EE Horizon Jeunesse

Specifications
Gym Roof Structure Replacement

Project Location:
1445 Lewisham Dr., Mississauga ON

Prepared for:
Conseil scolaire Viamonde
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MTE File No.: 43735-200

Engineers, Scientists, Surveyors.

SPECIFICATIONS

DRAWINGS

APPENDICES

PART 1 GENERAL

1.1 General

.1 Accept instructions only from the Consultant and sources designated by the Consultant.

.2 The building shall remain in use in areas not immediately affected by the work. Ensure that normal building operations and maintenance may be carried out without disruption, except as otherwise noted herein or stated in the Bid.

.3 Work shall be allowed only from 8 a.m. to 6 p.m., Monday to Friday. The work shall be performed according to the start date and duration given in the Bid Document.

1.2 Protection of Work, Property and Persons

.1 Supply, install and maintain a portable chain link fence construction barrier around work area.

.2 Maintain all emergency and service access routes clear at all times. Provide barricades and signs necessary to direct vehicular and pedestrian traffic around construction areas.

.3 Before commencing work, identify all paths for dust, fumes or odours generated by the work to penetrate interior spaces. These shall include make-up air intakes, ventilation/exhaust openings for service rooms such as generator or hydro vault rooms, doors, windows, and pipe or cable penetrations. Take measures such as enclosing, or sealing the openings to prevent dust, fume or odour ingress. If required, coordinate temporary shut-down of mechanical equipment by Owner.

.4 The Contractor is responsible for damage caused or clean-up required by dispersion of dust generated by the work.

.5 Before commencing work, inspect all building components, including drains, lights, signage, windows, screens, doors, etc. within or adjacent to the area of the work. Submit a photographic record of existing damages on CD to the Owner & Consultant. Catalogue existing conditions at landscaping, plantings and pavements as well.

.6 Receive, be responsible for, and promptly arrange all details of compensation for all damage existing after the work which was not recorded prior to the work. Unless dealt with promptly by the Contractor, the Contractor will be responsible for costs for time of Owner's or Consultant's personnel and other costs incurred for claims not handled by the Contractor. This includes costs for correction of deficiencies paid for by the Owner.

.7 The Contractor shall assume all responsibility for any damage resulting from the use of the building’s drainage system to dispose of construction water irrespective of the drain system condition.

.8 For work requiring interior building access, ensure no combustible materials (e.g. cardboard, wood, plastic, other debris) are placed or stored in elevator shafts, ventilation shafts or means of egress including hallways and stairwells.

.9 Ensure the building envelope affected by the work is made water-tight prior to adverse weather, and at the end of each day, to prevent interior leakage.

1.3 Project Schedule

.1 Monitor compliance with the contract schedule on a daily basis.

.2 If unit price items increase by more than 30%, or should unusual weather or other unforeseen conditions affect the project schedule, submit a revised schedule for owner approval to reflect.

.3 Provide a work force that is equal to or exceeds the crew size provided in The Bid Documents. If the Owner or Consultant, at any time, considers the number of workers, equipment or materials to be insufficient to maintain the Contract schedule, the Owner, through the Consultant, may, in writing, order the Contractor to work weekends/and or additional hours or provide additional workers, equipment, or materials as the Owner and Consultant may think necessary at no additional cost to the Owner in order that the Work be performed according to the terms of the Contract Schedule. Should the Contractor fail to comply with the order, the Contractor shall be considered to be in default of the Contract.

.4 Should the Contractor fail to meet the project schedule as a result of conditions under their control, the Owner reserves the right to deduct costs for additional time required by the Consultant from amounts owed to the Contractor.

.5 Where temperature sensitive work must take place and environmental conditions are not likely to be within the specified limits, and where it is not feasible to provide heat (as agreed to by the Contractor and Consultant), and where the Manufacturer has provided the Contractor with approval to proceed with the work, proceed only with written authorization from the Consultant. At least five days before the work is to take place, submit Manufacturer’s written instructions to the Consultant. The Manufacturer’s written instructions must include the revised environmental condition limits, details of required modifications to products or application procedures, and risks associated with proceeding under the revised conditions. The Consultant is not obliged to authorize the change.

1.4 Project Supervision

.1 Ensure that a qualified supervisor and foreman, capable of communicating effectively in the English language, familiar with the requirements of these specifications, is on site at all times, including during subcontractors’ activities.

.2 Control all aspects of the Work to minimize interference of occupants' use of the building. Be responsible for workers' activities while on the site. No smoking or horseplay will be permitted on site.

.3 Conform to all By-Laws and all Legislated requirements including those related to labour, noise and the environment.

.4 Maintain the latest versions of the following documents on site:
- .1 Contract drawings and specifications;
- .2 Site Visit Reports issued by Consultant;
- .3 Additional Drawings issued by Consultant;
- .4 Contemplated Change Orders and Change Orders;
- .5 Material Test Reports;
- .6 Accurate daily records of all work performed, weather and labour force;
- .7 Manufacturer's specifications for all products to be used;
- .8 Proof of WHMIS training for all site personnel;
- .9 Product data sheets to meet the WHMIS requirements;
- .10 Occupational Health and Safety Act and Site Specific Safety Plan;
- .11 Shoring/ Scaffolding Design;
- .12 Working at Heights Certificates;
- .13 Emergency Contact;
- .14 Building Permit; and,
- .15 Notice of Project.

.5 The Contractor is entirely responsible for site safety. No actions or lack of action by the Owner or Consultant shall be deemed to be an instruction related to safety of the workplace.

.6 Drawings are diagrammatic and are intended to convey the scope of work and indicate general and approximate locations and arrangement of work. The Contractor shall obtain accurate information about locations, arrangements and dimensions from the site.

.7 When site conditions differ from the drawings, obtain the Consultant's approval in writing prior to deviating from the drawings. The Consultants shall issue a formal site instruction or detail on a site report.

1.5 Applicable Laws, Regulations and Standards

.1 Perform all work in accordance with current Code requirements and local and municipal by-laws.

.2 All Standards referred to shall be the current editions as amended at the date of issue of Contract Documents.

.3 The Contractor is responsible for obtaining and paying for all building permits, street permits, power line protection, damage deposits, etc., as required.

.4 The Contractor is responsible for notifying the proper municipal inspector in advance (as specified by the inspector) to complete review of any project component the local municipal authority requires. Ensuring that correct municipal reviews are completed shall be solely the Contractor's responsibility. Additional work to expose or re-do uninspected work shall be completed by the Contractor at their expense.

1.6 Substitutions

.1 Any requests for substitutions to materials and/or installations specified and/or stated in the bid documents must be submitted to the Consultant, at least ten working days prior to the intended application.

.2 Submit information regarding the proposed substitution, including manufacturer data sheets, independent test reports, performance differences compared with the specifications, and the amount of credit offered.

1.7 Project Meetings

.1 At least one week prior to start of work, attend a meeting between the Consultant, the Owner and /or Owner’s representative and the Contractor's Project Manager to discuss the work.

.2 Attend bi-weekly site meetings with the Consultant, the Owner and /or Owner’s representative at a mutually agreeable time for the discussion of progress of the work and to resolve any difficulties.

1.8 Quality Assurance

.1 Make all measurements required to perform the work. Determine site dimensions and levels so that all new work is installed to correct sizes.

.2 Protect all completed and approved work from damage. Make good any damages caused to completed work.

.3 Maintain all work completed or in progress in its condition as accepted.

.4 All work shall meet or exceed the more stringent of the manufacturer's requirements or the requirements of this Specification.

1.9 Construction Review and Testing

.1 The Contractor shall notify the Consultant and inspection and testing agents not less than 48 hours prior to each part of work being ready for review or testing. Work which requires review or testing shall not be performed on weekends or holidays unless previously agreed to.

.2 The Contractor shall be responsible for payment of costs if the work is not ready when stated and if the Consultant and inspection and testing agency are not given sufficient notice of such delay.

.3 The Owner reserves the right to deduct from the Contractor amounts for extra inspection and testing by the Consultant as required for certification of payment of work done to repair a deficiency.

1.10 Temporary Facilities

.1 Provide a means of direct communication with the site to permit continuous contact on a daily basis.

.2 Provide temporary sanitary facilities and maintain in a sanitary condition. Site facilities shall not be used by the Contractor's forces.

.3 Temporary electrical power for hand held equipment will be provided free of charge by the Owner. Arrange and pay for any usage and connection costs required for all other equipment. Do not connect to the building's power supply without written permission of building management.

.4 The existing water supply from existing hose bibs at the site may be used free of charge. Any water required in excess of this supply shall be metered and paid for by the Contractor. Be responsible for connecting to the existing services. Do not use fire system without written permission of building management. Advise Building Operations/Property Management of any procedures that may cause fire alarms to activate.

1.11 Materials and Equipment

.1 Deliver all materials to the site in their original unopened containers, with labels intact. Where applicable, check material expiry dates. Immediately dispose of all materials older than their expiration date away from the site.

.2 Store all materials and equipment in accordance with manufacturer’s written requirements, and in a dry, secure and protected manner which will not overload the structure and shall prevent vandalism or unauthorized use. Storage locations shall be approved in advance by the Owner.

.3 Be responsible for the security of all materials and equipment. Stolen or damaged goods are solely the Contractor’s responsibility.

.4 Non-specified materials shall not be brought to site. Remove any non-specified materials from site within 24 hours upon request by the Consultant.

1.12 Waste Management

.1 Material and debris resulting from the Construction shall be disposed of offsite in a timely manner. Storage locations shall be approved in advance by the Owner. Material or waste storage on structural slabs must be approved by the Consultant.

1.13 Project Closeout

.1 Flush clear all drains affected by the work.

.2 Clean site of all materials and debris created by the Construction. Remove all caulking, paints, cementitious material or the like from windows. Damaged or scratched windows must be replaced at the Contractor’s cost.

.3 Submit written acceptance that utility companies have inspected services to their satisfaction.

.4 Provide Consultant with all Warranty and Bond Certificates with:
- .1 The proper name and address of the Owner and of the Project.
- .2 The date the warranty commences, which corresponds to the date of Substantial Completion.
- .3 A clear statement of what is being warranted as referenced in the Specifications.
- .4 The signature and seal of the company issuing the warranty, countersigned by the Contractor.

.5 Attend a final walk-through with the Owner and Consultant. The Consultant will record identified incomplete and deficient work for distribution to the Contractor and Owner.

.6 Make good all known deficiencies in the work in a timely manner, but no later than 1 week.

.7 Notify Consultant of readiness for final inspection only after completion of these items.

.8 The Consultant will review completion the identified deficiencies during one review. Additional reviews required to check un-rectified deficiencies or work that remains incomplete will be charged back to the Contractor. These charges will be deducted by the Owner from the Contractor's progress payments and paid from those funds to the Consultant.

1.14 Emergencies

.1 In an emergency affecting or threatening the safety of life, the work or adjoining property, the Owner and Consultant have authority to stop the progress of the work.

.2 Provide the Owner and Consultant with the name and telephone number of a person that is available and may be contacted during off hours, weekends and holidays in case of emergency.

1.15 Cash Allowances

.1 Expend cash allowances only on written instructions from the Consultant. Use only Testing Agencies approved by Consultant.

.2 Include in each expenditure from cash allowances applicable taxes as specified in the General Conditions of the Contract.

.3 Payment shall be made only for actual charges and only at the rate for work performed during normal business hours. No overhead or profit for the Contractor will be included in these amounts. Charges for stand by time or non-productive visits caused by the Contractor or the Contractors' forces will be the Contractors' responsibility.

.4 Cash allowances for permits shall be used only for the cost of the permit. All other costs associated with obtaining any permit shall be included elsewhere.

END OF SECTION

PART 1 GENERAL

Work under this contract is to replace the existing precast (Siporex) roof deck and roofing assembly above the gymnasium as well as to perform building envelope restoration works and interior upgrades at École élémentaire Horizon Jeunesse located at 1445 Lewisham Dr. in Mississauga, Ontario.

The purpose of this remediation work is to address deteriorating precast concrete (Siporex) roof panels that are beyond their service life, provide a new roofing composition to meet current energy efficiency standards, and to repair/replace localized areas of spalling brick and deteriorated concrete block foundation around the gym perimeter exterior walls.

Additional work covered under this contract includes replacement of existing asbestos containing flooring within the gymnasium area and surrounding rooms, replacement of existing asbestos fascia overhangs on the east and west sides of the gymnasium roof, and modifications to the electrical and mechanical components (lighting, roof drains, plumbing, etc.) associated with the roof structure replacement. Construction work is to be completed between the summer months of July and August 2025. Upon selection of the successful bidder, the School Board (Conseil scolaire Viamonde) will execute a contract.

PART 2 SCOPE OF WORK – BASE BID

The work includes, but is not limited to, the following:

2.1 Item A: General Items

.1 **Mobilization/Demobilization:** Provide all labour, materials, and equipment necessary to undertake the work. Upon project completion, remove all materials and equipment and restore the site to original conditions.

.2 **Access:** Provide access as required to the gymnasium roof structure as well as within the interior and exterior areas surrounding the building to facilitate the performance and inspection of the work described herein. This shall include all related equipment, safety supervision, engineering, etc.

.3 **Interior Construction Barrier:** Supply, install and maintain a suitable construction barrier to enclose the interior work area at all times and to protect against unauthorized access. The barrier is to be set-up in the interior corridor in front of the entrance doors to the gymnasium and in front of the single door to the gymnasium within the adjacent staff room (Room 107). Provide secure framing and seal joints to mitigate the migration of dust into adjacent building spaces.

.4 **Exterior Construction Barrier:** Supply, install and maintain a suitable construction barrier around the exterior work area at all times, including to protect against unauthorized access. Provide temporary guard rails on the roof edge as required by the Ministry of Labour.

.5 **Traffic Flow:** Access for emergency routes, local traffic and parking must be maintained at all times. Supply, install and maintain signage, and flags-people as necessary to ensure smooth traffic flow through by the site.

.6 **Rigging:**

.1 Develop an engineered rigging plan to hoist the existing precast concrete roof panels and to install the new steel roof decking as required by the technical sections herein, and as otherwise necessary to complete the work. Drawings shall be prepared by a professional engineer licensed to practice in the province and are to include set-up location, travel paths, timeframe, and calculations such as load weights, center of gravity, lifting points, sling angles, and required rigging components. Include for field review by the Design Engineer and submit written acceptance.

.2 Provide all necessary controls to prevent pedestrian and vehicular access through the area in which materials are being hoisted. Be responsible for repairing any damage to landscaping, concrete and asphalt pavements created by craning operations.

.7 **Grade Level Protection:** Provide overhead protection at all building entrances/exits and all emergency and service routes. Access to the building must be maintained at all times.

.8 **Protection:**

.1 **General:**

.1 Maintain and protect all existing fixtures and finishes. The Contractor is to provide suitable forms of protection to prevent damage to existing interior wall and floor finishes, windows, doors, exterior walls, basketball nets, duct work, mechanical units (HRV in Room 106B) and adjacent roof areas during the duration of the project.

.2 Provide a means of preventing dust and debris from entering the duct work throughout all areas of the gymnasium and the HRV unit in Room 106B.

.2 **Protection During Siporex Panel Removals:** The Contractor is responsible for preventing inclement weather from entering the interior if the building as part of the existing BUR system and Siporex panel removals. The Contractor shall conduct the following:

.1 Remove existing BUR system and Siporex panels and install the new specified metal decking and gypsum board sheathing to the removed Siporex panel areas, to the amounts that can be completed within the same workday. As soon as the exterior sheathing board is installed to the metal decking and prior to each day's end, the new roof deck assembly areas are to be made watertight by the installing the specified self-adhered vapour retarder membrane, in accordance to Section 07 26 13 Roofing Vapour Retarder and the following:

.1 Temporarily tie membrane into the remaining adjacent existing roof and/or wall construction to provide a watertight seal, until returning to site to continue Siporex panel removals, and new metal deck and gypsum sheathing board installation. Use manufacturer recommended sealants and/or mastics at membrane terminations.

.2 Once the membrane is installed and prior to leaving the site at days end, inspect the membrane for punctures, tears, fishmouths, and other deficiencies that will impact the performance of the membrane from stopping water from entering the building. Conduct necessary repairs in accordance with membrane manufacturer's requirements.

.3 **Protection During New BUR System Installation:** During BUR system installation, when roofing work cannot be completed in the same day or prior to anticipated precipitation, provide a temporary water cutoff between finished metal panel installations and the membrane installed to the roof deck substrate to prevent weather damage and water from entering the finished roof assembly.

.9 **Preconstruction Deficiency Inspection:** Prior to bringing any material or equipment onto the site, inspect the landscaping, exterior components of the building, and interior spaces which will be accessed for damage, deterioration, excessive wear or soiling. Submit a photographic or video log of the observed deficiencies to the Consultant and Owner. Accept responsibility for any items not identified which require repair, painting or cleaning upon completion of the work.

.10 **Project Supervision:** Provide a Project Supervisor, to be present at the job at all times that Work is being performed, for the duration of the project. The Supervisor is to have full knowledge of the Scope of Work and be able to direct forces accordingly. The Supervisor shall be of the Contractor's own forces and shall not be a representative of a Subcontractor. Superintendence shall be competent and satisfactory to the Owner and Consultant. Superintendence shall be deemed unsatisfactory and changes or additions to superintendence can be demanded by the Owner or Consultant when control, organization, or coordination of the Work is not adequate, quality of the Work does not meet Contract Document requirements, directions given in accordance with Contract Documents are not followed, or progress is behind schedule.

.11 **Bonding:** Arrange for and obtain all necessary bonds in accordance with the Contract documents.

.12 **All Other Items:** Costs for items that are not specifically itemized and described below but are required to complete the work in accordance with the Drawings and/or Specifications, and whose quantities can be pre-determined, are to be included under "All Other Items".

2.2 Item B: Removal of Existing Roof Structure, Roofing Assembly, and Electrical Items at the Gymnasium:

.1 Supply all equipment, materials and labour to execute the Removal and Disposal of the existing precast roof deck, roofing assembly, building envelope materials and flooring within the designated work area as per the terms, conditions, drawings and specifications contained in this Request for Quotation document.

.2 Prior to executing the work, a qualified contractor is to review the Designated Substance Survey report. There are designated hazardous substances present within the working area. Contractor to supply all equipment, materials and labour for the **Abatement of Designated Substances and Hazardous Materials** in accordance with the terms, conditions, drawings and specifications received by the abatement contractor and the Consultant. Refer to **Appendix A and B** for further information.

.3 Removal of Existing Equipment at Underside of Existing Roof Deck:
- .1 Prior to removals, label and provide written record of each existing component attached to the underside of the roof deck for later reinstatement of items that are to be salvaged.
- .2 Remove and dispose of the existing light fixtures attached to the underside of the roof structure above the gymnasium, stage, storage and office rooms. Wiring and conduits servicing these fixtures are to be salvaged.
- .3 Temporarily remove, store, and salvage all conduits and fire safety detection devices attached to the underside of the roof deck to accommodate the replacement work.
- .4 Disconnect and remove the existing roof drain. Maintain existing drain piping in place.
- .5 Removal and dispose of the asbestos containing thermal insulation on the pipe fittings in Room 106A in accordance with all applicable laws, regulations and project specifications. For further information, refer to the Arcadis Asbestos Abatement Specifications in **Appendix B** of the specification package. This Work is to be completed by a qualified Contractor.

.4 Removal of Existing Roofing Assembly and Roof Deck:
- .1 Remove and dispose of the existing roof assembly and 3” precast concrete (Siporex) roof panels in the areas shown on the Project Drawings. Based on available information, the existing assembly is as follows, from top to bottom:
  - .1 Multi-ply asphalt and felt membrane with pea gravel;
  - .2 ½” perlite cover insulation;
  - .3 2.5” polyisocyanurate base insulation; and,
  - .4 RAAC (Siporex) 3” thick panels on Open Web Steel Joists (OWSJs).
- .2 Based on information obtained from the project site, the following is the existing connections of the existing Siporex roof deck:
  - .1 The existing panels are anchored to the existing OWSJs via uplift clips. The clips are provided between each panel joint and are wrapped around the top chord of each of the OWSJs.

.5 Removal of Existing Transite Cement Board Cladding at Gymnasium Roof Canopy Eyebrows:
- .1 Remove and dispose of the asbestos containing cement board soffit and fascia on the exterior east and west sides of the Gymnasium (Room 106) in accordance with all applicable laws, regulations and project specifications. For further information, refer to the Arcadis Asbestos Abatement Specifications in **Appendix B** of the specification package. This Work is to be completed by a qualified Contractor.

.2 Remove and dispose of underlying plywood substrates and supporting wood blocking of the cement board soffit and fascia, to expose the existing metal framing of the canopies.
.3 Remove and dispose of the existing insulation within the canopies.

2.3 Item C: Removal of Existing Flooring within Rooms 106, 106B, and 106C:

.1 Remove and dispose of the existing asbestos containing vinyl tiles and mastic within Rooms 106, 106B, and 106C within the gymnasium. All asbestos containing floor tiles and associated asbestos mastic are to be removed and disposed of by a qualified contractor in accordance with all applicable laws, regulations and project specifications.

.2 All non-asbestos vinyl baseboards in Rooms 106, 106B, and 106C and the landing on the stair to stage area are to be removed as asbestos waste, as it is attached to asbestos paint on the concrete block walls. All non-asbestos vinyl floor tiles and associated asbestos mastic in Room 106C are also to be removed as asbestos waste.

2.4 Item D: Installation of New Roof Structure, Roofing Assembly, and Electrical Items at the Gymnasium:

.1 Supply all equipment, materials and labour for the installation of the new roof structure and assembly within the designated work area as per the terms, conditions, drawings and specifications contained in this Request for Quotation document.

.2 Clean all existing steel structure free from rust and touch up rusted areas with corrosion resistant paint prior to installation of metal deck.

.3 Install new 3” deep cellular acoustical metal deck, complete with factory applied sound absorbing acoustical insulation, over existing OWSJs. Fasten new deck to the existing open web steel joists (OWSJs) at all bearing points with powder-actuated mechanical fasteners in accordance with manufacturer’s instructions.

.4 Inspect all surfaces of deck after erection and touch-up with zinc-rich paint where protective coating has been scratched or damaged.

.5 Cut openings in roof deck for facilitating new roof drains at the locations shown on the Drawings. Notify Consultant and Owner for review and approval of new drain locations. Reinforce the openings as required by the technical specifications.

.6 Install a new conventional BUR system over the new metal deck, with the following to achieve specified warranties, from bottom to top:
.1 0.5” glass-mat faced gypsum sheathing panel, adhered;
.2 New self-adhered vapour barrier;
.3 New 6” polyisocyanurate insulation, installed in 2 layers of 3” thickness, adhered;
.4 New polyisocyanurate tapered insulation system, with drain sumps, adhered;
.5 New asphalt impregnated fibreboard, adhered; and,
.6 New 4-ply asphalt and felt membrane with pea gravel surfacing.

.7 Build new parapets as per the Drawings and in accordance with the technical specifications to accommodate the new roof system.

.8 Install 2 new roof drains at the locations shown on the drawings. Include for installation of additional drainpipe and tie-in to existing plumbing system. Include for hangers, etc. as required to mount to ceiling interior.

.9 Install new sheet metal flashings along the roof perimeter including counter and cap flashings.

.10 Prepare, clean, prime and paint underside surface of new structural metal deck. Painting application to include all exposed surfaces of the OWSJs and air distribution duct work in Rooms 106, 106A, and 106B.

.11 Install new LED light fixtures in Rooms 106, 106A, 106B, and 106C. Attach new fixtures, matching attachment methods as existing fixtures.

.12 Re-instate all conduits and fire safety detection devices, fastened to the underside of the new roof deck. Recommission all electrical and fire safety systems once re-instated.

.13 All electrical work to be carried out be licensed electricians skilled in the work to be performed and having a minimum of 5 years or experience in the electrical installation field. Only first-class workmanship will be accepted with respect to safety, accessibility, durability, neatness of detail, and appearance. Contractor to submit proof of record licenses for electricians working on this project.

.14 Arrange for inspections required by Authorities having Jurisdiction in the area where work will take place, including ESA.

2.5 Item E: Install New Cladding at Roof Canopy Eyebrows Overhangs:

.1 The Work of this item includes enclosing the existing openings between the canopy eyebrows and the exterior wall of the Gymnasium to provide an environmental separation. Installation of new metal wall cladding on all three sides of the canopy eyebrows and installation soffit panels at the underside of the eyebrows are also included.

.2 Enclose existing openings between the canopy eyebrows and the Gymnasium by the following:

- .1 Install 2x6 blocking on top of the existing steel I-Beam located at the openings;
- .2 Install new 0.5” exterior sheathing board to existing vertical L-Hangers on the interior side of the canopies, provided at each OWSJ location for the length of the canopies. Fasten sheathing board to the L-Hangers and wood blocking;
- .3 Notch the exterior sheathing board where required to facilitate installation around the top chords of the OWSJs and other structural penetrations within the canopy spaces;
- .4 Exterior sheathing board to be installed tight to adjacent surfaces, including at notched locations. Seal penetrations through sheathing board with sealant;

.5 Prime and install self-adhered vapour permeable membrane to sheathing board and all other surfaces to facilitate a continuous installation, from underside of the new roof deck and to the window framing/masonry assembly at the base of the canopy eyebrows; and,
.6 Install new 6" stone wool insulation over the membraned sheathing board, from underside of the new roof deck to bottom of the canopy eyebrows. Insulation installation to be continuous across all wall surfaces for the length of the canopy eyebrows.

.3 Install new metal wall cladding assembly as follows:
.1 Install new 0.5" exterior sheathing board to existing vertical L-Hangers on the exterior side of the canopies, provided at each OWSJ location for the length of the canopies;
.2 Prime and install non-vapour permeable self-adhered membrane to the sheathing board. The membrane is to be made continuous from the top of the parapet to the underside of the L-Angle structure of the canopies. The new roofing membrane flashing is to lap over the this membrane, from the top of the parapet, a minimum of 2";
.3 Install new Vicwest AD300 pre-finished metal cladding panel system with hidden fasteners, to ½" galvanized hat channels installed over the self-adhered membrane; and,
.4 Installation of new metal cladding panel system to include all manufacturer flashings, trims, closures, fasteners, etc.

.4 Install new soffit panels as follows:
.1 Install new Vicwest AD300 pre-finished metal cladding panel system with hidden fasteners, to existing horizontal L-Angles provided at the bottom of the canopy structures, aligned at each OWSJ location for the length of the canopies;
.2 Install continuous soffit vent reveal strip, within maximum 4" from the edge of the soffit of the canopy. Soffit vent to be integrated and mechanically locked with adjacent soffit panels;
.3 Finished surface of soffit to align with underside finished surface of the metal closures at the bottom of the wall cladding assembly; and,
.4 Installation of new metal soffit panels to include all manufacturer flashings, trims, closures, fasteners, etc.

2.6 Item F: Installation of New Flooring within Rooms 106, 106B, and 106C:

.1 Once the new roof deck and roof membrane system has been installed and made watertight, install new vinyl composition tiles (VCT) complete with baseboards to the floors in Rooms 106, 106B, and 106C in accordance with the project drawings and specifications.

.2 Upon completion of the VCT installation, prepare VCT surface and install vinyl tape to delineate Gymnasium game line markings. Refer to Project Drawings for game line layouts required.

.3 Clean, seal and wax floor and base surface to flooring manufacturer's instructions.

2.7 Item G: Excavate, Repair and Protect Foundation Wall:

.1 At locations shown on the drawings, locate underground utilities and excavate along the perimeter of the gymnasium west foundation wall to expose the entire extents of the concrete block foundation wall. Excavate to a length of 18' and to a depth of 50", to also expose the foundation wall footing. The excavation shall be of a width that allows the repair and protection of the masonry block foundation wall. Take measures to prevent undermining footings.

.2 Dispose of excavated material off site. Asphalt pavement shall be removed during excavation and reinstated after excavation backfill.

.3 Review the foundation block walls and identify all deteriorated blocks for review with the Consultant.

.4 Once receiving instructions from the Consultant to proceed, remove and replace loose, spalled, cracked or otherwise deteriorated blocks, taking care not to damage adjacent block units. Shore masonry units above removed locations to prevent damage to the remainder of the wall.

.5 Clean existing block units that are to be left in place of loose materials. Install new block units and infill with grout as per Project Specifications.

.6 Clean surface of concrete block foundation wall from dirt and apply coating protective liquid applied membrane, complete with protection board, to the foundation wall to prevent further deterioration of the concrete blocks. Acceptable membrane products: Tremco TREMproof 250GC or approved alternative. Acceptable protection board products: Tremco Protection Mat or approved alternative. Install membrane and protection layers in accordance with manufacturer's requirements.

.7 Backfill around the excavated weeping tile with 25mm clear drainage stone wrapped in filter fabric. Provide a 2' layer of drainage stone over the existing weeping tile.

.8 Backfill remainder of excavation with Granular 'B' and Granular 'A' in maximum 12" lifts and compact to 100% SPMDD prior to beginning new lift. Provide a 6" Granular 'A' layer over the Granular 'B' layer.

.9 Provide 3" of new HL3 asphalt, compact to 92% of the Maximum Relative Density (MRD) in accordance with O.P.S.S. 310

.10 Provide 20mmx20mm deep saw-cut or routed joints in the asphaltic surface, between new and existing asphalt. They shall be done as part of all surfacing work. Install hot poured traffic surface sealant in accordance with the manufacturer's specifications. Acceptable product: Tremco PQ 6190 or approved alternative.

.11 Arrange for the presence of an independent testing agency selected by the Consultant:
- .1 Granular base course testing by an independent agency shall be in accordance with O.P.S.S. 1010.
- .2 Provide asphalt testing by an independent agency in accordance with O.P.S.S. 310.

2.8 Item H: Localized Masonry Repairs above Grade:

.1 Replace and repoint all deteriorated and loose concrete masonry units and mortar and re-caulk control joints, at the gymnasium exterior walls above grade as shown on the Drawings. All work is to be completed in accordance with the technical specification and Drawings herein. Contractor to remove temporarily items attached to the walls (i.e. lighting, conduit, banners) as required to facilitate the repair work.

.2 Localized Brick Repair:
- .1 Review the exterior brick walls and identify all deteriorated bricks for review with the Consultant;
- .2 Once receiving instructions from the Consultant to proceed, remove and replace loose, spalled, cracked or otherwise deteriorated brick units, taking care not to damage adjacent brick units;
- .3 Remove all mortar and dust from adjacent surfaces prior to laying new brick; and,
- .4 Install new brick to match the existing for size, texture, colour, and coursing.

.3 Localized Mortar Joint Repair:
- .1 Review the exterior brick walls and identify all deteriorated mortar joints for review with the Consultant;
- .2 Once receiving instructions from the Consultant to proceed, rout out loose, spalled, cracked or otherwise deteriorated mortar joints, and strike edges of removals flush with a chisel, taking care not to damage adjacent brick units;
- .3 Remove all mortar and dust from adjacent surfaces prior to installing new mortar; and,
- .4 Re-point joints with a colour matched mortar and mortar suitable for adjacent material. Joint profile to match existing.

2.9 Item I: Interior Clean-Up:

.1 Clean all dust and debris on interior surfaces, including but not limited interior wall and floor finishes, equipment, etc. that was generated from the Construction, upon completion of the Work.

.2 Have all mechanical duct work within the area of Work professionally cleaned upon the completion of the Work, in accordance to Section 23 01 30.51 HVAC Air Distribution System Protection and Cleaning.

2.10 Item J: Cash and Contingency Allowances

.1 **Cash Allowance for Permits and Testing:** Arrange and pay for permits as outlined with the technical sections of this specification. Arrange and pay for third party testing as outlined with the technical sections of this specification.

.2 **Contingency Allowance:** To cover repairs to unforeseen or concealed conditions found during construction. Work under this item is only to be completed under direction of the Consultant in writing.

END OF SECTION

PART 1 SUBMISSION REQUIREMENTS

1.1 Purpose

This section is to be read in conjunction with, and supplement procedures for submittals as outlined in CCDC-2 conditions, Supplementary Conditions to the Stipulated Price Contract (CCDC 2 – 2020), and Specification Section 01 00 00 – General Conditions.

1.2 Acceptable Forms

.1 Acceptable forms of submission are hard copy delivered to the Consultant's address or electronic transmission to the Consultant in .pdf format.
  .1 Electronic submissions exceeding 10 Megabytes in size require coordination for delivery to the Consultant via email.

1.3 Transmittal

.1 Each submission by the Contractor shall be accompanied by a transmittal sheet. The transmittal sheet shall include:
  .1 Name and address of project prominently displayed;
  .2 Name of Contractor, Owner, and Consultant;
  .3 Date of submission; and,
  .4 Itemized list of the contents of the submission, including relevant specification section for each item and number of pages or samples associated with each item.

1.4 Product Data

.1 Manufacturer's product data sheets and material safety data sheets shall be submitted for all products being used in the completion of the work.

1.5 Samples

.1 Each sample provided by the Contractor shall be an accurate representation of the work to be completed. They shall be prepared using the same tools to be used in completion of the work.

.2 Samples submitted for colour selection or texture only shall be noted as such on the submission transmittal.

.3 The Consultant will retain sample submissions until completion of the work.

.4 Where colour or texture samples are submitted the manufacturer's name, product name and colour or texture shall be clearly indicated on the sample.

1.6 Shop Drawings

.1 Shop drawings shall be reviewed by the Contractor for general conformance to specifications prior to submission to the Consultant. The Contractor shall affix a company stamp to the drawings indicating their review.

.2 Drawings to clearly indicate dimensions in metric scale.

.3 Drawings shall clearly detail all anchor points, connections, transitions, and methods of attachment.

.4 Drawings requiring design by a Professional Engineer, including but not limited to metal deck and scaffolding design, shall be signed and sealed by a Professional Engineer licensed to practice in the province of Ontario.

1.7 Others

.1 Any other submittal not fitting a category called out above (ex. Letter from a manufacturer, etc.) shall be subject to the same submission requirements as outlined in this document.

PART 2 GENERAL SUBMISSIONS

2.1 Required Submissions

.1 Prior to commencement of any work the Contractor shall submit to the Consultant the following:
- .1 Detailed project schedule, showing key milestones and contingency days;
- .2 Notice of Project;
- .3 WSIB Clearance;
- .4 Insurance Certificates (with Conseil scolaire Viamonde and MTE Consultants Inc. listed as additionally insured);
- .5 50% Performance Bond;
- .6 50% Labour and Materials Bond;
- .7 Emergency Contact Information; and,
- .8 Workers' Training Certificates (Working at Heights and other relevant certifications).

PART 3 SECTION SPECIFIC SUBMITTALS

3.1 General

.1 No work of any section shall be commenced until all submissions of that section have been approved and returned to Contractor by the Consultant.

.2 Coordinate submission of all items of a single section to prevent delays and duplicate submissions.

.3 The Consultant will be entitled to 10 working days from the date of receipt for review of all submissions. If a submission is time sensitive, requiring review prior to end of 10 working days, the Consultant must be notified in writing of the date review must be completed and the reason for the earlier date at the time the original submission is made.

3.2 Submittal Schedule

.1 The following submissions must be made to the Consultant:

Section	Required Submittals
00 21 13 - Instructions to Bidders	Agreement to Bond in the amount of 50% of the Estimated Contract Price plus Tax for Performance and for Labour and Materials. The Standard Agreement to Bond Form must be executed on behalf of the Surety Company by its authorized officers under the company's corporate seal. Surety bonds shall be provided by a company licensed to provide Bonds in the Place of Work.
00 21 13 - Instructions to Bidders	Performance Bond (Original document required) The Performance Bond shall remain in effect for a period of 2 years from the date of Substantial Performance as defined in the governing lien legislation (or, where no definition exists, the date when work is ready for use or is being used for the purpose intended).
00 21 13 - Instructions to Bidders	Labour and Materials Bond (Original document required) The Labour and Materials Bond shall remain in effect for a period of 1 year following the date upon which work under the contract ceases.
00 73 02 - Supplementary Conditions	General Liability Certificate of Insurance in CSIO or equivalent format with named as additional insured.
01 00 00 - General Requirements	Schedule with details of each aspect of the work.
01 00 00 - General Requirements	Building Permit
01 00 00 - General Requirements	Professional Liability Insurance and Certificate of Authorization for Engineer’s Engaged by the Contractor (If applicable).
01 00 00 - General Requirements	Pre-existing Deficiencies in work areas. If one is not submitted, the Contractor is responsible for addressing the deficiencies if the Consultant suspects the deficiency may have been caused by the work.
04 21 13 - Brick Replacement	Brick Replacement Engineered Shoring Drawing(s) showing the design criteria, including limits and the procedural sequence to be followed for shoring installation at the

Section	Required Submittals
	CMU Wall. Engineer to confirm the supports elements will not be overloaded.
04 21 13 - Brick Replacement	3 samples of Brick Veneer.
07 21 14 - Conventional Roof Insulation	Conventional Roof Insulation Drawing showing the securement for insulation board, including fastener pattern, spacing and type of fastener.
07 21 14 - Conventional Roof Insulation	Tapered Insulation Shop Drawing identifying the location of each insulation panel.
07 46 19 – Prefinished Metal Cladding	Steel Siding Engineered Shop Drawings and Calculations (3 copies) to include: 1. Details at window head; cladding termination at the roof; corners, inside and outside; termination at sides; and termination at bottom. 2. All components of the assembly showing construction, methods of joining, bonding, fastening, sealing, anchorage as well as type of material, thickness, finishes and other pertinent details. 3. Provide engineering calculations in support of cladding fastener and masonry anchor locations shown. Show calculations of expansion/contraction allowances and gaps.
07 51 13 - Built-up Asphalt Roofing	Manufacturer's Warranty Certificate.
07 51 13 - Built-up Asphalt Roofing	Material Cut Sheets
07 62 00 - Sheet Metal Flashing and Trim	Shop Drawing for Sheet Metal and Flashing of typical details and means of attachment.
07 62 00 - Sheet Metal Flashing and Trim	Sample Sheet Metal Flashing and Trim of each flashing/trim type and colour (2 of each). Samples shall represent the extreme variations in the expected finish colour.
09 65 19 – Resilient Tile Flooring	Vinyl Composite Tiling Sample Panels of each type (300x300mm), including sample of base board. Samples are to be clearly labelled.
09 65 19 – Resilient Tile Flooring	Colour samples of Vinyl Gym Marking Tape.
26 00 00 - Electrical Work	Engineered Electrical Work Shop Drawings of all major equipment, fixtures and systems, including, but not limited to: 1. lighting fixtures complete with list of lamps.

Section	Required Submittals
23 01 30.51 – HVAC Air Distribution System Protection and Cleaning	Submittals listed in the specification section.
	Qualification Data listed in the specification section.
Appendix B - 02 82 00 – Asbestos Remediation	Submittals listed in specification sections.

PART 4 MOCK-UPS

4.1 General

.1 No mock-up shall be constructed prior to submission and approval of all required submittals related to the work of the mock-up.

.2 Build mock-ups on site for review and approval prior to beginning construction of the work. Approved mock-ups will constitute part of the finished construction where finishes and textures are the same as those selected by the Owner.

.3 Mock-up installation location will be selected by the Consultant.

.4 Mock-up shall be completed by the same workers who will be completing the full construction, using the tools and products to be used during regular construction.

.5 The Contractor will alert the Consultant and the Owner prior to commencement of the mock-up construction. Construction of the mock-up is not to commence unless the Consultant is present on site.

.6 The Consultant may require field testing of the mock-up. The mock-up will not be approved until such field tests as are deemed necessary have been passed.

.7 Mock-up construction shall be completed such that the construction schedule is not delayed due to corrections or material lead times.

4.2 Mock-up Schedule

.1 The following mock-ups are to be constructed for review by the Consultant:

Section	Required Mock-Ups
07 51 13 - Built-up Asphalt Roofing	**Metal Roofing System:** One mock-up to include field and parapet details including all assembly components (membrane, insulation, vapour barrier).
	Typical Penetration Flashing: One mock-up to include typical penetration flashing installation.
07 62 00 - Sheet Metal Flashing and Trim	**Sheet Metal Flashing and Trim Details for Sloped Roofing:** One mock-up to include all sheet metal transition details, 2400mm in length. The mock-up shall be complete with all securement fastening installed.

4.3 General

.1 All warranties provided under this section are in addition to those required of the standard CCDC 2 contract as amended by Supplementary Conditions to the Stipulated Price Contract (CCDC 2 -2020).

.2 Unless otherwise stated, the warranty shall include, at no cost to the Owner, all labour and materials to correct the defects and deficiencies. This shall include removal and reinstating components where required to gain access to the defect and/or deficiency. The warranty shall include all performance and aesthetic related issues as determined by the Consultant, such as leakage, de-bonding, corrosion, fading, discolouration, etc. The warranty excludes reasonable wear and tear.

4.4 Warranty Schedule

.1 Provide the following warranties:

Section	Required Warranties	Warranty Period
07 46 19 – Prefinished Metal Cladding	Manufacturer's Warranty against warping, paint fade.	5 Years
07 51 13 - Built-Up Asphalt Roofing	Membrane Manufacturer Full System Labour, Material and Workmanship Warranty, NDL. Any leaks through any element of the roofing system shall be repaired, upon notification of leakage, to match the specified conditions and quality at no cost to the Owner.	10 Years

END OF SECTION

PART 1 GENERAL

1.1 General

Conform to the requirements of the **General Requirements** and **Scope of Work**.

1.2 Related Sections

.1 Section 23 01 30.51 - HVAC Air Distribution System Cleaning.

1.3 Pre-construction Deficiency Inspection

.1 Prior to bringing any material or equipment onto the site, inspect the landscaping, lobbies and corridors which will be accessed for damage, deterioration, excessive wear or soiling. Submit a photographic or video log of the observed deficiencies to the Consultant and Owner. Accept responsibility for any items not identified which require repair, painting or cleaning upon completion or work.

1.4 Protection of Property

.1 Provide drop cloths or tarps on corridor floors at all paths used by the workers.

.2 Be responsible for maintaining fire access to the building and necessary barricades or signs to control unauthorized access or use.

.3 No storage of materials, tools and equipment will be permitted in hallways and said items must not restrict any paths of egress.

.4 Provide plywood sheathing on the built-up roof areas where equipment is stored. Note that material storage is NOT permitted on the roof and shall be stored at grade in a secured enclosure.

.5 Removed items (roofing, structure etc.) and other debris shall be directly removed to grade and disposed of. Debris cannot be stored on the structure at any time.

.6 Supply and install interior scaffolding and protection within the general purpose room in accordance with the scope of work.

.7 Ensure that interior spaces are made water-tight at the completion of each working day.

1.5 Interior Clean-Up

.1 All waste shall be removed from the interior common spaces the same day that it is generated.

.2 At the completion of the work, clean and polish all floors in the paths of travel used.

END OF SECTION

PART 1 GENERAL

1.1 Description

This section species the materials and methods for brick replacement, masonry repointing, and connecting masonry to its structural backing.

1.2 Related Requirements

.1 Section 07 62 00 Sheet Metal Flashing and Trim.

.2 Section 07 92 00 Sealants.

1.3 References

.1 ASTM International:
- .1 ASTM A36/A36M-12, Standard Specification for Carbon Structural Steel.
- .2 ASTM A167-99(R2009), Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
- .3 ASTM A580/A580M-13a, Standard Specification for Stainless Steel Wire.
- .4 ASTM A641/A641M-09a, Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
- .5 ASTM A666-10, Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
- .6 ASTM C216-13, Standard Specification for, Facing Brick (Solid Masonry Units Made of Clay or Shale).

.2 CSA Group:
- .1 CSA A23.1/A23.2-09, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.
- .2 CAN/CSA-A179-04(R2014) Mortar and Grout for Unit Masonry.
- .3 CAN/CSA-A370-04(R2009), Connectors for Masonry.
- .4 CAN/CSA-A371-04(R2009), Masonry Construction for Buildings.
- .5 CSA S304.1-04(R2010), Design of Masonry Structures.
- .6 CAN/CSA-A82-06(R2011), Fired Masonry Brick Made From Clay or Shale.

1.4 Site Conditions

.1 Assemble and erect components when temperatures are above 4°C.

.2 Hot Weather Requirements:
- .1 Protect freshly laid masonry from drying too rapidly, by means of waterproof, non-staining coverings.
- .2 Grout shall be placed in masonry at a maximum temperature of 50°C.
- .3 Avoid repointing areas that will be exposed to direct sunlight unless precautions are taken to avoid exceeding the specified maximum temperature.
- .4 Spray mortar surface at intervals and keep moist for maximum of 3 days after installation.

1.5 Delivery, Storage and Handling

.1 Deliver materials to job site in dry condition.

.2 Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.4 Store and protect masonry accessories from nicks, scratches, and blemishes.

.5 Keep materials dry until use except where wetting of bricks is specified.

.6 Replace defective or damaged materials with new.

1.6 Inspection and Testing

.1 Brick Replacement:
- .1 Notify Consultant for review of the following:
  - .1 Identification of bricks to be removed; and,
  - .2 Brick replacement.

1.7 Quality Assurance and Qualifications

.1 The masonry contractor shall have a minimum of five years of experience on projects of similar size and magnitude and shall provide continuous active supervision while masonry work is in progress.

