Addendum # 1
Bid Opportunity: 26-7848-RFT - Waterloo Collegiate Institute HVAC and Exterior Upgrades Phase 2
Closing Date: Tuesday, March 24, 2026 2:00 PM

The following issued by the Board shall form part of the Bid / Proposal Solicitation document. The revisions and additions noted herein along with any attachments shall be read in conjunction with all other related documents. This Addendum shall, take precedence over the previously issued documents where differences occur. Receipt of this addendum must be acknowledged in the Bidding System, bids&tenders.

If you have already submitted a Bid / Proposal, it will be automatically withdrawn as a result of this addendum. You must resubmit the Bid / Proposal acknowledging all addenda and revising your Bid / Proposal to comply with all addenda.

Question 1:

Is there a base building fire alarm contractor? Or any other base building contractors?

Answer 1:

Contractors are free to use subcontractors of their preference.

Question 2:

Note 2 on A4.1 is indicating new coat hooks for all existing lockers missing hooks, how are we to know the quantity of hooks required, can a quantity allowance be provided please?

Answer 2:

The locker contractor shall include in their base bid to replace 60% of the missing or damaged existing coat hooks.

Question 3:

How are we to provide powder coating to existing locker panels? Powder coating requires to be baked in an oven.

Answer 3:

The existing locker panels are to be repainted on site using electrostatic spraying in lieu of powder coating – Refer to Section 09 97 36 ELECTROSTATIC COATING.

Question 4:

Does the Wing C require HC operators?

Answer 4:

No power door operators are required.

Question 5:

Can you please provide clarification on the Existing wall mounted light to be replaced mentioned on E1.1 Drawing- B - WING 'A' 200 LOWER LEVEL KEY PLAN. There is no fixture spec for it at this time.

Answer 5:

Please refer to Mechanical & Electrical Addendum 02, dated March 18, 2026, for clarification on the existing wall-mounted light replacement noted on Drawing E1.1.

Question 6:

Please provide the pipe sizes where valves are to be replaced, as this is required for pricing.

Answer 6:

Please refer to Mechanical & Electrical Addendum 01, dated March 16, 2026, for clarification of all pipe sizes associated with the valve replacements.

Question 7:

On the new locker drawings it notes to replace any missing hooks within the lockers. The majority of these lockers are in use by students and we will have no way of verifying the quantities at the time of tender. Can we be given a number of hooks to carry or can a cash allowance be put in to cover the hooks?

Answer 7:

Refer to Answer 2.

Additional Clarifications (Owner/ Consultant-Initiated)

1. **Attached Architectural Drawings, as listed below, dated March 17, 2026, form part of this addendum.**
    a. **COVER SHEET**
    b. **A1.1 HVAC – WING ‘A’ LOWER 300 LEVEL – DEMOLITION PLAN**
    c. **A1.3 HVAC – WING ‘A’ LOWER 200 & 300 LEVEL – DEMOLITION REFLECTED CEILING PLAN**
    d. **A1.5b HVAC – WING ‘A’ LOWER 300 LEVEL FLOOR PLAN, LOWER 200 LEVEL RCP**

2. **Mechanical & Electrical Addendum 01, dated March 16, 2026, forms part of this addendum.**
3. **Mechanical & Electrical Addendum 02, dated March 18, 2026, forms part of this addendum.**

End of Addendum

WATERLOO COLLEGIATE INSTITUTE HVAC AND EXTERIOR UPGRADES PHASE 2

300 HAZEL STREET, WATERLOO, ON. N2L 3P2

TENDER NO. 26-7848-RFT

ISSUED FOR PERMIT / TENDER

2026.03.03

aba architects inc.
101 Randall Drive, Unit 8, Waterloo ON. 519 884 2911 www.abarchitect.ca

ARCHITECTURAL

WitzelDyce ENGINEERING INC.

STRUCTURAL

DEI Consulting Engineers
MECHANICAL | ELECTRICAL | AQUATIC

MECHANICAL & ELECTRICAL

C:\Users\Seanh\Documents\2025-153 WCI HVAC & Ext Upgrades Ph 2_Central_shobermehl@abarchitect.co.rvt

