

EXTERIOR OPENING REPAIRS AT MULTIPLE SCHOOL SITES

Tender No. T22-15



ARCHITECTURAL SPECIFICATIONS PROJECT MANUAL VOLUME 1

Moffet & Duncan Architects Inc.
Prime Consultant

VOLUME 1 ARCHITECTURAL SPECIFICATIONS

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VOLUME 2 SUPPLEMENTARY INFORMATION

Hazardous Materials Reports:

.1 Sir. Albert Love Catholic School

- .1 Asbestos-Containing Materials Reassessment by Pinchin, Ref. #293276.000, dated August 31, 2021.

.2 Monsignor Philip Coffey Catholic School

- .1 Asbestos-Containing Materials Reassessment by Pinchin, Ref. #293276.000, dated September 7, 2021.

.3 Monsignor John Pereyma Catholic Secondary School

- .1 Hazardous Building Materials Assessment by Pinchin, Ref. #288435, dated May 6, 2021.
- .2 Hazardous Materials Specifications.

.4 Father Leo J. Austin Catholic Secondary School

- .1 Hazardous Building Materials Assessment by Pinchin, Ref. #293276.000, dated September 3, 2021.

.5 St. Mark the Evangelist Catholic School

- .1 Hazardous Building Materials Assessment by Pinchin, Ref. #200972, dated February 22, 2017.
- .2 Asbestos Assessment by Pinchin, Ref. #77469, dated October 10, 2012.

.6 All Saints Catholic Secondary School

- .1 Asbestos Assessment by Pinchin, Ref. #77469, dated October 10, 2012.

.7 St. Wilfrid Catholic School

- .1 Asbestos Assessment by Pinchin, Ref. #77469, dated October 10, 2012.

.8 St. Joseph Catholic School

- .1 Asbestos-Containing Materials Reassessment by Pinchin, Ref. # 239276000, dated September 3, 2021.

EXTERIOR OPENING REPAIRS
AT MULTIPLE SCHOOL SITES
DURHAM CATHOLIC DISTRICT SCHOOL BOARD

PROFESSIONAL SEAL

Architectural
Moffet & Duncan Architects Inc.



The seal above pertains to the specification sections bearing the name of the Consultant at the bottom of each page.

Moffet & Duncan Architects Inc.

1.1 GENERAL

- .1 The drawings listed below are included on large format sheets and bound together.

1.2 ARCHITECTURAL DRAWINGS

.1 Site 1 - Sir. Albert Love Catholic School

- .1 A1. Floor Plan / Door Schedule / Details & Notes

.2 Site 2 - Monsignor Philip Coffey Catholic School

- .1 A1. Floor Plan / Door Schedule / Details & Notes
- .2 A2. Door Schedule / Details & Notes

.3 Site 3 - Monsignor John Pereyma Catholic Secondary School

- .1 A1. Key Floor Plan / Partial Plans / Details & Notes
- .2 A2. Door Schedule / Details & Notes

.4 Site 4 - Father Leo J. Austin Catholic Secondary School

- .1 A1. Key Floor Plan
- .2 A2. Partial Floor Plans / Door Schedule / Details & Notes

.5 Site 5 - St. Mark the Evangelist Catholic School

- .1 A1. Floor Plan / Door Schedule / Details & Notes

.6 Site 6 - All Saints Catholic Secondary School

- .1 A1. Floor Plan / Door Schedule / Details & Notes
- .2 A2. Partial Floor Plans / Door Schedule / Details & Notes

.7 Site 7 - St. Wilfrid Catholic School

- .1 A1.0 Floor Plan / Door Schedule / Details & Notes
- .2 A2. Partial Floor Plans / Door Schedule / Details & Notes

.8 Site 8 - St. Joseph Catholic School

- .1 A1.0 Floor Plan / Door Schedule / Details & Notes

END OF SECTION

1.1 CONTRACT DOCUMENTS

- .1 Contract documents for work under this contract consists of the following:
 - .1 Standard Construction Document CCDC 2, 2008
 - .2 Supplementary Conditions to CCDC2, included in the Request for Tender documents
 - .3 Specifications as listed in Index to Specifications
 - .4 Drawings as listed in List of Drawing Sheets, Section 00 01 15
 - .5 All Addenda issued prior to closing of the tender
 - .6 Amendments incorporated prior to the signing of the Contract, as agreed to between the signing parties.

1.2 PHASING OF THE WORK

- .1 All sites will be occupied during the school academic year. Work must be phased to give priority to those spaces which cannot be vacated to accommodate the Work when school is in session.
- .2 Work in the following critical areas must be undertaken during the summer school break, with all work in these areas completed by Friday, August 26, 2022.
 - .1 Main Entrances
 - .2 Stairwells
- .3 Work in Classrooms, secondary entrances and Learning Commons Rooms will be available one room / Corridor at a time for one day per room only.
- .4 All work during the school year must be scheduled with the school principal.
- .5 All work must be complete by Friday, November 11, 2022.

1.3 RELATION OF TRADES

- .1 These specifications have been divided generally into sections conforming to Construction Specifications Canada Master Format 2016 for the purpose of ready reference. They must be read as a whole. The responsibility for apportioning the work or of settling disputes related to same shall rest entirely with the Contractor.
- .2 The Contractor is responsible for co-ordinating all trades. He is solely responsible for determining the lines of demarcation between Contractor and/or trades. Neither the Consultant nor the Owner assume any responsibility for any such determination or for any dispute arising concerning it. No extras will be considered due to any such dispute concerning either labour or materials.
- .3 Specifications and drawings form an integral part of the Contract Documents. Any subject or item omitted from one but which is mentioned or reasonably implied in the other, shall be considered properly and sufficiently specified and will be part to the work.

1.4 EXAMINATION OF SITE

- .1 Examine existing building and site immediately prior to commencing Work to confirm that building and site as received by the Contractor conform to information on tender documents.

SECTION 01 10 00 - GENERAL INSTRUCTIONS

- .2 Notify Consultant immediately if site conditions are not acceptable. Commencement of the Work of this Contract will be taken as acceptance of site conditions. No extras will be considered unless accepted in advance of performance of the work, in writing, by Owner and Consultant.

1.5 ACCEPTANCE OF WORK IN PLACE

- .1 Before starting his work and from time to time as the work progresses, each subcontractor shall examine the work and materials installed by the other subcontractors insofar as it affects his own work, and shall promptly notify the Consultant IN WRITING, if any condition exists that will prevent him from giving a satisfactory result in his own work.
- .2 Should the subcontractor start his own work without such notification, it shall be construed as an acceptance by him of all preceding work and as a waiver of all claims or questions as to its suitability for receiving his work.

1.6 MATERIALS AND WORKMANSHIP

- .1 All materials shall be new and the best of their respective kinds. Where a specific grade or brand is not indicated preference shall be given to materials of Canadian manufacture. Pre-packaged materials shall be delivered and stored in unopened containers.
- .2 All work performed under this Contract shall be done by mechanics skilled in their respective trades. They shall make use of such templates, jigs or special tools as may be required for the operation involved.
- .3 The Contractor is responsible for maintaining quality of workmanship. He shall report to the Consultant whenever the Work or material of any trade does not meet the required standard.
- .4 The acceptance of any materials or workmanship shall not be a bar to their subsequent rejection, if found defective.
- .5 Rejected materials and workmanship, and any work which is found defective, shall be removed and replaced or made good by the Contractor without cost to the Owner and to the satisfaction of the Consultant.
- .6 Adequate, dry storage facilities shall be provided and all stored materials shall be protected from damage and theft.
- .7 Perform Work in accordance with the best industry practice of the type of work specified, unless the Contract Documents stipulate more precise requirements, in which case, the more precise requirements shall govern.
- .8 Do Work in a neat, plumb and square manner. Ensure that various work components are properly installed, forming tight joints and appropriately aligned junctions, edges and surfaces, free of warps, twists, waves, or other such irregularities.
- .9 Wherever indicated on the drawings or specifications, or in the manufacturers'/suppliers' written instructions, arrange to have manufacturers'/installer's representatives inspect the Work which incorporates their materials, products or items.

- .10 Do not permit materials to come in contact with other materials such conditions may result in corrosion, staining, discolouration or deterioration of the completed Work. Provide compatible, durable separators where such contact is unavoidable.
- .11 The design of the Work is based on the full interaction of its component parts. No provisions have been made for conditions occurring during construction. Ensure that no part of the Work is subjected to a load which will endanger its safety or which might cause permanent deformation.
- .12 Provide and maintain control lines and levels required for the Work. Lay out the Work in accordance with these lines and levels and dimensions indicated on the drawings.
- .13 Verify lines, levels and dimensions and report any errors or inconsistencies on the drawings to the Consultants.
- .14 Final responsibility of satisfactory completion of all the Work, however, lies with the Contractor.

1.7 SECURITY

- .1 The Contractor shall be responsible for security of work areas. Steps shall be taken to prevent entry to the Work by unauthorized persons and to guard against theft, fire and damage by any cause.

1.8 SCAFFOLDING

- .1 All necessary scaffolding shall be provided and constructed according to by-law and safety regulations.
- .2 Construct and maintain scaffolding in rigid, secure and safe manner.
- .3 Erect scaffolding independent of building walls.
- .4 Avoid interference with other trades.
- .5 Move when not in use to permit installation of other work and promptly remove when no longer required.
- .6 The provision of scaffolding shall be a matter of agreement between the Contractor and Subcontractors.

1.9 PROTECTION OF OTHER WORK

- .1 Each trade shall avoid damage to other trades and shall take all measures necessary and provide all masking and materials necessary to provide adequate protection.
- .2 Each Contractor and Subcontractor shall be held responsible for all damage to work installed by others that is caused by this work or by anyone employed by him.
- .3 Patching and repairing of damaged work shall be done by the contractor who installed the work, as directed by the Consultant, but the cost of same shall be paid for by the contractor who is responsible for the damage.

SECTION 01 10 00 - GENERAL INSTRUCTIONS

1.10 FASTENINGS

- .1 All fastenings must be permanent, of same metal or compatible with any metals with which they are in contact, of adequate size and spacing to ensure permanent anchorage against load or shear.
- .2 Exposed fastenings must be evenly spaced, neatly laid out and must not mar surfaces of prefinished materials.
- .3 No ram setting or similar techniques will be permitted without prior written approval of the Consultant.
- .4 No wood plugs and no anchorages which cause spalling or cracking will be accepted.
- .5 All fasteners exposed on the exterior must be stainless steel.

1.11 SUPPLY AND INSTALL

- .1 Unless specifically noted "supply only", any reference to supply intends the supply and installation of material or item so noted.

1.12 OCCUPATION BEFORE COMPLETION

- .1 If the Contractor, for any reason, does not have the job completed by the completion date and the Owner, of necessity, is forced to occupy any part of the building before the whole of the work in the area is completed, the Contractor will not be entitled to any indemnity for interference with his operation.

1.13 GENERAL REQUIREMENTS

- .1 All Subcontractors shall examine carefully all drawings and specifications to inform themselves fully of all conditions and limitations pertaining to the work of the contract.
- .2 All Subcontractors shall co-operate and co-ordinate their work for the proper completion of the work, including co-ordination of delivery dates and commencement of sub-trades work.
- .3 The responsibility for all work, including temporary structures, shoring and erection shall at all times rest with the Contractor and his Subcontractors. The Consultant will review construction methods and shop drawings for general arrangements only. The method of obtaining the results contemplated by the Contract Documents shall be determined by the Contractor.
- .4 The undertaking of periodic site review by the Consultant or Owner's representative shall not be construed as supervision of actual construction, nor make him responsible for providing a safe place for work, visit, use, access, travel, or occupancy of their employees or agents.
- .5 The Contractor shall be fully responsible for co-ordinating and expediting the work of all Subcontractors and shall employ the necessary and qualified personnel to provide the required quality of labour and materials and to prevent delays in the progress of the project. Each trade shall be afforded all reasonable opportunities for the installation of its work and for the storage and handling of its materials.

1.14 ELECTRICAL WORK

- .1 The Contractor shall engage a licenced electrician to do all electrical work required for automatic door opening hardware, and all removals, relocations, and reinstallations of electrical and lighting fixtures, and all wiring and accessories as identified on drawings and as specified. Refer to Section 02 40 00.
- .2 Electrical work shall conform to the Canadian Electrical Code, Electrical Safety Authority, and requirements of local Authorities Having Jurisdiction.
- .3 Obtain all permits required for electrical work. Permit fees are to be paid by the Contractor for reimbursement through the Cash Allowance included in the Contract.

1.15 COORDINATION

- .1 Coordinate all work and preparation on which subsequent work depends to facilitate mutual progress, and to prevent any conflict.
- .2 Review all drawings to identify interference issues prior to commencing construction. Review all shop drawings, samples, product data, mock-ups, and other required submittals for potential interference issues and co-ordinate with the trades to avoid these conflicts.
- .3 Where interference issues arise during construction, correct work at no expense to the Owner where the interference could have reasonably been foreseen.
- .4 Ensure that each trade makes known, for the information of the Contractor and other trades, the environmental and surface conditions required for the execution of its work; and that each trade makes known the sequence of others' work required for installation of its work.
- .5 Ensure that each trade, before commencing work, knows requirements for subsequent work and that each trade is assisted in the execution of its preparatory work by trades whose work depends upon it.
- .6 Review all shop and layout drawings, templates, and other required submittals for coordination purposes.
 - .1 Ensure that all information necessary for the location and installation of materials, openings, inserts, anchors, accessories, fastenings, connections, etc., are provided by each trade whose work requires co-operative location and installation by other trades and that such information is communicated to the applicable installer.
 - .2 Ensure that shop drawings for aluminum and hollow metal work are coordinated with the openings for doors, frames and windows; site measurements must be indicated on the drawings.
- .7 Deliver materials supplied by one trade to be installed by another well before the installation begins.
- .8 Trades giving installation information in error, or too late to incorporate in the work, shall be responsible for any extra work caused thereby.
- .9 Immediately remove any work which is unsatisfactory for subsequent work, as directed by the Consultant or by the appointed inspection firms.

SECTION 01 10 00 - GENERAL INSTRUCTIONS

1.16 SPECIAL REQUIREMENTS FOR OCCUPIED BUILDINGS

- .1 All work on site, outside of construction enclosures, must be scheduled with the school principal when the school is occupied.
- .2 Maintain all emergency exits at all times. Do not interfere with building access, particularly in the 30 minutes before school commences each day and 30 minutes before and after the school day ends. Confirm timing of school day start and end, and lunch times, with school principal.
- .3 All work which will result in excessive noise, dust, odours, or other unpleasant or unhealthy situations, shall take place outside of school hours, on evenings, weekends, or school holidays. Asphaltting on roof and asphalt paving, in particular, must be scheduled when building is unoccupied.
- .4 Ensure continuity of all utilities, including power and water. Schedule any required interruptions outside of school hours, in coordination with the school principal.
- .5 Suppress dust, avoid conditions likely to disperse mould or fungus of any kind, and take steps reasonably necessary to maintain the safety and comfort of the building occupants.
- .6 Cease any activity if advised by the school principal, or vice-principal that it is disruptive or offensive to building occupants.
- .7 Workers are not permitted to use washrooms, building entrances, or parking areas other than those designated by the School Principal.
- .8 Refer to Section 01 35 20 for additional site safety requirements which apply when the building is occupied.

1.17 ACCESS TO THE PROJECT

- .1 The Contractor for this work shall at all times allow the Owner or any other contractor or their employees in the building or around the premises, undisturbed, whether union or non-union, as may be required in the execution of other portions of the building work and installation of equipment, etc.
- .2 Cooperate fully with forces carrying out any work on behalf of the Owner.

1.18 SUB-TRADE AWARDS

- .1 The Contractor shall, on notice of award of the contract, obtain the Consultant's approval of a complete list of all persons or firms to which he proposes to sublet any part of the work, the trades or divisions of work which are to be sublet to each, and the amount of each trade. He shall provide to the Consultant a financial breakdown showing all divisions of the work amounting to the full sum of the contract.

1.19 SAFETY DATA SHEETS

- .1 The Contractor shall submit material and safety data sheets prior to commencing installation and application of at least the following:
 - .1 lead-free solder
 - .2 sealants and caulking
 - .3 foamed in place insulating sealants
 - .4 painting and finishing
 - .5 all adhesives
 - .6 any other product which may give off air borne particles after installation
- .2 The Contractor and all of his Subcontractors must note that specifically, asbestos and asbestos containing materials, solder for piping containing lead, and painting and coatings containing lead and/or mercury must be excluded from any part of the Work.
- .3 The Contractor must submit Certificates of Compliance, prior to the application for Substantial performance, for each of the following items:
 - .1 Products for which Material Safety Data Sheets have been submitted and accepted.
 - .2 Other Work/Products identified in the Contract Documents as requiring a Certificate of Compliance.
- .4 Each Certificate of Compliance must indicate names and addresses of the project, the Owner, the date of Issue, produce description including name, number, manufacturer, with a statement verifying that the Work/Product installed meets specified requirements and, if applicable, complies with the submitted and accepted Material Safety Data Sheets.
- .5 Each Certificate of Compliance must be issued on the trade's letterhead, properly executed, under whose work the respective Work/Product has been provided.
- .6 Each Certificate of Compliance must be endorsed by the Contractor with his authorized stamp/signature.
- .7 The Contractor must ensure that submissions are made to allow sufficient time for review without delaying progress of scheduled completion.
- .8 WHMIS Material Safety Data Sheets (MSDS) are required to be provided before or with the first delivery of every controlled product.
- .9 Ensure that worksite copies of MSDS's are available to workers wishing to consult them and to the health and safety representative and/or joint health and safety committee.
- .10 Ensure that workers are instructed in the purpose and content of MSDS.
- .11 Provide prescribed information on any workplace controlled product, including confidential business information, to a doctor or nurse who needs it for diagnosis or emergency medical treatment.
- .12 WHMIS MSDS sheets to be kept on site at all times.

SECTION 01 10 00 - GENERAL INSTRUCTIONS

1.20 REGULATING DOCUMENTS

- .1 Refer to Section 01 41 00, Regulatory Requirements. Conform to applicable Codes and Building By-Laws. Conform to the requirements of the authorities having jurisdiction, such as public utilities.
- .2 Provide copies of documents referred to in the Specification for joint use of Contractor and Consultant, on site. Digital documents are acceptable.

1.21 CONTRACTOR'S RESPONSIBILITY

- .1 The Contractor will be responsible to take all necessary steps to protect personnel (workers, visitors, general public, etc.) and property from any harm during the course of the contract. The list of Contractor's responsibilities identified below is by no means comprehensive, nor is it in any priority or critical order. It is here, merely to identify the most often forgotten or ignored responsibilities of the Contractor and is reproduced only as a reminder. The Consultants and the Owner advise the Contractor that it is he who is responsible for all aspects and facets of the Project, from start to completion, from compliance with Occupational Health and Safety regulations to compliance with all codes and statutes.
- .2 The Owner may perform periodic monitoring to ensure that safety requirements are met, and that safety records are properly kept and maintained. Continued disregard for safety standards can cause the Contract to be cancelled and the Contractor removed from the site.
- .3 All work procedures and equipment shall be in accordance with Owner and Legislation standards.
- .4 All equipment shall be in safe operating condition and appropriate to the task.
- .5 Only competent personnel will be permitted on site. During the site introduction, the Owner will determine who is competent. The Contractor will cause to remove from the site any persons not observing or complying with safety requirements.
- .6 The Contractor shall comply with all Federal, Provincial and Municipal Safety Codes and Regulations and the Occupational Health and Safety Act. He shall insure that all of his Subcontractors, suppliers, installers, etc. comply with all applicable codes, regulations, and acts.
- .7 The Contractor shall supply competent personnel to implement his safety program and ensure that the Owner's standards, and those of the Occupational Health and Safety Act, are being complied with.
- .8 The Contractor shall report to the Owner and jurisdictional authorities any accident or incident involving personnel and/or property of the Contractor, Owner, or Public, arising from the Contractor's or any of his Subcontractors, execution of the work.
- .9 Provide the Owner with a copy of each site visit report by the Ministry of Labour, as soon as the report is issued.
- .10 The Contractor shall include all provisions of this contract in any agreement with Subcontractors, and hold all subcontractors equally responsible for safe work performance.

- .11 If the Contractor is responsible for a delay in the progress of the work due to an infraction of legislation or Owner Health and Safety requirements, the Contractor will, without additional cost to the Owner, work such overtime, and acquire and use for the execution of the work such additional labour and equipment as to be necessary, in the opinion of the Owner's Representative, to avoid delay in the final completion of the work or any operations thereof.

1.22 MANUFACTURER'S INSTRUCTIONS

- .1 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods.
- .2 Notify Consultant in writing of any conflict between these specifications and manufacturer's instructions. Consultant will clarify any such conflict when requested.

1.23 AIR, VAPOUR, AND THERMAL SEAL

- .1 Ensure that exterior windows, doors, and frames provide an air-tight and vapour-tight membrane to prevent problems due to building vapour migration.
- .2 In general, the air/vapour barrier must be achieved on the interior side of the thermal insulation.
- .3 The air barrier/vapour retarder membranes, together with flashings and sealants shall be adhered to existing, where present, to provide a continuous air barrier/vapour retardant envelope.

1.24 SAFETY REQUIREMENTS

- .1 Comply with safety requirements outlined in Section 01 35 20.

1.25 TRUCKING COSTS

- .1 The Contractor is responsible for all costs related to trucking required for the Contract. No extra costs will be considered for weight load or limits due to seasonal conditions or restrictions on load capacities imposed by any authorities or any similar limitations or factors.

1.26 CONTINGENCY ALLOWANCE

- .1 Include in the Contract Price a Contingency Allowance in the amount of **\$25,000.00**
- .2 Expend Contingency Allowance as directed by Consultant, in writing, in accordance with the General Conditions and Supplementary Conditions of the Contract.
- .3 Contractor's charges for expenses and profit on Contingency Allowance expenditure shall not be included in Contract Price. Such charges shall be added to the net trade cost of each expenditure from the Contingency Allowance at the percentage rates noted Section 10 24 00, Valuation of Changes.
- .4 Credit the contract with any unused portion of the Contingency Allowance in the final payment statement.

SECTION 01 10 00 - GENERAL INSTRUCTIONS

1.27 INDEPENDENT TESTS AND INSPECTIONS

- .1 The Contractor shall appoint inspection firms as directed by Consultant and make payments from the cash allowances specified in Division noted, except for the following, which shall be included in the contract.
 - .1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
 - .2 Inspection and testing performed exclusively for Contractor's convenience.
 - .3 Mill tests and certificates of compliance.
 - .4 Re-testing as described under the Quality Control subsection, below
- .2 The Consultant will authorize payment of inspection services from specified cash allowances.
- .3 Where tests or inspections reveal work not in accordance with Contract requirements, Contractor shall pay costs for additional tests or inspections as Consultant may require to verify acceptability of corrected work. In the case of soil compactions, the first retest only will be considered as part of inspection allowance.
- .4 The Contractor shall furnish labour and facilities to:
 - .1 Provide access to work to be inspected and tested.
 - .2 Facilitate inspections and tests.
 - .3 Make good work disturbed by inspection and test.
 - .4 Pour concrete test cylinders and store as directed by Inspection Firm.
- .5 Notify Inspection Firms sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.
- .6 Where materials are specified to be tested, delivery representative samples in required quantity to testing laboratory.
- .7 Pay costs for uncovering and making good work that is covered before required inspection or testing is completed and approved by Consultant.

1.28 CASH ALLOWANCES

- .1 Include in the Contract Price, a stipulated sum Cash Allowance in the amount of **\$50,000.00**, to be expended as outlined below, which shall apply to the following aspects of the Work:

Hardware (supply only)
Hardware Installation Inspection
- .2 Cash Allowances, unless otherwise specified, cover the net cost to the Contractor of services, products, construction, machinery and equipment, freight, handling, unloading, storage installation and other authorized expenses incurred in performing the Work.
- .3 The Contract Price, and not the Cash Allowance, includes the Contractor's profit in connection with such cash allowance.

- .4 The listing of a cash allowance in this section shall not be construed to imply the deletion from the base contract of any work which may be specified elsewhere. Where the expenditure of a cash allowance is not specifically outlined in the specifications, it shall be expended as per instructions and specifications to be provided by the Consultant at a later date.
- .5 The Contract Price will be adjusted by written order by the Consultant to provide for an excess or deficit to the Cash Allowance. Any unused portion of the allowance shall be returned to the Owner at the conclusion of the Contract.
- .6 A schedule shall be prepared by the Contractor to show when items called for under Cash Allowances are required, so that the progress of the Work is not delayed.
- .7 Expend cash allowances as directed by Consultant in writing. Allowances will be adjusted to actual cost with no adjustment to Contractor's charges. Cash expenditure must identify the H.S.T. separately.
- .8 Material Allowances
 - .1 Material allowances shall include the following:
 - .1 Net cost of material
 - .2 Applicable taxes and duties, excluding H.S.T.
 - .3 Delivery to site
 - .2 For Material Allowance, the contract shall include:
 - .1 Handling at site, including unloading, uncrating, storage and hoisting.
 - .2 Protection from elements, from damage.
 - .3 Labour, installation, and finishing.
 - .4 Other expenses required to do cash allowance work (ie contract co-ordination).
 - .5 Overhead and profit.
- .9 Testing and Inspection Allowances:
 - .1 Testing and Inspection Allowances shall include the following:
 - .1 Net cost of testing and inspection firm, and laboratory services, designated and authorized by Consultant.
 - .2 Applicable Taxes, excluding H.S.T.
 - .2 For Testing and Inspection Allowances, the contract shall include:
 - .1 Overhead and profit
 - .2 Supply of material tested
 - .3 Other testing and re-testing work specified
 - .4 Other expenses required to do cash allowance work (ie contract co-ordination)

SECTION 01 10 00 - GENERAL INSTRUCTIONS

1.29 WARRANTIES

- .1 The following is a summary of the warranties required by the contract:

	# Years
General Contract	1
Caulking and Sealants	2
Hollow Metal Doors, Frames and Screens	3
Aluminum Windows	5
Sealed Window Units	10
Glass and Glazing	10
Painting	2
Window Shades	3

- .2 Additional warranties may be noted within the specification sections.

1.30 QUALITY CONTROL

- .1 The Consultants and authorized Owner staff shall have access to all areas of the Work, including any off site construction facilities.
- .2 The Contractor shall give timely notice requesting inspection if Work is designated for special tests, inspections, or approvals by the Consultants, or any other authorized Owner staff, or testing and inspection company.
- .3 If the Contractor covers, or permits to be covered Work that has been designated as outlined above, he shall uncover such work, have the inspections and tests satisfactorily completed and make good such work at no additional cost to the Owner.
- .4 The Consultants or the authorized Owner Staff may order any part of the Work to be examined, if such Work is suspected not to be according to the Contract Documents. If, upon examination, such work is found not to be in accordance with the Contract Documents, then the Contractor shall correct such Work and pay for cost of examinations and correction. If such Work is found to be in full accordance with the Contract Documents, the Owner shall pay for the cost of examination and making good.
- .5 If defects are revealed during inspection and/or testing, the appointed agency may request additional inspection and/or testing to ascertain the full degree of defects. The Contractor shall correct the defects and irregularities as reported by the inspection and/or testing agency, at no additional cost to the Owner and the Contractor shall pay all associated costs for retesting and reinspection.
- .6 The Contractor shall provide any tools, materials or equipment that may be required by the inspection and/or testing agencies in retesting the Work. (E.g. Video camera rental to reinspect incorrectly installed sewer lines.)
- .7 The employment of inspection and/or testing agencies does not, in any way, affect the Contractor's responsibility to perform the Work in strict accordance with the Contract Documents.

- .8 The Contractor shall remove all defective work, whether the result of poor workmanship by him or his subtrades, use of defective or damaged products, whether or not incorporated into the Work and any Work that has been rejected by the Consultants or authorized Owner Staff as failing to conform to the Contract Documents. Replacement and execution of the affected Work shall be done in full accordance with the Contract Documents, making good other trades' work damaged by such removals or replacements at no additional charge to the Owner.
- .9 If, in the opinion of the Consultant and/or the authorized Owner Staff, it is not expeditious to correct the defective Work, or Work not performed in accordance with the Contract Documents, the Owner, may, at its sole discretion, deduct from the Contract Price, the difference in value between the work performed and that required by the Contract Documents, the amounts of which shall be determined by the Owner.

1.31 ENVIRONMENTAL DESIGN REQUIREMENTS

- .1 Indoor air quality is of major importance in the building. It is the intention of this Contract that the materials and products used be as low as possible in emissions of volatile organic compounds (VOCs). Low or no VOC products shall be used where these are available and suitable for the application. This is particularly of concern with regard to paints and other finishes, adhesives, sealants, and products manufactured using these materials.
- .2 Any cleaners, solvents, fuels, aerosol sprays and other chemical products used during construction should also be low VOC emitting where possible. Provide good ventilation when using any products that may emit VOCs.

1.32 START-UP

- .1 Work may start immediately upon receipt of Letter of Intent from Owner, and Contractors submission of start-up documents and insurance.
- .2 Refer to phasing requirements and critical dates specified above.

1.33 PAYMENT PROCEDURES

- .1 Refer to CCDC2 2008, Stipulated Price Contract, Part 5, Payment, and amendments included in the Supplementary Conditions included in the Owner's Request for Tender documents.
- .2 Before submitting first request for payment, submit a Schedule of Values, which shall be a detailed breakdown of the Contract price, as directed by the Consultant and as per the Owner's format. Breakdown must equal Contract price. After approval by Consultant, cost breakdown will be used as basis for progress payments.
- .3 Notwithstanding the amounts indicated on the Schedule of Values for the various aspects of the Work, the Owner reserves the right to retain additional funds for some items, where listed in the specifications. This includes amounts to be retained for maintenance manuals and for commissioning, as outlined in the applicable specification sections.
- .4 Applications for monthly payments shall be reviewed in rough draft form and approved by the Owner, Consultant and Contractor. This is to be done prior to the Contractor issuing their proper invoice. Submit a draft of each progress draw to the Consultant, with copy to the Owner, at least five (5) calendar days before the end of each month.

SECTION 01 10 00 - GENERAL INSTRUCTIONS

- .5 Submit progress photos to substantiate any work performed after the last field review by the Consultant.
- .6 Applications for payment shall list HST separately.