.2 Site personnel to be trained in Infection Prevention and Control measures necessary for mitigating dust migration into the Hospital.

1.8 Site Measurements

.1 Make site measurements necessary to ensure proper fit of members.

PART 2 MATERIALS AND PRODUCTS

2.1 Manufactured Brick Units

.1 Manufactured Clay Brick Units: to CAN/CSA-A82:
- .1 Type: S
- .2 Grade: EG
- .3 Size: to match existing
- .4 Colour and texture: to match existing
- .5 Solid

2.2 Concrete Block Units

.1 Concrete masonry units (CMUs) shall conform to ASTM C90 – Standard Specification for Loadbearing Concrete Masonry Units.
.2 Units shall be normal weight.
.3 Minimum compressive strength shall be 1,900 psi (13.1 MPa) unless otherwise specified.
.4 CMU dimensions shall be nominal 12" x 8" x 16", with actual dimensions complying with standard tolerances.
.5 Block type: Hollow and grouted

2.3 Masonry Mortar Above Grade

.1 Use same brands of materials and source of aggregate for entire project.

.2 Water: potable and free of deleterious matter and acids and alkalis.

.3 Pre-Bagged Mortars for Masonry Veneer:
  .1 Pre-bagged Type N mortar, CSA A179 low alkali content cement, with white, type 10, non-staining Portland cement and pre-mixed aggregate (standard grey/beige aggregate, not white silica sand), or approved equivalent:

Manufacturer	Product
Daubois Inc.	Betomix Plus Type N
King Packaged Materials Co.	King 1-1-6 mortar mix
Or Approved Equivalent	

  .2 Match mortar as close as possible to existing with respect to colour and texture, as approved by Owner. Coordinate with manufacturer to batch trial mixes for comparison with original mortar. Once accepted by Consultant and Owner, ensure production batches match approved mix design for aggregate mix to maintain uniform colour.

2.4 Mortar and Grout for Concrete Block Units

.1 Mortar shall conform to ASTM C270 – Standard Specification for Mortar for Unit Masonry.

.2 Mortar type: Type S for reinforced masonry, foundation walls, and high-strength applications.

.3 Cementitious materials shall conform to ASTM C150 (Portland Cement) or ASTM C595 (Blended Cement).

.4 Sand shall comply with ASTM C144 – Standard Specification for Aggregate for Masonry Mortar.

.5 Grout (for CMU cores):
  .1 Grout shall conform to ASTM C476 – Standard Specification for Grout for Masonry.
  .2 Grout type:
    .1 Fine grout for spaces less than ¾ inch (19mm).
    .2 Coarse grout for spaces larger than ¾ inch (19mm).
    .3 Minimum compressive strength shall be 2,000 psi (13.8 MPa) at 28 days.

2.5 Masonry Anchorage and Reinforcing

.1 General:
  .1 All masonry connectors shall meet the minimum requirements for strength and corrosion protection as defined in CSA A370.
  .2 All hot-dipped galvanized components shall be hot dipped after fabrication.
  .3 All components required to be stainless steel shall be as per ASTM A580/A666.
  .4 Unless otherwise specified, the minimum pullout connector strength shall be 1000N (1kN).

.2 Replacement Dove Tail Ties:
  .1 Where encountered in areas of brick removal, replace corroded dove tail ties with new ties with the following characteristics:

Characteristic	Measurement
Thickness	1.52 ± 0.15mm
Width	25 ± 2mm
Minimum width at neck of dovetail	13mm
Length of dovetail end	25mm
Length of hook at mortar embedment end	6mm
Single corrugation	2mm high located 25mm from hook to match the existing

2.6 Moisture Control

.1 Weep Hole Vents: Goodco Brick vents or approved equivalent.

2.7 Flashings

.1 Sheet metal drip edges and end dams:
  .1 Refer to Section 07 62 00 – Sheet Metal Flashing and Trim.

.2 Membrane Flashings:
.1 Use one of the following products for membrane flashing between block or concrete backup to brick:

Manufacturer	Product
Bakor	Blueskin TWF or SA
Grace Waterproofing Products	PERM-A-BARRIER®
Tremco	Exo-Air Membrane
Or Approved Equivalent	

.3 Accessories:
.1 3mmx25mm flat mechanical fastening bar with 45° or 90° bent sealant edge, hot dipped galvanized steel or aluminum with compatible countersunk fasteners, connected at 200mm spacing. Add fasteners where contact is not firm between fasteners.
.2 Termination sealant shall be compatible with the membrane flashing, a cold applied rubberized asphalt.

PART 3 EXECUTION

3.1 Sequence of Work

.1 Perform repairs to the concrete block foundation prior to masonry repairs.

.2 Once foundation repairs are done, perform removals from the upper most masonry unit and proceed down. At all times ensure that masonry adjacent to the work area is fully supported against vertical and lateral movement.

.3 Repair back-up wall as required, to provide a sound substrate for anchors and to provide a solid back up, free of voids.

.4 Reinstate masonry units. Anchor units to back-up wall / provide lateral joint reinforcement as indicated by Consultant.

.5 Repoint joints around masonry units to match existing. Mortar joint colour shall be approved by the Owner.

3.2 Preparation

.1 Survey the affected area to determine the extent of damage and identify any structural concerns.

.2 Remove all debris, loose mortar, and damaged block units in a manner that minimizes disturbance to adjacent masonry.

.3 Install temporary supports or bracing as required to maintain structural integrity.

.4 Clean all contact surfaces to ensure proper bonding of new masonry work.

.5 In areas of work, identify salvageable bricks with Consultant.

3.3 Removals

.1 Remove chipped, cracked, and otherwise damaged units in exposed masonry and replace with undamaged new units.

.2 Remove existing masonry to the extent required using sufficient care so as not to disturb existing sound masonry, which is to remain.

.3 Avoid cutting into backup concrete, concrete block or masonry. Do not overcut into adjacent cladding or structural components. Stop sawcut short of removal limits and remove remaining mortar by hand with hammer and chisel.

.4 Do not remove masonry connectors where exposed.

.5 Provide shoring as necessary to adequately support masonry at all times. As a minimum, the shoring system shall ensure that no more than a 1m width of masonry is unsupported at any time.

.6 Reinstate at no cost to the Owner, such surrounding undamaged and sound masonry units that have been loosened or damaged by the Contractor during demolition.

.7 Remove all existing mortar from the bonding surface.

.8 Carefully dismantle, clean, and store bricks for re-use if approved by the Consultant.

3.4 Pre-bagged Mortars

.1 Mix masonry mortar in accordance with CSA A179 except where specified otherwise.

.2 Obtain samples of existing mortar from below surface of existing joints. Do not include soiled mortar.

.3 Supply factory coloured mortar to match existing “clean” mortar colour.

.4 Strictly follow mixing procedures called for by the manufacturer. Prepare and mix mortar materials under strict supervision and in small batches for immediate use only. Restrict mortar batching to one experienced worker. Use calibrated equipment. The consistency of grout shall be as recommended by the manufacturer.

.5 Use mortar within 2-1/2 hours when air temperature is less than 25^0C and within 1-1/2 hours when air temperature is 25^0C or higher, or as directed by manufacturer.

3.5 Unit Masonry Restoration

.1 Install new masonry units to match existing lines and levels.

.2 **Bond:** to match existing at masonry veneer. Half Running bond at CMU.

.3 **Coursing Height:** to match existing.

.4 **Jointing:** to match existing.

.5 **Mixing and blending:** mix units within each pallet and with other pallets to ensure uniform blend of colour and texture.

.6 Clean unglazed clay masonry as work progresses.

3.6 Installation of Replacement Concrete Block Units

.1 Install new concrete block units of the same size, strength, and composition as the existing blocks, unless otherwise specified.

.2 Lay blocks in a running bond pattern, ensuring proper alignment with adjacent masonry.

.3 Apply Type S mortar as per project specifications, ensuring full head and bed joints.

.4 Tool joints to match the existing profile and finish of adjacent masonry.

.5 Remove excess mortar and clean newly installed blocks with a damp sponge before it hardens.

3.7 Installation of Through-Wall Flashing

.1 Placement:
- .1 Install new through wall flashing at all locations where the masonry above the foundation wall has been removed.
- .2 Ensure flashing extends at least 6 inches (150 mm) vertically up the backup wall and laps behind the weather-resistive barrier.
- .3 With a hand roller, press all membrane surfaces firmly against the substrate.

.2 Lapping and Sealing:
- .1 Overlap flashing sections by a minimum of 4 inches (100 mm) and seal laps with manufacturer-approved adhesive or sealant.
- .2 End dams shall be formed at terminations to prevent lateral water migration.
- .3 Flashing shall extend beyond the face of the wall by at least ½ inch (12 mm) and be turned downward to form a drip edge.

.3 Attachment:
- .1 Install mechanical fastening bar horizontally along top edge of membrane flashing. Install fasteners as required to achieve tight contact with membrane. Seal top horizontal membrane edge with a cap bead of termination sealant, such that the sealant has a minimum bite of 6mm on the back-up wall substrate and the fastening bar.

.4 Integration with Weep Holes:
- .1 Install weep holes at a maximum spacing of 24 inches (600 mm) along the flashing line.

.2 Use open head joints, weep vents, or plastic tubing as specified.
.3 Ensure weep holes are free of mortar blockage to allow proper drainage.

3.8 Brick Replacement

.1 Repoint all sawcuts or void joints in backup concrete or block prior to replacing brick.

.2 Except in cold weather, wet bricks having an initial rate of absorption exceeding 1 g/minute/1000mm^2 wet to uniform degree of saturation, 3 to 24 hours before laying and not lay until surface dry. For bricks requiring wetting wet tops of walls when recommencing work.

.3 Make bonding surface of existing masonry damp prior to laying new bricks.

.4 New bricks shall be dry prior to laying. Keep face free from stains, chips and cracks. Do not use chipped, cracked or deformed units.

.5 Lay masonry in bonding to match existing in full beds of mortar. In areas of existing brick where bricks are to be replaced, maintain existing bonding pattern. Maintain lines and levels. Maintain vertical face of brick within 3mm.

.6 Buttering corners of units, throwing mortar droppings into joints, deep or excessive furrowing of bed joints, will not be permitted.

.7 Do not shift or tap units after mortar has taken initial set. Where adjustment must be made after mortar has started to set, remove mortar and replace with fresh supply.

.8 When mortar is "thumbprint" hard, tool all mortar joints slightly concave or to match existing. Use sufficient force to press mortar tightly against brick units on both sides of joints.

.9 Lay all joints nominally 10mm thick. Align coursing with existing brickwork.

3.9 Masonry Anchorage and Reinforcement

.1 General:
  .1 Install ties as required by the Scope of Work, drawings, or as directed by the Consultant.
  .2 Adjust connector or tie locations and spacing as required to prevent penetrating through-wall flashings.
  .3 Install connectors and ties in conformance with the manufacturer’s written specifications and CSA-A370.
  .4 Take measures to monitor drilled holes depths to monitor for variations in cavity and wythe widths, and to avoid damaging interior elements.

.2 Tie Spacing:
  .1 Ties shall be located within 300mm from the top of the masonry panels and within 400mm above the bottom of the masonry panels.
  .2 At openings (windows, doors, louvres, etc.), ties shall be located not more than 300mm from the edge of openings.

.3 In the “field” of the masonry wall, install ties at maximum 800Hx600Vmm on centre.

3.10 Repointing Mortar Joints

.1 Identify areas to be repointed with the Consultant.

.2 Rake the mortar joints square to a depth of 2 to 2-1/2 times the joint thickness.

.3 Remove all loose material from surfaces of the adjacent masonry.

.4 Clear out joints with water to get rid of all loose debris.

.5 Fill the joints with pre-bagged mortar. The mortar shall be well compacted with the substrate.

.6 Mortar joint and colour shall match existing joints.

3.11 Cleaning

.1 All dusting, mortar droppings or other stains on masonry or other surfaces, which were generated by the work, shall be removed as the work progresses.

.2 Perform further cleaning after mortar has set and cured.

.3 Clean masonry with stiff natural bristle brushes and plain water only. Vinegar or chemicals are not to be used without approval of the Consultant.

3.12 Protection

.1 Keep masonry dry using waterproof, non-staining coverings that extend over walls and down sides sufficient to protect walls from wind driven rain, until masonry work is completed and protected by flashings or other permanent construction.

.2 Cover completed and partially completed work not enclosed or sheltered with waterproof coverings at the end of each work day. Anchor securely in position.

.3 Provide temporary bracing of masonry work during and after erection until permanent lateral support is in place.

3.13 Completion of Day's Work

.1 Ensure that all areas of brick/mortar removal are adequately protected from penetration of rainwater.

.2 Protect adjacent finished work against damage, which may be caused by on-going work.

END OF SECTION

PART 1 GENERAL

1.1 Description

This section outlines the work required to provide new corrugated metal roof deck at the sloped roof areas outlined on project drawings.

1.2 Related Requirements

.1 Section 07 26 13 Roofing Vapour Retarder.

.2 Section 07 62 00 Sheet Metal Flashing and Trim.

.3 Section 07 92 00 Sealants.

.4 Section 07 51 00 Built-up Asphalt Roofing

1.3 References

.1 Design of cladding system in accordance to the latest edition of:

1. ASTM A653.A653M-20 Specification for Steel sheet, zinc-coated (galvanized) or zinc-iron alloy coated (galvannealed) by the hot-dip process.
2. CAN/CSA-S136-26, CAN/CSA-S136S1-04, North American Specification for the design of cold-formed steel structural members.
3. CSA W59-18 Welded Steel Construction.
4. CSSBI 10M-18 Standard for Steel Roof Deck.
5. CSSBI 101M-84, Zinc Coated Structural Quality Steel Sheet for Steel Deck.
6. National Building Code of Canada.
7. Ontario Building Code.

1.4 Delivery, Storage and Handling

.1 Store components and materials in accordance with panel manufacturer's recommendations and protect from elements.

1.5 Design Requirements

.1 Steel deck and connections to steel framing to carry dead, live, and other loads including lateral loads, diaphragm action, composite deck action, and uplift as indicated.

.2 Design steel deck using limit state design in accordance with CSSBI 10M and 12M.

.3 Design deck profiles for indicated loads, minimum thickness and section depths are shown on the drawings. Limit roof deflection under total load of 1/240th of span and under live load to 1/360th of span. Make sections continuous over 3 panels or increase thickness to material to give the equivalent stiffness and strength of a 3 span deck. Design anchorage to resist a gross uplift of 1.44 kPa (30 psf), 2.15 kPa (45 psf) for cantilevers.

1.6 Inspection and Testing

.1 The Consultant may inspect and test materials and work at any time before, during or after installation. Deficient or incomplete work or materials shall be corrected or replaced, as determined by the Engineer, without additional costs or delays to the Owner.

.2 Field inspection of deck shall include verification of correct size, type and gauge, inspection of fasteners, side lap connectors and verification of correct installation in accordance with Contract Documents and manufacturer instructions. Power regulation guides shall be used prior to final direct fastening of mechanical fasteners to properly gauge the fastening system to the base material thickness and hardness.

1.7 Deficient Work

.1 Deficient work or any work failing to strictly conform to the Contract Documents shall be removed and replaced, or repaired if accepted by consultant, at no cost to the Owner or Consultant.

.2 Non-conforming work may be rejected by Owner or Consultant at any time, regardless of prior acceptance in shop drawings, prior inspection, inclusions in certificates of payment.

.3 Deficient work shall include, but not be limited to:
- .1 Bent or warped pieces.
- .2 Damage to structural components.
- .3 Damage to deck coating or paint.
- .4 Unauthorized cutting.
- .5 Surface defects.

PART 2 PRODUCTS

2.1 Roof Deck

.1 The following are acceptable manufacturers for steel deck:
- .1 Canam
- .2 Vicwest
- .3 Ideal Roofing
- .4 Agway Metals
- .5 Or Approved Equivalent

.2 Acoustical steel deck shall be 0.76mm (22 ga, 0.030”) minimum nominal base steel thickness, 75mm (3”) maximum deep profile, cellular, interlocking side laps, with manufacturer’s standard perforated bottom plate. Decking shall be galvanized to have a zinc coating as per designation G90 (Z275), coating 1 mil thickness minimum.

.3 Insulation for cellular acoustical deck shall be manufacturer’s standard factory installed mineral fiber sound-absorbing acoustical insulation.

.4 Use primer to touch up damaged coating and touch up to welds. Primer shall be zinc-rich, ready mix to CAN/CGSB-1.181-99.

2.2 Mechanical Fasteners

.1 Powder-actuated mechanical fasteners for roof deck applications shall have minimum 1/2 inch (12mm) diameter steel washers, knurled shanks, ballistic points and electroplated zinc coating conforming to ASTM B 633, SC 1, Type III. Powder-actuated mechanical fasteners shall be recognized by ICC-ES AC43, SDI listed and approved by Factory Mutual and Underwriter's Laboratories for wind uplift. Powder-actuated mechanical fasteners shall also be listed by Underwriter's Laboratories for fire resistive steel roof deck assemblies in accordance with TLSX & TGKX designs.

.2 Powder-actuated mechanical fasteners shall be Hilti X-ENP-19 L15 or X-HSN-24 types as recommended by the manufacturer for the application.

.3 Self-drilling carbon steel screw mechanical fasteners for roof deck and floor deck applications case hardened to ASTM A510, Grade 1022 with a Zn-Ni coating and shall have a minimum 0.555 inch (14.1mm) washer head, a 5/16 inch (7.85mm) hexagonal drive head, a fluted shank that is 1.340 inches (34mm) long and contains 24 threads per 1 inch (25mm) length of threaded shaft. The fastener is designed for securing steel deck to steel supporting members having a thickness range of 0.0598 to 0.375 in. (1.5 to 9.5mm).

2.3 Corrosion Resistant Paint

.1 Use the following paint to coat corroded steel deck areas:

Manufacturer	Product
Ameron Canada Inc.	Amercoat 370
Or Approved Alternative	

PART 3 EXECUTION

3.1 Re-Coating Corroded Structural Steel

.1 Review the exposed existing structural steel framing (purlins, beams etc.) and identify sections with corrosion to the Consultant.

.2 Prepare all rusted surfaces by power tool cleaning to SSPC-SP3 to produce a smooth clean surface.

.3 Clean all surfaces to be painted to remove dirt and chalk with a Trisodium Phosphate (TSP) solution. Allow surface to drip and paint immediately.

.4 This is only required at the sloped roof metal structure where new metal deck is to be installed.

3.2 Preparation

.1 Steel deck units, accessories and fasteners shall be installed in accordance with manufacturer's recommendations, accepted shop drawings, and as specified herein.

.2 Clean surfaces of supporting steel members. Remove grease, oil, and other deleterious material that may interfere with sound fastening through steel deck and of other fastening of deck units to supports.

.3 Steel deck units shall bear two inches minimum on supporting framework. Laps of roof decks and centering shall be a minimum of 2 inches and shall occur over supports.

.4 Adjust deck units and accessories to final position and accurate alignment. Units shall be free from excessive deflection, local distortions and damage when permanently joined into the structure. Permanently secure deck units prior to their use as storage or working platforms.

.5 Locate deck bundles on the ground so as to prevent overloading of structure.

.6 Systems shown in the Drawings are based on unshored construction for strength considerations. Use shores where required for safety to meet specified tolerances or at option of Contractor.

.7 Touch-up paint where galvanizing has been scratched or damaged.

3.3 Installation of New Metal Deck

.1 Erect steel deck as indicated and in accordance with CSA S136, CSSBI 10M, the SDI Manual of Construction, and in accordance with approved erection drawings. Weld in accordance with CSA W59. Welding companies shall be certified under Division 1 or 2.1 of CSA W47.1 for fusion welding of steel decks and/or CSA W55.3 for resistance welding.

.2 Steel deck shall be placed on to supporting steel and properly positioned before permanently affixing the deck. Mark the location of the purlins and beams onto the deck prior to attaching the deck.

.3 Mechanical Fastening: Direct fastening of steel deck shall be in accordance with manufacturer’s instructions including appearance and quality of fastening of the steel deck. Use only certified or licensed powder-actuated fastening system operators.

.4 Bring steel deck units into direct contact with structural steel supporting members or steel bar joists prior to and during powder-actuated mechanical fastening. Moisture may be present on deck surface during powder-actuated mechanical fastening.

.5 Fasten steel deck units to structural steel supports as noted in the Drawings. Powder-actuated mechanical fasteners shall achieve adequate penetration of the steel deck and supporting member in accordance with manufacturer instructions. Powder-actuated mechanical fasteners shall be appropriately gauged to the base material thickness and hardness prior to final fastening.

.6 Lap ends to 100mm minimum.

.7 Reinforcement of Openings in Deck: Provide reinforcement around openings as shown in the Drawings and in accepted shop drawings. Unframed openings larger than 6 inches shall be reinforced as shown on the Drawings or as necessary, but not less than:

.1 Openings 6 to 12 inches - 16 gauge flat sheet, extending 6 inches beyond hole in all directions, fastened to top of deck.

.2 Openings 12 to 18 inches - 1-3/4 x 1-3/4 x 3/16 inch angle perpendicular to ribs of deck at each end of hole extending 16 inches beyond hole and fastened to top side of deck.

END OF SECTION

PART 1 GENERAL

1.1 Description

This section specifies the installation of wood nailers and plywood as defined in the scope of work and drawings.

1.2 Related Sections

.1 Section 01 33 00 Submittals, Mock-ups and Warranties.

.2 Section 07 31 13 Standard Sloped Asphalt Shingles.

.3 Section 07 62 00 Sheet Metal Flashing and Trim.

1.3 References

.1 American Society for Testing and Materials International (ASTM):
  .1 ASTM F1667-08 – Nails, Spikes, and Staples.

.2 Canadian Standards Association (CSA):
  .1 CSA B111, Wire Nails, Spikes and Staples.

.3 Factory Mutual:
  .1 Factory Mutual Loss Prevention Data Sheet 1-49.

1.4 Site Conditions

.1 The maximum acceptable wood moisture content is 20%.

1.5 Delivery, Storage and Handling

.1 Protect lumber and other products from dampness both during and after delivery at site.

.2 Pile lumber in stacks in such manner as to provide air circulation around surfaces of each piece.

.3 Stack plywood and other board products so as to prevent warping.

1.6 Submittals

.1 Material Data Sheet(s) for all lumber products to be used, including for walkway, noting species, grade and treatment(s).

PART 2 PRODUCTS

2.1 Wood Products

.1 Lumber identification shall be by grade stamp of an agency certified by the Canadian Lumber Standards Accreditation Board.

.2 All lumber shall be Grade #2 or Grade #1.

.3 Plywood shall be exterior grade, thickness to match existing.

2.2 Rough Hardware

.1 Wall fasteners shall be suitably coated to prevent corrosion with exposure to moisture, and compatible with elements that it contacts, preventing galvanic corrosion between dissimilar metals.

.2 Screws: Wood to Steel

.1 Fasteners securing wood to steel elements shall be sized to fully penetrate the steel element a minimum 20mm, and so as not to damage other elements below. Use No. 12 self-tapping stainless steel screw.

.3 Wood to Wood:

.1 Fasteners securing wood to wood shall be hot dipped galvanized and provide a minimum 30mm embedment into the element being secured to. Use No. 12 wood screw.

PART 3 EXECUTION

3.1 General Requirements

.1 Perform all work in accordance with the Contract Documents, local building codes, and manufacturer’s recommendations.

.2 Verify field conditions, including substrate and structural framing, before commencing work.

.3 Protect adjacent work from damage during installation.

.4 Do not install wet, warped, or damaged lumber.

.5 Coordinate with other trades to ensure proper integration of mechanical, electrical, and roofing systems.

3.2 Preparation

.1 Verify that supporting structure is level, plumb, and free from defects before installing rough carpentry components.

.2 Ensure all materials are properly acclimated to site conditions before installation.

.3 Remove debris, dust, and any obstructions that may interfere with proper attachment.

.4 Confirm layout dimensions and structural requirements per the approved drawings.

3.3 Installation of Roof Blocking and Curbing

.1 Install pressure-treated wood blocking at roof edges, parapets, penetrations, mechanical equipment supports, and transitions as indicated in the drawings.

.2 The new parapets shall be 600 mm tall and constructed of 2x6 stud framing. Parapets shall be sheathed and insulated in accordance with the details.

.3 Secure blocking to structure using appropriate fasteners, ensuring a solid attachment to resist uplift forces.

.4 Maintain consistent blocking height to provide a continuous substrate for roofing system termination.

.5 Install nailers where required for secure attachment of roof membranes, flashings, and coping systems.

3.4 Fastening and Anchorage

.1 Use corrosion-resistant fasteners per project specifications and manufacturer recommendations.

.2 Fasten wood components securely to resist wind uplift and roof loads as required by structural design.

.3 Verify all fasteners are properly embedded, flush with the surface, and do not penetrate beyond intended layers.

3.5 Tolerances and Quality Control

.1 Ensure installed surfaces are level within ¼ inch over 10 feet.

.2 Verify all blocking and sheathing are properly aligned and free of defects before roofing system installation.

.3 Inspect all connections for structural integrity and compliance with specifications.

3.6 Protection and Cleaning

.1 Protect installed rough carpentry from moisture and weather exposure until the roofing system is applied.

.2 Remove debris, scrap materials, and sawdust from the work area daily.

.3 Repair any damaged or improperly installed components before proceeding with roofing installation.

END OF SECTION

PART 1 GENERAL

1.1 Description

This Section specifies the supply and application of insulation in conventional roof assemblies. All work to conform to CRCA Specifications, Manufacturer's printed instructions or the specifications herein. In case of conflict, the most stringent shall apply.

1.2 Related Requirements

.1 Section 01 33 00 Submittals.

.2 Section 06 10 53 Rough Carpentry for Roofing.

.3 Section 07 26 13 Roofing Vapour Retarder.

.4 Section 07 51 13 Built-up Asphalt Roofing.

.5 Section 07 62 00 Sheet Metal Flashing and Trim.

1.3 References

.1 American Society for Testing and Materials International (ASTM):
- .1 ASTM C1002-07, Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
- .2 ASTM C1177/C1177M-06, Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
- .3 ASTM C1289-05a, Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
- .4 ASTM C1396/C1396M-06a, Standard Specification for Gypsum Board.
- .5 ASTM D312 – Standard Specification for Asphalt Used in Roofing

.2 Canadian Roofing Contractors Association (CRCA):
- .1 CRCA Roofing Specifications Manual, 2011.

.3 Canadian Standards Association (CSA):
- .1 CSA A123.21-04, Standard Test Method for the Dynamic Wind Uplift Resistance of Mechanically Attached Membrane-Roofing Systems
- .2 CSA A231.1/A231.2-06, Precast Concrete Paving Slabs/Precast Concrete Pavers.
- .3 CSA O121-M1978(R2003), Douglas Fir Plywood.
- .4 CSA O151-04, Canadian Softwood Plywood.

.4 Factory Mutual (FM Global):
- .1 FM Roof Assembly Classifications.

.5 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
- .1 Material Safety Data Sheets (MSDS).

1.4 Site Conditions

.1 Do not apply membrane during inclement weather or when ambient temperatures are expected to be below 5 degrees Celsius. For temperatures below this, practice cold weather application techniques as recommended by membrane manufacturer.

.2 Do not install insulation on roof deck when water or any type of moisture is present. Do not apply roofing materials when substrate is damp or wet.

1.5 Delivery, Storage and Handling

.1 Deliver insulation in packages labeled with material name, thermal value and product code.

.2 Ensure stored insulation is protected from sunlight, precipitation and deleterious materials.

.3 For materials stored outdoors, stack insulation on pallets above ground or roof deck and cover with tarpaulin or other suitable waterproof coverings. Slit or remove manufacturer's packaging before covering with waterproof covering.

.4 Ensure materials stored on roof stay within designated live load limits of roof construction. Do not store materials on, or transport materials across, completed roof areas.

1.6 Inspection and Testing

.1 Ensure the Consultant is aware of progress of work in this Section. Provide notice to allow inspection of the completed vapour retarded prior to proceeding.

PART 2 PRODUCTS

2.1 Insulation

.1 Polyisocyanurate:
  .1 To conform to CAN/ULC-S704, base thickness 150mm.

.2 Use insulation products as listed below, or approved alternate:

Insulation	Standard	Manufacturer	Product	Thickness (mm)
Poly-Isocyanurate with maximum board dimensions of 1200mm x 1200mm	CAN/ULC S704	Atlas Roofing Corporation	ACFoam – III	150mm
		IKO	IKOTherm III	
		Johns Manville	ENRGY3	

2.2 Coverboard

.1 The Coverboard thickness shall be 12.5mm.

.2 Use coverboard products as listed below, or approved alternate:

Insulation	Standard	Manufacturer	Product	Thickness (mm)
High density asphalt impregnated fibreboard panels with ship lapped edges, maximum board dimensions of 600mm x 1200mm	CAN/ULC S706, Type II Class 1	Building Products of Canada Corp	BP Esgard	12.5

2.3 Tapered Insulation

.1 Tapered insulation shall have a uniform slope of a minimum of 2%. All valley corners and crickets are to be factory mitred. All boards are to be clearly coded and referenced in the shop drawings; arrows are to indicate the slope direction of each board. Manufacture in accordance with approved shop drawings.

Insulation	Standard	Minimum Thickness (mm)
Polyisocyanurate	CAN/ULC S704	13

.2 Drain Sumps: Around drains, create sump with material matching the base insulation area approximately 2400x2400 by reducing thickness of the base insulation a minimum of 2%.

2.4 Cant Strips

.1 Cut from fibreboard material in a mopped application to measure 75mm x 75mm.

2.5 Adhesive Fastening

.1 Low rise foam products include:

Manufacturer	Product
Dow Building Solutions	Insta-Stik Quick Set
BASF	AmeriGlue
Soprema	DuoTack
Or Approved Equivalent	

.2 Liquid applied asphalt urethane adhesive products include:

Manufacturer	Product
Tremco	Fas-n-Free
Bakor	Thermostik 880-33
Or Approved Equivalent	

PART 3 EXECUTION

3.1 Substrate Preparation

.1 Review underside of deck for conduits and piping prior to securing into the deck.

.2 Prior to commencement of work, ensure substrates are dry, free of snow, ice of frost, and clean of dust and debris. Ensure that drains have been installed at proper elevations relative to finished surfaces.

.3 Ensure plywood and lumber nail plates have been installed to walls and parapets as indicated.

3.2 Insulation: Fully Adhered, Adhesive Application

.1 Adhere insulation by using continuous strips spaced 300mm centres on the field surface, 150mm centres on the perimeter, and 100mm centres on corners as per manufacturer's instructions.

.2 Place boards in parallel rows, with ends staggered, and in firm contact with one another. Ensure boards are fully adhered.

.3 Score and cut end pieces to suit.

3.3 Tapered Insulation: Application

.1 Install tapered as second insulation layer, in accordance with shop drawings, stagger joints between layers 150mm minimum.

.2 Install the sumps around the drains over the first layer of the base insulation.

.3 Apply coverboard insulation continuously over the tapered insulation.

3.4 Cants

.1 Install fibre cants over the base insulation between the roof and vertical surfaces

.2 Angle cut cants to fit tightly where the roof to wall angle varies from 90 degrees.

.3 Embed cant in mopping of hot bitumen firmly by hand.

3.5 Protection and Cleaning

.1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

.2 Check drains to ensure cleanliness and proper function. Remove any debris, equipment and/or excess material from site.

.3 Seal and ballast exposed edges.

.4 Place plywood runways over work areas to enable movement of materials and other traffic.

.5 At the end of each day's work, or when work stoppage occurs due to inclement weather, provide protection for completed work and materials out of storage.

END OF SECTION

PART 1 GENERAL

1.1 Description

This Section specifies the supply and application of vapour barrier for conventional roofing. All work to conform to CRCA Specifications, Manufacturer's printed instructions or the specifications herein. In case of conflict, the most stringent shall apply.

1.2 Related Requirements

.1 Section 01 33 00 Submittals.

.2 Section 06 10 53 Rough Carpentry for Roofing.

.3 Section 07 51 13 Built-up Asphalt Roofing.

.4 Section 07 62 00 Sheet Metal Flashing and Trim.

1.3 References

.1 American Society for Testing and Materials International (ASTM):
- .1 ASTM C1002-07, Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
- .2 ASTM C1177/C1177M-06, Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
- .3 ASTM D41-05, Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
- .4 ASTM D226-06, Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
- .5 ASTM D312-00(2006), Standard Specification for Asphalt Used in Roofing.
- .6 ASTM D6164-05, Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements.
- .7 ASTM D6380-03, Standard Specification for Asphalt Roll Roofing (Organic Felt).
- .8 ASTM E96/E96M-05, Standard Test Methods for Water Vapour Transmission of Materials.
- .9 ASTM E119 – Standard Test Methods for Fire Test of Building Construction and Materials.

.2 Canadian Roofing Contractors Association (CRCA):
- .1 CRCA Roofing Specifications Manual, 2011.

.3 Canadian Standards Association (CSA):
- .1 CSA A123.2-03, Asphalt-Coated Roofing Sheets.
- .2 CSA A123.3-05, Asphalt Saturated Organic Roofing Felt.
- .3 CSA A123.4-04, Asphalt for Constructing Built-Up Roof Coverings Waterproofing Systems.
- .4 CSA A123.21 – The Standard Method for the Dynamic Wind Uplift Resistance of Mechanically Attached Membrane – Roofing Systems.

.4 Factory Mutual (FM Global):
  .1 FM Roof Assembly Classifications.

1.4 Site Conditions

.1 Do not apply vapour retarder during inclement weather or when ambient temperature is expected to be below 5 degrees Celsius. For temperatures below this practice cold weather application techniques as recommended by membrane manufacturer.

.2 Install vapour retarder on dry substrate, free of snow and ice, use only dry materials and apply only during weather that will not introduce moisture into system.

1.5 Delivery, Storage and Handling

.1 Deliver materials in manufacturer's original, unopened containers with manufacturer's labels intact and legible.

.2 Keep pail good and membrane materials dry, stored in rolls standing on end, selvage edge up, elevated from contact with moisture.

.3 Handle rolls with care to avoid crushing, puncturing or other damage. Do not use wet or damp membrane or flattened rolls.

.4 Ensure materials stored on roof stay within designated live load limits of roof construction. Do not store materials on, or transport materials across, completed roof areas.

.5 Ensure pail-goods have tight fitting lids when not in use. Store on end in up-right position.

1.6 Quality Assurance and Qualifications

.1 Installers are to be specialized in the application of roofing vapour retarders approved by the manufacturer with a minimum of 5 years of experience.

.2 When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-up may not remain as part of finished work. Remove mock-up and dispose of materials when no longer required and when directed by Consultant.

PART 2 MATERIALS AND PRODUCTS

2.1 Support Panel

.1 Use support panel products as listed below, or approved alternate:

Insulation	Standard	Manufacturer	Product	Thickness
Gypsum board with fiberglass mat face,	ASTM C1177	Georgia-Pacific Gypsum	Dens Deck Prime	13mm

Insulation	Standard	Manufacturer	Product	Thickness
maximum board dimensions of 1200mm x2400mm		CGC Inc.	Securock Glass-Mat Roof Board	

2.2 Vapour Retarder

.1 Self-Adhered Vapour Retarder

Manufacturer	Product
IKO	MVP
Soprema	Sopravap'r
Henry Bakor	Vapor-Bloc SA

2.3 Adhesive Fastening

.1 Use low rise foam products include:

Manufacturer	Product
Dow Building Solutions	Insta-Stik Quick Set
BASF	AmeriGlue
Soprema	DuoTack

.2 Use liquid applied asphalt urethane adhesive products include:

Manufacturer	Product
Tremco	Fas-n-Free
Bakor	Thermostik 880-33

2.4 Accessories

.1 Joint sealing tape: air resistant pressure sensitive adhesive tape, cloth fabric duct tape, type recommended by vapour barrier manufacturer, 50mm wide for lap joints and perimeter seals, 25mm wide elsewhere.

.2 Sealant: compatible with vapour retarder materials, recommended by vapour retarder manufacturer.

.3 Staples: minimum 6mm leg.

.4 Mould box vapour barrier: factory-moulded polyethylene box for use with recessed electric switch and outlet device boxes.

PART 3 EXECUTION

3.1 Substrate Preparation

.1 Ensure services are installed and inspected prior to installation of vapour retarder.

.2 Prior to commencement of work ensure substrates are dry, free of snow, ice or frost, and clean of dust and debris.

3.2 Adhered Support Panel

.1 Adhere insulation by using continuous strips spaced 300mm centres on the field surface, 150mm centres on the perimeter, and 100mm centres on corners as per manufacturer's instructions.

.2 Place boards in parallel rows, with ends staggered, and in firm contact with one another. Ensure boards are fully adhered.

.3 Score and cut end pieces to suit.

3.3 Priming

.1 Apply deck primer to roofing substrate at the rate specified by the manufacturer.

.2 Ensure primer is dry to touch before applying vapour retarder.

.3 Re-prime surfaces contaminated with dust.

3.4 Perimeter Seals

.1 Seal perimeter of sheet vapour barrier as follows:
- .1 Apply continuous bead of sealant to substrate at perimeter of sheets.
- .2 Lap sheets over sealant and press into sealant bead.
- .3 Install stapled through lapped sheets at sealant bead into wood substrate.
- .4 Ensure no gaps exist in sealant bead. Smooth out folds and rippled occurring in sheet over sealant.

3.5 Lap Joint Seals:

.1 Seal lap joints of sheet vapour barrier as follows:
- .1 Attach first sheet to substrate.
- .2 Apply continuous bead of sealant over solid backing at joint.
- .3 Lab adjoining sheet minimum 150mm and press into sealant bead.
- .4 Install staples through lapped sheets at sealant bead into wood substrate.
- .5 Ensure no gaps exist in sealant bead. Smooth out folds and ripples occurring in sheet over sealant.

3.6 Self-Adhered Vapour Retarder

.1 Unroll and align self-adhered membrane centered at low point of roof or drain.

.2 Apply self-adhered membrane complete and continuous to prepared and primed substrate in an overlapping shingle fashion by removing release film providing 75mm side and 150mm end laps.

.3 Stagger all vertical joints.

.4 Promptly roll all laps and self-adhered membrane with a counter top roller.

.5 Extend vapour retarder 150mm above all cants or openings.

.6 Seal vapour retarder termination to building air barrier, where possible; otherwise, seal termination to solid substrate.

.7 Repair any damage to vapour retarder prior to applying other components.

END OF SECTION

PART 1 GENERAL

1.1 Description

This section specifies the materials and methods required for the installation of preformed metal cladding to the “eyebrows” over the windows at the gymnasium.

1.2 Related Work

.1 Section 01 33 00 Submittals, Mock-ups and Warranties.

.2 Section 07 62 00 Sheet Metal Flashing and Trim.

.3 Section 07 92 00 Sealants.

1.3 References

The most current editions of the following standards apply:

.1 Canadian Sheet Steel Building Institute (CSSBI):
- .1 Publication No. 40.7 – Prefinished and Pre-Painted Galvanized Sheet Steel for Exterior Building Products.
- .2 Standards 20M.

.2 CSA S136 for the design of Cold Formed Steel Structural Members.

1.4 Site Conditions

.1 Report in writing to the Consultant any areas of deficiencies or changes in condition revealed that are not part of this Work. Obtain the Consultant’s approval and instruction prior to proceeding with the repair work in this area.

.2 Secure the Work in a sage and watertight fashion before the onset of inclement weather and at the end of each day’s work.

1.5 Coordination

.1 Coordinate metal cladding panels with brick masonry repair and replacement work, flashing, trim penetrations, existing parapets, walls, and other adjoining work to provide a weather tight and secure installation.

.2 Coordinate metal panel installation with all adjacent components including existing roof and wall assemblies, flashings, rooftop and wall accessories, in order to avoid contact between in compatible metals and materials.

1.6 Quality Assurance and Qualifications

.1 Installer of wall system shall demonstrate at least five years’ experience in projects similar in scope.

1.7 Submittals

.1 Mock-Up: Contractor shall erect a mock-up in location selected on site, that will include installation of all material components (air barrier, metal cladding structure, insulation and finished panels) for review and approval by the Consultant and the Owner, prior to proceeding with general installation.

PART 2 PRODUCTS

2.1 Storage and Handling

.1 Protect metal and metal finishes to prevent damage during fabrication, storage, shipping, handling and installation.

.2 Stack units in manner to prevent racking. Do not remove from crates or other protective covering until ready for installation.

2.2 Cladding

.1 **Prefinished Metal Cladding** shall conform to the most recent editions of the standards referenced above and shall be fabricated from galvanized sheet steel, minimum 20-gauge material thickness. The cladding colour shall be selected by the Owner from a standard colour chart. The cladding profile shall be concealed fastener, similar to AD-300 profile by Vicwest.

.2 Approved steel cladding manufacturers are:
- .1 Vicwest
- .2 Agway Metals
- .3 Ideal Roofing
- .4 Or Approved Alternate

.3 **Siding fasteners:** Galvanized with exposed fasteners colour matched to cladding as per approved Shop Drawings.

2.3 Support and Connectors

.1 **Girts and Hat Channels:** Conform to CSA G40.21-M87 hot dipped galvanized. Individual length not to exceed 6000mm. Minimum 1.21mm (0.048”) and as per approved shop drawings.

2.4 Colour

.1 Prefinished cladding colour to be selected, reviewed and approved by Owner, to match the existing cladding.

2.5 Sheathing

.1 Use sheathing products as listed below, or approved alternate:

Insulation	Manufacturer	Product	Thickness
Gypsum board with fiberglass mat face, maximum board dimensions of 1200mm x2400mm	Georgia-Pacific Gypsum	Dens Glass Gold	13mm
	CGC Inc.	Securock Glass-Mat Sheathing	

2.6 Air and Vapour Barrier on Interior Plane of Eyebrow (Face of Gym Wall)

.1 Use one of the following products for membrane flashing and caps on parapets.

Manufacturer	Product
Bakor	Blueskin VP160
Tremco	Exo Air 210 AT
Or Approved Equivalent	

2.7 Flashings Membrane on Exterior Plane of Eyebrow

.1 Use one of the following products for membrane flashing and caps on parapets.

Manufacturer	Product
Bakor	Blueskin H.T. with Blueskin LVC Primer
Tremco	Exo Air HTF
Or Approved Equivalent	

2.8 Insulation

.1 Use semi-rigid mineral wool board insulation 150 mm thickness at all locations where possible. Use Cavityrock DD by Rockwool or approved alternate.

2.9 Soffit Panels

.1 Shall be the same as specified in Section 2.2.1.

2.10 Soffit Vents

.1 Continuous soffit vent, 28 ga galvanized steel with galvalume coloured coating, black or brown. Use Joto-Vent System SV2-1209BK or approved equivalent.

PART 3 EXECUTION

3.1 Design Principle

.1 The construction shall provide:
- .1 Such gaskets, baffles, overlaps and seals as required to effectively prevent bulk water entry into the cavities of the system, and to prevent entry of any water into building cavities.
- .2 All openings must be effectively baffled or otherwise guarded to minimize direct water entry, and entry of insects.
- .3 Adequate drainage of water and condensate to exterior from rain screen cavity. Ensure weepers, vents and drain holes are located in such positions so as to permit free drainage of cavity.

3.2 Performance Requirements

.1 There shall be no water infiltration into the building through the cladding system under design wind loads specified by the O.B.C.

.2 Design wind loads shall be as calculated from the Building Code based on 50 year probability.

.3 Design and fabricate brackets and anchorage devices so that when installed will:
- .1 Compensate for unevenness and dimensional differences in structure to which they are secured.
- .2 Allow full expansion and contraction of framing members without causing stress within the assembly as a result of such expansion and contraction.

3.3 Inspection and Testing

Contractor shall arrange and pay for testing of the masonry anchor capacity system by the fastener manufacturer to the approval of the Consultant. Consultant to be informed 48 hours in advance when testing is to be conducted. Submit an outline of the test method to be used for approval by Consultant.

3.4 Fabrication of Metal Cladding

.1 Construct and assemble to heights as indicated on drawings to incorporate breaks in panels and install flashing making a strong, watertight assembly capable of being handled to and on site.

.2 Cope, notch and drill so as to provide minimum tolerance throughout system and to fit with hairline joints.

.3 Conceal interconnecting members and fastenings in completed assembly.

.4 Provide joints for vertical expansion and contraction as necessary.

.5 Reinforce total panel as required to prevent oil canning effect and to meet specified design requirement.

.6 Provide metal cladding panels for full height, from base of wall to roof parapet, otherwise indicated or restricted by shipping limitations. Where transverse seams are required, as indicated on reviewed shop drawings, secure the transverse seams of cladding sheets in accordance with the details and manufacturer's specifications to provide a weather-tight seal. Limit transverse seams to one per panel height, from base of wall to parapet.

3.5 Installation of Sub-framing and Girts

.1 Install wood blocking as needed to attachment of girts and/or sheathing board.

.2 Install horizontal hat channels to span between the existing vertical steel framing. One hat channel will be installed to provide fastening for the new steel cladding.

.3 Install diagonal bracing for lateral stability.

3.6 Installation of Sheathing Board

.1 Provide and install sheathing board over the framing in plane with the gym wall, on the exterior face of the eyebrow, and at side returns.

.2 Fasteners shall be spaced at 200mm centres along the perimeters and 300mm centres at intermediate girts/channels.