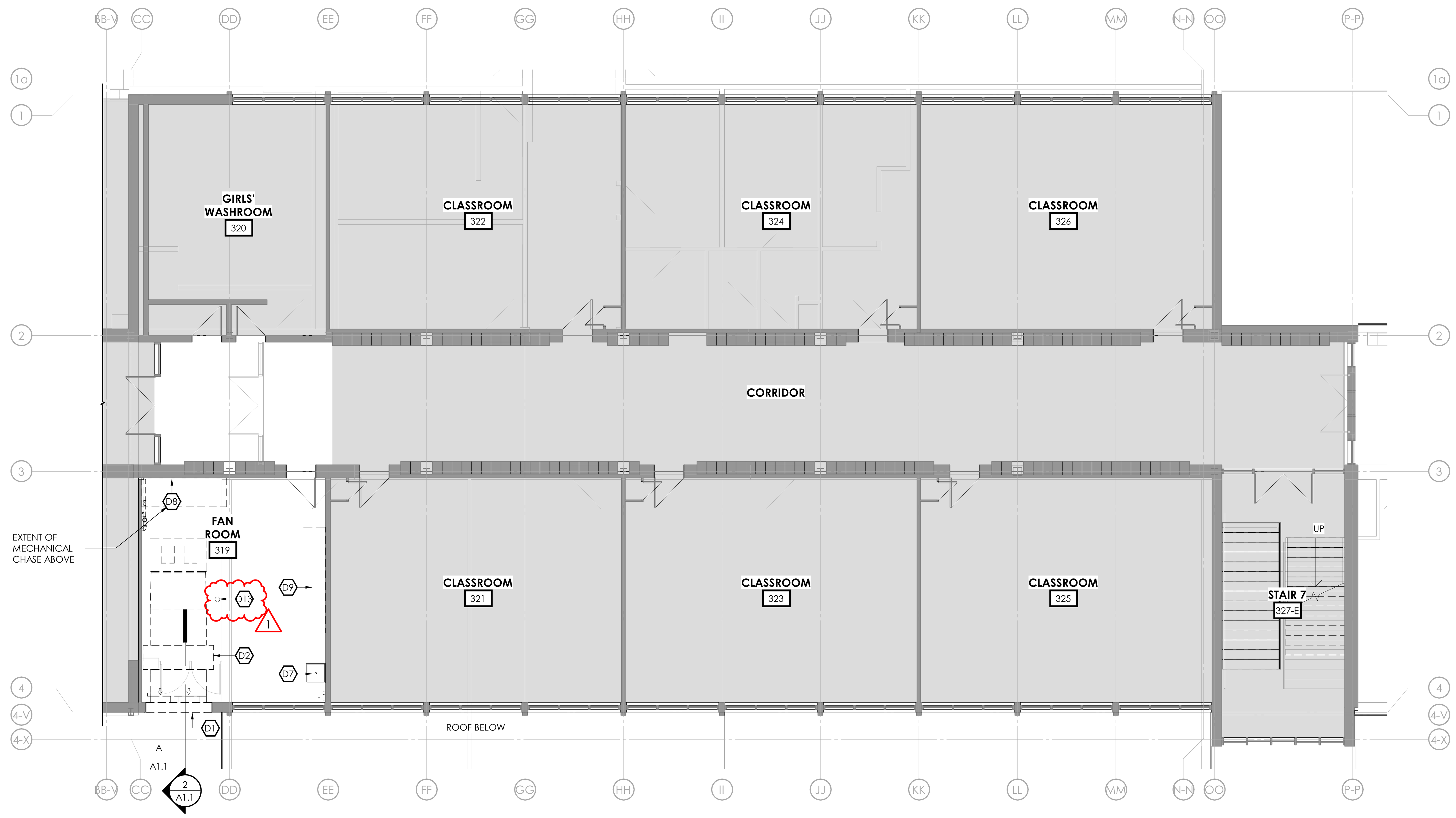
LIST OF DRAWINGS

ARCHITECTURAL

STRUCTURAL

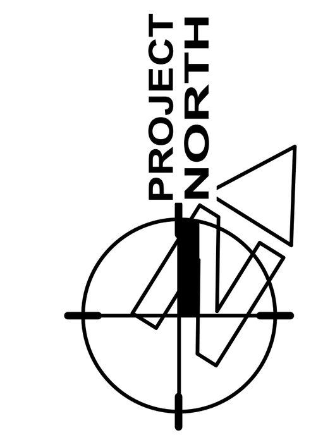
MECHANICAL

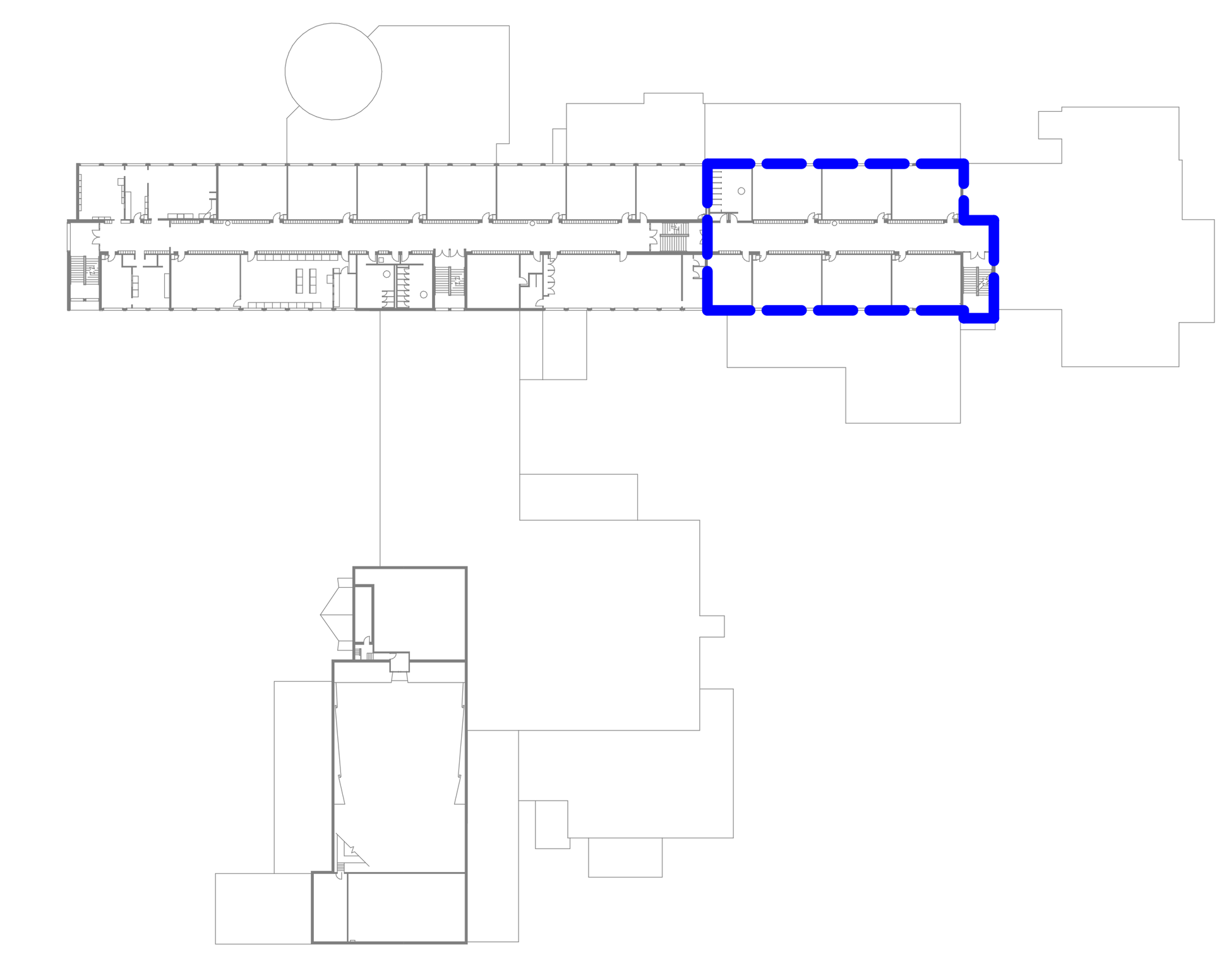
ELECTRICAL



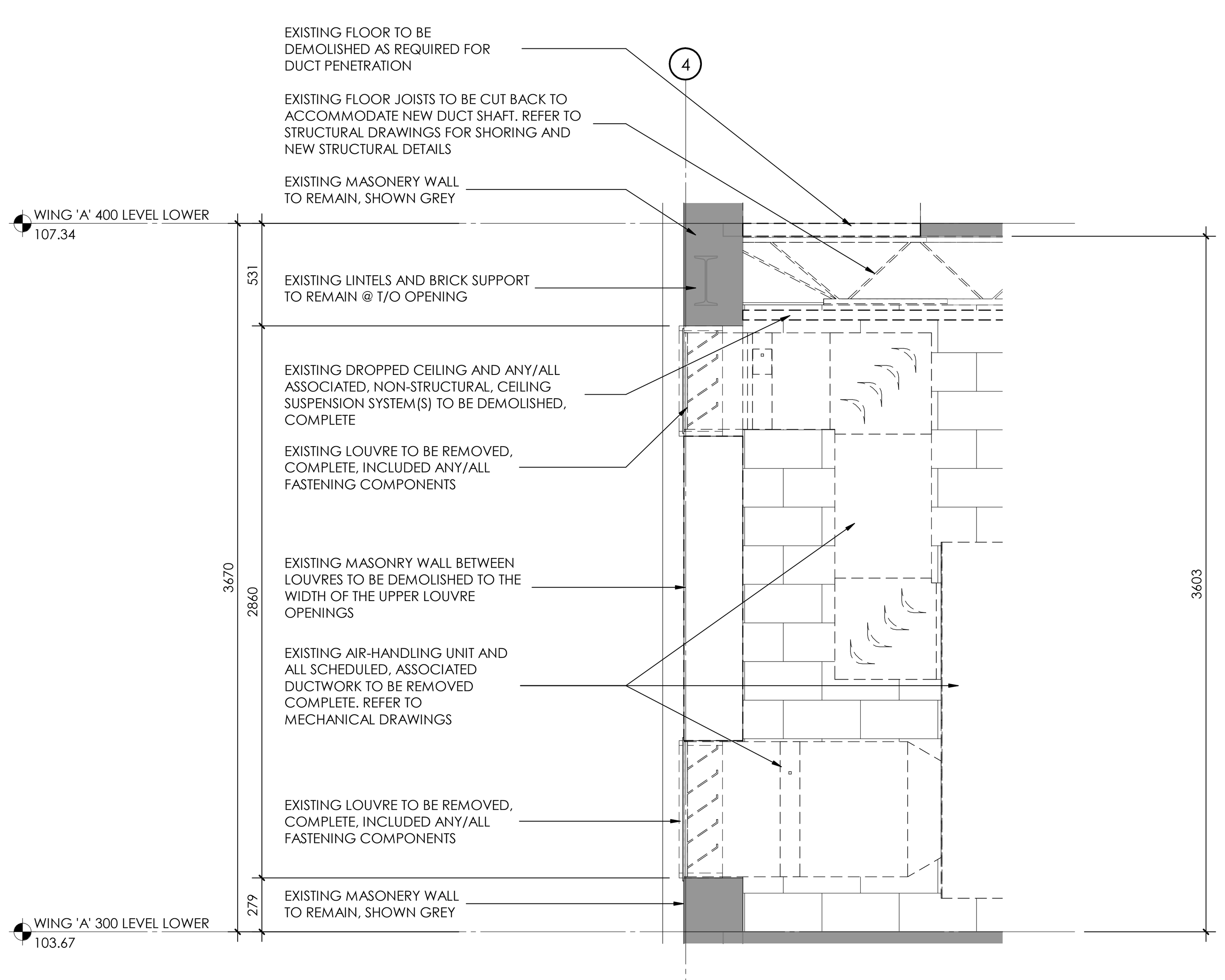
1 / A1.1 HVAC - WING 'A' LOWER 300 LEVEL - DEMOLITION PLAN

1 : 100





WING A LOWER 300 LEVEL



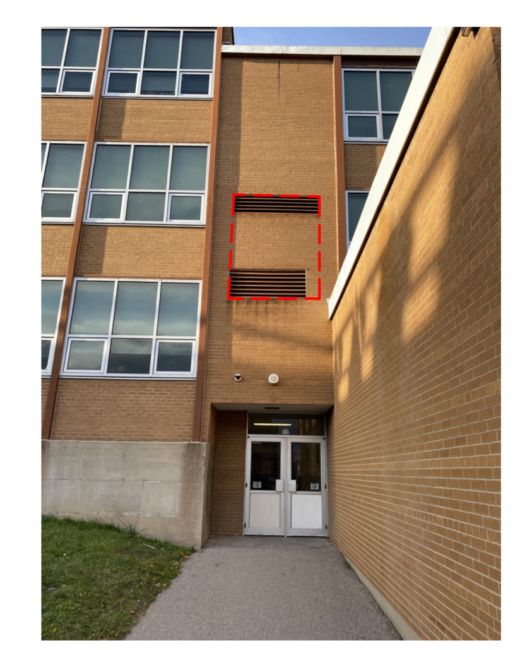
NOTE: ALL NOTES AND DIMENSIONS, THIS WALL SECTION, ARE TO ASSIST IN UNDERSTANDING THE SCOPE OF WORK, AND DO NOT REFLECT THE EXACT CONDITIONS ON SITE. THIS WALL SECTION IS INTENDED TO BE READ IN CONJUNCTION WITH THE REMAINDER OF THE A1 SERIES DRAWINGS AS WELL AS STRUCTURAL, MECHANICAL AND ELECTRICAL DRAWINGS.

2 / A1.1 DEMOLITION WALL SECTION

1 : 25

REFERENCE PHOTOS

A/
A1.1



NOTE: REFERENCE PHOTOS ARE TO ASSIST IN CLARIFYING THE SCOPE OF WORK, BUT SHOULD NOT BE SCALED OR USED IN LIEU OF A SITE INVESTIGATION BY THE CONTRACTOR AND ANY/ALL RELEVANT SUB-TRADES.

DEMOLITION KEYNOTES

- D1 REMOVE EXISTING LOUVRES, COMPLETE. DEMOLISH EXISTING MASONRY WALL BETWEEN LOUVRES TO THE WIDTH OF THE UPPER EXISTING LOUVRE OPENING. EXISTING UPPER OPENING LINTEL(S) TO REMAIN IN PLACE. REFER TO STRUCTURAL AND MECHANICAL DRAWINGS. SEE ALSO REFERENCE PHOTO A/A1.1.
- D2 DISCONNECT AND DEMOLISH EXISTING AIR-HANDLING UNIT (AHU) AND DISPOSE OF FROM SITE AS PER LOCAL REGULATIONS. REFER TO MECHANICAL DRAWINGS FOR FULL SCOPE AS WELL AS PHASING FOR REMOVAL/DEMOLITION.
- D3 REMOVE EXISTING URINAL AND URINAL CARRIER. REFER TO MECHANICAL DRAWINGS FOR ASSOCIATED DISCONNECT AND SAFE CAPPING OF PLUMBING.
- D4 DEMOLISH EXISTING HALF WALL AND SLOPED CAP IN THEIR ENTIRETY TO ACCOMMODATE NEW CHASE WALL INSTALLATION.
- D5 CUT EXISTING TERRAZZO TILE FLOORING. ENSURE CLEAN CUT FOR PATCHING AND REPAIRING. TERRAZZO FINISH WILL BE CUT AN ADDITIONAL AMOUNT AS NEEDED FOR BLOCK WALL CONSTRUCTION ON CONCRETE SLAB. CUT EXISTING FLOOR SLAB, AND POSSIBLE ORIGINAL URINAL PLATFORM, AS REQUIRED FOR DUCT PENETRATION. REFER TO STRUCTURAL AND MECHANICAL DRAWINGS.
- D6 CAREFULLY REMOVE EXISTING TOILET STALL PARTITIONS & TOILETS FOR STORAGE AND RE-INSTALLATION ONCE CONSTRUCTION IS COMPLETE. REFER TO MECHANICAL DRAWINGS FOR TEMPORARY TOILET DISCONNECT.
- D7 EXISTING MOP SINK AND ADJACENT PLUMBING FIXTURES TO REMAIN. REFER TO MECH. DWGS. FOR MORE INFORMATION.
- D8 APPROXIMATE LOCATION OF EXISTING THROUGH WALL DUCTS TO BE DEMOLISHED. INFILL WALL OPENINGS AS REQUIRED FOLLOWING NEW DUCT INSTALLATION WITH CONSTUCTION TO MATCH EXISTING WALL ASSEMBLY AND MAINTAIN INTEGRITY OF EXISTING FIRE SEPARATION. PROVIDE FIRE SEALANT AT ALL EDGES OF WALL. REFER TO MECH. DWGS. FOR MORE INFORMATION.
- D9 EXISTING SHELVING AND BLOCKING FOR WALL MOUNTING, TO BE REMOVED COMPLETE. CONFER WITH OWNER PRIOR TO REMOVAL IF SHELVING SHOULD BE TURNED OVER. PATCH AND MAKE GOOD SURFACES TO REMAIN.
- D10 EXISTING BRADLEY SINK AND ASSOCIATED PLUMBING TO REMAIN.
- D11 EXISTING, ORIGINAL URINAL PLATFORM TO REMAIN WHERE NOT INTERRUPTED BY DUCT CHASE. CONFIRMATION OF EXISTING CONDITION TO BE DETERMINED ON SITE.
- D12 EXISTING RADIATOR COVER TO BE CAREFULLY REMOVED FOR STORAGE, REFINISHING AND RE-INSTALLATION AFTER CONSTRUCTION. REFER TO MECHANICAL DRAWINGS.
- D13 CORE HOLE THROUGH THE EXISTING FLOOR FOR NEW FLOOR DRAIN. REFER TO MECHANICAL DRAWINGS. (1)

NOTE: NOT ALL KEYNOTES APPLY TO EVERY DRAWING.

DEMOLITION PLAN LEGEND

(solid grey bar)	EXISTING WALL TO REMAIN (SHOWN SHADED)
(dashed lines)	EXISTING ASSEMBLY TO BE DEMOLISHED
(dark grey box)	DENOTES EXISTING BUILDING
(light grey box)	DENOTES AREA N.I.C. UNLESS NOTED OTHERWISE

No.	REVISIONS	DATE
1	ADDENDUM 01	2025.03.17

***IMPORTANT NOTE TO ALL CONTRACTORS/SUB-CONTRACTORS:**

THIS SCOPE OF WORK CONTAINS ASBESTOS CONTAINING MATERIALS (ACM). ALL CONTRACTORS SHALL REFER TO THE ASBESTOS AUDIT AND SECTION 01 35 43, HAZARDOUS MATERIALS FOR APPROPRIATE PROTOCOLS THAT MUST BE FOLLOWED, REGARDLESS OF ABATEMENT OPERATIONS BEING CONDUCTED OR NOT.

