Request for Quotations

For

Sir Winston Churchill Public School Windows Replacement

Request for Quotations No.: **MA22-4778**

Issued: **June 23, 2022**

Submission Deadline**: July 11, 2022, at 3:00 PM local time**

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PART 1 – INVITATION AND SUBMISSION INSTRUCTIONS

1.1 Invitation to Respondents

This Request for Quotations (the "RFQ") is an invitation by Peel District School Board ("the Board") to a group of pre-qualified respondents to submit non-binding quotations for **Sir Winston Churchill Public School Window Replacement**, as further described in Section A of the RFQ Particulars (Appendix D) (the "Deliverables").

The Board operates 215 elementary schools and 42 secondary schools with a total enrolment of approximately 155,000 students. The Board has a full-time staff complement of approximately 18,020. The Board's jurisdiction includes the Town of Caledon, City of Brampton and City of Mississauga. For further information about the Peel District School Board, please visit http://www.peelschools.org.

1.2 RFQ Contact

For the purposes of this procurement process, the "RFQ Contact" will be:

John Marinescu
john.marinescu@peelsb.com

Respondents and their representatives are not permitted to contact any employees, officers, agents, elected or appointed officials or other representatives of the Board, other than the RFQ Contact, concerning matters regarding this RFQ. Failure to adhere to this rule may result in the disqualification of the respondent and the rejection of the respondent's quotation.

1.3 Type of Contract for Deliverables

The selected respondent(s) will be requested to enter into a contract for the provision of the Deliverables on the terms and conditions set out in the Form of Agreement (Appendix A) (the "Agreement"). It is the Board's intention to enter into a contract with only one (1) legal entity. The term of the contract is to be for a period from **Award to December 31, 2022.**

1.4 RFQ Timetable

Issue Date of RFQ	June 23, 2022
Recommended Site Meeting	Will occur on **Wednesday, June 29, 2022,** at **3:45 PM** local time at the following location: **Sir Winston Churchill Public School,** 89 Ardglen Dr, Brampton, ON L6W 1V1 All potential Respondents to meet at the School entrance and await direction from the Board representative(s). Site meeting attendance is not mandatory.
Deadline for Questions	June 30, 2022, at 4:00 PM local time All questions must be submitted through Opportunity Q&A in Bonfire. See section 3.2.1 for details.
Deadline for Issuing Addenda	July 4, 2022, at 4:00 pm local time
Submission Deadline	July 11, 2022, At 3:00 pm Local Time
Anticipated Execution of Agreement	July, 2022

The RFQ timetable is tentative only and may be changed by the Board at any time.

1.5 Submission of Quotations

1.5.1 Quotations to be Submitted at Prescribed Location

The Board will use the BonfireHub portal to accept and evaluate quotes digitally for this Request for Quote.

Please contact Bonfire at support@gobonfire.com for questions related to the uploading of your submission.

Please follow these instructions when submitting your documents electronically on Bonfire.

Upload your Submission at: https://peelsb.bonfirehub.ca/opportunities

Your Submission must be uploaded prior to the Submission Deadline established for this Quote.

(a) Uploading large documents may take significant time, depending on the size of the file(s) and Respondent's internet connection speed.

(b) Onus and responsibility rests solely with the Respondent to deliver its Quote as indicated in the details on or before the Submission Deadline. The Board does not accept any responsibility for submissions delivered to any other location by the Respondent or its delivery agents. Respondents are advised to make submissions well before the deadline. Respondents making submissions near the deadline do so at their own risk. Submissions shall be deemed to be received once they enter into the Bonfire system and a confirming email is returned to the submitting party. Respondent will receive an email from Bonfire with a unique confirmation receipt once they finalize their submission.

(c) Only the number of files indicated in the Bidding System can be uploaded for each Requested Document. If an uploaded document(s) needs to be changed, the Respondent will need to first delete the old file before re-uploading a new file.

(d) Respondent should not embed any documents within uploaded files as they will not be accessible.

(e) Each submission file uploaded is instantly sealed and will only be visible after the closing date and time.

(f) Each file has a maximum size of 1000MB. Any requested documents exceeding this limit will not be accepted by Bonfire.

(g) Minimum system requirements: Internet Explorer 8/9/10+, Google Chrome, or Mozilla Firefox. Javascript must be enabled and Adobe Flash Player version 9+ installed.

(h) There is no cost to the Respondent for uploading submission on Bonfire.

1.5.2 Quotations to be Submitted on Time

Quotations must be submitted on or before the Submission Deadline. Quotations submitted after the Submission Deadline will not be accepted. Respondents are advised to make submissions well before the deadline. Respondents making submissions near the deadline do so at their own risk.

1.5.3 Quotations to be Submitted in Prescribed Format

All respondents shall have a Bidding System vendor account and be registered as a plan taker for this opportunity, which will enable the respondent to download the solicitation document, to receive addenda email notifications, download addenda and submit their quotations electronically through the Bidding System.

Respondents are cautioned that the timing of their submission is based on when the quotation is received by the Bidding System, not when a quotation is submitted by a respondent, as transmission can be delayed due to file transfer size, transmission speed or other technical factors.

For the above reasons, the Board recommends that respondents allow sufficient time to upload their submission and attachment(s) (if applicable) and to resolve any issues that may arise. The closing date and time shall be determined by the Board's Bidding System web clock.

Respondents should contact the RFQ Contact at least twenty-four hours prior to deadline if they encounter any problems. The Bidding System will send a confirmation email to the respondent advising when the quotation was submitted successfully. If respondents do not receive a confirmation email, they should contact the RFQ Contact immediately.

To ensure receipt of the latest information and updates via email regarding this opportunity, or if a respondent has obtained this solicitation document from a third party, the onus is on the respondent to create a Bidding System Vendor account and register as a plan taker for the opportunity at https://peelsb.bonfirehub.ca.

1.5.4 Amendment of Quotations

Respondents may amend their quotations prior to the Submission Deadline. However, the respondent is solely responsible for ensuring that the amended quotation is received by the Bidding System by the Submission Deadline.

1.5.5 Withdrawal of Quotations

Respondents may withdraw their quotations prior to the Submission Deadline. However, the respondent is solely responsible for ensuring that the withdrawn quotation is withdrawn through the Bidding System by the Submission Deadline.

[End of Part 1]

PART 2 – EVALUATION AND AWARD

2.1 Stages of Evaluation

The Board will conduct the evaluation of quotations in the following stages:

2.2 Stage I – Mandatory Submission Requirements

Stage I will consist of a review to determine which quotations comply with all of the mandatory submission requirements. Quotations that fail to satisfy the mandatory submission requirements will be rejected. The mandatory submission requirements are listed in Section C of the RFQ Particulars (Appendix D).

2.3 Stage II – Mandatory Technical Requirements

The Board will review the quotations to determine whether the mandatory technical requirements as set out in Section D of the RFQ Particulars (Appendix D) have been met. Questions or queries on the part of the Board as to whether a quotation has met the mandatory technical requirements will be subject to the verification and clarification process set out in Part 3.

2.4 Stage III – Pricing

Stage III will consist of an evaluation of the submitted pricing in each qualified quotation in accordance with the price evaluation method set out in Pricing (Appendix C). The evaluation of price will be undertaken after the evaluation of mandatory requirements has been completed.

2.5 Selection of Top-Ranked Respondent

After the completion of Stage III, compliant respondents will be ranked based on the price evaluation. Subject to the process rules contained in the Terms and Conditions of the RFQ Process (Part 3), the top-ranked respondent will be invited to enter into the Agreement in accordance with Part 3. In the event of a tie, the selected respondent will be determined by way of best and final offer. The selected respondent will be notified in writing and will be expected to satisfy any applicable conditions of this RFQ, including the pre-conditions of award listed in Section E of the RFQ Particulars (Appendix D), and enter into the Agreement within the timeframe specified in the selection notice. Failure to do so may result in the disqualification of the respondent and the selection of another respondent or the cancellation of the RFQ.

[End of Part 2]

PART 3 – TERMS AND CONDITIONS OF THE RFQ PROCESS

3.1 General Information and Instructions

3.1.1 Respondents to Follow Instructions

Respondents should structure their quotations in accordance with the instructions in this RFQ. Where information is requested in this RFQ, any response made in a quotation should reference the applicable section numbers of this RFQ.

3.1.2 Quotations in English

All quotations are to be in English only.

3.1.3 No Incorporation by Reference

The entire content of the respondent's quotation should be submitted in a fixed form, and the content of websites or other external documents referred to in the respondent's quotation but not attached will not be considered to form part of its quotation.

3.1.4 References and Past Performance

In the evaluation process, the Board may include information provided by the respondent's references and may also consider the respondent's past performance or conduct on previous contracts with the Board or other institutions.

3.1.5 Information in RFQ Only an Estimate

The Board and its advisers make no representation, warranty or guarantee as to the accuracy of the information contained in this RFQ or issued by way of addenda. Any quantities shown or data contained in this RFQ or provided by way of addenda are estimates only, and are for the sole purpose of indicating to respondents the general scale and scope of the Deliverables. It is the respondent's responsibility to obtain all the information necessary to prepare a quotation in response to this RFQ.

3.1.6 Respondents to Bear Their Own Costs

The respondent will bear all costs associated with or incurred in the preparation and presentation of its quotation, including, if applicable, costs incurred for interviews or demonstrations.

3.1.7 Quotation to be Retained by the Board

The Board will not return the quotation or any accompanying documentation submitted by a respondent.

3.1.8 No Guarantee of Volume of Work or Exclusivity of Contract

The Board makes no guarantee of the value or volume of work to be assigned to the successful respondent. The contract with the selected respondent will not be an exclusive contract for the provision of the described Deliverables. The Board may contract with others for goods and

services the same as or similar to the Deliverables or may obtain such goods and services internally.

3.2 Communication after Issuance of RFQ

3.2.1 Respondents to Review RFQ and Seek Clarifications

Respondents should promptly examine all the documents comprising this RFQ and may direct questions to or seek additional information from the RFQ Contact on or before the Deadline for Questions. All questions and communications by respondents may only be sent through the Opportunity Q&A in the Bonfire Portal. The Board will not answer any questions submitted by any other means. The Board will provide answers to any questions through the Bonfire Portal only.

The Board is under no obligation to provide additional information, and the Board is not responsible for any information provided by or obtained from any source other than the RFQ Contact. It is the responsibility of the respondent to seek clarification from the RFQ Contact on any matter it considers to be unclear. The Board is not responsible for any misunderstanding on the part of the respondent concerning this RFQ or its process.

3.2.2 All New Information to Respondents by Way of Addenda

This RFQ may be amended only by addendum in accordance with this section. If the Board, for any reason, determines that it is necessary to provide additional information relating to this RFQ, such information will be communicated to all respondents by addendum. Each addendum forms an integral part of this RFQ and may contain important information, including significant changes to this RFQ. Respondents are responsible for obtaining all addenda issued by the Board. In the Submission Form (Appendix B), respondents should confirm their receipt of all addenda by setting out the number of each addendum in the space provided.

3.2.3 Post-Deadline Addenda and Extension of Submission Deadline

If the Board determines that it is necessary to issue an addendum after the Deadline for Issuing Addenda, the Board may extend the Submission Deadline for a reasonable period of time.

3.2.4 Verify, Clarify and Supplement

When evaluating quotations, the Board may request further information from the respondent or third parties in order to verify, clarify or supplement the information provided in the respondent's quotation, including but not limited to clarification with respect to whether a quotation meets the mandatory technical requirements set out in Section D of the RFQ Particulars (Appendix D). The Board may revisit, re-evaluate and rescore the respondent's response or ranking on the basis of any such information.

3.3 Notification and Debriefing

3.3.1 Notification to Other Respondents

Once an agreement is executed by the Board and a respondent, the other respondents may be notified directly in writing and will be notified by public posting in the same manner that this RFQ was originally posted of the outcome of the procurement process.

3.3.2 Debriefing

Respondents may request a debriefing after receipt of a notification of the outcome of the procurement process. All requests must be in writing to the RFQ Contact and must be made within sixty (60) days of such notification.

3.3.3 Procurement Protest Procedure

If a respondent wishes to challenge the RFQ process, it should provide written notice within 10 days of debriefing to the RFQ Contact in accordance with the Board's procurement protest procedures and any applicable trade agreement or other applicable bid protest procedures. The notice must provide a detailed explanation of the respondent's concerns with the procurement process or its outcome. The Board will respond in accordance with Section 14 of its Procurement Regulations.

3.4 Conflict of Interest and Prohibited Conduct

3.4.1 Conflict of Interest

For the purposes of this RFQ, the term "Conflict of Interest" includes, but is not limited to, any situation or circumstance where:

(a) in relation to the RFQ process, the respondent has an unfair advantage or engages in conduct, directly or indirectly, that may give it an unfair advantage, including but not limited to (i) having, or having access to, confidential information of the Board in the preparation of its quotation that is not available to other respondents, (ii) communicating with any person with a view to influencing preferred treatment in the RFQ process (including but not limited to the lobbying of decision makers involved in the RFQ process), or (iii) engaging in conduct that compromises, or could be seen to compromise, the integrity of the open and competitive RFQ process or render that process non-competitive or unfair; or

(b) in relation to the performance of its contractual obligations under a contract for the Deliverables, the respondent's other commitments, relationships or financial interests (i) could, or could be seen to, exercise an improper influence over the objective, unbiased and impartial exercise of its independent judgement, or (ii) could, or could be seen to, compromise, impair or be incompatible with the effective performance of its contractual obligations.

3.4.2 Disqualification for Conflict of Interest

The Board may disqualify a respondent for any conduct, situation or circumstances, determined by the Board, in its sole and absolute discretion, to constitute a Conflict of Interest as defined above.

3.4.3 Disqualification for Prohibited Conduct

The Board may disqualify a respondent, rescind notice of selection or terminate a contract subsequently entered into if the Board determines that the respondent has engaged in any conduct prohibited by this RFQ.

3.4.4 Prohibited Respondent Communications

Respondents must not engage in any communications that could constitute a Conflict of Interest and should take note of the Conflict of Interest declaration set out in the Submission Form (Appendix B).

3.4.5 Respondent Not to Communicate with Media

Respondents must not at any time directly or indirectly communicate with the media in relation to this RFQ or any agreement entered into pursuant to this RFQ without first obtaining the written permission of the RFQ Contact.

3.4.6 No Lobbying

Respondents must not, in relation to this RFQ or the evaluation and selection process, engage directly or indirectly in any form of political or other lobbying whatsoever to influence the selection of the successful respondent(s).

3.4.7 Illegal or Unethical Conduct

Respondents must not engage in any illegal business practices, including activities such as bid-rigging, price-fixing, bribery, fraud, coercion or collusion. Respondents must not engage in any unethical conduct, including lobbying, as described above, or other inappropriate communications; offering gifts to any employees, officers, agents, elected or appointed officials or other representatives of the Board; deceitfulness; submitting quotations containing misrepresentations or other misleading or inaccurate information; or any other conduct that compromises or may be seen to compromise the competitive process provided for in this RFQ.

3.4.8 Past Performance or Past Conduct

The Board may prohibit a supplier (or any individual that owns, controls, operates, manages or directs the supplier) from participating in a procurement process based on past performance or based on inappropriate conduct in a prior procurement process, including but not limited to the following:

(a) illegal or unethical conduct as described above;

(b) the refusal of the supplier to honour its submitted pricing or other commitments; or

(c) any conduct, situation or circumstance determined by the Board, in its sole and absolute discretion, to have constituted an undisclosed Conflict of Interest;

(d) litigation history.

3.5 Confidential Information

3.5.1 Confidential Information of the Board

All information provided by or obtained from the Board in any form in connection with this RFQ either before or after the issuance of this RFQ

(a) is the sole property of the Board and must be treated as confidential;

(b) is not to be used for any purpose other than replying to this RFQ and the performance of any subsequent contract for the Deliverables;

(c) must not be disclosed without prior written authorization from the Board; and

(d) must be returned by the respondent to the Board immediately upon the request of the Board.

3.5.2 Confidential Information of Respondent

A respondent should identify any information in its quotation or any accompanying documentation supplied in confidence for which confidentiality is to be maintained by the Board. The confidentiality of such information will be maintained by the Board, except as otherwise required by law or by order of a court or tribunal. Respondents are advised that their quotations will, as necessary, be disclosed, on a confidential basis, to advisers retained by the Board to advise or assist with the RFQ process, including the evaluation of quotations. If a respondent has any questions about the collection and use of personal information pursuant to this RFQ, questions are to be submitted to the RFQ Contact.

3.6 Procurement Process Non-binding

3.6.1 No Contract A and No Claims

This procurement process is not intended to create and will not create a formal, legally binding bidding process and will instead be governed by the law applicable to direct commercial negotiations. For greater certainty and without limitation:

(a) this RFQ will not give rise to any Contract A–based tendering law duties or any other legal obligations arising out of any process contract or collateral contract; and

(b) neither the respondent nor the Board will have the right to make any claims (in contract, tort, or otherwise) against the other with respect to the award of a contract, failure to award a contract or failure to honour a quotation submitted in response to this RFQ.

3.6.2 No Contract until Execution of Written Agreement

This RFQ process is intended to solicit non-binding quotations for consideration by the Board and may result in an invitation by the Board to a respondent to enter into the Agreement. No legal relationship or obligation regarding the procurement of any good or service will be created between the respondent and the Board by this RFQ process until the execution of a written agreement for the acquisition of such goods and/or services.

3.6.3 Non-binding Price Estimates

While the pricing information provided in quotations will be non-binding prior to the execution of a written agreement, such information will be assessed during the evaluation of the quotations and the ranking of the respondents. Any inaccurate, misleading or incomplete information, including withdrawn or altered pricing, could adversely impact any such evaluation or ranking or the decision of the Board to enter into an agreement for the Deliverables.

3.6.4 Cancellation

The Board may cancel or amend the RFQ process without liability at any time.

3.7 Governing Law and Interpretation

These Terms and Conditions of the RFQ Process (Part 3):

(i) are intended to be interpreted broadly and independently (with no particular provision intended to limit the scope of any other provision);

(j) are non-exhaustive and must not be construed as intending to limit the pre-existing rights of the parties to engage in pre-contractual discussions in accordance with the common law governing direct commercial negotiations; and

(k) are to be governed by and construed in accordance with the laws of the province of Ontario and the federal laws of Canada applicable therein.

[End of Part 3]

APPENDIX A – FORM OF AGREEMENT

A PDF copy of the Form of Agreement is available for download on the Bonfire™ Bidding System Website under **RFQMA22-4778** at **https://peelsb.bonfirehub.ca**.

APPENDIX B – SUBMISSION FORM

1. Respondent Information

Please fill out the following form, naming one person to be the respondent's contact for the RFQ process and for any clarifications or communication that might be necessary.	
Full Legal Name of Respondent:	
Any Other Relevant Name under which Respondent Carries on Business:	
Street Address:	
City, Province/State:	
Postal Code:	
Phone Number:	
Fax Number:	
Company Website (if any):	
Respondent Contact Name and Title:	
Respondent Contact Phone:	
Respondent Contact Fax:	
Respondent Contact Email:	

2. Acknowledgment of Non-binding Procurement Process

The respondent acknowledges that the RFQ process will be governed by the terms and conditions of the RFQ, and that, among other things, such terms and conditions confirm that this procurement process does not constitute a formal, legally binding bidding process (and for greater certainty, does not give rise to a Contract A bidding process contract), and that no legal relationship or obligation regarding the procurement of any good or service will be created between the Board and the respondent unless and until the Board and the respondent execute a written agreement for the Deliverables.

3. Ability to Provide Deliverables

The respondent has carefully examined the RFQ documents and has a clear and comprehensive knowledge of the Deliverables required. The respondent represents and warrants its ability to provide the Deliverables in accordance with the requirements of the RFQ for the rates set out in its quotation.

4. Non-binding Pricing

The respondent has submitted its pricing in accordance with the instructions in the RFQ and in Pricing (Appendix C) in particular. The respondent confirms that the pricing information provided is accurate. The respondent acknowledges that any inaccurate, misleading or incomplete

information, including withdrawn or altered pricing, could adversely impact the acceptance of its quotation or its eligibility for future work.

5. Addenda

The respondent is deemed to have read and taken into account all addenda issued by the Board prior to the Deadline for Issuing Addenda. The respondent is requested to confirm that it has received all addenda by listing the addenda numbers, or if no addenda were issued by writing the word "None", on the following line: _____. Respondents who fail to complete this section will be deemed to have received all posted addenda.

6. No Prohibited Conduct

The respondent declares that it has not engaged in any conduct prohibited by this RFQ.

7. Conflict of Interest

Respondents must declare all potential Conflicts of Interest, as defined in section 3.4.1 of the RFQ. This includes disclosing the names and all pertinent details of all individuals (employees, advisers, or individuals acting in any other capacity) who (a) participated in the preparation of the quotation; **AND** (b) were employees of the Board within twelve (12) months prior to the Submission Deadline.

If the box below is left blank, the respondent will be deemed to declare that (a) there was no Conflict of Interest in preparing its quotation; and (b) there is no foreseeable Conflict of Interest in performing the contractual obligations contemplated in the RFQ.

Otherwise, if the statement below applies, check the box.

- ❑ The respondent declares that there is an actual or potential Conflict of Interest relating to the preparation of its quotation, and/or the respondent foresees an actual or potential Conflict of Interest in performing the contractual obligations contemplated in the RFQ.

If the respondent declares an actual or potential Conflict of Interest by marking the box above, the respondent must set out below details of the actual or potential Conflict of Interest:

8. Disclosure of Information

The respondent hereby agrees that any information provided in this quotation, even if it is identified as being supplied in confidence, may be disclosed where required by law or by order of a court or tribunal. The respondent hereby consents to the disclosure, on a confidential basis, of this quotation by the Board to the advisers retained by the Board to advise or assist with the RFQ process, including with respect to the evaluation this quotation.

Signature of Respondent Representative

Name of Respondent Representative

Title of Respondent Representative

Date

I have the authority to bind the respondent.

APPENDIX C – PRICING

1. Instructions on How to Provide Pricing

(a) Respondents should provide the information requested under section 3 below ("Required Pricing Information") by reproducing and completing the table below in their quotations, or, if there is no table below, by completing the attached form and including it in their quotations.

(b) Rates must be provided in Canadian funds, inclusive of all applicable duties and taxes except for HST, which should be itemized separately.

(c) Rates quoted by the respondent must be all-inclusive and must include all labour and material costs, all travel and carriage costs, all insurance costs, all costs of delivery, all costs of installation and set-up, including any pre-delivery inspection charges, and all other overhead, including any fees or other charges required by law.

(d) Price ranges will not be accepted. All rates must be rounded to two (2) decimal places. Partial bids are not permitted. If an item is no charge or $0.00 respondent shall indicate "0".

(e) Additional work formally approved by the Board will be based on hourly rates. Hourly rates to apply to work completed during regular business hours, after hours, weekends and/or statutory holidays. No other charges to apply. HST is extra.

(f) MATERIAL COST PLUS MARK-UP: Allowable percentage mark-up over cost for any additional approved materials requested to be supplied by your firm will be: 5 (five) % mark-up over cost.

The Board reserves the right to request copies of original invoices for materials purchased by the successful respondent(s) to confirm the costs for materials charged to the Board. Further, the Board reserves the right to source, purchase and supply materials for any work performed by the successful respondent(s) through the award of this bid, for the term of the contract period.

(g) APPROVED SUBCONTRACTED SERVICES MARK-UP: Allowable percentage mark-up over your cost for any additional approved subcontracted services requested to be supplied by your firm will be: 10 (ten) % overhead + 5 (five) % profit mark-up over cost.

(h) Prices are to remain firm for the duration of the contract upon the execution of a written contract as the result of the RFQ.

2. Evaluation of Pricing

- The grand total of the pricing for Appendix 1 will be used for evaluation.
- The pricing information from Appendix 2 is not to be evaluated.

3. Required Pricing Information

Refer to Appendix 1 – Rate Bid Form (Table **BT-09MZ** in the bidding system)

APPENDIX D – RFQ PARTICULARS

A. THE DELIVERABLES

Sir Winston Churchill Public School Replacement.

The provision of the Deliverables will be governed by the terms and conditions set out in Appendix A and Appendix F – Specifications and Drawings.

B. MATERIAL DISCLOSURES

Estimated value of the project: $475,000 (before tax).

1. GENERAL CONDITIONS

The General Conditions form part of this RFQ document and it is understood by the Respondent that attaching signature in Appendix B, the Respondent acknowledges having read and understood the General Conditions, Section – 01000, pages 1 - 34 as posted on the Board's Purchasing website at: http://purchasing.peelschools.org.

2. CONSTRUCTION LIEN ACT PAYMENT TERMS IN GENERAL CONDITIONS

The General Conditions have been revised to include changes related to the new Construction Act.

3. AWARDING OF WORK

The Board reserves the right to award contractors only the amount of work to which the Board is confident can be completed on schedule by the successful Respondent. In order to expedite the completion of work within the Term of Contract, the Board may distribute awards from bids at its sole and unfettered discretion. The decision of the Board will be final.

4. HAZARDOUS BUILDING MATERIALS

Hazardous building materials may be present in the vicinity. Please view the assessment and required abatement work located in Appendix F – Specifications and Drawings.

5. SAMPLES

Samples when required, must be submitted strictly in accordance with instructions. Samples must be furnished free of charge and must be accompanied by descriptive memorandum invoices indicating if the Respondent requires their return, provided they have not been used or made useless by tests. Samples will be held at Respondent's risk and subject to the Respondent's expense.

6. If the word "Contract" is found in sections of the specifications and drawings it shall mean after the award of a contract to the successful respondent.

7. A respondent may not make any changes to any of the forms. Any submission containing any such changes, whether on the face of the form or elsewhere may result in the non-consideration of your submission.

8. PERFORMANCE SURETY OR AGREEMENT TO BOND

If the total value of the bid per location excluding all applicable taxes is less than $500,000.00 then a Performance Surety is required. If greater than $500,000.00 bonding is required.

Refer to Pre-Conditions of Award for details.

9. Facility Key(s) Deposit

Pursuant to Maintenance Services Department General Conditions Section 01000, all facility key(s) will be issued by Maintenance Services Department to the successful general contractor following the receipt of facility key deposit(s) issued by the successful general contractor.

Upon completion of project work and/or the end of term of the contract, all applicable facility key deposit(s) will be returned by the Board to the successful general contractor in a form of direct deposit. Facility key deposit(s) issued by sub-contractor(s) will not be accepted by the Board.

C. MANDATORY SUBMISSION REQUIREMENTS

1. Submission Form (Appendix B)

Each quotation must include a Submission Form (Appendix B) completed and signed by an authorized representative of the respondent.

2. Pricing Rate Bid Form (Appendix 1)

Each quotation must include pricing information that complies with the instructions contained in Pricing (Appendix C).

3. Supplementary Bid - Questionnaire (Appendix 2) – not to be evaluated.

D. MANDATORY TECHNICAL REQUIREMENTS

N/A

E. PRE-CONDITIONS OF AWARD

Respondent under consideration must provide the following information within (7) seven calendar days of notification or as otherwise agreed by the Board:

a) INSURANCE

The Respondent shall provide Commercial General Liability insurance coverage and Third-Party Liability insurance coverage for both owned and non-owned motor vehicles in

accordance to the Board's Standard Terms and Conditions – Form of Agreement under Appendix A.

b) WORKPLACE SAFETY AND INSURANCE BOARD (WSIB)

The Respondent shall provide a proof of WSIB coverage in accordance to the Board's Standard Terms and Conditions – Form of Agreement under Appendix A.

c) CONTRACTOR ASBESTOS AWARENESS TRAINING

All contractor's employees and staff, including subcontractors where applicable, who will work at any PDSB facilities are required to complete the Contractor Asbestos Awareness Training at Contractor Asbestos Awareness Training Video Link: https://drive.google.com/file/d/1dpnv5apl3CmlF-tp_-NMtyx-0Lq54-JP/view prior to beginning of the work at the Board. It is the contractor's responsibility to ensure that all their personnel receive this training timely and all training records, if applicable, are kept on file and are available upon Board request.

d) AGREEMENT TO BOND (If greater than $500,000)

Agreement to Bond from an approved bonding company for a 50% performance bond and a 50% labour and material bond.

The respondent acknowledges and agrees to comply with the special provisions specified with respect to the wording/and or conditions under which the Performance bond may be invoked and remain in force as a Maintenance bond.

Use the latest edition of CCDC approved bond forms.

e) PERFORMANCE SURETY

The Performance Surety requirement from the successful Respondent will be in the amount of 10% of the total dollar award, excluding all applicable taxes.

The successful Respondent will secure an original Irrevocable Letter of Credit or a Certified Cheque or Money Order or Bank Draft payable to Peel District School Board, which has been issued by a Canadian Chartered Bank or Trust Company, in the appropriate amount. If the Irrevocable Letter of Credit is the vehicle chosen for the Performance Surety, it must be identical to the form as presented in this RFQ document, Appendix E attached. The Performance Surety, either an Irrevocable Letter of Credit or a Certified Cheque, Money Order or Bank Draft will be deposited with and held by the Board prior to the commencement of the contract. The Performance Surety may be drawn on by the Board at any time to secure the due performance and observation of the contract; the payment of all claims, liabilities and obligations incurred by the successful Respondent during the performance of the contract. Such Performance Surety will not be released until sixty (60) days after substantial performance of the contract and the full discharge of all claims, liabilities and obligations incurred by the successful Respondent during the performance of this contract. The successful Respondent further covenants and agrees that, where the contract has been terminated or cancelled by virtue of the successful Respondent's default, the said Performance Surety will not be revoked or cancelled, and the Board may draw from the Performance Surety to compensate for such damages, losses or expenses incurred, or

to be incurred, for which the Board may not be otherwise liable. Should the said damages, losses or expenses be in excess of the amounts drawn, the successful Respondent shall be liable to the Board for such excesses.

The Performance Surety is to guarantee that the successful Respondent will complete the contract in a proper and satisfactory manner in accordance with the terms and conditions of the RFQ and must be presented by the successful Respondent to the Board as requested at the time of the award. Failure to provide the proper surety may result in the rescission of the Board's notice of selection. No interest will be either charged or retained by or to the Board in relation to the Performance Surety.

APPENDIX E – LETTER OF CREDIT

(BANK)_____ NO._____

(BRANCH)_____ (DATE)_____

TO:

WE HEREBY AUTHORIZE YOU TO DRAW ON (BANK)
FOR ACCOUNT OF
UP TO AN AGGREGATE AMOUNT OF
AVAILABLE BY DRAFTS AT SIGHT
GUARANTEE AS FOLLOWS:

Pursuant to the request of our customer, _____
we, (Bank)_____hereby establish and give to you an Irrevocable Letter of Credit in your favour in the total amount of $_____ which may be drawn on by you at any time and from time to time upon written demand for payment made upon us by you, which demand we shall honour without enquiring whether you have a right as between yourself and our said customer to make such demand and without recognizing any claim of our said customer.

PROVIDED, however, that you are to deliver to (Bank)_____
at such time as a written demand for payment is made upon us, a certificate signed by the Associate Director of Corporate Services of The Peel District School Board agreeing and/or confirming that monies drawn pursuant to this Letter of Credit are to be and/or have been expended pursuant to obligations incurred or to be incurred by you with reference to (description of services or projects) _____
This Letter of Credit shall commence on _____ and shall expire on _____ subject to the conditions of automatic extension, as set out herein.

IT IS A CONDITION of this Letter of Credit that it shall be automatically extended without amendment for one year from the expiry date, and thereafter from year to year unless sixty days prior to the present or future expiry date we shall notify the Associate Director of Operational Support Services of The Peel District School Board in writing that we elect not to consider this Letter of Credit renewed for any such additional period. Upon receipt by you of such notice; you may draw hereunder by means of your demand accompanied by your written certification that the amounts drawn will be retained and used by you to meet obligations incurred or to be incurred by you in connection with (description of services or projects) _____.

THE DRAFTS DRAWN UNDER THIS CREDIT ARE TO BE ENDORSED HEREON AND SHALL STATE ON THEIR FACE THAT THEY ARE DRAWN UNDER (BANK)_____
(BRANCH)_____ LETTER OF CREDIT NO._____
(DATE)_____

WE HEREBY AGREE WITH THE DRAWERS, ENDORSERS OF THE BILLS DRAWN IN COMPLIANCE WITH THE TERMS OF THIS CREDIT THAT THE BILLS SHALL BE DULY HONOURED UPON PRESENTATION AT THE DRAWEE BANK.

_____ _____

APPENDIX F - SPECIFICATIONS

Peel District School Board

Bid Documents

for

2022 Window Replacement

at

Sir Winston Churchill Public School

89 Ardglen Drive
Brampton, ON, L6W 1V1

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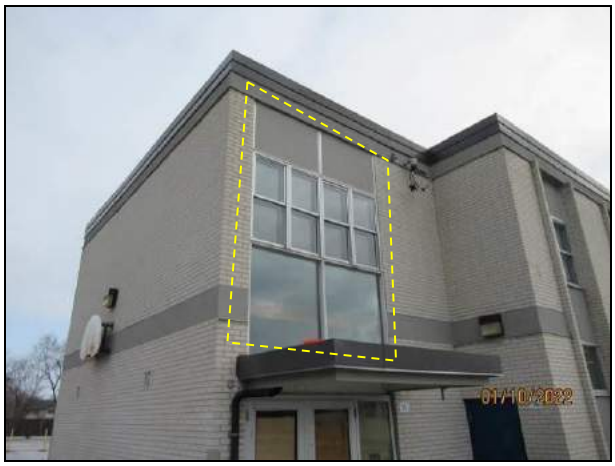
EXISTING CONDITIONS AND OBJECTIVES

Work under this contract is for window replacement at Sir Winston Churchill Public School, located at 89 Ardglen Drive in Brampton Ontario, and includes the provision of all plant, labour, and materials to perform the scope of work as described below and as indicated on the Drawings.

The purpose of the window replacement project is to improve window operation, building aesthetics, and occupant comfort.

The building is two storeys in height and originally constructed circa 1964 with the several additions constructed circa 1965, 1967, and 2005.



Photograph 1: Overall view of W1 window (2 total) in the stairwell landing to be replaced.

Photograph 2: Typical W2 windows (2 total) to be replaced. Glazing is to be opaque.

Photograph 3: Typical W3 windows (3 total) to be replaced.

Photograph 4: Typical W4 windows (clerestory; 10 total) to be replaced. These windows are on the 2nd storey of the building and accessed from the roof and the double height gym.

Photograph 5: Typical W5 windows (50 total) to be replaced.

Photograph 6: Typical W6 windows (10 total) to be replaced.

Photograph 7: Typical W7 windows (3 total) to be replaced.

Photograph 8: Typical W8 windows (4 total) to be replaced.

Photograph 9: One (1) W9 window on the 1st floor, east elevation to be replaced. New aluminum trim is to be provided at the jambs and head to cover the painted portion of the wall.

Photograph 10: Typical W10 windows (2 total) to be replaced. Glazing is to be opaque.

Photograph 11: At the landing adjacent to W1 Windows, remove and dispose of existing wood guard and install new engineered metal railing meeting current requirements of the OBC.

Photograph 12: AC unit for 1st floor Window W5 on the east elevation to be removed, temporarily stored, and reinstated following installation of new W5 window assemblies. New bracket is to be provided for the AC unit.

SCOPE OF WORK

1.0 General

.1 Schedule of Work

.1 The work shall commence upon award of the bid and proceed in a single phase of work until completion.

.2 All work shall be performed on site from 7AM to 9PM Monday to Sunday (subject to all bylaws) during the school summer holiday. All work shall be completed by August 31, 2022. Beyond the summer holiday, any work shall be performed from 4PM to 9PM Monday to Friday and 7AM to 9PM on weekends and/or holidays.

In the event that all work cannot be completed by September 2, 2022, the awarded contractor will be responsible to continue work at alternate times so as not to impact the daily functioning of the school. Any work not completed after September 2, 2022 shall be completed after hours only, weekends or holidays unless otherwise noted in writing by the PDSB. All work shall be completed by no later than December 31, 2022.

The Contractor shall abide with local noise by-laws.

.3 The Peel District School Board has the right to stop work at anytime and have the project postponed. Contractor will be paid to date for work done and a pre-determined fee (if required) to demobilize from the school. The project will then resume with all prices based on the quote.

.2 **Mobilization, Access and Protection**

.1 This item shall include, but not be limited to, all related equipment, mobilization, safety supervision, site protection, coordination with Consultant and Peel District School Board (PDSB), demobilization, securities, site cleanup and repair of damage caused by the work.

.2 Building Occupants will occupy premises during entire construction period for execution of normal operations. Cooperate with PDSB in scheduling operations to minimize conflict and to facilitate building usage.

.3 Contractor is to coordinate access with PDSB on a daily basis so that notices can be delivered as may be required. A minimum two (2) week notice must be given before starting work at the building.