3.7 Vapour Permeable Air Barrier

.1 Provide self-adhering vapour permeable air barrier on over the sheathing board in plane with the gym wall. The air barrier shall lap onto the soffit of the metal deck and onto the masonry by 50mm. Side laps between sheets shall be 75mm. Seal all penetrations and perimeters with manufacturer's compatible termination sealant.

3.8 Insulation

.1 Install insulation in accordance with manufacturer's recommendations. Ensure insulation is positively fixed to prevent sagging. All methods of insulation securement are to be outlined in shop drawings and installed as per approval. Insulation may be installed with pins or adhesive as approved by the Consultant.

.2 Butt each batt tightly against each other, with joints staggered.

.3 Fit neatly with tight joints around obstructions, openings and corners.

.4 Fill voids behind flashings and trim with neatly cut insulation.

.5 Layer insulation to achieve the desired thickness so that joints are offset when overlapped.

.6 Insulation must not block ventilation channels.

3.9 Cladding and Framing Support

.1 Securely install components so that they line up square, in true straight flat or flush planes, plumb and level, free from distortion and to the following tolerances:
- .1 Offset from true alignment between continuous metal members within one bay no greater than 1mm total.
- .2 Offset from true alignment between continuous metal members of adjacent bay assemblies no greater than 1mm total.
- .3 Deviation of misalignment from plumb, square or true line of any metal face no greater than 1mm total.
- .4 Rack, twist or wrap, within any bay, from plumb no greater than 1mm total.
- .5 Tolerances shall be non-cumulative and measured when ambient external air temperature is between 18°C and 30°C, wind speed up to 15 mph at ground level.

.2 Make joints neat and fine as practicable. Allow for full expansion and contraction with all components and at interface with adjacent materials. Take into account climatic conditions at time of installation.

.3 Comply with details shown on shop drawings in all aspects:
- .1 Supports
- .2 Fasteners
- .3 Anchors
- .4 Venting

.4 Install framing members and subgirts in a manner to provide unobstructed drainage within the system.

.5 Apply heavy coat of isolation coating to concealed surfaces of dissimilar metals and metals in direct contact with concrete or masonry.

.6 Fasten metal siding at every floor level and with intermediate supports. The spacing of intermediate supports to be determined by engineering design as provided in the shop drawings.

.7 Allow for expansion control in system to compensate for expansion and contraction of building components and the building expansion joint.

.8 Provide provision for drainage of the system at the at the base of the wall.

.9 Supply and install all flashings required to properly drain the cavities in the wall system. Install flashings such that they will never be displaced, creep or jam, and not constitute a source of noise.

.10 Use concealed fasteners except as indicated on the drawings.

.11 Move out existing lighting and other fixtures to the new plane of the sheet metal as required. Integrate all existing mounted fixtures, electrical outlets, downspouts, exhaust vents, etc. into new siding so they do not drain behind cladding. Support adequately for secure fixing. Seal all penetrations with silicone sealant, in accordance with Section 07 92 00.

3.10 Clean-Up

.1 Clean exposed panel surfaces in accordance with manufacturer's instructions.

.2 Repair and touch-up with colour matching high grade enamel minor surface damage only where permitted by the Consultant.

.3 Replace damaged panels and components that cannot be satisfactorily repaired.

END OF SECTION

PART 1 GENERAL

1.1 Description

.1 This Section specifies the supply and application of built-up bituminous roofing.

.2 All work to conform to CRCA Specifications, Manufacturer's printed instructions or the specifications and drawings herein. In case of conflict, the most stringent shall apply.

1.2 Related Requirements

.1 Section 01 33 00 Submittals.

.2 Section 07 51 13 Built-up Asphalt Roofing.

.3 Section 07 62 00 Sheet Metal Flashing and Trim.

1.3 References

.1 American Society for Testing and Materials International (ASTM):
- .1 ASTM D41-05, Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
- .2 ASTM D226-06, Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
- .3 ASTM D312-00(2006), Standard Specification for Asphalt Used in Roofing.
- .4 ASTM D1863-05, Standard Specification for Mineral Aggregate Used on Built-Up Roofs.
- .5 ASTM D6164-05, Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements.
- .6 ASTM D6380-03, Standard Specification for Asphalt Roll Roofing (Organic Felt).
- .7 ASTM E96/E96M-05, Standard Test Methods for Water Vapour Transmission of Materials.
- .8 ASTM E119 – Standard Test Methods for Fire Test of Building Construction and Materials.

.2 Canadian Standards Association (CSA):
- .1 CSA A123.2-03, Asphalt-Coated Roofing Sheets.
- .2 CSA A123.3-05, Asphalt Saturated Organic Roofing Felt.
- .3 CSA A123.4-04, Asphalt for Constructing Built-Up Roof Coverings Waterproofing Systems.
- .4 CSA A123.17-05, Asphalt Glass Felt Used for Roofing and Waterproofing.

.3 Canadian Roofing Contractors Association (CRCA):
- .1 CRCA Roofing Specifications Manual, 2011.

.4 Canadian General Standards Board (CGSB):
- .1 CGSB 37-GP-9Ma-83, Primer, Asphalt, Unfilled, for Asphalt Roofing, Dampproofing and Waterproofing.

1.4 Site Conditions

.1 Do not apply membrane during inclement weather or when ambient temperature is expected to be below 5 degrees Celsius. For temperatures below this practice cold weather application techniques as recommended by membrane manufacturer.

.2 Install membrane on dry substrate, free of snow and ice, use only dry materials and apply only during weather that will not introduce moisture into system.

1.5 Delivery, Storage and Handling

.1 All materials delivered to the project shall be in their original packaging and/or containers with manufacturer labels attached and clearly visible.

.2 Ensure that all materials left on the job site are stored off grade, properly tarped or otherwise sheltered from precipitation and sun. Dispose of all damaged or wet material off the site.

.3 Store all roll materials upright. Do not stack other materials or pallets on top.

1.6 Inspection and Testing

.1 Provide access to the Consultant and Owner at all times for review and testing of the work. Assure that copies of all material specifications, details and schedules are available on site for use by the Contractor and Consultant.

.2 One week prior to beginning roofing application, arrange for a meeting at the site with both the Consultant and the Owner to review the system installation and coordination of related work. Ensure that the project foreman is in attendance.

.3 Provide an asphalt thermometer for measuring kettle and application temperatures. Maintain an hourly log of kettle temperature for review by the Consultant.

.4 Test cut the completed membrane for review if directed by the Consultant. Locations will be selected by the Consultant at a maximum number of 1 per 100m^2. If deficiencies are encountered that require further investigation, additional test cuts may be required to evaluate the scope of deficient work. Repair test cut areas.

.5 If required by the Consultant, provide samples of the completed roofing membrane for laboratory testing to check compliance with the specifications. Locations will be selected by the Consultant at a maximum number of 1 per 150m^2. If deficiencies are encountered, additional samples may be necessary to evaluate the scope of deficient work. Repair test cut areas.

1.7 Quality Assurance and Qualifications

.1 Roofing membrane shall be applied by approved applicators with a minimum of 5 years' experience.

.2 Roofing membrane materials shall be from a single manufacturer unless specified otherwise. The manufacturer shall have a minimum of 10 years' experience in producing the specified products.

PART 2 MATERIALS AND PRODUCTS

2.1 Bituminous Materials

.1 Asphalt primer shall conform to CAN/CGSB-37-GP-9MA and Canada Gazette Part II (Vol. 143, No. 20 issued September 30, 2009). The primer shall be low VOC (< 350 g/L) and approved by the membrane manufacturer for the specific membrane type and compatible with the substrate.

.2 Asphalt bitumen shall conform to CSA A123 and be selected as follows:
- .1 Type 1: For organic felt membrane, slopes less than 1:16.
- .2 Type 2: For glass fibre felt membrane, slopes of up to a maximum of 1:8.
- .3 Type 3: For membrane flashings, slopes greater than 1:8.

.3 Modified Asphalt: Modified asphalt bitumen for mopping modified bitumen sheet goods to CSA A123 and be selected as follows:

Manufacturer	Product
Henry/Bakor	890-12
Soprema Inc.	Soprasphalte M
Tremco	THERMastic 50 Adhesive
Or Approved Alternate	

2.2 Roofing Felts

.1 Organic Felts:
- .1 #15 perforated asphalt saturated organic felts shall conform to CSA A123.3, 0.73 kg/m^2.

.2 Type IV Glass Fibre Felts:
- .1 Type IV asphalt saturated glass felts shall conform to ASTM D2178.

.3 Type VI Glass Fibre Felts
- .1 Type VI asphalt saturated glass felts shall conform to ASTM D2178.

.4 Acceptable manufacturers are:

Manufacturer	Product
IKO	IKO*Glass* (Type IV or Type VI)
Johns Manville	GlasPly IV or GlasPly Premier
Or Approved Equivalent	

2.3 Membrane Flashings

.1 2 Ply Modified Bitumen Mop Applied Base, Torch Applied Cap Sheet Flashing

.1 Modified bitumen base and cap sheets. Materials shall comply with CGSB 37-GP-56M. Acceptable products are:

Manufacturer	Base Sheet	Cap Sheet
Henry/Bakor	NP180P/S	NP180gT4
Soprema Inc.	Elastophene 180 PS	Sopralene Flam 180 GR
IKO	Modflex MP-180-FS-Base	Torchflex TP-180-CAP
Or Approved Equivalent		

.2 Termination Caulk

.1 Cold applied rubberized asphaltic sealant as manufacturer by modified bitumen membrane manufacturer for sealing the modified membrane edges and terminations.

Manufacturer	Product
Henry/Bakor	Polybitume 570-05
Soprema Inc.	Sopramastic
Tremco	POLYroof LV
Or Approved Equivalent	

2.4 Rubberized Asphaltic Mastic

.1 Rubberized asphalt cement conforming to CAN/CGSB-37.29:

Manufacturer	Product
Henry/Bakor	810-47
Tremco	Polyroof
Or Approved Equivalent	

2.5 Cant Strips

.1 Fibreboard cants cut to a 45° angle. Minimum 75mm x 75mm height.

2.6 Gravel

.1 Pea Gravel:

.1 Gravel shall conform to ASTM D1863 and be washed, rounded, and free of dust, fines, organic matter, and deleterious substances.

.2 Nominal size: 3/8 inch to 5/8 inch (10mm to 16mm).

.3 Pea gravel shall be sourced from an approved supplier and comply with local environmental and sustainability requirements.

.2 Asphalt Flood Coat:
  .1 Asphalt shall conform to CSA A123.4 Type III.
  .2 The application temperature of asphalt shall be per manufacturer's recommendations.

PART 3 EXECUTION

3.1 Preparation

.1 Install cants at all membrane upturns. Fasten wood cants no greater than 450mm on centre. Apply fibre cants in a full mopping of asphalt.

3.2 Asphalt Application Procedures

.1 Continuously monitor kettles with an accurate thermometer. Maintain an hourly log of the temperatures.

.2 Any overheated material shall be disposed away from the site (heated over 500°F).

.3 Asphalt must be applied at its equiviscous temperature (EVT). Comply with the manufacturer specified temperature range.

.4 Use insulated buckets as required to maintain asphalt at the recommended application temperature.

.5 Maintain separate kettles for each type of asphalt used or plan work so that kettles are completely emptied prior to requiring a different asphalt type.

.6 Plan the work so that felt edges are not in line vertically or horizontally. Start all roof applications at the lowest point to ensure that water runs over the laps of the membrane. Lay felts at right angles to slope.

3.3 Built-Up Bituminous Membrane

.1 Apply one ply of organic felt roofing and asphalt prior to applying glass fibre felt roofing.

.2 Install built-up membrane with a shingle type application to produce four full layers of glass fibre felt at any location, with no seams lining up. A two and two application will not be permitted.

.3 Lay felts into the asphalt applied at the following rates:

Lay Felt	Rate
Organic felts	1.0 kg/m^2 (20 pound per square)
Glass Fibre Felts	1.2 kg/m^2 (25 pound per square)

.4 Broom organic felts and squeegee glass fibre felts to assure proper adhesion to the asphalt and to remove air pockets, wrinkles, fish mouths, splits, etc. Do not walk on glass fibre felts until after asphalt has cooled.

.5 All felts shall be turned up to the top of the cant strip and embedded in asphalt.

.6 Install water cut-offs at the end of a day's work. Remove same prior to continuing the application of the roofing.

3.4 Modified Bitumen Flashings

.1 Modified bitumen flashings shall be laid in strips one metre wide to the vertical surfaces. Side laps shall be 75mm.

.2 To prevent possible voids at end/side laps, cut the corner piece off the selvage edge that will be covered by the next roll. The cut piece shall be the width of the lap (75mm) and extended along the selvage edge 150mm.

.3 Extend the base sheet onto the parapet and onto the flat surface of the roof a minimum of 150mm (6"). Mop solidly and press into a full mopping of hot asphalt.

.4 Extend the cap sheet 250mm (10") inside the roof from the base of the cant strip.

.5 Stagger cap sheet joints a minimum of 100mm from base sheet laps in order to avoid excessive thickness.

.6 Torch apply the cap sheet flashing. Proceed from bottom to top. Keep the torch flame pointed to the inside of the roll on the selvage edge of the adjacent sheet to prevent burning of the granules and blowing excessive asphalt out at the seam. Avoid asphalt seepage greater than 5mm at seams. Use a roller during torching to ensure proper welding, without air pockets, wrinkles, fish-mouths or tears. Avoid applying flame to the asphalt built-up roofing membrane to avoid charring.

.7 Where sheets are required to lap with granule surfaces, embed surface granules by heating with a torch and pressing with a round nosed roofing trowel.

.8 Inspect all joints after application of the cap sheet. Locally torch and seal any joints where there is poor adhesion.

.9 Apply rubberized asphalt termination caulk to all vertical joints.

3.5 Drains

.1 Flash drains in accordance with manufacturer's details as required to produce a watertight seal.

.2 Clean and prime surface of drain body. Embed first felt layer in plastic roofing cement. Extend all plies into opening. Coat final ply with asphalt and complete roof.

3.6 Flood Coat and Gravel

.1 Apply hot asphalt flood coat at a uniform rate of 3–4 kg/m² (60–80 lbs/100 ft²).

.2 Ensure that the asphalt temperature is within the manufacturer's recommended range at the time of application.

.3 Avoid excessive heating of asphalt, which may cause premature aging or loss of adhesion.

.4 Apply pea gravel immediately into the hot asphalt flood coat while it is still tacky.

.5 Uniformly broadcast gravel at a rate of 17–22 kg/m² (400–500 lbs/100 ft²).

.6 Ensure complete coverage with no bald spots and embed the gravel into the flood coat by walking-in or using a roller.

END OF SECTION

PART 1 GENERAL

1.1 Description

This Section specifies the supply and installation of sheet metal flashing and trim along with metal eavestroughs and downpipes.

1.2 Related Requirements

.1 Section 07 51 00 Built-up Asphalt Roofing.

.2 Section 07 92 00 Sealants.

1.3 References

.1 American Society for Testing and Materials (ASTM):
- .1 ASTM A653/A653M-11: Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy–Coated (Galvannealed) by the Hot-Dip Process.
- .2 ASTM B32-08: Standard Specification for Solder Metal.

.2 Canadian Roofing Contractors Association (CRCA):
- .1 Roofing Specifications Manual 1997.

.3 Canadian General Standards Board (CGSB):
- .1 CAN/CGSB-51.32-M77, Sheathing, Membrane, Breather Type.

.4 Canadian Standards Association (CSA International):
- .1 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.

.5 Health Canada/Workplace Hazardous Materials Information System (WHMIS):
- .1 Material Safety Data Sheets (MSDS).

.6 Sheet metal & Air Conditioning Contractors' National Association (SMACNA):
- .1 Architectural Sheet Metal Manual.

.7 South Coast Air Quality Management District (SCAQMD), California State:
- .1 SCAQMD Rule #1113-04, Architectural Coatings.
- .2 SCAQMD Rule #1168-05, Adhesives and Sealants.

1.4 Quality Assurance

.1 Sheet metal flashing and coping shall be installed to withstand wind loads, structural movement, thermally induced movement resulting from temperature change, and exposure to weather without failing, rattling, leaking, and fastener disengagement.

.2 Sheet metal flashing and trim shall be installed in a manner that does not allow water infiltration to the building interior.

1.5 Delivery, Storage and Handling

.1 Store material in a secure location, protected from any damages.

.2 Any dented, scratched or otherwise damaged materials will not be accepted for installation.

PART 2 PRODUCTS

2.1 Fastening Strips

.1 20 gauge galvanized sheet metal.

2.2 Finished Sheet Metal

.1 Exterior Trim: 24-gauge galvanized prefinished sheet steel sized to project requirements. Colour(s) are to be selected from Standard 8000+ Series Colour Chart by the Owner to match parapets and new metal cladding colour. To meet or exceed CGSB 93-GP-3M "Sheet Steel Galvanized Prefinished Residential". All flashing and trim to have folded edges where exposed.

.2 Interior Sheet Metal Closure Cladding and Trim: 24-gauge galvanized prefinished sheet steel sized to project requirements. Colour(s) are to be selected from Standard 8000+ Series Colour Chart by the Owner coloured white to match interior finishes. To meet or exceed CGSB 93-GP-3M "Sheet Steel Galvanized Prefinished Residential". All flashing and trim to have folded edges where exposed.

2.3 Accessories

.1 **Isolation coating:** alkali resistant bituminous paint.

.2 **Plastic cement:** to CAN/CGSB 37.5.

.3 **Screws:** Self-tapping. Colour matched coated heads by Tapcon.

.4 **Rivets:** Stainless steel. Size to suit application. Colour to match siding. (Used only where permitted by Consultant).

.5 **Nail Anchors:** Galvanized steel nail in plastic insert with mushroom head. Sized to suit application, with minimum 25mm penetration into substrate.

.6 **Cleats:** of same material, and temper as sheet metal, minimum 50mm wide. Thickness same as sheet metal being secured.

.7 **Washers:** of same material as sheet metal, 1mm thick with rubber packings.

.8 **Touch-up paint:** as recommended by prefinished material manufacturer.

2.4 Sealant

.1 Conform to the requirements of Section 07 92 00 - Sealants.

.2 Colour to match sheet metal or approved by the Owner.

2.5 Membrane Flashing

.1 Membrane flashings that are to be applied under sheet metal at the parapet are to be in accordance with Section 07 26 13 Roofing Vapour Retarder.

.2 Air/Vapour barrier membrane being installed behind the new metal cladding shall be:

Manufacturer	Product
Bakor	Blueskin H.T. with Blueskin LVC Primer
Tremco	Exo Air HTF
Or Approved Equivalent	

2.6 Fabrication

.1 Sheet Metal Flashing:
- .1 Form pieces in 2400mm maximum lengths. Make allowance for expansion at joints.
- .2 Hem exposed edges on underside 12mm. Mitre and seal corners with sealant.
- .3 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.
- .4 Apply isolation coating to metal surfaces to be embedded in concrete or mortar.
- .5 All drip edges to be a minimum of 38mm projection from building façade.
- .6 All flashings are to have positive slope away from building to facilitate drainage.

PART 3 EXECUTION

3.1 Surface Preparation

.1 Ensure the substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.

.2 Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 Flashing Installation

.1 Install sheet metal in conformance with the details shown on the drawings and in accordance with the SMACNA “Architectural Sheet Metal Manual”.

.2 Ensure that all horizontal surfaces have positive slope. Panned surfaces are not acceptable.

.3 Use concealed fastenings except where approved before installation.

.4 Counter-flash bituminous flashings at intersections of roof with vertical surfaces and curbs. Flash joints using S-lock joints.

.5 Lock end joints and caulk with sealant.

.6 Insert metal flashing under cap flashing to form weather tight junction.

.7 Provide membrane flashing under sheet metal caps over walls. Drain the membrane to the exterior. Lap all joints. Bond to substrate.

3.3 Cleaning

.1 On completion and verification of performance and installation, remove surplus materials, excess materials, rubbish, tools and equipment.

.2 Leave work areas clean, free from grease, finger marks and stains.

.3 Touch up any scratches in the finish.

.4 The Consultant will reject any damaged sheet metal that has been installed.

END OF SECTION

PART 1 GENERAL

1.1 Description

This Section specifies the materials and methods for work involving sealants. This includes new sealants at the window perimeter and sealants at metal to metal joints.

1.2 Related Work

.1 Section 07 62 00 Sheet Metal Flashing and Trim.

.2 Section 07 46 19 Prefinished Metal Cladding

1.3 References American Society for Testing and Materials (ASTM):

.1 ASTM C510, Standard Test Method for Staining and Color Change of Single or Multicomponent Joint Sealants.

.2 ASTM C661, Standard Test Method for Indentation Hardness of Elastomeric Type Sealants by Means of a Durometer.

.3 ASTM C719, Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle).

.4 ASTM C794, Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants.

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

.6 ASTM C1193, Guide for Use of Joint Sealants.

.7 ASTM C1247, Test Method for Durability of Sealants Exposed to Continuous Immersion in Liquids.

.8 ASTM C1248, Standard Test Method for Staining of Porous Substrate by Joint Sealants.

.9 ASTM C1311, Specification for Solvent Release Sealants.

.10 ASTM C1330, Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.

.11 ASTM C1521, Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints.

.12 ASTM D2203, Standard Test Method for Staining from Sealants.

.13 ASTM D2240, Test Method for Rubber Property - Durometer Hardness.

1.4 Delivery, Storage and Handling

.1 Deliver materials to site in original factory packaging, labeled with manufacturer's name and address.

.2 Store materials off ground, indoors in dry location and in accordance with manufacturer's recommendation in clean, dry, well-ventilated area.

.3 Replace defective or damaged materials with new.

1.5 Site Conditions

.1 Proceed with installation of joint sealants only when:
- .1 Ambient and substrate temperature conditions are within limits permitted by joint sealant manufacturer or are above 4°C. Should it become necessary to apply sealants at temperatures below 5°C, inform the Consultant and consult the sealant manufacturer's representative. Proceed on their written instructions only.
- .2 When working in cold temperatures, only clean/prime as much surfaces that can be sealed before frost and/or condensation re-occur.
- .3 Joint substrates are dry and frost free.
- .4 Conform to manufacturer's recommended temperature, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

.2 Joint substrate conditions:
- .1 Proceed with installation of joint sealants only after contaminants capable of interfering with adhesion are removed from joint substrates.

1.6 Quality Assurance and Qualifications

.1 Surface preparation and sealant installation shall be carried out by a recognized specialized applicator that is thoroughly trained and competent in all aspects of this work.

.2 Single Source Responsibility: Provide exterior joint sealants by a single manufacturer responsible for testing of Project substrates to verify compatibility and adhesion of joint sealants.

.3 Notify Consultant for review of surface preparation prior to sealant application, and completed sealant application prior to demobilizing from each work area.

PART 2 PRODUCTS

2.1 Exterior Sealants

.1 Sealant Types and Locations:

Sealant Type	Joint Location/Type	Colour
Silicone	Metal to metal. Metal to brick	Match sheet metal Parapet Flashing
Silicone	Window Perimeter	Match Window Perimeter

.2 Silicone Sealants:

.1 For all-purpose silicone sealants, use one of the following Type S, Grade NS, Class 50, moisture curing silicone sealant, conforming to ASTM C 920 and CAN/CGSB-19-13-M:

Manufacturer	Product
Dow Corning Canada Inc.	Dow 795
Momentive Performance Materials	GE SilPruf SCS2000
Tremco Ltd.	Spectrem 2
Sika Construction	Sikasil WS-295
Or Approved Equivalent	

2.2 Cleaners and Primers

.1 Cleaners:

.1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant in accordance with sealant manufacturer's written recommendations.

.2 Primers:

.1 Use primers in accordance with sealant manufacturer's specifications.

.2 Primers shall be recommended by the sealant manufacturer for surfaces to be adhered to and shall not be detrimental to the surface to which it comes in contact.

2.3 Joint Backing Material

.1 Cylindrical Sealant Backing at window perimeter: ASTM C 1330, Type B non-absorbent, bi-cellular material with surface skin, or Type O open-cell polyurethane, as recommended by sealant manufacturer for application.

.2 Bond Breaker Tape: Polymer tape compatible with joint sealant materials and recommended by sealant manufacturer.

PART 3 EXECUTION

3.1 Examination

.1 Verify that conditions of existing substrate are acceptable for joint sealants installation in accordance with manufacturer's written instructions.

3.2 Surface Preparation

.1 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work.

.2 Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

.1 Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.

.2 Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods in addition to solvent cleaning to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Remove laitance and form-release agents from concrete.

.3 Clean porous and nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.

.3 Clean only as much area as can be sealed in one 1 hour. If cleaned areas are exposed to rain or contaminants (dirt, dust, etc.), the surface must be cleaned again. Clean existing silicone sealant that is sufficiently adhered and not mechanically damaged to prepare for recapping. Use two-cloth solvent wipe in accordance with ASTM C 1193.

.4 Ensure joint surfaces are dry and frost free.

3.3 Priming

.1 Select priming material compatible with sealant manufacturer.

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

.3 Prime joint substrates when recommended by sealant manufacturer or when indicated by preconstruction testing or experience. Apply recommended primer using sealant manufacturer's recommended application techniques.

.4 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking. If primed areas are exposed to rain or contaminants (dirt, dust, etc.), the surface must be cleaned and re-primed.

3.4 Backup Material

.1 Select backup material compatible with sealant manufacturer.

.2 Select joint backing materials recommended by sealant manufacturer to be compatible with sealant material. Install backing material at depth required to produce profile of joint sealant allowing optimal sealant movement. Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

.3 Install bond breaker tape over substrates when sealant backings are not used.

.4 Joint backing must be thoroughly dry. Do not install more joint backing and bond breaker tape than can be sealed in one working day.

3.5 Application

.1 Install sealants using methods recommended by sealant manufacturer, in depths between 6.4 and 12.7mm unless otherwise recommended for application. Apply in continuous operation from bottom to top of joint vertically and horizontally in a single direction. Apply using adequate pressure to fill and seal joint width.

.2 Use sufficient pressure to fill voids and joints solid. Ensure sealant is well adhered to joint backing and substrate.

.3 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.

.4 Tool exposed surfaces before skinning begins to give slightly concave shape. Tool sealants immediately with appropriately shaped tool to force sealants against joint backing and joint substrates, eliminating voids and ensuring full contact. Using tooling agents approved by sealant manufacturer for application.

.5 Remove excess compound promptly as work progresses and upon completion, before compound cures.

.6 Ensure existing drainage holes provided for wall systems are not blocked by the sealant material.

.7 Profile:

- .1 Maintain the minimum and maximum sealant depths as recommended by the manufacturer. Provide sealant depth that is ½ the joint width where possible within these limits. Increase average sealant size as required to accommodate application tolerances.
- .2 Unless otherwise approved by the Consultant, joint widths shall be greater than 10mm. Identify any joint widths less than this width to the Consultant for direction.
- .3 For joints wider than 19mm, application of sealant in several passes may be required (depend on joint configuration, weather conditions, access and material type). Follow the sealant manufacturer’s recommendations for maximum joint width and application methods.

.8 Curing:

- .1 Cure sealants in accordance with sealant manufacturer's instructions.
- .2 Do not cover up sealants until proper curing has taken place.

3.6 Cleaning

.1 Leave Work area clean at end of each day.

.2 Clean adjacent surfaces immediately.

.3 Remove excess sealant using materials and methods approved by sealant manufacturer that will not damage joint substrate materials.

.4 Remove masking tape immediately after tooling joint without disturbing seal.

.5 Remove excess sealant from nonporous surfaces while still uncured.

3.7 Protection

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

.2 Repair damage to adjacent materials caused by joint sealants installation.

END OF SECTION

PART 1 GENERAL

1.1 Description

This section specified material and methods for the installation of resilient tile flooring and floor markings.

1.2 References

.1 American Society for Testing and Materials International (ASTM):
  .1 ASTM F1066-04, Standard Specification for Vinyl Composition Floor Tile.

.2 Canadian General Standards Board (CGSB):
  .1 CAN/CGSB-25.20-95, Surface Sealer for Floors.
  .2 CAN/CGSB-25.21-95, Detergent-Resistant Floor Polish.

.3 Health Canada/Workplace Hazardous Materials Information System (WHMIS):
  .1 Safety Data Sheets (SDS).

.4 South Coast Air Quality Management District (SCAQMD), California State:
  .1 SCAQMD Rule 1168-05, Adhesives and Sealants Applications.

1.3 Environmental Requirements

.1 Maintain air temperature and structural base temperature at flooring installation area above 20 degrees C for 48 hours before, during and for 48 hours after installation.

1.4 Maintenance

.1 Extra Materials:
  .1 Provide 20 extra tiles required for this project for maintenance use.
  .2 Extra materials from same production run as installed materials.
  .3 Identify each container of floor tile and each container of adhesive.
  .4 Deliver to the Owner upon completion of the work of this section.
  .5 Store where directed by Owner.

PART 2 PRODUCTS

2.1 Materials

.1 Vinyl composition tile: to ASTM F1066, Non-aebestos, Class 3 - surface patterned 3mm thick, 300x300mm size, in standard colour to match remaining school. Provide 3 samples to the Owner for review and approval.

.2 Finish:
  .1 Factory prefinished.

.3 Resilient base: to rubber baseboard, coved, 100 mm tall, including premoulded end stops and external corners for coved base only. Colour will be black.

.4 Primers and adhesives: waterproof, as recommended by flooring manufacturer for specific material on applicable substrate, above, at or below grade.
    .1 Flooring adhesives:
        .1 Adhesive: maximum VOC limit 50 g/L to SCAQMD Rule 1168.
    .2 Cove base adhesives:
        .1 Adhesive: maximum VOC limit 50 g/L to SCAQMD Rule 1168.

.5 Sub-floor filler and leveller: white premix latex requiring water only to produce cementitious paste as recommended by flooring manufacturer for use with their product.

.6 Sealer: to CAN/CGSB-25.20, Type 2-water based.
    .1 Sealant:
        .1 Sealant: maximum VOC limit 50 g/L to SCAQMD Rule 1168.

.7 Wax: to CAN/CGSB-25.21, type recommended by flooring manufacturer.

.8 Game Line Paint System:
    .1 PBWW Inc. GEN-U-LINE 3000 Series 2-Component Polyurethane Game Line Paint System or approved equivalent:
        .1 Width and layout of lines, as per Project Drawings .
        .2 Colours to be reviewed and approved by Owner.

PART 3 EXECUTION

3.1 Manufacturer's Instructions

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 Inspection

.1 Ensure concrete floors are dry, by using test methods recommended by tile manufacturer.

3.3 Sub-Floor Treatment

.1 Remove existing resilient flooring and adhesive. Take all precautions and measures outlined in the abatement section of this specification.

.2 Remove old adhesives to prevent residual, old flooring adhesives from bleeding through to new flooring and/or interfering with the bonding of new adhesives.

.3 Clean floor and apply filler; trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler cured and dry.

.4 Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with sub-floor filler.

.5 Prime the subfloor to meet the flooring manufacturer's printed instructions.

3.4 Tile Application

.1 Provide high ventilation rate, with maximum outside air, during installation, and for 72 hours after installation. If possible, vent directly to outside. Do not let contaminated air recirculate through district or whole building air distribution system. Maintain extra ventilation for at least one month following building occupation.

.2 Apply adhesive uniformly using recommended trowel in accordance with flooring manufacturer's instructions. Do not spread more adhesive than can be covered by flooring before initial set takes place.

.3 Lay flooring with joints parallel to building lines to produce symmetrical tile pattern. Border tiles minimum half tile width.

.4 Install flooring to square half-running bond pattern where the direction of the lines is perpendicular to the length of the room.

.5 As installation progresses, and after installation, roll flooring in 2 directions with 30 kg minimum roller to ensure full adhesion.

.6 Cut tile and fit neatly around fixed objects.

.7 Install feature strips and floor markings where indicated. Fit joints tightly.

.8 Install flooring in pan type floor access covers. Maintain floor pattern.

.9 Continue flooring through areas to receive movable type partitions without interrupting floor pattern.

.10 Terminate flooring at centerline of door in openings where adjacent floor finish or colour is dissimilar.

.11 Install metal edge strips at unprotected or exposed edges where flooring terminates.

3.5 Base Application

.1 Lay out base to keep number of joints at minimum. Base joints at maximum length available or at internal or premoulded corners.

.2 Clean substrate and prime with one coat of adhesive.

.3 Apply adhesive to back of base.

.4 Set base against wall and floor surfaces tightly by using 3 kg hand roller.

.5 Install straight and level to variation of 1:1000.

.6 Scribe and fit to door frames and other obstructions. Use premoulded end pieces at flush door frames.

.7 Cope internal corners. Use premoulded corner units for right angle external corners.

.8 Use formed straight base material for external corners of other angles, minimum 300 mm each leg. Wrap around toeless base at external corners.

3.6 Gymnasium Line Markings

.1 Surface Preparation:
- .1 Clean the floor thoroughly with a neutral cleaner to remove dust, oils, and wax to line paint manufacturer's instructions.
- .2 Ensure the surface is completely dry before applying paint.

.2 Layout and Alignment:
- .1 Verify court dimensions with governing sports authorities before installation.
- .2 Use laser alignment tools or masking tape to mark guidelines before applying tape. If masking tape is used verify the edges of the tape are well sealed to the floor.
- .3 Ensure straight, precise lines and correct intersections for multi-sport applications.

.3 Paint Application:
- .1 Prime substrates when recommended by line paint manufacturer. Apply recommended primer using manufacturer's recommended application techniques.
- .2 Mix and apply paint line product in accordance with manufacturer's written instructions.
- .3 Apply paint with an appropriate roller that is compatible with the solvents in the line paint.
- .4 If the roller is entrapping air bubbles in the paint, pass a fine bristle brush through the line paint immediately after application.
- .5 Apply paint in a minimum of two thin coats. Apply second coat 20 – 30 minutes after the initial coat is applied.
- .6 Apply a third coat within 20 – 30 minutes after the second coat, should full coverage of the paint be not achieved.
- .7 Lightly abrade surface with sandpaper should line paints dry 24 hours or longer between successive coats, prior to the application of another coat.
- .8 Remove masking tape immediately after application and before the paint sets. When removing the tap, pull it back against the game line to prevent bleeding or tailing.
- .9 Remove accidental spillage or traces of the paint from the floor surface, before the paint cures. Use thinners or Acetone in accordance with manufacturer's written instructions.
- .10 Do not allow foot traffic on floor until 72 hours after application. Athletic equipment is not allowed over the lines until 7-10 days after application.

.10 For intersections and sharp corners:
- .1 Overlap and trim with a precision knife.
- .2 Avoid excessive layering to prevent peeling.

3.7 Field Quality Control

.1 Manufacturer's Field Services:

.1 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

.2 Final Acceptance:
- .1 Ensure paint is fully bonded and free from lifting or bubbles.
- .2 Inspect all markings for adhesion, alignment, and completeness.
- .3 Confirm compliance with sports regulations and court dimensions.
- .4 Provide maintenance instructions for long-term performance.

3.8 Cleaning

.1 Proceed in accordance with Section 01 74 11 – Interior Protection and Cleaning.

.2 Remove excess adhesive from floor, base and wall surfaces without damage.

.3 Clean, seal and wax floor and base surface to flooring manufacturer's instructions. In carpeted areas clean, seal and wax base surface before carpet installation.

3.9 Protection

.1 Protect new floors from time of final set of adhesive until final waxing.

.2 Allow tape to set for 24 hours before heavy foot traffic.

.3 Prohibit traffic on floor for 48 hours after installation.

END OF SECTION

PART 1 GENERAL

1.1 General

This section outlines the work required to prepare and paint the underside of the new metal decking and the existing OWSJs and exposed duct work within the gymnasium.

1.2 Related Sections

.1 Section 05 32 23 Steel Roof Decking.

.2 Section 07 92 00 Sealants.

1.3 Ambient Conditions

.1 Air, surface, and material temperatures during application are to be a minimum of 5C and a maximum of 60C and a minimum of 5C above the dewpoint. The relative humidity shall not be higher than 85%.

.1 Ambient and substrate temperature conditions are within limits permitted by joint sealant manufacturer or are above 4° C. Should it become necessary to apply sealants at temperatures below 5°C, inform the Consultant and consult the sealant manufacturer's representative. Proceed on their written instructions only.

1.4 Quality Assurance

.1 Coatings shall be visibly free from flow lines, sags, streaks, blisters or other surface imperfections in the dry-film state when viewed from 3m of the metal surfaces and inspected at angles of 45° and 90°.

.2 Minor scratches and blemishes shall be touched up and shall match the new adjacent finishes in colour and gloss.

.3 The Consultant shall carry out random adhesion and thickness tests in accordance with ASTM-D3359.

.4 The coating manufacturer shall visit the site and provide a written site report to the Consultant.

1.5 Warranty

.1 The coating is to be warranted for a period of 10 years from date of Substantial Completion.

PART 2 MATERIALS AND PRODUCTS

2.1 Paint

.1 The system shall be manufactured by Sherwin Williams as follows:

.1 Base Coat: 2 coats of Macropoxy 646-100.

.2 Finish Coat: 2 coats of Hi-Solids Polyurethane (B65-350) semi-gloss.

PART 3 EXECUTION

3.1 Surface Preparation

.1 Surface must be clean, dry and in sound condition. Remove any oil, dust, grease, dirt, rush, and other foreign material to ensure adequate adhesion.

.2 Prepare surface in accordance with SSPC SP 1 – Solvent Cleaning, SSPC SP 2 – Hand Tool Cleaning or SSPC SP 3 – Power Tool Cleaning, for applicable surfaces required by the manufacturer.

.3 Prime any bare metal surfaces on the same day as it is cleaned.

3.2 Base Coat Application

.1 Mix materials thoroughly with low speed power agitation. Make certain that no pigment remains on the bottom of the can.

.2 Combine one part by volume of Part A with one part by volume of Part B and thoroughly agitate again.

.3 Allow the material to sweat-in prior to application. Re-stir before using.

.4 Apply 2 coats of base coat to a minimum thickness of 8 mils per coat.

.5 Allow to cure for 24 hours prior to finish coat application. In lower temperatures (less than 10C), allow to cure for 48 hours.

3.3 Finish Coat Application

.1 Mix contents of each component thoroughly with low speed power agitation. Make certain that no pigment remains on the bottom of the can.

.2 Combine four parts by volume of Part S with one part by volume of Part T and thoroughly agitate again.

.3 Apply 2 coats of finish coat to a minimum thickness of 5 mils per coat.

3.4 Cleaning

.1 Clean any spills and spatters immediately with Reducer #58, R7K58.

END OF SECTION

PART 1 GENERAL

1.1 Description

This section specifies the installation of drains and accessories for draining roofs.

1.2 Related Requirements

.1 Section 01 33 00 Submittals.

.2 Section 07 51 00 Built-up Asphalt Roofing.

1.3 Inspection and Testing

.1 Water test each drain prior to starting work in that area for 30 minutes to verify it to be clear and free draining. Apply water into drain at a rate not less than 10 litres per minute.

PART 2 PRODUCTS

All materials on the job site shall be new, CSA approved, best in quality and uniform, as specified.

2.1 Roof Drains

.1 Roof drains shall conform to ANSI A112.212-Roof Drains. The drain is to consist of vandalproof cast aluminum dome with hinged access gates. Mounting bolts to be welded to reinforcement discs with aluminum ferrule and drain deck flange. Aluminum drain body to be minimum 2.3mm thick. The drain shall be complete with copper flange, membrane clamping ring, deck clamping ring, cast aluminum strainer dome and flow control ring.

.2 Approved products include:

Manufacturer	Product
Zurn Industries (Canada) Ltd.	Model Z100
Mifab Inc. (Toronto, ON)	Series R1100
Watts Canada (Burlington, ON)	Model RD-300
Or Approved Equivalent	

2.2 Drainage Connection

.1 Where the drain pipe is accessible from below, connect the drains to plumbing with a mechanical “MJ” coupling.

.2 Connection will be to a 100 mm pipe.

2.3 New Plumbing

.1 **Drainage Piping and Fittings:** Drainage piping and fittings shall be medium weight, cast-iron mechanical joint pattern and stainless steel clamps. Size to match existing, but no less than 100mm diameter unless approved by Consultant.

.2 **Clean-Outs:** Clean-out bucket shall have dura-coated-iron body, with neoprene gasket and secured cover.

.3 **Supports:** All piping shall be supported at all floor drain locations and pipe elbows. Supports on horizontal piping shall be at 2400mm maximum spacing. Support piping on walls with Grinnel Figure 126 pipe supports fastened to the wall with bolts into lead shields.

.4 **Pipe Insulation:** Fiberglass SSL II Pipe Insulation 25mm (1") with vapour retarder jacket.

PART 3 EXECUTION

3.1 Equipment Delivery

The Contractor shall review the job completion schedule and make sure that the materials that are intended to be used shall be on the job site according to schedule. Use of substituted materials due to delivery problems may not be accepted by the Owner.

3.2 Drain Installation at Existing Drain Location

.1 Check to ensure that existing plumbing flows freely. Notify the Consultant if any obstruction to flow is encountered prior to installing the new drain.

.2 Adjust roof drains to ensure positive flow of water off the membrane. Grind or cut away existing drain flanges to ensure proper seating of the new drain.

.3 Ensure drain insert maintains positive seal to existing plumbing.

3.3 New Drain Installation

.1 Identify the exact drain location by flooding the area in question to determine the slab low point or other areas of ponding.

.2 Core new hole through concrete slab. Protect interior finishes and equipment form drainage during coring.

.3 Ensure drain connection maintains positive seal to existing plumbing.

.4 Wrap exposed drain pipes and drain bowl with insulation. Pipes are to be insulated 2,400mm (8'-0") from the drain.

END OF SECTION

PART 1 GENERAL

1.1 Summary

This section outlines the requirements for the protection of HVAC systems during construction, including filtration, protection and post-construction cleaning. This work is isolated to the gym, stage and small office areas.

1.2 Reference

.1 Abbreviations and Acronyms: See ACR, The NADCA Standard.

.2 Reference Standards:
- .1 Following current standards and publications of issues currently in effect form part of this specification to extent specified:
  - .1 American National Standards Institute/Institute of Inspection Cleaning and Restoration Certification (ANSI/IICRC).
    - .1 ANSI/IICRC S520 - Standard for Professional Mold Remediation.
- .2 National Air Duct Cleaners Association (NADCA) – ACR Standard for Assessment, Cleaning & Restoration of HVAC Systems.
- .3 ASHRAE 62.1 – Ventilation for Acceptable Indoor Air Quality.
- .4 National Fire Protection Association (NFPA):
  - .1 NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems.
  - .2 NFPA 90B - Standard for the Installation of Warm Air Heating and Air-Conditioning Systems.
- .5 North American Insulation Manufacturers Association (NAIMA):
  - .1 Cleaning Fibrous Glass Insulated Air Duct Systems.
- .6 Sheet Metal and Air Conditioning Contractors' National Association (SMACNA):
  - .1 HVAC Duct Construction Standards - Metal and Flexible.
- .7 Underwriters’ Laboratories (UL):
  - .1 UL Standard 181 - UL Standard for Safety Factory-Made Air Ducts and Connectors.
  - .2 UL Standard 181A - UL Standard for Safety Closure Systems for Use with Rigid Air Ducts.
  - .3 UL Standard 181B - Standard for Closure Systems for Use With Flexible Air Ducts and Air Connectors.
  - .4 UL Standard 723 - Standard for Test for Surface Burning Characteristics of Building Materials.

1.3 Administration Requirements

.1 Coordination:
- .1 Coordinate the Work of this section with the work of other trades, and the work of different contractors.

.2 Sequencing:
- .1 Perform duct cleaning work after construction.

1.4 Submittals

.1 Informational Submittals:
- .1 Duct cleaning plan: Before commencing cleaning work, submit written work plan including following information:
  - .1 Scope of Work identifying HVAC components to be cleaned or restored.
  - .2 Itemize specific environmental engineering controls required for workspace, and special work requirements.
  - .3 Detail cleaning work means and methods.
  - .4 Name, contact information, and functional tasks performed by each representative of each firm and contractor involved with the work.
- .2 Manufacturer's Instructions: Submit cleaning agent product installation instructions.
- .3 Field Quality Control Submittals:
  - .1 Submit laboratory analysis results if NADCA Vacuum Test is used for cleanliness verification.
  - .2 Submit documentation detailing chain of custody for test samples if outside laboratories or testing agencies performed sample analysis or testing.
- .4 Qualification Statements: Show project experience, and certifications for:
  - .1 HVAC Cleaning Contractor.
  - .2 Supervisor.
  - .3 Inspector.
  - .4 Hygienist.
  - .5 Testing Agency.

.2 Closeout Submittals:
- .1 Record Documentation: Submit documentation verifying compliance with this specification for work performed. This documentation may include:
  - .1 Completion of cleaning work, as verified by the Consultant's visual inspection and verification of cleanliness.

1.5 Qualifications

.1 HVAC System Cleaning Contractor: Mut abide by all rules and regulations set out by the NADCA and be experienced in HVAC cleaning projects of similar size and complexity:
- .1 Supervisor: Employ NADCA-certified Air Systems Cleaning Specialist (ASCS) responsible for project oversight.
- .2 Inspector: Employ NADCA-Certified ASCS, or NADCA-Certified Ventilation Inspector (CVI) to perform site inspections.

