wood flooring or metal or slate roofing
- Soffit and fascia boards at elevated heights
- Fire resistant doors or metal clad finishes
- Exterior cladding
- Vibration dampers on HVAC equipment
- Materials outside the assessed area

The bulk samples are submitted to a NVLAP accredited laboratory for analysis. The analysis is performed in accordance with Test Method EPA/600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials, July 1993.

Analytical results are compared to the following criteria.

<b>Jurisdiction</b>	<b>Friable</b>	<b>Non-Friable</b>
BC	0.5% <sup>1</sup>	0.5%
Alberta	Undefined <sup>2</sup>	Undefined <sup>2</sup>

<sup>1</sup> Or any amount if vermiculite

<sup>2</sup> There is no criteria established for defining an asbestos-containing material by Alberta OHS Regulations. Historically, the accepted threshold was 1%, however materials that contain any asbestos will now need to be assessed before disturbance to determine the potential for fibre release based on the planned work activity.





Saskatchewan	>0.5% <sup>1</sup>	>1%
Manitoba	0.1% <sup>1</sup>	1%
Ontario	0.5%	0.5%
Nova Scotia	0.5% <sup>1</sup>	0.5%
New Brunswick, Prince Edward Island, Newfound & Labrador	1%	1%
Yukon, Nunavut, Northwest Territories	1%	1%
Federal	1%	1%

Where building materials are described in the report as “non-asbestos” or “does not contain asbestos”, this means that either no asbestos was detected by the analytical method utilized in any of the multiple samples or, if detected, it is below the lower limit of an asbestos-containing material in the applicable regulation.

Asbestos materials are evaluated in order to make recommendations regarding remedial work. The priority for remedial action is based on several factors:

- Friability (friable or non-friable);
- Condition (good, fair, poor, debris);
- Accessibility (ranking from accessible to all building users to inaccessible);
- Efficiency of the work (for example, if damaged ACM is being removed in an area, it may be most practical to remove all ACM in the area even if it is in good condition).

### 1.3 Lead

Samples of distinctive paint finishes and surface coatings present in more than a limited application, where removal of the paint is possible is collected. The samples are collected by scraping the painted finish to include base and covering applications. Drawings included show sample locations.

Analysis for lead in paints or surface coatings is performed at an accredited laboratory in accordance with EPA Method No. 3050B/Method No. 7420; flame atomic absorption.

For this report, all paints containing lead at a concentration of 0.009% (90 ppm) or greater are discussed. Paint and surface coatings are evaluated for condition such as flaking, chipping or chalking.

Other lead building products (e.g. batteries, lead sheeting, flashing) are identified by visual observation only.



#### **1.4 Silica**

Building materials known to contain crystalline silica (e.g. concrete, cement, tile, brick, masonry, mortar) is identified by visual inspection only. Pinchin does not perform sampling of these materials for laboratory analysis of crystalline silica content.

#### **1.5 Mercury**

Building materials/products/equipment (e.g. thermostats, barometers, pressure gauges, light tubes), suspected to contain mercury are identified by visually inspection only. Dismantling of equipment suspected of containing mercury is not performed. Sampling of these materials for laboratory analysis of mercury content is not performed.

#### **1.6 Polychlorinated Biphenyls**

The potential for light ballast and wet transformers to contain PCBs is based on the age of the building, a review of maintenance records and examination of labels or nameplates on equipment, where present and accessible. The information is compared to known ban dates of PCBs and Environment Canada publications.

Dry type transformers are presumed to be free of dielectric fluids and hence non-PCB.

Fluids (mineral oil, hydraulic, Aroclor or Askarel) in transformers or other equipment are not sampled for PCB content.

Caulking or sealants are sampled for PCBs based on the date of construction or installation. Caulking installed after 1985 (1980 ban date plus a reasonable non-compliance period based on our experience) is presumed to be free of PCBs and hence not sampled. If sampled, analysis for PCBs is performed using an ASTM test method appropriate to the sample matrix at an accredited laboratory. Sample results are compared to the criteria of 50 ppm for solids as stated in the PCB Regulation, SOR/2008-273.

