LENNOX
ARCHITECTS
LIMITED

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SPECIFICATIONS

Volume 1 of 1

Trillium Lakelands
DISTRICT SCHOOL BOARD

Window, Door and Screen Renovations
Various Locations

Issue Date: April 23, 2021

Projects: #20005, 20012 & 21001

PART 1 – THE CONSULTANTS

1.1 PRIME CONSULTANT (ARCHITECT)

Lennox Architects Limited
24 Morgan Heights Drive
Huntsville, ON,
P1H 1B7

Phone: 705.789.8960
Email: susan@lennoxarchitects.com

1.2 STRUCTURAL CONSULTANT

Lea Consulting Ltd.
425 University Avenue, Suite 400
Toronto, ON,
M5G 1T6

Phone: 416.572.1784
Email: jford@lea.ca

END OF SECTION

CATEGORY	**SEAL & SIGNATURE**
ARCHITECTURAL This seal governs all Documents and Sections of these Specifications, except for Section 00 31 19 Existing Conditions and all Divisions/Sections listed below.	

END OF SECTION

END OF SECTION

PART 1 – GENERAL

1.1 LIST OF DRAWINGS

.1 Drawings forming part of the Contract Documents Labeled "Issued for Tender" in the revision column are as follows:

.1 Monck Public School Window Renovations
- .1 Architectural:
  - A001 Cover Sheet & OBC Matrix
  - A301 Key Plan & Demo Notes
  - A401 Window Types
  - A501 Window Header, Sill & Jamb Details
  - A502 Windows Header, Sill & Jamb Details

.2 Archie Stouffer E.S. Window & Door Renovations
- .1 Architectural:
  - A000 Cover Sheet & General Notes
  - A001 Key Plan & General Notes
  - A301 Part Plan 'A'
  - A302 Part Plan 'B'
  - A303 Part Plans 'C' & 'D'
  - A304 Part Plan 'E'
  - A305 Part Plans 'F' & 'G'
  - A311 Enlarged Plans
  - A401 Typical Window Demo Elevations
  - A402 Typical Demo Sections at Windows
  - A411 Door Schedule & Door Types
  - A412 Screen & Rated Screen Types
  - A413 Window & Rated Window Types
  - A501 Typical New Wall Section at Windows
  - A601 Door & Screen Details
  - A602 Door & Screen Details
  - A603 Curtain Wall Screen Details
  - A604 Curtain Wall Screen Details
  - A605 Window Details
  - A606 Window Details
  - A607 Window Details
- .2 Structural:
  - S100 General Notes and Project Details
  - S200 Partial Roof Plan

.3 JD Hodgson E.S. Door & Screen Renovations
- .1 Architectural:
  - A001 Cover Sheet, Key Plan & OBC Matrix
  - A301 Demo & New Floor Plans
  - A401 Elevations
  - A501 Screen Types, Schedules & Details
  - A502 Screen Details

.2 Structural:
- S100 General Notes
- S101 Typical Details
- S200 New Framing Plans

END OF SECTION

PART 1 – GENERAL

1.1 GENERAL

.1 A survey has been carried out concerning existing building conditions, reports for which are included in this specification as follows:

.1 Asbestos Containing Building Materials Re-Assessment Report Monck Public School:

.1 A survey of asbestos containing materials has been carried out by Maple Environmental Inc. dated September 2019.

.2 Asbestos Containing Building Materials Re-Assessment Report Archie Stouffer Elementary School:

.1 A survey of asbestos containing materials has been carried out by Maple Environmental Inc. dated September 2020.

.3 Asbestos Containing Building Materials Re-Assessment Report J D Hodgson Elementary School:

.1 A survey of asbestos containing materials has been carried out by Maple Environmental Inc. dated September 2019.

.2 Reports are hereby offered in good faith for general information and guidance. The Consultant assumes no responsibility for accuracy and completeness of the information provided.

.3 Contractor shall not be entitled to extra payment and/or performance time for conditions which are identified in the reports.

.4 In case of discrepancies between recommendations contained in reports and requirements of Contract Documents, the latter shall govern. Advise Consultant in writing of any discrepancies discovered.

END OF SECTION

PART 1 – GENERAL

1.1 SPECIFICATION FORMAT

.1 Specifications are addressed to the Contractor. Specifications are not intended as detailed descriptions of installation methods but serve to indicate particular requirements in completing the Work.

.2 Where Contract Documents do not provide sufficient information for complete installation of item, then as a supplement, comply with manufacturer's written instructions for quality of work.

.3 Portions of Specifications are written in short form. Therefore, it shall be understood that where item of the Work is stated in heading followed by material, equipment, component, or operation, words "shall be", "shall consist of" or similar words or phrases are implied which denote supply, fabricate and supply, install, provide or commission of such materials, equipment or operations for component of the Work designated by heading.

.4 Drawings, Lists or Schedules of Items are intended to show scope and arrangement of work. For location of item described refer to such Drawings, Lists or Schedules unless location stipulated in Specifications.

1.2 DIVISION OF WORK

.1 Work specified in the Specification has been divided into technical Sections for the purpose of ready reference. Division of work among Subcontractors and suppliers is solely the Contractor's responsibility and Consultant assumes no responsibility to act as an arbiter to establish subcontract limits between Sections or Divisions of work.

1.3 METRIC PROJECT

.1 This project is based on The International System of Units (SI). Measurements are expressed in metric (SI) units and depending on the progress made in the various sectors of the industry are either hard or soft converted units.

.2 All metric units specified shall be taken to be the minimum acceptable unless otherwise noted.

.3 It is the Contractor's responsibility to check and verify with manufacturers and suppliers on the availability of materials and products in either metric or imperial sizes.

.4 Where a material or product cannot be obtained in the metric size specified, provide the next larger imperial size available.

.5 Where both metric and imperial sizes or dimensions are shown, the metric size or dimension shall govern.

1.4 DISCREPANCIES/CONFLICTS/OMISSIONS

.1 If discrepancies or conflicts in, or omissions from Drawings, Specifications or other Contract Documents are suspected, or if there is doubt as to meaning or intent thereof, notify Consultant at

once. Where there is conflict between Contract Documents, the most stringent requirement shall prevail.

.2 Drawings, Specifications and other Contract Documents are intended to be in compliance with federal, provincial and municipal laws, by-laws, regulations and other requirements of authorities having jurisdiction. Perform work in conformity with such requirements. If discrepancies, conflicts or omissions are suspected, notify Consultant at once.

.3 Comply with Consultant's written instructions or explanations.

.4 Promptly and not later than within 10 Working Days of becoming aware of circumstances which may require a change in the Work or other directions, give written notice to Consultant outlining such circumstances and request written directions. Do no work in affected area, or that would prevent Consultant from properly assessing situation or evaluating change, without its prior written approval. Consultant will act promptly to give Contractor directions so the Work is not unreasonably delayed.

1.5 PRE-CONSTRUCTION MEETING

.1 Immediately prior to construction, upon notification attend at location of Owner's choice, pre--construction meeting, along with authoritative representatives of certain key subcontractors as directed by Consultant.

.2 Purpose of meeting is as follows:

.1 Review project communications procedures.

.2 Review contract administration requirements including submittals, payment and change order procedures.

.3 Identify all critical points on construction schedule for positive action.

.4 Identify any product availability problems and substitution requests.

.5 Establish site arrangements and temporary facilities.

.6 Review Consultant’s inspection requirements.

.7 Review any points which, in Owner's, Consultant's and Contractor's opinion, require clarification.

.3 The Consultant shall organize and chair the pre-construction meeting. Consultant shall record minutes of pre-construction meeting and distribute a copy to each participant within ten days of meeting.

1.6 SITE MEETINGS

.1 Prior to the commencement of the Work, the Contractor together with the Consultant shall mutually agree to a sequence for holding regular bi-weekly Contractor run site meetings.

.2 Organize and chair site meetings. Ensure that persons, whose presence is required, are present and that relative information is available to allow meetings to be conducted efficiently.

.3 Once a month, or more often if directed by Consultant, include review with Consultant and Owner of construction schedule and application for progress payment, during or immediately following site meeting.

.4 Record minutes of each meeting and promptly distribute copies to be received by all participants not later than seven days after meeting has been held. Distribute minutes of meetings to all Consultants, whether in attendance or not.

1.7 SUPERVISION

.1 Employ an experienced and qualified full time site supervisor who shall be in complete charge of the Work from commencement to final completion of the Work and who shall be present at the site whenever work is being carried out. A working foreperson will not be acceptable. The supervisor shall not be changed after commencement of work without the Consultant's approval.

.2 Supervise, direct, manage and control the work of all forces carrying out the Work, including subcontractors and suppliers. Carry out daily inspections to ensure compliance with the Contract Documents and the maintenance of quality standards. Ensure that the supervisory staff includes personnel competent in supervising all Sections of Work required.

.3 Arrange for sufficient number of qualified assistants to the supervisor as required for the proper and efficient execution of the Work.

1.8 DOCUMENTS ON SITE

.1 Contractor's field office shall at all times contain a complete set of Contract Documents (Drawings and Specifications) with all addenda, site instructions, change orders, reviewed shop drawings and samples, colour schedule, paint materials schedules, hardware list, progress reports and meeting minutes.

1.9 SCHEDULING

.1 Base sequence and scheduling of construction on maintaining continuous operation and access to the Work during construction.

.2 Phase construction as described herein. Notify Owner in writing 7 Days prior to beginning work in an occupied area. Owner will accommodate request within 7 Days of notification. Co-ordination with authority at the Place of the Work is crucial. Submit a progress schedule before commencement of the Work. Coordinate any suggested changes to schedule with Owner. Ensure schedule includes adequate time for Product delivery and Shop Drawing preparation, review and resubmission.

.3 Allow for un-schedule interruption to schedule of the Work and suspend parts of the Work affected to permit Owner to relocate furniture and equipment from Place of the Work, into finished spaces. Owner will coordinate this interruption.

1.8 INCLEMENT WEATHER AND COLD WEATHER WORK

.1 Take precautions during inclement weather and provide adequate protection.

.2 Continue the Work, including winter months, if applicable, until the Work is completed and accepted.

.3 Inclement weather or extra work caused thereby shall not be considered valid reason for additional payment or delay in satisfactory conclusion of the Work.

1.9 OWNER OCCUPANCY

.1 Owner reserves right to occupy and use portions of premises, whether partially or entirely completed, or whether completed on schedule or not, provided such occupancy does not interfere with Contractor's continuing work.

.2 Partial occupancy or installation of equipment by Owner does not imply acceptance of the Work in whole, or in part, nor shall it imply acknowledgment that terms of Contract are fulfilled.

1.10 PLACE OF THE WORK

.1 Confine extent of construction activities to area indicated on Drawings as Place of the Work and/or within area defined by property lines. Confine all equipment, materials, debris, offices, storage sheds and storage areas to area previously defined.

.2 Contractor has complete and exclusive use of Place of the Work for performance of the Work. Assume responsibility for premises assigned, for performance of the Work.

.3 Should Contractor require that boundaries of Place of the Work be temporarily extended, obtain approval of Consultant.

.4 Certain restrictions are specified as to use by Contractor of various portions of Place of the Work. Become familiar with these restrictions and establish work plan to accommodate these restrictions. No claims for extra costs due to such restrictions will be considered by Owner.

.5 Assume responsibility for care, custody and control of property which is assigned for performance of the Work. Assume responsibility for and Make Good damage to existing property attributable to performance of the Work.

1.11 DEMOLITION, SECURITY AND ACCESS

.1 Coordinate demolition times, security requirements and access with Owner.

1.12 SITE DIMENSIONS

.1 Before proceeding with Shop Drawings, fabrication, or supply of each new part of the Work, examine installed parts of the Work and verify as-built site dimensions to coordinate previously built construction with pending construction.

1.13 EXISTING AREAS AND WORK OF OTHER CONTRACTORS

.1 Commencement of parts of the Work, in existing areas and in areas provided by Other Contractors, will be deemed to signify Contractor's acknowledgment and acceptance of those parts of the Work.

.2 Immediately report defects, which affect quality and performance of the Work, in writing to Consultant.

.3 Existing premises will remain occupied during the Work. Execute the Work to cause minimum interference with activities in existing premises and maintain maximum safety to occupants. Take reasonable measures to minimize and control noise, dirt and dust during the Work.

.4 Before entering existing premises to carry out the Work or to obstruct or take out of use any area of existing premises, or to cause any other interference, request meeting with Consultant in order to reach agreement as to time and length of time you may interfere, possess, obstruct or remove from use any such area or services.

.5 Maintain temporary entrances to building(s) including enclosed hoardings as required. Maintain access to existing service entrance(s) at all times, including ready access for fuel oil trucks and delivery vehicles. Bridge excavations with construction to safely support any load that could be imposed or provide personnel to assist in deliveries to building(s) as required.

1.14 SECURITY AND SAFETY REGULATIONS

.1 Execute the Work in accordance with following security requirements and regulations.

.2 Be responsible for security of all areas affected by work of this Contract until taken over by Owner. Take steps to prevent entry to the Work by unauthorized persons and guard against theft, fire and damage by any cause.

.3 Ensure only necessary tools and equipment are brought to each work area where access by public is possible. Keep constant check on these items and, at end of each work shift, bring all tools and equipment to storage room as directed.

.4 Perform the Work between hours of 7:30 a.m. and 7:00 p.m., Monday to Friday unless directed otherwise by the Client. Obtain prior written approval to do work on other Days and times.

.5 Owner will provide security escort for the Work in locations it deems necessary.

.6 Owner may issue suitable keys to Contractor, where possible. Contractor shall sign receipt for keys issued and shall be responsible for admittance of its authorized personnel only to areas for which keys provide access. Return keys to Owner immediately upon request.

.7 Direct enquiries regarding security regulations to Owner, who will advise Contractor of any additional requirements.

.8 Maintain fire protection for work. Store paints and volatile substances in a separate and controlled location and inspect frequently. Inspect temporary wiring, drop cords, extension cables for defective insulation or connections frequently. Remove combustible wastes frequently.

.9 Do not cut, bore or sleeve through any loadbearing member, new or existing without Consultant's written authorization, unless specifically indicated on Drawings.

1.15 TEMPORARY SHUT DOWNS OF CONSTRUCTION OPERATIONS

.1 Contractors and Subcontractors shall be aware at all times that ongoing functions and activities of existing facility will continue. Owner may at any given time request that any work of Contract be temporarily ceased.

.2 Temporary reasonable shut downs and interference are for emergency and/or sensitive health and security reasons and they shall not be construed as cause of elimination or restriction of Contractor's Working Schedule, claims for delay of Work, nor additional costs.

.3 Contract Price shall include and allow for such temporary shut downs.

1.16 NO SMOKING POLICY

.1 Cooperate, respect and comply with Smoke Free Workplace policy requirements of Place of the Work. This policy applies to everyone who visits and works on this Project.

.2 Ensure Contractor's staff, Subcontractors and Suppliers performing work on site on Contractor's behalf are instructed to comply with Smoke Free Workplace policy requirements.

END OF SECTION

PART 1 – GENERAL

1.1 DEFINITION

.1 Comply with GC 4.2 Contingency Allowance.

.2 Contingency allowances are designated for additional work and services deemed to be necessary by Owner, from time to time, throughout the execution of the Work.

.3 Contractor may be required from time to time to assist in tendering of certain items of work covered by allowance, as directed by Consultant.

1.2 AUTHORIZATION

.1 Expenditures from allowances included in the Contract must be authorized in writing by the Consultant.

.2 Work covered by allowances shall be performed for such amounts and by such persons as directed by the Consultant.

1.3 CONTINGENCY ALLOWANCE

.1 The following contingency allowance amounts are to be carried for the projects (excludes HST):

.1 Monck Public School Window Renovations: $25,000.

.2 Archie Stouffer E.S. Window & Door Renovations: $25,000

.3 J.D. Hodgson E.S. Door & Screen Renovations: $5,000.

END OF SECTION

PART 1 – GENERAL

1.1 CONSTRUCTION SCHEDULE

.1 Within 5 days of Contract award, submit in format acceptable to Consultant, minimum four copies of Contractor's critical path construction schedule, using suitable computer scheduling software, such as “MS Project” or “Primavera”.

.2 Schedule proposed by the Contractor shall be based on the following assumptions:

.1 Critical path base line is considered by Contractor as reasonable and achievable.

.2 Schedule is based on resources which have been committed for this project by Contractor and will be readily available when needed.

.3 Schedule is based on normal range of weather conditions, as documented by official weather records.

.4 Float belongs to Project.

.3 Set up format to permit plotting of actual construction progress against scheduled progress.

.4 Schedule shall show:

.1 Commencement and completion dates of Contract.

.2 Commencement and completion dates of construction stages/phases, if any.

.3 Commencement and completion dates of each trade. Major trades shall be further broken down as directed by Consultant; generally follow Specification format.

.4 Order and delivery dates for major or critical equipment.

.5 Critical dates for shop drawing/sample submissions.

.6 Any other information relating to orderly progress of Contract, considered by Contractor or Consultant to be pertinent.

.5 Submit copy of schedule showing actual progress, to Consultant once a month, concurrently with application for payment. Consultant, together with Contractor, shall review construction progress once a month during or immediately following regular site meeting, or more often as directed by Consultant.

.6 Update construction schedule, whenever changes occur, in manner and at times acceptable to Consultant. Include with each update a written report of activity progress reflected in the revised critical path schedule, and the corrective actions which have been or are to be taken to maintain progress on the schedule in the future, anticipated delay, resource availability, schedule changes, and work to be completed in the next 2 month period.

.7 Plot actual construction progress on schedule at least once a week.

1.2 CASH FLOW CHART

.1 Within 5 days after award of Contract, submit, in form approved by Consultant, cash flow chart broken down on a monthly basis in an approved manner. Cash flow chart shall indicate anticipated Contractor's monthly progress billings from commencement of work until completion.

.2 Update cash flow chart whenever changes occur to scheduling and in manner and at times satisfactory to the Consultant.

1.3 PROGRESS RECORD

.1 Maintain on site, permanent written record of progress of work. Record shall be open to inspection by Consultant at all times and copy shall be furnished to Consultant upon request.

.2 This record shall show weather conditions, dates of commencement, progress and completion of various trades and items of work. Particulars pertaining to erection and removal of forms, pouring of concrete, installation of roofing and other critical or major components as well as number of employees of various trades and type and quantity of equipment employed daily, shall be noted.

.3 Display a copy of the construction schedule in the site office from start of construction to completion. Superimpose actual progress of work on schedule at least once each week.

1.4 AS-BUILT DRAWINGS

.1 Obtain and keep on site at all times a complete and separate set of black line white prints.

.2 Note clearly, neatly, accurately and promptly as the work progresses location of services, piping, conduits, ductwork embedded in concrete/masonry and location and depth of underground services below building.

.3 As-built drawings shall be available for review at each site meeting.

.4 Refer to Section 01 77 00 for requirements on submission of as-built drawings.

1.5 PRODUCT DELIVERY CONTROL

.1 It is the responsibility of the Contractor to ensure that the supplier or distributor of materials specified or alternatives accepted, which he intends to use, has materials on the site when required. The Contractor shall obtain confirmed delivery dates from the supplier.

.2 Provide equipment delivery schedule, coordinated with construction and submittals' schedule, showing delivery dates for major and/or critical equipment.

.3 The Contractor shall contact the Consultant immediately upon receipt of information indicating that any material or item, will not be available on time, in accordance with the original schedule, and similarly it shall be the responsibility of all subcontractors and suppliers to so inform the Contractor.

.4 The Consultant reserves the right to receive from the Contractor at any time, upon request, copies of actual purchase or work orders of any material or products to be supplied for the work.

.5 If materials and products have not been placed on order, the Consultant may instruct such items to be placed on order, if direct communication in writing from the manufacturer or prime suppliers is not available indicating that delivery of said material will be made in sufficient time for the orderly completion of the Work.

.6 The Consultant's review of purchase orders or other related documentation shall in no way release the Contractor, or his subcontractors and suppliers from their responsibility for ensuring the timely ordering of all materials and items required, including the necessary expediting, to complete the work as scheduled in accordance with the Contract Documents.

END OF SECTION

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Electronic Document Transfer Request
All Disciplines

Project Name:	
Project No.:	
Date:	
Company requesting files:	
Person requesting files:	
Intended use of files	
Description of files:	

1. The requested electronic file(s) (the "Files") remain the property of the applicable consultant (Lennox Architects Limited and Lea Consulting) including all copyright therein.
2. There is no warranty expressed or implied, that the intended use of the Files will meet the business purpose of the Company receiving the Files or that the Files represent or reflect the complete scope of work.
3. Company receiving the Files shall indemnify and hold the consultant harmless from any claims or damages arising from the use of the Files in the execution of the work.
4. In the event that drawing files transferred contain consultant title block, permits or professional seals, the Files shall be immediately returned to consultant and all copies thereof destroyed.
5. The Company receiving the Files is not permitted to alter or revise the Files, including the drawings or the scope of work, unless authorized in writing by the consultant.
6. No use shall be made of the Files for any purpose other than the one stated above, without the written consent of the consultant.
7. No retransmission of the Files, or parts thereof, in any form to any third party is permitted unless authorized in writing by the consultant.
8. Any data contained in the Files, including the internal file structure, etc., is the property of the consultant. and shall be kept confidential by the recipient.
9. The Undersigned agrees to pay the consultant a fee of **$500 per discipline set** (plus HST). The fees noted are to cover the cost of preparation of the Files. By paying the fee quoted, the Company receiving the Files has in no way acquired any rights to the Files or the drawings or the information contained therein.

Having read and understood the above, the undersigned agrees to be bound by the terms hereof.

_____ _____

Signature of Company's Authorized Representative | Date

The above requested files will only be released upon receipt by Lennox Architects Limited of an **original of this form** signed by a duly authorized representative of the company requesting the files along with the **cheque payable to the applicable consultant** in the amount consistent with note 9 above. The consultants reserves the right to deny any request for copies of electronic files.

PART 1 – GENERAL

1.1 GENERAL

.1 Unless specified or directed otherwise, make all submissions to the Consultant at his office.

.2 Make all submissions required by the Contract Documents with reasonable promptness and in orderly sequence so as to cause no delay in the work.

.3 Arrange and pay for delivery to and return from Consultant of all submittals.

1.2 RELATED REQUIREMENTS

.1 Make the following submissions in accordance with requirements specified elsewhere:

.1	Applications for payment:	General Conditions of the Contract
.2	WSIB certificates of clearance:	General Conditions of the Contract
.3	Insurance certificates:	General Conditions of the Contract
.4	Bonds:	General Conditions of the Contract
.5	Construction schedule:	Section 01 32 00
.6	Cash flow chart:	Section 01 32 00
.7	Maintenance and operations data:	Section 01 77 00
.8	As-built drawings:	Section 01 77 00
.9	Maintenance materials:	Section 01 77 00

1.3 SCHEDULE OF VALUES

.1 Submit schedule of values in accordance with requirements of GC 5.2 APPLICATIONS FOR PROGRESS PAYMENT.

.2 Follow specifications table of contents as basis for degree of breakdown required. Show breakdown for different construction phases/stages if required by Consultant.

.3 Break down cost for large items of work as directed by Consultant.

.4 Provide additional cost breakdown information if requested by Consultant.

1.4 SCHEDULE OF SUBMITTALS

.1 Within 10 days of submission of construction schedule submit a schedule of submittals for shop drawings, samples, lists of materials and other documentation requiring Consultant's review.

.2 For each item requiring submission and review show anticipated date of submission and critical date for return of reviewed submission.

.3 Design sequence of submissions to reflect requirements of construction schedule.

.4 Allow up to 10 days for Consultant's review for each submission. Stagger submissions as much as possible to permit adequate review time for each item submitted. If several submissions are made at the same time or within a short time of each other, indicate order of priority in which submissions should be reviewed.

.5 Include sufficient time to permit corrections and resubmission, if necessary, without affecting construction schedule.

1.5 PRODUCT DATA

.1 Submit product data sheets, required by Contract Documents, and others as may be reasonably required by Consultant.

.2 Submit product data sheets in digital or printed hardcopy form and in accordance with the following requirements:

.1 Show detailed comprehensive information on products to be used.

.2 Clearly identify product/model number on data sheets containing multiple products.

.3 Supplement manufacturers/distributor’s standard schematics, diagrams, brochures data sheets, catalogue sheers, charts and other descriptive data as required to give a clear understanding of the properties of the product and how product is to be incorporated into project.

1.6 SHOP DRAWINGS

.1 Submit shop drawings required by Contract Documents, in accordance with requirements of GC 3.11 SHOP DRAWINGS.

.2 Prepare shop drawings in metric measurements only. Shop drawings containing imperial measurements will be rejected.

.3 Provide shop drawings bearing seal and signature of professional engineer licensed to practice in Ontario where required. Shop drawings submitted without required seal and signature will be rejected and returned to Contractor without review.

.4 Contractor to set up an online account (dropbox or similar) and upload a digital copy for each shop drawing required. Email notification of the upload to be sent to all applicable consultants.

.5 After review, Consultant will return the marked up digital copy to the Contractor. Contractor shall be responsible for the distribution of reviewed shop drawings as required.

.6 Shop drawings which require the approval of a legally constituted authority having jurisdiction shall be submitted by Contractor to such authority for approval. Such shop drawings shall receive final approval of authority having jurisdiction before Consultant's final review.

.7 No work requiring a shop drawing submission shall be commenced until the submission has received Consultant's final review. Do not use any shop drawing, erection drawing or setting drawing which does not bear the stamp and signature of the Consultant.

.8 The Consultant's review is for the sole purpose of ascertaining conformance with the general design concept. This review shall not mean that the Consultant approves the detail design inherent in the shop drawings, responsibility for which shall remain with the Contractor submitting same, and this review shall not relieve the Contractor of his responsibility for meeting the requirements of the Contract Documents. The Contractor is responsible for dimensions to be confirmed and correlated at the job site for information that pertains solely to fabrication processes or to techniques of construction and installation and for coordination of the work of all subtrades.

1.7 SAMPLES AND MOCK UPS

.1 Submit samples and provide mock ups as required by Contract Documents and as directed by the Consultant.

.2 Unless indicated otherwise submit samples in duplicate.

.3 Where colour selection is required submit manufacturer's full colour range for specified product line.

.4 Submit samples with identifying labels bearing material or component description, manufacturer`s name and brand name, Contractor's name, project name, location in which material or component is to be used, and date.

.5 Prepay any shipping charges involved for delivering samples to destination point and returning to point of origin if required.

.6 No work requiring a sample submission shall be commenced until the submission has received Consultant's final review.

1.8 REQUESTS FOR INFORMATION (RFI'S)

.1 Submit RFI's only after a thorough review has determined that the required information is not included in the Contract Documents.

.2 Submit RFI's in a timely manner so as not to cause any delay and leaving sufficient review time for the Consultant.

.3 The Consultant will identify each RFI with the time and date received and assign an anticipated review time of one to five working days depending on the complexity of the matter under review, applied consecutively.

.4 The Consultant will review RFI's in the order received, unless, upon Contractor's request, the Consultant agrees to prioritize the review of a particular RFI, adjusting the review time accordingly.

.5 The consultant will advise the Contractor within the assigned review time with one of the following responses:

.1 Information requested is included in the Contract Documents.

.2 A site instruction will be issued.

.3 A change notice will be issued.

.4 A change directive will be issued.

1.9 CHANGES IN THE WORK

.1 When a change in the Work is proposed or required, the Consultant will provide the Contractor with a written description of the proposed change in the Work. The Contractor shall promptly present, in a form acceptable to the Consultant, an amount of adjustment for the Contract Price, if any, and the adjustment in the contract time, if any, for the proposed change in the Work.

.2 Allowance for overhead and profit shall be as per the CCDC and as per the Trillium Lakelands District School Board's Supplementary Conditions.

.3 The costs for the following items shall be considered to be included in the allowance for overhead and profit and may not be charged separately.

.1 Contractor's head office expenses, including estimating and accounting services.

.2 Wages of project managers, superintendents, assistants, watchpersons and administrative personnel.

.3 Temporary site office including costs for telephone, facsimile machine and internet equipment.

.4 Small tools.

.5 Insurance and bonding premiums.

.6 Construction safety program.

.7 Shop drawings , record drawings and interference drawings.

.8 Clean up and disposal of waste materials.

1.10 ELECTRONIC DOCUMENT FILES

.1 Apply and pay for electronic documents in accordance with "Electronic Document Transfer Request" form, attached to this Section.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

.1 Section Includes:

.1 Requirements for protection of existing facilities during construction operations.

.2 Demolition and removals of building elements.

.3 Progress photos documentation procedures.

.4 Products and installation for patching and extending Work within construction areas of existing facilities.

.5 Providing transitions and adjustments.

.6 Repair of damaged surfaces and finishes.

.7 Encountering Hazardous materials procedures.

1.2 QUALITY ASSURANCE

.1 Conform to Ontario Building Code, Ontario Occupational Health and Safety Act and all other Standards and Regulations noted.

.2 All work performed and materials used shall be of the same standard of quality as that of the existing finished building as a minimum level of acceptance.

.3 Any welding shall be performed by Welders certified in accordance with CSA W47, and shall conform to CSA W59.

1.3 OCCUPANCY, ACCESS AND PROTECTION

.1 Entire existing facility will be occupied and in full operation during execution of this Work.

.2 Coordinate with the Owner in scheduling access and storage space to minimize conflict and to permit continuous usage and operation of the occupied areas.

.3 When necessary to perform the Work, the Owner will issue keys to existing mechanical/electrical equipment spaces. Contractor to return the keys at the end of the warranty period.

.4 Contractor to exercise every precaution to ensure safety and protection for existing facilities, occupants, merchandise, pedestrians and vehicles. The following must meet required codes and accessibility requirements:

.1 Maintain safe access and egress at all times for occupants, pedestrians and vehicles.

.2 Provide protection to prevent damage to facilities, merchandise, and vehicles from dust, water, weather and other similar harmful elements.

.3 Maintain exiting from facilities to provide safe passage complying with applicable codes.

1.4 SCHEDULING OF WORK

.1 Make arrangements with the Owner and schedule the Work to avoid interference with normal operations of occupied areas. Submit a schedule and summary of applicable Work within occupied areas and obtain Owner approval not less than two days prior to commencement of such Work.

.2 Requests for use of certain existing loading docks, passage ways and other similar spaces within areas outside limits of construction operations will be limited to day-by-day basis and must be approved in advance by the Owner.

.3 Coordinate access with scheduling of Work within tenant areas with the Owner.

1.5 UTILITY SERVICE OUTAGES

.1 Contractor to keep utility and service outages to a minimum and perform only after written approval of the Owner is received.

.2 Make requests to the Owner for outages a minimum of two (2) calendar days in advance of the proposed outage.

.3 Contractor is responsible for investigating utility and service lines to determine the effect of a scheduled outage on building operations outside of the limit of the Work.

PART 2 – PRODUCTS

2.1 MATERIALS

.1 Use products of types and construction that exist currently as needed to patch, extend or match existing Work.

.1 Contract documents do not define products or standards of workmanship present in the existing construction.

.2 Determine by inspecting and testing products where necessary, referring to existing work as the quality standard.

.2 New Materials to comply with Specifications for each product involved.

.3 When material is not readily obtainable on the current market, salvaged sufficient quantities of cut or removed material to replace damaged Work of existing construction. Store salvaged material in a dry, secure space on site until reinstallation.

PART 3 – EXECUTION

3.1 EXAMINATION

.1 Verify existing conditions to determine that all areas meet constructability and are ready for alteration and remodeling as per the contract documents.

.2 Contractor shall notify the Consultant of any discrepancies prior to commencing the Work.

3.2 PREPARATION

.1 Construct temporary fire-rated partitions to separate existing occupied areas from construction and alteration areas.

.2 Cut, move or remove items as necessary for access to alteration and renovation Work.

.3 Cutting and removal work shall be performed so as not to cut or remove more than is necessary and in a manner to avoid damage to adjacent work. Cut finish surfaces such as masonry, tile, pilaster or metals by methods to terminate surfaces in a straight line at a natural point of division.

.4 Prepare surfaces and remove surface finishes as necessary to provide for proper installation of new material and finishes.

.5 Close openings in exterior surfaces to protect the existing building from weather, temperature and humidity variations. Insulate ductwork and piping to prevent condensation in exposed areas.

.6 Provide temporary barriers and closures to control operations to prevent spread of dust to occupied sections of the building.

3.3 PROGRESS PHOTOGRAPHIC DOCUMENTATION

.1 Contractor to provide to the Consultant a daily photographic documentation report for the progress of windows, framed entrances and storefront work at the following key stages:

.1 Removal of existing screens, doors and windows;

.2 Removal of vapour barrier and insulation;

.3 Installation of insulation;

.4 Installation of blue skin.

.2 Contactor's photographs are to be clear and of a scale that allows viewing of the specific conditions.

.3 Contractor to identify any unforeseen existing conditions discovered during the four stages of documentation when the photos are emailed to the Consultant.

.4 Contractor to provide a floor plan is to accompany the photos to identify the room name and day work completed.

3.4 HAZARDOUS MATERIALS PROCEDURES

.1 Refer to the Asbestos Survey in Section 00 31 19 for the anticipated existing condition details.

.2 If materials are encountered that are suspected to be lead, PCB, asbestos, contain asbestos or any other hazardous material, the Contractor shall immediately notify the Owner and take precautions as required to avoid disturbing materials until directed by the Owner.

.3 When removing asbestos or silica board fireproofing comply strictly with health and safety regulations. Bag material and dispose of in accordance with regulations. Enforce use of breathing masks during cleaning operations.

3.5 INSTALLATION

.1 Carefully perform demolition and removals in such a manner to insure safety in handling and to prevent damage to construction and materials indicated to remain. Provide shoring, bracing and other temporary measures as required to maintain safe conditions.

.2 Remove, cut and patch Work in a manner to minimize damage and to provide means of restoring products and finishes to specified conditions.

.3 Install products as specified in individual Specification Sections.

.4 Where new Work abuts or aligns with existing, perform smooth and even transition to match existing adjacent surfaces in texture and appearance.

.5 When finished surfaces are cut so that a smooth transition with the new Work is not possible, terminate existing surface along a straight line and request instructions from the Consultant as to methods of making the transition.

.6 Where there is an extreme level change (>50mm), obtain instructions from the Consultant for transition methods ie. Installation of bulkheads, ramping, sloping etc.

.7 Remove debris promptly from site each day in a safe and legal matter. Do not burn debris on site or allow it to enter the sewers.

.8 If applicable, TLDSB will remove window roller shades and curtains. Contractor to maintain existing mounting rods, where possible.

3.6 ADJUSTMENTS

.1 Where removal of partitions or walls results in adjacent spaces becoming one, rework floors, walls and ceilings to provide smooth surface without breaks, steps or soffits.

.2 Patch or replace portions of existing surfaces which are damaged, lifted, discoloured or showing other imperfections.

.3 If the surrounding surface cannot be matched, repaint or recoat the entire surface.

.4 Trim existing doors as necessary to allow swing clearances for new floor finishes.

.5 Where the existing ceiling finish is scheduled for removal, include existing suspension system in suspended ceiling systems, existing gypsum backer boards in adhesive-applied acoustical tile installation, and all other ceiling system components as applicable.

.6 Restore existing work that is damaged during construction to a condition equal to its condition at the time of the start of the Work.

.7 If any repair work is not equal to the standard of the new Work, the Contractor will be required to cut out and replace with new Work at no additional cost to the Owner.

3.7 CLEANING

.1 At the end of each day, any spillage, overspray, dust, debris or damage to adjacent Owner occupied spaces shall be cleaned.

.2 As soon as installation of the Work in each area is complete, clean up all surfaces, remove equipment, salvage debris and return in a condition suitable for use by the Owner.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

.1 Section Includes:

.1 Permits, Licenses, Fees.

.2 Building Code, By-Laws, Regulations.

.3 Construction Safety.

.4 Fire Protection.

.5 Hazardous Materials.

.6 Waste Management.

1.1 PERMITS, LICENCES, FEES

.1 The Contractor shall be responsible for the procurement (including payment) of permits, licences, inspections and certificates, which are necessary for the performance of the Work, not including building permit.

.2 Where permits, licences and inspection fees are required by authorities having jurisdiction for specific trade functions, they shall be obtained by particular subtrade responsible for that work.

.3 Review building permit set with Consultant immediately following receipt of building permit and jointly determine whether or not changes to Contract are required.

.4 Be responsible for ensuring that no work is undertaken which is conditional on permits, approvals, reviews, licences, fees, until all applicable conditions are met. No time extension will be allowed for delay in obtaining necessary permits.

.5 Report to the Consultant in writing any condition which would prohibit granting of any permit or approval before work affecting such items is commenced.

.6 Give notice of completion of project prior to occupancy, as required by applicable legislation.

1.2 BUILDING CODE, BY-LAWS, REGULATIONS

.1 Carry out work in accordance with requirements of the Ontario Building Code, latest issue, including all amendments and revisions.

.2 Comply with requirements, regulations and ordinances of other jurisdictional authorities.

.3 Where it is necessary to carry out work outside property lines, such as sidewalks, paving or concrete curbs, comply with applicable municipal requirements.

.4 Promptly submit written notice to Consultant, of observed variance of Contract Documents from requirements of Building Code and authorities having jurisdiction. Assume responsibility for work known to be contrary to such requirements and performed without notifying Consultant.

1.3 CONSTRUCTION SAFETY

.1 Be governed by pertinent safety requirements of Federal or Provincial Governments and of municipal bodies having authority, particularly the Ontario Construction Safety Act, and regulations of Ontario Ministry of Labour, and work in conjunction with proper safety associations operating under the authority of Ontario Workplace Safety and Insurance Act.

.2 Do not, in the performance of the work, in any manner endanger the safety or unlawfully interfere with the convenience of the public.

.3 Notify the Ontario Ministry of Labour of intended work of this Contract as required by the Occupational Health and Safety Act. One copy of the "Notice of Project" shall be handed to Consultant.

1.4 FIRE PROTECTION

.1 Refer to technical Sections of Specifications and Drawings for fire protection requirements.

.2 Test methods used to determine fire hazard classification and fire endurance rating shall be as required by Ontario Building Code.

.3 Upon request, furnish Consultant with evidence of compliance with project fire protection requirements.

.4 Materials and components used to construct fire rated assemblies and materials requiring fire hazard classification shall be listed and labelled, or otherwise approved, by fire rating authority. Labelled materials and their packaging shall bear fire rating authorities label showing product classification.

.5 Fire rated door assemblies shall include doors, frame, anchors and hardware and shall bear label of fire rating authority showing opening classification and rating.

.6 Materials having a fire hazard classification shall be applied or installed in accordance with fire rating authority`s printed instructions.

.7 Fire rated assemblies shall be constructed in accordance with applicable fire test report information issued by fire rating authority. Deviation from fire test report will not be allowed.

.8 Construct fire separations as continuous, uninterrupted elements except for permitted openings. Extend fire rated walls and partitions from floor to underside of structural deck above.

.9 Fill and patch voids and gaps around openings and penetrations in and at perimeter of assemblies so as to maintain continuity and to produce a fire resistant smoke tight seal, acceptable to jurisdictional authorities and Consultant.

1.5 HAZARDOUS MATERIALS

.1 Comply with provisions of the Occupational Health and Safety Act as amended to include WHMIS (Workplace Hazardous Materials Information System).

.2 Ensure that Material Safety Data Sheets (MSDS) are available on site prior to first delivery to site of any controlled material or substance.

.3 Maintain on site for duration of Contract a hazardous materials log containing all required MSDS.

.4 Log shall be open for inspection for City, Consultant and all personnel on site.

.5 Ensure that workers are instructed in the purpose and content of MSDS.

1.6 WASTE MANAGEMENT

.1 Comply with applicable regulations federal, provincial and municipal authorities governing waste management.

.2 Prepare and submit waste audit, waste reduction and source separation plans in accordance with applicable regulatory requirements.

END OF SECTION

PART 1 – GENERAL

1.1 GENERAL INSTRUCTIONS

.1 Read and conform to:

.1 CCDC 2 - 2008, Stipulated Price Contract as amended in the Contract Documents.

.2 Division 1 requirements and documents referred to therein.

1.2 REFERENCE STANDARD

.1 Comply with provisions of OAA, OGCA Document No. 100, revised January 8, 2019 "Take-Over Procedures" except as modified in these Specifications.

1.3 CLOSEOUT PROCEDURES

.1 Final Site Review: Consultant will perform final inspection in accordance with provisions under final Certificate for Payment. Conform to Construction Lien Act for commencement, procedure and release of hold back fund. Lien Period commencement, procedure and release of hold back monies will be in accordance with Construction Lien Act.

.2 Takeover Procedure: Conform to requirements of following General Conditions of Contract for take-over procedure:

.1 Comply also with recommended takeover procedures contained in OAA/OGCA Document No. 100, except as modified by Contract Documents. In case of conflict with Contract Documents conform to more stringent requirements. Procedure described in document consists of following stages:

.1	Stage 1	Contract Submissions
.2	Stage 2	Contractor's Inspection for Substantial Performance
.3	Stage 3	Contractor's Application for Certificate of Substantial Performance
.4	Stage 4	Certificate of Substantial Performance
.5	Stage 5	Certificate for Payment of Basic Statutory Holdback Monies
.6	Stage 6	Contractor’s Completion of the Contract
.7	Stage 7	Certificate for Payment of Monies for Finishing Holdback
.8	Stage 8	Final Payment Certificate
.9	Stage 9	Warranty-Guarantee Period(s)

.2 All stages will be reviewed at first Coordination Site Meeting to ensure all parties understand their responsibilities.

.3 Substantial Performance Review: Provide a written request to Consultant for Substantial Performance review of Work. Such request shall be completed on the form provided at the end of this document which includes a reconciliation of compliance with money test given in Clause 2 (1) (b) of Construction Lien Act in addition to all documentation specified in Contract Documents.

.4 Certification of Substantial Performance: Prepare Certificate of Substantial Performance in a form required by Construction Lien Act. When issued attach a normal progress Certificate showing statement of account to date and sub-titled "SUBSTANTIAL PERFORMANCE". Wherever practicable, accompany it with Final Change Order, sub-titled "FINAL". Consolidate all expenditures from cash allowances.

.5 Defect and Deficiency:

.1 A defect is an item of Work required by Contract which has been installed but requires repair and/or replacement at a specific time.

.2 A deficiency is an item of Work required by Contract which has not been installed or put into operating condition.

.3 A warranty item is an item of Work, installed under Contract which manufacturer or installer agrees to maintain in, or restore to perfect condition for a specific period of time, after Owner's acceptance of Work as being substantially completed.

.4 When, in Consultant's opinion, Work under Contract is substantially complete and prior to final inspection by Owner, a preliminary inspection shall be made at which time all defects and deficiencies shall be listed, taking care to distinguish between preliminary and final inspections.

.6 Deficiency Inspection:

.1 Provide a written request to Consultant for deficiency inspection of Work. Ensure such request includes a statement by Contractor that Work to be reviewed by Consultant for deficiencies is, to best of his knowledge, in compliance with Contract Documents, reviewed Shop Drawings, samples and previously instructed corrections by Consultant have been corrected.

.2 Provide a schedule of planned deficiency inspections having regard to foregoing.

.7 Deficiency Lists:

.1 Neither Owner's representatives, nor Consultant will be responsible for issue of extensive lists of deficiencies. Contractor assumes prime responsibility for ensuring items shown on Drawings and described in Specifications are completely his. Any inspections to approve Certificates of Substantial Performance will be immediately canceled if it becomes obvious that extensive deficiencies are outstanding.

.2 Promptly correct deficiencies noted by Consultant. Do not proceed with installation of subsequent parts of Work until deficiencies have been corrected. Every effort shall be made to ensure both defects and deficiencies are Made Good prior to final inspection.

.3 During inspection, a decision will be made as to which elements must be completed at a later date due to uncontrollable circumstances such as weather, which defects must be rectified before building can be accepted and which defects are to be treated as warranty items.

.4 Make Good deficiencies before Contract is considered complete.

.8 Notification of Correction of Deficiencies: Advise Consultant in writing, upon completion of rectification of deficiencies noted by Consultant. Failure to provide such notification may be cause to withhold final payment.

.9 Documents:

.1 Within 21 Days of commencement of Work, Contractor shall make first submittal required by OAA/OGCA Document No. 100.

.2 Submit documents in accordance with requirements of Contract Documents.

.3 Submit required documents along with request for Certificate of Substantial Performance. Consultant's inspection for Substantial Performance is not required until such submittal is received.

.10 Final Inspection for Final Payment:

.1 Further to requirements of GC 5.4, final review of Work shall constitute inspection precedent to issuance of final certificate of payment.

.2 If there are any further deficiencies determined by this review, they shall be listed by Consultant and provided to Contractor. This list shall be recognized as final deficiency list for purposes of acceptance of Work under Contract.

.3 Such deficiencies shall be corrected by a date mutually agreed upon between Consultant and Contractor, unless a specific date is required by Contract and a re-inspection by Consultant shall be called for by Contractor following his own inspection to take place within 7 Days from date of request.

.4 Contractor shall thereafter submit his invoice for final payment.

.11 End of Warranty Period Inspection:

.1 At beginning of 12th month after Substantial Performance of Contract in accordance with GC12.3, Owner, Contractor and Consultant, along with key Subcontractors as designated by Consultant, carry out a complete inspection of building and its systems to determine which deficiencies are to be rectified under warranty.

.2 Prior to completion of warranty period, arrange with Consultant to carry out complete review of defects and deficiencies which have been observed during warranty period to determine which are to be corrected.

1.4 CLOSEOUT SUBMITTALS

.1 Certificate of Substantial Performance:

.1 Conform to Construction Lien Act and publish copy of Certificate of Substantial Performance once in a construction trade newspaper.

.2 Submit promptly copies of construction trade newspaper containing publication of copy of Certificate of Substantial Performance.

.2 Product Record Documents:

.1 Print one set of white prints of Contract Drawings at commencement of Work and maintain on site. Ensure all addendums are printed on coloured paper and pasted into the on the site copies.

.2 As Work progresses, clearly mark in a neat and legible form on Specifications and white prints significant changes and deviations from Contract Drawings and Specifications caused by site conditions, Additional Instructions and Change Orders. Changes and deviations marked on as-built record drawings and Specifications by reference to and other documents are not acceptable.

.3 Have items relating to mechanical and electrical work recorded by respective trade.

.4 Print lettering and numbers in size to match original. Lines may be drawn free hand provided they are neat and accurate. Add "AS-BUILT RECORD" at each drawing title block and on title page of Specifications.

.5 Record the following changes and deviations on record drawings:

.1 Depths of various elements of foundation in relationship to first floor level.

.2 Field changes of dimensions and/or materials.

.3 Issued site instructions and change orders.

.4 Other significant deviations and changes which are concealed in construction and cannot be identified by visual inspection.

.5 Access doors and panels.

.6 Inverts of services at key points within building, at points where entering and leaving building, and at property lines. Dimension services in relation to structure and building grid lines.

.7 Duct work, piping, conduit, mechanical and electrical equipment and associated work.

.8 Concealed piping, conduit, equipment and conveying systems, including such items provided for future use.

.6 Record following information on record Specifications:

.1 Products, materials and other items selected from those specified.

.2 Approved substitutions and accepted alternatives.

.3 Other approved changes and deviations to items specified.

.7 Have record drawing white prints and Specifications available for inspection at all times.

.8 10 Days prior to date of Substantial Performance; Submit redlined “record drawings” in digital PDF format for consultants review.

.3 Maintenance Instructions and Data Book: Provide Consultant with a digital copy of operating and maintenance instructions and data books for review, 10 Days prior to advising Consultant that Work is substantially performed which include:

.1 Table of Contents.

.2 Complete listing of Subcontractors' names, addresses and telephone numbers with notation as to which portions of Contract have been provided by them.

.3 Complete listing of materials, Products and equipment including serial numbers, manufacturer's names and sources of supply.

.4 Description of each system, with description of each major component of systems.

.5 Operation and installation instructions for each assembly, component and system.

.6 Complete cleaning and maintenance instructions for each finish, assembly, component and system, including warnings of harmful practices.

.7 Lists of spare parts for each assembly, component and system complete with names, addresses and telephone numbers of Suppliers.

.8 Operating curves of mechanical and electrical equipment.

.9 A lubrication schedule of all equipment.

.10 Page-size Valve Tag Schedule and Flow Diagrams.

.11 Water treatment procedures and tests.

.12 Final balancing reports for mechanical systems.

.13 Installation manual or installation instructions for each mechanical, electrical or architectural item, stamped and signed by Subcontractors submitting them.

.14 Record drawings of mechanical, electrical and special installations.

.15 Final reviewed Shop Drawings.

.16 Copies of all warranties, properly executed.

.17 Organize and label contents into applicable categories of work, parallel to Specification Sections and provide a Table of Contents.

.18 Use consistent terminology in books.

.19 Submit maintenance and operation instructions which are manufacturer's latest published editions at date of submission.

.20 Should any finish, Product or assembly be injured or damaged by faulty maintenance materials, practices not warned against in maintenance manual or by failure to provide proper maintenance manuals in time, rectify such damage or injury at no additional cost to Owner.

.21 Once consultants have approved the digital copy of the manual, provide 2 hard copy books consisting of 3-ring hard cover loose-leaf binders, indexed as to contents and identified on binding edges as "Maintenance Instructions and Data Book, for (Project name)". Ensure binders contain name of Contractor and date of Substantial Performance of the Work.

.4 Distribution System Diagrams: Prior to date of Substantial Performance, submit framed single line diagrams of electrical distribution systems.

1.5 DEMONSTRATIONS FOR OWNER'S PERSONNEL

.1 Provide qualified technicians to demonstrate operation and/or maintenance of systems to Owner's staff.

1.6 PRODUCT WARRANTIES

.1 Examine all Sections of the Specifications to ensure inclusion of Warranties specified.

.2 In addition to requirements of the General Conditions, Article "GC 12.3 WARRANTY", Contractor shall note extended warranty periods required by Contract Documents for certain Products, systems and assemblies as specified under their respective Sections.

.3 Spare Parts:

.1 Supply extra maintenance materials and/or spare parts and store in a locked room as directed by Owner.

.2 Suitably package maintenance materials in accordance with manufacturer's instructions and label to identify Product type, manufacturer, Product name, colour number, dye lot and quantity.

.3 Store maintenance materials, e.g., positioning, proper side up, etc., in accordance with manufacturer's recommendations.

END OF SECTION

Application for Certificate of Substantial Performance
(To be submitted on Contractor's Letterhead)

Date: _____

To: Lennox Architects Limited

Project: _____

We the undersigned state that the Contract dated _____ between ourselves and the Owner _____ is substantially performed and the performance of the balance of the Contract is in process. The total performance is scheduled for the _____ day of _____ 20_____

We further state that the amount of holdback monies due for the release and payment following the issue of the Certificate of Substantial Performance is

_____ and /100 Dollars

($_____)

We further state that the Status of Contract is as follows:

1.	Original Contract Amount	$ _____
2.	Authorized Changes:	
	Extras	$ _____
	Credits	$ _____
	Net Amount of Changes	**$** _____
3.	Current Contract Amount	$ _____
4.	Less value of incomplete work beyond this Contractor's Control (See attached Appendix for list of items with Costs and dates of completion for each item).	$ _____
	Total Contract Value for purposes of the Construction Lien Act.	$ _____
5.	The requirements for substantial performance as per the Construction Lien Act:	
6.	3% of the first $500,000.00	$ _____
	2% of the next $500,000.00	$ _____
	1% of the balance of item 5 above	$ _____
	Total	**$** _____

Application for Certificate of Substantial Performance (Cont'd)

7. The estimated value of uncompleted work including deficiencies but not including items in 4 above (see attached Appendix for list of items with amounts and dates of completion for each item).

Total $ _____

8. We enclose herewith one copy of List A of the required documentation together with all of the documentation outlined thereon.

We are presently assembling the documentation required by List B which we will submit to the Architect immediately on receipt of the Architect's Certificate of Substantial Performance. We recognize that unless this documentation is submitted prior to the date for release of holdback money, the Architect will recommend to the Owner that the holdback payment be withheld until all documentation is provided.

Please signify your acceptance and correctness of the above and return one copy to our office.

Contractor: _____

Per: _____

Date of Submission: _____

Accepted By:
Lennox Architects Limited

Per: _____

Date of Acceptance: _____

Application for Certificate of Substantial Performance (Cont'd)

List A

1. Operating Instructions
2. Maintenance Manuals
3. Record Drawings
4. Spare Parts
5. Spare Materials
6. Certified Site Plan

List B

1. Statutory Declaration from Contractor
2. Worker's Compensation Board letter of good standing from Contractor
3. Warranty from Contractor
4. Extended warranties as specified
5. Occupancy Certificate
6. Finalized list of all subcontractors and suppliers of material who performed work or supplied material to the project

Less Incomplete work <u>beyond</u> contractor's control

XXXXXXX	$ _____
XXXXXXX	$ _____
XXXXXXX	$ _____
XXXXXXX	$ _____
XXXXXXX	$ _____
Remain Allowance	$ _____
Remain Contingency	$ _____
Total	**$** _____

List of Balance to complete deficiencies (not including above items)

XXXXXXX	$ _____
XXXXXXX	$ _____
XXXXXXX	$ _____
Total	**$** _____

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

.1 Read and conform to:

.1 CCDC 2 - 2008, Stipulated Price Contract as amended in the Contract Documents.

.2 Division 1 requirements and documents referred to therein.

1.2 SUMMARY

.1 Section Includes: Masonry units including, but not limited to, the following:

.1 Concrete block masonry;

.2 Brick masonry;

.3 Reinforced concrete block masonry;

.4 Block lintels and other special units;

.5 Masonry mortar;

.6 Masonry reinforcing;

.7 Anchor and tie systems;

.8 Reinforcing steel bars and concrete fill to block lintels;

.9 Expansion joints and joint flashings;

.9 Control joints and preformed joint filler;

.10 Concrete fill for reinforced masonry;

.11 Installation of loose steel lintels;

.12 Supply and installation of anchor bolts for securing wood coping atop masonry.

.13 Cleaning Masonry.

1.3 RELATED SECTIONS

.1 Section 01 35 16- Alteration Procedures;

.2 Section 05 55 00 – Metal Fabrications;

.3 Section 07 84 00 – Firestopping and Smoke Seals

.4 Section 07 92 00 - Sealants, except where specifically stated otherwise herein;

.5 Section 08 11 13 – Steel Doors and Frames

.6 Section 08 41 13 – Aluminum Framed Entrances

.7 Sleeves for mechanical and electrical works penetrating masonry walls or partitions.

1.4 WORK INSTALLED BUT SUPPLIED BY OTHERS

.1 Build into masonry elements inserts, anchors, bolts, sleeves and other items supplied by other Sections and which are required for installation and performance of work of other Sections.

.2 Install loose steel lintels required for support of masonry elements.

.3 Install steel door frames and access doors occurring in masonry elements.

.4 Install reinforcing steel and concrete fill into block lintels and reinforcing steel grouted into masonry walls as shown on the structural drawings.

1.5 QUALITY ASSURANCE

.1 Provide work of this Section executed by competent installers with minimum 5 years experience in the application of Products, systems and assemblies specified and with approval and training of the Product manufacturers. Membership in good standing in OMCA.

.2 Meet requirements of CSA A370-14, CSA A371-14 and CSA S304-14.

.3 Comply with requirements of Section 01 41 00 when constructing fire rated walls and partitions. Solidly fill around beams and joists penetrating fire rated walls/ partitions in accord with requirements of Ontario Building Code.

.4 Masonry units used in partitions/walls designated to provide a fire separation shall be of thickness and material required to achieve required rating. Hollow masonry units used in fire separation shall have the necessary percentage of solid material to meet required rating. Concrete block used in fire separation shall be suitably identified to permit verification of fire resistance rating.

1.6 SUBMITTALS

.1 Prior to start of work submit product data and samples of all masonry accessories including but not limited to horizontal reinforcing, ties, weep hole inserts, dampproof coursing, mortar dropping control device.

.2 Submit drawings showing location of control joints.

.3 Mock- Up:

.1 Construct sample panel of an exposed clay brick infill section with cavity back-up wall including reinforcement, insulation, air barrier, flashings and weep holes. Build sample panel in

stepped-back fashion to expose each material used (brick, insulation, air barrier, block) to a minimum height of 400 mm each. Coordinate with Sections 07 21 00 and 07 27 00 for installation of air barrier and insulation.

.2 Locate panels where directed by Consultant.

.3 Do not begin masonry work until panels are approved by Consultant. Approved panel shall represent minimum standard of quality for project masonry

1.7 DELIVERY, STORAGE AND HANDLING

.1 Deliver and handle masonry units so as to prevent soiling and chipping.

.2 Store masonry units above and off ground on level platforms which permit air circulation under stacks.

.3 During storage, protect masonry units against moisture absorption, damage and staining.

.4 Do not store or locate materials, plant and equipment in areas which will obstruct access to work by others.

1.8 PROTECTION

.1 When work is not in progress, cover tops of completed masonry elements exposed to weather with non-staining weatherproof covers. Covers shall be at least 600 mm wider than masonry elements and shall be well secured against displacement.

.2 Protect finished work at corners, sills, projections and other areas likely to be damaged, with suitable coverings until completion of building.

.3 Adequately brace masonry walls and partitions to resist effects of wind and other lateral forces.

1.9 ENVIRONMENTAL REQUIREMENTS

.1 Provide uniformly distributed and continuous heating. Prevent stratification and cold spots.

.2 When outside temperature is below or likely to go below 5 degrees C provide heat to maintain temperature of materials and surrounding air at 5 degrees C or better during laying and for 72 hours thereafter. Submit for approval the proposed method of protecting masonry against low temperatures. Salamanders will not be permitted.

.3 Keep units completely free from ice and frost. Preheat mortar materials and mortar boards. Temperature of mortar to be between 21 degrees C and 48 degrees C. Protect mortar from frost. Do not use admixtures or antifreezes in mortar.

.4 Maintain dry beds for masonry and use dry masonry units only. Do not wet masonry units in winter.

.5 Protect freshly laid masonry from drying too rapidly, by means of waterproof, non-staining coverings.

1.4 WARRANTY

.1 Warrant air/vapour barrier work of this Section for period of 5 years against defects and/or deficiencies in accordance with General Conditions of the Contract. Promptly correct any defects or

deficiencies which become apparent within warranty period, to satisfaction of Consultant and at no expense to Owner. Defects include but are not limited to; material remaining air and water tight.

PART 2 – PRODUCTS

2.1 MATERIALS

.1 Performance: Design exterior envelope cavity walls based on Rain Screen Principle advocated by NRCC and provide for drainage of water entering envelope cavity wall system. Provide for compartments in long cavity wall and at corners to achieve appropriate pressure equalization in exterior envelope cavity wall design.

.2 Provide only stainless steel reinforcement for exterior envelope walls.

.3 Clay Brick:

.1 Type: hard burned clay brick to CAN/CSA-A82-14: 92 x 57 x 194 mm: Belden or Glen Gery. Size, colour and finish to match existing yellow window brick.

.2 Provide solid brick where required to avoid exposure of voids. Mitred outside corners are not permitted.

.3 Purchase face brick in one lot, sufficient for entire project.

.4 Concrete Masonry Units:

.1 To requirements of CSA A165 Series-14:

.1 Standard weight: H/15/A/M and S/15/A/M.

.2 Lightweight: H/15/C/M and S/15/C/M .

.2 Acceptable manufacturers for block: Permacon, Simcoe Block, Boehmers, Richvale York , Day & Campbell or or other source approved by the Consultant.

.3 Units must be cured for at least 28 days before delivery and shall have a moisture content of not more than 30% of total absorption.

.4 Exposed concrete block units shall be uniform in size, free of perceptible warp or twist, without chipped, ragged or broken edges; have a uniform surface texture, free of cracks, blemishes or defects detrimental to appearance or performance.

.5 Where indicated provide solid and semi-solid (solid top) units.

.6 Provide manufacturer's catalogued special units such as bullnose, corner, end, lintel block and others as indicated.

.7 Where incorporated into existing block work provide masonry units matching existing block work.

.5 Metal Reinforcement:

.1 Steel wire, cold drawn high tensile strength, to ASTM A82-07, with hot dip galvanized finish after fabrication to ASTM A153, Class B2.

.2 Steel wire, cold drawn high tensile strength to ASTM A82-07, with mill galvanized finish to ASTM A116, Class 3.

.3 Stainless steel wire: Type 302.

.4 Horizontal reinforcement, exterior walls: Truss type with 4.8 mm diameter hot dip galvanized steel side and cross rods; side rods centred on concrete block face shells; prefabricated corner and intersection assemblies: BLOK-TRUS BL30 by Blok-Lok or equivalent product by Dur-O-Wal.

.5 Horizontal reinforcement, interior walls. Truss type with 3.6 mm diameter mill galvanized steel side and cross rods; side rods centred on concrete block face shells; prefabricated assemblies at corners and intersections: BLOK-TRUS BL30 by Blok-Lok or equivalent product by Dur-O-Wal.

.6 Connectors, Ties and Anchors:

.1 Materials:

.1 Steel: hot dip galvanized to ASTM A123-17 and stainless steel Type 302.

.2 Wire materials: as specified for metal reinforcement.

.2 Cavity wall connectors shall be:

.1 At walls less than 13 m high: hot dip galvanized steel.

.2 Walls 13 m and higher: stainless steel; where back up wall reinforcement is integral to connectors, it too shall be stainless steel.

.3 Cavity wall connectors at walls with concrete block back-up: one of the following types:

.1 Fero Holed Shear Connector consisting of 1.6 mm thick steel connector plate of length to suit insulation and concrete block thickness, steel wire V-tie, 4.8 mm diameter and polyethylene insulation support by Form & Build Supply (Toronto) Inc. (905) 629-0242.