.4 Temporary barriers, enclosures and signage will be highly enforced. No public access to the work area is to be allowed and no work is to occur outside enclosed work area.

.5 It is expected that the Contractor will ensure the safety and proper routing of the public. Maintain fire routes and exits and if they are affected as part of the work, include for hoarding / overhead protection within the work area. No areas of access to or around the building are to be restricted without the approval of PDSB.

.6 Supply, set-up, maintain and remove scaffolding, man lift platforms during the performance of the work as required to access the repair areas. If scaffolding is to be used, the contractor is to provide complete shop drawings bearing the seal of a Professional Engineer, licensed to practice in the Province of Ontario. Work to include review and approval of installed scaffolding by designer.

.7 Where a worker may be exposed to a fall hazard, the employer of the worker is responsible for providing and ensuring that all such workers be adequately trained and protected by a fall protection system that meets the requirements of the Occupational Health and Safety Act - Ontario Regulation 213/91 - Section 26.

.8 Provide access to the work area as required to facilitate review of the work by the Consultant as described herein.

.9 Provide temporary support to existing structural and cladding components during performance of work (if required).

.10 Install temporary protection for all building components, vehicles, pedestrians and occupants, as required to ensure safe, clean, and orderly removal and disposal work.

.11 Weather and security protection and enclosures (if required) are to be included in this item and will not be considered as an additional cost after award of the project. Provide weather protection for building components exposed during demolition / removals and/or winter protection and heat as required to perform the work if required and as specified.

.12 Provide temporary protection (such as drop cloths and carpet runners) at locations of interior work to ensure safe, clean and orderly removal and disposal, and to provide protection of interior building components and finishes. Elevator cab, if used, to be fully protected.

.13 Protected Roof Protection (insulation over waterproofing membrane): Provide plywood sheathing to displace loading below access rigging and where equipment or materials are stored on the roof.

.14 Coordination of trades will be the responsibility of the Contractor to ensure the work is completed as soon as possible.

.15 Prior to commencement of the Work, record condition and take photographs of existing building and landscaping components. Provide daily and final cleanup to restore building and site landscaping (grassed areas, shrubs and hard surfaces) to pre-construction conditions. During the completion of the Work, every attempt to minimize damage to landscaping shall be exercised, including the control of debris.

.16 For work completed by a subcontractor, a representative of the general contractor must be present on site at all times.

.3 **Coordination**

.1 A minimum two (2) week notice must be given before starting work at the building.

.2 Contractor to provide daily email confirmation of work to Board Designee every morning (after construction begins and prior to completion) to indicate what work is planned for the day, or to inform that no work is planned.

.3 Additional inspections required due to delay in the work schedule will be charged to the Contractor directly.

.4 Re-inspections to confirm correction of deficient work will be charged to the Contractor directly. Contractor must address deficient conditions immediately and coordinate re-inspection.

.5 Every other week, Contractor shall provide brief progress summary indicating: work complete during the period; outstanding issues; and updated completion schedule.

.6 Submit payment requests individually, and with all documentation necessary to facilitate expedient approval of payment.

.7 Once the project is 97% complete, notify the Board Designee in writing and request certification of Substantial Performance. 60 days prior to issuance of the holdback release invoice, publish Substantial Performance in accordance with the Construction Act and provide a copy of the publication with the Holdback Release payment request.

2.0 Windows

.1 **Window Replacement**: Remove and replace eighty-seven (87) window assemblies in accordance with Sections 08 50 00 and 08 80 00 and Drawings. Work to include, but not be limited to, the following:

.1 Removal and disposal of the existing window assemblies at a landfill or recycling facility as applicable.

.2 Blinds: The removal, storage and re-installation of blinds, shutters, drapes, curtains and valances in the designated window replacement areas shall be done by others. This work must be coordinated with the Peel District School Board (Attention: Ms. Maria Schembria 905-279-4310 ext. 277) prior to the start of the window replacements.

.3 Provide continuous ½" exterior grade plywood or wood blocking at sills as shown on the drawings.

.4 Installation of 3mm (1/8") thick aluminum angle back dams at the interior side of the new window frames as shown on the drawings. Angles are to be prefinished to match the window frame colour at the interior.

.5 Installation of new adhered sill flashing membrane upturned onto the angle back dam and a minimum of 100mm (4") onto the rough opening at each end. Ensure corner joints between the angle and rough opening at each end are watertight.

.6 Installation of new extruded aluminum sills matching the colour of the exterior window frames.

.7 Installation of new thermally broken window assemblies.

.1 The National Research Council of Canada's "rain screen principle" including provisions for pressure equalization and compartmentalization is to be used for all window elements and assemblies.

.2 Window types and quantities (refer to window schedule in the drawings for window configurations):

Window Type	No. of Windows	Locations	Notes
W1	2	Landing at stairwells on the south elevation and west elevation	New engineered metal railings are to be installed in front of these windows at each stairwell landing. At north stairwell, keep existing terrazzo sill if possible, if damaged during removal of existing assemblies, provide new Corian sill. The assembly include spandrel glass with back pan filled with mineral wool insulation.
W2	2	1st floor Boys' and Girls' washroom on the north elevation	Provide opaque glazing. Provide Teleflex operator in each washroom complete with removable handles.
W3	3	1st floor SMT classroom on the north elevation	
W4	10	2nd floor Gym windows on the north and south elevations	Provide Teleflex operators.
W5	50	1st floor and 2nd floor windows on the east and west elevations	The assembly include aluminum spandrel with back pan filled with mineral wool insulation.
W6	10	1st floor music classrooms on the south elevation and 1st floor classroom 8 and 9 on the north elevation	The assembly include aluminum spandrel with back pan filled with mineral wool insulation.
W7	3	1st floor library windows (one type)	In the library office, provide Teleflex operator; existing wood still to remain. The assembly include aluminum spandrel with back pan filled with mineral wool insulation.
W8	4	1st floor library windows (second type)	Individual Teleflex operators are to be provided for each window.

W9	1	1st floor classroom 6 on the east elevation	
W10	2	2nd floor Boys' and Girls' washroom on the east and west elevations	Provide opaque glazing. Provide Teleflex operator in each washroom complete with removable handles.
Total	87		

.3 Refer to Drawings for configurations of new window assemblies. All measurements on drawings are approximate and are to be verified by the Contractor.

.4 Contractor to take field measurements of all existing windows. New window assemblies to fit within existing rough openings. Any window assemblies that cannot be installed within specified tolerances, as per Section 08 50 00, will not be accepted.

.5 Depth of new window frames is not to be less than the existing.

.6 Operable units to include safety restrictors.

.7 Where window latching devices are located in excess of 1,900mm (6'-3") above floor level, provide Teleflex operators.

.8 New windows are to meet the performance criteria noted in Section 08 50 00.

.9 Ensure all removed windows are replaced by the end of each day and provide a weather tight assembly. Work must be completed the same day in any classroom/room accessed.

.8 Glazing shall be provided and installed as per Section 08 80 00.

.1 Glazing shall be factory sealed insulating glass units (IGU) with continuous aluminum spacer, dual seal perimeter sealant system, argon-gas filled space, and Soft Low-E coating on Surface #2. Both exterior and interior glass lites are to be 6mm thick, fully tempered, clear float glass.

.9 Spandrel panels shall be provided and installed as per Sections 08 50 00 and 08 80 00.

.10 Installation of new fasteners shall be performed in accordance with the engineered shop drawings.

.11 Application of spray applied polyurethane insulation is required to fill the full depth of the gaps between window frame and rough opening at the perimeters.

.12 Provide new Corian sills at the interior at all new windows unless otherwise indicated or instructed by Owner or Consultant; colour, finish, and thickness to be approved by Board. Continuous Corian sill is to be provided between the windows where the existing wood sill is provided.

.13 Interior Trim: Windows to be sized / fabricated so that interior trim is not required. Where interior trim is required, Contractor to supply and install interior aluminum closures to cover unfinished surfaces exposed as a result of the removal of the existing windows, and to cover exposed blocking and gaps around the interior perimeter of the rough opening exceeding 9mm (3/8”), as per Section 08 50 00.

.14 Exterior Trim: Windows to be sized so that exterior trim is not required where possible. Where exterior trim is required, install new brake formed aluminum closures (to match window frame finish) and install sealant to provide air seal.

.15 Perimeter Sealant: Installation of new sealants at interior and exterior frame perimeters, including end dams at exterior sills as specification Section 07 92 00. Colour to match new window assemblies.

.16 For Windows W1, remove all existing wood ‘guards’ mounted on the window frame and install new engineered metal railing at the adjacent landing to satisfy current requirements of the OBC. Submit engineer stamped shop drawings to Consultant for review prior to fabrication.

.17 At some windows, the existing ceiling mounting T-bars are fastened to the existing window frame. The T-bars and ceiling tiles are to be removed and reinstated. If possible, the installation of T-bars onto the new frame is to be avoided.

.18 Where AC Unit is present within the window assembly, W5 at Classroom 14, AC unit is to be removed, temporarily stored, and reinstalled after the installation of new window assemblies. New brackets are to be provided and back pan with metal panel is to be provided around AC units as shown on the drawing.

.19 Shop Drawings and Approvals

.1 Independent Test Report(s): Provide a test report(s) for the windows which demonstrates compliance with the performance levels specified. The test report(s) shall be for a representative window which is not smaller than the largest windows used on this project.

.2 Contractor and Manufacturer are responsible to provide windows and fastening of windows to meet design.

.3 Engineered Shop Drawings: Engineered shop drawings and calculations shall be provided to prove adequate wind load resistance and deflection.

.4 Provide Shop Drawings. Shop drawings to show all blocking, window set back from face of exterior wall, window shims and fastener types, fastener locations, hinge type and location, limiter type and location, drainage direction, drainage hole locations, setting blocks, glazing trims, sill thickness and fastening.

.5 Shop drawings shall be stamped and signed by a professional engineer having a valid license to practice in the province of Ontario.

.6 Approval: The test reports and shop drawings for windows shall be submitted and approved before the fabrication/installation of windows can commence.

.7 Contractor to allow for a minimum of two (2) site visits at the school to review shop drawings for formal approval with the PDSB and the Consultant.

.20 Mock-up

.1 At an area selected by the Owner, complete a full window installation for review by the Owner's representative and Consultant prior to proceeding with remaining installation.

.2 The mock-up installation shall include all the interface details with adjacent walls. Do not proceed with general replacement until the mock-up is approved by the Owner and Consultant.

.3 The foreman assigned to the project is to be present for the duration of the mock-up. If required, the Contractor shall provide assistance to the Consultant during the water testing.

.4 Mock-up shall be prepared by same installers that will perform the general installation.

.5 Approved mock-up installation shall serve as basis for acceptance for general installation.

.6 If acceptable, mock-up installation may form part of the Work.

.21 Window Test

.1 Include a cost for on-site air infiltration and water penetration testing of one (1) completely installed window unit chosen by the Owner/Consultant.

.2 Contractor to select an accredited testing company: CAN-BEST, INTERTEK or Consultant approved alternate company to conduct field testing.

.3 If testing fails, Contractor is to provide necessary modifications to failed units, and the modified units are to be re-tested. Re-testing is to be completed at Contractor's cost. Any modifications are to be approved by a window manufacturer and Consultant. Contractor shall also pay for the cost of engineering for the retesting.

.22 Repair to Existing Building: Contractor to all reasonable precautions to avoid damage to existing building during removals. Contractor to repair any damages to exteriors and interiors as a result of the window replacement project. Repairs to match existing surrounding materials and colours.

.1 Make good all interior walls and ceilings including and not limited to the repair of gypsum/plaster, acoustical tile ceilings, sills, and paint finishes damaged during removal of existing windows and installation of new windows.

3.0 Hazardous Building Materials

.1 **Hazardous Building Materials Work:** All work to be carried out in accordance with PDSB Hazardous Materials Management Program and the Hazardous Building Materials Survey prepared by Peritus Environmental Consultants dated March 2022 and related Abatement Specifications (Refer to Appendix 1). Lead-containing paint was identified in various locations.

.1 A minimum of 72-hours notice in writing should be provided before abatement work begins.

.2 PDSB approved abatement contractors:

.1 Caliber Environmental: jimball@caliberenv.com (905-884-5500)

.2 Edge Environmental Contracting Inc.: nabil@edgeenviro.ca (416-560-6404)

.3 Furcon Environmental: furconenviro@bellnet.ca (905-569-8311)

.3 Contractors other than those listed above may be used for work. Documents proving qualification of the work must be submitted for approval.

QUALIFICATIONS

.1 The above is to be considered a general description of the work to be completed and must not be construed as limiting the scope of work.

.2 All quantities / measurements to be confirmed by Contractor from on-site take-offs.

END OF SECTION – 01 11 00

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PART 1 - GENERAL

1.1 General Requirements

.1 All conditions of the project apply to this section.

.2 Scheduling of the work shall be discussed with and be subject to the approval of the Owner.

.3 All materials and equipment must be set up in a position satisfactory to the Owner.

.4 Provide a minimum 48-hour notice to the Consultant and the Owner prior to proceeding with any work that may disrupt building access or services.

.5 Perform work of this section in conformity with all applicable Municipal and Federal regulations.

1.2 References

.1 Comply with requirements of the following documents, latest edition:

.1 Canadian Standards Association CSA S350, Code of Practice for Safety in Demolition of Structures.

.2 C.S.A. Standard S350-M1980, Code and Practice for Safety in Demolition of Structures.

.3 Regulation 447 - Environmental Protection Act.

.4 Occupational Health and Safety Act and regulations for Construction Projects

.5 Construction Safety Act of the Province of Ontario

.6 National Building Code of Canada, Part 8, "Safety Measures at Construction and Demolition Sites", and Provincial requirements.

.7 Ontario Building Code.

1.3 Quality Assurance

.1 Notify the Consultant for review and confirmation of the following items:

.1 Final repair review.

1.4 Asbestos and Designated Substances

.1 If present, remove asbestos-containing materials and designated substances in accordance with the environmental consultant's specification, and in accordance with authorities having jurisdiction.

PART 2 - PRODUCTS

.1 Not Used.

PART 3 - EXECUTION

3.1 General Procedures

.1 At all times coordinate with school staff and perform work at times suitable to their schedule.

.2 Maintain security of the building at all times.

.3 Provide temporary enclosures in accordance with the Construction Safety Act to all hazardous areas, openings, and the like to protect persons/property using the building - lawfully or otherwise.

.4 Do not use cranes, hoists or other equipment in a manner that could overload the structure.

.5 Remove existing equipment, services, and obstacles where required, for refinishing or making good of existing surfaces, and replace same as work progresses.

.6 Take special care to avoid overloading roofs, floors, walls, and columns. Dispose of materials as soon as possible after removal and in no case permit accumulation of debris within existing building or site.

.7 The Contractor shall be responsible for the preservation of all public and private property and shall protect carefully from disturbance or damage.

3.2 General Protection

.1 Protect interiors, access routes, adjacent conditions, and parts not to be demolished from danger and damage at all times.

.2 Provide interior protection for building personnel and equipment.

.3 At all times protect exposed openings from moisture, dust, smoke, or physical entry.

.4 Prevent movement, settlement, or other damage to adjacent structures, utilities, and parts of the building to remain in place. Provide engineered bracing and shoring as required.

.5 Protect existing building systems, services, and equipment.

.6 Provide temporary dust screens, covers, railings, supports and other protection as required.

.7 Provide required signage, barricades, hoarding, overhead protection and temporary egress in accordance with Occupational Health and Safety Act.

.8 Support affected structure or building components and if safety of structure being demolished or adjacent structures or services appears to be endangered, take preventative measures and then cease operations and notify Consultant immediately.

.9 Ensure that demolition work does not adversely affect adjacent watercourses, groundwater, and wildlife, or contribute to excess air and noise pollution.

.10 Do not dispose of waste or volatile materials such as: mineral spirits, oil, petroleum-based lubricants, or toxic cleaning solutions into watercourses, storm, or sanitary sewers. Ensure proper disposal procedures are maintained throughout project.

.11 Do not pump water containing suspended materials into watercourses, storm, or sanitary sewers, or onto adjacent properties.

.12 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authorities.

.13 Protect trees, plants and foliage on site and adjacent properties where indicated.

.14 Prevent extraneous materials from contaminating air beyond application area, by providing temporary enclosures during demolition work.

.15 Cover or wet down dry materials and waste to prevent blowing dust and debris. Control dust on all temporary roads.

3.3 Demolition

.1 Remove parts of existing structure to permit repairs or new construction. Sort materials into appropriate piles for recycling and or reuse.

.2 Demolish systems as required to facilitate the contracted work.

.3 Ensure that existing materials are removed in such a manner as to ensure they will not damage the substrate. Any damages to the substrate must be repaired and sealed prior to proceeding with the work.

.4 Demolish to minimize noise, dust, and inconvenience to occupants. Where necessary keep materials damp to minimize dust.

.5 Dispose of demolished materials in accordance with authorities having jurisdiction.

.6 Disconnect and re-route any encumbrances such as electrical, gas, cable, refrigerant, telephone service lines, etc. encountered during demolition work, in accordance with authorities having jurisdiction. Post warning signs on electrical lines and equipment which must remain energized to serve other parts of the building during period of demolition. Reinstate in accordance with current codes and requirements.

.7 Do not disrupt, activate, or energize utilities designated to remain undisturbed.

.8 At end of each day's work, leave work in safe condition so that no part is in danger of leakage, toppling, falling, or physical entry.

3.4 Cutting, Fitting and Patching

.1 Execute cutting, fitting, and patching required to make work fit properly.

.2 Where new work connects with existing and where existing work is altered, cut, patch, and make good to match existing work.

.3 Obtain Consultant's approval before cutting, boring or sleeving load-bearing members.

.4 Make cuts with clean, true, smooth edges. Make patches inconspicuous in final assembly.

3.5 Disposal

.1 Include for the disposal of removed materials to appropriate Landfill and/or recycling facilities, except where specified otherwise, in accordance with authority having jurisdiction.

.2 Dispose of debris on a continuous basis with minimum disturbance to Owner and occupants. Do not stockpile debris in a manner which would overload the structure or impede access around the site. Use approved safe method(s) of conveying materials to and from grade level as follows:

.1 Under no circumstances shall material be dropped from one roof level to another. Use hoists and other similar equipment.

.2 Method(s) of conveying materials shall not damage existing building elements and surfaces to remain, and steps must be taken to protect and ensure safety of same during demolition and until construction is complete.

.3 Provide for storage and removal of garbage as a result of work and obtain approval of storage location(s) from Owner's Representative and the Consultant prior to commencement of work.

.4 At all times maintain work area and site free of accumulated waste and rubbish.

.5 Provide garbage bins and chutes required for daily disposal of debris and garbage. Obtain approval from the Owner for the bin location prior to commencement of the work.

.6 Remove full garbage bins immediately. Do not stockpile debris or garbage on project site.

.7 During and upon completion of the work, the Contractor shall remove from the premises all surplus materials, equipment, and debris.

3.6 Reconstruction, Alterations, and Making Good

.1 Ensure that existing pipelines, sprinkler lines, electrical conduit and wiring is not undermined or otherwise damaged or endangered by cutting or other operation in the performance of so affected immediately and make good to the Owner’s satisfaction.

.2 Schedule all work with all necessary consideration for the requirements of the Owner relating to the function of the existing building, including its facilities and services.

.3 Cutting work to be performed so as not to cut more than is necessary and so as not to damage adjacent work. The expression “make good” refers to repair and restoration of both new and existing work.

.4 Do not incorporate salvaged or used material in new work.

.5 Where existing work is to be made good, have new work match exactly the old work in material, form construction and finish unless otherwise noted or specified.

.6 Throughout the entire construction period, allow for proper and safe means of fire exit from the existing building for all workers and users continued use of the building at all times to the approval of the authorities having jurisdiction. Do not obstruct any exits from the building.

.7 Protect work in the existing building as completely as possible to keep the replacement of damaged work to a minimum. Replace damaged work to match existing.

.8 Co-ordinate the work of the various sections, taking into account the existing conditions to assure the best and most efficient methods of executing the work. No extra cost will be allowed due to the failure by the Contractor to co-ordinate work. If required, in critical locations, prepare Interference and/or Installation Drawings showing the work of the various sections as well as the existing installation. Submit these to the Owner for review before the commencement of the work.

.9 Do not begin work in any portion until Drawings, material and equipment required for the work in the respective areas is on the site.

3.7 Security and Weatherproofing

.1 It is essential that the existing building to be weatherproof at all times and made secure when construction forces are not on site.

.2 Furnish temporary protection, enclosures, tarpaulins, etc., as may be required to weatherproof and burglar proof openings made in the work. Make provisions to maintain security in a manner acceptable to the Owner.

3.8 Limitation in Use of Existing Building

.1 Contractor shall ensure that workmen do not enter areas of building not required to be entered in connection with the work of this project.

.2 Washrooms inside of the school are not to be used, unless otherwise indicated by the Owner.

3.9 Responsibility for Damage

.1 The Contractor shall be responsible for all damage or injury to property of any character, during the execution of the work, resulting from any act, omission, neglect, or misconduct in the manner or method of executing the work, or at any time due to defective work or materials, and said responsibility will not be released until the project work shall have been completed and accepted. When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work, or consequence of the non-execution thereof by the contractor, the Contractor shall restore, at the Contractor's own expense, such property to a condition equal to or better than existing before such damage or injury was done, by repairing, rebuilding, or otherwise restoring as may be directed, or he shall make good such damage or injury in an acceptable manner.

END OF SECTION – 02 41 00

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PART 1 - GENERAL

1.1 General Requirements

.1 All conditions of the project and Division 1, General Requirements apply to this section.

.2 All materials and equipment must be set up in a position satisfactory to the Owner's representative.

.3 All materials shall be new and in perfect condition, free from defects which may impair strength, durability or appearance.

.4 Scheduling of the work shall be discussed with and be subject to the approval of the Owner.

1.2 References

.1 Comply with requirements of the following documents, latest edition:

.1 ASTM C719, Standard Test Method for Adhesion and Cohesion of Elastomeric Sealant Joints Under Cyclic Movement (Hockman Cycle).

.2 ASTM C920, Standard Specification for Elastomeric Joint Sealants.

.3 ASTM C1193, Standard Guide for Use of Joint Sealants.

.4 ASTM C1311, Standard Specification for Solvent Release Sealants.

.5 ASTM C1330, Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.

.6 CAN/CGSB-19.13, Sealing Compound, One-component, Elastomeric, Chemical Curing

.7 SWRI (Sealant, Waterproofing and Restoration Institute) – Sealant and Caulking Guide Specification.

.8 The Professionals' Guide, Sealant, Waterproofing and Restoration Institute.

.9 Ontario Building Code.

1.3 Quality Assurance

.1 Contractor Qualifications

.1 Execute the Work of this Section by Contractors approved by manufacturers of materials incorporated in the Work; who has equipment, adequate for Project, and experienced tradesperson(s) to perform it expeditiously; and is known to have been responsible for satisfactory installations similar to that specified during a period of at least the immediate past three (3) years.

.2 The applicator must supply proper numbers of trained and approved personnel to perform tasks as described in the specification.

.2 Field Review

.1 The Work will be reviewed on behalf of the Owner by the Consultant. The Contractor is required to co-operate with and provide access and samples to the Consultant. The Contractor shall give the Consultant 24 hours advance notice for inspection and/or testing services.

.2 At the request of the Consultant, Contractor shall arrange for the sealant manufacturer's representative to review substrates and completed sealant joints.

1.4 Submittals

.1 Product Data: After the award of project, submit the following:

.1 Manufacturer's product data and specifications needed to prove compliance with the specified requirements.

.2 Sealant manufacturer's recommended installation procedures which will become the basis for accepting or rejecting actual installation procedures used on the work. Indicate special procedures, surface preparation, perimeter conditions requiring special attention, and field quality control testing.

.2 Samples: Upon request, submit samples of each sealant, each backer rod and each bond breaker to be used.

1.5 Delivery, Storage and Handling

.1 Materials to be stored on-site at a location approved by the Owner.

.2 Deliver all materials to the job site in their original unopened containers, with all labels intact. Verify the sealant(s) and the primer(s) for expiry date upon their arrival to site. Materials shall be used within their stated shelf life.

.3 Store and use materials in strict accordance with manufacturer's recommendations. Protect from freezing, moisture, water and contact with ground or floor.

.4 Unless otherwise approved, do not transport any materials through the buildings.

1.6 Environmental and Safety 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 local Labour regulations.

.2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use, including but not limited to:

.1 Weather dry.

.2 Imminent weather forecast, dry.

.3 Ensure that sealant and substrate materials are not less than 5°C when applied.

.4 Should it become necessary to apply sealants at temperatures below 5°C, consult the sealant manufacturer's technical representative. Proceed on manufacturer's written instruction only.

.3 Apply sealants only to completely dry and clean surfaces. (Note: Although the joint interface may appear to be dry, the substrate below the immediate joint surface may still be moist. This moisture can migrate rapidly to the joint surface thereby contaminating any surface preparation.

1.7 Measurement for Payment

.1 All work shall be paid on a lump sum basis, unless otherwise indicated.

.2 If scope of work is extended, then sealant replacement shall be performed on a per metre basis, which includes removal, surface preparation and installation of new material, complete with bond breaker.

1.8 Warranty

.1 **Contractors Obligation:** The Contractor must submit a signed written warranty to the Owner for the installation of work specified in this Section covering a period of two (2) years, including materials and application, at no cost to the Owner. The contractor shall warrant that the installation will be free from defects related to workmanship or material deficiencies, including:

.1 water penetration at joint;

.2 cracking, crumbling, melting, running of sealant;

.3 joint adhesion failure attributable to improper surface preparation;

.4 joint cohesion failure attributable to improper mixing of material or application of material; and

.5 staining of adjacent materials.

.2 **Manufacturer's Obligation:** The Manufacturer must submit a signed written warranty to the Owner for the installation of work specified in this Section covering a period of five (5) years.

.3 The cost of all warranties shall be included in the Bid base price.

.4 Any repair required under the warranty will be carried out in accordance with the recommendations of the Consultant.

PART 2 - PRODUCTS

2.1 Sealant Materials

.1 Sealant compounds must:

.1 meet or exceed all applicable governmental and industrial safety and performance standards.

.2 be manufactured and transported in such a manner that all steps of the process, including the disposal of waste products arising therefrom, will meet the requirements of all applicable governmental acts, by-laws and regulations.

.2 Sealant compounds must be accompanied by detailed instructions for proper application so as to minimize health concerns and maximize performance, and information describing proper disposal methods.

.3 Sealant that emits strong odours, contains toxic chemicals or is not certified as mould resistant shall not be used in or near air handling units.

.4 Compatibility: All materials in a sealant system shall be compatible with each other and with the substrate.

.5 The use of materials other than those specified herein must be approved prior to award of the Project. If substitute materials are proposed, then the list of materials must be included as part of the Bid Form. This submittal shall include product name, number and data sheets and manufacturer's specifications and installation instructions.

.6 All materials listed below must be used on the project. Under no circumstances will substitute materials be used unless approval is first received from the Owner. Use of substitute materials without prior approval can result in the removal and replacement of these materials at no cost to the Owner.

2.2 Sealant Material Designations

.1 General:

.1 Colour of sealants shall be selected to match substrates and/or existing sealants and shall be approved by the Owner prior to application.

.2 Silicone Sealants: Single component moisture curing, non-staining, conforming to CGSB-19.13.

.1 Exterior Sealant:

.1 Contractors Weatherproofing Sealant (CWS) by Dowsil

.2 or approved equivalent

.2 Interior Sealant:

.1 Contractors Weatherproofing Sealant (CWS) by Dowsil

.2 or approved equivalent

.3 Interior Sealants: Single component, acrylic latex sealant, conforming to CAN/CGSB-19.17 or meeting the requirement of ASTM C834:

.1 Tremflex 834 by Tremco Ltd.

.2 MasterSeal NP 1 by BASF

.3 or approved equivalent

.4 Cleaning Materials:

.1 Acceptable cleaners are:

.1 Isopropyl Alcohol (IPA)

.2 Methylethylketone (MEK)

.3 Or other solvent cleaner as recommended by sealant manufacturer

.2 Surfaces to receive sealants shall not be cleaned with Xylene unless cleaned with Isopropyl Alcohol (IPA) after.

.3 Xylene and Toluene shall not be used for cold weather cleaning.

.4 All substrate materials shall be cleaned with compatible cleaners.

.5 Masking Tape:

.1 For masking around joints, provide an appropriate masking tape which will effectively prevent application of sealant on surfaces not scheduled to receive it, and which is removable without damage to the substrate.

.6 Void Filler:

.1 Clean, glass fibre batt insulation.

.7 Cloths For Solvent Cleaning:

.1 Cloths for solvent cleaning of surfaces prior to application of sealants shall be clean, white and solvent resistant. Coloured cloths shall not be used. Change cloths frequently as they become soiled during cleaning.

.8 Primer:

.1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant. Primer as recommended by sealant manufacturer.

.2 The deletion of primer shall be at the sole discretion of the Consultant, with consideration given to manufacturer recommendation and/or field testing results.

.9 Joint Backing:

.1 Backer Rod must be used, where applicable, to control depth of sealant. Acceptable materials are:

.1 Closed Cell: Polyethylene, urethane, neoprene or vinyl, extruded closed cell foam, in circular shape with diameter 25% greater than joint width before installation.

.2 Hybrid: Extruded polyolefin foam, non-gassing with diameter 25% larger than joint width SOF-ROD as manufactured by Industrial Thermo Polymers and distributed by Tremco Ltd.

.2 Bond Breaker Tape must be used, if dimensions of joint do not permit installation of backer rod, to prevent three (3) sided adhesion of sealant. Acceptable materials are:

.1 Pressure sensitive adhesive tape recommended by sealant manufacturer that will not bond to the sealant: No. 226 or No. 481 Tape by 3M Canada Inc.

.2 Alternatively, and where approved by Consultant, wax crayon may be used.

PART 3 - EXECUTION

3.1 Examination of Site Conditions

.1 Examine the Drawings and Specifications to determine the extent of the work involved, together with other necessary data affecting the work, as in no circumstances will any claims against the Owner be allowed resulting from failure to ascertain the extent of such work herein described or implied.

.2 Bidders shall visit the site and acquaint themselves with the existing conditions. Prior to bidding, bidders shall make investigations to satisfy themselves as to the job requirements, existing conditions, and quantities.

.3 Before any sealant replacement is performed, the type of existing sealant shall be determined. If uncertain as to type, then the sealant manufacturer technical representative shall be contacted to confirm type. Only sealant compatible with the existing shall be installed as part of repairs.

.4 Inspect existing conditions and substrates upon which work of this section is dependent. Report to the Owner's Representative in writing any defects or discrepancies. Commencement of work implies acceptance of existing conditions and assuming full responsibility for the finished condition of the work.

.5 Ascertain that sealers and coatings applied to sealant substrates are compatible with the sealant used and that full bond between sealant and substrate is attained. Request samples of the sealed or coated substrate from their fabricators for testing of compatibility and bond if necessary.

.6 Inform Owner's Representative of any unusual or deteriorated construction revealed during performance of Work. Allow Owner's Representative to review conditions prior to retrofit.

.7 Defective work resulting from application to unsatisfactory joint conditions will be considered the responsibility of those performing the work of this section.

3.2 Surface Preparation

.1 Prepare surfaces in accordance with manufacturer's directions.

.2 Before any sealant repairs are made, the type of existing sealant shall be determined. If uncertain as to type, a sealant manufacturer technical representative shall be contacted to confirm type. Only sealant compatible with the existing shall be installed as part of repairs. Polyurethane based sealants are not to be applied over existing silicone sealants.

.3 Where existing, remove sealant completely. In no case shall new sealant be applied over old. In addition:

.1 Remove existing sealants, dust, oil, grease, oxidation, mill scale, coatings and all other loose material by cutting, brushing, scrubbing, scraping and/or grinding. In no case, however, shall remaining components such as window frames be damaged during surface preparation.

.2 Prior to use of any solvents, ensure that solvent does not damage existing materials and finishes.

.3 Clean substrates with the recommended solvent cleaner. Apply solvent with a clean cloth, pad or soft paper towel. The applicator cloth or towel shall not leave fiber residue on the substrate surface. The surface should be wiped clean and dried with a second clean cloth to ensure removal of contaminants. If substrate surfaces is still not clean, repeat procedures as needed. Change cloths frequently to prevent depositing contaminants from the cloth onto the substrate surface.

.4 Use method of surface preparation suitable for substrate, as recommended by sealant manufacturer and that does not damage existing finishes.

.4 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.

.5 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.

.6 Ensure joint surfaces are dry and frost free.

.7 Do not install sealant until joints are in compliance with the manufacturer of the sealant and the specific requirements of other sections of the Specification.

3.3 Priming

.1 The deletion of primer shall be at the sole discretion of the Consultant. Manufacturer's written recommendation, and/or results of in-field adhesion testing, shall be considered by the Consultant in the decision to delete primer.

.2 Use only the primer approved by the sealant manufacturer for the particular installation, applying in strict accordance with the manufacturers printed recommendations.

.3 Prevent staining of adjacent surfaces and priming backer rod/bond breaker during priming of joint interfaces. Where necessary to prevent staining or for neat appearance, mask adjacent surfaces prior to priming and sealant installation.

.4 Prime only as much area as can be sealed in one (1) hour. If primed areas are exposed to rain or contaminants (dirt, dust, etc.), joint surfaces must be cleaned and re-primed. Follow manufacturer's recommendations for application and cure time.

.5 If primer is installed accidentally on surfaces other than surfaces to which sealants are to be applied, remove excess primer immediately with clean cloth dampened with recommended cleaner.

.6 Always pour primers onto the rag or brush, do not dip the rag or brush into the container.

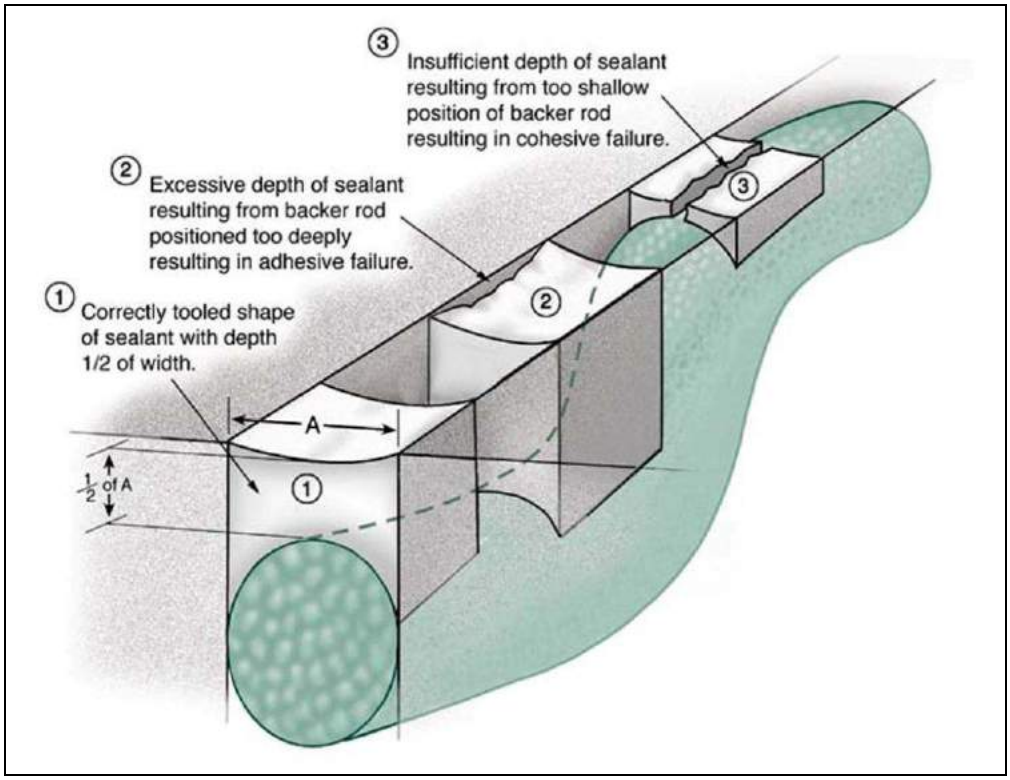
3.4 Back-Up Material

.1 When using backing material comprised of tubular or rod stock, avoid lengthwise stretching of the material. Do not twist or braid backer material.

.2 Provide a stiff blunt-surfaced wood or plastic installation tool, having shoulders designed to ride on the finished surface and a protrusion of the required dimensions to assure a uniform depth of backup material below the sealant. Do not puncture the exterior skin or surface of the backer material. A screwdriver and other similar sharp pointed items are prohibited. Where punctured or otherwise damaged, the backer material shall be removed and replaced with new.

.3 Using the approved tool, smoothly and uniformly place the backup material to achieve the proper depth to width ratio required, compressing the backer material 25% to 50% and securing a positive fit. Do not insert the depth of the backer material beyond 13mm (1/2").

