
**Halton District School Board
RFT 25-061 School Renovation Project - Paul A Fisher PS**

Addendum No. 3

The following, issued by the Halton District School Board (HDSB) June 19, 2025, shall be incorporated in the specifications and shall form part of the proposal document for the above.

ATTACHED

1. Bidders are to reference the attached document as drafted by Hossack Architecture (158 pages) which provides responses to some vendor questions and additional information.
2. Bidders must submit their response to RFT 25-061 School Renovation Project - Paul A Fisher using the attached Revised Form of Tender which includes an updated cash allowance based on this addendum.



REVISED FORM OF TENDER

Project: School Renovation Project - Paul A. Fisher Public School
Project Reference #: RFT 25-061

From (Bidder): _____
Company Name

Street Address

City, Province and postal code

Phone Number Email Address

To (Owner): Halton District School Board
2050 Guelph Line
Burlington, Ontario L7P 5A8

We, the undersigned, having examined the Tender Documents for the above-named Project, including Addenda, hereby offer to perform the Work in accordance with the Tender Documents, for the Stipulated Price of:

Base Bid Amount	\$
Cash Allowance	\$ 325,000
Contingency	\$ 250,000
Total Base Bid Amount (Excluding HST)	\$

Proposed Subcontractor

Abatement Contractor	
Electrical Contractor	
Mechanical Contractor	
Roofing Contractor	

RFT 25-054 School Renovation Project - Paul A. Fisher PS
REVISED Form of Tender Continued
Page 2 of 2

Itemized Price (Included in Base Bid Amount)

Includes all existing exterior brick removal, new insulation, new exterior block/brick work.	\$
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Separate Price (NOT included in Base Bid Amount)

Includes additional costs to replace all existing windows with new windows. For clarification, base bid amount to include removal and reinstallation of all existing windows.	\$
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We, the undersigned, declare that:

- a. We agree to perform the Work within the required completion time specified in the Tender Documents,
- b. We have arrived at the Tender without collusion with any competitor,
- c. This Tender is open to acceptance by the Owner for a period of 90 days from the date of Tender Closing,
- d. All Form of Tender supplements called for by the Tender Documents from an integral part of this Tender.

Signature: _____
LEGAL NAME OF BIDDER DATE

AUTHORIZED SIGNATURE OF BIDDER & TITLE PRINTED NAME
I have the authority to bind the Bidder

RECEIPT OF ADDENDA MUST BE ACKNOWLEDGED ON THE FORM OF QUOTATION.

PAGE 1 OF 161
END OF ADDENDUM 3

PROJECT NO. 24131
HOSSACK ARCHITECTURE

ADDENDUM NO. 3

Issued June 19, 2025

The following additions, deletions, modifications and clarifications issued herein are hereby an integral part of the Tender and Contract Documents. Minor Typographic or spelling mistakes in the Contract Documents which do not significantly affect the meaning of the sentence or phrase in which they occur may not necessarily be corrected by Addenda.

GENERAL

1. Ensure that all parties submitting bids are aware of this **Addendum No. 3** and its contents.
2. **Contents of Addendum No. 3** – in its entirety consists of the following:
 - .1 Seven (7) typed pages of instructions.
 - .2 Ninety-one (92) letter sized pages of Specifications
 - .3 Two (2) revised letter sized Architectural AD Details
 - .4 Four (4) 11x17 sized Addendum Sketches
 - .5 Three (3) full sized Architectural Drawings
 - .6 Structural Addendum S02 (3 pages)
 - .7 Electrical Addendum E02 (19 pages)
 - .8 Mechanical Addendum M01 (27 pages)

QUESTIONS & ANSWERS

QUESTION 1: Cash Allowance item .3 Abatement is to be expended form the Cash Allowance, on the FORM OF TENDER, GC have to propose Abatement Contractor, Please clarify

ANSWER 1: [See attached updated DSR Report from Arcadis and new Asbestos removal specification attached for clarification of scope of work. This work should now be priced as part of the contract price and will not be part of the Cash Allowance.](#)

QUESTION 2: AWMAC does not allow for plywood doors, please confirm particle board are acceptable (reference section 06 40 00, 2.7.9)

ANSWER 2: [Particle board is an acceptable alternative to plywood under plastic laminate for millwork doors.](#)

QUESTION 3 *(Re: Specification Section 10 11 25 Paragraph 2.7.1.4)* If lockers are to remain 15in. wide - NOTE: 15in. wide lockers do not come with a plastic bottom shelf - I trust 16 gauge galvaneal is acceptable?

ANSWER 3: [16 guage galvaneal is an acceptable alternative to the specified plastic bottom shelf.](#)

QUESTION 4 *(Re: Specification Section 10 11 25 Paragraph 2.7.9)* Ultra anti-graffiti (as per spec .7.1.5) and custom colours (as per spec .7.9) are not available. Therefore, I trust standard colour formulation and standard manufacturer's colour is acceptable?

ANSWER 4: [Architect to select from standard colour options.](#)

QUESTION 5 Spec .7 calls for Double Tier lockers. I trust the only shelf (as per spec .7.6) is the divider shelf which separates the upper and lower compartment?

ANSWER 5: [Each of the Upper and Lower Lockers should come with one internal shelf each. This noted does not mean the divider between the upper and lower compartments.](#)

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- QUESTION 6 Can you please clarify what material and finish to be used for the Cabinets, the box, the shelves, the doors and edges, as well the material and the finish for Countertops. Thank you.
- ANSWER 6: For material used for Cabinets, box, shelves, doors and edges, follow details and notes on AD Drawings and in Specifications. All Countertops are to be Plastic Laminate. Final colour selections to be made during contract.
- QUESTION 7 With reference to Specification 25 09 23 Section 2.01, Manufacturer Assigned Vendor are HTS Engineering(Alerton) and Energy Controls & Mechanical Services Inc (Distech Controls). Can we not ask other Controls Contractors such as ACE Solutions & AEA as long as they can do Niagara 4 platform? Please clarify.
- ANSWER 7: (RDZ Response) The listed vendors are school board approved and only vendors permitted to perform controls work in HDSB schools.
- QUESTION 8 Are we carrying Mechanical Commissioning Agent as per Specification Section 20 02 40? Please confirm.
- ANSWER 8: (RDZ Response) Mechanical contractor to carry mechanical commissioning agent as per specification.
- QUESTION 9 Per specification 20 05 05 Section 1.09, Engineers fee is required and it looks like for the seismic, fire protection or structural . As we are only quoting the HVAC & Plumbing, I believe we do will not allow for the fee. Please confirm.
- ANSWER 9: (RDZ Response) Mechanical contractor to carry engineers fee required to complete mechanical scope as per specifications.
- QUESTION 10: Are you getting price from the Fire Sprinkler sub directly? Please confirm.
- ANSWER 10: Mechanical Contractor typically carries the Fire Sprinkler sub within their price.
- QUESTION 11: Could you please provide the existing roof assembly details for the repair and/or mechanical upgrade roof tie-in?
- ANSWER 11: The roof was last replaced by the HDSB in 2015. Based on previous drawings we understand that the roof assembly is as follows: **"Rounded Gravel Ballast on 4 Ply Built-up Roofing on 13mm (Actual) Fibreboard on Rigid Insulation on Air Vapour Barrier on 38mm (Actual) Metal Deck."** Final assembly to be confirmed onside prior to any roofing repair or tie-ins commencing.
- QUESTION 12: Is the telephone work covered under the cash allowance?
- ANSWER 12: Yes telephone work will be added to Cash Allowance.
- QUESTION 13: Did they want to upgrade the phone system and install telephones in the classrooms as is the norm for a new build or reuse the existing phone system? typically with a new build they install an IP Office phone system with IP telephones in the classrooms and offices.
- ANSWER 13: HDSB will install IP Office phone system with IP telephones in classrooms and offices. Details to be issued at a later date and costs carried as a Cash Allowance.
- QUESTION 14: Is all cabling Cat 6 data cables installed by the data cabling contractor?
- ANSWER 14: (RDZ Response) The electrical contractor shall carry the communication contractor as the sub for all communication-related scope of work. Per Specification 27 11 19, a list of pre-qualified network subcontractors has been noted.

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QUESTION 15: Specification 101410 Exterior Signage - refers to drawing SP-1 for Quantities - however, drawing SP-1 does not show any signages - please clarify.

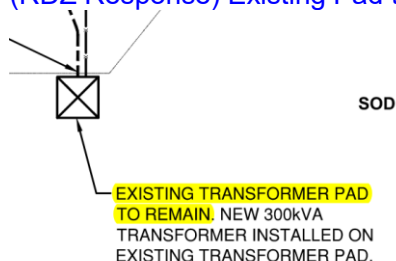
ANSWER 15: As per Specification Section 01 11 00 Paragraph 1.35.8.15 all Interior and Exterior Signage is to be covered under the Cash Allowance.

QUESTION 16: Can you please confirm if the school will be occupied at anytime during the construction schedules, and if yes does the work during this time need to be completed after hours?

ANSWER 16: The school will not be occupied at any time during the construction schedule.

QUESTION 17: As mentioned in Addendum#1 , Burlington Hydro is going to replace the existing Transformer. So, please confirm whether we need to include New Precast Transformer Pad in our scope or not.

ANSWER 17: (RDZ Response) Existing Pad to remain as noted in contract.



AMENDMENTS TO SPECIFICATIONS – BINDER A

Item 1: Section 00 00 05 Consultants

- .1 REVISE contact information for Environmental Consultant to the following:
“ARCADIS CANADA INC., Jean Daigle, 8133 Warden Ave, Unit 300, Markham, ON, L6G 1B3, Tel: (905) 764-9380.”

Item 2: Section 00 00 10 Table of Contents

- .1 RENUMBER & REVISE 02 82 00 Designated Substance Survey General, Limited Designated Substance Survey Report – by Arcadis with the following: ***02 82 01 Designated Substance Survey – Pre-Renovation Report, 54 pages***
- .2 ADD new ***02 82 00 Asbestos Abatement Specifications (ARCADIS), 25 pages***

Item 3: Section 01 11 00 Summary of Work

- .1 REVISE 1.35.1 to read ***“Include in the Contract Price, stipulated sum Cash Allowances totaling the amount of Three Hundred and Twenty Five Thousand Dollars (\$325,000).”***
- .2 REVISE 1.35.8.3 to read ***“Additional Abatement not included in Section 02 82 00 Asbestos Abatement Specifications”***
- .3 ADD the following items to the 1.35.8 List of Cash Allowance Items.
1.35.8.15 - New Telephone System
1.35.8.16 – New Gym Stage Bulkhead following Abatement
1.35.8.17 - Removal and Re-Installation of Sliding Partition.
1.35.8.18 - Pipe Insulation Replacement following Abatement.

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Item 4: Section 02 82 00 Asbestos Abatement Specifications (ARCADIS)

- .1 ADD this new Asbestos Specification by Arcadis (25 pages).

Item 5: Section 02 82 01 Designated Substance Survey – Pre-Renovation Report

- .1 REPLACE existing 02 82 00 with this new Report (54 pages).

Item 6: Section 08 11 15 Door Schedule

- .1 REPLACE with attached revised Door Schedule with revisions are highlighted.

Item 7: Section 09 91 30 Room Finish Schedule

- .1 REPLACE with attached revised Room Finish Schedule

Item 8: Section 10 14 00 Exterior Signage

- .1 Revise 1.7.1 to read, ***“A full list of Signage types are listed below. Exterior Signage will be covered under the Cash Allowance and final quantities and locations to be confirmed post tender.”***

Item 9: Section 11 52 00 Gymnasium Equipment

- .1 ADD the following Paragraphs:
 - “2.1.6 De-Escalation Room Padding***
 - .1 Walls: All padding to extend entire perimeter of room. From floor to ceiling. Wall pads are to be permanently fastened to wall top and bottom with screws. Wall pads are to be 2.5” thick with OSB backing and are covered with slip and skid resistant vinyl cover.***
 - .1 Drywall Installation – Pad to be fastened in studs with appropriate anchoring system***
 - .2 Concrete Installation – Pad to be fastened using Philips head Tapcon minimum 1.75” long x 3/16”***
 - .2 Floor Padding Removable: Floor pads to cover entire floor area. (Usually made in two-piece sections). Floor pads are made of high-density cross-linked foam 2” thick and covered with slip and skid resistant vinyl cover. Floors are held in place by being wedged under the wall padding foam. Floor pads to come with an angled transition piece for doorways. (Reduces tripping hazard)***
 - .3 Door Padding: Padding for doors includes custom cut outs for handles and viewing windows. These pads are permanently fastened and designed to not impede safe operation of the door. All Doors should open outwards.***
 - .4 All Corners frames and windows ledges are wrapped and padded to provide maximum protection.***
 - .5 All Rooms require detailed site measurements prior to shop drawings and fabrication.”***

Item 10: AD 209 Bollard

- .1 Replace with attached revised AD209.

Item 11: AD 251 Pavement Markings

- .1 ADD new attached AD 251.

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AMENDMENTS TO SPECIFICATIONS – BINDER B

Refer to attached Mechanical Addendum M01 and Electrical Addenda E02 for revisions to Mechanical and Electrical Specifications

AMENDEMENTS TO ARCHITECTURAL DRAWINGS

Item 12: Drawing SP1 Site Plan & Exterior Work

- .1 REPLACE drawing to incorporate bubbled changes to address Building Permit Review Comments

Item 13: Drawing SP2 Site Plan & Exterior Work

- .1 ADD this new drawing to show revisions to Fire Route and Parking Area required to accommodate Building Permit Review Comments.

Item 14: Drawing A01 Fire Separations & OBC Matrix

- .1 REPLACE drawing to incorporate bubbled changes including:
 - HDSB requested changes to
 - o Revisions to General Office Area
 - o Deletion of Health Room 124
 - o New door outside 122 & 123 Staff Washrooms
 - o Revisions to layout of 121 Meeting Room and 115 Calming Room
 - Revisions to fire ratings to accommodate Building Permit Review Comments

Item 15: Drawing A02 Demolition Floor Plan

- .1 REVISE noted tags at new door openings in Meeting Room X121, Utility 103 and Mechanical Storage x105 from tag #20 to tag #51
- .2 Refer to NEW Sketch AD3-103 for demolition revisions to Millwork in JK/SK Classroom x113B
- .3 AD3-REVISE Demolition Note #12 to the following: ***“EXISTING MANUAL WINDOW COVERINGS – ALL EXISTING DOOR AND WINDOW ROLLER SHADES IN ENTIRETY (INCLUDING HARDWARE AND BRACKETS) IN ENTIRE BUILDING ARE TO BE CAREFULLY REMOVED, PROTECTED AND STORED FOR RE-USE. CONTRACTOR TO ENSURE COORDINATION OF REINSTALLATION OF EXISTING WINDOW COVERINGS AT SAME ROOM AND LOCATION. REFER TO CASH ALLOWANCE FOR NEW WINDOW COVERINGS FOR NEW WINDOWS. REFER TO SPECS..”***
- .4 REVISE Demolition Note #20 to the following: ***“FOR NEW DOOR OPENINGS ON WALLS WITH ARCHITECTURAL RIBBED BLOCK COURSE HEADER – SHORE ABOVE EXISTING ARCH. RIBBED BLOCK COURSES. SAW-CUT AND REMOVE EX. ARCH. RIBBED BLOCK COURSES FOR INSTALLATION OF NEW MASONRY LINTEL. SAWCUT EXISTING BLOCK FOR NEW DOOR OR SCREEN. REMOVE ALTERNATE COURSES OF BLOCK AT OPENING FOR TOOTHING NEW BLOCK IN. REPLACE EXISTING ARCHITECTURAL RIBBED BLOCK COURSES AT OPENING HEADER UPON INSTALLATION OF NEW DOOR OR WINDOW. NEW ARCHITECTURAL RIBBED BLOCKS TO MATCH EXISTING. PATCH AND MAKE GOOD BLOCK WALL EDGE AND PARGE SMOOTH IN PREPARATION FOR NEW DOOR FRAMES. REFER TO STRUCTURAL DRAWINGS FOR NEW DOOR LINTEL TYPE. SEE EXISTING IMATES ON PAGE ‘AEX’ SERIES. COORDINATE WITH PROPOSED PLANS DOOR SCHEDULE, TYPICAL..”***

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Item 16: Drawing A03 Proposed Floor Plan

- .1 Refer to NEW Sketch AD3--100 General Office 127, Meeting Room 127A and Office 127B for layout changes to these areas.
- .2 Refer to NEW Sketch AD3-102 Calming Room 115 and Staff Lounge 120 for layout changes to these areas.
- .3 Refer to NEW Sketch AD3-103 JK-SK Classroom for layout changes to these areas
- .4 REVISE Floor Plan Note #20 to the following: ***"PATCH AND MAKE GOOD EXISTING FLOOR UPON WINDOW/DOOR REMOVAL AND REPLACEMENT. ALLOW FOR SLAB INFILL. PREPARE FLOORING FOR INSTALLATION OF NEW FINISHES AT AFFECTED AREAS. REFER TO FLOOR PATTERN PLAN. FOR JK/SK CLASSROOMS 1 AND 2 (113a AND 113b) FLOORING TO MATCH EXISTING."***
- .5 ADD Floor Plan Note #21: ***"REINSTALL REMOVED, PROTECTED AND STORED MILLWORK – TEACHERS CLOSET, LOW OPEN SHELVING AND WALL MOUNTED TACKBOARD IN PLACE. PROVIDE NEW LOW OPEN SHELVING COUNTERTOP, FINISH TO MATCH EXISTING."***

Item 17: Drawing A05 Proposed Roof Plan

- .1 Refer to NEW Sketch AD3-104 Proposed Canopy (Roof Drain & Overflow Scupper Drain) for changes to Canopy to address Building Permit Comment.

Item 18: Drawing A07 Proposed Reflected Ceiling Plans

- .1 Refer to NEW Sketch AD3--100 General Office 127, Meeting Room 127A and Office 127B for layout changes to these areas.
- .2 Refer to NEW Sketch AD3-102 Calming Room 115 and Staff Lounge 120 for layout changes to these areas.
- .3 REVISE Detail 2/A07 Revise steel in bulkhead to 90mm 20 gauge studs.

Item 19: Drawing A14 Interior Elevations

- .1 Detail 6/A14 – ADD CWT Hatch to full walls in Elevation
- .2 DELETE Detail 23/A14 as Health Room have been deleted from General Office

Item 20: Drawing A16 Floor Pattern Plan

- .1 FOLLOW Revisions to Floor Finishes in Updated Room Finish Schedule

Item 21: Sketch AD3-100 General Office 127, Meeting Room 127A and Office 127B

- .1 NEW 11x17 sketch to document HDSB requested changes to the General Office Area.

Item 22: Sketch AD3-102 Calming Room 115 and Staff Lounge 120

- .1 NEW 11x17 sketch to document HDSB requested changed to the Staff Lounge and Calming Room Area.

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Item 23: Sketch AD3- 103 JK-SK Classroom 2

- .1 NEW 11x17 sketch to document coordination changes to this Classroom Area.

Item 24: Sketch AD3- 104 PROPOSED CANOPY (ROOF DRAIN & OVERFLOW SCUPPER DRAIN)

- .1 NEW 11x17 sketch to document changes Proposed Canopy to address Building Department Comments.

End of Addendum No. 3

ASBESTOS ABATEMENT SPECIFICATIONS
Paul A. Fisher Public School
2175 Cavendish Drive, Burlington, Ontario

ASBESTOS ABATEMENT SPECIFICATIONS**Paul A. Fisher Public School****TABLE OF CONTENTS**

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At Rear:

Drawing No. 30271453 - Locations of Work Areas – First Floor Plan

ASBESTOS ABATEMENT SPECIFICATIONS**Paul A. Fisher Public School**

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 all accessible asbestos-containing materials, to the extent practicable, prior to renovation work.
- .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, Electrical, and Mechanical Drawings and project specifications for additional details.
- .5 Where required, mechanical, electrical, communication and life systems isolations and disconnects will be performed by the General Contractor's sub trades prior to commencement of remedial work.
- .6 Supply and install scaffolding and/or lift equipment in accordance with all applicable regulations, in order to provide sufficient and safe access to the work areas.
- .7 Work may be performed as several separate mobilizations.
- .8 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.
- .9 **Work Area 1 - Rooms 11, 12, 13, 14, 15, 24A and 24B**

- .1 Prepare the areas as indicated above and on the attached floor plans for Type 2 Enclosure asbestos removal operations.
- .2 Light fixtures in ceilings in Rooms 24A and 24B will be removed by the Contractor's sub trades prior to commencement of remedial work.
- .3 Remove and dispose as clean demolition waste, select acoustic ceiling tiles and associated T-Bar support systems, as required, to access drywall applications specified for removal.
- .4 Remove and dispose the following as asbestos waste:
 - .1 Drywall partition wall located between Rooms 12 and 13 and Room 15 including, but not limited to, baseboards, drywall with asbestos-containing joint compounds and associated framing materials. Framing materials may be disposed as clean demolition waste provided, they are thoroughly cleaned of all dust and debris.

ASBESTOS ABATEMENT SPECIFICATIONS**Paul A. Fisher Public School**

- .2 Bulkheads in Rooms 13 and 15 adjacent Corridor 14 and bulkheads in Rooms 12 and 15 adjacent to Corridor 11 including, but not limited to, drywall with asbestos-containing joint compounds and associated framing materials. Framing materials may be disposed as clean demolition waste provided, they are thoroughly cleaned of all dust and debris.
 - .3 Entire ceiling assemblies in Rooms 24A and 24B including, but not limited to, drywall with asbestos-containing joint compounds and ceiling support systems. Ceiling support systems may be disposed as clean demolition waste provided, they are thoroughly cleaned of all dust and debris.
- .10 **Work Area 2 – Rooms 5, 21, 28, 36, 37 and 38**
- .1 Prepare the areas as indicated above and on the attached floor plans for a Type 2 Enclosure asbestos removal operations.
 - .2 Remove and dispose the following as clean demolition waste:
 - .1 All baseboards.
 - .2 All carpet tiles in Rooms 36, 37 and 38
 - .3 Remove and dispose as asbestos waste, all asbestos-containing vinyl floor tiles.
- .11 **Work Area 3 – Room 2**
- .1 Prepare the areas as indicated above and on the attached floor plans for Type 2 Enclosure and Glovebag asbestos removal operations.
 - .2 Remove and dispose as asbestos waste, all drywall with asbestos-containing joint compounds and associated framing materials on walls adjacent to the roof hatch. Framing materials may be disposed as clean demolition waste provided, they are thoroughly cleaned of all dust and debris.
 - .3 Using glovebags inside the enclosure work area, remove and dispose as asbestos waste, all asbestos-containing thermal insulation applied to pipe fittings and water meter. For costing purposes allow for the removal of a thermal insulation from a total of ten (10) pipe fittings and the removal of 0.5 square metres of thermal insulation from the water meter.
- .12 **Work Area 4 – Rooms 25 and 26**
- .1 Prepare the areas as indicated above and on the attached floor plans for Type 2 Enclosure and Glovebag asbestos removal operations.
 - .2 Remove and dispose as clean demolition waste, all baseboards in Room 26.
 - .3 Remove and dispose as asbestos waste, all asbestos-containing floor tiles in Room 26.
 - .4 Using glovebags inside the enclosure work area, remove and dispose as asbestos waste, all asbestos-containing thermal insulation applied to pipe fittings in Room 25 and all assumed asbestos-containing thermal insulation applied to select sections of pipe straights in Rooms 25 and 26. For costing purposes allow for the

ASBESTOS ABATEMENT SPECIFICATIONS

Paul A. Fisher Public School

removal of thermal insulation from two (2) pipe fittings and the removal of thermal insulation from eight (8) linear metres of pipe straights.

.13 **Work Area 5 – Rooms 25 (Stage) and 27**

- .1 Prepare the areas as indicated above and on the attached floor plans for a Type 1 asbestos removal operation.
- .2 The folding door separating Rooms 25 and 27 (the stage opening), will be removed by the General Contractor's sub trades prior to commencement of remedial work and the folding door-track assembly and surround will be removed by the Asbestos Contractor.
- .3 Carefully remove the folding door-track assembly and surround attached to asbestos-containing cement board panels, thoroughly clean of all dust and debris, and turn over to the General Contractor. **Care must be taken to not damage the folding door-track assembly and surround as these components are to be reinstalled by the General Contractor.**
- .4 Remove and dispose as asbestos waste, all asbestos-containing cement board panels and associated framing applied to the header and sides of the stage opening and, on the wall directly adjacent to the stage opening in Room 25. Framing materials may be disposed as clean demolition waste provided, they are thoroughly cleaned of all dust and debris.

.14 Vinyl floor tiles contain 0.66% chrysotile asbestos. Joint compounds on drywall applications contain 2% chrysotile asbestos. Thermal insulation on pipe fittings contains 29% chrysotile asbestos. Thermal insulation on water meter contains 36% to 67% chrysotile asbestos. Cement board contains 3% chrysotile asbestos and 10% amosite asbestos.

.15 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 a lockable metal door system which must be kept locked at all times. Disposal bins must be removed immediately on completion of work.

.16 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 Professional Services (Canada) Inc. Consultant shall determine the manner for proceeding. The Asbestos Contractor shall not be entitled to any additional payment.

ASBESTOS ABATEMENT SPECIFICATIONS**Paul A. Fisher Public School**

- .2 The General 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 Professional Services (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 Professional Services (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 Professional Services (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

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corrected and a written notice to proceed has been issued by the Arcadis Professional Services (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 Professional Services (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 Professional Services (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 Professional Services (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 General Contractor and Arcadis Professional Services (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 Professional Services (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 Professional Services (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.

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- .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 Professional Services (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 Professional Services (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:*

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- .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.

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- .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 Arcadis Professional Services (Canada) Inc. Consultant 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**

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- .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.

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.5 Insurance:

- .1 Provide a Certificate signed by the insurance agency naming the Owner, the General Contractor and Arcadis Professional Services (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).

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1.7.2 Submittals Before Commencing Asbestos Removal

- .1 Proposed Work Area emergency exit procedures.

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 Vinyl floor tiles contain 0.66% chrysotile asbestos. Joint compounds on drywall applications contain 2% chrysotile asbestos. Thermal insulation on pipe fittings contains 29% chrysotile asbestos. Thermal insulation on water meter contains 36% to 76% chrysotile asbestos. Cement board contains 3% chrysotile asbestos and 10% amosite asbestos.
- .2 Existing conditions are documented in a report prepared by Arcadis Professional Services (Canada) Inc. for the Halton District School Board titled "*Designated Substances Survey - Pre-Renovation, Paul A. Fisher Public School, 2175 Cavendish Drive, Burlington, Ontario*" dated June 17, 2025, which is included with the tender documents.
- .3 Masonry applications and other building materials may contain silica. Paint applications contain lead. 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:*

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- .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.

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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

Not Applicable.

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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:

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- .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 Glovebox. 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.

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- .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 Professional Services (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 Professional Services (Canada) Inc. Consultant prior to installation of the Panel on site.

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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.

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- .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

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- .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.

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- .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 *Drywall with Asbestos-Containing Joint Compound:* 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. Remove gypsum board by hand and place directly into waste receptor. Do not throw or allow waste to fall to the floor from the work area. Ensure that all asbestos debris is removed from the ceiling/wall assembly. Ensure that all asbestos debris is removed including that on fasteners. Double bag when removing debris from work area.
 - .5 *Vinyl Floor Tile:* Disconnect all floor-mounted electrical fixtures and outlets and seal with duct tape. Seal other floor penetrations as required. Spray amended water on tiles to be removed to reduce dust. Remove tiles and immediately place into waste receptor. 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.

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- .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.
- .4 **Cement Board:** Place polyethylene sheet on building materials below and adjacent to materials being removed. Apply amended water as required to reduce dust.

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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 floor from the work area. Ensure that all asbestos debris is removed including that on fasteners, embedded in caulking, etc.

- .5 Do not allow waste to accumulate.
- .6 Clean dust and debris at regular intervals and at the end of each shift with a damp cloth or HEPA vacuum.
- .7 Ensure that there is no visible airborne dust in the work area during the removal and cleanup operation.
- .8 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.
- .9 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.
- .10 Dispose of protective clothing (where applicable) as asbestos waste.
- .11 Wash hands and face prior to taking breaks and at completion of the work before leaving the work area. Damp-wipe the respirator (where applicable) after use and store in an appropriate place.
- .12 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

ASBESTOS ABATEMENT SPECIFICATIONS

Paul A. Fisher Public School

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).
 - .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,

ASBESTOS ABATEMENT SPECIFICATIONS

Paul A. Fisher Public School

.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:

1 FUNCTIONAL SPACE

WORK AREA 1

WORK AREA 2

WORK AREA 3

WORK AREA 4

WORK AREA 5

NOTES:

REVISIONS:

No.	Date:	By:	Revisions

REFERENCE:

1.

HALTON DISTRICT SCHOOL BOARD

ASBESTOS ABATEMENT SPECIFICATIONS

LOCATION OF WORK AREAS

PAUL A. FISHER PUBLIC SCHOOL

FIRST FLOOR

Drawn By: M.K.R	Approved By: J.D	Project No: 30271453
Date: JUNE 2025	Scale: N.T.S	Drawing No: 30271453-1

Part 1 General

1.1 DESIGNATED SUBSTANCE SURVEY - PRE-RENOVATION

Paul A. Fisher Public School, 2175 Cavendish Drive, Burlington, Ontario

- .1 Abatement of designated substances is to be expended from the Cash Allowance.
- .2 Refer to report pertaining to hazardous materials and abatement survey and findings prepared by others bound within this document for convenience only.
- .2 This report outlines the designated substances discovered at this site. **Report is dated June 17, 2025.**
- .3 Direct any questions regarding clarification regarding the Hazardous Building Material Survey to:

Arcadis Canada Inc.

Matthew Molinari, Junior Hazardous Building Materials Field Technician
Or

Jean Daigle, Senior Technical Specialist – Project Manager
8133 Warden Avenue, Unit 300, Markham, Ontario L6B 1B3
Tel: (905) 764-9380
www.arcadis.com

- .4 The specification sections related to Asbestos Survey or Abatement forms part of the Contract Documents but contains information that is not prepared by the Architect or their sub consultants. The referenced asbestos reports and asbestos abatement specifications were not prepared by or under the supervision of the Architect. While every effort has been made to attempt to provide comprehensive abatement testing information for the purposes of design and tendering, the Architect claims no responsibility or liability for the accuracy of the information contained in the report.

Part 2 Products

2.1

1. Refer to documents noted above.

Part 3 Execution

- .1 Abatement and Inspection and Testing will be paid for under Cash Allowances.

END OF SECTION

Designated Substance Survey - Pre-Renovation

**Paul A. Fisher Public School, 2175 Cavendish Drive,
Burlington, Ontario**

June 17, 2025

Arcadis Project No. 30271453

Designated Substance Survey - Pre-Renovation
Paul A. Fisher Public School, 2175 Cavendish Drive, Burlington, Ontario

Designated Substance Survey - Pre-Renovation

Paul A. Fisher Public School, 2175 Cavendish Drive, Burlington, Ontario

June 17, 2025

Arcadis Project No. 30271453

Prepared By:

Arcadis Professional Services (Canada) Inc.
8133 Warden Avenue, Unit 300
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Our Ref: 30271453

Authored by: Matthew Molinari



Matthew Molinari
Junior Hazardous Building Materials Field Technician

Reviewed by: Jean Daigle



Jean Daigle
Senior Technical Specialist – Project Manager

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Version Control

Issue	Revision No.	Date Issued	Page No.	Description	Reviewed By
01	00	June 18, 2025	All	Final Report	Dwayne Kellyman

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Appendices

Appendix A: Asbestos Summary Table

Designated Substance Survey - Pre-Renovation
Paul A. Fisher Public School, 2175 Cavendish Drive, Burlington, Ontario

Appendix B: Laboratory Certificates of Analysis

Appendix C: Asbestos Bulk Sample Analyses List

Appendix D: Floor Plans

Appendix E: Regulations and Guidelines

Appendix F: Survey Methodology

Acronyms and Abbreviations

ACM	Asbestos-Containing Materials
Arcadis	Arcadis Professional Services (Canada) Inc.
CLC	Canada Labour Code
COHSR	Canada Occupational Health and Safety Regulations
DSS	Designated Substance Survey
EACC	Environmental Abatement Council of Canada
HBMA	Hazardous Building Materials Assessment
HCE	Halocarbon-Containing Equipment
LPB	Lead Based Paints
NIOSH	National Institute for Occupational Safety and Health
NJC	National Joint Council
OHS	Occupational Health and Safety
AACM	Assumed Asbestos-Containing Materials
PCBs	Polychlorinated Biphenyls
PLM	Polarized Light Microscopy
TEM	Transmission Electron Microscopy
USEPA	United States Environmental Protection Agency

1 Introduction

1.1 Purpose

Arcadis Professional Services (Canada) Inc. (Arcadis) was retained by Halton District School Board (HDSB) to conduct a pre-renovation designated substance survey (DSS) in Paul A. Fisher Public School located at 2175 Cavendish Drive, Burlington, Ontario.

The objective of the assessment was to identify specified designated substances (DS) in preparation for building renovations. This assessment is intended to be used for renovation purposes only and may not provide sufficient detail for long-term management of hazardous materials as required by Health and Safety regulations. The results of this assessment are intended for use with a properly developed scope of work and performance specification.

The project consisted of a limited intrusive assessment of specific areas of the building as shown on the floor plan provided in Appendix D.

Arcadis performed the assessment on June 5, 2025. The assessment was conducted by Mr. Dwayne Kellyman, Mr. Scott Knight and Mr. Matthew Molinari of Arcadis.

1.2 Scope of Work

The scope of work for the project included:

- Review of previous documents related to the work, including floor plans and previous reports.
- Development of sampling strategy to address any identified gaps.
- Conduct a comprehensive, limited intrusive DSS on interior and exterior finishes of the site.
- Submit representative samples of suspect materials identified to accredited laboratories for analysis.
- Evaluation and interpretation of field findings and sample analytical results to develop conclusions and recommendations pertaining to hazardous building materials identified and to provide a summary of the locations of HBMs.

For the purpose of this assessment, designated substances (DS) are defined as follows:

- Asbestos-containing materials (ACM)
- Paint (lead)
- Lead Products
- Silica
- Mercury
- Polychlorinated Biphenyls (PCBs)
- Halocarbon-Containing Equipment (HCE)
- Suspect visible mould

- Other Biological Hazards (Rodent/Bird Droppings)

The assessment was restricted to accessible locations in the building. Limited finishes, if present, such as carpeting were lifted, to assess area and materials beneath it. Solid ceiling and walls were investigated where access hatches were present. Drawings showing assessment areas in the building as well as the building construction eras are provided in Appendix D.

A general description of the building included in this DSS is provided in Table 1 below:

Table 1: Building Description

Building Name	Address	Year Constructed Additions	Building Description
Paul A. Fisher Public School	2175 Cavendish Drive, Burlington, Ontario	Construction 1974	Single storey facility.

2 Background Information

Background information for the Site includes the following:

Arcadis reviewed the following reports prepared by Arcadis for the HDSB:

- “Pre-Renovation Designated Substances and Hazardous Materials Survey, Paul A. Fisher Public School, 2175 Cavendish Drive, Burlington, Ontario” dated June 20, 2023, prepared by Arcadis.

3 Results

The following section summarizes the findings of the assessment and provides a general description of the designated substances (DS) identified and their locations. A summary of asbestos-containing building materials found to be present in areas assessed is included in Appendix A. Laboratory certificates of analyses of samples collected as part of this assessment work are provided in Appendix B. A list of building materials sampled for asbestos content as part of this assessment and previous assessments and laboratory analyses results are included in the Asbestos Bulk Sample Analyses List provided in Appendix C. Floor plans showing locations of asbestos-containing building materials and assessment areas are provided in Appendix D. Appendix E provides information on applicable regulation and guidelines. Refer to Appendix F for the survey methodology.

3.1 Asbestos

Arcadis reviewed reports prepared by Arcadis for the HDSB titled “Pre-Renovation Designated Substances and Hazardous Materials Survey, Paul A. Fisher Public School, 2175 Cavendish Drive, Burlington, Ontario” dated June 20, 2023.

Information taken from these previous reports was used by Arcadis during the course of our assessment and in the preparation of this report.

During the course of our assessment, additional bulk samples of material were collected by Arcadis staff. The samples were forwarded to EMSL in Mississauga, Ontario for asbestos analyses. EMSL holds a current Certificate of Accreditation for Bulk Asbestos Fibre Analysis under the Voluntary Accreditation Program (NVLAP). Bulk sampling was performed in general accordance with the requirements specified in the ASTM E2356 Standard, and O Reg 278/05. Laboratory analyses results of bulk samples analyzed for this assessment, are included in the Asbestos Bulk Sample Analyses List provided in Appendix C.

3.1.1 Suspect Building Materials Not Found

The following types of building materials may historically contain asbestos but were not observed in the assessed area and are not discussed in the report findings:

- Spray-applied fireproofing
- Firestopping
- Texture Finish

3.1.2 Asbestos-Containing Building Materials in Assessed Area

The following accessible asbestos-containing building materials were found to be present in the assessed area:

- Vinyl floor tiles (12" x 12") in Rooms 5, 21, 26 and 28;
- Vinyl floor tiles (12" x 12") below carpet tile in Rooms 36, 37 and 38;
- Joint compound applied to gypsum board ceilings in Rooms 24A and 24B;
- Joint compound applied to gypsum board walls in Rooms 12, 13 and 15;
- Joint compound applied to gypsum board bulkheads in Rooms 12, 13 and 15;
- Joint compound applied to gypsum board around access hatch in Room 2;
- Asbestos thermal insulation on pipe fittings in Rooms 2 and 26;
- Asbestos thermal insulation applied to the water meter in Room 2;
- Assumed asbestos thermal insulation on pipe straights in Rooms 25 and 26; and
- Asbestos cement panels in Rooms 25 and 27.

During the course of the site investigations, Arcadis staff drilled into interior concrete block walls in several different locations throughout the designated study areas where renovation activities may disturb the concrete block walls. Materials suspected of containing asbestos (e.g. vermiculite block-fill insulation) was not observed in all block wall cavities accessed.

Asbestos-containing thermal insulation applied to pipe fittings is a white-coloured cementitious material.

Thermal insulation is a friable material. The removal, alteration and/or disturbance of less than 1 m² 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 m² of friable asbestos-containing materials is classified as a Type 3 operation.

Vinyl floor tiles and cement panels 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. 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 a Type 2 operation. If the power tools do not have HEPA filtered dust collecting devices, then the work is classified as a Type 3 operation.

The removal, alteration and/or disturbance of less than 1m² of drywall in which asbestos-containing joint filling compounds have been used is classified as a Type 1 operation. The removal, alteration and/or disturbance of more than 1m² of drywall with asbestos-containing joint compounds is a Type 2 operation.

Glass fibre insulation is readily visually distinguishable (typically yellow in colour) from asbestos-containing insulation materials and was, therefore, not tested for asbestos content.

Please Note: Arcadis reviewed information associated with roofing materials present on the building. Information provided to Arcadis by the HDSB indicated that roofing materials including roof flashings were replaced in 2005 with the original Built-Up Roofing (BUR) system completely removed down to the metal roof decking. The replacement BUR system installed in 2005 is surfaced in Gravel in Asphalt, on a 1 Ply 95 gm/m² plus 3 Ply Type IV Glass Felt membrane, on 1" High-Density Asphalt-Impregnated Fibreboard coverboard insulation, followed by a 1 Ply Type IV Glass Felt separation sheet, on a 2.5" Polyisocyanurate base insulation and a Kraft vapour retarder. All roofing materials installed in 2005, as outlined above, are not suspected of containing asbestos and were therefore not tested for asbestos content.

3.1.3 Potentially Asbestos-Containing Materials

Assumed asbestos-containing thermal insulation applied on pipe straights on rainwater piping in Rooms 25 and 26. Unable to sample thermal insulation due to height restrictions.

3.2 Paint

Arcadis reviewed a report prepared by Arcadis for the HDSB titled "*Pre-Renovation Designated Substances and Hazardous Materials Survey, Paul A. Fisher Public School, 2175 Cavendish Drive, Burlington, Ontario*" dated June 20, 2023. Results of paint sample analyses for lead taken from this previous report was used by Arcadis during the course of the investigation and in the preparation of this report.

During the course of our site investigation, an additional bulk sample of the predominant paint observed in the study areas was collected by Arcadis staff. The samples were forwarded to EMSL in Mississauga, Ontario for lead analyses. Results of bulk sample analysis of paint are provided in Table 2. Table 2 also includes sample results taken from the existing report.

Table 2: Results of Analyses of Bulk Samples for Metals in Paint

Sample ID	Sample Location	Sample Description	Lead Content
P1	Room 2	Paint, yellow coloured from drywall	<64 mg/Kg ⁽¹⁾
P-1	Corridor 39	Paint, White coloured from concrete block wall	<93 mg/Kg ^(1,4)
P-2	Room 30	Paint, multi layered from concrete block wall	14,000 mg/Kg ^(3,4)
P-3	Room 3	Paint, brown coloured from concrete block wall	<90 mg/Kg ^(1,4)

Designated Substance Survey - Pre-Renovation

Paul A. Fisher Public School, 2175 Cavendish Drive, Burlington, Ontario

Sample ID	Sample Location	Sample Description	Lead Content
P-4	Room 30	Paint, pink coloured from metal stall	19,000 mg/Kg ^(3,4)
Mor-1	Room 30	Mortar – from concrete block wall	<40 mg/Kg ^(1,4)

FOOT NOTES:

1. Lead concentrations less than or equal to 0.1% lead by weight (1,000 ppm)
2. Lead concentrations greater than 0.1% (1,000 ppm) or equal to 0.5% (5,000 ppm)
3. Lead concentrations greater than 0.5% (5,000 ppm)
4. Sample results taken from a report prepared by Arcadis for the Halton District School Board titled "*Pre-Renovation Designated Substances and Hazardous Materials Survey, Paul A. Fisher Public School, 2175 Cavendish Drive, Burlington, Ontario*" dated June 30, 2023.

1 mg/kg = 1 ppm

The *Environmental Abatement Council of Canada (EACC) Lead Guideline* for Construction, Renovation, Maintenance or Repair, October 2014, states the following:

- Paints or coatings containing less than or equal to 0.1% lead by weight (1,000 ppm) are considered low-level lead paints. If these materials are disturbed in a non-aggressive manner, performed using normal dust control procedures, then worker protection from the inhalation of lead is not required.
- Paints or coatings containing between 0.1% and 0.5% (5,000 ppm) lead by weight are considered lead-containing paints. Tasks performed that disturb these materials must be completed using precautionary measures and procedures specified in the guideline.
- Construction operations involving lead-based paints with concentrations greater than 0.5% lead must always be completed in accordance with precautionary measures and procedures specified in the guideline.

Similarly painted areas throughout the building are presumed to contain lead at the same concentrations as noted above.

Due to the constraints and difficulty of obtaining adequate volumes of paint from metal substrate materials for analyses for lead content, all paint on metal substrates in the assessed area is assumed to contain lead and were not sampled. Paint applications and associated metal substrate materials that are affected by the renovation work must be either sent for metal recycling at an approved facility or disposed as lead waste at a licensed hazardous waste disposal facility.

3.3 Lead Products

Materials presumed to contain lead were observed in the assessed area including:

- Electrical components including wiring connectors, grounding conductors, and solder.
- Glazing on ceramic tiles, in the solder (in buildings built pre-1986) 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.

3.4 Silica

Crystalline silica is a presumed component of the following materials where present in the assessed area:

- poured or pre-cast concrete
- cement
- masonry and mortar
- ceramic tiles, grout and associated mortar beds
- plaster, gypsum board and taping compound
- Concrete block

3.5 Mercury

Mercury vapor is present in fluorescent lamps which were present in the assessed area.

3.6 Polychlorinated Biphenyls (PCBs)

Based on visual observations (evidence of T-8 Type florescent light fixtures) the ballasts associated with T-8 Type florescent light fixtures, should not contain PCBs.

3.7 Halocarbon-Containing Equipment (HCE)

Refrigerators suspected to contain halocarbons were observed in Rooms 1 and 34 in the assessed area.

3.8 Suspect Visible Mould

Suspect visible mould and/or water staining was not observed in the assessed area.

3.9 Other Biological Hazards

Rodent/Bird/Bat droppings were not observed in the assessed area.

4 Recommendations

We recommend the following on the basis of the findings of the HBMA outlined in this report

4.1 General

1. Ensure that all asbestos-containing materials identified not impacted by the proposed renovations are managed in place. The Ontario Regulation 278/05 Regulation Respecting Asbestos on Construction Projects and in Buildings and Repair Operations provides guidance in asbestos management programs including risk assessment, development of safe work procedures, worker instructions, development and implementation of Asbestos Management Plans and record keeping.

2. Investigate any items excluded from the scope of work of this report. Ideally this investigation will be performed as part of the development of the specifications, or at a minimum immediately prior to commencing renovations when the areas are no longer occupied.
3. Provide this report and the detailed plans and specifications to the contractor prior to bidding or commencing work.
4. Retain a qualified consultant to specify, inspect and verify the successful removal of hazardous materials.
5. Update the asbestos inventory upon completion of the abatement and removal of asbestos-containing materials.

4.2 Renovation Work Involving Hazardous Materials

1. Prepare plans and performance specifications for hazardous building materials handling and removal required for the planned renovation work. The specifications should include the scope of work, safe work practices, personal protective equipment, respiratory protection, and disposal of waste materials. Provide this report and the detailed plans and specifications to the contractor prior to bidding or commencing work.
2. Remove all asbestos-containing materials (ACM) in the designated work area prior to renovation, alteration, maintenance or demolition work. If the identified ACM will not be removed prior to commencement of the work, disturbance of ACM must follow the appropriate asbestos precautions for the classification of work being performed. Asbestos-containing materials must be disposed of at a landfill approved to accept asbestos waste.
3. Test PACM if impacted by the proposed renovations or demolition. If PACM is not tested, it must be treated as ACM.
4. If work activities may cause exposure to paint containing elevated levels of metal (arsenic, chromium, lead, mercury) conduct a risk assessment for exposure, develop an exposure control plan, write safe work procedures, and implement controls. The Ministry of Labour Guideline, Lead on Construction Projects provides guidance in assessment and control of lead exposure, which can be used as a guide for other metals.
5. Items painted with paints containing elevated levels of lead may be a hazardous waste. Test lead-painted materials for leachable lead and other metals prior to disposal. Dispose of painted non-metallic materials exceeding the criteria for leachable lead as hazardous waste. Well adhered paints containing elevated levels of lead on metal substrates do not require leachable lead analysis as the materials can be recycled with the paint intact.
6. Lead-containing items [lead-acid batteries, others] should be recycled when taken out of service or prior to building demolition.
7. If silica-containing materials will be affected by sanding, drilling, chipping, grinding, cutting, sawing, sweeping, demolition or blasting, develop a silica exposure control plan to address control methods and personal protective equipment requirements in order to reduce worker exposure to a level as low as reasonably achievable below the occupational exposure limit prescribed in the [Choose an item](#). Guidance is provided in the Ministry of Labour Guideline, Silica on Construction Projects Silica control methods can include construction of barriers or enclosure systems to restrict access to and contain the

work area; the use of wet methods; local exhaust ventilation when practical; and the use of personnel protective equipment.

8. Recycle and reclaim mercury from fluorescent lamps and thermostats when taken out of service. Do not break lamps or separate liquid mercury from components. Liquid mercury is classified as a hazardous waste and must be disposed of in accordance with local regulations.
9. When light fixtures are removed from service, ensure a qualified person examines the light ballasts for PCB content. If ballasts are not clearly labelled as “non-PCB” or are suspected to contain PCBs, package, and ship ballasts for destruction at a federally permitted facility. Liquid in oil transformers should be sampled for classification purposes. Capacitors suspected to contain PCBs must be disposed of as hazardous waste when removed from service. Dispose of non-liquid PCB materials as hazardous waste when they are removed from the building.
10. Conduct an intrusive mould investigation to determine the extent of suspect visible mould growth. The investigation should identify the source of the water intrusion that contributed to the suspect visible mould growth and water damage observed during this assessment.
11. Investigate the source of the rodent/bird/bat droppings observed and implement preventative measures such as sealing openings to prevent further rodent intrusion. Mist rodent droppings with amended water and dispose of in sealed containers. Seal all opening and penetrations that may permit rodent intrusion into the building. Monitor for rodent activity and implement mitigation methods as required. Follow Environmental Abatement Council of Canada procedures for clean-up of bird or bat droppings.
12. Ensure toxic and flammable chemicals are stored in sealed containers with safety data sheets available. Material is required to be removed and disposed of in accordance with local regulations prior to demolition activities.
13. Remove radioactive smoke detectors when removed from service. Dispose of in accordance with local regulations.
14. Remove and recover refrigerants prior to disposal in compliance with provincial Ozone Depleting Substances and Other Halocarbons, O.Reg 463/10 And Federal Halocarbon Regulations, 2022, SOR/2022-110 regulations. Use certified persons to perform this work. Before dismantling, decommissioning or destroying any system, the following will occur:
 - i. Recover all halocarbons contained in the system into a container designed and manufactured to be refilled and to contain that specific type of halocarbon.
 - ii. Affix a notice to the system before dismantling, decommissioning, or destruction; and
 - iii. Keep a record of the information on the notice.

5 References

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

1. Occupational Health and Safety Act, (OSHA).
2. ASTM E2356 Standard Practice for Comprehensive Buildings Asbestos Surveys, 2018 Edition.
3. Technical Guideline to Asbestos Exposure Management Programs, Employment and Social Development Canada, January 16, 2018.

4. Ontario Regulation 278/05 – Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations, O. Reg. 278/05
5. R.R.O. 1990, Reg. 347: General - Waste Management
6. Ozone Depleting Substances and Other Halocarbons, O Reg. 463-10.
7. Ontario Ministry of Labour, Immigration, Training and Skills Development (MLITSD) “*A Guide to the Regulation Respecting Asbestos on Construction Projects and in Buildings and Repair Operations*”, November 2007
8. Federal Halocarbon Regulations, 2022, SOR/2022-110, under Canadian Environmental Protection Act, 1999.
9. PCB Regulations, SOR/2008-273, as amended up to October 31, 2021, under Canadian Environmental Protection Act, 1999.
10. Identification of Lamp Ballasts Containing PCBs. Report EPS 2/CC/2 (revised), Environment Canada, August 1991.
11. Surface Coating Materials Regulations, SOR/2016-193, as amended up to December 19, 2022, under Canada Consumer Product Safety Act.
12. Guideline, Lead on Construction Projects, Ministry of Labour, 2011.
13. Environmental Abatement Council of Canada Lead Guidelines for Construction, Renovation, Maintenance or Repair, 2014
14. Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing, United States Housing and Urban Development (HUD), 2012 Edition.
15. Transportation of Dangerous Goods Regulations, SOR/2001-286, as amended up to July 5, 2023, under Transportation of Dangerous Goods Act, 1992.
16. Mould Guidelines for the Canadian Construction Industry, Canadian Construction Association, 2018 Edition.
17. Environmental Abatement Council of Canada Mould Abatement Guidelines, Edition 3 (2015).
18. Guideline, Silica on Construction Projects Ministry of Labour, 2011.
19. Canada Labour Code, R.S.C., 1985, c. L-2, as amended up to July 9, 2023.
20. Canada Occupational Health and Safety Regulations, SOR/86-304, as amended up to April 12, 2023, under Canada Labour Code.

6 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.

Appendix A

Asbestos Summary Table

APPENDIX A – ASBESTOS SUMMARY TABLE

ASBESTOS-CONTAINING BUILDING MATERIALS IN ASSESSED AREA		
Location	Description	Asbestos Content
Rooms 5, 21, 26 and 28	Vinyl floor tiles	0.66% Chrysotile Asbestos
Rooms 2, 12, 13, 15, 24A and 24B	Joint compound applied to gypsum board	2% Chrysotile Asbestos
Rooms 2, 25 and 26	Thermal insulation on pipe fittings and pipe straights	29 to 67% Chrysotile Asbestos
Rooms 25 and 27	Cement panels	10% Amosite Asbestos 3% Chrysotile Asbestos

Appendix B

Laboratory Certificates of Analysis



EMSL Canada Inc.

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Phone/Fax: (289) 997-4602 / (289) 997-4607
<http://www.EMSL.com> / torontolab@emsl.com

EMSL Canada Order 552510144
Customer ID: 55CLEG25
Customer PO: 30271453
Project ID:

Attn: Matthew Molinari
Arcadis Professional Svcs (Canada) Inc.
8133 Warden Ave, Unit 300
Markham, ON L6G 1B3

Phone: (905) 940-6161
Fax:
Collected:
Received: 6/06/2025
Analyzed: 6/11/2025

Proj: Paul A Fisher 2025 DSS/ 30271453

Summary Test Report for Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05

Client Sample ID: 1A **Lab Sample ID:** 552510144-0001

Sample Description: Roof Exterior/ Caulking (Grey) on Flashing

TEST	Analyzed	Color	Non-Asbestos		Asbestos	Comment
	Date		Fibrous	Non-Fibrous		
PLM Grav. Reduction	6/11/2025	Brown	0.0%	100%	None Detected	
TEM Grav. Reduction	6/11/2025	Brown	0.0%	100.0%	None Detected	

Client Sample ID: 1B-Caulking 1 **Lab Sample ID:** 552510144-0002

Sample Description: Roof Exterior/ Caulking (Grey) on Flashing

TEST	Analyzed	Color	Non-Asbestos		Asbestos	Comment
	Date		Fibrous	Non-Fibrous		
PLM	6/11/2025	Brown/Gray	0.0%	100.0%	None Detected	

Client Sample ID: 1B-Caulking 2 **Lab Sample ID:** 552510144-0002A

Sample Description: Roof Exterior/ Caulking (Grey) on Flashing

TEST	Analyzed	Color	Non-Asbestos		Asbestos	Comment
	Date		Fibrous	Non-Fibrous		
PLM	6/11/2025	Brown	0.0%	100.0%	None Detected	

Client Sample ID: 1B-Caulking 3 **Lab Sample ID:** 552510144-0002B

Sample Description: Roof Exterior/ Caulking (Grey) on Flashing

TEST	Analyzed	Color	Non-Asbestos		Asbestos	Comment
	Date		Fibrous	Non-Fibrous		
PLM	6/11/2025	Beige/Clear	0.0%	100.0%	None Detected	

Client Sample ID: 1C **Lab Sample ID:** 552510144-0003

Sample Description: Roof Exterior/ Caulking (Grey) on Flashing

TEST	Analyzed	Color	Non-Asbestos		Asbestos	Comment
	Date		Fibrous	Non-Fibrous		
PLM	6/11/2025	Brown/Gray	0.0%	100.0%	None Detected	

Client Sample ID: 2A **Lab Sample ID:** 552510144-0004

Sample Description: Building Exterior/ Expansion Joint Caulking- White Exterior

TEST	Analyzed	Color	Non-Asbestos		Asbestos	Comment
	Date		Fibrous	Non-Fibrous		
PLM Grav. Reduction	6/11/2025	White	0.0%	100%	None Detected	
TEM Grav. Reduction	6/11/2025	White	0.0%	100.0%	None Detected	

Client Sample ID: 2B-Caulking 1 **Lab Sample ID:** 552510144-0005

Sample Description: Building Exterior/ Expansion Joint Caulking- White Exterior

TEST	Analyzed	Color	Non-Asbestos		Asbestos	Comment
	Date		Fibrous	Non-Fibrous		
PLM	6/11/2025	White	0.0%	100.0%	None Detected	



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Customer ID: 55CLEG25
Customer PO: 30271453
Project ID:

Summary Test Report for Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05

Client Sample ID: 2B-Caulking 2 **Lab Sample ID:** 552510144-0005A

Sample Description: Building Exterior/ Expansion Joint Caulking- White Exterior

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	Clear	0.0%	100.0%	None Detected	

Client Sample ID: 2C-Caulking 1 **Lab Sample ID:** 552510144-0006

Sample Description: Building Exterior/ Expansion Joint Caulking- White Exterior

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	White	0.0%	100.0%	None Detected	

Client Sample ID: 2C-Caulking 2 **Lab Sample ID:** 552510144-0006A

Sample Description: Building Exterior/ Expansion Joint Caulking- White Exterior

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	Clear	0.0%	100.0%	None Detected	

Client Sample ID: 3A **Lab Sample ID:** 552510144-0007

Sample Description: Room 2/ Caulking (Brown) on Interior Doorframe

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	6/11/2025	Brown	0.0%	100%	None Detected	
TEM Grav. Reduction	6/11/2025	Brown	0.0%	100.0%	None Detected	

Client Sample ID: 3B-Caulking 1 **Lab Sample ID:** 552510144-0008

Sample Description: Room 2/ Caulking (Brown) on Interior Doorframe

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	Brown	0.0%	100.0%	None Detected	

Client Sample ID: 3B-Caulking 2 **Lab Sample ID:** 552510144-0008A

Sample Description: Room 2/ Caulking (Brown) on Interior Doorframe

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 3C-Caulking 1 **Lab Sample ID:** 552510144-0009

Sample Description: Room 2/ Caulking (Brown) on Interior Doorframe

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	Brown	0.0%	100.0%	None Detected	

Client Sample ID: 3C-Caulking 2 **Lab Sample ID:** 552510144-0009A

Sample Description: Room 2/ Caulking (Brown) on Interior Doorframe

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	Gray	0.0%	100.0%	None Detected	



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Summary Test Report for Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05

Client Sample ID: 4A **Lab Sample ID:** 552510144-0010

Sample Description: Room 12/ Caulking (Grey) on Interior Windows

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	6/11/2025	Gray	0.0%	100%	None Detected	
TEM Grav. Reduction	6/11/2025	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 4B **Lab Sample ID:** 552510144-0011

Sample Description: Room 13/ Caulking (Grey) on Interior Windows

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 4C **Lab Sample ID:** 552510144-0012

Sample Description: Room 17/ Caulking (Grey) on Interior Windows

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 5A **Lab Sample ID:** 552510144-0013

Sample Description: Room 15/ Carpet Mastic (Yellow)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	6/11/2025	Gray/Yellow	0.0%	100%	None Detected	
TEM Grav. Reduction	6/11/2025	Gray/Yellow	0.0%	100.0%	None Detected	

Client Sample ID: 5B **Lab Sample ID:** 552510144-0014

Sample Description: Room 15/ Carpet Mastic (Yellow)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	Gray/Yellow	0.0%	100.0%	None Detected	

Client Sample ID: 5C **Lab Sample ID:** 552510144-0015

Sample Description: Room 15/ Carpet Mastic (Yellow)

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	Gray/Yellow	0.0%	100.0%	None Detected	

Client Sample ID: 6A-Caulking 1 **Lab Sample ID:** 552510144-0016

Sample Description: Room 41/ Caulking (Black) on Exterior Doorframe

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	6/11/2025	Black	0.0%	100%	None Detected	
TEM Grav. Reduction	6/11/2025	Black	0.0%	100.0%	None Detected	

Client Sample ID: 6A-Caulking 2 **Lab Sample ID:** 552510144-0016A

Sample Description: Room 41/ Caulking (Black) on Exterior Doorframe

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM Grav. Reduction	6/11/2025	Gray	0.0%	100%	None Detected	
TEM Grav. Reduction	6/11/2025	Gray	0.0%	100.0%	None Detected	



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Project ID:

Summary Test Report for Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05

Client Sample ID: 6B-Caulking 1 **Lab Sample ID:** 552510144-0017

Sample Description: Room 42/ Caulking (Black) on Exterior Doorframe

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	Black	0.0%	100.0%	None Detected	

Client Sample ID: 6B-Caulking 2 **Lab Sample ID:** 552510144-0017A

Sample Description: Room 42/ Caulking (Black) on Exterior Doorframe

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 6C-Caulking 1 **Lab Sample ID:** 552510144-0018

Sample Description: Room 44/ Caulking (Black) on Exterior Doorframe

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	Black	0.0%	100.0%	None Detected	

Client Sample ID: 6C-Caulking 2 **Lab Sample ID:** 552510144-0018A

Sample Description: Room 44/ Caulking (Black) on Exterior Doorframe

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 6C-Caulking 3 **Lab Sample ID:** 552510144-0018B

Sample Description: Room 44/ Caulking (Black) on Exterior Doorframe

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	Clear	0.0%	100.0%	None Detected	

Client Sample ID: 7A **Lab Sample ID:** 552510144-0019

Sample Description: Room 7/ Ceramic Tile (9"x9" Blue) Grout/ Mortar Bed

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 7B **Lab Sample ID:** 552510144-0020

Sample Description: Room 7/ Ceramic Tile (9"x9" Blue) Grout/ Mortar Bed

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 7c **Lab Sample ID:** 552510144-0021

Sample Description: Room 7/ Ceramic Tile (9"x9" Blue) Grout/ Mortar Bed

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	Gray	0.0%	100.0%	None Detected	



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Project ID:

Summary Test Report for Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05

Client Sample ID: 8A **Lab Sample ID:** 552510144-0022

Sample Description: Room 7/ Ceramic Tile (1"x1" Grey) Grout

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 8B **Lab Sample ID:** 552510144-0023

Sample Description: Room 7/ Ceramic Tile (1"x1" Grey) Grout

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 8C **Lab Sample ID:** 552510144-0024

Sample Description: Room 7/ Ceramic Tile (1"x1" Grey) Grout

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 9A **Lab Sample ID:** 552510144-0025

Sample Description: Room 7/ Ceramic Tile (1"x1" Grey) Mortar Bed

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 9B **Lab Sample ID:** 552510144-0026

Sample Description: Room 7/ Ceramic Tile (1"x1" Grey) Mortar Bed

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 9C **Lab Sample ID:** 552510144-0027

Sample Description: Room 7/ Ceramic Tile (1"x1" Grey) Mortar Bed

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 10A **Lab Sample ID:** 552510144-0028

Sample Description: Room 24A/ Ceramic Tile (12'X12' Grey, Multi-coloured speck) Grout

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 10B **Lab Sample ID:** 552510144-0029

Sample Description: Room 24A/ Ceramic Tile (12'X12' Grey, Multi-coloured speck) Grout

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	Gray	0.0%	100.0%	None Detected	



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Summary Test Report for Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05

Client Sample ID: 10C **Lab Sample ID:** 552510144-0030

Sample Description: Room 24A/ Ceramic Tile (12"x12" Grey, Multi-coloured speck) Grout

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 11A-Adhesive **Lab Sample ID:** 552510144-0031

Sample Description: Room 24A/ Ceramic Tile (12"x12" Grey, Multi- coloured speck) Mortar Bed

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	Yellow	0.0%	100.0%	None Detected	Insufficient material for gravimetric reduction.

