HWDSB

WINDOW AND DOOR REPLACEMENT
AND LEARNING COMMONS RENOVATIONS TO

CECIL B STIRLING ELEMENTARY SCHOOL

340 QUEEN VICTORIA DRIVE, HAMILTON, ON

ARCHITECTURAL SPECIFICATIONS

WHITELINE | Architects Inc.

Architectural

Mechanical

Electrical

END OF DRAWING INDEX

ARCHITECTURAL ITEMS:

1.1 Description of Work

.1 Work under this Contract in general covers, but is not limited to, window and door replacements and Learning Commons Renovations to Cecil B Stirling Elementary School for the Hamilton Wentworth District School Board.

a) The project includes removal of existing windows, screens, doors, window coverings and installing new windows, doors, painting, window coverings, hardware, ceilings, lighting,mechanical, drywall and painting, all in accordance with the Contract Documents.

1.2 Documents Required

.1 Maintain at job site, one copy each of following:

a) Contract drawings
b) Specifications
c) Addenda
d) Reviewed shop drawings
e) Change Orders and Contemplated Change Notices
f) Site/Field Instructions
g) Other modifications to contract
h) Field test reports
i) Copy of approved work schedule
j) Manufacturers' installation and application instructions.
k) List of Sub-contractors
l) As-built Drawings
m) Minutes of Site Meetings

1.3 Specifications

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

.2 Whenever used in Specifications following definitions shall apply:

a) SUPPLY - Procurement or fabrication of standard components not to special design of materials, equipment, or components, or performance of services to extent indicated. Where used with respect to materials, equipment, or components, term shall include delivery to Site but is not intended to include installation of item, either temporary or final.

b) FABRICATE AND SUPPLY - Fabrication of materials, equipment or component, to special customized design to extent indicated including delivery to Site, assisting in form of supervision to those Section(s) installing materials, equipment or component. Term does not include installation of item either temporary or final.

c) INSTALL - Placement of materials, equipment, or components, including receiving, unloading, transporting, storage, uncrating and installing, and performance of such testing and finish work as is compatible with degree of installation specified complete ready for use.

d) PROVIDE - To Supply and Install, compete and in place, including accessories, finishes, tests and services as required to render item so specified complete ready for use.

e) COMMISSION - Startup and initial operation of equipment as required and/or as specified in respective Sections, to demonstrate satisfactory operation of components and entire system including calibration of any control instrumentation as required to maintain operations.

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

.4 Wherever words "acceptable", "approved", "reviewed", "satisfactory", "selected", "directed", "designated", "permitted", "inspected", "instructed", "clarification", "required", "report", "submit", "obtain", "consult", "advise", or similar words or phrases are used in Standards or in Contract Documents, it shall be understood that, unless context provides otherwise words "by/to/with/from the Architect shall follow them as applicable.

1.4 Work Schedule .1 No work shall commence on the project or portion of the project without assurance that the delivery of critical materials to complete the project is in place.
It is the expectation of the Hamilton Wentworth District School Board (HWDSB) that the Contractor will order the necessary materials upon award of the Contract.

.2 Provide within 10 working days after Contract award, schedule showing anticipated progress stages and final completion of work within time period stated on the Tender Form.

.3 In accordance with schedule and in form acceptable to the Architect provide within (10) working days after contract award, schedule showing dates for:

a) Submission of shop drawings, material lists, and samples.
b) Delivery of the following items of equipment and materials (as required for project):

i) Windows
ii) Doors and Hardware
iii) Lighting
iv) Unit Ventilators

.3 Interim reviews of work progress on work schedule will be conducted as described by Architect and schedule updated by Contractor in conjunction with and with approval of Architect.

1.5 Contractor's Use

.1 USE OF SITE: Limit to those areas of the site designated by the Owner and the architect for sea container and portable washroom. Operators and activities should allow for storage, parking, deliveries, exits, fire safety and construction.

.2 Do not unreasonably encumber site with materials or equipment.

.3 Obtain and pay for use of additional storage or work areas needed for operations.

1.6 Partial Occupancy of Use

.1 Contractor to coordinate the Work with the continuing use of the remainder site.

1.7 Standards

.1 Where reference is made to specification standards produced by various organizations, conform to edition of standards specified or, if not specified, to latest edition as amended and revised to date of Contract.

.2 If requested provide copy on Site of such standard(s).

.3 Where standard designated authorities such as "Engineer", Designer", "Purchaser" or some other such designation, these designations shall be taken to mean "Architect".

1.8 Building Code

.1 Comply with The Building Code Act, as amended; and the Building Code, as amended; and Regulations and by-laws of other authorities having jurisdiction including latest amendments thereto: all hereafter referred to as Code where Code or Contract Documents do not cover particular requirement which is covered by National Building Code, 2005 conform to requirements of NBC including its related supplements. Where Drawings and/or Specifications exceed Code requirements satisfy such additional requirements.

.2 Where material is designated in Contract Documents for certain application, unless otherwise specified, that material shall conform to standards designated in Code and in absence of more restrictive requirement comply with "Housing and Small Buildings Part 9" of Code. Similarly, unless otherwise specified, and not required otherwise by Code, installation methods and standards of workmanship shall also conform to standards of Part 9. Where specific requirements for a material are not specified for certain use select from choice offered in Part 9.

1.9 Project Meetings

.1 Hold project meetings at times and locations requested by the Architect. Allow for bi-weekly meetings during construction.

.2 Notify all parties concerned of meetings.

.3 Record minutes of meetings, and distribute to all parties within 72 hours of meeting.

1.10 Setting Out of Work

.1 Assume full responsibility for and execute complete layout of work to locations, lines and elevations indicated.

.2 Provide devices needed to lay out and construct work.

.3 Supply such devices as ladders, measuring tapes, straight edges and templates required to facilitate Architect's inspection of work.

.4 Supply stakes and other survey markers required for laying out work.

.5 Any deviation from line and level shall be corrected without additional cost, to the Architect's satisfaction.

1.11 Location of Equipment and Fixtures

.1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate. Do not scale drawing for locating of position. Obtain Architect's direction.

.2 Locate equipment, fixtures, and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access, and maintenance.

.3 Inform Architect of impending installation and obtain his approval for actual location.

.4 Submit field drawings to indicate relative position of various services and equipment when required by Architect.

1.12 Concealment

.1 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

1.13 Cutting, Fitting, Patching

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

.2 Obtain Engineer's approval before cutting, boring or sleeving load-bearing members.

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

.4 Fit work airtight to pipes, sleeves, ducts, and conduits.

.5 Cutting and patching to be by tradesmen qualified in the respective sections of the work.

1.14 Existing Services

.1 Before commencing Work, establish location and extent of existing services in area of Work and notify Architect.

.2 Whenever it is necessary to cut, interfere with, or connect to existing services or facility do so at hours and times recommended by governing authorities and approved by Architect; and with minimum disturbance to occupants, pedestrian and vehicular traffic and public and private property.

.3 Submit schedule to and obtain approval from Architect for each proposed shut-down of active service or facility. Adhere to approved schedule and provide notice to affected parties.

.4 If unknown services are encountered, immediately notify Architect and confirm findings in writing and/or on Drawings. Obtain Architect's written direction if such services require cutting, capping or relocation to do Work.

.5 Remove abandoned service lines within 2m of structures. Cap or otherwise seal lines at cut-off points as directed by Architect.

.6 Protect and record locations of maintained or rerouted service lines. Record locations of abandoned service lines.

1.15 Additional Drawings

.1 Architect may furnish additional drawings to assist proper execution of work. These drawings will be issued for clarification only. Such drawings shall have same meaning and intent as if they were included with plans referred to in

Contract Documents.

1.16 Relics and Antiquities

.1 Relics and antiquities and items of historical or scientific interest such as cornerstones and contents commemorative plaques, inscribed tablets, and similar objects found on site or in buildings to be demolished, shall remain property of Owner. Protect such articles and request directives from Architect.

1.17 Coordination

.1 The Contractor will coordinate the work of all sub-contractors, including mechanical and electrical trades.

.2 Coordinate work of each Section as required for satisfactory and expeditious completion of Work. Take field dimensions. Take into account existing installations to assure best arrangements of components in available space. Consult before commencing Work in critical locations. Fabricate and erect Work to suit field dimensions and field conditions.

.3 Provide forms, templates, anchors, sleeves, inserts and accessories or other components required to be fixed to or inserted in Work. As applicable set them in place or instruct related Sections as to their location.

.4 Pay cost of extra work caused by, and make up time lost as result of failure to comply with these requirements at proper time.

.5 Cutting and patching as specified in sub-section above.

1.18 Modular Coordination

.1 Where work incorporates metric modular components following rules apply:

a) Actual opening dimensions in masonry including doors, windows, walls, louvres and actual room sizes are 10 mm (3/8") greater than nominal dimensions given on Drawings. Actual thicknesses of walls, piers and overall lengths of walls or buildings are 10 mm (3/8") less than nominal dimensions given on Drawings unless indicated otherwise.

b) Unless indicated otherwise Drawing details at scales of 1:10 and less indicate "actual" rather than "nominal" dimensions.

1.19 Examination

.1 Examine work upon which your work depends. Report in writing defects in such work. Application of your work shall be deemed acceptance of work upon which your work depends.

.2 Drawings are, in part, diagrammatic and are intended to convey scope of Work and indicate general and approximate location, arrangement and sizes of fixtures, equipment, ducts, piping, conduit and outlets and similar items. Obtain more accurate information about locations, arrangement and sizes from study and coordination of Drawings, including shop drawings and manufacturers' literature and become familiar with conditions and spaces affecting these matters before proceeding with Work.

.3 Where job conditions require reasonable changes in indicated locations and arrangements, make such changes with approval of Architect at no additional cost to Client. Similarly, where existing conditions interfere with new installation and require relocation, such relocation is included in Work.

.4 Install and arrange fixtures, equipment, ducts, piping and conduit to conserve as much headroom and space as possible, and avoid interference and obstruction of access. Observe good installation practice for safety, access, maintenance and follow manufacturer's recommendations. Make changes requested to comply with these requirements at no additional cost to Client.

.5 If requested by Architect, and before installation, relocate equipment, services, doors, openings, furring and other work at no additional cost to Client; providing such relocation involves only reasonable minor adjustments and reasonable advance notice is given in writing.

1.20 Cold Weather Work

.1 Construction to continue work including winter months, if applicable, until Work is completed and accepted to meet the schedule. No additional costs for cold weather heating will be entertained.

1.21 Materials, Plant and Equipment

.1 Materials, plant and equipment specified shall form basis of Bid and Contract. Where more than 1 brand or manufacturer is named in Specifications, or on Drawings, choice is Bidders/Contractors provided requirements of Drawings and Specifications are met.

.2 Unless explicit statement is made in Bid/Contract Documents to say no substitutions will be permitted; then works "or approved alternate" are hereby deemed to apply to material, plant and equipment specified by brand or manufacturer, subject to following conditions

a) Request for substitution is made after Contract award and

in accordance with provisions for substitutions set out in the General Conditions of the Contract.

b) Proposed substitution satisfies all other indicated or specified requirements and conditions.

.3 Materials, plant and equipment shall not be damaged or defective and shall be of quality compatible with Specifications for purpose intended. If requested provide evidence as to type, source and quality. Remove and replace defective products, at
own expense, regardless of previous inspections, and be responsible for delays and expenses caused thereby.

.4 Replace factory finished equipment, or parts thereof, whose paint finish is damaged and cannot be reasonably remedies by paint touch-up.

1.22 Material Storage and Handling

.1 Store packaged materials in original, undamaged containers with manufacturer's labels and seals intact. Handle and store materials in accordance with manufacturer's and suppliers' recommendations and in manner to prevent damage to materials during storage and handling.

1.23 Concealment of Work

.1 Conceal pipes, ducts conduits, tubing, wiring and other items requiring concealment in floor, wall and ceiling construction of finished areas except where indicated or specified otherwise. If in doubt as to method of concealment, or intention of Contract Documents in this connection, request clarification from Architect before proceeding with work in question.

.2 Lay out mechanical and electrical work in advance of concrete placement and furring installation to allow for its proper concealment.

.3 Test and inspect work before applying pipe covering and before Work is concealed.

1.24 Lines, Levels and Dimensions

.1 Have registered Ontario Land Surveyor establish 1 permanent bench marks on Site, referenced to established bench marks by survey control points. Provide and maintain control lines and level required.

.2 Lay out work in accordance with lines. levels and dimensions indicated and/or provided on bench marks established by survey.

.3 Verify lines, levels and dimensions. Report errors or inconsistencies in Drawings and obtain direction before commencing Work.

.4 Except as provided by survey, provide lines, levels and dimensions necessary to relate your work to work of other Sections.

1.25 General Workmanship

.1 Do Work in accordance with industry practice for type of work unless Contract Documents stipulate more precise requirements.

.2 Do Work in neat and careful manner to retain Work plumb, square and straight.

.3 Ensure Work is properly related to form close joints and appropriately aligned junctions, edges and surfaces and is free of warp, twist, wind, wave or other irregularities.

.4 When required by Specifications or by manufacturer's recommendations, have manufacturer, supplier or accredited agent, inspect work which incorporates their products.

.5 Do not permit materials to come in contact with other materials whether in presence of moisture or otherwise if conditions will result in corrosion, stain or discolouration or deterioration of completed Work. Provide compatible, durable separators where such contact is unavoidable.

1.26 Fasteners

.1 Supply appropriate fasteners, anchors, accessories and adhesives required for fabrication and erection of Work.

.2 Unless specified otherwise use exposed metal fasteners and accessories of same texture, colour and finish as product being fastened.

.3 Use metal fasteners of same material as metal component being fastened, or of metal which will not generate electrolytic action and cause damage to fastener or metal component under moist conditions. In general use noncorrosive or hot dip galvanized steel anchors occurring on or in exterior wall, slab or other exterior locations, unless higher standard is indicated or specified.

.4 Fastening devices or adhesives shall be of appropriate type, used in sufficient quantity and in such manner to provide positive, permanent fastening which will not shift, work loose or fail during occupancy of building due to vibration or other causes resulting from normal use of building. Install anchors at spacing to provide required load/stress carrying capacity. Do not use wood plugs.

.5 Lay out fasteners neatly, evenly spaced and aligned. Keep exposed fasteners to minimum.

.6 Supply adequate instructions and templates and, if necessary supervise installation, where fasteners or accessories for your Section are required to be built into work of other Sections.

.7 Do not use fasteners which will cause spalling, cracking, or deformation or deterioration of material being fastened by or to.

.8 Do not use powder actuated fastening devices, which are used in tension, without approval. Take stringent safety precautions when using powder actuated fasteners. Use only low velocity plunger-type devices.

.9 Use adhesives specified, or if not specified, those recommended by manufacturer of materials involved, compatible with materials to be joined, and effective in forming permanent joint of adequate strength.

.10 Use screws, nails, staples and other similar, driven fasteners suitable to materials to be joined and to conditions under which they are installed and used. Ensure that in finished work, fasteners are sized to take durable hold under stress to be encountered without damage to, or weakening of, elements secured together, and that fastenings will not corrode or cause staining of exposed surfaces.

.11 Do brazing or soldering to form durable connections of strength adequate to resist stresses to be encountered without deformation of elements joined. Prepare base metals and use methods and materials to ensure clean joint, and to prevent staining, corrosion, discolouration, deformation or other damage to finished Work.

.12 Do welding to CSA W59-M89 (for steel) or CSA W59.2-M91 (for aluminum) for material and methods, unless specified otherwise. Have welding performed by industry certified operatives to CSA W47.1-83 or CSA W47.2-M87.

1.27 Accessories

.1 Provide accessory items or materials required, such as brackets, cleats, connectors, sealants, lubricants, cleaners, protection, and similar items, whether specified or not, so that Work is complete and will perform as required.

1.28 Design and Safety Requirements for Temporary Work

.1 Be responsible for design, erection, operation, maintenance and removal of temporary structural and other temporary facilities. Engage and pay for registered Professional Engineering personnel skilled in appropriate disciplines to perform these functions where required by law or by the Contract Documents; and in cases where such temporary facilities and their method of construction are of such nature that Professional Engineering skill is required to produce safe and satisfactory results.

1.29 Protection and Safety

.1 Comply with requirements of Acts and Regulations with respect to health and safety including Occupational Health and Safety Act, as amended, and Workplace Hazardous Materials Information System (WHIMIS) Regulation, including following:

a) Before commencement of Work, and throughout Contract, maintain on Site, and readily accessible to all those who may be exposed to hazardous materials, list of hazardous materials proposed for use on Site or Workplace together with current Materials Safety Data Sheet (MSDS).

b) Ensure hazardous materials used and/or supplied on Site are labelled in accordance with WHIMIS requirements.

c) Know and be aware of the procedures for safe handling, storage and use of such hazardous materials including special precautions, safe clean-up and disposal procedures. Conform to Environmental Protection Act for disposal requirements.

d) ensure that those who handle, and/or are exposed to, or are likely to handle or be exposed to, hazardous materials are fully instructed and trained in accordance with WHIMIS requirements.

2. Protect excavation, trenches and building from damage from rainwater, ground water, backing up of drains or sewers and other water, frost and other weather conditions. Provide sheeting, piling, shoring, pumps, equipment, temporary drainage, protective covering and enclosures. Provide necessary pumps including spare pump for keeping project free of water throughout construction period.

.3 Protect, relocate and maintain existing, active services wherever they are encountered. Wherever inactive services are encountered, cap them off and remove unwanted portion, with approval of authorities having jurisdiction or public utility

concerned in manner approved by them.

.4 Load no part of structure during construction with load greater than it is calculated to bear safely when completed. Make every temporary support as strong as permanent support. Place no load on concrete structure until it has sufficient strength to safely carry such load.

.5 Adequately protect floors and roofs from damage. Take special measures when moving heavy loads or equipment on them.

.6 Keep floors free of oils, grease or other materials likely to discolour them or affect bond of applied surfaces including fumes generated by temporary heating devices. Take care not to spill or allow oil, grease, gasoline, diesel and fuel oil, chemicals and other substances to contaminate soil or water on or adjacent to Site. Should such contamination accidentally occur report it immediately and clean up to satisfaction of Architect.

.7 Protect work of other Sections from damage resulting from your work.

.8 Damaged work shall be made good wherever possible by Section whose work is damaged but at expense of those causing damage.

.9 Protect glass and other finishes against heat, slag and weld splatter using suitable protective shields or covers.

.10 Prior to beginning of construction, design fire safety plan in conjunction with local Fire Chief. Post fire plan throughout construction and recommended. Do not allow accumulation of waste that may constitute fire hazard.

.11 Conform to Construction Safety Association of Ontario's manual on Propane in construction. Watch work area for minimum of 30 minutes after hot work is completed. Provide Site fire security when required by local building department and/or municipal fire department. Ensure that water supply is adequate for fire fighting.

.12 Provide and maintain in working order, suitable Underwriters' labelled fire extinguishers and locate in suitable positions, to approval of authorities having jurisdiction.

.13 Provide minimum of 3 safety helmets for Architect and any other authorized visitors to Site if required.

.14 Protect public and those employed on Work from injury. Equipment (mobile) when not in use shall have keys removed and locked up in secure location.

1.30 Scaffolding

.1 Erect scaffolding independent of walls. Use it in manner as to interfere as little as possible with other Sections. When not in use, move it as necessary to permit installation of other work. Construct and maintain scaffolding in rigid, secure and safe manner. Remove it promptly when no longer required

1.31 Temporary Cleaning

.1 Keep Site and building, including concealed spaces, free from accumulation of dirt, debris, garbage and excess material. Remove oily rags and waste from premises at close of each day, or more often if required.

1.32 Manufacturers Directions

.1 Except where specified otherwise, use each product in accordance with manufacturer's published or written instructions, specifications or recommendations regarding handling, storage, preparation, Site conditions, ancillary products or accessories, methods of installation, protection and cleaning. Submit coy of such instructions, and indicate if and where there is discrepancy between them and requirements of Specifications and obtain direction.

1.33 Spare Products

.1 Where specified in other Sections, provide spare materials and products for future repair and replacement.

.2 Ensure such materials are of same production run as those incorporated in Work.

.3 Deliver quantities required, in separate labelled containers, and store where directed.

.4 Labels shall state material description, colour, pattern and location of installation.

1.34 Environmental Practices

.1 Take active role in implementing environmentally sound business practices and producing goods and services that lessen burden on environment in production, use and final disposition. Support implementation of reduction, reuse and recycling strategies and use of environmentally sound products. Reduce or eliminate excessive packaging and promote use of environmentally responsible packaging practices.

a) Environmentally Sound Products: Product that is made, used and disposed of in a manner that significantly reduces harm it would otherwise cause the environment. Product may be certified as environmentally sound because it is made in a way that improves energy efficiency, reduces hazardous by-products, uses recycled material, or because the product itself can be recycled or reused, or in some way is environmentally benign.

b) Packaging requirements: Implement waste reduction by reducing or eliminating excessive packaging practices.

c) Use, where appropriate, combination of packaging materials such as re-usable containers, blanket wrap or cushioning material provided that all reasonable requirements of materials handling, transportation and storage are observed.

d) Packaging materials such as kraft paper and corrugated cartons shall be made from reclaimed products to facilitate recycling of secondary materials.

e) Packaging material shall be clearly labelled to display their recycled content and recyclability.

f) Ensure that packaging materials are removed from Site and disposed of in environmentally responsible manner.

1.35 Waste Disposal

.1 Do not burn rubbish on Site. Obtain approval and use following off-Site disposal alternatives, depending upon materials involved; burying, composting, Municipal collection or local dump or sanitary landfill site.

1.36 Polychlorinated Biphenyl (PCB's)

.1 In event of unexpected discovery of PCB's immediately notify Architect orally and in writing and do not handle, disturb or remove items containing PCB's. Architect will authorize remedial work, if any, in writing. Do such remedial work as addition to Contract.

1.37 Spill Response Procedures

.1 The Contractor shall have written spill response procedures and material on-site to respond to pollutants and contaminants Into the natural environment in excess of levels permitted in regulations or cause or are likely to cause an adverse effect.

End of Section 01005

1.1 Samples

.1 **Mandatory Sample Approval:**
Submit samples in sizes and quantities specified in all related sections as noted elsewhere herein. Samples are to be submitted for all interior and exterior building finishes unless noted otherwise. All samples are to be approved by the Architect before the related items are ordered and put into production as applicable. No items are to be installed on site without prior sample approvals by the Architect's office. Any installed items (not previously approved by sample submittal to the Architect) are subject to full rectification (to all aspects of the drawings, specifications, schedules and related Contract Documents) at no additional expense.

.2 **Verification of Product Names and Codes:**
All trades and sub-trades are responsible to verify that supplied and specified product *names* and *colour names* reconcile to the *numeric product codes* also provided throughout. All discrepancies between product names and codes (i.e. written description and product ordering numbers) are to be reported to the Architect prior to product ordering, fabrication and installation.

1.2 Co-ordination complete Submissions

.1 **Prior to first draw for payment being processed, the list of all shop drawings for the project shall be submitted and approved by all consultants. Updated shop drawing schedule to be submitted with each draw until all shop drawings have been processed.**

.2 Review shop drawings, product data and of samples prior to submission.

.3 Verify:
(a) Field measurements
(b) Field Construction Criteria
(c) Catalogue numbers and similar data

.4 Co-ordinate each submission with requirements of work and Contract documents. Individual shop drawings will not be reviewed until all related drawings are available.

.5 Contractor's responsibility for errors and omissions in submission is not relieved by Architect's review of submittals.

.6 Contractor's responsibility for deviations in submission from requirements of contract documents is not relieved by Architect's review of submission, unless Architect gives written acceptance of specified deviations.

.7 Notify Architect, in writing at time of submission, of deviation from requirements of Contract documents.

1.3 Submission Requirements

.1 Schedule submissions at least twenty-one (21) days before dates reviewed submissions will be needed.

.2 Submit shop drawings via pdf document for consultant review.

.3 Accompany submissions with transmittal letter, containing:
- (a) Date
- (b) Project title and number
- (c) Contractor's name and address
- (d) Number of each shop drawing, product data and sample submitted.

.4 Where additional copies of shop drawings or product data are required for distribution, they shall be marked by the Contractor to accord with the copies reviewed by Consultants.

.5 Submissions shall include:

(a) Date and revision dates
- (b) Project title and number
- (c) Name of:
  - (i) Contractor
  - (ii) Sub-contractor
  - (iii) Supplier
  - (iv) Manufacturer
  - (v) Separate detailer when pertinent
- (d) Identification of product or material
- (e) Relation to adjacent structure or materials
- (f) Field Dimensions, clearly identified as such
- (g) Specification Section number
- (h) Applicable standards, such as CSA or CGSB numbers
- (i) Contractor's stamp, initialed or signed, certifying review of submission, verification of field measurements and compliance with Contract documents.

.6 Final copy of shop drawings to the Client for record purposes.

.7 Shop Drawings not stamped with the Contractor's "Approved" stamp will be rejected.

.8 Shop Drawings requested to have Engineer’s seal submitted without said seal will be rejected.

End of Section 01340

1.1 Access

.1 Provide and maintain adequate access to project site.

.2 Do not encumber corridors with materials and keep clean.

1.2 Contractor's Site Offices

.1 The General Contractor shall provide for their own site offices and workshops for the entire length of Construction if required. Areas of work within the school are not available.

.2 Maintain in clean condition. Sweep daily.

.3 This facility not to be used for material storage.

1.3 Sanitary Facilities

.1 Sanitary facilities will not be designated for contractor's use within the school.

.2 Portable washroom to be installed in exterior compound area. Ensure it is secured to avoid damage and vandalism. Exterior compound to be locked when not on site.

1.6 Parking

.1 Parking is allowed on school ground after regular school hours until end of June. During summer recess contractors are allowed to park on site.

.2 Do not interfere with adjacent and local existing traffic patterns including such items as bus routes, drop-off/pick-up lanes, etc.

1.7 Enclosure of Structure

.1 Provide temporary weather tight enclosures and protection for exterior openings until permanently enclosed.

.2 Provide and maintain dustproof and sound resistant barriers or partitions between the Work and existing occupied building.

1.8 Power

.1 Existing electrical power and lighting systems may be used for construction requirements with prior approval of Owner provided that guarantees are not affected. Make good damage. Replace lamps which have been used over a period of 3 months.

1.9 Water Supply

.1 Water supply is available.

1.10 Heating & ventilation

.1 Provide temporary heat and ventilation in enclosed areas as required to:

(a) Facilitate progress of work.
(b) Protect work and products against dampness and cold.
(c) Prevent moisture condensation on surfaces.

(d) Provide ambient temperatures and humidity levels for storage, installation and curing of materials.
(e) Provide adequate ventilation to meet health regulations for safe working environment.

.2 Maintain minimum temperature of 10°C or higher where specified as soon as finishing work is commenced and maintain until acceptance of structure by Architect.

.3 Ventilating:
(a) Prevent hazardous accumulations of dust, fumes, mists, vapours, or gases, in areas occupied during construction.
(b) Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
(c) Provide mechanical ventilation to accelerate drying out of building if necessary to maintain schedule.
(d) Ventilate storage spaces containing hazardous or volatile materials.
(e) Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful elements.

.4 Maintain strict supervision of operation of temporary heating and ventilating equipment to:
(a) Conform with applicable codes and standards
(b) Enforce safe practices
(c) Prevent abuse of services
(d) Prevent damage to finishes
(e) Vent direct-fired combustion units to outside.

1.11 Site Signs and Notices

.1 Only project identification and approved job sign and notices for safety or instruction are permitted on site.

.2 Signs and notices for safety or instructions to be in the English language, or commonly understood graphic symbols.

.3 Maintain sign and notices for duration of project. Remove sign and deliver to Owner off site on completion of project.

1.12 Scaffolding

.1 Construct and maintain scaffolding in rigid, secure and safe manner.

.2 Erect scaffolding independent of walls. Remove promptly when no longer required. Refer to Section 01545 for safety requirements for scaffolding.

End of Section 01500

1.1 Construction Safety Measures

.1 Observe and enforce construction safety measures required by the Ontario Building Code, Provincial Government, Worker's Compensation Board and Municipal Statutes and authorities.

.2 In event of conflict between any provision of the above authorities the most stringent provision will apply.

1.2 Fire Safety Requirements

.1 Provide and maintain in good working order, sufficient fire fighting equipment, tools, and extinguishers to contain an outbreak of fire.

.2 Comply with all requirements of the local authorities having jurisdiction in the storage and handling of flammable materials.

.3 Ensure all persons working at the site are conversant with action to be taken in the event of an outbreak of fire at the Work.

1.3 Overloading

.1 Ensure no part of work is subjected to a load which will endanger its safety or will cause permanent deformation.

1.4 Falsework

.1 Design and construct falsework in accordance with CSA S269.1-1975.

1.5 Scaffolding

.1 Design and construct scaffolding in accordance with CSA S269.2-M1980.

1.6 Smoking

.1 Smoking or vaping is not permitted anywhere on School Board Property.

End of Section 01545

1.1 General

.1 Use new material and equipment unless otherwise specified or directed in writing by the Architect.

.2 Within (7) days of written request by Architect, submit the following information for any or all material and products proposed for supply:

(a) Name and address of manufacturer
(b) Trade name, model, and catalogue number
(c) Performance, descriptive and test data
(d) Manufacturer's installation or application instructions
(e) Evidence of arrangements to procure

.3 Provide material and equipment of specified design and quality, performing to published ratings and for which replacement parts are readily available.

.4 Use products of one manufacturer for equipment or material of same type or classification unless otherwise specified.

1.2 Manufacturer's Instructions

.1 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods.

.2 Notify Architect in writing of any conflict between these specifications and manufacturers' instructions. Architect will designate which document is to be followed.

1.3 Fasteners - General

.1 Provide metal fasteners and accessories in same texture, colour and finish as base metal in which they occur. Prevent electrolytic action between dissimilar metals. Use non-corrosive fasteners, anchors and spacers for securing exterior work.

.2 Space anchors within limits of load bearing or shear capacity and ensure that they provide positive permanent anchorage. Wood plugs not acceptable.

.3 Keep exposed fasteners to minimum, space evenly and lay out neatly.

.4 Fasteners which cause spalling or cracking of material to which anchorage is made are not acceptable.

.5 Obtain Architect's approval before using explosive actuated fastening devices. If approval is obtained comply with CSA Z166-1975.

.6 Use fasteners of standard commercial Equipment sizes and patterns with material and finish suitable for service.

.7 Use heavy hexagon heads, semi-finished unless otherwise specified. Use no. 304 stainless steel for exterior areas.

.8 Bolts may not project more than one diameter beyond nuts.

.9 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur and resilient washers with stainless steel.

1.4 Delivery and Storage

.1 Deliver, store and maintain packaged material and equipment with manufacturers' seals and labels intact.

.2 Prevent damage, adulteration and soiling of material and equipment during delivery, handling and storage. Immediately remove rejected material and equipment from site.

.3 Store material and equipment in accordance with suppliers' instructions and Section 01500.

.4 Touch-up damaged factory finished surfaces to Architect's satisfaction. Use primer or enamel to match original. Do not paint over name plates.

1.5 Substitution

.1 Proposals for substitution may not be submitted after award of Contract. It is mandatory that substitutions occur during the tender stage so that approved equivalents are allowed to be bid by all.

.2 Proposals will be considered by Architect if:

(a) Products selected by tenderer from those specified, are not available, or

(b) Delivery date of products selected from those specified would unduly delay completion of Contract, or

(c) Alternate products to those specified, which are brought to attention of, and considered by Architect as equivalent to those specified and will result in credit to Contract amount.

.3 Should proposed substitution be accepted either in part or in whole, assume full responsibility and costs when substitution affects other work on project. Pay for design or drawing changes required as result of substitution.

.4 Amounts of all credits arising from approval of substitutions will be determined by Architect and Contract price will be reduced accordingly. No substitutions will be permitted without prior written approval of Architect.

.5 The Owners reserve the right not to allow substitutions. Products specified are Boards standards and are consistent with systems standards.

1.6 Construction Equipment and Plant

.1 On request, prove to the satisfaction of Architect that the construction equipment and plant are adequate to manufacture, transport, place and finish work to quality and production rates specified. If inadequate, replace or provide additional equipment or plant as directed.

.2 Maintain construction equipment and plant in good operating order.

1.7 Work Surfaces

.1 Millwork or other similar permanent surfaces, including loose or fixed and installed furniture and equipment are not to be used as work surfaces. Contractors and Subcontractors shall provide their own temporary work surfaces as required.

End of Section 01600

1.1 General

.1 Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.

.2 Contractor shall move all school materials away from areas of work and tarp off all items within room to keep clean during demolition.

.3 Store volatile wastes in covered metal containers and remove from premises daily.

.4 Prevent accumulations of wastes which create hazardous conditions.

.5 Provide adequate ventilation during use of volatile or noxious substances.

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 Cleaning During Construction

.1 On a daily basis maintain premises free from debris and waste material.

.2 Maintain project site and public properties free from accumulations of waste materials and rubbish.

.3 Provide on-site container for collection of waste materials and rubbish.

.4 Remove waste materials, and rubbish from site at regular intervals, or when container is full.

.5 Vacuum clean interior building areas when ready to receive finish painting and continue vacuum cleaning on an as-needed basis until building is ready for substantial completion or occupancy.

.6 Schedule cleaning operations so that resulting dust and other contaminants will not fall on areas prepared for finishes and/ or wet, newly painted surfaces.

1.4 Final Cleaning

.1 In preparation for substantial completion or occupancy, conduct inspection of sight-exposed interior surfaces.

.2 Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials, from sight-exposed interior finished surfaces including glass and other polished surfaces, resulting from own work.

.3 Broom clean paved surfaces; rake clean other surfaces of grounds.

.4 Remove debris and surplus materials from accessible concealed spaces.

.5 Replace broken, damaged or scratched glass and mirrors, which are part of the Work.

.6 Use appropriate apparatus and cleaning materials. Clean Work in accordance with applicable Sections and/or manufacturer's directions.

.7 Upon completion of final cleaning, remove cleaning equipment, materials and debris from building and Site.

.8 Interior and exterior of all glazing and framing materials to be fully cleaned prior to final review. All construction stickers and labels to be removed.

End of Section 01700

1.1 Record Drawings

.1 Contractor will provide with two sets of white prints at the outset of construction for the progressive recording of items deviating from the drawings. At the completion of construction, this set of record drawings should reflect final 'as-built' conditions.

.2 Maintain project record drawings by accurately and progressively recording deviations from Contract documents caused by site conditions, and changes subsequent to Tender.

.3 Mark changes in coloured (red) ink.

.4 Record following information:

(a) Location and nature of mechanical and electrical building systems and related components not otherwise shown on the drawings.
(b) Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvement.
(c) Location of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure.
(d) Field changes of dimension and detail.
(e) All changes made by Change Order.

.5 At completion of project and prior to final inspection, neatly transfer notations from the original working set of drawings to the second final set. Submit both sets to Architect.