PART 2 PRODUCTS

2.1 Cleaning Materials and Equipment

.1 Cleaning Agents: Mild Detergent Solution (pH Neutral Soap & Water).

.2 Water: Potable.

.3 Use HEPA-filtered vacuum systems to prevent recontamination.

.4 Use mechanical agitation tools, such as rotary brushes, air whips, and compressed air nozzles, to dislodge debris.

.5 Protective Materials: Polyethylene Sheeting (6 mil minimum thickness) and non-damaging contractor tape.

PART 3 EXECUTION

3.1 Pre-Protection Requirements

.1 Before installing protection materials, inspect HVAC equipment for pre-existing dust, debris, or damage.

.2 Confirm that HVAC systems are turned off and isolated per project requirements.

.3 Ensure all protective measures remain accessible for periodic inspection and maintenance.

3.2 Protection Installation

.1 Furnace and Air Handling Units (AHUs) in the stage area:
- .1 Wrap intake and exhaust openings with 6 mil polyethylene sheeting, secured with tape.
- .2 Ensure all control panels remain accessible for periodic system checks.

.2 Duct Openings, Vents, Diffusers, and Grilles:
- .1 Cover with temporary duct protection film.
- .2 Secure edges with low-residue tape to prevent air leaks and contamination.
- .3 For larger openings, use sealed plywood covers fastened with non-penetrating clips.

3.3 Protection Maintenance & Removal

1. Conduct weekly inspections to ensure protective materials remain secure and intact.

2. If HVAC protection is compromised (e.g., torn sheeting), replace or resecure immediately.

3. Remove protective coverings only during final cleaning and pre-commissioning phase.

4. Clean all surfaces before activating HVAC equipment to ensure system integrity.

3.3 Pre-Cleaning Inspection

.1 Conduct a visual inspection of ductwork using cameras or access points to assess contamination levels.

.2 Verify that duct systems are sealed and isolated from ongoing construction activities.

3.4 HVAC System Preparation

.1 Services Openings:
- .1 Access duct cleaning work through existing or new service openings, allowing safe access and thorough cleaning throughout specified components.
- .2 Work through service openings sized to allow mechanical tool entry and visual inspection, as required for cleaning activities.
- .3 Where possible, work through existing service openings.
- .4 Where new service openings are required, install openings as follows:
  - .1 Do not degrade structural, thermal, or functional system integrity, and comply with applicable SMACNA duct construction methods.
  - .2 Install service openings complying with applicable UL and SMACNA standards, federal, state, and local code requirements, and requirements of Authorities Having Jurisdiction.
  - .3 Where required, install duct access doors and service panels fabricated with materials complying with SMACNA and UL 723.
  - .4 Where required, install tapes and mastics complying with UL 181A/B.
  - .5 Where required, install closure panels fabricated from equivalent material and same or heavier gage.
  - .6 Mechanically fasten closure panels over service openings with screws or rivets at perimeter, maximum 100mm spacing.
  - .7 Fabricate closure panel to overlap duct opening perimeter, minimum 25mm.
  - .8 Insulate closure panels to match adjacent duct interior and exterior surfaces.
  - .9 Seal rigid fibrous glass duct systems in accordance with NAIMA recommended practices.
    - .1 Install closure techniques: UL Standard 181 or UL Standard 181A.
  - .10 Close service openings installed in rigid fibrous glass ductwork and metal ductwork with fibrous glass liner with no exposed fibrous glass edges exposed to airstream.
- .5 Install service openings that can be reopened for future inspection or remediation:
  - .1 Mark outside of duct and report service opening locations to Owner in project closeout documents.

.6 Do not cut service openings into flexible duct:
  .1 Disconnect flexible duct at both ends as required for inspection and cleaning.
  .2 Reconnect flexible duct ends in accordance with SMACNA standards.

3.5 Cleaning Equipment Maintenance and Use

.1 Maintain equipment employed in work performance in good working order, consistent with equipment manufacturer's written instructions and applicable jurisdictional requirements.

.2 Clean and inspect equipment before bringing to work site.

.3 Do not introduce contaminants from cleaning equipment into indoor environment or HVAC system.

.4 Service equipment to limit possible HVAC system contamination from insufficient service equipment cleaning, and unsafe operating conditions for service personnel and building occupants.

.5 Perform activities requiring opening contaminated vacuum collection equipment on-site, including servicing or filter maintenance, in appropriate containment area or outside building.

.6 Clean and seal collection devices, vacuums and other tools and devices before relocating to different building areas, moving equipment through occupied spaces, and before removing equipment from building.

.7 Locate fuel-powered equipment to prevent combustion emissions and air exhaust emissions from entering building envelope:
  .1 Monitor and manage equipment operation and location to prevent introduction of combustion emissions into occupied space.

.8 Furnish HEPA-filtered equipment with minimum collection efficiency of 99.97 percent at 0.3 micron particle size, when vacuum collection equipment exhausts within building envelope.

3.6 Cleaning - General

.1 Perform HVAC system cleaning in accordance with ACR, The NADCA Standard.

.2 Remove visible non-adhered substances:
  .1 Clean HVAC components employing agitation device to dislodge contaminants from HVAC component airside surfaces and then capturing contaminants with vacuum collection device.
    .1 Acceptable methods include those that do not damage integrity of ductwork and other system components and does not damage porous surface materials including internal insulation and duct lining.
  .2 Clean HVAC components using source removal mechanical cleaning methods designed to extract contaminants from within HVAC system components and safely remove contaminants from facility.

.3 Select source removal methods rendering HVAC system components visibly clean and capable of passing cleanliness verification methods as described in ACR, The NADCA Standard.
.4 Do not employ cleaning method, or combination of methods, that can damage HVAC system components or negatively alter system integrity.
.5 Do not damage HVAC system and components with wet cleaning, power washing, steam cleaning and other wet process cleaning.

.3 Apply cleaning materials in accordance with manufacturer's instructions:
.1 Do not apply cleaning agents or water to electrical, fibrous glass or other porous HVAC system components.

.4 Capture removed contamination and cleaning materials and legally dispose.

.5 Verify HVAC system surface and component cleanliness in accordance with ACR, The NADCA Standard.

.6 Particulate Collection:
.1 Employ contaminant removal methods incorporating vacuum collection devices operated continuously during cleaning.
.1 Connect vacuum collection device to component being cleaned through service opening.
.2 Employ vacuum collection device of sufficient capacity to maintain areas being cleaned under negative pressure, containing debris and preventing contaminant migration to adjacent areas.
.2 When possible, discharge ducted exhaust air from vacuum collection devices outdoors, keeping discharge air clear of outdoor air intakes, operable windows, and other locations allowing outdoor air entry.
.1 Do not violate outdoor environmental standards, codes or regulations.
.2 Do not discharge unfiltered air from vacuum collection devices outdoors.
.3 When necessary to exhaust vacuum collection devices indoors, including hand-held and wet-vacuum machines, keep discharge air in work area, and provide machine air discharge HEPA filtration, rated at 99.97 percent collection efficiency for 0.3 micron particles and larger.

3.7 Air Duct Systems

.1 Clean airside surfaces of ducts to remove non-adhered substances.

.2 Access air duct interiors through service openings in system that are large enough to accommodate mechanical cleaning procedures and allow for cleanliness verification.

.3 Use mechanical agitation methods to remove non-adhered substances.

.4 Capture dislodged substances with vacuum collection device.

.5 Do not employ cleaning methods that damage HVAC components.

.6 Mark position of dampers and air-directional mechanical devices inside HVAC system prior to cleaning.

.7 When cleaning is complete, restore dampers and devices to their marked positions.

.8 After cleaning, verify cleanliness of HVAC system surfaces and components in accordance with ACR, The NADCA Standard.

3.8 Field Quality Control

.1 Inspect work to verify cleanliness immediately after HVAC system component cleaning and prior to placing system in operation.

.2 Do not apply treatment, coating, or antimicrobial agent to cleaned HVAC system components until the work has been inspected and determined to be acceptable.

.3 Visual Inspection:
- .1 When cleaning is complete, perform final inspection in presence of the Consultant.
- .2 Perform visual inspection of porous and non-porous HVAC system component surfaces. Verify HVAC system components are visibly clean as defined in ACR, The NADCA Standard.
- .3 If no contaminants are evident through visual inspection, HVAC system components are considered clean and acceptable.
- .4 If contaminants are evident through visual inspection, repeat cleaning system areas where contaminants are visible.

.4 NADCA Vacuum Test for Non-Porous Surfaces Only:
- .1 When required, perform Vacuum Test in presence of the Consultant and in accordance with ACR, The NADCA Standard.
- .2 Apply NADCA Vacuum Test template to ducted airside of component's surface.
- .3 Attach closed-face vacuum cassette with filter media to calibrated air sampling pump and pass closed-face of filter cassette over two 2 cm x 25 cm openings marked on template.
- .4 The cassette shall be moved at a rate not greater than 5 cm per second (5 seconds per slot in each direction).When sampling is complete, prepare filter cassette and weigh it to determine total amount of debris collected.
- .5 Surface is considered acceptably clean, when net weight of debris collected on filter cassette is less than 0.75 mg/100 cm^2.

3.9 System Startup

.1 Install closures over services access openings before allowing system restart for normal facility operation.

.2 When system is placed in operation, remove temporary filter elements after minimum 24 hours operation.

3.10 Disposal of Job Site Duct Cleaning Waste

.1 Seal HVAC system debris and removed contaminated materials in containers before removal from work area.

.2 Handle materials classified as hazardous by governmental agencies in accordance with applicable federal, state, and local, regulations and codes.

.3 Dispose of debris removed from HVAC system in accordance with applicable federal, state, and local requirements.

END OF SECTION

PART 1 GENERAL

1.1 General

The whole of the work specified herein, or as shown on the drawings, is intended to comply strictly with the latest edition of the Canadian Electrical Code, the Ontario Electrical Code and the requirements of all the local authorities having jurisdiction.

1.2 Description

.1 This Division shall include and supply all materials and labour required for the complete installation of all electrical work in the buildings and on the site, as specified herein, and as shown on the drawings.

.2 Items mentioned herein and not shown on the drawings and vice-versa are to be covered by the Contract. All items which are necessary to form a complete and workable system shall be included in the Contract.

.3 Should conflict occur in or between drawings and specifications, this Division is deemed to have estimated on the more expensive way of doing work unless he shall have asked for and obtained a written decision before submission of tender as to which method or materials will be required. No interpretations nor instructions given verbally by any person or persons whomsoever will be considered valid under these specifications.

1.3 Environmental Condition

Not applicable.

1.4 Inspection and Testing

.1 Notify Consultant for field review of delivery and installation of electrical equipment.

.2 Test and operate all equipment and electrical systems to the satisfaction of the Consultant prior to acceptance.

.3 Perform insulation tests as per articles 2-500-502-504 and 506, of the Electrical Safety Code for all wiring and equipment installed under this Section. Perform insulation test with 1,000 volts "megger" insulation tester for low voltage systems. Measure insulation resistance between conductor to ground, and if less than specified minimum as per Table 24, of the Electrical Safety Code on any lighting or power circuit, replace such circuit.

PART 2 MATERIALS AND PRODUCTS

2.1 Noise and Vibration

.1 All equipment supplied and/or installed by this Division shall operate without objectionable noise or vibration and to the satisfaction of the Owners.

.2 This Division shall be responsible for changes and/or additions necessary to eliminate such objectionable noises and vibrations without extra cost to the Contract.

2.2 Conduits

.1 Existing conduit shall be removed, labelled, and reinstated.

2.3 Building Wire

.1 Wire shall be minimum size No. 12 AWG. Conductors for general purpose branch wiring No. 12 AWG and smaller shall be solid soft annealed copper with PVC insulation type TWH. Conductors size No. 10 AWG and larger shall be stranded soft annealed copper with PVC insulation type R90 X link.

.2 Conductors for feeder wiring shall be stranded soft annealed copper with PVC insulation type R90 - X link.

.3 The use of PVC jacketed M1 cable in lieu of conduit and wire is acceptable. Use only manufactured connections.

2.4 Light Fixtures and Ballasts

.1 Provide suspended ambient luminaires, providing a minimum of 115 lumens per Watt. Approved manufacturers are:
- .1 Cree Lighting;
- .2 Lumenpulse (Canada);
- .3 Philips Signify;
- .4 Eaton;
- .5 Sylvania Lighting; and,
- .6 Approved equivalent.

.2 Light Output (Luminous Flux):
- .1 Minimum 10,000 lumens per fixture for general gym lighting.

.3 Color Temperature:
- .1 4000K–5000K for bright, neutral-white light that enhances visibility.

.4 Color Rendering Index (CRI):
- .1 CRI ≥ 80

.5 Beam Angle:
- .1 120° wide-angle distribution for even coverage.

.6 Ingress Protection (IP Rating):
- .1 IP65 or higher for dust and impact resistance.

.7 Impact & Vibration Resistance:
  .1 IK10 rating for gym environments.

.8 Lifespan & Efficiency:
  .1 Minimum 50,000 hours rated life.
  .2 ≥ 130 lumens per watt for energy efficiency.

PART 3 EXECUTION

3.1 Workmanship and Materials

.1 It is to be understood that any unsatisfactory work shall be rectified by this Division at its own expense. This Division shall pay the cost of all trades that may be affected by his work or correction.

.2 The entire work shall be executed using only specified materials and apparatus, except where the words 'or approved equal' occur.

.3 The listing herein of any article, material, operation or method requires that this Division supply all items listed of quality noted and quantity required and perform such operations according to the methods prescribed supplying therefore all necessary labour and incidentals.

.4 All equipment, wiring, and wiring devices shall conform to the Canadian Electrical Code for the purposes for which they are to be used. All equipment shall bear the approval of the C.S.A.

3.2 Liability

.1 Assume full responsibility for laying out this work and for any damage or extra work resulting from improper location or performance of this work.

.2 Supply to other trades any equipment to be built-in by them or measurement to allow necessary openings to be left.

.3 Protect all work from damage resulting from doing work of this Division. Cover floors and other work with tarpaulins, if necessary. Repair all damage to floor surfaces or other parts of the building resulting from doing the work of this Division, to the satisfaction of the Owner.

.4 Be responsible for the condition of all materials under this Division and provide all necessary protection and maintenance of the work of this Division until the building has been completed and accepted.

.5 Be solely responsible for loss or damage of materials or equipment supplied under this Division and delivered to the site from whatever source.

3.3 Cleaning-Up

.1 During construction, this Division shall keep the premises reasonably clear of rubbish, waste materials, etc. After completion of its work, it shall remove all rubbish, debris, etc., due to its work or employees, sub-contractors, agents, etc., and shall leave the premises and all parts of its work in good order.

.2 The General Contractor may, if considered desirable, and on notice to this Division, protect, clean, etc., any work in the course of construction and charge to each or any sub-contractor a proportionate share of such work and provision.

3.4 Location of Equipment

.1 The Contractor shall markup the existing layout so that it can be reinstated after construction. All fixtures and ballasts shall be removed and disposed of. All conduit and wiring shall be temporarily disconnected, labelled and reconnected to the new fixtures and ballast upon completion of the roof installation.

.2 Surface-mounted conduit and lighting may not be directly fastened to the corrugated metal roof deck. They shall be connected to the OWSJ system.

3.5 Re-installation of Conduits

.1 Conduits shall be run exposed.

.2 Conduit ends shall be reamed and open ends capped with proper threaded caps immediately after installation. Use of wooden plugs will not be permitted.

.3 All wiring shall be in conduit. Provide nylon fishrope in all empty conduit.

.4 Conduits shall be kept at least 15mm clear of pipes, flues, and other such work.

.5 Conduits shall be supported at intervals not exceeding 1500mm on centres using T & B or approved equal conduit clamps.

.6 Provide conduit expansion joints or fittings where conduit crosses building expansion joints, also at 30 metres in straight runs of conduit 30 metres or longer.

.7 Field bends and offsets shall be uniform and symmetrical without flattening conduit. Minimum bending radius shall be ten times the conduit diameter.

.8 All horizontal conduit and wiring runs shall be installed where exposed on the surface of the building fabric on the ceiling with vertical conduit and wiring drops installed exposed on the surface of the wall.

.9 All conduit and wiring shall be run parallel to the building lines and shall be installed in a neat and workmanlike manner.

3.6 Wire Installation

Building Wiring:

.1 All building wiring shall be installed in rigid steel conduit as previously specified.

.2 Splicing of conductors #8 AWG and larger, shall be done with solderless pressure type splicing connectors of the split bolt or compression sleeve type. Splices shall be insulated with filler putty and minimum of two half-lapped layers of vinyl plastic tape. Compression joints shall be made using approved hydraulic tools to assure a permanent mechanically secure high conductivity joint.

.3 Conductors up to and including #10 AWG shall be joined with and twist plastic insulated pressure connectors having expandable tapered spring and extended skirt. Hand twist joints will be not permitted with conductors larger than #10 AWG and number of size of conductors within each connectors will not be allowed for this type of joint.

.4 A minimum of 150mm must be maintained between wiring and all water pipes, flues, ducts and such other work.

3.7 Grounding

.1 Equipment requiring grounding by CSA Electrical Code, H.E.P.C. of Ontario and local ordinances shall be so grounded regardless of whether it has been shown on Drawings or called for in these specifications.

.2 Grounds shall be so arranged that under normal operating conditions no injurious amount of current will flow in any grounding conductor.

.3 Provide insulated copper ground wire in all PVC conduit.

END OF SECTION

Drawings

DRAWING LIST

BR0.0	TITLE PAGE
BR1.0	PROPERTY AERIAL VIEW AND SITE PLAN
BR1.1	OVERALL ROOF PLAN AND 1ST FLOOR PLAN
BR2.0	ENLARGED ROOF PLAN
BR2.1	ENLARGED 1ST FLOOR PLAN
BR2.2	GYMNASIUM GAME LINE LAYOUTS
BR2.3	ENLARGED REFLECTED CEILING PLAN
BR3.0	EXISTING PHOTOS
BR3.1	EXISTING PHOTOS
BR4.0	STRUCTURAL ROOF DEMOLITION PLAN
BR4.1	STRUCTURAL ROOF FRAMING PLAN
BR4.2	STRUCTURAL WIND LOAD DIAGRAM
BR5.0	STRUCTURAL DETAILS
BR5.1	STRUCTURAL DETAILS

Client Logo:

NOTE TO CONTRACTOR:
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Issued for Tender	A	2025/03/24
Issued for Review	A	2025/03/20
Issued for Review	A	2025/01/24

MTE
Engineers, Scientists, Surveyors
905-639-2552

NOTE: THE UNDERSIGNED HAS REVIEWED AND TAKES RESPONSIBILITY FOR THIS DESIGN, AND HAS THE QUALIFICATIONS AND MEETS THE REQUIREMENTS SET OUT IN THE ONTARIO BUILDING CODE TO BE A DESIGNER

Seal:

PROJECT
HORIZON JEUNESSE
GYM ROOF REPLACEMENT
1445 LEWISHAM DR, MISSISSAUGA, ON

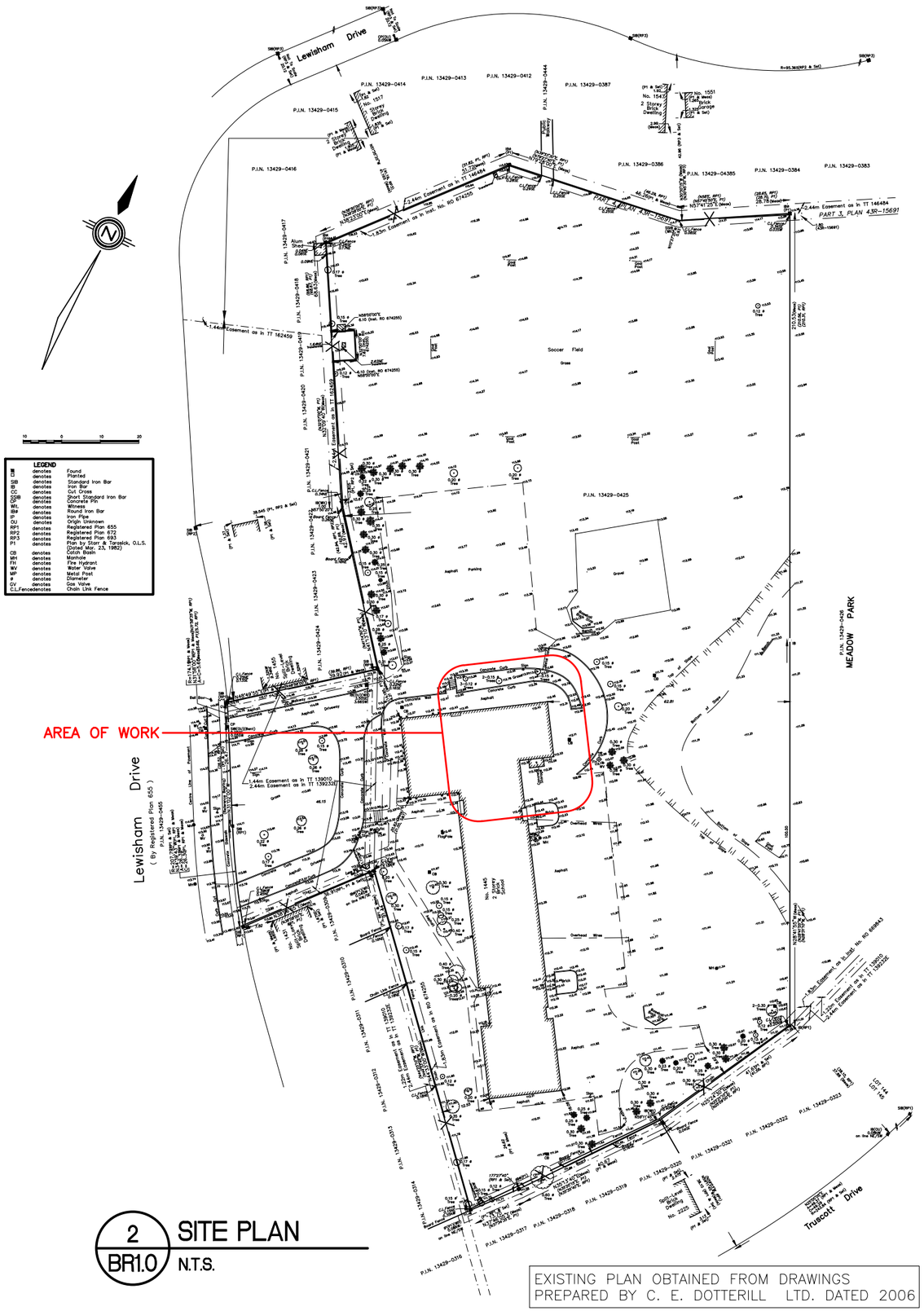
DRAWING
TITLE PAGE

Project Number:	43735-200
Scale:	N.A.
Date:	March 24, 2025
Project Manager:	CMF
Designed By:	JXS
Drawn By:	TT + MTI
Checked By:	JXS

Drawing Number: **BR0.0**

SIZE: 11x17 CAD: P:\43735\200\WORKING\43735-200 HORIZON JEUNESSE BR1.0.DWG

1 BR1.0 AERIAL VIEW N.T.S.



2 BR1.0 SITE PLAN N.T.S.

EXISTING PLAN OBTAINED FROM DRAWINGS PREPARED BY C. E. DOTTERILL LTD. DATED 2006

Client Logo:

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Seal:

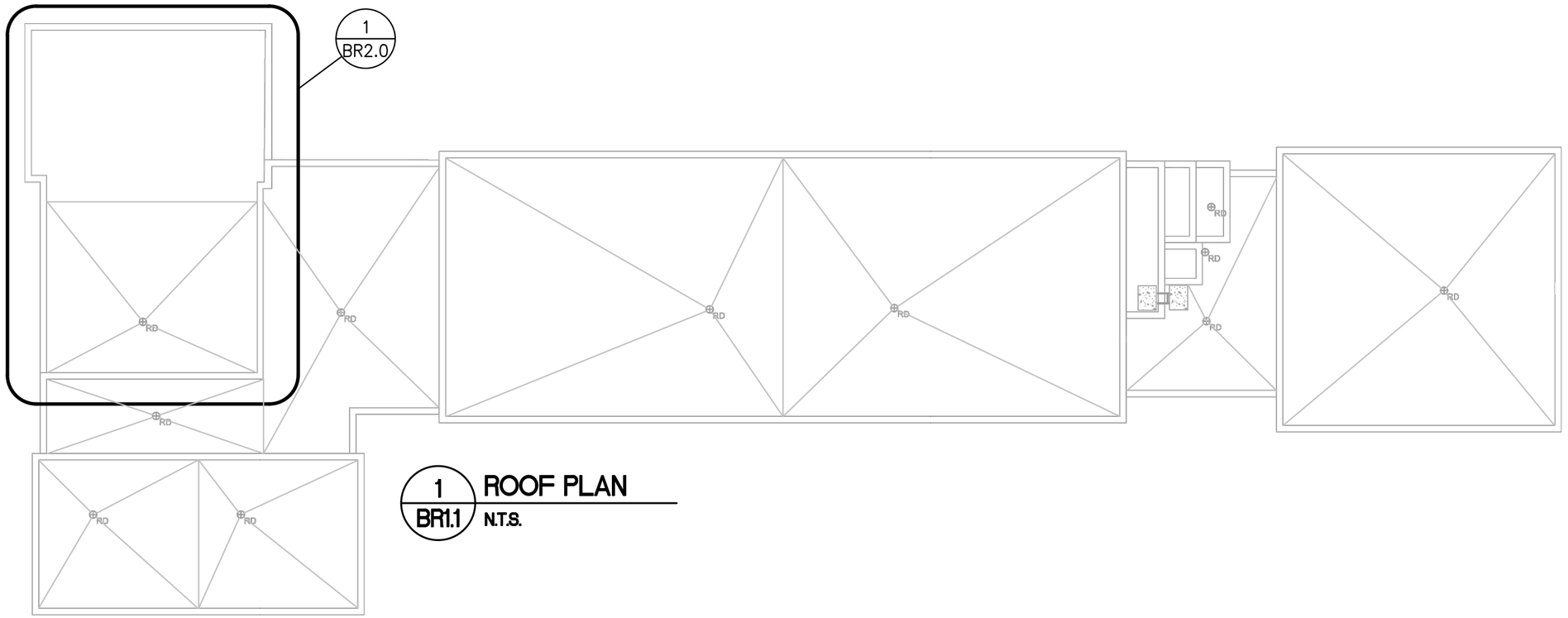
PROJECT
HORIZON JEUNESSE
GYM ROOF REPLACEMENT
1445 LEWISHAM DR, MISSISSAUGA, ON

DRAWING
PROPERTY AERIAL VIEW AND SITE PLAN

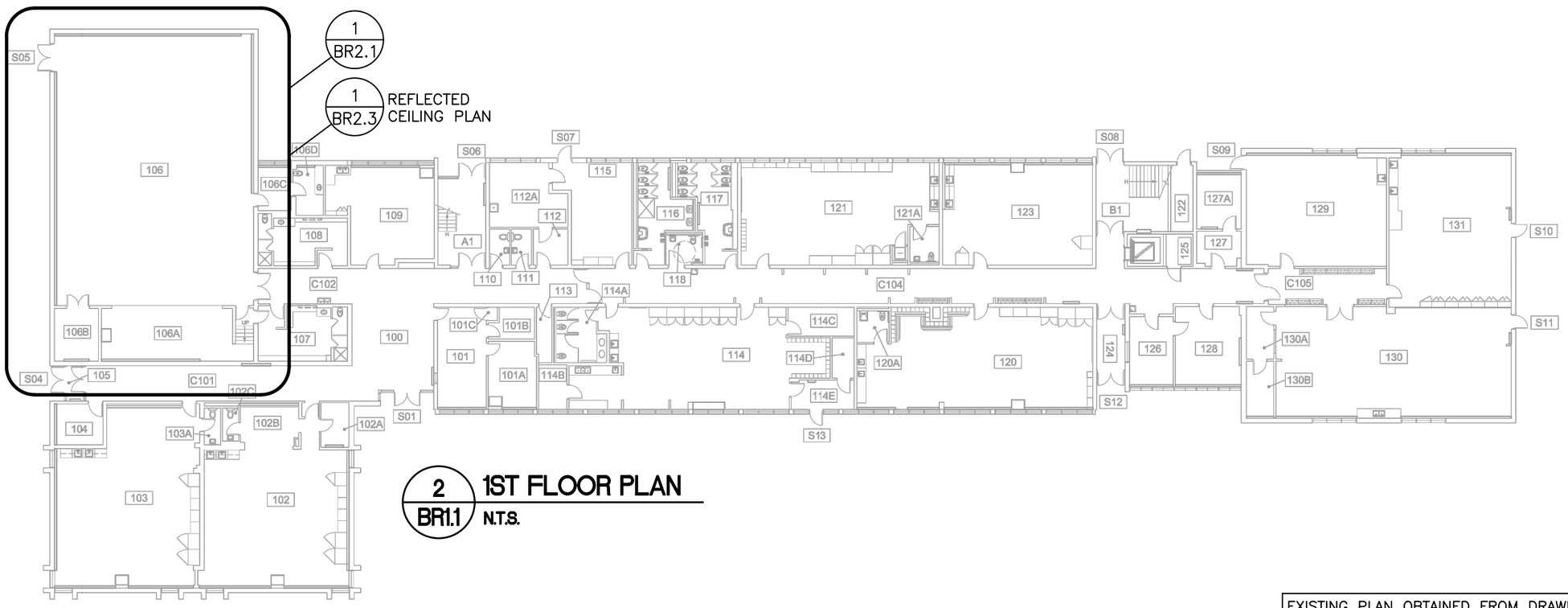
Project Number:	43735-200
Scale:	N.T.S.
Date:	March 24, 2025
Project Manager:	CMF
Designed By:	JXS
Drawn By:	TT + MTI
Checked By:	JXS

Drawing Number: BR1.0

SIZE: 11x17 CAD: P:\P\43735\200\WORKING\43735-200 HORIZON JEUNESSE BR1.0.DWG



1 BR1.1 **ROOF PLAN**
N.T.S.



2 BR1.1 **1ST FLOOR PLAN**
N.T.S.

EXISTING PLAN OBTAINED FROM DRAWINGS PREPARED BY LANGLOIS + BLAIR DATED 1998.

SIZE: 11x17 CAD: P:\43735\200\WORKING\43735-200 HORIZON JEUNESSE BR1.0.DWG

Client Logo:

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Seal:

PROJECT
HORIZON JEUNESSE
GYM ROOF REPLACEMENT
1445 LEWISHAM DR, MISSISSAUGA, ON

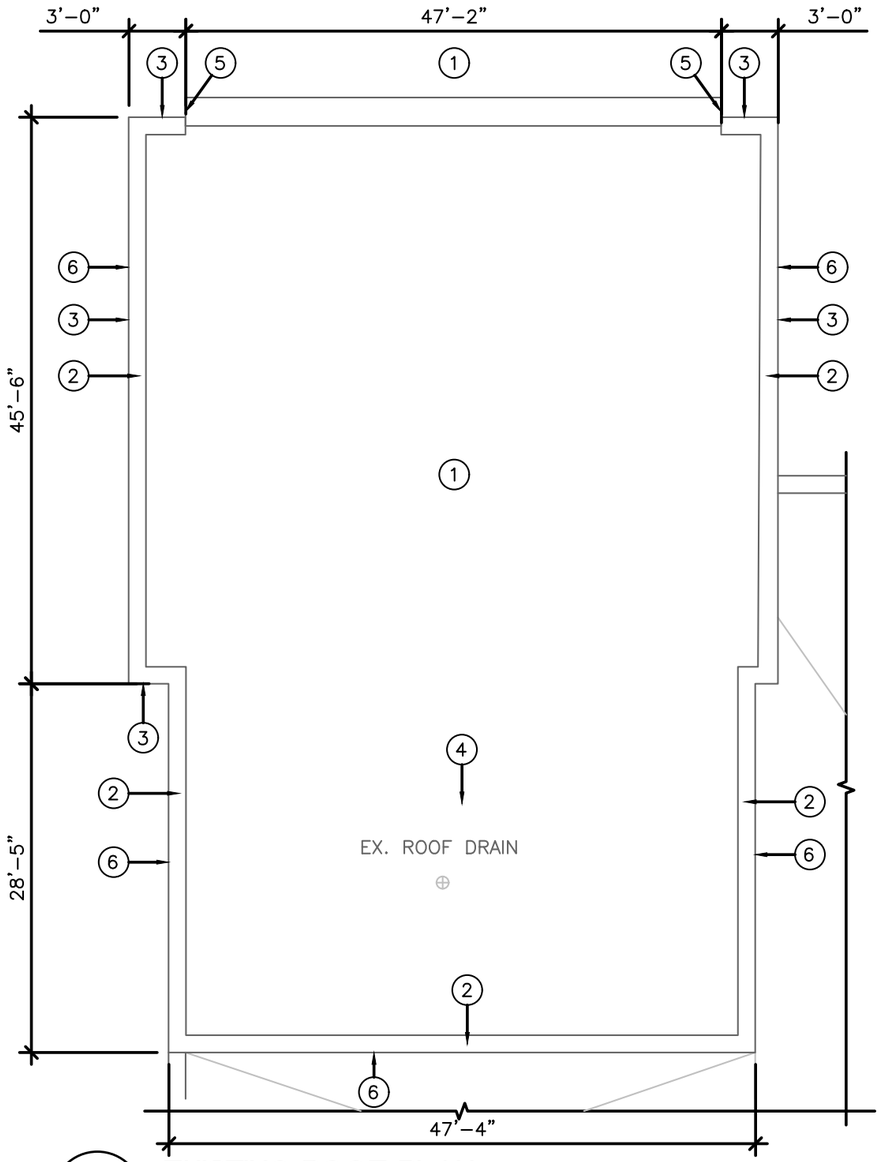
DRAWING
OVERALL ROOF PLAN AND 1ST FLOOR PLAN

Project Number:	43735-200
Scale:	N.T.S.
Date:	March 24, 2025
Project Manager:	CMF
Designed By:	JXS
Drawn By:	TT + MTI
Checked By:	JXS

Drawing Number: **BR1.1**

EXISTING LAYOUT AND DEMOLITION NOTES:

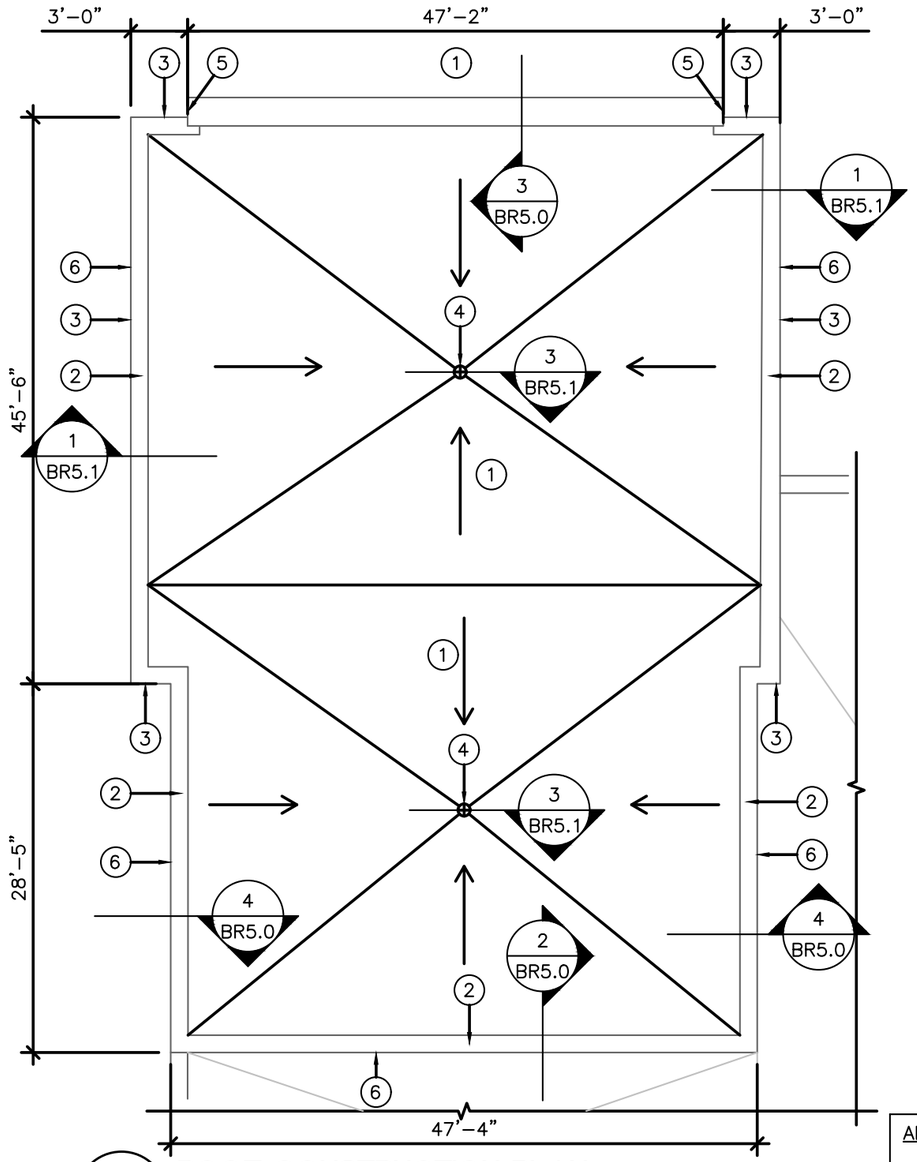
1. REMOVE EXISTING BUILT–UP ROOFING (ASSEMBLY AND PRECAST SIPOREX DECK).
2. REMOVE EXISTING PARAPET CONSTRUCTION INCLUDING METAL FLASHINGS TO FACILITATE ROOF DECK REMOVAL
3. REMOVE EXISTING TRANSITE PANEL CLADDING
4. DISCONNECT ROOF DRAIN ELBOW AND REMOVE ROOF DRAIN. LEAVE REMAINING EXISTING PIPING IN PLACE.
5. EXISTING METAL WALL CLADDING TO REMAIN. REMOVE METAL CAP AND COUNTER FLASHINGS TO FACILITATE ROOF DECK REMOVAL
6. REMOVE DETERIORATED BRICK UNITS AND MORTAR JOINTS ON THE NORTH, EAST, AND WEST ELEVATIONS OF GYMNASIUM AS REVIEWED WITH THE CONSULTANT



1 BR2.0 EXISTING ROOF PLAN
N.T.S.

CONSTRUCTION NOTES:

1. INSTALL NEW BUILT–UP ROOFING ASSEMBLY, INCLUDING ACOUSTICAL METAL DECK, SHEATHING BOARD, VAPOUR BARRIER. THERMAL INSULATION, TAPERED INSULATION, HOT–APPLIED ROOFING FELTS AND PEA GRAVEL.
2. NEW PARAPET CONSTRUCTION INCLUDING ROOFING MEMBRANE AND METAL FLASHING.
3. NEW METAL CLADDING WALL ASSEMBLY.
4. NEW ROOF DRAINS WITH ELBOW CONNECTIONS AND DRAIN LINE PIPING AS NECESSARY TO FACILITATE CONNECTION OF NEW ROOF DRAIN TO EXISTING ROOF DRAIN LINES
5. NEW METAL CAP AND COUNTER FLASHING'S AT EXISTING METAL WALL CLADDING ASSEMBLY.
6. INSTALL NEW BRICK UNITS AND MORTAR JOINTS ON THE NORTH, EAST, AND WEST ELEVATIONS OF THE GYMNASIUM, AND ON THE WEST ELEVATION OF THE BUILDING SOUTH OF THE GYMNASIUM TO REPLACE DETERIORATED UNITS AND JOINTS.



2 BR2.0 ROOF CONSTRUCTION PLAN
N.T.S.

ALL DIMENSIONS TO BE SITE VERIFIED

EXISTING PLAN OBTAINED FROM DRAWINGS PREPARED BY LANGLOIS + BLAIR DATED 1998.

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Issued for Tender	A	2025/03/24
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Engineers, Scientists, Surveyors
905-639-2552

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Seal:

PROJECT
HORIZON JEUNESSE
GYM ROOF REPLACEMENT
1445 LEWISHAM DR, MISSISSAUGA, ON

DRAWING
ENLARGED ROOF PLAN

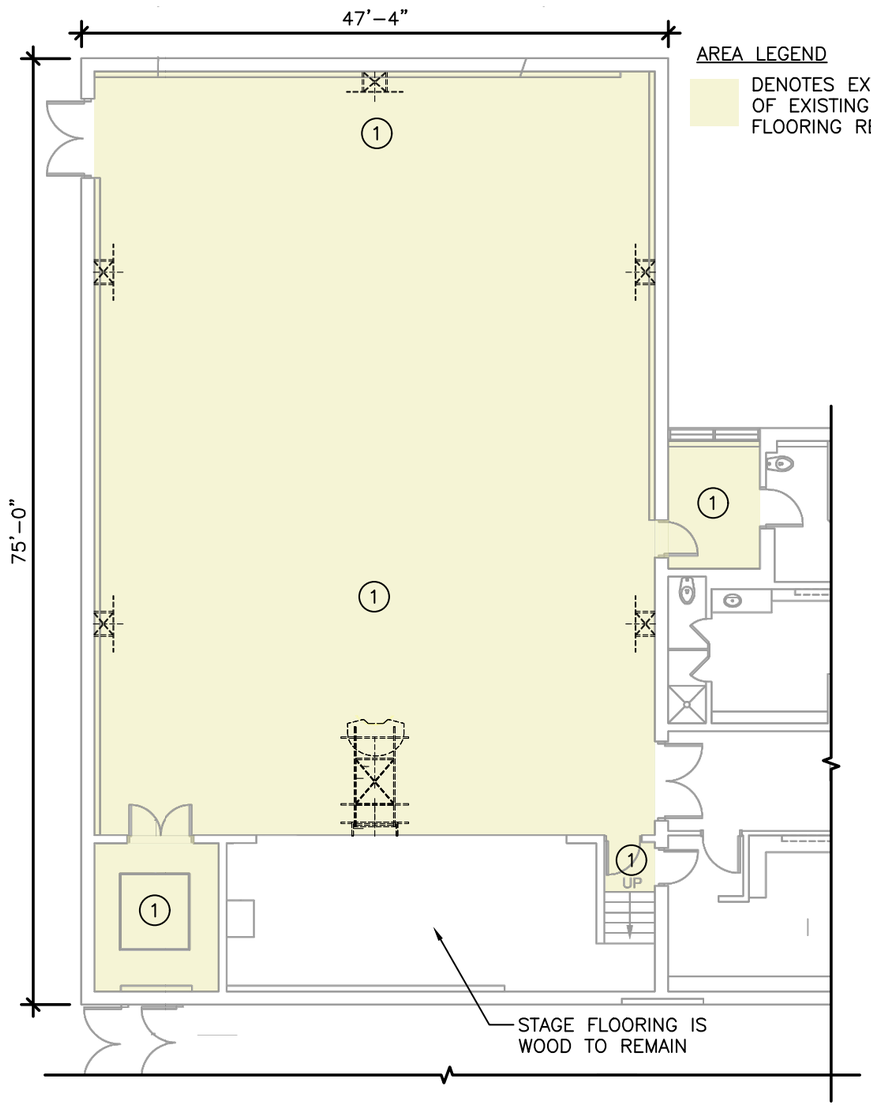
Project Number:	43735-200
Scale:	N.T.S.
Date:	March 24, 2025
Project Manager:	CMF
Designed By:	JXS
Drawn By:	TT + MTI
Checked By:	JXS

Drawing Number: BR2.0

SIZE: 11x17 CAD: P:\43735\200\WORKING\43735-200 HORIZON JEUNESSE BR1.0.DWG

EXISTING LAYOUT AND DEMOLITION NOTES:

1. REMOVE EXISTING ASBESTOS CONTAINING VINYL TILES AND ASSOCIATED BASE BOARDS ALONG WITH THEIR RESPECTIVE MASTICS/ADHESIVES



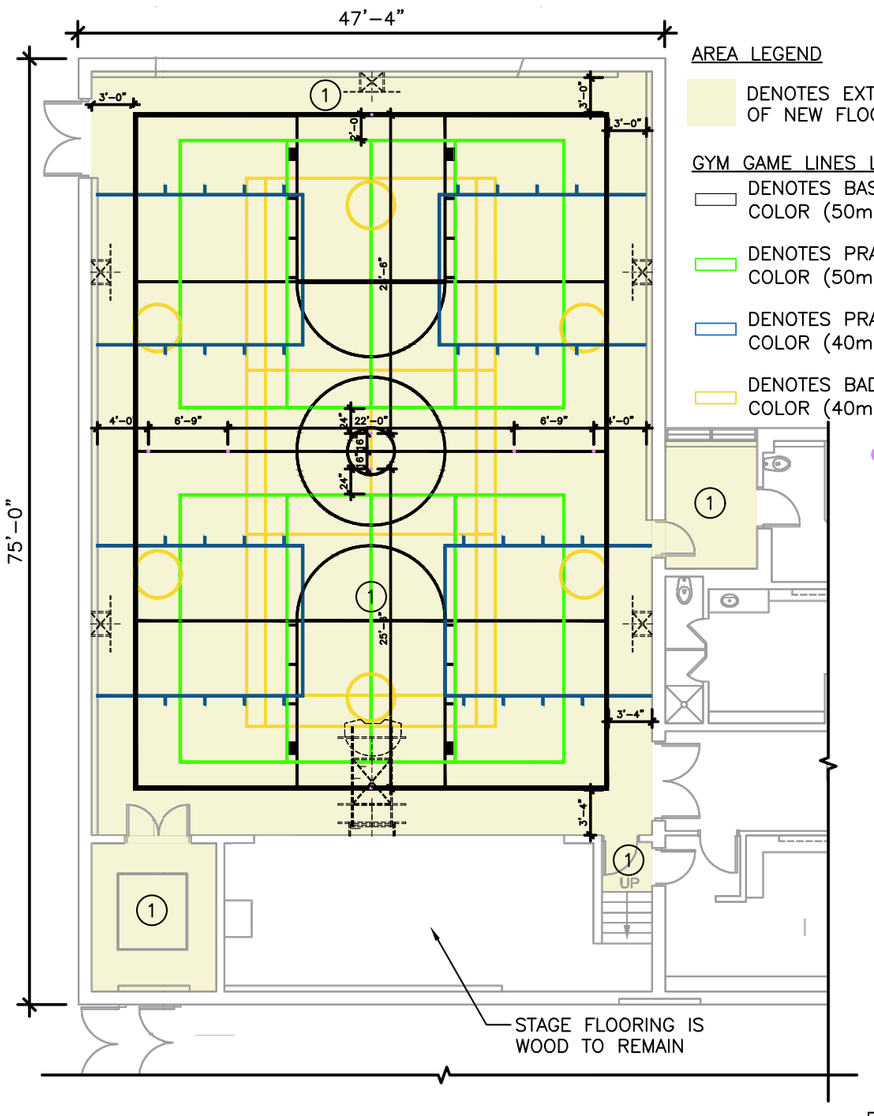
AREA LEGEND

DENOTES EXTENTS OF EXISTING FLOORING REMOVAL

1 BR2.1 GROUND FLOOR DEMOLITION PLAN
N.T.S.

CONSTRUCTION NOTES:

1. INSTALL NEW VINYL COMPOSITE TILE (VCT) COMPLETE WITH NEW BASEBOARDS. INSTALL NEW MULTI-SPORT GAME LINES OVER THE VCT FLOORING AS SHOWN. REFER TO DRAWING BR2.2 FOR FURTHER DIMENSIONS PERTAINING TO THE GAME LINE LAYOUTS



AREA LEGEND

DENOTES EXTENTS OF NEW FLOORING

GYM GAME LINES LEGEND

DENOTES BASKETBALL COLOR (50mm-2"): BLACK

DENOTES PRACTICE VOLLEYBALL COLOR (50mm-2"): GREEN

DENOTES PRACTICE BASKETBALL COLOR (40mm-1 1/2"): BLUE

DENOTES BADMINTON COLOR (40mm-1 1/2"): YELLOW

● DENOTES NEW SOCKETS

2 BR2.1 GROUND FLOOR CONSTRUCTION PLAN
N.T.S.

ALL DIMENSIONS TO BE SITE VERIFIED

EXISTING PLAN OBTAINED FROM DRAWINGS PREPARED BY LANGLOIS + BLAIR DATED 1998.

