



Halifax
Regional Centre for Education

RFP #4195

Re-posting, with updates and changes.

Window Replacement Sunnyside Elementary (Fort Sackville)

RFP Closing Date:	Thur – February 15, 2024
RFP Closing Time:	2:00 PM (ATL)
Submission Email:	hrcetenders@hrce.ca
Ready-for-Takeover Date:	Tuesday - August 27, 2024 One week prior to the start of school.
<u>HRCE Procurement Contact:</u>	<u>Operations Contact:</u>
Nancy Rideout, Purchasing Manager	George MacDonald, Supervisor
Tel: (902) 464-2000 ext 2222	Cell: (902) 220-1881
Email: nrideout@hrce.ca	Email: george.macdonald@hrce.ca
<u>School Location:</u>	<u>Mandatory Site Meeting for Bidders:</u>
Sunnyside Elementary (Fort Sackville)	Wed – February 7, 2024 at 3:00 pm
21 Perth Street	Sunnyside Elementary (Fort Sackville)
Bedford, NS B4A 2H1	Please meet at School Entrance

RFP submissions are to be submitted by email to: hrcetenders@hrce.ca

RFP documents are available for download from the HRCE's Website:
<https://www.hrce.ca/about-hrce/financial-services/tenders/tender-listing>

In the light of COVID-19 and future pandemics, all vendors are required to follow the guidelines set in place by Nova Scotia Health Authority. Potential risks such as restricted accessibility to schools and buildings of the Halifax Regional Centre for Education (HRCE), inability to complete work on a timely manner due to social distancing, disabled supply chains which will result in delivery delays of raw materials and finished goods, labour shortages and additional storage costs should be clearly communicated with the HRCE Personnel on a timely manner to ensure an amicable solution can be agreed between the HRCE and the vendor/contractor. The HRCE will not be liable for any direct or indirect loss incurred due to a pandemic.

The Terms and Conditions of the RFP Package, including but not limited to the Contract Type and Supplementary Conditions have been modified.

It is the Proponent's Responsibility to review all sections of the RFP prior to submitting a Proposal/Bid.

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SPECIFICATIONS 180 pages

00 PROCUREMENT AND CONTRACTING REQUIREMENTS

- 00 01 10 List of Contents
- 00 11 10 List of Drawings
- 00 31 26 Existing Hazardous Material Information
 - Hazardous Building Materials Assessment (Preconstruction) –
Fort Sackville Elementary School, 21 Perth Street, Bedford, NS HRCE
 - Outlined in “Halifax Regional Centre for Education” General Requirements

01 GENERAL REQUIREMENTS

- Outlined in “Halifax Regional Centre for Education” General Requirements

06 WOODS, PLASTICS, AND COMPOSITES

- 06 10 00 Rough Carpentry
- 06 20 00 Finish Carpentry

07 THERMAL AND MOISTURE PROTECTION

- 07 21 13 Board Insulation
- 07 27 13 Sheet Membrane Air and Vapour Barriers
- 07 42 00 Composite Metal Panels
- 07 62 00 Sheet Metal Flashing and Trim
- 07 92 00 Joint Sealants

08 OPENINGS

- 08 11 14 Metal Doors and Frames
- 08 44 13 Glazed Aluminum Framing Systems
- 08 71 00 Door Hardware

DRAWING LIST 7 pages

- COVER FBM PROJECT 2023-059
- A-100 SITE & FLOOR PLAN
- A-201 BUILDING ELEVATIONS
- A-501 SECTION DETAILS
- A-502 SECTION AND PLAN DETAILS
- A-551 PLAN DETAILS
- A-601 WINDOWS, SCREENS & CURTAIN WALLS

END OF DOCUMENT1 Page

SECTION 00 00 15 - DESCRIPTION OF WORK & LIST OF DRAWINGS

1. General

- 1.1 The work of this contract includes the provision of all materials, labour and equipment necessary to complete the Window Replacement at Sunnyside Elementary (Fort Sackville), to remove the existing Window and materials in areas as noted on the drawings and specifications prepared by **FBM Architecture**.
- 1.2 It is the intent of the Halifax Regional Centre for Education (HRCE) to have all work completed, to the point of Ready-for-Takeover, prior to August 27, 2024. It is expected that a timely award of this contract will enable the Contractor to facilitate shop drawing review and ordering of materials to allow commencement of work immediately after contract execution.
- 1.3 The whole of the work shall agree in all particulars with the levels, measurements and details contained in the drawings accompanying this specification and with such other drawings or information as may from time to time be supplied by the HRCE or may be supplied by the Contractor and reviewed by the HRCE.
- 1.4 In relation to the hours of work: Work for the HRCE is to be completed during hours when the schools are unoccupied, unless otherwise authorized in writing by the Project Manager (Operations Contact person) or designate. Hours of work shall comply with the local ordinances and bylaws for each site. (Refer Section 00 41 13, Section 3.7)

2. Drawings

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A-201	BUILDING ELEVATIONS	Page 3 of 7
A-501	SECTION DETAILS	Page 4 of 7
A-502	SECTION AND PLAN DETAILS	Page 5 of 7
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A-601	WINDOWS, SCREENS & CURTAIN WALLS	Page 7 of 7

END OF SECTION

SECTION 00 05 00 - LIST OF CONSULTANTS

Owner: Halifax Regional Centre for Education
33 Spectacle Lake Drive
Dartmouth, NS B3B 1X7

Nancy Rideout, Purchasing Manager
Office: (902) 464-2000 ext 2222
nrideout@hrce.ca

Consultant: FBM Architecture
HS1 – 1660 Hollis Street
Halifax, NS B3J 1V7

Shawn Doyle
Office: (902) 429-4100 ext 113
doyle@fbm.ca

END OF SECTION

SECTION 00 21 13 – INFORMATION FOR PROPONENTS

Invitation:

1. Proposal Call

- 1.1. The Halifax Regional Centre for Education (HRCE) will receive offers in the form of a two-file proposal from proponents which is signed and electronically received on or before the date and time specified on the cover sheet of this document. The email address to submit submissions and amendments is hrcetenders@hrce.ca. Both files should be submitted in Adobe (.pdf) format. If the electronic submission is larger than 20MB, proponents have the option of sharing files from google drive to hrcetenders@gnspe.ca. If you encounter difficulties kindly contact the HRCE Procurement team for further clarification.
- 1.2. Proposals received after the closing time will not be considered. The HRCE deems the submission date and time to be the email received date and time. Please ensure to allow sufficient time for your submission to be received by the HRCE before the 2pm close. Please consider that large files may require more time.
- 1.3. Proponents are to submit completed Request for Proposal (RFP) documents by email.

The technical submission electronic file should be named:

“Technical Submission_4195_Proponent Name”.

The second file (Price Submission) should be named:

“Price Submission_4195_Proponent Name”.

There must be no reference to the bid price within the technical submission.

Proponents can refer to item 11 in this section for more detailed submission instructions.

- 1.4. Proposals will be opened at the time indicated on the cover sheet of this document. Public openings are no longer held for any Tenders or RFPs relating to goods, services or construction for the HRCE. **The technical submission will be the only file opened during the RFP closing.** All proposal submissions are subject to evaluation after opening and before award of contract. The successful proponent and award amount will be posted on the Procurement Services website (<http://novascotia.ca/tenders/tenders/ns-tenders.aspx>) after award.

- 1.5. Amendments to the submitted offer will be permitted if received by email prior to bid closing and if endorsed by the same party or parties who signed and executed the offer.

If the amendment relates to the technical submission, the electronic file should be named
“Technical Submission Amendment_4195_Proponent Name”.

If the amendment relates to the price submission, the file should be named:

“Price Submission Amendment_4195_Proponent Name”.

The price amendment file submission should be the signed Price Amendment Form (Section 00 41 73) and shall not disclose either the original or revised total price.

- 1.6. Bid submissions **will not** be accepted by fax, mail, courier or hand delivery.

2. Intent

- 2.1. The intent of this Request for Proposals (RFP) is to obtain an offer to perform all work associated with **RFP #4195, Window Replacement at Sunnyside Elementary (Fort Sackville)** for a Stipulated Price Contract in accordance with the Contract Documents.
- 2.2. The HRCE will use the CCDC-2, 2020 for this work. A copy of the Standard Construction Contract CCDC 2 – 2020 is available upon request and will form part of the contract documents.
- 2.3. The HRCE Supplementary General Conditions for the CCDC-2, 2020, applicable to this work is available for review under Section 0073 00 of the RFP document.
- 2.4. Ready-for-Takeover (RFT) of the project is to be achieved on or before **August 27, 2024**, provided the contract is awarded within fifteen (15) business days after the RFP closing.
- 2.4.1. If the contract is not awarded within fifteen (15) business days of closing, the Ready-for-Takeover Date will be extended by one (1) business day, for every business day that passes, until the contract has been awarded.
- 2.4.2. Receipt of the award letter by the successful contractor does not constitute approval to begin work on site.
- 2.5. The HRCE does not guarantee the award of all areas, phases or any portion thereof.
- 2.6. The HRCE reserves the right to award individual areas or phases to one contractor or between multiple contractors.
- 2.7. The HRCE reserves the right to reduce the scope of work if the stipulated bid amount exceeds the budget for the relevant project.

3. Scope of work

- 3.1. Refer to Section 00 00 15 – Description of Work and List of Drawings and Section 01 11 00 Summary of Work.

4. Availability

- 4.1. RFP documents are available for download on the HRCE website:
<https://www.hrce.ca/about-hrce/financial-services/tenders/tender-listing>
- 4.2. RFP documents are made available only for the purpose of obtaining offers for this project. Their use does not confer a license or grant for other purposes.
- 4.3. The HRCE is not responsible for accuracy of documents obtained from any other source.

5. Examination

- 5.1. RFP documents are provided to the Construction Association of Nova Scotia (CANS).
- 5.2. Upon receipt of RFP documents, proponents are to verify that documents are complete.
- 5.3. Bidders are responsible to retrieve all RFP documents from the HRCE website and fully review the RFP requirements prior to the preparation of a bid submission.

6. Clarification and Addenda

- 6.1. Proponents must notify the Purchasing Manager, by email at nrideout@hrce.ca no less than **five (5)** working days before the RFP Closing regarding any questions, omissions, errors or ambiguities found in the documents. If HRCE considers that correction, explanation or interpretation is necessary, an addendum will be posted on the HRCE website.
- 6.2. Addenda will be issued no less than three (3) business days before the RFP closing date and will form part of the Contract Documents.
- 6.3. All RFP information must be confirmed by written addenda. The HRCE and its representatives shall not be bound by or be liable for any representation or information provided verbally. Information obtained by any other source is not official and will not bind the HRCE.
- 6.4. Proponents are to complete Price Submission Form (section 00 41 13) acknowledging each addendum that was issued.
- 6.5. Where the HRCE publishes an Addendum modifying the terms of the posting documents, or changing the Project or Contract Documents in any manner, the HRCE shall not be liable for any expense, cost, loss, or any form of damage or damages incurred or suffered; whether directly or indirectly, by any Supplier or any other person in connection with or in any way relating to or resulting from the publication of an Addendum, regardless of whether the publication occurs prior to or after a Supplier has submitted their bid submission.
- 6.6. All Addenda issued by HRCE shall become part of the Contract Documents, unless specifically excluded from the Contract Documents in writing. Addenda shall be allowed for in determining the total contract price.

7. Product/System Options

- 7.1.** Alternatives to specified products and systems will only be considered during the bidding period in the manner prescribed below.
- 7.1.1.** Where the RFP documents stipulate a particular product, alternatives may be considered by the Consultant up to five (5) working days before the RFP closing date and time. Bidders must forward their written requests by email to nrideout@hrce.ca. Requests will be forward to the appropriate person(s) for review.
- 7.2.** The submission must provide sufficient information to enable the Consultant to determine acceptability of such products. Request for an alternate product/system must be accompanied with:
- 7.2.1.** information about how the request affects other work in order to accommodate each alternate;
- 7.2.2.** the dollar amount of additions to or reductions from the Price Submission, including revisions to other work.
- 7.2.3.** A later claim by the bidder for an addition to the contract price because of changes in work necessitated by use of alternates shall not be considered.
- 7.3.** When a request to substitute a product is made and pursuant to consultation with the Consultant, HRCE may approve or disapprove the substitution. The bidder making the request will be notified of the HRCE's decision and if the alternate is approved, the HRCE will issue an addendum.
- 7.4.** Alternates must be submitted in the above manner; otherwise, they will not be accepted.

8. Mandatory Bidders' Site Meeting (Site Assessment)

- 8.1.** Bidders will be deemed to have familiarized themselves with the existing project site, working conditions and all other conditions which may affect performance of the Contract. No plea of ignorance of such conditions as a result of failure to make all necessary examinations will be accepted as a basis for any claims for extra compensation or an extension of time.
- 8.1.1.** A mandatory bidders' site meeting has been scheduled as per the information on the cover sheet of this document. All bidders are required to attend. Representatives of HRCE and the Consultant will be in attendance.
- 8.1.2.** Bidders must register their presence with the HRCE stating the name of the contractor they represent. Failure to attend and register will lead to non-acceptance of the proposal by HRCE. HRCE recommends that interested bidders ensure that their proposed subcontractors attend the mandatory site meeting.

9. Bidders Registration

- 9.1.** The successful contractor and sub-contractors must comply with the Nova Scotia Corporations Registration Act and/or Partnerships and Business Name Registration Act, or equivalent, before a contract is awarded.

10. Qualifications (Subcontractors/Other Tradespersons/Individuals)

- 10.1.** Bidders are fully responsible to the HRCE for the acts/omissions of subcontractors and of persons directly or indirectly employed or retained by them. Nothing contained in the contract documents shall create any contractual relation between any subcontractor and the HRCE. Subcontracting the contract shall not relieve the Bidder from any contractual obligations.
- 10.2.** Bidders must provide subcontractors with a copy of the RFP documents making subcontractors aware that the HRCE is not responsible for any payments to subcontractors, and that all actions, directions or claims are solely between the bidder and the subcontractor.
- 10.3.** The Contract, or any portion thereof, shall not be assigned nor sub-contracted without the prior written approval of HRCE, which approval may be withheld in the HRCE's sole discretion. When sub-contracting, successful bidder(s) must be prepared, if requested, to provide copies of billings from subcontractors.
- 10.4.** Successful bidder(s) shall only use additional subcontractors during the course of the contract with the prior written approval of the HRCE.
- 10.5.** The successful bidder(s) shall not re-assign the role of Project Manager to another individual other than the proposed Project Manager as indicated in the technical submission, without prior written approval from the HRCE.
- 10.6.** The successful bidder(s) shall at all times enforce strict discipline and good order among their employees and subcontractors and shall avoid any unfit person or any person not skilled in the work assigned to the employee.
- 10.7.** HRCE reserves the right to reject a proposed sub-contractor for a reasonable cause.
- 10.8.** Refer to GC 3.6 of CCDC-2020.

11. PROPOSAL SUBMISSION

11.1. RFP Proposal Package - A complete proposal package is comprised of the elements below:

11.2. Technical Submission and Price Submission - General

- 11.2.1.** Each proposal shall include a signed technical submission file and a signed price submission file, clearly labelled as previously instructed in Section 00 21 13, item 1.3.
- 11.2.2.** Both the Technical Submission files, and the separate Price Submission file, shall be submitted simultaneously.
- 11.2.3.** The Technical Submission file contents must not contain any reference to the bid price being offered for this project.
- 11.2.4.** The email subject line or body must identify the name of the proponent/company and the RFP name and number.
- 11.2.5.** Proponents shall be solely responsible for the delivery of their proposals in the manner and time prescribed.

11.3. Technical Submission Contents

- 11.3.1.** Technical submissions shall be submitted in a legible format, not to exceed 20 pages. Submissions will be on the proponent's letterhead and shall contain an authorized signature. Proposals shall be submitted in English, and shall be specifically prepared to meet the requirements of this project.

Total RFP Scoring:

Phase A – Technical Score	30 Points
Phase B – Pricing Score	70 Points
Phase C - Total RFP Score	100 Points

The technical submission response shall be organized into four sections:

Section I.	Project Experience and References
Section II.	Team Composition
Section III.	Management of Project Specific Risk
Section IV.	Schedule of Work

I. PROJECT EXPERIENCE AND REFERENCES.

The proponent is required to provide a detailed summary of their company's experience within the past sixty (60) months, by describing three (3) Window Replacement projects for an educational/commercial institution.

These projects should be within a 100 km radius of the Halifax Regional Municipality. These projects should be similar in nature, complexity and value to the requirements specified in this RFP (see Section 00 00 15).

If a proponent has completed projects for the HRCE, they are required to include the two most recent HRCE projects in this section (regardless of the date completed). It is the bidder's responsibility to source HRCE project information requested in this section.

Please note if the proponent fails to include relevant HRCE projects, this will negatively impact their technical score. **If a proponent has not completed prior work (at any time) for the HRCE, then they may select projects of their choosing within the other stipulated parameters.**

> For each of the three projects listed, the proponent is asked to provide:

- 1) the company name,
- 2) a brief description of the project,
- 3) the name of the project manager,
- 4) the dollar value of the project.
- 5) A reference contact name and title for this project, and
- 6) their email and phone number.

For HRCE projects, please provide the HRCE Project Manager's name; prior consent is not required.

Please ensure that non-HRCE references are aware they will be contacted, and that prior consent to be a reference was obtained.

RFP Scoring for this section:

SECTION I. PROJECT EXPERIENCE, BASED ON REFERENCE FEEDBACK		
Project 1	Project met budget and schedule.	2.00
	Good quality work and product.	1.00
	Well managed project and good communications.	2.00
Total Points Available for this Project		5.00
Project 2	Project met budget and schedule.	2.00
	Good quality work and product.	1.00
	Well managed project and good communications.	2.00
Total Points Available for this Project		5.00
Project 3	Project met budget and schedule.	2.00
	Good quality work and product.	1.00
	Well managed project and good communications.	2.00
Total Points Available for this Project		5.00
Total Points Available for Section I.		15.00

II. TEAM COMPOSITION.

The proponent is required to identify the key personnel who will be assigned to this project, these key personnel must remain with the project until completion. Please provide each employee’s name, title/role, and years of related experience.

Proponents are required to provide a detailed resume for the proposed Project Manager outlining professional qualifications and years of experience.

Please indicate the percentage of their time that will be committed to this project.

An ***example*** of a time commitment for this project could be:

Commitment	Key Personnel
100%	Foreman
50%	Site Supervisor
20%	Project Manager

RFP Scoring for this section is:

SECTION II. TEAM COMPOSITION	Score
Does the Project Manager have a minimum of 3 years of relevant experience?	2.00
Was a listing of key team members provided?	1.00
Was the percentage of commitment indicated and adequate?	2.00
Total Points Available for Section II.	5.00

III. MANAGEMENT OF PROJECT SPECIFIC RISK

Proponents shall identify a minimum of three (3) risks associated with this specific project. Risks that their company could be faced with related to the scope of work for this project. Proponents shall state the risk, risk mitigation strategy, responsible parties, and the impact to schedule or budget.

An example of a Project Specific Risk could be:

Risk Register Example			
Risk	Mitigation	Responsibility	Impact
Specified materials have long lead times.	1. Expedite delivery if available. 2. Source alternative equivalent materials that are readily available.	Contractor. Client and Consultant approval required.	Expedited delivery or alternative materials may increase cost and impact budget. Without mitigation the schedule will be impacted.

Standard safety risks covered by Safe Work Practices are not to be referenced here. The HRCE is looking for assurances that risks identified through the mandatory site meeting are identified and will be mitigated, and that potential delays or other risks are disclosed in the proposal.

RFP Scoring for this section is:

SECTION III. MANAGEMENT OF RISKS ASSOCIATED WITH THIS SPECIFIC PROJECT	Score
Did the proponent detail the 3 Project Specific Risks with mitigation strategies?	3.00
Are risk management responsibilities clearly identified and assigned?	1.00
Were appropriate risk impacts provided for the 3 stated risks?	1.00
Total Points Available for Section III.	5.00

IV. SCHEDULE OF WORK

Please provide a Gantt Chart that includes an appropriate amount of detail around the planning and scheduling needs for this project. The Gantt Chart should contain all the key activities and align with the work schedule. A successfully prepared Gantt Chart provides a clear visual representation of how the project and required tasks will be completed.

If the Ready for Takeover Date cannot be met, please communicate this to procurement as an RFI well before RFP close.

The HRCE expects to award this work within 15 days of close. Please ensure that the proposed schedule of work aligns with that timeframe.

RFP Scoring for this section is:

SECTION IV. SCHEDULE OF WORK	Score
Does the Gantt Chart include all required components? Is the schedule reasonable?	2.00
Does the schedule indicate project completion <i>before</i> the Ready for Takeover date? <i>If the Ready for Takeover date cannot be met, please submit a RFI prior to RFP close.</i>	3.00
Total Points Available for Section IV.	5.00

11.4. Price Submission Contents

11.4.1 The Price Submission is to be submitted on the forms provided by the HRCE (Section 00 41 13 – Price Submission Form). These forms are to be completed in full, with an authorized signature and corporate seal as applicable. The completed form shall be without interlineations, alterations or erasures.

Proponents are advised that the HRCE may request original documents be sent to the HRCE office for further review. Price submissions sent by fax, mail or hand delivered will not be accepted.

11.4.2 The pricing details are to be clearly indicated. The total contract price in both numbers (dollars and cents) and written words must be entered. Should there be a discrepancy between the two, the written words shall prevail.

11.4.1. The executed pricing offer is to be submitted on the forms **together with a scanned copy of the required bid security** by email.

11.4.2. Improperly completed information, and/or irregularities in the bid security, may be cause to declare the submission non-compliant.

The omission of bid security from the bid submission will result in the submission being deemed as non-compliant (Refer Section 14.1.10).

11.5. Proposal Evaluation

11.5.1. Evaluation Process – Compliant proposals will be evaluated, first during Phase A, and those meeting the minimum qualifying score under Phase A will then be evaluated in Phase B, with a final score determined in Phase C.

Phase A – Technical Score	30 Points
Phase B – Pricing Score	70 Points
Phase C - Total RFP Score	100 Points

11.5.2. Proposals that do not meet the minimum qualifying score for Phase A will not be given further consideration.

11.5.3. Proposals will be evaluated and scored by an evaluation team comprised of a minimum of three (3) representatives of the HRCE. The degree to which a proposal meets the proposal requirements will be determined at the sole discretion of the HRCE evaluation team.

11.5.4. Phase A – Technical Submission – The Technical Submission for compliant proposals will be evaluated using the evaluation criteria set out in the table below. Scores will be recorded for each criterion (rounded to two (2) decimal points) and a total qualifying score will be determined.

Refer 11.3.1	Phase A - Evaluation Criteria Technical Submission	Score
Section I.	Project Experience and References	15.00
Section II.	Team Composition	5.00
Section III.	Management of Project Specific Risks	5.00
Section IV.	Schedule of Work	5.00
Total Phase A - Potential total score - Technical Submission		30.00
Minimum score needed to pass technical		15.00

A minimum qualifying score of 15.00 points is required in Phase A for the proposal to be given further consideration.

All technical submissions that have met the minimum qualifying score will proceed to Phase B - Price Submission.

Technical submissions that score below the minimum qualifying score will not proceed further in the RFP evaluation process.

11.5.5. Phase B - Price Submission - Price Submission files for proponents whose Technical Submission have received fifteen (15.00) points or greater will be opened.

The Price Submission will have a weight of seventy (70.00) points.

Price submissions will be evaluated, and a Phase B score will be assigned to each proponent by using a proximity to lowest price method. In this method, proponents will be awarded points based on how close their total price submitted compares with the lowest cost of all total submissions.

Price Submissions will be Evaluated based on the Proponent’s Lump Sum Price.

For example:

Formula: Price Score = % value of score x (Low bid ÷ Your bid)

Example for calculation: Bid Pricing Received

Company P	Company Q	Company R	Company S	Company T
\$115,000	\$135,000	\$185,000	\$165,000	\$180,000

Calculation of Pricing Score for Company S:

Phase B Score = 70 points x (\$115,000 ÷ \$165,000) = 48.79 points

The Total Score (Phase C) will be calculated by adding together Phase A + Phase B scores.

11.5.6. The proponent who has the highest **TOTAL SCORE** (Phase C calculation), will be deemed to be the successful proponent, subject to other provisions herein, including Section 16.5.

Phase A – Technical Score	30 Points
Phase B – Pricing Score	70 Points
Phase C - Total RFP Score	100 Points

12. Conditions of the RFP Process

12.1. Proponents shall take full cognizance of content of all Contract Documents in preparation of their proposal. Section 00 41 13 – Price Submission Form, Subsection 5.0 references a complete list of Contract Documents.

13. Amendment or Withdrawal of Proposals

- 13.1.** Proposal packages may be **withdrawn** from the RFP process in writing by email notification sent to the submission email address, prior to date and time of closing.
- 13.2.** As previously stated in Section 00 21 13, item 1.6 - Amendments to the submitted offer will be permitted if received by email prior to the RFP closing time and if endorsed by the same party or parties who signed and executed the offer. If the amendment relates to the technical submission, it must be labeled "Technical Submission Amendment" along with the RFP number of the project and the company name. If the amendment relates to the price submission, it must be labeled "Price Submission Amendment" along with the RFP number of the project and the company name. The price amendment file must include the signed "Price Amendment Form" (Section 00 41 73).
- 13.3.** A single page Price Amendment Form is provided immediately following the Price Submission Forms (Section 00 41 73).
 - 13.3.1.1.** The Price Amendment Form provided is the standard master form for submission of any price amendments for this project.
 - 13.3.1.2.** The Price Amendment Form must be copied and completed, as directed, for any price amendments submitted.
- 13.4.** Price amendments shall not disclose either original or revised total price.

14. Proposal Ineligibility (Reason for Rejection)

- 14.1.** HRCE may reject a proposal which has been received prior to the closing time where:
 - 14.1.1.** The two file (electronic) system (Technical Submission and Price Submission) is not followed.
 - 14.1.2.** The price submission is not submitted on the required forms (Section 00 41 13) included herein.
 - 14.1.3.** The proposal is submitted by facsimile or regular mail or hand delivery.
 - 14.1.4.** There are omissions of information that the HRCE in its sole discretion deems to be significant.
 - 14.1.5.** The technical submission or price submission form is not signed as required.
 - 14.1.6.** The proposal has conditions attached which are not authorized by the invitation to bid.
 - 14.1.7.** The proposal fails to meet one or more standards specified in the invitation to bid.
 - 14.1.8.** All addenda have not been acknowledged.
 - 14.1.9.** Any other defect which, in the opinion of the HRCE brings the meaning of the proposal into question.

14.1.10. The required bid security is not provided within the Price Submission file.

14.1.11. Proponent failed to attend bidders' mandatory site meeting.

14.1.12. Proponent failed to list relevant HRCE project(s) in their Technical submission.

15. Communications Affecting Bids

15.1. Transmissions, including, but not limited to facsimile transmission:

15.1.1. The technical submission or price submission forms submitted by mail, fax or courier will not be accepted.

16. Right to Accept or Reject any Proposal

16.1. The HRCE reserves the right to reject any proposal in its sole and absolute discretion for any reason whatsoever and the HRCE will not necessarily accept the lowest bid.

16.2. The HRCE specifically reserves the right to reject all proposals if none are considered to be satisfactory in the HRCE's sole and absolute discretion and, in that event, at its option, to call for additional proposals.

16.3. Without limiting the generality of any other provision herein, the HRCE reserves the right to accept or reject any proposal in accordance with item #14 above (Proposal Ineligibility).

16.4. Notwithstanding the above, the HRCE shall be entitled, in its sole and absolute discretion, to waive any irregularity, informality or non-conformance with these instructions in any proposal received by the HRCE. The HRCE reserves the right to reject any or all proposals, or to accept any proposal, or portion thereof, deemed in its best interest.

16.5. In the event that more than one proponent achieves an identical final total score within two decimal places in Phase C, the HRCE will flip a coin to determine the successful contractor.

16.6. No term or condition shall be implied, based upon any industry or trade practice or custom or in a practice or policy of the HRCE or otherwise, which is inconsistent or conflicts with the provisions contained in these instructions.

17. Right to Cancel Competition/No Award

17.1. Issuing a RFP/RFT implies no obligation on HRCE to accept any submission, or a portion of any submission. The lowest or any RFP/RFT submission will not necessarily be accepted.

17.2. Without limiting the generality of the foregoing, an RFP/RFT may be cancelled in whole or in part by HRCE in its sole discretion, whether before or after the time for RFP/RFT submissions has closed, when:

17.2.1. The RFP/RFT submission price exceeds the funds allocated for the purchase;

17.2.2. There has been a material change in the procurement requirements after the RFP/RFT has been issued;

17.2.3. Information has been received by HRCE after issuance of the RFP/RFT that HRCE believes has materially altered the procurement or the need of HRCE for the procurement; or

17.2.4. There was insufficient competition in order to provide the level of service, quality of goods or pricing required.

17.3. If no compliant RFP/RFT submission is received in response to an RFP/RFT, the HRCE reserves the right to enter into negotiations with one or more suppliers in order to complete the procurement or to reject all Bids and re-issue the RFP/RFT on new or modified RFP/RFT Documents.

17.4. HRCE will be the sole judge of whether there is sufficient justification to cancel any RFP/RFT.

17.5. No action or liability will lie or reside against HRCE in its exercise of its rights under this section

18. Construction Contract Guidelines

18.1. The printed policies of the Nova Scotia Construction Guidelines dated May 18, 2006 (or latest revisions) are applicable to these RFP documents.

19. Submission and Security Forms – Signatures

19.1. All Price Submission forms, bid security forms and performance assurance forms **must** bear the Bidder's original signature and name HRCE as the insured.

20. Bid Security

20.1. Proponents must submit within the sealed Price Submission file, one of the following: bid security in the form of a certified cheque, Irrevocable Letter of Credit, or Bid Bond on CCDC Form 220, in the amount of ten percent (10%) of the Bid Price made payable to or naming HRCE (as obligee). This bid security **must** accompany the Price Submission as an electronic file. HRCE will request an original hard copy from the successful proponent as required.

20.2. Where bid bond is provided as bid security:

20.2.1. The bond must be provided on the standard CCDC Bid Bond Form (latest version) in the amount of not less than ten percent (10%) of the Bid Price.

20.2.2. The bond must be submitted by the general contractor bidder, signed and sealed by the principal (Contractor) and Surety and shall be with an established Surety Company satisfactory to and approved by the HRCE.

20.2.3. The cost of providing the Bid Bond must be included in the Bid Price.

20.2.4. A legible scanned copy of the bid bond or an electronic bid bond shall be submitted with the bid via email. If requested by the HRCE, the vendor will provide the original bid bond without delay.

20.3. Where a certified cheque or a bank draft is provided as bid security:

20.3.1. The certified cheque or bank draft must be endorsed in the name of HRCE, for a sum not less than ten percent (10%) of the amount of the Bid Price.

20.3.2. The cost of providing the certified cheque or bank draft must be included in the Bid Price.

20.4. Where the Irrevocable Standby Letter of Credit is used as bid security:

20.4.1. The letter must be endorsed in the name of HRCE, for a sum not less than ten percent (10%) of the Bid Price

20.4.2. The Irrevocable Standby Letter of Credit shall be issued by a certified financial institution subject to the Uniform Custom and Practices for Documentary Credit (1993 revision or latest revision), International Chamber of Commerce (Publication No. 500).

20.4.3. The cost of providing the letter must be included in the Bid Price.

20.4.4. **A legible scanned copy of the bid bond or an electronic bid bond can be submitted with the bid via email. If requested by the HRCE, the vendor is required to provide the original bid bond without delay.**

20.5. Return of Bid Security:

20.5.1. The bid security of the unsuccessful proponents will be returned to them after the contract has been signed, or previous to such time, at the discretion of HRCE.

20.5.2. If no contract is awarded, all bid security will be returned.

21. Contract Security (Performance Assurance) – Required for contracts valued over \$100,000

21.1. The performance assurance forms must bear the bidder's original signature and name HRCE as the insured.

21.2. The successful contractor shall maintain performance assurance in force for a period of not less than twelve (12) months after Ready-for-Takeover is achieved.

21.3. Performance Assurance must be endorsed as specified for bid security.

21.4. Should it become apparent that the final cost of the project will exceed the total amount payable by more than 20%, the bidder shall arrange to have their bonds reissued based on the projected final cost.

- 21.5.** Section 00 72 13 – General Conditions GC11.2 and Section 00 73 00 – Supplementary General Conditions for form of Contract Security. Proponents should reference the project documents for the amount of Contract Security and the alternate type of Contract Security if applicable.
- 21.6.** Performance Assurance must be submitted as one of the following:
- 21.6.1.** Where a Bid Bond was used as bid security:
- 21.6.1.1.** Within ten (10) days after notification of award of the Contract, the successful contractor must provide a Performance Bond and a Labour & Material Payment Bond, each in an amount equal to fifty percent (50%) of the amount of the Contract, naming HRCE.
- 21.6.1.2.** Performance Bond and Labour and Material Payment Bonds, submitted by the bidders, shall be provided at the expense of the bidder and shall be with an established Surety Company satisfactory to and approved by the HRCE.
- 21.6.2.** Where a certified cheque or bank draft is used as Contract Security:
- 21.6.2.1.** The certified cheque or bank draft submitted during the bid period will be cashed and the amount retained by the HRCE shall serve as Performance Assurance, including the payment of all obligations arising under the Contract.
- 21.6.2.2.** The value of the certified cheque or bank draft will be retained in lieu of the Performance Bond and Labour and Material Bonds, providing that, at Contract award, the successful contractor shall supplement their certified cheque or bank draft to maintain an amount of ten (10%) of the total amount payable (Contract Price plus HST) under the contract.
- 21.6.2.3.** The amount remaining will be returned without interest after a period of not less than twelve (12) months after Ready-for-Takeover is achieved.
- 21.6.2.4.** Where certified cheque or bank draft is used as Performance Assurance, the cost of providing the certified cheque or bank draft in the Contract price.
- 21.6.3.** Where an Irrevocable Standby Letter or Credit is used as Contract Security:
- 21.6.3.1.** The Irrevocable Standby Letter of Credit submitted during the bid period will be retained by the HRCE and shall serve as performance assurance, including the payment of all obligations arising under the contract. The Irrevocable Standby Letter of Credit shall be issued by a certified financial institution subject to the Uniform Customs and

Practices for Documentary Credit (1993 revision) International Chamber of Commerce (Publication No. 500).

- 21.6.3.2.** Where an Irrevocable Standby Letter of Credit is used as Performance Assurance, the cost of providing this letter should be included in the Contract Price. The contractor shall provide to the HRCE documentation throughout the duration of the contract that the Irrevocable Standby Letter of Credit remains in full effect at all times as specified.
- 21.6.3.3.** Upon expiry of the Irrevocable Standby Letter of Credit, a separate Irrevocable Standby Letter of Credit shall be provided for work requiring extended warranties for such amounts as are required by the contract.
- 21.6.3.4.** The Irrevocable Standby Letter of Credit is to be in effect for a period of not less than twelve (12) months after the Ready-for-Takeover is achieved.

22. Insurance

- 22.1.** Proponents shall refer to project documents for the amount of insurance, the duration of coverage and alternate type of insurance; if applicable.

Section 00 72 13 -General Conditions of Contract,
Section GC 11.1 – Insurance, and
Section 00 73 00 – Supplementary General Conditions for form of Insurance.

- 22.2.** The contractor shall carry such insurance as is required to protect the contractor, any sub-contractor, the HRCE, their agents and employees from all claims which may arise from the operations under this contract. The amounts of such insurance shall not be less than 22.3 below.

- 22.3.** The General Contractor shall secure and maintain, at its expense, during the term of the insurance:

- 22.3.1.** Wrap-Up Liability insurance must insure the general contractor(s) and all sub-contractors on this project:

- 22.3.1.1.** including but not limited to, products liability and completed operations, contractual liability, owners and contractors' liability, attached

machinery extension endorsement, and independent contractor, for a combined single limit of no less than \$5,000,000 (five million dollars) per occurrence.

- 22.3.1.2.** Wrap-Up Liability insurance is to include 24 months (2 years) of completed operations.
- 22.3.2.** Commercial Auto Liability insurance covering all owned, non-owned and hired vehicles for a minimum combined single coverage of \$2,000,000 (two million dollars) per occurrence.
- 22.3.3.** Builders Risk: All risks in the amount of the contract Stipulated Bid Price. Insurance requirements as stipulated in the CCDC 2-2020.
- 22.3.4.** Workers' Compensation to meet statutory requirements and/or Employers Liability, with limits of not less than \$2,000,000 (two million dollars).
- 22.3.5.** Contractors Pollution Liability Insurance limits of not less than \$2,000,000 (two million dollars) per occurrence
- 22.4.** Primary Insurance: The Contractor agrees that the insurance as required shall be primary and non-contributory.
- 22.5.** No Limitation: The Contractor is responsible for determining whether the minimum insurance coverage amounts contained in this RFP are adequate to protect its interests. These minimum coverage amounts do not constitute limitations upon Supplier's Liability.
- 22.6.** Endorsements – For the policies in item 22.3 above, there shall contain an endorsement naming the Halifax Regional Centre for Education and its affiliates as Additional Insured, and eliminating and removing any exclusion of liability for:

 - 22.6.1.** injury, including bodily injury and death to an employee of the insured or of the Halifax Regional Centre for Education, or
 - 22.6.2.** any obligation of the insured to indemnify, hold harmless, defend, or otherwise make contribution to the Halifax Regional Centre for Education because of damage arising out of injury, including bodily injury and death, to an employee of Halifax Regional Centre for Education.

- 22.7.** The Contractor shall provide a certificate of insurance evidencing the above prior to work being performed. The HRCE also requires a complete copy of the Builder's Risk and Wrap-Up Liability policies, in addition to the Certificate of Liability Insurance.
- 22.8.** Furthermore, HRCE must receive, in writing, at least thirty (30) days' notice of cancellation or modification of the above insurances. All insurance policies or certification documents shall specify coverage being applicable to this contract. The Contractor shall not do or omit to do or suffer anything to be done or omitted to be done which will in any way impair or invalidate such policy or policies of insurance.
- 22.9.** Insurance documents (certificate and policies) shall be provided to the Purchasing Department within the timeframe indicated on the award letter. These documents are required before a purchase order will be issued. Work is not authorized and shall not commence until receipt of the purchase order.

23. Proof of Competency of Proponent

- 23.1.** Any bidder may be required to furnish evidence satisfactory to the owner that he and his proposed sub-contractors have sufficient means and experience in the types of work called for to assure completion of the contract in a satisfactory manner.
- 23.1.1.** The successful contractor must be a member in good standing with CRCA, RCANS or NBRCA; and Nova Scotia Construction Safety Association or approved recognized association or program.

23.2. Proposal Signing

- 23.2.1.** The Technical Submission and the Price Submission form must be signed and under seal (as applicable) by a duly authorized signing officer(s) in their normal signatures.

23.3. Contract Time

- 23.3.1.** The bidder, in submitting an offer, agrees to achieve Ready-for-Takeover of the work by the date indicated in the contract documents.

24. Offer Acceptance / Rejection

24.1. Duration of offer

- 24.1.1.** Proposals shall remain open to acceptance and shall be irrevocable for a period of ninety (90) days after the RFP closing date.

24.2. Award/Selection/Acceptance of Offer

24.2.1. In the evaluation of a proposal, HRCE will consider, but not be limited to, the following criteria:

24.2.1.1. Compliance with proposal requirements

24.2.1.2. Proposal Evaluation Criteria as stated in Section 11.5

24.2.2. The Owner's evaluation of any and all proposals will be final

24.3. After acceptance by HRCE, the successful bidder shall be notified in writing of acceptance of the bid by way of an award letter.

25. Agreement

25.1. After acceptance, the HRCE and the successful proponent will enter into a CCDC-2, standard form of contract for the execution of the work.

25.2. A purchase order will be issued to the successful bidder once the contract has been signed and executed.

26. Post Award Submissions

26.1. Upon receipt of the award letter, the successful contractor will provide the following documents within five (05) business days:

26.1.1. A current Certificate of Recognition or Letter of Good Standing - The Contractor will supply a Certificate of Recognition issued jointly by the Workers' Compensation Board of Nova Scotia and an occupational health and safety organization approved by the Workers' Compensation Board of Nova Scotia (such as the Nova Scotia Construction Safety Association). These approved organizations are currently listed on the Workers' Compensation Board of Nova Scotia website (www.wcb.ns.ca). The contractor shall remain in good standing for the duration of the contract.

The Contractor shall supply the following:

26.1.1.1. Worker's Compensation Coverage – The Contractor shall supply a clearance letter from the Worker's Compensation Board of Nova Scotia, indicating the Contractor is assessed and in good standing;

26.1.1.2. Certificates of good standing with CRCA (Canadian Roofing Contractors Association) and RCANS (Roofing Contractors Association of Nova Scotia);

26.1.1.3. All required contract security and insurance documentation;

26.1.1.4. A completed Schedule of Values (see Section 01 37 00);

26.1.1.5. A completed Safety Plan; and,

26.1.1.6. A detailed listing of subcontractors to be used.

- 26.1.2.** In the event that any such certification during the term of the contract expires, the obligation remains with the Contractor to provide the updated required certificates.
- 26.1.2.1.** The Contractor and subcontractors (if applicable) shall remain in good standing for the duration of the contract.

27. Taxes

- 27.1.** The General Conditions of the Contract state that the Contractor is to pay all Harmonized Sales Tax (HST).
- 27.2.** The HRCE is not exempt from HST. As a result, the aggregate amount of the bid for contracts is subject to HST; however, **prices submitted shall not include HST.**
- 27.3.** The HST payable by the HRCE will be added as a separate item during the processing of progress payments and therefore **HST will not appear as a cost in the aggregate amount of the bid amount.**
- 27.4.** Proponents are advised that they may be eligible to claim an Input Tax Credit (ITC) for a portion of the HST paid in relation to the contract requirement of the Government of Canada.
- 27.5.** Proponents are to note that prices indicated on the Price Submission Form and the amendments to the Price Submission Form shall not include Provincial Sales Taxes, the Federal Goods and Services Tax or the Harmonized Sales Tax.
- 27.6.** Refer to CCDC-2 (Section 00 72 13) and Supplementary General Conditions (Section 00 73 00).

28. Proponent Debriefing

- 28.1.** HRCE will, if requested by a proponent within fifteen (15) days of notice of RFP award, arrange a debriefing for the purpose of informing the bidder why their proposal was not selected. At least two (2) HRCE staff shall attend the de-briefing.

The purpose of the de-briefing will be to discuss the proponent's scoring, answer questions and identify any weak areas in the proponent's submission in order for the proponent to improve future bid submissions. HRCE will not divulge details contained in any proponent's proposal with other proponents or overall ranking.

29. Purchase Orders

- 29.1.** The purchase order will be issued by the HRCE Purchasing Department once the CCDC-2 Contract Documents have been fully executed by all parties.

30. Invoices

- 30.1.** The purchase order number and HST number shall be noted on any/all invoices related to all work performed under this contract.

- 30.2.** Applications for progress payments should be submitted to HRCE's consultant and cc'd to operations-invoices@hrce.ca as well as HRCE's Project Manager (Operations Contact) identified on the RFP cover page.

END OF SECTION 00 21 13

SECTION 00 41 13 – PRICE SUBMISSION FORM

1. Salutation:

**To: HALIFAX REGIONAL CENTRE FOR EDUCATION
33 SPECTACLE LAKE DRIVE, DARTMOUTH, NS B3B 1X7
ATTN: NANCY RIDEOUT, PURCHASING MANAGER**

For: #4195 Window Replacement – Sunnyside Elementary (Fort Sackville)

Organization Name:	
Street Address:	
Email Address:	
Telephone:	
Authorized Signing Authority:	
Position Title:	

2. Proponent Declares:

- 2.1.** That this submission was made without collusion or fraud.
- 2.2.** That the proposed work was carefully examined.
- 2.3.** That the Proponent is familiar with local conditions.
- 2.4.** That Contract Documents and Addenda were carefully examined.
- 2.5.** That all the above were taken into consideration in preparation of this RFP.

3. Proponent Agrees:

- 3.1.** To provide all necessary equipment, tools, labour, incidentals and other means of construction to do all the work and furnish all the materials of the specified requirements which are necessary to complete the work in accordance with the Contract and agrees to accept, therefore, as payment in full the Lump Sum Price stated in Subsection 6 hereunder.

- 3.2. The have carefully examined the site of the work described herein; have become familiar with local conditions and the character and the extent of the work; have carefully examined every part of the proposed Contract and thoroughly understand its stipulations, requirements and provisions.
- 3.3. The have determined the quality and quantity of materials required; have investigated the location and determined the source of supply of the materials required; have investigated labour conditions; and have arranged for the continuous prosecution of the work herein described.
- 3.4. To be bound by the award of the Contract and if awarded the Contract on this bid price, to execute the required contract within fifteen (15) days after notice of award.
- 3.5. They have noted that the Harmonized Sales Tax is excluded from the "Contract Price".
- 3.6. The Contractor's employees shall always report to the main office of a school, indicate who they are, and state their purpose on site prior to starting any work in the school.
- 3.7. ***To the hours of work, defined as: Work for the HRCE is to be completed during hours when schools are unoccupied, unless otherwise authorized in writing by the Project Manager (Operations Contact person) or designate. Hours of work shall comply with local ordinances and bylaws for each site.***
 - 3.7.1. No work shall be conducted on weekends or statutory holidays without specific written approval from the Operations Manager or designate.
 - 3.7.2. In the event that work is requested by HRCE during hours when schools are occupied, the work will be limited to work that is not disruptive to the school. There shall be no mechanical removals, no drilling, screwing or torch work during occupied hours without prior written approval from HRCE.

4. Owner Agrees

- 4.1. To examine this proposal and in consideration, therefore, the proponent hereby agrees not to revoke this bid:
 - 4.1.1. until some other proponent has entered into the Contract with the HRCE for the performance of the work and the supply of the materials specified in the notice inviting proposals; or in the Information to Proponents, or
 - 4.1.2. until ninety (90) days after the time fixed in the Information to Proponents for receiving bids has expired, or
 - 4.1.3. Whichever first occurs; provided, however, that the Proponent may revoke this proposal at any time before the time fixed as indicated in the section 00 21 13, item 13.1.

5. Contract Documents include:

The HRCE will use the CCDC-2, 2020 for this work. A copy of the Standard Construction Contract CCDC 2 – 2020 is available upon request and will form part of the Contract Documents.

The HRCE Supplementary General Conditions for the CCDC-2, 2020 application to this Work is available for review under Section 0073 00 of the RFP document.

- 5.1.1. Cover Page
- 5.1.2. Table of Contents – Section 00 00 10
- 5.1.3. Description of Work & List of Drawings – Section 00 00 15
- 5.1.4. List of Consultants – Section 00 05 00
- 5.1.5. Information for Proponents – Section 00 21 13
- 5.1.6. Price Submission Form – Section 00 41 13
- 5.1.7. Price Amendment Form (if applicable) – Section 00 41 73
- 5.1.8. Agreement Between Owner and Contractor (CCDC 2) – Section 00 52 00
- 5.1.9. Definitions (CCDC 2) – Section 00 52 13
- 5.1.10. General Conditions of the Stipulated Contract Price (CCDC 2) – Section 00 72 13
- 5.1.11. Supplementary General Conditions – Section 00 73 00
- 5.1.12. Specifications of Work (all applicable sections)
- 5.1.13. Drawing(s) – as applicable
- 5.1.14. Addenda issued by HRCE
- 5.1.15. Post Bid Addenda issued by the HRCE, where applicable.
- 5.1.16. Executed Contract

6. Price Submission - Contract Price:

- 6.1. The undersigned Proponent, having carefully read and examined the aforementioned Contract Documents prepared by the Consultant, for the Halifax Regional Centre for Education, hereby accepts the same as part and parcel of the Contract herein referred to, and having carefully examined the locality and site of works and having full knowledge of the work required and of the materials to be furnished and used, does hereby propose and offer to enter into a contract to perform and complete, the whole of the said works and provide all necessary labour, plant, tools, materials and equipment and pay all applicable taxes, as set forth and in strict accordance with the Specifications, Drawings and other Contract Documents and to do all therein called for on the terms and conditions and under the provisions therein set forth for the following:

6.2 LUMP SUM PRICE

#4195 Window Replacement – Sunnyside Elementary (Fort Sackville)

_____ /100 Dollars (\$_____)
(HST Excluded)

Contract Price to be completed in written form on the lines provided above, with cents expressed as numerical fraction of a dollar. Contract price to be completed in numerical form on the line bounded by parenthesis above, with cents expressed as a decimal of a dollar.

Price Submissions will be Evaluated based on the Proponent’s Lump Sum Price.

WHERE THERE IS A CONFLICT, WRITTEN WORD WILL GOVERN.

Award will be subject to Budget Availability.

The HRCE reserves the Right to:

Award to one or more contractors who bid.

Accept bids on any or all sections of this work.

Reduce the Scope of Work if the Bid amount Exceeds the Available Budget.

6.3 SEPARATE PRICE

This separate price, as detailed below, is **not** to be included in the Lump Sum Price as detailed above (6.1 – Contract Price). It will be added only on the instruction and at the sole discretion of the HRCE, for which the contract will be adjusted, equal to the separate pricing detailed below (price to exclude HST). Award of the separate price will be determined based on budget availability.

PRICE FOR TWO (2) ADDITIONAL WINDOWS – Drawing Sections W5 and W6

_____ /100 Dollars (\$_____)
(HST Excluded)

6.4 INDIVIDUAL PRICE – EACH ELEVATION

The lump sum price provided in Section 6.2 represents the total price to complete this window project in its entirety. The HRCE acknowledges that there are inherent costs savings and economies of scale achieved when awarding all elevations to a single bidder.

In the event that partial award is required, please provide pricing per each individual section as listed below. Each price is to include all management costs (administration, mobilization, etc.) as required to perform the entirety of the work for that specific elevation. The HRCE acknowledges that management costs are higher on a per section basis, compared to management costs associated with all sections priced as one lump sum.

The expectation is that the pricing provided below represents the entire price to complete that specific section/elevation, should it be the only section awarded. The pricing provided here will not be used in the calculation of the RFP scoring, see Section 6.2 Lump Sum Price.

NORTH ELEVATION

_____ /100 Dollars (\$ _____)
(HST Excluded)

SOUTH ELEVATION

_____ /100 Dollars (\$ _____)
(HST Excluded)

EAST ELEVATION

_____ /100 Dollars (\$ _____)
(HST Excluded)

WEST ELEVATION

_____ /100 Dollars (\$ _____)
(HST Excluded)

Signature * The undersigned Proponent declares that this bid is made without connection to any other person(s) submitting pricing for the same work and is in all respects fair and without collusion or fraud.

RFP #4195 Window Replacement – Sunnyside Elementary (Fort Sackville)

SIGNATURE:

SIGNED AND DELIVERED
in the presence of:

Witness

CONTRACTOR

Company name

Signature of Signing Officer

Name and Title (printed)

Date

9. Acknowledgement of Student Safety

The Halifax Regional Centre for Education (HRCE) is directly responsible for the safety of its students and staff. Should contractors be required to work in or on school property while children are present, it is a **mandatory HRCE requirement** that contractors assign the work to employees and/or sub-contractors who do not have a criminal record and who are not listed on the Child Abuse Registry. Failure to comply with this requirement may result in immediate contract termination.

The HRCE reserves the right to demand, at any time, during the full term of the project a Criminal Record Check and/or a Child Abuse Registry Check, on any personnel authorized by the Contractor to be on HRCE work/school sites.

By signing below, you are confirming that you understand and will abide by this mandatory HRCE requirement.

Witness

Company name

Signature of Signing Officer

Name and Title (printed)

Date

END OF SECTION 00 41 13

SECTION 00 41 73 - PRICE AMENDMENT FORM
#4195 Window Replacement
Sunnyside Elementary (Fort Sackville)

Note: to be completed and forwarded for each Price amendment prior to RFP closing time and date as detailed on the cover sheet of the RFP document and any applicable addenda.

Lump Sum Price Amendment – Section 00 41 13 Price Submission form, Article 6.1. Contract Price

Increase Price by		Decrease Price By	
Amount (excluding HST)	\$	Amount (excluding HST)	\$

It is the Proponent's responsibility to ensure the table above is legible.

Submitted by:

Company Name (please print as it appears on original RFP file)

Authorized Proponent's Name (please print as it appears on Price Submission Form)

Authorized Proponent's Signature

Date

END OF SECTION 00 41 73

SECTION 00 52 00 - AGREEMENT BETWEEN OWNER AND CONTRACTOR
CCDC 2 – 2020

(A copy of Section 00 52 00, Standard Construction Contract CCDC 2 – 2020 (5 pages) is available upon request, otherwise, will form part of the contract sets to the successful bidder)

END OF SECTION 00 52 00

SECTION 00 52 13 - DEFINITIONS
CCDC 2 - 2020

(A copy of section 00 52 13, Standard Construction Contract CCDC 2 – 2020 (2 pages) is available upon request, otherwise, will form part of the contract sets to the successful bidder)

END OF SECTION 00 52 13

SECTION 00 72 13 - GENERAL CONDITIONS
OF THE STIPULATED PRICE CONTRACT
CCDC 2 - 2020

(A copy of section 00 72 13, Standard Construction Contract CCDC 2 – 2020 (22 pages) is available upon request, otherwise, will form part of the contract sets to the successful bidder)

END OF SECTION 00 72 13

SECTION 00 73 00 - SUPPLEMENTARY GENERAL CONDITIONS CCDC2 – 2020

The Canadian Standard Construction Document for Stipulated Price Contract (CCDC 2, 2020 version), Definitions and General Conditions governing same, shall be used by the project. The following Supplementary General Conditions (the “**Supplementary Conditions**”) are intended to Supplement or Amend the General Conditions, and where conflicts occur, the Supplementary Conditions shall take precedence.

Where a General Condition or paragraph of the General Conditions of the Stipulated Price Contract is Deleted by these Supplementary Conditions, the numbering of the remaining General Conditions or paragraphs shall remain unchanged, and the numbering of the Deleted item will be retained, unused.

2 ARTICLE A-5 PAYMENT

Change 5.2.1 to delete the letter “s” from the word “rates”.

Change 5.2.1(1) to read: "1% per annum above the prime rate."

Delete 5.2.1(2) in its entirety.

Delete 5.2.2. in its entirety.

DEFINITIONS

Add the following defined term to the Definitions:

Submittals

Submittals are documents or items required by the Contract Documents to be provided by the Contractor, such as:

1. Shop Drawings, samples, models, mock-ups to include details or characteristics, before the portion of the Work that they represent can be incorporated into the Work; and
2. As-built drawings and manuals to provide instructions to the operation and maintenance of the Work.

3 GC 1.1 CONTRACT DOCUMENTS

Add to the end of subparagraph 1.1.6.2:

1.1.6.2 Except where the Consultant shall be indemnified as a third party beneficiary as provided in subparagraphs 9.2.7.4, 9.5.3.4 and in 13.1.1.3.

Add subparagraph 1.1.4.1:

1.1.4.1 Notwithstanding GC 1.1.4, should one or more conflict exist between Contract Documents and any work is done without consulting the Consultant for correction, Additional information, or a finding, the Contractor shall assume full and sole responsibility for any Additional costs incurred related to the conflict(s).

4 GC 2.4 DEFECTIVE WORK

Add new subparagraphs 2.4.1.1 and 2.4.1.2:

2.4.1.1 The Contractor shall rectify, in a manner acceptable to the Owner and the Consultant, all defective work and deficiencies throughout the Work, whether or not they are specifically identified by the Consultant.

2.4.1.2 The Contractor shall prioritize the correction of any defective work which, in the sole discretion of the Owner, adversely affects the day to day operation of the Owner.

5 PART 3 EXECUTION OF THE WORK

6 GC 3.1 CONTROL OF THE WORK

Add new paragraphs 3.1.3 and 3.1.4:

3.1.3 Prior to commencing individual procurement, fabrication, and construction activities, the Contractor shall verify, at the Place of the Work, all relevant measurements and levels necessary for proper and complete fabrication, assembly and installation of the Work and shall further carefully compare such field measurements and conditions with the requirements of the Contract Documents. Where dimensions are not included or contradictions exist, or exact locations are not apparent, the Contractor shall immediately notify the Consultant before proceeding with any part of the affected work.

3.1.4 The Contractor shall make all reasonable efforts to ensure that the Work is carried out in a continuous manner. The Contractor shall not knowingly permit Construction Equipment and/or Products to be stored at the Place of Work when they are not being used in connection with or implemented into the Work, except in accordance with paragraph 3.7.7.1.

7 GC 3.6 SUBCONTRACTORS AND SUPPLIERS

Add the following paragraph 3.6.7:

3.6.7 A copy of the agreement between Contractor and any subcontractor(s) shall be provided to the Owner and the Consultant, if so requested.

8 GC 3.7 LABOUR AND PRODUCTS

Add the following paragraph 3.7.4:

3.7.4 The Contractor is responsible for the safe on-site storage of Products and their protection (including Products supplied by the Owner and other contractors to be installed under the Contract) in such ways as to avoid dangerous conditions or contamination to the Products or other persons or property and in locations at the Place of the Work to the satisfaction of the Owner and the Consultant. The Owner shall provide all relevant information on the Products to be supplied by the Owner.

Add the following paragraph 3.7.5:

3.7.5 The Contractor shall confine Construction Equipment, Temporary Work, storage of Products, waste products and debris, and operations of employees and Subcontractors to limits indicated by laws, ordinances, permits, or the Contract Documents and shall not unreasonably encumber the Place of the Work.

Add the following paragraph 3.7.6:

3.7.6 The Contractor shall maintain the Work in a safe and tidy condition and free from accumulation of waste products and debris.

Add the following paragraphs 3.7.7.1 and 3.7.7.2:

3.7.7 .1 The Contractor shall not permit Products or Construction Equipment to be stored at the Place of Work unless:

(i) the Products and/or Construction Equipment are used within fourteen (14) days of their arrival at the Place of Work; or

(ii) the Owner provides written permission for Products and/or Construction Equipment to be stored at the Place of Work, in which case the Contractor shall comply with the written instructions provided by the Owner in that regard, and said permission may be withdrawn by the Owner upon five (5) business days' notice, in which case the Contractor will be solely responsible for any costs, losses, or damages the Contractor incurs in connection the withdrawal of said permission;

.2 Notwithstanding any other provision of the Contract Documents, and subject only to the provisions of any Payment Legislation, the Owner shall not be liable to pay any amount greater than 25% of the actual cost of any Products and/or costs associated with Construction Equipment that is/are stored at the Place of Work and not used within 14 days of their arrival at the Place of Work. The Owner shall only become liable to pay for the remainder of said Products and/or costs of said Construction Equipment after those Products and/or Construction Equipment are actually used at the Place of Work and is/are invoiced in accordance with the terms of the Contract Documents.

Add the following paragraphs 3.7.8.1., 3.7.8.2, 3.7.8.3, and 3.7.8.4:

3.7.8 The Contactor shall:

.1 furnish competent and adequate labour and staff, who shall be in attendance at the Place of Work at all times, as necessary, for the proper administration, co-ordination, supervision, and superintendence of the Work;

.2 organize the procurement of all Products and Construction Equipment so that labour and staff will be available at the requisite times to complete the Work in accordance with GC 3.4 Construction Schedule;

.3 keep an adequate force of skilled workers at the Place of Work, as necessary, to complete the Work in accordance with all requirements of the Contract Documents and in accordance with GC 3.4 Construction Schedule; and

.4 provide the Owner, Project Manager, and Consultant, with the names, work addresses, and telephone numbers of the appointed representative of the Contract and other responsible field persons who may be contacted during non-working hours.

9 GC 3.8 SHOP DRAWINGS AND OTHER SUBMITTALS

Add the words “AND OTHER SUBMITTALS” to the Title after SHOP DRAWINGS in GC 3.8.

Add “and Submittals” after each instance of the words “Shop Drawings” in paragraphs 3.8.1, 3.8.2, 3.8.3, 3.8.3.2, 3.8.5, 3.8.6, and 3.8.7.

Add the following paragraph 3.8.1.1:

3.8.1.1 Prior to the first application for payment, the Contractor and the Consultant shall jointly prepare a schedule of the dates for submission and return of Shop Drawings and any Submittals.

Add the following subparagraph 3.8.4.1:

3.8.4.1 The following paragraph shall apply to each Shop Drawing and Submittal reviewed in connection with the project. The Consultant’s review conducted pursuant to GC 3.8.3 shall not imply that the Consultant has approved the detailed design inherent in the Shop Drawings or Submittals, responsibility for which shall remain with the Contractor submitting same. The Contractor is responsible for information that pertains solely to fabrication processes or to techniques of construction and installation, and for coordination of the work of all sub trades.

Delete the following words in paragraph 3.8.7:

3.8.7 “with reasonable promptness so as to cause no delay in the performance of the Work” and replace those words with: “within ten (10) working days or such longer period as may be reasonably required”.

Add new GC 3.9 as follows:

10 GC 3.9 CONTRACTOR RESPONSIBILITY FOR WATER TIGHTNESS

GC 3.9 The Drawings and Specifications are not intended to depict each and every condition or detail of construction. As the knowledgeable party in the field, the contractor is in the best position to verify that all construction is completed in a manner which will provide a watertight structure.

The contractor has the sole responsibility for ensuring the watertight integrity of the structure.

Add new GC 3.10 as follows:

11 GC 3.10 PERFORMANCE BY CONTRACTOR

GC 3.10 In performing the Work and all its services and obligations under the Contract, the Contractor shall exercise a standard of care, skill and diligence that would normally be provided by an experienced and prudent contractor supplying similar services for similar projects. The Contractor acknowledges and agrees that throughout the Contract, the Contractor's obligations, duties and responsibilities shall be interpreted in accordance with this standard. The Contractor shall exercise the same standard of due care and diligence in respect of any products, personnel, or procedures which it may recommend to the Owner.

The Contractor further represents, covenants and warrants to the Owner that:

1. The personnel it assigns to the Project are appropriately experienced;
2. It has sufficient staff of qualified and competent personnel to replace its designated supervisor and project manager, subject to the Owner's approval, in the event of death, incapacity, removal or resignation.

12 GC 4.1 CASH ALLOWANCES

Delete paragraph 4.1.7 in its entirety and substitute:

4.1.7 At the commencement of the Work, the Contractor shall prepare for the review and acceptance of the Owner and the Consultant a schedule indicating the times, within the construction schedule referred to in GC 3.4, at which items called for under cash allowances and items that are specified to be purchased by the Owner and installed or hooked up by the Contractor are required to be at the Place of the Work to avoid delaying the progress of the Work.

Add new paragraph 4.1.8:

4.1.8 The *Owner* reserves the right to call, or to have the Contractor call, for competitive bids for portions of the Work, to be paid for from cash allowances.

13 GC 5.1 FINANCING INFORMATION REQUIRED OF THE OWNER

Delete section GC 5.1 in its entirety.

14 GC 5.2 APPLICATION FOR PROGRESS PAYMENT

Add to paragraph 5.2.1, “, the Project Manager,” after the word “Owner”.

Add the following at the end of paragraph 5.2.2:

5.2.2 Such applications shall be accompanied by one or more of the following documents: a Statutory Declaration, Waiver of Lien, or receipt, stating that the holdback monies claimed have been paid to the particular party or parties so named or referred to therein. The form of the Statutory Declaration, Waiver of Lien, or receipt shall meet the approval of the Consultant.

Add the following paragraph 5.2.9:

5.2.9 The reference to payment for Products delivered to the Place of the Work in Article 5.2.8 shall not be construed as covering day-to-day financing of the Project. Products delivered to the Place of the Work shall be construed to mean major items of equipment or quantities of items that are essential for the expedient conduct of the Work.

Add the following paragraph 5.2.10:

5.2.10 The Contractor shall submit all applications for payment and invoices (with supporting documents as required by the Contract Documents) to the Owner via the following email address: operations-invoices@hrce.ca.

15 GC 5.3 PAYMENT

Supplement paragraph 5.3.1 by adding the following:

5.3.1 A holdback percentage of ten (10) percent (%) shall apply to progress payments. The sworn statement by the Contractor for release of holdback monies shall be in the form of a Statutory Declaration meeting the approval of the Consultant. Amounts as certified by the Consultant to rectify deficiency items, or incomplete portions of individual work items, may be retained by the Owner after Substantial Performance has been obtained, pending Total Performance of the work or other authorization for release by the Consultant.

Amend subparagraph 5.3.1.2 as follows:

5.3.1.2 Delete "28" and replace with "30."

16 GC 5.4 SUBSTANTIAL PERFORMANCE OF THE WORK AND PAYMENT OF HOLDBACK

Add the following paragraph 5.4.7:

5.4.7. Before the Contractor submits his application for Substantial Performance of the Work, all Operations and Maintenance Manual materials shall be submitted in accordance with the Contract Documents. The Certificate of Substantial Performance will not be issued until this requirement is met.

Add the following subparagraph 5.4.8:

5.4.8 After the issuance of a certificate of Substantial Performance of the Work by the Consultant, the Contractor shall promptly submit to the Consultant and the Owner (i) a Certificate from a barrister stating that there are no Builders' Liens filed relating to the Work and (ii) a Clearance Letter from the Workers' Compensation Board.

17 GC 5.5 FINAL PAYMENT

Add the following subparagraphs 5.5.1.1, 5.5.1.2, 5.5.1.3, and 5.5.1.4:

5.5.1.1 The Contractor's application for final payment is considered to be valid only when all of the following have been performed:

1. Work has been completed and inspected for compliance with Contract Documents, and the Consultant is satisfied that all the requirements of the Contract have been fulfilled by the Contractor.
2. Defects have been corrected, deficiencies have been completed, and the Place of Work is (i) free of waste products and debris, and (ii) clean and suitable for use or occupancy by the Owner.
3. Equipment and systems have been tested, adjusted and balanced and are fully operational, and written reports as outlined in the Contract Documents have been provided to the Consultant.
4. Certificates required by Utility companies, manufacturer's representative and inspectors have been submitted.
5. Spare parts, maintenance materials, warranties and bonds have been provided.

5.5.1.2 If Work is deemed incomplete by the Consultant, the Contractor shall complete outstanding items and request re-inspection.