Template: Methodology for Hazardous Building Materials Assessment, HAZ, July 10, 2019

**APPENDIX IV**  
**Location Summary Report**

Client: Canadian Food Inspection Agency  
 Building Name: Canadian Food Inspection Agency Building  
 Surveyor: Mike Lucyk  
 Reassessment Surveyor:

Site: 3650 36 Street NW, Calgary, AB  
 Survey Date:  
 Last Re-Assessment:

Location No.	Name or Description	ft <sup>2</sup>	Floor No.	Notes
1	North Roof	12000		
2	South Roof	12000		
3	Northwest Roof	7000		

**APPENDIX V**  
**Hazardous Materials Summary Report**

**Client:** Canadian Food Inspection Agency

**Site:** 3650 36 Street NW, Calgary, AB

**Building Name:** Canadian Food Inspection Agency Building

**Surveyor:** Mike Lucyk

**Survey Date:**

HAZMAT	Sample No	System/Material/Sample Description	Locations	LF	SF	EA	%	Type	Positive
Asbestos	S0001 ABC	DUCT     OAKUM, BROWN	1,2,3	12	0	0	0	None Detected	No
Asbestos	S0002	DUCT   CAULKING   LIGHT GREY	1,2	9	0	0	0	None Detected	No
Asbestos	S0003	DUCT   CAULKING   WHITE	1,3	13	0	0	0	None Detected	No
Asbestos	S0004	DUCT     BLACK TAR	1	0	2	0	0	None Detected	No
Asbestos	S0005	PIPING   CAULKING   BROWN	1	0	1	0	0	None Detected	No
Asbestos	V0000	FLOOR   CONCRETE (PRECAST)	1,2,3	0	6500	0	0	Non Asbestos	No
Asbestos	V0000	FLOOR   METAL	1,2,3	0	24500	0	0	Non Asbestos	No
Lead Paint	L0001	FLOOR   METAL   GREEN	1,2	0	1200	0	0	Lead	Yes
Lead Paint	L0002	FLOOR   METAL   GREEN	3	0	200	0	0		No
PCB	P0001	CAULKING   LIGHT GREY	1	6	0	0	0	-	No
PCB	P0002	CAULKING   WHITE	1,2	6	0	0	0	-	No
PCB	P0003	CAULKING   BROWN	1,3	12	0	0	0	-	No

## Legend:

Sample number	Units
S#### Asbestos sample collected	SF Square feet
L#### Lead sample collected	LF Linear feet
P#### PCB sample collected	EA Each
M#### Mould sample collected	% Percentage
V#### Material visually similar to numbered sample collected	
V0000 Known non Hazardous Material	
V9000 Material is visually identified as Hazardous Material	
V9500 Material is presumed to be Hazardous Material	

**APPENDIX VI**  
**All Data Report**



**Client:** Canadian Food Inspection Agency

**Site:** 3650 36 Street NW, Calgary, AB

**Building Name:** Canadian Food Inspection Agency Building

**Location:** #1 : North Roof

**Floor:**

**Room #:**

**Area (sqft):** 12000

**Surveyor:** Mike Lucyk

**Survey Date:** 2019-10-21

**Reassessment Surveyor:**

**Last Re-Assessment:**

ASBESTOS											
System	Component	Material	Item	Covering	Quantity	Unit	Sample	Asbestos Type	Amount	Hazard	
Duct	All	, Oakum, Brown	ALL		8	LF	S0001A	None Detected	N.D.	None	
Duct	All	, Black tar	ALL		2	SF	S0004	None Detected	N.D.	None	
Duct	All	Caulking, Light grey	ALL		6	LF	S0002	None Detected	N.D.	None	
Duct	All	Caulking, White	ALL		3	LF	S0003	None Detected	N.D.	None	
Floor	All	Concrete (precast)	ALL		2000	SF	V0000	Non-Asbestos		None	
Floor <sup>1</sup>	All	Metal	ALL		10000	SF	V0000	Non-Asbestos		None	
Piping	All	Caulking, Brown	ALL		1	SF	S0005	None Detected	N.D.	None	