1.34 REQUESTS FOR SUBSTITUTIONS

- .1 Products, materials, equipment, and methods of construction included in the Contract Documents are to be used in the execution of the Work of this Contract unless otherwise accepted by the Consultant in writing. Substitute products and materials may not be ordered or installed without written acceptance from the Consultant.
- .2 Changes proposed by the Contractor are considered requests for "Substitutions". Requests for Substitutions are to be submitted only by the Contractor.
- .3 Submit a complete package, including information and documentation outlined below, for evaluation by the Consultant.
- .4 A Request for Substitution must include the following information:
 - .1 Data sheets for both the specified item and the proposed substitution, enabling side by side comparisons.
 - .2 Complete description of the proposed alternative product or material, including:
 - .1 Laboratory tests results
 - .2 dimensions, gauges, weights, etc.
 - .3 An explanation of how the proposed substitute differs from the specified product
 - .1 in physical properties
 - .2 in quality and performance
 - .4 A list of any effects the proposed substitution would have
 - .1 on service connections (wiring, piping, ductwork, etc.)
 - .2 on the work of other trades
 - .3 on construction Schedules
 - .5 Evidence that manufacturers warranties and guarantees for the proposed substitutes are the same, or exceed those required under the Contract.
 - .6 Information on the availability of maintenance services and replacement materials for proposed substitute.
 - .7 Names, addresses, and phone numbers of fabricators and suppliers for proposed substitute(s).
 - .8 Confirmation that the proposed substitution, if accepted, would have no cost impact, or indication of a credit (or extra cost) associated with the substitution.
- .5 Submissions of Requests for Substitution must be received by the Consultant well prior to any shop drawing submissions. The Shop Drawing process is not an acceptable means of requesting a substitution, and submission of drawings for products that have not been accepted will result in the automatic rejection of the Shop Drawing submission.
- .6 The burden of proof of the merit of the proposed substitution lies with the Contractor.
- .7 Substitution requests deemed incomplete or incorrect by the Consultant will be rejected.

- .8 The Consultant may require the submission of further information in order to make an informed determination on the suitability of the proposed substitution. Allow a minimum of 10 working days, upon receipt of all required information, for the Consultant's decision. Substitutions requested too late, not allowing sufficient time for thorough review by the Consultant, will be rejected.
- .9 The Owner's decision, based upon recommendations of the Consultant, of acceptance or rejection, of a proposed substitution shall be final.

1.35 PANDEMIC RESPONSE MEASURES

- .1 When pandemic response measures are indicated by federal, provincial and/or municipal authorities, abide by all restrictions and protocols.
- .2 Provide measures to prevent the spread of COVID-19 in compliance with the Occupational Health and Safety Act and associated regulations and public health directives issued by the Chief Medical Officer of Health for the Province of Ontario.
- .3 Refer to Canadian Construction Association document, "COVID-19 - Standardized Protocols for All Canadian Construction Sites" for best practices in responding to the COVID-19 pandemic.
- .4 The Contractor is responsible for the safety of all people entering the construction site including, but not limited to, workers, suppliers, delivery personnel, owner's representatives, consultants, testing and inspection personnel, building inspectors, and any visitors to site.
- .5 Provide signage at all entry points to the site, outlining the measures that are in place to combat the spread of COVID-19 at the work site. Provide additional signage and/or official posters outlining measures to be taken on site in site offices, sanitation stations, lunch areas, and other common work areas.
- .6 The following measures are recommended by the Ministry of Labour, Training and Skills Development and should be practised on site:
 - .1 Practice physical distancing and stay 2 metres from other people
 - .2 Conduct meetings outdoors
 - .3 Clean tools before and after use
 - .4 Clean toilets frequently
 - .5 Make hand washing or sanitizing stations easily available
 - .6 Disinfect facepieces and other personal protective equipment
 - .7 Stagger start and finish times
 - .8 Bag work clothes when bringing home laundry
- .7 Prepare an action plan outlining the COVID-19 response measures which will be undertaken on site. Prior to the commencement of Work on site, provide a copy of the action plan to the Owner and Consultant.
 - .1 Ensure that worksite policies related to the COVID-19 pandemic are made available on site and clearly communicated to all workers.

END OF SECTION

PART 1 - GENERAL

1.1 GENERAL PROCEDURES

- .1 Changes in the Work ordered by the Consultant in accordance with the General Conditions of the Stipulated Price Contract shall be valued in accordance with the General and Supplementary Conditions of the Stipulated Price Contract and as more fully specified herein.
- .2 The standard documentation for effecting changes in the Work shall be as follows:
 - .1 Consultant's Notice of Contemplated Change issued to the Contractor on standard form and accompanied by necessary Drawings, Schedule, Details and Specifications.
 - .2 Contractor's Quotation submitted to the Consultant showing amount by which the Contract Sum shall be adjusted by way of increase or decrease if the change is ordered.
 - .3 Consultant's formal Change Order issued to the Contractor on Standard Form after Owner's approval. Formal Change Order becomes valid when signed by Consultant, Contractor, and Owner.
- .3 Where a change is not expected to result in an increase or decrease to the scope or cost of work, the Consultant may issue such change as a Jobsite Instruction. Should the Contractor determine that any part of a Jobsite Instruction will result in extra costs, or credits, they shall notify the Consultant, and request the issuance of a Notice of Contemplated Change for the relevant portion of the work. A Jobsite Instruction does not authorize work which will result in a change in the Contract Price.
- .4 Standard form of Jobsite Instruction, Notice of Contemplated Change and Change Order may be viewed at the Consultant's office during normal working hours.

1.2 VALUATION OF CHANGES

- .1 Quotations submitted by the Contractor in response to Consultant's Notice of Change shall be fully detailed and itemized to facilitate checking and processing by the Consultant. Quotations shall:
 - .1 List Work proposed to be carried out by Contractor's Own Forces showing labour, material, and equipment charges together with quantities and costs (unit rates if applicable) in the assessment of such charges.
 - .2 List Work proposed to be carried out by Subcontractors showing the amount quoted by each Subcontractor as verified by the Subcontractor's quotation which shall show labour, material, plant and equipment charges together with quantities and costs (unit rates if applicable) upon which the quotation is based.
 - .3 In evaluating a change, the net cost shall be the net difference in quantity between the original and revised Work. For example: If the change affects the omission of 3m³ and the addition of 4m³ of an item, the value of the change will be assessed by applying the net difference of 1m³ (extra) and applying the appropriate mark-up specified herein.

SECTION 01 24 00 - VALUATION OF CHANGES

- .2 Unit rates are only applicable if they have been accepted by the Owner in advance and included in the Contract.
- .3 Where unit rates are not established in the Contract, quote costs as follows:
 - .1 material prices shall be the net price paid by the Contractor (or Subcontractor) after deduction of all trade discounts and the like other than reasonable discount for prompt payment.
 - .2 plant and equipment costs shall not be more than rates quoted in the latest edition of "Rental Rates on Contractor's Equipment" published by the Canadian Construction Association.
 - .3 labour costs shall be the actual rate paid to the workers in accordance with the fair wage provision of the Contract plus a "fair wage burden" mark-up of thirty-eight percent to cover Welfare contribution, Pension contribution, Vacation Pay, Trade Improvement Fund, Promotional Fund, Training Fund, Supplementary Unemployment Benefits, Check Off, Apprenticeship, Trust Fund and similar labour contract payments; Worker's Compensation Insurance, Canada Pension Scheme and other statutory charges on labour..
- .4 "Overhead", means all expenses to carry on work, except items included in the cost as defined above, and shall include but shall not be limited to: use of Plant, tools; administrative and supervisory staff; personal vehicles, travel; bonds, insurance; health and safety protocols ; and closeout submissions.
- .5 The maximum mark-ups for overhead and profit may be applied, as appropriate, to the net costs assessed as above where the effect of the proposed change is an increase in the Contract Sum. If the effect of the change is a decrease in the Contract Sum no mark-up shall be applied. Maximum mark-ups for overhead and profit shall be as set out in the Supplementary Conditions included in the Owner's Request for Tender documents.
- .6 When work deleted from the Contract is later added back into the Contract, additional overhead and profit will not apply to the reinstated work. Overhead and profit amounts are not included in credits and so remain included in the Contract amount.
- .7 Where overhead and profit mark-ups are to be modified:
 - .1 Where a change involves an extra/credit of more than \$20,000.00, smaller mark-up percentages must be negotiated to reflect a fair mark-up considering the volume of work involved.
- .8 It shall be understood and agreed that the mark-ups specified above shall be deemed to provide for payment in full for all items that in the custom of the Construction Industry in Ontario are considered to be site or head office overhead, profit, supervision, administration and labour costs.
- .9 Claims for extras will not be considered unless they can be verified by the Consultant. Site work, excavation, backfill, footings and all below grade work must be visually inspected by the Consultant and documented by an independent third party (ie Surveyor) BEFORE the work is hidden.

- .10 The signing of a Change Order by all parties shall be deemed to be formal acceptance by the Owner of the Contractor's quotation. Following the issue of a Change Order the Owner will not entertain claims for extra payments due to errors alleged to have been made in the Contractor's Quotation.
- .11 Under no circumstances will a claim for extra be considered if it is for work recommended by the Inspection Company unless the Consultant has been advised and his approval obtained PRIOR TO THE EXECUTION OF THE WORK.

END OF SECTION

PART 1 - GENERAL

1.1 SITE SUPERVISOR

- .1 The Contractor shall be fully responsible for co-ordinating and expediting the work of all Subcontractors and shall employ a qualified Site Supervisor who shall be in full time attendance on this project.
- .2 Prior to the Preconstruction Meeting, the Contractor shall inform the Consultant of their choice for Site Supervisors and shall provide resumes outlining qualifications and related work experiences.
- .3 Site Supervisor shall have as a minimum:
 - .1 Recent, previous experience with renovation or addition projects involving occupied buildings including (but not limited to) school construction, sites with students, tenants, employees, customers, pedestrian and vehicular traffic.
 - .2 Successful completion of a multi-session Supervisor's training course conducted by a recognised Construction Association in Ontario.
- .4 The Supervisor must be assigned to projects for the duration of the construction period.
- .5 The Owner and the Consultant reserve the right to reject the proposed Supervisor should they feel that they are not fully qualified to assume the responsibilities of the positions.
- .6 There shall be a minimum of one full time Site Supervisor dedicated to all sites.
- .7 Site Supervisor must carry a cell phone at all times during construction with the ability to be reached directly during all work hours and the ability to have voicemail recorded during all non-work hours including weekends and holidays.
- .8 Once the Supervisors are confirmed, there will be no change permitted without the written consent of the Consultant.

1.2 CONSULTANT/CONTRACTOR MEETING

- .1 Prior to the commencement of the Work, the Contractor together with the Consultant shall mutually agree to a sequence for holding regular "site meetings" on same day (to be determined) of every second week.

1.3 PRE-CONSTRUCTION MEETING

- .1 Immediately prior to construction, upon notification, attend at location of Owner's choice, pre-construction meeting, along with authoritative representatives of certain key Subcontractors as specifically requested by the Consultant.
- .2 Purpose of meeting is as follows:
 - .1 Review project communications procedures.
 - .2 Review contract administration requirements including submittals, payment and change order procedures.
 - .3 Identify all critical points on Construction Schedule for positive action.
 - .4 Identify any product availability problems and substitution requests.

SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION

- .5 Establish site arrangements and temporary facilities.
- .6 Review any items which, in the Board's, Consultant's and Contractor's opinion, require clarification.
- .7 Exchange names & addresses of all key personnel representing Owner, Consultant, Contractor and Subcontractors.
- .8 Identify Consultant's inspection requirements.

1.4 PROJECT MEETINGS

- .1 Consultant shall Chair project meetings on Site, on a regular basis and will issue minutes to Owner's Representative, Consultants, and Contractor. . When restrictions are in place due to pandemic measures put in place by Authorities, site meetings will be held virtually.
- .2 Consultant shall take minutes of meeting showing:
 - .1 List of persons attending.
 - .2 Decisions taken.
 - .3 Instructions required or issued - Allocating responsibilities to action items.
 - .4 All matters discussed.
 - .5 Schedule Update - Progress, Delays.
- .3 Contractor shall provide suitable on site accommodation for meeting, attend all meetings, arrange for attendance of all necessary Subcontractors, and distribute minutes of previous meeting to Subcontractors and Suppliers as appropriate.
- .4 The Contractor's representatives at site meetings must include the project co-ordinator as well as site Supervisor.
- .5 Contractor shall hold regular co-ordination meeting with Subcontractors and shall chair and minute each meeting. Copies of minutes shall be distributed to relevant Trades and Consultants and Owner.
- .6 In addition to jobsite meetings, Contractor shall arrange for, chair, and record safety meetings and regular meetings with his Subcontractors and suppliers. He shall distribute copies of the minutes of these meetings to all Subcontractors, Owner and Consultant.

1.5 ON SITE DOCUMENTS

- .1 The Contractor shall maintain the following documents, up to date, in the site office:
 - .1 Contract Documents
 - .2 Reviewed Shop Drawings - Printed in full colour or redline
 - .3 All instructions and changes, i.e. Work Authorization, Jobsite Instructions, Notices of Contemplated Change, Change Orders, etc.
 - .4 All inspection and test reports
 - .5 Authorizations, approval documents, permits, special rulings, etc., issued for the project by Authorities Having Jurisdiction.
 - .6 Details of tested assemblies being used on the project; ULC, cUL, etc.
 - .7 As-Built drawings.
- .2 Documents listed above shall be printed, full size documents, not only digit format.

SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION

- .3 Maintain copies of Regulating Documents referred to in the specifications, up to date, in the site office.
- .4 Maintain a file of Material Safety Data Sheets (MSDS) for all materials being used on site and make available to all concerned, in the site office.

END OF SECTION

PART 1 - GENERAL

1.1 SCHEDULE

- .1 Within thirty (30) days of contract award, submit a detailed construction schedule. Base the submission on the commencement of completion dates of the Contract and indicate specified restraints and milestones, activities and durations for shop drawing submission and approval, testing, fabrication and delivery, construction sequence and timing, interdependencies and constraints. Include the procurement activities for major elements. Ensure the participation of all major Subcontractors and Suppliers.
- .2 Schedule shall show:
 - .1 Commencement and completion dates of Contract.
 - .2 Commencement and completion dates of stipulated stages if any.
 - .3 Commencement and completion dates of Trades.
 - .4 Order and delivery times for materials and equipment, where possible.
 - .5 Dates for submission of Shop Drawings, material lists and samples.
 - .6 Any other information relating to the orderly progress of Contract, considered by Contractor to be pertinent.
- .3 The schedule shall be reviewed and updated at every Site meeting.
- .4 Include with each update a written report of activity progress reflected in the revised Schedule, and the corrective actions which have been made or are to be taken to maintain progress on the schedule in the future, anticipated delays, resources availability, schedule changes, and work to be completed in the next 1 month period.

1.2 UPDATING AND MONITORING

- .1 Set up format of Construction Schedule to allow plotting of actual progress against scheduled progress.
 - .1 Allow sufficient space for modifications and revisions to the Schedule as Work progresses.
 - .2 Format shall be approved by the Consultant.
- .2 Display copy of Schedule in Site office during complete construction period and plot actual progress weekly.
- .3 Updating:
 - .1 Arrange participation, on Site and off Site, with Subcontractors and Suppliers, as and when necessary for the purpose of updating schedule and monitoring progress.
 - .2 Conduct reviews of progress and update schedule, distributing copies to Consultant, Owner and Sub-Trades at least once a month or as directed by Consultant.

SECTION 01 32 00 - CONSTRUCTION PROGRESS DOCUMENTATION

1.3 PROGRESS PHOTOGRAPHS

- .1 Concurrently with monthly application for payment, submit 10 electronic format colour images as follows:
 - .1 Images shall clearly show overall progress of Work, and particularly work undertaken after the last field review of the month.
 - .2 Images shall be properly exposed and in focus; views shall be unobstructed. The Consultants will not accept images which are, in their opinion, substandard and these shall be retaken and resubmitted.
 - .3 Provide an index with printed images clearly identified with name of project, description of view and date taken. Disks are to be clearly labelled .

1.4 QUALITY OF WORK / STATUS REPORTS

- .1 The Contractor shall take full responsibility for the quality of work on site. The Contractor shall furthermore notify workers of deficient work immediately upon receipt of notification of deficiencies by the Consultant, Subconsultants and/or Owner.
- .2 The Contractor shall provide a monthly status report on the status of deficiencies identified by the Consultant and Subconsultants. The report shall include a description of each deficiency, status of the deficiency, description of corrective action taken, value (cost) to the correct deficiency and trade (person) responsible for deficiency. The report shall be typewritten on the Contractors letterhead. Submit monthly status reports with each progress draw.
- .3 After Substantial Performance, the Contractor shall continue provide the deficiency status reports on a monthly basis, including updated lists of deficiencies identified by the Owner and consultants.

END OF SECTION

PART 1 - GENERAL

1.1 BEFORE COMMENCEMENT OF WORK

- .1 Obtain the documents listed under this heading and supply to Consultant within the time stipulated in the Specification, or if not so stipulated, before issue of the first Certificate.
 - .1 Performance Bond/Labour and Material Bond.
 - .2 Insurance Policies required under General Conditions of Contract - Insurance.
 - .3 Certificates of good standing from the Workplace Safety & Insurance Board for the Contractor and all Subcontractors.
 - .4 Shop Drawing Schedule.
 - .5 Permits for temporary structures, hoists, etc.
 - .6 Schedule of Values: Refer to General Conditions of Contract.
 - .7 Estimate of monthly progress claims (cash flow schedule).
 - .8 Construction Schedule.
 - .9 Equipment Delivery Schedule.
- .2 Concurrently, with schedule of values, submit cash flow schedule broken down on a monthly basis, indicating anticipated monthly progress billings for duration of the Contract.
- .3 Submit schedule in a format acceptable to the Consultant. Indicate anticipated submission dates and review periods. Highlight critical items.
- .4 Submit, in a format acceptable to the Consultant, a list of manufactured equipment complete with order dates, anticipated delivery dates, and dates required on site to meet progress schedule. Update schedule at least once a month or more often if directed by the Consultant. Clearly indicate late deliveries and anticipated impact on construction schedule. Include in schedule required delivery dates for products supplied by Owner.
- .5 Schedule of Values:
 - .1 Before submitting first request for payment, submit a detailed breakdown of the Contract price, as directed by the Consultant and as per the Owner's format. Breakdown must equal Contract price. After approval by Consultant, cost breakdown will be used as basis for progress payments.

1.2 DOCUMENTS AND ACTION REQUIRED DURING PROGRESS OF CONTRACT

- .1 Perform the action and/or obtain the documents listed under this heading and supply to the Consultant, within the time stipulated in the Specification or, if not so stipulated, as soon as possible following Consultant's request.

SECTION 01 33 00 - SUBMITTAL PROCEDURES

- .2 Adjust Cash Allowances by award of separate Contracts, where appropriate.
- .3 Documents specified under Section 01 10 00, General Instructions and Section 01 33 23, Shop Drawings, Product Data and Samples.
- .4 Progress photographs, submitted concurrently with monthly application for payment. Refer to Section 01 32 00.
- .5 Any permits required from Authorities Having Jurisdiction enabling Owner to occupy the work (or part thereof) prior to Substantial Performance of the Contract.
- .6 As-Built Documents:
 - .1 The Owner requires as-built documents for all changes on completion of the construction.
 - .2 The Contractor shall obtain a complete and separate set of prints of Contract Drawings to keep on the site at all times.
 - .3 The drawing prints shall be marked up by responsible personnel of the Contractor and Subcontractors to record clearly, neatly, accurately and promptly showing all deviations from the contract documents.
 - .4 Prior to the date of Substantial Performance, request from the Consultant updated drawings incorporating all changes made to the building through Change Orders and Jobsite Instructions. Transfer all recordings from the white prints to these updated drawings and return them to the Consultant, as specified in Section 01 78 00, Close-out Submittals.
 - .5 Mark "as-built" changes in red coloured ink.
 - .6 Clearly mark each of the drawings, "Project As-Built Record Copy".
 - .7 Final completion of these Drawings shall be a condition precedent to the issuance of Consultant's final payment certificate.

END OF SECTION

PART 1 - GENERAL

1.1 SCHEDULE

- .1 Within 5 working days after award of Contract, prepare and submit to Consultant for comment, a schedule fixing the dates for the submission of all Shop Drawings, product data, and samples.
- .2 Allow reasonable promptness for Consultant to review submissions, exclusive of time required for inter-office transmissions.
- .3 All shop drawings must be reviewed and stamped by the Contractor prior to submission to the Consultant.

1.2 GENERAL

- .1 Submit to Consultant, for review, Shop Drawings, Product Data, Samples, and other required submittals specified.
- .2 All shop drawings and related submittals must be reviewed and stamped by the Contractor prior to submission to the Consultant.
- .3 Until submittal is reviewed, Work involving relevant product may not proceed.
- .4 Do not use for construction, Shop or setting Drawings or diagrams which do not bear Consultant's stamp and name of reviewer.
- .5 Shop drawing reviews do not authorize changes in cost or time, which may only be accomplished by an appropriate Change Order issued through the Consultant.
- .6 Shop drawings shall be for products as specified or otherwise approved by the Consultant. The shop drawing process is not a means of requesting substitutions.
- .7 Submission and subsequent review of Shop Drawings constitute a service and does not entitle the Supplier or Subcontractor to the right to remuneration until the materials are supplied and installed on the Site in accordance with the Contract.
- .8 The Contractor must include for delivery and pick up of shop drawings to/from the Consultant by hand or courier.
- .9 The Contractor must include for reproduction of shop drawings after review by the consultants.

1.3 SHOP DRAWINGS

- .1 Drawings shall be copies of original drawings prepared by Contractor, subcontractor, supplier or distributor, for the work of the Contract which illustrate appropriate portions of the Work. Shop drawing submissions shall show pertinent information for incorporation of the products and equipment, including the following, as applicable:
 - .1 fabrication details
 - .2 dimensioned layout drawings, including clearances, with site dimensions
 - .3 relationship to adjacent work
 - .4 setting or erection details

SECTION 01 33 23 - SHOP DRAWINGS AND OTHER SUBMITTALS

- .5 performance requirements
 - .6 operating weights of equipment
 - .7 installation instructions
 - .8 service connection requirements, including wiring diagrams
 - .9 single line and schematic diagrams
 - .10 additional information as may be specified in applicable Specification Sections.
- .2 Note that some shop drawings are required to be approved by a Professional Structural Engineer in the Contractor's employ.
- .3 Submit Shop Drawings with transmittal forms listing:
- .1 the project name and number
 - .2 the names of the manufacturer, supplier, subcontractor
 - .3 the applicable Drawing numbers
 - .4 the number of copies
 - .5 the names of the items included the submittals
 - .6 number of Specification section to which the Shop Drawings refer
 - .7 dates and revision numbers, and submission numbers
- .4 All dimensions on shop drawings must be in metric.
- .5 On Shop Drawings for fire rated assemblies show required fire rating and ULC design numbers.
- .6 Submission:
- .1 Submittals may be submitted by email.
 - .2 Submittals must be submitted in the same size and scale as they were originally prepared. Drawings may not be reduced in size for email transmission.
 - .3 Email submissions must be in pdf format and must be high quality documents, preferably generated by computer from the original documents (rather than scans of printed documents). If digital submissions are of insufficient quality, hard copies will be required.
 - .4 Emailed documents shall be reviewed and stamped digitally by the Contractor, or accompanied by a separate sheet from the Contractor listing the documents reviewed and bearing the Contractor's review stamp, along with copies of any revisions made.
 - .5 Email submission is only used as a convenient means of distributing drawings, in lieu of sending hard copies by courier. Reviewed drawings must still be printed for job site files, record copies, etc. All site copies shall be red line prints or colour prints.
- .7 If submitting printed submittals, submit copies as follows:
- .1 Submissions shall be in sufficient quantities for distribution to all reviewers, plus one copy to be returned to the Contractor for reproduction and distribution.
 - .2 The prime Consultant requires one copy of every submission, of all disciplines.
 - .3 Each sub-consultant, of each discipline, will retain one copy of the shop drawings.

SECTION 01 33 23 - SHOP DRAWINGS AND OTHER SUBMITTALS

- .4 For architectural submissions which do not need to be reviewed by sub-consultants, only two copies are required.
- .8 Drawings shall be of a size and quality which will be readily reproduced. Shop drawings must be certified to have been reviewed and corrected by Contractor and sub-contractor responsible for forwarding to the Consultant.
- .9 Shop drawings are to be to scale. Scale shall be large enough to adequately review details included when printed full sized. Provide site measured dimensions on drawings wherever possible.
- .10 All requirements for shop drawings apply also to resubmissions of shop drawings, as may be required by the Consultant.
- .11 Revise all reviewed shop drawings to incorporate Consultant's comments. One complete set of final, revised Shop Drawings, used for construction, shall be submitted to the Consultant.
- .12 Shop Drawings are required for the following items:
 - Hollow Metal Work
 - Windows, Curtain Wall, and Doors
 - Hardware Schedule and Data
 - Window Shades
 - Other items as may be requested within the specifications
- 1.4 Refer also to the General Conditions of the Contract the Supplementary Conditions issued by the Owner in their RFT document.
- 1.5 **PRODUCT DATA**
 - .1 Certain Specification Sections specify that manufacturer's standard schematic drawings, catalogue sheets, diagrams, schedules, performance charts, illustrations and other standard descriptive data will be accepted in lieu of Shop Drawings.
 - .2 The above will be accepted if they conform to the following:
 - .1 Delete information which is not applicable to project.
 - .2 Supplement standard information to provide additional information applicable to project.
 - .3 Show dimensions and clearances required.
 - .4 Show performance characteristics and capacities.
 - .5 Show wiring diagrams and controls.
 - .6 Add to standard sheet the Project identification data.
- 1.6 **SAMPLES AND MOCK-UPS**
 - .1 Where specified, shown or considered necessary, submit duplicate samples for Consultant's approval.
 - .2 Where colour, pattern or texture is criterion, submit full range of samples.
 - .3 Samples must correspond in every respect to materials supplied for project.

SECTION 01 33 23 - SHOP DRAWINGS AND OTHER SUBMITTALS

- .4 Construct field samples and mock-ups at locations acceptable to Consultant.
- .5 Construct each sample or mock-up complete, including work of all trades required to finish work.
- .6 Do not proceed with fabrication or delivery of materials until samples are approved.
- .7 Reviewed samples or mock-ups will become standards of workmanship and material against which installed work will be checked on project.
- .8 Approval of samples does not imply acceptance of finished work.

1.7 CONTRACTOR'S RESPONSIBILITY

- .1 Prior to submission to the Consultant, review all shop drawings, samples, product data, and other required submittals as follows:
 - .1 Verify that the submission is for products as specified, or otherwise approved by the Consultant.
 - .2 Ensure that the submission is complete.
 - .3 Note any potential interference issues and co-ordinate with the trades to avoid these conflicts.
 - .4 Verify:
 - .1 Field measurements.
 - .2 Field construction criteria.
 - .3 Catalogue numbers and similar data.
- .2 Coordinate each submittal with requirements of Work and Contract Documents. Refer to Section 01 10 00, General Instructions, and the subsection on Coordination.
- .3 Notify Consultant, in writing at time of submission of any deviations in submittal from requirements of Contract Documents.
- .4 Stamp, initial or sign each Drawing, certifying approval of submission, verification of field dimensions and measurements and compliance with Contract Documents, prior to submission to the Consultant(s).
- .5 The Contractor shall be responsible for reproducing and distributing reviewed shop drawings, except for those copies required by the Architect and Consultants.
- .6 After Consultant's review, distribute copies as follows:
 - .1 Job Site file (2 copies) - colour or redline copies
 - .2 As-built documents file.
 - .3 Other prime contractors.
 - .4 Subcontractors.
 - .5 Supplier.
 - .6 Fabricator.

SECTION 01 33 23 - SHOP DRAWINGS AND OTHER SUBMITTALS

- .7 Authorities having jurisdiction, where required by Codes and/or By-Laws, i.e. structural steel.
 - .8 Owner's Maintenance Manual (revised, as-built copies).
 - .7 Distribute samples as directed by the Consultant.
 - .8 Ensure that all samples are approved by authorities having jurisdiction, supplier for correct application in Project, and other parties such as Owner in time to permit approval prior to ordering of quantity delivery to Site.
 - .9 The Contractor shall advise all Trades, Subcontractors and suppliers of the limits of the Consultant's responsibility with respect to Shop Drawings and other submittals, as detailed below.
- 1.8 CONSULTANT'S RESPONSIBILITY**
- .1 With reasonable promptness from the receipt of samples and Architectural shop drawings, the Consultant shall review them and return them to the Contractor. Allow 15 working days for review of shop drawings.
 - .2 Review by the Consultant is for the sole purpose of ascertaining conformance with the general design concept. This review shall not mean that the Consultant approves the detail design inherent in the shop drawings, responsibility for which shall remain with the Contractor, and such review shall not relieve the Contractor of his responsibility for errors or omissions in the shop drawings or of his responsibility for meeting all requirements of the Contract Documents. The Contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to the processes or techniques of construction and installation and for co-ordination of the work of all subtrades.
 - .3 Shop drawing markings shall be interpreted as follows:
 - .1 Shop drawings marked "REVIEWED" by Consultant and/or Subconsultants are released for construction.
 - .2 Shop drawings marked "REVIEWED AS NOTED" by the Consultant or his Subconsultants are also released for construction, after revisions noted are made; with final copies sent to the Consultant.
 - .3 Shop drawings marked "REVISE AND RESUBMIT" by the Consultant or his Subconsultants are NOT released for construction and must be resubmitted after being revised in accordance with the consultants' comments.
 - .4 Shop Drawings marked with the Consultant's "RECEIVED" stamp only have not been reviewed by the Consultant.
 - .4 Review by the Architect does not in any way constitute review of the design of engineering elements, which form part of the Contract Document's prepared by others.
 - .5 Shop drawings for products that are not a specified item, or an approved substitution, will be rejected without being reviewed.

SECTION 01 33 23 - SHOP DRAWINGS AND OTHER SUBMITTALS

- .6 Shop drawings which have not been requested will be returned to the Contractor with no action taken by the Consultant.
- .7 The Architect will use the following stamps in reviewing Shop Drawings:

Date: <h1 style="text-align: center;">RECEIVED</h1> MOFFET & DUNCAN ARCHITECTS INC.
--

"Review by Moffet & Duncan Architects Inc. does not in any way constitute review of the design of engineering elements, which form part of the Contract Documents prepared by others." MOFFET & DUNCAN ARCHITECTS INC.