Client Sample ID: 11A-Mortar **Lab Sample ID:** 552510144-0031A

Sample Description: Room 24A/ Ceramic Tile (12"x12" Grey, Multi- coloured speck) Mortar Bed

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 11B **Lab Sample ID:** 552510144-0032

Sample Description: Room 24A/ Ceramic Tile (12"x12" Grey, Multi- coloured speck) Mortar Bed

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 11C **Lab Sample ID:** 552510144-0033

Sample Description: Room 24A/ Ceramic Tile (12"x12" Grey, Multi- coloured speck) Mortar Bed

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	Gray	0.0%	100.0%	None Detected	

Client Sample ID: 12A **Lab Sample ID:** 552510144-0034

Sample Description: Room 25/ Ceramic Panle

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025	Gray	0.0%	87.0%	10% Amosite 3% Chrysotile	

Client Sample ID: 12B **Lab Sample ID:** 552510144-0035

Sample Description: Room 25/ Ceramic Panle

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025				Positive Stop (Not Analyzed)	

Client Sample ID: 12C **Lab Sample ID:** 552510144-0036

Sample Description: Room 27/ Ceramic Panle

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	6/11/2025				Positive Stop (Not Analyzed)	



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Summary Test Report for Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05

Analyst(s):

Diana Costantino PLM (10)
Hassan Moez PLM Grav. Reduction (7)
Sarah De Frias TEM Grav. Reduction (7)
Vanessa Gallego PLM (28)

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: 06/11/2025 13:30:10

**EMSL Canada Inc.**

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EMSL Canada Or 552510143

CustomerID: 55CLEG25

CustomerPO: 30271453

ProjectID:

Attn: **Matthew Molinari**
Arcadis Professional Svcs (Canada) Inc.
8133 Warden Ave, Unit 300
Markham, ON L6G 1B3

Phone: (905) 940-6161
Fax:
Received: 6/6/2025 01:57 PM
Collected: 6/5/2025

Project: **Paul A Fisher / 30271453****Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)***

<i>Client Sample</i>	<i>Description</i>	<i>Collected</i>	<i>Analyzed</i>	<i>Weight</i>	<i>RDL</i>	<i>Lead Concentration</i>
P1		6/5/2025	6/9/2025	0.2558 g	64 ppm	<64 ppm
552510143-0001	Site: Yellow Paint on Drywall / Room 2					

Rowena Fanto, Lead Supervisor
or other approved signatory

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Samples analyzed by EMSL Canada Inc. Mississauga, ON AIHA LAP, LLC-ELLAP Accredited #196142

Initial report from 06/11/2025 09:54:18

Appendix C

Asbestos Bulk Sample Analyses List

APPENDIX C – ASBESTOS BULK SAMPLE LIST

Samples - This Assessment			
Sample №	Location	Description	Asbestos Content
1A	Roof Exterior	Caulking (Grey) on Flashing	None detected (PLM) None detected (TEM)
1B	Roof Exterior	Caulking 1 (Grey) on Flashing	None detected
		Caulking 2 (Grey) on Flashing	None detected
		Caulking 3 (Grey) on Flashing	None detected
1C	Roof Exterior	Caulking (Grey) on Flashing	None detected
2A	Building Exterior	Expansion Joint Caulking – White Exterior	None detected (PLM) None detected (TEM)
2B	Building Exterior	Expansion Joint Caulking – White Exterior	None detected
2C	Building Exterior	Expansion Joint Caulking 1 – White Exterior	None detected
		Expansion Joint Caulking 2 – White Exterior	None detected
3A	Room 2	Caulking (Brown) on Interior Doorframe	None detected (PLM) None detected (TEM)
3B	Room 2	Caulking 1 (Brown) on Interior Doorframe	None detected
		Caulking 2 (Brown) on Interior Doorframe	None detected
3C	Room 2	Caulking 1 (Brown) on Interior Doorframe	None detected
		Caulking 2 (Brown) on Interior Doorframe	None detected
4A	Room 12	Caulking (Grey) on Interior Windows	None detected (PLM) None detected (TEM)
4B	Room 13	Caulking (Grey) on Interior Windows	None detected
4C	Room 17	Caulking (Grey) on Interior Windows	None detected
5A	Room 15	Carpet Mastic (Yellow)	None detected (PLM) None detected (TEM)
5B	Room 15	Carpet Mastic (Yellow)	None detected
5C	Room 15	Carpet Mastic (Yellow)	None detected
6A	Room 41	Caulking 1 (Black) on Exterior Doorframe	None detected (PLM) None detected (TEM)
		Caulking 2 (Black) on Exterior Doorframe	None detected (PLM) None detected (TEM)
6B	Room 42	Caulking 1 (Black) on Exterior Doorframe	None detected
		Caulking 2 (Black) on Exterior Doorframe	None detected
6C	Room 44	Caulking 1 (Black) on Exterior Doorframe	None detected
		Caulking 2 (Black) on Exterior Doorframe	None detected
		Caulking 3 (Black) on Exterior Doorframe	None detected
7A	Room 7	Ceramic Tile (9"x9" Blue) Grout/Mortar Bed	None detected
7B	Room 7	Ceramic Tile (9"x9" Blue) Grout/Mortar Bed	None detected
7C	Room 7	Ceramic Tile (9"x9" Blue) Grout/Mortar Bed	None detected
8A	Room 7	Ceramic Tile (1"x1" Grey) Grout	None detected
8B	Room 7	Ceramic Tile (1"x1" Grey) Grout	None detected
8C	Room 7	Ceramic Tile (1"x1" Grey) Grout	None detected

APPENDIX C – ASBESTOS BULK SAMPLE LIST

Samples - This Assessment			
Sample №	Location	Description	Asbestos Content
9A	Room 7	Ceramic Tile (1"x1" Grey) Mortar Bed	None detected
9B	Room 7	Ceramic Tile (1"x1" Grey) Mortar Bed	None detected
9C	Room 7	Ceramic Tile (1"x1" Grey) Mortar Bed	None detected
10A	Room 24A	Ceramic Tile (12"x12" Grey, Multi-coloured speck) Grout	None detected
10B	Room 24A	Ceramic Tile (12"x12" Grey, Multi-coloured speck) Grout	None detected
10C	Room 24A	Ceramic Tile (12"x12" Grey, Multi-coloured speck) Grout	None detected
11A	Room 24A	Ceramic Tile (12"x12" Grey, Multi-coloured speck) Mortar Bed – Adhesive	None detected
		Ceramic Tile (12"x12" Grey, Multi-coloured speck) Mortar Bed – Mortar	None detected
11B	Room 24A	Ceramic Tile (12"x12" Grey, Multi-coloured speck) Mortar Bed	None detected
11C	Room 24A	Ceramic Tile (12"x12" Grey, Multi-coloured speck) Mortar Bed	None detected
12A	Room 25	Cement Panel	10% Amosite 3% Chrysotile
12B	Room 25	Cement Panel	Positive Stop (Not Analyzed)
12C	Room 27	Cement Panel	Positive Stop (Not Analyzed)

NOTES:

Bulk samples were analyzed by Polarized Light Microscopy (PLM) analysis, except where "TEM" is noted, in which case Transmission Electron Microscopy analysis was also performed.

Chrysotile = Chrysotile asbestos.

Amosite = Amosite asbestos.

APPENDIX C – ASBESTOS BULK SAMPLE LIST

Samples - Previous Assessments			
Sample No.	Location	Description	Asbestos Content
CT-1A	39	2'x4' acoustic ceiling tile with small pinholes and long fissures	None detected ⁽¹⁾
CT-1B	1	2'x4' acoustic ceiling tile with small pinholes and long fissures	None detected ⁽¹⁾
CT-1C	15	2'x4' acoustic ceiling tile with small pinholes and long fissures	None detected ⁽¹⁾
CT-2A	39	2'x4' acoustic ceiling tile with pinholes and short fissures	None detected ⁽¹⁾
CT-2B	2	2'x4' acoustic ceiling tile with pinholes and short fissures	None detected ⁽¹⁾
CT-2C	28	2'x4' acoustic ceiling tile with pinholes and short fissures	None detected ⁽¹⁾
FT-3A	32	12"X12" beige vinyl floor tiles with grey specks	None detected (PLM) ⁽¹⁾ None detected (TEM) ⁽¹⁾
FT-3B	32	12"X12" beige vinyl floor tiles with grey specks	None detected ⁽¹⁾
FT-3C	32	12"X12" beige vinyl floor tiles with grey specks	None detected ⁽¹⁾
MS-4A	32	Black mastic associated with 12"X12" beige vinyl floor tiles with grey specks	None detected ⁽¹⁾
MS-4B	32	Black mastic associated with 12"X12" beige vinyl floor tiles with grey specks	None detected ⁽¹⁾
MS-4C	32	Black mastic associated with 12"X12" beige vinyl floor tiles with grey specks	None detected ⁽¹⁾
VB-5A	32	Black vinyl baseboard	None detected (PLM) ⁽¹⁾ None detected (TEM) ⁽¹⁾
VB-5B	32	Black vinyl baseboard	None detected ⁽¹⁾
VB-5C	32	Black vinyl baseboard	None detected ⁽¹⁾
MS-6A	32	Yellow baseboard mastic	None detected ⁽¹⁾
MS-6B	32	Yellow baseboard mastic	None detected ⁽¹⁾
MS-6C	32	Yellow baseboard mastic	None detected ⁽¹⁾
FT-7A	5	12"X12" dark-beige vinyl floor tiles with brown specks	0.66% Chrysotile⁽¹⁾
FT-7B	5	12"X12" dark-beige vinyl floor tiles with brown specks	Positive Stop (Not Analyzed)⁽¹⁾
FT-7C	5	12"X12" dark-beige vinyl floor tiles with brown specks	Positive Stop (Not Analyzed)⁽¹⁾
MS-8A	5	Black mastic associated with 12"X12" dark-beige vinyl floor tiles with brown specks	None detected ⁽¹⁾
MS-8B	5	Black mastic associated with 12"X12" dark-beige vinyl floor tiles with brown specks	None detected ⁽¹⁾
MS-8C	5	Black mastic associated with 12"X12" dark-beige vinyl floor tiles with brown specks	None detected ⁽¹⁾

APPENDIX C – ASBESTOS BULK SAMPLE LIST

Samples - Previous Assessments			
Sample No.	Location	Description	Asbestos Content
VB-9A	5	Brown vinyl baseboard	None detected (PLM) ⁽¹⁾ None detected (TEM) ⁽¹⁾
VB-9B	5	Brown vinyl baseboard	None detected ⁽¹⁾
VB-9C	5	Brown vinyl baseboard	None detected ⁽¹⁾
MS-10A	5	Brown baseboard mastic	None detected ⁽¹⁾
MS-10B	5	Brown baseboard mastic	None detected ⁽¹⁾
MS-10C	5	Brown baseboard mastic	None detected ⁽¹⁾
FT-11A	6D	12"X12" grey vinyl floor tiles with white speckles	None detected (PLM) ⁽¹⁾ None detected (TEM) ⁽¹⁾
FT-11B	6D	12"X12" grey vinyl floor tiles with white speckles	None detected ⁽¹⁾
FT-11C	7	12"X12" grey vinyl floor tiles with white speckles	None detected ⁽¹⁾
MS-12A	6D	Mastic associated with 12"X12" grey vinyl floor tiles with white speckles	None detected ⁽¹⁾
MS-12B	6D	Mastic associated with 12"X12" grey vinyl floor tiles with white speckles	None detected ⁽¹⁾
MS-12C	7	Mastic associated with 12"X12" grey vinyl floor tiles with white speckles	None detected ⁽¹⁾
FT-13A	6A	12"X12" beige vinyl floor tiles with brown speckles	None detected (PLM) ⁽¹⁾ None detected (TEM) ⁽¹⁾
FT-13B	6A	12"X12" beige vinyl floor tiles with brown speckles	None detected ⁽¹⁾
FT-13C	6B	12"X12" beige vinyl floor tiles with brown speckles	None detected ⁽¹⁾
MS-14A	6A	Black mastic associated with 12"X12" beige vinyl floor tiles with brown speckles	None detected ⁽¹⁾
MS-14B	6A	Black mastic associated with 12"X12" beige vinyl floor tiles with brown speckles	None detected ⁽¹⁾
MS-14C	6B	Black mastic associated with 12"X12" beige vinyl floor tiles with brown speckles	None detected ⁽¹⁾
FT-15A			
FT-15B	6C	12"X12" light-grey vinyl floor tiles with grey & white square patterns	None detected ⁽¹⁾
FT-15C	6C	12"X12" light-grey vinyl floor tiles with grey & white square patterns	None detected ⁽¹⁾
MS-16A	6C	Yellow mastic associated with 12"X12" light-grey vinyl floor tiles with grey & white square patterns	None detected ⁽¹⁾
MS-16B	6C	Yellow mastic associated with 12"X12" light-grey vinyl floor tiles with grey & white square patterns	None detected ⁽¹⁾

APPENDIX C – ASBESTOS BULK SAMPLE LIST

Samples - Previous Assessments			
Sample No.	Location	Description	Asbestos Content
MS-16C	6C	Yellow mastic associated with 12"X12" light-grey vinyl floor tiles with grey & white square patterns	None detected ⁽¹⁾
FT-17A	11	12"X12" grey vinyl floor tiles with white/grey flecks	None detected (PLM) ⁽¹⁾ None detected (TEM) ⁽¹⁾
FT-17B	11	12"X12" grey vinyl floor tiles with white/grey flecks	None detected ⁽¹⁾
FT-17C	14	12"X12" grey vinyl floor tiles with white/grey flecks	None detected ⁽¹⁾
MS-18A	11	Mastic associated with 12"X12" grey vinyl floor tiles with white/grey flecks	None detected ⁽¹⁾
MS-18B	11	Mastic associated with 12"X12" grey vinyl floor tiles with white/grey flecks	None detected ⁽¹⁾
MS-18C	14	Mastic associated with 12"X12" grey vinyl floor tiles with white/grey flecks	None detected ⁽¹⁾
FT-19A	9	12"X12" white vinyl floor tiles with beige flecks	None detected (PLM) ⁽¹⁾ None detected (TEM) ⁽¹⁾
FT-19B	9	12"X12" white vinyl floor tiles with beige flecks	None detected ⁽¹⁾
FT-19C	10	12"X12" white vinyl floor tiles with beige flecks	None detected ⁽¹⁾
MS-20A	9	Yellow mastic associated with 12"X12" white vinyl floor tiles with beige flecks	None detected ⁽¹⁾
MS-20B	9	Yellow mastic associated with 12"X12" white vinyl floor tiles with beige flecks	None detected ⁽¹⁾
MS-20C	10	Yellow mastic associated with 12"X12" white vinyl floor tiles with beige flecks	None detected ⁽¹⁾
JC-21A	12	Gypsum board joint compound	2% Chrysotile ⁽¹⁾
JC-21B	12	Gypsum board joint compound	Positive Stop (Not Analyzed) ⁽¹⁾
JC-21C	13	Gypsum board joint compound	Positive Stop (Not Analyzed) ⁽¹⁾
SF-22A	20	Beige vinyl sheet flooring	None detected ⁽¹⁾
SF-22B	22	Beige vinyl sheet flooring	None detected ⁽¹⁾
SF-22C	23	Beige vinyl sheet flooring	None detected ⁽¹⁾
MS-23A	20	Mastic associated with Beige vinyl sheet flooring	None detected ⁽¹⁾
MS-23B	22	Mastic associated with Beige vinyl sheet flooring	None detected ⁽¹⁾
MS-23C	23	Mastic associated with Beige vinyl sheet flooring	None detected ⁽¹⁾
FT-24A	21	12"X12" tan vinyl floor tiles with white specks	0.66% Chrysotile ⁽¹⁾
FT-24B	26	12"X12" tan vinyl floor tiles with white specks	Positive Stop (Not Analyzed) ⁽¹⁾

APPENDIX C – ASBESTOS BULK SAMPLE LIST

Samples - Previous Assessments			
Sample No.	Location	Description	Asbestos Content
FT-24C	28	12"X12" tan vinyl floor tiles with white specks	Positive Stop (Not Analyzed)⁽¹⁾
MS-25A	21	Mastic associated with 12"X12" tan vinyl floor tiles with white specks	None detected ⁽¹⁾
MS-25B	26	Mastic associated with 12"X12" tan vinyl floor tiles with white specks	None detected ⁽¹⁾
MS-25C	28	Mastic associated with 12"X12" tan vinyl floor tiles with white specks	None detected ⁽¹⁾
1A	23	Concrete block filler paint	None detected ⁽¹⁾
1B	18	Concrete block filler paint	None detected ⁽¹⁾
1C	9	Concrete block filler paint	None detected ⁽¹⁾
2A	23	2"x4" lay in ceiling tile pinhole with small fissure	None detected ⁽¹⁾
2B	23	2"x4" lay in ceiling tile pinhole with small fissure	None detected ⁽¹⁾
2C	22	2"x4" lay in ceiling tile pinhole with small fissure	None detected ⁽¹⁾
3A	23	White caulking on interior window frame	None detected ⁽¹⁾
3B	18	White caulking on interior window frame	None detected ⁽¹⁾
3C	9	White caulking on interior window frame	None detected ⁽¹⁾
4A	12	2"x4" lay in ceiling tile pinhole with horizontal fissure	None detected ⁽¹⁾
4B	12	2"x4" lay in ceiling tile pinhole with horizontal fissure	None detected ⁽¹⁾
4C	13	2"x4" lay in ceiling tile pinhole with horizontal fissure	None detected ⁽¹⁾
5A	Exterior	Brick Mortar	None detected ⁽¹⁾
5B	Exterior	Brick Mortar	None detected ⁽¹⁾
5C	Exterior	Brick Mortar	None detected ⁽¹⁾
6A	Exterior	White Window Caulking	None detected ⁽¹⁾
6B	Exterior	White Window Caulking	None detected ⁽¹⁾
6C	Exterior	White Window Caulking	None detected ⁽¹⁾
1A	Room 3	Grout – white in colour from 6" x 6" ceramic beige floor tile	None detected ⁽¹⁾
1B	Room 3	Grout – white in colour from 6" x 6" ceramic beige floor tile	None detected ⁽¹⁾
1C	Room 3	Grout – white in colour from 6" x 6" ceramic beige floor tile	None detected ⁽¹⁾
2A	Room 3	Mortar bed – grey in colour from 6" x 6" ceramic beige floor tile	None detected ⁽¹⁾
2B	Room 3	Mortar bed – grey in colour from 6" x 6" ceramic beige floor tile	None detected ⁽¹⁾

APPENDIX C – ASBESTOS BULK SAMPLE LIST

Samples - Previous Assessments			
Sample No.	Location	Description	Asbestos Content
2C	Room 3	Mortar bed – grey in colour from 6" x 6" ceramic beige floor tile	None detected ⁽¹⁾
3A	Room 30	Mortar – grey in colour from interior concrete block wall	None detected ⁽¹⁾
3B	Room 3	Mortar – grey in colour from interior concrete block wall	None detected ⁽¹⁾
3C	Room 39	Mortar – grey in colour from interior concrete block wall	None detected ⁽¹⁾
4A	Room 30	Plaster – grey in colour bottom scratch coat from ceiling	None detected ⁽¹⁾
4B	Room 30	Plaster – grey in colour bottom scratch coat from ceiling	None detected ⁽¹⁾
4C	Room 3	Plaster – grey in colour bottom scratch coat from ceiling	None detected ⁽¹⁾
5A	Room 30	Plaster – white in colour top smooth coat from ceiling	None detected ⁽¹⁾
5B	Room 30	Plaster – white in colour top smooth coat from ceiling	None detected ⁽¹⁾
5C	Room 3	Plaster – white in colour top smooth coat from ceiling	None detected ⁽¹⁾
6A	Room 30	Sand insulation – greyish white in colour on top of plaster ceiling	None detected ⁽¹⁾
6B	Room 30	Sand insulation – greyish white in colour on top of plaster ceiling	None detected ⁽¹⁾
6C	Room 30	Sand insulation – greyish white in colour on top of plaster ceiling	None detected ⁽¹⁾
7A	Room 30	Caulking – grey in colour from interior door frame	None detected ⁽¹⁾
7B	Room 3	Caulking – grey in colour from interior door frame	None detected ⁽¹⁾
7C	Room 3	Caulking – grey in colour from interior door frame	None detected ⁽¹⁾
8A	Corridor 39	2' x 4' ceiling tile – fissure on 2' with pinholes	None detected ⁽¹⁾
8B	Corridor 39	2' x 4' ceiling tile – fissure on 2' with pinholes	None detected ⁽¹⁾
8C	Corridor 39	2' x 4' ceiling tile – fissure on 2' with pinholes	None detected ⁽¹⁾
1	1	2' x 4' ceiling tile	None detected ⁽¹⁾
2	2	Domestic hot water pipe fitting insulation	29% Chrysotile⁽¹⁾
3	2	Cold water meter insulation	36% Chrysotile⁽¹⁾
4	2	Cold water meter insulation	67% Chrysotile⁽¹⁾
5	28	2' x 4' ceiling tile	None detected ⁽¹⁾

NOTES:

APPENDIX C – ASBESTOS BULK SAMPLE LIST

- (1) Sample results taken from a report prepared by Arcadis for the Halton District School Board titled “*Pre-Renovation Designated Substances and Hazardous Materials Survey, Paul A. Fisher Public School, 2175 Cavendish Drive, Burlington, Ontario*” dated June 20, 2023.
- (2) “*Asbestos-containing material*” is defined as material that contains 0.5% or more asbestos by dry weight”.

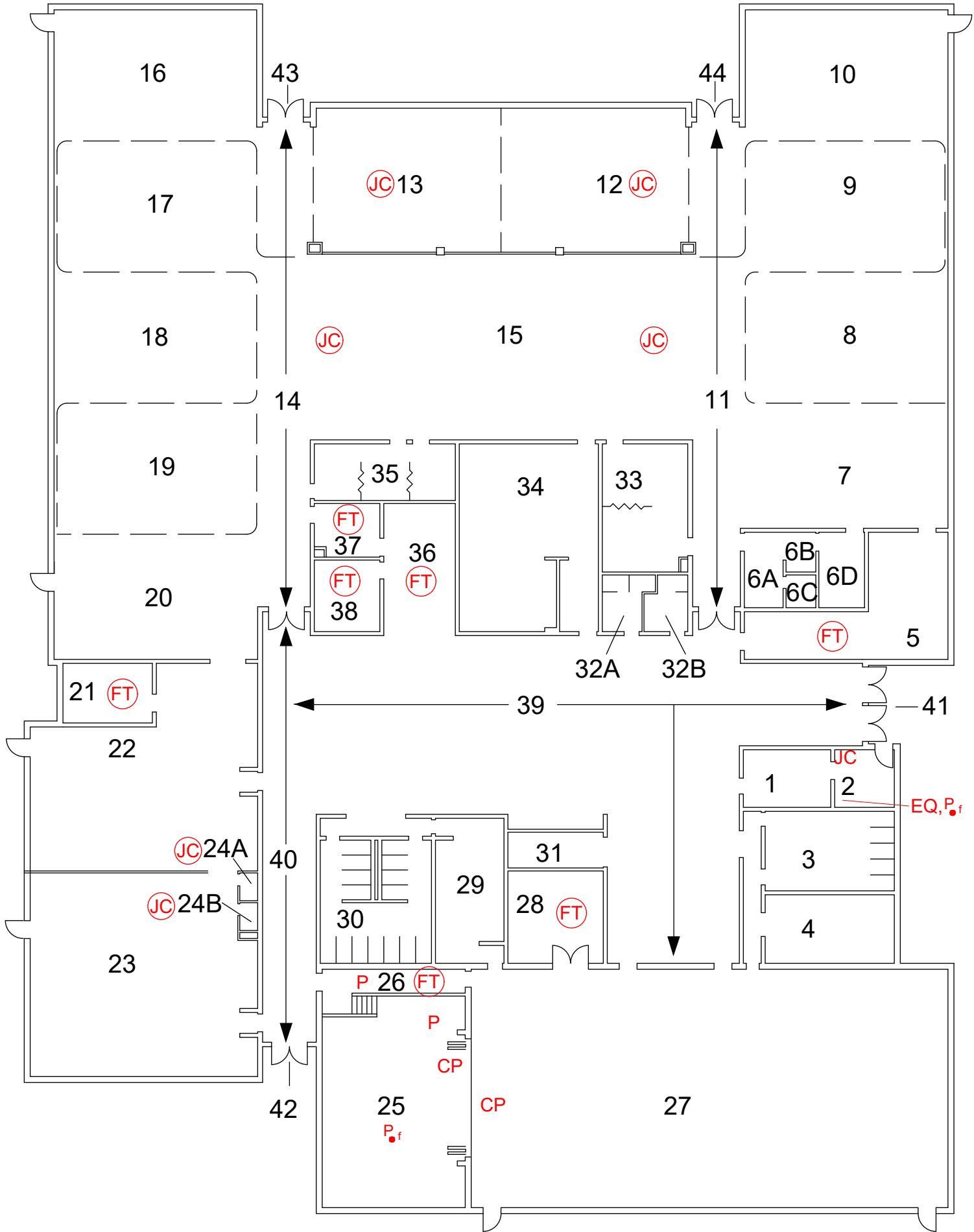
Bulk samples were analyzed by Polarized Light Microscopy (PLM) analysis, except where “TEM” is noted, in which case Transmission Electron Microscopy analysis was also performed.

< = Less than.

Chrysotile = Chrysotile asbestos.

Appendix D

Floor Plans



LEGEND:

- 1 FUNCTIONAL SPACE
- THROUGHOUT FUNCTIONAL SPACE
- * ABOVE CEILING ASSEMBLY
- P SUSPECT ASBESTOS ON PIPING (FRIABLE)
- P_f ASBESTOS ON PIPE FITTINGS ONLY (FRIABLE)
- EQ ASBESTOS ON MECHANICAL EQUIPMENT (FRIABLE)
- FT ASBESTOS FLOOR TILE (NON-FRIABLE)
- JC ASBESTOS GYPSUM BOARD JOINT COMPOUND
- CP ASBESTOS CEMENT PANEL (NON-FRIABLE)

NOTES:

- THE WHOLE BUILDING IS THE STUDY AREA

REVISIONS:

No.	Date:	By:	Revisions

REFERENCE:

-



HALTON DISTRICT SCHOOL BOARD

**PRE-RENOVATION DESIGNATED
SUBSTANCES AND HAZARDOUS
MATERIALS SURVEY**

LOCATION OF STUDY AREAS AND ASBESTOS
CONTAINING MATERIALS

PAUL A. FISHER PUBLIC SCHOOL

FIRST FLOOR

Drawn By: M.K.R.	Approved By: R.H.	Project No: 30271453
Date: JUNE 2025	Scale: N.T.S.	Drawing No: 30271453-1

Appendix E

Regulations and Guidelines

Canada Labour Code

Requirements related to disclosing the presence of hazardous substances (including designated substances) in federal government buildings are specified in Part II of the Canada Labour Code, sections 125(1)y and 125(1)(z.14), which state that employers shall:

- 1.1.1 *“ensure that the activities of every person granted access to the workplace do not endanger the health and safety of employees [Section y]; and*
- 1.1.2 *take all reasonable care to ensure that all of the persons granted access to the workplace, other than the employer’s employees, are informed of every known or foreseeable health or safety hazard to which they are likely to be exposed in the workplace [Section z.14]”.*

Canada Occupational Health and Safety Regulations

The requirement for employees to keep and maintain a record of all hazardous substances that are used, produced, handled or stored for use in the work place and the criteria to employ in carrying out an investigation into potential exposure to a hazardous substance are specified in Part X – Hazardous Substances – of the Canada Occupational Health and Safety Regulations.

Asbestos

Occupational Health and Safety (OHS) for federal employees is regulated by the Canada Labour Code (CLC) Part II. The *Canada Occupational Health and Safety Regulations (COHSR), Part X, Hazardous Substances* covers specific requirements related to the management and control of asbestos-containing materials (ACM). The COHSR, Part X, Hazardous Substances, states an employer shall ensure that an employee’s exposure to a concentration of airborne asbestos fibres is as close to zero as possible, but in any event the employer shall ensure that the concentration does not exceed the value for airborne asbestos fibres adopted by the American Conference of Governmental Industrial Hygienists in its publication entitled *Threshold Limit Values (TLV) and Biological Exposure Indices (BEI)*, as amended from time to time (currently 0.1 fibre/cm³ or f/cc). There are also specific requirements for hazard prevention detailed in the Hazard Prevention Program (HPP) in the CLC.

For the purposes of this report, the following federal requirements will be followed, unless provincial requirements are more stringent. Federal legislation and policy referenced in this report includes:

- Canada Labour Code, R.S.C., 1985, c. L-2., as amended up to July 9, 2023
- Canada Occupational Health and Safety Regulations Part X, Hazardous Substances; SOR/86-304, as amended up to April 12, 2023
- Public Services and Procurement Canada Standard on Asbestos Management, 2024
- Public Services and Procurement Canada Directive on Asbestos Management, 2024
- Department of National Defence Canadian Forces Asbestos Management Directive, March 2007
- Government of Canada Technical Guideline to Asbestos Exposure Management Program, January 2018
- Transportation of Dangerous Goods Regulations, SOR/2001-286, as amended up to July 5, 2023

The management and requirements for the potential disturbance of asbestos in buildings is also regulated at the provincial level under the Ontario Occupational Health and Safety Act (OHSA), and 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 R.R.O. 1990, Reg. 347: General - Waste Management. O.Reg. 278/05 classifies asbestos work operations into three types (Type 1, 2 and 3), and specifies procedures to be followed in conducting asbestos abatement work. The Federal Transportation of Dangerous Goods Regulation set out the requirements for the proper transport of asbestos waste in Ontario.

Paint

In Canada, the Surface Coating Materials Regulations (SOR/2016-193) under the federal Hazardous Products Act provides a concentration of metals that must not be exceeded in surface coatings that are presently sold in this country. Where no criteria is listed, the laboratory detection limit is used.

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. 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.

The *Environmental Abatement Council of Canada (EACC) Lead Guideline* for Construction, Renovation, Maintenance or Repair, October 2014, states the following:

- Paints or coatings containing less than or equal to 0.1% lead by weight (1,000 ppm) are considered low-level lead paints. If these materials are disturbed in a non-aggressive manner, performed using normal dust control procedures, then worker protection from the inhalation of lead is not required.
- Paints or coatings containing between 0.1% and 0.5% (5,000 ppm) lead by weight are considered lead-containing paints. Tasks performed that disturb these materials must be completed using precautionary measures and procedures specified in the guideline.
- Construction operations involving lead-based paints with concentrations greater than 0.5% lead must always be completed in accordance with precautionary measures and procedures specified in the guideline.

For building materials that are to be disposed at a landfill, all lead-based paints and associated substrate (concrete, plaster, wood, etc.) must undergo Toxicity Characteristic Leachate Properties (TCLP) testing to determine disposal procedures. The disposal of lead-containing paint is regulated under the Federal Transportation of Dangerous Goods Regulations and by the Ontario Ministry of Environment, Conservation and Parks.

PCB

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.

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.

The Federal Transportation of Dangerous Goods Regulation sets out the requirements for the proper transport of PCB waste across provincial boundaries.

Suspect Visible Mould

At present, there are no specific laws or regulations governing acceptable levels of mould in buildings. The lack of specific regulatory standards is due in part to an inability to establish exposure-response relationships. Variation in individual susceptibility, limitations in sampling and analytical techniques, and the vast number of fungal agents and their products make it difficult to establish safe levels of exposure for all individuals. With a lack of defined exposure criteria, current Health Canada and other agency guidelines on the assessment and control of mould contamination in public buildings are largely based on prudent avoidance (i.e., remove any indoor growth or amplification site of mould, regardless of the concentration of moulds or their products in the indoor environment).

Although there are currently no regulations in Canada pertaining specifically to mould in buildings, occupational health and safety regulations typically require employers to take every precaution reasonable in the circumstances for the protection of workers.

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:

- Canadian Construction Association. Mould Guidelines for the Canadian Construction Industry. Standard Construction Document CCA 82 2004.
- Environmental Abatement Council of Canada (EACC) Mould Abatement Guideline Edition 3, 2015.

Mercury

In Canada, the Surface Coating Materials Regulations (SOR/2005-109) under the federal *Hazardous Products Act* provides a concentration of mercury that must not be exceeded in surface coatings that are presently sold in this country. This value was set at 10 ppm in 2005. However, it is important to note that there is not a direct correlation between the concentration of mercury in a material to the potential occupational exposure if the material is disturbed.

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.

Silica

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.

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.

Halocarbon Containing Equipment (HCE)

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.

On federal land, aboriginal land and federal works, buildings and undertakings, the Federal Halocarbon Regulations, 2022 (SOR/2022-110) applies. The regulations prohibit the release of halocarbons contained in refrigeration systems, air conditioning systems, fire extinguishers (except to fight a fire that is not a fire caused for training purposes) or containers or equipment used in the re-use, recycling, reclamation or storage of a halocarbon.

The regulations also impose restrictions on the servicing and dismantling, disposing of or decommissioning of any system containing halocarbons and requires the recovery of halocarbons into an appropriate container by a certified person. The regulation also details an owner's record-keeping obligations.

The Federal Transportation of Dangerous Goods Regulation set out the requirements for the proper transport of halocarbon waste in Ontario.

Other Biological Hazards

Hantaviruses are found in the droppings, urine and saliva of infected rodents and humans can contract the virus from breathing in airborne particles or from being bitten. In Canada, a hantavirus capable of causing disease in humans – named Sin Nombre virus – has been identified in deer mice. Although the risk in Canada is low, when it happens, the disease can be very severe.

Exposure to hantaviruses can cause a rare, but often fatal, disease called Hantavirus pulmonary syndrome (HPS). The earliest documented case of HPS in Canada was contracted in Alberta in 1989. Since then, there have been over 70 confirmed cases. Most of the cases occurred in western Canada (Manitoba, Saskatchewan, Alberta and British Columbia), except for one case in Quebec.¹

Hantavirus is typically transmitted by breathing particles in air from the droppings, urine and saliva of infected rodents. However, there have been a small number of reported cases of HPS believed to have been contracted through rodent bites.

Workers removing accumulations of bird or bat droppings are at risk of exposure to airborne fungal spores (and other microbial hazards) likely to be released when this material is disturbed. Bird and bat droppings should be presumed to be contaminated with the fungi *Histoplasma capsulatum*, *Cryptococcus neoformans*, and other infectious hazards. The spores of some of these organisms can remain infectious for decades after their growth in the guano has ceased. Many of these microorganisms are known to cause respiratory infections in workers exposed during construction or maintenance disturbance.

¹ Health Canada – "It's Your Health – Hantaviruses" – August 2009.

Toxic and Flammable Chemical

Toxic and Flammable chemicals are regulated in Ontario under OSHA. If a worker is or may be exposed to a chemical agent, or biological agent designated as a toxic substance, the employer must ensure that the identity of the chemical agent or toxic agent, its possible effects on worker health and safety and any precautions required to protect the health and safety of the worker are clearly indicated by labels, SDSs, or other similar means and the information required is clearly communicated to the worker. Written procedures must be prepared and implemented to eliminate or minimize a risk of exposure to a chemical agent or toxic agent by any route that could cause an adverse health effect, and to address emergency and cleanup procedures in the event of a spill or release of a chemical agent or toxic agent.

Radioactive Materials

Radioactive Materials are regulated in Ontario under Radiation Protection Regulations SOR/2003-203 and Nuclear Substances and Radiation Devices Regulations, SOR/2000-207, s. 6, as amended up to March 13, 2015, under Nuclear Safety and Control Act. An exposure control plan is required if a worker's radiation exposure exceeds or may exceed the applicable action level.

Appendix F

Survey Methodology

Sampling activities were conducted in accordance with Arcadis' Standard Operation Procedures which take into account current federal and provincial regulations pertaining to such work (i.e., sampling procedures, required number of samples and laboratory analytical procedures).

Representative bulk samples were collected of accessible suspect paint, and asbestos-containing materials in sufficient quantities for laboratory analysis. Samples were sealed in polyethylene zip-lock bags labeled with the sample number, suspect material description, and sample location. As part of sampling procedures, sampling tools were cleaned between sample collection events to avoid the potential for cross-contamination of samples.

All sample bags were compiled in order and placed into a single container accompanied with a chain of custody form outlining the project information, date, building location, number of samples, and sample description. Samples were submitted to the analytical laboratory in a sealed container via courier.

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 the mid to-late 1970s contain some form of friable construction material with an asbestos content. Asbestos vermiculite has been reported to be used up until about 1990. The use of asbestos in certain non-friable materials continued beyond the mid-1970s and are commonly found in buildings constructed up to and including the mid-1980s, with some materials still in production through 2018. Manufacturing, importation, and use of asbestos was banned in Canada in 2018.

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

Bulk sampling protocols followed the ASTM E2356 Standard, which indicates requirements for the number of samples to collect for each homogeneous material. The table below provides an outline of the minimum number of samples to be collected from the ASTM E2356 Standard.

Table F-1: Bulk Material Sample Quantities

Type of Material	Size of Area of Homogeneous Material	Minimum Number of Samples Collected
Any homogeneous material, including but not limited to fireproofing, drywall joint compound, ceiling tile stucco, acoustical and stipple finishes, and visually similar floor tiles	Less than 90 m ² (<1,000 ft ²)	3
	90 m ² or more, but less than 450 m ² (1,000-5,000 ft ²)	5
	450 m ² or more (>5,000 ft ²)	7

In some cases, manufactured products such as asbestos cement pipe were visually identified without sample confirmation.

Flooring mastic/adhesive were only sampled and analyzed if present on the underside of flooring samples (vinyl floor tile and vinyl sheet flooring) in sufficient quantity for laboratory analysis.

Attempts to distinguish and delineate asbestos-containing drywall compound from new non-asbestos drywall compound is often unachievable. Arcadis collected drywall joint compound samples from exterior walls, columns or other locations which are unlikely to have been renovated in an attempt to determine the presence of asbestos in the original drywall compound.

Arcadis samples roofing felts only at the Clients request. A temporary repair will be made with asphalt-based mastic and fibreglass mesh. A more permanent repair is required if the roofing or the building is to remain in use for any extended period of time. Arcadis will not be responsible or liable for leaks or water damage caused by sampling and or repair.

Arcadis conducts limited demolition of masonry block walls (core holes) to investigate for loose fill insulation. The core holes are temporarily patched with expanding foam.

Arcadis will submit the bulk samples to a NVLAP accredited laboratory for analysis. The analysis is performed in accordance with Test Method EPA/600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials, July 1993.

EPA Method 600 states that materials characterized by interfering binder/matrix or low asbestos content may require additional gravimetric reduction sample treatment beyond routine polarized light microscopy (PLM) analysis (e.g., dissolution with hydrochloric acid, treatment with organic solvents or ashing in a muffle furnace or low temperature plasma asher to remove unwanted components). Arcadis will submit one sample of each sample set (3) of vinyl floor tiles to be analyzed by transmission electron microscopy (TEM) if the first two samples are reported negative by PLM.

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

Bulk samples of materials which could contain asbestos were collected and submitted to EMSL Canada Inc. (EMSL) for analysis of asbestos content. Asbestos-containing materials are defined as 0.5% or greater, or any amount if vermiculite.

Classification, Condition and Accessibility

Spray Applied Fireproofing, Insulation and Texture Finishes

To evaluate the condition of ACM spray applied as fireproofing, thermal insulation, or texture, decorative or acoustic finishes, the following criteria are applied:

GOOD

Surface of material shows no significant signs of damage, deterioration, or delamination. Up to 1 percent visible damage to surface is allowed within range of **GOOD**. Evaluation of sprayed fireproofing requires the surveyor to be familiar with the irregular surface texture typical of sprayed asbestos products. **GOOD** condition includes un-encapsulated or unpainted fireproofing or texture finishes, where no delamination or damage is observed, and encapsulated fireproofing or texture finishes where the encapsulation has been applied after the damage or fallout occurred.

POOR

Sprayed materials show signs of damage, delamination, or deterioration. More than 1 percent damage to surface of ACM spray.

In observation areas where damage exists in isolated locations, both **GOOD** and **POOR** condition may be reported. The extent or percentage of each condition will be recorded on the survey or re-assessment form.

NOTE: FAIR condition is not utilized in the evaluation of the sprayed fireproofing, sprayed insulation, or texture coat finishes.

The evaluation of ACM spray applied as fireproofing, non-mechanical thermal insulation, or texture, decorative or acoustic finishes which are present above ceilings, may be limited by the number of observations made, and by building components such as ducts or full height walls that obstruct the above ceiling observations. Persons entering the ceiling are advised to be watchful for ACM **DEBRIS** prior to accessing or working above ceilings in areas of buildings with ACM regardless of the reported condition.

Mechanical Insulation

The evaluation of the condition of mechanical insulation (on boilers, breaching, ductwork, piping, tanks, equipment etc.) utilizes the following criteria:

GOOD

Insulation is completely covered in jacketing and exhibits no evidence of damage or deterioration. No insulation is exposed. Includes conditions where the jacketing has minor surface damage (i.e., scuffs or stains), but the jacketing is not penetrated.

FAIR

Minor penetrating damage to jacketed insulation (cuts, tears, nicks, deterioration, or delamination) or undamaged insulation that has never been jacketed. Insulation is exposed but not showing surface disintegration. The extent of missing insulation ranges should be minor to none.

POOR

Original insulation jacket is missing, damaged, deteriorated, or delaminated. Insulation is exposed and significant areas have been dislodged. Damage cannot be readily repaired.

The evaluation of mechanical insulation may be limited by the number of observations made and building components such as ducts or full height walls that obstruct observations. It is not possible to observe the full length of mechanical insulation from all angles.

Non-friable and Potentially Friable Materials

Non-friable materials generally have little potential to release airborne fibres, even when damaged by mechanical breakage. However, some non-friable materials, i.e., exterior asbestos cement products, may have deteriorated so that the binder no longer effectively contains the asbestos fibres. In such cases of significantly deteriorated non-friable material, the material should be treated as a friable product.

ACM DEBRIS

DEBRIS from Friable ACM

The presence of fallen ACM is noted separately from the presumed friable ACM source (sprayed fireproofing, thermal insulation, texture, decorative or acoustic finishes or mechanical insulation) and is referred to as **DEBRIS**.

DEBRIS from Damaged Non-Friable ACM

The presence of fallen ACM from damaged non-friable ACM is also reported separately from the non-friable ACM source. Only fallen non-friable ACM that has become friable is reported as **DEBRIS**.

The identification of the exact location or presence of **DEBRIS** on the top of ceiling tiles is limited by the number of observations made and the presence of building components such as ducts or full height walls that obstruct observations. Workers are advised to be watchful for the presence of **DEBRIS** prior to accessing or working in proximity to mechanical insulation or above ceilings in areas of buildings with ACM regardless of the reported presence or absence of **DEBRIS**.

Paint

Arcadis collects samples of distinctive paint finishes and surface coatings present in more than a limited application, where removal of the paint is possible. Arcadis collects samples by scraping the painted finish to include base and covering applications. Paint and surface coatings are evaluated for condition. All paints will be analyzed for arsenic, lead, and mercury. At least one sample per building will be analyzed for PCBs where the age of construction is pre-1985.

When evaluating the condition of paints, an attempt is made to determine whether the deterioration is due to a moisture problem or some other existing building deficiency. **“Poor”** surfaces are considered to be a hazard and should be corrected. **“Fair”** surfaces should be repaired but are not yet considered to be a hazard; if not repaired, they should be monitored frequently. **“Good/intact”** surfaces should be monitored to ensure that they remain in a nonhazardous condition.

In addition, the presence of paint debris is considered in evaluating conditions. Given the variety of paint uses, there are many applications that can have a tendency for the paint to “wear” from the surface slowly, over an extended period of time. Conditions where paint has worn from a surface are worth noting for maintenance discussions (i.e., related to re-coating the surface should, for example, the coating provide weather protection), however, in the absence of loose paint chip debris/dust, such conditions would not represent a potential exposure situation related to lead.

The condition evaluation criteria for paints is summarized in the table below.

Table F-2: Paint Condition Categories

Type of Building Component ¹	Total Area of Deteriorated Paint on Each Component		
	Good/Intact	Fair ²	Poor ³
Exterior components with large surface areas.	Entire surface is intact.	Less than or equal to 10 square feet	More than 10 square feet
Interior components with large surface areas (walls, ceilings, floors, doors.	Entire surface is intact.	Less than or equal to 2 square feet	More than 2 square feet
Interior and exterior components with small surface areas (windowsills,	Entire surface is intact.	Less than or equal to 10% of the total surface area of the	More than 10% of the total surface area of the component
NOTES: 1 Building component in this table refers to each individual component or side of building, not the combined surface area of all similar components in a room (e.g., a wall with 1 square foot of deteriorated paint is in "fair" condition, even if the other three walls in a room are intact). 2 Surfaces in "fair" condition should be repaired and/or monitored but are not considered to be "lead-containing paint hazards". 3 Surfaces in "poor" condition are considered to be "lead-containing paint hazards" and should be addressed through abatement or interim controls.			

Analysis for lead in paints or surface coatings is performed in accordance with US EPA SW-846 Method No. 3050B/Method No. 7000B; Flame Atomic Absorption (FAA) at an accredited laboratory by the American Industrial Hygiene Association (AIHA). For the purpose of this report a criteria of **Choose an item.** will be used to define lead-based paint.

Analysis for mercury in paint is performed in accordance with EPA Cold Vapor Atomic Absorption (CVAA) via 7471B. For the purpose of this project, a criteria of 10 ppm is used as stipulated in the Surface Coating Materials Regs (SOR/2016-93).

Analysis for arsenic in paint is performed in accordance with Individual Elements by EPA Inductively Coupled Plasma (ICP) via 6010D. There is no current regulated criteria; therefore, the laboratory detection limit of 10 ppm is used for this project.

Analysis for PCB is performed via EPA SW 846 3540C/8082A. For the purpose of this project a criteria of 50ppm or greater is used based on the threshold given in Canadian Environmental Protection Act (1999) SOR/2008-273.

Lead Products

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 building products were identified by visual observation only.

Leachate Testing

Representative samples are collected of each material (eg. wood, gypsum, concrete) coated with metal-containing paint. Samples are submitted for analysis to EMSL Canada Inc. OR Bureau Veritas labs, Burnaby, BC, NVLAP accredited Laboratory in accordance with the Toxicity Characteristic Leaching Procedure (TCLP) outlined in US EPA SW-846 Method 1311 and Method 6010D.

Results are compared to Ontario Ministry of Environment, Conservation and Parks Leachable toxic waste means waste when subject to the TCLP leaks or spills which may lead to the escape of hazardous waste from the facility or may pose a threat to human health.

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.

Arcadis identified building materials suspected of containing crystalline silica (e.g., concrete, cement, tile, brick, masonry, mortar) by knowledge of current and historic applications and visual inspection only. Arcadis did not perform sampling of these materials for laboratory analysis of crystalline silica content.

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 feet) 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.

Building materials/products/equipment suspected to contain mercury were identified by visual inspection only. Dismantling of equipment suspected of containing mercury was not performed. Mercury spills or damaged mercury-containing equipment were recorded where observed.

Polychlorinated Biphenyls (PCBs)

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 specialty 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.

Arcadis determined the potential for light ballast and wet transformers to contain PCBs based on the age of the building, a review of maintenance records and examination of labels or nameplates on equipment, where present and accessible. The information was compared to known ban dates of PCBs and Environment Canada publications. Dry type transformers were presumed to be free of dielectric fluids and hence non-PCB. Arcadis recorded spills or leakage of suspect PCB-containing fluids where observed or identified in historical documents. Fluids (mineral oil, hydraulic or Askaral) in transformers, capacitors or other equipment are not sampled for PCB content. Capacitors which were installed in 1980 or earlier are assumed to contain PCBs.

Window, door, penetration, and expansion caulking were sampled for PCB content in buildings older than 1985. The material was considered a PCB solid if PCB content is 50ppm or greater based on the threshold given in PCB Regulations, SOR/2008-273.

Halocarbon-Containing Equipment (HCE)

Arcadis determines the potential presence of halocarbons (chlorofluorocarbons, hydrochlorofluorocarbons, hydrofluorocarbons, halons, etc.) in air conditioning units, chillers, commercial coolers, and fire suppression systems by visual inspection of manufactures' labels or plates, maintenance records, or logbooks, etc.

Suspect Visible 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.

Arcadis identified the presence of any suspect visible mould or water damage observed during the course of our site investigation. Suspect visible mould is typically a coloured, textured substance or discolouration or staining on a building material surface which, based on our experience, may be mould growth. The adjective suspect is used where the presence of mould has not been confirmed by laboratory analysis.

Other Biological Hazards (Rodent Droppings)

Arcadis identifies other biological hazards by visual observation only. Areas where rodent or bird droppings are noticed will be noted and photographed. Arcadis does not perform sampling of these materials for laboratory analysis, unless specifically requested by the Client.

Toxic or Flammable Chemicals

Arcadis identifies toxic or flammable chemical by visual observation only. Areas used to store toxic and flammable chemicals will be noted and photographed.

Radioactive Materials

Arcadis identifies radioactive materials, such as smoke detectors, by visual observation only. Suspect areas where radioactive materials are present will be noted and photographed. Testing for radiation is not conducted.

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HDSB PAUL A. FISHER PS RENO DOOR SCHEDULE

DOOR #	ROOM	DOOR								FRAME					WRAP AROUND BLOCK	REMARKS
		WIDTH	HEIGHT	FIRE	H.T.	TYPE	MAT'L	FIN	GLASS	TYPE	MAT'L	FIN	DC	GLASS		
100 A	VESTIBULE	1000	2100	-	HT	C	HM	P	TP	7	HM	P	Y	-		NEW THREE-DOOR INSULATED EXTERIOR DOORS COMPLETE WITH WEATHERSTRIPPING. HM ASSEMBLY TO SUIT EXISTING MASONRY OPENING. REFER TO PLANS AND AD801 FOR DOOR LAYOUT. EXISTING B/F DOOR OPERATOR, EX. CARD READER, PIN PAD, AI PHONE AND CAMERA TO BE RELOCATED AT SINGLE DOOR. KEYED REMOVABLE MULLION AT DOUBLE DOOR.
100 B	VESTIBULE	2x1000	2100	-	HT	C	HM	P	TP	7	HM	P	Y	-		
100 C	VESTIBULE	1000	2150	-	HT	C	HM	P	TP	7	HM	P	-	-		NEW THREE-DOOR INTERIOR DOOR. REFER TO PLANS AND AD801 FOR DOOR LAYOUT. NEW B/F DOOR OPERATOR AT SINGLE DOOR. KEYED REMOVABLE MULLION AT DOUBLE DOOR.
100 D	VESTIBULE	2x1000	2150	-	HT	C	HM	P	TP	7	HM	P	-	-		
102 A	CUSTODIAL	EX	EX	-	EX	EX	EX	P	EX	EX	EX	P	-	EX		EXISTING INTERIOR DOOR AND FRAME TO REMAIN. NEW PAINT FINISH.
103 A	UTILITY	900	2100	-	-	A	HM	P	-	1	HM	P	Y	-		NEW INSULATED EXTERIOR DOOR COMPLETE WITH WEATHERSTRIPPING.
103 B	UTILITY	EX	EX	EX 45MIN	EX	EX	EX	EX	EX	EX	EX	EX				EXISTING FRR INTERIOR DOOR TO REMAIN
105A A	UTR	1000	2100	-	-	A	HM	P	-	1	HM	P	-	-	Y	NEW DOOR & FRAME, NEW B/F DOOR OPERATOR + EMERG. CALL BUTTON . NEW FRAME TO WRAP-AROUND EXISTING BLOCK WALL. CONFIRM THICKNESS OF WALL PRIOR TO FABRICATION.
105B A	MECHANICAL STORAGE	1100	2100	45MIN	-	A	HM	P	-	1	HM	P	-	-	Y	NEW FRR DOOR & FRAME. NEW FRAME TO WRAP-AROUND EXISTING BLOCK WALL. CONFIRM THICKNESS OF WALL PRIOR TO FABRICATION.
105B B	MECHANICAL STORAGE	1100	2100	-	-	A	HM	P	-	1	HM	P	Y	-		NEW INSULATED EXTERIOR DOOR & FRAME COMPLETE WITH WEATHERSTRIPPING

HDSB PAUL A. FISHER PS RENO DOOR SCHEDULE

DOOR #	ROOM	DOOR								FRAME					WRAP AROUND BLOCK	REMARKS
		WIDTH	HEIGHT	FIRE	H.T.	TYPE	MAT'L	FIN	GLASS	TYPE	MAT'L	FIN	DC	GLASS		
106 A	GYMNASIUM	2x1000	2100	20MIN	HT	B	HM	P	FRG	3	HM	P	-	-		NEW FRR INTERIOR DOUBLE DOOR & FRAME. KEYED REMOVABLE MULLION. NEW B/F DOOR OPERATOR.
106 B	GYMNASIUM	900	2100	-	-	A	HM	P	-	1	HM	P	Y	-		NEW EXTERIOR INSULATED DOOR & FRAME AT EXISTING DOOR OPENING COMPLETE WITH WEATHERSTRIPPING. CONFIRM ROUGH OPENING ON SITE.
106 C	GYMNASIUM	900	2100	-	-	A	HM	P	-	1	HM	P	Y	-		NEW EXTERIOR INSULATED DOOR & FRAME AT EXISTING DOOR OPENING COMPLETE WITH WEATHERSTRIPPING. CONFIRM ROUGH OPENING ON SITE.
107 A	MUSIC ROOM	950	2100	20MIN	-	D	HM	P	FRG	1	HM	P	-	-	Y	NEW WIDENED INTERIOR DOOR & FRAME AT EXISTING DOOR OPENING. CONFIRM ROUGH OPENING ON SITE. NEW FRAME TO WRAP-AROUND EXISTING BLOCK WALL. CONFIRM THICKNESS OF WALL PRIOR TO FABRICATION.
107 B	MUSIC ROOM	900	2100	20MIN	HT	D	HM	P	FRG	EX	EX	P	-	-		REPLACE EX. WOOD DOORS WITH NEW HM DOOR. CONFIRM DOOR SIZE PER EXISTING HM FRAMES.
108 A	GYM STORAGE	2x900	2100		HT	A	HM	P	-	EX	EX	P	-	-		REPLACE EX. WOOD DOORS WITH NEW FRR HM DOORS. CONFIRM DOOR SIZE PER EXISTING HM FRAMES.
109 A	SEMINAR ROOM	950	2100	-	-	A	WD	PLA M	-	4	HM	P	-	TP		NEW WOOD DOOR AND HM FRAME & SIDELITE.
110 A	STAFF WORKROOM	950	2100	-	-	D	WD	PLA M	TP	1	HM	P	-	-	Y	NEW WOOD DOOR & HM FRAME. NEW FRAME TO WRAP-AROUND EXISTING BLOCK WALL. CONFIRM THICKNESS OF WALL PRIOR TO FABRICATION.
112 A	CORRIDOR	2x1000	2100	-	HT	C	HM	P	TP	2	HM	P	Y	-		EXTERIOR DOUBLE DOOR & FRAME. EX. B/F DOOR OPERATOR TO BE RELOCATED / REUSED. EX. CARD READER TO BE RELOCATED / REUSED.
113A A	JK/SK CLASSROOM 1	EX	EX	-	EX	EX	EX	EX	EX	EX	EX	EX	-	-		EXISTING CORRIDOR DOOR & FRAME TO REMAIN

HDSB PAUL A. FISHER PS RENO DOOR SCHEDULE

DOOR #	ROOM	DOOR								FRAME					WRAP AROUND BLOCK	REMARKS
		WIDTH	HEIGHT	FIRE	H.T.	TYPE	MAT'L	FIN	GLASS	TYPE	MAT'L	FIN	DC	GLASS		
113A B	JK/SK CLASSROOM 1	EX	EX	-	EX	EX	EX	EX	EX	EX	EX	EX	-	-		EXISTING DOOR & FRAME BETWEEN CLASSROOMS TO REMAIN
113A C	JK/SK CLASSROOM 1	950	2100	-	-	C	HM	P	TP	4	HM	P	Y	-		NEW EXTERIOR INSULATED DOOR, FRAME & SIDELITE/WINDOW AT EXISTING DOOR OPENING. COMPLETE WITH WEATHER STRIPPING. CONFIRM ROUGH OPENING ON
113B A	JK/SK CLASSROOM 2	EX	EX	-	EX	EX	EX	EX	EX	EX	EX	EX	-	-		EXISTING CORRIDOR DOOR & FRAME TO REMAIN
113C A	VESTIBULE	950	2100	-	-	C	HM	P	TP	1	HM	P	Y	-		NEW EXTERIOR INSULATED DOOR & FRAME IN SERIES WITH NEW EXTERIOR WINDOWS. COMPLETE WITH WEATHER STRIPPING. CONFIRM ROUGH OPENING ON SITE.
114 A	ELECTRICAL ROOM	EX	EX	EX 45MIN	EX	EX	EX	EX	EX	EX	EX	EX	-	-		EXISTING DOOR & FRAME WITH NEW DOOR HARDWARE
115 A	CALMING ROOM	950	2100	-	-	D	HM	P	TP	1	HM	P	-	-		NEW DOOR & FRAME, HARDWARE FOR DE-ESCALATION ROOM. CONTINUOUS HINGE AND REGULAR LEVEL DOOR HANDLE (NOT LOCKABLE)
116 A	SENSORY ROOM	950	2150	-	-	D	WD	PLA M	TP	1	HM	P	-	-		NEW DOOR & FRAME
116 B	SENSORY ROOM	950	2150	-	-	D	WD	PLA M	TP	1	HM	P	-	-		NEW DOOR & FRAME
117 A	KITCHEN	950	2150	45MIN	-	B	HM	P	FRG	6	HM	P	-	FRG		NEW FRR DOOR, FRAME & SCREEN
117 B	KITCHEN	950	2150	45MIN	-	B	HM	P	FRG	1	HM	P	-	-		NEW FRR DOOR & FRAME
118 A	LIFE SKILLS CLASSROOM	950	2100	-	-	D	WD	PLA M	-	4	HM	P	-	TP	Y	NEW DOOR & FRAME IN EXISTING OPENING. CONFIRM ROUGH OPENING ON SITE. NEW FRAME TO WRAP-AROUND EXISTING BLOCK WALL. CONFIRM THICKNESS OF WALL PRIOR TO FABRICATION.