.2 1.6 mm thick holed steel plate and 4.8 mm diameter steel wire anchor: BL-507S by Blok-Lok.

.4 Cavity wall connectors at walls with concrete back-up: one of the following types:

.1 Fero Rap Tie consisting of holed connector plate of length to suit insulation thickness, anchored with predrilled concrete anchors, and steel wire V-tie, 4.8 mm diameter and polyethylene insulation support by Form & Build Supply.

.2 Predrilled, self-tapping 8 mm diameter helical steel anchors with plastic insulation retainer: Helifix and Wedge-Lok by Blok-Lok, or Helix Spiro-Tie and Vista-Fix by JV Building Products.

.5 Cavity wall connectors at walls with structural steel back-up: one of the following types:

.1 Fero Rap Tie as specified for concrete back-up.

.2 Triangular 4.8 mm steel wire tie and steel anchor: Flex-O-Lok BLT9 and Adjustable Flex-O-Lok Anchor by Blok-Lok.

.6 Interior masonry to concrete: 2.5 mm galvanized anchor and 4.8 mm diameter galvanized steel wire tie with galvanized steel dovetail anchor slots: Dovetail Anchors BLT8 by Blok-Lok.

.7 Interior masonry to structural steel: 4.8 mm diameter galvanized triangular wire tie with galvanized steel adjustable anchors: Flex-O-Lok BLT9 and Adjustable Flex-O-Lok Anchors by Blok-Lok.

.8 Lateral Supports and Ties:

.1 Prime coated steel angles 75 mm x 75 mm x 200 mm long x 6 mm thick.

.2 Steel: CAN/CSA-G40.21-13 (R2018), Grade 300W.

.3 Primer: CAN/CGSB-1.40-M89.

.4 Fasteners: Expansion type concrete anchors, two per angle.

.5 Reinforcing bar positioners: Dur-O-Wal 1A 810.

.7 Dampproof course and membrane flashing: Blueskin TWF by Bakor.

.8 Flashing back-up: minimum 0.9 mm thick hot dip galvanized sheet steel; Z275 zinc coating.

.9 Mortar dropping control device (cavity drainage mat): high density polyethylene or nylon mesh in trapezoidal configuration designed to facilitate effective drainage of moisture to weep holes; thickness to suit air space: "The Mortar Net" by Mortar Net Solutions.

.10 Premoulded Joint Filler: Non-fire rated locations: Type 704 fibreglass board by Owens Corning or Rockboard 40 by Roxul.

.11 Concrete block lintels:

.1 Reinforcing steel: CSA G30.18-09 (R2014).

.2 Cast-in-place concrete: CSA A23.1-14.

.12 Control Joint Filler: Emseal 25V Expanding Foam Sealant

.13 Weep hole inserts: Cell Vent Weep Hole Ventilator by Dur-O-Wal Inc.

.14 Mortar:

.1 Water: potable and non-staining.

.2 Sand: CSA A82-56-M1976.

.3 Portland cement: CAN3-A5-03, Type 10.

.4 Masonry cement: CAN3-A8-03, Type H.

.5 Lime: ASTM C207, Type S.

.6 Colour pigment: Iron Oxide Pigment Harcros 'F' Series (4 lb - 6% loading) by Elementis (416-251-1161) or type recommended by mortar manufacturer. Colours selected by Consultant.

PART 3 – EXECUTION

3.1 EXAMINATION

.1 Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to the installation.

.2 Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2 INSTALLATION

.1 Lay masonry work in uniform manner. No one portion of any section of work shall rise more than 750 mm above general level. Do not lay more than 1500 mm in height of any wall in any working day.

.2 Unless otherwise noted on Drawings, all walls and partitions shall extend to the underside of the structural deck.

.3 Cut exposed masonry units with power driven table model masonry saw only. Ragged or chipped edges will not be permitted.

.4 Consult with other Sections to avoid cutting and patching. Co-operate in setting and aligning built-in items. Build in conduit and piping so that they are not exposed. Do not break masonry bond to accommodate concealed built-in items.

.5 Grout solid with mortar all spaces around built-in items.

.6 Build in metal nailing plugs, grounds, inserts, anchor bolts, bearing plates, loose and miscellaneous items of steel and iron, isolated beams, lintels and shelf angles, sleeves, blocking and items furnished by other Sections.

.7 Do not shift or tap masonry units after mortar has taken its initial set.

.8 At masonry openings less than 450 mm wide, unless otherwise detailed, use mild steel plates, minimum 6 mm thick, of width 25 mm less than supported masonry thickness and with minimum 100 mm end bearing each side.

.9 Construct structurally reinforced masonry elements in accordance with requirements indicated on structural drawings.

.10 When infilling new block with existing, masonry to be toothed into the existing block.

3.3 CHASES, SLEEVES, OPENINGS AND HOLES

.1 Chases, sleeves and openings shall be built in during erection of masonry work, and purpose-made chased units shall be built into proper position

.2 Openings in masonry work exceeding 450 mm shall be provided with lintels in accord with lintel schedule.

.3 Chasing of completed walls or formation of holes shall only be carried out with Consultant's prior approval, and then only with a tool designed to cleanly cut masonry units.

.4 Chases shall be plumb and shall be minimum of one unit length from jambs of openings.

.5 Horizontal or diagonal chases are not permitted

3.4 MASONRY BEARING

.1 Masonry bearing shall extend full thickness of wall.

.2 Unless otherwise indicated, provide at least 200 mm of bearing for lintels and beams.

.3 Bearings of block masonry walls: use minimum 2 courses of solid or grouted block units except where concrete bearing pads are required.

.4 Bearings in brick masonry walls: use solid face brick where exposed to view..

.5 Build masonry neatly around beam, and lintel bearings.

3.5 CONSTRUCTION JOINTS

.1 Where fresh masonry joins partially or totally set masonry, clean exposed surfaces of set masonry and remove loose mortar and foreign material prior to laying fresh masonry.

.2 If necessary to stop off a horizontal run of masonry, rack back one-half masonry unit length in each course. Toothing will not be permitted unless approved by the Consultant.

3.6 BLOCKWORK

.1 Blockwork shall be laid up in running bond except where shown otherwise. Unless otherwise indicated, blocks shall be of thickness required to produce total wythe thickness

.2 Do not wet blocks before laying.

.3 Units shall be laid with webs aligning one over the other in full bed of mortar over entire laying surface including webs.

.4 Exposed faces shall be full units laid out to minimize cutting with not less than 100 mm any at vertical edge or corner.

.5 Top course of block walls shall be laid with semi-solid blocks at door and window sills, at wall changes to brick and where shown. Top course of freestanding block walls shall be bullnosed all sides.

.6 Partitions which do not extend full height, to underside of structural deck, shall be capped with solid or semi-solid (solid top).

.7 Provide solid block roof parapets or fill hollow block with grout.

.8 Use solid block for at least two courses under all point bearing loads.

.9 Form exposed external block foundation corners with end units.

.10 Provide bullnose block at all exposed vertical and horizontal block corners. Where directed by Consultant provide square corner block at first course above floor; grind corner above base to match bullnose above. At head of exterior doors grind bottom inside corner of lintel block to provide bullnose.

.11 Provide minimum 400 mm solid or grouted block for jambs of openings and at ends of walls.

.12 Cut with power saw exposed units to accommodate flush mounted electrical outlets, grilles and other components. Leave maximum 5 mm clearance. Cover plates and flanges must cover cut edges.

.13 Blockwork scheduled to be left exposed or painted shall be laid and pointed with utmost care. Distribute units of varying colour and texture evenly to achieve homogeneous blend. Replace at no extra cost to Contract, block units which in the opinion of the Consultant are too contrasting in appearance for satisfactory blending.

.14 Take special care to prevent mortar or other substances from staining exposed block faces. Replace stained blocks as directed by the Consultant at no extra cost to Contract.

.15 Where new block is adjacent to existing block walls, new block to be keyed into existing and joints to align.

3.7 BLOCK LINTELS

.1 Build block lintels; install reinforcement and concrete fill. Unless otherwise detailed make lintels 200mm high.

.2 Lintels shall have minimum 200 mm bearing, with care taken in layout of wall to ensure that lintel jointing coincides with regular bond of wall.

.3 Provide building paper in joint at bearings and at vehicle joint at ends of block lintels to break bond.

3.8 BRICKWORK

.1 Lay clay brick in running bond except where shown otherwise. Provide header, soldier, rowlock and special band courses, where indicated. Provide solid units at outside corners; mitred units will not be accepted.

.2 Lay exposed face brick in full horizontal modules only, except where Consultant has approved use of cut units.Make small adjustments in width of vertical mortar joints to maximize use of full modules. Cut units, where permitted by Consultant, shall be located as directed by Consultant.

.3 Completed brickwork shall appear uniform and well blended, free of contrasting areas. Replace at no cost to Contract, brickwork which does not meet this requirement.

.4 Brick with an absorption rate of over 1 g/min./1000 mm^2 when tested in accordance with ASTM C67 shall be dampened before laying.

.5 Tops of walls which have been left exposed for any period of time shall be dampened before work is commenced again, if required.

.6 Brickwork at different levels shall be stepped in regular proportions between levels.

.7 Brickwork shall be laid up with the shove joint method in full bed of mortar with vertical and horizontal joints filled flush. Slushing mortar into joints after brick is laid, is not permitted.

.8 All joints in brickwork, including bed and collar joints, shall be filled flush as each course is laid. Pull down and rebuild walls/partitions which do not meet this requirement as directed by Consultant and at no extra cost to Contract.

.9 Variations in size of brick shall be evenly distributed in wall so that mortar joints are uniform throughout.

.10 At first brick course over steel lintels place brick directly on membrane flashing without mortar.

.11 At external corners other than 90° provide special custom shape solid corner units.

3.9 CAVITY WALLS

.1 Erect interior wythe masonry and co-ordinate with Sections 07 21 00 and 07 27 00 for installation of air barrier and insulation.

.2 Ensure that air barrier and insulation are complete and have been inspected and accepted by Consultant prior to installation of exterior wythe masonry.

.3 After the first course of exterior masonry units is laid install one continuous row of mortar dropping control device at bottom of cavities and veneer air space; place device on top of membrane flashing, with "zig-zag" side up. Where cavity/air space is larger than 25 mm use multi-layer mortar dropping control device of thickness designed to fill space completely.

.4 Keep the cavity clean and free from mortar droppings or projections. Bevel the "cavity" edge of the mortar bed immediately after "stringing" the mortar.

.5 Reinforce back up masonry with continuous metal reinforcement at maximum 400 mm o.c. vertically. Provide additional reinforcing at openings as specified hereinafter. Provide first row of reinforcing at first joint above support. Place reinforcement in alternate courses to cavity wall connectors, except where connectors are integral with reinforcement.

.6 Provide cavity wall connectors at maximum 400 mm o.c. horizontally and vertically, unless other spacing, supported by manufacturer's engineering analysis is accepted by jurisdictional authorities. Locate first row of connectors/ties at 200 mm above foundations and loose lintels and at maximum 400 mm above shelf angles; install connectors/ties above through wall metal flashings. Locate last row of connectors/ties maximum 200 mm below openings and below top of parapets. Locate connectors/ties maximum 300 mm from inside and outside corners and at maximum 200 mm each side of expansion and control joints.

3.10 JOINT WORK

.1 Make joints uniform and 10 mm thick unless otherwise shown on Drawings.

.2 Joints in exposed and painted surfaces, and in masonry behind wall mounted and built-in fixtures, shall be tooled when thumbprint hard with a 25 mm o.d. plastic tool to produce a concave joint..

.3 Joints in unparged masonry below grade shall be pointed tight with a trowel.

.4 Joints directly behind resilient base, rigid insulation, ceramic tile and gypsum board shall be struck flush.

3.11 ANCHORING, BONDING AND REINFORCING

.1 Anchor or bond walls and partitions at points where they intersect.

.2 Except where stack bond is required bond each wythe or masonry walls and partitions at corners by alternately bonding 50% of units of each wall and partition at corner intersection.

.3 Bond non-loadbearing walls and partitions to loadbearing walls with ties spaced at 400 mm o.c. vertically. Provide one tie for each 100 mm thickness, or part thereof, of wall or partition.

.4 Anchor masonry walls and partitions to concrete and steel elements with anchors spaced at 400 mm vertically.

.5 Unless otherwise indicated reinforce all walls and partitions with continuous horizontal metal reinforcement, installed at 400 mm o.c. vertically.

.6 At wall openings place continuous reinforcement in first and second mortar joints above and below openings. Additional reinforcement at openings shall extend 610 mm beyond both sides of openings.

.7 Install prefabricated corner assemblies at corners.

.8 Lap continuous reinforcement 150 mm at splices. Cut reinforcement at control joints.

.9 Provide lateral support angles at top of non-loadbearing masonry/walls partitions. Anchor angles to structural deck or beam at 10x partition/wall thickness (maximum 2 m o.c.) staggered each side of

3.12 CONTROL JOINTS

.1 Provide control joints at masonry walls supported by foundation walls at approximately 7.5 m o.c. and at masonry walls supported on framed slabs at approximately 4 m o.c., and where shown on Drawings. Confirm actual locations of control joints with Consultant before starting work.

.2 Provide control joints at intersection of bearing and nonbearing walls.

.3 At cavity walls, offset control joints at outer and inner wythe as shown.

.4 Construct control joints as shown on Drawings. Unless otherwise shown make control joints 10 mm wide. Interrupt masonry reinforcement at control joints. Provide expanding foam sealant at control joint, at exterior and interior wythe.

.5 Control joints must be constructed during erection of masonry, and may not be sawcut later.

3.13 MEMBRANE FLASHINGS / DAMPPROOF COURSE

.1 Install dampproof course on top of foundation walls above grade.

.2 Install membrane flashing at bottom of cavity walls; where shown, and at the following locations:

.1 Door heads

.2 Window heads

.3 Immediately above horizontal interruptions within exterior walls.

.4 Below precast concrete components.

.3 Lap membrane flashing 100 mm at joints; seal lap with adhesive.

.4 In all cases extend membrane flashing 13 mm beyond outside face of wall or outside edge of steel lintel. Trim as required to Consultant's later instructions.

.5 Unless otherwise indicated carry membrane flashing up behind exterior wythe masonry units min. 200 mm and turn into concrete block back-up. Mechanically secure top edge at concrete back-up.

.6 Membrane flashings require continuous support at all locations. Provide sheet metal back-up where shown and where required. Metal backing shall not protrude beyond exterior face of exterior wall.

3.14 WEEP & VENT HOLES

.1 Form weep holes by inserting weep/vent hole inserts into exterior wythe mortar joint immediately above all membrane flashings, and at other locations where shown. Space weep holes at 800 mm o.c. horizontally.

.2 Form vent holes by inserting weep/vent hole insert into exterior wythe mortar joint near top of each cavity compartment and at other locations, where indicated. Space vent holes at 800 mm o.c. horizontally.

.3 Keep face of weep/vent hole inserts back from face of brick minimum 6 mm. Keep weep holes free of mortar.

3.15 STEEL DOORS AND FRAMES

.1 Install steel frames in masonry walls. Build in frames rigid, true and plumb. Fill voids between frames and masonry with grout. Fill fixed centre mullions at double doors with grout.

.2 Brace frames solidly in position while being built in. Provide temporary horizontal wood spreader at mid-height of frames to ensure maintenance of required frame width until masonry work is completed. For frames over 1200 mm width provide temporary vertical support at centre of head.

.3 Construct structurally reinforced masonry elements in accordance with requirements indicated on structural drawings.

.4 Comply with installation requirements specified under Section 08 11 13.

.5 Provide galvanized metal drip flashing above door frames.

3.16 GROUTED MASONRY

.1 Provide grouted masonry at loadbearing walls in accordance with requirements shown on structural drawings.

3.17 MISCELLANEOUS

.1 Where non-loadbearing, non-fire rated partitions extend to underside of structure, terminate partitions as detailed. Where not detailed allow for structural deflection and fill space with premoulded joint filler. Refer to Section 07250 for firestopping requirements at fire rated partitions.

.2 Provide continuous 0.1 mm thick polyethylene or glass fibre reinforced kraft paper - asphalt laminate bond breaker at base of partitions and walls which bear on concrete slabs.

.3 Provide paper backed galvanized steel lath as required for support of grout and mortar fill within masonry elements.

.4 Install access doors occurring in masonry elements, required by Divisions 21 to 28. Install access doors plumb, level, properly aligned and securely anchored, in locations directed by Divisions 21 to 28. Remove all excess grout and masonry debris from shafts and chases accessible by means of access doors.

3.18 PARGING

.1 Provide parging at locations shown.

.2 Parging mix: 1 part Portland cement and 3 parts sand by volume, mixed with sufficient water to produce workable mix.

.3 Bond coat mix: 24 kg Portland cement and 4L parging bonding agent and 4L water.

.4 Prepare substrate and apply bond coat in accordance with bonding agent manufacturer's recommendations. Apply parging while bond coat is still moist and tacky. Apply parging minimum 6 mm thick, trowelled to smooth surface.

3.19 MORTAR

.1 Mix mortar in accordance with table 2 of CSA A179-04 except as specified herein.

.2 Place an experienced and competent person in direct charge of proportioning and mixing operations.

.3 Except where specified otherwise do not add admixtures of any kind to mixes.

.4 All mortar shall be mixed for a period of not less than 3 minutes and not more than 10 minutes.

.5 Provide all mortar by one of the following: Max-Mix, Jiffy, Forwells or King Products.

.6 Mix coloured mortar in colour selected by Consultant, in accordance with pigment manufacturer's recommendations. Make adjustments in colour mix as directed by Consultant.

.7 Time Limits and Retempering: Use and place mortar in final position within following time limits after mixing:

.1 Air Temp. above 26.5oC - 2 hours.

.2 Air Temp. below 26.5oC - 2.5 hours.

.8 Mortar Schedule:

.1 Exterior wythe of exterior walls: 1:1:6 cement lime mortar.

.2 At foundations walls and solid bearing courses: type M mortar.

.3 Bearing walls and interior wythe of exterior walls: type S mortar.

.4 Non-bearing interior partitions: type N mortar.

.5 Provide coloured mortar where indicated.

3.20 SITE QUALITY CONTROL

.1 Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of Consultant at no cost to Owner.

.2 Replace masonry units stained or chipped, or materials affected by inadequate protection.

3.21 REPAIR

.1 Repoint defective joints as follows: Cut back joints 13 mm taking care not to damage units. Remove dust and loose materials by brushing or by water jet. If water jet is used, allow excess water to drain before repointing

.2 Repoint with same mix and colour as original.

.3 Pack mortar tightly in thin layers and tool joint to match non-defective joints.

3.18 CLEANING

.1 Obtain cleaning materials in accordance with manufacturer's instructions and brick manufacturer's written instructions for cleaning and verify cleaning procedures outlined in CSA A371 with manufacturers. Follow brick manufacturer's written instructions for cleaning masonry. Test sample area, 10 m^2 (100 sq ft), to judge effectiveness of cleaning procedures and obtain Consultant's approval.

.2 Keep wall clean and free of mortar stains during laying. Allow mortar droppings which adhere to wall to dry out but not set. Then rub with small piece of masonry followed by brushing to remove all traces.

On completion of masonry construction, after mortar is thoroughly set and cured, clean masonry thoroughly.

.3 Protect windows, trim and metal from cleaning agents.

.4 Remove mortar with wood paddles and scrapers before wetting. Saturate masonry with clean water and flush off loose mortar and dirt. Clean blockwork using water, scrubbing brushes and wood paddles only.

.5 Clean masonry to be left exposed, using procedures as outlined herein and, where this is inadequate, try following recommendations outlined in BIA's Technical Note No. 20, June 2006.

.6 Particular care should be taken when cleaning lighter coloured clay bricks even with non-acid based cleaning solutions. Dark red or brown residue resulting from cleaning operations when allowed to run down face of brick could streak and discolour exterior facing. Protect lighter coloured Products by masking them from run off or by taking measures recommended by brick manufacturers.

.7 Clean calcium silicate masonry units only with non acid based cleaning solutions.

.8 Should these methods prove inadequate consult masonry manufacturer before undertaking unusual cleaning procedures and obtain Consultant's prior consent.

.9 Clean adjacent surfaces completely, which have been soiled or otherwise marred.

END OF SECTION

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

.1 Read and conform to:

.1 CCDC 2 - 2008, Stipulated Price Contract as amended in the Contract Documents.

.2 Division 1 requirements and documents referred to therein.

1.2 SUMMARY

.1 Section Includes: Provide metal fabrications including but not limited to following:

.1 Miscellaneous metals and lintels;

1.3 RELATED SECTIONS

.1 Section 01 35 16 - Alteration Procedures

.2 Section 06 10 00 – Rough Carpentry

.3 Section 09 91 00 – Painting

1.4 WORK SUPPLIED BUT NOT INSTALLED

.1 Supply following items for installation under other Sections of work: anchor bolts, bearing plates, sleeves and other inserts to be built into concrete and masonry elements and required for anchorage and support of metal fabrications.

.2 Supply other Sections with instructions, and if required, templates, necessary for accurate setting of inserts and components.

1.5 SUBMITTALS

.1 Shop Drawings:

.1 Visit site to confirm appropriate dimensions and site conditions prior to submission of shop drawings.

.2 Submit digital shop drawings to Consultant for review.

.3 Shop drawings to indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, accessories and other pertinent data.

.4 Shop drawings shall bear the seal and signature of the structural engineer, licensed in the Province of Ontario, responsible for the design.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Deliver, handle and store fabricated components to prevent permanent distortion, corrosion and damage.

.2 Handle and store metal materials at the job site in such a manner to prevent damage to other materials, to existing building or property.

1.7 QUALITY ASSURANCE

.1 Provide welding in accordance with CSA W59 performed by a fabricator and mechanics fully approved by the Canadian Welding Bureau.

.2 Upon completion of installation of ladders, stairs, platforms, pit covers, balustrades, bench brackets and railings submit certification by professional engineer responsible for design of these components, verifying that they have been installed in accordance with reviewed shop drawings.

.3 Sizes of structural members, shall be taken to be a minimum size and shall not be decreased without Consultants' approval.

PART 2 – PRODUCTS

2.1 MATERIALS

.1 Steel sections and plate: CSA-G40.20 and CSA-G40.21, Grade 300W.

.2 Square steel tube: CSA-G40.20 and CSA-G40.21, Grade 350W, Class H.

.3 Steel pipe: ASTM A53, Type E, Grade A.

.4 Sheet steel: hot dip galvanized, cold rolled, with stretcher level degree of flatness to ASTM A553; zinc coating designation Z275.

.5 Aluminium:

.1 Extrusions: ASTM B221-14 6063-T5 or T6.

.2 Sheet, plate: ASTM B209-14, 1100 or 3000 Series alloy, anodizing quality.

.6 Stainless Steel: ASTM A167, Type 304 alloy with exposed surfaces having No. 4 polished finish. Sizes as required to meet design requirements.

.7 Structural Aluminum: to CSA HA series - M, Type 6061-T6, clear anodized.

.8 Welded steel wire mesh: 5/5 50 x 50 mm at stair railings and guards and 3/3 75 x 75 mm elsewhere conforming to ASTM A510M by Gerard Daniel Worldwide, Canadian Division.

.9 Welding materials:

.1 Steel: CSA W59-18

.2 Aluminum: CSA W59.2-18

.10 Bituminous enamel: alkali resistant asphaltic coating.

.11 Supply bolts, nuts and washers conforming to ASTM A325M. Supply each type and size of bolt and nut of same manufacture and of same lot.

.12 Bolts: Heavy, hexagon head high strength structural bolts, of standard size, of lengths required for thickness of members joined and for type of connection.

.13 Nuts: Heavy hexagon semi-finished nuts.

.14 Washers: Flat and smooth hardened washers, quenched and tempered to suit applications and conforms to ASTM F844. Provide AISI Type 304 stainless steel washers at exterior locations.

.15 Hardened Steel Washers: To suit applications and conforms to ASTM F436M.

.16 Stainless Steel Bolts: To suit applications and conforms to ASTM F738M.

.17 Stainless Steel Nuts: To suit applications and conforms to ASTM F836M.

.18 Lock Washers: Helical spring type steel “lock” washers to suit applications and conforms to Federal specification FF-W-84. Provide AISI Type 304 stainless steel lock washers at exterior locations.

.19 Exterior Vandal Resistant Fasteners: AISI Type 304 stainless steel, dual pin type vandal resistant fasteners to suit applications and acceptable to Consultant.

.20 Security Fasteners: Button head "Torx® Plus R" screw tamper resistant #10, 25 mm long 2 per glass stop minimum stainless steel machine screws.

.21 Common or Ordinary Bolts and Anchor Bolts: Unfinished bolts conforming to ASTM A307, Grade A, with hexagon heads and nuts where exposed in the finish work. Supply common bolts of lengths required to suit thickness of material being joined, but not projecting more than 6 mm beyond nut, without the use of washers. Supply anchor bolts of lengths noted, but projecting not less than 13 mm beyond nut unless otherwise noted.

.22 Dielectric Separator: Provide best grade, quick drying non-staining alkali resistant bituminous paint or epoxy resin solution or membrane type to acceptance of Consultant.

.23 Galvanized Primer Paint: Zinc rich conforming to CAN/CGSB-1.181 for new galvanized metal.

.24 High Performance Corrosion Protection for Perimeter Steel: 1 component, moisture cured, micaceous iron oxide/zinc filled primer, UL Classified in accordance with ANSI/UL 263 (ASTM E119), corrosion protection in accordance with ASTM B117, meeting Class B Slip Certification in accordance with American Institute of Steel Construction (AISC) requirements for slip critical bolted connections, tested in accordance with ASTM E736 for its suitability for application of primer over steel to receive sprayed fireproofing, “Series 394, PerimePrime” by Tnemec Company Incorporated; www.tnemec.com.

.25 Steel Pipe Handrails: Conforming to ASTM A53/A53M, Type "S", Schedule 40, Grade A steel pipe of sizes shown.

.26 Steel Pipe Bumpers: Conforming to ASTM A53/A53M, Schedule 80 steel pipe of sizes shown.

.27 Galvanizing: Hot dipped galvanizing with minimum zinc coating of 600 g/m^2.

.28 Galvanized Sheet Steel: Supply 0.91 mm (20 ga) core thickness commercial quality to ASTM A653/A653M, CS Type A, with Z275 (G90) zinc coating designation to ASTM A653/A653M.

.29 Expanded Steel Mesh: Flattened, expanded, carbon steel mesh of 10 msg gauge thickness, weighing minimum 51 kg/10 m^2 style 33 mm SWD x 81 mm LWD, 292 mm - No.9 by Gerard Daniel Worldwide, Canadian Division, Expanded Metal Corporation or Dramex International.

.30 Welded Steel Wire Mesh: 50 mm x 50 mm x 3.4 mm diameter, welded carbon steel wire mesh conforming to ASTM A510M by Gerard Daniel Worldwide, Canadian Division.

.31 Handrail Wall Brackets: In accordance with OBC requirements and to meet design requirements indicated on Drawings.

2.2 FABRICATION

.1 Fabricate components in the shop in largest size practicable to minimize field jointing.

.2 Fabricate components square, straight, true, free from warpage and other defects. Accurately cut, machine file and fit joints, corners, copes and mitres.

.3 Reinforce fabricated components to safely withstand expected loads.

.4 Make joints in built-up sections with hairline joints in least conspicuous locations and manner.

.5 Make allowance for thermal expansion and contraction when fabricating exterior work.

.6 Joints shall be welded unless otherwise indicated and unless details of construction do not permit welding. Exposed welds shall be continuous and shall be ground smooth.

.7 Close exposed open ends of tubular members with welded on steel plugs.

.8 Where work of other Sections is to be attached to work of this Section, prepare work by drilling and tapping holes, as required to facilitate installation of such other work.

.9 Work of this Section, supplied for installation under other Sections, shall be prepared as required ready for installation by: drilling, countersinking and tapping holes, forming shapes and cutting to required sizes.

.10 Grind off mill stampings and fill recessed markings on steel components left exposed to view.

2.3 FINISHES

.1 Thoroughly clean steel of loose scale, rust, oil, dirt and other foreign matter. Suitably prepare steel surfaces by power tool cleaning to receive specified finishes.

.2 Grind smooth sharp projections.

.3 Remove oil and grease by solvent cleaning.

.4 Hot dip galvanize steel components after fabrication in accordance with requirements of CAN/CSA-G164-18, minimum coating weight 600 g/m^2.

.5 Clear anodized aluminum components AA M12 C22 A41.

.6 Apply coat of bituminous enamel to contact surfaces of metal components in contact with cementitious materials and dissimilar metals.

PART 3 – EXECUTION

3.1 EXAMINATION

.1 Verification of Conditions: Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to the installation.

.2 Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2 INSTALLATION

.1 Install components plumb, square, straight and true to line. Drill, cut and fit as necessary to attach this work to adjoining work.

.2 Provide temporary supports and bracing required to position components until they are permanently anchored in place.

.3 Securely anchor components in place; unless otherwise indicated, anchor components as follows:

.1 To concrete and solid masonry with expansion type anchor bolts.

.2 To hollow construction with toggle bolts.

.3 To thin metal with screws or bolts.

.4 To thick metal with bolts or by welding.

.5 To wood with bolts or lag screws.

.6 Fill space between railing members and sleeves with non-shrink grout.

.4 Provide all components required for anchoring. Make anchoring in concealed manner wherever possible. Make exposed fastenings, where approved by Consultant, neatly and of same material, colour, texture and finish as base metal on which they occur. Keep exposed fastenings evenly spaced.

.5 Dissimilar metals and metals in contact with cementitious elements shall have contact surfaces coated with bituminous paint or be isolated by other means as approved by Consultant.

.6 After installation, clean and refinish injured finishes, welds, bolt heads and nuts. Refinish with zinc rich paint or primer to match original finish.

.7 Remove protective coverings from stainless steel components prior to Substantial Performance or when directed by Consultant.

3.3 SITE QUALITY CONTROL

.1 Structural Inspection: Ensure a licensed engineer specified herein inspects work of this Section during erection/installation.

.2 Non-Conforming Work: Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of Consultant at no cost to Owner.

3.4 CLEANING

.1 On completion of installation, carefully clean metal work.

3.5 SCHEDULE

.1 Provide all metal fabrications required whether listed hereunder or not, unless clearly covered by another Section. Unless otherwise shown provide hot dip galvanized steel components.

.2 List of Components:

.1 Sill support brackets

.2 Loose lintels, plates, angles and other members required but not shown on structural drawings.

.3 Other metal fabrications required.

END OF SECTION

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

.1 Read and conform to:

.1 CCDC 2 - 2008, Stipulated Price Contract as amended in the Contract Documents.

.2 Division 1 requirements and documents referred to therein.

1.2 SUMMARY

.1 Section Includes: Provide Rough Carpentry work including but not limited to following:

.1 Miscellaneous interior carpentry;

.2 Built up / blocking as required.

1.3 RELATED SECTIONS

.1 Section 01 35 16 - Alteration Procedures;

.2 Section 06 20 00 – Finish Carpentry;

.3 Section 06 51 13 – Plastic Lumber;

.4 Section 06 41 00 – Cabinetwork.

1.4 REFERENCES

.1 Exposed Framing: Framing not concealed by other construction.

.2 CSA O80 Series-08 - Wood Preservation

.3 CSA O121-08 - Douglas Fir Plywood

.4 CAN/ULC-S102-07 - Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies

1.5 QUALITY ASSURANCE

.1 Lumber shall bear the grading stamp of an agency certified by The Canadian Lumber Standards Administration Board.

.2 All lumber shall be sound, straight, dressed all sides and kiln dried, and moisture content at any time during shipment and storage shall not exceed 19%.

.3 Provide roof sheathing bearing the COFI grading stamp for identification.

.4 Provide "treated" and "fire treated" wood and plywood bearing the stamp of the Canadian Wood Preservers Bureau.

1.6 WORK SUPPLIED BUT NOT INSTALLED

.1 Supply to other Sections anchors, bolts, rough hardware and other items required to be built into work of other Sections to receive, accommodate, secure work of this Section.

.2 Provide other Sections with instructions to ensure accurate setting of built-in items.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Store lumber in a dry place and protect from dampness and damage.

.2 Stack lumber flat with spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

PART 2 – PRODUCTS

2.1 LUMBER

.1 Meet requirements of CSA-086-94 Strength Group D (spruce-pine-fir) and CAN/CSA-0141-05 and National Lumber Grading Authority (NLGA) Standard Grading Rules.

.2 Light Framing: Species Group D, Standard Grade.

.3 Studding: Species Group D, Stud Grade.

.4 Structural Light Framing: Species Group D, No. 1 Grade.

.5 Appearance Lumber: Species Group B, Appearance Grade.

.6 Hardwood Lumber: Of grades conforming to grading rules of U.S. National Hardwood Lumber Association, solid Yellow Birch, select or better.

.7 Concealed Framing Lumber: No. 2 White Pine, No. 2 Red Pine, or No. 1 Construction Eastern Spruce, Balsam Fir or Jack Pine, kiln dried, free from sap, shakes, splits, knots and other defects.

.8 Grounds, Nailing Strips and Blocking: No. 2 White Pine, No. 2 Red Pine, or No. 1 Construction Eastern Spruce, kiln dried, free from sap, shakes, splits, knots and other defects.

.9 Blocking, Copings, Nailers, Curbs: NLGA 122c "Standard".

2.2 PLYWOOD

.1 All locations except backboards: Canadian Softwood Plywood to CSA 0151-04 Unsanded Sheathing Grade.

.2 Backboards: Canadian Softwood Plywood to CSA 0151-04, Sanded grade, solid two sides, fire retardant pressure treated.

.3 Plywood, select grade, unsanded conforming to CSA O121.

2.3 WOOD TREATMENT

.1 Preservative pressure treated components: to CSA-080 Series-97, arsenic free, using copper and azole.

.2 Surface cut, bore and trim components to sizes required as much as possible prior to pressure treatment.

2.4 FIRE TREATED WOOD AND PLYWOOD

.1 Flame Spread: Max 25 in 30 minutes in accordance with CAN/ULC-S102.

.2 Provide fire treated wood kiln dried to max 19% moisture content.

.3 Provide fire treated material bearing the stamp of the Canadian Wood Preservers Bureau and the ULC stamp.

.4 Pressure treated lumber and plywood with fire retardant chemicals to meet an UL FR-5 rating with a surface-burning characteristics rating of 25 or less for flamespread, fuel contributed and smoke developed. Ensure each piece of fire retardant treated lumber and plywood bears a ULC label or imprint attesting to this rating.

.5 Fire Resistant Barrier: Non-toxic, water based latex fire resistant coating with proprietary fibers, 68% solids, each container or package bearing ULC label, “Firefree Ff88" by International Fire Resistant Systems, Inc.; www.phoenixthermal.com

2.5 FASTENERS AND CONNECTING HARDWARE:

.1 Nails: to CSA B111-1974, except where otherwise shown hot dip galvanized steel for exterior work including components located in exterior walls and roofs; bright finish steel in all other locations. Unless otherwise indicated use common spiral flathead nails. Provide stainless steel fasteners for preservative pressure treated wood.

.2 Bolts, nuts, washers: ASTM A307, hot dip galvanized steel.

.3 Connectors, anchors, brackets, spikes: hot dip galvanized structural quality steel.

.4 Screws: zinc, cadmium or chrome plated..

.5 Fasteners in contact with preservative pressure treated wood shall be stainless steel.

2.6 WOOD TREATMENT

.1 Preservative pressure treated components: to CSA-080 Series-97, arsenic free, using copper and azole.

.2 Fire retardant pressure treated components: to CSA-080 Series-97 for maximum flame spread of 25 and labelled by ULC.

.3 Surface cut, bore and trim components to sizes required as much as possible prior to pressure treatment.

PART 3 – EXECUTION

3.1 EXAMINATION

.1 Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to the installation.

.2 Commencement of work implies acceptance of previously completed work.

3.2 INSTALLATION

.1 General:

.1 Properly frame together parts of the Work with members accurately cut to size, closely fitted, well spiked and erected in a substantial manner, plumb, level, square and true to dimension.

.2 Where other materials and components are to be applied directly over wood members recess heads of fastening devices below wood surfaces.

.3 Where work remains exposed to view, fasteners shall be uniformly and evenly spaced and neatly installed.

.4 Locate joints over bearing or supporting surfaces

.5 Provide running members full length wherever possible.

.6 Design for expansion and contraction of the materials.

.2 Nailers, Clocking, Copings, Grounds, Curbs

.1 Provide wood nailers, blocking, copings, strapping, bucks, grounds and other rough carpentry components to sizes and in locations required for satisfactory support of fabricated items and other work. Provide wood blocking at steel stud framed gypsum board partitions for support of wall mounted components.

.2 Unless otherwise indicated, provide minimum 38 mm thick materials. Grounds may be 21 mm thick material unless otherwise indicated.

.3 Provide built-up wood curbs for rooftop mounted equipment. Unless otherwise detailed, provide 90 mm thick curbs extending minimum 300 mm from top of roof membrane to top of curb.

.3 Anchors and Fasteners

.1 Provide rough hardware including nails, screws, bolts, washers, brackets, hangers, and fastening devices of all types.

.2 Unless otherwise indicated, attach wood members at maximum 600 mm o.c. as follows:

.1 To concrete and solid masonry with expansion or friction type anchor bolts.

.2 To hollow masonry with toggle bolts

.3 To heavy gauge metal with bolts.

.4 To light gauge metal with screws or bolts.

.5 To wood with nails, screws or bolts as required to ensure stability.

.3 Fasten wood copings to supporting masonry elements with 13 mm galvanized steel bolts minimum 300 mm long spaced maximum 600 mm o.c. Where width of coping plate exceeds 100 mm, stagger bolts off centre.

.4 Pressure Treated and Fire Rated Components

.1 Mix intumescent paint coating product to manufacturer's recommendations. Do not thin or strain. Apply primer and paint coating providing fire resistant barrier in accordance with manufacturer's recommendations to achieve requirements of authorities having jurisdiction. Apply at rate 3.2 m^2/l (125 sq ft/gal) to obtain dry film thickness of 0.25 mm (10 mils).

.2 Provide "fire treated" plywood.

.3 After cutting, drilling and fitting "treated" wood and plywood but before installation, apply 1 full coat of wood preservative to exposed surfaces, including ends of blocking, furring, nailers and rough carpentry.

.5 Backboards

.1 Where required by Division 26 00 00 and by telephone system supplier, provide minimum 19 mm thick fire retardant treated plywood backboards mounted on strapping if required.

.2 Size backboards to adequately accommodate equipment to be mounted. Secure boards with countersunk fasteners to supporting walls in manner which will carry equipment load without damaging wall.

3.3 SITE QUALITY CONTROL

.1 Replace damaged work which cannot be satisfactorily repaired to satisfaction to Consultant at no cost to Owner.

3.4 PROTECTION

.1 Protect rough carpentry from weather.

END OF SECTION

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

.1 Read and conform to:

.1 CCDC 2 - 2008, Stipulated Price Contract as amended in the Contract Documents.

.2 Division 1 requirements and documents referred to therein.

1.2 SUMMARY

.1 Section Includes: Provide Solid Surfacing work including but not limited to following:

.1 Sills.

1.3 RELATED SECTIONS

.1 Section 01 35 16 - Alteration Procedures;

.2 Section 09 91 00 – Painting.

1.4 QUALITY ASSURANCE

.1 Fabricator Qualifications: Certified by material manufacturer; with minimum five years experience fabricating solid surfacing and having suitable machinery and tools required for fabrication.

1.5 SUBMITTALS

.1 Submit detailed and complete product data for all products used

.2 Submit shop drawings, indicating all dimensions, component sizes, cutouts, fabrication details, attachment provisions and coordination requirements with adjacent work.

.3 Submit duplicate minimum 150 mm x 150 mm samples of each colour and finish surfacing required.

.4 Submit manufacturer's instructions for care and maintenance of solid surface materials including repair instructions for inclusion in maintenance manual.

1.5 TOLERANCES

.1 Variation in component size: ± 3mm.

.2 Location of openings: ± 3mm from indicated location.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Do not deliver components to site until existing conditions are suitable for installation. Store materials indoors in protected location or as otherwise required by manufacturer prior to installation.

1.7 WARRANTY

.1 Provide manufacturer's written warranty against defects in materials and workmanship under normal usage, for a period of 10 years from Substantial Performance. Warranty shall provide for all material and labour to repair or replace defective materials.

PART 2 – PRODUCTS

2.1 MATERIALS

.1 Manufacturer:

.1 Monck Public School: Formica, #407 All that Jazz.

.2 Archie Stouffer Public School: Formica, #742 Bianco Terrazo.

.3 Solid surfacing: Cast, non-porous filled material consisting of acrylic polymer, aluminum trihydrate filler and pigment, with through body colour (not coated, laminated or of composite construction), meeting ANSI Z124.3 or ANSI Z124.6, having physical and performance published by manufacturer:

.4 Adhesive: solid surfacing material manufacturer's standard one or two part adhesive kit, matching colour of solid surfacing.

.5 Sealant: solid surfacing material manufacturer's standard silicone, mould and mildew resistant, colour to match solid surfacing

PART 3 – EXECUTION

3.1 EXAMINATION

.1 Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to the installation.

.2 Commencement of work implies acceptance of previously completed work.

3.2 FABRICATION

.1 Provide solid surface material tops where indicated. Comply with material manufacturer's fabrication directions.

.2 Fabricate components in shop as recommended by material manufacturer to sizes, thicknesses and profiles indicated and with all exposed surfaces and edges fully finished.

.3 Unless otherwise indicated provide 13 mm thick horizontal surfaces and 6 mm thick vertical surfaces.

.4 Locate intermediate joints where shown; if not shown fabricate solid surfacing panels in largest practicable size to minimize number of joints. Provide fully welded joints, reinforced, as recommended by surfacing manufacturer. Joints shall be inconspicuous in appearance and free of voids. Ensure that joined pieces are a perfect colour match. Prepare butting edges with a double fluted router to ensure a perfect fit. Reinforce deck joints as recommended by material

manufacturer.

.5 Materials throughout project shall be from the same batch and shall bear labels with same batch number. Visually inspect materials to be used for adjacent pieces to assure acceptable colour match.

.6 Laminate multiple layers of material where required to achieve profile shown. Provide no-drip edge at vanity and counter tops with sinks.

.7 Exposed corners, unless otherwise shown, shall be bullnosed as directed by the Consultant.

.8 Make cutouts for work of other Sections. Reinforce cutouts and joints as recommended by material manufacturer.

.9 Finish component and cutout edges to a smooth uniform polished consistency.

3.3 INSTALLATION

.1 Install solid surfacing materials in accordance to manufacturer's recommendations.

.2 Install components plumb, level, square and securely supported, in accordance with reviewed shop drawings and manufacturer's directions. Apply sufficient quantity of adhesive to provide permanent and secure bond.

.3 Provide fully welded field joints, with joint appearance flush, tightfitting, level, neat and inconspicuous. Clamp or brace solid surfacing in position until adhesive has set. Reinforce field joints with solid surface strips to a minimum of 25 mm on either side of joint as recommended by surfacing manufacturer.

.4 Cut and finish component edges clean, with sharp returns and polished to match solid surfacing finish.

.5 Apply sealant at joints between solid surface components and adjacent work, between counter/vanity tops and backsplashes and where shown.

.6 If jobsite cutting, grinding, or polishing is required, use purpose made tools as recommended by manufacturer. Protect jobsite and surfaces against dust and water. Perform work away from installation site if possible.

.7 Allow gaps for expansion when installed between walls or other fixed conditions.

3.4 SITE QUALITY CONTROL

.1 Repair or replace damaged materials in a manner satisfactory to Consultant.

.2 Remove masking and excess adhesives and sealants. Clean exposed surfaces.

.3 Protect surfacing from damage of any kind, until Substantial Performance.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

.1 Section Includes: Provide building insulation including but not limited to following:

.1 Board, batt and loose insulation throughout building, except as specified under other Sections. This Section establishes insulation and accessory Products and minimum performance criteria which apply to board, batt and loose insulation types used throughout this Project. Read and become familiar with insulation requirements of all Sections;

.2 Air sealing to supplement and provide continuity of main and primary air/vapour barrier assembly including sealing and/or filling of perimeter of door and window openings, crevices, gaps, cracks in walls, roof/wall connections, mechanical and electrical penetrations in walls, floors, roofs, curtain wall mullions, beams, columns enclosures and other similar locations with polyurethane foam consisting of a single mix of chemical in pressurized container formulated to cure when exposed to moisture present in air to provide and maintain air/vapour barrier integrity and impermeable barrier to air infiltration or loss.

1.2 RELATED SECTIONS

.1 Section 01 35 16 - Alteration Procedures;

.2 Section 04 20 00 – Masonry Units;

.3 Section 07 25 00 – Air Barrier;

.4 Section 07 46 19 – Metal Siding System;

.5 Section 07 92 00 - Sealants, except where specifically stated otherwise herein.

.6 Insulation for mechanical work.

1.3 REFERENCE STANDARDS

.1 Rain Screen Principle: A theory governing the design of a building enclosure in such a way as to prevent water penetration due to rain; in other words, a scientific approach to eliminating water leakage.

.2 ASTM C165-07(12) - Standard Test Method for Measuring Compressive Properties of Thermal Insulations

.3 ASTM C553-11 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications

.4 ASTM C578-12a - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation

.5 ASTM C612-10 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation

.6	ASTM C692-08e1	- Standard Test Method for Evaluating the Influence of Thermal Insulations on External Stress Corrosion Cracking Tendency of Austenitic Stainless Steel
.7	ASTM C795-08	- Standard Specification for Thermal Insulation for Use in contact with Austenitic Stainless Steel
.8	ASTM C871-11e1	- Standard Test Methods for Chemical Analysis of Thermal Insulation Materials for Leachable Chloride, Fluoride, Silicate, and Sodium Ions
.9	ASTM C1303/C1303M-12	- Standard Test Method for Predicting Long-Term Thermal Resistance of Closed Cell Foam Insulation
.10	ASTM C1338-08	- Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings
.11	ASTM D1621-10	- Standard Test Method for Compressive Properties of Rigid Cellular Plastics
.12	ASTM D2842-12	- Standard Test Method for Water Absorption of Rigid Cellular Plastics
.13	ASTM E84-12b	- Standard Test Method for Surface Burning Characteristics of Building Materials
.14	ASTM E96/E96M-10	- Standard Test Methods for Water Vapor Transmission of Materials
.15	ASTM E136-12	- Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C
.16	ASTM E283-04(12)	- Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
.17	CAN/CGSB-51.34-M86	- Vapor Barrier, Polyethylene Sheet for Use in Building Construction
.18	CGSB 71-GP-24M	- Adhesive, Flexible, for Bonding Cellular Polystyrene Insulation
.19	CSA A440-00(05)	- Windows
.20	CAN/ULC-S102-07	- Test Method of Surface Burning Characteristics of Building Materials and Assemblies
.21	CAN/ULC-S114-05	- Standard Method of Test for Determination of Non Combustibility in Building Materials
.22	CAN/ULC-S701-11	- Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering
.23	CAN/ULC-S702-09	- Standard for Mineral Fibre Thermal Insulation for Buildings

.24	CAN/ULC-S705.1-01	- Standard for Thermal Insulation Spray Applied Rigid Polyurethane Foam, Medium Density, Material Specification
.25	CAN/ULC-S710.1-11	- Standard for Thermal Insulation - Bead Applied One-Component Polyurethane Air Sealant Foam, Part 1: Material Specification
.26	CAN/ULC-S710.2-11	- Standard for Thermal Insulation - Bead Applied One-Component Polyurethane Air Sealant Foam, Part 2: Application
.27	CAN/ULC-S711.1-11	- Standard for Thermal Insulation - Bead Applied Two-Component Polyurethane Air Sealant Foam, Part 1: Material Specification
.28	CAN/ULC-S711.2-11	- Standard for Thermal Insulation - Bead Applied Two-Component Polyurethane Air Sealant Foam, Part 2: Application
.29	CAN/ULC-S770-09	- Standard Test Method for Determination of Long-Term Thermal Resistance of Closed Cell Thermal Insulating Foams

1.4 PERFORMANCE CRITERIA

.1 Exterior envelope is based on "Rain Screen Principle" by NRCC. This requires construction behind cladding act as an air/vapour barrier to prevent passage of moisture laden air and diffusion of water vapour. To ensure continuity of air/vapour barrier within construction specified herein and with adjacent barrier construction is part of responsibility of this Section.

.2 Select appropriate products from list of materials on basis of their maintaining thermal value of envelope, total compatibility when incorporated into finished system while ensuring substrate conditions as well as their ability to adhere components permanently, where applicable in rigid manner and maintain flexibility where required in finished work.

.3 Ensure insulation materials and their facings do not support fungal growth when tested in accordance with ASTM C1338.

1.5 QUALITY ASSURANCE

.1 Provide work of this Section executed by competent installers with minimum of 5 years experience in application of Products, systems and assemblies specified and with approval and training of the Product manufacturers.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Deliver materials to site in original wrappings with labels intact and store in areas directed by Consultant.

.2 Store insulation on raised platforms and protect with waterproof covers. Prevent exposure of insulation to sun.

.3 Store materials inside buildings for 24 hours prior to installation.

1.7 PROTECTION

.1 Temporarily protect installed insulation from damage and action of the elements until it is permanently concealed or protected.

.2 Protect polystyrene insulation from sunlight.

1.8 SITE CONDITIONS

.1 Maintain surface and ambient temperatures during application and curing of adhesive at temperature recommended by manufacturer of type of adhesive used.

PART 2 – PRODUCTS

2.1 MATERIALS

.1 Products of the following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications:

.1 Dow Chemical Canada Inc.; www.dow.com

.2 Owens Corning Canada LP; www.insulation.owenscorning.ca

.3 Roxul Inc.; www.roxul.com

.2 Products:

.1 Insulation Type 1: At building foundations, in contact with soil (perimeter insulation); below slabs on grade; Extruded, expanded polystyrene with shiplapped edges: CAN/ULC-S701-05: Styrofoam SM by Dow, or Celfort 300 by Owens Corning.

.2 Insulation Type 2: At cavity walls and behind metal cladding; Extruded, expanded polystyrene: CAN/ULC-S701-05, Cavitymate by Dow or Celfort 200 by Owens Corning.

.3 Insulation Type 3: Where shown and where rigid board insulation is required but no particular type is indicated; Rigid fibrous insulation, glass fibre or mineral wool board: CAN/ULC-S-702-97; density of 48 kg/m^3; minimum RSI of 0.73 per 25 mm thickness: AF530 by Owens Corning or OFI 48 by Ottawa Fibre Inc. or RXL 40 by Roxul Inc.

.4 Insulation Type 4: Where shown; Mineral fibre, batt or roll type: CAN/ULC-S702-1997.

.5 Insulation Type 5: At perimeter of windows, curtainwalls, and where shown; Foamed in place urethane: two-component polyurethane: froth/spray kit, ULC Class 1 (flame spread 25 or less): Froth-Pak by Insta-Foam Products, Inc. or Enerfoam by Abisko or Zerodraft Air Barrier Sealant by Building Resources Inc. or equivalent product by other manufacturer approved by Consultant.

.6 Adhesive for polystyrene insulation: Bakor 230-21; adhesive for securement of insulation to waterproofing/dampproofing membrane shall be compatible with such membranes.

.7 Impaling clips: zinc coated Stic-Klip with perforated base and cadmium plated speed washer by Eckel Industries of Canada Ltd., or Insul-Anchors "Spindle" by Continental Studwelding Ltd.; adhesive and mechanical fasteners as recommended by clip manufacturer.

.8 Cavity insulation securement: supplied by Section 04 20 00 Masonry Units.

.9 Mechanical securement system:

.1 Metal securement members: 41 x 13 x 0.5 mm galvanized channels: Insulok by Reach Plastics; or 48 x 13 x 0.5 mm galvanized tee: Retainer Tee by Bailey.

.2 Concrete/masonry anchors: Tapcon anchors of length to provide minimum 25 mm embedment of anchor.

.3 Fasteners to metal framing: self-drilling, self-tapping plated screws.

.10 Vapour retarder tape: self-adhesive, minimum 50 mm wide aluminum foil tape.

.11 Cavity Compartment seals, firestops: Sheet metal; minimum 0.9 mm thick sheet steel formed to profiles required, hot dip galvanized ASTM A653, zinc coating designation Z275.

PART 3 – EXECUTION

3.1 EXAMINATION

.1 Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to the installation.

.2 Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2 PREPARATION

.1 Surface Preparation: Ensure surfaces to receive adhesive or insulation are dry, firm, straight and free from loose material, projections, ice, frost, slick, grease, oil or other matter detrimental to bond of adhesive or uniform bedding of insulation.

3.3 INSTALLATION

.1 Provide under this Section all thermal insulation required except where it is specified to be part of another Section.

.2 Provide continuous uniform thermal insulation over insulated areas. Use largest practicable insulation board size, to minimize number of joints.

.3 Where insulation is interrupted by construction elements, neatly fit insulation around such elements and pack spaces around elements with same insulation.

.4 Moderately butt insulation boards against each other so that there are no gaps

.5 Stagger joints at multiple layer installations.

.6 Type 1 Insulation:

.1 Provide perimeter insulation at inside or outside of foundation walls, as indicated, to minimum 600 mm below finished grade or lower where shown. Unless otherwise indicated provide 50 mm thick insulation bonded to substrate with spot adhesive application.

.2 Secure insulation boards mechanically with impale clips or other method approved by Consultant. Butter all edges of insulation boards with adhesive.

.3 Provide rigid board insulation below slabs on grade where indicated. Place insulation board on prepared, level subgrade, with joints tightly butted. Unless noted, use 50 mm thick insulation.

.7 Type 2 Insulation:

.1 Place insulation against air barrier, tightly fitted at joints, at perimeter of insulated areas, around ties and at other penetrations; leave no gaps or voids.

.2 Secure insulation boards mechanically with impale clips or other method approved by Consultant. Butter all edges of insulation boards with adhesive.

.3 Provide continuous 12 mm beads of Type 2 insulation adhesive applied in serpentine pattern, side to side, at back of insulation board; space beads at 150 mm o.c. Press board against air barrier and mechanically secure at each cavity wall tie, with insulation securement.

.3 Near wall corners, at perimeter of openings, and at other locations where cavity wall ties are not available in required location, use tapcon anchors and plastic washers for mechanical securement of insulation boards; ensure that fastener is within 150 mm of corner or jamb.

.4 Do not install insulation until air barrier and membrane flashings are complete and have been approved by Consultant.

.5 Provide vertical and horizontal cavity compartment seals spaced in accordance with NBRC recommendations. Where depth of cavity exceeds 25 mm install fire stops in accordance with OBC requirements.

.8 Type 3 Insulation:

.1 Secure insulation board to supporting work with adhesive bonded or mechanically fastened impale clips spaced at maximum 500 mm in each direction, unless otherwise indicated.

.2 Apply vapour retarder tape at board joints where foil faced board is required.

.9 Type 4 Insulation:

.1 Completely fill spaces with insulation, leaving no gaps or voids. Do not pack insulation tighter than manufactured density of materials.

.10 Type 5 Insulation:

.1 Apply insulation with suitable equipment, in accordance with manufacturer's directions.

.2 Fill designated spaces completely, leaving no voids or gaps; trim excess material.

.11 Mechanical Securement:

.1 Space securement members at maximum 600 mm o.c. Provide additional members at openings, penetrations, corners, changes of directions and terminations to ensure firm securement and adequate support for gypsum board in all locations.

.2 Fasten members to supporting elements maximum 150 mm from end of furring members and at maximum 600 mm at walls and at maximum 400 mm o.c. at horizontal applications.

.12 Vapour Barrier:

.1 Staple vapour barrier to inside face of insulation. Ensure continuous vapour barrier envelope of entire building.

.2 Staple vapour barrier securely in place at 400 oc both directions.

.3 Lap joints 150 mm.

.4 Tape joints with polyethylene tape.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

.1 Section Includes: Provide miscellaneous air/vapour barriers including but not limited to following:

.1 Air/vapour barriers required to maintain air/vapour integrity of building envelope not shown or identified on Drawings or specified under another Section;

.2 Coordination of work of this Section with other trades working on the building envelope.

1.2 RELATED SECTIONS

.1 Section 01 35 16 - Alteration Procedures;

.2 Section 04 20 00 - Masonry Units;

.3 Section 07 21 00 – Insulation;

.4 Section 07 92 00 – Sealants;

.5 Section 08 41 13 - Aluminum Framed Entrances and Storefronts ;

.6 Section 08 51 13 – Aluminum Windows;

1.3 REFERENCE STANDARDS

.1	ASTM E96/E96M-10	- Standard Test Methods for Water Vapor Transmission of Materials
.2	ASTM E2178-11	- Standard Test Method for Air Permeance of Building Materials
.3	CGSB 37-GP-9Ma	- Primer, Asphalt, Unfilled, for Asphalt Roofing, Dampproofing and Waterproofing
.4	CAN/CGSB-51.33-M89	- Vapour Barrier Sheet, Excluding Polyethylene for Use in Building Construction

1.4 ADMINISTRATIVE REQUIREMENTS

.1 Review Contract Documents for work included under this trade and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials, materials to be used, installation of materials, sequence and quality control, Project staffing, restrictions on areas of work and other matters affecting construction, to permit compliance with intent of work of this Section.

1.5 SUBMITTALS

.1 Submit prior to ordering materials proposal in writing, indicating which membrane system is to be used. Include manufacturer's documentation verifying suitability of application for expected application conditions.

1.6 QUALITY ASSURANCE

.1 Provide work of this Section executed by competent installers with minimum of 5 years experience in application of Products, systems and assemblies specified and with approval and training of the Product manufacturers.

.2 Owner may obtain the services of an independent inspection agency for inspection and testing of work provided under this Section, as directed by Consultant.

.3 Refer to Section 01 35 16 Alteration Procedures Paragraph 3.3 Progress Photographic Documentation.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Store materials in weathertight enclosure raised off the ground in an upright position so they are protected from sunlight, weather exposure, moisture, deterioration, tearing, puncturing and other damage.

.2 Comply with manufacturer's printed recommendations for handling of materials.

1.8 ENVIRONMENTAL REQUIREMENTS

.1 Do not perform glazing when temperature is less than 7 deg C or sash or frames are wet, damp or frosted.

1.9 WARRANTY

.1 Manufacturer Warranty: Warrant work of this Section for period of 3 years against defects and/or deficiencies in accordance with General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of Consultant and at no expense to Owner. Defects include but are not limited to; material remaining air and water tight.

PART 2 – PRODUCTS

2.1 MATERIALS

.1 Self-Adhering Vapour Permeable Air Barrier: CAN/CGSB 51.32 and ASTM E96, a tri-laminated woven high density polyethylene to surface film with silcone release film, 0.6 mm thick, a maximum perm rating of 2875 ng/(Pa•s•sq m) , and maximum air leakage rate of 0.0025 L/s•m2 at 75 Pa. Width minimum 450mm.

.1 Acceptable Products and Manufacturers:

.1 Blueskin VP160 by Bakor Inc.; www.bakor.com

.2 Sopraseal Stick VP by Soprema; www.soprema.ca

.3 AirOutshield SA 280 by SRP Canada Inc; www.srpcanada.ca

.4 ExoAir 110 by Tremco; www.tremcosealants.com

.5 Sealtight Airshield by W.R. Meadows; www.wrmeadows.com

.2 Foam-In-Place Sealant (for use at window frames, door frames or penetrations in exterior assembly): to CAN/ULCS710.1, low expansion, one component, semi-flexible soft, spray-applied polyurethane foam insulation, designed for low expansion around windows and doors.

.1 Acceptable Products and Manufacturers:

.1 Zerodraft Foam Sealant, manufactured by Canam Building Envelope Specialists.

.2 Great Stuff Pro Window & Door Insulating Foam Sealant, manufactured by Dow Chemical Canada

.3 IPF Green, manufactured by Rivenco Industries Ltd.

.3 Membrane and Flashing Sealant: ASTM C920, Grade NS, Class 35, Use NT, M, O, A, and I; single component, capable of continuous water immersion, non-sagging type; Use Low VOC products wherever possible.

.1 Product: as recommended by membrane manufacturer.

.4 Primer: as recommended by membrane manufacturer.

.5 Adhesives, mastics, joint backing: as recommended by membrane manufacturer.

.6 Metal backing: cold rolled sheet steel, hot dip galvanized to ASTM A653, zinc coating designation Z275; unless otherwise shown, 0.9 mm thick.

PART 3 – EXECUTION

3.1 EXAMINATION

.1 Notify Consultant in writing of any conditions which would be detrimental to the installation.

.2 Examine surface to receive membranes to assure they are smooth, dry and free from conditions that will adversely affect execution, permanence, or quality of work.

.3 For window and storefront replacements at existing buildings, ensure all previous membrane and debris is removed from opening prior to commencing new work.

.4 Commencement of work implies acceptance of previously completed work.

3.2 INSTALLATION

.1 Install membrane system in accordance with manufacturer's installation instructions.

.2 Apply membrane to exterior face of interior wythe of cavity walls and, if indicated, in other locations.

.3 Completely cover substrates. Start at low point and proceed up the wall, overlapping subsequent sheets minimum 50 mm in the direction of water flow. Lap end joints minimum 100 mm.

.4 Apply primer with roller, brush or spray equipment. Do not apply more primer than that which can be covered, on the same working day, with air barrier membrane. Recoat primed areas which are not covered with membrane the same day.

.5 Position membrane for alignment, with protective film in place. Roll membrane back, remove film and press membrane in place.

.6 Roll completed membrane, including seams, with suitable roller, to ensure full contact with substrate.

.7 At masonry wall ties and at other penetrations through sheet type membrane, accurately cut, fit and seal membrane around penetrating component.