REVIEWED <input type="checkbox"/> REVIEWED AS NOTED <input type="checkbox"/> REVISE AND RESUBMIT <input type="checkbox"/>						
"This review by Moffet & Duncan Architects is for the sole purpose of ascertaining conformance with the general design concept. This review shall not mean that Moffet & Duncan Architects Inc. approves the detail design inherent in the shop drawings, responsibility for which shall remain with the Contractor submitting same, and such review shall not relieve the Contractor of his responsibility for errors or omissions in the shop drawings or his responsibility for meeting all requirements of the Construction and Contract Documents. The Contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of the work of all sub-trades." MOFFET & DUNCAN ARCHITECTS INC.						
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END OF SECTION

PART 1 - GENERAL

1.1 CONSTRUCTION SAFETY

- .1 Observe and enforce construction safety measures required by the National Building Code of Canada, Canadian Construction Safety Code, Ontario Occupational Health and Safety Act, Workplace Safety & Insurance board (WSIB) and Municipal Statutes and Authorities.
 - .1 The Contractor is again reminded that the Contractor is responsible for Occupational Health and Safety on this project. The items listed below are only guidelines of the Owner's expectations in this regard and not to be construed to be comprehensive or total in nature.
- .2 In particular, the Ontario Construction Safety Act, the regulations of the Ontario Department of Labour and Ontario Hydro Safety Requirements shall be strictly enforced.
- .3 In event of conflict between any provisions of above authorities the most stringent provisions will apply.
- .4 The Owner will take every reasonable precaution to prevent injury or illness to students, employees and the public, participating in Owner activities, or performing their duties. This shall be accomplished by providing and maintaining a safe, healthy working environment and by providing the education necessary to perform these activities or duties safely.
- .5 The Owner is also vitally interested in the health and safety of Contractors and their workers performing work for the Owner. Cooperation and support of the Contractor in the protection of the workers from injury or occupational disease is a major, continuing objective of the Owner. To achieve these goals, the Owner, in concert with the Contractors, will endeavour to make every effort to ensure that the Contractors provide a work site which is a safe and healthy work environment. The Owner insists that all Contractors and their workers are dedicated to the continuing objective of reducing risk and injury.
- .6 The Contractor covenants and agrees to comply with all statutory and other obligations, including without limitation, the provisions of the Occupational Health and Safety Act (Ontario) and all Regulations thereto, and all amending and successor legislation, in connection with all work performed by either the Contractor, Sub-contractors, or any Other Contractor on, or in connection with, the Project.
- .7 Without limiting the foregoing, for the purposes of this Contract, the Contractor agrees that it shall be the "constructor" of the Project within the meaning of the Act, and as such, shall assume all the obligations and responsibilities, and observe all construction safety requirements and procedures, and duties of inspection imposed by the Act on the "constructor", as therein defined, for all work and services performed by the Contractor, Subcontractors and Other Contractors on or in connection with the Project. The Contractor further covenants and agrees that the Owner and its existing and former officers, trustees, employees and agents, and their respective heirs, executors, administrators, successors and assigns shall be released from any obligations or liabilities otherwise imposed on the Owner, or on any of them, pursuant to the Act in connection with the Project, and that the Contractor shall assume all liability and responsibility in connection with same. The Contractor agrees to save harmless and indemnify the Owner from any losses, damages, costs and expenses of any kind, or nature whatsoever, including all legal expenses, and all defence costs and related expert or consulting fees, incurred

SECTION 01 35 20 - SAFETY REQUIREMENTS

by the Owner, or any of them, arising in connection with the failure, default, or inability of the Contractor of the Owner, or any of them, to comply with any of the aforementioned statutory, or other legal requirements, or arising in connection with any breach by the Contractor of any of its covenants, agreements and obligations under this Contract.

- .8 The Contractor shall inform and instruct Other Contractors that they, while performing work on this project, are under the authority of the Contractor. Other Contractors are to discuss and coordinate with, and follow instructions from, the Contractor on all matters of site access, vehicles, deliveries, storage, temporary facilities, coordination with the work of other subcontractors, work methods, scheduling, labour conditions, construction safety, environmental protection, security and all other matters which relate to the safe and proper execution of construction work.
- .9 The Contractor shall ensure that all supervisory personnel on job site are fully aware of the procedures and requirements outlined herein and comply with all requirements specified.
- .10 All contractors are responsible to ensure that all machinery and/or equipment are/is safe and that the workers perform their tasks in compliance with established safe work practices or procedures. Workers must receive adequate training in their specific work tasks to protect their health and safety.
- .11 The Contractor shall be responsible for all persons and companies performing work, including other Contractors, on this project, at all times, up to and including, the date of Substantial Performance of the Work. Authority for coordination and instructions relating to all matters which relate to the safe and proper execution of construction work shall rest with the Contractor. The Contract Price will include the Contractor's fees for the coordination and supervision of the work of all Other contractors.
- .12 In addition to the responsibility of all contractors as outlined in 1.1.10, above, Subcontractors will be held accountable for the health and safety of workers under their supervision.
- .13 Every worker must protect his/her own health and safety by working in compliance with the law and with safe work practices and procedures established by the authorities having jurisdiction.
- .14 All sections of the Occupational Health and Safety Act for Industrial Establishments, latest edition, and the Occupational Health and Safety Act for Construction Projects, latest edition, shall be enforced, by the Contractor, in their entirety, throughout the duration of the construction project.
- .15 The Contractor shall provide the Consultant with the telephone number where the Contractor or his representative can be reached at any time, day or night, for the duration of the contract.
- .16 Where an accident, explosion, or fire causes a person injury at the work place, and the worker is disabled from performing the usual task, the Contractor shall prepare a written notice and shall forward same to the Ministry of Labour within four days of the occurrence with a copy to the health and safety representative or the Joint Health and Safety Committee, containing such information and particulars as may be prescribed.
- .1 Where a person is killed or critically injured from any cause at the work place, the Contractor shall immediately call the Ministry of Labour. A written notice from the Contractor shall be given to the Ministry of Labour within forty-eight hours after the

occurrence, containing such information and particulars as may be prescribed, with copies to the Consultant and the Owner's Representative.

- .2 The Contractor is advised that the accident scene is under the jurisdiction of the Ministry of Labour and no wreckage, articles, etc., shall be interfered with, disturbed, destroyed, altered or carried away at the scene, or connected with the occurrence, until the Ministry of Labour has given permission.

1.2 REPORT ACCIDENTS

- .1 Promptly report in writing to the Consultant all accidents which cause death, personal injury or property damage, arising out of or in connection with the performance of the work on or adjacent to the site. Where death or serious injuries or serious damages are caused, the accident shall be reported immediately by telephone or messenger to the Consultant and to the relevant public authorities.
- .2 If any claim is made by anyone against the Contractor or Subcontractor on account of any accident, the Contractor shall promptly report the facts in writing to the Consultant giving full details of the claim.

1.3 FIRST AID FACILITIES

- .1 Provide at the site the equipment and medical facilities necessary to supply first-aid service to anyone who may be injured in connection with the Work, and to conform to the requirements of the authorities having jurisdiction over the Work.

1.4 FIRE SAFETY REQUIREMENTS

- .1 The appropriate clauses of the Ontario Building Code, Ontario Fire Code, National Building Code of Canada and National Fire Code relating to fire safety and protection shall be strictly followed.
- .2 Provide and maintain free access to temporary or permanent fire hydrants acceptable to local fire department.
- .3 Provide sufficient temporary standpipes and connections, fire hose, valves, temporary cabinets, extinguishers, etc. to comply with the requirements of the governing Municipal and Provincial authorities.
- .4 Make necessary adjustments and modifications to temporary fire protection as required during progress of the work. Remove such temporary work when permanent system is installed and operating.
- .5 Maintain fire safety in the existing building during construction, as follows:
 - .1 Maintain existing exits and access to exits. Where an exit must be blocked, provide an alternate exit acceptable to Authorities Having Jurisdiction.
 - .2 Where separations are provided between existing corridors in occupied spaces and new corridors under construction,, they shall be minimum 45 minute rated fire separations. Any required access through these partitions shall be with rated doors, frames with closers and latching.

SECTION 01 35 20 - SAFETY REQUIREMENTS

- .3 Maintain existing fire department access route or provide new, or temporary, access route acceptable to the fire department.
- .4 Do not store combustible materials adjacent to existing building or where such materials could pose a fire hazard to the building or the occupants.
- .5 Existing fire alarm system is to be kept operational throughout the construction period. Keep fire department informed of any temporary shutdowns and arrange for alternate fire safety measures to be implemented during that period.
- .6 Refer to the Ontario Fire Code for requirements for temporary shutdown of fire protections systems, including sprinklers and standpipe systems.
- .7 Modify Fire Safety Plan in accordance with the Fire Code, when required to facilitate construction. Such modifications shall be determined in cooperation with the Owner and the local fire department.

1.5 OVERLOADING

- .1 Ensure no part of Work is subjected to a load which exceeds the design live loads shown on the structural drawings. Ensure that scaffolding and false work are not overloaded. Do not cut load bearing members without approval of Consultant.

1.6 FALSEWORK

- .1 Design and construct falsework in accordance with CSA S269.1 latest version.

1.7 VISITORS

- .1 Provide hard hats and safety vests for use by all visitors.

1.8 ADDITIONAL REQUIREMENTS FOR OCCUPIED SITES

- .1 The existing school will be occupied throughout the academic year. When school is in session, additional safety requirements will apply, as outlined below:
- .2 Flagman:
 - .1 Provide a full-time flagman at each delivery location.
 - .2 The location of the Flagman shall be coordinated with the Owner, to ensure the safe guarding of staff, students, and the general public.
 - .3 Flagman shall be a designated person, not the Site Supervisor or other construction worker, and shall not be changed during the Project unless approved by the Owner.
 - .4 Flagman must have means of communication with Site Supervisor (phone or walkie-talkie).
 - .5 Flagman shall meet and escort all construction traffic from the street and for the entire time the vehicle is on site outside of a fenced construction enclosure. No unaccompanied construction vehicles will be permitted on School Board property, outside of a construction enclosure.
 - .6 Flagman shall control construction parking at the school site. Parking shall be as designated by Owner and school Principal.

- .7 Flagman shall be properly outfitted to carry out his duties, with appropriate safety clothing and equipment, including reflective vest, hand-held "Stop" sign and a visible identification tag.
- .3 Access Control:
 - .1 The Contractor shall instruct all suppliers and subcontractors that they are required to contact the Site Supervisor by cell phone prior to entering the site, and await escort by the flagman.
 - .2 Site Supervisor shall then advise the flagman to meet and escort the vehicle.
 - .3 Gates of construction enclosure must remain closed and locked at all times and only opened for the time required for access/egress of authorized vehicles or personnel.
- .4 Site Communication
 - .1 The Contractor shall provide the Owner and Principal with an emergency contact telephone number at which the Site Supervisor or other Contractor representative can be contacted directly during work hours and with voicemail available at all other times, including weekends and holidays, which will be checked regularly.
 - .2 Site Supervisor and flagman must have means of direct communication available at all times during work hours.
 - .3 Contractor shall be in daily communication with the school Principal to determine any activities which may involve safety concerns, whether school related or construction related.

1.9 SIGNAGE

- .1 Provide signage indicating " Danger - Keep Out", "Hard Hats must be worn at all times", "Safety Shoes must be worn at all times", "No Trespassing", etc., mounted on all sides of construction enclosures, and additional signs as necessary to adequately warn the public and workmen of the inherent dangers of the site and requirements to maintain personal safety. Safety Signage is also required at all construction entrances
- .2 During the school year, signage posted at site entrance shall state restrictions on hours of entry and egress, as agreed to by the Owner and Principal, and under no circumstances shall construction traffic be allowed within 30 minutes prior to school start, during recess, lunch break, and within 30 minutes after school dismissal.

1.10 PANDEMIC RESPONSE MEASURES

- .1 When pandemic response measures are indicated by provincial and/or municipal authorities, abide by all restrictions and protocols.
- .2 Refer to Section 01 10 00 for COVID-19 response measures required

END OF SECTION

PART 1 - GENERAL

1.1 HAZARDOUS MATERIALS

- .1 The Ontario Occupational Health and Safety Act requires the Owner to provide a list of Designated Substances to all prospective Contractors and they in turn must supply the list to their sub-trades who are likely to handle or disturb the material.
- .2 The Owner will provide a survey of designated substances known, or likely, to be found in the building, as supplementary information.
- .3 Materials that may be present in the area of construction may include any or all of the following and would be expected in normal construction of older buildings:
 - .1 Asbestos: in caulking, parging cement, insulation, drywall compound, acoustic ceiling tiles, vinyl asbestos floor tile.
 - .2 Lead: in paint films, in solder or pipe for drinking water, in solder for other pipe or electrical components
 - .3 Mercury : found in elemental form in an ampoule in thermostats or in electrical soft switches, as a gas in fluorescent light tubes or in paint films and caulk
 - .4 Silica: primarily as Quartz, bound in building materials including but not limited to concrete, brick and block.
- .4 In accordance with the Ontario Health and Safety Act and regulations enacted under the Act the Contractor and sub-trades shall take appropriate precautions for the building and their work force. Such precautions may include, for the substances listed, the measures outlined below.
- .5 Remove, transport, and dispose of hazardous materials in accordance with applicable laws, including the following:
 - .1 Occupational Health and Safety Act, R.S.O. 1990, c. O.1., including the following regulations made under the Act:
 - .1 O.Reg. 213/91, Construction Projects, amended to 345/15 and
 - .2 O.Reg. 278/05, Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations amended 479/10.
 - .2 Regulations for the transport of asbestos waste, including:
 - .1 Transportation of Dangerous Goods Act, 1992 (1992, c. 34)
 - .2 Dangerous Goods Transportation Act, R.S.O. 1990, c. D.1
 - .3 Environmental Protection Act, R.S.O. 1990, C. E.19, and regulations under the Act, including:
 - .1 O.Reg. 102/94 Waste Audits and Waste Reduction Work Plans
 - .2 O.Reg. 103/94 Industrial, Commercial and Institutional Source Separation Programs
 - .3 R.R.O. 1990, Reg. 347: General - Waste Management
- .6 Asbestos:
 - .1 If materials suspected to contain asbestos are disturbed during building demolition or new construction activities, they must be handled and disposed of in accordance with the procedures set out in O. Reg. 278/05.

SECTION 01 35 43 - HAZARDOUS MATERIALS

- .2 It is expected that existing caulking in the oldest parts of the school could contain asbestos, which can be removed as Type 1 operations. Type 1 removals are to be included in the scope of Work of this Contract.
 - .3 Should the Contractor or Subcontractors encounter other suspected asbestos containing materials in the course of their work, they shall immediately notify the Consultant and the Owner, who will arrange for inspection by an asbestos abatement consultant. Any additional abatement work will be done by forces appointed by the Owner.
- .7 Lead:
- .1 Any operation involving lead-based paints may potentially produce significant exposures to lead if adequate controls are not provided. Exposure varies with the type of operation being employed.
 - .2 The presence of lead in building finishes left intact or found peeling in a few locations produces little exposure for workers to lead through contact, inhalation or ingestion.
 - .3 Operations involving the hand sanding and scraping of lead based paints can elevate exposure through inhalation. The use of a negative pressure respirator equipped with high efficiency particulate air (HEPA) filters is recommended to reduce exposure.
 - .4 Operations involving the machine sanding or abrasive cutting of paint and other surface coatings containing lead can elevate levels of much finer dust. The spray application of a lead bearing paint or coating produces a respirable fume. These operations increase the likelihood of exposure by inhalation. A negative pressure air-purifying respirator equipped with HEPA filters is recommended for these operations.
 - .5 Operations involving oxyacetylene torches or other heating operations produces the most significant exposure to lead in particular through inhalation and by contact of lead fumes solidifying on skin. A powered air-purifying respirator equipped with HEPA filters and full body covering is recommended for these operations.
 - .6 Lead found in solder of other pipe systems and electronic components poses no threat to the work force by inhalation, ingestion or by contact with the exception of maintenance or renovation activities. The maintenance of the pipe or electrical component may produce some exposure to lead fume during the seating on of lead solders but for a short duration of time. Inhalation is the source of entry and exposure is not very significant.
 - .7 All items identified in this section may be disposed of as regular non-hazardous waste unless concentrated. Metallic lead may be reclaimed through scrap metal dealers.
- .8 Mercury
- .1 Fluorescent light tubes contain small quantities of mercury gas. These sealed units do not pose any harm in the workplace except in the case of breakage. There are no liquid or residue present after breakage and spill cleaning is not a concern. A recommended practice is to evacuate the work area when breakage occurs. The gas will diffuse in about five to ten minutes and cleanup of the tubes can be performed. Mercury can be taken into the body by inhalation only from this source.
 - .2 The same precautions as those indicated for lead-based paints would apply to mercury in paints.
 - .3 Elemental mercury found in ampoules in electrical equipment may be disposed of as regular waste and should be turned over to the Owner for disposal through commercial recyclers. The other forms (light tubes and painted surfaces that have been concentrated) can be disposed of as regular waste.

- .9 Silica
 - .1 Silica is presumed to be present in cement, cement blocks, bricks and mortar of the building. Unless the silica in these materials is reduced to respirable size (5 um or less) and the airborne concentration exceeds the time weighted average exposure of 0.2 milligrams per cubic metre in air, no adverse health effects are expected to occur. Building construction, renovation or demolition do not normally raise excessive exposure to silica with the exception of jack hammering, dry saw cutting or sand blasting. There is little likelihood for the work force to be exposed to excessive levels of respirable silica dust if the material is suppressed with water spray or flow. Respiratory protection is dependent on the type and airborne concentration of respirable silica present in the particular work environment.
- .10 Asbestos:
 - .1 Where a friable building material is found enclosed in a wall, floor or ceiling such as fireproofing, insulation on pipe or ducts, vermiculite insulation, etc. (that is not fibrous glass) or an acoustical textured material (stucco) or a non-friable material such as cement board or cement pipe, the Contractor shall refer to the Consultant who shall contact the Owner for further direction.
- .11 Prior to the disposal of building materials a leachate toxicity test in compliance with Water Management Regulation (Revised Regulation of Ontario 1990/Regulation 347) may be required by the local waster receiving site or the Ontario Ministry of Environment and Energy. Prior to disposal these authorities should be consulted with, and tests performed where required.

END OF SECTION

PART 1 - GENERAL

1.1 REGULATING DOCUMENTS

- .1 Conform to the Ontario Building Code (Ontario Reg. 332/12), Ontario Fire Code (Ontario Reg. 213/07), Accessibility for Ontarians with Disabilities Act (Ontario Reg. 191/11), National Building Code of Canada, Canadian Electrical Code (CEC), CSA B44 - Safety Code for Elevators and Escalators, CSA W59 - Welded Steel Construction, The Occupational Health and Safety Act, Ontario (R.S.O. 1990), the National Fire Code, the local municipal Fire Code, and all other applicable Codes and Building By-Laws.
- .2 Conform to the requirements of the authorities having jurisdiction, such as public utilities.
- .3 Contract forms, codes, standards and manuals referred to in these specifications are the latest published editions at the date of close of tenders. Meet or exceed requirements of specified standards.
- .4 Provide copies of documents referred to in the Specification for joint use of Contractor and Consultant, on site.

END OF SECTION

PART 1 - GENERAL

1.1 QUALITY ASSURANCE

- .1 Refer also to the Quality Control Provisions of Section 00 10 00, General Instructions.
- .2 Provide a system of quality control to ensure that the minimum standards specified herein are attained.
- .3 Bring to the attention of the Consultant any defects in the work or departures from the Contract Documents which may occur during construction. The Consultant will decide upon corrective action and state recommendations in writing.
- .4 The Consultant's general review during construction and inspection by independent inspection and testing agencies reporting to the Consultant are both undertaken to inform the Owner of the Contractor's performance and shall in no way augment the Contractor's quality control or relieve him of contractual responsibility.

1.2 NOTIFICATION

- .1 Give the Consultant advance notice of shop fabrication, field erection and other phases of the work so as to afford him reasonable opportunity to inspect the work for compliance with contract requirements.

1.3 DEFECTIVE MATERIALS AND WORKMANSHIP

- .1 Where factual evidence exists that defective workmanship has occurred or that work has been carried out incorporating defective materials, the Consultant may have tests, inspections or surveys performed, and the like in order to help determine whether the work must be replaced. Test, inspections or surveys carried out under these circumstances will be made at the Contractor's expense, regardless of their results, which may indicate that, in the Consultant's opinion, the work may be acceptable.
- .2 All testing shall be conducted in accordance with the requirements of the Ontario Building Code, except where this would, in the Consultant's opinion, cause undue delay or give results not representative of the rejected material in place. In this case, the tests shall be conducted in accordance with the standards given by the Consultant.

END OF SECTION

PART 1 - GENERAL

1.1 COMMUNICATIONS

- .1 Provide for all communications services on site, including cell phone, internet, computer, and printer, for Contractor's own use, and for the Owner's and Consultant's use.

1.2 POWER AND WATER SUPPLY

- .1 Provide all temporary light and power complete with all wiring, lamps and similar equipment as required for completion of the Work. Provide adequate lighting for all workmen, sufficient for safety and for execution of good workmanship, taking particular care to observe all safety requirements. Adequate temporary lighting will be insisted upon. The Owner will not be liable for any loss, damage, delay, or claims for extra costs resulting from lack of services.
- .2 Existing building services may be used, as available. This does not include emergency generators or batteries.
- .3 Provide an adequate pure fresh water supply for the use of trades.
- .4 Ensure continued water and power supply to the building and adjacent residences and buildings throughout the construction period.

1.3 TEMPORARY VENTILATION

- .1 Provide local exhaust ventilation to prevent harmful accumulations of hazardous substances into atmosphere of occupied areas. Dispose of exhaust materials in manner that will not result in harmful exposure to persons.
- .2 Ventilate storage spaces containing hazardous or volatile materials. Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful elements. Store paints and solvents in secure, locked, ventilated room at all times.

1.4 REMOVAL OF TEMPORARY UTILITIES

- .1 Remove temporary utilities from site when directed by Consultant and/or at the completion of the project.

1.5 FIRE EXTINGUISHERS

- .1 An adequate number of ABC type fire extinguishers shall be provided for the protection of the work during construction.

END OF SECTION

PART 1 - GENERAL

1.1 CONTRACTOR'S SITE

- .1 The Contractor shall maintain the following documents, on site:
 - .1 Contract Documents
 - .2 Reviewed shop drawings
 - .3 All instructions and change documents, ie Work Authorizations, Jobsite Instructions, Notices of Contemplated Change, Change Orders
 - .4 All inspection and test reports
 - .5 Permits and related drawings
 - .6 As-built drawings

1.2 STORAGE SHEDS

- .1 Provide adequate weather-tight sheds with raised floors, for storage of materials, tools and equipment which are subject to damage by weather.
- .2 Storage sheds shall be painted and doors shall be fitted with locks.
- .3 Locate storage sheds adjacent to building away from road to approved of the Consultant.
- .4 Material stored on site must be protected by tarpaulins until enclosed in building.

1.3 SANITARY FACILITIES

- .1 Furnish and maintain in a sanitary condition, suitable sanitary accommodation for all workers in accordance with local Municipal and Provincial sanitary regulations, and to the approval of Public Health Authorities and the Consultant, with all necessary water, sewage, light and heat supplied in sufficient quantity. The use of single portable serviced units will be permitted providing siting is approved.
- .2 When the school is vacated for the summer break, one designated washroom within the building will be assigned for the Contractor's use.
- .3 Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.
- .4 Refer to Section 01 10 00 for pandemic protocols.

1.4 REMOVAL OF TEMPORARY FACILITIES

- .1 Remove temporary facilities from site when directed by Consultant and/or at the completion of the project.

END OF SECTION

PART 1 - GENERAL

1.1 SITE ENCLOSURE AND PROTECTION

- .1 Install temporary fencing to secure work areas. No construction work may be undertaken on an unsecured site.
- .2 Construction enclosures must be installed when building is vacant. All other temporary barriers and controls located outside of the construction enclosures must also be installed when the building is vacant. Coordinate with Owner.
- .3 Enclose work areas to conform with current legislation and safety standards. Provide temporary 1.8m high galvanized chainlink fencing, complete with gates as required for site access.
- .4 Erect enclosures so as to provide a secure compound for construction equipment and supplies. Hold the Owner harmless from any damage or expense arising from failure to properly execute such work.
- .5 Provide, erect, and maintain enclosures for construction as required for safety or as otherwise agreed to with the Consultant, or as directed by Authorities Having Jurisdiction. Confirm that hoarding is designed to resist wind loads.
- .6 Gates to be kept locked except during working hours.
- .7 On completion of the contract, take down and remove enclosures and gates from the site.

1.2 SITE PROTECTION

- .1 Supply, install and maintain all guard rails, barriers, night lights, sidewalk and curb protection as may be necessary or as the by-law may require.
- .2 Supply, install and maintain all necessary temporary doors, screens and coverings to protect work areas. All such work shall be neatly painted. Doors shall have hasp and substantial padlock. Owners representative shall have key or combination where access is required. Provide and maintain temporary fencing at excavations, etc. as required for safety. Protect existing asphalt and concrete paving and curbs from damage and make good any damage at completion of project.
- .3 Protect building and construction materials from cold weather and rain. Protect all of the work from damage by the elements.
- .4 Properly protect floors and roofs from any damage. Take special precautions when moving heavy loads or equipment over floors and roofs.
- .5 Keep floors free of oils, grease or other such materials likely to discolour them.
- .6 Ensure that no part of the Work is loaded greater than it was designed for, when completed. Make any temporary support as strong as the permanent support.
- .7 Protect glass and other finishes, using appropriate protective shields and covers.

SECTION 01 56 00 - TEMPORARY BARRIERS AND CONTROLS

- .8 Provide and maintain, in good working order, appropriately labelled ULC fire extinguishers, to the approval of Authorities Having Jurisdiction.
- .9 Provide a minimum of two safety helmets and two safety vests on site at all times for the use of any other Owner authorized visitors to the site. It is the Contractor's responsibility to make certain that any such visitors wear the protective headgear and any other safety gear which may be necessary at that particular time of construction.
- .10 Should the job be stopped for any cause, the Contractor shall be responsible for and provide all necessary protection to prevent damage by weather or other cause until the cause of stoppage has been cleared.
- .11 The Contractor shall be entirely responsible for supervision of project and for protection of public from vehicles in movement, stockpiled materials and construction.
- .12 The Contractor is responsible for the prevention of vandalism and theft of all tools, equipment and materials.
- .13 Any damage to roadways must be repaired immediately, to municipal standards.
- .14 The Contractor is responsible for snow removal in work areas.
- .15 Any damage to site by the Contractors forces, delivery vehicles, etc., must be made good at the end of the job. Similarly any damage to curbs, sidewalks, or other municipal property shall be made good by the Contractor.

1.3 OVERHEAD PROTECTION

- .1 Provide overhead protection at each access point into the building addition during construction.
- .2 Provide overhead protection at temporary and existing building exits adjacent to construction enclosure.
- .3 Overhead protection shall be constructed to support loads of 2.4 kN/m², of suitable materials for the design load and for the intended purposes.

1.4 TEMPORARY DUST CONTROLS

- .1 Supply and install temporary dust proofing measures in the existing school prior to any work taking place in each area. Call for review by Owner/Consultant after dust proofing measures are installed.
- .2 Dust proofing measures shall include the following:
 - .1 Cover floor and furnishings with heavy duty plastic or fabric drop cloths.
 - .2 Where possible erect dust proof enclosures around work area to limit the spread of dust, dirt and debris. Enclosures shall consist of steel stud framing to underside of structure above, covered with plywood sheathing and min. 10mm polyethylene sheets, caulked around perimeter.
 - .3 Place filters in return air vents in all work areas to prevent dust from entering the existing HVAC system.

SECTION 01 56 00 - TEMPORARY BARRIERS AND CONTROLS

- .4 Clean and vacuum daily to prevent the spreading and tracking of dust and dirt to other areas.
- .3 Dust proofing shall be as acceptable to Owner and Consultant.
- .4 Dust proofing shall be installed outside of school operating hours and shall remain in place until the new Work is finished in the area, and accepted by the Owner.
- .5 Minimize the amount of dirt tracked into the existing building. Provide mats at all entrances used by construction personnel to enter the school.
- .6 Keep dust, dirt, and debris away from fresh air intakes, open doors and windows, and from areas where it could be tracked into the building by students, staff, or visitors to the school. Assume responsibility for cleaning up all dirt, debris, mud, water, snow, etc., tracked in by construction personnel.

1.5 MAINTAINING INDOOR AIR QUALITY

- .1 Smoking is not permitted inside the building or on the school property at any time. The Contractor shall post "No Smoking" signs throughout the work areas to enforce this requirement.
- .2 Minimize the time that vehicles are left idling on site. Keep idling vehicles away from open doorways and windows, open areas of the building addition, fresh air intakes, and areas where students are gathered.
- .3 All adhesives, sealants, paints and coatings applied onsite must be low VOC products.
- .4 Products requiring the use of adhesives, sealants, paints and other coatings, are to be assembled offsite as much as possible. Such adhesives, sealants, and coatings shall be low VOC products, where suitable products are available.
- .5 No toxic chemicals or fuels are permitted to be stored inside the building.
- .6 Refueling of equipment is to be undertaken outside the building.
- .7 Gas powered equipment is not to be used inside the building. Use electric or propane powered equipment only, and to acceptance of Owner and Consultant.

1.6 SECURITY

- .1 The Contractor shall be entirely responsible for supervision of project and for protection of public from vehicles in movement, for stockpiled materials and construction. Vehicular parking and stockpile materials must be maintained on the construction site only. No street parking or stockpiling will be allowed on the Municipal streets.
- .2 The Contractor is responsible for the prevention of vandalism and theft of all tools, equipment and materials until date of Substantial Performance of Contract.

SECTION 01 56 00 - TEMPORARY BARRIERS AND CONTROLS

1.7 REMOVAL OF TEMPORARY BARRIERS

- .1 Remove temporary barriers and enclosures from site when directed by Consultant and/or at the completion of the project.

END OF SECTION

PART 1 - GENERAL

1.1 MOBILIZATION ON SITE

- .1 At the time of mobilization or immediately thereafter, the Contractor is to confirm in writing that the building and site are visually in general conformance with the descriptions in the documents.

1.2 DIMENSIONS

- .1 Ensure that necessary job dimensions are taken and trades are co-ordinated for the proper execution of the work. Assume complete responsibility for the accuracy and completeness of dimensions and for all co-ordination.
- .2 Verify that work is executed in accordance with dimensions indicated, that levels and clearances are maintained, and that work installed in error is rectified before construction continues.
- .3 Check and verify all dimensions including interfacing of services. Dimensions, when pertaining to the work of other trades, shall be verified with the trade concerned. Ensure that all Subcontractors co-operate for the proper performance of the work.
- .4 Do not scale directly from the drawings; this applies all drawings, whether in paper or digital format. If there is ambiguity or lack of information, immediately inform the Consultant. Any change caused by lack of such review shall be the responsibility of the trade concerned.

END OF SECTION

PART 1 - GENERAL

1.1 CUTTING AND PATCHING

- .1 Before cutting, drilling or sleeving load-bearing elements, obtain approval of location and method.
- .2 Cut and drill with true smooth edge to minimum suitable tolerances.
- .3 Fit construction tightly to stop air movement completely. The trade performing work that penetrates a fire, air, vapour, moisture, thermal or acoustic separation element of the building shall pack voids tightly with insulation, rated where required; seal air, vapour and moisture barriers; and caulk joints as may be required to ensure that no air movement through the penetration is possible.
- .4 Cutting, drilling and sleeving of work shall be done only by specialized trades. The trade requiring drilling and sleeving shall inform the trade performing the work of the location and other requirements for drilling and sleeving. The Contractor shall directly supervise performance of cutting and patching.
- .5 Replace and/or make good damaged work.
- .6 Patching or replacement of damaged work shall be done by the subcontractor under whose work it was originally executed, and at the expense of the subcontractor who caused the damage.