.4 Install backing material to a depth to provide a caulked joint meeting the depth requirement as set out in the sealant manufacturer's specifications and outlined in Figure 1 below.



.5 Install specified bond breaker tape, or other acceptable bond breaker where backer rod cannot be installed due to joint profile.

3.5 General Installation

.1 Install sealant in compliance with sealant manufacturer's recommendation. Joint designs and profiles shall be as described below and in accordance to Sealants: The Professionals' Guide,

Sealant, Waterproofing and Restoration Institute. Joint designs deviating from those listed below and as described in the aforementioned document shall not be accepted.

.2 Where surfaces adjacent to joints are likely to become coated with sealant during application, or where irregular surface or sensitive joint border exist, mask edges with masking tape prior to sealing.

.3 Do not apply work of this section on surfaces which are wet, damp or have frost.

.4 Equipment:

.1 Apply sealant under pressure with power-actuated handgun, with manually operated hand gun, or by other appropriate means.

.2 Use guns with a nozzle of proper size and length and providing sufficient pressure to completely fill the joints as designed.

.3 Provide suitable nozzle extensions where double stage joints are installed.

.4 Provide appropriate nozzles to create profiles required. This may require custom cutting of nozzles tips.

.5 Apply sealant in continuous beads. Fill joints completely to required depths with sealant compound. Use sufficient pressure to fill all voids and joints.

.6 Ensure that the new sealant is adhered to substrates a minimum of 6mm (1/4") at each side of joint. Depth of sealant at center to be a maximum of 13mm (1/2") while maintaining a 2:1 joint width to depth ratio.

.7 Tool joints to a slight concave bead, smooth and free from ridges, wrinkles, sags, air pockets and imbedded impurities. Tooling to be performed by proper metal or wood tool. Finger tooling joints will not be accepted.

.8 Remove excess compound promptly as work progresses and upon completion.

.9 Where possible (i.e. for new cladding installations), install sealant as a recessed joint (at least 3/4" back from face of the joint) to allow for sealant replacement in the future without removing the existing sealant.

3.6 Fillet Bead

.1 If backer rod cannot be installed into joint then provide bond breaker at inside corners. Bond breaker to extend 3mm (1/8") onto substrates.

.2 Install sealant to provide minimum 6mm (1/4") vertical and horizontal leg of sealant onto substrate, or more where gap exists between assemblies. Minimum adhesion to be 6mm (1/4") onto substrate. Minimum depth of sealant to be 6mm (1/4").

.3 Where a proper fillet bead cannot be obtained because the window frames are installed flush or near flush with finished cladding surface, provide a sealant bead profile (similar to a band-aid joint) to meet the above minimum requirements for sealant depth and contact with substrates.

3.7 Butt Joints

.1 For butt joints, maintain the following width to depth ratio (Note: Depth of sealant shown at middle of joint):

Joint Width (mm)	Sealant Depth (mm)
<12	6
12	6 to 8
25	8 to 10
18	9 to 12
25	10 to 15

.2 For joints wider than 19mm (3/4"), it may be necessary to apply the sealant in several passes (depending on joint configuration, weather conditions, access and material type). Follow the sealant manufacturer recommendations for maximum joint width and application methods.

3.8 Cleaning

.1 Remove sealant smears and droppings using recommended cleaners as work progresses as follows:

.1 Non-Porous Surfaces: Immediately remove all excess sealant adjacent to the joint with one of the recommended solvents as work progresses.

.2 Porous Surfaces: Allow sealant to develop initial cure, then remove by abrasion or other mechanical means. Caution should be exercised to maintain original surface integrity.

END OF SECTION – 07 92 00

PART 1 - GENERAL

1.1 General Requirements

.1 All conditions of the project apply to this section.

.2 All materials and equipment must be set up in a position satisfactory to the Owner's representative.

.3 All materials, except those approved by Consultant for re-use, shall be new and in perfect condition, free from defects which may impair strength, durability or appearance.

.4 Scheduling of the work shall be discussed with, and be subject to, the approval of the Owner.

.5 All work shall meet the current Ontario Building Code and Insulating Glass Manufacturers Alliance (IGMA) recommendations, including all amendments up to project date, and good building practice.

.6 Design glazing to withstand, without detrimental effects to appearance and performance, wind loads and temperature range expected in accordance with applicable codes and standards.

1.2 References

.1 Comply with requirements of the following documents, latest edition:

.1 AAMA 501, Methods of Test for Exterior Walls

.2 AAMA 2605, Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels – Series: Components, Coatings and Finishes

.3 AAMA/WDMA/CSA 101/I.S.2/A440-08, NAFS – North American Fenestration Standard/Specification for windows, doors, and skylights

.4 Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440-08, NAFS – North American Fenestration Standard/Specification for windows, doors, and skylights

.5 CAN/CSA-A440, Windows.

.6 CAN/CSA-A440.1, User Selection Guide to CAN/CSA-A440.

.7 CAN/CSA-A440.2, Energy Performance of Windows and Other Fenestration Systems.

.8 CAN/CSA-A440.3, User Guide to CSA A440.2.

.9 CAN/CSA-A440.4, Window and Door Installation.

.10 CAN/CSA-Z91, Safety Code for Window Cleaning Operations.

.11 CAN/CSA 3-S157.20-M83, Strength Design in Aluminum.

.12 CAN/ULC-S710.1, Standard for Thermal Insulation - Bead Applied One-Component Polyurethane Air Sealant Foam.

.13 ASTM E283, Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differentiation Across the Specimen.

.14 ASTM E783, Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors.

.15 ASTM E1105, Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference.

.16 Ontario Building Code.

1.3 System Design

.1 Any drawings provided by the Consultant are intended to show design intent only. Design of window assembly and associated accessories and anchorage are the sole responsibility of the shop drawing engineer.

.2 Design window systems to withstand, without any detrimental effects to appearance and performance, wind loads and temperature ranges expected in the geographical area.

.3 Design windows in accordance with following Climatic Design Data for Toronto contained in the Ontario Building Code:

.1 Design temperature: January 1%, July 2½%.

.2 Hourly wind pressures: 1 in 50 year occurrence.

.4 Design complete fixed window systems, including glazing, to meet the following performance criteria:

.1 U-factor (Btu/h/ft^2/F): Maximum 0.35

.2 Solar Heat Gain Coefficient (SHGC): Maximum 0.39

.5 Design complete operable window and door systems, including glazing, to meet the following performance criteria:

.1 U-factor (Btu/h/ft2/F): Maximum 0.42

.2 SHGC: Maximum 0.39

.6 Design windows to accommodate following without producing detrimental effect:

.1 Cyclic 40°C daily thermal swing of components.

.2 Cyclic, dynamic loading and release of loads such as wind loads.

.3 13mm (½") vertical deflection in supporting structure and movement of supporting structure due to live, dead load, and creep or deflections, seismic load, sway displacement and similar items.

.7 Design windows to prevent accumulation of condensate on interior side of framing under the following service conditions:

.1 Interior summer temperature: 22°C

.2 Interior winter temperature: 20°C

.3 Exterior winter temperature: -18°C

.4 Interior Relative Humidity: 35%

.8 Classification and Performance for Windows (the most stringent between NAFS and A440 shall apply): Performance grade per AAMA/WDMA/CSA 101/I.S.2/A440 NAFS – North American Fenestration Standard/Specification for windows, doors, and skylights and Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440-08, NAFS – North American Fenestration Standard/Specification for windows, doors, and skylights:

.1 Primary Designator:

.1 Performance Class: **CW**

.2 Maximum Size Tested: **Greater than largest window of given type shown on the drawings**. Submit test reports to reflect proposed assemblies or greater.

.3 Minimum Positive Design Pressure: 1680 Pa

.4 Minimum Negative Design Pressure: -1680 Pa

.2 Secondary Designator:

.1 Minimum Water Penetration Resistance Test Pressure: **730 Pa**

.2 Minimum Canadian Air Infiltration/Exfiltration: **A3** (for operable units)**, Fixed** rating for fixed glazing.

.3 Performance rating to CAN/CSA-A440:

.1 Air Tightness: **A3** (for operable units)**, Fixed** rating for fixed glazing.

.2 Water Tightness: **B7**

.3 Wind Load Resistance: **C5**

.4 Condensation Resistance: **I ≥ 60**

.5 Forced Entry: **F10**

.6 Ease of operation: **Pass**

.7 Block operation: **Pass**

.9 Windows should not be used to support other components (except for the weight of window components). Design window system to provide:

.1 Resistance to pressure differentials.

.2 Adequate provision for thermal movement without thermal fractures of framing members, glazing, and/or sealants.

.3 Adequate provision for live and dead loads without failures, distortion or fracture.

.4 Adequate support and anchorage of components, taking into consideration all loading factors.

.5 A water and weather tight installation with gaskets, seals, and sealants to effectively prevent water entry into building.

.6 The operable window system must respect the "open rainscreen principle" (i.e. be pressure-equalized and self-drained to the exterior). Provide pressure equalized and self-drained vents at exterior frame members without causing air flow around glazing.

.7 Continuous air and vapour seals to control transfer of moisture vapour into system of insulated glass units.

.8 When corrosion represents a possible problem, design shall include preventive measures.

.9 Size each window to achieve a sealant joint width between 6mm and 10mm (1/4" and 3/8") from surrounding exterior finish. Where larger clearances are necessary, use extended flange on the window frame or install extruded aluminum trim to reduce the sealant joint width to the tolerances indicated.

1.4 Quality Assurance

.1 Manufacturer and Installer Qualifications:

.1 Fabrications specified in this Section to be provided only by a manufacturer and erector who has adequate plant, equipment, and experienced tradesperson(s) to perform work expeditiously, and who is known to have been responsible for satisfactory fabrication similar to that specified in Specifications during a period of at least the immediate past three (3) years.

.2 Installation shall be by the window company or its approved installer using only mechanics experienced in this trade and in sealant trade, as applicable. Installation crew to remain the same for the duration of the project provided performance is acceptable.

.2 Mock-Up

.1 Install one complete window assembly, including metal flashings, interior trim, sealants, metal spandrel panel, etc. in accordance with approved shop drawings, at location designated by the Owner. The prototype shall be complete in all respects, including unit finishing, sealants, trim, flashings and painting.

.2 Mock-up shall be installed by same installers who will perform the general installation.

.3 The prototype shall be reviewed and modified, if necessary, as required to conform to the Bid documents and site conditions. The assembly may require re-testing, if applicable, at the Contractor's expense.

.4 Do not proceed with the balance of the work until prototype has been approved in writing by the Owner.

.5 The approved prototype shall remain in place as the minimum standard of acceptance for the balance of the work.

.6 The Shop Drawings shall be modified and resubmitted to reflect final installation procedures, as per the approved prototype.

.3 Window Manufacturer Plant Review

.1 Provide access for the Owner/Consultant to the plant, during fabrication of the window assemblies to be installed on-site, to review materials and assembly. Manufacturer to make adjustments to the fabrication of the assemblies to meet the specified design, descriptions in the laboratory test report, and approved Shop Drawing requirements, at no additional cost to the Owner.

.4 Field Quality Control

.1 The Owner / Consultant maintains the right at any time during the work to test any window unit in accordance with NAFS/A440 in a completed in situ location.

.2 Any Work failing any tests shall be repaired or replaced without cost to Owner. Such failure will also require retesting of subject window to satisfaction of the Consultant and Owner. All costs for additional testing to be paid by window contractor.

.3 Contractor to select an accredited testing company or other qualified company to conduct field testing of a window selected by The Owner for compliance with the ratings specified below. Consultant to approve selected testing company. All window testing will be conducted using the following procedures:

.1 ASTM Standard E783-93, Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors.

.2 ASTM Standard E1105-00, Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference.

.4 Windows failing to perform to the required test levels will be modified such that they pass, and re-testing will be conducted by the Owner, **at the Contractor's expense**. Costs for Consultant for work required to resolve deficiencies, including but not limited to, extra inspections and additional testing required due to failure of windows to meet specified performance levels, shall be deducted from amounts owing to the Contractor.

.5 The inspection and testing service does not relieve the Contractor of his responsibility for quality control of production and for subsequent mistakes.

1.5 Submittals

.1 Samples: Not required if the installation of a mock-up window is completed prior to the full fabrication.

.1 Submit one representative sample of each proposed assembly type. Sample window supplied must be identical to the window described in the submitted test report in terms of any components which may affect the performance ratings. These samples will clearly demonstrate all operational features and noted locations.

.2 Include frame, sash, sill, glazing and weatherproofing method, surface finish, sealants, and hardware. Show location of manufacturer's name plates.

.3 Include 150mm (6") long samples of head, jamb, sill, meeting jambs, and mullions to indicate profile at Consultant's request.

.4 Include pre-formed joint covers and end caps for sill facings.

.2 Test Reports:

.1 Submit to the Consultant, for review, test documentation as required to verify that the window assemblies specified meet the requirements of AAMA/WDMA/CSA 101/I.S.2/A440-08, NAFS – North American Fenestration Standard/Specification for windows, doors, and skylights, Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440-08, NAFS – North American Fenestration Standard/Specification for windows, doors, and skylights, CAN/CSA-A440 and CAN/CGSB-82.1. and the rating specified in this Section. Information must be supplied by the manufacturer to confirm that all requirements of the Standard are satisfied. Additional testing may be required to illustrate that the specifications are satisfied. Test reports submitted without drawings of the window tested are not considered acceptable by current regulations. An SCC approved laboratory must have carried out all testing.

.3 Shop Drawings:

.1 Shop drawings must be specific to wall assembly in which they are to be installed. Please note, specified indications to the windows have been listed below.

.2 Indicate materials and details in as large a scale as practical, including, but not limited to, the following:

.1 Window head, jamb, sill, and spandrel panel profiles including type, thickness, and properties of metal alloy used for extrusions.

.2 Vertical and horizontal sections through mullions and frames, including junction between combination units.

.3 Interior and exterior trim and wood blocking between frame and rough opening.

.4 Elevations of unit and window schedule and layout dimensioned to indicate the number and spacing of anchors.

.5 Anchorage of window assembly to structure. Drawings should also show complete calculations including anchor size, capacity, spacing, and mullion deflection.

.6 Location and type of subsill flashings and metal sill flashings. Show type, size, and spacing of fasteners used to secure flashings.

.7 Location of setting blocks, edge blocks, and isolation coatings.

.8 Type of glazing and sealants.

.9 Size, number and configuration of new steel lintels, if required.

.10 Indicate location of manufacturer's name plates.

.11 Provide additional framing as required to support existing ventilation unit penetrations at locations shown on the Drawings. Framing details to be shown on Shop Drawings.

.3 Windows required to act as guards shall be designed in accordance with the NBC and OBC for required loads and shall be indicated as such on Drawings.

.4 If required, the Contractor shall attend a meeting to discuss the shop drawings and review their content. Window samples to be provided at the meeting. The draft version of the Shop Drawings shall be submitted a minimum of one (1) week prior to the meeting. The intent of the meeting will be to discuss / confirm the shop drawing and project requirements. Contractor to allow for a minimum 2 site meetings. All meetings to be held at the school or at the PDSB's office, 933 Central Parkway W. in Mississauga, Ontario.

.5 Once reviewed by the Consultant, revise and re-submit the Shop Drawings, if required. Proceed with the mock-up once revised Drawings are approved by the Consultant.

.6 After the meeting and the completion of the mock-up, revise Shop Drawings (if necessary) and submit to the Consultant.

.7 Final Shop Drawings are to be signed and sealed by a Professional Engineer licensed in the Province of Ontario. These shall be provided prior to ordering materials and starting fabrication.

.4 Safety:

.1 All work of this section to be completed to Ministry of Labour guidelines under the *Occupational Health and Safety Act*.

.2 Submit to Consultant a work plan indicating tie-off locations for workers during removal and replacement of windows.

.3 Submit plan indicating locations and configurations of covered hoarding for walkways, etc.

.5 Maintenance Data:

.1 Provide operation and maintenance data for windows for incorporation into manual.

.2 Include the following information:

.1 Maintenance instruction for materials, finishes, operation, and cleaning.

.2 Parts list indicating make, size, serial number, manufacturer, telephone number, and address of the suppliers.

.3 Arrange with and demonstrate to building maintenance staff, window operation, sash removal, cleaning, Reglazing, and general maintenance procedures.

1.6 Delivery, Storage and Handling

.1 Before shipment, brace frame units to prevent distortion in shipment and handling and protect finished surfaces by sturdy protective wrappings.

.2 Maintain squareness of the windows during packaging and hoisting.

.3 Store on site on wood platforms with waterproof sheds.

.4 Store in vertical position with spacers between to prevent damage.

1.7 Manufacturers

.1 Below are the accepted window manufacturers, provided they meet all requirements of this Specification. Contractors must submit test reports with bid submission.

Manufacturer	Fixed Windows	Operable Windows
Sherwood Windows Ltd.	TB 502D	V237
Aluminum Window Designs Ltd.	4800	4800
Alwind Industries Ltd.	FG 400	VO 300
Windspec Inc.	855	535
Alumicor Ltd.	RainBlade 1900	UniVent 1350
Alternates	Consideration will be given to proposed alternates which meet performance requirements specified.	

1.8 Warranty

.1 **Contractor's Obligation:** The Contractor must submit a signed written warranty to the Consultant for the installation of work specified in this Section covering a period of five (5) years from date of the Certificate for Substantial Performance. The window units' installation warranty shall include, but not be restricted to:

.1 Leaking, loosening of whole or of parts of units, glass breakage from excessive stresses developed on the exterior of the insulating glass unit (other than by accidental cause exterior to the glazed unit), or deformation of unit framing due to installation.

.2 **Manufacturer's Obligation:** The manufacturer must submit a signed written warranty to the Consultant for the fabrication of windows specified in this Section covering a period of ten (10)

years from date of the Certificate for Substantial Performance, against leakage, defects, and malfunction under normal usage conditions.

.3 Any repairs required shall be carried out in accordance with the recommendations of the Consultant, at no cost to the Owner.

.4 The cost of all warranties shall be included in the Bid price.

PART 2 - PRODUCTS

2.1 Materials

.1 All window materials, components, design, construction, and performance to meet all current code requirements as supplemented in this Specification.

.2 For structural requirements, conform to Ontario Building Code, Part 4.

.3 All materials shall be compatible and by the same manufacturer.

.4 Extrusions:

.1 Extrusions to be designed in accordance with CAN/CSA-S157.

.2 Main Frame and Mullions: Extruded aluminum, thermally-broken.

.3 Sash: Extruded aluminum, thermally broken.

.4 Minimum metal thickness for window sash and frame shall be 1.6mm.

.5 Extruded Aluminum: Aluminum Association Alloy AA6063-T6 with minimum yield strength 110 MPa for thickness up to 13mm (1/2").

.6 Sheet Steel: Stainless steel or hot-dipped zinc coating at least equal to ASTM A525M coating designated Z275 and with sufficient ductility to permit necessary forming operation.

.7 Exposed Aluminum Sheet and Plate: AA1100-H14, alloy and temper.

.8 The main frame depth shall be match to the existing complete with frame extension if necessary.

.5 Exterior Sills:

.1 Utility grade minimum 1.60mm thick, extruded aluminum complete with jamb drip deflectors, chairs, and anchors, reinforced with integral stiffening ribs. Use 1.95mm thick extruded aluminum when not reinforced. Sills to be interlocked to frame. Brake formed shapes and exposed fasteners will not be accepted. Finish of sill to match windows.

.6 Aluminum Finish:

.1 Clear Anodized Finish:

.1 Finish aluminum components in accordance with AA-C22A31 "Aluminum Association Designation System for Aluminum Finishes".

.2 Anodized to attain a (Class 2 for exterior) or (Class 3 for interior) anodic coating; exterior trim not less than 10 µm; interior trim not less than 5 µm when tested in accordance with ASTM B244.

.3 Coating mass when tested to ASTM B137: Class 2, density shall not be less than 24.0 g/m^2 except for interior trim which shall have a minimum coating area density of 12.0 g/m^2.

.4 Exposure to salt spray to ASTM B117: Class 2, capable of withstanding 250h of exposure without pitting; interior trim Class 3, minimum time expose of 100 h without pitting.

.7 Interior Angle Back Dam:

.1 3mm (1/8") thick.

.8 Sub-Sill Flashing Membrane:

.1 DuPont™ FlexWrap(FM),

.2 Blueskin® PE200HT by Bakor,

.3 Sopraseal Stick FlashPro HT,

.4 or approved equivalent.

.9 Glass Stops**:**

.1 Extruded aluminum glass stops, finish to match windows.

.10 Glass:

.1 Glass and glazing materials to meet specified requirements of Section 08 80 00.

.11 Spandrel Panels: to be comprised of the following (exterior to interior)

.1 Aluminum panel, minimum 2 mm thickness. Finish of panel to match window frame and approved by the Owner.

.2 Air gap, minimum 25 mm width.

.3 Mineral wool insulation filled in galvanized metal back pan. Insulation to be minimum 63.5 mm thick.

.4 Galvanized metal back pan, minimum 20 gauge in thickness.

.5 Aluminum panel, minimum 2 mm thickness. Finish of panel to match window frame.

.12 Weatherstripping:

.1 To be constructed of material resistant to weathering and aging.

.2 Weatherstripping shall be compatible with associated materials.

.3 Open celled or surface applied or glued weatherstripping shall not be used.

.4 All weatherstripping shall be continuous, installed in specially extruded parts, and mechanically secured to prevent shrinkage, movement or loss when removing sash for cleaning or glass replacement.

.5 Must be mechanically fastened in a manner to ensure easy replacement.

.13 Operating Hardware:

.1 Conform to CAN/CGSB 69 series "Builders Finishing Hardware".

.2 Unless noted otherwise, provide zinc-plated 1018 steel or 304 stainless steel for operating hardware, nuts, washers, bolts, rivets, and other fastening devices incorporated in the windows.

.3 For each Top Hung Project Out and Project In Vent, provide the following:

.1 Handles: A minimum of 2 (two) solid stainless steel cam handles per awning unit. 25 and 27 Series TrimLine and Pole Operated Cam Handles (where applicable) by Truth hardware or approved alternate.

.2 Hinges: Side arms are to be 301 Series Heavy stainless steel Duty Steel 4-Bar Hinges by Truth Hardware or approved alternate. To be sized as per manufacturer's requirements for the project specific operable size.

.3 For windows not within standing reach, Teleflex operators are to be used.

.4 Install restrictors to limit the projection of the operable sash to a maximum of 100 mm unless noted otherwise, in accordance with OBC.

.4 Safety Restrictors:

.1 Provide safety restrictors on all operating windows.

.2 Provide controlled sash operation to restrict, when engaged, the opening of the operable sash to not more than 100mm (4") unless noted otherwise, in accordance with OBC.

.3 Safety restrictors shall allow manual by-pass to allow full opening of sash and automatically reset when the sash is moved to the closed position.

.4 Do not use spring loaded pins requiring holes in main frame.

.5 Where window latching devices are located in excess of 1900mm (6'-3") above floor level, equip operable units with hardware or design sash to permit pole operation (pole, coaxial crank, etc.).

.14 Isolating coating:

.1 Alkali resistant bituminous enamel paint conforming to CGSB 1-GP-108M to prevent deterioration due to corrosion or electrolytic action, as recommended by manufacturer. Isolate aluminum from following components:

.1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.

.2 Concrete, mortar, and masonry.

.3 Wood.

.15 Thermal Break:

.1 Extruded rigid cellular PVC conforming to CGSB 41-CP-19M, or poured in polyurethane. Poured and de-bridged thermal break installation must follow AAMA guidelines, and employ cavity serration technique to mitigate dry shrinkage.

.16 Perimeter insulation:

.1 Polyurethane Foam: Non-shrinking, low expansion (25%), closed cell, no CFC, single component polyurethane foam, complying with CAN/ULC-S710.1 "Standard for Thermal Insulation - Bead Applied One-Component Polyurethane Air Sealant Foam", such as EnerFoam manufactured by Dow Chemical Company, or an approved equivalent.

.17 Installation Anchors:

.1 Anchors to be specified by Professional Consultant and indicated on Shop Drawings.

.2 Galvanized steel, aluminum or stainless steel anchors. All exterior fasteners shall be Series 300 stainless steel with chromium content not less than 12% unless otherwise noted.

.3 Into Concrete Structure and Masonry:

.1 Pre-drilled, self-tapping screws formed from carbon steel, 6mm (1/4") minimum diameter, length as required to provide minimum 25mm (1") embedment into concrete or masonry; use Tapcon by ITW Construction Products or Tapper by Powers Rawl.

.4 Into Structural Steel:

.1 Pre-drilled, self-tapping screws formed from carbon steel, 1/4" minimum diameter, length as required to provide minimum thread engagement in the steel as shown on approved shop drawings.

.5 Into Wood:

.1 Minimum #8 wood screws, formed from stainless steel, length as required to provide penetration into wood members as shown on approved shop drawings.

.6 Into Aluminum:

.1 Self-drilling, self-tapping screws, minimum #6, minimum length, as required to provide full penetration, pan head, formed from stainless steel; use Twin-Fast by Powers Rawl or Traxx by ITW Construction Products.

.7 Length, diameter and spacing to suit application and be indicated on Shop Drawings to provide adequate securement such that all loads subjected to the window will be transferred to and be carried by the anchors and anchor support systems. (All anchors to be designed to meet loads and stresses as dictated by the Ontario Building code).

.8 Screw fasteners shall be socket pan head or hex washer head type, except where screws are installed through window frames (fixed and/or operable), or in sliding doors, where flat head may be used provided they are properly countersunk.

.9 All fasteners to be concealed.

.10 Fasteners shall not be installed through the drainage plane in window or door sills unless approved by the Consultant. If fasteners at these locations are required and approved by the Consultant, wrap screw shanks with unshimmed butyl glazing tape.

.18 Wood Blocking / Shims:

.1 Wood blocking and shims to be provided at anchorage locations to be cedar.

.19 Interior Aluminum Closures:

.1 All interior exposed blocking and gaps exceeding 9mm (3/8") at window perimeters to be covered with angled brake formed shapes (installed in conjunction with windows), aluminum, minimum 0.81mm (20ga) thickness, finish to match windows.

.20 Window Pannings and Brake Formed Shapes:

.1 All exterior exposed blocking and gaps exceeding 9mm (3/8") at window perimeters shall be covered by extruded aluminum panning, interlocked to frame. Brake formed shapes and exposed fasteners will not be accepted.

.21 Sealant: See Section 07 92 00.

2.2 Window Type

.1 Aluminum, Combination Fixed with Awning Assemblies. Refer to Drawings for type and configuration.

2.3 Fabrication

.1 Fabricate windows in accordance with CAN/CSA-A440.

.2 Tolerances:

.1 Fabricate units square and true with maximum tolerance of plus or minus 1.5mm (1/16") for vertical, horizontal, and diagonal dimensions of units under 1830mm (6'), and plus or minus 3mm (1/8") for dimensions greater than 1830mm (6').

.2 Fabricate mullions to ensure, under specified wind loads, a maximum deflection of L/175 of mullion span or 19mm (3/4”), whichever is less.

.3 Fabricate sash members to ensure, under specified wind loads, a maximum deflection of L/125 of mullion span or 19mm (3/4”), whichever is less.

.4 Fabricate horizontal mullions, for the worst condition of loading, to ensure under specified gravity loads a maximum deflection of L/360 of mullion span or 3mm (1/8”) or smaller than the gap to the adjacent component, whichever is less.

.3 Dimensions shown on drawings are diagrammatic only. Field measurements of every rough window opening shall be performed by Contractor and shown on submitted Shop Drawings. Maintain sight lines indicated and clearances to other construction components.

.4 Mechanically joined sections shall have hairline joints.

.5 Reinforce members for attachment of hardware.

.6 Ensure that glazing rabbet is provided with depth and width to accommodate specified glass in accordance with glass manufacturer's recommendations.

.7 Finish steel clips and reinforcement with 380g/m zinc coating to CAN/CSA-G164.

.8 Assembly of units:

.1 Join members by welding where practicable, using materials recommended by manufacturers of metals being welded. Remove flux completely following welding, and grind and polish joints smooth and clean.

.2 Join members where welding is impractical by mechanical methods. Reinforcement or fasteners visible on exposed faces of members when window is in the closed position will not be acceptable.

.3 Incorporate weep holes to drain off pocketed water. Baffle weep holes to prevent entry of driven water to conform to specified performance.

.4 Except where shipping makes impossible, fabricate units in shop and ship completely assembled with operating hardware attached.

.5 All butt joints in the window assembly must be sealed, prior to assembly, by the use of tapes or sealants. Surface application of sealant at butt joints shall not be accepted as a suitable alternative. Use of foam tapes will not be accepted.

.6 All sash corners shall be secured with a thread cutting type screw to ensure tight corners. All sash corners to be internally sealed during assembly.

.7 Deburr and make smooth all sharp milled edges and corners of frames.

.9 Aluminum Flashings:

.1 Fabricate flashings and starter strips to dimensions and profiles indicated on reviewed Shop Drawings and to meet specified requirements. Determine dimensions from site measurements.

.2 Provide required joint covers and concealed anchoring devices. Do not use exposed fasteners or anchors except these indicated on reviewed Shop Drawings.

.3 Hem all exposed edges a minimum of 13mm (1/2") for appearance and stiffening.

.10 Fastenings:

.1 Where fastenings are exposed, use Series 300 stainless steel for steel-to-steel, aluminum for aluminum-to-aluminum.

.2 Where fastenings are not exposed to dampness or moisture, cadmium plated steel may additionally be used for all combinations of metal noted in preceding subparagraphs.

.11 Thermal movement: Fabricate units and assemblies to provide for expansion and contraction of component members and between units when subjected to surface temperatures from -34° C to 82° C.

.12 Anchors:

.1 Incorporate anchorage to structure as required by the reviewed Shop Drawings.

.2 Allow for complete adjustment in anchorage for levelling and positioning of units during installation.

.13 Cut rigid insulation to fit snugly in frame sections, without voids.

.14 Place manufacturers' and identification name plates in semi-concealed locations.

PART 3 - EXECUTION

3.1 Preliminary Work and Removals

.1 Examine job conditions before commencement of work. Commencement of work will denote acceptance of existing conditions unless the Client has been notified in writing of unacceptable conditions prior to commencement.

.2 Provide temporary protection (such as drop cloths and carpet runners) at locations of interior work, as required and as specified to ensure safe, clean, orderly removal and disposal of work and to provide protection of interior building components and finishes.

.3 Remove and dispose of existing windows (glass, frames, and sill flashings) and associated sealants. Take all precautions required (such as pre-cutting glass and tapping) to prevent debris from falling below. Frames, glass, and other debris shall not be thrown out of windows onto the ground below.

.4 Collect debris in containers for removal from building through interior. All materials removed from the interior are to be placed in carts for safe and secure transport through the building and

directly into disposal bins. Dispose of all materials at landfill site authorized by authorities having jurisdiction.

.5 Take care to avoid damage to the interior finishes and exterior cladding. Damage to sound interior finishes and exterior cladding shall be repaired by the Contractor, at no cost to the Owner.

3.2 New Window Assembly Protection

.1 Protect prefinished surfaces of framing with protective coatings or wrappings, same to remain in place until construction completion. Use materials recommended by finish or frame manufacturer to ensure that method is sufficiently protective, easily removed, and harmless to finish.

.2 Remove protection from glazing surfaces before installation of glass.

.3 Maintain protection from time of installation to final clean-up.

3.3 Window Installation

.1 Install in accordance with:

.1 CAN/CSA-A440.4-07 Window and Door Installation.

.2 CAN/CSA-A440 Windows and supplemented as described following.

.2 Install windows in accordance with manufacturer's instructions and to approved Shop Drawings and sample installation.

.3 Provide all necessary shims and blocking where required. Locate shims under each fastener to prevent frame bowing.

.4 Install perimeter wood blocking as required and as shown on Drawings.

.5 Securely install frames plumb, true, square, and straight in openings, and free from distortion. Do not exceed 3mm in 3m (1/8" in 9'-0") variation from plumb and level.

.6 Arrange components to prevent abrupt variation in colour.

.7 Where required, install new prefinished aluminum closure angle, to match colour of interior frame, at perimeter. Angle to be fastened to frame, with one leg turned into frame. Apply small bead of sealant to match colour of frame between this angle and ceiling.

.8 Completed installation shall be satisfactory in all respects, so that any unit can be tested in situ and meet the minimum performance criteria of the approved window unit.

3.4 Polyurethane Foam Installation

.1 Fill cavity between window frames and rough opening with foam insulation, as described below. Ensure cavity is completely filled to CAN/CGSB 51-GP-39M for foam insulation. Control quantity of insulation to avoid main frame from deforming.

.2 No material that has passed its recommended shelf life shall be brought to or used on this project.

.3 Store materials at 24ºC (74ºF) in a clean, dry area. Do not store at temperatures above 49ºC (120ºF). Avoid prolonged storage in direct sunlight or near heat sources. Store a partially used kit with the safety latch on and the tank valves turned off. Remove the used nozzle, reapply petroleum jelly to the face of the gun, and reinsert the used nozzle. Once used, the remainder must be used within 60 days.

.4 The nozzle must be replaced if more than 30 seconds elapses between each use. Foam will harden in the nozzle after this time.

.5 The foam is organic and combustible and may constitute a fire hazard if improperly used.

.6 Avoid contact with eyes and skin. Always wear protective eyewear, gloves, and clothing when operating. Use only with adequate ventilation and certified respiratory protection. In unventilated areas, do not remove respirator for at least 15 minutes after use.

.7 Install specified polyurethane foam sealant to perimeter of new window installation. Ensure that cavity is completely filled and free of air pockets, particularly around shims. Avoid contact with other surfaces.

.8 Allow foam to set prior to trimming and installing sealants.

3.5 Sill Flashing Installation

.1 Install continuous wood blocking ensuring positive slope to exterior as may be required. / Existing exterior sill to remain where possible.

.2 Install new one-piece prefinished aluminum angle (to match interior of new window frame colour) into prepared opening as shown on the drawings.

.3 Install specified waterproofing membrane flashing over sloped blocking and angle back dam, and upturn at jambs a minimum 100mm (4”). The design intent is to create a three-sided pan to direct any water leakage through the window frame to the exterior.

.4 Install new prefinished aluminum sill flashing over the existing sill and provide drip at exterior edge. Secure sill in place with concealed fasteners located at ends, joints of continuous sills and evenly spaced at 600mm o.c. (2’0”) in between.

.5 Install sills with uniform wash to exterior, level in length, straight in alignment, with plumb upstands and faces. Use maximum lengths possible, allowing for expansion. Where opening is greater than 3600mm (12’0”), multiple pieces will be permitted.

.6 Maintain 6.35mm to 10mm (1/4 to 3/8”) space between butt ends of continuous sills for sills over 1220mm (4’) in length and maintain 3mm to 6mm (1/8 to 1/4”) space at each end.

.7 Seal joint between new sill and window frame and provide sealant end dams as detailed.

.8 All sharp and protruding corners, as determined by the Consultant shall be chamfered, trimmed, and made smooth.

3.6 Sealant

.1 Apply sealant in accordance with Section 07 92 00.

.2 Seal joints between the substrate and window frame perimeter, sill, and other components at both inside and outside joints to provide a seal to air and moisture transfer.

.3 Install sealant at butt joints in continuous sills before installing caps.

.4 Exterior window sealants shall not be installed from the interior. Installation of these sealants must be completed through the use of scaffolding, lift, extension ladder, or swing stage, from the exterior.

3.7 Completion and Cleaning

.1 After installation of windows has been completed, reinstate existing finishes (at the interior and exterior) to match new finishes to existing surfaces in quality and appearance.

.2 Adjust window ventilating sash to operate smoothly and fit tightly when closed and locked.

.3 Adjust and lubricate hardware to operate smoothly, with proper tensions.

.4 Ensure weatherstripping does not cause binding or prevent closing and locking, to ensure weather tight contact. Replace weather-stripping if necessary.

.5 Clean interior and exterior surfaces, including glass, by washing with clear water or with water and detergent, followed by a clean water rinse.

.6 Clean and restore stained metal surfaces in accordance with manufacturer's recommendation. Replace if cleaning is unsuccessful.

.7 Perform final clean-up of the work area and surrounding areas of the site to the satisfaction of the Owner.

3.8 Operation and Maintenance

.1 Upon completion of installation, the window manufacturer’s installation foreman shall arrange with and demonstrate to the buildings custodian staff, window operation, cleaning, re-glazing and general maintenance procedures.

END OF SECTION – 08 50 00

PART 1 - GENERAL

1.1 General Requirements

.1 All conditions of the project apply to this section.

.2 All materials and equipment must be set up in a position satisfactory to the Owner's representative.

.3 All materials, except those approved by Consultant for re-use, shall be new and in perfect condition, free from defects which may impair strength, durability or appearance.