.8 At wall openings return membrane into rough openings. Install membrane to ensure that corners of openings are sealed.

.9 At large joint gaps between dissimilar substrate materials slightly loop sheet membrane to accommodate expected movement; for liquid applied membranes in similar situations provide and incorporate into the air barrier system an approved sheet material and install accordingly.

.10 Leave sufficient amount of excess membrane material over the top of parapet walls and around the perimeter of openings for tie-in by others.

.11 Cut membrane neatly around penetrations. Seal with air/vapour barrier sealant or mastic. Seal around perimeter or dissimilar materials to ensure complete and continuous seal.

3.3 SITE QUALITY CONTROL

.1 Membrane manufacturer shall provide periodic site inspection and technical assistance to ensure work is properly executed.

.2 Upon completion of membrane installation membrane manufacturer shall issue a report verifying that membrane installation is complete and satisfactory.

.3 Prior to allowing membrane to be covered with other work, document installation as per Section 01 35 16 Alteration Procedures Paragraph 3.3 Progress Photographic Documentation and issue to consultant for review.

END OF SECTION

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

.1 Read and conform to:

.1 CCDC 2 - 2008, Stipulated Price Contract as amended in the Contract Documents.

.2 Division 1 requirements and documents referred to therein.

1.2 SUMMARY

.1 Section Includes: Provide metal flashings and trim including but not limited to following:

.1 Break forming and installation of pre-painted metal coping flashings;

.2 Sheet metal flashings at windows;

.3 Flashing at parapets;

.4 Caulking.

1.3 RELATED SECTIONS

.1 Section 01 35 16 - Alteration Procedures;

.2 Section 04 20 00- Masonry;

.3 Section 06 10 00- Rough Carpentry;

.4 Section 07 92 00 - Sealants, except where specifically stated otherwise herein.

1.4 REFERENCE STANDARDS

.1	ASTM A167-99(04)	- Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
.2	ASTM A653/A653M-08	- Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
.3	ASTM B32-08	- Specification for Solder Metal
.4	ASTM B370-03	- Specification for Copper Sheet and Strip for Building Construction
.5	ASTM C920-08	- Standard Specification for Elastomeric Joint Sealants
.6	CSA B111-74(03)	- Wire Nails, Splices and Staples

1.5 ADMINISTRATIVE REQUIREMENTS

.1 Prior to commencing work for this Section, arrange for Contractor, installer and manufacturer's representative to meet on site and review conditions under which work is to be performed, installation procedures and inspect surfaces to receive this work.

1.6 SUBMITTALS

.1 Submit minimum 300 mm long samples of typical flashings showing profile, method of locking and anchoring and corner condition, fabricated from materials specified

1.7 QUALITY ASSURANCE

.1 Ensure work of this Section is installed by a company specializing in sheet metal flashing work with 5 years documented experience and a member in good standing of CRCA.

.2 Conform to requirements contained in CRCA manual.

1.8 PERFORMANCE REQUIREMENTS

.1 Appearance: neatly and evenly lay out and install components. Exposed fastening devices not permitted.

.2 Effects of wind: resist positive and negative wind pressures without causing detrimental effects.

.3 Water control: prevent passage of water.

.4 Thermal movement: accommodate expansion and contraction of component parts without causing buckling, failure of joints, undue stress on fasteners and other detrimental effects.

.5 Compatibility: components shall be compatible with dissimilar metals and materials with which they are in contact or fastened to so as to prevent corrosion, staining and other detrimental effects. If required, treat or separate contact surfaces with inert and non-staining insulation material to achieve compatibility.

1.9 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials to prevent damage, distortion and corrosion.

.2 Stockpile panels tilted to provide water run-off, free from ground contact on firm, level, non-staining supports extending full width of sheet and spaced not more than 450 mm (36") apart. Where possible, pile individual sheets or panel length and types separately. Cover components with opaque polyethylene sheet to protect from direct sunlight and moisture penetration. Vent to allow air movement.

.3 Handle and store metal materials at the job site in such a manner to prevent damage to other materials, to existing building or property.

1.10 WARRANTY

.1 At no cost to Owner, remedy any defects in work, including work of this and other Sections, due to faults in materials and/or workmanship provided under this Section of Specifications appearing within a period of 2 years from date of Substantial Performance.

PART 2 – PRODUCTS

2.1 MATERIALS

.1 Aluminum sheet: AA1100 or 3000 Series, anodizing quality, plain aluminum sheet; clear anodized AA M12 C22 A31.

.2 Pre-painted Sheet Steel: Supply 0.607 mm (24 ga) minimum thickness, commercial quality, Type A to ASTM A653/A653M with Z275 (G90) zinc coating designation, pre-painted with “Stelcolour Series 8000” by Stelco Inc. or “Pre-Coat System No. 8000 Series” by Dofasco Inc., finish and colour to match existing Metal Siding.

.3 Cleats and edge strips: non-corrosive metal compatible with sheet metal, thickness as required to provide rigid support and positive securement for metal flashings.

.4 Mechanical fastening devices: non-corrosive metal compatible with sheet metal.

.5 Sealant: one part low modulus silicone to ASTM C920. Consultant will select colour of sealant exposed in finished work

.6 Asphaltic paint: Alkali resistant asphalt based enamel.

2.2 FABRICATION

.1 Shop fabricate copings, parapet vertical flashings, flashings, curb counter flashing starter clips, strips and miscellaneous flashings in accordance with CRCA recommendations and to detail indicated.

.2 Unless otherwise indicated provide minimum sheet metal thicknesses as follows:

.1 Aluminum flashings: 0.8 mm (20 ga B & S).

.2 Aluminum locking strips: 1 mm (18 ga B & S).

.3 Steel flashings: 0.6 mm (24 ga).

.4 Steel locking strips: 0.9 mm (20 ga).

.3 Provide components free from distortion, waves, twists, buckles and other defects detrimental to performance and appearance. Form sections square, true and accurate to size.

.4 Form pieces in longest practical lengths. Make joints to permit thermal movement. Make flashing surfaces free from building, warp, wave, dents, oil canning or other defects.

.5 Double back exposed edges at least 12 mm.

.6 Seams: space seams uniformly at maximum 2.5 m o.c.. Unless otherwise indicated, use flat locked seams, lapped 25 mm. Make horizontal seams in directions of water flow. Mitre and seal corners.

.7 Form material with standing seam.

.8 Fabricate corners from 1 piece with minimum 450 mm long legs; seam for rigidity, seal with sealant. Make corners square and surfaces straight and in true planes.

.9 Fabricate vertical faces with bottom edge formed outward 12 mm and hemmed to form drip.

.10 Fabricate flashings to allow toe to extend 50 mm over roofing. Return and brake edges. Form sheet metal pans 150 mm nominal size, with 75 mm upstand and 100 mm flanges. Fill pans watertight with plastic cement.

.11 Unless otherwise indicated, counter flashings shall completely cover base flashings.

.12 Furnish everything necessary for complete metal flashing installation, including clips and fastening devices.

.13 Back paint metal flashings with asphaltic paint, 0.4mm thickness.

PART 3 – EXECUTION

3.1 EXAMINATION

.1 Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to the installation.

.2 Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, cant strips and reglets in place and nailing strips located.

.3 Verify membrane termination and base flashings are in place, sealed and secure.

.4 Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2 INSTALLATION

.1 Conform to drawing details included in CRCA manuals.

.2 Provide metal flashings at roof perimeter, curbs, copings, penetrations, at junctions of roof to walls, at expansion joints and where shown. Unless otherwise shown provide aluminum flashings.

.3 Protect all membrane flashings with metal counter flashings.

.4 Clean surfaces to be covered with metal flashings of dirt and other foreign matter. Drive projecting nails flush with substrate. Do not apply metal flashings over substrates likely to cause rupture.

.5 Provide underlay of resin sized paper under metal flashings installed over masonry, concrete or wood. Lay underlay dry as sheet metal work is installed. Secure in place and lap joints 100 mm.

.6 Install copings, curb coverings, starter strips, (back-up plates), pipe collars and other flashings to details shown on Drawings.

.7 Exposed fastenings will not be permitted in the Work.

.8 Install starter strips where indicated or required to present a true, non-waving, leading edge. Anchor to back-up to provide rigid, secure installation

.9 Install surface mounted reglets true to lines and levels. Seal top of reglets with sealant.

.10 Insert flashings into reglets to form tight fit. Secure in place with plastic wedges. Seal flashings into reglets with sealant.

.11 Where vertical portion of metal flashing exceeds 300 mm provide vertical standing seams at 600 mm o.c.

.12 Apply plastic cement compound between metal flashings and felt flashings.

.13 Fit flashings tight in place. Make corners square, surfaces true and straight in planes and lines accurate to profiles.

.14 Provide and maintain continuity of air/vapour barrier to adjacent dissimilar materials. Seal to form weathertight seal between flashing and adjoining surfaces and between flashing and other work.

3.3 SITE QUALITY CONTROL

.1 Imperfections in metal flashing work such as holes, dents, creases, or oil-canning will not be accepted. Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of Consultant at no cost to Owner.

3.4 PROTECTION

.1 Protect work of this Section from damage.

.2 Protect reglets from ice formation during freezing weather.

END OF SECTION

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

.1 Read and conform to:

.1 CCDC 2 - 2008, Stipulated Price Contract as amended in the Contract Documents.

.2 Division 1 requirements and documents referred to therein.

1.2 SUMMARY

.1 Section Includes: Provide firestopping and smoke seals including but not limited to following:

.1 Firestopping and smoke seals in accordance with Code requirements, at openings and around penetrations, at un-penetrated openings, at projecting and recessed items and at openings and joints within fire separations and assemblies having fire resistance rating, excluding those inside sealed mechanical and electrical assemblies (e.g. inside ducts, dampers, bus ducts, etc.).

.2 Firestopping and smoke seals in accordance with Code requirements, at openings and spaces at perimeter edge conditions, excluding those inside sealed mechanical and electrical assemblies (e.g. inside ducts, dampers, bus ducts, etc.)

.3 Firestopping and smoke seals in and around fire separations, including spaces around mechanical and electrical penetrations, at tops of fire walls, between slab edges and other gaps and penetrations at fire assemblies.

.4 Ensure Divisions 21, 22, 23, 26, 27 and 28 respectively are responsible for firestopping and smoke seals within mechanical (i.e. inside ducts, dampers) and electrical assemblies (i.e. inside electrical bus ducts). Ensure firestopping and smoke seals around outside of such mechanical and electrical assemblies where they penetrate fire-rated separations are part of work of this Section.

1.3 RELATED SECTIONS

.1 Section 01 35 16 - Alteration Procedures;

.2 Section 04 20 00 – Masonry Units;

.3 Section 07 92 00 - Sealants;

.4 Section 09 21 16 – Gypsum Board.

1.4 REFERENCES

.1	CAN/ULC-S101-07	- Standard Methods of Fire Endurance Tests of Building Construction and Materials
.2	CAN/ULC-S102-07	- Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies
.3	ULC-S115-05	- Standard Method of Fire Tests of Firestop Systems

.4 ULC Guide No. 40 U19 - Firestop Systems

.5 ULC Guide No. 40 U19.13 - Firestop Systems Components

1.5 ADMINISTRATIVE REQUIREMENTS

.1 Prior to commencement of sealing, arrange for Product manufacturer's knowledgeable representative to meet and discuss installation procedures and unique conditions at the Place of the Work, inspect substrate surfaces and recommend solutions to accommodate adverse conditions, periodically visit and verify installations before being concealed and report unsatisfactory conditions to Contractor, attend final inspection and to submit written certification that Products, systems and assemblies have been installed in accordance with manufacturer's requirements.

.2 Coordinate with trades involved and advise dates where work will take place throughout various areas of work.

1.6 SUBMITTALS

.1 Prior to start of work submit digital list of proposed firestopping and smoke seal materials together with suitable documentation to verify that specified requirements will be met. Provide the following information as applicable to this Project:

.1 ULC and/or cUL assembly number certification and material safety data sheets;

.2 Required temperature rise and flame rating;

.3 Hose stream rating (where applicable);

.4 Thickness;

.5 proposed installation methods;

.6 Material of firestopping and smoke seals, primers, reinforcements, damming materials, reinforcements and anchorages/fastenings;

.7 Size of Opening;

.8 Adjacent materials.

.2 Submit manufacturer's verification that installed firestopping and smoke seal materials comply with specified requirements.

.3 Closeout Submittals: Provide maintenance data for materials and prefabricated devices, providing descriptions sufficient for identification on site.

1.7 MOCK UPS

.1 At locations directed by Consultant prepare mock-ups of each type of firestopping/smoke seal required.

.2 Provide linear firestopping/smoke seal mock-ups minimum 1 m long. Provide mock-up of each type or penetration firestopping.

.3 Mock-ups may be incorporated into finished work if approved by Consultant.

1.8 QUALITY ASSURANCE

.1 Qualifications:

.1 Provide work of this Section executed by competent installers experienced, trained, licensed and approved, by material or system manufacturer for application of materials and systems being used having minimum 5 years experience in application of Products, systems and assemblies specified. Ensure firestopping systems conform to requirements of ULC-S115 tested assemblies that provide fire rating as shown.

1.9 DELIVERY, STORAGE AND HANDLING

.1 Delivery:

.1 Deliver materials to site in manufacturer's sealed and labelled containers. Materials are subject to Consultant's inspection.

.2 Storage:

.1 Store materials inside building for 24 hours prior to use; store in area designated by Consultant. Protect from damage and environmental conditions detrimental to material.

.2 Comply with manufacturer's temperature, relative humidity and substrate moisture content for storage, mixing, application and curing of Products.

1.10 SITE CONDITIONS

.1 Comply with manufacturer's recommended requirements for temperature, relative humidity, moisture content and presence of any sealer or release agents on substrate during application and curing of materials. Ensure surfaces are dry and frost free.

.2 Maintain minimum temperature of 5 deg C (40 deg F) for minimum period of 1 week before application, during application and until application is fully cured.

.3 Ventilate areas in which firestopping is being applied. Protect water-soluble material from wetting until fully cured.

1.11 WARRANTY

.1 Warrant work of this Section against defects and deficiencies for period of 5 years in accordance with General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of Consultant and at no additional expense to Owner. Defects include but are not limited to cracking, breakdown of bond, failure to stay in place or bleeding

PART 2 – PRODUCTS

2.1 MANFACTURERS

.1 Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications:

.1 A/D Fire Protection Systems Inc.; www.adfire.com

.2 GE Canada, Inc.; www.gesilicones.com

.3 Electrical Products Division/3M; www.3m.com

.4 Grace Construction Products; www.graceconstruction.com

.5 Instant Firestop Inc.

.6 Hilti (Canada) Corporation; www.ca.hilti.com

.7 Johns Manville, Fire Protection Systems; www.jm.com

.8 Tremco Canada; www.tremcosealants.com

2.2 SYSTEMS

.1 Firestopping and smoke seal systems shall be:

.1 Tested in accordance with CAN/ULC-S115-05.

.2 Listed by ULC or other fire testing agency approved by jurisdictional authorities.

.3 Capable of providing fire resistance rating not less than that required by surrounding assembly.

.4 Comply with F, T and H rating required.

.2 Firestopping and smoke seals for vertical fire separations shall meet ULC designation PJ, JF and HW as required for respective location.

2.3 MATERIALS

.1 Firestopping and smoke seal materials:

.1 Provide materials which are:

.1 PCB and asbestos-free;

.2 An easily identifiable colour, except where used in exposed location;

.3 Suitable for intended application;

.4 Compatible with adjacent materials.

.2 Provide elastomeric type materials at locations requiring future re-entry (such as cable) and at penetrations for ducts and other mechanical items requiring sound and vibration control.

.3 Sealant type materials shall be non-sagging for vertical surfaces and self-levelling for level floors.

.2 Primer: as recommended by firestopping material manufacturer for specific substrate and use.

.3 Damming and back-up materials, support and anchoring devices: non-combustible, in accordance with tested assembly and as recommended by manufacturer.

2.4 MIXING

.1 Mix materials at correct temperature and in accordance with manufacturer's directions.

PART 3 – EXECUTION

3.1 EXAMINATION

.1 Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to the installation.

.2 Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2 PREPERATION

.1 Remove combustible material and loose material detrimental to bond from edges of penetration. Clean, prime or otherwise prepare substrate material to manufacturer's recommendation.

.2 Do not apply firestop material to surfaces previously painted or treated with sealer, curing compound, water repellent to other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required..

.3 Verify openings, dimensions and surfaces conform to fire and smoke seal assembly.

.4 Protect adjacent surfaces from marring or damage.

.5 Prime surfaces in accordance with manufacturer's directions.

.6 Remove insulation from area of insulated pipe and duct where such pipes or ducts penetrate fire separation unless ULC certified assembly permits such insulation to remain within assembly..

.7 Provide temporary damming, forming, packing and bracing materials necessary to contain firestopping. Upon completion, remove forming and damming materials not required to remain as part of system.

.8 Examine sizes, anticipated movement and conditions of opening and penetration to establish correct system and depth of backup materials and of firestopping material required.

3.3 INSTALLATION

.1 Do not apply firestop material to surfaces previously painted or treated with sealer, curing compound, water repellent to other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required

.2 Seal penetrations through and gaps in fire rated separations in accordance with ULC listing for tested system selected.

.3 Apply firestopping materials in accordance with manufacturer's instructions and tested designs. Apply with sufficient pressure to properly fill and seal openings to ensure continuity and integrity of fire separation. Tool or trowel exposed surfaces as required.

.4 Remove excess compound promptly as work progresses and upon completion.

.5 Unless otherwise indicated or permitted by Consultant recess firestopping and smoke seals in exposed locations to permit installation of decorative sealant by Section 07 92 00.

.6 Do not cover materials until full cure has taken place.

.7 Provide firestopping and smoke seal systems at following locations, without being limited to:

.1 At all openings, voids and penetrations through all floor slabs except openings within shafts constructed with a fire resistance rating and slabs on granular fill.

.2 At all openings, voids, control joints and penetrations through fire rated masonry, concrete and gypsum board walls, partitions and shaft walls.

.3 At all openings, voids and penetrations installed for future use through fire rated masonry, concrete and gypsum board walls, partitions and shaft walls.

.4 Between perimeter of all floor and roof slabs and exterior wall construction.

.5 Between curtainwall and adjacent assemblies.

.6 Between tops of all fire rated walls and partitions and underside of floor or roof slabs.

.7 At building expansion joints.

.8 Curing: cure materials in accordance with manufacturer's directions.

3.4 SITE QUALITY CONTROL

.1 Upon Consultant's request, manufacturer's representative shall inspect work of this Section and confirm in writing that it complies with specified requirements.

.2 Request Consultant's review of installed systems before they are covered by other work.

.3 Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of Consultant at no cost to Owner

.4 Owner may arrange for inspection and testing of work of this Section by independent agency as directed by Consultant.

.5 Where work or materials fail to meet requirements as indicated by test results, pay costs of additional inspection and testing required for new replacement work or materials.

3.5 CLEANING

.1 Remove excess materials and debris and clean adjacent surfaces immediately after application to satisfaction of Consultant. Remove and or correct staining and discolouring of adjacent surfaces as directed.

.2 Remove temporary dams after initial set of firestopping and smoke seal materials where such materials are left exposed in finished areas and flame spread rating of such materials exceed a value of 25, in accordance with CAN/ULC-S102.

3.6 PROTECTION

.1 Fully protect walls, windows, floors and other surfaces around areas to be firestopped from marring or damage. Mask where necessary to avoid spillage on to adjoining surfaces. Mask areas adjacent to openings, where necessary to prevent contamination or marring of adjacent surface materials. Remove masking after seal has been completed and an initial set has been achieved. Remove stains on adjacent surfaces as required.

END OF SECTION

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

.1 Read and conform to:

.1 CCDC 2 - 2008, Stipulated Price Contract as amended in the Contract Documents.

.2 Division 1 requirements and documents referred to therein.

1.2 SUMMARY

.1 Provide sealants including but not limited to following exterior locations:

.1 Between dissimilar materials in exposed locations except where specifically indicated otherwise;

.2 Control joints in masonry elements;

.3 Joints between precast concrete elements and between precast concrete elements and adjacent work;

.4 Below door thresholds (double bead);

.5 At perimeter of door, screen and louvre frames;

.6 At penetrations through exterior building elements;

.7 Where indicated.

.2 Provide sealants including but not limited to following interior locations:

.1 Between dissimilar materials in exposed locations except where specifically indicated otherwise;

.2 Perimeter of exterior door, louvre and screen frames;

.3 Between interior door frames and wall where gap exceeds 1.5 mm or where gap is irregular;

.4 Control joints in masonry elements, and joints between bearing and non-bearing masonry walls;

.5 Building expansion joint, except where expansion joint covers are required;

.6 At ceramic tile control joints;

.7 Perimeter of firehose cabinets, access panels, and control panels;

.8 Between vanities/countertops and wall;

.9 Between interior door frame and flooring;

.10 Where indicated.

.3 At interior locations use acrylic emulsion sealant except:

.1 At floor control joints use self levelling polyurethane;

.2 At vanities/countertops, sills and at ceramic wall tile control joints use silicone sealant;

.3 Where expected joint movement exceeds movement capability of acrylic emulsion sealant, use sealant specified for exterior use, as directed by Consultant.

1.3 RELATED SECTIONS

.1 Section 01 35 16 - Alteration Procedures;

.2 Section 04 20 00 – Masonry Units;

.3 Section 06 10 00 – Rough Carpentry;

.4 Section 07 84 00 - Firestopping and Smoke Seals;

.5 Section 08 11 13 - Steel Doors and Frames;

.6 Section 09 21 16 – Gypsum Board.

1.4 REFERENCES

.1 Caulking = Sealant.

.2	ASTM C661-06(11)	-Standard Test Method for Indentation Hardness of Elastomeric-Type Sealant by Means of a Durometer
.3	ASTM C719-93(10)	- Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (HockmanCycle)
.4	ASTM C834-10	- Standard Specification for Latex Sealants
.5	ASTM C920-11	- Standard Specification for Elastomeric Joint Sealants
.6	ASTM C1021-08	-Standard Practice for Laboratories Engaged in Testing of Building Sealants
.7	ASTM C1248-08	- Standard Test Method for Staining of Porous Substrate by Joint Sealants

1.5 ADMINISTRATIVE REQUIREMENTS

.1 Review Specification for work included under this Section and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials, materials to be used, installation of materials, sequence and quality control, Project staffing, restrictions on areas of work and other matters affecting construction, to permit compliance with intent of this Section.

1.6 SUBMITTALS

.1 Prior to start of work submit digital Product information from sealant manufacturer prior to commencement of work of this Section verifying:

.1 Selected sealant materials are from those specified;

.2 Composition and physical characteristics;

.3 Surface preparation requirements;

.4 Priming and application procedures;

.5 Suitability of sealants for purposes intended and joint design.

.6 Sealants compatibility with other materials and Products with which they come in contact including but not limited to sealants provided under other Sections, insulation adhesives, bitumens, brick, stone, concrete, masonry, metals and metal finishes, ceramic tile, plastic laminates and paints

.7 Verify compatibility of new materials with existing, carry out adhesion testing, testing on gasket materials to verify no discoloration takes place when sealant is in contact with gasket and whether it is necessary to totally remove (i.e. grind off) existing sealing materials. Verify with manufacturer.

.2 Provide cured, colour samples of manufacturer's standard range of colours in each type of sealant and caulking compound for colour selection by Consultant. Submit samples of primer, bond breaker tape and joint backing material, if requested.

1.7 QUALITY ASSURANCE

.1 Qualifications:

.1 Provide work of this Section executed by competent installers who have a membership in good standing with SWRI and have minimum of 5 year’s experience in application of Products, systems and assemblies specified and with approval and training of Product manufacturers.

.2 Upon Consultant's request arrange for sealant manufacturer's technical representative to visit the site, investigate conditions and make recommendations in connection with work of this Section.

1.8 DELIVERY, STORAGE AND HANDLING

.1 Delivery:

.1 Deliver caulking and sealant materials to site in original, unopened containers with manufacturers’ labels and seals intact. Labels to identify manufacturer's name, brand name of Product, grade and type, application directions and shelf life or expiry date of Product.

.2 Storage:

.1 Store materials in a dry area having an ambient temperature within limitations recommended by material manufacturer.

.2 Do not use caulking and sealant materials that have been stored for period of time exceeding maximum recommended shelf life of materials.

1.9 SITE CONDITIONS

.1 Do not apply any sealant under adverse weather conditions, when joints to be sealed are damp, wet or frozen or when at ambient temperatures below 5 deg C. Maintain minimum temperature of application during application and for 8 hours after application. Consult manufacturer for specific instructions before proceeding and obtain Consultant's approval

.2 Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated and until contaminants capable of interfering with adhesion are removed from joint substrates.

1.10 WARRANTY

.1 At no cost to Owner remedy any defects in work, including work of this and other Sections, due to faults in materials and workmanship provided under this Section appearing within a period of two (2) years from date of Substantial Performance.

PART 2 – PRODUCTS

2.1 MANFACTURERS

.1 Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications:

.1 BASF Construction Chemicals, LLC; www.buildingsystems.basf.com

.2 CPD Construction Products; www.cpd.com

.3 Dow Corning; www.dowcorning.com

.4 Euclid Chemical Canada Ltd.; www.euclidchemical.com

.5 Momentive Performance Materials; www.momentive.com

.6 Sika Canada Inc.; www.sika.ca

.7 Tremco Canada; www.tremcosealants.com

.8 W.R. Meadows of Canada; www.wrmeadows.com

2.2 MATERIALS

.1 Sealant materials:

.1 Exterior sealant for vertical joints: two-part medium modulus silicone sealant with joint movement capability of ±50%; custom colour selected by Consultant: ASTM C920, Type S, Grade NS, Class 25, uses NT, G, A, 0: standard of acceptance: Dow Corning 790 Silicone Building Sealant.

.2 Interior sealant for vertical joints: one part acrylic latex with joint movement capability of ±7 ½%, paintable: ASTM C834 Type OP, Grade -18°C, standard of acceptance: Tremflex 834.

.3 Interior sealant for horizontal joints: multi-component, self levelling, chemically curing polyurethane: ASTM C920, Type M, Grade P, Class 25: Standard of acceptance: Tremco THC-900.

.4 Interior sealant for wet locations: mildew-resistant silicone formulated with fungicide: ASTM C920, Type S, Grade NS, Class 25, Uses NT, G, A: standard of acceptance: Dow Corning 786 Mildew Resistant Silicone Sealant.

.5 Colours: selected by Consultant from manufacturer's standard colours.

.2 Primers, thinners, cleaners: as recommended by sealant manufacturer, non-staining type.

.3 Premoulded backup for sealant: non-gassing closed cell foam rope, compressed 25% when in joint: Sof-Rod by Tremco, or Cera-Rod by W.R. Meadows.

.4 Bond breaker: closed cell polyethylene or vinyl foam tape, self-adhering one side.

.5 Performance:

.1 Provide exterior and interior elastomeric joint sealants establishing and maintaining water tight, water resistant and air tight continuous joint seals without staining or deteriorating joint substrates.

.2 Products with capability, when tested for adhesion and cohesion under maximum cyclic movement in accordance with ASTM C719, to withstand required percentage change in joint width existing at time of installation and remain in compliance with other requirements of ASTM C920 for uses indicated.

PART 3 – EXECUTION

3.1 EXAMINATION

.1 Examine joints for compliance with requirements for joint configuration, installation tolerances and other conditions affecting joint sealant performance. Ensure joints are suitable to accept and receive sealants.

.2 Verify joint surfaces are clean, sound, free of defects and dimensions are within sealant manufacturer's size requirements.

.3 Proceed with installation only after unsatisfactory conditions have been corrected.

.4 Do not apply sealant to masonry until mortar has cured.

.5 Preinstallation Testing: Before any sealing work is commenced, test materials for indications of staining or poor adhesion.

.6 Start of work implies acceptance of conditions.

3.2 PREPERATION

.1 Clean and prepare joints to be caulked to produce clean sound surfaces for sealant adhesion.

.2 Remove previous caulking, dust, oil, grease, water, frost, loose mortar and other foreign matter. Remove loose particles by blowing joint out with compressed air.

.3 Chemically clean non-porous surfaces such as metal and glass, taking care to wipe solvents dry with a clean cloth. Use solvents recommended by sealant manufacturer.

.4 Clean porous surfaces such as masonry, concrete and stone by mechanical abrading.

.5 Surfaces adjacent to joints to be primed and which may be stained by primer shall be masked with tape before primer is applied.

.6 Prime joints in accordance with sealant manufacturer's recommendations. Apply primer before installing premoulded backup.

.7 Install premoulded backup in joints 6 mm and more in width. Roll rope type backup into joint, do not stretch or braid. Install bond breaker in joints less than 6 mm in width.

.8 Protect adjacent surfaces from stains and contamination. Make good any damage caused.

3.3 INSTALLATION

.1 Do not apply firestop material to surfaces previously painted or treated with sealer, curing compound, Apply sealants under pressure using suitable equipment. Gun nozzle shall be of proper size to fit, and seal joint.

.2 Force sealant into joints in full bead, making certain that void free contact is made with sides of joint. Tool joints to produce a slightly concave surface.

.3 Caulking must appear as a concave recessed joint, free of ridges, wrinkles and embedded foreign matter. Caulking shall not spread or bulge beyond surfaces on each of joint.

.4 Apply sealants in accordance with following table:

Joint Width	Sealant Depth
5 mm	5 mm
10mm	5mm
15mm	7mm
20mm	10mm

.5 **If the finished caulking joint width, interior or exterior, exceeds 15mm in total** other measures to be utilized to seal/cover the joint ie. Aluminum covers. Approval by consultant required.

.6 Vent exterior joints as directed by Consultant.

3.4 SITE QUALITY CONTROL

.1 Independent inspection and testing company may be appointed and paid for by Owner to carry out inspection and testing as directed by Consultant.

.2 Inspect joints for complete fill, for absence of voids and for joint configuration complying with specified requirements. Record results in a manner acceptable to Consultant.

.3 Tests may include sampling of installed Product where adhesion, cohesion or reversion failure is suspected.

.4 Where work or materials fail to meet requirements as indicated by test results, pay costs of additional inspection and testing required for new replacement work or materials

.5 Non-Conforming Work: Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of Consultant at no cost to Owner.

.6 Prior to commencement of sealing, arrange for sealant manufacturer's technical representative to visit the Place of the Work and inspect surfaces and joints to be sealed.

3.5 CLEANING

.1 Immediately clean adjacent surfaces which have been soiled and leave work in neat, clean condition. Remove excess materials, compounds smears or other soiling resulting from application of sealants. Use manufacturer recommended cleaners and solvents. Leave finished work in neat, clean condition with no evidence of spillovers onto adjacent surfaces

3.6 PROTECTION

.1 Provide approved, non-staining means of protection for completed joint sealant installations where required to protect work from mechanical, thermal, chemical and other damage by construction operations and traffic.

.2 Maintain protection securely in place until completion of Work. Remove protection when so directed by Consultant.

3.7 SCHEDULE

.1 Apply sealant at the following exterior locations:

.1 Between dissimilar materials in exposed locations except where specifically indicated otherwise.

.2 Control joints in masonry elements.

.3 Below door thresholds (double bead).

.4 Penetrations through exterior building elements.

.5 Where indicated.

.2 Apply sealant at the following interior locations:

.1 Between dissimilar materials in exposed locations except where specifically indicated otherwise.

.2 Perimeter of exterior and interior door and screen frames (both sides).

.3 Control joints in masonry elements, and joints between bearing and non-bearing masonry walls.

.4 Porcelain/Ceramic tile control joints.

.5 Perimeter of firehose/extinguisher cabinets, access and control panels.

.6 Between vanities/countertops and wall.

.7 Between sills and window frame.

.8 Where shown.

.3 At interior locations use acrylic emulsion sealant except:

.1 At floor control joints use polyurethane sealant.

.2 At vanities/countertops and at ceramic wall tile control joints use silicone sealant.

.3 Where expected joint movement exceeds movement capability of sealant, use sealant specified for exterior locations as directed by Consultant.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

.1 Section Includes: Provide steel doors and frames including, but not limited to, the following:

.1 Hollow metals doors, frames, and transom panels;

.2 Preparation of hollow metal doors and frames for door hardware;

.3 Glazing Stops.

.4 Door Louvres.

1.2 RELATED SECTIONS

.1 Section 01 35 16 - Alteration Procedures

.2 Section 04 20 00 – Masonry Units

.3 Section 07 92 00 - Sealants

.4 Section 08 71 00 - Door Hardware

.5 Section 08 80 00 – Glass and Glazing

.6 Section 09 21 16 – Gypsum Board

.7 Section 09 91 00 – Painting

.8 Wiring and Conduit of electronic hardware in frame; Electrical Drawing

1.3 REFERENCE STANDARDS

.1	ANSI/UL 263-03(07)	- Fire Resistance Ratings
.2	ANSI A250.4-94	-Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors
.3	ANSI A250.10-98(11)	-Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames
.4	ASTM A568/A568M-11b	-Standard Specification for Steel, Sheet, Carbon, Structrural, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for:
.5	ASTM A653/A653M-11	-Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

.6	ASTM C177-10	-Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus
.7	ASTM C518-10	-Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
.8	ASTM E90-09	-Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
.9	ASTM E413-10	- Classification for Rating Sound Insulation
.10	CGSB 41-GP-19Ma	- Rigid Vinyl Extrusions for Windows and Doors
.11	CAN/CGSB-82.5-M88	- Insulated Steel Doors
.12	CSA W59-03(08)	- Welded Steel Construction (Metal Arc Welding)
.13	NAAMM-HMMA 840-07	-Guide Specification for Installation of Hollow Metal Doors and Frames
.14	NFPA 80-13	- Standard for Fire Doors and Other Opening Protectives
.15	NFPA 252-12	- Standard for Fire Tests of Door Assemblies
.16	NFPA 257-12	-Standard for Fire Tests of Window Assemblies
.17	CAN4-S104-M80(85)	- Standard Method for Fire Tests of Door Assemblies
.18	CAN4-S105-M85(92)	-Standard Specification for Fire Door Frames Meeting the Performance Required by CAN4-S104
.19	CAN4-S106-M80(85)	-Standard Method for Fire Test of Window and Glass Block Assemblies
.20	CAN/ULC-S702-09	- Standard for Mineral Fibre Thermal Insulation for Buildings

1.4 ADMINISTRATIVE REQUIREMENTS

.1 Submit a schedule indicating each door and frame related to the Door and Frame Schedule.

.2 Coordinate with related work of other Sections including, but not limited to: door, frame, hardware and electrical.

1.5 SUBMITTALS

.1 Shop Drawings:

.1 Visit the site to confirm appropriate existing dimensions and site conditions prior to the submission of shop drawings.

.2 Submit digital door, frame and hardware shop drawings to Consultant for review.

.3 Shop drawings to indicate each type of frame, door, core, metal thicknesses and finishes, openings (glazed and/or louvred), fire ratings, location of exposed fasteners, cutouts, hardware blanking, reinforcing, tapping and drilling arrangements. Show large scale frame sections and anchoring details and any other pertinent data.

.4 Submit following test and evaluation reports:

.1 Steel door and frame assemblies supplied under this Section meet acceptance criteria of ANSI A250.10 and ANSI A250.4, Level "A".

.2 Insulated door cores supplied in exterior doors under this Section meet specified thermal resistance rating.

.3 Thermally broken frames meet or exceed CAN/CGSB-82.5-M.

.4 Acoustic door and frame assemblies provide the STC and sound TL values specified with the critical frequency range, as determined and scheduled by the Consultant.

.5 Ensure reports include name of testing authority, date of test, location of test facility, descriptions of test specimens, procedures used in testing and indicate compliance with acceptance criteria of the test.

.6 Submit in addition to fire label, certificate to substantiate design and construction of fire-rated screen and window assemblies, if required by Consultant or authorities having jurisdiction

.2 Progress Photographic Documentation:

.1 Contractor to provide to the Consultant a <u>daily</u> photographic documentation report for the progress of work at the following key stages:

.1 Removal of existing windows, screens and doors;

.2 Removal of vapour barrier and insulation;

.3 Installation of insulation;

.4 Installation of blue skin.

.2 Contactor's photographs are to be clear and of a scale that allows viewing of the specific conditions.

.3 Contractor to identify any unforeseen existing conditions discovered during the four stages of documentation when the photos are emailed.

.4 Contractor to provide a floor plan is to accompany the photos to identify the room name and day work completed.

1.6 QUALITY ASSURANCE

.1 Execute the work of this Section by a manufacturer who is a member of CSDMA Steel Doors and Frames.

.2 Coordination with hardware distributer prior to submission of shop drawings.

.3 Fire protection requirements: fire rated windows, doors and frames shall bear ULC or WHI label for required rating and shall be installed in accordance with NPPA 80 - Fire Doors and Windows, current edition. Provide temperature rise rated assemblies where required.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Deliver, handle and store fabricated components to prevent permanent distortion, corrosion and damage. Coordinate storage location with Owner.

.2 Remove wrappings from doors upon delivery to site and inspect for any damage. Replace any damaged or bent material immediately.

.3 Handle and store metal materials at the job site in such a manner to prevent damage to other materials, to existing building or property.

PART 2 – PRODUCTS

2.1 MATERIALS

.1 Acceptable Manufacturers:

.1 Ali-Porte Inc.

.2 Artek Door Ltd.

.3 Baron Metal

.4 Daybar Industries Ltd.

.5 Fleming Door Products

.6 Gensteel Doors

.7 Metal Door

.8 Shanahan’s Ltd.

.2 Sheet Steel: Commercial grade steel to ASTM A568/A568M, Class 1, hot-dip galvanized to ASTM A653/A653M, ZF120 (A40), known commercially as "Colourbond", "Satincoat", or "Galvanneal". Steel sheet thicknesses specified are base metal thicknesses prior to galvanizing.

.3 Door Cores:

.1 Interior Doors (non fire rated): Honeycomb - Structural small cell 25 mm maximum, kraft paper "honeycomb"; weight; 36 kg per ream (min), density; 16.5 kg/m^3 minimum, sanded to required thickness.

.2 Exterior Doors and interior doors separating conditioned and unconditioned spaces: Mineral wool insulation, density 24 kg/m^3 minimum consisting of durable fibrous material processed from rock, slag or glass, bound with deterioration resistant binders, CAN/ULC-S702, Type

.3 Fire Rated Doors: in accordance with fire test requirements.

.4 Reinforcing steel: CAN/CSA-G40.21-04 Grade 300W, hot dip galvanized to CAN/CSA-G164-M92.

.5 Exterior door frame and interior door frame separating conditioned and unconditioned space thermal break: non-conductive PVC or neoprene.

.6 Adhesives:

.1 Honeycomb Cores and Steel Components: Heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement.

.2 Polystyrene and Polyurethane Cores: Heat resistant, epoxy resin based, low viscosity, contact cement.

.3 Adhesive For Lock Seam Edges: 2 component, fire-resistant RRPC type.

.7 Finishing Materials:

.1 Touch up paint: zinc rich paint CAN/CGSB-1.181-99.

.2 Metal filler: two component epoxy type

.8 Door Louvres:

.1 Fire rated Louvres: 1900A Fire-Rated Air Louvre by Activar Inc. or equivalent product by EH Price; Finish Silver (SI).

2.2 FABRICATION

.1 Hollow Metal Window and Door Frames (and Transom Frames):

.1 Interior Frames: Minimum 1.5 mm thick (16 ga) steel

.2 Exterior Frames : Minimum 1.9 mm thick (14 ga) steel.

.3 Reinforcement for hardware:

.1 Surface Applied Hardware: Minimum 1.2 mm thick (18 ga) steel.

.2 Concealed Door Closer or Holder: Minimum 3.5 mm thick (10 ga) steel

.3 Butts and Pivots: 3.5 mm (10 ga) steel.

.4 Panic Bars: 3.5 mm (10 ga) steel.

.5 Flush Bolts, Locks and Strikes: 2.5 mm (12 ga) steel.

.6 Mortar Boxes: 1.0 mm (20 ga) steel.

.7 Surface Mounted Overhead Stops / Closers: 2.8mm steel.

.8 Lock and Strike: Minimum 1.5 mm thick (16 ga) steel.

.9 Hinge: Minimum 3.4 mm thick (10 ga) steel.

.4 Protect hardware reinforcements at frames located in masonry elements with 1.0 mm thick guard boxes.

.5 Hardware reinforcements shall be minimum 3.5 mm (10 ga) thick exclusive of frame thickness, cold-rolled commercial quality steel, regular galvannealed finish. Provide reinforcement at all hardware fastening points.

.6 Coordinate for removable hardware mullions where indicated: refer to Section 08 71 00 Door Hardware.

.7 Make provisions to accommodate automatic door openers where required. Coordinate with Electrical Division.

.8 Top and Bottom End Channels: Minimum 1.2 mm thick (18 ga) steel.

.9 Jamb Spreaders: Minimum 01.0 mm thick (20 ga) steel.

.10 Glazing Stops: Minimum 1.0 mm thick (20 ga) steel, formed, drilled and countersunk for fastenings.

.11 Assemble components with accurately cut joints. Mitre outside corner joints of frames. Weld joints on inside of profile; grind welds, flush and sand to smooth uniform surface. Tab connectors and partial or spot welding is not acceptable.

.12 Fit and assemble work in the shop wherever possible, eliminating field joints.

.13 Side light and transom framing shall be of same thickness metal as adjacent door frame.

.14 Drill interior door frames for rubber bumpers. Drill strike jamb of each single door frame for 3 bumpers. Drill head member of double door frames for 2 bumpers.

.15 Provide angle or channel door head reinforcement for doors wider than 915 mm.

.16 Provide adjustable base clips for anchorage to floor at bottom of each door jamb.

.17 Provide welded on metal drip at head of exterior doors.

.18 Exterior and interior door frames between conditioned and unconditioned space shall be thermally broken.

.19 For rated frames at doors and windows, provide Special Thermal Glazing Kits to accommodate installation of 25mm thick Fire Rated Glazing (FRG). Refer to screen/door types on the drawing for locations of rated frames. Location: JD Hodgson Elementary School.

.2 Hollow Metal Doors:

.1 Interior doors: Honeycomb core construction or between conditioned and unconditioned spaces shall be insulated. Skins shall be 1.2 mm thick (18 ga) steel. Join door faces at vertical door edges with tight-fitting mechanical interlock joint.

.2 Exterior doors: Reinforced hollow steel construction with all spaces filled with insulation. Skins shall be minimum 1.5 mm thick (16 ga) steel. Join door faces at vertical door edges by continuous weld, extending full height of door; grind, fill and dress smooth.

.3 Construct fire rated doors in accordance with fire test requirements. Double doors shall be labelled without need for mullions, astragals or coordinating devices. Doors with transom panels shall be labelled with rebated interlocking head condition.

.4 Provide all doors of seamless construction with no visible seams or joints on faces.

.5 Provide flush end closures made of steel at top edge of exterior doors and where required for attachment of hardware and weatherstripping.

.6 Hardware reinforcements shall be minimum 3.5 mm (10 ga) thick steel exclusive of door skin thickness. Provide reinforcement at all hardware fastening points.

.7 Surround openings in flush doors with minimum 1.2 mm thick (18 ga) steel edge channels, welded to both face sheets.

.8 Provide removable glazing stops of zinc coated steel channels mitred at corners, accurately fitted into position and fastened with oval headed, plated screws.

.9 Glazing stops at exterior doors shall be located on the interior side.

.10 Construct oversized doors to sizes indicated; frame and reinforce doors as required to maintain shape.

.11 All exterior and interior glazing between conditioned and unconditioned spaces should be prepped for 25mm thickness.

.12 All interior glazing, except for fire rated and interior glazing separating conditioned and unconditioned spaces should be prepped for 6mm thickness.

.13 All fire rated glazing should be prepped as required by fire rated glazing.

.3 Finishes:

.1 Fill seams, corner joints and other depressions with filler and sand smooth.

.2 Clean and remove all traces of oil, grease and other foreign substances to ensure proper bond of touch up after fabrication.

.3 Touch up damaged zinc coating with zinc rich paint.

.4 Insulate, where necessary to prevent electrolysis, metal surfaces in contact with dissimilar metals or cementitious materials.

.4 Exterior fire rated windows, doors, frames and louvres to have shop applied 4 coat painted finish (3 of the 4 coats to be shop applied): Fluoropolymer coating, PPG Duranar XLB Coating, Metalic colour to match clear anodized aluminum as selected by Consultant.

PART 3 – EXECUTION

3.1 EXAMINATION

.1 Verify actual site dimensions, floor conditions in path of door swing and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to the installation.

.2 Commencement of work implies acceptance of previously completed work.

3.2 INSTALLATION

.1 Install non rated frames and doors according to CSDMA and fire-rated frame and doors in accordance with NFPA 80.

.2 Allowable limit of distortion shall be 1.5 mm out of plumb at each jamb, measured on face of frame, resulting in maximum twist of frame of 3 mm measured from upper corner to lower diagonal corner.

.3 Anchorage of frames shall be by means of standard anchors. Where standard anchors cannot be used, provide special anchors to ensure proper installation. Method of anchorage shall not be visible when frames are installed.

.4 Provide minimum 3 anchors at each jamb. At frames exceeding 2150 mm in height provide one additional anchor for each additional 610 mm, or part thereof.

.5 Anchor intermediate vertical frame members to structure above as required to ensure stability. Where required, provide steel frame extensions. Provide flexible connection at structure to allow for deflection. Brace frames solidly in position while being built in.

.6 Seal openings between walls surfaces and frames around all edges.

.7 Install threshold saddles across bottom of exterior door frames.

.8 Remove steel shipping spreaders; install wood installation spreaders at sill and at third points of frame rabbet height to maintain constant frame width. Remove wood spreaders only after frames are securely anchored in place.

.9 Install hardware in accordance with hardware supplier's instructions.

.10 Install louvers, glazing and door silencers.

.11 Adjust operable parts to ensure proper operation.

.12 Finish doors and frames as per Section 09 90 00 Painting.

3.3 SITE QUALITY CONTROL

.1 Patch damaged shop primer. Remove rust, sand damaged and abraded surfaces and touch-up with zinc rich paint.

.2 Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of Consultant at no cost to Owner.

END OF SECTION

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

.1 Read and conform to:

.1 CCDC 2 - 2008, Stipulated Price Contract as amended in the Contract Documents.

.2 Division 1 requirements and documents referred to therein.

1.2 SUMMARY

.1 Section Includes: Supply and install aluminum doors, frames and entrances including, but not limited to, the following:

.1 Aluminum entrance doors and frames;

.2 Sealants;

.3 Supply direct to other Sections anchors, inserts and items required to be built into work of other Sections.

1.3 RELATED SECTIONS

.1 Section 01 35 16 - Alteration Procedures;

.2 Section 07 84 00 – Firestopping and Smoke Seals;

.3 Section 07 92 00 - Sealants, except where specifically stated otherwise herein;

.4 Section 08 71 00 - Door Hardware;

.5 Section 08 80 00 – Glass and Glazing, except where specifically stated otherwise herein;

.6 Section 09 21 16 – Gypsum Board;

.7 Section 09 91 00 – Painting;

.8 Wiring and Conduit of electronic hardware in frame; Electrical Drawing.

1.4 DESIGN AND PERFORMANCE STANDARDS

.1 Design entrance systems to withstand, without any detrimental effects to appearance and performance, wind loads and temperature range expected in geographical area of this project (OBC climatic information 50 year probability), unless specified otherwise.

.2 Design systems to accommodate without detrimental effects on appearance and performance of system.

.1 Positive and negative wind loads.

.2 Thermal expansion and contraction of systems components.

.3 Movement, deflection and creep of building structural frame.

.3 Limit deflection of component parts under maximum design load to 1/175 of span or less if required by glass manufacturer.

.4 Exterior screens:

.1 Structural performance shall be based on CSA 157-05 "Strength Design in Aluminum" and a maximum deflection of 1/175 of the span.

.2 Air infiltration shall not exceed 0.0003 m^3 / s-m^2 when tested in accordance with ASTM E283 at a pressure differential of 75 Pa.

.3 There shall be no water infiltration when tested in accordance with ASTM E331 with a pressure differential of 300 Pa.

.4 Thermally, the grid members shall have a condensation resistance equal to, or better than, the area along the bottom of a 25 mm thick sealed glass unit with standard metal spacer edge construction.

1.5 ADMINISTRATIVE REQUIREMENTS

.1 Coordinate with related work of other Sections including, but not limited to: door, frame, hardware and electrical. Be responsible to provide adequate reinforcing, clearances, rebates and brackets for hardware specified and for accurate installation of door and hardware on site.

1.6 SUBMITTALS

.1 Shop Drawings:

.1 Visit the site to confirm appropriate existing dimensions and site conditions prior to the submission of shop drawings. Notify the Consultant of any discrepancies prior to completing shop drawings.

.2 Submit digital door, frame and hardware shop drawings to Consultant for review. Shop drawings released to Consultant for review shall contain hardware trade's review stamp and acceptance signatures.

.3 Shop drawings to indicate relation to adjoining work and location, construction and back-up, joint sealant, interior structure and/or reinforcements, door and glazing modules, head and frame details, extrusion sections, glazing and glass stop details, thermal break sections and vinyl or neoprene mouldings and anchorage and assembly fixings. Materials used for every component must be clearly indicated on Shop Drawings.

.4 Shop drawings for screens required to be designed as guards to meet loading requirements in accordance with Part 4 of the Ontario Building Code, shall bear the seal of a structural engineer who is licensed in the Province of Ontario and responsible for the design. Engineering design shall include, but not limited to, framing, glazing, attachment of frame to building and all other structural components.

.2 Samples:

.1 Submit two sets of samples minimum 50mm x100mm of each type of metal finish specified.

.3 Progress Photographic Documentation:

.1 Contractor to provide to the Consultant a daily photographic documentation report for the progress of work at the following key stages:

.1 Removal of existing windows, doors and frames;

.2 Removal of vapour barrier and insulation;

.3 Installation of insulation;

.4 Installation of blue skin.

.2 Contactor's photographs are to be clear and of a scale that allows viewing of the specific conditions.

.3 Contractor to identify any unforeseen existing conditions discovered during the four stages of documentation when the photos are emailed.

.4 Contractor to provide a floor plan is to accompany the photos to identify the room name and day work completed.

.4 Closeout Documents:

.1 Provide operation and maintenance instructions for aluminum screens, doors and hardware.

1.7 QUALITY ASSURANCE

.1 Execute the work of this Section by installers with a minimum of 5 years experience in the application of Products, systems and assemblies specified and with the approval and training of the Product Manufacturer.

.2 Fabrication tolerances: overall height, width and diagonal dimensions of frames shall be within the following tolerances:

Dimension of 1.8 m and less: +/- 1.5 mm

Dimension more than 1.8 m: +/- 3 mm

.3 Caulking installer to be a specialized installer with a minimum of 5 years experience.

.4 Coordination and approval by the hardware distributer is required prior to submission of shop drawings.

1.8 DELIVERY, STORAGE AND HANDLING

.1 Deliver, handle and store fabricated components to prevent permanent distortion, corrosion and damage. Coordinate storage location with Owner.

.2 Remove wrappings from doors upon delivery to site and inspect for any damage. Replace any damaged or bent material immediately.

.3 Handle and store metal materials at the job site in such a manner to prevent damage to other materials, to existing building or property.

1.9 ENVIRONMENTAL REQUIREMENTS

.1 Sealants are not to be installed when ambient temperature is less than 5 degrees C during and forty-eight hours after installation.

1.10 WARRANTY

.1 At no cost to the Owner, correct defective Work within a five (5) year period after Substantial Completion. For the purposes of this paragraph, defects shall include, but not limited to the following:

.1 Water infiltration in excess of requirements specified.

.2 Air infiltration / exfiltration in excess of requirements specified

.3 Deflection of system components in excess of requirements specified.

.4 Failure of joint seal.

.5 Cracked glass (except where caused by vandalism).

.6 Delamination, cracking, blistering, excessive fading of metal finishes.

.2 At no cost to the Owner, warrant aluminum doors against defects for a period of ten (10) years from the date of Substantial Completion.

.3 At no cost to Owner, replace factory sealed insulating window units should cracking of glass or any other breakdown or failure of glass units occur or should obstruction of vision develop due to dust or film forming on inner glass surfaces within a period of ten (10) years from date of Substantial Peformance.

.4 Include coverage for complete system for failure to meet specified requirements.

PART 2 – PRODUCTS

2.1 MATERIALS

.1 General:

.1 Material: Aluminum Association Alloy AA-6063-T5 for extruded shapes, commercial quality AA-1100-H14 aluminum sheet for formed shapes.

.2 Hardware: Doors complete with weatherstripping around frame and along bottom of door and aluminum sill. Style "V" push & pull handles in clear anodized aluminum. Prepare doors to templates provided by hardware supplier forbutt hinges, exposed overhead closer, lock cylinder and flushbolt.

.3 Closures, Cover Plates and Trim: Extruded aluminum and sheet stock formed or brake shaped to profiles shown on Drawings (minimum 3mm thick) and as required to finish around windows.

.4 Dielectric Separator: Provide best grade, quick drying non-staining alkali resistant bituminous paint or epoxy resin solution or membrane type to acceptance of Consultant.

.5 Screws, Bolts and Fasteners: Self tapping cadmium plated steel for aluminum to aluminum contact and stainless steel for aluminum to steel contact.

.6 Compressible Filler: Supply "Unifoam R1009" by Goodco Limited.

.7 Temporary Strips and Safety Markings: Supply 25 mm wide, light reflecting, easily removable, pressure sensitive tape applied over glass lites in doors.

.2 Systems:

.1 Framing:

.1 Acceptable Non-Fire Rated Systems as follows:

.1 Exterior: Wide Stile Series 655 Framing by Windspec.

.2 Interior: Wide Stile Series 630 Framing by Windspec.

.3 Equivalent products by Kawneer Co. of Canada Ltd or Alumicor Ltd.

.2 Thermal Break Material: Polyvinyl chloride, of semi-rigid durometer hardness of 80, plus or minus 5, located on external side of glass pane

.3 Size units to allow for structural deflection of surrounding construction;

.4 Fastenings shall be concealed;

.5 Glazing stops shall be snap-on-type, without exposed fasteners;

.6 Internal weep drainage system;

.7 Reinforce members as required to withstand loads and to maintain deflection within allowable limited;

.8 Closures, covers and trim shall be extruded or formed to profiles shown and unless otherwise shown, minimum 3 mm thick;

.2 Doors:

.1 Acceptable Non-Fire Rated Systems as follows:

.1 Exterior: Wide Stile Series 500HTP Framing by Windspec.

.2 Interior: Wide Stile Series 500 Framing by Windspec.

.3 Equivalent products by Kawneer Co. of Canada Ltd or Alumicor Ltd.

.2 Construct doors of minimum 4.8 mm thick porthole extrusions, with all fastenings and connections concealed.

.3 Vertical edge profile: bevelled or rounded;

.4 Glazing stops shall be snap-on-type, without exposed fasteners;

.5 Door Weatherstripping: Material designed for easy removal and replacement when worn; silicone treated twin-tuft pile at jambs and heads and 2.4 mm white vinyl strips at toes, complete with adjustable fixing to ensure a full "wipe" of the thresholds below;

.6 Where doors are incorporated into window wall provide suitable subframes;

.7 Provide cutouts, recesses, mortising required for finish and operating hardware;

.8 Provide heavy duty reinforcing at all door and frame hardware fastening points;

.9 Internally reinforce framing members where work of other Sections is to be fastened thereto;

.10 Provide rails and transoms to sizes and profiles shown;

.11 Prepare doors / frames for automatic door operator; provide head member of sufficient size to accommodate operator;

.3 Insulated Panels (IAP):

.1 Prefabricated insulated panels, as manufactured by Mapes Industries or Citadel Architectural (GlazeGuard 1000) as distributed by SRP Building Products Inc.:

.1 Exterior skin: minimum 0.4mm thick aluminum sheet with smooth surface, bonded to 3mm thick tempered hardboard stabilizer substrate. Finish: anodized to match framing.

.2 Insulating Core: expanded polystyrene rigid insulation to CGSB-51-GP-20M Type2.

.3 Interior skin: .5mm thick aluminum sheet with clear anodized finish, bonded to 3.2mm thick hardboard stabilizer substrate.

.4 Overall thickness: 51mm (2") minimum.

.4 Flashings:

.1 Aluminum; 1.27 mm thick, secured with concealed fastening method.

.2 Finish: To match framing sections where exposed.

.2 Finish:

.1 Colour Anodic Coating: all exposed components, AAMA 611 , Class I, AA-M12C22A44.

.1 Colour: Clear Anodized.

.2 Location: Interior and exterior exposed aluminum surfaces.

.2 Apply one (1) coat of bituminous paint to concealed steel and aluminum surfaces in contact with cementitious or dissimilar materials.

.3 Shop and Touch-Up Primer for Steel Components: SSPC-Paint 25, zinc oxide alkyd primer.

.4 Touch-Up Primer for Galvanized Steel Surfaces: MPI #18, inorganic zinc-rich primer.

.5 Extent of Finish:

.1 Apply factory coating to all surfaces exposed at completed assemblies.

.2 Apply finish to surfaces cut during fabrication so that no natural aluminum is visible in completed assemblies, including joint edges.

.3 Apply touch-up materials recommended by coating manufacturer for field application to cut ends and minor damage to factory applied finish.

.3 Glass and Glazing:

.1 Setting blocks: Neoprene, Shore "A" Durometer hardness of 70 to 90 points; spacer shims, 40 to 50 points, as recommended by glass manufacturers.

.2 Glazing sealant: one part polysulphide meeting requirements of CAN/CGSB-19.13-M87 or as recommended by window and glass manufacturer.

.3 Glazing tape: preshimmed polyisobutylene: Polyshim Tape by Tremco.

.4 Glazing wedges and splines: solid extruded neoprene or EPDM having Shore "A" Durometer hardness of 50 to 70 points as recommended by window manufacturer.

.5 Tempered Glass in all glazing (TGL / FSG): Clear transparent fully tempered glass conforming to CAN/CGSB-12.1- M90. 1, minimum 6 mm (1/4") thick. Ensure surface compression is equal to or greater than 69 MPa (10 000 psi). Tempered glass identification must be sandblasted into glass and shall be visible after installation.

.6 GL Low emissivity (Low-E) glass; Solarban 60 clear by PPG. Tempered glass: CAN2-12.1-M79, fully tempered, and unless noted 6 mm thick.

.7 Double glazed insulating units (all exterior glazing): factory sealed units meeting requirements of CGSB-12.8-M76, clear tempered float glass inside and grey tinted tempered glass outside, nominal thickness 25 mm, with warm edge spacer, space between glass filled with argon gas; low-E coating on No. 2 surface (max U-value 0.24): PPG Solarban 60, clear or equivalent product by other manufacturer approved by Consultant.

.8 Spandrel glass (BSP): Float glass heat strengthened or tempered (if recommended by glass manufacturer); backpainted with 2-coat fluoropolymer paint system: PPG Duranar DTG XL; colour selected by Consultant.

.9 Silk Screened Simulated Acid Etch Glass (FSSG): fully tempered Prel-Design by Prelco. Colour to be opaque - White PC-9912. To be installed on No. 2 surface of insulated glazing unit.

.4 Sealant:

.1 Multi-component conforming to ASTM C920, Type M, Grade NS for sealant to be incorporated between aluminum framing and adjacent structures. Colours to be selected by Consultant from standard colour selection. Acceptable products: Dow Corning 790.

.2 Supply non-hardening, non-skimming, non-sagging, non-bleeding polyisobutylene or partially vulcanized rubber base sealant for use in concealed-sealing of thin joints in metal work.

.3 Joint backing to be non-gassing foam rope, compressed minimum 25% installed. Acceptable product: Sof-Rod by Tremco.

2.2 FABRICATION

.1 Form sections true to detail, free from defects impairing appearance, strength and durability.

.2 Ensure frames are tubular extruded shapes with sharp, well defined corners.

.3 Ensure overall assembled profiles are as detailed on Drawings.

.4 Fabricate frames with continuous thermal breaks. Locate thermal break on exterior side of the glazing as detailed on Drawings and hold by snap-in methods without the use of any metallic fasteners which could reduce the effectiveness of the thermal barrier.

.5 Corners of formed work must be mitred and closely fitted. Apply back-up sealants designed for this purpose on inside of joints in aluminum work by this Section.

.6 Anchorages must be attached to warm side.

.7 Carry out welding with argon shielded electric arcs to ensure complete fusion of the metal.

.8 Ensure aluminum doors have bevelled glazing beads designed for neoprene glazing system; except at exterior doors with insulating lites, use glazing system compatible with secondary sealant of the glass unit.

.9 Equip doors with full weatherstripping at perimeter. Install weatherstripping throughout full length and width of doors at jambs and heads.

.10 Fabricate doors and frames complete with necessary internal reinforcements, cutouts, recesses, mortising or milling operations required for a rigid assembly and to accommodate door hardware. Ensure connections have adequate strength.

.11 Fabricate frames with joints accurately fitted and securely joined together in a manner to ensure tightly fitting joints. Internally caulk and seal corners of frames and joints exposed to water penetration using a material compatible to resist flow at the high surface summer temperatures to be experienced by the metal.

.12 Fabrication Tolerances:

.1 Maximum Variation from Plumb: 1.5 mm/m non-cumulative or 1.5 mm per 3 m1/16 inches per 10ft, whichever is less.

.2 Maximum Misalignment of Two Adjoining Members Abutting in Plane: 0.8 mm1/32 inch.

PART 3 – EXECUTION

3.1 EXAMINATION

.1 Verify actual site dimensions, floor conditions in path of door swing and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to the installation.

.2 Commencement of work implies acceptance of previously completed work.

.3 Return any existing hardware to Owner.