5.5.1.3 If, within sixty (60) days after the issuance by the Consultant of the Certificate of Substantial Performance, the Contractor has not corrected all the deficiencies, the Owner will retain sufficient money to cover the cost of completing said deficiencies, as determined by the Consultant, in

addition to holding monies retained in accordance with the Contract Documents and subject to the provisions of the Builders' Lien legislation of Nova Scotia.

5.5.1.4 Neither the final certificate nor the payment thereunder, nor any provision in the Contract Documents shall relieve the Contractor from responsibility for faulty material or workmanship which shall appear within a period of one (1) year from the date when Ready-For-Takeover has been attained and the Contractor shall promptly remedy any defects due thereto and pay for any damage to other Work resulting therefrom which shall appear within such period of one year. The Owner shall give notice of observed defects reasonably promptly. This article shall not be deemed to restrict any liability of the Contractor arising out of any law in force in the Province of Nova Scotia.

18 GC 6.2 CHANGE ORDER

Add the following paragraphs 6.2.3, 6.2.4, 6.2.5, 6.2.5, 6.2.6, 6.2.7, and 6.2.8:

- 6.2.3 All contemplated changes in the work shall be issued by the Consultant on a "Contemplated Change Order" form.
- 6.2.4 For lump sum pricing, the Contractor shall, upon receipt of the Contemplated Change Order, submit to the Consultant for approval within seven (7) days, a quotation for changes in the work. The Contractor acknowledges that failure to do so will result in foreseeable delay to the approval and payment of changes in the Work and foreseeable Additional costs to the Owner.
- 6.2.5 Quotation for changes shall be priced in sufficient detail (GC 6.6 applies).
- 6.2.6 Consultant shall, within five (5) working days, notify the Contractor whether estimates are accepted by Owner or further information is required. Acceptance of the Owner shall be indicated in writing, and a signed copy of the Contemplated Change Order form shall be returned to the Contractor.
- 6.2.7 The Contractor shall take reasonable measures to stop Work or minimize the Work in areas affected by or related to the contemplated change(s).
- 6.2.8 For each change in the Work, the Contract Price shall be increased by the net cost of that change in the Work, plus the following mark-ups for all overhead and profits:
- a. a 10% mark-up on the direct cost of the net change in the Work for change work performed by the Contractor's own forces; and
 - b. a 5% mark-up on the change work performed by Subcontractors.

Credits for reduced or Deleted portions of the Work shall be the actual cost of that Work, without Addition or subtraction of any amount by the Contractor for overhead and profit, and shall be included in the actual cost of the net change.

19 GC 6.3 CHANGE DIRECTIVE

Delete paragraph 6.3.6.3 of GC 6.3 and replace with:

6.3.6.3. The Contractor's percentage fee referred to in paragraphs 6.3.6.1 and 6.3.6.2 shall be calculated and determined applying the following percentage mark-ups for overhead and profit:

- a. a 10% mark-up on the direct cost of the net change in the Work for change work performed by the Contractor's own forces; and
- b. a 5% mark-up on the change work performed by Subcontractors.

Add to GC 6.3 the following paragraphs 6.3.14 and 6.3.15:

6.3.14 If unit prices are set out in the Contract or subsequently agreed upon, then the unit process alone shall govern in relation to determining the cost of any item for a Change Directive.

6.3.15 Payment of the cost of performing work attributable to a Change Directive shall be made only if and to the extent that the Contractor has taken all reasonable steps to mitigate and minimize the impact of the change and the resulting cost.

20 GC 6.4 CONCEALED OR UNKNOWN CONDITIONS

Add new paragraph 6.4.5:

6.4.5 The *Contractor* confirms that, prior to bidding the *Project*, it carefully investigated the Place of the Work and applied to that investigation the degree of care and skill described in paragraph 3.10, given the amount of time provided between the issue of the bid documents and the actual closing of bids, the degree of access provided to the Contractor prior to submission of bid, and the sufficiency and completeness of the information provided by the Owner. The Contractor is not entitled to compensation or to an extension of the Contract Time for anything which could reasonably have been ascertained by the Contractor by such careful investigation undertaken prior to the submission of the bid.

21 GC 6.5 DELAYS

Delete the period at the end of paragraph 6.5.1 and substitute the following words:

6.5.1 “, but excluding any consequential, indirect or special damages.”

Add new paragraph 6.5.6:

6.5.6 If the Contractor is delayed in the performance of the Work by any act or omission of the Contractor or anyone employed or engaged by the Contractor directly or indirectly, or by any cause within the Contractor's control, then the Contract Time shall be extended for such reasonable time as the Consultant may decide in consultation with the Contractor. The Owner shall be reimbursed by the

Contractor for all reasonable costs incurred by the Owner as the result of such delay, including all services required by the Owner from the Consultant as a result of such delay by the Contractor and, in particular, the cost of the Consultant's services during the period between the Ready-for-Takeover date stated in Article A-1 herein (subject to any adjustment in accordance with the Contract Documents) and any later, actual date Ready-for-Takeover is attained by the Contractor.

Add new paragraph 6.5.7:

6.5.7 The Consultant shall not, except by written notice to the Contractor, stop or delay any part of the Work pending decisions or proposed changes.

22 GC6.6 CLAIMS FOR A CHANGE IN CONTRACT PRICE

Add the following to the end of paragraph 6.6.1, deleting the "." after the word "Consultant":

"in no case more than 10 Working Days from the event or series of events giving rise to the claim".

Amend paragraph 6.6.5 as follows:

6.6.5 Add the words "as noted in paragraph 6.6.3" after the words "of the claim" and add the words "and the consultant", at the end.

Add the following paragraph 6.6.7:

6.6.7 If the Contractor claims for an increase in the Contract Price pursuant to this GC 6.6, the amount of any such claim shall be limited to the amount determined in accordance with the methods of quantification set out in paragraphs 6.3.6, 6.3.7, and 6.3.14 of GC 6.3, and the Contractor shall promptly submit a detailed breakdown of all labour, materials, overhead, and profits claimed, including those of Subcontractors. Contemporaneous records are required to support a claim for an increase in the Contract Price, and the Owner retains the right to verify all submitted records through an independent audit. The Owner is not liable for costs not so substantiated. Any mark-up for overhead and profit on the claimed amount under this GC 6.6 shall be limited to the amounts provided for under GC 6.3.6.3, as Amended by these Supplementary Conditions.

23 GC 8.3 NEGOTIATION, MEDIATION, AND ARBITRATION

Add the following paragraphs 8.3.9, 8.3.10, 8.3.11, 8.3.12, 8.3.13, 8.3.14, and 8.3.15:

8.3.9 Within five (5) days of receiving a Notice in Writing requesting arbitration, the party receiving the notice shall give the Consultant a written notice containing:

- a. a copy of the Notice in Writing requesting arbitration;
- b. a copy of supplementary conditions 8.2.9 to 8.2.14 of this contract, and;

- c. a concise description of any claims or issues which the Contractor or the Owner, as the case may be, wishes to raise in relation to the Consultant arising out of the issues in dispute in the arbitration.

8.3.10 The Owner and the Contractor agree that the Consultant may elect, within ten (10) days of receipt of the notice under paragraph 8.3.9, to become a full party to the arbitration under paragraph 8.3.6 if the Consultant:

- a. has a vested or contingent financial interest in the outcome of the arbitration;
- b. gives the notice of its election to the Owner and the Contractor before the arbitrator is appointed;
- c. agrees to be a party to the arbitration within the meaning of the rules referred to in paragraph 8.3.6, and;
- d. agrees to be bound by the arbitral award made in the arbitration.

8.3.11 If an election is made under paragraph 8.3.10, the Consultant may participate in the appointment of the arbitrator and, notwithstanding the rules referred to in paragraph 8.3.6, the time period for reaching agreement on the appointment of the arbitrator shall begin to run from the date the respondent receives a copy of the notice of arbitration.

8.3.12 The arbitrator in the arbitration in which the Consultant has elected under paragraph 8.3.10 to become a full party may:

- a. on application of the Owner or the Contractor, determine whether the Consultant has satisfied the requirements of paragraph 8.3.10, and;
- b. make any procedural order considered necessary to facilitate the Addition of the Consultant as a party to the arbitration.

8.3.13 The provisions of paragraph 8.3.9 shall apply mutatis mutandis to written notice to be given by the Consultant to any sub-consultant.

8.3.14 In the event of notice of arbitration given by the Consultant to a sub-consultant, the sub-consultant is not entitled to any election with respect to the proceeding as outlined in 8.3.10, and is deemed to be bound by the arbitration proceeding.

8.3.15 An application for arbitration shall be accompanied by security in the amount of \$1,000 to apply to the cost of arbitration. Any claims of excess costs must be submitted in writing to the Consultant within two weeks of completion or alleged completion of the work. No claims shall be accepted after this date and, also, no claims shall be accepted for disputed work unless the Consultant has been notified as specified.

24 GC 9.1 PROTECTION OF WORK AND PROPERTY

Delete subparagraph 9.1.1.1 in its entirety and substitute the following new paragraph 9.1.1.1:

9.1.1.1 errors or omissions in the Contract Documents which the Contractor could not have discovered applying the standard of care described in paragraph 3.10.

Delete paragraph 9.1.2 in its entirety and substitute the following new paragraph 9.1.2:

9.1.2 Before commencing any Work, the Contractor shall determine the locations of all underground utilities and structures indicated in the Contract Documents, or that are discoverable by applying to an Inspection of the Place of the Work exercising the degree of care and skill described in paragraph 3.10.

25 GC 9.2 TOXIC AND HAZARDOUS SUBSTANCES

Add in paragraph 9.2.6 after the word “responsible”, the following new words:

9.2.6 Or whether any toxic or hazardous substances or materials already at the Place of the Work (and which were then harmless or stored, contained or otherwise dealt with in accordance with legal and regulatory requirements) were dealt with by the Contractor or anyone for whom the Contractor is responsible in a manner which does not comply with legal and regulatory requirements, or which threatens human health and safety or the environment, or material damage to the property of the Owner and others,

Add in subparagraph 9.2.7.4:

9.2.7.4 “and the Consultant” after “Contractor”:

Add in paragraph 9.2.8 after the word “responsible”, the following new words:

9.2.8 or that any toxic or hazardous substances or materials already at the Place of the Work (and which were then harmless or stored, contained or otherwise dealt with in accordance with legal and regulatory requirements) were dealt with by the Contractor or anyone for whom the Contractor is responsible in a manner which does not comply with legal and regulatory requirement, or which threatens, human health and safety or the environment, or material damage to the property of the Owner or others,

26 GC 9.4 Construction Safety

Add to the end of paragraph 9.4.1:

The Contractor shall be responsible for and ensure the safety of not only the workers, Subcontractors, tradespeople, and Suppliers, and their equipment, but also of all other persons who enter the Place of Work whether during working hours or not, and for that purpose shall erect

such hoardings and signs and shall employ such safety measures as may be necessary to ensure the safety of such persons.

Delete paragraph 9.4.5 and replace with:

The Contractor shall be responsible for the cost to comply with any public health order(s) affecting the performance of the Work issued pursuant to the Health Protection act (Nova Scotia) or pursuant to any similar legislation, whether Federal or Provincial.

27 GC 9.5 MOULD

Add in subparagraph 9.5.3.4:

9.5.3.4 “and the Consultant” after “Contractor”

28 GC 10.1 TAXES AND DUTIES

Add the following paragraph 10.1.3:

10.1.3 The Contractor shall indicate on each application for payment as a separate amount, the appropriate Harmonized Sales Tax the Owner is legally obliged to pay. This amount will be paid to the Contractor in Addition to the amount certified for payment under the Contract. The Contractor’s HST registration number must appear on all invoices.

29 GC 10.2 LAWS, NOTICES, PERMITS AND FEES

Delete from the first line of paragraph 10.2.5 the word, “The” and substitute the words:

10.2.5 “Subject to paragraph 3.10, the”

30 GC 10.4 WORKERS' COMPENSATION

Add the following paragraphs 10.4.2, 10.4.3, 10.4.4, and 10.4.5:

10.4.2 The contractor is referred to regulations, as applicable, under the Worker's Compensation Act of Nova Scotia.

10.4.3 The Contractor’s registration with the Worker’s Compensation Board shall be continuous during the contract. Should registrations be scheduled to expire during the contract period, the Contractor shall submit a copy of its registration renewal one month prior to the expiration of the current certificate.

10.4.4 The Contractor shall furnish evidence of coverage under the Worker’s Compensation Act of Nova Scotia and a clearance Certificate providing proof of registration with the Worker’s Compensation Board prior to commencement of the Work. (A photocopy of the Contractors registration

certificate is acceptable proof). On-going proof of good standing with the Worker's Compensation Board during the term of the contract is required.

10.4.5 The Contractor shall also maintain a Certificate of Recognition (COR) from a safety audit company recognized by the Workers' Compensation Board, such as the Nova Scotia Construction Safety Association, for the duration of the Contract. The Contractor shall provide a copy of its COR to the Owner and Consultant prior to commencement of the Work and shall provide a copy of its COR to the Owner or Consultant upon request.

GC 11.1 INSURANCE

Delete sentences and replace with the following in subparagraph 11.1.1.1:

11.1.1.1 **Delete:** "General liability insurance shall be maintained from the commencement of the Work until one year from the date of Ready-for-Takeover. Liability coverage shall be provided for completed operations hazards from the date of Ready-for-Takeover on an ongoing basis for a period of 6 years following Ready-for-Takeover" **and replace with:** "General Liability Insurance or Wrap- Up Liability Insurance, (as detailed in the Information to Tenders section under "Insurance Requirements"), shall be maintained from the commencement of the Work until final completion and acceptance of the Work including the making good of faulty work or materials, except that coverage of completed operations liability shall in any event be maintained for twelve (12) months from date of Ready-for-Takeover".

Add the following subparagraphs 11.1.1.1.1, 11.1.1.1.2, and 11.1.1.2.1:

11.1.1.1.1 The general liability insurance to be maintained by the Contractor shall include Commercial General Liability Insurance covering Premises and Operations Liability, elevators, broad form property damage, broad form automobile, owners and contractors protective, blanket contractual, personal injury, completed operations liability contingent employers liability, cross liability clause, non-owned automobile liability, and a 30 day notice of cancellation clause.

11.1.1.1.2 All liability insurance policies shall be written in such terms as will fully protect the Contractor and The Halifax Regional Centre for Education as an Additional named insured.

11.1.1.2.1 Liability coverage of not less than ten million dollars (\$10,000,000) is required with regard to operations of owned and non-owned automobiles.

Delete subparagraph 11.1.1.4 in its entirety and insert the following subparagraphs:

11.1.1.4 Broad Form (All Risks) Builders Risk Coverage - Prior to the commencement of any Work the Contractor shall maintain and pay for Broad Form (All Risks) Builders Risk Coverage in the joint names of The HRCE and the Contractor totaling not less than one hundred percent (100%) of the total value of the Work to be done and materials delivered on the site

(contract value), so that any loss under such policies of insurance will be payable to The HRCE and the Contractor as their respective interests appear. The Builders Risk Insurance shall include all materials related to the Work while in transit or at other locations.

- 11.1.1.4.1 Should a loss be sustained under the Builders Risk Coverage, the Contractor shall act on behalf of The HRCE and Contractor for the purpose of adjusting the amount of such loss with the insurance companies. As soon as such adjustment has been satisfactorily completed, the Contractor shall proceed to repair the damage and complete the Work and shall be entitled to receive from The HRCE in Addition to any sum due under the Contract, the amount at which The HRCE interest has been appraised in the adjustment made with the insurance companies as referred to above, said amount to be paid to the Contractor as the Work of restoration proceeds. Any loss or damage which may occur shall not affect the rights and obligations of either party under the Contract except as aforesaid and except that the Contractor shall be entitled to a reasonable extension of time for the performance of the Work, as The HRCE may decide.
- 11.1.1.4.2 Upon Ready-for-Takeover being attained, the Contractor's obligation to maintain Builder Risk Insurance shall cease and The HRCE shall assume full responsibility for insuring the whole of the Work against loss or damage.
- 11.1.1.4.3 "Broad form" property insurance in the joint names of the *Contractor*, the *Owner* and the *Consultant*. The policy shall include as insureds all *Subcontractors*. The Broad form" property insurance shall be provided from the date of commencement of the Work until the earliest of:
- 11.1.4.3.1 Ten (10) Calendar days after Ready-for-Takeover;
- 11.1.4.3.2 on the commencement of use or occupancy of any part or section of the *Work* unless such use or occupancy is for construction purposes, habitational, office, banking, convenience store under 465 square meter in area, or parking purposes, or for the installation, testing and commissioning or equipment forming part of the *Work*; and
- 11.1.4.3.3 when left unattended for more than thirty (30) consecutive calendar days or when construction activity has ceased for more than thirty (30) consecutive calendar days.

Paragraph 11.1.2 is supplemented as follows:

- 11.1.2 In addition, within seven (7) working days after notification of award or in any event prior to payment of the first progress claim, the Contractor shall submit certified true copies of each insurance policy to the Owner's Contract Authority. Such copies shall be exclusive of information pertaining to premium or premium bases used by the insurer to determine the cost of the insurance. Prior to the commencement of any work, the Contractor shall file with the Owner a certified copy of each insurance policy and certificate required.

Delete 11.1.5 in its entirety and replace with the following:

11.1.5 Insurance contracts shall be procured from and the premiums paid to a resident agent of an insurance Company licensed to underwrite insurance in the Province of Nova Scotia.

Add the following paragraph 11.1.9:

11.1.9 All of the insurance policies shall contain a clause stating that no change in terms and conditions or cancellation may at any time be made without the full knowledge and consent of the Owner.

31 GC 11.2 CONTRACT SECURITY

Add the following paragraphs 11.2.1, 11.2.2, and subparagraph 11.2.2.1:

11.2.1 The Contractor shall, prior to commencement of the *Work* or within the specified time, provide to the *Owner* and the *Consultant* the *Contract* security specified in the *Contract Documents*.

11.2.2 If the *Contract Documents* require surety bonds to be provided, such bonds shall be issued by a duly licensed surety company authorized to transact the business of suretyship in the province or territory of the *Place of the Work* and shall be maintained in good standing until the fulfillment of the *Contract*. The form of such bonds shall be in accordance with the latest edition of the CCDC approved bond forms, or in such other form as specified by the Owner.

11.2.2.1 "Bonds shall be procured from a Nova Scotia resident agent of an insurance company licensed to do business in Nova Scotia and shall be maintained in good standing and held by the Owner until one (1) year after Ready-for-Takeover.

Add the following paragraph 11.2.3:

11.2.3 If a Certified Cheque is held as contract security it shall be in an amount equal to ten (10) percent (%) of the Contract Price. The Contract shall supplement the Certified Cheque as necessary to maintain the amount equal to ten (10) percent (%) of the total amount payable (Contract Price plus HST).

- .1 The Certified Cheque will be deposited at the chartered bank holding The HRCE deposits.
- .2 The HRCE will return the cheque amount to the Contractor upon satisfactory completion of the contract and duration as specified in the Tender documents.
- .3 Should Contractor default, total amount payable under the Certified Cheque will be the face value of the cheque plus all accrued interest.
- .4 Payment for completion of work, due to failure of performance of the Contractor, shall include all reasonable obligations under the Contract, including architectural and engineering costs arising because of the default of the Contractor.

- .5 Payment for labour and materials shall be limited to those who have a direct contract with the Contractor for the provision of labour and/or material (which includes equipment rental).

32 GC 12.3 WARRANTY

In paragraph 12.3.2, delete from the first line the word, "The" and substitute the words:

12.3.2 "Subject to paragraph 3.10, the..."

Add the following paragraph 12.3.7:

12.3.7 Warranty repairs or replacements which arise during warranty period which affect the operation of the system shall be attended to immediately upon notification from the Consultant.

33 GC 13.3 INDEMNIFICATION

Add the following paragraph 13.1.1.3:

13.1.1.3 The Contractor shall indemnify and hold harmless the Consultant, its agents and employees from and against claims, demands, losses, costs, damages, actions, suits, or proceeding by third parties that arise out of, or are attributable to, the Contractor's performance of the Contract, provided such claims are attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property, and caused by negligent acts or omissions of the Contractor or anyone for whose acts the Contractor may be liable, and made in writing within a period of six (6) years from t Ready-for-Takeover, or within such shorter such period as may be prescribed by any limitation statute or the province or territory of the Place of the Work.

END OF SECTION 00 73 00

SECTION 01 11 00 - HRCE SUMMARY OF WORK

1. Project Location & General Scope

- 1.1. Sunnyside Elementary (Fort Sackville), 21 Perth Street, Bedford B4A 2H1
- 1.2. Scope: Refer to Section 00 00 15 for scope and schedule information.

2. Contract Documents

- 2.1. Work will be performed under CCDC-2 contract.

3. General Conditions

- 3.1. Halifax Regional Centre for Education and CCDC-2 form an integral part of this Project Manual, a copy of which is bound herein.

4. Project Manual

- 4.1. Sections of the Project Manual are numbered in conformance with the Master List of Section Titles and Numbers, CSC Document 004E, published jointly by Construction Specifications Canada and The Construction Specifications Institute (USA). Sections are arranged in their standard format.
- 4.2. Sections are written as units of the Work which have been assigned numbers in conformance with the CSC/CSI system. They are arranged in sequence for this Manual. Gaps in the order of numerical sequence do not indicate that a section has been inadvertently omitted from this Manual, but, rather that a Section is not required for completion of the Work.
- 4.3. Wherever the project location building name occurs in the Contract Documents it shall be taken to mean all work included in the Contract.
- 4.4. Wherever in the Contract Documents the words "approval", "approved", "direction", "directed", "selection", "selected", "request", "requested", "report", and similar words are used, such approvals, directions, selections, requests and reports shall be given by the HRCE unless specifically stated otherwise.
- 4.5. Wherever in the Contract Documents the word "provide" is used in any form, it shall mean that the Work concerned shall include both supply and installation of the products required for completion of that part of the Work.
- 4.6. Wherever in this Project Manual it is specified that Work is to proceed or to meet approval, direction, selection or request of jurisdictional authorities or others, such approval, direction, selection or request shall be in writing.

5. Errors & Omissions

- 5.1.** If errors or omissions are observed in the Contract Documents, immediately notify the HRCE Procurement Contact in writing of all such errors or omissions. In the event no such notice is given, the Contractor will be held responsible for the results of any such error or omission and the cost of rectifying the same.

6. Division 1

- 6.1.** The provisions of all Sections of **Division 1** shall apply to each Section of this Specification.

7. Wage Rates

- 7.1.** Pay all employees engaged on the Work a wage not less than the minimum wage per hour as set out by the Province of Nova Scotia. For overtime work beyond 48 hours in any one week, pay no employee at a rate of less than one and one-half times the minimum wage per hour noted above. Provide for these wage rates in tendered contract amount.

8. Work Performed Under Separate Contracts

- 8.1.** Work not to be included in the Contract, as noted "NIC" on the Drawings, shall be governed by Article 37, Separate Contracts, of General Conditions of Contract.
- 8.2.** Furniture installation will be carried out by others.
- 8.3.** Computer installation will be carried out by others.

9. Project Schedule

- 9.1. Refer to Section 00 00 15 Description of Work.**
- 9.2.** Existing services (mechanical & electrical) will need to be maintained through the renovations.
- 9.3.** During construction, all life safety systems as well as mechanical and electrical systems must be in active, usable condition to permit the school to operate or alternate methods used to ensure the safe operation of the school as directed by HRCE project representative.
- 9.4.** As construction progresses revise the schedule to compensate for any delays or unforeseen activities so as to maintain the contract completion date. Each schedule submission is to be complete with a statement indicating the changes made, the reason they were changed and confirmation that the project completion date will not change. The above schedule information is to be submitted monthly or more often if necessary.

10. Site Progress Records

- 10.1.** Maintain at site a permanent written record of progress of Work. Make the record available at all times with copies provided when requested. Include in record each day:
 - 10.1.1.** Commencement and completion dates of the Work of each trade in each area of Project.
 - 10.1.2.** Attendance of Contractor's and Subcontractor's Work forces at Project and a record of the work they perform.
 - 10.1.3.** Visits to site by representatives of the Owner, Engineer, jurisdictional authorities, Contractor, Subcontractors, and suppliers.
- 10.2.** Maintain a progress chart in approved format. Show on chart proposed Work schedule and progress of Work by Contractor and Subcontractor.

11. Examination

- 11.1.** Site:
 - 11.1.1.** Examine site, and ensure that site conditions have been examined, that all are fully informed on all particulars which affect Work thereon and at the place of construction, and in order that construction proceeds competently and expeditiously.
 - 11.1.2.** Ensure by examination that all physical features, and working restrictions and limitations which exist are known.
- 11.2.** Previously Completed Work:
 - 11.2.1.** Verify dimensions of existing Work in place before construction of Work to be incorporated with it.
 - 11.2.2.** Verify that previously executed Work and surfaces are satisfactory for construction, and that performance of subsequent Work will not be adversely affected.
 - 11.2.3.** Commencement of Work will constitute acceptance of site conditions and previously executed Work as satisfactory.
 - 11.2.4.** Report to Engineer defects in prior Work which will affect quality of subsequent Work, or construction schedule.
- 11.3.** Construction Measurements:
 - 11.3.1.** Before commencing installation of Work, verify that its layout is accurate in accordance with intent of Drawings, and that locations, elevations, and clearances to adjacent infrastructure are maintained.
 - 11.3.2.** If Work is installed in wrong location, rectify it before other Work concerned proceeds.

12. PROTECTION OF WORK, PROPERTY & PERSONS

- 12.1.** Include in Work necessary methods, materials, and construction to ensure that no damage or harm to Work, materials, property and persons results from the Work of this Contract. Temporary facilities relating to protection are specified in Section 01 52 00.
- 12.2.** Protect, and if damaged make good, adjacent private and public property.
- 12.3.** Keep surfaces, on which finish materials will be applied, free from grease, oil, and other contamination which would be detrimental in any way to the application of finish materials.
- 12.4.** Protect finished surfaces of completed Work from damage by restriction of access or by use of physical means suitable to the material and surface location. Establish with each Subcontractor the suitability of such protection in each case.
- 12.5.** Protect existing underground infrastructure, mechanical, electrical, telephone and similar services from damage. If necessary, relocate active services to ensure that they function continuously in safety and without risk of damage.
- 12.6.** Cap off and remove unused utility services encountered during Work after approval is given by the utilities concerned or jurisdictional authorities, whichever may apply. Relocation, removal, protection and capping of existing utility services shall be performed only by the applicable utility and of other services by licensed mechanics.
- 12.7.** To prevent soiling or damage to finish flooring where pedestrian traffic occurs after the flooring has been installed, install and maintain 6 mil. polyethylene membrane or reinforced kraft paper temporary protection, secured in place and with joints sealed by reinforced pressure sensitive tape.
- 12.8.** Install plywood panels of minimum ¼" thickness over completed finish flooring materials, on which further construction Work is performed by other trades or delivery of products is made, or both. Seal joints between panels with reinforced pressure sensitive tape.
- 12.9.** Prevent spread of dust beyond the construction zone by wetting, or by other approved means, as it accumulates.
- 12.10.** The outside work area shall be appropriately demarked and/or surrounded by rigid chain link panels or fencing (at the cost of the contractor) to prevent unauthorized entry to the work area. Any area of roof having work completed is to be covered below with this fencing approximately 10' from the edge of the building. It is to be maintained at all times throughout the project. All waste disposal bins are to be fenced in using the same type of fencing as indicated above during working hours. After working hours, all waste disposal bins shall be located a minimum of 25 feet from any structure. Any windows where the debris chute is located are to be covered. All entrances below the roof area are to have covered scaffolding erected to ensure a safe travel path to a distance of ten feet from edge of building. All workers shall contain their activity to the work site area. Access to the school shall only be allowed as

planned in coordination with HRCE Operations and the school administration.

- 12.11.** All security on site shall be coordinated through HRCE using an HRCE preferred vendor.
- 12.12.** The contractor is responsible for the cost of security for all project materials.
- 12.13.** If access to the project site is required inside the building, HRCE will provide security personnel at its own cost.
- 12.14.** The contractor shall keep the work site free from accumulated debris caused by the employees or work and shall remove all debris at the end of each work shift. Debris shall not be deposited in HRCE controlled garbage and/or recycling containers.
- 12.15.** All waste materials and debris created during demolition and/or construction shall be disposed of in a dumpster provided by the contractor, to be removed at the end of the construction project, using a methodology that is in compliance with the applicable HRM solid waste by laws. Otherwise, the material must be removed and disposed of off-site at the end of each working day. The waste materials may not be stored on site unless they are held in an approved project dumpster no closer than twenty five (25) feet from any structure.
- 12.16.** All temporary structures such as portable washroom facilities, materials storage trailer, work trailer, debris dumpster, vehicles, etc., shall be located a minimum of (25) twenty-five feet from the school building.
- 12.17.** Where applicable, a hot work permit will be required to be completed and approved by HRCE prior to commencement of work and all conditions of the permit must be maintained until completion of hot work. A copy of the hot work permit signed by the contractor representative shall be provided to HRCE upon completion of each hot work session. Contractor must assign a designated fire watch as noted on the permit document who shall remain on site for three hours after completion of each hot work session.
- 12.18.** A school washroom will be designated for use where appropriate. However, protection of the surfaces as indicated above must be maintained. It should also be noted that access to the building during summer months will be limited for security reasons. Contractor is responsible to provide temporary portable washroom facilities for general use of contractor staff.
- 12.19.** Access to Interior of School - All interior access is to be scheduled with the PM. This will allow for notice to the school admin., custodial and possible scheduling of a security guard for after hour access.
- 12.20.** Adhesives / Torch Work - All adhesive use and torch work must be completed after school hours. Contractor must assign a designated fire watch as indicated above in 12.17.

13. Cleaning

- 13.1.** Ensure that during and after construction the public streets and existing asphalt parking lot are cleaned as required.

14. Salvage

- 14.1.** Unless otherwise specified, salvaged material resulting from construction, and surplus materials and construction debris shall become property of Contractor, who must dispose of it away from Site.

15. Site Limitations

- 15.1.** Since the existing building will be occupied during the Work (in accordance with the Phasing Schedule) the Architect will designate the precise areas on the site which may be utilized for work and storage, and where personnel will be permitted to be present. Refer also to Drawings. Allow for hoarding to secure construction areas from occupied portions of the Building and Site.
- 15.2.** All access to the construction site is to be coordinated with the Project Manager for HRCE and communicated at the pre-construction meeting.
- 15.3.** Any Work carried out in the building is to be carried out during hours approved by the School Administration.
- 15.4.** Any disruption to services within the building must occur during hours approved by School Administration.
- 15.5.** Any Work which may have an adverse effect on the occupancy functions, must have prior approval of the School Administration and **may** require scheduling during off-hours.

16. Security Regulations

- 16.1.** Perform Work in conformance to the security regulations of the building as directed by the Project Manager for HRCE.

17. Project Identification

- 17.1.** No project sign is required on this Project.

18. Owner's Occupancy

- 18.1.** The Owner reserves the right to occupy and use portions of the Project, whether partially or entirely completed, or whether completed on schedule or not, provided such occupancy does not interfere with the Contractor's continuing Work.
- 18.2.** Partial occupancy or installation by the Owner of his equipment shall not imply acceptance of the Project in whole, or in part, nor shall it imply acknowledgement that terms of the Agreement are fulfilled.

END OF SECTION 01 11 00

SECTION 01 11 25 - PRICES

1. General

- 1.1. Prices included in the Contract shall be complete for the applicable Work, and shall include for each price:
 - 1.1.1. Expenditures for wages and for salaries of workmen, engineers, superintendents, draftsmen, foremen, timekeepers, accountants, expeditors, clerks, watchmen and such other personnel as may be approved, employed directly under the Contractor and while engaged on the applicable Work at the site and expenditures for travelling and HRCE allowances of such employees when required by location of the applicable Work or when covered by trade agreements and when approved; provided, however, that nothing shall be included for wages or salary of the Contractor if an individual, or of any member of the Contractor's firm if the Contractor is a firm or the salary of any officer of the Corporation if the Contractor is a corporation, unless otherwise agreed to in writing.
 - 1.1.2. Expenditures for material used in or required in connection with the construction of the applicable Work including material tests and required by the laws or ordinances of any authority having jurisdiction and not included under Subparagraph .9.
 - 1.1.3. Expenditures for preparation, inspection, delivery, installation and removal of materials, equipment, tools and supplies.
 - 1.1.4. Temporary facilities as required for the applicable Work.
 - 1.1.5. Travelling expenses properly incurred by the Contractor in connection with the inspection and supervision of the applicable Work or in connection with the inspection of materials prepared or in course of preparation for the applicable Work and in expediting their delivery.
 - 1.1.6. Rentals of all equipment whether rented from the Contractor or others, in accordance with approved rental agreements including any approved applicable insurance premiums thereon and expenditures for transportation to and from the site of such equipment, costs of loading and unloading, cost of installation, dismantling and removal thereof and repairs or replacements during its use on the applicable Work, exclusive of any repairs which may be necessary because of defects in the equipment when brought to the Work or appearing within thirty (30) days thereafter.
 - 1.1.7. The cost of all expendable materials, supplies, light, power, heat, water and tools (other than tools customarily provided by tradesmen) less the salvage value thereof at the completion of the applicable Work.
 - 1.1.8. Assessments under the Workmen's Compensation Act, the Unemployment Insurance Act, Canada Pension Act, statutes providing for government hospitalization, vacations

with pay or any similar statutes; or payments on account of usual vacations made by the Contractor to his employees engaged on the applicable Work at the site, to the extent to which such assessments or payments for vacations with pay relate to the Work covered by the specified price; and all sales taxes or other taxes where applicable.

- 1.1.9. The amounts of all Subcontracts related to the specified price.
- 1.1.10. Premiums on all insurance policies and bonds called for under this Contract as related to the specified price.
- 1.1.11. Royalties for the use of any patented invention on the applicable Work.
- 1.1.12. Fees for licenses and permits in connection with the applicable Work. No Building Permit is required for the project.
- 1.1.13. Duties and taxes imposed on the applicable Work.
- 1.1.14. Such other expenditures in connection with the applicable Work as may be approved.
- 1.1.15. Provided always that except with the consent of the Owner, the above items of cost shall be at rates comparable with those prevailing in the locality of the Work.

END OF SECTION 01 11 25

SECTION 01 11 41 - PROJECT COORDINATION

1. Requirements Included

- 1.1. Each Trade Contractor's responsibilities include the coordination of Work within his own Contract and with the Work of other Contracts.

2. Related Requirements

- 2.1. Project Meetings: Section 01 31 19
- 2.2. Submittals: Section 01 33 00

3. Description

- 3.1. Coordinate Work on which subsequent Work depends to facilitate mutual progress, and to prevent conflict between parts of the work.
- 3.2. Ensure that each Section makes known for the information of the Construction Manager and other Sections, the environmental and surface conditions required for the execution of its Work, and the sequence of others Work required installation of its Work.
- 3.3. Ensure that each Section, commencing Work, and that each Section is assisted in the execution of its preparatory Work by Sections depending upon its preparation.
- 3.4. Deliver materials supplied by one Section to be installed by another well before the installation begins.
- 3.5. Sections giving installation information in error, or too late to incorporate in the Work, shall be responsible for having Work done which was thereby additionally made necessary.
- 3.6. Coordinate warranty conditions of interconnected Work to ensure that full coverage is obtained.
- 3.7. Remove work installed in error which is unsatisfactory for subsequent Work.

4. Cutting And Patching

- 4.1. Include under Work of this Section all cutting and patching of asphalt required by the Work.
- 4.2. Finish new surfaces flush with existing surfaces.
- 4.3. Cut and patch as required making work fit.
- 4.4. Make cuts with clean, true, smooth edges.
- 4.5. Patching of existing or new asphalt shall be performed only by workmen with expertise in that particular trade and who normally perform that Trade.
- 4.6. Replace, and otherwise make good, damaged or defective Work. If required by the Construction Manager.

- 4.7. Do not endanger Work or property by cutting, digging, or similar activities. No Section shall cut or alter the Work of another Section unless approved by the Section which has installed it.
- 4.8. Cut and drill with true smooth edges and to minimum suitable tolerances.
- 4.9. If required, before cutting, drilling, or sleeving structural load bearing elements, obtain approval of location and methods.
- 4.10. Cutting, drilling and sleeving of Work shall be done only by the Section which has installed it. The Section requiring drilling and sleeving shall inform the Section performing the Work of the location and other requirements for drilling and sleeving. The Contractor shall directly supervise performance of cutting and patching.
- 4.11. Cutting and Patching for Holes Required by Mechanical & Electrical Work:
 - 4.11.1. Include under Work of Mechanical Divisions cutting or provision of holes up to 8" in diameter and related patching.
 - 4.11.2. Include under Work of this Section holes and other openings required by the work of Mechanical Divisions which are larger than 8" in diameter or least dimension, and chases, bulkheads, furring and required patching. This Section shall be responsible for determination of Work required for holes in excess of 8" diameter or least dimension.
 - 4.11.3. Include under the Work of Electrical Divisions all cutting or provision of holes and related patching for the Work of that Division.
- 4.12. Include under Work of this Section all other cutting and patching required by the Work except as described in Clause .11 above.
- 4.13. Patching or replacement of damaged Work shall be done by the Subcontractor under whose Work it was originally executed, and at the expense of the Subcontractor who caused the damage.
- 4.14. Make patches invisible in final assembly.

5. Quality Assurance

- 5.1. Requirements of Regulatory Agencies:
 - 5.1.1. Make known and coordinate the requirements of jurisdictional authorities, as made explicit by the Contract Documents, and by representatives of such authorities
- 5.2. Source Quality Control:
 - 5.2.1. Ensure that Work meets specified requirements
 - 5.2.2. Schedule, supervise and administer inspection and testing as specified in Section 01 45 00.
- 5.3. Job Records:
 - 5.3.1. Maintain job records and ensure that such records are maintained by subcontractors.

Submittals

- 5.4. Prepare a Project schedule in accordance with Section 01 33 00, and ensure that all subcontractors and suppliers are aware of the details of this schedule, and progressively of their general compliance with the schedule.
- 5.5. Become aware of the required submittals specified in each Section, and expedite submission of such submittals so as not to hinder the Project Schedule.
- 5.6. Review submittals and make comments as specified in Section 01 33 00.

6. Job Conditions

- 6.1. Ensure that Work proceeds under conditions meeting specified environment and job safety requirements
- 6.2. Ensure that protection of adjacent property and the Work is adequately provided and maintained to meet specified requirements.

7. Product Delivery, Storage And Handling

- 7.1. Site has limited spaces for storage, only delivery of materials agreed upon by the Construction Manager will be allowed. Comply with Construction Manager's allocations. Any requirement for modifications to the building in order to allow delivery and storage of the materials to complete this work is the responsibility of the contractor.
- 7.2. Schedule delivery of products & removal of material with Construction Manager.
- 7.3. Make available areas for storage of products and construction equipment to meet specified requirements, and to ensure a minimum of interference with progress of the Work and relocations.
- 7.4. Trade Contractor to provide flag persons, traffic signals, barricades and Flares/lights/lanterns as required to perform the Work and to protect the public.
- 7.5. Material and Waste - Deliveries and Removals - Must be coordinated to be completed 30 minutes after school dismissal where applicable.

END OF SECTION 01 11 41

SECTION 01 31 19 – PROJECT MEETINGS

1. Pre-Award Meeting

- 1.1. A Pre-award meeting will be held at which time the following will be addressed:
 - 1.1.1. Owner and HRCE's functions.
 - 1.1.2. The Consultant and the Consultant's functions.
 - 1.1.3. The General Contractor and the General Contractor's functions.
 - 1.1.4. Documentation requirements from the General Contractor.
 - 1.1.5. Obligees for Performance and Payment Bonds from Sub-contractors.
 - 1.1.6. Progress Claims.
 - 1.1.7. CO's & CCO's.
 - 1.1.8. Construction Schedule.
 - 1.1.9. Project Start-up.
 - 1.1.10. Job Meetings.
 - 1.1.11. Superintendent – General Contractor's Representative.
 - 1.1.12. Design / Administration authority.
 - 1.1.13. Owner's Representative.
 - 1.1.14. Special Consultants.
 - 1.1.15. Quality of Workmanship.
 - 1.1.16. Accountability.
 - 1.1.17. Harmonized Sales Tax.
 - 1.1.18. Contract Close-out Documentation.

2. Preconstruction Meeting

- 2.1. Within fifteen (15) days after award of Contract, arrange a meeting between the Consultant, Subcontractors, Project Superintendents, Inspection and Testing Company Representatives, and representatives of others whose coordination is required during construction.
- 2.2. Discuss at the meeting the means by which full cooperation and coordination of the participants during construction can be achieved.
- 2.3. Document the responsibilities and necessary activities of the participants during construction as discussed and distribute to each participant.
- 2.4. Establish procedures for maintenance and completion of Project record drawings specified in Section 01 77 00.
- 2.5. Review and establish methods of maintaining life safety and egress for the school occupants. Communicate these methods thoroughly with the School Principal.

3. Progress Meeting

- 3.1. Invite representatives of HRCE, to attend twice monthly site meetings called by the Contractor during the progress of the Work.

- 3.2. Inform HRCE of each meeting and of proposed agenda a minimum of five (5) days before meeting.
- 3.3. Submit proposed schedule of site meetings to Engineer and Owner.
- 3.4. Record, prepare and distribute minutes of each meeting to HRCE and to each other participant within 72 hours of meeting.
- 3.5. Ensure that all representatives who attend meetings have the authority to conduct business on behalf of firms they represent.
- 3.6. Details of Progress Meetings to be discussed at the project start-up meeting.

4. Suggested Agendum (Preconstruction Meeting)

- 4.1. Distribution and discussion of:
 - 4.1.1. List of major subcontractors and suppliers.
 - 4.1.2. Projected Construction Schedules.
- 4.2. Critical work sequencing.
- 4.3. Major equipment deliveries and priorities.
- 4.4. Project Coordination:
 - 4.4.1. Designation of responsible personnel.
- 4.5. Procedures and Processing of:
 - 4.5.1. Field decisions
 - 4.5.2. Proposal requests
 - 4.5.3. Submittals
 - 4.5.4. Change orders
 - 4.5.5. Applications for Payment.
- 4.6. Adequacy of distribution of Contract Documents.
- 4.7. Procedures for maintaining Record Documents.
- 4.8. Use of premises:
 - 4.8.1. Office, work and storage areas.
 - 4.8.2. Owner's requirements.
- 4.9. Construction facilities, controls and construction aids.
- 4.10. Safety/Tool Box Meetings.
- 4.11. Security procedures.
- 4.12. Housekeeping procedures.
- 4.13. Egress/life safety procedures

5. Suggested Agendum (Progress Meetings)

- 5.1. Review and approval of minutes of previous meeting.
- 5.2. Safety meeting minutes.
- 5.3. Review of work progress since previous meeting.
- 5.4. Field observations, problems, conflicts.
- 5.5. Problems which impede Construction Schedule.
- 5.6. Review of off-site fabrication, delivery Schedules.

- 5.7. Corrective measures and procedures to regain projected schedules.
 - 5.8. Revisions to Construction Schedules.
 - 5.9. Maintenance of quality standards.
 - 5.10. Pending changes and substitutions and effect on Construction Schedule.
 - 5.11. Other Business.
-
- 6. Attend, with representatives of HRCE weekly meetings with the School Administration to review construction activities and concerns of Building Occupants.
 - 7. Quarterly meetings with Contractor and the HRCE / User during Warranty Period including major sub-trade contractors.
 - 8. Dates for meetings will be set at time of completion.

END OF SECTION 01 31 19

SECTION 01 33 00 – SUBMITTAL PROCEDURES

1. General Requirements

- 1.1. Make submittals specified in this Section to Consultant unless otherwise specified, with additional submissions made, in manner that they direct, to other parties involved with construction of the Project as their interests are concerned. These parties are, but shall not be restricted to, consultants, jurisdictional authorities, and Subcontractors whose Work must be coordinated with Work related to Submittals.
- 1.2. Ensure that submissions are made to allow sufficient time for review without the construction schedule being delayed.

2. Document Submissions Required

- 2.1. At Commencement of Contract:
 - 2.1.1. Performance and Payment Bonds.
 - 2.1.2. Public Liability and Property Damage Insurance Certificates.
 - 2.1.3. List of Subcontractors by firm name.
 - 2.1.4. Construction Schedule and other required schedules and estimates.
 - 2.1.5. Site Specific Safety Plan/Safety Policy.
 - 2.1.6. Workers' Compensation Board status.
- 2.2. During Construction:
 - 2.2.1. Weekly progress reports.
 - 2.2.2. Job meeting reports and minutes.
 - 2.2.3. Updated construction schedules.
 - 2.2.4. Shop drawings as required.
 - 2.2.5. Inspection and test reports.
 - 2.2.6. Daily communication of Hot Work Permits as needed.
- 2.3. Submissions at completion of Work are specified in Section 01 77 00, Contract Closeout.

3. Administrative

- 3.1. Submit to Consultant submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time no claim for extension by reason of such default will be allowed.
- 3.2. Do not proceed with Work affected by submittal until review is complete.
- 3.3. Present shop drawings, product data, samples and in Imperial units.
- 3.4. Review submittals prior to submission to Consultant. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been

checked and coordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.

- 3.5. Notify Consultant in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- 3.6. Verify field measurements and affirm that affected adjacent work is coordinated.
- 3.7. Contractor's responsibility for errors and omissions in submission is not relieved by Consultant's review of submittals.
- 3.8. Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Consultant's review.
- 3.9. Keep one review copy of each submission on site.

4. Construction Schedules

- 4.1. Submit proposed construction schedule at beginning of Project, as specified in Project Documents.
- 4.2. As construction progresses, submit up-dated construction schedules as specified in Project documents.

5. Shop Drawings And Product Data

- 5.1. The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- 5.2. Submit drawings stamped and signed by professional consultant registered or licensed in Province of Nova Scotia of Canada.
- 5.3. Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- 5.4. Allow seven (7) days for Consultant's review of each submission. Do not proceed with work involving relevant products until completion of shop drawing review.
- 5.5. Adjustments made on shop drawings by Consultant are not intended to change Contract Price. If adjustments affect value of work, state such in writing to Consultant prior to proceeding with work.
- 5.6. Make changes in shop drawings as Consultant may require, consistent with Contract Documents. When resubmitting, notify Consultant in writing of revisions other than those requested.

Accompany submission with transmittal letter, in duplicate, containing:

- 5.6.1. Date
- 5.6.2. Project title and number
- 5.6.3. Contractor's name and address
- 5.6.4. Identification and quantity of each shop drawing, product data and sample.
- 5.6.5. Other pertinent data.
- 5.7. Submission to include:
 - 5.7.1. Date and revision dates.
 - 5.7.2. Project title and number.
 - 5.7.3. Name and address of:
 - 5.7.3.1. Subcontractor.
 - 5.7.3.2. Supplier.
 - 5.7.3.3. Manufacturer.
 - 5.7.4. Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - 5.7.5. Details of appropriate portions of Work as applicable:
 - 5.7.5.1. Fabrication.
 - 5.7.5.2. Layout, showing dimensions, including identified field dimensions, and clearances.
 - 5.7.5.3. Setting or erection details.
 - 5.7.5.4. Capacities.
 - 5.7.5.5. Performance characteristics.
 - 5.7.5.6. Standards.
 - 5.7.5.7. Relationship to adjacent work.
- 5.8. After Consultant's review, distribute copies.
- 5.9. Submit for review one electronic copy in PDF file format of shop drawings for each requirement requested in specification Sections and as Consultant may reasonably request.
- 5.10. Submit electronic copies of product data sheets for brochures for requirements requested in specification Sections and as requested by Consultant where shop drawings will not be prepared due to standardized manufacture of product.
- 5.11. Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Consultant.
 - 5.11.1. Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
 - 5.11.2. Testing must have been within three (3) years of date of contract award for project.

- 5.12. Documentation of testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- 5.13. Delete information not applicable to project.
- 5.14. Supplement standard information to provide details applicable to project.
 - 5.14.1. If upon review by Consultant, no errors or omissions are discovered or if only minor corrections are made, copies will be returned, and fabrication and installation of work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of work may proceed.
 - 5.14.2. Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for coordination of work of sub-trades.

- 5.15. Shop Drawings are specified for submission under the following:
 - Section 03 20 00 Concrete Reinforcement
 - Section 05 12 23 Structural Steel
 - Section 05 31 00 Steel Deck
 - Section 05 50 00 Metal Fabrications
 - Section 06 10 11 Rough Carpentry
 - Section 06 40 00 Architectural Woodwork
 - Section 07 41 43 Aluminum Composite Panels
 - Section 07 46 13 Preformed Metal Siding
 - Section 07 55 00 Modified Bitumen Roofing System & Flashing
 - Section 07 84 00 Fire Stopping and Smoke Seals
 - Section 08 11 14 Steel Doors & Frames
 - Section 08 11 16 Aluminum Doors & Frames
 - Section 08 14 10 Wood Doors
 - Section 08 50 50 Aluminum Windows
 - Section 08 62 11 Vinyl Windows
 - Section 08 71 10 Door Hardware
 - Section 09 22 16 Non-Load Bearing Wall Framing
 - Section 09 30 13 Ceramic Tile
 - Section 10 11 13 Communication Boards
 - Section 10 11 23 Tackboards
 - Section 10 14 53 Traffic Signs
 - Section 10 28 10 Toilet & Bath Accessories
 - Section 10 50 00 Miscellaneous Specialties
 - Section 11 40 11 Food Services Catalogued & Custom Equipment
 - Section 12 21 13 Horizontal Blinds

Section 12 21 16 Roller Shades

Section 14 42 13 Wheelchair Platform Lift

All pre-manufactured Mechanical & Electrical items as noted in Mechanical & Electrical Divisions.

6. SAMPLES

- 6.1. Submit for review samples in duplicate as requested in respective specification Sections, as requested by the Consultant. Label samples with origin and intended use.
- 6.2. Deliver samples prepaid to Consultant's business address.
- 6.3. Notify Consultant in writing, at time of submission of deviations in samples from requirements of Contract Documents.
- 6.4. Adjustments made on samples by Consultant are not intended to change.
- 6.5. Make changes in samples which Consultant may require, consistent with Contract Documents.
- 6.6. Reviewed and accepted samples will become standard of workmanship and material against which installed work will be verified.
- 6.7. Samples are specified for submission under the following Sections:

Section 07 41 43 Aluminum Composite Panels

Section 07 46 13 Preformed Metal Siding

Section 08 14 10 Wood Doors

Section 08 50 50 Aluminum Windows

Section 09 30 13 Ceramic Tile

Section 09 51 13 Acoustical Ceiling Units

Section 09 65 19 Resilient Tile Flooring

Section 12 21 13 Horizontal Blinds

Section 12 21 16 Roller Shades

Refer to Mechanical & Electrical Divisions for sample requirements in those Trades.

7. Record Drawings

- 7.1. Record, as the Work progresses, changes and deviations in the location of Work concealed by the finished Work, and such other approved changes that occur during progress of Work, to ensure that an accurate record is provided for future maintenance and alterations.
- 7.2. White prints will be provided by the HRCE for use in preparing record drawings. Record changes in the Work on these prints in red ink.
- 7.3. Dimension location of concealed Work in reference to building walls, and elevation in reference to floor elevation. Indicate at which point dimension is taken to conceal Work. Dimension all terminations and offsets of runs of concealed work.
- 7.4. Record work constructed differently than shown on Contract Documents, changes in the work caused by site conditions, by Owner, Consultant, Contractor and Subcontractor originated

changes, and by site instructions, supplementary instructions, field orders, change orders, addenda, correspondence and directions of jurisdictional authorities.

- 7.5. Record location of mechanical and electrical services, piping, valves, conduits, pull boxes, junction boxes and similar work not clearly in view, and position of which is required for maintenance, alteration work and future additions. Do not conceal critical work until its location has been recorded.
- 7.6. Identify record drawings as a "Project Record Copy". Maintain in good condition, do not use for construction purposes and make available to Consultant at all times.
- 7.7. Submit record drawings at completion of Work. Final acceptance of the Work will be predicated on receipt and approval of record drawings.

8. Extra Stock

- 8.1. Supply extra stock at completion of Project as specified in other Sections of the Project Manual.
- 8.2. Deliver extra stock as directed by the Architect to location he designates.
- 8.3. Extra stock is specified to be supplied in the following Sections:

Section 09 30 13 Ceramic Tile

Section 09 51 13 Acoustical Ceiling Units

Section 09 65 19 Resilient Tile Flooring

Section 09 91 23 Painting

Refer to Mechanical & Electrical Divisions for Extra Stock requirements in those Trades.

9. Maintenance Manual & Operating Instructions

- 9.1. Submit three (3) copies of Maintenance Manual with application for completion certificate.
- 9.2. Include in Maintenance Manual one (1) copy of each final approved shop drawing issued for Project on which have been recorded changes made during fabrication and installation caused by unforeseen conditions.
- 9.3. Submit extended guarantees together in one (1) report binder.
- 9.4. The Manuals shall:
 - 9.4.1. Consist of a hard-cover, black, vinyl-covered, loose-leaf, letter-size binder.
 - 9.4.2. Have a title sheet, or sheets preceding data on which shall be recorded Project name, Project number, date, list of contents, and Contractor's and Subcontractors' names.
 - 9.4.3. Be organized into applicable Sections of Work with each Section separated by hard paper dividers with plastic covered tabs marked by Section.
 - 9.4.4. Contain only typed or printed information and notes, and neatly drafted drawings.
 - 9.4.5. Contain maintenance and operating instructions on all building, and mechanical and electrical equipment.
 - 9.4.6. Contain maintenance instructions as specified in various Sections.

- 9.4.7. Contain brochures and parts lists on all equipment.
- 9.4.8. Contain sources of supply for all proprietary products used in the Work.
- 9.4.9. Contain lists of supply sources for maintenance of all equipment in Project of which more detailed information is not included above.
- 9.4.10. Contain finished hardware schedule.
- 9.4.11. Contain charts, diagrams and reports specified in Mechanical & Electrical Divisions.

10. Extended Warranties

- 10.1. Submit the extended warranties listed in this Article and as specified in each applicable Section of this Project Manual.
- 10.2. Extended warranties shall commence on termination of the standard one-year warranty granted in this Contract.
- 10.3. Submit each extended warranty on a standard Form of Warranty, a sample of which is included in this Section.
- 10.4. Secure each extended Warranty by a Maintenance Bond in an amount indicated.
- 10.5. Submit extended warranties for:

Section 06 40 00 Architectural Woodwork – extended 4 years

Section 07 41 43 Aluminum Composite Panels – extended 10 years (panel finish)

Section 07 55 00 Modified Bitumen Roofing System & Flashing:

- 2 year CRCA materials and workmanship against leaks and blow off
- 10 year material warranty the membrane will perform as a roofing material
- 1 year CRCA warranty against defects of materials and workmanship for the sheet metal work.

Section 07 92 10 Joint Sealants – extended 5 years

Section 08 11 16 Aluminum Doors & Frames – extended 4 years

Section 08 14 10 Wood Doors – extended 4 years

Section 08 50 50 Aluminum Windows – extended 4 years

Section 08 62 11 Vinyl Windows – extended 5 years

Section 08 71 10 Door Hardware – various, refer to that Section

Section 09 30 13 Ceramic Tile – extended 4 years

Section 09 51 13 Acoustical Ceiling Units – extended 4 years

Section 09 65 19 Resilient Tile Flooring – extended 4 years

Section 10 11 13 Communication Boards – extended 24 years

Section 10 11 23 Tackboards – extended 9 years

Section 12 21 13 Horizontal Blinds – extended 5 years

Section 12 21 16 Rollers Shades – extended 5 years

Section 14 42 13 Platform Lift – extended 5 years

Refer to Mechanical & Electrical Divisions for extended Warranty requirements in those trades.

11. Inspection Laboratory Reports

- 11.1.** Submit copies of inspection and test reports obtained by the Contractor and Subcontractors for their Work or for Jurisdictional Authorities, if requested by Consultant.
- 11.2.** Submit reports in accordance with requirements specified in Section 01 41 00.

12. Documentation On Suppliers & Manufacturers

- 12.1.** Provide information under headings identifying the following: Associated Technical Section, Manufacturer, Supplier, Contact Name, and Phone Numbers.

SAMPLE FORM OF WARRANTY FOLLOWS THIS PAGE

Sample Form for Warranty

Date

Client

Project

.....

Warranty

(title of work)

We hereby undertake to warrant all materials supplied and installed under our Contracts and include the providing of necessary materials and labour to cover the result of faulty materials or workmanship. Upon written notification from Client or the Architect that the above work is defective any repair or replacement work required shall be to the Architect's satisfaction at no cost to the Client. This Warranty shall not apply to defects caused by the work of others, maltreatment of materials, negligence or Acts of God. This Warranty shall remain in effect for the total period from the acceptance of the Work to (...date...), irrespective of the date of completion or the beneficial use by the Owner.

Signature

Authorized Signing Officer

Name of Firm

Address

END OF SECTION 01 33 00

SECTION 01 35 13 – APPENDIX A - SPECIAL PROJECT PROCEDURES

1. Introduction

- 1.1. School construction, renovation and maintenance projects are scheduled every year as a normal and necessary course of business by operations departments in each Nova Scotia Centre for Education. Building modifications, repairs and additions/demolitions to buildings may impact the school environment without appropriate controls. With increased controls based primarily on the CSA standards implementation, proper scheduling and clear communication on adequate controls can be put into place to eliminate/minimize the impact to all occupants.
- 1.2. Projects of this nature may generate varying levels of dusts, noises and odors. It is possible, unknown/unforeseeable environmental contaminants, such as spills, mold, fumes, lead or asbestos exposure maybe identified.
- 1.3. To successfully complete work within the school environment, it is necessary to plan and implement appropriate containment and control strategies. This document is developed to provide a minimum standard for contaminant controls for various types of projects in schools. These standards are in addition to and should complement all legislated protocols for working with regulated materials such as asbestos, lead paints, PCB's etc.
- 1.4. Executing a successful project will depend primarily on clear, concise communication. This may involve a number of parties (Project Manager, Operations staff, School Administration and Health & Safety staff and Joint Occupational Health & Safety Committee).

2. Communication Plan

- 2.1. The most critical element of any project management plan is effective communication between all stakeholders. Communication between the Operations project manager/supervisor, the contractor and school administrators before the start of a project is very important. This meeting is meant to explain the scope, schedule and risk assessment for the project. The meeting will also help establish clear expectations when managing planned and unplanned exposure risks associated with contaminant controls.
- 2.2. The communication plan shall include:
 - 2.2.1. A description of potential contaminants, which may include but is not limited to:
 - 2.2.1.1. Particulates (dirt, concrete/silica, steel, fiberglass, wood dust, ash, cellulose, etc.)
 - 2.2.1.2. Moisture: external water infiltration, internal system leaks (domestic water, sanitary, storm, sprinkler)
 - 2.2.1.3. Noise from equipment/tool operation,
 - 2.2.1.4. Fumes/odors from equipment exhaust, boiler exhaust, septic waste, chemical/adhesives, etc.

- 2.2.1.5. Hazardous materials including, asbestos, PCB, mercury, lead, fuel oil, fungi/mould, etc.
 - 2.2.1.6. Excessive heat/cold
 - 2.2.2. A description of the control measure which may include but not be limited to:
 - 2.2.2.1. Isolation within an enclosure (water, noise, hazardous materials)
 - 2.2.2.2. Ventilation and filtration
 - 2.2.2.3. Dehumidifiers/blowers (moisture)
 - 2.2.2.4. Personal protective equipment
 - 2.2.2.5. Schedule outside or inside school hours
 - 2.2.2.6. Sound dampeners
 - 2.2.2.7. Monitoring
 - 2.2.2.8. Security
 - 2.2.3. Other Hazards created by the work, including but not limited to fire safety and the need to alter fire safety plans.
- 2.3. For small routine work orders the communication plan may only involve one tradesperson and the school principal or designate. This communication is equally as important for management of contaminant controls.

3. Contaminant Control Management

- 3.1. Regardless of the contaminant or control measure used, the following procedures shall apply for every project:
 - 3.1.1. Every project, including all routine work requests, shall be assessed, as per this document, by appropriate personnel for potential contaminant risk.
 - 3.1.2. Clear lines of communication must be established between project personnel, site supervisor or project manager and the school administration.
 - 3.1.3. Control strategies as per this document, shall be, communicated to workers as well as the site JOHSC and implemented prior to starting the work.
 - 3.1.4. Where isolation is used as a control, all entry points must be clearly posted to describe the purpose of the enclosure and limitations of access.
 - 3.1.5. During the execution of the project, the control measures must be regularly inspected and maintained before the start of each work shift, and throughout the shift as required.
 - 3.1.6. A process for stop work and remediation orders must be established to ensure the project manager; site supervisor and school administrator have a means to cease project operations when a contaminant control breach may impact the school environment. Breached control measures must be reported immediately to HRCE project manager upon discovery. He/she will be responsible to communicate to the school principal or designate. Work shall be stopped immediately until the control measures are re-established.

- 3.1.7.** Access to the controlled work site is only permitted by authorized personnel. The project supervisor or designate shall determine appropriate personal protective equipment (PPE) and necessary worker orientation.

4. Particulate Control

- 4.1.** Exposure to minimal levels of dust is a normal condition in most outdoor and indoor environments and is typically controlled inside a building through building ventilation, filtration and routine housekeeping measures. However, as noted, construction projects generally create elevated dust levels in work areas, whether inside or outside of a building.
- 4.2.** Operational Services Managers must ensure maintenance staff and contracted service providers implement dust control measures appropriate for the type and scope of work being performed. This will include assessing the type and amount of dust being created as well as the location of the work being conducted.
- 4.2.1.** Interior Construction Projects:
- 4.2.2.** Construction projects may be described as projects that may include window replacement, wall creation/demolition, etc.
- 4.3.** As a minimum for these types of construction projects, all interior entry points into a construction zone must be effectively sealed. The barrier must prevent contaminants from the work area to be distributed to other areas of the school. Appropriate signage must be posted to indicate only authorized persons are permitted access.
- 4.4.** Entrance design could range from a two flap plastic tarp door to a fully constructed sealed entry door with negative hepa-filtered ventilation on the construction side of the barrier.
- 4.5.** Exterior Construction Projects:
- 4.5.1.** Exterior work shall be performed so as not to affect the safety of building occupants. It will also provide controls to avoid impact to adjacent properties. Depending up on the results identified in the risk assessment, at a minimum consideration must be given to prevent dust from entering into the school environment. This may be controlled through isolation, dampening application, closing building AHU and window/door openings.

5. Noise Control

- 5.1.** Hearing plays an essential role in communication, speech and language development and learning within a school environment. During construction the contractor is responsible for ensuring acceptable noise levels will be adhered to for the HRCE staff and students within the building. Noise related to a project may prove to be very distracting for staff and students. To minimize distractions and interruptions in student learning the following are important to consider:
- 5.1.1.** Contractors are responsible to ensure appropriate noise control measures are taken
- 5.1.2.** "No work" periods may need to be incorporated into construction schedules

- 5.1.3. Work causing a noise disruption may need to take place during unoccupied times and/or during pre-determined acceptable times of the day (i.e. before and after class times)
- 5.1.4. It may be necessary for the School Administrator to make a request to the HRCE Project Manager or the Contractor to exclude undertaking certain noisy activities during particular periods and/or activities.

6. Moisture Control

- 6.1. Moisture levels are to be controlled during construction and maintenance activities. Moisture levels above normal may impact the air in the room and/or building and may also penetrate building materials giving the potential to lead to mould growth.
- 6.2. Certain activities (i.e. tape and mud of drywall, painting, pressure washing, concrete cutting with water or other water-based dust-suppression) introduce high amounts of moisture into the room environment and ventilation and or drying is required to control local moisture.
- 6.3. An enclosure properly set-up to contain other contaminants will similarly contain/control high levels of airborne moisture. A wet-vac should be available on-site for activities which have a risk of water spillage of more than 5 gallons at any instance.
- 6.4. Standing and or stagnate water must be avoided on construction sites, for a number of reasons, including, but not limited to; insects breed in these bodies of water, the water may give off odours, it is a nuisance to walk through, and it may be an ice hazard in cold weather.
- 6.5. It is important that all water leaks and flooding are reported immediately to the HRCE's project manager and building supervisor. Where works to existing "plumbing" is to occur the water lines (potable, heating, fire suppression) must be isolated and drained (de-energized/de-pressurized) following Lock Out - Tag Out procedure. Adequate supplies such as buckets and absorbents should be present when drains are not available to drain a line.
- 6.6. When an interruption to the water supply, potable or service, is to occur then the "owner's representative" and building supervisor should be notified 24 hours in advance. Bottled water provision may be required.
- 6.7. Materials used in the construction and or maintenance activities are to be stored in dry areas. The introduction of materials to the activities with moisture levels above the acceptable (XXX%)CNBC states for wood, on dry weight basis, a max of 19%, I can't find info on drywall but assume it is much lower range is prohibited as these materials are highly susceptible to colonization by mould spores.

7. Fumes

- 7.1. Fumes may be produced on a project site for a variety of reasons such as use of motorized equipment, off gassing of sealants, adhesives and finish products, cutting/torching processes, exposure of sanitary systems, process ignition gases such as propane and acetylene, proximity of project temporary washrooms, radon, etc.
- 7.2. The impact of fumes on occupants may range from discomfort to health risk, to life safety risk.

- 7.3. The project manager or supervisor must ensure that all potential fume sources are identified and remedial or control measures included in the scope of work by the contractor.
- 7.4. Monitoring equipment may be required to determine for example radon exposure or safety of confined space access.

8. Activity Assessment

- 8.1. Activities that may produce contaminants which require control may be considered as low, medium and high impact.
- 8.2. Low impact activities include routine maintenance and repairs that may create localized dust or odors or brief periods of noise which are not considered harmful to occupants but may be a nuisance which requires minimal control. These may include activities such as opening ceiling tiles or gyproc walls, replacing a plumbing fixture, paint touch ups, drilling through a wall, etc.
- 8.3. Medium impact activities include larger repair jobs or longer duration projects that will create more wide spread levels of contaminant which must be controlled to prevent exposure to building occupants. Boiler cleaning, ceiling replacement, long periods of hammer drilling, etc.
- 8.4. High impact activities include large demolition and construction projects, or jobs with exposure to contaminants that are a risk to health or life safety such as asbestos remediation, mould abatement, lead paint clean up, etc.