HDSB PAUL A. FISHER PS RENO DOOR SCHEDULE

DOOR #	ROOM	DOOR								FRAME					WRAP AROUND BLOCK	REMARKS
		WIDTH	HEIGHT	FIRE	H.T.	TYPE	MAT'L	FIN	GLASS	TYPE	MAT'L	FIN	DC	GLASS		
119 A	MEETING ROOM	900	2100	-	-	A	WD	PLA M	TP	EX	EX	P	-	EX		NEW WOOD DOOR & HARDWARE IN EXISTING FRAME & SCREEN
119 B	MEETING ROOM	950	2100	-	-	D	WD	PLA M	TP	1	HM	P	-		Y	NEW DOOR & FRAME. NEW FRAME TO WRAP-AROUND EXISTING BLOCK WALL. CONFIRM THICKNESS OF WALL PRIOR TO FABRICATION.
120 A	STAFF LOUNGE	900	2100	45MIN	-	D	HM	P	FRG	1	HM	P	-	-		NEW FRR DOOR & FRAME
120A A	VESTIBULE	950	2100			D	HM	P	TP	1	HM	P				NEW DOOR & FRAME.
120 B	STAFF LOUNGE	950	2100	45MIN	-	D	HM	P	FRG	1	HM	P	-	-		NEW FRR DOOR & FRAME
121 A	MEETING ROOM	900	2100	-	-	D	WD	PLA M	TP	EX	EX	P	-	EX		NEW WOOD DOOR & HARDWARE IN EXISTING FRAME & SCREEN
121 B	MEETING ROOM	950	2150	45MIN	-	D	HM	P	FRG	1	HM	P	-	-		NEW FRR DOOR & FRAME.
122 A	STAFF WR	950	2100	-	-	A	HM	P		1	HM	P	-	-	Y	NEW DOOR & FRAME. NEW FRAME TO WRAP-AROUND EXISTING BLOCK WALL. CONFIRM THICKNESS OF WALL PRIOR TO FABRICATION.
123 A	STAFF WR	950	2100	-	-	A	HM	P		1	HM	P	-	-	Y	NEW DOOR & FRAME. NEW FRAME TO WRAP-AROUND EXISTING BLOCK WALL. CONFIRM THICKNESS OF WALL PRIOR TO FABRICATION.
127 A	GENERAL OFFICE	950	2100	-	-	C	HM	P	TP	4	HM	P	-	TP	Y	NEW DOOR, FRAME & SIDELITE, NEW B/F DOOR OPERATOR . NEW FRAME TO WRAP-AROUND EXISTING BLOCK WALL. CONFIRM THICKNESS OF WALL PRIOR TO FABRICATION.
127 B	GENERAL OFFICE	900	2100	-	-	D	WD	PLA M	-	EX	EX	P	-	-		NEW WOOD DOOR & HARDWARE IN EXISTING FRAME.

HDSB PAUL A. FISHER PS RENO DOOR SCHEDULE

DOOR #	ROOM	DOOR								FRAME					WRAP AROUND BLOCK	REMARKS
		WIDTH	HEIGHT	FIRE	H.T.	TYPE	MAT'L	FIN	GLASS	TYPE	MAT'L	FIN	DC	GLASS		
127A A	MEETING ROOM	950	2150	-	-	D	WD	PLA M	TP	1	HM	P	-	TP		NEW WOOD DOOR, FRAME
127B A	OFFICE	950	2150	-	-	D	WD	PLA M	TP	1	HM	P	-	TP		NEW WOOD DOOR, FRAME
128A A	CLASSROOM 9	950	2150	0HR	-	A	WD	PLA M	TP	4	HM	P	-	TP		NEW WOOD DOOR, FRAME & SIDELITE
128B A	CLASSROOM 10	950	2150	0HR	-	A	WD	PLA M	TP	4	HM	P	-	TP		NEW WOOD DOOR, FRAME & SIDELITE
128C A	CLASSROOM 11	950	2150	0HR	-	A	WD	PLA M	TP	4	HM	P	-	TP		NEW WOOD DOOR, FRAME & SIDELITE
128D A	CLASSROOM 12	EX	EX	-	-	EX	EX	EX	EX	EX	EX	P	-	-		EXISTING DOOR & FRAME TO REMAIN. REPLACE KNOB HARDWARE WITH STANDARD CLASSROOM HARDWARE.
129A A	CLASSROOM 8	950	2150	0HR	-	A	WD	PLA M	TP	4	HM	P	-	TP		NEW WOOD DOOR, FRAME & SIDELITE
129B A	CLASSROOM 7	950	2150	0HR	-	A	WD	PLA M	TP	4	HM	P	-	TP		NEW WOOD DOOR, FRAME & SIDELITE
130 A	LIBRARY	950	2150	0HR	-	C	HM	P	TP	5	HM	P	-	TP		NEW DOOR, FRAME & SIDELITE
130 B	LIBRARY	950	2150	0HR	-	C	HM	P	TP	5	HM	P	-	TP		NEW DOOR, FRAME & SIDELITE
131A A	CLASSROOM 6	950	2150	0HR	-	A	WD	PLA M	TP	4	HM	P	-	TP		NEW WOOD DOOR, FRAME & SIDELITE

HDSB PAUL A. FISHER PS RENO DOOR SCHEDULE

DOOR #	ROOM	DOOR								FRAME					WRAP AROUND BLOCK	REMARKS
		WIDTH	HEIGHT	FIRE	H.T.	TYPE	MAT'L	FIN	GLASS	TYPE	MAT'L	FIN	DC	GLASS		
131A B	CLASSROOM 6	950	2100	-	-	C	HM	P	TP	1	HM	P	Y	-		NEW EXTERIOR INSULATED DOOR & FRAME AT OPENING. COMPLETE WITH WEATHER STRIPPING. CONFIRM ROUGH OPENING ON SITE.
131B A	CLASSROOM 5	950	2150	0HR	-	A	WD	PLA M	TP	4	HM	P	-	TP		NEW WOOD DOOR, FRAME & SIDELITE
131C A	CLASSROOM 4	950	2150	0HR	-	A	WD	PLA M	-	4	HM	P	-	TP		NEW WOOD DOOR, FRAME & SIDELITE
131D A	CLASSROOM 3	950	2150	0HR	-	A	WD	PLA M	-	4	HM	P	-	TP		NEW WOOD DOOR, FRAME & SIDELITE
131D B	CLASSROOM 3	950	2100	-	-	C	HM	P	-	1	HM	P	Y	-		NEW EXTERIOR INSULATED DOOR & FRAME AT OPENING. COMPLETE WITH WEATHER STRIPPING. CONFIRM ROUGH OPENING ON SITE.
131DA A	WASHROOM	950	2150	-	-	A	HM	P	-	1	HM	P	-	-		NEW DOOR & FRAME.
132 A	BARRIER-FREE WASHROOM	EX	EX	EX	EX	EX	EX	EX	EX	EX	EX	-	-	-		EXISTING INTERIOR DOOR & FRAME TO REMAIN.
133 A	WASHROOM	EX	EX	EX	EX	EX	EX	EX	EX	EX	EX	-	-	-		EXISTING INTERIOR DOOR & FRAME TO REMAIN.
134 A	CORRIDOR	EX 2X900	EX	EX	EX	EX	EX	P	EX	EX	EX	P	-	-		EXISTING INTERIOR DOUBLE DOOR & FRAME TO REMAIN. NEW B/F DOOR OPERATOR
134A A	VESTIBULE	2x1000	2100	-	HT	C	HM	P	TP	2	HM	P	Y	-		EXTERIOR INSULATED DOUBLE DOOR & FRAME, NEW B/F DOOR OPERATOR & WEATHER STRIPPING.

DOOR #	ROOM	DOOR								FRAME					WRAP AROUND BLOCK	REMARKS
		WIDTH	HEIGHT	FIRE	H.T.	TYPE	MAT'L	FIN	GLASS	TYPE	MAT'L	FIN	DC	GLASS		
134A B	VESTIBULE	2x1000	2100	-	HT	C	HM	P	TP	2	HM	P	-	-		INTERIOR DOUBLE DOOR & FRAME, NEW B/F DOOR OPERATOR.
135 A	CORRIDOR	EX 2X900	EX	EX	EX	EX	EX	P	EX	EX	EX	P	-	-		EXISTING INTERIOR DOUBLE DOOR & FRAME TO REMAIN, EXISTING B/F DOOR OPERATOR TO BE RELOCATED/REUSED.
135A A	VESTIBULE	2x1000	2100	-	HT	C	HM	P	TP	2	HM	P	Y	-		EXTERIOR INSULATED DOUBLE DOOR & FRAME, EXISTING B/F DOOR OPERATOR TO BE RELOCATED/REUSED. COMPLETE WITH WEATHER STRIPPING. EX. CARD READER TO BE RELOCATED/REUSED.
135A B	VESTIBULE	2x1000	2100	-	HT	C	HM	P	TP	2	HM	P	-	-		INTERIOR DOUBLE DOOR & FRAME, NEW B/F DOOR OPERATOR.

SCHEDULE NOTES:

1. DOOR SCHEDULE MUST BE COORDINATED IN CONJUNCTION WITH EXISTING SITE CONDITIONS, DEMOLITION & PROPOSED FLOOR PLANS, DOOR SCHEDULE AND HOLLOW METAL DOORS AND FRAMES AD DETAILS.

2. DIMENSIONS OF ALL NEW DOORS AT AN EXISTING OPENING MUST BE SITE VERIFIED.

3. EXISTING MASONRY CONDITIONS VARY. DOOR ROUGH OPENING CONDITIONS MUST BE VERIFIED PRIOR TO HOLLOW METAL FRAME AND DOOR FABRICATION. (OBSERVE VARIANCE OF BLOCK COURSING ON EXISTING BLOCK WALLS)

DOORS AT EXISTING MASONRY BLOCK WALL - TO MATCH EXISTING HOLLOW METAL FRAME HEIGHT AT 2150 AND DOOR HEIGHT AT 2100.

DOORS AT NEW MASONRY BLOCK AND STUD WALLS - HOLLOW METAL FRAME HEIGHT AT 2200 AND DOOR HEIGHT AT 2150.

4. COORDINATE RELOCATION AND REUSE OF EXISTING BARRIER-FREE DOOR OPERATORS WITH FLOOR PLANS AND ELECTRICAL DRAWINGS. 'BFP' DENOTES NEW BARRIER-FREE PUSH BUTTON. 'BFPx' DENOTES EXISTING BARRIER-FREE PUSH BUTTONS TO BE RELOCATED AND REUSED.

5. COORDINATE ALL NEW HARDWARE WITH HARDWARE SCHEDULE OBSERVING THE LATEST HALTON DISTRICT SCHOOL BOARD HARDWARE STANDARDS.

6. ALL EXTERIOR DOORS TO HAVE HOLLOW METAL FRAMES WITH THERMAL BREAK.

7. PROVIDE WRAP-AROUND HOLLOW METAL DOOR FRAMES AT NEW OPENINGS ON EXISTING BLOCK. INTENT IS TO CONCEAL CUT-BLOCK EDGE OF NEW OPENING. CONFIRM AND COORDINATE WALL THICKNESS PRIOR TO FABRICATION. TYPICAL.

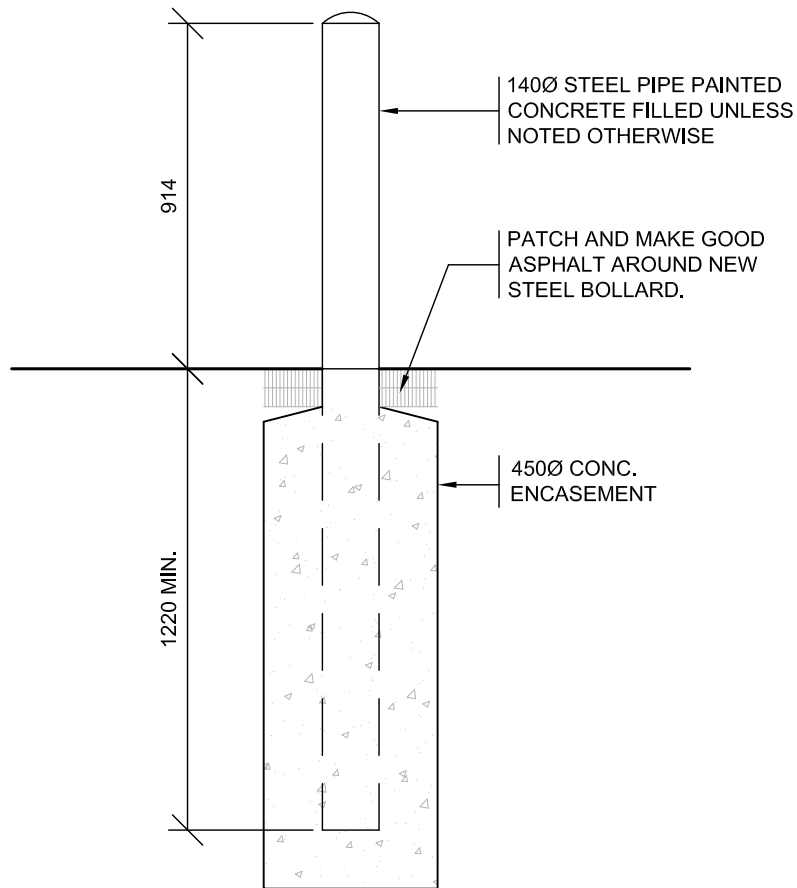
HDSB PAUL A. FISHER PS RENO DOOR SCHEDULE

DOOR #	ROOM	DOOR								FRAME					WRAP AROUND D BLOCK	REMARKS
		WIDTH	HEIGHT	FIRE	H.T.	TYPE	MAT'L	FIN	GLASS	TYPE	MAT'L	FIN	DC	GLASS		
END OF SCHEDULE																

ROOM FINISH SCHEDULE		FLOOR		WALL		CEILING			REMARKS
NO.	NAME	FIN.	BASE	MAT'L	FIN.	MAT'L	FIN.	HEIGHT(mm)	
100	VESTIBULE	POR	POR	EX.CB / CB	P	GB	P	2610	
101	FORUM	EX.TERR	EX.TERR	EX.CB/ CB	P	LAP		2610 / 2850	PATCH EX TERRAZZO FLOORING AS NEEDED
101A	GYM CORRIDOR	EX.TERR	EX.TERR	EX.CB/ CB	P	LAP		2610	PATCH EX TERRAZZO FLOORING AS NEEDED
x102	EX. CUSTODIAL	EX	EX	EX	EX	LAP		2700	
x103	EX. UTILITY	EX	EX	EX CB / CB	P	LAP		2700	PATCH PAINT WHERE DOOR FILLED IN
x104	EX. BOY'S WASHROOM	EX.TERR	EX.TERR	EX CB / CB	P	GB	P	2610	PATCH EX TERRAZZO FLOORING AS NEEDED. PATCH PAINT WHERE DOOR FILLED IN
105A	UNIVERSAL TOILET ROOM	POR / CMT	CWT	EX.CB/ CB	CWT / P	GB	P	2610	REFER TO INTERIOR ELEVATIONS FOR EXTEND OF CWT
105B	SPRINKLER / STORAGE ROOM	EX / CONC	EX	EX.CB/ CB	P	EX			PATCH CONCRETE WHERE TRENCHED
106	GYMNASIUM	EX SF-SP	EX RR	EX.CB/ CB	P	EXP.			
107	MUSIC ROOM / STAGE	LVT / RR ON STAIR	RB	EX.CB / GB	P	EXP.			PAINT NEW ALL BESIDE NEW STAIR AND LIFT
108	GYM STORAGE	LVT	RB	EX.CB/ CB	P	EXP.	P		
109	SEMINAR ROOM	LVT	RB	EX.CB/ CB	P	LAP		2610	
110	STAFF WORK ROOM	LVT	RB	EX.CB/ CB	P	LAP		2610	
x111	EX. GIRL'S WASHROOM	EX.TERR	EX.TERR	EX CB / CB	P	GB	P	2610	PATCH EX TERRAZZO FLOORING AS NEEDED
112	CORRIDOR	EX.TERR	EX.TERR	EX.CB/ CB	P	LAP		2610	PATCH EX TERRAZZO FLOORING AS NEEDED
x113A	EX. JK / SK CLASSROOM	EX	EX	EX.CB		LAP		2700	
x113B	EX. JK / SK CLASSROOM	EX	EX	EX.CB		LAP		2700	
x113C	EX. VESTIBULE	EX	EX	EX.CB		LAP		2700	
x113D	EX. COATS	EX	EX	EX.CB		LAP		2700	
x113E	EX. COATS	EX	EX	EX.CB		LAP		2700	
x114	EX. ELECTRICAL ROOM	EX	EX	EX.CB		EXP.		2700	
115	CALMING ROOM	LVT	RB	EX.CB/ CB	P	GB	P	2610	WALL, FLOOR AND DOOR PADDING. REFER TO SPECIFICATIONS.

ROOM FINISH SCHEDULE		FLOOR		WALL		CEILING			REMARKS
NO.	NAME	FIN.	BASE	MAT'L	FIN.	MAT'L	FIN.	HEIGHT(mm)	
116	SENSORY ROOM	LVT	RB	EX.CB/ CB	P	GB	P	2610	
117	KITCHEN	LVT	RB	CB	CWT / P	LAP		2610	WASHABLE LAP CEILING. REFER TO INTERIOR ELEVATIONS FOR EXTENT OF CWT
118	LIFE SKILLS CLASSROOM	LVT	RB	EX.CB/ CB	P	LAP		2610	
119	MEETING ROOM	LVT	RB	EX.CB/ CB	P	LAP		2610	
120	STAFF ROOM	LVT	RB	EX.CB/ CB	CWT / P	LAP		2610	REFER TO INTERIOR ELEVATIONS FOR EXTEND OF CWT
120A	VESTIBULE	LVT	RB	EX.CB/ CB	P	LAP		2610	
121	MEETING ROOM	LVT	RB	EX.CB/ CB	P	LAP		2610	
122	WASHROOM	POR	CWT	EX.CB / GB	CWT / P	GB	P	2610	REFER TO INTERIOR ELEVATIONS FOR EXTEND OF CWT
123	BARRIER-FREE STAFF WASHROOM	POR	CWT	EX.CB / GB	CWT / P	GB	P	2610	REFER TO INTERIOR ELEVATIONS FOR EXTEND OF CWT
~~124~~	~~HEALTH~~	~~LVT~~	~~RB~~	~~EX.CB / GB~~	~~P~~	~~LAP~~		~~2610~~	HEALTH ROOM 124 DELETED.
125	(RESERVED)								
126	(RESERVED)								
127	GENERAL OFFICE	LVT	RB	EX.CB/ CB/GB	P	LAP		2610	
127A	MEETING ROOM	CPT	RB	EX.CB/ GB	P	LAP		2610	
127B	OFFICE	CPT	RB	EX.CB/ GB	P	LAP		2610	
128A	CLASSROOM 9	LVT	RB	EX.CB/ CB/GB	P	LAP		2610 / 2200	
128B	CLASSROOM 10	LVT	RB	EX.CB/ CB/GB	P	LAP		2610 / 2200	
128C	CLASSROOM 11	LVT	RB	EX.CB/ CB/GB	P	LAP		2610 / 2200	
128D	CLASSROOM 12	LVT	RB	EX.CB / CB	P	LAP		2610 / 2200	
129A	CLASSROOM 8	LVT	RB	EX.CB/ CB/GB	P	LAP		2610	
129B	CLASSROOM 7	LVT	RB	EX.CB/ CB/GB	P	LAP		2610	
130	LIBRARY	CPT	RB	EX.CB/ CB/GB	P	LAP/GB	P AT GB	2850 / 2200	
131A	CLASSROOM 6	LVT	RB	EX.CB/ CB/GB	P	LAP		2610 / 2200	
131B	CLASSROOM 5	LVT	RB	EX.CB/ CB/GB	P	LAP		2610 / 2200	
131C	CLASSROOM 4	LVT	RB	EX.CB/ CB/GB	P	LAP		2610 / 2200	

ROOM FINISH SCHEDULE		FLOOR		WALL		CEILING			REMARKS
NO.	NAME	FIN.	BASE	MAT'L	FIN.	MAT'L	FIN.	HEIGHT(mm)	
131D	JK/SK CLASSROOM 3	LVT	RB	EX.CB/ CB/GB	P / CWT	LAP		2610 / 2200	REFER TO INTERIOR ELEVATIONS FOR EXTEND OF CWT
131DA	BARRIER-FREE WASHROOM	POR	CWT	EX.CB / GB	CWT / P	GB		2610	REFER TO INTERIOR ELEVATIONS FOR EXTEND OF CWT
x132	EX. BARRIER-FREE WASHROOM	EX	EX	EX	EX	EX			REPAIR & MAKE GOOD GB CEILING AFTER INSTALLATION OF SPRINKLERS
x133	EX. WASHROOM	EX	EX	EX	EX	EX			REPAIR & MAKE GOOD GB CEILING AFTER INSTALLATION OF SPRINKLERS
134	CORRIDOR	LVT	RB	EX.CB/ CB	P	LAP		2610	
134A	VESTIBULE	POR	POR	EX.CB/ CB	P	GB	P	2610	
135	CORRIDOR	LVT	RB	EX.CB/ CB	P	LAP		2610	
135A	VESTIBULE	POR	POR	EX.CB/ CB	P	GB	P	2610	
END OF SCHEDULE									



STEEL BOLLARD DETAIL

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SCALE: 1:20
DRAWN: KB
DATE: 25 05 20

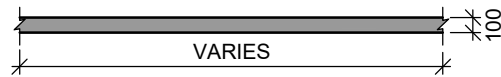
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ARCHITECTURE



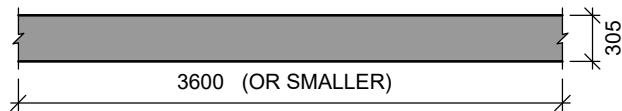
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ADD. NO. 3

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209

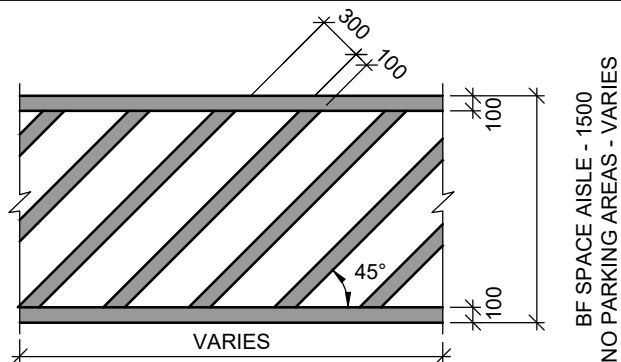
SOLID CENTER LINE
LINE TYPE 1
 PARKING SPACES



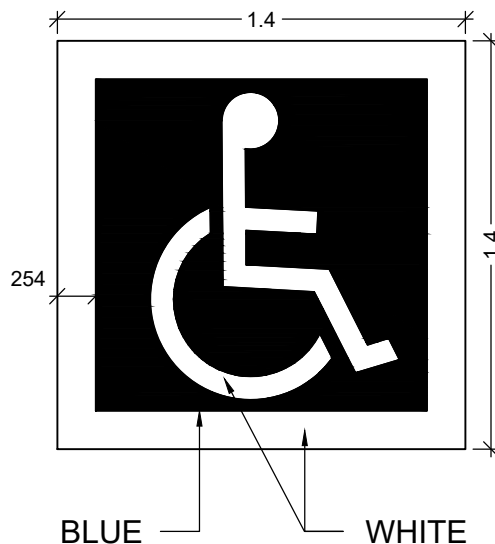
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LINE TYPE 2
 WALK WAY BORDER

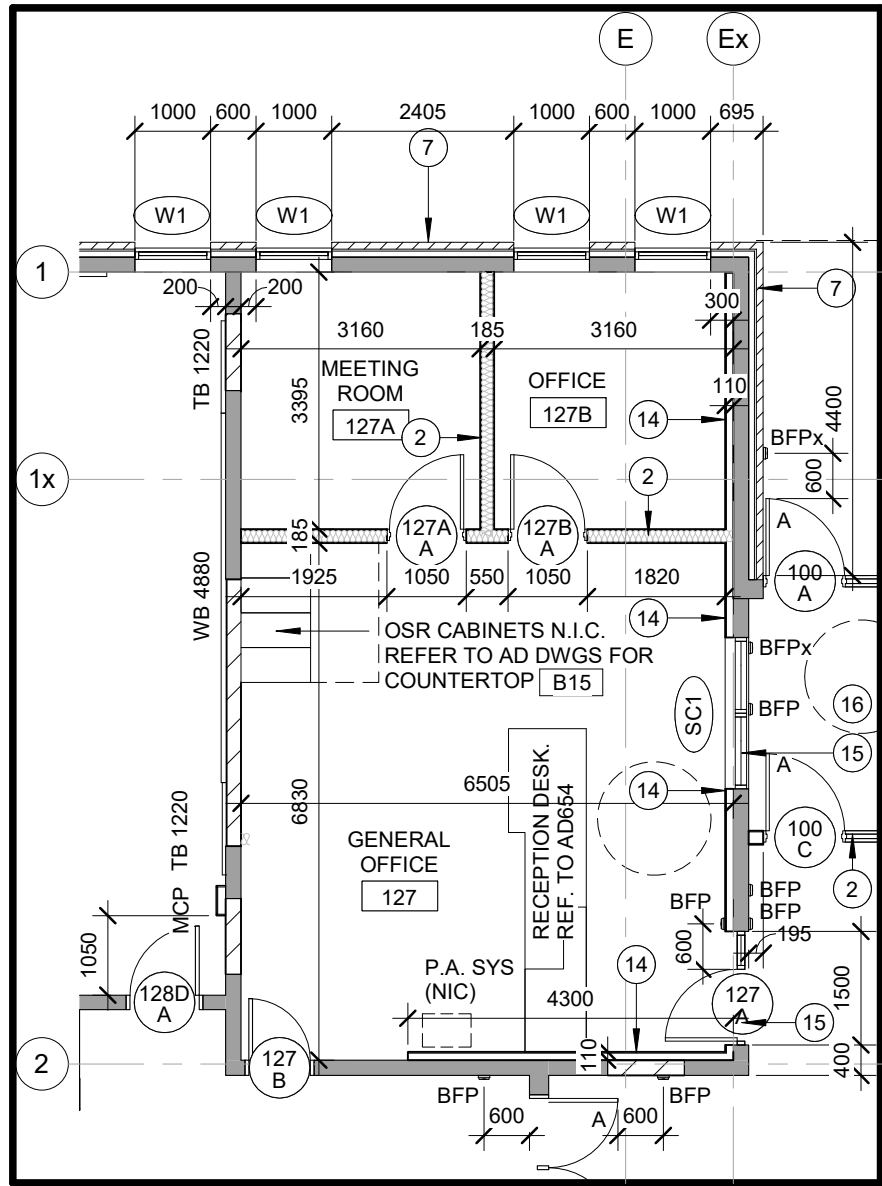


WALKWAY DESIGNATION
LINE TYPE 6
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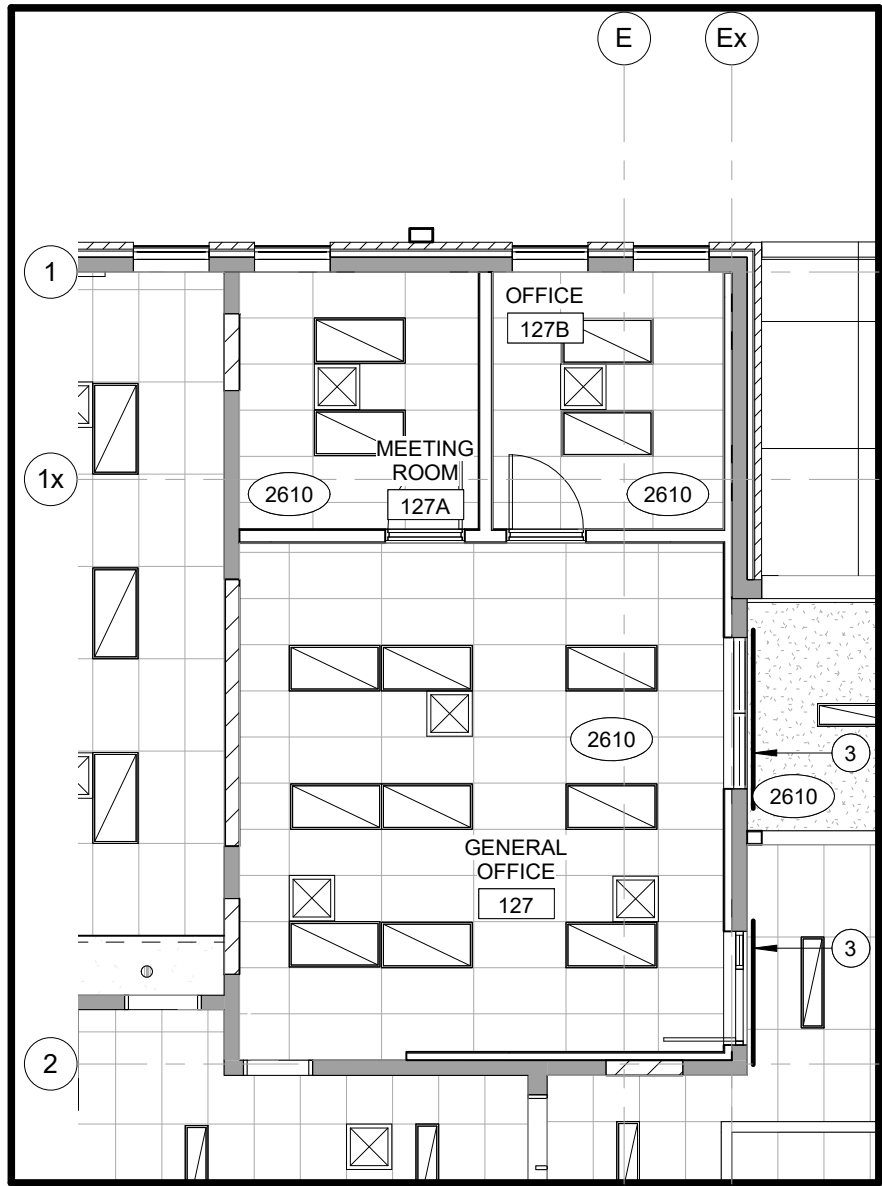


BARRIER-FREE PARKING
ICON TYPE 1





1 **PROPOSED FLOOR PLAN**
100 SCALE: 1 : 100



2 **PROPOSED REFLECTED CEILING PLAN**
100 SCALE: 1 : 100

GENERAL OFFICE 127, MEETING ROOM 127A AND OFFICE 127B - REVISION

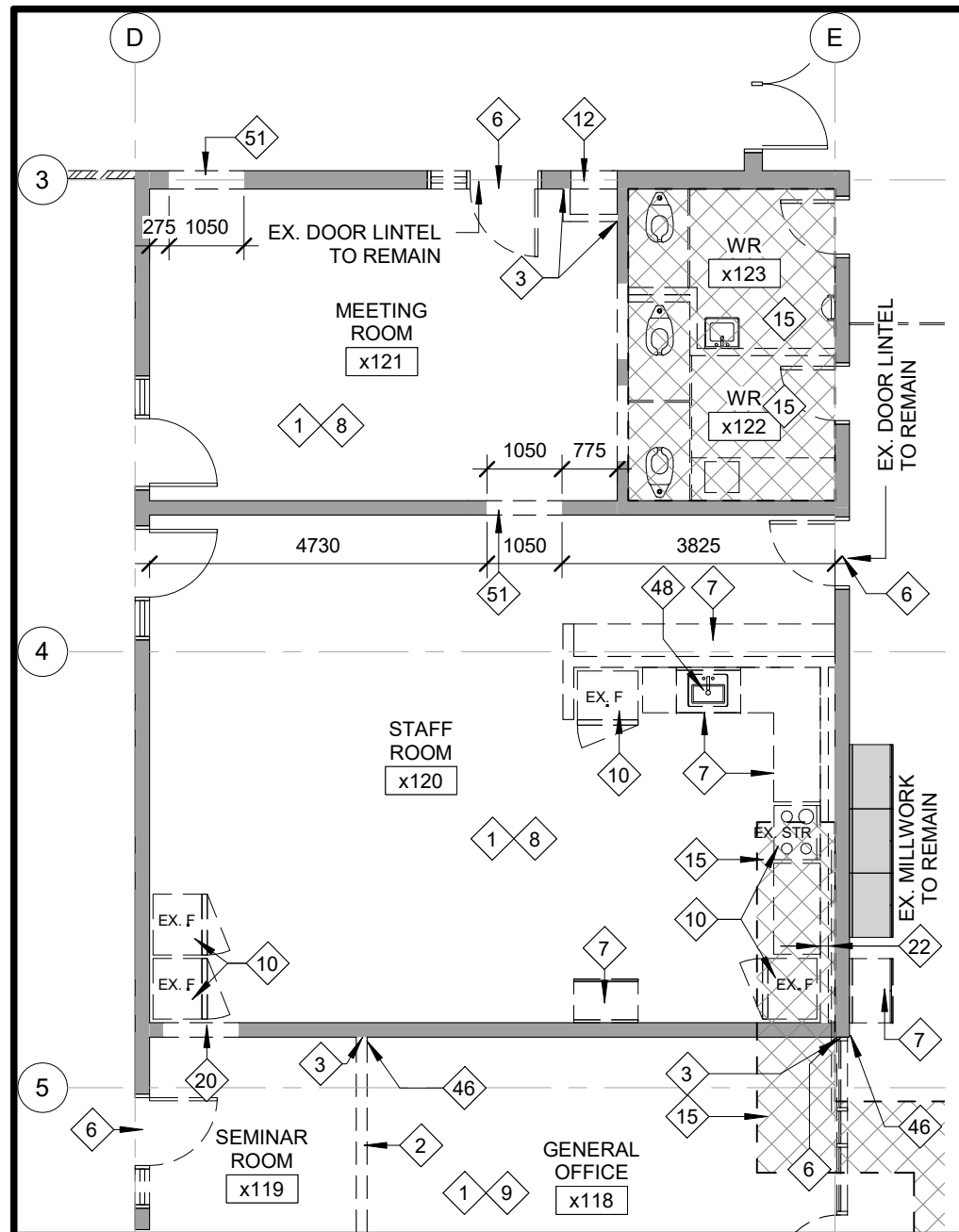
THESE LAYOUT REVISIONS ARE TO BE READ IN CONJUNCTION WITH THE ENTIRE ADDENDUM. FOR REVISED CONSTRUCTION NOTES, REFER TO ADDENDUM NO.3 AND ASSOCIATED ATTACHMENTS. COORDINATE WITH ASSOCIATED MECHANICAL AND ELECTRICAL REVISIONS.

PROJ:	24131
SCALE:	1 : 100
DRAWN:	KB
DATE:	25 06 18

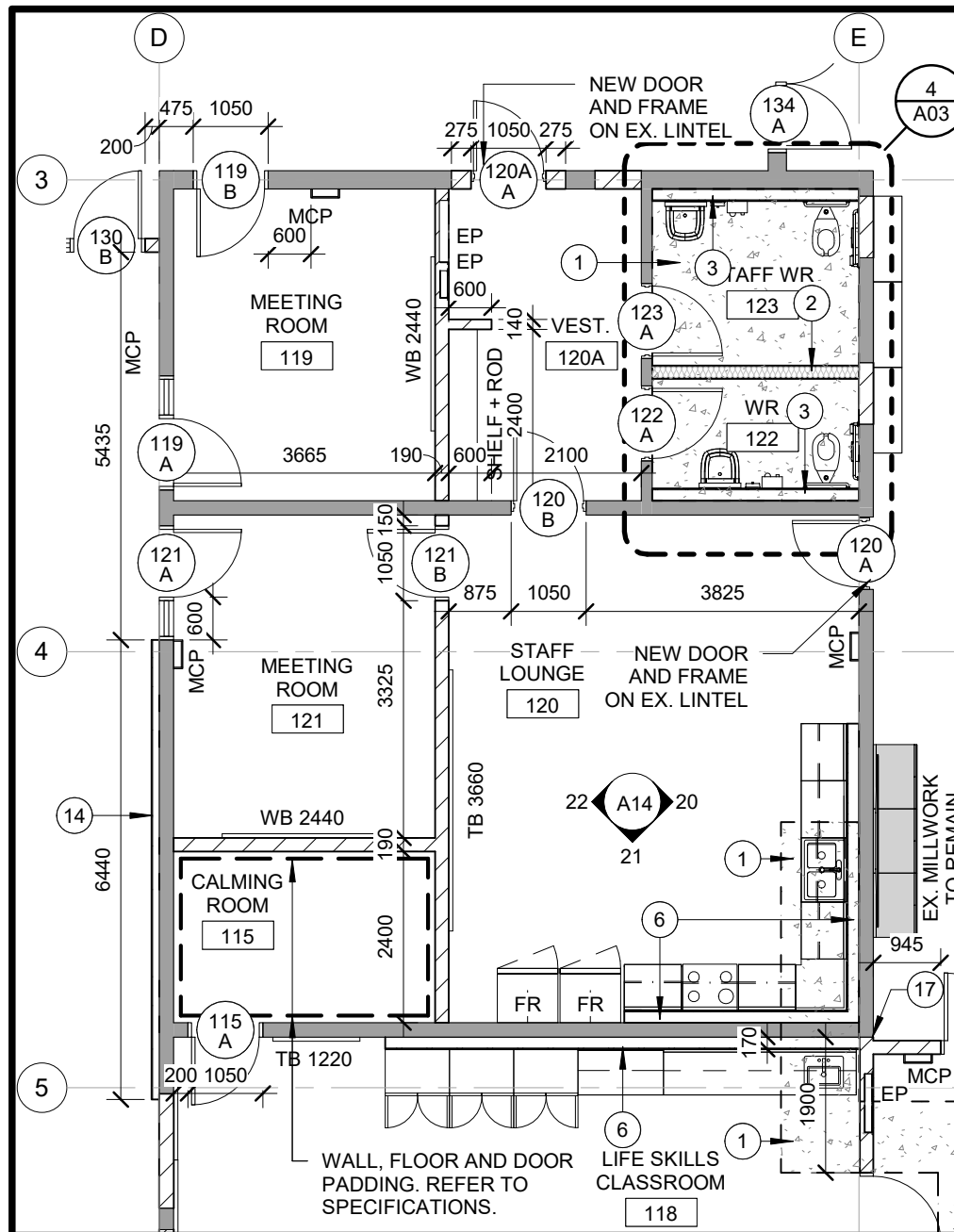


ISSUE/REV.
ADDENDUM #3

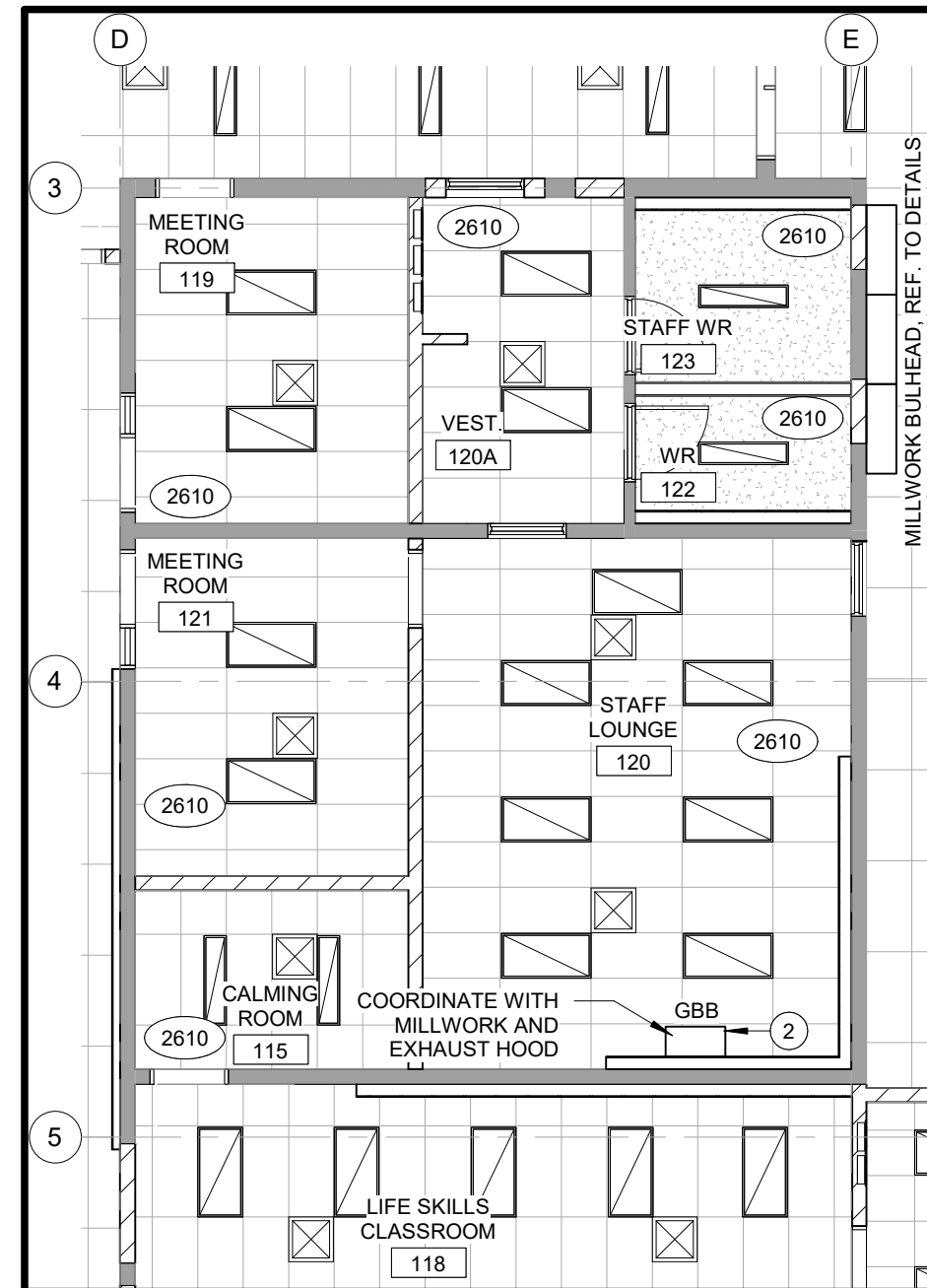
SKA
100



1
102 **DEMOLITION FLOOR PLAN**
SCALE: 1 : 100



2
102 **PROPOSED FLOOR PLAN**
SCALE: 1 : 100



3
102 **PROPOSED REFLECTED CEILING PLAN**
SCALE: 1 : 100

CALMING ROOM 115 AND STAFF LOUNGE 120 - REVISION

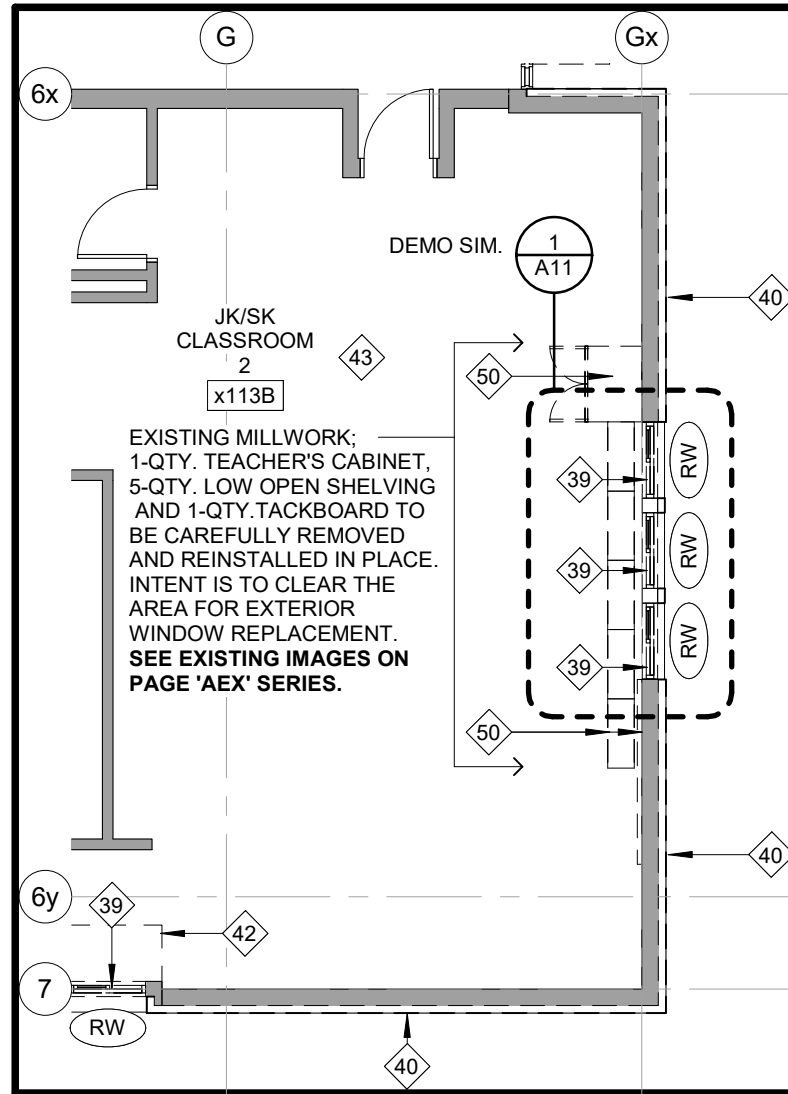
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SCALE: 1 : 100
DRAWN: KB
DATE: 25 06 18

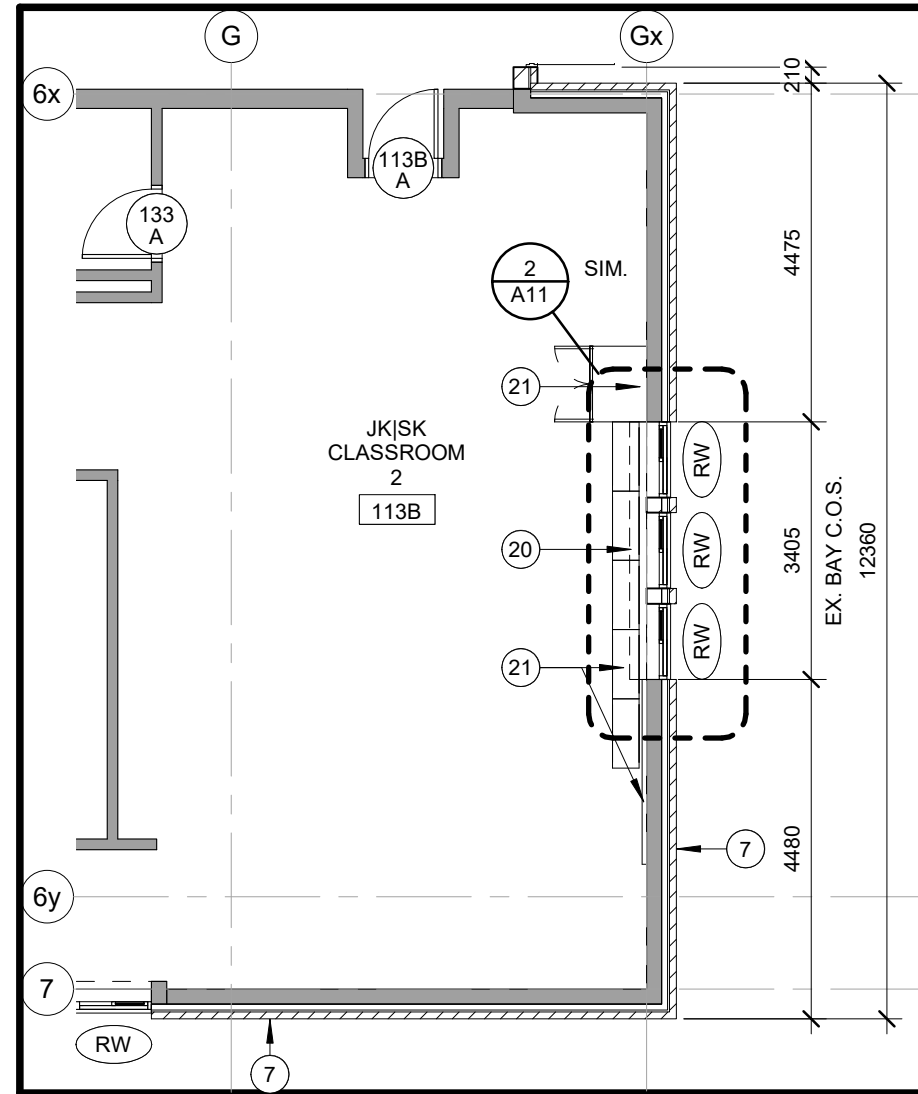


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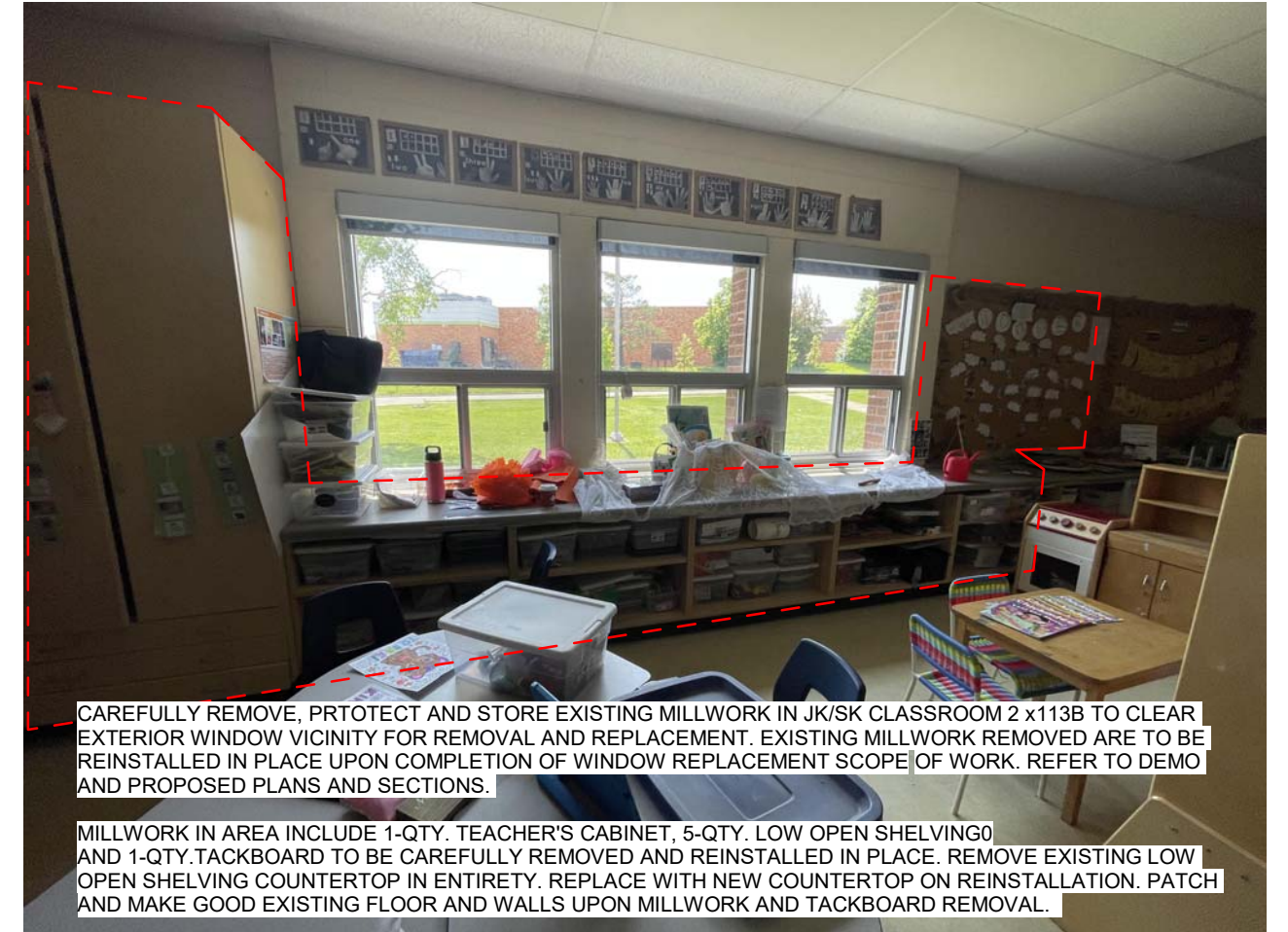
SKA
102



1
103
DEMOLITION FLOOR PLAN
SCALE: 1 : 100



2
103
PROPOSED FLOOR PLAN
SCALE: 1 : 100



3
103
JK/SK CLASSROOM 2 - EXISTING PHOTO
SCALE: 1 : 1

JK/SK CLASSROOM 2 - REVISION

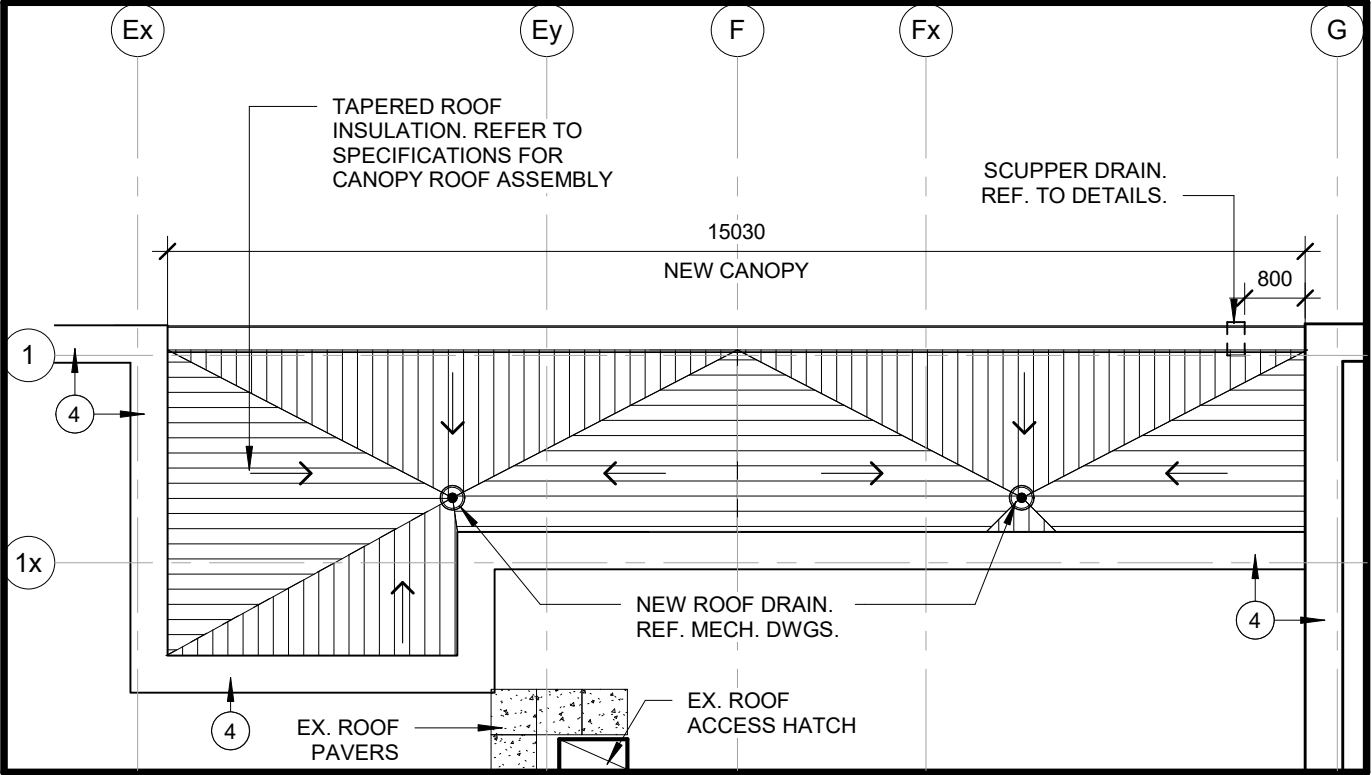
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PROJ: 24131
SCALE: As indicated
DRAWN: KB
DATE: 25 06 18

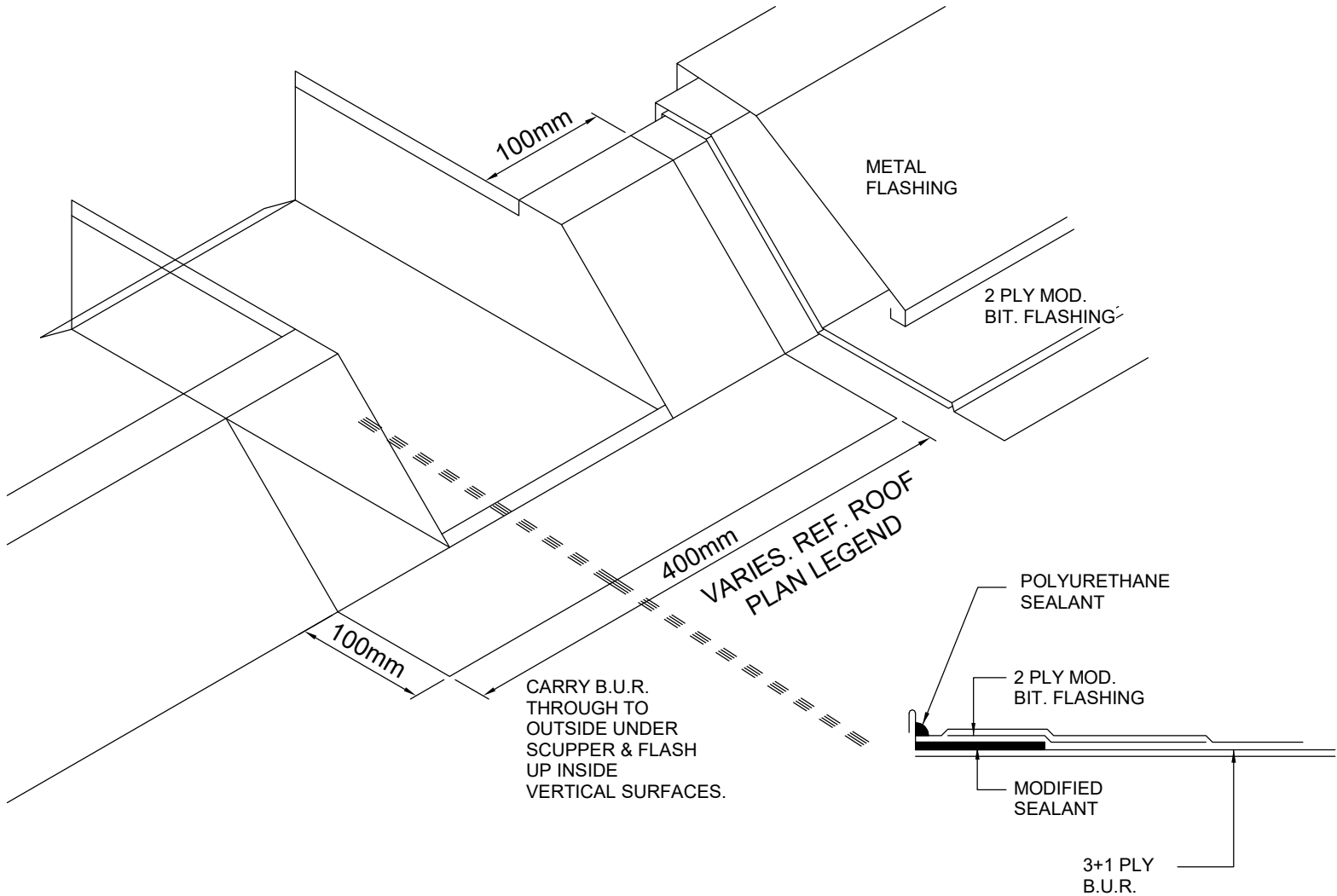


ISSUE/REV.
ADDENDUM #3

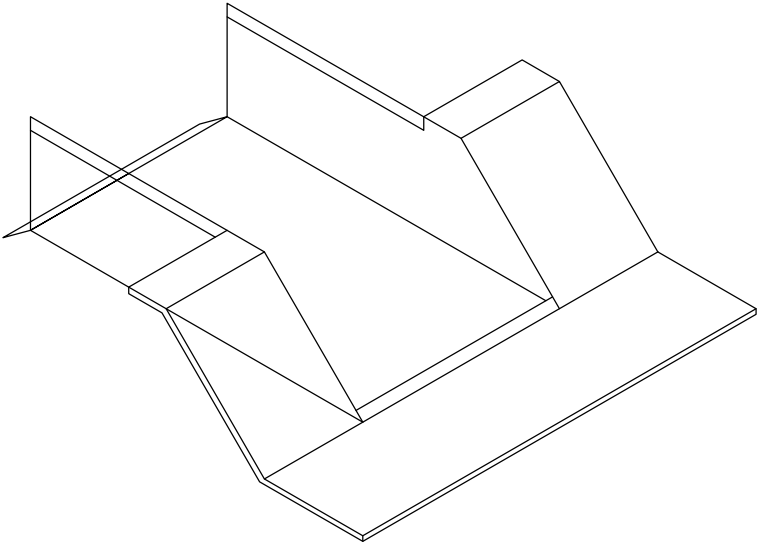
SKA
103



1 **PROPOSED ROOF PLAN - NEW CANOPY**
SCALE: 1 : 100
104



- NOTES:
1. FABRICATE SCUPPER FROM 454gm (16oz) COPPER OR 26ga. STAINLESS STEEL.
 2. ALL SEAMS TO BE CONTINUOUSLY SOLDERED OR WELDED.
 3. EXTEND SCUPPER MIN. 200mm BEYOND OUTSIDE FACE OF EAVE.