Client Logo:

Issued for Tender	A	2025/03/24
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Issued for Review	A	2025/01/24

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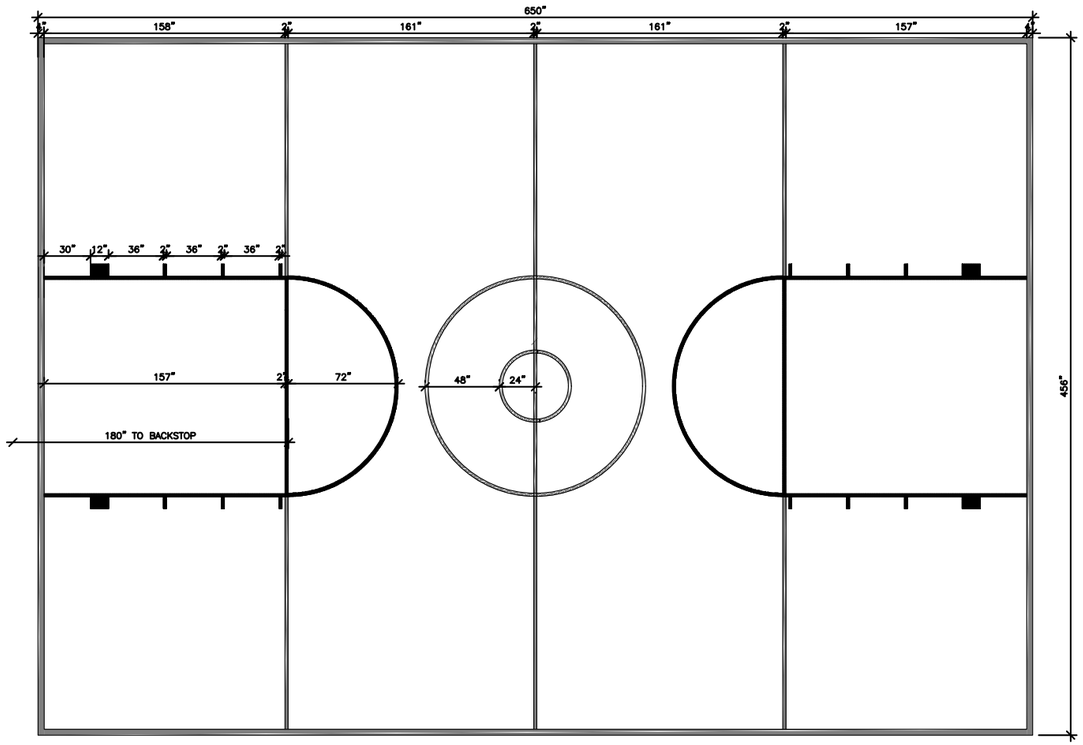
Seal:

PROJECT
HORIZON JEUNESSE
GYM ROOF REPLACEMENT
1445 LEWISHAM DR, MISSISSAUGA, ON

DRAWING
ENLARGED 1ST FLOOR PLAN

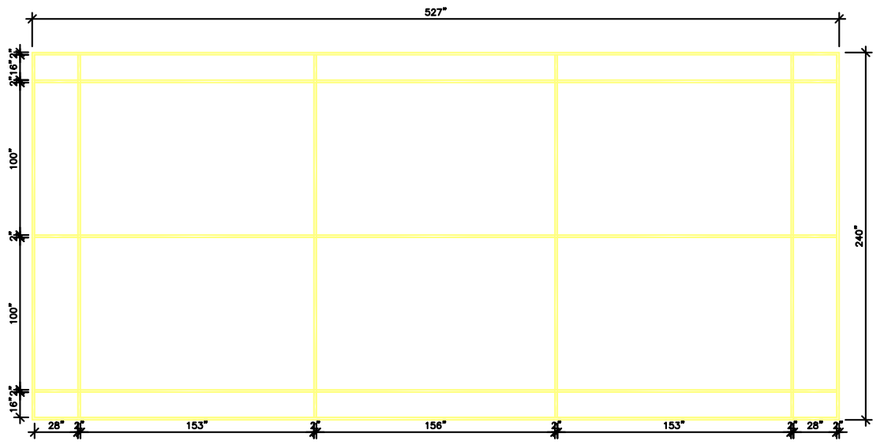
Project Number:	43735-200
Scale:	N.T.S.
Date:	March 24, 2025
Project Manager:	CMF
Designed By:	JXS
Drawn By:	TT + MTI
Checked By:	JXS

Drawing Number: BR2.1



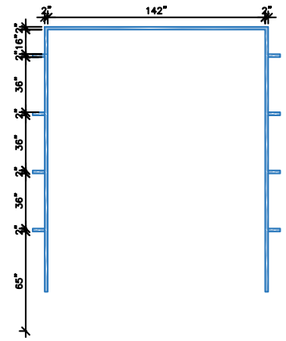
1 BR2.2 GYM GAME LINES BASKETBALL MINI COURT

N.T.S.



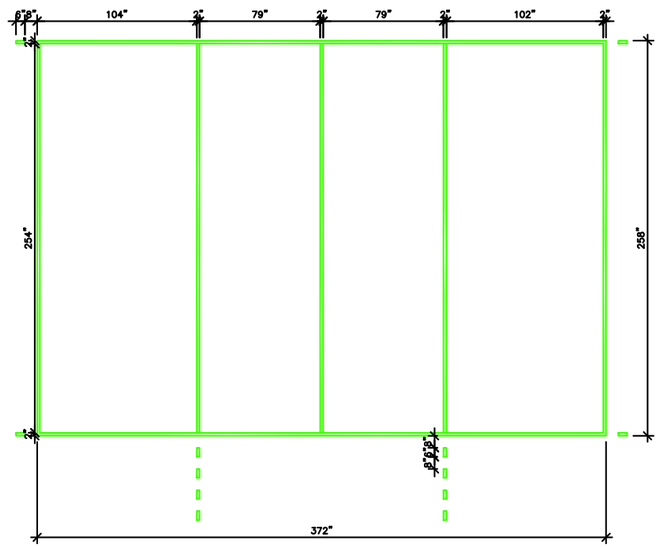
3 BR2.2 GYM GAME LINES BADMINTON COURT

N.T.S.



2 BR2.2 GYM GAME LINES PRACTICE BASKETBALL COURT

N.T.S.



4 BR2.2 GYM GAME LINES PRACTICE VOLEYBALL COURT

N.T.S.

Client Logo:

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Issued for Tender	A	2025/03/24
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Engineers, Scientists, Surveyors
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Seal:

PROJECT
HORIZON JEUNESSE
GYM ROOF REPLACEMENT
1445 LEWISHAM DR, MISSISSAUGA, ON

DRAWING
GYMNASIUM GAME LINE LAYOUTS

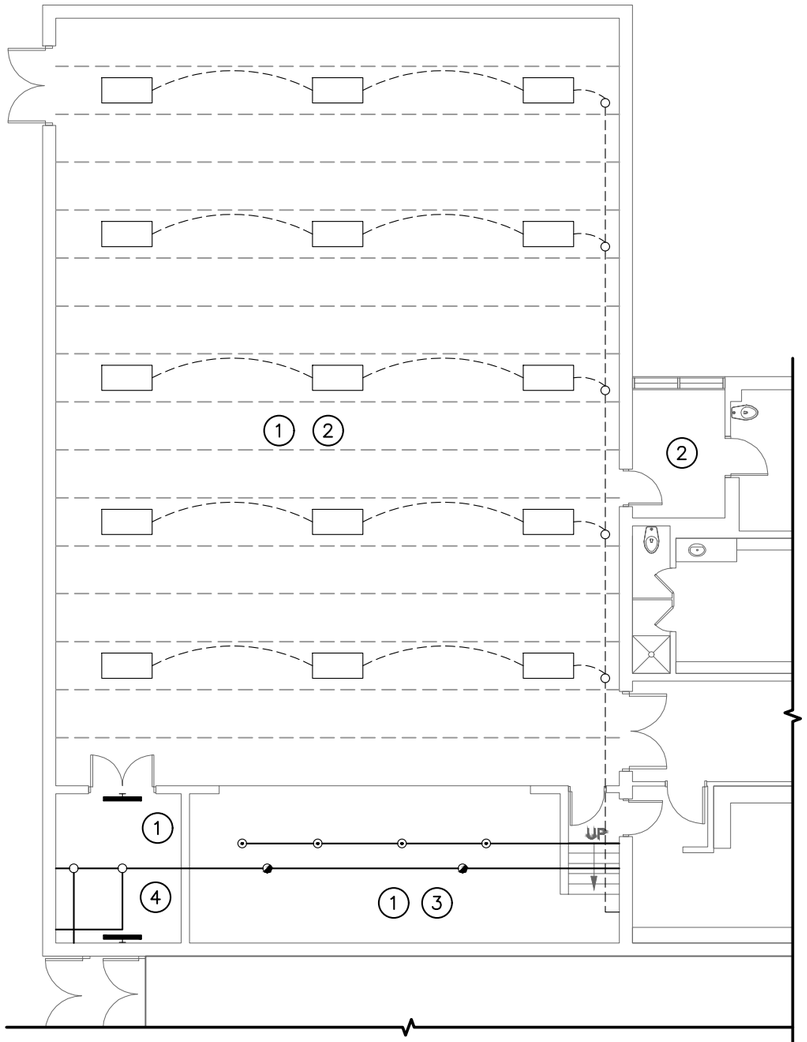
Project Number:	43735-200
Scale:	N.T.S.
Date:	March 24, 2025
Project Manager:	CMF
Designed By:	JXS
Drawn By:	TT + MTI
Checked By:	JXS

Drawing Number: BR2.2

SIZE: 11x17 CAD: P:\43735\200\WORKING\43735-200 HORIZON JEUNESSE BR1.0.DWG

EXISTING LAYOUT AND DEMOLITION NOTES

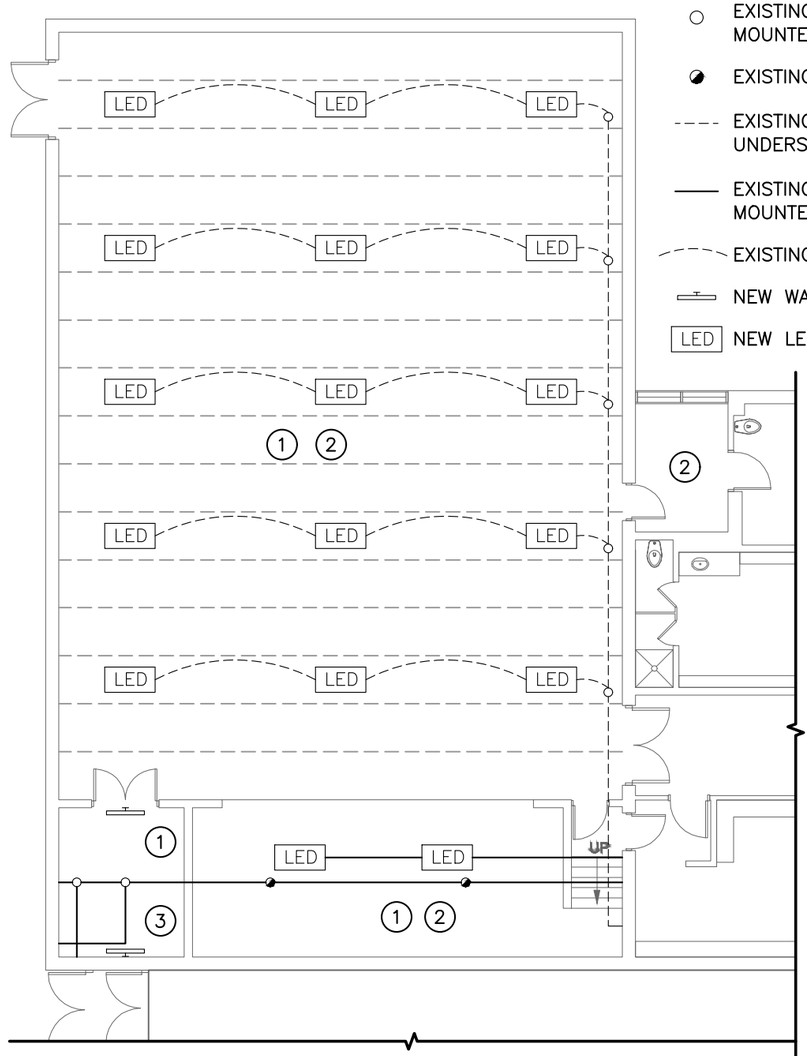
1. REMOVE EXISTING ELECTRICAL AND FIRE DETECTION COMPONENTS CONNECTED TO THE U/S OF THE EXISTING ROOF DECK
2. REMOVE ALL EXISTING FLUORESCENT LIGHT FIXTURES WITHIN THE GYMNASIUM AREA AND GYMNASIUM OFFICE
3. REMOVE ALL INCANDESCENT PENDANT LIGHT FIXTURES OVER THE GYMNASIUM STAGE
4. REMOVE ALL EXISTING WALL MOUNTED FLUORESCENT STRIP LIGHTING IN THE GYMNASIUM STORAGE ROOM



1 BR2.3 EXISTING GROUND FLOOR REFLECTED CEILING PLAN
N.T.S.

CONSTRUCTION NOTES

1. REINSTATE PREVIOUSLY REMOVED ELECTRICAL AND FIRE DETECTION COMPONENTS
2. INSTALL NEW LED FIXTURES AT REMOVED EXISTING FLUORESCENT AND INCANDESCENT LIGHT FIXTURE LOCATIONS
3. INSTALL NEW LED STRIP LIGHTING FIXTURES AT REMOVED EXISTING FLUORESCENT STRIP LIGHTING LOCATIONS WITHIN THE GYMNASIUM STORAGE ROOM



2 BR2.3 GROUND FLOOR REFLECTED CEILING CONSTRUCTION PLAN
N.T.S.

LEGEND

- EXISTING WALL MOUNTED FLUORESCENT STRIP LUMINAIRE
- EXISTING FLUORESCENT LUMINAIRE
- EXISTING ROUND PENDANT INCADESCENT LIGHT
- EXISTING JUNCTION BOX (SURFACE MOUNTED TO UNDERSIDE OF ROOF DECK)
- EXISTING HEAT DETECTOR
- EXISTING RIGID CONDUIT (SUSPENDED FROM UNDERSIDE OF TOP CHORD OF OWSJ)
- EXISTING RIGID CONDUIT (SURFACE MOUNTED TO UNDERSIDE OF ROOF DECK)
- EXISTING ELECTRICAL CABLING
- NEW WALL MOUNTED LED STRIP LUMINAIRE
- LED NEW LED LUMINAIRE

ALL DIMENSIONS AND FIXTURES TO BE SITE VERIFIED

EXISTING PLAN OBTAINED FROM RECORD DRAWINGS PREPARED BY DEI & ASSOCIATES INC. DATED 2015.

Client Logo:

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Issued for Review	A	2025/03/20
Issued for Review	A	2025/01/24

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Engineers, Scientists, Surveyors
905-639-2552

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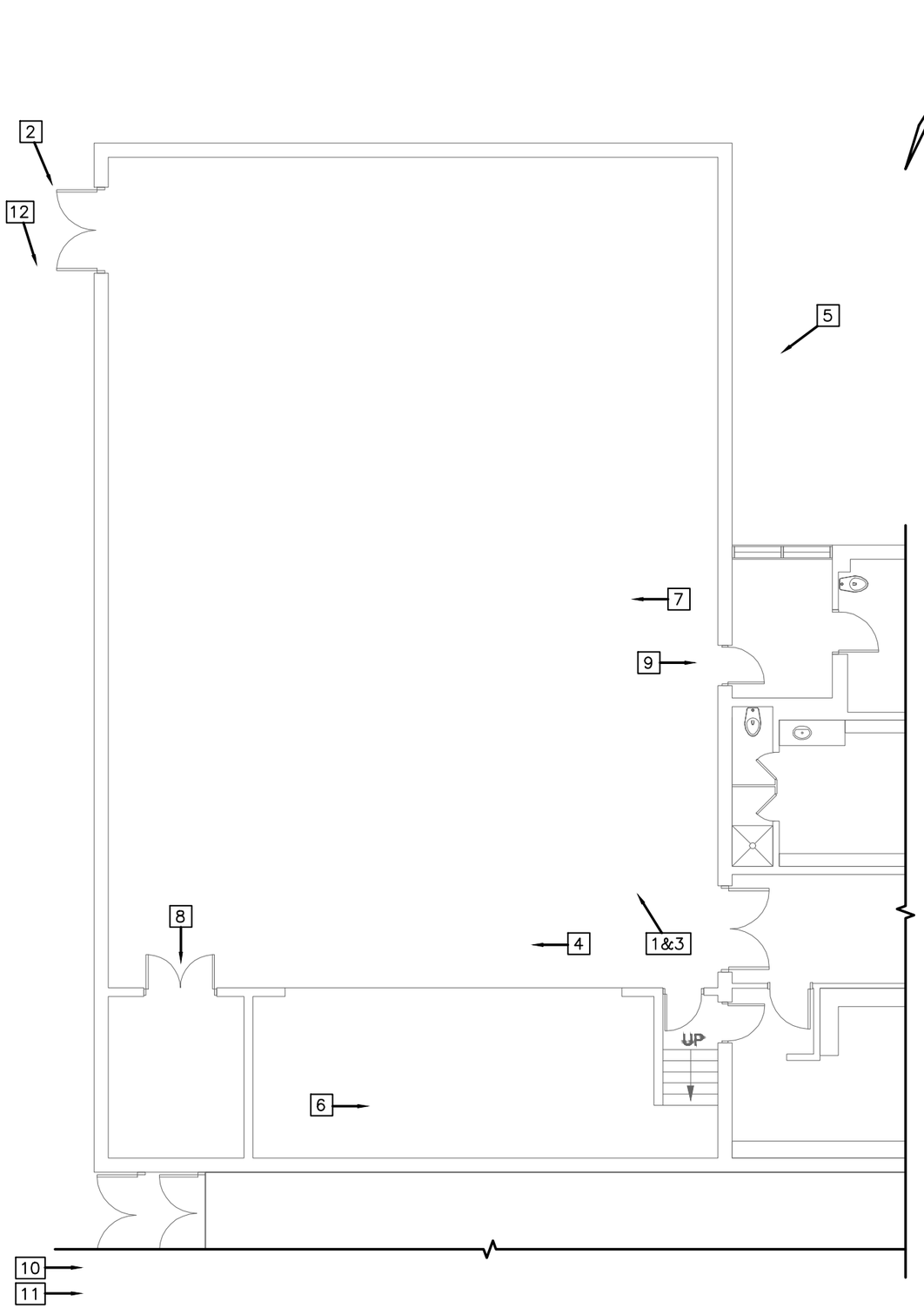
Seal:

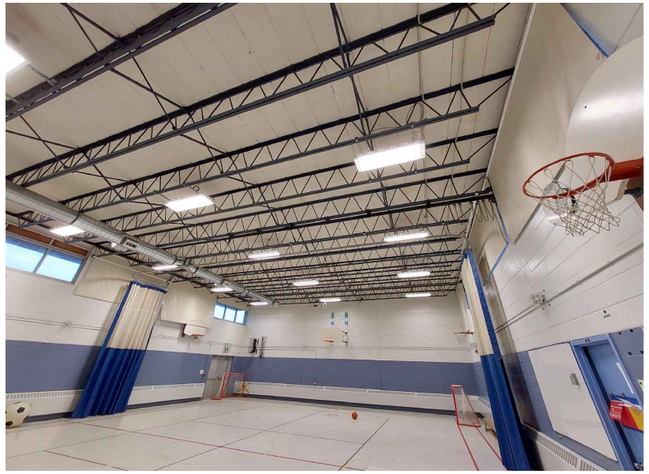
PROJECT
HORIZON JEUNESSE
GYM ROOF REPLACEMENT
1445 LEWISHAM DR, MISSISSAUGA, ON

DRAWING
ENLARGED REFLECTED CEILING PLAN

Project Number:	43735-200
Scale:	N.T.S.
Date:	March 24, 2025
Project Manager:	CMF
Designed By:	JXS
Drawn By:	TT + MTI
Checked By:	JXS

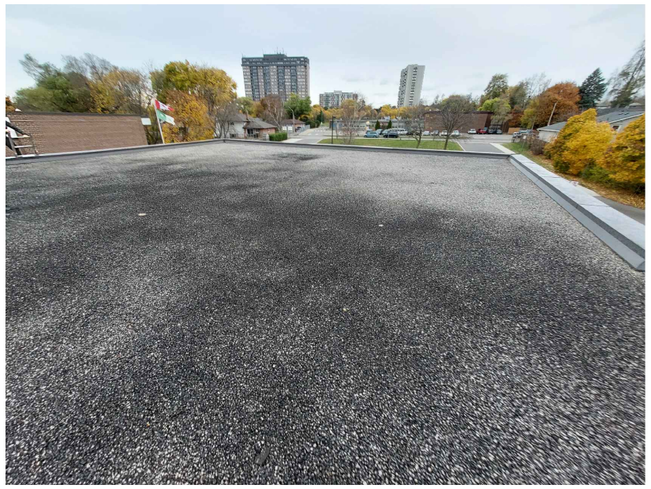
Drawing Number: BR2.3





1. GYM OVERALL INTERIOR VIEW

2. GYM ROOF OVERHANG – WEST ELEVATION



3. GYM BUILT-UP ROOFING (BUR)

Client Logo:

NOTE TO CONTRACTOR:
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PROJECT
HORIZON JEUNESSE
GYM ROOF REPLACEMENT
1445 LEWISHAM DR, MISSISSAUGA, ON

DRAWING
EXISTING PHOTOS

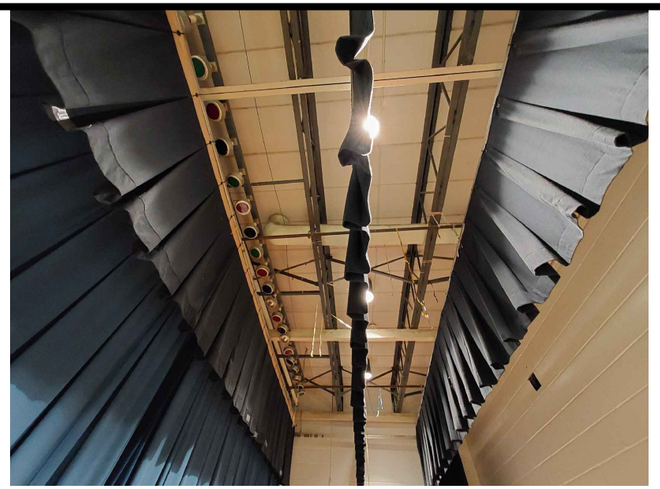
Project Number:	43735-200
Scale:	N.T.S.
Date:	March 24, 2025
Project Manager:	CMF
Designed By:	JXS
Drawn By:	TT + MTI
Checked By:	JXS

Drawing Number: BR3.0

SIZE: 11x17 CAD: P:\43735\200\WORKING\43735-200 HORIZON JEUNESSE BR1.0.DWG

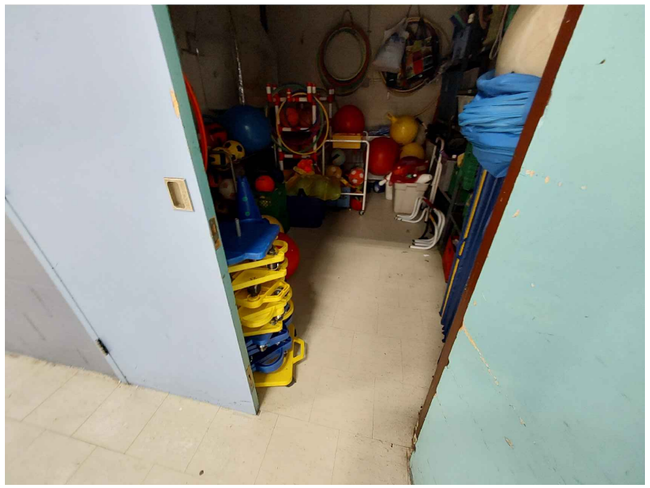
4. GYM ROOF DRAIN

5. GYM EAST ELEVATION

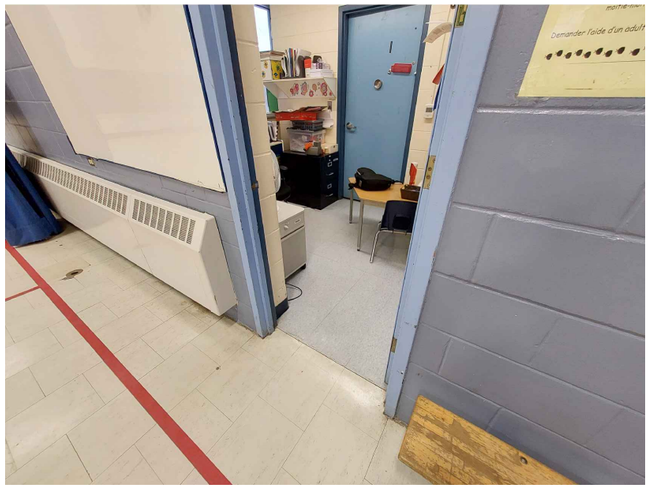


6. GYM ROOF STRUCTURE ABOVE STAGE

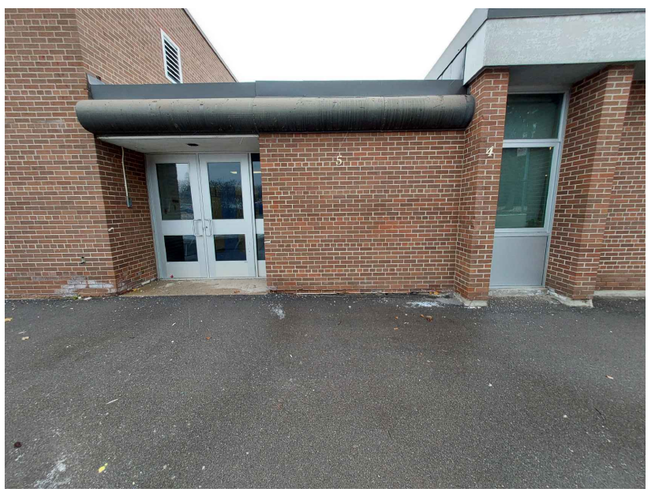
7. GYM FLOORING AND GAME LINE PAINTING



8. STORAGE ROOM

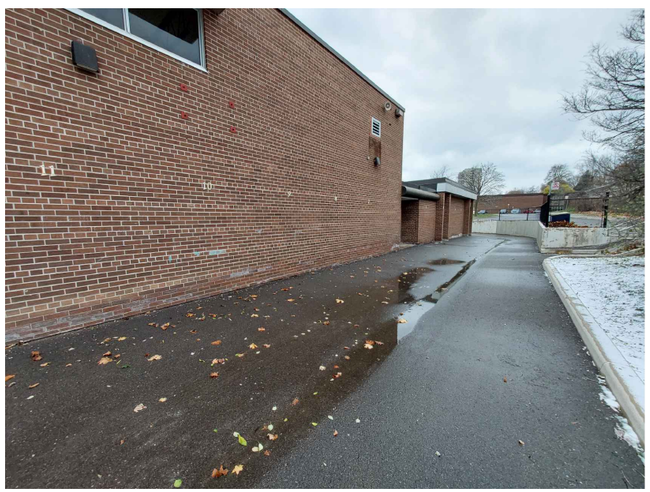


9. GYM'S OFFICE



10. SECONDARY ENTRANCE

11. DETERIORATED BRICK CLADDING AND CONCRETE BLOCK FOUNDATION



12. ASPHALT DRIVEWAY WEST OF GYM

Client Logo:

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Seal:

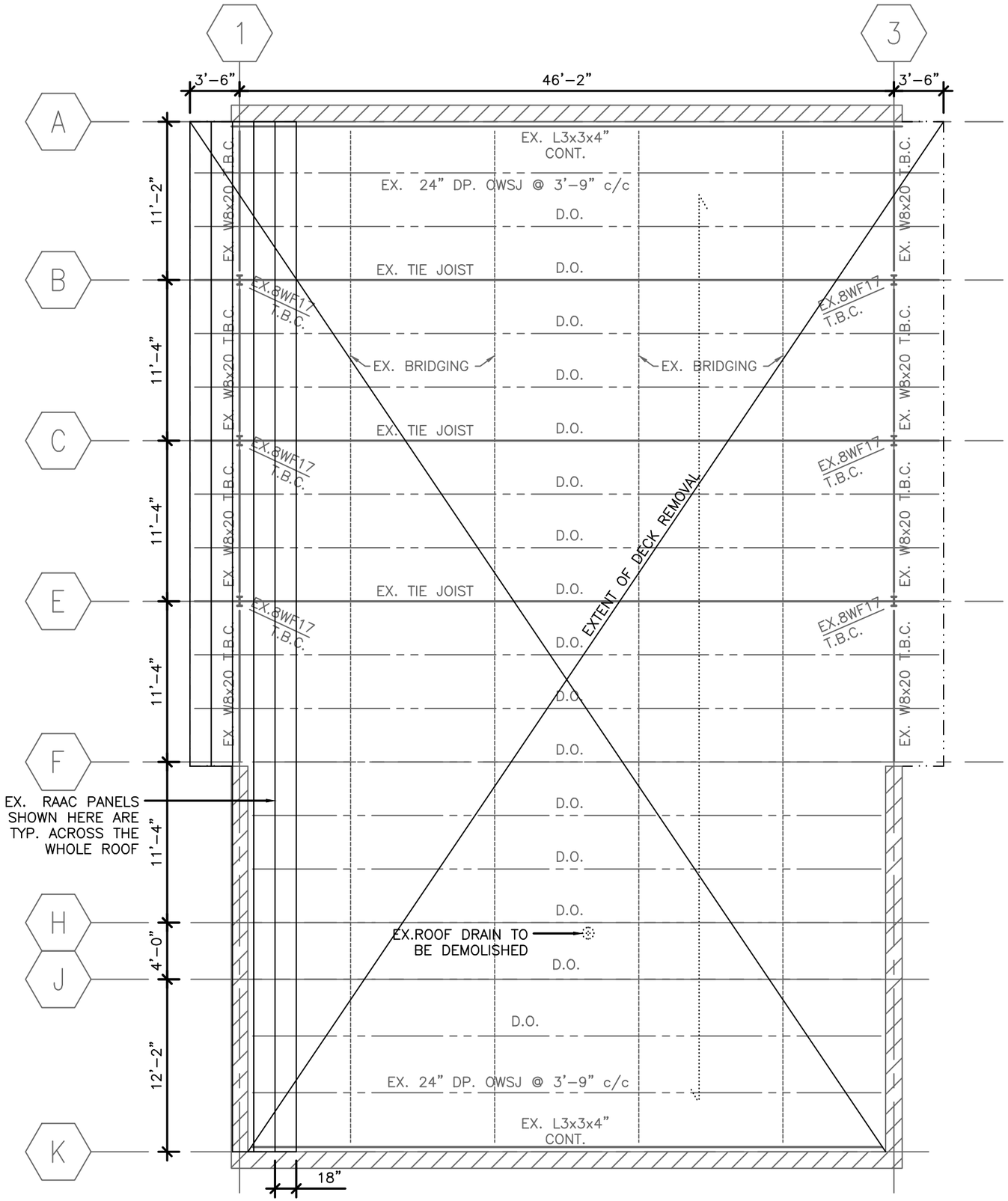
PROJECT
HORIZON JEUNESSE
GYM ROOF REPLACEMENT
1445 LEWISHAM DR, MISSISSAUGA, ON

DRAWING
EXISTING PHOTOS

Project Number:	43735-200
Scale:	N.T.S.
Date:	March 24, 2025
Project Manager:	CMF
Designed By:	JXS
Drawn By:	TT + MTI
Checked By:	JXS

Drawing Number: **BR3.1**

SIZE: 11x17 CAD: P:\43735\200\WORKING\43735-200 HORIZON JEUNESSE BR1.0.DWG



DEMOLITION NOTES

1 ALL EXISTING FRAMING IS TO BE SITE VERIFIED. ANY DISCREPANCIES BETWEEN SITE CONDITIONS AND THESE DRAWINGS ARE TO BE REPORTED TO THE ARCHITECT AND/OR ENGINEER.

2 EXISTING 3"D X 18"W RAAC PANELS TO BE REMOVED

3 ALL EX. STRUCTURAL FRAMING TO REMAIN

4 ALL EXISTING DIMENSIONS AND ELEVATIONS ARE TO BE SITE VERIFIED. ANY DISCREPANCIES BETWEEN SITE CONDITIONS AND THESE DRAWINGS ARE TO BE REPORTED TO THE ARCHITECT AND/OR ENGINEER.

5 EXISTING FRAMING OBTAINED FROM DRAWINGS PREPARED BY DOMINION BRIDGE DATED 1969 AND DRAWINGS PREPARED BY LANGLOIS + BLAIR DATED 1998.

6 u/s ROOF DECK. EL = ±24'–4 7/8" (U.N.O.) (SEE ARCH. DRAWINGS.)

Client Logo:

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Seal:

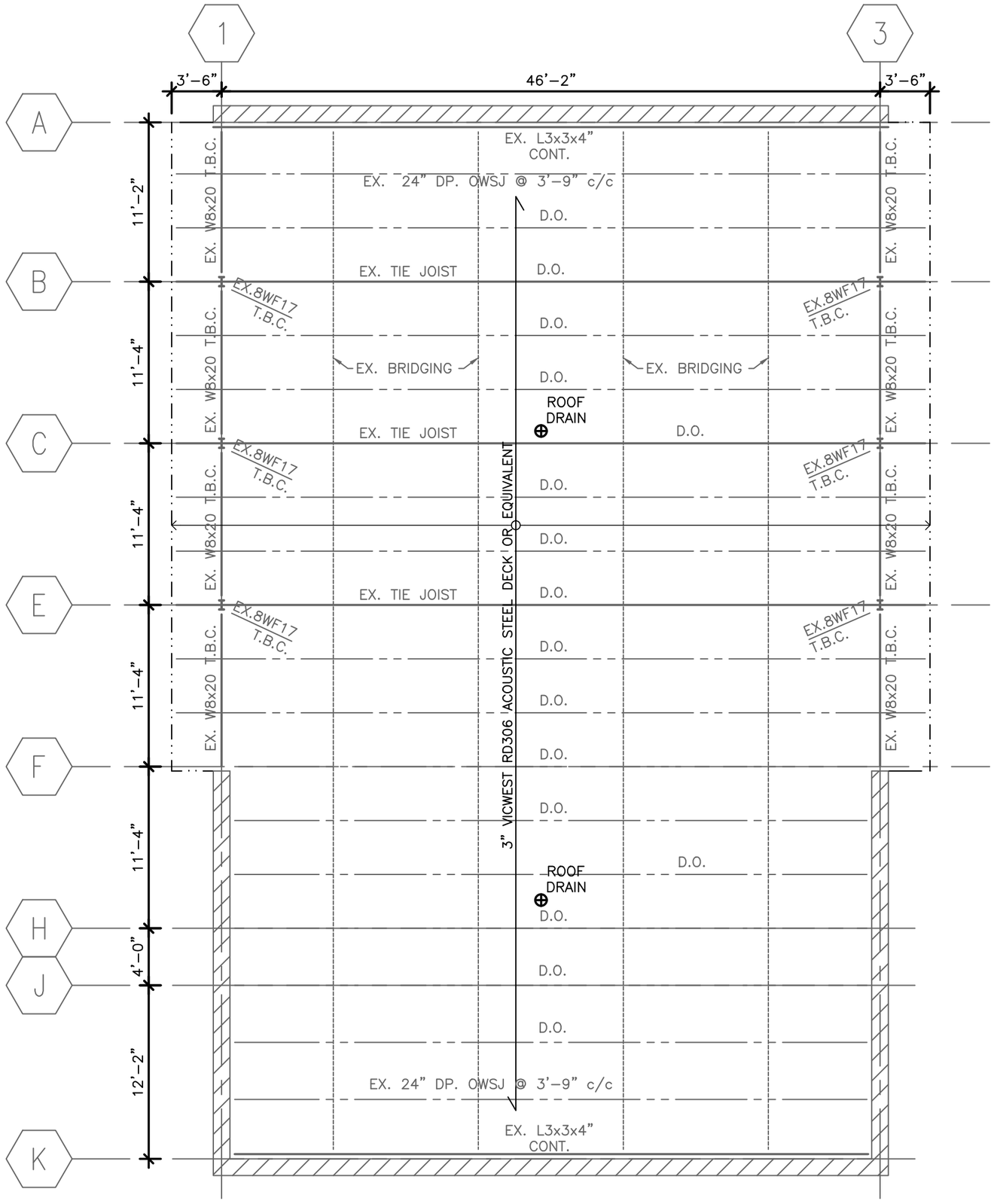
PROJECT
HORIZON JEUNESSE
GYM ROOF REPLACEMENT
1445 LEWISHAM DR, MISSISSAUGA, ON

DRAWING
STRUCTURAL ROOF DEMOLITION PLAN

Project Number:	43735-200
Scale:	1/8"=1'-0"
Date:	March 24, 2025
Project Manager:	CMF
Designed By:	JXS
Drawn By:	TT + MTI
Checked By:	JXS

Drawing Number: **BR4.0**

SIZE: 11x17 CAD: P:\43735\200\WORKING\43735-200 HORIZON JEUNESSE BR1.0.DWG



LOADS:

ROOF DEAD LOAD	=	30.0psf (1.44 kPa)
SNOW LOAD	=	26.9psf (1.29 kPa)

CONSTRUCTION NOTES

1 ALL EXISTING FRAMING IS TO BE SITE VERIFIED. ANY DISCREPANCIES BETWEEN SITE CONDITIONS AND THESE DRAWINGS ARE TO BE REPORTED TO THE ARCHITECT AND/OR ENGINEER.