CHRONOLOGY	DATE
ISSUED FOR PERMIT/TENDER	2026.03.03
ISSUED FOR COORDINATION	2026.02.26

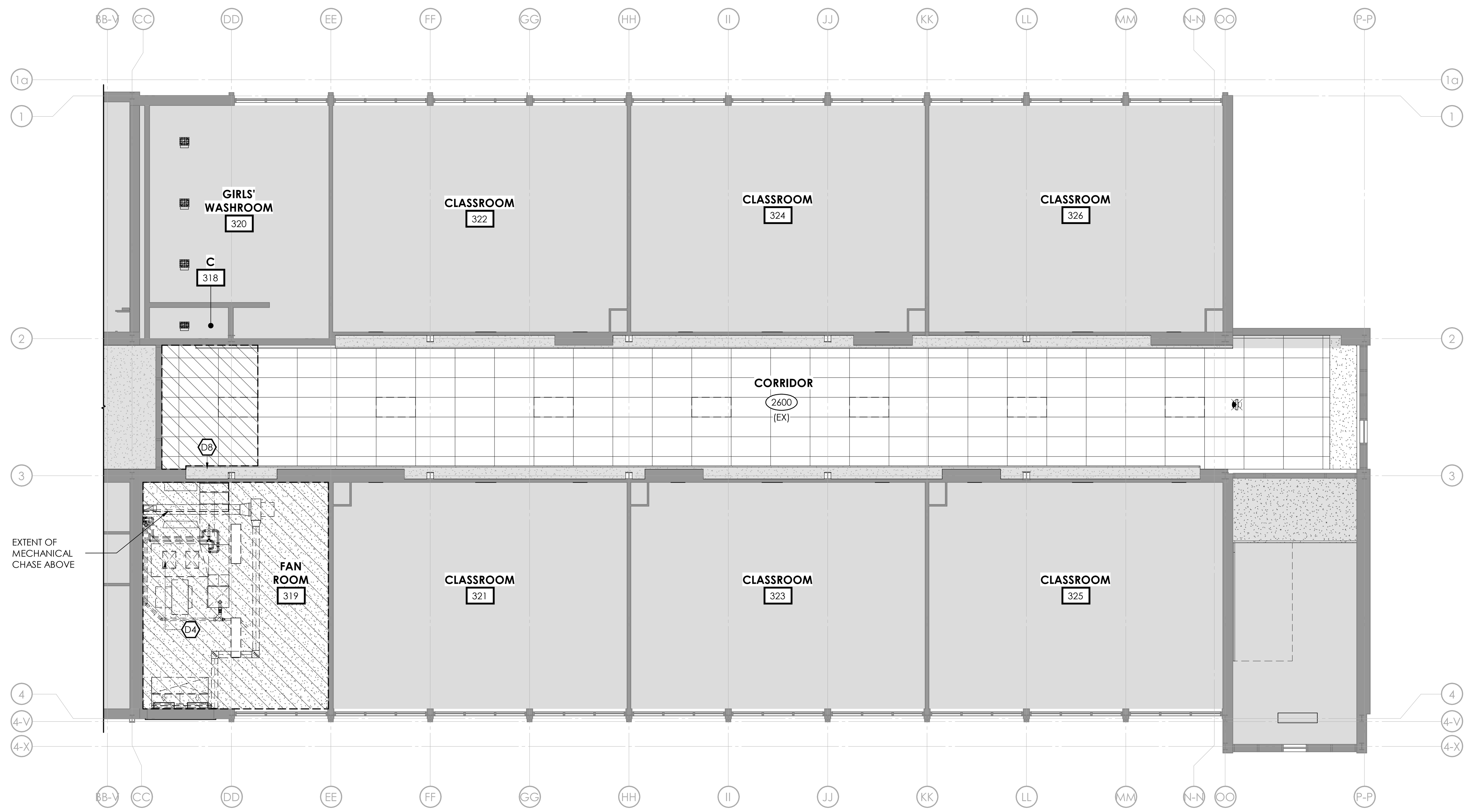
a b a architects inc.
101 Randall Drive, Unit B, Waterloo ON. TEL 519 884 2711 www.abarchitect.ca

CLIENT
WATERLOO REGION DISTRICT SCHOOL BOARD

PROJECT NAME
WATERLOO COLLEGIATE INSTITUTE HVAC AND EXTERIOR UPGRADES PHASE 2
300 HAZEL STREET, WATERLOO, ON. N2L 3P2

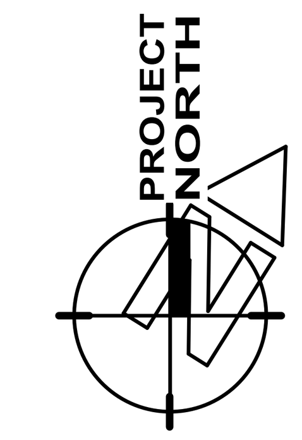
DRAWING TITLE
HVAC - WING 'A' LOWER 300 LEVEL - DEMOLITION PLAN

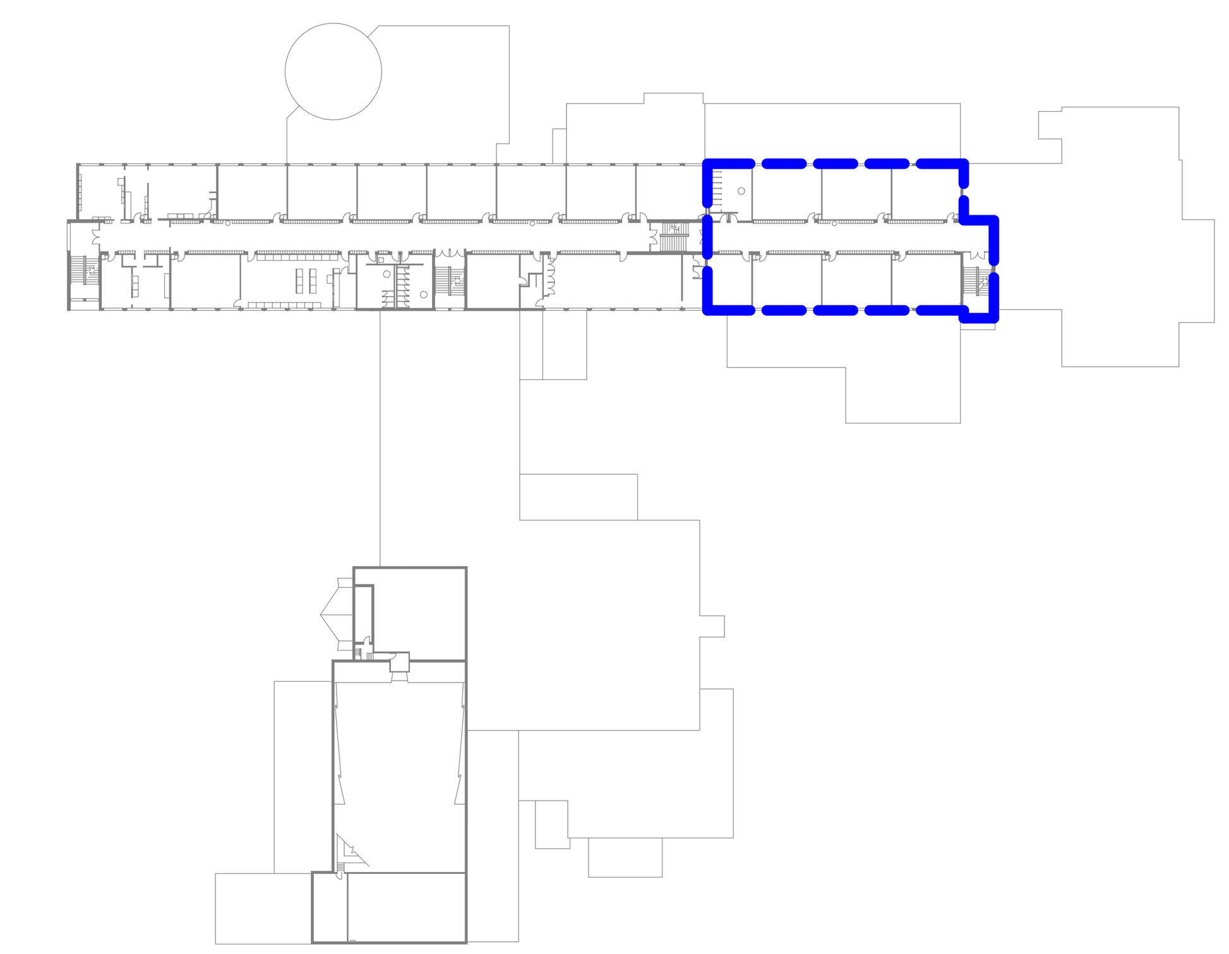
SCALE: As indicated
SHEET SIZE: 609 x 914
PROJECT NUMBER: 2025-153
DRAWING NUMBER: A1.1



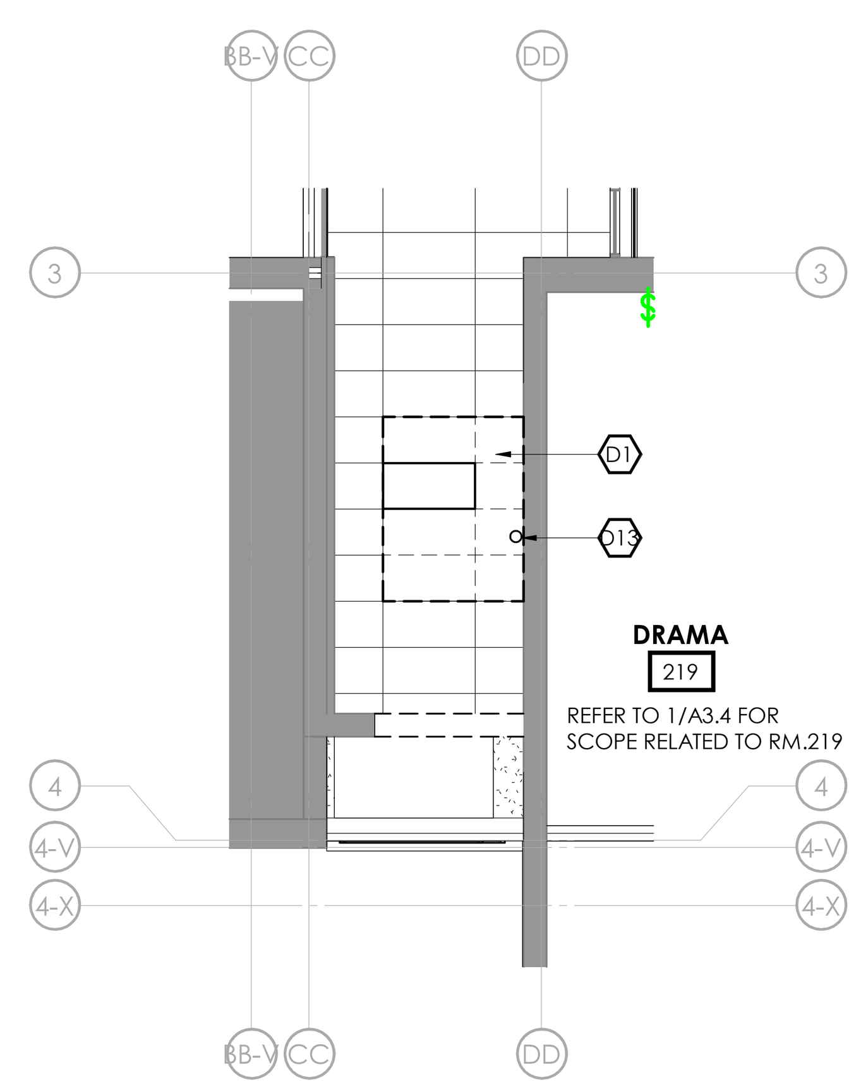
1 / A1.3 HVAC - WING 'A' LOWER 300 LEVEL - DEMOLITION REFLECTED CEILING PLAN