.6 The General Contractor shall note a $2,000.00 Hold Back value (to be identified in all draws) to cover final submission and of as-built drawings and Operation and Maintenance Manuals. Hold back values will be released upon consultant review and approval of completed submittal requirements.

END OF SECTION 01720

1.1 Maintenance

.1 On completion of project submit to Architect 1 digital and 1 physical copy Operating and Maintenance Manuals in English, made up as follows:

a) Enclose title sheet, labeled "Operating and Maintenance Data Manual", project name, date and list of contents.

b) Organize contents into applicable sections of work to parallel project specification breakdown. Mark each section by labeled tabs projected and celluloid covers fastened to hard paper dividing sheets.

.2 Include the following information:

a) Maintenance instruction for finished surfaces and materials.

b) Copy of hardware and Paint Schedules, paint layout drawings, Interior and Exterior Colour and Finish Schedules

c) Description, operation and maintenance instructions for equipment and systems, including complete list of equipment and parts list. Indicate nameplate information such as make, size, capacity and serial number.

d) Names, addresses and phone numbers of Sub-contractors and Suppliers.

e) Guarantees, warranties and bonds showing:
   i) Name and address of projects
   ii) Guarantee commencement date (date of Final Certificate of Completion).
   iii) Duration of guarantee.
   iv) Clear indication of what is being guaranteed and what remedial action will be taken under guarantee.
   v) Signature and seal of Contractor.

.3 Neatly type all information. Use clear diagrams or manufacturer's literature.

.4 Final payments will not be made until complete packages, as described at 1.1.1. to 1.1.3, are received by the Board.

.5 *The General Contractor shall note a **$2,000.00 Hold Back value** (to be identified in all draws) will be retained to cover final submission and approval of as-built drawings and Operation and Maintenance Manuals. Hold back values will be released upon consultant review and approval of completed submittal requirements.*

END OF SECTION 01730

1.1 General

.1 Work of this Section includes demolition and removal from site of materials, finishes, fixtures, equipment etc., [related to the proposed scope of work] which may or may not be specifically spelled out on drawings.

.2 Division One [General Requirements] applies as if repeated herein.

1.2 Description

.1 Work included in this section but not limited to may involve the following:

- the demolition of portions of the existing building items, related services and associated features as noted on drawings and/or as required for completion of the scope of work outlined in the Contract Documents
- the salvaging of items (denoted for removal not intended for re-integration into the project) to be offered to Owner for first right of refusal prior to discarding
- the removal of items from site and subsequent discard at an approved sanitary landfill site, recycling depot or similar approved facility suited to the nature of materials being removed

The work of this division shall include all temporary and permanent service disconnects required by items being demolished and/or disconnected as part of the scope of work illustrated in the Contract Documents.

.2 Clarify all unclear and ambiguous items with Architect immediately prior to demolition and construction.

1.3 Relocation

.1 Ensure that all items to be relocated (as per drawings), are carefully removed and stored on site for future relocation complete with all related components and accessories integral to their operation. Protect items during the course of construction to ensure their safety.

.2 Clarify all items, which may be ambiguous or unclear with the Architect and/or respective Engineer prior to any removal activity on the site.

1.4 Examination

.1 Examine site and premises and be satisfied as to condition of premises and means of access to same, and nature and quantity of work required.

.2 Examine drawings and documents and report ambiguous items and/or possible errors or omissions to the Architect immediately for clarification.

1.5 Coordination

.1 Coordinate all demolition activities with Building Owner relative to hours of operation and acceptable level of impact on ongoing building operations (as/if applicable). Work cooperatively with Owner and/or Occupants to determine acceptable hours and activities.

1.6 Protection

.1 Protect building occupants from demolition activities via construction hoarding or other means deemed acceptable to the Owner. Hoarding provisions to conform to related specification sections elsewhere herein.

.2 Throughout demolition, protect all existing building items and areas adjacent to demolition as required to prevent or minimize adverse impact on materials otherwise to remain. Repair and make good all existing finishes damaged throughout the course of construction to pre-construction condition and/or as designated by the Architect.

1.7 Utilities

.1 Where required, ensure that water, sewer, mechanical and electrical services are cut off and properly capped before commencing remainder of work, and notify appropriate authorities, building owner, building occupants etc. as required.

1.8 Removal of Debris

.1 All debris from the site and structure demolition, shall be removed from site immediately. There shall be no accumulation of demolished materials any shape or form in any location. All debris shall be removed in accordance with Section 01005 and related divisions as prescribed elsewhere herein.

1.9 Hazardous Materials

.1 (IF APPLICABLE) All hazardous materials shall be removed from the facilities prior to demolition otherwise required for the scope of work. Refer to related Specifications and Appendix items contained herein for Designated Substances, Hazardous Materials Abatement and associated items.

END OF SECTION 02100

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

.1 Read this section in conjunction with all other sections so as to conform to Division 1, and the General Requirements of the project.

.2 Inform all sub-trades of the presence of Asbestos Containing Materials identified in the documents.

.3 The Contractor involved directly or indirectly with the removal, handling, management, transportation and disposal of Asbestos Containing Materials and Asbestos Waste in any and all aspects shall take all reasonable precautions, due care and diligence to prevent asbestos from becoming airborne and shall take all reasonable precautions to control and prevent the spread of airborne asbestos in the event of an incident, accidental release or loss of containment. Cost of additional work by the Contractor and/or Consultant to rectify unsatisfactory conditions, shall be charged to the Contractor.

.4 No allowance will be made for any difficulties encountered or any expenses incurred on account of any conditions of the site or any item existing thereon that is visible or known or can be reasonably anticipated.

.5 The Contractor shall be prepared to respond throughout the duration of the project in order to repair, encapsulate remove or otherwise manage additional asbestos as required. The abatement contractor shall provide an emergency contact phone number and be on call to provide emergency services.

.6 The abatement contractor shall control all water migration (including leakage and spillage) from the abatement work area to areas below/adjacent. It is the responsibility of the contractor to protect all items from damage caused by water used in the abatement work area(s). The abatement contractor must immediately mitigate any and all damage to the satisfaction of the owner and Consultant resulting from water used in the abatement work area(s) at their own expense. No allowances shall be made as a result of lost time, resources, materials or equipment.

.7 It is the Contractor’s responsibility to ensure all construction aspects of the project are conducted in accordance with applicable construction safety legislation, regulations and general approved practice. This includes, but is not limited to; all means, methods, techniques, sequences, procedures, safety programs and precautions used.

1.2 DEFINITIONS

.1 Asbestos Containing Material: Materials that contain 0.5 percent or more asbestos by dry weight.

.2 Asbestos Waste: is material that contains asbestos in more than a trivial amount or proportion as defined by Ontario Regulation 347 as amended by Ontario Regulation 558/00 and includes the following:

.1 Solid or liquid waste that results from the removal of asbestos-containing construction or insulation materials and contains asbestos;

.2 Commercial waste and/or domestic waste that contains asbestos;

.3 Non-hazardous solid industrial waste that contains asbestos; and

.4 Materials determined or deemed contaminated with asbestos.

.3 Authorized Visitors: The Consultant or their representative, Architect, Owner's representatives, and persons representing regulatory agencies.

.4 Contractor: Contractors or Sub-Contractor performing work included in this specification.

.5 Consultant: Owner's Representative providing inspection and air monitoring.

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PART 2 – SCOPE OF WORK

2.1 SUMMARY OF MATERIALS

.1 Refer to the following documents regarding Designated Substances within the work areas. The survey and documentation of Designated Substances is required by Section 30 of the Occupational Health and Safety Act and shall be read in conjunction with these specifications.

.1 "*Designated Substance Audit Report – Cecil B. Stirling Elementary School, Window and Exterior Door Replacement and Learning Commons Accommodation"* dated December 21, 2023 prepared by MTE Consultants Inc.

.2 Removal and/or disturbance of asbestos-containing materials shall be performed in accordance with Ontario Regulation 278/05 – Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations.

.3 Removal and/or disturbance of lead-based and lead-containing materials shall be performed in accordance with the Environmental Abatement Council of Canada's Lead Guideline for Construction, Renovation, Maintenance and Repair (2014)

.4 Removal and/or disturbance of silica-containing materials shall be performed in accordance with the Ministry of Labour's Guideline Silica on Construction Projects.

.2 ACM may be present in concealed locations and become apparent during construction, renovation, alteration, or maintenance activities. Should any suspect ACM be discovered during the course of regular construction, renovation, alteration, or maintenance activities, work should cease and the materials should not be disturbed. Suspect ACM must be treated as asbestos-containing or sampled and proven to not contain asbestos. Any activities that require disturbance of ACM must be performed in accordance with Ontario Regulation 278/05. It is the responsibility of the constructor to provide supervision and training and undertake due care and diligence in situations where such discoveries can and would occur.

.3 Upon discovery of suspect or known ACM not identified or referred to in Section 2.0 or the reports referenced, the constructor shall immediately notify, orally and in writing; an inspector at the office of the Ministry of Labour nearest the workplace, the

owner/representative, the Contractor and the joint health and safety committee or the health and safety representative, if any, for the workplace. The written notice shall include the following:

.1 The name and address of the person giving the notice;

.2 The name and address of the owner of the place where the work will be carried out;

.3 The municipal address or other description of the place where the work will be carried out sufficient to permit the inspector to locate the place, including the location with respect to the nearest public highway;

.4 A description of the work that will be carried out;

.5 The starting date of the work that will be carried out; and

.6 The name and address of the supervisor in charge of the work.

.4 No work that is likely to involve handling, dealing with or disturbing or removing the discovered materials shall be done unless it has been determined whether the material is asbestos-containing; or, the work is performed in accordance to Ontario Regulation 278/05 as though the materials were asbestos-containing materials and, in the case of sprayed-on friable material, as though it contained a type of asbestos other than Chrysotile.

2.2 SUMMARY OF MATERIALS

.1 Where required to complete the scope of the proposed renovations, disturbance of Asbestos-Containing Materials shall be performed as follows, in accordance with Ontario Regulation 278/05:

Location	ACM	Asbestos Operation	Notes
Learning Commons, Exit F	Drywall Joint Compound	Type 1	Removal and/or disturbance of less than 1 square meter of drywall
		Type 2	Removal and/or disturbance of greater than 1 square meter of drywall
Gymnasium (Around Door Scheduled for Replacement)	12” x 12” Vinyl Floor Tile (Black)	Type 1	Removal using non-powered hand tools in conjunction with dust suppression
2nd Level Hallway	Hard Beige Interior Window Sealant	Type 1	Removal using non-powered hand tools in conjunction with dust suppression

Location	ACM	Asbestos Operation	Notes
Exterior Doors Throughout Building	Exterior Brown Sealant	Type 1	Removal using non-powered hand tools in conjunction with dust suppression
Exterior Windows Throughout Building	Exterior Light Gray Sealant	Type 1	Removal using non-powered hand tools in conjunction with dust suppression
Exterior Windows Throughout Building	Exterior Black Window Glazing	Type 1	Removal using non-powered hand tools in conjunction with dust suppression

2.3 SCHEDULING

.1 The Contractor shall schedule and perform work in accordance with the Contract Time established in the agreement.

2.4 INSPECTION

.1 From project set-up to completion of clean-up, the Asbestos Abatement Consultant will be present on both the inside and outside of the work area.

.2 Inspections will be conducted to confirm the Contractor's compliance. Failure to comply with the specified requirements may result in a stoppage of work at no additional cost to the Owner.

.3 Promptly notify the Consultant of any ACM or potential ACM discovered during the work and not apparent in the audit, specifications or site meeting(s). DO NOT disturb such material until given direction by the Consultant. Assume such material to contain asbestos of a type other than Chrysotile until proven otherwise. Failure to notify the Consultant of ACM prior to removal will result in the dispute of payment of fees for any extra work performed.

.4 The following inspections will be conducted at the Owner's cost. Provide Consultant with minimum of 24 Hours verbal notice:

.1 Pre Start Inspection: conducted after completion of work area set-up and prior to start of contaminated work.

.2 Contaminated Work Inspections: inspections and routine monitoring of the abatement will be conducted for the duration of the work.

.3 Final Inspection: conducted after removal of all ACM, and application of lockdown agent to confirm cleanliness. Additional labour or materials expended by the Asbestos Abatement Contractor to provide satisfactory performance to the level specified shall be at no additional cost.

2.5 SUBMITTALS

.1 Submit to the Consultant upon request:

.1 AAW and AAS certification and relevant training for all workers/supervisors on-site and involved in the project.

.2 Names, credentials and contact information of Site superintendent and shift supervisors.

.3 All necessary permits, certificates, and documents for all aspects of the work to be completed.

.4 Ministry of Labour Notice of Project if applicable.

.5 Certificate of Approval for transportation of asbestos waste.

.6 Negative air unit performance leak tests.

.7 HEPA/P100 filtered vacuum performance leak tests.

.8 Any and all proposed changes, alterations, deviations intended to be made in scope, procedures and/or measures from these specifications or associated regulations, guidelines and standards.

.2 The contractor shall have all asbestos waste transported under a current and valid Certificate of Approval or Provisional Certificate of Approval that specifically authorizes the transportation of asbestos waste in bulk. A copy of the Certificate of Approval will be maintained on-site and within the transport vehicle(s) and will be provided to the Consultant upon request.

2.6 PERMITS AND REGULATIONS

.1 Comply with all federal, provincial and local requirements, Regulations and Acts as well as client/owner corporate policies and procedures pertaining to asbestos and health and safety, provided that in any case of conflict among these requirements or with these specifications the more stringent requirements shall apply.

.2 Comply will all aspects of the Occupational Health and Safety Act Revised Statues of Ontario, 2005.

.3 Comply with Ontario Regulation 278/05 “Asbestos on Construction Projects and in Buildings and Repair Operations”, made under the Occupational Health and Safety Act.

.4 Comply with “Handling, Transportation and Disposal of Asbestos Waste’ in accordance with Ontario Regulation 347 as amended by Ontario Regulation 558/00, under the Environmental Protection Act (General-Waste Management), June 1992.

.5 Before varying a measure or procedure described in Ontario Regulation 278/05, or these specifications, the contractor/constructor must ensure that the varied measure(s) and/or procedure(s), affords protection for the health and safety of workers and building occupants that is at least equal to the protection that would be provided by complying with Ontario Regulation 278/05. Written notice of the varied measure(s) and/or procedure(s) shall be given in advance to the joint health and safety committee and safety representative, if any,

for the workplace. Such notice shall also be provided to the Consultant.

2.7 INSTRUCTION AND TRAINING

.1 It shall be the responsibility of the Constructor to inform all workers involved in this project of the hazards in regard to the work to be performed and ensure appropriate training has been provided to all workers.

.2 Every worker shall be properly trained in accordance with Section 19 of Ontario Regulation 278/05 in the removal/management of asbestos as a Type 1, Type 2 and Type 3 Operation and have had instruction and training in:

.1 Asbestos awareness;

.2 The hazards of asbestos exposure;

.3 Personal hygiene and work practices;

.4 The use, cleaning, maintenance, selection and disposal of respirators and protective clothing; and

.5 The measures and procedures prescribed by Ontario Regulation 278/05.

.3 Instruction and training related to personal protective equipment and hygiene shall include but shall not necessarily be limited to:

.1 Limitations of the equipment;

.2 Inspection and maintenance of the equipment;

.3 Fitting of the equipment; and

.4 Disinfecting and decontamination of the equipment.

.4 The abatement contractor shall ensure that every worker/supervisor involved in a Type 3 operation meets the training and certification requirements of Section 20 of Ontario Regulation 278/05.

2.8 WORKER PROTECTION

.1 All personal protective equipment shall be used and maintained in accordance to the manufactures specifications and/or federal, provincial, local regulations and Acts and any corporate policies and procedures.

.2 All Personal protective equipment shall be of a nature that can be readily and effectively decontaminated or shall be of a disposable type.

.3 Damaged, deteriorated or defective personal protective equipment shall be repaired or replaced immediately and the worker shall not continue with their duties until such damages, deterioration or defects have been corrected.

.4 All personal protective equipment shall be durable enough and otherwise suitable to withstand the nature of the work being performed and the environmental conditions present within the work area(s).

.5 The contractor shall provide all workers with personally issued respirators suitable for protection against asbestos and acceptable to the Ministry of Labour.

.6 It shall be the responsibility of the contractor/constructor to ensure that all procedures for the use of respiratory equipment in accordance with Ontario Regulation 278/05 and manufacturers requirements are complied with. This shall include but shall not necessarily be limited to:

.1 The worker being physically able to perform the required duties while wearing the respirator;

.2 Respirators must be fit checked by qualitative or quantitative fit testing. Instruction must be provided as defined by the Occupational Health and safety Act;

.3 Air purifying respirators will be equipped with Ministry of Labour and NIOSH approved N 100, P 100, R 100 or HEPA hard exterior cassette style filters and shall be fitted so that an effective seal exists between the respirator and the workers face;

.4 Supplied air respirators will have supply air meet the Canadian Standards Association (CSA) standard Z180.1-00, Compressed Breathing Air and Systems (March 2000);

.5 Cleaning and disinfecting of respirator(s) after each use or more often if needed;

.6 Inspection of respirator(s) and/or respiratory equipment before each use;

.7 The proper storage in a clean, dry and sanitary location when respirator(s) are not in use; and

.8 The development of written procedures regarding selection, use and care of respirators.

.7 Protective Clothing: The contractor shall provide every worker who enters the work area with disposable coveralls and gloves which:

.1 Shall be made of a material that does not readily retain nor permit the penetration of asbestos fibres;

.2 Shall consist of head covering and full body covering that fits snugly at the ankles, wrists and neck, in order to prevent asbestos fibres from reaching the garment and skin under the protective clothing;

.3 Shall include suitable footwear; and

.4 Shall be repaired or replaced if torn or damaged.

.8 The contractor shall provide worker(s) with Canadian Standards Association approved head, hearing and foot protection for the work being performed and as required by applicable construction safety regulations.

2.9 AUTHORIZED VISITOR PROTECTION

.1 The contractor shall provide all prescribed personal protective equipment to authorized visitors to the work area(s).

.2 Ensure authorized visitors have received required training prior to entry to the work areas.

.3 Instruct authorized visitors in all relevant procedures to be followed while in and around the work area(s).

PART 3 - APPROVED PRODUCTS

3.1 MATERIALS AND EQUIPMENT

.1 Amended Water: Water with a surfactant agent added to reduce water tension for thorough wetting of fibres.

.2 Decontamination Shower: For the purpose of worker decontamination, a portable self-contained shower equipped with the following shall be utilized:

.1 Hot and cold water connections;

.2 Interior hot and cold fixtures that can be controlled by the person using the shower; or provide a constant water temperature of not less the 40 Celsius but not greater 50 Celsius;

.3 A containment basin of sufficient capacity to collect and contain the quantity of water required for at least one worker to properly decontaminate; and

.4 Shall be supplied with soap and clean towels.

.3 Drop Sheets: Fire retardant Polyethylene: 0.15mm (6mil) minimum thickness or Fire retardant Fibre Reinforced (FR) polyethylene: 0.15mm (6mil) minimum thickness. New Materials Only.

.4 Exhausted Ducting: For use with Negative Air Unit(s) shall be flexible reinforced heavy duty type duct and be free of tears, punctures and damage and be otherwise suitable for the conditions of the work area(s). The cross sectional area of the ducting shall be maintained during the operation of the Negative Air Unit(s). And reasonable care shall be taken to ensure the ducting does not become damaged.

.5 Micronic Water Filter: Shall be used to filter contaminated water that is to be discharged to local sanitary sewers. Contaminated water includes but is not necessarily limited to wash down water and decontamination shower water. The filter shall be equipped with a secondary 5 micrometer filter. As an alternative to filtration, contaminated water may be collected in appropriate waste containers for off-site disposal.

.6 Negative Air Units: Shall be equipped with HEPA/P100 filters and shall have performance leak testing to verify efficiency of filters. Copies of filter tests shall be provided to the consultant upon request.

.7 Power Tools: Used in the cutting, grinding, drilling, abrading, sanding, vibrating or removal of Asbestos Containing Material, as a Type 2 Operation, shall be equipped with an effective

dust collection device with a HEPA/P100 filtration system capable of capturing all debris and dust generated by the tool. All tools and assemblies of dust collection and filtration equipment will be subject to approval and testing by the Consultant as seen fit prior to use.

.8 Pressure Differential Measuring Device: Shall be capable of measuring pressure differential of 0.02 inches of water column and shall otherwise measure pressure differential in an appropriate range and interval. The device shall be dedicated to the site/work area, properly calibrated, installed and maintained throughout the duration of work to measure pressure differential between the enclosed removal area and the occupied area and shall be acceptable to the consultant. Daily records shall be kept by the contractor, on site, and made available to the consultant.

.9 Sealant: A suitable water based post-removal sealer appropriate for the lock-down and sealing of asbestos fibres to polyethylene sheeting and cleaned substrate.

.10 Sprayer(s): Shall be capable of delivering low velocity mist pattern spray of Amended water or sealant. Sprayers may be hand held reservoir type or powered airless units.

.11 Surfactant: A commercial or industrial agent that when added to potable water reduces surface tension.

.12 Tape: Shall be able to create and maintain a suitable seal on polyethylene and other materials within the work area under both wet and dry conditions and ambient temperatures for the duration of the work being performed and shall otherwise be suitable for the work being performed.

.13 Waste Containers: Waste shall be contained in two overlying dust tight containers impervious to asbestos fibres. The outer container shall be a minimum of 0.15mm (6mil.) thick sealable polyethylene waste bag.

.1 Should the waste material include sharp objects/materials, the inner container shall be a sealable metal, cardboard, fibre or plastic type suitable to resist puncturing of the containers;

.2 Containers shall be cleaned with a damp cloth or vacuum equipped with a HEPA filter immediately before being removed from the work area;

.3 Outer waste containers shall have a pre-printed cautionary asbestos warning identifying it as asbestos waste in both official languages clearly visible and legible in a colour which contrasts with the background on which it is printed; and,

.4 Be otherwise suited for the waste being contained.

.14 Vacuums: Shall be equipped with HEPA/P100 filters and shall have performance leak testing to verify efficiency of filters. Copies of filter tests shall be provided to the consultant upon request.

3.2 SIGNAGE AND PLACARDS

.1 Before beginning work, post a sufficient number of signs at each entrance/exit to the work area(s) warning of asbestos hazards and restricting access to authorized persons wearing personal protective equipment.

.2 On both sides of all containers and vehicles used in the transport of asbestos waste in

large easily legible letters of a minimum of ten centimetres (10cm) in height which contrast in colour with the background of the container or vehicle the following words shall be clearly displayed:

.1 CAUTION: CONTAINED ASBESTOS FIBRES; Avoid Creating Dust and Spillage; and,

.2 Asbestos May be Harmful to Your Health; Wear Approved Protective Equipment.

PART 4 - EXECUTION

4.1 GENERAL REQUIREMENTS – ALL PROCEDURES

.1 Before beginning work, post at each entrance/exit to the work area(s) a sufficient number of signs warning of asbestos hazards and restricting access to authorized persons wearing personal protective equipment.

.2 Eating, drinking, chewing or smoking shall not be permitted in the work area.

.3 Where wet removals are to take place de-energize and disable with proper lock-out tag-out procedures electrical systems.

.4 Temporary electrical distribution systems equipped with Ground Fault Circuit Interrupters (GFCI) shall be supplied and used by the Contractor during wet removals.

.5 Remove all items from the work area(s). If items are affixed or otherwise cannot be removed from the work area(s), ensure that they are pre-cleaned using a HEPA/P100 filtered vacuum or damp wiping and completely covered and sealed with polyethylene sheeting and otherwise adequately protected.

.6 Before commencing with work, disable and seal all ventilation to and from the work area and ensure ventilation remains disabled throughout the duration of activities. Seal any and all openings within the work area(s).

.7 Removal of Asbestos Containing Materials shall commence only after set-up is complete.

.8 Frequently and at regular intervals during the Work and immediately upon completion of the work clean up and place all asbestos dust, debris and waste in approved waste containers.

.9 Prevent the spread of dust from the Work Area.

.10 At completion of Work or at the end of the work day, remove from work area(s) all asbestos waste and in accordance with requirements of Ontario Regulations and these specifications dispose of asbestos waste off-site.

4.2 EXECUTION OF TYPE 1 OPERATION

.1 Set-Up

.1 Ensure adequate signage is posted restricting access to the work area to authorized personnel.

.2 Prevent the spread of dust from the work area using measures appropriate to the work to be done. Use single layer rip proof polyethylene drop sheets. In areas with carpeted or textured floors which cannot be readily cleaned use double layer rip proof polyethylene over flooring in work area(s).

.3 Provide facilities for washing hands and face.

.4 Allow for inspection by the Consultant to confirm that set-up is sufficient prior to the start of work.

.2 Asbestos Removal

.1 If a worker requests, the contractor shall supply a respirator in accordance with Ontario Regulation 278/05 Table 2 requirements, suitable for protection against asbestos and protective coveralls and the worker shall wear the respirator and coveralls.

.2 Perform removal of ACM in a manner to reduce dust creation to lowest level practicable by:

- Dust and waste shall not be permitted to fall freely from one work level to another
- Use of hand tools only for the removal of ACM
- Careful removal of ACM
- Continual wetting of Asbestos Containing Materials throughout the work
- Placing removed asbestos waste directly into approved waste containers

.3 All workers shall proceed to washing facilities and wash hands and face before leaving the work area.

.3 Clean-Up

.1 After completion of the removal; perform final thorough cleanup of polyethylene, barriers, drop sheets, tools, equipment, items, work area(s) and adjacent areas using HEPA/P100 filtered vacuum or damp wiping methods. Ensuring work area(s) and all items within the work area(s) are clean of visible asbestos dust, debris and waste. Place and seal asbestos dust debris and waste in approved waste containers.

.2 In the case of floor tile mastics, if they are removed using a low odour chemical mastic remover, surfaces shall be adequately degreased following removal to prevent impacts to new flooring finishes.

.3 Allow for inspection by Consultant to determine abatement is complete and an acceptable level of cleanliness prior to application of sealant.

.4 Wet and fold polyethylene drop sheets and barriers in a manner which contains asbestos dust, debris and waste, place and seal in approved waste containers.

.5 If Personal Protective Equipment was requested and used by the worker prior to leaving the work area(s) clean all asbestos dust, debris and waste from clothing and personal protective equipment (PPE). Remove and place disposable PPE in approved waste container.

.6 Immediately before their removal from the work area, clean each filled waste container using HEPA/P100 filtered vacuum and place and seal in a secondary clean waste container.

4.3 EXECUTION OF TYPE 2 OPERATION

.1 Set-Up

.1 Construct an enclosure using polyethylene sheeting that extends from floor to ceiling and encompasses the entire work area were asbestos containing materials will be removed or encapsulated. The enclosure shall include the following:

- Double flap weighted air lock doors at all entrances, exits and doorways of the enclosure and rooms within the enclosure;
- Transparent windows for inspection purposes from outside the enclosure area;
- Sealed edges of the entire enclosure using tape or other suitable methods; and
- Ensure all edges of enclosure are securely fixed.

.2 Construct a decontamination facility as close as practicable to the work area which shall include the following:

- A room suitable for changing into protective clothing and for storing contaminated protective clothing and equipment; and,
- A room suitable for changing into street clothes and for storing clean clothing and equipment.

.3 Arrange configuration of the above-mentioned rooms so that (a) person(s) entering/exiting the work area must pass through each room in the correct order.

.4 Allow for inspection by the Consultant to confirm that set-up is sufficient prior to the start of work.

.2 Asbestos Removal

.1 Workers entering the work area shall don all appropriate personal protective equipment including coveralls and respiratory protection prior to entering the work area.

.2 Before commencing with work and at the beginning and end of each work shift and at a minimum of at least once per day the enclosure shall be inspected for any defects of deficiencies.

.3 Any defects or deficiencies observed shall be repaired forthwith and no work other than such repairs shall be conducted until repair activities are completed

.4 Other than loose material which is pulverized, crumbled and or powdered and shall be removed by HEPA/P100 filtered vacuum, Asbestos Containing Materials to be removed or disturbed shall be thoroughly wetted with Amended Water before and during work unless wetting creates a hazard or causes damage.

.5 Perform removal of ACM in a manner to reduce dust creation to lowest level practicable by:

- Dust and waste shall not be permitted to fall freely from one work level to another;
- Use of hand tools only for the removal of ACM;
- Careful removal of ACM;
- Continual wetting of Asbestos Containing Materials throughout the work; and
- Placing removed asbestos waste directly into approved waste containers.

.6 All workers shall proceed to the washing facilities while wearing respirator and shall wash hands and face before leaving the work area.

.3 Clean-Up

.1 After completion of the removal; perform final thorough cleanup of polyethylene, barriers, tools, equipment, items, work area(s) and adjacent areas using HEPA/P100 filtered vacuum or damp wiping methods. Ensuring work area(s) and all items within the work area(s) are clean of visible asbestos dust, debris and waste. Place and seal all asbestos dust debris and waste in approved waste containers.

.2 Allow for inspection by Consultant to determine abatement is complete and an acceptable level of cleanliness prior to application of sealant.

.3 Apply sealant to all vertical and horizontal surfaces, enclosures, drop sheets and items within the enclosure. Allow sufficient time for sealant to dry.

.4 Wet and fold polyethylene and barriers in a manner which contains asbestos dust, debris and waste, place and seal in approved waste containers.

.5 Prior to leaving the work area(s) workers shall clean all asbestos dust, debris and waste from Personal Protective Clothing Using HEPA/P100 filtered vacuum or damp wipe methods prior to removing the clothing. Remove and place disposable Personal Protective Clothing in approved waste containers.

.6 Immediately before their removal from the work area, clean each filled waste container using HEPA/P100 filtered vacuum and place and seal in a secondary clean waste container.

END

PART 1 - GENERAL

1.1 Description of Work

.1 Including the following but not limited to: sheathing, furring, rough framing, grounds, blocking, rough hardware, wood preserving, concealed wood anchoring within stud wall assemblies for all metal door and glazing screen frames, concealed wood anchoring for all wall and/or ceiling mounted fitments, features and equipment items identified on the drawings, etc.

.2 Temporary carpentry, including fencing, hoarding, etc. as required throughout the course of construction to comply with all items in Division 1.

1.2 Related Work Specified Elsewhere

.1	Finish Carpentry	Section 06200
.2	Architectural Woodwork/Millwork	Section 06400

1.3 Source Quality

.1 Identify lumber by grade stamp of an agency certified Control by Canadian Lumber Standard Administration Board.

.2 Identify pressure treated wood by stamp of approval and Licensed applicator of Kopper's "Wolmanized" system.

PART 2 - PRODUCTS

2.1 Lumber

.1 Except as indicated or specified otherwise, lumber materials shall be softwood, not greater than 19% moisture content at time of installation, in accordance with the following standards:
(a) CSA 0141
(b) NLGA Standard Grading Rules for Canadian Lumber, effective 1979.

.2 Machine stress-rated lumber is acceptable for all purposes.

.3 Framing and board lumber; in accordance with Table 9.3.2A of O.B.C. 1990 except as indicated or specified otherwise.

.4 Plywood coping and sheathing: exterior grades thickness as shown.

.5 Preserved wood: pressure treated softwood, to CSA 080, using Wolman CCA preservative.

.6 Plywood: CSA 0151M - Softwood.

2.2 Fastenings and Hardware

.1 Nails, spikes and staples.

(a) Use common spiral nails and spiral spikes except where indicated otherwise.
(b) Use hot galvanized finish steel for exterior work, pressure-preservative treated lumber except where indicated otherwise.

.2 Bolt, nut, washer, screw and pin type fasteners: with hot-dip galvanized finish for exterior work, interior highly humid areas and for pressure-preservative treated lumber; elsewhere with primer paint finish where installed on sight-exposed surfaces.

.3 Use surface fastenings of following types, except where specific type is indicated.

(a) To hollow masonry, plaster and panel surfaces use toggle bolt.
(b) To solid masonry and concrete use expansion shield with lag screw or lead plug with wood screw.
(c) To structural steel use bolts through drilled hole or welded stud-bolts or power driven self-drilling screws.

PART 3 - EXECUTION

3.1 Furring and Blocking

.1 Install furring and/or solid wood blocking as required to support and/or to solidly anchor finishes, fitments, features, white boards and all wall and ceiling-mounted equipment items throughout. Use solid wood blocking within concealed wall, ceiling and/or bulkhead assemblies as required.

.2 Align and plumb face of furring and blocking to tolerance of 1:600.

.3 Ensure provision of continuous 2” wide x depth to suit wood blocking around all door frames in steel stud wall assemblies. Blocking depth to be full depth of steel studs surrounding door/glazing screen framing.

3.2 Rough Bucks

.1 Install wood bucks and nailers as indicated and/ or where nailers required.

.2 Except where indicated otherwise use material at least 38mm thick secured with 9mm bolts located within 300mm from ends of members and uniformly spaced at not over 1200mm between.

.3 Countersink bolts where necessary to provide clearance for other work.

3.3 Coping, Curbs and Sheathing

.1 Install backing, curbs and other wood supports for roofing and sheet metal work, and roof mounted equipment, as indicated.

.2 Secure with galvanized bolts where indicated, galvanized screws elsewhere. Locate fastenings within 300mm from ends and uniformly spaced between. Space bolts at 1200mm maximum and nails at 600mm centers maximum except where indicated otherwise.

.3 Install wood nailers for roof hopper, dressed, tapered and recessed slightly below surface of roof insulation.

END OF SECTION 06100

PART 1 - GENERAL

The work under this section consists of the following but is not limited to:

1.1 Description

.1 Installation of miscellaneous wood and/or millwork trim items as indicated on drawings.

.2 Installation of pressed hollow metal door frames, supplied under Section 08100.

.3 Hanging of hollow metal doors supplied under other sections.

.4 Installation of Finished Hardware supplied under Section 08710.

1.2 Related Work Specified Elsewhere

.1	Rough Carpentry	Section 06100
.2	Architectural Woodwork	Section 06400
.3	Steel Doors and Frames	Section 08100
.4	Finish Hardware	Section 08710
.5	Painting and Finishing	Section 09900

1.3 Reference Standards

.1 Do millwork to millwork standards of the Architectural Woodwork Manufacturers Association of Canada (AWMAC).

1.4 Samples

.1 Submit duplicate 300mm x 300mm samples of each type of panelling and each type of solid wood or plywood to receive paint finish, in accordance with Section 01340.

.2 Submit duplicate 300mm long samples of each type of trim moulding, in accordance with Section 01340.

PART 2 - PRODUCTS

2.1 Materials

.1 Softwood Lumber: to CSA 0141 and National Lumber Grades Authority requirements, with maximum moisture content of 10%.

.2 Hardwood Lumber: to National Hardwood Lumber Association (NHLA) requirements; moisture content to AWMAC - premium grade; species, red oak or birch as indicated or scheduled.

2.2 Millwork

.1 Mill wood components to dimensions and profiles indicated on the drawings.

.2 All faces to be machine dressed finish.