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Client Logo:

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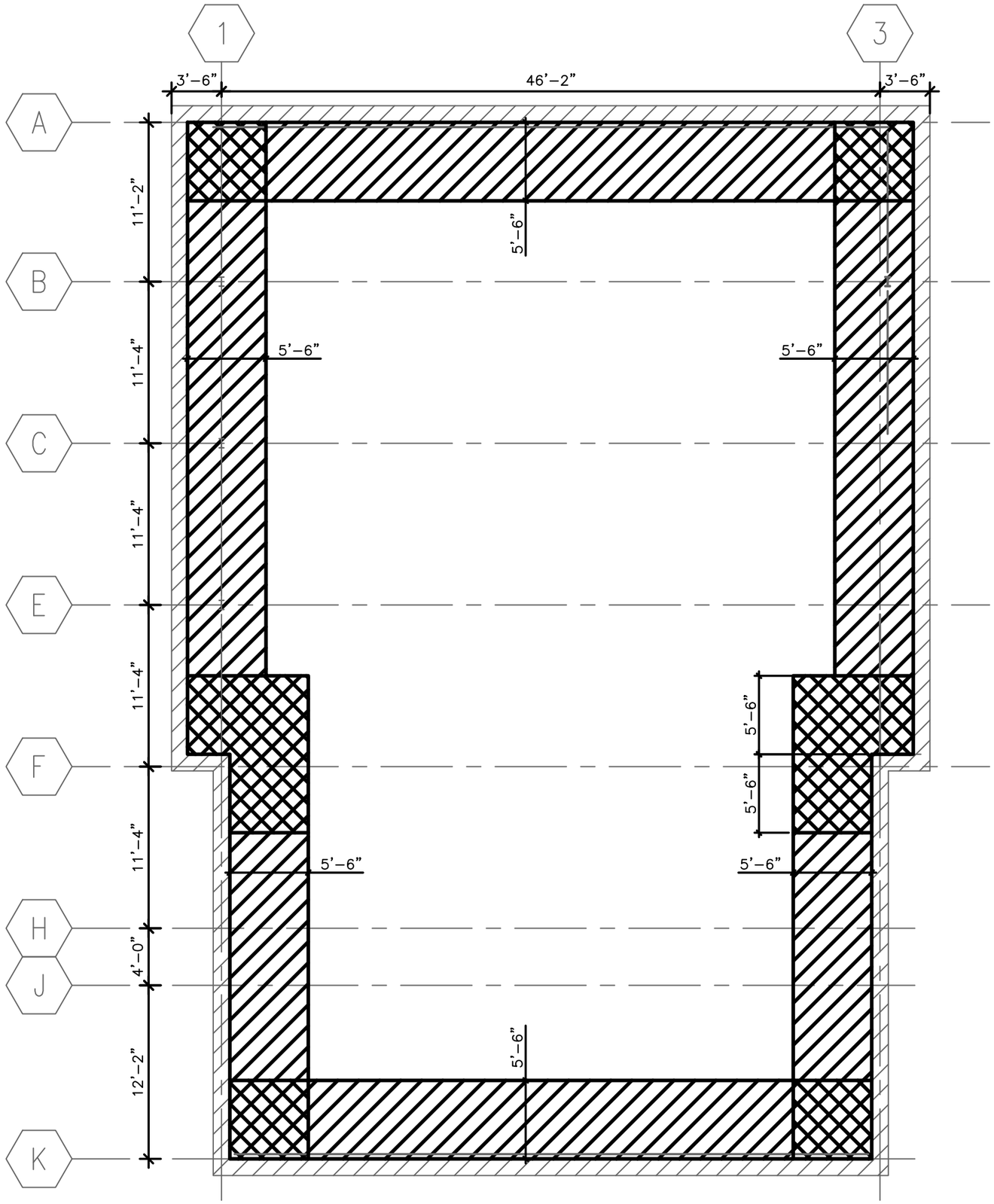
Seal:

PROJECT
HORIZON JEUNESSE
GYM ROOF REPLACEMENT
1445 LEWISHAM DR, MISSISSAUGA, ON

DRAWING
STRUCTURAL ROOF FRAMING PLAN

Project Number:	43735-200
Scale:	1/8"=1'-0"
Date:	March 24, 2025
Project Manager:	CMF
Designed By:	JXS
Drawn By:	TT + MTI
Checked By:	JXS

Drawing Number: **BR4.1**



68 PSF

35 PSF

27 PSF

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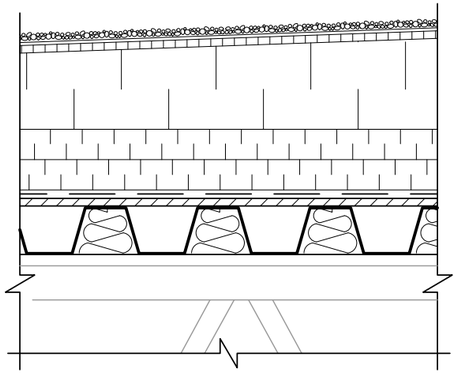
Seal:

PROJECT
HORIZON JEUNESSE
GYM ROOF REPLACEMENT
1445 LEWISHAM DR, MISSISSAUGA, ON

DRAWING
STRUCTURAL WIND LOAD DIAGRAM

Project Number:	43735-200
Scale:	1/8"=1'-0"
Date:	March 24, 2025
Project Manager:	CMF
Designed By:	JXS
Drawn By:	TT + MTI
Checked By:	JXS
Drawing Number:	BR4.2

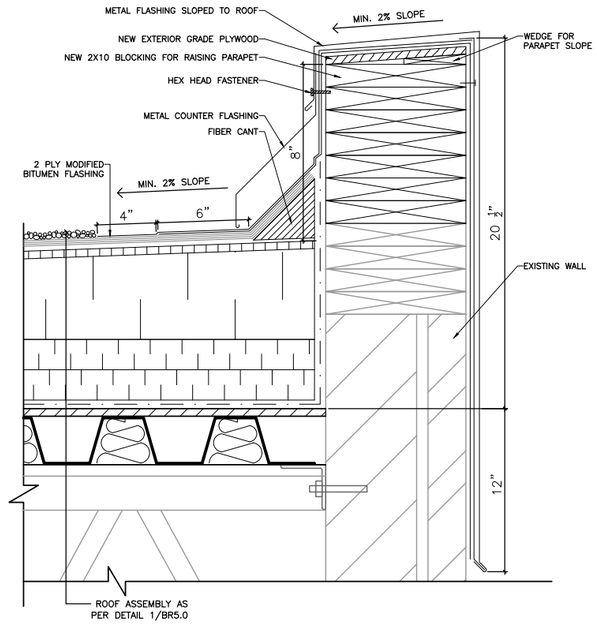
SIZE: 11x17 CAD: P:\43735\200\WORKING\43735-200 HORIZON JEUNESSE BR1.0.DWG



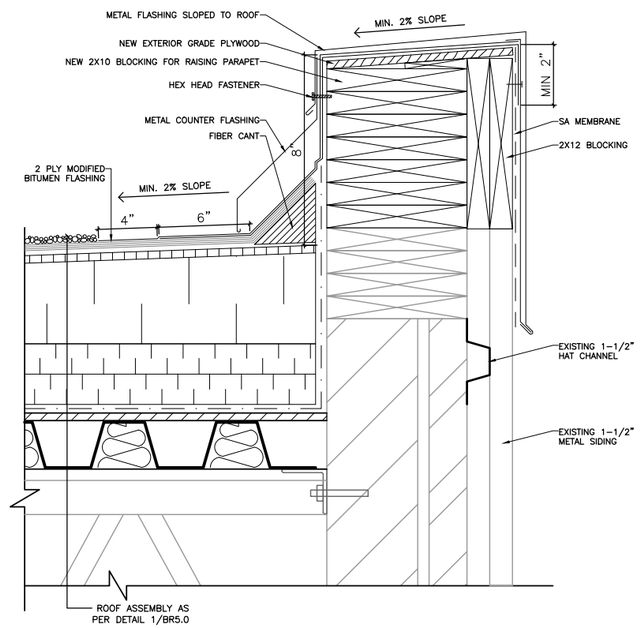
TYPICAL ROOF ASSEMBLY

- GRAVEL SURFACING
- BUILT UP MEMBRANE
- ½" FIBREBOARD
- FULLY TAPERED POLYISO INSULATION
- TWO LAYERS OF 3" BASE POLYISO INSULATION
- VAPOUR RETARDER
- ½" EXTERIOR ROOF DECK SHEATHING BOARD
- CELLULAR ACOUSTICAL DECKING WITH SOUND ABSORBING INSULATION
- EXISTING ROOF JOISTS

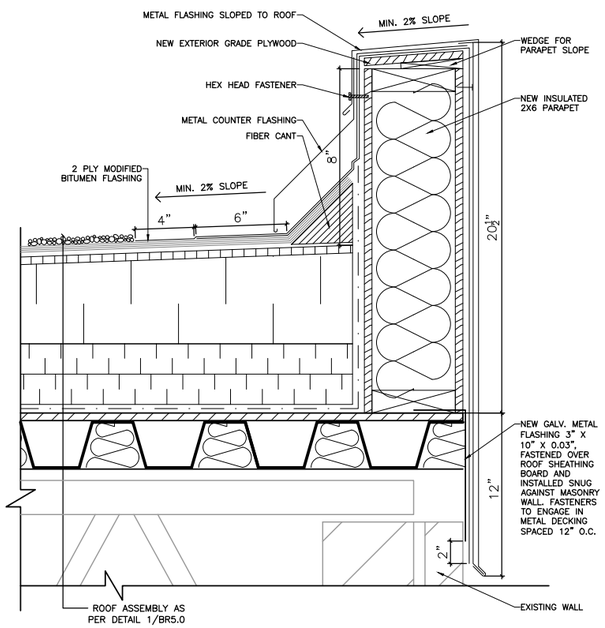
1 / BR5.0 **TYPICAL ROOF ASSEMBLY** N.T.S



2 / BR5.0 **SOUTH PARAPET DETAIL** N.T.S



3 / BR5.0 **NORTH PARAPET DETAIL** AT METAL SIDING N.T.S



4 / BR5.0 **EAST AND WEST PARAPET DETAIL** AT MASONRY WALL N.T.S

Client Logo:

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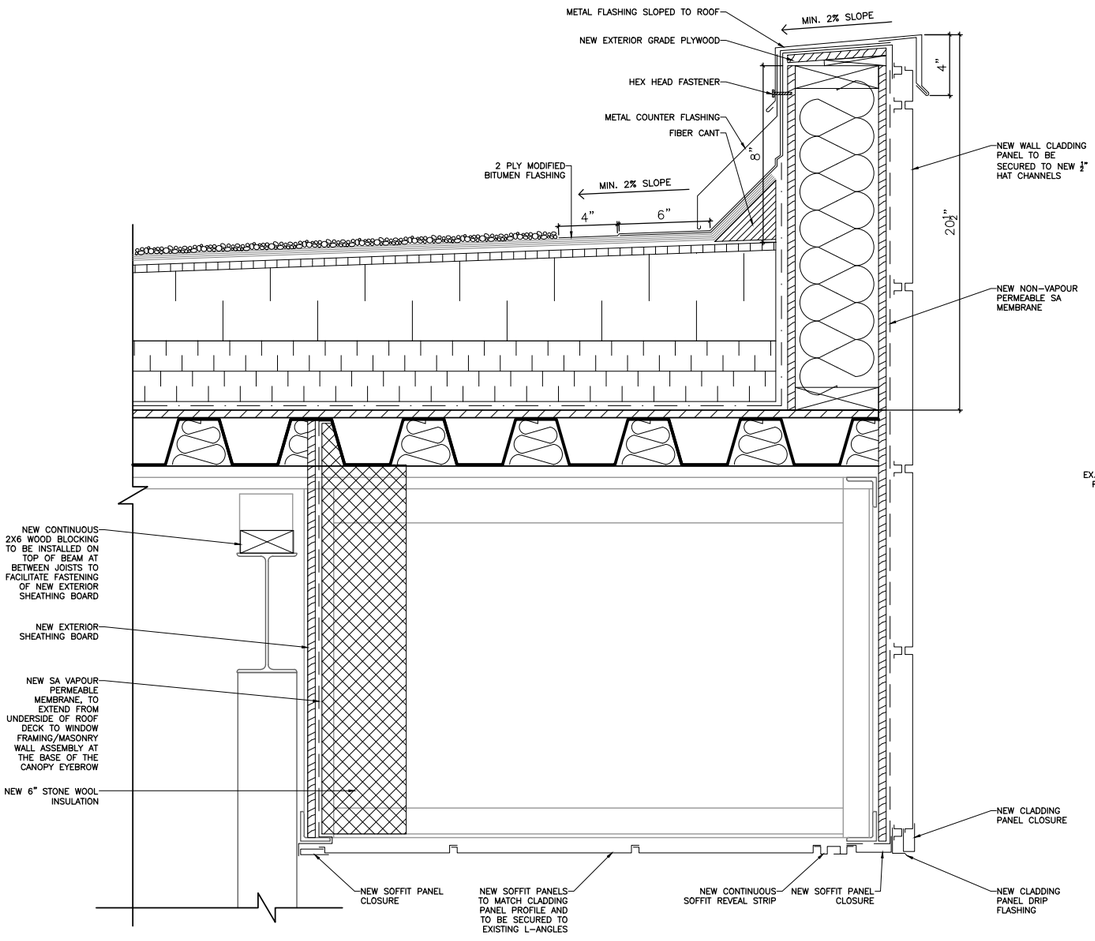
Seal:

PROJECT
HORIZON JEUNESSE
GYM ROOF REPLACEMENT
1445 LEWISHAM DR, MISSISSAUGA, ON

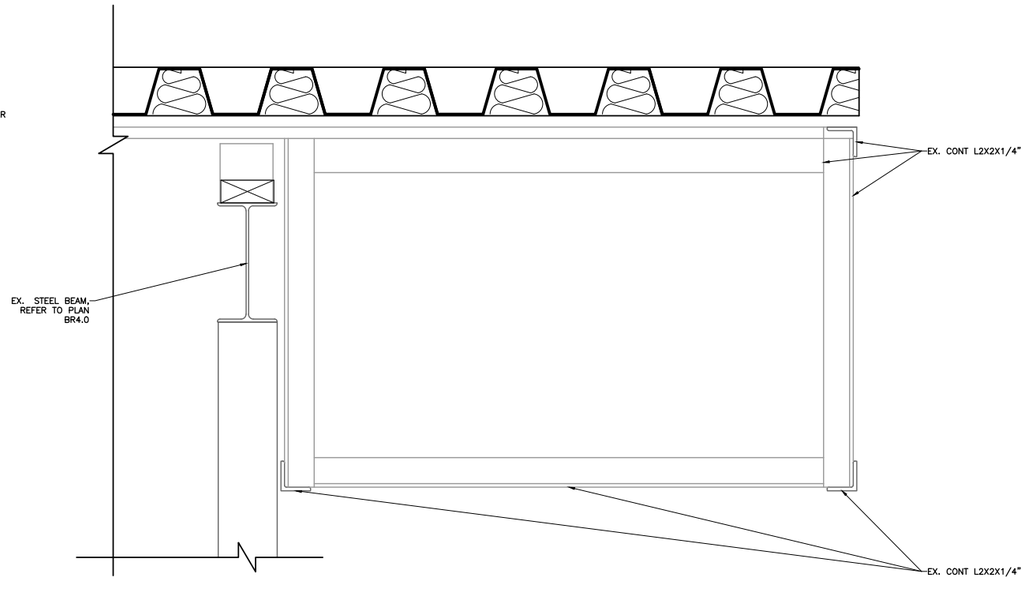
DRAWING
STRUCTURAL SECTIONS

Project Number:	43735-200
Scale:	AS SHOWN
Date:	March 24, 2025
Project Manager:	CMF
Designed By:	JXS
Drawn By:	TT + MTI
Checked By:	JXS

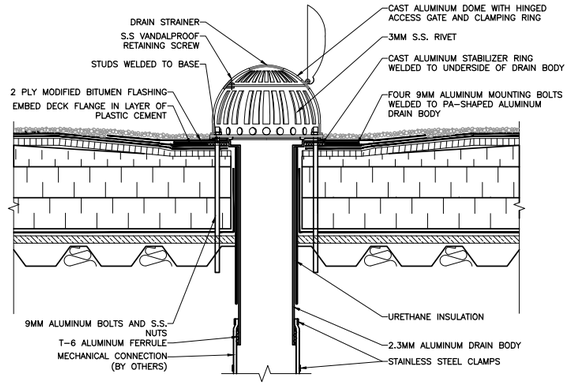
Drawing Number: BR5.0



1 BR5.1 **PARAPET AND CANOPY EYEBROW DETAIL** N.T.S



2 BR5.1 **CANOPY EYEBROW FRAMING DETAIL** N.T.S



NOTE: ALL SUMPS TO BE SLOPED AT 2% AND SHALL BE 2.4m x 2.4m CENTERED ON THE DRAIN UNLESS OTHERWISE NOTED

3 BR5.1 **CONVENTIONAL DRAIN** N.T.S

Client Logo:

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Seal:

PROJECT
HORIZON JEUNESSE
GYM ROOF REPLACEMENT
1445 LEWISHAM DR, MISSISSAUGA, ON

DRAWING
STRUCTURAL SECTIONS

Project Number:	43735-200
Scale:	AS SHOWN
Date:	March 24, 2025
Project Manager:	CMF
Designed By:	JXS
Drawn By:	TT + MTI
Checked By:	JXS

Drawing Number: BR5.1

SIZE: 11x17 CAD: P:\43735\200\WORKING\43735-200 HORIZON JEUNESSE BR1.0.DWG

Appendix A

Pre-Renovation Designated Substances and Hazardous Materials Survey

Conseil scolaire Viamonde

Pre-Renovation Designated Substances and Hazardous Materials Survey

ÉCOLE ÉLÉMENTAIRE HORIZON JEUNESSE
1445 Lewisham Dr., Mississauga, Ontario

January 10, 2025

Pre-Renovation Designated Substances and Hazardous Materials Survey

ÉCOLE ÉLÉMENTAIRE HORIZON JEUNESSE
1445 Lewisham Dr., Mississauga, Ontario

January 10, 2025

Prepared By:
Arcadis Canada Inc.
8133 Warden Avenue
Markham
Ontario L6G 1B3
Phone: 905 764 9380

Prepared For:
Conseil scolaire Viamonde
116 Cornelius Parkway
Toronto, Ontario
M6L 2K5
Attention:
Pascal Gosselin
Manager of Renovation Projects, Energy Conservation and Preventive Maintenance

Our Ref:
Project No. 30246133

Prepared by:

Dwayne Kellyman, Dipl. Tech.
Technical Specialist, Field Supervisor

Jean Daigle
Senior Technical Specialist

Contents

Tables

Appendices

1 Introduction

Arcadis Canada Inc. (Arcadis) was retained by Conseil scolaire Viamonde (CSV) to conduct a pre-renovation designated substances and hazardous materials survey in designated areas of École élémentaire Horizon Jeunesse located at 1445 Lewisham Drive, Mississauga, Ontario.

The information in this report is to be provided to all bidders on a project in accordance with the requirements of the Occupational Health and Safety Act.

The site is a two-storey building. The school was constructed in 1965 with an addition constructed in 1969.

It is our understanding that several renovations are to take place in designated areas of the building referred to in this report at the “designated study areas”. The survey was limited to inspecting and testing materials in the designated study areas that may be affected by the renovation project based on information provided by CSV.

The designated study areas, eras of construction and roof plan are shown on floor plans provided in Appendix A.

The survey was undertaken to report on the presence or suspected presence of readily observable designated substances and hazardous materials.

1.1 Scope of Work

The scope of work for our investigation included:

- review of existing information;
- investigation of readily-accessible areas in the designated study areas for the presence of designated substances and hazardous materials used in building construction materials;
- obtaining representative bulk samples of materials suspected of containing asbestos and paint chip samples for lead;
- laboratory analyses of bulk samples for asbestos content;
- laboratory analyses of paint chip samples for lead content; and
- preparation of a report outlining the findings of the investigation.

Mr. Dwayne Kellyman of Arcadis visited the site on December 4, 2024, to conduct the designated substances and hazardous materials survey at École élémentaire Horizon Jeunesse.

2 Regulatory Discussion and Methodology

Ontario Occupational Health and Safety Act (OHSA)

The Ontario *Occupational Health and Safety Act* (OHSA) sets out, in very general terms, the duties of employers and others to protect workers from health and safety hazards on the job. These duties include, but are not limited to:

- taking all reasonable precautions to protect the health and safety of workers [clause 25(2)(h)];
- ensuring that equipment, materials and protective equipment are maintained in good condition [clause 25(1)(b)];
- providing information, instruction and supervision to protect worker health and safety [clause 25(2)(a)]; and
- acquainting a worker or a person in authority over a worker with any hazard in the work and in the handling, storage, use, disposal and transport of any article, device, equipment or a biological, chemical or physical agent [clause 25(2)(d)].

In addition, Section 30 of the OHSA deals with the presence of designated substances on construction projects. Compliance with the OHSA and its regulations requires action to be taken where there is a designated substance hazard on a construction project.

Section 30 of the OHSA requires the owner of a project to determine if designated substances are present on a project and, if so, to inform all potential contractors as part of the bidding process. Contractors who receive this information are to pass it onto other contractors and subcontractors who are bidding for work on the project.

Regulation for Construction Projects, O.Reg. 213/91

The *Regulation for Construction Projects*, O.Reg. 213/91, applies to all construction projects. The following sections of the regulation would apply to situations where there is the potential for workers to be exposed to designated substances:

Section 14	(5)	A competent person shall perform tests and observations necessary for the detection of hazardous conditions on a project.
Section 21	(1)	A worker shall wear such protective clothing and use such personal protective equipment or devices as are necessary to protect the worker against the hazards to which the worker may be exposed.
	(2)	A worker's employer shall require the worker to comply with subsection (1).
	(3)	A worker required to wear personal protective clothing or use personal protective equipment or devices shall be adequately instructed and trained in the care and use of the clothing, equipment or device before wearing or using it.

Section 30 Workers who handle or use substances likely to endanger their health shall be provided with washing facilities with clean water, soap and individual towels.

Section 46 (1) A project shall be adequately ventilated by natural or mechanical means,

(a) if a worker may be injured by inhaling a noxious...dust or fume;

(2) If it is not practicable to provide natural or mechanical ventilation in the circumstances described in clause (1)(a), respiratory protective equipment suitable for the hazard shall be provided and be used by the workers.

Section 59 If the dissemination of dust is a hazard to a worker, the dust shall be adequately controlled or each worker who may be exposed to the hazard shall be provided with adequate personal protective equipment.

Regulation for Designated Substances (O.Reg. 490/09)

The *Designated Substance Regulation* (O.Reg. 490/09) specifies occupational exposure limits (OELs) for designated substances and requires an assessment and a control program to ensure compliance with these OELs.

Although, O.Reg. 490/09 and the OELs do not apply to an employer on a construction project, or to their workers at the project, employers still have a responsibility to protect the health of their workers and to comply with the OHSA and other applicable regulations. Section 25(2)(h) of the OHSA requires that employers take "every precaution reasonable in the circumstances for the protection of a worker".

Other regulatory requirements (and guidelines) which apply to control of exposure to designated substances and hazardous materials are referenced in the sections below.

2.1 Asbestos

Asbestos has been widely used in buildings, both in friable applications (materials which can be crumbled, pulverized or powdered by hand pressure, when dry) such as pipe and tank insulation, sprayed-on fireproofing and acoustic texture material and in non-friable manufactured products such as floor tile, gaskets, cement board and so on. The use of asbestos in friable applications was curtailed around the mid-1970s and, as such, most buildings constructed prior to about 1975 contain some form of friable construction material with an asbestos content. The use of asbestos in certain non-friable materials continued beyond the mid-1970s.

Control of exposure to asbestos is governed in Ontario by Regulation 278/05 – *Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations*. Disposal of asbestos waste (friable and non-friable materials) is governed by Ontario Regulation 278/05 and by Ontario Regulation 347, *Waste Management – General*. O.Reg. 278/05 classifies asbestos work operations into three types (Type 1, 2 and 3), as shown in Table C-1 in Appendix C, and specifies procedures to be followed in conducting asbestos abatement work.

2.2 Lead

Lead is a heavy metal that can be found in construction materials such as paints, coatings, mortar, concrete, pipes, solder, packings, sheet metal, caulking, glazed ceramic products and cable splices. Lead has been used historically in exterior and interior paints.

The *Surface Coating Materials Regulations* (SOR/2016-193) made pursuant to the Canada Consumer Product Safety Act states that a surface coating material must not contain more than 90 mg/kg total lead. Health Canada defines a lead-containing surface coating as a paint or similar material that dries to a solid film that contains over 90 mg/kg dry weight of lead.

Information from the United States Occupational Health and Safety Administration (OSHA) suggests that the improper removal of lead paint containing 600 mg/kg lead results in airborne lead concentrations that exceed half of the permissible exposure limit. Lead concentrations as low as 90 mg/kg may present a risk to pregnant women and children[1].

The *National Plumbing Code* allowed lead as an acceptable material for pipes until 1975 and in solder until 1986.

The Ministry of Labour *Guideline, Lead on Construction Projects*, dated April 2011, provides guidance in the measures and procedures that should be followed when handling lead containing materials during construction projects. In the guideline, lead-containing construction operations are classified into three groups - Type 1 (low risk), Type 2 (medium risk) and Type 3 (high risk) based on presumed airborne concentrations of lead, as shown in Appendix C, Table C-2. Any operation that may expose a worker to lead that is not a Type 1, Type 2, or Type 3b operation, is classified as a Type 3a operation.

2.3 Mercury

Mercury has been used in electrical equipment such as alkaline batteries, fluorescent light bulbs (lamps), high intensity discharge (HID) lights (mercury vapour, high pressure sodium and metal halide), “silent switches” and in instruments such as thermometers, manometers and barometers, pressure gauges, float and level switches and flow meters. Mercury-containing lamps, the bulk of which are 1.22 m (four foot) fluorescent lamps contain between 7 and 40 mg of mercury each. Mercury compounds have also been used historically as additives in latex paint to protect the paint from mildew and bacteria during production and storage.

The intentional addition of mercury to Canadian-produced consumer paints for interior use was prohibited in 1991. Mercury may have remained in paints after 1991, however, as a result of impurities in the paint ingredients or cross-contamination due to other manufacturing processes. The *Surface Coating Materials Regulations* made under the *Hazardous Products Act* set a maximum total mercury concentration of 10 mg/kg (0.001 percent) for surface coating materials (including paint). This criterion level applies to the sale and importation of new surface coating materials.

[1] *Lead-Containing Paints and Coatings: Preventing Exposure in the Construction Industry.* WorkSafe BC, 2011.

Mercury-containing thermostats and silent light switches are mercury tilt switches which are small tubes with electrical contacts at one end of the tube. A mercury tilt switch is usually present when no switch is visible. Mercury switches often have the word “TOP” stamped on the upper end of the switch, which is visible after removing the cover plate. If mercury switches are to be removed, the entire switch should be removed and placed into a suitable container for storage and disposal.

Waste light tubes generated during renovations or building demolition and waste mercury from equipment must either be recycled or disposed of in accordance with the requirements of Ont. Reg. 347 - *Waste Management, General*.

Waste mercury in amounts less than 5 kg (per month) are exempt from the generator registration requirements prescribed by O.Reg. 347 – *Waste Management – General*. Waste mercury from mercury switches or gauges should, however, be properly collected and shipped to a recycling facility or disposed of as a hazardous waste. Removal of mercury-containing equipment (e.g., switches, gauges, controls, etc.) should be carried out in a manner which prevents spillage and exposure to workers.

2.4 Silica

Silica exists in several forms of which crystalline silica is of most concern with respect to potential worker exposures. Quartz is the most abundant type of crystalline silica. Some commonly used construction materials containing silica include brick, refractory brick, concrete, concrete block, cement, mortar, rock and stone, sand, fill dirt, topsoil and asphalt containing rock or stone.

The Ministry of Labour *Guideline, Silica on Construction Projects*, dated April 2011, provides guidance in controlling exposure to silica dust during construction activities. In the guideline, silica-containing construction operations are classified into three groups - Type 1 (low risk), Type 2 (medium risk) and Type 3 (high risk) based on presumed airborne concentrations of respirable crystalline silica in the form of cristobalite, tridymite, quartz and tripoli as shown in Appendix C, Table C-3.

2.5 Vinyl Chloride

Vinyl chloride vapours may be released from polyvinyl chloride (PVC) products in the event of heating or as a result of decomposition during fire. PVC is used in numerous materials that may be found in building construction, including, for example, piping, conduits, siding, window and door frames, plastics, garden hoses, flooring and wire and cable protection.

2.6 Acrylonitrile

Acrylonitrile is used to produce nitrile-butadiene rubber, acrylonitrile-butadiene-styrene (ABS) polymers and styrene-acrylonitrile (SAN) polymers. Products made with ABS resins which may be found in buildings include telephones, bottles, packaging, refrigerator door liners, plastic pipe, building panels and shower stalls. Acrylonitrile can be released into the air by combustion of products containing ABS.

2.7 Other Designated Substances

Isocyanates are a class of chemicals used in the manufacture of certain types of plastics, foams, coatings and other products. Isocyanate-based building construction materials may include rigid foam products such as foam-core panels and spray-on insulation and paints, coatings, sealants and adhesives. Isocyanates may be inhaled if they are present in the air in the form of a vapour, a mist or a dust.

Benzene is a clear, highly flammable liquid used mainly in the manufacture of other chemicals. The commercial use of benzene as a solvent has practically been eliminated, however it continues to be used as a solvent and reactant in laboratories.

Arsenic is a heavy metal used historically in pesticides and herbicides. The primary use in building construction materials was its use in the wood preservative chromated copper arsenate (CCA). CCA was used to pressure treat lumber since the 1940's. Pressure-treated wood containing CCA is no longer being produced for use in most residential settings.

Ethylene oxide is a colourless gas at room temperature. it has been used primarily for the manufacture of other chemicals, as a fumigant and fungicide and for sterilization of hospital equipment.

Coke oven emissions are airborne contaminants emitted from coke ovens and are not a potential hazard associated with building construction materials.

2.8 Polychlorinated Biphenyls (PCBs)

The management of equipment classified as waste and containing Polychlorinated Biphenyls (PCBs) at concentrations of 50 parts per million (mg/kg) or greater is regulated by Ontario Regulation 362*, Waste Management – PCBs*. Under this regulation, PCB waste is defined as any waste material containing PCBs in concentrations of 50 mg/kg or greater. Any equipment containing PCBs at or greater than this level, such as transformers, switchgear, light ballasts and capacitors, which is removed from service due to age, failure or as a result of decommissioning, is considered to constitute a PCB waste. Although current federal legislation (effective 1 July 1980) has prohibited the manufacture and sale of new equipment containing PCBs since that time, continued operation of equipment supplied prior to this date and containing PCBs is still permitted. Handling, storage and disposition of such equipment is, however, tightly regulated and must be managed in accordance with provincial and federal government requirements as soon as it is taken out of service or becomes unserviceable.

In most institutional, commercial facilities and in smaller industrial facilities, the primary source of equipment potentially containing PCBs is fluorescent and H.I.D. light ballasts. Small transformers may also be present. In larger industrial facilities, larger transformers and switch gear containing, or potentially containing, PCBs may also be present.

PCBs were also commonly added to industrial paints from the 1940s to the late 1970s. PCBs were added directly to the paint mixture to act as a fungicide, to increase durability and flexibility, to improve resistance to fires and to increase moisture resistance. The use of PCBs in new products was banned in Canada in the 1970s. PCB amended paints were used in speciality industrial/institutional applications prior to the 1970s including government buildings

and equipment such as industrial plants, radar sites, ships as well as non-government rail cars, ships, grain bins, automobiles and appliances.

Removal of in-service equipment containing PCBs, such as fluorescent light ballasts, capacitors and transformers, is subject to the requirements of the federal *PCB Regulations* (discussed below).

The *PCB Regulations*, which came into force on 5 September 2008, were made under the *Canadian Environmental Protection Act*, 1999 (CEPA 1999) with the objective of addressing the risks posed by the use, storage and release to the environment of PCBs, and to accelerate their destruction. The *PCB Regulations* set different end-of-use deadlines for equipment containing PCBs at various concentration levels.

The Regulations Amending the PCB Regulations and Repealing the Federal Mobile PCB Treatment and Destruction Regulations were published on 23 April 2014, in the Canada Gazette, Part II, and came into force on 1 January 2015. The most notable part of the amendments is the addition of an end-of-use deadline date of 31 December 2025 for specific electrical equipment located at electrical generation, transmission and distribution facilities.

When the PCB materials are classified as waste, jurisdiction falls under the Ontario Ministry of the Environment and Climate Change (MOECC) and O.Reg. 362. All remedial and PCB management work must be carried out under the terms of a Director's Instruction issued by an MOECC District Office (for quantities of PCB fluid greater than 50 litres). The PCB waste stream, regardless of quantity, must be registered with the MOECC, in accordance with O.Reg. 347, *General - Waste Management*. O.Reg. 362 applies to any equipment containing greater than 1 kg of PCBs.

2.9 Ozone-Depleting Substances (ODS) and Other Halocarbons

Ontario Regulation 463/10 – *Ozone Depleting Substances and Other Halocarbons*, applies to the use, handling and disposal of Class 1 ozone-depleting substances, including various chlorofluorocarbons (CFCs), halons and other halocarbons, Class 2 ozone-depleting substances, including various hydrochlorofluorocarbons (HCFCs) and halocarbons, and other halocarbons, including fluorocarbons (FCs) and hydrofluorocarbons (CFCs). The most significant requirements for handling of ozone-depleting substances (ODS) and other Halocarbons, which include, for example, refrigerants used in refrigeration equipment and chillers, include the following:

- certification is required for all persons testing, repairing, filling or emptying equipment containing ODS and other halocarbons;
- the discharge of a Class 1 ODS or anything that contains a Class 1 ODS to the natural environment or within a building is prohibited;
- the making, use of, selling of or transferring of a Class 1 ODS is restricted to certain conditions;
- the discharge of a solvent or sterilant that contains a Class 2 ODS is prohibited;
- the making, use of, selling of or transferring of a solvent or sterilant that contains a Class 2 ODS is restricted to certain conditions;

- fire extinguishing equipment that contains a halon may be discharged to fight fires, except fires for firefighting training purposes;
- portable fire extinguishing equipment that contains a halon may be used or stored if the extinguisher was sold for use for the first time before 1 January 1996;
- records of the servicing and repair of equipment containing ODS and other halocarbons must be prepared and maintained by the owner of the equipment; and
- equipment no longer containing ODS and other halocarbons must be posted with a notice completed by a certified person.

Ontario Regulation 347, *General – Waste Management*, has also been amended to provide for more strict control of CFCs. The requirements under the amended regulation apply primarily to the keeping of records for the receipt or recycling of CFC waste.

2.10 Mould

Moulds are forms of fungi that are found everywhere both indoors and outdoors all year round. Outdoors, moulds live in the soil, on plants and on dead and decaying matter. More than 1000 different kinds of indoor moulds have been found in buildings. Moulds spread and reproduce by making spores, which are all small and light-weight, able to travel through air, capable of resisting dry, adverse environmental conditions, and hence capable of surviving a long time. Moulds need moisture and nutrients to grow and their growth is stimulated by warm, damp and humid conditions.

Control of exposure to mould is required under Section 25(2)(h) of the Ontario *Occupational Health and Safety Act*, which states that employers shall take every precaution reasonable in the circumstances for the protection of workers. Recommended work practices are outlined in the following documents:

- *Mould Guidelines for the Canadian Construction Industry*. Standard Construction Document CCA 82 2004. Canadian Construction Association.
- *Mould Abatement Guidelines*. Environmental Abatement Council of Ontario. Edition 3. 2015.

3 Results and Discussion

3.1 Asbestos

Arcadis reviewed reports prepared by Arcadis for the CSV titled "*Updated Survey of Asbestos-Containing Materials, École élémentaire Horizon Jeunesse, 1445 Lewisham Drive, Mississauga, Ontario"* dated January 25, 2023, and "*Pre-Renovation Designated Substances and Hazardous Materials Survey, École élémentaire Horizon Jeunesse, 1445 Lewisham Drive, Mississauga, Ontario"* dated March 13, 2024. Information and bulk sample analysis results obtained from these existing reports were utilized by Arcadis during the course of our investigation and in the preparation of this report.

During the course of our site investigation, additional representative bulk samples of material were collected by Arcadis staff. The samples were forwarded to EMSL Canada Inc. for asbestos analyses. Results of bulk sample analysis for asbestos content are provided in Table 3.1. Laboratory reports for bulk sample analyses of samples collected as part of the 2024 survey work are provided in Appendix B. Locations of accessible asbestos-containing materials are outlined on the floor plan provided in Appendix A.

Table 3-1 Summary of Results of Analyses of Bulk Samples for Asbestos Content

École élémentaire Horizon Jeunesse

Sample No.	Location	Description	Asbestos Content
1A	Room 106	"Siporex" roof decking (Autoclaved Aerated Concrete)	None Detected
1B	Room 106	"Siporex" roof decking (Autoclaved Aerated Concrete)	None Detected
1C	Room 106	"Siporex" roof decking (Autoclaved Aerated Concrete)	None Detected
2A	Exterior Room 106	Cement board on exterior soffit	**3% Amosite** **12% Chrysotile**
1-A	103	Mastic under sheet flooring	None detected (1)
1-B	103	Mastic under sheet flooring	None detected (1)
1-C	103	Mastic under sheet flooring	None detected (1)
2-A	107	Mastic under 12" grey floor tiles with flecks	**2% Chrysotile (1)**
3-A	121B	Grey sheet flooring	None detected (PLM) (1) None detected (TEM) (1)
3-A	121B	Mastic - Grey sheet flooring	**2% Chrysotile (1)**
3-B	121B	Grey sheet flooring	None detected (1)
3-C	121B	Grey sheet flooring	None detected (1)
4-A	123	Blue vinyl baseboard	None detected (PLM) (1) None detected (TEM) (1)
4-A	123	Mastic – Blue baseboard	None detected (1)
4-B	123	Blue vinyl baseboard	None detected (1)
4-B	123	Mastic – Blue baseboard	None detected (1)
4-C	123	Blue vinyl baseboard	None detected (1)
4-C	123	Mastic – Blue baseboard	None detected (1)
0712-01A	Room 128 (Floor tile)	Light grey vinyl floor tiles with blue flecks	None detected (1)

Sample No.	Location	Description	Asbestos Content
0712-01A	Room 128 (Mastic)	Mastic (Light grey vinyl floor tiles with blue flecks)	**1% Chrysotile** (1)
0712-01B	Room 128 (Floor tile)	Light grey vinyl floor tiles with blue flecks	None detected (1)
0712-01C	Room 128 (Floor tile)	Light grey vinyl floor tiles with blue flecks	None detected (1)
0712-02A	Room 123 (Floor Tile)	Beige vinyl floor tile with blue flecks	None detected (1)
0712-02A	Room 123 (mastic)	Mastic (Beige vinyl floor tile with blue flecks)	**4% Chrysotile** (1)
0712-02B	Room 123 (Floor Tile)	Beige vinyl floor tile with blue flecks	None detected (1)
0712-02C	Room 123 (Floor Tile)	Beige vinyl floor tile with blue flecks	None detected (1)
0712-03A	Room 121 (Sheet Flooring)	Tan vinyl sheet flooring	None detected (1)
0712-03B	Room 123 (mastic)	Mastic (Tan vinyl sheet flooring)	**1% Chrysotile** (1)
0712-03B	Room 121 (Sheet Flooring)	Tan vinyl sheet flooring	None detected (1)
0712-03C	Room 121 (Sheet Flooring)	Tan vinyl sheet flooring	None detected (1)
0712-04A	Room 114B	Mastic under sheet flooring	None detected (1)
0712-04B	Room 114B	Mastic under sheet flooring	None detected (1)
0712-04C	Room 114B	Mastic under sheet flooring	None detected (1)
1A	Room 202	Yellow mastic under 12” aqua with blue fleck and 12” blue with blue fleck vinyl floor tiles	None detected (1)
1B	Room 202	Yellow mastic under 12” aqua with blue fleck and 12” blue with blue fleck vinyl floor tiles	None detected (1)
1C	Room 202	Yellow mastic under 12” aqua with blue fleck and 12” blue with blue fleck vinyl floor tiles	None detected (1)
2A	Room 210	Black vinyl floor tile mastic under 12” blue with blue fleck	**2% chrysotile** (1, 3)
3A	Room 213	Black mastic under 12” vinyl floor tile tan with brown fleck	**1% chrysotile** (1,3)
1A	106B	Black mastic below 12”x12” vinyl floor tile tan with tan and green fleck	**2% chrysotile** (1)
2A	106b	Black baseboard mastic	None detected (1)
2B	106	Black baseboard mastic	None detected (1)
2C	109	Black baseboard mastic	None detected (1)
3A	102	Spray fireproofing	None detected (1)
3B	102	Spray fireproofing	None detected (1)
3C	103	Spray fireproofing	None detected (1)
4A	106B	Brown mastic below baseboard	None detected (1)
4B	106A	Brown mastic below baseboard	None detected (1)
4C	109	Brown mastic below baseboard	None detected (1)
5A	106D	Grout on ceramic tile	None detected (1)
5B	106D	Grout on ceramic tile	None detected (1)

Sample No.	Location	Description	Asbestos Content
5C	106D	Grout on ceramic tile	None detected (1)
6A	106D	Mortar on ceramic tile	None detected (1)
6B	106D	Mortar on ceramic tile	None detected (1)
6C	106D	Mortar on ceramic tile	None detected (1)
7A	109	12”x12” vinyl floor tiles beige with brown streaks	**2.2% chrysotile (1)**
8A	109	Mastic below 12”x12” vinyl floor tiles beige with brown streaks	**3% chrysotile (1)**
9A	102	Yellow vinyl sheet flooring with jute mesh	None detected (PLM) (1) None detected (TEM)
9B	102	Yellow vinyl sheet flooring with jute mesh	None detected (1)
9C	103	Yellow vinyl sheet flooring with jute mesh	None detected (1)
10A	102	Levelling compound below vinyl sheet flooring	None detected (1)
10B	103	Levelling compound below vinyl sheet flooring	None detected (1)
10C	102	Levelling compound below vinyl sheet flooring	None detected (1)
11A	102	Grey baseboard	None detected (PLM) (1) None detected (TEM)
11B	102	Grey baseboard	None detected (1)
11C	103	Grey baseboard	None detected (1)
12A	103	Mastic below grey baseboard	None detected (1)
12B	103	Mastic below grey baseboard	None detected (1)
12C	102	Mastic below grey baseboard	None detected (1)
13A	102	Grey caulking on windows, 1965 era	None detected (PLM) (1) None detected (TEM)
13B	101A	Grey caulking on windows, 1965 era	None detected (1)
13C	109	Grey caulking on windows, 1965 era	None detected (1)
14A	103	Interior brick mortar, 1969 era	<0.25% chrysotile (1,2)
14B	103	Interior brick mortar, 1969 era	<0.25% chrysotile (1,2)
14C	103	Interior brick mortar, 1969 era	<0.25% chrysotile (1,2)
15A	101	Second layer below 12”x12” vinyl floor tile	**1% chrysotile (1)**
16A	101	Mastic below, Second layer below 12”x12” vinyl floor tile	**3% chrysotile (1)**
17A	101	Black mastic below, 12”x12” vinyl floor tile, aqua	None detected (1)
17B	101A	Black mastic below, 12”x12” vinyl floor tile, aqua	None detected (1)
17C	101B	Black mastic below, 12”x12” vinyl floor tile, aqua	None detected (1)
17C	101B	Black mastic below 12”x12”, aqua	**2% chrysotile (1)**
18A	130	Grey caulking on windows, 1969 era	None detected (PLM) (1) None detected (TEM)
18B	131	Grey caulking on windows, 1969 era	None detected (1)
18C	129	Grey caulking on windows, 1969 era	None detected (1)
19A	115	Cement gasket on pipe	**15% chrysotile**
20A	129	12”x12” vinyl floor tile grey with grey and white fleck	None detected (PLM) (1) None detected (TEM)
20B	130	12”x12” vinyl floor tile grey with grey and white fleck	None detected (1)
20C	131	12”x12” vinyl floor tile grey with grey and white fleck	None detected (1)
21A	129	Black mastic below 12”x12” vinyl floor tile grey with grey and white fleck	None detected (1)
21B	130	Black mastic below 12”x12” vinyl floor tile grey with grey and white fleck	None detected (1)

Sample No.	Location	Description	Asbestos Content
21C	131	Black mastic below 12”x12” vinyl floor tile grey with grey and white fleck	None detected (1)
22A	Room 101	Exterior cement board on soffit	**12% chrysotile** (1)
23A	Exterior	Brick Mortar, 1965 era	<0.25% chrysotile (1,2)
23B	Exterior	Brick Mortar, 1965 era	<0.25% chrysotile (1,2)
23C	Exterior	Brick Mortar, 1965 era	<0.25% chrysotile (1,2)
24A	Exterior	Brick Mortar, 1969 era	<0.25% chrysotile (1,2)
24B	Exterior	Brick Mortar, 1969 era	<0.25% chrysotile (1,2)
24C	Exterior	Brick Mortar, 1969 era	<0.25% chrysotile (1,2)
25A	106B	Thermal insulation on ductwork	**65% chrysotile (1,3)**
1A	Room B2	Mastic – black in colour under 12” x 12” vinyl floor tile	**4% chrysotile (1,3)**
2A	Corridor 201	Mastic – cream in colour from 4” blue vinyl baseboard	None detected (1,3)
2B	Corridor 201	Mastic – cream in colour from 4” blue vinyl baseboard	None detected (1,3)
2C	Corridor 201	Mastic – cream in colour from 4” blue vinyl baseboard	None detected (PLM) (1,3) None detected (TEM)
3A	Corridor 201	4” vinyl baseboard – blue in colour	None detected (1,3)
3B	Corridor 201	4” vinyl baseboard – blue in colour	None detected (1,3)
3C	Corridor 201	4” vinyl baseboard – blue in colour	None detected (PLM) (1,3) None detected (TEM)
1A-VFT	Room 106	12”x12” vinyl floor tile, tan with grey-green specks	**5.4 % chrysotile (1)**
2A-PS	Room 106A	Pipe straight – antisweat (1950)	None detected (1)
2B-PS	Room 102C	Pipe straight – antisweat (1950)	None detected (1)
2C-PS	Room 102C	Pipe straight – antisweat (1950)	None detected (1)
3E-JC	Room 204	Drywall joint compound (1950)	None detected (1)
4A-VSF	Room 106D	Vinyl sheet flooring - grey with sparkles	None detected (1)
4B-VSF	Room 106D	Vinyl sheet flooring - grey with sparkles	None detected (1)
4C-VSF	Room 106D	Vinyl sheet flooring - grey with sparkles	None detected (1)
7A-VFT	Room 103	12”x12” vinyl floor tile, white with black & grey specks	None detected (1)
7B-VFT	Room 103	12”x12” vinyl floor tile, white with black & grey specks	None detected (1)
7C-VFT	Room 103	12”x12” vinyl floor tile, white with black & grey specks	None detected (1)
9A-VFT	Room 102	12”x12” vinyl floor tile, tan with brown specks	None detected (1)
9B-VFT	Room 102	12”x12” vinyl floor tile, tan with brown specks	None detected (1)
9C-VFT	Room 213	12”x12” vinyl floor tile, tan with brown specks	None detected (1)
10A-SCT	Room 113B	2’x4’ suspended ceiling tile, pinholes with textured surface	None detected (1)
11A-VFT	Room 101	12”x12” vinyl floor tile, aqua blue with blue specks	None detected (1)
11B-VFT	Room 101	12”x12” vinyl floor tile, aqua blue with blue specks	None detected (1)
11C-VFT	Room 202	12”x12” vinyl floor tile, aqua blue with blue specks	None detected (1)
12A-SCT	Room 101	2’x4’ suspended ceiling tile, wide fissures in 4’ (wavy)	None detected (1)
12B-SCT	Room 101A	2’x4’ suspended ceiling tile, wide fissures in 4’ (wavy)	None detected (1)
12C-SCT	Room 120	2’x4’ suspended ceiling tile, wide fissures in 4’ (wavy)	None detected (1)
14A-FP	Room 114	Fireproofing (cementitious-brown)	None detected (1)
14B-FP	Room 114	Fireproofing (cementitious-brown)	None detected (1)
14C-FP	Room 114	Fireproofing (cementitious-brown)	None detected (1)
16A-SCT	Room 119	2’x4’ suspended ceiling tile, small random pinholes	None detected (1)
16B-SCT	Room 121	2’x4’ suspended ceiling tile, small random pinholes	None detected (1)
16C-SCT	Room 119	2’x4’ suspended ceiling tile, small random pinholes	None detected (1)
19A-VFT	Room 122	12”x12” vinyl floor tile, dark blue with blue specks	None detected (1)

Sample No.	Location	Description	Asbestos Content
19B-VFT	Room 122	12”x12” vinyl floor tile, dark blue with blue specks	None detected (1)
19C-VFT	Room 122	12”x12” vinyl floor tile, dark blue with blue specks	None detected (1)
20A-JC	Room 129	Drywall joint compound (1969)	None detected (1)
20B-JC	Room 131	Drywall joint compound (1969)	None detected (1)
20C-JC	Room 131	Drywall joint compound (1969)	None detected (1)
20D-JC	Room 130	Drywall joint compound (1969)	None detected (1)
20E-JC	Room 130	Drywall joint compound (1969)	None detected (1)
70454-1	Room 102	Mastic (12”x12” vinyl floor tile, beige w/ brown)	**0.5 % chrysotile (1)**
70454-2	Room 103	Mastic (12”x12” vinyl floor tile, white w/ black)	None detected (1)
70454-3	Room 118	12”x12” vinyl floor tile, blue w/ white	None detected (1)
70454-3	Room 118	Mastic (12”x12” vinyl floor tile, blue w/ white)	None detected (1)
70454-4	Room 118	12”x12” vinyl floor tile, blue w/ white	None detected (1)
70454-5	Room 119	12”x12” vinyl floor tile, blue w/ white	None detected (1)
70454-6	Room 102A	Drywall joint compound	None detected (1)
70454-7	Room 102A	Drywall joint compound	None detected (1)
70454-8	Room 102B	Drywall joint compound	None detected (1)
70454-9	Room 118	Drywall joint compound	None detected (1)
70454-10	Room 119	Drywall joint compound	None detected (1)
70454-11	Room 121	Drywall joint compound	None detected (1)
70454-12	Room 102	2’x4’ ceiling tile, floral pinhole	None detected (1)
70454-13	Room 102	2’x4’ ceiling tile, floral pinhole	None detected (1)
70454-14	Room 103	2’x4’ ceiling tile, floral pinhole	None detected (1)
70454-15	Room 102	2’x4’ ceiling tile, random fissure w/ pinhole	None detected (1)
70454-16	Room 102	2’x4’ ceiling tile, random fissure w/ pinhole	None detected (1)
70454-17	Room 103	2’x4’ ceiling tile, random fissure w/ pinhole	None detected (1)
70454-18	Room 102	2’x4’ ceiling tile, new textured pinhole	None detected (1)
70454-19	Room 102	2’x4’ ceiling tile, new textured pinhole	None detected (1)
70454-20	Room 103	2’x4’ ceiling tile, new textured pinhole	None detected (1)
70454-21	Room 102	2’x4’ ceiling tile, old textured pinhole	None detected (1)
70454-22	Room 102	2’x4’ ceiling tile, old textured pinhole	None detected (1)
70454-23	Room 102B	2’x4’ ceiling tile, old textured pinhole	None detected (1)
70454-24	Room 121	2’x4’ ceiling tile, random dent w/ fissure	None detected (1)
70454-25	Room 121	2’x4’ ceiling tile, random dent w/ fissure	None detected (1)
70454-26	Room 121A	2’x4’ ceiling tile, random dent w/ fissure	None detected (1)
2106-02	-----	Insulated cement steam elbow	**45 % chrysotile (1)**
2106-12	-----	Insulated cement DW elbow	**45 % chrysotile (1)**
2106-13	-----	Insulated cement HW elbow	**45 % chrysotile (1)**
1-A	Room C101	2’x4’Ceiling Tile – Pinhole random fissure (1965)	None detected (1)
1-B	Room C102	2’x4’Ceiling Tile – Pinhole random fissure (1965)	None detected (1)
1-C	Room C101	2’x4’Ceiling Tile – Pinhole random fissure (1965)	None detected (1)
2-A	Room 106	Blue paint with concrete block coating (1965)	0.37% chrysotile (1,2)
2-B	Room 106	Blue paint with concrete block coating (1965)	**0.6% chrysotile (1)**
3-A	Room 106	Green paint with concrete block coating (1965)	None detected (1)
3-B	Room 106	Green paint with concrete block coating (1965)	None detected (1)
3-C	Room 106	Green paint with concrete block coating (1965)	None detected (1)
4-A	Room C102	White paint with concrete block coating (1965)	**3.1% chrysotile (1)**
5-A	Room C201	Yellow paint with concrete block coating (1965)	**1.0% chrysotile (1)**
6-A	Room C105	Beige paint on concrete block (1969)	None detected (1)

Sample No.	Location	Description	Asbestos Content
6-B	Room C105	Beige paint on drywall (1969)	None detected (1)
6-C	Room C105	Beige paint on drywall (1969)	None detected (1)
6-D	Room 103	Beige paint on concrete block wall (1969)	**1.0% chrysotile (1)**
7-A	Exit 07	Interior door caulking – grey color (1965)	**1.2% chrysotile (1,3)**
8-A	Exit07/S07	Exterior door caulking – grey color (1965)	**1.2% chrysotile (1,3)**
9-A	Exit09/S09	Interior door caulking – beige color (1969)	None detected (PLM) (1) None detected (TEM) (1)
9-B	Exit09/S09	Interior door caulking – beige color (1969)	None detected (1)
9-C	Exit09/S09	Interior door caulking – beige color (1969)	None detected (1)
10-A	Exit08/S08	Exterior door caulking – grey color (1969)	None detected (PLM) (1) None detected (TEM) (1)
10-B	Exit08/S08	Exterior door caulking – grey color (1969)	None detected (1)
10-C	Exit08/S08	Exterior door caulking – grey color (1969)	None detected (1)
11-A	Exit08/S08	Interior door caulking – beige color (1969)	**2.0% chrysotile** (1,3)
12-A	Exit10/S10	Exterior door caulking – grey color (1969)	None detected (PLM) (1) None detected (TEM) (1)
12-B	Exit12/S12	Exterior door caulking – grey color (1969)	None detected (1)
12-C	Exit08/S08	Exterior door caulking – grey color (1969)	None detected (1)
13-A	C104	Mortar (1965)	None detected (PLM) (1) None detected (TEM) (1)
13-B	Room 106	Mortar (1965)	<0.25% chrysotile (1,2)
13-C	C201	Mortar (1965)	<0.25% chrysotile (1,2)
14-A	C104	Mortar (1969)	None detected (1)
14-B	B1	Mortar (1969)	None detected (1)
14-C	C105	Mortar (1969)	None detected (1)

NOTES:

(1) Sample results taken from a report prepared by Arcadis for the CSV titled *"Pre-Renovation Designated Substances and Hazardous Materials Survey, École élémantaire Horizon Jeunesse, 1445 Lewisham Drive, Mississauga, Ontario"* dated March 13, 2024.