1 : 100





WING A LOWER 300 LEVEL



3 / A1.3 HVAC - WING 'A' 200 LEVEL - DEMOLITION REFLECTED CEILING PLAN

1 : 100

DEMOLITION RCP KEYNOTES

- D1 REMOVE EXISTING ACOUSTIC CEILING TILES AND SUSPENDED CEILING TILE GRID AS REQUIRED TO PERFORM HVAC RENOVATION. REFER TO MECHANICAL DRAWINGS FOR FULL SCOPE OF HVAC RENOVATION. SHOULD A SECOND MEMBRANE CEILING BE DISCOVERED ABOVE THE SUSPENDED CEILING, REPORT FINDINGS TO DESIGNER PRIOR TO DEMOLITION.
- D2 DEMOLISH EXISTING CEILING IN IT'S ENTIRETY. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR FULL SCOPE OF REMOVAL, REUSE, REROUTING OR DECOMMISSIONING OF EXISTING SERVICES. STORE CEILING TILES STILL IN GOOD CONDITION, UP TO 10% OF TILES, IN A SAFE, DRY LOCATION. CONFER WITH OWNER IF REQUIRED FOR STORAGE LOCATION. REFER TO ASBESTOS AUDIT REPORT PRIOR TO ANY CEILING DEMOLITION.
- D3 RESERVED
- D4 REFER TO MECHANICAL DRAWINGS FOR DISMANTLING & REMOVAL OF EXISTING AHU AND ASSOCIATED DUCTWORK.
- D5 DEMOLISH EXISTING GYPSUM BOARD CEILING AND ANY/ALL ASSOCIATED SUSPENSION SYSTEM IN IT'S ENTIRETY AND DISPOSE OF FROM SITE. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR FULL SCOPE OF REMOVAL, REUSE, REROUTING OR DECOMMISSIONING OF EXISTING SERVICES.
- D6 EXISTING EXTERIOR WALL OPENING TO BE MODIFIED. REFER TO STRUCTURAL DRAWINGS.
- D8 APPROXIMATE LOCATION OF EXISTING THROUGH WALL DUCTS TO BE DEMOLISHED. INFILL WALL OPENINGS AS REQUIRED FOLLOWING NEW DUCT INSTALLATION WITH CONSTUCTION TO MATCH EXISTING WALL ASSEMBLY AND MAINTAIN INTEGRITY OF EXISTING FIRE SEPARATION. PROVIDE FIRE SEALANT AT ALL EDGES OF WALL. REFER TO MECH. DWGS. FOR MORE INFORMATION.
- D9 APPROXIMATE LOCATION OF EDGE OF EXISTING GYPSUM BULKHEAD TO BE DEMOLISHED.
- D10 CONTRACTOR TO TEMPORARILY REMOVE AND REINSTATE EXISTING CEILING TILE AND GRID AS REQUIRED FOR INSTALLATION OF WALL MOUNTED MECH. UNIT. REFER TO MECH. DWGS. FOR MORE INFORMATION.
- D11 DEMOLISH EXISTING 305x305 TILE SECONDARY CEILING ABOVE ACOUSTIC CEILING TILE IN IT'S ENTIRETY AND DISPOSE OF FROM SITE. REFER TO HAZARDOUS SUBSTANCES REPORT PRIOR TO ANY DEMOLITION AND FOLLOW ALL APPROPRIATE ABATEMENT PROTOCOLS WHERE NECESSARY.
- D12 REFER TO STRUCTURAL DRAWINGS FOR NEW STRUCTURAL STEEL, ROOF REINFORCING. REFER TO MECHANICAL DRAWINGS FOR ANY REMOVAL OF EXISTING DUCTWORK REQUIRED FOR INSTALLATION OF NEW STRUCTURAL STEEL, ROOF REINFORCING.
- D13 APPROXIMATE LOCATION OF CORED HOLE, ABOVE CEILING, FOR NEW FLOOR DRAIN IN FAN RM.319. CONTRACTOR TO NOTE, THAT THERE IS A GYPSUM BOARD CEILING AT THE U/S OF THE JOISTS THAT FRAME THE FAN RM.319 FLOOR. THIS IS ASSUMED TO BE A RATED CEILING AND SHOULD BE TREATED AS SUCH WITH REGARDS TO PATCHING AND FIRE STOPPING.

NOTE: NOT ALL KEYNOTES APPLY TO EVERY DRAWING.

DEMOLITION RCP LEGEND

- EXISTING WALL TO REMAIN (SHOWN SHADED)
- DENOTES EXISTING BUILDING
- DENOTES AREA N.I.C. UNLESS NOTED OTHERWISE
- EXISTING GYPSUM BOARD CEILING TO REMAIN
- EXISTING GYPSUM BOARD CEILING, AND ANY/ALL FURRING STRIPS OR SUSPENSION SYSTEM, TO BE DEMOLISHED
- EXISTING LATHE AND PLASTER CEILING, AND ANY/ALL FURRING STRIPS OR SUSPENSION SYSTEM, TO BE DEMOLISHED
- EXISTING ACOUSTIC CEILING TILE SUSPENDED CEILING TO REMAIN
- EXISTING ACOUSTIC CEILING TILES AND SUSPENDED CEILING TILE GRID TO BE REMOVED AS REQUIRED TO PERFORM HVAC RENOVATION. SAFELY STORE TILES FOR REINSTALL. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS
- EXISTING 610x1220 OR 610x610 ACOUSTIC CEILING TILE SUSPENDED CEILING AND T-BAR GRID SYSTEM TO BE REMOVED COMPLETE
- EXISTING 305x305 CEILING TILE, COMPLETE WITH BACKING SUBSTRATE AND FURRING STRIPS/SUSPENSION SYSTEM TO BE REMOVED COMPLETE
- EXISTING LIGHT TO BE REMOVED AND TURNED OVER TO THE OWNER. REFER TO ELECTRICAL DRAWINGS

No.	REVISIONS	DATE
1	ADDENDUM 01	2025.03.17

***IMPORTANT NOTE TO ALL CONTRACTORS/SUB-CONTRACTORS:**

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ISSUED FOR PERMIT/TENDER	2026.03.03
ISSUED FOR COORDINATION	2026.02.26
CHRONOLOGY	DATE

aba architects inc.

CLIENT: WATERLOO REGION DISTRICT SCHOOL BOARD

PROJECT NAME: WATERLOO COLLEGIATE INSTITUTE HVAC AND EXTERIOR UPGRADES PHASE 2

300 HAZEL STREET, WATERLOO, ON. N2L 3P2

DRAWING TITLE: HVAC - WING 'A' LOWER 200 & 300 LEVEL - DEMOLITION REFLECTED CEILING PLAN

SCALE: As indicated

SHEET SIZE: 609 x 914

PROJECT NUMBER: 2025-153

DRAWING NUMBER: A1.3

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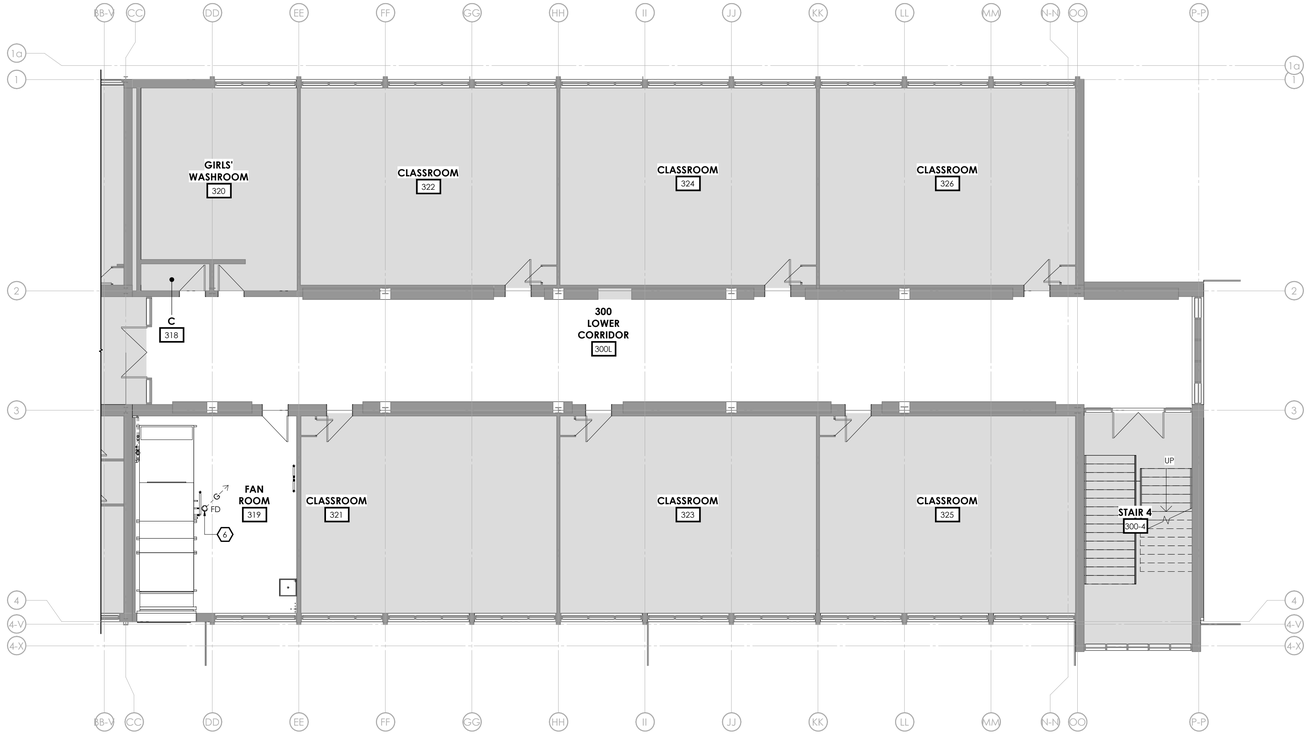
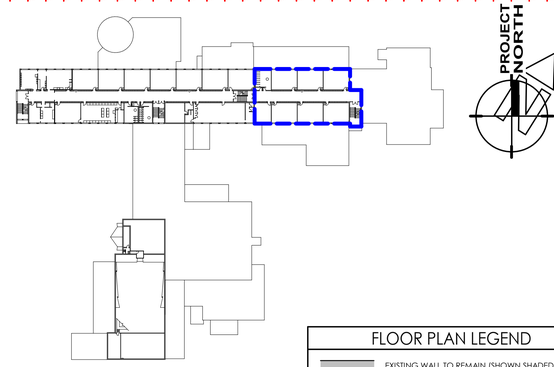


1 / A1.5b HVAC - 300 LEVEL FLOOR PLAN

1 : 100



WING A LOWER 300 LEVEL

CONSTRUCTION KEYNOTES

1. EXISTING BRADLEY SINK AND ALL ASSOCIATED PLUMBING TO REMAIN.
2. TOILETS AND STALL PARTITIONS TO BE REINSTALLED IN SAME LOCATION PRIOR TO REMOVAL.
3. THREE NEW URINALS AT EQUAL SPACING ALONG LENGTH OF NEW BLOCK WALL c/w URINAL CARRIERS, BACK SIDE OF BLOCK WALL. REFER TO MECHANICAL DRAWINGS.
4. ANY/ALL WALL-MOUNTED FIXTURES AFFECTED BY THE NEW CEILING HEIGHT TO BE SAFELY DISCONNECTED AND REINSTATED AFTER CONSTRUCTION. ANY/ALL TESTING REQUIRED FOR FIXTURES TO BE CARRIED OUT BY CONTRACTOR. REFER TO ELECTRICAL DRAWINGS.
5. LOCATION OF NEW DUCTLESS SPLIT. PATCH / REPAIR ANY AFFECTED SURFACES TO REMAIN FROM INSTALLATION OF NEW DUCTLESS SPLIT UNITS, INCLUDING, BUT NOT LIMITED TO, WALL SURFACES, MILLWORK SURFACES, CHALKBOARD OR WHITEBOARD SURFACES AND FRAMES. ANY REPAIRS TO MATCH ADJACENT FINISHES.
6. PENETRATION OF FLOOR DRAIN THROUGH FLOOR TO BE CONTINUOUSLY FIRE-STOPPED/FIRE CAULKED, BOTH ABOVE AND BELOW FLOOR. 1

NOTE: NOT ALL KEYNOTES APPLY TO EVERY DRAWING.