3.2 INSTALLATION

.1 Frames:

.1 Erect and secure framing plumb, square and level, free from warp, twist and superimposed loads.

.2 Anchor framing to supporting building elements; provide brackets, anchors and clips as required. All devises for anchoring shall have sufficient adjustment to permit correct and accurate

alignment. After alignment rivet, weld or otherwise positively lock anchoring devices to prevent movement other than that required to accommodate expansion, contraction and deflection.

.3 Anchor intermediate vertical frame members to structure above as required. Where support for intermediate vertical frame members is not available directly above head, provide frame extensions to structure above. Provide flexible connection at structure to allow for movement.

.4 Provide necessary inserts to be built into work of other Sections as required for anchorage of framing.

.5 Set frame members in bedding compound to ensure watertight assembly.

.6 Metal to metal joints between abutting components shall be sealed weathertight.

.7 Use concealed fastenings and anchorages in all locations. Exposed fastenings, where unavoidable, must be clearly identified on shop drawings, and require Consultant's approval prior to fabrication of work.

.8 Install foam-in-place insulation in all voids around windows and door frames and as shown on drawings.

.2 Doors:

.1 Install doors plumb, square, level, free from warp, twist and superimposed loads.

.2 Secure work adequately and accurately to structure in required position, in a manner not restricting thermal movement.

.3 Provide compressible filler over aluminum work at locations shown on Drawings.

.4 Install doors complete with finish hardware supplied by hardware supplier, in accordance with templates supplied by same.

.5 After installation of hardware, have hardware supplier check operation of hardware. Do readjustments as required.

.6 Use aluminum or stainless steel screws, nuts, bolts, washers, rivets and other fastening devices, colour to match doors and frames where exposed to view.

.7 Coordinate with Division 26 for required power connection and wiring to automatic door operator and controls.

.3 Covers, Closures and Trim:

.1 Provide aluminum covers, closures and trim as indicated and as required to provide complete and finished installation.

.2 Wherever possible, provide concealed fastenings.

.4 Glazing:

.1 Use extruded gaskets for door glazing and of type compatible with secondary sealant in insulating glass unit locations.

.2 Thoroughly wipe surfaces receiving glazing materials with a cloth dampened in xylol to assure a clean surface.

.3 Place setting blocks at quarter points from each corner, centre sealed unit in opening and press firmly against tape. Provide isolation tape at edges of laminated glass to prevent staining of interply plastic from glazing materials. Roll-in inside resilient extrusion.

.4 Caulking: At interior and exterior joints between aluminum framing and adjacent work of others execute following work:

.5 Install backer rod over compressible filler material or perimeter blocking to provide sealant joints of proper form, thickness to width ratios and bond break at back side of sealant. Where backer rod cannot be used or is not shown provide bond breaker tape to back side of sealant joint substrate.

.6 Clean substrate surfaces where sealant is to bond and apply sealant primers as recommended by sealant manufacturer.

.7 Caulk joints continuous to produce weatherproof and visually acceptable joint installation.

3.3 SITE QUALITY CONTROL

.1 Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of Consultant at no cost to Owner.

3.4 CLEANING

.1 Maintain aluminum work in a clean condition throughout construction period, so it will be without deterioration or damage at time of acceptance. Select methods of cleaning which will promote achievement of uniform appearance and stabilized colours and textures for materials that weather or age with exposure.

.2 Immediately before time of Substantial Performance, clean aluminum work thoroughly, inside and out. Demonstrate proper cleaning methods to Owner during this final cleaning. Prepare a "Cleaning and Maintenance Manual" listing types of cleaning compounds, cleaning methods, sealants and glazing materials of the work and submit 2 copies to Consultant.

.3 Remove protective covering and coating from aluminum surfaces, inside and out and clean surfaces, remove labels, stripes and protective devices and polish glass surfaces, immediately prior to final acceptance of the work by Consultant.

3.5 PROTECTION

.1 Protect the work of this Section from damage. Protect work of other trades resulting from the work of this Section.

.2 Provide at factory, strippable coatings on exposed surfaces of aluminum. Ensure coating and protective wrappings remain on surfaces through period other trades' works proceed on the building and removed by this trade on completion of building.

END OF SECTION

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

.1 Read and conform to:

.1 CCDC 2 - 2008, Stipulated Price Contract as amended in the Contract Documents.

.2 Division 1 requirements and documents referred to therein.

1.2 SUMMARY

.1 Section Includes: Supply and install aluminum curtain wall system including, but not limited to, the following:

.1 Aluminum doors, frames, screens and transom panels;

.2 Aluminum fixed and operable windows;

.3 Vision glass, spandrel glass and insulated metal infill panels;

.4 Preparation of aluminum doors and frames for door hardware;

.5 Aluminum trim, closures and cover plates;

.6 Sealants;

.7 Supply direct to other Sections anchors, inserts and items required to be built into work of other Sections.

1.3 RELATED SECTIONS

.1 Section 01 35 16 - Alteration Procedures;

.2 Section 07 84 00 – Firestopping and Smoke Seals;

.3 Section 07 92 00 - Sealants, except where specifically stated otherwise herein;

.4 Section 08 41 13 – Aluminum Framed Entrances and Store Fronts;

.5 Section 08 51 13 – Aluminum Windows;

.6 Section 08 71 00 - Door Hardware;

.7 Section 08 80 00 – Glass and Glazing, except where specifically stated otherwise herein;

.8 Section 09 21 16 – Gypsum Board;

.9 Section 09 91 00 – Painting;

.8 Wiring and Conduit of electronic hardware in frame; Electrical Drawing.

1.4 DESIGN AND PERFORMANCE STANDARDS

.1 Details shown on drawings are schematic and are intended to convey general design intent, but shall not be taken to represent final design, responsibility for which belongs exclusively to the Contractor.

.2 Design curtain wall to withstand, without any detrimental effects to appearance and performance, wind loads and temperature range expected in geographical area of this project (OBC climatic information 50 year probability), unless specified otherwise.

.3 Design system based on rain screen principles, having all cavities outboard of the air seal, pressure equalized and drained to the exterior.

.4 Design curtain wall systems to perform as an effective air and vapour barrier.

.5 Design systems to accommodate without detrimental effects on appearance and performance of system.

.1 Wind loads, positive and negative.

.2 Thermal expansion and contraction of systems components.

.3 Movement, deflection and creep of building structural frame.

.6 Limit deflection of component parts under maximum design load to 1/175 of span or less if required by glass manufacturer.

.7 Prevent water infiltration through curtain wall systems, when tested in accordance with ASTM E331, with static pressure difference across system of 500 Pa.

.8 Limit air infiltration and exfiltration through curtain wall systems of maximum 0.0003 $m^3/s.m^2$ under a static pressure of 75 Pa when tested in accordance with ASTM E283.

.9 Curtainwall, extending below a level of 1070 mm above finished floor and where grade/floor at outside is more than 600 mm below finished floor, shall be designed as guards in accordance with requirements of OBC.

.10 Structural glazing:

.1 Carry out design of structural silicone joints by rational analysis including all movements specified herein. Maximum stress shall not exceed 138 kPa in tension or shear for short term loading. Maximum stress in shear for long term loading due to the dead load of glass shall not exceed 7 kPa or the limit imposed by sealant manufacturer, whichever is less.

.2 The joint shall be essentially rectangular in shape and shall include no internal corners which could precipitate tearing or create high local stresses.

.3 Use tempered glass where recommended by system manufacturer.

.4 Ensure and verify compatibility of all materials used in structural glazing systems.

1.5 ADMINISTRATIVE REQUIREMENTS

.1 Coordinate with related work of other Sections including, but not limited to: door, frame, hardware and electrical. Be responsible to provide adequate reinforcing, clearances, rebates and brackets for hardware specified and for accurate installation of door and hardware on site.

1.6 SUBMITTALS

.1 Shop Drawings:

.1 Visit the site to confirm appropriate existing dimensions and site conditions prior to the submission of shop drawings. Notify the Consultant of any discrepancies prior to completing shop drawings.

.2 Submit digital curtainwall shop drawings to Consultant for review.

.3 Indicate head, jamb and sill, profiles of components, (interior and exterior trim), junction between combination units, elevations of unit and description of related components. Indicate relation to adjoining work and location, construction and back-up, joint sealant, location of isolation coating, interior structure and/or details of reinforcements, glazing modules, head and frame details, mullions and details, extrusion sections (in 1/2 size, if not of the manufacture specified and drawn), glazing and glass stop details, thermal break sections and vinyl or neoprene mouldings (in 1/2 size), details of connections, anchorage, interfacing with adjacent work and assembly fixings. Clearly indicate materials used for every component on Shop Drawings.

.4 Shop drawings shall be stamped and signed by a professional engineer, licensed to practice in Ontario.

.5 Upon Consultant's request submit design calculation for curtain wall system for review.

.2 Upon Consultant's request submit test report from recognized testing agency verifying that systems provided will meet design and performance requirements.

.3 Samples:

.1 Submit two sets of samples minimum 50mm x100mm of each type of metal finish specified.

.4 Progress Photographic Documentation:

.1 Contractor to provide to the Consultant a <u>daily</u> photographic documentation report for the progress of work at the following key stages:

.1 Removal of existing windows, doors and frames;

.2 Removal of vapour barrier and insulation;

.3 Installation of insulation;

.4 Installation of blue skin.

.2 Contactor's photographs are to be clear and of a scale that allows viewing of the specific conditions.

.3 Contractor to identify any unforeseen existing conditions discovered during the four stages of documentation when the photos are emailed.

.4 Contractor to provide a floor plan is to accompany the photos to identify the room name and day work completed.

.5 Closeout Documents:

.1 Provide operation and maintenance instructions for aluminum screens, doors and hardware.

1.7 QUALITY ASSURANCE

.1 Execute the work of this Section by installers with a minimum of 5 years experience in the application of Products, systems and assemblies specified and with the approval and training of the Product Manufacturer.

.2 Fabrication tolerances: overall height, width and diagonal dimensions of frames shall be within the following tolerances:

Dimension of 2 m and less: +/- 2 mm

Dimension more than 2 m: +/- 3.5 mm

.3 Caulking installer to be a specialized installer with a minimum of 5 years experience.

.4 Glazing: comply with IGMAC recommendations and with requirements of Section 08 81 00 except where specified otherwise herein.

.5 Coordination and approval by the hardware distributer is required prior to submission of shop drawings.

1.8 DELIVERY, STORAGE AND HANDLING

.1 Deliver, handle and store fabricated components to prevent permanent distortion, corrosion and damage. Coordinate storage location with Owner.

.2 Remove wrappings from doors upon delivery to site and inspect for any damage. Replace any damaged or bent material immediately.

.3 Handle and store metal materials at the job site in such a manner to prevent damage to other materials, to existing building or property.

1.9 ENVIRONMENTAL REQUIREMENTS

.1 Sealants are not to be installed when ambient temperature is less than 5 degrees C during and forty-eight hours after installation.

1.10 WARRANTY

.1 At no cost to the Owner, correct defective Work within a five (5) year period after Substantial Completion. For the purposes of this paragraph, defects shall include, but not limited to the following:

.1 Water infiltration in excess of requirements specified.

.2 Air infiltration / exfiltration in excess of requirements specified

.3 Deflection of system components in excess of requirements specified.

.4 Failure of joint seal.

.5 Cracked glass (except where caused by vandalism).

.6 Failure of insulating glass perimeter seal.

.7 Delamination, cracking, blistering, excessive fading of metal finishes.

.2 At no cost to the Owner, warrant aluminum doors against defects for a period of ten (10) years from the date of Substantial Completion.

.3 At no cost to Owner, replace factory sealed insulating window units should cracking of glass or any other breakdown or failure of glass units occur or should obstruction of vision develop due to dust or film forming on inner glass surfaces within a period of ten (10) years from date of Substantial Performance.

.4 Include coverage for complete system for failure to meet specified requirements.

PART 2 – PRODUCTS

2.1 SYSTEMS

.1 Curtain wall framing:

.1 Archie Stouffer ES: 5500 HTP Series Framing by Windspec; 101.6mm double glazed mullion.

.2 Monck PS: 5500 HTP Series Framing by Windspec; 73mm double glazed mullion.

.3 Equivalent products by Kawneer Co. of Canada Ltd. or Alumincor Ltd.

.2 Exterior Doors: one of the following products:

.1 Exterior: 500 HTP Wide Stile Doors by Windspec.

.2 Equivalent products by Kawneer Co. of Canada Ltd. or Alumincor Ltd.

.3 Interior Doors: one of the following products:

.1 Interior: 500 Wide Stile Doors by Windspec.

.2 Equivalent products by Kawneer Co. of Canada Ltd. or Alumincor Ltd.

2.2 MATERIALS

.1 Framing Components:

.1 Aluminum extrusions: AA 6063-T5 and 6063-T6 alloy.

.2 Aluminum plate and sheet: ASTM B209, AA 1100 alloy.

.3 Steel sections and plate: CAN/CSA-G40.21-04, Grade 300W.

.4 Steel tubes: CAN/CSA-G40.21-04, Grade 350W, Class H.

.5 Screws, bolts, nuts, washers and other fasteners incorporated into aluminum sections: aluminum or ANSI Series 300 stainless steel, or hot dip galvanized steel.

.6 Anchoring devices: aluminum, non-magnetic stainless steel or hot dip galvanized steel.

.7 Thermal break: PVC.

.2 Glass and Glazing Materials:

.1 Setting blocks: Neoprene, Shore "A" Durometer hardness of 70 to 90 points; spacer shims, 40 to 50 points, as recommended by system manufacturer.

.2 Glazing Sealant: one part polysulphide meeting requirements of ASTM C920 or as recommended by system manufacturer.

.3 Structural glazing sealant: high modulus black silicone, to ASTM C920 by G.E., Tremco, or Dow Corning.

.4 Glazing Tape: preshimmed polyisobutylene: Polyshim Tape by Tremco.

.5 Glazing gaskets: solid extruded neoprene or EPDM having Shore "A" Durometer hardness of 50 to 70 points as recommended by system manufacturer.

.6 Float glass: CAN/CGSB-12.3-M91, Glazing Quality, clear.

.7 Tempered Glass (TGL / FSG): Clear transparent fully tempered glass conforming to CAN/CGSB-12.1- M90. 1, minimum 6 mm (1/4”) thick. Ensure surface compression is equal to

or greater than 69 MPa (10 000 psi). Tempered glass identification must be sandblasted into glass and shall be visible after installation.

.8 Spandrel glass (BSP): Float glass heat strengthened or tempered (if recommended by glass manufacturer); backpainted with 2-coat fluoropolymer paint system: PPG Duranar DTG XL; colour selected by Consultant.

.9 Double glazed insulating units: factory sealed units meeting requirements of CGSB-12.8-M76, clear tempered float glass inside and grey tinted tempered glass outside, nominal thickness 25 mm, with warm edge spacer, space between glass filled with argon gas; low-E coating on No. 2 surface (max U-value 0.24): PPG Solarban 60, clear or equivalent product by other manufacturer approved by Consultant.

.10 GL Low emissivity (Low-E) glass; Solarban 60 clear by PPG. Tempered glass: CAN2-12.1-M79, fully tempered, and unless noted 6 mm thick.

.11 Silk Screened Simulated Acid Etch Glass (FSSG): fully tempered Prel-Design by Prelco. Colour to be opaque - White PC-9912. To be installed on No. 2 surface of insulated glazing unit.

.3 Caulking Materials:

.1 Sealant: multi-part chemical curing type to ASTM C920; acceptable product: Tremco Dymeric or type recommended by system manufacturer; custom colours selected by Consultant.

.2 Primer: as recommended by sealant manufacturer.

.3 Joint backing: non-gassing foam rope, compressed minimum 25% when installed: Sof-Rod by Tremco.

.4 Air barrier sealant (concealed): single component, gun grade flexible foamed in place polyurethane: ExoAir Flex Foam by Tremco.

.4 Miscellaneous Materials:

.1 Concealed sheet metal closures: galvanized sheet steel, minimum 1.2 mm thick, Z275 zinc coating.

.2 Air barrier sealant: single component gun grade flexible foamed in place urethane: ExoAir Flex Foam by Tremco.

.3 Bituminous paint: alkali resistant asphaltic enamel.

.4 Bedding compound: non-hardening and nonskinning.

2.3 FABRICATION

.1 Aluminum components shall be extruded sections and shapes unless otherwise specified.

.2 Curtain wall framing shall consist of tubular inner aluminum section reinforced if necessary, pressure plate and exterior cap at horizontal framing locations and structurally glazed at vertical framing locations. Provide cap depths as indicated; use machine screws to fasten pressure plates; self-drilling, self-tapping screws are not permitted.

.3 Size units to allow for structural deflection of surrounding construction.

.4 Design work so that it will not be distorted, nor fasteners overstressed, from expansion and contraction of metal.

.5 Reinforce members as required to withstand loads and to maintain deflection within allowable limited.

.6 Internally reinforce framing members where work of other Sections is to be fastened thereto.

.7 Fastenings shall be concealed.

.8 Mechanically joined sections shall have hairline joints.

.9 Fabricate extruded or formed aluminum sills to profiles indicated to suit wall conditions and minimum 3 mm thick. Provide drip deflectors at sill ends and at abutting vertical surfaces. Open ends of sills shall be fitted with neatly applied closure plats. Anchors shall be designed not to work loose after installation. Unless otherwise detailed provide flush slip joint at intermediate sill joints.

.10 Stools, cap flashings, copings, closures, covers and trim shall be extruded or formed to profiles shown and unless otherwise shown, minimum 3 mm thick.

.11 Spandrel back-up panels: brake form insulation back-up panels from minimum 1 mm thick galvanized sheet steel at concealed locations and of minimum 1 mm thick aluminum with finish matching adjacent framing at exposed locations, designed to engage into framing in manner maintaining air and vapour barrier in all locations. Install back-up panels into framing and provide air seal, at shop, not in the field.

.12 Metal spandrel face panels: fabricate panels to profile indicated of minimum 3 mm thick aluminum sheet. Exposed face of panel shall be flat, smooth, free of waves, buckles, dents and other defects.

.13 Doors:

.1 Provide suitable subframes to incorporate doors into curtain wall.

.2 Construct doors of minimum 3 mm thick porthole extrusions, with all fastenings and connection concealed.

.3 Vertical edge profile: bevelled or rounded.

.4 Provide heavy duty reinforcing at all doors and frame hardware fastening points.

.5 Internally reinforce framing members where work of other Sections is to be fastened thereto.

.6 Provide rails and transoms to sizes and profiles shown.

.7 Prepare doors/frames for automatic door operator, provide had member of sufficient size to accommodate recessed operator.

.8 Prepare doors/frames for door contacts required for security system.

.9 Glazing stops shall be snap-on type, without exposed fasteners.

.10 Weatherstripping: provide manufacturer's standard weatherstripping at jambs, head and bottom of exterior door. Weather stripping shall be removable for replacement.

.11 Door hardware: prepare doors and frame to receive door hardware. Prepare each door/frame for continuous hinge, rim type panic device with cylinder lock, surface overhead closer, overhead stop, pull, threshold.

2.4 FINISHES

.1 Exposed aluminum surfaces: colour anodized black: AA-M10 C21 A44; Kawneer #29 Black.

.2 Contact surfaces of aluminum components with dissimilar building components shall be coated with bituminous paint.

PART 3 – EXECUTION

3.4 FRAMING

.1 Erect and secure framing plumb, square and level, free from warp, twist and superimposed loads.

.2 Anchor curtain wall system to supporting building elements; provide brackets, anchors and clips as required. All devices for anchoring shall have sufficient adjustment to permit correct and accurate alignment. After alignment, weld or otherwise positively lock anchoring devices to prevent movement other than that required to accommodate expansion, contraction and deflection.

.3 Anchor intermediate vertical frame members to structure above as required. Where support for intermediate vertical frame members is not available directly above head, provide frame extensions to structure above. Provide flexible connection at structure to allow for movement.

.4 Provide necessary inserts to be built into work of other Sections as required for anchorage of framing.

.5 Set frame members in bedding compound to ensure watertight assembly.

.6 Metal to metal joints between abutting components shall be sealed weathertight.

.7 Use concealed fastenings and anchorages in all locations. Exposed fastenings, where unavoidable, must be clearly identified on shop drawings, and require Consultant's approval prior to fabrication of work.

.8 Joints between framing members and adjacent work, which are to be caulked, shall be minimum 10 mm wide.

.9 Make airtight connections to adjacent wall and roof air barriers. Use air seal membrane which is compatible with adjacent membrane; mechanically secure and/or adhesive bond air seal membrane in place.

3.5 SPANDREL PANELS

.1 Adhere insulation clips to back-up panel at maximum 300 mm o.c. both ways; welded clips may be used in lieu of adhesive bonded type, provided pins to not easily break off and weld burn-through does not occur.

.2 Apply adhesive to back-up panels and embed insulation boards. Fit boards tightly and accurately, leave no voids or gaps. Place retainer discs over pins. Unless noted otherwise provide 100 mm thick insulation.

3.6 GLAZING

.1 Glaze openings in accordance with curtainwall and glass manufacturer's recommendation so as to achieve weathertight installation.

.2 Unless otherwise indicated provide double glazed insulating glass at all locations.

.3 Except where structural glazing is required, provide a dry/dry glazing system using glazing gaskets under constant compression.

.4 Provide structurally glazed vertical joints in accordance with system manufacturers' directions. Fill joint with sealant tool joint slightly concave, smooth, free from ridges, wrinkles, says, air pockets and embedded impurities.

3.7 DOORS

.1 Install door subframes and doors.

.2 Install door hardware and weatherstripping required, in accordance with hardwaremanufacturer's directions. Check test operation of all operable parts and, if necessary, adjust to ensure correct and smooth function.

.3 Coordinate with Division 26 for required power connection and wiring to automatic door operator and controls.

3.8 SEALANTS

.1 Seal joints in accordance with system and sealant manufacturers' recommendations. Prime contact surfaces prior to installation of sealant.

.2 Provide caulking between framing members and adjoining work, inside and outside, and where required to render work of this Section weathertight.

.3 Provide for continuity of air and vapour barrier in all locations; join up with air/vapour barrier components of adjacent systems. Where indicated, and where required to maintain continuity of air barrier, install galvanized sheet metal closures and or air seal membrane at terminations of curtain wall systems and effectively seal to adjacent building elements. Ensure that membrane materials are compatible with each other.

.4 Fill space between curtainwall perimeter frames and adjacent construction with air barrier sealant. Apply insulation with suitable equipment, in accordance with manufacturer's directions. Fill spaces completely, leaving no voids or gaps; trim excess material. Leave sufficient room for installation of interior and exterior sealant and back-up.

3.9 SILLS

.1 Provide aluminum sills, complete with chairs, anchors, expansion plates, drip deflectors as detailed.

.2 Provide sills in longest practicable lengths. Provide flush slip joints at maximum 3 m o.c. Align joints with centre line of mullions.

3.10 COPINGS, COVERS, CLOSURES AND TRIM

.1 Provide copings, covers, closures and trim as indicated and as required to provide complete and finished installation.

.2 Include metal angle for header connection.

.3 Use concealed fastenings unless approved otherwise by Consultant.

3.11 SITE QUALITY CONTROL

.1 Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of Consultant at no cost to Owner.

3.12 CLEANING

.1 Maintain aluminum work in a clean condition throughout construction period, so it will be without deterioration or damage at time of acceptance. Select methods of cleaning which will promote achievement of uniform appearance and stabilized colours and textures for materials that weather or age with exposure.

.2 Immediately before time of Substantial Performance, clean aluminum work thoroughly, inside and out. Demonstrate proper cleaning methods to Owner during this final cleaning. Prepare a "Cleaning and Maintenance Manual" listing types of cleaning compounds, cleaning methods, sealants and glazing materials of the work and submit 2 copies to Consultant.

.3 Remove protective covering and coating from aluminum surfaces, inside and out and clean surfaces, remove labels, stripes and protective devices and polish glass surfaces, immediately prior to final acceptance of the work by Consultant.

3.13 PROTECTION

.1 Protect the work of this Section from damage. Protect work of other trades resulting from the work of this Section.

.2 Provide at factory, strippable coatings on exposed surfaces of aluminum. Ensure coating and protective wrappings remain on surfaces through period other trades' works proceed on the building and removed by this trade on completion of building.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

.1 Section Includes: Supply and install aluminum windows including, but not limited to, the following:

.1 Fixed and operable thermally broken aluminum windows;

.2 Hardware for operating windows;

.3 Vision glass and insulated metal infill panels;

.4 Aluminum sills, trim, closures and cover plates;

.7 Sealants;

.8 Coordination with interior sill installation.

1.2 RELATED SECTIONS

.1 Section 01 35 16 - Alteration Procedures;

.2 Section 06 61 16 – Solid Surface Sills;

.3 Section 07 25 00 – Air Barrier;

.4 Section 07 92 00 - Sealants, except where specifically stated otherwise herein;

.5 Section 08 41 13 - Aluminum Framed Entrances and Storefronts ;

.6 Section 08 44 13 - Aluminum Curtainwall ;

.7 Section 08 80 00 – Glass and Glazing, except where specifically stated otherwise herein;

.8 Section 09 21 16 – Gypsum Board;

.9 Section 09 91 00 – Painting.

1.3 DESIGN AND PERFORMANCE STANDARDS

.1 Design systems to withstand, without any detrimental effects to appearance and performance, wind loads and temperature range expected in geographical area of this project, (OBC climatic information, 50 year probability), unless specified otherwise.

.2 Design window systems to perform as an effective air and vapour barrier.

.3 Design systems to accommodate without detrimental effects on appearance and performance of system.

.1 Thermal expansion and contraction of systems components.

.2 Movement deflection and creep of building structural frame.

.4 Limit deflection of component parts under maximum design load to 1/200 of span or less if required by glass manufacturer.

.5 Appearance:

.1 Fasteners and anchors: concealed.

.2 Joints between components: hairline, with adjacent surfaces accurately aligned.

.6 Windows extending below a level of 1070 mm above finished floor and where grade/floor at outside is more than 600 mm below finished floor, shall be designed as guards in accordance with requirements of OBC.

1.4 SUBMITTALS

.1 Shop Drawings:

.1 Visit the site to confirm appropriate existing dimensions and site conditions prior to the submission of shop drawings. Notify the Consultant of any discrepancies prior to completing shop drawings.

.2 Submit digital window shop drawings to Consultant for review.

.3 Indicate head, jamb and sill, profiles of components, (interior and exterior trim), junction between combination units, elevations of unit and description of related components. Indicate relation to adjoining work and location, construction and back-up, joint sealant, location of isolation coating, interior structure and/or details of reinforcements, glazing modules, head and frame details, mullions and details, extrusion sections (in 1/2 size, if not of the manufacture specified and drawn), glazing and glass stop details, thermal break sections and vinyl or neoprene mouldings (in 1/2 size), details of connections, anchorage, interfacing with adjacent work and assembly fixings. Clearly indicate materials used for every component on Shop Drawings.

.4 Clearly indicate how thermal expansion and contraction are to be accommodated and to what degree. Show connections to adjacent construction and provision made for structural deflections, contractions, expansion and other normal movement.

.5 Indicate details identifying coordination with the interior sill installer.

.6 Submit Shop Drawings showing where anchors and shims are placed, type of anchors, shim thicknesses, widths, number of fasteners and edge clearances for fasteners. Ensure Shop Drawings indicate allowance for deflection of structure at head of window.

.7 Shop drawings for windows required to be designed as guards to meet loading requirements in accordance with Part 4 of the Ontario Building Code, shall bear the seal of a structural

engineer who is licensed in the Province of Ontario and responsible for the design. Engineering design shall include, but not limited to, framing, glazing, attachment of frame to building and all other structural components..

8 Upon Consultant's request submit test report from recognized testing agency verifying that systems provided will meet design and performance requirements.

.2 Samples:

.1 Submit two sets of samples minimum 50mm x100mm of each type of metal finish specified.

.2 If requested by the consultant, build a window mockup into the building envelop for review and approval prior to proceeding.

.3 Progress Photographic Documentation:

.1 Contractor to provide to the Consultant a daily photographic documentation report for the progress of work at the following key stages:

.1 Removal of existing windows;

.2 Removal of vapour barrier and insulation;

.3 Installation of insulation;

.4 Installation of blue skin.

.2 Contactor’s photographs are to be clear and of a scale that allows viewing of the specific conditions.

.3 Contractor to identify any unforeseen existing conditions discovered during the four stages of documentation when the photos are emailed.

.4 Contractor to provide a floor plan is to accompany the photos to identify the room name and day work completed.

.3 Closeout Documents:

.1 Provide operation and maintenance instructions for aluminum windows.

.2 Provide a Manufacturer's Certificate certifying that Products meet or exceed specified requirements.

1.5 QUALITY ASSURANCE

.1 Execute the work of this Section by competent installers with a minimum of 5 years experience in the application of Products, systems and assemblies specified and with the approval and training of the Product Manufacturer.

.2 Caulking installer to be a specialized installer with a minimum of 5 years experience.

.3 Installer Qualifications: installation shall be by forces approved by manufacturer.

.4 Fabrication Tolerances: overall height, width and diagonal dimensions of frames shall be within the following tolerances:

Dimension of 2 m and less: +/- 2 mm

Dimension more than 2m: +/- 3.5 mm

.5 Glazing: Comply with requirements of Section 08 81 00 except where specifically stated otherwise herein.

.6 Windows shall meet or exceed the following minimum performance criteria, contained in CSA-A440-17:

.1 Air tightness: A3

.2 Water tightness: B5

.3 Wind load resistance: C5

.4 Thermal break condensation resistance: I58

1.6 DELIVERY, STORAGE AND HANDLING

.1 Deliver, handle and store fabricated components to prevent permanent distortion, corrosion and damage. Coordinate storage location with Owner.

.2 Remove wrappings from windows upon delivery to site and inspect for any damage. Replace any damaged material immediately.

.3 Handle and store metal materials at the job site in such a manner to prevent damage to other materials, to existing building or property.

1.7 ENVIRONMENTAL REQUIREMENTS

.1 Sealants are not to be installed when ambient temperature is less than 5 degrees C during and forty-eight hours after installation.

1.8 WARRANTY

.1 At no cost to the Owner, correct defective Work within a five (5) year period after Substantial Completion. For the purposes of this paragraph, defects shall include, but not limited to the following:

.1 Water infiltration in excess of requirements specified.

.2 Air infiltration / exfiltration in excess of requirements specified

.3 Deflection of system components in excess of requirements specified.

.4 Failure of joint seal.

.5 Cracked glass (except where caused by vandalism).

.6 Delamination, cracking, blistering, excessive fading of metal finishes.

.2 At no cost to the Owner, provide a manufacturer's warranty for aluminum windows for a period of ten (10) years from the date of Substantial Completion.

.3 At no cost to Owner, replace factory sealed insulating window units should cracking of glass or any other breakdown or failure of glass units occur or should obstruction of vision develop due to dust or film forming on inner glass surfaces within a period of ten (10) years from date of Substantial Performance.

.4 Warranty: Include coverage for complete system for failure to meet specified requirements.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

.1 Systems:

.1 Windows, fixed and vents, c/w operable units & insulated aluminum panels as per drawings, one of the following systems (all windows to be rainscreen):

.1 Series 925RS Windows with 535RS vent by Windspec; 152.5mm wide frame.

.2 Equivalent product by Kawneer or Alumicor;

2.2 MATERIALS

.1 Framing Components:

.1 Aluminum extrusions: AA 6063-T5 alloy.

.2 Aluminum plate and sheet: AA 1100 alloy.

.3 Screws, bolts, nuts, washers, rivets and other fasteners, incorporated into aluminum sections: aluminum or ANSI Series 300 stainless steel, or hot dip galvanized steel.

.4 Anchoring devices: aluminum, non-magnetic stainless steel or hot dip galvanized steel.

.5 Steel: CAN/CSA-G40.21-04, Grade 300 W structural quality steel and Grade 350W, Class H tubular members and ASTM A446 Grade A sheet steel.

.2 Glass and Glazing:

.1 Setting blocks: Neoprene, Shore "A" Durometer hardness of 70 to 90 points; spacer shims, 40 to 50 points, as recommended by glass manufacturers.

.2 Thermal barrier between pressure plate and mullion extrusions: extruded hard PVC.

.3 Glazing sealant: one part polysulphide meeting requirements of CAN/CGSB-19.13-M87 or as recommended by window and glass manufacturer.

.4 Glazing tape: preshimmed polyisobutylene: Polyshim Tape by Tremco.

.5 Glazing wedges and splines: solid extruded neoprene or PVC having Shore "A" Durometer hardness of 50 to 70 points as recommended by window manufacturer.

.6 Tempered Glass in all glazing (TGL / FSG): Clear transparent fully tempered glass conforming to CAN/CGSB-12.1- M90. 1, minimum 6 mm (1/4”) thick. Ensure surface compression is equal to or greater than 69 MPa (10 000 psi). Tempered glass identification must be sandblasted into glass and shall be visible after installation.

.7 Double glazed insulating units (all exterior glazing): factory sealed units meeting requirements of CGSB-12.8-M76, clear tempered float glass inside and grey tinted tempered glass outside, nominal thickness 25 mm, with warm edge spacer, space between glass filled with argon gas; low-E coating on No. 2 surface (max U-value 0.24): PPG Solarban 60, clear or equivalent product by other manufacturer approved by Consultant.

.8 GL Low emissivity (Low-E) glass in all exterior windows (FSG): Solarban 60 clear by PPG. Tempered glass: CAN2-12.1-M79, fully tempered, and unless noted 6 mm thick.

.9 Silk Screened Simulated Acid Etch Glass (FSSG): fully tempered Prel-Design by Prelco. Colour to be opaque - White PC-9912. To be installed on No. 2 surface of insulated glazing unit.

.10 Spandrel glass (BSP): Float glass heat strengthened or tempered (if recommended by glass manufacturer); backpainted with 2-coat fluoropolymer paint system: PPG Duranar DTG XL; colour selected by Consultant.

.3 Opening Vents:

.1 Provide Provide top hung opening out opening vents. Weld corners of vent frames by heli-arc welding.

.2 Provide insect screen made of 18 x 16 glass fibre mesh retained in extruded aluminium perimeter frame with removable extruded elastomer splines. Frames shall be finished to match window frames. Frames shall be rigidly joined at corners.

.3 Provide minimum 2 heavy duty butt hinges, one single crank operator, 2 friction arms, 2 claw handles and one key operated lock for each vent. Finish: Clear anodized aluminum. Fasteners: Stainless steel screws.

.4 Mount vents into main framing in factory, complete with all hardware and maintain in locked position until glazed. Limit vent opening to 100mm.

.4 Insulated Panels (IAP):

.1 Prefabricated insulated panels, as manufactured by Mapes Industries or Citadel Architectural (GlazeGuard 1000) as distributed by SRP Building Products Inc.:

.1 Exterior skin: minimum 0.4mm thick aluminum sheet with smooth surface, bonded to 3mm thick tempered hardboard stabilizer substrate. Finish: anodized to match framing.

.2 Insulating Core: expanded polystyrene rigid insulation to CGSB-51-GP-20M Type2.

.3 Interior skin: .5mm thick aluminum sheet with clear anodized finish, bonded to 3.2mm thick hardboard stabilizer substrate.

.4 Overall thickness: 51mm (2") minimum.

.5 Sealant:

.1 Multi-component conforming to ASTM C920, Type M, Grade NS for sealant to be incorporated between aluminum framing and adjacent structures. Colours to be selected by Consultant from standard colour selection. Acceptable products: Dow Corning 790 or Spectrem 2 by Tremco..

.2 Supply non-hardening, non-skimming, non-sagging, non-bleeding polyisobutylene or partially vulcanized rubber base sealant for use in concealed-sealing of thin joints in metal work.

.3 Joint backing to be non-gassing foam rope, compressed minimum 25% installed. Acceptable product: Sof-Rod by Tremco.

.6 Sills:

.1 Provide extruded aluminum sills (minimum 1.27mm thickness), complete with chairs, anchors, expansion plates and drip deflectors where windows are located on top of masonry walls.

.2 Sloped for positive wash;

.3 Fit under sash leg to 13 mm beyond wall face; one-piece full width of opening where possible.

.7 Miscellaneous Materials:

.1 Concealed membrane flashing: 1.2 mm thick EPDM membrane by Carlisle or 1 mm thick RF 40 by Lexsuco; adhesive and lap sealant as recommended by manufacturer.

.2 Bituminous paint: alkali resistant asphaltic enamel.

.3 Bedding compound: non-hardening and non-skinning.

.4 Fasteners: Stainless steel with chromium content not less than 12%.

2.3 FINISHES

.1 Clear anodized aluminum.

.2 Contact surfaces of steel and aluminum components with dissimilar building components shall be coated with bituminous paint.

2.2 FABRICATION

.1 Aluminum components shall be extruded sections and shapes, unless otherwise specified.

.2 Window framing shall consist of inner and outer aluminum sections joined by means of extruded polyvinyl chloride or polyurethane thermal break without use of other fasteners and thermal bridging elements. Provide exterior cap matching curtain wall framing.

.3 Size window units to allow for structural deflection of surrounding construction.

.4 Design work so that it will not be distorted, nor fasteners overstressed, from expansion and contraction of metal.

.5 Reinforce members as required to withstand loads and to maintain deflection within allowable limits.

.6 Internally reinforce framing members where work of other Sections is to be fastened thereto. Provide heavy duty reinforcing at all door and frame hardware fastening points. Provide continuous reinforcing at hinge side of door frames.

.7 Fastenings shall be concealed where possible. Where concealed fastenings cannot be used, use countersunk flathead screws. Exposed fastenings shall match base metal on which they occur.

.8 Mechanically joined sections shall have hairline joints.

.9 Removable glazing stops shall be fabricated in sections not exceeding length of the pane of glass being restrained.

.10 Fabricate extruded or formed aluminum sills to profiles indicated to suit wall condition and minimum 3 mm thick. Provide drip deflectors at sill ends and at abutting vertical surfaces. Open ends of sills shall be fitted with neatly applied closure plates. Anchors shall be designed not to work loose after installation. Unless otherwise detailed provide flush slip joint at intermediate sill joints.

.11 Stools, closures, covers, flashings and trim shall be extruded or formed to profiles shown and unless otherwise shown, minimum 2 mm thick.

.12 Make provision to accommodate vertical expansion and contraction of curtain wall framing without causing detrimental effects.

.13 Make provisions to drain to exterior any moisture entering or forming inside systems.

.14 Provide special tubular aluminum fins in accordance with details shown.

PART 3 – EXECUTION

3.1 EXAMINATION

.1 Verify actual site dimensions, head/sill conditions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to the installation.

.2 Commencement of work implies acceptance of previously completed work.

.3 Return any existing decommissioned hardware to Owner.

3.2 INSTALLATION

.1 Framing:

.1 Erect and secure framing plumb, square and level, free from warp, twist and superimposed loads.

.2 Anchor framing to supporting building elements; provide brackets, anchors and clips as required. All devises for anchoring shall have sufficient adjustment to permit correct and accurate alignment. After alignment rivet, weld or otherwise positively lock anchoring devices to prevent movement other than that required to accommodate expansion, contraction and deflection.

.3 Anchor intermediate vertical frame members to structure above as required. Where support for intermediate vertical frame members is not available directly above head, provide frame extensions to structure above. Provide flexible connection at structure to allow for movement.

.4 Anchor window jamb members to adjacent building elements near top and bottom and at maximum 600 mm in between.

.5 Provide necessary inserts to be built into work of other Sections as required for anchorage of framing.

.6 Set frame members in bedding compound to ensure watertight assembly.

.7 Metal to metal joints between abutting components shall be sealed weather tight.

.8 Use concealed fastenings and anchorages in all locations. Exposed fastenings, where unavoidable, must be clearly identified on shop drawings, and require Consultant's approval prior to fabrication of work.

.9 Where indicated provide membrane flashing located within or abutting window systems. Secure membrane flashings to window frames and to adjacent work mechanically or with adhesive lap membrane flashings at joints minimum 100 mm and seal.

.2 Covers, Closures and Trim:

.1 Provide aluminum covers, closures and trim as indicated and as required to provide complete and finished installation.

.2 Wherever possible, provide concealed fastenings.

.3 Glazing:

.1 Unless otherwise shown provide insulating glass at all locations.

.2 Glaze openings in accordance with window and glass manufacturer's recommendations so as to achieve weather tight installation. Provide sealant heel bead at windows and vents.

.3 Glass thickness: unless specific thickness is indicated or unless thicker glass is required by design and performance requirements, provide minimum 6 mm thick glass at all locations.

.4 Caulking:

.1 Fill space between window perimeter frames and adjacent construction with air barrier sealant. Apply insulation with suitable equipment, in accordance with manufacturer’s directions. Fill designated spaces completely, leaving no voids or gaps; trim excess material. Leave sufficient room for installation of interior and exterior sealant and back-up.

.2 Seal joints in accordance with window and sealant manufacturer's recommendations. Prime contact surfaces prior to installation of sealant. Maximum finished caulking joint to be 15mm; larger joints to be concealed with aluminum trim.

.3 Provide caulking between framing members and adjoining work and where required to render work of this Section weather tight.

.4 Provide for continuity of air / vapour barriers; seal at junction with air / vapour barriers of adjacent systems.

.5 Sills:

.1 Provide aluminum sills, complete with chairs, anchors, expansion plates and drip deflectors where windows and curtain wall are located on top of masonry walls.

.2 Provide sills in longest practicable lengths. Provide flush slip joints at maximum 3 m o.c. Locate joints as directed by Consultant.

3.3 SITE QUALITY CONTROL

.1 Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of Consultant at no cost to Owner.

3.4 CLEANING

.1 Maintain aluminum work in a clean condition throughout construction period, so it will be without deterioration or damage at time of acceptance. Select methods of cleaning which will promote achievement of uniform appearance and stabilized colours and textures for materials that weather or age with exposure.

.2 Immediately before time of Substantial Performance, clean aluminum work thoroughly, inside and out. Demonstrate proper cleaning methods to Owner during this final cleaning. Prepare a "Cleaning and Maintenance Manual" listing types of cleaning compounds, cleaning methods, sealants and glazing materials of the work and submit 2 copies to Consultant.

.3 Remove protective covering and coating from aluminum surfaces, inside and out and clean surfaces, remove labels, stripes and protective devices and polish glass surfaces, immediately prior to final acceptance of the work by Consultant.

3.5 PROTECTION

.1 Protect the work of this Section from damage. Protect work of other trades resulting from the work of this Section.

END OF SECTION

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

.1 Read and conform to:

.1 CCDC 2 - 2008, Stipulated Price Contract as amended in the Contract Documents.

.2 Division 1 requirements and documents referred to therein.

1.2 RELATED SECTIONS

.1 Section 01 35 16 - Alteration Procedures

.2 Section 08 11 16 – Aluminum Doors and Frames

.3 Section 08 41 13 – Aluminum Framed Entrances & Storefronts

.4 Electrical Drawings – Power Requirements

1.3 REFERENCE STANDARDS

.1 CAN/ULC-S104-10 - Standard Method for Fire Tests of Door Assemblies.

.2 CAN/ULC-S132-07 - Standard for Emergency Exit and Emergency Fire Exit Hardware.

.3 CSDMA (Canadian Steel Door Manufacturers Association).

.4 DHI (Door and Hardware Institute Canada) - AHC and EHC certification programs.

.5 DHI (Door Hardware Institute) - A115 series.

.6 DHI - Recommended Locations for Architectural Hardware for Flush Wood Doors (1993).

.7 BHMA (Builders Hardware Manufacturers Association) - A156 Series Standards.

.8 NFPA 80 - Standard for Fire Doors and Other Opening Protectives, 2013 Edition.

.9 NFPA 252 - Fire Tests of Door Assemblies, 2012 Edition.

.10 UL 10B-2008 - Fire Tests of Door Assemblies (10th Edition).

.11 UL 305-2012 - Standard for Panic Hardware (6th Edition).

1.4 SUBMITTALS

.1 Shop Drawings:

.1 Upon consultant’s request, submit samples of finish hardware.

.2 Prepare and submit a digital copy of a detailed hardware schedule and manufactures catalogue cuts.

.3 Provide confirmation of locations and mounting heights of each hardware item.

.4 The hands of doors shall be shown on the hardware schedule.

.5 The degree of opening for doors with overhead holders, closers and other affected hardware shall be included in the Hardware Schedule for approval.

.6 Furnish other Sections with templates required for hardware preparation and installation.

1.5 CLOSEOUT SUBMITTALS

.1 Submit Operation and Maintenance data including; operating hardware, lubrication requirements and inspection procedures related to preventative maintenance.

1.6 QUALITY ASSURANCE

.1 Meet requirements of Ontario Building Code and other applicable regulations.

.2 Manufacturer to have a minimum of five (5) years successful experience in the fabrication of automatic doors of the type required for this project.

.3 Installer performing the work of this section must have a minimum of three (3) years' experience and approved by the hardware manufacturer.

.3 Upon completion of the finish hardware installation, hardware supplier's qualified representative shall inspect the work and shall certify in writing that all items and their installation are in accordance with the requirements of the Contract Documents and are functioning properly. This document shall be included in the maintenance materials.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Deliver each hardware item packaged separately in individual containers with necessary screws, keys, instructions and installation templates.

.2 Mark each container with item number corresponding to number shown on hardware schedule with respective door number.

.3 Store hardware in dry, lockable area.

1.8 WARRANTY

.1 Provide a ten (10) year manufacturer warranty for auto door operators, door closers, lock sets and exit devices.

PART 2 – PRODUCTS

2.1 GENERAL

.1 Supply and install of door hardware is to be included in the contract as per the schedule included at the end of this Section.

.2 Hardware shall comply with requirements of jurisdictional authorities.

.3 Confirm all kick plate and threshold sizes before ordering them.

.4 Do not use wall stops on drywall.

.5 Exposed screws for installing hardware shall have Philips or Robertson heads.

.6 Confirm degree of swing for door holders and closers.

.7 Construction door Lock keying system to be BEST Cylinders colour coded core keyed alike; permanent cores will be provided by the Owner.

.8 All demolished hardware to be turned over to the Owner.

.9 Contractor to hire **360 Advanced Contracting** (Tel: 416-798-2228) to install all existing /new auto door operators and card readers.

.10 Panic hardware to include key lock with cylinders.

.11 Removable mullions to be key locked type with a clear anodized finish surface.

2.2 MATERIALS

.1 Refer to the attached hardware schedule at the end of this Section by Allegion Canada Inc.; www.allegion.com

PART 3 – EXECUTION

3.1 EXAMINATION

.1 Prior to installation, hardware supplier to visit the site to verify that doors and frames are ready to receive work and dimensions are as indicated on approved Shop Drawings. Any discrepancies are to be identified to the Consultant prior to installation.

.2 For hardware installed on existing doors and/or frames, prior to submitting shop drawings, hardware supplier shall site verify that the new hardware is compatible with existing doors and frames. Any discrepancies shall be identified to the Consultant on the shop drawings.

3.2 INSTALLATION

.1 Meet requirements of DHI A115.1G-94. “Installation Guide for Doors and Hardware”.

.2 Install finish hardware in accordance with hardware supplier’s directions. Ensure that hardware is installed correctly. Issue instructions, if required, to related Sections.

.3 Contractor’s shop drawing approval by the Consultant of locations and mounting heights of finish hardware required prior to installation.

3.3 PROTECTION

.1 Upon completion of installation, protect hardware from potential damage due to adjacent work.

3.4 SCHEDULE

.1 Finishes:

ANSI	US	Description	Base Metal
626	US26D	Satin Chromium Plated Over Nickel	Brass, Bronze
627	US27	Satin Aluminum, Clear Coated	Aluminum
628	US28	Satin Aluminum, Clear Anodized	Aluminum
630	US32D	Satin Stainless Steel	Stain. Steel 300 Ser
652	US26D	Satin Chromium Plated Over Nickel	Steel
689	US28	Aluminum Painted	Any

.2 Manufacturers:

Abbrev	Name
ADA	Adams Rite Manufacturing Co Assa Abloy Door Security Solutions
BES	Stanley Security Solutions Best Access Systems
CBH	Canadian Builders Hardware Mfg. Inc.
GLY	Glynn-Johnson Corp Allegion, PLC
HES	Hes Inc An Assa Abloy Group Company
HOR	Horton, Inc. Stack Door Division
IVE	H.B. Ives Allegion, PLC
KNC	K.N. Crowder Mfg. Inc.
LCN	LCN Commercial Division Allegion, PLC
SAR	Sargent Manufacturing Co Assa Abloy Door Security Solutions
SCH	Schlage Lock Company Allegion, PLC
TAH	Thomas Architectural Hardware K.M. Thomas Company Ltd.

.3 Schedule:

.1 General:

.1 Contractor to provide cylinders and Construction cores. It is required to be BEST- COLOUR CODED Cylinders colour coded core keyed alike. Permanent cores will be provided by the Owner.

.2 Existing and new auto door operators and card readers are to be installed by **360 Advanced Contracting** (Tel: 416-798-2228) as part of this contract.

.3 Panic hardware to include key lock with cylinders.

.4 All removable mullions to be key locked type with cylinders. All removable mullions on aluminum doors to have a clear anodized finish surface (L980A)

.4 **JD Hodgson Elementary School Hardware Schedule:**

Hardware Group No. 01
For use on Door #(s):
101A
Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
8	EA	HINGE	5BB1HW 127X114MM NRP	652	IVE
1	EA	FIRE KEYED REMOVABLE MULLION	12-70-L980S X 980C1	600	SAR
2	EA	FIRE EXIT DEVICE	12-70-8813-ETL	630	SAR
3	EA	PERMANENT CORE	BEST - BY OWNER	626	BES
3	EA	CONSTRUCTION CORE	BEST - COLOUR CODED	UNF	BES
2	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN
2	EA	KICK PLATE	CBH 903 150 X SIZE TO SUIT	630	CBH
1	EA	MULLION GASKETING	139N PSA X OPENING HEIGHT		ZER
1	EA	GASKETING	188SBK PSA X 1@HD / 2@JMB	BK	ZER

NOTE: EXISTING HARDWARE NOT RE-USED, TURN OVER TO OWNER.
NOTE: EXISTING DOOR CLOSERS CANNOT BE USED, UNITS INSTALLED ARE HOLD OPEN CLOSERS

Hardware Group No. 02
For use on Door #(s):
101B
Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
8	EA	HINGE	5BB1HW 127X114MM NRP	652	IVE
1	EA	ELECTRIC STRIKE	9500	630	HES
1	EA	FIRE KEYED REMOVABLE MULLION	12-70-L980S X 980C1	600	SAR
2	EA	FIRE EXIT DEVICE	12-70-8813-ETL	630	SAR
3	EA	PERMANENT CORE	BEST - BY OWNER	626	BES
3	EA	CONSTRUCTION CORE	BEST - COLOUR CODED	UNF	BES
1	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN
1	EA	AUTO OPERATOR & ACTUATORS	EXISTING TO BE REUSED	UNF	UNK
2	EA	KICK PLATE	CBH 903 150 X SIZE TO SUIT	630	CBH
1	EA	MULLION GASKETING	139N PSA X OPENING HEIGHT		ZER
1	EA	GASKETING	188SBK PSA X 1@HD / 2@JMB	BK	ZER

Hardware Group No. 03
For use on Door #(s):
136
Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1HW 127X114MM	652	IVE
1	SET	CONST LATCHING BOLT	FB51P	630	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	VANDL CLASSROOM SEC	ND95BD RHO 14-042 XN12-035	626	SCH
1	EA	PERMANENT CORE	BEST - BY OWNER	626	BES
1	EA	CONSTRUCTION CORE	BEST - COLOUR CODED	UNF	BES
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	MOUNTING BRACKET	MB1/MB2 MODEL TO SUIT FRAME PROFILE	689	IVE
2	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN
2	EA	KICK PLATE	CBH 903 150 X SIZE TO SUIT	630	CBH
1	EA	GASKETING	188SBK PSA X 1@HD / 2@JMB	BK	ZER
1	EA	ASTRAGAL	BY HOLLOW METAL DOOR SUPPLIER	600	UNK

.5 **Archie Stouffer Elementary School Hardware Schedule:**

Hardware Group No. 01
For use on Door #(s):
101
Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
2	EA	CONT. HINGE	112XY X DOOR HEIGHT		628	IVE
1	EA	ELECTRIC STRIKE	9500		630	HES
1	EA	FIXED MULLION	BY ALUMINUM DOOR/FRAME MANUTACTURER		628	UNK
1	EA	EXIT DEVICE	16-70-8810		630	SAR
1	EA	EXIT DEVICE	16-70-LC-8804		630	SAR
3	EA	PERMANENT CORE	BEST - BY OWNER		626	BES
2	EA	CONSTRUCTION CORE	BEST - COLOUR CODED			BES
1	EA	CONSTRUCTION CYLINDER & CORE	BEST - COLOUR CODED			BES
1	EA	PULL PLATE	CBH 375		630	CBH
1	EA	PULL PLATE	CBH 375 X CYLINDER HOLE		630	CBH
1	EA	OH STOP	100S ADJ		630	GLY
1	EA	OH STOP	100S		630	GLY
1	EA	SURFACE CLOSER	4040XP LONG TOP JAMB		689	LCN
1	EA	AUTO OPERATOR	4900LE C/W 3 POSITION KEY SWITCH	↯		HOR
1	EA	MOUNTING PLATE	4040XP-18G		689	LCN
2	EA	WIRELESS ACTUATOR, WALL MOUNT	8310-3852WS	↯	630	LCN
2	EA	ACTIVATION RECEIVER	8310-865	↯	630	LCN
1	SET	WEATHERSTRIP	BY ALUMINUM DOOR/FRAME MANUFACTURER		UNF	UNK
4	EA	DOOR SWEEP	BY ALUMINUM DOOR/FRAME MANUFACTURER		628	UNK
2	EA	THRESHOLD	CT-45 X OPENING WIDTH		627	KNC
1		CARD/FOB READER	RE-USE EXISTING			

NOTE: RE-USE EXISTING CARD/FOB READER
NOTE: PANIC BAR LENGTH TO SUIT DOOR WIDTH.
NOTE: PANIC DEVICE REQUIRES STRIKE TO SUIT FRAME.
NOTE: INSUL-CALD DOOR, TYPICAL FOR EXTERIOR.

Hardware Group No. 02
For use on Door #(s):
101A
Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
2	EA	CONT. HINGE	112XY X DOOR HEIGHT		628	IVE
1	EA	FIXED MULLION	BY ALUMINUM DOOR/FRAME MANUTACTURER		628	UNK
2	EA	DUMMY RAIL	8893		630	SAR
2	EA	DOOR PULL	CBH 9430B #1MTG		630	CBH
1	EA	OH STOP	100S ADJ		630	GLY
1	EA	OH STOP	100S		630	GLY
1	EA	SURFACE CLOSER	4040XP LONG TOP JAMB		689	LCN
1	EA	AUTO OPERATOR	4900LE C/W 3 POSITION KEY SWITCH	↯		HOR
1	EA	MOUNTING PLATE	4040XP-18G		689	LCN
2	EA	WIRELESS ACTUATOR, WALL MOUNT	8310-3852WS	↯	630	LCN
2	EA	ACTIVATION RECEIVER	8310-865	↯	630	LCN

NOTE: DUMMY BAR LENGTH TO SUIT DOOR WIDTH.

Hardware Group No. 03
For use on Door #(s):
101B 115B 155A 160B
Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	112XY X DOOR HEIGHT	628	IVE
1	EA	KEYED REMOVABLE MULLION	70-L980A X 980C1	628	SAR
2	EA	DUMMY RAIL	8893	630	SAR
1	EA	PERMANENT CORE	BEST - BY OWNER	626	BES
1	EA	CONSTRUCTION CORE	BEST - COLOUR CODED		BES
2	EA	DOOR PULL	CBH 9430B #1MTG	630	CBH
2	EA	OH STOP & HOLDER	100H	630	GLY
2	EA	SURFACE CLOSER	4040XP LONG TOP JAMB	689	LCN
2	EA	MOUNTING PLATE	4040XP-18G	689	LCN
1	EA	GASKETING	BY ALUMINUM DOOR/FRAME MANUFACTURER	UNF	UNK

NOTE: DUMMY BAR LENGTH TO SUIT DOOR WIDTH.

Hardware Group No. 04
For use on Door #(s):
115C 160A
Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	112XY X DOOR HEIGHT	628	IVE
1	EA	KEYED REMOVABLE MULLION	70-L980A X 980C1	628	SAR
1	EA	EXIT DEVICE	16-70-8810	630	SAR
1	EA	EXIT DEVICE	16-70-LC-8804	630	SAR
4	EA	PERMANENT CORE	BEST - BY OWNER	626	BES
3	EA	CONSTRUCTION CORE	BEST - COLOUR CODED		BES
1	EA	CONSTRUCTION CYLINDER & CORE	BEST - COLOUR CODED		BES
1	EA	PULL PLATE	CBH 375	630	CBH
1	EA	PULL PLATE	CBH 375 X CYLINDER HOLE	630	CBH
2	EA	OH STOP	100S	630	GLY
2	EA	SURFACE CLOSER	4040XP LONG TOP JAMB	689	LCN
2	EA	MOUNTING PLATE	4040XP-18G	689	LCN
1	SET	WEATHERSTRIP	BY ALUMINUM DOOR/FRAME MANUFACTURER	UNF	UNK
4	EA	DOOR SWEEP	BY ALUMINUM DOOR/FRAME MANUFACTURER	628	UNK
1	EA	THRESHOLD	CT-45 X OPENING WIDTH	627	KNC

NOTE: PANIC BAR LENGTH TO SUIT DOOR WIDTH.
NOTE: CUT AND NOTCH THRESHOLD TO ACCOMMOATE REMOVABLE MULLION.

Hardware Group No. 05
For use on Door #(s):
101C
Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	112XY X DOOR HEIGHT	628	IVE
1	EA	ELECTRIC STRIKE	9500	630	HES
1	EA	KEYED REMOVABLE MULLION	70-L980A X 980C1	628	SAR
1	EA	EXIT DEVICE	16-70-8810	630	SAR
1	EA	EXIT DEVICE	16-70-LC-8804	630	SAR
4	EA	PERMANENT CORE	BEST - BY OWNER	626	BES
3	EA	CONSTRUCTION CORE	BEST - COLOUR CODED		BES
1	EA	CONSTRUCTION CYLINDER & CORE	BEST - COLOUR CODED		BES
1	EA	PULL PLATE	CBH 375	630	CBH
1	EA	PULL PLATE	CBH 375 X CYLINDER HOLE	630	CBH
2	EA	OH STOP	100S	630	GLY
2	EA	SURFACE CLOSER	4040XP LONG TOP JAMB	689	LCN
2	EA	MOUNTING PLATE	4040XP-18G	689	LCN
1	SET	WEATHERSTRIP	BY ALUMINUM DOOR/FRAME MANUFACTURER	UNF	UNK
4	EA	DOOR SWEEP	BY ALUMINUM DOOR/FRAME MANUFACTURER	628	UNK
1	EA	THRESHOLD	CT-45 X OPENING WIDTH	627	KNC
1		CARD/FOB READER	RE-USE EXISTING		

NOTE: PANIC BAR LENGTH TO SUIT DOOR WIDTH.
NOTE: CUT AND NOTCH THRESHOLD TO ACCOMMOATE REMOVABLE MULLION.

Hardware Group No. 06
For use on Door #(s):

102	126C	128C	141A	141B	147
154	161	162			

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY X DOOR HEIGHT	628	IVE
1	EA	EXIT DEVICE	16-70-LC-8804	630	SAR
2	EA	PERMANENT CORE	BEST - BY OWNER	626	BES
1	EA	CONSTRUCTION CORE	BEST - COLOUR CODED		BES
1	EA	CONSTRUCTION CYLINDER & CORE	BEST - COLOUR CODED		BES
1	EA	PULL PLATE	CBH 375 X CYLINDER HOLE	630	CBH
1	EA	OH STOP	100S	630	GLY
1	EA	SURFACE CLOSER	4040XP LONG TOP JAMB	689	LCN
1	EA	MOUNTING PLATE	4040XP-18G	689	LCN
1	SET	WEATHERSTRIP	BY ALUMINUM DOOR/FRAME MANUFACTURER	UNF	UNK
2	EA	DOOR SWEEP	BY ALUMINUM DOOR/FRAME MANUFACTURER	628	UNK
1	EA	THRESHOLD	CT-45 X OPENING WIDTH	627	KNC

NOTE: PANIC BAR LENGTH TO SUIT DOOR WIDTH.
NOTE: PANIC DEVICE REQUIRES STRIKE TO SUIT FRAME.