(2) "Asbestos-containing material" is defined as material that contains 0.5% or more asbestos by dry weight.

(3) Asbestos materials have since been removed from the sample location and are provided here for references purposes.

< = Less than.

Chrysotile= Chrysotile asbestos.

Determination of the locations of asbestos-containing material was made based on the review of existing information, results of bulk sample analysis, visual observations and physical characteristics of the applications as well as our knowledge of the uses of asbestos in building materials.

Based on visual observations and results of laboratory analyses of samples collected by Arcadis Canada Inc., the following asbestos-containing materials were found to be present in the designated study areas:

- 12"x12" vinyl floor tiles and associated asbestos-containing mastic in Rooms 106, 106A (Stair to Stage), and 106B;
- Mastic associated with non-asbestos containing 12" x 12" vinyl floor tiles in Room 106C;

- Concrete block filler paint on concrete block walls throughout the designated study areas. Note: asbestos paint is not present on concealed concrete block walls above ceilings;
- Thermal insulation applied to pipe fittings below ceilings in Room 106A; and
- Cement board on exterior soffit and fascia on exterior of the building adjacent to the designated study areas and on exterior soffit and fascia on the exterior of the building outside the designated study areas.

Please Note: Arcadis reviewed information associated with roofing materials present on the roof being replaced as part of the upcoming renovation work. The roofing and roof decking being replaced is Roof No. 3 as shown on the roof plan provided in Appendix A. Information provided to Arcadis by the CSV indicated that roofing materials on Roof No. 3 had been replaced in 2000 with all original roofing materials reported to have been removed. The Built-Up roofing system installed in 2000 is comprised of glass felts, plastic vapour barrier, 63.5 mm polyisocyanurate base insulation, 12.7 mm perlite cover insulation, and pea gravel surface on the original Reinforced Autoclaved Aerated Concrete (RAAC) roof decking. The RAAC roof decking material was tested for asbestos content and does not contain asbestos. All roofing materials on Roof No. 3 installed in 2000, as outlined above, are not suspected of containing asbestos and were therefore not tested for asbestos content.

During the course of previous site investigations, Arcadis staff accessed cavities in exterior concrete block walls in several locations throughout the building in both construction eras. Materials suspected of containing asbestos (e.g. vermiculite block-fill insulation) was not observed in all block wall cavities accessed.

Glass fibre insulation is readily visually distinguishable (typically yellow in colour) from asbestos-containing insulation materials and was, therefore, not tested for asbestos content.

Block-filler paint applied to concrete block walls was generally applied to bare concrete block as a primer coat to limit absorption of the final paint finishes into the concrete block. Exposed paint finishes should not contain asbestos on concrete block walls in the school identified as having asbestos-containing block filler paint.

Vinyl floor tiles, floor tile mastics, paint and cement board are non-friable materials. The removal, alteration and/or disturbance of these non-friable asbestos-containing materials can be performed as a Type 1 operation as specified in O. Reg. 278/05 if the material is wetted and the work is done only using non-powered, hand-held tools (see Table C-1 in Appendix C). If the removal, alteration and/or disturbance work is done using power tools that are attached to dust-collecting devices equipped with HEPA filters, then the work is classified as Type 2. If the power tools do not have HEPA filtered dust collecting devices, then the work is Type 3.

Thermal insulation is a friable material. The removal, alteration and/or disturbance of less than 1 m^2 of friable asbestos-containing materials is classified as a Type 2 enclosure operation as specified in O.Reg. 278/05. The removal, alteration and/or disturbance of more than 1 m^2 of friable asbestos-containing materials is classified as a Type 3 operation.

Asbestos may also be present in materials which were not sampled during the course of the asbestos survey carried out by Arcadis, including, but not limited to, areas outside the designated study areas, roofing materials, fire doors, gaskets in piping, internal components of boilers, components of electrical equipment (e.g. electric wiring insulation, non-metallic sheathed cable, electrical panel partitions, arc chutes, high-grade electrical paper, etc.), concrete,

asphaltic pavement, etc., and/or in locations that are presently inaccessible (e.g., in pipe chases, behind walls, and above suspended gypsum board or plaster ceilings). Confirmatory testing of any such materials could be undertaken as the need arises (i.e., at the time of renovations, modifications or demolition) or the materials can be assumed to contain asbestos based on findings in adjacent areas.

If any materials which may contain asbestos and which were not tested during the course of the designated substances and hazardous materials survey are discovered during any construction activities, the work shall not proceed until such time as the required notifications have been made and an appropriate course of action is determined.

3.2 Lead

Arcadis reviewed a report prepared by Arcadis for the CSV titled *"Designated Substances and Hazardous Materials Survey, École élémentaire Horizon Jeunesse, 1445 Lewisham Drive, Mississauga, Ontario* dated March 13, 2024. Information and paint sample analysis results obtained from this existing report was utilized by Arcadis during the course of our investigation and in the preparation of this report.

During the course of our site investigation, a bulk sample of paint on the structural steel supporting the roof system in Room 106 was collected by Arcadis staff. The sample was forwarded to EMSL Canada Inc. for lead analyses. Results of bulk sample analysis for lead content are provided in Table 3.2. The laboratory report is provided in Appendix B.

Table 3-2 Summary of Results of Analyses of Bulk Samples for Lead Content

École élémentaire Horizon Jeunesse

Sample No.	Sample Location	Sample Description	Lead Content
P-1	Room 106	Paint on metal support joists	**19,000 ppm**
P-1	Room 106	Paint on concrete block walls green coloured	**290 ppm** (1)
P-2	Room 106	Paint on concrete block walls green coloured	**8,400 ppm** (1)
P-3	Corridor C102	Paint on concrete block walls white coloured	**130 ppm** (1)
P-4	Corridor C201	Paint on concrete block walls yellow coloured	**790 ppm** (1)
P-5	Corridor C105	Paint on drywalls beige coloured	<90 ppm (1)

NOTE:

(1) Sample results taken from a report prepared by Arcadis for the Conseil scolaire Viamonde titled *Designated Substances and Hazardous Materials Survey, École élémentaire Horizon Jeunesse, 1445 Lewisham Drive, Mississauga, Ontario* dated March 13, 2024.

< = less than.

mg/Kg = milligrams lead per kilogram paint.

1 mg/Kg - 1 part per million (ppm).

Lead was detected in 5 of the 6 representative paint samples and lead was not detected (below the laboratory detection limit of 90 ppm) in the remaining paint sample.

Lead may also be present in lead pipe, mortar, glazing on ceramic tiles, in the solder on the seals of bell joints of any cast iron drainpipe and in the solder on the sweated-on joints between copper pipe and fittings.

The Ministry of Labour *Guideline – Lead on Construction Projects*, dated April 2011, provides guidance in the measures and procedures that should be followed when handling lead containing materials during construction projects. In the guideline, lead-containing construction operations are classified into three groups - Type 1 (low risk), Type 2 (medium risk) and Type 3 (high risk) based on presumed airborne concentrations of lead, as shown in Appendix C, Table C-2. Any operation that may expose a worker to lead that is not a Type 1, Type 2, or Type 3b operation, is classified as a Type 3a operation.

In addition, the *EACO Lead Abatement Guidelines*, *2014 — Edition 1,* Environmental Abatement Council of Ontario, also provides guidance and recommended work practices.

3.3 Mercury

During the course of our site investigation, fluorescent lights were observed in the designated study areas. Mercury should be assumed to be present as a gas in all fluorescent light tubes and in all paint applications, albeit at low levels. The fluorescent light tubes should be recycled for mercury, if the lights are removed.

Proper procedures for removing and handling mercury-containing fluorescent light tubes typically involve:

- ensuring that electrical power to light fixtures has been disconnected and locked out;
- taking all necessary precautions to ensure that fluorescent lamp tubes are removed in a manner that prevents breakage; and
- transporting fluorescent lamp tubes to a licensed processing location for separation and recovery of mercury.

The measures and procedures outlined in the MOL *Guideline, Lead on Construction Projects* for control of potential exposure to lead in paint during construction activities will also serve to control potential exposure to any mercury in paint.

3.4 Silica

Materials observed in the designated study areas which should be considered to contain silica included gypsum board, joint compound, concrete, vinyl floor tiles, cement products, concrete block, brick, mortar and siporex decking.

Silica can also be assumed to be present in any gravel ballast on roofs and will also be found in asphalt roofing materials if rock or stone are present in the asphalt.

The Ministry of Labour *Guideline, Silica on Construction Projects*, April 2011, provides guidance in controlling exposure to silica dust during construction activities. In the guideline, silica-containing construction operations are classified into three groups - Type 1 (low risk), Type 2 (medium risk) and Type 3 (high risk) based on presumed airborne concentrations of silica, as shown in Appendix C, Table C-3.

Additional precautionary measures should also be implemented for certain types of materials (e.g., plaster and texture coat materials, including non-asbestos applications, concrete block, etc.). For minor disturbances such as drilling, a HEPA-filtered attachment should be used. For removal of more than a minor amount of material, enclosures should be constructed for dust control and separation of the work area from adjacent areas.

3.5 Vinyl Chloride

As mentioned in Section 2.5 above, vinyl chloride would only be a potential exposure concern in the event of combustion of PVC products.

3.6 Acrylonitrile

As mentioned in Section 2.6 above, acrylonitrile would only be a potential exposure concern in the event of combustion of ABS products.

3.7 Other Designated Substances

No other designated substances (benzene, isocyanates, arsenic, ethylene oxide and coke oven emissions) were observed to be present in the designated study areas, and none would be expected to be encountered in any building materials in a form that would represent an exposure concern. Arsenic may be present at low levels in paint applications. The measures and procedures outlined in the MOL *Guideline, Lead on Construction Projects* for control of potential exposure to lead in paint during construction activities will also serve to control potential exposure to any arsenic (or mercury) in paint.

3.8 Polychlorinated Biphenyls (PCBs)

Fluorescent lights were observed in the designated study areas during the course of our site investigations. Light ballasts, such as those associated with the type of fluorescent lights (T8s) observed in the designated study areas, are usually an electronic type which do not contain PCBs, however, this would be confirmed by an electrician at the time of dismantling of the lights.

3.9 Ozone-Depleting Substances (ODS) and Other Halocarbons

During the course of the site investigations, no equipment which may have refrigerants that are ODS were observed in the designated study areas.

If any ODS-containing equipment is to be removed then they must be handled in the following manner:

- any equipment designated for disposal as scrap must be drained of its contents by a licensed technician and equipped with a label indicating that the equipment no longer contains any refrigerant. The specific requirements for information on the label, as specified in the regulation, must be adhered to;
- equipment designated for relocation to another facility owned by Conseil scolaire Viamonde must be drained and labelled, as above; and
- any equipment that is drained to facilitate relocation to another facility owned by Conseil scolaire Viamonde must be tested for leaks prior to re-filling. The equipment must be re-filled within six months of the leak test.

3.10 Mould

The investigation for mould included a visual inspection of readily-accessible surfaces throughout the designated study areas to determine if any mould was evident. The inspection of mould did not include intrusive inspections of wall cavities. Readily evident suspect mould was not observed in the designated study areas during the course of the site investigation. During renovations or interior demolition work, any mould-impacted materials uncovered/discovered should be remediated following the measures and procedures outlined in the *Canadian Construction Association Standard Construction Document CCA-82 2004 - Mould Guidelines for the Canadian Construction Industry*.

4 Limitations and Service Constraints

The opinions, conclusions and recommendations presented in this report are limited to the information obtained during the performance of the specific scope of service identified in the report. To the extent that Arcadis relied upon any information prepared by other parties not under direct contract to Arcadis, no representation as to the accuracy or completeness of such information is made. This report is an instrument of professional service and the services described in the report were performed in accordance with generally accepted standards and level of skill and care ordinarily exercised by members of the profession working under similar conditions including comparable budgetary and schedule constraints. No warranty, guarantee or certification express or implied, is intended or given with respect to Arcadis' services, opinions, conclusions or recommendations.

Arcadis' observations, the results of any testing and Arcadis' opinions, conclusions and recommendations apply solely to conditions existing at the specific times when and specific locations where Arcadis' investigative work was performed. Arcadis affirms that data gathered and presented in this report was collected in an appropriate manner in accordance with generally accepted methods and practices. Arcadis cannot be responsible for decisions made by our client solely on the basis of economic factors. Observation and testing activities such as those conducted by Arcadis are inherently limited and do not represent a conclusive or complete characterization. Arcadis analyzed only the substances, conditions and locations described in the report at the time indicated. Conditions in other parts of the project site, building or area may vary from conditions at the specific locations where observations were made and where testing was performed by Arcadis. Additionally, other building material hazards which were not identified by Arcadis, may also be present un-accessed areas and in walls, ceilings, cavities, and floors.

This report is expressly for the sole and exclusive use of the Client for whom this report was originally prepared and for the particular purpose outlined in the report. Reuse of this report or any portion thereof for other than its intended purpose, or if modified, or if used by third parties, shall be at the user's sole risk. This report must be presented in its entirety.

The survey did not include for identification of asbestos in process materials, equipment (including electrical equipment and wiring), furniture (e.g., chairs, tabletops, chalkboards, etc.), nor material outside of the building (e.g., asphaltic pavement).

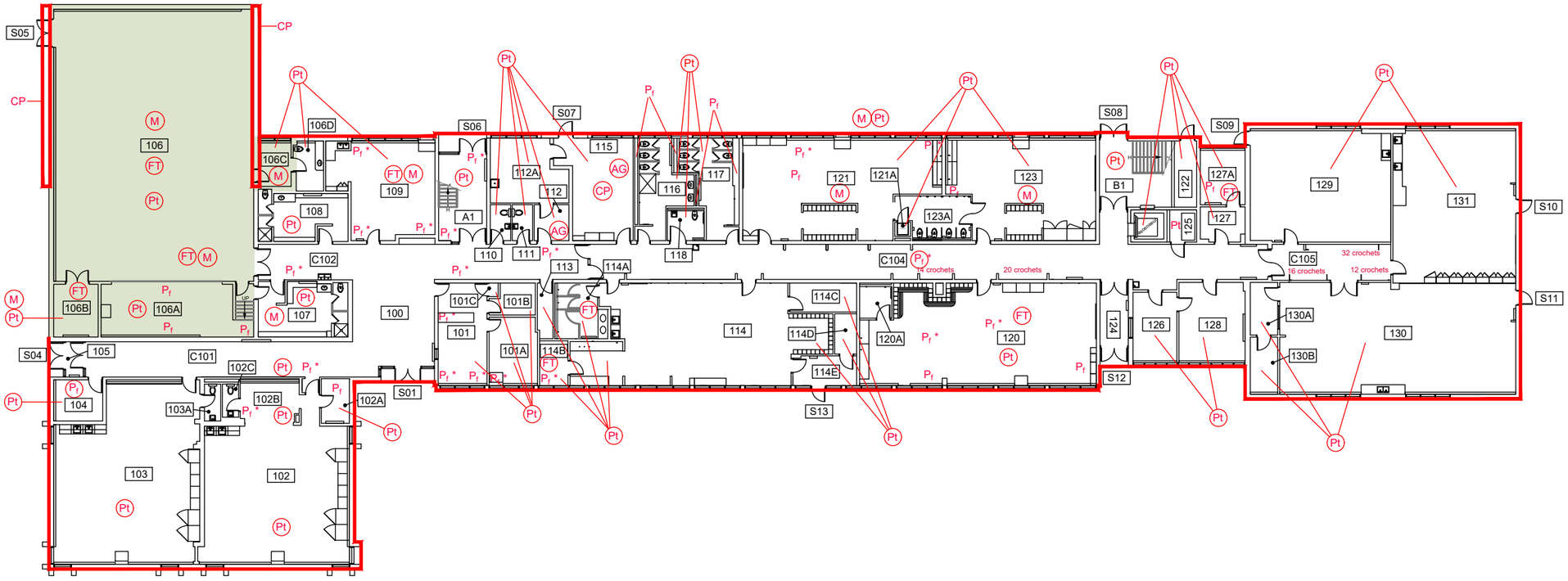
This report is not intended to be used as a scope of work or technical specification for remediation of designated substances or hazardous materials.

Appendix A

Floor Plans

NOTE:

1. **ASBESTOS CONTAINING PAINT IS PRESENT ON ALL CONCRETE BLOCK WALL APPLICATIONS WITH THE EXCEPTION OF CORRIDORS 100, 101, 102, 103, 104 AND 105, VESTIBULE 105 AND VESTIBULE 124 WHERE ASBESTOS PAINT WAS REPORTED BY THE BOARD TO HAVE BEEN REMOVED IN 2015**



REZ-DE-CHAUSSÉE

LEGEND

116	FUNCTIONAL SPACE
*	ABOVE CEILING ASSEMBLY
○	THROUGHOUT FUNCTIONAL SPACE
P_f	ASBESTOS ON PIPE FITTINGS ONLY
FT	ASBESTOS FLOORING
CLK	ASBESTOS CAULKING
M	ASBESTOS FLOOR TILE MASTIC
Pt	ASBESTOS CONTAINING PAINT
AG	ASBESTOS GASKET
EQ	ASBESTOS DUCT INSULATION
▬	ASBESTOS CEMENT PRODUCT
▭	STUDY AREA

NOTES:

REVISIONS:

No.	Date:	By:	Revisions

REFERENCE:

1.

ARCADIS

CONSEIL SCOLAIRE VIAMONDE

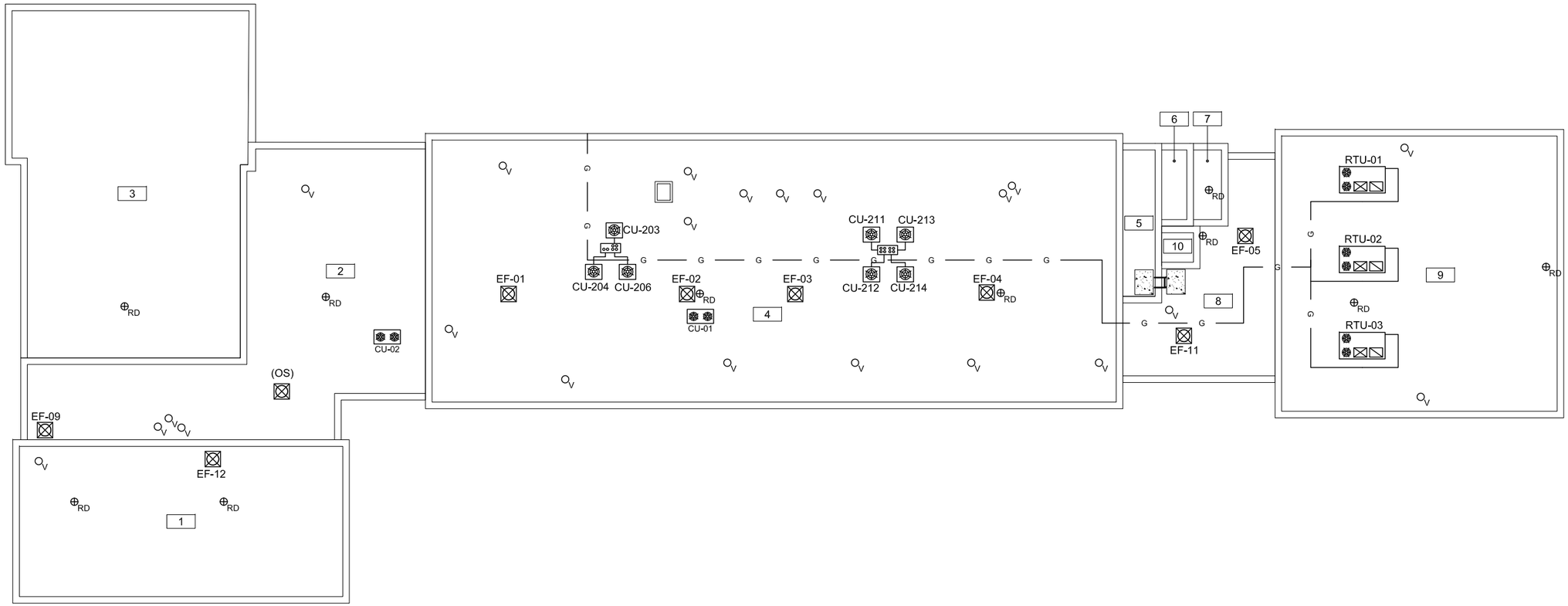
PRE-RENNOVATION DESIGNATED SUBSTACES AND HAZARDOUS MATERIALS SURVEY

LOCATIONS OF ASBESTOS-CONTAINING MATERIALS

École élémentaire Horizon Jeunesse
1445 Lewisham Drive, Mississauga Ontario

FIRST FLOOR PLAN

Drawn By: B.R	Approved By: D.K.	Project No: 30246133
Date: JAN 2025	Scale: N.T.S	Drawing No: 30246133-1



LÉGENDE DE TOIT					
SYMBOLE	DESCRIPTION				
S	PUIT DE LUMIÈRE		DORMANT		DALOT
	VENTILATEUR D'EVACUATION		DALLE EN BÉTON	C J	JOINT DE CONTRÔLE
V	ÉVENT		CHEMINÉE	E J	JOINT D'EXPANSION
RD	DRAIN DE TOIT		UNITÉ DE TOIT	RC	CÔNE DE TOIT
	CONDUIT D'AÉRATION / ÉCHAPPEMENT		CONDENSEUR		TRAPPE D'ACCÈS
U	OUVERTURE INUTILISÉE	G	CONDUITE DE GAZ		PANNEAU SOLAIRE

Conseil scolaire Viamonde

Secteur de l'immobilisation, de l'entretien et de la planification

116, Cornelius Parkway,
Toronto (Ontario) M6L 2K5
TÉL: (416)614-5920 FAX: (416)397-2054

NORD / NORTH :

NOTES :

#	SUPERFICIE DU TOIT (m²)
1	233.4
2	295
3	349.7
4	814.2
5	26.2
6	11.1
7	12.2
8	95.98
9	353.2
10	6.92

No.	DATE	RÉVISIONS / REVISIONS
01	4/06/2007	RENUMÉROTATION DES LOCAUX PAR NM
02	10/07/2007	RÉNOVATION DES LOCAUX 114 & 130 PAR NM
03	10/03/2010	RÉNOVATION LOCAL 213 PAR CP
04	13/08/2015	Ajout de toit #10 par GS
05		
06		

PROJET / PROJECT

ÉCOLE ÉLÉMENTAIRE
HORIZON JEUNESSE

1445, Lewisham Dr, Mississauga
(Ontario) L5J 3R2

TITRE / TITLE

TOIT

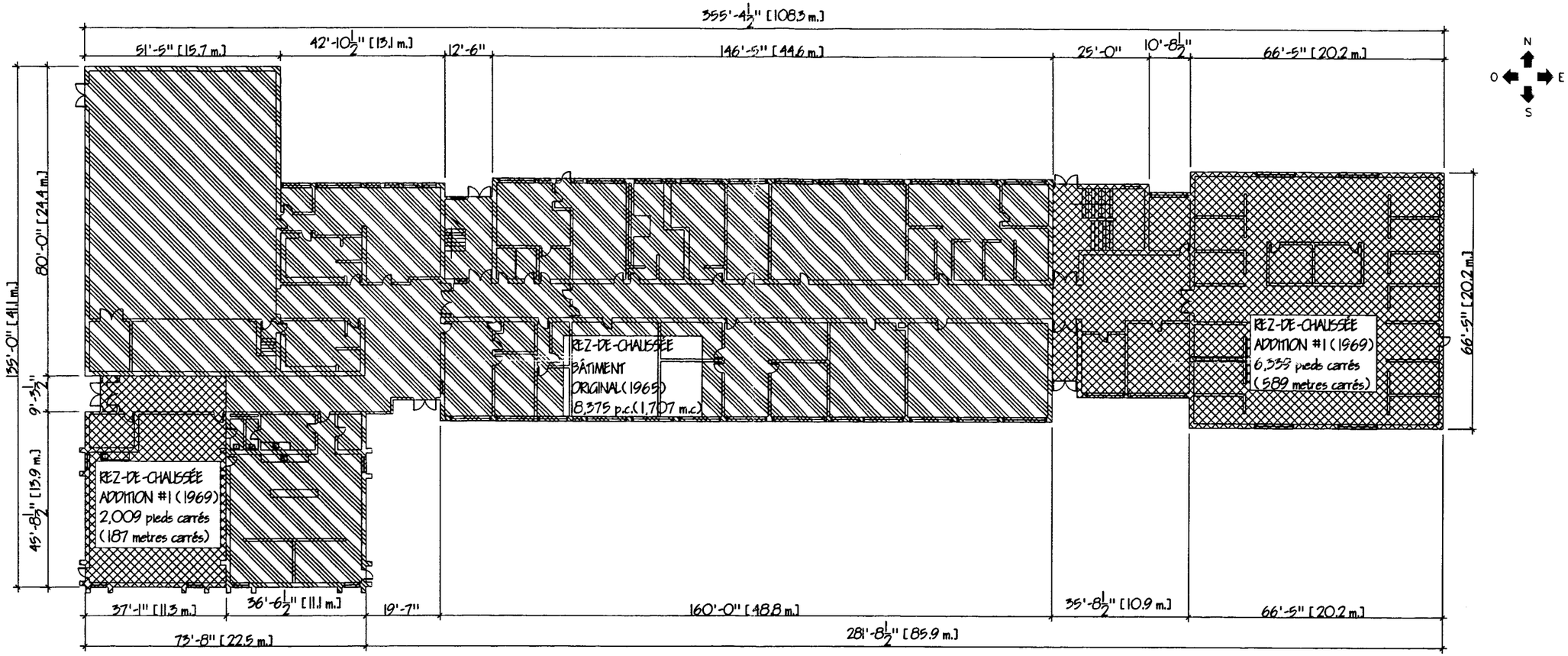
DATE / DATE 15/11/2012

DESSINÉ PAR / DRAWN BY NM

VÉRIFIÉ PAR / INSPECTED BY NR

ÉCHELLE / SCALE 1 : 300 (11X17)

DESSIN No. / DRAWING No. A203



REZ-DE-CHAUSSÉE

Superficie brute totale : 26,723 pieds carrés (2,483 metres carrés)

Total Bâtiment Original (1965) : 28,876 pieds carrés (2,683 metres carrés)
Total ADDITION #1 (1969) : 8,978 pieds carrés (834 metres carrés)

SUPERFICIE TOTALE ÉDIFICE (Rez-de-chaussée; Deuxième plancher) : 37,854 pieds carrés (3,517 metres carrés)

Note: 1) Les sources du dessin sont les dessins CAD faites en 1998 par LANGLOIS & BLAIR Arch. Inc.

ÉDIFICE:	École HORIZON JEUNESSE; plan REZ-DE-CHAUSSÉE.		
projet:	dossier Recapp 2003		
nom du dessin:	plan superficies et additions	échelle:	1"=30' (1/360)
chemin d'accès :	X:/ DanP/ AutoCAD/ plans d'écoles/ 27 Horizon Jeunesse_superficies		
CONSEIL SCOLAIRE de DISTRICT du CENTRE-SUD-OUEST 116 Cornelius Parkway, Toronto (Ontario) M6L 2K5 Secteur d'immobilisation de l'entretien et de la planification; SIEP		dessiné par: DP	dessin no.:
		date: avril 2003	

Appendix B

Laboratory Reports

EMSL Canada Inc.

2756 Slough Street Mississauga, ON L4T 1G3
Phone/Fax: (289) 997-4602 / (289) 997-4607
http://www.EMSL.com / torontolab@emsl.com

EMSL Canada Order 552419877
Customer ID: 55DCSL97B
Customer PO: 30246133 Task02
Project ID:

Attn: Dwayne Kellyman
Arcadis Canada Inc.
8133 Warden Ave, Unit 300
Markham, ON L6G 1B3

Phone: (905) 940-6161
Fax:
Collected:
Received: 12/04/2024
Analyzed: 12/11/2024

Proj: 30246133 / Horizon Jeunesse

Summary Test Report for Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05

Client Sample ID: 1A **Lab Sample ID:** **552419877-0001**
Sample Description: Room 106/Siporex decking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	12/11/2024	Gray/White	0.0%	100.0%	None Detected	

Client Sample ID: 1B **Lab Sample ID:** **552419877-0002**
Sample Description: Room 106/Siporex decking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	12/11/2024	Gray/White	0.0%	100.0%	None Detected	

Client Sample ID: 1C **Lab Sample ID:** **552419877-0003**
Sample Description: Room 106/Siporex decking

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	12/11/2024	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 2A **Lab Sample ID:** **552419877-0004**
Sample Description: Exterior Room 106/Cement board

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	12/11/2024	Gray	0.0%	85.0%	**3% Amosite**	
					12% Chrysotile	

Client Sample ID: 2B **Lab Sample ID:** **552419877-0005**
Sample Description: Exterior Room 106/Cement board

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	12/11/2024				Positive Stop (Not Analyzed)	

Client Sample ID: 2C **Lab Sample ID:** **552419877-0006**
Sample Description: Exterior Room 106/Cement board

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	12/11/2024				Positive Stop (Not Analyzed)	

EMSL Canada Inc.

2756 Slough Street Mississauga, ON L4T 1G3
Phone/Fax: (289) 997-4602 / (289) 997-4607
http://www.EMSL.com / torontolab@emsl.com

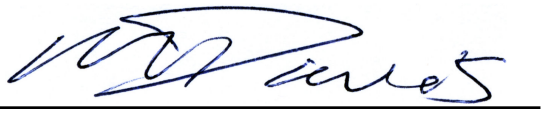
EMSL Canada Order 552419877
Customer ID: 55DCSL97B
Customer PO: 30246133 Task02
Project ID:

Summary Test Report for Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05

Analyst(s):

Ashley Brito	PLM (3)
Nickesh Mistry	PLM (1)

Reviewed and approved by:



Matthew Davis or other approved signatory
or Other Approved Signatory

None Detected = <0.1%. EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This is a summary report; official reports are available on LabConnect or upon request and relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method") but augmented with procedures outlined in the 1993 ("final") version of the method. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Canada Inc. Mississauga, ON NVLAP Lab Code 200877-0

Initial report from: 12/11/202415:14:37

EMSL Canada Inc.
2756 Slough Street, Mississauga, ON L4T 1G3
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http://www.EMSL.com torontolab@emsl.com

EMSL Canada Or	552419876
CustomerID:	55DCSL97B
CustomerPO:	30246133
ProjectID:	

Attn: **Dwayne Kellyman**
Arcadis Canada Inc.
8133 Warden Ave, Unit 300
Markham, ON L6G 1B3

Phone: (905) 940-6161
Fax:
Received: 12/4/2024 01:41 PM
Collected:

Project: **Horizon Jeunesse / 30246133 Task 02**

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)*

Client SampleDescription	*Collected*	*Analyzed*	*Weight*	*RDL*	*Lead Concentration*
P-1		12/4/2024	0.2563 g	800 ppm	19000 ppm
552419876-0001	Site: Paint on metal support joist Room 106				

Rowena Fanto, Lead Supervisor
or other approved signatory

Initial report from 12/11/2024 09:38:34

Appendix C

Summary of Asbestos, Lead and Silica Work Classifications

TABLE C-1
SUMMARY OF CLASSIFICATION OF TYPE 1, 2 AND 3 OPERATIONS (Ont. Reg. 278/05)

TYPE 1 OPERATIONS

- removing less than 7.5 m^2 asbestos-containing ceiling tiles;
- removing non-friable asbestos-containing material other than ceiling tiles, if the material is removed without being broken, cut, drilled, abraded, ground, sanded or vibrated;
- breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if the material is wetted and the work is done only using non-powered, hand-held tools; and
- removing less than 1 m^2 of drywall in which asbestos-containing joint compounds have been used.

TYPE 2 OPERATIONS

- removing all or part of a false ceiling to obtain access to a work area, if asbestos-containing material is likely to be lying on the surface of the false ceiling;
- removal of one square metre or less of friable asbestos-containing material;
- enclosing friable asbestos-containing material;
- applying tape or a sealant or other covering to asbestos-containing pipe or boiler insulation;
- removing 7.5 m^2 or more asbestos-containing ceiling tiles (if removed without being broken, cut, drilled, abraded, ground, sanded or vibrated);
- breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if the material is not wetted and the work is done only using non-powered, hand-held tools;
- removal of one square metre or more of drywall in which asbestos-containing joint compounds have been used;
- breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if the work is done using power tools that are attached to dust-collecting devices equipped with HEPA filters;
- cleaning or removing filters used in air-handling equipment in a building that has asbestos-containing sprayed fireproofing.

TABLE C-1 (Continued)
SUMMARY OF CLASSIFICATION OF TYPE 1, 2 AND 3 OPERATIONS (Ont. Reg. 278/05)

TYPE 3 OPERATIONS

- removal of more than one square metre of friable asbestos-containing material;
- spray application of a sealant to friable asbestos-containing material;
- cleaning or removing air-handling equipment, including rigid ducting but not including filters, in a building that has sprayed asbestos-containing fireproofing;
- repairing or demolishing a kiln, metallurgical furnace or similar structure that is made in part of asbestos-containing refractory materials;
- breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing materials, if the work is done using power tools that are not attached to dust-collecting devices equipped with HEPA filters.

TABLE C-2
SUMMARY OF CLASSIFICATION OF LEAD-CONTAINING CONSTRUCTION TASKS
MOL GUIDELINE – LEAD ON CONSTRUCTION PROJECTS, APRIL 2011

Type 1 Operations	Type 2 Operations		Type 3 Operations	
	Type 2a	Type 2b	Type 3a	Type 3b
<0.05 mg/m^3	>0.05 to 0.50 mg/m^3	>0.50 to 1.25 mg/m^3	>1.25 to 2.50 mg/m^3	>2.50 mg/m^3

Note: The classification of Type 1, 2 and 3 operations is based on presumed airborne concentrations of lead, as shown above.

TYPE 1 OPERATIONS

- application of lead-containing coatings with a brush or roller;
- removal of lead-containing coatings with a chemical gel or paste and fibrous laminated cloth wrap;
- removal of lead-containing coatings or materials using a power tool that has an effective dust collection system equipped with a HEPA filter;
- installation or removal of lead-containing sheet metal;
- installation or removal of lead-containing packing, babbit or similar material;
- removal of lead-containing coatings or materials using non-powered hand tools, other than manual scraping or sanding;
- soldering.

TYPE 2 OPERATIONS

Type 2a Operations

- welding or high temperature cutting of lead-containing coatings or materials outdoors. This operation is considered a Type 2a operation only if it is short-term, not repeated, and if the material has been stripped prior to welding or high temperature cutting. Otherwise it will be considered a Type 3a operation;
- removal of lead-containing coatings or materials by scraping or sanding using non-powered hand tools;
- manual demolition of lead-painted plaster walls or building components by striking a wall with a sledgehammer or similar tool.

Type 2b Operations

- spray application of lead-containing coatings.

TABLE C-2 (Continued)
SUMMARY OF CLASSIFICATION OF LEAD-CONTAINING CONSTRUCTION TASKS
MOL GUIDELINE – LEAD ON CONSTRUCTION PROJECTS, APRIL 2011

TYPE 3 OPERATIONS

Type 3a Operations

- welding or high temperature cutting of lead-containing coatings or materials indoors or in a confined space;
- burning of a surface containing lead;
- dry removal of lead-containing mortar using an electric or pneumatic cutting device;
- removal of lead-containing coatings or materials using power tools without an effective dust collection system equipped with a HEPA filter;
- removal or repair of a ventilation system used for controlling lead exposure;
- demolition or cleanup of a facility where lead-containing products were manufactured;
- an operation that may expose a worker to lead dust, fume or mist that is not a Type 1, Type 2, or Type 3b operation

Type 3b Operations

- abrasive blasting of lead-containing coatings or materials;
- removal of lead-containing dust using an air mist extraction system.

TABLE C-3

SUMMARY OF CLASSIFICATION OF SILICA-CONTAINING CONSTRUCTION TASKS

MOL GUIDELINE, SILICA ON CONSTRUCTION PROJECTS, APRIL 2011

	Type 1 Operations	Type 2 Operations	Type 3 Operations
Cristobalite and Tridymite	>0.05 to 0.50 mg/m^3	>0.50 to 2.50 mg/m^3	>2.5 mg/m^3
Quartz and Tripoli	>0.10 to 1.0 mg/m^3	>1.0 to 5.0 mg/m^3	>5.0 mg/m^3

Note: The classification of silica-containing construction tasks is based on presumed concentrations of respirable crystalline silica, as shown above.

TYPE 1 OPERATIONS

- The drilling of holes in concrete or rock that is not part of a tunnelling operation or road construction.
- Milling of asphalt from concrete highway pavement.
- Charging mixers and hoppers with silica sand (sand consisting of at least 95 per cent silica) or silica flour (finely ground sand consisting of at least 95 per cent silica).
- Any other operation at a project that requires the handling of silica-containing material in a way that may result in a worker being exposed to airborne silica.
- Entry into a dry mortar removal or abrasive blasting area while airborne dust is visible for less than 15 minutes for inspection and/or sampling.
- Working within 25 metres of an area where compressed air is being used to remove silica-containing dust outdoors.

TYPE 2 OPERATIONS

- Removal of silica containing refractory materials with a jackhammer.
- The drilling of holes in concrete or rock that is part of a tunnelling or road construction.
- The use of a power tool to cut, grind, or polish concrete, masonry, terrazzo or refractory materials.
- The use of a power tool to remove silica containing materials.
- Tunnelling (operation of the tunnel boring machine, tunnel drilling, tunnel mesh installation).
- Tuckpoint and surface grinding.
- Dry mortar removal with an electric or pneumatic cutting device.
- Dry method dust cleanup from abrasive blasting operations.
- The use of compressed air outdoors for removing silica dust.
- Entry into area where abrasive blasting is being carried out for more than 15 minutes.

TABLE C-3 (Continued)
SUMMARY OF CLASSIFICATION OF SILICA-CONTAINING CONSTRUCTION TASKS
MOL GUIDELINE, SILICA ON CONSTRUCTION PROJECTS, APRIL 2011

TYPE 3 OPERATIONS

- Abrasive blasting with an abrasive that contains ≥ 1 per cent silica.
- Abrasive blasting of a material that contains ≥ 1 per cent silica.

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Appendix B

Asbestos Abatement Specifications

ASBESTOS ABATEMENT SPECIFICATIONS
École élémentaire Horizon Jeunesse

TABLE OF CONTENTS

At Rear:

Drawing No 30246133-1 - Locations of Work Areas – First Floor Plan

Electrician’s Submittal Form

1.0 PART 1 – GENERAL

1.1 GENERAL

.1 The requirements as set out in these specifications may, at times, exceed the procedures detailed in the various applicable regulations. All work shall be done in compliance with the specifications AND the regulations. Should there be any discrepancy or conflict between the documents, the most stringent shall apply.

1.2 ASBESTOS ABATEMENT OUTLINE OF WORK

.1 The intent of the work is to remove, and dispose select accessible asbestos-containing materials, to the extent practicable, prior to building renovation operations.

.2 Replacement of the removed materials is not part of this contract unless otherwise noted.