OVERFLOW SCUPPER DETAIL

PROPOSED CANOPY (ROOF DRAIN AND OVERFLOW SCUPPER DRAIN) - REVISION

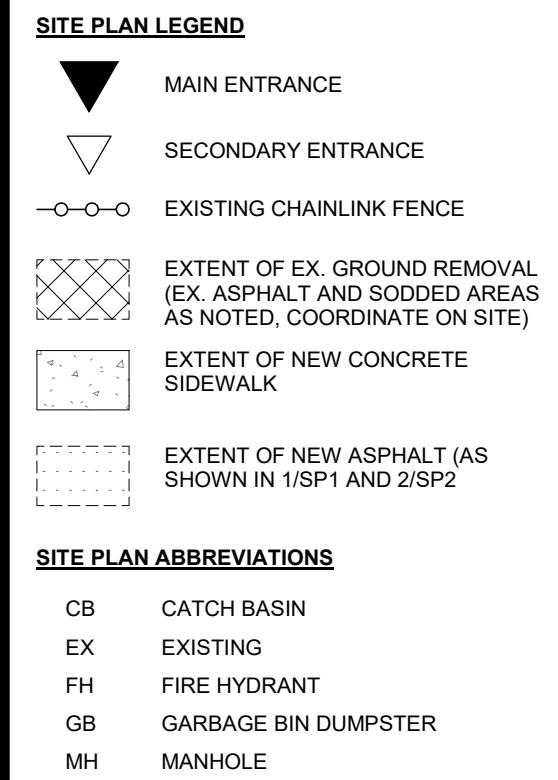
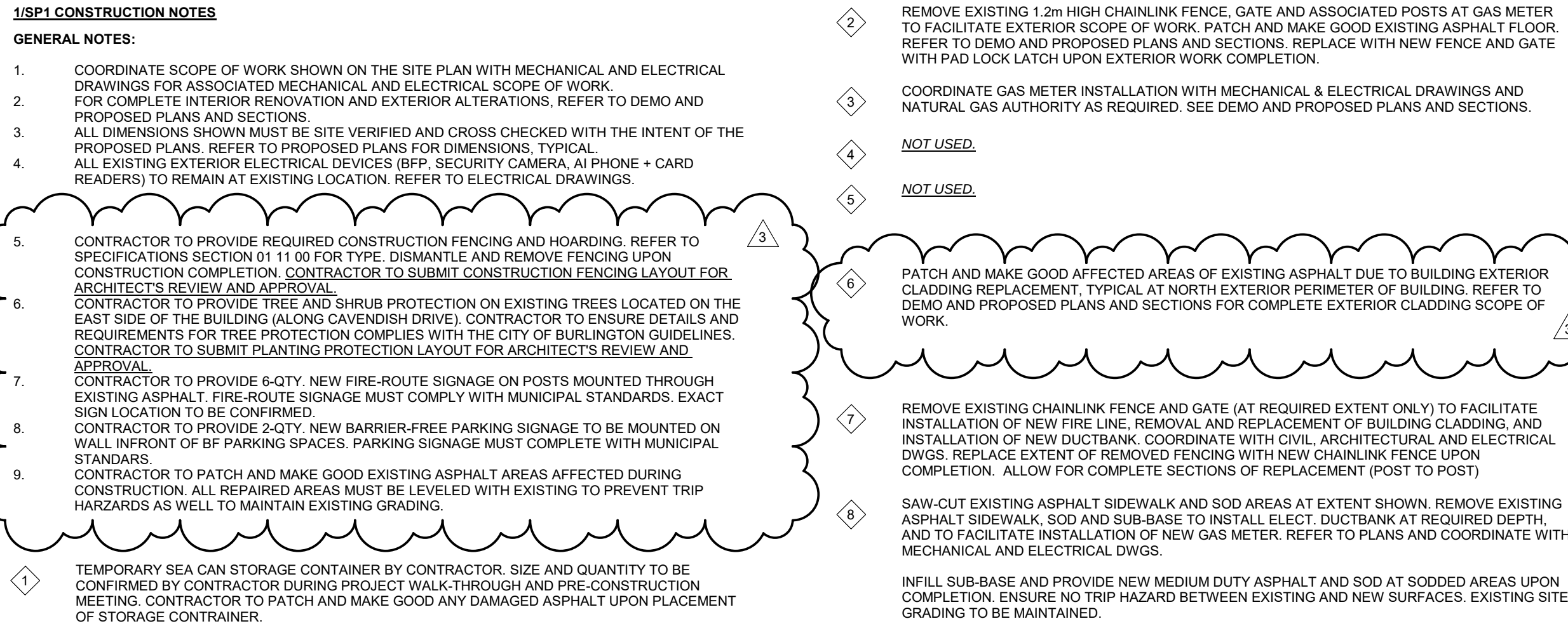
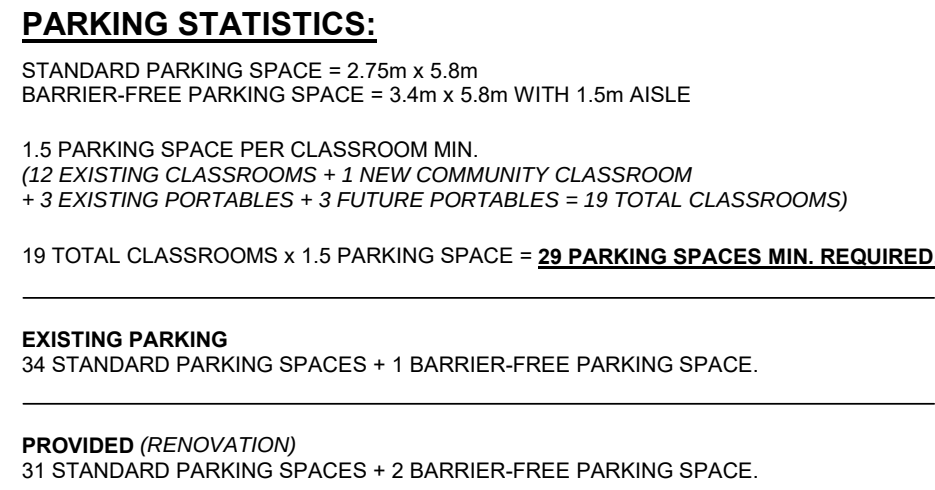
THESE LAYOUT REVISIONS ARE TO BE READ IN CONJUNCTION WITH THE ENTIRE ADDENDUM. FOR REVISED CONSTRUCTION NOTES, REFER TO ADDENDUM NO.3 AND ASSOCIATED ATTACHMENTS. COORDINATE WITH ASSOCIATED MECHANICAL AND ELECTRICAL REVISIONS.

PROJ:	24131
SCALE:	As indicated
DRAWN:	KB
DATE:	25 06 18



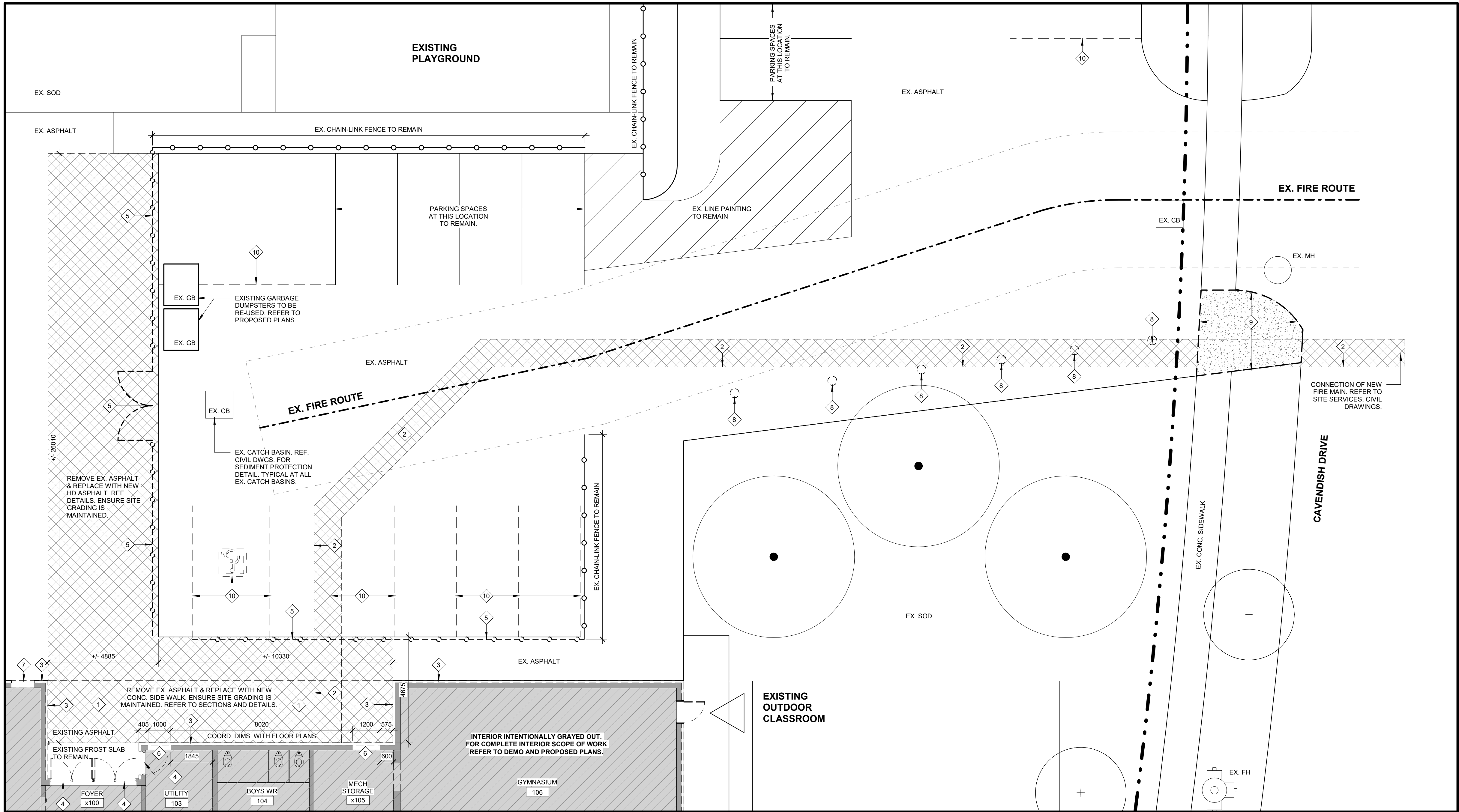
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ADDENDUM #3

SKA
104



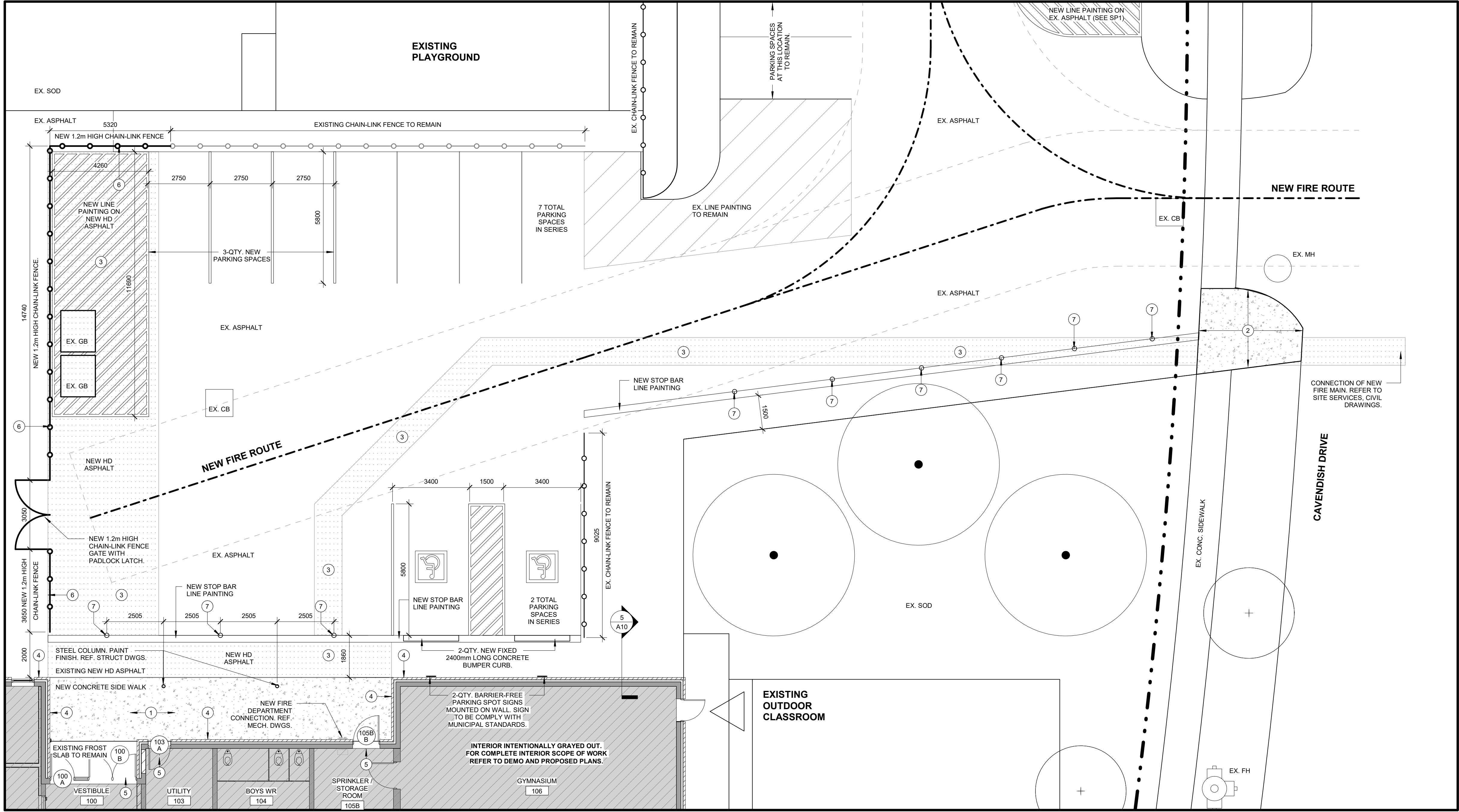
DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT; AND MUST REPORT ANY DISCREPANCIES TO THE CONSULTANTS BEFORE PROCEEDING WITH THE WORK. THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE CONSULTANTS.

125 - 1339 IRONOKAY WAY OAKVILLE ON L4H 3V8 (905) 815-3284 admin@hossackarch.com	
SCALE As indicated	PROJECT 24131
DATE 25 06 03	
DRAWN KB	DRAWING
CHECKED CS ST	SP1
PRINT DATE	2025-06-17 11:38:50 AM
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1
SP2 EXTERIOR SCOPE OF WORK AT MAIN ENTRANCE - DEMOLITION
SCALE: 1:100

- 1/SP2 DEMOLITION NOTES**
- GENERAL NOTES:**
- INTERIOR INTENTIONALLY GRAVED OUT. FOR COMPLETE INTERIOR SCOPE OF WORK, REFER TO DEMO AND PROPOSED PLANS.
 - COORDINATE SCOPE OF WORK SHOWN ON THE SITE PLAN WITH MECHANICAL AND ELECTRICAL DRAWINGS FOR ASSOCIATED MECHANICAL AND ELECTRICAL SCOPE OF WORK FOR COMPLETE INTERIOR RENOVATION AND EXTERIOR ALTERATIONS. REFER TO DEMO AND PROPOSED PLANS AND SECTIONS.
 - ALL DIMENSIONS SHOWN MUST BE SITE VERIFIED AND CROSS CHECKED WITH THE INTENT OF THE PROPOSED PLANS. REFER TO PROPOSED PLANS FOR DIMENSIONS, TYPICAL.
 - ALL EXISTING EXTERIOR ELECTRICAL DEVICES (BFP, SECURITY CAMERA, AI PHONE + CARD READERS) TO REMAIN AT EXISTING LOCATION. REFER TO ELECTRICAL DRAWINGS.
 - CONTRACTOR TO PROVIDE REQUIRED CONSTRUCTION FENCING AND HOARDING. REFER TO SPECIFICATIONS SECTION 01 11 00 FOR TYPE, DISMANTLE AND REMOVE FENCING UPON CONSTRUCTION COMPLETION. CONTRACTOR TO SUBMIT CONSTRUCTION FENCING LAYOUT FOR ARCHITECT'S REVIEW AND APPROVAL.
 - CONTRACTOR TO PROVIDE TREE AND SHRUB PROTECTION ON EXISTING TREES LOCATED ON THE EAST SIDE OF THE BUILDING (ALONG CAVENDISH DRIVE). CONTRACTOR TO ENSURE DETAILS AND REQUIREMENTS FOR TREE PROTECTION COMPLY WITH THE CITY OF BURLINGTON GUIDELINES. CONTRACTOR TO SUBMIT PLANTING PROTECTION LAYOUT FOR ARCHITECT'S REVIEW AND APPROVAL.
 - CONTRACTOR TO PATCH AND MAKE GOOD EXISTING ASPHALT AREAS AFFECTED DURING CONSTRUCTION. ALL REPAIRED AREAS MUST BE LEVELED WITH EXISTING TO PREVENT TRIP HAZARDS AS WELL TO MAINTAIN EXISTING GRADING.
- 1 SAW CUT EXISTING ASPHALT AT EXTENT SHOWN. EXISTING ASPHALT AND GRANULAR BASE TO BE REMOVED. PREPARE AREA FOR NEW STEEL COLUMN FOOTINGS AND NEW ASPHALT AREAS AND CONCRETE SIDEWALK INSTALLATION. REFER TO PROPOSED PLANS FOR COORDINATION.
- 2 SAW CUT EXISTING ASPHALT AT EXTENT SHOWN. EXCAVATE AREA FOR NEW INCOMING FIRE MAIN CONNECTION. COORDINATE WITH MECHANICAL AND SITE SERVICES DRAWINGS. EXTENTS OF EXCAVATION TO BE COORDINATED WITH CIVIL DRAWINGS. REFER TO MECHANICAL AND CIVIL DRAWINGS. PATCH AND MAKE GOOD EXISTING ASPHALT. PROVIDE NEW SUB-BASE AND ASPHALT UPON COMPLETION OF WORK.
- 3 EXISTING EXTERIOR CLADDING REMOVAL. REFER TO DEMOLITION PLANS AND SECTIONS FOR COMPLETE SCOPE OF WORK.
- 4 REMOVE EXTERIOR DOORS AND FRAMES INCLUDING THRESHOLDS IN ENTIRETY. REFER TO DEMOLITION PLANS AND SECTIONS FOR COMPLETE SCOPE OF WORK. PATCH AND MAKE GOOD EXISTING WALLS AS REQUIRED TO MATCH EXISTING.
- 5 REMOVE COMPLETE SECTIONS (POST TO POST) OF EXISTING CHAINLINK FENCE AND POST IN ENTIRETY (INCLUDING FENCE GATE, IF ANY). PATCH AND MAKE GOOD ASPHALT UPON FENCING POST REMOVAL.
- 6 SHORE BLOCK ABOVE. SAW-CUT EXISTING BLOCK WALL FOR INSTALLATION OF NEW DOOR LINTELS AND NEW EXT. HOLLOW METAL DOOR AND FRAME. PROVIDE SLAB INFILL AS REQUIRED UPON REMOVAL OF EXISTING BLOCK.
- 7 SHORE BLOCK ABOVE. SAW-CUT EXISTING BLOCK WALL FOR INSTALLATION OF NEW EXTERIOR WINDOW. REFER TO DEMO AND PROPOSED PLANS FOR COMPLETE SCOPE OF WORK.
- 8 REMOVE EXISTING STEEL BOLLARD IN ENTIRETY TO FACILITATE INSTALLATION OF NEW FIRE LINE. REPLACE WITH NEW STEEL BOLLARD UPON COMPLETION. PAINT FINISH. REFER TO DETAILS. COORDINATE ON SITE. PATCH AND MAKE GOOD EXISTING ASPHALT UPON REMOVAL AND REPLACEMENT OF BOLLARDS.
- 9 REMOVE EXISTING MUNICIPAL CONCRETE SIDE WALK AND SUB-BASE AS REQUIRED FOR THE INSTALLATION NEW VALVE BOX AND FIRE LINE. REFER TO CIVIL DRAWINGS.
- 10 INFILL SUB-BASE AND PROVIDE NEW CONCRETE SIDEWALK TO MUNICIPALITY STANDARDS UPON COMPLETION. ENSURE NO TRIP HAZARD BETWEEN EXISTING AND NEW SURFACES. EXISTING SITE GRADING TO BE MAINTAINED.
- 11 REMOVE EXISTING ASPHALT LINE PAINTING (INCLUDING LOGO/COINS) IN ENTIRETY. REFER TO PROPOSED PLAN FOR COORDINATION OF NEW PARKING LAYOUT & NEW LINE PAINTING.



2
SP2 EXTERIOR SCOPE OF WORK AT MAIN ENTRANCE - PROPOSED
SCALE: 1:100

- 2/SP2 PROPOSED NOTES**
- GENERAL NOTES:**
- INTERIOR INTENTIONALLY GRAVED OUT. FOR COMPLETE INTERIOR SCOPE OF WORK, REFER TO DEMO AND PROPOSED PLANS.
 - COORDINATE SCOPE OF WORK SHOWN ON THE SITE PLAN WITH MECHANICAL AND ELECTRICAL DRAWINGS FOR ASSOCIATED MECHANICAL AND ELECTRICAL SCOPE OF WORK FOR COMPLETE INTERIOR RENOVATION AND EXTERIOR ALTERATIONS. REFER TO DEMO AND PROPOSED PLANS AND SECTIONS.
 - ALL DIMENSIONS SHOWN MUST BE SITE VERIFIED AND CROSS CHECKED WITH THE INTENT OF THE PROPOSED PLANS. REFER TO PROPOSED PLANS FOR DIMENSIONS, TYPICAL.
 - ALL EXISTING EXTERIOR ELECTRICAL DEVICES (BFP, SECURITY CAMERA, AI PHONE + CARD READERS) TO REMAIN AT EXISTING LOCATION. REFER TO ELECTRICAL DRAWINGS.
- 1 NEW CONCRETE SIDE WALK. REFER TO DETAIL AND SPECIFICATIONS. ENSURE EXISTING SITE GRADING IS MAINTAINED AND SLOPED AWAY FROM BUILDING. NEW SIDEWALK TO TIE-IN TO EXISTING ASPHALT. PROVIDE AN EXPANSION JOINT TRANSITION BETWEEN NEW CONCRETE SIDEWALK AND EXISTING FROST SLAB. ENSURE THERE ARE NO TRIP HAZARD BETWEEN NEW AND EXISTING SURFACES.
- 2 NEW MUNICIPAL CONCRETE SIDE WALK. SIDE WALK MUST COMPLY WITH MUNICIPAL STANDARDS. ENSURE EXISTING SITE GRADING IS MAINTAINED. NEW SIDEWALK TO TIE-IN TO EXISTING SIDE WALK. PROVIDE AN EXPANSION JOINT TRANSITION BETWEEN NEW CONCRETE SIDEWALK AND EXISTING FROST SLAB. ENSURE THERE ARE NO TRIP HAZARD BETWEEN NEW AND EXISTING SURFACES.
- 3 NEW (HEAVY-DUTY) ASPHALT AND SUB-BASE. LEVEL TO MATCH EXISTING AS REQUIRED. FEATHER INTO EXISTING. ENSURE THERE ARE NO TRIP HAZARD BETWEEN NEW AND EXISTING SURFACES.
- 4 NEW EXTERIOR CLADDING. REFER TO PROPOSED FLOOR PLANS AND SECTIONS FOR COMPLETE SCOPE OF WORK.
- 5 NEW HOLLOW METAL EXTERIOR DOOR AND FRAME ASSEMBLIES. REFER TO PROPOSED PLANS, DETAILS AND SPECIFICATIONS.
- 6 NEW CHAINLINK FENCE AND GATE WITH PADLOCK LATCH TO MATCH EXISTING TYPE AND HEIGHT (APPROX. 1.2m).
- 7 NEW STEEL BOLLARD. PAINT FINISH. REFER TO DETAILS. PATCH AND MAKE GOOD EXISTING ADJACENT ASPHALT UPON INSTALLATION.

PROJECT NORTH

TRUE NORTH

▲ MAIN ENTRANCE

▽ SECONDARY ENTRANCE

○-○-○ EXISTING CHAINLINK FENCE

EXTENT OF EX. GROUND REMOVAL (EX. ASPHALT AND SODDED AREAS AS NOTED, COORDINATE ON SITE)

EXTENT OF NEW CONCRETE SIDEWALK

EXTENT OF NEW ASPHALT (AS SHOWN IN 1/SP1 AND 2/SP2)

CB CATCH BASIN

EX EXISTING

FH FIRE HYDRANT

GB GARBAGE BIN DUMPSTER

MH MANHOLE

1 ADDENDUM NO. 3 25 06 17

NO ISSUED DATE

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT, AND MUST REPORT ANY DISCREPANCIES TO THE CONSULTANTS BEFORE PROCEEDING WITH THE WORK. THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE CONSULTANTS.

CERTIFICATE OF PRACTICE #4282

PAUL A. FISHER PUBLIC SCHOOL RENOVATION & ALTERATION

2175 CAVENDISH DRIVE, BURLINGTON ON L7P 5J8

LEGAL DESCRIPTION

PLAN 1462 BLOCK G, CITY OF BURLINGTON REGION OF HALTON

HALTON DISTRICT SCHOOL BOARD

J.W. SINGLETON EDUCATION CENTRE

2050 GUELPH LINE BURLINGTON, ON L7P 5A8

TEL (905) 335-3663 FAX (905) 335-9802

HOSSACK ARCHITECTURE

103 - 1939 IRONGRAVE WAY (2ND FLOOR) UNIT 103 MISSISSAUGA, ON L4X 1L7

(905) 815-8384 aaron@hossackarch.com

SCALE As indicated

DATE 25 06 03

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PROJECT 24131

DRAWING SP2

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THESE NOTES ARE TO BE READ IN CONJUNCTION WITH THE FIRE SEPARATION PLANS, GENERAL DRAWING NOTES AND APPLICABLE SPECIFICATION SECTIONS (E.G. FIRE-PROOFING, GYPSUM BOARD ETC.) AND AD 725 "TOP OF WALL AT FIRE SEPARATION

Occupant Load for Paul A. Fisher School Renovation							OBC 3.1.17.2
Room Type	Number of Rooms	Student Occ. Load per room	Staff Occ. load	Student Occ load	Staff Occ load	Total Occ. Load	Notes
Kindergarten	3	26	2	78	6	84	
Special Education + Lifeskills	1	9	2	9	2	11	
Classroom	9	23	1	207	9	216	
Gym (1st Floor)	0	0	0	0	0	0	(*)
Resource Rooms (>400 ft²)	1	12	1	12	1	13	
Administration Areas:							
Principal	1	0	1	0	1	1	
Vice Principal	1	0	1	0	1	1	
Receptionists	1	0	1	0	1	1	
Custodians	1	0	1	0	1	1	
Librarian	1	0	1	0	1	1	
Subtotal School				306	23	329	
Existing & Future Portables	6	23	1	138	6	144	
(*) Gym HVAC system designed to accommodate 400 persons for a 1 hour assembly occupancy situation.							

Washroom Type	No. of water closets Required	No. of water closets provided
Male Washrooms*	8	15
Female Washrooms*	8	14

NOTES:

1 For the purposes of this table, barrier-free, UTR (OBC 3.8.3.12) and unisex washrooms have been divided equally and included with the count for Male and Female

2 UTR's have been counted for 1 M & 1 W per OBC 3.7.4.1.(7)

3 Kindergarten Classrooms not included as there is one washroom per Classroom for 26 students.

4 Staff have access to all washrooms for use with exception of student banks

SAWCUT EXISTING BLOCK WALL FOR NEW INSTALLATION OF NEW HOLLOW METAL DOOR. REMOVE ALTERNATE COURSES OF BLOCK AT OPENING FOR TOOTHING NEW BLOCK IN. PATCH AND MAKE GOOD BLOCK WALL ABOVE AND PARGE SMOOTH IN PREPARATION FOR NEW DOOR. REFER TO SCHEDULE FOR MATERIALS. PREPARE FOR NEW DOOR LINTEL TYPE. COORDINATE WITH PROPOSED PLANS DOOR SCHEDULE, TYPICAL.

Washroom Type	No. of water closets Required	No. of water closets provided
Male Washrooms*	8	15
Female Washrooms*	8	14

3	ADDENDUM NO. 3	2
2	ISSUED FOR TENDER	2
1	ISSUED FOR PERMIT	2
NO	ISSUED	

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT; AND MUST REPORT DISCREPANCIES TO THE CONSULTANTS BEFORE PROCEEDING WITH THE WORK. THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE CONSULTANTS.

CERTIFICATE OF PRACTICE #428

PAUL A. FISHER PUBLIC
SCHOOL RENOVATION &
ALTERATION

2175 CAVENDISH DRIVE,
BURLINGTON ON L7P 3J8

LEGAL DESCRIPTION

PLAN 1462 BLOCK G, CITY OF BURLINGTON
REGION OF HALTON



**HALTON DISTRICT SCHOOL BOARD
J.W. SINGLETON EDUCATION CENTRE**

**2050 GUELPH LINE
BURLINGTON, ON L7P 5A1**

**TEL. (905) 335-3666
FAX (905) 335-8800**

FIRE
SEPARATIONS &
OBC MATRIX

HOSSACK
ARCHITECTURE

105 - 1939 IRON OAK WAY
OAKVILLE ON L6H 3V8
(905) 815-8284 admin@hossackarch.com

SCALE	PROJECT
As indicated	As indicated

DATE 25.08.03 24131

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Halton District School Board

**Renovation & Alteration
Paul A. Fisher Public School**

ADDENDUM No. 2

June 19, 2025

The following amendments/clarifications to the Tender Documents are considered to form part of this Tender.

No consideration will be given for extras and/or changes due to the Bidder not being familiar with the contents of this Addendum.

Bidders are to acknowledge this Addendum by signing and enclosing this addendum of this document with their submission.

The following Addendum has been issued to make clarifications, revisions, additions and/or deletions to the various areas of the Request for Tender.

This addendum shall be incorporated in the specifications and drawings and shall form part of the contract documents:

1. AMENDMENTS TO DRAWINGS:

- A. Refer to [Drawing SK1.01: General Office Revisions]:
 - Revised architectural layout.
 - Revised the general note regarding the steel stud partition walls.
- B. Refer to [Drawing SK1.02: Staff Lounge Revisions]:
 - Revised architectural layout.
 - Added a new steel lintel for the new door opening in the existing masonry wall.
 - Revised the general note regarding the steel stud partition walls.

2. ATTACHMENTS TO THIS DOCUMENT:

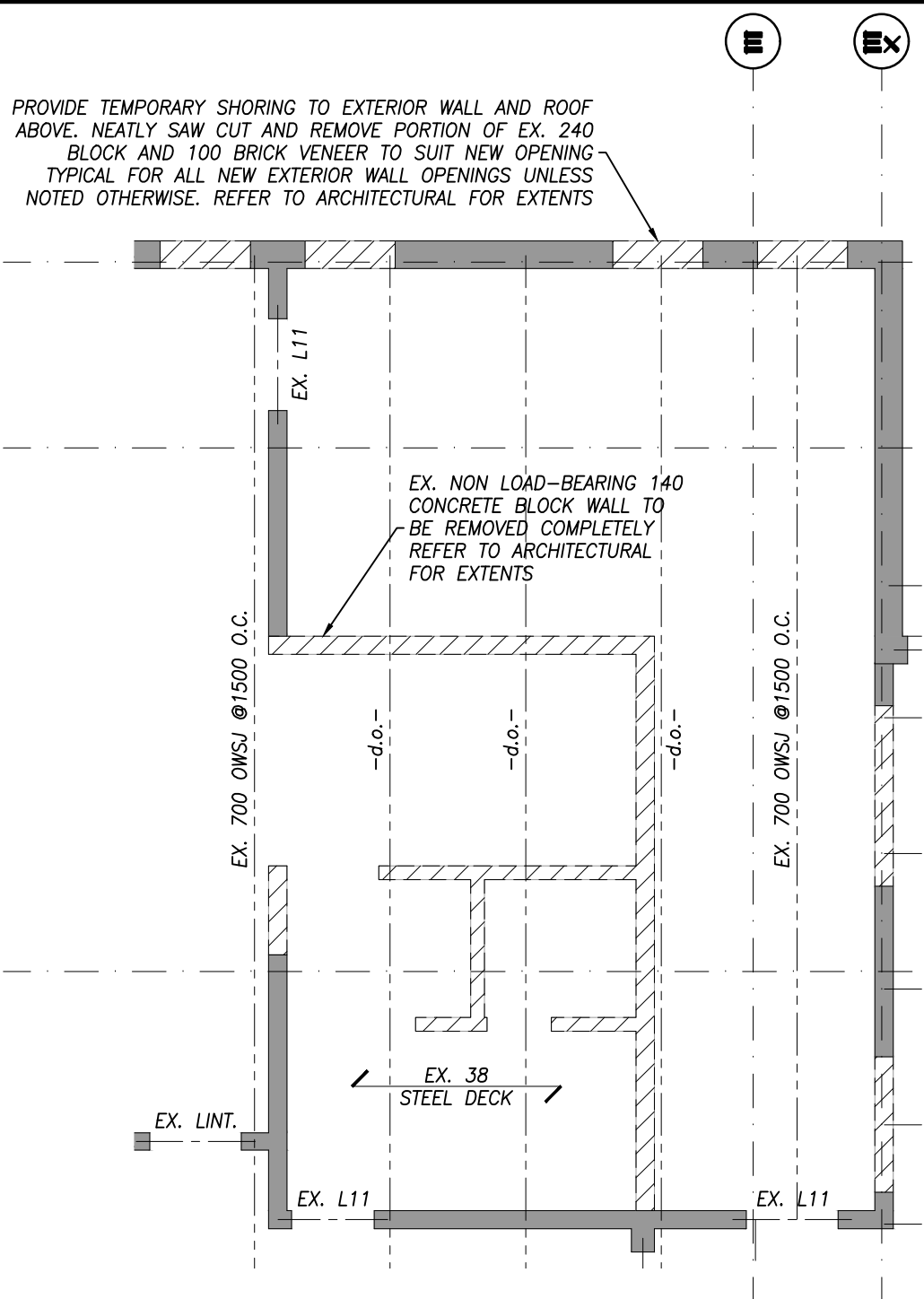
- Drawing SK1.01.
- Drawing SK1.02.

Sincerely,

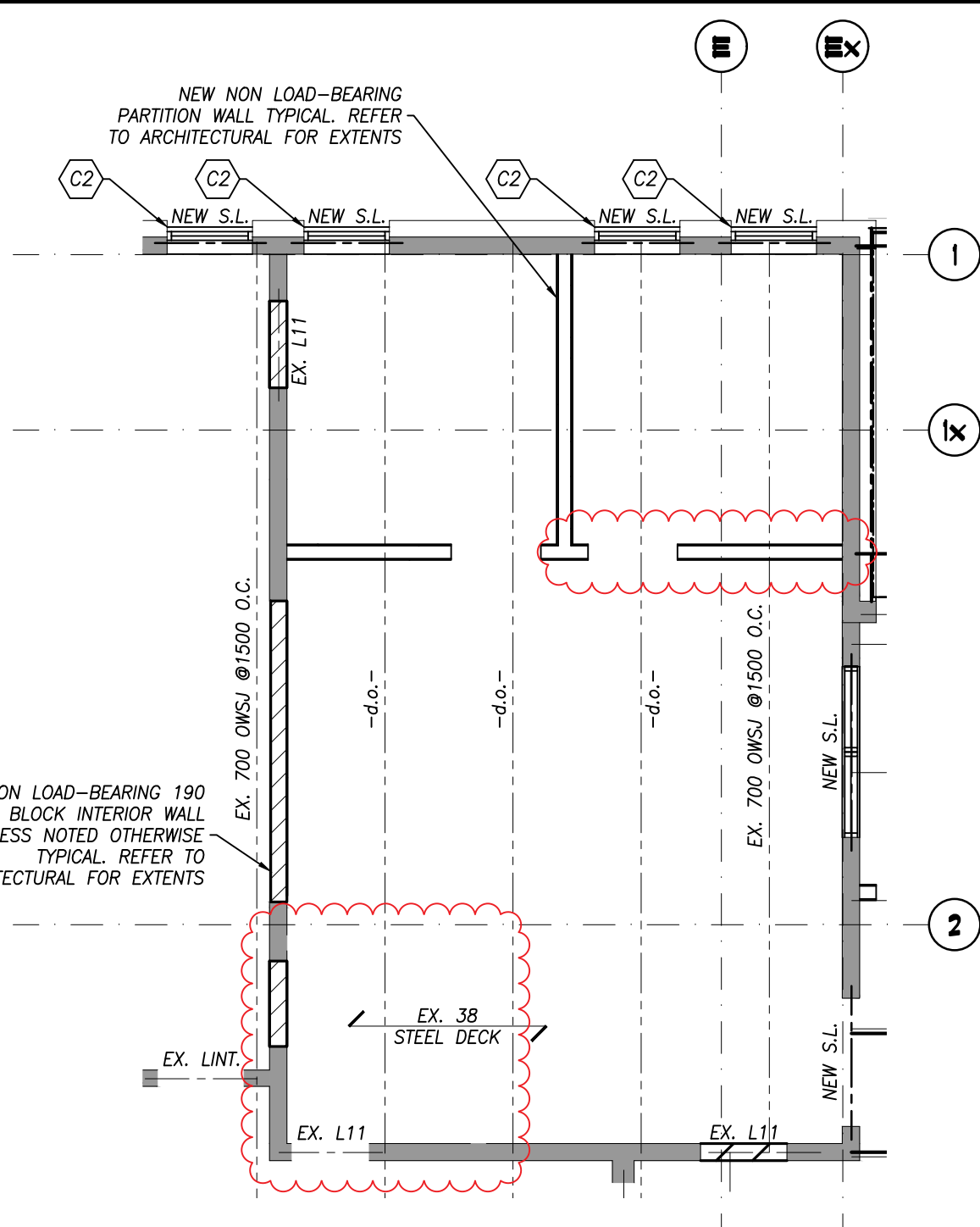
Per: Rola Abdullah, P.Eng.
Kalos Engineering Inc.

Signature:  _____ Date: June 19, 2025 _____

PLOT DATE: 2025/06/19 9:50 AM



ROOF FRAMING PLAN - DEMOLITION
SCALE: 1:75



ROOF FRAMING PLAN - PROPOSED
SCALE: 1:75

CONSTRUCTION NOTES

- C2 EXISTING EXTERIOR BRICK TO BE REMOVED SHORE UP AND BRACE EXISTING 240 CONCRETE BLOCK WALL. NEATLY SAW CUT AND REMOVE PORTION OF EXISTING CONCRETE BLOCK WALL TO SUIT NEW OPENING. PROVIDE STEEL LINTEL TO SUPPORT EXISTING BLOCK AND NEW BRICK VENEER SIZED AS PER STEEL LINTEL DETAIL ON DRAWING S2.0. REFER TO ARCHITECTURAL FOR EXTENTS.

GENERAL NOTE

ALL NON LOAD-BEARING STEEL STUD PARTITION WALLS SHALL BE MINIMUM 600S125-33 @400 O.C.
EXCLUSIVE OF ANY PROPOSED PARTITION WALLS LOCATED IN THE GYMNASIUM OR MUSIC ROOM/STAGE



300 YORK BLVD. HAMILTON, ONTARIO L8R 3K6

PAUL A. FISHER PUBLIC SCHOOL
GENERAL OFFICE REVISIONS

DRAWN BY T.M.

JUNE, 2025

PROJECT No. 24212

DRAWING SK1.01

ALL NON LOAD-BEARING STEEL STUD PARTITION WALLS
SHALL BE MINIMUM 600S125-33 @400 O.C.
*EXCLUSIVE OF ANY PROPOSED PARTITION WALLS
LOCATED IN THE GYMNASIUM OR MUSIC ROOM/STAGE*

ELECTRICAL ADDENDUM E-02

RDZ
ENG

Project Name: Paul A Fisher Public School
Renovation and Alteration
Project Address: 2175 Cavendish Drive
Burlington, ON
Project No.: 24122

Date: June 17, 2025

Electrical Addendum E-02

Include for the following additions, deletions, and/or clarifications in your bid amount. Indicate in the space provided on the bid form that you have received and included for the requirements of this addendum.

1. SPECIFICATIONS

1.1. SECTION 26 05 10 - LIGHT FIXTURE SCHEDULE

- .1 Modified the spec section.

1.2. SECTION 26 05 41 - SEISMIC BRACING FOR ELECTRICAL EQUIPMENT

- .1 Added new spec section.

2. DRAWING

2.1. E-300: NEW LIGHTING LAYOUT

- .1 Revised lighting layout at the following space:
 - Meeting room #127A, 127B, 121
 - General Office #127
 - Calming Room #115
- .2 Deleted Health Room #124, updated lighting to suit.

2.2. E-301: NEW POWER LAYOUT

- .1 Revised power layout at the following space:
 - Meeting room #127A, 127B, 121
 - General Office #127
 - Calming Room #115
- .2 Deleted Health Room #124, updated power layout.

2.3. E-302: NEW FIRE ALARM AND COMMUNICATION LAYOUT

- .1 Added duct smoke detector to suit fire smoke damper/smoke damper. Provide new power connection to suit the new fire smoke damper/smoke damper.

ELECTRICAL ADDENDUM E-02



Project No.: 24122
Date: June 17, 2025

Page 2 of 2

- .2 Deleted Health Room #124 and associated strobe light.
- 2.4. E-500: FIRE ALARM RISER
 - .1 Updated fire alarm riser.
- 2.5. E-600: PANEL SCHEDULE
 - .1 Revised panel LP-R1 to 84 circuit panel. Added additional breaker to suit.
- 3. **RFI**
 - 3.1. PER RFI REQUEST, ATTACHED IS THE EXISTING LIGHT FIXTURE DESIGNATED 'A1' & 'B' FOR REFERENCE.

End of Electrical Addendum E-02

1. General

1.1 APPLICATION

- .1 This Section specifies products, criteria and characteristics, and methods and execution that are common to one or more Sections of Electrical Divisions. It is intended as a supplement to each Section and is to be read accordingly.
- .2 Refer to section 26 05 01, Electrical Work General Instructions.

1.2 SUBMITTALS

- .1 Submit shop drawings for all products specified in Part 2.
- .2 Submit the following to the Consultant for review:
 - .1 Manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish, and limitations.
 - .2 Samples of materials and any other items as specified in succeeding Sections of this Division of the Specification.

2. Products

- .1 Except for those items as may be specified in Part 3, of this Section, refer to Part 2 of the various Sections of Specification, Division 26 Electrical.
- .2 The lighting fixtures with the letter shown, shall be of the types as described below:

Type 'A1' Existing 2'-0" x 4'-0" light fixture to be relocated as shown.

Type 'B1' Existing 1'-0" x 4'-0" light fixture to be relocated as shown.

Type 'AB' Shall be Cooper Lighting, Metalux Cruze ST, Cat. #24CZ2-40-UNV-L840-CD1-WLS-U, 2'-0" x 4'-0" recessed LED light fixture for T-bar ceiling mounting, complete with high reflective matte white enamel paint finish, ribbed frosted acrylic lens, integrated occupancy sensor and 120-volt integral driver. Integral occupancy sensor shall be with dimming control to provide a 50% dim level during vacancy and 100% in occupancy. Photocell shall be disabled.

Type 'BA' Shall be Cooper Lighting, Metalux Cruze ST, Cat. #14CZ2-39-UNV-L840-CD1-U, 1'-0" x 4'-0" recessed LED light fixture suitable for drywall ceiling installation complete with drywall ceiling installation kit, high reflective matte white enamel paint finish, ribbed frosted acrylic lens and 120-volt integral driver.

Type 'BB' Shall be same as Type 'BA' except fixture shall be suitable for T-bar ceiling mounting and complete with integrated occupancy sensor, Cat. #14CZ2-39-UNV-L840-CD1-WLS-U. Integral occupancy sensor shall be with dimming control to provide a 50% dim level during vacancy and 100% in occupancy. Photocell shall be disabled.

Type 'BC' Shall be same as Type 'BA' except fixture shall be complete with integrated occupancy sensor, Cat. #14CZ2-39-UNV-L840-CD1-WLS-U. Integral occupancy sensor shall be with dimming control to provide a 50% dim level during vacancy and 100% in occupancy. Photocell shall be disabled.

Type 'C' Shall be Cooper Lighting Cat. #4SNLED-LD5-41SL-LW-UNV-L840-CD1-U-WG/SNF-4FT, 4'-0" long channel strip LED light fixture complete with snap on/off diffuse lens, 120-volt integral driver and wire guard.

Type 'D' Shall be Current Prescolite, Cat. #LFR-4RDS-M-15L-40K-8-WD-DM1-LFR-4RDS-T-SS-WT-LFR-4RD-H, 4" diameter shallow LED recessed wide beam downlight complete with self-flanged high purity spun aluminum specular finish reflector, 4" housing frame and 120-volt input voltage integral driver.

Type 'R' Shall be Current Beacon-Viper Wall, Cat. #VPW1-24L-25-3K7-3-120-XX-BTSO-12F wall pack surface mounted LED full cut-off light fixture complete with integrated motion sensor, corrosion resistant, diecast aluminum housing with powder coat paint finish and 120-volt integral weather-tight LED driver compartment. Integral motion sensor shall be with dimming control to provide a 30% dim level during no motion/ activity and 100% in motion/ activity. Fixture finish colour to be confirmed by Architect at later date.

Type 'RA' Shall be Current Prescolite, Cat. #LFR-6RD-M-10L-35K-8-XW-DM1-LFR-6RD-T-SS-LFR-6RD-H, 6" diameter shallow LED recessed extra wide beam downlight complete with self-flanged high purity spun aluminum specular finish reflector, 6" housing frame and 120-volt input voltage integral driver.

- .3 LED light fixtures, unless otherwise noted, Signify/Philips Canada, Cooper, Acuity, and Current Lighting shall be considered equal. Contractor must submit proposed equivalent fixtures and photometric calculation 3 days prior to tender closing for engineers review and approval.

END OF SECTION

1. General

1.1 APPLICATION

- .1 This Section specifies products, criteria and characteristics, and methods and execution that are common to one or more Sections of Electrical Divisions. It is intended as a supplement to each Section and is to be read accordingly.
- .2 Refer to section 26 05 01, Electrical Work General Instructions.
- .3 Project specific design values shall be used for determining seismic and wind design forces based on the information on the structural drawings. The values below are provided for reference only for the purpose of coordinating with suppliers and other trades. If a conflict exists between these values and the structural drawings, the values on the structural drawings will prevail. Where project documents do not provide values necessary to determine design forces, the Delegated Design Engineer may use values substantiated through the governing building code(s) or the authority having jurisdiction and subject to review and approval by the Engineer of Record.
 - .1 Risk Category: [I, II, III, or IV]
 - .2 Seismic Design Category: [A, B, C, D, E, or F]
 - .3 Short-period Spectral Response Acceleration parameter (SDS): [#.##g]
 - .4 Basic wind speed: [####mph (####kph)]
- .4 All vibration isolation and restraint products and associated engineering work shall be provided by one supplying manufacturer. Preferred manufacturer is Vibro-Acoustics. Alternate manufacturers must request and obtain written approval by the Engineer of Record for substitutions.
- .5 Isolation and restraint products shall be tested or analysed for performance as appropriate and reports shall be made available to the Engineer of Record upon request.
- .6 All work to determine seismic and wind restraints shall be done by or under the direct supervision of a qualified professional engineer in responsible charge of the work acting as the Delegated Design Engineer. This Delegated Design Engineer must hold an active license in the province of the project.

1.2 REFERENCES

- .1 Ontario Building Code, latest edition
- .2 CAN/CSA C22.2 NO.250.0, Luminaires, latest edition.
- .3 CAN/CSA-G40.21, Structural Quality Steels, latest edition.

1.3 SUBMITTALS

- .1 Submit shop drawings include:
 - .1 Design load and calculation.
 - .2 Details of design criteria
 - .3 Identification of location where electrical equipment to be provided with seismic bracing.
 - .4 Installation procedures.
 - .5 Testing and certification
- .2 Submittal shall be designed and stamped by a professional Engineer, licensed to practice specializing in design of seismic force restraint system.

2. Products

2.1 GENERAL

- .1 The seismic restraint manufacturer shall be responsible for the selection of the attachment hardware as required to attach snubbers/restraints to both the equipment and supporting structure on vibration isolated equipment, or to directly attach equipment to the building structure for non-isolated equipment.
- .2 The contractor shall furnish, to the seismic restraint manufacturer, a complete set of approved shop drawings of all equipment that is to be restrained, from which the selection and design of seismic restraint devices and/or attachment hardware will be completed. The shop drawings furnished shall include, at a minimum, basic equipment layout, length and width dimensions, and installed operating weights of the equipment to be restrained.
- .3 All electrical equipment (lighting fixture, panel, transformer, conduits, cable trays, etc.) are to be restrained to meet code requirements. At a minimum, the seismic restraint manufacturer shall provide documentation on maximum restraint spacing for various restraint sizes and anchors, as well as “worst case” reaction loads for each restraint and/or anchor size
- .4 The contractor shall ensure that all housekeeping pads used are adequately reinforced and are properly dowelled to the building structure, so as to withstand calculated seismic forces. In addition, the size & thickness of the housekeeping pad is to be coordinated with the seismic restraint manufacturer to ensure that adequate edge distances & embedment depths exist in order to obtain the desired equipment anchor capacities.
- .5 Coordinate size, shape, reinforcement and attachment of all housekeeping pads supporting vibration/seismically rated equipment. Concrete shall have a minimum compressive strength of 3,000 psi.
- .6 Coordinate with vibration/seismic restraint manufacturer and the structural engineer of record to locate and size structural supports underneath vibration/seismically restrained equipment (e.g. roof curbs, cooling towers and other similar equipment).
- .7 The acceptable manufacture for Seismic Force Restraint System shall be:
 - .1 Kinetics noise Control Inc.
 - .2 Eaton
 - .3 Vibro-AcousticsOr approved equal meets specification.

3. Execution

3.1 COORDINATION AND EXECUTION

- .1 Coordinate size, shape, reinforcement and attachment of all housekeeping pads supporting vibration/seismically rated equipment. Concrete shall have a minimum compressive strength of 3,000 psi or as specified by the project engineer. Coordinate size, thickness, doweling, and reinforcing of concrete equipment housekeeping pads and piers with vibration isolation and seismic restraint device manufacturer to ensure adequate space, embedment and prevent edge breakout failures. Pads and piers must be adequately doweled in to structural slab.
- .2 Housekeeping Pads must be adequately reinforced and adequately sized for proper installation of equipment anchors. Refer seismic restraint manufacturer's written instructions.
- .3 Coordinate with vibration/seismic restraint manufacturer and the structural engineer of record to locate and size structural supports underneath vibration/seismically restrained equipment (e.g. roof curbs, cooling towers and other similar equipment). Installation of all seismic restraint materials specified in this section shall be accomplished as per the manufacturer's written instructions. Adjust isolators and restraints after piping systems have been filled and equipment is at its operating weight, following the manufacturer's written instructions.

- .4 Isolated and restrained equipment and conduit located on roofs must be attached to the structure. Supports (e.g., sleepers) that are not attached to the structure will not be acceptable.
- .5 Attach piping to the trapeze per seismic restraint manufacturer's design. Install cables so they do not bend across sharp edges of adjacent equipment or building structures
- .6 Do not brace or support equipment to separate portions of the structure that may act differently in response to an earthquake. For example, do not connect a Transverse restraint to a wall and then a Longitudinal restraint to either a floor/ceiling/roof at the same braced location.
- .7 Install vertical braces to stiffen hanger rods and prevent buckling per seismic restraint manufacturer's design. Clamp vertical brace to hanger rods. Requirements apply equally to hanging equipment. Do not weld vertical braces to hanger rods.

3.2 SEISMIC RESTRAINT APPLICATION:

.1 General

- .1 All equipment, conduits, cable trays shall be restrained to resist seismic forces per the applicable building code(s) as a minimum; listed herein. Additional requirements specified herein are included specifically for this project; as needed basis.
- .2 Install seismic restraint devices per the manufacturer's submittals. Any deviation from the manufacturer's instructions shall be reviewed and approved by the manufacturer.
- .3 Attachment to structure for suspended equipment, pipe and duct: If specific attachment is not indicated, anchor bracing to structure at flanges of beams, at upper truss chords of bar joists, or at concrete members.
- .4 Provide hanger rod stiffeners where indicated or as required to prevent buckling of rods due to seismic forces.
- .5 Where rigid restraints are used on equipment, cable tray, the support rods for the equipment, ductwork or piping at restraint locations must be supported by anchors rated for seismic use.
- .6 Ensure housekeeping pads have adequate space to mount equipment and seismic restraint devices and shall also be large enough and thick enough to ensure adequate edge distance and embedment depth for restraint anchor bolts to avoid housekeeping pad breakout failure.

.2 Concrete Anchor Bolts:

- .1 Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Do not damage existing reinforcing or embedded items during coring or drilling. Notify the structural engineer if reinforcing steel or other embedded items are encountered during drilling. Locate and avoid pre- or post-tensioned tendons, electrical and telecommunications conduit.
- .2 Do not drill holes in concrete or masonry until concrete, mortar, or grout has achieved full design strength
- .3 Mechanical Anchors: Protect threads from damage during anchor installation.
- .4 Adhesive Anchors: Clean holes to remove loose material and drilling dust per manufactures instructions prior to installation of adhesive. Place adhesive in holes proceeding from the bottom of the hole and progressing toward the surface in such a manner as to avoid introduction of air pockets in the adhesive.
- .5 Set anchors to manufacturer's recommended torque, using a torque wrench.