1.2 EXISTING CEILINGS

- .1 All existing ceiling components and ceiling mounted fixtures and equipment shall be carefully removed as required to accommodate new work and reinstalled when work is complete.
- .2 Where ceiling tiles are broken in the course of the work, replace with new to match existing. Use fire guard panels in areas where there is no sprinkler system.

1.3 DOORS AND HARDWARE

- .1 Refer to the Door Schedule on drawings and the general notes below.
- .2 Hardware shall be supplied under Cash Allowance. Installation shall be included in base bid.
- .3 Doors and frames shall be prepared for barrier-free auto door operators where indicated. Exterior doors and frames shall be prepared for security alarm devices.
- .4 Provide electrical work for powered door hardware by a licenced electrician. Refer to Section 02 40 00.

END OF SECTION

PART 1 - GENERAL

1.1 GENERAL

- .1 Conduct cleaning and disposal operations to comply with local ordinances, anti-pollution laws, and recommendations of Construction Safety Association.
- .2 Store volatile wastes in covered metal containers, and remove from premises daily.
- .3 Prevent accumulation of wastes which create hazardous conditions.
- .4 Provide adequate ventilation during use of volatile or noxious substances.
- .5 Provide instructions designating proper methods and materials to be used in final cleaning of Work.
- .6 Do not bury or burn any rubble, waste or packaging, or surplus materials. No dumping of waste, such as oil or paint, into sewers will be permitted.
- .7 Dispose of waste materials in accordance with the Environmental Protection Act, R.S.O. 1990, C. E.19, and regulations under the Act, including:
 - .1 O.Reg. 102/94 Waste Audits and Waste Reduction Work Plans
 - .2 O.Reg. 103/94 Industrial, Commercial and Institutional Source Separation Programs
 - .3 R.R.O. 1990, Reg. 347: General - Waste Management

1.2 MATERIALS

- .1 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

1.3 POLLUTION CONTROL

- .1 Cover dry materials and rubbish to prevent blowing dust and debris.
- .2 Remove mud deposited on public roads.
- .3 Prevent dust nuisance to adjacent properties, existing school, and general public by taking appropriate pollution control measures as directed by Consultant.

1.4 DISPOSAL OF WASTES

- .1 Disposal of waste or volatile materials, such as mineral spirits oil or paint thinner into storm or sanitary sewers prohibited.
- .2 Meet Ministry of the Environment Standards and Guidelines.

1.5 FIRES

- .1 Fires and burning of rubbish on Site is not permitted.

SECTION 01 74 00 - CLEANING AND WASTE MANAGEMENT

1.6 CLEANING DURING CONSTRUCTION

- .1 Maintain entire site and adjoining municipal and/or private property free from accumulations of waste materials and rubbish. Do not allow rubbish to accumulate in work under construction. Clean site daily.
- .2 Maintain work areas free from accumulations of snow and ice.
- .3 Provide on-site containers for collection of waste materials, and rubbish. Empty containers on a regular basis in conformance with Municipal and Provincial Regulations.
- .4 Cleaning operations shall include those areas used for temporary site access or used on a temporary basis to facilitate the Work.
- .5 Broom clean and vacuum areas as required for application of finishes. Continue to clean on an "as needed" basis and insure that areas which receive paint and other finishes are kept dry, dust free, and at acceptable temperatures.
- .6 Keep all areas of the Work clean and orderly, free from accumulation of dirt, debris, garbage, oily rags, excess material, or such other trash items. Remove such items from all areas of the Work on a daily basis.
- .7 Vacuum and/or broom interior building areas when ready to receive painting and other finishes. Continue cleaning on an "as needed" basis until the building is ready for inspection and take-over.
- .8 Schedule cleaning operations so that resulting dust and other contaminants do not affect wet, newly painted surfaces, or newly installed equipment, or devices.

1.7 CLEANING AT COMPLETION OF WORK

- .1 Employ a professional cleaning company to thoroughly clean all areas immediately prior to occupancy of the Work by the Owner. Cleaning company shall be an established firm, bonded and fully insured, and acceptable to the Owner.
- .2 Provide manufacturer's printed cleaning and maintenance instructions to cleaning company. All surfaces are to be cleaned in accordance with the product manufacturer's recommendations.
- .3 Use cleaning products which are non-toxic, environmentally friendly products, and which will not leave residues or odours on surfaces.
- .4 Do not apply sealers, wax, or polish to any flooring without the expressed permission of the Owner. All such products, and the methods of application, must be approved in advance by the Owner.
- .5 Remove all temporary protective coverings provided during construction.
- .6 Remove all protective film. Remove miscellaneous labels from hardware, etc.

SECTION 01 74 00 - CLEANING AND WASTE MANAGEMENT

- .7 Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from all exposed interior and exterior finishes, including glass and frames. Clean glass both sides. Remove paint spots and smears from all surfaces, including hardware.
- .8 Clean hardware, aluminum, stainless steel, and other metal surfaces.
- .9 Clean lighting reflectors, lenses and other lighting surfaces.
- .10 Vacuum clean all existing building interiors affected by construction operations.
- .11 Remove debris and surplus materials from the roof areas and accessible concealed spaces.
- .12 Broom clean all asphalt and concrete paved surfaces and rake clean other disturbed surfaces in the area of the Work, to remove site debris caused by the Work of this Contract. Inspect for damages and make good.
- .13 Ensure that all clean up operations specified in other sections has been performed.
- .14 Conduct final inspection of interior and exterior surfaces, and concealed spaces.
- .15 Leave premises ready for immediate occupation without further cleaning, all to the Consultant's approval.

1.8 REPAIR WORK

- .1 Repaint or touch up paint finish affected by the Work as necessary to return to new condition.
- .2 Replace all broken glass.
- .3 Repair any damage incurred during cleaning operations.

END OF SECTION

PART 1 - GENERAL

1.1 TAKEOVER PROCEDURE

- .1 Subject to detailed instructions included in these specifications, conform to Recommended Procedures Concerning Substantial Performance of Construction Contracts and Completion Take-over of Projects, OAA/OGCA Document No. 100-2018.

1.2 ACTION REQUIRED AT OCCUPANCY

- .1 When partial occupancy of uncompleted project is required by the Owner, co-ordinate the Owner's uses, requirements and access with the construction requirements to complete project. Submit a revised construction schedule, taking restrictions on work activities and hours into account; refer to Section 01 10 00 for special requirements in occupied buildings.

1.3 ACTION REQUIRED AT SUBSTANTIAL PERFORMANCE

- .1 Perform the actions listed below prior to issue of the Certificate of Substantial Performance of the Contract.
- .2 Submit the documents and material detailed in section 01 78 00, Closeout Submittals. Deliver all required submittals to the Consultant for approval PRIOR to Substantial Performance of the Work. Final payment will not be made until all these items have been received and approved.
- .3 Prior to applying for a Certificate of Substantial Performance, perform an inspection in accordance with OAA/OGCA Document No. 100-2018, Stage 2, Contractor's Inspection for Substantial Performance. Submit a copy of the deficiency list to the Consultant.
- .4 When of the opinion that the requirements for Substantial Performance have been met, submit an application for a Certificate of Substantial Performance to the Consultant. The application shall be as outline for Stage 3 of the OAA/OGCA Take-Over Procedures.
- .5 Expedite and complete deficiencies and defects identified by the Consultant. Final Certificate for Payment will not be issued until all deficiencies are satisfactorily corrected, inspected, and approved by the Consultant, and all documentation has been handed to the Consultant.
- .6 Remove all protection erected, and make good all damage to the Work and adjoining Work due to the lack or failure of such protection. In addition, all debris, surplus materials tools equipment shall be removed from the work areas and the site, and the Project shall be left clean and tidy to the full and complete satisfaction of the Consultant and Owner.
- .7 Perform final adjustment of Cash Allowance, specified in Section 01 10 00, General Instructions.
- .8 At time of Substantial Performance, instruct the Owner's personnel in operation, adjustment and maintenance of equipment and systems, using operation and maintenance manuals as the basis for instruction.
- .9 Once the Certificate of Substantial Performance of the Work is issued, the Contractor shall promptly arrange to have the certificate published in the Daily Commercial News.

SECTION 01 77 00 - CLOSEOUT PROCEDURES

- .10 Prior to final site review, start up and demonstrate operation of all systems to the Owner and the Consultant.
- .11 Review cash and contingency allowances in relation to contract price, change orders, hold-backs and other contract price adjustments.
- .12 Review inspection and testing reports to verify conformance to the intent of the documents.
- .13 Review condition of all equipment, which has been used in the course of the Work to ensure turnover at completion in "as new condition" with warranties, dated and certified from time of Substantial Performance of the Contract.
- .14 Provide on-going review, inspection, and attendance to building call back, maintenance and repair problems during the warranty periods.
- .15 Continue to submit monthly deficiency status reports, as specified in Section 01 32 00, Construction Progress Documentation.

1.4 TOTAL PERFORMANCE

- .1 Upon completion of all items noted on the deficiency list, clean all areas, surfaces, and components affected by corrections and completion of deficient items.
- .2 Ensure that all services, equipment, and apparatus are properly tested and adjusted.
- .3 Letter of Completion:
 - .1 Submit a Letter of Completion to the Consultant stating that the Contract is complete, that all deficiencies identified by the Consultant, Inspectors and Owner have been rectified, and requesting final review by the Consultant.
 - .2 Sign and return deficiency lists, issued by the Consultant, to confirm completion of all deficiencies identified thereon.
- .4 Final Site Review:
 - .1 Consultant will conduct one site review for Total Performance, within ten (10) working days of the request by the Contractor. Should the Contractor fail to provide the Letter of Completion, the Consultants will be under no obligation to perform a site review within the above noted time.
 - .2 Additional site reviews, as requested by the Contractor or as necessitated due to the Contractor's failure to complete work as required, shall be paid for by the Contractor at a rate of \$500 per visit, plus the cost to prepare additional site review reports at per diem rates (rates as recommended by the OAA, or as negotiated in advance).
- .5 Submit a final request for payment, incorporating all approved changes to the Contract price, and adjustments to the Cash Allowance.

SECTION 01 77 00 - CLOSEOUT PROCEDURES

- .6 Final Certificate for Payment will not be authorized until all deficiencies are satisfactorily corrected, reviewed and signed off by the Consultant, and required submittals have been completely and accurately provided.

1.5 **WARRANTY PERIOD**

- .1 The Warranty Period on this Project will expire **twelve (12) months** from the date of Substantial Performance of the Work, except for extended warranties as called for throughout the Specifications or equipment not certified by Consultant at time of Substantial Performance.

END OF SECTION

PART 1 - GENERAL

1.1 SUBMITTALS REQUIRED AT SUBSTANTIAL PERFORMANCE

- .1 Prior to Substantial Performance of the Contract, perform the actions detailed in section 01 77 00, Closeout Procedures, and submit the following documents and materials:
 - .1 Deficiency list prepared by Contractor for both interior and exterior areas of the project.
 - .2 Certificates of good standing from the Workplace Safety & Insurance Board for the Contractor and all Subcontractors
 - .3 Operations and Maintenance Manuals, including warranties. If manuals are unavailable, the designated value of the submittals will be retained in the Contract; see below.
 - .4 One complete set of final approved Shop Drawings indicating corrections and changes made during fabrication and installation
 - .5 Keys and construction cores
 - .6 Maintenance materials
 - .7 As-Built Documents as specified in Section 01 33 00, Submittal Procedures
 - .8 Inspection Certificates required by Provincial, Municipal and other authorities having jurisdiction.
- .2 Deliver all required submittals to the Consultant for approval prior to Substantial Performance of the Work. Final payment will not be made until all these items have been received and approved. These submittals include:

1.2 MAINTENANCE MANUALS

- .1 At Substantial Performance, submit to Consultant one hard copy and one digital copy of an Operations Data and Maintenance Manuals made up as follows:
 - .1 Bind data in vinyl hard covered, three-ring loose leaf binders for 212.5mm x 275mm (8-1/2" x 11") size paper. Digital copy shall be submitted in pdf (portable document format) on a single USB flash drive with label or tag identifying project.
 - .2 Enclose title sheet, labelled "Operation Data and Maintenance Manual", project name, date and list of contents. Include the following information:
 - .1 name of project
 - .2 name of Owner
 - .3 name of Consultant
 - .4 name of Contractor
 - .5 date of Substantial Performance.

SECTION 01 78 00 - CLOSEOUT SUBMITTALS

- .3 Organize contents into applicable sections of work to parallel project specification break-down. Mark each section by labelled tabs protected with celluloid covers fastened to hard paper dividing sheets
- .4 All data related to a section of work or product shall be grouped together, except for shop drawings, unless otherwise requested by the Owner. Confirm method of organization with Owner prior to assembling manuals. Typically, each section shall be organized, as applicable, as follows:
 - .1 General information; identify section of work, subcontractor(s) responsible
 - .2 Warranty
 - .3 Guarantees, Bonds
 - .4 Schedules (hardware, paint)
 - .5 Product data sheets
 - .6 Material safety data sheets (MSDS)
 - .7 Operating manual
 - .8 Maintenance instructions
 - .9 Receipts for maintenance materials, keys, etc.,
 - .10 Maintenance contracts (applicable to elevator, wheelchair lift, planting, sod, etc.)
 - .11 Inspection and testing reports
 - .12 Shop Drawings
- .2 Provide one copy of each of the following in the first binder:
 - .1 Contractor's final statutory declaration on CCDC form 9A-2001
 - .2 Major Subcontractor's final statutory declarations on CCDC form 9B-2001
 - .3 Workers' Compensation and Insurance Board (WSIB) certificate
 - .4 certificates of approval of the work by the Building Department (if available)
- .3 Also in the binder, provide a disk or memory stick containing all construction progress photos submitted; refer to Section 01 32 00. Provide an index with printed images clearly identified with name of project, description of view and date taken. Disks are to be clearly labelled .
- .4 Include the following information, plus any additional data required within the specifications.
 - .1 List of all Subcontractors, major suppliers, and local equipment service representatives, their addresses and telephone numbers.
 - .2 Date of Substantial Performance (commencement of warranty periods) and termination dates of warranties.
 - .3 Door and Frame Schedule (as-built); insert in front of Division 08 section in manuals.
 - .4 Final hardware schedule, revised to include all changes during construction, including local manufacturer's descriptive and service literature. Include AHC's final inspection report.
 - .5 Provide paint schedule indicating paint brand and formulas used.
 - .6 Maintenance instructions for all types of special finishes. Include instructions for cleaning, repairing, refinishing and freshening, and warnings of damaging or dangerous practices where necessary.

SECTION 01 78 00 - CLOSEOUT SUBMITTALS

- .7 Maintenance and service instructions and manufacturer's literature for all special architectural features: i.e. windows, patent glazing, handicapped lift etc.
- .8 Description, operations and maintenance instructions for equipment and systems, including complete list of equipment and parts list.
- .9 All warranties, guarantees, bonds, etc., properly completed and signed, which extend beyond the general warranty period, for all work and equipment as specified or as otherwise supplied and installed, from manufacturers and trades. Warranties, guarantees and bonds shall include:
 - .1 Name and address of project.
 - .2 Warranty commencement date.
 - .3 Duration of warranty.
 - .4 Clear indication of what is being warranted and what remedial action will be taken under warranties.
 - .5 Signature and seal of Contractor.
- .5 List additional material used in project showing name of manufacturer and source of supply.
- .6 Neatly type lists and notes. Use clear drawings, diagrams or manufacturer's literature.
- .7 Supply copies of inspection and testing reports, inspection and acceptance certificates, balancing reports, all bound in all three copies of manuals.
- .8 Supply Operations and Maintenance manuals, and other required documentation as specified for Mechanical and Electrical work.
- .9 Manuals must bear seal and signature of Contractor.
- .10 Maintenance Manuals must be delivered, complete and in one package, to Consultant. The final Certificate for payment will not be issued until ALL documentation has been received, reviewed, and approved, by Consultant.
- .11 Provide a complete set of final approved Shop Drawings. Shop drawings shall be the drawings reviewed and stamped by the consultants. Mark-up shop drawings to indicate corrections and changes made during fabrication and installation.
- .12 Provide a digital copy of the shop drawing manual, included on the USB flash drive with the digital copy of the maintenance manuals.
- .13 Disks and USB flash drives must be clearly and permanently labelled.

1.3 MAINTENANCE MATERIALS

- .1 Where supply of maintenance materials is specified, deliver items as follows:
 - .1 Materials in unbroken cartons or, if not supplied in cartons, they shall be strongly packaged.
 - .2 Clearly mark as to content.

SECTION 01 78 00 - CLOSEOUT SUBMITTALS

- .3 If applicable give colour, room number of area where material used.
- .4 Obtain signed receipt from the Owner's designated representative and store in an assigned, lockable room.
- .2 Copies of signed receipts for maintenance materials are to be included in the maintenance manuals.
- .3 Replacement materials are for the sole use of the Owner and must not be used by Contractor to replace deficient work.

1.4 AS-BUILT DRAWINGS

- .1 Provide As-Built Drawings, as specified in Section 01 33 00, and Record Documents (electronic files).
- .2 Prior to the date of Substantial Performance, request updated drawings from the Consultant. Transfer all "as-built" markups from the on-site drawings to these updated drawings and return them to the Consultant for preparation of architectural Record Drawings.

1.5 REVIEW OF MANUALS BY CONSULTANT

- .1 Submit all manuals for review by the Consultant.
- .2 The Contractor is responsible for confirming the completion of the manuals prior to forwarding to the Consultant for review. If any items are outstanding, provide tabs at the appropriate locations and indicate the nature of the outstanding documents to be inserted.
- .3 Do not submit partially complete manuals to the Consultant; only documents which cannot be provided at the time of Substantial Performance are permitted to be flagged for later insertion. The Consultant will review manuals once for completion and will then review only one resubmission. If additional reviews are required, the Contractor will be invoiced for the Consultant's time at a rate of \$125/hour.

1.6 VALUATION OF CLOSEOUT SUBMITTALS

- .1 Due to the high value to the Owner of the closeout submittals, for the purpose of project administration and calculation of Substantial Performance, the Closeout Submittals will be assigned a value of **\$5,000.00**.
- .2 The full assigned value of the submittals for each discipline will be held in the Contract until such time as all closeout submittals required for that discipline are delivered to the Consultant and are deemed complete and acceptable by the Consultant.
- .3 Architectural record drawings, to be prepared by the Consultant and paid through the Cash Allowance, are not included in the valuation of closeout submittals.

END OF SECTION

PART 1 - GENERAL

1.1 WORK INCLUDED

- .1 Demolition and removal of aluminum windows to be replaced, as indicated on drawings, including modifications required to facilitate installation of new windows.
- .2 Removal of existing exterior hollow metal doors and frames, as indicated on drawings, and preparation of openings to receive new doors and frames.
- .3 Removal of existing window blinds.
- .4 Carry out all demolition, cutting and removal of existing work in preparation for the installation of the new windows, curtain wall, entrance systems, and doors. Remove sealants, foam and adhesives from masonry.
- .5 Carry out all alteration and demolition work required to accommodate new work indicated on drawings. Make good any damage caused by alterations required.
- .6 Repair or replace existing surfaces damaged by the work of this Contract. Finished surfaces to be ready for repainting.
- .7 Unless noted otherwise, building materials resulting from demolition under this contract shall become the property of the Contractor, and shall be removed by the Contractor.
- .8 Remove, transport, and dispose of hazardous materials in accordance with applicable laws.
- .9 Supply and install temporary dust controls in work areas, to prevent the spread of dust, dirt and debris in the building.
- .10 Include costs to schedule work outside of school operating times, including after-hours and weekend work and remobilization costs.
- .11 Engage a licenced electrician to perform electrical work.

1.2 RELATED WORK

- | | | |
|-----|--|------------------|
| .1 | Hazardous Materials | Section 01 35 43 |
| .2 | Temporary Barriers and Controls | Section 01 56 00 |
| .3 | Execution | Section 01 73 00 |
| .4 | Repair and Restoration of Unit Masonry | Section 04 01 00 |
| .5 | Hollow Metal Doors and Frames | Section 08 11 13 |
| .6 | Glazed Aluminum Curtain Walls | Section 08 44 13 |
| .7 | Aluminum Windows | Section 08 51 13 |
| .8 | Gypsum Board | Section 09 29 00 |
| .9 | Ceramic Tiling | Section 09 30 00 |
| .10 | Repainting | Section 09 92 00 |

SECTION 02 40 00 - DEMOLITION AND ALTERATIONS

1.3 REFERENCES

- .1 Conform to all laws, By-Laws and regulations of the authorities having jurisdiction and, in particular, the Ontario Occupational Health and Safety Act; The Environmental Protection Act; The Ontario Building Code, (Ontario Reg. 332/12); The Ontario Fire Code; The National Building Code; and the National Fire Code. Refer to current editions of all standards.
- .2 CSA S350-M, code of practice for safety in demolition of structures.
- .3 Environmental Protection Act, R.S.O. 1990, C. E.19, and regulations under the Act, including:
 - .1 O.Reg. 102/94 Waste Audits and Waste Reduction Work Plans
 - .2 O. Reg. 103/94: Industrial, Commercial And Institutional Source Separation Programs
 - .3 R.R.O. 1990, Reg. 347: General - Waste Management
- .4 Occupational Health and Safety Act, and regulations under the Act, including:
 - .1 O.Reg. 213/91 Construction Projects
 - .2 O.Reg. 278/05, Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations
 - .3 O.Reg. 860/90 Workplace Hazardous Materials Information System (WHMIS)
 - .4 All regulations regarding "Designated Substances"
- .5 Regulations for the transport of asbestos waste, including:
 - .1 Transportation of Dangerous Goods Act, 1992 (1992, c. 34)
 - .2 Dangerous Goods Transportation Act, R.S.O. 1990, c. D.1

1.4 EXAMINATION OF EXISTING SITE AND STRUCTURE

- .1 Examine the existing site and building before tendering to be familiar with the detailed extent of demolition, dismantling, relocation and reassembly required.
- .2 Copies of available original working drawings for the construction of parts of the building are being made available in digital format only, as supplementary information.
- .3 An inventory of hazardous materials has been conducted for the existing building; a copy of which will be made available by the Owner. Refer also to Section 01 35 43.
- .4 No allowance will be made for failure to obtain complete information prior to close of tenders.

1.5 PROTECTION

- .1 Erect fencing, interior barriers, notice and warning boards and maintain all protection of all kinds for the protection of the workers on the work, for the protection of adjoining property and for protection of public.
- .2 Protect all existing paving and site amenities not designated for removal. Make good damage to the approval of the Consultant.
- .3 Prevent movement, settlement, and damage to existing building to remain, services, paving, landscaped areas to remain, and adjacent structures. Provide temporary supports, including shoring and bracing, as required. All shoring must be designed by a professional engineer licenced in the Province of Ontario.

SECTION 02 40 00 - DEMOLITION AND ALTERATIONS

- .4 Protect adjacent properties against damage which might occur from falling debris or other cause. Make good damage to adjacent public or private properties resulting from Work of this Contract.
- .5 Protect existing building from damage and contamination during demolition activities. All openings must be made weatherproof. Provide temporary barriers, dust control measures, security controls, supports, and such additional protection as may be required by specific demolition work.
- .6 Remove contaminated and dangerous material from the site and dispose of safely and legally. Meet all M.O.E. requirements.
- .7 Take precaution against contamination of air and adjacent properties.

1.6 MAINTAINING FIRE SAFETY IN EXISTING BUILDING

- .1 Maintain all required exiting for safe operations within the existing building. Where an exit is closed off due to construction activities, provide alternate exit acceptable to both the Consultant and to Authorities Having Jurisdiction. If access to exit must be through an area under construction, provide smoke tight enclosure with minimum 45minute fire resistance rating. Any temporary exits must be clearly identified with appropriate signage.
- .2 Maintain access roadways for fire department vehicles, acceptable to the fire department. Access must be approved prior to commencement of construction activities.
- .3 Store all combustible materials in accordance with the Fire Code and the Occupational Health and Safety Act. Do not store combustible materials within the existing building or against the building. All combustibles shall be stored in a manner which minimizes risks to building and occupants.
- .4 Maintain fire alarm system in operating condition in existing building. Notify the fire department and school principal of any temporary shutdowns of service and provide alternative measures during such periods of time.
- .5 Coordinate with Owner and Authorities Having Jurisdiction for all changes to fire emergency procedures as may be required during construction.

1.7 SCHEDULE OF WORK

- .1 Student safety and required exiting from the existing school must be maintained at all times, particularly during the school's operating hours and scheduled events. Work must be suspended if the Principal advises that noise and/or dust is interfering with the school program.
- .2 Construction fencing must be installed and construction area secured before any work is undertaken. Enclosures must conform to Ministry of Labour and Municipal requirements.
- .3 Dust proofing measures must be installed prior to any work being undertaken.

SECTION 02 40 00 - DEMOLITION AND ALTERATIONS

PART 2 - PRODUCTS**2.1 MATERIALS**

- .1 Vapour retarder membrane:
 - .1 Perm-A-Barrier by Grace, Blueskin SA by Henry Co., ExoAir 110 by Tremco, Air Shield by W.R. Meadows, AquaBarrier AVB by IKO, AirTight 40 by Blok-Lok, or Sopraseal Stick 1100T by Soprema Canada
 - .2 When ambient or surface temperatures are below 5°C, use low temperature versions of these products.
- .2 Through-wall flashing:
 - .1 Perm-A-Barrier Wall Flashing by Grace, Blueskin TWF by Henry Co., ExoAir TWF by Tremco, Air Shield TWF by W.R. Meadows, AquaBarrier TWF by IKO, AirTight 40 by Blok-Lok, or Sopraseal WFM by Soprema.
- .3 Primer for vapour retarder:
 - .1 Perm-A-Barrier WB Primer by Grace, Blueskin Primer by Henry, ExoAir 10 Primer by Tremco, Mel-Prime by W. R. Meadows, S.A.M. Adhesive by IKO, or Elastocol Stick by Soprema.
- .4 Cavity Wall Insulation:
 - .1 Stone mineral wool fibre insulation board, semi-rigid, conforming to CAN/ULC S702, RSI value of 0.76m²K/W per 25.4mm (R-4.3/inch), with a flame spread rating of 0, smoke developed rating of 0, manufactured and sized to suit metric masonry coursing;
 - .2 Insulation shall be CavityRock by Rockwool International, Thermafiber Rainbarrier 45 by Owens Corning, or Cladstone by Johns Manville
 - .3 Cavity wall insulation to be 102mm thick, R-17.2, unless otherwise indicated on drawings or required by site conditions.
- .5 Batt Insulation: Rockwool International "Comfort Batt", Johns Manville "TempControl", or Owens Corning "Thermafiber UltraBatt", friction fit stone wool batts.
- .6 Other materials shall conform to the specifications of related Sections.

PART 3 - EXECUTION**3.1 DEMOLITION**

- .1 Refer to drawings for demolition plans and notes.
- .2 Reference to windows and doors below shall be interpreted as including all aluminum windows, curtain wall, entrance systems and doors, and all hollow metal doors, frames, and screens, complete with glazing, hardware and accessories, all as indicated to be replaced with new under this Contract.
- .3 Remove gypsum board, steel framing, vapour barrier and insulation at exterior walls as required to facilitate removal of existing windows and doors and installation of new windows and doors.
- .4 Remove all window blinds not indicated or noted to remain or be re-used.

- .5 Remove recessed drainage mats in Vestibules where noted on drawings.
- .6 Cut out and remove ceramic floor tile at building entrances where doors are being replaced, and elsewhere where indicated on drawings.
 - .1 Remove the first row (300mm width) of floor tile, in the door opening, completely.
 - .2 Where there are mismatched or broken tiles in the second row adjacent to the opening, remove that row completely.
 - .1 If the tiles in the second row are all intact and matching in appearance, they may all remain.
 - .2 Additional mismatched or broken tiles in the vicinity may required to be removed in addition to, or in lieu of, tiles in the first 600mm from the doors; confirm with Consultant on site.
 - .3 Refer to Section 09 30 00 for extent of new tile work.
 - .3 Chip out mortar and grout where tiles are removed and clean, ready for new work.
- .7 Remove all existing windows and doors indicated to be replaced with new. Removals shall be coordinated with installation of new windows, doors, frames and screens in each opening.
- .8 Remove all joint sealants and related materials at perimeter of windows and doors being removed. Clean openings and leave ready for installation of new windows and doors and joint sealants.
- .9 Any items noted to be re-used or re-located are to be removed carefully, packaged appropriately, clearly labelled, and handed over to Contractor.
- .10 Upon discovery of mould or mouldy materials remove and dispose of these separately.
- .11 If any additional materials suspected to contain asbestos and other designated substances are encountered, do not disturb these materials. Inform the Consultant of the location and extent of suspect material. Do not resume work in this area until it has been cleared by an Abatement Consultant.
- .12 Do not burn any refuse or debris at the site.

3.2 REPAIRS TO EXISTING WALLS AND FINISHES

- .1 Repair damage to existing walls where finishes are removed to accommodate frame replacement.
- .2 Masonry:
 - .1 Repair existing damage to masonry at window sills, jambs and heads with patching compounds and fillers.
 - .2 Remove peeling and flaking paint prior to installation of new windows.
 - .3 Leave masonry surrounding frames in good condition, ready for repainting.

SECTION 02 40 00 - DEMOLITION AND ALTERATIONS

.3 Gypsum Board:

- .1 Remove gypsum board and framing around openings as required to facilitate removal of existing frames and installation of new frames.
 - .2 Cut out and replace sections of gypsum board and framing damaged by the work of this Contract.
 - .3 Replace insulation and vapour barrier where damaged by this work.
 - .4 Refer to section 09 29 00 for gypsum board work.
- .4 All repairs to be completed to level required for finish painting.

3.3 REMOVAL OF CEILINGS

- .1 Remove sections of existing ceilings and bulkheads in areas where they interfere with the demolition or installation work.
- .2 Where acoustic tile ceilings are to be removed to accommodate work, and later reinstalled, carefully disassemble ceilings to the extent required. Clean all components, wrap for protection, clearly label package contents, and store in a safe location until they are to be reinstalled. If any ceiling tile is damaged during the work, replace with new fire-rated panels to match the appearance of the existing panels.
- .3 Repair damage to gypsum board ceilings and bulkheads to remain, to level required for finish painting.

3.4 ELECTRICAL WORK

- .1 Engage a licenced electrician to do all removals, relocations, and reinstallations of electrical and, wiring, and accessories as identified on drawings.
- .2 Obtain all permits required for electrical work. Permit fees are to be paid by the Contractor for reimbursement through the Cash Allowance included in the Contract.
- .3 Provide electrical work for auto door operators; refer to drawings and door schedule. Provide power to door operators where indicated on drawings.
 - .1 Supply and install conduit from auto operator locations to push button locations, complete with gang boxes, for installation of low voltage wiring by hardware installer.
 - .2 Coordinate with forces installing new doors and frames to provide accommodations for wiring and conduit for hardware. Where conduit is to be surface mounted, bring conduit down inside door frames and provide raceway horizontally on wall to push button locations.
 - .3 Raceways for surface mounted wiring and conduit shall be Legrande Wiremold 500/700 Series Small Raceway or equal.