9. Hazard Assessment

- 9.1. A hazardous assessment is required to be completed for each job to ensure hazards are identified and corresponding controls are implemented. Depending upon the circumstances at the site it may be necessary to upgrade and/or add other precautions.
- 9.2. Determine the most appropriate hazard classification and apply the corresponding protocols. The attached hazard assessment identifies the minimum controls that must be in place during the corresponding activities. Depending on the specific circumstances at a site further controls may be required. When the hazards are deemed to be in the C or F category the form including specific controls must be submitted to the HRCE for review, prior to commencing work. The contractor may still be required to complete their own hazard assessment of the job/work.

10. Contaminant Controls Procedure for initiating work for all Contaminant Controls:

10.1. Contaminant Control I

- 10.1.1. The tradesperson or project manager for the HRCE will discuss the details, including the scope and any impacts of the job/project with the principal.
- 10.1.2. Ensure fire exiting requirements and life safety systems are addressed or adequate mitigating plans are implemented for the building, construction staff and building occupants.
- 10.1.3. Presence of lead paint or ACM's (Asbestos Containing Materials) must be determined prior to the start of any job. Specific protocols or Codes of Practice may apply.

- 10.1.4. Consideration will be given for work that is anticipated to generate significant noise, odours or VOC's (Volatile Organic Compounds) and this will be scheduled outside of school hours or during times when the noise will not disrupt occupant activities. This will require coordination with the Principal.
 - 10.1.5. The work area shall be isolated where possible. This may be achieved at varying levels, by closing doors and opening outside windows for ventilation or by installing appropriate hoarding and negative pressure units to ensure contaminants are not circulated throughout the school causing further health and safety concerns.
 - 10.1.6. Dust shall be minimized during the activity. When drilling, sanding or cutting is taking place, wetting the area may be necessary to reduce dust.
 - 10.1.7. Good housekeeping practices shall be maintained at all times on the work site. Bag and remove dust and debris from the building as soon as possible.
 - 10.1.8. Possible environmental impacts shall be managed and minimized. If work uncovers environmental contaminants or suspected contaminants such as oil spills (current or historic) or potentially friable asbestos materials (check the school asbestos audit) that may be disturbed, this information shall be brought to the attention of the HRCE's employee responsible for the project so that appropriate actions can be taken.
 - 10.1.9. When the activity is completed the work area shall be inspected and cleaned. Dust and debris shall be removed from the area and all efforts will be made to return items to their pre-maintenance activity location.
 - 10.1.10. The Principal shall be notified that the work is completed.
- 10.2. Contaminant Control II** - All Contaminant Control I measures shall apply, as well as;
- 10.2.1. Cover furniture, bookshelves and teaching materials with plastic sheets.
 - 10.2.2. Water misting while performing dust generating activities may be required.
 - 10.2.3. Seal un-used doors. Seal wall penetrations, electrical outlets, or any other source of air leaks in the construction area.
 - 10.2.4. Seal exhaust air vents in construction area and open the windows. If possible shut down air handling system in the area for duration of project.
 - 10.2.5. A walk out mat at exterior of exit door to trap dust may be required.
- 10.3. Contaminant Control III** - All Contaminant Control I and II measures shall apply, as well as;
- 10.3.1. Install an impermeable dust barrier from the true ceiling to the floor consisting of two layers of 6 mil fire retardant polyethylene or solid wall and sealed door. The wall shall remain in place until the job is finished and the clean-up is completed.
 - 10.3.2. Seal all wall penetrations.
 - 10.3.3. Seal off all return and supply air handling ducts and close all windows.
 - 10.3.4. Turn off the air handling system in the area of construction.
 - 10.3.5. Maintain negative air pressure in the construction area using HEPA filter equipped exhaust ventilation. The pressure differential between the project area of contamination and the building's occupied areas shall be demonstrable by a means approved by the HRCE employee responsible for the project.

- 10.3.6. Ensure that the air is exhausted directly outside and away from intake vents.
- 10.3.7. Vacuum all horizontal surfaces including drop cloths with a hepa vacuum.
- 10.3.8. Remove drop cloths.
- 10.3.9. Vacuum again all horizontal surfaces with HEPA Vacuum.
- 10.3.10. Restore ventilation.
- 10.3.11. Remove enclosure and equipment.

10.4. Control IV: (External Work)

- 10.4.1. External work may impact building interior or occupants.
- 10.4.2. To reduce the impact to building interior or occupants, it may be necessary to contain the work area from impacting building interior. This may include closing or opening windows, tarping ceilings to capture debris or water, temporary relocation of occupants or ventilation controls.
- 10.4.3. The job supervisor shall consider weather conditions and forecast to reduce the effect of any weather impacts to the building materials or building occupants.
- 10.4.4. It may be necessary to use protective tarps and ground cover sheets below equipment and work areas to contain building debris such as paint chips, materials, dust or oil from equipment.
- 10.4.5. When the job is completed and the tarps have been lifted, inspect the ground around the job for debris and clean as necessary.

Fire Protection

10.5. Type V: General Fire Protection

- 10.5.1. Ensure fire exiting requirements and life safety systems are addressed or adequate mitigating plans are implemented for the building, construction staff and building occupants. Staff must be aware of temporary modifications to fire safety plans.
- 10.5.2. MSDSs for all materials to be used must be reviewed and available on site.
- 10.5.3. Construction materials stored outside must be a minimum distance of ten feet from the building and be in a secured area.
- 10.5.4. Flammable or Combustible liquids must be stored as per Fire Code requirements. All flammable and combustible liquids or materials must be kept in a secure area at all times.

10.6. Control VI: Fire Protection (minor hot work) - All Contaminant Control V shall apply as well as;

- 10.6.1. Notify the Principal that a risk of fire has increased and the area in which the hot work will occur.
- 10.6.2. Refer and implement the HRCE's hot work permit process. At a minimum the following should be considered;
 - 10.6.2.1. Sweep the work area and remove all unnecessary materials in the vicinity; particularly all combustible and flammable materials and liquids shall be removed from the area (35 feet).
 - 10.6.2.2. Have an appropriate size fire extinguisher available.

- 10.6.2.3.** Inspect the work location for areas (such as a hole in the wall) where hot material or sparks could fall and smolder and close them off so that any hot debris can only fall within your field of view.
- 10.6.2.4.** If it is possible that the flame will go past the object being welded or soldered and excessively heat a flammable or combustible material, then either protect that material with a non-flammable material or wet the material and keep it wetted during the use of heat or grinding.
- 10.6.2.5.** Remain in the area while the joint and/or heated materials cool to room temperature (ambient) while checking for the smell or appearance of smoke in the area.
- 10.6.2.6.** Stay in the area for at least 2 hours and then re-inspect for any smell or appearance of smoke.
- 10.6.2.7.** Ask another staff person to inspect the area for the smell or appearance of smoke. Record who you asked to do the final inspection.
- 10.6.3.** Type VII: Fire Protection (hot work w fire watch) - All Contaminant Control V and VI shall apply as well as;
- 10.6.4.** Notify the Principal that a risk of fire has increased and the area in which the hot work will occur. If any life safety system components (sprinkler, detectors, fire alarms) are not function, hot work should not proceed until these systems are functioning unless fire watch procedures for life systems are followed. See Activation of Fire Watch for Life Safety Systems checklist. Appendix...XX
- 10.6.5.** Refer and implement the HRCE's hot work permit process. At a minimum the following should be considered;
 - 10.6.5.1.** Cover all floor openings with fire stop material. Seal duct work openings with metal covers or blankets and close all doors.
 - 10.6.5.2.** Ensure that there are no potentially explosive atmospheres in the area.
 - 10.6.5.3.** Hot work on vessels, pressure tanks or boilers, use only contractors who are qualified by nationally or internationally recognized boiler and pressure vessel code.
 - 10.6.5.4.** Notify the local fire department of the type of work and the work schedule.
 - 10.6.5.5.** Before hot work is started, designate one employee responsible to complete the fire watch: while work is in progress, during lunch breaks and other breaks and for one hour after all flames are extinguished for the day and monitor the area for an additional two hours. After three hours after the last flame has been extinguished, have a second employee do a final survey of the area for smells or evidence of smoldering or fire and record the inspection.

APPENDIX
Fire Watch Activation Checklist

1. Documentation (identify locations to be checked on an hourly basis, provide contact information for relevant HRCE staff and outside agencies} HRCE provided template to be used for documentation.
2. Procedure reviewed with Custodian or individual responsible for fire watch. Any high-risk areas shall be identified to be highlighted on the documentation page and checked during the rounds.
3. Staff working in the building have been notified of the Fire Watch and that they are responsible to monitor areas for signs of fire or smoke and have been reminded of required actions to take according to the school fire safety plan.
4. Staff responsible for fire watch have been trained in how to use a fire extinguisher. (PASS)
5. Staff responsible for the fire watch have a means of communication (cell phone or walkie-talkies)
6. Staff responsible for the fire watch are aware of the procedure for initiating fire alarm and what systems are functioning. i.e. systems (sprinklers, alarm panel or if school has monitoring company or if calling 911 is required)
7. The School Insurance Program (SIP) Emergency Information Line has been notified 1-902-448-2840
8. All relevant information has been documented in the school's fire books. Including date, time and reason for fire watch.

Fire Watch De-Activation Checklist

1. Document the date, time and actions taken to remedy the deficiency requiring the fire watch.
2. School Insurance Program (SIP) has been notified.
3. Copy of the Fire Watch documentation is kept in the fire book and the original is sent to the HRCE Project Representative.

END OF SECTION 01 35 13

SECTION 01 35 29 - OCCUPATIONAL HEALTH & SAFETY REQUIREMENTS

1. References

- 1.1. CSA S269.1-1975 Falsework for Construction Purposes.

2. CONSTRUCTION SAFETY MEASURES

- 2.1. Observe construction safety measures of:
 - 2.1.1. National Building Code 2010, Part 8
 - 2.1.2. National Fire Code of Canada
 - 2.1.3. Provincial Government, including but not limited to the:
 - 2.1.3.1. Occupational Health & Safety Act revised Statutes of Nova Scotia 1996, Chapter 7 and regulations.
 - 2.1.3.2. Workers' Compensation Act
 - 2.1.3.3. Fire Protection Act
 - 2.1.3.4. Dangerous Goods Transportation Act
- 2.2. In case of conflict or discrepancy the more stringent requirement shall apply.
- 2.3. Ensure that employees working on this specific project have met training requirements as legislated by the Nova Scotia Occupational Health & Safety Act and its regulations.
- 2.4. Where reference is made to jurisdictional authorities, it shall mean all authorities who have within their constituted powers the right to enforce the laws of the place of the building.

3. Equipment & Tools

- 3.1. Each user of equipment or tools shall be responsible to examine for sufficiency before use. Make equipment and tools safe if necessary.

4. WHMIS

- 4.1. Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of material safety data sheets.
- 4.2. Have a copy of WHMIS data sheets available at the workplace on delivery of materials.

5. Hazardous Material

- 5.1. Should material resembling hazardous materials other than those identified with the Contract Documents, including but not limited to spray or trowel applied asbestos, be encountered in course of work; stop work immediately. Do not proceed until written instructions have been received from Consultant.
- 5.2. Where work entails use, storage, or disposal of toxic or hazardous materials, chemicals and or explosives, or otherwise creates a hazard to life, safety, health, or the environment; work shall be in accordance with the Jurisdictional Authority.

6. Site Cleaning

- 6.1. Except where special permission is obtained, maintain clear access on public sidewalks and roads.
- 6.2. Maintain walks and roads clear of construction materials and debris, including excavated material. Clean walks and roads as frequently as required to ensure that they are cleared of materials, debris and excavated material.

7. Fire Safety Requirements

- 7.1. Enforce fire protection methods, good housekeeping and adherence to local and Underwriter's fire regulations including, but not limited to, Fire Protection Act and the Provincial Building Code Act. Provide UL approved fire extinguishers, and other fire- fighting services and equipment, except where more explicit requirements are specified as the responsibility of individual Sections.
- 7.2. Smoking is not permitted on school property.
- 7.3. Advise Fire Chief in the area of Work of any work that would impede fire apparatus response, including but not limited to violation of minimum overhead clearance prescribed by the fire chief, erecting of barricades and digging of trenches and in areas where work is being done.
- 7.4. Ensure nothing subverts the integrity of fire protection provided for the building structure.

8. Reporting Fires

- 8.1. Know the location of the nearest fire alarm box and telephone, including the emergency phone number.
- 8.2. Report immediately all fire incidents to the fire department as follows:
 - 8.2.1. Activate nearest fire alarm box, or
 - 8.2.2. Telephone local fire department
 - 8.2.3. Where fire alarm box is exterior to building, the person activating the fire alarm box shall remain at the box to direct Fire Department to scene of the fire.
 - 8.2.4. When reporting a fire by telephone, give location of fire, name or number of building and be prepared to verify the location.

9. Safety Document Submission

- 9.1.** Ensure Safety Document Submission applies to Work of this specific project and site.
- 9.2.** Submit two (2) copies of Project Safety Document at the Pre-Construction Meeting. Do not commence Work nor deliver material on-site prior to submission.
- 9.3.** Include in Safety Document submission specific information detailing the methods and procedures to be implemented ensuring adherence to the acts, regulations, codes and policies specified in this section and to:
 - 9.3.1.** Ensure the Health & Safety of persons at or near the Work; including, but not limited to, the Public.
 - 9.3.2.** Ensure the measures and procedures of the regulatory agencies specified are carried out.
 - 9.3.3.** Ensure every employee, self-employed person and employer performing Work under this contract complies with the regulatory agencies specified.
 - 9.3.4.** Where changes to the methods and procedures in the execution of work change submitted safety methods and procedures, modify submitted Safety Documentation and submit modifications, in writing to the Consultant and Owner prior to implementation.

10. Safety Document Organization

- 10.1.** Organize information in the form of an instructional manual as follows:
 - 10.1.1.** Place in binders of commercial quality, accommodating 8½" x 11" paper size.
 - 10.1.2.** Cover: Identify binder with typed or printed title 'Project Safety Document' and list the title of project.
 - 10.1.3.** Provide tabbed fly leaf for each separate heading, with typed heading on tab.
 - 10.1.4.** Where drawings are within the safety document, provide with reinforced punched binder tab. Bind in with text; fold in larger drawings to size of text pages.
 - 10.1.5.** Arrange content under Safety Document headings specified herein.

11. Safety Document Headings

11.1. Employee Safety Training

11.1.1. Place, under this heading, a statement indicating employees working on this specific project have met specified training requirements, if required.

11.2. Company Safety Policy

11.2.1. Place, under this heading, information pertaining to the company's policy and commitment to Occupational Health & Safety, including the responsibilities of management, supervisors and workers.

11.3. Company Safety Rules in General Terms

11.3.1. Place, under this heading, information of a general, global nature, applying to every work environment where the company has staff and pertaining to rules directing compliance to policy. For example state company safety rules with respect to use of hard hats, safety glasses, safety foot ware, CSA approval on such items, and use of alcohol or non-prescription drugs.

11.4. Hazard Assessment

11.4.1. Place, under this heading, information identifying possible hazards specific to this project and identify safe methods and procedures for the execution of work to ensure safety in the workplace.

11.4.2. Arrange contents of this heading by technical section number of the project manual.

11.5. Emergency Action Plan

11.5.1. Place, under this heading, information detailing action to be taken in the event of various emergencies.

11.5.2. Arrange content under the following sub-headings:

11.5.2.1. First Aid

11.5.2.1.1. Include information concerning establishment of a First Aid Station, related supplies, staff awareness of location and staff training in First Aid Care of Casualties.

11.5.2.2. Contact of Emergency Support Groups:

11.5.2.2.1. Include relative information including phone location for emergency use, the emergency telephone numbers and their location for the various organizations which must be contacted in case of an emergency, and staff training in procedures.

Cessation of Work:

11.5.2.2.2. Include relative information how work cessation during emergencies is handled and communicated to persons present on site.

11.6. Joint Occupational Health & Safety Committee/Representative:

11.6.1. Place under this heading information detailing membership and terms of reference.

OCCUPATIONAL HEALTH & SAFETY SUMMARY FOLLOWS THIS PAGE

Occupational Health & Safety Summary (to be submitted with each monthly Progress estimate)

The following information summarizes Occupational Health & Safety activities on the project conducted by the Contractor during the month and includes activities of Subcontractors. Activities include all matters prescribed by the Occupational Health & Safety Act and Regulations and the submitted Occupational Health & Safety Document for the Project.

Indicate the applicable # number below:

List new Contractors on Site below:

____ new contractors on site,

____ orientations

____ toolbox talks

____ safety meetings

____ Joint Occupational Health
and Safety Committee meetings

____ hazard assessments

____ formal written inspections

____ warnings issued to employees or subcontractors

____ other, explain _____

The Contractor certifies that the above noted activity list is accurate and that during the month:
Check

All activities on the Project were found to be in compliance with the Occupational Health & Safety Act and Regulations

Some activities on the Project were not found to be in compliance with the Occupational Health & Safety Act and Regulations but were adequately corrected in an appropriate time frame. Explain

Prepared by

Certified by

(Contractor Project Manager)

(Contractor Senior Management)

END OF SECTION 01 35 29

SECTION 01 37 00 - SCHEDULE OF VALUES

1. Related Documents

- 1.1. General Conditions of Contract.

2. General

- 2.1. Submit to the Architect, and Owner, Schedule of Values, within twenty (20) days after signing Agreement.
- 2.2. Use Schedule of Values as basis for Contractor's Progress Claim.

3. Form Of Submittal

- 3.1. Form included at end of this Section.

4. Preparing Schedule Of Values

- 4.1. Itemize separate line item cost for work required.
- 4.2. Round off figures to nearest ten (10) dollars.
- 4.3. The sum of all values listed in the schedule shall equal the total contract sum.

5. Review And Submittal

- 5.1. After review by Architect and Owner, revise and resubmit Schedule as directed.
- 5.2. The form shall be completed and supported by such evidence as to its correctness as the Architect may reasonably direct.

SCHEDULE OF VALUES

#4195 - Window Replacement –
Project Name *Sunnyside Elementary (Fort Sackville)*

Architect

Contractor

Date

Halifax Regional Centre for Education – Schedule of Values		
Contract Item	Percentage	Dollar Value
Mobilization, bonding / insurance, safety, set up safety fencing and window access	10	
Materials - approved materials delivered to site . Approved area by HRCE	25	
Removal of existing windows and prepare window opening	15	
Install new windows	20	
Cladding, mill work, trim and finishes	20	
Close out documentation including copy of warranty	10	
Total	100 %	

END OF SECTION 01 37 00

SECTION 01 41 00 - REGULATORY AGENCIES

1. Jurisdictional Authorities

- 1.1. Where reference is made to jurisdictional authorities, it shall mean all authorities who have within their constituted powers the right to enforce the laws of the place of building.

2. Definitions

- 2.1. The "Constructor" named in the Construction Safety Act, Chapter 52, Revised Statutes of Nova Scotia, as amended by 1972, Chapter 25; and Construction Safety Regulations, pursuant to Chapter 52 R.S.N.S., including any amendments, shall mean the "Contractor" for the Work performed under this Specification.

3. Fire Prevention, Safety & Protection

- 3.1. General Construction Safety Measures:
- 3.1.1. Observe safety measures of the
 - 3.1.1.1. National Building Code 2010, Part 8.
 - 3.1.1.2. National Fire Code of Canada.
 - 3.1.1.3. Provincial Government, including but not limited to the Occupational Health & Safety Act Revised Statutes of Nova Scotia 1996, Chapter 320, and the Construction Safety & Industrial Safety Regulations made pursuant to the Occupational Health and Safety Act, 1996.
 - 3.1.1.4. Workers'/Workmen's Compensation Board.
 - 3.1.2. In case of conflict or discrepancy the more stringent requirement shall apply.
 - 3.1.3. Maintain clear emergency exit paths for personnel.
- 3.2. Except where special permission is obtained, maintain clear access on public sidewalks and roads.
- 3.3. Maintain walks and roads clear of construction materials and debris, including excavated materials. Clean walks and roads as frequently as required to ensure that they are cleared of materials, debris and excavated materials.
- 3.4. WHMIS:
- 3.4.1. Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of material safety data sheets acceptable to Labour Canada and Health & Welfare Canada.
 - 3.4.2. Have a copy of WHMIS data sheets available at the workplace on delivery of materials.

Blockage of Roadways

- 3.5.** Advise Fire Chief of any work that would impede fire apparatus response. This includes violation of minimum overhead clearance, as prescribed by fire chief, erecting of barricades and the digging of trenches.

4. Smoking Precautions

- 4.1.** Observe, at all times, smoking regulations.

5. Rubbish And Waste Materials

- 5.1.** Rubbish and waste materials are to be kept to a minimum.
5.2. The burning of rubbish is prohibited.

6. Flammable And Combustible Liquids

- 6.1.** The handling, storage and use of flammable and combustible liquids are to be governed by the current National Fire Code of Canada.
6.2. Flammable and combustible liquids such as gasoline, kerosene and naphtha will be kept for ready use in quantities not exceeding 45 litres provided they are stored in approved safety cans bearing the Underwriter's Laboratory of Canada or Factory Mutual seal of approval. Storage of quantities of flammable and combustible liquids exceeding 45 litres for work purposes, requires the permission of the Fire Chief.
6.3. Transfer of flammable and combustible liquids is prohibited within buildings or jetties.
6.4. Transfer of flammable and combustible liquids will not be carried out in the vicinity of open flames or any type of heat-producing devices.
6.5. Flammable liquids having a flash point below 38°C such as naphtha or gasoline will not be used as solvents or cleaning agents.
6.6. Flammable and combustible waste liquids, for disposal, will be stored in approved containers located in a safe ventilated area. Quantities are to be kept to a minimum and the Fire Department is to be notified when disposal is required.

7. Hazardous Substances

- 7.1.** Work entailing the use of toxic or hazardous materials, chemicals and/or explosives, otherwise creates a hazard to life, safety or health, will be in accordance with the National Fire Code of Canada.
7.2. Where flammable liquids, such as lacquers or urethanes are to be used, proper ventilation will be assured and all sources of ignition are to be eliminated. The Fire Chief is to be informed prior to and at the cessation of such work.

8. Questions and/or Clarification

- 8.1.** Direct any questions or clarification on Fire Safety in addition to above requirements to Fire Chief.

9. Fire Inspection

- 9.1.** Site inspections by Fire Chief will be coordinated through HRCE Project Manager.
- 9.2.** Allow Fire Chief unrestricted access to the work site.
- 9.3.** Co-operate with the Fire Chief during routine fire safety inspection of the Work site.
- 9.4.** Immediately remedy all unsafe fire situations observed by the Fire Chief.

10. Reference Standards

- 10.1.** Where edition date is not specified, consider that references to manufacturer's and, published codes, standards and specifications are made to the latest edition, (revision) approved by the issuing organization, current at the date of this Specification.
- 10.2.** Reference standards and specifications are quoted in this Specification to establish minimum standards. Work which in quality exceeds these minimum standards shall be considered to conform.
- 10.3.** Should the Contract Documents conflict with specified reference standards or specifications the General Conditions of the Contract shall govern.
- 10.4.** Where reference is made to manufacturer's directions, instructions or specifications they shall include full information on storing, handling, preparing, mixing, installing, erecting, applying, or other matters concerning the materials pertinent to their use and their relationship to materials with which they are incorporated.
- 10.5.** Have a copy of each code, standard and specification, and manufacturer's directions, instructions and specifications, to which reference is made in this Specification, always available at construction site.
- 10.6.** Standards, specifications, associations, and regulatory bodies are generally referred to throughout the specifications by their abbreviated designations:

AA	The Aluminum Association
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute
ARI	Air Conditioning & Refrigeration Institute
ASTM	American Society for Testing & Materials
CCA	Canadian Construction Association
CGSB	Canadian General Standards Board
CSA	Canadian Standards Association
NSDTIR	Department of Transportation & Infrastructure Renewal, Province of Nova Scotia
IAO	Insurers Advisory Organization
NBC	National Building Code
NFPA	National Fire Protection Association
CANS	Construction Association of Nova Scotia
ULC	Underwriters Laboratories of Canada
WHMIS	Workplace Hazardous Materials Information System

END OF SECTION 01 41 00

SECTION 01 45 00 - QUALITY CONTROL

1. Section Includes

- 1.1. Inspection and testing, administrative and enforcement requirements
- 1.2. Tests and mix designs.
- 1.3. Mock-ups.
- 1.4. Mill tests.
- 1.5. Equipment and system adjust and balance.
- 1.6. Verification by affidavits and certificates that specified products meet requirements of reference standards: In applicable Sections of the Specification.
- 1.7. Testing, balancing and adjusting of equipment: In applicable Mechanical and Electrical Sections of the Specification.
- 1.8. Cutting & Patching: Section 01 11 41.

2. Related Sections

- 2.1. Section 01 33 00 Submittal Procedures: Submission of samples to confirm product quality.
- 2.2. Section 01 61 00 Material & Equipment: Material and workmanship quality – reference standards.
- 2.3. Section 01 77 00 Contract Closeout.

3. REVIEW OF WORK

- 3.1. The Owner shall have access to the Work. If part of the Work is in preparation at locations other than the Place of the Work, access shall be given to such work whenever it is in progress.
- 3.2. Give timely notice to the Owner's Representative, requesting review of the Work as indicated in the Contract Documents.
- 3.3. If the Contractor covers or permits to be covered Work that has been designated for review by the Owner before such is made, uncover such Work, have the review satisfactorily completed and make good such Work at no extra cost to Owner.

4. Inspection, Special Tests, Approvals

- 4.1. Engage the services of appropriate inspection testing agencies ensuring the Work meets codes, acts and regulations, and laws in force at the place of Work. Include such costs in the Contract Price.

- 4.2. Give timely notice requesting inspection to those required to provide inspections, special tests, or approvals, where Work is designated, by the Owner's instructions or the law of the place of Work, for special tests.
- 4.3. If the Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have the inspections or tests satisfactorily completed and make good such Work at no extra cost to the Owner.
- 4.4. The Owner may order any part of the Work to be examined if the Work is suspected to be not in accordance with the Contract Documents. If, upon examination such Work is found not in accordance with the Contract Documents, correct such Work and pay the cost of examination and correction. If such Work is found in accordance with the Contractor Documents, the Owner shall pay the cost of examination and replacement.

5. Independent Inspection Agencies

- 5.1. Independent Inspection/Testing Agencies may be engaged by the Owner for the purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by the Owner.
- 5.2. Provide access to the Work, and equipment required for executing inspection and testing by the appointed agencies.
- 5.3. Employment of inspection/testing agencies does not relax the Contractor's responsibility to perform Work, or carry out his own inspections and testing in accordance with the Contract Documents.
- 5.4. If defects are revealed during inspection and/or testing, the appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Owner at no cost to the Owner. Pay costs for retesting and reinspection.

6. Access To Work

- 6.1. Allow inspection/testing agencies access to the Work, off site manufacturing and fabrication plants.
- 6.2. Co-operate to provide reasonable facilities for such access.

7. Procedures

- 7.1.** Notify the appropriate agency and Owner in advance of the requirement for tests, in order that attendance arrangements can be made.
- 7.2.** Submit samples and/or materials required for testing, at specifically requested in specifications. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in the Work.
- 7.3.** Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

8. Rejected Work

- 8.1.** Remove defective Work, whether the result of poor workmanship, use of defective products or damage and whether incorporated in the Work or not, which has been rejected, including (but not limited to) defective Work rejected by the Owner as failing to conform to the Contract Documents. Replace or re-execute in accordance with the Contract Documents.
- 8.2.** Make good other Contractor's work damaged by such removals or replacements promptly.
- 8.3.** If in the opinion of the Owner, it is not expedient to correct defective Work or Work not performed in accordance with the Contract Documents, the Owner may deduct from the Contract Price the difference in value between the Work performed and that called for by the Contract Documents, the amount of which shall be determined by the Owner.

9. Reports

- 9.1.** Submit four (4) copies of inspection and test reports to the Owner.
- 9.2.** Provide copies to Contractor's Consultant and Subcontractor of Work being inspected or tested.

10. Tests and Mix Designs

- 10.1.** Furnish test results and mix designs as may be requested.
- 10.2.** The cost of tests and mix designs beyond those called for in the Contract Documents or beyond those required by law of the Place of Work shall be appraised by the Owner and may be authorized as recoverable.

11. Mock-Up

- 11.1.** Prepare mock-up for Work for each finish in the Work and other work specifically requested in the specifications. Include for Work of all Sections required to provide mock-ups.
- 11.2.** Construct in all locations as specified in specific Section.
- 11.3.** Prepare mock-up for Owner's review with reasonable promptness and in an orderly sequence, so as not to cause any delay in the Work.
- 11.4.** Failure to prepare mock-up in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.
- 11.5.** If requested the Owner will assist in preparing a schedule fixing the dates for preparation.
- 11.6.** Mock-ups may remain as part of the Work, unless specified otherwise in the Contract Documents.

12. Mill Tests

- 12.1.** Submit mill test certificates as may be requested.

13. Equipment And Systems

- 13.1.** Submit adjustment and balancing reports for mechanical, electrical and building equipment systems.
- 13.2.** Refer to Contract Documents for definitive requirements.

END OF SECTION 01 45 00

SECTION 01 52 00 – CONSTRUCTION & TEMPORARY FACILITIES

1. General

- 1.1. Include in the Work construction and temporary facilities required as construction aids or by jurisdictional authorities or as otherwise specified. Install to meet needs of construction as Work progresses. Maintain construction and temporary facilities during use, relocate them as required by the Work, remove them at completion of need and make good adjacent Work and property affected by their installation.
- 1.2. Include in the Work construction and temporary facilities to provide for construction safety such as: fences, barricades, bracing, supports, storage, sanitation and first aid facilities, fire protection, stand pipes, electrical supply, construction equipment with its supports and guards, stairs, ramps, platforms, runways, ladders, scaffolds, guardrails, temporary flooring, rubbish chutes, and walkway, morality and guard lights, and as otherwise required of the Constructor by the Construction Safety Act, of the Province of Nova Scotia, as well as all other applicable regulations or jurisdictional authorities.
- 1.3. Construct temporary Work of new materials unless use of second-hand materials is approved.
- 1.4. Ensure that structural, mechanical, and electrical characteristics of temporary facilities are suitable and adequate for use intended. Be responsible that no harm is caused to persons and property by failure of temporary facilities because of placing, location, stability, protection, structural sufficiency, removal, or any other cause.
- 1.5. Locate temporary facilities as directed and coordinated with School Administration and HRCE.
- 1.6. Relocate construction and temporary facilities as required by the Progress of the Work, and remove at completion of Work.
- 1.7. Do not permit construction personnel to use new washroom and toilet facilities.
- 1.8. Interior work zones to be complete with temporary negative air ventilation units to be functioning at all times to control dust migration to occupied areas.
- 1.9. Refer also to HRCE Policies & Guidelines contained in Appendix A of Section 01 35 13.

2. Services

- 2.1. Temporary Electric Power:
 - 2.1.1. The Contractor will provide a source of electric power for all construction purposes.
 - 2.1.2. Coordinate with the Building Operator locations of power sources and arrange to connect under his direction.
 - 2.1.3. Install electric service distribution conductors and necessary components. Determine anticipated demand which will be placed on service during normal peak periods and obtain approval on this basis before making installation. Supply power of characteristics required by the Work. Install a power centre for miscellaneous tools

and equipment for each major building floor area with distribution box, a minimum of four 20 amp grounded outlets, and circuit breaker protection for each outlet. Make connections available to any part of the Work within distance of a 100'-0" extension.

2.2. Temporary Lighting:

2.2.1. Install lighting for

2.2.1.1. emergency evacuation, safety and security throughout the Project at intensity levels required by jurisdictional authorities.

2.2.1.2. performance of Work throughout Work areas as required, evenly distributed, and at intensities to ensure that proper installations and applications are achieved.

2.2.1.3. performance of finishing Work in areas as required, evenly distributed and of an intensity of at least 15 foot candles.

2.2.2. Permanent fluorescent lighting may be used during construction, provided that fixtures, lamps and lenses are completely cleaned. Incandescent sources may be used during construction to the extent of 20% of the total. Electrical Division Contractor to provide 20% spare lamps to the Owner for replacement purposes.

2.3. Temporary Sanitary Facilities:

2.3.1. Provide sanitary facilities for persons on the Work site. Facilities in areas of the building are only to be used under extraordinary circumstances and with prior approval.

2.4. Maintain fire protection as required by jurisdictional authorities. The Contractor is responsible for de-activating and re-activating Fire Alarm zones as required by the Work of the Contract and to maintain protection in the existing building.

3. Construction Aids

3.1. Hoists & Cranes:

3.1.1. Select, operate and maintain hoisting equipment and cranes as may be required. Operate such equipment only by qualified hoist or crane operators. Make hoist available for Work of each Section.

3.2. Building Enclosure:

3.2.1. Include in Work temporary enclosure for building as required to protect it, in its entirety or in its parts, against the elements, to maintain environmental conditions

required for Work. Design enclosures to withstand wind pressures required for the building by jurisdictional authorities. Erect enclosures to allow complete accessibility for installation of materials during the time enclosures remain in place.

3.3. Scaffolding:

- 3.3.1. Each user of scaffolding shall be responsible for its examination and testing for sufficiency before using it. He shall make it secure if necessary, or shall notify the Contractor in writing that he will not commence work until it is made secure; otherwise he will be held responsible for accidents due to its insufficiency.

4. Barriers

- 4.1. Install barricades for traffic control, and to prevent damaging traffic over exterior and interior finished areas, as well as safety barricades and otherwise, as may be required.
- 4.2. Construct hoardings and walkways as required by HRCE or jurisdictional authorities.

5. Protection

- 5.1. Protect roofs and podiums by substantial temporary construction to ensure that no damage occurs. Provide protection by materials of sufficient thickness to prevent all damage to structure and finish, and to waterproofing qualities of membranes, whenever each of these individual components are exposed. Damage shall include harm resulting from all construction work, such as falling objects, wheel and foot traffic, failure to remove debris, operation of machinery and equipment, and scaffolding and hoisting operations. Positively secure protection to prevent displacement from any cause.
- 5.2. Box with wood or otherwise protect from damage, by continuing construction, finished sills, jambs, corners, and the like.

END OF SECTION 01 52 00

SECTION 01 61 00 - MATERIAL & EQUIPMENT

1. General

- 1.1. Products refer to materials, manufactured components and assemblies, fixtures and equipment incorporated in the Work.
- 1.2. Use only products of Canadian manufacture unless such products are not manufactured in Canada, are specified otherwise, or are not competitive.
- 1.3. Products for use in the Project and on which the Tender was based shall be in production at that time, with a precise model and shop drawings available for viewing.
- 1.4. Where equivalent products are specified, or where alternatives are proposed under "substitution of products", these products claimed by the Contractor as equivalent shall be comparable in construction, type, function, quality, performance, and, where applicable, in appearance, as approved. Where specified equivalents are used in the tendered bulk sum price for the Work, they shall be subject to final approval.
- 1.5. Incorporate products in the Work in strict accordance with manufacturers' directions unless specified otherwise.
- 1.6. Products delivered to the Project site for incorporation in the Work shall be considered the property of the Owner. Maintain protection and security of products stored on the site after payment has been made for them.
- 1.7. Do not install permanently incorporated labels, trademarks and nameplates, in visible locations unless required for operating instructions or by jurisdictional authorities.

2. Specified Products

- 2.1. Products specified by manufacturer's name, brand name or catalogue reference shall be the basis of the bid and shall be supplied for the Work without exception in any detail, subject to allowable substitutions as specified.
- 2.2. Where several proprietary products are specified, any one of the several will be acceptable.
- 2.3. For products specified by reference standards, the onus shall be on the supplier to establish that such products meet reference standard requirements. The Architect may require affidavits from the supplier, as specified in Section 01 33 00, or inspection and testing at the expense of the supplier, or both, to prove compliance. Products exceeding minimum requirements established by reference standards will be accepted for the Work if such products are compatible with and harmless to Work with which they are incorporated.

3. Substitution Of Products During Progress Of Work

- 3.1.** Products substituted for those specified or approved, or both, shall be permitted only if the listed product cannot be delivered to maintain construction schedule and if the delay is caused by conditions beyond the Contractor's control.
- 3.2.** Obtain approval for substitutions. Application for approval of substitutions shall be made only by Contractor. Process proposals for substituted Work in accordance with procedures established for changes in the Work.
- 3.3.** Submit, with request for substitution, documentary evidence that substituted products are equal to, or superior to, approved products, and a comparison of price and delivery factors for both specified or approved products, and proposed substitute.
- 3.4.** Ensure that substituted products can be both physically and dimensionally incorporated in the Work with no loss of intended function, performance, space or construction time, and that spare parts and service are readily available. The Contractor shall be responsible for additional installation costs, including architectural and engineering fees, required by incorporation of substituted products, and for adaptations made otherwise necessary to ensure that above requirements are satisfied.

4. Product Handling

- 4.1.** Manufacture, pack, ship, deliver and store products so that no damage occurs to structural qualities and finish appearance, nor in any other way detrimental to their function or appearance, or both.
- 4.2.** Ensure that products, while transported, stored or installed, are not exposed to an environment which would increase their moisture content beyond the maximum specified.
- 4.3.** Schedule early delivery of products to enable Work to be executed without delay. Before delivery, arrange for receiving at site.
- 4.4.** Deliver package products, and store until use, in original unopened wrapping or containers, with manufacturer's seals and labels intact.
- 4.5.** Label packaged products to describe contents, quantity and other information as specified.
- 4.6.** Product handling requirements may be repeated and additional requirements specified, in other Sections.

5. Storage & Protection

- 5.1. Coordinate material delivery to ensure that areas within or on building are available to receive them.
- 5.2. Store manufactured products in accordance with manufacturer's instructions, when such instructions are attached to products or submitted by him.
- 5.3. Store finished products and woodwork under cover at all times.
- 5.4. Store and handle flammable liquids and other hazardous materials in approved safety containers and as otherwise prescribed by safety authorities. Store no flammable liquids or other hazardous materials in bulk within the Project.
- 5.5. Storage and special protection requirements may be repeated, and additional requirements specified, in other Sections.

6. Defective Products & Work

- 6.1. Products and Work found defective; not in accordance with the Specifications; or defaced or injured through negligence of the Contractor, his employees or subcontractors, or by fire, weather or any other cause will be rejected for incorporation in the Work.
- 6.2. Remove rejected products and Work from the premises immediately.
- 6.3. Replace rejected products and Work with no delay after rejection. Provide replacement products and execute replacement Work precisely as required by the Specification for the defective Work replaced. Previous inspection and payment shall not relieve the Contractor from the obligation of providing sound and satisfactory Work in compliance with this Project Manual.

7. Workers, Suppliers & Subcontractors

- 7.1. Assign Work only to workers, suppliers, and Subcontractors who have complete knowledge, not only of the conditions of this Project Manual, but of jurisdictional requirements, and reference standards and specifications.
- 7.2. Give preference to use of local workers, suppliers, and Subcontractors wherever possible.

8. Workmanship

- 8.1. Unless otherwise specified in a more detailed manner, workmanship shall be of the highest quality recognized by trade executing the Work in accordance with standard practices, by the best methods recommended by the manufacturer of the Product, and as approved by the Architect.

END OF SECTION 01 61 00

SECTION 01 77 00 – CONTRACT CLOSEOUT

1. Section Includes

- 1.1. Final cleaning.
- 1.2. Spare parts and maintenance materials.
- 1.3. Take over procedures.

2. Related Sections

- 2.1. Individual Specifications Sections: Specific requirements for operation and maintenance data.

3. Final Cleaning

- 3.1. Refer to the General Conditions of Contract.
- 3.2. Before final inspection, replace glass and mirrors broken, damaged and etched during construction, or which are otherwise defective.
- 3.3. In addition to requirements for cleaning-up specified in General Conditions of the Contract, include in Work final cleaning by skilled cleaning specialists on completion of construction.
- 3.4. Remove temporary protections and make good defects before commencement of final cleaning.
- 3.5. Remove waste products and debris other than that caused by the Owner, other contractors or their employees, and leave the Work clean and suitable for occupancy by Owner.
- 3.6. Remove surplus products, tools, construction machinery and equipment. Remove waste products and debris other than that caused by the Owner or other Contractors.
- 3.7. Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.
- 3.8. Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and floors and ceilings.
- 3.9. Vacuum clean and dust building interiors, behind grilles, louvres and screens as affected by Work.
- 3.10. Wax, seal, shampoo, buff or prepare floor finishes, as recommended by the manufacturer. Use products compatible with products used by building maintenance staff.
- 3.11. Broom clean and wash all horizontal and vertical surfaces as affected by Work.
- 3.12. Clean up and make good exterior grades, lawns, planting and surfaces after removal of temporary access and facilities.
- 3.13. Removing of visible labels left on materials, components, and equipment.
- 3.14. Maintain cleaning until Owner has taken possession of building or portions thereof.

4. Spare Parts And Maintenance Materials

- 4.1.** Spare parts and maintenance materials provided shall be new, not damaged or defective, and of the same quality and manufacture as Products provided in the Work. If requested, furnish evidence as to type, source and quality of Products provided.
- 4.2.** Defective Products will be rejected, regardless of previous inspections. Replace products at own expense.
- 4.3.** Store spare parts and maintenance materials in a manner to prevent damage, or deterioration.
- 4.4.** Provide spare parts, special tools, maintenance and extra materials in quantities specified in individual specification Sections.
- 4.5.** Provide items of same manufacture and quality as items in the Work.

5. Demonstration Of Systems & Equipment

- 5.1.** Give a complete demonstration of all systems and equipment in the presence of the Consultant at the following times:
- 5.2.** When each is 100% completed at the request of the Contractor.
- 5.3.** At time of inspection to validate final completion.
- 5.4.** At final completion for the benefit of the maintenance staff for the Project.
- 5.5.** Responsible personnel representing the Subcontractor responsible for the Work being demonstrated shall be present at each demonstration.

6. Submittals

- 6.1.** Submit with application for substantial performance certificate.
 - 6.1.1.** Certificate of Substantial Performance inspection report from electrical utility or inspection.
 - 6.1.2.** Certificate of verification of fire alarm system.
 - 6.1.3.** Certificate from the Fire Marshal's Office and I.A.O. of final inspection of sprinkler system.
 - 6.1.4.** Air balance reports.
 - 6.1.5.** Other reports required or specified.
 - 6.1.6.** Maintenance Manuals and Operating Instructions.
- 6.2.** Submit with application for release of final payment:
 - 6.2.1.** Final project record drawings.
 - 6.2.2.** Extra stock.
 - 6.2.3.** Performance bonds which shall remain in effect for one (1) year after take-over date.
 - 6.2.4.** Completed Liability Insurance Policy extended for one (1) year from take-over date.
 - 6.2.5.** Written guarantee covering all workmanship and materials used in the Work.
 - 6.2.6.** Maintenance bonds as specified.

- 6.2.7. Extended Warranties as specified
- 6.2.8. Certificate from Workers' Compensation Board.
- 6.2.9. Certificate from Health Services Tax Division.

7. Final Inspection Procedures

- 7.1. Schedule, make arrangements for and administer final inspections and close out in the following stages.
- 7.2. Contractor's Inspection:
 - 7.2.1. Determination that Project meets requirements for substantial performance and inspection is the responsibility of the Contractor.
 - 7.2.2. The Contractor and all Subcontractors shall conduct an inspection of the work, identify deficiencies and defects; repair as required. Notify the Consultant in writing of satisfactory completion of the contractor's Inspection and that corrections have been made. Request a Consultant's Substantial Performance Inspection.
- 7.3. Consultant's Inspection: Consultants and the Contractor will perform an inspection of the Work to identify obvious defects or deficiencies. The contractor shall correct Work accordingly.
- 7.4. Substantial Performance Inspection:
 - 7.4.1. When the items noted above are complete, request a substantial performance inspection of the Work by the Consultant, and the Contractor. If Work is deemed incomplete by the Consultant, complete the outstanding items and request a re-inspection.
 - 7.4.2. Substantial performance inspections shall be scheduled to begin within eight working days of the Contractor's request.
 - 7.4.3. Present at the substantial performance inspection will be:
 - 7.4.3.1. The Consultant and his Sub-consultants that he requires and notifies.
 - 7.4.3.2. The Owner's representatives, upon notification by the Consultant.
 - 7.4.3.3. The Contractor and such Subcontractors that he considers are required.
 - 7.4.3.4. The Contractor will compile a substantial performance deficiency list at this inspection and issue it to the Consultant and Owner.
 - 7.4.3.5. The Contractor shall correct substantial performance deficiencies before a date agreed upon by the Contractor and Consultant.
 - 7.4.3.6. Upon the Consultant's approval of substantial performance, the Contractor shall submit an application for a substantial performance certificate.
 - 7.4.3.7. When the Contractor has satisfied himself that these corrections have been completed in a satisfactory manner by his inspection he shall schedule a final Contractor's inspection by the Consultant, and the Owner's representatives if required, within five working days of the Contractor's request.

7.4.3.8. Upon the Consultant's approval of completion, the Contractor shall submit an application for a completion certificate.

8. Substantial Performance

- 8.1.** The Consultant will issue a Certificate of Substantial Performance when satisfied outstanding deficiencies noted during inspections prior to the Substantial Performance inspection have been corrected, the Work is substantially complete and is so certified by the Owner.
- 8.2.** A list of remaining deficiencies to be rectified before final acceptance will be attached to the Certificate of Substantial Performance.
- 8.3.** Make submissions specified in Subparagraph 1.06 of this Section.

9. Certificate For Release Of Amount Due At Substantial performance

- 9.1.** The Consultant will issue to the Owner a certificate for release of money in an amount equal to the amount due the Contractor under the Contract Documents provided the Consultant is satisfied the Work has been substantially completed.
- 9.2.** The certificate shall indicate the date of substantial performance.
- 9.3.** Payment shall be due in accordance with GC 5.4 and the Contract Documents.

10. Completion Certificate

- 10.1.** The Consultant will issue a Certificate of Completion (DSS Document DC670-92) when he is satisfied that outstanding deficiencies noted during inspections have been corrected and the Work is completed and is so certified by the Owner.
- 10.2.** The date of the completion certificate will commence the required sixty (60) day period before release of final payment.

11. Certificate For Release Of Final Payment

- 11.1.** Subject to the provisions of the Contract Documents, the Consultant will issue to the Owner a certificate for release of final payment sixty (60) days after date of completion certificate providing he is satisfied the Work has been completed.
- 11.2.** The certificate will be in an amount equal to the remaining money due the Contractor under the Contract, and shall indicate the date of final completion.
- 11.3.** Payment shall be due upon date of final completion.

12. Warranties

12.1. Establishment of Warranties:

12.1.1. Warranties shall commence on the Ready-for-Takeover date.

12.2. Warranty Period:

12.2.1. The Owner will advise the Consultant of defects observed during warranty periods.

12.2.2. The Consultant will notify the Contractor of defects observed during warranty period and request him to remedy the defects in accordance with the Contractor documents.

12.2.3. Thirty (30) days before expiration of warranties the Owner's representatives, the Consultant and the Contractor will inspect the Work as arranged by the Contractor noting defects of products and workmanship.

12.2.4. The Contractor shall immediately remedy such noted defects.

END OF SECTION 01 77 00

CONTRACTOR'S CHECKLIST

Pre-Closing Reminder to Proponents:

- This Request for Proposals (RFP) is a **two-file process**.
Please ensure that the submission instructions are followed carefully as noted in Section 00 21 13 – Information to Proponents to ensure your submission is compliant.
- Required Bid Security – (10% of the Contract price before HST)
- Please include a copy of your bid security in with your Price Submission file.
- Please submit your proposal to the submission email address: hrcetenders@hrce.ca
- The HRCE will use the CCDC-2, 2020 for this work. A copy of the Standard Construction Contract CCDC 2 – 2020 is available upon request and will form part of the contract documents.
- The HRCE Supplementary General Conditions for the CCDC-2, 2020 applicable for this work is available for review under Section 0073 00 of the RFP document.

Post Award Document Requirements:

- Certificate of Recognition from a safety audit organization, jointly signed with the WCB.
- Workers' Compensation Board Letter of Good Standing.
- Certificate of Good Standing from the Canadian Roofing Contractors Association and Roofing Contractors Association of Nova Scotia.
- Contract Security documentation – if required
- Insurance Certificate – As identified in the RFP.
- Schedule of Values
- Site Specific Safety Plan
- Hazard Assessment
- Listing of subcontractors
- Warranty information

The award letter will list the specific documents required and provide a submission timeframe.

A purchase order will be issued only after receipt of all required items.

Work is not authorized until purchase order is issued.

Project Experience and References Form

Refer Technical Submission Requirements in Section 11.3.1 Section I.

Project #1 – The most recent HRCE project, if applicable.

Company Name	
Brief Project Description	
Project Manager Name	
Project Dollar Value \$	
Reference Name and Position Title	
Reference Contact Info - Email Address - Phone Number	

Project Experience and References Form

Refer Technical Submission Requirements in Section 11.3.1 Section I.

Project #2 – The next most recent HRCE project, if applicable

Company Name	
Brief Project Description	
Project Manager Name	
Project Dollar Value \$	
Reference Name and Position Title	
Reference Contact Info - Email Address - Phone Number	

Project Experience and References Form

Refer Technical Submission Requirements in Section 11.3.1 Section I.

Project #3 – Any recent project

Company Name	
Brief Project Description	
Project Manager Name	
Project Dollar Value \$	
Reference Name and Position Title	
Reference Contact Info - Email Address - Phone Number	



Halifax

Regional Centre for Education

**Sunnyside Elementary
Window Replacement**

21 Perth St, Bedford, NS B4A 2H1

Issued for Tender

FBM Project # 2023-059

January 29, 2024

00	PROCUREMENT AND CONTRACTING REQUIREMENTS	
00 01 10	List of Contents	1
00 11 10	List of Drawings	1
00 31 26	Existing Hazardous Material Information	1
-	- Hazardous Building Materials Assessment (Preconstruction) – Fort Sackville Elementary School, 21 Perth Street, Bedford, NS HRCE	
-	Outlined in “Halifax Regional Centre for Education” General Requirements	
01	GENERAL REQUIREMENTS	
-	Outlined in “Halifax Regional Centre for Education” General Requirements	
03	CONCRETE	
-	Not Used.	
04	MASONRY	
-	Not Used.	
05	METALS	
-	Not Used.	
06	WOODS, PLASTICS, AND COMPOSITES	
06 10 00	Rough Carpentry	4
06 20 00	Finish Carpentry	4
07	THERMAL AND MOISTURE PROTECTION	
07 21 13	Board Insulation	5
07 27 13	Sheet Membrane Air and Vapour Barriers	6
07 42 00	Composite Metal Panels	7
07 62 00	Sheet Metal Flashing and Trim	5
07 92 00	Joint Sealants	6
08	OPENINGS	
08 11 14	Metal Doors and Frames	6
08 44 13	Glazed Aluminum Framing Systems	21
08 71 00	Door Hardware	5
09	FINISHES	
-	Not Used.	
10	SPECIALTIES	
-	Not Used.	
12	FURNISHINGS	
-	Not Used.	
13	SPECIAL CONSTRUCTION	
-	Not Used.	
33	UTILITIES	
-	Not Used.	

END OF SECTION

ARCHITECTURE

A-100	SITE & FLOOR PLAN
A-201	BUILDING ELEVATIONS
A-501	SECTION DETAILS
A-502	SECTION AND PLAN DETAILS
A-551	PLAN DETAILS
A-601	WINDOWS, SCREENS & CURTAIN WALLS

END OF SECTION



April 18, 2023

Halifax Regional Centre for Education
33 Spectacle Lake Drive
Dartmouth, Nova Scotia B3B 1X7

Re: Hazardous Building Materials Assessment (Preconstruction)
Fort Sackville Elementary School, 21 Perth Street, Bedford, Nova Scotia

Halifax Regional Centre for Education (HRCE) (Client) retained Pinchin Ltd. (Pinchin) to conduct a hazardous building materials assessment of Fort Sackville Elementary School located at 21 Perth Street, Bedford, Nova Scotia.

Pinchin performed the assessment on March 17, 2023. The assessor was unaccompanied during the assessment. The assessed area was unoccupied at the time of the assessment.

The objective of the assessment was to identify specified hazardous building materials in preparation for building renovation activities. The proposed work as identified by the Client includes a window replacement project.

The results of this assessment are intended for use with a properly developed scope of work or performance specification.

The **assessed area** consisted of all areas of the building, excluding the roof.

The assessment was performed to establish the type of specified hazardous building materials, locations and approximate quantities incorporated in the structure(s) and its finishes.

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

- Asbestos
- Lead
- Silica
- Mercury
- Polychlorinated Biphenyls (PCBs)
- Mould and Water Damage



1.0 RECOMMENDATIONS

1.1 General

Prepare scope of work or performance specifications for hazardous material removal required for the planned work. The specifications should include safe work practices, personal protective equipment, respiratory protection, and disposal of waste materials.

If suspected hazardous building materials are discovered during the planned work, which are not identified in this report, do not disturb, and arrange for further testing and evaluation.

Provide this report and the detailed plans and specifications to the contractor prior to bidding or commencing work.

Retain a qualified consultant to specify, observe and document the successful removal of hazardous materials.

Update the asbestos inventory upon completion of the abatement and removal of asbestos-containing materials and any other relevant findings.

1.2 Remedial Work

The following remedial work is recommended regardless of the planned construction work due to the condition and location of the material. The work must be completed in compliance with procedures defined in applicable regulations or guidance documents:

Hazard: System	Material Description	Quantities per Condition		Location Name, (Location No.)	Recommended Procedure
		Fair	Poor		
ASB: Piping	Heating Water Supply, Aircell	14 LF		Oil Tank Room (25)	Type 2 (moderate risk) or Glove Bag procedures

1.3 Building Renovation Work

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

1.3.1 Asbestos

Remove asbestos-containing materials (ACM) prior to renovation, alteration, or maintenance if ACM may be disturbed by the work.

If the identified ACM will not be removed prior to commencement of the work, any potential disturbance of ACM must follow asbestos precautions appropriate for the type of work being performed.



Asbestos-containing materials must be disposed of at a landfill approved to accept asbestos waste.

1.3.2 *Lead*

Construction disturbance of lead in paint and coatings (or other materials) may result in exposure to lead dust or fumes and safe work procedures are required. Project specific work procedures, engineering controls and personal protective equipment will need to be assessed and developed as per applicable regulations and guidelines.

Items painted with paints containing elevated levels of lead may be a hazardous waste. Metallic components coated with lead paint do not require leachate testing and can be disposed of as non-hazardous construction and demolition (C&D) waste.

Dispose of painted materials exceeding the criteria for leachable lead as hazardous waste.

Lead-containing items should be recycled when taken out of service.

1.3.3 *Silica*

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

1.3.4 *Mercury*

Do not break lamps or separate liquid mercury from components. Recycle and reclaim mercury from fluorescent lamps and thermostats when taken out of service. Mercury is classified as a hazardous waste and must be disposed of in accordance with applicable regulations.

1.3.5 *PCBs*

As light fixtures are removed from service, examine light ballasts for PCB content. If ballasts are not clearly labelled as “non-PCB” or are suspected to contain PCBs, package, and ship ballasts for destruction at a federally permitted facility. As per the PCB Regulation (SOR/2008-273), all PCB light ballasts must be removed from service and properly disposed of by December 31, 2025.

2.0 **BACKGROUND INFORMATION**

2.1 **Assessed Area Description Summary**

Description Item	Details
Building Use	School
Floors Above Grade	One
Floors Below Grade	Partial basement



Description Item	Details
Total Area (square feet)	~8,900 SF
Year of Construction	1950
Additions	1970
Structure	Poured concrete, structural steel joists, wood deck
Exterior Cladding	Brick, wood siding, vinyl/composite siding, transite siding, transite panels
HVAC	Boiler with radiators
Roof	Not assessed
Flooring	Vinyl sheet flooring, vinyl floor tile, ceramic floor tile
Wall and Ceiling Finishes	Drywall, plaster, wood panelling, acoustic ceiling tiles

2.2 Existing Reports

2.2.1 Review of Previous Reports

Pinchin reviewed the following reports and included relevant results as appropriate:

- “Asbestos Survey, Fort Sackville School, 21 Perth Street, Bedford, NS B4A 2H1”, March 8th, 1999. Prepared by Maritime Testing (1985) Limited, File No. NEO-1256.75.

3.0 FINDINGS

Any quantities listed in this report or data tables are estimated based on visual approximations only and are subject to variation.

3.1 Asbestos

The following table summarizes the materials evaluated for asbestos in the assessed area. For details on approximate quantities, condition, friability, accessibility, and locations of hazardous building materials; refer to the Hazardous Material Summary / Sample Log and All Data Report in Appendices V and VI.

Sample Number	Material Description	Type of Asbestos	Confirmed Hazard	Total Quantity Present	Notes
S0001 ABC	Wall Cement Product 2x2 transite panels	Chrysotile	Yes	28 EA	
S0002 ABC	Wall Caulking White	Chrysotile	Yes	300 LF	
S0003 ABC	Wall Tar Paper	None Detected	No	160 SF	



Hazardous Building Materials Assessment (Preconstruction)

Fort Sackville Elementary School, 21 Perth Street, Bedford, NS
HRCE

April 18, 2023
Pinchin File: 324048.000

Sample Number	Material Description	Type of Asbestos	Confirmed Hazard	Total Quantity Present	Notes
S0004 ABC	Wall Caulking Black	None Detected	No	50 SF	
S0005 ABCDEFG	Ceiling, Wall Drywall and joint compound	Chrysotile	Yes	12,742SF	1
S0006 ABC	Floor Vinyl Sheet Flooring Green and white marble pattern	None Detected	No	1061 SF	
S0007 ABC	Floor Vinyl Sheet Flooring Brown and white marble pattern	None Detected	No	92 SF	
S0008 ABC	Floor Vinyl Floor Tile and Mastic 12" white with beige flecks	None Detected	No	249 SF	
S0009 ABC	Wall Tar Paper Black with yellow backing	None Detected	No	1000 SF	
S0010 ABC	Floor Vinyl Floor Tile and Mastic 12" blue with flecks	None Detected	No	167 SF	
S0011 ABC	Piping Aircell	Chrysotile	Yes	418 LF	
S0012 ABC	Floor Vinyl Sheet Flooring Brown marble pattern	None Detected	No	2003 SF	
S0013 ABC	Floor Vinyl Floor Tile and Mastic 12" beige with white flecks	None Detected	No	29 SF	
S0014 ABC	Floor Vinyl Floor Tile and Mastic 12" black with white flecks	None Detected	No	45 SF	
S0015 ABCDEFG	Ceiling, Wall Drywall and joint compound	Chrysotile	Yes	7862 SF	2
S0016 ABC	Floor Vinyl Floor Tile and Mastic 12" beige with brown flecks	None Detected	No	552 SF	



Sample Number	Material Description	Type of Asbestos	Confirmed Hazard	Total Quantity Present	Notes
S0017 ABC	Floor Vinyl Sheet Flooring Brown	None Detected	No	430 SF	
S0018 ABC	Floor Vinyl Floor Tile and Mastic 12" green with flecks	None Detected	No	348 SF	
S0019 ABCDE	Ceiling, Wall Plaster	Chrysotile	Yes	1290 SF	
S0020 ABC	Floor Vinyl Floor Tile and Mastic 12" beige	None Detected	No	1495 SF	
S0021 ABC	Wall Cement Product Siding	Chrysotile	Yes	10 SF	3
V9500	Ceiling Ceiling tiles (glue-on)	Presumed Asbestos	Yes	2495 SF	4
V9500	Floor Mortar	Presumed Asbestos	Yes	418 SF	5
V9500	Wall Mortar	Presumed Asbestos	Yes	160 SF	5
V0000	Ceiling Ceiling Tiles (lay-in) 2x4 pinhole and fissure	None	No	2495 SF	
V0000	Other Caulking Silicone	None	No		
V0000	Other Rubber	None	No		
V0000	Piping Thermal Insulation Horsehair	None	No		
V0000	Wall Rubber	None	No		

Site Specific Notes:

1. 1950's phase sample set (Phase B).
2. 1970's phase sample set (Phase A).
3. Located above boiler room door.
4. Glue-on ceiling tiles, as well as the adhesive used to apply them to the ceiling, are presumed to contain asbestos.
5. Mortar/adhesive associated with ceramic tiles has not been sampled as it will not be impacted by the current scope of work, and sampling would be destructive.



General Notes:

1. Materials identified as Sample Number V9500 were either observed to be present or based on the construction of the building/equipment are likely present in concealed locations. These materials have not been sampled and are presumed to contain asbestos based on historical known use of asbestos. Sampling of these materials may be completed prior to disturbance.
2. Materials identified as Sample Number V0000 were determined to be non-asbestos based on the manufacture date and known end of use of asbestos in these products.

3.1.1 Excluded Asbestos Materials

The following is a list of materials which may contain asbestos and were excluded from the assessment. These materials are presumed to contain asbestos until otherwise proven to be non-asbestos by sampling and analysis:

- Roofing felts and tar, mastics
- Floor levelling compound
- Ceramic tile setting compound
- Electrical components
- Insulation under metal clad boilers and vessels
- Mechanical packing, ropes, and gaskets
- Paper products
- Soffit and fascia boards
- Fire resistant doors
- Ropes and gaskets in cast-iron bell and spigot joints
- Sealants on pipe threads

3.2 Lead

Refer to the Hazardous Material Summary / Sample Log and All Data Report in Appendices V and VI for details on locations, condition and approximate quantities on paints sampled and their locations.

The following table summarizes the analytical results of paints sampled:

Sample Number	Material Description	Concentration	Confirmed Hazard	Total Quantity Present	Notes
L0001	Wall Wood Yellow	2450 mg/kg	Yes	2000 SF	1



Sample Number	Material Description	Concentration	Confirmed Hazard	Total Quantity Present	Notes
L0002	Wall Wood White	27300 mg/kg	Yes	800 SF	2, 3
L0003	Wall Drywall and joint compound White (interior)	131 mg/kg	Yes	20612 SF	4
L0004	Wall Wood Light blue	357 mg/kg	Yes	1271 LF	5
L0005	Wall Wood Black	1180 mg/kg	Yes	935 LF	6

Site Specific Notes:

1. Paint is present on wood siding on the building exterior, and present under white paint under various other exterior applications.
2. Paint is present on wood and Transite finishes of the window systems.
3. Leachable lead analysis was completed on the paint and substrate, and was within the allowable criterion of 5.0 mg/L (results at 0.457 mg/L). Results are provided in Appendix II D.
4. Paint is present on interior drywall finishes.
5. Paint is present on the interior finish of window frames, and on interior doors and frames.
6. Paint is present on wood trim (baseboards).

General Notes:

1. Results above 0.1% (1,000 mg/kg) are considered lead-containing, and over 0.5% (5,000 mg/kg) are considered lead-based.
2. Results less than or equal to 0.1% (1,000 mg/kg), but equal to or greater than 0.009% (90 mg/kg), are considered low-level lead paints or surface coatings in accordance with the EACC guideline.

3.2.1 Lead Products and Applications

Refer to the Hazardous Material Summary / Sample Log and All Data Report in Appendices V and VI for details on lead-products including their locations and quantities.

Sample Number	Material Description	Confirmed Hazard	Total Quantity Present	Notes
V9000	Batteries In Emer. Lights	Yes	6 EA	



3.2.2 Excluded Lead Materials

Lead may be present in a number of materials which were not assessed and/or sampled. The following materials, where found, should be considered to contain lead.

- Electrical components, including wiring connectors, grounding conductors, and solder
- Solder on pipe connections
- Glazing on ceramic tiles

3.3 Silica

Crystalline silica is a presumed component of the following materials:

- Poured and pre-cast concrete
- Masonry and mortar
- Ceramic tiles and grout
- Plaster
- Drywall
- Ceiling tiles
- Refractory or ceramic materials

3.4 Mercury

Refer to the Hazardous Material Summary / Sample Log and All Data Report in Appendices V and VI for details on mercury-containing products including their locations and quantities.

Sample Number	Material Description	Confirmed Hazard	Total Quantity Present	Notes
V9000	Fluorescent Light Tube	Yes	92 EA	
V9000	Thermostat	Yes	3 EA	
V9500	Fluorescent Light Tube	Yes	143 EA	
V0000	Fluorescent Light Tube	No	2 EA	
V0000	Thermostat	No	3 EA	

General Notes:

1. Items identified as Sample Number V9500 were observed to be present but could not be definitively determined to contain mercury (e.g., inaccessible lamps and thermostats).

2. Items identified as Sample Number V9000 were observed to be present and were determined to contain mercury based on visual observation (e.g., labelled lamps and ampules in thermostats).
3. Items identified as Sample Number V0000 are items that historically may have contained mercury; however, have been visually identified as non-mercury types (e.g., LED lamps, digital or electric thermostats).

3.5 Polychlorinated Biphenyls

Refer to the Hazardous Material Summary / Sample Log and All Data Report in Appendices V and VI for details on PCB-products including their locations and quantities.

Sample Number	Material Description	Concentration	Confirmed Hazard	Total Quantity Present	Notes
P0001	Caulking White	<0.5 mg/kg	No	300 LF	
P0002	Caulking Black	<0.5 mg/kg	No	50 LF	
V9500	Light Ballasts		Yes	119 EA	

General Notes:

1. Materials identified as Sample Number V9500 were either observed to be present or based on the construction of the building/equipment are likely present in concealed locations. These materials have not been sampled and are presumed to contain PCBs based on historical known use. Sampling of these materials may be completed prior to disturbance.

3.5.1 Excluded PCB Materials

PCBs are known to be present in several materials and equipment which were not assessed or sampled. The following materials, where found, should be presumed to contain PCBs until sampling proves otherwise.

- Capacitors within or associated with electrical equipment
- Voltage regulators and capacitors

3.6 Mould and Water Damage

Visible mould growth and water damage was not found during the assessment.



4.0 METHODOLOGY

Pinchin conducted a room-by-room assessment (rooms, corridors, service areas, exterior, etc.) to identify the hazardous building materials as defined in the scope.

The assessment included intrusive testing of areas to be directly affected by the window replacement project, specifically the exterior wall of Classroom 6 (Location 2). Concealed spaces such as those above solid ceilings and within shafts and pipe chases were accessed via existing access panels only.

Destructive testing of flooring was not conducted (under carpets or multiple layers of flooring). Demolition of walls, solid ceilings, structural items, interior finishes or exterior building finishes, to determine the presence of concealed materials was conducted. Sampling of roofing materials was not conducted.

For further details on the methodology including test methods and evaluation criteria, refer to Appendix III.