Hardware Group No. 07
For use on Door #(s):
106
Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 127X114MM NRP	630	IVE
1	EA	VANDL STOREROOM LOCK	ND96BD RHO	626	SCH
1	EA	PERMANENT CORE	BEST - BY OWNER	626	BES
1	EA	CONSTRUCTION CORE	BEST - COLOUR CODED		BES
1	EA	LOCK GUARD	LG12	630	IVE
1	EA	SURFACE CLOSER	4040XP SCUSH ST-1595 ST-3068	689	LCN
1	EA	WEATHERSTRIP	W-20S X HEAD WIDTH	628	KNC
2	EA	WEATHERSTRIP	W-50S X JAMB HEIGHT	628	KNC
1	EA	DOOR SWEEP	W-24S X DOOR WIDTH	628	KNC
1	EA	THRESHOLD	CT-66 X OPENING WIDTH	627	KNC

Hardware Group No. 08
For use on Door #(s):
106A
Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY X DOOR HEIGHT	628	IVE
1	EA	VANDL STOREROOM LOCK	ND96BD RHO	626	SCH
1	EA	PERMANENT CORE	BEST - BY OWNER	626	BES
1	EA	CONSTRUCTION CORE	BEST - COLOUR CODED		BES
1	EA	LOCK GUARD	LG12	630	IVE
1	EA	OH STOP	100S	630	GLY
1	EA	SURFACE CLOSER	4040XP LONG TOP JAMB	689	LCN
1	EA	MOUNTING PLATE	4040XP-18G	689	LCN
1	SET	WEATHERSTRIP	BY ALUMINUM DOOR/FRAME MANUFACTURER	UNF	UNK
2	EA	DOOR SWEEP	BY ALUMINUM DOOR/FRAME MANUFACTURER	628	UNK
1	EA	THRESHOLD	CT-66 X OPENING WIDTH	627	KNC

Hardware Group No. 09
For use on Door #(s):
115
Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	112XY X DOOR HEIGHT	628	IVE
1	EA	KEYED REMOVABLE MULLION	70-L980A X 980C1	628	SAR
1	EA	EXIT DEVICE	16-70-8810	630	SAR
1	EA	EXIT DEVICE	16-70-LC-8804	630	SAR
4	EA	PERMANENT CORE	BEST - BY OWNER	626	BES
3	EA	CONSTRUCTION CORE	BEST - COLOUR CODED		BES
1	EA	CONSTRUCTION CYLINDER & CORE	BEST - COLOUR CODED		BES
1	EA	PULL PLATE	CBH 375	630	CBH
1	EA	PULL PLATE	CBH 375 X CYLINDER HOLE	630	CBH
1	EA	OH STOP	100S ADJ	630	GLY
1	EA	OH STOP	100S	630	GLY
1	EA	SURFACE CLOSER	4040XP LONG TOP JAMB	689	LCN
1	EA	AUTO OPERATOR	RE-USE EXISTING AND ACTUATORS		HOR
1	EA	MOUNTING PLATE	4040XP-18G	689	LCN
1	SET	WEATHERSTRIP	BY ALUMINUM DOOR/FRAME MANUFACTURER	UNF	UNK
4	EA	DOOR SWEEP	BY ALUMINUM DOOR/FRAME MANUFACTURER	628	UNK
1	EA	THRESHOLD	CT-45 X OPENING WIDTH	627	KNC

NOTE: RE-USE EXISTING AUTO OPERATOR AND ACTUATORS.
NOTE: PANIC BAR LENGTH TO SUIT DOOR WIDTH.
NOTE: CUT AND NOTCH THRESHOLD TO ACCOMMOATE REMOVABLE MULLION.

Hardware Group No. 10
For use on Door #(s):
115A
Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	112XY X DOOR HEIGHT	628	IVE
1	EA	KEYED REMOVABLE MULLION	70-L980A X 980C1	628	SAR
2	EA	DUMMY RAIL	8893	630	SAR
1	EA	PERMANENT CORE	BEST - BY OWNER	626	BES
1	EA	CONSTRUCTION CORE	BEST - COLOUR CODED		BES
2	EA	DOOR PULL	CBH 9430B #1MTG	630	CBH
1	EA	OH STOP & HOLDER	100H	630	GLY
1	EA	OH STOP	100S ADJ	630	GLY
1	EA	SURFACE CLOSER	RE-USE EXISTING AND ACTUATORS		
1	EA	AUTO OPERATOR	4900LE C/W 3 POSITION KEY SWITCH		HOR
1	EA	MOUNTING PLATE	4040XP-18G	689	LCN

NOTE: RE-USE EXISTING AUTO OPERATOR AND ACTUATORS

NOTE: DUMMY BAR LENGTH TO SUIT DOOR WIDTH.
NOTE: CONFIRM USE OF CBH 375

Hardware Group No. 11
For use on Door #(s):
126B 127B 128B 129B
Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 114X114MM	652	IVE
1	EA	PUSH PLATE	CBH 923 101 X 406	630	CBH
1	EA	DOOR PULL	CBH 9430B #1MTG	630	CBH
1	EA	SURFACE CLOSER	4040XP EDA ST-3068	689	LCN
1	EA	KICK PLATE	CBH 903 150 X SIZE TO SUIT	630	CBH
1	EA	WALL STOP	CBH 140	630	CBH
3	EA	SILENCER	SR64	GRY	IVE

Hardware Group No. 12
For use on Door #(s):
140A 155B
Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	112XY X DOOR HEIGHT	628	IVE
1	EA	KEYED REMOVABLE MULLION	70-L980A X 980C1	628	SAR
1	EA	EXIT DEVICE	16-70-8810	630	SAR
1	EA	EXIT DEVICE	16-70-LC-8804	630	SAR
3	EA	PERMANENT CORE	BEST - BY OWNER	626	BES
4	EA	CONSTRUCTION CORE	BEST - COLOUR CODED		BES
1	EA	CONSTRUCTION CYLINDER & CORE	BEST - COLOUR CODED		BES
1	EA	PULL PLATE	CBH 375	630	CBH
1	EA	PULL PLATE	CBH 375 X CYLINDER HOLE	630	CBH
2	EA	OH STOP	100S	630	GLY
2	EA	SURFACE CLOSER	4040XP LONG TOP JAMB	689	LCN
2	EA	MOUNTING PLATE	4040XP-18G	689	LCN
1	SET	WEATHERSTRIP	BY ALUMINUM DOOR/FRAME MANUFACTURER	UNF	UNK
4	EA	DOOR SWEEP	BY ALUMINUM DOOR/FRAME MANUFACTURER	628	UNK
1	EA	THRESHOLD	CT-45 X OPENING WIDTH	627	KNC

NOTE: PANIC BAR LENGTH TO SUIT DOOR WIDTH.
NOTE: CUT AND NOTCH THRESHOLD TO ACCOMMOATE REMOVABLE MULLION.

Hardware Group No. 13
For use on Door #(s):
163A
Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	112XY X DOOR HEIGHT	628	IVE
1	EA	ELECTRIC STRIKE	9500	630	HES
1	EA	KEYED REMOVABLE MULLION	70-L980A X 980C1	628	SAR
1	EA	EXIT DEVICE	16-70-8810	630	SAR
1	EA	EXIT DEVICE	16-70-LC-8804	630	SAR
3	EA	PERMANENT CORE	BEST - BY OWNER	626	BES
4	EA	CONSTRUCTION CORE	BEST - COLOUR CODED		BES
1	EA	CONSTRUCTION CYLINDER & CORE	BEST - COLOUR CODED		BES
1	EA	PULL PLATE	CBH 375	630	CBH
1	EA	PULL PLATE	CBH 375 X CYLINDER HOLE	630	CBH
1	EA	OH STOP	100S ADJ	630	GLY
1	EA	OH STOP	100S	630	GLY
1	EA	SURFACE CLOSER	4040XP LONG TOP JAMB	689	LCN
1	EA	AUTO OPERATOR	RE-USE EXISTING AND ACTUATORS		
1	EA	MOUNTING PLATE	4040XP-18G	689	LCN
1	SET	WEATHERSTRIP	BY ALUMINUM DOOR/FRAME MANUFACTURER	UNF	UNK
4	EA	DOOR SWEEP	BY ALUMINUM DOOR/FRAME MANUFACTURER	628	UNK
1	EA	THRESHOLD	CT-45 X OPENING WIDTH	627	KNC
1		CARD/FOB READER	RE-USE EXISTING		

NOTE: PANIC BAR LENGTH TO SUIT DOOR WIDTH.
NOTE: CUT AND NOTCH THRESHOLD TO ACCOMMOATE REMOVABLE MULLION.

Hardware Group No. 14
For use on Door #(s):
163B
Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
2	EA	CONT. HINGE	112XY X DOOR HEIGHT		628	IVE
1	EA	KEYED REMOVABLE MULLION	70-L980A X 980C1		628	SAR
2	EA	DUMMY RAIL	8893		630	SAR
1	EA	PERMANENT CORE	BEST - BY OWNER		626	BES
1	EA	CONSTRUCTION CORE	BEST - COLOUR CODED			BES
2	EA	DOOR PULL	CBH 9430B #1MTG		630	CBH
1	EA	OH STOP & HOLDER	100H		630	GLY
1	EA	OH STOP	100S ADJ		630	GLY
1	EA	SURFACE CLOSER	4040XP LONG TOP JAMB		689	LCN
1	EA	AUTO OPERATOR	RE-USE EXISTING AND ACTUATORS	↙		HOR
1	EA	MOUNTING PLATE	4040XP-18G		689	LCN
1	EA	GASKETING	BY ALUMINUM DOOR/FRAME MANUFACTURER		UNF	UNK

NOTE: DUMMY BAR LENGTH TO SUIT DOOR WIDTH.

END OF SECTION

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

.1 Read and conform to:

.1 CCDC 2 - 2008, Stipulated Price Contract as amended in the Contract Documents.

.2 Division 1 requirements and documents referred to therein.

1.2 SUMMARY

.1 Section Includes: Supply and install glass and glazing including, but not limited to, the following:

.1 Hollow Metal Door, Window and Screen Glazing;

.2 Fire Rated Glazing;

.3 Sealants;

1.3 RELATED SECTIONS

.1 Section 01 35 16 - Alteration Procedures;

.2 Section 07 92 00 - Sealants, except where specifically stated otherwise herein;

.3 Section 08 41 13 - Aluminum Framed Entrances and Storefronts ;

1.4 ADMINISTRATIVE REQUIREMENTS

.1 Review installation methods, procedures, time schedule and conditions under which work shall proceed including manufacturer's written instructions and coordination required with related work.

.2 Review and finalize construction schedule, verify availability of materials, experienced installer, equipment, and facilities needed to make progress and avoid delays.

1.5 SUBMITTALS

.1 Submit digital product data sheets on all glass types for approval prior to commencing work.

.2 Submit Manufacturer’s Certificate that certifies **fire rated glass and insulated glass** meets or exceeds specified requirements.

.3 Close Out: Provide operation and maintenance data indicating cleaning instructions for inclusion into Maintenance Manual.

1.6 QUALITY ASSURANCE

.1 Provide experienced installer who is trained and experienced in glass and glazing requirements of this Section including familiarization with standards specified herein and capable to instruct installation requirements of this Section.

.2 Every pane of glass shall be factory labelled and label shall remain in place until final cleaning. Safety, Tempered and Fire Rated glass shall have permanent identification.

.2 Caulking installer to be a specialized installer with a minimum of 5 years experience.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Deliver glass and associated materials to site in original crates and containers with manufacturer's name and brand distinctly marked thereon and with glass labelled as to types. Do not remove labels on glass until after work is accepted by Consultant.

.2 Storage and Handling Requirements: Store materials within the building, in a clean, dry location, acceptable or as designated by Owner. Fully protect materials from damage of any kind until ready for use.

.3 Handle and store metal materials at the job site in such a manner to prevent damage to other materials, to existing building or property.

1.8 ENVIRONMENTAL REQUIREMENTS

.1 Do not perform glazing when temperature is less than 7 deg C or sash or frames are wet, damp or frosted.

1.9 WARRANTY

.1 At no cost to Owner, replace factory sealed insulating window units should cracking of glass or any other breakdown or failure of glass units occur or should obstruction of vision develop due to dust or film forming on inner glass surfaces within a period of ten (10) years from date of Substantial Performance.

PART 2 – PRODUCTS

2.1 MATERIALS

.1 Tempered Glass in all glazing (TGL / FSG): Clear transparent fully tempered glass conforming to CAN/CGSB-12.1- M90. 1, minimum 6 mm (1/4”) thick. Ensure surface compression is equal to or greater than 69 MPa (10 000 psi). Tempered glass identification must be sandblasted into glass and shall be visible after installation.

.2 Interior Fire Rated Glass 1 (FRG 1): clear 45 minute fire rated glass to CAN/ULC –S104, S106 tested, Glazing Quality; 19mm thickness; Fire rating identification must be sandblasted into glass and shall be visible after installation. Acceptable Manufacturer: Contraflam 45. Location: JD Hodgson ES.

.3 Interior Fire Rated Glass 2 (FRG 2): clear 60 minute fire rated glass to CAN/ULC-S101 tested. Glazing Quality; 25mm thickness; Fire rating identification must be sandblasted into glass and shall be visible after installation. Acceptable Manufacturer: Contraflam 60. Location: JD Hodgson ES.

.4 Exterior Insulated Fire Rated Glass 3 (FRG 3): clear 45 minute fire rated glass to CAN/ULC –S104, S106 tested, Glazing Quality; 32mm thickness; Fire rating identification must be sandblasted into glass and shall be visible after installation. Acceptable Manufacturer: Contraflam IGU 45. Location: Archie Stouffer E.S.

.5 Spandrel glass (BSP): Float glass heat strengthened or tempered (if recommended by glass manufacturer); backpainted with 2-coat fluoropolymer paint system: PPG Duranar DTG XL; colour selected by Consultant.

.6 Double glazed insulating units (all exterior glazing): factory sealed units meeting requirements of CGSB-12.8-M76, clear tempered float glass inside and grey tinted tempered glass outside, nominal thickness 25 mm, with warm edge spacer, space between glass filled with argon gas; low-E coating on No. 2 surface (max U-value 0.24): PPG Solarban 60, clear or equivalent product by other manufacturer approved by Consultant.

.7 GL Low emissivity (Low-E) glass; Solarban 60 clear by PPG. Tempered glass: CAN2-12.1-M79, fully tempered, and unless noted 6 mm thick.

.8 Silk Screened Simulated Acid Etch Glass (FSSG): fully tempered Prel-Design by Prelco. Colour to be opaque - White PC-9912. To be installed on No. 2 surface of insulated glazing unit

.9 Setting blocks: neoprene, Shore 'A' durometer hardness of 70 to 90 points; spacer shims, 40 to 50 points, as recommended by glass manufacturer.

.10 Glazing compound: Non-hardening modified oil type. Colour to match adjacent surfaces unless indicated otherwise.

.11 Glazing sealant: to ASTM C920-18: one part polysulphide or one part silicone.Colour to match adjacent surfaces unless indicated otherwise.

.12 Glazing tape: polyisobutylene tape; acceptable product: Tremco 440 tape. Glazing tape for fire-rated glass must be PVC.

.13 Glazing gasket: Tremco Vision Strip; colour selected by Consultant.

PART 3 – EXECUTION

3.1 EXAMINATION

.1 Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to the installation.

.2 Ensure glass is not more than 4 mm (3/16") less than the rebate size in either dimension, with allowance for edge spacers, shims and setting blocks as required.

.3 Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2 INSTALLATION

.1 Thoroughly clean glass rebates and glass of dust, dirt, mortar and other foreign materials prior to glazing. Remove oils and grease with non-staining solvents such as Xycol or Methyl Ethyl Ketone solutions prior to installation.

.2 Do not glaze when ambient or surface temperature is less than 5oC. Ensure that glazing rabbets, stops and glass are dry, free of frost, grease, oil, dust, rust and other substances detrimental to adhesion of compounds and sealants.

.3 Provide clearance at perimeter edge of glass on all four sides, minimum equal to glass thickness. Accurately cut glass to fit openings, allowing for expansion in accordance with glass manufacturer's recommendations.

.4 Provide sealer space between face of glass and glazing stops of minimum 3 mm.

.5 Clean sealing surfaces at perimeter of glass and sealing surfaces of rabbets and stop beads before applying glazing tapes, gaskets and compounds. Use solvents and cleaning agents recommended by manufacturer of sealing materials.

.6 Install glazing tapes uniformly with accurately formed corners and bevels. Ensure that proper contact is made with glass and rabbet interfaces.

.7 Set glass on setting blocks, spaced as recommended by glass manufacturer. Provide at least one setting block at quarter points from each corner.

.8 Centre glass in glazing rabbet to maintain specified clearances at perimeter on all four sides. Maintain centred position of glass in rabbet and provide the required sealer thickness on both sides of glass.

.9 Use spacers and shims in accordance with glass manufacturer's recommendations.

.10 Carefully remove glazing stops and reinstall after glazing.

.11 Mark each pane of glass to indicate presence of glass.

.12 Interior Glazing: Apply glazing tape to permanent stop; centre glass in opening and set on setting blocks; apply glass and press against tape. Apply glazing tape to removable stops and install stops. Trim tape for neat appearance.

.13 Fire Rated Hollow Metal Windows, Doors and Screens: Set glass in fire rated metals windows, doors and screens on continuous setting block with 3 mm (1/8") gap between glazing stop glass and embed in glazing compound in accordance with NFPA 80 and OBC requirements. Strike and point exposed joints between metal and glass or install glass in accordance to ULC tested proprietary methods of installation.

3.3 SITE QUALITY CONTROL

.1 Ensure framing to be glazed is plumb, secure and permanently fixed in position.

.2 Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of Consultant at no cost to Owner.

3.4 CLEANING

.1 Clean installed glass and metal frequently during construction. Avoid etching and staining glass and metal during construction.

.2 Remove sealant and compound droppings from finished surface.

.3 Remove markings and labels at time of final clean-up. Ensure final clean-up is carried out in accordance with glass and sealant manufacturer's recommendations to Consultant's satisfaction

3.5 PROTECTION

.1 Protect the work of this Section from damage. Protect work of other trades resulting from the work of this Section.

.2 Replace cracked, broken, or defective glass at no additional cost to Owner and to Consultant's satisfaction.

3.6 SCHEDULE

.1 Provide the following glass:

.1 Fire rated glass: fire rated components (refer to drawings and schedules).

.2 Insulating glass: all exterior glazing.

.3 Tempered glass: all windows, doors and screens, except where other type glass is required.

.4 Provide glass thickness as indicated. Where no thickness is indicated, provide 6 mm thick glass.

END OF SECTION

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

.1 Read and conform to:

.1 CCDC 2 - 2008, Stipulated Price Contract as amended in the Contract Documents.

.2 Division 1 requirements and documents referred to therein.

1.2 SUMMARY

.1 Section Includes: Provide Gypsum Board work including but not limited to following:

.1 Gypsum board ceilings, partitions, bulkheads and soffits;

.2 Ceiling, bulkhead and soffit suspension system;

.3 Corner beads, casing beads, trim, control joints and corner reinforcement;

.4 Steel studs and furring channels;

.5 Taping and filling;

.6 Fire rated wall assemblies;

.7 Installation of doors supplied by other trades in gypsum board walls and ceilings as required.

1.3 RELATED SECTIONS

.1 Section 01 35 16 - Alteration Procedures;

.2 Section 07 84 00 -Firestopping and Smoke Seals;

.3 Section 07 92 00 - Sealants;

.4 Section 09 91 00 – Painting;

.5 Supply of access doors – Division 21 to 28 incl.

1.4 REFERENCE STANDARDS

.1 Definition: Drywall = Gypsum board

.2 Interior metal framing and furring: comply with applicable requirements of ASTM C754-18 and ASTM C840-18 unless otherwise shown.

.3 Gypsum board application and finishing: comply with requirements of ASTM C840-18, unless otherwise shown.

.4 Gypsum board surfaces exposed to view shall meet Gypsum Association GA 214-10 Recommended Levels of Gypsum Board Finish “Level 4”.

1.5 ADMINISTRATIVE REQUIREMENTS

.1 Coordination:

.1 Coordinate installation and cooperate with mechanical and electrical trades to accommodate mechanical electrical items and any other work required to be incorporated into or coordinated with ceiling and soffit systems.

.2 Cooperate and coordinate with Sections applying wet trades and trades installing mechanical and electrical services. Coordinate stud layout at partitions accommodating wall mounted fixtures by other trades.

1.6 SUBMITTALS

.1 Shop Drawings:

.1 Submit digital shop drawings showing design, construction, control joint layout, sound attenuating construction, adjacent construction, elevations, finishes and relevant details of furring, enclosures and partitions which require fire rating.

.2 Samples:

.1 Provide 300 mm long samples of corner beads, edge trims and insulating strip.

1.7 QUALITY ASSURANCE

.1 Qualifications:

.1 Provide work of this Section executed by competent installers with minimum of 5 years experience in application of Products, systems and assemblies specified.

1.8 FIRE PROTECTION REQUIREMENTS

.1 Provide fire rated gypsum board components and assemblies as indicated.

.2 Where firehose cabinets, electrical panels or other fixtures or equipment are recessed into fire rated gypsum board partitions, provide fire rated backing to maintain required fire rating.

.3 Protect recessed fixtures in fire rated gypsum board ceilings in accordance with fire rated assembly design report and/or as indicated.

.4 Gypsum bulkheads/partitions in ceiling spaces above fire rated glazed screens, doors or other elements shall have same fire rating as screens/doors over which they occur.

.5 Fire rated bulkheads are required in first floor ceiling spaces where construction changes from fire rated floor assembly to non-fire rated roof assembly. Carefully examine Drawings to determine locations.

1.9 DELIVERY, STORAGE AND HANDLING

.1 Delivery:

.1 Deliver materials to site with manufacturer's original labels intact. Do not remove wrappings until ready for use

.2 Storage:

.1 No outside storage permitted. Store in clean, dry area, off ground. Provide adequate ventilation to avoid excess moisture, surface relative humidity and mould or fungal growth. Remove immediately any board showing signs of mould, mildew or fungal growth.

.2 Stack gypsum board flat on level and dry surface without overhanging boards. Prevent sagging and damage to edges, ends and surfaces. Protect bagged Products from moisture or wetting.

1.10 SITE CONDITIONS

.1 Do not install work of this Section in any area unless satisfied that work in place has dried out and that no further installation of materials requiring wetness, moisture or dampness is contemplated. Ensure relative humidity in area of work of this Section does not exceed 55% for duration of Project

.2 Ensure temperature of surrounding areas is min 13 deg C and max 21 deg C for 7 Days before and during application of gypsum board; maintain for 4 Days thereafter. Ensure heat is provided at appropriate time before work has started to bring surrounding and adjacent materials up to required temperature and maintained as specified. Avoid concentrated or irregular heating during drying by means of deflectors or protective screens.

.3 Ensure ventilation is provided for proper drying of joint filler and adhesive and to prevent excessive humidity. Do not force dry adhesives and joint treatment.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

.1 Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications:

.1 Bailey Metal Products Ltd.; www.bmp-group.com

.2 CertainTeed Corporation; www.certainteed.com

.3 CGC Inc; www.cgcinc.com

.4 Chicago Metallic; www.chicagometallic.com

.5 Georgia-Pacific Canada, Inc.; www.gpgypsum.com

.6 Gordon Incorporated; www.gordongrid.com

.7 Roll Formed Specialty; www.rollformed.com

.8 Trim-Tex Inc.; www.trim-tex.com

2.2 FRAMING

.1 Unless otherwise specified, provide framing members of minimum 0.5 mm core thickness steel hot dip galvanized (wipe coat) to ASTM A653.

.2 Studs, interior locations: channel shaped screw-on type: depth as indicated; with knurled supporting flanges at least 34 mm wide; with service pass-through holes at 610 mm o.c. in web. Provide minimum 0.9 mm thick studs where stud depth exceeds 92 mm or where abuse resistant board is used.

.3 Top and bottom runners: channel sections, 35 mm legs and service pass-through holes at 610 mm o.c. Depth to suit studs.

.4 Rough framing members: 38 x 13 x 1.2 mm and 19 x 13 x 1.2 mm galvanized steel channels.

.5 Furring and strapping members to receive gypsum board: 19 mm deep channel shaped section with outstanding flanges and 35 mm wide knurled supporting face.

.6 Corner beads: beaded angle with perforated flanges.

.7 Casing beads: channel shaped; beaded corners.

.8 Hangers: minimum 3 mm galvanized steel wire.

.9 Tie wire: minimum 1.5 mm soft annealed galvanized steel.

.10 Metal control joint section: bellows shaped section with perforated flanges.

.11 Reveal mouldings: extruded aluminum, profiles as indicated, by Fry, Pittcon or Gordon.

2.3 GYPSUM BOARD

.1 Exposed gypsum board for interior use: tapered edge: ASTM C1396.

.2 Unexposed gypsum board for interior use: backing board: ASTM C1396.

.3 Fire rated gypsum board: Type 'X' board: ASTM C1396.

.4 Abuse resistant gypsum board ASTM C1278: 16 mm thick, fire rated and non-fire rated: Fiberock VHI by CGC or equivalent product by CertainTeed.

.5 Gypsum sheathing: DensGlas Gold by Georgia Pacific or GlasRoc by Certainteed.

.6 Backer board for ceramic tile: ASTM C1178-18: Dens Shield by Georgia Pacific, or Aqua Tough by CGC, or equivalent product by CertainTeed.

.7 Water resistant gypsum board: glass fibre-reinforced, paperless face, moisture and mould resistant core, Type X where required: ASTM C1278/C1278M and Mold Resistance: ASTM D 3273.

2.4 CEMENTITIOUS BOARD

.1 Board for paint finish:

.1 Board: polymer modified, fibreglass mesh reinforced lightweight concrete board, 12 mm thick, tapered edges: PermaBase by Unifix.

.2 Joint tape: 75 mm wide alkali resistant fibreglass mesh tape: Unitape by Unifix.

.3 Base coat reinforcing: Uniroll by Unifix.

.4 Joint compound and base coat: acrylic based: Acryjoint by Unifix.

.2 Cement board for textured finish or backing for ceramic tile: Durock by CGC 16 mm thick, or equivalent product by other manufacturer approved by Consultant.

2.5 FASTENINGS AND FINISHING MATERIALS

.1 Drywall screws: self-drilling, self-tapping, case hardened. Use zinc, nickel or cadmium plated screws for fastening of cementitious board.

.2 Laminating adhesive: CGC Durabond 90 compound by CGC or similar by BPB.

.3 Joint tape: 50 mm perforated type.

.4 Joint filler and topping cement: casein, vinyl or latex base, slow setting: ASTM C475/C475M,.

2.6 ACOUSTICAL MATERIALS

.1 Acoustic Insulation inside partitions and above ceilings: AFB by Roxul or equivalent product by Fibrex.

.2 Caulking: to CAN/CGSB-19.21-M87: Acoustical Sealant by Tremco, or CGC Acoustical Sealant.

.3 Steel deck closures: Emseal 25V Expanding Foam Sealant sized and shaped to fit flutes.

2.7 THERMAL BREAK

.1 Adhesive face rubberized cork 3 mm thick or self adhesive closed cell neoprene sponge tape "Permastik" 122X by Jacobs and Thompson Ltd., or foamed vinyl tape "Arnofoam" by Arno Adhesive Tape Inc.

2.8 ACCESS PANELS

.1 Access Panels for Items Other Than Mechanical and Electrical: “N/W Series, Flush Non-Rated Access Panels” by Nystrom Building Products; www.nystrom.com or “DW-5040" by Acudor Products Inc.; www.acudoracornltd.com, sized to suit requirements of other Sections, but minimum size 406 mm x 406 mm (16" x 16") with drywall bead frame and key operated cylinder lock.

PART 3 – EXECUTION

3.1 EXAMINATION

.1 Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to the installation.

.2 Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2 METAL FRAMING

.1 General:

.1 Framing and furring indicated is schematic and shall not be considered exact or complete. Location and spacing of members, bracing, supports and securement shall be in accord with referenced standards as required to provide complete and finished work.

.2 Make provision for supporting recessed and surface mounted fixtures and equipment. Provide additional framing, supports and stiffeners as required.

.3 Neatly frame around recessed fixtures and openings

.4 Examine mechanical and electrical drawings and coordinate with Divisions to determine openings required.

.2 Partitions:

.1 Unless specified or shown otherwise, extend steel studs to underside of structural slab above.

.2 All steel studs shall be spaced at 400 mm maximum, except where indicated otherwise. At curved walls/partitions space studs closer so as to maintain uniform curvature.

.3 Install runner channels at top and bottom of partition and secure to supporting building elements at maximum 610 mm o.c..

.4 At partition corners extend one runner channel to end of corner and butt other runner channel; allow clearance for gypsum board thickness; do not mitre runner channels.

.5 Install steel studs vertically; fix studs to runner channels by crimping or screwing on both sides of stud.

.6 Install additional studs as detailed and required at partition intersections, openings and terminations at dissimilar materials. Place studs not more than 50 mm from abutting walls, openings and each side of corners.

.7 Stiffen partitions over 2400 mm in height at maximum 1500 mm with at least one 19 mm horizontal bracing channel extending full length of partition.

.8 Stiffen partitions over 2400 mm in height at maximum 1500 mm with at least one 19 mm horizontal bracing channel extending full length of partition.

.3 Ceilings and Soffits:

.1 Erect suspension and furring system level with a maximum tolerance of +3 mm over a 3000mm length.

.2 Suspension system shall support ceiling assemblies, with maximum deflection of L/360, L being span between supports.

.3 Hangers for suspended ceilings shall support grillage independent of walls, columns, pipe and ducts. Space hangers at maximum 1220 mm o.c. along rough furring members and not more than 150 mm from ends. Do not place hangers in front of access panels.

.4 Space rough furring members at maximum 915 mm and not more than 150 mm from perimeter walls.

.5 Space furring channels transverse to runner channels at maximum 610 mm o.c. except at exterior soffits, and secure to each support with clip or saddle tie with 2 loops of tie wire. Install furring channels so as not to contact perimeter walls.

.6 Where ductwork, piping and other elements within ceiling spaces interfere with direct suspension of ceiling from structure, install additional framing securely fastened to main structure to accommodate proper hanging of ceiling.

.7 At exterior soffits suspend soffit framing with metal studs and brace system to withstand positive and negative wind pressures without detrimental effects. Fasten furring members to surrounding walls. Space primary furring channels at max. 610 mm o.c. Provide Z-shaped furring members at max. 400 mm o.c. Use minimum 1.2 mm thick framing members.

.4 Bulkheads, Covers, Furring:

.1 Frame to profiles shown, rigid, square, true to line and securely fastened to supporting building elements.

.2 Space furring members to receive gypsum board at maximum 610 mm o.c.

.3 Provide rough framing and bracing members as required to ensure stability and accuracy of work.

.4 Where indicated, provide resilient furring channels, spaced at maximum 600 mm o.c.

3.3 GYPSUM BOARD INSTALLATION

.1 Unless otherwise specified, erect gypsum board vertically or horizontally, whichever results in fewer end joints.

.2 Locate board end joints over supporting members.

.3 Cut and fit gypsum board as required to accommodate other work.

.4 Unless otherwise shown or specified, extend gypsum board on both sides of partitions to underside of structural deck above. Fasten gypsum board to studs, not to top channel. Allow for 13 mm deflection.

.5 Do not install gypsum board until wood blocking or other back-up components are installed. Remove and reinstall gypsum board at no extra cost to Contract where this requirements is not complied with..

.6 Provide corner beads at external corners.

.7 Provide casing beads around openings and where gypsum board abuts dissimilar material and construction.

.8 Fasten gypsum board to supports with screws spaced at maximum 305 mm o.c..

.9 Install gypsum sheathing horizontally at outside of exterior wall steel studs. Fasten each board at each stud with minimum 3 screws.

.10 Adhesive bonded gypsum board; apply 13 x 13 mm ribbons of laminating adhesive to back side of board, parallel to long dimension; space adhesive ribbons at max.150 mm o.c. temporarily brace boards until complete adhesive bond develops.

.11 Where double layer is required screw fasten second layer through first into steel framing. Select screws of suitable length to ensure positive fastening. Offset joints in second layer.

3.4 GYPSUM BOARD FINISHING

.1 Tape and fill exposed joints, fastener heads, edges, corners, to produce an acceptable surface ready for decoration.

.2 Conceal exposed flanges of corner beads, casing beads and other trim sections with at least 3 coats of cement, feathered out minimum 200 mm.

.3 Fill depressions at fastener head with cement, then apply 2 additional coats of cement to produce smooth, level surface.

.4 Treat joints using 3 coat method as follows:

.1 Apply thin uniform layer of cement and embed joint tape.

.2 Immediately apply thin skim coat of cement over tape and allow to dry.

.3 Apply 2 additional coats of cement. Allow first coat to dry before applying second coat.

.5 Sand each coat of topping cement with fine sandpaper as required to produce smooth surface. Do not sand paper face of gypsum board.

.6 Finish concealed fastener heads at fire rated gypsum board elements in manner specified for exposed work.

.7 Finish concealed joints at fire rated and at acoustically insulated gypsum board elements in manner specified for exposed work..

3.5 CONTROL AND RELIEF JOINTS

.1 Control Joint:

.1 Provide control joints where shown and at maximum 10 m o.c.

.2 Break continuity of gypsum board and framing system at control joints; install continuous metal control joint section.

.2 Relief Joints:

.1 Provide relief joints where shown and where gypsum board assemblies abut dissimilar construction.

.2 Stop gypsum board 6 mm from abutting construction at dissimilar building elements, unless otherwise indicated.

.3 Where gypsum board comes into contact with window frames or exterior door/screen frames install thermal break. Adhere self-sticking tape to casing bead and compress during installation of gypsum board.

.4 Where indicated, install reveal mouldings. Provide reveal moulding where ceilings meet curved wall surface.

3.6 SOUND CONTROL

.1 Partitions:

.1 Provide acoustical insulation in gypsum board partitions as indicated. Unless otherwise noted provide 50 mm thick insulation. Extend acoustical insulation over full height of partition, including portions located above ceiling.

.2 Provide acoustical caulking at all partitions scheduled to receive acoustical insulation as follows:

.1 At perimeter of partitions.

.2 Around objects penetrating partition.

.3 Provide 2 bead caulking system around horizontal and vertical perimeters. Apply continuous sealant beads at each side of horizontal runner tracks and vertical end studs, between gypsum board and adjacent construction.

.4 Caulk around objects such as electrical outlets, light switches, electrical and mechanical panels and boxes, grilles, and other objects penetrating. Caulk behind metal control joint sections.

.5 Where acoustically insulated partitions meet steel deck running perpendicularly to partition, provide steel deck closures.

3.7 DOOR FRAMES / ACCESS DOORS

.1 Install access doors when required by Mechanical and Electrical equipment. Build doors into gypsum board elements flush and parallel to walls and securely fastened.

3.8 SITE QUALITY CONTROL

.1 Replace damaged work which cannot be satisfactorily repaired to satisfaction to Consultant at no cost to Owner.

3.9 CLEANING

.1 Clean off beads, casings, joint cement droppings and similar items and remove surplus materials and rubbish on completion and as directed

3.10 SCHEDULE OF FINISHES

.1 Use Type 'X' gypsum board at fire rated elements.

.2 Use exterior gypsum sheathing at outside of exterior wall steel studs.

.3 Use abuse resistant gypsum board where indicated.

.4 Use water proof gypsum board in wet areas.

.5 Unless otherwise specified or shown, provide 16 mm thick standard gypsum board.

.6 Repair existing surfaces where work is scheduled and/or where existing finish is damaged by alteration work.

END OF SECTION

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

.1 Read and conform to:

.1 CCDC 2 - 2008, Stipulated Price Contract as amended in the Contract Documents.

.2 Division 1 requirements and documents referred to therein.

1.2 SUMMARY

.1 Section Includes: Provide Ceramic and Porcelain tile work including but not limited to following:

.1 Floor tile, base and fittings;

.2 Wall tile;

.3 Waterproofing membrane;

.4 Mortar;

.5 Stain resistant floor grout;

.6 Caulking tile control joints;

.7 Caulking penetrations through wall and floor tile.

1.2 RELATED SECTIONS

.1 Section 01 35 16 - Alteration Procedures;

.2 Section 07 92 00 – Sealants;

1.3 SUBMITTALS

.1 Shop Drawings:

.1 Submit digital shop drawing list of mortar mixes, waterproof membrane and grout to be utilized.

.2 If requested by the consultant, submit digital shop drawing of tile joint layout.

.3 If requested by the consultant, provide a floor and/or wall tile mock up on site at location as directed by the consultant. Once approved, it will serve as a quality reference standard for the balance of the project.

.2 Samples: Submit two 300mm x 300mm samples of each type of tile and grout specified.

.3 Close Out Documents:

.1 Submit manufacturer's recommended maintenance procedures and materials for inclusion into

operation and maintenance manuals.

.2 Provide Owner with one sealed carton of each type tile used. Clearly identify each package and store where directed. Obtain receipt and submit copy to Consultant.

1.4 QUALITY ASSURANCE

.1 Provide work of this Section executed by competent installers who is a member in good standing with TTMAC and has a minimum of 5 years experience in application of Products, systems and assemblies specified. Perform tile work using skilled mechanics trained and experienced in work of this complexity. Install waterproofing system using an applicator approved by system manufacturer.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Delivery:

.1 Coordinate deliveries to comply with construction progress schedule and arrange for above ground, under cover storage location with Owner before materials are delivered to site.

.2 Deliver tile in a manner to avoid chipping, breakage, staining and any other damage.

.3 Deliver packaged materials in their original bags and containers clearly identified.

.2 Storage:

.1 Store and handle tile in a manner to avoid chipping, breakage, staining and any other damage.

.2 Store packaged materials in their original bags and containers clearly identified. Keep containers sealed and labels intact unit time of use. Prevent damage or contamination to materials by water, moisture, freezing, excessive heat, foreign matter or other causes. If materials have frozen, do not stir liquids or mix materials until they are completely thawed.

.3 Provide secure heated and dry storage facilities on site. Maintain temperatures in storage area between 15 deg C and 30 deg C.

1.7 SITE CONDITIONS

.1 Do not perform work of this Section at temperature below 12 deg C when using portland cement mortars or dry set mortars, latex portland mortars or bond coat. Maintain temperature between 12 deg C and 32 deg C.

.2 Observe manufacturer's recommended working temperatures for installation of adhesives and grouts.

.3 Close doors and windows and turn off direct forced ventilation systems and apparatus. Turn off radiant floor heating systems and protect work area from direct draft, sun and heat exposure during installation and for at least 72 hours after completion

.4 Do not perform work of this Section when either substrate and/or ambient temperatures are below 10 deg C or above 35 deg C. Maintain temperature in tiled areas within these temperature limits during installation and for 7 Days after completion of the Work unless otherwise indicated in the Product instructions and/or in ANSI A108 Installation Standard Procedure requirements.

1.8 WARRANTY

.1 Warrant work of this Section for a period of 3 years against defects, excessive wear and loss of adhesion including replacement of defective tiling, materials, labour costs for demolition of defective work, accessories and installation systems at Owner's convenience. Cracks arising from normal shrinkage and/or expansion of concrete are not considered as structural failure. Hairline cracks in grout joints which result from these causes are considered normal and warranty is not voided as a result of these minor defects.

.2 Warrant waterproofing work of this Section against defects of workmanship and materials and against any actual leakage, for a period of 5 years. Leakage due to structural failure of concrete is excepted.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

.1 Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications:

.1 Centura; www.centura.ca

.2 Daltile Inc.; www.daltile.com

.3 Flextile Ltd.; www.flextile.net

.4 Laticrete International, Inc.; www.laticrete.com

.5 Mapei Corporation; www.mapei.ca

.6 Olympia Tile International Inc.; www.olympiatile.com

.2 Use proprietary Products in full compliance with manufacturer's recommendations. As far as possible obtain Product from single manufacturer ensuring compatibility with adjacent components while maintaining quality.

2.2 MATERIALS

.2 Porcelain Floor tile (PCT):

.1 Archie Stouffer ES: PCT floor and base replacements in Rooms #101A, 101B, 115A, 115B, 155A, 160A, 163 and where required due to scope of work. Size and colour to match existing 305mm x 305mm tiles. Refer to drawing for locations.

.2 JD Hodgson ES: PCT floor and base replacements in Rooms #101A, 101 and where required due to scope of work. Size and colour to match existing 150mm x 150mm tiles. Refer to drawing for locations.

.3 Products by Laticrete listed herein are specified to establish a standard of acceptance. Equivalent products, subject to Consultant's review, by Mapei is also acceptable.

.4 Water: clean and non-staining.

.5 Portland cement: CSA A3000-18.

.6 Sand: CSA A82.56-M1976.

.7 Waterproof membrane: single component liquid rubber polymer: Laticrete Hydro Ban.

.8 Reinforcing: 50 x 50 x 1.6 mm hot dip galvanized steel wire mesh.

.9 Thick bed mortar: high strength latex-portland cement mix: Laticrete 226/3701/8510.

.10 Thin set mortar: latex-portland cement mix: Laticrete 211/4237.

.11 High strength mortar: 100% solids epoxy adhesive: Latapoxy 300.

.12 Organic adhesive: latex adhesive to ANSI A136.1: Laticrete 15 Multi-Mastic.

.13 Floor grout: epoxy grout: Spectral Lock Pro Grout by Laticrete; colours selected by Consultant.

.14 Wall grout: unsanded dry set, coloured: Laticrete 600 Series/1776; colours selected by Consultant.

.15 Control joints: Schlüter DILEX-BWB, height to suit tile thickness, colour selected by Consultant.

.16 Transition trim: stainless steel profile: Schlüter Reno-U, height to suit.

.17 Wall finish edge protection at all corners: stainless steel profile: Schluter Rondec, full height of tile.

.18 Cleaning compound: TTMAC 1001

2.3 MIXES

.1 Mortar and grout: mix using suitable mechanical mixers in accordance with material manufacturer's directions.

.2 Place liquid into mixer, start mixer and add dry material. Mix only long enough to wet out batch; do not overmix. Dump mixed material from mixer promptly and clean out mixer with water after each batch.

PART 3 – EXECUTION

3.1 EXAMINATION

.1 Verify existing conditions and finishes are ready to receive specified tile work. Ensure backings are structurally sound, level, and plumb within required tolerances. Notify Consultant in writing of unacceptable substrate conditions.

.2 Ensure compatibility of adhesives, waterproofing, reinforcing and fillers with adjacent substrate and component coming in contact with these Products.

.3 Ensure waterproofing and adhesive manufacturers; examine substrate conditions, verify conditions are suitable for installation prior to commencement and review application procedures. If requested submit written report.

.4 Preinstallation Testing: Perform calcium chloride test in accordance with requirements of ASTM F1869 immediately prior to tiling for moisture on concrete floors around perimeter of areas, at columns and where moisture may be anticipated. Conduct 3 tests for first 93 m^2 (1000 sq ft) and 1 additional test for every 93 m^2 (1000 sq ft) of flooring. Ensure moisture emission from concrete floor does not exceed 1.36 kg/93 m^2 (3 lbs/1000 sq ft) in 24 hours unless otherwise stated in flooring Product instructions and limitations. Do not proceed with installation until moisture problem has been corrected. Provide results to Consultant prior to commencement of installation.

.5 Prior to installation, set aside for further inspection and replacement on a tile for tile basis by tile or dimension stone Supplier, sub-standard tiles, fractured tiles or tiles with chipped corners, pinholes or voids that are unusable for cuts. Ensure this Subcontractor replaces at his own expense, sub-standard and/or pre-damaged tiles once installed.

.6 Carefully select, set-aside and shade-mix tiles and/or dimension stones to a homogeneous blend throughout. During installation, provide supplementary lighting equipment if necessary to easily identify shade differences, which could normally be very slight and provide a standard even aesthetic blend effect. This is best achieved by using a strong floodlight or spotlight fitted to a movable pole stand immediately over Work area.

.7 Before setting, examine tile backs for possible dust or other contaminants. If necessary, use a slightly damp towel and wipe tile backs to remove any such dust or contaminant residue.

.8 Commencement of work implies acceptance of previously completed work.

3.2 INSTALLATION

.1 Provide tiling in accordance with TTMAC's current "Specification Guide 09 30 00 Tile Installation Manual" unless specified otherwise.

.2 Lay out tile so field or patterns are centered on wall and floor areas, or conform architectural details so no tile less than 1/2 size occurs. No cut tiles are allowed at finished ceiling level. Align joints in walls, bases and floors. Provide uniform joint widths throughout.

.3 Prior to installation ensure back of each tile is free of contaminants. Distribute production run variations evenly, maintaining continuity of appearance. When necessary, wipe the back face of stone or tile with a damp towel or cloth to remove dust and residual contaminants.

.4 Arrange accessories in tile work so they are spaced evenly, centered with joints and set true with proper and adequate projection conforming to manufacturer's recommendations.

.5 Make sure tile has adequate solid backing. Ensure corner and edges are fully supported by bonding material. Avoid slippage. Ensure tile installation has a minimum of 95% bond coverage by backbuttering or other approved technique.

.6 Fit tile units around corners, fitments, fixtures, drains and other built-in-objects to maintain uniform joint appearance. Cut, drill and set anchors, bolts for fastening fixtures and fittings in tile work. Make cut edges smooth, even and free from chipping. Do not split tile.

.7 Grout colour of tile to be selected by Consultant. Fill joints.

.8 Porcelain Tile:

.1 Bond porcelain tile to all substrates with high strength mortar. Bond other tile to substrate in accordance with mortar / adhesive manufacturer's directions and as follows:

.1 All locations except where indicated otherwise: thin set mortar.

.2 Gypsum board substrate: organic adhesive.

.3 Cement board substrate: high strength mortar.

.3 Finished work shall be level, plumb, or sloped as shown, true, square and free of defective, chipped, broken, discoloured or blemished tiles. Maximum allowable finished surface variation shall be 3 mm in 3 m when measured, in any direction, with a 3 m straight edge.

.4 Lay out tile patterns symmetrically within each area and to patterns shown. Unless otherwise indicated or directed provide stacked pattern.

.5 Joints shall be parallel, uniform, neat, straight, square and completely filled. Provide joint width as directed by Consultant.

.6 Fit tile accurately against and around interruptions, penetrations and abutting dissimilar surfaces. Wherever possible, drill holes for penetrating elements to ensure neat fitting.

.7 Provide accent patterns as shown, or if not shown, as directed by Consultant.

.8 Provide tile manufacturer's standard trim pieces at changes in direction and at terminations. Unless otherwise indicated provide the following corner and edge conditions:

.1 Internal horizontal corners: coved.

.2 External vertical and horizontal corners and edges: 100mm deep bull nosed

.8 Expansion and Control Joints:

.1 Carry existing movement joints all the way through from substrate surface layer including tiling surface. Ensure control and expansion joints are kept free of setting materials.

.2 Install control joints where tiling abuts restraining surfaces, around perimeter of work (and or panel) and at base of columns and curbs.

.3 Install and space expansion and control joints in accordance with following:

.1 Interior: 4878 mm to 6098 mm in each direction with minimum joint width of 6 mm.

.2 Interior exposed to direct sunlight or moisture: 2439 mm to 3659 mm in each direction with minimum joint width of 6 mm.

.3 Exterior - normal: 2439 mm to 3659 mm in each direction with minimum joint width of 9 mm.

.4 Exterior - excessive: 2439 mm to 3049 mm in each direction with minimum joint width of 13 mm.

.4 Caution: Under no circumstances cut in control joints after tiling has been installed. Install tiling up to movement joint and stop. If required, cut tiling and resume setting from opposite side of the joint. Before continuing, rake joint clean.

.5 Install an approved compressible bead and specified sealant to caulk expansion and control joints. Follow sealant manufacturer's installation instructions or install preformed proprietary brand control joint profiles as specified

.9 Waterproof membrane:

.1 At all locations with floor drains and where indicated at other areas, provide waterproofing membrane below/behind ceramic tile. Follow manufacturer's directions for surface preparation, installation and protection.

.2 Pre-treat cracks, joints, coves, floor/wall transitions and drain flanges with a liberal coat of waterproofing, in accordance with membrane manufacturer's directions.

.3 Carry waterproofing membrane up and over curbs and up surrounding walls, minimum 150 mm high, but in no case shall membrane be visible in finished work.

.4 Apply membrane liberally, minimum 0.508 mm (20 mils) dry film. Allow 5 Day cure time. Protect installed membrane from contact with water for at least 2 hours after final cure (21 ºC and 50% RH).

.5 Conduct hydrostatic water pressure test minimum 24 hours. No water loss allowed, except due to evaporation.

.6 Repair and retest if required.

.7 Provide minimum 1.6 mm (1/16") levelling bed to surfaces to receive waterproof membrane, in accordance with manufacturer's instructions.

.8 Provide ramped levelling bed beneath finish flooring adjacent to ceramic tile, for minimum 600 mm strip, to achieve flush finished surfaces at finished flooring transition.

.10 Grouting:

.1 Where tiling or stone tiling is installed with normal setting thin-set mortar, grout no sooner than 24 hours after installation.

.2 Where tiling or stone tiling is installed with fast-setting mortar system, grout no sooner than 3 to 4 hours after installation.

.3 Where tiling or stone tiling is installed with reactive epoxy mortars and adhesives, grout no sooner than 24 hours after installation.

.4 Where tiling or stone tiling is installed with reactive polyurethane adhesive, grout no sooner than 24 hours after installation.

.5 Install epoxy grouts in accordance with Product instructions and ANSI Al08.6.

.6 Install chemical resistant furan resin mortar and grout only for setting and grouting pre-waxed chemical resistant floor tile or paving brick. Proceed in accordance with Product instructions and ANSI A108.8.

.7 Install unsanded cement grout in accordance with Product instructions and ANSI A108.10.

.8 Install sanded cement grout in accordance with Product instructions and ANSI A108.10.

.9 Install fast-setting sanded 'HCT' cement grout in accordance with Product instructions and ANSI A108.10

3.8 SITE QUALITY CONTROL

.1 Replace damaged work which cannot be satisfactorily repaired to satisfaction to Consultant at no cost to Owner.

.2 Have manufacturer's representative visit site at commencement of tile work to give proper direction and thereafter at regular interval to ensure proper workmanship.

3.9 CLEANING

.1 Remove grout and mortar residue immediately while work progresses and before materials harden on tiling surface.

.2 Clean tiling completely leaving no apparent cement laitance on the surface. Do not acid wash especially where pigmented grouts are specified.

.3 Clean adjacent surfaces that have been soiled or otherwise marred, to completely remove evidence of materials causing same.

.4 Upon completion, remove protective coverings and clean down finished work of this Section leaving it in a correct condition according to industry standards. Correct defective jointing and grouting and other non-conformities.

3.10 PROTECTION

.1 Protect other parts of work from spatters, stains or damage.

.2 Remove and replace with new materials, sections of work that have become stained, soiled, broken, chipped or otherwise damaged.

.3 Protect finished work from weather, freezing and complete water immersion for periods of at least 72 hours to 14 Days after completion of the Work depending on setting and grouting materials used. Follow Product instructions for requirements.

.4 Walls: Protect walls from impact, vibration and hammering on adjacent and opposite walls for periods of at least 24 hours to 7 Days after installation depending on setting and grouting materials used. Follow Product instructions for requirements.

.5 Floors: Protect floors from foot traffic for at least 4 hours to 48 hours after installation depending on the setting and grouting materials used. In all cases prohibit heavy commercial and equipment traffic for at least 48 hours to 7 Days depending on setting and grouting materials used. Follow product instructions for requirements.

.6 Fabricated Faced Panels: Do not disturb or move panels for at least 7 Days or 72 hours with fast-setting mortar system and allow setting mortar to cure for at least 7 Days to 28 Days before shipping and installing panels on site depending on setting and grouting materials used. Follow product instructions for requirements.

.7 Since temperature and humidity conditions during and after installation affect final curing time of cement based and epoxy materials, allow for extended periods of cure and protection when ambient and/or substrate temperatures drop below 15 deg C (60 deg F) and/or when relative humidity is higher than 70%.

.8 Protect finished work from damage by other trades and general abuse until Substantial Performance of the Work and acceptance

END OF SECTION

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

.1 Read and conform to:

.1 CCDC 2 - 2008, Stipulated Price Contract as amended in the Contract Documents.

.2 Division 1 requirements and documents referred to therein.

1.2 SUMMARY

.1 Section Includes: Provide Acoustic Panel Ceilings work including but not limited to following:

.1 Ceiling suspension systems;

.2 Lay-in acoustic ceiling panels;

1.2 RELATED SECTIONS

.1 Section 01 35 16 - Alteration Procedures;

.2 Section 09 21 16 – Gypsum Board;

1.3 REFERENCES

.1	ASTM C635/C635M-12	- Standard Specification for Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings
.2	ASTM C636/C636M-08	- Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels
.3	CAN/CGSB-92.1-M89	- Sound Absorptive Prefabricated Acoustical Units
.4	CAN/ULC-S101-07	- Standard Methods of Fire Endurance Tests of Building Construction and Materials
.5	CAN/ULC-S102-07	- Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies
.6	CAN/ULC-S114-05	- Standard Method of Test for Determination of Non-Combustibility in Building Materials
.7	CAN/ULC-S702-09	- Standard for Mineral Fibre Thermal Insulation for Buildings

1.4 SUBMITTALS

.1 If requested by the Consultant, submit statement from suspension system manufacturer verifying that suspension system will support light fixtures within deflection criteria contained in referenced standards.

.2 Samples: submit two samples of each type of acoustical panel specified; size: 300 mm x 300 mm. Upon Consultant's request submit samples of suspension system components.

.3 Maintenance materials: provide Owner with two sealed cartons of each type panel used. Obtain receipt and submit copy to Consultant.

1.5 QUALITY ASSURANCE

.1 Qualifications:

.1 Provide work of this Section executed by competent installers with minimum of 5 years experience in application of Products, systems and assemblies specified.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Delivery:

.1 Deliver materials in original packages, containers and bundles, bearing brand and manufacturer's name and ULC or cUL labels.

.2 Storage:

.1 Store materials in a covered area, off ground, on flat, smooth, dry surfaces. Protect from moisture. Remove damaged or deteriorated materials from site.

1.7 SITE CONDITIONS

.1 Continuously maintain rooms or areas scheduled to receive acoustical treatment at not less than 21 deg C and at occupancy humidity, at least 3 Days prior to installation and 3 Days after work is completed. Schedule work to eliminate risk of damage to these materials due to adverse environmental conditions in rooms or areas when and after work is installed.

.2 Ensure that work to be concealed by ceiling systems has been installed, tested, inspected and approved before starting work.

.3 Co-ordinate with Mechanical and Elecatrical divisions for work to be built into work of this Section.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

.1 Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications:

.1 Armstrong World Industries Canada Ltd.; www.armstrong.com

.2 Bailey Metal Products Ltd.: www.bmp-group.com

.3 CertainTeed Ceilings; www.certainteed.com

.4 CGC Inc.; www.cgcinc.com

.5 Chicago Metallic Corporation; www.chicagometallic.com

2.2 MATERIALS

.1 Acoustic Panels (ACT): 610 x 1220 x 16 mm thick, square edged mineral fibre board, colour: white: match existing panels.

.3 Suspension system: exposed non-fire rated grid system: Georgian by Armstrong or equivalent by CGC, or Bailey.

.4 Accessories: splicers and fasteners, as required to provide complete and finished work; manufacturer's standard types.

PART 3 – EXECUTION

3.1 EXAMINATION

.1 Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to the installation.

.2 Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2 INSTALLATION

.1 Lay out ceilings in accordance with reflected ceiling plans and symmetrical within each area to obtain uniform borders. Where layout is not shown install ceilings as directed by Consultant.

.2 Finished work shall be plumb, level and square with adjoining work.

.3 Suspend ceilings directly from structural members or from carrying channels supported from structural members. Do not fasten hangers to ducts, pipes, conduits.

.4 Erect suspension systems level with a maximum tolerance of 3 mm over 3 m length.

.5 Install main tees in accord with module size. Suspend at maximum 1220 mm o.c.

.6 Install cross tees perpendicular to main tees in accord with module size. Interlock with main tees.

.7 Hangers for suspended ceilings shall support grillage independently of walls, columns, pipes and ducts. Space hangers at maximum 1220 mm o.c. along supporting grillage and not more than 150 mm from ends. Do not place hangers in front of access panels.

.8 Make provisions for carrying fixtures occurring on and in suspended ceilings. Install additional hangers and reinforcing to ensure that loads being carried do not compromise integrity of system. Frame around fixtures and openings as required.

.9 Where ductwork, piping and other elements within ceiling spaces interfere with direct suspension of ceiling from structure, install additional framing securely fastened to main structure to accommodate proper hanging of ceiling.

.10 Exposed members shall be as long in length as practical to minimize joints. Distribute joints to prevent clustering in one area. Joints shall be made square, tight and flush so that exposed faces of intersecting members are on same plane.

.11 Joints in suspension system members shall be reinforced with splines or other suitable methods.

.12 Install perimeter moulding at abutting vertical surfaces.

.13 Where work of other Sections is fastened to acoustical ceilings, reinforce suspension system and/ or acoustical panels in manner acceptable to Consultant.

.14 Install panels so that work is clean and unmarked.

.15 Neatly cut and fit panels as required to suit ceiling layout and to accommodate other work.

.16 Recessed items shall replace or be centred on panel unless otherwise indicated.

3.8 SITE QUALITY CONTROL

.1 Replace damaged work which cannot be satisfactorily repaired to satisfaction to Consultant at no cost to Owner.

.2 Existing ceiling tiles damaged due to the work to be replaced with matching tiles at no cost to Owner.

3.9 CLEANING

.1 Clean exposed surfaces of acoustical panel ceilings, including trim and edge mouldings. Comply with manufacturer's written instructions for cleaning and touch-up of minor finish damage. Remove and replace tiles and other ceiling components that cannot be successfully cleaned or repaired to permanently eliminate evidence of damage.

END OF SECTION

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

.1 Read and conform to:

.1 CCDC 2 - 2008, Stipulated Price Contract as amended in the Contract Documents.

.2 Division 1 requirements and documents referred to therein.

1.2 SUMMARY

.1 Section Includes: Provide resilient flooring work including but not limited to following:

.1 Vinyl composition tile;

.2 Resilient base.

1.2 RELATED SECTIONS

.1 Section 01 35 16 - Alteration Procedures.

1.3 REFERENCES

.1	ASTM F1066-04	- Standard Specification for Vinyl Composition Floor Tile;
.2	ASTM F710-08	- Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
.3	ASTM F1861-08	- Standard Specification for Resilient Wall Base

1.4 SUBMITTALS

.1 Submit manufacturer's full range of colour samples of each type of flooring and base material specified.

.2 Submit maintenance instructions with recommended maintenance methods and procedures, for all flooring materials, for inclusion into maintenance manual.

1.5 QUALITY ASSURANCE

.1 Qualifications:

.1 Fabricator Qualifications: Provide work of this Section executed by competent installers with minimum of 5 years experience in application of Products, systems and assemblies specified and with approval and training of Product manufacturers.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Delivery:

.1 Deliver materials undamaged in original wrappings or containers, with manufacturer's labels and seals intact.

.2 Storage:

.1 Store materials undamaged in original wrappings or containers, with manufacturer's labels and seals intact. Store materials in a warm, dry area for at least 48 hours prior to installation.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

.1 Products of following manufacturers are acceptable subject to conformance to requirements of Drawings and Specifications:

.1 Vinyl Composite Tile & Rubber Base (VCT/RB): Armstrong World Industries Canada Ltd.; www.armstrong.com or equivalent by Johnsonite.

.2 Comparable Products from manufacturers listed herein will be accepted provided they meet requirements of this Specification.

2.2 MATERIALS

.1 Material colours and patterns:

.1 Vinyl Composite floor tile (VCT): 300 x 300 mm to ASTM F1066, Class 2, 3 mm thick by Armstrong. Colour: To match existing. Locations: Refer to drawings.

.2 Resilient base (RB): 3 mm thick x 100 mm high, rubber base coved. Colour: Black. Locations: Refer to drawings.

.3 Vinyl reducing strips tapered, to suit thickness of flooring, colours selected by Consultant: Johnsonite RRS.

.2 Door Thresholds: CT-45 by KN Crowder. Located where new flooring occurs at an existing door. Site verification of size and locations required.

.3 Primers, fillers, adhesives, sub-floor filler and levellers: as recommended by flooring material manufacturer.

.4 Cementitious underlayment: as recommended by flooring material manufacturer.

.5 Cleaning and finishing materials: As recommended by flooring material manufacturer.

PART 3 – EXECUTION

3.1 EXAMINATION

.1 Surfaces to receive resilient flooring shall be dry, true, even and smooth, and free of paint, grease and oil. Surfaces to receive resilient base shall be even, smooth free of gaps, holes and depressions.

.2 Ensure moisture content of substrate is 12% or less. Perform moisture tests on concrete substrates where moisture content is uncertain. Perform tests in minimum ambient temperature of 18°C. Do not install materials until test results are satisfactory.

.3 Start of installation shall imply acceptance of conditions.

3.2 PREPARATION

.1 Level depressions, cracks and joints in subfloor with non-shrinking type filler compatible with bonding adhesive.

.2 If recommended by adhesive or tile manufacturer, prime substrates. Apply primer in accordance with manufacturer's directions.

.3 Where new flooring is installed over existing floors, prepare existing surfaces as required to ensure satisfactory installation conditions. Remove existing flooring, strip, wash, etch, grind or otherwise treat existing substrates as required to completely remove existing substances which would adversely affect installation of new flooring.

3.3 UNDERLAYMENT

.1 Where resilient flooring abuts other flooring of different thickness, provide cementitious underlayment allowing for smooth and level transition between finished floor surfaces.

.2 Mix, apply and finish underlayment in accordance with manufacturer's recommendations.

3.4 INSTALLATION

.1 Install resilient flooring materials in accordance with material manufacturer's current printed directions. Keep a copy of manufacturers installation manual on site during execution of work.

.2 Scribe flooring to walls, columns, cabinets, floor outlets and other appurtenances to produce tight joints. Extend flooring into recesses and closets.

.3 Locate change to different floor finish or colour centred under doors, except where multicoloured floor patterns are required.

.4 Install door thresholds where required to transition existing flooring to new flooring at existing doors.

.5 Provide vinyl reducer strip fully bonded to floor where floor covering terminates exposing edge of floor.

.6 Lay out each area to be tiled symmetrically square with axis of room to provide perimeter tiles as least one half tile in width.

.7 Distribute tiles having varying shades or pattern evenly over floor area to obtain uniform effect. - Abrupt variations will not be permitted. Tile joints shall be flush, uniform, in moderate contact and in straight lines.

.8 Install tile with joints staggered half tile in one direction and with tile pattern running as directed by the Consultant.

.9 Immediately after installation, roll entire floor tile to ensure adhesion in accordance with tile and adhesive manufacturer's recommendations.