PART 3 - EXECUTION

3.1 Interior Trim

.1 Standing and running trim to be AWMAC custom grade construction.

.2 Trim to be of species as detailed.

.3 Set nails and screws, apply plain wood filler to indentations, sand smooth and leave ready to receive finish.

3.2 Erection

.1 Set and secure materials and components in place, rigid, plumb, and square.

.2 Provide heavy duty fixture attachments for wall mounted cabinet work.

.3 Provide solid and secure fastening of finish wood elements to rough blocking or other supporting material.

.4 Prepare external exposed and semi-exposed surfaces ready for painting.

.5 Apply bituminous coating over wood framing members in contact with masonry or cementitious construction.

3.3 Door Hardware

.1 Install hinges, latches and pulls and specified hardware. Install using templates supplied by Hardware consultant; hang doors in specified frames; adjust for smooth free movement, free of binding. Ensure that all doors are properly balanced to close and do not ‘hang’ open.

.2 Install latches, locks, striker plates, pulls, pushes, closers, panic devices, etc., in pre-fabricated openings in steel doors and frames.

END OF SECTION 06200

PART 1 - GENERAL

1.1 **General Requirements:**

.1 The General Conditions, the Supplementary Conditions, the Instructions to Bidders and Division One General Requirements shall be read in conjunction with and govern this section.

.2 The Specification shall be read as a whole by all parties concerned. Each Section may contain more or less than the complete work of any trade. The Contractor is solely responsible to make clear to the Subcontractors the extent of their work.

1.2 **Description of Work:**

This division applies to the provision of 'air barriers, vapour barriers, moisture barriers, transition membrane' and similarly named membranes referred to on the Architectural drawings including (without strict limitation to) the following:

.1 Supply labour, materials, plant, tools and equipment to complete the Work as shown on the Drawings and as specified herein to bridge and seal the following air leakage pathways and gaps:
1. Connections of the walls to the roof air barrier.
2. Connections of the walls to the foundations.
3. Seismic and expansion joints.
4. Openings and penetrations of window and door frames, curtain wall etc.
5. Piping, conduit, duct and similar penetrations
6. Masonry ties, screws, bolts and similar penetrations.
7. All other air leakage pathways in the building envelope.

.2 Materials and installation methods of the primary air/vapour & rain barrier membrane system on applicable substrates, behind specified cladding materials.

.3 Materials and installation methods of damp-proof coursing and through-wall flashing membranes.

.4 Materials and installation methods for the adhesion of rigid and semi-rigid insulating materials.

1.3 **Related Sections:**

.1	Hollow Metal Doors and Frames:	Section 08100
.2	Aluminum Windows:	Section 08150

1.4 REFERENCES

.1 The following standards are applicable to this section:

.1 ASTM E2178: Standard Test Method for Air Permeance of Building Materials.

.2 ASTM E283: Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

.3 E1677 Specification for Air Retarder (AR) Material or System for Low-Rise Framed Building Walls

.4 ASTM E330: Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.

.5 ASTM E331: Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference

.6 ASTM E96: Water Vapor Transmission of Materials.

.7 CGSB 37-GP-56M: Membrane, Modified, Bituminous, Prefabricated, and Reinforced.

.8 ASTM 2357 certifying the air leakage and vapour permeance rates for assembly.

1.5 Submittals

.1 Submit documentation from an approved independent testing laboratory certifying the air leakage rates of the air barrier membranes assembly, including primary membrane, adhesive, primer and sealants have been tested to meet ASTM E 2357. Submittal to include testing for both regular and low temperature grades on both porous and sheathing substrates.

.2 Submit documentation from an approved independent testing laboratory certifying the air leakage and vapour permeance rates of the air barrier membranes, including primary membrane and transition sheets, exceed the requirements of the Massachusetts Energy Code and in accordance with ASTM E2178.

1. Test report submittals shall include test results on porous substrate and include sustained wind load and gust load air leakage results.
2. Test reports to be provided for both regular and low temperature grades.

.3 Prior to commencing the Work, submit documentation from an approved independent testing laboratory certifying that the air leakage and vapour permeance rates of the air barrier membranes, including primary membrane and transition sheets, exceed the requirements of the National Building Code.

.4 Prior to commencing the Work submit copies of manufacturers' current ISO certification. Membrane, primers, sealants, adhesives and associated auxiliary materials shall be included.

.5 Prior to commencing the Work submit references clearly indicating that the membrane manufacturer has successfully completed projects on an annual basis of similar scope and nature for a minimum of fifteen years. Submit references for a minimum of ten projects.

.6 Prior to commencing the Work submit manufacturers' complete set of standard details for the air barrier membrane systems showing a continuous plane of air tightness throughout the building envelope.

.7 Prior to commencing work provide material checklist complete with application rates & minimum thickness of primary membranes.

1.6 Quality Assurance

.1 Submit in writing, a document stating that the applicator of the primary air/vapour barrier membranes specified in this section is recognized by the manufacturer as suitable for the execution of the Work.

.2 Perform Work in accordance with the manufacturer's written instructions of the air/vapour barrier membrane and this specification.

.3 Maintain one copy of manufacturer's written instructions on site.

.4 At the beginning of the Work and at all times during the execution of the Work, allow access to Work site by the air/vapour barrier membrane manufacturers' representative.

.5 Components used in this section shall be sourced from one manufacturer, including sheet membrane, air/vapour barrier sealants, primers, mastics and adhesives.

1.7 Mock-Up

.1 Construct mock-up in accordance with Section 01340 - Shop Drawings, Product Data, Samples and Mock-ups.

.2 Where directed by architect, construct typical exterior wall panel, 2 m long by 2 m wide, incorporating substrate, window frame, attachment of insulation, and showing air/vapour barrier membrane application details.

.3 Allow 48 h for inspection of mock-up by architect before proceeding with air/vapour barrier work. Mock-up may remain as part of the Work.

1.8 Delivery, Storage and Handling

.1 Deliver materials to the job site in undamaged and original packaging indicating the name of the manufacturer and product.

.2 Store role materials on end in original packaging.

.3 Store adhesives and primers at temperatures of 5 degrees C and above to facilitate handling.

.4 Keep solvent away from open flame or excessive heat.
.5 Protect rolls from direct sunlight until ready for use.

1.9 Co-ordination
.1 Ensure continuity of the air/vapour barrier membrane system throughout the scope of this section.

1.10 Alternates
.1 Submit requests for alternates in accordance with Section 01005.

.2 Alternate submission format to include:
.1 Submit evidence that alternate materials meet or exceed performance characteristics of Product requirements as well as documentation from an approved independent testing laboratory certifying that the air leakage and vapour permeance rates of the air/ vapour barrier membranes, including primary membrane and transition sheets, exceed the requirements of the National Building Code, ASTM E 2357, the Massachusetts Energy Code and in accordance with ASTM E 2178.
.2 Submit copies of the manufacturers' current ISO certification.
.3 Submit references clearly indicating that the membrane manufacturer has successfully completed projects on a annual basis of similar scope and nature for a minimum of fifteen years.
.4 Submit manufacturers' complete set of standard details for air/vapour barrier membrane systems showing a continuous plane of air tightness throughout the building envelope.
.5 As identified in competitive process documents, submit requests for alternates to this specification a minimum of ten (10) working days prior to tender closing for evaluation. Include a list of ten projects executed over the past ten years.
.6 Acceptable alternates will be confirmed by addendum. Substitute materials not approved in writing prior to tender closing shall not be permitted for use on this project.

1.11 Warranty
.1 Provide manufacturer's standard 5-year material warranty.

PART 2: PRODUCTS

2.1 Air/vapour barrier membrane components and accessories must be obtained as a single-source from the membrane manufacturer to ensure total system compatibility and integrity.

2.2 Membrane Manufacturer: **Henry-Bakor** or pre-approved alternate.

2.3 Membranes
.1 Primary sheet air/vapour barrier membrane shall be Blueskin® SA manufactured by Henry-Bakor, a SBS modified bitumen, self-adhering sheet membrane complete with a cross-laminated polyethylene film. For application temperatures down to -12°C use Blueskin® SA LT. Membrane shall have the following physical properties:
.1 Thickness: 1.0 mm (40 mils),
.2 Air leakage: <0.005 L/s.m² @ 75 Pa to ASTM E283-91,
.3 Tested to ASTM E 2357 for the air barrier assembly,
.4 Water vapour permeance: 1.6 ng/Pa.m².s (0.03 perms) to ASTM E96,
.5 Low temperature flexibility: -30 °C to CGSB 37-GP-56M,

.6 Elongation: 200% to ASTM D412-modifed.

.2 Through-wall flashing membrane and dampproof course (Self-Adhering) shall be Blueskin® TWF manufactured by Henry-Bakor, a SBS modified bitumen, self-adhering sheet membrane complete with a cross-laminated polyethylene film, having the following physical properties:
- .1 Colour: Yellow,
- .2 High Temperature Stability: 110 degrees C min. to ASTM D5147 (resistance to flow)
- .3 Thickness: 1.0 mm (40 mils),
- .4 Air leakage: <0.005 L/s.m² @ 75 Pa to ASTM E283-91,
- .5 Water vapour permeance: 1.6 ng/Pa.m².s (0.03 perms) to ASTM E96,
- .6 Low temperature flexibility: -30 °C to CGSB 37-GP-56M.

.3 Primary water resistive air barrier membrane and window flashing on plywood backing shall be BlueskinVP 160 manufactured by Henry; a self-adhering reinforced modified polyolefin tri-laminate (Blue) sheet air barrier membrane for wall construction, specifically designed to be water resistant and vapour permeable. Patented adhesive backing to be protected with a 2 piece release film. Membrane shall have the following physical properties:
- .1 Air leakage: <0.02L/s/m² @ 75Pa [<0.004 CFM/ft² @ 1.57 lbs/ft²] when tested in accordance with ASTM E 2178.
- .2 Water Vapour Permeance: 1658 ng/Pa.m².s (29 perms) to ASTM E96, Method B – Desiccant Method.
- .3 Tested to ASTM E 2357 for Air Leakage of Air Barrier Assemblies.
- .4 Resistance to Water Penetration: Pass ICC-ES AC 38.
- .5. Water Penetration Resistance around Nails: Pass when tested to AAMA 711-05 & ASTM D 1970 modified.
- .6 Surface Burning Characteristics: Class A, when tested in accordance with ASTM E84: Flame Spread Rating of 0 and Smoke Development Classification of 105.
- .7 Basis Weight: 120 g/m², when tested in accordance with TAPPI Test Method T-410.
- .8 Tensile Strength: 182N MD and 129N CD per ASTM D828.
- .9 Average Dry Breaking Force: 565N MD, and 405N CD per ASTM D 5034.
- .10 Cyclic and Elongation: Pass at 100 cycles, -29 deg C. (-20 deg F.) per ICC-ES AC 48.

2.4 Adhesive and Primers

.1 Adhesive for self-adhering membranes at temperatures above -12°C shall be Blueskin® Adhesive manufactured by Henry-Bakor, a synthetic rubber based adhesive, quick setting, having the following physical properties:
- .1 Colour: Blue,
- .2 Weight: 0.8 kg/l,
- .3 Solids by weight: 35%,
- .4 Drying time (initial set): 30 minutes.

.2 Primer for self-adhering membranes at temperatures above –4 degrees C shall be Aquatac™ Primer manufactured by Henry-Bakor, a polymer emulsion based adhesive, quick setting, having the following physical properties:
- .1 Colour: Aqua,
- .2 Weight: 1.0 kg/l,
- .3 Solids by weight: 53%,
- .4 Water based, no solvent odours,
- .5 Drying time (initial set): 30 minutes at 50%RH and 20 degrees C.

.3 Adhesive for self-adhering membranes at temperatures above -12°C shall be Blueskin® LVC Adhesive a quick drying, lower volatile organic compound (VOC) formulation, rubber based adhesive designed to enhance the adhesion of self-adhesive membranes such as **Blueskin®**
- .1 Colour: Blue
- .2 Weight: 0.9 kg/l
- .3 Solids By Weight: 40%
- .4 VOC Content: < 250 g / L
- .5 Drying Time (initial set): Approximately 30 minutes.

2.5 Mastics & Termination Sealants

.1 Liquid air seal mastic and insulation adhesive shall be Air-Bloc 21 or 230-21 Insulation Adhesive manufactured by Henry-Bakor, a synthetic, trowel applied, rubber based adhesive, having the following characteristics:
- .1 Compatibility: With air/vapour barrier membrane, substrate and insulation.
- .2 Air leakage: 0.013 L/s.m² @ 100 Pa.,
- .3 Water vapour permeance: 1.7 ng/Pa.m².s. (0.03 perms),
- .4 Long term flexibility: CGSB 71-GP-24M,
- .5 Chemical resistance: Alkalis and salt.

.2 Termination Sealant shall be HE925 BES Sealant manufactured by Henry-Bakor, a moisture cure, medium modulus polymer modified sealing compound having the following physical properties:
- .1 Compatible with sheet air barrier, roofing &waterproofing membranes and substrate,
- .2 Complies with Fed. Spec. TT-S-00230C, Type II, Class A,
- .3 Complies with ASTM C 920, Type S, Grade NS, Class 25,
- .4 Elongation: 450 – 550%,
- .5 Remains flexible with aging,
- .6 Seals construction joints up to 25mm wide.
- .7 For use in concealed or exposed application.

.3 Termination Sealant shall be POLYBITUME® 570-05 Polymer Modified Sealing Compound manufactured by Henry-Bakor, a polymer modified sealing compound having the following characteristics:
- .1 Compatible with sheet waterproofing membrane and substrate,
- .2 Solids by volume: 70%,
- .3 Vapour permeance: 2.9 ng/Pa.m².s, ASTM E96,
- .4 Complies with CGSB 37.29,
- .5 Remains flexible with ageing,
- .6 Chemical resistance: Alkalis, calcium chloride, mild acid and salt solutions.

PART 3: EXECUTION

3.1 Examination

.1 Verify that surfaces and conditions are ready to accept the Work of this section. Notify consultant in writing of any discrepancies. Commencement of the work or any parts thereof shall mean acceptance of the prepared substrate.

.2 All surfaces must be sound, dry, clean and free of oil, grease, dirt, excess mortar or other contaminants. Fill spalled areas in substrate to provide an even plane. Strike masonry joints flush.

.3 New concrete should be cured for a minimum of 14 days and must be dry before air/vapour barrier membranes are applied.

.4 Where curing compounds are used they must be clear resin based without oil, wax or pigments.

3.2 Adhesive or Primer for Transition and Through-wall Flashing Membrane (Self-Adhering)

.1 Apply adhesive or primer for self-adhering membranes at rate recommended by manufacturer.

.2 Apply to all areas to receive transition sheet and / or through-wall flashing membrane, as indicated on drawings by roller or spray and allow minimum 30 minute open time. Surfaces not covered by self-adhering transition membrane or self-adhering through-wall flashing membrane during the same working day must be re-applied.

3.3 Transition Membrane (Self-Adhering)

.1 Align and position self-adhering transition membrane, remove protective film and press firmly into place. Ensure minimum 50 mm overlap at all end and side laps.

.2 Tie-in to window frames, aluminium screens, hollow metal doorframes, spandrel panels, roofing system and at the interface of dissimilar materials as indicated in drawings

.3 Promptly roll all laps and membrane with a counter top roller to effect seal.

.4 Ensure all preparatory work is complete prior to applying liquid applied air vapour barrier membrane.

3.4 Through-wall Flashing Membrane & Dampproof Course (Self-Adhering)

.1 Apply through-wall flashing and dampproof coursing membrane in accordance with CSA A371-94 Masonry Construction for Buildings; along the base of masonry veneer walls, over windows, doors and other wall openings required to be protected.

.2 Applications shall form a continuous flashing membrane and shall extend up a minimum of 200 mm up the back-up wall.

.3 At the end of each days work seal the top edge of the membrane where it meets the substrate using liquid air seal mastic. Trowel apply a feathered edge to seal termination and shed water.

.4 Ensure through-wall flashing membrane extends fully to the exterior face of the exterior masonry veneer. At locations where flashing terminates or intersects wall openings including door frames, “end dam” flashing to protect openings and redirect water out. Trim off excess as directed by the consultant.

.5 Apply dampproof coursing membrane over slabs on grade, prepare and prime surfaces, align and position membrane between slab and masonry block work.

.6 Align and position the leading edge of self-adhering through-wall flashing membrane with the front horizontal edge of the foundation walls, self angles and other substrates to be protected, partially remove protective film and roll membrane over surface and up vertically.

.7 Press firmly into place. Ensure minimum 50 mm overlap at all end and side laps. Promptly roll all laps and membrane to affect the seal.

.8 Ensure all preparatory work is complete prior to applying self-adhering through-wall flashing membrane.

.9 Ensure through-wall flashing membrane extends fully to the exterior face of the exterior masonry veneer. Trim off excess as directed by the consultant.

3.5 Air/Vapour Barrier Membrane

.1 Apply self-adhering membrane complete and continuous to prepared and primed substrate in an overlapping shingle fashion and in accordance with manufacturer's recommendations and written instructions. Stagger all vertical joints.

.2 Align and position self-adhering membrane, remove protective film and press firmly into place. Ensure minimum 50 mm overlap at all end and side laps. Promptly roll all laps and membrane with a counter top roller to affect the seal.

.3 At the end of each days work seal the top edge of the membrane where it meets the substrate using liquid air seal mastic. Trowel apply a feathered edge to seal termination and shed water.

.4 Tie-in to window frames, aluminium screens, hollow metal doorframes, spandrel panels, roofing
system and at the interface of dissimilar materials as indicated in drawings. Refer to manufacturers' standard details.

.5 Ensure all projections, including wall ties, are properly sealed with a caulk application of liquid air seal mastic.

.6 Mechanically fasten membrane through securement bars to all window, door, louvers and curtain wall sections as recommended by membrane manufacturer where proper adhesion and bonding cannot be maintained.

.7 Membrane applied to the underside of substrate surfaces shall receive special attention on application to ensure maximum surface area adhesion is obtained.

3.6 Installation of Insulation

.1 Co-ordinate with Cavity Wall Insulation Section 07216 for insulating materials.

.2 Upon the curing of the air/vapour barrier membrane system apply the liquid air seal mastic and insulation adhesive in a serpentine pattern over completed air/vapour barrier membrane system.

.3 Immediately embed insulation into the adhesive and press firmly into place to ensure full contact. Apply additional adhesive if allowed to skin over.

.4 Fully butter all joints of insulation panels with adhesive during installation, except at expansion joints.

3.7 Inspection

.1 Notify consultant when sections of work are complete so as to allow for review prior to installing insulation.

3.8 Protection of Finished Work

.1 Air-Bloc and Blueskin® membranes are not designed for permanent exposure. Product designed to withstand reasonable job site exposure, however good practice calls for covering as soon as possible.

.2 Damp substrates must not be inhibited from drying out. Do not expose the backside of the substrate to moisture or rain.

.3 Cap and protect exposed back-up walls against wet weather conditions during and after application of membrane. Drying time varies depending on temperature and relative humidity.

.4 Air barrier membranes are not designed for permanent exposure. Good practice calls for covering as soon as possible.

END OF SECTION 07261

PART 1 - GENERAL

1.1 General

Division One, General Requirements, is part of this section and shall apply as if repeated here.

1.2 Description of Work

Provide all labour, materials, and equipment required or called for in this specification, or which is necessary, to complete the work without any extra cost. This work may require any or all, but not be limited to any of the following:

1.3 Related Work

Shall include the following but not limited to:

.1	Architectural Woodwork	Section 06400
.2	Hollow Metal Doors & Frames	Section 08100
.3	Aluminum Windows	Section 08150

1.4 Environmental Conditions

.1 Sealant and substrate materials to be at temperature recommended by manufacturer for each type of sealant.

1.5 Samples

.1 Submit samples, in accordance with Section 01340, of each specified type of compound to be used together with the recommended primers and joint filler proposed to be used.

Provide samples of available colours for selection by the Architect.

1.6 Warranty

.1 Contractor hereby warrants that caulking work will not leak, crack, crumble, melt, shrink, run, loose adhesion, or stain adjacent surfaces for three years.

1.7 Qualifications

.1 Only skilled and experienced tradesmen shall carry out the work in this section.

.2 Report to the Architect any discrepancies or unclear items.

PART 2 - PRODUCTS

2.1 Materials

.1 Primers: type recommended by sealant manufacturer.

.2 Joint Fillers:

(a) General: compatible with primers and sealants, outsized 30% to 50%.
(b) Polyethylene, urethane, neoprene or vinyl: extruded closed cell foam, Shore A hardness 20, tensile strength 140 to 200 kPa.

(c) Neoprene or butly rubber: round solid rod, Shore A hardness 70.
(d) Polyvinyl chloride or neoprene: extruded tubing with 6mm minimum thick walls.

.3 Bond breaker: pressure sensitive plastic tape, which will not bond to sealants.

.4 Joint cleaner: xylol, methylethyleketon or non-corrosive type recommended by sealant manufacturer and compatible with joint forming materials.

.5 Vent tubing: 3mm inside diameter extruded polyvinyl chloride tubing.

.6 Sealants:
(a) General Exterior Sealant: single component polyurethane base sealant to meet C.G.S.B. Specification 19GP5M and CAN 2-19-24-M90 such as Sikaflex 1A, Dymeric by Tremco, or approved alternate.
(b) General Interior Sealant: single component sealant to meet C.G.S.B. specification 19GP17M and which can be painted, such as Tremflex 834 by Tremco, an approved alternate.
(c) Rubber asphalt sealing compound: one component, black rubberized asphalt: Bakor "570-05".
(d) High humidity sealant: one component, coloured, mildew resistant, silicone; Dow "786".
(e) Isolation paint: black asphaltic bitumastic paint; Bakor "410-02" or Domtar "Ace of Spades".

.7 All colours to closely match adjacent window or door frame. Provide samples for approval min. 4 weeks prior to install.

2.2 Preparation

.1 Remove dust, paint, loose mortar and other foreign matter. Dry joint surfaces.

.2 Remove rust, mill scale and coatings from ferrous metals by wire brush, grinding or sandblasting.

3 Remove oil, grease and other coatings from non-ferrous metals with a compatible cleaner.

.4 Prepare concrete, masonry and glazed surfaces to sealant manufacturer's instructions.

.5 Examine joint sizes; minimum width of 6mm (1/4"); maximum width 25mm (1").

.6 Install joint filler to achieve correct joint depth to width ratio; minimum depth 1/2 width. Joint filler shall be oversized to remain under 25% compression within the joint, at minus 7 degrees C (20 degrees F.); set back in joint to achieve depth to width ratio as above.

.7 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.

.8 Apply bond breaker tape where required to manufacturer's instructions.

.9 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

2.3 Application

.1 Apply sealants, primers, joint fillers and bond breakers to manufacturer's instructions and as required by job conditions.

.2 Coordinate with work of other sections to determine correct position of sealant application in sequence of work.

.3 Apply sealants using gun with proper size nozzle. Shape nozzle so as to finish sealant in a neat concave bead.

.4 Use sufficient pressure to fill voids and joints solid. Superficial pointing with skin bead is not acceptable.

.5 Exposed sealant shall be smooth, free from ridges, wrinkles, sags, air pockets and embedded impurities.

.6 In masonry cavity construction, vent caulked joints from cavity to 3 mm beyond external face of wall by inserting vent tubing at bottom of each joint and maximum of 1500 mm (5') oc vertically. Position tube to drain to exterior.

.7 Remove excess sealant and droppings using a recommended cleaner without damaging finished surfaces. Remove masking after tooling joints.

2.4 Schedule of Projections

Materials and application to be in accordance with manufacturer's recommendations and verified by their technical representative.

.1 General exterior sealant: joints between exterior metal door frames and masonry; joints between window frames and siding control and expansion joints; sealing of joints between underside of concrete floor slabs and masonry; continuously at underside of metal sills; around all projections through exterior wall, hose bibs, pipes and the like; around all metal louvers; as per drawings and not necessarily covered herein; locations not filled with trim.

.2 General Interior Sealant: joints between door frames and masonry; masonry control and expansion joints; between built-in architectural woodwork and adjacent surfaces; control joints in gypsum board assemblies above suspended ceilings where pipes, ducts or other mechanical equipment passes through walls; at any other location indicated on drawings but not described herein; locations not covered by trim; at window sills and all toilet bases.

.3 Rubber-Asphalt Sealant: around penetrations in foundation wall damp proofing; between roof sleeves and pipes, conduits, etc., penetrating roof; as bed for and between joints in concealed metal flashing; between sheet damp proofing and adjacent concrete and masonry surfaces; etc.

.4 High Humidity Sealant: joints between plumbing fixtures and surrounding material; joints between mirrors and metal fixtures; etc.

.5 Isolation paint: back priming of metal flashing; coating aluminum frame and structural components in contact with steel or masonry; priming of metal components built into roof assembly; etc.

END OF SECTION 07900

PART 1 - GENERAL

1.1 General

.1 Division One, General requirements, is part of this Section and shall apply as if repeated here.

1.2 Description of Work

The work shall consist of the following but not limited to:

.1 Fire-rated and non-rated steel doors, door frames, glazing screens and hollow metal transom panels as indicated on the drawings.

.2 Prepare frames with continuous bar reinforcement at head of frames for door closures.

.3 Prepare frames with continuous bar reinforcement at jambs of frames for continuous piano hinges as shown on Door and Frame schedule.

.4 Prepare frame and doors to receive electrical wiring and control switches for barrier-free door operators supplied by other sections.

.5 Prepare frames and doors for intrusion alarms.

.6 Prepare doors as required to receive electrical wiring for door strikes for card access system.

.7 All steel frames shall be metric sized for metric concrete block coursing unless noted or required otherwise.

.8 Steel frame sizes and configurations shall be as indicated in the Door and Frame Schedule Drawings.

1.3 Related Work

.1	Finish Carpentry	Section 06200
.2	Finish Hardware	Section 08710
.3	Sealants	Section 07900
.4	Glazing	Section 08800
.5	Painting	Section 09900

1.4 Requirements of Regulatory Agencies

.1 Fabrication and installation of steel doors and frames is to be in accordance with Canadian Steel Door and Frame Manufacturers' Association, "Canadian Manufacturing Specifications for Steel Doors and Frames", (most current edition) except where specified otherwise.

.2 Fabrication and installation of fire rated steel doors and frames is to be in accordance with the requirements of NFPA-80. Rated doors and frames are to carry ULC Labels, permanently anchored; unlabelled units will be rejected.

1.5 Shop Drawings

.1 Submit shop drawings in accordance with Section 01340.

.2 Indicated each type of door and frame, fire rating, material, core type and thickness, mortices and reinforcements, location of anchors and exposed fasteners, arrangement of hardware, openings, glazing stops and finishes.

.3 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and in door schedule.

PART 2 - PRODUCTS

All material notations provided below reflect minimum acceptable standards. For all fire-rated products, suppliers are to provide items fully achieving required/noted fire-resistance ratings. Modify and upgrade material gauges, material composition, fabrication techniques etc. as required to achieve specified ratings (noted on drawings and/or in Door Schedule) in accordance with hollow-metal manufacturer options and offerings.

2.1 Manufacturers

.1 Fleming-Baron, Gen-Steel or alternate approved via addenda.

2.2 Materials Steel Frames

.1 Sheet steel: commercial grade steel W25 wiped zinc finish.

(a) Frames: 1.5 mm (16 U.S. std. ga.) base thickness steel.
(b) Floor anchors, channel spreaders and wall anchors: minimum 1.5 mm (16 ga.) base thickness steel.
(c) Guard boxes: minimum 0.8 mm (22 ga.) base thickness steel.
(d) Glazing stops: minimum 1.0 mm base thickness steel, screw fixed tamperproof (19 ga.)
(e) Hardware reinforcing: 6 mm (1/4") steel plate.

.2 Reinforcing channel: 100 x 40 mm (C4 x 6.25).

.3 Door bumpers: black neoprene double stud

.4 Primer: to CGSB 1-GP.

.5 Anchors: Wire "T" masonry or welded in UL type.

2.3 Materials Steel Doors

.1 **Exterior Hollow Doors and Hollow Metal Transom Panels:** Sheet Steel: 1.5 (16 ga.) base thickness, commercial grade steel with exterior-application premium zinc finish.

.2 Glazing and panel stops: minimum 1 mm (19 ga.) base thickness sheet steel with wiped zinc finish; tamperproof, screw fixed.

.3 Top and bottom channels: 1.5 mm (16 ga.) galv. steel channels.

.4 Reinforcing: hinges, 5 mm (6ga.): Lock and flush bolt 3 mm (10 ga.); surface hardware 1.5 mm (16 ga.)

.5 Primer: for touch up to CGSB 1-GP.

2.4 Fabrication Frames

.1 Form profiles accurately to approved shop drawings, free of kinks, twists and warps.

.2 Cut mitres and joints accurately and weld continuously on inside of frame profile. Where site welding or splicing is required due to size of unit, location of field joints shall be shown on Shop Drawings and strictly adhered to; avoid field welding where possible.

.3 Grind welded corners and joints to flat plane, fill with metallic paste filler and sand to uniform smooth finish.

.4 Mortice, reinforce, drill and tap fames to receive templated strikes, butt hinges, and continuous piano hinges; check Hardware Schedule for requirements. Manufacturer to make allowance for morticed hardware.

.5 Weld guard boxes to frame at all strikes, hinges and concealed closers to completely enclose same.

.6 Install stiffener plates or spreaders between frame trim where required to prevent bending of trim and to maintain alignment when setting and during adjacent construction work.

.7 Provide 1.5 mm (1/16") clearance at head and jambs, and no more than 9mm (3/8") at floor. Provide clearance for intended finish flooring. Locate top hinges with top 125 mm (5") below door top, bottom hinges with bottom 250 mm (10") from floor, and intermediate hinges equi-distant between top and bottom hinges.

.8 Provide adjustable "T" anchors or welded in UL type anchors for each jamb at approximately 600 mm (2'-0") centres. Provide floor anchors on frames that terminate at finished floor. Provide jamb extension anchorage on frames that terminate at slab.

.9 Provide two welded-in channel or angle spreaders per door frame at bottom to ensure frame alignment.

.10 Reinforce head of frames over 1200 mm (4') in width. Reinforce jambs of frames over 2400 mm (8') in height or where frame heads are unsupported by adjacent material; install reinforcing continuous from floor to structure above.

.11 Install 3 bumpers on strike jamb for each single door and 2 bumpers at head for pairs of doors.

.12 Construct thermally broken frames with continuous polyvinylchloride thermal breaks between inner and outer portions of frame.

.13 Provide glazing stops in all areas requiring glass or panels, as indicated; stops to be on interior side of exterior frames.

.14 All frames shall be bonderized and receive one coat of baked on rust inhibitive primer.

.15 Install all glass with isolation and glazing tapes to suit, included any and all related fabrication techniques or accessories required to achieve specified fire-resistance ratings.

2.5 Fabrication-Doors

.1 Doors shall be of hollow metal construction reinforced and stiffened with sound deadening kraft honeycomb, or rigid polyurethane insulation cores. Laminate core to both inside faces of the panels.

.2 Doors shall be flush with no face seams. Doors shall have vertical mechanically interlocking seams.

16 gauge exterior doors shall be continuously welded and seam filled on both hinge and lock edges.

18 gauge interior doors shall be welded at 6” centres minimum and seam filled on both hinge and lock edges.

.3 Mortice, reinforce, drill and tap doors and reinforcements to receive hardware using templates provided by Finish Hardware supplier. Manufacturer to make allowance for morticed hardware.

.4 Make provision for glazing as indicated and provide necessary glazing stops. Stops on interior side of exterior doors.

.5 Doors shall be cleaned and sanded, given a coat of air drying past filler, again sanded to eliminate all unevenness or irregularities and given a baked on coat of rust-inhibitive primer.

.6 Install all glass in doors with isolation and glazing tapes to suit, included any and all related fabrication techniques or accessories required to achieve specified fire-resistance ratings.

PART 3 - EXECUTION

3.1 Frames

.1 Set frames plumb, square, level and at correct elevation.

.2 Secure frames and screens to floor construction with two fasteners at each jamb, and set and brace them securely to maintain true alignment until built-in.

.3 Install temporary horizontal wood spreaders at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings over 1200 mm wide. Remove temporary spreaders after frames are built in.

.4 Make allowance for deflection to ensure structural loads are not transmitted to frames.

.5 Install labeled fire rated frames with anchorage as required by NFPA-80.

3.2 Doors

.1 Install hollow metal doors complete with hinges as supplied under the work of Section 08710.

.2 Install doors only when work has progressed to a stage when no damage will occur to them in place.

3.3 Adjusting and Cleaning

.1 Hang doors to swing easily and freely on their hinges, to remain stationary in any position and to close tightly and evenly on frames without binding.

.2 Refinish damaged and defective work before completion of project.
Refinishing of exposed surfaces shall show no discernible variation in appearance.

END OF SECTION 08100

PART 1 - GENERAL

1.1 General

.1 Division One, General requirements, is part of this Section and shall apply as if repeated herein.

1.2 Description of Work

The intent of this project is the replacement of existing windows, trims and associated framing as/where noted in the Architectural drawings. Replacement items are to be fitted into existing openings throughout. All existing windows, entry systems and/or framing systems being replaced are to be removed complete with all associated existing items mounted thereon including [without strict limitation to]:

- existing exterior mounted security screens
- existing window blinds
- miscellaneous existing items

The work shall consist of the following but not limited to:

.1 The coordinated removal of all existing windows, and related items specified to be replaced as part of the scope of work, including coordination with the Owner and/or school Principal to plan and phase this work cooperatively with the ongoing operation of the school facility.

Plan and coordinate all removal/replacement activities accordingly to optimize the ongoing function of the school and to minimize adverse impact on adjacent occupied spaces.

.2 The investigation of all existing site and building conditions as they affect this scope of work, allowing for same herein, and ensuring that they factor into the pricing and related execution of this work.

.3 The on-site surveying of all dimensions related to architectural and other building features within and around curtain wall openings they impact the dimensions and of new curtain wall assemblies. All such detailed dimensions are to be reflected in the shop drawings at the time of their submission to the Architect.

.4 The disposal of all existing windows and related items being removed and replaced as part of this Division.

All items are to be disposed of under this contract at an approved sanitary landfill or recycling site capable of accommodating the related construction waste materials.

.5 The supply and installation of all thermal aluminum-framed window with related components and accessories (as specified/as applicable) for a complete system including (without strict limitation to): aluminum framing components (including both fixed and operable sash), glazed vision panes, spandrel units, insulated back-pans behind spandrel panels, window screens, caulking within and around the window system, aluminum sills, all required anchorage components, fasteners, attachments, concealed interior (structural steel) reinforcing, shims, perimeter weather seals and all other items called for and/or as required as part of this scope of work.

.6 The supply and installation of tarping, boarding and any other temporary means required to ensure the water-resistance of the building envelope for all areas under construction affected by/related to the scope of work covered herein.

.7 The supply and installation of all aluminum clad column covers (ACC) noted throughout architectural drawings.