5.0 REFERENCES

The following legislation and documents were referenced in completing the assessment and this report:

1. Nova Scotia Occupational Safety General Regulation (N.S. Reg. 53/2013).
2. A Guide to Removal of Friable Asbestos-Containing Material.
3. A Guide to Assessment and Management of Asbestos in the Workplace.
4. Asbestos Waste Management Regulations, N.S. Reg. 53/95.
5. Lead in the Workplace: A Guide to Working with Lead, revised January 18, 2019.
6. Guidelines for Disposal of Contaminated Solids in Landfills.
7. Nova Scotia Environment Act, 1994-95.
8. Mercury Diversion Standard, N.S. Reg. 161/2018.
9. PCB Management Regulations, N.S. Reg. 163/97.
10. PCB Regulations, SOR/2008-273, Canadian Environmental Protection Act.
11. Surface Coating Materials Regulations, SOR/2016-193, Canada Consumer Product Safety Act.
12. Consolidated Transportation of Dangerous Goods Regulations, including Amendment SOR/2019-101, Transportation of Dangerous Goods Act.
13. Mould Guidelines for the Canadian Construction Industry, Standard Construction Document CCA 82 – 2004 (Revised 2018), Canadian Construction Association.
14. The Environmental Abatement Council of Canada (EACC) Lead Guideline for Construction, Renovation, Maintenance or Repair.



6.0 LIMITATIONS

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

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

7.0 CLOSURE

The data presented in the appendices is prepared by Pinchin’s Hazardous Materials Inventory System (HMIS). The information can be made available for your real-time access through our secure web-based platform. Please contact your Pinchin representative to discuss HMIS solutions for management of your asbestos (and other hazardous materials) inventory.

Contact the undersigned should you have any questions.

Sincerely,

Pinchin Ltd.

Prepared by:

Reviewed by:

Ashley Penney
Project Coordinator

782.640.1015
apenney@pinchin.com

Michael Harrett, C.E.T.
Practice Leader, Ontario and Atlantic
Hazardous Materials

613.881.0762
mharrett@pinchin.com

- | | | |
|-------|---------------|---------------------------------------|
| Encl: | APPENDIX I | Drawings |
| | APPENDIX II-A | Asbestos Analytical Certificates |
| | APPENDIX II-B | Lead Analytical Certificates |
| | APPENDIX II-C | PCB Analytical Certificates |
| | APPENDIX II-D | Lead Leachate Analytical Certificates |
| | APPENDIX III | Methodology |



Hazardous Building Materials Assessment (Preconstruction)

Fort Sackville Elementary School, 21 Perth Street, Bedford, NS
HRCE

April 18, 2023
Pinchin File: 324048.000

APPENDIX IV	Location Summary Report
APPENDIX V	Hazardous Materials Summary Report / Sample Log
APPENDIX VI	All Data Report
APPENDIX VII	Photographs

\\pifs01\jobs\324000s\0324048.000 HRCE,21PerthSt,Bedford,NS,HAZ,Hazmat\Deliverables\HBMA\324048 HBMA PreCon, 21 Perth St., Bedford, NS, HRCE, Apr 18 2023.docx
Template: Master Template HBMA PreConstruction, HMIS, HAZ, February 10, 2023

APPENDIX I
Drawings



LEGEND

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

ASBESTOS-CONTAINING MATERIALS:

- ⊞ AIRCELL

FOR CLARITY, THE FOLLOWING ASBESTOS-CONTAINING MATERIALS, ARE PRESENT IN THE ASSESSED AREA, BUT HAVE NOT BEEN HATCHED ON THE DRAWING:

- DRYWALL AND JOINT COMPOUND
- PLASTER
- TRANSITE PANELS
- CAULKING

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

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



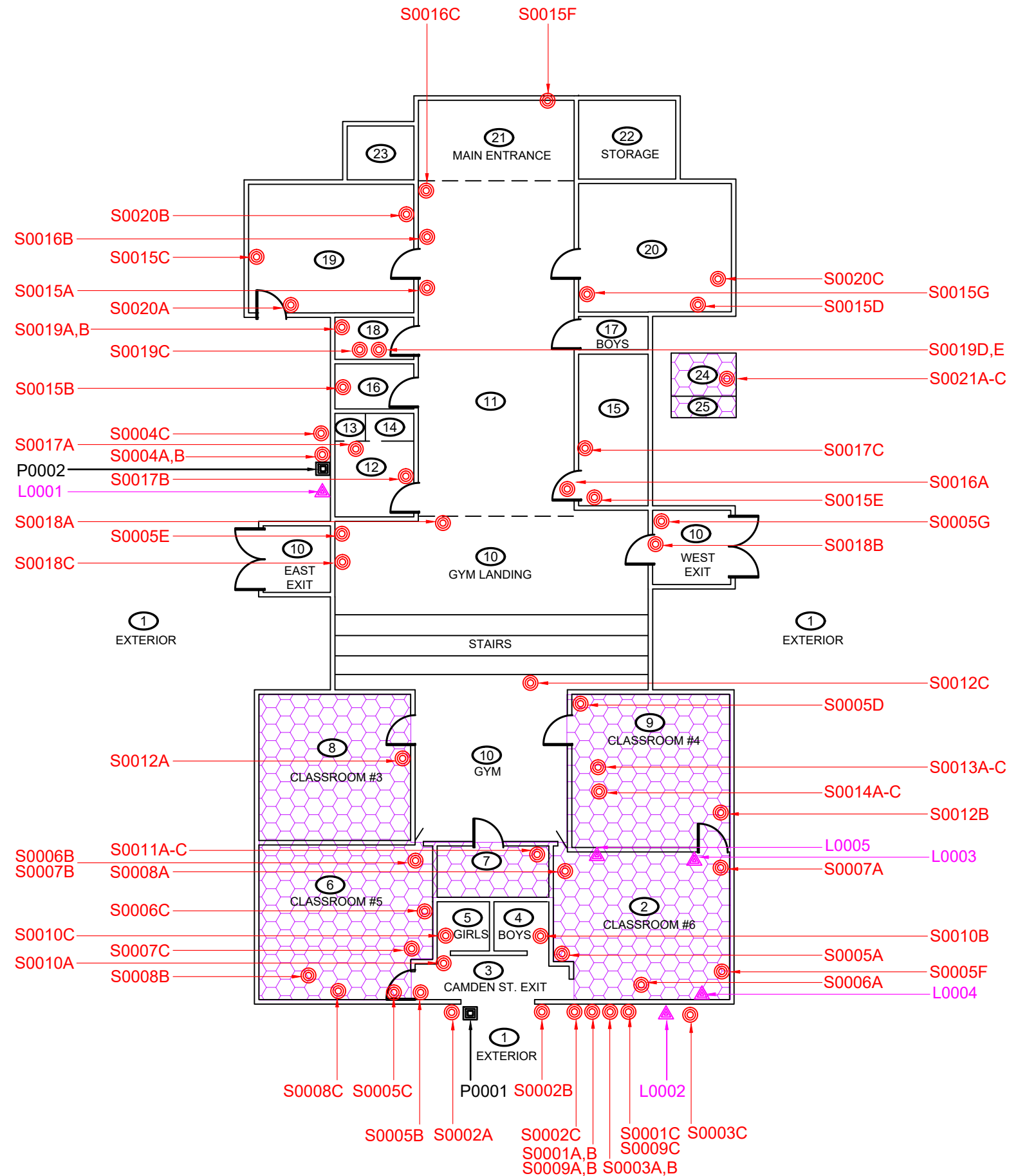
PROJECT NAME:
HAZARDOUS BUILDING MATERIALS ASSESSMENT (PRE-CONSTRUCTION)

CLIENT NAME:
HALIFAX REGIONAL CENTRE FOR EDUCATION (HRCE)

PROJECT LOCATION:
**21 PERTH STREET
BEDFORD, NOVA SCOTIA**

FIGURE NAME:
GROUND FLOOR

PROJECT NUMBER: 324048.000	SCALE: NOT TO SCALE
DRAWN BY: DP	REVIEWED BY: AP
DATE: APR. 2023	FIGURE NUMBER: 1 OF 1



APPENDIX II-A
Asbestos Analytical Certificates



Pinchin Ltd. Asbestos Laboratory *Certificate of Analysis*

Project Name: HRCE, Fort Sackville, 21 Perth St., Bedford, NS
Project No.: 0324048.000
Prepared For: A. Penney / A. Thebeau

Lab Reference No.: b288610
Analyst(s): R. Janssen

Date Received: March 21, 2023 **Samples Submitted:** 70
Date Analyzed: March 23, 2023 **Phases Analyzed:** 75

The Pinchin Ltd. Dartmouth asbestos laboratory is accredited by the National Institute of Standards and Technology, National Voluntary Laboratory Accreditation Program (NVLAP Lab Code 201032-0) for the 'EPA – 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples,' and the 'EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials'; and meets all requirements of ISO/IEC 17025:2017. The Pinchin asbestos laboratory uses the aforementioned methods of analysis.

Bulk samples are checked visually and scanned under a stereomicroscope. Slides are prepared and observed under a Polarized Light Microscope (PLM) at magnifications of 40X, 100X or 400X as appropriate. Asbestos fibres are identified by a combination of morphology, colour, refractive index, extinction, sign of elongation, birefringence and dispersion staining colours. A visual estimate is made of the percentage of asbestos present. A reported concentration of less than (<) the regulatory threshold indicates the presence of confirmed asbestos in trace quantities, limited to only a few fibres or fibre bundles in an entire sample. This method complies with provincial regulatory requirements where applicable. Multiple phases within a sample are analyzed and reported separately.

All bulk samples submitted to this laboratory for asbestos analysis are retained for a minimum of three months. Samples may be retrieved, upon request, for re-examination at any time during that period.

This report relates only to the items tested.

This report relates only to the items tested and is valid only when signed with a protected, authorized, electronic signature. This report may not be reproduced, except in full, without the written approval of Pinchin Ltd. The client may not use this report to claim product endorsement by NVLAP or any agency of the U.S. Government. Internal verification studies, quality assurance / control data and laboratory documentation on measurement uncertainty are available upon request.



Pinchin Ltd. Asbestos Laboratory Certificate of Analysis

Project Name: HRCE, Fort Sackville, 21 Perth St., Bedford, NS
Project No.: 0324048.000
Prepared For: A. Penney / A. Thebeau

Lab Reference No.: b288610
Date Analyzed: March 23, 2023

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
S0001A Wall, All, Cement Product, 2x2 Transite Panels, Loc:1, Exterior	Homogeneous, light grey, hard, cementitious transite material.	Chrysotile	10-25% Non-Fibrous Material > 75%
S0001B Wall, All, Cement Product, 2x2 Transite Panels, Loc:1, Exterior			Not Analyzed
Comments:	Analysis was stopped due to a previous positive result.		
S0001C Wall, All, Cement Product, 2x2 Transite Panels, Loc:1, Exterior			Not Analyzed
Comments:	Analysis was stopped due to a previous positive result.		
S0002A Wall, Window, Caulking, White, Loc:1, Exterior	Homogeneous, grey, soft, caulking material.	Chrysotile	5-10% Non-Fibrous Material > 75%
S0002B Wall, Window, Caulking, White, Loc:1, Exterior			Not Analyzed
Comments:	Analysis was stopped due to a previous positive result.		
S0002C Wall, Window, Caulking, White, Loc:1, Exterior			Not Analyzed
Comments:	Analysis was stopped due to a previous positive result.		
S0003A Wall, All, Tar Paper, Loc:1, Exterior	Homogeneous, black, tar- impregnated, compressed, fibrous material.	None Detected	Cellulose 50-75% Tar and other Non- Fibrous Material 25-50%
S0003B Wall, All, Tar Paper, Loc:1, Exterior	Homogeneous, black, tar- impregnated, compressed, fibrous material.	None Detected	Cellulose 50-75% Tar and other Non- Fibrous Material 25-50%



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BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
S0003C Wall, All, Tar Paper, Loc:1, Exterior	Homogeneous, black, tar-impregnated, compressed, fibrous material.	None Detected	Cellulose 50-75% Tar and other Non-Fibrous Material 25-50%
S0004A Wall, Window, Caulking, Black, Loc:1, Exterior	Homogeneous, grey, caulking material.	None Detected	Non-Fibrous Material > 75%
S0004B Wall, Window, Caulking, Black, Loc:1, Exterior	Homogeneous, grey, caulking material.	None Detected	Non-Fibrous Material > 75%
S0004C Wall, Window, Caulking, Black, Loc:1, Exterior	Homogeneous, grey, caulking material.	None Detected	Non-Fibrous Material > 75%
S0005A Wall, All, Drywall And Joint Compound, Interior, Loc:2, Classroom 6	Homogeneous, off-white, drywall joint compound.	Chrysotile 0.5-5%	Non-Fibrous Material > 75%
S0005B Wall, All, Drywall And Joint Compound, Loc:3, Vestibule 1			Not Analyzed
Comments:	Analysis was stopped due to a previous positive result.		
S0005C Wall, All, Drywall And Joint Compound, Loc:6, Classroom 5			Not Analyzed
Comments:	Analysis was stopped due to a previous positive result.		



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Date Analyzed: March 23, 2023

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
S0005D Wall, All, Drywall And Joint Compound, Interior, Loc:9, Classroom 4			Not Analyzed
Comments:	Analysis was stopped due to a previous positive result.		
S0005E Wall, All, Drywall And Joint Compound, Interior, Loc:10, Gym			Not Analyzed
Comments:	Analysis was stopped due to a previous positive result.		
S0005F Wall, All, Drywall And Joint Compound, Loc:2, Classroom 6			Not Analyzed
Comments:	Analysis was stopped due to a previous positive result.		
S0005G Wall, All, Drywall And Joint Compound, Interior, Loc:10, Gym			Not Analyzed
Comments:	Analysis was stopped due to a previous positive result.		
S0006A Floor, All, Vinyl Sheet Flooring, Green And White Marble Pattern, Loc:2, Classroom 6	Homogeneous, brown, woven fabric material on the back of vinyl sheet flooring.	None Detected	Cellulose > 75%
Comments:	Another phase is present but there was insufficient material submitted to analyze.		
S0006B Floor, All, Vinyl Sheet Flooring, Green And White Marble Pattern, Loc:6, Classroom 5	Homogeneous, brown, woven fabric material on the back of vinyl sheet flooring.	None Detected	Cellulose > 75%
Comments:	Another phase is present but there was insufficient material submitted to analyze.		



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Prepared For: A. Penney / A. Thebeau

Lab Reference No.: b288610
Date Analyzed: March 23, 2023

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
S0006C Floor, All, Vinyl Sheet Flooring, Green And White Marble Pattern, Loc:6, Classroom 5	Homogeneous, brown, woven fabric material on the back of vinyl sheet flooring.	None Detected	Cellulose > 75%
Comments:	Another phase is present but there was insufficient material submitted to analyze.		
S0007A Floor, All, Vinyl Sheet Flooring, Brown And White Marble Pattern, Loc:2, Classroom 6	Homogeneous, brown, woven fabric material on the back of vinyl sheet flooring.	None Detected	Cellulose > 75%
Comments:	Another phase is present but there was insufficient material submitted to analyze.		
S0007B Floor, All, Vinyl Sheet Flooring, Brown And White Marble Pattern, Loc:6, Classroom 5	Homogeneous, brown, woven fabric material on the back of vinyl sheet flooring.	None Detected	Cellulose > 75%
S0007C Floor, All, Vinyl Sheet Flooring, Brown And White Marble Pattern, Loc:6, Classroom 5	Homogeneous, brown, woven fabric material on the back of vinyl sheet flooring.	None Detected	Cellulose > 75%
Comments:	Another phase is present but there was insufficient material submitted to analyze.		
S0008A Floor, All, Vinyl Floor Tile And Mastic, 12" White With Beige Flecks, Loc:2, Classroom 6	Homogeneous, light beige, consolidated, vinyl floor tile.	None Detected	Non-Fibrous Material > 75%



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Lab Reference No.: b288610
Date Analyzed: March 23, 2023

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
S0008B Floor, All, Vinyl Floor Tile And Mastic, 12" White With Beige Flecks, Loc:6, Classroom 5	a) Homogeneous, white, consolidated, vinyl floor tile.	None Detected	Non-Fibrous Material > 75%
	b) Homogeneous, black, soft, sticky material on the back of vinyl floor tile.	None Detected	Tar and other Non-Fibrous Material > 75%
Comments:	Another phase is present but there was insufficient material submitted to analyze.		
S0008C Floor, All, Vinyl Floor Tile And Mastic, 12" White With Beige Flecks, Loc:6, Classroom 5	a) Homogeneous, white, consolidated, vinyl floor tile.	None Detected	Non-Fibrous Material > 75%
	b) Homogeneous, black, soft, sticky material on the back of vinyl floor tile.	None Detected	Tar and other Non-Fibrous Material > 75%
Comments:	Another phase is present but there was insufficient material submitted to analyze.		
S0009A Wall, All, Tar Paper, Black With Yellow Backing, Loc:1, Exterior	Homogeneous, black and brown, tar-coated, compressed, fibrous material.	None Detected	Cellulose > 75% Tar and other Non-Fibrous Material 10-25%
S0009B Wall, All, Tar Paper, Black With Yellow Backing, Loc:1, Exterior	Homogeneous, black and brown, tar-coated, compressed, fibrous material.	None Detected	Cellulose > 75% Tar and other Non-Fibrous Material 10-25%
S0009C Wall, All, Tar Paper, Black With Yellow Backing, Loc:1, Exterior	Homogeneous, black and brown, tar-coated, compressed, fibrous material.	None Detected	Cellulose > 75% Tar and other Non-Fibrous Material 10-25%



Pinchin Ltd. Asbestos Laboratory Certificate of Analysis

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Lab Reference No.: b288610
Date Analyzed: March 23, 2023

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
S0010A Floor, All, Vinyl Floor Tile And Mastic, 12" Blue With Flecks, Loc:3, Vestibule 1	a) Homogeneous, blue, consolidated, vinyl floor tile.	None Detected	Non-Fibrous Material > 75%
	b) Homogeneous, black, soft, sticky material on the back of vinyl floor tile.	None Detected	Tar and other Non-Fibrous Material > 75%
S0010B Floor, All, Vinyl Floor Tile And Mastic, 12" Blue With Flecks, Loc:4, Washroom 1	a) Homogeneous, blue, consolidated, vinyl floor tile.	None Detected	Non-Fibrous Material > 75%
	b) Homogeneous, black, soft, sticky material on the back of vinyl floor tile.	None Detected	Tar and other Non-Fibrous Material > 75%
S0010C Floor, All, Vinyl Floor Tile And Mastic, 12" Blue With Flecks, Loc:5, Washroom 2	a) Homogeneous, blue, consolidated, vinyl floor tile.	None Detected	Non-Fibrous Material > 75%
	b) Homogeneous, black, soft, sticky material on the back of vinyl floor tile.	None Detected	Tar and other Non-Fibrous Material > 75%
S0011A Piping, Hot Water Heating, Aircell, Loc:7, Maintenance Office	Homogeneous, off-white, layered, corrugated paper.	Chrysotile 25-50%	Cellulose 25-50% Non-Fibrous Material 10-25%
S0011B Piping, Hot Water Heating, Aircell, Loc:7, Maintenance Office			Not Analyzed
Comments:	Analysis was stopped due to a previous positive result.		



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Date Analyzed: March 23, 2023

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
S0011C Piping, Hot Water Heating, Aircell, Loc:7, Maintenance Office			Not Analyzed
Comments:	Analysis was stopped due to a previous positive result.		
S0012A Floor, All, Vinyl Sheet Flooring, Brown Marble Pattern, Loc:8, Classroom 3	Homogeneous, brown, woven fabric material on the back of vinyl sheet flooring.	None Detected	Cellulose > 75%
Comments:	Another phase is present but there was insufficient material submitted to analyze.		
S0012B Floor, All, Vinyl Sheet Flooring, Brown Marble Pattern, Loc:9, Classroom 4	Homogeneous, brown, woven fabric material on the back of vinyl sheet flooring.	None Detected	Cellulose > 75%
Comments:	Another phase is present but there was insufficient material submitted to analyze.		
S0012C Floor, All, Vinyl Sheet Flooring, Brown Marble Pattern, Loc:10, Gym	Homogeneous, brown, woven fabric material on the back of vinyl sheet flooring.	None Detected	Cellulose > 75%
Comments:	Another phase is present but there was insufficient material submitted to analyze.		
S0013A Floor, All, Vinyl Floor Tile And Mastic, 12" Beige With White Flecks, Loc:9, Classroom 4	2 Phases: a) Homogeneous, light grey, consolidated, vinyl floor tile. b) Homogeneous, black, soft, sticky material on the back of vinyl floor tile.	None Detected None Detected	Non-Fibrous Material > 75% Tar and other Non- Fibrous Material > 75%



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Date Analyzed: March 23, 2023

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
S0013B Floor, All, Vinyl Floor Tile And Mastic, 12" Beige With White Flecks, Loc:9, Classroom 4	a) Homogeneous, light grey, consolidated, vinyl floor tile.	None Detected	Non-Fibrous Material > 75%
	b) Homogeneous, black, soft, sticky material on the back of vinyl floor tile.	None Detected	Tar and other Non-Fibrous Material > 75%
S0013C Floor, All, Vinyl Floor Tile And Mastic, 12" Beige With White Flecks, Loc:9, Classroom 4	a) Homogeneous, light grey, consolidated, vinyl floor tile.	None Detected	Non-Fibrous Material > 75%
	b) Homogeneous, black, soft, sticky material on the back of vinyl floor tile.	None Detected	Tar and other Non-Fibrous Material > 75%
S0014A Floor, All, Vinyl Floor Tile And Mastic, 12" Black With White Flecks, Loc:9, Classroom 4	Homogeneous, black, consolidated, vinyl floor tile.	None Detected	Non-Fibrous Material > 75%
S0014B Floor, All, Vinyl Floor Tile And Mastic, 12" Black With White Flecks, Loc:9, Classroom 4	a) Homogeneous, black, consolidated, vinyl floor tile.	None Detected	Non-Fibrous Material > 75%
	b) Homogeneous, black, soft, sticky material on the back of vinyl floor tile.	None Detected	Tar and other Non-Fibrous Material > 75%



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Date Analyzed: March 23, 2023

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
S0014C Floor, All, Vinyl Floor Tile And Mastic, 12" Black With White Flecks, Loc:9, Classroom 4	a) Homogeneous, black, consolidated, vinyl floor tile.	None Detected	Non-Fibrous Material > 75%
	b) Homogeneous, black, soft, sticky material on the back of vinyl floor tile.	None Detected	Tar and other Non-Fibrous Material > 75%
S0015A Wall, All, Drywall And Joint Compound, Interior, Loc:11, Hallway	Homogeneous, off-white, drywall joint compound.	Chrysotile 0.5-5%	Non-Fibrous Material > 75%
S0015B Wall, All, Drywall And Joint Compound, Interior, Loc:16, Janitor Closet			Not Analyzed
Comments:	Analysis was stopped due to a previous positive result.		
S0015C Wall, All, Drywall And Joint Compound, Loc:19, Classroom 1			Not Analyzed
Comments:	Analysis was stopped due to a previous positive result.		
S0015D Wall, All, Drywall And Joint Compound, Loc:20, Classroom 2			Not Analyzed
Comments:	Analysis was stopped due to a previous positive result.		



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Lab Reference No.: b288610
Date Analyzed: March 23, 2023

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
S0015E Wall, All, Drywall And Joint Compound, Interior, Loc:15, Kitchen			Not Analyzed
Comments:	Analysis was stopped due to a previous positive result.		
S0015F Wall, All, Drywall And Joint Compound, Loc:21, Front Entrance			Not Analyzed
Comments:	Analysis was stopped due to a previous positive result.		
S0015G Wall, All, Drywall And Joint Compound, Loc:20, Classroom 2			Not Analyzed
Comments:	Analysis was stopped due to a previous positive result.		
S0016A Floor, All, Vinyl Floor Tile And Mastic, 12" Beige With Brown Flecks, Loc:11, Hallway	2 Phases: a) Homogeneous, beige, consolidated, vinyl floor tile. b) Homogeneous, black, soft, sticky material on the back of vinyl floor tile.	None Detected None Detected	Non-Fibrous Material > 75% Tar and other Non-Fibrous Material > 75%
Comments:	Wood is present on the surface of this sample.		



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Date Analyzed: March 23, 2023

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
S0016B Floor, All, Vinyl Floor Tile And Mastic, 12" Beige With Brown Flecks, Loc:11, Hallway	3 Phases: a) Homogeneous, beige, consolidated, vinyl floor tile.	None Detected	Non-Fibrous Material > 75%
	b) Homogeneous, black, soft, sticky material on the back of vinyl floor tile.	None Detected	Tar and other Non-Fibrous Material > 75%
	c) Homogeneous, brown, soft, cementitious material.	None Detected	Cellulose 5-10% Non-Fibrous Material > 75%
S0016C Floor, All, Vinyl Floor Tile And Mastic, 12" Beige With Brown Flecks, Loc:11, Hallway	2 Phases: a) Homogeneous, beige, consolidated, vinyl floor tile.	None Detected	Non-Fibrous Material > 75%
	b) Homogeneous, black, soft, sticky material on the back of vinyl floor tile.	None Detected	Tar and other Non-Fibrous Material > 75%
S0017A Floor, All, Vinyl Sheet Flooring, Brown, Loc:12, Work Room	2 Phases: a) Homogeneous, brown, woven fabric material on the back of vinyl sheet flooring.	None Detected	Cellulose > 75%
	b) Homogeneous, dark brown, adhesive material.	None Detected	Non-Fibrous Material > 75%
Comments:	Phase b) of this sample is small in size. For more reliable results, a larger sample is required.		



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BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
S0017B Floor, All, Vinyl Sheet Flooring, Brown, Loc:12, Work Room	Homogeneous, brown, woven fabric material on the back of vinyl sheet flooring.	None Detected	Cellulose > 75%
Comments:	Another phase is present but there was insufficient material submitted to analyze.		
S0017C Floor, All, Vinyl Sheet Flooring, Brown, Loc:15, Kitchen	Homogeneous, brown, woven fabric material on the back of vinyl sheet flooring.	None Detected	Cellulose > 75%
Comments:	Another phase is present but there was insufficient material submitted to analyze. Additionally, foam is present on the surface of this sample.		
S0018A Floor, All, Vinyl Floor Tile And Mastic, 12" Green With Flecks, Loc:10, Gym	3 Phases: a) Homogeneous, blue, consolidated, vinyl floor tile.	None Detected	Non-Fibrous Material > 75%
	b) Homogeneous, black, soft, sticky material on the back of vinyl floor tile.	None Detected	Tar and other Non-Fibrous Material > 75%
	c) Homogeneous, grey, levelling compound.	None Detected	Non-Fibrous Material > 75%
S0018B Floor, All, Vinyl Floor Tile And Mastic, 12" Green With Flecks, Loc:10, Gym	2 Phases: a) Homogeneous, blue, consolidated, vinyl floor tile.	None Detected	Non-Fibrous Material > 75%
	b) Homogeneous, black, soft, sticky material on the back of vinyl floor tile.	None Detected	Tar and other Non-Fibrous Material > 75%



Pinchin Ltd. Asbestos Laboratory Certificate of Analysis

Project Name: HRCE, Fort Sackville, 21 Perth St., Bedford, NS
Project No.: 0324048.000
Prepared For: A. Penney / A. Thebeau

Lab Reference No.: b288610
Date Analyzed: March 23, 2023

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
S0018C Floor, All, Vinyl Floor Tile And Mastic, 12" Green With Flecks, Loc:10, Gym	a) Homogeneous, blue, consolidated, vinyl floor tile.	None Detected	Non-Fibrous Material > 75%
	b) Homogeneous, black, soft, sticky material on the back of vinyl floor tile.	None Detected	Tar and other Non-Fibrous Material > 75%
S0019A Wall, All, Plaster, Interior, Loc:18, Girls Washroom	a) Homogeneous, light grey, hard, cementitious, plaster base coat.	Chrysotile 0.5-5%	Hair 0.5-5% Non-Fibrous Material > 75%
	b) Homogeneous, white, hard, cementitious, plaster top coat.	None Detected	Non-Fibrous Material > 75%
S0019B Wall, All, Plaster, Interior, Loc:18, Girls Washroom	a) Homogeneous, light grey, hard, cementitious, plaster base coat.		Not Analyzed
	b) Homogeneous, white, hard, cementitious, plaster top coat.	None Detected	Non-Fibrous Material > 75%
Comments:	Analysis of phase a) was stopped due to a previous positive result.		
S0019C Wall, All, Plaster, Interior, Loc:18, Girls Washroom	a) Homogeneous, light grey, hard, cementitious, plaster base coat.		Not Analyzed
	b) Homogeneous, white, hard, cementitious, plaster top coat.	None Detected	Non-Fibrous Material > 75%
Comments:	Analysis of phase a) was stopped due to a previous positive result.		



Pinchin Ltd. Asbestos Laboratory Certificate of Analysis

Project Name: HRCE, Fort Sackville, 21 Perth St., Bedford, NS
Project No.: 0324048.000
Prepared For: A. Penney / A. Thebeau

Lab Reference No.: b288610
Date Analyzed: March 23, 2023

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
S0019D Wall, All, Plaster, Interior, Loc:18, Girls Washroom	2 Phases: a) Homogeneous, light grey, hard, cementitious, plaster base coat. b) Homogeneous, white, hard, cementitious, plaster top coat.	None Detected	Not Analyzed Non-Fibrous Material > 75%
Comments:	Analysis of phase a) was stopped due to a previous positive result.		
S0019E Wall, All, Plaster, Interior, Loc:18, Girls Washroom	2 Phases: a) Homogeneous, light grey, hard, cementitious, plaster base coat. b) Homogeneous, white, hard, cementitious, plaster top coat.	None Detected	Not Analyzed Non-Fibrous Material > 75%
Comments:	Analysis of phase a) was stopped due to a previous positive result.		
S0020A Floor, All, Vinyl Floor Tile And Mastic, 12" Beige, Loc:19, Classroom 1	2 Phases: a) Homogeneous, beige, consolidated, vinyl floor tile. b) Homogeneous, black, soft, sticky material on the back of vinyl floor tile.	None Detected None Detected	Non-Fibrous Material > 75% Tar and other Non-Fibrous Material > 75%
S0020B Floor, All, Vinyl Floor Tile And Mastic, 12" Beige, Loc:19, Classroom 1	2 Phases: a) Homogeneous, beige, consolidated, vinyl floor tile. b) Homogeneous, black, soft, sticky material on the back of vinyl floor tile.	None Detected None Detected	Non-Fibrous Material > 75% Tar and other Non-Fibrous Material > 75%



Pinchin Ltd. Asbestos Laboratory Certificate of Analysis

Project Name: HRCE, Fort Sackville, 21 Perth St., Bedford, NS
Project No.: 0324048.000
Prepared For: A. Penney / A. Thebeau

Lab Reference No.: b288610
Date Analyzed: March 23, 2023

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
S0020C Floor, All, Vinyl Floor Tile And Mastic, 12" Beige, Loc:20, Classroom 2	2 Phases: a) Homogeneous, beige, consolidated, vinyl floor tile.	None Detected	Non-Fibrous Material > 75%
	b) Homogeneous, black, soft, sticky material on the back of vinyl floor tile.	None Detected	Tar and other Non- Fibrous Material > 75%

Reviewed by:

Jason Stapleton
2023.03.23 14:13:26-03'00'

Reporting Analyst:

Reid Janssen
2023.03.23 13:44:55-03'00'



Pinchin Ltd. Asbestos Laboratory *Certificate of Analysis*

Project Name: HRCE, Fork Sackville School, 21 Perth St., Bedford, NS
Project No.: 0324048.000
Prepared For: A. Penney / A. Thebeau

Lab Reference No.: b288611
Analyst(s): J. Stapleton

Date Received: March 21, 2023 **Samples Submitted:** 3
Date Analyzed: March 21, 2023 **Phases Analyzed:** 1

The Pinchin Ltd. Dartmouth asbestos laboratory is accredited by the National Institute of Standards and Technology, National Voluntary Laboratory Accreditation Program (NVLAP Lab Code 201032-0) for the 'EPA – 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples,' and the 'EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials'; and meets all requirements of ISO/IEC 17025:2017. The Pinchin asbestos laboratory uses the aforementioned methods of analysis.

Bulk samples are checked visually and scanned under a stereomicroscope. Slides are prepared and observed under a Polarized Light Microscope (PLM) at magnifications of 40X, 100X or 400X as appropriate. Asbestos fibres are identified by a combination of morphology, colour, refractive index, extinction, sign of elongation, birefringence and dispersion staining colours. A visual estimate is made of the percentage of asbestos present. A reported concentration of less than (<) the regulatory threshold indicates the presence of confirmed asbestos in trace quantities, limited to only a few fibres or fibre bundles in an entire sample. This method complies with provincial regulatory requirements where applicable. Multiple phases within a sample are analyzed and reported separately.

All bulk samples submitted to this laboratory for asbestos analysis are retained for a minimum of three months. Samples may be retrieved, upon request, for re-examination at any time during that period.

This report relates only to the items tested.

This report relates only to the items tested and is valid only when signed with a protected, authorized, electronic signature. This report may not be reproduced, except in full, without the written approval of Pinchin Ltd. The client may not use this report to claim product endorsement by NVLAP or any agency of the U.S. Government. Internal verification studies, quality assurance / control data and laboratory documentation on measurement uncertainty are available upon request.



Pinchin Ltd. Asbestos Laboratory Certificate of Analysis

Project Name: HRCE, Fork Sackville School, 21 Perth St., Bedford, NS
Project No.: 0324048.000
Prepared For: A. Penney / A. Thebeau

Lab Reference No.: b288611
Date Analyzed: March 21, 2023

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
S0021A Wall, Exterior, Cement Product, Siding, Loc:24, Boiler Room And Stairwell	Homogeneous, grey, hard, cementitious transite material.	Chrysotile 10-25%	Non-Fibrous Material > 75%
S0021B Wall, Exterior, Cement Product, Siding, Loc:24, Boiler Room And Stairwell			Not Analyzed
Comments:	Analysis was stopped due to a previous positive result.		
S0021C Wall, Exterior, Cement Product, Siding, Loc:24, Boiler Room And Stairwell			Not Analyzed
Comments:	Analysis was stopped due to a previous positive result.		

Reviewed by:

Nicole Gerrow
2023.03.21 15:52:09-03'00'

Reporting Analyst:

Jason Stapleton
2023.03.21 15:49:51-03'00'

APPENDIX II-B
Lead Analytical Certificates



CLIENT NAME: PINCHIN LTD.
42 Dorey Avenue
Dartmouth, NS B3B0B1
(902) 461-9999

ATTENTION TO: Ashley Penney

PROJECT: 324048.000

AGAT WORK ORDER: 23X007040

OCCUPATIONAL HYGIENE REVIEWED BY: Amanjot Bhela, Inorganic Lab Manager

DATE REPORTED: Mar 27, 2023

PAGES (INCLUDING COVER): 5

VERSION*: 2

Should you require any information regarding this analysis please contact your client services representative at (902) 468-8718

***Notes**

VERSION 2:Version 2.0 supersedes Version 1.0 Project ID revised as per client request. 2023/3/27 JFH

Disclaimer:

- *All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.*
- *All samples will be disposed of within 30 days after receipt unless a Long Term Storage Agreement is signed and returned. Some specialty analysis may be exempt, please contact your Client Project Manager for details.*
- *AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the services.*
- *This Certificate shall not be reproduced except in full, without the written approval of the laboratory.*
- *The test results reported herewith relate only to the samples as received by the laboratory.*
- *Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the guidelines contained in this document.*
- *All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.*
- *For environmental samples in the Province of Quebec: The analysis is performed on and results apply to samples as received. A temperature above 6°C upon receipt, as indicated in the Sample Reception Notification (SRN), could indicate the integrity of the samples has been compromised if the delay between sampling and submission to the laboratory could not be minimized.*



Certificate of Analysis

AGAT WORK ORDER: 23X007040

PROJECT: 324048.000

11 Morris Drive, Unit 122
 Dartmouth, Nova Scotia
 CANADA B3B 1M2
 TEL (902)468-8718
 FAX (902)468-8924
<http://www.agatlabs.com>

CLIENT NAME: PINCHIN LTD.

ATTENTION TO: Ashley Penney

SAMPLING SITE:

SAMPLED BY:

Lead in Paint

DATE RECEIVED: 2023-03-20

DATE REPORTED: 2023-03-27

Parameter	Unit	L0001, Yellow		L0002, White on		L0003, White on		L0004, Light		L0005 Black on	
		on wood, Loc 1		wood, Loc 1		drywall, Loc 2		blue on wood, Loc 2		wood, Loc 2	
		SAMPLE DESCRIPTION:		Paint		Paint		Paint		Paint	
		G / S	RDL	G / S	RDL	G / S	RDL	G / S	RDL	G / S	RDL
Lead	mg/kg	10	2450	27300	131	357	1180				

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard
 Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

Anamjot Bhela


Quality Assurance

 CLIENT NAME: PINCHIN LTD.
 PROJECT: 324048.000
 SAMPLING SITE:

 AGAT WORK ORDER: 23X007040
 ATTENTION TO: Ashley Penney
 SAMPLED BY:

Occupational Hygiene Analysis

RPT Date: Mar 27, 2023			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Lead in Paint

Lead	4862635	4862635	2450	2300	6.3%	< 10	99%	80%	120%	105%	80%	120%	NA	70%	130%
------	---------	---------	------	------	------	------	-----	-----	------	------	-----	------	----	-----	------

Comments: Matrix spike NA: Spike level < native concentration. Matrix spike acceptance limits do not apply and are not calculated.

Certified By:






Method Summary

CLIENT NAME: PINCHIN LTD.

AGAT WORK ORDER: 23X007040

PROJECT: 324048.000

ATTENTION TO: Ashley Penney

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Occupational Hygiene Analysis			
Lead	MET-93-6106	EPA SW 846 3050B & 6010C	ICP/OES

Unit 122 - 11 Morris Dr.
Dartmouth, Nova Scotia
B3B 1M2
http://webearth.agatlabs.com

Phone: 902-468-8718
Fax: 902-468-8924
www.agatlabs.com

Laboratory use Only
 Arrival Condition: Good Poor (complete 'notes')
 Arrival Temperature: 19.4, 19.4, 19.2 AGAT Job Number: 23x007040
 Notes: _____

Drinking Water Sample (y/n): _____ Reg. No. _____
 Waterworks Number: _____

Report To:
 Company: Pinchin Ltd.
 Contact: Ashley Penney
 Address: 42 Dorey Ave, Dartmouth, NS B3B 0B1
 Phone: 902.461.9999 FAX: 902.461.9932
 PO#: _____
 AGAT Quotation: 514103
 Client Project #: 303304.028
Invoice to: Same (Y/N) - Circle
 Company: _____
 Contact: _____
 Address: _____
 Phone: _____ Fax: _____
 PO#/Credit Card #: _____

Report Information
 1. Name: Ashley Penney
 Email: apenney@pinchin.com
 2. Name: Allain Thebeau
 Email: athebeau@pinchin.com

Regulatory Requirements (Check):
 List Guidelines on Report Do Not List Guidelines on Report
 PIRI Site Info (check all that apply):
 Teir 1 Res. Pot. Coarse
 Teir 2 Com N/Pot. Fine
 Gas Fuel Lube
 CCME CDWQ
 Ind NSDFOSP
 Com HRM 101
 Res/P Storm Water
 Ag HRM 101
 FWAL Waste Water
 Sediment
 Other _____

Report Format
 Single PDF sample per page
 Multiple PDF samples per page
 Excel Format Included

Turnaround Time (TAT) Business Days
Regular TAT: 5 - 7 days
Rush TAT: 1 day 2 days
 3 - 4 days
 Date Required: _____
 Time Required: _____

23 MAR 20 12:13 PM

SAMPLE IDENTIFICATION	DATE / TIME SAMPLED	SAMPLE MATRIX	# OF CONTAINERS	COMMENTS - Site/Sample Info, Sample Containment	Field Filtered/ Preserved	Standard Water Analysis +MS	Metals	(Circle-Total, Diss or Available)	Mercury Leachate CGSB	BOD	pH	TSS	TKN	Anions	Total Phosphorus	Phenols	TPH/BTEX (PIR) Teir 1	TPH/BTEX-Fractionation Teir 2	VOC	THM	Mercury in paint	Lead in Paint	PCB	Hazardous (Y/N)	Lab Sample #
L0001, Yellow on wood, Loc. 1	3/17/2023	solid	1 bag	REPORT IN MG/KG																					23.04
L0002, White on wood, Loc. 1	3/17/2023	solid	1 bag	REPORT IN MG/KG																		X			15.36
L0003, White on drywall, Loc. 2	3/17/2023	solid	1 bag	REPORT IN MG/KG																		X			3.60
L0004, Light blue on wood, Loc. 2	3/17/2023	solid	1 bag	REPORT IN MG/KG																		X			4.46
L0005, Black on wood, Loc. 2	3/17/2023	solid	1 bag	REPORT IN MG/KG																		X			4.41



APPENDIX II-C
PCB Analytical Certificates



CLIENT NAME: PINCHIN LTD.
42 Dorey Avenue
Dartmouth, NS B3B0B1
(902) 461-9999

ATTENTION TO: Ashley Penney

PROJECT: 324048.000

AGAT WORK ORDER: 23X007045

TRACE ORGANICS REVIEWED BY: Dylan McCarthy, Trace Organics Lab Technician

DATE REPORTED: Mar 30, 2023

PAGES (INCLUDING COVER): 5

VERSION*: 2

Should you require any information regarding this analysis please contact your client services representative at (902) 468-8718

***Notes**

VERSION 2: Version 2.0 supersedes Version 1.0. Work order 23X007045, version 1, issued March 29th. Project ID revised as per client request. 2023/3/30 JFH

Disclaimer:

- All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.
- All samples will be disposed of within 30 days after receipt unless a Long Term Storage Agreement is signed and returned. Some specialty analysis may be exempt, please contact your Client Project Manager for details.
- AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the services.
- This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
- The test results reported herewith relate only to the samples as received by the laboratory.
- Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the guidelines contained in this document.
- All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.
- For environmental samples in the Province of Quebec: The analysis is performed on and results apply to samples as received. A temperature above 6°C upon receipt, as indicated in the Sample Reception Notification (SRN), could indicate the integrity of the samples has been compromised if the delay between sampling and submission to the laboratory could not be minimized.



Certificate of Analysis

AGAT WORK ORDER: 23X007045

PROJECT: 324048.000

11 Morris Drive, Unit 122
 Dartmouth, Nova Scotia
 CANADA B3B 1M2
 TEL (902)468-8718
 FAX (902)468-8924
<http://www.agatlabs.com>

CLIENT NAME: PINCHIN LTD.

ATTENTION TO: Ashley Penney

SAMPLING SITE:

SAMPLED BY:

Total Polychlorinated Biphenyls in Solids

DATE RECEIVED: 2023-03-20

DATE REPORTED: 2023-03-30

Parameter	Unit	P0001, White Exterior Caulking, Loc:		P0002, Black Exterior Caulking, Loc:	
		G / S	RDL	G / S	RDL
SAMPLE DESCRIPTION:		1, Exterior		1, Exterior	
SAMPLE TYPE:		Solid		Solid	
DATE SAMPLED:		2023-03-17		2023-03-17	
Total Polychlorinated Biphenyls	mg/kg	0.5	<0.5	<0.5	<0.5
Surrogate	Unit	Acceptable Limits			
Decachlorobiphenyl	%	60-140	92	92	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard
 Analysis performed at AGAT Halifax (unless marked by *)

Certified By:

Quality Assurance

 CLIENT NAME: PINCHIN LTD.
 PROJECT: 324048.000
 SAMPLING SITE:

 AGAT WORK ORDER: 23X007045
 ATTENTION TO: Ashley Penney
 SAMPLED BY:

Trace Organics Analysis

RPT Date: Mar 30, 2023			DUPLICATE				Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Measured Value		Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	

Total Polychlorinated Biphenyls in Solids															
Total Polychlorinated Biphenyls	1	BS DUP	0.5	< 0.5	NA	< 0.5	104%	60%	140%	107%	60%	140%	97%	60%	140%

Comments: If Matrix spike value is NA, the spiked analyte concentration was lower than that of the matrix contribution.
 If RPD value is NA, the results of the duplicates are less than 5x the RDL and the RPD will not be calculated.

Certified By:





Method Summary

CLIENT NAME: PINCHIN LTD.

AGAT WORK ORDER: 23X007045

PROJECT: 324048.000

ATTENTION TO: Ashley Penney

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Total Polychlorinated Biphenyls	ORG-120-5106	EPA SW846/8081/8080	GC/ECD
Decachlorobiphenyl	ORG-120-5106	EAP SW846 3510C/8080/8010	GC/ECD



AGAT Laboratories

Unit 122 - 11 Morris Dr.
Dartmouth, Nova Scotia
B3B 1M2
http://webearth.agatlabs.com

Phone: 902-468-8718
Fax: 902-468-8924
www.agatlabs.com

Laboratory use Only

Arrival Condition: Good Poor (complete 'notes')
Arrival Temperature: 16.2 AGAT Job Number: 23X007045
Notes: _____

Drinking Water Sample (y/n): _____ Reg. No. _____

Waterworks Number: _____

Report To:
 Company: Pinchin Ltd.
 Contact: Ashley Penney
 Address: 42 Dorey Ave, Dartmouth, NS B3B 0B1
 Phone: 902.461.9999 FAX: 902.461.9932
 PO#: _____
 AGAT Quotation: 514103
 Client Project #: 303304.028

Invoice to: Same (Y/N) - Circle
 Company: _____
 Contact: _____
 Address: _____
 Phone: _____ Fax: _____
 PO#/Credit Card #: _____

Report Information
 1. Name: Ashley Penney
 Email: apenney@pinchin.com
 2. Name: Matt Sweeny
 Email: msweeny@pinchin.com

Regulatory Requirements (Check):
 List Guidelines on Report Do Not List Guidelines on Report
 PIRI Site Info (check all that apply):
 Teir 1 Res. Pot. Coarse
 Teir 2 Com N/Pot. Fine
 Gas Fuel Lube
 CCME CDWQ
 Ind NSDFOSP
 Com HRM 101
 Res/P Storm Water
 Ag HRM 101
 FWAL Waste Water
 Sediment
 Other _____

Report Format

- Single PDF sample per page
 Multiple PDF samples per page
 Excel Format Included

Turnaround Time (TAT) Business Days

- Regular TAT:**
 5 - 7 days
Rush TAT:
 1 day 2 days
 3 - 4 days
 Date Required: _____
 Time Required: _____

23 MAR 20 12:11 PM

SAMPLE IDENTIFICATION	DATE / TIME SAMPLED	SAMPLE MATRIX	# OF CONTAINERS	COMMENTS - Site/Sample Info, Sample Containment	Field Filtered/ Preserved	Standard Water Analysis +MS	Metals	(circle-Total, Diss or Available)	Mercury Leachate CGSB	BOD	pH	TSS	TKN	Anions	Total Phosphorus	Phenols	TPH/BTEX (PIRI) Teir 1	TPH/BTEX-Fractionation Teir 2	VOC	THM	Mercury in paint	Lead in Paint	PCB	Hazardous (Y/N)	Lab Sample #
P0001, White Exterior Caulking, Loc: 1, Exterior	3/17/2023	solid	1 bag	2.11g																					
P0002, Black Exterior Caulking, Loc: 1, Exterior	3/17/2023	solid	1 bag	0.93g																			X		
																							X		

Paul

APPENDIX III
Methodology



1.0 GENERAL

An inspection was conducted to identify the type of Hazardous Building Materials incorporated in the structure and its finishes.

Information regarding the location and condition of hazardous building materials encountered and visually estimated quantities were recorded. The locations of any samples collected were recorded on small-scale plans. As-built drawings and previous reports were referenced where provided.

Sample collection was conducted in accordance with our Standard Operating Procedures.

1.1 Asbestos

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

A separate set of samples was collected of each type of homogenous material suspected to contain asbestos. A homogenous material is defined by the US EPA as material that is uniform in texture and appearance, was installed at one time, and is unlikely to consist of more than one type or formulation of material. The homogeneous materials were determined by visual examination and available information on the phases of construction and prior renovations.

Samples were collected at a rate that is in compliance with the requirements of local regulations and guidelines. The sampling strategy was also based on known ban dates and phase out dates of the use of asbestos; sampling of certain building materials is not conducted after specific construction dates. In addition, to be conservative, several years past these dates are added to account for some uncertainty in the exact start / finish date of construction and associated usage of ACM. In some cases, manufactured products such as asbestos cement pipe were visually identified without sample confirmation.

The asbestos analysis was completed using a stop-positive approach. Only one result meeting the regulated criteria was required to determine that a material is asbestos-containing, but all samples must be analyzed to conclusively determine that a material is non-asbestos. The laboratory stopped analyzing samples from a homogeneous material once a result equal to or greater than the regulated criteria is detected in any of the samples of that material. All samples of a homogeneous material were analyzed if no asbestos is detected. In some cases, all samples were analyzed in the sample set regardless of result.

The analysis was performed in accordance with Test Method EPA/600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials, July 1993.

Analytical results were compared to the following criteria.

Jurisdiction*	Friable	Non-Friable
Nova Scotia	0.5% ¹	0.5%
Federal	1%	1%

* If there is a conflict between federal and provincial criteria, the more stringent will apply.

Where building materials are described in the report as “non-asbestos” or “does not contain asbestos”, this means that either no asbestos was detected by the analytical method utilized in any of the multiple samples or, if detected, it is below the lower limit of an asbestos-containing material in the applicable regulation. Additionally, these terms are used for materials which historically are known to not include asbestos in their manufacturing.

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

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

For a complete description of the Evaluation Criteria and Basis of Recommendations, refer to Annex A.

1.2 Lead

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

Analysis for lead in paints or surface coatings was performed in accordance with EPA Method No. 3050B/Method No. 7420; flame atomic absorption.

Analytical results were compared to the following criteria.

Jurisdiction*	Units (%)	Units (ppm) / (mg/kg)
Nova Scotia	0.009	90
Federal	0.009	90

* If there is a conflict between federal and provincial criteria, the more stringent will apply.

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

Pinchin reviewed the bulk samples results for elevated concentrations of lead. Where elevated concentrations are present, paint samples including the substrate (e.g., wood, concrete, plaster) were submitted for waste characterization analysis following CGSB 164-GP-IMP or TCLP Method 1311. Analytical results were compared against local provincial requirements.

1.3 Silica

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

1.4 Mercury

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

1.5 Polychlorinated Biphenyls

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

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

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

Caulking, sealants, or paints were sampled and submitted for PCB analysis following EPA 3550C/8082A.

Sample results are compared to the criteria of 50 mg/kg for solids as stated in the PCB Regulation, SOR/2008-273.



1.6 Visible Mould

The presence of mould or water damage was determined by visual inspection of exposed building surfaces. If any mould growth or water damage was concealed within building cavities it was not addressed in this assessment.

1.7 Urea Formaldehyde Foam Insulation (UFFI)

Limited demolition of wall cavities was conducted to investigate for UFFI. Materials suspected to be UFFI were sampled and submitted for laboratory analysis.

1.8 Radioactive Materials

Most smoke detectors use a radioactive source for the detection of smoke. The radioactive source used is low-activity Americium-241. These types of smoke detectors use a very small amount of this material (1-5 micro curies); and it is encapsulated between thin layers of gold and silver foil.

The potential for radioactive sources was determined by visual inspection of the smoke detector.

Template: Methodology for Hazardous Building Materials Assessment, HAZ, January 26, 2023

APPENDIX IV
Location Summary Report

Client:HRCE

Site: 21 Perth Street, Bedford, NS

Building Name: Fort Sackville Elementary School

Survey Date:

Last Re-Assessment:

Building Phases: A: 1970 , B: 1950

Location No.	Name or Description	Area ft ²	Floor No.	Bldg. Phase	Notes
1	Exterior	0		A	
2	Classroom 6	631	G	A	
3	Vestibule 1	56	G	A	
4	Washroom 1	33	G	A	
5	Washroom 2	33	G	A	
6	Classroom 5	639	G	A	
7	Maintenance Office	115	G	A	
8	Classroom 3	698	G	A	
9	Classroom 4	687	G	A	
10	Gym	1040	G	A	
11	Hallway	540	G	B	Solid ceiling above lay-in ceiling tiles, no visible pipes, ducts
12	Work Room	160	G	B	solid ceiling above lay-in acoustic tiles, no pipes, ducts observed
13	Staff Washroom	30	G	B	solid ceiling above lay-in ceiling tiles, no visible pipes/ducts
14	Storage Closet	40	G	B	solid ceiling above lay-in tiles, no pipes/ducts observed
15	Kitchen	230	G	B	Solid ceiling above lay-in ceiling tiles, no pipes/ducts observed
16	Janitor Closet	12	G	B	Solid ceiling. Not able to observe pipes above
17	Boys Washroom	145	G	B	Solid, high ceiling - not able to observe above.
18	Girls Washroom	145	G	B	Solid, high ceiling - not able to observe piping/duct work above
19	Classroom 1	748	G	B	Solid ceiling above lay-in tiles, no pipes/ducts observed
20	Classroom 2	747	G	B	Solid ceiling above lay-in tiles, not able to observe pipes/ducts
21	Front Entrance	48	G	B	solid ceiling, not able to observe pipes/ducts/structure
22	Storage Room 1	40	G	B	solid ceiling, not able to see above to observe pipes, ducts, structure
23	Storage Room 2	40	G	B	Solid ceiling - not able to observe pipes, ducts, structure
24	Boiler Room And Stairwell	363	B	B	
25	Oil Tank Room	110	B	B	

APPENDIX V
Hazardous Materials Summary Report / Sample Log

Client:HRCE **Site:** 21 Perth Street, Bedford, NS **Building Name:** Fort Sackville Elementary School **Survey Date:**

HAZMAT	Sample No	System/Component/Material/Sample Description	Locations	Bldg. Phase	LF	SF	EA	%	Type	Positive	Friability
Asbestos	S0001 ABC	Wall All Cement Product 2x2 Transite Panels	1	A	0	0	28	0	Chrysotile	Yes	NF
Asbestos	S0002 ABC	Wall Window Caulking White	1	A	300	0	0	0	Chrysotile	Yes	NF
Asbestos	S0003 ABC	Wall All Tar Paper	1	A	0	160	0	0	None Detected	No	
Asbestos	S0004 ABC	Wall Window Caulking Black	1	A	0	50	0	0	None Detected	No	
Asbestos	S0005 ABCDEFG	Wall, Ceiling, Wall All Drywall And Joint Compound Interior	2,3,4,5,6,7,8,9,10	A	0	12742	0	0	Chrysotile	Yes	NF
Asbestos	S0006 ABC	Floor All Vinyl Sheet Flooring Green And White Marble Pattern	2,6	A	0	1061	0	0	None Detected	No	
Asbestos	S0007 ABC	Floor All Vinyl Sheet Flooring Brown And White Marble Pattern	2,6	A	0	92	0	0	None Detected	No	
Asbestos	S0008 ABC	Floor All Vinyl Floor Tile And Mastic 12" White With Beige Flecks	2,6,7	A	0	239	0	0	None Detected	No	
Asbestos	S0009 ABC	Wall All Tar Paper Black With Yellow Backing	1	A	0	1000	0	0	None Detected	No	
Asbestos	S0010 ABC	Floor All Vinyl Floor Tile And Mastic 12" Blue With Flecks	3,4,5,7,13	A,B	0	167	0	0	None Detected	No	
Asbestos	S0011 ABC	Piping Hot Water Heating, Heating Water Supply Aircell	2,6,7,8,9,24,25	A,B	418	0	0	0	Chrysotile	Yes	F
Asbestos	S0012 ABC	Floor All Vinyl Sheet Flooring Brown Marble Pattern	8,9,10	A	0	2003	0	0	None Detected	No	
Asbestos	S0013 ABC	Floor All Vinyl Floor Tile And Mastic 12" Beige With White Flecks	9	A	0	29	0	0	None Detected	No	
Asbestos	S0014 ABC	Floor All Vinyl Floor Tile And Mastic 12" Black With White Flecks	9	A	0	45	0	0	None Detected	No	
Asbestos	S0015 ABCDEFG	Wall, Ceiling, Wall All Drywall And Joint Compound Interior	11,12,13,14,15,16,19,20,21,22,23	B	0	7910	0	0	Chrysotile	Yes	NF
Asbestos	S0016 ABC	Floor All Vinyl Floor Tile And Mastic 12" Beige With Brown Flecks	11,16	B	0	552	0	0	None Detected	No	
Asbestos	S0017 ABC	Floor All Vinyl Sheet Flooring Brown	12,14,15	B	0	430	0	0	None Detected	No	
Asbestos	S0018 ABC	Floor All Vinyl Floor Tile And Mastic 12" Green With Flecks	10	A	0	348	0	0	None Detected	No	
Asbestos	S0019 ABCDE	Wall, Ceiling, Wall All Plaster Interior	17,18	B	0	1290	0	0	Chrysotile	Yes	PF
Asbestos	S0020 ABC	Floor All Vinyl Floor Tile And Mastic 12" Beige	19,20	B	0	1495	0	0	None Detected	No	
Asbestos	S0021 ABC	Wall Exterior Cement Product Siding	24	B	0	10	0	0	Chrysotile	Yes	NF
Asbestos	V9500	Ceiling Acoustic Tile Ceiling Tiles (glue-on)	11,12,13,14,15,19,20	B	0	2495	0	0	Presumed Asbestos	Yes	PF
Asbestos	V9500	Floor All Mortar	17,18,21,22,23	B	0	418	0	0	Presumed Asbestos	Yes	NF

HAZMAT	Sample No	System/Component/Material/Sample Description	Locations	Bldg. Phase	LF	SF	EA	%	Type	Positive	Friability
Asbestos	V9500	Wall All Mortar	4,5	A	0	160	0	0	Presumed Asbestos	Yes	NF
Asbestos	V0000	Ceiling Acoustic Tile Ceiling Tiles (lay-in) 2x4 Pinhole And Fissure	11,12,13,14,15,19,20	B	0	2495	0	0	Non Asbestos	No	
Asbestos	V0000	Mechanical Equipment Boiler Fibreglass	24	B	0	0	1	0	Non Asbestos	No	
Asbestos	V0000	Other Door Caulking Silicone	3	A	0	0	0	0	Non Asbestos	No	
Asbestos	V0000	Other Window Liner Rubber	3,12,15	A,B	0	0	0	0	Non Asbestos	No	
Asbestos	V0000	Piping Drain Thermal Insulation Horsehair	7	A	0	0	0	0	Non Asbestos	No	
Asbestos	V0000	Wall Base Rubber	4,5	A	0	0	0	0	Non Asbestos	No	
Paint	L0001	Wall Wood Yellow	1	A	0	2000	0	0	Lead (High)	Yes	-
Paint	L0002	Wall Wood White	1	A	0	800	0	0	Lead (High)	Yes	-
Paint	L0003	Wall Drywall And Joint Compound White (interior)	2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,19,20,21,22,23	A,B	0	20612	0	0	Lead (Low)	Yes	-
Paint	L0004	Wall Wood Light Blue	2,3,4,5,6,8,9,19,20,21	A,B	1271	0	0	0	Lead (Low)	Yes	-
Paint	L0005	Wall Wood Black	2,6,8,9,10,11,19,20	A,B	935	0	0	0	Lead (High)	Yes	-
Paint	V9500	Wall Drywall And Joint Compound White	18	B	0	500	0	0	Presumed Lead	Yes	-
Paint	V9500	Wall Plaster White	17	B	0	500	0	0	Presumed Lead	Yes	-
Lead Product	V9000	Batteries In Emer. Lights	10,11,24	A,B	0	0	6	0	Lead Product	Yes	-
PCB	P0001	Caulking White	1	A	300	0	0	0	-	No	-
PCB	P0002	Caulking Black	1	A	50	0	0	0	-	No	-
PCB	V9500	Light Ballasts	2,3,6,7,8,9,10,11,12,13,14,15,17,18,19,20,21,22,23,24,25	A,B	0	0	119	0	Presumed PCB	Yes	-
Hg	V9000	Fluorescent Light Tube	8,9,10,11,22,23	A,B	0	0	92	0	Hg	Yes	-
Hg	V9000	Thermostat	2,6,20	A,B	0	0	3	0	Hg	Yes	-
Hg	V9500	Fluorescent Light Tube	2,3,6,7,12,13,14,15,17,18,19,20,21,24,25	A,B	0	0	143	0	Presumed Hg	Yes	-
Hg	V0000	Fluorescent Light Tube	4,5,16	A,B	0	0	2	0	-	No	-
Hg	V0000	Thermostat	8,9,10	A	0	0	3	0	-	No	-

Legend:

Sample number		Units		
S####	Asbestos sample collected	SF	Square feet	NF Non Friable material.
L####	Paint sample collected	LF	Linear feet	F Friable material
P####	PCB sample collected	EA	Each	PF Potentially Friable material
M####	Mould sample collected	%	Percentage	
V####	Material visually similar to numbered sample collected			
V0000	Known non Hazardous Material			
V9000	Material is visually identified as Hazardous Material			
V9500	Material is presumed to be Hazardous Material			
[Loc. No.]	Abated Material			

APPENDIX VI
All Data Report

Client: HRCE
Location: #1 : Exterior
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: Basement (0)

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 0

ASBESTOS																
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard	Friable
Structure	Base	Concrete (poured)														
Wall ¹	All	Wood	Surface													
Wall	All	Masonry	Exterior													
Wall	All	Cement Product, 2x2 transite panels	Exterior		A	Y		28			EA	S0001ABC	Chrysotile	10-25%	Confirmed Asbestos	NF
Wall	All	Tar Paper		Wood	D	N		160			SF	S0003ABC	None Detected	N.D.	None	
Wall	All	Tar Paper, Black with yellow backing			D	N		1000			SF	S0009ABC	None Detected	N.D.	None	
Wall	Window	Caulking, White			A	Y		300			LF	S0002ABC	Chrysotile	5-10%	Confirmed Asbestos	NF
Wall	Window	Caulking, Black			A	Y		50			SF	S0004ABC	None Detected	N.D.	None	

1 - Siding

Client: HRCE
Location: #1 : Exterior
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: Basement (0)

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 0

PAINT									
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Hazard	
Wall	Wood	2000		SF	L0001	Yellow	Pb: 2450 mg/kg	Lead (High)	
Wall	Wood	800		SF	L0002	White	Pb: 27300 mg/kg	Lead (High)	

Client: HRCE
Location: #1 : Exterior
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: Basement (0)

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 0

PCB							
Component	Quantity	Unit	Sample	Sample Description	Amount	PCB	
Caulking	300	LF	P0001	White	<0.5 mg/kg	No	
Caulking	50	LF	P0002	Black	<0.5 mg/kg	No	

Client: HRCE
Location: #2 : Classroom 6
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 631

ASBESTOS																
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard	Friable
Ceiling	All	None Found														
Floor	All	Vinyl Floor Tile and Mastic, 12" white with beige flecks			A	Y		114			SF	S0008A	None Detected	N.D.	None	
Floor	All	Vinyl Sheet Flooring, Green and white marble pattern			A	Y		493			SF	S0006A	None Detected	N.D.	None	
Floor	All	Vinyl Sheet Flooring, Brown and white marble pattern			A	Y		46			SF	S0007A	None Detected	N.D.	None	
Mechanical Equipment	Radiator															
Other	Window Liner	Silicone										V0000	Non-Asbestos		None	
Piping	Hot Water Heating	Aircell		Plastic	C	Y		94			LF	V0011	Chrysotile	25-50%	Confirmed Asbestos	F
Piping	Hot Water Heating	Not Insulated														
Structure	Deck	Wood														
Structure	Joist	Steel														
Wall	All	Drywall and joint compound, Interior			A	Y		1000			SF	S0005A	Chrysotile	0.5-5%	Confirmed Asbestos	NF
Wall	All	Drywall and joint compound	Exterior		A	Y		800			SF	S0005F	Chrysotile	0.5-5%	Confirmed Asbestos	NF

Client: HRCE
Location: #2 : Classroom 6
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 631

PAINT									
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Hazard	
Wall	Drywall and joint compound	1900		SF	L0003	White (interior)	Pb: 131 mg/kg	Lead (Low)	
Wall ¹	Wood	190		LF	L0004	Light blue	Pb: 357 mg/kg	Lead (Low)	
Wall ²	Wood	105		LF	L0005	Black	Pb: 1180 mg/kg	Lead (High)	

1 - Window and door frames
2 - Wood base boards

Client: HRCE
Location: #2 : Classroom 6
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 631

MERCURY				
Component	Quantity	Unit	Sample	Hazard
Fluorescent Light Tube ¹	18	EA	V9500	Presumed
Thermostat	1	EA	V9000	Yes

1 - Light covers

2023-04-14

Client: HRCE
Location: #2 : Classroom 6
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00
Area (sqft): 631

PCB						
Component	Quantity	Unit	Sample	Sample Description	Amount	PCB
Light Ballasts	9	EA	V9500			Presumed

Client: HRCE
Location: #3 : Vestibule 1
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 56

ASBESTOS																
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard	Friable
Ceiling	All	Drywall and joint compound			B	Y		56			SF	V0005	Chrysotile	0.5-5%	Confirmed Asbestos	NF
Floor	All	Vinyl Floor Tile and Mastic, 12" blue with flecks			A	Y		56			SF	S0010A	None Detected	N.D.	None	
Mechanical Equipment	Radiator															
Other	Door	Caulking, Silicone										V0000	Non-Asbestos		None	
Other	Window Liner	Rubber										V0000	Non-Asbestos		None	
Piping	Hot Water Heating	Not Insulated														
Structure	Deck	Wood		Drywall and joint compound												
Structure	Joist	Steel														
Wall	All	Drywall and joint compound	ALL		A	Y		160			SF	S0005B	Chrysotile	0.5-5%	Confirmed Asbestos	NF

Client: HRCE
Location: #3 : Vestibule 1
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 56

PAINT									
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Hazard	
Wall	Drywall and joint compound	160		SF	V0003	White (interior)	Pb: 131 mg/kg	Lead (Low)	
Wall ¹	Wood	76		LF	V0004	Light blue	Pb: 357 mg/kg	Lead (Low)	
Ceiling	Drywall and joint compound	56		SF	V0003	White (interior)	Pb: 131 mg/kg	Lead (Low)	