FLOOR PLAN LEGEND

- EXISTING WALL TO REMAIN (SHOWN SHADED)
- PROPOSED WALL AS NOTED (REFER TO WALL SCHEDULE)
- EXISTING DOOR AND FRAME TO REMAIN
- PROPOSED DOOR AND FRAME AS NOTED (REFER TO DOOR SCHEDULE)
- EXISTING WINDOW AND FRAME TO REMAIN
- DENOTES EXISTING BUILDING TO REMAIN
- DENOTES AREA N.I.C. UNLESS NOTED OTHERWISE
- W-- PROPOSED WALL TAG: (REFER TO WALL SCHEDULE)
- D-- PROPOSED DOOR TAG: (REFER TO DOOR SCHEDULE)
- W-- PROPOSED WINDOW TAG: (REFER TO WINDOW SCHEDULE)
- S-- PROPOSED SCREEN TAG: (REFER TO SCREEN SCHEDULE)

No.	REVISIONS	DATE
1	ADDENDUM 01	2025.03.17

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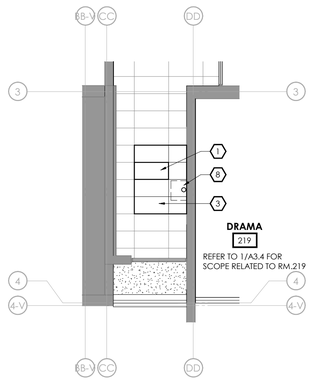


2 / A1.5b HVAC - WING 'A' LOWER 200 LEVEL

1 : 100

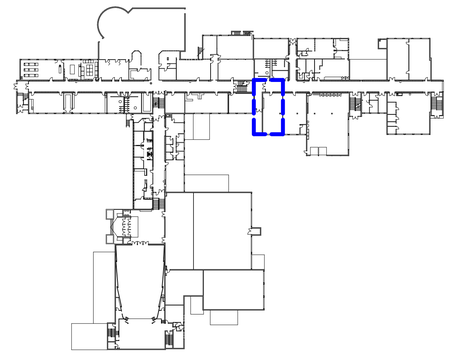
RCP KEYNOTES

1. EXISTING LIGHTING TO REMAIN. CONTRACTOR TO SAFELY SUSPEND OR DISCONNECT LIGHTING FOR THE DURATION OF THE CEILING REMOVAL SCOPE AND REINSTALL IN NEW CEILING.
2. REFER TO ELECTRICAL DRAWINGS FOR RELOCATION OF ELECTRICAL SERVICES AFFECTED BY CEILING HEIGHT DECREASE.
3. RE-INSTALL EXISTING ACOUSTIC CEILING TILES AS REQUIRED (REFER TO KEYNOTE D1 ON A1.1). REPLACE ANY DAMAGED CEILING TILES DUE TO WORK ACTIVITIES RELATED TO KEYNOTE D1 ON A1.2.
4. REFER TO ELECTRICAL DRAWINGS FOR ANY/ALL SCOPE RELATED TO NEW LIGHTING AND/OR ELECTRICAL FIXTURES. THIS ROOM.
5. PROVIDE CONTINUOUS 1HR FIRE SPRAY ON THE U/S OF ROOF DECK AND ALL STEEL ROOF STRUCTURE.
6. REFER TO MECHANICAL DRAWINGS FOR INSTALLATION OF NEW AHU. CONFER WITH DESIGNER AND WDE (STRUCTURAL) FOR ANY WALLS THAT REQUIRE MODIFICATION TO SUIT NEW DUCTWORK.
7. NEW AIR CONDITIONING UNIT. REFER TO MECHANICAL DRAWINGS. PATCH AND REPAIR ASSEMBLIES AFFECTED BY INSTALLATION. ALL VISIBLE SURFACES AFFECTED TO BE RE-FINISHED TO MATCH EXISTING ADJACENT FINISHES.
8. GYPSUM BOARD CEILING @ U/S OF JOISTS SUPPORTING FAN RM.319 FLOOR TO BE PATCHED AND REPAIRED AS A FIRE SEPARATION. PENETRATION THROUGH FLOOR FOR FLOOR DRAIN TO BE CONTINUOUSLY FIRE-STOPPED / FIRE-CAULKED, BOTH ABOVE AND BELOW FLOOR. 1
9. NEW 2400x3250 INTAKE LOUVER. REFER TO MECHANICAL DRAWINGS. LOUVER SHALL BE RATED FOR WIND AND GUARD LOADS. PROVIDE INSULATED BACK PAN FOR PORTIONS OF LOUVER OUTSIDE OF INTAKE DUCT AREA. SITE VERIFY AREA OF OPENING PRIOR TO MANUFACTURING.
10. PROVIDE CONTINUOUS 1HR FIRE SPRAY ON THE U/S OF THE ROOF DECK AND ALL STEEL ROOF STRUCTURE IN FAN ROOM 319, COMPLETE.

NOTE: NOT ALL KEYNOTES APPLY TO EVERY DRAWING.

RCP LEGEND

- EXISTING WALL TO REMAIN (SHOWN SHADED)
- DENOTES EXISTING BUILDING
- DENOTES AREA N.I.C. UNLESS NOTED OTHERWISE
- EXISTING GYPSUM BOARD CEILING TO REMAIN
- FIRE RETARDANT SPRAY ON UNDERSIDE OF DECK AND ALL SUPPORTING STRUCTURE IN THEIR ENTIRETY
- EXISTING ACOUSTIC CEILING TILE SUSPENDED CEILING TO REMAIN
- ACOUSTIC CEILING TILES AND SUSPENDED CEILING TILE GRID
- 610x610 AND 610x1220 RECESSED LIGHT FIXTURE (REFER TO ELECTRICAL DWGS.)
- SUSPENDED OR SURFACE MOUNT LIGHT FIXTURE (REFER TO ELECTRICAL DWGS.)
- POT LIGHT (REFER TO ELECTRICAL DWGS.)
- EXHAUST FAN (REFER TO MECHANICAL DWGS.)
- SUPPLY AIR DIFFUSERS (REFER TO MECHANICAL DWGS.)
- 2450 CEILING HEIGHT TAG



WING A 200 LEVEL LOWER & TECH WING

CHRONOLOGY	DATE
ISSUED FOR PERMIT/TENDER	2026.03.03
ISSUED FOR COORDINATION	2026.02.26

aba architects inc.
101 Randall Drive, Unit 8, Waterloo ON, N2, 519 884 2711 | www.abaarchitect.ca

CLIENT: WATERLOO REGION DISTRICT SCHOOL BOARD

PROJECT NAME: WATERLOO COLLEGIATE INSTITUTE HVAC AND EXTERIOR UPGRADES PHASE 2
300 HAZEL STREET, WATERLOO, ON. N2L 3P2

DRAWING TITLE: HVAC - WING 'A' LOWER 300 LEVEL FLOOR PLAN, LOWER 200 LEVEL RCP

SCALE	As indicated
SHEET SIZE	609 x 914
PROJECT NUMBER	2025-153
DRAWING NUMBER	A1.5b

DEI Consulting Engineers
MECHANICAL | ELECTRICAL | AQUATIC

55 Northland Rd.
Waterloo, ON N2V 1Y8

Tel: 519-725-3555
www.deiassociates.ca

March 16, 2026

Client: ABA Architects Inc.
101 Randall Drive, Unit B
Waterloo, ON N2V 1C5

RE: Waterloo Collegiate Institute
HVAC & Exterior Upgrades Phase 2
Waterloo, ON

Job #: 25407

Attn: Sean Habermehl, Architectural Technologist

ADDENDUM 01

MECHANICAL

Item 1

1.0 Reference Attached Reissued Specification Section 25 40 11 'Building Control System'
- .1 Replace specification section in its entirety.

Item 2

2.0 Reference Attached Reissued Drawing M1.1
- .1 Revise AHU-2's schedule as shown.
- .2 Add FFD-1 to plumbing fixture schedule.
- .3 Remove CP-2 from condensate pump schedule.
- .4 Revise CU-4's schedule as shown.

Item 3

3.0 Reference Attached Reissued Drawings M3.1 to M3.5
- .1 Added pipe size clarification as shown.
- .2 Added Fan Room 411 renovation as shown.

Item 4

4.0 Reference Attached Reissued Drawing M6.1
- .1 Revise AHU-2's cabinet to include recirculation damper and mixing section.
- .2 Remove CP-2 and associated condensate piping.
- .3 Add new funnel floor drain FFD-1 and associated sanitary piping to serve AHU-2's condensate drainage.
- .4 Relocated ASHRAE 62.1 ventilation table from drawing M7.1 to drawing M6.1 and revised values as shown.

ELECTRICAL

Item 1

1.0 No electrical content.

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25407 Addendum 01 (M-Various Revisions)(various reissued dwgs) Mar 16 26
aa/ma

Part 1 General

1.1 GENERAL REQUIREMENTS

.1 Conform to General Conditions for Mechanical Trades.

.2 Related Work Specified Elsewhere.

.1 General Conditions for Mechanical Trades

.2 Plumbing & Drainage

.3 Heating, Ventilation & Air Conditioning

.4 Heating, Ventilation & Air Conditioning Equipment

.5 Electrical

1.2 DESCRIPTION OF SYSTEM

.1 Furnish and install all components, devices and control wiring for a fully integrated Energy Management and Environmental Control System incorporating Direct Digital Control (DDC), and equipment monitoring. The system shall control/monitor mechanical equipment and systems as specified in this section. The work shall include but is not limited to the following:

.1 All necessary hardware, software, control panels, control wiring, field devices, installation, documentation, and owner training as specified.

.2 The installed system shall incorporate electronic and digital control devices to perform the control sequences and monitoring outlined herein. Specific control sequence requirements are as detailed elsewhere in this Section of the specification.

.3 Control and monitoring of the equipment and systems shown on the drawings (refer also to 'Sequence of Operation' for additional details).

.4 Control valves shall be supplied by this Trade but installed in the piping system by the Mechanical Trade complete with transitions and unions as required.

.5 Testing, debugging, calibrating, adjustment, programming, and confirmation of total system operation.

1.3 MANUFACTURER AND INSTALLING CONTRACTOR – updated with ADD 01

.1 The temperature control manufacturer shall be Distech Controls.

.2 The local contractor is available at phone (519) 893-2638.

.3 Any ~~new~~ building, new, addition or renovation, must be a seamless extension of the current Energy Management and Building Control System

.1 The existing TAC Vista software is, and shall continue to be, the only head-end BAS server for the entire School Board.

.2 The head-end server contains the secure Energy Management Settings (i.e. Master Setpoints & Schedules) that are sent to all schools in real-time. The control system must be an extension of the head-end server and be able to be managed exclusively through the Vista head-end server.

.3 Monitoring of all school board control systems are done in real-time and must be presented at the exclusive Vista head-end server as first-priority data.

.4 The Vista head-end server has all the required controller databases and software to be able to centrally maintain and modify network configuration and controller software for the entire School Board. The Vista head-end server is the only system that can access the programming variables inside the controllers for real-time configuration of setpoint and time scheduling parameters.

.5 The graphics and controller database must be presented inside the Vista head-end server in its native format in order to preserve the real-time speed, integrity and multi-site administration of the entire system.

.6 Utilizes Remote Network Interfaces (RNI) Ethernet adapters at each site to communicate to the Lonworks network at each site.

.7 Distributes all network variables via the RNI using the LNS protocol and Loytec NIC-IP to each site.

.8 Used to administer the TAC Xenta and Lonworks based BAS devices with the Echelon Lonmaker Network configuration tool, Schneider Electric TAC Vista System Plug-in Tool, and Schneider TAC Menta programming software.

1.4 WRDSB NIAGARA BAS SERVER – updated with ADD 01

.1 Update name to NIAGARA (formerly EC-TACBAS-T) on the WRDSB network

.2 Is based on the Niagara N4-based Distech EC-NET server software to administer the EC-BOS networking devices at each site

.3 Utilizes Niagara N4-based Distech EC-BOS networking servers complete with adapters at each site to communicate to the BACnet and Lonworks (where applicable) network at each site.

.4 Distributes all network variables via the Tridium Niagara FOX protocol to each site

.5 Used to administer the Distech BACnet and Lonworks (where applicable) based BAS devices with the Distech GFX programming/controller configuration and Tridium Niagara WorkBench software

.6 Utilizes Baudrate Schneider Electric TAC driver software (where applicable) to support the Lon-based TAC Xenta Controllers.