3.5 COMPLETION OF WORK

- .1 Remove all surplus materials, equipment and rubbish from the site.
- .2 Leave site in condition to meet approval of the Consultant.
- .3 On completion of Demolition work, thoroughly clean all existing surfaces to remain, including ceiling space. No debris or dirt shall remain to be enclosed by new construction.

END OF SECTION

SECTION 04 01 00 - REPAIR AND RESTORATION OF UNIT MASONRY

PART 1 - GENERAL

1.1 WORK INCLUDED

- .1 Masonry Repairs
 - .1 Replacement of broken masonry units at frames, including staining to match existing brick.
 - .2 Masonry work as indicated on drawings.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- .1 Demolition and Alterations Section 20 40 00
- .2 Hollow Metal Doors and Frames Section 08 11 13
- .3 Aluminum Windows Section 08 51 13

1.3 REFERENCES

- .1 CSA Group:
 - .1 CSA A82 Fired Masonry Brick Made From Clay or Shale
 - .2 CAN/CSA A179 Mortar and Grout for Unit Masonry
 - .3 CSA A370 Connectors for Masonry.
 - .4 CAN/CSA A371 Masonry Construction for Buildings
 - .5 CSA A3000 Cementitious Materials Compendium
- .2 ASTM International:
 - .1 ASTM C270 Standard Specification for Mortar for Unit Masonry
 - .2 ASTM C207 Standard Specification for Hydrated Lime for Masonry Purposes
- .3 Brick Industry Association
 - .1 BIA Technical Note 8B Mortars for Brickwork - Selection and Quality Assurance
 - .2 BIA Technical Note 18A Accommodating Expansion of Brickwork
 - .3 BIA Technical Note 20 Cleaning Brickwork
 - .4 BIA Technical Note 46 Maintenance of Brick Masonry
- .4 Meridian Brick: Weatherproofing Masonry for Northern Climates
- .5 National Research Council (NRC)
 - .1 Construction Technology Update No. 67 Repointing Mortars for Older Masonry Buildings - Design Considerations
 - .2 Construction Technology Update No. 68 Repointing Mortars for Older Masonry Buildings - Site Considerations

1.4 QUALITY ASSURANCE

- .1 Subcontractor shall be a company specializing in commercial masonry work and masonry restoration, with minimum five (5) years documented experience in masonry restoration projects.
- .2 Masonry restoration work shall be executed under the continuous supervision and direction of a competent foreman familiar and experienced with the materials and methods specified and with the design requirements for masonry restoration.

SECTION 04 01 00 - REPAIR AND RESTORATION OF UNIT MASONRY

- .3 Perform masonry work to CSA-A371.

1.5 SUBMITTALS

- .1 Submit product data sheets for all materials proposed for use, in accordance with Section 01 33 23.
- .2 Obtain Consultant's final approval of brick samples prior to ordering materials.
- .3 Submit colour samples of colour matched materials, for review by Consultant on site.
- .4 Submit technical data sheet for mortar mixtures. Indicate related standards and mortar properties in terms of compressive strength, water retention and air content. Provide all test certificates required for mortar mixture lots delivered to site.

PART 2 - PRODUCTS**2.1 MATERIALS**

- .1 Brick:
 - .1 Burned clay brick to CAN/CSA A82.1, Type FBX, Grade SW, as manufactured by Meridian Brick or Brampton Brick.
 - .2 To match sizes and textures of existing brick, and to be of similar colours.
 - .3 Brick to be tinted to match existing.
- .2 Obtain materials for patching, coating, crack repair, setting, and repointing from a single manufacturer to ensure compatibility and matching in quality, colour, and texture.
- .3 Mortar:
 - .1 Sand: fine grain aggregate, graded in accordance with CSA-A179
 - .2 Water: potable, free of ice and any contaminants, to CSA A179.
 - .3 Portland cement: to CAN/CSA-A5 normal Type 10.
 - .4 Hydrated lime: type 'S', in accordance with ASTM C207
 - .5 Colouring agent: As recommended by mortar manufacturer. Colour to match existing at each site.
- .4 Metal Anchors: Conforming to Ontario Building Code.
- .5 Wall Ties:
 - .1 For brick veneer to existing masonry, concrete or brick:
 - .1 BL-5407 Repair and Restoration masonry fastener by Blok-Lok, stainless steel.
 - .2 For masonry to existing masonry:
 - .1 Torq-Lok Mechanical Anchoring System by Blok-Lok; Torq-Lok 510 Series Anchors.
- .6 Brick Stain: Staining shall be the products of Nawkaw Corporation, or PermaTint.

2.2 MORTAR MIX

- .1 All mortars to be cement-lime type.

SECTION 04 01 00 - REPAIR AND RESTORATION OF UNIT MASONRY

- .2 Repointing mortar shall be Type 'O' mortar. Compressive strength to be minimum 2.4 MPa at 28 days.
 - .1 Repointing Mortar shall be pre-blended, pre-packaged Type O mortar, "MasonCare 300" as manufactured by King Masonry Products, or "Restomix" as manufactured by Daubois. Colourants to be premixed with mortar materials.
 - .2 Colour to match existing mortars at each site.
- .3 Bedding mortar, where required, shall be pre-blended, pre-packaged Type 'N' mortar; "King 1-1-6" by King Masonry Products or "Betomix Plus Type N" by Daubois.
- .4 Compressive strength of mortars must not exceed the compressive strength of the masonry units with which they are being used. Compressive strengths of mortars shall conform to CSA Standard A179.

2.3 GROUT

- .1 Grout:
 - .1 Fine grout to CSA A179, with sufficient water to produce pouring consistency without segregation of ingredients, but to retain cohesiveness.
 - .2 Grout shall be pre-blended, pre-packaged, Portland cement based, low compressive strength grout; Cellfiller E-15, as manufactured by King Masonry Products
 - .3 Compressive strength shall not exceed the compressive strength of the masonry units.

PART 3 - EXECUTION

3.1 GENERAL

- .1 Review drawings and inspect walls to determine the scope of repair work required. The bricks that are damaged by frame removals shall be replaced with new masonry to match existing.

3.2 PREPARATION

- .1 Where indicated, remove heavily spalled, loose and broken brick, for replacement with new brick. To remove brick, first cut out surrounding mortar, to prevent damage to adjacent brick. Brick to be removed can be broken to facilitate removal.
- .2 Where bricks are removed, carefully remove surrounding mortar back to remaining masonry. Remove all debris and dust by brushing or vacuuming.
- .3 Cut out sections shall be squared off at the edges.
 - .1 Do not overcut corners of the patch; stop short of corner and chip out remainder by hand without damaging surrounding masonry.
 - .2 Do not allow any feathered edges in the patch areas.
- .4 Once the deteriorated material in an area has been removed, remove rust on any exposed anchors by wire brush.
 - .1 Remove material around steel anchors to provide a minimum of 6mm clearance.

SECTION 04 01 00 - REPAIR AND RESTORATION OF UNIT MASONRY

.2 Apply approved rust -inhibitive bonding agent to cleaned reinforcement.

.5 Remove torn, deteriorated, and inelastic sealants.

.6 Take care not to damage flashing, adjacent masonry, or other surfaces. Repair damage, or replace items, to make good.

3.3 JOINT PREPARATION

.1 Prepare joints for repointing by raking out joints to a continuous, uniform depth. Depth shall be equal to twice the joint thickness. Ensure mortar remaining is sound.

.2 Rake out joints by hand chisel where vermiculite or asbestos containing material is present in cavity wall. Take care not to damage the edges of the existing masonry.

.3 If the Contractor proposes to use power tools to rake out joints, the method must be demonstrated on site for the Consultant. The procedure must be shown to be effective and without damage to masonry. Do not proceed until the procedure is accepted by the Consultant.

.4 After raking, clean joints by brushing or vacuuming, and wash down with water spray to remove dust and debris.

3.4 MIXING OF MORTAR

.1 Mix mortar ingredients thoroughly in quantities needed for immediate use. Colour of mortar shall match colour of existing mortar.

.2 Mix mortar in mechanical mixer operated until materials are homogeneously blended, but not less than 3 minutes after all materials are in mixer.

.3 Hand mixing permitted provided quantities of materials and water are accurately controlled, and that method of mixing is approved by Consultant.

.4 Mason to review mixing procedures with mortar manufacturer.

.5 Obtain manufacturer's approval for any additives.

.6 Comply with the manufacturer's written specifications and recommendations for mixing, application, and curing of grouts and patching materials.

.7 Pre-hydrate repointing mortar to reduce shrinkage.

.1 re-hydrate mortar 1 to 1 ½ hours before it will be used.

.2 Mix ingredients with only enough clean water to create a damp mixture, capable of forming a ball.

3.5 REPOINTING

.1 Ensure raked out joints are clean, as specified above, prior to commencing repointing work.

.2 Dampen joints to ensure adequate bonding, and allow masonry to absorb all surface water before proceeding with the work.

SECTION 04 01 00 - REPAIR AND RESTORATION OF UNIT MASONRY

- .3 Add just enough water to pre-hydrated mortar to bring to a workable consistency.
- .4 Pack mortar into joints in multiple layers, in depths of no more than 6mm at one time.
- .5 Completely fill joints with mortar. This is a mandatory requirement. If inspection reveals that this requirement has not been met the mortar must be raked out and the joints repointed again, in accordance with this Specification, at no additional cost to the Owner.
- .6 Repointed joints shall be tooled to concave shape.
- .7 Tooling of joints shall consist of compressing mortar as the work proceeds with a non-staining (plastic or stainless steel) tool to produce a dense, perfectly flush or concave joint.

3.6 REPLACEMENT OF DAMAGED BRICK

- .1 Ensure voids and areas to receive new brickwork are clean and free of any debris or contaminants that could interfere with bonding.
- .2 To ensure adequate bonding, dampen adjacent masonry surfaces and allow masonry to absorb all surface water before proceeding with the installation of replacement bricks.
- .3 To install single bricks, coat brick, and surfaces in which it will be installed, with mortar. Centre brick in opening and push into place. Remove excess mortar and point around the brick, tooling as described above for repointing.
- .4 Bond: Maintain existing bond patterns, including soldier courses, rowlock bands, etc.
- .5 Provide special shapes at outside corners; 45 degree, cut brick will not be acceptable.
- .6 Where ends of bricks are exposed, as at corners and rowlocks, the end of the brick must match the finished face of the adjacent bricks.
- .7 Where sections of brick are removed, rather than individual bricks, brick shall be tied to structure with specified brick ties.
- .8 Brick ties:
 - .1 Locate masonry anchors at maximum 820mm on centre horizontally and at maximum 600mm intervals vertically. Tie location, spacing, and pattern shall conform to CSA-S304.1.
 - .2 Pre-drill for anchors using appropriate type and size of bit. Provide minimum embedment of 25mm.
 - .3 Install brick ties in accordance with manufacturer's instructions.
- .9 Weep Hole Vents: Where bricks are replaced at window sill location, remove old weeper vents and provide new.

3.7 STAINING OF NEW BRICK

- .1 As the new brick colour will not match the existing exactly, provide staining of new brick that will be exposed in the wall.

SECTION 04 01 00 - REPAIR AND RESTORATION OF UNIT MASONRY

- .2 Stain shall be applied with brush or roller to new areas of brick and individual new bricks.

3.8 PROTECTION

- .1 Protect both existing brickwork from staining as the work progresses. Cover brick with 6mil polyethylene sheets to protect brick finishes.
- .2 Protect all adjacent materials (i.e. precast concrete, aluminum windows, metal cladding, hollow metal frames etc.) from mortar droppings.

3.9 CLEANING

- .1 Clean clay masonry units as work progresses.
- .2 Do all cleaning at completion of work in conformance with Section 01 74 00.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK

- | | | |
|----|-------------------|------------------|
| .1 | Joint Sealants | Section 07 92 00 |
| .2 | Hollow Metal Work | Section 08 11 13 |
| .3 | Aluminum Windows | Section 08 51 13 |

1.2 STANDARDS

- | | | |
|----|----------------|---|
| .1 | CAN/ULC-S710.1 | Standard for Thermal Insulation - Bead Applied One-Component Polyurethane Air Sealant Foam, Part 1: Material Specification; Class I |
| .2 | CAN/ULC-S710.2 | Standard for Thermal Insulation - Bead Applied One-Component Polyurethane Air Sealant Foam, Part 2: Application |
| .3 | ASTM E84 | Standard Test Method for Surface Burning Characteristics for Building Materials |
| .4 | ASTM E814 | Standard Test Method for Fire Tests of Through-Penetration Fire Stops |

1.3 SUBMITTALS

- .1 Submit samples to 01 33 23.
- .2 Submit manufacturer's affidavits that the products meet or exceed specified requirements and listed standards. Submit in accordance with Section 01 33 23.
- .3 Submit manufacturer/s project data for materials, providing descriptions suitable for identification of products on site. Include manufacturer's printed installation instructions.

1.4 STORAGE AND HANDLING

- .1 Deliver and store materials in the original packaging, with manufacturer's seals and labels intact. Store and protect from damage in accordance with manufacturer's recommended procedures.
- .2 Keep containers tightly closed when not in use.
- .3 Keep Products away from direct sunlight.
- .4 Do not incinerate aerosol canisters.

1.5 WARRANTY

- .1 Provide extended warranty to **two (2) years** from date of Substantial Performance.

SECTION 07 27 10 - AIR SEALANT FOAM

PART 2 - PRODUCTS**2.1 MATERIALS****.1 Insulating Foam Sealants:****.1 Low Pressure Type, for windows and doors:****.1 Semi-flexible soft, single-component polyurethane foamed-in-place sealant, to CAN/ULC-S710.1; and having the following properties:**

- .1 Core Density (ASTM D1622): 27.24 kg/m³**
- .2 Fire Resistance (ASTM E84): Flame spread = 10, Smoke Developed = 20**
- .3 Cure Time: approximately 12 hours**
- .4 Tack-free Time: 6-9 minutes**

.2 Great Stuff Pro Window & Door Insulating Foam Sealant by Dow Chemical Canada**.2 General Purpose:****.1 Semi-rigid single-component polyurethane foamed-in-place sealant to CAN/ULC-S710.1; and having the following properties:**

- .1 Thermal Resistance: minimum RSI 0.67/25mm (R-3.8/inch)**
- .2 Fire Resistance (ASTM E84): Flame spread = 15, Smoke Developed = 20.**
- .3 Cure Time: approximately 1 hour.**
- .4 Tack-free Time: 6-7 minutes.**

.2 Great Stuff Pro Gaps and Cracks Insulating Foam Sealant by Dow Chemical Canada.**.2 Flexible Foam Sealant:****.1 One-component, minimal-expanding, flexible polyurethane foam to CAN/ULC-S710.1 material specification.****.2 Class I, with maximum flame spread rating of 25 and a maximum smoke developed rating of 50.****.3 Enerfoam Professional Foam Sealant as manufactured by Dow Chemical Canada.****.3 Primer : As recommended by sealant manufacturer.****.4 Substrate Cleaner: Non-corrosive type as recommended by sealant manufacturer and approved for use by manufacturers of substrate products.**

PART 3 - EXECUTION

3.1 INSTALLATION

- .1 Examine joints before sealing to ensure that Configuration, surfaces, and widths are suitable for sealant and service, and that execution of sealing and performance of sealant will not be adversely affected. Defective work resulting from application to unsatisfactory joint conditions will be considered the responsibility of those performing the work of this section.
- .2 Where foam sealants are used around windows and doors, use only low pressure type.
- .3 Install materials in accordance with manufacturer's printed instructions, as acceptable to Authorities Having Jurisdiction, and to the Consultant/s satisfaction.
- .4 Proceed with air sealant only when air, substrate and surfaces in contact with air sealant are completely dry.
- .5 Apply foamed-in-place air sealant foam when ambient air temperature is greater than -3 °C and less than 44 °C.
- .6 Prepare joints by brushing, scrubbing, scraping or grinding inner face surfaces to remove loose mortar, dust, oil, grease, oxidation, mill scale, and other materials which will affect adhesion and integrity of sealant, and dry with clean cloths. Ensure that surfaces have not been coated with releasing agents, coating or other treatments, or that they are entirely removed.
- .7 Finished joints to be free of air pockets, imbedded foreign materials and cut back after curing to be flush with surrounding materials.
- .8 Do not allow sealants to cover or spot surfaces outside of joints. Use masking tape to prevent, if necessary.
- .9 Seal all joints where air leakage can occur, including at joint shoes, under base plates, between door and window frames and rough openings, around electrical and plumbing boxes and conduits that penetrate vapour barriers, around ceiling fixtures that penetrate attics, air ducts and over top of exterior walls including wall plates at underside of slabs, metal decks, and precast slabs. An at any other location specified on the drawings, or in the caulking schedule, for air leakage sealing. Do not attempt to seal gaps wider than 75mm.
- .10 Insulating foam sealant is not to be relied upon as a permanent air/vapour barrier, and does not replace the requirement for a fully continuous air/vapour barrier seal with the specified air/vapour barrier system components specified elsewhere.
- .11 Where air leakage sealant is to be faced by other caulking materials for finishing purposes, ensure sealant is cut back or recessed to sufficient depth for finishing caulking.
- .12 Foam air sealant may not be permanently exposed to ultra-violet radiation; paint or cover exposed foam.

SECTION 07 27 10 - AIR SEALANT FOAM

3.2 CLEANING AND PROTECTION

- .1 Remove from surfaces of other work sealant smears, droppings and masking tape immediately after sealant has cured to a hard surface film.
- .2 Clean surfaces soiled by work of this Section. Do not use cleaning methods that will damage surrounding surfaces. Make good work cleaning has damaged under work of this Section.
- .3 Upon completion of work, remove materials, equipment and debris from site. Leave installed work protected from damage for duration of construction period.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK

.1	Air Sealant Foam	Section 07 27 10
.2	Hollow Metal Doors and Frames	Section 08 11 13
.3	Aluminum Windows	Section 08 51 13
.4	Ceramic Tile	Section 09 30 00

1.2 REFERENCE STANDARDS

.1	ASTM International:	
.1	ASTM C 510	Standard Test Method for Staining and Color Change of Single- or Multicomponent Joint Sealants
.2	ASTM C 719	Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle)
.3	ASTM C 794	Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants
.4	ASTM C 834	Standard Specification for Latex Sealants
.5	ASTM C920	Standard Specification for Elastomeric Joint Sealants
.6	ASTM C 1087	Standard Test Method for Determining Compatibility of Liquid- Applied Sealants with Accessories Used in Structural Glazing Systems
.7	ASTM C 1193	Standard Guide for Use of Joint Sealants
.8	ASTM C 1247	Standard Test Method for Durability of Sealants Exposed to Continuous Immersion in Liquids
.9	ASTM C 1248	Standard Test Method for Staining of Porous Substrate by Joint Sealants
.10	ASTM C 1311	Standard Specification for Solvent Release Sealants
.11	ASTM D 2203	Standard Test Method for Staining from Sealants

1.3 APPROVED MANUFACTURERS

- .1 The products of the following manufacturers are approved for use subject to meeting the specifications for the particular type of sealants listed below. However, this is not an approval to substitute another type of sealant for those specified unless the material manufacturer requests change in his product in writing to the Consultant.
 - .1 Canadian General Electric Company Ltd.
 - .2 Dow Corning Canada Inc.
 - .3 Tremco
- .2 Material manufacturers must be willing to review Shop Drawings and drawing details, visit the site to review sealant installation and provide written reports to the Consultant.

1.4 INSTALLER QUALIFICATIONS

- .1 Sealants and caulking shall be installed by a specialized Subcontractor, having skilled mechanics thoroughly trained and competent in all aspects of caulking work, with minimum 5 years documented experience.

SECTION 07 92 00 - JOINT SEALANTS

1.5 SUBMITTALS

- .1 Submit samples of each sealant, in conformance with Section 01 33 23.
- .2 Provide colour cards for Consultants selection.
- .3 Submit written adhesion and compatibility approval from the sealant manufacturer for all materials to be sealed.

1.6 WARRANTY

- .1 Extend Contractor's warranty to **five (5) years**, in writing. Warranty shall commence on the date of Substantial Performance.
- .2 Defective work shall include, but not be restricted to, joint leakage, cracking, crumbling, melting, running, loss of adhesion, loss of cohesion, or staining of adjacent surfaces
- .3 Provide manufacturer's project-specific 20 year non-staining warranty and 10 year weatherseal warranty for "Type A" sealant listed below.

PART 2 - PRODUCTS**2.1 MATERIALS**

- .1 Sealant Type A: For exterior locations. Non-Staining, primer less, silicone weather-proofing sealant:
 - .1 SilPruf SCS9000 NB, manufactured by Canadian General Electric Company Limited,
 - .2 Dow Corning 756 SMS, manufactured by Dow Corning Canada Inc., or
 - .3 Spectrem 3, manufactured by Tremco Ltd., and
 - .4 conforming to the product properties published.
 - .5 to ASTM C920 Type S, Grade NS, Class 50, Use NT, M, G, A, and O
- .2 Sealant Type B: For interior locations. Non-staining, primer less, silicone hybrid sealant:
 - .1 SCS7000, manufactured by Canadian General Electric Company Limited.
 - .2 Dow Corning 756 SMS, manufactured by Dow Corning Canada Inc., or
 - .3 Spectrem 3, manufactured by Tremco Ltd.
 - .4 to ASTM C920 Type S, Grade NS, Class 50, Use M, G, A, and O
- .3 Colours of sealants and caulking when exposed in the finished work to later selection by the Consultant. Allow different colours for different situations and materials. Allow for custom colours for exterior sealants.
- .4 Primers for sealing: As manufactured or recommended by the manufacturer of the sealing materials for the specific applications.
- .5 Joint backing material:
 - .1 circular foam strips, of approved manufacture, compatible with sealant and 50% greater width than joint width;

- .2 Vertical Surfaces: extruded polyolefin foam, Sof Rod by Tremco Ltd.
- .3 Horizontal Surfaces: closed cell polyethylene foam, Standard Backer Rod by Tremco.
- .6 Bond Breaker: pressure sensitive plastic tape backing material, which will not bond to sealant; 3M #226 or #481, or Valley Industries #40.
- .7 Cleaning material for surfaces to receive sealant to be as recommended by the manufacturer of the sealant.

PART 3 - EXECUTION

3.1 LOCATIONS

- .1 Seal all exterior junctions and joints wherever required to close gap and wherever sealant is essential to maintain the continuity of air barrier, water barrier, or non-rated smoke separation of wall with Sealant Type A. Areas to be caulked include:
 - .1 Concrete to metal, masonry, concrete and precast concrete.
 - .2 Masonry to metal, concrete, precast concrete, and masonry.
 - .3 Metal to metal, masonry, concrete, and precast concrete.
 - .4 Around pipes and conduit through foundation walls.
 - .5 Between hollow metal frames and screens and adjacent materials.
 - .6 Between metal siding and metal panels and adjacent materials.
 - .7 Between door and window frames and sills and adjacent materials.
 - .8 At all control and expansion joints.

3.2 SUPERVISION

- .1 Unless specified otherwise herein comply with the recommendations and directions of the manufacturer whose materials are being used on the work.
- .2 Arrange for the sealant manufacturer's technical representatives to visit the site prior to the commencement of the sealing to meet with the Contractor and the Consultant.
- .3 Sealant manufacturer to visit site periodically and to provide written reports to Consultant ensuring sealant is in accordance with good trade practice, the manufacturer's recommendations and the intent of this Specification.

3.3 PREPARATION

- .1 Install sealants only when surfaces and ambient temperatures are suitable for the material used, as per manufacturer's recommendations.

SECTION 07 92 00 - JOINT SEALANTS

- .2 Clean all joints and spaces to be sealed.
- .3 Ensure that surfaces are structurally sound, free from grease, chalk or other contaminants which may adversely affect the adhesion of the sealing materials. Use dry oil free clean compressed air stream if necessary to clean out the joint.
- .4 Clean surfaces with a solvent or cleaner recommended by the manufacturer of the sealant materials.
- .5 Remove chalk lines completely. Do not place clear sealant over coloured chalk lines.
- .6 Test materials for indications of staining or poor adhesion before any sealing is commenced.
- .7 Submit colour chart to Consultant and obtain his written instructions for colours and locations of colours.

3.4 PRIMING

- .1 If recommended by the manufacturer of the sealing materials, prime joints to prevent staining, or to assist the bond, or to stabilize porous surfaces.
- .2 Apply primer with a brush which will permit the priming of all joint surfaces.

3.5 MASKING

- .1 Where necessary to prevent contamination of adjacent surfaces, mask the areas adjacent to the joints with masking tape.

3.6 INSTALLATION

- .1 Install joint backing materials at all locations as detailed or where required by sealant manufacturer's printed directions.
- .2 Install a bondbreaker tape or packing over asphalt impregnated fibre board as recommended by sealant manufacturer.
- .3 Ensure that the correct sealant depth is maintained.
- .4 Finished joints shall be free of wrinkles, sags, air pockets, ridges and embedded impurities.
- .5 Tool all sealant surfaces to produce a smooth surface.
- .6 Remove droppings and excess sealant as work progresses and before material sets.
- .7 Sealing materials shall be gun grade or tool grade consistency to suit the joint conditions.
- .8 Commence sealing only after all adjacent surfaces have been painted under Painting Section.

3.7 CLEANING

- .1 Clean adjacent surfaces immediately and leave work neat and clean. Remove excess sealant and droppings using recommended cleaners as work progresses. Remove masking after joint tooling.

END OF SECTION

SECTION 08 11 13 - HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 WORK INCLUDED

- .1 Supply and install all hollow metal products including doors, frames, transom frames, screens, and sidelight assemblies with provision for glazed, panelled or louvred openings.
- .2 Cutting out damaged (rusted) sections of door frames and welding replacement sections to frames.
- .3 Work shall include the following:
 - .1 Door cutouts, complete with reinforcing, stops and closers required for glazing.
 - .2 Reinforcing for Finishing Hardware.
 - .3 Preparations for wiring for security and control systems and electronic hardware.
 - .4 Supply of all necessary fastening and anchoring devices for above items.
 - .5 Steel closure pieces at metal panels, steel columns, horizontal members, and hollow metal frames and screens. Refer to Drawings.
 - .6 Metal panels in hollow metal frames.
 - .7 Provision of zinc-rich coating on all exterior steel doors, frames and screens.
 - .8 Fire rated and labelled doors, frames, and screens, glazed and unglazed, where noted on schedule.
 - .9 Supply and install HSS and channel reinforcing members where shown at screens and door frames/sidelights.
 - .10 Supply and install door silencers on metal frames.

1.2 RELATED WORK

- | | | |
|----|----------------------------|------------------|
| .1 | Demolition and Alterations | Section 02 40 00 |
| .2 | Joint Sealants | Section 07 92 00 |
| .3 | Door Hardware | Section 08 71 00 |
| .4 | Glazing | Section 08 81 00 |
| .5 | Painting | Section 09 92 00 |

1.3 REFERENCES

- .1 ULC Standards:
 - .1 CAN/ULC-S104 Standard Method for Fire Tests of Door Assemblies
 - .2 CAN/ULC -S105 Standard Specification for Fire Door Frames Meeting the Performance Required by CAN/ULC-S104
 - .3 CANULC-S106 Standard Method for Fire Tests of Window and Glass Block Assemblies

SECTION 08 11 13 - HOLLOW METAL DOORS AND FRAMES

- .2 Canadian Steel Door Manufacturers Association (CSDMA):
 - .1 Recommended Specifications for Commercial Steel Doors and Frames
 - .2 Recommended Dimensional Standards for Commercial Steel Doors and Frames
 - .3 Recommended Specifications for Sound Retardant Steel Doors and Frames
 - .4 Canadian Fire Labelling Guide for Commercial Steel Door and Frame Products
 - .5 Guide Specification for Installation and Storage of Hollow Metal Doors and Frames
- .3 CSA Group:
 - .1 CSA W59 Welded Steel Construction (Metal Arc Welding)
 - .2 CSA S136 North American specification for the design of cold-formed steel structural members
- .4 ASTM International:
 - .1 ASTM A653/A653M Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
 - .2 ASTM A1008/1008M Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable
 - .3 ASTM C518 Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
 - .4 ASTM C553 Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications
 - .5 ASTM C578 Specification for Rigid, Cellular Polystyrene Thermal Insulation
 - .6 ASTM C591 Standard Specification for Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation
 - .7 ASTM C665 Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing
 - .8 ASTM C1289 Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board
- .5 American National Standards Institute:
 - .1 NFPA 80 Standard for Fire Doors and Fire Windows
 - .2 ANSI A250.4 Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors Frames and Frame Anchors
 - .3 ANSI/DHI A115.IG Installation Guide for Doors and Hardware
 - .4 ANSI A250.11 Recommended Erection Instructions for Steel Frames

1.4 PERFORMANCE

- .1 Doors and frames covered by this specification shall be certified as meeting Level "A" acceptance criteria when tested in strict conformance with ANSI-A250.4. Swing Test duration shall be 1,000,000 cycles. For door twist tests maximum deflection is not to exceed 32mm (1 ¼ ") when loaded to 136kg (300 lbs), and permanent deflection is not to exceed 3.2mm (1/8"). Tests shall be conducted by an independent nationally recognized accredited laboratory.

SECTION 08 11 13 - HOLLOW METAL DOORS AND FRAMES

- .2 Fire labelled product shall be provided for those openings requiring fire protection and as determined and scheduled by the Consultant. Doors, frames, transom frames and sidelight assemblies shall be tested in strict accordance with CAN/ULC-S104. Product shall be listed by Underwriters Laboratories of Canada under an active Factory Inspection Program and shall be constructed as detailed in Follow-Up Service Procedures issued to the manufacturer.
- .3 Core materials for exterior doors shall attain a thermal resistance rating RSI 1.06 (R6.0) when tested in accordance with ASTM C518.
- .4 Product quality shall meet, or exceed, standards set by the Canadian Steel Door Manufacturers Association.

1.5 QUALITY ASSURANCE

- .1 Supply all steel door and frame product from one manufacturer member company of the CSDMA.
- .2 Manufacturer must be capable of labelling the fire rated doors, frames, and screens, glazed with specified fire glass. Refer to Section 08 81 00 for fire glass specifications. No Georgian Wired Glass will be permitted on the job.
- .3 CSDMA Specification 08 11 13 "Commercial Steel Doors and Frames" is the minimum fabrication standard for this section, as if printed in its entirety herein, except where specified otherwise.
- .4 Handle and install product in strict compliance with CSDMA 08 11 13, DHI A115.IG and NFPA 60.

1.6 SUBMITTALS

- .1 Submit confirmation that the manufacturer can label all fire rated doors, frames, and screens, glazed with the fire rated glass to be used on the project, for the fire separation required.
- .2 Prepare and submit shop Drawings in accordance with Section 01 33 23, and show the following:
 - .1 Door and frame schedules, identifying each unit, with door numbers referencing the numbering in the contract documents.
 - .2 Provide columns for Stock Code Numbers for both doors and frames.
 - .3 Typical and special details; including mortises, reinforcements, anchorages, locations of exposed fasteners, openings (glazed, panelled or louvered) and arrangement of hardware.
 - .4 Materials and finishes; including steel, core, material thickness.
 - .5 Hardware preparation.
 - .6 Frame anchorage details.