1 - Window and door frames

Client: HRCE
Location: #3 : Vestibule 1
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 56

MERCURY				
Component	Quantity	Unit	Sample	Hazard
Fluorescent Light Tube ¹	1	EA	V9500	Presumed

1 - Light covers

Client: HRCE
Location: #3 : Vestibule 1
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 56

PCB						
Component	Quantity	Unit	Sample	Sample Description	Amount	PCB
Light Ballasts	1	EA	V9500			Presumed

Client: HRCE
Location: #4 : Washroom 1
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 33

ASBESTOS																
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard	Friable
Ceiling	All	Drywall and joint compound			B	Y		33			SF	V0005	Chrysotile	0.5-5%	Confirmed Asbestos	NF
Floor	All	Vinyl Floor Tile and Mastic, 12" blue with flecks			A	Y		33			SF	S0010B	None Detected	N.D.	None	
Piping	Domestic Water (hot And Cold)	Not Insulated														
Structure	Deck	Wood		Drywall and joint compound												
Structure	Joist	Steel														
Wall	All	Drywall and joint compound	ALL		A	Y		80			SF	V0005	Chrysotile	0.5-5%	Confirmed Asbestos	NF
Wall	All	Mortar		Ceramic Tiles	D	N		80			SF	V9500	Presumed Asbestos		Presumed Asbestos	NF
Wall	Base	Rubber										V0000	Non-Asbestos		None	

Client: HRCE
Location: #4 : Washroom 1
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 33

PAINT									
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Hazard	
Wall	Drywall and joint compound	80		SF	V0003	White (interior)	Pb: 131 mg/kg	Lead (Low)	
Wall ¹	Wood	20		LF	V0004	Light blue	Pb: 357 mg/kg	Lead (Low)	
Ceiling	Drywall and joint compound	33		SF	V0003	White (interior)	Pb: 131 mg/kg	Lead (Low)	

1 - Window and door frames

Client: HRCE
Location: #4 : Washroom 1
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 33

MERCURY				
Component	Quantity	Unit	Sample	Hazard
Fluorescent Light Tube ¹	1	EA	V0000	

1 - LED

Client: HRCE
Location: #5 : Washroom 2
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 33

ASBESTOS																
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard	Friable
Ceiling	All	Drywall and joint compound			B	Y		33			SF	V0005	Chrysotile	0.5-5%	Confirmed Asbestos	NF
Floor	All	Vinyl Floor Tile and Mastic, 12" blue with flecks			A	Y		33			SF	S0010C	None Detected	N.D.	None	
Piping	Domestic Water (hot And Cold)	Not Insulated														
Structure	Deck	Wood		Drywall and joint compound												
Structure	Joist	Steel														
Wall	All	Drywall and joint compound	ALL		A	Y		80			SF	V0005	Chrysotile	0.5-5%	Confirmed Asbestos	NF
Wall	All	Mortar		Ceramic Tiles	D	N		80			SF	V9500	Presumed Asbestos		Presumed Asbestos	NF
Wall	Base	Rubber										V0000	Non-Asbestos		None	

Client: HRCE
Location: #5 : Washroom 2
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 33

PAINT									
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Hazard	
Wall	Drywall and joint compound	80		SF	V0003	White (interior)	Pb: 131 mg/kg	Lead (Low)	
Wall ¹	Wood	20		LF	V0004	Light blue	Pb: 357 mg/kg	Lead (Low)	
Ceiling	Drywall and joint compound	33		SF	V0003	White (interior)	Pb: 131 mg/kg	Lead (Low)	

1 - Window and door frames

Client: HRCE
Location: #5 : Washroom 2
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 33

MERCURY				
Component	Quantity	Unit	Sample	Hazard
Fluorescent Light Tube ¹	1	EA	V0000	

1 - LED

Client: HRCE
Location: #6 : Classroom 5
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 639

ASBESTOS																
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard	Friable
Ceiling	All	None Found														
Floor	All	Vinyl Floor Tile and Mastic, 12" white with beige flecks			A	Y		25			SF	S0008BC	None Detected	N.D.	None	
Floor	All	Vinyl Sheet Flooring, Green and white marble pattern			A	Y		568			SF	S0006BC	None Detected	N.D.	None	
Floor	All	Vinyl Sheet Flooring, Brown and white marble pattern			A	Y		46			SF	S0007BC	None Detected	N.D.	None	
Mechanical Equipment	Radiator															
Other	Window Liner	Silicone										V0000	Non-Asbestos		None	
Piping	Hot Water Heating	Aircell		Plastic	C	Y		94			LF	V0011	Chrysotile	25-50%	Confirmed Asbestos	F
Piping	Hot Water Heating	Not Insulated														
Structure	Deck	Wood														
Structure	Joist	Steel														
Wall ¹	All	Drywall and joint compound	ALL		A	Y		1900			SF	S0005C	Chrysotile	0.5-5%	Confirmed Asbestos	NF

1 - sampled from exterior wall

Client: HRCE
Location: #6 : Classroom 5
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 639

PAINT									
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Hazard	
Wall	Drywall and joint compound	1900		SF	V0003	White (interior)	Pb: 131 mg/kg	Lead (Low)	
Wall ¹	Wood	190		LF	V0004	Light blue	Pb: 357 mg/kg	Lead (Low)	
Wall ²	Wood	105		LF	V0005	Black	Pb: 1180 mg/kg	Lead (High)	

1 - Window and door frames
2 - Wood base boards

Client: HRCE
Location: #6 : Classroom 5
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 639

MERCURY				
Component	Quantity	Unit	Sample	Hazard
Fluorescent Light Tube ¹	18	EA	V9500	Presumed
Thermostat	1	EA	V9000	Yes

1 - Light covers

ALL DATA REPORT

Client: HRCE
Location: #6 : Classroom 5
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 639

PCB						
Component	Quantity	Unit	Sample	Sample Description	Amount	PCB
Light Ballasts	9	EA	V9500			Presumed

Client: HRCE
Location: #7 : Maintenance Office
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 115

ASBESTOS																
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard	Friable
Ceiling	All	None Found														
Duct ¹	All	Not Insulated														
Floor	All	Vinyl Floor Tile and Mastic, 12" white with beige flecks			A	Y		100			SF	V0008	None Detected	N.D.	None	
Floor	All	Vinyl Floor Tile and Mastic			A	Y		15			SF	V0010	None Detected	N.D.	None	
Piping	Drain	Thermal Insulation, Horsehair		Plastic								V0000	Non-Asbestos		None	
Piping	Hot Water Heating	Aircell	Straight	Plastic	C	N		48			LF	S0011ABC	Chrysotile	25-50%	Confirmed Asbestos	F
Structure	Deck	Wood														
Structure	Joist	Steel														
Wall	All	Drywall and joint compound	ALL		A	Y		450			SF	V0005	Chrysotile	0.5-5%	Confirmed Asbestos	NF

1 - No mastic

Client: HRCE
Location: #7 : Maintenance Office
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 115

PAINT									
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Hazard	
Wall	Drywall and joint compound	450		SF	V0003	White (interior)	Pb: 131 mg/kg	Lead (Low)	

Client: HRCE
Location: #7 : Maintenance Office
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 115

MERCURY				
Component	Quantity	Unit	Sample	Hazard
Fluorescent Light Tube ¹	2	EA	V9500	Presumed

1 - Light covers

Client: HRCE
Location: #7 : Maintenance Office
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 115

PCB						
Component	Quantity	Unit	Sample	Sample Description	Amount	PCB
Light Ballasts	1	EA	V9500			Presumed

Client: HRCE
Location: #8 : Classroom 3
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 698

ASBESTOS																
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard	Friable
Ceiling	All	None Found														
Floor	All	Vinyl Sheet Flooring, Brown marble pattern			A	Y		698			SF	S0012A	None Detected	N.D.	None	
Mechanical Equipment	Radiator															
Piping	Hot Water Heating	Aircell		Plastic	C	Y		54			LF	V0011	Chrysotile	25-50%	Confirmed Asbestos	F
Piping	Hot Water Heating	Not Insulated														
Structure	Deck	Wood														
Structure	Joist	Steel														
Wall	All	Drywall and joint compound	ALL		A	Y		2100			SF	V0005	Chrysotile	0.5-5%	Confirmed Asbestos	NF

Client: HRCE
Location: #8 : Classroom 3
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 698

PAINT									
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Hazard	
Wall	Drywall and joint compound	2100		SF	V0003	White (interior)	Pb: 131 mg/kg	Lead (Low)	
Wall ¹	Wood	190		LF	V0004	Light blue	Pb: 357 mg/kg	Lead (Low)	
Wall ²	Wood	115		LF	V0005	Black	Pb: 1180 mg/kg	Lead (High)	

- 1 - Window and door frames
- 2 - Wood base boards

Client: HRCE
Location: #8 : Classroom 3
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 698

MERCURY				
Component	Quantity	Unit	Sample	Hazard
Thermostat	1	EA	V0000	
Fluorescent Light Tube	30	EA	V9000	Yes

Client: HRCE
Location: #8 : Classroom 3
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 698

PCB						
Component	Quantity	Unit	Sample	Sample Description	Amount	PCB
Light Ballasts ¹	15	EA	V9500			Presumed

- 1 - T12s

Client: HRCE
Location: #9 : Classroom 4
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 687

ASBESTOS																
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard	Friable
Ceiling	All	None Found														
Floor	All	Vinyl Floor Tile and Mastic, 12" beige with white flecks			A	Y		29			SF	S0013ABC	None Detected	N.D.	None	
Floor	All	Vinyl Floor Tile and Mastic, 12" black with white flecks			A	Y		45			SF	S0014ABC	None Detected	N.D.	None	
Floor	All	Vinyl Sheet Flooring, Brown marble pattern			A	Y		613			SF	S0012B	None Detected	N.D.	None	
Mechanical Equipment	Radiator															
Piping	Hot Water Heating	Aircell		Plastic	C	Y		53			LF	V0011	Chrysotile	25-50%	Confirmed Asbestos	F
Piping	Hot Water Heating	Not Insulated														
Structure	Deck	Wood														
Structure	Joist	Steel														
Wall ¹	All	Drywall and joint compound	ALL		A	Y		2050			SF	S0005D	Chrysotile	0.5-5%	Confirmed Asbestos	NF

1 - sampled from interior wall

Client: HRCE
Location: #9 : Classroom 4
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 687

PAINT									
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Hazard	
Wall	Drywall and joint compound	2050		SF	V0003	White (interior)	Pb: 131 mg/kg	Lead (Low)	
Wall ¹	Wood	170		LF	V0004	Light blue	Pb: 357 mg/kg	Lead (Low)	
Wall ²	Wood	110		LF	V0005	Black	Pb: 1180 mg/kg	Lead (High)	

1 - Window and door frames
2 - Wood base boards

Client: HRCE
Location: #9 : Classroom 4
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 687

MERCURY				
Component	Quantity	Unit	Sample	Hazard
Thermostat	1	EA	V0000	
Fluorescent Light Tube	24	EA	V9000	Yes

Client: HRCE
Location: #9 : Classroom 4
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 687

PCB						
Component	Quantity	Unit	Sample	Sample Description	Amount	PCB
Light Ballasts ¹	12	EA	V9500			Presumed

1 - T12s

Client: HRCE
Location: #10 : Gym
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 1040

ASBESTOS																
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard	Friable
Ceiling	All	None Found														
Floor ¹	All	Vinyl Floor Tile and Mastic, 12" green with flecks			A	Y		348			SF	S0018ABC	None Detected	N.D.	None	
Floor	All	Vinyl Sheet Flooring, Brown marble pattern			A	Y		692			SF	S0012C	None Detected	N.D.	None	
Piping	Hot Water Heating	Not Insulated														
Structure	Deck	Wood														
Structure	Joist	Steel														
Wall	All	Drywall and joint compound, Interior			A	Y		4000			SF	S0005EG	Chrysotile	0.5-5%	Confirmed Asbestos	NF
Wall ²	All	Wall covering														

- 1 - Appears to be layer of VFT underneath
- 2 - Wood panel wall coverings on lower half of walls

Client: HRCE
Location: #10 : Gym
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 1040

PAINT									
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Hazard	
Wall	Drywall and joint compound	4000		SF	V0003	White (interior)	Pb: 131 mg/kg	Lead (Low)	
Wall ¹	Wood	140		LF	V0005	Black	Pb: 1180 mg/kg	Lead (High)	

- 1 - Wood base boards

Client: HRCE
Location: #10 : Gym
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 1040

PB PRODUCTS				
Component	Quantity	Unit	Sample	Hazard
Batteries In Emer. Lights	3	EA	V9000	Yes

Client: HRCE
Location: #10 : Gym
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 1040

MERCURY				
Component	Quantity	Unit	Sample	Hazard
Thermostat	1	EA	V0000	
Fluorescent Light Tube	26	EA	V9000	Yes

Client: HRCE

Site: 21 Perth Street, Bedford, NS

Building Name: Fort Sackville Elementary School

Location: #10 : Gym
Survey Date: 2023-03-17

Floor: G

Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 1040

PCB						
Component	Quantity	Unit	Sample	Sample Description	Amount	PCB
Light Ballasts	13	EA	V9500			Presumed

Client: HRCE
Location: #11 : Hallway
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 540

ASBESTOS																
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard	Friable
Ceiling ¹	Acoustic Tile	Ceiling tiles (glue-on)		Ceiling Tiles (lay-in)	C	N		540			SF	V9500	Presumed Asbestos		Presumed Asbestos	PF
Ceiling	Acoustic Tile	Ceiling Tiles (lay-in), 2x4 pinhole and fissure			C	Y		540			SF	V0000	Non-Asbestos		None	
Floor	All	Vinyl Floor Tile and Mastic, 12" beige with brown flecks			A	Y		540			SF	S0016ABC	None Detected	N.D.	None	
Structure ²																
Wall ³	All	Drywall and joint compound			A	Y		1200			SF	S0015A	Chrysotile	0.5-5%	Confirmed Asbestos	NF

Solid ceiling above lay-in ceiling tiles, no visible pipes, ducts

1 - Glue-on tiles and associated mastic are presumed

2 - Not visible

3 - sampled from interior wall

Client: HRCE
Location: #11 : Hallway
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 540

PAINT									
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Hazard	
Wall	Drywall and joint compound	1200		SF	V0003	White (interior)	Pb: 131 mg/kg	Lead (Low)	
Wall ¹	Wood	120		LF	V0005	Black	Pb: 1180 mg/kg	Lead (High)	

Solid ceiling above lay-in ceiling tiles, no visible pipes, ducts

1 - Wood base boards

Client: HRCE
Location: #11 : Hallway
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 540

PB PRODUCTS				
Component	Quantity	Unit	Sample	Hazard
Batteries In Emer. Lights	2	EA	V9000	Yes

Solid ceiling above lay-in ceiling tiles, no visible pipes, ducts

Client: HRCE
Location: #11 : Hallway
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 540

MERCURY				
Component	Quantity	Unit	Sample	Hazard
Fluorescent Light Tube	8	EA	V9000	Yes

Solid ceiling above lay-in ceiling tiles, no visible pipes, ducts

Client: HRCE
Location: #11 : Hallway
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 540

PCB						
Component	Quantity	Unit	Sample	Sample Description	Amount	PCB
Light Ballasts ¹	4	EA	V9500			Presumed

Solid ceiling above lay-in ceiling tiles, no visible pipes, ducts
1 - T12s

Client: HRCE
Location: #12 : Work Room
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 160

ASBESTOS																
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard	Friable
Ceiling ¹	Acoustic Tile	Ceiling tiles (glue-on)		Ceiling Tiles (lay-in)	C	N		160			SF	V9500	Presumed Asbestos		Presumed Asbestos	PF
Ceiling	Acoustic Tile	Ceiling Tiles (lay-in), 2x4 pinhole and fissure			C	Y		160			SF	V0000	Non-Asbestos		None	
Floor	All	Vinyl Sheet Flooring, Brown			A	Y		160			SF	S0017AB	None Detected	N.D.	None	
Other	Window Liner	Rubber										V0000	Non-Asbestos		None	
Structure ²																
Wall	All	Drywall and joint compound			A	Y		480			SF	V0015	Chrysotile	0.5-5%	Confirmed Asbestos	NF

solid ceiling above lay-in acoustic tiles, no pipes, ducts observed

1 - glue-on tiles and their associated mastic are presumed

2 - Not visible

Client: HRCE
Location: #12 : Work Room
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 160

PAINT									
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Hazard	
Wall	Drywall and joint compound	480		SF	V0003	White (interior)	Pb: 131 mg/kg	Lead (Low)	

solid ceiling above lay-in acoustic tiles, no pipes, ducts observed

Client: HRCE
Location: #12 : Work Room
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 160

MERCURY				
Component	Quantity	Unit	Sample	Hazard
Fluorescent Light Tube	4	EA	V9500	Presumed

solid ceiling above lay-in acoustic tiles, no pipes, ducts observed

Client: HRCE
Location: #12 : Work Room
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 160

PCB						
Component	Quantity	Unit	Sample	Sample Description	Amount	PCB
Light Ballasts ¹	2	EA	V9500			Presumed

solid ceiling above lay-in acoustic tiles, no pipes, ducts observed

1 - T12s

Client: HRCE
Location: #13 : Staff Washroom
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 30

ASBESTOS																
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard	Friable
Ceiling ¹	Acoustic Tile	Ceiling tiles (glue-on)		Ceiling Tiles (lay-in)	C	N		30			SF	V9500	Presumed Asbestos		Presumed Asbestos	PF
Ceiling	Acoustic Tile	Ceiling Tiles (lay-in), 2x4 pinhole and fissure			C	Y		30			SF	V0000	Non-Asbestos		None	
Floor	All	Vinyl Floor Tile and Mastic, 12" blue with flecks			A	Y		30			SF	V0010	None Detected	N.D.	None	
Structure ²																
Wall	All	Drywall and joint compound			A	Y		190			SF	V0015	Chrysotile	0.5-5%	Confirmed Asbestos	NF

solid ceiling above lay-in ceiling tiles, no visible pipes/ducts
1 - glue-on tiles and their associated mastic are presumed
2 - Not visible

Client: HRCE
Location: #13 : Staff Washroom
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 30

PAINT									
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Hazard	
Wall	Drywall and joint compound	190		SF	V0003	White (interior)	Pb: 131 mg/kg	Lead (Low)	

solid ceiling above lay-in ceiling tiles, no visible pipes/ducts

Client: HRCE
Location: #13 : Staff Washroom
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 30

MERCURY				
Component	Quantity	Unit	Sample	Hazard
Fluorescent Light Tube	1	EA	V9500	Presumed

solid ceiling above lay-in ceiling tiles, no visible pipes/ducts

Client: HRCE
Location: #13 : Staff Washroom
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 30

PCB						
Component	Quantity	Unit	Sample	Sample Description	Amount	PCB
Light Ballasts	1	EA	V9500			Presumed

solid ceiling above lay-in ceiling tiles, no visible pipes/ducts

Client: HRCE
Location: #14 : Storage Closet
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 40

ASBESTOS																
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard	Friable
Ceiling ¹	Acoustic Tile	Ceiling tiles (glue-on)		Ceiling Tiles (lay-in)	C	N		40			SF	V9500	Presumed Asbestos		Presumed Asbestos	PF
Ceiling	Acoustic Tile	Ceiling Tiles (lay-in), 2x4 pinhole and fissure			C	Y		40			SF	V0000	Non-Asbestos		None	
Floor	All	Vinyl Sheet Flooring, Brown			A	Y		40			SF	V0017	None Detected	N.D.	None	
Structure ²																
Wall	All	Drywall and joint compound			A	Y		180			SF	V0015	Chrysotile	0.5-5%	Confirmed Asbestos	NF

solid ceiling above lay-in tiles, no pipes/ducts observed

1 - glue-on tiles and their associated mastic are presumed

2 - Not visible

Client: HRCE
Location: #14 : Storage Closet
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 40

PAINT									
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Hazard	
Wall	Drywall and joint compound	180		SF	V0003	White (interior)	Pb: 131 mg/kg	Lead (Low)	

solid ceiling above lay-in tiles, no pipes/ducts observed

Client: HRCE
Location: #14 : Storage Closet
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 40

MERCURY				
Component	Quantity	Unit	Sample	Hazard
Fluorescent Light Tube	4	EA	V9500	Presumed

solid ceiling above lay-in tiles, no pipes/ducts observed

Client: HRCE
Location: #14 : Storage Closet
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 40

PCB						
Component	Quantity	Unit	Sample	Sample Description	Amount	PCB
Light Ballasts ¹	2	EA	V9500			Presumed

solid ceiling above lay-in tiles, no pipes/ducts observed

1 - T12s

Client: HRCE
Location: #15 : Kitchen
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 230

ASBESTOS																
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard	Friable
Ceiling ¹	Acoustic Tile	Ceiling tiles (glue-on)		Ceiling Tiles (lay-in)	C	N		230			SF	V9500	Presumed Asbestos		Presumed Asbestos	PF
Ceiling	Acoustic Tile	Ceiling Tiles (lay-in), 2x4 pinhole and fissure			C	Y		230			SF	V0000	Non-Asbestos		None	
Floor	All	Vinyl Sheet Flooring, Brown			A	Y		230			SF	S0017C	None Detected	N.D.	None	
Other	Window Liner	Rubber										V0000	Non-Asbestos		None	
Structure ²																
Wall	All	Drywall and joint compound, Interior			A	Y		680			SF	S0015E	Chrysotile	0.5-5%	Confirmed Asbestos	NF

Solid ceiling above lay-in ceiling tiles, no pipes/ducts observed

1 - glue-on tiles and their associated mastic are both presumed

2 - Not visible

Client: HRCE
Location: #15 : Kitchen
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 230

PAINT									
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Hazard	
Wall	Drywall and joint compound	680		SF	V0003	White (interior)	Pb: 131 mg/kg	Lead (Low)	

Solid ceiling above lay-in ceiling tiles, no pipes/ducts observed

Client: HRCE
Location: #15 : Kitchen
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 230

MERCURY				
Component	Quantity	Unit	Sample	Hazard
Fluorescent Light Tube	4	EA	V9500	Presumed

Solid ceiling above lay-in ceiling tiles, no pipes/ducts observed

Client: HRCE
Location: #15 : Kitchen
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 230

PCB						
Component	Quantity	Unit	Sample	Sample Description	Amount	PCB
Light Ballasts ¹	2	EA	V9500			Presumed

Solid ceiling above lay-in ceiling tiles, no pipes/ducts observed

1 - T12s

Client: HRCE
Location: #16 : Janitor Closet
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 12

ASBESTOS																
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard	Friable
Ceiling	All	Drywall and joint compound			C	Y		12			SF	V0015	Chrysotile	0.5-5%	Confirmed Asbestos	NF
Duct	All	Not Insulated														
Floor	All	Vinyl Floor Tile and Mastic, 12" beige with brown flecks			A	Y		12			SF	V0016	None Detected	N.D.	None	
Structure ¹																
Wall	All	Drywall and joint compound, Interior			A	Y		60			SF	S0015B	Chrysotile	0.5-5%	Confirmed Asbestos	NF

Solid ceiling. Not able to observe pipes above
1 - Not visible

Client: HRCE
Location: #16 : Janitor Closet
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 12

PAINT									
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Hazard	
Wall	Drywall and joint compound	60		SF	V0003	White (interior)	Pb: 131 mg/kg	Lead (Low)	

Solid ceiling. Not able to observe pipes above

Client: HRCE
Location: #16 : Janitor Closet
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 12

MERCURY				
Component	Quantity	Unit	Sample	Hazard
Fluorescent Light Tube ¹		EA	V0000	

Solid ceiling. Not able to observe pipes above
1 - LED

Client: HRCE
Location: #17 : Boys Washroom
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 145

ASBESTOS																
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard	Friable
Ceiling	All	Plaster			C	Y		145			SF	V0019	Chrysotile	0.5-5%	Confirmed Asbestos	PF
Floor	All	Mortar		Ceramic Tiles	D	N		145			SF	V9500	Presumed Asbestos		Presumed Asbestos	NF
Other	Window Liner	None Found														
Structure ¹																
Wall	All	Plaster, Interior			A	Y		500			SF	V0019	Chrysotile	0.5-5%	Confirmed Asbestos	PF

Solid, high ceiling - not able to observe above.

1 - Not visible

Client: HRCE
Location: #17 : Boys Washroom
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 145

PAINT									
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Hazard	
Wall	Plaster	500		SF	V9500	White		Presumed Lead	

Solid, high ceiling - not able to observe above.

Client: HRCE
Location: #17 : Boys Washroom
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 145

MERCURY				
Component	Quantity	Unit	Sample	Hazard
Fluorescent Light Tube	2	EA	V9500	Presumed

Solid, high ceiling - not able to observe above.

Client: HRCE
Location: #17 : Boys Washroom
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 145

PCB						
Component	Quantity	Unit	Sample	Sample Description	Amount	PCB
Light Ballasts	1	EA	V9500			Presumed

Solid, high ceiling - not able to observe above.

Client: HRCE
Location: #18 : Girls Washroom
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 145

ASBESTOS																
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard	Friable
Ceiling	All	Plaster			C	Y		145			SF	V0019	Chrysotile	0.5-5%	Confirmed Asbestos	PF
Floor	All	Mortar		Ceramic Tiles	D	N		145			SF	V9500	Presumed Asbestos		Presumed Asbestos	NF
Other	Window Liner	None Found														
Structure ¹																
Wall	All	Plaster, Interior			A	Y		500			SF	S0019ABC DE	Chrysotile	0.5-5%	Confirmed Asbestos	PF

Solid, high ceiling - not able to observe piping/duct work above
1 - Not visible

Client: HRCE
Location: #18 : Girls Washroom
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 145

PAINT									
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Hazard	
Wall	Drywall and joint compound	500		SF	V9500	White		Presumed Lead	

Solid, high ceiling - not able to observe piping/duct work above

Client: HRCE
Location: #18 : Girls Washroom
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 145

MERCURY				
Component	Quantity	Unit	Sample	Hazard
Fluorescent Light Tube	2	EA	V9500	Presumed

Solid, high ceiling - not able to observe piping/duct work above

Client: HRCE
Location: #18 : Girls Washroom
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 145

PCB						
Component	Quantity	Unit	Sample	Sample Description	Amount	PCB
Light Ballasts	1	EA	V9500			Presumed

Solid, high ceiling - not able to observe piping/duct work above

Client: HRCE
Location: #19 : Classroom 1
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 748

ASBESTOS																
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard	Friable
Ceiling ¹	Acoustic Tile	Ceiling tiles (glue-on)		Ceiling Tiles (lay-in)	C	N		748			SF	V9500	Presumed Asbestos		Presumed Asbestos	PF
Ceiling ²	Acoustic Tile	Ceiling Tiles (lay-in), 2x4 pinhole and fissure			C	Y		748			SF	V0000	Non-Asbestos		None	
Floor	All	Vinyl Floor Tile and Mastic, 12" beige			A	Y		748			SF	S0020AB	None Detected	N.D.	None	
Structure ³																
Wall	All	Drywall and joint compound	Exterior		A	Y		2275			SF	S0015C	Chrysotile	0.5-5%	Confirmed Asbestos	NF

Solid ceiling above lay-in tiles, no pipes/ducts observed
1 - Glue-on tiles and their associated mastic are presumed
2 - Date stamped
3 - Not visible

Client: HRCE
Location: #19 : Classroom 1
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 748

PAINT									
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Hazard	
Wall	Drywall and joint compound	2275		SF	V0003	White (interior)	Pb: 131 mg/kg	Lead (Low)	
Wall ¹	Wood	120		LF	V0005	Black	Pb: 1180 mg/kg	Lead (High)	
Wall ²	Wood	190		LF	V0004	Light blue	Pb: 357 mg/kg	Lead (Low)	

Solid ceiling above lay-in tiles, no pipes/ducts observed
1 - Wood base boards
2 - Window and door frames

Client: HRCE
Location: #19 : Classroom 1
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 748

MERCURY				
Component	Quantity	Unit	Sample	Hazard
Fluorescent Light Tube	44	EA	V9500	Presumed

Solid ceiling above lay-in tiles, no pipes/ducts observed

Client: HRCE
Location: #19 : Classroom 1
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 748

PCB						
Component	Quantity	Unit	Sample	Sample Description	Amount	PCB
Light Ballasts ¹	22	EA	V9500			Presumed

Solid ceiling above lay-in tiles, no pipes/ducts observed
1 - T12s

Client: HRCE
Location: #20 : Classroom 2
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 747

ASBESTOS																
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard	Friable
Ceiling ¹	Acoustic Tile	Ceiling tiles (glue-on)		Ceiling Tiles (lay-in)	C	N		747			SF	V9500	Presumed Asbestos		Presumed Asbestos	PF
Ceiling ²	Acoustic Tile	Ceiling Tiles (lay-in), 2x4 pinhole and fissure			C	Y		747			SF	V0000	Non-Asbestos		None	
Floor	All	Vinyl Floor Tile and Mastic, 12" beige			A	Y		747			SF	S0020C	None Detected	N.D.	None	
Structure ³																
Wall	All	Drywall and joint compound	Exterior		A	Y		2275			SF	S0015DG	Chrysotile	0.5-5%	Confirmed Asbestos	NF

Solid ceiling above lay-in tiles, not able to observe pipes/ducts

1 - Glue-on tiles and their associated mastic are presumed

2 - Date stamped

3 - Not visible

Client: HRCE
Location: #20 : Classroom 2
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 747

PAINT									
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Hazard	
Wall	Drywall and joint compound	2275		SF	V0003	White (interior)	Pb: 131 mg/kg	Lead (Low)	
Wall ¹	Wood	120		LF	V0005	Black	Pb: 1180 mg/kg	Lead (High)	
Wall ²	Wood	190		LF	V0004	Light blue	Pb: 357 mg/kg	Lead (Low)	

Solid ceiling above lay-in tiles, not able to observe pipes/ducts

1 - Wood base boards

2 - Window and door frames

Client: HRCE
Location: #20 : Classroom 2
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 747

MERCURY				
Component	Quantity	Unit	Sample	Hazard
Fluorescent Light Tube	38	EA	V9500	Presumed
Thermostat	1	EA	V9000	Yes

Solid ceiling above lay-in tiles, not able to observe pipes/ducts

Client: HRCE
Location: #20 : Classroom 2
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 747

PCB						
Component	Quantity	Unit	Sample	Sample Description	Amount	PCB
Light Ballasts	19	EA	V9500			Presumed

Solid ceiling above lay-in tiles, not able to observe pipes/ducts

Client: HRCE
Location: #21 : Front Entrance
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 48

ASBESTOS																
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard	Friable
Ceiling	All	Drywall and joint compound			B	Y		48			SF	V0015	Chrysotile	0.5-5%	Confirmed Asbestos	NF
Floor	All	Mortar		Ceramic Tiles	D	N		48			SF	V9500	Presumed Asbestos		Presumed Asbestos	NF
Wall	All	Drywall and joint compound	Exterior		A	Y		150			SF	S0015F	Chrysotile	0.5-5%	Confirmed Asbestos	NF

solid ceiling, not able to observe pipes/ducts/structure

Client: HRCE
Location: #21 : Front Entrance
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 48

PAINT									
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Hazard	
Wall	Drywall and joint compound	150		SF	V0003	White (interior)	Pb: 131 mg/kg	Lead (Low)	
Wall ¹	Wood	35		LF	V0004	Light blue	Pb: 357 mg/kg	Lead (Low)	

solid ceiling, not able to observe pipes/ducts/structure
1 - Window and door frames

Client: HRCE
Location: #21 : Front Entrance
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 48

MERCURY				
Component	Quantity	Unit	Sample	Hazard
Fluorescent Light Tube	2	EA	V9500	Presumed

solid ceiling, not able to observe pipes/ducts/structure

Client: HRCE
Location: #21 : Front Entrance
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 48

PCB						
Component	Quantity	Unit	Sample	Sample Description	Amount	PCB
Light Ballasts	1	EA	V9500			Presumed

solid ceiling, not able to observe pipes/ducts/structure

Client: HRCE
Location: #22 : Storage Room 1
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 40

ASBESTOS																
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard	Friable
Ceiling	All	Drywall and joint compound			C	Y		40			SF	V0015	Chrysotile	0.5-5%	Confirmed Asbestos	NF
Floor	All	Mortar			D	N		40			SF	V9500	Presumed Asbestos		Presumed Asbestos	NF
Wall	All	Drywall and joint compound	ALL		A	Y		140			SF	V0015	Chrysotile	0.5-5%	Confirmed Asbestos	NF

solid ceiling, not able to see above to observe pipes, ducts, structure

Client: HRCE
Location: #22 : Storage Room 1
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 40

PAINT									
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Hazard	
Wall	Drywall and joint compound	140		SF	V0003	White (interior)	Pb: 131 mg/kg	Lead (Low)	

solid ceiling, not able to see above to observe pipes, ducts, structure

Client: HRCE
Location: #22 : Storage Room 1
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 40

MERCURY				
Component	Quantity	Unit	Sample	Hazard
Fluorescent Light Tube	2	EA	V9000	Yes

solid ceiling, not able to see above to observe pipes, ducts, structure

Client: HRCE
Location: #22 : Storage Room 1
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 40

PCB						
Component	Quantity	Unit	Sample	Sample Description	Amount	PCB
Light Ballasts	1	EA	V9500			Presumed

solid ceiling, not able to see above to observe pipes, ducts, structure

Client: HRCE
Location: #23 : Storage Room 2
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 40

ASBESTOS																
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard	Friable
Ceiling	All	Drywall and joint compound			C	Y		40			SF	V0015	Chrysotile	0.5-5%	Confirmed Asbestos	NF
Floor	All	Mortar			D	N		40			SF	V9500	Presumed Asbestos		Presumed Asbestos	NF
Wall	All	Drywall and joint compound	ALL		A	Y		140			SF	V0015	Chrysotile	0.5-5%	Confirmed Asbestos	NF

Solid ceiling - not able to observe pipes, ducts, structure

Client: HRCE
Location: #23 : Storage Room 2
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 40

PAINT									
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Hazard	
Wall	Drywall and joint compound	140		SF	V0003	White (interior)	Pb: 131 mg/kg	Lead (Low)	

Solid ceiling - not able to observe pipes, ducts, structure

Client: HRCE
Location: #23 : Storage Room 2
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 40

MERCURY				
Component	Quantity	Unit	Sample	Hazard
Fluorescent Light Tube	2	EA	V9000	Yes

Solid ceiling - not able to observe pipes, ducts, structure

Client: HRCE
Location: #23 : Storage Room 2
Survey Date: 2023-03-17

Site: 21 Perth Street, Bedford, NS
Floor: G

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 40

PCB						
Component	Quantity	Unit	Sample	Sample Description	Amount	PCB
Light Ballasts	1	EA	V9500			Presumed

Solid ceiling - not able to observe pipes, ducts, structure

Client: HRCE
Location: #24 : Boiler Room And Stairwell
Survey Date: 2023-03-20

Site: 21 Perth Street, Bedford, NS
Floor: B

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 363

ASBESTOS																
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard	Friable
Ceiling ¹	All	None Found														
Duct ²	All	Not Insulated														
Floor ³	All	Concrete (poured)														
Mechanical Equipment ⁴	Boiler	Fibreglass					1				EA	V0000	Non-Asbestos		None	
Mechanical Equipment	Heating Water Tank						1				EA					
Mechanical Equipment ⁵	Tank						3				EA					
Other	Electrical Panel	Wood														
Piping	All	Not Insulated														
Piping	Heating Water Supply	Aircell			C	Y	40				LF	V0011	Chrysotile	25-50%	Confirmed Asbestos	F
Structure	All	Concrete (poured)														
Wall ⁶	All	Masonry														
Wall	Exterior	Cement Product, Siding			B	Y	10				SF	S0021ABC	Chrysotile	10-25%	Confirmed Asbestos	NF

- 1 - Not painted
- 2 - No mastic
- 3 - Not painted
- 4 - Built 1996
- 5 - Pressurized expansion tank
- 6 - Not painted

Client: HRCE
Location: #24 : Boiler Room And Stairwell
Survey Date: 2023-03-20

Site: 21 Perth Street, Bedford, NS
Floor: B

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 363

PB PRODUCTS				
Component	Quantity	Unit	Sample	Hazard
Batteries In Emer. Lights	1	EA	V9000	Yes

Client: HRCE
Location: #24 : Boiler Room And Stairwell
Survey Date: 2023-03-20

Site: 21 Perth Street, Bedford, NS
Floor: B

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 363

Client: HRCE
Location: #25 : Oil Tank Room
Survey Date: 2023-03-20

Site: 21 Perth Street, Bedford, NS
Floor: B

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 110

ASBESTOS																
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard	Friable
Ceiling ¹	All	None Found														
Floor ²	All	Concrete (poured)														
Mechanical Equipment ³	Above Ground Storage Tank							2			EA	V0000	Non-Asbestos		None	
Piping	All	Not Insulated														
Piping	Heating Water Supply	Aircell			C	Y		21	14		LF	V0011	Chrysotile	25-50%	Confirmed Asbestos	F
Structure	All	Concrete (poured)														
Wall ⁴	All	Masonry														

- 1 - Not painted
- 2 - Not painted
- 3 - Fiberglass tanks manufactured 2014
- 4 - Not painted

Client: HRCE
Location: #25 : Oil Tank Room
Survey Date: 2023-03-20

Site: 21 Perth Street, Bedford, NS
Floor: B

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 110

MERCURY				
Component	Quantity	Unit	Sample	Hazard
Fluorescent Light Tube	2	EA	V9500	Presumed

Client: HRCE
Location: #25 : Oil Tank Room
Survey Date: 2023-03-20

Site: 21 Perth Street, Bedford, NS
Floor: B

Building Name: Fort Sackville Elementary School
Room #:
Last Re-Assessment: 0000-00-00

Area (sqft): 110

PCB						
Component	Quantity	Unit	Sample	Sample Description	Amount	PCB
Light Ballasts	1	EA	V9500			Presumed

Legend:



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

Access	
A	Accessible to all building occupants
B	Accessible to maintenance and operations staff without a ladder
C	Accessible to maintenance and operations staff with a ladder. Also rarely entered, locked areas
D	Not normally accessible

Condition	
Good	No visible damage or deterioration
Fair	Minor, repairable damage, cracking, delamination or deterioration
Poor	Irreparable damage or deterioration with exposed and missing material

Visible	
Y	The material is visible when standing on the floor of the room, without the removal or opening of other building components (e.g. ceiling tiles or access panels).
N	The material is not visible to view when standing on the floor of the room and requires the removal of a building component (e.g. ceilings tiles or access panels) to view and access. Includes rarely entered crawlspaces, attic spaces, etc. Observations will be limited to the extent visible from the access points.

Air Plenum	
Yes or No	The material is in a return air plenum or in a direct airstream or there is evidence of air erosion (e.g. duct for heating or cooling blowing directly on or across an ACM). This field is only completed where Air Plenum consideration is required by regulation.

Colour Coding	
	The material is known to contain regulated concentrations of asbestos; either by analytical results or visible identification (use of the V9000 code).
	The material is presumed to contain asbestos; based on visual appearances; typically a material known to historically contain asbestos; however, not sampled due to limited access or the destructive nature of the sampling.

APPENDIX VII
Photographs



Confirmed Asbestos, S0001A-C, Wall, Cement Product (Transite panels), Exterior (Location #: 1)



Confirmed Asbestos, S0001A-C, Wall, Cement Product (Transite panels), Exterior (Location #: 1)



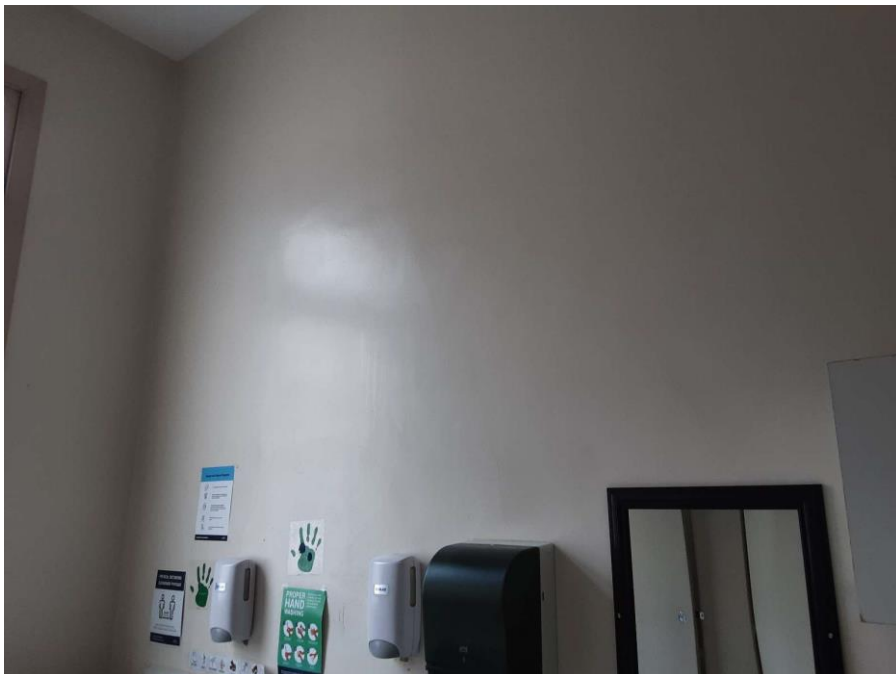
Confirmed Asbestos, S0002A-C, Wall, White Caulking, Exterior (Location #: 1)



Confirmed Asbestos, S0011A-C, Piping, Heating Water Supply, Aircell, Maintenance Office (Location #: 7)



Confirmed Asbestos, S0011A-C, Piping, Heating Water Supply, Aircell, Oil Tank Room (Location #: 25)



Confirmed Asbestos, S0019A-C, Wall, Plaster, Boys Washroom (Location #: 17)



Confirmed Asbestos, S0021A-C, Wall, Cement Product (Transite siding), Boiler Room And Stairwell (Location #: 24)



Confirmed Asbestos, S0021A-C, Wall, Cement Product (Transite siding), Boiler Room And Stairwell (Location #: 24)



Presumed Asbestos (V9500), Glue-on ceiling tiles above lay-in ceiling tiles, Hallway (Location #: 11)



L0001, Yellow paint on wood siding, Exterior (Location #: 1)



L0002, White paint on wood siding, Exterior (Location #: 1)



L0003, White paint on drywall walls, Classroom 6 (Location #: 2)



L0004, Light blue paint on wood window frames, Classroom 6 (Location #: 2)



L0005, Black paint on wood wall trim, Classroom 6 (Location #: 2)



Confirmed Mercury, Liquid mercury in thermostat ampule, Classroom 6 (Location #: 2)



Intrusive investigation to exterior wall, Exterior (Location #: 1)



Intrusive investigation to exterior wall, Exterior (Location #: 1)



None-Asbestos Tar Paper (S0009A-C) and fiberglass insulation inside exterior wall, Exterior (Location #: 1)

Part 1 General

1.1 EXISTING HAZARDOUS MATERIAL INFORMATION

.1 The following report is attached for all bidders' information and reference:

.1 Hazardous Building Materials Assessment (Preconstruction) – Fort Sackville
Elementary School, 21 Perth Street, Bedford, NS HRCE by Pinchin Ltd., dated
April 18, 2023.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 08 44 13 - Glazed Aluminum Framing Systems.

1.2 REFERENCES

- .1 ASTM International (ASTM)
 - .1 ASTM A153/A153M-16 Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - .2 ASTM A307-14, Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.
 - .3 ASTM A653/A653M-15e1, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .4 ASTM C954-18, Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness
 - .5 ASTM D1761-12, Standard Test Methods for Mechanical Fasteners in Wood.
 - .6 ASTM E1333-14, Standard Test Method for Determining Formaldehyde Concentrations in Air and Emission Rates from Wood Products Using a Large Chamber.
 - .7 ASTM F1667-15, Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.
- .2 CSA Group (CSA)
 - .1 CAN/CSA G164-18, Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .2 CSA O121-17, Douglas Fir Plywood.
 - .3 CSA O141-05 (R2014), Softwood Lumber.
 - .4 CAN/CSA O325-16, Construction Sheathing.
- .3 National Lumber Grading Association (NLGA):
 - .1 NLGA SPS 2-2017, Machine Graded Lumber.
 - .2 Standard Grading Rules for Canadian Lumber 2017

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit product data in accordance with Division 01 General Requirements:
 - .1 Submit manufacturer's printed product literature, specifications and technical datasheets.
 - .2 Submit MSDS sheets or official manufacturer literature stating no added urea-formaldehyde was used in the manufacturing of composite wood.

1.4 QUALITY ASSURANCE

- .1 Lumber identification: Use CLS grade marked lumber conforming to the Standard Grading Rules for Canadian Lumber published by the National Lumber Grades Authority.
- .2 Plywood identification: Use grade marked plywood in accordance with the applicable CSA standards.
- .3 Plywood and wood based composite panel construction sheathing identification: by grademark in accordance with applicable CSA standards and Canadian Panel Association (CPA).

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver wood products bundled or crated to provide adequate protection during transit. Inspect wood products for damage upon delivery and remove and replace damaged materials.
- .2 Store materials a minimum of 150 mm off the ground on blocking. Keep materials under cover and dry. Provide for air circulation within and around stacks and under temporary coverings.
- .3 Protect sheet materials to prevent breaking of corners and damage to surfaces.

Part 2 Products

2.1 LUMBER

- .1 Lumber: Structural Light Framing to CAN/CSA O141, softwood, S-P-F, S4S, graded and stamped in accordance with National Lumber Grading Association (NLGA) Standard Grading Rules for Canadian Lumber and as follows:
 - .1 Moisture Content: maximum 8% at time of installation.
 - .2 Grade: No. 2 or better.
 - .3 Dimensions: as indicated.
 - .4 Provide lumber for support or attachment of construction, including rough bucks, furring, blocking, nailing strips, canopy curbs, fascia, backing sleepers, and similar members.

2.2 PANEL MATERIALS

- .1 Exterior grade plywood: exterior grade Douglas Fir (DFP) to CSA O121, thickness as indicated; waterproof glue bond.
- .2 Canadian Softwood Plywood (CSP): to CSA, standard construction exterior grade, Canply / COFI certified.
- .3 Panels shall have no added urea formaldehyde.

2.3 ACCESSORIES

- .1 Sealants: in accordance with Section 07 92 00 – Joint Sealants. Maximum allowable VOC limit 250 g/L in accordance with SCAQMD Rule 1168.
- .2 General purpose adhesive: to CSA O112 Series. Maximum allowable VOC limit 70 g/L in accordance with SCAQMD Rule 1168.
- .3 Nails, spikes, and staples: to ASTM F1667, double hot dipped galvanized for exterior work and pressure preservative and fire-retardant treated materials; hot dipped galvanized for all other purposes.
- .4 Screws for Fastening to Cold-Formed Metal Framing: ASTM C954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.
- .5 Rough Hardware (bolts, nuts, washers, etc.): hot dip galvanized in conformity to CSA G164 or Grade A low carbon steel, conforming to ASTM A307.
- .6 Nailing discs: flat caps, minimum 25 mm diameter, minimum 0.4 mm thick, galvanized sheet metal or fibre, formed to prevent dishing. Bell or cup shapes not acceptable.
- .7 Proprietary fasteners: hot dip galvanized or type 304 or 316 stainless steel toggle bolts, expansion shields and lag bolts, screws and lead plugs, recommended for purpose by manufacturer.

2.4 FASTENER FINISHES

- .1 Galvanizing: use hot-dipped galvanized fasteners complying with ASTM A153 and connectors complying with ASTM A653, class G185.

Part 3 Execution

3.1 COMPLIANCE

- .1 Comply with requirements of National Building Code of Canada 2015 and amendments (NBC), and the requirements of this Section.
- .2 Accurately frame and properly assemble rough carpentry work. Include all necessary nails or other connectors.

3.2 INSTALLATION

- .1 Install members true to line, levels and elevations, square and plumb.
- .2 Construct continuous members from pieces of longest practical length.
- .3 Install blocking to support washroom accessories (coordinate with HRCE).
- .4 Install furring and blocking as required to space-out wall and ceiling finishes, facings, and other work as required.
- .5 Install rough bucks (windows), nailers and linings to rough openings as required to provide backing for frames and other work.
- .6 Use dust collectors and high-quality respirator masks when cutting or sanding wood panels.

3.3 ERECTION

- .1 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.
- .2 Countersink bolts where necessary to provide clearance for other work.
- .3 Use nailing disks for soft sheathing as recommended by sheathing manufacturer.

3.4 FASTENINGS AND ROUGH HARDWARE

- .1 Unless indicated otherwise, fasten to hollow masonry units with toggle bolts; to solid masonry or concrete surfaces with expansion shields and bolts.
- .2 Where screws are required use lead or inorganic fibre plugs. Wood or organic plugs not permitted.
- .3 Powder actuated fasteners may be used in lieu of bolts if approved by the Consultant in writing prior to materials arriving on site.
- .4 Provide all rough hardware such as nails, bolts, nuts, washers, screws, clips and strap metal.

3.5 CLEANING

- .1 Progress Cleaning: clean in accordance with Division 01 General Requirements. Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Division 01 General Requirements. Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .3 Manage and dispose of demolition and construction waste materials in accordance with Division 01 General Requirements.

3.6 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by Work of this Section.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 06 10 00 - Rough Carpentry.
- .2 Section 09 91 00 - Painting.

1.2 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM E1333-14, Standard Test Method for Determining Formaldehyde Concentrations in Air and Emissions Rates from Wood Products Using a Large Chamber.
 - .2 ASTM F1667-17, Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.
- .2 Architectural Woodwork Manufacturers Association of Canada (AWMAC)
 - .1 ARCHITECTURAL WOODWORK STANDARDS, EDITION TWO (2014) PLUS ALL ERRATA THROUGH APRIL 29, 2016.
- .3 Canadian Standards Association (CSA International)
 - .1 CAN/CSA O141-05 (R2014), Softwood Lumber.
- .4 National Hardwood Lumber Association (NHLA)
 - .1 Rules for the Measurement and Inspection of Hardwood and Cypress.
- .5 National Lumber Grades Authority (NLGA)
 - .1 Standard Grading Rules for Canadian Lumber 2017.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Division 01 General Requirements.
- .2 Submit Shop Drawings:
 - .1 Indicate details of construction, profiles, jointing, fastening and other related details.
 - .2 Indicate materials, thicknesses, finishes and hardware.
- .3 Samples.
 - .1 Submit samples, 300 mm x 300 mm of each wood species to receive finish, to the Consultant for review.
 - .2 Submit 250 mm long samples of each type of trim.
 - .3 Reviewed samples shall become the standard for the work.
- .4 Closeout Submittals:
 - .1 Provide operations and maintenance data in accordance with Division 01 General Requirements.

1.4 QUALITY ASSURANCE

- .1 Architectural Woodwork Standards (AWS) published by the Architectural Woodwork Manufacturers Association of Canada, together with authorized additions and amendments will be used as a reference standard and shall form part of this project specification. Where differences occur between the drawings and specifications requirements and the AWS, the more restrictive requirement shall prevail.
- .2 Any reference to Custom or Premium grade in this specification shall be as defined in the AWS.

- .3 Any item not given a specific quality grade shall be Premium grade as defined in the AWS.
- .4 A copy of the AWS shall be made readily available for reference purposes on the job site.
- .5 References in this specification to part and item numbers mean those parts and items contained within the AWS.
- .6 Materials and installation shall be in Metric measurements as specified.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 The Architectural Woodwork Manufacturer and the Contractor shall be jointly responsible to make certain that architectural woodwork is not delivered until the building and storage areas are sufficiently dry so that the architectural woodwork will not be damaged by excessive changes in moisture content.
- .2 Architectural woodwork delivery, storage and handling shall be in accordance with Section 2 Care and Storage of the AWS.
- .3 Delivered materials which are damaged in any way or do not comply with these specifications will be rejected by the Consultant and shall be removed from the job site and replaced with acceptable materials.

1.6 PROJECT CONDITIONS

- .1 Environmental Conditions: Comply with the AWS Section 2 – Care & Storage for optimum temperature and humidity conditions for woodwork during its storage and installation. Do not install woodwork until these conditions have been attained and stabilized.

1.7 COORDINATION

- .1 Coordinate provision of concealed blocking or supports.
- .2 Ensure that back-priming of finish carpentry surfaces concealed after installation, has been performed as specified in Section 09 91 00 – Painting, prior to installation.

Part 2 Products

2.1 LUMBER MATERIAL

- .1 Hardwood lumber: white maple species, S4S, average moisture content of 6% and maximum of 9% for interior work in accordance with following standards:
 - .1 AWS premium grade, moisture content as specified.
 - .2 Dimension: as indicated.
 - .3 For use at interior window trims and casings.
 - .1 Sills: maple veneer plywood.

2.2 ACCESSORIES

- .1 Fasteners: to suit size and nature of components being fastened.
- .2 Nails and staples: to ASTM F1667; galvanized to ASTM A123/A123M for exterior work; plain finish elsewhere.
- .3 Splines: wood.
- .4 Adhesive: recommended by manufacturer.

2.3 SITE FABRICATION

- .1 Fabricate items rigid, plumb and square, as detailed, with tight, bevelled, hairline joints. Sand work smooth, set all nails and screws.
- .2 Countersink bolts and washers, fill holes with matching wood plugs.

2.4 FINISHING

- .1 Trims, casings and sills shall be clear finished: for all wood trims and sills not specified to have a clear finish, apply:
 - .1 One coat Speedhide Interior Latex Sealer (PPG Code 6-2: <50 g/L VOC). Two coats Pitt-Glaze WB1 Interior Pre-Catalyzed Acrylic Semi-Gloss Epoxy (PPG Code 16-510 Series; <100g/L VOC) @ 3.0 to 4.0 mils DFT per coat.
 - .2 One coat Dulux Gripper Interior Primer Sealer (Dulux Code 60000; <99g/L VOC) @1.8 mils DFT. Two coats Dulux Diamond Interior Acrylic Pearl (Dulux Code 14220; <125 g/L VOC) @ 3.0 to 4.0 mils DFT per coat.
 - .3 Once coat Pro Mar 200 Zero VOC primer (SW Code B28W02600; <50 g/L VOC). Two coats Pro Industrial Pre Catalyzed Semi Gloss Epoxy (SW Code K46W00151; 135 g/L VOC) @ 1.5 mil DFT.

Part 3 Execution

3.1 INSTALLATION

- .1 Do finish carpentry to Premium Quality Standards of the AWS, except where specified otherwise.
- .2 Scribe and cut as required, fit to abutting walls, and surfaces, fit properly into recesses and to accommodate piping, columns, fixtures, outlets, or other projecting, intersecting or penetrating objects.
- .3 Form joints to conceal shrinkage.

3.2 CONSTRUCTION

- .1 Fastening:
 - .1 Position items of finished carpentry work accurately, level, plumb, true and fasten or anchor securely.
 - .2 Design and select fasteners to suit size and nature of components being joined. Use proprietary devices as recommended by manufacturer.
 - .3 Set finishing nails to receive filler. Where screws are used to secure members, countersink screw in round smooth cut hole and plug with wood plug to match material being secured.
 - .4 Replace items of finish carpentry with damage to wood surfaces including hammer and other bruises.

3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Division 01 General Requirements. Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Division 01 General Requirements. Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .3 Manage and dispose of demolition and construction waste materials in accordance with Division 01 General Requirements.

3.4 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by Work of this Section.

3.5 SCHEDULE

- .1 Refer to Contract Drawings for construction and locations.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 07 27 13 – Sheet Membrane Air and Vapour Barriers.
- .2 Section 07 42 00 – Composite Metal Panels.
- .3 Section 08 44 13 – Glazed Aluminum Framing Systems

1.2 REFERENCES

- .1 Underwriters Laboratories of Canada (ULC).
 - .1 CAN/ULC S102-18, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
 - .2 CAN/ULC S702.1:2014-AMD1, Standard for Mineral Fibre Thermal Insulation for Buildings, Part 1: Material Specification.
 - .3 CAN/ULC S702.2-15, Mineral Fibre Thermal Insulation for Buildings, Part 2: Application Guidelines.
 - .4 CAN/ULC S114, Standard Method of Test for Determination of Non-combustibility in Building Materials

1.3 PRE-INSTALLATION MEETINGS

- .1 Pre-Installation Meetings: convene pre-installation meeting one week prior to beginning work of this Section and on-site installation, with contractor's representative and Consultant in accordance with Division 01 General Requirements to:
 - .1 Verify project requirements.
 - .2 Review installation and substrate conditions.
 - .3 Coordination with other building trades.
 - .4 Review manufacturer's installation instructions.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Division 01 General Requirements.
- .2 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and technical datasheet.
- .3 Manufacturer's Instructions:
 - .1 Submit manufacturer's installation instructions.
- .4 Submit warranties.

1.5 QUALITY ASSURANCE

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

1.6 DELIVERY, STORAGE, AND HANDLING

- .1 Storage and Handling Requirements:
 - .1 Protect insulation materials from physical damage and from deterioration by moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.
 - .2 Protect insulation as follows:
 - .1 Do not expose to sunlight, except to extent necessary for period of installation and concealment.
 - .2 Protect against ignition at all times. Do not deliver insulating materials to Project site before installation time.
 - .3 Complete installation and concealment of materials as rapidly as possible in each area of construction.

1.7 WARRANTIES

- .1 Contractor agrees to correct any deficiencies of labour or material found in the work performed for a period of 2-years from date of Substantial Performance.

Part 2 Products

2.1 INSULATION

- .1 Semi-Rigid Mineral Wool Insulation: designed for cavity wall rainscreen applications; Type IVB, to ASTM C612, with the following characteristics:
 - .1 Thickness: 4".
 - .2 Non-combustible, to CAN/ULC S114.
 - .3 Density: minimum 5.3 lbs/ft³.
 - .4 Thermal Resistance: R-4.2 per inch minimum.
 - .5 Acceptable materials:
 - .1 CavityRock by Rockwool
 - .2 Thermafiber Rainbarrier by Owens Corning.
 - .3 Or approved alternate.
- .2 Curtain Wall Backpan Insulation: Semi-rigid mineral wool insulation board designed for curtain spandrel backpan applications; Type IVB, to ASTM C612, with the following characteristics:
 - .1 Thickness: 4".
 - .2 Non-combustible, to CAN/ULC S114.
 - .3 Density: minimum 8.0 lbs/ft³
 - .4 Acceptable materials:
 - .1 CurtainRock 80 by Rockwool
 - .2 Thermafiber Firespan 90 (unfaced) by Owens Corning.
 - .3 Or approved alternate.
- .3 Extruded Polystyrene (XPS) Rigid Insulation: designed for cavity wall rainscreen applications:
 - .1 Extruded polystyrene (XPS): to CAN/ULC-S701.
 - .2 Type: 4.
 - .3 Minimum compressive strength: 210 kPa (30 psi).
 - .4 Thickness: as indicated on Drawings.

- .5 Edges: shiplap.
- .6 Acceptable materials:
 - .1 Celfort 300 by Owens Corning.
 - .2 Styrofoam SM by DuPont.
 - .3 Sopra-XPS 30 by Soprema.
 - .4 Or approved alternate.

2.2 ACCESSORIES

- .1 Adhesive (for polystyrene): to CGSB 71-GP-24.
- .2 Insulation clips for semi-rigid mineral wool insulation:
 - .1 99% thermally efficient, purpose made, gas fired direct-fasten type anchor, comprised of high density polyethylene (HDPE) shaft and integrated washer/cap with steel pin tip. Shaft point designed to pierce semi-rigid insulations.
 - .2 Anchor washer to have 2-3/8" holding diameter. Anchor shaft length to match insulation thickness.
 - .3 Anchor tip to have 2" spiral steel stud pins of zinc plated heat-treated carbon steel to penetrate through the gypsum sheathing and securely fasten anchor into steel studs.
 - .4 Fasteners to be colour coded to substrate applications.
 - .1 White Fasteners: Concrete and concrete block.
 - .2 Black Fasteners: Steel stud.
 - .5 Acceptable material:
 - .1 Ramset T3 Insulfast System by ITW Construction Products, as available through Action Fasteners or HD Supply Brafasco.
 - .2 Or approved alternate.
 - .6 Self-adhesive or metal stick pins are not acceptable.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's printed installation instructions, data sheets, standard details, and specifications.

3.2 EXAMINATION

- .1 Examine substrates and immediately inform Consultant in writing of defects.
- .2 Prior to commencement of work, ensure:
 - .1 Substrates are firm, straight, smooth, dry, free of snow, ice or frost, and clean of dust and debris.

3.3 SEQUENCING

- .1 Do not perform the Work of this Section until the installation of air barriers have been tested and accepted by the Consultant. Refer to Section 07 27 14 - Air and Vapour Barriers.

3.4 WORKMANSHIP

- .1 Install insulation after building substrate materials are dry.

- .2 Install insulation to maintain continuity of thermal protection to building elements and spaces.
- .3 Cut and trim insulation neatly to fit spaces. Butt joints tightly, offset vertical joints. Use only insulation boards free from chipped or broken edges. Use largest possible dimensions to reduce number of joints.
- .4 Fit insulation tight around electrical boxes, plumbing and heating pipes and ducts around exterior doors and windows and other protrusions.
- .5 Cut boards neatly to fit around boxes, pipes, ducts, or other objects in/or passing through insulation. Fill all gaps with foam insulation.
- .6 Keep insulation a minimum of 3" from heat emitting devices such as recessed light fixtures.
- .7 Do not enclose or cover insulation until it has been reviewed and approved by Consultant.

3.5 INSULATION – GENERAL

- .1 Install insulation in accordance with insulation manufacturer's installation instructions, illustrations and technical datasheets, and in accordance with ULC 702.2.
- .2 Fit courses of insulation between confining obstructions in cavity; butt edges tightly in vertical and horizontal directions and as follows:
 - .3 Install insulation after building substrate materials are dry.
 - .4 Install insulation to maintain continuity of thermal protection to building elements and spaces.
 - .5 Fit insulation tight around electrical boxes, plumbing and heating pipes and ducts, around exterior doors and windows and other protrusions.
 - .6 Use largest possible dimensions to reduce number of joints.
 - .7 Install insulation to maintain continuous thermal insulation for building spaces and elements.
 - .8 Cut and trim insulation neatly to fit spaces. Butt edges and ends tight. Fit insulation tight against mechanical, electrical, and other items protruding plane of insulation. Fill voids with foamed-in-place insulation compatible with installed insulation.
 - .9 Follow the instructions for use of materials of insulation and accessory manufacturers.
 - .10 Install insulation horizontally.
 - .1 Offset vertical joints minimum 12".
 - .11 Do not enclose or cover insulation until it has been reviewed by Consultant.
 - .12 Use only insulation boards that are dry and unsoiled.
 - .13 Cut the top of the insulation as indicated to form snug fit under the sloping through-wall flashing supported on sheet metal per Section 07 62 00. Fit tight behind continuous shelf angle and supports as required.
 - .14 Fasteners:
 - .1 It is anticipated that insulation retainers at each masonry tie is sufficient to securely hold insulation in place, tight to the substrate. Install additional fasteners, as specified, if requested by the consultant to address insufficient insulation securement.
 - .2 Install specified fasteners and washers in accordance with insulation manufacturer's recommendations, at locations and spacings requested by the consultant.

3.6 FIELD QUALITY CONTROL

- .1 Field Inspection: Coordinate field inspection in accordance with Division 01 General Requirements.
- .2 Manufacturer's Services:
 - .1 Coordinate manufacturer's services with Division 01 General Requirements.
 - .2 Have manufacturer review work involved in handling, installation, protection, and cleaning of insulation and accessories, and submit written reports in acceptable format to verify compliance of Work with Contract conditions.
 - .3 Report any inconsistencies from manufacturer's recommendations immediately to Consultant.

3.7 CLEANING

- .1 Progress Cleaning: clean in accordance with Division 01 General Requirements. Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Division 01 General Requirements. Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .3 Manage and dispose of demolition and construction waste materials in accordance with Division 01 General Requirements.

3.8 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by Work of this Section.

END OF SECTION

Part 1 General

1.1 SUMMARY

- .1 This section specifies requirements for self-adhesive sheet membrane materials intended for use as the air and vapour barriers in the exterior envelope systems of the building as indicated on the drawings, including the underside of suspended structures, masonry cavity wall system, metal wall and aluminum composite panel cladding systems, lap connections and transitions between other envelope components.

1.2 RELATED REQUIREMENTS

- .1 Section 07 21 13 - Board Insulation.
- .2 Section 07 42 00 – Composite Metal Panels.
- .3 Section 07 92 00 - Joint Sealing.
- .4 Section 08 44 13 - Glazed Aluminum Framing Systems.

1.3 REFERENCE STANDARDS

- .1 ASTM International (ASTM):
 - .1 ASTM E96/E96M-16, Standard Test Methods for Water Vapor Transmission of Materials.
 - .2 ASTM E783-02 (2018), Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors.
 - .3 ASTM E1186-03 (2017), Standard Practices for Air Leakage Site Detection in Building Envelopes and Air Barrier Systems.
 - .4 ASTM E2178-13, Standard Test Method for Air Permeance of Building Materials.
 - .5 ASTM E2357-18, Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-19.13M-M87, Sealing Compound, One Component, Elastomeric Chemical Curing.
 - .2 CAN/CGSB-19.24M-90, Multi-Component, Chemical Curing Sealing Compound.
 - .3 CGSB 19-GP-14M-84, Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing.
- .3 Sealant and Waterproofer' Institute - Sealant and Caulking Guide Specification.
- .4 National Air Barrier Association (NABA): Quality Assurance Program.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Division 01 General Requirements.
- .2 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and datasheet and include:
 - .1 Product characteristics.
 - .2 Performance criteria.
 - .3 Limitations.
 - .4 Installation instructions.
- .3 Submit Workplace Hazardous Materials Information System (WHMIS) Safety Data Sheets (SDS).