.4 Scheduling of the work shall be discussed with, and be subject to, the approval of the Owner.

.5 All work shall meet the current Ontario Building Code and Insulating Glass Manufacturers Alliance (IGMA) recommendations, including all amendments up to project date, and good building practice.

.6 Design glazing to withstand, without detrimental effects to appearance and performance, wind loads and temperature range expected in accordance with applicable codes and standards.

1.2 References

.1 Comply with requirements of the following documents, latest edition:

.1 CAN/CGSB-12.1-M, Glass, Safety, Tempered or Laminated.

.2 CAN/CGSB-12.2-M, Flat, Clear Sheet Glass.

.3 CAN/CGSB-12.3-M, Flat, Clear Float Glass.

.4 CAN/CGSB-12.4-M, Heat Absorbing Glass.

.5 CAN/CGSB-12.8, Insulating Glass Units.

.6 CAN/CGSB-12.10M, Glass, Light and Heat Reflecting.

.7 CAN/CGSB-12.13M, Patterned Glass.

.8 CAN/CGSB-12.20, Structural Design of Glass for Buildings.

.9 CAN/CGSB 19.18-M, Sealing Compound, One Component, Silicone Base, Solvent Curing.

.10 CGSB Standard 19-GP-14M, Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing.

.11 Insulting Glass Manufacturers Alliance (IGMA), North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use.

.12 ASTM E2190, Insulating Glass Unit Performance and Evaluation.

.13 Ontario Building Code

1.3 Quality Assurance

.1 All of the IGUs to be provided for this project shall be manufactured by an Insulating Glass Manufacturer Alliance (IGMA) certified member.

.2 If required, allow for the Consultant and/or Owner access to the IGU manufacturing facilities during fabrication of products to be installed on the project.

.3 Manufacturer shall make IGMA required daily quality control records available for review by Consultant and Owner.

.4 The Consultant will review the IGUs on site. If required, destructive testing may be performed to confirm concealed details. IGUs not manufactured in accordance with IGMA certification and as otherwise detailed in this Section shall be replaced at no cost to the Owner.

.5 Insulated Glass Units (IGUs) must bear the IGMAC or IGMA stamp. IGUs without a stamp and proper labeling will be rejected and will require replacement.

1.4 Submittals

.1 Submit to the Owner and Consultant all glazing details and technical data, including the written installation recommendations from the manufacturer for each product which will be used on this project. Written confirmation from IGMA is required that IGUs to be installed for this project are currently certified by IGMA.

.2 Provide to the Consultant written confirmation from the manufacturer as to the compatibility of all materials to be used.

.3 Provide two (2) samples of IGU including specified glass, spacer, and sealants to PDSB and the Consultant for approval. IGU identification to include IGMA or IGMAC trademark, company name, location, and year of manufacture.

1.5 Delivery, Storage and Handling

.1 Deliver and store materials to manufacturer's instructions in original packages with labels intact.

.2 Sealed units shall be handled and stored as per IGMAC recommendations.

.3 Protect finished surfaces by sturdy protective wrappings.

.4 Provide methods for lifting or hoisting units into place without causing damage.

.5 Store materials under cover on elevated platforms, protected from weather and construction activities.

.6 Protect materials from freezing. Materials suspected of having been subjected to freezing are not to be used unless the manufacturer verifies in writing that the material has not been damaged.

.7 Remove and replace damaged, wet or broken materials.

.8 Store materials away from open flame or ignition sources.

1.6 Environment Requirements

.1 Before commencing work each day, ensure that all surfaces to receive glazing tapes, sealants or primers are clean and dry.

.2 Apply glazing tapes and sealants at air and substrate temperatures not less than the minimum recommended by the material manufacturer. Work shall not be carried out during inclement weather conditions.

.3 Proceed with glazing only when glazing surfaces are accumulating no moisture from rain, mist or condensation.

.4 Obtain approval from the manufacturer, when temperature of glazing surfaces is below 4°C, for the glazing methods and protective measures which will be used during glazing operations.

1.7 Warranty

.1 Provide a warranty stating that the installation of new sealed insulating glass units specified in this Section shall:

.1 Not cause any deleterious affect on the air and water tightness and wind load resistance performance of the window.

.2 Remain air and watertight and free of defects which shall include, without being limited to, breakage and loss of seal. Fogging of glass inside sealed units or failure of a field dew point test will be considered sufficient evidence of loss of seal.

.3 Not result in cracking of glass panes including, but not limited to, imperfections in glass made during fabrication, from improper handling during installation, or from stresses created by improper installation.

.4 Not result in inward migration of spacer exposing the edge seal above the exterior or interior sight lines.

.2 This warranty shall be for a period of ten (10) years from date of Substantial Performance. The warranty shall include all required materials and their installation, at no additional cost to the Owner.

.3 Repair leaks into building within 24 hours of notification. Any repairs required shall be carried out in accordance with the recommendations of the Consultant.

.4 Inspect glazing thirty (30) days before expiry of warranty period and correct defects within fifteen (15) days of inspection.

.5 The cost of all warranties shall be included in the Bid price.

PART 2 - PRODUCTS

2.1 Glass

.1 Acceptable IGU manufacturers include:

.1 Trulite

.2 Prelco

.3 Cardinal

.4 SAAND

.5 Oldcastle

.2 Insulating Glass Units (IGUs):

.1 IGMAC or IGMA certified to meet specified requirements of CAN/CGSB-12.8 or ASTM E2190.

.2 IGU Perimeter Edge Seals:

.1 Dual perimeter edge seal with 13mm (1/2") air space.

.2 Primary: Continuous polyisobutylene primary seal (PIB).

.3 Secondary: Continuous silicone secondary seal which is in full contact with the primary seal, or two-component structural polysulphide sealant where silicone is not compatible with spacer.

.4 Edge delete film as required by glass and edge seal manufacturer.

.5 Spacer:

.1 Stainless steel, continuous, and fabricated with bent corners and fused butt joints. Corner keys will only be accepted if approved by IGMA.

.2 Size the spacer system as required to be compatible with framing system and engineered glass thicknesses. Unless otherwise specified, nominal air space width between inboard and outboard pane should be 12±1mm.

.3 Provide a spacer system which is suitable and tested for use in conjunction with argon gas.

.4 Design desiccant volume as required to avoid inward deflection of glass and/or spacer and sealant system due to excessive adsorption of gasses other than water vapour.

.5 Approved products: Chromatech Plus by RollTeck, Nirotec by Helima, Endur IG by Cardinal or approved equivalent.

.6 Swiggle® Seal spacer/sealant systems are not acceptable.

.3 Windows:

.1 Exterior Lite:

.1 Clear float glass to CAN/CGSB-12.3-M. Minimum 6mm, heat soaked, fully tempered glass.

.2 Interior Lite:

.1 Clear float glass to CAN/CGSB-12.3-M. Minimum 6mm, heat soaked, fully tempered glass.

.3 Privacy Glass:

.1 Provide insulated glass units with frosted lites at all bathroom locations. Minimum 6mm, heat soaked, fully tempered.

.3 Coatings:

.1 Low-E (Soft Coat) – For IGUs:

.1 Sputtered type soft coat on Surface #2 (interior surface of exterior pane).

.2 Solarban 70XL by PPG,

.3 LoE^2-366 by Cardinal,

.4 Energy Select 28 by AGC Glass

.5 or approved equivalent.

.6 Edge delete coating to facilitate proper sealant to glass adhesion.

.4 Argon Gas:

.1 Space between glazing panes to be filled with argon gas, minimum 90% concentration. The desiccant shall be designed and tested to avoid inward deflection of glass or spacer as a result of absorption of gasses other than water vapour.

2.2 Glazing Accessories

.1 Ensure that glazing tapes, sealants, splines, and setting blocks are completely compatible with insulating glass unit sealants.

.2 Setting Blocks:

.1 Neoprene, EPDM or Silicone with Durometer hardness of Shore "A" 80 to 90. Thickness to be 6mm (1/4”). PVC or other types of setting blocks are not permitted.

.2 Width of setting blocks to slightly exceed width of sealed insulating glass unit to fully support the glass.

.3 Length of setting blocks to be 25mm (1") for every 1m^2 of glass, with a minimum length of 50mm (2") for residential applications and 100mm (4") for commercial applications.

.4 Setting blocks shall be compatible with all adjacent components, including edge seal. If a silicone secondary sealant is used at the IGU perimeter, use silicone setting blocks.

.3 Silicone Glazing Sealant: To comply with CAN/CGSB 19.18-M80-Type 2.

.4 Pre-shimmed Glazing Tape (for greater than 75 united inches): Pre-shimmed glazing tape such as POLYshim™ II Tape as manufactured by Tremco, or approved equivalent.

.5 Glazing Spline/Gaskets: Extruded neoprene, silicone or EPDM glazing splines/gaskets to suit glass stops, POLYshim™ II glazing spline, as manufactured by Tremco, or approved equivalent and conforming to CAN/CGSB 41-GP-20M. PVC or Santoprene gaskets are not acceptable.

.6 Lock Strip Gaskets: Black Neoprene to ASTM C542-82 (1984), H type for cavities, spline type of recessed reglets. Provide internal drainage channel with drainage holes in sill section. Use injection moulded one-piece corner sections and heat-seal to main gaskets.

.7 Glazing Sealants

.1 For Filling Recesses in Glazing Tapes or Heel Beads: Single component, moisture curing silicone: Dow Corning® 795 by Dow Corning Canada or Spectrum 2 by Tremco, or approved equivalent.

.2 For Corner Toe Beads: Tremco® Butyl Sealant by Tremco, or approved equivalent.

.3 For Sealing Butt Joints at Sill/Jamb Corner: Tremsil® 600 by Tremco, or approved equivalent.

.8 Cleaning Material: MEK, xylol, toluol, or as recommended by glazing and sealant manufacturer.

.9 Primers: To glass and sealant manufacturer's recommendation.

.10 Removal Stops: Dual Durometer PVC or aluminum. Stop and gasket (for aluminum stops) to provide adequate compression onto glass.

2.3 Fabrication

.1 Size and fabricate glass units to fit openings and to provide minimum edge clearances, which will ensure that glass is held firmly in place while providing clearances for thermal expansion and contraction between glass and frame in accordance with IGMA recommendations, but not less than 3mm (1/8") on each side.

.2 Replace oversize or flared lights with entirely new units of proper dimensions.

.3 Label each piece of glass to indicate manufacturer, type, and quality. When low-E coatings are provided, clearly mark which surface is coated. Remove labels on glass units at time of installation.

.4 When IGU is to be filled with inert gas, immediately assemble spacer frame following desiccant fill installation.

.5 Corner keys are to be fully sealed with polyisobutylene (PIB).

.6 Apply PIB on both sides of spacer and around the entire perimeter of the spacer frame assembly for complete PIB wet-out onto surfaces 2 and 3.

.7 Delete the edge of low-E coating around the entire glass perimeter as per manufacturer's recommendations, to ensure proper bond of edge seals to glass.

.8 Position spacer frame with all sides parallel to edges of glass. Misalignment and deflection of the spacer bar into the vision area across its length will not be acceptable. The top of the spacer is to be aligned with the sight line.

.9 After assembly, the PIB is to be in continuous contact with glass and spacer around the entire perimeter of the assembly (on both glass surfaces), with a minimum width of 3mm (1/8") when measured from top to bottom of spacer. The PIB is not to project past the sight line by more than 1mm.

.10 Proceed with gas fill operation. Once filling procedures are complete, mechanically close the injection port and cover/seal with a layer of PIB. Proceed with the installation of structural secondary sealant as outlined in this section.

.11 Install continuous application of structural secondary sealant at perimeter of IGU as per sealant manufacturer's recommendations. The sealant is to be installed at a minimum thickness of 3mm (1/8') to fill the depth between the edge of the glass and spacer bar.

.12 Store IGUs as per IGMA recommendations. IGUs shall not be stored in direct sunlight and shall not be stored outside during cure period. Structural secondary sealant shall be thoroughly cured before shipment to site.

PART 3 - EXECUTION

3.1 Examination

.1 Check window frame dimensions prior to fabricating sealed insulating glass units.

.2 Commencement of work implies acceptance of existing conditions and assuming full responsibility for the finished condition of the work.

.3 Verify that edges of glass are free from nicks and other imperfections conducive to breakage.

3.2 Preparation

.1 Clean glazing surfaces of all traces of existing glazing tapes, sealants, dirt, dust, or other contaminants.

.2 Ensure that projections have been removed from the glazing surfaces and that required face and edge clearances are provided for the glass units.

.3 Prime all surfaces to receive glazing tapes, splines or sealants per sealant manufacturer's recommendations, to provide a positive and permanent adhesion and to prevent staining. Apply primers per manufacturer's directions and test substrates for adhesion. Primer shall be suitable for materials affected.

.4 Do not cut or nip tempered glass to fit. Replace oversize or flared lights with new units of correct dimensions.

3.3 Installation

.1 When requested by the Owner or Consultant, arrange for the presence of a technical representative of the glazing materials manufacturer to advise on procedures and methods when glazing commences.

.2 Glazing Tape at Exterior Fixed Stops:

.1 Cut tapes of full depth and full length at jambs to cover horizontal butt joints in stop first.

.2 Ensure that glazing tape or spline projects 1.5mm (1/16") above exterior fixed window stop or site line.

.3 Butt tape tightly at corners and knead all joints to form one continuous strip, with no voids or gaps.

.4 Do not overlap tape ends or extend tapes around corners.

.5 Do not stretch tape to fit.

.6 Apply corner toe bead to seal corner joint and other joints in tape with compatible sealant. Extend toe bead 50mm (2") on either side of corner.

.7 Remove protective paper backing only when glass is ready for setting and ensure that butted joins of tape are positively filled with applied sealant. Use heat guns to warm the frame and tape at temperatures below 4°C.

.3 Setting Block Placement:

.1 Support the bottom of the sealed insulating glass units on setting blocks placed at quarter points of each light (1/4 of the unit width from each corner) and/or not closer than 150mm (6") from the corners of the units, unless agreed to by the Consultant.

.2 Position to not block drainage paths by blocking weep holes.

.3 Provide shims below setting blocks as directed by the Consultant.

.4 IGU Placement:

.1 Position and glaze sealed insulating glass units into the framing, in accordance with IGMAC glazing recommendations and as indicated on the reviewed Shop Drawings.

.2 Using solvent, clean outside of glass using two-rag method.

.3 Centre the sealed insulating glass units in the opening and on the setting blocks ensuring full support of glass.

.4 Provide a minimum edge clearance of 9mm (3/8") or as per the manufacturer's requirements.

.5 Press IGU uniformly against glazing tape to obtain adequate compression.

.6 Install continuous heel bead around perimeter of IGU (interior side) if required and indicated in test reports.

.5 Interior Stops:

.1 Install interior stops immediately following IGU placement. Apply tape or spline to removable stops where required and verify that adequate compression is achieved. Butt joints between stops to be tightly fitted. Glazing splines shall be continuous with butt joint at the head of the sash member.

.6 Apply sealants with backing where indicated on reviewed Shop Drawings and as specified in Section 07 92 00. Use glazing sealants without addition of thinners and only from containers with seals until opened for use. Tool gunned sealants with a slight bevel away from glass faces.

.7 Fill in depressions between glass and glazing tapes at sill as specified.

3.4 Cleaning

.1 Remove, as work progresses, all corrosive and foreign materials which may set or become difficult to remove at time of final cleaning or which may damage components of the window system. Examine all surfaces as often as required to ensure cleanliness.

.2 Clean and polish interior and exterior surfaces of glass after installation, to the satisfaction of the Consultant and Owner, with a commercial glass cleaner or water and household hand dishwashing detergent solution.

.3 Remove excess sealants, stains, deposits, marks or blemishes from work of this Section and all adjacent surfaces by methods not harmful to the surfaces. Replace or make good all defective, scratched or damaged materials.

.4 Remove labels and perform final cleaning after completion of entire installation and immediately prior to date of Substantial Performance.

.5 Collect broken glass and cuttings in boxes and remove from site.

END OF SECTION – 08 80 00

Drawings:

Consulting Engineers | Working Together, Better

SIR WINSTON CHURCHILL PS - WINDOW REPLACEMENT
89 ARDGLEN DRIVE, BRAMPTON, ON L6W 1V1

PREPARED FOR:
PEEL DISTRICT SCHOOL BOARD
24 HOLTBY AVENUE
BRAMPTON, ON L6X 2M1
ATTN.: GABRIELA CARUSO
ARCH. TECH., ASSISTANT STRUCTURAL SUPERVISOR

PREPARED BY:
PRETIUM ENGINEERING INC.
5403 EGLINTON AVENUE WEST, SUITE 100
TORONTO, ON, M9C 5K6
T: 416-636-8886
www.PretiumEngineering.com

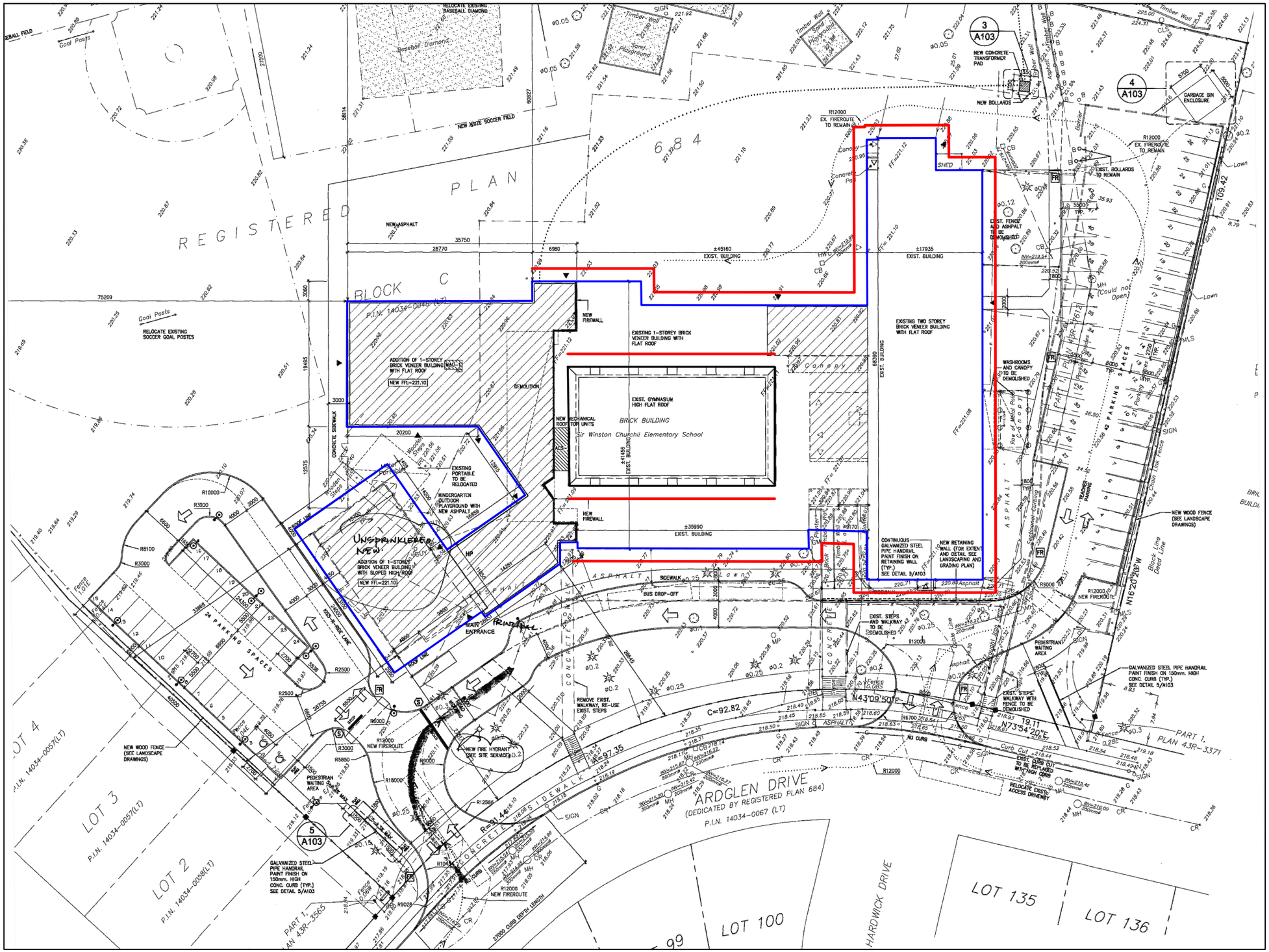
MAY. 2022
22-00051

GENERAL NOTES

1. ALL DRAWINGS ARE THE PROPERTY OF THE CONSULTANT AND MAY NOT BE REPRODUCED IN WHOLE OR IN PART WITHOUT WRITTEN PERMISSION OF THE CONSULTANT.
2. THE CONSULTANT BEARS NO RESPONSIBILITY FOR THE INTERPRETATION OF THE DOCUMENTS BY THE CONTRACTOR. THE CONSULTANT WILL PROVIDE CLARIFICATION OR SUPPLEMENTAL INFORMATION REGARDING THE INTENT OF THE DOCUMENTS UPON WRITTEN APPLICATION.
3. ALL DIMENSIONS ARE NOMINAL AND REPRESENT MILLIMETERS UNLESS NOTED OTHERWISE.
4. CONTRACTOR SHALL SITE VERIFY ALL DIMENSIONS AND ELEVATIONS. THE DRAWINGS ARE NOT TO BE SCALED. REPORT ANY DISCREPANCIES TO THE CONSULTANT BEFORE PROCEEDING WITH THE WORK.
5. ALL MATERIALS IN DETAILS ARE TO BE NEW EXCEPT AS NOTED OTHERWISE.
6. COORDINATE ALL SITE ACCESS AND CLEARANCES WITH THE BOARD.
7. ALL WORK SHALL BE CARRIED OUT IN CONFORMANCE WITH THE CODE AND BYLAWS HAVING JURISDICTION. COORDINATE ALL INSPECTIONS WITH THE MUNICIPALITY.
8. COORDINATE ALL UTILITY STAKEOUTS AND CLEARANCES WITH THE APPROPRIATE UTILITY.
9. COORDINATE WITH AND INFORM CONSULTANTS OF WORK IN PROGRESS AND PROVIDE FREE ACCESS FOR REVIEW BY THE CONSULTANT.
10. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SAFEGUARD ALL EXISTING STRUCTURES AFFECTED BY THIS CONSTRUCTION.
11. SUBMIT DATA SHEETS FOR ALL PROPOSED MATERIALS/PRODUCTS TO THE CONSULTANT PRIOR TO INCORPORATING INTO THE WORK.
12. NO HOLES SHALL BE MADE THROUGH STRUCTURAL MEMBERS WITHOUT PRIOR WRITTEN APPROVAL FROM THE CONSULTANT.
13. THE CONTRACTOR SHALL VERIFY THE WORK AREA WITH THE CONSULTANT PRIOR TO BEGINNING WORK.

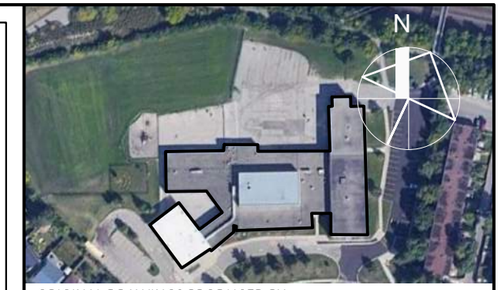
NO.	REVISIONS	DATE
2	ISSUED FOR TENDER	MAY. 2022
1	ISSUED FOR CLIENT REVIEW	APR. 2022

DWG NO: A001



1 A100 SITE PLAN

NTS



ORIGINAL DRAWINGS PRODUCED BY:
NG CHEE ARCHITECTS
PROJECT:
SIR WINSTON CHURCHILL PS
89 ARDGLEN DRIVE, ON
DRAWING TITLED:
SHEET TITLE: SITE PLAN
DRAWING No: A103
LAST REVISION DATED:
AUG. 2005
PRETIUM ENGINEERING INC. IS NOT RESPONSIBLE FOR THE ACCURACY OF THIS DRAWING.

LEGEND:

BUILDING OUTLINE

WORK AREA

NO.	REVISIONS	DATE
2	ISSUED FOR TENDER	MAY. 2022
1	ISSUED FOR CLIENT REVIEW	APR. 2022

STAMP:

N

Pretium

Pretium Engineering Inc.

CLIENT:
PEEL DISTRICT SCHOOL BOARD

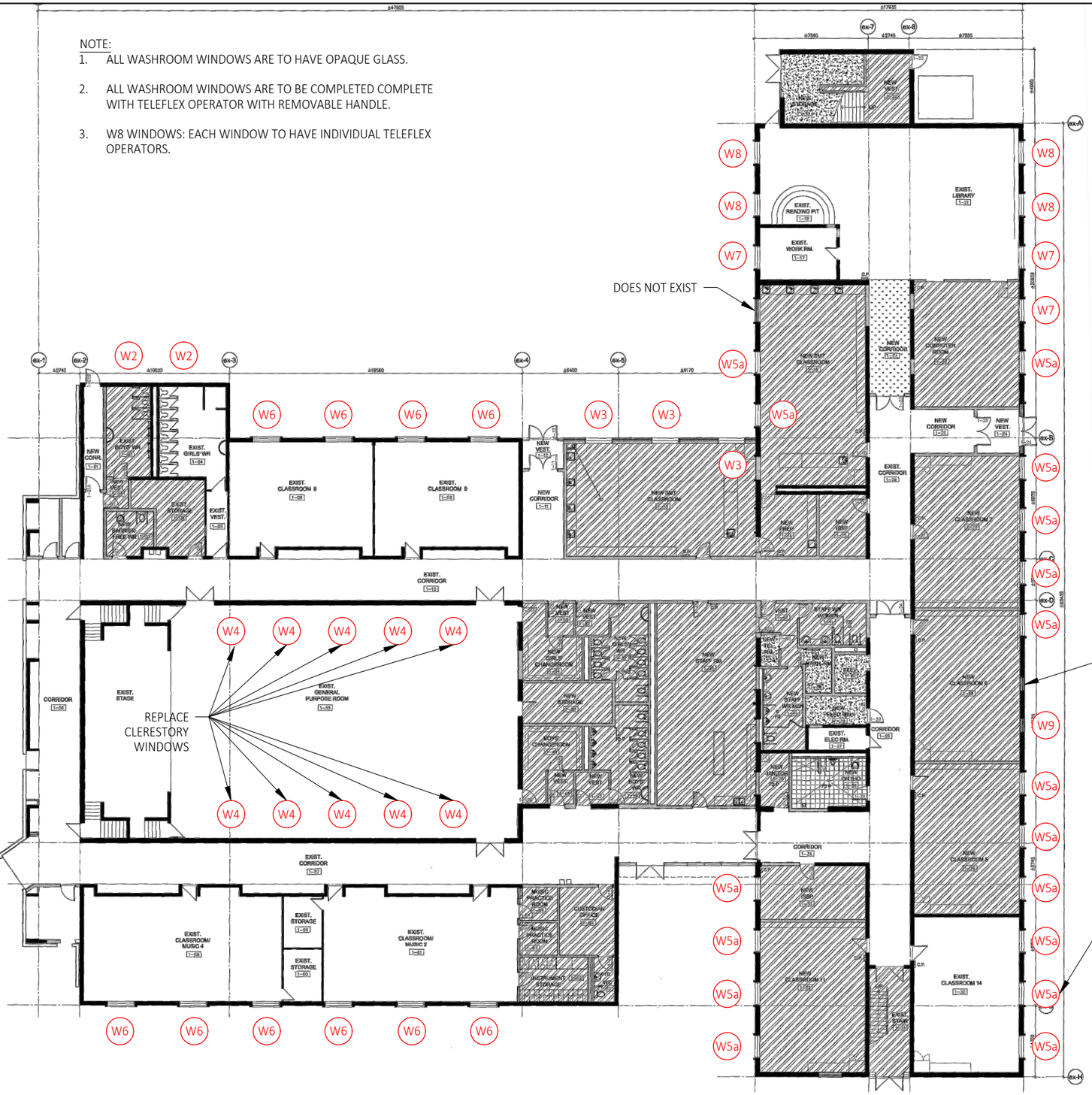
PROJECT:
SIR WINSTON CHURCHILL PS - WINDOW REPLACEMENT
89 ARDGLEN DRIVE, BRAMPTON, ON L6W 1V1

DRAWING:
SITE PLAN

DRAWN BY:	SS	SCALE:	NTS
CHECKED:	BC	DATE:	MAY. 2022
PROJECT No.:	22-00051	DWG. #:	A100

NOTE:

1. ALL WASHROOM WINDOWS ARE TO HAVE OPAQUE GLASS.
2. ALL WASHROOM WINDOWS ARE TO BE COMPLETED COMPLETE WITH TELEFLEX OPERATOR WITH REMOVABLE HANDLE.
3. W8 WINDOWS: EACH WINDOW TO HAVE INDIVIDUAL TELEFLEX OPERATORS.



1 A101 1ST FLOOR PLAN

NTS

LEGEND:

WX = WINDOW TYPE (REFER TO A300 AND A301)

NO.	REVISIONS	DATE
2	ISSUED FOR TENDER	MAY. 2022
1	ISSUED FOR CLIENT REVIEW	APR. 2022

STAMP:

N

Pretium

Pretium Engineering Inc.

CLIENT: PEEL DISTRICT SCHOOL BOARD

PROJECT: SIR WINSTON CHURCHILL PS - WINDOW REPLACEMENT

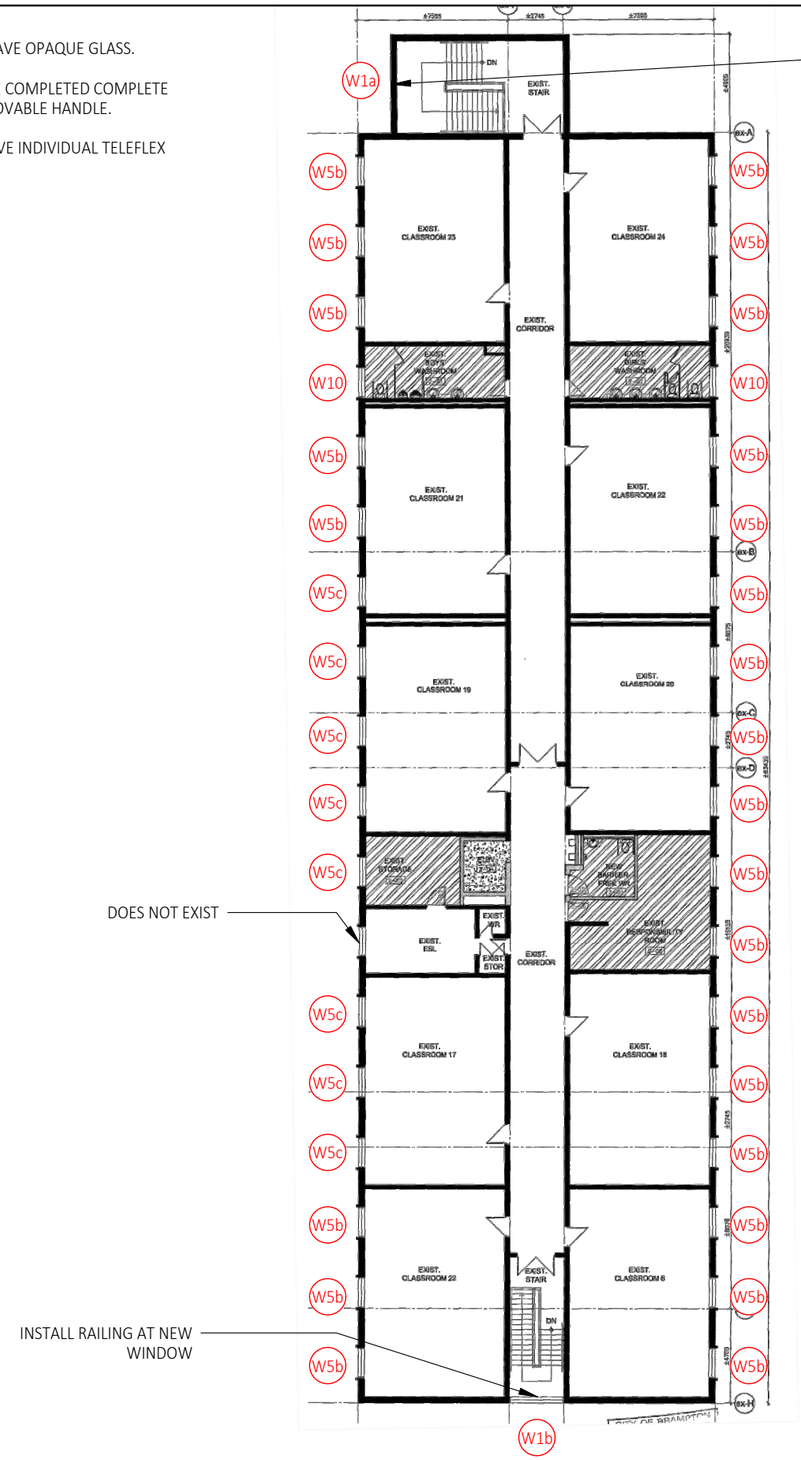
89 ARDGLEN DRIVE, BRAMPTON, ON L6W 1V1

DRAWING: 1ST FLOOR PLAN

DRAWN BY:	SS	SCALE:	NTS
CHECKED:	BC	DATE:	MAY. 2022
PROJECT No.:	22-00051	DWG. #:	A101

NOTE:

1. ALL WASHROOM WINDOWS ARE TO HAVE OPAQUE GLASS.
2. ALL WASHROOM WINDOWS ARE TO BE COMPLETED COMPLETE WITH TELEFLEX OPERATOR WITH REMOVABLE HANDLE.
3. W8 WINDOWS: EACH WINDOW TO HAVE INDIVIDUAL TELEFLEX OPERATORS.



1 A102 2ND FLOOR PLAN

NTS

LEGEND:

WX = WINDOW TYPE (REFER TO A300 AND A301)

NO.	REVISIONS	DATE
2	ISSUED FOR TENDER	MAY. 2022
1	ISSUED FOR CLIENT REVIEW	APR. 2022

STAMP:

N

Pretium

Pretium Engineering Inc.

CLIENT: PEEL DISTRICT SCHOOL BOARD

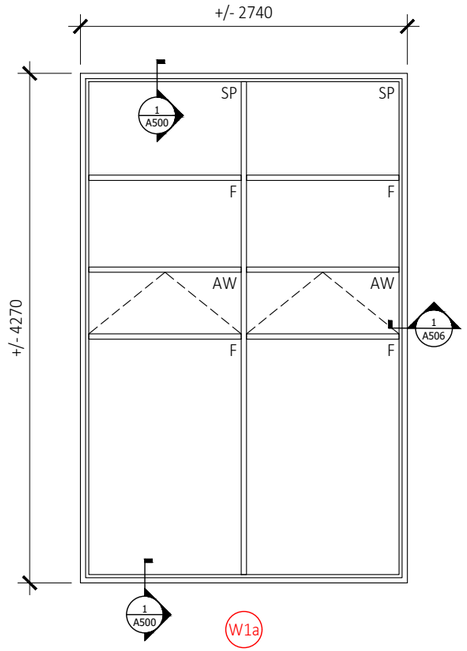
PROJECT: SIR WINSTON CHURCHILL PS - WINDOW REPLACEMENT

89 ARDGLEN DRIVE, BRAMPTON, ON L6W 1V1

DRAWING: 2ND FLOOR PLAN

DRAWN BY:	SS	SCALE:	NTS
CHECKED:	BC	DATE:	MAY. 2022
PROJECT No.:	22-00051	DWG. #:	A102

NOTE:
1. THE CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY ALL WINDOWS AND DOORS BEFORE PROCEEDING WITH ANY WORK.