SECTION 08 11 13 - HOLLOW METAL DOORS AND FRAMES

- .7 Submit manufacturer's standard catalogue data for specified products demonstrating compliance with referenced standards.
- .8 Other pertinent information.
- .3 Submit information on standard shop drawing sheets as approved by the Canadian Steel Door and Frame Manufacturers Association.
- .4 Shop drawings for hollow metal screens over 8m² in size, and for all screens which are required by code to be designed as guards at variations in floor level, must be sealed by a professional engineer, registered in the Province of Ontario.
- .5 Submit manufacturer's printed installation instructions.
- .6 Operation and Maintenance Data: Include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance.

1.7 PRODUCT HANDLING

- .1 Matchmark doors, panels, frames and windows with Stock Code Numbers as shown on the Door Schedule. If Stock Code Numbers are not shown on the Schedule, matchmark with Door Numbers.
- .2 Deliver, store and handle components so as to prevent damage, distortion and corrosion.
- .3 Store Steel Frames under cover, raised on wood skids at least 100mm above grade, and as required to prevent damage and rusting. Store assembled frames in an upright position. Stack frames to prevent twisting; maximum 5 units per stack. Provide minimum 6mm airspace between frames to permit air circulation. Covers must be vented so as to avoid a build-up of humidity within.
- .4 Doors to be delivered to site immediately prior to installation. Store doors protected at corners to prevent damage or marring of finish. Store in upright position, in enclosed, dry space, in a manner to prevent rust and damage. Use vented covers.

1.8 WARRANTY

- .1 Provide an extended warranty of **three (3) years** from date of Substantial Performance against defects of workmanship including failure of welded seams or of reinforced hinge anchorage plates. Work showing defects during this period shall be repaired or replaced without cost to the Owner.

PART 2 - MATERIALS**2.1 MATERIALS**

- .1 General: All materials shall be new and suitable for their various purposes and shall be free from flaws and imperfections.

SECTION 08 11 13 - HOLLOW METAL DOORS AND FRAMES

- .2 All doors, frames, and screens shall be from one manufacturer. Only the following manufacturers will be accepted:
 - .1 Manufacturers:
 - .1 Fleming Baron Door Products (Assa Abloy)
 - .2 Daybar Industries Ltd.
 - .3 All Steel Doors
 - .4 Gensteel Doors
 - .5 Metal Door
 - .6 Trillium Steel Doors
 - .7 Vision Hollow Metal
 - .2 Manufacturers must be able to provide and label the fire rated doors, frames, and screens required for this project, using the fire glass specified. If the manufacturer carried in the tender is not capable of providing the fire labelled products, the Contractor will be required to use one of the other listed manufacturers for the work, at no additional cost to the Owner.
- .3 Sheet Steel:
 - .1 General: cold rolled, carbon steel, tension levelled, to ASTM A924 and ASTM A1008/1008M, suitable for forming and bending without metal or coating fracture.
 - .2 Steel sheet to be galvanized to ASTM A653/A653M, commercial steel
 - .1 Steel for doors and interior frames to be hot-dipped galvanized; coating designation ZF120 (A40)
 - .2 Steel for exterior frames to be hot-dipped galvanized; coating designation Z275 (G90)
- .4 Minimum Base Steel Thicknesses:
 - .1 Doors: 1.443mm (16 ga)
 - .2 Panels: 1.153mm (18 ga)
 - .3 Frames: 1.443mm (16 ga)
 - .4 Hinge Reinforcement: 3.416mm (10 ga)
 - .5 Minimum thickness to be based on CSA-S136.
- .5 Door Materials:
 - .1 Doors to be Fleming H-Series, 16 gauge, with continuous welded edge seams, or equal by one of the manufacturers listed above.
 - .1 Reinforce steel doors with 20 ga. vertical interlocking weld steel stiffeners at 150mm o.c., spot welded to face sheets.
 - .2 Semi-rigid rock wool insulation in all exterior doors.
- .6 Frame reinforcement:
 - .1 Reinforce frames for high frequency hinge preparation.
 - .2 Stiffen all mullions and hinge jambs with continuous 3.5mm channel where continuous hinges are required.
 - .3 Reinforce and provide cut outs and boxes for security devices.

SECTION 08 11 13 - HOLLOW METAL DOORS AND FRAMES

- .4 Reinforce for overhead stops.
- .7 Exterior Top Caps: galvanized steel caps, flush with top of door.
- .8 Zinc Rich Coating: ZRC 221 Cold Galvanizing Compound by ZRC Worldwide, low VOC coating, or equivalent approved by the Consultant.
- .9 Metal Filler: Two component epoxy type.
- .10 Primer: Rust inhibitive primer
- .11 Glass Stop Screws: Oval head, cadmium plated, self-tapping steel screws. Other mechanical locking methods may be used but shall be detailed on Shop Drawings for review.
- .12 Door Silencers: Rubber - Ives SR64 or approved equal.

2.2 FABRICATION

- .1 General
 - .1 Dissimilar metals in contact, or metals which will be in contact with concrete or masonry when installed, shall be insulated one from another by methods and materials required for such results, as approved by the Consultant.
 - .2 Components shall be the types and sizes shown on the Drawings.
 - .3 Reinforce components, where required, for the installation of Finishing Hardware. Drill and tap to suit templates.
 - .4 Prepare doors and frames for the installation of the security system. Confirm requirements with Consultant.
 - .5 Ensure adequacy of anchoring devices.
 - .6 No patching, plugging, skimming or other such means of overcoming defects, discrepancies or errors shall be resorted to without written permission of the Consultant.
 - .7 Fabricate components from clean steel, free of rust and scale, which has been thoroughly degreased.
 - .8 The dimensions shown on the Drawings are the full rebate size of the frame.
 - .9 In addition to specified requirements for hollow metal doors and frames, fire doors and frames shall comply with the Underwriters Laboratories requirements for the specified rating and be provided with the appropriate labels.
 - .10 All seams in exterior doors and frames must be continuously welded. No spot welding will be permitted. All welds must be ground flush. No visible seams will be accepted.

SECTION 08 11 13 - HOLLOW METAL DOORS AND FRAMES

- .11 All exterior steel doors, frames and screens to be painted with 2 coats of zinc-rich coating after fabrication and before delivery to site.
- .12 All areas where shop applied zinc-rich coating has been damaged on site shall immediately be cleaned and touched up with the same zinc-rich coating product.
- .13 Steel framed doors, screens and windows are to be glazed as specified in Section 08 81 00. Exterior doors and screens are to be prepared for double glazed units.
- .2 Edge Clearances
 - .1 Unless otherwise specified, allow edge clearances in accordance with Canadian Manufacturing Specifications for Steel Door and Frame Manufacturers Association.
 - .2 Where hardware items are to be attached to, or mortised into, bottom edges of doors, provide proper clearance between door and floor or threshold to accommodate such hardware.
- .3 Hardware Preparation
 - .1 Refer to Hardware Schedule, included in Section 08 71 05, and prepare doors for hardware listed.
 - .2 Templated hardware: prepare work in accordance with templates supplied AS SPECIFIED in Section 08 71 00. Prepare doors for mortice locksets according to Hardware Schedule.
 - .3 Reinforce doors and frames for concealed, mortised and surface mounted hardware in accordance to "Thickness of Steel for Component Parts" in the "Canadian Manufacturing Standards for Steel Doors and Frames", published by the Canadian Steel Door and Frame Manufacturers' Association.
 - .4 Prepare doors and frames for security system where noted.
 - .5 Prepare all exterior doors and vestibule doors and frames for four hinges or continuous hinges, as scheduled.
- .4 Hollow Metal Doors and Panels
 - .1 Doors and panels shall be of seamless, continuously welded construction with no visible seams or joints on faces. Doors to be 44.4mm minimum thickness.
 - .2 Secure edge seams with suitable continuously welded seams to the approval of the Consultant.
 - .3 Interlocking seams for doors shall be fully seam welded, for full length of door. All welding to be ground smooth.
 - .4 Core construction:
 - .1 All doors to be steel stiffened as specified herein.
 - .2 Exterior doors to be filled with glass fibre insulation between steel reinforcing.

SECTION 08 11 13 - HOLLOW METAL DOORS AND FRAMES

- .5 Welds shall be ground, filled, and dressed smooth to provide an invisible joint and smooth flush surface.
 - .6 Fully reinforce doors as required for specified hardware. All exterior, stairwell, and washroom doors and all doors classified as "high use" shall be reinforced with Fleming high frequency angle top hinge reinforcement, welded to door skin.
 - .7 Close top and bottom edges of doors with a continuous, recessed, minimum 1.5mm thick steel channel, extending full width of door and welded to both faces. At exterior doors, provide an additional flush closing channel at top edge and, where required for attachment of weather stripping, a flush closure at bottom edge. Provide similar closure channel at all stair doors.
 - .8 Surround openings in doors with minimum 1.5mm thick steel edge channels, welded to both face sheets.
 - .9 Vertical edge profile for single acting swing doors: bevelled 3mm in 50mm.
 - .10 Glazing Stops:
 - .1 Equip glazed doors with minimum 0.9mm steel glazing stops, mitred and welded at corners. Where least dimension of stop is less than 12mm, make stop from solid square bar.
 - .2 Glazing stops at outside of exterior doors and at secure side of interior doors shall be rendered non-removable by welding to door. Secure removable stops with screws.
 - .3 Glazing stops may be mechanically locked in place, providing details have been reviewed on Shop Drawings.
 - .11 Fabricate exterior panels with a full width steel drip on the outer, lower edge.
 - .12 Doors for installation in channel frames shall be double-depth mortised to accommodate both butt flanges.
- .5 Steel Frames
- .1 Frames shall be of sheet steel, formed profiles shown on the Drawings.
 - .2 Fabricate frames in sections as large as practicable to minimize field jointing. Internally reinforce all mullions and hinge jambs with 1.3mm channel.
 - .3 Steel thickness: 1.6mm (16 ga.) galvanized steel.
 - .4 Glazing stops shall be as specified for doors above.
 - .5 Sidelight framing shall be of same metal and thickness as adjacent door frame.
 - .6 Assemble components with accurately cut joints. Mitre outside corner joints of frames. Continuously weld joints on inside of profile; grind welds flush and sand to smooth uniform surface. Provide semi-rigid insulation to exterior frames.

SECTION 08 11 13 - HOLLOW METAL DOORS AND FRAMES

- .7 Tack weld two (2) removable 1.2mm steel spreader channels to inside faces of door frames at base, for protection during shipping.
- .8 Provide adjustable base clips at bottom of each door jamb for anchorage to floor.
- .9 Provide button type rubber silencers; three per strike jamb of single doors: two per head member of double door frames.
- .10 Prepare door frames for ANSI strike, where doors to be fitted with latchsets or lockets.
- .11 Provide removable mullions where noted. Reinforce removable mullions with 3.5mm channel to prevent forcing of latching hardware.
- .12 Masonry Anchors:
 - .1 Provide masonry anchors at rate of 3 per jamb up to 2.2m high; one additional per jamb for each 0.6m over 2.2m high.
 - .2 Anchors shall be designed for attachment to existing masonry openings, fabricated of galvanized 3mm steel plates, predrilled for fasteners.
- .13 Provide two 38mm by 38mm by 4.8mm thick steel stiffening angles in the head member of frames for two or more doors totalling over 1980mm, wide. Provide necessary vertical stiffeners where required and carry to structure above. Provide stiffener angles in all exterior door jamb with sidelights and in all centre mullions between doors.
- .14 Mounting bars for sidelights shall be as detailed on the Drawings and shall be completely filled with glass fibre insulation.

PART 3 - EXECUTION

3.1 GENERAL

- .1 Store doors and frames as specified under item 1.7, Product Handling, above.
- .2 When installing frames during cold weather, installer to coat inside of frames with a corrosion inhibiting bituminous product, prior to installation, to protect against cold weather additives in masonry grout.
- .3 Silencers, gaskets, etc., are to be installed in holes in frames prior to installation of frames; so to avoid filling these holes with grout during installation.
- .4 Keep steel surfaces free of grout, tar, other bonding materials, and sealers; clean surfaces immediately following installation.

SECTION 08 11 13 - HOLLOW METAL DOORS AND FRAMES

3.2 INSTALLATION**.1 Frame and Screen Installation**

- .1 Remove all steel spreaders, which are provided to avoid damage during shipping. Provide wood spreaders at base and midpoint of frames. Wood spreaders to be min. 38 x 89mm lumber, notched to clear frame stops; width to be equal to opening between jambs at header level. Wood spreaders to remain in place until frames are set permanently in walls.
- .2 Set frames and screens plumb, square, aligned, without twist and at correct elevation. Maximum allowable limits of distortion shall be as follows:
 - .1 Plumbness: Not more than 1.6 mm out of plumb, measured using a line from the intersection of vertical members and the head to the floor.
 - .2 Squareness: Not more than 1.6 mm difference between diagonal measurements between corners.
 - .3 Alignment: Not more than 1.6 mm, measured on jambs, through a horizontal line parallel to the plane of the wall.
 - .4 Twist: Not more than 1.6 mm, measured at face corners of jambs, on parallel lines perpendicular to the plane of the wall.
- .3 At masonry walls, install frames using masonry anchors. Provide vertical support at centre of head for openings exceeding 1200 mm in width.
- .4 After installation, fill countersunk screw heads flush with frame and sand smooth ready for painting. Fill exterior frames with glass fibre batt insulation. Cooperate with masonry trade to fill interior frames with mortar.
- .5 Where large screens are assembled on site, they must be joined by continuously welded seams, ground smooth. Provide formed covers for structural columns built into screens.

.2 Door Installation

- .1 Install hollow metal doors plumb and true.
- .2 Co-ordinate installation of hardware.
- .3 Adjust operable parts to ensure proper operation. Lubricate using a suitable lubricant compatible with door and frame coatings.
- .4 Install hollow metal panels with concealed fastenings.

3.3 WELDED REPAIRS

- .1 Neatly cut out rusted door jambs where indicated on drawings and weld new door jambs in situ.
- .2 Weld full height door jamb to door frame head with frame section matching existing.
- .3 Screw anchor jambs to masonry and fill solid with mortar.

3.4 TOUCH UP

- .1 Remove rust, clean and touch up any damaged galvanizing with "ZRC 221" coating.
- .2 Remove rust, clean and touch up any damaged paint with approved rust inhibitive primer.

3.5 CLEANING AND PROTECTION

- .1 Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged products. Clean installed products in accordance with manufacturer's instructions before Owner's acceptance.
- .2 Remove construction debris associated with this work from project site, and dispose of in accordance with applicable laws.
- .3 Protect installed products and finished surfaces from damage during construction.

END OF SECTION

SECTION 08 51 13 - ALUMINUM WINDOWS AND DOORS

PART 1 - GENERAL

1.1 WORK INCLUDED

- .1 Glazed aluminum windows and doors include thermally broken tubular aluminum sections with self supporting framing, shop fabricated, factory prefinished, glazing, spandrel infill, related flashings, anchorage and attachment devices.
- .2 One hour fire rated aluminum windows in Learning Commons at Monsignor Philip Coffey Catholic School. Fire rated frames to be supplied complete with fire rated intumescent glazing.
- .3 Sheet metal air/vapour barrier closures and finish closures, and aluminum angle closures at jambs.
- .4 Insulation and air/vapour barrier seals between work of this section and adjacent construction
- .5 Sealants for work of this section and between work of this section and adjacent construction
- .6 System to permit replacement of individual glass and spandrel panels without necessitating removal of structural mullion sections

1.2 RELATED WORK SPECIFIED ELSEWHERE

- | | | |
|----|---------------|------------------|
| .1 | Sealants | Section 07 92 00 |
| .2 | Glazing | Section 08 81 00 |
| .3 | Window Shades | Section 12 24 00 |

1.3 REFERENCES

- .1 AAMA/WDMA/CSA 101/I.S.2/A440 NAFS - North American Fenestration Standard/ Specification for Windows, Doors, and Skylights
- .2 Canadian Standards Association (CSA):
 - .1 CSA A440S1 Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440, NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights
 - .2 CAN/CSA-A440.2/A440.3 Fenestration energy performance / User guide to CSA A440.2, Fenestration energy performance
 - .3 CAN/CSA A440.4 Window, Door and Skylight Installation
 - .4 CAN/CSA-G40.21 Structural Quality Steels
 - .5 CSA-S136 Cold Formed Steel Structural Members
 - .6 CAN/CSA-S157 Strength Design of Aluminum
 - .7 CSA-W59.2 Welded Aluminum Construction
- .3 Canadian General Standards Board (CGSB):
 - .1 CAN/CGSB-12.1 Tempered or Laminated Safety Glass
 - .2 CAN/CGSB-12.9 Spandrel Glass
 - .3 CAN/CGSB-12.20 Structural Design of Glass for Buildings
 - .4 CAN/CGSB-19.13 Sealing Compound, One Component, Elastomeric Chemical Curing
 - .5 CAN/CGSB-19.24 Multi-Component, Chemical Curing Sealing Compound

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- .6 CAN/CGSB-51.10 Mineral Fibre Board Thermal Insulation
- .4 ASHRAE 90.1 Energy Standard for Buildings Except Low-Rise Residential Buildings
- .5 American Architectural Manufacturers Association (AAMA):
 - .1 AAMA-GSM-1 Metal Curtain Wall, Window, Store Front and Entrance Guide Specifications Manual
- .6 ASTM International:
 - .1 ASTM-A123 Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
 - .2 ASTM-A446 Specification for Sheet Steel, Zinc-Coated by the Hot-Dip Process, Structural Quality
 - .3 ASTM-B209 Specification for Aluminum and Aluminum-Alloy Sheet and Plate
 - .4 ASTM-B221 Specification for Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes and Tubes
 - .5 ASTM E119 Standard Test Methods for Fire Tests of Building Construction and Materials.
 - .6 ASTM E2010 Standard Test Method for Positive Pressure Fire Tests of Window Assemblies.
 - .7 ASTM-E283 Standard Test Method for Rate of Air Leakage through Exterior Windows, Curtain Walls and Doors.
 - .8 ASTM E 330 Test for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.
 - .9 ASTM-E331 Test Method for Water Penetration Through Exterior Windows, Curtain Wall and Doors by Uniform Static Air Pressure Difference
- .7 Do sealant work in accordance with Section 07 92 00 unless otherwise specified herein.
- .8 Do glazing work in accordance with Section 08 81 00 unless otherwise specified herein.

1.4 DESIGN

- .1 Design and fabricate windows, brackets and anchorage devices to provide:
 - .1 Resistance to pressure differentials.
 - .2 Adequate provisions for thermal movement without thermal fractures.
 - .3 Adequate provision for live and dead loads without failure, distortion or fracture.
 - .4 For differential movement of structural live load deflection.
 - .5 Adequate support and anchorage of components taking into consideration all loading factors.
 - .6 Conformance to Rain Screen principles including:
 - .1 Provision of gaskets, baffles, overlaps and seals as required to provide a "Rain Screen" barrier effectively to deter rain water entry into the cavities of the system.
 - .2 Incorporation of air seals to effectively prevent air passage from the system into the building and vice versa.
 - .3 Air and vapour seals required to minimize airborne vapour exfiltration from the building into the system cavities.
 - .4 Openings between system cavities and the outside of sufficient cross-sections to provide pressure equalization. All such openings to be effectively drained to allow moisture entering cavity to escape.

SECTION 08 51 13 - ALUMINUM WINDOWS AND DOORS

- .7 For long range shrinkage (creep) of concrete structure.
- .8 A continuous air seal from the non-glass wall systems air seal to the aluminum curtain wall frame and from there to the inside glass face. These seals shall be made in such a manner that with anticipated structural and thermal movement there will be no break in the seal.
- .2 Deflection of members when under full loads shall maintain adequate clearance of glass. Maximum deflection shall not be more than 1/175 of the span of any member.
- .3 Design window systems to perform as an effective air and vapour barrier.
- .4 Design windows such that glass replacement can be accomplished from the building interior.
- .5 Condensation: Not more than 25mm high across the bottom of inside pane and none on aluminum frames under conditions of - 33.3 deg. C. exterior, 22.2 degrees C interior, 30% relative humidity interior 25 m/h wind measured on lee side of building, or zero condensation with no wind.
- .6 Conform to Ontario MMAH Supplementary Standard SB-10 and ASHRAE 90.1.
- .1 Conform to SB-10 table SB5.5-5-2017, for Climate Zone 5, as follows:

Fenestration Type	Max. U value (W/m ² •K)	Max. SHGC	Min. VT/SHGC
Metal framing: fixed	U-2.15	0.4	1.1
Metal framing: operable	U-2.56		
Metal framing: entrance door	U-3.94		

- .2 Conform to ASHRAE 90.1, subsection 5.4.3.2, for fenestration. When tested as indicated, air leakage shall not exceed:
 - .1 Storefront glazing: 0.06 cfm/ft²
 - .2 Entrance doors: 1.0 cfm/ft² for glazed swinging doors
 - .3 Other metal framed fenestration:
 - .1 0.2 cfm/ft² when tested at a pressure of 1.57 lbs/sq.ft. in accordance with AAMA/WDMA/CSA 101/I.S.2/A440 or NFRC 400;
 - .2 or 0.3 cfm/ft² when tested at a pressure of 6.24 lbs/sq.ft. in accordance with AAMA/WDMA/CSA 101/I.S.2/A440.
- .3 Label windows in accordance with ASHRAE 90.1 requirements for "Labeling of Fenestration Products". If the units do not have permanent labels, the Subcontractor shall provide a signed and dated certificate for the windows [and doors] listing the U-value, solar heat gain coefficient, and air leakage rate of the installed products.

SECTION 08 51 13 - ALUMINUM WINDOWS AND DOORS

- .7 Conform to AAMA/WDMA/CSA 101/I.S.2/A440, Performance Class AW, for institutional application. The following minimum performance levels shall also be met:

	<u>Operating Vents</u>	<u>Fixed Sash</u>
Air tightness	A3	0.2 L/(s•m ²)
Water tightness	B5	B7
Wind resistance	C4	C4

1.5 **QUALITY ASSURANCE**

- .1 Window Subcontractor must have ten years experience in the installation of aluminum windows and doors of the type specified, in installations of similar scope, and be approved by the window manufacturer for this installation.
- .2 Installers must provide references for approval by Owner and Consultant prior to Contract award.
- .3 Window manufacturer to provide letter certifying that they are supplying fully assembled window units to the Subcontractor. Assembly of aluminum sections by Subtrades is not permitted.

1.6 **SUBMITTALS**

- .1 Shop Drawings
- .1 Submit Shop Drawings in accordance with Section 01 33 23. Shop drawings shall be prepared by the window manufacturer, and shall be accompanied by a letter certifying that fully assembled windows are being supplied to the installer.
- .2 Show detailed assembly, including large scale details of members and materials, of brackets and anchorage devices and of connection and jointing details; full dimensioned layouts for positioning of brackets and anchorage devices to structures; dimensions, gauges, thicknesses; glazing details, description of materials including catalogue numbers, products and manufacturer's names; aluminum alloy and temper designations, finish specifications and all other pertinent data.
- .2 Submit certification of the U-value, solar heat gain coefficient, and air leakage rates for the windows, in accordance with ASHRAE 90.1 and as specified above. This is not required if the windows and doors will have permanent labels indicating these values; indicate on shop drawings if units will bear permanent label.
- .3 Submit test data on doors, screens and windows being proposed, prepared by an approved testing laboratory. The window unit described herein shall meet the local requirements for operating vents and fixed framing in accordance with AAMA/WDMA/CSA 101/I.S.2/A440.
- .4 Submit a written adhesion and compatibility approved from sealant manufacturer stating all materials in contact with sealants are compatible.
- .5 Submit samples of glass products in accordance with Section 08 81 00.

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- .6 Submit one representative sample window concurrent with Shop Drawing submittal.
 - .1 Show frame, sash, sill, glazing and waterproofing method, insect screens, surface finish and hardware. Include 150 mm. long samples of head, jamb, sill, meeting rail, mullions to indicate profile.
- .7 Provide copies of manufacturers printed maintenance instructions in Maintenance Manuals; refer to Section 01 78 00.

1.7 DELIVERY AND STORAGE

- .1 Adequately protect glazing, aluminum and aluminum finishes to prevent damage thereto during fabrication, storage, shipping, handling and installation.
- .2 Deliver, handle and store units by methods approved by manufacturer. Protect from damage and staining.
- .3 Protect glass, sills and stools after installation with boards, heavy paper or other suitable protection, secured in place, to prevent staining or scratching. Do not remove protection until final cleaning.

1.8 COORDINATION WITH OTHER TRADES

- .1 Coordinate delivery and installation of windows to occur prior to installation of exterior masonry, to permit sealing of window perimeter with air/vapour barrier membrane. Refer to drawing details.
- .2 Provide protection of installed windows to prevent breaking of glass during installation of masonry, and other work.

1.9 WARRANTY

- .1 Warranty the Work of this Section for a period of **five (5) years** from date of Substantial Performance, in writing. Warranty shall include all products and work to repair or replace defective units.
- .2 Provide an extended warranty to **ten (10) years** against water leakage.
- .3 In addition to the above, insulating glass units shall carry manufacturer's warranty of **ten (10) years** from date of Substantial Performance of the Work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- .1 Aluminum windows and doors specified below are as manufactured by Oldcastle Building Envelope. Products conforming to these specifications as manufactured by Aerloc Industries Ltd., Kawneer Company Inc., Windspec Inc., Allwind Industries Ltd., Commdoor Aluminum, Sherwood Windows Ltd., and Alumicor Ltd. will also be accepted.
- .2 Manufacturer shall supply assembled windows to window Subcontractor.

SECTION 08 51 13 - ALUMINUM WINDOWS AND DOORS

- .3 Manufacturer of aluminum windows must be same as manufacturer of curtain wall.
- .4 The Window Subcontractor must warrant the supply and installation of all Work of this Section.

2.2 MATERIALS

- .1 Aluminum Extrusions: Extruded shapes, Aluminum Association alloy AA 6063 T54, mechanically straightened and free of marks, of size and shape specified and detailed, minimum 3mm thick.
- .2 Sheet and Plate Aluminum: AA 1100 alloy, anodizing quality.
- .3 Finish: Clear anodized finish to Consultant's approval.
- .4 Steel Sections and Plates: to CSA G40.21 Type 300W. Hot dip galvanized with minimum zinc coating of 600g/m².
- .5 Steel Reinforcing for screens: to CSA G40.20, Class H
- .6 Thermal Break: Rigid PVC or hard rubber.
- .7 Bolts, Screws, Fasteners: Hot dipped galvanized, or cadmium plated steel or 302 stainless steel.
- .8 Glass: As specified in Section 08 81 00.
 - .1 Glazing must meet the SB-10 requirements for the climate zone.
 - .2 Use fire resistant glass in fire rated assemblies.
 - .3 Use double-glazed units for all exterior glazing.
- .9 Glazing Sealant: One component silicone; Spectrum 2 by Tremco.
- .10 BES Sealant: As specified in Section 07 92 00. Colour to be as selected by the Consultant.
- .11 Air Sealant Foam: refer to Section 07 27 10.
- .12 Setting Blocks: Neoprene 100mm long, 80A durometer.
- .13 Steel: Brake formed, galvanized sheet steel.
- .14 Glazing Tape: Vulcanized butyl tape with continuous neoprene spacer. Colour as selected by Consultant.
- .15 Insect Screens: All opening sash to have side hinged stainless steel mesh screens with aluminum frames to match windows.
- .16 Aluminum Closures: Closures, caps, flashings, panels as detailed, from 2mm aluminum to match frame.
- .17 Condensation Gutters: Supply and install formed aluminum condensation gutter at sill, 110x25mm deep, where indicated on drawings.

SECTION 08 51 13 - ALUMINUM WINDOWS AND DOORS

- .18 A/V Barrier Tape: 3M 3015 Air and Vapour Barrier adhesive tape.

2.3 FABRICATION

- .1 Aluminum windows shall be Oldcastle Series 1200 thermally broken, rainscreen windows, 25mm wide x 150mm deep.
- .1 Fire rated windows in Learning Commons at Monsignor Philip Coffey Catholic School shall be specialty units as specified below.
- .2 Framing shall consist of closed tubular aluminum sections, reinforced as necessary, thermally broken. Open channel profiles are not acceptable.
- .3 Make profiles of framing members as shown on Drawings. All perimeter frames shall be fully closed sections, including at corners.
- .4 Operating vents:
- .1 Opening units to be 2000 Arctic Series Projected Window, outward opening, top hung vents, as indicated on drawings
- .2 Equip each top-hung vent with minimum two (2) heavy duty extruded hinges with stainless steel pins, (3 if vent is more than 750mm wide) with "Truth Scissors Arm Operator" with high pressure die cast zinc case, crank handle, and knob.
- .3 Cut vent corner joint at 45 degrees and swage with 3 heavy duty reinforcing angles per corner. Screwed corners on vents will not be accepted.
- .4 Provide opening limit stops. Limit opening distance generally to 100mm.
- .5 Provide insect screens at all operable vents.
- .5 Entire assembly shall be weathertight throughout.
- .6 Fabricate complete units in shop to provide minimum tolerance and hairline joints throughout.
- .7 Assemble members by stainless steel screws. All connections shall be internally sealed in factory with approved sealing compound. Exposed frame sealants are not acceptable.
- .8 Aluminum extrusions shall be designed to provide sufficient section modules to safely resist imposed loads but minimum thickness of any part of the load bearing extrusion shall be 3mm. Glazing stops may be 1.6mm. Be prepared to submit design data as requested by Consultant.
- .9 Conceal interconnecting members and fasteners in completed assembly.
- .10 Do not place manufacturer's name plates, labels or any other finished means of identification on exposed or finished parts.
- .11 Provide weep holes in tubular members to drain condensation.

SECTION 08 51 13 - ALUMINUM WINDOWS AND DOORS

- .12 Provide an extruded rigid thermal break integrated with the inner and outer aluminum extrusions to form a rigidly interconnected assembly without the use of fasteners or other thermal bridging elements.
- .13 Glass stops shall provide edge margins recommended by glass manufacturer.
- .14 Paint all metal surfaces in contact with concrete or masonry, plaster, mortar or dissimilar metals with protective lacquer or bituminous coating.
- .15 Mitre and full strength vulcanize joints in weatherstripping.
- .16 Provide 3.2mm extruded aluminum sills as indicated and to suit wall conditions, complete with chair type anchoring devices at 600mm. o.c. maximum and drip deflectors at sill ends and abutting vertical surfaces.
- .17 Stools, cap flashings, closures, covers and trim shall be minimum 3mm thick aluminum, extruded or formed to profiles shown.