.8 Provision of an additional 10% colour matched window cranks and 20% screen fastening clips to be left behind for repairs

1.3 Related Work

.1	Final Cleaning	Section 01710
.2	Rough Carpentry	Section 06101
.3	Sealants	Section 07900
.4	Glass & Glazing	Section 08800

1.4 Sub-Trade Quality Assurance

.1 Minimum Qualification for Successful Trade: The work of section shall be supplied, fabricated and installed by a company which has a minimum of 5 years of experience in the successful completion of projects of a similar size, design and quality, with a workforce of skilled personnel to complete the work in an efficient, professional and first-quality manner. The size of the Sub-Trades workforce will be critical for the timely execution of project requirements.

General Contractors are responsible to ensure at the time of Tender that their Sub-Trade executing this component of the work complies with these minimum requirements. Following project award, the Contractor may be required to provide written proof of this qualification, relative to the Sub-Trade being carried, as well as a written outline of the workforce (installation crew) being committed to this project.

1.5 Reference Standards

.1 Aluminum Association (AA):
a) DAF 45 [2003], Designation System For Aluminum Finishes.

.2 American Architectural Manufacturers Association (AAMA):

a) AAMA-501-[2005], Methods of Test for Exterior Walls.

b) AAMA-2603-[2002], Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.

c) AAMA-2604-[2005], Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.

d) AAMA-2605-[2005], Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.

e) AAMA CW DG-1-[96], Aluminum Curtain Wall Design Guide Manual.

f) AAMA CW-10-[2004], Care and Handling of Architectural Aluminum From Shop to Site.

g) AAMA CW-11-[1985], Design Windloads for Buildings and Boundary Layer Wind Tunnel Testing.

h) AAMA-TIR A1-[2004], Sound Control for Fenestration Products.

.3 ASTM International (ASTM):

a) ASTM A653 / A653M – [09a], Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

b) ASTM B209-[07], Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

c) ASTM B221-[08], Specification for Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

d) ASTM C612 – [09], Standard Specification for Mineral Fiber Block and Board Thermal Insulation.

e) ASTM E283-[04], Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

f) ASTM E331-[00], Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform Static Air Pressure Difference.

g) ASTM E413 – [04], Classification for Rating Sound Insulation.

h) ASTM E1105 – [00(2008)], Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference.

.4 Canadian General Standards Board (CGSB):

a) CAN/CGSB-12.8-[97], Insulating Glass Units.

b) CAN/CGSB-12.20-[M89], Structural Design of Glass for Buildings.

c) CAN/CGSB-19.13-[M87], Sealing Compound, One-Component, Elastomeric, Chemical Curing.

.5 CSA International (CSA):

a) CAN/CSA-S157-[2005], Strength Design in Aluminum.

b) CAN/CSA-S136–[2007], North American Specification for the Design of Cold-Formed Steel Structural Members.

c) CAN/CSA W59.2-[M1991(R2003)], Welded Aluminum Construction.

.6 Environmental Choice Program (ECP):

CCD-45-[1995], Sealants and Caulking Compounds.

.7 Underwriter's Laboratories of Canada (ULC):

AN/ULC-S710.1 [2005], Standard for Thermal Insulation – Bead-Applied One Component Polyurethane Air Sealant Foam, Part 1: Materials Standard for Thermal Insulation - Bead - Applied One Component Polyurethane Air Sealant Foam, Part 1: Materials.

1.6 Samples & Submittals

.1 **Manufacturer's Certification:**

Submit a letter from the manufacturer (on window manufacturer's letterhead) certifying that the subcontractor who has issued a purchase order, letter of intent or otherwise has entered into contract with the manufacturer to supply and install the related product. The letter must be dated and include the:

- Name and Contact Info of the Manufacturer
- Name of the project
- Name of the approved sub-contractor
- Complete list of product materials, components and accessories to be incorporated into the work including names, types and series numbers of all items being installed
- Manufacturer's Representative serving as contact for this project with telephone, fax and email numbers/addresses.

Submit this certification prior to the preparation of shop drawings.

.2 Submit to the Architect (upon his request) one representative sample mock-up of typical aluminum window assembly, complete with mullion types, vision glass, spandrel panel, insulated back-pan, weep-drainage system, attachments, anchors, caulking system and any other items comprising the full system specified herein.

.3 Submit to the Architect duplicate samples (12" x 12" size) of all prefinished aluminum colours to be utilized on the project. No related items are to be ordered without written sample approval from the Architect.

.4 Submit to the Architect duplicate samples (12" x 12" size) of all hermetic vision pane types, all spandrel panel types and all specialty ventilator units to be utilized on the project. No related items are to be ordered without written sample approval from the Architect.

1.7 Shop Drawings

.1 Submit shop drawings of all windows and curtain-wall items, clearly indicating opening sizes, materials and details for head, jamb and sill, profiles of components and elevations of units, structural or reinforcing members, anchoring details, description of related components and exposed finishes and fasteners, all in accordance with Section 01340.

.2 Submit with shop drawings **a letter from the identified manufacturer certifying that the details shown on the shop drawings accurately depict the identified manufacturers products**. The letter must be dated and include the:

- Name of the project
- Name of the sub-contractor
- Manufacturers contact with telephone and telefax numbers

Submit this certification with shop drawings.

.3 Submit one representative sample model and one corner cross section of each type of window, showing sill and jamb section, complete with hardware, weather stripping, glass, screening, etc., and other items to be used at the windows, including finishes.

1.8 Test Reports

.1 Submit test reports from independent testing agency indicating that windows exceed the performance requirements of CAN/CSA-A440 or equal at the appropriate performance levels to meet climatic requirements, and as specified herein, resistance, thermal performance, ease of operation, load tests on screen, blocked operation.

Submit a letter or certificate from aluminum profile extruder that the aluminum alloy is 6063 and has been heat treated to T6 temper.

.2 Submit test reports verifying that insulated glazing vision panes used in curtain wall system comply with specified thermal standards.

1.9 Administrative Requirements

.1 Coordination with Trades: Coordinate work of this Section with work of other trades and for proper timing and sequence to avoid construction delays.

.2 Project/Site Meetings: Comply with other Sections herein relative to periodic attendance at site meetings as required. Ensure availability of manufacturer's Technical Representative to provide technical input as required.

.3 Manufacturer's Field Reports: Curtain Wall manufacturer to provide Site Reports in accordance with Section 3.4 Field Quality Control later herein. Copies of Field Reports are to be submitted directly to the Architect within 3 days of representative's visit and site inspection.

1.10 Maintenance

.1 Provide maintenance data for cleaning and maintenance of aluminum finishes and curtain wall systems for incorporation into maintenance manual specified in Section 01730.

1.11 Delivery, Storage & Handling

.1 Delivery and Acceptance Requirements:
- deliver material in accordance with Section 01600
- deliver aluminum framing and glazing materials and related components in manufacturer's original packaging with identification labels in tact and on products sized to suit project requirements

.2 Material Handling and Storage: to AAMA CW-10.

.3 Storage and Handling Requirements:
Store materials off of ground and protected from exposure to harmful weather conditions, and keep within temperature ranges recommended by manufacturer.

.4 Waste Management Requirements:

a) Separate and recycle or dispose of packaging material waste by an approved method as outlined related Sections elsewhere herein.
b) Separate and recycle or dispose of waste construction items by an approved method as outlined in related Sections elsewhere herein.

1.12 Warranty

.1 Provide written joint warranty between the General Contractor and window manufacturer stating that finished/assembled curtain wall, window, glazing screens and aluminum doors and frames are guaranteed against defects and malfunction under normal usage for a period of 5 years from date of Substantial Performance, including insulated glazing units. Warranty to be provided by Manufacturer(s) in writing, and executed by an authorized company official. This written warranty is in addition to and not intended to limit other rights which the Owner may have under any other Contract conditions or provisions.

PART 2 - PRODUCTS

2.1 Materials

.1 **Acceptable Manufacturers:**
Product shall be as manufactured by Alumicor or OldCastle Building Envelope. Approved alternates are Commdoor Aluminum, Windspec Inc. and Alwind Industries. Alternate products will be reviewed only if submitted during tender period and may be approved by Architect if criteria is met. No alternates allowed that are not noted in base bid or via addendum.

.2 **Design Criteria:**

a) Products to be designed to AAMA CW-DG-1
- design windows according to rainscreen principles
- ensure horizontal members are sealed to vertical members to form individual compartments in accordance with rainscreen principles
- ventilate and pressure-equalize air space outside exterior surface of insulation to the exterior

b) Design Aluminum components to CAN/CSA S157.

c) Design and window components to withstand dead and live loads caused by pressure and suction of wind, acting normal to plane of wall using design pressure of 0.95 kPa (20psi) to AAMA CW11/ASTM E330.

d) Design window systems for thermal expansion and contraction caused by cycling temperature range of 95 degrees C (surface temperature of system components) over a 12-hour period without causing detrimental effect to interior or exterior system components.

Ensure systems are able to withstand a temperature differential of 85 degrees C (ambient environmental temperature) without any adverse effect on system components and no deterioration of seals.

e) Design vertical expansion joints with baffled overlaps and compressed resilient air seal laid between mullion ends.

f) Ensure system is designed to accommodate:
- movement within window wall assembly
- movement between system and perimeter framing components
- dynamic loading and release of loads
- deflection of structural support faming
- shortening of building concrete structural columns
- creep of masonry, steel and concrete building components
- mid-span slab deflections
- action of door hardware and related items attached to aluminum framing members

g) Limit mullion deflection to prevent breakage of glass and to ensure maximum recovery of all materials.

h) Deadload prevention: design curtain wall system with

separate, integrated support for insulating glass units.

i) Size all glass units to CAN/CGSB-12.20

j) Flatness critria: 6mm max. in 6 m run for each panel

k) Air Infiltration: 0.63 cfm maximum of wall area to AAMA 501, ASTM E283 at differential pressure across assembly of 0.044 psi.

l) Water Infiltration: None to AAMA 501, ASTM E331, ASTM E1105 at differential pressure assembly of 0.104 psi.

m) Interior surfaces shall have no condensation before exposed edges of sealed units reach dew point temperatures during testing to AAMA 501.

n) Maintain continuous air-barrier and vapour-retarder throughout building envelope and curtain wall assembly.

o) Ensure no vibration harmonics, wind whistles, noises caused by thermal movement transmitted to other building elements, loosening, weakening, or fracturing of attachments or system components occur.

.3 **ALUMINUM-FRAMED WINDOWS (W-#):**

All **fixed sash** in aluminum framed windows tagged as W/# to be:

Model 1200-6-AR Series, fixed window units having a (6") deep frame with thermal break to CAN/CSA-A440, performance levels Air Leakage - Fixed, Water Leakage B7, Wind Load C5, Condensation Resistance - Frame I-50, Glass I-59, complete with a B7 sill manufactured by Old Castle Building Envelope ***or*** Alumicor Model 230.

All **awning style vented operable sash** in aluminum framed windows tagged as W/# to be:

Model 2000-AR Series Arctic Open-Out Awning window with thermal break to CAN/CSA-A440, performance levels Air leakage A3, Water Leakage B7, Wind Load C5, Condensation Resistance - Frame I-52, Glass I-61, manufactured by Old Castle Building Envelope ***or*** Alumicor 1350 series.

Provide for all new interior aluminum formed window trim flashings at all window locations to match window finish.

.4 **Insect Screens:**

Insect screens at operable sash components shall meet CGSB 79-GP-1M and CAN#-A440-M90 rating heavy duty, accommodated in extruded aluminum frame having a wall thickness of 1.9mm, finish as specified. Screen cloth shall be:

18 x 14 fiberglass mesh (black)

Flyscreens shall be located between the interior and exterior sliders and shall be removable.

.5 **Break-Shape Aluminum Sills at Windows:**
Break-shape aluminum sills at base of windows and curtain wall (where required) are to be break shape aluminum in 0.051" thickness (gauge) to match exterior finish of adjacent window and/or curtain wall framing components. Ensure sills have drip return at underside and extend from the underside of the window to just beyond the finished face of material below, all with a positive drainage slope away from the building.

.6 **FINISHES at ALL ALUMINUM WINDOWS, DOORS & GLAZING SCREENS:**

a) Finish at Aluminum Window Frames [Fixed Sash]:

- INTERIOR & EXTERIOR FACES *of* ***fixed framing components*** at aluminum framed windows and storefront door framing systems are to be finished in:
  Clear anodized

b) Finish at Horizontal Operable Sash Components:

- INTERIOR & EXTERIOR FACES of **operable sash components** within aluminum framed curtain wall to be finished in:
  Clear anodized

.7 Isolation coating: alkali resistant bituminous paint in accordance with Section 07900.

.8 Sealants: in accordance with Section 07900 in colour to match adjacent window/door frame colours.

2.2 Window Performance Requirements (Air Infiltration)

.1 Air Leakage; Operable Windows:
Maximum 0-55 M/3/H metre of sash crack length when tested to ASTM E283-73. Rating A-3, CAN/CSA-A440.

Fixed Windows:
Maximum 0-25 M/3 /H/ M/2 when tested to ASTM E283-73. Rating Fixed, CAN/CSA-A440.

.2 Water Resistance:
No evidence of water on interior face of frame when tested to ASTM E547 and CAN/CSA-A440 to level B5 at test pressure 500 Pa.

.3 Wind Load Resistance:
To CAN/CSA-A440, when tested to ASTM E330. Rating - C5 - at test pressure 5000 Pa.

.4 Condensation Resistance:
Window shall be tested to CAN#-A440-M90 for condensation resistance to determine "I" Value to meet winter design

temperature and selected relative humidity.

Horizontal Window - Glass - I-61, Frame - I-55
Fixed Window - Glass - I-59, Frame - I-63

2.3 Fabrication

.1 Construct frames to profiles and face sizes shown on drawings.

.2 Design frames in exterior walls to accommodate expansion and contraction within service temperature range of -34 degrees C to 75 degrees C. Make allowances for defection of structure, ensure that structural loads are not transmitted to aluminum work.

.3 General - Fabricate windows using two separate frames joined by means of a thermal break as follows:

Cope and butt join all joints in main frame and sash neatly in weather tight manner and secure by means of screws anchored into integral screw ports. Secure sash corners with thread cutting type screw to ensure tight corners when re-assembling after glass repairs have been made. Internally seal all sash corners. De-burr and make smooth all sharp milled edges and corners of sash and screen frames. Provide outside main frame sill with device extending beyond plane of operating tracks which will prevent the removal or accidental loss of exterior sash or screens to exterior. Provide sill members with minimum 5 degrees slope. Provide sill weep system which will facilitate drainage of water accumulating in sill area, while preventing passage of air, dirt and insects to interior. Fabricate and anchor both inner and outer frames using specified screw fasteners without violating the thermo-barrier. Exposed fasteners or the use of pop rivets not acceptable.

.4 Fabricate entire window in a manner that will allow easy replacement of any defective, damaged or worn components, hardware or weather stripping.

.5 Fixed Windows:
The fixed unit shall consist of two separate frames, joined by means of a thermal break. All joints of the frame shall be butt-type, joined neatly in a weather tight manner. The units shall be designed for field glazing, using a combination semi-solid/wet seal at the exterior weathering joint and a concealed screw applied stop with a resilient gasket at the interior. The stop shall be extruded aluminum.

.6 Aluminum Horizontal Sliding Window Operation:
Exterior sash: left operates, right fixed
Interior sash: left operates, right operates

Completely separate all operating sash surfaces from metal to metal contact. Provide sash members with continuous, integral-type pull handles. Provide quiet, smooth sash operation using nylon glides concealed in sash bottom rails or stainless steel roller wheels. Provide dual weather stripping in sash bottom rails, below nylon glides, which will clean the sill rib as the sash is operated. Provide all interior and exterior operating vents with spring loaded metal locking device to provide automatic locking in closed position at jambs. All operating sash shall be easily removed from the interior for cleaning.

.7 Thermo Barrier:
Provide complete metal-to-metal separation between the two main frame members. Do not use connecting screws, clips or other devices which would tend to bridge the two frame members or restrict in any manner the expansion and contraction of the individual separate frame members. Factory seal between Thermo-Barrier and frame around the entire perimeter to ensure weather tight assembly.

.8 Glazing:
Provide sash frames which will permit glass replacement without the use of special tools.

.9 Weather stripping:
Double weather strip window units at all sash perimeters. Conceal weather stripping to prevent accumulation of foreign matter due to cleaning, operation or handling which would reduce effectiveness or life of seal.

.10 Install all weather stripping in specially extruded ports and secure to prevent shrinkage, movement or loss when removing sash for cleaning or glass replacement.

.11 Exterior Panning Trim:
Provide one piece sections designed to lock into window frame. Join planting sections at corners, utilizing integral screw ports and screws and back seal. Sheet metal formed shapes not acceptable.

.12 Screens:
Factory install in tubular extruded aluminum frames and secure in place using vinyl spline. Screen is to be located between the interior and exterior sash. Screen guide channels or fins which facilitate the operation of the screen shall be an integral part of the window frame or thermal barrier. Channels or fins which are surface applied to the window frame or thermal barrier by means of screws or rivets are not acceptable. Screens must meet CAN3-A440-M90 screen rating - heavy duty.

.13 Apply isolation coating to aluminum to be in contact with dissimilar metals or cementitious materials.

.14 Manufacturer's nameplates on frames and screens are not permitted.

PART 3 - EXECUTION

3.1 INSTALLERS

.1 Use only window manufacturer’s authorized installers meeting work experience requirements outlined earlier in this Section.

3.2 EXAMINATION

.1 Verification of Conditions: Verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for curtain wall installation in accordance with manufacturer’s written instructions.

a) Visually inspect substrate in presence of Consultant.

b) Inform Consultant of unacceptable conditions immediately upon discovery.

c) Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.

3.3 INSTALLATION

.1 Install windows in accordance with manufacturer’s written instructions.

.2 Do aluminum welding to CAN/CSA W59.2.

.3 Attach window assemblies to structure plumb and level, free from warp, and allow for sufficient adjustment to accommodate construction tolerances and other irregularities.

a) Maintain dimensional tolerances and align with adjacent work.

b) Use alignment attachments and shims to permanently fasten elements to building structure.

c) Clean welded surfaces and apply protective primer to field welds and adjacent surfaces.

.4 Install thermal isolation where components penetrate or disrupt building insulation.

.5 Install sill flashings (where applicable).

.6 Co-ordinate attachment and seal of perimeter air barrier in accordance with Section [07270 – Air Barriers].

.7 Co-ordinate attachment and seal of perimeter vapour retarder in accordance with Section [07260 – Vapour Retarders].

.8 Install [fibrous insulation] [liquid foam insulation] in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

.9 Install insulating glass units and infill panels in accordance with Section [08800- Glazing] and to manufacturer's written instructions.

.10 Install perimeter sealant [to method required to achieve performance criteria, backing materials, and installation criteria in accordance with Section [07920 - Joint Sealing].

3.04 FIELD QUALITY CONTROL

.1 Field Inspection: Coordinate field inspection in accordance with Section [01 45 00 - Quality Control].

.2 Site Installation Tolerances:

a) Variation from plumb: [12 mm per 30 m (0.5 inches per 100 feet)] maximum.

b) Misalignment of two adjacent panels or members: [0.8 mm (0.03 inches)] maximum.

c) Sealant space between curtain wall and adjacent construction: [13 mm (0.5 inches)] maximum.

.3 Manufacturer's Services:

a) Coordinate manufacturer's services with Section [01 45 00 - Quality Control].

b) Submit to Consultant a written agreement from the manufacturer to perform the manufacturer's services.

c) Schedule manufacturer's review of work (including site inspections and written reports) at the following stages:
- 1 review at commencement of work
- 1 review at 50% completion of work
- 1 review at full completion of work

.4 Submit manufacturer's Written Reports to Consultant describing:

a) The scope of inspection/reporting services provided.

b) Date, time and location of site review.

c) Observed installation procedures performed by Sub-Trade noting extent of work complete and conformance to manufacturer's recommendations.

d) Observed or detected non-compliances or inconsistencies with manufacturers' recommended instructions relative to the intended application.

.5 Limitations or disclaimers regarding the procedures performed.

.6 Obtain reports within seven days of review and submit immediately to Consultant.

3.05 CLEANING

.1 Progress Cleaning: Perform cleanup as work progresses [in accordance with Sections addressing Cleaning and Waste Management]. Leave work area clean end of each day.

.2 Final leaning: Perform final cleaning of new curtain wall systems and glazing components (vision pane and spandrel panels, caps, aluminum composite panels etc.) to remove all signs of construction and related debris including all stickers and glue. Panels to be left cleaned and clear of blemishes, spots, smears etc.

.3 Waste Management:

a) Co-ordinate recycling of waste materials with Sections elsewhere addressing Construction Waste Management and Disposal.

b) Collect recyclable waste and dispose of or recycle field generated construction waste created during construction or final cleaning related to work of this Section.

c) Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.06 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by glazed aluminum curtain wall installation.

PART 4 - ON-SITE TESTING

4.1 On-Site Testing

.1 The Owner reserves the right to appoint an independent testing agency to test installed windows at random for compliance with all requirements contained in the specification. Failure to meet these requirements shall make the contractor liable for full replacement and/or rectification costs for items of concern (cited in Testing Report) as well as cost of further (third party) tests to verify compliance of system including rectification items.

END OF SECTION 08150

PART 1 - GENERAL

1.1 Description of Work

.1 All Finish Hardware [related to man doors throughout] is to include [without strict limitation to] the following:

a) Hardware for all hinged man doors (butt hinges, adjustable piano hinges, closers, locks and latches, bolts, panic bars, kick plates, pulls etc.)
b) Mortised hardware (where specified)
c) Door stops in floor or wall types as required.
d) Metal thresholds, sweeps, weather-stripping.
e) Auto door operators

1.2 Preparation

.1 Supply of Finish Hardware is to be as per accompanying Appendix containing "Finish Hardware Schedule".

.2 Installation of the above noted Finish Hardware to be done by a certified hardware installer. Installation by General Contractor will not be permitted.

1.3 Related Work

.1	Finish Carpentry:	Section 06200
.2	Hollow Metal Doors and Frames:	Section 08100
.3	Architectural Woodwork:	Section 06400

1.4 Requirements of Regulatory Agencies

.1 All Hardware on fire rated doors and frames to conform to requirements of NFPA-80 and to bear ULC label.

1.5 Qualification

.1 Personnel who will be responsible for scheduling detailing, ordering, and coordination hardware for this project, shall be experienced hardware consultants. Regular membership in the American Society of Architectural Hardware Consultants is acceptable evidence of such experience.

1.6 Coordination

.1 The finish hardware contract shall be the responsibility of hardware supplier to request shop drawings from related trades for coordinating.

.2 Before supplying materials, ensure by check of drawings, shop drawings and details prepared for the Project, that listed hardware is suitable by dimension and function for intended purposes.

.3 Work of this Section shall include assistance and supervision of installation when requested, and as otherwise provided by the supplier, to ensure correct installation. After installation of all hardware and before building is accepted, the Contractor shall request the hardware supplier to inspect the installations and certify that the hardware is properly installed in accordance with the manufacturer's recommendations. The guarantee, as published by each manufacturer, will begin when the Owner accepts the building.

1.7 Submittals

.1 Hardware Supplier to prepare required submittals of product noted in Appendix “A” with cut-sheets of all items as per Section 01340.

1.8 Delivery and Storage

.1 Receive and check all hardware from supplier. Protect from pilferage at all times.

.2 Store finishing hardware in locked, clean and dry area.

.3 Package each item of hardware, including fastenings, separately or in like groups of hardware. Label each package as to item, definition and location.

PART 2 - PRODUCTS

2.1 Material

.1 Products shall be as noted in accompanying ‘Hardware Schedule’.

.2 Supply with specified hardware screws, bolts, expansion shields, inserts, and other items and parts required for complete installation and function.

2.2 Manufacturers

.1 Refer to accompanying “Hardware Schedule”.

2.3 Keying

.1 Refer to accompanying “Hardware Schedule”.

PART 3 – EXECUTION

.1 All items to be installed in full accordance with manufacturers’ recommendations for the intended application relative to the door types noted on the Architectural drawings.

END OF SECTION 08710

FINISHING HARDWARE SPECIFICATION

FOR

CECIL B. STIRLING ELEMENTARY SCHOOL

340 QUEEN VICTORIA DRIVE

HAMILTON, ON

ARCHITECT: WHITELINE ARCHITECT INC.
83 ONTARIO STREET
ST. CATHARINES, ON L2R 5J5

CONTRACTOR:

SUPPLIER:

GROUP 87

ARCHITECTURAL HARDWARE INC.

UNIT #1 – 3245 HARVESTER RD,
BURLINGTON, ONT. L7N-3T7
PH# 905-639-4676
FAX# 905-639-7561
E-MAIL: glen@group87.ca
WEB: www.group87.ca

CONSULTANT: **GLEN C. WIKKERINK**

DATE: February 12, 2024
REVISION: February 21, 2024

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Supply of finishing hardware as listed in the hardware schedule, 3.06
2. Supply of bolts, screws, expansion shields and special fastening devices required to properly install finishing hardware.
3.

B. Related Sections:

1. Installation of finishing hardware.
2. Metal doors and frames.
3. Wood doors.
4. Roll-up doors and fire shutters.
5. Aluminum door hardware.
6. Toilet partition hardware.
7. Miscellaneous specialties.
8. Power connection to automatic door operators. Provision of conduit between operators and activators, power connection to electric hold open devices, section 16000.

1.02 REFERENCES

1. Hardware for Labeled Fire Doors.
2. N.F.P.A. 80. Fire Doors and Windows.
3. N.F.P.A. 101. Life Safety Code.
4. N.F.P.A. 105. Installation of Smoke Control Door Assemblies.
5. Ontario Building Code.

1.03 SUBMITTAL

1. Make submittal in accordance with section 01340.
2. Prepare a detailed finishing hardware schedule itemizing each opening.
   List all doors by number including size, hand, swing and any and all relevant details effecting the application of finishing hardware.
3. Submit catalogue cuts of all proposed hardware.
4. Submit samples for approval as required.
5. Submit template information to the General Contractor for preparation of product in related sections' and installation of finishing hardware.
6. Prepare for review a detailed key schedule.
7. Submit wiring diagrams and a description of operation for electrified hardware systems specified.
8. Upon job completion, submit to the owners two 'Owners Operation and Maintenance Manuals' containing the following information:
    1. Maintenance instructions for each item of hardware.
    2. Final Hardware Schedule.
    3. Final Keying Schedule.

1.04 QUALITY ASSURANCE

1. Proposed substitutions shall be submitted for review prior to tender closing as identified in the competitive bidding process.
2. The hardware supplier must be regularly involved in supplying and expediting contract hardware for projects of this nature. The supplier must employ a certified "**Architectural Hardware Consultant**" to co-ordinate and oversee scheduling, ordering and the supplying of finishing hardware.

1.05 DELIVERY, STORAGE AND HANDLING

1. Hardware is to be delivered to the site in the Manufacturers original packaging. Each item of hardware to be clearly marked with the door number and item number corresponding to the approved hardware schedule. The General Contractor shall receive, check and be responsible for all items of hardware delivered to the jobsite.
2. Hardware supplier to co-ordinate delivery of hardware to the site or to the appropriate parties as noted in section 1.01.B "Related Sections" for installation.
3. Prior to delivery to the jobsite, a dry, secure room is to be provided for storage of the finishing hardware.

1.06 WARRANTY

1. Provide a minimum one year warranty for finishing hardware.
2. Provide a minimum ten year warranty for door closers.
3. Warranty to commence from date of Substantial Completion.

1.07 MAINTENANCE

1. Provide three wrenches for door closer adjustment.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

1.	Hinges	Ives
2.	Exit Devices	Von Duprin
3.	Locksets	Schlage Lock Co.
4.	Cylinders	Schlage Lock Co.
5.	Door Pulls	Standard Metal
6.	Door Closers	LCN Closers
7.	Overhead Stops	Glynn-Johnson
8.	Push, Kick, Armor Plates	Standard Metal
9.	Floor, Wall Stops	Standard Metal
10.	Thresholds, Weatherstrip	KN Crowder
11.	Signage	Frost
12.	Auto Door Operators	Micom

2.02 MATERIALS

1. All hardware shall be supplied complete with the necessary screw, bolts and other fasteners so as to anchor in position all finishing hardware to the Consultants approval. Exposed fasteners to be finished to match hardware. When a door pull is utilized on one side of the door and a push plate on the other, the plate is to be applied so as to conceal the door pull fasteners.

2. Hinges:

Specified:	Five knuckle 5BB1 series by	Ives
Acceptable Substitute:		

3. Continuous Hinges

Specified:		
Acceptable Substitute:		

3. Locksets:

Specified:	Grade one lever, ND series	Schlage
Acceptable Substitute:		

4. Exit Devices:

Specified:	98 series by	Von Duprin
Acceptable Substitute:		

5. Door Closers:

Specified:	1461 series by	LCN
Acceptable Substitute:		
Specified:	4040XP	LCN
Acceptable Substitute:		

6. Overhead Stops:

Specified:	GJ90 series by	Glynn Johnson
Acceptable Substitute:		

2.03 FINISHES

1.	15/652	SATIN NICKEL
	28	ANODIZED ALUMINUM
	26D/ 626	SATIN CHROME
	32D/630	SATIN STAINLESS STEEL
	689	ALUMINUM PAINTED
	AL	ALUMINUM
	PT	PRIMED FOR PAINT

2.04 KEYING

1. All locks keyed to an existing Schlage factory, nterchangeable core master key system.

PART 3 - EXECUTION

3.01 EXAMINATION

1. Size and condition of opening shall be verified as to door frames being plumb and of correct tolerance to receive doors and hardware. [General Contractor]

3.02 INSTALLATION

1. Review proper mounting heights with the Architect and/or Owner.
2. Standard mounting heights [unless otherwise noted]

A.	Locks/Latches	40-5/16" to centre line of strike from finished floor.
B.	Deadlocks	48" to centre line of strike from finished floor.
C.	Exit Devices	40-5/16" to centre line of strike from finished floor.
D.	Door Pulls	42" to centre line of pull from finished floor.
E.	Push Plate	45" to centre line of Push Plate from finished floor.

The above noted mounting heights are a recommended standard and may vary under special applications and conditions.

3.03 FIELD QUALITY CONTROL

1. After installation of hardware, inspect the installation and certify that the hardware is correctly installed and in accordance with the Manufacturers recommendations.

3.04 ADJUSTING AND CLEANING

1. Upon final completion the hardware is to be left clean and free from defect. Hardware found defective is to be repaired or replaced.
2. All door closers are to be inspected for proper installation and adjustment. Proved a written report from the Manufacturers Representative confirming proper door closer installation and submit the report to the Architect.

3.05 PROTECTION

1. Contractor shall provide proper protection of hardware until turned over to the Owner.

3.06 HARDWARE SCHEDULE

1. Provide hardware in accordance with the schedule as follows:

LEGEND

AL	ALUMINUM
CLSR	CLOSER
DR	DOOR
DS	DEAD STOP
HLDR	HOLDER
HM	HOLLOW METAL
HW	HEAVY WEIGHT
LBR	LESS BOTTOM ROD
MNT	MOUNT
MTG	MOUNTING
NRP	NON REMOVABLE PIN
P.A.	PARALLEL ARM
WD	WOOD

FINISHES

15/652	SATIN NICKEL
28	ANODIZED ALUMINUM
26D/ 626	SATIN CHROME
32D/630	SATIN STAINLESS STEEL
689	ALUMINUM PAINTED
AL	ALUMINUM
PT	PRIMED FOR PAINT

MANUFACTURERS

HINGES	IVES
LOCKSETS	SCHLAGE
EXIT DEVICES	VON DUPRIN
DOOR CLOSERS	LCN
OVERHEAD STOPS	GLYNN-JOHNSON
FLATWARE	STANDARD METAL
DOOR PULLS	STANDARD METAL
FLOOR/ WALL STOPS	STANDARD METAL
THRESHOLDS	K.N. CROWDER
WEATHERSTRIP	K.N. CROWDER
AUTO OPERATORS	HORTON

Door Index

Door No	Hdg	Door No	Hdg	Door No	Hdg
D1	01				
D10	10				
D2	02				
D3	02				
D4	03				
D5.1	04				
D5.2	04				
D5.3	04				
D6.1	05				
D6.2	06				
D6.3	06				
D7	07				
D8	08				
D9	09				

Heading 01 (HwSet)

		Hand	Degree Act	Degree InAct
1 PR	DOOR(S) D1 EXTERIOR FROM VESTIBULE 100 2/3'2" x 7'0" x 1-3/4" x HMD x HMF x NON-RTD	RHRA	90	90

Totals								Act	InAct
(6)	6	EA	HINGE	5BB1HW 5 X 4.5 NRP	630	IVE		3	3
(1)	1	EA	MULLION	KR4954 7' 6"	689	VON		1	1
(1)	1	EA	PANIC HARDWARE	CD98EO 4'	626	VON			1
(1)	1	EA	PANIC HARDWARE	CD98NL-OP 4'	626	VON		1	
(1)	1	EA	RIM CYL. HOUSING	20-079	626	SCH		1	
(1)	1	EA	MORT. CYL. HOUSING	26-094	626	SCH			
(2)	2	EA	MORT. CYL. HOUSING	26-094 X XQ11-948	626	SCH		1	1
(4)	4	EA	PERMANENT CORE	23-030 C123 50-210, 50-216	626	SCH		2	2
(1)	1	EA	ELECTRIC STRIKE	6300	630	VON		1	
(2)	2	EA	DOOR PULL	3015-2 #2 MTG 1-3/4" THICK DOOR	630	SMH		1	1
(1)	1	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN			1
(1)	1	EA	OVERHEAD STOP	904S	630	GLY		1	
(2)	2	EA	KICKPLATE	K10A 7" X 36" TAPE MTD.	32D	SMH		1	1
(2)	2	SET	WEATHERSTRIP	W-17N 1/38" 2/84"	628	KNC		1	1
(2)	2	EA	DOOR SWEEP	W-24S 38"	628	KNC		1	1
(2)	2	EA	THRESHOLD	CT-10 38"	627	KNC		1	1
(1)	1	EA	INSTALLATION	AUTO OPERATOR/SYSTEM		G87		1	

HARDWARE SUPPLIER TO REMOVE AND RE-INSTALL EXISTING OPERATOR ON ACTIVE LEAF. HWDSB TO SUPPLY & INSTALL SURVEILLANCE KEYED CYLINDER. EXISTING CARD READER AND INTERCOM SYSTEM TO REMAIN

Heading 02 (HwSet)

		Hand	Degree Act	Degree InAct
1 SGL	DOOR(S) D2 EXTERIOR FROM GYMNASIUM 127	LHR	90	
1 SGL	DOOR(S) D3 EXTERIOR FROM GYMNASIUM 127 3'0" x 7'0" x 1-3/4" x HMD x HMF x NON-RTD	RHR	90	

Totals						
(6)	3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
(2)	1	EA	EXIT DEVICE	CD98EO 3'	626	VON
(2)	1	EA	MORT. CYL. HOUSING	26-094 X XQ11-948	626	SCH
(2)	1	EA	PERMANENT CORE	23-030 C123 50-210, 50-216	626	SCH
(2)	1	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN
(2)	1	EA	KICKPLATE	K10A 7" X 34" TAPE MTD.	32D	SMH

Heading 02 (HwSet) Continued.....