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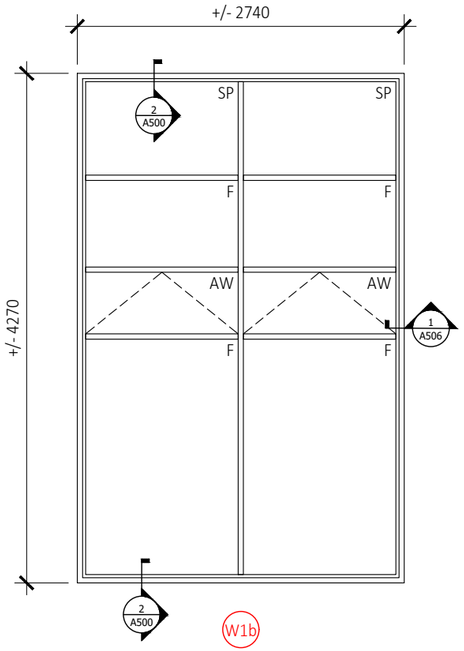

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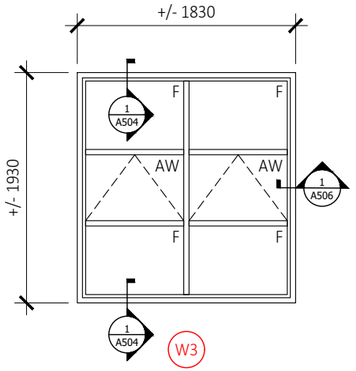

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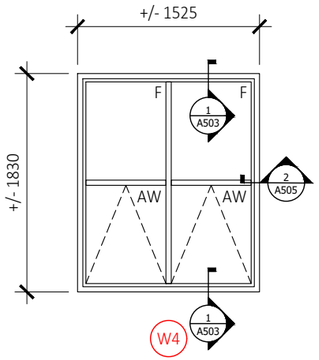
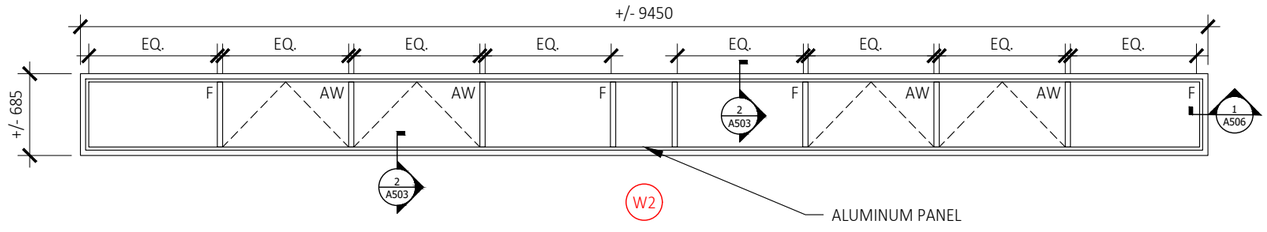


(10 WINDOWS)

DESCRIPTION:
EACH WINDOW TO HAVE INDIVIDUAL
TELEFLEX OPERATORS.



(2 WINDOWS)

DESCRIPTION:
WINDOWS ARE TO BE COMPLETED WITH TELEFLEX
OPERATOR WITH REMOVABLE HANDLE.
ALL WINDOWS TO HAVE OPAQUE GLASS.

LEGEND:

F = FIXED
SP = SPANDREL GLASS
AW = AWNING PANEL

WX = WINDOW TYPE

NO.	REVISIONS	DATE
2	ISSUED FOR TENDER	MAY. 2022
1	ISSUED FOR CLIENT REVIEW	APR. 2022

STAMP:

Pretium Engineering Inc.

CLIENT:
PEEL DISTRICT SCHOOL BOARD

PROJECT:
SIR WINSTON CHURCHILL PS - WINDOW REPLACEMENT
89 ARDGLEN DRIVE, BRAMPTON, ON L6W 1V1

DRAWING:
WINDOW SCHEDULE

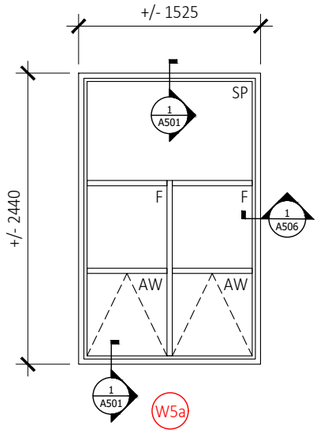
DRAWN BY:	SS	SCALE:	NTS
CHECKED:	BC	DATE:	MAY. 2022
PROJECT No.:	22-00051	DWG. #:	A300

1 A300 WINDOW SCHEDULE

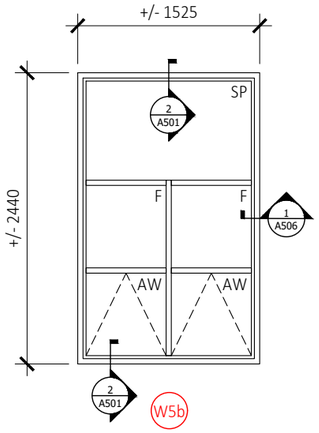
NTS

WINDOW SCHEDULE

THE CONTRACTOR SHOULD FIELD VERIFY ALL WINDOWS AND DOORS DIMENSIONS BEFORE PROCEEDING WITH ANY WORK.



(17 WINDOWS)



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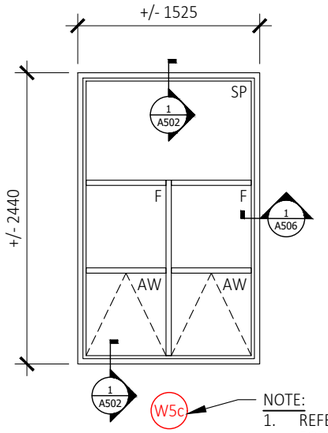
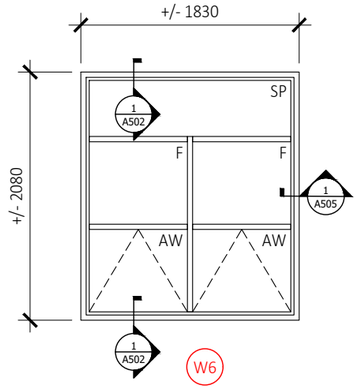
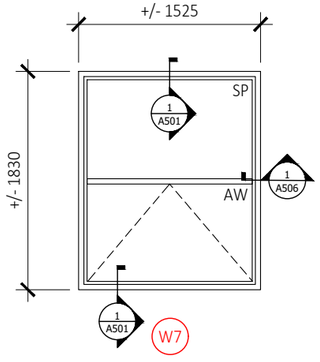


(8 WINDOWS)

NOTE:
1. REFER TO DRAWING A101 FOR LOCATION OF AC UNIT



(10 WINDOWS)



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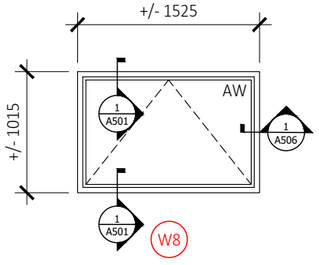
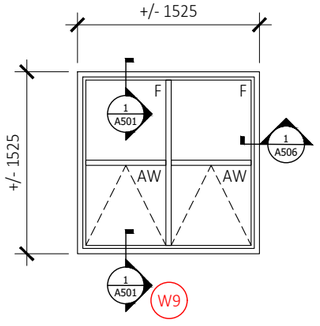
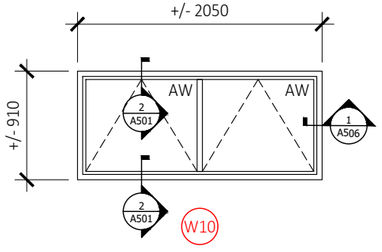


(4 WINDOWS)

DESCRIPTION:
EACH WINDOW TO HAVE INDIVIDUAL TELEFLEX OPERATORS.



(1 WINDOW)



(2 WINDOWS)

DESCRIPTION:
WINDOWS ARE TO BE COMPLETED WITH TELEFLEX OPERATOR WITH REMOVABLE HANDLE.
ALL WINDOWS TO HAVE OPAQUE GLASS.

1 / A300 WINDOW SCHEDULE

NTS

LEGEND:

F = FIXED
SP = SPANDREL GLASS
AW = AWNING PANEL

WX = WINDOW TYPE

NO.	REVISIONS	DATE
2	ISSUED FOR TENDER	MAY. 2022
1	ISSUED FOR CLIENT REVIEW	APR. 2022

STAMP:

Pretium Engineering Inc.

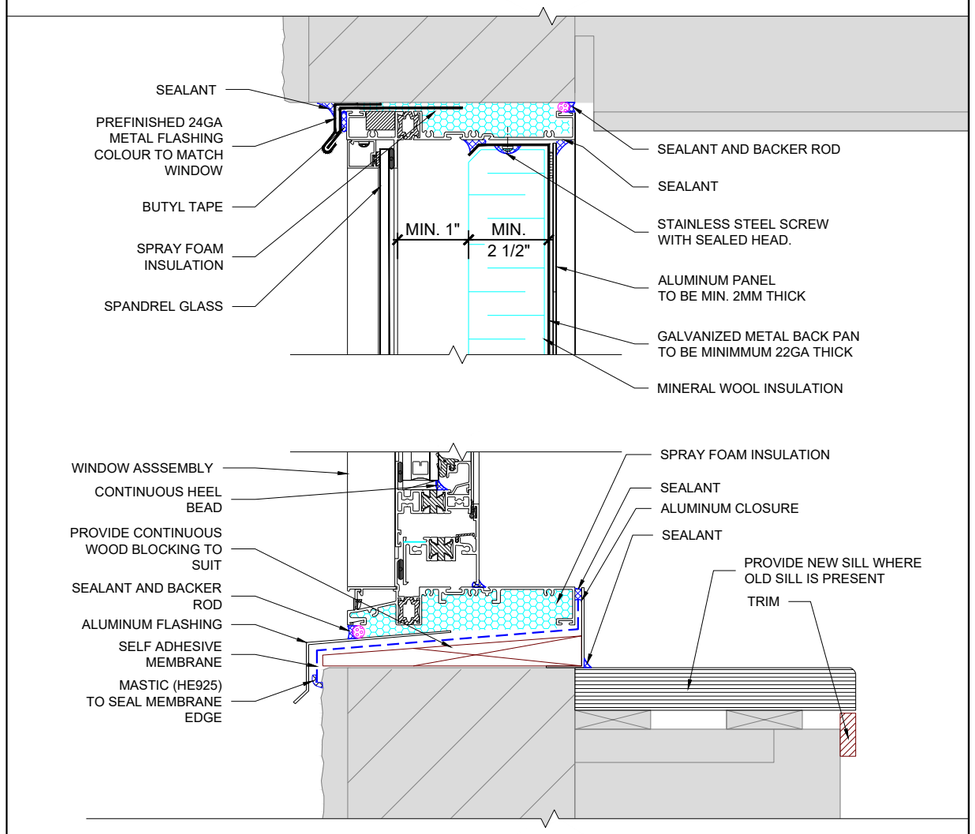
CLIENT: PEEL DISTRICT SCHOOL BOARD

PROJECT: SIR WINSTON CHURCHILL PS - WINDOW REPLACEMENT

89 ARDGLEN DRIVE, BRAMPTON, ON L6W 1V1

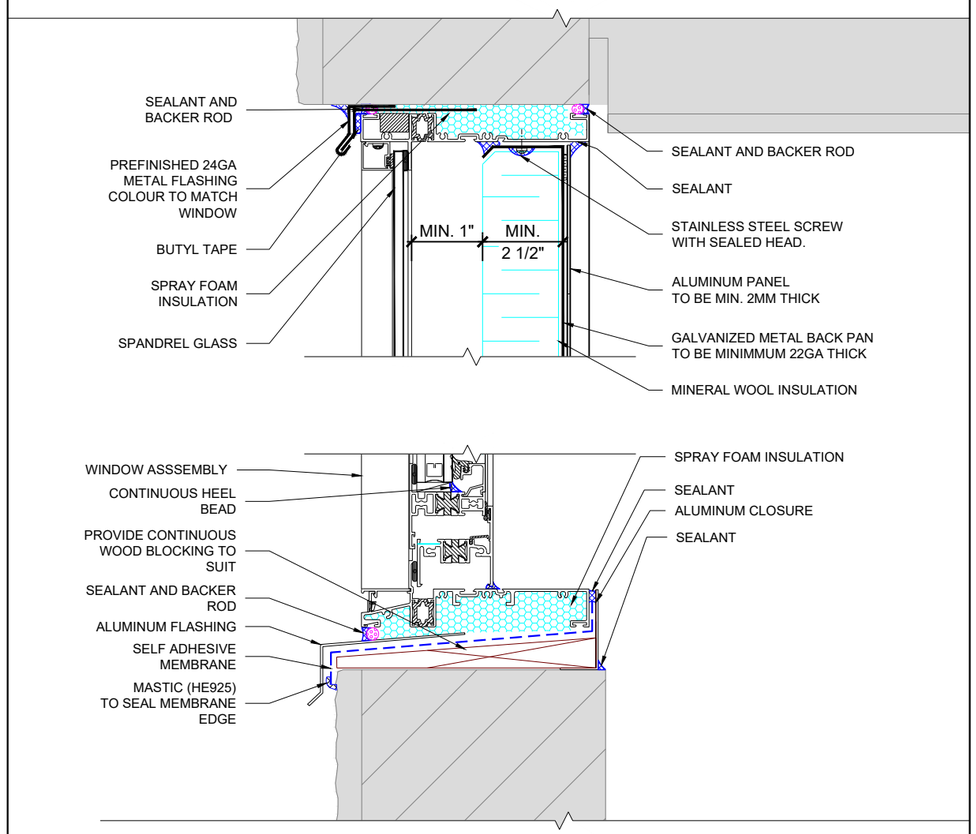
DRAWING: WINDOW SCHEDULE

DRAWN BY:	SS	SCALE:	NTS
CHECKED:	BC	DATE:	MAY. 2022
PROJECT No.:	22-00051	DWG. #:	A301



1 A500 TYPICAL HEAD AND SILL AT W1a

NTS



2 A500 TYPICAL HEAD AND SILL AT W1b

NTS

GENERAL NOTES:

1) ALL MATERIALS TO BE NEW EXCEPT WHERE NOTED AS "EXISTING".
2) ALL SITE CONDITIONS AND MEASUREMENTS TO BE CONFIRMED BY THE CONTRACTOR.

NO.	REVISIONS	DATE
2	ISSUED FOR TENDER	MAY. 2022
1	ISSUED FOR CLIENT REVIEW	APR. 2022

STAMP:

Pretium

Pretium Engineering Inc.

CLIENT:

PEEL DISTRICT SCHOOL BOARD

PROJECT:

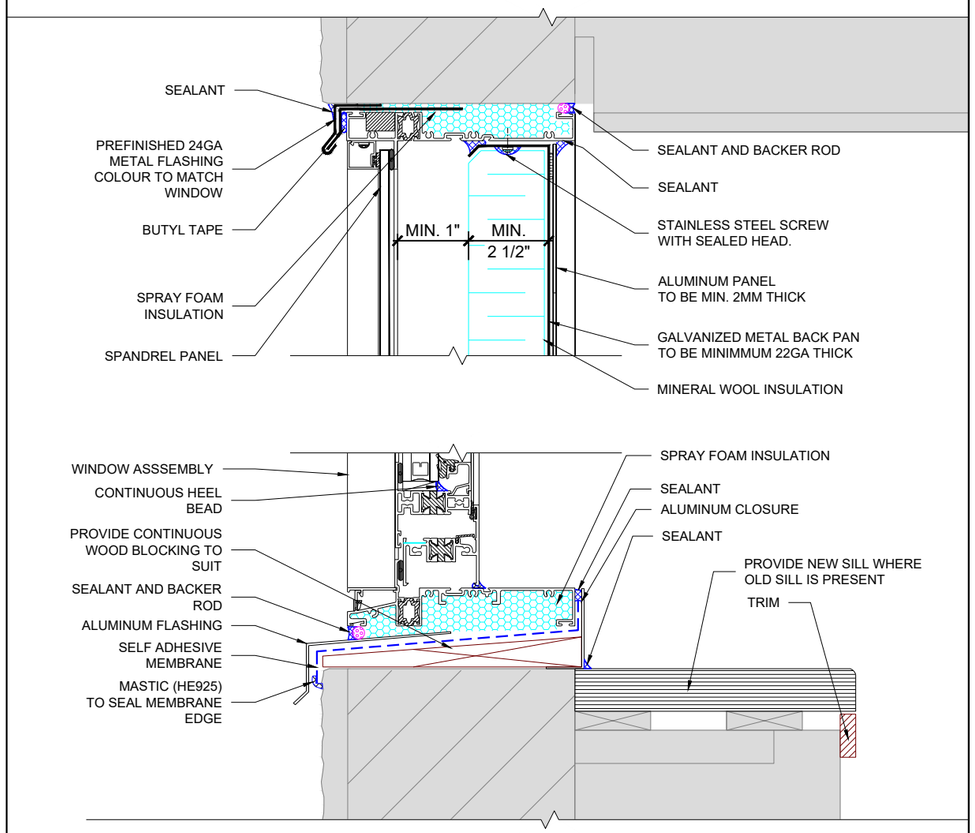
SIR WINSTON CHURCHILL PS - WINDOW REPLACEMENT

89 ARDGLEN DRIVE, BRAMPTON, ON L6W 1V1

DRAWING:

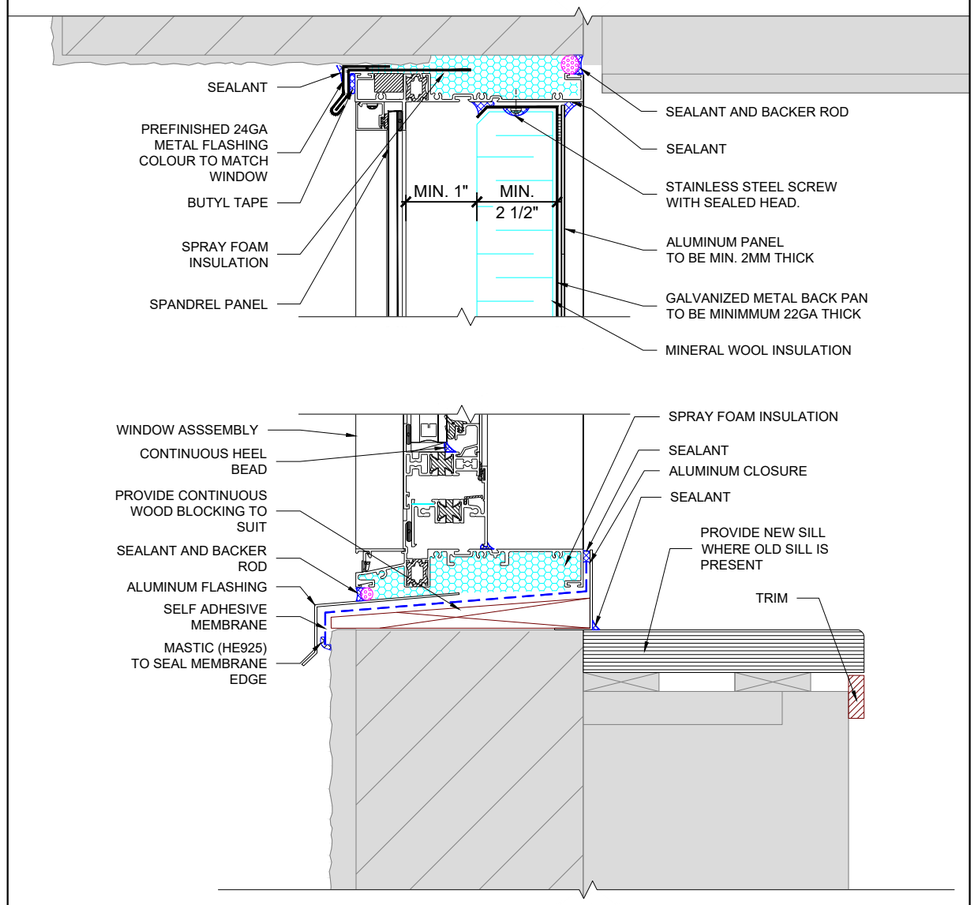
WINDOW DETAILS

DRAWN BY:	SS	SCALE:	NTS
CHECKED:	BC	DATE:	MAY. 2022
PROJECT No.:	22-00051	DWG. #:	A500



1 A501 TYPICAL HEAD AND SILL AT W5a, W7, W8, W9

NTS



2 A501 TYPICAL HEAD AND SILL AT W5b, W10

NTS

GENERAL NOTES:

1) ALL MATERIALS TO BE NEW EXCEPT WHERE NOTED AS "EXISTING".
2) ALL SITE CONDITIONS AND MEASUREMENTS TO BE CONFIRMED BY THE CONTRACTOR.

NO.	REVISIONS	DATE
2	ISSUED FOR TENDER	MAY. 2022
1	ISSUED FOR CLIENT REVIEW	APR. 2022

STAMP:

Pretium

Pretium Engineering Inc.

CLIENT:

PEEL DISTRICT SCHOOL BOARD

PROJECT:

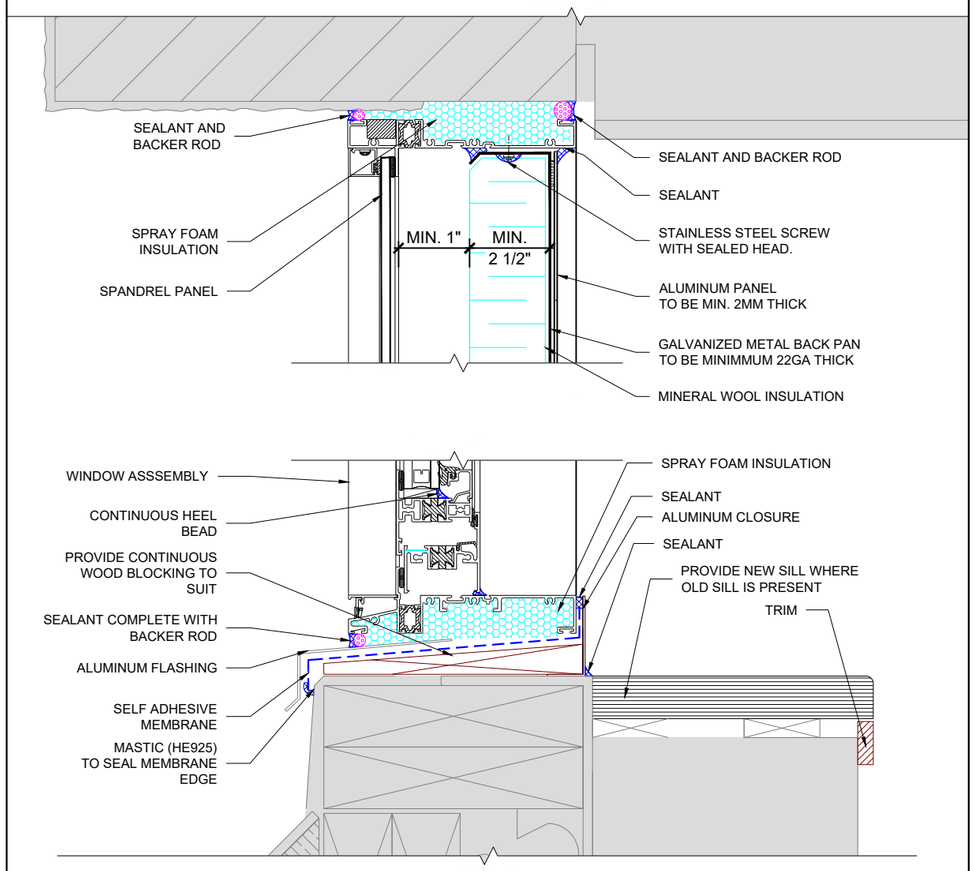
SIR WINSTON CHURCHILL PS - WINDOW REPLACEMENT

89 ARDGLEN DRIVE, BRAMPTON, ON L6W 1V1

DRAWING:

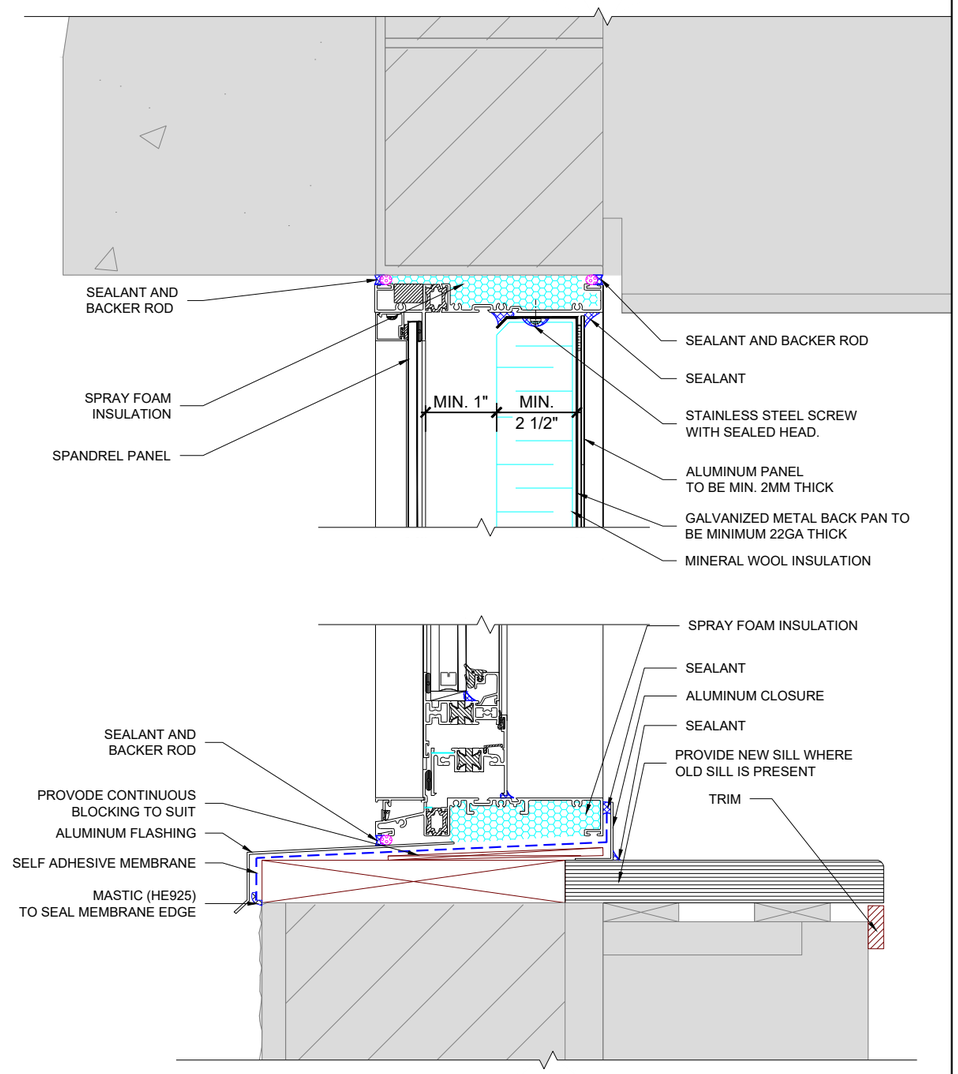
WINDOW DETAILS

DRAWN BY:	SS	SCALE:	NTS
CHECKED:	BC	DATE:	MAY. 2022
PROJECT No.:	22-00051	DWG. #:	A501



1 A502 TYPICAL HEAD AND SILL AT W5c

NTS



2 A502 TYPICAL HEAD AND SILL DETAIL AT W6

NTS

GENERAL NOTES:

1) ALL MATERIALS TO BE NEW EXCEPT WHERE NOTED AS "EXISTING".
2) ALL SITE CONDITIONS AND MEASUREMENTS TO BE CONFIRMED BY THE CONTRACTOR.

NO.	REVISIONS	DATE
2	ISSUED FOR TENDER	MAY. 2022
1	ISSUED FOR CLIENT REVIEW	APR. 2022

STAMP:

Pretium Engineering Inc.

CLIENT:

PEEL DISTRICT SCHOOL BOARD

PROJECT:

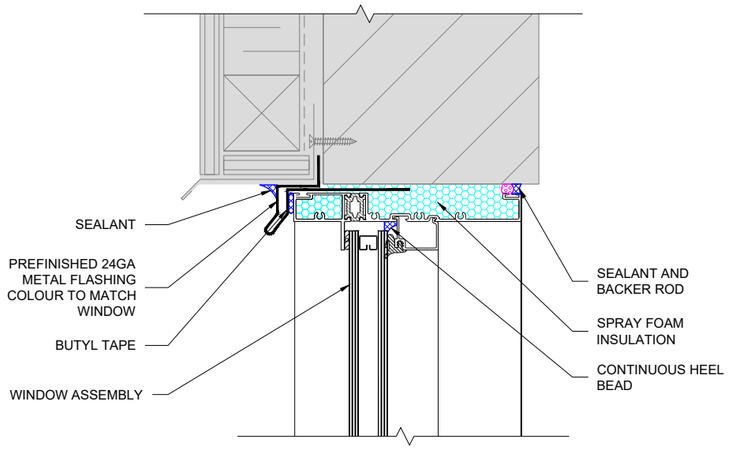
SIR WINSTON CHURCHILL PS - WINDOW REPLACEMENT

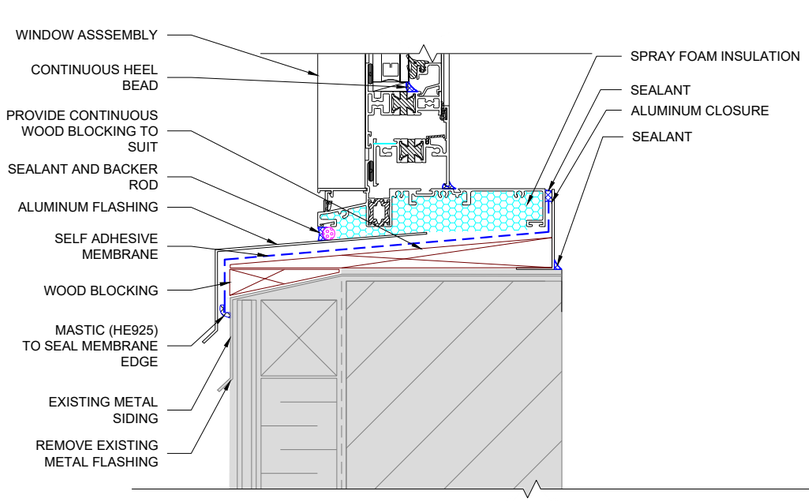
89 ARDGLEN DRIVE, BRAMPTON, ON L6W 1V1

DRAWING:

WINDOW DETAILS

DRAWN BY:	SS	SCALE:	NTS
CHECKED:	BC	DATE:	MAY. 2022
PROJECT No.:	22-00051	DWG. #:	A502





1 A503 TYPICAL HEAD AND SILL DETAIL FOR W4

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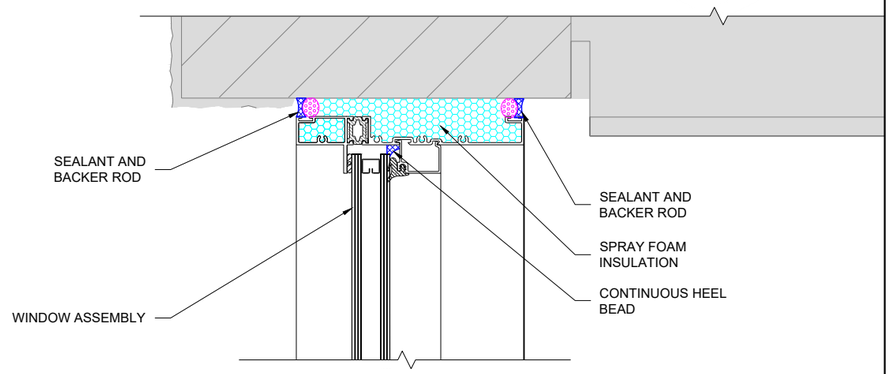
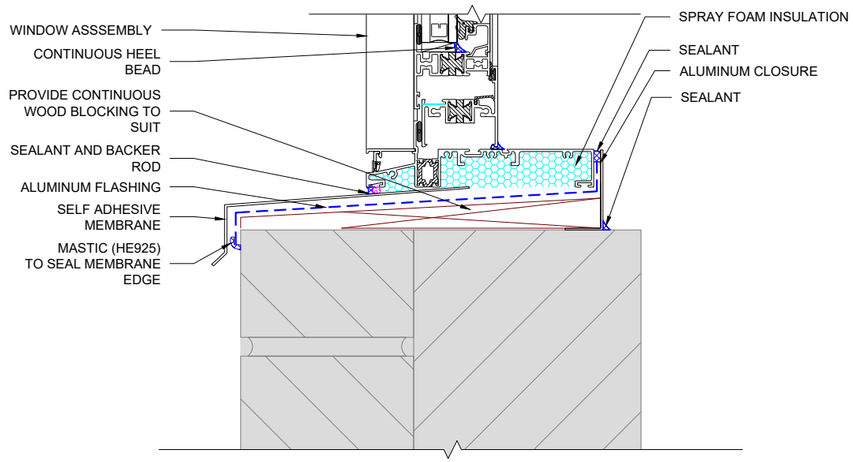




2 A503 TYPICAL HEAD AND SILL FOR W2

NTS

GENERAL NOTES:

1) ALL MATERIALS TO BE NEW EXCEPT WHERE NOTED AS "EXISTING".
2) ALL SITE CONDITIONS AND MEASUREMENTS TO BE CONFIRMED BY THE CONTRACTOR.

NO.	REVISIONS	DATE
2	ISSUED FOR TENDER	MAY. 2022
1	ISSUED FOR CLIENT REVIEW	APR. 2022

STAMP:

Pretium

Pretium Engineering Inc.

CLIENT:

PEEL DISTRICT SCHOOL BOARD

PROJECT:

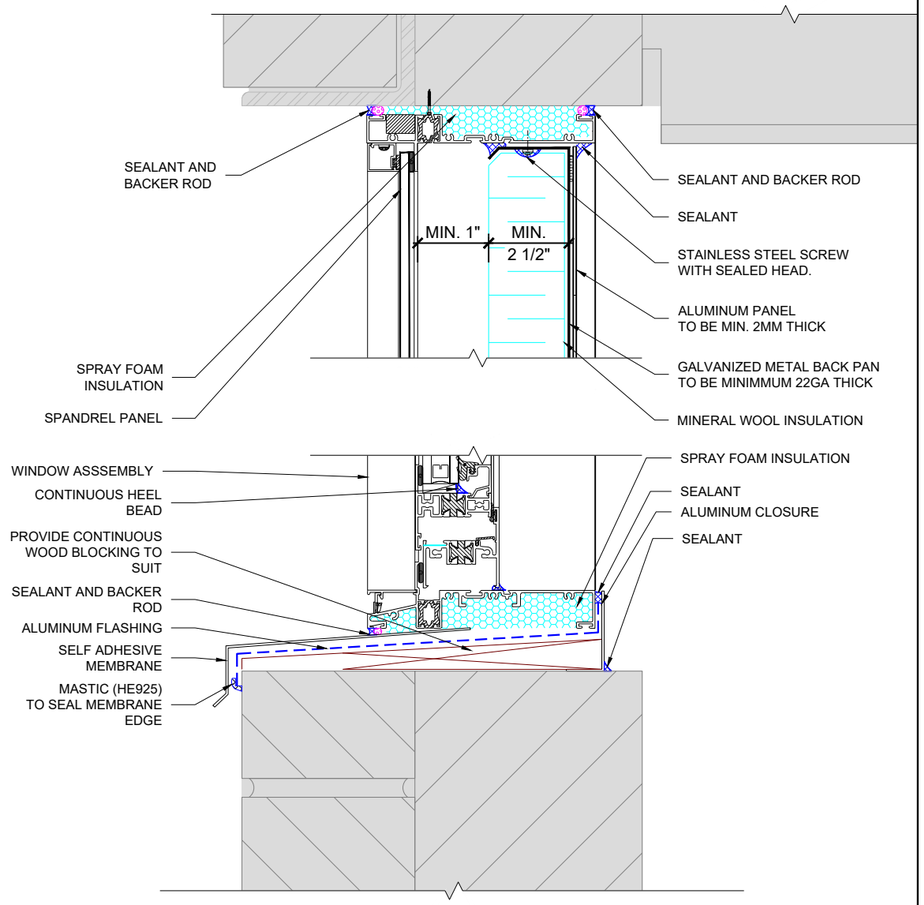
SIR WINSTON CHURCHILL PS - WINDOW REPLACEMENT

89 ARDGLEN DRIVE, BRAMPTON, ON L6W 1V1

DRAWING:

WINDOW DETAILS

DRAWN BY:	SS	SCALE:	NTS
CHECKED:	BC	DATE:	MAY. 2022
PROJECT No.:	22-00051	DWG. #:	A503



1 A504 TYPICAL HEAD AND SILL FOR W3

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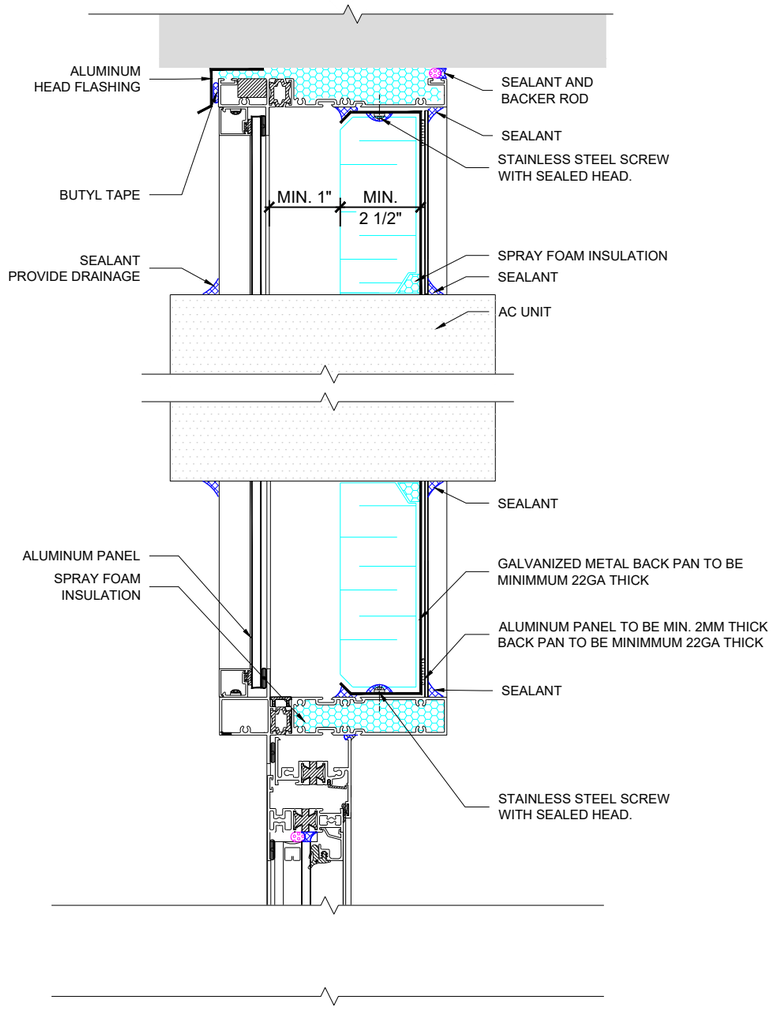


2 A504 AC UNIT / VENT

NTS

GENERAL NOTES:

1) ALL MATERIALS TO BE NEW EXCEPT WHERE NOTED AS "EXISTING".
2) ALL SITE CONDITIONS AND MEASUREMENTS TO BE CONFIRMED BY THE CONTRACTOR.