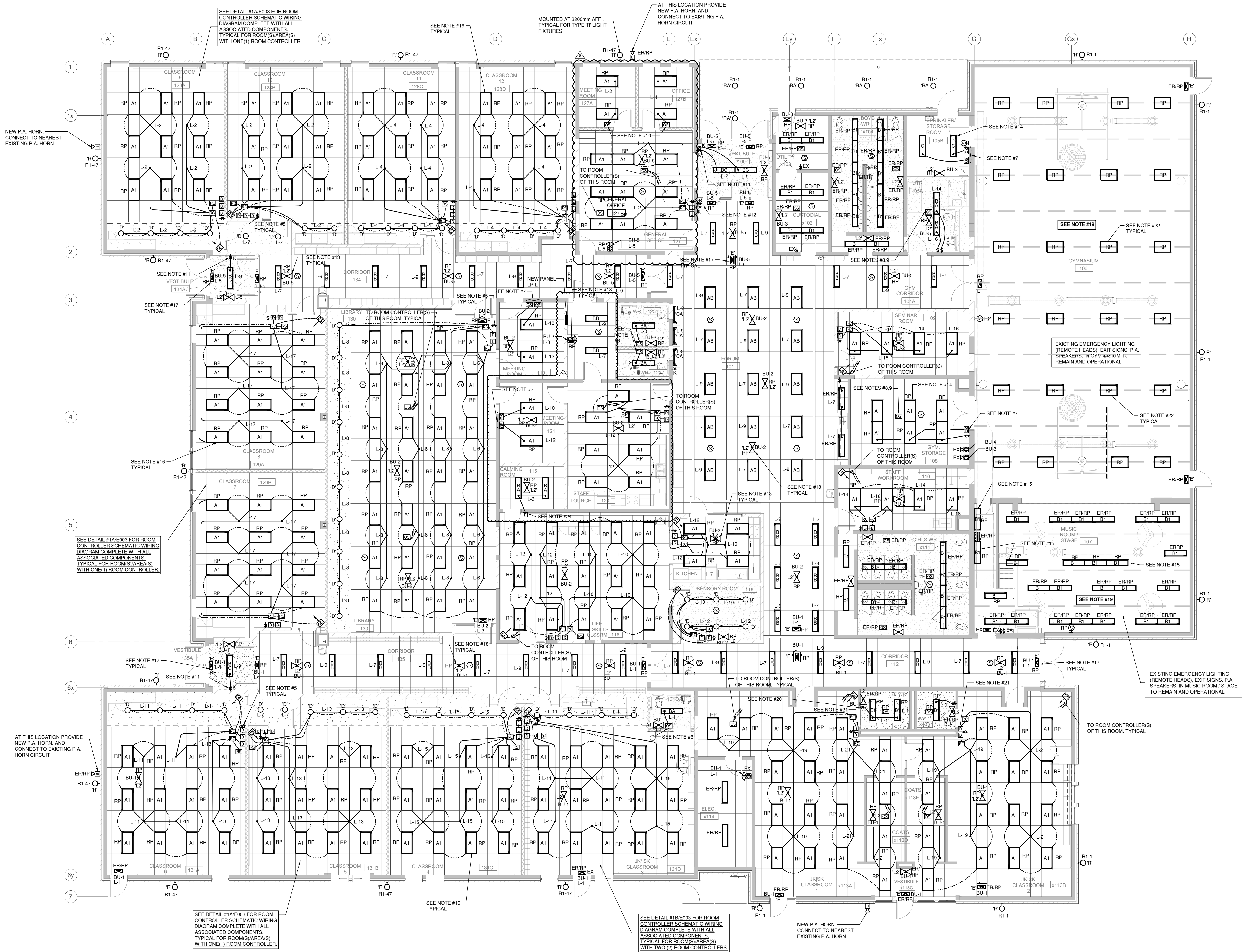
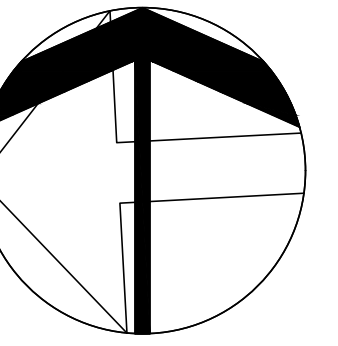
.3 Equipment Restraints:

- .1 Install fasteners, straps and brackets as required to secure the equipment.
- .2 Provide seismic restrains for all electrical equipment.
- .3 The electrical contractor are to provide the weight per unit length for cable trays & conduits.
- .4 Longitudinal restraints for single conduit supports shall be attached rigidly to the pipe, not to the pipe/conduit hanger.
- .5 For supports with multiple conduits (trapezes), secure conduits to trapeze member with clamps approved for application.
- .6 Where conduit, bus ducts, cable trays sizes reduce below required dimensions, the final restraint shall be installed at the transition location.
- .7 Adjust restraint cables so that they are not visibly slack. Cable not to support weight during normal operation.
- .8 Seismic systems are to be compatible with requirements for anchoring and guiding of systems.

3.3 INSPECTION & CERTIFICATION:

- .1 The contractor shall notify the local representative of the seismic restraint materials manufacturer prior to installing any seismic restraint devices. The contractor shall seek the representative's guidance in any installation procedures with which he/she is unfamiliar.
- .2 The contractor shall notify the local representative of the seismic restraint materials manufacturer mid-way through the listed project if they require an inspection of any and all vibration and seismic restraint devices already installed. A written report of any installation errors, improperly selected devices, or other fault in the system which could affect the performance of the system shall be documented and the contractor shall perform all steps that are required from this written report to properly complete the vibration and seismic restraint work as per the specifications.
- .3 Upon completion of the installation, arrange for an independent 3rd party registered design professional, upon request, is to visit the site to verify the proper installation of all seismic restraint devices herein specified. The local representative of the vibration manufacturer shall, at the contractor's request, be present as well to support the independent professional in the inspection of the completed system. A written report citing any installation errors, improperly selected devices, or other fault in the system which could affect the performance of the system should be generated by the 3rd party professional. Also, the local representative shall verify that isolators are adjusted, with spring's perpendicular to bases or housing, adjustment bolts are tightened up on equipment mountings, and hangers are not cocked.
- .4 The installing contractor shall submit a report upon request to the building architect and/or engineer, including the manufacturer's representative's final report, indicating that all seismic restraint material has been properly installed, or steps that are to be taken by the contractor to properly complete the seismic restraint work as per the specifications

END OF SECTION



NOTES

- ELECTRICAL CONTRACTOR SHALL INCLUDE IN TENDER PRICE FOR INSTALLATION, TESTING, TIME ADJUSTMENT AND COMMISSIONING OF OCCUPANCY SENSORS, ROOM CONTROLLERS, DAYLIGHT SENSORS, AND PROGRAMMING OF AUTO-ON SEQUENCE OF ROOM CONTROLLER FOR LIGHT FIXTURES ON A ROOM BY ROOM BASIS ENTIRE BUILDING, BY MANUFACTURER, SUBMIT VERIFICATION/COMMISSIONING REPORT AFTER COMPLETION OF WORK. REFER TO ELECTRICAL SPECIFICATION FOR DETAILS.
- FOR EXACT LOCATION OF ALL LIGHT FIXTURES REFER TO ARCHITECTURAL DRAWINGS.
- COORDINATE LOCATION OF LIGHTING FIXTURES WITH MECHANICAL DIVISION.
- WIRING FOR EMERGENCY CIRCUITS SHALL BE SIZED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION AND VOLTAGE DROP SHALL NOT EXCEED 5% & MINIMUM WIRE SIZE SHALL BE #10AWG.
- PROVIDE SINGLE POLE DOUBLE THROW LIGHT SWITCH (WALL MOUNTED IN ACCESSIBLE CEILING SPACE ABOVE WALL STATIONS/CLASSROOM CONTROL PANEL) AND DOUBLE POLE SINGLE THROW LIGHT SWITCH RECESS MOUNTED ON THE WALL/CLASSROOM CONTROL PANEL (WHERE APPLICABLE) FOR EACH ROOM CONTROLLER. BOTH SWITCHES SHALL OVERRIDE RESPECTIVE ROOM CONTROLLER USED FOR 120V LIGHTING IN THE RESPECTIVE ROOM(S) SPACES. IN CASE OF THEIR FAILURE, PROVIDE ASSOCIATED LAMINATE PLATE ON SWITCH LOCATED ABOVE WALL STATIONS/CLASSROOM CONTROL PANEL AND ON CEILING GRID BELOW SWITCH AS WELL AS THE BY-PASS SWITCH MOUNTED ON CLASSROOM CONTROL PANEL OR ON WALL ADJUST ALL COMPONENTS TO SUIT. REFER TO DETAIL #2/E003 FOR WIRING SCHEMATIC DIAGRAM.
- PROVIDE OCCUPANCY SENSOR, COOPER LIGHTING SOLUTIONS, CAT. ONW-D-1001-MV, WALL SWITCH VACANCY SENSOR (AUTOMATIC-ON/AUTOMATIC-OFF CONTROL) WHICH SHALL TURN OFF ASSOCIATED LIGHT FIXTURES WHEN SPACE IS NOT OCCUPIED. PROVIDE ALL NECESSARY EQUIPMENT TO SUIT.
- PROVIDE OCCUPANCY SENSOR, COOPER LIGHTING SOLUTIONS, CAT. ONW-D-1001-MV, WALL SWITCH VACANCY SENSOR (MANUAL-ON/AUTOMATIC-OFF CONTROL) WHICH SHALL TURN OFF ASSOCIATED LIGHT FIXTURES WHEN SPACE IS NOT OCCUPIED. PROVIDE ALL NECESSARY EQUIPMENT TO SUIT.
- PROVIDE OCCUPANCY SENSOR COOPER LIGHTING SOLUTIONS, CAT. OAC-DT-1000-R, WHICH SHALL TURN OFF CORRESPONDING LIGHT FIXTURES WHEN LIGHT SWITCH(S) IS (ARE) IN "ON" POSITION AND SPACE IS NOT OCCUPIED AND TURN THEM BACK "ON" WHEN SPACE OCCUPIED. EXACT LOCATION OF OCCUPANCY SENSOR SHALL BE COORDINATED ON SITE AND SHALL COMPLY WITH MANUFACTURER RECOMMENDATION. PROVIDE ALL NECESSARY EQUIPMENT TO SUIT. PROVIDE NUMBER OF POWER PACK(S) TO SUIT NUMBER OF CIRCUITS IN ROOM.
- ELECTRICAL CONTRACTOR SHALL PROVIDE LIGHT SWITCH (WALL MOUNTED IN CORRIDOR CEILING SPACE ABOVE ENTRANCE TO ROOM WITH DRYWALL CEILING OR WALL MOUNTED IN CEILING SPACE ABOVE ROOM LIGHT SWITCHES IN ROOM WITH T-BANKSPROOF CEILING WHICH SHALL OVERRIDE BY PASS OCCUPANCY SENSOR/POWER PACK(S) IN CASE OF THEIR FAILURE. PROVIDE ASSOCIATED LAMINATE PLATE ON SWITCH AND T-BANK GRID BELOW SWITCH. ADJUST ALL COMPONENTS TO SUIT.
- PROVIDE OCCUPANCY SENSOR, COOPER LIGHTING SOLUTIONS, CAT. VSW-P-010, WALL SWITCH VACANCY SENSOR (MANUAL-ON/AUTOMATIC-OFF CONTROL) WHICH SHALL TURN OFF ASSOCIATED LIGHT FIXTURES WHEN SPACE IS NOT OCCUPIED. VACANCY SENSOR SHALL BE PRESET TO 50% LIGHTING LEVEL. WHEN MANUALLY ACTIVATED TO TURN ON THE ASSOCIATED LIGHT FIXTURES IN THE RESPECTIVE SPACE. PROVIDE ALL NECESSARY EQUIPMENT TO SUIT.
- KEY SWITCHES SHALL REMAIN IN "ON" POSITION TO ALLOW BAS & SECURITY SYSTEM TO CONTROL VESTIBULE LIGHTING CIRCUITS.
- PROVIDE TWO (2) KEY OPERATED SWITCHES AS FOLLOWS:
 - ONE TO CONTROL CORRIDOR LIGHTS ON CCT #1-7
 - ONE TO CONTROL CORRIDOR LIGHTS ON CCT #1-9KEY SWITCHES SHALL REMAIN IN "ON" POSITION AT ALL TIME TO ALLOW B.M.S. & SECURITY SYSTEMS TO CONTROL ALL CORRIDOR LIGHTING CIRCUITS.
- PROVIDE T-BANK MOUNTING BRACKETS/SUPPORT FOR EMERGENCY REMOTE HEADS MOUNTING ON T-BANK CEILING.
- CONNECT NEW LIGHT FIXTURES TO EXISTING CIRCUIT PREVIOUSLY FEEDING REMOVED LIGHT FIXTURES IN THIS SPACE.
- MOUNTING HEIGHT OF THESE LIGHT FIXTURES SHALL BE SAME AS BOTTOM OF THE DUCT.
- REINSTALL EXISTING LIGHT FIXTURES AT LOCATIONS AS SHOWN AND CONNECT TO LIGHTING CIRCUIT AND CONTROL AS IDENTIFIED ON DRAWINGS. BEFORE RE-INSTALLATION ALL EXISTING LIGHT FIXTURES MUST BE CLEANED FROM DUST AND DEBRIS. TEST ALL PARTS OF THE REUSED LIGHT FIXTURES AND CORRECT ALL FAULTS AND GROUNDS BEFORE RE-INSTALLATION.
- REINSTALL EXISTING EXIT SIGNS AT LOCATIONS AS SHOWN AND CONNECT TO LIGHTING AND BATTERY UNIT CIRCUITS AS IDENTIFIED ON DRAWINGS. BEFORE RE-INSTALLATION ALL EXISTING EXIT SIGNS MUST BE CLEANED FROM DUST AND DEBRIS. TEST ALL PARTS OF THE REUSED EXIT SIGNS AND CORRECT ALL FAULTS AND GROUNDS BEFORE RE-INSTALLATION.
- REINSTALL EXISTING BATTERY UNITS AND EMERGENCY REMOTE HEADS AT LOCATIONS AS SHOWN AND CONNECT TO LIGHTING AND BATTERY UNIT CIRCUITS AS IDENTIFIED ON DRAWINGS. BEFORE RE-INSTALLATION ALL EXISTING BATTERY UNITS AND EMERGENCY REMOTE HEADS MUST BE CLEANED FROM DUST AND DEBRIS. TEST ALL PARTS OF THE REUSED BATTERY UNITS AND EMERGENCY REMOTE HEADS AND CORRECT ALL FAULTS AND GROUNDS BEFORE RE-INSTALLATION.
- ALL ELECTRICAL DEVICES MOUNTED ON WALLS SHALL BE PROTECTED FOR WALL PAINTING. COORDINATE WITH GENERAL CONTRACTOR AND ON SITE. TEMPORARILY DISCONNECT AND REMOVE IF REQUIRED AND RE-INSTALL AFTER COMPLETION OF WORK. VERIFY EXACT QUANTITY OF WALL MOUNTED DEVICES ON SITE.
- UTILIZE EXISTING OUTLET BOX, PROVIDE NEW LIGHT SWITCH AND CONNECT TO CIRCUIT AS SHOWN.
- REMOVE EXISTING LIGHT SWITCHES AND PROVIDE NEW DIMMER SWITCHES IN EXISTING CLASSROOM CONTROL PANEL. CONNECT TO CIRCUITS AS SHOWN.
- WALL MOUNTED LOW VOLTAGE, 0-10V, DIMMER SWITCH SIMILAR TO SENSOR SWITCH CAT. #SPDMRD WH.

NO	ISSUED FOR	DATE
5	ISSUED FOR ADDENDUM E-02	2025 06 17
4	ISSUED FOR TENDER	2025 05 27
3	ISSUED FOR PERMIT	2025 05 05
2	ISSUED FOR BUILDING PERMIT PRE-CONSULTATION	2025 04 17
1	ISSUED FOR OWNERS REVIEW	2025 03 04
NO	ISSUED	

DRAWINGS ARE NOT TO BE SEALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT, AND MUST REPORT ANY DISCREPANCIES TO THE CONSULTANTS BEFORE PROCEEDING WITH THE WORK. THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE CONSULTANTS.

CERTIFICATE OF PRACTICE #4292

PAUL A. FISHER PUBLIC SCHOOL RENOVATION & ALTERATION

2175 CAVENISH DRIVE, BURLINGTON ON L7P 3J8

BLOCK 900 on Registered Plan 0000, CITY OF XXXXX

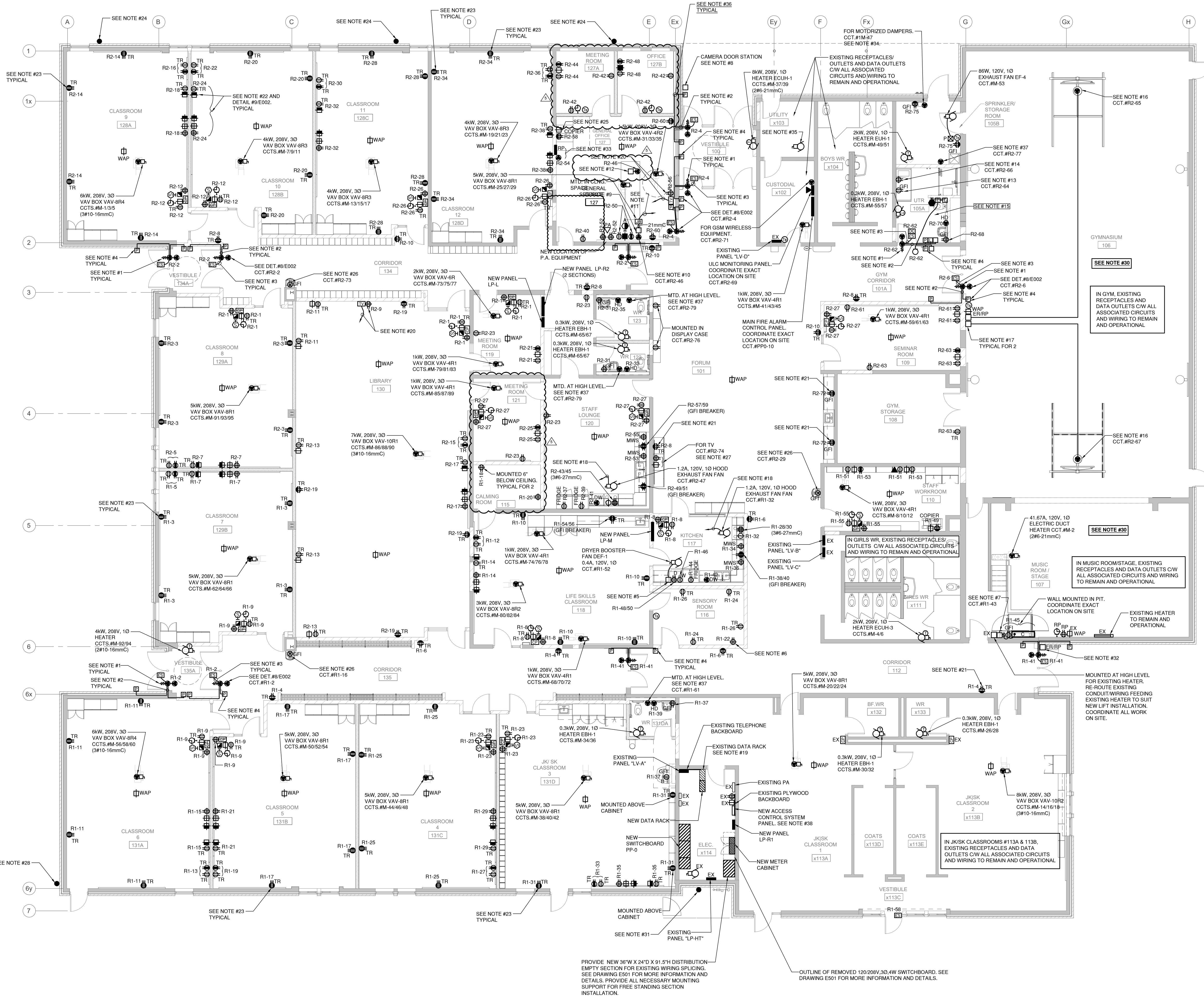
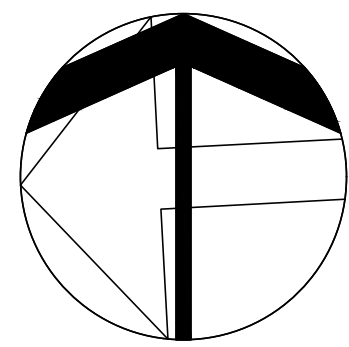
HALTON DISTRICT SCHOOL BOARD
J.W. SINGLETON EDUCATION CENTRE
2050 QUELPH LINE, BURLINGTON, ON L7P 5A8
TEL: (905) 335-3663
FAX: (905) 335-9802

NEW LIGHTING LAYOUT



RDZ ENGINEERS LTD
17A, 35 Pennsylvania Avenue
Vaughan, Ontario L4K 4A5
email: info@rdzeng.ca

SCALE	PROJECT
AS SHOWN	24122
DATE	
DRAWN	DRAWING
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NOTES

1. OUTLET AND TOGGLE SWITCH MTD. ON DOOR TRANSOM FOR 120V, 10 DOOR MOTOR (CONNECT TO POWER PACK WITH 2#12).
2. 16mmEC TO BE TERMINATED INSIDE DOOR FRAME/TRANSOM.
3. PROVIDE 16mm E.C. INSIDE DOOR FRAME BETWEEN ELECTRIC STRIKE AND DOOR OPERATOR. COORDINATE WITH DOOR HARDWARE CONTRACTOR FOR EXACT ROUGH-INS.
4. COORDINATE EXACT LOCATION OF PUSHBUTTONS WITH ARCHITECT AND ON SITE BEFORE ROUGH-IN.
5. WALL MOUNTED DOUBLE GANG BOX LOCATED NEXT TO DRYER OUTLET FOR AMP SENSOR SUPPLIED BY MECHANICAL DIVISION AND INSTALLED WIRED BY ELECTRICAL DIVISION. AMP SENSOR SHALL TURN ON DRYER BOOSTER FAN WHEN DRYER IS WORKING AND TURN FAN OFF WHEN DRYER IS NOT WORKING.
6. MOUNTED AT HIGH LEVEL BELOW 1 BAR CEILING FOR CEILING LIFT CHARGER. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT WITH THE ARCHITECT, CEILING LIFT INSTALLER AND ON SITE.
7. 30A/F-20A, 120V, 10, DISC. SWITCH COMPLETE WITH AUXILIARY CONTACT FOR B.F. LIFT. COORDINATE EXACT LOCATION ON SITE WITH LIFT SUPPLIER/INSTALLER BEFORE ROUGH-IN.
8. PROVIDE IPHONE JIP-SERIES INTERCOM SYSTEM, MODEL #JPS-4AEV, INCLUDING:
 - JIP-DV - CAMERA DOOR STATION
 - JIP-AM - INSIDE MASTER STATION
 - JIP-4HD - SUB MASTER STATION
 - PS-240UL - POWER SUPPLY
 - MCW-S/A - DESK MOUNT STAND
 - JIP-SZ - DISTRIBUTION ADAPTER

PROVIDE ALL ASSOCIATED WIRING BETWEEN MASTER STATION, SUB-MASTER STATIONS, DOOR STATION AND DOOR STRIKE AS PER IPHONE INTERCOM SYSTEM WIRING DIAGRAM FOR COMPLETE SYSTEM FOR PROPER DOOR OPERATION. COORDINATE ALL WORK ON SITE.

9. VIDEO INTERCOM MASTER STATION. COORDINATE EXACT LOCATION WITH OWNER, ARCHITECT AND ON SITE BEFORE ROUGH-IN.
10. POWER SUPPLY FOR VIDEO INTERCOM STATION. TYPICAL

11. TWO (2) 21mmEC AS FOLLOWS:
 - ONE (1) 21mmEC TO CAMERA DOOR STATION (OUTSIDE VESTIBULE #100)
 - ONE (1) 21mmEC TO SUB MASTER STATION
12. VIDEO INTERCOM SUB MASTER STATION. COORDINATE EXACT LOCATION WITH OWNER ARCHITECT AND ON SITE BEFORE ROUGH-IN.

13. FOR ELECTRICAL POWERED ADJUSTABLE TABLE. COORDINATE EXACT LOCATION WITH ARCHITECT AND ON SITE.
14. 15A, 120V DUPLEX RECEPTACLE MOUNTED AT 400mm BELOW CEILING FOR BF LIFT CHARGER. COORDINATE EXACT LOCATION WITH THE ARCHITECT, BF LIFT SUPPLIER/INSTALLER AND ON SITE.
15. SEE DETAIL #7/E002 FOR OUTLET BOX(ES), CONDUIT(S) ROUGH-IN AND WIRING FOR UNIVERSAL WASHROOM DOOR OPERATOR AND EMERGENCY ASSISTANCE SYSTEM.

16. OUTLET MOUNTED AT HIGH LEVEL FOR MOTORIZED BASKETBALL BACKSTOP. EXACT LOCATION OF OUTLET SHALL BE COORDINATED WITH THE ARCHITECT AND BASKETBALL BACKSTOP SUPPLIER/INSTALLER.
17. FLUSH WALL MOUNTED (IN RECESSED SPACE) KEY OPERATED SWITCH FOR MOTORIZED BASKETBALL BACKSTOP.
18. CONNECT TO SPEED CONTROLLER MOUNTED IN EXHAUST HOOD.

19. PROVIDE PLASTIC PROTECTIVE COVER PROTECTING EXISTING IT RACK AND EQUIPMENT/DEVICES FROM DUST DURING CONSTRUCTION. COORDINATE EXACT REQUIREMENT WITH SCHOOL BOARD REPRESENTATIVE.
20. 41mm EMPTY CONDUIT TO TELEPHONE BACKBOARD IN MAIN ELECTRICAL ROOM FOR CABLE TV. RECEPTACLE AND ASSOCIATED TV OUTLET BOX SHALL BE MOUNTED AT HIGH LEVEL, BELOW CEILING.

21. AT THIS LOCATION, REUSE EXISTING OUTLET BOX AND CONDUIT. PROVIDE NEW RECEPTACLE AND ASSOCIATED COVER PLATE. COORDINATE NEW RECEPTACLE TO NEW CIRCUIT COMPLETE WITH ASSOCIATED WIRING AS SHOWN, ADJUST ALL ASSOCIATED COMPONENTS TO SUIT.
22. SHORT THROW PROJECTOR AND ASSOCIATED COMPONENTS WILL BE REINSTALLED BY HAMILTON VIDEO & SOUND AS PART OF CASH ALLOWANCE. PROVIDE ALL REQUIRED MOUNTING SUPPORTS FOR PROPER INSTALLATION AS REQUIRED. PROVIDE NEW AV OUTLET AND ASSOCIATED NEW CONDUIT, BACKBOX, ETC AND COORDINATE ALL WORK WITH HAMILTON VIDEO & SOUND.

23. WHERE CONDUITS/RACEWAYS CANNOT BE RUN CONCEALED IN WALLS, USE WIREMOLD 700 SERIES METAL SURFACE RACEWAY WIRE CHANNEL, COMPLETE WITH ALL FITTINGS, BOX EXTENSION RINGS, OUTLET BOX, COVER, MOUNTING BRACKET AND ALL ASSOCIATED REQUIRED ACCESSORIES FOR COMPLETE INSTALLATION. COORDINATE ROUTING OF SURFACE RACEWAYS WITH THE OWNER AND ARCHITECT BEFORE ROUGH-IN.
24. EXISTING SERVICE MAST AND OVERHEAD WIRING FOR EXISTING PORTABLES SHALL BE TEMPORARILY DISCONNECTED FROM SERVICE MAST FOR NEW BRICK WORK AND SHALL BE SECURELY STORED FOR REUSE. EXISTING SERVICE MAST AND EXISTING SUPPORTING POLES MOUNTED ON EXISTING BRICK SHALL ALSO BE REMOVED FOR NEW BRICK WORK. REINSTALL SERVICE MAST AND ASSOCIATED SUPPORTING POLES ON NEW BRICK WALL AND RECONNECT ALL WIRING TO EXISTING PORTABLES TO REINSTATE EXISTING CONDITION. PROVIDE ALL NECESSARY CONDUIT WIRING AND COMPONENTS TO SUIT. COORDINATE ALL WORK ON SITE WITH GENERAL CONTRACTOR AND BRICK INSTALLER/CONTRACTOR.

25. COORDINATE EXACT LOCATION OF COPPER WITH OWNER, ARCHITECT AND ON SITE BEFORE ROUGH-IN.
26. FOR WATER BOTTLE FILLER. COORDINATE EXACT LOCATION ON SITE.
27. MOUNTED AT 1830mm A.F.F. (6'). COORDINATE EXACT LOCATION ON SITE.

28. EXISTING SERVICE POLE AND OVERHEAD WIRING FOR EXISTING PORTABLES SHALL BE TEMPORARILY DISCONNECTED FROM SERVICE POLE FOR NEW BRICK WORK AND SHALL BE SECURELY STORED FOR REUSE. EXISTING SERVICE POLE MOUNTED ON EXISTING BRICK SHALL ALSO BE REMOVED FOR NEW BRICK WORK. REINSTALL SERVICE POLE ON NEW BRICK WALL AND RECONNECT ALL WIRING TO EXISTING PORTABLES TO REINSTATE EXISTING CONDITION. PROVIDE ALL NECESSARY CONDUIT WIRING AND COMPONENTS TO SUIT. COORDINATE ALL WORK ON SITE WITH GENERAL CONTRACTOR AND BRICK INSTALLER/CONTRACTOR.
29. INCLUDE IN TENDER PRICE TO REPLACE TWENTY (20) RECEPTABLES WITH TAMPER PROOF RECEPTABLES (IN GYM, STAGE, JK/SK CLASSROOMS #113A & 113B).

30. ALL ELECTRICAL DEVICES MOUNTED ON WALLS SHALL BE PROTECTED FOR WALL PAINTING. COORDINATE WITH GENERAL CONTRACTOR AND ON SITE. TEMPORARILY DISCONNECT AND REMOVE IF REQUIRED AND RE-INSTALL AFTER COMPLETION OF WORK. VERIFY EXACT QUANTITY OF WALL MOUNTED DEVICES ON SITE.
31. EXISTING FIBER OPTIC CABLES, COMMUNICATION CABLES, POWER CABLES, EXISTING WIRELESS ANTENNA COMPLETE WITH ASSOCIATED CABLES ETC SHALL BE PROPERLY PROTECTED DURING NEW BRICK WORK. TEMPORARILY DISCONNECT AND REMOVE IF REQUIRED, RE-INSTALL AFTER COMPLETION OF NEW BRICK WORK AND REINSTATE EXISTING CONDITION. PROVIDE ALL NECESSARY COMPONENTS TO SUIT. COORDINATE ALL WORK ON SITE WITH GENERAL CONTRACTOR AND BRICK INSTALLER/CONTRACTOR.

32. EXISTING JUNCTION BOX SHALL BE TEMPORARILY DISCONNECTED FOR NEW BRICK WORK AND SHALL BE SECURELY STORED FOR REUSE. REINSTALL EXISTING JUNCTION BOX ON NEW BRICK WALL AND REINSTATE EXISTING CONDITION. PROVIDE ALL NECESSARY COMPONENTS TO SUIT. COORDINATE ALL WORK ON SITE WITH GENERAL CONTRACTOR AND BRICK INSTALLER/CONTRACTOR.
33. CLOCK/BELL RINGER. COORDINATE EXACT LOCATION ON SITE.

34. COORDINATE EXACT LOCATION WITH MECHANICAL CONTRACTOR AND ON SITE BEFORE ROUGHING IN.
35. CONNECT THE NEW RECIRC PUMP TO THE EXISTING CIRCUIT(S) PREVIOUSLY FEEDING THE REMOVED RECIRC PUMP. PROVIDE ALL NECESSARY WIRING, CONDUITS AND ACCESSORIES TO ENSURE A COMPLETE AND FULLY FUNCTIONAL INSTALLATION. VERIFY THE EXISTING CIRCUIT(S) AND COORDINATE ALL CONNECTIONS ACCORDINGLY.

36. RUN ALL CONDUITS THROUGH NEW WALL IN GENERAL OFFICE #127. THERE SHALL BE NO EXPOSED CONDUITS IN VESTIBULE #100 AND FORUM #101.
37. FOR TRAP SEAL PRIMER. COORDINATE EXACT LOCATION WITH MECHANICAL DRAWINGS AND ON SITE BEFORE ROUGHING IN.
38. CONNECT NEW ACCESS CONTROL PANEL TO EXISTING POWER PREVIOUSLY FEEDING REMOVED ACCESS CONTROL PANEL.



NO	DESCRIPTION	DATE
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1	ISSUED FOR OWNER'S REVIEW	2025 03 04
NO	ISSUED	

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CERTIFICATE OF PRACTICE #4232

PAUL A. FISHER PUBLIC SCHOOL RENOVATION & ALTERATION

2175 CAVENDISH DRIVE, BURLINGTON ON L7P 3J8

LEGAL DESCRIPTION

BLOCK 000 on Registered Plan 0000, CITY OF XXXXX



HALTON DISTRICT SCHOOL BOARD
J.W. SINGLETON EDUCATION CENTRE

2050 QUELPH LINE
BURLINGTON, ON L7P 5A8
TEL (905) 335-3663
FAX (905) 335-9802

NEW POWER LAYOUT



RDZ ENGINEERS LTD
17A - 30 Pennsylvania Avenue
Vaughan, Ontario L4K 4A5
email: info@rdzeng.ca

SCALE	PROJECT
AS SHOWN	24122
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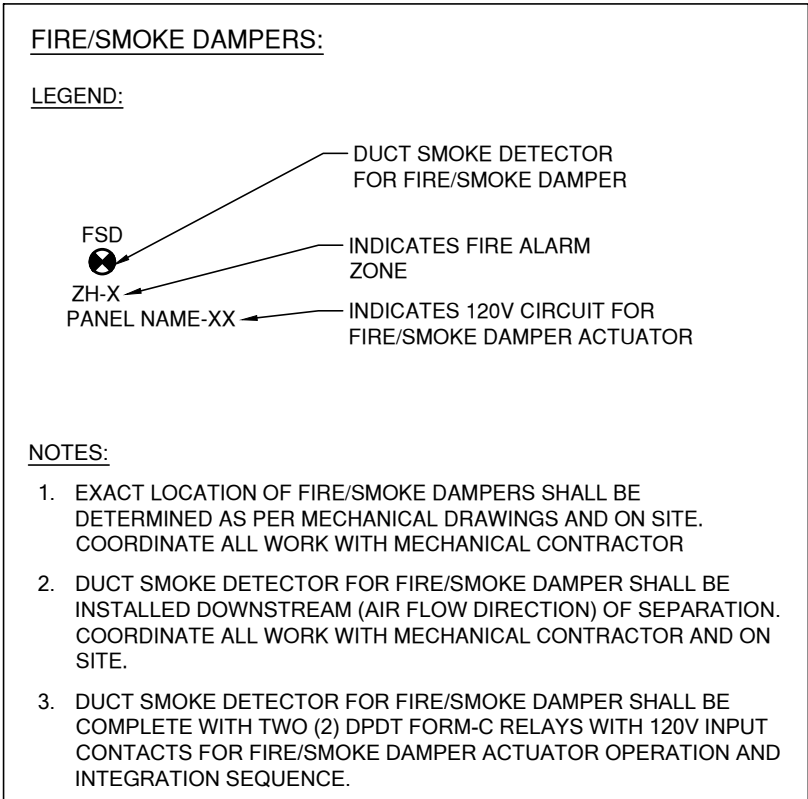
PAUL A. FISHER PUBLIC
SCHOOL RENOVATION &
ALTERATION

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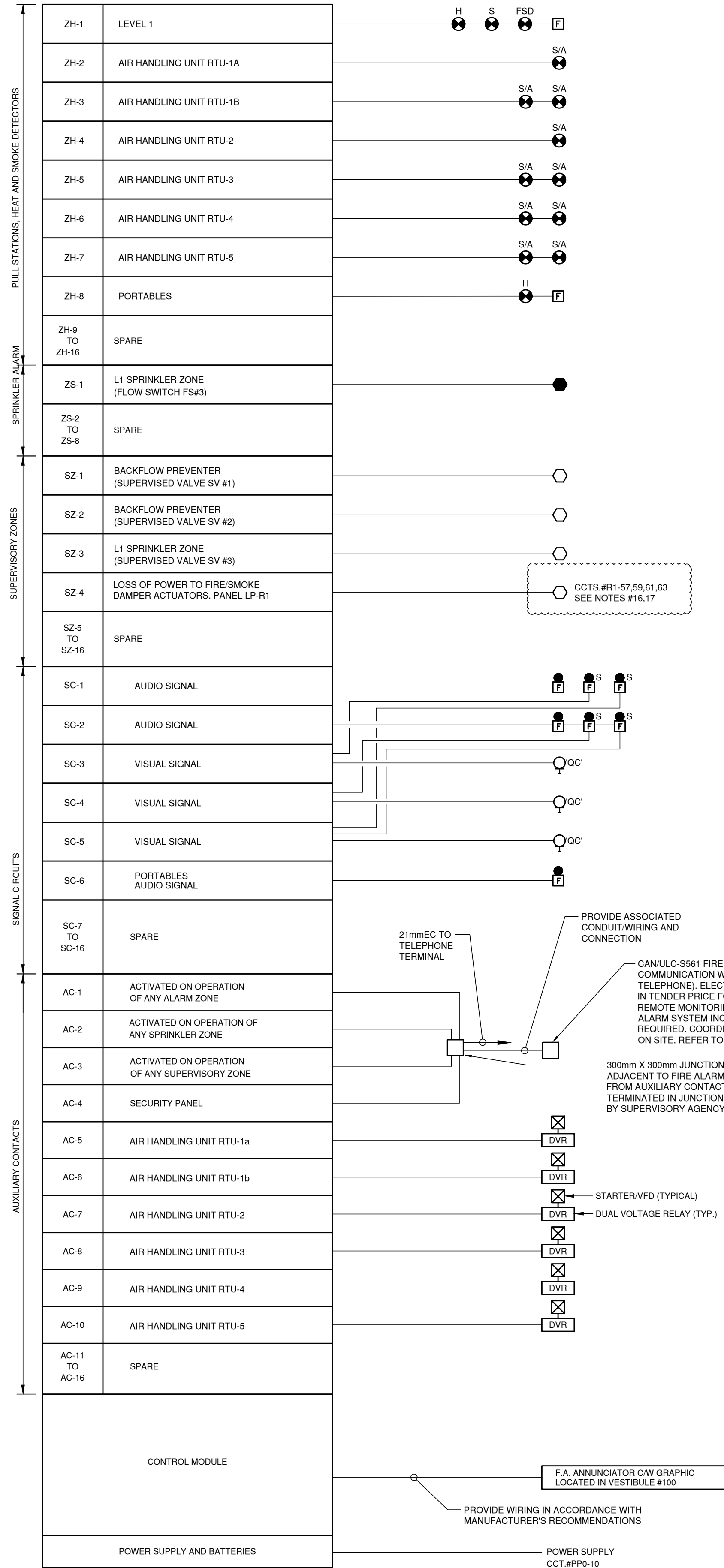
2050 GUELPH LINE
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2. A PULL STATIONS SHALL BE COMPLETE WITH LEXAN COVER EQUIPPED WITH LOCAL ALARM.
3. SMOKE DETECTORS SHALL BE A MINIMUM OF 610mm away from ANY OTHER DEVICE, SMOKE DETECTOR, DOWNROCK OR SPRINKLER HEAD AND MINIMUM 305mm AWAY FROM WALLS AND PARTITION WALLS.
4. ELECTRICAL CONTRACTOR SHALL COORDINATE LOCATION OF DUCT MOUNTED SMOKE DETECTORS WITH MECHANICAL CONTRACTOR TO AVOID FASE A. FIRE ALARMS.
5. CONDUITS LOW VOLTAGE OR LINE VOLTAGE ARE NOT ALLOWED TO BE ATTACHED TO CABLE TRAYS, HANGERS.
6. FOR LOCATION OF CABLE DUAL HANGERS IN CORRIDORS, COORDINATE WITH MECHANICAL DIVISION.
 - 305mm OPEN LADDER TYPE CABLE TRAY FOR COMPUTER, TEL. VOLTAGE SURVEILLANCE, SECURITY AND TV CABLES. CABLE TRAY SHALL BE:
 - GALVANIZED STEEL LADDER TRAY OF THE S120 SIZE AND CONFIGURATION SHOWN ON THE DRAWING; CLASS "1" WITH 12" SPACING AND ALL NECESSARY FITTINGS FOR A COMPLETE AND OPERATING SYSTEM.
 - FLOOR HUNG AND SUPPORTED AT 4" CENTERS
 - RIGID TYPING "CL" AND ASSOCIATED SUPPORTS AND ACCESSORIES SHALL BE ELECTRICAL CONTRACTOR'S RESPONSIBILITY.
 - THE CABLE TRAY SYSTEM AND ASSOCIATED SUPPORTS SHALL PROVIDE A COMPLETE ENGINEERED SYSTEM AND THE COMPLETE INSTALLATION SHALL CONFORM TO ALL C.S.A. STANDARDS AND ALL AUTHORITIES HAVING JURISDICTION. CODES AND REGULATIONS SHALL APPLY.
7. ALL SECURITY MOTION DETECTORS SHALL BE MOUNTED ON WALL, FOR EXACT LOCATION, COORDINATE WITH THE ARCHITECT/CONSULTANT PRIOR TO POUGH-IN.
8. WALL MOUNTED DUAL HANGERS FOR COMPUTER, TELEPHONE, P.A., SECURITY, VOLTAGE SURVEILLANCE AND TV CABLES FOR EXACT LOCATION COORDINATE WITH MECHANICAL DIVISION, REFER TO DETAILS ON DRAWING E002 & ELECTRICAL SPECIALTY DRAWING E003.
9. PROVIDE DUAL HANGERS AS REQUIRED FOR COMPUTER SYSTEM, P.A., TELEPHONE SYSTEM, SECURITY SYSTEM AND CCTV SYSTEM CABLES IN EACH ROOM AND A PORTABLE CEILING SPACE, TYING CABLES TO STRUCTURE IS NOT ACCEPTABLE.
10. IN ROOMS/FACILITIES WITH EXPOSED OR DRY WALL CEILING, RUN CONDUITS FROM EACH DETECTOR TO THE DETECTOR, PROVIDE 120V SURVEILLANCE SYSTEM EQUIPMENT DEVICES. LOCATED IN ROOM SPACE AND TERMINATE AT DUAL HANGERS WITH EXPOSED OR DRY WALL CEILING. PROVIDE WIRING TO SERVICE MAST FOR PORTABLES FOR OVERHEAD FEED. NO JUNCTION OR SPLINGS SHALL BE PROVIDED AT DETECTOR OR TERMINAL. PROVIDE 120V SURVEILLANCE SYSTEM EQUIPMENT DEVICES FOR OVERHEAD FIRE ALARM CABLES.
11. FINAL LOCATION OF FIRE ALARM COMPONENTS IN PORTABLES SHALL BE DETERMINED ON SITE.
12. ALL ELECTRICAL DEVICES MOUNTED ON WALLS SHALL BE PROTECTED FOR WALL PAINTING, COORDINATE WITH GENERAL CONTRACTOR AND ON SITE. TEMPORARILY DISCONNECT AND REMOVE IF REQUIRED AND RE-INSTALL AFTER COMPLETION OF WALL PAINTING.

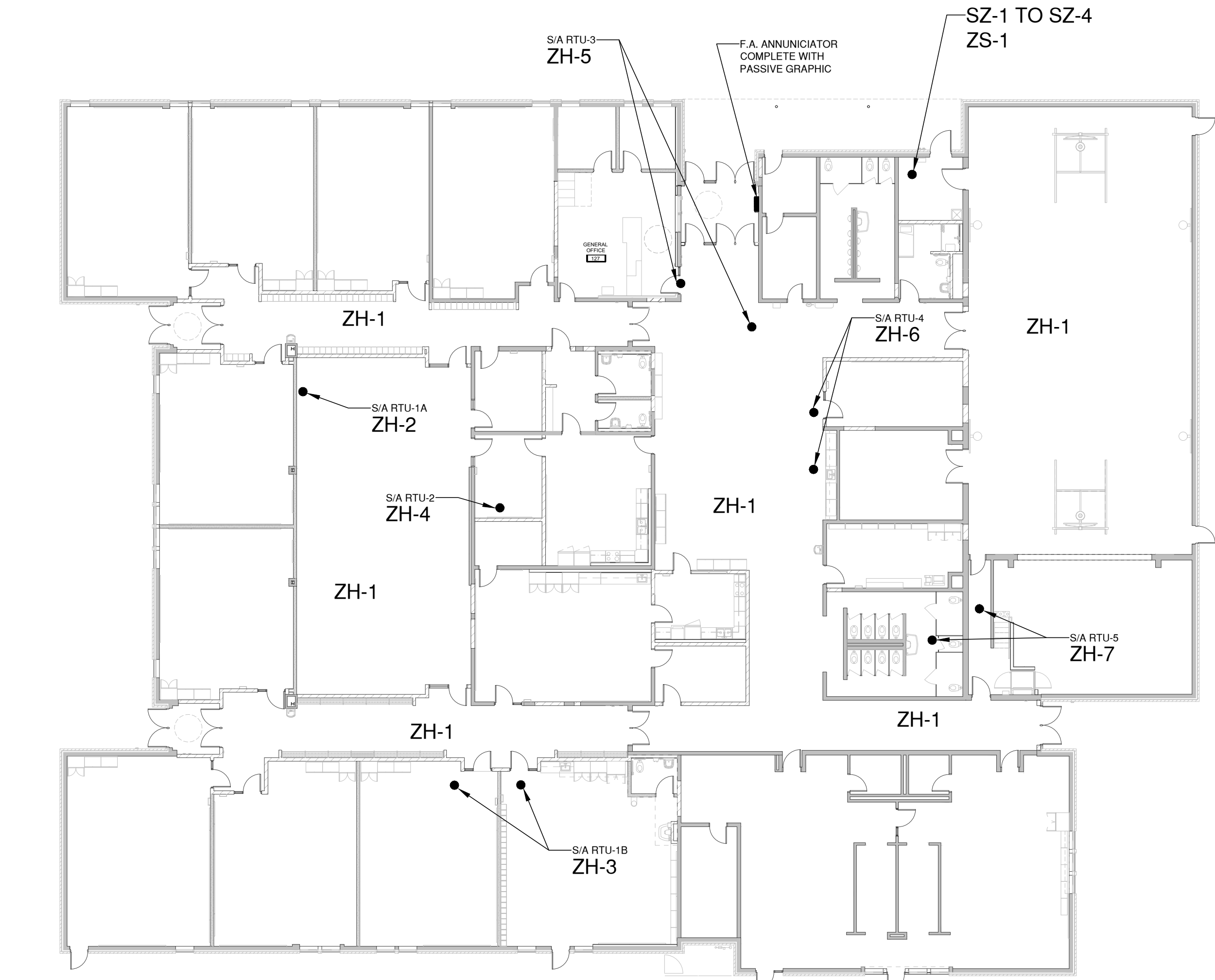


- NOTES**
- INCLUDE IN THE TENDER PRICE FOR THE SUPPLY, INSTALLATION AND FIRE ALARM VERIFICATION OF ADDITIONAL 1 FIRE ALARM PULL STATION, EACH C/W 15,000mm OF CONDUIT, WIRING AND CONNECTION TO THE NEAREST F.A. PULL STATION.
 - INCLUDE IN THE TENDER PRICE FOR THE SUPPLY, INSTALLATION AND FIRE ALARM VERIFICATION OF ADDITIONAL 1 FIRE ALARM CONE SPEAKER, EACH C/W 15,000mm OF CONDUIT, WIRING AND CONNECTION TO THE NEAREST F.A. CONE SPEAKER.
 - INCLUDE IN THE TENDER PRICE FOR THE SUPPLY, INSTALLATION AND FIRE ALARM VERIFICATION OF ADDITIONAL 1 FIRE ALARM CONE SPEAKER C/W STROBE LIGHT, EACH C/W 15,000mm OF CONDUIT, WIRING AND CONNECTION TO THE NEAREST F.A. CONE SPEAKER C/W STROBE LIGHT.
 - INCLUDE IN THE TENDER PRICE FOR THE SUPPLY, INSTALLATION AND FIRE ALARM VERIFICATION OF ADDITIONAL 1 STROBE LIGHT TYPE 12V, EACH C/W 15,000mm OF CONDUIT, WIRING AND CONNECTION TO THE NEAREST F.A. STROBE LIGHT.
 - INCLUDE IN THE TENDER PRICE FOR THE SUPPLY, INSTALLATION AND FIRE ALARM VERIFICATION OF ADDITIONAL 1 FIRE ALARM DUCT SMOKE DETECTOR MOUNTED IN RETURN AND/OR SUPPLY DUCT, EACH C/W PILOT LIGHT AND 15,000mm OF CONDUIT, WIRING AND CONNECTION TO NEAREST FIRE ALARM SMOKE DETECTOR MOUNTED IN RETURN AND/OR SUPPLY DUCT.
 - IN ACTUATION OF ANY FIRE ALARM ZONE, AUXILIARY CONTACTS AC-5 TO AC-10 SHALL BE ENERGIZED AND SHALL SHUT DOWN CORRESPONDING AIR HANDLING UNITS, ROOF TOP UNITS.
 - DVR RELAYS FOR AC-5 TO AC-10 SHALL BE C/W THE TIME DELAY PROVISIONS (AIR HANDLING, ROOF TOP UNITS, CANNOT START SIMULTANEOUSLY) COORDINATE WITH MECHANICAL DIV.
 - INCLUDE IN THE TENDER PRICE FOR THE SUPPLY, INSTALLATION AND FIRE ALARM VERIFICATION OF ADDITIONAL 1 FIRE ALARM SMOKE DETECTOR, EACH C/W 15,000mm OF CONDUIT, WIRING AND CONNECTION TO THE NEAREST F.A. HEAT/SMOKE DETECTORS.
 - INCLUDE IN THE TENDER PRICE FOR THE SUPPLY, INSTALLATION AND FIRE ALARM VERIFICATION OF ADDITIONAL 1 FIRE ALARM HEAT DETECTOR, EACH C/W 15,000mm OF CONDUIT, WIRING AND CONNECTION TO THE NEAREST F.A. HEAT/SMOKE DETECTORS.
 - OBTAIN APPROVED FINAL ROOM NAMES AND NUMBERS AND ARCHITECTURAL DRAWINGS BEFORE ANY PROGRAMMING OF FIRE ALARM CONTROL PANEL OR ORDERING PASSIVE GRAPHICS AND MODIFY FIRE ALARM ANNUNCIATOR TO SUIT.
 - ALL WIRING TO BE RUN IN CONDUITS AND IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION.
 - FOR EXACT QUANTITY OF FIRE ALARM DEVICES, REFER TO FLOOR PLANS.
 - FOR MORE INFORMATION REFER TO ELECTRICAL SPECIFICATION.
 - ELECTRICAL CONTRACTOR SHALL VERIFY LOCATIONS, QUANTITIES AND NAMES OF ALL SPRINKLER ALARM ZONES AND SPRINKLER SUPERVISORY ZONES ON SITE. COORDINATE ALL WORK WITH MECHANICAL/SPRINKLER CONTRACTOR AND ON SITE.
 - PROVIDE ALL NECESSARY RELAYS AND COMPONENTS TO ACHIEVE LOSS OF POWER (CIRCUIT FAILURE) OF EACH CIRCUIT FOR RESPECTIVE PANEL.
 - CONDUCT COMMISSIONING, TESTING, OPERATION AND VERIFICATION OF ALL FIRE/SMOKE DAMPERS AND ASSOCIATED DUCT SMOKE DETECTORS AS PART OF INTEGRATED LIFE SAFETY SYSTEM TESTING.
 - INCLUDE IN THE TENDER PRICE FOR THE SUPPLY, INSTALLATION AND F.A. VERIFICATION OF ADDITIONAL 1 DUCT SMOKE DETECTOR FOR FIRE/SMOKE DAMPERS COMPLETE WITH ASSOCIATED 120V CIRCUIT CONNECTION, EACH COMPLETE WITH PILOT LIGHT, AUXILIARY CONTACT CONNECTION, SUPERVISORY ZONE (LOSS OF POWER) AND 15,000mm OF CONDUIT, WIRING AND CONNECTION TO THE NEAREST FIRE ALARM ZONE.

- FIRE ALARM SYSTEM OPERATION SEQUENCE:**
- ACTIVATION OF ANY ALARM INITIATING DEVICE SHALL CAUSE THE FOLLOWING TO OCCUR:
 - ALL AUDIBLE SIGNALS TO SOUND CONTINUOUSLY FOR THE MANDATORY PERIOD BEFORE THEY CAN BE MANUALLY OR AUTOMATICALLY SILENCED.
 - THE TYPE AND LOCATION OF THE ALARM TO BE INDICATED ON THE CONTROL PANEL AND THE REMOTE ANNUNCIATOR.
 - TRANSMIT AN ALARM TO THE FIRE ALARM MONITORING STATION WITH INDICATION ON THE ANNUNCIATOR.
 - OPERATION OF AUXILIARY CONTACTS FOR CONTROL OF AUXILIARY FUNCTIONS.
 - RELEASE FIRE DOORS HELD OPEN BY ELECTRIC DOOR HOLD OPEN DEVICES.
 - FAN SHUT DOWN.
 - ACTIVATION OF ANY SUPERVISORY DEVICE SHALL CAUSE THE FOLLOWING TO OCCUR:
 - THE COMMON TROUBLE ALARM SIGNAL SHALL SOUND IN THE CONTROL PANEL AND THE ANNUNCIATOR.
 - THE TYPE AND LOCATION FOR THE ALARM TO BE INDICATED ON THE CONTROL PANEL AND THE ANNUNCIATOR.
 - ANY MALFUNCTION ON THE SYSTEM SHALL SOUND A TROUBLE ALARM SIGNAL AND ILLUMINATE A TROUBLE INDICATOR ON THE CONTROL PANEL AND THE ANNUNCIATOR.

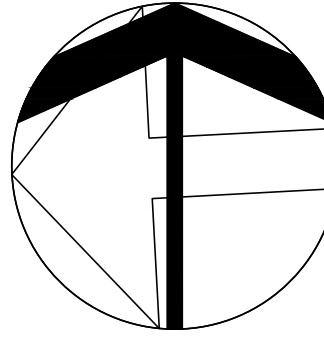
- FIRE/SMOKE DAMPER OPERATION SEQUENCE:**
- PROVIDE ALL REQUIRED RELAYS AND COMPONENTS TO ACHIEVE THE FOLLOWING SEQUENCE:
- NORMAL CONDITION:
 - 120V POWER SHALL BE PROVIDED TO FIRE/SMOKE DAMPER ACTUATOR TO KEEP DAMPER IN OPEN POSITION.
 - ALARM CONDITION:
 - ACTIVATION OF DUCT SMOKE DETECTOR OF RESPECTIVE FIRE/SMOKE DAMPER (MOUNTED DOWNSTREAM OF SEPARATION) SHALL DISCONNECT 120V POWER TO FIRE/SMOKE DAMPER ACTUATOR AND CLOSE THE DAMPER.
 - LOSS OF POWER:
 - LOSS OF 120V POWER TO ACTUATOR SHALL BE PROGRAMMED IN FACP AS TROUBLE FOR CIRCUITS AS INDICATED ON FIRE ALARM RISER DIAGRAM

PORTABLES
ZH-8



2
E500
FIRE ALARM KEY PLAN
Scale: N.T.S.

1
E500
FIRE ALARM RISER DIAGRAM
Scale: N.T.S.



NO	ISSUED	DATE
5	ISSUED FOR ADDENDUM E-02	2025 06 17
4	ISSUED FOR TENDER	2025 05 27
3	ISSUED FOR PERMIT	2025 05 05
2	ISSUED FOR BUILDING PERMIT PRE-CONSULTATION	2025 04 17
1	ISSUED FOR OWNERS REVIEW	2025 03 04

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT AND MUST REPORT ANY DISCREPANCIES TO THE CONSULTANTS BEFORE PROCEEDING WITH THE WORK. THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE CONSULTANTS.