1 - Pitched roof

**Client:** Canadian Food Inspection Agency

**Site:** 3650 36 Street NW, Calgary, AB

**Building Name:** Canadian Food Inspection Agency Building

**Location:** #1 : North Roof

**Floor:**

**Room #:**

**Area (sqft):** 12000

**Surveyor:** Mike Lucyk

**Survey Date:** 2019-10-21

**Reassessment Surveyor:**

**Last Re-Assessment:**

LEAD PAINT									
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Lead	
Floor	Metal	600		SF	V0001	Green	0.25	Yes	

**Client:** Canadian Food Inspection Agency

**Site:** 3650 36 Street NW, Calgary, AB

**Building Name:** Canadian Food Inspection Agency Building

**Location:** #1 : North Roof

**Floor:**

**Room #:**

**Area (sqft):** 12000

**Surveyor:** Mike Lucyk

**Survey Date:** 2019-10-21

**Reassessment Surveyor:**

**Last Re-Assessment:**

PB PRODUCTS		
Component	Quantity	Unit
LEAD SHEETING	18	SF
ROOF FLASHING	3	EA

**Client:** Canadian Food Inspection Agency

**Site:** 3650 36 Street NW, Calgary, AB

**Building Name:** Canadian Food Inspection Agency Building

**Location:** #1 : North Roof

**Floor:**

**Room #:**

**Area (sqft):** 12000

**Surveyor:** Mike Lucyk

**Survey Date:** 2019-10-21

**Reassessment Surveyor:**

**Last Re-Assessment:**

PCB					
Component	Quantity	Unit	Sample	Sample Description	PCB
CAULKING	6	LF	P0001	Light grey	No

PCB					
Component	Quantity	Unit	Sample	Sample Description	PCB
CAULKING	3	LF	P0002	White	No
CAULKING	2	LF	P0003	Brown	No

Client: Canadian Food Inspection Agency

Site: 3650 36 Street NW, Calgary, AB

Building Name: Canadian Food Inspection Agency Building

Location: #2 : South Roof

Floor:

Room #:

Area (sqft): 12000

Surveyor: Mike Lucyk

Survey Date: 2019-10-21

Reassessment Surveyor:

Last Re-Assessment:

ASBESTOS											
System	Component	Material	Item	Covering	Quantity	Unit	Sample	Asbestos Type	Amount	Hazard	
Duct	All	, Oakum, Brown	ALL		3	LF	S0001B	None Detected	N.D.	None	
Duct	All	Caulking, White	ALL		3	LF	V0002	None Detected	N.D.	None	
Floor	All	Concrete (precast)	ALL		2000	SF	V0000	Non-Asbestos		None	
Floor <sup>1</sup>	All	Metal	ALL		10000	SF	V0000	Non-Asbestos		None	

1 - Pitched roof

Client: Canadian Food Inspection Agency

Site: 3650 36 Street NW, Calgary, AB

Building Name: Canadian Food Inspection Agency Building

Location: #2 : South Roof

Floor:

Room #:

Area (sqft): 12000

Surveyor: Mike Lucyk

Survey Date: 2019-10-21

Reassessment Surveyor:

Last Re-Assessment:

LEAD PAINT									
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Lead	
Floor	Metal	600		SF	L0001	Green	0.25	Yes	

Client: Canadian Food Inspection Agency

Site: 3650 36 Street NW, Calgary, AB

Building Name: Canadian Food Inspection Agency Building

Location: #2 : South Roof

Floor:

Room #:

Area (sqft): 12000

Surveyor: Mike Lucyk

Survey Date: 2019-10-21

Reassessment Surveyor:

Last Re-Assessment:

PB PRODUCTS		
Component	Quantity	Unit
LEAD SHEETING	9	SF
ROOF FLASHING	3	EA

Client: Canadian Food Inspection Agency

Site: 3650 36 Street NW, Calgary, AB

Building Name: Canadian Food Inspection Agency Building

Location: #2 : South Roof

Floor:

Room #:

Area (sqft): 12000

Surveyor: Mike Lucyk

Survey Date: 2019-10-21

Reassessment Surveyor:

Last Re-Assessment:

PCB					
Component	Quantity	Unit	Sample	Sample Description	PCB
2019-11-05	Quantities shown above are based on visual approximations only and may be subject to variation. Copyright Pinchin Ltd. 1992-2018				Page 2 of 4.

**Client:** Canadian Food Inspection Agency

**Site:** 3650 36 Street NW, Calgary, AB

**Building Name:** Canadian Food Inspection Agency Building

**Location:** #3 : Northwest Roof

**Floor:**

**Room #:**

**Area (sqft):** 7000

**Surveyor:** Mike Lucyk

**Survey Date:** 2019-10-21

**Reassessment Surveyor:**

**Last Re-Assessment:**

ASBESTOS											
System	Component	Material	Item	Covering	Quantity	Unit	Sample	Asbestos Type	Amount	Hazard	
Duct	All	, Oakum, Brown	ALL		1	LF	S0001C	None Detected	N.D.	None	
Duct	All	Caulking, White	ALL		10	LF	V0003	None Detected	N.D.	None	
Floor	All	Concrete (precast)	ALL		2500	SF	V0000	Non-Asbestos		None	
Floor <sup>1</sup>	All	Metal	ALL		4500	SF	V0000	Non-Asbestos		None	

1 - Pitched roof

**Client:** Canadian Food Inspection Agency

**Site:** 3650 36 Street NW, Calgary, AB

**Building Name:** Canadian Food Inspection Agency Building

**Location:** #3 : Northwest Roof

**Floor:**

**Room #:**

**Area (sqft):** 7000

**Surveyor:** Mike Lucyk

**Survey Date:** 2019-10-21

**Reassessment Surveyor:**

**Last Re-Assessment:**

LEAD PAINT									
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Lead	
Floor	Metal	200		SF	L0002	Green	0.0079	No	

**Client:** Canadian Food Inspection Agency

**Site:** 3650 36 Street NW, Calgary, AB

**Building Name:** Canadian Food Inspection Agency Building

**Location:** #3 : Northwest Roof

**Floor:**

**Room #:**

**Area (sqft):** 7000

**Surveyor:** Mike Lucyk

**Survey Date:** 2019-10-21

**Reassessment Surveyor:**

**Last Re-Assessment:**

PB PRODUCTS		
Component	Quantity	Unit
LEAD SHEETING	3	SF
ROOF FLASHING	4	EA

**Client:** Canadian Food Inspection Agency

**Site:** 3650 36 Street NW, Calgary, AB

**Building Name:** Canadian Food Inspection Agency Building

**Location:** #3 : Northwest Roof

**Floor:**

**Room #:**

**Area (sqft):** 7000

**Surveyor:** Mike Lucyk

**Survey Date:** 2019-10-21

**Reassessment Surveyor:**

**Last Re-Assessment:**

PCB					
Component	Quantity	Unit	Sample	Sample Description	PCB
CAULKING	10	LF	V0003	White	No

## Legend:

Sample number		Units		Other	
S####	Asbestos sample collected	SF	Square feet	SVM	Suspect Visible Mould
L####	Lead sample collected	LF	Linear feet	A	Access
P####	PCB sample collected	EA	Each	V	Visible
M####	Mould sample collected	%	Percentage	AP	Air Plenum
V####	Material is visually identified to be identical to S####	LF	Linear feet	F	Friable material
V0000	Known non hazardous material			NF	Non Friable material
V9000	Material visually identified as a Hazardous Material				
V9500	Material is presumed to contain hazardous material				