.7 Network Variables

.1 For the purpose of zone temperature setpoint adjustment.

.2 To place lockouts on heating/cooling systems in response to changing seasonal conditions.

.3 To manage setpoints for night setback heating and cooling modes.

.4 To manage minimum outside air setpoints for ventilation requirements.

.5 To adjust the beginning and end of heating season.

.6 To manage boiler water temperature setpoint outdoor reset parameters.

.7 To set the morning warmup and night setback offset for boiler water temperature.

.8 To place lockouts on ventilation based on building use requirements.

.9 To place restrictions on ventilation based on humidity for additional energy savings measures.

.10 To distribute humidity information from one of the three WRDSB humidity averaged zones.

.11 To distribute the central holiday schedule for setback mode operation.

.12 For Outdoor Lighting Astroclock Control adjustments to sundown and sunset times.

.13 For the purpose of after-hours alarms and troubleshooting

.14 A dashboard is used at the central server to provide a user interface for all the variables and corresponding time/calendar schedules used in the BAS system.

.15 A central alarm display is used to capture all incoming BAS alarms from each site.

1.5 SCOPE OF WORK – updated with ADD 01

.1 Refer to drawings and specification for complete scope.

.2 Air handling unit including associated pump, control valves, remote VRF.

.3 VRF and associated air conditioning units on 2nd and 3rd Floor Wing A.

.4 Converting pneumatic to DDC for the entire school and removing the existing compressor

.5 Removal of all obsolete pneumatic tubing.

1.6 QUALITY ASSURANCE

.1 The system components shall be listed by Underwriters Laboratories Inc. and Canadian Standards Association.

.2 The system control products shall be stored and handled according to manufacturer' recommendations.

.3 The work shall be performed by skilled technicians all of whom shall be properly trained and qualified for this work.

1.7 SUBMITTALS

.1 Prior to the installation of any equipment, the Contractor shall provide the Consultant with shop drawings and specifications for all devices and equipment used for the complete system installation. Shop drawings shall include the following:

.1 Identified schematic control diagrams for all systems, each diagram indicating or referencing input / output connection points, control components, component catalogue numbers, operation sequence, interlocking and RPU's to which they are connected.

.2 Complete network schematic indicating all programmable controllers and data connections.

.3 Detailed listing of inputs and outputs of each programmable controller.

.4 Control damper schedule indicating damper size, required torque and blade type.

.5 Technical data sheets / manufacturer application manuals of each system component.

.2 Upon completion of the installation and prior to acceptance and Owner training, the Contractor shall furnish the Consultant with three copies of installation and operation manuals for the system. Each manual shall include:

.1 Record drawings, including plan layout indicating major device locations and wiring diagrams as finally installed.

.2 All shop drawings, incorporating all required revisions to reflect as-built conditions.

.3 The Contractor shall also keep one copy of backup programs for the system archived in a software storage vault at their business location.

Part 2 Products

2.1 GENERAL – updated with ADD 01

.1 The control system shall be a Tour Andover (TAC) Xenta/Distech building automation system (BAS).

.2 The system shall integrate the operation of intelligent building management controllers distributed into the network.

.3 The DDC System shall be generally comprised of the following devices to achieve the control functions described in this section:

.1 Xenta/Distech programmable controllers

.2 Distech input/ output programmable I/O modules.

.3 Control relays.

.4 Control dampers and valves.

.5 Sensors, actuators, and other input/output devices.

.4 Controllers shall execute the application programs, calculations, and commands to provide the control function specified for that unit. Each controller shall include its own micro-computer controller, power supply, input/output modules, termination modules and real time clock.

.5 Controllers shall be capable of full control functionality and alarm reporting independently or as a part of the DDC network.

.6 The system shall be stored in flash ram so no batteries are required.

.7 Each control device shall be modular and expandable to provide additional inputs and outputs and control functionality for that device.

.8 Each controller shall be able to transfer and receive data via the network for performance of control functions.

.9 The system shall be modular, permitting expansion by adding hardware and software without changes in communication or processing equipment.

.10 The complete system shall be capable of communication over a LonWorks network.

.11 The controllers shall monitor the status of all overrides and include this information in logs and summaries to inform the operator that automatic control has been inhibited.

.12 Controllers shall continuously perform self-diagnostics, communication diagnosis and diagnosis of all subsidiary equipment and provide both local and remote annunciation of any component failures.

.13 Controllers shall activate an orderly shutdown of their operation in the event of loss of normal electrical power. Non-volatile memory shall be incorporated for all controller configuration data. The controllers shall automatically resume full operation without manual intervention.

.14 The controllers shall have sufficient memory to support their own operating system and data bases including:

- .1 Control processes
- .2 Energy management applications
- .3 Alarm management
- .4 Trend data
- .5 Operator input/output
- .6 Remote communications
- .7 Manual override monitoring

.15 Controllers shall incorporate the following software features

- .1 Energy Management:
  - .1 Time of Day Scheduling
  - .2 Calendar Based Scheduling
  - .3 Holiday Scheduling
  - .4 Optimal Start and Stop
  - .5 Demand Limiting
  - .6 Heating/Cooling Interlock
- .2 Alarm Management
  - .1 Alarm Management shall be provided to monitor, buffer and direct alarm reports to operator devices and memory files. The controllers shall perform alarm analysis and filtering to minimize operator interruptions due to non-critical alarms, minimize network traffic and prevent alarms from being lost.
  - .2 All alarm or point change report shall include the points English language description and the time and date of occurrence.
  - .3 The user shall be able to define the specific reaction for each point, the priority level (3 in total) and ability to inhibit alarm reporting for each point.
  - .4 The user shall be able to define conditions under which point changes need to be acknowledged by an operator and logged for analysis at a later date.

.5 The user shall be able to print, display or store a unique 60 character alarm message to more fully describe the alarm condition or direct operator response. The message shall be customizable to describe each individual alarm.

.6 In web access applications only critical alarms shall initiate a call to a remote operator device, otherwise call activity shall be minimized by time stamping and saving reports until a manual request is received or until the buffer space (minimum 50 alarms) is full.

.3 Trend Logs:

.1 Controllers shall provide an automatic roll-over trend log, which stores records up to an operator-selected number at an operator-selected sampling rate and then overwrites the oldest record with each new record.

.2 Sample intervals shall be from 1 minute to 24 hours.

.3 Provide graphical and tabular displays.

.4 Runtime Totalization:

.1 The controllers shall automatically accumulate and store runtime hours for binary points with a sampling resolution of 1 minute. The user shall have the ability to define a warning limit to trigger maintenance or user-defined messages.

.5 Custom Programming:

.1 The controllers shall permit user defined custom control processes based on:

.1 Any system measured data or status

.2 Any calculated data

.3 Any results from other processes

.4 Boolean logic

.2 The custom processes may be triggered by:

.1 Time-of-day

.2 Calendar date

.3 Events (point alarm etc.)

.16 The control strategy for each control loop shall be performed by software within the controller. The sequence of events required for each control loop is described for each system in the control sequence.

.17 Outdoor air temperature indication shall be available at each controller as an integral part of the control strategies for that controller. Should the network transmission of the common outdoor air temperature (or any other common value) fail, then each controller shall use the last good value received.

~~.18 Controls and Requirements for VVT Systems~~

~~.1 Where VVT controls are specified, units are to operate as part of a Variable Volume/Variable Temperature System complete with all necessary controls including zone dampers, temperature sensors, static pressure sensor probes and bypass damper.~~

.18 Hardware Requirements:

.1 LON board inside Distech EC-BOS: Installed on site, interfaces between site BAS system, Distech Lonworks Controller and Loytec NIC-IP.

.2 Loytec NIC-IP RNI: Installed at each site, interfaces between site BAS system and WRDSB NIAGARA server via Ethernet and Lonworks networks.

.3 A LON-based Distech controller: Must be current version. Installed on site, holds the network variables for use by both the WRDSB NIAGARA server and the site BAS system, and also the switching logic between local and global variable selection.

.4 Licensing for LON board, Baudrate Schneider TAC Xenta driver for the Distech EC-BOS: Allows access to TAC Xenta controllers points, time schedules and alarms for use in the EC-BOS. Licensing confirmation of LON boards, Schneider TAC Xenta Driver, current Distech BAS SI Partner confirmation as a minimum.

.5 Distech BACnet MS/TP based controllers are accepted for use with all the remaining systems.

.6 WRDSB Ethernet Drops: Installed on site, to be co-ordinated with WRDSB IT department, fixed IP address to be assigned by IT.

.7 All existing functioning BAS devices within each building including but not limited to Lonworks, BACnet controllers as well as other field controls including sensors, valve or damper actuators, VFD drives, chiller systems, unit vents, air handlers, accessories or others, shall remain integrated. Approaches that require the replacement of existing functioning BAS devices other than the required LAN interfaces for proper integration (EC-BOS / NIC-IP) will not be considered.

2.2 NETWORK ARCHITECTURE

.1 The controllers on the local network shall communicate via a two wire LonTalk TP/FT-10 or BACnet network.

2.3 CONTROL PANELS

.1 Control panels shall be fully enclosed cabinets with all steel construction. Cabinets shall have a hinged door with locking latch or bolt-on cover plate.

2.4 TEMPERATURE SENSORS

.1 Provide thermistor temperature sensors, not requiring transmitters, to measure temperature.

.2 Accuracy shall be +/-0.2°C from 0 to 70°C.

.3 Temperature sensors shall be Greystone EC200 series.

.4 Space sensors in occupied areas shall be type AE or equal having an integral push button for unoccupied override and an integral slider to adjust set point (LED display not required).

.5 In corridors and where noted on the drawings, provide stainless steel plate type sensors (push button override and LED display not required), type AS.

.6 Duct temperature sensors shall be type B having a stainless steel probe length to suit application and ABS enclosure. Duct averaging temperature sensors shall be type FD having an element length to suit application, copper probe and ABS enclosure.

.7 Immersion temperature sensors shall be type C having a ¼" OD stainless steel probe, 4" long and ABS enclosure. Immersion sensors shall be complete with thermowells. Thermal conductive compound shall be added inside the thermowell to provide optimum thermal transfer from the fluid to sensor. Stainless steel thermowells shall be used for steel pipe and brass thermowells shall be used in copper pipe.

2.5 CARBON DIOXIDE SENSORS

.1 Sensors shall Greystone CDD series or equal having the following features:

.1 0-2000 ppm factory default detection range, field adjustable.

.2 Non-dispersive infrared sensing element with self-calibration algorithm.

.3 Guaranteed 5 year calibration interval.

.4 Powered by either AC or DC source.

.5 Accuracy: within 50 ppm or 3% of reading (whichever is greater).

.6 Operating humidity range: 0-95% RH.

.7 Operating temperature range: 0 to 50°C or greater.

.8 Stability: less than 2% full scale in 15 years

.9 Response time: less than 2 minutes for 90% step change.

.2 Duct mounted sensors shall be complete with ABS enclosure complete with sampling tube.

.3 Space mounted sensors shall be executive space type without LCD display.

2.6 MOTORIZED CONTROL DAMPERS

.1 Control dampers shall be the parallel or opposed blade type as below or as scheduled on drawings.

.1 Outdoor and/or return air mixing dampers and face and bypass (F & BP) dampers shall be parallel blade, arranged to direct air-streams toward each other.

.2 Other modulating dampers shall be the opposed blade type.

.3 Two-position shutoff dampers may be parallel or opposed blade type with blade and side seals.

.2 Damper frames shall be 13 gauge galvanized steel channel or 1/8 in. extruded aluminum with reinforced corner bracing.

.3 Damper blades shall not exceed 20 cm (8 in.) in width or 125 cm (48 in.) in length. Blades are to be suitable for medium velocity performance (10 m/s [2000 fpm]). Blades shall be not less than 16 gauge.

.4 Damper shaft bearings shall be as recommended by manufacturer for application, oil impregnated sintered bronze or better.