NO.	REVISIONS	DATE
2	ISSUED FOR TENDER	MAY. 2022
1	ISSUED FOR CLIENT REVIEW	APR. 2022

STAMP:

Pretium

Pretium Engineering Inc.

CLIENT:

PEEL DISTRICT SCHOOL BOARD

PROJECT:

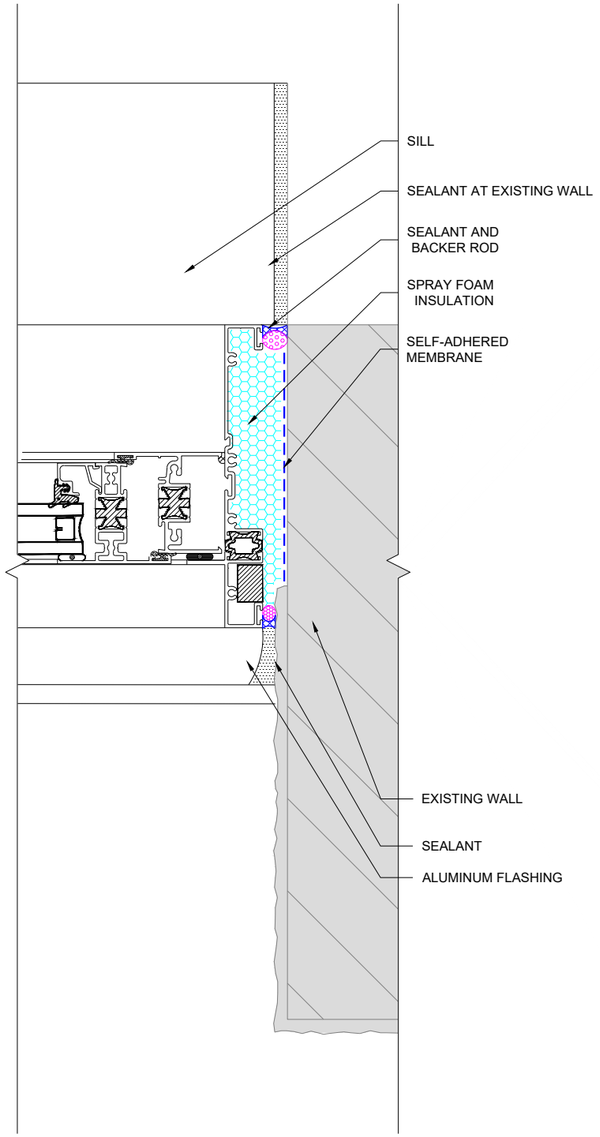
SIR WINSTON CHURCHILL PS - WINDOW REPLACEMENT

89 ARDGLEN DRIVE, BRAMPTON, ON L6W 1V1

DRAWING:

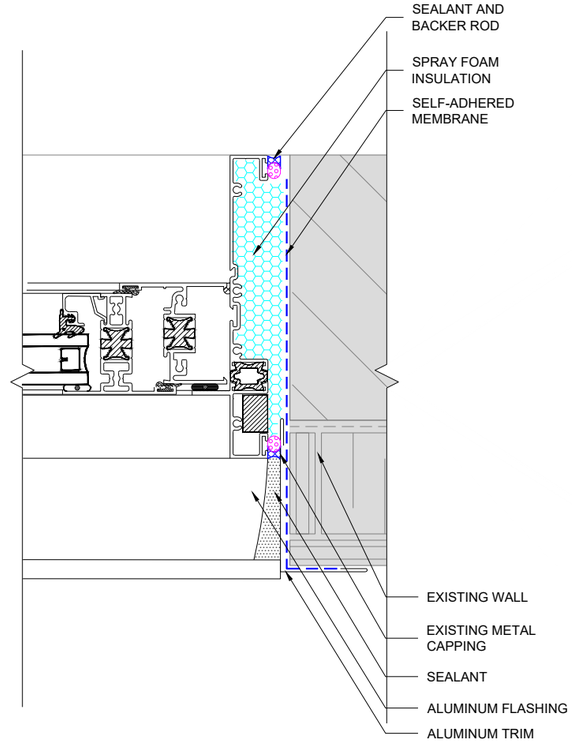
WINDOW DETAILS

DRAWN BY:	SS	SCALE:	NTS
CHECKED:	BC	DATE:	MAY. 2022
PROJECT No.:	22-00051	DWG. #:	A504



1 A505 JAMB AT TROWELLED MARBLE FASCIA

NTS



2 A505 JAMB AT METAL SIDING

NTS

GENERAL NOTES:

1) ALL MATERIALS TO BE NEW EXCEPT WHERE NOTED AS "EXISTING".
2) ALL SITE CONDITIONS AND MEASUREMENTS TO BE CONFIRMED BY THE CONTRACTOR.

NO.	REVISIONS	DATE
2	ISSUED FOR TENDER	MAY. 2022
1	ISSUED FOR CLIENT REVIEW	APR. 2022

STAMP:

Pretium

Pretium Engineering Inc.

CLIENT:

PEEL DISTRICT SCHOOL BOARD

PROJECT:

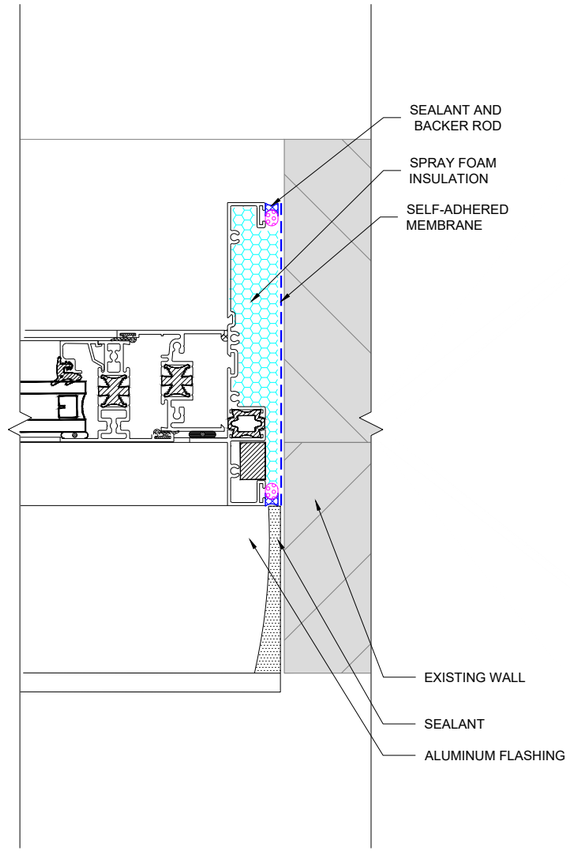
SIR WINSTON CHURCHILL PS - WINDOW REPLACEMENT

89 ARDGLEN DRIVE, BRAMPTON, ON L6W 1V1

DRAWING:

WINDOW DETAILS

DRAWN BY:	SS	SCALE:	NTS
CHECKED:	BC	DATE:	MAY. 2022
PROJECT No.:	22-00051	DWG. #:	A505



1 A506 JAMB AT BRICK

NTS

GENERAL NOTES:

1) ALL MATERIALS TO BE NEW EXCEPT WHERE NOTED AS "EXISTING".
2) ALL SITE CONDITIONS AND MEASUREMENTS TO BE CONFIRMED BY THE CONTRACTOR.

NO.	REVISIONS	DATE
2	ISSUED FOR TENDER	MAY. 2022
1	ISSUED FOR CLIENT REVIEW	APR. 2022

STAMP:

Pretium

Pretium Engineering Inc.

CLIENT:

PEEL DISTRICT SCHOOL BOARD

PROJECT:

SIR WINSTON CHURCHILL PS - WINDOW REPLACEMENT

89 ARDGLEN DRIVE, BRAMPTON, ON L6W 1V1

DRAWING:

WINDOW DETAILS

DRAWN BY:	SS	SCALE:	NTS
CHECKED:	BC	DATE:	MAY. 2022
PROJECT No.:	22-00051	DWG. #:	A506

APPENDIX 1:

Hazardous Building Materials Survey

PERITUS
ENVIRONMENTAL CONSULTANTS INC.

PROJECT SPECIFIC DESIGNATED SUBSTANCES SURVEY

Window Replacement

Sir Winston Churchill Public School

89 Ardglen Drive

Brampton, ON

Prepared for:
Peel District School Board
933 Central Parkway West

Mississauga, ON L5C 2T9

Prepared by:
Peritus Environmental Consultants Inc.
5403 Eglinton Avenue West Suite 100
Toronto, ON M9C 5K6

Project Number:
22-21-191718

Report Date:
March 2022

EXECUTIVE SUMMARY

Peritus Environmental Consultants Inc. (Peritus) was retained by Pretium Engineering Inc. (Pretium) on behalf of the Peel District School Board (PDSB) to complete a project-specific designated substances survey (DSS) of the windows at Sir Winston Churchill Public School located at 89 Ardglen Drive, Brampton, Ontario (Site). The PDSB plans to replace the windows along the eastern portion of the school The purpose of the DSS was to identify potential designated substances and hazardous building materials prior to the replacement of the windows. The locations of the proposed window replacement work are shown on Figure 1.

Asbestos

Based on the analytical results, asbestos was not present in the inspected materials surrounding the windows to be replaced.

Please note, asbestos containing materials (ACMs) may exist in other areas of the building at the Site that may become visible during future renovation/demolition work. Any unknown building materials not identified in this report should be assumed to be ACMs unless otherwise confirmed by laboratory analyses. The Sample Location Plan and Photographic Logs show approximate locations of the sampled materials and may not be fully representative of Site conditions and concealed materials.

Lead

The table below summarizes the "lead-containing" paint present around the windows at the Site. The sampling locations are shown on Figure 1.

Sample ID	Location	Building Material	Lead Content		Lead Classification
			µg/g	% By Weight	
P-02	Windows	Grey paint	147 µg/g	0.0147%	Lead-Containing

Silica

Field personnel observed masonry walls surrounding the windows to be replaced during the site visit. Since there are masonry walls present, appropriate protective measures are recommended if these walls are disturbed as part of door replacement project. Cutting, grinding or demolition of materials containing silica should be completed only with proper respiration protection and other worker-safe procedures such as adequate dust suppression technique (wetting).

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1 INTRODUCTION

Peritus Environmental Consultants Inc. (Peritus) was retained by Pretium Engineering Inc. (Pretium) on behalf of the Peel District School Board (PDSB) to complete a project-specific designated substances survey (DSS) of the windows at Sir Winston Churchill Public School located at 89 Ardglen Drive, Brampton, Ontario (Site). The PDSB plans to replace the windows along the eastern portion of the school The purpose of the DSS was to identify potential designated substances and hazardous building materials prior to the replacement of the windows. The locations of the proposed window replacement work are shown on Figure 1.

Peritus also conducted a project specific DSS for various roof sections at the Site in 2019 titled "Project Specific Designated Substances Survey (Roof Repair/Replacement), Sir Winston Churchill P.S., Brampton, ON," and dated December 18, 2019. During this project specific DSS, Peritus focused on the roof of the Site, however, one component of this investigation involved the renovation of a rooftop window into an access door. Some samples of window materials were collected at this time and will be used in this report.

The DSS report consists of this introduction section which includes a description of the building, scope of survey and summary of applicable regulations. A discussion on the background of designated substances and hazardous material is provided in Section 2. The survey methodology, findings and discussion are presented in Sections 3 to 5, respectively.

1.1 BUILDING DESCRIPTION

The Site has a multi-storey school building surrounded by asphalt parking lots (Photo 1). A recreational field is located northwest of the building. The school building is made up of multiple sections that range from one-storey to two-storeys.

The window areas inspected for this project specific DSS were all constructed prior to 1990. There were four different windows styles observed in the areas to be renovated at the Site (Photo 2). All windows however, were the typical commercial grade window, consisting of an anodized metal frame, caulking, mastics and decorative finishes. s

1.2 SURVEY SCOPE

The scope of work for this project specific DSS focused on identifying potential designated substances that may be encountered during the roof replacement and improvement activities.

Section 30 of the "Occupational Health and Safety Act" (OHSA) requires that the following designated substances be included in a DSS:

Acrylonitrile	Coke Oven Emissions	Mercury	Arsenic
Ethylene Oxide	Silica	Asbestos	Isocyanates
Vinyl Chloride Monomer	Benzene	Lead	

Specific materials of concern that may potentially be encountered in the subject buildings include asbestos, lead and silica.

1.3 REGULATORY REQUIREMENTS

Section 30 of OHSA requires building owners or their agents (architects, general contractors, etc.) to prepare or have prepared a DSS for specified potentially hazardous materials possibly present in a facility. The owner must provide a prospective contractor with a DSS report before entering into a binding agreement with the contractor. The owner is liable to the contractor for damages and costs arising from unreported materials (of which the owner should reasonably have been aware) and could also be subject to orders and fines from the Ministry of Labour (MOL).

In addition to the requirements under the OHSA, Section 6 of the MOL Regulations for Construction Projects requires the contractor, when submitting a Notice of Project form, to report any designated substances likely to be used, handled or disturbed during the project.

The disturbance of asbestos materials on construction projects is regulated by Ontario Regulation 278/05, as amended (O.Reg.278/05). The disposal of asbestos waste is regulated by O.Reg.347, as amended. The regulations are administered by the Ministry of Environment, Conservation and Parks (MECP).

There are no specific MOL regulations for control of the other designated substances on construction projects; however, the MOL actively enforces the general duty clause of OHSA which protects workers and provides guidance on exposure monitoring, permissible exposure levels, medical monitoring, etc. for all designated substances.

1.4 LIMITATIONS AND EXCLUSIONS REGARDING SCOPE

The scope of the report was limited to potential designated substances found within specified and accessible areas. The survey was limited to the materials discussed in this report. Only areas that were accessible using limited-intrusive techniques were used in this DSS.

The findings cannot be extended to previous or future site conditions. The field observations are considered sufficient in details and scope to form a reasonable basis for the findings presented in this report.

Other areas that were not accessible for direct investigation and subsurface locations may contain designated substances. Substances other than those addressed by the investigation

described in this report may exist within the site; and substances addressed by the investigation may exist in areas of the site not investigated or in quantities not ascertained. For example, the areas covered by the metal window frames could not be accessed for sampling. There may be caulking, and other materials present that could not be accessed without more destructive testing (i.e. removing the window frame or cutting into the brick or masonry walls).

This survey did not focus on current or past use of the property or occupant articles within the buildings (i.e. furniture or stock items), nor does it report on possible contaminants in the soil and groundwater at the Site.

2 BACKGROUND INFORMATION ON DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS

OHSA requires that a list of all "designated substances" at a project site be provided to all bidders at the time of the pricing stage and that the "Constructor" for a project shall provide each prospective contractor and subcontractor for the project with a copy of the list before they enter into an agreement.

Eleven substances are classified as "designated substances" in Ontario: asbestos, lead, mercury, silica, isocyanates, vinyl chloride, benzene, acrylonitrile, coke oven emissions, arsenic and ethylene oxide. PCBs are considered to be "hazardous materials" and require special handling during construction or demolition activities.

Legal requirements, which apply to health and safety on construction projects, are set out in OHSA and regulations under this act. OHSA specifies, in general terms, the duties of employers and others to protect workers from health and safety hazards on the job. These duties include taking all reasonable precautions to protect the health and safety of workers and acquainting a worker or a person in authority over a worker with hazard in the work and in the handling, storage, use, disposal and transport of any hazardous materials.

The Regulation for Construction Projects, O.Reg.213/91, as amended, applies to all construction projects, and requires the use of appropriate personal protective equipment, training in the use or protective equipment and the provision of adequate washing facilities.

It is noted that friable ACMs were banned in Ontario in 1973 and non-friable ACMs were banned in the 1980s; however, asbestos based products were still in circulation and remained in use into the 1980s. For buildings constructed prior to 1990, asbestos may be present in the building materials.

Other regulatory requirements (and guidelines) which apply to control of exposure to designated substances and hazardous materials are discussed in Appendix A.

3 SURVEY METHODOLOGY

3.1 METHODOLOGY

A review of the Site history indicated that the windows to be replaced were constructed prior to 1990; therefore, the designated substances outlined in Section 30 of the OHSA (i.e. asbestos and lead) could potentially be present within the building materials.

Field personnel visited the Site on February 4, 2022 and collected samples from various windows throughout the Site. During the Site visit, field personnel looked for the most common uses of window building materials that could contain designated substances based on historical applications. The survey focused on collecting following materials:

- Soffit board mastics (Photo 3)
- Caulking (Photo 4)
- Mortars (Photo 5)
- Plaster/Texture finishes (Photo 6)
- Sealants /glazing around the window frame (Photo 7 to 8)
- Ceiling tiles above the window
- Paint on the paneling above the window (Photo 9)

The sampling locations are shown on Figure 1. Peritus completed minor repairs in areas where samples were collected, as applicable. For example, Peritus collected caulking from windows and patched these areas with new caulking.

3.2 ANALYSIS

A total of 24 samples were collected for asbestos analysis during this investigation and 12 from the 2019 investigation. There was also one paint sample collected for lead analysis around the windows during the 2019 investigation. The locations of the samples are shown on Figure 1 and described in Sections 4 and 5 of this report.

The asbestos and lead samples were submitted to Paracel Laboratories Ltd. (Paracel) of Mississauga, Ontario. The analysis was performed in accordance with the EPA 600/R-93/116 method for Asbestos PLM Visual Estimation and the MECP E3470, ICP-OES method for Metals/Lead. Certificates of Analyses are provided in Appendix B.

4 FINDINGS

The findings of the survey are presented in separate subsections for each of the 11 designated substances. Samples were collected from the windows of the defined study area. These samples were deemed to be representative of similar materials found around the windows of the Site to be replaced.

4.1 ASBESTOS

A total 36 samples were collected and submitted to Paracel for analysis of asbestos content for the window investigation. Based on the analytical results the materials tested did not contain asbestos at or below the regulatory requirements (0.5% asbestos by dry weight). The results of the asbestos sampling are summarized on the chart below. The sampling locations can be found in Figure 1.

Sample ID	Location	Building Material	Asbestos Content
01-A to C	Exterior side of Windows	Grey soffit board – mastics/paper vapour barrier	None
02-A to C	Interior/Exterior side of Windows	Grey caulking	None
03-A to C	Exterior side of Windows	Mortar	None
04-A to C	Exterior side of Windows	Cement/Plaster Paneling	None
05-A to C	Exterior side of Windows	Texture plaster – decorative paneling	None
06-A to C	Exterior side of Windows	Black sealant	None
07-A to C	Exterior side of Windows	Brown sealant	None
08-A to C	Interior side of Windows	White caulking	None
16-A to C (Dec 2019 Report)	Window to be removed – flashing below window	Brown caulking	None
17-A to C (Dec 2019 Report)	Window to be removed – bitumen membrane below window	Black mastic/sealant	None

Sample ID	Location	Building Material	Asbestos Content
18-A to C (Dec 2019 Report)	Window to be removed – bitumen membrane below window	Sealant behind bitumen membrane and joints of bitumen membrane	None
19-A to C (Dec 2019 Report)	Window to be removed – inside storage room	Ceiling tiles	None

Notes:

1. All samples submitted with a positive stop request. If first sample had positive asbestos content, the remainder of samples were not analyzed and assumed to be asbestos containing

4.1.1 Soffit Board Mastics

A grey metal soffit board was observed as a decorative finish around some windows at the Site. Upon further inspection, a yellow mastic, a paper vapour barrier and yellow fiberglass insulation was observed behind the metal board (Photo 3). Based on the analytical results, the mastics/vapour barrier did not contain asbestos. The yellow insulation was observed to be fiberglass, which typically does not contain asbestos.

4.1.2 Caulking

Grey, white and brown caulking were observed in the areas that may be affecting by the window replacement (Photo 4). Several samples were collected to confirm whether any of the caulking present contained asbestos. Based on the analytical results, none of the caulking observed around the windows contained asbestos.

4.1.3 Mortar

Mortar was observed along the brick and concrete block finishes throughout the Site (Photo 5). Based on the analytical results, none of the mortar samples collected contained asbestos.

4.1.4 Plaster Compounds

Plaster compounds were observed in the form of decorative/texture finishes around the exterior windows (Photo 6). These plaster compounds were observed in two forms at the Site. Based on the analytical results these materials did not contain asbestos.

4.1.5 Window Glazing Sealants

Window glazing sealants were typically found between the metal window frames and glass panels of the window. There were two styles of sealants observed throughout the various window styles (black and brown) as well asl rubber seals (Photo 7). Based on the analytical results, the glazing sealants observed did not contain asbestos.

4.1.6 Other sealants/mastics

A black mastic and brown sealant were observed as a sealant below some of the windows at the Site (Photo 8). The mastic appeared to seal the modified bitumen roof membrane flashing of the window assembly. The brown sealant was observed beneath and along the joints of the membrane flashing. Based of the analytical results, the black mastic and brown sealant did not contain asbestos.

4.1.7 Acoustic Ceiling Tiles

Acoustic ceiling tiles were observed in some areas near the windows to be replaced at the Site. The ceiling tiles could potentially be impacted by the removal of the window and cutting the area to fit the new door in this area. The ceiling tiles were inspected, and no date stamps were observed. Samples of the ceiling tiles were collected and submitted for analysis to confirm whether the tiles contained asbestos. Based on analytical results, the ceiling tiles sampled did not contain asbestos.

4.1.8 Other Asbestos Cement Type Products

It is noted that asbestos cement products, (i.e. Transite™ cement pipes) may be present in areas that were not accessible during the investigation and may become apparent during demolition/renovation work.

4.1.9 Sprayed or Trowelled Fireproofing

Sprayed or trowelled fireproofing was not observed on or around the areas investigated within the Site. It is possible that asbestos containing fireproofing may be present in areas that were not accessible during this investigation and may become apparent during future renovation work.

4.2 LEAD

One paint sample was collected for lead analysis during the Site visit in December of 2019. This paint sample was the same paint style observed throughout all the window assemblies in the areas to be renovated. The paint sample was the grey painted surfaces around the windows (Photo 9). The results of the analysis are summarized in the following chart. The sample locations are shown in Figure 1.

Sample ID	Location	Building Material	Lead Content	
			µg/g	% By Weight
P-02 Dec 2019 Report	Windows	Grey paint	147 µg/g	0.0147%

For the purpose of classifying surface coatings and mortars by laboratory analysis, materials containing lead at a concentration:

- Greater than 0.5% by weight (5,000 µg/g) is considered "Lead-Based"
- Between 0.5% to 0.009% by weight (5,000 µg/g to 90 µg/g) is considered "Lead-Containing"
- Less than 0.009% by weight (90 µg/g) is considered "Lead-Free,". Note: Lead free does not imply zero lead content. Laboratory detection limit is 20 µg/g (<0.002%).

Based on these results, the paint samples collected from around the windows at the Site are "lead-containing".

Lead may also be present in wiring and plumbing materials that were not accessible at the time of the investigation.

4.3 MERCURY

Not applicable.

4.4 SILICA

Silica may be present in the masonry walls surrounding the interior and exterior sides of the windows to be replaced.

4.5 ISOCYANATES

Not applicable.

4.6 VINYL CHLORIDE MONOMER

Not applicable.

4.7 BENZENE

Not applicable.

4.8 ACRYLONITRILE

Not applicable.

4.9 COKE OVEN EMISSIONS

Not applicable.

4.10 ARSENIC

Not applicable.

4.11 ETHYLENE OXIDE

Not applicable.

Not applicable.

4.12 UREA-FORMALDEHYDE FOAM INSULATION

There was no indication that urea formaldehyde foam insulation was used in the inspected areas of the windows to be replaced.

4.13 OZONE DEPLETING SUBSTANCES

HVAC units were not observed on the part of the roof to be replaced.

5 DISCUSSION

5.1 ASBESTOS

Based on the analytical results, asbestos was not present in the inspected materials surrounding the windows to be replaced.

Please note, asbestos containing materials (ACMs) may exist in other areas of the building at the Site that may become visible during future renovation/demolition work. Any unknown building materials not identified in this report should be assumed to be ACMs unless otherwise confirmed by laboratory analyses. The Sample Location Plan and Photographic Logs show approximate locations of the sampled materials and may not be fully representative of Site conditions and concealed materials.

5.2 LEAD

The table below summarizes the "lead-containing" paint present at the Site. The sampling locations are shown on Figure 1.

Sample ID	Location	Building Material	Lead Content		Lead Classification
			µg/g	% By Weight	
P-02	Windows	Grey paint	147 µg/g	0.0147%	Lead-Containing

Removal of lead application paint from the walls of the Site must be completed by a qualified contractor, using the applicable Ministry of Labour Guidelines for lead in paint removal. Generally, removal of lead containing paint requires workers to wear personal protection equipment (PPE), including a NIOSH approved respirator. Dust in the air must be controlled to keep the airborne lead concentrations below 0.05 mg/m^3. Please note, the identified lead-containing or lead-based painted surfaces may exist in other areas of the building and may become visible during renovation/demolition work. Building materials that appear to be visually similar to the painted surfaces described in this report should also be assumed to be lead-containing/based unless otherwise confirmed by laboratory analyses.

Metals that were painted with lead paint should be separated from other materials and disposed at a recycling facility. Other materials (such as wood and drywall) that contain lead paint shall be disposed in accordance with the requirements of the disposal site. It is noted that lead may be present in wiring and plumbing materials that were not accessible at the time of the investigation.

5.3 SILICA

As discussed in Section 4.4, concrete masonry walls and brick walls were observed during the DSS. These materials typically contain silica. Cutting, grinding or other demolition techniques of materials containing silica should be completed only with proper respiration protection and other worker-safe procedures such as dust suppression (wetting).

6 REFERENCES

1. Occupational Health and Safety Act. “Ontario Regulation 278/05 (O.Reg.278/05): Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations”.

2. Peritus Environmental Consultants. “Project Specific Designated Substances Survey (Roof Repair/Replacement), Sir Winston Churchill P.S., Brampton, ON.” December, 18, 2019.

7 LIMITATIONS

This report "Project Specific Designated Substances Survey (Window Replacement), Sir Winston Churchill Public School, Brampton, ON" was prepared for Pretium Engineering Inc. and the Peel District School Board. The scope of services performed may not be appropriate for the purposes of other users, and any use or reuse of this document or its findings or recommendations represented herein is at the sole risk of any other user. Any use by a third party, of reports or documents authored by Peritus Environmental Consultants Inc., 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. Peritus Environmental Consultants Inc. accepts no responsibility for damages suffered by any third party because of decisions made or actions conducted.

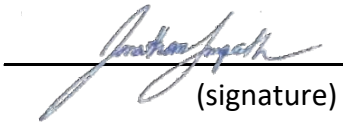
Due to the nature of building construction, some limitations exist as to the possible thoroughness of a designated substances inventory. The field observations are considered sufficient in detail and scope to form a reasonable basis for the findings presented in this report. The scope of the survey is based on the rationale given in this report. The building survey findings rely on professional interpretation of selective sampling and analysis. Sample analysis results have been applied to homogenous materials in locations not sampled; it was not within the scope of work to carry out an exhaustive sampling and analysis program. For non-accessible building spaces, the likelihood of the presence or absence of asbestos and other designated substances has been described, but such assessment is not a definitive statement of presence or absence.

The quantities of Designated Substances and Hazardous Materials identified herein are estimates only. Contractors retained to remove, handle or dispose of these materials must confirm these estimated quantities for their budgeting and planning purposes.

Peritus Environmental Consultants Inc. warrants that the findings and conclusions contained herein have been made in accordance with generally accepted evaluation methods in the industry and applicable regulations at the time of the report. Peritus Environmental Consultants Inc. accepts responsibility for the diligent performance of its duties in executing this assignment within the normal standards of the profession, but disclaims responsibility for consequential damages, if any.

It is possible that conditions may exist which could not be reasonably identified within the scope of the survey or which were not apparent during field work. Peritus Environmental Consultants Inc. believes that the information collected during the survey is most up to date. No other warranties are implied or expressed.

"Project Specific Designated Substances Survey (Window Replacement), Sir Winston Churchill Public School, Brampton, ON"

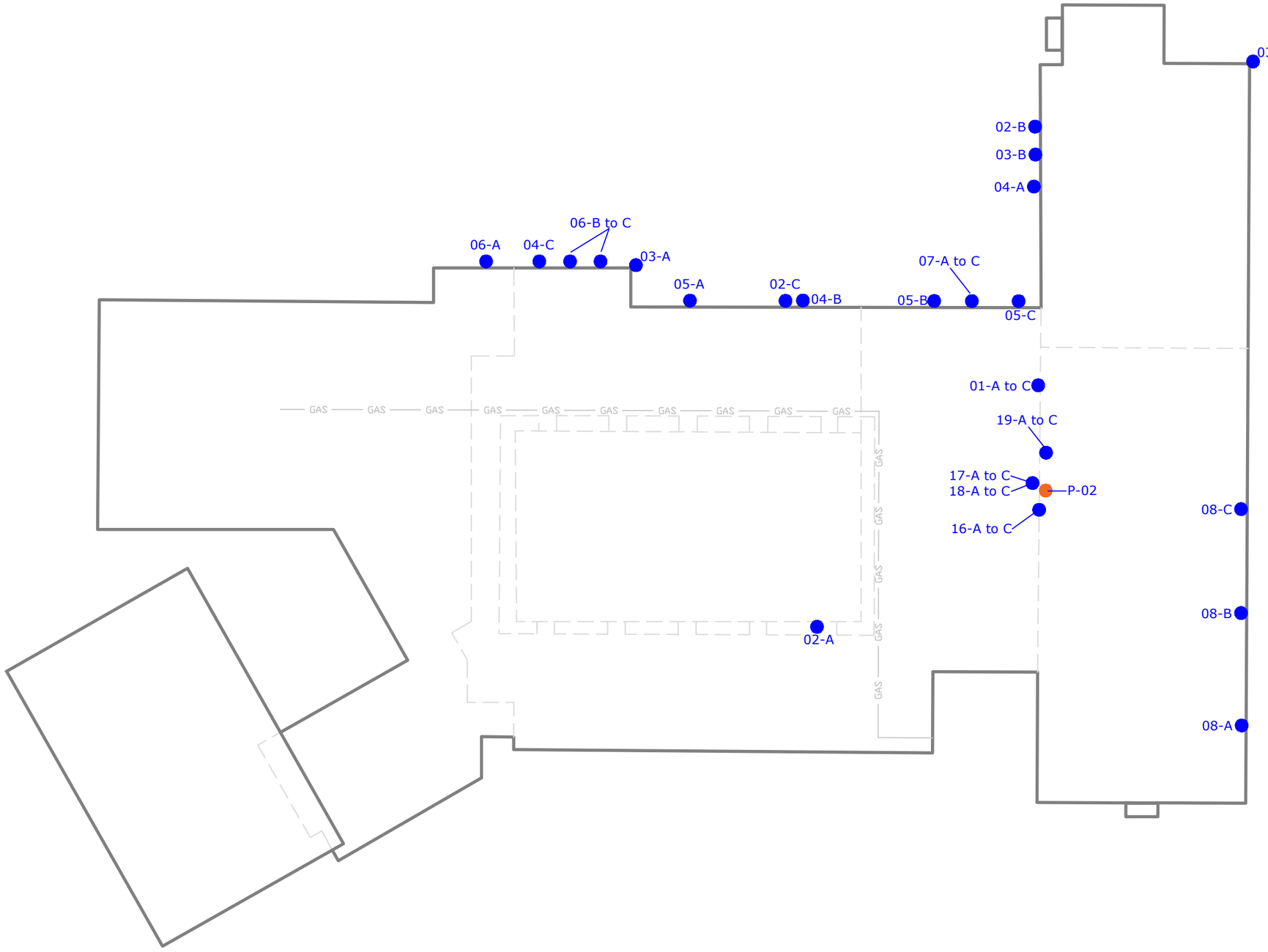
Prepared by 
(signature)

Jonathan Sampath, C.Tech., B.E.S.

Reviewed by 
(signature)

Naz Ritchie, M.Eng., P.Eng.

Figures



LEGEND:

- BUILDING BOUNDARY
- NEGATIVE ACM SAMPLE LOCATION
- POSITIVE LEAD CONTAINING PAINT SAMPLE LOCATION

NOTES:

1. Approximate sample locations and building features shown only.
2. Drawing to be used in conjunction with Report and Photographic Logs

SCALE:

0 5 10 15 20 m

Drawing Reference: Based on aerial photos and Peritus notes.
Note: Locations of buildings, underground utilities etc. are for reference only and should not be referred to for detail design, excavation, or construction purposes.

PERITUS ENVIRONMENTAL CONSULTANTS INC.

Title: Sample Locations	Revision Date: March 2022
Site: Sir Winston Churchill P.S.	Project No.: 22-21-191718
Customer: Peel District School Board c/o Pretium Engineering	Figure: 1

N:\01 Projects\Peel DSB\Sir Winston Churchill\22-21-191718 - DSS\10 Figures\1718 Windows.dwg, 2/15/2022 5:07:01 PM, DWG To PDF.pc3

Photo Log

PHOTOGRAPHIC LOG

Photo No: 1	Date: February 4, 2022	Site Location: Sir Winston Churchill P.S.	Project Number: 22-21-191718

Description: Onsite building.

1

PHOTOGRAPHIC LOG

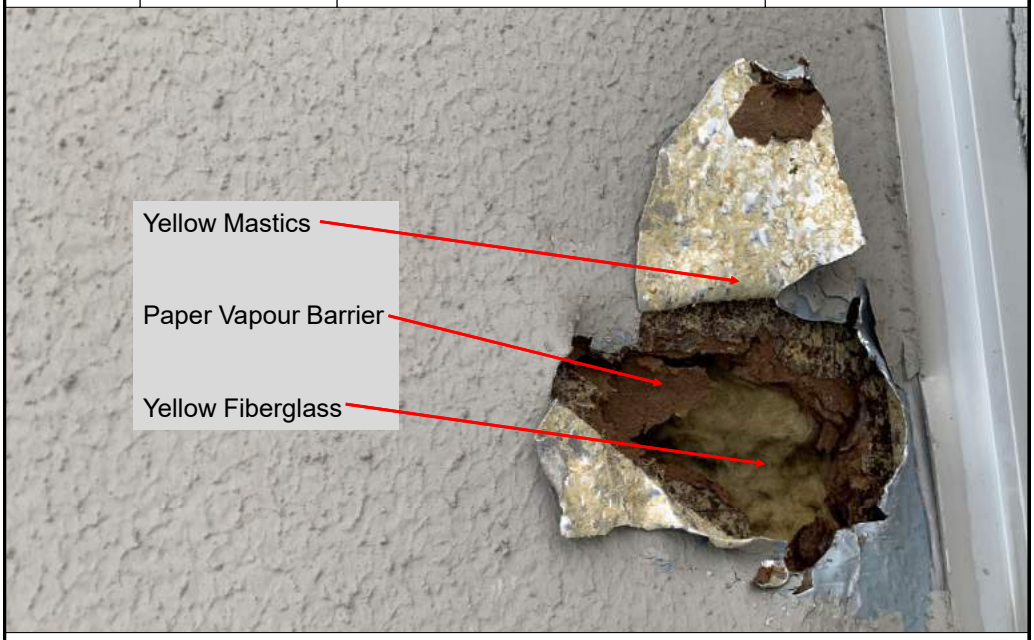
Photo No: 2	Date: February 4, 2022	Site Location: Sir Winston Churchill P.S.	Project Number: 22-21-191718

Description: Typical windows observed at the Site. The windows shown in this photo are scheduled to be replaced.