						Hand	Degree Act	Degree InAct
(2)	1	SET	WEATHERSTRIP	W-17N 1/38" 2/84"	628	KNC		
(2)	1	EA	DOOR SWEEP	W-24S 38"	628	KNC		
(2)	1	EA	THRESHOLD	CT-10 38"	627	KNC		

EXIT ONLY, NO OUTSIDE PULL

Heading 03 (HwSet)

	Hand	Degree Act	Degree InAct
1 SGL DOOR(S) D4 EXTERIOR FROM HAMILTON HYDRO 130 EX x EX x 1-3/4" x XHMD x XHMF x NON-RTD	LHR	90	

Totals Each Assembly to have:

(1)	1			EXISTING DOOR & HARDWARE TO REMAIN				

Heading 04 (HwSet)

	Hand	Degree Act	Degree InAct
1 SGL DOOR(S) D5.1 EXTERIOR FROM VESTIBULE 123	LHR	90	
1 SGL DOOR(S) D5.2 EXTERIOR FROM VESTIBULE 123	LHR	90	
1 SGL DOOR(S) D5.3 EXTERIOR FROM VESTIBULE 123	LHR	90	
3'0" x 7'0" x 1-3/4" x HMD x HMF x NON-RTD Opening Remark: IN A BANK OF 3 DOORS			

Totals Each Assembly to have:

(9)	3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE		
(3)	1	EA	EXIT DEVICE	CD98EO 3'	626	VON		
(3)	1	EA	MORT. CYL. HOUSING	26-094 X XQ11-948	626	SCH		
(3)	1	EA	PERMANENT CORE	23-030 C123 50-210, 50-216	626	SCH		
(3)	1	EA	DOOR PULL	3015-2 #2 MTG 1-3/4" THICK DOOR	630	SMH		
(3)	1	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN		
(3)	1	EA	KICKPLATE	K10A 7" X 34" TAPE MTD.	32D	SMH		
(3)	1	SET	WEATHERSTRIP	W-17N 1/38" 2/84"	628	KNC		
(3)	1	EA	DOOR SWEEP	W-24S 38"	628	KNC		
(3)	1	EA	THRESHOLD	CT-10 38"	627	KNC		

Heading 05 (HwSet)

	Hand	Degree Act	Degree InAct
1 SGL DOOR(S) D6.1 EXTERIOR FROM VESTIBULE 114 3'0" x 7'0" x 1-3/4" x HMD x HMF x NON-RTD Opening Remark: IN A BANK OF 3 DOORS	LHR	90	

Totals Each Assembly to have:

(3)	3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE		

Heading 05 (HwSet) Continued.....

						Hand	Degree Act	Degree InAct
(1)	1	EA	EXIT DEVICE	CD98EO 3'	626	VON		
(1)	1	EA	MORT. CYL. HOUSING	26-094 X XQ11-948	626	SCH		
(1)	1	EA	PERMANENT CORE	23-030 C123 50-210, 50-216	626	SCH		
(1)	1	EA	DOOR PULL	3015-2 #2 MTG 1-3/4" THICK DOOR	630	SMH		
(1)	1	EA	KICKPLATE	K10A 7" X 34" TAPE MTD.	32D	SMH		
(1)	1	SET	WEATHERSTRIP	W-17N 1/38" 2/84"	628	KNC		
(1)	1	EA	DOOR SWEEP	W-24S 38"	628	KNC		
(1)	1	EA	THRESHOLD	CT-10 38"	627	KNC		
(1)	1	EA	INSTALLATION	AUTO OPERATOR/SYSTEM		G87		

HARDWARE SUPPLIER TO REMOVE AND RE-INSTALL EXISTING OPERATOR ON ACTIVE LEAF

Heading 06 (HwSet)

		Hand	Degree Act	Degree InAct
1 SGL	DOOR(S) D6.2 EXTERIOR FROM VESTIBULE 114	LHR	90	
1 SGL	DOOR(S) D6.3 EXTERIOR FROM VESTIBULE 114	LHR	90	

3'0" x 7'0" x 1-3/4" x HMD x HMF x NON-RTD
Opening Remark: IN A BANK OF 3 DOORS

Totals Each Assembly to have:

(6)	3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE	
(2)	1	EA	EXIT DEVICE	CD98EO 3'	626	VON	
(2)	1	EA	MORT. CYL. HOUSING	26-094 X XQ11-948	626	SCH	
(2)	1	EA	PERMANENT CORE	23-030 C123 50-210, 50-216	626	SCH	
(2)	1	EA	DOOR PULL	3015-2 #2 MTG 1-3/4" THICK DOOR	630	SMH	
(2)	1	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN	
(2)	1	EA	KICKPLATE	K10A 7" X 34" TAPE MTD.	32D	SMH	
(2)	1	SET	WEATHERSTRIP	W-17N 1/38" 2/84"	628	KNC	
(2)	1	EA	DOOR SWEEP	W-24S 38"	628	KNC	
(2)	1	EA	THRESHOLD	CT-10 38"	627	KNC	

Heading 07 (HwSet)

		Hand	Degree Act	Degree InAct
1 SGL	DOOR(S) D7 EXTERIOR FROM CLASSROOM 111	LHR	90	

3'0" x 7'0" x 1-3/4" x HMD x HMF x NON-RTD

Totals Each Assembly to have:

(3)	3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE	
(1)	1	EA	EXIT DEVICE	CD98EO 3'	626	VON	

Heading 07 (HwSet) Continued.....

							Hand	Degree Act	Degree InAct
(	1)	1	EA	MORT. CYL. HOUSING	26-094 X XQ11-948	626	SCH		
(	1)	1	EA	PERMANENT CORE	23-030 C123 50-210, 50-216	626	SCH		
(	1)	1	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN		
(	1)	1	EA	KICKPLATE	K10A 7" X 34" TAPE MTD.	32D	SMH		
(	1)	1	SET	WEATHERSTRIP	W-17N 1/38" 2/84"	628	KNC		
(	1)	1	EA	DOOR SWEEP	W-24S 38"	628	KNC		
(	1)	1	EA	THRESHOLD	CT-10 38"	627	KNC		

EXIT ONLY, NO OUTSIDE PULL

Heading 08 (HwSet)

	Hand	Degree Act	Degree InAct
1 SGL DOOR(S) D8 EXTERIOR FROM STORAGE 107A 3'0" x 7'0" x 1-3/4" x HMD x HMF x NON-RTD	RHR	90	

Totals Each Assembly to have:

(	3)	3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE		
(	1)	1	EA	STOREROOM LOCK	ND96JD RHO VANDLGARD	626	SCH		
(	1)	1	EA	PERMANENT CORE	23-030 C123 50-210, 50-216	626	SCH		
(	1)	1	EA	ASTRAGAL	43SP 7'	P	ZER		
(	1)	1	EA	CLSR-HLDR-STOP	4040XP S-HCUSH	689	LCN		
(	1)	1	EA	KICKPLATE	K10A 7" X 34" TAPE MTD.	32D	SMH		
(	1)	1	SET	WEATHERSTRIP	W-17N 1/38" 2/84"	628	KNC		
(	1)	1	EA	DOOR SWEEP	W-24S 38"	628	KNC		
(	1)	1	EA	THRESHOLD	CT-10 38"	627	KNC		

Heading 09 (HwSet)

	Hand	Degree Act	Degree InAct
1 PR DOOR(S) D9 EXTERIOR FROM CORRIDOR 103 2/3'0" x 7'0" x 1-3/4" x HMD x HMF x NON-RTD	LHR	90	90

Totals Each Assembly to have:

								Act	InAct
(	6)	6	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE	3	3
(	1)	1	EA	MULLION	KR4954 7' 6"	689	VON	1	1
(	2)	2	EA	EXIT DEVICE	CD98EO 3'	626	VON	1	1
(	1)	1	EA	MORT. CYL. HOUSING	26-094	626	SCH	1	
(	2)	2	EA	MORT. CYL. HOUSING	26-094 X XQ11-948	626	SCH	1	1
(	3)	3	EA	PERMANENT CORE	23-030 C123 50-210, 50-216	626	SCH	2	1

Heading 09 (HwSet) Continued.....

							Hand	Degree Act	Degree InAct
(2)	2	EA	DOOR PULL	3015-2 #2 MTG 1-3/4" THICK DOOR	630	SMH	1	1
(2)	2	EA	CLSR-HLDR-STOP	4040XP S-HCUSH	689	LCN	1	1
(2)	2	EA	KICKPLATE	K10A 7" X 34" TAPE MTD.	32D	SMH	1	1
(2)	2	SET	WEATHERSTRIP	W-17N 1/38" 2/84"	628	KNC	1	1
(2)	2	EA	DOOR SWEEP	W-24S 38"	628	KNC	1	1
(2)	2	EA	THRESHOLD	CT-10 38"	627	KNC	1	1

Heading 10 (HwSet)

	Hand	Degree Act	Degree InAct
1 SGL DOOR(S) D10 EXTERIOR FROM KINDERGARTEN 104 3'0" x 7'0" x 1-3/4" x HMD x HMF x NON-RTD	RHR	90	

Totals Each Assembly to have:

(3)	3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
(1)	1	EA	EXIT DEVICE	CD98EO 3'	626	VON
(1)	1	EA	MORT. CYL. HOUSING	26-094 X XQ11-948	626	SCH
(1)	1	EA	PERMANENT CORE	23-030 C123 50-210, 50-216	626	SCH
(1)	1	EA	DOOR PULL	3015-2 #2 MTG 1-3/4" THICK DOOR	630	SMH
(1)	1	EA	CLSR-HLDR-STOP	4040XP S-HCUSH	689	LCN
(1)	1	EA	KICKPLATE	K10A 7" X 34" TAPE MTD.	32D	SMH
(1)	1	SET	WEATHERSTRIP	W-17N 1/38" 2/84"	628	KNC
(1)	1	EA	DOOR SWEEP	W-24S 38"	628	KNC
(1)	1	EA	THRESHOLD	CT-10 38"	627	KNC

End of Schedule

NetBox VARs (Golden Horseshoe)

360 Advanced Security Corp.
Andrew Pierce
(416) 798-2228
Andrew.p@360asc.com

Stanley Security Solutions
Spike Anderson
(416)455-1391
Spike.anderson@sbdinc.com

Troy Life and Fire Safety
Ted Koch
(905) 672-5348
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Convergint Technologies
Eric Heagle
(800) 691-3246
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Jared Budd
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Power Access
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PART 1 - GENERAL

1.1 General

.1 Division One (01000 series specifications) General requirements, is part of this Section and shall apply as if repeated here.

1.2 Description of Work

The work shall consist of the following but not limited to:

.1 Hermetically sealed double pane (insulating) glazing units in locations shown on the drawings. Hermetically sealed double pane glass units may include vision panes and/or spandrel panes as indicated on the drawings.

1.3 Related Work

.1	Final Cleaning	Section 01710
.2	Demolition	Section 02100
.3	Rough Carpentry	Section 06101
.4	Finished Carpentry	Section 06200
.5	Sealants	Section 07900
.6	Hollow Metal Doors & Frames	Section 08100
.7	Aluminum Windows	Section 08150

1.4 Dimensions

.1 The Contractor shall carefully check all frames and openings to be glazed in the field to determine all opening sizes; do not cut the glass until dimensions have been site-verified.

1.5 Glass Breakage

.1 The Contractor shall be responsible for all glass broken or unsuitable because of faulty setting or manufacturer's errors or product failure Glass broken by others shall be replaced by the glazing sub-contractor.

1.6 Environmental Conditions

.1 Glaze with compounds, sealants or tapes only when glazing surfaces are at temperatures over 45ºF (7.5°C), and when positive that no moisture is accumulating on them from frost, rain, mist, or condensation.

1.7 Glass Design

.1 This contractor shall be responsible for proper glass thickness, design and type as required by all prevailing Codes and mandated legislations. Report any such discrepancies in glass design, type and thickness immediately to the Architect.

.2 Glass types, sizes and locations to be as shown on Architectural drawings and all related door, frame, window and glazing Schedules as applicable.

PART 2 - PRODUCTS

2.1 Glass Materials

.1 Polished float glass to CAN2-12.3M and amendments; glazing "A" quality, thickness and tint as indicated. Units to be tempered, frosted, laminated where specified or where required by the O.B.C.

.2 Sealant compound: multicomponent, chemical curing to CAN2-19.24 M80 type 2, class A, black colour.

.3 Glazing tape for non-rated applications: pre-formed butyl tape, Tremco 440 black colour, 5mm thick x 10mm wide.

.4 Glazing tape for fire-rated glass: must be PVC, 3mm thick x 12 mm wide

.5 Setting blocks: neoprene, Shore "A" durometer hardness 80, 75mm long x 2.4mm thick x 5mm high.

.6 Spacer shims: neoprene, Shore "A" durometer hardness 70, 75mm long x 2.4mm thick x 5mm high.

.7 Primer-sealers and cleaners: to glass manufacture's standard.

.8 Low-E solar rejection film shall be as specified, applied to surfaces noted.

2.2 Fabrication

.1 **VISION PANE (VP) INSULATED GLAZING @ EXTERIOR WINDOWS & DOORS:**

Vision panes of insulating/hermetic glazing is to be used in:
- all fixed sash
- all awning window operable sash

components of exterior windows and/or doors.

Insulated Glazing/Hermetic glass units are to be supplied by Oldcastle Building Envelope, Trulite, Saand or approved alternate.

Insulated Glazing units are to be 25.4 mm thick Double-Glazed Hermetically Sealed Unit consisting of:

- *Exterior Sheet:*
  6 mm Vitro Glass/PPG ‘Solargray’ tinted glass, tempered, with PPG Solarban 60 film on surface 2
  or
  6 mm Guardian ‘Gray Float’ tinted glass, tempered, with Sunguard ‘SN 68’ film on surface 2
- *Vacuum Space:*
  1/2” argon-gas space (90% argon, 10% air) with ‘Technoform I-Spacer’ in colour black
- *Interior Sheet:*
  6 mm clear glass, tempered

PART 3 - EXECUTION

3.1 Examination

.1 All wood and steel shall be properly primed by others before glazing, and primer must be hard and dry. All openings must be free from moisture, frost, rust, dirt, plaster, cement, oil or grease.

.2 The Glazing sub-contractor shall examine all openings to be glazed and shall report any conditions which may affect the work of this trade before commencing. Commencement of work will be construed as an acceptance of conditions.

3.2 Installation of Interior Glazing

.1 Remove protective coatings and clean contact surfaces with Interior solvent and wipe dry. Apply primer-sealer to contact surfaces.

.2 Glazing compound shall be neatly run in straight line paralleled with glazing rebate. Corners shall be carefully made.

.3 All glass shall be back and face bedded in glazing compound with 3mm (1/8") clearance on all sides. Glass shall be set on setting blocks as required, with equal bearing on the entire width of plane. Convex side of glass shall be on exterior.

.4 Insert spacer shims to centre glass in space. Place shims at 100mm o.c. Keep 6mm below sight line.

.5 Install removable stops, without displacing tape or sealant.

.6 Apply cap bead of sealant, at exterior void, in a uniform and Level line, flush with sight line, tooled or wiped with solvent to smooth appearance.

3.3 Thermal Glazing Installation

.1 Accurately measure glass openings and calculate glass size based on manufacturer's installation tables allowing for proper edge engagement, rabbet width, rabbet depth, tolerances for expansion and contraction etc.

.2 Before glazing, verify openings to see that they are square, plumb, and in true planes. If found otherwise, do not proceed with glazing until proper corrections are made.

.3 Set hermetically sealed insulated glass units on setting blocks placed at ¼ points from each corner of glass.

.4 Dry glaze by means of EPDM gaskets on interior and preformed glazing tape with built-in shim on exterior.

3.4 Cleaning

.1 Immediately remove all excess sealant and compound and droppings from finished surfaces.

.2 Clean all glass prior to handover to Owner, ensuring it is clear of surface soiling and debris of any sort.

END OF SECTION 08800

PART 1 - GENERAL

1.1 Description of Work

The general scope of work shall include, but not be limited to the following:

.1 All gypsum wall board, cement board, steel studwork, steel furring and framing etc. throughout the building interior and exterior.

.2 Supply and installation of all sound and fire insulation materials at interior building assemblies.

1.2 Related Work

.1	Steel Doors and Frames	Section 08100
.2	Mechanical	Section 15000
.3	Finish Carpentry	Section 06200
.4	Acoustical Ceilings	Section 09130
.5	Painting & Decorating	Section 09900

1.3 Product Handling

.1 Store product in protected dry areas. Store gypsum board laying flat in piles with edges protected.

.2 Ensure that metal members are not bent, dented, or otherwise deformed.

.3 Deliver products supplied under the work of this Section only to those who are responsible for installation, to the place they direct, and to meet installation schedules.

1.4 Environmental Conditions

.1 Install work only in areas closed and protected against weather, and maintained between 10 degrees C and 21 degrees C. In cold weather ensure that heat is introduced in sufficient time, before work commences, to bring surrounding materials up to these temperatures; and maintained until materials installed by this Section have cured.

1.4 Environmental Conditions

.2 Provide adequate ventilation to carry off excess moisture during curing of joint compound and textured finishes.

PART 2 - PRODUCTS

2.1 Materials

.1 All materials to be supplied by Canadian Gypsum Company, Domtar or approved alternates.

.2 Steel stud framing: to ASTM C645 formed from minimum 0.5mm (25 ga.) thickness hot-dipped galvanized steel sheet, meeting ASTM A525 and A568, for screw attachment of gypsum board. Knockout service holes at 450mm minimum o.c. Stud size to be as noted on the drawings.

Steel gauge of studs to be as noted above only as a minimum, and shall be increased in gauge as required to suit job requirements. Select stud gauge to related wall heights utilizing one single stud for height of wall. Select stud gauge for bulkheads respective to length of bulkhead and any anchoring loads to be accommodated by the studs from glazing screens, doors and similar items.

.3 Furring Channel: ASTM C645, 1.5mm (16 ga.) 32 x 22 mm (1 1/4" x 7/8") galvanized metal.

.4 Corner bead: galvanized metal 32 mm (1 1/4") flange.

.5 Edge trim: "J" or "L" profile galvanized metal, minimum 22 mm (7/8") flange.

.6 Runner channels: meeting ASTM A525 and A568; 1.2 mm (18 ga.), 38 mm x 19 mm (1 1/2" x 3/4") galvanized metal.

.7 Hanger wire: galvanized 4 mm (8 ga.).

.8 Tie Wire: galvanized 1.2 mm (18 ga.)
Fasteners Type S Bugle head or as otherwise required, in lengths to suit application.

.9 **General-Use Gypsum Wall Board (GWB):**

GWB on Interior Wall Surfaces
Product to be 5/8” thick Georgia-Pacific ‘Dens Armor Plus Abuse Resistant Interior Panels’ with moisture-resistant core faced in coated fibre-glass matts. Product inherently meets type X fire-rating requirements. Board widths to be 4’-0” x longest practical lengths to suit.

.10 Joint tape: perforated paper; 50 mm (2") width.

.11 Joint filler compound: to ASTM C474.67, ready-to-use; all purposed, for base coats, special topping grade for final coat.

.12 Vapour Barrier 0.25 mm (6 mil) polyethylene sheet.

.13 VOC content of all adhesives and sealants used shall be as per limits specified in Section 01359.

.14 **Sound and/or Fire-Resistance Batt Insulation:**
Fire-resistance insulation is to be supplied thicknesses no less than that required to achieve noted fire-resistance ratings according to related CAN/ULC assembly types.

All sound insulation is to be supplied in thicknesses fully filling the depth of related wall assembly.

Sound and Fire-Resitsance Batt Insulation is to be Rockwool AFB throughou, supplied and installed in full accordance with the manufacturer's recommendations for the intended application.

PART 3 - EXECUTION

3.1 Examination

.1 The installing sub-contractor shall examine all ceilings and wall surfaces to which his work is attached; report to the Contractor, in writing, any defects of work prepared by other trades and unsatisfactory site conditions.

.2 Before work of this Section commences ensure that services have been installed, tested, and approved by relevant jurisdictional authorities, that conduit, pipes, cables, and outlet are plugged, capped, or covered; and that fastenings and supports installed by others are in place. Do not permit work of others to touch the back of wallboard.

3.2 Installation

.1 Framing and furring shown on Drawings is indicative but do not regard it as exact or complete. Construct work to provide adequate strength to withstand stresses imposed by use and application conditions without distortion. Maintain dimensions indicated on Drawings, and execute work in accordance with regulations governing fire rated assemblies and separations.

Ensure that all gwb panels/panel types are installed and finished in full accordance with panel manufacturer's recommendations, notwithstanding notations to the contrary herein. Use all manufacturer recommended fasteners, joint tapes, joint compounds, application products and installation techniques suited to the intended application.

.2 Erect supporting and finish materials to dimensions indicated on Drawings; plumb, level, straight, and square to adjoining elements. Install work within 3 mm (1/8") of dimensioned location unless otherwise approved, flat to a tolerance of 1:1000 (1/8" in 10.0") overall and 1.5 mm (1/16") maximum in any 300 mm (1.0").

.3 Do not support the work of this Section from, nor make attachment to: ducts, pipes, conduit, or the support framing of the work of other sections.

.4 Do not apply gypsum board in close proximity to hot pipes or heating ducts.

.5 Install materials with the minimum of joints. Tightly butt joints, without force, and neatly align them.

.6 Provide clearances required at mechanical and electrical services, such as grilles, diffusers, access panel, and lighting fixtures only after verification of requirements in each case.

.7 Provide freedom for deflection under beams and structural slabs.

.8 Do not use or install metal framing, trim, or accessories which have bent or otherwise deformed.

3.3 Installation: Steel studs and Wall Furring

.1 Install steel stud and wall furring as specified and/or as otherwise required for fire rated separations or protection.

.2 Align partition tracks plumb and level at ceiling or bulkheads as shown on the drawings, secure at 600 mm oc (2'-0") maximum.

.3 Place studs in tracks vertically at 400 mm (16") oc and not more than 50 mm (2") from abutting walls, and at each side of openings. Cross brace steel studs or add horizontal stiffeners as required to provide rigid installation to manufacturer's instructions.

.4 Attach studs to bottom and ceiling track using screws. No crimping allowed.

.5 Coordinate simultaneous erection of studs with installation of service lines. When erecting studs ensure web openings are aligned.

.6 Coordinated erection of studs with installation of doors and
special supports or anchorage for work specified in other Sections.

.7 Erect studs for fascia in similar manner.

.8 Install wall furring for gypsum board wall finished at 400 mm (16") oc; install furring for other material as indicated nest channels 200 mm (8") at splices.

.9 Furr duct shafts, beams, columns, pipes and exposed serviced where indicated. Provide access doors at clean outs and fire dampers.

3.4 Installation: Gypsum Board Panels

.1 Install gypsum board wall and ceiling finishes in gypsum panel type and thicknesses indicated and/or as otherwise required to provide required fire-rated separations, ratings or protection.

.2 Apply wallboard with long dimension perpendicular to supports. Back all joints with framing member.

.3 Install wallboard in maximum lengths and widths to minimize joints, and never in lengths of under 1800 mm (6'-0"). Stagger end joints where they are unavoidable. Locate joints in soffits where least prominently discerned.

.4 Form neat joints at mill ends and at field cut edges of wallboard panels. Cut paper on face with a knife. Smooth by sanding and rubbing edges together.

.5 Fasten wallboard to metal support members by sheet metal screws no closer than 9 mm (3/8") to, and no farther than 12.5 mm (1/2') from, centre of joints, and at 300 mm (12") maximum oc at edges and on intermediate supports. Where two layers of wallboard are used, screw outer layer through inner to metal framing.

.6 Finish all exposed edges of wall board panels, or where gypsum board butts against a surface having no trim concealing its juncture, with appropriate metal trim, Erect plumb or level with minimum joints. Where trim abuts block or brick walls, the joint shall be carefully caulked to overcome irregularities in the masonry wall.

.7 At external corners install corner beads secure through wallboard, to framing at 150 mm (6") oc on alternate flanges.

.8 Ensure that all gwb reveals are installed level and true througout and are compounded in place, flush with surrounding gwb faces. Ensure that joints between adjacent reveals are seemed imperceptibly.

3.5 Taping and and Filling

.1 Fill joints between boards, at edge trim and corner beads, all screw holes and depressions on wallboard surfaces exposed to view to provide smooth seamless surfaces and square neat corners. Use jointing compounds and reinforcing tapes in conformance with manufacturer's specifications. Ensure that wall board is tight against framing members, fasteners are properly depressed, and adhesives have sufficiently cured.

.2 Fill at joints by three-coat method:
(a) Embed reinforcing tape in a cover of joint filler.
(b) Apply level coat of joint filler when cover coat has dried.
(c) Apply skim coat of topping cement when level coat has dried.

.3 At beveled joints: apply cover coat 178 mm (7") wide, level
coat 254 mm (10") wide, and skim coat 300 mm (12") wide.

.4 At end joints, and butt joints formed at cut edges of wallboard: apply cover coat 356 mm (14") wide level coat 508 mm (20") wide, and skim coat 600 mm (24") wide. Camber treatment over end joints to 0080 mm (1/32") thick.

.5 At Internal Corners: first fill gaps between boards with joint filler. Imbed creased reinforcing tape in a thin coat of joint filler applied 52 mm (2") wide at each side of corner. Apply cover coat as specified for beveled joints. Apply skim coat (as specified for beveled joints) to just one side of joint, and when dry apply skim coat to other side.

.6 At External Corners: fill to nose of corner bead with joint filler
and topping cement as specified for beveled joints.

.7 At edge trim: as specified for beveled joints.

.8 At screws and heads: fill holes and depressions with a two coat application of joint filler so as to be invisible after painting is complete.

.9 At control joints: as specified for beveled joints both sides. Do not fill control joint.

.10 Feather edges of compounds into surfaces of wallboards. After skim coat has dried for at least 24 hours sand lightly to leave smooth for decoration. Do not sand paper face of wallboard.

.11 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for painting.

.12 Cement Board Finishing: wherever cement board is used as a ceiling finish, supply and install fiberglass mesh and cementitious plaster skim coat(s) as required to provide a smooth consistent surface, suitable for painting and resistant to moisture and vapour from showers, cooking equipment and/or any other fixtures, equipment items etc.

3.6 Patching and Cleaning

.1 Remove droppings and excess joint compound from work before it sets.

.2 Vacuum clean working areas at the end of each day to reduce traffic of gypsum dust through other areas.

.3 Make good to cut-outs for services and other work. Fill in defective joints, holes and other depression with joint compound; ensure that surfaces are smooth, evenly textured and within specified tolerances to receive finish treatments.

.4 Clean off beads, casings and other metal trim, and leave all surfaces ready for specified finishes.

3.7 Protection

.1 Provide adequate protection of materials and work of this section from damage by weather and other causes. Protect other work from damage resulting from work of this section.

.2 Any damage caused to work of this section shall be repaired by this section at this sections expense to the satisfaction of the Architect.

END OF SECTION 09111

PART 1 - GENERAL

1.1 General

Division One, General Requirements, is part of this section and shall apply as if repeated here.

1.2 Description of Work

Provide all labour, materials, and equipment required or called for in this specification, or which is necessary, to complete the work without any extra cost. This work may require any or all, but not be limited to the supply and installation of:

.1 New lay-in acoustical ceiling panels and metal suspension grid systems for SAT ceiling assemblies as indicated on the Drawings and Schedules.

.2 Removal and modification of existing suspended acoustic ceiling panels and suspension systems as required by the work outlined in the drawings. This may also include the re-installation of existing salvaged tiles (possibly involving cutting) as well as the modification and alteration of existing suspension grids as required throughout.

1.3 Related

.1	Metal Stud and Gypsum Board	Section 09111
.2	Painting and Decorating	Section 09990
.3	Mechanical Fixtures	Section 15000
.4	Electrical Fixtures	Section 16000

1.4 Requirements of Regulatory Agencies

.1 Install ceilings that serve as fire protective membranes exactly as specified in Underwriter's Laboratories text design specifications. Verify, before installation of ceiling, that work specified in other Sections, as a part of the entire assembly, is installed to meet validating specification for a ceiling-floor or a ceiling roof assembly.

.2 Materials supplied shall carry marks identifying them as U.L.C. approved for the particular use and assembly.

1.5 Submittals

.1 Samples: Submit samples of each specified acoustical board, suspension components, and exposed grid material.

.2 Affidavits: Submit to Architect two (2) copies of affidavits in accordance with Section 01300 to verify that ceiling meets fire protective requirements.

.3 Extra Stock: Provide two sealed cartons of each specified acoustical ceilings for Owner's use. Deliver to Owner as directed.

1.6 Product Handling

.1 Deliver all products in fully sealed packages.

.2 Store all materials in a protected dry area.

.3 Ensure that pre-finished metal members are not bent, dented, or otherwise deformed or blemished.

.4 Deliver products supplied under the work of this Section to those who are responsible for installation, to the place they direct, and to meet installation schedule.

1.7 Environmental Conditions

.1 Install work only in areas closed and protected against weather, and maintained at no less than 10 degrees C. (50 degrees F.)

.2 Do not install work in any area unless satisfied that work in place has dried out, and that no further installation of damp materials is contemplated.

PART 2 - PRODUCTS

2.1 Materials

.1 Materials shall be supplied with all means of fastening as recommended by the manufacturer for the particular type of installation, and to include all clips, etc., to make the tile and grid system conform to the requirements of the U.L.C. tested assembly where a fire rated ceiling is required.

.2 Acoustical tile panels and suspension systems in locations as illustrated on Reflected Ceiling Plans and Architectural Drawings are to be as noted below.

SAT (Standard Lay-In Tile):

Tiles: 24" X 48" X 3/4" Armstrong "School Zone Fine Fissured" #1714 square lay-in tiles in white factory finish

Grid: Armstrong "Prelude ML 15/16" exposed tee system" in white factory finish

.3 Accessories: Miscellaneous clips, splicers, connectors, screws, and other standard accessories shall be steel, zinc coated or cadmium plated, strength and design compatible with suspension methods and system specified.

.4 Hangers: Galvanized annealed steel wire: 2.5mm diameter (#12 ga.) to support a maximum weight of 68 kg/hanger (150 lbs.)

.5 Inserts and Hanger Connections: Steel; galvanized after forming; suitable for structure and ceiling conditions, and loading; and approved by Architect before work commences.

PART 3 - EXECUTION

3.1 Cooperation

.1 The contractor shall cooperate with all other trades concerned to ensure a satisfactory installation. This contractor shall furnish the electrical trade all necessary information so that their lights and fixtures will conform to the centres and joining of the tiles and panels.

3.2 Scaffolding

.1 The contractor shall provide all necessary scaffolding required for the proper execution of the wall and ceiling finishes. Scaffolding shall be erected to interfere as little as possible with the work of the other trades and shall be removed immediately on completion of the work of this section.

3.3 Examination

.1 Ensure that environmental conditions and work preceding this Section are satisfactory and will permit compliance with the quality and dimension required of this work.

.2 Verify that work performed under other Sections as a part of an Underwriter Specification for a fire rated protective assembly has been done in accordance with that Specification.

3.4 Installation

.1 Install grid system ceilings as specified by the manufacturer of the system. Ensure that methods of installation used are acceptable to the manufacturer of each system component and in conformance with requirements of U.L.C. rated assemblies where required.

.2 Coordinate work of this Section with that of other Sections. Ensure that adequate preparation is made for attachment of hangers and fasteners. Do not use through the-roof hangers. Provide for carrying and integration of flush-mounted and recessed services components only after consultation and verification of methods and locations with those performing the work of Sections 15000 and 16000.

.3 Space hangers for supporting grid generally at 1200mm (48") nominal centres each way, to suit structure and ceiling system. Secure wire hangers to framing by bending sharply upward and wrapping securely with three turns. Install hangers free of kinks, provide extra hangers for each corner of lighting fixtures, and reinforce other ceiling equipment with hangers. Secure hangers to structure by a permanent method as approved by Architect.

.4 Install-the entire hanger and suspension grid to adequately support the ceiling assembly, including services incorporated, with a maximum deflection of 1/360 of the span of each component member, and free from horizontal movement. Provide intermediate support channels as and when required between structural building components securely wired thereto. Install hangers at no more than 5 degrees off vertical.

.5 Frame and trim all openings as required for recessed lighting fixtures, diffusers, grilles and openings.

.6 Lay out work in accordance with Drawings to provide even spacing in each area, with grid lines symmetrical about room axes, columns and service dimensions on opposite sides of areas. Work shall include suitable moldings as required where ceilings abut walls or other vertical surfaces.

.7 Maintain true surface planes, and component and joint lines throughout each area.

.8 Butt joints between components tightly together.

.9 Only install new tiles free from any visible irregularities on the surface face, edges or corners. When utilizing salvaged existing tiles (only in locations permitted on Architectural drawings) select the cleanest and most blemish-free tile from reclaim stock for re-use.

.10 Brace system to maintain alignment of grid.

.11 Adapt installation to provide for access to ceiling where required for services.

.12 Mark access panels in an unobtrusive manner.

.13 Work shall include expansion joints in ceiling where required or indicated.

3.5 Tolerances

.1 Install ceilings within a variation of +/- 5 mm (3/16") of dimensioned height above floor unless approved otherwise by Architect, and level within a maximum tolerance of 1 mm in 1000 mm (1/8" in 10'-0").

3.6 Cleaning

.1 Clean soiled or discoloured surfaces of exposed work on completion of work.

.2 Replace components which are visibly damaged, marred, or uncleanable.

.3 Final cleaning is specified in Section 01700.

END OF SECTION 09130

PART 1 - GENERAL

1.1 General

Division One, General Requirements, is part of this section and shall apply as if repeated here.

1.2 Description of Work

Provide all labour, materials, and equipment required or called for in this specification, or which is necessary, to complete the work without any extra cost. This work may require any or all, but not be limited to the supply and installation of the following:

.1 Rubber wall base (at all walls and/or the base of all millwork items as indicated on the Drawings)

1.3 Related Work

.1	Demolition	Section 02100
.2	Steel Stud & Gypsum Board	Section 09111

1.4 Maintenance Data

.1 Provide data for maintenance of resilient tile flooring in accordance with Section 01730.

1.5 Maintenance

.1 Deliver 2 linear meters of each colour of base material required for this project, for maintenance use, excluding sheet goods. Package and clearly identify each type. Deliver to Owner as directed.

.2 Maintenance materials to be same production run as installed materials.

1.6 Environmental

.1 Maintain minimum 20° air temperature at flooring installation area for 3 days before, during and for 48 hours after installation.