2.4 DOORS AND FRAMES

- .1 Aluminum doors shall be Series TB805, 50mm thick heavy duty wide stile doors.
 - .1 Supply and install aluminum doors in thermally broken aluminum frames and screens.
 - .2 Doors shall be insulated with polyurethane. Provide insulated aluminum panels in lower portion of doors where shown on drawings.
 - .3 Provide rails and transoms to sizes and profiles shown on drawings.
 - .4 Corner construction shall be butt joined with two hidden welds. At each corner, welds shall be of the inert gas process with maximum penetration and without heat discolouration on exposed surfaces.
 - .5 Aluminum frames and screens for aluminum doors shall generally match window profiles with 13mm solid aluminum bar reinforcing.
 - .6 Prepare for and install finishing hardware on aluminum doors. Provide cutouts, recesses, mortising required for finish and operating hardware. Coordinate with hardware supplier.

2.5 GLAZING

- .1 Glaze windows in shop.
- .2 Clean aluminum and glass surfaces that are to receive glazing materials with an oil removing solvent and wipe dry.
- .3 Glaze windows with factory glazed wrap around vinyl glazing channels.
- .4 Place setting blocks at quarter points for each light of glass.

SECTION 08 51 13 - ALUMINUM WINDOWS AND DOORS

- .5 Comply with tape manufacturer's recommendations regarding use of spacers for certain glass sizes.
- .6 Install glass with clean cut edges, leaving spaces for expansion and contraction between edge of glass and inside of frame as recommended by glass manufacturer.
- .7 Glaze windows with sealed double glazed units.
- .8 Finish tape and glazing wedge with straight unwavering sight lines.
- .9 Conform to sealant manufacturer's written recommendations for cleaning, priming, backing and joint design to suit type and location of joint and environmental conditions. Conform to Section 07 92 00.
- .10 Apply heel of sealant at perimeter of glass. Ensure drainage space below exterior pane to weep holes in frame and install heel bead at inner pane.
- .11 Apply sealant in such a manner as to assure good adhesion to sides of joints and to completely fill voids in joint. Form surfaces of sealant smooth, concave, free from ridges, wrinkles, sags, air pockets and imbedded impurities.
- .12 Glazing shall be completely weathertight.

2.6 FIRE-RATED ALUMINUM WINDOWS

- .1 Provide one hour fire-rated aluminum windows where noted in Learning Commons at Monsignor Philip Coffey Catholic School, with intumescent fire-rated glass; Fireframes Aluminum Series by Technical Glass Products, combined with Pilkington Pyrostop fire-rated glass. Fire-rated windows shall be ULC labelled.
- .2 Fire-rated windows shall consist of high strength steel sub-frame assembly, 51mm wide x 146mm deep, with clear anodized aluminum cover.
- .3 Glazing shall be low E insulated glazing units Pilkington Pyrostop 60-361, 41mm thick consisting of 27mm thick fire-rated inner pane, 8mm air space and 6mm clear tempered Low E outer pane.
- .4 Glazing accessories shall be manufacturer's standard, as required for the rated assembly.
- .5 Provide anodized aluminum window sills with drip deflectors, flashings, closures, covers and trim, as specified for other windows.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Confirm that existing conditions are satisfactory before commencing installation. Check structural elements and adjoining work on which this work may depend. Verify dimensions of openings and minimum clearances. Verify that openings are level and plumb.

SECTION 08 51 13 - ALUMINUM WINDOWS AND DOORS

- .2 Advise Consultant and Owner in writing of any conditions which exist which would compromise the successful installation of aluminum windows. Commencement of installation will signify acceptance of existing conditions. No extras will be considered due to subsequent problems related to unsatisfactory conditions of openings and surfaces.

3.2 INSTALLATION

- .1 Provide all fastenings or anchors required to be built in under work of other Sections.
- .2 Use only concealed fastenings.
- .3 Securely install components so that they line up square in true, straight flat and/or flush planes, plumb and level, free from distortion.
- .4 Make joints neat and fine as practicable. Allow for full expansion and contraction and take into consideration climatic conditions prevailing at time of installation.
- .5 Fasten galvanized steel supports and clips with galvanized bolts and fasten aluminum members with stainless steel screws and bolts.
- .6 Ensure that corner joints of frames are weathertight.
- .7 Fill all voids between windows and rough opening with expanding foam insulating sealant.
- .8 Remove masking tape, soils and sealant which may have been deposited on surfaces near joints.
- .9 Seal all window frames to adjacent materials both sides after filling all voids with expanding foam insulation, using silicone sealant as specified above.
- .10 Install metal sills straight and plumb, with uniform drainage away from building. Use maximum lengths possible. Secure sills in place with anchoring devices located at ends and at 600mm o.c.
- .11 Install drip deflectors at window sills tight to face of masonry, with self tapping stainless steel screws. File all sharp edges to smooth, rounded finish.
- .12 Provide 25 x 25mm aluminum angle trim at perimeter of windows on interior. Install 3M air/vapour barrier tape behind and below angle trim, sealing gap between window frame and substrate.

3.3 CLEANING AND PROTECTION

- .1 After installation, remove all sealants and other misplaced materials from all surfaces, including adjacent work.
- .2 Thoroughly clean window frames, casings, and glass using materials and methods recommended by the window and glass manufacturer.
- .3 Touch-up, repair or replace any damaged products before Consultant's review for Substantial Performance.

SECTION 08 51 13 - ALUMINUM WINDOWS AND DOORS

- .4 Immediately prior to turning areas over to Owner, inspect work and remove protective wrappings, coatings and devices and clean glass and aluminum surfaces. Use methods which will not scratch or damage glass, paint or coatings.
- .5 Perform final cleaning as per Section 01 74 00.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

- .1 Hollow Metal Doors and Frames Section 08 11 13

1.2 PRODUCTS SUPPLIED BUT NOT INSTALLED IN THIS SECTION

- .1 Power supplies, compressor/control boxes, junction boxes.

1.3 REFERENCES

- .1 CAN/CGSB-69.17-M Bored and Pre-assembled Locks and Latches
- .2 CAN/CGSB-69.18-M/ANSI/BHMA-A156.1 Butts & Hinges
- .3 CAN/CGSB-69.19-M/ANSI/BHMA-A156-3 Exit Devices
- .4 CAN/CGSB-69.20-M/ANSI/BHMA-A156-4 Door Controls (Closers)
- .5 CAN/CGSB-69.29/ANSI/BHMA-A156-13 Mortise Locks & Latches
- .6 CAN/CGSB-69.34/ANSI/BHMA-A156.18 Materials & Finishes
- .7 Canadian Steel Door & Frame Manufacturers Association (CSDFMA), Canadian Metric Guide for Steel Doors & Frames (Modular Construction)
- .8 NFPA 80-Standard for Fire Doors and Windows
- .9 Door and Hardware Institute Recommended locations for Architectural Hardware for Standard Steel Doors and Frames
- .10 Door and Hardware Institute Recommended locations for Architectural Hardware for Flush Wood Doors
- .11 Door and Hardware Institute Sequence Format for Hardware Schedule
- .12 Door and Hardware Institute Key Systems and Nomenclature
- .13 Door and Hardware Institute Abbreviations and Symbols used in Architectural Door and Hardware Schedules and Specifications,
- .14 Door and Hardware Institute Installation Guide for Doors and Hardware

1.4 ALLOWANCES

- .1 A cash allowance is included in the contract to cover the cost of supply only of door hardware. Provision of this allowance shall not infer the deletion of any requirements for removal, storage, reinstallation of existing hardware.
- .2 Expend allowance as directed by the Consultant and in accordance with Section 01 10 00.

1.5 GENERAL REQUIREMENTS

- .1 Hardware shall comply with requirements of authorities having jurisdiction.
- .2 All door closers shall have back checking features and shall be of proper size to operate door efficiently.
- .3 Confirm all kick plate and threshold sizes before ordering them.
- .4 Exposed screws for installing hardware shall have Phillips or Robertson heads.

SECTION 08 71 00 - DOOR HARDWARE

- .5 Rim panic device strikes shall be mortise type application. Equip panic devices with six bolts.
- .6 Confirm degree of swing for door holders, closers, etc.

1.6 SUBMITTALS

- .1 Door and Hardware List
 - .1 Submit a detailed final door hardware list prepared by a qualified Architectural Hardware Consultant.
 - .2 List all items to be furnished and delivered under this section.
 - .3 Indicate door hardware proposed, identifying each item by manufacturer name, manufacturer's catalogue model number, material, function, finish, location, and other pertinent information.
 - .4 The list shall be in the same format as the door hardware list bound in this project manual.
 - .5 Acceptance of the Final Door Hardware List by the Consultant and the Owner shall not relieve the Contractor from responsibility for providing all required door hardware.
- .2 Product Data:
 - .1 Within ten (10) calendar days after award of hardware supply subcontract, submit: copies of product data sheets with the finish hardware schedule showing all items of hardware to be used on the project.
 - .1 Identify each hardware item supplied under this section by product number, function, hand and finish.
 - .2 Finish hardware schedule to be in conformance of door and Hardware Institute Standards.
 - .3 Catalogue cuts and other data are required to identify individual components listed and/or to demonstrate compliance with specified requirements for all items contained in the finish hardware set. Submission of manufacturer's full line brochure is not acceptable.
- .3 Samples:
 - .1 When requested in writing, provide (to the Consultants Site Office) one sample of each hardware item complete with fasteners, within fifteen (15) calendar days of award of a purchase order. Samples to be clearly labelled with their hardware schedule designation, installation location, and manufacturers' name and model number. Samples will be returned; approved samples may be incorporated into the work.
 - .2 Substitute new samples for those rejected by the Consultant.
 - .3 Do not supply door hardware to the site until all samples are approved by the Consultant.

- .4 Templates:
 - .1 Furnish templates within ten (10) calendar days of being requested by the Consultant and/or door and frame manufacturer, the Contractor must submit templates for door and frame preparations and/or mounting of finish hardware items, and identify each template by label indicating applicable specification paragraph number, brand name and number, door number and hardware package number.
- .5 Keying:
 - .1 Provide a keying schedule for review by Consultant and Owner. Include all special keying notes and stamping instructions. Locks and cylinders are not to be ordered until the key schedule has been approved by the Owner.
 - .2 Salvage and store existing Primus cylinders for reinstallation in new doors.
- .6 Wiring Diagrams:
 - .1 Furnish a written description of the functional use of all electrical hardware. Include door and frame elevations showing the location of each item of electrical hardware to be installed, including a diagram showing number and size of all conductors. Include drawings showing all terminal connections
- .7 Operations and Maintenance Data:
 - .1 Prior to Substantial Performance, provide the following information for inclusion in the Maintenance manuals, in accordance with Section 01 78 00, Closeout Submittals:
 - .1 Name of hardware distributor, address and contact name
 - .2 Copy of final "as-built" finish hardware schedule
 - .3 Wiring diagrams, elevations, risers, point to point
 - .4 Copy of final keying schedule
 - .5 Copy of floor plans with keying nomenclature assigned to door numbers as per the approved keying schedule
 - .6 Maintenance instructions for each product
 - .7 Catalogue cut sheets and product specifications for each product
 - .8 Parts list for each product
 - .9 Installation instructions for each product
 - .10 A copy of the certification letter from the AHC, confirming the correct supply and installation of hardware, as required by Subsection 3.3, below.
- .8 Maintenance Materials:
 - .1 Provide maintenance materials, in accordance with Section 01 78 00, Closeout Submittals.
 - .2 Supply four sets of wrenches for door closers, locksets, latchsets, and exit devices.

SECTION 08 71 00 - DOOR HARDWARE

- .3 Supply five sets of other special parts or tools required for proper maintenance and adjustment of door hardware, including those used for locks/passage/privacy, all type of door closers, and all exit devices.

1.7 QUALITY ASSURANCE

- .1 Contractor shall coordinate a hardware pre-installation meeting with hardware installer, hardware supplier and hardware sub-consultant (original hardware specifier). Payment for original hardware sub-consultant's time to attend meeting shall be paid for through the cash allowance included for inspections (except where hardware supplier is also the hardware sub-consultant). Review installation procedures with the hardware suppliers.
- .2 Supplier and installer shall hold regular review meetings (at least every second week) during the installation period. Submit minutes of meetings to the Consultant.
- .3 The Contract contains a cash allowance for independent inspection. Supplier and installer shall attend such inspections; costs associated with their attendance shall be included in the Contract.
- .4 Substitutes:
 - .1 Only approved products specified will be accepted. Make substitution request in accordance with Division 01. Include product data and indicate benefit to the project.
- .5 Supplier Qualifications:
 - .1 Successful hardware distributor to have a minimum of five (5) years experience in the door and hardware industry. The distributor to have on staff an Architectural Hardware Consultant (A.H.C.) who will be responsible for scheduling, detailing, ordering and co-ordination of the finishing hardware for this project. This individual shall be required for jobsite visits, as outlined below and when so requested by the Architect.
- .6 Designated Installer:
 - .1 Hardware Installers must have a minimum of five (5) years experience in installation of hardware. Provide verification of installer's qualification to Consultant for approval. All installers to attend review meetings with the Hardware Distributor.

1.8 PRODUCT DELIVERY, STORAGE AND HANDLING

- .1 Marking and Packaging:
 - .1 All cartons shall be marked with heading number, door number, and key-set symbol where applicable in original packaging provided by the manufacturer. Pack packaged hardware in suitable wrappings and containers to protect it from damage during shipping and storage. Accessories, fastening devices and other loose items shall be enclosed with each applicable item of hardware.

.2 Delivery:

- .1 Deliver hardware to those who are to install it, complete with keys, templates and installation instructions together with all required screws, expansion shields, anchors, jigs and other related accessories for satisfactory attaching or installing hardware.

.3 Storage

- .1 Store in a clean, dry room with lockable man door and adequate shelving to permit organization so item numbers are readily visible.

1.9 **WARRANTY**

.1 Provide warranties by the accepted manufacturers:

Hardware Item	Length of Warranty
Mortise Hinges	Lifetime
Locks(ND-Series)	7 yrs.
Locks(All other Series)	2 yrs.
Exit Devices	3 yrs.
Door closers - mechanical	10 yrs.
Door Operators - Electro mechanical	2 yrs.
Door Hold open Devices - Electro mechanical	2 yrs.
Overhead stops/holders	2 yr.
Floor/Wall stops	2 yr.
Electric Strikes/Key Switches/Power Supplies	2 yr.

.2 **Where manufacturers standard warranty period exceeds these requirements, it shall prevail.**

- .3 Door hardware warranties shall cover all defects in material and workmanship that become apparent during the warranty period and such defects shall be made good or the defective product shall be replaced, to the satisfaction of the Owner and at no cost to the Owner.

1.10 **MAINTENANCE**

.1 Maintenance Service:

- .1 After the building is occupied arrange an appointment with the Owner's maintenance staff for instruction of proper use, servicing, adjusting and lubrication of hardware furnished. Submit to the consultant a list of attendees and meeting date.

.2 Extra Materials:

- .1 Provide Owner with maintenance materials as specified above.

SECTION 08 71 00 - DOOR HARDWARE

PART 2 - PRODUCTS**2.1 MANUFACTURERS**

- .1 Products listed in the finishing hardware schedule are from the manufacturers listed below:

.1	Abbreviation	Manufacturer Name
	CBH	Canadian Builders Hardware Mfg. Inc.
	CAM	Camden Door Controls
	NGP	National Guard Products (Finger Guard)
	GLY	Glynn Johnson, Allegion Canada Inc.
	HES	HESS
	IVE	Ives, Allegion Canada Inc.
	KNC	K.N. Crowder Mfg. Inc.
	LCN	LCN Door Closers, Allegion Canada Inc.
	NGP	National Guard Products
	SCE	Schlage Electronics, Allegion Canada Inc.
	SCH	Schlage Locksets, Allegion Canada Inc.
	VON	Von Duprin, Allegion Canada Inc.

2.2 MATERIALS

- .1 Screws and Fasteners:
- .1 All screws shall be matching finish to their product and shall be manufacturer's standard. Door closers, door holders and exit devices installed on fire rated wood doors and hollow metal doors shall be attached with sex nuts and bolts.
- .2 Materials shall be as listed on the Door Hardware List provided by the hardware consultant.
- .3 Note: Supply all products in a given category from the same manufacturer
- .4 Note: all low energy operators and low voltage wiring are to be supplied and installed by this section

2.3 FINISHES

- .1 Unless other wise specified, all finishes to be brushed chrome (626).
- .2 Finishes are specified as follows:

Item	BHMA#	Description	Base Materials
Hinges	630	satin, stainless steel	stainless steel
Hinges	652	satin chrome plated	steel
Continuous Hinges	689	anodized aluminum	aluminum
Lock Trim	626	satin chrome plated	brass/bronze
Exit Devices	626	satin chrome plated	brass/bronze
Door Closer	689	powder coat aluminum	steel
Magnetic Wall Holders	689	powder coat aluminum	steel
Door Pulls	630	satin stainless steel	stainless steel

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Item	BHMA#	Description	Base Materials
Protective Plate	630	satin stainless steel	stainless steel
Door Stops/Holders			
Overhead	630	satin stainless steel	stainless steel
Wall/Floor	626	satin chrome plated	brass/bronze
Thresholds	628	anodized aluminum	aluminum
Weatherstrip	628	anodized aluminum	aluminum
Miscellaneous			
Mullions	689	powder coat aluminum	steel
Electric Strikes	630	satin stainless steel	stainless steel

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Ensure that doors and frames are properly prepared and reinforced to receive finish hardware prior to installation.
- .2 Ensure that door frames and finished floor are sufficiently plumb and level to permit proper engagement and operation of hardware.
- .3 Submit in writing a list of deficiencies determined as part of inspection required in 3.1.1 and 3.1.2 to supervising consultant prior to installation of finished hardware.

3.2 INSTALLATION

- .1 Hardware Installers must have a minimum of five (5) years experience in installation of hardware. Provide verification of installer's qualification to Consultant for approval. All installers to attend review meetings with the hardware distributor.
- .2 Install hardware at mounting heights as specified in the manufacturers templates or specific references in approved hardware schedule or approved elevation drawings.
- .3 Where mounting height is not otherwise specified, install hardware at mounting heights as per referenced standards.
- .4 Install hardware using only manufacturer supplied and approved fasteners in strict adherence with manufacturers published installation instructions.
- .5 Ensure that all locksets / latchsets / deadlocks are of the correct hand before installation to ensure that the cylinder is in the correct position. **Handing is part of installation procedure.**
- .6 Ensure that all exit devices are of the correct hand and adjust device cam for proper outside trim function prior to installation. **Handing is part of installation procedure.**
- .7 Follow all manufactures installation instructions. Adjustment is inclusive of spring power, closing speed, latching speed and back-check at the time of installation.

SECTION 08 71 00 - DOOR HARDWARE

- .8 Delayed action door closers are to be adjusted to forty (40) second delay for handicapped accessibility and movement of materials. Time period to be approved by Owner.
- .9 Install head seal prior to installation of "PA"-parallel arm mounted door closers and push side mounted door stops/holders. Trim, cut and notch thresholds and saddles neatly to minimally fit the profile of the door frame. Install thresholds and saddles in a bed of caulking completely sealing the underside from water and air penetration.
- .10 Counter sink through bolt of door pull under push plate during installation.
- .11 Install blocking material of sufficient type and size in cavities of metal and wood stud walls and partitions. Located concave and convex type door bumpers at the appropriate height to properly contact protruding door trim.

3.3 FIELD QUALITY CONTROL

- .1 Verify each door leaf opens closes and latches properly. Inspect fire rated openings to ensure they are installed in compliance with NFPA 80 requirements. Test access control system and electrified hardware devices for proper operation, owner to sign off on verification of operation. Verify electric door release hardware operates properly upon activation of the fire alarm system.
- .2 Finishing Hardware supplier's Architectural Hardware Consultant shall perform on-site inspections every two weeks during hardware installation and provide inspection reports listing progress of work, unacceptable work and corrective measures. Repair or replace as directed by the Consultant.
- .3 Upon completion of finish hardware installation, the Architectural Hardware Consultant and the Contractor shall inspect work and provide a list of all hardware deficiencies. The Architectural Hardware Consultant shall re-inspect when notified by the Contractor as to the clearing of deficiencies. Final inspection must ensure all hardware items operate as per manufacture requirements. Coordinate inspections with manufacturer's representatives as required to establish warranties.
- .4 Once any deficiencies have been corrected, the Architectural Hardware Consultant and the Contractor shall certify in writing that all hardware items and their installation are in accord with requirements of Contract Documents.
- .5 At the discretion of the Owner, a third party inspection may be required. Contractor shall arrange for post installation review of hardware by an independent hardware sub-consultant appointed by, or acceptable to, the Owner (original hardware specifier or other independent hardware sub-consultant). The deficiency report shall be prepared by the independent hardware sub-consultant. The cost of the first inspection and one follow-up inspection only, shall be paid through the cash allowance included for hardware inspection. The cost of any subsequent inspections, required for the correction of deficiencies, shall be borne by the Contractor.

3.4 ADJUSTING AND CLEANING

- .1 Check and make final adjustments to each operating item of hardware on each door to ensure proper operation and function.

SECTION 08 71 00 - DOOR HARDWARE

- .2 Adjust doors with self closing devices or automatic closing devices for proper operation after the HVAC system is balanced and adjusted. Verify spring power of non sized door closers is properly adjusted.
- .3 All hardware to be left clean and free of disfigurements.
- .4 Instruct owner personnel in the proper operation, adjustment and maintenance of hardware.
- .5 Check all locked doors against approved keying schedule.

3.5 PROTECTION

- .1 Protect hardware from damage during construction. Wrap locks panic hardware, fire exit hardware, door pull trim with kraft paper or plastic bubble materials to protect finish from damage until date of substantial completion. Remove and reinstalling or where necessary, using temporary hardware to maintain finish in new condition and maintain manufacturer's warranty

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

- | | | |
|----|------------------------------|------------------|
| .1 | Joint Sealants | Section 07 92 00 |
| .2 | Aluminum Windows | Section 08 51 13 |
| .3 | Fire Rated windows / Glazing | Section 08 51 13 |

1.2 REFERENCES

- | | | |
|----|--|---|
| .1 | Canadian General Standards Board (CGSB): | |
| .1 | CAN/CGSB-12.1 | Safety Glazing |
| .2 | CAN/CGSB-12.3 | Flat, Clear Float Glass |
| .3 | CAN/CGSB-12.8 | Insulating Glass Units |
| .4 | CAN/CGSB-12.9 | Spandrel Glass |
| .5 | CAN/CGSB-12.20 | Structural Design of Glass for Buildings |
| .2 | Underwriter's Laboratory Canada (ULC) | |
| .1 | CAN4-S104 | Standard Method for Fire Tests of Door Assemblies |
| .2 | CAN4-S106 | Standard Method for Fire Tests of Window and Glass Block Assemblies |
| .3 | CAN/ULC-S101 | Fire Endurance Tests of Building Construction and Materials |
| .3 | American Society for Testing and Materials (ASTM): | |
| .1 | ASTM E1300 | Standard Practice for Determining Load Resistance of Glass in Buildings |
| .2 | ASTM E2190 | Insulating Glass Unit Performance and Evaluation |
| .4 | Glass Association of North America. | |
| .1 | GANA Glazing Manual | |
| .2 | GANA Sealant Manual | |

1.3 QUALITY ASSURANCE

- | | |
|----|---|
| .1 | Coordinate with manufacturer of fire rated windows to ensure that the fire glass provided for the work is an acceptable component of their tested assemblies, and can be included as part of their labelled products. |
| .2 | Review drawings for fire separations and ensure fire glass is provided in all rated fire separations, including doors and screen. Inform Consultant of any discrepancies in drawings or schedules. |
| .3 | Fabricators: |
| .1 | Fabricator of insulating glazing units shall be capable of providing the IGU's as specified, in sizes required. |
| .2 | It is the responsibility of the Contractor to confirm that the window subcontractor has confirmed the ability of the fabricator to provide the specified units at the time of tender. |
| .3 | Oldcastle Building Envelope, Prelco Inc., Saand, and Truelite are approved fabricators. |
| .4 | Performance for exterior glazed assemblies shall be as specified for windows in Section 08 51 13. |

SECTION 08 81 00 - GLAZING

1.4 SUBMITTALS

- .1 Submit manufacturer's product data for double glazed insulating units. Include performance data for each type of unit required.
- .2 Submit manufacturer's product data sheets for fire rated glass.
- .3 Submit colour charts for ceramic frit for spandrel panels, for preliminary colour selections.
- .4 Samples:
 - .1 Submit sample of standard double glazed unit.
 - .2 Submit duplicate samples of translucent glass, in two shades, for selection by the Consultant.

1.5 WARRANTY

- .1 Warranty all glass to be free from defects in workmanship and materials of any kind for a period of **ten (10) years**.
- .2 Warranty all fire rated glass to be free from defects in workmanship and materials of any kind for a period of **five (5) years**.
- .3 Replace (including removal and installation) all glass found to be defective.

PART 2 - PRODUCTS**2.1 MATERIALS**

- .1 Laminated Glass:
 - .1 Clear laminated glass conforming to CAN/CGSB 12.1.
 - .2 Minimum 3 mm annealed glass, 0.76mm PVB lamination, 3 mm annealed glass.
 - .3 Provide thicker laminated glass where required to suit oversized glazing units.
- .2 Heat-strengthened Laminated Glass (Safety Glass):
 - .1 Minimum 3 mm heat-strengthened glass, 1.5mm PVB lamination, 3 mm heat-strengthened glass, conforming to CAN/CGSB 12.1.
 - .2 Provide thicker heat-strengthened laminated glass where required to suit larger glazing units.
 - .3 Prel-Lam by Prelco, or equivalent by one of the approved fabricators listed above.
- .3 Double-Glazed Insulating Units:
 - .1 Conform to CAN/CGSB 12.8, Low E units.
 - .2 Framed glazing with Insulating glass units shall conform to the performance requirements of MMAH Supplementary Standard SB-10 for the climate zone; refer also to Sections 08 44 13 and 08 51 13.
 - .3 All exterior glazing shall consist of hermetically sealed units composed of 6mm Low E clear outer pane, 13mm argon gas filled (min. 90%) space, 6mm clear inner pane.
 - .1 Glazing units to be Vitro Solarban 60, Guardian SN 68, Cardinal LoE2-272, or AGC Energy Select 40; Clear, solar control, Low E (soft/sputtered coat) exterior pane.

- .2 Outer pane shall be clear tempered glass for all exterior glazing except where noted otherwise.
- .3 Inner pane shall be clear, laminated glass except where noted otherwise.
- .4 Glazing accessories:
 - .1 Setting Blocks: Neoprene, 80 durometer hardness, 102mm x 6mm width to suit glass, to extend from the fixed stop to the opposite face of the glazing.
 - .2 Spacer Blocks: Neoprene, thickness to provide a minimum glass to face clearance of 3mm.
 - .3 Glazing Compounds:
 - .1 Tapes: Pre-formed polyisobutylene- butyl glazing tape with integral shim strip, 10-15 durometer hardness, paper release, black; Tremco "Polyshim" or equal by Dow Corning or General Electric.
 - .2 Gasket: Black neoprene "U" cavity type with lock strip.
 - .3 Sealant: One component silicone; Spectrum 2 by Tremco or Dow Corning 795, or SCS2000 SilPruf by General Electric.

PART 3 - EXECUTION

3.1 PREPARATION

- .1 Examine framing, with glazier present, for compliance with the following:
 - .1 Manufacturing and installation tolerances, including size, squareness, offsets at corners.
 - .2 Minimum required face or edge clearances.
 - .3 Edge damage or face imperfections.
- .2 Do not proceed with glazing until unsatisfactory conditions have been corrected.
- .3 Clean frames immediately before glazing. Remove any coatings not firmly bonded to substrates.

3.2 SITE CUTTING OF GLASS

- .1 Site cutting of glass is prohibited except with the express permission of the Consultant after review of the Contractor's proposed methods.

3.3 INSTALLATION

- .1 Conform to the recommendations of the Glass Association of North America (GANA) Glazing Manual, most recent edition.
- .2 Inspect glass as installation proceeds. Discard any glass edge damage that could affect performance. Discard any glass with visible defects.
- .3 Protect edges of glass from damage during handling and installation.

SECTION 08 81 00 - GLAZING

- .4 Set lights on setting blocks placed at quarter points. Glaze lights with glazing tape or dry gasket glazing system, channel shape to wrap completely around glass edge, or other approved means to prevent rattle.
- .5 Replace loose stops in their original positions, set all screws tight, countersink all nails.

3.4 EXTERIOR GLAZING (WET/DRY METHOD)

- .1 All exterior glazing shall be sealed units as specified in 2.1, above.
- .2 Provide heat strengthened, laminated safety laminated glass in interior pane of all IGU's extending below 1070mm above adjacent floor in stairwells and at second floor.
- .3 Provide translucent glass in inner pane in washrooms.
- .4 Apply glazing tape to fixed leg of frame accurately, cutting and butting joints at corners.
- .5 Run a heel bead of sealant 100mm up and 100mm along frame at corners of glass rebate, thick enough to make contact with glass, lapping tape and frame to ensure weathertight seal.
- .6 Apply setting blocks at 1/4 points and not less than 150mm from edges of glass. Remove protective paper cover from tape immediately before placing glass. Set glass in on setting blocks and press firmly in place against the glazing tape. Apply spacer shims to edges of glass maximum 600mm apart and more than 150mm from corners.
- .7 Install backer rod in voids below glass edge and apply continuous interior heel bead of sealant, making contact with glass edge and metal frame.
- .8 Install interior stop, with spacer strips or gasket between glazing and stops, 6mm below site line.
- .9 Apply sealant to fill void between glass and stops, finishing in a neat, smooth, even line, bevelled approximately 1.5mm onto glass.
- .10 Fire rated exterior glazing is included in Section 08 51 13.

3.5 CLEANING

- .1 As work progresses clean all glass, including fittings. Remove all setting and glazing compounds from adjacent surfaces. Remove all finger and hand prints and other soil.
- .2 Protect glass from contact with contaminating substances during construction.
- .3 Clean and wash glass by methods recommended by glass manufacturers.
- .4 All glass shall be cleaned immediately prior to re-occupancy of the building area by the Owner and immediately prior the Consultant's review for Substantial Performance.