- .4 Quality assurance submittals: submit the following in accordance with Division 01 General Requirements.
 - .1 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
 - .2 Instructions: submit manufacturer's installation instructions and comply with written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

1.5 QUALITY ASSURANCE

- .1 Applicator: company specializing in performing work of this section with minimum 5 years documented experience with installation of air/vapour systems and approved by materials manufacturer.
- .2 Mock-Ups:
 - .1 Submit mock-ups in accordance with Division 01 General Requirements.
 - .2 Construct mock-ups of sheet vapour barrier installation including window and frame condition, typical masonry ties, junctions with roof and podium systems, lap joints, movement joints, corners and connection to electrical and mechanical components. Mock-up may be part of finished work.
 - .3 Mock-up will be used to illustrate material interfaces and seals, to judge workmanship, substrate preparation, and material application.
 - .4 Locate where directed.
 - .5 Allow 72 hours for inspection of mock-up by Consultant before proceeding with air/vapour barrier work.
- .3 When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-up may remain as part of finished work.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, handle, store and protect materials in accordance with manufacturer' written instructions.
- .2 Provide and maintain dry, off-ground weatherproof storage.
- .3 Store rolls of membrane in upright position, with manufacturer's labels and seals intact.
- .4 Store protected from sunlight, weather and deleterious materials.
- .5 Remove only in quantities required for same day use.

1.7 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Division 01 General Requirements.
- .2 Place materials defined as hazardous or toxic waste in designated containers.
- .3 Ensure emptied containers are sealed and stored safely for disposal away from children.

1.8 AMBIENT CONDITIONS

- .1 Do not install solvent curing sealants or vapour release adhesive materials in enclosed spaces without ventilation.
- .2 Maintain temperature and humidity recommended by materials manufacturer before, during and after installation.

1.9 SEQUENCING

- .1 Sequence work to permit installation of materials in conjunction with related materials and seals.

1.10 COORDINATION

- .1 Coordinate work of this section with all sections referencing this section.

1.11 WARRANTY

- .1 For sealant and sheet materials the 12 months warranty period is extended to two (2) years from date of Substantial Performance.
- .2 Warranty: include coverage of installed sheet materials which fail to achieve air tight and water tight seal, exhibit any loss of adhesion or delaminates, including any loss of adhesion to substrate or delamination of the membrane itself.
- .3 Provide a written warranty on materials and workmanship for a period of two years after Substantial Performance.

Part 2 Products

2.1 AIR AND VAPOUR BARRIER MEMBRANE

- .1 Vapour impermeable: 5.72 ng/Pa·s·m² or less.
- .2 For all three types of sheet materials indicated below, standard of acceptance noted is based on Henry-Bakor. Alternate manufacturers are acceptable provided they meet the same criteria as the referenced standard.
- .3 Self-adhered, rubberized asphalt bonded to sheet polyethylene:
 - .1 General use areas, summer grade: smooth face, nominal total thickness of 40 mil (1mm). Acceptable material:
 - .1 Blueskin SA by Henry Bakor
 - .3 SopraSeal Stick 1100 T Summer by Soprema.
 - .4 Aqua Barrier ABV by IKO Industries.
 - .5 Or approved alternate.
 - .2 General use areas, for low temperature application between minus 10 degrees C and plus 10 degrees C: smooth face, nominal thickness of 40 mil (1mm). Acceptable material:
 - .1 Blueskin SA LT by Henry Bakor.
 - .3 Sopraseal Stick 1100 T Winter by Soprema.
 - .4 Aquabarrier AVB LT by IKO Industries.
 - .5 Or approved alternate.
 - .3 Heavier material for use at all sill tie-ins to curtainwall/window/door frames at all roof membrane system locations: nominal total thickness of 60 mil (1.5mm). Acceptable material:
 - .1 Blueskin WP200 by Henry-Bakor.
 - .2 Colphene 3000 by Soprema.
 - .3 Or approved alternate.
- .4 Primer: solvent based, as recommended by the sheet membrane manufacturer for application to concrete block, cast-in-place concrete, glass-met faced exterior sheathing board, and plywood.
- .5 Mastics: at all terminations and projections as recommended and supplied by membrane manufacturer.
- .6 Attachments: galvanized steel termination bars and anchors.
- .7 Substrate cleaner: non-corrosive type recommended by sealant manufacturer compatible with adjacent materials.

- .8 Preformed compressible back-up material: extruded polyethylene, closed cell foam rod, 32 kg/m³ density, size to suit joint dimension.
- .9 Sheet metal where indicated on drawings for support for sheet membrane flashings: 22 ga. galvanized sheet steel.

2.2 AIR BARRIER MEMBRANE

- .1 Vapour permeance: greater than 572 ng/Pa·s·m² when tested in accordance with ASTM E96, Method A.
- .2 Air permeance @ 75Pa: less than 0.0147 L/s. m², when tested in accordance with ASTM E2178.
- .3 Self-adhered, vapour permeable, water resistive, sheet air barrier.
 - .1 Acceptable materials:
 - .1 Blueskin VP 160 by Henry Baker.
 - .2 Sopraseal Stick VP by Soprema.
 - .3 Aqua Barrier VP by Soprema.
 - .4 Or approved alternate.
- .4 Primer: approved primer only as required and as recommended by membrane manufacturer.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and data sheets.
- .2 Perform Work in accordance with National Air Barrier Association - Professional Contractor Quality Assurance Program.

3.2 ENVIRONMENTAL REQUIREMENTS

- .1 All membrane shall be installed at surface and ambient temperature of 10 degrees C or above, in dry weather conditions.
- .2 For applications below 10 degrees C use low temperature products and materials and consult membrane manufacturer's technical representative for instructions, and obtain Consultant's approval before proceeding with Work.

3.3 EXAMINATION

- .1 Verify that surfaces and conditions are ready to accept the Work of this section.
- .2 Ensure all surfaces are clean, dry, sound, smooth, continuous and comply with air barrier manufacturer's requirements.
- .3 Report any unsatisfactory conditions to the Consultant in writing.
- .4 Do not start work until deficiencies have been corrected. Commencement of Work implies acceptance of conditions.

3.4 PREPARATION

- .1 Remove loose or foreign matter which might impair adhesion of materials.
- .2 Ensure all substrates are clean of oil or excess dust, all masonry joints struck flush and open joints filled; and all concrete surfaces free of large voids, spalled areas or sharp protrusions.
- .3 Ensure all substrates are free of surface moisture prior to application of self-adhesive membrane and primer.
- .4 Ensure metal closures are free of sharp edges and burrs.
- .5 Prime substrate surfaces to receive adhesive and sealants in accordance with manufacturer's instructions.
- .6 Primer to be dry and 'tacky' prior to membrane application. Membrane to be applied to primed area on the same day as primer application.

3.5 INSTALLATION: SHEET MATERIALS

- .1 Install sheet materials to prepared substrates in strict accordance with membrane manufacturer's written recommendations.
- .2 Align and position self-adhering membrane over primed substrate, remove protective film and press firmly into place. Ensure minimum 6" (150mm) overlap at all end and side laps, position lap seal over firm bearing.
- .3 Corner details: Double cover outside and inside corners, use 12" (300mm) wide initial strip of membrane centred on axis of corner. Follow with full width of sheet membrane to cover initial strip completely.
- .4 Construction and control joints: Install membrane in double thickness over properly sealed joints, use 12" (300mm) wide initial strip of membrane centred over joint. Follow with full width of sheet membrane. Insure that joints are properly sealed and/or prepared with backup material and joint filler and a compatible sealant are installed.
- .5 Tie-in to aluminum curtain wall and window frames, hollow metal door frames, spandrel panels, roofing system, at the interface of dissimilar materials and as indicated on the drawings.
- .6 Roll membrane with a metal roller to ensure complete adhesion to substrate material. Roll in two separate passes at 90 degrees to each other.
- .7 Small protrusions (pipes, etc.) and penetrations through the membrane, should be pre-stripped with membrane and sealed with mastic.
- .8 Ensure all electrical, mechanical and architectural penetrations are sealed to maintain integrity and continuity of the air/vapour barrier and air barrier membranes of the building envelope.
- .9 Caulk all joints with mastic. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- .10 Inspect membrane installation meticulously and immediately. Holes and tears in the membrane must be repaired with air/vapour barrier and air barrier membrane material.

The repair must exceed the affected surface area by a minimum of 6" (150mm). The membrane piece applied for the repair must be sealed around its edges with mastic.

- .11 Perform pull tests on outer surface of applied sheet membrane air/vapour barrier and air barrier material to ensure adequate adhesion of the membrane to the substrate and cohesion of the membrane itself using equipment specifically design for this purpose. Adhesion/cohesion must be 15 psi, minimum. It is this trade's responsibility to ensure adhesion/cohesion meets this criterion before Work by other trades. Re-do work as required to ensure adequate adhesion/cohesion.

3.6 CLEANING

- .1 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

3.7 PROTECTION OF WORK

- .1 Protect finished work.
- .2 Do not permit adjacent work to damage work of this section.
- .3 Ensure finished work is protected from climatic conditions.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 07 21 13 – Board Insulation.
- .2 Section 07 27 13 – Sheet Membrane Air and Vapour Barriers.
- .3 Section 07 62 00 – Sheet Metal Flashing and Trim.
- .4 Section 07 92 00 – Joint Sealing.

1.2 REFERENCES

- .1 Aluminum Association, Inc. (AA)
 - .1 DAF-45-03, Designation System for Aluminum Finishes.
- .2 American Society for Testing and Materials International (ASTM)
 - .1 ASTM A167-99(2009), Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
 - .2 ASTM A240/A240M-14, Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
 - .3 ASTM A755/A755M-11, Standard Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.
 - .4 ASTM B209-10, Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 - .5 ASTM C297/C297M-04(2010), Standard Test Method for Flatwise Tensile Strength of Sandwich Constructions.
 - .6 ASTM A480/A480M-14a, Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip.
 - .7 ASTM D523-14, Standard Test Method for Specular Gloss.
 - .8 ASTM A653/A653M-11, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .9 ASTM D1781-98(2012), Standard Test Method for Climbing Drum Peel for Adhesives.
- .3 Canadian General Standards Board (CGSB)
 - .1 CGSB 19-GP-14M, Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing.
- .4 Canadian Sheet Steel Building Institute (CSSBI)
 - .1 CSSBI 20M-08, Standard for Sheet Steel Cladding for Architectural, Industrial and Commercial Building Applications.
 - .2 CSSBI S8-08, Quality and Performance Specification for Prefinished Sheet Steel Used for Building Products.
- .5 Canadian Standards Association (CSA)
 - .1 CAN3 S157/S157.1-05 (R2010), Strength Design in Aluminum/Commentary on CSA S157-05, Strength Design in Aluminum.
 - .2 CSA S136-12, North American Specification for the Design of Cold Formed Steel Structural Members, Includes Update No. 1 (2014).
 - .3 CSA W47.2-11, Certification of Companies for Fusion Welding of Aluminum, Includes Update No. 1 (2011), Update No. 2 (2012).
 - .4 CSA HA Series-M1980, CSA Standards for Aluminum and Aluminum Alloys.

1.3 PRE-INSTALLATION MEETINGS

- .1 Convene pre-installation meeting one week prior to beginning work of this Section and on-site installation, with Contractor, Consultant, installer, and manufacturer's representative to:
 - .1 Verify project requirements.
 - .2 Review installation and substrate conditions.
 - .3 Co-ordination with other building trades.
 - .4 Review manufacturer's installation instructions and warranty requirements.
- .2 Manufacturer's representative shall also provide frequent inspection visits during the course of work of this Section to assure quality and competence of panel installation.

1.4 SUBMITTALS

- .1 Submit product data in accordance with Section 01 33 00 – Submittal Procedures:
 - .1 Submit manufacturer's printed product literature, specifications and datasheet.
- .2 Submit shop drawings in accordance with Section 01 33 00 – Submittal Procedures:
 - .1 Indicate layout, profiles and product components including anchorage, accessories, finish colours and textures.
 - .2 Include details showing thickness and dimensions of the various system parts, fastening and anchoring methods, locations of joints and gaskets and location and configuration of movement joints.
- .3 Manufacturer's Instructions:
 - .1 Submit manufacturer's installation instructions and special handling criteria, installation sequence and cleaning procedures.
- .4 Samples:
 - .1 Submit samples for colour/sheen match confirmation.
- .5 Manufacturers' Field Reports: Submit copies of manufacturers field reports.
- .6 Submit quality assurance submittals in accordance with Section 01 45 00 - Quality Control.
 - .1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
 - .2 Certificates: submit certificates signed by manufacturer certifying that composite wall panels comply with specified performance characteristics and physical properties.

1.5 QUALITY ASSURANCE

- .1 Installer Qualifications: engage experienced installer with a minimum of 5 years' experience who has completed systems similar in material, design, and extent to that indicated for Project and with record of successful performance and is approved by manufacturer.
- .2 Manufacturer's representatives shall provide periodic inspection visits during the course of Work of this Section to review quality and conformance of each panel system installation.
- .3 Delegated Design: retain a professional engineer, registered or licensed in the Province of Nova Scotia, to design the fabrication and erection of the Work of this Section in accordance with National Building Code of Canada and Amendments, and Contract Document requirements including, but not limited to, the following:

- .1 Seal and signature to shop drawings and design submittals requiring structural engineer.
- .2 Field review of installed components.
- .3 Completion of Letters of Commitment and Supervision.
- .4 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
- .5 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.6 MOCK-UPS

- .1 Mock-ups: construct mock-ups in accordance with Section 01 45 00 - Quality Control and to requirements supplemented as follows:
 - .1 Provide mock-up for evaluation of surface finishes and workmanship.
 - .2 Construct mock-up indicating relationship between wall panels, air spaces, air/vapour retarder membrane, windows, and masonry.
 - .3 Co-ordinate type and location of mock-ups with project requirements.
 - .4 Accepted units will be used as standard for acceptance of production units.
 - .5 Remove and replace units which are not accepted.
 - .6 Do not proceed with remaining work until workmanship, colour, and finish are reviewed by Consultant.
 - .7 Refinish mock-up area as required to produce acceptable work.
 - .8 When accepted, mock-up will demonstrate minimum standard of quality required for this work.
 - .1 Approved mock-up may remain as part of finished work.

1.7 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 – Common Product Requirements.
- .2 Deliver, store and protect material in accordance with panel manufacturer's recommendations.
- .3 Do not expose panels with strippable film to direct sunlight or extreme heat.

1.8 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for recycling in accordance with Section 01 74 19 – Waste Management and Disposal.

1.9 WARRANTY

- .1 Special warranties specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.
- .2 Special Finish Warranty: Submit a written warranty, signed by manufacturer, covering failure of the factory-applied exterior finish on metal wall panels within the specified warranty period and agreeing to repair finish or replace wall panels that show evidence of finish deterioration. Deterioration of finish includes, but is not limited to, colour fade, chalking, cracking, peeling, and loss of film integrity for a period of 20 years from date of Substantial Performance.

Part 2 Products

2.1 STANDARD OF ACCEPTANCE

- .1 Subject to compliance with requirements specified in this section, manufacturers offering products that may be incorporated into the Work include the following:
 - .1 Accumet® FR, Flynn.
 - .2 Alpolic®/fr, Mitsubishi Chemical.
 - .3 Alucobond® A2, 3A Composites.
 - .4 Reynobond® FR, Alcoa Architectural Products.

2.2 PERFORMANCE/DESIGN CRITERIA

- .1 Maximum deflection not to exceed $L/180$ under system's own weight plus wind load (positive and negative) loads acting normal to the plane in accordance with the Building Code Climatic Data, wind load 1:30 years.
- .2 Calculate live load deflections in accordance with CSSBI 20M, as modified by the requirements of this Section.
- .3 Provide for movement of components without causing buckling, failure of joint seals, undue stress on fasteners when subject to seasonal temperature range from -40°C (-40°F) to $+50^{\circ}\text{C}$ (120°F), and wind loads noted above.
- .4 Include expansion joints to accommodate movement in wall system and between wall system and building structure, where these movements are caused by deflection of building structure, and accommodate these movements, without permanent distortion, damage to infills, racking of joints, breakage of seals, or water penetration.
- .5 Provide for positive drainage to the exterior of all water entering or condensation occurring within the system.
- .1 Specified tolerances:
 - .1 Maximum allowable variation from plane between the components shall not exceed $3/8"$ in $32'-10"$ of length and up to $3/4"$ in $328'-0"$.
 - .2 Maximum allowable offset between two adjoining panels in the same plane shall not exceed $1/8"$.
 - .3 The load-bearing capacity (dead load and wind loads) of the ACP panels shall be in accordance with these specifications, the NBCC and local applicable regulations. The maximum allowable deflection is $L/180$.
- .6 Final review and acceptance of work completed by this Section shall be carried out by the manufacturer's representative, the Consultant, Contractor and the Subcontractor.

2.3 COMPOSITE METAL PANEL MATERIALS (ACP)

- .1 Aluminum Composite Panels: Aluminum sheets thermally bonded in continuous process, under tension, to thermoplastic core with no glues or adhesives between dissimilar materials, and as follows:
 - .1 Total Composite Thickness: $5/32"$ (4mm) thick.
 - .2 Aluminum Face Sheets:
 - .1 Alloy: AA3000 Series.
 - .2 Thickness: $1/64"$ (0.5mm).
 - .3 Factory Finish: Clear anodized, Class 1, to AA-M12.
 - .3 Core: non-combustible.
 - .4 Minimum Bond Integrity Criteria: tested for resistance to delamination as follows:
 - .1 Bond Strength: 10.3 MPa minimum to ASTM C297.
 - .2 Peel Strength: 100 N mm/mm minimum to ASTM D1781.

- .3 No degradation in bond performance after 8 hours of submersion in boiling water and after 21 days of immersion in water at 21°C.
- .2 Aluminum extrusions:
 - .1 Alloy: AA-6063-T5.
 - .2 Colour: Mill finish where non-exposed.
- .3 Stiffeners:
 - .1 Alloy: AA-6063-T5
 - .2 Colour: Mill finish.
- .4 Flashings: aluminum, as indicated and as required, finish to match panels.

2.4 SYSTEM BACK-UP MATERIALS

- .1 Girts: Fabricated from minimum 1.27 mm thickness galvanized steel to ASTM A653, Grade 230 with Z275 coating. Material visible after assembly of wall panel shall be finished to match aluminum panels.
- .2 Isolation Tape: Manufacturers standard material for separating dissimilar metals from direct contact.
- .3 Stiffeners, as required: Minimum 25 mm x 25 mm aluminum, bonded to the full length of face sheet using double sided high bond isolating tape to prevent weather staining and frost lines to the face of the panel. Bonding tape to be protected with continuous bead of caulking on both sides of stiffeners, type as recommended by manufacturer.
- .4 Insulation Fastenings: Corrosion resistant, galvanized bugle head screws with 38 mm diameter washer, 25 mm minimum penetration into framing.
- .5 Insulation: to Section 07 21 13 – Board Insulation.
- .6 Air and Vapour Barrier: to Section 07 27 13 – Sheet Membrane Air and Vapour Barriers.

2.5 ACCESSORIES

- .1 System Sealants: Sealants within the panel system, as recommended by manufacturer, colour to be selected by Consultant.
- .2 Gaskets: Santoprene or EPDM as recommended by manufacturer.
- .3 Flashings: to Section 07 62 00 – Sheet Metal Flashing and Trims.
- .4 Fasteners:
 - .1 Attachment of the panel system to the primary panel structural supports shall be made using manufacturer's recommended fasteners.
 - .2 Typical joinery shall be attached with concealed, non-corrosive fasteners. When exposed fasteners are required in isolated conditions, the fastener shall be obscured in the panel joinery, exposed fasteners shall be stainless steel.

2.6 FABRICATION

- .1 Aluminum wall panels and components shall comply with details as indicated on drawings and as indicated in shop drawings.
- .2 All components shall be factory fabricated ready for field installation. All components shall match quality and installation of accepted mock-up specified above.
- .2 Fabricate systems to prevent entry of water into building. Provide weep holes to prevent collection of water within assemblies.
- .3 Fabricate systems to conform to requirements of reference standards specified.
- .4 Tolerances:

- .1 Panel bow shall not exceed 0.8% of panel overall dimension in width or length.
- .2 Panel dimensions shall allow for field adjustment and thermal movement.
- .3 Panel lines, breaks and curves shall be sharp, smooth and free of warps or buckles.
- .4 Panel shall be visually flat.
- .5 Panel surfaces shall be free of scratches or marks caused during fabrication.
- .5 Fabricate aluminum composite panel wall and soffit systems to avoid compressive skin stresses and so that panels remain flat at all times.
- .6 All aluminum panels are to be fabricated from the same lot and with grain in same direction to prevent variations in appearance.
- .7 All exposed panel surfaces shall be free of scratches, or marks caused during fabrication and installation.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 PREPARATION

- .1 Obtain all dimensions from job site.
- .2 Ensure all structural support is aligned and condition is acceptable.
- .3 Building surfaces shall be smooth, clean and dry, and free from defects detrimental to the installation of the system. Notify Contractor of conditions not acceptable for installation of system.
- .4 Inspect wall system and components before installation and verify that there is no shipping damage.
- .5 Do not install damaged panels; repair or replace as required for smooth and consistent finished appearance.

3.3 INSTALLATION

- .1 Install composite panels in accordance with manufacturer's written instructions and shop drawings.
 - .1 Allow for thermal movement.
- .2 Install air and vapour barrier membrane in accordance with Section 07 27 13 – Sheet Membrane Air and Vapour Barriers, and the manufacturer's instructions.
- .3 Install girts as indicated on drawings and to ensure no air gap between girts and insulation boards.
- .4 Install girts attached to structural support or wall framing, using recommended fasteners.
- .5 Install insulation between girts forming tight to following applied girt to maintain continuous thermal barrier.
- .6 Erect panels plumb, level and true.
- .7 Do not install component parts that are observed to be defective, including warped, bowed, dented, scraped and broken members.
- .8 Install exterior metal cladding to structural support by hidden mechanical fasteners.

- .9 All fasteners shall penetrate wall framing.
- .10 Where fastener does not penetrate framing, do not remove fastener; removal of fastener will damage integrity of the air and vapour barrier membrane.
 - .1 Realign fastener location and install new fastener in close proximity to original fastener.
- .11 Install pre-formed corners and end enclosures, sealed to arrest direct weather penetration.
- .12 Ensure panels aligned vertically and horizontally.
- .13 Assemble and secure wall system so stresses on sealants are within manufacturers' recommended limits.
- .14 Separate dissimilar metals; use appropriate gasket and fasteners to minimize corrosive or electrolytic action between metals.
- .15 Install flashings to divert all moisture and condensation to exterior. Trim and flash around windows. Use only membrane flashing supported by insulation per architectural details.

3.4 FIELD QUALITY CONTROL

- .1 Manufacturer's Field Services:
 - .1 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

3.5 CLEANING

- .1 Remove strippable film coating (if used) as soon as possible after surrounding material has been installed.
- .2 Remove all excess materials, debris and equipment at completion.
- .3 Clean all panels clean and free of all grime and dirt.
- .4 Touch-up damaged finishes with manufacturer's recommended touch-up paint.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 ASTM International (ASTM)
 - .1 ASTM A606/A606M-09a, Standard Specification for Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance.
 - .2 ASTM A653/A653M-15e1, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .3 ASTM B209M-14, Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric)
 - .4 ASTM F1667-17, Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.
 - .5 ASTM F468-15, Standard Specification for Nonferrous Bolts, Hex Cap Screws, Socket Head Cap Screws, and Studs for General Use.
- .2 CSA Group (CSA)
 - .1 CSA A123.3-05 (R2015), Asphalt Saturated Organic Roofing Felt.
- .3 Sheet Metal and Air Conditioning Contractors' National Association (SMACNA)
 - .1 SMACNA Architectural Sheet Metal Manual, 7th Edition.

1.2 ADMINISTRATIVE REQUIREMENTS

- .1 Coordination:
 - .1 Coordinate work of this Section with interfacing and adjoining Work for proper sequencing of each installation and to provide positive weather resistance, durability of the work, and protection of materials and finishes.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals shall conform to the requirements of Division 01 General Requirements:
- .2 Submit manufacturer's printed product literature, specifications and datasheets, and include product characteristics, performance criteria, physical size(s), finish(es) and constraints.
- .3 Submit shop drawings showing proposed method of shaping, forming, jointing, fastening, and application of flashing and sheet metalwork.
- .4 Submit warranty.

1.4 QUALITY CONTROL

- .1 General: Fabricate and install sheet metal flashing and trim in accordance with SMACNA Architectural Sheet Metal Manual.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Stack pre-formed and pre-finished material in manner to prevent twisting bending and rubbing.
- .2 Provide protection for finished surfaces.
- .3 Prevent contact of dissimilar metals during storage and protect from acids, flux, and other corrosive materials and elements
- .4 Protect prefinished surfaces from scratches and from rust staining.

1.6 WARRANTY

- .1 Contractor agrees to correct any deficiencies of labour or material found in the work performed for a period of 5 years from the date of Substantial Performance.
- .2 Provide Warranty for sheet metal flashing and trim to include in maintenance manuals.

Part 2 Products

2.1 METAL FLASHING

- .1 Hot dip galvanized steel sheet (pre-finished): Type A commercial quality to ASTM A653/A653M, with Z275 designation zinc coating.
 - .1 Class: F1S-Finished one side (manufacturer's standard prime finish on unexposed face).
 - .2 Thickness: minimum 0.71 mm (24 gauge) base metal thickness.
 - .3 Manufacturer's Coil Coating System: silicone modified polyester (SMP) system, applied over a zinc phosphate pre-treatment, and high-performance, flexible primer.
 - .1 Standards of Acceptance:
 - .1 WeatherXL, by Vicwest.
 - .2 Prespectra Plus, by Agway.
 - .4 Colours: as selected by Consultant from manufacturer's full colour ranges and series.
 - .1 Bright Silver (QC 11080), by Agway.
 - .2 The intent is to match the clear anodized finish of the window framing.
 - .5 Locations:
 - .1 Through-wall flashing at head of windows (at composite aluminum panels).
 - .2 Exterior window sills.
- .2 Formed aluminum flashing: Tension levelled, commercial quality aluminum sheet in accordance with ASTM B209 and ANSI H35.1 alloy designation 5005-H14 and as follows:
 - .1 Minimum Thicknesses: 1.27 mm thick (0.050").
 - .2 All exposed aluminum surfaces including flashings, trims, and panels shall be clear anodized. Comply with Aluminum Association designation AA-M12 C22 A44, 0.018mm (0.7 mils) minimum coating thickness (Class I).
 - .3 Unexposed aluminum: Mill finish.
 - .4 Locations:
 - .1 Exterior at head of windows (without composite aluminum panels).
 - .2 Exterior at window jambs.
 - .3 Interior at window heads.
- .3 Form flashing to profiles indicated or as required to achieve the design intent illustrated on the Drawings.

2.2 ACCESSORIES

- .1 Isolation coating: alkali resistant bituminous paint.
- .2 Sealants: as indicated in Section 07 92 00 – Joint Sealants.
 - .1 Mastic Sealant: polyisobutylene; non-hardening, non-skinning, non-drying, non-migrating sealant.

- .2 Elastomeric Sealant: Generic type recommended by sheet metal manufacturer and fabricator of components being sealed and complying with requirements for joint sealants as specified in Section 07 92 00.
- .3 Fasteners: of same material as sheet metal, to ASTM F1667, as recommended by sheet metal manufacturer; non-corrosive. Finish of exposed parts to match material being fastened.
- .4 Washers: of same material as sheet metal, 1 mm thick with rubber packings.
- .5 Adhesives: Type recommended by flashing sheet metal manufacturer for waterproof and weather resistant seaming and adhesive application of flashing sheet metal.
- .6 Prefinished Steel Accessories: Provide non-corrosive sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of Work. Accessories shall match or be compatible with material being installed; size and thickness as required.
- .7 Touch-up paint: as recommended by prefinished material manufacturer.

2.3 FABRICATION

- .1 Galvanized sheet steel: Fabricate in accordance with SMACNA Architectural Sheet Metal Manual.
- .2 Form sections square, true, and accurate to size, free from distortion and other defects detrimental to appearance or performance.
- .3 Apply isolation coating to metal surfaces to be embedded in concrete or mortar.
- .4 Make joints to allow for thermal movement, space S-Lock joints at 3000 mm maximum centers.
- .5 Strengthen free edges of metal flashings by folding to form a 13-mm hem.
- .6 Make flashings to walls a minimum of 100 mm high.
- .7 Make joints for corners and intersections with standing seams except where exposed of pre-finished metal when seams shall be flat locked.
- .8 All bends machine made. Form sections square, true, and accurate to size, free from distortion and other defects detrimental to appearance or performance.

Part 3 Execution

3.1 EXAMINATION

- .1 Check mounting and counterflashing of mechanical items and report any defect to the Consultant.
- .2 Verify that solid wood blocking or sheathing provided to back-up all flashings and that all nails, screws set and wood provides a smooth flat plane.
- .3 Commencement of Work means acceptance of existing conditions.

3.2 INSTALLATION

- .1 Install sheet metal flashing and trim in accordance with applicable CRCA 'FL' series details, SMACNA's Architectural Sheet Metal Manual, and as indicated.
- .2 Verify shapes and dimensions of surfaces being covered before fabricating sheet metal.
- .3 Where possible, secure flashings to supporting building elements with concealed continuous cleats or locking strips. Use hot dipped galvanized steel locking strips / cleats for prefinished steel flashing.

- .4 Do not use exposed fastening unless indicated, or concealed fastening is not possible. Locations and methods shall be approved by Consultant.
- .5 Anchor units of work securely in place, providing for thermal expansion of metal units. Conceal fasteners where possible and set units true to line and level.
- .6 Install work with laps, joints, and seams that are watertight and weatherproof.
- .7 Install exposed sheet metal work that is without oil canning, buckling and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weatherproof performance.
- .8 Fasten metal base flashing to walls or upstands along top of flashing. Form lapped corner joints.
- .9 Expansion Provisions:
 - .1 Provide for the thermal expansion of exposed sheet metal Work.
 - .2 Space movement joints at maximum of 3050 mm, with no joints allowed within 610 mm of a corner or intersection, or as otherwise indicated per Drawings.
 - .3 Form expansion joints of intermeshing hooked flanges, not less than 25 mm deep, filled with mastic sealant (concealed within joints) where lapped or bayonet type expansion provisions in the work cannot be used or are not sufficiently weatherproof and waterproof.
 - .4 Provide slip joints to allow for movement.
- .10 Sealed Joints:
 - .1 Form non-expansion, but movable, joints in metal to accommodate elastomeric sealant.
 - .2 Fill joint with sealant and form metal to conceal sealant completely.
 - .3 Use joint adhesive for non-moving joints specified.
- .11 Lock Seams:
 - .1 Fabricate non-moving seams in sheet metal with flat lock seams.
- .12 Separations:
 - .1 Separate metal from non-compatible metal or corrosive substrates by coating concealed surfaces, at locations of contact, with bituminous paint or other permanent separation as recommended by the manufacturer.
 - .2 Underlayment: Install a slip-sheet of No. 15 perforated asphalt saturated felt and a course of polyethylene underlayment where installing sheet metal directly on cementitious or wood substrates. Secure in place and lap joints minimum 100 mm.
- .13 Flashing and metal closures: where flashing and metal closures overlap at any point in a system, ensure that flashing and closures are shingled over top lower sheet(s) and not behind, so that water is directed, and drains, to the exterior.

3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Division 01 General Requirements. Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Division 01 General Requirements. Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .3 Manage and dispose of demolition and construction waste materials in accordance with Division 01 General Requirements.

3.4 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by Work of this Section.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 This Section specifies caulking and sealants not specified in other Sections.
- .2 Refer to other sections for other caulking and sealants.

1.2 RELATED SECTIONS

- .1 Section 06 20 00 – Finish Carpentry.
- .2 Section 08 44 13 – Glazed Aluminum Framing Systems

1.3 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM C919-12, Standard Practice for Use of Sealants in Acoustical Applications.
 - .2 ASTM C920-11, Standard Specification for Elastomeric Joint Sealants.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB 19.13-M87, Sealing Compound, One-component, Elastomeric, Chemical Curing.
 - .2 CAN/CGSB 19.17-M90, One-Component Acrylic Emulsion Base Sealing Compound.
- .3 Department of Justice Canada (Jus)
 - .1 Canadian Environmental Protection Act, 1999 (CEPA).
- .4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .5 Transport Canada (TC)
 - .1 Transportation of Dangerous Goods Act, 1992 (TDGA).

1.4 ACTION AND INFORMATIONAL SUBMITTALS.

- .1 Submit product data in accordance with Division 01 General Requirements.
- .2 Manufacturer's product to describe.
 - .1 Caulking compound.
 - .2 Primers.
 - .3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.
- .3 Submit samples in accordance with Division 01 General Requirements.
- .4 Submit duplicate samples of each type of material and colour.
- .5 Cured samples of exposed sealants for each color where required to match adjacent material.
- .6 Submit manufacturer's instructions in accordance with Division 01 General Requirements.

- .1 Instructions to include installation instructions for each product used.

1.5 QUALITY ASSURANCE

- .1 Retain purchase orders, invoices and other documents to prove that all materials utilized in this contract meet requirements of the specifications. Produce documents when requested by Consultant.
- .2 Manufacturer's obligations:
 - .1 The manufacturer shall play an active role in the application and inspection of their product during the period of this contract.
 - .2 The manufacturer shall be represented at all relevant meetings by a qualified technical representative, with a minimum of 5 years' experience.

1.6 STORAGE, AND HANDLING

- .1 Deliver, handle, store and protect materials.
- .2 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture, water and contact with ground or floor.

1.7 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Division 01 General Requirements.
- .2 Place materials defined as hazardous or toxic in designated containers.
- .3 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.
- .4 Unused material must not be disposed of into sewer system, into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.
- .5 Divert unused joint sealing material from landfill to official hazardous material collections site approved by Consultant.
- .6 Empty plastic joint sealer containers are not recyclable. Do not dispose of empty containers with plastic materials destined for recycling.
- .7 Fold up metal banding, flatten, and place in designated area for recycling.

1.8 PROJECT CONDITIONS

- .1 Environmental Limitations:
 - .1 Do not proceed with installation of joint sealants under following conditions:
 - .1 When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 4.4 degrees C.
 - .2 When joint substrates are wet.
- .2 Joint-Width Conditions:
 - .1 Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.

- .3 Joint-Substrate Conditions:
 - .1 Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

1.9 ENVIRONMENTAL REQUIREMENTS

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labeling and provision of material safety data sheets acceptable to Labour Canada.
- .2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.
- .3 Ventilate area of work by use of approved portable supply and exhaust fans.

1.10 EXTENDED WARRANTIES

- .1 For respective trade sections where sealants are used, provide a warranty of five years, for material and workmanship beyond date of Substantial Performance.

Part 2 Products

2.1 SEALANT MATERIALS

- .1 Do not use caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant in air handling units.
- .2 When low toxicity caulks are not possible, confine usage to areas which off-gas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize off-gas time.
- .3 Where sealants are qualified with primers use only these primers.

2.2 LOW EMITTING MATERIALS

- .1 Although this project is not seeking LEED certification, all site-applied interior paints, coatings, adhesives, sealants, sealant primers, etc., must conform to VOC content requirements of LEED Canada-NC - 2009.
- .2 Submit Material Safety Data Sheets (MSDS) for all products and materials of these types incorporated into the construction of the project as per Section 01 33 00.

2.3 SEALANT MATERIAL DESIGNATIONS

- .1 Type 1: One-component polyurethane sealant; non-sag, for general constructions.
 - .1 To ASTM C920: type S; grade NS; class 25; use NT, M, A, O.
 - .2 Acceptable materials:
 - .1 Polyurethane Sealant 540, 3M Company
 - .2 Dymonic or Dymonic FC, Tremco Inc

- .3 Multiflex, Chemtron.
- .4 Sonolastic NP 1, BASF Sonneborn.
- .5 Sikaflex 1a, Sika.
- .6 DynaTrol I-XL, Pecora.
- .2 Type 2: Acoustical Sealant; interior, non-hardening.
 - .1 To ASTM C834 Type P, Grade -18°C.
 - .2 Acceptable materials:
 - .1 Acoustical Sealant, Tremco.
 - .2 Metaseal, Chemtron.
 - .3 QuietZone acoustic sealant, Owens Corning.
 - .4 BA-98, Pecora.
- .3 Type 3 - Acrylic Latex One Part.
 - .1 To CAN/CGSB-19.17.
 - .2 Acceptable material:
 - .1 Tremco 100 latex.
 - .2 Sonneborn Sonolac.
 - .3 Pecora AC-20 + Silicone.

2.4 ACCESSORIES

- .1 Preformed compressible and non-compressible back-up materials that are non-staining, compatible with joint substrate, sealants, primers, and other joint fillers, and are approved for applications indicated by sealant manufacturer based on site experience and laboratory testing.
 - .1 Rod Type Sealant Backings:
 - .1 ASTM C1330, Type C (closed cell material with a surface skin), Type O (open cell material) or Type B (bi-cellular material with a surface skin).
 - .2 Use any of the preceding types, as approved in writing by joint sealant manufacturer for joint application indicated.
 - .3 Size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
 - .4 Non-adhering to sealant, to maintain two sided adhesion across joint.
 - .2 Bond Breaker Tape.
 - .1 Polyethylene bond breaker tape which will not bond to sealant.
- .2 Primer: Non-staining type as recommended by sealant manufacturer.
- .3 Joint Cleaner: Non-corrosive solvent type recommended by sealant manufacturer for applicable substrate materials.

2.5 SEALANT SELECTION

- .1 Jamb and head of windows at masonry veneer: Sealant Type: 1.
- .2 Expansion/control joints in masonry veneer: Type 1.
- .3 Acoustical applications: Type 2
- .4 Interior trims: Type 3.

Part 3 Execution

3.1 PROTECTION

- .1 Protect installed work of other trades from staining or contamination.

3.2 PREPARATION OF JOINT SURFACES

- .1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.
- .2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair work.
- .3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.
- .4 Ensure joint surfaces are dry and frost free.
- .5 Prepare surfaces in accordance with manufacturer's directions.

3.3 PRIMING

- .1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.
- .2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.4 BACKUP MATERIAL

- .1 Apply bond breaker tape where required to manufacturer's instructions.
- .2 Install joint filler/backer rod to achieve correct joint depth and shape, with approximately 30% compression.

3.5 MIXING

- .1 Mix materials in strict accordance with sealant manufacturer's instructions.

3.6 APPLICATION

- .1 Sealant:
 - .1 Apply sealant in accordance with manufacturer's written instructions.
 - .2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
 - .3 Apply sealant in continuous beads.
 - .4 Apply sealant using gun with proper size nozzle.
 - .5 Use sufficient pressure to fill voids and joints solid.
 - .6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
 - .7 Tool exposed surfaces before skinning begins to give slightly concave shape.
 - .8 Remove excess compound promptly as work progresses and upon completion.

- .2 Curing:
 - .1 Cure sealants in accordance with sealant manufacturer's instructions.
 - .2 Do not cover up sealants until proper curing has taken place.

- .3 Cleanup:
 - .1 Clean adjacent surfaces immediately and leave work neat and clean.
 - .2 Remove excess and droppings, using recommended cleaners as work progresses.
 - .3 Remove masking tape after initial set of sealant.

- .4 Defective work:
 - .1 Shall include, but not be restricted to, joint leakage, cracking, crumbling, melting, runny, loss of adhesion, loss of cohesion, or staining of adjoining or adjacent work or surfaces. Contractor to make good any defective sealant work.

END OF SECTION

Part 1 General

1.1 SUMMARY

- .1 This section includes hollow metal products, including doors and frames, as indicated.

1.2 RELATED REQUIREMENTS

- .1 Section 08 71 00 – Door Hardware

1.3 REFERENCES

- .1 American National Standards Organization (ANSI) / Steel Door Institute (SDI)
 - .1 ANSI/SDI A250.8-2003 (R2008), Recommended Specifications for Standard Steel Doors and Frames.
- .2 ASTM International (ASTM)
 - .1 ASTM A653/A653M-17, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .2 ASTM A924 / A924M-17a, Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
 - .3 ASTM D4726-18, Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Exterior-Profile Extrusions Used for Assembled Windows and Doors.
- .3 Builders Hardware Manufacturers Association (BHMA)
 - .1 BHMA A156.16-2013, Auxiliary Hardware.
- .4 CSA International (CSA)
 - .1 CSA W47.1-09(R2014), Certification of companies for fusion welding of steel, Includes Update No. 3 (2011), Update No. 5 (2012).
 - .2 CSA W59-18, Welded Steel Construction (Metal Arc Welding).
- .5 Canadian Steel Door Manufacturers' Association (CSDMA)
 - .1 CSDMA Guide Specification for Installation and Storage of Hollow Metal Doors and Frames, 2012.
 - .2 CSDMA Recommended Specifications for Commercial Steel Doors and Frames, 2006.
 - .3 CSDMA, Selection and Usage Guide for Commercial Steel Doors, 2009.
- .6 The Society for Protective Coatings (SSPC)
 - .1 SSPC-PS 12.01, One Coat Zinc-Rich Painting System (Includes 2004 Revisions).
 - .2 SSPC-PS Guide 12.00, Guide to Zinc-Rich Coating Systems , 03/01/2007.
- .7 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC S701-11, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Division 01 General Requirements.
- .2 Submit Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and data sheets for each type of door and frame specified.

- .3 Submit Shop Drawings:
 - .1 Indicate general construction of each type of door and frame, configurations, material, material thickness, jointing methods, mortises, reinforcements, anchors, arrangement of hardware, fire ratings, finish and special features.
 - .2 Reference door and frame types to Door Schedule. Indicate door numbers where applicable.

1.5 QUALITY ASSURANCE

- .1 Manufacturer/Fabricator: member in good standing of the Canadian Steel Door and Frame Manufacturer's Association.
- .2 Installer: Use installers who are experienced with the installation of hollow metal doors and frames of similar complexity and extent to that required for the Project.
- .3 Manufacture door and frame assemblies to ANSI/SDI A250.8.

1.6 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store and handle materials in accordance with Division 01 General Requirements, and as follows:
 - .1 Receive and store materials as recommended by materials manufacturer.
 - .2 Adequately protect surfaces from damage during moving, handling and storage.

Part 2 Products

2.1 PERFORMANCE/DESIGN CRITERIA

- .1 Perform work in accordance with CSDMA, Recommended Specifications for Commercial Steel Doors and Frames, except as otherwise specified herein.
- .2 Design exterior frame assembly to accommodate to expansion and contraction when subjected to minimum and maximum surface temperature of -35 degrees C to 35 degrees C.
- .3 Maximum deflection for exterior steel entrance doors under wind load of 1.2 kPa not to exceed 1/175th of span.

2.2 MATERIALS

- .1 Steel:
 - .1 Doors and frames: coated steel sheets to ASTM A924/M924; coating designation to ASTM A653/A653M: Commercial Steel (CS), Type B, ZF180 galvanized; stretcher levelled.
- .2 Nominal Base Metal Thickness Requirements:
 - .1 Frames: refer to frame fabrication requirements specified in this section.
 - .2 Doors: refer to door fabrication requirements specified in this section.
 - .3 Hardware Reinforcement for Doors and Frames: Carbon steel, welded in place, and prime painted.
- .3 Door Core Materials
 - .1 Polystyrene: Rigid extruded, closed cell insulation, fire retardant treated meeting the requirements of ULC S701, Type 4, minimum thermal resistance RSI 0.8/25 mm thickness.

2.3 ADHESIVES

- .1 Polystyrene cores: heat resistant, epoxy resin based, low viscosity, contact cement.
- .2 Interlocking Edge Seam Adhesive: fire-resistant, resin-reinforced polychloroprene, high-viscosity, sealant/adhesive.

2.4 ACCESSORIES

- .1 Exterior top and bottom caps: steel.
- .2 Metallic paste filler: to manufacturer's standard.
- .3 Fasteners: type 304 stainless steel screws with countersunk flat head.
- .4 Sealant: Section 07 92 00 – Joint Sealants.

2.5 FABRICATION - GENERAL

- .1 Welded construction: assemble units by welding in accordance with CSA W59 to produce a finished unit square, true, and free of distortion. Welding shall be continuous unless specified otherwise. Welding shall be undertaken only by a fabricator fully approved by the Canadian Welding Bureau to the requirements of CSA W47.1.
- .2 Fabricate galvanized steel channels to reinforce frames as required for size. Extend reinforcements from floor to structure above. Design top connection to accommodate structural deflection. Conceal reinforcements in frames.

2.6 FABRICATION - PRESSED STEEL DOOR AND SCREEN FRAMES

- .1 Supply frames to suit construction conditions and indicated dimensions.
- .2 Fabricate frames of ZF120 wipe zinc coat steel unless otherwise indicated.
- .3 Provide welded type pressed steel door frame and screen components in minimum thickness of 1.5mm (16 gauge).
- .4 Assemble components with accurately cut joints. Mitre outside corner joints of frames. Continuously weld joints on inside of profile and grind welds, flush and sand to smooth uniform surface; tabbed and spot-welded connections are not acceptable.
- .5 On factory-assembles frame product, provide two removable steel jamb spreaders welded to the base of the jambs or mullions to maintain alignment during shipping and handling. Remove spreaders prior to anchoring frames to floor.
- .6 Brace frame units to prevent distortion and protect finish during shipment.
- .7 Conceal fastenings unless otherwise indicated.
- .8 Form Door stops integrally with frame and not added as a separate profile.
- .9 Anchor frames to floor by 1.6 mm (0.063") thick adjustable base clips, welded to frame and Provide with 2 holes for floor anchorage.
- .10 Provide minimum 3 mm anchors for connection to adjacent floor and wall construction. Each wall anchor shall be located immediately above or below each hinge reinforcement on the hinge jamb and directly opposite the strike jamb. On each jamb, install 2 anchors for openings up to and including 1525 mm (60") high and install 1 anchor for each additional height of 610 mm (24") of height or fraction thereof, except as indicated below. Frames placed in existing construction shall be provided with anchors located not more than 150 mm (6") from top and bottom of each jamb, and intermediate anchors at 660 mm (26") on centre maximum.

- .11 Provide reinforcement at hardware fastening points. Provide high frequency (angle type) reinforcement at hinges. Provide full height reinforcement of thicknesses at hinge side of frames with continuous hinges.

2.7 FRAME ANCHORAGE

- .1 Provide appropriate anchorage to floor and wall construction.
- .2 Where frames terminate at finished floor, supply floor plates for anchorage to slab. Check depth of extension of finished floor to structural slab and provide jamb extension anchorage as required. Provide 50 mm minimum adjustment
- .3 Locate wall anchors immediately above or below each hinge reinforcement on the hinge jamb, and directly opposite on the strike jamb. Provide three anchors per jamb for frames up to 2300 mm. Add one anchor per jamb for each additional 760 mm or fraction thereof in frame height.
- .4 Locate anchors for frames in existing openings not more than 150 mm from top and bottom of each jamb and intermediate at 660 mm on centre maximum.

2.8 WELDED FRAMES

- .1 Welding in accordance with CSA W59.
- .2 Cut frame mitres accurately and weld on inside of frame profile. Fill frame corners, exposed surface depressions and butted joints with air drying paste filler. Sand to a smooth uniform finish. Touch up damaged galvanized finish with zinc rich primer.
- .3 Grind welded joints and corners to a flat plane, fill with metallic paste and sand to uniform smooth finish.
- .4 Securely attach floor anchors to inside of each jamb profile.
- .5 Weld in 2 temporary jamb spreaders per frame to maintain proper alignment during shipment.

2.9 DOOR FABRICATION - GENERAL

- .1 Doors: swing type, flush, with provision for openings as indicated.
- .2 Fabricate doors with longitudinal edges locked seamed with adhesive and spot-welded for larger doors. Seams: not visible, grind welded joints to a flat plane, fill with metallic paste filler and sand to a uniform smooth finish. Bevel both stiles of single doors 1 in 16.
- .3 Mortise, reinforce, drill, and tap doors to receive templated hardware.
- .4 Reinforce doors where required, for surface mounted hardware. Provide flush steel top and bottom caps to exterior doors.
- .5 Factory prepare holes 12.7 mm diameter and larger except mounting and through-bolt holes, on site, at time of hardware installation.
- .6 Cut-outs: Where openings are required, provide integrally formed cut-outs with steel framing, and closely fitted steel glass and grille stops, as required. Mitre corners of stops. Drill and countersink fasteners symmetrically at 150 mm on centre. Supply and install coated steel stops, with same coating type and thickness as doors. Screw stops in place.
- .7 Supply and install steel vent grilles in doors where indicated.
- .8 Fabricate doors with a clearance of 3 mm to the frame and 6 mm to completed floor finish or threshold, except at openings in non-fire rated separations where undercuts are indicated.
- .9 Provide flush top and bottom steel edge on exterior doors. Equip exterior doors with factory installed flush PVC top caps.

- .10 Provide touch-up primer at areas where zinc coating has been removed or damaged during fabrication.
- .11 Manufacturer's nameplates on doors are not permitted.

2.10 FABRICATION - EXTERIOR DOORS

- .1 Face sheets: Minimum 1.6 mm base steel sheet thickness.
- .2 Stiffened, insulated and sound deadened with polystyrene core laminated under pressure to each face sheet.
- .3 Longitudinal edges mechanically interlocked, adhesive assisted with edge seams continuous welded, filled, and sanded flush with no visible seam.

2.11 PRIMER

- .1 Touch-up primer: Commercial rust inhibitive primer, shop prime coat doors and frames before delivery; grey or red coloured primer; in accordance with Section 09 91 00 – Painting. Clear primer not acceptable; provide primer for field touch-up.

2.12 PAINT

- .1 Field paint steel doors and frames with the following paint system. Paint XP-1: for exterior galvanized steel doors and frames, apply:
 - .1 One coat Pitt-Guard DTR Epoxy Mastic (PPG Code 97-145 Series; 128 g/L VOC) @ 5 to 7 mils DFT. Two coats of Pitthane Ultra Gloss Acrylic Aliphatic Urethane (PPG Code 95-812 Series; 241 g/L VOC) @ 2.0 to 3.0 mils DFT per coat.
 - .2 One coat Amerlock 2 VOC (Code AK2-3; <100 g/L VOC) @ 7 mils DFT.
 - .3 One coat PSX 700 (Code PX7003; 84 g/L VOC) @ 7 mils DFT per coat.
- .2 Protect weatherstrips from paint.
- .3 Provide final finish free of scratches or other blemishes.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 EXAMINATION

- .1 Verify condition and dimensions of previously installed work upon which this Section depends. Report defects to Consultant. Commencement of work means acceptance of existing conditions

3.3 INSTALLATION GENERAL

- .1 Install doors and frames to CSDMA Guide Specification for Installation and Storage of Hollow Metal Doors and Frames.

3.4 FRAME INSTALLATION

- .1 Set frames plumb, square, level and at correct elevation.
- .2 Secure anchorages and connections to adjacent construction.
- .3 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.

- .4 Caulk perimeter of frames between frame and adjacent material.
- .5 Maintain continuity of air barrier and vapour retarder.

3.5 DOOR INSTALLATION

- .1 Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section 08 71 00 - Door Hardware.
- .2 Provide even margins between doors and jambs and doors and finished floor and thresholds as follows.
 - .1 Hinge side: 1.0 mm.
 - .2 Latchside and head: 1.5 mm.
 - .3 Finished floor, top of carpet, non-combustible sill, or thresholds: 6 mm.
- .3 Adjust operable parts for correct function.

3.6 FINISH REPAIRS

- .1 Touch-up areas where galvanized coating has been removed or damaged with primer.
- .2 Fill exposed frame anchors and surfaces with imperfections with metallic paste filler and sand to a uniform smooth finish.

3.7 ADJUSTING

- .1 Adjust doors for smooth and balanced door movement.

3.8 CLEANING

- .1 Progress Cleaning: clean in accordance with Division 01 General Requirements. Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Division 01 General Requirements. Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .3 Manage and dispose of demolition and construction waste materials in accordance with Division 01 General Requirements.

3.9 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by Work of this Section.

END OF SECTION

Part 1 General

1.1 GENERAL REQUIREMENTS

- .1 Architectural Drawings covering the Work of this Section show design intent and profiles that are diagrammatic in nature. Drawings also show some general building standards for tying into adjacent building trades, which are to be completed and coordinated by this Section. In addition to Specification requirements, final design and performance of glazed aluminum framed systems and approval by authorities having jurisdiction is the responsibility of this Section.
- .2 The engineering-design of the Work of this Section shall be certified by a Professional Engineer experienced in the design of glazed aluminum framed systems and registered or licensed in the Province of Nova Scotia. Request approval of all deviations or non-compliance to the project standards prior to bid submission.

1.2 SUMMARY

- .1 Capped glazed aluminum curtain wall framed windows with tubular aluminum sections with continuous thermal break.
- .2 Capped glazed aluminum curtain wall framed windows with tubular aluminum sections with continuous thermal break material integral with nose of mullion complete with self-supporting and supplementary support framing, shop fabricated, and factory prefinished.
- .3 Provide labour, materials, products, equipment and services to design, supply and all install glazed aluminium framed assemblies in accordance with all project drawings and details.
- .4 Engineer-design, submit shop drawings, data and sample materials, fabricate, erect and warrant the glazed aluminum framed systems. This Trade Contractor shall be fully responsible for the structural integrity, weather tightness (air and watertight to the standards specified) of the glazed aluminum framed systems and envelope continuity to the surrounding elements.
- .5 The assembled system is to permit re-glazing of individual glass and spandrel panel units without requiring removal of structural mullion sections.
- .6 The exterior glazed aluminum framed systems assemblies are to be designed to span between floor slabs or past floor slabs, with differential movement at junctions to be accommodated with coupling horizontal mullions (stack joints).
- .7 The work of this Section shall include but not be limited to:
- .8 Prefinished exterior aluminum framed glazing assemblies incorporating insulating glass units, glass spandrel units complete with insulated back pans, as indicated;
 - .1 Steel sheet air and vapour barriers and metal closures;
 - .2 Air and vapour barrier seals between work of this Section and adjacent construction;
 - .3 Insulation and air and vapour barriers associated with work of this Section, including areas behind glass spandrel panels;
 - .4 Sealants and caulking for work of this Section and between work of this Section and adjacent construction;
 - .5 All glass and glazing of wall assemblies including glass, gaskets, splines, setting blocks, weather stripping, sealants, and protective aluminum cover angle at exposed outside corners of glazing units;
 - .6 All reinforcing members, bracing, brackets, screws, bolts, etc. necessary for installation and to ensure glazed aluminum framed assemblies are in compliance with specified performance criteria; supply and installation of supplementary steel supports and anchors as required;

- .7 Verification of building lines and levels as required for the proper layout and installation of all work included in this Section, including initial checking that embeds are in correct position prior to commencing work on site;
- .8 Shop applied anti-corrosive coating of all steel shapes and ferrous metal used in attachment or reinforcing of curtain wall and field painting after steel shapes are installed, except that galvanized steel need not be painted; touch-up galvanized steel shapes after installation;
- .9 This Section includes all work including air and vapour barrier connections, expanded foam at perimeter of frames, sealants and fasteners;
- .10 Coordinate work of this Section with installation of fire stopping, spray foam insulation, aluminum composite panel cladding, roofing and other related components or materials;
- .11 The work of this Section shall include the provision of installation drawings and the supply only of the materials under this Section to be installed by other trade Sections, including but not limited to, the supply to concrete formwork trade of inserts, anchors and support items required for the connection or support of assemblies specified in this Section.
- .12 Work includes supply and installation of architectural aluminum louvres as indicated in the system for mechanical ventilation/exhaust. Supply and installation of ductwork connections is by Division 23.

1.3 RELATED REQUIREMENTS

- .1 Section 06 10 00 – Rough Carpentry.
- .2 Section 07 21 19 - Foamed-in-Place Insulation.
- .3 Section 07 27 13 - Sheet Membrane Air and Vapour Barriers.
- .4 Section 07 42 43 – Composite Metal Panels.
- .5 Section 07 92 00 - Joint Sealing.
- .6 Section 08 71 00 - Door Hardware.
- .7 Division 23 – Heating, Ventilation and Air Conditioning (HVAC).
- .8 Division 26 – Electrical.

1.4 REFERENCE STANDARDS

- .1 Building Regulations:
 - .1 Design of glazed aluminum framed systems shall comply with latest editions of all Government Codes and Regulations, Fire Regulations, National Building Code of Canada, Safety Regulations and any other regulations applicable to the installation, as a minimum standard.
- .2 Aluminum Association (AA):
 - .1 AA DAF45:2003 (R2009), Designation System for Aluminum Finishes.
- .3 American Architectural Manufacturers Association (AAMA):
 - .1 AAMA CW-DG1-96(2005), Aluminum Curtain Wall Design Guide Manual.
 - .2 AAMA CW-10-15, Care and Handling of Architectural Aluminum from Shop to Site.
 - .3 AAMA CW-11-85, Design Wind Loads for Buildings and Boundary Layer Wind Tunnel Testing.
 - .4 AAMA TIR A1-15, Sound Control for Fenestration Products.
 - .5 AAMA TIR A9-14. Metal Curtain Wall Fasteners.
 - .6 AAMA TIR A13-13, Recommended Static Water Penetration Resistance Test Pressures in Non-Hurricane-Prone Regions of the United States.

- .7 AAMA 501.1-17. Standard Test Method for Water Penetration using Dynamic pressure
- .8 AAMA 501.2-15. Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems.
- .9 AAMA 501.4-09. Recommended Static Test method for Evaluating Curtain Wall and Storefront Systems Subjected to Seismic and Wind Induced Interstory Drifts.
- .10 AAMA 501.5-07. Test Method for Thermal Cycling of Exterior Walls.
- .11 AAMA 501-15, Methods of Test for Exterior Walls.
- .12 AAMA 1503-09. Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections
- .13 AAMA 2603-17a, Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix).
- .14 AAMA 2604-17a, Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix).
- .15 AAMA 2605-17a, Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix).
- .16 AAMA CW-13-85. Structural Sealant Glazing Systems.
- .4 American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE):
 - .1 ASHRAE 90.1-2016 (I-P), Standard 90.1-2016 (I-P Edition) -- Energy Standard for Buildings Except Low-Rise Residential Buildings (ANSI Approved; IES Co-sponsored).
- .5 American Society for Testing and Materials International, (ASTM):
 - .1 ASTM A36/A36M-14, Specification for Carbon Structural Steel.
 - .2 ASTM A123/A123M-15, Specification for Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.
 - .3 ASTM A153/A153M-16a. Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - .4 ASTM A167-99(2009), Specification for Stainless and Heat Resisting Chromium Nickel Steel Plate, Sheet, and Strip.
 - .5 ASTM A276/A276M-13. Specification for stainless Steel Bars and Shapes.
 - .6 ASTM A436-84(2015), Standard Specification for Austenitic Gray Iron Castings.
 - .7 ASTM A653/A653M-15e1, Standard Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot Dip Process.
 - .8 ASTM A1008/A1008M-16, Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.
 - .9 ASTM A1011/A1011M-17a, Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.
 - .10 ASTM B209-14, Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 - .11 ASTM B221-14, Specification for Aluminum Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
 - .12 ASTM C165-07(2017), Standard Test Method for Measuring Compressive Properties of Thermal Insulations.
 - .13 ASTM C509-06(2015), Standard Specification for Elastomeric Cellular Preformed Gasket and Sealing Material.

- .14 ASTM C612-14. - Standard Specification for Mineral Fiber Block and Board Thermal Insulation
- .15 ASTM C661-15. - Standard Test Method for Indentation Hardness of Elastomeric Type Sealant by Means of a Durometer
- .16 ASTM C794-15a, Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants.
- .17 ASTM C920-14a. Standard Specification for Elastomeric Joint Sealants
- .18 ASTM C1036-16. Standard Specification for Flat Glass.
- .19 ASTM C1048-12e1. Standard Specification for Heat-Treated Flat Glass Kind HS, Kind FT Coated and Uncoated Glass
- .20 ASTM C1087-16, Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems.
- .21 ASTM C1184-14, Standard Specification for Structural Silicone Sealants.
- .22 ASTM C1279-13(2019), Test Method for Non-Destructive Photoelastic Measurement of Edge and Surface Stresses in Annealed, Heat-Strengthened, and Fully Tempered Flat Glass
- .23 ASTM C1376, Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass
- .24 ASTM D2240-15e, Standard Test Method for Rubber Property-Durometer Hardness.
- .25 ASTM D2244-16. Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates.
- .26 ASTM D4214-07(15). Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films.
- .27 ASTM E90-09(16). Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
- .28 ASTM E283-19, Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
- .29 ASTM E330/E220M-14, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls, by Uniform Static Air Pressure Difference.
- .30 ASTM E331-00(2016), Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform Static Air Pressure Difference.
- .31 ASTM E547, Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Difference
- .32 ASTM E576-14, Standard Test Method for Frost/Dew Point of Sealed Insulating Glass Units in the Vertical Position.
- .33 ASTM E783-02(2018) Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors
- .34 ASTM E1105-15, Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference.
- .35 ASTM E1300-16. Standard Practice for Determining Load Resistance of Glass in Buildings.
- .36 ASTM E1332-16. Standard Classification for Rating Outdoor-Indoor Sound Attenuation.
- .37 ASTM E1651, Standard Test Method for Measurement of Roll Wave Optical Distortion in Heat-Treated Flat Glass
- .38 ASTM E2188, Standard Test Method for Insulating Glass Unit Performance

- .39 ASTM E2189, Standard Test Method for Testing Resistance to Fogging in Insulating Glass Units
- .40 ASTM E2190, Standard Specification for Insulating Glass Unit Performance and Evaluation
- .6 British Standards Institute (BSI or BSI Group):
 - .1 BS EN 14179-1:2016, Glass in Building. Heat Soaked Thermally Toughened Soda Lime Silicate Safety Glass.
- .7 Canadian General Standards Board (CGSB):
 - .1 CAN/CGSB 1.108-M89, Bituminous Solvent Type Paint
 - .2 CAN/CGSB-12.1-M90, Tempered or Laminated Safety Glass
 - .3 CAN/CGSB-12.3-M91, Flat, Clear Float Glass
 - .4 CAN/CGSB-12.4, Heat Absorbing Glass
 - .5 CAN/CGSB-12.8-97, Insulating Glass Units
 - .6 CAN/CGSB-12.9-M91, Spandrel Glass
 - .7 CAN/CGSB-12.20-M89, Structural Design of Glass for Buildings
 - .8 CAN/CGSB 19.13-M87, Sealing Compound, One-Component, Elastomeric, Chemical Curing.
 - .9 CAN/CGSB-79.1-M91, Insect Screens.
- .8 Canadian Standards Association (CSA International):
 - .1 AAMA/WDMA/CSA 101/I.S.2/A440: North American Fenestration Standard / Specification for windows, doors, and skylights including the Canadian Supplement
 - .2 CSA-A440S1, Canadian Supplement to NAFS
 - .3 CSA-A440-00/A440.1-00, A440-00(R2005), Windows/Special Publication A440.1-00, User Selection Guide to CSA Standard A440-00, Windows
 - .4 CSA-A440.2/A440.3, Fenestration Energy Performance / User Guide to CSA A440.2
 - .5 CSA-G40.20/G40.21-13(R2018), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steels
 - .6 CAN/CSA-G164-18, Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .7 CSA S16-16, Design of Steel Structures, Includes Update No. 1 (2016).
 - .8 CSA-S136-12, North American Specification for the Design of Cold-Formed Steel Structural Members.
 - .9 CSA-S157-05/S157.1-05 (R2015), Strength Design in Aluminum.
 - .10 CSA S832(R2019), Seismic Risk Reduction of Operational and Functional Components (OFCs) of Buildings
 - .11 CSA W47.1-09 (R2014), Certification of Companies for Fusion Welding of Steel.
 - .12 CSA W47.2-11 (R2015), Certification of Companies for Fusion Welding of Aluminum, Includes Update No. 1 (2011), Update No. 2 (2012).
 - .13 CSA-W59-13, Welded Aluminum Construction.
- .9 Environmental Choice Program (ECP):
 - .1 CCD-45-95, Sealants and Caulking Compounds.
 - .2 CCD-47-1998, Surface Coatings.
 - .3 CCD-48-95, Recycled Water Borne Surface Coatings.
- .10 Glass Association of North America (GANA):
 - .1 GANA Glazing Manual - 2008.

- .2 GANA 01-0300 Glass Information Bulletin, Proper Procedures for Cleaning Architectural Glass Products.
- .11 Insulating Glass Manufacturers Alliance (IGMA).
- .12 National Building Code of Canada (NBCC) 2015.
- .13 National Energy Code of Canada for Buildings (NECCB) 2017.
- .14 National Fenestration Rating Council (NFRC).
 - .1 NFRC Document 100, Procedure for Determining Fenestration Product U-factors
 - .2 NFRC Document 200, Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence
 - .3 NFRC Document 300, Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems
 - .4 NFRC Document 400, Procedure for Determining Fenestration Product Air Leakage
 - .5 NFRC Document 500, Procedure for Determining Fenestration Product Condensation Resistance Values
- .15 Society for Protective Coatings (SSPC):
 - .1 SSPC - Paint 20 Zinc Rich Coating.
 - .2 SSPC - Paint 25 Alkyd, Zinc Oxide Linseed Oil and Primer for Use Over Hand Cleaned Steel Type 1 and Type 2.

1.5 DESIGN RESPONSIBILITY

- .1 The details shown on the drawings are included for the purpose of indicating the preferred profiles and dimensions necessary to achieve the design intent. Minor dimensional adjustments to those shown may be made in the proposed design in the interest of fabrication or erection methods or techniques, provided that the design intent and the intent of the specifications are maintained. The design, engineering, procurement, fabrication and erection of the glazed aluminum framed assemblies, including the loads related to the direct attachment of the panel systems to the curtain wall assemblies as required to meet these performance specifications, shall be the complete responsibility of the Trade Contractor. The final reviewed shop drawings shall form part of the Contract Documents.