.2 Acclimate all resilient flooring and wall

PART 2 - PRODUCTS

2.1 Materials

.1 **<u>RUBBER BASE (RB-#)</u>:**

All rubber base to be 4.25" high Johnsonite 'Traditional Rubber Base with toe' in colours and locations noted on drawings and related Schedules. Product to be supplied in roll goods throughout and installed in longest practical lengths with seams only at inside corners.

Product colours to be: from full range.

Base to be installed with Johnsonite #960 Adhesive on porous substrates and Johnsonite #945 Contact Base Adhesive on non-porous surfaces.

Flooring trade to note requirement for rubber base on millwork items where shown on Architectural drawings.

PART 3 – EXECUTION

3.4 Base Installation

.1 Set base in adhesive tightly against wall and floor surfaces. Use lengths as long as practical and not less than 500mm (20") long.

.2 Install straight and level to variation of 1:100.

.3 All base products are to be installed in full accordance with manufacturer's recommendations, including scribing details at all interior and exterior corners. Fit base goods neatly to all doorframes. All short returns of base goods (and at any locations where base product may not sit firmly against wall surface), base to be secured in place with construction adhesive or contact cement adhesive, sufficient to ensure full adhesion.

END OF SECTION 09661

PART 1 - GENERAL

1.1 General

Division One, General Requirements, is part of this section and shall apply as if repeated here.

1.2 Description of Work

Provide all labour, materials, and equipment required or called for in this specification, or which is necessary to complete the work without any extra cost. This work *may* require, without strict limitation to the following (at the building interior and/or exterior):

.1 Priming and painting of interior masonry, gypsum board, cement plaster, plaster and other surfaces as indicated on Drawings and Schedules.

.2 Finish priming and painting of new steel doors and frames, and other non-prefinished metal components including priming and finish painting of all miscellaneous steel items contained within the Architectural and related Engineering drawings.

.3 Painting of miscellaneous non-prefinished steel and metal items (bench supports, countertop supports, lintels etc.)

.4 Complete preparation of existing painted surfaces (specified for re-paint) including all related sanding, scraping, and removal of loose existing paint, testing of existing paint (for determination of compatible paint formulations), and priming of all existing surfaces (following Preparation) prior to re-painting as specified.

1.3 Related Work by Others

.1	Shop priming structural steel	Section 05120
.2	Shop painting miscellaneous metals	Section 05500
.3	Steel Doors & Frames	Section 08100
.4	Sealants	Section 07900

1.4 Requirements of Regulatory Agencies

.1 All finishes shall meet the flame spread and smoke development requirements of the Ontario Building Code for the specific location and application for all parts of the Work.

1.5 Environmental Requirements

.1 Apply finishing materials only when air and surface temperatures have reached the minimum level recommended by the manufacturer's specification for each product, and have been maintained at this temperature for a minimum of 24 hours.

.2 Do not apply exterior finish in direct sunlight that raises surface temperatures above that for proper application and drying, nor in rainy, foggy or windy weather.

.3 Do not apply finishes when relative humidity is over 50%, when condensation has formed or is likely to form, nor immediately following rain, frost or dew.

.4 Do not apply paint where moisture content, in gypsum board, pipe insulation or wood is above paint manufacturer's recommended maximum allowances. Confirm results of moisture test with Architect before proceeding.

.5 Do not apply paint finish in areas where dust is being generated.

1.6 Colours and Samples

.1 All colours shall be as scheduled by the Architect on the Colour and Finish Schedule or as specified herein.

.2 Paint samples shall be prepared as directed by the Architect in accordance with Section 01340 and 1.11 of Section 09900. All site work on site must be completed to match approved sample. All product mixing and work on-site must be preceded with Architect's approved samples for paint & stain, lacquer and varnish, etc.

Acceptable paint and stain samples include 8” x 11" (minimum) sample size. Only “draw down” samples of actual paints will be accepted for paint colours. Minimum requirements are 2 draw down samples per paint colour per different paint product and per different paint finish. Stain samples to be applied to wood sample of wood species specified for use in the project.

1.7 Cooperation with Others

.1 This contractor shall examine all drawings and specifications of all trades throughout the building for information affecting the work of this trade.

1.8 Plant and Scaffolding

.1 The contractor shall provide all plant and scaffolding necessary for proper and efficient performance of the work.

1.9 Field Quality Control

.1 Arrange for periodic visits to site by paint manufacturers' representatives while work is in progress. On each visit he shall verify that specified materials and methods are used, and that procedures agreed upon at the initial site meeting are followed.

1.10 Product Delivery, Storage and Handling

.1 Deliver to site each container sealed and labeled with manufacturer's name, catalogue number or brand name, colour, and formulation type, reducing instructions, and reference standard specification number if applicable

.2 Store materials on site, and in an area specifically set aside for purpose, that is locked, ventilated, maintained at a temperature of over 4 degrees C (40 degrees F) and protected from direct rays of sun.

.3 Ensure that health and fire regulations are complied with in storage area. Provide carbon dioxide fire extinguishers of 9 kg (20 lbs.) minimum capacity in each storage area while materials are contained within.

.4 On each container, for materials requiring a fire hazard classification, attach an Underwriter's label verifying that the material is listed under their label service, and giving the hazard classification.

1.11 Protection

.1 Cover or mask surfaces adjacent to those receiving treatment and finishing to protect work of others from damage and soil. Mask instruction and specification plates attached to equipment being painted.

.2 Take particular care in storage and mixing areas that floors are protected by tarpaulins and metal pans.

.3 Place cloths and other disposable finishing materials, that are a fire hazard, in closed metal containers containing water, and remove from building every night.

.4 Coordinate with the appropriate trades for the removal from finished surfaces, storage and reinstallation after finish work is completed of finish hardware, switch and receptacle plates, escutcheons, luminaries frames, and similar items.

.5 Post "No Smoking" signs and ensure that spark-proof electrical equipment is used in areas where flammable painting materials are being applied.

.6 Post "Wet Paint" signs throughout freshly finished areas and remove when finishes are dry.

1.12 Colour and Product Fidelity and Finish

.1 Draw Down samples of each paint colour and paint sheen for each different paint product must be approved by the Architect prior to installation. The Contractor will retain 1 full set of the approved samples on site and is responsible to verify the application of the proper colours and products throughout the project. The Architect reserves the right to enforce full conformance of the finished work to the approved samples and specified products as shown on drawings, Schedules, Addenda's, and all Contract Documents. Any colours or products which the Architect deems unsuitable due to lack of colour or sheen fidelity, improper application, poor workmanship or any conditions not in strict accordance with the Contract Documents will be rectified by the Painting Contractor to the full satisfaction of the Architect in accordance with the Contract Documents at no cost increase.

PART 2 - PRODUCTS

2.1 Paint Materials

.1 Painting materials such as primers, paints, rust-inhibiting agents, stains, fillers, varnishes, lacquers, etc., to be supplied by Benjamin Moore, Sherwin Williams or ICI/Dulux only. All paint to be highest professional/commercial grade products available from each manufacturer as prescribed in PART 3 below, relative to the intended application. Only OPCA/CPCA/CGSBQ approved equivalents within the noted manufacturers will be accepted.

Painting contractors must inform the Architect in writing which product line he intends to use and is to receive approval prior to mixing. Selection of final product line is completely at the Architect's discretion and the Architect reserves the right to select any of the specified product lines at no cost increase.

.2 All materials to be the highest professional/commercial grade available from the manufacturer for each finish type, to meet or exceed CGSB Specifications, as outlined in PART 3 herein.

.3 Materials for application of each finish type shall be products from a single manufacturer.

.4 Materials such as putty, linseed oil, shellac, turpentine, etc., shall be pure, or of the highest quality produced or recommended by the paint manufacturer, and bear an identifying label on the container.

.5 Gypsum Board patching compound: Resurfo by Reardon or alternate.

PART 3 – EXECUTION & INSTALLATION

3.1 Paint Colours

.1 All paint/pigment colours and locations to be in full and strict accordance with Architect's drawings, Room Finish Schedule and Colour Finish Schedule. Any areas or items requiring paint finishes which appear unclear or which are insufficiently documented, are to be reported to the Architect for direction prior to paint mixing and installation. Any site work relative to such items undertaken by the Contractor or trades without the consultation of the Architect is the sole responsibility of the Contractor and is subject to further rectification of the work for unacceptable materials, colours, or finishes, as per the Architect's direction, at no cost increase.

.2 Except where noted otherwise within the Contract Documents, and excluding those surfaces featuring painted wall graphics, the Architect reserves the right to select any number of paint/pigment colours for each room, up to one individual colour per wall surface/wall plane (or ceiling surface/ceiling plane), at no cost increase. This applies only to wall and ceiling surfaces and excludes trims and other architectural features thereon. For all other architectural items associated with the walls, floors, ceilings, etc. in each room, the Architect reserves the right to select another paint colour differing from that of the adjacent surfaces at no cost increase. All paint colours to be noted on Colour/Finish Schedule (issued post-Tender).

3.2 Examination

.1 Verify that specified environmental conditions are ensured before commencing work.

.2 Ensure that surfaces to receive finishing materials are satisfactory for specified materials and will not adversely affect execution, permanence, or quality of work.

.3 Maintain on site at all times until work is completed a moisture meter, hygrometer and thermometer to verify surface and environmental conditions. Test all surfaces for moisture content with an electronic moisture meter, and concrete, masonry, exterior insulation and finish systems, plus plaster surfaces for acid alkali balance with appropriate equipment and procedures.

3.3 Mixing

.1 Unless specified otherwise paints shall be ready-mixed. All catalyzed products to be mixed on site to as required to provide a uniform and optimal finish quality.

3.4 Workmanship

.1 All work must be executed by skilled, experienced mechanics under the direction of a competent foreman. All paint and enamel shall be evenly spread and no coat shall be applied until the previous coat is perfectly dry.

.2 All products are to be applied in full accordance with the paint manufacturer's recommendations, including surface preparations, recommended application tools, techniques, intermediate drying times, etc. All products are to be applied in full accordance with the manufacturer's maximum recommended dried film thicknesses (dft) throughout.

.3 There shall not be any drips or runs of materials. The woodwork shall be well-rubbed down before the first coat and between all coats. All work shall be to the satisfaction of the Architect.

.4 Brush on all painting materials covered by this division, except where noted in 3.4.8 below. If this contractor wishes to spray certain surfaces, obtain prior approval from the Architect. Apply painting materials evenly and smoothly.

.5 Sand and dust between each coat to remove defects visible from distance up to 1.0m (3' -0").

.6 Finish bottoms, tops, edges and sides of all doors, including returns to cutouts where applicable.

.7 In the opinion of the Architect, the number of coats of paint specified should produce a superior finish. However, if more coats than the number specified are required to meet the approval of the Architect, they shall be supplied and applied at no extra charge. Painting contractor may be required to verify dry film thickness (dft) of any products applied under this Section, at no cost increase.

3.5 Preparation

.1 All surfaces or materials to receive paint finish are to be prepped in full accordance with the finish manufacturer's specifications relative to the material substrate, using the finish manufacturer's recommended products. It will be assumed by the Architect that any improperly adhering paint finishes are the result of inadequate preparation or improper application, and are subject to full rectification at no cost increase.

.2 Touch-up shop painted primer on steel with approved primer. Tint filler to match stains for stained woodwork.

.3 Prepare galvanized steel and zinc coated surfaces with one coat of copper sulfate solution in water (1:16 proportion).

.4 Prepare exposed concrete, plaster and masonry to make free of dust, dirt, grease, loose mortar on face, etc. Apply filler to concrete block of sufficient density to eliminate pinholing.

.5 Interior gypsum board to be prepared by cutting out minor imperfections, such as scratches, cracks, abrasions in surface, and filled with patching compound; sand smooth when dry. Seal before prime coat application.

.6 Prepare wood finishes (designated for stain and/or clear topcoat finish) by applying matching (or stainable) wood filler to suit, at nail holes, gaps, cracks and imperfections, blending filled spots with adjacent surfaces. Sand all filler smooth and flush with adjacent surface, applying in multiple coats as required. Ensure that all wood is adequately sanded and free of contaminants which may adversely affect quality and consistency of subsequent stain and/or topcoat finishes.

.7 PREPARATION of PREVIOUSLY COATED SURFACES:
Painting Contractor to investigate all previously coated surfaces to determine necessary requirements to ensure proper adhesion and formulation compatibility of newly specified paint finishes throughout.

Existing painted surfaces (specified to be re-painted) are to be tested with methyl-hydrate to determine if they are alkyd or water-based materials to determine compatible formulation of new paint materials.

All existing coatings are to be properly cleaned, scraped and prepared for recoat to ensure full and lasting adhesion of new paint finish. Preparation shall include any form of mechanical abrasion required (sanding, scraping, sandblasting, shot-blasting etc.) to remove peeling and/or loose paint finishes to ensure a proper and lasting bond of new paint finish.

Existing clear topcoated surfaces (varnish, polyurethane, oil-based or waterbased clearcoats etc.) are to be properly scraped, sanded and de-glossed as required to remove any topcoats which are not fully adhered to their substrate.

Supply and install new high-adhesion bonding primers, stain-blocking primers and/or sealant primers as required prior to repainting. Bonding primers should be selected to ensure adhesion and perfomance of the final paint finish. Non-waterbased primers are acceptable to ensure adhesion throughout.

3.7 Exterior Coatings ***The items noted in this section below are provided for reference as/if required.***

.1 Miscellaneous Steel Lintels and Non-prefinished Steel Items:
- 1 coat Sherwin Williams “Kem Bond Hi-Solids” Universal Metal Primer (alkyd); VOC compliant
- 2 coats Sherwin Williams “Industrial Enamel Urethane” topcoat (alkyd), B54W151 Series, gloss finish; VOC compliant [spray applied finish at steel doors]

.2 Miscellaneous Ferrous Metals:
- 1 coat Sherwin Williams “Kem Bond Hi-Solids” Universal Metal Primer (alkyd); VOC compliant
- 2 coats Sherwin Williams “Industrial Enamel Urethane” topcoat (alkyd), B54W151 Series, gloss finish; VOC compliant

.3 Miscellaneous Galvanized Items:
- 1 coat Sherwin Williams “Galvite HS” acrylic primer, B50 WZ30 Series, spray applied
- 2 coats Sherwin Williams “Industrial Enamel Urethane” topcoat (alkyd), B54W151 Series, gloss finish; VOC compliant

3.8 Interior Coatings

It is the intention that various (existing) interior [previoulsy painted] items may be re-painted as part of this scope of work.

Whether or not expressly noted below, it is required that all items to be repainted are to be prepped in accordance with Section 3.5 (Preparation), using additional products (as required) including suitable bonding primers and/or sealing primers (such as Sherwin Williams ‘Extreme Bond – Bonding Primer’, Sherwin Williams ‘PrimeRX Peel Bonding Primer’, Zinsser ‘Bullseye Shellac Bonding Primer’ and/or similar products). Primers to be selected specific to individual application requirements based upon site requirements.

.1 Concrete Block - Paint Finish:
- 1 coat Sherwin Williams “Prep Rite” Blockfiller, B25 Series
- 2 coats Sherwin Williams abrasion resistant “Duration Interior Latex” A98 Series *or* Dulux “Diamond Interior 100% Acrylic”, satin finish

.2 Gypsum Wall Board Walls – Paint Finish
- 1 coat Sherwin Williams “Prep Rite 200" Primer, B28W200 Series
- 2 coats Sherwin Williams abrasion resistant “Duration Interior Latex” A98 Series *or* Dulux “Diamond Interior 100% Acrylic”, satin finish

.3 Gypsum Wall Board Ceilings/Bulkheads - Paint Finish:
- 1 coat Sherwin Williams “Prep Rite 200” Primer, B28W200 Series
- 2 coats Sherwin Williams “Promar 200 Zero VOC” Interior Latex” Interior Acrylic, eggshell finish

.4 Steel Door and Frames and All Miscellaneous Non-prefinished Steel Items (u.n.o.) – Paint Finish:
- 1 coat Sherwin Williams “Kem Bond Hi-Solids” Universal Metal Primer (alkyd); VOC compliant
- 2 coats Sherwin Williams “Industrial Enamel Urethane” topcoat (alkyd), B54W151 Series, gloss finish; VOC compliant

.5 Galvanized and Zinc coated Metals – Paint Finish:
- 1 coat Sherwin Williams “Galvite HS” acrylic primer, B50 WZ30 Series, spray applied
- 2 coats Sherwin Williams “Industrial Enamel Urethane” topcoat (alkyd), B54W151 Series, gloss finish; VOC compliant

.6 Exposed Underside of Metal Deck, Open Web Steel Joists, Steel Roof Structutre, Exposed Metal Ducts, Conduit, etc. – Paint Finish:
- 2 coats Sherwin Williams “Waterborne Acrylic Dryfall”, B42 Series, eggshell finish, spray applied

.7 Repainted Hollow Metal Doors, Door Frames and Glazing Screen frames (as applicable):
- 1 coat appropriate bonding primer
- 2 coats Sherwin Williams “Industrial Enamel Urethane” topcoat (alkyd), B54W151 Series, gloss finish; VOC compliant

3.9 Touch-Up & Cleaning

.1 Touch up and finish visible defects in the work. Refinish entire wall, ceiling or finished surface where substrate and/or finish is significantly damaged or not deemed acceptable by the Archtitect.

.2 Remove all overspray paint or similar finish from prefinished or unpainted items throughout. Clean and remove any paint overspray of one colour on a painted surface of dissimilar colour or finish. Repaint and restore finishes as required to blemish-free state.

.3 Leave storage and mixing areas clean and in same condition as adjacent spaces in project.

END OF SECTION 09900

PART 1 - GENERAL

1.1 Description of Work

.1 Removal of all existing blinds by demolition contractor.

.2 Supply and installation of new chain-driven sheer-weave roller blinds and all related mounting and operating hardware in the types at all new window locations.

1.2 Related Work

.1 Painting and Decorating Section 09900

.2 Aluminum Windows Section 08150

1.3 Shop Drawings

.1 Provide shop drawings in accordance with supplementary and/or general conditions. Show dimensional layouts together with fabrication and installation details based on site conditions.

.2 The general contractor, upon request, to forward to this sub-contractor a complete set of architectural drawings, specifications, addenda and colour schedule for use in preparation of shop drawings and execution of installation.

1.4 Samples

.1 Samples to be provided to the architect and/or owner, for his perusal and approval of all materials to be utilized in this installation.

1.5 Warranty/Guarantee

.1 Installation of all materials and products is to be guaranteed for a period of one year from date of Building Occupancy. This warranty covers both labour and material for replacement of defective items and/or components.

PART 2 - PRODUCTS

2.1 Materials/Design

.1 Acceptable products include “Teleshade” smooth chain-operated sprocket roller blinds as manufactured by: Solarfective Products Ltd. or “Deko Light Lift System” as manufactured by Altex Sun Project Inc or approved alternate.

All products to be manually operated complete with all related operating hardware, mounting hardware and screening fabrics providing the transmission percentages specified in Part 1 earlier herein.

All shades specified herein will be provided by one manufacturer who shall take full responsibility for the supply and installation of the product.

All shades shall be mounted as per section details.

All roller blinds are to be **inset-mounted** into framed window openings/recesses throughout, with minimal gapping between shades and adjacent walls. Overlay mounting of blinds (over top of framed window recesses) will not be accepted unless specifically approved.

Rectangular headers/shade tubes/cassettes to be approx. 79mm deep x 96 m high throughout. All window blinds are to be securely anchored into suitable architectural materials in/within wall or ceiling assemblies and are NOT to be mechanically fastened to aluminium or metal curtain wall or window frames throughout.

Installations in continuous/long window runs are to be comprised of multiple blinds neatly and tightly mounted side-by-side. Ensure that joints between adjacent blinds align with vertical window frames throughout. No vertical seams between adjacent blinds falling in the middle of a vision pane will be accepted.

All shades are to be sufficiently long to reach existing sill height in each room. Sill heights to be as shown on the Architectural drawings [Building Elevations] and related window sections provided therein. Site verify actual sill heights to suit, allowing for same herein.

.2 **Operation/Action**

Manual: Easy-Lift (Chain-operated) Action with infinite positioning. Left or right hand operation available to be determined by installer relative to site-conditions and/or as directed by Architect or Owner.
At all pull chain locations, provide a commercial grade child safety cord tensioner screwed to wall at bottom of chain to allow for smooth chain operation.

.3 **Product Assembly**

a) Provide fully factory assembled shade unit consisting of 2 end brackets, shade tube, extruded aluminium fascia, hembar and fabric specified. Removal must not require the disassembly of the shade unit.

b) End Bracket: the 77 x 96 mm end bracket shall be a two piece moulded ABS construction with a 64 mm diameter nylon drive sprocket. Brackets colour shall co-ordinate with the fascia colour.

c) Shade Tube: 38 mm extruded aluminium shade tube shall be 1.52 mm thick with three internal continuous fins 4.82 mm high, for strength and drive capabilities when attached to the nylon sprocket. The fins shall be spaced 120 degrees apart.

d) Header/Cassette: the extruded aluminium header/ cassette shall be 1.7 mm thick rectangular profile measuring approx. 77 mm deep x 96 m high. Header to fully conceal internal shade tube/roller. Header finish to be anodized aluminium or paint colour selected by Architect from manufacturer's full colour range.

e) Drive Assembly: Shall be factory set for size and travel of shades. Capable of being field adjusted from the exterior of the shade unit without having to disassemble the hardware. Provided with a built-in shock absorber system to prevent chain breakage, under normal usage conditions.

f) Drive Chain: Shall be No. 10 stainless steel bead chain formed in a continuous loop. The chain shall have a 90# (lb.) test. Supply wall-mount brackets/loops for loose end of chain where directed by the Architect. Ensure that underside of operating chains are mounted at a reasonable height above finished floor level to be readily accessible. No chains to be higher than 4'-6" a.f.f.

g) Bottom-Weighted Hembar: extruded aluminium with plastic end finials. Finish to be clear anodized aluminium throughout.

.4 **Shading Fabric**

All screening fabric transmission requirements respective to locations to be as specified in Part 1 above. Fabrics based upon percentages of light transmission to be:

Dow 'Phifer Shearweave' woven PVC fabric in the openness factor (3% of light transmission) specified elsewhere herein.

Transmission shade fabrics shall be woven of .018 opaque, vinyl coated polyester yarn consisting of approximately 79% vinyl and 21% 500 dernier polyester core yarn. The fabric shall be tensioned in the finishing range prior to heat setting to keep the warp ends straight and minimize or eliminate weave distortion to keep the fabric flat. The fabric shall be dimensionally stable.

All fabric colours to be Eco/Granite [grey tone] throughout or as selected by Architect from manufacturer's full colour range.

As a "shade cloth" the fabric shall hang flat, without buckling or distortion. The edge, when trimmed, shall hang straight without ravelling. An unguided roller shade cloth shall roll true and straight, without shifting sideways more than + 1/8" in either direction due to warp distortion or weave design.

Fabric shall be certified by an Independent Laboratory to pass the Small Scale Vertical Burn Requirements test CAN and UCL-S109-M87 and NFPA 701.

PART 3 - EXECUTION

3.1 Examination

.1 Prior to commencement if erection, all surfaces to be checked for irregularities, trueness, rigidity and projections. Defects to be reported immediately to the general contractor for correction.

3.2 Installation

.1 Erection/Installation of product shall be carried out in a to ensure a rigid, straight, square, plumb, and level assembly and operation of shades in accordance with the supplier's installation instructions. Supplier/installer is responsible to provide all related anchors and fasters suited to the applicable substrates throughout.

.2 On completion of the installation, all materials and workmanship are to be inspected for proper operation, rigidity and appearance, and any defective materials are to be replaced with new materials prior to final inspection.

3.3 Special Cleaning

.1 Upon completion of all work clean and remove all dirt from blind components, and leave all elements in an unblemished factory condition at the time of handing over to the Owner.

END OF SECTION 11500

Cecil B. Stirling Elementary School

Window and Exterior Door Replacement and Learning Commons Accommodation

Designated Substance Audit Report

Project Location:
340 Queen Victoria Drive, Hamilton, ON

Prepared for:
Hamilton-Wentworth District School Board
20 Education Court, Hamilton ON L8N 3L1

Prepared by:
MTE Consultants Inc.
1016 Sutton Drive, Unit A
Burlington, ON L7L 6B8

December 21, 2023

MTE File No.: 54546-100

Engineers, Scientists, Surveyors.

Contents

Appendices

1.0 INTRODUCTION

1.1 Authorization

MTE Consultants Inc. (MTE) was retained by Hamilton-Wentworth District School Board (the Client) to conduct a Designated Substance Audit for Cecil B. Sterling Elementary School located at 340 Queen Victoria Drive in Hamilton, Ontario.

The purpose of the audit was to identify the presence of Designated Substances within the building in accordance with Section 30 of the Occupational Health & Safety Act (OHSA), in advance of building renovation. This report meets the requirements of Section 30 of the OHSA and the requirements of Ontario Regulation (O. Reg.) 278/05.

2.0 SCOPE OF WORK

As requested by the Client, this assessment was limited to areas of the building that will be affected by the proposed exterior door and window replacement project, as well as upgrades to the Learning Commons area. These areas are referred to in the following sections as the "Subject Areas".

The Scope of Work for this assessment was completed by MTE and included the following activities:

- Visual inspection of accessible locations within the Subject Area to identify the following suspect Designated Substances and Hazardous Building Materials:
  - Asbestos;
  - Lead;
  - Mercury;
  - Silica;
  - Mould growth;
  - Ozone Depleting Substances; and,
  - Polychlorinated Biphenyls limited to fluorescent light ballasts/sealants.
- The following Designated Substances are not expected to be present due to the building use or in a form that is hazardous: Acrylonitrile, Arsenic, Benzene, Coke Oven Emissions, Ethylene Oxide, Isocyanates, and Vinyl Chloride;
- Collection of bulk building material samples suspected to contain asbestos;
- Collection of paint scrape samples suspected to contain lead;
- Collection of sealant samples to determine Polychlorinated Biphenyl (PCB) content;
- Submission of samples to an accredited and/or qualified laboratory;
- Interpretation of laboratory results; and,
- Preparation of this report of findings and recommendations.

3.0 METHODOLOGY AND ASSESSMENT CRITERIA

This audit was conducted using visual and laboratory identification methods for the assessment of materials outlined in Section 2.0 and their corresponding location and use. Materials that are determined to be asbestos-containing materials (ACM) are further classified by their friability and condition. The areas outlined in Section 2.0 were inspected and limited to building components, materials and service connections. Notwithstanding that reasonable attempts were made to identify all Designated Substances, the possibility of concealed substances and material exists and may not become visible until substantial demolition has occurred and therefore are currently undocumented. All work was conducted in accordance with industry accepted methods and MTE Standard Operating Procedures and did not include the following:

- Materials indicated in this report as “Potentially Concealed”;
- Locations that may be hazardous to the surveyor (located at heights, electrical equipment, confined spaces);
- Where invasive inspection could cause consequential damage to the property or impair the integrity of the equipment, such as roof system, exterior finishes, underground services or components of mechanical equipment;
- Locations concealed by building finishes that require substantial demolition or removal for access or determination of quantities (plumbing or electrical lines);
- Non-permanent items or personal contents, furnishings; and,
- Settled dust or airborne agents unless otherwise stated.

4.0 ASSESSMENT AND RESULTS

An inspection of the building was conducted by MTE on December 7, 2023.

The proposed project is expected to disturb exterior doors and door assemblies, all windows and associated hardware, sealants, walls, frames and glazing, as well walls and ceilings within the learning commons area.

A description of the building and assessed finishes is provided below. Refer to Section 4.1 for a summary of findings.

Building Element	Description
Exterior Finishes	Concrete Brick veneer and mortar Sealants Texture Coat
Mechanical Systems/Insulations	Fiberglass insulation
Electrical/Plumbing Systems	Fluorescent Light tubes
Floor Finishes	Vinyl floor tiles
Wall Finishes	Drywall Concrete Block
Ceiling Finishes	Drywall Concrete

4.1 Findings and Analytical Results

A summary of sampling locations and analytical results are included in **Appendix A**.

Laboratory certificates of analysis are included in **Appendix B**.

Figures of inspected areas are included in **Appendix C**.

A photographic log is included in **Appendix D.**

A detailed summary of findings and recommended actions is provided in **Table 4.4 of Appendix A.**

4.1.1 Asbestos

Asbestos was used in building materials throughout the years with a peak usage in the 1950s and 1960s. While the manufacture of most ACM was banned in the 1970s, buildings constructed in the 1980s have the potential for ACM as well. In 1986, legislation limiting the use of asbestos in consumer products was introduced.

As part of this inspection, a total of 59 bulk samples of suspect ACM were submitted for asbestos analysis with a total of 52 analyses being performed. The difference between the number of samples submitted and the number of samples analysed can be a function of either the stop-positive method or the requirement of analyzing multiple layers, performed by the laboratory, from a single sample reported as additional samples or subsets of a sample.

Bulk samples were submitted to Paracel Laboratories Ltd. (Paracel), in Mississauga, Ontario for asbestos analysis. Paracel is certified under the Canadian Association of Laboratory Accreditation to perform asbestos analysis of bulk samples (accreditation number A3762). Laboratory analysis was conducted in accordance with the United States Environmental Protection Agency (USEPA), Test Method EPA/600-R-93/116: Method for the Determination of Asbestos in Bulk Building Materials, June, 1993 by Polarized Light Microscopy (PLM) as prescribed by O. Reg. 278/05.

Based on the laboratory results, ACM was confirmed present at the time of the inspection.

4.1.2 Lead

Lead was historically used in mortar pigments, ceramic glazing; plumbing solder, electrical equipment and electronics solder, in pipe gaskets as packing in cast iron bell and spigot joints of sanitary drains, flexible plumbing connections, flashing panels, acoustical dampeners, phone cable casing and some architectural applications. In buildings constructed after 1990, these applications are no longer applicable outside of specialized uses (shielding for medical imaging etc.).

As part of this inspection, a total of 3 paint scrape samples were collected from surfaces and represent the paint colours which may be disturbed during the proposed project.

Samples were submitted for laboratory analysis by ASTM D3335-85A “Standard Method to Test for Low Concentrations of Lead in Paint by Atomic Absorption Spectrophotometry” following MOE Method E3470 Inductively Coupled Plasma Optical Emission Spectrometry to Paracel Laboratories Ltd., in Hamilton, Ontario. Paracel is accredited by the Canadian Association of Laboratory Accreditation to perform bulk lead analysis of paint.

Based on the laboratory results, lead-containing materials were confirmed present at the time of the inspection.

4.1.3 Mercury

Mercury is typically used in building service applications such as fluorescent light tubes, compact fluorescent bulbs, metal halide (sodium halide) lamp bulbs, and neon lights as a vapour. Mercury may exist in thermostats and pipe or mechanical equipment thermometers as a liquid. Mercury is presumed to be present in the above materials.

While sources of mercury may be present, no mercury-containing materials will be impacted by the proposed work.

4.1.4 Silica

Silica is present in rock, stone, soil, and sand. Masonry products such as concrete block, brick, and mortar, as well as concrete and associated products contain silica. Due to its ubiquitous nature, silica was historically used in a wide variety of building materials and is still used today in new construction.

Building materials that are presumed to contain silica were visually identified at the time of the inspection.

4.1.5 Mould

No water damaged or mould growth impacted building materials were observed during the inspection.

4.1.6 Polychlorinated Biphenyls (PCB)

While sources of PCB's may be present in light ballasts, no PCB-containing equipment will be impacted by the proposed work.

As part of this inspection, a total of 11 sealant samples were collected from building components which may be disturbed during the proposed project and submitted to Paracel for laboratory analysis under US EPA Method 8082A for PCBs. In Ontario, under Ontario Regulation 362, a PCB-containing solid is defined as any material or substance other than a PCB liquid that contains or is contaminated with PCBs at a concentration greater than 50 µg/g by weight of PCBs.

Based on the laboratory results and visual identification, no PCB-containing materials were confirmed present at the time of the inspection.

4.1.7 Ozone-Depleting Substances (ODS)

ODS are chemical compounds that include chlorofluorocarbons (cfcs), hydrochlorofluorocarbons (hcfcs), halons, methyl bromide, carbon tetrachloride, hydrobromofluorocarbons, chlorobromomethane, and methyl chloroform which are widely used in cooling and refrigeration. The use of ODS is regulated under Ontario Regulation 463/10 *Ozone Depleting Substances and Other Halocarbons* Made under the Environmental Protection Act.

No building components presumed to contain ODS were identified at the time of the inspection.

4.2 Conclusions and Recommendations

A detailed summary of recommended actions is provided in **Table 4.4 of Appendix A**.

In accordance with Section 30 of OHSA and Section 8 of O. Reg. 278/05, the Owner must provide a copy of this report to all contractors doing work at the building. The Owner must also provide a copy of this report to all prospective contractors.

Should any additional suspect Designated Substances be discovered during building renovation demolition, work in the vicinity should cease and the materials should not be disturbed until proper notification, testing and abatement instructions are provided. All waste generated as a result of any and all work at the Site must be handled, transported and disposed of in accordance with Ontario Regulation 347 made under the Environmental Protection Act and local by-laws. Based on the assessment findings and analytical results, the following abatement measures are presented. It should be noted that the recommended actions are the minimum required actions, as prescribed by the appropriate Acts, regulations, guidelines, standards, codes and general best practice measures.

4.2.1 Asbestos

ACMs were identified during the assessment. If these materials, including those deemed or suspected, will be disturbed, or will likely be disturbed, during building maintenance, renovations, construction, or demolition activities, they must be handled and disposed of in accordance with the procedures prescribed by O. Reg. 278/05.

All asbestos work must be conducted by contractors who are trained in the type of asbestos operations required, and should be overseen by a qualified third party Health, Safety and Environmental professional. In order to conduct Type 3 asbestos operations, contractors must be certified as Asbestos Abatement Workers AAW (Trade code 253W) and Asbestos Abatement Supervisors AAS (Trade code 253S) by The Ministry of Training, Colleges and Universities (Ministry of Advanced Education and Skills Development) as prescribed by Section 20 of O. Reg. 278/05. Suspect or visually confirmed ACM must be deemed to be asbestos-containing and treated as if they contain a type of asbestos other than Chrysotile.

ACM may be present in concealed locations and if construction, renovation, alteration, or maintenance activities are planned, invasive inspections of concealed locations for potential ACM must be performed prior to such activities. Exterior light gray sealant on windows may be concealed under gray silicon sealant at windows and doors throughout the exterior of the building.

Should any suspect ACM be discovered during the course of construction, renovation, alteration, or maintenance activities, work which disturbs the material must cease immediately. Suspect ACM must be treated as asbestos-containing or sampled prior to disturbance to assess the presence of asbestos.

There are no requirements under current legislation to remove ACM from a building simply because it is present. However, O. Reg. 278/05 requires that an Asbestos Management Program be implemented and maintained by the owner/employer where ACM is identified or suspected present.