.10 Adhesive apply cove base to vertical surfaces so that gaps do not occur behind base, so that front lip of base cove bears firmly and uniformly on floor surfaces and so that good and permanent bond is produced between base and surface to which it is applied.

.11 Use full length pieces where practicable; accumulated short lengths not permitted. Backscore and wrap base around external corners; do not use preformed corners; mitre inside corners; butt intermediate joints flush without gaps.

3.5 CLEANING

.1 Remove adhesive from surface of flooring, base and wall surfaces as work progresses.

.2 Safety flooring shall be washed with a mild detergent and vacuumed dry. Do not seal or wax safety flooring.

.3 Do not wash newly laid floor covering for minimum 7 Days after installation to allow adhesive to set and dry.

3.6 PROTECTION

.1 Protect this work and work of other trades at all times.

.2 Protect newly laid flooring from construction traffic for a period of 7 Days to allow flooring to bond firmly. Then thoroughly clean surfaces in accordance to manufacturer's directions using cleaners as recommended by material manufacturer.

.3 Provide and maintain necessary protection of finished resilient flooring and bases. Replace damaged resilient flooring and bases with new materials without cost to Owner

END OF SECTION

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

.1 Read and conform to:
- .1 CCDC 2 - 2008, Stipulated Price Contract as amended in the Contract Documents.
- .2 Division 1 requirements and documents referred to therein.

1.2 RELATED WORK

.1 Gypsum Board: Division 09 21 16

.2 Colour coding of concealed mechanical and electrical services: Divisions 21 to 28

1.3 ACCEPTABLE MANUFACTURERS

.1 Unless otherwise specified, materials shall be manufactured and supplied by one of the following:

- .1 Benjamin-Moore
- .2 Dulux Paints
- .3 Para Paints
- .4 Pittsburgh Paints
- .5 Pratt & Lambert
- .6 Sherwin-Williams

1.4 LIST OF MATERIALS, SAMPLES

.1 List of Materials:

- .1 Before ordering materials, submit written request in form acceptable to Consultant, for approval of paint materials. List each of the materials proposed and surfaces to be covered. State manufacturer's name and brand name of materials.
- .2 List of materials shall be endorsed by manufacturer as being the best material for the applicable condition.
- .3 Do not order material or commence work until list of materials is approved by Consultant.

.2 Samples:

- .1 Submit two 200 mm x 250 mm colour draw-downs of each paint colour coated with manufacturer's paint system to confirm colour match with colour chips supplied by Consultant.
- .2 Submit sample of natural and stained finishes on each species and grade of wood to receive such finishes.
- .3 Prepare full size samples showing each type of door finish.
- .4 Prepare sample panels of wall and ceiling paint system as directed by Consultant.

.3 Maintenance Materials:

.1 Upon completion of work provide one sealed and properly identified 1 gallon can of each type and colour paint used on this project.

.2 Only top coating paints used in building interior are required.

.3 Submit complete colour schedule listing paint colours, name and product code numbers, prior to Substantial performance.

1.5 PRODUCT HANDLING

.1 Deliver paint materials to site in sealed original labelled containers bearing manufacturer's name, brand name, type of paint and colour designation.

.2 Store materials in strict accordance with manufacturer's recommendations.

.3 Do not store paints, stains, varnishes, rags, or equipment inside building. maintain separate workshop/storage shed for duration of work by this Section.

1.6 JOB CONDITIONS

.1 Environmental Conditions:

.1 Maintain temperature to receive coatings between 15°C and 25°C for at least 24 hours before, during application and until coatings have cured after application.

.2 Adequately ventilate areas where coatings are being applied. Maintain a reasonably dust-free atmosphere for duration of work.

.2 Protection:

.1 Protect adjacent surfaces not scheduled to receive coatings from damage.

.2 Remove electrical plates, surface hardware, fittings and fastenings prior to painting operations. These items shall be carefully stored, cleaned and replaced on completion of work in each area. No solvent shall be used to clean hardware that will remove permanent lacquer finish on these items.

.3 Mask labels and specification plates occurring on equipment to be painted.

.4 Post "wet coating" signs while work is in progress and while coatings are curing.

.3 Work Schedule:

.1 Unless otherwise permitted, apply coatings only after all other Sections have completed their work.

.2 Coordinate work of this Section with that of Section 07 92 00 and review order of installation with Consultant where sealants are installed adjacent to painted surfaces.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Materials shall be "top line quality" products and shall be supplied by a single manufacturer except for specialty products not available from paint manufacturer.

.2 Provide paints with zero VOC content.

.3 Paints shall be factory mixed unless otherwise specified, except any coating in paste or powder form, or to be field-catalyzed shall be field-mixed in accordance with manufacturer's directions.

.4 Primers shall be as specified by manufacturer and fully compatible with finish coats.

.5 Stains shall be of the rapid dry, alkyd base type or pigment oil type.

.6 Varnishes shall be synthetic type.

.7 Shellac shall be pure white gum in pure grain alcohol.

.8 Thinners, cleaners: as recommended by paint manufacturer.

2.2 FINISHES

.1 Paint colours: refer to General List of Materials.

.2 Confirm gloss levels for all surfaces with Consultant before starting work. Unless otherwise indicated, allow for the following:

.1 Ceilings: flat
.2 Walls: eggshell
.3 Trim, doors, frames: semi-gloss
.4 All other surfaces: semi-gloss

.3 In existing buildings, confirm existing gloss levels for all repainted surfaces and match accordingly.

PART 3 - EXECUTION

3.1 CONDITIONS OF SUBSTRATES

.1 Sound, non-dusting, and free of grease, oil, dirt, and other matter detrimental to adhesion and appearance of coatings.

.2 Temperature: minimum 13°C.

.3 Moisture content: maximum 12%. Test for moisture content using moisture meter.

.4 Alkalinity: test cementitious substrates for alkalinity. Use method recommended by coating manufacturer.

3.2 PREPARATION OF SUBSTRATES

.1 All substrates: clean as required to produce an acceptable surface. If wood, metal or any other surface to be finished cannot be put in proper condition for finishing by cleaning, sanding and filling as specified, notify Consultant in writing or assume responsibility for an rectify any unsatisfactory finish resulting.

.2 Galvanized steel: coat with etching cleaner and rinse (MPI #25)

.3 Unit masonry and concrete: fill minor cracks, holes and fissures with non-shrink filler and smooth to a flush surface. Texture filled areas to match surrounding surface.

.4 Gypsum board: fill minor cracks, holes and imperfections with patching plaster; allow to dry and sand smooth; sand taped joints and remove dust.

.5 Alkaline surfaces: wash and neutralize using proper type of solution compatible with paint to be used.

3.3 APPLICATION OF COATINGS

.1 Apply paint by brush or roller, except on wood and metal surfaces where paint shall be applied by brush only.

.2 Spray painting may be permitted where deemed advantageous and shall be subject to Consultant's approval. When spray painting is permitted, use only airless spray guns. Consultant may prohibit use of spray painting at any time for such reasons as carelessness, poor masking or protective measures, drifting paint fog, disturbance to other trades or failure to obtain a uniform satisfactory finish.

.3 Applied and cured coatings shall be uniform in thickness, sheen, colour and texture and free of brush or roller marks, sags, crawls and other defects detrimental to appearance and performance.

.4 Regardless of the number of coats specified for any surface, apply sufficient paint to completely cover and hide substrate and to produce a solid uniform appearance.

.5 Thoroughly mix materials before application. Use same brand of paint for primer, intermediate and finish coats.

.6 Where two or more coats of same paint are to be applied, undercoats shall be tinted in lighter shades of final coat to differentiate from final coat.

.7 Touch up suction spots after application of first coat. Sand lightly between coats with fine sandpaper.

.8 Each coat of finish shall be dry and hard before succeeding coats are applied with a minimum of 24 hours between coats, unless manufacturer's instructions state otherwise. Do not proceed with any coat until the last preceding coat is approved by the Consultant.

3.4 PATCHING/TOUCH-UP

.1 Prior to takeover of project by Owner, inspect work of this Section and touch-up or refinish damaged finishes and finishes unsatisfactory to Consultant

3.5 SCHEDULE OF FINISHES

.1 General Requirements:

.1 Paint exposed surfaces of building materials, services and equipment, except those which are prefinished in factory and except those which are located in areas designed as not requiring painting.

.2 Comply with the following requirements except in areas designated as not requiring painting.

.1 Paint behind surface mounted fixtures on walls and ceilings with full coats of paint.

.2 Paint walls behind wall mounted heating units with full coats of paint.

.3 Paint inside surfaces of light coves white.

.4 Finish tops of doors, trim, projections and other work as specified for surrounding work whether above site lines or not.

.5 Finish edges of doors to match face of door. Refinish edges of doors after fitting.

.6 Finish drawers on all sides, inside and outside. Unless otherwise indicated finish drawers with two coats of varnish.

.7 Paint tops, bottoms and edges of shelves with full specified coats, whether exposed to view or not.

.8 Paint interior of ducts at grilles and diffusers with two coats of flat black paint, so that duct interior is not visible when grilles and diffusers are installed.

.9 Paint exposed piping, ducts and conduits in colours matching background wall or ceiling colours, unless otherwise directed by the Consultant. Ducts in mechanical rooms require only one finish coat in addition to primer. Other exposed ductwork to receive two finish coats.

.3 Where finishing formula for surfaces requiring painting is not included hereunder, follow recommendations of MPI Architectural Painting Specification Manual, latest issue.

.2 Interior Finishing:

.1 Concrete and concrete block:
2 coats block filler
1 coat primer, latex or PVA based
2 coats acrylic latex

.2 Metal, prime painted:
Spot prime with alkyd metal primer
2 coats acrylic latex

.3 Metal, zinc coated:
1 coat galvanized primer
2 coats acrylic latex

.4 Woodwork, painted:
1 coat water based enamel undercoat
2 coats acrylic latex

.5 Woodwork, stained and varnished (transparent finish):
1 coat stain
1 coat sanding sealer, sand lightly
1 coat waterbased polyurethane varnish, gloss
1 coat waterbased or polyurethane varnish, satin

.6 Gypsum board:
1 coat drywall primer
2 coats acrylic latex

.7 Cementitious wood fibre acoustic panels:
2 coat alkali resistant latex

.8 Exposed piping, wrapped:
1 coat block filler
2 coats acrylic latex

.9 Exposed piping and conduit, unwrapped:
1 coat latex metal primer
2 coats acrylic latex

.10 Exposed ductwork, insulated:
1 coat block filler and primer
2 coats acrylic latex

.3 Exterior Finishing:

.1 Metal, zinc coated (hot dip galvanized):
1 coat epoxy primer
2 coats aliphatic polyurethane

.2 Metal, zinc coated (inorganic zinc rich primer):
1 coat epoxy primer
2 coats aliphatic polyurethane

.3 Wood:
3 coats solid colour stain

3.6 EXISTING SURFACES

.1 Repaint existing surfaces where they are scheduled to be painted or where finish is damaged by alteration work. Extend new paint finish over full height and/or width of area affected, to a straight line in location determined by Consultant.

.2 All existing surfaces to be repainted shall receive as many coats of new paint, as required to hide existing finish.

.3 Materials used for repainting shall be of similar quality to those specified for new work, but in each case shall be compatible with finishes to which they are applied.

.4 Where compatibility of new coating with existing surface is uncertain, apply test patch of approximately 0.5 m² and check for results.

.5 Prepare existing surfaces to be repainted as follows:

.1 Clean as required to remove dirt, dust, oil, grease, loose paint, rust and any other foreign matter which would prevent proper bonding of new finish.

.2 Peeled chipped, scratched and otherwise damaged surfaces shall be filled, sanded and repaired as required to provide consistent surface with texture matching that of adjacent area.

.3 Sand glossy surfaces to uniform dull texture.

.4 Treat bare areas as specified for new work.

.6 Prior to repainting existing surfaces request Consultant's review and acceptance of prepared substrates, existing surfaces repainted without Consultant's review and acceptance may have to be prepared again as directed by Consultant and repainted at no extra cost.

END OF SECTION

MAPLE ENVIRONMENTAL INC.
ENVIRONMENT, HEALTH & SAFETY CONSULTANTS

ASBESTOS-CONTAINING BUILDING MATERIALS RE-ASSESSMENT REPORT

MONCK PUBLIC SCHOOL

250 Wellington Street
Bracebridge, Ontario

Presented to:

Trillium Lakelands District School Board

Box 420, County Road 36
Lindsay, Ontario
K9V 4S4

Attention: Daniel Whalen

September 2019

Maple Project No. 18021-07

Executive Summary
2019 Asbestos-Containing Building Materials Re-Assessment Report

Maple Project	School Name	Address
18021-07	Monck Public School	250 Wellington St, Bracebridge, Ontario

Maple Environmental Inc. was retained by Trillium Lakelands District School Board to perform a re-assessment of known asbestos-containing building materials within the subject building.

The findings and recommendations of the current assessment are summarized below. Please refer to the main body of the report for details.

FINDINGS

Asbestos-containing materials (ACM) identified within the building at the time of the assessment are as follows:

ASBESTOS BUILDING MATERIALS SUMMARY								
MATERIAL		ASBESTOS			FRIABILITY			Remedial Work Required
		Yes	No	Suspect	Friable	Non-Friable	Potentially	
Sprayed Fireproofing			X		X			NO
Textured Finish			X		X			NO
Mechanical Insulations	Pipe Fittings		X		X			NO
	Pipe Straight		X		X			NO
	Ductwork		X		X			NO
	Mechanical Equip.		X		X			NO
Ceiling Tiles			X				X	NO
Vinyl Sheet Flooring			X				X	NO
Vinyl Floor Tiles		X				X		NO
Asbestos Cement (Transite)			X			X		NO
Plaster			X				X	NO
Drywall Joint Compound.				X		X		NO
Other (roofing, caulking etc.)				X				NO

Please refer to Room by Room Inventory in Appendix I to view location, quantities, and condition of ACM observed within the building at the time of the assessment.

RECOMMENDATIONS

As asbestos-containing materials were found to be present within the building, Ontario Regulation 278/05 requires that the Trillium Lakelands District School Board's Asbestos Management Plan must apply to this building. In addition, an annual re-assessment of all ACM must be performed.

All asbestos-containing materials identified within the building were observed to be in GOOD condition and therefore no recommendations are warranted.

General Statement

This report should be read in its entirety and is not a stand-alone report. Please refer to the Trillium Lakelands District School Board Overview Report provided under a separate cover to review information relevant to Regulations, Inventory Scope and Methodology, Sampling Strategies, Analytical Methods, Assessment Criteria, and the assessment limitations. Further, this Executive Summary must be read in conjunction with the main body of this report below.

TABLE OF CONTENTS

1.0 INTRODUCTION

MAPLE Environmental Inc. ("MAPLE") was retained by the Trillium Lakelands District School Board (TLDSB) to perform a re-assessment of known asbestos-containing building materials within all TLDSB schools where asbestos was previously confirmed to be present (by others).

The assessment was competed in accordance with the requirement of Ontario Regulation 278/05 to complete a re-assessment on an annual basis.

The following report presents the findings and recommendations of the assessment for the specific building listed.

SUMMARY OF BUILDING INFORMATION	
School Name:	Monck Public School
Building Address:	250 Wellington St, Bracebridge, Ontario
Number of Floors:	1
Approximate Square Footage:	53,000
Assessed by:	Kyle Prosser
Assessment Date:	July 3, 2019

2.0 APPLICABLE ONTARIO REGULATIONS

Applicable Ontario Regulations for each of the materials included in the investigation are briefly described below.

2.1 Ontario Regulation 278/05 (Asbestos)

The Ontario Ministry of Labour Regulation 278/05 requires a detailed asbestos inventory be performed in all buildings where friable and non-friable asbestos-containing materials (ACM) are present. The inventory must be available at the work place and must identify the type and location of asbestos-containing materials on a room-by-room basis, where necessary.

Each individual building report prepared by MAPLE meets or exceeds the requirements for an asbestos survey under Ontario Regulation 278/05.

Ontario Regulation 278/05 applies to buildings with regards to maintenance, renovation or demolition work where ACM is present and may be disturbed. The regulation requires all buildings where asbestos is known to be part of the building materials to implement an Asbestos Management Program

(AMP). TLDSB has prepared and maintains an AMP of which the current Re-Assessment report is part of.

2.2 Ontario Regulation 347

Ontario Regulation 347 applies to the transport of waste from the location of generation to a landfill site authorized to receive specific wastes. The regulation also prescribes procedures on how the specific wastes are to be handled at the landfill site.

The major requirements of the building owner and the person(s) removing the waste are to ensure that:

- The waste is appropriately packaged and labelled;
- The transport vehicle is appropriately placard; and
- The waste is to be transported as directly as possible to the landfill site once it leaves the site.

Some wastes require the Owner to register a Generator (of waste) number and many wastes require classification that can restrict or even prohibit their disposal in landfill.

It is important to note that the building owner can be held responsible for the waste until the waste disposal site accepts it.

3.0 SURVEY SCOPE AND METHODOLOGY

The surveys were performed on a Room-by-Room basis within each building included in the scope of the assessment where asbestos was previously identified (by others).

The scope of the surveys included all friable and major non-friable materials suspected to contain asbestos. The term friable is applied to a material that can be readily reduced to dust or powder by hand or moderate pressure. Asbestos materials that are friable have a much greater potential to release airborne asbestos fibres when disturbed.

Typical friable asbestos materials include; sprayed fireproofing or thermal insulation, textured (stippled) plaster, and thermal mechanical insulation. Typical non-friable materials include: asbestos cement (transite) products, caulking, vinyl floor tiles, asbestos textiles and gaskets. Additional materials such as ceiling tiles and drywall joint compounds are classified as non-friable, but because of their ability to release dust when disturbed they are considered as "potentially friable" for the purpose of this report.

3.1 Inventory Methodology

In order to determine the location of the materials included in the assessment, each room or area was entered where practical (i.e.: where access was possible without the demolition of walls, roof or ceilings or destruction of flooring) where asbestos materials were previously identified. An investigation of areas of the building where asbestos was not previously identified was not included in the scope of the current project.

Representative views were made above accessible suspended ceiling systems. Drywall or plaster ceilings were accessed via existing ceiling access panels only. The inventory did not include destructive testing of building systems or finishes to observe possible hidden conditions.

3.2 Asbestos Assessment Criteria

The recommendations and suggestions made as part of this report with respect to asbestos have taken into consideration the condition and accessibility of the asbestos-containing material as well as other factors such as water damage, vibration, air movement, and general activities in the area.

Where ACM is found to be in GOOD condition and not likely to deteriorate or fall, the general recommendation would be to re-evaluate the condition of the material on an annual basis (required by Regulation 278/05). This recommendation can be subject to change if the material is located in a manner that persons untrained in asbestos awareness could physically damage it.

Where the ACM is found to be damaged (i.e. FAIR or POOR condition), a recommendation to have the material cleaned-up, repaired, removed, enclosed, or encapsulated is offered. The recommendation will also indicate which asbestos procedure should be used to perform the remedial work (i.e. Type 1, Type 2, Type 3, or Glove Bag Removal Methods).

In each area or room inventoried, the quantity, condition (GOOD, FAIR, or POOR) and accessibility (A, B, C, D or E) of each suspect material was recorded.

The definitions for condition and accessibility items are as follows:

GOOD	Material is intact with no visible signs of damage.
FAIR	Material is visibly damaged but can be repaired.
POOR	Material is damaged beyond repair and likely needs to be removed.
Access A	Accessible to all occupants of the building.

Access B	Accessible to Maintenance personnel without the use of a ladder (i.e. Mechanical Room, pipe chase etc.).
Access C	Accessible to Maintenance personnel with the use of a ladder and is exposed to view without removing building components.
Access D	Accessible to Maintenance personnel with the use of a ladder and is concealed from viewing due to a building component (i.e. above a removable ceiling).
Access E	Not accessible without demolition of a building component (i.e. above a fixed ceiling system).

The asbestos related information collected during the previous assessments was confirmed and the room-by-room data updated to reflect the current information.

3.3 Limitations and Omissions from Scope

Due to the nature of building construction, some limitations exist in regards to the possible thoroughness of any building materials inventory. The field observations, measurements, and analysis are considered sufficient in detail and scope to form a reasonable basis for the findings presented in this report. MAPLE warrants that the findings and conclusions contained herein have been made in accordance with generally accepted evaluation methods in the industry and applicable regulations at the time of the performance of the inventory.

It is possible that conditions may exist which could not be reasonably identified within the scope of the inventory or which were not apparent during the site investigation. MAPLE believes that the information collected during the inventory period concerning the property is reliable. No other warranties are implied or expressed.

In addition, during a standard asbestos assessment, performed for the purposes of regulatory compliance, it is industry practice to exclude some non-friable materials in the inventory. Examples of such assumptions include; elevator brakes, roofing felts and mastics, high voltage wiring, mechanical packing and gaskets, underground services or piping, fire-doors, window caulking, levelling compound, and/or materials used in operating equipment. As such, these materials were not sampled at the time of this survey and where present are assumed to be asbestos containing until proven otherwise.

3.4 Sampling Strategy and Analytical Methods

As the majority of materials were previously sampled by others, the requirement for sampling during the current survey was limited. Where samples were collected, they conformed to the criteria outlined below and in compliance with O. Reg. 278/05.

A small volume of the material was removed either from a damaged section or cut out of intact material and then repaired by sealing with tape to prevent the release of fibres. The collected samples were placed in plastic bags, sealed and labelled and then sent to an independent laboratory for analysis. To ensure quality results, the independent laboratory chosen is NVLAP accredited and successfully participates in an "Asbestos Proficiency Analytical Testing Program" and as such, these laboratories are responsible for their findings.

The collection of samples was performed in accordance with regulatory sampling requirements and with sufficient frequency to obtain a general pattern of asbestos use within the building. Due to building renovations or modifications that have occurred, the consistency of the application of asbestos materials may not be uniform throughout the entire building. It is important to note that without sampling every wall, pipe section, ceiling tile etc. it is not possible to identify the possible asbestos content in every material present in the building. For this reason, materials similar in appearance to those sampled elsewhere in the building were visually identified as being homogeneous and thus are assumed to be composed of the same material, thus additional sampling is not required.

In accordance with Reg. 278/05, samples were collected at the following frequency.

Material Type	No. Samples
Sprayed Fireproofing	Up to 7
Texture Coat	Up to 7
Pipe Fitting Insulation	3
Pipe Straight Insulation	3
Ductwork Insulation	3
Ceiling Tiles	3
Vinyl Sheeting Flooring	3
Vinyl Floor Tile	3
Plaster Finishes	Up to 7
Drywall Compound	Up to 7

An independent NVLAP accredited laboratory, was used to analyse the collected samples. Analysis was performed following the Code of Practice for the identification of asbestos in bulk material, as detailed in Ontario Regulation 278/05. Bulk samples were analysed using the Polarized Light Microscopy ("PLM") Technique with Dispersion Staining. The identification of asbestos fibre in bulk material is based on a collective set of parameters dependent on the unique shape and crystallographic properties of each fibre as viewed through the microscope. This method is useful for the qualitative identification of asbestos and the semi-quantitative determination of asbestos content in bulk materials expressed as a percent of projected area. The method identifies types of asbestos and also measures percent of asbestos as perceived by the analyst in comparison to standard area projections or trained experience.

Given the composition of some vinyl floor products, the PLM analysis method is often prone to yielding false negative analysis results. Therefore it may be prudent that the Transmission Electron Microscopy (TEM) analysis method be used to determine the asbestos content in the vinyl floor products, if negative results are obtain from the laboratory analysis.

3.5 Drawings

Drawings provided for each building indicate the following (where present):

- ◊ Location Numbers (reference to Room-by-Room asbestos data)
- ◊ Asbestos-Containing Sprayed Fireproofing
- ◊ Asbestos-Containing Texture Finishes
- ◊ Asbestos Containing Ceiling Tiles
- ◊ Asbestos-Containing Flooring Materials
- ◊ Presence of Asbestos-Containing Mechanical Insulations will not be specifically indicated on the drawings; however, a general statement regarding the presence of ACM mechanical insulations, where present, has been indicated on the drawings.
- ◊ Presence of asbestos-containing drywall joint compound and hard plaster will not be specifically identified on the drawings; however, a general statement regarding the presence of these ACM materials, where present, has been indicated on the drawings.

4.0 INVENTORY FINDINGS

The following is a brief discussion of the extent to which Asbestos-Containing Materials (ACM) was identified in the building. The discussion is organized under the headings of materials that are generally suspected of containing asbestos. Refer to the Room-by-Room Survey Inventory in Appendix I for a detailed description and location of all ACM.

Destructive testing was not conducted and as such some areas within the building were not accessible for an assessment (i.e. above solid ceilings, behind walls). Access for viewing within wall and ceiling cavities was not always possible. Suspect asbestos materials may be present within ceiling and wall cavities that were not identified in this report. This comment is particularly important for materials such as mechanical insulation. Caution should be taken when demolishing solid wall finishes within the building.

4.1 Sprayed Fireproofing (Friable)

No asbestos-containing sprayed fireproofing is present in the building. The sprayed fireproofing present within eBase 165 was previously sampled by others and found not to contain asbestos.

4.2 Thermal Mechanical Insulation (Friable)

No asbestos-containing mechanical insulations are present in the building. As ACM mechanical insulations were known to exist previously in the building (removed), it is important to note that mechanical systems may be present within walls and ceiling cavities or pipe chases that were not accessible during this assessment. The presence of ACM mechanical insulations in these locations should be suspected.

4.3 Texture Finish (Friable)

No asbestos-containing texture finishes were identified to be present within the building.

4.4 Acoustic Ceiling Tiles (Potentially Friable)

No asbestos-containing ceiling tiles were identified to be present within the building.

4.5 Vinyl Sheet Flooring (Potentially Friable)

No asbestos-containing vinyl sheet flooring was identified to be present within the building.

4.6 Vinyl Floor Tile (Non-Friable)

Vinyl floor tiles containing asbestos are present in the Music Storage Room (eBase 139A). The vinyl floor tiles were found to be in GOOD condition. Refer to the Room-by-Room Inventory in Appendix I for details regarding location and quantity.

4.7 Asbestos Cement Products "Transite" (Non-Friable)

Asbestos cement products were not observed to be present within the building.

4.8 Drywall Joint Compound (DJC)

While previous sample results indicated drywall joint compound sampled at the Site does not contain asbestos, it should be noted that the concentration of asbestos within drywall joint compound is historically known to be potentially inconsistently distributed. Further, it is possible that various phases of construction and renovations have occurred at the Site. Therefore, the number of samples previously collected may not be representative of all drywall joint compound finishes in the building.

4.9 Plaster

Plaster finishes were not identified in the building.

5.0 RECOMMENDATIONS

5.1 General Recommendations

Due to the presence of ACM within the building, TLDSB must maintain their existing Asbestos Management Program for this property.

A re-assessment of known ACM is to be conducted at least once annually.

It is important to note that due to the presence of solid walls and ceiling systems, ACM may be present in concealed locations not identified in this report.

If asbestos-containing vinyl floor tiles are likely to be disturbed, the tiles should be removed using Type 1 Asbestos procedures (provided no power tools are used and the material is wetted). The use of power tools would require Type 3 Asbestos procedures.

Materials suspected of containing asbestos should be sampled prior to disturbance. Suspect materials include; drywall joint compound, plaster, roofing materials, caulking, etc. unless previously confirmed to contain asbestos.

5.2 Specific Recommendations

All asbestos-containing materials identified within the building were observed to be in GOOD condition and therefore no immediate recommendations are warranted.

6.0 LIMITATIONS

Due to the nature of building construction some limitations exist as to the possible thoroughness of the subject investigation. The field observations are considered sufficient in detail and scope to form a reasonable basis for the findings presented in this report. MAPLE warrants that the findings and

conclusions contained herein have been made in accordance with generally accepted evaluation methods in the industry and applicable regulations at the time of the performance of the assessment.

It is possible that conditions may exist which could not be reasonably identified within the scope of the investigation or which were not apparent during the site investigation. MAPLE believes that the information collected during the investigation period concerning the property is reliable. No other warranties are implied or expressed.

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Please contact Maple Environmental Inc. at (905) 257-4408 for inquiries regarding this project.

Sincerely,

MAPLE ENVIRONMENTAL INC.
Environment, Health and Safety Consultants

Prepared By:

Mark Pollock
Project Technologist

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APPENDIX I

ROOM-BY-ROOM ASBESTOS INVENTORY

APPENDIX I - ROOM BY ROOM ASBESTOS INVENTORY

MAPLE ENVIRONMENTAL INC.
ENVIRONMENT, HEALTH & SAFETY CONSULTANTS

STRUCTURAL ELEMENT

RF: Roof	B/J: Beams/Joists
WN: Window	CB: Chalkboard
FL:Floor	PI: Pipe
CL:Ceiling	DT:Duct
WL:Wall	BL:Boiler
DK:Deck	MC:Mechanical

ACCESSIBILITY

A: All occupants of the facility

B: Maintenance staff without a ladder

C: Maintenance staff with a ladder, exposed to view without moving building components

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TERMINOLOGY

ACM: Asbestos Containing Material	N/A: Not Applicable	PL: Plaster	TB: Transite Board	VSF: Vinyl Sheet Flooring
CT: Ceiling Tile	N/Anz: Not Analyzed	RM: Roofing Materials	TP: Transite Pipe	V/C: Visually Consistent w/ Other Sampled Material
DJC: Drywall Joint Compound	N/D: None Detected	SFP: Sprayed Fireproofing	VI: Vermiculite Insulation	
FTG: Fitting	PI-AC: Pipe Insulation - Aircell	SF: Square Feet	VFT: Vinyl Floor Tile	WC: Window Caulking
LF: Linear Feet	PI-PC: Pipe Insulation-Parging Cement	TF: Texture Finish		
	PI-CP: Pipe Insulation-Caposite			

CONDITION G: Good F: Fair P: Poor

ID	Facility	Floor #	Room #	Room name	Has ACM	Friable	Struct. Elem.	Application	Material	Type	Qty	Condition	Sample #	Action	Ref #	Comments 1	Comments 2	Comments 3	Notes
32088	Monck Public School	NA		EXTERIOR	No	No	RF	RM	NA	ACM ASSUMED	1	G	NS			C			Sample prior to renovation
32089	Monck Public School	NA		EXTERIOR	No	No	WN	WC	NA	ACM ASSUMED	1	G	NS			A, C			Sample prior to renovation
32090	Monck Public School	NA		EXTERIOR	No	No	CL	TF	NA	N/D	-	-	14398-07-PR4-01A-C			-			
32091	Monck Public School	1	101	ROOM 41 - VESTIBULE	No	No	CL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32092	Monck Public School	1	101	ROOM 41 - VESTIBULE	No	No	FL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32208	Monck Public School	1	102	AREA 40 - HALLWAY	No	No	FL	CT	7	N/D	-	-	V/C: 12578-07-02			-			
32209	Monck Public School	1	102	AREA 40 - HALLWAY	No	No	WL	DJC	NA	N/D	-	-	7-BS-17D, E			-			
32282	Monck Public School	1	103	ROOM 43 - STAFF ROOM	No	No	FL	VFT	2	N/D	-	-	7-BS-05A			-			
32283	Monck Public School	1	103	ROOM 43 - STAFF ROOM	No	No	CL	CT	2	N/D	-	-	V/C: 7-BS-04			-			
32284	Monck Public School	1	103	ROOM 43 - STAFF ROOM	No	No	WL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32285	Monck Public School	1	103A	ROOM 42 - OFFICES	No	No	CL	CT	2	N/D	-	-	V/C: 7-BS-04			-			
32286	Monck Public School	1	103A	ROOM 42 - OFFICES	No	No	WL	DJC	NA	N/D	-	-	7-BS-17G			-			
32279	Monck Public School	1	103B	ROOM 45 - GIRLS W/R	No	No	FL	VFT	2	N/D	-	-	V/C: 7-BS-05			-			
32280	Monck Public School	1	103B	ROOM 45 - GIRLS W/R	No	No	CL	CT	2	N/D	-	-	V/C: 7-BS-04			-			
32281	Monck Public School	1	103B	ROOM 45 - GIRLS W/R	No	No	WL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32276	Monck Public School	1	103C	ROOM 46 - BOYS W/R	No	No	FL	VFT	2	N/D	-	-	V/C: 7-BS-05			-			
32277	Monck Public School	1	103C	ROOM 46 - BOYS W/R	No	No	CL	CT	2	N/D	-	-	V/C: 7-BS-04			-			
32278	Monck Public School	1	103C	ROOM 46 - BOYS W/R	No	No	WL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32261	Monck Public School	1	104	ROOM 39 - HALLWAY	No	No	CL	CT	7	N/D	-	-	V/C: 12578-07-02			-			
32262	Monck Public School	1	104	ROOM 39 - HALLWAY	No	No	CL	DJC	NA	N/D	-	-	7-BS-15E			-			
32273	Monck Public School	1	105	ROOM 47 - DETENTION ROOM	No	No	FL	VFT	1	N/D	-	-	V/C: 7-BS-03			-			
32274	Monck Public School	1	105	ROOM 47 - DETENTION ROOM	No	No	CL	CT	2	N/D	-	-	V/C: 7-BS-04			-			
32275	Monck Public School	1	105	ROOM 47 - DETENTION ROOM	No	No	WL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32270	Monck Public School	1	106	ROOM 48 - CLASSROOM	No	No	FL	VFT	2	N/D	-	-	7-BS-05B			-			
32271	Monck Public School	1	106	ROOM 48 - CLASSROOM	No	No	CL	CT	2	N/D	-	-	V/C: 7-BS-04			-			
32272	Monck Public School	1	106	ROOM 48 - CLASSROOM	No	No	WL	DJC	NA	N/D	-	-	7-BS-17F			-			
32267	Monck Public School	1	107	ROOM 44 - CLASSROOM	No	No	FL	VFT	2	N/D	-	-	V/C: 7-BS-05			-			
32268	Monck Public School	1	107	ROOM 44 - CLASSROOM	No	No	CL	CT	2	N/D	-	-	V/C: 7-BS-04			-			
32269	Monck Public School	1	107	ROOM 44 - CLASSROOM	No	No	WL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32265	Monck Public School	1	109	ROOM 38 - KINDERGARTEN CLASSROOM	No	No	FL	VFT	1	N/D	-	-	V/C: 7-BS-03			-			
32266	Monck Public School	1	109	ROOM 38 - KINDERGARTEN CLASSROOM	No	No	CL	CT	2	N/D	-	-	V/C: 7-BS-04			-			
32263	Monck Public School	1	110	ROOM 37 - KINDERGARTEN CLASSROOM	No	No	FL	VFT	1	N/D	-	-	V/C: 7-BS-03			-			
32264	Monck Public School	1	110	ROOM 37 - KINDERGARTEN CLASSROOM	No	No	CL	CT	2	N/D	-	-	V/C: 7-BS-04			-			
32230	Monck Public School	1	111	ROOM 86 - CLASSROOM	No	No	FL	VFT	3	N/D	-	-	V/C: 7-BS-08			-			
32231	Monck Public School	1	111	ROOM 86 - CLASSROOM	No	No	CL	CT	7	N/D	-	-	V/C: 12578-07-02			-			
32227	Monck Public School	1	112	AREA 31 - HALLWAY	No	No	CL	CT	7	N/D	-	-	12578-07-02C			-			
32259	Monck Public School	1	113	AREA 75 - HALLWAY	No	No	CL	CT	7	N/D	-	-	V/C: 12578-07-02			-			
32260	Monck Public School	1	114	ROOM 85 - MECH ROOM	-	-	-	-	-	-	-	-	-			-			
32256	Monck Public School	1	115	ROOM 84 - NEW CLASSROOM	No	No	FL	VFT	3	N/D	-	-	V/C: 7-BS-08			-			
32257	Monck Public School	1	115	ROOM 84 - NEW CLASSROOM	No	No	CL	CT	7	N/D	-	-	V/C: 12578-07-02			-			
32258	Monck Public School	1	115	ROOM 84 - NEW CLASSROOM	No	No	WL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32253	Monck Public School	1	116	ROOM 83 - NEW CLASSROOM	No	No	FL	VFT	3	N/D	-	-	V/C: 7-BS-08			-			
32254	Monck Public School	1	116	ROOM 83 - NEW CLASSROOM	No	No	CL	CT	7	N/D	-	-	V/C: 12578-07-02			-			
32255	Monck Public School	1	116	ROOM 83 - NEW CLASSROOM	No	No	WL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32250	Monck Public School	1	117	ROOM 82 - NEW CLASSROOM	No	No	FL	VFT	3	N/D	-	-	V/C: 7-BS-08			-			

APPENDIX I - ROOM BY ROOM ASBESTOS INVENTORY

MAPLE ENVIRONMENTAL INC.
ENVIRONMENT, HEALTH & SAFETY CONSULTANTS

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DK:Deck	MC:Mechanical

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	PI-CP: Pipe Insulation-Caposite			

CONDITION G: Good F: Fair P: Poor

ID	Facility	Floor #	Room #	Room name	Has ACM	Friable	Struct. Elem.	Application	Material	Type	Qty	Condition	Sample #	Action	Ref #	Comments 1	Comments 2	Comments 3	Notes
32251	Monck Public School	1	117	ROOM 82 - NEW CLASSROOM	No	No	CL	CT	7	N/D	-	-	V/C: 12578-07-02			-			
32252	Monck Public School	1	117	ROOM 82 - NEW CLASSROOM	No	No	WL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32247	Monck Public School	1	118	ROOM 81 - NEW CLASSROOM	No	No	FL	VFT	3	N/D	-	-	V/C: 7-BS-08			-			
32248	Monck Public School	1	118	ROOM 81 - NEW CLASSROOM	No	No	CL	CT	7	N/D	-	-	V/C: 12578-07-02			-			
32249	Monck Public School	1	118	ROOM 81 - NEW CLASSROOM	No	No	WL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32244	Monck Public School	1	119	ROOM 80 - NEW CLASSROOM	No	No	FL	VFT	3	N/D	-	-	V/C: 7-BS-08			-			
32245	Monck Public School	1	119	ROOM 80 - NEW CLASSROOM	No	No	CL	CT	7	N/D	-	-	V/C: 12578-07-02			-			
32246	Monck Public School	1	119	ROOM 80 - NEW CLASSROOM	No	No	WL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32241	Monck Public School	1	120	ROOM 79 - NEW CLASSROOM	No	No	FL	VFT	3	N/D	-	-	V/C: 7-BS-08			-			
32242	Monck Public School	1	120	ROOM 79 - NEW CLASSROOM	No	No	CL	CT	7	N/D	-	-	V/C: 12578-07-02			-			
32243	Monck Public School	1	120	ROOM 79 - NEW CLASSROOM	No	No	WL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32238	Monck Public School	1	121	ROOM 78 - NEW CLASSROOM	No	No	FL	VFT	3	N/D	-	-	V/C: 7-BS-08			-			
32239	Monck Public School	1	121	ROOM 78 - NEW CLASSROOM	No	No	CL	CT	7	N/D	-	-	V/C: 12578-07-02			-			
32240	Monck Public School	1	121	ROOM 78 - NEW CLASSROOM	No	No	WL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32235	Monck Public School	1	122	ROOM 77 - NEW CLASSROOM	No	No	FL	VFT	3	N/D	-	-	V/C: 7-BS-08			-			
32236	Monck Public School	1	122	ROOM 77 - NEW CLASSROOM	No	No	CL	CT	7	N/D	-	-	V/C: 12578-07-02			-			
32237	Monck Public School	1	122	ROOM 77 - NEW CLASSROOM	No	No	WL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32232	Monck Public School	1	123	ROOM 76 - NEW CLASSROOM	No	No	FL	VFT	3	N/D	-	-	V/C: 7-BS-08			-			
32233	Monck Public School	1	123	ROOM 76 - NEW CLASSROOM	No	No	CL	CT	7	N/D	-	-	V/C: 12578-07-02			-			
32234	Monck Public School	1	123	ROOM 76 - NEW CLASSROOM	No	No	WL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32228	Monck Public School	1	124	ROOM 30 - CLASSROOM	No	No	FL	VFT	3	N/D	-	-	V/C: 7-BS-08			-			
32229	Monck Public School	1	124	ROOM 30 - CLASSROOM	No	No	CL	CT	7	N/D	-	-	V/C: 12578-07-02			-			
32225	Monck Public School	1	126	ROOM 29 - GIRLS W/R	No	No	CL	CT	3	N/D	-	-	V/C: 7-BS-07			-			
32226	Monck Public School	1	126A	ROOM 28 - OUTDOOR STORAGE	-	-	-	-	-	-	-	-	-			-			
32201	Monck Public School	1	127	ROOM 25 - CLASSROOM	No	No	FL	VFT	2	N/D	-	-	V/C: 7-BS-05			-			
32202	Monck Public School	1	127	ROOM 25 - CLASSROOM	No	No	CL	CT	8	N/D	-	-	NS			-			CT Manufactured between 2007-2011
32199	Monck Public School	1	128	ROOM 24 - CLASSROOM	No	No	FL	VFT	2	N/D	-	-	V/C: 7-BS-05			-			
32200	Monck Public School	1	128	ROOM 24 - CLASSROOM	No	No	CL	CT	8	N/D	-	-	NS			-			CT Manufactured between 2007-2011
32196	Monck Public School	1	129	ROOM 21 - CLASSROOM	No	No	FL	VFT	2	N/D	-	-	V/C: 7-BS-05			-			
32197	Monck Public School	1	129	ROOM 21 - CLASSROOM	No	No	CL	CT	8	N/D	-	-	NS			-			CT Manufactured between 2007-2011
32198	Monck Public School	1	129	ROOM 21 - CLASSROOM	No	No	WL	DJC	NA	N/D	-	-	7-BS-17A			-			
32186	Monck Public School	1	130	ROOM 20 - STORAGE	No	No	FL	VFT	1	N/D	-	-	V/C: 7-BS-03			-			
32187	Monck Public School	1	130	ROOM 20 - STORAGE	No	No	CL	CT	6	8% CHRYSOTILE	-	-	V/C: 7-BS-18			-			Removed Summer 2013
32204	Monck Public School	1	131	ROOM - 22 LIBRARY OFFICE	No	No	CL	CT	3	N/D	-	-	7-BS-07C			-			
32203	Monck Public School	1	132	ROOM 23 - LIBRARY	No	No	CL	CT	7	N/D	-	-	V/C: 12578-07-02			-			Active water leak and water stains
32205	Monck Public School	1	132A	ROOM 68 - UPPER STORAGE AND LIBRAR	No	No	CL	CT	6	8% CHRYSOTILE	-	-	V/C: 7-BS-18			-			Removed Summer 2013
32206	Monck Public School	1	132A	ROOM 68 - UPPER STORAGE AND LIBRAR	No	Yes	PI	PI-PC	NA	65% CHRYSOTILE	-	-	V/C: 7-BS-12			-			Removed Summer 2013
32207	Monck Public School	1	133	ROOM 69 - CONFERENCE ROOM	No	No	CL	CT	2	N/D	-	-	V/C: 7-BS-04			-			
32219	Monck Public School	1	134	ROOM 26 - VISUAL STIMULATION ROOM	No	No	FL	VFT	1	N/D	-	-	V/C: 7-BS-03			-			
32220	Monck Public School	1	134	ROOM 26 - VISUAL STIMULATION ROOM	No	No	CL	CT	7	N/D	-	-	V/C: 12578-07-02			-			
32221	Monck Public School	1	134	ROOM 26 - VISUAL STIMULATION ROOM	No	No	WL	DJC	NA	N/D	-	-	7-BS-17B			-			
32217	Monck Public School	1	135	ROOM 27 - TECH CLASSROOM	No	No	CL	CT	8	N/D	-	-	NS			-			CT Manufactured between 2007-2011
32218	Monck Public School	1	135	ROOM 27 - TECH CLASSROOM	No	No	WL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32222	Monck Public School	1	136	ROOM 33 - CUSTODIANS ROOM	No	No	CL	CT	6	8% CHRYSOTILE	-	-	7-BS-18C			-			Fully abated and replaced with new CT in April 2013
32223	Monck Public School	1	136	ROOM 33 - CUSTODIANS ROOM	No	No	CL	CT	8	N/D	-	-	NS			-			CT Manufactured between 2007-2011

APPENDIX I - ROOM BY ROOM ASBESTOS INVENTORY

MAPLE ENVIRONMENTAL INC.
ENVIRONMENT, HEALTH & SAFETY CONSULTANTS

STRUCTURAL ELEMENT

RF: Roof	B/J: Beams/Joists
WN: Window	CB: Chalkboard
FL:Floor	PI: Pipe
CL:Ceiling	DT:Duct
WL:Wall	BL:Boiler
DK:Deck	MC:Mechanical

ACCESSIBILITY

A: All occupants of the facility

B: Maintenance staff without a ladder

C: Maintenance staff with a ladder, exposed to view without moving building components

D: Maintenance staff with a ladder, concealed from view by building components

E: No access without demolition or removal of fixed building components or systems

TERMINOLOGY

ACM: Asbestos Containing Material	N/A: Not Applicable	PL: Plaster	TB: Transite Board	VSF: Vinyl Sheet Flooring
CT: Ceiling Tile	N/Anz: Not Analyzed	RM: Roofing Materials	TP: Transite Pipe	V/C: Visually Consistent w/ Other Sampled Material
DJC: Drywall Joint Compound	N/D: None Detected	SFP: Sprayed Fireproofing	VI: Vermiculite Insulation	
FTG: Fitting	PI-AC: Pipe Insulation - Aircell	SF: Square Feet	VFT: Vinyl Floor Tile	WC: Window Caulking
LF: Linear Feet	PI-PC: Pipe Insulation-Parging Cement	TF: Texture Finish		
	PI-CP: Pipe Insulation-Caposite			

CONDITION G: Good F: Fair P: Poor

ID	Facility	Floor #	Room #	Room name	Has ACM	Friable	Struct. Elem.	Application	Material	Type	Qty	Condition	Sample #	Action	Ref #	Comments 1	Comments 2	Comments 3	Notes
32224	Monck Public School	1	137	ROOM 34 - BOYS W/R	No	No	CL	CT	7	N/D	-	-	V/C: 12578-07-02			-			
32215	Monck Public School	1	138	ROOM 36 - MUSIC STORAGE	No	No	FL	VFT	1	N/D	-	-	7-BS-03B			-			
32216	Monck Public School	1	138	ROOM 36 - MUSIC STORAGE	No	No	CL	CT	2	N/D	-	-	V/C: 7-BS-04			-			
32210	Monck Public School	1	139	ROOM 32 - MUSIC ROOM	No	No	CL	CT	2	N/D	-	-	V/C: 7-BS-04			-			
32211	Monck Public School	1	139	ROOM 32 - MUSIC ROOM	No	No	WL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32212	Monck Public School	1	139A	ROOM 75 - MUSIC STORAGE	Yes	No	FL	VFT	5	3% CHRYSOTILE	149 SF	G	7-BS-11A, B			A			
32213	Monck Public School	1	139A	ROOM 75 - MUSIC STORAGE	No	No	CL	CT	2	N/D	-	-	V/C: 7-BS-04			-			
32214	Monck Public School	1	139A	ROOM 75 - MUSIC STORAGE	No	No	WL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32287	Monck Public School	1	139A	ROOM 75 - MUSIC STORAGE	No	No	FL	VFT	5	3% CHRYSOTILE	-					A			1 tile replaced in 2016.
32194	Monck Public School	1	140	AREA 16 - HALLWAY	No	No	CL	CT	7	N/D	-	-	V/C: 12578-07-02			-			
32195	Monck Public School	1	140	AREA 16 - HALLWAY	No	No	WL	DJC	NA	N/D	-	-	7-BS-15A			-			
32184	Monck Public School	1	141	ROOM 19 - BREAK ROOM	No	No	FL	VFT	1	N/D	-	-	V/C: 7-BS-03			-			
32185	Monck Public School	1	141	ROOM 19 - BREAK ROOM	No	No	CL	CT	6	8% CHRYSOTILE	-	-	V/C: 7-BS-18			-			Removed Summer 2013
32162	Monck Public School	1	142	AREA 49 - HALLWAY	No	No	CL	CT	7	N/D	-	-	V/C: 12578-07-02			-			
32171	Monck Public School	1	143	ROOM 61 - CLASSROOM	No	No	FL	VFT	2	N/D	-	-	V/C: 7-BS-05			-			
32172	Monck Public School	1	143	ROOM 61 - CLASSROOM	No	No	CL	CT	2	N/D	-	-	V/C: 7-BS-04			-			
32167	Monck Public School	1	144	ROOM 62 - CLASSROOM	No	No	FL	VFT	2	N/D	-	-	V/C: 7-BS-05			-			
32168	Monck Public School	1	144	ROOM 62 - CLASSROOM	No	No	CL	CT	2	N/D	-	-	V/C: 7-BS-04			-			
32169	Monck Public School	1	145	ROOM 63 - CLASSROOM	No	No	FL	VFT	2	N/D	-	-	V/C: 7-BS-05			-			
32170	Monck Public School	1	145	ROOM 63 - CLASSROOM	No	No	CL	CT	2	N/D	-	-	V/C: 7-BS-04			-			
32288	Monck Public School	1	146	Vestibule	No	No	WN	WC		ND			16387C-01A-C			-			Black and brown caulking
32173	Monck Public School	1	147	ROOM 60 - KITCHEN	No	No	FL	VFT	1	N/D	-	-	V/C: 7-BS-03			-			
32174	Monck Public School	1	147	ROOM 60 - KITCHEN	No	No	CL	CT	2	N/D	-	-	V/C: 7-BS-04			-			
32183	Monck Public School	1	148	STAGE	-	-	-	-	-	-	-	-	-			-			
32176	Monck Public School	1	148A	AREA 66 & 67 - STAIRWELL	No	No	FL	VFT	3	N/D	-	-	7-BS-08A, B, C			-			
32178	Monck Public School	1	148A	AREA 66 & 67 - STAIRWELL	No	No	CL	CT	2	N/D	-	-	V/C: 7-BS-04			-			
32180	Monck Public School	1	148A	AREA 66 & 67 - STAIRWELL	No	No	WL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32175	Monck Public School	1	149	ROOM 59 - STAGE ROOM	-	-	-	-	-	-	-	-	-			-			
32182	Monck Public School	1	150	AREA 51 -GYM	-	-	-	-	-	-	-	-	-			-			
32154	Monck Public School	1	150A	ROOM 50 - Gym Storage	No	No	CL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32155	Monck Public School	1	150A	ROOM 50 - Gym Storage	No	No	WL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32177	Monck Public School	1	151	AREA 66 & 67 - STAIRWELL	No	No	FL	VFT	3	N/D	-	-	7-BS-08A, B, C			-			
32179	Monck Public School	1	151	AREA 66 & 67 - STAIRWELL	No	No	CL	CT	2	N/D	-	-	V/C: 7-BS-04			-			
32181	Monck Public School	1	151	AREA 66 & 67 - STAIRWELL	No	No	WL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32165	Monck Public School	1	152	ROOM 57 - GYM STORAGE	No	No	FL	VFT	1	N/D	-	-	V/C: 7-BS-03			-			
32166	Monck Public School	1	152	ROOM 57 - GYM STORAGE	No	No	CL	CT	2	N/D	-	-	V/C: 7-BS-04			-			
32163	Monck Public School	1	153	AREA 49 - HALLWAY	No	No	CL	CT	7	N/D	-	-	V/C: 12578-07-02			-			
32156	Monck Public School	1	154	ROOM 56 - GIRLS W/R	No	No	CL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32157	Monck Public School	1	154	ROOM 56 - GIRLS W/R	No	No	WL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32160	Monck Public School	1	155	ROOM 64 - GIRLS CHANGEROOM	No	No	CL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32161	Monck Public School	1	155	ROOM 64 - GIRLS CHANGEROOM	No	No	WL	DJC	NA	N/D	-	-	7-BS-15D			-			
32158	Monck Public School	1	156	ROOM 55 - GIRLS CHANGEROOM	No	No	CL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32159	Monck Public School	1	156	ROOM 55 - GIRLS CHANGEROOM	No	No	WL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32164	Monck Public School	1	157	AREA 54 - GYM HALLWAY	No	No	CL	CT	7	N/D	-	-	V/C: 12578-07-02			-			

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	PI-CP: Pipe Insulation-Caposite			

CONDITION G: Good F: Fair P: Poor

ID	Facility	Floor #	Room #	Room name	Has ACM	Friable	Struct. Elem.	Application	Material	Type	Qty	Condition	Sample #	Action	Ref #	Comments 1	Comments 2	Comments 3	Notes
32152	Monck Public School	1	158	ROOM 65 - BOYS CHANGEROOM	No	No	CL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32153	Monck Public School	1	158	ROOM 65 - BOYS CHANGEROOM	No	No	WL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32150	Monck Public School	1	159	ROOM 53 - BOYS CHANGEROOM	No	No	CL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32151	Monck Public School	1	159	ROOM 53 - BOYS CHANGEROOM	No	No	WL	DJC	NA	N/D	-	-	7-BS-15C			-			
32148	Monck Public School	1	160	ROOM 52 - BOYS W/R	No	No	CL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32149	Monck Public School	1	160	ROOM 52 - BOYS W/R	No	No	WL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32188	Monck Public School	1	162	ROOM 18 - CLASSROOM	No	No	FL	VFT	1	N/D	-	-	V/C: 7-BS-03			-			
32189	Monck Public School	1	162	ROOM 18 - CLASSROOM	No	No	CL	CT	6	8% CHRYSOTILE	-	-	V/C: 7-BS-18			-			Removed Summer 2013
32190	Monck Public School	1	162	ROOM 18 - CLASSROOM	No	No	CL	CT	8	N/D	-	-	NS			-			New Ceiling Tile
32191	Monck Public School	1	163	ROOM 17 - CLASSROOM	No	No	FL	VFT	1	N/D	-	-	V/C: 7-BS-03			-			
32192	Monck Public School	1	163	ROOM 17 - CLASSROOM	No	No	CL	CT	6	8% CHRYSOTILE	-	-	7-BS-18A			-			Removed Summer 2013
32193	Monck Public School	1	163	ROOM 17 - CLASSROOM	No	No	CL	CT	8	N/D	-	-	NS			-			New Ceiling Tile
32103	Monck Public School	1	165	AREA 74 - HALLWAY	No	No	CL	CT	7	N/D	-	-	V/C: 12578-07-02			-			
32104	Monck Public School	1	165	AREA 74 - HALLWAY	No	Yes	DK	SFP	NA	N/D	-	-	7-BS-13A, B, C			-			
32108	Monck Public School	1	166	AREA 14 - HALLWAY	No	No	CL	CT	7	N/D	-	-	12578-07-02A, B			-			
32109	Monck Public School	1	166	AREA 14 - HALLWAY	No	No	WL	DJC	NA	N/D	-	-	7-BS-16G			-			
32119	Monck Public School	1	167	ROOM 13 - CLASSROOM	No	No	FL	VFT	2	N/D	-	-	V/C: 7-BS-05			-			
32120	Monck Public School	1	167	ROOM 13 - CLASSROOM	No	No	CL	CT	2	N/D	-	-	V/C: 7-BS-04			-			
32121	Monck Public School	1	167	ROOM 13 - CLASSROOM	No	No	WL	DJC	NA	N/D	-	-	7-BS-16A			-			
32122	Monck Public School	1	167	ROOM 13 - CLASSROOM	No	No	CL	CT	5	7% AMOSITE,2% CHRYSOTILE	-	-	V/C: 7-BS-14			-			Removed Summer 2013
32123	Monck Public School	1	168A	ROOM 12 - STAFF OFFICE	No	No	CL	CT	2	N/D	-	-	V/C: 7-BS-04			-			
32124	Monck Public School	1	168A	ROOM 12 - STAFF OFFICE	No	No	WL	DJC	NA	N/D	-	-	7-BS-16F			-			
32125	Monck Public School	1	168A	ROOM 12 - STAFF OFFICE	No	No	CL	CT	5	7% AMOSITE,2% CHRYSOTILE	-	-	V/C: 7-BS-14			-			Removed Summer 2013
32126	Monck Public School	1	169	ROOM 8 - BOYS W/R	No	No	FL	VSF	2	N/D	-	-	12578-07-03A, B			-			
32127	Monck Public School	1	169	ROOM 8 - BOYS W/R	No	No	WL	DJC	NA	N/D	-	-	7-BS-16B			-			
32128	Monck Public School	1	169	ROOM 8 - BOYS W/R	No	No	CL	DJC	NA	N/D	-	-	V/C: 7-BS-16			-			
32129	Monck Public School	1	171	ROOM 7 - GIRLS W/R	No	No	FL	VSF	2	N/D	-	-	12578-07-03C			-			
32130	Monck Public School	1	171	ROOM 7 - GIRLS W/R	No	No	WL	DJC	NA	N/D	-	-	7-BS-16C			-			
32131	Monck Public School	1	171	ROOM 7 - GIRLS W/R	No	No	CL	DJC	NA	N/D	-	-	V/C: 7-BS-16			-			
32132	Monck Public School	1	172	ROOM 6- CUSTODIAN ROOM	No	No	CL	CT	2	N/D	-	-	V/C: 7-BS-04			-			
32133	Monck Public School	1	172	ROOM 6- CUSTODIAN ROOM	No	No	WL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32147	Monck Public School	1	173	AREA 15 - HALLWAY	No	No	CL	CT	7	N/D	-	-	V/C: 12578-07-02			-			
32145	Monck Public School	1	174	ROOM 1 - CLASSROOM	No	No	FL	VFT	1	N/D	-	-	V/C: 7-BS-03			-			
32146	Monck Public School	1	174	ROOM 1 - CLASSROOM	No	No	CL	CT	2	N/D	-	-	V/C: 7-BS-04			-			
32142	Monck Public School	1	175	ROOM 2 - CLASSROOM	No	No	FL	VFT	1	N/D	-	-	V/C: 7-BS-03			-			
32143	Monck Public School	1	175	ROOM 2 - CLASSROOM	No	No	CL	CT	2	N/D	-	-	V/C: 7-BS-04			-			
32144	Monck Public School	1	175	ROOM 2 - CLASSROOM	No	No	WL	DJC	NA	N/D	-	-	7-BS-15B			-			
32140	Monck Public School	1	176	ROOM 3 - CUSTODIANS SUPPLY ROOM	No	No	FL	VFT	1	N/D	-	-	V/C: 7-BS-03			-			
32141	Monck Public School	1	176	ROOM 3 - CUSTODIANS SUPPLY ROOM	No	No	CL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32137	Monck Public School	1	177	ROOM 4 - CLASSROOM	No	No	FL	VFT	2	N/D	-	-	V/C: 7-BS-05			-			
32138	Monck Public School	1	177	ROOM 4 - CLASSROOM	No	No	CL	CT	2	N/D	-	-	V/C: 7-BS-04			-			
32139	Monck Public School	1	177	ROOM 4 - CLASSROOM	No	No	WL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32134	Monck Public School	1	178	ROOM 5 - CLASSROOM	No	No	FL	VFT	2	N/D	-	-	V/C: 7-BS-05			-			
32135	Monck Public School	1	178	ROOM 5 - CLASSROOM	No	No	CL	CT	2	N/D	-	-	V/C: 7-BS-04			-			
32136	Monck Public School	1	178	ROOM 5 - CLASSROOM	No	No	WL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32115	Monck Public School	1	180	ROOM 9 - CLASSROOM	No	No	FL	VFT	2	N/D	-	-	7-BS-05C			-			

APPENDIX I - ROOM BY ROOM ASBESTOS INVENTORY

MAPLE ENVIRONMENTAL INC.
ENVIRONMENT, HEALTH & SAFETY CONSULTANTS

STRUCTURAL ELEMENT

RF: Roof	B/J: Beams/Joists
WN: Window	CB: Chalkboard
FL:Floor	PI: Pipe
CL:Ceiling	DT:Duct
WL:Wall	BL:Boiler
DK:Deck	MC:Mechanical

ACCESSIBILITY

A: All occupants of the facility

B: Maintenance staff without a ladder

C: Maintenance staff with a ladder, exposed to view without moving building components

D: Maintenance staff with a ladder, concealed from view by building components

E: No access without demolition or removal of fixed building components or systems

TERMINOLOGY

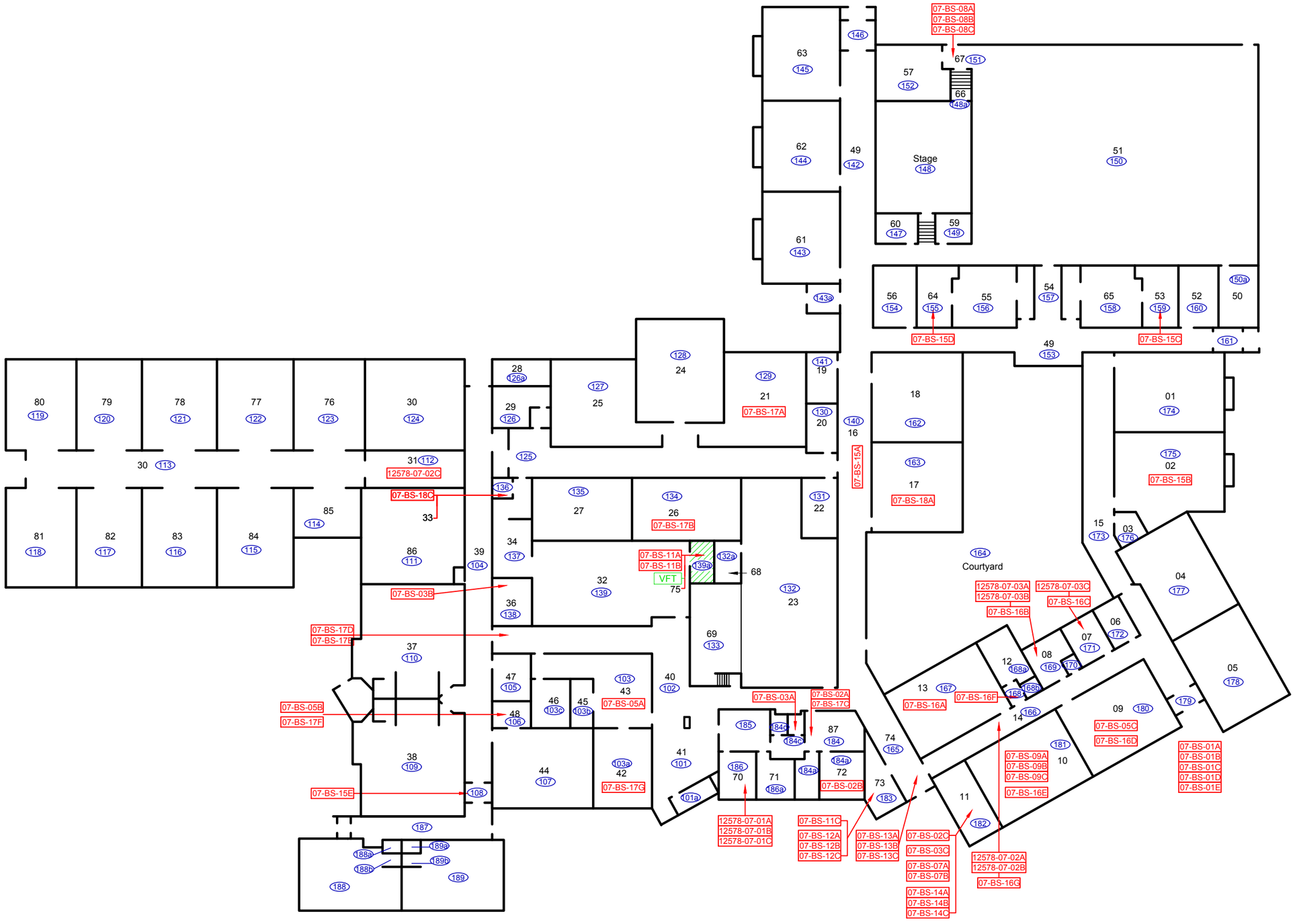
ACM: Asbestos Containing Material	N/A: Not Applicable	PL: Plaster	TB: Transite Board	VSF: Vinyl Sheet Flooring
CT: Ceiling Tile	N/Anz: Not Analyzed	RM: Roofing Materials	TP: Transite Pipe	V/C: Visually Consistent w/ Other Sampled Material
DJC: Drywall Joint Compound	N/D: None Detected	SFP: Sprayed Fireproofing	VI: Vermiculite Insulation	
FTG: Fitting	PI-AC: Pipe Insulation - Aircell	SF: Square Feet	VFT: Vinyl Floor Tile	WC: Window Caulking
LF: Linear Feet	PI-PC: Pipe Insulation-Parging Cement	TF: Texture Finish		
	PI-CP: Pipe Insulation-Caposite			

CONDITION G: Good F: Fair P: Poor

ID	Facility	Floor #	Room #	Room name	Has ACM	Friable	Struct. Elem.	Application	Material	Type	Qty	Condition	Sample #	Action	Ref #	Comments 1	Comments 2	Comments 3	Notes
32116	Monck Public School	1	180	ROOM 9 - CLASSROOM	No	No	CL	CT	2	N/D	-	-	V/C: 7-BS-04			-			
32117	Monck Public School	1	180	ROOM 9 - CLASSROOM	No	No	WL	DJC	NA	N/D	-	-	7-BS-16D			-			
32118	Monck Public School	1	180	ROOM 9 - CLASSROOM	No	No	CL	CT	5	7% AMOSITE,2% CHRYSOTILE	-	-	V/C: 7-BS-14			-			Removed Summer 2013
32110	Monck Public School	1	181	ROOM 10 - CLASSROOM	No	No	FL	VFT	2	N/D	-	-	V/C: 7-BS-05			-			
32111	Monck Public School	1	181	ROOM 10 - CLASSROOM	No	No	CL	CT	2	N/D	-	-	V/C: 7-BS-04			-			
32112	Monck Public School	1	181	ROOM 10 - CLASSROOM	No	No	WL	DJC	NA	N/D	-	-	7-BS-16E			-			
32113	Monck Public School	1	181	ROOM 10 - CLASSROOM	No	No	CL	CT	4	N/D	-	-	7-BS-09A, B, C			-			CEILING TILE MASTIC
32114	Monck Public School	1	181	ROOM 10 - CLASSROOM	No	No	CL	CT	5	7% AMOSITE,2% CHRYSOTILE	-	-	V/C: 7-BS-14			-			Removed Summer 2013
32105	Monck Public School	1	182	ROOM 11 - CUSTODIANS OFFICE	No	No	FL	VFT	1	N/D	-	-	7-BS-03C			-			
32106	Monck Public School	1	182	ROOM 11 - CUSTODIANS OFFICE	No	No	CL	CT	1	N/D	-	-	7-BS-02C			-			
32107	Monck Public School	1	182	ROOM 11 - CUSTODIANS OFFICE	No	No	CL	CT	5	7% AMOSITE,2% CHRYSOTILE	-	-	7-BS-14A, B, C			-			Removed Summer 2013
32101	Monck Public School	1	183	ROOM 73 - CUSTODIANS ROOM	No	No	FL	VFT	5	3% CHRYSOTILE	0 SF		7-BS-11C						Removed July 2017
32102	Monck Public School	1	183	ROOM 73 - CUSTODIANS ROOM	No	Yes	PI	PI-PC	NA	65% CHRYSOTILE	-	-	7-BS-12A, B, C			-			Removed
32094	Monck Public School	1	184	ROOM 87 - GUIDANCE ROOM	No	No	FL	VFT	1	N/D	-	-	7-BS-03A			-			
32095	Monck Public School	1	184	ROOM 87 - GUIDANCE ROOM	No	No	CL	CT	1	N/D	-	-	7-BS-02A			-			
32096	Monck Public School	1	184	ROOM 87 - GUIDANCE ROOM	No	No	WL	DJC	NA	N/D	-	-	7-BS-17C			-			
32099	Monck Public School	1	184A	ROOM 72 - PRINCIPAL	No	No	CL	CT	1	N/D	-	-	7-BS-02B			-			
32100	Monck Public School	1	184A	ROOM 72 - PRINCIPAL	No	No	WL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			
32093	Monck Public School	1	186	ROOM 70 - RECEPTION	No	No	FL	VSF	1	N/D	-	-	12578-07-01A, B, C			-			
32097	Monck Public School	1	186A	ROOM 71 - VICE PRINCIPAL	No	No	CL	CT	1	N/D	-	-	V/C: 7-BS-02			-			
32098	Monck Public School	1	186A	ROOM 71 - VICE PRINCIPAL	No	No	WL	DJC	NA	N/D	-	-	V/C: 7-BS-17			-			

APPENDIX II

DRAWINGS



LEGEND

12578-04-01A	ECOH Sample Locations
01-BS-01A	Jacques Whitford Sample Locations
#	Ebase Number

CONFIRMED ACM

SYMBOL	DESCRIPTION
	Friable Asbestos-Containing Material
	Non-Friable Asbestos-Containing Material
VFT	Vinyl Floor Tile (Non-Friable Asbestos-Containing Material)

For Detailed Information as to Location, Type, Quantity, Condition and Access to ACM, Please Refer to the Room-by-Room Sheets Provided in the Report.