2

PHOTOGRAPHIC LOG

Photo No: 3	Date: February 4, 2022	Site Location: Sir Winston Churchill P.S.	Project Number: 22-21-191718



Description: Typical materials observed behind the metal soffit board paneling at the Site.

3

PHOTOGRAPHIC LOG

Photo No: 4	Date: February 4, 2022	Site Location: Sir Winston Churchill P.S.	Project Number: 22-21-191718

Description: Typical caulking observed at the Site. Grey caulking (exterior and interior), white caulking (interior) and brown caulking (exterior). These styles of caulking did not contain asbestos.

4

PHOTOGRAPHIC LOG

Photo No: 5	Date: February 4, 2022	Site Location: Sir Winston Churchill P.S.	Project Number: 22-21-191718

Description: Typical locations where mortar samples were collected. The mortars at the Site did not contain asbestos.

5

PHOTOGRAPHIC LOG

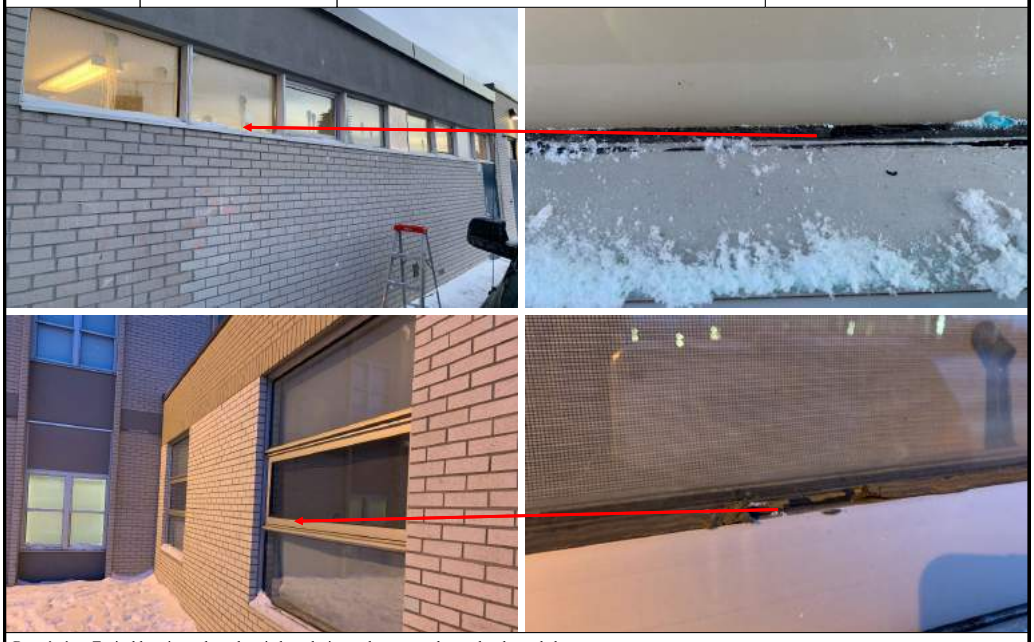
Photo No: 6	Date: February 4, 2022	Site Location: Sir Winston Churchill P.S.	Project Number: 22-21-191718

Description: Typical locations where textured/decorative plaster finishes were observed and sampled. These materials did not contain asbestos.

6

PHOTOGRAPHIC LOG

Photo No: 7	Date: February 4, 2022	Site Location: Sir Winston Churchill P.S.	Project Number: 22-21-191718



Description: Typical locations where the window glazing sealants were observed and sampled.

7

PHOTOGRAPHIC LOG

Photo No: 8	Date: February 4, 2022	Site Location: Sir Winston Churchill P.S.	Project Number: 22-21-191718

Description: Typical location where black mastics and brown sealants were observed in the December 2019 Report. These materials did not contain asbestos.

8

PHOTOGRAPHIC LOG

Photo No: 9	**Date:** February 4, 2022	**Site Location:** Sir Winston Churchill P.S.	**Project Number:** 22-21-191718




Description: Typical locations where the lead-containing grey paint was observed and sampled throughout the windows to the replaced at the Site.

Appendix A:
Regulatory Requirements and Guidelines
Designated Substances and Hazardous Materials

DESIGNATED SUBSTANCES AND HAZARDOUS MATERIALS: REGULATORY REQUIREMENTS AND GUIDELINES

ASBESTOS

Asbestos was widely used in building applications for its ability to withstand high temperatures and its resistance to chemical and biological breakdown. Asbestos may be present in friable or non-friable form. Friable means materials which can be crumbled, pulverized or powdered by hand pressure, when dry. Otherwise, the material is considered to be non-friable. Examples of friable asbestos containing materials (ACM) include pipe and tank insulation, sprayed-on fireproofing and acoustic texture material. Non-friable ACMs include floor tile, gaskets and cement board.

Health concerns related to airborne friable asbestos fibers include the diseases such as asbestosis, mesothelioma and lung cancer.

Friable ACMs were banned in Ontario in 1973 and non-friable ACMs were banned in the 1980s; however, asbestos based products were still in circulation and remained in use into the 1980s. Based on the age of the building, it is possible asbestos is present in the building materials used during construction.

Provincial occupational health and safety requirements with respect to ACMs are contained within Ontario Regulation 278/05 (O.Reg.278/05) and 837 (amended to O.Reg.279/10). Disposal of asbestos waste is governed by the Environmental Protection Act – R.R.O. 1990, Regulation 347 (amended to O.Reg.334/13). The "Transportation of Dangerous Goods Act and Regulations" prescribe additional requirements related to the transportation of asbestos waste.

LEAD

Lead is a heavy metal that can be found in construction materials such as paints, coatings, mortar, concrete, solder, packings, sheet metal, caulking, glazed ceramic products and cable splices. Lead has been used historically in exterior and interior paints. In Canada, the lead content of paints and other liquid coatings on furniture, household products, children's products and surface (exterior and interior) of any building frequented by children was restricted to 0.5% in 1976.

Since no regulations exist in Ontario, the standards provided by the USA Housing and Urban Development (HUD) and the Environmental Protection Act's (EPA) Toxic Substances Control Act were used to compare the analytical data. These standards define lead-containing paint as paint that has lead equal to or exceeding 0.5 percent by weight [~5,000 parts per million (ppm)]. This criterion was widely, although not universally, used in Canada. In Canada, the "Federal Hazardous Product Act" has recently lowered the allowable concentration of lead in paints for new consumer products to 0.06% lead content by weight (600 ppm).

MERCURY

Mercury has been used in electrical equipment such as alkaline batteries, fluorescent light bulbs (lamps), high intensity discharge (HID) lights (mercury vapour, high pressure sodium and metal halide), “silent switches” and in instruments such as thermometers, manometers and barometers, pressures gauges, float and level switches and flow meters. Mercury-containing lamps, the bulk of which are 1.22 m (4 foot) fluorescent lamps, contain between 7 mg and 40 mg of mercury each. Mercury compounds have also been used by many manufacturers historically as additives in latex paint to protect the paint from mildew and bacteria during production and storage.

The intentional addition of mercury to Canadian-produced consumer paints for interior use was prohibited in 1991. Mercury may have remained in paints after 1991, as a result of impurities in the paint ingredients or cross-contamination due to other manufacturing processes. The” Surface Coating Materials Regulations” made under the “Hazardous Products Act”, published in the Canada Gazette Part II on May 4, 2005 sets a maximum total mercury concentration of 10 mg/kg (0.001 percent weight/weight) for all surface coating materials (including paint).

Mercury-containing thermostats and silent light switches are mercury tilt switches which are small tubes with electrical contacts at one end of the tube. A mercury tilt switch is usually present when no switch is visible. Mercury switches often have the word “TOP” stamped on the upper end of the switch, which is visible after removing the cover plate. If mercury switches are to be removed, the entire switch should be removed and placed into a suitable container for storage and disposal.

No special requirements exist in Ontario for disposal of small quantities (i.e., less than 30) of waste light tubes. Larger quantities of waste light tubes (more than 30) generated during renovations or building demolition and waste mercury from equipment must either be recycled or disposed of in accordance with the requirements of O.Reg.347 – “Waste Management, General”.

Waste mercury in amounts less than 5 kg (per month) are exempt from the generator registration requirements prescribed by O.Reg.347 – “Waste Management, General”. Waste mercury from mercury switches or gauges should be properly collected and shipped to a recycling facility or disposed of as hazardous waste. Removal of mercury-containing equipment (e.g. switches, gauges, controls, etc.) should be carried out in a manner which prevents spillage and exposure to workers.

The measures and procedures in the “MOL Guideline – Lead in Construction Projects” for control of exposure to lead from paint applications during construction activities will also serve to control potential exposure to mercury in paint.

SILICA

Silica exists in several forms of which crystalline silica is of most concern with respect to potential worker exposures. Quartz is the most abundant type of crystalline silica. Some commonly used construction materials containing silica include brick, refractory brick, concrete, concrete block, cement, mortar, rock and stone, sand, fill dirt, topsoil and asphalt containing rock or stone.

The MOL Guideline, "Silica on Construction Projects", dated September 2004, provides guidance in controlling exposure to silica dust during construction activities. In the guideline, silica-containing construction operations are classified into three groups – Type 1 (low risk), Type 2 (medium risk) and Type 3 (high risk) based on presumed airborne concentrations of respirable crystalline silica in the form of cristobalite, tridymite, quartz and tripoli.

ISOCYANATES

Isocyanates are a family of highly reactive chemicals with a low molecular weight. They are widely used in the manufacture of flexible and rigid foams, fibers, coatings such as paints, varnishes and elastomers. They are increasingly used in the automotive industry including autobody repair and automobile manufacturing. They are also used in building insulation materials. Spray-on polyurethane products containing isocyanates have been developed for a wide range of retail, commercial and industrial uses to protect cement, wood, fiberglass, steel and aluminum, including protective coatings for truck beds, trailers, boats, foundations and decks.

Isocyanates are powerful irritants to the mucous membranes of the eyes and gastrointestinal and respiratory tracts. Direct skin contact can also cause marked inflammation. Isocyanates can also sensitize workers, making them subject to severe asthma attacks if they are exposed to it again. There is evidence that both respiratory and dermal exposures can lead to sensitization. Controlling exposure to isocyanates is governed by the "Occupational Health and Safety Act (OHSA) – R.R.O. 1990, Regulation 842".

VINYL CHLORIDE MONOMER

Vinyl chloride is one of the largest petroleum-derived chemicals in world production. Large quantities of vinyl chloride are used in industry to produce the polymer polyvinyl chloride (PVC) plastic and vinyl products, among other uses. Vinyl chloride is also a by-product of the breakdown of chlorinated solvents by soil organisms and, when in soil, it can migrate to groundwater sources eventually entering drinking water sources.

Acute exposure to high levels of vinyl chloride in the air can affect the central nervous system and can lead to dizziness, drowsiness and headaches. Chronic exposure to vinyl chloride through inhalation and oral exposure has resulted in liver damage. Vinyl chloride is a carcinogen and exposure through inhalation has been shown to increase the risk of a rare form of liver cancer. Controlling exposure to vinyl chloride is governed by the "OHSA – R.R.0. 1990, Regulation 846".

BENZENE

Benzene is an aromatic hydrocarbon, and one of the most elemental petroleum-derived chemicals. It's found in the air from burning coal and oil, gasoline service stations and motor vehicle exhaust.

Acute inhalation exposure of humans to benzene may cause drowsiness, dizziness, headaches, as well as eye, skin and respiratory tract irritation and, at high levels, unconsciousness. Chronic inhalation exposure has caused various disorders in the blood, including reduced numbers of red blood cells and aplastic anemia, in occupational settings. Benzene is a known human carcinogen for all routes of exposure.

ACRYLONITRILE

Acrylonitrile is often used for the manufacture of acrylic and modacrylic fibers, and as a raw material for plastics, adiponitrile, acrylamide and nitrile rubbers and barrier resins. Exposure to acrylonitrile is most commonly occupational.

Acute effects of acrylonitrile through inhalation in high concentrations can cause a person to experience mucous membrane irritation, headaches, nausea, feelings of apprehension and nervous irritability. Chronic effects include prolonged headaches, fatigue, nausea and weakness.

The OHSA classifies acrylonitrile as a designated substance. As such potential exposure and disposal of acrylonitrile is regulated. It is a probable human carcinogen.

COKE OVEN EMISSIONS

Coke is used as a fuel, and it is usually made from coal. It is a common component in the manufacturing of iron and steel. Several industries can expose workers to coke oven emissions including the aluminum, steel, graphite, electrical and construction industries.

Coke oven emissions are a known human carcinogen. Chronic effects of exposure through inhalation include conjunctivitis, severe dermatitis and lesions of the respiratory and digestive systems. Controlling exposure to coke oven emissions is governed by "OHSA – R.R.0. 1990, Regulation 840".

ARSENIC

Metallic arsenic is mainly used in alloying with lead. Arsenic is also used in the agricultural, medical and mining industries. Very small amounts of arsenic can be added to the lead components in car batteries to increase the strength of the batteries. Gallium arsenide is an important semiconductor material used in integrated circuits. The presence of arsenic is prevalent in the automotive and manufacturing sectors.

Arsenic can contaminate groundwater sources and can have adverse effects on human health if consumed. Groundwater that is contaminated with arsenic can be a result of naturally occurring arsenic or from the use of arsenic in a manufacturing process. Some private wells in North America contain arsenic above the governing body standards. Arsenic can also be found in food from plants that have absorbed small amounts of arsenic.

Elemental arsenic and arsenic compounds are toxic and dangerous for the environment and are recognized as group 1 carcinogens (sufficient evidence of carcinogenicity in humans). The EPA maximum arsenic concentration in drinking water is 10 ppb.

ETHYLENE OXIDE

Ethyl oxide, as a raw material, has many applications. It is commonly used as a key industrial chemical for making consumer products and non-consumer chemicals. Some uses include production of detergents, thickeners, solvents, plastics and various organic chemicals.

Ethylene oxide is a very hazardous substance: at room temperature it is a flammable, carcinogenic, mutagenic, irritating and anesthetic gas. O.Reg.490/09 states that the short-term exposure limit (STEL) for ethylene oxide in a 15-minutes period is 10 ppm.

POLYCHLORINATED BIPHENYLS

The management of equipment classified as waste and containing (polychlorinated biphenyls) PCBs at concentrations of 50 parts per million (mg/kg) or greater is regulated by “Ontario Regulation 362, Waste Management – PCBs” (amended to O.Reg.232/11). Under this regulation, PCB waste is defined as any waste material containing PCBs in concentrations of 50 mg/kg or greater. Any equipment containing PCBs at or greater than this level, such as transformers, switchgear, light ballasts and capacitors, which is removed from service due to age, failure or as a result of decommissioning, is considered to constitute a PCB waste. Current federal legislation (effective July 1, 1980) has prohibited the manufacture and sale of new equipment containing PCBs. Since that time, continued operation of equipment supplied prior to this date and containing PCBs is still permitted. Handling, storage and disposition of such equipment is, however, tightly regulated and must be managed in accordance with provincial and federal government requirements as soon as it is taken out of service or becomes unserviceable.

In most institutional, commercial and smaller industrial facilities, the primary source of equipment potentially containing PCBs is fluorescent and HID light ballasts. Small transformers may also be present. In larger industrial facilities, larger transformers and switch gear containing, or potentially containing, PCBs may also be present.

Removal of in-service equipment containing PCBs, such as fluorescent light ballasts, capacitors and transformers, is subject to the requirements of the federal “PCBs Regulations”. When the PCB materials are classified as waste, jurisdiction falls under the Ontario Ministry of the

Environment, Conservation and Parks (MOE) and O.Reg.362. All remedial and PCB management work must be carried out under the terms of a Director's Instruction issued by a MOE District Office (for quantities of PCB fluid greater than 50 litres). The PCB waste stream, regardless of quantity, must be registered with the MOE, in accordance with O.Reg.347, "General – Waste Management". O.Reg.362 applies to any equipment containing greater than 1 kg of PCBs. Current MOE policies will, therefore, allow a one-time disposal of up to 40 ballasts as municipal waste. For quantities greater than 40, the ballasts must be classified as PCB waste and either placed into temporary storage or disposed of at an acceptable facility.

OZONE-DEPLETING SUBSTANCES

An ozone-depleting substance (ODS) is any substance that results in the depletion of stratospheric ozone shield that screens the earth from some of the sun's harmful ultraviolet rays. Such substances must be sufficiently stable to survive the time needed to mix into the stratosphere. Common ozone-depleting substances are chlorofluorocarbons (CFCs), halons, hydrochlorofluorocarbons (HCFCs), carbon tetrachloride, methyl chloroform, methyl bromide and oxides of nitrogen.

CFCs have been widely used as refrigerants, solvents, foam blowing agents and as aerosol propellants. Halons are used within fire extinguishing equipment. Methyl chloroform and carbon tetrachloride have been used mainly in industry as degreasers and adhesive, and for chemical processing.

Several regulations apply to the use, storage, disposal and emission of ozone-depleting substances. The general provincial regulation pertaining to ODS is O.Reg.356 (amended to O.Reg.851/93) and O.Reg.189/94 (amended to O.Reg.238/01).

Due to the nature of ODSs and their potential impact to the environment, their use, transport, storage and disposal is strictly enforced. Canada's current position on CFCs is to freeze production by January 1996 and complete elimination by 2020. The "Federal Halocarbon Regulations" (SOR/99-255) assist in the development of strategic plans for the use, control and phase-out of ODSs and their halocarbon alternatives for operations under federal jurisdiction.

UREA-FORMALDEHYDE FOAM INSULATION

Urea-formaldehyde foam insulation (UFFI) was developed in Europe in the 1950s as an improved means of insulating cavities in house walls. It was typically made at a construction site from a mixture of urea-formaldehyde resin, a foaming agent and compressed air. When the mixture is injected into the wall, urea and formaldehyde unite and "cure" into an insulating foam plastic. During the 1970s, when concerns about energy efficiency led to efforts to improve home insulation in Canada, UFFI became an important insulation product for existing houses.

In the insulating process, a slight excess of formaldehyde was often added to ensure complete "curing" with the urea to produce the urea-formaldehyde foam. That excess was off-gassed during the curing, almost entirely within a day or two of injection. Health problems associated with exposure to formaldehyde include: eye, nose, and throat irritation, coughing, headaches dizziness and, in very high concentrations, bronchial pneumonia and pulmonary edema. As a result, the use of UFFI was banned in 1980 by the "Federal Hazardous Products Act"(R.S.C. 1985).

Appendix B:
Certificates of Analysis
(Paracel Laboratory)

PARACEL LABORATORIES LTD.
TRUSTED. RESPONSIVE. RELIABLE.

15 - 6800 Kitimat Rd
Mississauga, ON, L5N 5M1
1-800-749-1947
www.paracellabs.com

Certificate of Analysis

Peritus Environmental Consultants

320 Woolwich St S
Breslau, ON N0B 1M0
Attn: Jonathan Sampath

Client PO: 22-21-191718
Project: 22-21-191718
Custody:

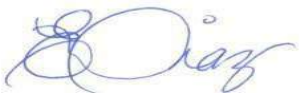
Report Date: 11-Feb-2022
Order Date: 7-Feb-2022

Order #: 2207001

This Certificate of Analysis contains analytical data applicable to the following samples as submitted :

Paracel ID	Client ID
2207001-01	01-A
2207001-02	01-A
2207001-03	01-B
2207001-04	01-B
2207001-05	01-C
2207001-06	01-C
2207001-07	02-A
2207001-08	02-B
2207001-09	02-C
2207001-10	03-A
2207001-11	03-B
2207001-12	03-C
2207001-13	04-A
2207001-14	04-B
2207001-15	04-C
2207001-16	05-A
2207001-17	05-B
2207001-18	05-C
2207001-19	06-A
2207001-20	06-B
2207001-21	06-C
2207001-22	07-A
2207001-23	07-B
2207001-24	07-C
2207001-25	08-A
2207001-26	08-B

Approved By:



Emma Diaz

Senior Analyst

2207001-27	08-C

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Paracel ID	Sample Date	Colour	Description	Asbestos Detected	Material Identification	% Content
2207001-01	04-Feb-22	Brown/Yellow	Mastic/Paper	No	**Client ID: 01-A** [AS-PRE, Z-01]	
					Cellulose	90
					MMVF	<MDL
					Non-Fibers	10
2207001-02	04-Feb-22		Paper		**Client ID: 01-A** [Z-01]	
					not analyzed	
2207001-03	04-Feb-22	Brown/Yellow	Mastic/Paper	No	**Client ID: 01-B** [AS-PRE, Z-01]	
					Cellulose	90
					MMVF	<MDL
					Non-Fibers	10
2207001-04	04-Feb-22		Paper		**Client ID: 01-B** [Z-01]	
					not analyzed	
2207001-05	04-Feb-22	Brown/Yellow	Mastic/Paper	No	**Client ID: 01-C** [AS-PRE, Z-01]	
					Cellulose	90
					MMVF	<MDL
					Non-Fibers	10
2207001-06	04-Feb-22		Paper		**Client ID: 01-C** [Z-01]	
					not analyzed	
2207001-07	04-Feb-22	Grey	Caulking	No	**Client ID: 02-A**	
					Non-Fibers	100
2207001-08	04-Feb-22	Grey	Caulking	No	**Client ID: 02-B**	
					Non-Fibers	100
2207001-09	04-Feb-22	Grey	Caulking	No	**Client ID: 02-C**	
					Non-Fibers	100
2207001-10	04-Feb-22	Grey	Mortar	No	**Client ID: 03-A**	
					Non-Fibers	100

Certificate of Analysis

Client: Peritus Environmental Consultants

Client PO: 22-21-191718

Report Date: 11-Feb-2022

Order Date: 7-Feb-2022

Project Description: 22-21-191718

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Paracel ID	Sample Date	Colour	Description	Asbestos Detected	Material Identification	% Content
2207001-11	04-Feb-22	Grey	Mortar	No	**Client ID: 03-B**	
					Non-Fibers	100
2207001-12	04-Feb-22	Grey	Mortar	No	**Client ID: 03-C**	
					Non-Fibers	100
2207001-13	04-Feb-22	White/Grey	Potential Transite Panel	No	**Client ID: 04-A** [Z-01]	
					Non-Fibers	100
2207001-14	04-Feb-22	White/Grey	Potential Transite Panel	No	**Client ID: 04-B** [Z-01]	
					Non-Fibers	100
2207001-15	04-Feb-22	White/Grey	Potential Transite Panel	No	**Client ID: 04-C** [Z-01]	
					Non-Fibers	100
2207001-16	04-Feb-22	White/Grey	Textured Plaster	No	**Client ID: 05-A** [Z-01]	
					Non-Fibers	100
2207001-17	04-Feb-22	White/Grey	Textured Plaster	No	**Client ID: 05-B** [Z-01]	
					Non-Fibers	100
2207001-18	04-Feb-22	White/Grey	Textured Plaster	No	**Client ID: 05-C** [Z-01]	
					Non-Fibers	100
2207001-19	04-Feb-22	Black	Sealant	No	**Client ID: 06-A**	
					Non-Fibers	100
2207001-20	04-Feb-22	Black	Sealant	No	**Client ID: 06-B**	
					Non-Fibers	100
2207001-21	04-Feb-22	Black	Sealant	No	**Client ID: 06-C**	
					Non-Fibers	100
2207001-22	04-Feb-22	Brown	Sealant	No	**Client ID: 07-A**	
					Non-Fibers	100

Certificate of Analysis

Client: Peritus Environmental Consultants

Client PO: 22-21-191718

Report Date: 11-Feb-2022

Order Date: 7-Feb-2022

Project Description: 22-21-191718

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Paracel ID	Sample Date	Colour	Description	Asbestos Detected	Material Identification	% Content
2207001-23	04-Feb-22	Brown	Sealant	No	**Client ID: 07-B**	
					Non-Fibers	100
2207001-24	04-Feb-22	Brown	Sealant	No	**Client ID: 07-C**	
					Non-Fibers	100
2207001-25	04-Feb-22	White	Caulking	No	**Client ID: 08-A**	
					Non-Fibers	100
2207001-26	04-Feb-22	White	Caulking	No	**Client ID: 08-B**	
					Non-Fibers	100
2207001-27	04-Feb-22	White	Caulking	No	**Client ID: 08-C**	
					Non-Fibers	100

* MMVF: Man Made Vitreous Fibers: Fiberglass, Mineral Wool, Rockwool, Glasswool

Analysis Summary Table

Analysis	Method Reference/Description	Lab Location	Lab Accreditation *	Analysis Date
Asbestos, PLM Visual Estimation	AppE to SubE of 40CFR Part753 and EPA/600/R-93/116	1 - Mississauga	CALA 3762	7-Feb-22

* Reference to the NVLAP term does not permit the user of this report to claim product certification , approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Mississauga Lab: 15 - 6800 Kitimat Rd Mississauga, Ontario, L5N 5M1

Qualifier Notes

Sample Qualifiers :

AS-PRE: Due to the difficult nature of the bulk sample (interfering fibers/binders), additional NOB preparation was required prior to analysis

Z-01: Inseparable Layers, Sample Homogenized

Work Order Revisions | Comments

None

PARACEL LABORATORIES LTD.

2207001

ead Office
0-2319 St. Laurent Blvd.
tawa, Ontario K1G 4J8
1-800-749-1947
paracel@paracellabs.com

Chain of Custody
(Lab Use Only)

Page . of .

Client Name: Peritus Environmental Consultants	Project Reference: 22-21-191718
Contact Name: Jonathan Sampath	Quote #:
Address: 320 Woolwich St. S., Breslau, ON, N0B 1M0	PO #: 22-21-191718
	Email Address: jonathan.sampath@peritusenv.com
Telephone: 519-594-0018	naz.ritchie@peritusenv.com; erin.janzen@peritusenv.com

Turnaround Time:

- ☐ Immediate
- ☐ 4 Hour
- ☐ 8 Hour
- ☐ 1 Day
- ☐ 2 Day
- ☐ 3 Day
- ☒ Regular

Date Required: _____

ASBESTOS & MOLD ANALYSIS

Matrix: ☐ Air ☒ Bulk ☐ Tape Lift ☐ Swab ☐ Other **Regulatory Guideline:** ☒ ON ☐ QC ☐ AB ☐ SK ☐ Other:

Analyses: ☐ Microscopic Mold ☐ Culturable Mold ☐ Bacteria GRAM ☐ PCM Asbestos ☒ PLM Asbestos ☐ Chatfield Asbestos ☐ TEM Asbestos

Paracel Order Number: 2207001

	Sample ID	Sampling Date	Air Volume (L)	Analysis Required	Asbestos - Bulk: Identify Distinct Building Materials to Be Analyzed (if not specified, all materials identified will be analyzed) *	Positive Stop?
1	01- A to C	Feb 4, 2022	N/A	PLM	Yellow Mastic / ~~Fiberboard~~ Paper	☒
2	02-	↓	↓	↓	Grey Caulking	☒
3	03-				Mortar	☒
4	04-				Potential Transite Panel	☒
5	05-				Texture Plaster	☒
6	06-				Black Sealant	☒
7	07-				Dark Brown Sealant	☒
8	09- ↓				White Caulking	☐
9						☐
10						☐
11						☐
12						☐

* If left blank, all distinct materials identified in the samples will be analyzed and reported separately as per EPA 600/R-93/116. Additional charges will apply.

Comments:

Method of Delivery: Drop Box

Relinquished By (Sign):	Received at Depot:	Received at Lab:	Verified By:
Relinquished By (Print): Jonathan Sampath			
Date/Time: Feb 4, 2022 7:20 pm	Date/Time:	Date/Time: Feb 7/22 8:00	Date/Time: Feb 7/22 8-06

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15 - 6800 Kitimat Rd
Mississauga, ON, L5N 5M1
1-800-749-1947
www.paracellabs.com

Certificate of Analysis

Peritus Environmental Consultants

320 Woolwich St S
Breslau, ON N0B 1M0
Attn: Naz Ritchie

Client PO: 22-21-191718
Project: 22-21-191718
Custody:

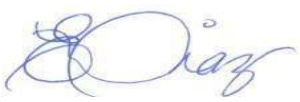
Report Date: 2-Dec-2019
Order Date: 26-Nov-2019

Order #: 1948351

This Certificate of Analysis contains analytical data applicable to the following samples as submitted :

Paracel ID	Client ID
1948351-01	01-A
1948351-02	01-B
1948351-03	01-C
1948351-04	02-A
1948351-05	02-B
1948351-06	02-C
1948351-07	03-A
1948351-08	03-B
1948351-09	03-C
1948351-10	04-A
1948351-11	04-B
1948351-12	04-C
1948351-13	05-A
1948351-14	05-B
1948351-15	05-C
1948351-16	06-A
1948351-17	06-B
1948351-18	06-C
1948351-19	07-A
1948351-21	07-B
1948351-23	07-C
1948351-25	08-A
1948351-26	08-B
1948351-27	08-C
1948351-28	09-A
1948351-30	09-B

Approved By:



Emma Diaz

Senior Analyst

1948351-32	09-C
1948351-34	010-A
1948351-35	010-B
1948351-36	010-C
1948351-37	011-A
1948351-38	011-B
1948351-39	011-C
1948351-40	012-A
1948351-41	012-B
1948351-42	012-C
1948351-43	013-A
1948351-44	013-B
1948351-45	013-C
1948351-46	014-A
1948351-47	014-B
1948351-48	014-C
1948351-49	015-A
1948351-50	015-B
1948351-51	015-C
1948351-52	016-A
1948351-53	016-B
1948351-54	016-C
1948351-55	017-A
1948351-56	017-B
1948351-57	017-C
1948351-58	018-A
1948351-60	018-B
1948351-62	018-C
1948351-64	019-A
1948351-65	019-B
1948351-66	019-C
1948351-67	020-A
1948351-68	020-B
1948351-69	020-C

Certificate of Analysis

Report Date: 02-Dec-2019

Client: Peritus Environmental Consultants

Order Date: 26-Nov-2019

Client PO: 22-21-191718

Project Description: 22-21-191718

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Paracel ID	Sample Date	Colour	Description	Asbestos Detected	Material Identification	% Content
1948351-01	26-Nov-19	White/Grey	Vinyl Sheet Flooring	No	**Client ID: 01-A**	
					MMVF	5
					Non-Fibers	90
					Other fibers	5
1948351-02	26-Nov-19	White/Grey	Vinyl Sheet Flooring	No	**Client ID: 01-B**	
					MMVF	5
					Non-Fibers	90
					Other fibers	5
1948351-03	26-Nov-19	White/Grey	Vinyl Sheet Flooring	No	**Client ID: 01-C**	
					MMVF	5
					Non-Fibers	90
					Other fibers	5
1948351-04	26-Nov-19	Grey	Drywall Material	No	**Client ID: 02-A**	
					MMVF	5
					Non-Fibers	95
1948351-05	26-Nov-19	Grey/Brown	Drywall Material	No	**Client ID: 02-B**	
					Cellulose	5
					MMVF	5
					Non-Fibers	90
1948351-06	26-Nov-19	Grey/Brown	Drywall Material	No	**Client ID: 02-C**	
					Cellulose	5
					MMVF	5
					Non-Fibers	90
1948351-07	26-Nov-19	Green	Membrane	No	**Client ID: 03-A**	[Z-01]
					Cellulose	90
					MMVF	5
					Non-Fibers	5

Certificate of Analysis

Client: Peritus Environmental Consultants

Client PO: 22-21-191718

Report Date: 02-Dec-2019

Order Date: 26-Nov-2019

Project Description: 22-21-191718

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Paracel ID	Sample Date	Colour	Description	Asbestos Detected	Material Identification	% Content
1948351-08	26-Nov-19	Green	Membrane	No	**Client ID: 03-B**	[Z-01]
					Cellulose	90
					MMVF	5
					Non-Fibers	5
1948351-09	26-Nov-19	Green	Membrane	No	**Client ID: 03-C**	
					Cellulose	90
					MMVF	5
					Non-Fibers	5
1948351-10	26-Nov-19	Brown	Fibre Board	No	**Client ID: 04-A**	
					Cellulose	98
					Non-Fibers	2
1948351-11	26-Nov-19	Brown	Fibre Board	No	**Client ID: 04-B**	
					Cellulose	98
					Non-Fibers	2
1948351-12	26-Nov-19	Brown	Fibre Board	No	**Client ID: 04-C**	
					Cellulose	98
					Non-Fibers	2
1948351-13	26-Nov-19	Black	Caulking	No	**Client ID: 05-A**	
					Non-Fibers	100
1948351-14	26-Nov-19	Black	Caulking	No	**Client ID: 05-B**	
					Non-Fibers	100
1948351-15	26-Nov-19	Black	Caulking	No	**Client ID: 05-C**	
					Non-Fibers	100
1948351-16	26-Nov-19	White	Caulking	No	**Client ID: 06-A**	
					Non-Fibers	100

Certificate of Analysis

Report Date: 02-Dec-2019

Client: Peritus Environmental Consultants

Order Date: 26-Nov-2019

Client PO: 22-21-191718

Project Description: 22-21-191718

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Paracel ID	Sample Date	Colour	Description	Asbestos Detected	Material Identification	% Content
1948351-17	26-Nov-19	White	Caulking	No	**Client ID: 06-B**	
					Non-Fibers	100
1948351-18	26-Nov-19	White	Caulking	No	**Client ID: 06-C**	
					Non-Fibers	100
1948351-19	26-Nov-19	Yellow	Mastic	No	**Client ID: 07-A**	
					Non-Fibers	100
1948351-21	26-Nov-19	Yellow	Mastic	No	**Client ID: 07-B**	
					Non-Fibers	100
1948351-23	26-Nov-19	Yellow	Mastic	No	**Client ID: 07-C**	
					Non-Fibers	100
1948351-25	26-Nov-19	Black	Fibre Patch	**Yes**	**Client ID: 08-A**	
					Chrysotile	7
					MMVF	50
					Non-Fibers	43
1948351-26	26-Nov-19				**Client ID: 08-B**	
					not analyzed	
1948351-27	26-Nov-19				**Client ID: 08-C**	
					not analyzed	
1948351-28	26-Nov-19	Black	Roof Layer	No	**Client ID: 09-A** [AS-PRE]	
					Cellulose	10
					Non-Fibers	90
1948351-30	26-Nov-19	Black	Roof Layer	**Yes**	**Client ID: 09-B** [AS-PRE]	
				[ASTrc]	**Chrysotile**	<MDL
					Cellulose	10
					Non-Fibers	90

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Paracel ID	Sample Date	Colour	Description	Asbestos Detected	Material Identification	% Content
1948351-32	26-Nov-19	Black	Roof Layer	No	**Client ID: 09-C** [AS-PRE]	
					Cellulose	10
					Non-Fibers	90
1948351-34	26-Nov-19	Black	Roofing Asphalt	**Yes**	**Client ID: 010-A** [AS-PRE]	
				[ASTrc]	**Chrysotile**	<MDL
					Cellulose	10
					Non-Fibers	90
1948351-35	26-Nov-19	Black	Roofing Asphalt	**Yes**	**Client ID: 010-B** [AS-PRE]	
				[ASTrc]	**Chrysotile**	<MDL
					Cellulose	10
					Non-Fibers	90
1948351-36	26-Nov-19	Black	Roofing Asphalt	**Yes**	**Client ID: 010-C** [AS-PRE]	
				[ASTrc]	**Chrysotile**	<MDL
					Cellulose	10
					Non-Fibers	90
1948351-37	26-Nov-19	Brown	Fibre Board	No	**Client ID: 011-A**	
					Cellulose	98
					Non-Fibers	2
1948351-38	26-Nov-19	Brown	Fibre Board	No	**Client ID: 011-B**	
					Cellulose	98
					Non-Fibers	2
1948351-39	26-Nov-19	Brown	Fibre Board	No	**Client ID: 011-C**	
					Cellulose	98
					Non-Fibers	2
1948351-40	26-Nov-19	Grey	Caulking	**Yes**	**Client ID: 012-A**	
					Chrysotile	1
					Non-Fibers	99

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Paracel ID	Sample Date	Colour	Description	Asbestos Detected	Material Identification	% Content
1948351-41	26-Nov-19				**Client ID: 012-B**	
					not analyzed	
1948351-42	26-Nov-19				**Client ID: 012-C**	
					not analyzed	
1948351-43	26-Nov-19	White	Caulking	No	**Client ID: 013-A**	
					Non-Fibers	85
					Other fibers	15
1948351-44	26-Nov-19	White	Caulking	No	**Client ID: 013-B**	
					Non-Fibers	85
					Other fibers	15
1948351-45	26-Nov-19	White	Caulking	No	**Client ID: 013-C**	
					Non-Fibers	85
					Other fibers	15
1948351-46	26-Nov-19	Grey	Plaster Material	**Yes**	**Client ID: 014-A**	[AS-PT]
					Chrysotile	0.5
					Non-Fibers	99.5
1948351-47	26-Nov-19				**Client ID: 014-B**	
					not analyzed	
1948351-48	26-Nov-19				**Client ID: 014-C**	
					not analyzed	
1948351-49	26-Nov-19	Grey	Caulking	No	**Client ID: 015-A**	
					Non-Fibers	90
					Other fibers	10
1948351-50	26-Nov-19	Grey	Caulking	No	**Client ID: 015-B**	
					Non-Fibers	90
					Other fibers	10

Certificate of Analysis

Client: Peritus Environmental Consultants

Client PO: 22-21-191718

Report Date: 02-Dec-2019

Order Date: 26-Nov-2019

Project Description: 22-21-191718

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Paracel ID	Sample Date	Colour	Description	Asbestos Detected	Material Identification	% Content
1948351-51	26-Nov-19	Grey	Caulking	No	**Client ID: 015-C**	
					Non-Fibers	90
					Other fibers	10
1948351-52	26-Nov-19	Brown	Caulking	No	**Client ID: 016-A**	
					Non-Fibers	100
1948351-53	26-Nov-19	Brown	Caulking	No	**Client ID: 016-B**	
					Non-Fibers	100
1948351-54	26-Nov-19	Brown	Caulking	No	**Client ID: 016-C**	
					Non-Fibers	100
1948351-55	26-Nov-19	Black	Sealant	No	**Client ID: 017-A**	
					Non-Fibers	100
1948351-56	26-Nov-19	Black	Sealant	No	**Client ID: 017-B**	
					Non-Fibers	100
1948351-57	26-Nov-19	Black	Sealant	No	**Client ID: 017-C**	
					Non-Fibers	100
1948351-58	26-Nov-19	Black	Sealant	No	**Client ID: 018-A** [AS-PRE]	
					Non-Fibers	100
1948351-60	26-Nov-19	Black	Sealant	No	**Client ID: 018-B** [AS-PRE]	
					Non-Fibers	100
1948351-62	26-Nov-19	Black	Sealant	No	**Client ID: 018-C** [AS-PRE]	
					Non-Fibers	100
1948351-64	26-Nov-19	Beige	Ceiling Tile	No	**Client ID: 019-A**	
					Cellulose	40
					MMVF	30
					Non-Fibers	30

Certificate of Analysis

Client: Peritus Environmental Consultants

Client PO: 22-21-191718

Report Date: 02-Dec-2019

Order Date: 26-Nov-2019

Project Description: 22-21-191718

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Paracel ID	Sample Date	Colour	Description	Asbestos Detected	Material Identification	% Content
1948351-65	26-Nov-19	Beige	Ceiling Tile	No	**Client ID: 019-B**	
					Cellulose	40
					MMVF	30
					Non-Fibers	30
1948351-66	26-Nov-19	Beige	Ceiling Tile	No	**Client ID: 019-C**	
					Cellulose	40
					MMVF	30
					Non-Fibers	30
1948351-67	26-Nov-19	Black	Asphalt Roof Shingles	No	**Client ID: 020-A** [AS-PRE]	
					Cellulose	10
					MMVF	<MDL
					Non-Fibers	90
1948351-68	26-Nov-19	Black	Asphalt Roof Shingles	No	**Client ID: 020-B** [AS-PRE]	
					Cellulose	10
					MMVF	<MDL
					Non-Fibers	90
1948351-69	26-Nov-19	Black	Asphalt Roof Shingles	No	**Client ID: 020-C** [AS-PRE]	
					Cellulose	10
					MMVF	<MDL
					Non-Fibers	90

* MMVF: Man Made Vitreous Fibers: Fiberglass, Mineral Wool, Rockwool, Glasswool

**** Analytes in bold indicate asbestos mineral content.**

PARACEL LABORATORIES LTD.