4.2.2 Lead

Lead-based paint was identified. As such special requirements for the management, handling and disposal of lead-containing materials by the owner, constructor, contractor, sub-contractors and workers apply. The abatement contractor should consult Environmental Abatement Council of Canada's (EACC) *Lead Guideline for Construction, Renovation, Maintenance or Repair (October 2014)* for the procedures and methods required to remove and dispose of lead-containing materials.

Low level lead-containing paint is also present and the following general procedures are recommended as a precautionary measure as per Environmental Abatement Council of Canada's (EACC) *Lead Guideline for Construction, Renovation, Maintenance or Repair (October 2014)*:

- General dust control;
- The washing of hands and face at on-site facilities;
- No smoking, eating, chewing gum or drinking in the work area; and,
- No removal of painted surfaces by means of abrasive blasting.

Metal building finishes with the lead-based paint must be deemed hazardous waste if paint is not removed prior to disposal, and must then be manifested and disposed of off-site at a facility that is licensed to accept hazardous waste.

4.2.3 Mercury

No mercury-containing materials will be impacted by the proposed project. As such, no special requirements for management, handing and disposal by the owner, constructor, contractor, sub-contractors and workers apply.

4.2.4 Silica

Silica is presumed to be present; therefore, special requirements for management and handing are required. The contractor should also consult MOL Occupational Health and Safety Branch's Guideline: *Silica on Construction Projects* (April 2011) for the procedures and methods required to remove and dispose of silica-containing materials.

4.2.5 Mould

No water damage or suspect mould growth was observed during the assessment therefore no special management and handling requirements are warranted.

4.2.6 Polychlorinated Biphenyls (PCB)

No PCB-containing materials were identified; therefore, no special requirements for management, handing and disposal by the owner, constructor, contractor, sub-contractors and workers apply.

4.2.7 Ozone Depleting Substances (ODS)

No building components presumed to contain ODS were identified and no special requirements for management, handing and disposal by the owner, constructor, contractor, sub-contractors and workers apply.

5.0 LIMITATIONS

Services performed by **MTE Consultants Inc.** (MTE) were conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the Environmental Engineering & Consulting profession. No other representation expressed or implied as to the accuracy of the information, conclusions or recommendations is included or intended in this report.

This report was completed for the sole use of MTE and the Client. It was completed in accordance with the approved Scope of Work referred to in Section 2.0. As such, this report may not deal with all issues potentially applicable to the site and may omit issues that are or may be of interest to the reader. MTE makes no representation that the present report has dealt with all-important environmental features, except as provided in the Scope of Work. All findings and conclusions presented in this report are based on site conditions, as they existed during the time period of the investigation. This report is not intended to be exhaustive in scope or to imply a risk-free facility.

Any use which a third party makes of this report, or any reliance on, or decisions to be made based upon it, are the responsibility of such third parties. MTE accepts no responsibility for liabilities incurred by or damages, if any, suffered by any third party as a result of decisions made or actions taken, based upon this report. Others with interest in the site should undertake their own investigations and studies to determine how or if the condition affects them or their plans.

It should be recognized that the passage of time might affect the views, conclusions and recommendations (if any) provided in this report because environmental conditions of a property can change. Should additional or new information become available, MTE recommends that it be brought to our attention in order that we may re-assess the contents of this report.

All of which is respectfully submitted,

MTE Consultants Inc.

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Appendix A

Tables

TABLE 4.1: BULK ASBESTOS SAMPLE SUMMARY TABLE				
Sample #	**Location**	**Material Description**	**Asbestos Results (% Type)**	**Is Material ACM**
S01A	117 Window	Brown Sealant	ND	No
S01B	117 Window	Brown Sealant	ND	No
S01C	117 Window	Brown Sealant	ND	No
S02A	111 Ext. Door	12"x12" Gray Fleck Vinyl Floor Tile	ND	No
		Black Mastic	ND	No
S02B	111 Ext. Door	12"x12" Gray Fleck Vinyl Floor Tile	ND	No
		Black Mastic	ND	No
S02C	111 Ext. Door	12"x12" Gray Fleck Vinyl Floor Tile	ND	No
		Black Mastic	ND	No
S03A	Library	Concrete Block Mortar	ND	No
S03B	Library	Concrete Block Mortar	ND	No
S03C	Library	Concrete Block Mortar	ND	No
S04A	Library	**Drywall Joint Compound**	**1% Chrysotile**	**Yes**
S04B	Library	**Drywall Joint Compound**	**NA**	**Yes**
S04C	Library	**Drywall Joint Compound**	**NA**	**Yes**
S04D	Exit F	**Drywall Joint Compound**	**NA**	**Yes**
S04E	Exit F	**Drywall Joint Compound**	**NA**	**Yes**
S05A	2nd Level Hall Window	**Hard Beige Sealant**	**3% Chrysotile**	**Yes**
S05B	2nd Level Hall Window	**Hard Beige Sealant**	**NA**	**Yes**
S05C	2nd Level Hall Window	**Hard Beige Sealant**	**NA**	**Yes**
S06A	117 Window	Silver Sealant	ND	No
S06B	117 Window	Silver Sealant	ND	No
S06C	117 Window	Silver Sealant	ND	No
S07A	Library	2'x4' Deep Fissure Pinhole Pattern Ceiling Tile	ND	No
S07B	Library	2'x4' Deep Fissure Pinhole Pattern Ceiling Tile	ND	No
S07C	Library	2'x4' Deep Fissure Pinhole Pattern Ceiling Tile	ND	No
S08A	Library	2'x4' Pinhole Pattern Ceiling Tile	ND	No
S08B	Library	2'x4' Pinhole Pattern Ceiling Tile	ND	No
S08C	Library	2'x4' Pinhole Pattern Ceiling Tile	ND	No
S09A	Exterior	Brick Mortar	ND	No
S09B	Exterior	Brick Mortar	ND	No
S09C	Exterior	Brick Mortar	ND	No
S10A	Exterior Windows	Dark Gray Sealant	ND	No
S10B	Exterior Windows	Dark Gray Sealant	ND	No
S10C	Exterior Windows	Dark Gray Sealant	ND	No
S11A	Exterior Doors	**Brown Sealant**	**2% Chrysotile**	**Yes**
S11B	Exterior Doors	**Brown Sealant**	**NA**	**Yes**
S11C	Exterior Doors	**Brown Sealant**	**NA**	**Yes**
S12A	Exterior Windows/Doors	**Light Gray Sealant**	**0.5% Chrysotile**	**Yes**
S12B	Exterior Windows/Doors	**Light Gray Sealant**	**NA**	**Yes**
S12C	Exterior Windows/Doors	**Light Gray Sealant**	**NA**	**Yes**
S13A	Exterior Windows	**Black Glazing**	**5% Chrysotile**	**Yes**
S13B	Exterior Windows	**Black Glazing**	**NA**	**Yes**
S13C	Exterior Windows	**Black Glazing**	**NA**	**Yes**
S14A	Exterior Overhang	Texture Coat	ND	No
S14B	Exterior Overhang	Texture Coat	ND	No
S14C	Exterior Overhang	Texture Coat	ND	No
S15A	Exit C	Beige Sealant	ND	No
S15B	Exit C	Beige Sealant	ND	No
S15C	Exit C	Beige Sealant	ND	No
S16A	Gym	**12"x12" Black Vinyl Floor Tile**	**0.5% Chrysotile**	**Yes**
		Black Mastic	ND	No
S16B	Gym	**12"x12" Black Vinyl Floor Tile**	**NA**	**Yes**
		Black Mastic	<MDL	No
S16C	Gym	**12"x12" Black Vinyl Floor Tile**	**NA**	**Yes**
		Black Mastic	ND	No
S17A	Class 104 Ext. Door	White Sealant	ND	No
S17B	Class 104 Ext. Door	White Sealant	ND	No
S17C	Class 104 Ext. Door	White Sealant	ND	No
S18A	105 Windows	Gray Sealant	ND	No
S18B	105 Windows	Gray Sealant	ND	No
S18C	105 Windows	Gray Sealant	ND	No
S19A	104 Windows	Dark Brown Sealant	ND	No
S19B	104 Windows	Dark Brown Sealant	ND	No
S19C	104 Windows	Dark Brown Sealant	ND	No

NA: Not Analyzed due to stop positive method **ND**: No asbestos fibres detected above the laboratory minimum detection limit

TABLE 4.1: BULK ASBESTOS SAMPLE SUMMARY TABLE				
Sample #	**Location**	**Material Description**	**Asbestos Results (% Type)**	**Is Material ACM**
A bulk material sample containing 0.5% or more asbestos therefore establishes that material as asbestos-containing. In accordance with Table 1 of O. Reg. 278/05, a minimum number of samples for the material to be classified as non asbestos. A homogeneous material is defined by O. Reg. 278/05 “as material that is uniform in colour and texture”. Homogeneous samples are identified by an alphabetical suffix to sample names to represent multiple samples of a homogeneous material. When a homogeneous material is analysed it is determined to be asbestos-containing upon the first positive detection of asbestos equal to or greater than 0.5%. Subsequent samples of the same material are therefore not analysed. Some bulk samples are comprised of multiple layers and as such will require multiple analysis. In such cases each layer is isolated at the laboratory and analysed individually to determine asbestos content. As a result the laboratory may report additional samples beyond the submitted number of samples or include multiple analyses as subsets within a sample.				

TABLE 4.2: LEAD IN PAINT SAMPLE SUMMARY TABLE				
Sample #	**Location**	**Material**	**Lead Content (ug/g)**	**Classification**
LP1	Exterior Doors	**Black Paint**	**24,900**	**Lead Based**
LP2	Exit F	Light Gray Paint	84	Low Level Lead-Containing
LP3	Interior Door Frames	Beige Paint	47	Low Level Lead-Containing

"<": The samples analysed reported concentrations of lead to be less than 1000 ug/g and are therefore classified as low level lead-containing. However, no lead concentrations were reported above the sample specific laboratory detection limit.

As outlined in EACO's Lead Guideline for Construction, Renovation, Maintenance or Repair (October 2014), for the purpose of classifying surface coatings and mortars by laboratory analysis, any material containing lead at a concentration:

- Greater than 0.5% by weight (5,000 µg/g, mg/kg, ppm) is considered lead-based;
- Between 0.1 % and 0.5% by weight (1,000 to 5,000 µg/g, mg/kg, ppm) is considered lead-containing; or
- Less than 0.1% (1,000 µg/g, mg/kg, ppm) is considered low level lead-containing.

TABLE 4.3: BULK PCB SAMPLE SUMMARY TABLE				
Sample #	**Location**	**Material Description**	**PCB Content (ug/g)**	**Classification**
PCB1	Class 104 Windows	Dark Brown Sealant	<5	Non PCB-Containing
PCB2	Class 105 Windows	Gray Sealant	<5	Non PCB-Containing
PCB3	Class 104 Ext. Door	White Sealant	<5	Non PCB-Containing
PCB4	Exit C	Beige Sealant	<5	Non PCB-Containing
PCB5	Exterior Windows/Doors	Black Glazing	<5	Non PCB-Containing
PCB6	Exterior Windows/Doors	Light Gray Sealant	<5	Non PCB-Containing
PCB7	Exterior Windows/Doors	Brown Sealant	<5	Non PCB-Containing
PCB8	Exterior Windows/Doors	Dark Gray Sealant	<5	Non PCB-Containing
PCB9	Class 117 Window	Brown Sealant	<5	Non PCB-Containing
PCB10	Class 117 Window	Siliver Sealant	<5	Non PCB-Containing
PCB11	2nd Level Hallway Window	Hard Beige Sealant	<5	Non PCB-Containing

As outlined in the Statutory Orders and Regulations (SOR)/2008-273, the PCB Regulations, made under the Canadian Environmental Protection Act, 1999, any material containing PCB at a concentration:
• Greater than 50 µg/g is considered PCB-Containing

Table 4.4 - Summary of Designated Substances and Recommended Actions

Cecil B. Sterling Elementary School

Material	Location(s)	Material Description	Management Requirements If No Impacts to Material	Recommended Actions If Material Will Be Or Likely Be Impacted By Maintenance, Renovation, Construction or Demolition Activities
Asbestos Non-Friable	Gymnasium	12"x12" Black Vinyl Floor Tile	In place management in accordance with O. Reg. 278/05	Removal in accordance with O. Reg. 278/05 as a Type 1 Operation Using Non-Powered Hand Tools in Conjunction with Material Wetting
Asbestos Non-Friable	2nd Level Hallway Windows	Hard Beige Sealant	In place management in accordance with O. Reg. 278/05	Removal in accordance with O. Reg. 278/05 as a Type 1 Operation Using Non-Powered Hand Tools in Conjunction with Material Wetting
Asbestos Non-Friable	Exterior Doors	Exterior Brown Sealant	In place management in accordance with O. Reg. 278/05	Removal in accordance with O. Reg. 278/05 as a Type 1 Operation Using Non-Powered Hand Tools in Conjunction with Material Wetting

Table 4.4 - Summary of Designated Substances and Recommended Actions				
Cecil B. Sterling Elementary School				
Material	**Location(s)**	**Material Description**	**Management Requirements If No Impacts to Material**	**Recommended Actions If Material Will Be Or Likely Be Impacted By Maintenance, Renovation, Construction or Demolition Activities**
Asbestos Non-Friable	Exterior Windows and Doors	Exterior Light Gray Sealant	In place management in accordance with O. Reg. 278/05	Removal in accordance with O. Reg. 278/05 as a Type 1 Operation Using Non-Powered Hand Tools in Conjunction with Material Wetting
Asbestos Non-Friable	Exterior Windows	Exterior Black Window Glazing	In place management in accordance with O. Reg. 278/05	Removal in accordance with O. Reg. 278/05 as a Type 1 Operation Using Non-Powered Hand Tools in Conjunction with Material Wetting
Asbestos Non-Friable	Learning Commons, Exit F	Drywall Joint Compound	In place management in accordance with O. Reg. 278/05	Removal in accordance with O. Reg. 278/05 < $1m^2$ as a Type 1 Operation and for > $1m^2$ as a Type 2 Operation - Hand tools only in conjunction with dust suppression

Table 4.4 - Summary of Designated Substances and Recommended Actions				
Cecil B. Sterling Elementary School				
Material	**Location(s)**	**Material Description**	**Management Requirements If No Impacts to Material**	**Recommended Actions If Material Will Be Or Likely Be Impacted By Maintenance, Renovation, Construction or Demolition Activities**
Potentially Concealed Asbestos	Electrical Wiring Throughout Interior of Building	Jacketing on Electrical Wiring	In place management in accordance with O. Reg. 278/05	Invasive inspection prior to maintenance/renovations/construction/demolition activities, if present and sampling confirms as ACM, removal in accordance with O. Reg. 278/05
Potentially Concealed Asbestos	Doors Throughout Building	Door Core Insulation	In place management in accordance with O. Reg. 278/05	Invasive inspection prior to maintenance/renovations/construction/demolition activities, if present and sampling confirms as ACM, removal in accordance with O. Reg. 278/05
Lead-Based Paint	Exterior Doors	Exterior Black Paint	In place management in accordance with EACC's Lead Guideline	Removal as required prior to maintenance, renovations, construction or demolition activities in accordance with EACC's Lead Guideline as a: Class 1, Class 2A, Class 3A, or a Class 3B Operation If paint is not removed prior to disposal of any metal building finishes, these materials must be deemed hazardous waste, then manifested and disposed of off-site at a MOECP facility that is licensed to accept hazardous waste. If this paint is not removed prior to disposal of any other building finishes, these materials require analysis of Leachable Lead according to Ontario Regulation 558/00. If confirmed or deemed hazardous waste, materials must then be manifested and disposed of off-site at a MOECP facility that is licensed to accept hazardous waste.
Low Level Lead-Containing Paint	Exit F	Light Gray Paint	None	General hygiene procedures during renovation activities: • General dust control, • Washing of hands and face at on-site facilities, • No smoking, eating, chewing gum or drinking in the work area, • No abrasive blasting.
	Interior Door Frames	Beige Paint		
Silica	Throughout Interior and Exterior of Building	Brick and Mortar, Concrete, Fill and Hardscaping	None	Conduct any work during renovation, demolition activities in accordance with the Ministry of Labour Guideline Silica on Construction Projects
Notes: 1) A copy of this report should be provided to all prospective contractors prior to quotation, in accordance with Section 30 of the Occupational Health and Safety Act. 2) Recommended actions are the minimum required actions, as prescribed by the appropriate Acts, regulations, guidelines, standards, codes and general best practice measures. Prior to demolition, the Contractor may choose to alter the approach and combine or break out sections of work. This is acceptable provided that the appropriate Acts, regulations, guidelines, standards and codes are followed and afford protection for the health and safety of workers, occupants and the public that is at least equal to the protection that would be provided by complying with the minimum requirements. 3) All waste generated is subject to characterization and disposal in accordance with Ontario Regulation 347.				

Appendix B

Laboratory Certificates of Analysis

PARACEL LABORATORIES LTD.
TRUSTED. RESPONSIVE. RELIABLE.

15 - 6800 Kitimat Rd
Mississauga, ON, L5N 5M1
1-800-749-1947
www.paracellabs.com

Certificate of Analysis

MTE Consultants Inc. (Burlington)

1016 Sutton Drive, Unit A
Burlington, ON L7L 6B8
Attn: Gavin Oakes

Client PO:
Project: 54546-100
Custody:

Report Date: 15-Dec-2023
Order Date: 11-Dec-2023

Order #: 2350055

This Certificate of Analysis contains analytical data applicable to the following samples as submitted :

Paracel ID	Client ID
2350055-01	S01A
2350055-02	S01B
2350055-03	S01C
2350055-04	S02A
2350055-05	S02A
2350055-06	S02B
2350055-07	S02B
2350055-08	S02C
2350055-09	S02C
2350055-10	S03A
2350055-11	S03B
2350055-12	S03C
2350055-13	S04A
2350055-14	S04B
2350055-15	S04C
2350055-16	S04D
2350055-17	S04E
2350055-18	S05A
2350055-19	S05B
2350055-20	S05C
2350055-21	S06A
2350055-22	S06B
2350055-23	S06C
2350055-24	S07A
2350055-25	S07B
2350055-26	S07C

Approved By:

Emma Diaz

Senior Analyst

2350055-27	S08A
2350055-28	S08B
2350055-29	S08C
2350055-30	S09A
2350055-31	S09B
2350055-32	S09C
2350055-33	S10A
2350055-34	S10B
2350055-35	S10C
2350055-36	S11A
2350055-37	S11B
2350055-38	S11C
2350055-39.1	S12A
2350055-39.2	S12A
2350055-40.1	S12B
2350055-40.2	S12B
2350055-41.1	S12C
2350055-41.2	S12C
2350055-42	S13A
2350055-43	S13B
2350055-44	S13C
2350055-45	S14A
2350055-46	S14B
2350055-47	S14C
2350055-48	S15A
2350055-49	S15B
2350055-50	S15C
2350055-51	S16A
2350055-52	S16A
2350055-53	S16B
2350055-54	S16B
2350055-55	S16C
2350055-56	S16C
2350055-57	S17A
2350055-58	S17B
2350055-59	S17C
2350055-60	S18A
2350055-61	S18B
2350055-62	S18C
2350055-63	S19A
2350055-64	S19B
2350055-65	S19C

Certificate of Analysis

Client: MTE Consultants Inc. (Burlington)

Client PO:

Report Date: 15-Dec-2023

Order Date: 11-Dec-2023

Project Description: 54546-100

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Paracel ID	Sample Date	Colour	Description	Asbestos Detected	Material Identification	% Content
2350055-01	07-Dec-23	Black	Sealant	No	**Client ID: S01A**	
					Non-Fibers	100
2350055-02	07-Dec-23	Black	Sealant	No	**Client ID: S01B**	
					Non-Fibers	100
2350055-03	07-Dec-23	Black	Sealant	No	**Client ID: S01C**	
					Non-Fibers	100
2350055-04	07-Dec-23	Grey	Vinyl Floor Tile	No	**Client ID: S02A**	
					Non-Fibers	100
2350055-05	07-Dec-23	Black/Yellow	Mastic	No	**Client ID: S02A**	[AS-LR-NA]
					Cellulose	2
					Non-Fibers	98
2350055-06	07-Dec-23	Grey	Vinyl Floor Tile	No	**Client ID: S02B**	
					Non-Fibers	100
2350055-07	07-Dec-23	Black/Yellow	Mastic	No	**Client ID: S02B**	[AS-LR-NA]
					Cellulose	2
					Non-Fibers	98
2350055-08	07-Dec-23	Grey	Vinyl Floor Tile	No	**Client ID: S02C**	
					Non-Fibers	100
2350055-09	07-Dec-23	Black/Yellow	Mastic	No	**Client ID: S02C**	[AS-LR-NA]
					Cellulose	2
					Non-Fibers	98
2350055-10	07-Dec-23	Grey	Mortar	No	**Client ID: S03A**	
					Non-Fibers	100
2350055-11	07-Dec-23	Grey	Mortar	No	**Client ID: S03B**	
					Non-Fibers	100

Certificate of Analysis

Report Date: 15-Dec-2023

Client: MTE Consultants Inc. (Burlington)

Order Date: 11-Dec-2023

Client PO:

Project Description: 54546-100

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Paracel ID	Sample Date	Colour	Description	Asbestos Detected	Material Identification	% Content
2350055-12	07-Dec-23	Grey	Mortar	No	**Client ID: S03C**	
					Non-Fibers	100
2350055-13	07-Dec-23	White	Drywall Joint Compound	**Yes**	**Client ID: S04A**	
					Chrysotile	1
					Non-Fibers	99
2350055-14	07-Dec-23	White	Drywall Joint Compound		**Client ID: S04B**	
					not analyzed, positive stop	
2350055-15	07-Dec-23	White	Drywall Joint Compound		**Client ID: S04C**	
					not analyzed, positive stop	
2350055-16	07-Dec-23	White	Drywall Joint Compound		**Client ID: S04D**	
					not analyzed, positive stop	
2350055-17	07-Dec-23	White	Drywall Joint Compound		**Client ID: S04E**	
					not analyzed, positive stop	
2350055-18	07-Dec-23	Beige	Sealant	**Yes**	**Client ID: S05A**	
					Chrysotile	3
					Non-Fibers	97
2350055-19	07-Dec-23	Beige	Sealant		**Client ID: S05B**	
					not analyzed, positive stop	
2350055-20	07-Dec-23	Beige	Sealant		**Client ID: S05C**	
					not analyzed, positive stop	
2350055-21	07-Dec-23	Grey	Sealant	No	**Client ID: S06A**	
					Non-Fibers	100
2350055-22	07-Dec-23	Grey	Sealant	No	**Client ID: S06B**	
					Non-Fibers	100

Certificate of Analysis

Report Date: 15-Dec-2023

Client: MTE Consultants Inc. (Burlington)

Order Date: 11-Dec-2023

Client PO:

Project Description: 54546-100

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Paracel ID	Sample Date	Colour	Description	Asbestos Detected	Material Identification	% Content
2350055-23	07-Dec-23	Grey	Sealant	No	**Client ID: S06C**	
					Non-Fibers	100
2350055-24	07-Dec-23	Grey	Ceiling Tile	No	**Client ID: S07A**	
					Cellulose	40
					MMVF	30
					Non-Fibers	30
2350055-25	07-Dec-23	Grey	Ceiling Tile	No	**Client ID: S07B**	
					Cellulose	40
					MMVF	30
					Non-Fibers	30
2350055-26	07-Dec-23	Grey	Ceiling Tile	No	**Client ID: S07C**	
					Cellulose	40
					MMVF	30
					Non-Fibers	30
2350055-27	07-Dec-23	Grey	Ceiling Tile	No	**Client ID: S08A**	
					Cellulose	40
					MMVF	30
					Non-Fibers	30
2350055-28	07-Dec-23	Grey	Ceiling Tile	No	**Client ID: S08B**	
					Cellulose	40
					MMVF	30
					Non-Fibers	30
2350055-29	07-Dec-23	Grey	Ceiling Tile	No	**Client ID: S08C**	
					Cellulose	40
					MMVF	30
					Non-Fibers	30
2350055-30	07-Dec-23	Brown	Mortar	No	**Client ID: S09A**	
					Non-Fibers	100

Certificate of Analysis

Report Date: 15-Dec-2023

Client: MTE Consultants Inc. (Burlington)

Order Date: 11-Dec-2023

Client PO:

Project Description: 54546-100

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Paracel ID	Sample Date	Colour	Description	Asbestos Detected	Material Identification	% Content
2350055-31	07-Dec-23	Brown	Mortar	No	**Client ID: S09B**	
					Non-Fibers	100
2350055-32	07-Dec-23	Brown	Mortar	No	**Client ID: S09C**	
					Non-Fibers	100
2350055-33	07-Dec-23	Dark Grey	Sealant	No	**Client ID: S10A**	
					MMVF	1
					Non-Fibers	99
2350055-34	07-Dec-23	Dark Grey	Sealant	No	**Client ID: S10B**	
					MMVF	1
					Non-Fibers	99
2350055-35	07-Dec-23	Dark Grey	Sealant	No	**Client ID: S10C**	
					MMVF	1
					Non-Fibers	99
2350055-36	07-Dec-23	Brown	Sealant	**Yes**	**Client ID: S11A**	
					Chrysotile	2
					Non-Fibers	98
2350055-37	07-Dec-23	Brown	Sealant		**Client ID: S11B**	
					not analyzed, positive stop	
2350055-38	07-Dec-23	Brown	Sealant		**Client ID: S11C**	
					not analyzed, positive stop	
2350055-39.1	07-Dec-23	Light Grey	Sealant	**Yes**	**Client ID: S12A** [AS-PT]	
					Chrysotile	0.5
					Non-Fibers	99.5
2350055-39.2	07-Dec-23	Dark Grey	Sealant	**Yes**	**Client ID: S12A** [AS-PT]	
					Chrysotile	0.5
					MMVF	1
					Non-Fibers	98.5

Certificate of Analysis

Report Date: 15-Dec-2023

Client: MTE Consultants Inc. (Burlington)

Order Date: 11-Dec-2023

Client PO:

Project Description: 54546-100

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Paracel ID	Sample Date	Colour	Description	Asbestos Detected	Material Identification	% Content
2350055-40.1	07-Dec-23	Light Grey	Sealant		**Client ID: S12B**	
					not analyzed, positive stop	
2350055-40.2	07-Dec-23	Dark Grey	Sealant		**Client ID: S12B**	
					not analyzed, positive stop	
2350055-41.1	07-Dec-23	Light Grey	Sealant		**Client ID: S12C**	
					not analyzed, positive stop	
2350055-41.2	07-Dec-23	Dark Grey	Sealant		**Client ID: S12C**	
					not analyzed, positive stop	
2350055-42	07-Dec-23	Black	Glazing	**Yes**	**Client ID: S13A**	
					Chrysotile	5
					Non-Fibers	94
					Other fibers	1
2350055-43	07-Dec-23	Black	Glazing		**Client ID: S13B**	
					not analyzed, positive stop	
2350055-44	07-Dec-23	Black	Glazing		**Client ID: S13C**	
					not analyzed, positive stop	
2350055-45	07-Dec-23	Off-white	Texture Coat	No	**Client ID: S14A**	
					Non-Fibers	100
2350055-46	07-Dec-23	Off-white	Texture Coat	No	**Client ID: S14B**	
					Non-Fibers	100
2350055-47	07-Dec-23	Off-white	Texture Coat	No	**Client ID: S14C**	
					Non-Fibers	100
2350055-48	07-Dec-23	White	Sealant	No	**Client ID: S15A**	
					Non-Fibers	100

Certificate of Analysis

Client: **MTE Consultants Inc. (Burlington)**

Client PO:

Report Date: 15-Dec-2023

Order Date: 11-Dec-2023

Project Description: 54546-100

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Paracel ID	Sample Date	Colour	Description	Asbestos Detected	Material Identification	% Content
2350055-49	07-Dec-23	White	Sealant	No	**Client ID: S15B**	
					Non-Fibers	100
2350055-50	07-Dec-23	White	Sealant	No	**Client ID: S15C**	
					Non-Fibers	100
2350055-51	07-Dec-23	Black	Vinyl Floor Tile	**Yes**	**Client ID: S16A**	[AS-PT]
					Chrysotile	0.5
					Non-Fibers	99.5
2350055-52	07-Dec-23	Black	Mastic	No	**Client ID: S16A**	
					Non-Fibers	100
2350055-53	07-Dec-23	Black	Vinyl Floor Tile		**Client ID: S16B**	
					not analyzed, positive stop	
2350055-54	07-Dec-23	Black	Mastic	**Yes**	**Client ID: S16B**	[AS-PT]
				[ASTrc]	**Chrysotile**	<MDL
					Non-Fibers	100
2350055-55	07-Dec-23	Black	Vinyl Floor Tile		**Client ID: S16C**	
					not analyzed, positive stop	
2350055-56	07-Dec-23	Black	Mastic	No	**Client ID: S16C**	
					Non-Fibers	100
2350055-57	07-Dec-23	Grey	Sealant	No	**Client ID: S17A**	
					Non-Fibers	100
2350055-58	07-Dec-23	Grey	Sealant	No	**Client ID: S17B**	
					Non-Fibers	100
2350055-59	07-Dec-23	Grey	Sealant	No	**Client ID: S17C**	
					Non-Fibers	100

Certificate of Analysis

Client: MTE Consultants Inc. (Burlington)

Client PO:

Report Date: 15-Dec-2023

Order Date: 11-Dec-2023

Project Description: 54546-100

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Paracel ID	Sample Date	Colour	Description	Asbestos Detected	Material Identification	% Content
2350055-60	07-Dec-23	Grey	Sealant	No	**Client ID: S18A**	
					Non-Fibers	100
2350055-61	07-Dec-23	Grey	Sealant	No	**Client ID: S18B**	
					Non-Fibers	100
2350055-62	07-Dec-23	Grey	Sealant	No	**Client ID: S18C**	
					Non-Fibers	100
2350055-63	07-Dec-23	Black	Sealant	No	**Client ID: S19A**	
					Non-Fibers	100
2350055-64	07-Dec-23	Black	Sealant	No	**Client ID: S19B**	
					Non-Fibers	100
2350055-65	07-Dec-23	Black	Sealant	No	**Client ID: S19C**	
					Non-Fibers	100

* MMVF: Man Made Vitreous Fibers: Fiberglass, Mineral Wool, Rockwool, Glasswool

**** Analytes in bold indicate asbestos mineral content.**

Analysis Summary Table

Analysis	Method Reference/Description	Lab Location	Lab Accreditation	Analysis Date
Asbestos, PLM Visual Estimation	AppE to SubE of 40CFR Part763 and EPA/600/R-93/116	1 - Mississauga	CALA 3762	15-Dec-23

Mississauga Lab: 15 - 6800 Kitimat Rd Mississauga, Ontario, L5N 5M1

Qualifier Notes

Sample Qualifiers :

AS-LR-NA: Layers/materials inseparable, combined and not analysed separately

AS-PT: Asbestos quantitation by PLM Point Count method.

ASTrc: Trace asbestos was observed below the noted detection limit but could not be accurately quantified.

Certificate of Analysis

Report Date: 15-Dec-2023

Client: MTE Consultants Inc. (Burlington)

Order Date: 11-Dec-2023

Client PO:

Project Description: 54546-100

Work Order Revisions | Comments

None

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Paracel ID: 2350055

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awa, Ontario K1G 4J8
1-800-749-1947
paracel@paracellabs.com

Chain of Custody
(Lab Use Only)

Page 1 of 2

Client Name: MTE Consultants Inc.	Project Reference: 54546-100
Contact Name: Gavin Oakes	Quote #:
Address: 1016 Sutton Dr. Burlington	PO #:
Telephone: 905 639 2552	Email Address: mchoueir@mte85.com goakes@mte85.com

Turnaround Time:

- ☐ Immediate
- ☐ 4 Hour
- ☐ 8 Hour
- ☐ 1 Day
- ☐ 2 Day
- ☐ 3 Day
- ☒ Regular

Date Required: _____

ASBESTOS & MOLD ANALYSIS

Matrix: ☐ Air ☒ Bulk ☐ Tape Lift ☐ Swab ☐ Other **Regulatory Guideline:** ☒ ON ☐ QC ☐ AB ☐ SK ☐ Other:

Analyses: ☐ Microscopic Mold ☐ Culturable Mold ☐ Bacteria GRAM ☐ PCM Asbestos ☒ PLM Asbestos ☐ Chatfield Asbestos ☐ TEM Asbestos

Paracel Order Number: 2350055

	Sample ID	Sampling Date	Air Volume (L)	Analysis Required	Asbestos - Bulk: Identify Distinct Building Materials to Be Analyzed (if not specified, all materials identified will be analyzed) *	Positive Stop?
1	S01A-C	12/7		PLM	Sealant	☐
2	S02A-C				vinyl floor tile + mastic	☐
3	S03A-C				mortar	☐
4	S04A+E				drywall joint compound	☐
5	S05A-C				Sealant	☐
6	S06A-C				Sealant	☐
7	S07A-C				Ceiling tile	☐
8	S08A-C				Ceiling tile	☐
9	S09A-C				mortar	☐
10	S10A-C				Sealant	☐
11	S11A-C				Sealant	☐
12	S12A-C				Sealant	☐

* If left blank, all distinct materials identified in the samples will be analyzed and reported separately as per EPA 600/R-93/116. Additional charges will apply.

Comments:

Method of Delivery: Purolator

Relinquished By (Sign):	Received at Depot:	Received at Lab:	Verified By:
Relinquished By (Print): Melanie Choueir			
Date/Time: 12/8/23	Date/Time:	Date/Time: Dec 11/23 12:20	Date/Time: Dec 11/23 13:45

PARACEL LABORATORIES LTD.

Paracel ID: 2350055

Office
119 St. Laurent Blvd.
a, Ontario K1G 4J8
00-749-1947
acel@paracellabs.com

Chain of Custody
(Lab Use Only)

Client Name:	Project Reference:
Contact Name:	Quote #:
Address:	PO #:
Telephone:	Email Address:

Turnaround Time:

☐ Immediate ☐ 1 Day
☐ 4 Hour ☐ 2 Day
☐ 8 Hour ☐ 3 Day
☒ Regular

Date Required: _____

ASBESTOS & MOLD ANALYSIS

Matrix: ☐ Air ☐ Bulk ☐ Tape Lift ☐ Swab ☐ Other **Regulatory Guideline:** ☐ ON ☐ QC ☐ AB ☐ SK ☐ Other:

Analyses: ☐ Microscopic Mold ☐ Culturable Mold ☐ Bacteria GRAM ☐ PCM Asbestos ☐ PLM Asbestos ☐ Chatfield Asbestos ☐ TEM Asbestos

Paracel Order Number: 2350055

	Sample ID	Sampling Date	Air Volume (L)	Analysis Required	Asbestos - Bulk: Identify Distinct Building Materials to Be Analyzed (if not specified, all materials identified will be analyzed) *	Positive Stop?
1	S13A-C	12/7		PLM	glazing	☒
2	S14A-C				texture coat	☒
3	S15A-C				Sealant	☒
4	S16A-C				vinyl floor tile + mastic	☒
5	S17A-C				Sealant	☒
6	S18A-C				Sealant	☒
7	S19A-C				Sealant	☒
8						☐
9						☐
10						☐
11						☐
12						☐

* If left blank, all distinct materials identified in the samples will be analyzed and reported separately as per EPA 600/R-93/116. Additional charges will apply.