CERTIFICATE OF PRACTICE #4292

PAUL A. FISHER PUBLIC SCHOOL RENOVATION & ALTERATION

2175 CAVENDISH DRIVE, BURLINGTON, ON L7P 3J8

LEGAL DESCRIPTION
BLOCK 000 on Registered Plan 0000, CITY OF XXXXX

HALTON DISTRICT SCHOOL BOARD
J.W. SINGLETON EDUCATION CENTRE
2050 GUELPH LINE, BURLINGTON, ON L7P 5A8
TEL: (905) 335-3663 FAX: (905) 335-9802

FIRE ALARM RISER DIAGRAM



RDZ ENGINEERS LTD
17A - 35 PENNSYLVANIA AVENUE
VAUGHAN, ONTARIO L4N 4A5
email: info@rdzeng.ca

SCALE	PROJECT
AS SHOWN	24122
DATE	-
DRAWN	MB
CHECKED	TM
PRINT DATE	-
REVIT FILE	-

PANEL LP-'L'									
225A MAINS, 42 CCTS, 120/208V, 3Ø, 4W, 22KAIC RECESS MOUNTED PANEL LOCATION: STAFF LOUNGE #120									
DESCRIPTION	LOAD (W)	BRKR SIZE	A	B	C	BRKR SIZE	LOAD (W)	DESCRIPTION	
BATTERY UNIT (BU-1) & LIGHTING	755	15A/1P	1	2		20A/1P	696	CLASSROOMS & OFFICE LIGHTING	
BATTERY UNIT (BU-2) & LIGHTING	790	15A/1P	3	4		20A/1P	928	CLASSROOMS & OFFICE LIGHTING	
BATTERY UNIT (BU-5) & LIGHTING	582	15A/1P	5	6		20A/1P	672	LIBRARY LIGHTING	
CORRIDORS, VESTIBULES LTG	915	20A/1P	7	8		20A/1P	448	LIBRARY LIGHTING	
CORRIDORS, VESTIBULES LTG	910	20A/1P	9	10		20A/1P	615	STAFF, MTNG, LIFE SKILLS ETC LTG	
CLASSROOMS LIGHTING	704	20A/1P	11	12		20A/1P	615	STAFF, MTNG, LIFE SKILLS ETC LTG	
CLASSROOMS LIGHTING	576	20A/1P	13	14		20A/1P	180	SEMINAR, STAFF WRK RM, UTR	
CLASSROOMS LIGHTING	768	20A/1P	15	16		20A/1P	180	SEMINAR, STAFF WRK RM, UTR	
CLASSROOMS LIGHTING	768	20A/1P	17	18		20A/1P		SPARE	
CLASSROOMS LIGHTING	580	20A/1P	19	20		20A/1P			
CLASSROOMS LIGHTING	520	20A/1P	21	22		20A/1P			
SPARE		20A/1P	23	24		20A/1P			
		20A/1P	25	26		20A/1P			
		20A/1P	27	28		20A/1P			
↓			29	30				SPARE	
			31	32					
			33	34					
			35	36					
			37	38					
			39	40					
↓			41	42					
TOTAL		7866					4534		
TOTAL CONNECTED LOAD		12.4	NOTES:						

PANEL LP-'R2' (SECTION 1)									
225A MAINS, 2-54 CCTS, 120/208V, 3Ø, 4W 22KAIC RECESS MOUNTED PANEL, C/W FEED THRU LUGS LOCATION: STAFF LOUNGE #120									
DESCRIPTION	LOAD (W)	BRKR SIZE	A	B	C	BRKR SIZE	LOAD (W)	DESCRIPTION	
CP RECP.,CLOCK (#129A,130,119)	900	15A/1P	1	2		15A/1P	400	DOOR OPER. (VEST.130A,CORR.134)	
CONTROLLED RECEPT. (#129A)	600	15A/1P	3	4		15A/1P	300	DOOR OPERATORS (VEST.100,OFF.C)	
RECEPTACLES (#129A)	300	15A/1P	5	6		15A/1P	200	DOOR OPERATOR (GYM)	
RECEPTACLES (#129A)	300	15A/1P	7	8		20A/1P	600	CORRIDOR RECEPTACLES	
CABLE TV (LIBRARY #130)	300	15A/1P	9	10		20A/1P	450	CORRIDOR RECEPTACLES	
RECEPTACLES (LIBRARY #130)	300	15A/1P	11	12		15A/1P	600	CP RECP.,CLOCK (#126A,126B)	
RECEPTACLES (LIBRARY #130)	450	15A/1P	13	14		15A/1P	600	CONTROLLED RECEPT. (#128A)	
RECEPTACLES (LIBRARY #130)	300	15A/1P	15	16		15A/1P	300	RECEPTACLES (#128A)	
RECEPTACLES (LIBRARY #130)	300	15A/1P	17	18		15A/1P	300	RECEPTACLES (#128A)	
RECEPTACLES (LIBRARY #130)	600	20A/1P	19	20		15A/1P	600	CONTROLLED RECEPT. (#128B)	
RECEPTACLES (MTNG #119)	300	15A/1P	21	22		15A/1P	300	RECEPTACLES (#128B)	
RECEPTACLES (#119,120,121)	600	15A/1P	23	24		15A/1P	300	RECEPTACLES (#128B)	
RECEPTACLES (MTNG #121)	300	15A/1P	25	26		15A/1P	600	CP RECP.,CLOCK (#128C,128D)	
CP RECP.,CLOCK (#120,121,109)	900	15A/1P	27	28		15A/1P	600	CONTROLLED RECEPT. (#128C)	
WATER BOTTLE FILLER (FORUM)	200	15A/1P	29	30		15A/1P	300	RECEPTACLES (#128C)	
GFI RECEPTACLES (WR# #122,123)	300	15A/1P	31	32		15A/1P	300	RECEPTACLES (#128C)	
HAND DRYER (WR #123)	1000	15A/1P	33	34		15A/1P	600	CONTROLLED RECEPT. (#128D)	
HAND DRYER (WR #122)	1000	15A/1P	35	36		15A/1P	300	RECEPTACLES (#128D)	
FRIDGE (STAFF LOUNGE #120)	800	15A/1P	37	38		15A/1P	300	RECEPTACLES (#128D)	
FRIDGE (STAFF LOUNGE #120)	800	15A/1P	39	40		15A/1P	300	RECEPTACLES (HEALTH #124)	
DISHWASHER (STAFF LOUNGE #120)	800	15A/1P	41	42		15A/1P	600	RECEPTACLES (#127A,B)	
STOVE (STAFF LOUNGE #120)	5000	50A/2P	43	44		15A/1P	300	RECEPTACLES (OFFICE #127A)	
HOOD EXH. FAN (#120)	200	15A/1P	45	46		15A/1P	300	INTERCOM (GEN.OFF.#127)	
SPLIT RECEPTACLE (STAFF LOUNGE #120)	600	15A/2P GFI BREAKER	47	48		15A/1P	300	RECEPTACLES (GEN.OFF.#127)	
MICROWAVE (STAFF LOUNGE #120)	1100	15A/1P	49	50		15A/1P	300	RECEPTACLES (GEN.OFF.#127)	
			51	52		15A/1P	300	P.A. EQUIPMENT (GEN.OFF.#127)	
			53	54		15A/1P	200	BELL RINGER (GEN.OFF.#127)	
TOTAL		18250					10550		
TOTAL (kW)		28.8	NOTES:						
TOTAL CONNECTED LOAD (kW)		36.90							

PANEL LP-'R2' (SECTION 2)									
225A MAINS, 2-54 CCTS, 120/208V, 3Ø, 4W 22KAIC RECESS MOUNTED PANEL, C/W FEED THRU LUGS LOCATION: STAFF LOUNGE #120									
DESCRIPTION	LOAD (W)	BRKR SIZE	A	B	C	BRKR SIZE	LOAD (W)	DESCRIPTION	
MICROWAVE (STAFF LOUNGE #120)	1100	15A/1P	55	56		15A/1P	300	CABLE TV (GEN.OFF.#127)	
SPLIT RECEPTACLE (STAFF LOUNGE #120)	600	15A/2P GFI BREAKER	57	58		20A/1P	500	COPIER/PRINTER (GEN.OFF.#127)	
			59	60		20A/1P	300	RECEPTACLES (GEN.OFF.#127)	
RECEPTACLES (SEMINAR #109)	450	15A/1P	61	62		15A/1P	200	DOOR OP/EMERG.ASSIST. (#105A)	
RECEPTACLES (SEMINAR #109, 108)	600	15A/1P	63	64		15A/1P	300	ADJUSTABLE TABLE (UTR #105A)	
BASKETBALL BACKSTOP (GYM #105)	500	20A/1P	65	66		15A/1P	300	LIFT CHARGER (UTR #105A)	
BASKETBALL BACKSTOP (GYM #108)	500	20A/1P	67	68		15A/1P	150	GFI RECEPT. (UTR #105A)	
ULC MONITORING PANEL (x102)	100	15A/1P	69	70		15A/1P	1000	HAND DRYER (UTR #105A)	
GSM WIRELESS EQUIPMENT (x102)	100	15A/1P	71	72		20A/1P	300	RECEPTACLES (FORUM #101)	
WATER BOTTLE FILLER (CORR.#134)	200	15A/1P	73	74		15A/1P	300	TV (FORUM #101)	
RECEPTACLES (SPRINKLER #105B)	300	20A/1P	75	76		15A/1P	300	DISPLAY CASE (FORUM #101)	
TRAP SEAL PRIMER (#105B)	100	15A/1P	77	78		15A/1P		SPARE	
TRAP SEAL PRIMERS (WR#s 122,123)	300	15A/1P	79	80		15A/1P			
SPARE		15A/1P	81	82		15A/1P			
SPARE		15A/1P	83	84		15A/1P			
SPACE			85	86				SPACE	
			87	88					
			89	90					
			91	92					
			93	94					
			95	96					
			97	98					
			99	100					
			101	102					
			103	104					
			105	106					
			107	108					
TOTAL		4850					3950		
TOTAL (kW)		8.8	NOTES:						

PANEL LP-'R1'									
225A MAINS, 84 CCTS, 120/208V, 3Ø, 4W 22KAIC SURFACE MOUNTED PANEL LOCATION: ELECTRICAL RM. #114									
DESCRIPTION	LOAD (W)	BRKR SIZE	A	B	C	BRKR SIZE	LOAD (W)	DESCRIPTION	
EXTERIOR BUILDING LIGHTING	230	20A/1P	1	2		15A/1P	200	DOOR OPERATOR (VESTIBULE 135A)	
CONTROLLED RECEPT. (#129B)	600	15A/1P	3	4		20A/1P	450	CORRIDOR RECEPTACLES	
RECEPTACLES (#129B)	300	15A/1P	5	6		20A/1P	450	CORRIDOR RECEPTACLES	
RECEPTACLES (#129B)	300	15A/1P	7	8		15A/1P	600	CP RECP.,CLOCK (#117,118)	
CP RECP.,CLOCK (#129B,131A,131B)	900	15A/1P	9	10		15A/1P	600	CONTROLLED RECEPT. (#118)	
CONTROLLED RECEPT. (#131A)	600	15A/1P	11	12		15A/1P	300	RECEPTACLES (#118)	
RECEPTACLES (#131A)	300	15A/1P	13	14		15A/1P	300	RECEPTACLES (#118)	
RECEPTACLES (#131A)	300	15A/1P	15	16		15A/1P	150	WATER BOTTLE FILLER (CORR.#135)	
CONTROLLED RECEPT. (#131B)	600	15A/1P	17	18		15A/1P	150	RECEPTACLES (CALMING RM #115)	
RECEPTACLES (#131B)	300	15A/1P	19	20		15A/1P	150	RECEPTACLES (CALMING RM #115)	
RECEPTACLES (#131B)	300	15A/1P	21	22		15A/1P	300	CEILING LIFT CHARGER	
CP RECP.,CLOCK (#131C,131D)	600	15A/1P	23	24		15A/1P	300	RECEPTACLES (SENSORY RM #116)	
CONTROLLED RECEPT. (#131C)	600	15A/1P	25	26		15A/1P	300	RECEPTACLES (SENSORY RM #116)	
RECEPTACLES (#131C)	300	15A/1P	27	28					
RECEPTACLES (#131C)	300	15A/1P	29	30		50A/2P	5000	STOVE (KITCHEN #117)	
CONTROLLED RECEPT. (#131D)	600	15A/1P	31	32		15A/1P	200	HOOD EXH. FAN (#117)	
RECEPTACLES (#131D)	300	15A/1P	33	34		15A/1P	1100	MICROWAVE (#117)	
RECEPTACLES (#131D)	300	15A/1P	35	36		15A/1P	1100	MICROWAVE (#117)	
GFI RECEPT.(WR 131DA)&BRADLEY	300	15A/1P	37	38		15A/2P GFI BREAKER	600	SPLIT RECEPTACLE (#117)	
HAND DRYER (WR 131DA)	1000	15A/1P	39	40					
DOOR OPERATORS (CORR.#112)	300	15A/1P	41	42		15A/1P	800	DISHWASHER (#117)	
STAGE LIFT (#107) (20A,120V)	1800	20A/1P	43	44		15A/1P	800	FRIDGE (#117)	
STAGE LIFT LIGHT & RECEP (#107)	300	15A/1P	45	46		15A/1P	600	WASHER (#117)	
EXTERIOR BUILDING LIGHTING	300	20A/1P	47	48					
COPPER (STAFF #110)	500	20A/1P	49	50		30A/2P	3000	DRYER (#117)	
RECEPTACLES (STAFF #110)	300	15A/1P	51	52		15A/1P	100	DRYER BOOSTER FAN DEF-1 (#117)	
RECEPTACLES (STAFF #110)	300	15A/1P	53	54		15A/2P GFI	600	SPLIT RECEPTACLE (#118)	
CP RECP.,CLOCK (STAFF #110)	300	15A/1P	55	56		56A BREAKER			
FSD ACTUATORS	100	15A/1P	57	58		15A/1P	100	ELECTRIC STRIKE (VEST.#x113C)	
FSD ACTUATORS	120	15A/1P	59	60		15A/1P		SPARE	
TRAP SEAL PRIMER (WR #131DA)	200	15A/1P	61	62		15A/1P			
FSD ACTUATORS	100	15A/1P	63	64		15A/1P			
FSD ACTUATORS	100	15A/1P	65	66				SPACE	
SPARE		15A/1P	67	68					
SPARE		15A/1P	69	70					
SPACE			71	72					
			73	74					
			75	76					
			77	78					
			79	80					
			81	82					
			83	84					
TOTAL		13750					18250		
TOTAL CONNECTED LOAD		32.0	NOTES:						

PANEL LP-'M'

Job Name:

Paul A Fisher PS Lighting Renewal
Engineer: SURI & ASSOCIATES LTD
Distributor: REXEL - WESTBURNE - KIT
(KITCHENER)

Catalog Number:

LACH3-24G-40-40K-125-MV

Notes:**Type:****A1**

GROSS23-18163

LACH

Latches . Cam . Hook

PROJECT:

CAT.NO:

NOTES:

DATE:

TYPE:

VOLTS:

PEERLUX®
SERIES**GENERAL DESCRIPTION**

LED luminaire for **recessed** installation. Durable shielding with a #12 clear prismatic acrylic diffuser supplied as standard. Rigid one-piece body constructed from code gauge steel. Cam latch release opens frame for easy servicing while retaining hook prevents the hinged frame from disengaging accidentally when opened. Lens is held within a hinged steel frame. No visible hardware. Plaster frame kit available, consult factory. Ideal for commercial environments.

CERTIFICATION

Approved to UL1598 and CSA C22.2 No. 250 standards**
Suitable for damp locations. IC RATED.



*LED Five (5) year limited warranty. ****Complies with Buy American Act.
**Operating temperature: -20°C to +35°C / -4°F to +95°F, consult factory for operating temperatures outside the listed range.
***Not all available products are DLC qualified. View DLC Qualified Products List at designlights.org to confirm which versions are qualified.
Specifications are subject to change. Please confirm latest specifications prior to placing order. ****up to 50W on 1'x4' and 2'x2', 100W on 2'x4'.

PERFORMANCE SUMMARY 8FT X 4FT AT 4000K

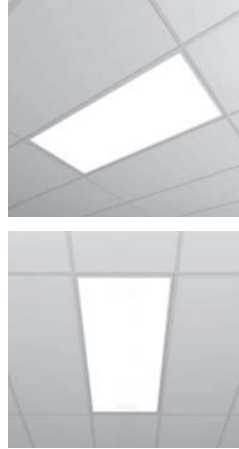
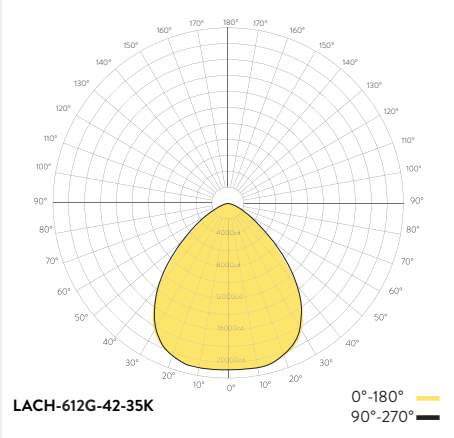
LUMENS(lm)	WATTAGE(W)	EFFICACY(lm/W)
4200	40	105

PERFORMANCE SUMMARY 8FT X 8FT AT 4000K

LUMENS(lm)	WATTAGE(W)	EFFICACY(lm/W)
8400	80	105

PERFORMANCE SUMMARY 12FT AT 4000K

LUMENS(lm)	WATTAGE(W)	EFFICACY(lm/W)
6000	55	109

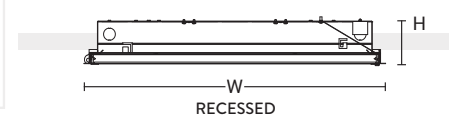
**PHOTOMETRIC DATA****DIMENSIONS - METRIC**

SIZE	L	W	H
312G	1200mm	300mm	83mm
600G	600mm	600mm	83mm
612G	600mm	1200mm	83mm

DIMENSIONS - IMPERIAL

SIZE	L	W	H
14G	4'	1'	3.25"
22G	2'	2'	3.25"
24G	2'	4'	3.25"

*other sizes available, consult factory

MOUNTING / CROSS SECTION**ORDERING INFORMATION**

FIXTURE	STYLE	SIZE* T-bar Ceiling:	LUMENS	CCT	SHIELDING	CONTROLS *OPTIONAL*	DRIVER
LACH = Latches. Cam. Hook	3 = Static Troffer 3A = Air Handling Troffer	14G = 1' x 4' 22G = 2' x 2' 312G = 300mm x 1200mm 600G = 600mm x 600mm 24G = 2' x 4' 612G = 600mm x 1200mm	30 = 3000lm 32 = 3200lm 35 = 3500lm 40 = 4000lm 46 = 4600lm 40 = 4000lm 48 = 4800lm 64 = 6400lm 82 = 8200lm 90 = 9000lm 100 = 10000lm	30K = 3000K 35K = 3500K 40K = 4000K 50K = 5000K TW = Tunable White *Other CCT, RGB (Red, Green, Blue LEDs), DM (dim to warm) available, consult factory	12 = Clear Prismatic Acrylic 12F = Frosted Prismatic Acrylic FA = Flat Frosted Acrylic FOA = Flat Opal Acrylic 12P = Clear Prismatic Polycarbonate 0.125in THK 125 = Clear Prismatic Acrylic 0.125in THK	OC = On / Off Occupancy Control O5 = 100% - 50% Hi / Low Occupancy Control Click here for suggested control options	MV = Standard 120V-277V 1% Dimming (0-10V) 347 = Standard 347V Dimming (0-10V) EM = Emergency Driver X = DALI, Lutron EcoSystem LED, and other drivers available, consult factory

*other sizes on request

Job Name:

Paul A Fisher PS Lighting Renewal
Engineer: SURI & ASSOCIATES LTD
Distributor: REXEL - WESTBURNE - KIT
(KITCHENER)

Catalog Number:

LACH3-24G-40-40K-125-MV

Notes:**Type:****A1**

GROSS23-18163

LACH

Latches . Cam . Hook

PROJECT:

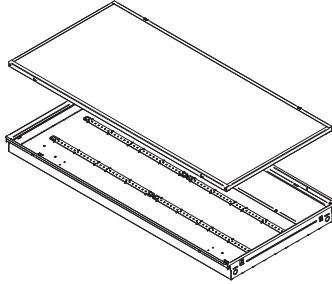
CAT.NO:

NOTES:

DATE:

TYPE:

VOLTS:

PEERLUX[®]
SERIES**SHIELDING**

Durable shielding with a #12 clear prismatic acrylic diffuser supplied as standard. Other shielding options available.

CONSTRUCTION

Rigid one-piece body constructed from code gauge steel. Cam latch release opens frame for easy servicing while retaining hook prevents the hinged frame from disengaging accidentally when opened. Lens is held within a hinged steel frame. No visible hardware.

FINISH

Standard finish is high gloss white polyester baked powder coat enamel. Custom colours available, consult factory.

Glossy / Matte / Custom Colours

**LED LIGHT ENGINE**

Mounted on internal high reflectance white painted reflector.

LED DRIVER

1% Dimming (0-10V). Emergency driver available. DALI (Digital Addressable Lighting Interface), Lutron EcoSystem LED, and other drivers available, consult factory.

ELECTRICAL

3000K 3500K 4000K 5000K

120V - 277V 347V

*TW (Tunable White), other CCT, RGB (Red, Green, Blue LEDs), DM (dim to warm) available, consult factory. L80 performance at 60,000 hours minimum. 80 CRI Standard. Other dimming options, lumen options, 90CRI and lengths available, consult factory.

CERTIFICATION

Approved to UL1598 and CSA C22.2 No. 250 standards** Suitable for damp locations. IC RATED.



*LED Five (5) year limited warranty. ****Complies with Buy American Act. **Operating temperature: -20°C to +35°C / -4°F to +95°F, consult factory for operating temperatures outside the listed range. ***Not all available products are DLC qualified. View DLC Qualified Products List at designlights.org to confirm which versions are qualified. ****up to 50W on 1'x4' and 2'x2', 100W on 2'x4'.

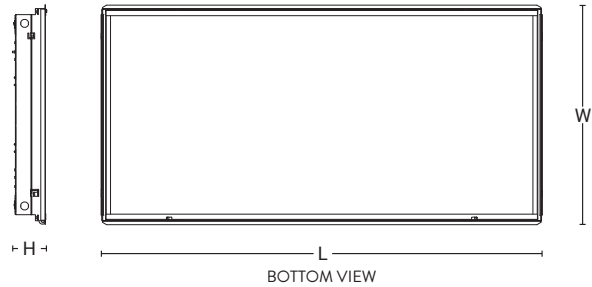
DIMENSIONS - METRIC

SIZE	L	W	H
312G	1200mm	300mm	83mm
600G	600mm	600mm	83mm
612G	600mm	1200mm	83mm

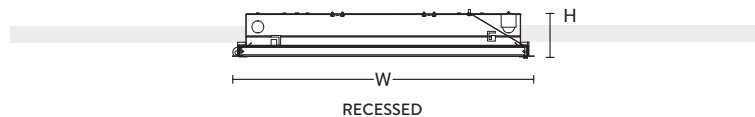
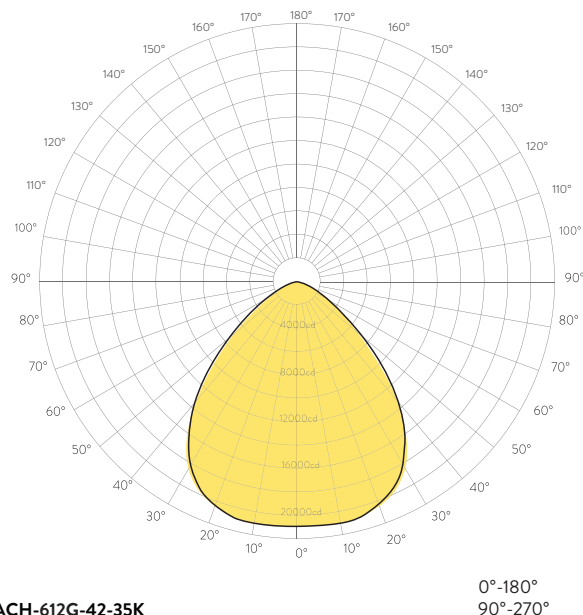
*other sizes available, consult factory

DIMENSIONS - IMPERIAL

SIZE	L	W	H
14G	4'	1'	3.25"
22G	2'	2'	3.25"
24G	2'	4'	3.25"

**MOUNTING / CROSS SECTION**

Recessed installation.

**PHOTOMETRIC DATA**

LACH-612G-42-35K

LACH

Latches . Cam . Hook

PROJECT:
CAT.NO:
NOTES:

DATE:
TYPE:
VOLTS:

PEERLUX[®]
SERIES

WATTAGE & EFFICACY - 312G

LACH-312G-30-30K-12	3000lm	3000K	27W	113lm/W
LACH-312G-30-35K-12	3000lm	3500K	27W	115lm/W
LACH-312G-30-40K-12	3000lm	4000K	25W	119lm/W
LACH-312G-30-50K-12	3000lm	5000K	25W	121lm/W
LACH-312G-32-30K-12	3200lm	3000K	29W	112lm/W
LACH-312G-32-35K-12	3200lm	3500K	28W	114lm/W
LACH-312G-32-40K-12	3200lm	4000K	27W	119lm/W
LACH-312G-32-50K-12	3200lm	5000K	27W	121lm/W
LACH-312G-35-30K-12	3500lm	3000K	30W	108lm/W
LACH-312G-35-35K-12	3500lm	3500K	30W	110lm/W
LACH-312G-35-40K-12	3500lm	4000K	30W	114lm/W
LACH-312G-35-50K-12	3500lm	5000K	29W	118lm/W
LACH-312G-40-30K-12	4000lm	3000K	34W	119lm/W
LACH-312G-40-35K-12	4000lm	3500K	34W	121lm/W
LACH-312G-40-40K-12	4000lm	4000K	33W	124lm/W
LACH-312G-40-50K-12	4000lm	5000K	32W	129lm/W
LACH-312G-46-30K-12	4600lm	3000K	40W	118lm/W
LACH-312G-46-35K-12	4600lm	3500K	39W	119lm/W
LACH-312G-46-40K-12	4600lm	4000K	37W	125lm/W
LACH-312G-46-50K-12	4600lm	5000K	37W	127lm/W

WATTAGE & EFFICACY - 600G

LACH-600G-30-30K-12	3000lm	3000K	29W	105lm/W
LACH-600G-30-35K-12	3000lm	3500K	29W	106lm/W
LACH-600G-30-40K-12	3000lm	4000K	28W	111lm/W
LACH-600G-30-50K-12	3000lm	5000K	27W	115lm/W
LACH-600G-32-30K-12	3200lm	3000K	30W	107lm/W
LACH-600G-32-35K-12	3200lm	3500K	30W	109lm/W
LACH-600G-32-40K-12	3200lm	4000K	29W	113lm/W
LACH-600G-32-50K-12	3200lm	5000K	28W	117lm/W
LACH-600G-35-30K-12	3500lm	3000K	34W	104lm/W
LACH-600G-35-35K-12	3500lm	3500K	33W	106lm/W
LACH-600G-35-40K-12	3500lm	4000K	32W	110lm/W
LACH-600G-35-50K-12	3500lm	5000K	31W	115lm/W
LACH-600G-40-30K-12	4000lm	3000K	35W	117lm/W
LACH-600G-40-35K-12	4000lm	3500K	34W	119lm/W
LACH-600G-40-40K-12	4000lm	4000K	33W	124lm/W
LACH-600G-40-50K-12	4000lm	5000K	32W	125lm/W
LACH-600G-46-30K-12	4600lm	3000K	40W	115lm/W
LACH-600G-46-35K-12	4600lm	3500K	40W	116lm/W
LACH-600G-46-40K-12	4600lm	4000K	38W	121lm/W
LACH-600G-46-50K-12	4600lm	5000K	38W	123lm/W

WATTAGE & EFFICACY - 612G

LACH-612G-40-30K-12	4000lm	3000K	34W	118lm/W
LACH-612G-40-35K-12	4000lm	3500K	34W	120lm/W
LACH-612G-40-40K-12	4000lm	4000K	32W	125lm/W
LACH-612G-40-50K-12	4000lm	5000K	32W	127lm/W
LACH-612G-48-30K-12	4800lm	3000K	41W	117lm/W
LACH-612G-48-35K-12	4800lm	3500K	41W	119lm/W
LACH-612G-48-40K-12	4800lm	4000K	39W	125lm/W
LACH-612G-48-50K-12	4800lm	5000K	38W	126lm/W
LACH-612G-64-30K-12	6400lm	3000K	57W	113lm/W
LACH-612G-64-35K-12	6400lm	3500K	56W	114lm/W
LACH-612G-64-40K-12	6400lm	4000K	53W	120lm/W
LACH-612G-64-50K-12	6400lm	5000K	53W	121lm/W

WATTAGE & EFFICACY - 612G

LACH-612G-82-30K-12	8200lm	3000K	68W	120lm/W
LACH-612G-82-35K-12	8200lm	3500K	68W	122lm/W
LACH-612G-82-40K-12	8200lm	4000K	65W	128lm/W
LACH-612G-82-50K-12	8200lm	5000K	64W	129lm/W
LACH-612G-90-30K-12	9000lm	3000K	77W	118lm/W
LACH-612G-90-35K-12	9000lm	3500K	76W	119lm/W
LACH-612G-90-40K-12	9000lm	4000K	72W	125lm/W
LACH-612G-90-50K-12	9000lm	5000K	71W	127lm/W
LACH-612G-100-30K-12	10000lm	3000K	84W	119lm/W
LACH-612G-100-35K-12	10000lm	3500K	83W	122lm/W
LACH-612G-100-40K-12	10000lm	4000K	80W	125lm/W
LACH-612G-100-50K-12	10000lm	5000K	78W	130lm/W

LOPA-11

LOPA . 11" width

PROJECT:
CAT.NO:
NOTES:

DATE:
TYPE:
VOLTS:

PEERLUX[®]
SERIES

GENERAL DESCRIPTION

LED luminaire for **surface** installation with mounting brackets or **suspended** installation with field adjustable aircraft cables or v-links for mounting chain. Clear or frosted acrylic wrap-around lens, optional wireguard with clear prismatic acrylic lens. Rigid one-piece body constructed from code gauge steel. Ideal for various commercial environments. Row mounting available, consult factory.

CERTIFICATION

Approved to UL1598 and CSA C22.2 No. 250 standards**
Suitable for damp locations.



*LED Five (5) year limited warranty. ****Complies with Buy American Act.
**Operating temperature: -20°C to +35°C / -4°F to +95 °F, consult factory for operating temperatures outside the listed range.
***Not all available products are DLC qualified. View DLC Qualified Products List at designlights.org to confirm which versions are qualified.
Specifications are subject to change. Please confirm latest specifications prior to placing order.

PERFORMANCE SUMMARY 2FT AT 4000K

LUMENS(lm)	WATTAGE(W)	EFFICACY(lm/W)
4200	40	105

PERFORMANCE SUMMARY 4FT AT 4000K

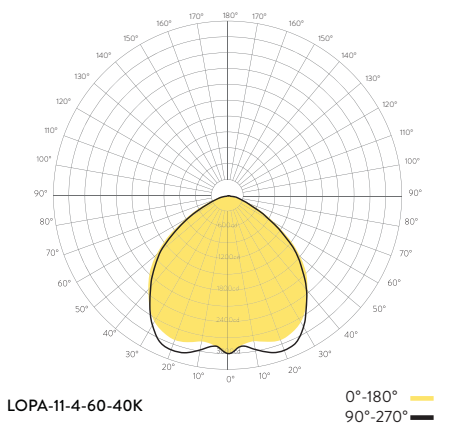
LUMENS(lm)	WATTAGE(W)	EFFICACY(lm/W)
8400	80	105

PERFORMANCE SUMMARY 8FT AT 4000K

LUMENS(lm)	WATTAGE(W)	EFFICACY(lm/W)
6000	55	109



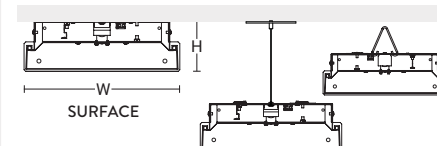
PHOTOMETRIC DATA



DIMENSIONS

SIZE	L	W	H
2FT	24.00"	11.10"	3.75"
4FT	48.00"	11.10"	3.75"
8FT	96.00"	11.10"	3.75"

MOUNTING / CROSS SECTION



(field adjustable aircraft cables or v-links for mounting chain)

ORDERING INFORMATION

LOPA	11							
FIXTURE	WIDTH	LENGTH	LUMENS	CCT	SHEILDING	CONTROLS *OPTIONAL*	POWER CORD *OPTIONAL*	DRIVER
LOPA	11 = 11"	2 = 2ft	26 = 2600lm	30K = 3000K 35K = 3500K 40K = 4000K 50K = 5000K	AC = Clear Prismatic Acrylic Wrap Around Lens ACF = Frosted Prismatic Acrylic Wrap Around Lens WG12 = Wireguard & Clear Prismatic Acrylic Lens	OC = On / Off Occupancy Control OS = 100% - 50% Hi / Low Occupancy Control Click here for suggested control options	C1 = Cord 5ft C2 = Cord 6ft C3 = Cord 8ft C4 = Cord 9ft C5 = Cord 10ft C6 = Cord 12ft	MV = Standard 120V-277V 1% Dimming (0-10V) 347 = Standard 347V Dimming (0-10V) EM = Emergency Driver X = DALI, Lutron EcoSystem LED, and other drivers available, consult factory
		4 = 4ft	34 = 3400lm 40 = 4000lm 48 = 4800lm 60 = 6000lm	TW = Tunable White *Other CCT, RGB (Red, Green, Blue LEDs), DM (dim to warm) available, consult factory				
		8 = 8ft	60 = 6000lm 80 = 8000lm 120 = 12000lm					

Job Name:

Paul A Fisher PS Lighting Renewal
Engineer: SURI & ASSOCIATES LTD
Distributor: REXEL - WESTBURNE - KIT
(KITCHENER)

Catalog Number:

LOPA-11-4-60-40K-AC-MV

Notes:**Type:****B1**

GROSS23-18163

LOPA-11

LOPA . 11" width

PROJECT:

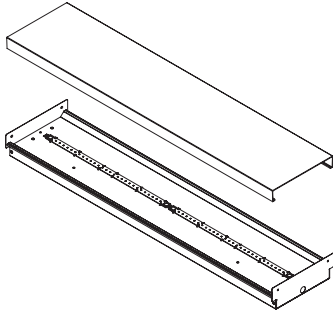
CAT.NO:

NOTES:

DATE:

TYPE:

VOLTS:

PEERLUX[®]
SERIES**SHIELDING**

Clear or frosted acrylic wrap-around lens.

Optional wireguard with clear prismatic acrylic lens.

CONSTRUCTION

Rigid one-piece body constructed from code gauge steel.

FINISH

Standard finish is high gloss white polyester baked powder coat enamel. Custom colours available, consult factory.

Glossy / Matte / Custom Colours

**LED LIGHT ENGINE**

Mounted on internal high reflectance white painted reflector.

LED DRIVER

1% Dimming (0-10V). Emergency driver available.

DALI (Digital Addressable Lighting Interface), Lutron EcoSystem LED, and other drivers available, consult factory.

ELECTRICAL

3000K 3500K 4000K 5000K

120V - 277V 347V

*TW (Tunable White), other CCT, RGB (Red, Green, Blue LEDs), DM (dim to warm) available, consult factory.

L80 performance at 60,000 hours minimum.

80 CRI Standard. Other dimming options, lumen options, 90CRI and lengths available, consult factory.

CERTIFICATION

Approved to UL1598 and CSA C22.2 No. 250 standards**

Suitable for damp locations.



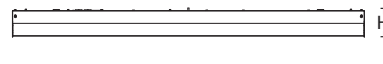
*LED Five (5) year limited warranty. ****Complies with Buy American Act.

**Operating temperature: -20°C to +35°C / -4°F to +95°F, consult factory for operating temperatures outside the listed range.

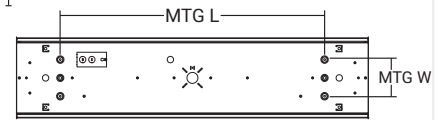
***Not all available products are DLC qualified. View DLC Qualified Products List at designlights.org to confirm which versions are qualified.

DIMENSIONS

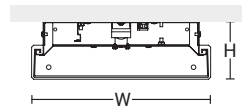
SIZE	L	W	H	MTG L	MTG W
2FT	24.00"	11.10"	3.75"	18.00"	5.00"
4FT	48.00"	11.10"	3.75"	36.00"	5.00"
8FT	96.00"	11.10"	3.75"	84.00"	5.00"



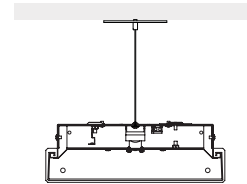
BOTTOM VIEW



TOP VIEW

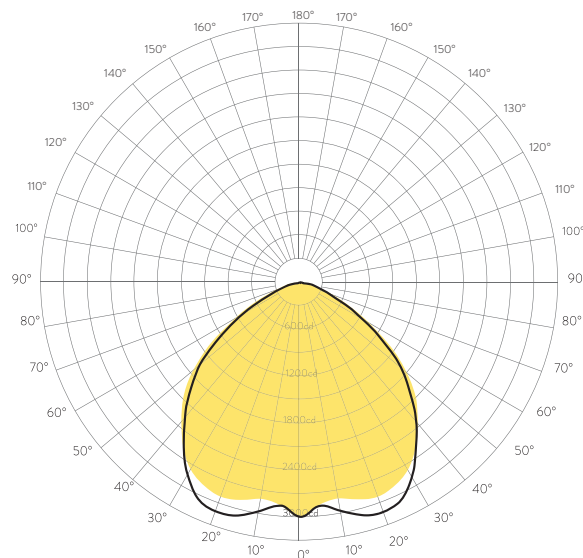
MOUNTING / CROSS SECTION**Surface** installation with mounting brackets or **suspended** installation with field adjustable aircraft cables or v-links for mounting chain.

SURFACE



SUSPENDED

(field adjustable aircraft cables or v-links for mounting chain)

PHOTOMETRIC DATA

LOPA-11-4-60-40K

0°-180° ■
90°-270° ■

LOPA-11

LOPA . 11" width

PROJECT:
CAT.NO:
NOTES:

DATE:
TYPE:
VOLTS:

PEERLUX[®]
SERIES

WATTAGE & EFFICACY - 2FT

LOPA-11-2-26-35K-AC-MV	2600lm	3500K	23W	115lm/W
LOPA-11-2-26-40K-AC-MV	2600lm	4000K	22W	120lm/W
LOPA-11-2-26-50K-AC-MV	2600lm	5000K	22W	121lm/W

WATTAGE & EFFICACY - 4FT

LOPA-11-4-34-35K-AC-MV	3400lm	3500K	30W	112lm/W
LOPA-11-4-34-40K-AC-MV	3400lm	4000K	30W	115lm/W
LOPA-11-4-34-50K-AC-MV	3400lm	5000K	29W	120lm/W
LOPA-11-4-40-35K-AC-MV	4000lm	3500K	33W	122lm/W
LOPA-11-4-40-40K-AC-MV	4000lm	4000K	32W	126lm/W
LOPA-11-4-40-50K-AC-MV	4000lm	5000K	31W	131lm/W
LOPA-11-4-60-35K-AC-MV	6000lm	3500K	53W	114lm/W
LOPA-11-4-60-40K-AC-MV	6000lm	4000K	51W	118lm/W
LOPA-11-4-60-50K-AC-MV	6000lm	5000K	50W	122lm/W
LOPA-11-4-34-35K-ACF-MV	3400lm	3500K	29W	120lm/W
LOPA-11-4-34-40K-ACF-MV	3400lm	4000K	28W	125lm/W
LOPA-11-4-34-50K-ACF-MV	3400lm	5000K	27W	126lm/W
LOPA-11-4-40-35K-ACF-MV	4000lm	3500K	32W	121lm/W
LOPA-11-4-40-40K-ACF-MV	4000lm	4000K	32W	126lm/W
LOPA-11-4-40-50K-ACF-MV	4000lm	5000K	31W	128lm/W
LOPA-11-4-60-35K-ACF-MV	6000lm	3500K	54W	112lm/W
LOPA-11-4-60-40K-ACF-MV	6000lm	4000K	51W	117lm/W
LOPA-11-4-60-50K-ACF-MV	6000lm	5000K	50W	121lm/W

WATTAGE & EFFICACY - 8FT

LOPA-11-8-60-35K-AC-MV	6000lm	3500K	51W	118lm/W
LOPA-11-8-60-40K-AC-MV	6000lm	4000K	49W	123lm/W
LOPA-11-8-60-50K-AC-MV	6000lm	5000K	48W	127lm/W
LOPA-11-8-80-35K-AC-MV	8000lm	3500K	64W	124lm/W
LOPA-11-8-80-40K-AC-MV	8000lm	4000K	62W	129lm/W
LOPA-11-8-80-50K-AC-MV	8000lm	5000K	60W	134lm/W
LOPA-11-8-120-35K-AC-MV	12000lm	3500K	106W	113lm/W
LOPA-11-8-120-40K-AC-MV	12000lm	4000K	102W	118lm/W
LOPA-11-8-120-50K-AC-MV	12000lm	5000K	99W	123lm/W
LOPA-11-8-60-35K-ACF-MV	6000lm	3500K	73W	111lm/W
LOPA-11-8-60-40K-ACF-MV	6000lm	4000K	70W	115lm/W
LOPA-11-8-60-50K-ACF-MV	6000lm	5000K	68W	119lm/W

MECHANICAL ADDENDUM M-01

RDZ
ENG

Project Name: Paul A Fisher Public School
Renovation and Alteration
Project Address: 2175 Cavendish Drive
Burlington, ON
Project No.: 24122

Date: June 18, 2025

Mechanical Addendum M-01

Include for the following additions, deletions, and/or clarifications in your bid amount. Indicate in the space provided on the bid form that you have received and included for the requirements of this addendum.

1. SPECIFICATIONS

1.1. 20 05 15 - SEISMIC CONTROL AND RESTRAINT

- .1 Add enclosed new specification section 20 05 15 Seismic Control and Restraint.

1.2. 20 05 20 - MECHANICAL VIBRATION CONTROL

- .1 Replace specification section 20 05 20 Mechanical Vibration Control with enclosed section.

1.3. 23 34 00 - HVAC FANS

- .1 Add "Factory secured seismic restraint connection hardware" for all exhaust fans.

1.4. 25 09 93 - HDSB SEQUENCE OF OPERATION DESIGN GUIDELINE

- .1 Add enclosed new specification section 25 09 93 HDSB Sequence of Operation Design Guideline.

2. DRAWINGS

2.1. M-03: NEW WORK FLOOR PLAN - HVAC

- .1 Refer to drawing M-03: NEW WORK FLOOR PLAN - HVAC and include for the following changes:
 - .1 Revise ductwork size for exhaust fan EF-2 as indicated.
 - .2 Include for ductwork and type 'C' grille for washroom WR 131DA.
 - .3 Revise duct and diffuser/grille layout for Calming Room 115 as indicated.
 - .4 Revise duct and diffusers/grilles layout for General Office 127, Meeting Room 127A and Office 127B as indicated.
 - .5 Revise ductwork for Staff Workroom 110 as indicated.
 - .6 Revise duct and diffusers/grilles layout for Vestibule 120A, Staff Lounge 120, Meeting Room 119, and Meeting Room 121 as indicated.

MECHANICAL ADDENDUM M-01

RDZ
ENG

Project No.: 24122
Date: June 18, 2025

Page 2 of 3

- .7 Revise range hood exhaust duct routing in Staff Lounge 120 as indicated.
- .8 Add smoke (SD) and combination fire/smoke (FSD) dampers at fire separations as indicated.

2.2. M-05: NEW WORK ROOF PLAN - MECHANICAL

- .1 Refer to drawing M-05: NEW WORK ROOF PLAN - MECHANICAL and include for the following changes:
 - .1 Revise duct size for exhaust fan EF-2 as indicated.
 - .2 Revise range hood exhaust gooseneck termination location as indicated.
 - .3 Provide new roof drain provided as per permit comments.

2.3. M-07: NEW WORK FLOOR PLAN - PLUMBING

- .1 Refer to drawing M-07: NEW WORK FLOOR PLAN - PLUMBING and include for the following changes:
 - .1 Provide storm piping as indicated for new roof drain above.

2.4. M-09: CONTROLS DIAGRAMS 1

- .1 Refer to General Controls Notes:
 - .1 Add Notes # 10 and #11 as indicated.
- .2 Refer to Rooftop Air Handling Unit 'RTU-1a', 'RTU-1b' (Classrooms) & 'RTU-2' (Library) control diagram:
 - .1 Revise control point for outdoor air damper to (AO) Outdoor air damper modulation.
 - .2 Revise control point for return air damper to (AO) Return air damper modulation.
 - .3 Revise control point for exhaust air damper to (AO) Exhaust air damper modulation.
 - .4 Add Notes #11 and #12 as indicated.
- .3 Refer to Rooftop Air Handling Unit 'RTU-3' (Office) control diagram:
 - .1 Revise heating control points as indicated.
 - .2 Add Notes #10 and #11 as indicated.

2.5. M-10: CONTROLS DIAGRAMS 2

- .1 Refer to Rooftop Air Handling Unit 'RTU-4' (Forum + Corridors) control diagram:

MECHANICAL ADDENDUM M-01



Project No.: 24122
Date: June 18, 2025

Page 3 of 3

- .1 Revise heating control points as indicated.
- .2 Add Notes #9 and #10 as indicated.
- .2 Refer to Rooftop Air Handling Unit 'RTU-5' (Gym) control diagram:
 - .1 Revise control point for outdoor air damper to (AO) Outdoor air damper modulation.
 - .2 Revise control point for return air damper to (AO) Return air damper modulation.
 - .3 Revise control point for exhaust air damper to (AO) Exhaust air damper modulation.
 - .4 Revise DX cooling control points as indicated.
 - .5 Add Notes #11 and #12 as indicated.

2.6. M-12: EQUIPMENT SCHEDULES 2

- .1 Refer to SCHEDULE OF FANS, update 'EF-2' as indicated.
- .2 Refer to LOOSE MOTOR STARTER SCHEDULE, update 'EF-2' as indicated.

3. **ATTACHMENTS**

3.1. SPECIFICATIONS

- .1 20 05 15 SEISMIC CONTROL AND RESTRAINT
- .2 20 05 20 MECHANICAL VIBRATION CONTROL
- .3 25 09 23 HDSB SEQUENCE OF OPERATION DESIGN GUIDELINE

3.2. DRAWINGS

- .1 M-03: NEW WORK FLOOR PLAN - HVAC
- .2 M-05: NEW WORK ROOF PLAN - MECHANICAL
- .3 M-07: NEW WORK FLOOR PLAN - PLUMBING
- .4 M-09: CONTROLS DIAGRAMS 1
- .5 M-10: CONTROLS DIAGRAMS 2
- .6 M-12: EQUIPMENT SCHEDULES 2

End of Mechanical Addendum M-01

1 GENERAL

1.01 APPLICATION

- .1 This Section specifies seismic control and restraint requirements that are common to mechanical work Sections of the Specification and it is a supplement to each Section and is to be read accordingly.

1.02 SEISMIC CONSULTANT

- .1 Retain and pay for services of an experienced Seismic Consultant who is a registered professional engineer licensed in the jurisdiction of the work and a member in good standing of a Professional Engineers Association in the jurisdiction of the work.
- .2 Seismic Consultant is to:
 - .1 determine proper seismic hazard level, design, recommend, and review proposed mechanical work seismic restraint shop, placement and securing drawings, and sign and stamp drawings prior to submittal for review as specified below;
 - .2 supervise installation of mechanical work seismic restraint and, when work is complete, certify in writing that seismic restraint work has been installed in accordance with signed, stamped and reviewed drawings;
 - .3 prepare and submit to Municipality and authorities having jurisdiction, on a form approved by Municipality and authorities having jurisdiction, at the beginning of seismic restraint work and when work is complete, original signed and sealed Letters of Assurance for design, installation and field review of seismic restraint work.

1.03 SUBMITTALS

- .1 Obtain required equipment information and submit manufacturer's shop drawings/product data sheets for restraining devices and steel bases. Include placement data, and details of attachment to both equipment and structure meeting requirements of forces involved. Product data sheets and drawings are to be signed and stamped by Seismic Consultant referred to above.
- .2 Submit copies of Seismic Consultant's Letters of Assurance as specified above.
- .3 Submit copies of Seismic Consultant and seismic control manufacturer's certification letters as specified in Part 3 of this Section.
- .4 If requested, submit samples of seismic restraint materials for review.

1.04 QUALITY ASSURANCE

- .1 Seismic restraints are to be designed by a registered professional engineer as specified above, and are to be installed by qualified tradesmen under supervision of and to the approval of the design engineer.
- .2 Unless otherwise specified, seismic control and restraints are to be designed in accordance with Code requirements, ANSI/SMACNA Seismic Restraint Manual: Guidelines for Mechanical Systems, SMACNA/ASHRAE Service Restraint Applications CD-ROM, and the P.P.I.C. Manual Guidelines for Seismic Restraints of Mechanical Systems and Plumbing Piping Systems, all of which are to form a part of this Section.
- .3 Seismic control and restraints for fire protection piping and equipment are to be in accordance with NFPA requirements. When specified and/or required, design is also to include Factory Mutual requirements.
- .4 Restraint products must be tested in an independent testing laboratory, or certified by Seismic Consultant, to confirm restraint products meet requirements of this Section, i.e. dynamic ultimate limit load state as required by Code, "Fail Safe" design, etc. If particular tests are carried out to represent a restraint type, test is to be valid for the full load range of the restraint. Submit such tests or certification when requested.
- .5 Seismic control and restraint product manufacturers are to provide required assistance during installation, and, when installation is complete, submit written reports listing any deficiencies to the installation.

2 PRODUCTS

2.01 GENERAL

- .1 Isolation, anchors, bolts, bases, restraints, etc., are to be designed to withstand without failure or yielding, the dynamic G load as specified in Code for the seismic zone in which building is located. Design loads are ultimate limit state loads (1.5 times working load) acting through the centre of gravity of the anchored or restrained equipment. "Fail Safe" designs are acceptable.
- .2 For both isolated and non-isolated floor mounted equipment, i.e. tanks, heat exchangers, boilers, etc., design and provide anchors and bolts to withstand, without failure or yielding, a dynamic ultimate limit state load as defined in Code, of the greater of 0.3 g or as required by Code, applied horizontally through the centre of gravity.
- .3 Where impact forces may be significant, use ductile materials.
- .4 Seismic restraining devices factory supplied with equipment are to meet requirements of this Section.
- .5 Acceptable manufacturers are:
 - .1 Mason Industries Inc.;
 - .2 Kinetics Noise Control;
 - .3 Vibro-Acoustics Ltd;
 - .4 Price Industries Inc.

2.02 SLACK CABLE RESTRAINTS

- .1 Aircraft cable galvanized slack cable restraints meeting current requirements of Building Code, sized to suit the application and complete with required cable ties, anchor hardware (selected for a load equal to twice the weight of the equipment), and similar connection accessories.

2.03 ANCHOR BOLTS

- .1 Equal to Mason Industries type SAB seismic anchor bolts.

2.04 FLEXIBLE PIPING CONNECTIONS

- .1 Flexible piping connectors are to be supplied with seismic restraint materials. Where flexible connections are not specified with piping in other Sections they are to be equal to Mason Industries twin sphere, non-metallic connectors with hose lengths preset in strict accordance with manufacturer's instructions and to approval of Seismic Consultant, each rated for continuous operation at 1725 kPa at 87.7°C (250 psi at 190°F) or 1380 kPa at 121°C (200 psi at 250°F), and complete with:
 - .1 nylon tire cord reinforced EPDM body;
 - .2 ductile iron reinforcing ring and ductile iron screwed or flanged connections as required and to suit piping system operating pressure.

2.05 VIBRATION ISOLATION PRODUCTS

- .1 Refer to Section entitled Mechanical Vibration Control.

3 EXECUTION

3.01 INSTALLATION OF SEISMIC RESTRAINT MATERIALS

- .1 Provide seismic restraint for mechanical equipment, piping, and ductwork, including diffusers, grilles, etc., as per requirements of current edition of Building Code and this Section of the Specification.
- .2 Following Mechanical Components Restraint Guide is to be used as a general guide only to establish appropriate restraint methods, hardware, and attachments, however, due to differences in construction, size, weight, and configuration of different manufacturer's equipment and variety of ways and means that equipment and components can be installed, specific restraint methods are to be confirmed in the field. Seismic restraint materials and methods are to be reviewed and approved by Seismic Consultant.

MECHANICAL COMPONENT RESTRAINT GUIDE

ITEM	TYPE OF RESTRAINT	MINIMUM NO. OF RESTRAINTS	NOTES
In-line Pumps	SCR	2	Pipe mounted type pump
Unit Heaters	TSR-SCR	4	
Force Flow Heaters	TSR-SCR	4	
Packaged Rooftop Air Units (all types)			
On roof curb	BTRC	4	Roof curb bolted to roof.
Fans – Suspended			
- Isolated	SCR	4	
- Non-Isolated	SCR	4	
Fans – Freestanding			
- Isolated	SNBR	4	
- Non-Isolated	BTHP	4	
Grilles, Registers, Diffusers	SCR	4	Where not bolted to duct (i.e. in tee-bar ceilings)
Piping	SCR TSR	As required	As per Specification
Ductwork	SCR TSR	As required	As per Specification

LEGEND	
SCR	Slack cable restraint (bolted to structure)
SNBR	Seismic snubber (bolted to structure)
TSR	Threaded support rod (bolted or clamped to structure)
BTSLPR	Bolt to sleeper (sleeper bolted to structure)
BTHP	Bolt to concrete housekeeping pad (pad to be keyed to structure)
CSSB	Custom steel shoe base (bolted to structure)
BTRC	Bolt to roof curb (roof curb bolted to roof structure)

- .3 Provide structural steel bases for equipment unless equipment manufacturer certifies direct attachment capabilities.

- .4 Space restraints under equipment so minimum distance between adjacent corner restraints is at least equal to the height of the centre of gravity of the equipment. Include the height of the centre of gravity on shop drawings, otherwise, design for increased forces on supports and submit design calculations with shop drawings. In particular, chillers are to meet this requirement.
- .5 Floor mounted isolated equipment is to be installed on 100 mm (4") high concrete housekeeping pads with at least 200 mm (8") clearance between drilled inserts and edges of pads. Ensure housekeeping pads are keyed to structure to resist seismic displacement.
- .6 Requirements pertaining to seismic control work are as follows:
 - .1 execute seismic control and restraint work in accordance with drawing details, reviewed shop drawings, ANSI/SMACNA Seismic Restraint Manual, PIPC Manual: Guidelines for Seismic Restraints of Mechanical Systems and Plumbing Piping Systems, and National Uniform Seismic Installation Guidelines (NUSIG);
 - .2 seismic control systems are to work in all directions;
 - .3 fasteners and attachment points are to resist same maximum load as the seismic restraint;
 - .4 drilled or power driven anchors and fasteners are not permitted;
 - .5 no equipment, equipment supports or mounts are to fail before failure of structure;
 - .6 supports of cast iron or threaded pipe are not permitted;
 - .7 seismic control measures are not to interfere with integrity of firestopping;
 - .8 equipment is to be bolted to structure, and bolts are to be fitted with isolation washers;
 - .9 number, size, type, and installation of anchor bolts are to be as recommended by anchor bolt manufacturer and seismic design consultant;
 - .10 where more than a 3 mm (1/8") differential exists between an anchor or attachment bolt diameter, an anchor and attachment point hole, or an isolator gap attachment bolt and equipment anchor attachment hole, pack air gap with Mason type 0.5 FastSteel reinforced epoxy putty;
 - .11 hung equipment and pipe hangers are to be fitted with a means of preventing upward movement, and non-isolated equipment and pipe hanger rods are to be fitted with oversized steel washers and nuts above and below hanger or equipment attachment point, locked tight to prevent uplift of equipment or hanger;
 - .12 where suspended equipment hanger rod length exceeds 50 rod diameters between structure and equipment attachment point, reinforce rods with angle iron to prevent bending due to uplift forces;
 - .13 seismic control measures are not to jeopardize noise and vibration isolation systems, and 6 mm (1/4") to 9 mm (3/8") clearance during normal operation of equipment and systems is to be provided between seismic restraint and equipment;

- .14 where hold-down bolts for seismic restraint equipment penetrate roofing membranes coordinate with roofing trade for installation of pitch pockets/"gum cups" and sealing compound to maintain water-tight integrity of roof;
- .15 where friction type clamps are used for support of equipment and connecting services, secure clamps to steel work by means of welding or other positive means to prevent slippage or loosening of clamps due to seismic forces.
- .7 Provide slack cable restraint assemblies for:
 - .1 fuel gas, fuel oil, medical gas, compressed air and service piping 25 mm (1") dia. and larger;
 - .2 piping 32 mm (1-1/4") dia. and larger located in boiler, fan, chiller, and similar equipment rooms;
 - .3 horizontal and vertical piping 65 mm (2-1/2") dia. and larger;
 - .4 ductwork and duct mounted equipment;
 - .5 isolated and non-isolated ceiling hung fans, tanks, equipment, etc.;
- .8 Installation requirements for slack cable restraints include following:
 - .1 connect slack cable restraints to ceiling hung equipment in such a way that axial projection of wires passes through the centre of gravity of the equipment;
 - .2 orient restraint wires on ceiling hung equipment at approximately 90° to each other (in plan), and tie back to the ceiling slab at an angle not exceeding 45° to slab;
 - .3 install cables using appropriate grommets, shackles, and other hardware to ensure alignment of restraints and to avoid bending cables at connection points, and, where feasible, wrap cables directly around pipes as opposed to using collars;
 - .4 for piping systems, provide transverse slack cable restraints at a maximum spacing of 12.5 m (40'), and longitudinal restraints at 25 m (80') maximum spacing, or as limited by anchor/slack cable performance;
 - .5 for piping less than 250 mm (10") dia., reduce transverse restraint spacing to 6 m (20'), and note that smaller piping may be rigidly tied to larger piping for restraint, but not the reverse;
 - .6 vary adjacent spacing of restraints on a piping run by 10% to 30% to avoid coincident resonance;
 - .7 transverse bracing for one pipe section may also act as longitudinal bracing for piping connected perpendicular to it if bracing is installed within 600 mm (24") of elbow or tee, and if connected piping is same or smaller dia., and note that branch lines are not to be used to restrain main lines;
 - .8 provide flexibility in piping joints or sleeves where piping penetrates building seismic or expansion joints;

- .9 wherever possible, support weight of vertical piping risers at a point or points above the centre of gravity of riser, and provide lateral guides at top and bottom of riser, and at intermediate points not to exceed the transverse spacing specified above for horizontal pipes, with guide clearance not exceeding 3 m (10');
- .10 install restraints at least 50 mm (2") clear of other equipment and services;
- .11 adjust restraint cables such that they are not visibly slack, or such that flexibility is approximately 40 mm (1-½") under thumb pressure for a 1.5 m (5') cable length, with an equivalent ratio for other cable lengths, and adjust clearance of cable strap/spacer piece restraints so as not to exceed 6 mm (0.23");
- .12 provide transverse and axial restraints within 4 m (12') of a vertical bend;
- .13 at steel trusses, connect to top chords at panel points and follow truss manufacturer's instructions;
- .14 diffusers and grilles mounted in t-bar ceilings or which are not positively secured to ductwork or structure are to be fitted with slack cable restraints to prevent them from falling in the event the ceiling t-bar grid is displaced;
- .15 do not bridge vibration isolators with slack cable restraints;
- .16 other approved restraint systems are conventional pipe guides, rigid restraint where piping passes through a block or concrete wall, or a cable strap and spacer piece attached to structure and used where piping is adjacent to a wall and conventional slack cable restraints cannot be used.

3.02 INSTALLATION OF FLEXIBLE PIPING CONNECTORS

- .1 Supply flexible piping connectors for connections (including plumbing) to seismically restrained equipment. Hand connectors to appropriate piping trade at site for installation.

3.03 SITE INSPECTION AND LETTERS OF CERTIFICATION

- .1 When seismic control products have been installed, arrange for seismic control product manufacturer and Seismic Consultant to examine installation of seismic control products and to certify in writing (separate letters) that products have been properly installed in accordance with governing Codes and Regulations, and recommendations and instructions. Seismic Consultant is to apply his professional stamp to the letter.

END OF SECTION

1 GENERAL

1.01 APPLICATION

- .1 This Section specifies vibration isolation product requirements that are common to mechanical work Sections of the Specification, and it is a supplement to each Section and is to be read accordingly. n

1.02 SUBMITTALS

- .1 Submit copies of manufacturer's product data sheets for products specified in this Section. Product data sheets are to include product characteristics, limitations, dimensions, finishes, and installation recommendations.
- .2 Submit a letter from vibration isolation manufacturer to certify correct installation of products, as specified in Part 3 of this Section.

1.03 SEISMIC RESTRAINT REQUIREMENTS

- .1 Refer to Section entitled Seismic Control and Restraint for requirements for use of a Seismic Consultant, and seismic restraint requirements applicable to vibration isolated materials and equipment.

2 PRODUCTS

2.01 GENERAL

- .1 Vibration isolation products are to be in accordance with drawing schedule and details, and as specified below.
- .2 Springs are to be stable, colour coded, selected to operate at no greater than $\frac{2}{3}$ solid load, designed in accordance with Society of Automotive Engineers Handbook Supplement 9 entitled Manual on Design and Application of Helical and Spiral Springs, and with spring diameters in accordance with manufacturer's recommendations to suit static deflection and maximum equipment load.
- .3 Steel components of isolation products not exposed to the weather or moisture are to be zinc plated. Steel components of isolation products exposed to the weather or in a damp, moist environment are to be factory painted with rust inhibiting primer and 2 coats of neoprene.
- .4 Where weight of isolated equipment may change significantly due to draining or filling with a liquid, vibration isolators are to be equipped with limit stops to limit spring extensions.
- .5 Seismic rated isolators and snubbers are to be listed, rated, and approved by State of California Office of Statewide Health and Planning Department (O.S.H.P.D.) and carry an O.S.H.P.D. pre-approved number. Seismic restraints supplied with vibration isolation are to meet requirements specified in Section entitled Seismic Control and Restraint.
- .6 Flexible piping connections to vibration isolated equipment are specified in the appropriate piping sections of the Specification.

2.02 ISOLATION PADS

- .1 Sandwich type pads, 20 mm ($\frac{3}{4}$ ") nominal thickness, selected for 3.2 mm ($\frac{1}{8}$ ") static deflection unless otherwise specified, consisting of 2 waffle type or ribbed 50 durometer neoprene pads permanently bonded to a minimum #10 gauge steel plate, and complete with rubber bushed bolt holes and equipment anchor bolts with neoprene isolation grommets.
- .2 Acceptable products are:
 - .1 Vibro-Acoustics Ltd. Type NSN;
 - .2 The VMC Group Vibration Mounting & Controls Inc. (Korfund-Dynamics) "SHEAR-FLEX PLATES";
 - .3 Kinetics Noise Control Vibron Products Group Type NGS/NGD;
 - .4 Mason Industries Inc. Type SW/S/SW with HG Bolt Insertion Washers;
 - .5 J. P. America Inc. Type JSJ.

2.03 SPRING HANGERS

- .1 Welded steel plate housing with top and bottom rod mounting holes and spring retainer, neoprene double deflection isolation element, stable colour coded spring, and heavy-duty rubber washers.
- .2 Acceptable products are:
 - .1 Vibro-Acoustics Ltd. Type SHR-SN;
 - .2 The VMC Group Vibration Mounting & Controls (Korfund-Dynamics) "Spring-Flex" Series HRSA;
 - .3 Kinetics Noise Control Vibron Products Group. Type SRH;
 - .4 Mason Industries Inc. Type 30N;
 - .5 J. P. America Inc. Type TSH.

2.04 NEOPRENE HANGER ISOLATORS

- .1 Neoprene double deflection rod isolators with steel housing and hanger rod bushing, selected for a minimum 4 mm (0.15") static deflection unless otherwise specified.
- .2 Acceptable products are:
 - .1 Vibro-Acoustics Ltd. Type NH;
 - .2 The VMC Group Vibration Mounting & Controls (Korfund-Dynamics) Type HR;
 - .3 Kinetics Noise Control Vibron Products Group Type RH;
 - .4 Mason Industries Inc. Type HD or WHD;

.5 J. P. America Inc. Type TRH.