1.6 PERFORMANCE REQUIREMENTS

- .1 Design and size components to withstand dead and live loads caused by pressure and suction of wind, acting normal to the plane of the system.
- .2 Design and size components to withstand seismic loads and sway displacement as calculated in accordance with NBCC and other applicable codes. Coordinate and accommodate anticipated movements per structural design conditions.
- .3 Design glass to applicable requirements of CAN/CGSB12.20 except where more stringent requirements are specified. Design glass not to exceed a statistical probability of failure of 8 units per 1000 units representing a safety factor of 2.5.
- .4 Glass units shall withstand thermal stresses. Base thermal stress calculations on the use of blinds mounted on the inside face of glass units. Glass units shall also withstand thermal stresses created by shadowing of exterior components or assembly and elevated interstitial space temperatures. Glass thermal stress analysis to be provided as a formal submittal.
- .5 Glazed assemblies shall be capable of sustaining a minimum interior lateral load when considered as a guard. Provide safety glass as required.
- .6 Structural Test Performance: to ASTM E330, as follows:

- .1 When tested at a positive and negative wind load design pressures, assemblies do not evidence deflection exceeding $L/175$ of clear span.
- .2 A static design load of 40 psf (1916 Pa) shall be applied in the positive and negative direction.
- .3 When tested at 150% of positive and negative wind-load design pressures, assemblies, including anchorage, do not evidence material failures, structural distress, and permanent deformation of main framing members exceeding 0.2% of clear span.
- .4 Minimum test duration according to ASTM E330 is 10 seconds.
- .7 Design frames so that edges of inner pane of insulating glass units do not fall more than 8°C below the temperature of the center of the inner pane.
- .8 The design of the glazed aluminum framing, shall incorporate a thermal-break system so that no condensation shall form on any interior surfaces of the aluminum members before any of the exposed glass area of the sealed units reaches the dew point temperature when subjected to the specified environmental conditions. Thermally, the grid members shall have a resistance to heat transfer equal to or better than that of the area along the bottom of the sealed glass units with the selected spacer edge construction.
- .9 Anchorage shall be designed to accommodate all thermal, seismic and building movements. All anchorage and fastenings for curtain wall shall be concealed. Anchor shall be designed to accommodate construction tolerance of ± 25 mm in all directions.
- .10 Elastic deflection limits for mullions: $L/175$ of the span vertically, under design loading for spans less than or equal to 4115mm; $L/240 + 6$ mm for spans greater than 4115mm.
- .11 Provide system to accommodate, without damage to components or deterioration of seals:
 - .1 Movement within system.
 - .2 Movement between system and perimeter framing components.
 - .3 Dynamic loading and release of loads.
 - .4 Deflection of structural support framing.
 - .5 A mid-span roof and floor edge maximum short and long-term creep and deflection of 20mm.
 - .6 Dead and live loads of metal panel cladding systems.
- .12 Design and provide aluminum elements in accordance with CAN3-S157.
- .13 Limit air infiltration to the following:
 - .1 Air infiltration and exfiltration for fixed vision and spandrel assemblies: $0.15 \text{ L/s}\cdot\text{m}^2$ ($0.00015 \text{ m}^3/\text{s}/\text{m}^2$) of wall area, measured at a reference differential pressure across assembly of 300 Pa as measured in accordance with AAMA 501 and ASTM E 283.
 - .2 Air infiltration and exfiltration for operable glazed assemblies: $0.5 \text{ L/s}\cdot\text{m}^2$ ($0.0005 \text{ m}^3/\text{s}/\text{m}^2$) at 300Pa pressure differential when tested in accordance with ASTM E283.
- .14 Vapour seal with interior atmospheric pressure of 25 mm sp, 22C, 40% RH: No failure.
- .15 Water leakage: none, when measured in accordance with AAMA 501, ASTM E 331 and ASTM E 1105, with a reference differential pressure of 720 Pa and wind speed as specified above.
- .16 Thermal Transmittance (U-factor): Fixed glass and framing areas shall have U-factor of no greater than 0.35 with 1" (25.4) High Performance (HP) Glass as determined according to NFRC 100-2010.
- .17 The specified U-factor does not apply to operators.
- .18 Systems to provide for expansion and contraction within all system components caused by a cycling temperature range of 110 degrees C over a 12 hour period without causing

- detrimental effect to system components including buckling, glass breakage, failure of joint seals, undue stress on fasteners, noise or other detrimental effects.
- .19 Design glazed aluminum framed assemblies on the Rain Screen Principle. Drain water entering joints, condensation occurring in glazing channels, or migrating moisture occurring within system, to the exterior by a weep drainage network. Rain Screen Principle is to include provisions for pressure equalization and compartmentalization for all glazed aluminum framed elements and assemblies.
 - .20 Vent spandrel cavities to the outside air to adequately reduce heat build-up.
 - .21 Maintain continuous air barrier and vapour retarder throughout assembly, primarily in line with inside pane of glass and heel bead of glazing compound. Position thermal insulation on exterior surface of air/vapour barrier (back pans).
 - .22 Locate sealants, air/vapour seals, thermal breaks, thermal separations, drainage slots as show on the drawings and specified in this Section. All glazed aluminum framed assembly joinery is to be sealed with silicone adhesives/sealants
 - .23 Movements of glazed aluminum framed assemblies due to design wind load, thermal and building movements shall be noiseless. Ensure no vibration harmonics, wind whistles, noises caused by thermal movement, thermal movement transmitted to other building elements, loosening, weakening, or fracturing of attachments or components of system occur.
 - .24 All dissimilar metals shall be separated by an inert material to prevent any possibility of galvanic action.
 - .25 Performance Designation: in accordance with AAMA/WDMA/CSA 101/I.S.2/A440-11 – NAFS:
 - .1 **AW-PG40-FW/AP**
 - .2 Designation Legend:
 - .1 AW – Performance Class
 - .2 PG – Performance Grade
 - .3 40 – Design Pressure
 - .4 FW – Fixed Window / AP – Awning Window

1.7 ADMINISTRATIVE REQUIREMENTS

- .1 Coordination:
 - .1 Notify concerned trades of items required to be incorporated into work of separate Sections. Certain components specified under this Section include items which are closely integrated with air and vapour barrier transitions, entrances and aluminum composite panel (ACP) cladding systems, roofing systems, glazing components, flashing pieces and architectural metalwork specified under separate Sections and consequently requires close coordination with such allied trades. Perform total coordination required to ensure correct installation procedures and results.
 - .2 Coordinate and cooperate with ACP cladding trades and air and vapour barrier and transition membrane trades by installing panel system closures and trims supplied by such trades.
 - .3 It is the responsibility of the Trade Contractor to verify on site and coordinate all dimensions and modules related to the work in a timely fashion to allow for any remedial work without affecting program.
- .2 Pre-Installation Meeting/Conference:
 - .1 Arrange pre-installation meeting/conference 2 weeks prior to commencing work of this Section with parties associated with this trade as designated in Contract Documents or as requested by Consultant. Presided over by General Contractor,

include Consultant, Owner's Representative, Subcontractor performing work of this trade, testing company's representative and consultants of applicable discipline. 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, testing, inspection and certification procedures, coordination with other work, 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.

- .2 Review installation methods, procedures, time schedule and conditions under which work shall proceed including manufacturers' written instructions and coordination required with related work.
- .3 Review and finalize construction schedule, verify availability of materials, experienced installers, equipment and facilities needed to make progress and avoid delays.

1.8 ACTION AND INFORMATIONAL SUBMITTALS

.1 Product Data:

- .1 Submit product data in accordance with Division 01 General Requirements.
- .2 Submit manufacturer's instructions, printed product literature and data sheets for all curtain wall and window components, doors, panels, anchorage and fasteners, glass and infill, and internal drainage details and include product characteristics, performance criteria, physical size, finishes and limitations and water flow diagrams.
- .3 Submit product data on structural silicone sealants to be used complete with preparation and installation recommendations.
- .4 Submit test reports for insulating glass units as prescribed in CAN/CGSB 12.8 confirming performance criteria. Tests shall be conducted and reports prepared by an approved independent testing laboratory.

.2 Shop Drawings:

- .1 Submit shop drawings in accordance with Division 01 General Requirements.
- .2 Shop drawings to be stamped by a Professional Engineer registered or licensed to practice in Nova Scotia.
- .3 Indicate components and installation methods to conform to specified post-disaster and seismic design and construction requirements of Contract Documents and CSA S832.
- .4 Shop drawings shall show all plans, elevations, sections and details. Show fabrication, assembly, installation and fixing anchorage, for all curtain wall, window types, doors and conditions. Indicate type, thickness and finish of materials, methods of anchorage, size of anchors, system dimensions, framed opening requirements and tolerances, adjacent construction, air/vapour barrier tie-ins, finishes, anticipated deflection under load, affected related work, weep drainage network, expansion and contraction joint location and details, separation of dissimilar materials and field welding required.
- .5 Glazing details applicable to replacement glass, with outline of procedure for glass replacement.
- .6 Shop drawings shall include a complete layout of modular and referenced dimensions for all glazed aluminum assemblies, including identification of any deviations from the architectural layouts and drawings.
- .7 Final comment on the shop drawings shall be contingent upon the complete submission of all structural calculations, documentation, certifications, approvals (anchorage and fire stop assemblies), samples, mock-ups and test reports.
- .8 The Consultant's consideration of shop drawings shall not relieve the Contractor from their responsibility for errors or for supplying components and materials to the full satisfaction of the Consultant.
- .9 Sealants: Provide to sealant manufacturer, Shop Drawings showing size of lites, design loads and sealant dimensions for evaluation and statement on stress.

- .10 Submit glass thermal and wind load stress analysis documenting adequate glass thickness and/or heat treatment to meet stresses generated. Thermal stress analysis to consider effects of external and internal shading, conduction at glass edge and contribution of low "E" coatings.
 - .11 Provide framing member structural and physical characteristics, calculations, dimensional limitations, special installation requirements.
 - .12 Submit results of thermal modeling by manufacturer of all critical and typical cross sections to assess both overall U value and establish condensation resistance. Results to be submitted in a format acceptable to the Consultant.
- .3 Laboratory Test Reports:
- .1 Suitable laboratory test reports must be provided. Suitable shall mean that testing meets all project requirements and is for the same systems, with similar unit sizes, which will be used for the project.
 - .2 Submit certified test reports of the curtain wall framed assemblies and swing doors confirming compliance with the Specifications. Test reports shall be for the size and configuration of components to be supplied. Tests shall be conducted by an approved independent testing laboratory.
 - .3 Performance tests are to include the following:
 - .1 Static Air Infiltration and Exfiltration Test in accordance with ASTM E283, Test Method for Rate of Air Leakage Through Exterior Windows, glazed aluminum assemblies, and Doors, except as otherwise specified herein. Air infiltration and exfiltration shall not exceed requirements of this Section.
 - .2 Air infiltration and exfiltration through fixed glazing shall not exceed 0.15 L/S/M² at 300 Pa static pressure difference when tested to accordance with ASTM E283.
 - .3 Air infiltration and exfiltration through operable windows and doors shall not exceed 0.5 L/S/M² at 300 Pa static pressure difference when tested to accordance with ASTM E283.
 - .4 Static Water Penetration Test in accordance with ASTM E331, Test Method for Water penetration of Exterior glazed aluminium assemblies and Doors by Uniform Static Air Pressure Difference, except as otherwise specified herein. There shall be no infiltration of water inboard of the air barrier plane or retained in wall cavities. Test for water penetration under a static pressure difference of 720 Pa for a period of 15 minutes.
 - .5 Dynamic Water Penetration Test in accordance with Architectural Aluminium Manufacturers Association, Standard Test Method for Water Penetration of Windows, glazed aluminium assemblies and Doors using Dynamic Pressure, except as otherwise specified herein. There shall be no infiltration of water inboard of the air barrier plane or retained in wall cavities. Test for water penetration under a static pressure difference of 720 Pa for a period of 15 minutes.
- .4 Design Data:
- .1 Submit design data in accordance with Division 01 General Requirements.
 - .2 Provide framing member structural and physical characteristics, calculations, dimensional limitations, special installation requirements.
- .5 Samples:
- .1 Submit samples in accordance with Division 01 General Requirements.
 - .2 Submit three samples illustrating prefinished aluminum surfaces, specified glass units, and insulated spandrel units. Glazing materials to illustrate edges and corners. Alternative colours for spandrel glass may be requested.
 - .3 Include frame, sash, sill, glazing and weatherproofing method, surface finish and hardware.
 - .4 Include 150mm long samples of all curtain wall, window and door heads, jambs, sills and mullions to indicate profile.
 - .5 Provide product run test samples of all substrate materials to the sealant

manufacturer for peel adhesion and accelerated weathering testing, and submit the results of all tests to the Consultant. All testing shall be with materials and finishes identical in every respect to approved production materials and finishes.

- .1 Submit sealant manufacturer's test reports on adhesion to the finished metal and glass production samples in accordance with ASTM C794, 7-day cure and 7-day water submersion, tensile strength at 100% elongation and required bite size for sealants.
- .2 Submit sealant manufacturer's sealant compatibility statement that all materials in contact with structural sealants are compatible with the sealants in accordance with ASTM C1087. Submit sealant manufacturer's statement and test data confirming that sealant stress is less than 138 MPa and a safety factor of 5:1.

.6 Maintenance Data:

- .1 Provide operation and maintenance data for glazed aluminum framed assemblies.

1.9 SOURCE QUALITY CONTROL

- .1 Manufacturer qualifications: company specializing in manufacturing the Products specified in this section with minimum five years documented experience.
- .2 Installer qualifications: company specializing in performing the work of this section with minimum five years documented experience and approved by manufacturer.
- .3 Design structural support framing components to CAN/CSAS157 under direct supervision of a Professional Structural Engineer experienced in design of this Work and registered or licensed in the Province of Nova Scotia.
- .4 Perform welding Work in accordance with CSA W59.2.

1.10 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and acceptance requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and handling requirements:
 - .1 Handle work of this section in accordance with AAMA CW-10.
 - .2 Store materials indoors, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .3 Store and protect aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather.
 - .4 Protect prefinished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather.
 - .5 Replace defective or damaged materials with new.

1.11 ENVIRONMENTAL REQUIREMENTS

- .1 Do not install sealants when ambient and surface temperature is less than 5 degrees C.
- .2 Maintain this minimum temperature during and after installation of sealants.

1.12 SEQUENCING

- .1 Coordinate work with installation of fire stopping, steel stud installation, air/vapour barrier placement, flashing placement, insulation installation, and other components or materials.

1.13 MOCK-UPS

- .1 Construct mock-ups in accordance with Division 01 General Requirements.
- .2 Provide one full window unit for inclusion in the Level 2 brick masonry wall. Assemble to illustrate component assembly including glazing materials, weep drainage system, attachments, anchors, and perimeter sealant.
- .3 Provide full bay curtain wall mock-up for inclusion in the West Level 1 and 2 brick masonry wall including aluminum composite panel cladding, intermediate mullions, sill muntin, vision glass units and spandrel glass units. Assemble to illustrate component assembly including glazing materials, weep drainage system, attachments, anchors, and perimeter sealant.
- .4 Locate where directed.
- .5 Allow 72 hours for inspection of mock-up by Consultant before proceeding with work.
- .6 When accepted, mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of finished work if approved by Consultant.

1.14 FIELD QUALITY CONTROL

- .1 Have manufacturer of products supplied under this Section review work involved in handling, installation/application, protection and cleaning of its products, and submit written reports in acceptable format to verify compliance of Work with Contract.
- .2 Manufacturer's field services: provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
- .3 Schedule site visits to review Work at stages listed:
 - .1 After delivery and storage of products, and when preparatory Work on which Work of this Section depends is complete, but before installation begins.
 - .2 Twice during progress of Work at 25% and 60% complete.
 - .3 Upon completion of Work, after cleaning is carried out.
 - .4 Obtain reports within three days of review and submit.

1.15 WASTE MANAGEMENT AND DISPOSAL

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Collect and separate for disposal paper, plastic, polystyrene and corrugated cardboard packaging material for recycling.
- .3 Separate for reuse and recycling all steel, metal, glass and plastic waste.
- .4 Handle and dispose of hazardous materials in accordance with Regional and Municipal regulations.

1.16 EXTENDED WARRANTY

- .1 Provide a written warranty, signed and issued in the name of the Owner, stating that the total glazed aluminum framed assemblies and door systems are warranted against leakage, defects and malfunction under normal usage for a period of five (5) years from date of Certificate of Substantial Performance. Total system includes related caulking. Defective materials and workmanship include, but are not limited to: abnormal deterioration, aging and weathering of the work; leakage of water and air exceeding specified limits; structural failure of components resulting from forces and movements up to specified limits; condensation; deterioration, peeling and discoloration of finishes in excess of normal usage.
- .2 Provide a separate written warranty stating that factory sealed double glazed insulating units, both vision and spandrel units, are warranted against leakage, malfunction and

other defects, under normal usage for a period of ten (10) years from date of Certificate of Substantial Performance. Without restricting the generality of the warranty, defects to the insulating units shall include: warping of spacer bars by greater than 3mm; dust or film formation on internal glass surfaces; glass breakage except that caused by impact of solid objects; deterioration of glass coatings, including thermal properties.

- .3 Warranty shall include for replacement of any IGU's with internal dew point above -30 degrees Celsius when tested in accordance with ASTM E 576.
- .4 Warranties shall include the prompt remedy of defects upon written notification from the Owner that defects exist. Remedy shall include labour, materials, equipment and services required to make good defective areas of the work and in the case of factory-fabricated components, to supply and install new components, all at no cost to the Owner and at times convenient to the Owner. Warranties shall also include making good other building parts and finishes and other Owner's property damaged or disturbed in the course of remedying defects.
- .5 Warrant all structural silicone sealant work against defects for a period of twenty (20) years. Warrant that the sealant shall remain free from cohesive or adhesive failure, surface crazing or discoloration.
- .6 Warranty, High Performance Organic Coatings: Submit a warranty for a period of 20 years, warranting integrity of film and permanence of colour of high performance organic coatings for following:
 - .1 Color fade not to exceed 5 ΔE units (Hunter) as calculated in accordance with ASTM D2244 on exposed surfaces cleaned with clean water and a soft cloth.
 - .2 Degree of chalking not to exceed rating No. 8 when measured in accordance with ASTM D4214 on exposed unwashed surfaces.
 - .3 Will not crack, check or peel.

Part 2 Products

2.1 ALUMINUM FRAMING AND COMPONENTS

- .1 Aluminum Components:
 - .1 Conform to requirements published in AA "Aluminum Standards and Data", referenced ASTM Standards and the following.
 - .2 Aluminum extrusions manufactured to dimensional tolerances to eliminate any edge projection or misalignment at joints. Unless otherwise specified, provide alloy and temper as required to suit performance requirements and finishes indicated. Provide concealed extruded bars, rods, shapes and tubes in alloys as recommended by fabricator to join or reinforce assembly of exposed aluminum components. Aluminum Association Design alloy AA6063T6, anodizing quality, free from perceptible distortions, waves, twists, buckling or other deficiencies of appearance or performance.
- .2 Alloys:
 - .1 Aluminum Extrusions and Sheet Aluminum: Shall be in accordance with most stringent of CAN3-S157 or ASTM B221 and ASTM B209, minimum 1/8" (3mm).
 - .2 Extruded Bars, Rods, Shapes and Tubes: Alloy 6063 and ASTM B221, 'Anodizing Quality'.
 - .3 Bars, Rods and Wire: ASTM B211
 - .4 Sand Castings: ASTM B26/B26M
 - .5 Permanent Mold Castings: ASTM B108/B108M.
- .3 Aluminum sheet and plate: ASTM B 209M, suitable for purpose and finish required.

- .4 Apply one coat of bituminous paint to concealed aluminum surfaces in contact with cementitious or dissimilar materials.
- .5 Curtain Wall Framing:
 - .1 Profile: 2" (51mm) wide with depths as noted on drawings, nominal dimensions for vertical and horizontal back members and as required to carry required loads. Internal reinforcement of shaped steel structural sections where required for vertical spans and connections and support of aluminum composite panel cladding assembly systems.
 - .2 Shapes and Thickness: Provide shapes as shown and as required to suit performance requirements but with wall thickness of not less than following:
 - .1 Minimum Wall Thickness for Structural Extrusions: 1/8" (3mm).
 - .2 Minimum Wall Thickness for Non-Structural Extrusions: 1/16" (1.5mm).
 - .3 All exterior framing to be thermally broken with interior tubular section insulated from exterior pressure plate.
 - .4 Drainage holes, deflector plates and internal flashings to accommodate internal weep drainage system. Ensure curtain wall is provided with a positive slope to encourage water drainage out of the system to the exterior.
 - .5 Internal mullion baffles to eliminate "stack effect" air movement within internal spaces.
 - .6 Acceptable Manufacturers:
 - .1 TW2200 Series, by Alumaticor.
 - .2 5400HTP Series, by Windspec.
 - .3 5200 Series, by Commdoor.
 - .4 1620UT Series, by Kawneer.
 - .5 Or approved alternate.
- .6 Exterior connectors:
 - .1 Extruded aluminum snap-on cap trims secured to pressure plate with concealed fastening method.
 - .2 1-1/4" and 2-1/2" deep as indicated x width of back members.
 - .3 All open ends to have matching end closures, flush with end of cap.
- .7 Flashings and Sills:
 - .1 Typical: 0.080" (2.0mm) thick break formed aluminum, finished to match glazed aluminum framed assemblies where exposed, secured with concealed fastening method.
 - .2 Coping flashing at parapets to be 1/8" (3mm) thick aluminum, finished to match glazed aluminum framed assemblies.
- .8 Exposed Aluminum Finishes:
 - .1 Colour and sheen shall be uniform with no visible variations.
 - .2 All exposed aluminum surfaces including curtain wall frames, window frames, flashings, trims, and panels shall be clear anodized. Comply with Aluminum Association designation AA-M12 C22 A44, 0.7 mils (0.018mm) minimum coating thickness (Class I).
- .9 Carbon Steel:
 - .1 Structural Steel: CSA G40.20/G40.21, grade 350W. Mullion reinforcement shall be aluminum or stainless steel unless totally interior to air seal and vapour barrier where reinforcement shall be as a minimum, coated structural steel with galvanized paint.
 - .1 Structural Shapes, Plates and Bars: ASTM A36/A36M.
 - .2 Cold-Rolled Sheet and Strip: ASTM A1008/A1008M.

- .3 Hot-Rolled Sheet and Strip: ASTM A1011/A1011M.
- .2 Galvanizing: Galvanize after fabrication. Follow standard precautions to avoid embrittlement of the base metal by overpickling, overheating during galvanizing.
- .10 Fasteners:
 - .1 Exterior and Thru Air Seal Line: Type 304 Stainless Steel.
 - .2 Interior to Air Seal Line: Cadmium/Zinc plated or 400 series stainless steel or hot dip galvanized.
- .11 Embeds and Inserts:
 - .1 Interior of vapour barrier: hot-dip galvanized, cadmium plated, cast-iron, malleable-iron, or painted steel inserts complying with ASTM A123/A123M or ASTM A153/A153M requirements.
 - .2 Exterior of Vapour Barrier: Type 304 Stainless Steel.
 - .3 Curtain Wall Support Clips: Aluminum with Alodine finish.

2.2 SEALED INSULATING GLASS UNITS

- .1 Vision Glass (VG) Units VG-1: Generally for use at typical vision glass areas:
 - .1 Double glazed insulating units to CAN/CGSB-12.8; 1" (25mm) overall thickness.
 - .2 1/4" (6mm) clear outer lite, annealed.
 - .3 Low emissivity coating on #2 surface:
 - .1 Cardinal/Prelco 366.
 - .2 Guardian SNX 62/27.
 - .3 Vitro Solarban 70.
 - .4 Energy Select 28, by AGC Glass.
 - .4 Edge deletion of Low-E coating as required at thermal spacer.
 - .5 1/2" (13mm) high performance thermal spacer, black.
 - .6 Inert gas filled cavity: 90% Argon, 10% air.
 - .7 1/4" (6mm) clear inner lite, annealed.
- .2 Vision Glass (VG) Units VG-2: Glass areas at aluminum doors:
 - .1 Double glazed insulating units to CAN/CGSB-12.8; 1" (25mm) overall thickness.
 - .2 1/4" (6mm) clear outer lite, tempered.
 - .3 Low emissivity coating on #2 surface:
 - .1 Cardinal/Prelco 366.
 - .2 Guardian SNX 62/27.
 - .3 Vitro Solarban 70.
 - .4 Energy Select 28, by AGC Glass.
 - .4 Edge deletion of Low-E coating as required at thermal spacer.
 - .5 1/2" (13mm) high performance thermal spacer, black.
 - .6 Inert gas filled cavity: 90% Argon, 10% air.
 - .7 1/4" (6mm) clear inner lite, tempered.
- .3 Vision Glass (VG) Units VG-3: Glass areas at washroom windows:
 - .1 Same as VG-1, except as follows:
 - .1 Outer lite: 6mm annealed, frosted.
 - .1 Frosted glass, annealed to CAN/CGSB-12.3, acid-etched, 6mm thickness.
 - .2 Acceptable material: Pavia, by Vitro.
 - .2 Low "E" coating on surface #3.

- .4 Spandrel Glass (SG) Units SG-1: For use typically in spandrel areas:
 - .1 Double glazed insulating units to CAN/CGSB-12.8; 1" (25mm) overall thickness.
 - .2 1/4" (6mm) clear outer lite, heat strengthened.
 - .3 Low emissivity coating on #2 surface:
 - .1 Cardinal/Prelco 366.
 - .2 Guardian SNX 62/27.
 - .3 Vitro Solarban 70.
 - .4 Edge deletion of Low-E coating as required at thermal spacer.
 - .5 1/2" (13mm) high performance thermal spacer, black.
 - .6 Inert gas filled cavity: 90% Argon, 10% air.
 - .7 1/4" (6mm) clear inner lite, fully tempered, heat soaked.
 - .8 Ceramic frit on the #4 surface, solid colour to resemble adjacent vision units selected by Consultant.

2.3 OPERATORS

- .1 Performance: to AAMA/WDMA/CSA 101/I.S.2/A440-11 – NAFS, in accordance with the performance requirements outlined in this specification, and as follows:
 - .1 Designation: CW-PG40-AP.
 - .2 Air tightness: A2.
 - .3 Condensation resistance: I-58-60.
 - .4 Thermal resistance: 0.48.
- .2 Projected: top hung opening out (THOO) awning with removable double glazed insulating glass.
- .3 Acceptable materials:
 - .1 Alumicor Univent 1350.
 - .2 Windspec 535 Series.
 - .3 Commdoor 225 Series.
 - .4 Kawneer 526.
 - .5 Or approved alternate.
- .4 Hardware and screens:
 - 1. Hinges: Equip each window with 1 pair of stainless steel friction arms.
 - 2. Operators:
 - 1. Awning: Equip each awning window with a crank operator, single lever type roto-operator.
 - 2. Locking: Equip each window with two claw locking handles with painted finish to match anodized aluminum frame finish.
 - 3. Screens: to CAN/CGSB-79.1.
 - 1. Type: Insect screening mesh: count 18x14, fibreglass.
 - 2. Fasteners: Stainless steel, tamper proof
 - 3. Screen frames: Aluminum colour to match window frames.

2.4 ALUMINUM ENTRANCES

- .1 Aluminum Extrusions: Alloy and temper recommended by sliding aluminum-framed glass door manufacturer for strength, corrosion resistance, and application of required finish

- and not less than 2.3 mm wall thickness at any location for the main frame and sash members.
- .2 Fasteners: Aluminum, nonmagnetic stainless steel or other materials to be non-corrosive and compatible with sliding aluminum-framed glass door members, trim hardware, anchors, and other components.
 - .3 Anchors, Clips, and Accessories: Aluminum or nonmagnetic stainless steel; provide sufficient strength to withstand design pressure indicated.
 - .4 Reinforcing Members: Aluminum or nonmagnetic stainless steel; provide sufficient strength to withstand design pressure indicated.
 - .5 Weather Seals: Provide weather stripping with integral barrier fin or fins of semi rigid, polypropylene sheet or polypropylene-coated material. Comply with AAMA 701/702.
 - .6 Heavy-duty commercial flush door adaptors.
 - .7 Glazing gaskets shall be either EPDM elastomeric extrusions or a thermoplastic elastomer.
 - .8 Provide adjustable glass jacks to help center the glass in the door opening.
 - .9 Commercial grade, thermally broken aluminum door system.
 - .10 Construct doors of porthole extrusions with minimum wall thickness of 2.4 mm.
 - .11 Door stiles nominal 4" (102mm) wide plus or minus 1/2" (12mm).
 - .12 Top rail nominal 3-7/8" (98mm) wide plus or minus 1/4" (6mm).
 - .13 Bottom rail nominal 3-7/8" (98mm) wide plus or minus 1/4" (6mm).
 - .14 Doors to be of welded construction:
 - .1 Weld aluminum to CAN/CSA W59-2.
 - .15 Weld with SIGMA deep penetration plug weld and fillet weld at stile/rail connection.
 - .16 Reinforce corners of doors to produce sturdy door unit.
 - .17 Construct doors square and plumb, no distortion, waves, twists, buckles or other defects.
 - .18 Glazing stops: interlocking snap-in type for dry glazing. Exterior stops: tamperproof type.
 - .19 Acceptable materials:
 - .1 Exterior doors: thermally broken 2-1/4" (57mm) thick, overall:
 - .1 Kawneer AA425 Series.
 - .2 Thermaporte 7700, by Alumicor.
 - .3 HTP Door, by Windpsec.

2.5 SEALANT

- .1 Cleaner: As recommended by manufacturer and approved by Consultant.
- .2 Primer: As recommended by manufacturer and approved by Consultant.

2.6 INSULATION

- .1 Foamed-In-Place Insulation:
 - .1 Low expansion, one component foam polyurethane, solvent free to CAN/ULC-S705.1; for use at shim spaces and voids.
 - .2 Acceptable materials:
 - .1 Enerfoam by Dow Chemical.
 - .2 Handi-foam by Fomo Products.
 - .3 CF 128-DW by Hilti.
 - .4 Or approved alternate.

- .2 Back Pan Insulation, Semi-rigid mineral wool, 4" (100mm) thick at centre of back pan, minimum R-4.2 per inch (RSI of 0.74 per 25mm); provide additional layer of insulation around perimeter to provide improved thermal performance at aluminum mullions.
 - .1 Acceptable materials:
 - .2 CurtainRock by Rockwool.
 - .3 Thermafire FireSpan 40 by Owens Corning.
 - .4 Or approved alternate.

2.7 MISCELLANEOUS COMPONENTS

- .2 Shims, Spacers, Anti-walk Blocks and Setting Blocks: 50 and 80 (Setting Blocks) Durometer Shore 'A' Hardness +/-5 respectively, heat cured silicone rubber. Resistance to sunlight, weathering, oxidization and permanent deformation under load and compatibility with all materials in the glazing system, including heel beads and secondary seals shall be the prime essentials of shims, spacers and setting blocks. Submit data confirming resistance to above items.
- .3 Exterior Glazing Gaskets: heat cured silicone compression gasket, of sufficient thickness to CGSB 10.13, Type 1. Gaskets shall have a 13.8 MPa (2000 psi) tensile strength to be under 30% compression minimum when installed. Gaskets shall have hardness Durometer A of 60 +/- 5, resistance to permanent set, 300% minimum elongation at break and resistant to ozone showing no cracks. Setting Blocks shall not damage or restrict glazing rabbet.
- .4 Dielectric Separator: Approved quick-drying, non-staining, alkali-resistant bituminous paint or epoxy resin solution or membrane - for cold application tack free once dry and able to withstand high temperatures.
- .5 Concealed Flashing: Dead-soft, 0.018" thick type 316 stainless steel, complying with ASTM A666.
- .6 Gun Welded Pins: metal pins of length to suit insulation thickness and suitable for gun shot welded to the metal air/vapour barriers. Galvanized steel insulation retainers shall be 1" x 1" (25mm x 25mm) galvanized sheet steel.
- .7 Back Pan/Metal Closure Panel Air Seal: galvanized sheet metal to ASTM A653/A653M, as detailed, minimum 20 ga thick in accordance with ASTM B209 minimum coating weight of 1.24 oz/sq.ft. Reinforcing of hot or cold rolled steel or galvanized sheet steel sections, to the requirements of this Section shall be provided if required for stability of the sheet and to ULC compliance.
- .8 Zinc Rich Primer/Paint: Galvafruid Grade SB zinc-rich coating by W.R. Meadows or approved alternate.
- .9 Cleaning Material: Xylol, Methyl-ethyl-ketone, Toluol or recommended by sealant manufacturer.
- .10 Sheet membrane air and vapour barriers: as per Section 07 27 13.
- .11 Compressible Filler/Backing Rod for Sealant: non-staining, round, resilient and nonabsorbent, non-gassing, bi-cellular, polyethylene foam, such as SOF ROD by Nomaco or Soft Type Baker Rod by ITP. Diameter shall be 25% greater than joint width before installation. Compatible with sealant, primer and substrate.
- .12 Stack Joint Flashing: 22 ga. Type 300 series stainless steel embedded in silicone sealant and mechanically fastened, allowing specified movement or Dow 123 silicone membrane 3 mm thick with pre-sealed panel to panel joints.

- .13 Counter Flashing Supports: Continuous Aluminum "Z" Girt clips.
- .14 Reinforcing Angles: Galvanized steel or aluminum angles of size, thickness and finish suitable for application.
- .15 Curtain Wall Polyethylene Protection Film: Provide on all horizontal and vertical mullions to minimum ceiling height. "Nitto" or approved alternate.

Part 3 Execution

3.1 EXAMINATION

- .1 Verify dimensions, tolerances, and methods of attachment with work of other Sections.
- .2 Verify conditions of substrates, wall openings and adjoining air barrier and vapour barrier materials, etc., installed under other Sections or Contracts are ready to receive Work of this Section. After lines and grades have been established and before beginning of installation in any area, the Trade Contractor shall examine substrates, adjoining construction and conditions under which Work is to be installed. Should any conditions be found which, in their opinion, will prevent the proper execution of their work, they shall report such conditions in writing to the Consultant. Installation work shall not proceed in that area until an agreement is reached on how the work will be adjusted to the satisfaction of the Consultant. Proceed with installation only after unsatisfactory conditions have been corrected. Coordinate slab edges prior to the erection of the structure.
- .3 Proceed with installation only after unacceptable conditions have been remedied. Commencement of Work will be taken as acceptance of conditions.

3.2 FABRICATION

- .1 Fabricate system components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
- .2 Accurately machine cut and match frame together all joints, corners and mitres. Match components carefully to produce perfect continuity of line and design. Make joints toward the exterior weathertight and joints toward the interior airtight in accordance with specified allowances. Metal in contact shall have hairline joints. Location of exposed joints shall be subject to the approval of the Consultant.
- .3 Cope, notch and drill so as to provide minimum tolerance throughout system and to fit with hairline joints.
- .4 Provide for vertical expansion and contraction joints as necessary and install air cut-off in continuous vertical members to prevent stack effect of enclosed air columns.
- .5 Provide pressure equalizing and weep holes for enclosed air spaces at glazed assemblies including spaces behind glazed spandrels and louvres. Location of all joints and pressure equalizing drain vents shall be subject to Consultant's acceptance. Provide flexible, continuous gasket air/vapor barrier seals within framing assemblies, to attach between work of this Section and adjacent work, and elsewhere at locations shown and required. Seal joints.
- .6 Prepare components to receive anchor devices. Install anchors.
- .7 Arrange fasteners and attachments to ensure concealment from view.
- .8 Prepare system components to receive doors and hardware.
- .9 Reinforce framing members for external imposed loads.
- .10 Visible manufacturer's identification labels not permitted on finished work except where identification of safety glass is required by Code.

- .11 All aluminum surfaces to receive structural silicone sealant are to be prepared in strict accordance with the sealant manufacturer's instructions.

3.3 GLAZING

- .1 Use shims, spacers and setting blocks of proper size to support and hold glass in position independent of the glazing tape and gaskets. Place two setting blocks under each unit at the quarter points. Arrange setting blocks to avoid blocking water transfer to the inside of frames.
- .2 Install glazing tapes/gaskets for structural silicone application. Do not stretch tape or gasket. If using gasket, lift end gasket off the recess and apply 50mm long bead of sealant into the recess before pressing gasket down. Wipe off any excess sealant. Make joints only at corners of frame and seal all joints. Fit tape accurately with tight joints, free from tension, without gaps and cracks.
- .3 Set glass properly centered with uniform bite and face and edge clearances, free from twist or warp. Ensure bite is minimum 12mm.
- .4 Handle and install glass in accordance with manufacturer's directions. Prevent nicks, abrasion and other damage likely to develop stress on edges.
- .5 Cover and protect exposed outside corners of sealed glazing units with continuous light gauge aluminum angle, black.

3.4 BACK PANS

- .1 Ensure back pans are continuous and all joints within the back pan are fully sealed.
- .2 Provide a continuous seal from the back pan to the framing.
- .3 All fasteners that penetrate the back pan shall be bedded in sealant and have the fastener head sealed.
- .4 Ensure spandrel spaces are adequately drained and vented, including eliminating obstructions that may trap water.

3.5 INSTALLATION, CURTAIN WALL AND WINDOWS

- .1 Install glazed aluminum framed assemblies in accordance with manufacturer's instructions, engineering requirements and CSA-A440/A440.1.
- .2 Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- .3 Provide all steel anchors, alignment attachments and shims to permanently fasten system to building structure. Clean weld surfaces; apply protective primer to field welds and adjacent surfaces.
- .4 Windows are to have continuous angle supports at head, jambs, and sills.
- .4 Align assemblies plumb and level, free of warp or twist. Maintain assembly dimensional tolerances and align with adjacent work.
- .5 Cut holes in vertical mullions where covered by interior finishes to permit horizontal runs of electrical and communications wiring. Coordinate sizes and locations of cut-outs with drywall and electrical trades, and engineering requirements of glazed aluminum framed assemblies.
- .6 Clean rabbets, stops and glass edges of dust, dirt, moisture, oil and other foreign matter detrimental to glazing material adhesion. Ensure drainage holes are not blocked.
- .7 Prior to insertion of gasket into adaptor race, apply silicone sealant.

- .8 Seal hairline joints at junctions of frame members. Metal to metal sealing to consist of gun applied silicone sealant. Gun-inject sealant ensuring a continuous seal of the joint. Ensure that bead in the glazing space does not impair seating of glazing materials. Remove excess sealant which is forced onto face of frame assembly.
- .9 Install sills, flashings and closures for complete installation. Ensure that sills, flashings and closures are provided with a positive slope to ensure water drainage to the exterior.
- .10 Accurately size glass to fit openings allowing clearances following trade practices. Cut glass cleanly and carefully. Nicks, damaged edge conditions will not be accepted. Replace glass which has nicked or otherwise damaged edges.
- .12 Provide thermal isolation where components penetrate or disrupt building insulation.
- .13 Coordinate installation of fire stop insulation, supplied and installed by others, at each floor edge and intersection with vertical construction where indicated.
- .14 Install and seal perimeter sheet air and vapour barrier materials to building air and vapour barrier as indicated, complete with termination sealant/mastic at all membrane terminations.
- .15 Install perimeter sealant to achieve performance criteria, including backing materials, and installation criteria.
- .16 Cover and protect exposed outside corners of sealed glazing units with continuous light gauge aluminum angle, anodized.
- .17 Install foamed-in-place insulation inside and around all exterior glazed aluminum framed assemblies to maintain continuity of air seal and thermal barrier.

3.6 ENTRANCES

- .1 Comply with Drawings and manufacturer's printed installation instructions for installing aluminum swing entrance doors, hardware, accessories, and other components.
- .2 Install swing entrance doors level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent
- .3 Set sill threshold in bed of sealant, as indicated, for weather tight construction.
- .4 Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

3.7 SITE TOLLERANCES

- .1 Maximum variation from plumb: 1/16" (1.5mm) / meter noncumulative or 1/2" (12mm) / 30 meters, whichever is less.
- .2 Maximum misalignment of two adjoining members abutting in plane: 5/16" (0.8mm).
- .3 Maximum sealant space between glazed aluminum framed assemblies and adjacent construction: 3/4" (19mm).

3.8 CLEANING

- .1 Ensure all excess sealants are removed. Remove excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant manufacturer
- .2 Clean Work of this Section as recommended by finish applicator.
- .3 Clean glass on exterior and interior and remove markings indicating presence of glass.

3.9 PROTECTION

- .1 Protect finished Work from damage during construction.
- .2 Repair damage to adjacent materials caused by Work of this Section.

END OF SECTION

Part 1 General

1.1 RELATED WORK

- .1 Section 08 44 13 - Glazed Aluminum Framed Assemblies.

1.2 REFERENCE STANDARDS

- .1 Standard hardware location dimensions in accordance with the Canadian Metric Guide for Steel Doors and Frames (Modular Construction) prepared by Canadian Steel Door and Frame Manufacturers Association.
- .2 ANSI / BHMA, A156.1-2016, Butts and Hinges
- .3 ANSI / BHMA, A156.2-2017, Bored & Pre-assembled Locks and Latches
- .4 ANSI / BHMA A156.3-2014, Exit Devices
- .5 ANSI/BHMA A156.4-2013, Door Controls - Closers
- .6 ANSI/BHMA A156.5-2014, Cylinders and Input Devices for Locks
- .7 ANSI / BHMA A156.6-2010, Architectural Door Trim.
- .8 ANSI /BHMA A156.7-2014, Template Hinge Dimensions
- .9 ANSI /BHMA A156.8-2010, Door Controls - Overhead Stops & Holders
- .10 ANSI/BHMA A156.13-2017, Mortise Locks and Latches
- .12 ANSI / BHMA, A156.16 - 2018, Auxiliary Hardware
- .13 ANSI/BHMA A156.18-2016, Materials and Finishes
- .15 ANSI /BHMA A156.21-2014, Thresholds
- .16 ANSI/BHMA A156.22-2012, Door Gasketing and Edge Seal Systems
- .18 ANSI/BHMA A156.26-2017, Continuous Hinges

1.3 REQUIREMENTS OF REGULATORY AGENCIES

- .1 Hardware for exit doors to be certified by ULI / ULC, a Canadian Certification Organization accredited by Standards Council of Canada.

1.4 SAMPLES

- .1 When requested, submit samples of hardware items in accordance with **Section 01 33 00 - Shop Drawings, Product Data, Samples and Mock-ups.**
- .2 Identify each sample by label indicating applicable specification paragraph number, brand name and number, finish and hardware package number.
- .3 After approval, samples will be returned for incorporation in the Work.

1.5 HARDWARE SCHEDULE

- .1 Submit finish hardware schedule using the standard DHI format for finish hardware schedules in accordance with Division 01 General requirements for Shop Drawings, Product Data, Samples and Mock-ups.
- .2 Clearly indicate specified hardware, including make, model, material, function, size, finish and other pertinent information.

1.6 MAINTENANCE DATA

- .1 Provide operation and maintenance data for door closers, locksets, door holders and fire exit devices for incorporation into manual specified in Division 01 General Requirements.
- .2 Brief maintenance staff regarding proper care, cleaning and general maintenance of door hardware items

1.7 MAINTENANCE MATERIALS

- .1 Provide maintenance materials in accordance with Division 01 General Requirements.
- .2 Supply two sets of wrenches for door closers, locksets and exit hardware.

1.8 DELIVERY AND STORAGE

- .1 Store finishing hardware in locked, clean and dry area.
- .2 Package each item of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.

Part 2 – Products

2.1 HARDWARE ITEMS

- .1 Use one manufacturer's products only for all similar product groups.
- .2 All products supplied must meet design criteria standards of HRCE.
- .3 The product numbers listed in the finish hardware schedule are to be used as the standard of acceptance for all items and are from the following group of manufacturers:

Full Mortise & Continuous Hinges	Ives
Locksets, Latchsets	Schlage
Cylinders, SFIC Cores	Best
Exit Devices, Trims	Von Duprin
Door Closers	LCN
Overhead Door Stops	Glynn-Johnson
Floor/Wall Stops, Flush Bolts	Ives Hardware
Door Seal, Door Sweeps, Astragals & Weatherstripping	Draft Seal

2.2 DOOR HARDWARE

.1 Butts and hinges:

- .1 Butts hinges: designated by letter and numeral identifiers, followed by size and finish, as listed in Hardware Schedule.
- .2 Butt hinges on exterior doors and locked doors opening out shall have non removable pins (NRP) and doors equipped with door closers or in high traffic areas shall have ball bearing (BB) hinges.

- .3 Continuous hinges shall be Grade 1, heavy duty, geared-type, single section, full mortise, and UL 10C listed and approved. Hinges shall provide full height door support with 2” knuckles and nylon bearings (32) at each separation for quiet, smooth and self-lubricating operation. Hinge material to be 6063-T6 Clear Anodized Aluminum, and support door weight up to 450 lbs. Hinges shall have symmetrical hole pattern and minimum of 21 fasteners on each leaf, and be non-handed. Finish to be Clear Aluminum 628.
- .4 Specified product - butt hinges: Ives
Specified product - continuous hinges: Ives
- .2 Locks and latches:**
 - .1 Locksets and latchsets are to be heavy duty cylindrical, lever type, and meet ANSI Grade 1, A156.2-2011, A117.1 Accessibility, and ULC requirements, with small format I/C cores, and must be Best Lock cores to match existing system of owner.
 - .2 Lever handle trim must be “free-wheeling” vandal resistant, must have concealed through bolt mounting, and the levers are to be solid cast with a return to the door face. All locks are to have heavy duty cast mounting plates, threaded hub and locking nut, and stainless steel interlocking spindle. Lever design to be Schlage ND-RHO.
 - .3 Provide ¾” latch throw for pairs of labeled doors.
 - .4 Roses or Escutcheons: Round design 3 7/16” O.D., as listed in schedule.
 - .5 Normal strikes: box type, lip projection not to exceed ¼” beyond jam.
 - .6 Cylinders: key SFIC cores into the existing Best Master Key system as directed.
 - .7 Finish to be Satin Chrome Plated - 626.
 - .8 Specified products: Locksets - Schlage Lock.
- .3 Exit Devices:**
 - .1 To be heavy duty, grade 1, modern design push bar style, wide or narrow stile, to meet ANSI, ULC, NFPA and ADA certification, to have thru-bolted trim, heavy-duty steel I-beam bar, and heavy gauge latch head with reinforced bracket. All lever trims to be free-wheeling, vandal-resistant, and all devices to have deadlocking latchbolts.
 - .2 Finish to be Satin Chrome 626, for complete devices and trim. Functions and trims to be as listed in Hardware Schedule.
 - .3 Specified product: Von Duprin
- .4 Door Closers and Accessories:**
 - .1 Door controls (closers): to meet or exceed ANSI A156.4 Grade 1 requirements; to be heavy duty cast iron bodies with adjustable spring power and have separate valves for latching, closing and backcheck control. All closer arms to be forged steel, with power adjustment arm bracket.
 - .2 All closers are to be non-sized to suit door and opening, and to have full covers with finish 689. Brackets, shoes, and plates are to be included for proper mounting of closers. All closers shall have minimum 10 - year warranty.
 - .3 Specified product: LCN
- .5 Overhead stops/holders:**
 - .1 Door controls (overhead stops/holders): to meet or exceed ANSI A156.8 Grade 1 requirements; to be heavy duty slide track type with heavy duty shock absorber spring and non-metal slide block and shock block, non-handed.
 - .2 To be Type 304 stainless steel material, with 630 finish.

.3 Specified product: Glynn-Johnson

.6 Auxiliary locks:

.1 To meet ANSI A156.16 requirements, to be heavy-duty, and finished in Satin Chrome 626.

.2 Cylinders: Small format I/C core rim or mortise type, finished to 626, for installation in exit device trim provided with doors as listed in Hardware Schedule.

.3 Specified product: Best

.8 Thresholds:

.1 100/127mm wide x full width of door opening, extruded aluminum, serrated surface, barrier free, clear anodized finish.

.2 Specified product: Draft Seal

.9 Door bottom seal:

.1 Extruded aluminum frame and solid closed cell neoprene insert, clear anodized finish.

.2 Specified product: Draft Seal

.10 Weatherstripping:

.1 Head and jamb seal:

.1 Extruded aluminum frame and solid closed cell neoprene insert, clear anodized finish.

.2 Astragals:

.1 Extruded aluminum frame and nylon brush insert, clear anodized finish.

.3 Specified product: Draft Seal

2.3 FASTENINGS

.1 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.

.2 Exposed fastening devices to match finish of hardware.

.3 Use fasteners compatible with material through which they pass.

2.4 KEYING

.1 All locksets and exit device trims to have Small Format I/C core cylinders to suit, and be keyed under existing master key system for HRCE. Cylinders to be keyed differently, keyed alike, keyed alike in groups, master keyed or grandmaster keyed as directed. Prepare detailed keying schedule in conjunction with owner's representative.

.2 Provide three (3) change keys for every lock in this Contract.

Part 3 – Execution

3.1 INSTALLATION INSTRUCTIONS

.1 Furnish metal door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.

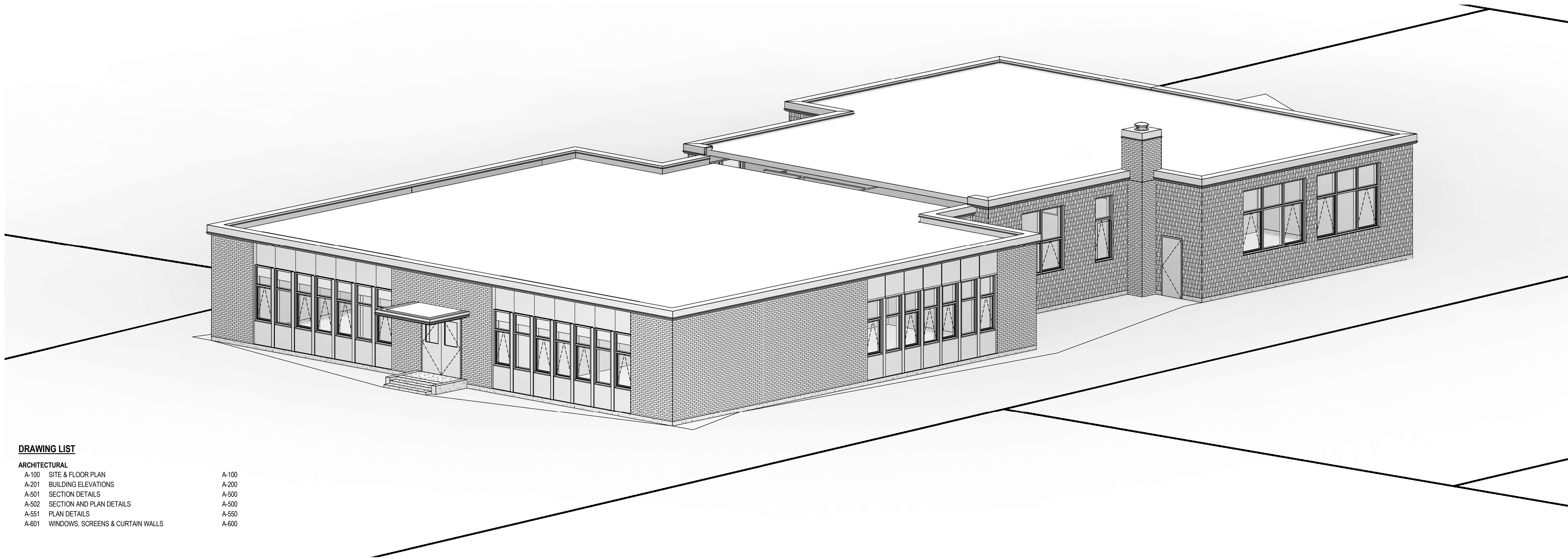
.2 Furnish manufacturer's instructions for proper installation of all hardware components.

- .3 Install hardware to standard hardware location dimensions in accordance with Canadian Imperial Guide for Steel Doors and Frames (Modular Construction) prepared by Canadian Steel Door and Frame Manufacturers' Association.
- .4 Where door stop contacts door pulls, mount stop to strike bottom of pull.

3.2 SCHEDULE

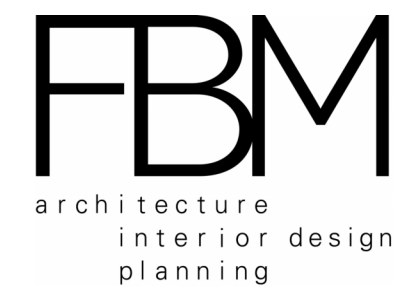
- .1 Hardware Set # H-1 - Double Vestibule Doors; to have:
 - 1. 2 Continuous Hinges Ives 027XY x 83" - US28
 - 2. 1 Exit Device Von Duprin CD-98L-NL x 996L-NL-03 x 36" dr. x RHR - 628
 - 3. 1 Exit Device Von Duprin CD-98L-DT x 996L-DT-03 x 299 x 36" dr. x LHR - 628
 - 4. 1 Rim Cylinder Schlage 20-021 x MK'd - 626
 - 5. 3 Mortise Cylinders Schlage 20-001 x 1 ¼" x cam to suit x MK'D - 626
 - 6. 2 Door Closers LCN 4050 Rw/PA-REG x T/J mtg. x TB/SN - 689
 - 7. 2 Mounting Plates LCN 4050-18G - 689
 - 8. 2 Conc. O/H Door Stops Glynn-Johnson 104S x SHIM2 x 95 deg. - 630
 - 9. 1 Threshold DraftSeal DS501TB x 72" - Alum
 - 10. 1 Electric Strike Von Duprin 6111 FSE x 12/24V x RHR dr. - 630
 - 11. 1 Power Supply Von Duprin PS902 x 900-2RL x 900-BBK
 - 12. 2 Door Contacts GRI 195-12WG DPDT - G
 - 13. Weatherstrip, astragals & door sweeps - supplied by aluminum door supplier

END OF SECTION



DRAWING LIST

ARCHITECTURAL	
A-100	SITE & FLOOR PLAN
A-201	BUILDING ELEVATIONS
A-501	SECTION DETAILS
A-502	SECTION AND PLAN DETAILS
A-551	PLAN DETAILS
A-601	WINDOWS, SCREENS & CURTAIN WALLS
A-100	
A-200	
A-500	
A-500	
A-550	
A-600	



HS1-1050 Hollis Street
Halifax, Nova Scotia, B3J 1V7
Canada

T: (902) 429-4100
architects@fbm.ca
fbm.ca

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PROJECT NAME:

SUNNYSIDE ELEMENTARY - WINDOW REPLACEMENT

21 PERTH ST, BEDFORD, NS B4A 2H1

ISSUED FOR TENDER

CLIENT:



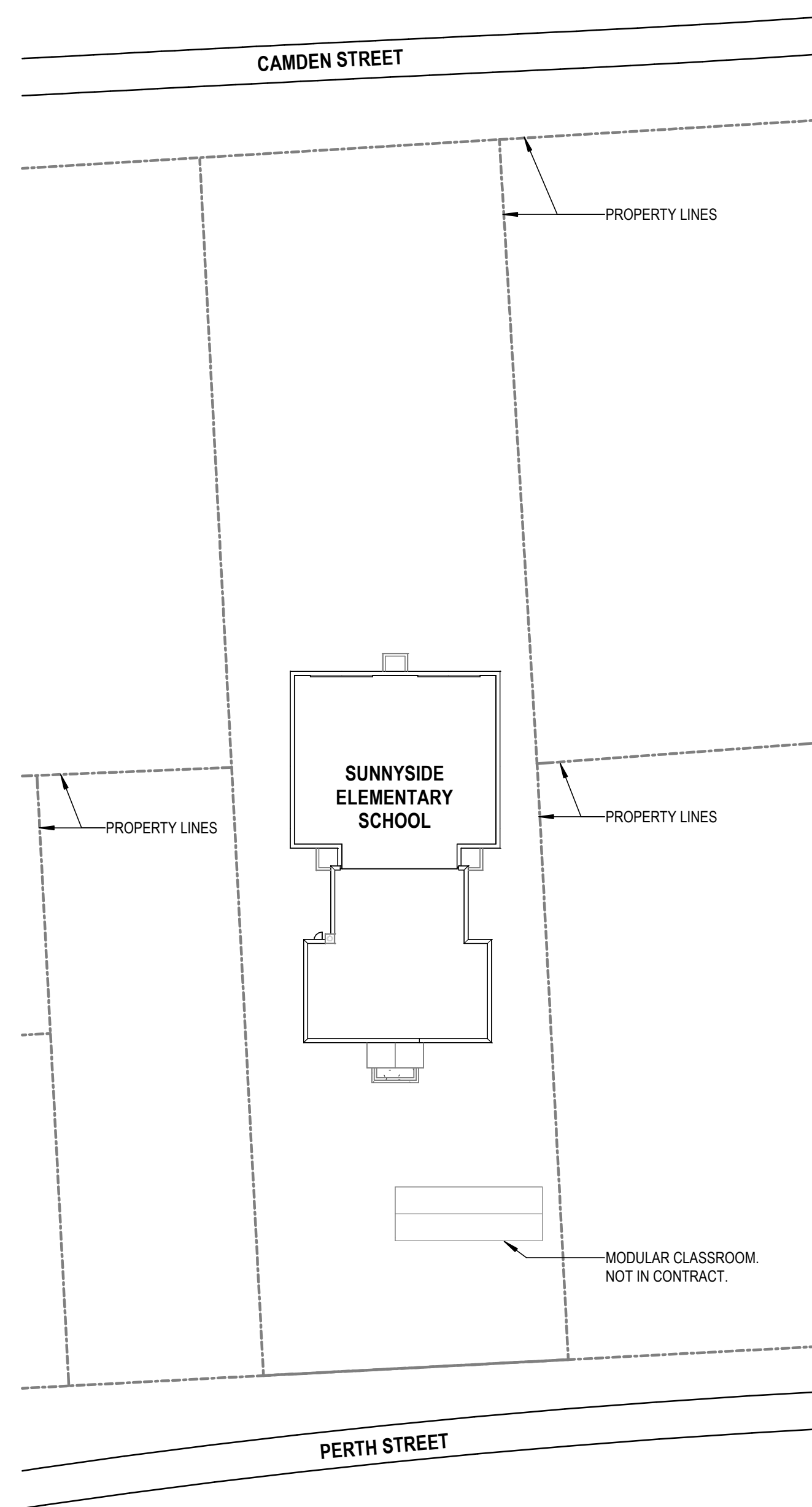
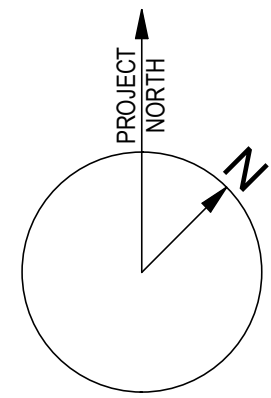
FBM PROJECT NO.: 2023-059 DATE: 29 MAY 2024

GENERAL NOTES

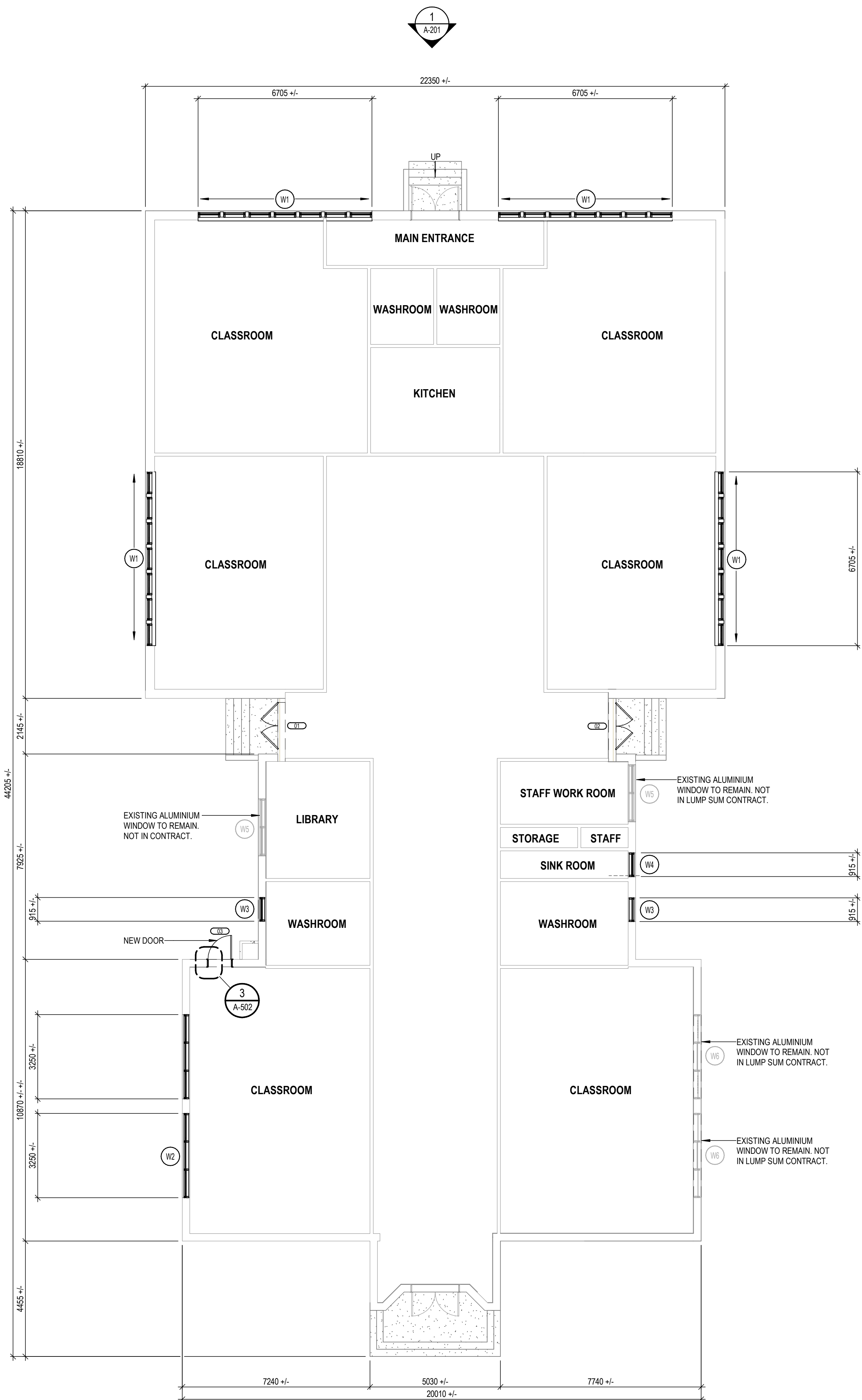
- CONTRACTOR TO MAKE GOOD ALL EXISTING SURFACES AND FINISHES AFFECTED BY THE WINDOW AND EXTERIOR WALL REMOVAL WORK AS DETAILED AND/OR IMPLIED BY THE DRAWINGS. WHERE NECESSARY TO REPAIR TO MATCH ADJACENT MATERIALS AND FINISHES. EXTEND PATCH TO NEAREST NATURAL BREAK POINT (i.e. INSIDE CORNER, EXIST. JOINT OR LOCATION APPROVED BY THE ARCHITECT).
- CONTRACTOR TO PROTECT AND MAINTAIN THE INTEGRITY OF EXISTING FINISHES IN ALL AREAS NOT SCHEDULED FOR DEMOLITION WORK. ANY DAMAGE DUE TO DEMOLITION AND/OR NEW CONSTRUCTION TO BE REPAIRED AND MADE GOOD.
- DO NOT ALLOW ANY ADHESIVE ODOURS AND OTHER FUMES FROM CONSTRUCTION ACTIVITIES TO ENTER MECHANICAL SYSTEMS.
- REMOVE EXTERIOR WALL CONSTRUCTION AND WINDOWS WHERE INDICATED FOR REMOVAL, INCLUDING TRIMS, CLIPS, FLASHINGS, SEALANTS, FASTENERS.
- CONTRACTOR TO REMOVE AND LAWFULLY DISPOSE OFF SITE ALL RUBBISH AND DEBRIS RESULTING FROM CONSTRUCTION. KEEP PROJECT AREA BROOM CLEAN. WHENEVER APPLICABLE, ALL DEMOLITION AND CONSTRUCTION DEBRIS TO BE SORTED AND TAKEN TO APPROPRIATE FACILITIES FOR RECYCLING.
- CONTRACTOR TO REPAIR AND MAKE GOOD ALL EXISTING FLOORS, WALLS, AND CEILINGS THAT ARE TO REMAIN AFTER DEMOLITION AND PREPARE SURFACES TO RECEIVE NEW FINISHES.
- ALLOW FOR PROPER VENTILATION OF THE PREMISES DURING THE WORK.
- CONTRACTOR IS RESPONSIBLE FOR THE DESIGN, COORDINATION AND EXECUTION OF CONSTRUCTION METHODS, PROCEDURES AND SCHEDULES. THE OPERATIONAL PROCEDURES AND METHODS ARE THE RESPONSIBILITY OF THE CONTRACTOR INsofar AS THEY DO NOT PRESENT HAZARDS TO PERSONNEL OR PROPERTY OR INFRINGE ON WORK SCHEDULES FOR NORMAL SITE ACTIVITY.
- REPORT ANY HAZARDOUS MATERIALS FOUND ON SITE TO HRCE PROJECT MANAGER.
- GREY SHADED COMPONENTS ARE NOT PART OF THE WORK OF THIS CONTRACT.
- VERIFY ALL DIMENSIONS ON SITE PRIOR TO PROCEEDING WITH WORK. NOTIFY HRCE OF ANY DISCREPANCIES BETWEEN AS FOUND CONDITIONS AND THE CONTRACT DOCUMENTS IMMEDIATELY UPON DISCOVERY OF SUCH CONDITIONS.

HAZARDOUS BUILDING MATERIALS

- HAZARDOUS BUILDING MATERIALS HAVE BEEN IDENTIFIED, WHICH AFFECTS THE WORK OF THIS PROJECT. HAZARDOUS MATERIALS IDENTIFIED INCLUDE ASBESTOS CONTAINING MATERIALS (DRYWALL, PLASTER, CAULKING, ETC.), LEAD CONTAINING MATERIALS (PAINT), AND OTHERS. REFER TO HAZARDOUS BUILDING MATERIALS ASSESSMENT REPORT, PREPARED BY PINCHIN, DATED APRIL 18, 2023, FOR INFORMATION REGARDING IDENTIFIED MATERIALS AND LOCATIONS.
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- COORDINATE ALL REMOVAL/ABATEMENT WORK WITH HRCE.