.3 Coordinate all work with the General Contractor and sub trades as required.

.4 Refer to Architectural Drawings and specifications for additional details and locations.

.5 Electrical hookups of GFI panels and temporary panels for power equipment will be performed by the General Contractor's licensed electrician in compliance to all regulatory requirements and codes.

.6 Each negative pressure unit shall be integrity tested at the work site prior to commencement of asbestos removal operations.

.7 Supply and install scaffolding and/or lift equipment (scissor lift, zoom-boom lift, etc.) in accordance with all applicable regulations, in order to provide sufficient and safe access to the work areas.

.8 Scheduling requirements:

.1 Work in Work Areas 1 and 2 is to be performed during the last 2 weeks of June 2025 and must be completed by the end of June 2025. All work must be performed either after school hours or on weekends.

.2 Work is Work Area 3 is to be performed starting in July 2025 during the summer school break. Coordinate with the General Contractor for scheduling requirements for this phase of the work.

.9 Provide all supervision, labour, equipment, tools, materials, waste management, haulage and disposal, and other services, as required, for undertaking and completing all of the work, as detailed below.

.10 **Work Area 1 – Rooms 106, 106A (Partial), 106B and 106C**

.1 Prepare the areas as indicated above and on the attached floor plans for Type 2 Enclosure asbestos removal operations.

.2 Erect a three-chamber decontamination facility at the entrance to the work areas using wood or steel plates and studs covered with rip-proof polyethylene sheeting on both sides and sealed with duct tape.

.1 Change room/wash station and dirty room should have double-overlapping, flaps at both ends of the rooms.

.3 Establish a measurable negative pressure differential in the enclosure work areas by using fan/filter units equipped with High Efficiency Particulate Air (HEPA) filters. Units must be integrity-tested on site and are to be exhausted directly outdoors.

.4 Remove and dispose the following as asbestos waste:

.1 All vinyl baseboards.

.2 All asbestos-containing vinyl floor tiles and associated asbestos-containing mastic in Rooms 106, 106A (Partial) and 106B and all non-asbestos-containing vinyl floor tiles and associated asbestos-containing mastic in Room 106C.

.5 Using power tools (power grinders) that are attached to dust collecting devices equipped with HEPA filters, remove and dispose as asbestos waste, all asbestos-containing vinyl floor tile mastic. Mastic is to be completely removed from concrete floors. **Chemical and/or water-based mastic removers are <u>not</u> to be used.**

.1 Dust collecting devices with HEPA filters (HEPA vacuums) that are attached to power tools, must have adequate CFM capacity to properly collect mastic and residual dust generated by the power grinding operations.

.2 All power tools used to remove mastics, must have an integrated shrouding system designed to properly contain dust and debris generated by the power grinding operations.

.11 **<u>Work Area 2 – Rooms 106A</u>**

.1 Prepare the areas as indicated above and on the attached floor plans for Type 2/Glovebag asbestos removal operations.

.2 Using glovebags, remove and dispose as asbestos waste all asbestos-containing thermal insulation applied to pipe fittings.

.3 For costing purposes, allow for the removal of asbestos-containing thermal insulation from ten (10) pipe fittings.

.12 **<u>Work Area 3 – Exterior Room 106</u>**

.1 Prepare the areas as indicated above and on the attached floor plans for an Outdoor Type 1 asbestos removal operation.

.2 Remove and dispose as clean demolition waste, metal roof capping, as required, to access asbestos-containing cement board fascia.

.3 Remove and dispose as asbestos waste, all asbestos-containing cement board soffits and fascia.

.13 Paint on concrete block walls contains 0.60% to 3.1% chrysotile asbestos. Thermal insulation on pipe fittings contains 45% chrysotile asbestos. Vinyl floor tiles contain 1% to 5.4% chrysotile asbestos. Vinyl floor tile mastic contains 0.5% to 3% chrysotile asbestos. Cement board contains 3% amosite asbestos and 12% chrysotile asbestos.

.14 All waste is to be removed from the site and disposed. Asbestos waste disposal bins are not to be left on School property unless fully enclosed with an integral metal roof system and locked. Disposal bins must be removed immediately on completion of work.

.15 Schedule

.1	Mobilization	To be Coordinated with the General Contractor
.2	Complete Work and Demobilization	To be Coordinated with the General Contractor

1.3 GENERAL REQUIREMENTS

.1 The location and availability of utilities including water, sewer and electrical power is to be determined on site. The Asbestos Contractor shall co-operate with all others on site. Should there be any disagreement, or should Contractors be unable to reach a satisfactory working arrangement, the Arcadis Canada Inc. Consultant shall determine the manner for proceeding. The Asbestos Contractor shall not be entitled to any additional payment.

.2 The Asbestos Contractor is responsible for all electrical connects and disconnects. All work must be performed by a licensed electrician in compliance to all regulatory requirements and codes.

.3 The Asbestos Contractor is responsible for making all arrangements, and for paying for the disposal of all waste materials in accordance to all applicable government laws and regulations including local, provincial and federal.

.4 The Asbestos Contractor is advised that extended hours of work may be required to meet the schedules as detailed in the Scope of Work and shall allow for the cost thereof including shift premiums and overtime. The Arcadis Canada Inc. Consultant shall be advised in writing at least four days in advance of the proposed working hours.

.5 The Asbestos Contractor shall furnish and post on site the name and current phone number of an authorized representative(s) who can be contacted on a 24-hour basis in case of an emergency.

.6 All precautions will be taken to prevent the spread of contaminated material and to protect all parties including Asbestos Contractor’s personnel, Owner’s employees and the public from asbestos dust exposure during the course of the work. The documents outline the minimum levels of precaution to be taken.

.7 All work in work areas that are confined spaces shall comply with all requirements respecting confined spaces specified in O. Reg. 632/05, as amended 346/15, November 26, 2015.

.8 **All work shall be done in compliance with the specifications and the Ontario Regulation 278/05 – *Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations* – made under the *Occupational Health and Safety Act***. Should there be any discrepancy or conflict between the documents, the most stringent shall apply.

.9 Contract conditions include, but are not limited to, complying with all Regulations, taking all precautions necessary to control the release of asbestos fibres within the work areas, preventing the release of asbestos fibres outside the work areas, and providing appropriate protection from exposure to asbestos fibres for all parties. Failure to meet any of these conditions will be considered a fundamental breach of the Contract.

.10 The Arcadis Canada Inc. Consultant will visit the site at his/her discretion to familiarize himself/herself with the progress and quality of the Work and to determine if the Work is proceeding in accordance with the Contract Documents.

.11 The Arcadis Canada Inc. Consultant shall have the authority to immediately stop the Work through a written instruction if, in his opinion, the Work does not conform to the requirements of the Contract Documents, or if continuance of the Work could subject the Owner, his employees or the public to a hazardous condition. The Work shall not recommence until such time as the deficiency or hazardous situation has been corrected and a written notice to proceed has been issued by the Arcadis Canada Inc. Consultant.

.12 If the Asbestos Contractor fails to comply with requirements dealing with the control of asbestos fibres and the health and safety of Asbestos Contractor employees, Arcadis Canada Inc. Consultant and Owner personnel or the Public, the Owner, or the Owner's representative, may verbally instruct the Asbestos Contractor to cease work immediately with written confirmation to follow within two working days. If the Arcadis Canada Inc. Consultant gives a written statement to the Owner and the Asbestos Contractor that sufficient cause exists, the Owner may notify the Asbestos Contractor in writing that he is in default of his contractual obligations.

.13 Any employee shall be replaced, at the written request of the Arcadis Canada Inc. Consultant, if working, or causing others to work, in violation of O.Reg. 278/05.

.14 The Asbestos Contractor's insurance coverage limits, per occurrence, shall equal or exceed the following and shall name the Owner, the Architect, the General Contractor and Arcadis Canada Inc. as additional insureds:

.1 General Liability $5 million;

.2 Automotive Liability $2 million;

.3 Pollution Liability $5 million including asbestos operations.

.15 The supervisor must have proven experience and proficiency in the type of Work being undertaken under this Contract.

.16 The supervisor shall be replaced, at the written request of the Arcadis Canada Inc. Consultant, if found to be incompetent or inattentive to the needs of the project.

.17 Where standards of performance are specified or implied and the Work does not comply with the performance specified or implied, such deficiencies shall be corrected as directed by the Arcadis Canada Inc. Consultant. Any subsequent testing shall be done at the Asbestos Contractor's expense.

1.4 DEFINITIONS

.1 *HEPA Vacuum:*

.1 High Efficiency Particulate Aerosol (HEPA) filtered vacuum equipment acceptable to Health and Welfare Canada and meeting U.S. Military Standard 282. This vacuum equipment shall have a filtering system capable of collecting and retaining asbestos fibres to an efficiency of 99.97% for fibres of 0.3 micrometer or larger.

.2 *Polyethylene sheeting sealed with tape:*

.1 Polyethylene sheeting of thickness specified sealed with tape along all edges, around penetrating objects, over cuts and tears, and elsewhere as required to provide a continuous polyethylene membrane to protect underlying surfaces from water damage or damage by sealants, and to prevent escape of asbestos fibres through the sheeting into a clean area.

.3 *Inspector:*

.1 Representative of Arcadis Canada Inc. designated by the owner to provide inspection and air monitoring of the Contractor's work.

.4 *Authorized Visitor:*

.1 Representative of the building owner, Arcadis Canada Inc., and/or persons representing regulatory agencies.

.5 *Amended Water:*

.1 Water with a non-ionic surfactant added to reduce water tension to allow thorough wetting of asbestos fibres.

.6 *Airlock:*

.1 A system for permitting ingress or egress without permitting air movement between a contaminated area and an uncontaminated area typically consisting of two curtained doorways at least 1.5 m apart.

.7 *Curtained Doorways:*

.1 An arrangement of closures to allow ingress and egress from one room to another while permitting minimal air movement between rooms, typically constructed by placing two overlapping sheets of polyethylene over an existing or temporarily framed doorway, securing each along the top of the doorway, securing the vertical edge of one sheet along one vertical side of the doorway and securing the vertical edge of the other sheet along the opposite vertical side of the doorway.

.2 All free edges of polyethylene shall be reinforced with duct tape and the bottom edge shall be weighted to ensure proper closing. Each polyethylene sheet shall overlap openings an additional 1/3 of the doorway width.

.8 *Operating Area:*

.1 Area where no removal or repair Work is underway.

.9 *Clean Area:*

.1 Either an operating area or an area in which removal Work has already been completed.

.10 *Work Area:*

.1 Where the actual removal of asbestos-containing materials take place.

.11 *Negative Pressure:*

.1 A system which extracts air from the work area and discharges this air directly outside the building, sufficient to maintain a minimum pressure differential of 0.5 mm (0.02 inch) of water column relative to adjacent areas outside of work areas. This air extraction system is to be equipped with a High Efficiency Particulate Aerosol filtering system before discharge.

.12 *Confined Space:*

.1 A fully or partially enclosed space,

.1 that is not both designed and constructed for continuous human occupancy, and

.2 in which atmospheric hazards may occur because of its construction, location or contents or because of work that is done in it.

1.5 REGULATORY AGENCIES

.1 Comply with Federal, Provincial, and local requirements pertaining to asbestos, provided that in any case of conflict among those requirements or with these Specifications the more stringent requirement shall apply. These include, but are not limited to, the following:

.1 Ontario Ministry of Labour, Occupational Health and Safety Division, *Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations*, O. Reg. 278/05, as amended 62/18, March 2, 2018 – made under the *Occupational Health and Safety Act, R.S.O. 1990, c. E. 19, as amended.*

.2 Ontario Ministry of the Environment *Regulation 347* under the Environmental Protection Act, 19 as amended by O. Reg. 509/21, June 30, 2021.

.2 Government of Canada *Regulations Respecting the Handling, Offering for Transport and Transporting of Dangerous Goods*. (Extract from the Canada Gazette Part II, dated February 6, 1985.)

.3 Government of Ontario *Occupational Health and Safety Act, -R.S.O. 1990, c. E. 19, as amended, and Regulations for Construction Projects* O. Reg. 213/91, as amended.

.4 Office of the Fire Commissioner of Canada.

.5 Ontario Electrical Safety Code.

.6 Government of Ontario, Building Code O. Reg. 332/12, as amended 137/19, May 2, 2019.

.2 *Patents:*

.1 It shall be the Contractor's responsibility to ensure that all applicable patent laws are complied with.

1.6 FIRE SAFETY PLAN

.1 Prior to initiating any work on the site, the Contractor shall prepare and submit in writing to the Engineer a Fire Safety Plan. The Plan shall be in accordance to the requirements set forth in Section 2.14, Construction and Demolition Sites, of the National Fire Code and shall include:

.1 the designation and organization of site personnel to carry out fire safety duties, including fire water services if applicable;

.2 the emergency procedures to be used in the case of fire, including:

.1 sounding the fire alarm;

.2 notifying the fire department;

.3 instructing site personnel on procedures to be followed when the alarm sounds; and

.4 firefighting procedures;

.3 the control of fire hazards in and around the building;

.4 maintenance of firefighting facilities; and

.5 special requirements as may be identified by the building owner.

.2 Implementation of the Fire Safety Plan shall be the sole responsibility of the Contractor, and the above shall, in no way, limit the Contractor's statutory and regulatory obligations. During the work, the Fire Safety Plan shall be prominently displayed at the site and its requirements included in site safety training and awareness programs.

1.7 SUBMITTALS

1.7.1 Submittals Before Commencing Work

.1 The following documentation shall be submitted to the Inspector with a dated covering letter listing attachments a minimum 48 hours prior to commencement of the Work:

.1 *Permits and Notifications:*

.1 All necessary permits for transporting and disposal of asbestos waste. Submit proof satisfactory to Inspector that suitable arrangements have been made to receive and properly dispose of asbestos waste. Copies of all Notifications required by Section 1.11.

.2 *Safety Data Sheets:*

.1 Safety Data Sheets, or equivalent, for any sealant, surfactant or other material proposed for use. Include a separate attachment for each sheet indicating the specific worker protective equipment proposed for use with the material indicated.

.3 *Supervisory Personnel:*

.1 Names of supervisory personnel who will be responsible for work area(s). **One of these supervisors must remain on site at all times asbestos removal or cleanup is occurring**. Submit proof that supervisory personnel have over 2000 hours experience on asbestos abatement projects, have performed supervisory functions on at least two other asbestos projects and have achieved the level of training as set out by the Regulation.

.4 *Schedule:*

.1 Provide a bar chart indicating planned progress for critical activities as required under **Scope of Work** as well as additional information listed below a minimum of 48 hours prior to commencement of any preparatory work indicating:

.1 shifts to be worked;

.2 proposed workforce;

.3 starting date;

.4 estimated date of commencement of asbestos removal;

.5 estimated date of completion of asbestos removal;

.6 estimated completion date.

.5 *Insurance:*

.1 Provide a Certificate signed by the insurance agency naming the Owner, the Architect, the General Contractor and Arcadis Canada Inc. as co-insureds.

2. The Asbestos Contractor's insurance coverage limits, per occurrence, shall equal or exceed the following:

.1 General Liability $5 million;

.2 Automotive Liability $2 million;

.3 Pollution Liability $5 million including asbestos operations.

.3 The Asbestos Contractor must provide thirty (30) days' notice of cancellation or amendment of coverage.

.6 *Fire Safety Plan*:

.1 In accordance to Article 1.6 above.

.7 *Confined Space:*

.1 If a work area, or part thereof, is a confined space, the contractor shall submit:

.1 a co-ordination document (see Section 1.13.1.1);

.2 a written program (see Section 1.13.1.2);

.3 a written plan (see Section 1.13.1.4).

.8 *Asbestos Training:*

.1 A letter certifying that:

(a) every worker involved in a Type 3 operation has successfully completed the Asbestos Abatement Worker Training Program approved by the Ministry of Training, Colleges and Universities; and

(b) every supervisor of a worker involved in a Type 3 operation has successfully completed the Asbestos Abatement Supervisor Training Program approved by the Ministry of Training, Colleges and Universities. O.Reg. 278/05, s. 20(1).

1.7.2 Submittals Before Commencing Asbestos Removal

.1 Results of negative pressure unit integrity tests.

.2 Proposed Work Area emergency exit procedures.

.3 Proposed locations of decontamination facilities and negative pressure units and exhaust routing.

.4 Evidence (letter or other suitable documentation) of proper construction, inspection and installation of GFI panel by licensed electrician in compliance to all regulatory requirements and codes.

1.7.3 Submittals Upon Completion of Work

.1 Asbestos waste haulage and disposal documentations including Bills of Lading, waste transfer documents and dump receipts.

.2 All documentation as specified in the contract General Conditions including, but not limited to, Workplace Safety and Insurance Board Certificate, Statutory Declarations and Proof of Publication of Substantial Performance.

1.8 EXISTING CONDITIONS

.1 Paint on concrete block walls contains 0.60% to 3.1% chrysotile asbestos. Thermal insulation on pipe fittings contains 45% chrysotile asbestos. Vinyl floor tiles contain 1% to 5.4% chrysotile asbestos. Vinyl floor tile mastic contains 0.5% to 3% chrysotile asbestos. Cement board contains 3% amosite asbestos and 12% chrysotile asbestos.

.2 Existing conditions are documented in a report prepared by Arcadis Canada Inc. for the Conseil scolaire Viamonde titled "*Pre-Renovation Designated Substances and Hazardous Materials Survey, École élémentaire Horizon Jeunesse, 1445 Lewisham Drive, Mississauga, Ontario*", dated January 10, 2025, which is included with the tender documents.

.3 Masonry applications may contain silica. Paint applications contain lead and may contain mercury. Appropriate dust control procedures and respiratory protective equipment are to be used if disturbing these materials.

1.9 RESTRICTIONS

.1 Do not allow smoking, eating or drinking in the work area.

.2 Do not allow entry to work area by unauthorized persons.

.3 Compressed air shall not be used in the work area.

.4 Open flames will not be permitted in the work area (including but not limited to torches and propane-fired heaters).

1.10 WORKER PROTECTION

.1 *Instructions:*

.1 Before commencing Work, instruct workers in all aspects of work procedures and protective measures.

.2 *Respiratory Protection:*

.1 Provide workers with personally issued and marked respiratory equipment acceptable to the Occupational Health and Safety Division of the Ontario Ministry of Labour, suitable for the asbestos exposure in the work area.

.2 Ensure that suitable respiratory protective equipment is worn by every worker who enters the work area. A respirator provided by an employer and used by a worker:

.1 shall be in accordance to O.Reg. 278/05, Section 13, respirators;

.2 shall be fitted so that there is an effective seal between the respirator and the worker's face;

.3 shall be assigned to a worker for the worker's exclusive use;

.4 shall be used and maintained in accordance with the procedures specified by the equipment manufacturer;

.5 shall be cleaned, disinfected and inspected after use on each shift, or more often if necessary;

.6 shall have damaged or deteriorated parts replaced prior to being used by a worker; and

.7 when not in use, shall be stored in a convenient, clean and sanitary location.

.3 *Protective Clothing:*

.1 Provide workers with protective clothing which shall:

.1 be worn by every worker who enters the work area;

.2 be made of a material which does not readily retain nor permit penetration of asbestos fibres;

.3 consist of full body covering including head covering with snug fitting cuffs at the wrists, ankles and neck;

.4 include suitable footwear; and

.5 be repaired or replaced if torn.

1.11 NOTIFICATIONS

.1 Notify, in writing, the local Fire Department of the extent of the work, including a copy of the Fire Safety Plan detailed in Article 1.6 above.

.2 Notify, orally and in writing, an inspector at the office of the Ministry of Labour nearest the work place of the operation. O.Reg. 278/05, Section 11.

.1 The written notice required by subsection (1) shall set out:

.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 and expected duration of the work; and

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

.3 Notify the Inspector a minimum of eight hours prior to initiation of the following phases of the project:

.1 commencement of asbestos removal;

.2 commencement of sealant application;

.3 dismantling of the enclosure; and

.4 removing asbestos waste from the work area.

1.12 PROTECTION, REPAIR AND REPLACEMENT OF EQUIPMENT AND MATERIALS

.1 All equipment within and surrounding the work area shall be suitably protected by the Contractor during the work periods.

.2 All equipment damaged by the Contractor shall be replaced by the Contractor at no additional cost to the Owner.

1.13 CONFINED SPACES

.1 If any work area, or part thereof, is a confined space, the contractor shall comply with all requirements respecting confined spaces specified in O. Reg. 632/05, as amended 346/15, November 26, 2015, including but not limited to:

.1 preparation of a co-ordination document;

.2 development of a written program;

.3 assessment of hazards;

.4 development and implementation of an adequate written plan;

.5 provision of adequate worker training; and

.6 issuance of entry permits.

.2 The contractor shall perform adequate air tests while a worker is in a confined space to ensure that acceptable atmospheric levels are maintained in the confined space, including during any inspections and during final clearance air monitoring performed by Arcadis Canada Inc.

.3 The contractor shall provide an attendant for communications and rescue response whenever a worker is to enter a confined space, including during inspections and final clearance air monitoring by Arcadis Canada Inc.

.4 The contractor shall provide Arcadis Canada Inc. with calibration records for air testing equipment and copies of all records of atmospheric monitoring of confined space.

.5 The co-ordination document (see Section 1.13.1.1) shall refer to the contractor's responsibilities for air testing, communications and rescue response specified in Sections 1.13.2 and 1.13.3, above.

2.0 PART 2 – PRODUCTS

2.1 MATERIALS

.1 *Polyethylene:*

.1 In 0.15 mm (6 mil) minimum thickness unless otherwise specified; in sheet size to minimize joints.

.2 *Tape:*

.1 Reinforced duct tape suitable for sealing polyethylene under both wet conditions using amended water, and dry conditions.

.3 *Wetting Agent:*

.1 50% polyoxethylene ester and 50% polyglycol or polyxyethylene ether, or equivalent approved product, and shall be mixed with water to a concentration to provide adequate penetration and wetting of asbestos-containing material.

.4 *Asbestos Waste Receptors:*

.1 0.15 mm (6 mil) minimum thickness appropriately labelled, sealable polyethylene bags and 0.15 mm (6 mil) minimum thickness sealable clear polyethylene bags.

.5 *Rip-Proof Polyethylene:*

.1 0.20 mm (8 mil) fabric made up from 0.13 mm (5 mil) weave and 2 layers 0.04 mm (1.5 mil) poly laminate, in sheet size to minimize joints.

.6 *Sealant:*

.1 Slow-drying sealant which remains tacky on surface for a minimum of 8 hours for purpose of trapping residual airborne fibre during settling period. Product must have flame spread and smoke development ratings both less than 50. **Product shall leave a clear finish when dry. Acceptable products "Childers Chil-Lock CP-240" or equivalent.**

2.2 EQUIPMENT

.1 All equipment brought on site must be thoroughly clean and free of all fibre, asbestos or otherwise, to the satisfaction of the Field Inspector. The Contractor will be fully responsible for the replacement of equipment rejected by the Inspector and for all costs resulting from site contamination due to dirty or faulty equipment.

.2 *Airless Sprayer:*

.1 Spray equipment for the application of amended water and sealant such as Graco Hydrospray or equivalent:

.1 Fine atomizing spray nozzle: Nozzle for airless sprayer capable of delivering not less than 4.5 L per minute of fine particle spray of amended water.

.3 *Garden Sprayer:*

.1 Hand pump-type pressure-can garden sprayer fabricated out of either metal or plastic equipped with a wand at the end of a hose that can deliver a stream or spray of liquid under pressure. **Only to be used on small removal and repair projects with the approval of the site inspector.**

.4 *HEPA Vacuum:*

.1 High Efficiency Particulate Aerosol filtered vacuum equipment. Must have a filtering system capable of collecting and retaining asbestos fibres to an efficiency of 99.97% for fibres of 0.3 um or larger. HEPA filters must have been individually tested and certified by the manufacturer.

.2 All HEPA vacuums brought onto the job site shall be visibly clean, shall be in a good state of repair and shall be maintained in such state through completion of the project.

.5 *Glovebag:*

.1 Prefabricated, purposely made, 0.20 mm minimum thickness, polyvinyl chloride bag with integral 0.25 mm thick polyvinyl chloride gloves.

.2 Bag equipped with reversible double-pull, double-throw zipper on top to facilitate installation on pipe and progressive movement along pipe, with straps for sealing ends of bag around pipe, and with plastic flap under zipper for strength on pipe and to provide effective seal and with “ziploc” feature. Bags shall be secured using manufacturer’s prescribed securing devices. Approval must be obtained from the Inspector for use of Glovebags. Bag must be acceptable to the Inspector for use.

.3 Bag must have valves to allow insertion of a vacuum hose and the nozzle of a water sprayer while maintaining the seal to the pipe, duct or similar structure.

.6 *Negative Pressure Units:*

.1 Exhaust units fitted with High Efficiency Particulate Aerosol (HEPA) filters used to effect a negative pressure differential in the work area as compared to the immediate surrounding or clean area. The filtering system must be capable of collecting and retaining asbestos fibres to an efficiency of 99.97% for fibres of

0.3 um or larger. The HEPA filters must have been individually tested and certified by the manufacturer and bear a label certifying performance. The unit is to be fitted with instrumentation to indicate pressure differential across the HEPA filter with an audible alarm to sound at a preset low differential pressure.

.2 Construction of HEPA filter/fan cabinet units shall be airtight and all joints shall be caulked. The gasket seal between the filter housing and the retaining frame inside the cabinet shall provide a zero-leakage seal to avoid filter bypassing.

.3 **Each negative pressure unit shall be integrity tested at the work site prior to commencement of asbestos removal.** The procedure must include the testing of the integrity of the entire cabinet. Written confirmation of the test results are to be provided to the Inspector. Retesting may be requested by the Inspector and performed by the Contractor should the unit be damaged or modified during the work.

.7 *Differential Pressure Recorder:*

.1 Instrument to monitor and record the differential pressure between the Work Area and Clean Area.

.1	sensitivity:	0.025 mm (0.001 inches) WC increments between +0.25 mm to -2.5 mm (+0.010 to -0.100 inches) WC
.2	accuracy:	+/- 1 %
.3	pressure alarms:	audible high and low level alarm programmable within operating range
.4	printout:	minimum 24 hr period at 15 minute intervals

.8 *Ground Fault Panel:*

.1 Electrical Panel equipped with ground fault circuit breakers of sufficient capacity to power all electrical equipment and lights in work area. All breakers shall have 5 mA ground fault protection. Panel should be complete with all necessary accessories including ground fault interrupter lights, test switch to ensure unit is working, and reset switch. Ground fault receptacles on extension cords shall not be used without written authorization by the Arcadis Canada Inc. Consultant.

.2 The GFI Panel must be constructed under the direction of a licensed Electrician and inspected by a licensed Electrician on a regular basis. Evidence of such construction and inspection shall be submitted to the Arcadis Canada Inc. Consultant prior to installation of the Panel on site.

3.0 PART 3 – EXECUTION

3.1 MAJOR ASBESTOS WORK (TYPE 3 OPERATIONS)

Not Applicable.

3.2 ASBESTOS REMOVAL (GLOVEBAG METHOD)

.1 Before performing work:

.1 Prepare site by placing new 0.15 mm (6 mil) polyethylene plastic drop sheets on all surfaces immediately below and within 3.0 m of the work area.

.2 Remove all obstructions from around pipes to allow access for repair work.

.3 Inspect all glovebags for defects before using. A defective bag shall not be used.

.4 Ensure that any knife to be used inside the glovebag has a retractable blade and that any saw used inside the glovebag is of the flexible wire type; and brush used inside a glovebag shall not have metal bristles.

.2 Perform removal operations using the following procedures (in accordance to the manufacturer's instructions):

.1 Place any tools necessary to remove insulation in bottom of the containment bag.

.2 Install the bag on the pipe or fitting using shoulder straps and zipper provided. **Duct tape is not to be substituted for shoulder straps.** Support bag as necessary to avoid damage to the piping system or the bag itself.

.3 Insert nozzle of spray pump prefilled and primed with water and surfactant mixture (amended water) into the bag through the valve provided. Place hands in gloves and relocate the tools to the tool pouch.

.4 Cut or remove exterior insulation jacket, where applicable, to expose asbestos pipe covering. Wet exposed pipe covering with sufficient amended water to suppress any dust. Remove insulation and arrange in bottom of bag to obtain maximum capacity for the bag. Wash down exposed portion of pipe and top section of bag ensuring that insulation in lower portion of bag as well as any exposed end of insulation is thoroughly saturated. Use one hand and a cloth or sponge to aid in washing process.

.5 Ensure that pipe and other surfaces are clean of visual residue, dirt or dust prior to removal of the containment bag and seal all surfaces with encapsulant. Seal exposed ends of remaining asbestos insulation with encapsulant.

.6 If the glovebag is ripped, cut or opened in any way, work that may disturb friable material shall cease immediately. If the rip, cut or opening is small and easy to repair then the glovebag shall be repaired immediately with tape. Work may continue once the repairs are complete. If the rip, cut or opening is not small and cannot be easily repaired, place the glovebag immediately within a suitable asbestos waste container. Any spilled material containing asbestos shall be cleaned up and removed by using a vacuum equipped with a HEPA filter.

.7 To remove bag after completion of stripping, wash top section and tools thoroughly. Put all tools in one hand (glove), pull hand out inverted, twist to create a separate pouch, double tape to seal ends, cut and place in the next glovebag or into a water bucket, open pouch under water and clean and then allow to dry. Tools may also be cleaned and handed out during the dismantling of the bag while taking all precautions to prevent release of asbestos.

.8 Remove all air inside the glovebag by means of a vacuum equipped with a HEPA filter. Seal lower portion of bag and place bag into appropriate waste container.

.9 After removal of bag, ensure pipe is clean of all residue. If necessary after removal of each section of asbestos, vacuum all surfaces of pipe, using HEPA Filtered Vacuum equipment.

.10 Welds and folds of glovebags are to remain intact without modification to manufacturer's design.

.11 Glovebags, disposal bags, cloth rags and any porous materials are to be handled and disposed as hazardous waste.

.12 Frequently, and at regular intervals during the work and immediately upon completion of the work, glovebags containing asbestos-contaminated dust and waste shall be placed in a suitable waste container and shall be removed from the workplace.

.13 Immediately after removal of asbestos, clean all surfaces and equipment within the work area using a HEPA vacuum and damp wiping.

.14 Remove polyethylene floor covering, fold inward, and place in 6-mil polyethylene waste bags. Seal bags tightly.

.15 Place sponges, brushes, etc., in double polyethylene bags and seal tightly.

.16 Make arrangements for disposal of all asbestos-containing waste material.

3.3 TYPE 2 ENCLOSURE METHOD

.1 Preparation

.1 Separate the work area from the rest of the building using rope barriers, signage and other appropriate means. The extent of the work area will depend on the amount of work to be done, potential for fibre release and the height of the work above floor level.

.2 Identify the work area with clearly visible warning signs.

.3 Construct a frame for the enclosure from 50 mm x 100 mm (2” x 4”) studs or other suitable material (scaffolding, for example); if the potential exists for the disturbance of asbestos-containing material during the construction of the enclosure, wear a respirator and suitable protective clothing; ensure that the enclosure is of adequate size to permit the storage of equipment and waste.

.4 If the room where the work is to take place is small, the room itself may serve as an enclosure, provided that all openings are sealed, the mechanical ventilation system servicing the room is disabled and the ventilation ducts to and from the work area are sealed.

.5 Shut off the source of heat for piping systems (i.e., boiler or steam line header), where possible.

.6 Cover the walls, floor and ceiling of the enclosure with clear 0.15 mm polyethylene sheeting sealed with duct tape. Curtains of polyethylene sheeting must be fitted on each side of the entrance to the enclosure (curtain flaps may require weights at the bottoms to ensure proper closing).

.7 Disable the ventilation system servicing the enclosure; seal ventilation ducts to and from the work area.

.8 Shut off and lock out electrical power within the enclosure.

.9 Wear an appropriate respirator approved for use with asbestos and suitable protective equipment. Only persons wearing protective clothing and equipment shall be allowed to enter the work area. If the type of asbestos is other than chrysotile, a powered air purifying respirator shall be used.

.10 Do not use compressed air.

.11 Do not eat, drink, smoke or chew in the work area.

.12 Vacuum surfaces of insulated material in the work area using a HEPA vacuum.

.2 Asbestos Removal and Cleanup

.1 Only non-powered hand-tools, or power tools **FITTED WITH A DUST COLLECTION DEVICE AND HEPA FILTER** are permitted to be used.

.2 Do not eat, drink, chew or smoke within the work area.

.3 *Thermal insulation:* (piping and equipment) Ensure that heat sources to all piping systems, tanks, etc., have been shut off before work commences. Carefully cut open the outer cover of thermal insulation while spraying a mist of amended water on the section being worked on; thoroughly soak the underlying asbestos-containing material with amended water, using airless spray equipment. Spray the asbestos material repeatedly during the work process to maintain saturation and to minimize asbestos fibre dispersion.

.4 *Paint and Coatings*: Apply amended water to the surface of the material using an airless sprayer. Application of a fine mist at low volumes will avoid excessive water dripping to the floor. Remove painted material by hand and place directly into waste receptor. Do not throw or allow waste to fall to the floor from the work area. Spray the asbestos material repeatedly during the work process to maintain saturation and to minimize asbestos fibre dispersion. If power tools are used to remove paint, power tools must be fitted with HEPA filtered dust collection device. Double bag when removing debris from work area.

.5 *Mastics:* Apply amended water as required to reduce dust. Remove material by hand and place immediately into waste receptor. Do not throw asbestos waste. If power tools are used to remove mastic, power tools must be fitted with HEPA filtered dust collection device. Double bag when removing debris from work area.

.6 Remove the saturated asbestos material in small sections. Do not allow saturated asbestos to dry out. As it is being removed, pack the material into a waste receptor (polyethylene bag).

.1 Spray the asbestos material repeatedly during the work process to maintain saturation and to minimize asbestos fibre dispersion.

.2 Mist the air periodically with water.

.3 Excess water is to be treated as asbestos waste and is to be placed into a waste receptor (polyethylene bag). Refer to Waste Handling for cleaning and removal of bagged asbestos waste.

.7 After completion of asbestos removal, all surfaces from which asbestos has been removed shall be brushed and wet-sponged to remove all visible material and residues. During this Work the surfaces shall be kept wet.

.8 Clean all surfaces and equipment within the work area, including polyethylene sheeting, using a HEPA vacuum or by damp wiping.

.9 Seal all surfaces of pipe or other equipment, enclosure, and ends of exposed insulation with a suitable encapsulant.

.10 After satisfactory completion of cleaning and before leaving the work area, decontaminate protective clothing (including boots) and equipment, etc., using a HEPA vacuum or by damp wiping.

.11 Dismantle the enclosure and wet and dispose of all polyethylene sheeting, brushes and sponges as asbestos waste.

.12 Dispose of protective clothing as asbestos waste.

.13 Wash hands and face at the completion of the work (before leaving the work area); damp wipe the respirator and store in a proper place.

.14 Make arrangements for disposal of all asbestos-containing waste material.

3.4 TYPE 2 NON-ENCLOSURE METHOD

Not Applicable.

3.5 TYPE 1 OPERATION

.1 *Preparation*

.1 Control the spread of dust from the work being performed by use of drop sheets, keeping doors closed, providing signage, etc. Ensure that appropriate equipment and materials are at hand.

.2 Restrict access to the work area using rope barriers, barricades, and other appropriate measures.

.3 Disable ventilation systems servicing the work area.

.4 Provide and wear a non-powered air purifying respirator with high efficiency cartridges approved for use with asbestos and disposable coveralls including hood, elasticized cuffs and zipper over work clothes.

.2 *Asbestos Removal and Cleanup*

.1 Do not use any power tools. All work is to be completed by non-powered hand tools only.

.2 Do not eat, drink, chew or smoke within the work area.

.3 *Exterior Cement Board*: Place polyethylene sheet over ground to prevent soil contamination. Apply amended water as required to reduce dust. Remove material by hand with minimal breakage and place immediately into waste receptor. Do not throw or allow the asbestos waste to fall to the ground from the work area. Ensure that all asbestos debris is removed including that on fasteners, embedded in caulking, etc.

.4 Do not allow waste to accumulate.

.5 Clean dust and debris at regular intervals and at the end of each shift with a damp cloth or HEPA vacuum.

.6 Ensure that there is no visible airborne dust in the work area during the removal and cleanup operation.

.7 All duct tape, polyethylene sheets, disposable clothing and other consumables used for, and during the removal of asbestos shall be contained and disposed as asbestos waste.

.8 After satisfactory completion of cleaning and before leaving the work area, decontaminate protective clothing (including boots) and equipment, etc., using a HEPA vacuum or by damp wiping.

.9 Dispose of protective clothing (where applicable) as asbestos waste.

.10 Wash hands and face prior to taking breaks and at completion of the work before leaving the work area. Damp-wipe the respirator (where appliable) after use and store in an appropriate place.

.11 Make arrangements for disposal of all asbestos-containing waste material.

3.6 WASTE DISPOSAL

.1 Asbestos-containing wastes shall be disposed of in accordance with procedures established by the Ontario Ministry of the Environment *Regulation 347 (as amended) under the Environmental Protection Act* and the Government of Canada *Transportation of Dangerous Goods Regulations*.

.2 All waste is to be removed from the site and disposed. Disposal containers are not to be left on the property unattended unless fully enclosed and locked. Bins must be removed immediately on completion of work.

.3 Both sides of every vehicle used for the transportation of asbestos and every waste container must display in large easily legible letters that contrast in colour with the background the word “CAUTION” in letters not less than 10 cm in height and the words:

CONTAINS ASBESTOS FIBRES
Avoid Creating Dust and Spillage
Asbestos May Be Harmful To Your Health
Wear Approved Protective Equipment

.4 Both sides of every waste container must display in large easily legible letters the words **‘ASBESTOS, WHITE, PRODUCT IDENTIFICATION NUMBER 2590’** or **‘ASBESTOS, BLUE, PRODUCT IDENTIFICATION NUMBER 2212’** in accordance with the type of asbestos being transported.

.5 Every vehicle used for the transportation of asbestos waste shall display a Class 9 placard on the front, back and two sides of the vehicle.

.6 The waste must be transported in a fully-enclosed truck, or alternatively, in a waste disposal skip. The driver must be familiar with cleanup and handling procedures and be trained to deal with spills or container breakage.

.7 The truck must be equipped with a shovel and broom, wetting agent, protective clothing, respiratory protective equipment, polyethylene bags of at least 0.15 mm (6 mil) thickness, and bag closures and duct tape.

.8 All waste must be transported with a **Bill of Lading** directly from the work area to the waste disposal site. The Bill of Lading is to indicate the source and type of asbestos, the Carrier, the amount, the destination (disposal site) and date all in accordance to applicable regulations. A copy of the Bill of Lading and disposal site receipt is to be provided to the Inspector.

3.7 AIR MONITORING

.1 Air tests will be taken at the discretion of the Asbestos Consultant using the Phase Contrast Microscopy (PCM) method from the time asbestos-containing materials may be disturbed until the final visual inspection of the work area(s). PCM will be used for final clearance air monitoring analysis.

.1 *Outside Asbestos Removal Work Areas:*

.1 The maximum allowable fibre concentration outside the Work Areas during asbestos removal or cleanup shall be 0.05 f/cc. Should readings exceed

this value, the work shall stop at the discretion of the inspector and proceed only after the cause of the high fibre counts has been remedied.

.2 All costs associated with the cleaning, monitoring, and disruption caused by excessive fibre levels outside the Work Area and related to the work, are to be borne by the Asbestos Contractor including but not limited to:

.1 thorough cleaning with wet wiping and HEPA vacuuming by the Asbestos Contractor to the extent and satisfaction of the Inspector,

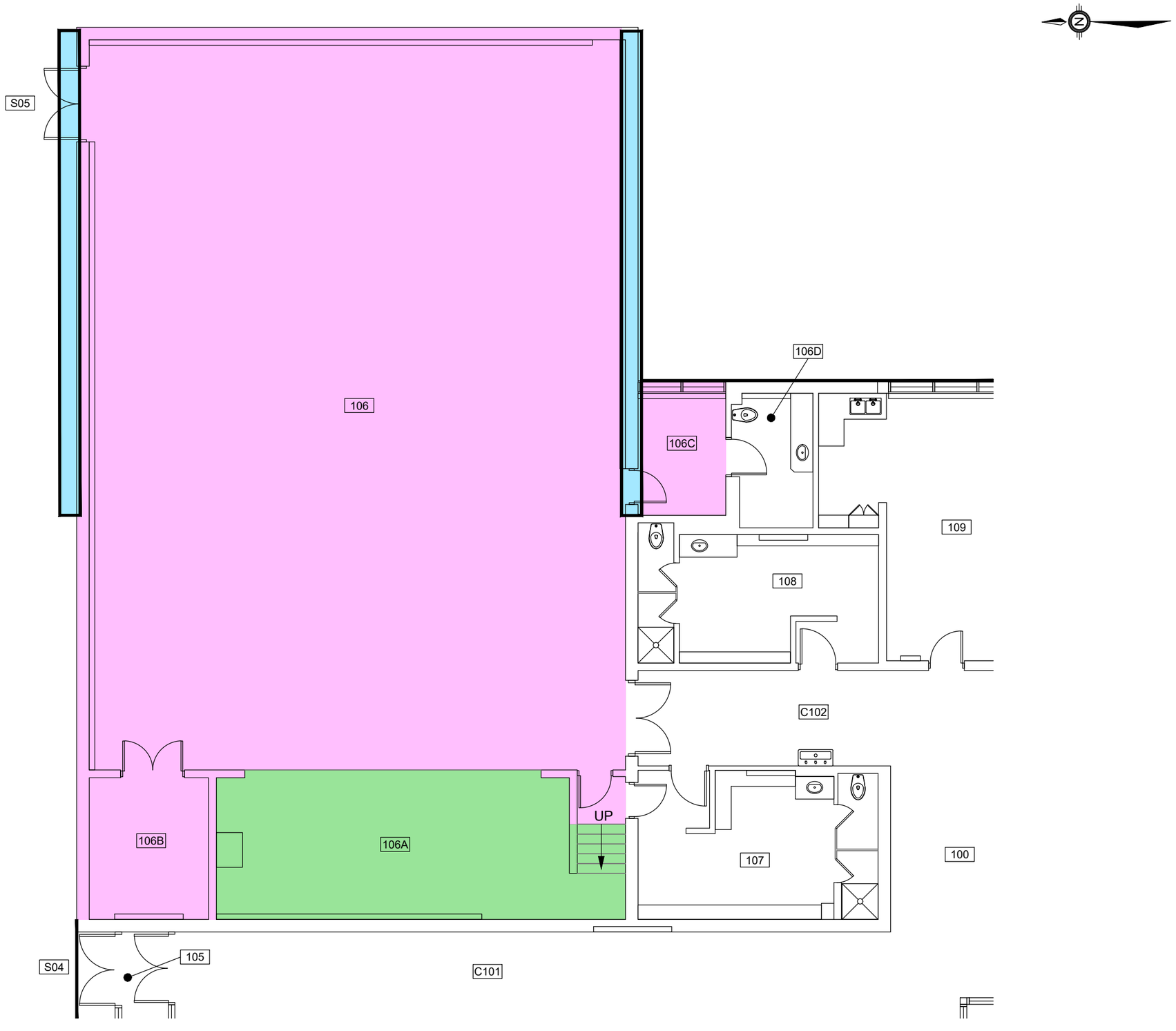
.2 all activities deemed necessary by the Inspector including area isolation, personnel relocation, additional visual inspections and air monitoring to confirm that the area has been adequately cleaned,

.3 disruption of plant production, office routine, and delays.

.2 *Final Clearance Test:*

Not Applicable.

END OF SECTION



LEGEND

106 FUNCTIONAL SPACE

WORK AREA 1

WORK AREA 2

WORK AREA 3

NOTES:

REVISIONS:

No.	Date:	By:	Revisions

REFERENCE:

1.

ARCADIS

CONSEIL SCOLAIRE VIAMONDE

ASBESTOS ABATEMENT SPECIFICATIONS

LOCATIONS OF WORK AREAS

École élémentaire Horizon Jeunesse
1445 Lewisham Drive, Mississauga Ontario

FIRST FLOOR PLAN

Drawn By: M.K.R	Approved By: J.D.	Project No: 30246133	
Date: JAN 2025	Scale: N.T.S	Drawing No: 30246133-1	

ASBESTOS ABATEMENT
ELECTRICIAN'S SUBMITTAL FORM

Abatement Contractor _____

Project Site _____

I hereby certify the following:

1. All electrical work has been performed by a licensed electrician and complies with the latest edition of the Ontario Electrical Safety Code and any other local codes and requirements.

2. Arrangements have been made for all inspections and approvals which may be required by government regulations, Electrical Safety Authority and any other authorities having jurisdiction.

3. The GFI panel has been properly constructed, inspected and installed by a licensed electrician in compliance to all regulatory requirements and codes.

4. All electrical circuits in the work area have been de-energized and locked out wherever practicable.

5. All systems that cannot be de-energized have been clearly identified.

6. Any electrical conditions which need special protection or consideration have been clearly identified.

Electrical Contractor _____

Electrician's Name (print) _____

Electrician's Signature _____

Electrician's License No. _____

Date _____