Order #: 1948351

Certificate of Analysis

Report Date: 02-Dec-2019

Client: Peritus Environmental Consultants

Order Date: 26-Nov-2019

Client PO: 22-21-191718

Project Description: 22-21-191718

Analysis Summary Table

Analysis	Method Reference/Description	Lab Location	NVLAP Lab Code *	Analysis Date
Asbestos, PLM Visual Estimation	by EPA 600/R-93/116	1 - Mississauga	200863-0	29-Nov-19

* Reference to the NVLAP term does not permit the user of this report to claim product certification , approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Mississauga Lab: 15 - 6800 Kitimat Rd Mississauga, Ontario, L5N 5M1

Qualifier Notes

Sample Qualifiers :

AS-PRE: Due to the difficult nature of the bulk sample (interfering fibers/binders), additional NOB preparation was required prior to analysis

AS-PT: Asbestos quantitation by PLM Point Count method.

ASTrc: Trace asbestos was observed below the noted detection limit but could not be accurately quantified.

Z-01: Sample appears to be grey

Work Order Revisions | Comments

None

PARAC LABORATORIES

Paracel ID: 1948351

Head Office
300-2319 St. Laurent Blvd.
Ottawa, Ontario K1G 4J8
1-800-749-1947
paracel@paracellabs.com

Chain of Custody
(Lab Use Only)

Client Name: Pentus Environmental Consultants	Project Reference: 22-21-191718
Contact Name: Noz Ritchie	Quote #: —
Address: 320 Wortuch St. S Brussels, ON N0B 1M0	PO #: 22-21-191718
Telephone: 519-594-0018	Email Address: noz.ritchie@pentusenv.com; tina.freebaine@pentusenv.com; jonathan.sampath@pentusenv.com

Turnaround Time:
☐ Immediate ☐ 1 Day
☐ 4 Hour ☐ 2 Day
☐ 8 Hour ☐ 3 Day
☑ Regular
Date Required: _____

ASBESTOS & MOLD ANALYSIS

Matrix: ☐ Air ☑ Bulk ☐ Tape Lift ☐ Swab ☐ Other **Regulatory Guideline:** ☐ ON ☐ QC ☐ AB ☐ SK ☐ Other:

Analyses: ☐ Microscopic Mold ☐ Culturable Mold ☐ Bacteria GRAM ☐ PCM Asbestos ☑ PLM Asbestos ☐ Chatfield Asbestos ☐ TEM Asbestos

Paracel Order Number: 1948351

	Sample ID	Sampling Date	Air Volume (L)	Analysis Required	Asbestos - Bulk: Identify Distinct Building Materials to Be Analyzed (if not specified, all materials identified will be analyzed) *	Positive Stop?
1	01-A to C	26-Nov-19	N/A	PLM	TPO Vinyl Sheet	☑
2	02-A to C				Drywall Material	☑
3	03-A to C				Membrane (Green only)	☑
4	04-A to C				FibreBoard - Roof	☑
5	05-A to C				Black Caulking	☑
6	06-A to C				White Caulking	☑
7	07-A to C				Brown Sealant/Caulk under TPO Vinyl	☑
8	08-A to C				Fibre Patch Layer	☑
9	09-A to C				Roof Layer - Asphalt Paper	☑
10	10-A to C				Roofing Asphalt	☑
11	11-A to C				Fibre board - Canopy	☑
12	12-A to C				Grey Canopy Perimeter Caulk	☑

* If left blank, all distinct materials identified in the samples will be analyzed and reported separately as per EPA 600/R-93/116. Additional charges will apply.

Comments:

Method of Delivery: Walk-in

Relinquished By (Sign):	Received at Depot:	Received at Lab:	Verified By:
Relinquished By (Print): JONATHAN SAMPATH			
Date/Time: NOV 26, 2019 5:33pm	Date/Time:	Date/Time: 11/26/19 5:22pm	Date/Time: NOV 27/2019 14:49

Paracel ID: 1948351

PAI LABORA

Head Office
300-2319 St. Laurent Blvd.
Ottawa, Ontario K1G 4J8
1-800-749-1947
paracel@paracellabs.com

Chain of Custody
(Lab Use Only)

Page 2 of 2

Client Name: Pentus Environmental Consultants	Project Reference: 22-21-191718
Contact Name: Noz. Ritchie	Quote #: —
Address: 320 Woolwich St S. Breslau ON N0B 1M0	PO #: 22-21-191718
Telephone: 519-594-0018	Email Address: Noz.Ritchie@pentusenv.com, ting.freeborn@pentusenv.com, jonathan.sampath@pentusenv.com

Turnaround Time:
☐ Immediate ☐ 1 Day
☐ 4 Hour ☐ 2 Day
☐ 8 Hour ☐ 3 Day
☑ Regular

Date Required: _____

ASBESTOS & MOLD ANALYSIS

Matrix: ☐ Air ☑ Bulk ☐ Tape Lift ☐ Swab ☐ Other **Regulatory Guideline:** ☑ ON ☐ QC ☐ AB ☐ SK ☐ Other:

Analyses: ☐ Microscopic Mold ☐ Culturable Mold ☐ Bacteria GRAM ☐ PCM Asbestos ☑ PLM Asbestos ☐ Chatfield Asbestos ☐ TEM Asbestos

Paracel Order Number: 1948351

	Sample ID	Sampling Date	Air Volume (L)	Analysis Required	Asbestos - Bulk: Identify Distinct Building Materials to Be Analyzed (if not specified, all materials identified will be analyzed) *	Positive Stop?
1	13-A to C	26 Nov 19	N/A	PLM	White Perimeter Caulking - Canopy Window	☑
2	14-A to C				Plaster Material - Grey	☑
3	15-A to C				Grey Window Caulk	☑
4	16-A to C				Brown Flashing Caulk	☑
5	17-A to C				Black Sealant	☑
6	18-A to C				Brown Sealant - Shingles	☑
7	19-A to C				Ceiling Tile	☑
8	20-A to C	"	"	"	Asphalt	☑
9						☐
10						☐
11						☐
12						☐

* If left blank, all distinct materials identified in the samples will be analyzed and reported separately as per EPA 600/R-93/116. Additional charges will apply.

Comments:

Method of Delivery: Walk-in

Relinquished By (Sign):	Received at Depot:	Received at Lab:	Verified By:
Relinquished By (Print): Jonathan Sampath			
Date/Time: Nov 26, 2019 5:37 pm	Date/Time:	Date/Time: 11/26/19 5:22 pm	Date/Time: Nov 27/2019 14:49

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1-800-749-1947
www.paracellabs.com

Certificate of Analysis

Peritus Environmental Consultants

320 Woolwich St S
Breslau, ON N0B 1M0
Attn: Naz Ritchie

Client PO: 22-21-191718
Project: 22-21-191718
Custody:

Report Date: 28-Nov-2019
Order Date: 26-Nov-2019

Order #: 1948315

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1948315-01	P-01
1948315-02	P-02
1948315-03	P-03

Approved By:

Milan Ralitsch, PhD
Senior Technical Manager

Certificate of Analysis
Client: Peritus Environmental Consultants
Client PO: 22-21-191718

Report Date: 28-Nov-2019
Order Date: 26-Nov-2019
Project Description: 22-21-191718

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals, ICP-MS	EPA 6020 - Digestion - ICP-MS	28-Nov-19	28-Nov-19

Sample Data Revisions

None

Work Order Revisions/Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.

PARACEL LABORATORIES LTD.

Order #: 1948315

Certificate of Analysis
Client: Peritus Environmental Consultants
Client PO: 22-21-191718

Report Date: 28-Nov-2019
Order Date: 26-Nov-2019
Project Description: 22-21-191718

Sample Results

Lead

Matrix: Paint
Sample Date: 26-Nov-19

Paracel ID	Client ID	Units	MDL	Result
1948315-01	P-01	ug/g	5	39
1948315-02	P-02	ug/g	5	147
1948315-03	P-03	ug/g	5	1250

Laboratory Internal QA/QC

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Matrix Blank									
Lead	**ND**	**5**	**ug/g**						
Matrix Duplicate									
Lead	**1350**	**5**	**ug/g**	**1250**			**7.8**	**50**	
Matrix Spike									
Lead	2440	5	ug/g	1250	95.2	70-130			

Paracel ID: 1948315

PARACEL LABORATORIES

Office
2319 St. Laurent Blvd
Ottawa, Ontario K1G 4J8
800-749-1947
paracel@paracellabs.com
www.paracellabs.com

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
1948315	

Client Name: Pentus Environmental Consultants	Project Ref: 22-21-191718	Page 1 of 1
Contact Name: Naz Ritchie	Quote #: —	Turnaround Time
Address: 320 Westwick St. S Brooklin, ON N0B 1M0	PO #: 22-21-191718	☐ 1 day ☐ 3 day
	E-mail: naz.ritchie@pentusenv.com tina.freeburne@pentusenv.com jonathan.sampath@pentusenv.com	☐ 2 day ☑ Regular
Telephone: 519-594-0018		Date Required:

Regulation 153/04	Other Regulation
☐ Table 1 ☐ Res/Park ☐ Med/Fine	☐ REG 558 ☐ PWQO
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ CCME ☐ MISA
☐ Table 3 ☐ Agri/Other	☐ SU - Sani ☐ SU - Storm
☐ Table —	Mun: —
For RSC: ☐ Yes ☑ No	☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken: Date	Sample Taken: Time	Required Analysis: Lead in Paint
1	P-01	P	/	1	Nov 26, 2019	—	✓
2	P-02	P	/	1	↓	—	✓
3	P-03	P	/	1	↓	—	✓
4							
5							
6							
7							
8							
9							
10							

Comments:

Method of Delivery: Walk-in

Relinquished By (Sign):	Received By Driver/Depot:	Received at Lab: mg	Verified By: Cynthia Q
Relinquished By (Print): Jonathan Sampath	Date/Time:	Date/Time: 11/26/19 5:22 pm	Date/Time: Nov 27/2019 12:35
Date/Time: Nov 26, 2019 5:22pm	Temperature: °C	Temperature:	pH Verified: ☐ By:

Chain of Custody (Blank).xlsx Revsion 3.0

Alyssa CB 11/28/19 8:30

Appendix C:
Environmental Submittals

HAZARDOUS MATERIALS ABATEMENT CONTRACTOR SUBMITTAL REQUIREMENTS

A. CONTRACTOR SUBMITTALS

1. TRAINING CONFIRMATION

In accordance with Designated Substances and Hazardous Building Materials Specification: Successful respondent(s) are required to submit to the Hazardous Materials Consultant the items indicated below ***within 4 (four) calendar days*** of request by the Hazardous Materials Consultant.

All training must be facilitated by a competent person, as per the Occupational Health & Safety Act, and certificates must be issued by the same competent person.

☐ Training in Type 1 & 2 Asbestos Awareness, Work Procedures, and Care and Use of Respiratory Protection, as per Section 19 of O.Reg. 278/05. The duration of the course shall be a minimum of 8 hours in length. Proof of training is required for workers performing abatement. Changes in personnel shall be accompanied by certificates reflecting this change.

☐ Training in Type 3 Asbestos Work Procedures (MTCU 253W Certificate), as per Section 19 & 20 of O.Reg. 278/05.

☑ Training in Lead Awareness, Work Procedures and Personal Protective Equipment (PPE) as per the MOL Guideline – Lead on Construction Projects. The duration of the course shall be at least 4 hours in duration.

☐ Training on Mercury Work Procedures, as per Section 25(2)(h) of the Occupational Health & Safety Act The duration of the course shall be up to 4 hours in duration.

☑ Training on Silica Work Procedures, as per the MOL Guideline – Silica on Construction Projects. The duration of the course shall be up to 4 hours in duration.

☐ Training on Level I and Level II Mould Work Procedures and remediation, as per the Section 25(2)(h) of the Occupational Health & Safety Act. The duration of the course shall be a minimum of 8 hours in length. Proof of training is required for workers performing remediation. Changes in personnel shall be accompanied by certificates reflecting this change.

☐ Training on Level III Mould Work Procedures and remediation, as per the Section 25(2)(h) of the Occupational Health & Safety Act. The duration of the course shall be a minimum of 8 hours in length. Proof of training is required for workers performing remediation. Changes in personnel shall be accompanied by certificates reflecting this change.

☐ Training on PCB Work Procedures, as per Section 25(2)(h) of the Occupational Health & Safety Act. The duration of the course shall be up to 4 hours in duration.

☑ WHMIS

☑ Working at heights training

☐ Confined Space Entry/Awareness

☑ Asbestos Abatement Supervisors Training Program (MTCU 253S Certificate), as per Section 20 of O.Reg. 278/05.

☑ Basics of Supervising course or proof of equivalent training or experience.

2. EXPERIENCE

Successful respondent(s) are required to submit to the Hazardous Materials Consultant the items indicated below ***within 4 (four) calendar days*** of request by the Hazardous Materials Consultant.

☑ Successful Respondent(s) are required to submit 3 project references demonstrating asbestos abatement experience. The examples shall be relevant to the project and describe the nature of the project, year of completion, approximate value, and client contact name and phone number. The project references shall include only crew/sub-contractors to be used on the work by Successful Respondent(s).

3. WASTE HAUL

Successful respondent(s) are required to submit to the Hazardous Materials Consultant the items indicated below ***within 4 (four) calendar days*** of request by the Hazardous Materials Consultant.

☑ Successful Respondent(s) are required to submit a copy of the company's Provisional Certificate of Approval Waste Management System Number as issued by the Ontario Ministry of Environment or certificate in the name of the approved waste hauler.

B: ABATEMENT WORK REQUIREMENTS

Prior to commencement and/or during abatement work, the successful respondent(s) shall submit to the Hazardous Materials Consultant as requested:

☑ Proposed work schedule

☑ Proposed project plan meeting the requirements of the specifications

☑ A WHMIS information package containing documentation addressing test results, flammability and fire data and Safety Data Sheets (SDSs) for products, chemicals and materials used on site during the course of the asbestos abatement project

☑ Proof satisfactory to the Hazardous Materials Consultant that each worker scheduled to work on the project has been fit tested for the appropriate respirator to be used

☐ Dioctyl Phthalate (DOP) test results and performance data for HEPA vacuums

☐ DOP test results and performance data for negative air unit systems

☐ Pressure differential monitoring data – to be submitted on a daily basis

C: MANIFESTS/WAYBILLS/BILLS OF LADING

At completion of abatement work, the successful respondent(s) shall submit to the Hazardous Materials Consultant as indicated:

☑ a copy of the weight scale or waste manifests/waybills/bill of lading, as applicable, for each type of waste to the Hazardous Materials Consultant at the completion of work. The waste manifest/waybills/bill of lading to be submitted with the final invoice. The board shall process payment upon receipt of the above along with the invoice.

POLLUTION INSURANCE REQUIREMENTS

For any projects that require abatement work and confirmation of pollution insurance, the consultant is required to advise the PDSB at the time of submission to the board of the bid specification documents. The PDSB Purchasing Department will include the requirement for pollution insurance (the statement below) in the Bid front end document. The purchasing department will maintain the insurance document for the duration of contract period.

POLLUTION INSURANCE

Respondent(s) shall provide Pollution Liability Policy insurance coverage including mould and asbestos (no mould and asbestos exclusions). The intent of this policy is to hold Peel District School Board harmless as it relates to claims for Bodily Injury or Property Damage or both, relating to the contract. Pollution Liability shall be provided on an “occurrence” basis to cover injury or damage (whether detected or not during the policy period) which happens during the policy period, even though a claim may not be presented for many years. Without limiting the generality of the foregoing, the policy shall insure the operations of the work and shall not contain any environmental and/or health hazard exclusions relating to remediation operations. The limits will be no less than $5,000,000.00 (Five Million Canadian Dollars) per occurrence.

Appendix D:
Technical Specifications for Lead Abatement

PART 1 - GENERAL

1.1 General Requirements

.1 All conditions of the quote and Division 1, General Requirements apply to this section.

.2 All materials and equipment must be set up in a position satisfactory to the Owner's representative.

.3 Scheduling of the work shall be discussed with and be subject to the approval of the Owner or Owner's representative.

.4 It is the intent that work performed as outlined in this section will result in the removal and disposal of all lead-containing materials and materials that become contaminated by lead as a result of the work specified by this Section. The referenced materials include, but are not limited to lead-containing painted surfaces on decorative window panels.

.5 Dispose of all waste as specified in applicable sections of the specifications document.

.6 The Environmental Consultant may perform area and personal air sampling to verify effectiveness of dust suppression methods and adequacy of the respirators used by the Contractor. Contractor's personnel shall co-operate with the Environmental Consultant in collecting air samples.

.7 This project and all work associated with it is regulated by Ontario Regulation 278/05, The Occupational Health and Safety Act and other applicable regulations.

.8 Provide all equipment, material, services, supervision and labour required or specified to complete the scope of work of this project as described in the Quote and Specifications Documents.

.9 The Contractor shall be insured and possess all necessary requirements to perform Type 1 Lead Abatement work in Ontario as stated in Section 6.0 Measures and Procedures for Working with Lead as part of the Ministry of Labour's Lead on Construction Projects Guidelines.

1.2 Description of Work

.1 Before submitting a bid, confirm the scope of work of the project by visiting the site and reading the entire bid documents. The information and any drawings and figures presented should not be used as the only basis for submitting a bid.

.2 Lead containing paint present as follows:

.1 Grey paint on window paneling – both metal and plaster paneling 0.0147% by weight (147 µg/g) lead content.

.3 Concrete block (masonry) walls are present throughout the building and may be impacted during the window replacement work.

.4 Contractors shall take precautions to manage dust to reduce the likelihood of lead and silica particles from becoming airborne using similar methods as for asbestos (Refer to Part 3).

.5 Each Contractor must examine the Drawings and Specifications, and must also attend the site before submitting this Bid. They must satisfy themselves by personal examination as to specific conditions to be met with during the project. They shall make their own estimates of the facilities and difficulties to be encountered in completing the work under this Project. They shall not claim at any time after submission of this Bid, that there was any misunderstanding of the terms and conditions relating to the site conditions.

.6 No plea of ignorance of conditions that exist or that may be encountered in the execution of the work under this Project as a result of the failure to make the necessary examinations and investigations will be accepted as an excuse for any failure or omission on the part of the Contractor to fulfill in every detail all requirements of said Bid Documents, or will be accepted as a basis for any claims whatsoever for extra compensation or any extension of time.

1.3 Work Schedule

.1 It is the responsibility of the contactor to provide the necessary manpower and work shifts to meet the schedule as specified below:

.2 The Owner and the project management team shall determine the schedule and the start date for the project.

.3 The Contractor shall, at no extra cost to the owner, be responsible for the completion of work required or scheduled to be performed on weekends, holidays and after regular hours and shall be carried out as required to meet the schedule specified.

.4 In all situations where the Contractor fails to meet the specified schedule, the Contractor shall pay all costs of inspection and air monitoring by the Environmental Consultant.

1.4 Quality Assurance

.1 Ensure that work progresses according to schedule.

.2 Ensure that work complies with all the requirements of the applicable regulations, guidelines and manuals.

.3 Perform work so that airborne lead dust do not contaminate areas outside work area. The Environmental Consultant has been given authorization by the Owner to stop any work where contamination of areas outside enclosures are suspected. The Contractor shall be responsible for all costs to rectify the problem.

.4 Use only skilled and qualified workers for all trades required to work on this project.

.5 Only the Lead abatement Contractor (and not the Client's Consultant), is responsible for the following:

.1 Safety programs and precautions required by applicable regulations for the work being performed.

.2 Control over the acts and omissions of the Contractor's workers, agents, subcontractors and other employees of the Contractor required to perform work on the project.

.3 Control over construction techniques, methods, means or procedures.

.6 Final review may be carried out by Owner's Consultant to ensure no dust or debris remains.

.7 From commencement of work until completion of clean-up operations, Client's Consultant may be present.

.8 If visual inspection indicates that areas outside current lead work areas are contaminated these areas are to be cleaned in same manner as that applicable to lead work areas, at no cost to Client.

1.5 Regulations

.1 The Contractor shall comply with all local, provincial and federal requirements relating to asbestos and other work being carried out.

.2 In case of conflict among the above-mentioned requirements or with these specifications, the more stringent requirements shall apply.

.3 Perform work following the requirements of the various regulations in effect at the time the work is being carried out.

.4 The regulations shall include, but are not limited to:

.1 Ontario Occupational Health and Safety Act.

.2 Ministry of Labour: Lead on Construction Project Guidelines; Section 6.0 Measures and Procedures for Working with Lead, as part of the Occupational Health and Safety Act.

.3 Ontario Ministry of Environment Regulation 347, as amended for the disposal of lead waste made under the Environmental Protection Act.

.4 Regulations respecting the Handling, Offering for Transport and Transportation of Dangerous Goods.

.5 Regulations for Construction Projects Ontario Regulation 213/91 made under the Occupational

.6 Health and Safety Act.

.7 WHMIS Regulations.

1.6 Supervision

.1 The Contractor shall provide a trained and qualified shift supervisor for each and every shift during which lead removal and clean up is being carried out. The Owner reserves the right to stop all work if this requirement is not complied with, at no additional charge to the Owner.

.2 The shift supervisor shall have the authority to make decisions and take actions with respect to production, manpower and equipment.

.3 The Contractor shall obtain approval from the Owner of his representative before replacing supervisory personnel.

.4 At the request of the Owner or his representative, the Contractor shall, without asking for explanation, replace supervisory personnel with 2 days from receiving the Owner's written request.

1.7 NOTIFICATIONS

.1 The Contractor shall be responsible for immediately notifying the following, orally and in writing, prior to any work on this project commencing:

.2 Ontario Ministry of Labour, Construction Health and Safety branch closest to the location of the project.

.3 The landfill site which agreed to accept the waste as per the requirements of regulation 347, as amended.

.4 The Fire Marshall, in cases were the execution of the work will result in blocking building exists or when turning off, removing or temporarily altering fire alarms.

1.8 WASTE DISPOSAL

.1 Provide for storage and removal of garbage as a result of work and obtain approval of storage location(s) from Owner's Representative and the Consultant prior to commencement of work.

.2 Disposal of debris and garbage is the responsibility of the Contractor and shall be on a daily basis with minimum disturbance to Owner and occupants.

.3 At all times maintain work area and site free of accumulated waste, dust and debris.

.4 Dispose of debris and garbage from the job site on a daily basis with minimum disturbance to Owner and occupants, and in accordance with authorities having jurisdiction.

.5 Provide garbage bins that can be kept in a secure area and/or locked covered dumpsters for each type of designated material.

.6 Obtain approval from the Client designee for the bin location prior to commencement of the work.

.7 Remove full garbage bins immediately. Do not stockpile debris or garbage on project site.

.8 During and upon completion of the work, the Contractor shall remove from the premises all surplus materials, equipment and debris.

.9 All existing materials removed during construction shall be immediately taken off site to a legal dumping area authorized to receive such materials. Hazardous

materials, such as materials containing lead, are to be removed and disposed of in strict accordance with applicable Municipal, Provincial, and Federal requirements.

.10 All new waste material shall be immediately removed from the site by the Contractor and properly transported to a legal dumping area authorized to receive such material.

.11 Obtain Environmental Compliance Approval from Ministry of Environment for waste management disposal system for lead, if necessary.

.12 Follow appropriate notification procedures for disposing lead at the waste disposal site in accordance with the requirements of Ontario Regulation 347/90, as amended. Confirm acceptable waste containers at receiving site.

.13 Contractor shall use licensed waste hauler to transport asbestos waste.

.14 Each load requires completion of bill of lading showing type and weight of hazardous waste being transported.

.15 Co-operate with Ministry of Environment and Ministry of Labour inspectors and immediately carry out instructions for remedial work at the waste disposal site to maintain environment, at no additional cost to Owner.

1.9 WARRANTY

.1 The warranty period stipulated in the General Conditions of the Project, shall be made in writing and extended as follows.

.2 Agree to make good any defects and replace defective components. Replacement to include removal of defective components and installation of replacement components, including removal and replacement of adjacent materials as required to allow for proper replacement.

PART 2 - MATERIALS AND EQUIPMENT (For Lead)

2.1 Definition

.1 Abatement: Procedures to control dust release from lead containing building materials. Includes encapsulation, enclosure, and removal.

.2 Amended Water: Water containing a wetting agent or surfactant that is added for the purpose of reducing water surface tension to allow proper wetting of lead material.

.3 Area Monitoring: Sampling of lead dust concentrations within the lead control area and outside the lead control area which is representative of the airborne concentrations of lead dust which may reach the breathing zone.

.4 Lead Work/Control Area: An area where lead removal operations are performed which is isolated by physical boundaries to prevent the spread of lead dust, or debris.

.5 Air Monitoring: The process of measuring the lead dust content of a specific volume of air in a stated period of time.

.6 Lead Containing Paint: Any paint analyzed and found to contain greater than 0.009% by weight (90 µg/g) and less than 0.5% by weight (5,000 µg/g).

.7 Lead Work Area(s): Area(s) where work takes place which will, or may disturb lead-containing painted surfaces, including overspray and fallen material, or settled dust that may contain lead.

.8 Authorized Visitor: The building Owner or designated representative, Construction Manager, persons of any regulatory or other agency having jurisdiction over the project and the asbestos abatement Consultant or designated representative.

.9 Contractor/Supervisor: An individual who supervises asbestos abatement work and has the proper qualifications and training as specified in this document.

.10 Disposal: Procedures necessary to transport and deposit the lead contaminated material stripped and removed from the building, and equipment in an approved waste disposal site in compliance with the applicable environmental regulations.

.11 Encapsulation: Procedures necessary to coat all lead containing surfaces with an encapsulate to control the possible release of lead dust into the ambient air.

.12 HEPA Filter Equipment: High efficiency particulate air filtered vacuuming equipment with a filter system capable of collecting and retaining asbestos fibers. Filters shall be capable of trapping and retaining at least 99.97 percent of 0.3 micrometer diameter particles.

.13 Polyethylene Sheeting: 0.15 mm (6 mil) minimum thickness unless otherwise specified; in sheet size to minimize joints.

.14 Positive Pressure Respirator: A respirator that maintains a positive pressure inside the facepiece during inhalation and exhalation in relation to the atmospheric pressure.

.15 Surfactant: A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.

.16 Wetting Agent: Non-sudsing surface active agent; mixed with water in concentration to provide thorough wetting of asbestos fibre.

.17 Wet Cleaning: The process of eliminating asbestos from building surfaces and objects by using cloths, mops, or other cleaning tools dampened with water.

.18 Work: Includes all labour, supervision, materials and equipment required for the complete execution of the project as specified in the quote.

2.2 Materials and Equipment for Lead Removal

.1 Polyethylene sheeting: 6-mil thick for covering non-removable items, floors, walls, ceilings, for construction barriers and wrapping objects too large to place into waste disposal bags.

.2 Opaque polyethylene shall be used for barriers on public side of enclosures. Nylon, polyester, or fiberglass reinforced polyethylene sheeting shall be used where additional strength is required. Fire retardant polyethylene shall be used where the potential for fire exists.

.3 Disposal containers: Non-porous, sealable drums for disposal of items which could tear bags.

.4 Carts: Constructed of opaque materials with a secure fitting lid used for transporting filled disposal bags from Load Out to temporary disposal storage facilities.

.5 Cleanup equipment: The Contractor shall provide an adequate number of mops, rags, plastic scoops, shovels, buckets, scrapers, brushes, spray washers, etc. to clean up lead-based paint debris, dust, and water as removal and cleaning proceeds. At least one wet/dry HEPA-filtered vacuum cleaner shall be supplied. Vacuums without a HEPA-filter and brooms are not permitted on-site.

.6 Electrical power: Ground wire equipped extension cords without splices

.7 Sealer: Sealer for purpose of trapping residual fibre debris. Product must have flame spread and smoke development ratings both less than 25. Product shall leave no stain when dry.

.8 Sprayer: Garden-type portable manual sprayer, low velocity, capable of producing mist or fine spray.

.9 HEPA Vacuum: Vacuum with all necessary fittings, tools and attachments. Air must pass HEPA filter before discharge.

.10 Water sprayer: A water sprayer/mister such as a hand pump (garden type) to wet all dust and/or debris that is generated by the abatement or associated work.

.11 Ladders and scaffolding: A sufficient number of OSHA approved and properly used and maintained ladders, scaffolds, platforms, and walkways for use during preparation, removal, inspections, and cleanup shall be provided by the Contractor.

.12 Lighting: The Contractor shall supply a sufficient number of portable lighting units to provide adequate illumination (in compliance with all OSHA requirements) at all locations within the work areas.

.13 Sander: Only sanders equipped with shrouded heads which are attached to HEPA filtration vacuums will be allowed for use. All circular saws, reciprocating saw and all other similar devices shall be equipped with a shrouded head and attached to a HEPA filtration vacuum.

.14 Other abatement equipment: All tools and equipment which has the potential of generating lead containing dusts shall employ local exhaust ventilation (shall be attached via hose to a HEPA vacuum). All other tools, equipment, and accessories as may be necessary to complete the requirements of the project, as specified in these documents, and required by municipal, provincial, and federal requirements and/or guidelines, in a safe and efficient manner.

PART 3 - EXECUTION

3.1 Type 1 Removal Operation

.1 Use adequate number of skilled workers who are trained, licensed and experienced in the necessary skills and crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

.2 Post signs at entrance of work area.

.3 Manual demolition of lead-painted building components by striking a wall with a sledgehammer or similar tool is a Type 2A operation as long as the airborne lead concentrations are maintained between 0.05 to 0.5 mg/m^3.

.4 Lead-based and lead-containing painted components, including drywall and exterior wood walls, shall be removed in a manner which minimizes dust releases.

.5 General Removal Procedures for Lead

.1 Clear out all movable objects from the work area. Clean visible, loose debris or dust and other contaminated surfaces with HEPA vacuum before covering with 6 mil polyethylene sheets to reduce cross contamination.

.2 The work area and items to be removed shall be wet misted with a water sprayer or similar device to reduce dust or particles in the air. Use water sprayer to reduce visible dust or particles in the air.

.3 Contractor shall remove lead-paint material carefully and slowly to reduce dust and debris.

.4 Contractor will use HEPA vacuum to remove dust and debris from the floors after all the materials with lead paint have been removed.

.5 Contractor shall remove nails, screws or other sharp materials (such as fasteners) from the materials with lead paint so that the sharp materials do not puncture the disposal bags or the plastic they are covered with.

.6 The materials (including drywall and wood walls that have lead paint) will be cut into small lengths to facilitate carrying and disposal. The materials will not exceed a length of approximately 2.4 m (8 feet).

.7 Contractor shall cut materials with either hand saws or power saws that are equipped with a shrouded head that is attached to a HEPA vacuum or filtration system.

.8 The Contractor will place all materials with lead-paint in 6-mil disposal bags or wrap in 6-mil plastic with all seams securely sealed.

.9 All debris, waste, cleaning materials, hardware or other removed items associated with the lead paint items shall be disposed of in separate disposal bags.

.6 Care shall be taken to avoid damage to adjacent finished surface areas during the removal of materials or items, whether those items are replaced or not. The Contractor shall run a utility knife or other suitable tool around the edge (score) of the abatement

material and any adjacent (non-abated) material to cut the bonding between the materials to reduce damage when an item is removed.

.7 If the lead materials to be removed contain areas of loose or peeling paint, these areas shall be wet scraped or HEPA vacuumed prior to removal. The paint chips shall be contained either in the HEPA vacuum or in a separate 6-mil polyethylene bag.

.8 Lead materials which are removed shall be wrapped with 2 layers of 6-mil polyethylene and stored for disposal. All disposal shall be in accordance with the more stringent of all applicable municipal, provincial and federal regulations.

.9 Personal Protective Equipment

.1 The workers shall wear appropriate respirators during scraping and/or sanding of lead-based and lead-containing paints.

.2 Respirator shall be NIOSH approved half-mask particulate respirator with N-, R-, or P-series filter and 95, 99, or 100% efficiency.

.3 Protective clothing must be decontaminated by damp wiping or HEPA vacuuming before leaving the work area.

.10 Disposal

.1 All removed lead containing materials and the resulting debris require wrapping, bagging or some other type of proper containerization. All resulting containers of removed materials and/or debris shall be carefully handled to reduce the potential of ripping, bursting, or otherwise diminishing the integrity of the container.

.2 The Contractor must ensure that debris or lead-contaminated materials are not burned or disturbed so they result in lead exposure to workers, residents, children, the environment or other stakeholders.

.3 All wrapped materials shall be placed in a locked dumpster that is designed for lead paint materials.

.4 Contractor shall transport materials to an appropriate licensed facility that will accept lead waste.