Monck Public School

250 Wellington Street,
Bracebridge, Ontario

First Floor Plan

Asbestos Materials Re-Assessment Survey

CLIENT: Trillium Lakelands District School Board

PROJECT NUMBER:	DATE:	DRW BY:
18021-07	July 2019	S. Prosser
	SCALE: Not to Scale	CHK BY: K. Prosser

MAPLE ENVIRONMENTAL INC.
ENVIRONMENT, HEALTH & SAFETY CONSULTANTS

APPENDIX III

POTENTIAL ASBESTOS-CONTAINING MATERIAL IDENTIFICATION SHEET

APPENDIX III - POTENTIAL ASBESTOS-CONTAINING MATERIALS INFORMATION SHEET

MIN	*Material*	*Material Description*	*Size*	*Sample Number*	*Sample Location**	*Asbestos Containing*
CT-1	Ceiling Tile	Square Pinhole	2' x 2'	7-BS-02A, B, C	Guidance Room 87, Principals Room 72, Custodians Room 11	No
CT-2	Ceiling Tile	Four Strip w Small Fissure	2' x 4'	7-BS-04A, B, C	Hallway 40 (3)	No
CT-3	Ceiling Tile	Medium Thin Fissure	2' x 4'	7-BS-07A, B, C	Custodians Office 11 (2), Library Office 22	No
CT-4	Ceiling Tile	Tile Mastic	NA	7-BS-09A, B, C	Room 10 (3)	No
CT-5	Ceiling Tile	Grey Pinhole	1' x 1'	7-BS-14A, B, C	Custodians Office 11(3)	7% Amosite, 2% Chrysotile
CT-6	Ceiling Tile	Small Pinhole with Textured Finish	2' x 4'	7-BS-18A, B, C	Room 17, Boys Washroom 34, Janitors Closet 33 (All ACM CT abated April 2013)	8% Chrysotile
CT-7	Ceiling Tile	Small and Large Pinhole	2' x 4'	12578-07-02A, B, C	Hallway 14 (2), Hallway 31	No
CT-8	Ceiling Tile	Small, Dense Pinhole with Textured Finish	2' x 4'	NS: Manufactured 2007-2011	Classrooms 21, 24, 25, and 27	No
VFT-1	Vinyl Floor Tiles	White w Grey Dark grey Smudges	12" x 12"	7-BS-03A, B, C	Guidance Washroom 87 Music Storage 36, Custodians Room 11,	No
VFT-2	Vinyl Floor Tiles	Cream and Beige Mix	12" x 12"	7-BS-05A, B, C	Staff Lounge 43, Room 48, Room 9	No
VFT-3	Vinyl Floor Tiles	White w Blue Specks	12" x 12"	7-BS-08A, B, C	Gym Stairwell (3)	No
VFT-4	Vinyl Floor Tiles	Light and Dark Grey Mix	12" x 12"	7-BS-10A, B, C	Girls W/R 7 (3)	No
VFT-5	Vinyl Floor Tiles	Beige w Brown Streaks	12" x 12"	7-BS-11A, B, C	Music Storage 75(2), Custodian Storage 73	3% Chrysotile
VSF-1	Vinyl Sheet Flooring	Beige w Brown Streaks	NA	12578-01A, B, C	Reception 70 (2), Guidance 87	No
VSF-2	Vinyl Sheet Flooring	Grey w Black Mosaic	NA	12578-03A, B, C	Boys W/R 8 (2), Girls W/R 7	No

MAPLE ENVIRONMENTAL INC.
ENVIRONMENT, HEALTH & SAFETY CONSULTANTS

ASBESTOS-CONTAINING BUILDING MATERIALS RE-ASSESSMENT REPORT

Archie Stouffer Elementary School

9 Donald Street
Minden, Ontario

Presented to:

Trillium Lakelands District School Board

Box 420, County Road 36
Lindsay, Ontario
K9V 4S4

Attention: Daniel Whalen

September 2020

Maple Project No. 18736-11

Executive Summary
2020 Asbestos-Containing Building Materials Re-Assessment Report

Maple Project	School Name	Address
18736-11	Archie Stouffer Elementary School	9 Donald Street, Minden, Ontario

Maple Environmental Inc. was retained by Trillium Lakelands District School Board to perform a re-assessment of known asbestos-containing building materials within the subject building.

The findings and recommendations of the current assessment are summarized below. Please refer to the main body of the report for details.

FINDINGS

Asbestos-containing materials (ACM) identified within the building at the time of the assessment are as follows:

ASBESTOS BUILDING MATERIALS SUMMARY								
MATERIAL		ASBESTOS			FRIABILITY			Remedial Work Required
		Yes	No	Suspect	Friable	Non-Friable	Potentially	
Sprayed Fireproofing			X		X			NO
Textured Finish			X		X			NO
Mechanical Insulations	Pipe Fittings		X		X			NO
	Pipe Straight		X		X			NO
	Ductwork		X		X			NO
	Mechanical Equip.		X		X			NO
Ceiling Tiles			X				X	NO
Vinyl Sheet Flooring			X				X	NO
Vinyl Floor Tiles		X				X		NO
Asbestos Cement (Transite)			X			X		NO
Plaster				X			X	NO
Drywall Joint Compound				X		X		NO
Other (roofing, caulking, etc.)		X		X		X		NO

Please refer to Room by Room Inventory in Appendix I to view location, quantities, and condition of ACM observed within the building at the time of the assessment.

RECOMMENDATIONS

As asbestos-containing materials were found to be present within the building, Ontario Regulation 278/05 requires that the Trillium Lakelands District School Board's Asbestos Management Plan must apply to this building. In addition, an annual re-assessment of all ACM must be performed.

All asbestos-containing materials identified within the building were observed to be in GOOD condition and therefore no immediate recommendations are warranted.

General Statement

This report should be read in its entirety and is not a stand-alone report. Please refer to the Trillium Lakelands District School Board Overview Report provided under a separate cover to review information relevant to Regulations, Inventory Scope and Methodology, Sampling Strategies, Analytical Methods, Assessment Criteria, and the assessment limitations. Further, this Executive Summary must be read in conjunction with the main body of this report below.

TABLE OF CONTENTS

1.0 INTRODUCTION

MAPLE Environmental Inc. ("MAPLE") was retained by the Trillium Lakelands District School Board (TLDSB) to perform a re-assessment of known asbestos-containing building materials within all TLDSB schools where asbestos was previously confirmed to be present (by others).

The assessment was competed in accordance with the requirement of Ontario Regulation 278/05 to complete a re-assessment on an annual basis.

The following report presents the findings and recommendations of the assessment for the specific building listed.

SUMMARY OF BUILDING INFORMATION	
School Name:	Archie Stouffer Elementary School
Building Address:	9 Donald Street, Minden, Ontario
Number of Floors:	2
Approximate Square Footage:	15,800
Assessed by:	Richards Reboks
Assessment Date:	July 28, 2020

2.0 APPLICABLE ONTARIO REGULATIONS

Applicable Ontario Regulations for each of the materials included in the investigation are briefly described below.

2.1 Ontario Regulation 278/05 (Asbestos)

The Ontario Ministry of Labour Regulation 278/05 requires a detailed asbestos inventory be performed in all buildings where friable and non-friable asbestos-containing materials (ACM) are present. The inventory must be available at the work place and must identify the type and location of asbestos-containing materials on a room-by-room basis, where necessary.

Each individual building report prepared by MAPLE meets or exceeds the requirements for an asbestos survey under Ontario Regulation 278/05.

Ontario Regulation 278/05 applies to buildings with regards to maintenance, renovation or demolition work where ACM is present and may be disturbed. The regulation requires all buildings where asbestos is known to be part of the building materials to implement an Asbestos Management Program

(AMP). TLDSB has prepared and maintains an AMP of which the current Re-Assessment report is part of.

2.2 Ontario Regulation 347

Ontario Regulation 347 applies to the transport of waste from the location of generation to a landfill site authorized to receive specific wastes. The regulation also prescribes procedures on how the specific wastes are to be handled at the landfill site.

The major requirements of the building owner and the person(s) removing the waste are to ensure that:

- The waste is appropriately packaged and labelled;
- The transport vehicle is appropriately placard; and
- The waste is to be transported as directly as possible to the landfill site once it leaves the site.

Some wastes require the Owner to register a Generator (of waste) number and many wastes require classification that can restrict or even prohibit their disposal in landfill.

It is important to note that the building owner can be held responsible for the waste until the waste disposal site accepts it.

3.0 SURVEY SCOPE AND METHODOLOGY

The surveys were performed on a Room-by-Room basis within each building included in the scope of the assessment where asbestos was previously identified (by others).

The scope of the surveys included all friable and major non-friable materials suspected to contain asbestos. The term friable is applied to a material that can be readily reduced to dust or powder by hand or moderate pressure. Asbestos materials that are friable have a much greater potential to release airborne asbestos fibres when disturbed.

Typical friable asbestos materials include; sprayed fireproofing or thermal insulation, textured (stippled) plaster, and thermal mechanical insulation. Typical non-friable materials include: asbestos cement (transite) products, caulking, vinyl floor tiles, asbestos textiles and gaskets. Additional materials such as ceiling tiles and drywall joint compounds are classified as non-friable, but because of their ability to release dust when disturbed they are considered as "potentially friable" for the purpose of this report.

3.1 Inventory Methodology

In order to determine the location of the materials included in the assessment, each room or area was entered where practical (i.e.: where access was possible without the demolition of walls, roof or ceilings or destruction of flooring) where asbestos materials were previously identified. An investigation of areas of the building where asbestos was not previously identified was not included in the scope of the current project.

Representative views were made above accessible suspended ceiling systems. Drywall or plaster ceilings were accessed via existing ceiling access panels only. The inventory did not include destructive testing of building systems or finishes to observe possible hidden conditions.

3.2 Asbestos Assessment Criteria

The recommendations and suggestions made as part of this report with respect to asbestos have taken into consideration the condition and accessibility of the asbestos-containing material as well as other factors such as water damage, vibration, air movement, and general activities in the area.

Where ACM is found to be in GOOD condition and not likely to deteriorate or fall, the general recommendation would be to re-evaluate the condition of the material on an annual basis (required by Regulation 278/05). This recommendation can be subject to change if the material is located in a manner that persons untrained in asbestos awareness could physically damage it.

Where the ACM is found to be damaged (i.e. FAIR or POOR condition), a recommendation to have the material cleaned-up, repaired, removed, enclosed, or encapsulated is offered. The recommendation will also indicate which asbestos procedure should be used to perform the remedial work (i.e. Type 1, Type 2, Type 3, or Glove Bag Removal Methods).

In each area or room inventoried, the quantity, condition (GOOD, FAIR, or POOR) and accessibility (A, B, C, D or E) of each suspect material was recorded.

The definitions for condition and accessibility items are as follows:

GOOD	Material is intact with no visible signs of damage.
FAIR	Material is visibly damaged but can be repaired.
POOR	Material is damaged beyond repair and likely needs to be removed.
Access A	Accessible to all occupants of the building.

Access B	Accessible to Maintenance personnel without the use of a ladder (i.e. Mechanical Room, pipe chase etc.).
Access C	Accessible to Maintenance personnel with the use of a ladder and is exposed to view without removing building components.
Access D	Accessible to Maintenance personnel with the use of a ladder and is concealed from viewing due to a building component (i.e. above a removable ceiling).
Access E	Not accessible without demolition of a building component (i.e. above a fixed ceiling system).

The asbestos related information collected during the previous assessments was confirmed and the room-by-room data updated to reflect the current information.

3.3 Limitations and Omissions from Scope

Due to the nature of building construction, some limitations exist in regards to the possible thoroughness of any building materials inventory. The field observations, measurements, and analysis are considered sufficient in detail and scope to form a reasonable basis for the findings presented in this report. MAPLE warrants that the findings and conclusions contained herein have been made in accordance with generally accepted evaluation methods in the industry and applicable regulations at the time of the performance of the inventory.

It is possible that conditions may exist which could not be reasonably identified within the scope of the inventory or which were not apparent during the site investigation. MAPLE believes that the information collected during the inventory period concerning the property is reliable. No other warranties are implied or expressed.

In addition, during a standard asbestos assessment, performed for the purposes of regulatory compliance, it is industry practice to exclude some non-friable materials in the inventory. Examples of such assumptions include; elevator brakes, roofing felts and mastics, high voltage wiring, mechanical packing and gaskets, underground services or piping, fire-doors, window caulking, levelling compound, and/or materials used in operating equipment. As such, these materials were not sampled at the time of this survey and where present are assumed to be asbestos containing until proven otherwise.

3.4 Sampling Strategy and Analytical Methods

As the majority of materials were previously sampled by others, the requirement for sampling during the current survey was limited. Where samples were collected, they conformed to the criteria outlined below and in compliance with O. Reg. 278/05.

A small volume of the material was removed either from a damaged section or cut out of intact material and then repaired by sealing with tape to prevent the release of fibres. The collected samples were placed in plastic bags, sealed and labelled and then sent to an independent laboratory for analysis. To ensure quality results, the independent laboratory chosen is NVLAP accredited and successfully participates in an "Asbestos Proficiency Analytical Testing Program" and as such, these laboratories are responsible for their findings.

The collection of samples was performed in accordance with regulatory sampling requirements and with sufficient frequency to obtain a general pattern of asbestos use within the building. Due to building renovations or modifications that have occurred, the consistency of the application of asbestos materials may not be uniform throughout the entire building. It is important to note that without sampling every wall, pipe section, ceiling tile etc. it is not possible to identify the possible asbestos content in every material present in the building. For this reason, materials similar in appearance to those sampled elsewhere in the building were visually identified as being homogeneous and thus are assumed to be composed of the same material, thus additional sampling is not required.

In accordance with Reg. 278/05, samples were collected at the following frequency.

Material Type	No. Samples
Sprayed Fireproofing	Up to 7
Texture Coat	Up to 7
Pipe Fitting Insulation	3
Pipe Straight Insulation	3
Ductwork Insulation	3
Ceiling Tiles	3
Vinyl Sheeting Flooring	3
Vinyl Floor Tile	3
Plaster Finishes	Up to 7
Drywall Compound	Up to 7

An independent NVLAP accredited laboratory, was used to analyse the collected samples. Analysis was performed following the Code of Practice for the identification of asbestos in bulk material, as detailed in Ontario Regulation 278/05. Bulk samples were analysed using the Polarized Light Microscopy ("PLM") Technique with Dispersion Staining. The identification of asbestos fibre in bulk material is based on a collective set of parameters dependent on the unique shape and crystallographic properties of each fibre as viewed through the microscope. This method is useful for the qualitative identification of asbestos and the semi-quantitative determination of asbestos content in bulk materials expressed as a percent of projected area. The method identifies types of asbestos and also measures percent of asbestos as perceived by the analyst in comparison to standard area projections or trained experience.

Given the composition of some vinyl floor products, the PLM analysis method is often prone to yielding false negative analysis results. Therefore it may be prudent that the Transmission Electron Microscopy (TEM) analysis method be used to determine the asbestos content in the vinyl floor products, if negative results are obtain from the laboratory analysis.

3.5 Drawings

Drawings provided for each building indicate the following (where present):

- ◊ Location Numbers (reference to Room-by-Room asbestos data)
- ◊ Asbestos-Containing Sprayed Fireproofing
- ◊ Asbestos-Containing Texture Finishes
- ◊ Asbestos Containing Ceiling Tiles
- ◊ Asbestos-Containing Flooring Materials
- ◊ Presence of Asbestos-Containing Mechanical Insulations will not be specifically indicated on the drawings; however, a general statement regarding the presence of ACM mechanical insulations, where present, has been indicated on the drawings.
- ◊ Presence of asbestos-containing drywall joint compound and hard plaster will not be specifically identified on the drawings; however, a general statement regarding the presence of these ACM materials, where present, has been indicated on the drawings.

4.0 INVENTORY FINDINGS

The following is a brief discussion of the extent to which Asbestos-Containing Materials (ACM) was identified in the building. The discussion is organized under the headings of materials that are generally suspected of containing asbestos. Refer to the Room-by-Room Survey Inventory in Appendix I for a detailed description and location of all ACM.

Destructive testing was not conducted and as such some areas within the building were not accessible for an assessment (i.e. above solid ceilings, behind walls). Access for viewing within wall and ceiling cavities was not always possible. Suspect asbestos materials may be present within ceiling and wall cavities that were not identified in this report. This comment is particularly important for materials such as mechanical insulation. Caution should be taken when demolishing solid wall finishes within the building.

4.1 Sprayed Fireproofing (Friable)

No sprayed fireproofing was observed in the building.

4.2 Thermal Mechanical Insulation (Friable)

No asbestos-containing mechanical insulations are present in the building. As ACM mechanical insulations were known to exist previously in the building (removed), it is important to note that mechanical systems may be present within walls and ceiling cavities or pipe chases that were not accessible during this assessment. The presence of ACM mechanical insulations in these locations should be suspected.

4.3 Texture Finish (Friable)

No asbestos-containing texture finishes were identified to be present within the building.

4.4 Acoustic Ceiling Tiles (Potentially Friable)

No asbestos-containing ceiling tiles were identified to be present within the building.

4.5 Vinyl Sheet Flooring (Potentially Friable)

No asbestos-containing vinyl sheet flooring was identified to be present within the building.

4.6 Vinyl Floor Tile (Non-Friable)

Vinyl floor tiles containing asbestos are present in various areas of the building. All tiles were found to be in GOOD condition. Refer to the Room-by-Room Inventory in Appendix I for details regarding location and quantity.

4.7 Asbestos Cement Products "Transite" (Non-Friable)

Asbestos cement products were not observed to be present within the building.

4.8 Drywall Joint Compound (DJC)

While previous sample results indicated drywall joint compound sampled at the Site does not contain asbestos, it should be noted that the concentration of asbestos within drywall joint compound is historically known to be potentially inconsistently distributed. Further, it is possible that various phases of construction and renovations have occurred at the Site. Therefore, the number of samples previously collected may not be representative of all drywall joint compound finishes in the building.

4.9 Plaster

While previous sample results indicated all plaster finishes sampled at the Site does not contain asbestos, note that the concentration of asbestos within plaster is historically known to be potentially inconsistently distributed. Further, it is possible that various phases of construction and renovations have occurred at the Site. Therefore, the number of samples previously collected may not be representative of all plaster finishes in the building.

4.10 Caulking

Caulking applied around interior doors within Washroom 2 (eBase 176) has been confirmed to contain asbestos. At the time of the assessment the caulking was observed to be in GOOD condition.

5.0 RECOMMENDATIONS

5.1 General Recommendations

Due to the presence of ACM within the building, TLDSB must maintain their existing Asbestos Management Program for this property.

A re-assessment of known ACM is to be conducted at least once annually.

It is important to note that due to the presence of solid walls and ceiling systems, ACM may be present in concealed locations not identified in this report.

If asbestos-containing vinyl floor tiles are likely to be disturbed, the tiles should be removed using Type 1 Asbestos procedures (provided no power tools are used and the material is wetted). The use of power tools would require Type 3 Asbestos procedures.

Removal or disturbance of asbestos-containing caulking requires the use of Type 1 Asbestos procedures (provided no power tools are used and the material is wetted). If power tools are required Type 3 Asbestos procedures need be applied.

Materials suspected of containing asbestos should be sampled prior to disturbance. Suspect materials include; drywall joint compound, plaster, roofing materials, caulking, etc. unless previously confirmed to contain asbestos.

5.2 Specific Recommendations

All ACM was identified in GOOD condition. As such no immediate recommendations are warranted at this time.

6.0 LIMITATIONS

Due to the nature of building construction some limitations exist as to the possible thoroughness of the subject investigation. The field observations are considered sufficient in detail and scope to form a reasonable basis for the findings presented in this report. MAPLE warrants that the findings and conclusions contained herein have been made in accordance with generally accepted evaluation methods in the industry and applicable regulations at the time of the performance of the assessment.

It is possible that conditions may exist which could not be reasonably identified within the scope of the investigation or which were not apparent during the site investigation. MAPLE believes that the information collected during the investigation period concerning the property is reliable. No other warranties are implied or expressed.

Information provided by Maple is intended for Client use only. Any use by a third party, of reports or documents authored by Maple, 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. Maple accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted.

The liability of Maple or its staff will be limited to the lesser of the fees paid or actual damages incurred by the Client. Maple will not be responsible for any consequential or indirect damages. Maple will only be liable for damages resulting from negligence of Maple; all claims by the Client shall be deemed relinquished if not made within two years after last date of services provided.

Please contact Maple Environmental Inc. at (905) 257-4408 for inquiries regarding this project.

Sincerely,

MAPLE ENVIRONMENTAL INC.
Environment, Health and Safety Consultants

Prepared By:

Richards Reboks
Senior Project Technologist

Reviewed By:

Kyle Prosser
Senior Project Manager

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APPENDIX I

ROOM-BY-ROOM ASBESTOS INVENTORY

APPENDIX I - ROOM BY ROOM ASBESTOS INVENTORY

MAPLE ENVIRONMENTAL INC.
ENVIRONMENT, HEALTH & SAFETY CONSULTANTS

STRUCTURAL ELEMENT

RF: Roof	B/J: Beams/Joists
WN: Window	CB: Chalkboard
FL:Floor	PI: Pipe
CL:Ceiling	DT:Duct
WL:Wall	BL:Boiler
DK:Deck	MC:Mechanical

ACCESSIBILITY

A: All occupants of the facility

B: Maintenance staff without a ladder

C: Maintenance staff with a ladder, exposed to view without moving building components

D: Maintenance staff with a ladder, concealed from view by building components

E: No access without demolition or removal of fixed building components or systems

TERMINOLOGY

ACM: Asbestos Containing Material	N/A: Not Applicable	PL: Plaster	TB: Transite Board	VSF: Vinyl Sheet Flooring
CT: Ceiling Tile	N/Anz: Not Analyzed	RM: Roofing Materials	TP: Transite Pipe	V/C: Visually Consistent w/ Other Sampled Material
DJC: Drywall Joint Compound	N/D: None Detected	SFP: Sprayed Fireproofing	VI: Vermiculite Insulation	
FTG: Fitting	PI-AC: Pipe Insulation - Aircell	SF: Square Feet	VFT: Vinyl Floor Tile	WC: Window Caulking
LF: Linear Feet	PI-PC: Pipe Insulation-Parging Cement	TF: Texture Finish		
	PI-CP: Pipe Insulation-Caposite			

CONDITION G: Good F: Fair P: Poor

ID	Facility	Floor #	Room #	Room name	Has ACM	Friable	Struct. Elem.	Application	Material	Type	Qty	Condition	Sample #	Action	Ref #	Comments 1	Comments 2	Comments 3	Notes	
47653	Archie Stouffer Elementary School	1	101	MAIN FOYER	No	No	CL	DJC		N/D			24-BS-01G							
47654	Archie Stouffer Elementary School	1	101	MAIN FOYER	No	No	CL	CT	1	N/D	-		24-BS-04B							
47723	Archie Stouffer Elementary School	1	102	LIBRARY	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47724	Archie Stouffer Elementary School	1	102	LIBRARY	No	No	CL	DJC		N/D			V/C 24-BS-11							
47725	Archie Stouffer Elementary School	1	102	LIBRARY	No	No	WL	DJC		N/D			V/C 24-BS-11							
47730	Archie Stouffer Elementary School	1	102A	LIBRARY OFFICE 4	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47729	Archie Stouffer Elementary School	1	102B	LIBRARY OFFICE 3	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47726	Archie Stouffer Elementary School	1	102C	LIBRARY OFFICE 1	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47727	Archie Stouffer Elementary School	1	102D	LIBRARY OFFICE 2	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47728	Archie Stouffer Elementary School	1	103	VISUAL AUDIO ROOM	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47703	Archie Stouffer Elementary School	1	104	HALLWAY 2	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47716	Archie Stouffer Elementary School	1	105	CUSTODIAN CLOSET 3	No	No	CL	DJC		N/D			V/C 24-BS-11							
47711	Archie Stouffer Elementary School	1	106	BOILER ROOM	No	No	CL	PL		N/D			24-BS-02A-E							
47713	Archie Stouffer Elementary School	1	106A	GARAGE	-	-	-	-	-	-	-	-	-			-				
47712	Archie Stouffer Elementary School	1	107	ELECTRICAL ROOM	No	-	FL	VFT								Removed				
47709	Archie Stouffer Elementary School	1	108	CUSTODIAN OFFICE 2	No	No	FL	VFT	3	N/D	-		V/C 24-BS-07							
47710	Archie Stouffer Elementary School	1	108	CUSTODIAN OFFICE 2	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47704	Archie Stouffer Elementary School	1	110	CUSTODIAN CLOSET 2	No	No	FL	VFT	3	N/D	-		V/C 24-BS-07							
47705	Archie Stouffer Elementary School	1	110	CUSTODIAN CLOSET 2	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47706	Archie Stouffer Elementary School	1	110	CUSTODIAN CLOSET 2	No	No	CL	DJC		N/D			V/C 24-BS-11							
47707	Archie Stouffer Elementary School	1	111	CUSTODIAN OFFICE 1	No	No	FL	VFT	3	N/D	-		V/C 24-BS-07							
47708	Archie Stouffer Elementary School	1	111	CUSTODIAN OFFICE 1	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47699	Archie Stouffer Elementary School	1	112	103	No	No	FL	VFT	2	N/D	-		V/C 24-BS-06							
47700	Archie Stouffer Elementary School	1	112	103	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47692	Archie Stouffer Elementary School	1	113	104	No	No	FL	VFT	2	N/D	-		V/C 24-BS-06							
47693	Archie Stouffer Elementary School	1	113	104	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47694	Archie Stouffer Elementary School	1	113	104	No	No	WL	DJC		N/D			24-BS-01F							
47690	Archie Stouffer Elementary School	1	114	CUSTODIAN CLOSET	No	No	FL	VFT	3	N/D	-		V/C 24-BS-07							
47691	Archie Stouffer Elementary School	1	114	CUSTODIAN CLOSET	No	No	CL	DJC		N/D			V/C 24-BS-11							
47687	Archie Stouffer Elementary School	1	115	HALLWAY 1	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47681	Archie Stouffer Elementary School	1	116	105	No	No	FL	VFT	5	N/D	-		24-BS-09A-B							
47682	Archie Stouffer Elementary School	1	116	105	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47671	Archie Stouffer Elementary School	1	117	106	No	No	FL	VFT	5	N/D	-		V/C 24-BS-09							
47672	Archie Stouffer Elementary School	1	117	106	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47746	Archie Stouffer Elementary School	1	118	MECHANICAL ROOM 1	-	-	-	-	-	-	-	-	-			-				
47679	Archie Stouffer Elementary School	1	119	107	No	No	FL	VFT	1	N/D	-		V/C 24-BS-05							
47680	Archie Stouffer Elementary School	1	119	107	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47685	Archie Stouffer Elementary School	1	120	BOYS WASHROOM	No	No	FL	VFT	3	N/D	-		24-BS-07C							
47686	Archie Stouffer Elementary School	1	120	BOYS WASHROOM	No	No	CL	DJC		N/D			24-BS-01D							
47683	Archie Stouffer Elementary School	1	121	GIRLS WASHROOM	No	No	FL	VFT	3	N/D	-		V/C 24-BS-07							
47684	Archie Stouffer Elementary School	1	121	GIRLS WASHROOM	No	No	CL	DJC		N/D			V/C 24-BS-11							
47667	Archie Stouffer Elementary School	1	122	108	No	No	FL	VFT	5	N/D	-		V/C 24-BS-09							
47668	Archie Stouffer Elementary School	1	122	108	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47669	Archie Stouffer Elementary School	1	123	109	No	No	FL	VFT	5	N/D	-		V/C 24-BS-09							
47670	Archie Stouffer Elementary School	1	123	109	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47663	Archie Stouffer Elementary School	1	124	110	No	No	FL	VFT	1	N/D	-		V/C 24-BS-05							
47664	Archie Stouffer Elementary School	1	124	110	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							

APPENDIX I - ROOM BY ROOM ASBESTOS INVENTORY

MAPLE ENVIRONMENTAL INC.
ENVIRONMENT, HEALTH & SAFETY CONSULTANTS

STRUCTURAL ELEMENT

RF: Roof	B/J: Beams/Joists
WN: Window	CB: Chalkboard
FL:Floor	PI: Pipe
CL:Ceiling	DT:Duct
WL:Wall	BL:Boiler
DK:Deck	MC:Mechanical

ACCESSIBILITY

A: All occupants of the facility

B: Maintenance staff without a ladder

C: Maintenance staff with a ladder, exposed to view without moving building components

D: Maintenance staff with a ladder, concealed from view by building components

E: No access without demolition or removal of fixed building components or systems

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FTG: Fitting	PI-AC: Pipe Insulation - Aircell	SF: Square Feet	VFT: Vinyl Floor Tile	WC: Window Caulking
LF: Linear Feet	PI-PC: Pipe Insulation-Parging Cement	TF: Texture Finish		
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CONDITION G: Good F: Fair P: Poor

ID	Facility	Floor #	Room #	Room name	Has ACM	Friable	Struct. Elem.	Application	Material	Type	Qty	Condition	Sample #	Action	Ref #	Comments 1	Comments 2	Comments 3	Notes	
47661	Archie Stouffer Elementary School	1	125	111	No	No	FL	VFT	1	N/D	-		24-BS-05B							
47662	Archie Stouffer Elementary School	1	125	111	No	No	CL	CT	1	N/D	-		24-BS-01C							
47659	Archie Stouffer Elementary School	1	126	112	No	No	FL	VFT	1	N/D	-		24-BS-05C							
47660	Archie Stouffer Elementary School	1	126	112	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47665	Archie Stouffer Elementary School	1	127	113	No	No	FL	VFT	1	N/D	-		V/C 24-BS-05							
47666	Archie Stouffer Elementary School	1	127	113	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47673	Archie Stouffer Elementary School	1	128	114	No	No	FL	VFT	1	N/D	-		V/C 24-BS-05							
47674	Archie Stouffer Elementary School	1	128	114	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47675	Archie Stouffer Elementary School	1	130	116	No	No	FL	VFT	3	N/D	-		V/C 24-BS-07							
47676	Archie Stouffer Elementary School	1	130	116	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47677	Archie Stouffer Elementary School	1	131	117	No	No	FL	VFT	3	N/D	-		V/C 24-BS-07							
47678	Archie Stouffer Elementary School	1	131	117	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47688	Archie Stouffer Elementary School	1	132	STAFF WASHROOM	No	No	FL	VFT	3	N/D	-		V/C 24-BS-07							
47689	Archie Stouffer Elementary School	1	132	STAFF WASHROOM	No	No	CL	DJC		N/D			V/C 24-BS-11							
47695	Archie Stouffer Elementary School	1	133	118	No	No	FL	VFT	2	N/D	-		24-BS-06A							
47696	Archie Stouffer Elementary School	1	133	118	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47697	Archie Stouffer Elementary School	1	134	119	No	No	FL	VFT	2	N/D	-		V/C 24-BS-06							
47698	Archie Stouffer Elementary School	1	134	119	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47701	Archie Stouffer Elementary School	1	135	120	No	No	FL	VFT	2	N/D	-		24-BS-06B							
47702	Archie Stouffer Elementary School	1	135	120	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47714	Archie Stouffer Elementary School	1	136	GIRLS WASHROOM 2	No	No	CL	DJC		N/D			V/C 24-BS-11							
47715	Archie Stouffer Elementary School	1	137	BOYS WASHROOM 2	No	No	CL	DJC		N/D			V/C 24-BS-11							
47717	Archie Stouffer Elementary School	1	138	CUSTODIAN CLOSET 4	No	No	FL	VFT	3	N/D	-		V/C 24-BS-07							
47718	Archie Stouffer Elementary School	1	138	CUSTODIAN CLOSET 4	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47719	Archie Stouffer Elementary School	1	138	CUSTODIAN CLOSET 4	No	No	CL	CT	2	N/D	-		V/C 24-BS-13							
47720	Archie Stouffer Elementary School	1	139	STAFF ROOM	No	No	FL	VFT	3	N/D	-		24-BS-07B							
47721	Archie Stouffer Elementary School	1	139	STAFF ROOM	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47722	Archie Stouffer Elementary School	1	139	STAFF ROOM	No	No	CL	DJC		N/D			V/C 24-BS-11							
47731	Archie Stouffer Elementary School	1	140	HALLWAY 3	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47745	Archie Stouffer Elementary School	1	141	115	No	No	FL	VFT	1	N/D	-		24-BS-05A							
47739	Archie Stouffer Elementary School	1	141	GYM	-	-	-	-	-	-	-	-	-			-				
47744	Archie Stouffer Elementary School	1	141A	GYM STORAGE	No	No	FL	VFT	2	N/D	-		V/C 24-BS-06							
47742	Archie Stouffer Elementary School	1	141B	PE OFFICE	No	No	FL	VFT	3	N/D	-		V/C 24-BS-07							
47743	Archie Stouffer Elementary School	1	141B	PE OFFICE	No	No	CL	DJC		N/D			V/C 24-BS-11							
47738	Archie Stouffer Elementary School	1	142	STAGE	No	No	FL	VFT	2	N/D	-		V/C 24-BS-06							
47736	Archie Stouffer Elementary School	1	143	KITCHEN	No	No	FL	VFT	2	N/D	-		V/C 24-BS-06							
47737	Archie Stouffer Elementary School	1	143	KITCHEN	No	No	CL	DJC		N/D			V/C 24-BS-11							
47740	Archie Stouffer Elementary School	1	144	CUSTODIAN CLOSET 5	No	No	FL	VFT	3	N/D	-		V/C 24-BS-07							
47741	Archie Stouffer Elementary School	1	144	CUSTODIAN CLOSET 5	No	No	CL	DJC		N/D			V/C 24-BS-11							
47734	Archie Stouffer Elementary School	1	145	BOYS CHANGEROOM	No	No	FL	VFT	3	N/D	-		V/C 24-BS-07							
47735	Archie Stouffer Elementary School	1	145	BOYS CHANGEROOM	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47732	Archie Stouffer Elementary School	1	146	GIRLS CHANGEROOM	No	No	FL	VFT	3	N/D	-		24-BS-07A							
47733	Archie Stouffer Elementary School	1	146	GIRLS CHANGEROOM	No	No	CL	DJC		N/D			V/C 24-BS-11							
47656	Archie Stouffer Elementary School	1	147	121	No	No	FL	VFT	7	N/D	-		V/C 24-BS-15							
47657	Archie Stouffer Elementary School	1	147	121	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47658	Archie Stouffer Elementary School	1	147	121	No	No	CL	DJC		N/D			24-BS-01E							
47655	Archie Stouffer Elementary School	1	148	CUSTODIAN CLOSET 6	No	No	FL	VFT	2	N/D	-		V/C 24-BS-06							

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MAPLE ENVIRONMENTAL INC.
ENVIRONMENT, HEALTH & SAFETY CONSULTANTS

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WL:Wall	BL:Boiler
DK:Deck	MC:Mechanical

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CONDITION G: Good F: Fair P: Poor

ID	Facility	Floor #	Room #	Room name	Has ACM	Friable	Struct. Elem.	Application	Material	Type	Qty	Condition	Sample #	Action	Ref #	Comments 1	Comments 2	Comments 3	Notes	
47651	Archie Stouffer Elementary School	1	149	122	No	No	FL	VFT	2	N/D	-		V/C 24-BS-06							
47652	Archie Stouffer Elementary School	1	149	122	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47643	Archie Stouffer Elementary School	1	150	HALLWAY 4	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47649	Archie Stouffer Elementary School	1	151	123	No	No	FL	VFT	2	N/D	-		V/C 24-BS-06							
47650	Archie Stouffer Elementary School	1	151	123	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47647	Archie Stouffer Elementary School	1	152	124	No	No	FL	VFT	6	N/D	-		24-BS-10A-C							
47648	Archie Stouffer Elementary School	1	152	124	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47637	Archie Stouffer Elementary School	1	153	125 A	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47638	Archie Stouffer Elementary School	1	154	125	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47635	Archie Stouffer Elementary School	1	155	HALLWAY 5	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47636	Archie Stouffer Elementary School	1	155	HALLWAY 5	No	No	WL	DJC		N/D			24-BS-01B							
47627	Archie Stouffer Elementary School	1	156	126	No	No	FL	VFT	2	N/D	-		V/C 24-BS-06							
47628	Archie Stouffer Elementary School	1	156	126	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47629	Archie Stouffer Elementary School	1	157	127	No	No	FL	VFT	2	N/D	-		V/C 24-BS-06							
47630	Archie Stouffer Elementary School	1	157	127	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47631	Archie Stouffer Elementary School	1	158	128	No	No	FL	VFT	2	N/D	-		24-BS-06C							
47632	Archie Stouffer Elementary School	1	158	128	No	No	CL	CT	1	N/D	-		24-BS-04A							
47633	Archie Stouffer Elementary School	1	159	129	No	No	FL	VFT	2	N/D	-		V/C 24-BS-06							
47634	Archie Stouffer Elementary School	1	159	129	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47620	Archie Stouffer Elementary School	1	160	HALLWAY 6	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47621	Archie Stouffer Elementary School	1	160	HALLWAY 6	No	No	WL	DJC		N/D			V/C 24-BS-11							
47617	Archie Stouffer Elementary School	1	161	130	No	No	FL	VFT	1	N/D	-		V/C 24-BS-05							
47618	Archie Stouffer Elementary School	1	161	130	No	No	WL	PL		N/D			V/C 24-BS-12							
47619	Archie Stouffer Elementary School	1	161	130	No	Yes	FTG	PI-PC		85% CHRYSOTILE	-	-	24-BS-03C			-			27 Ftgs removed 2014 (Maple Report 14458)	
47614	Archie Stouffer Elementary School	1	162	131	No	No	FL	VFT	5	N/D	-		24-BS-09C							
47615	Archie Stouffer Elementary School	1	162	131	No	No	WL	PL		N/D			V/C 24-BS-12							
47616	Archie Stouffer Elementary School	1	162	131	No	Yes	FTG	PI-PC		85% CHRYSOTILE	-	-	24-BS-03A-B			-			10 Ftgs removed 2014 (Maple Report 14458)	
47610	Archie Stouffer Elementary School	1	164	HALLWAY 8	No	No	CL	CT	3	N/D	-		24-BS-14C							
47611	Archie Stouffer Elementary School	1	164	HALLWAY 8	No	No	CL	PL		N/D			24-BS-12B&G							
47612	Archie Stouffer Elementary School	1	164	HALLWAY 8	No	No	WL	PL		N/D			24-BS-12E							
47613	Archie Stouffer Elementary School	1	164	HALLWAY 8	No	No	WL	DJC		N/D			24-BS-11A							
47592	Archie Stouffer Elementary School	1	165	ROOM 001 & Storage 001	No	No	CL	PL		N/D			V/C 24-BS-12							
47594	Archie Stouffer Elementary School	1	165	ROOM 001 & Storage 001	No	Yes	FTG	PI-PC		85% CHRYSOTILE	-	-	V/C 24-BS-03			-			1 Ftg removed 2014 (Maple Report 14458)	
47593	Archie Stouffer Elementary School	1	165A	ROOM 001 & Storage 001	No	No	CL	PL		N/D			V/C 24-BS-12							
47595	Archie Stouffer Elementary School	1	165A	ROOM 001 & Storage 001	No	Yes	FTG	PI-PC		85% CHRYSOTILE	-	-	V/C 24-BS-03			-			1 Ftg removed 2014 (Maple Report 14458)	
47596	Archie Stouffer Elementary School	1	166	ROOM 002 & Storage 002	No	No	CL	PL		N/D			24-BS-12F							
47598	Archie Stouffer Elementary School	1	167	ROOM 003	No	No	FL	VFT	7	N/D	-		24-BS-15B							
47599	Archie Stouffer Elementary School	1	167	ROOM 003	No	No	CL	DJC		N/D			V/C 24-BS-11							
47600	Archie Stouffer Elementary School	1	167	ROOM 003	No	No	WL	DJC		N/D			V/C 24-BS-11							
47597	Archie Stouffer Elementary School	1	167A	CUSTODIAN CLOSET 8	No	No	CL	DJC		N/D			V/C 24-BS-11							

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LF: Linear Feet	PI-PC: Pipe Insulation-Parging Cement	TF: Texture Finish		
	PI-CP: Pipe Insulation-Caposite			

CONDITION G: Good F: Fair P: Poor

ID	Facility	Floor #	Room #	Room name	Has ACM	Friable	Struct. Elem.	Application	Material	Type	Qty	Condition	Sample #	Action	Ref #	Comments 1	Comments 2	Comments 3	Notes	
47605	Archie Stouffer Elementary School	1	168	GIRLS WASHROOM 3	No	No	FL	VFT	7	N/D	-		24-BS-15C							
47606	Archie Stouffer Elementary School	1	168	GIRLS WASHROOM 3	No	No	CL	CT	2	N/D	-		24-BS-13A							
47607	Archie Stouffer Elementary School	1	168	GIRLS WASHROOM 3	No	No	CL	DJC		N/D			V/C 24-BS-11							
47608	Archie Stouffer Elementary School	1	168	GIRLS WASHROOM 3	No	No	WL	DJC		N/D			24-BS-11B							
47601	Archie Stouffer Elementary School	1	169	BOYS WASHROOM 3	No	No	FL	VFT	7	N/D	-		24-BS-15A							
47602	Archie Stouffer Elementary School	1	169	BOYS WASHROOM 3	No	No	CL	CT	2	N/D	-		24-BS-13B-C							
47603	Archie Stouffer Elementary School	1	169	BOYS WASHROOM 3	No	No	CL	DJC		N/D			V/C 24-BS-11							
47604	Archie Stouffer Elementary School	1	169	BOYS WASHROOM 3	No	No	WL	DJC		N/D			24-BS-11C							
47609	Archie Stouffer Elementary School	1	170	BOILER ROOM 2	No	No	CL	DJC		N/D			V/C 24-BS-11							
47622	Archie Stouffer Elementary School	1	171	132	No	No	FL	VFT	2	N/D	-		V/C 24-BS-06							
47623	Archie Stouffer Elementary School	1	171	132	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47624	Archie Stouffer Elementary School	1	171	132	No	No	WL	DJC		N/D			V/C 24-BS-11							
47625	Archie Stouffer Elementary School	1	172	133	No	No	FL	VFT	2	N/D	-		V/C 24-BS-06							
47626	Archie Stouffer Elementary School	1	172	133	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47639	Archie Stouffer Elementary School	1	173	CUSTODIAN CLOSET 7	Yes	No	FL	VFT	4	5% CHRYSOTILE	100SF	G	V/C 24-BS-08			A				
47640	Archie Stouffer Elementary School	1	174	134	No	No	FL	VFT	2	N/D	-		V/C 24-BS-06							
47641	Archie Stouffer Elementary School	1	174	134	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47642	Archie Stouffer Elementary School	1	174	134	No	No	WL	DJC		N/D			24-BS-01C							
47644	Archie Stouffer Elementary School	1	175	WASHROOM 1	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47645	Archie Stouffer Elementary School	1	175	WASHROOM 1	No	No	WL	DJC		N/D			24-BS-01A							
47646	Archie Stouffer Elementary School	1	176	WASHROOM 2	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
	Archie Stouffer Elementary School	1	176	WASHROOM 2	Yes	No	WL	WC		0.5% CHRYSOTILE		G	18805A-S02A			A			Applied around door	
47591	Archie Stouffer Elementary School	1	177	STAFF WASHROOM 2	No	No	CL	DJC		N/D			18805A-S01A-C							
47578	Archie Stouffer Elementary School	1	178	GUIDANCE ROOM	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47589	Archie Stouffer Elementary School	1	179	COPY ROOM	No	No	FL	VFT	3	N/D	-		V/C 24-BS-07							
47590	Archie Stouffer Elementary School	1	179	COPY ROOM	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47577	Archie Stouffer Elementary School	1	180	OFFICE 101	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47583	Archie Stouffer Elementary School	1	180A	OFFICE STORAGE	No	No	FL	VFT	3	N/D	-		V/C 24-BS-07							
47584	Archie Stouffer Elementary School	1	180A	OFFICE STORAGE	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47581	Archie Stouffer Elementary School	1	181	HEALTH OFFICE	No	No	FL	VFT	3	N/D	-		V/C 24-BS-07							
47582	Archie Stouffer Elementary School	1	181	HEALTH OFFICE	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47587	Archie Stouffer Elementary School	1	182	136	No	No	FL	VFT	2	N/D	-		V/C 24-BS-06							
47588	Archie Stouffer Elementary School	1	182	136	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47585	Archie Stouffer Elementary School	1	183	135	No	No	FL	VFT	3	N/D	-		V/C 24-BS-07							
47586	Archie Stouffer Elementary School	1	183	135	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47580	Archie Stouffer Elementary School	1	184	PRINCIPAL OFFICE	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47579	Archie Stouffer Elementary School	1	185	VP OFFICE	No	No	CL	CT	1	N/D	-		V/C 24-BS-04							
47748	Archie Stouffer Elementary School	2	200	HALLWAY 7	No	No	CL	CT	3	N/D	-		24-BS-14A-B							
47749	Archie Stouffer Elementary School	2	200	HALLWAY 7	No	No	CL	PL		N/D			24-BS-12C							
47750	Archie Stouffer Elementary School	2	200	HALLWAY 7	No	No	WL	DJC		N/D			24-BS-11E/G							
47763	Archie Stouffer Elementary School	2	203	Room-201	No	No	CL	CT	2	N/D	-		V/C 24-BS-13							
47765	Archie Stouffer Elementary School	2	203	Room-201	No	No	WL	DJC		N/D			24-BS-11F							
47767	Archie Stouffer Elementary School	2	203	Room-201	No	No	WL	PL		N/D			24-BS-12D							
47764	Archie Stouffer Elementary School	2	203A	Storage 201	No	No	CL	CT	2	N/D	-		V/C 24-BS-13							
47766	Archie Stouffer Elementary School	2	203A	Storage 201	No	No	WL	DJC		N/D			24-BS-11F							
47768	Archie Stouffer Elementary School	2	203A	Storage 201	No	No	WL	PL		N/D			24-BS-12D							

APPENDIX I - ROOM BY ROOM ASBESTOS INVENTORY

MAPLE ENVIRONMENTAL INC.
ENVIRONMENT, HEALTH & SAFETY CONSULTANTS

STRUCTURAL ELEMENT

RF: Roof	B/J: Beams/Joists
WN: Window	CB: Chalkboard
FL:Floor	PI: Pipe
CL:Ceiling	DT:Duct
WL:Wall	BL:Boiler
DK:Deck	MC:Mechanical

ACCESSIBILITY

A: All occupants of the facility

B: Maintenance staff without a ladder

C: Maintenance staff with a ladder, exposed to view without moving building components

D: Maintenance staff with a ladder, concealed from view by building components

E: No access without demolition or removal of fixed building components or systems

TERMINOLOGY

ACM: Asbestos Containing Material	N/A: Not Applicable	PL: Plaster	TB: Transite Board	VSF: Vinyl Sheet Flooring
CT: Ceiling Tile	N/Anz: Not Analyzed	RM: Roofing Materials	TP: Transite Pipe	V/C: Visually Consistent w/ Other Sampled Material
DJC: Drywall Joint Compound	N/D: None Detected	SFP: Sprayed Fireproofing	VI: Vermiculite Insulation	
FTG: Fitting	PI-AC: Pipe Insulation - Aircell	SF: Square Feet	VFT: Vinyl Floor Tile	WC: Window Caulking
LF: Linear Feet	PI-PC: Pipe Insulation-Parging Cement	TF: Texture Finish		
	PI-CP: Pipe Insulation-Caposite			

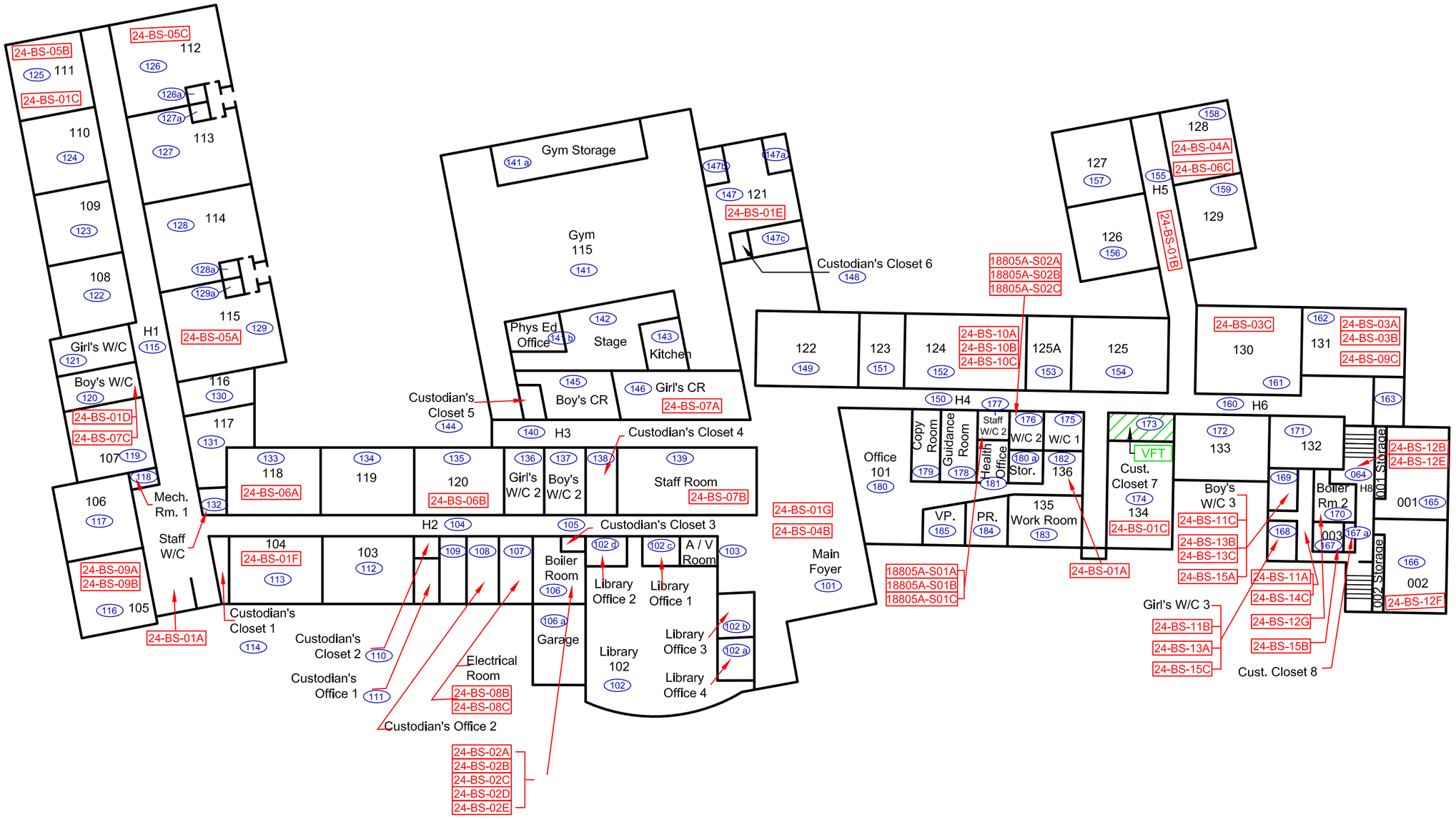
CONDITION G: Good F: Fair P: Poor

ID	Facility	Floor #	Room #	Room name	Has ACM	Friable	Struct. Elem.	Application	Material	Type	Qty	Condition	Sample #	Action	Ref #	Comments 1	Comments 2	Comments 3	Notes	
47751	Archie Stouffer Elementary School	2	204	Room-202 & Storage 202	No	No	CL	CT	2	N/D	-		V/C 24-BS-13							
47753	Archie Stouffer Elementary School	2	204	Room-202 & Storage 202	No	No	WL	DJC		N/D			V/C 24-BS-11							
47755	Archie Stouffer Elementary School	2	204	Room-202 & Storage 202	No	No	WL	PL		N/D			V/C 24-BS-12							
47752	Archie Stouffer Elementary School	2	204A	Room-202 & Storage 202	No	No	CL	CT	2	N/D	-		V/C 24-BS-13							
47754	Archie Stouffer Elementary School	2	204A	Room-202 & Storage 202	No	No	WL	DJC		N/D			V/C 24-BS-11							
47756	Archie Stouffer Elementary School	2	204A	Room-202 & Storage 202	No	No	WL	PL		N/D			V/C 24-BS-12							
47757	Archie Stouffer Elementary School	2	206	203	No	No	CL	CT	2	N/D	-		V/C 24-BS-13							
47759	Archie Stouffer Elementary School	2	206	203	No	No	WL	DJC		N/D			24-BS-11D							
47761	Archie Stouffer Elementary School	2	206	203	No	No	WL	PL		N/D			24-BS-12A							
47758	Archie Stouffer Elementary School	2	206A	203	No	No	CL	CT	2	N/D	-		V/C 24-BS-13							
47760	Archie Stouffer Elementary School	2	206A	203	No	No	WL	DJC		N/D			24-BS-11D							
47762	Archie Stouffer Elementary School	2	206A	203	No	No	WL	PL		N/D			24-BS-12A							
47747	Archie Stouffer Elementary School	2	207	MECHANICAL ROOM 2	-	-	-	-	-	-	-	-	-			-				
47575	Archie Stouffer Elementary School	NA		EXTERIOR	No	No	RF	RM	NA	ACM ASSUMED	1	G	NS			C			sample prior to renovation	
47576	Archie Stouffer Elementary School	NA		EXTERIOR	No	No	WN	WC	NA	ACM ASSUMED	1	G	NS			A, C			sample prior to renovation	

APPENDIX II

DRAWINGS

Please Note:
Interior caulking applied around doors has been identified as ASBESTOS CONTAINING



LEGEND

01-BS-01A	Jacques Whitford Sample Locations
#	Ebase Number

CONFIRMED ACM

SYMBOL	DESCRIPTION
	Friable Asbestos-Containing Material
	Non-Friable Asbestos-Containing Material
VFT	Vinyl Floor Tile (Non-Friable Asbestos-Containing Material)
NOTE	Interior Caulking

For Detailed Information as to Location, Type, Quantity, Condition and Access to ACM, Please Refer to the Room-by-Room Sheets Provided in the Report.