Comments:

Method of Delivery: Purolator

Relinquished By (Sign):	Received at Depot:	Received at Lab:	Verified By:
Relinquished By (Print): Mehrnaz Chegini			
Date/Time: 12/8/23	Date/Time:	Date/Time: Dec 11/23 12:20	Date/Time: Dec 11/23 13:45

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Certificate of Analysis

MTE Consultants Inc. (Burlington)

1016 Sutton Drive, Unit A
Burlington, ON L7L 6B8
Attn: Gavin Oakes

Client PO:
Project: 54546-100
Custody:

Report Date: 13-Dec-2023
Order Date: 11-Dec-2023

Order #: 2350053

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
2350053-01	LP1
2350053-02	LP2
2350053-03	LP3

Approved By:

Milan Ralitsch, PhD
Senior Technical Manager

Certificate of Analysis

Report Date: 13-Dec-2023

Client: MTE Consultants Inc. (Burlington)

Order Date: 11-Dec-2023

Client PO:

Project Description: 54546-100

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals, ICP-MS	EPA 6020 - Digestion - ICP-MS	12-Dec-23	13-Dec-23

Qualifier Notes:

None

Sample Data Revisions

None

Work Order Revisions/Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.

Certificate of Analysis

Client: MTE Consultants Inc. (Burlington)

Client PO:

Report Date: 13-Dec-2023

Order Date: 11-Dec-2023

Project Description: 54546-100

Sample Results

Lead

Matrix: Paint

Paracel ID	Client ID	Sample Date	Units	MDL	Result
2350053-01	LP1	7-Dec-23	ug/g	5	24900
2350053-02	LP2	7-Dec-23	ug/g	5	84
2350053-03	LP3	7-Dec-23	ug/g	5	47

Laboratory Internal QA/QC

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Matrix Blank									
Lead	**ND**	**5**	**ug/g**						
Matrix Duplicate									
Lead	**15.3**	**5**	**ug/g**	**16.8**			**8.99**	**50**	
Matrix Spike									
Lead	45.0	5.00	ug/g	ND	88.7	70-130			

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Paracel ID: 2350053

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io K1G 4J8
947
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Chain of Custody
(Lab Use Only)

Page 1 of 1

Client Name: MTE Consultants Inc.	Project Reference: 54546-100
Contact Name: Gavin Oakes	Quote #
Address: 1016 Sutton Dr. Burlington	PO #
Telephone: 905 639 2552	Email Address: mchown@mte85.com goakes@mte85.com

Turnaround Time:
☐ 1 Day ☐ 3 Day
☐ 2 Day ☑ Regular
Date Required: _____

Criteria: ☐ O. Reg. 153/04 (As Amended) Table __ ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: _____ ☐ Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

	Paracel Order Number: / Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken: Date	Sample Taken: Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	Lead						
1	LP1	S	1	1	12/7	5:00	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐
2	LP2	S	1	1	1	1	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐
3	LP3	S	1	1	1	1	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐
4							☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
5							☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
6							☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
7							☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
8							☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
9							☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
10							☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Comments:

Method of Delivery: Purolator

Relinquished By (Sign):	Received by Driver/Depot:	Received at Lab: KM	Verified By: KM
Relinquished By (Print): Melanie Crouch	Date/Time:	Date/Time: 12/11/23 1337	Date/Time: 12/11/23 1346
Date/Time: 12/8/23	Temperature: _____ °C	Temperature: _____ °C	pH Verified [ ] By: NA

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Certificate of Analysis

MTE Consultants Inc. (Burlington)
1016 Sutton Drive, Unit A
Burlington, ON L7L 6B8
Attn: Gavin Oakes

Client PO:
Project: 54546-100
Custody:

Report Date: 18-Dec-2023
Order Date: 11-Dec-2023

Order #: 2350147

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
2350147-01	PCB1
2350147-02	PCB2
2350147-03	PCB3
2350147-04	PCB4
2350147-05	PCB5
2350147-06	PCB6
2350147-07	PCB7
2350147-08	PCB8
2350147-09	PCB9
2350147-10	PCB10
2350147-11	PCB11

Approved By:

Dale Robertson, BSc
Laboratory Director

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
PCBs, total	SW846 8082A - GC-ECD	13-Dec-23	15-Dec-23

Certificate of Analysis

Report Date: 18-Dec-2023

Client: **MTE Consultants Inc. (Burlington)**

Order Date: 11-Dec-2023

Client PO:

Project Description: 54546-100

	Client ID:	PCB1	PCB2	PCB3	PCB4		
	Sample Date:	07-Dec-23 18:00	07-Dec-23 18:00	07-Dec-23 18:00	07-Dec-23 18:00	-	-
	Sample ID:	2350147-01	2350147-02	2350147-03	2350147-04		
	Matrix:	Other	Other	Other	Other		
	MDL/Units						
PCBs							
PCBs, total	5 ug/g	<5	<5	<5	<5	-	-
Decachlorobiphenyl	Surrogate	111%	103%	110%	89%	-	-

	Client ID:	PCB5	PCB6	PCB7	PCB8		
	Sample Date:	07-Dec-23 18:00	07-Dec-23 18:00	07-Dec-23 18:00	07-Dec-23 18:00	-	-
	Sample ID:	2350147-05	2350147-06	2350147-07	2350147-08		
	Matrix:	Other	Other	Other	Other		
	MDL/Units						
PCBs							
PCBs, total	5 ug/g	<5	<5	<5	<5	-	-
Decachlorobiphenyl	Surrogate	99%	105%	109%	109%	-	-

	Client ID:	PCB9	PCB10	PCB11		-	-
	Sample Date:	07-Dec-23 18:00	07-Dec-23 18:00	07-Dec-23 18:00			
	Sample ID:	2350147-09	2350147-10	2350147-11			
	Matrix:	Other	Other	Other			
	MDL/Units						
PCBs							
PCBs, total	5 ug/g	<5	<5	<5	-	-	-
Decachlorobiphenyl	Surrogate	109%	108%	111%	-	-	-

Certificate of Analysis

Report Date: 18-Dec-2023

Client: **MTE Consultants Inc. (Burlington)**

Order Date: 11-Dec-2023

Client PO:

Project Description: 54546-100

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
PCBs								
PCBs, total	ND	5	ug/g					
Surrogate: Decachlorobiphenyl	*4.93*		*%*	*98.6*	*60-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
PCBs									
PCBs, total	ND	5	ug/g	ND			NC	40	
Surrogate: Decachlorobiphenyl	*5.48*		*%*		*110*	*60-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
PCBs									
PCBs, total	22	5	ug/g	ND	111	60-140			
Surrogate: Decachlorobiphenyl	*5.56*		*%*		*111*	*60-140*			

Certificate of Analysis

Report Date: 18-Dec-2023

Client: **MTE Consultants Inc. (Burlington)**

Order Date: 11-Dec-2023

Client PO:

Project Description: 54546-100

Qualifier Notes:

Sample Data Revisions:

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

Source Result: Data used as source for matrix and duplicate samples

%REC: Percent recovery.

RPD: Relative percent difference.

NC: Not Calculated

PARACE LABORATORIES LT

Paracel ID: 2350147

Head Office
300-2319 St. Laurent Blvd.
Ottawa, Ontario K1G 4J8
p: 1-800-749-1947
e: paracel@paracellabs.com

Chain of Custody
(Lab Use Only)

Page 1 of 2

Client Name: MTE Consultants Inc.
Contact Name: Mahin Oake
Address: 1016 Sutton Dr. Burlington
Telephone: 905 639 2552

Project Reference: 54546-100
Quote #
PO #
Email Address: mchoun@mtejs.com
goake@mtejs.com

Turnaround Time:
☐ 1 Day ☐ 3 Day
☐ 2 Day ☒ Regular
Date Required: _____

Criteria: ☐ O. Reg. 153/04 (As Amended) Table __ ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: _____ ☐ Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number:

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	PCB						
1	PCB1	O			12/7	5:00	☐	☐	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐
2	PCB2						☐	☐	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐
3	PCB3						☐	☐	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐
4	PCB4						☐	☐	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐
5	PCB5						☐	☐	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐
6	PCB6						☐	☐	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐
7	PCB7						☐	☐	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐
8	PCB8						☐	☐	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐
9	PCB9						☐	☐	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐
10	PCB10						☐	☐	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐

Required Analyses

Comments:

Method of Delivery: Purolator

Relinquished By (Sign):	Received by Driver/Depot:	Received at Lab:	Verified By:
Relinquished By (Print): Melanie Choun	Date/Time: Dec 11/23	Date/Time: Dec 12 2023 1230	Date/Time: Dec 12 2023
Date/Time: 12/8/23	Temperature: _____ °C 12.20	Temperature: _____ °C	pH Verified [ ] By: 1338

PARACEL LABORATORI

Paracel ID: 2350147

Head Office
300-2319 St. Laurent Blvd.
Ottawa, Ontario K1G 4J8
p: 1-800-749-1947
e: paracel@paracellabs.com

Chain of Custody
(Lab Use Only)

Page 2 of 2

Client Name:	Project Reference:
Contact Name:	Quote #
Address:	PO #
Telephone:	Email Address:

Turnaround Time:
☐ 1 Day ☐ 3 Day
☐ 2 Day ☒ Regular
Date Required: _____

Criteria: ☐ O. Reg. 153/04 (As Amended) Table __ ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: _____ ☐ Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Paracel Order Number:

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	PCB						
1	PCB 11	O	-	1	12/7	6:00	☐	☐	☐	☐	☐	☐	☐	☒	☐	☐	☐	☐	☐	☐
2							☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
3							☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
4							☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
5							☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
6							☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
7							☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
8							☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
9							☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
10							☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Required Analyses

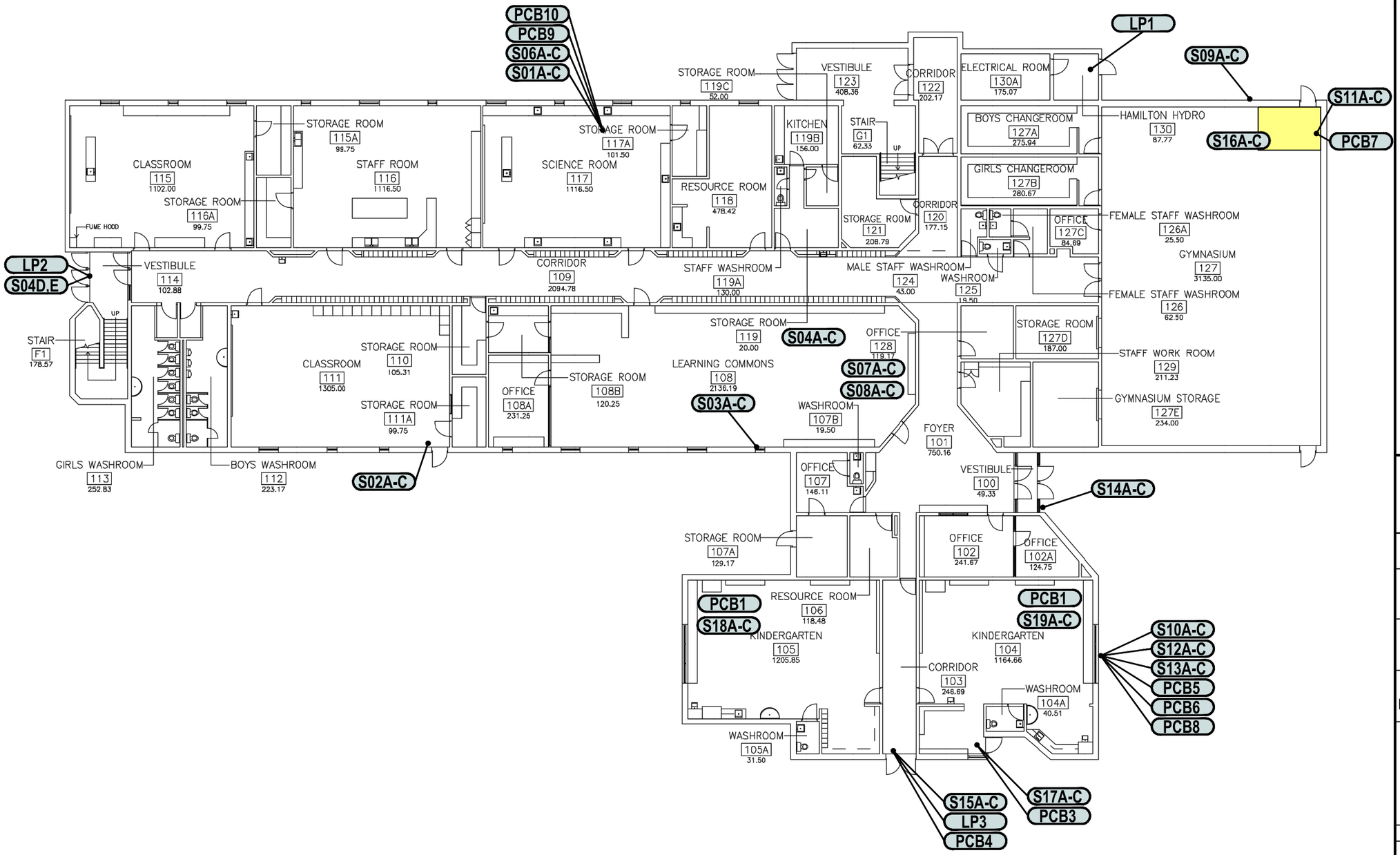
Comments:

Method of Delivery: Purolator

Relinquished By (Sign):	Received by Driver/Depot:	Received at Lab:	Verified By:
Relinquished By (Print): Melanie Cheah	Date/Time: Dec 11/23	Date/Time: Dec 12 2023 0950	Date/Time: Dec 12 2023 1355
Date/Time: 12/8/23	Temperature: _____ °C 12-2	Temperature: _____ °C	pH Verified ☐ By: _____

Appendix C

Figures



Notes:

ALL DRAWINGS TO BE REFERENCED WITH THE DSA REPORT. LOCATIONS AND QUANTITIES ARE APPROXIMATE.

ALL KNOWN OR SUSPECT DESIGNATED SUBSTANCES ARE NOT DEPICTED ON THIS FIGURE. REFER TO THE DSA REPORT FOR A COMPLETE LIST OF IDENTIFIED KNOWN AND SUSPECT DESIGNATED SUBSTANCES.

THIS FIGURE IS COLOUR DEPENDENT, PHOTOCOPIES MAY ALTER INTERPRETATION OF FIGURE. ALWAYS REFER TO ORIGINAL DRAWINGS AND DSA REPORT.

Designated Substances and Hazardous Materials Legend

LP1 — Sample Identification

ACM Vinyl Floor Tiles

NOTE:
* Drywall Joint Compound Contains Asbestos.
* Exterior Sealant on Windows and Doors Contain Asbestos.
* Exterior Black Window Glazing Contains Asbestos.

MTE
Engineers, Scientists, Surveyors

Ph. (905) 639-2552 www.mte85.com

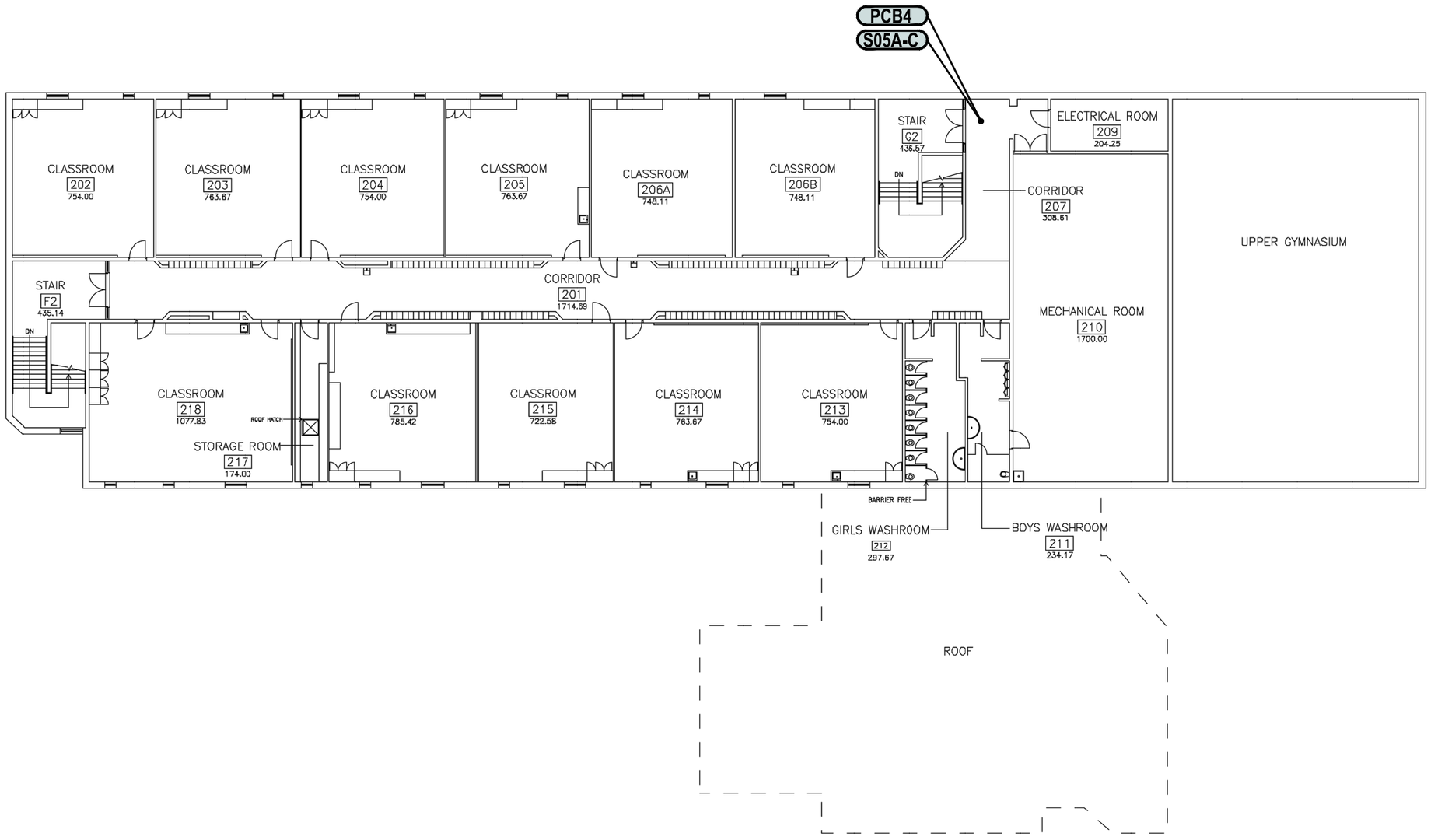
CLIENT
Hamilton- Wentworth District School Board

PROJECT
DESIGNATED SUBSTANCE AND HAZARDOUS MATERIALS SURVEY

DRAWING
FIRST FLOOR PLAN
340 QUEEN VICTORIA DRIVE, HAMILTON, ON

Project Manager	G. OAKES	Date	DECEMBER 2023
Baseplan By	MTE	Project No.	54546-100
Figure By	SXS	Drawing No.	1.0
Scale	N.T.S.		

March 20, 2018 - 2:00 pm - Plotted By: MVanRuyven
Project: 43923-100 CAD: P:\P\54546\100\54546-100.DWG



Notes:

ALL DRAWINGS TO BE REFERENCED WITH THE DSA REPORT. LOCATIONS AND QUANTITIES ARE APPROXIMATE.

ALL KNOWN OR SUSPECT DESIGNATED SUBSTANCES ARE NOT DEPICTED ON THIS FIGURE. REFER TO THE DSA REPORT FOR A COMPLETE LIST OF IDENTIFIED KNOWN AND SUSPECT DESIGNATED SUBSTANCES.

THIS FIGURE IS COLOUR DEPENDENT, PHOTOCOPIES MAY ALTER INTERPRETATION OF FIGURE. ALWAYS REFER TO ORIGINAL DRAWINGS AND DSA REPORT.

Designated Substances and Hazardous Materials Legend

PCB4 — Sample Identification

NOTE:
* Drywall Joint Compound Contains Asbestos.
* Hard Beige Sealant on Interior Hallway Window Contains Asbestos.
* Exterior Sealant on Windows and Doors Contain Asbestos.
* Exterior Black Window Glazing Contains Asbestos.

MTE
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Ph. (905) 639-2552 www.mte85.com

CLIENT
Hamilton- Wentworth District School Board

PROJECT
DESIGNATED SUBSTANCE AND HAZARDOUS MATERIALS SURVEY

DRAWING
SECOND FLOOR PLAN
340 QUEEN VICTORIA DRIVE, HAMILTON, ON

Project Manager: G. OAKES	Date: DECEMBER 2023
Baseplan By: MTE	Project No.: 54546-100
Figure By: SXS	Drawing No.: 2.0
Scale: N.T.S.	

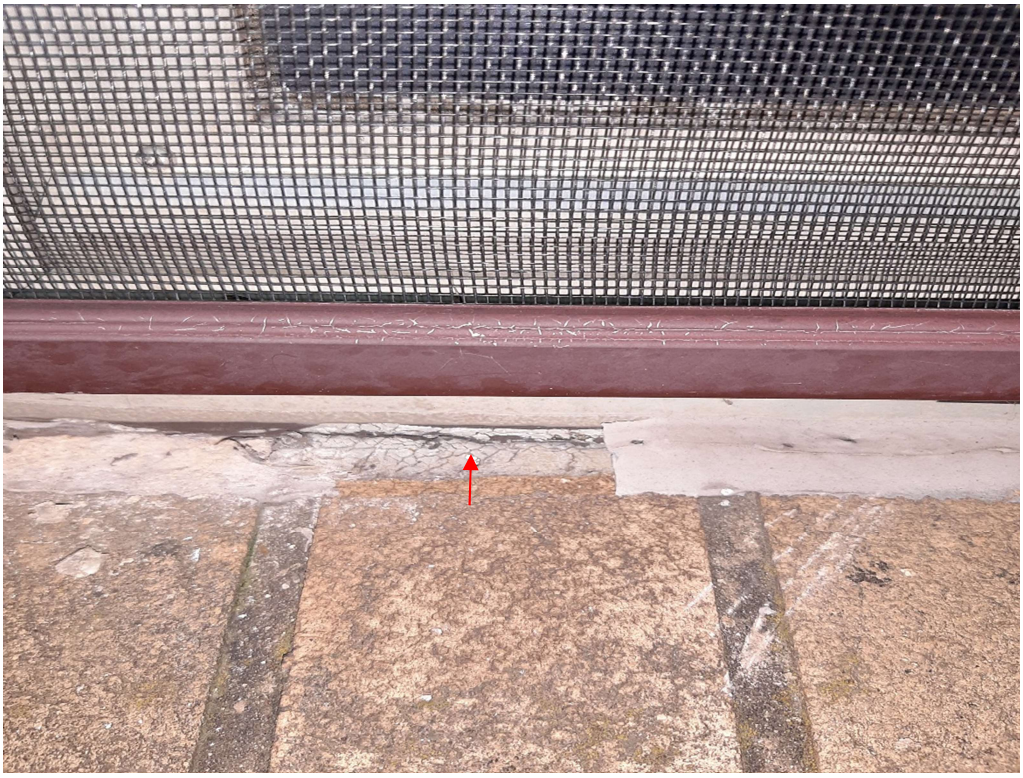
Project: 43923-100 CAD: P:\P\54546\100\54546-100.DWG — Plotted By: MVanRuyven — March 20, 2018 — 2:00 pm

Appendix D

Photographic Log

Photograph No. 1 – Exterior black paint is lead-based.

Photograph No. 2 – Exterior brown sealant contains asbestos.



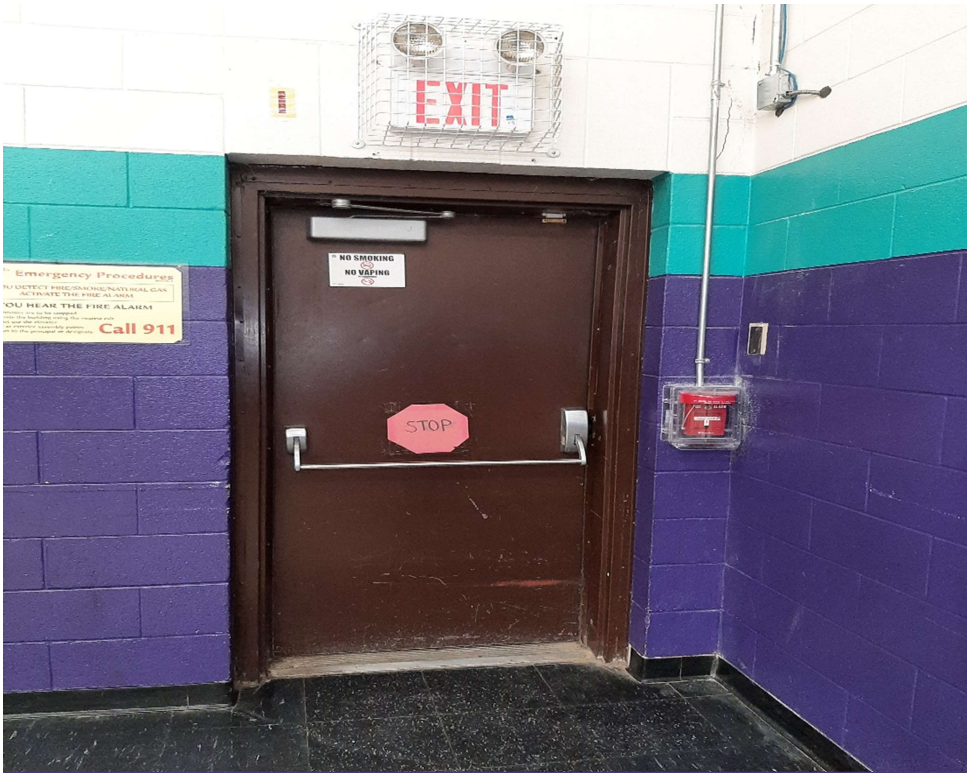
Photograph No. 3 – Exterior light gray sealant on windows (under light gray silicon sealant) contains asbestos.

Photograph No. 4 – Black exterior window glazing contains asbestos.

Photograph No. 5 – Texture coat on exterior overhang is non-asbestos.

Photograph No. 6 – Drywall joint compound contains asbestos.

Photograph No. 7 – Drywall joint compound contains asbestos.



Photograph No. 8 – Black vinyl floor tiles around the exterior door in the gym contain asbestos.

Photograph No. 9 – Hard beige interior sealant on the 2nd floor hallway window contains asbestos.

Appendix A – Construction School Specific Information Sheet Sample

In addition to the terms and conditions of the Contract Documents, the Contractor shall follow the protocols of the Construction Site Specific Information Sheet, sample provided below.
A completed version of this document, with site specific content, will be provided to the Contractor at the pre-construction meeting.

HWDSB

Capital Projects
Facility Services

Construction School Specific Information Sheet

1. School Information:

School Name:	Insert School Name
Bell Times	
Morning (School Entry)**:**	0:00 AM
Afternoon (School Dismissal):	0:00 PM
Aftercare Program Dismissal:	6:00 PM
Caretaking Phone Number:	000-000-0000
Caretaking Hours	
September to June	6:00 AM – 10:00 PM
December Holiday Break	6:00 AM – 2:00 PM
March Break	6:00 AM – 2:00 PM
July to August	6:00 AM – 2:00 PM
Saturday / Sunday	CLOSED
PasWord Account Code:	HP0000
Security Panel Code:	0000

2. School Entry for afterhours, school holidays or closures:

Please follow these steps upon entry to the building outside of caretaker hours and on school holidays or closures:

1. Call PasWord Protection at 1-800-561-3099 or 905-522-6680 and notify them in advance of the day(s) and time(s) that access to the building will be required. They will require the PasWord account code noted above.
2. Disarm the security panel when arriving.
3. Arm the security panel when leaving.
4. Call PasWord to verify that the building is armed and secure.

Failure to follow this procedure outside of caretaker hours and on school holidays or closures will result in an automatic dispatch of a security guard to the building to verify who has entered/exited the building. Security costs associated with the dispatch of a security guard for failing to follow the procedure will be expensed to the contractor responsible for the incident.

3. Fire Safety Plan and Procedures:

The following procedures are to ensure the safe evacuation of the job site and school in the event of a fire alarm:

1. All employees, subcontractors, workers, and all visitors to the site are to review and follow the Hamilton Wentworth District School Board (HWDSB) posted room specific evacuation cards and school specific Fire Safety Plan located in the main office, on the health & safety board and in the fire manual binder (see caretaker).
2. Construction hoarding, fencing and temporary exits are to be implemented to ensure all fire routes are maintained for safe exiting.
3. In the event of a fire alarm, all construction activities must stop and all site personnel are to vacate the building and job site.
4. All site personnel are to meet at the predetermined meeting area as identified in the contractor's fire safety plan. contractor fire safety plan to be submitted with the Health & Safety submittals upon construction initiation.

4. Fire Alarm Bypass Protocols:

Please follow these steps to put the fire alarm on bypass. The FA system should not be put on test at any time. The following protocols are established by the HWDSB Fire Safety Plan and in the event that there is a discrepancy in a procedure the HWDSB Fire Safety Plan shall govern.

1. Contractor to contact Hamilton Fire Control (HFC) per the contact information below and make arrangements to review the site requirements for bypass – i.e. complete a walkthrough with HFC to determine which devices need to be bypassed, if any, if a device/s is/are to be red capped and protected from construction debris or damage, if a rate-of-rise device is to be installed or device disconnected and how to address the trouble on the panel.

   Contact: Michael Fleet - Hamilton Fire Control
   Phone: (905) 527-7042
   Email: michael@hamiltonfirecontrol.ca

2. Hamilton Fire Control to coordinate fire alarm bypass with HWDSB caretaker and PasWord.
3. The caretaker will post a notice that the school is on Fire Watch on the exterior doors. This is required anytime that the fire alarm Panel is in trouble, a fire alarm device is bypassed or impeded in any way (i.e. disconnected, gloved, red capped, etc.).
4. The caretaker will contact PasWord and the school main office to notify them the system is on bypass.

5. The contractor is to take all necessary precautions during this period to protect any FA devices in the construction zone from activating the emergency fire alarm system, including not conducting heat/smoke generating activities in proximity to the detectors (i.e. do not solder near the detector, protect devices from debris/ dust, disconnect device when required to perform work that may activate the emergency fire alarm system).
6. The contractor is responsible for Fire Watch at all times within the construction area including at any time that a fire alarm device is affected (i.e. disconnected, bypassed, trouble on the panel, device is red capped or gloved). The contractor must maintain and make available a copy of the hourly fire watch log. Fire Watch during unoccupied times is not required.
7. The caretaker will be responsible for Fire Watch within the occupied area of the school up to the delineation of the construction work area during occupied times when a fire alarm device is affected. Fire Watch during unoccupied times is not required.
8. In the event a fire alarm device is activated, all occupants of the school, including contractors, must follow the HWDSB Fire Safety Protocol and Fire Safety Plan and Procedures as outlined in this document, and evacuate the school.
9. The caretaker is responsible to notify the Fire Department should there be a trouble on the panel for longer than 72 hours.

5. Please follow these steps for planning any service (electrical, gas, water) shutdowns:

A. Internal Localized System/Service Shutdowns:

1. Localized shutdowns **require minimum 3 days' notice** to HWDSB project supervisor for coordination with the school facility and staff.
2. Shutdowns must be completed outside of school bell times/operational hours which vary by facility and must be scheduled for evenings after 6:00 PM, weekends or board holidays.
3. If a shutdown will impact the security system, the contractor shall contact PasWord Protection at 1-800-561-3099 or 905-522-6680 and notify them in advance of the day(s) and time(s) of the shutdown.
4. If a shutdown impacts the fire alarm system, the contractor shall follow the Fire Alarm Bypass Protocol, section 4 above.
5. If required, the contractor is to coordinate with Board vendor/s to be on site to ensure boilers, roof top units, heat pumps, etc. are functioning properly after service disruption has concluded.

    - Chamberlain Building Services Inc - info@chbs.ca, 905-664-1914 or
    - Union Boiler Company Limited - info@unionboiler.com, 905-528-7977

6. Process will vary based on services shutdown and ability to localize shutdown.

B. Complete School System/Service Shutdowns:

1. Complete building shutdowns **require minimum 5 days' notice** to HWDSB project supervisor.
2. Shutdowns must be completed outside of school bell times/operational hours which vary by facility and must be scheduled for evenings after 6:00 PM, weekends or board holidays.
3. Contractor to contact PasWord Protection at 1-800-561-3099 or 905-522-6680 and notify them in advance of the day(s) and time(s) of shutdown.
4. During the shutdown, the contractor is responsible for following Fire Alarm Bypass Protocol, section 4 above.
5. The contractor is to coordinate with Board vendor/s to be on site to ensure boilers, roof top units, heat pumps, etc. are functioning properly after service disruption has concluded.

    - Chamberlain Building Services Inc - info@chbs.ca, 905-664-1914 or
    - Union Boiler Company Limited - info@unionboiler.com, 905-528-7977

6. HWDSB project supervisor will coordinate with other HWDSB departments to ensure all systems (IIT, security, communications) are up and running after service disruption has concluded.
7. If required, HWDSB project supervisor will coordinate with City of Hamilton staff if site has shared facilities such as recreation centre, community centre, pool or library, etc.
8. Process will vary based on service shutdown.

C. Heating and Cooling System Shutdowns:

1. Heating and cooling system shutdowns **require minimum 5 days' notice** to HWDSB project supervisor
2. Shutdowns must be completed outside of school bell times/operational hours which vary by facility and must be scheduled for evenings after 6:00 PM, weekends or board holidays.
3. The contractor is to coordinate with Board vendor/s to be on site to ensure boilers, roof top units, heat pumps, etc. are functioning properly after service disruption has concluded.

    - Chamberlain Building Services Inc - info@chbs.ca, 905-664-1914 or
    - Union Boiler Company Limited - info@unionboiler.com, 905-528-7977

4. If the boiler system is drained, the contractor upon refilling the system, is responsible for coordinating Board approved chemical treatment vendor to treat water.

    - Aquarian Chemicals Inc - info@aquarianchemicals.com, 905-825-3711

5. Process will vary based on services shutdown and ability to localize shutdown.

D. Asbestos Abatement and Designated Substance Related Work:

1. Designated substance related work **requires minimum 5 days' notice** to HWDSB project supervisor.
2. Designated substance related work in occupied areas must be completed outside of school bell times/operational hours which vary by facility and must be scheduled for evenings after 6:00 PM, weekends or board holidays.