END OF SECTION

PART 1 - GENERAL

1.1 WORK INCLUDED

- .1 Porcelain tile infill where Vestibule matt sinkage is indicated to be removed. Work shall include:
 - .1 Removal of matt sinkage.
 - .2 Supply and installation of brass clean out and pipe extension.
 - .3 Substrate preparation.
 - .4 Installation Systems, adhesives, mortars and grouts.
- .2 Replacement of two (2) rows of floor tile by the full width of each Vestibule or stairwell at each building entrance where frames are being replaced under this Contract.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- .1 Demolition and Alterations Section 02 40 00

1.3 REFERENCES

- .1 International Organization for Standardization
 - .1 ISO 13006 Ceramic tiles- Definitions, Classification, Characteristics and Marking
 - .2 ISO 23599 Assistive Products for Blind and Vision-Impaired Persons - Tactile Walking Surface Indicators
- .2 American National Standards Institute
 - .1 ANSI A108/A118/A136.1 American National Specifications for the Installation of Ceramic Tile (Compilation)
 - .2 ANSI A118.4 Specifications for Latex Portland Cement Mortar
 - .3 ANSI A137.1 Specifications for Ceramic Tile
- .3 ASTM International
 - .1 ASTM C 50 Standard Specification for Portland Cement.
 - .2 ASTM C 847 Standard Specification for Metal Lath.
- .4 Canadian General Standards Board
 - .1 CAN/CGSB-75.1M Tile, Ceramic
 - .2 CGSB 71-GP-22M Adhesive, Organic, for Installation of Ceramic Wall Tile
- .5 Canadian Standards Association
 - .1 CAN/CSA A-3000 Cementitious Materials Compendium
- .6 Terrazzo, Tile and Marble Association of Canada (TTMAC):
 - .1 Specification Guide 09 30 00/ Tile Installation Manual
 - .2 TTMAC Hard Surface Maintenance Guide

1.4 SUBMITTALS

- .1 Submit required submittals in accordance with Section 01 33 00 Submittal Procedures
- .2 Submit manufacturer's product data sheets on each product to be used, including:
 - .1 Storage and handling instructions

SECTION 09 30 00 - CERAMIC TILING

- .2 Preparation instructions
- .3 Installation instructions and recommendations

- .3 Submit sample book for selection of tile colours. Deliver samples on site, for preliminary selections by the Consultant.
- .4 Submit 4 random samples of each colour of tile selected for use on the project; clearly identify with manufacturer's name, colour number and project number. Do not proceed with work until samples have been approved by Consultant.

1.5 PROTECTION

- .1 Protect Work of this Section against damage by other trades for minimum 72 hours after application by prohibiting passage of traffic over tile.

1.6 QUALIFICATIONS

- .1 Installer to have membership in good standing with the TTMAC; must have 10 years experience in the Work of this Section. Employ skilled mechanics trained and experienced in tile work. If requested, submit references detailing experience in at least three projects of similar scope.

1.7 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver materials in manufacturer's unopened containers, fully identified with name, brand, type, and grade.
- .2 Protect materials from contamination, dampness, freezing, or overheating in accordance with manufacturer's instructions.
- .3 Broken, cracked, chipped, stained, or damaged tile will be rejected, whether built-in or not.
- .4 Protect mortar and grout materials against moisture, soiling, or staining.
- .5 Handle tile that has temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.8 PROJECT CONDITIONS

- .1 Comply with manufacturer's requirements for environmental conditions before, during, and after installation.
- .2 Maintain continuous and uniform building temperatures of not less than 12°C or more than 38°C during installation and for at least 7 days after completion of installation.
- .3 Ventilate spaces receiving tile in accordance with material manufacturer's instructions.

PART 2 - PRODUCTS

2.1 TILE MATERIALS

.1 Floor Tile:

- .1 Provide tile to match existing where available, for pricing purposes include cost of Omnia series, unglazed fully vitrified porcelain tiles by Olympia Tile and Stone; 300x300mm, matte finish.

2.2 INSTALLATION SYSTEM MATERIALS

- .1 Installation system materials and sealers to be the products of one manufacturer, who shall warrant the system against failure.

.2 Thin-set Mortar:

.1 At tile sizes 305 x 305mm and smaller:

- .1 single component, polymer-modified premium tile mortar, conforming to ANSI-A118.4 and A118.11, ISO 13077 class C2ES; Ultraflex 3 by Mapei Canada Inc., Laticrete 254 Platinum by Laticrete International Inc., Ardex X5 by Ardex Engineered Cements, or TEC 3N1 Performance Mortar by H.B. Fuller Construction Products Inc.

.3 Grout:

- .1 Industrial grade 100% solids epoxy grout, water cleanable, stain resistant. Mapei Kerapoxy IEG CQ or TEC AccuColor EFX Epoxy Special Effects Grout.
- .2 Colour to be selected by the Consultant.

- .4 Levelling coat: Self-curing liquid latex, Portland cement based floor levelling product by Mapei, Laticrete, Ardex, or H.B. Fuller. Levelling coat must be compatible with mortar being used, and approved by the manufacturer for the specific application.

- .5 Sealants: Conform to Section 07 92 00.

2.3 ACCESSORIES

- .1 Accessory products must be compatible with all other products used in tile installation system. Confirm compatibility with product manufacturers.

.2 Anti-Fracture Membrane:

- .1 Laticrete two component anti-fracture membrane "Blue 92", or Mapei Mapeguard 2 with Mapei SM Primer , or Ardex 8 + 9.

- .3 Joint Sealants: Conform to Section 07 92 00.

- .4 Cleanouts: Zurn Model ZN-1612-T-DC-SP

SECTION 09 30 00 - CERAMIC TILING

PART 3 - EXECUTION**3.1 PREPARATION AND EXAMINATION**

- .1 Examine surfaces prepared to receive installation of tiling. If conditions are not acceptable, report to Consultant, in writing. Commencement of installation of any part of the Work of this section will be construed as acceptance of existing conditions.
- .2 Substrate shall be dry, clean and free of dust, oil, grease, paint, tar, wax, curing agent, primer, sealer, form release agent or any deleterious substances which could inhibit adhesion.
- .3 Prepare substrate surfaces for adhesive installation in accordance with adhesive manufacturer's instructions.
- .4 Ensure compatibility of substrate materials with materials supplied under this Section.
- .5 Mechanically sand or scarify the substrate as required to completely remove all loose particles and contaminants.
- .6 Apply levelling coat where required to build up concrete floor slabs.

3.2 INSTALLATION

- .1 Regard recommendations, installation methods and materials specified and illustrated in Terrazzo, Tile and Marble Association Manual, latest issue, and applicable manufacturer's instructions as minimum acceptable standards. Provide additional work and materials as required to meet the contract specifications and the drawing details.
- .2 Confirm colours to be laid in each area. Where tile colour cannot be matched, a slightly darker tile is to be used. Window stools are to be in contrasting colour to adjacent floor tile.
- .3 Install floor tile by thin-set method, to TTMAC Detail 311F;
 - .1 use detail C with crack isolation membrane.
 - .2 use detail C1 over cracked existing concrete
- .4 Do not cover expansion and control joints in substrate with mortar or tiles.
- .5 Apply anti-fracture membrane over substrate before applying thin-set mortar.
- .6 Before commencing installation, wipe all dust from back of tile with a damp sponge.
- .7 Use tile setting method specified hereinafter. All tile must be fully bedded using suitable notched trowels to ensure full, even bedding.
- .8 Apply mortar using notched trowel, of type recommended by mortar manufacturer for specific installation. Do not spread more material than can be covered before it begins to skin over.
- .9 Set tiles before skinning occurs. Back butter each tile immediately before laying, to achieve full mortar contact.

- .10 Set tiles firmly over wet mortar; shifting tile in the direction of the mortar ridges to ensure full mortar contact. Beat in tile to flatten ridges into a continuous bed. Between 25% and 33% of the tile is to be imbedded in the mortar. Adjust tile for correct alignment.
- .11 Make joints of tiles to match existing in width. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Do not use gauges, string or plastic spacers. Make joints watertight, without voids, cracks, excess mortar, or excess grout. Provide minimum 85% mortar coverage.
- .12 Using a damp sponge, clean all joints and wipe all mortar smudges from the face of the tile before mortar hardens.
- .13 Keep expansion joints free of adhesive or grout.
- .14 Place tile snugly around items built in or passing through tile work. Form external angles with round edge tile extending over edge of square edge adjacent tile. Internal angles shall be formed square, carrying 1 flat tile past edge of other..
- .15 Finish surfaces flat and level and in plane with adjacent tile work.
- .16 Cut tiles to conform to irregularities in wall lines and vertical planes along outer edges. Smooth cut edges with carborundum block or by other means to provide clean straight edges.
- .17 At window stools, line up tile with existing wall base tile. Cut tile edges are not to be used at exposed edge fo stool. Grout intersection of new tile and existing wall tile, for continuous, smooth surface.
- .18 Wait at least 24 hours after tile installation before grouting. Grout joints, leave to set for 45 minutes, then rub with "scrubby" brush to break surface, make one pass with clean sponge to leave grout joint flush with tile.
- .19 Repoint joints after cleaning to eliminate imperfections. Avoid scratching tile surfaces.
- .20 Finished tile to be clean and free of tiles which are pitted, chipped, cracked or scratched.

3.3 CLEANING AND PROTECTION

- .1 Clean tile work progressively as work proceeds. Do not allow mortar to stain absorbent tile. Do not use acids for cleaning.
- .2 Conform to Section 07 92 00 for Joint Sealants.
- .3 Protect finished areas from traffic until setting materials have cured. Protect grouted areas from foot traffic for 72 hours after completion of grouting.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE

- | | | |
|----|-------------------------------|------------------|
| .1 | Demolition and Alterations | Section 02 40 00 |
| .2 | Hollow Metal Doors and Frames | Section 08 11 00 |

1.2 SCOPE OF WORK

- .1 This Section is intended to cover all repainting of existing surfaces and painting of new surfaces in areas affected by the Work of this Contract, both interior and exterior. With the exception of painting specifically called for in other Sections of the Specifications, all painting work is included in the scope of this Section of the Specification.
- .2 Unless otherwise noted on drawings, paint colours are to match existing colours in each area.
- .3 The intent of this Specification is that all new work and existing surfaces in areas affected by the Work of this project shall be painted.
- .4 Paint all new, altered, and repaired surfaces in accordance with the paint systems specified. The rest of the affected wall, to the corners at adjacent walls, are to be cleaned, prepared, and repainted. Scope of painting work includes the following:
 - .1 new hollow metal doors, frames and screens;
 - .2 masonry at heads, jambs, and sills of new windows, after repairs have been made;
 - .3 visible portions of steel lintels at windows , curtain wall, and doors.
 - .4 new and repaired drywall surfaces;
 - .5 any painted surfaces damaged during the Work of this Contract, after being repaired;
 - .6 one coat for entire wall where windows , curtain wall, and doors are replaced.
- .5 Work includes:
 - .1 testing of substrates for moisture and alkalinity
 - .2 surface preparation of substrates as required for acceptance of paint, including sanding, cleaning, small crack repair, patching, caulking, and making good surfaces
 - .3 recoatability testing
 - .4 pre-treatments, sealing, and priming of surfaces
 - .5 painting of existing and new surfaces in accordance with specified systems
 - .6 provision of adequate ventilation and safe working conditions
 - .7 clean up and protection

1.3 REFERENCE STANDARDS

- .1 Do painting and finishing work to material manufacturer's instructions and to the most recent edition of the Master Painters Institute (MPI) Maintenance Repainting Manual and Architectural Painting Specification Manual. The most stringent standards shall apply.
- .2 All paints and coatings used must conform to Green Seal Standard GS-11 for paints and coatings based on performance requirements and reduced use of hazardous substances and reduced volatile organic compounds.

SECTION 09 92 00 - REPAINTING

1.4 QUALITY ASSURANCE

- .1 Painting Subcontractor shall have a minimum of five (5) years documented successful experience with projects of a similar type and scope. When requested to do so by the Consultant, provide references confirming satisfactory performance of work on such projects.
- .2 Painting crew shall be composed of experienced, qualified journeypersons. Apprentices may undertake work only when fully supervised by senior, qualified workers.
- .3 All painting and coating products shall be as listed in the current Approved Product List published by the Master Painter's Institute (MPI).
- .4 Materials, surface preparation and workmanship shall conform to the latest edition of the MPI Maintenance Repainting Manual and Architectural Painting Specifications Manual.
- .5 The Painting Subcontractor shall inspect all surfaces requiring repainting and shall notify the Consultant and Contractor, in writing, of any defects or problems, prior to commencing repainting or after preparation work. Commencement of work will infer acceptance of existing conditions.
- .6 Final coat shall be uniform in colour and sheen across the entire surface area.

1.5 SCHEDULING OF WORK

- .1 Submit a schedule for all painting work to be performed in occupied areas. Scheduling must be coordinated with the School Principal. Schedule must be submitted at least two weeks prior to proposed commencement of painting work and is subject to approval by the Owner.
- .2 Painting work in occupied areas must be undertaken when the area is scheduled to be vacant for a sufficient period to fully perform the work, including protection of room contents, preparation of surfaces, all painting, provision of adequate curing times, and clean up.
- .3 Advise Owner of any items that need to be removed to facilitate painting work. Wall mounted tack boards, writing boards, casework, etc., do not have to be removed for painting.
- .4 Paint occupied areas in strict accordance with the approved schedule. Changes to the schedule will require written authorization from the Principal.

1.6 WORK ENVIRONMENT

- .1 Do not apply paint finish in areas where dust is being generated. Apply paint only to dry, clean, properly cured and adequately prepared surfaces.
- .2 Maintain environmental conditions within limits recommended by manufacturer, for optimum results. Do not apply coatings under environmental conditions outside manufacturer's absolute limits.
 - .1 Do not perform painting or decorating work when the ambient air and substrate temperatures are below 10°C, for both interior and exterior work.

- .2 Maintain minimum ambient air and substrate temperatures for 24 hours before, during and after paint application.
- .3 Provide adequate, continuous ventilation during work.
- .4 Provide supplemental ventilating equipment if ventilation from existing system is inadequate to meet minimum requirements.
- .5 Do not perform painting work when the relative humidity is above 85% or when the dew point is less than 3°C variance between the air/surface temperature.
- .6 Test concrete, masonry, plaster, and wood surfaces for moisture and alkalinity.
 - .1 Do not do painting or decorating work when the maximum moisture content of the substrate exceeds 15% for wood, or 12 % for concrete, masonry, plaster, and gypsum board.
- .3 Work areas shall be well illuminated during painting work. Do not perform work unless a minimum lighting level of 323 Lux (30 foot candles) is provided on surfaces to be painted or repainted.
- .4 Conform to requirements of MPI Maintenance Repainting Manual and Architectural Specification Manual.

1.7 INSPECTION AND ACCEPTANCE OF EXISTING CONDITIONS

- .1 Submit written confirmation of acceptance of existing conditions, to the Consultant, prior to commencing painting work. Painting may not commence without submission of this confirmation.
- .2 Examine the conditions of existing surfaces to be repainted and evaluate with respect to MPI's Maintenance Repainting Manual. This includes the following:
 - .1 check thickness and adhesion of existing coatings. Perform adhesion tests on existing surfaces where existing coatings are peeling, flaking, or showing signs of delamination.
 - .2 determine what type of paint products were used previously
 - .3 assess defects in existing coatings
 - .4 Determine the degree of surface degradation. Refer to MPI guidelines for accessing levels of surface degradation.
- .3 Notify the Consultant, in writing, immediately if any existing condition is encountered that will prevent the attainment of satisfactory results in this work.
- .4 Existing paint materials used in the building may not be compatible with new materials specified for the surface types in some cases. This includes surfaces which may be coated with alkyd paints. Additionally, encapsulation of old lead paint may be required. Review hazardous materials report to determine if any lead based paint is known to be present in the building.

1.8 SUBMITTALS

- .1 Submit a list of all paint materials for review by Consultant, prior to ordering materials.

SECTION 09 92 00 - REPAINTING

- .2 Submit manufacturer's data sheets for each paint product to be used on the project, including:
 - .1 MPI approved product number
 - .2 Product characteristics
 - .3 Surface preparation instructions and recommendations
 - .4 Primer requirements and finish specifications
 - .5 Storage and handling recommendations
 - .6 Application methods
 - .7 Cautions
 - .8 VOC data
- .3 Submit WHMIS Material Safety Data Sheets (MSDS) for all paint/coating materials.
- .4 Submit list of all paint brand names and colour formulas used on the job. This can be a sheet containing copies of the labels added to the paint containers at time of purchase.
- .5 Submit written confirmation of acceptance of existing conditions, as specified above, or an assessment of existing conditions noting all problematic areas.
- .6 Submit a receipt for maintenance materials required to be provided to Owner; receipt to be signed by building Custodian.

1.9 STORAGE AND HANDLING

- .1 Store paint and painter's materials in clean, dry, well ventilated locations approved by the Consultant. Store materials in an area that is within the acceptable temperature range, per manufacturer's instructions. Protect from freezing.
- .2 All paint shall be in unopened containers, labelled with:
 - .1 manufacturer's name,
 - .2 product name, product type,
 - .3 instructions for surface preparation and product application,
 - .4 VOC content,
 - .5 compliance with applicable standards,
 - .6 batch date, and
 - .7 colour name and number.
- .3 Provide CO₂ fire extinguisher minimum 9 kg capacity in paint storage area.
- .4 Handle, store, use and dispose of flammable and combustible materials in accordance with the Ontario Fire Code and to requirements of Authorities Having Jurisdiction.
- .5 Do not permit contaminants to enter waterways, sanitary or storm drain systems, or into ground. Adhere to the following procedures:
 - .1 Retain cleaning water for water-based materials to allow sediments to be filtered out. In no case shall equipment be cleaned using free draining water.
 - .2 Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.
 - .3 Return solvent and oil soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.

- .4 Close and seal tightly partly used cans of materials including sealant and adhesive containers and store protected in well ventilated fire-safe area at moderate temperature.
 - .6 Dispose of materials in accordance with the requirements of authorities having jurisdiction. Where paint recycling is available, collect waste paint by type and provide for delivery to recycling or collection facility. Empty paint cans are to be dry prior to disposal or recycling.
- 1.10 **SIGNS**
- .1 Provide legible signs throughout the Work reading "WET PAINT" in prominent positions during painting and while paint is drying.
 - .2 Use 75mm high letters on white card or board.
- 1.11 **TEMPORARY COVERS AND PROTECTION**
- .1 Protect floors and other surfaces with temporary covers such as dust sheets, polyethelene film or tarpaulins.
 - .2 Remove light switches and electrical communication and outlet plates and reinstall on completion of paint application..
 - .3 Keep oily rags, waste and other similar combustible materials in closed metal containers; take every precaution to avoid spontaneous combustion, remove waste and combustible materials daily.
 - .4 Clean surfaces soiled by spillage of paint, paint spattering and the like. If such cleaning operations damage the surface, repair and replace damaged work at no cost to the Owner.
- 1.12 **RETOUCHING**
- .1 Do all retouching, etc. to ensure that the building may be handed over to the Owner in perfect condition, free of spatter, finger prints, rust, watermarks, scratches, blemishes of other disfiguration.
- 1.13 **MAINTENANCE MATERIALS**
- .1 Provide one sealed can, one litre capacity, of each product in each colour used in the Work for Owner's use in maintenance Work.
 - .2 Container to be new fully labelled with manufacturer's name, type of paint, and colour.
 - .3 Store materials where directed by Owner's representative on site. Obtain receipt, signed by building custodian and listing all maintenance materials provided, and submit to Consultant.
- 1.14 **WARRANTY**
- .1 Warrant painting work for a period of **two (2) years** from date of Substantial Performance, or from date of completion of Work if work is not complete at date of Substantial Performance.

SECTION 09 92 00 - REPAINTING

- .2 Subcontractor shall warrant that the work has been performed in accordance with the standards and requirements of the MPI Maintenance Repainting Manual and Architectural Painting Specification Manual, most recent editions.

PART 2 - PRODUCTS**2.1 MATERIALS**

- .1 Paint and finishing materials shall be the highest grade, first line quality, low VOC products, included on the MPI Approved Product List under the MPI reference numbers specified herein, and the products of the following manufacturers:
 - .1 Benjamin Moore & Co.
 - .2 Devoe High Performance Coatings
 - .3 Dulux Paints
 - .4 The Sherwin-Williams Company
 - .5 General Paints
 - .6 Sico Paints
 - .7 PPG Canada
 - .8 Para Paints
- .2 Paints, enamels, fillers, primers, varnishes and stains shall be ready mixed products of one of the manufacturers listed. Substitutes will not be allowed. The only exception to this is where a specific product of another manufacturer is specified herein; such products shall be provided as specified.
- .3 All paints shall be ready-mixed and pre-tinted. Thoroughly re-mix all paint in containers prior to and during application to ensure break-up of lumps and uniformity of colour and gloss.
- .4 Thinners, cleaners - type and brand recommended by the paint manufacturer
- .5 Only products manufactured by paint manufacturer stated at time of submission of samples will be allowed on Site unless other materials specifically specified herein or otherwise approved. No painting to be performed until paint manufacturer is identified and acceptance received from the Consultant.
- .6 Where available, paint products shall meet MPI Environmentally Friendly E3 ratings for VOC content.
- .7 All materials and paints shall be free of lead and mercury, shall conform to Canadian Regulations for VOC limits, and shall meet flame spread and smoke developed limits required by code.
- .8 Deliver materials to Site in original unbroken containers bearing brand and maker's name. The presence of any unauthorized material or containers for such, on Site shall be of sufficient cause for rejection of ALL paint materials on Site at that time, and all previous painted work repainted with proper material.

PART 3 - EXECUTION

3.1 PREPARATION - GENERAL

- .1 Remove all paint and rust from hollow metal frames and doors to bare metal by grinding, sanding and filing. Review frame and door condition with Consultant prior to repainting.
- .2 Remove existing hardware and surface fittings, fastenings, plates, mechanical louvers, light fixture trim, signage, etc., from walls prior to repainting and replace upon completion. Clean all items, wrap carefully, fully labelling each package, and store on site for reinstallation at completion of the work. Do not use solvent or reactive cleaning agents on items which may mar or lose finishes.
- .3 Protect all adjacent interior surfaces, equipment, and furnishings to remain in work areas, including rating and instruction labels on doors, frames, piping, etc., from repainting operations and damage by use of drop cloths, shields, masking, templates, or other suitable methods. Make good any damage caused by failure to provide adequate protection.

3.2 PREPARATION OF SURFACES

- .1 Prepare surfaces in accordance with the following standards and to MPI Maintenance Repainting Manual and Architectural Specification Manual; the most stringent requirements shall apply.
- .2 Existing Surfaces:
 - .1 Refer to the MPI Maintenance Repainting manual for the levels of surface degradation and the corresponding surface preparation requirements and recommended repaint systems. Prepare existing surfaces as recommended for the finish required.
 - .2 Remove all surface contamination such as oil, grease, loose paint, mill scale, dirt, foreign matter, rust, mould, mildew, mortar, efflorescence, smoke stains, sap, and sealers from existing surfaces to assure sound bonding to tightly adhering old paint.
 - .3 Scape peeling paint off existing masonry surfaces and apply a compatible masonry sealer, approved for use by the paint manufacturer, before applying new coatings.
 - .4 Glossy surfaces must be clean and dull before repainting. Wash with abrasive cleanser, or, wash thoroughly and dull by sanding. Use full coat of bonding primer below finish coats.
 - .5 Where smoke and water stains cannot be adequately removed by cleaning, provide stain blocking primer over affected areas.
 - .6 Spot prime any existing bare areas with an appropriate primer.

SECTION 09 92 00 - REPAINTING

3.3 FINISHING SYSTEMS

- .1 Finishing systems specified below are based on the repainting and new painting systems included in the MPI manuals. Painting in renovated areas consists of repainting of existing surfaces and painting of new surfaces.
 - .1 RIN and REX formulas are found in the Maintenance Repainting Manual and apply to repainting work.
 - .2 INT and EXT formulas are found in the Architectural Painting Specification Manual and apply to new painting work.
 - .3 Finishing systems are to be modified where indicated below.
 - .4 Finishes must be low VOC products; use paint products meeting MPI Environmentally Friendly E3 ratings, where such products are available in Ontario.
 - .5 All finishing systems shall be Premium Grade.
- .2 Existing surfaces to be repainted are to be primed in accordance with MPI Maintenance Repainting Manual recommendations for the degree of surface degradation, as follows:
 - .1 DSD-1: Touch-up
 - .2 DSD-2: Spot prime
 - .3 DSD-3: Full prime coat
 - .4 DSD-4: After repair by others, full prime coat
- .3 Bonding Primer:
 - .1 Where existing surfaces are coated with different coating types than they are specified to receive, including old alkyd paints, glazed coatings, epoxies, etc., or where surfaces are inherently slick or glossy, use a full prime coat of bonding primer before applying new finish coats.
 - .2 All existing metal doors, frames and screens are to receive a full coat of bonding primer before repainting.
 - .3 Bonding primer shall be MPI #17 X-Green, or MPI #17 within VOC range E3, selected as appropriate for the substrate and new coating.
- .4 Hollow Metal Doors, Frames, and Screens: High Performance Architectural Latex, semi-gloss finish
 - .1 RIN 5.3J - G5 (modified) for repainting work
 - .1 2 coats of bonding primer MPI #17 X-Green
 - .2 3 coats of HIPAC Latex MPI #141; VOC Range E3
 - .2 INT 5.3M - G5 for new painting work
 - .1 2 coats water based Galvanized Primer MPI #134
 - .2 2 coats HIPAC Latex MPI #141; VOC Range E3

3.4 APPLICATION

- .1 Apply coatings in accordance with manufacturer's printed instructions.
- .2 Use suitable, clean equipment in good condition.

- .3 Maintain dust-free suitable conditions on the surfaces free from machine, tool or sandpaper marks, insects, grease, or any other condition liable to impair finished work to prevent production or good results.
- .4 Do not commence repainting unless substrates are acceptable and until all environmental conditions (heating, ventilation, lighting and completion of other subtrade work, if applicable) are acceptable for application of products.
- .5 Allow appropriate time between surface cleaning and commencement of painting work to permit surface conditions to be ready for coating work, and to prevent re-contamination of surfaces.
- .6 Apply primers, paints, and stains in accordance with the Premium Grade finish requirements of the MPI Painting and Repainting manuals.
- .7 Apply bonding primer over incompatible existing coatings and glossy substrates, as specified above.
- .8 Apply evenly, uniform in sheen, colour and texture, free from brush or roller marks, well brushed or rolled in and free of crawls, runs, join marks or other defects.
- .9 Sand and dust between each coat to provide an anchor for next coat and to remove defects in previous coat (runs, sags, etc.) visible from a distance up to 1000 mm.
- .10 Permit paint to dry between coats. Touch up uneven spots after applying first coat. Tint various coats of multiple coat work in light shades of the final colour selected, to distinguish between coats.
- .11 To avoid air entrapment in applied coats, apply materials in strict accordance with manufacturer's spread rates and application requirements.
- .12 Painting coats are intended to cover surfaces perfectly; if in painter's opinion, formula specified is inadequate to provide a first class finished surface, report to the Consultant and have formulas rectified before commencing work. Surfaces imperfectly covered shall receive additional coats at no additional cost. Provide additional coat where ever dark colours are used.
- .13 Use paint unadulterated. Use same brand of paint for primer, intermediate and finish coats. Factory mix all paints.
- .14 Paint finish shall be applied by roller except in the case of wood trim, door frames, base board and similar work of small surface area which shall be painted by brush. Do not use roller for applying finish other than paint.
- .15 Spray painting will not be permitted.
- .16 Finish edges of doors with paint as required to match face of door.
- .17 Carefully hand smooth and sandpaper wood between coats (including priming). Apply one coat sealer before applying first coat paint filler to knots or sap blemishes on wood surfaces to receive paint or stain finish.

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- .18 After first coat, fill nail holes, splits and scratches, using putty coloured to match finish.
- .19 Remove rust, oil, grease and loose shop paint from metal work by brushing or with wire brushes. Feather out edges to make touch up patches inconspicuous.
- .20 Do not etch galvanized metal. Use zinc rich primer. This includes metal door frames.
- .21 Note that bonding primer is required on all existing hollow metal doors, frames and screens to be repainted. Two coats of primer is required on all new hollow metal doors, frames and screens. Four coat system is required in all cases. Sand between all coats.
- .22 At all hollow metal doors and frames, prime coat must be inspected and signed off by Site Supervisor before painting work may proceed.

3.5 CLEAN-UP AND PROTECTION

- .1 Replace and reinstall all items previously removed and stored upon completion of repainting work in each area.
- .2 Protect all newly painted exterior surfaces from rain and snow, condensation, contamination, dust, salt spray and freezing temperatures until paint coatings are completely dry. Curing periods shall exceed the manufacturer's recommended minimum time requirements.
- .3 Erect barriers or screens and post signs to warn, limit or direct traffic away or around work area as required.
- .4 Remove all paint where spilled, splashed, splattered or sprayed as work progresses using means and materials that are not detrimental to affected surfaces.
- .5 Clean equipment and dispose of wash water and solvents as well as all other cleaning and protective materials, paints, thinners, paint removers/strippers in accordance with the environmental and safety requirements of authorities having jurisdiction.

END OF SECTION

PART 1 - GENERAL

1.1 WORK INCLUDED

- .1 A Cash Allowance is included for the supply and installation of manually operated, full height, room darkening shades at exterior windows in Learning Commons at Monsignor Philip Coffey Catholic School.
- .2 Remove and reinstall blinds and other window coverings indicated to be retained, which are removed to accommodate window work, under the general Contract.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- .1 Hollow Metal Doors and Frames Section 08 11 13
- .2 Aluminum Windows Section 08 51 13

1.3 SUBMITTALS

- .1 Submit shop drawings including the following information:
 - .1 Layout of all blinds on floor plans.
 - .2 Provide details to show sizes, fabrication, installation, anchorage, and interface of the work of this Section with the work of adjacent trades.
 - .3 Indicate field measurements on shop drawings.
- .2 Submit list of proposed materials.
- .3 Submit manufacturer's specifications, product data, and other data needed to prove compliance with the specified requirements.
- .4 Manufacturer's recommended installation procedures which, when accepted by the Consultant will become the basis for accepting or rejecting actual installation procedures used on the work.
- .5 Fabric to be flame retardant. Provide proof of compliance with CAN/ULC S109, Flame Tests of Flame-Resistant Fabrics and Films, small scale vertical burn requirement test.
- .6 Submit fabric samples for colour selection by the Consultant.
- .7 Provide printed operation and maintenance instructions for inclusion in maintenance manuals.

1.4 WARRANTY

- .1 Provide a warranty for an extended period of **three (3) years** from date of Substantial Performance.

SECTION 12 24 00 - WINDOW SHADES

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Manual shades shall be commercial system with smooth operating chain and sprocket roller shades, supplied and installed by subtrade appointed by Owner and paid through the Cash Allowance included in the Contract.
- .2 For blinds to be reinstalled, existing brackets and other hardware may be reused, providing they were not damaged during removal. Replace all damaged or missing blind hardware. Provide new fasteners for all blinds and other window coverings being reinstalled.

PART 3 - EXECUTION

3.1 COORDINATION

- .1 Co-ordinate as required with other trades to assure proper and adequate provision in the work of those trades interfaced with the work of this Section.

3.2 EXISTING CONDITIONS

- .1 Examine the areas and conditions under which work of this section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.3 INSTALLATION

- .1 Fasten support brackets to masonry and/or steel lintels. Fastening brackets to aluminum window or curtain wall frames will not be accepted.
- .2 Locate and install the Work of this Section in strict accordance with reviewed Shop Drawings, pertinent requirements of government agencies having jurisdiction, and the manufacturer's recommended installation procedures as accepted by the Consultant anchoring all components firmly into position for long life under School environment use.
- .3 Install the work plumb, level, and in proper operating condition.
- .4 Upon completion of the installation, put each operating component through at least five complete cycles, adjusting as required to achieve optimum operation and complete blackout at all edges.

END OF SECTION