1 SITE PLAN
A-100 SCALE: 1:500



2 FLOOR PLAN
A-100 SCALE: 1:100

No	REVISION	BY	DATE
0	ISSUED FOR TENDER		28JAN24

STAMP			

SCALE	As indicated
DRAWN	SL
CHECKED	SD
DATE	29 MAY 2023

PROJECT
SUNNYSIDE ELEMENTARY - WINDOW REPLACEMENT

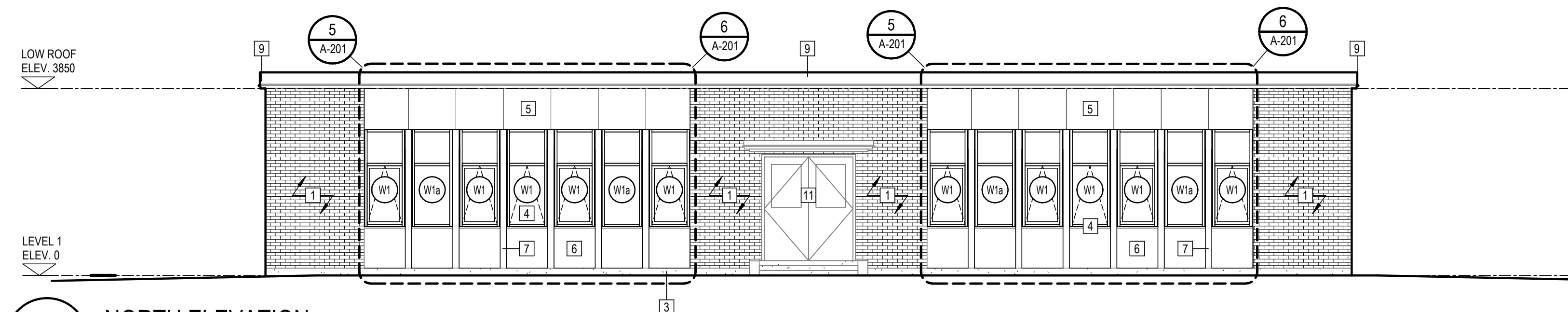
21 PERTH ST, BEDFORD, NS B4A 2H1

CLIENT
HRCE

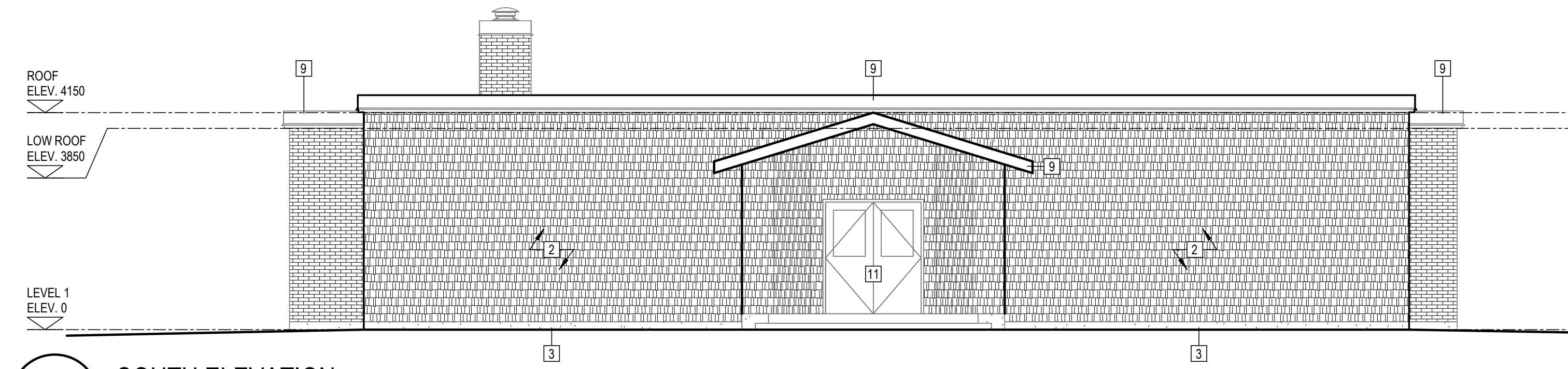
PROJECT No. 2023-059

SHEET TITLE
SITE & FLOOR PLAN

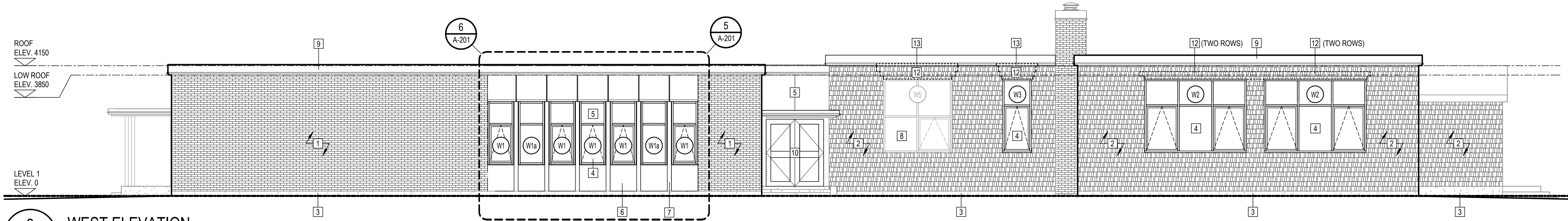
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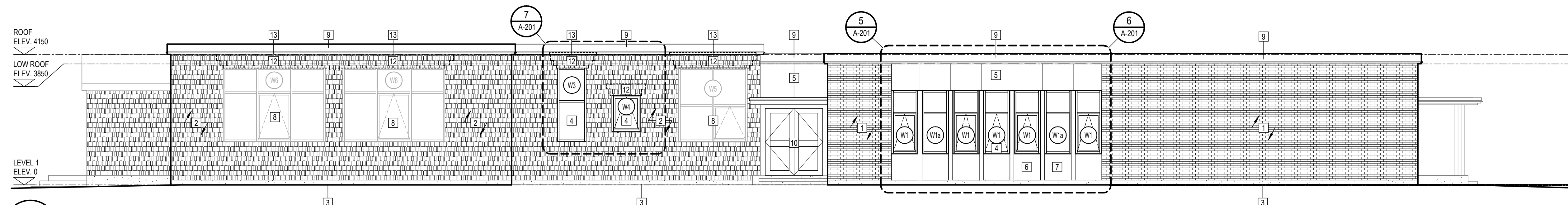
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A-201 SCALE: 1:75



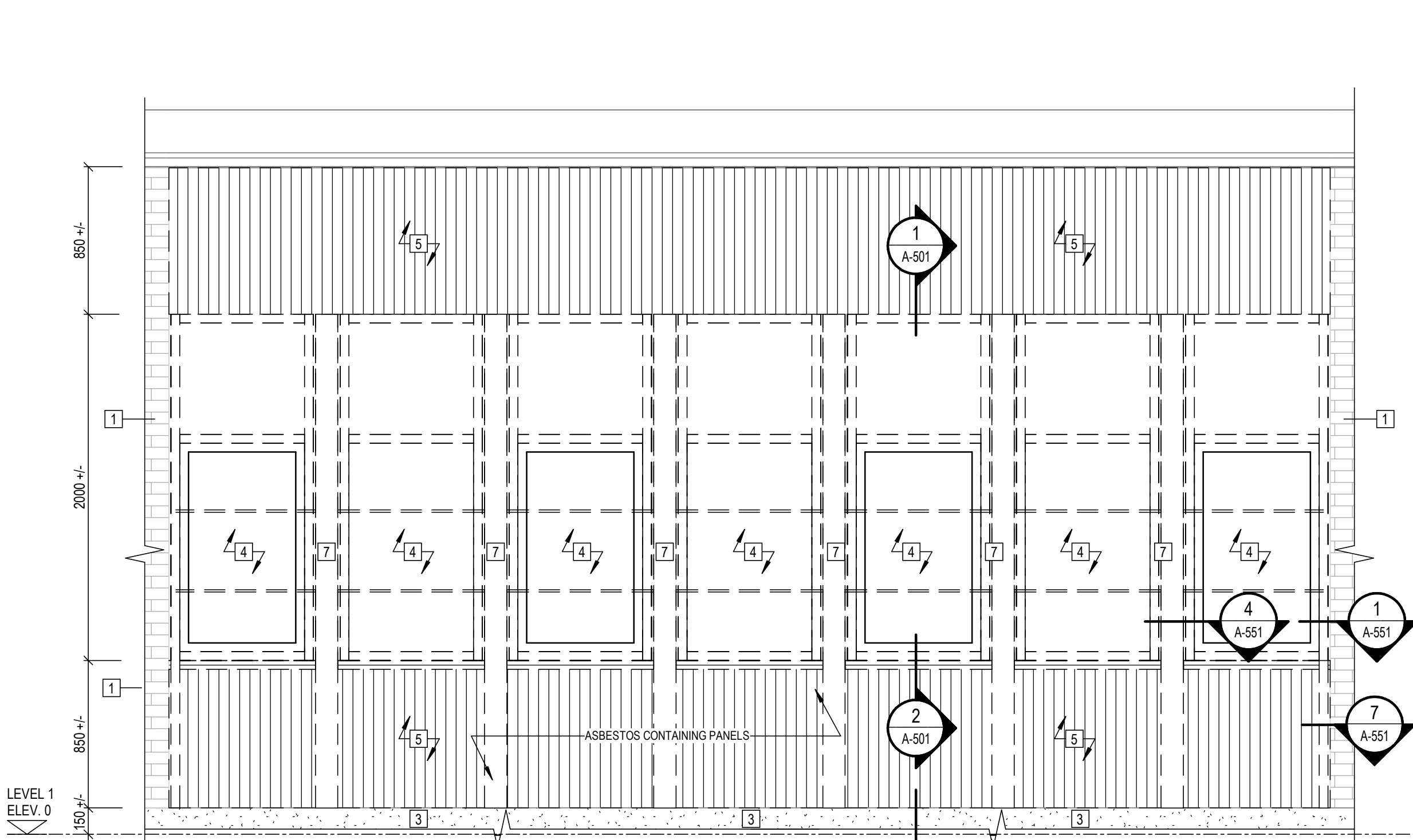
2 SOUTH ELEVATION
A-201 SCALE: 1:75



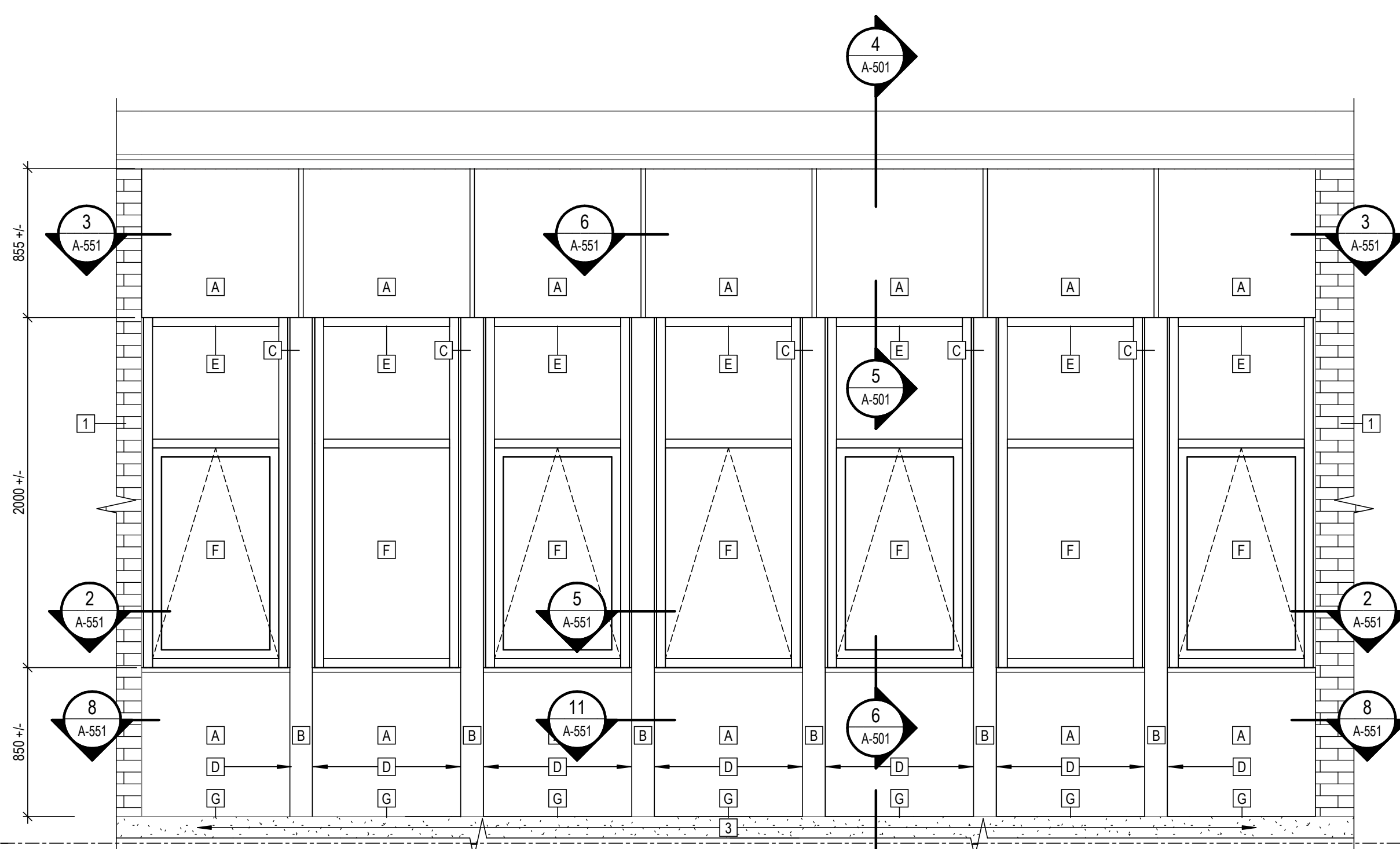
3 WEST ELEVATION
A-201 SCALE: 1:75



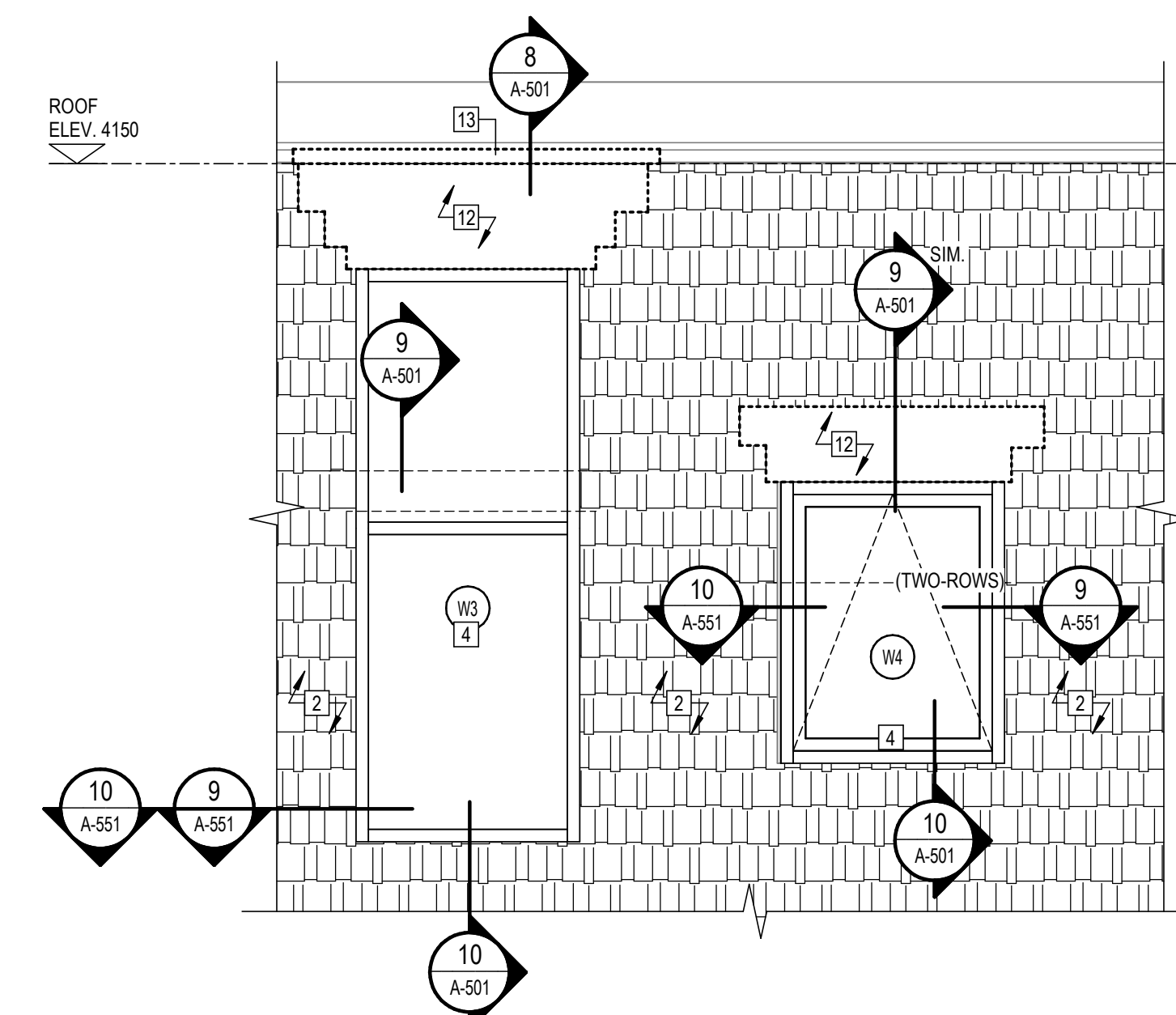
4 EAST ELEVATION
A-201 SCALE: 1:75



6 ENLARGED ELEVATION AT W1 - EXISTING AND DEMOLITION
A-201 SCALE: 1:25



5 ENLARGED ELEVATION AT W1 - NEW CONSTRUCTION
A-201 SCALE: 1:25



7 ENLARGED ELEVATION AT SHINGLE REMOVAL
A-201 SCALE: 1:25

GENERAL NOTES

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KEYNOTE LEGEND

- 1 EXISTING BRICK VENEER, TO REMAIN
- 2 EXISTING CEDAR SHINGLES, TO REMAIN
- 3 EXISTING CONCRETE FOUNDATION, TO REMAIN
- 4 EXISTING WOOD WINDOW, REMOVE AND REPLACE
- 5 EXISTING WOOD PANEL CLADDING, REMOVE AND REPLACE WITH ALUMINUM PANELS
- 6 EXISTING CEMENTITIOUS PANELS (TRANSITE); REMOVE AND REPLACE WITH ALUMINUM PANELS
- 7 EXISTING WOOD TRIM BETWEEN WINDOWS; REMOVE AND REPLACE WITH ALUMINUM PANELS
- 8 EXISTING ALUMINUM WINDOW, TO REMAIN. THIS WINDOW IS NOT INCLUDED IN THE CONTRACT. HOWEVER, PROVIDE SEPARATE PRICE FOR ITS REPLACEMENT WITH BID. REFER TO A-501 FOR REPLACEMENT WINDOW TYPE.
- 9 EXISTING METAL FASCIA, TO REMAIN
- 10 EXISTING WOOD DOOR, REMOVE AND REPLACE WITH ALUMINUM DOOR
- 11 EXISTING ALUMINUM DOOR, TO REMAIN
- 12 REMOVE EXISTING CEDAR SHINGLES TO ALLOW MEMBRANE INSTALL AT WINDOW HEAD. WEAVE NEW CEDAR SHINGLE (PAINTED TO MATCH EXISTING AND FASTENED WITH STAINLESS STEEL NAILS).
- 13 REMOVE PORTION OF EXISTING FRIEZE BOARD TO ALLOW CEDAR SHINGLES REMOVAL/REPLACEMENT; REPLACE WITH NEW FRIEZE BOARD; PAINTED TO MATCH EXISTING

ELEVATION LEGEND

- A COMPOSITE ALUMINUM PANEL, COMPLETE WITH GIRT SUPPORT SYSTEM, INSULATION, AND AIR BARRIER MEMBRANE.
- B COMPOSITE ALUMINUM PANEL TRIM, WITH 25mm PROJECTION BEYOND SURROUNDING PANELS
- C 13mm PANEL JOINT, TYPICAL AT UPPER PANELS
- D 6mm PANEL JOINT, TYPICAL AT LOWER PANELS
- E PRE-FINISHED METAL THROUGH-WALL FLASHING
- F ALUMINUM CURTAINWALL FRAMED WINDOWS WITH 25mm INSULATED GLAZING UNITS
- G PRE-FINISHED METAL BASE FLASHING OVER EXISTING CONC. FOUNDATION WALL.

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No	REVISION	BY	DATE
0	ISSUED FOR TENDER		28JAN24

SCALE AS NOTED
DRAWN SL
CHECKED SD
DATE 29 MAY 2023

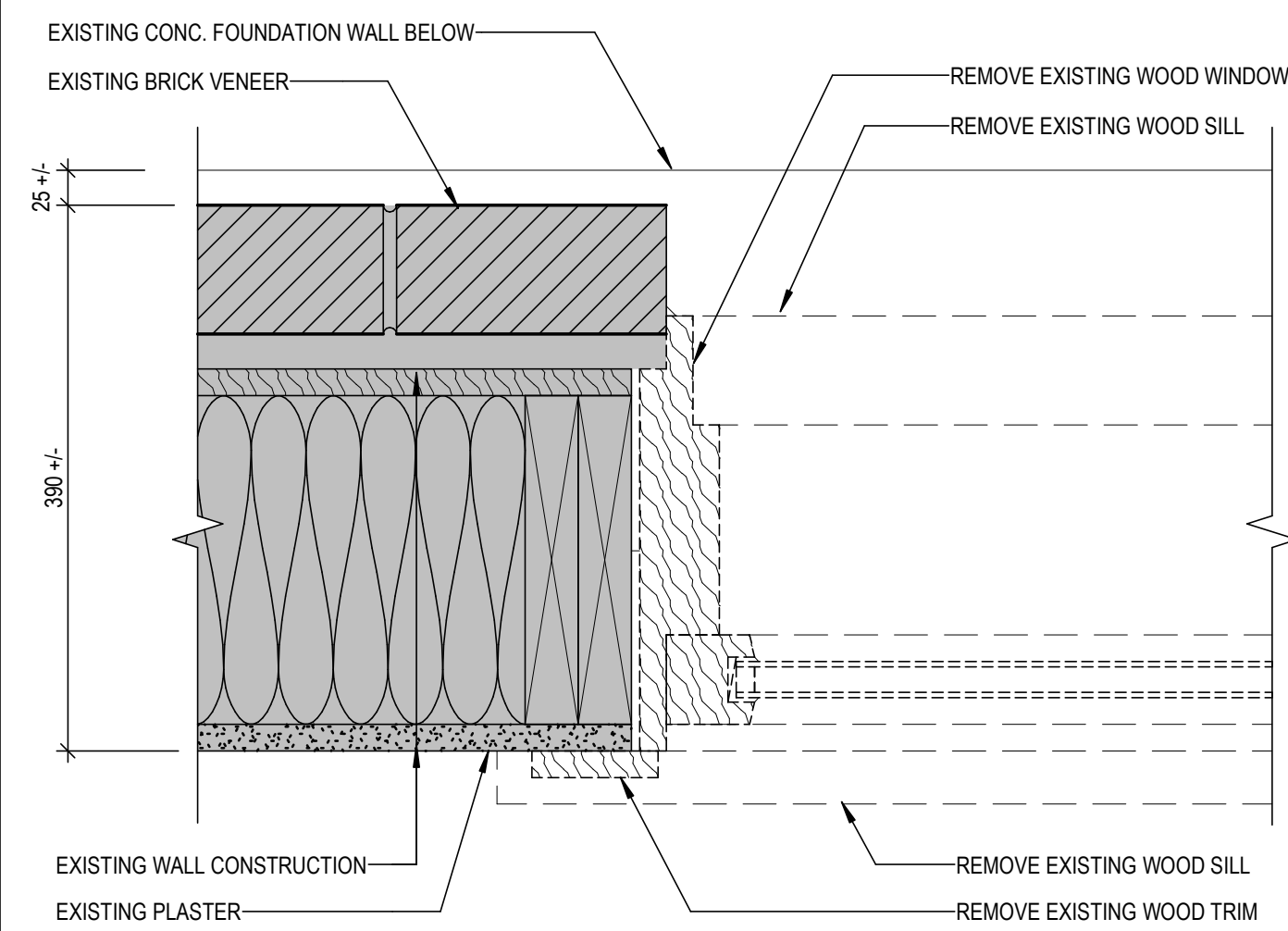
PROJECT SUNNYSIDE ELEMENTARY - WINDOW REPLACEMENT

21 PERTH ST, BEDFORD, NS B4A 2H1
CLIENT HRCE

PROJECT No: 2023-059

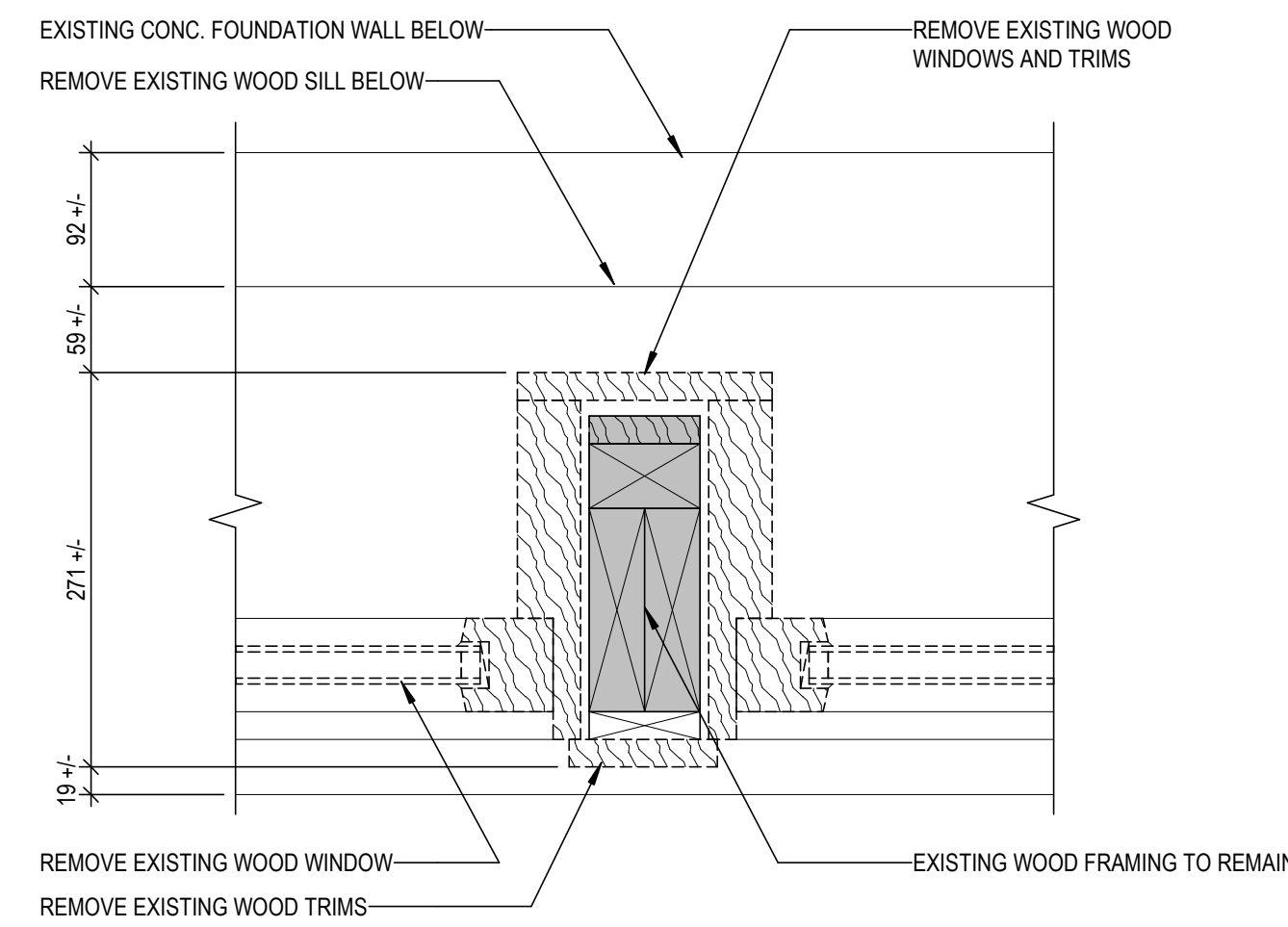
SHEET TITLE BUILDING ELEVATIONS

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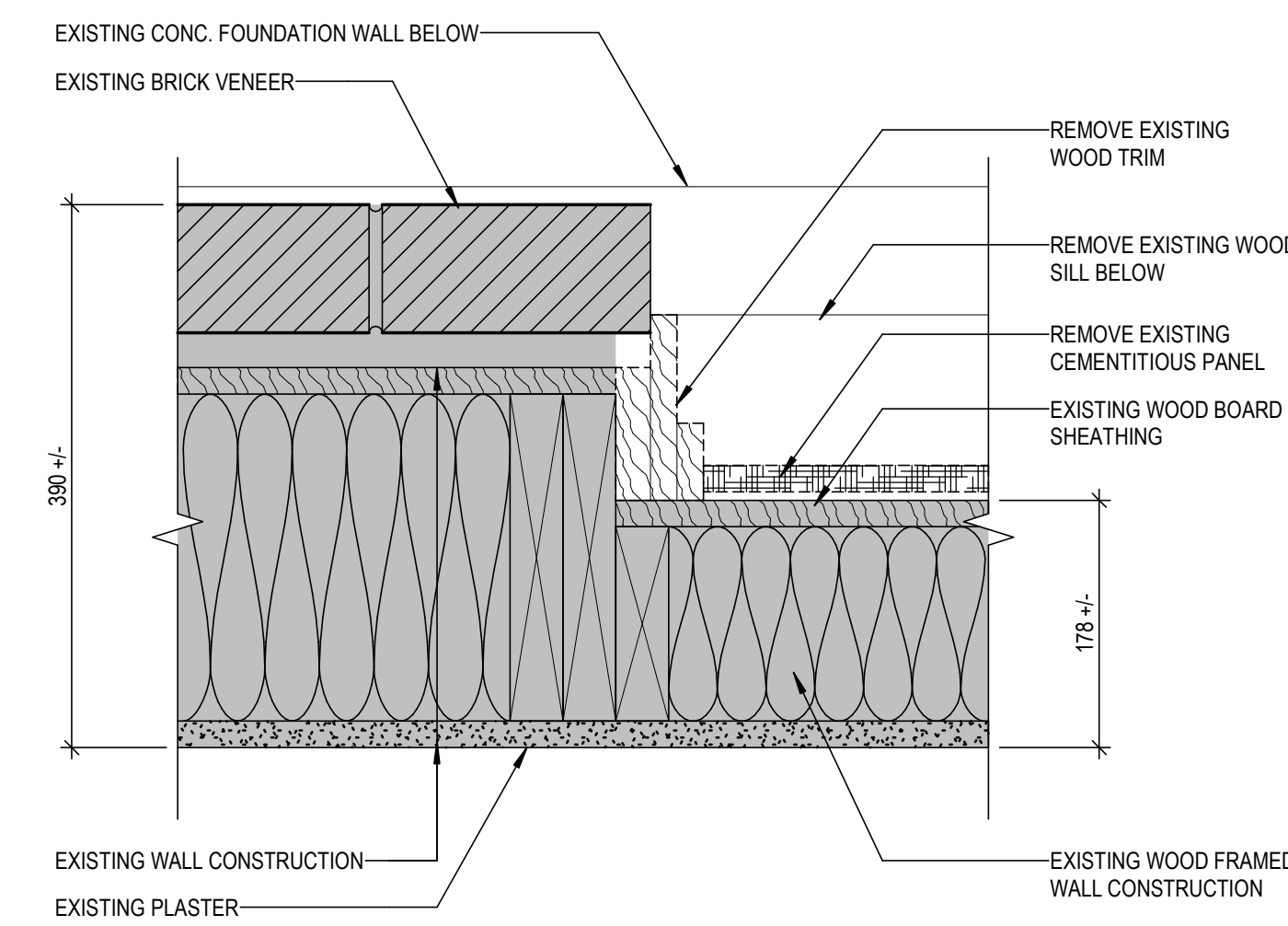
1 W1 JAMB AT BRICK VENEER (EXISTING)

A-551 SCALE: 1:5



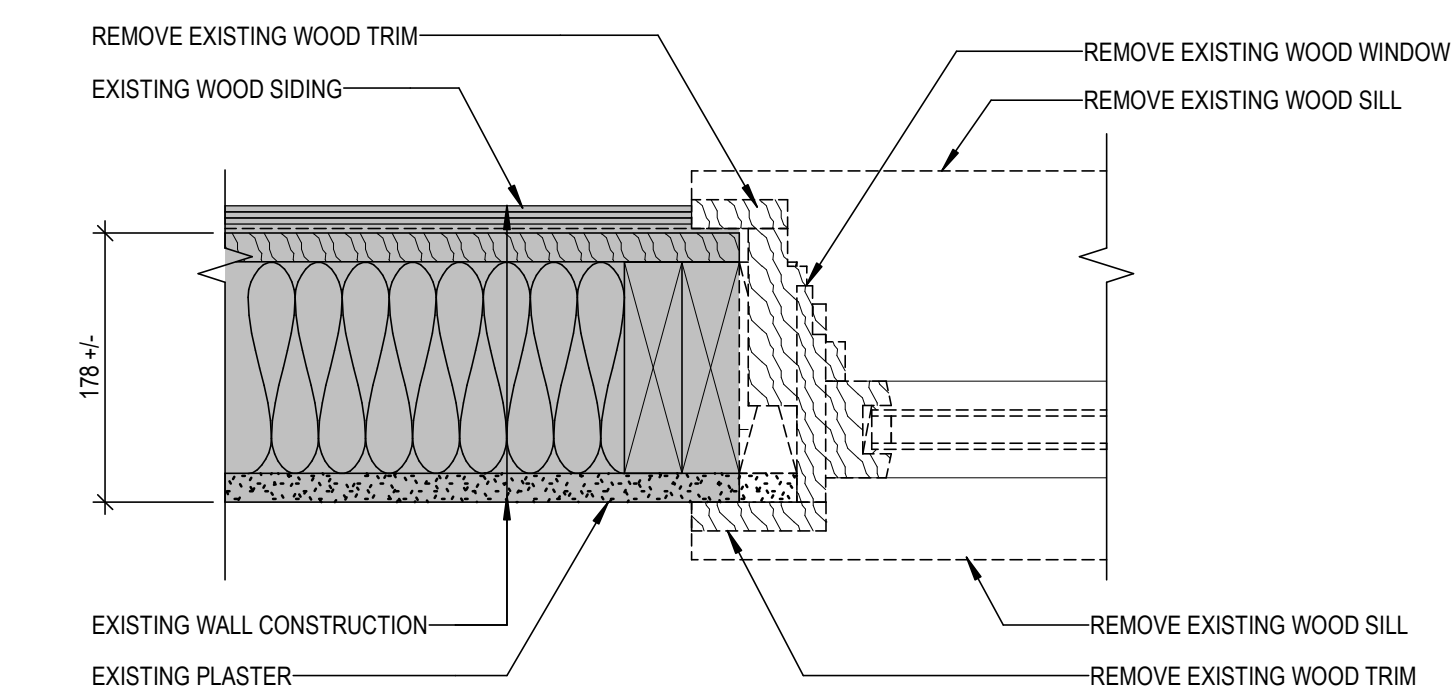
4 W1 JAMB AT WOOD FRAMING (EXISTING)

A-551 SCALE: 1:5



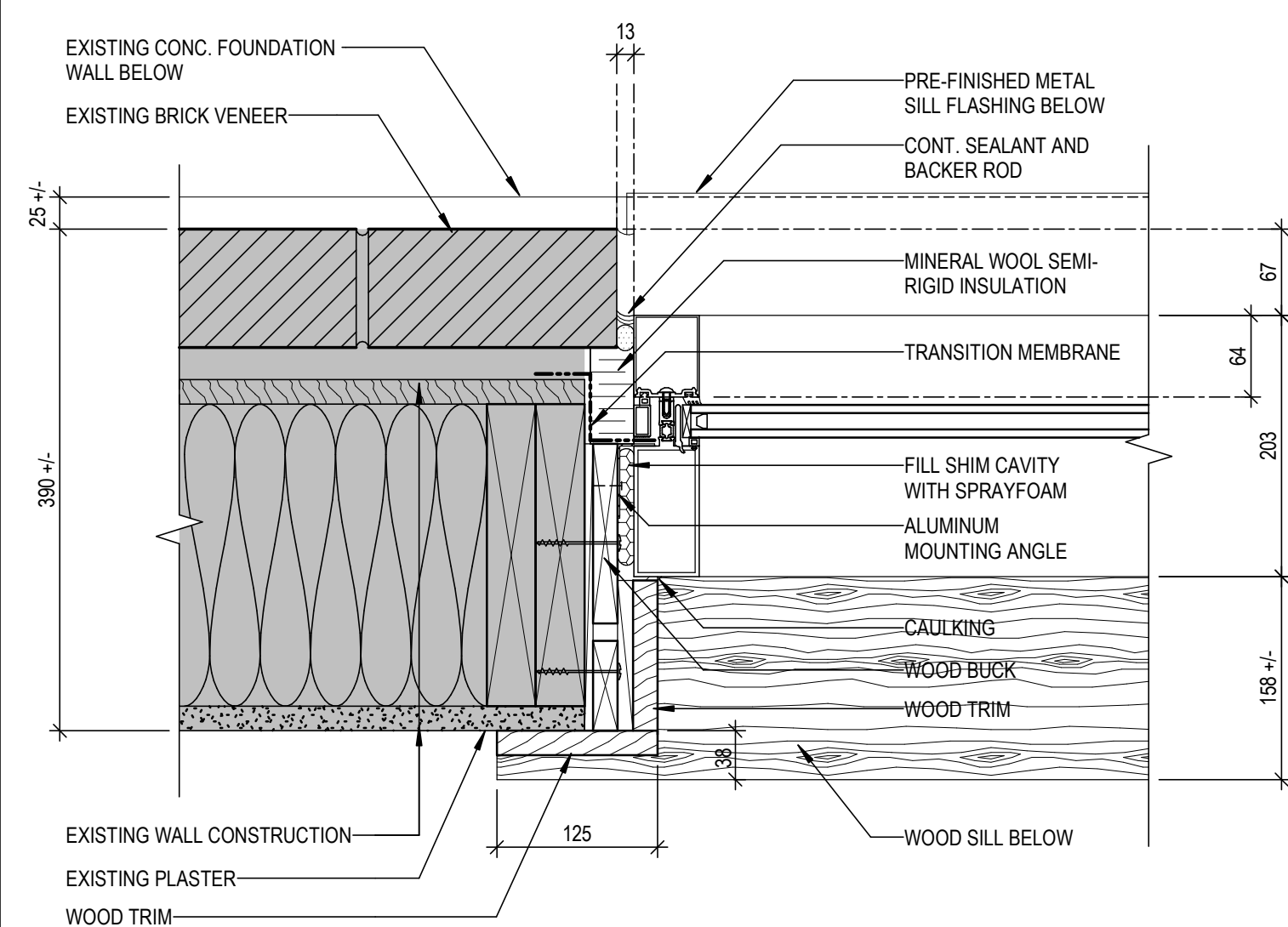
7 BRICK VENEER AT CEMENTITIOUS PANEL (EXISTING)

A-551 SCALE: 1:5



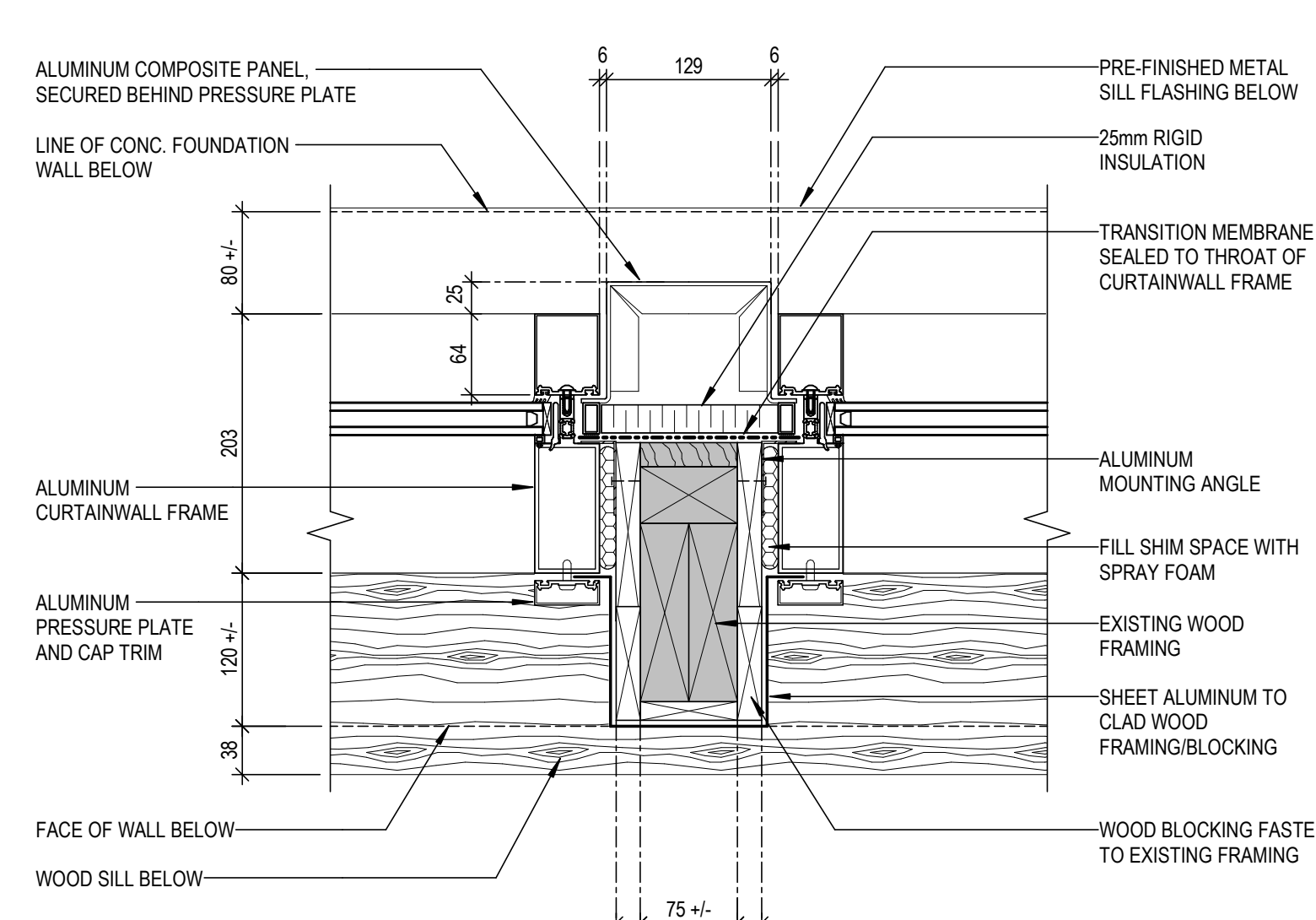
10 WINDOW JAMB AT WOOD SIDING TYPICAL (EXISTING)

A-551 SCALE: 1:5



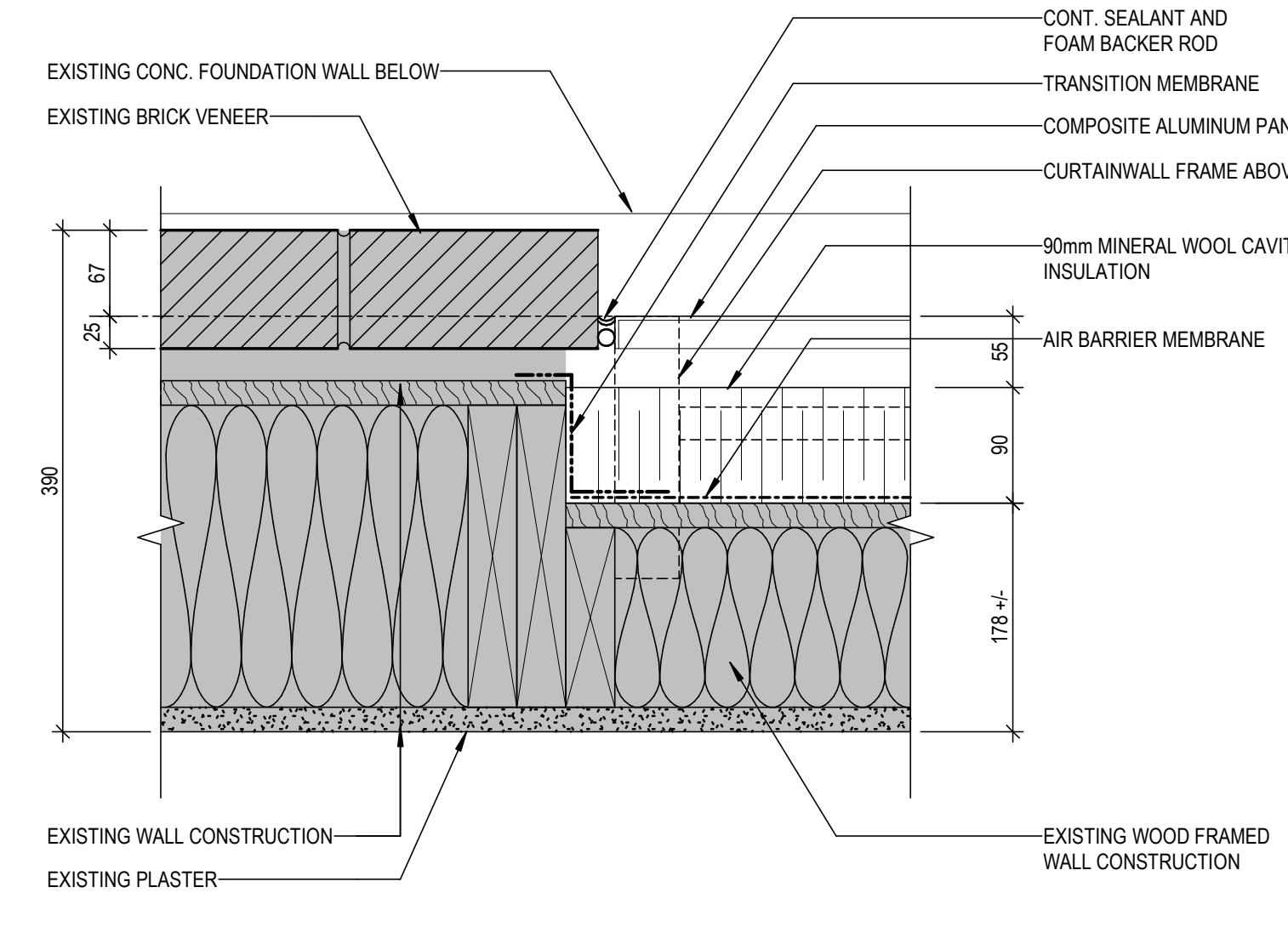
2 W1 JAMB AT BRICK VENEER

A-551 SCALE: 1:5



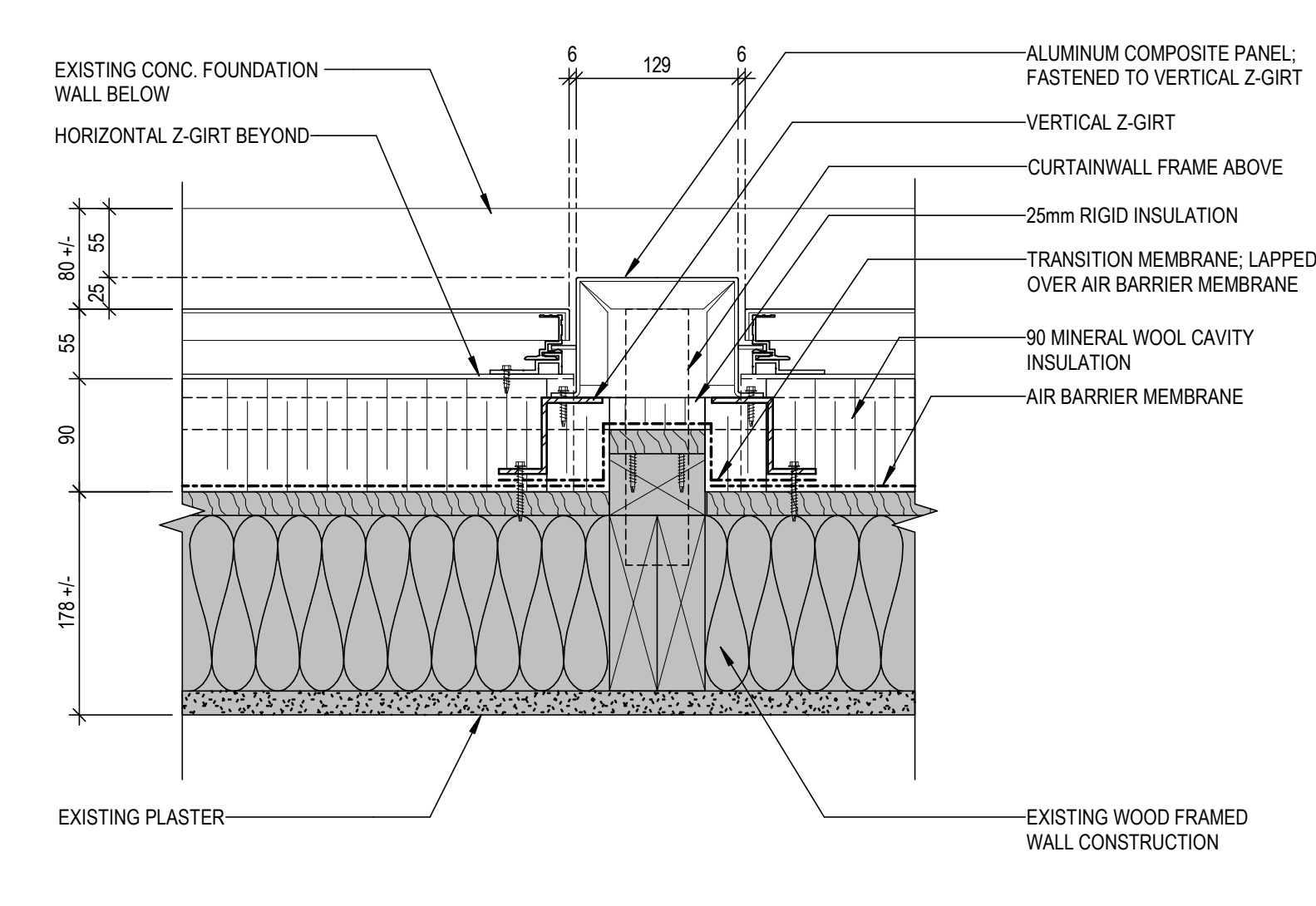
5 W1 JAMB AT WOOD FRAMING

A-551 SCALE: 1:5



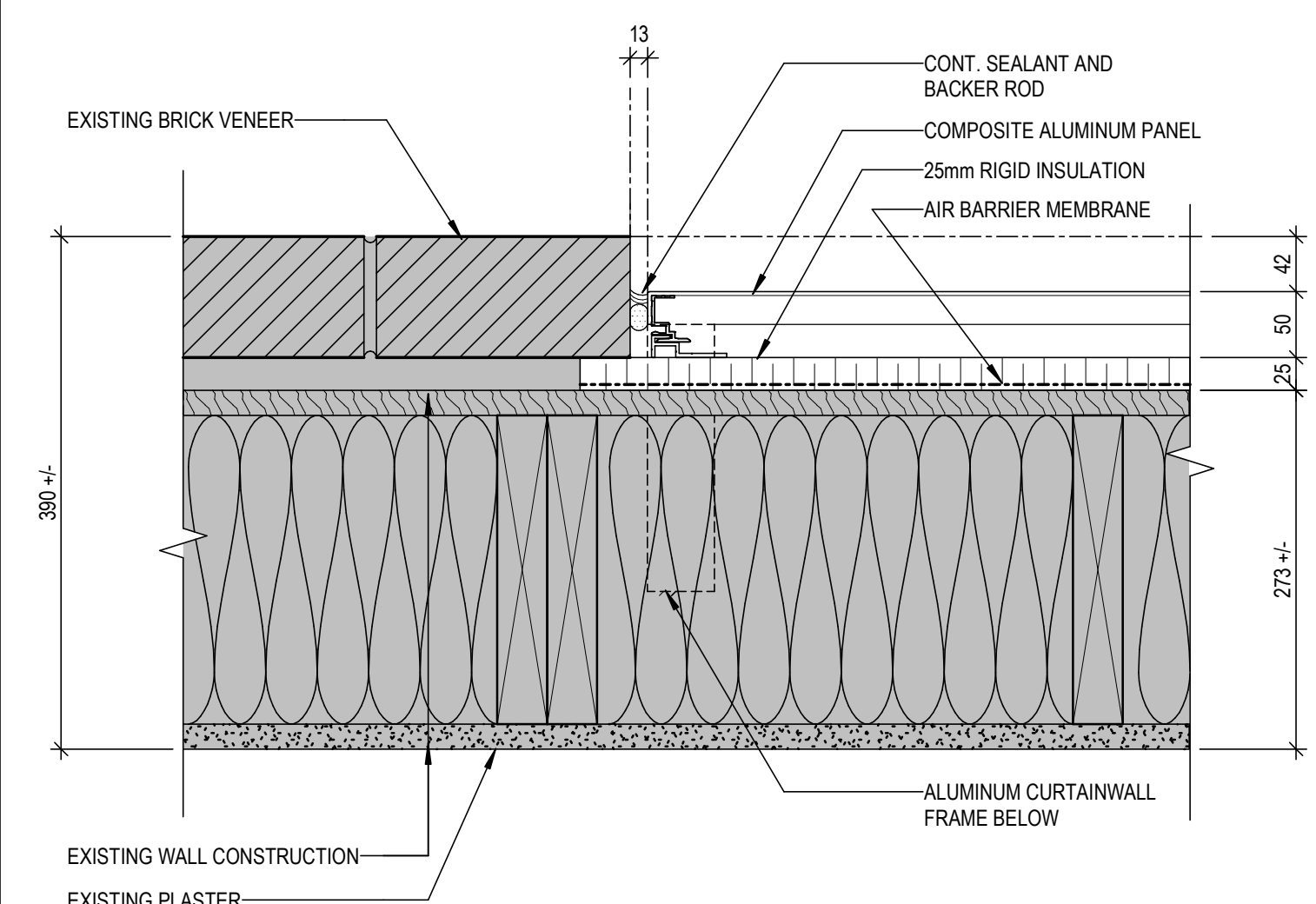
8 ALUMINUM PANEL AT BRICK VENEER (BELOW W1 WINDOW)

A-551 SCALE: 1:5



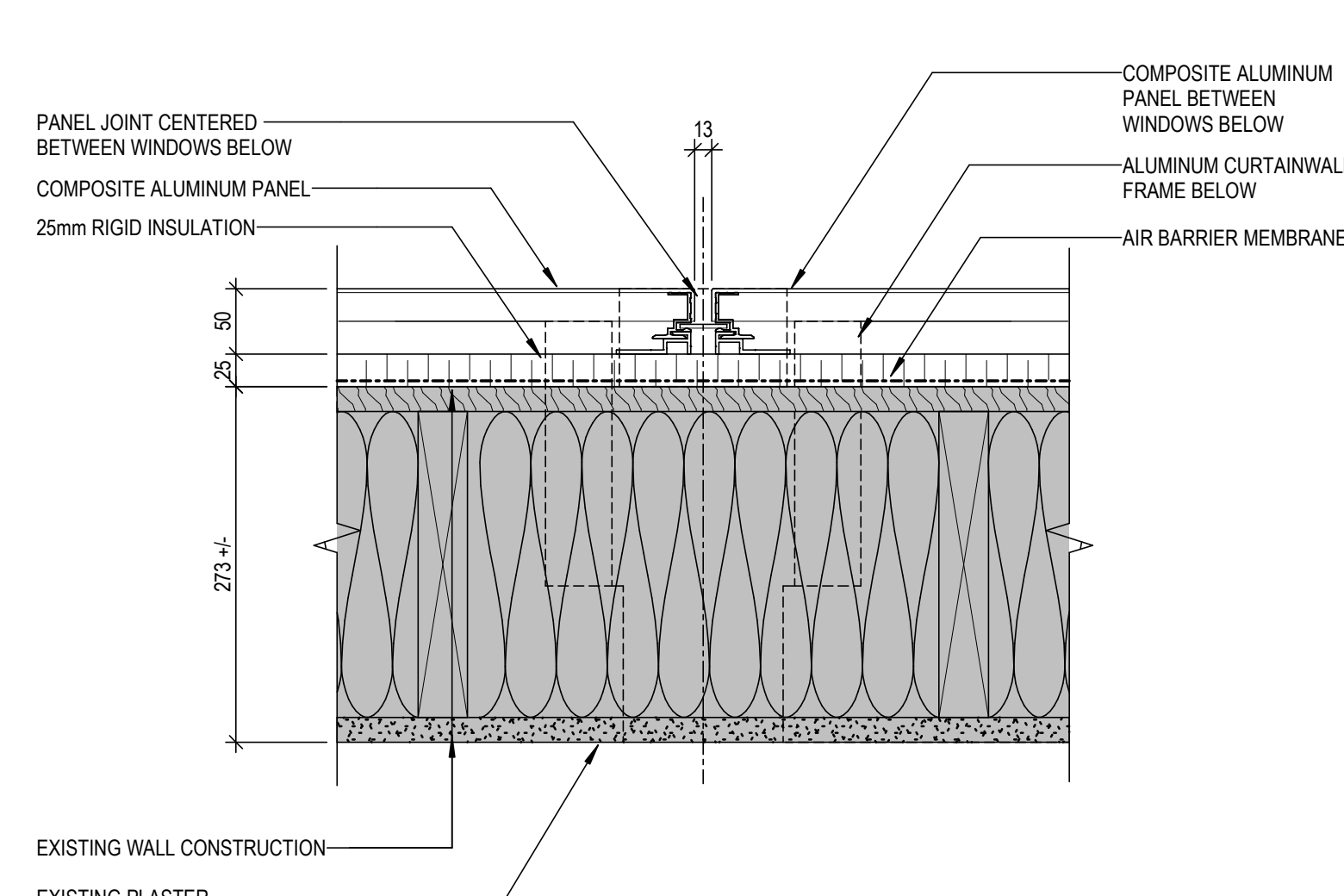
11 ALUMINUM PANEL AT WOOD FRAMING (BELOW W1 WINDOW)

A-551 SCALE: 1:5



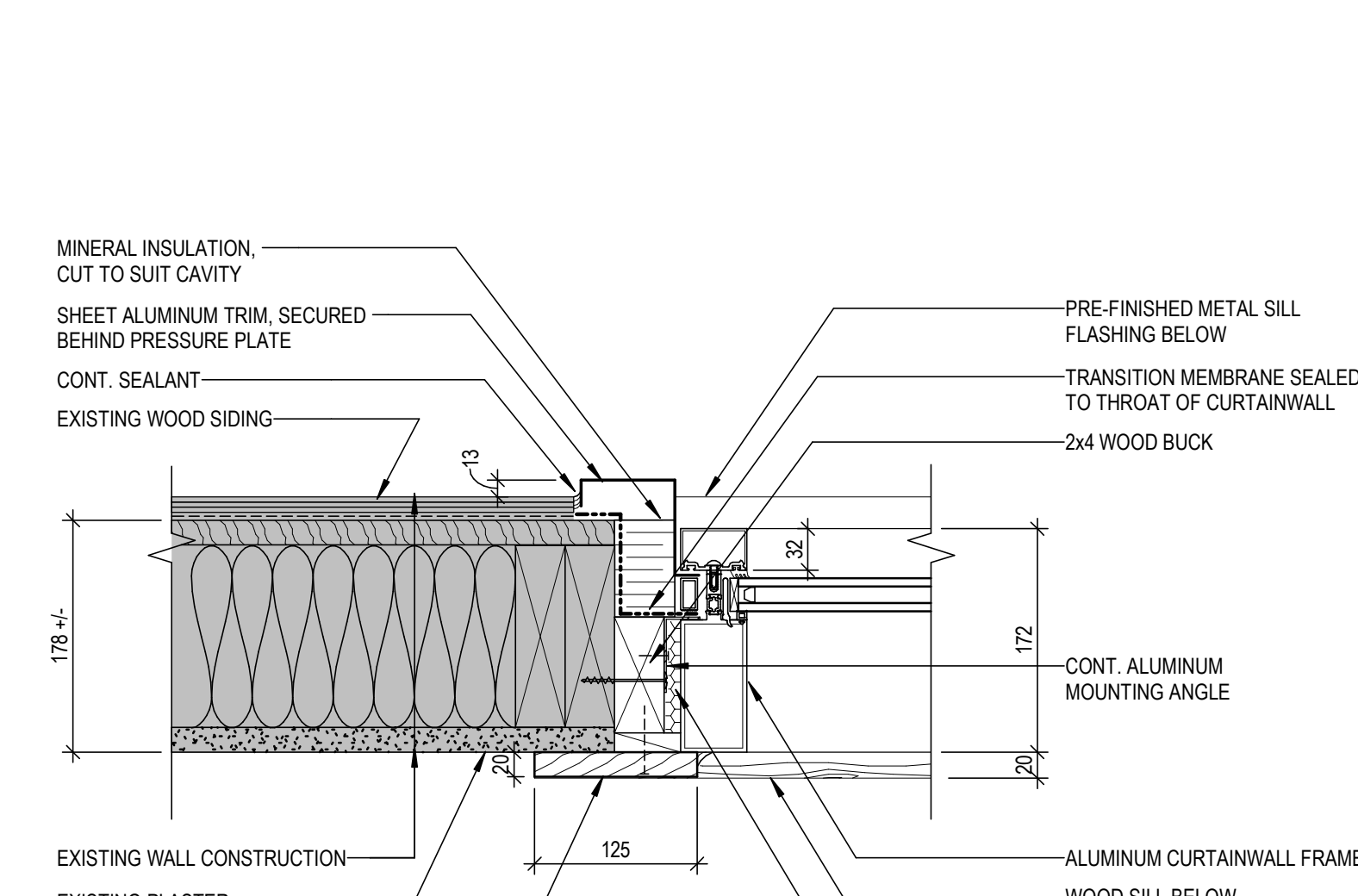
3 ALUMINUM PANEL AT BRICK VENEER (ABOVE W1 WINDOW)

A-551 SCALE: 1:5



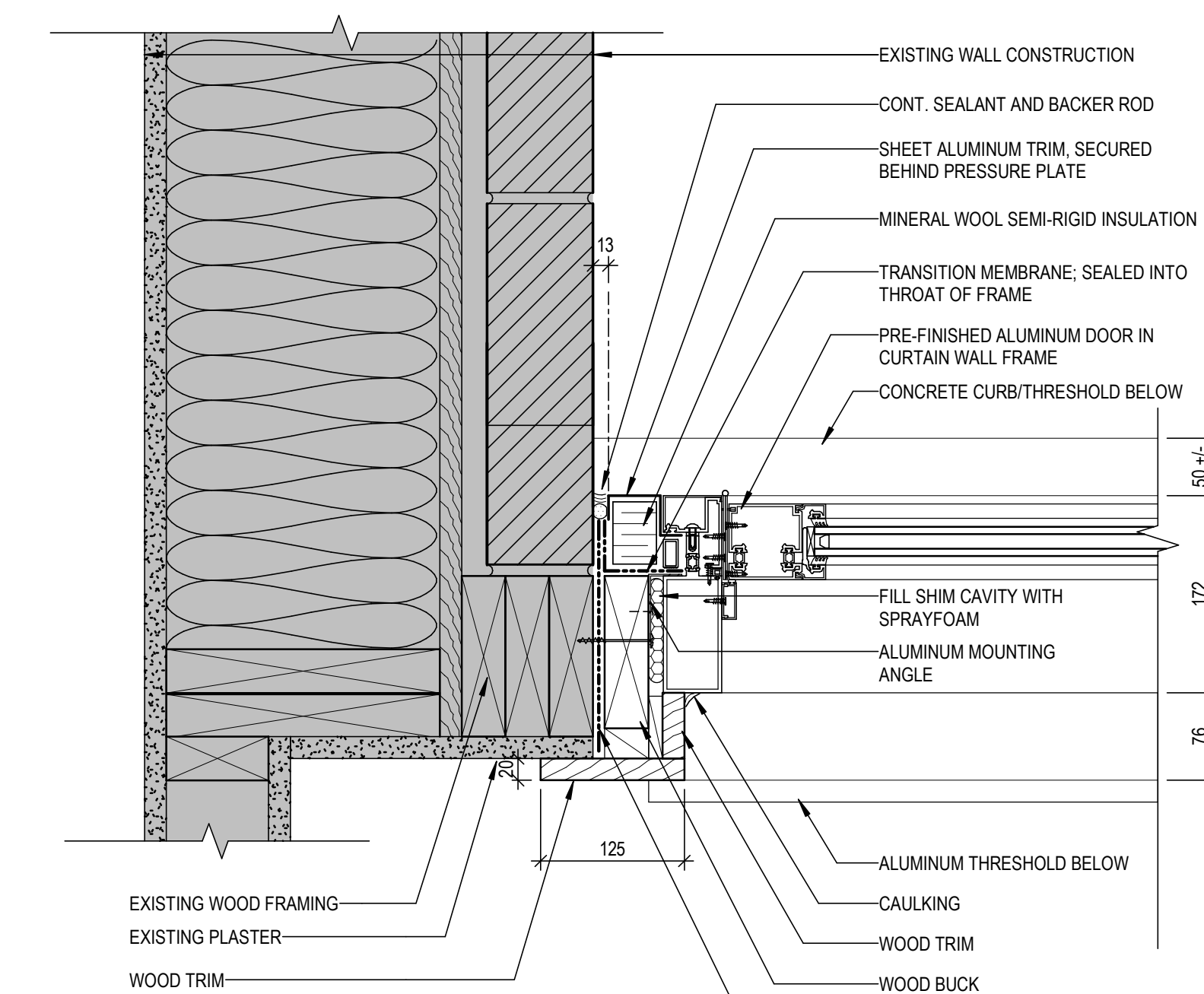
6 ALUMINUM PANEL (ABOVE W1 WINDOW)

A-551 SCALE: 1:5



9 W2, W3, W4 JAMB (TYPICAL AT WOOD SIDING)

A-551 SCALE: 1:5



12 DOOR 01 & 02 AT JAMB

A-551 SCALE: 1:5

No	REVISION	BY	DATE
0	ISSUED FOR TENDER		28JAN24

SCALE	1:5
DRAWN	SD
CHECKED	
DATE	29 MAY 2023
PROJECT	SUNNYSIDE ELEMENTARY - WINDOW REPLACEMENT
CLIENT	21 PERTH ST, BEDFORD, NS B4A 2H1
HRCE	
PROJECT No	2023-059
SHEET TITLE	PLAN DETAILS
A-551	

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 1/29/2024 11:52 AM



Halifax
Regional Centre for Education