.5 All blade edges and top and bottom of the frame shall be provided with replaceable butyl rubber or neoprene seals. Side seals shall be spring-loaded stainless steel. The blade seals shall provide for a maximum leakage rate of 50 L/s m^2 (10 cfm per ft^2) at 1000 Pa (4 in. w.g.) differential pressure. Provide air foil blades suitable for a wide-open face velocity of 7.5 m/s (1500 fpm).

.6 Individual damper sections shall not be larger than 125 cm x 150 cm (48 in. x 60 in.). Provide a minimum of one damper actuator per section.

.7 Modulating dampers shall provide a linear flow characteristic where possible.

.8 Dampers shall have exposed linkages.

2.7 WATER CONTROL VALVES

.1 Heating and cooling control valves shall be Belimo CCV series characterized ball valves, complete with chrome plated brass trim and NPT female pipe connections. Radiation valves shall be complete with non-spring return modulating actuators. Control valves for coils heating a portion of outdoor air shall have spring return modulating actuators.

.2 Control valves shall be sized to provide approximately one half the circuit branch pressure drop to obtain good modulation control but they shall be no smaller than two pipe sizes less than the pipe they are installed in.

2.8 FREEZE THERMOSTATS – added with ADD 01

.1 Thermostats shall have 6000 mm vapour tension sensing element sensitive to a temperature below its setpoint over 300 mm of its length.

.2 Range shall be 1.7°C to 7.2°C.

.3 Switch shall be snap acting and rated for 16 amperes at 120 VAC or 8 amperes at 575 VAC as required.

.4 Thermostat shall have automatic reset feature.

.5 Provide one thermostat for each 1 sq. m of coil face area or part thereof.

.6 Thermostats shall be DPDT to facilitate monitoring by BMS.

.7 Mount sensing element rigidly and as close as possible to the downstream face of the coil being protected or where shown on schematic diagrams. Freeze controls shall have 6 m capillary arranged in ducts for best possible protection.

.8 Provide freeze stat for each 5.5 square meters of duct area where necessary, wired in series. Sensing element shall extend at least to two diagonally opposite corners of the coil.

2.9 TURNOVER REQUIREMENTS AND DELIVERABLES – added with ADD 01

.1 Demonstrate: full functionality of the integration from the WRDSB server altering the settings on each of the BAS controllers on site.

.2 Database files: to be backed up and given to WRDSB facilities on USB drive.

- .1 Loytec NIC-IP: Configuration File
- .2 Distech EC-BOS with Lonworks board and 5-year software updates license: database file
- .3 Distech Lonworks controller: controller program file

.4 Menta: controller program file for the existing TAC Xenta controllers (supplied by WRDSB to integrator)

.3 Security and Serviceability:

.1 Supply username and password.

.2 Source programming software tools with never expiring licenses

.3 Source files and databases for all BAS controllers, networking hardware to be able to network, initialize and replace BAS controllers.

.4 Remote access to school BAS system will not be via VPN or similar method. It will be a managed firewall when available. WRDSB IT firewall and networking rules will need to be followed when integrating the BAS system to the WRDSB NIAGARA BAS Server.

.5 The integrator is required to coordinate with the WRDSB IT services team for SAML integration.

.4 Reporting Requirements:

.1 Network Transfer Diagram: List in a matrix format, all Distech BAS controllers and associated the network variables, indicating the source and destination for each network variable.

.2 Version Control: Maintain a variable for version number for each Distech BAS controller's software with a description of what changes and updates to the controller software were made, initialled, and dated by the programmer in the source code of the controller.

.3 Graphical User Interface:

.1 MAIN graphic: Display all the global network variables, the adjustable local network variables, the adjustable local/global mode switch and the actual network variables in current use, which are actually sent to all the controllers on the local BAS network. Refer to attached sample graphic.

.2 SYSTEMS graphics (e.g., AC1, AHU1, RTU3): Indicate the current status of the heating enable, cooling enable, adjustable Holiday Exemption flag, final zone setpoint, Minimum Outside Damper position, Maximum Outside Damper position, Minimum Outside Air Schedule status. Night setback heating and cooling setpoints.

.3 MAIN graphic: A link to a notepad file application where an operator can maintain a running day and timestamp in logbook format for any changes/adjustments made to the system, noting any issues that may arise.

2.10 IMPLEMENTATION – added with ADD 01

.1 Chain of Data Custody Sequence:

.1 Network Variables/Parameters are written to the Distech Lonworks Controller by the WRDSB NIAGARA server via the Loytec NIC-IP adapter.

.2 The Distech EC-BOS reads the network variables and then stored on the Lon controller and then distributes them to each controller on the local BAS network for use in its sequence of operations.

.3 These network variables are to have a parallel set of local network variables stored in the Distech EC-BOS to be used in the local mode. The local mode when selected will transfer the use of the local network variables from the Distech EC-BOS to each controller on the local BAS network instead of the global network variables written to it by the WRDSB EC-TACBAS server.

.4 The local/global mode switch will be adjustable by the WRDSB NIAGARA server and shown on the main page graphic also adjustable by the operator.

.2 Data Functionality and Persistence:

.1 All network variables/parameters must be backed up into non-volatile RAM so that the network variables are automatically restored after a reboot/cold start.

.2 Local/Global Mode Flag to be read/writeable from the WRDSB NIAGARA Server.

.3 Critical Alarms reported back to WRDSB NIAGARA server.

.4 If site is designated to have an outdoor humidity sensor, the real time value is to be sent back to the WRDSB EC-TACBAS server.

.3 Overview:

.1 Service office within 1 hour of all WRDSB Facilities during school hours and after hours.

.2 Written confirmation of Distech SI partnership for WRDSB territory.

.3 Written confirmation of Schneider/TAC Xenta License for NIAGARA Server for WRDSB territory.

Part 3 Execution

3.1 INSTALLATION

.1 Installation

.1 All controllers and components in the system and on the network shall be installed according to manufacturer recommendations, general installation standards for digital controls and in accordance with the approved shop drawings.

.2 Locate room sensors in the locations shown on the mechanical drawings. All sensors shall be mounted at barrier free height (3’-11” (1175 mm) above finished floor).

.3 All control components for off site system access shall be located where noted on the drawings. The Electrical Contractor shall provide all required connections/cabling for off site access to the web access components.

.4 All programmable controllers, web access components, relays and other control components shall be located within control panels. Control Panels shall be wall mounted and shall be located within suspended ceiling spaces or other locations approved by the Consultant.

.5 The Electrical Contractor will provide hand-off-auto switches in all starters controlled by the BAS.

.2 Generally, duct mount carbon dioxide sensors shall be used where specified for air handling units; but, for gyms and single zone libraries, a wall mount carbon dioxide sensor shall be mounted next to the room temperature sensor.

.3 All carbon dioxide levels which are measured by the carbon dioxide sensors shall be made available to the Owner in the form of trend logs. Record readings at 10 minute intervals and keep them for at least 30 days.

.4 Freeze-stats shall be installed so that their sensing element runs horizontally across the coil face (not diagonally) with no more than 12" vertical drops at the outside coil frame. The full face of the coil shall be covered with no horizontal runs being more than 12" apart. The top and bottom horizontal run shall be within 6" of the coil frame. If more than one freezestat is required, they shall be wired in series in order to detect a low temperature in portion of the coil. The sensing elements shall be firmly secured in place to avoid vibration without added air restriction.

.5 All dampers, valves, and necessary accessories to suit install shall be installed by the mechanical contractor and wired by the BAS contractor.

3.2 SYSTEM START-UP AND ACCEPTANCE

.1 Upon completion of installation, test, adjust and calibrate controls provided under this Section.

.2 On system completion, a demonstration of complete system operation shall be made to the Owner's authorized representative and Consultant.

.3 The Consultant shall verify through the Owners representatives that the entire system is complete and operating to the satisfaction of the Owner before final acceptance is approved.

3.3 TRAINING

.1 The Contractor shall provide competent instructors to give full instruction to designated personnel in the adjustment, operation and maintenance of the system installed rather than a general training course. Instructors shall be thoroughly familiar with all aspects of the subject matter they are to teach. All training shall be held during normal work hours of 8:00 a.m. to 4:30 p.m. weekdays as follows:

.2 Provide 4 hours of training for Owner's operating personnel. Training shall include:

.1 Explanation of drawings, operations, and maintenance manuals

.2 Explanation of web access program

.3 Explanation of adjustment procedures

.4 Trend Analysis

3.4 WARRANTY

.1 Warranty Start Date:

.1 Warranty period starts as of the date of Ready for Takeover.

.2 Warranty start dates based on shipment date, start up date, substantial completion date, etc. are not applicable.

.2 Warranty Duration:

.1 Warrant in writing, all provided equipment, accessories, installations, software and firmware against defects in workmanship and materials for a period of two (2) year commencing from the date of Ready for Takeover.

.2 Maintain the affected parts operational during repair of defective equipment covered by the warranty.

.3 Equipment, material, and software shall be unconditionally guaranteed for a period of two years form the date of substantial completion.

.4 Provide warranty service at no cost to the Owner for the guarantee period, which shall include but not be limited to the following:

.1 Emergency repair service on regular working hour basis during warranty.

.2 Replacing defective parts and components as required.

.3 System software support.

.5 Warranty Coverage:

.1 Applies to parts and labour.

3.5 IDENTIFICATION

.1 Provide system identification and provide nameplates identifying the following (nameplates shall be keyed to the wiring diagrams):

.1 Duct mounted sensors.

.2 Control panels (identify as to equipment / systems controlled). Each panel shall include an as-built drawing showing all the connected control points.

3.6 TESTING AND BALANCING

.1 During the system testing and balancing by the Testing and Balancing Agency, demonstrate the operation of all controls. During balancing procedures, set controls to a fixed mode (bypass damper locked fully closed and all zone dampers locked fully open) to prevent any changes during the balancing procedure.

.2 Balancer shall verify existing flow rates for all hydronic heaters prior to demolition. new valves installed on existing heaters shall be balanced to the original existing design flow.

3.7 ELECTRICAL WIRING

.1 All wiring shall be installed to the standards specified in the Electrical Division.

.2 Use Echelon recommended orange jacket cable for all network wiring.

.3 Run all wiring in EMT conduit where exposed, where running within concrete block walls and where required by the Ontario Electrical Code. Plenum rated cable shall be used in return air ceiling plenums.

.4 Control relays necessary for BAS operation shall be provided by the Temperature Control Contractor but all contactors and their power supplies handling power wiring to the equipment shall be by the Electrical Contractor.

Part 4 Sequence of Operation – updated with ADD 01

~~4.1 AIR HANDLING UNIT~~

.1 ~~Air handling unit outdoor air damper position during occupied hours shall modulate based on CO2 demand controlled ventilation.~~

.2 ~~Air handling unit cooling shall operate as first stage cooling based on supply air temperature setpoint. local split air conditioning units, where installed in classrooms, shall operate as second stage cooling as required to maintain space temperature setpoint. Provide all required sensors and interlocks through BAS.~~

4.2 EQUIPMENT SERVICES

.1 See the graphical sequence of operations attached to the end of this specification for equipment and services.

.2 Note that this is not a complete representation of all equipment and systems. Controls contractor to review all drawings and specifications and provide complete controls and sequence.

4.3 GENERAL

.1 All setpoints shall be adjustable.

.2 Outdoor air temperature shall be broadcasted to all controllers.

.3 Heating mode: Heating is enabled between October 15 and April 15 or if the outdoor air temperature is below 10°C. This heating mode is used in all controllers for the building.

.4 Cooling Mode: Mechanical cooling is enabled if the outdoor air temperature is above 18°C.

.5 Occupancy mode shall be determined by a weekly schedule with an annual holiday schedule. Each system shall have this schedule but there shall be provision for operating under a general (to the building) schedule as well. An adjustable parameter shall be available to select the local or general schedule for each system.