Archie Stouffer Elementary School

9 Donald Street,
Minden, Ontario

First Floor Plan

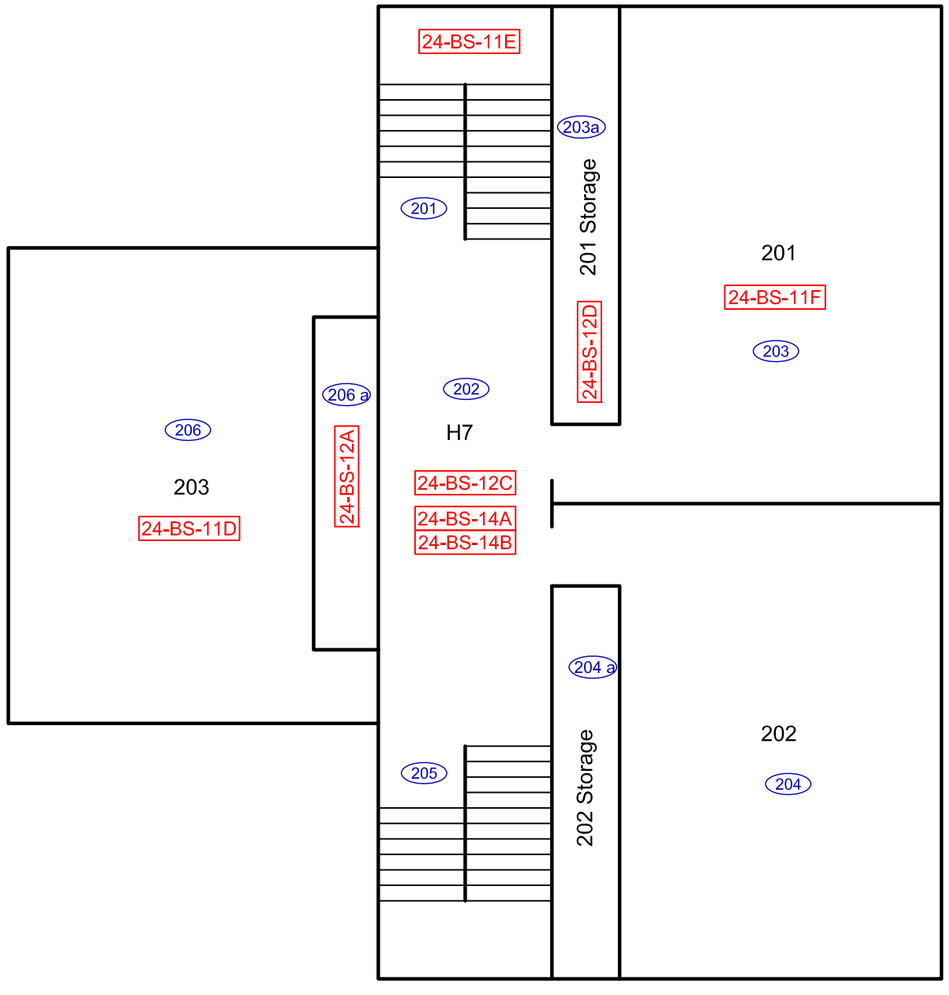
Asbestos Materials Re-Assessment Survey

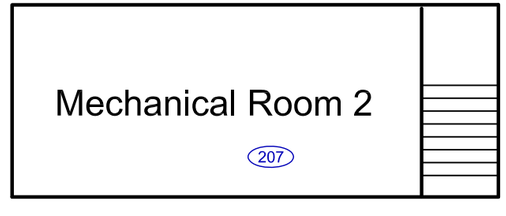
CLIENT: Trillium Lakelands District School Board

PROJECT NUMBER:	DATE:	DRW BY:
18736-11	September 2020	S. Prosser
	SCALE: Not to Scale	CHK BY: K. Prosser

MAPLE ENVIRONMENTAL INC.
ENVIRONMENT, HEALTH & SAFETY CONSULTANTS

Please Note:
Interior caulking applied around doors has been identified as ASBESTOS CONTAINING





LEGEND

01-BS-01A	Jacques Whitford Sample Locations
#	Ebase Number

CONFIRMED ACM

SYMBOL	DESCRIPTION
	Friable Asbestos-Containing Material
	Non-Friable Asbestos-Containing Material
VFT	Vinyl Floor Tile (Non-Friable Asbestos-Containing Material)
NOTE	Interior Caulking

For Detailed Information as to Location, Type, Quantity, Condition and Access to ACM, Please Refer to the Room-by-Room Sheets Provided in the Report.

Archie Stouffer Elementary School

9 Donald Street,
Minden, Ontario

Second Floor Plan

Asbestos Materials Re-Assessment Survey

CLIENT: Trillium Lakelands District School Board

PROJECT NUMBER:	DATE:	DRW BY:
18736-11	September 2020	S. Prosser
	SCALE: Not to Scale	CHK BY: K. Prosser

MAPLE ENVIRONMENTAL INC.
ENVIRONMENT, HEALTH & SAFETY CONSULTANTS

APPENDIX III

POTENTIAL ASBESTOS-CONTAINING MATERIAL IDENTIFICATION SHEET

APPENDIX III - POTENTIAL ASBESTOS-CONTAINING MATERIALS INFORMATION SHEET

MIN	*Material*	*Material Description*	*Size*	*Sample Number*	*Sample Location*	*Asbestos Containing*
VFT-1	Vinyl Floor Tiles	White with beige smears	12 x 12	05A-C	Multiple	None
VFT-2	Vinyl Floor Tiles	Blue with white smears	12 x 12	06A-C	Multiple	None
VFT-3	Vinyl Floor Tiles	Green with white smears	12 x 12	07A-C	Multiple	None
VFT-4	Vinyl Floor Tiles	White with grey streaks	12 x 12	08A-C	Multiple	5% Chrysotile
VFT-5	Vinyl Floor Tiles	White with grey smears	12 x 12	09A-C	Multiple	None
VFT-6	Vinyl Floor Tiles	Beige with red streaks	12 x 12	10A-C	Room 124	None
VFT-7	Vinyl Floor Tiles	Green with white smears	12 x 12	15A-C	Multiple	None
CT-1	Ceiling Tiles	Small fissure pinhole	2 x 4	04A-C	Multiple	None
CT-2	Ceiling Tiles	Pinhole	2 x 4	13A-C	Boys Washroom 3	None
CT-3	Ceiling Tiles	Small fissure pinhole	2 x 4	14A-C	Multiple	None

MAPLE ENVIRONMENTAL INC.
ENVIRONMENT, HEALTH & SAFETY CONSULTANTS

ASBESTOS-CONTAINING BUILDING MATERIALS RE-ASSESSMENT REPORT

J Douglas Hodgson Elementary School

1020 Grass Lake Road
Haliburton, Ontario

Presented to:

Trillium Lakelands District School Board

Box 420, County Road 36
Lindsay, Ontario
K9V 4S4

Attention: Daniel Whalen

September 2019

Maple Project No. 18021-15

Executive Summary
2019 Asbestos-Containing Building Materials Re-Assessment Report

Maple Project	School Name	Address
18021-15	J Douglas Hodgson Elementary School	1020 Grass Lake Road, Haliburton, Ontario

Maple Environmental Inc. was retained by Trillium Lakelands District School Board to perform a re-assessment of known asbestos-containing building materials within the subject building.

The findings and recommendations of the current assessment are summarized below. Please refer to the main body of the report for details.

FINDINGS

Asbestos-containing materials (ACM) identified within the building at the time of the assessment are as follows:

ASBESTOS BUILDING MATERIALS SUMMARY

MATERIAL		ASBESTOS			FRIABILITY			Remedial Work Required
		Yes	No	Suspect	Friable	Non-Friable	Potentially	
Sprayed Fireproofing			X		X			NO
Textured Finish			X		X			NO
Mechanical Insulations	Pipe Fittings	X			X			YES
	Pipe Straight		X		X			NO
	Ductwork		X		X			NO
	Mechanical Equip.		X		X			NO
Ceiling Tiles			X				X	NO
Vinyl Sheet Flooring			X				X	NO
Vinyl Floor Tiles		X				X		YES
Asbestos Cement (Transite)		X				X		NO
Plaster		X		X			X	NO
Drywall Joint Compound		X				X		NO
Other (roofing, caulking, etc.)				X				NO

Please refer to Room by Room Inventory in Appendix I to view location, quantities, and condition of ACM observed within the building at the time of the assessment.

RECOMMENDATIONS

As asbestos-containing materials were found to be present within the building, Ontario Regulation 278/05 requires that the Trillium Lakelands District School Board's Asbestos Management Plan must apply to this building. In addition, an annual re-assessment of all ACM must be performed.

The following asbestos remedial work is recommended for compliance with O. Reg. 278/05:

- Remove and replace damaged asbestos-containing vinyl floor tiles observed in POOR condition within Room 312 (eBase 128) using Type 1 Asbestos procedures.
- Repair one (1) damaged asbestos-containing parging cement insulation on the pipe fitting in FAIR condition within Gym A (eBase 217) using Type 2 asbestos abatement procedures.

As the remaining asbestos-containing materials identified within the building were observed to be in GOOD condition and no additional immediate remedial work was warranted.

General Statement

This report should be read in its entirety and is not a stand-alone report. Please refer to the Trillium Lakelands District School Board Overview Report provided under a separate cover to review information relevant to Regulations, Inventory Scope and Methodology, Sampling Strategies, Analytical Methods, Assessment Criteria, and the assessment limitations. Further, this Executive Summary must be read in conjunction with the main body of this report below.

TABLE OF CONTENTS

1.0 INTRODUCTION

MAPLE Environmental Inc. ("MAPLE") was retained by the Trillium Lakelands District School Board (TLDSB) to perform a re-assessment of known asbestos-containing building materials within all TLDSB schools where asbestos was previously confirmed to be present (by others).

The assessment was competed in accordance with the requirement of Ontario Regulation 278/05 to complete a re-assessment on an annual basis.

The following report presents the findings and recommendations of the assessment for the specific building listed.

SUMMARY OF BUILDING INFORMATION	
School Name:	J Douglas Hodgson Elementary School
Building Address:	1020 Grass Lake Road, Haliburton, Ontario
Number of Floors:	2 (no basement)
Approximate Square Footage:	47,400
Assessed by:	Richards Reboks
Assessment Date:	July 3, 2019

2.0 APPLICABLE ONTARIO REGULATIONS

Applicable Ontario Regulations for each of the materials included in the investigation are briefly described below.

2.1 Ontario Regulation 278/05 (Asbestos)

The Ontario Ministry of Labour Regulation 278/05 requires a detailed asbestos inventory be performed in all buildings where friable and non-friable asbestos-containing materials (ACM) are present. The inventory must be available at the work place and must identify the type and location of asbestos-containing materials on a room-by-room basis, where necessary.

Each individual building report prepared by MAPLE meets or exceeds the requirements for an asbestos survey under Ontario Regulation 278/05.

Ontario Regulation 278/05 applies to buildings with regards to maintenance, renovation or demolition work where ACM is present and may be disturbed. The regulation requires all buildings where asbestos is known to be part of

the building materials to implement an Asbestos Management Program (AMP). TLDSB has prepared and maintains an AMP of which the current Re-Assessment report is part of.

2.2 Ontario Regulation 347

Ontario Regulation 347 applies to the transport of waste from the location of generation to a landfill site authorized to receive specific wastes. The regulation also prescribes procedures on how the specific wastes are to be handled at the landfill site.

The major requirements of the building owner and the person(s) removing the waste are to ensure that:

- The waste is appropriately packaged and labelled;
- The transport vehicle is appropriately placard; and
- The waste is to be transported as directly as possible to the landfill site once it leaves the site.

Some wastes require the Owner to register a Generator (of waste) number and many wastes require classification that can restrict or even prohibit their disposal in landfill.

It is important to note that the building owner can be held responsible for the waste until the waste disposal site accepts it.

3.0 SURVEY SCOPE AND METHODOLOGY

The surveys were performed on a Room-by-Room basis within each building included in the scope of the assessment where asbestos was previously identified (by others).

The scope of the surveys included all friable and major non-friable materials suspected to contain asbestos. The term friable is applied to a material that can be readily reduced to dust or powder by hand or moderate pressure. Asbestos materials that are friable have a much greater potential to release airborne asbestos fibres when disturbed.

Typical friable asbestos materials include; sprayed fireproofing or thermal insulation, textured (stippled) plaster, and thermal mechanical insulation. Typical non-friable materials include: asbestos cement (transite) products, caulking, vinyl floor tiles, asbestos textiles and gaskets. Additional materials such as ceiling tiles and drywall joint compounds are classified as non-friable, but because of their ability to release dust when disturbed they are considered as "potentially friable" for the purpose of this report.

3.1 Inventory Methodology

In order to determine the location of the materials included in the assessment, each room or area was entered where practical (i.e.: where access was possible without the demolition of walls, roof or ceilings or destruction of flooring) where asbestos materials were previously identified. An investigation of areas of the building where asbestos was not previously identified was not included in the scope of the current project.

Representative views were made above accessible suspended ceiling systems. Drywall or plaster ceilings were accessed via existing ceiling access panels only. The inventory did not include destructive testing of building systems or finishes to observe possible hidden conditions.

3.2 Asbestos Assessment Criteria

The recommendations and suggestions made as part of this report with respect to asbestos have taken into consideration the condition and accessibility of the asbestos-containing material as well as other factors such as water damage, vibration, air movement, and general activities in the area.

Where ACM is found to be in GOOD condition and not likely to deteriorate or fall, the general recommendation would be to re-evaluate the condition of the material on an annual basis (required by Regulation 278/05). This recommendation can be subject to change if the material is located in a manner that persons untrained in asbestos awareness could physically damage it.

Where the ACM is found to be damaged (i.e. FAIR or POOR condition), a recommendation to have the material cleaned-up, repaired, removed, enclosed, or encapsulated is offered. The recommendation will also indicate which asbestos procedure should be used to perform the remedial work (i.e. Type 1, Type 2, Type 3, or Glove Bag Removal Methods).

In each area or room inventoried, the quantity, condition (GOOD, FAIR, or POOR) and accessibility (A, B, C, D or E) of each suspect material was recorded.

The definitions for condition and accessibility items are as follows:

GOOD	Material is intact with no visible signs of damage.
FAIR	Material is visibly damaged but can be repaired.
POOR	Material is damaged beyond repair and likely needs to be removed.
Access A	Accessible to all occupants of the building.

Access B	Accessible to Maintenance personnel without the use of a ladder (i.e. Mechanical Room, pipe chase etc.).
Access C	Accessible to Maintenance personnel with the use of a ladder and is exposed to view without removing building components.
Access D	Accessible to Maintenance personnel with the use of a ladder and is concealed from viewing due to a building component (i.e. above a removable ceiling).
Access E	Not accessible without demolition of a building component (i.e. above a fixed ceiling system).

The asbestos related information collected during the previous assessments was confirmed and the room-by-room data updated to reflect the current information.

3.3 Limitations and Omissions from Scope

Due to the nature of building construction, some limitations exist in regards to the possible thoroughness of any building materials inventory. The field observations, measurements, and analysis are considered sufficient in detail and scope to form a reasonable basis for the findings presented in this report. MAPLE warrants that the findings and conclusions contained herein have been made in accordance with generally accepted evaluation methods in the industry and applicable regulations at the time of the performance of the inventory.

It is possible that conditions may exist which could not be reasonably identified within the scope of the inventory or which were not apparent during the site investigation. MAPLE believes that the information collected during the inventory period concerning the property is reliable. No other warranties are implied or expressed.

In addition, during a standard asbestos assessment, performed for the purposes of regulatory compliance, it is industry practice to exclude some non-friable materials in the inventory. Examples of such assumptions include; elevator brakes, roofing felts and mastics, high voltage wiring, mechanical packing and gaskets, underground services or piping, fire-doors, window caulking, levelling compound, and/or materials used in operating equipment. As such, these materials were not sampled at the time of this survey and where present are assumed to be asbestos containing until proven otherwise.

3.4 Sampling Strategy and Analytical Methods

As the majority of materials were previously sampled by others, the requirement for sampling during the current survey was limited. Where samples were collected, they conformed to the criteria outlined below and in compliance with O. Reg. 278/05.

A small volume of the material was removed either from a damaged section or cut out of intact material and then repaired by sealing with tape to prevent the release of fibres. The collected samples were placed in plastic bags, sealed and labelled and then sent to an independent laboratory for analysis. To ensure quality results, the independent laboratory chosen is NVLAP accredited and successfully participates in an "Asbestos Proficiency Analytical Testing Program" and as such, these laboratories are responsible for their findings.

The collection of samples was performed in accordance with regulatory sampling requirements and with sufficient frequency to obtain a general pattern of asbestos use within the building. Due to building renovations or modifications that have occurred, the consistency of the application of asbestos materials may not be uniform throughout the entire building. It is important to note that without sampling every wall, pipe section, ceiling tile etc. it is not possible to identify the possible asbestos content in every material present in the building. For this reason, materials similar in appearance to those sampled elsewhere in the building were visually identified as being homogeneous and thus are assumed to be composed of the same material, thus additional sampling is not required.

In accordance with Reg. 278/05, samples were collected at the following frequency.

Material Type	No. Samples
Sprayed Fireproofing	Up to 7
Texture Coat	Up to 7
Pipe Fitting Insulation	3
Pipe Straight Insulation	3
Ductwork Insulation	3
Ceiling Tiles	3
Vinyl Sheeting Flooring	3
Vinyl Floor Tile	3
Plaster Finishes	Up to 7
Drywall Compound	Up to 7

An independent NVLAP accredited laboratory, was used to analyse the collected samples. Analysis was performed following the Code of Practice for the identification of asbestos in bulk material, as detailed in Ontario Regulation 278/05. Bulk samples were analysed using the Polarized Light Microscopy ("PLM") Technique with Dispersion Staining. The identification of asbestos fibre in bulk material is based on a collective set of parameters dependent on the unique shape and crystallographic properties of each fibre as viewed through the microscope. This method is useful for the qualitative identification of asbestos and the semi-quantitative determination of asbestos content in bulk materials expressed as a percent of projected area. The method identifies types of asbestos and also measures percent of asbestos as perceived by the analyst in comparison to standard area projections or trained experience.

Given the composition of some vinyl floor products, the PLM analysis method is often prone to yielding false negative analysis results. Therefore it may be prudent that the Transmission Electron Microscopy (TEM) analysis method be used to determine the asbestos content in the vinyl floor products, if negative results are obtain from the laboratory analysis.

3.5 Drawings

Drawings provided for each building indicate the following (where present):

- ◊ Location Numbers (reference to Room-by-Room asbestos data)
- ◊ Asbestos-Containing Sprayed Fireproofing
- ◊ Asbestos-Containing Texture Finishes
- ◊ Asbestos Containing Ceiling Tiles
- ◊ Asbestos-Containing Flooring Materials
- ◊ Presence of Asbestos-Containing Mechanical Insulations will not be specifically indicated on the drawings; however, a general statement regarding the presence of ACM mechanical insulations, where present, has been indicated on the drawings.
- ◊ Presence of asbestos-containing drywall joint compound and hard plaster will not be specifically identified on the drawings; however, a general statement regarding the presence of these ACM materials, where present, has been indicated on the drawings.

4.0 INVENTORY FINDINGS

The following is a brief discussion of the extent to which Asbestos-Containing Materials (ACM) was identified in the building. The discussion is organized under the headings of materials that are generally suspected of containing asbestos. Refer to the Room-by-Room Survey Inventory in Appendix I for a detailed description and location of all ACM.

Destructive testing was not conducted and as such some areas within the building were not accessible for an assessment (i.e. above solid ceilings, behind walls). Access for viewing within wall and ceiling cavities was not always possible. Suspect asbestos materials may be present within ceiling and wall cavities that were not identified in this report. This comment is particularly important for materials such as mechanical insulation. Caution should be taken when demolishing solid wall finishes within the building.

4.1 Sprayed Fireproofing (Friable)

No sprayed fireproofing was observed in the building.

4.2 Thermal Mechanical Insulation (Friable)

Asbestos-containing mechanical insulations are present in the building. It is important to note that mechanical systems may be present within walls and ceiling cavities or pipe chases that were not accessible during this assessment. The presence of ACM mechanical insulations in these locations should be suspected.

Pipe Systems:

Pipe Fittings, including elbows, valves, tees, hangers, etc. where insulated are insulated with parging cement previously confirmed to contain Chrysotile asbestos or are insulated with non-asbestos materials (i.e. Fibreglass). All pipe fittings were found to be in GOOD condition with the exception of one (1) parging cement fitting in FAIR condition within Gym A (eBase 217).

Pipe Straights, where insulated are insulated with non-asbestos fibreglass and/or armaflex materials. The insulation on the pipe straights within Gym A (eBase 217) and Gym B (eBase 216) is inaccessible and therefore assumed to contain asbestos until sampling proves otherwise. The pipe straight insulation was observed to be in GOOD condition at the time of the assessment.

Ductwork:

Duct systems were either insulated with non-asbestos fibreglass or were un-insulated.

Mechanical Equipment:

Mechanical equipment was observed to be externally un-insulated.

4.3 Texture Finish (Friable)

No asbestos-containing texture finishes were identified to be present within the building.

4.4 Acoustic Ceiling Tiles (Potentially Friable)

No asbestos-containing ceiling tiles were identified to be present within the building.

4.5 Vinyl Sheet Flooring (Potentially Friable)

No asbestos-containing vinyl sheet flooring was identified to be present within the building.

4.6 Vinyl Floor Tile (Non-Friable)

Vinyl floor tiles containing asbestos are present in various areas of the building. All tiles were found to be in GOOD condition except for five (5SF) square feet of vinyl floor tiles observed to be in POOR condition in Room 312 (eBase location 128). Refer to the Room-by-Room Inventory in Appendix I for details regarding location and quantity.

4.7 Asbestos Cement Products "Transite" (Non-Friable)

Asbestos-containing transite is present in the form of a panel within Room 105 (eBase 130). All transite panels were found to be in GOOD condition at the time of the assessment.

4.8 Drywall Joint Compound (DJC)

Previous sample results indicated drywall joint compound sampled at the Site contains asbestos. All drywall should be assumed to contain asbestos unless testing in specific areas indicates otherwise. The drywall was found to be in Good Condition.

4.9 Plaster

Textured plaster finishes present on the exterior soffits, overhangs and vestibules were sampled (Sample Set 15864-S01-S03) and analysed for asbestos content. The samples were found to contain 0.5% Chrysotile asbestos. At the time of the current assessment, the textured plaster were observed to be in GOOD condition.

5.0 RECOMMENDATIONS

5.1 General Recommendations

Due to the presence of ACM within the building, TLDSB must maintain their existing Asbestos Management Program for this property.

A re-assessment of known ACM is to be conducted at least once annually.

It is important to note that due to the presence of solid walls and ceiling systems, ACM may be present in concealed locations not identified in this report.

The assessment confirmed the presence of ACM mechanical insulations within the building (Refer to room-by-room Inventory for condition and quantities). Should any proposed renovations likely cause disturbance of the mechanical insulations, the materials would require removal using Type 2, Type 3 or Glove Bag Asbestos procedures as appropriate for the work being performed.

If asbestos-containing vinyl floor tiles are likely to be disturbed, the tiles should be removed using Type 1 Asbestos procedures (provided no power tools are used and the material is wetted). The use of power tools would require Type 3 Asbestos procedures.

Removal or disturbance of transite cement products requires the use of Type 1 Asbestos procedures (provided no power tools are used and the material is wetted). If power tools are required Type 3 Asbestos procedures need be applied.

Asbestos-containing drywall joint compound is present within the building. Removal or disturbance of less than 1 m^2 of this material will require the use of Type 1 Asbestos procedures, and the disturbance of greater than less than 1 m^2 will require Type 2 Asbestos procedures.

The removal or disturbance of textured plaster finishes less than 1m^2 will require the use of Type 2 Asbestos procedures; greater than 1m^2 Type 3 Asbestos procedures apply.

Materials suspected of containing asbestos should be sampled prior to disturbance. Suspect materials include; drywall joint compound, plaster, roofing materials, caulking, etc. unless previously confirmed to contain asbestos.

5.2 Specific Recommendations

The following asbestos remedial work is recommended for compliance with O. Reg. 278/05:

- Remove and replace damaged asbestos-containing vinyl floor tiles observed in POOR condition within Room 312 (eBase 128) using Type 1 Asbestos procedures.

- Repair one (1) damaged asbestos-containing parging cement insulation on the pipe fitting in FAIR condition within Gym A (eBase 217) using Type 2 asbestos abatement procedures.

As the remaining asbestos-containing materials identified within the building were observed to be in GOOD condition and no additional immediate remedial work was warranted.

6.0 LIMITATIONS

Due to the nature of building construction some limitations exist as to the possible thoroughness of the subject investigation. The field observations are considered sufficient in detail and scope to form a reasonable basis for the findings presented in this report. MAPLE warrants that the findings and conclusions contained herein have been made in accordance with generally accepted evaluation methods in the industry and applicable regulations at the time of the performance of the assessment.

It is possible that conditions may exist which could not be reasonably identified within the scope of the investigation or which were not apparent during the site investigation. MAPLE believes that the information collected during the investigation period concerning the property is reliable. No other warranties are implied or expressed.

Information provided by Maple is intended for Client use only. Any use by a third party, of reports or documents authored by Maple, 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. Maple accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted.

The liability of Maple or its staff will be limited to the lesser of the fees paid or actual damages incurred by the Client. Maple will not be responsible for any consequential or indirect damages. Maple will only be liable for damages resulting from negligence of Maple; all claims by the Client shall be deemed relinquished if not made within two years after last date of services provided.

Please contact Maple Environmental Inc. at (905) 257-4408 for inquiries regarding this project.

Sincerely,

MAPLE ENVIRONMENTAL INC.
Environment, Health and Safety Consultants

Prepared By:

Mark Pollock
Project Technologist

Reviewed By:

Kyle Prosser
Senior Project Manager

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APPENDIX I

ROOM-BY-ROOM ASBESTOS INVENTORY

APPENDIX I - ROOM BY ROOM ASBESTOS INVENTORY

MAPLE ENVIRONMENTAL INC.
ENVIRONMENT, HEALTH & SAFETY CONSULTANTS

STRUCTURAL ELEMENT

RF: Roof	B/J: Beams/Joists
WN: Window	CB: Chalkboard
FL:Floor	PI: Pipe
CL:Ceiling	DT:Duct
WL:Wall	BL:Boiler
DK:Deck	MC:Mechanical
SF:Soffits	

ACCESSIBILITY

A: All occupants of the facility

B: Maintenance staff without a ladder

C: Maintenance staff with a ladder, exposed to view without moving building components

D: Maintenance staff with a ladder, concealed from view by building components

E: No access without demolition or removal of fixed building components or systems

TERMINOLOGY

ACM: Asbestos Containing Material	N/A: Not Applicable	PL: Plaster	TB: Transite Board	VSF: Vinyl Sheet Flooring
CT: Ceiling Tile	N/Anz: Not Analyzed	RM: Roofing Materials	TP: Transite Pipe	V/C: Visually Consistent w/ Other Sampled Material
DJC: Drywall Joint Compound	N/D: None Detected	SFP: Sprayed Fireproofing	VI: Vermiculite Insulation	
FTG: Fitting	PI-AC: Pipe Insulation - Aircell	SF: Square Feet	VFT: Vinyl Floor Tile	WC: Window Caulking
LF: Linear Feet	PI-PC: Pipe Insulation-Parging Cement	TF: Texture Finish		
	PI-CP: Pipe Insulation-Caposite			

CONDITION G: Good F: Fair P: Poor

ID	Facility	Floor #	Room #	Room name	Has ACM	Friable	Struct. Elem.	Application	Material	Type	Qty	Condition	Sample #	Action	Ref #	Comments 1	Comments 2	Comments 3	Notes
49423	J. Douglas Hodgson Elementary School	1	101	Main Foyer	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49424	J. Douglas Hodgson Elementary School	1	101	Main Foyer	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	V/C 20-BS-01			A			18143 Sections of Walls Removed
49417	J. Douglas Hodgson Elementary School	1	102	304	No	No	FL	VFT	4	N/D			V/C 20-BS-10						
49418	J. Douglas Hodgson Elementary School	1	102	304	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49419	J. Douglas Hodgson Elementary School	1	102	304	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	V/C 20-BS-01			A			
49436	J. Douglas Hodgson Elementary School	1	103	Hallway 2	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49437	J. Douglas Hodgson Elementary School	1	103	Hallway 2	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	20-BS-01B			A			
49392	J. Douglas Hodgson Elementary School	1	104	104	No	No	FL	VFT	4	N/D			20-BS-10C						
49393	J. Douglas Hodgson Elementary School	1	104	104	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49394	J. Douglas Hodgson Elementary School	1	104	104	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	V/C 20-BS-01			A			
49389	J. Douglas Hodgson Elementary School	1	105	103	No	No	FL	VFT	4	N/D			V/C 20-BS-10						
49390	J. Douglas Hodgson Elementary School	1	105	103	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49391	J. Douglas Hodgson Elementary School	1	105	103	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	V/C 20-BS-01			A			
49386	J. Douglas Hodgson Elementary School	1	107	301	No	No	FL	VFT	4	N/D			V/C 20-BS-10						
49387	J. Douglas Hodgson Elementary School	1	107	301	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49388	J. Douglas Hodgson Elementary School	1	107	301	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	V/C 20-BS-01			A			
49434	J. Douglas Hodgson Elementary School	1	108	Hallway 1	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49435	J. Douglas Hodgson Elementary School	1	108	Hallway 1	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	20-BS-01A			A			
49383	J. Douglas Hodgson Elementary School	1	109	102	No	No	FL	VFT	4	N/D			V/C 20-BS-10						
49384	J. Douglas Hodgson Elementary School	1	109	102	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49385	J. Douglas Hodgson Elementary School	1	109	102	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	V/C 20-BS-01			A			
49380	J. Douglas Hodgson Elementary School	1	110	101	No	No	FL	VFT	4	N/D			20-BS-10B						
49381	J. Douglas Hodgson Elementary School	1	110	101	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49382	J. Douglas Hodgson Elementary School	1	110	101	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	V/C 20-BS-01			A			
49376	J. Douglas Hodgson Elementary School	1	112	Boy's Washroom	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49377	J. Douglas Hodgson Elementary School	1	113	Girl's Washroom	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49395	J. Douglas Hodgson Elementary School	1	114	302	No	No	FL	VFT (New)	5	N/A			N/S						Replaced with new VFT
49396	J. Douglas Hodgson Elementary School	1	114	302	No	No	CL	CT	2	N/D			20-BS-06C						
49397	J. Douglas Hodgson Elementary School	1	115	303	No	No	FL	VFT (New)	5	N/A			N/S						Replaced with new VFT
49398	J. Douglas Hodgson Elementary School	1	115	303	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49378	J. Douglas Hodgson Elementary School	1	116	Staff Washroom W/C 1	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49379	J. Douglas Hodgson Elementary School	1	117	Staff Washroom W/C 2	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49425	J. Douglas Hodgson Elementary School	1	118	Garden	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	V/C 20-BS-01			A			18143-Sections of Walls Removed
49438	J. Douglas Hodgson Elementary School	1	119	Hallway 3	No	No	CL	CT	2	N/D			V/C 20-BS-06						

APPENDIX I - ROOM BY ROOM ASBESTOS INVENTORY

MAPLE ENVIRONMENTAL INC.
ENVIRONMENT, HEALTH & SAFETY CONSULTANTS

STRUCTURAL ELEMENT

RF: Roof	B/J: Beams/Joists
WN: Window	CB: Chalkboard
FL:Floor	PI: Pipe
CL:Ceiling	DT:Duct
WL:Wall	BL:Boiler
DK:Deck	MC:Mechanical
SF:Soffits	

ACCESSIBILITY

A: All occupants of the facility

B: Maintenance staff without a ladder

C: Maintenance staff with a ladder, exposed to view without moving building components

D: Maintenance staff with a ladder, concealed from view by building components

E: No access without demolition or removal of fixed building components or systems

TERMINOLOGY

ACM: Asbestos Containing Material
CT: Ceiling Tile
DJC: Drywall Joint Compound
FTG: Fitting
LF: Linear Feet
N/A: Not Applicable
N/Anz: Not Analyzed
N/D: None Detected
PI-AC: Pipe Insulation - Aircell
PI-PC: Pipe Insulation-Parging Cement
PI-CP: Pipe Insulation-Caposite
PL: Plaster
RM: Roofing Materials
SFP: Sprayed Fireproofing
SF: Square Feet
TF: Texture Finish
TB: Transite Board
TP: Transite Pipe
VI: Vermiculite Insulation
VFT: Vinyl Floor Tile
VSF: Vinyl Sheet Flooring
V/C: Visually Consistent w/ Other Sampled Material
WC: Window Caulking

CONDITION G: Good F: Fair P: Poor

ID	Facility	Floor #	Room #	Room name	Has ACM	Friable	Struct. Elem.	Application	Material	Type	Qty	Condition	Sample #	Action	Ref #	Comments 1	Comments 2	Comments 3	Notes
49439	J. Douglas Hodgson Elementary School	1	119	Hallway 3	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	V/C 20-BS-01			A			
49426	J. Douglas Hodgson Elementary School	1	120	305	No	No	FL	VFT (New)	5	N/A	-	-	N/S			-			Replaced with new VFT
49427	J. Douglas Hodgson Elementary School	1	120	305	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49415	J. Douglas Hodgson Elementary School	1	121	306	No	No	FL	VFT	2	0.5% CHRYSOTILE	-	-	V/C 12578-01			-			Replaced Summer 2013
49416	J. Douglas Hodgson Elementary School	1	121	306	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49428	J. Douglas Hodgson Elementary School	1	122	307	No	No	FL	VFT	2	0.5% CHRYSOTILE	-	-	V/C 12578-01			-			Replaced Summer 2013
49429	J. Douglas Hodgson Elementary School	1	122	307	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49430	J. Douglas Hodgson Elementary School	1	122	307	No	Yes	FTG	PI-PC		15% CHRYSOTILE			20-BS-03A-B						Replaced Summer 2013
49440	J. Douglas Hodgson Elementary School	1	123	Hallway 4	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49441	J. Douglas Hodgson Elementary School	1	123	Hallway 4	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	V/C 20-BS-01			A			
49442	J. Douglas Hodgson Elementary School	1	123	Hallway 4	No	No	PI	PI-SW		N/D	-	-	20-BS-02C			-			
49443	J. Douglas Hodgson Elementary School	1	124	310	No	No	FL	VFT (New)	5	N/A	-	-	N/S			-			Replaced with new VFT
49444	J. Douglas Hodgson Elementary School	1	124	310	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49445	J. Douglas Hodgson Elementary School	1	124	310	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	V/C 20-BS-01			A			
49446	J. Douglas Hodgson Elementary School	1	125	311	No	No	FL	VFT (New)	5	N/A	-	-	N/S			-			Replaced with new VFT
49447	J. Douglas Hodgson Elementary School	1	125	311	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49448	J. Douglas Hodgson Elementary School	1	125	311	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	V/C 20-BS-01			A			
49456	J. Douglas Hodgson Elementary School	1	126	Boy's Washroom 2	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49457	J. Douglas Hodgson Elementary School	1	126	Boy's Washroom 2	No	No	PI	PI-SW		N/D			V/C 20-BS-02						
49454	J. Douglas Hodgson Elementary School	1	127	Girl's Washroom 2	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49455	J. Douglas Hodgson Elementary School	1	127	Girl's Washroom 2	No	No	PI	PI-SW		N/D			20-BS-02A-B						
49458	J. Douglas Hodgson Elementary School	1	128	312	Yes	No	FL	VFT	2	0.5% CHRYSOTILE	495 SF	G	12578-01A-C			A			
49459	J. Douglas Hodgson Elementary School	1	128	312	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49527	J. Douglas Hodgson Elementary School	1	128	312	Yes	No	FL	VFT		0.5% Chrysotile	5 SF	P	12578-01A-C			A			
49453	J. Douglas Hodgson Elementary School	1	129	106	No	No	FL	VFT (New)	5	N/A			N/S						
49449	J. Douglas Hodgson Elementary School	1	130	105	No	No	FL	VFT	4	N/D			V/C 20-BS-10						
49450	J. Douglas Hodgson Elementary School	1	130	105	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49451	J. Douglas Hodgson Elementary School	1	130	105 Music Room	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	20-BS-01D			A			
49452	J. Douglas Hodgson Elementary School	1	130	105 Music Room	Yes	No	WL	TRANSITE		VISUALLY ACM	400 SF	G	-			A			
49420	J. Douglas Hodgson Elementary School	1	132	309	No	No	FL	VFT	4	N/D			V/C 20-BS-10						
49421	J. Douglas Hodgson Elementary School	1	132	309	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49422	J. Douglas Hodgson Elementary School	1	132	309	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	V/C 20-BS-01			A			
49407	J. Douglas Hodgson Elementary School	1	132A	Staff Washroom 5	No	No	FL	VFT	4	N/D			V/C 20-BS-10						
49408	J. Douglas Hodgson Elementary School	1	132A	Staff Washroom 5	No	No	CL	CT	2	N/D			V/C 20-BS-06						

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FTG: Fitting	PI-AC: Pipe Insulation - Aircell	SF: Square Feet	VFT: Vinyl Floor Tile	WC: Window Caulking
LF: Linear Feet	PI-PC: Pipe Insulation-Parging Cement	TF: Texture Finish		
	PI-CP: Pipe Insulation-Caposite			

CONDITION G: Good F: Fair P: Poor

ID	Facility	Floor #	Room #	Room name	Has ACM	Friable	Struct. Elem.	Application	Material	Type	Qty	Condition	Sample #	Action	Ref #	Comments 1	Comments 2	Comments 3	Notes
49411	J. Douglas Hodgson Elementary School	1	133	Custodian Closet	No	No	FL	VFT	2	0.5% CHRYSOTILE	-	-	V/C 12578-01			-			Replaced Summer 2013
49412	J. Douglas Hodgson Elementary School	1	133	Custodian Closet	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49403	J. Douglas Hodgson Elementary School	1	134	Principal's Office	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49404	J. Douglas Hodgson Elementary School	1	134	Principal's Office	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	V/C 20-BS-01			A			
49405	J. Douglas Hodgson Elementary School	1	134A	Staff Washroom 4	No	No	FL	VFT	4	N/D			V/C 20-BS-10						
49406	J. Douglas Hodgson Elementary School	1	134A	Staff Washroom 4	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49401	J. Douglas Hodgson Elementary School	1	135	Vice-Principal's Office	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49402	J. Douglas Hodgson Elementary School	1	135	Vice-Principal's Office	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	V/C 20-BS-01			A			
49399	J. Douglas Hodgson Elementary School	1	136	Office 1	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49400	J. Douglas Hodgson Elementary School	1	136	Office 1	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	20-BS-01C			A			
49413	J. Douglas Hodgson Elementary School	1	137	Staff Washroom 3	No	No	FL	VFT	2	0.5% CHRYSOTILE	-	-	V/C 12578-01			-			Replaced Summer 2013
49414	J. Douglas Hodgson Elementary School	1	137	Staff Washroom 3	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49409	J. Douglas Hodgson Elementary School	1	138	Office 2	Yes	No	FL	VFT	2	0.5% CHRYSOTILE	1	G	V/C 12578-01			A			
49410	J. Douglas Hodgson Elementary School	1	138	Office 2	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49431	J. Douglas Hodgson Elementary School	1	139	308	No	No	FL	VFT	4	N/D			V/C 20-BS-10						
49432	J. Douglas Hodgson Elementary School	1	139	308	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49433	J. Douglas Hodgson Elementary School	1	139	308	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	V/C 20-BS-01			A			
49515	J. Douglas Hodgson Elementary School	2	202	Hallway 5	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49516	J. Douglas Hodgson Elementary School	2	202	Hallway 5	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	20-BS-01E			A			
49517	J. Douglas Hodgson Elementary School	2	202	Hallway 5	Yes	Yes	FTG	PI-PC		15% CHRYSOTILE	2	G	V/C 20-BS-03			D			
49507	J. Douglas Hodgson Elementary School	2	203	Kitchen	No	No	FL	VFT	4	N/D			V/C 20-BS-10						
49508	J. Douglas Hodgson Elementary School	2	203	Kitchen	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49509	J. Douglas Hodgson Elementary School	2	203	Kitchen	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	V/C 20-BS-01			A			18143 Sections Removed
49510	J. Douglas Hodgson Elementary School	2	204	211	No	No	FL	VFT	3	N/D			20-BS-09A-C						
49511	J. Douglas Hodgson Elementary School	2	204	211	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49512	J. Douglas Hodgson Elementary School	2	204	211	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	V/C 20-BS-01			A			
49513	J. Douglas Hodgson Elementary School	2	205	Custodian Closet 2	No	No	FL	VFT (New)	5	N/A	-	-	N/S			-			Replaced with new VFT
49514	J. Douglas Hodgson Elementary School	2	205	Custodian Closet 2	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49504	J. Douglas Hodgson Elementary School	2	206	212	No	No	FL	VFT	4	N/D			V/C 20-BS-10						
49505	J. Douglas Hodgson Elementary School	2	206	212	No	No	CL	CT	2	N/D			20-BS-06A						
49506	J. Douglas Hodgson Elementary School	2	206	212	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	V/C 20-BS-01			A			
49492	J. Douglas Hodgson Elementary School	2	208	214	No	No	FL	VFT	1	N/D			20-BS-07A-C						
49493	J. Douglas Hodgson Elementary School	2	208	214	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49494	J. Douglas Hodgson Elementary School	2	208	214	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	V/C 20-BS-01			A			

APPENDIX I - ROOM BY ROOM ASBESTOS INVENTORY

MAPLE ENVIRONMENTAL INC.
ENVIRONMENT, HEALTH & SAFETY CONSULTANTS

STRUCTURAL ELEMENT

RF: Roof
WN: Window
FL:Floor
CL:Ceiling
WL:Wall
DK:Deck
SF:Soffits
B/J: Beams/Joists
CB: Chalkboard
PI: Pipe
DT:Duct
BL:Boiler
MC:Mechanical

ACCESSIBILITY

A: All occupants of the facility

B: Maintenance staff without a ladder

C: Maintenance staff with a ladder, exposed to view without moving building components

D: Maintenance staff with a ladder, concealed from view by building components

E: No access without demolition or removal of fixed building components or systems

TERMINOLOGY

ACM: Asbestos Containing Material
CT: Ceiling Tile
DJC: Drywall Joint Compound
FTG: Fitting
LF: Linear Feet
N/A: Not Applicable
N/Anz: Not Analyzed
N/D: None Detected
PI-AC: Pipe Insulation - Aircell
PI-PC: Pipe Insulation-Parging Cement
PI-CP: Pipe Insulation-Caposite
PL: Plaster
RM: Roofing Materials
SFP: Sprayed Fireproofing
SF: Square Feet
TF: Texture Finish
TB: Transite Board
TP: Transite Pipe
VI: Vermiculite Insulation
VFT: Vinyl Floor Tile
VSF: Vinyl Sheet Flooring
V/C: Visually Consistent w/ Other Sampled Material
WC: Window Caulking

CONDITION G: Good F: Fair P: Poor

ID	Facility	Floor #	Room #	Room name	Has ACM	Friable	Struct. Elem.	Application	Material	Type	Qty	Condition	Sample #	Action	Ref #	Comments 1	Comments 2	Comments 3	Notes
49501	J. Douglas Hodgson Elementary School	2	209	213	No	No	FL	VFT	4	N/D			V/C 20-BS-10						
49502	J. Douglas Hodgson Elementary School	2	209	213	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49503	J. Douglas Hodgson Elementary School	2	209	213	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	V/C 20-BS-01			A			
49498	J. Douglas Hodgson Elementary School	2	210	210	No	No	FL	VFT	4	N/D			V/C 20-BS-10						
49499	J. Douglas Hodgson Elementary School	2	210	210	No	No	CL	CT	1	N/D			20-BS-05C						
49500	J. Douglas Hodgson Elementary School	2	210	210	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	V/C 20-BS-01			A			
49495	J. Douglas Hodgson Elementary School	2	211	209	No	No	FL	VFT	4	N/D			V/C 20-BS-10						
49496	J. Douglas Hodgson Elementary School	2	211	209	No	No	CL	CT	1	N/D			20-BS-05A-B						
49497	J. Douglas Hodgson Elementary School	2	211	209	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	V/C 20-BS-01			A			
49518	J. Douglas Hodgson Elementary School	2	212	Hallway 6	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49519	J. Douglas Hodgson Elementary School	2	212	Hallway 6	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	20-BS-01F			A			
49490	J. Douglas Hodgson Elementary School	2	213	407	Yes	No	FL	VFT	2	0.5% CHRYSOTILE	250 SF	G	V/C 12578-01			A			
49491	J. Douglas Hodgson Elementary School	2	213	407	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49489	J. Douglas Hodgson Elementary School	2	214	Boy's Washroom 3	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49488	J. Douglas Hodgson Elementary School	2	215	Girl's Washroom 3	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49473	J. Douglas Hodgson Elementary School	2	216	Gym B	Yes	Yes	PI	PI		VISUALLY ACM	40 LF	G	-			C			NO ACCESS DUE TO HEIGHT - ASSUMED ACM
49475	J. Douglas Hodgson Elementary School	2	216	Gym B	Yes	Yes	FTG	PI-PC		15% CHRYSOTILE	7	G	20-BS-03C			C			
49472	J. Douglas Hodgson Elementary School	2	217	Gym A	Yes	Yes	PI	PI		VISUALLY ACM	40 LF	G	-			C			NO ACCESS DUE TO HEIGHT - ASSUMED ACM
49474	J. Douglas Hodgson Elementary School	2	217	Gym A	Yes	Yes	FTG	PI-PC		15% CHRYSOTILE	6	G	20-BS-03C			C			Fitting Removed by bleachers
49526	J. Douglas Hodgson Elementary School	2	217	Gym A	Yes	Yes	PI	PI-PC		15% Chrysotile	1	F	V/C 20-BS-03C			C			Above stands
49476	J. Douglas Hodgson Elementary School	2	217A	405	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49477	J. Douglas Hodgson Elementary School	2	217A	405	Yes	No	CL	DJC		3% CHRYSOTILE	1	G	V/C 20-BS-01			C			
49478	J. Douglas Hodgson Elementary School	2	217A	405	No	No	PI	PI-SW		N/D			V/C 20-BS-02						
49479	J. Douglas Hodgson Elementary School	2	217A	405	Yes	Yes	FTG	PI-PC		15% CHRYSOTILE	1	G	V/C 20-BS-03			D			
49480	J. Douglas Hodgson Elementary School	2	218	406	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49481	J. Douglas Hodgson Elementary School	2	218	406	Yes	No	CL	DJC		3% CHRYSOTILE	1	G	V/C 20-BS-01			C			
49486	J. Douglas Hodgson Elementary School	2	219	Stage	No	No	FL	VFT	2	0.5% CHRYSOTILE	-	-	V/C 12578-01			-			Replaced Summer 2013
49487	J. Douglas Hodgson Elementary School	2	219	Stage	No	No	CL	DJC		3% CHRYSOTILE	-	-	V/C 20-BS-01			-			Replaced Summer 2013
49484	J. Douglas Hodgson Elementary School	2	220	Library	No	No	CL	CT	2	N/D			20-BS-06B						
49485	J. Douglas Hodgson Elementary School	2	220	Library	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	V/C 20-BS-01			A			
49471	J. Douglas Hodgson Elementary School	2	221	404	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49482	J. Douglas Hodgson Elementary School	2	222	403	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49483	J. Douglas Hodgson Elementary School	2	222	403	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	V/C 20-BS-01			A			
49470	J. Douglas Hodgson Elementary School	2	225	402	No	No	FL	CT	2	N/D			V/C 20-BS-06						

APPENDIX I - ROOM BY ROOM ASBESTOS INVENTORY

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ENVIRONMENT, HEALTH & SAFETY CONSULTANTS

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PI-CP: Pipe Insulation-Caposite
PL: Plaster
RM: Roofing Materials
SFP: Sprayed Fireproofing
SF: Square Feet
TF: Texture Finish
TB: Transite Board
TP: Transite Pipe
VI: Vermiculite Insulation
VFT: Vinyl Floor Tile
VSF: Vinyl Sheet Flooring
V/C: Visually Consistent w/ Other Sampled Material
WC: Window Caulking

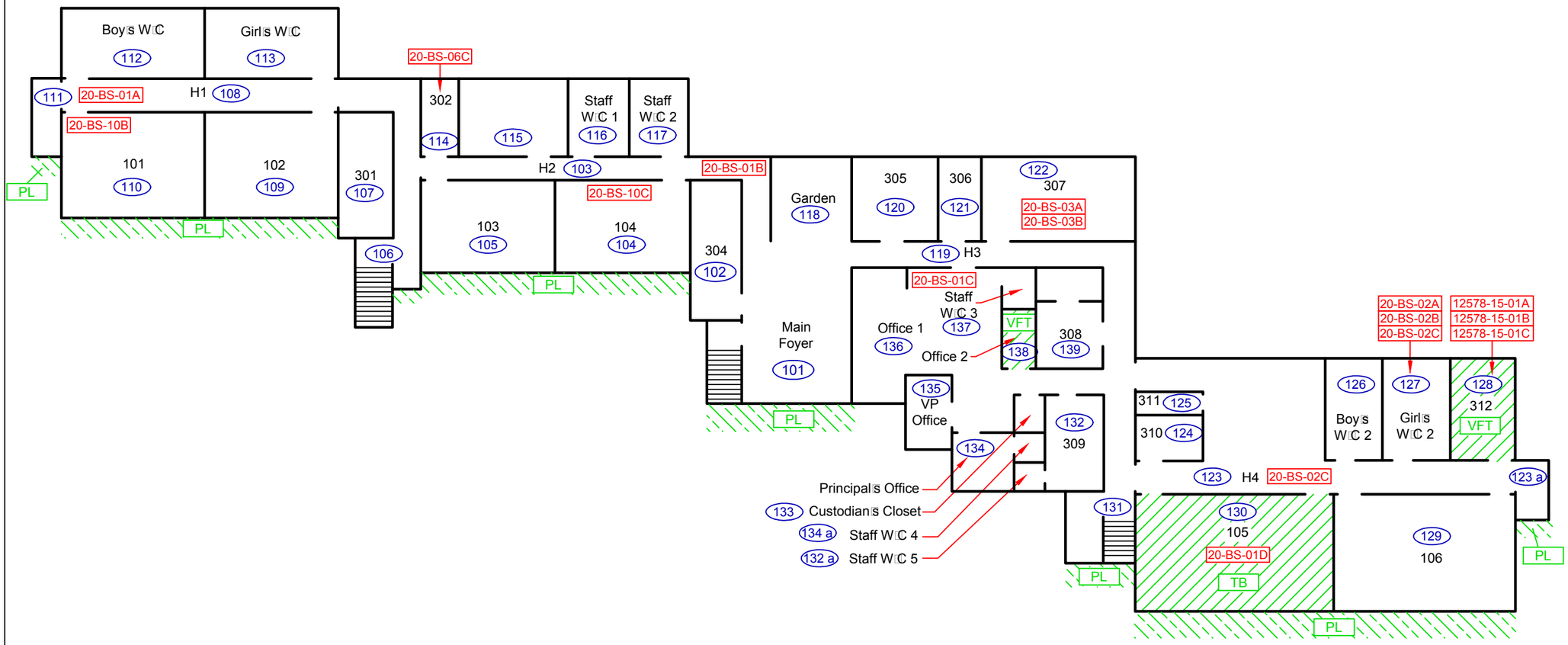
CONDITION G: Good F: Fair P: Poor

ID	Facility	Floor #	Room #	Room name	Has ACM	Friable	Struct. Elem.	Application	Material	Type	Qty	Condition	Sample #	Action	Ref #	Comments 1	Comments 2	Comments 3	Notes
49520	J. Douglas Hodgson Elementary School	2	226	Hallway 7	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49521	J. Douglas Hodgson Elementary School	2	226	Hallway 7	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	V/C 20-BS-01			A			
49522	J. Douglas Hodgson Elementary School	2	226	Hallway 7	Yes	Yes	FTG	PI-PC		15% CHRYSOTILE	3	G	V/C 20-BS-03			D			
49468	J. Douglas Hodgson Elementary School	2	227	206	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49466	J. Douglas Hodgson Elementary School	2	228	205	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49469	J. Douglas Hodgson Elementary School	2	230	401	No	No	DT	CT	2	N/D			V/C 20-BS-06						
49523	J. Douglas Hodgson Elementary School	2	231	Hallway 8	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49524	J. Douglas Hodgson Elementary School	2	231	Hallway 8	Yes	No	WL	DJC		3% CHRYSOTILE	1	G	20-BS-01G			A			
49525	J. Douglas Hodgson Elementary School	2	231	Hallway 8	Yes	Yes	FTG	PI-PC		15% CHRYSOTILE	3	G	V/C 20-BS-03			D			
49462	J. Douglas Hodgson Elementary School	2	232	202	No	No	CL	CT	2	N/D			V/C 20-BS-05						
49460	J. Douglas Hodgson Elementary School	2	233	201	No	No	CL	CT	2	N/D			V/C 20-BS-04						
49461	J. Douglas Hodgson Elementary School	2	233	201	No	No	FL	VFT	4	N/D			20-BS-10A						
49463	J. Douglas Hodgson Elementary School	2	235	203	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49464	J. Douglas Hodgson Elementary School	2	236	204	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49465	J. Douglas Hodgson Elementary School	2	237	207	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49467	J. Douglas Hodgson Elementary School	2	238	208	No	No	CL	CT	2	N/D			V/C 20-BS-06						
49374	J. Douglas Hodgson Elementary School	NA		EXTERIOR	No	No	RF	RM	NA	ACM ASSUMED	1	G	NS			C			sample prior to renovation
49375	J. Douglas Hodgson Elementary School	NA		EXTERIOR	No	No	WN	WC	NA	ACM ASSUMED	1	G	NS			A, C			sample prior to renovation
49528	J. Douglas Hodgson Elementary School	NA		EXTERIOR	Yes	Yes	SF	PL		0.5% CHRYSOTILE	1000 SF	G	15864-S01A-C			C			Present on vestibules, overhangs and soffits

APPENDIX II

DRAWINGS

Please Note
Dry all Joint Compound (DJC) has been indentified as ASBESTOS CONTAINING throughout the building.



LEGEND

12578-□□-01A	ECOH Sample Locations
01-BS-01A	Jacques Whitford Sample Locations
#	Ebase Number

CONFIRMED ACM

SYMBOL	DESCRIPTION
	Friable Asbestos-Containing Material
	Non-Friable Asbestos-Containing Material
VFT	Vinyl Floor Tile (Non-Friable Asbestos-Containing Material)
PI	Pipe Insulation (Friable Asbestos-Containing Material)
TB	Te□ture Board (Non-Friable Asbestos-Containing Material)
PL	Te□tured Plaster (Friable Asbestos-Containing Material)
NOTE	Dry□all Joint Compound

For Detailed Information as to Location, Type, Quantity, Condition and Access to ACM, Please Refer to the Room-by-Room Sheets Provided in the Report.

J. Douglas Hodgson Elementary School
HWY 121 AT CTY RD 1,
Haliburton, Ontario

First Floor Plan

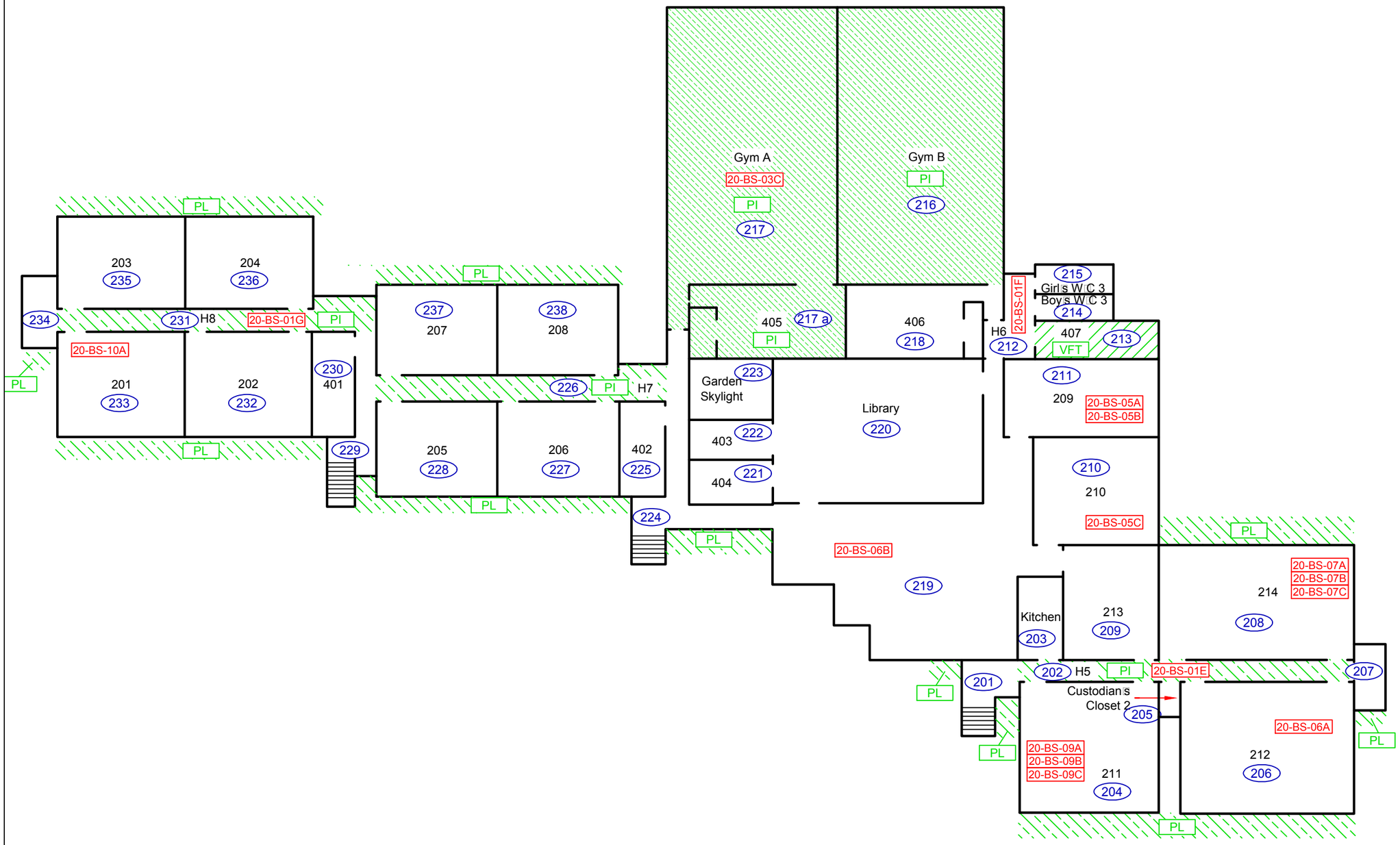
Asbestos Materials Re-Assessment Survey

CLIENT: Trillium Lakelands District School Board

PROJECT NUMBER:	DATE:	DRW BY:
18021-15	July 2019	S. Prosser
	SCALE: Not to Scale	CHK BY: K. Prosser

MAPLE ENVIRONMENTAL INC.
ENVIRONMENT, HEALTH & SAFETY CONSULTANTS

Please Note
Dry all Joint Compound (DJC) has been indentified as ASBESTOS CONTAINING throughout the building.



LEGEND

12578-□□-01A	ECOH Sample Locations
01-BS-01A	Jacques Whitford Sample Locations
#	Ebase Number

CONFIRMED ACM

SYMBOL	DESCRIPTION
	Friable Asbestos-Containing Material
	Non-Friable Asbestos-Containing Material
VFT	Vinyl Floor Tile (Non-Friable Asbestos-Containing Material)
PI	Pipe Insulation (Friable Asbestos-Containing Material)
TB	Te□ture Board (Non-Friable Asbestos-Containing Material)
PL	Te□tured Plaster (Friable Asbestos-Containing Material)
NOTE	Dry□all Joint Compound

For Detailed Information as to Location, Type, Quantity, Condition and Access to ACM, Please Refer to the Room-by-Room Sheets Provided in the Report.

J. Douglas Hodgson Elementary School
HWY 121 AT CTY RD 1,
Haliburton, Ontario

Second Floor Plan

Asbestos Materials Re-Assessment Survey

CLIENT: Trillium Lakelands District School Board

PROJECT NUMBER:	DATE:	DRW BY:
18021-15	July 2019	S. Prosser
	SCALE: Not to Scale	CHK BY: K. Prosser

MAPLE ENVIRONMENTAL INC.
ENVIRONMENT, HEALTH & SAFETY CONSULTANTS

APPENDIX III

POTENTIAL ASBESTOS-CONTAINING MATERIAL IDENTIFICATION SHEET

APPENDIX III - POTENTIAL ASBESTOS-CONTAINING MATERIALS INFORMATION SHEET

MIN	*Material*	*Material Description*	*Size*	*Sample Number*	*Sample Location*	*Asbestos Containing*
VFT-1	Vinyl Floor Tile	Grey with black and white specks	12 x 12	07A-C	Room 214	None
VFT-2	Vinyl Floor Tile	White with grey smears	12 x 12	12578-01A-C	Room 312	0.5% Chrysotile
VFT-3	Vinyl Floor Tile	Green with grey smears	12 x 12	09A-C	Room 211	None
VFT-4	Vinyl Floor Tile	White with beige smears	12 x 12	10A-C	Rooms 210, 101, 104	None
VFT-5	Vinyl Floor Tile	New Vinyl Floor Tiles	12 x 12	N/S	NA	None
CT-1	Ceiling Tile	Long fissure pinhole pattern	2 x 4	05A-C	Rooms 209, 210	None
CT-2	Ceiling Tile	Pinhole pattern	2 x 4	06A-C	Rooms 212, 302, Library	None