3 EXECUTION

3.01 INSTALLATION OF VIBRATION ISOLATION MATERIALS

- .1 Provide vibration isolation products for mechanical work in accordance with drawing schedule and details, and requirements specified herein and/or on drawings.
- .2 Supply to vibration isolation product manufacturer or supplier a copy of a "reviewed" shop drawing or product data sheet for each piece of equipment to be isolated and dimensioned pipe layouts of associated piping to be isolated.
- .3 Unless otherwise specified, vibration isolation products are to be product of one manufacturer.
- .4 Ensure vibration isolation manufacturer coordinates material selections with equipment provided in order to ensure adherence to performance criteria. Allow for expansion and contraction when material is selected and installed.
- .5 Isolate piping larger than 25 mm (1") dia. directly connected to motorized and/or vibration isolated equipment with 25 mm (1") static deflection spring hangers at spacing intervals in accordance with following:
 - .1 for pipe less than or equal to 100 mm (4") dia. – first 3 points of support;
 - .2 for pipe 125 mm (5") to 200 mm (8") dia. – first 4 points of support;
 - .3 for pipe equal to or greater than 250 mm (10") dia. – first 6 points of support;
- .6 First point of isolated piping support is to have a static deflection of twice the deflection of the isolated equipment but maximum 50 mm (2").
- .7 Secure top of spring hanger frame rigidly to structure, and do not install spring hangers in concealed locations.
- .8 Where it is impossible to use at least 2 spring hangers, provide Senior Flexonics Ltd. Style 102 (or 102-U as required) or equal, twin sphere, moulded rubber flexible connection assemblies, selected by manufacturer and suitable in all respects for intended application, and complete with required nipples and connections to provide proper vibration isolation.
- .9 For control wiring connections to vibration isolated equipment ensure flexible metallic conduit with 90° bend is used for conduit 25 mm (1") dia. and smaller, and for conduit larger than 25 mm (1") dia., use Crouse Hinds EC couplings. Connections are to be long enough so that conduit will remain intact if equipment moves 300 mm (12") laterally from its installed position, and flexible enough to transmit less vibration to structure than is transmitted through vibration isolation. Coordinate these requirements with mechanical trades involved. If electrical power connections are not made in a similar manner as part of the electrical work, report this fact to Consultant.
- .10 Arrange and pay for vibration isolation product manufacturer to visit site to inspect installation of his equipment. Perform revision work required as a result of improper installation. When vibration isolation equipment manufacturer is satisfied with the installation, obtain and submit a letter stating manufacturer has inspected the installation and equipment is properly installed.

- .11 Refer to Section entitled Seismic Control and Restraint for requirements pertaining to seismically restrained vibration isolation.

END OF SECTION

1 GENERAL

1.01 REFERENCES

- .1 This Section specifies control sequences for HVAC systems, sub-systems, and accessories that are common to mechanical work Sections of the Specification and it is a supplement to each Section and is to be read accordingly.

1.02 APPLICATION

- .1 Sequences specified herein indicate the functional intent of the systems operation and do not fully detail the programming required to obtain the indicated operation.
- .2 Throttling ranges, proportional bands, and cycle differentials shall be centered on the associated set-point. All modulating feedback control loops shall include the capability of having proportional, integral, and derivative action. Contractor shall apply appropriate elements of integral and derivative gain to each control loop which shall result in stable operation, minimum settling time, and shall maintain the primary variable within the specified maximum allowable variance.
- .3 Equipment start-up concluding a power failure shall be provisioned such that there is protection against building reduced voltage resulting from starting multiple inductive loads. Mechanical equipment shall be grouped such that the combined starting current of the defined group will not exceed the electrical distribution system rated capacity less base load. An interval of not less than 3 seconds shall be maintained between starting of the defined groups.
- .4 Preference will be given to using OEM furnished controls. OEM furnished controls must have minimum hard-wired points as indicated herein.

2 PRODUCTS

NOT USED

3 EXECUTION

3.01 GYMNASIUM UNIT(S)

- .1 Unit OEM Controller Minimum Hard-wired points:
 - .1 Outdoor Air Damper Position Signal: Analogue input (0 to 10 Vdc, or 4 to 20 mA)
 - .2 Fan(s) Command and/or Enable: Binary input
 - .3 Heating Command and/or Enable: Binary input
 - .4 Mechanical Cooling Command and/or Enable: Binary input
- .2 Free-cooling is to be enabled when outdoor air is below 12°C
- .3 In the event of power loss, the outdoor and exhaust air dampers are to close by way of mechanical spring, return air dampers shall open by way of mechanical spring.

- .4 Where the unit is equipped with a hydronic heating coil, the heating valve will keep the unit internal temperature (mixed air temperature) to a minimum of 15°C. When the outdoor air is below 10°C or there is a heating load, any heating coil pump will run.

- .5 Scheduled Occupancy:

Pre-Occupancy: The BAS shall command on and/or enable the supply and return air fans, 30 minutes prior to the start of the Occupied period. Outdoor air dampers are to remain closed. The unit is controlled to maintain the space temperature to the occupied set-point.

Occupied: The BAS shall command on and/or enable the unit (and all associated HVAC equipment, i.e. change room exhaust fans) as per Occupancy Appendix. The outdoor air dampers are to be kept to a minimum position or to vary to maintain a return air CO2 level equal to or less than 800 ppm. The unit is controlled to maintain the space temperature at 19°C.

Un-Occupied: The BAS shall command off and/or disable the unit as per Occupancy Appendix. All fans are to be commanded off and/or disabled and the outdoor and exhaust air dampers are to be closed by way of mechanical spring return. The return air dampers are to be released and open by way of mechanical spring return. Outdoor air dampers are to remain closed during un-occupied times. The space temperature shall be controlled to maintain between 18°C and 25°C.

3.02 ROOM CONTROL TERMINAL OR BY-PASS BOX

- .1 Room temperature set points are set to a Network Occupied Set-point, reset at 7 am each occupied period, from 21°C to 24°C based on Outdoor air temperature -10°C to 27°C, respectively. A +/-2°C set-point offset shall be provisioned through the room sensor.

- .2 Heating or Cooling is to be enabled when the room temperature is 1°C away from set-point. Damper to open when there is a minimum 5°C differential between room temperature and the air supplied by the respective unit (Heating call supply air to be 5°C above room temperature, Cooling call supply air to be 5°C below room temperature), otherwise remain at minimum position. Heating or cooling will be disabled using a 1°C dead-band. There shall be a 30 minutes delay between heating and cooling.

- .3 Scheduled Occupancy:

Occupied: Occupancy is to be scheduled as per Occupancy Appendix.

- .4 Perimeter Heat:

When a room, conditioned by a terminal unit or by-pass box, is provisioned with perimeter hydronic heat, the perimeter heat shall be enabled as 1st stage heat. For hydronic heating, the heat is to be enabled when the radiant device is equal to or less than 6°C (must enable respective circulation pump).

3.03 ROOM CONTROL TERMINAL OR BY-PASS BOX WITH RE-HEAT

- .1 Room temperature set-points are set to a Network Occupied Set-point, reset at 7 am each occupied period, from 21°C to 24°C based on Outdoor air temperature -10°C to 27°C, respectively. A +/-2°C set-point offset shall be provisioned through the room sensor.

- .2 Heating or Cooling is to be enabled when the room temperature is 1°C away from set-point. On a call for Cooling the damper is to open when there is a minimum 5°C differential between room temperature and the air supplied by the respective unit (supply air to be 5°C below room temperature), otherwise remain at minimum position. Heating or cooling will be disabled using a 1°C dead-band. There shall be a 30 minutes delay between heating and cooling.

- .3 Scheduled Occupancy:

Pre-Occupancy: The BAS shall enable the supply and return air fans 30 minutes prior to the start of the Occupied period. Outdoor air dampers are to remain closed. The unit is controlled to maintain the space temperature to the occupied set-point.

Occupied: Occupancy is to be scheduled as per Occupancy Appendix.

- .4 Perimeter Heat:

When a room, conditioned by a terminal unit or by-pass box with re-heat, is provisioned with perimeter hydronic heat, the perimeter heat shall be enabled as 1st stage heat. For hydronic heating, the heat is to be enabled when the radiant device is equal to or less than 6°C (must enable respective circulation pump).

3.04 ROOM CONTROL HVAC UNIT (SINGLE ZONE)

- .1 HVAC Unit Controls Minimum Hard-wired points:
- .1 Outdoor Air Damper Signal (0 Vdc – 10 Vdc or 4mA to 20 mA)
 - .2 Fan(s) Enable / Disable (10 Vdc to 24Vdc)
 - .3 Heating Enable (10 Vdc to 24Vdc)
 - .4 Mechanical Cooling Enable (10 Vdc to 24Vdc)
- .2 Room temperature set-points are set to a Network Occupied Set-point, reset at 7 am each occupied period, from 21°C to 24°C based on Outdoor air temperature -10°C to 27°C, respectively. A +/-2°C set-point offset shall be provisioned through the room sensor.
- .3 Heating or Cooling is to be enabled when the room temperature is 1°C away from set-point and will be disabled using a 1°C dead-band. There shall be a 30 minutes delay between heating and cooling.
- .4 The compressor will have minimum run time of 5 minutes.
- .5 Free-cooling is to be enabled when outdoor air is below 12°C
- .6 In the event of power loss, the outdoor and exhaust air dampers are to close by way of mechanical spring, return air dampers shall open by way of mechanical spring.
- .7 Where the unit is equipped with a hydronic heating coil, the heating valve will keep the unit internal temperature (mixed air temperature) to a minimum of 15°C. When the outdoor air is below 10°C or there is a heating load, any heating coil pump will run.

- .8 Where the unit is equipped with a hydronic heating coil, in the event the freeze stat senses a low temperature event, the unit fans are to be disabled, outdoor air dampers close by way of mechanical spring, and the heating valve is to be opened 100% (heating circulation pump, where equipped is to be enabled).

- .9 Scheduled Occupancy:

Pre-Occupancy: The BAS shall enable the supply and return air fans 30 minutes prior to the start of the Occupied period. Outdoor air dampers are to remain closed. The unit is controlled to maintain the space temperature to the occupied set-point.

Occupied: The BAS shall enable the unit as per Occupancy Appendix. The dampers are to be kept to a minimum position or to maintain the return air CO₂ to a level of 800 ppm. The unit is controlled to maintain the space temperature. The exhaust fan and dampers are enabled with the supply and return air fans.

Un-Occupied: The BAS shall disable the unit as per Occupancy Appendix. All fans are to be disabled and the outdoor and exhaust air dampers are to be closed by way of mechanical spring return. The return air dampers are to be released and open by way of mechanical spring return. The space temperature shall be controlled to maintain between 18°C and 27°C.

- .10 Perimeter Heat:

When a room, conditioned by a HVAC unit, is provisioned with perimeter hydronic heat, the perimeter heat shall be enabled as 1st stage heat. For hydronic heating, the heat is to be enabled when the radiant device is equal to or less than 6°C (must enable respective circulation pump).

3.05 ROOM CONTROL OCCUPANT COMFORT HEAT - INCLUDES DUCT HEATERS

- .1 Occupant comfort heat includes but is not limited to the following instances:
- .1 Perimeter heaters, unit heaters, duct heaters, radiant panels, etc., in all classrooms, administrative areas, work rooms and resource areas.
 - .2 Room temperature set-points are set to a Network Occupied Set-point, reset at 7 am each occupied period, from 21°C to 24°C based on Outdoor air temperature -10°C to 27°C, respectively. A +/-2°C set-point offset shall be provisioned through the room sensor.
 - .3 Heating is to be enabled when the room temperature is 1°C away from set-point and will be disabled using a 1°C dead-band.
 - .4 The BAS shall control room temperature and indicate status with an analog current Transformer or temperature sensor in accordance with Object
 - .5 For hydronic heating, the heat is to be enabled when the radiant device is equal to or less than 6°C (must enable respective circulation pump).

3.06 HVAC UNIT INCLUDING V.A.V. OR V.V.T. WITH MORE THAN TWO ZONES

- .1 HVAC Unit Controls Minimum Hard-wired points:
- .1 Discharge Air Temperature Reset Signal (0 Vdc – 10 Vdc or 4mA to 20 mA)

- .2 Outdoor Air Damper Signal (0 Vdc – 10 Vdc or 4mA to 20 mA)
- .3 Fan(s) Enable / Disable (10 Vdc to 24Vdc)
- .4 Heating Enable (10 Vdc to 24Vdc)
- .5 Mechanical Cooling Enable (10 Vdc to 24Vdc)
- .2 Free-cooling is to be enabled when outdoor air is below 12°C
- .3 In the event of power loss, the outdoor and exhaust air dampers are to close by way of mechanical spring, return air dampers shall open by way of mechanical spring.
- .4 Where the unit is equipped with a hydronic heating coil, the heating valve will keep the unit internal temperature (mixed air temperature) to a minimum of 15°C. When the outdoor air is below 10°C or there is a heating load, any heating coil pump will run.
- .5 Where the unit is equipped with a hydronic heating coil, in the event the freeze stat senses a low temperature event, the unit fans are to be disabled and the heating valve is to be opened 100% (heating circulation pump, where equipped is to be enabled).
- .6 Scheduled Occupancy:
Occupied: Occupancy is to be scheduled as per Occupancy Appendix.
Un-Occupied: Cooling and heating set-points shall be 18°C and 27°C and will be disabled by a 2°C dead-band

3.07 DOMESTIC HOT-WATER

- .1 The BAS shall monitor the Domestic Supply Water Temperature and domestic hot water circulating pump(s) using an analog current transformer.

3.08 ANCILLARY HEAT

- .1 Ancillary Heat shall use a stainless-steel plate sensor include the following areas:
 - .1 Vestibules
 - .2 Above ceiling freeze protection
 - .3 Outdoor storage areas
 - .4 Receiving areas
 - .5 Electrical rooms
 - .6 Supply storage rooms
 - .7 Stairwells
- .2 "Spare" I/O points from a typical room controller are not to be used for Ancillary Heat (i.e. points from Room Controller located within proximity to the Ancillary Heater). I/O point terminations and control points are to be detailed on the drawings.

- .3 Stairwells: Ancillary heaters servicing a stairwell and vestibule are to be grouped and controlled using a sensor located within the stairwell (not the vestibule area). Status is required for individual heaters.
- .4 Grouping multiple Ancillary Heaters to a single I/O control point is preferred. Status is required for individual heaters.
- .5 Ancillary heaters are to be disabled when outdoor air temperatures is above 6°C.
- .6 The BAS shall indicate status using a temperature sensor located on the unit return water piping (Hydronic heater) or using an analog current transformer (Electric heater).
- .7 The room temperature set-point shall use unoccupied set-point as for comfort heaters.

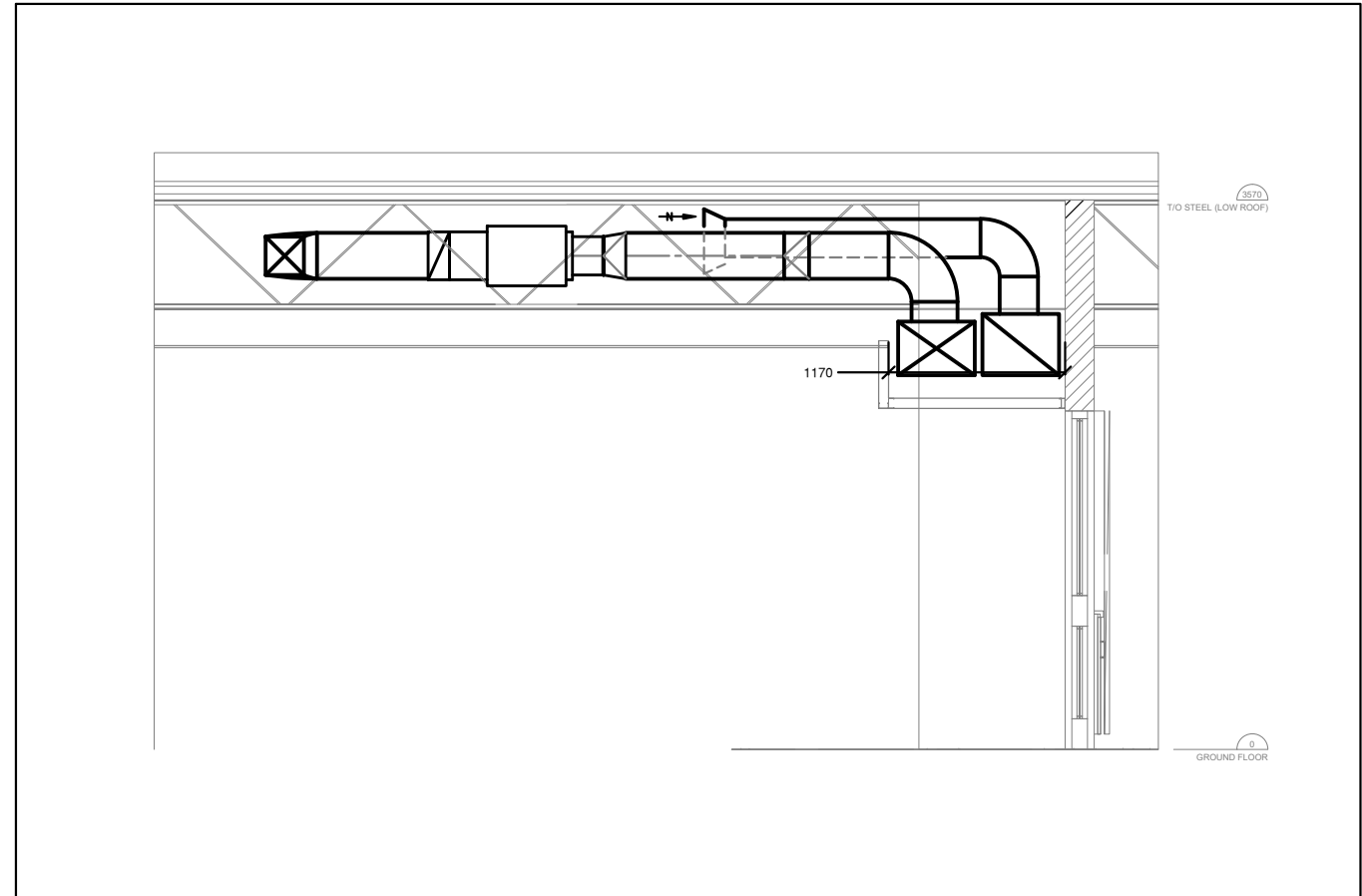
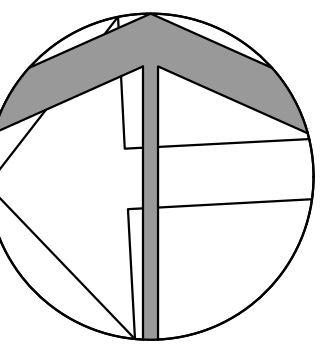
3.09 EXHAUST FANS

- .1 The BAS shall control exhaust fans and monitor status with an analog current transformer.
 - .1 **Group A** fans include but is not limited to the following instances:
 - Gym washrooms / change rooms
 - Laundry roomFans are to be enabled with the gymnasium HVAC unit occupancy schedule.
 - .2 **Group B** fans include but is not limited to the following instances:
 - Exterior storage areas
 - Machine room (elevator)
 - Electrical & Sprinkler rooms
 - Hub room
 - Mechanical roomFans are to be enabled to maintain room temperature below 27°C.
 - .3 **Group C** fans include but is not limited to the following instances:
 - Staff and Classroom washrooms
 - Interior storage areasFans are to be enabled during hours of school occupancy and when the school is occupied by custodial or cleaning staff.
 - .4 **Group D** fans include but is not limited to the following instances:
 - Food preparation (excluding staffroom kitchenettes)
 - Kiln rooms
 - Automotive shops
 - Science fume hoods
 - Dust collectorsFans are to be removed from the BAS and controlled via a switch near their relative equipment.

3.10 EXTERIOR LIGHTING

- .1 The BAS shall enable or disable exterior lighting using a combination calendar and astronomical clock. Command status shall be verified using an analog Current Transformer.
- .2 The lighting is to be grouped as Wall-packs and Pole Lighting.

END OF SECTION



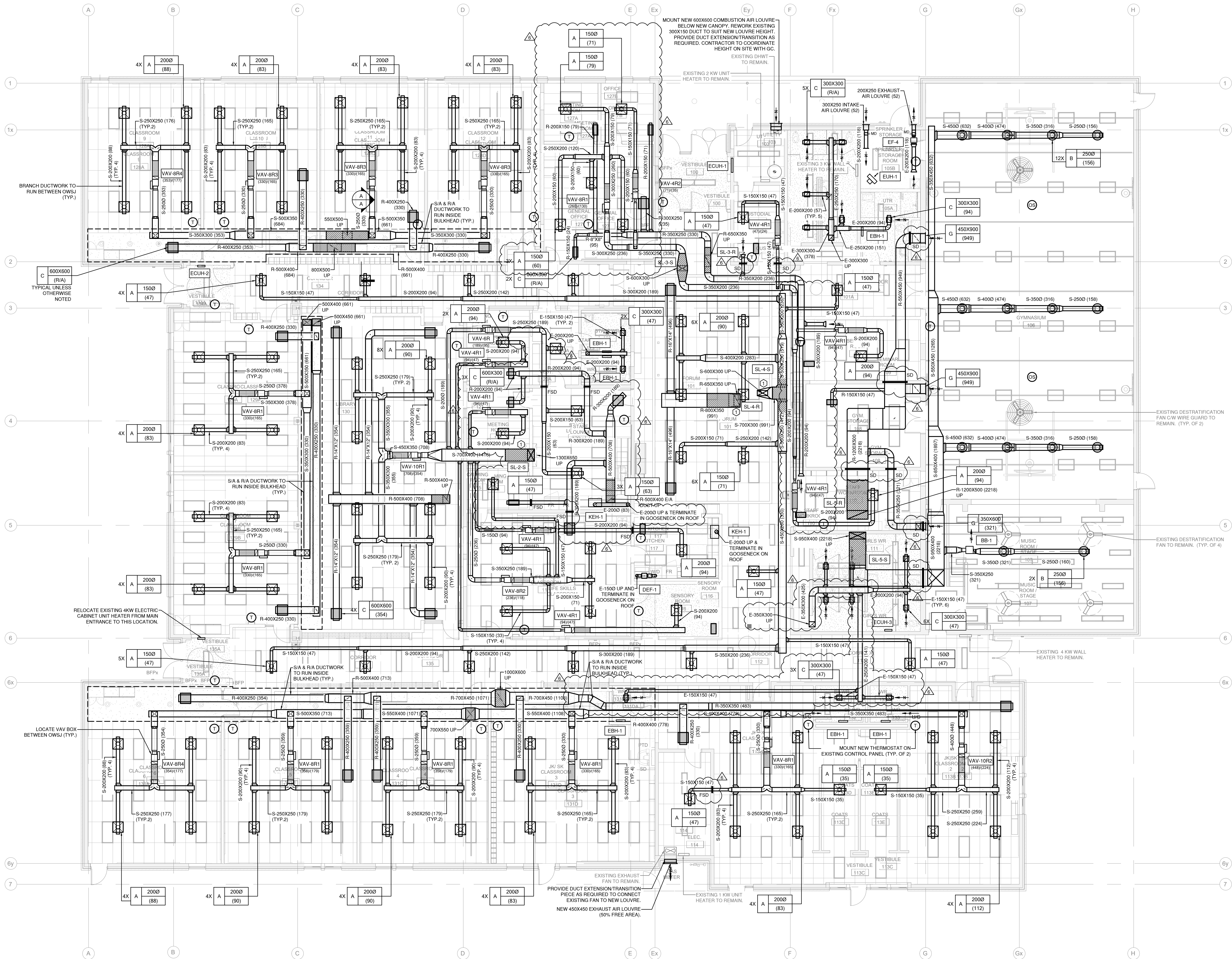
1 SECTION A-A
M03 Scale: 1:50

HVAC GENERAL NOTES

- MECHANICAL CONTRACTOR SHALL REVIEW STRUCTURAL DRAWINGS AND COORDINATE MECHANICAL SERVICES WITH STRUCTURAL BEAMS AND JOISTS.
- ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS.
- ALL DUCTWORK SHALL BE INSULATED AS PER MECHANICAL SPECIFICATIONS.
- DIMENSIONS OF ACOUSTICALLY LINED DUCTWORK SHOWN REPRESENT THE FREE AREA OF DUCTWORK. DUCT SIZES SHALL BE ADJUSTED TO ACCOUNT FOR THICKNESS OF ACOUSTIC LINING PROVIDED TO MAINTAIN FREE AREA NOTED.
- MANUAL BALANCING DAMPERS SHALL BE PROVIDED AT ALL DUCT BRANCHES AND IN ALL BRANCHES TO GRILLES AND DIFFUSERS AS SHOWN ON MECHANICAL DETAILS.
- ENSURE THAT ALL EQUIPMENT REQUIRING MAINTENANCE IS ACCESSIBLE AND THAT ACCESS REQUIREMENTS ARE NOT OBSTRUCTED BY NEW SERVICES. PROVIDE ACCESS DOOR/PANELS WHERE REQUIRED.
- LOCATION OF CONTROLS ON VAV BOXES (RIGHT HAND / LEFT HAND) SHOWN ARE TO BE CONFIRMED BY CONTRACTOR PRIOR TO ORDERING TO ENSURE ADEQUATE ACCESS IS PROVIDED.
- INSTALLATION LOCATIONS AND HEIGHTS OF ALL WALL MOUNTED SENSORS AND SWITCHES ARE TO BE COORDINATED WITH ARCHITECTURAL ELEVATIONS AND ARE TO BE INSTALLED AS PER LOCAL CODES.
- NEW DUCTWORK TO RUN BETWEEN OPEN WEB JOISTS AND/OR THROUGH WEBBING TO MAINTAIN MAXIMUM CEILING HEIGHT. (TYPICAL)

KEYED NOTES

- ① PROVIDE 16G DUCT TRANSITION BETWEEN SILENCER AND RTU CONNECTION.



6	ISSUED FOR ADDENDUM M-01	2025-06-10
5	ISSUED FOR RESPONSE TO PERMIT COMMENTS	2025-06-10
4	ISSUED FOR TENDER	2025-05-22
3	ISSUED FOR PERMIT	2025-05-08
2	ISSUED FOR BUILDING PERMIT PRE-CONSULTATION	2025-04-17
1	ISSUED FOR OWNER'S REVIEW	2025-03-04
NO	ISSUED	DATE

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT AND MUST REPORT ANY DISCREPANCIES TO THE CONSULTANTS BEFORE PROCEEDING WITH THE WORK. THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE CONSULTANTS.

CERTIFICATE OF PRACTICE #4292

PAUL A. FISHER PUBLIC SCHOOL RENOVATION & ALTERATION

2175 CAVENDISH DRIVE, BURLINGTON ON L7P 3J8

LEGAL DESCRIPTION
BLOCK 000 on Registered Plan 0000, CITY OF XXXXX

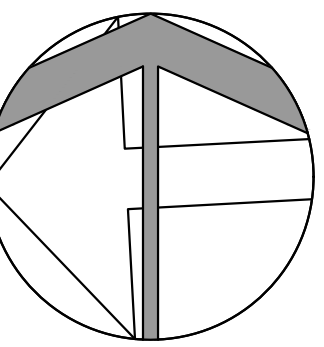
HALTON DISTRICT SCHOOL BOARD
J.W. SINGLETON EDUCATION CENTRE
2050 GUELPH LINE
BURLINGTON, ON L7P 5A8
TEL: (905) 335-3683
FAX: (905) 335-9802

NEW WORK FLOOR PLAN HVAC

RDZ
ENG

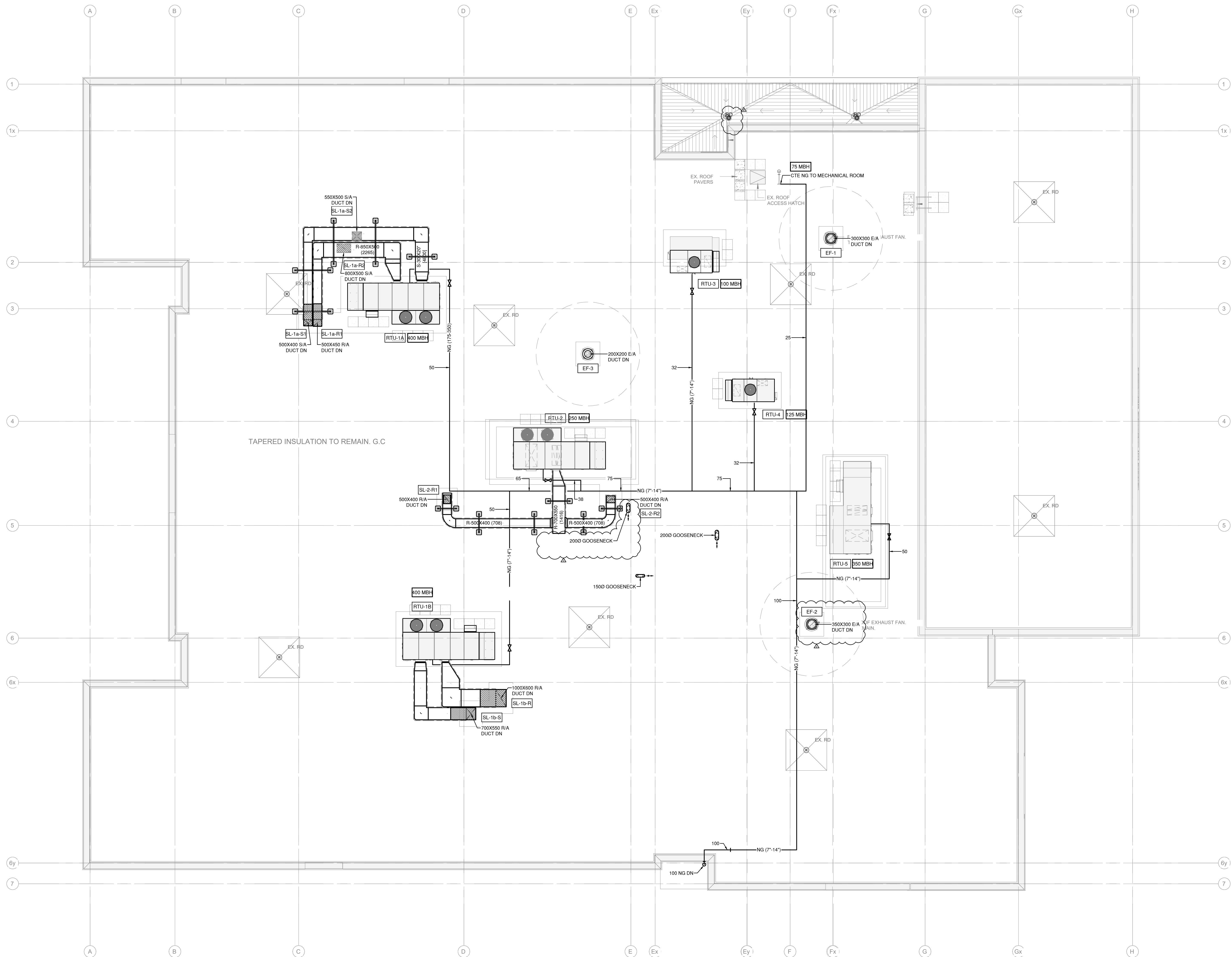
RDZ ENGINEERS LTD
17A - 30 Pennsylvania Avenue
Vaughan, Ontario L4H 4A5
email: info@rdzeng.ca

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DECEMBER 2024	
DRAWN	DRAWING
VW / KL / SL	
CHECKED	M03
VK / GR	
PRINT DATE	2024-12-10 11:47:39 AM



HVAC GENERAL NOTES

- MECHANICAL CONTRACTOR SHALL REVIEW STRUCTURAL DRAWINGS AND COORDINATE MECHANICAL SERVICES WITH STRUCTURAL BEAMS AND JOISTS.
- ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS.
- ENSURE THAT ALL EQUIPMENT REQUIRING MAINTENANCE IS ACCESSIBLE AND THAT ACCESS REQUIREMENTS ARE NOT OBSTRUCTED BY NEW SERVICES. PROVIDE ACCESS DOORS/PANELS WHERE REQUIRED.
- ENSURE THAT REQUIRED CLEARANCES BETWEEN EQUIPMENT INTAKES, EXHAUSTS AND FLUES ARE MAINTAINED.
- PAIN FULL CIRCUMFERENCE OF GAS PIPE YELLOW AND LABEL GAS PIPING COMPLETE WITH GAS PRESSURE ON WEATHERPROOF LABELS AS PER CSA B149.1



NO	ISSUED FOR OWNER'S REVIEW	DATE
1	ISSUED FOR OWNER'S REVIEW	2025-03-04
2	ISSUED FOR BUILDING PERMIT PRE-CONSULTATION	2025-04-17
3	ISSUED FOR PERMIT	2025-05-09
4	ISSUED FOR TENDER	2025-05-22
5	ISSUED FOR ADDENDUM M-01	2025-06-10

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT, AND MUST REPORT ANY DISCREPANCIES TO THE CONSULTANTS BEFORE PROCEEDING WITH THE WORK. THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE CONSULTANTS.

CERTIFICATE OF PRACTICE #4292

PAUL A. FISHER PUBLIC SCHOOL RENOVATION & ALTERATION

2175 CAVENDISH DRIVE, BURLINGTON ON L7P 3J8

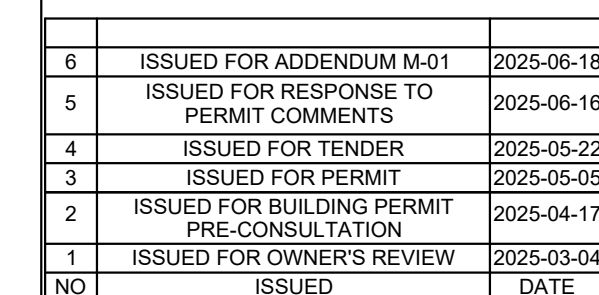
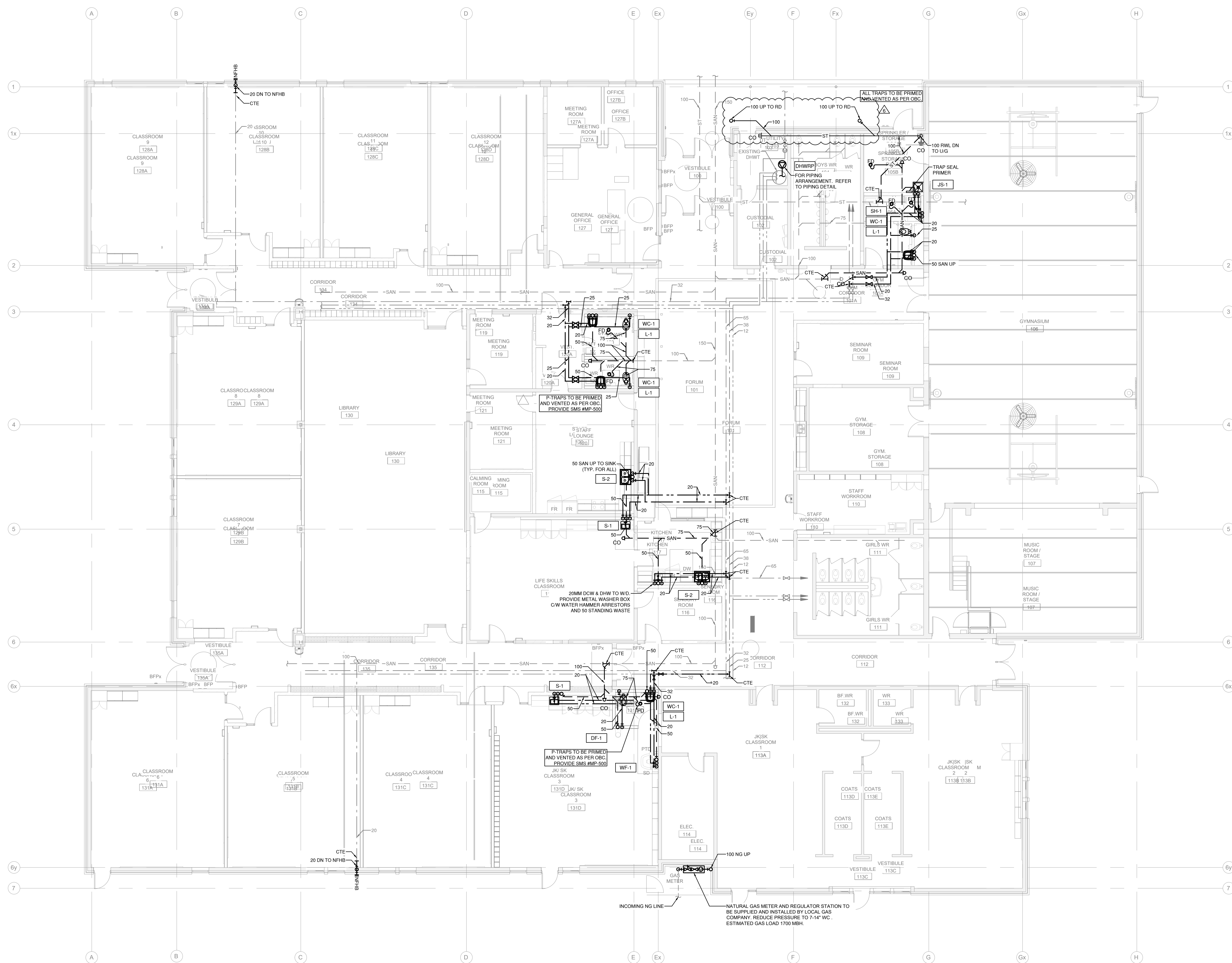
BLOCK 000 on Registered Plan 0000, CITY OF XXXXX

HALTON DISTRICT SCHOOL BOARD
J.W. SINGLETON EDUCATION CENTRE
2050 GUELPH LINE
BURLINGTON, ON L7P 5A8
TEL: (905) 335-3683
FAX: (905) 335-9802

NEW WORK ROOF PLAN MECHANICAL

RDZ ENG
RDZ ENGINEERS LTD
17A - 30 Pennsylvania Avenue
Vaughan, Ontario L4H 4A5
email: info@rdzeng.ca

SCALE	PROJECT
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DATE	DRAWING
DECEMBER 2024	M05
DRAWN	CHECKED
VW / KL / SL	VK / GR
PRINT DATE	2024-12-10 11:47:39 AM



DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT; AND MUST REPORT ANY DISCREPANCIES TO THE CONSULTANTS BEFORE PROCEEDING WITH THE WORK. THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE CONSULTANTS.

CERTIFICATE OF PRACTICE #4292

PAUL A. FISHER PUBLIC
SCHOOL RENOVATION &
ALTERATION

2175 CAVENDISH DRIVE,
BURLINGTON ON L7P 3J8

LEGAL DESCRIPTION

BLOCK 000 on Registered Plan 0000,
CITY OF XXXXX



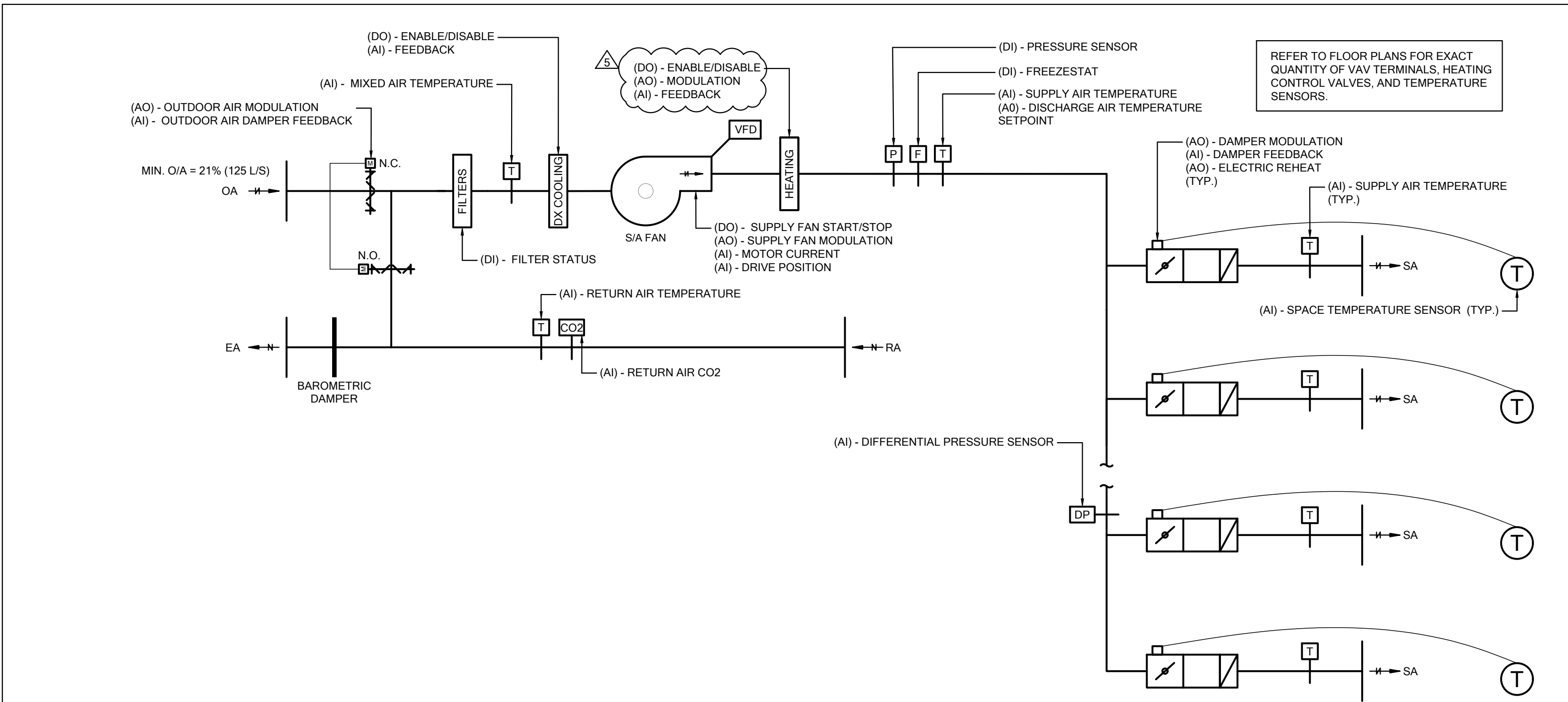
HALTON DISTRICT SCHOOL BOARD
J.W. SINGLETON EDUCATION CENTRE
2050 GUELPH LINE
BURLINGTON, ON L7P 5A8
TEL. (905) 335-3663
FAX (905) 335-9802

NEW WORK
FLOOR PLAN
PLUMBING



RDZ ENGINEERS LTD
17A - 30 Pennsylvania Avenue
Vaughan, Ontario L4K 4A5
email: info@rdzeng.ca

SCALE 1:100	PROJECT 24122
DATE DECEMBER 2024	DRAWING M07
DRAWN VW / KL / SL	
CHECKED VK / GR	
PRINT DATE 2024-12-10 11:47:39 AM	



SEQUENCE OF OPERATION

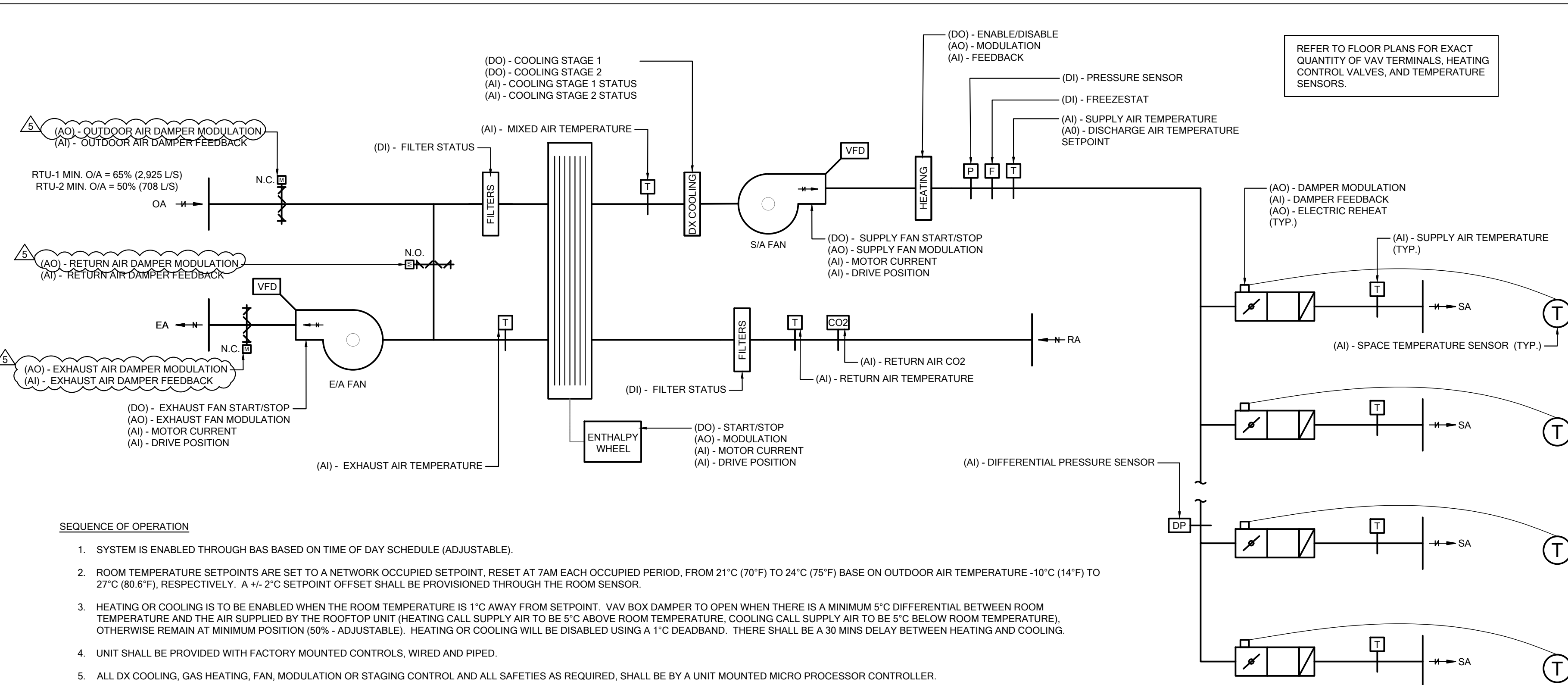
1. SYSTEM IS ENABLED THROUGH BAS BASED ON TIME OF DAY SCHEDULE (ADJUSTABLE).
2. SPACE TEMPERATURE SETPOINTS ARE SET TO A NETWORK OCCUPIED SETPOINT, RESET AT 7AM EACH OCCUPIED PERIOD, FROM 21°C (70°F) TO 24°C (75°F) BASE ON OUTDOOR AIR TEMPERATURE -10°C (14°F) TO 27°C (80.6°F), RESPECTIVELY. A +/- 2°C SETPOINT OFFSET SHALL BE PROVIDED THROUGH THE SPACE SENSORS.
3. HEATING OR COOLING IS TO BE ENABLED WHEN THE ROOM TEMPERATURE IS 1°C AWAY FROM SETPOINT. VAV BOX DAMPER TO OPEN WHEN THERE IS A MINIMUM 5°C DIFFERENTIAL BETWEEN ROOM TEMPERATURE AND THE AIR SUPPLIED BY THE ROOFTOP UNIT (HEATING CALL SUPPLY AIR TO BE 5°C ABOVE ROOM TEMPERATURE, COOLING CALL SUPPLY AIR TO BE 5°C BELOW ROOM TEMPERATURE), OTHERWISE REMAIN AT MINIMUM POSITION (50% - ADJUSTABLE). HEATING OR COOLING WILL BE DISABLED USING A 1°C DEADBAND. THERE SHALL BE A 30 MINS DELAY BETWEEN HEATING AND COOLING.
4. UNIT SHALL BE PROVIDED WITH FACTORY MOUNTED CONTROLS, WIRED AND PIPED.
5. ALL DX COOLING, GAS HEATING, FAN, MODULATION OR STAGING CONTROL AND ALL SAFETIES AS REQUIRED, SHALL BE BY A UNIT MOUNTED MICRO PROCESSOR CONTROLLER.
6. PRE-OCCUPANCY MODE:
 1. BAS TO ENABLE SUPPLY AIR FAN 30 MINUTES (ADJUSTABLE) PRIOR TO START OF OCCUPIED PERIOD. INCREASE FAN SPEED GRADUALLY TO FULL SPEED VIA VFDs.
 2. OUTDOOR AIR DAMPER REMAIN CLOSED. RETURN AIR DAMPER REMAINS OPEN.
7. OCCUPIED MODE:
 1. BAS TO ENABLE UNIT. MODULATE OUTDOOR AIR DAMPER TO MINIMUM OUTDOOR AIR POSITION (21%).
 2. WHEN IN COOLING MODE, STAGE DX COOLING TO MAINTAIN ROOFTOP UNIT SUPPLY AIR TEMPERATURE SETPOINT AT 12.7°C (55°F - ADJUSTABLE). WHEN IN HEATING MODE, MODULATE HEATING CONTROL VALVE TO MAINTAIN ROOFTOP UNIT SUPPLY AIR TEMPERATURE SETPOINT AT 18.3°C (65°F - ADJUSTABLE).
 3. THE MIXED AIR TEMPERATURE SENSOR SHALL INITIATE A HIGH PRIORITY ALARM AT A LOW LIMIT OF -1.0°C (30°F) AND A HIGH LIMIT OF 30°C (86°F).
 4. THE CO2 SENSOR SHALL MODULATE THE OUTDOOR AIR DAMPER TO MAINTAIN THE CO2 SETPOINT OF 800 PPM (ADJUSTABLE).
 5. WHEN OUTDOOR AIR TEMPERATURE IS BELOW 12°C (54°F - ADJUSTABLE), ROOFTOP UNIT IS IN ECONOMIZER (FREE COOLING) MODE. DX COOLING AND GAS BURNERS DISABLED. ONCE OUTDOOR AIR TEMPERATURE DROPS BELOW 5°C (41°F - ADJUSTABLE), AIR SIDE ECONOMIZER OPERATION STOPS, UNIT RETURN TO NORMAL OPERATION. FREE COOLING MODE TO BE ENABLED ONLY WHEN ON CALL FOR COOLING.
 6. DIFFERENTIAL PRESSURE SENSOR DP (LOCATED 1 OF LONGEST DUCT RUN DOWNSTREAM OF FAN) SHALL MAINTAIN SETPOINT BASED ON STATIC PRESSURE RESET CONTROL BY MODULATING BYPASS AIR DAMPER. BAS SHALL CONTINUALLY POLL VAV BOX DAMPER POSITION AND RESET THE STATIC PRESSURE SETPOINT TO MAINTAIN THE INLET PRESSURE OF THE MOST OPEN DAMPER GREATER THAN 95% OPEN. HIGH PRESSURE SENSOR 1" C/W MANUAL RESET SHALL OVERRIDE VFD AND STOP SUPPLY FAN WHEN SETPOINT EXCEEDS 500Pa (ADJUSTABLE).
 7. THE LOCAL SPACE TEMPERATURE SENSOR SHALL MAINTAIN SPACE TEMPERATURE SETPOINT BY MODULATING THE ROOM VAV TERMINAL DAMPER.
8. UNOCCUPIED MODE:
 1. DISABLE ROOFTOP UNIT SUPPLY FAN.
 2. CLOSE OUTSIDE AIR DAMPER BY MECHANICAL SPRING RETURN. RETURN AIR DAMPER TO BE RELEASED AND OPEN BY WAY OF MECHANICAL SPRING RETURN. OUTDOOR AIR DAMPER TO REMAIN CLOSED DURING UNOCCUPIED TIMES.
 3. RETURN VAV BOX DAMPER TO MINIMUM POSITION.
 4. COOLING AND HEATING SETPOINTS SHALL BE 18°C AND 27°C AND WILL BE DISABLED BY A 2°C DEADBAND.
9. TERMINAL REHEAT:
 1. ENABLE TERMINAL ELECTRIC REHEAT TO MAINTAIN SPACE TEMPERATURE SETPOINT.

NOTES

1. PROVIDE A DIFFERENTIAL PRESSURE SENSOR AT THE AIR FILTERS. PROVIDE AN ALARM AT THE BAS WHEN THE PRESSURE REACHES 500 PA (ADJUSTABLE).
2. FAN VFDs ARE PROVIDED FOR BALANCING PURPOSES. ONCE AIRFLOW IS ESTABLISHED, FANS TO OPERATE IN CONSTANT AIRFLOW MODE. CONTROL POINTS ARE DEFINED FOR EACH VFD AS:
DO - ENABLE/DISABLE
AO - FAN SPEED
AI - MOTOR CURRENT
AI - DRIVE POSITION
3. PROVIDE STATUS SIGNAL FROM O/A, R/A AND E/A DAMPERS.
4. UPON ACTIVATION OF THE FREEZE STAT AT 2°C, THE SUPPLY AND EXHAUST AI FANS SHALL STOP AND NOT AUTOMATICALLY RESTART. THE FREEZE STAT MUST BE MANUALLY RESET. PROVIDE AN ALARM AT THE BAS INDICATING THAT THE UNIT WAS TURNED OFF AS A RESULT OF A FREEZE ALARM.
5. OUTDOOR AIR DAMPER SHALL OPEN PRIOR TO FAN ACTIVATION.
6. IN THE EVENT OF POWER LOSS, OUTDOOR AIR DAMPER TO CLOSE BY MECHANICAL SPRING. RETURN AIR DAMPER SHALL OPEN BY WAY OF MECHANICAL SPRING.
7. DX COOLING IS LOCKED OUT WHEN AMBIENT TEMPERATURE IS BELOW 12.8°C (55°F).
8. THE COOLING COMPRESSORS WILL HAVE MINIMUM RUN TIME OF 5 MINUTES.
9. INTERLOCK OUTDOOR AIR AND RETURN AIR DAMPERS SUCH THAT THEY OPERATE TOGETHER TO MAINTAIN MIN. FRESH AIR REQUIREMENT AND PROVIDE ECONOMIZER OPERATION WHEN AVAILABLE.
10. CONTROLS CONTRACTOR TO PROVIDE ALL CONTROLLERS AND DEVICES REQUIRED TO OPERATE EQUIPMENT AS PER ABOVE SEQUENCE OF OPERATION.
11. CONTROLS CONTRACTOR TO CROSS REFERENCE SPECIFICATION SECTION 25 09 23 FOR HDSB SEQUENCE OF OPERATION DESIGN GUIDELINE.

ROOFTOP AIR HANDLING UNIT 'RTU-3' (OFFICE)

CONTROL DIAGRAM



SEQUENCE OF OPERATION

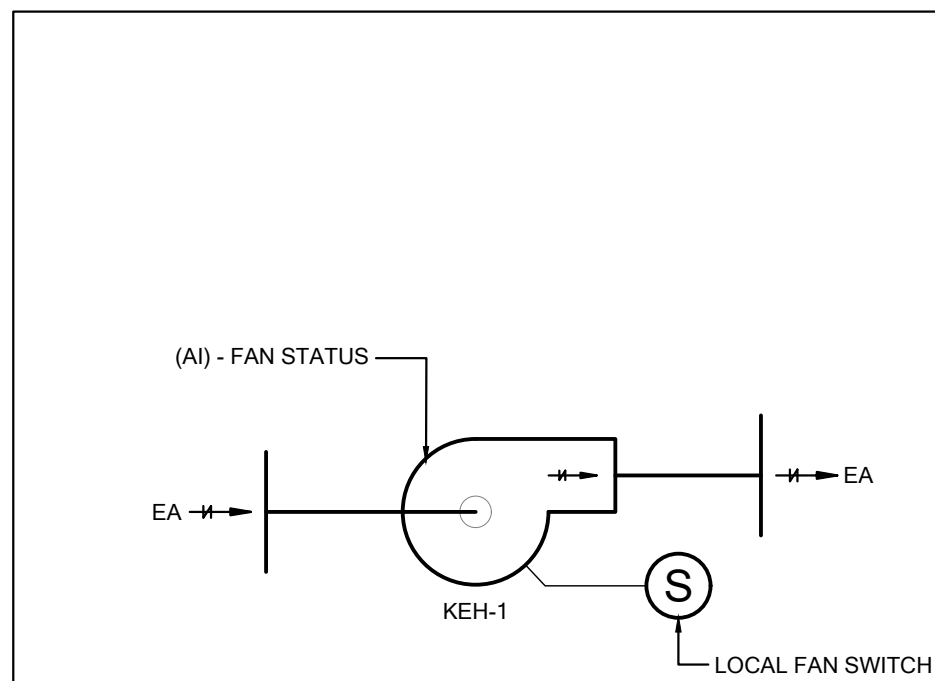
1. SYSTEM IS ENABLED THROUGH BAS BASED ON TIME OF DAY SCHEDULE (ADJUSTABLE).
2. ROOM TEMPERATURE SETPOINTS ARE SET TO A NETWORK OCCUPIED SETPOINT, RESET AT 7AM EACH OCCUPIED PERIOD, FROM 21°C (70°F) TO 24°C (75°F) BASE ON OUTDOOR AIR TEMPERATURE -10°C (14°F) TO 27°C (80.6°F), RESPECTIVELY. A +/- 2°C SETPOINT OFFSET SHALL BE PROVIDED THROUGH THE ROOM SENSOR.
3. HEATING OR COOLING IS TO BE ENABLED WHEN THE ROOM TEMPERATURE IS 1°C AWAY FROM SETPOINT. VAV BOX DAMPER TO OPEN WHEN THERE IS A MINIMUM 5°C DIFFERENTIAL BETWEEN ROOM TEMPERATURE AND THE AIR SUPPLIED BY THE ROOFTOP UNIT (HEATING CALL SUPPLY AIR TO BE 5°C ABOVE ROOM TEMPERATURE, COOLING CALL SUPPLY AIR TO BE 5°C BELOW ROOM TEMPERATURE), OTHERWISE REMAIN AT MINIMUM POSITION (50% - ADJUSTABLE). HEATING OR COOLING WILL BE DISABLED USING A 1°C DEADBAND. THERE SHALL BE A 30 MINS DELAY BETWEEN HEATING AND COOLING.
4. UNIT SHALL BE PROVIDED WITH FACTORY MOUNTED CONTROLS, WIRED AND PIPED.
5. ALL DX COOLING, GAS HEATING, FAN, MODULATION OR STAGING CONTROL AND ALL SAFETIES AS REQUIRED, SHALL BE BY A UNIT MOUNTED MICRO PROCESSOR CONTROLLER.
6. PRE-OCCUPANCY MODE:
 1. BAS TO ENABLE UNIT. START SUPPLY AND EXHAUST AIR FANS 30 MINUTES (ADJUSTABLE) PRIOR TO START OF OCCUPIED PERIOD. START EXHAUST AIR FAN FOLLOWED BY THE SUPPLY AIR FAN. INCREASE FAN SPEED GRADUALLY TO FULL SPEED VIA VFDs.
 2. OUTDOOR AIR & EXHAUST AIR DAMPERS REMAIN CLOSED. RETURN AIR DAMPER REMAINS OPEN.
7. OCCUPIED MODE:
 1. MODULATE OUTDOOR AIR, RETURN AIR, AND EXHAUST AIR DAMPERS TO MINIMUM OUTDOOR AIR POSITION (55%).
 2. ENABLE ENTHALPY WHEEL. EXHAUST AIR TEMPERATURE SENSOR SHALL MODULATE ENTHALPY WHEEL SPEED ROTATION FOR FROST CONTROL TO MAINTAIN AN EXHAUST AIR TEMPERATURE ABOVE 2°C (35.6°F) WB.
 3. WHEN IN COOLING MODE, STAGE DX COOLING TO MAINTAIN ROOFTOP UNIT SUPPLY AIR TEMPERATURE SETPOINT AT 12.7°C (55°F - ADJUSTABLE). WHEN IN HEATING MODE, MODULATE HEATING CONTROL VALVE TO MAINTAIN ROOFTOP UNIT SUPPLY AIR TEMPERATURE SETPOINT AT 18.3°C (65°F - ADJUSTABLE).
 4. ENABLE ENTHALPY WHEEL. EXHAUST AIR TEMPERATURE SENSOR SHALL MODULATE ENTHALPY WHEEL SPEED ROTATION FOR FROST CONTROL TO MAINTAIN AN EXHAUST AIR TEMPERATURE ABOVE 2°C (35.6°F) WB.
 5. THE MIXED AIR TEMPERATURE SENSOR SHALL INITIATE A HIGH PRIORITY ALARM AT A LOW LIMIT OF -1.0°C (30°F) AND A HIGH LIMIT OF 30°C (86°F).
 6. THE CO2 SENSOR SHALL MODULATE THE OUTDOOR AIR, RETURN AIR AND EXHAUST AIR DAMPERS TO MAINTAIN THE CO2 SETPOINT OF 800 PPM (ADJUSTABLE).
 7. WHEN OUTDOOR AIR TEMPERATURE IS LESS THAN 12°C (53.6°F - ADJUSTABLE), UNIT IS IN ECONOMIZER (FREE COOLING) MODE. ENTHALPY WHEEL IS DISABLED. DX COOLING AND GAS BURNERS DISABLED. ONCE OUTDOOR AIR TEMPERATURE DROPS BELOW 5°C (41°F - ADJUSTABLE), AIR SIDE ECONOMIZER OPERATION STOPS, UNIT RETURN TO NORMAL OPERATION. FREE COOLING MODE TO BE ENABLED ONLY WHEN ON CALL FOR COOLING.
 8. DIFFERENTIAL PRESSURE SENSOR DP (LOCATED 1 OF LONGEST DUCT RUN DOWNSTREAM OF FAN) SHALL MAINTAIN SETPOINT BASED ON STATIC PRESSURE RESET CONTROL BY MODULATING BYPASS AIR DAMPER. BAS SHALL CONTINUALLY POLL VAV BOX DAMPER POSITION AND RESET THE STATIC PRESSURE SETPOINT TO MAINTAIN THE INLET PRESSURE OF THE MOST OPEN DAMPER GREATER THAN 95% OPEN. HIGH PRESSURE SENSOR 1" C/W MANUAL RESET SHALL OVERRIDE VFD AND STOP SUPPLY FAN WHEN SETPOINT EXCEEDS 500Pa (ADJUSTABLE).
 9. THE LOCAL SPACE TEMPERATURE SENSOR SHALL MAINTAIN SPACE TEMPERATURE SETPOINT BY MODULATING THE ROOM VAV TERMINAL DAMPER.
8. UNOCCUPIED MODE:
 1. DISABLE SUPPLY AND EXHAUST FANS.
 2. CLOSE OUTSIDE AIR DAMPER BY MECHANICAL SPRING RETURN. RETURN AIR DAMPER TO BE RELEASED AND OPEN BY WAY OF MECHANICAL SPRING RETURN. OUTDOOR AIR DAMPER TO REMAIN CLOSED DURING UNOCCUPIED TIMES.
 3. DISABLE ENTHALPY WHEEL.
 4. RETURN VAV BOX DAMPER TO MINIMUM POSITION.
 5. COOLING AND HEATING SETPOINTS SHALL BE 18°C AND 27°C AND WILL BE DISABLED BY A 2°C DEADBAND.
9. TERMINAL REHEAT:
 1. ENABLE TERMINAL ELECTRIC REHEAT TO MAINTAIN SPACE TEMPERATURE SETPOINT.

NOTES

1. PROVIDE A DIFFERENTIAL PRESSURE SENSOR AT THE AIR FILTERS. PROVIDE AN ALARM AT THE BAS WHEN THE PRESSURE REACHES 500 PA (ADJUSTABLE).
2. EXHAUST AIR FAN SHALL BE INTERLOCKED WITH THE SUPPLY FAN SUCH THAT IT IS ENABLED OR DISABLED IN SIMILAR FASHION.
3. FAN VFDs ARE PROVIDED FOR BALANCING PURPOSES. ONCE AIRFLOW IS ESTABLISHED, FANS TO OPERATE IN CONSTANT AIRFLOW MODE. CONTROL POINTS ARE DEFINED FOR EACH VFD AS:
DO - ENABLE/DISABLE
AO - FAN SPEED
AI - MOTOR CURRENT
AI - DRIVE POSITION
4. PROVIDE STATUS SIGNAL FROM O/A, R/A AND E/A DAMPERS.
5. UPON ACTIVATION OF THE FREEZE STAT AT 2°C, THE SUPPLY AND EXHAUST AI FANS SHALL STOP AND NOT AUTOMATICALLY RESTART. THE FREEZE STAT MUST BE MANUALLY RESET. PROVIDE AN ALARM AT THE BAS INDICATING THAT THE UNIT WAS TURNED OFF AS A RESULT OF A FREEZE ALARM.
6. DURING ECONOMIZER MODE, ROTATE ENTHALPY WHEEL AT MIN. SPEED FOR 1 MIN. EVERY 24 HOURS TO FLUSH THE WHEEL AND AVOID ANY DUST ENTRAPMENT THAT MAY CAUSE WHEEL IMBALANCE.
7. OUTDOOR AIR & EXHAUST AIR DAMPERS SHALL OPEN PRIOR TO FAN ACTIVATION.
8. IN THE EVENT OF POWER LOSS, OUTDOOR AIR & EXHAUST AIR DAMPERS ARE TO CLOSE BY MECHANICAL SPRING. RETURN AIR DAMPER SHALL OPEN BY WAY OF MECHANICAL SPRING.
9. DX COOLING IS LOCKED OUT WHEN AMBIENT TEMPERATURE IS BELOW 12.8°C (55°F).
10. THE COOLING COMPRESSORS WILL HAVE MINIMUM RUN TIME OF 5 MINUTES.
11. CONTROLS CONTRACTOR TO PROVIDE ALL CONTROLLERS AND DEVICES REQUIRED TO OPERATE EQUIPMENT AS PER ABOVE SEQUENCE OF OPERATION.
12. CONTROLS CONTRACTOR TO CROSS REFERENCE SPECIFICATION SECTION 25 09 23 FOR HDSB SEQUENCE OF OPERATION DESIGN GUIDELINE.

ROOFTOP AIR HANDLING UNIT 'RTU-1a', 'RTU-1b' (CLASSROOMS) & 'RTU-2' (LIBRARY)

CONTROL DIAGRAM

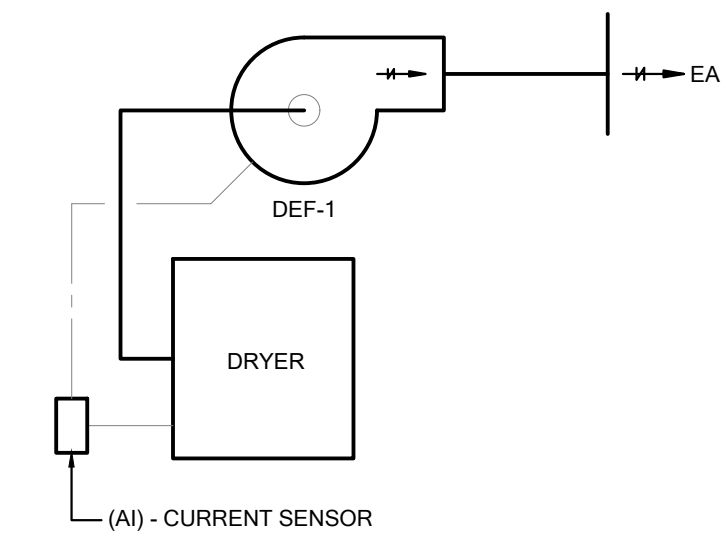


SEQUENCE OF OPERATION

1. LOCAL FAN SWITCH TO ENABLE RANGE HOOD. BAS TO MONITOR FAN STATUS.

RANGE HOOD 'KEH-1'

CONTROL DIAGRAM

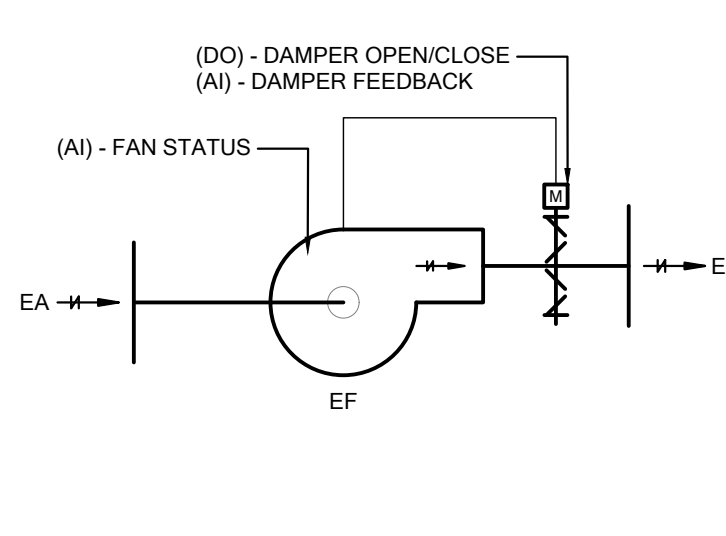


SEQUENCE OF OPERATION

1. DRYER EXHAUST FAN IS INTERLOCKED TO DRYER VIA CURRENT SENSOR. CURRENT SWITCH SHALL ENABLE/DISABLE DRYER BOOSTER FAN.

DRYER EXHAUST FAN DEF-1

CONTROL DIAGRAM

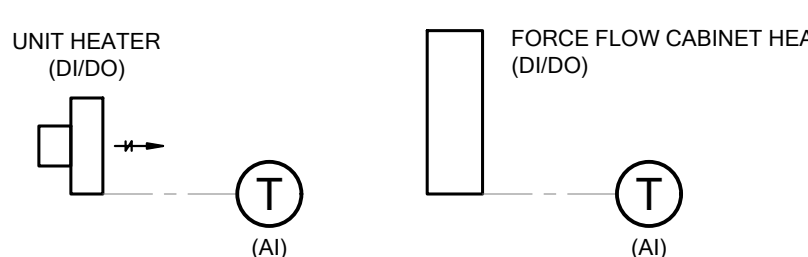


SEQUENCE OF OPERATION

1. BAS TO ENABLE SYSTEM BASE ON TIME OF DAY SCHEDULE. ONCE ENABLED, SYSTEM SHALL OPERATE CONTINUOUSLY.
2. WHEN ENABLED, BAS TO OPEN THE EXHAUST AIR DAMPER. ONCE THE END-SWITCH MAKES, IT WILL START THE EXHAUST FAN THROUGH AN INTERLOCK.
3. WHEN DISABLED, BAS TO STOP THE EXHAUST FAN AND CLOSE EXHAUST AIR DAMPER.
4. SAFETY: FAN SHALL NOT START UNTIL MOTORIZED EXHAUST DAMPER IS OPENED. PROVIDE RELAYS AS REQUIRED.

TOILET EXHAUST FANS

CONTROL DIAGRAM



SEQUENCE OF OPERATION

1. IN HEATING MODE, BUILT IN THERMOSTAT TO ENABLE/DISABLE ELECTRIC HEATING COIL AND FAN TO MAINTAIN ROOM TEMPERATURE SETPOINT OF 22.2°C (72°F - ADJUSTABLE) IN SCHOOL AREAS AND 18.8°C (66°F - ADJUSTABLE) IN SERVICE SPACES.
2. PROVIDE SPACE TEMPERATURE SENSOR (AI) IN SPACE WITH HEATERS AND CONNECT TO BAS FOR MONITORING.

NOTES

1. CONTROL DIAGRAM APPLIES TO BOTH UNIT HEATERS AND FORCE FLOW CABINET HEATERS.
2. REFER TO FLOOR PLAN FOR LOCATIONS OF UNIT HEATERS AND FORCE FLOW CABINET HEATERS.
3. HEATERS DISABLED WHEN O/A TEMPERATURE IS ABOVE 6°C (43°F - ADJUSTABLE).

TYPICAL MOTORIZED HEATER

CONTROL DIAGRAM

NOTES

1. ALL CONTROL EQUIPMENT, INSTRUMENTATION, AND STRATEGIES TO BE PROVIDED AS PER THE LATEST SCHOOL BOARD CONTROL DESIGN STANDARDS.
2. REFER TO ELECTRICAL DRAWINGS FOR LOCATIONS OF JUNCTION BOXES PROVIDED BY THE ELECTRICAL TRADE, FOR THE PROVISION OF POWER TO CONTROL SYSTEMS.
3. ELECTRICAL CONTRACTORS SHALL PROVIDE RELAYS, DRY CONTACTS, CONTACTORS, TRANSDUCERS AND SENSORS, ETC. AS REQUIRED ON EQUIPMENT PROVIDED BY ELECTRICAL CONTRACTOR, FOR CONNECTION TO THE BAS. CONTROL CONTRACTOR TO COORDINATE.
4. COORDINATE FINAL INSTALLATION POSITION (INCLUDING HEIGHT A.F.F.) OF EACH TEMPERATURE AND HUMIDITY SENSOR, THERMOSTAT, OCCUPANCY SENSOR, FAN CONTROLLER, AND ALL OTHER CONTROLS RELATED DEVICES THAT ARE LOCATED ON WALLS, CEILINGS, FLOORS, ETC. IN ALL AREAS (EXCLUDING SERVICE AREAS) WITH ARCHITECT AND GENERAL CONTRACTOR ON SITE PRIOR TO ROUGH-IN.
5. ALL CONTROL WIRING IN AREAS WITH EXPOSED CEILINGS SHALL BE PROVIDED IN CONDUIT.
6. UNLESS OTHERWISE NOTED, PROVIDE ALARM AT BAS SHOULD ANY SPACE TEMPERATURE DROPS BELOW 12.8°C (55°F - ADJUSTABLE).
7. SHOULD A SMOKE DETECTOR BE ACTIVATED, THE SYSTEM SHALL SHUT DOWN AND NOT RE-START AUTOMATICALLY.
8. FAN RE-START SEQUENCE ONCE FIRE ALARM HAS BEEN SILENCED SHALL BE STAGGERED THROUGH THE BAS IN ORDER TO PREVENT A CURRENT OVERLOAD OF ELECTRICAL SERVICES.
9. ALL MECHANICAL EQUIPMENT OEM CONTROLLERS SHALL BE BACKUP IP OR COMPATIBLE COMMUNICATION PROTOCOL. THE CONTROLLERS MUST COMMUNICATE ALL CONTROL POINTS THROUGH BAS SYSTEM WITHOUT GATEWAYS OR JACES. MECHANICAL CONTRACTOR TO COORDINATE COMMUNICATION PROTOCOL BETWEEN EQUIPMENT SUPPLIERS AND CONTROLS CONTRACTOR TO PROVIDE A FULLY INTEGRATED CONTROL SYSTEM.
10. CONTROLS CONTRACTOR TO PROVIDE ALL CONTROLLERS AND DEVICES REQUIRED TO OPERATE EQUIPMENT AS PER SEQUENCE OF OPERATION.
11. REFER TO SPECIFICATION SECTION 25 09 23 FOR HDSB SEQUENCE OF OPERATION DESIGN GUIDELINE.

GENERAL CONTROLS NOTES

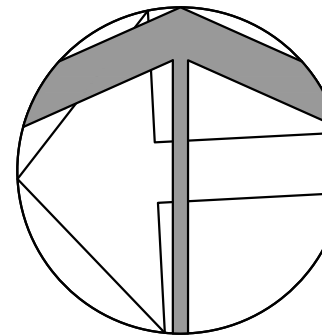
EQUIPMENT STATUS AND MONITORING

1. PROVIDE CONTROLS INFRASTRUCTURE TO PERMIT BAS TO CONTROL AND MONITOR EQUIPMENT AS PER CONTROL DIAGRAMS. PROVIDE POINTS AS SPECIFIED, INCLUDING ALARM, STATUS, TEMPERATURES, PRESSURES AND OTHER MEASURED PROPERTIES WHERE INDICATED.
2. REFER TO CONTROL DIAGRAMS AND FLOW DIAGRAMS AND PROVIDE CONTROL INFRASTRUCTURE TO PROVIDE CONTROL STRATEGIES OR BAS SYSTEM MONITORING WHERE INDICATED.

FIRE ALARM STATUS AND MONITORING

1. INTERFACE THE FIRE ALARM SYSTEM WITH BAS FOR MONITORING PURPOSES ONLY.
2. PROVIDE CONTROL INFRASTRUCTURE TO PERMIT BAS TO MONITOR EACH SUPPLY AND RETURN FAN PROVIDED WITH SMOKE DETECTORS.
3. PROVIDE AN ADDITIONAL THIRTY (30) DIDO AND A/A/O POINTS.

HVAC CONTROLS AND INSTRUMENTATION



NO	ISSUED	DATE
5	ISSUED FOR ADD. M-01	2025-06-18
4	ISSUED FOR TENDER	2025-05-22
3	ISSUED FOR PERMIT	2025-05-09
2	ISSUED FOR BUILDING PERMIT PRE-CONSULTATION	2025-04-17
1	ISSUED FOR OWNER'S REVIEW	2025-03-04

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT, AND MUST REPORT ANY DISCREPANCIES TO THE CONSULTANTS BEFORE PROCEEDING WITH THE WORK. THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE CONSULTANTS.

CERTIFICATE OF PRACTICE #4292

PAUL A. FISHER PUBLIC SCHOOL RENOVATION & ALTERATION

2175 CAVENDISH DRIVE, BURLINGTON ON L7P 3J8

LEGAL DESCRIPTION

BLOCK 900 on Registered Plan 000, CITY OF XXXXX

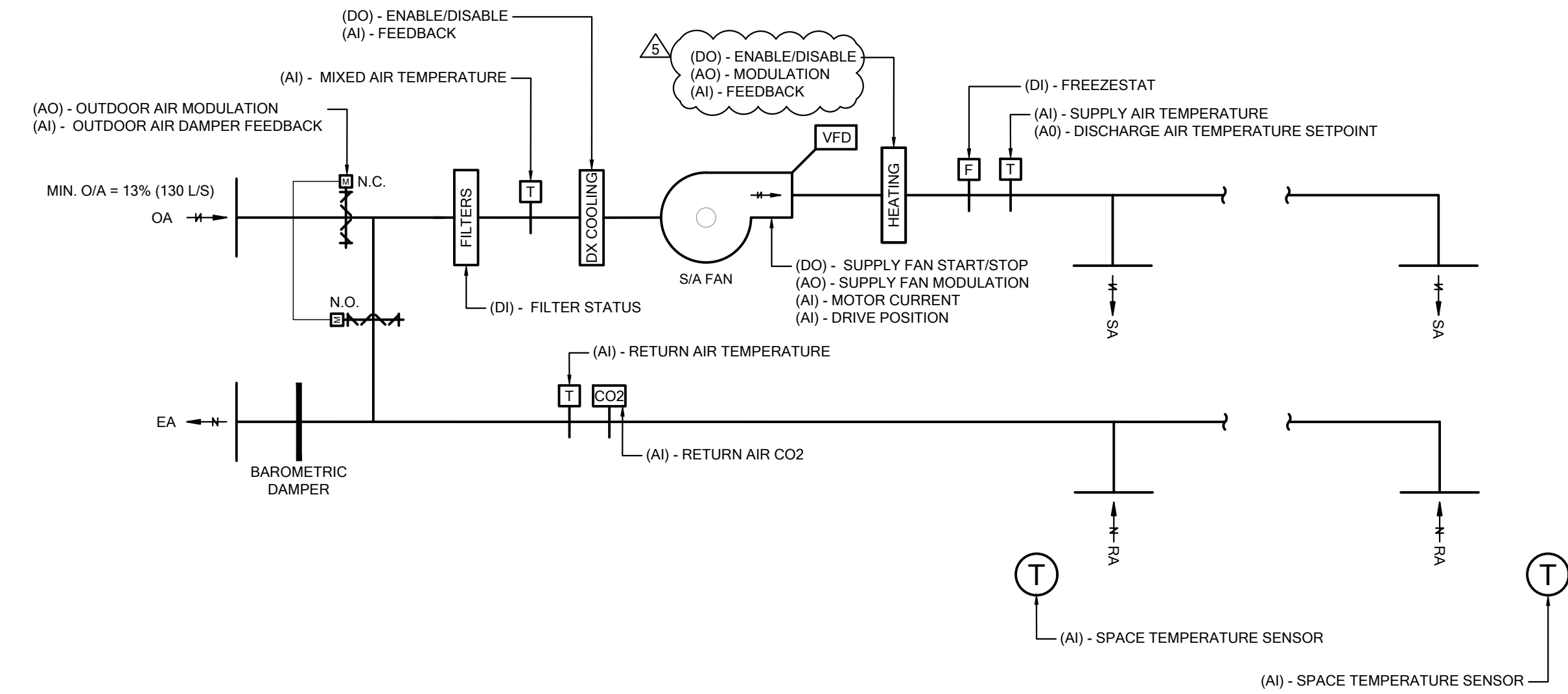
HALTON DISTRICT SCHOOL BOARD
J.W. SINGLETON EDUCATION CENTRE
2050 GUELPH LINE
BURLINGTON, ON L7P 5A8
TEL: (905) 335-3683
FAX: (905) 335-9802

CONTROLS DIAGRAMS 1



RDZ ENGINEERS LTD
17A - 30 Pennsylvania Avenue
Vaughan, Ontario L4H 4A5
email: info@rdzeng.ca

SCALE	N.T.S.	PROJECT
DATE	DECEMBER 2024	24122
DRAWN	VW / KL / SL	DRAWING
CHECKED	VK / GR	M09
PRINT DATE	2024-12-10 11:47:39 AM	



SEQUENCE OF OPERATION

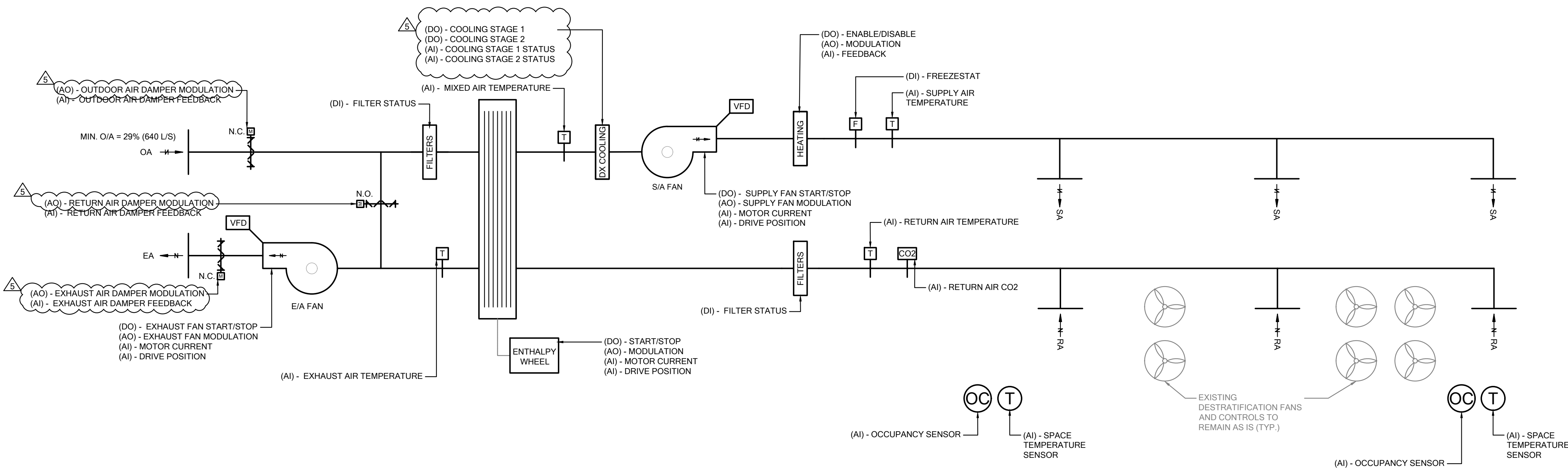
- SYSTEM IS ENABLED THROUGH BAS BASED ON TIME OF DAY SCHEDULE (ADJUSTABLE).
- SPACE TEMPERATURE SETPOINTS ARE SET TO A NETWORK OCCUPIED SETPOINT, RESET AT 7AM EACH OCCUPIED PERIOD, FROM 21°C (70°F) TO 24°C (75°F) BASE ON OUTDOOR AIR TEMPERATURE -10°C (14°F) TO 27°C (80.6°F), RESPECTIVELY. A +/- 2°C SETPOINT OFFSET SHALL BE PROVISIONED THROUGH THE SPACE SENSORS.
- HEATING OR COOLING IS TO BE ENABLED WHEN THE SPACE TEMPERATURE IS 1°C AWAY FROM SETPOINT AND WILL BE DISABLED USING A 1°C DEADBAND. THERE SHALL BE A 30 MINS DELAY BETWEEN HEATING AND COOLING.
- UNIT SHALL BE PROVIDED WITH FACTORY MOUNTED CONTROLS, WIRED AND PIPED.
- ALL DX COOLING, GAS HEATING, FAN, MODULATION OR STAGING CONTROL AND ALL SAFETIES AS REQUIRED, SHALL BE BY A UNIT MOUNTED MICRO PROCESSOR CONTROLLER.
- PRE-OCCUPANCY MODE:**
 - BAS TO ENABLE SUPPLY AIR FAN 30 MINUTES (ADJUSTABLE) PRIOR TO START OF OCCUPIED PERIOD.
 - OUTDOOR AIR DAMPER REMAIN CLOSED. RETURN AIR DAMPER REMAINS OPEN.
- OCCUPIED MODE:**
 - BAS TO ENABLE UNIT. MODULATE OUTDOOR AIR DAMPER TO MINIMUM OUTDOOR AIR POSITION (30%).
 - BAS TO POLL SPACE TEMPERATURES IN FORUM AND CORRIDORS AT LOCAL TEMPERATURE SENSORS. MODULATE DX COOLING (IN COOLING MODE) AND GAS HEATING (IN HEATING MODE) TO MAINTAIN AVERAGE SPACE TEMPERATURE SETPOINT AT 22°C (72°F - ADJUSTABLE).
 - THE MIXED AIR TEMPERATURE SENSOR SHALL INITIATE A HIGH PRIORITY ALARM AT A LOW LIMIT OF -1.0°C (30°F) AND A HIGH LIMIT OF 30°C (86°F).
 - THE CO2 SENSOR SHALL MODULATE THE OUTDOOR AIR DAMPER TO MAINTAIN THE CO2 SETPOINT OF 800 PPM (ADJUSTABLE).
 - WHEN OUTDOOR AIR TEMPERATURE IS BELOW 12°C (54°F - ADJUSTABLE), ROOFTOP UNIT IS IN ECONOMIZER (FREE COOLING) MODE. DX COOLING AND GAS BURNERS DISABLED. ONCE OUTDOOR AIR TEMPERATURE DROPS BELOW 5°C (41°F - ADJUSTABLE), AIR SIDE ECONOMIZER OPERATION STOPS, UNIT RETURN TO NORMAL OPERATION. FREE COOLING MODE TO BE ENABLED ONLY WHEN ON CALL FOR COOLING.
- UNOCCUPIED MODE:**
 - DISABLE ROOFTOP UNIT SUPPLY FAN.
 - CLOSE OUTSIDE AIR DAMPER BY MECHANICAL SPRING RETURN. RETURN AIR DAMPER TO BE RELEASED AND OPEN BY WAY OF MECHANICAL SPRING RETURN. OUTDOOR AIR DAMPER TO REMAIN CLOSED DURING UNOCCUPIED TIMES.
 - COOLING AND HEATING SETPOINTS SHALL BE 18°C AND 27°C AND WILL BE DISABLED BY A 2°C DEADBAND.

NOTES

- PROVIDE A DIFFERENTIAL PRESSURE SENSOR AT THE AIR FILTERS. PROVIDE AN ALARM AT THE BAS WHEN THE PRESSURE REACHES 500 PA (ADJUSTABLE).
- PROVIDE STATUS SIGNAL FROM O/A AND R/A DAMPERS.
- UPON ACTIVATION OF THE FREEZE STAT AT 2°C, THE SUPPLY AND EXHAUST AI FANS SHALL STOP AND NOT AUTOMATICALLY RESTART. THE FREEZE STAT MUST BE MANUALLY RESET. PROVIDE AN ALARM AT THE BAS INDICATING THAT THE UNIT WAS TURNED OFF AS A RESULT OF A FREEZE ALARM.
- OUTDOOR AIR DAMPER SHALL OPEN PRIOR TO FAN ACTIVATION.
- IN THE EVENT OF POWER LOSS, OUTDOOR AIR DAMPER TO CLOSE BY MECHANICAL SPRING. RETURN AIR DAMPER SHALL OPEN BY WAY OF MECHANICAL SPRING.
- DX COOLING IS LOCKED OUT WHEN AMBIENT TEMPERATURE IS BELOW 12.8°C (55°F).
- THE COOLING COMPRESSORS WILL HAVE MINIMUM RUN TIME OF 5 MINUTES.
- INTERLOCK OUTDOOR AIR AND RETURN AIR DAMPERS SUCH THAT THEY OPERATE TOGETHER TO MAINTAIN MIN. FRESH AIR REQUIREMENT AND PROVIDE ECONOMIZER OPERATION WHEN AVAILABLE.
- CONTROLS CONTRACTOR TO PROVIDE ALL CONTROLLERS AND DEVICES REQUIRED TO OPERATE EQUIPMENT AS PER ABOVE SEQUENCE OF OPERATION.
- CONTROLS CONTRACTOR TO CROSS REFERENCE SPECIFICATION SECTION 25 09 23 FOR HDSB SEQUENCE OF OPERATION DESIGN GUIDELINE.

ROOFTOP AIR HANDLING UNIT 'RTU-4' (FORUM + CORRIDORS)

CONTROL DIAGRAM



SEQUENCE OF OPERATION

- SYSTEM IS ENABLED THROUGH BAS BASED ON TIME OF DAY SCHEDULE (ADJUSTABLE).
- SPACE TEMPERATURE SETPOINTS ARE SET TO A NETWORK OCCUPIED SETPOINT, RESET AT 7AM EACH OCCUPIED PERIOD, FROM 21°C (70°F) TO 24°C (75°F) BASE ON OUTDOOR AIR TEMPERATURE -10°C (14°F) TO 27°C (80.6°F), RESPECTIVELY. A +/- 2°C SETPOINT OFFSET SHALL BE PROVISIONED THROUGH THE SPACE SENSORS.
- HEATING OR COOLING IS TO BE ENABLED WHEN THE SPACE TEMPERATURE IS 1°C AWAY FROM SETPOINT AND WILL BE DISABLED USING A 1°C DEADBAND. THERE SHALL BE A 30 MINS DELAY BETWEEN HEATING AND COOLING.
- UNIT SHALL BE PROVIDED WITH FACTORY MOUNTED CONTROLS, WIRED AND PIPED.
- ALL DX COOLING, GAS HEATING, FAN, MODULATION OR STAGING CONTROL AND ALL SAFETIES AS REQUIRED, SHALL BE BY A UNIT MOUNTED MICRO PROCESSOR CONTROLLER.
- PRE-OCCUPANCY MODE:**
 - BAS TO ENABLE SUPPLY AND EXHAUST AIR FANS 30 MINUTES (ADJUSTABLE) PRIOR TO START OF OCCUPIED PERIOD. START EXHAUST AIR FAN FOLLOWED BY THE SUPPLY AIR FAN. INCREASE FAN SPEED GRADUALLY TO FULL SPEED VIA VFDs.
 - OUTDOOR AIR & EXHAUST AIR DAMPERS REMAIN CLOSED. RETURN AIR DAMPER REMAINS OPEN.
 - BAS TO POLL SPACE TEMPERATURES IN THE GYM AT LOCAL TEMPERATURE SENSORS. MODULATE DX COOLING (IN COOLING MODE) AND GAS HEATING (IN HEATING MODE) TO MAINTAIN AVERAGE SPACE TEMPERATURE SETPOINT AT 19°C (66°F - ADJUSTABLE).
- OCCUPIED MODE:**
 - DURING OCCUPIED PERIOD AND WHEN THE GYM IS OCCUPIED AS DETERMINED BY THE MOTION DETECTOR, BAS TO ENABLE UNIT. MODULATE OUTDOOR AIR, RETURN AIR, AND EXHAUST AIR DAMPERS TO MINIMUM OUTDOOR AIR POSITION (20%).
 - ENABLE ENTHALPY WHEEL. EXHAUST AIR TEMPERATURE SENSOR SHALL MODULATE ENTHALPY WHEEL SPEED ROTATION FOR FROST CONTROL TO MAINTAIN AN EXHAUST AIR TEMPERATURE ABOVE 2°C (35.6°F) WB.
 - THE MIXED AIR TEMPERATURE SENSOR SHALL INITIATE A HIGH PRIORITY ALARM AT A LOW LIMIT OF -1.0°C (30°F) AND A HIGH LIMIT OF 30°C (86°F).
 - THE CO2 SENSOR SHALL MODULATE THE OUTDOOR AIR, RETURN AIR AND EXHAUST AIR DAMPERS TO MAINTAIN THE CO2 SETPOINT OF 800 PPM (ADJUSTABLE).
 - WHEN OUTDOOR AIR TEMPERATURE IS LESS THAN 12°C (53.6°F - ADJUSTABLE), UNIT IS IN ECONOMIZER (FREE COOLING) MODE. ENTHALPY WHEEL IS DISABLED. DX COOLING AND GAS BURNERS DISABLED. ONCE OUTDOOR AIR TEMPERATURE DROPS BELOW 5°C (41°F - ADJUSTABLE), AIR SIDE ECONOMIZER OPERATION STOPS, UNIT RETURN TO NORMAL OPERATION. FREE COOLING MODE TO BE ENABLED ONLY WHEN ON CALL FOR COOLING.
 - DURING OCCUPIED PERIOD AND WHEN THE GYM IS UN-OCCUPIED AS DETERMINED BY THE OCCUPANCY SENSORS FOR A TIME PERIOD OF 15 MINUTES (ADJUSTABLE), BAS TO OPERATE IN 'PRE-OCCUPIED MODE.'
- UNOCCUPIED MODE:**
 - DISABLE SUPPLY AND EXHAUST FANS.
 - CLOSE OUTSIDE AIR & EXHAUST AIR DAMPERS BY MECHANICAL SPRING RETURN. RETURN AIR DAMPER TO BE RELEASED AND OPEN BY WAY OF MECHANICAL SPRING RETURN. OUTDOOR AIR DAMPER TO REMAIN CLOSED DURING UNOCCUPIED TIMES.
 - DISABLE ENTHALPY WHEEL.
 - DISABLE CEILING DESTRATIFICATION FANS.
 - BAS TO POLL SPACE TEMPERATURES IN THE GYM AT LOCAL TEMPERATURE SENSORS. MODULATE DX COOLING (IN COOLING MODE) AND GAS HEATING (IN HEATING MODE) TO MAINTAIN AVERAGE SPACE TEMPERATURE BETWEEN 18°C (64°F - ADJUSTABLE) AND 25°C (77°F - ADJUSTABLE).
 - SUPPLY AND RETURN FANS SHALL ENERGIZE AND MINIMUM OUTDOOR AIR SETTING SHALL RESUME WHEN MOTION IS DETECTED IN THE GYM. WHEN THE GYM IS UN-OCCUPIED AS DETERMINED BY THE MOTION DETECTOR FOR A TIME PERIOD OF 15 MINUTES (ADJUSTABLE), UNIT RESUME 'UNOCCUPIED MODE.'

NOTES

- PROVIDE A DIFFERENTIAL PRESSURE SENSOR AT THE AIR FILTERS. PROVIDE AN ALARM AT THE BAS WHEN THE PRESSURE REACHES 500 PA (ADJUSTABLE).
- EXHAUST AIR FAN SHALL BE INTERLOCKED WITH THE SUPPLY FAN SUCH THAT IT IS ENABLED OR DISABLED IN SIMILAR FASHION.
- FAN VFDs ARE PROVIDED FOR BALANCING PURPOSES. ONCE AIRFLOW IS ESTABLISHED, FANS TO OPERATE IN CONSTANT AIRFLOW MODE. CONTROL POINTS ARE DEFINED FOR EACH VFD AS:
 - DO - ENABLE/DISABLE
 - AO - FAN SPEED
 - AI - MOTOR CURRENT
 - AI - DRIVE POSITION
- PROVIDE STATUS SIGNAL FROM O/A, R/A AND E/A DAMPERS.
- UPON ACTIVATION OF THE FREEZE STAT AT 2°C, THE SUPPLY AND EXHAUST AI FANS SHALL STOP AND NOT AUTOMATICALLY RESTART. THE FREEZE STAT MUST BE MANUALLY RESET. PROVIDE AN ALARM AT THE BAS INDICATING THAT THE UNIT WAS TURNED OFF AS A RESULT OF A FREEZE ALARM.
- DURING ECONOMIZER MODE, ROTATE ENTHALPY WHEEL AT MIN. SPEED FOR 1 MIN. EVERY 24 HOURS TO FLUSH THE WHEEL AND AVOID ANY DUST ENTRAPMENT THAT MAY CAUSE WHEEL IMBALANCE.
- OUTDOOR AIR & EXHAUST AIR DAMPERS SHALL OPEN PRIOR TO FAN ACTIVATION.
- IN THE EVENT OF POWER LOSS, OUTDOOR AIR & EXHAUST AIR DAMPERS ARE TO CLOSE BY MECHANICAL SPRING. RETURN AIR DAMPER SHALL OPEN BY WAY OF MECHANICAL SPRING.
- DX COOLING IS LOCKED OUT WHEN AMBIENT TEMPERATURE IS BELOW 12.8°C (55°F).
- EXISTING DESTRATIFICATION FANS AND ASSOCIATE CONTROLS TO REMAIN AS IS.
- CONTROLS CONTRACTOR TO PROVIDE ALL CONTROLLERS AND DEVICES REQUIRED TO OPERATE EQUIPMENT AS PER ABOVE SEQUENCE OF OPERATION.
- CONTROLS CONTRACTOR TO CROSS REFERENCE SPECIFICATION SECTION 25 09 23 FOR HDSB SEQUENCE OF OPERATION DESIGN GUIDELINE.

ROOFTOP AIR HANDLING UNIT 'RTU-5' (GYM)

CONTROL DIAGRAM

SEQUENCE OF OPERATION

- BAS TO ENABLE/DISABLE (DO) EXTERIOR LIGHTING USING COMBINATION OF CALENDAR AND ASTRONOMICAL CLOCK.
- COMMAND STATUS (AI) SHALL BE VERIFIED USING ANALOG CURRENT TRANSFORMER.
- GROUP LIGHTS AS WALL PACKS AND POLE LIGHTING.

EXTERIOR LIGHTING

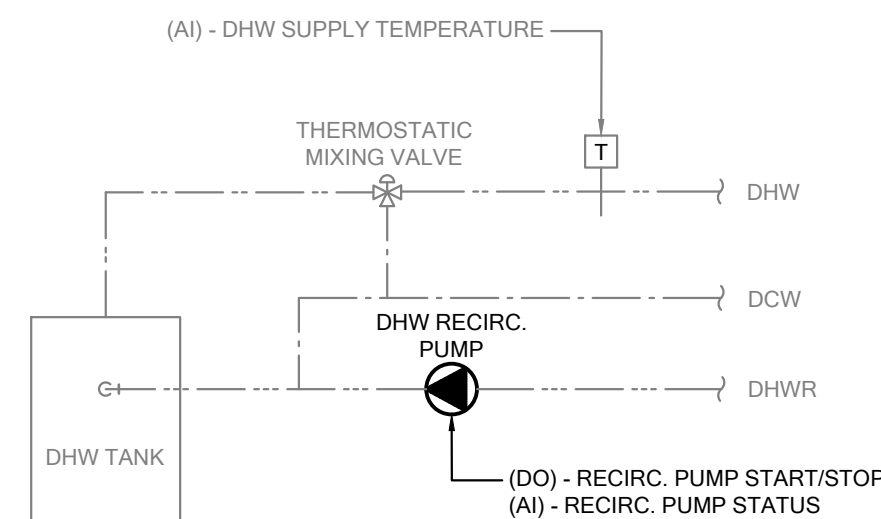
CONTROL DIAGRAM

SEQUENCE OF OPERATION

- BAS TO ENABLE/DISABLE (DO) INTERIOR LIGHTING USING COMBINATION OF CALENDAR AND ASTRONOMICAL CLOCK.
- COMMAND STATUS (AI) SHALL BE VERIFIED USING ANALOG CURRENT TRANSFORMER.
- GROUP LIGHTS AS CORRIDOR LIGHTS AND VESTIBULE LIGHTS

INTERIOR LIGHTING

CONTROL DIAGRAM

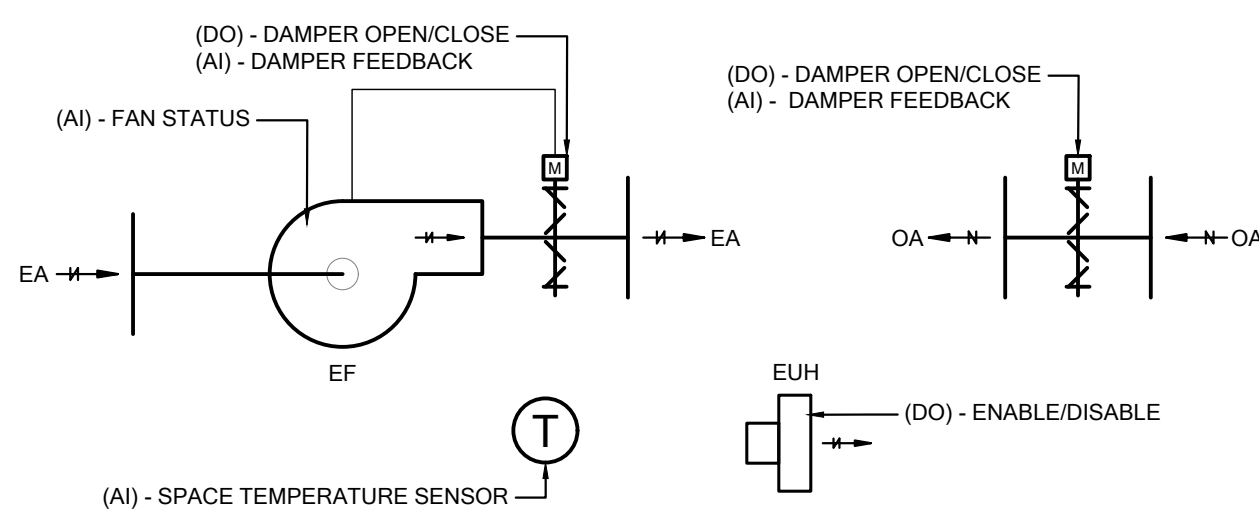


SEQUENCE OF OPERATION

- DOMESTIC HOT WATER RECIRCULATION PUMP TO BE DISABLED AT NIGHT / UNOCCUPIED PERIODS. PUMP TO RUN FOR 15 MIN OF EVERY HOUR DURING OCCUPIED PERIODS.

DOMESTIC HOT WATER RECIRC. PUMP

CONTROL DIAGRAM

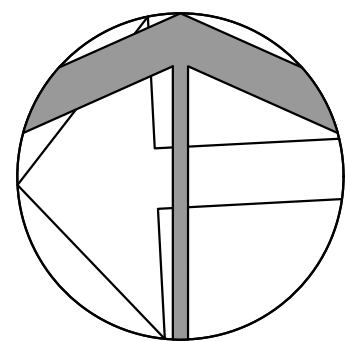


SEQUENCE OF OPERATION

- BAS TO ENABLE SYSTEM TO MAINTAIN LOCAL SPACE TEMPERATURE SETPOINT OF 27°C (81°F - ADJUSTABLE) IN SUMMER AND 15.6°C (60°F - ADJUSTABLE) IN WINTER.
- ON CALL FOR COOLING, BAS TO DISABLE UNIT HEATER. BAS TO OPEN OUTDOOR AIR AND EXHAUST AIR DAMPERS, ONCE THE EXHAUST AIR DAMPER END-SWITCH MAKES, IT WILL START THE EXHAUST FAN THROUGH AN INTERLOCK.
- ON CALL FOR HEATING, BAS TO STOP THE EXHAUST FAN AND CLOSE OUTDOOR AIR AND EXHAUST AIR DAMPERS. BAS TO ENABLE UNIT HEATER.
- SAFETY:** FAN SHALL NOT START UNTIL MOTORIZED EXHAUST AIR DAMPER IS OPENED. PROVIDE RELAYS AS REQUIRED.

SPRINKLER ROOM EXHAUST FAN W/ OUTDOOR AIR SUPPLY

CONTROL DIAGRAM



NO	ISSUED	DATE
5	ISSUED FOR ADD. M-01	2025-06-10
4	ISSUED FOR TENDER	2025-05-22
3	ISSUED FOR PERMIT	2025-05-09
2	ISSUED FOR BUILDING PERMIT PRE-CONSULTATION	2025-04-17
1	ISSUED FOR OWNER'S REVIEW	2025-03-04

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT AND MUST REPORT ANY DISCREPANCIES TO THE CONSULTANTS BEFORE PROCEEDING WITH THE WORK. THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE CONSULTANTS.

CERTIFICATE OF PRACTICE #4292

PAUL A. FISHER PUBLIC SCHOOL RENOVATION & ALTERATION

2175 CAVENDISH DRIVE, BURLINGTON ON L7P 5J8

LEGAL DESCRIPTION

BLOCK 900 on Registered Plan 0000, CITY OF XXXXX

HALTON DISTRICT SCHOOL BOARD
J.W. SINGLETON EDUCATION CENTRE
2050 GUELPH LINE
BURLINGTON, ON L7P 5A8
TEL: (905) 335-3683
FAX: (905) 335-9802

CONTROLS DIAGRAMS 2



RDZ ENGINEERS LTD
17A - 30 Pennsylvania Avenue
Vaughan, Ontario L4H 4A5
email: info@rdzeng.ca

SCALE	PROJECT
N.T.S.	24122
DATE	DRAWING
DECEMBER 2024	M10
DRAWN	CHECKED
VW / KL / SL	VK / GR
PRINT DATE	2024-12-10 11:47:39 AM

SCHEDULE OF VARIABLE AIR VOLUME BOXES														
UNIT DESIGNATION	UNIT SIZE	MANUFACTURER	MODEL	AIRFLOW RANGE (L/S)		ATTENUATOR LENGTH (MM)	DISCHARGE NC	ELECTRIC HEATING COIL				OPTIONS	REMARKS	
				MIN.	MAX.			AIRFLOW (L/S)	CAPACITY (KW)	AIR TEMP (°C)				POWER (V/Ø/Hz)
												EAT	LAT	
VAV-4R1	4	E.H. PRICE	SDV5000	24	106	900	24	94	1.0	21.1	26.7	208/3/60	VAV BOX: ACCESS DOOR: ADQ LINER: SM-3/4" THICK COORDINATE 24V POWER CONNECTION FROM NEARBY POWER SUPPLY. NC VALUES TAKEN AT DELTA P = 1.5" w.c. ACROSS UNIT ELECTRIC HEATING COIL: SCR TYPE CONTROL	
VAV-4R2	4	E.H. PRICE	SDV5000	24	106	900	24	71	1.5	21.1	26.7	208/3/60		
VAV-6R	6	E.H. PRICE	SDV5000	31	212	900	23	189	2.0	21.1	26.7	208/3/60		
VAV-8R1	8	E.H. PRICE	SDV5000	62	378	900	24	330	5.0	21.1	26.7	208/3/60		
VAV-8R2	8	E.H. PRICE	SDV5000	62	378	900	24	236	3.0	21.1	26.7	208/3/60		
VAV-8R3	8	E.H. PRICE	SDV5000	62	378	900	24	330	4.0	21.1	26.7	208/3/60		
VAV-8R4	8	E.H. PRICE	SDV5000	62	378	900	24	354	6.0	21.1	26.7	208/3/60		
VAV-10R	10	E.H. PRICE	SDV5000	104	637	900	21	708	7.0	21.1	26.7	208/3/60		
NOTES														
1. ALL VAV BOXES SHALL BE PROVIDED WITH DEDICATED ROOM TEMPERATURE SENSOR														
2. PRESSURE INDEPENDENT COMPLETE WITH CROSS FLOW SENSOR.														
3. DDC CONTROLLER/ACTUATOR SHALL BE SUPPLIED BY CONTROLS CONTRACTOR AND INSTALLED BY VAV BOX MANUFACTURER.														
4. REFER TO FLOOR PLANS FOR LOCATIONS AND QUANTITIES.														
5. MOUNT VAV BOXES MAXIMUM 24" ABOVE CEILING FOR MAINTENANCE														

SCHEDULE OF FANS																				
TAG	MANUFACTURER	MODEL	LOCATION	AREA SERVED	WEIGHT (KG)	CURB HEIGHT (MM)	DESIGN AIRFLOW (L/S)	ESP (Pa)	RPM	BHP	MOTOR HP	VFD	ECM MOTOR	SPEED CONTROLLER	SOUND (SONES)	ELECTRICAL				REMARKS
																FLA (A)	MCA (A)	MOP (A)	POWER (V@Hz)	
EF-1	GREENHECK	GB-100	ROOF	BOY'S WIR 104, UTR 105 A	30	300	377	125	1,311	0.16	1/4	NO	NO	YES	6.8	2.4	3	15.0	208/3/60	1, 3, 6, 7
EF-2	GREENHECK	GB-100-4	ROOF	GIRL'S WIR 111, BF WIR 132, WIR 133, WIR 131AD	40	300	425	125	1,503	0.22	1/4	NO	NO	YES	8.0	2.4	3	15.0	208/3/60	1, 3, 6, 7
EF-3	GREENHECK	G-097A	ROOF	WIR 122, WIR 123	30	300	94	125	1,725	0.13	1/4	NO	NO	YES	2.0	2.4	3	15.0	208/3/60	1, 3, 6, 7
EF-4	GREENHECK	CSP-A390	SPRINKLER RM.	SPRINKLER RM.	12	-	118	174	1,215	-	86W	NO	NO	YES	3.5	1.42	-	-	120/1/60	1, 4, 5
KEH-1	REVERSOMATIC	4000-300	STAFF 120 KITCHEN 117	KITCHEN RANGE HOOD	-	-	82	74.7	2200	-	-	NO	NO	NO	6.5	1.2	-	-	120/1/60	C/W WASHABLE ALUMINUM MESH FILTER, SPEED CONTROL, WHITE FINISH. PROVIDE BACKDRAFT DAMPER AT LOUVRE.
DEF-1	REVERSOMATIC	TLD-200ECM	KITCHEN 117	KITCHEN 117	-	-	46	124.6	1500	32W	-	NO	NO	YES	1.3	0.40	-	-	120/1/60	C/W LINT TRAP AND BACKDRAFT DAMPER AT LOUVRE.
NOTES																				
1. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS																				
2. UNIT IDENTIFIED WITH 'VFD' TO BE COMPLETE WITH INVERTER DUTY MOTOR AND REMOTE VARIABLE FREQUENCY DRIVE																				
3. ROOF MOUNTED EQUIPMENT SHALL BE COMPLETE WITH ROOF CURB AND MOTORIZED DAMPER.																				
4. INLINE FANS SHALL BE PROVIDED WITH NSN TYPE MOUNTING HANGARS.																				
5. DIRECT DRIVE FAN C/W SPEED CONTROLLER.																				
6. FAN C/W REMOTE SPEED CONTROLLER FOR BALANCING.																				
7. FAN C/W ALUMINUM HOUSING, ALUMINUM WHEEL, ALUMINUM ROOF CURB AND MOTORIZED DAMPER.																				

LOOSE MOTOR STARTER SCHEDULE																				
ITEM NO.	DESCRIPTION	MOTOR HP	FULL LOAD (AMPS)	COMBINATION STARTER & DISCONNECT				MODIFICATIONS						BRANCH FEEDERS		WP DISCONNECT AT MOTOR	DISCONNECT AT MOTOR	DISCONNECT ONLY	F.A. SHUT DOWN	REMARKS
				FUSED DISC.		STARTER		CONTROL TRANSFORMER (24V)	START/STOP PUSH BUTTON	H.O.A. SELECTOR SWITCH	PILOT LIGHT	AUX. CONT.								
				REQUIRED	FUSE	SIZE	TYPE					NORMALLY OPEN	NORMALLY CLOSED	CABLE OR BUS	CONDUIT SIZE					
EF-1	BOY'S W/R 104, UTR 105 A	1/4	2.4	NOTE 2	NOTE 2	1	FVNR	YES	-	YES	YES	2	2	NOTE 2	NOTE 2	YES	-	-	-	208/3/60
EF-2	GIRL'S W/R 114, BF W/R 132, W/R 133, W/R 131DA	1/4	2.4	NOTE 2	NOTE 2	1	FVNR	YES	-	YES	YES	2	2	NOTE 2	NOTE 2	YES	-	-	-	208/3/60
EF-3	W/R 122, W/R 123	1/4	2.4	NOTE 2	NOTE 2	1	FVNR	YES	-	YES	YES	2	2	NOTE 2	NOTE 2	YES	-	-	-	208/3/60
EF-4	SPRINKLER RM.	86W	1.42	NOTE 2	NOTE 2	1	FVNR	YES	-	YES	YES	2	2	NOTE 2	NOTE 2	-	YES	-	-	120/1/60
DHWRP	UTILITY RM.	33W	-	NOTE 2	NOTE 2	1	FVNR	YES	-	YES	YES	2	2	NOTE 2	NOTE 2	-	YES	-	-	120/1/60
NOTES																				
1. ALL STARTERS TO BE COMPLETE WITH EXTERNAL OVERLOAD RESET PUSH BUTTONS.																				
2. REFER TO ELECTRICAL FLOOR PLANS, PANEL SCHEDULES, AND SINGLE LINE DIAGRAM FOR ELECTRICAL REQUIREMENT SUCH AS FUSE SIZE, CIRCUIT, BRANCH FEEDER, BREAKER REQUIREMENT.																				

SCHEDULE OF DHW RECIRCULATION PUMPS												
TAG	ASSOCIATED DHWT	LOCATION	MANUFACTURER	MODEL	FLOW (GPM)	HEAD (Ft)	RPM	MOTOR HP	MOTOR SPEED	POWER (V@94Hz)	CONTROL	REMARKS
DHWRP	INPUT DHW TANK TAG	MECH ROOM	TACO	0026E-SF2	2	5	3400	33 W	3-SPEED	115/1/60	TIMER	INTEGRAL CHECK VALVE. CONTRACTOR TO CONFIRM FLOW RATE & PRESSURE AND BALANCE RECIRCULATION AS PER EXISTING
NOTES												
1. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS												
2. CONFIRM SYSTEM OPERATING TIMES WITH TENANT DURING COMMISSIONING AND PRIOR TO TURNOVER.												

SCHEDULE OF GRILLES AND DIFFUSERS							
TYPE	MANUFACTURER	MODEL	DESCRIPTION	VOLUME CONTROL	FINISH	OPTIONS	REMARKS
A	E.H. PRICE	SCD	SQUARE CONE DIFFUSER	YES	TO ARCH. DIRECTION	SIZE: 24"x24" (600mm x 600mm) FRAME 3" T-SAR LAY IN	REFER TO FLOOR PLANS FOR NECK SIZE AND AIRFLOWS.
B	E.H. PRICE	RCD	ROUND CONE DIFFUSER	YES	TO ARCH. DIRECTION	-	REFER TO FLOOR PLANS FOR SIZE OF DIFFUSER
C	E.H. PRICE	80	EGG CRATE	YES	TO ARCH. DIRECTION	DUCTED: F BORDER NON-DUCTED: CONE	REFER TO FLOOR PLANS FOR SIZE OF GRILLES.
D	E.H. PRICE	520D	LOUVERED SUPPLY GRILLE	YES	TO ARCH. DIRECTION	DOUBLE DEFLECTION STEEL CONSTRUCTION SURFACE MOUNT: F BORDER SPIRAL DUCT: SSF FRAME L BLADE ORIENTATION	REFER TO FLOOR PLANS FOR SIZE OF GRILLES.
E	E.H. PRICE	530	LOUVERED RETURN GRILLE	NO	TO ARCH. DIRECTION	SINGLE DEFLECTION 3/4" BLADE SPACING SURFACE MOUNT: F BORDER FASTENING: CONCEALED "C" L BLADE ORIENTATION	REFER TO FLOOR PLANS FOR SIZE OF GRILLES.
F	E.H. PRICE	ATG1	DOOR GRILLE	NO	TO ARCH. DIRECTION	TYPE A CHANNEL BORDER	REFER TO FLOOR PLANS FOR SIZE OF GRILLES.
G	E.H. PRICE	95	HEAVY DUTY RETURN GYM GRILLE	NO	TO ARCH. DIRECTION	STEEL 3/4" BLADE SPACING 45° DEFLECTION	REFER TO FLOOR PLANS FOR SIZE AND QUANTITIES.
NOTES							
1. CONFIRM FINISH WITH ARCHITECT PRIOR TO ORDER							
2. REFER TO DRAWINGS FOR QUANTITIES.							

SCHEDULE OF ELECTRIC HEATERS								
TAG	MANUFACTURER	MODEL	LOCATION	TYPE	FINISH / COLOUR	CAPACITY (KW)	POWER (V@94Hz)	REMARKS
ECUH-1	OUELLET	OAC06008-T	VESTIBULE 100	WALL FAN HEATER	STANDARD. CONFIRM WITH ARCH.	8.0	208/1/60	RECESSED MODEL BUILT IN TAMPERPROOF THERMOSTAT
ECUH-2	OUELLET	OAC04008-T	VESTIBULE 134A	WALL FAN HEATER	STANDARD. CONFIRM WITH ARCH.	4.0	208/1/60	RECESSED MODEL BUILT IN TAMPERPROOF THERMOSTAT
ECUH-3	OUELLET	OAC02008-T	GIRL WR 111	WALL FAN HEATER	STANDARD. CONFIRM WITH ARCH.	2.0	208/1/60	SURFACE MOUNTED MODEL BUILT IN TAMPERPROOF THERMOSTAT
EUH-1	OUELLET	OAE2000AM-EQ-TB6	MECH STORAGE 105B	UNIT HEATER	STANDARD. CONFIRM WITH ARCH.	2.0	208/1/60	BUILT IN TAMPERPROOF THERMOSTAT
EBH-1	OUELLET	OPR0308	VARIOUS	HEAVY DUTY STEEL BASEBOARD HEATER	STANDARD. CONFIRM WITH ARCH.	0.3	208/1/60	BUILT IN TAMPERPROOF THERMOSTAT
NOTES								
1. REFER TO SPECIFICATIONS FOR ADDITIONAL DETAILS.								

SCHEDULE OF BYPASS BOXES													
TAG	MANUFACTURER	MODEL	SIZE	AIRFLOW (L/S)	CONTROL TYPE	ATTENUATOR LENGTH (MM)	ELECTRIC DUCT HEATER						REMARKS
							CAPACITY (KW)	MODEL	OPTIONS	CONTROL	CURRENT (A)	POWER	
BB-1	E.H. PRICE	LGB	8	283	2862	900	5	DF C100H	CA-DS-AC-MC-TR-HECM-EAS-SSR-CGC-N1-BLE	2 STAGES	41.67	120/1/60	
NOTES													
1. UNIT COMPLETED ELECTRIC DUCT HEATER INSTALLED ON DISCHARGE SIDE OF ATTENUATOR.													
2. UNIT SHALL BE PROVIDED WITH DEDICATED ROOM TEMPERATURE SENSOR.													
3. DDC CONTROLLER/ACTUATOR SHALL BE SUPPLIED BY CONTROLS CONTRACTOR AND INSTALLED BY VAV BOX MANUFACTURER.													
4. MOUNT BYPASS BOXES MAXIMUM 24" ABOVE CEILING FOR MAINTENANCE.													