.6 Lead/lag: Devices designed for lead lag operation shall operate in automatic lead/lag mode to equalize run time. If the lead unit fails the lag shall automatically start and an alarm shall be generated. The lead unit shall be advanced through the series of devices in sequence every Tuesday at noon.

4.4 AIR HANDLING UNIT (AHU-2 & ALTERATIONS TO AHU-1) – added with ADD 01

.1 Discretionary Fire Alarm Shutdown Mode:

The supply fan is off and power exhaust fan is off, the outdoor air mixing dampers are in the 0 % outdoor air position, heating is disabled and cooling is disabled. This is not intended to replace the hard-wired fan shutdown provided by others when required by Code. Normal AHU functions are auto restored on relay signal from the fire alarm panel reset.

.2 Freeze-stat Shutdown Mode:

The duct/unit mounted supply air temperature sensor acts as a software freeze-stat (triggered below 1 °C after 3 minutes, restored above 5 °C after 3 minutes, and auto reset after 5 minute delay).

.3 Unoccupied Mode:

Mode is active usually between 11:00 p.m. to 7:00 a.m. Monday to Friday and 24 hours Saturday and Sunday.
The system will be in Unoccupied Mode when not in Morning Warmup, Occupied or Standby modes.
The system will cycle between Idle State, Heating State or Pushbutton Override States to meet the demands from each state and return to the Idle State when the demands from each state are satisfied.

.1 (Idle State)
The supply fan is off, the Global Ventilation Mode is disabled, the outdoor air mixing dampers are in the 0 % outdoor air position, and the cooling is disabled. For hydronic heated AHU, when outdoor air temperature is below 3 °C, the heating valve modulates to maintain a supply air plenum temperature of 15 °C. When outdoor air temperature is 3 °C or above, the heating valve is closed to the coil. The heating coil circulating pump runs continuously in Winter Mode.

.2 (Heating State)
System cycles on a call for unoccupied heating. A full call for (all stages or full heat modulation where applicable) heating until setpoint is reached.
Heating temperature nominally 16.0 °C space temperature setpoint with an increased space temperature setpoint to 17.0 °C at -10.0 °C OAT or lower and 18.0 °C at -20.0 °C OAT or lower (each adjustable)
Free Cooling: Disabled
Global Ventilation Schedule: Disabled

.3 (Push Button Override State)
If the override pushbutton is pressed, at any associated room sensor, the associated system will switch to the Occupied Mode for 2 hours (adjustable). With outdoor air ventilation enabled.

.4 Morning Warmup Mode:

An optimized start, based on the time of day schedule, outdoor air temperature and the indoor zone temperature is provided for heating.
The global Global Ventilation Schedule is disabled. The supply fan is on, the outdoor air mixing dampers are in the 0 % outdoor air position and heating is enabled at full capacity.
The optimized start program is to begin up to 105 minutes (adjustable) before the occupancy schedule to allow for morning warm up to bring the lowest space temperature up to occupancy setpoint.

.5 Occupied Mode:

Time of day schedule, which starts the unit along with an Optimum Start program usually between 7:00 a.m. and 4:00 p.m. Monday to Friday, when not overridden by a Holiday Schedule, Standby Occupancy Mode or Unoccupied Mode.
Global Ventilation Schedule is enabled.
Air handler fan status confirmed by current sensing device(s) or VFD feedback.
Fan operation: The supply fan runs continuously.
Room heating temperature nominal: 21.5 °C +/- 1.0 °C (adjustable).
Room Free Cooling Enabled temperature setpoint nominal 22.5 °C +/-1.0 °C.
Room Mechanical Cooling temperature setpoint nominal 24.5 °C +/- 1.0 °C (adjustable).

.6 Standby Occupancy Mode:

Time of day schedule starts the unit(s) usually between 4:00 p.m. and 11:00 p.m. Monday to Friday. Minimum Outdoor Air is set to zero when the Global Ventilation Schedule is off. Supply fan runs only on a call from heating. Ventilation normally set to zero (with a future provision to adjust).
Room heating temperature nominal: 21.5 °C +/- 1.0°C
Room Free Cooling: Disabled
Mechanical Cooling: Enabled
Global Ventilation Schedule: Disabled

.7 Ventilation Lockout (Sequence):

When the ventilation lockout switch, usually located in the Custodial Office, is engaged, all outdoor air dampers close, free cooling is disabled, and the system switches to Standby Occupancy Mode of operation.

.8 Heating Sequence:

.1 Outdoor Air Temperature used to determine Heating Enabled Mode:
A set of thresholds that are user adjustable at a Global (board wide) or Local (site specific) level, triggers the heating enable mode based on the outdoor air temperature below the threshold. The threshold is further adjusted by a calendar schedule.
Typical default values are: 16 °C from September to May and 5 °C from June to August.

.2 Default Setpoint:
When the Heating Mode is active, the default room temperature setpoint remains unchanged.

.3 Call for Heating:
Heating is used until the heating calls (from room controller PID or unoccupied heating thresholds) are satisfied.
For hydronic heated AHUs, 0 % signal (10 Volts) closes the heating valve. A 100% signal (2 Volts) opens the heating valve. (Note: The heating valve is reverse acting to the controller output signal and is to fail safe open).
The heating coil circulating pump runs continuously in Winter Mode.
The room temperature sensor with the lowest temperature regulates heating output to maintain the heating setpoint. Local setpoint adjustment is provided.
The power exhaust fan or relief fan cycles based on the AHU economizer position.
Where there is a zone served by radiation, the radiation valve opens as the first stage of heating.

.9 Mechanical Cooling Sequence:

.1 Default Setpoint:
When the Mechanical Cooling Mode is active, the default room temperature cooling setpoint is 24.5 °C +/- 1°C and will not go below 23.5 °C.

.2 Call for Cooling:
Mechanical cooling will be used until the cooling calls (from room controller PID) are satisfied.
Where there is a zone served by ductless heat pump units, the heat pump cooling acts as second stage cooling if the AHU is unable to maintain the cooling setpoint for 10 minutes or if the AHU is indicating fault/alarm.

.10 Free Cooling Sequence:

.1 Outdoor Air Temperature used to determine cooling enable mode:
(Free cooling enabled) A set of thresholds that are user adjustable at a global (board wide) or local (site specific) level, triggers the cooling enable mode based on the outdoor air temperature exceeding the threshold. The threshold is further adjusted by a calendar schedule.
Typical default values are: 18 °C from September to May and 21 °C from June to August.

.2 Default Setpoint:
When the cooling enable mode is active, the default room temperature setpoint is raised by 2 °C higher than the heating setpoint and will not go below 23.5 °C

.3 Call for Cooling:
When free cooling is available, and a demand for cooling is in place, free cooling will be used, until the cooling calls (from room controller PID) are satisfied.
The room temperature sensor also modulates the mixing dampers (for free cooling) to maintain the occupied free cooling setpoint.

.11 Economizer Operation (and CO_2 Demand Control Ventilation):

During Occupied Mode, economizer operation will be substituted for first stage mechanical cooling when the outdoor air temperature and relative humidity are below the Free Cooling Setpoint Sequence of Operation. If the outdoor air temperature is below this free cooling setpoint the mixing dampers will be modulated open on a call for cooling to provide ‘free’ cooling.

.1 Minimum Outdoor Air Damper Position
A typical value for minimum outdoor air damper position is 5 % outdoor air, which can vary based on use case of the occupied space based on ASHRAE 62.1 net occupiable floor area outdoor air rate.
Minimum outdoor air damper position signal may exceed the economizer signal.

.2 Economizer Operation
The outdoor air mixing dampers will be set to the minimum outdoor air position unless otherwise required under ASHRAE 62.1 Ventilation Rate Procedure - net occupiable floor area outdoor air rate (w/ CO2 demand controlled ventilation reset).
If Free Cooling is enabled during Occupied Mode, economizer operation will be substituted for first stage mechanical cooling, the mixing dampers will be modulated open on a call for cooling to provide ‘free’ cooling.
For air handling units with power exhaust, the exhaust fan runs when the outdoor air damper is more than 50 % open.

During morning warm-up, the outdoor air minimum position is set to zero.
During Unoccupied Mode and Standby Occupancy Mode, free cooling is unavailable.
Each return air duct-mounted or space mounted CO2 sensor acts as a high limit and will increase the amount of minimum outdoor air, to a maximum of 40 % outdoor air as the CO2 level increases from 1000 ppm to 1200 ppm over a ramped 15 minute period).
CO2 levels are automatically logged at 10 minute intervals.

.12 Heat Pump Sequence

.1 The heat pump sequence can only function when air entering the evaporator coil is above 6°C (43°F).

.2 Heat pump is used when heat is required based on discharge air required above 6°C (43°F) and the outdoor air is above -5°C (23°F).

.13 CO2 Control

.1 Minimum outdoor air is provided when enabled by the global minimum outdoor air time schedule. The minimum outdoor air is adjustable from the graphic and is typically a default of 10 % open outdoor damper position.

.2 The return air carbon dioxide sensor acts as a high limit to increase the amount of minimum outdoor air from 0 % to 40 % as the reading increases from 1000 ppm to 1200 ppm (1000 ppm to 1200 ppm over a ramped 15 minute period).

.14 Limits and Safeties

.1 The maximum outdoor air damper position is limited based on the outdoor air temperature to prevent excessively low supply air temperature during startup. At -20 °C outdoor air temperature, and below, the maximum outdoor air damper position will be 0 % open and at 10 °C outdoor air temperature the maximum outdoor air damper position will be 100 %.

.2 The mixed air temperature sensor acts as a low limit to ensure temperature does not fall below setpoint (typically 11 °C). In applications where the mixed air sensor is located after the DX cooling coil, the setpoint is reduced (to typically 5 °C) when DX cooling is enabled.

.3 The supply air temperature sensor acts as a high limit for each stage of heating (stage 1 heating disabled above 60 °C and enabled below 50 °C, stage 2 heating disabled above 55 °C and enabled below 45 °C) and a low limit for each stage of cooling (stage 1 disabled below 5 °C and enabled above 13 °C, stage 2 disabled below 8 °C and enabled above 18 °C).

.4 The supply air temperature sensor acts as a software freezestat (triggered below 1 °C for 1 minute and restored above 5 °C after a 5 minute delay).

.5 The supply fan has a delay-off time of 90 seconds.

.6 The DX cooling has a minimum-off time of 5 minutes.

.7 DX cooling is disabled when the outdoor air temperature is below global DX disable setpoint (typically 18 °C) or when fan is off.

.8 Cooling cannot turn on until heating has been off for a minimum of 5 minutes.

.9 During Occupied Mode, and the outdoor air temperature is above -1 °C, heating stage 2 (where applicable) has a delay-on time of 15 minutes, except when the outdoor air temperature is below -3 °C with a +2 °C deadband.

.10 The default room temperature cooling setpoint is 2 °C above the heating setpoint when mechanical cooling is enabled. The standard mechanical cooling room setpoint will be limited to a minimum of 23.5 °C.

.11 When the ventilation lockout switch (usually located at the custodial office) is engaged, the outdoor air dampers close, free cooling is disabled, and the system switches to standby mode of operation.

.12 Minimum outdoor air is set to zero when the global ventilation schedule is off.

.13 Supply Fan disabled if the hydronic heating coil pump status is not running when required.

.14 Discretionary Fire Alarm Shutdown Mode to be enabled on the fire alarm status.

.15 The heating coil pump (for hydronic units where applicable) turns off when the outside air temperature exceeds the heating disable setpoint (60 second delay-off time)

.15 Alarms:

An alarm will be generated upon the following conditions:

.1 Supply Fan status does not match the start/stop signal.

.2 Mixed air temperature too high alarm (triggered above 50 °C and restored below 48 °C) or too low alarm (triggered below 5 °C and restored above 7 °C). Low mixed air temperature alarm set to lower thresholds when Mixed Air Temperature sensor is installed after the DX or cooling coil.

.3 Supply air temperature too high alarm (triggered above 65 °C and restored below 63 °C) or too low alarm (triggered below 5 °C and restored above 7 °C)

.4 Space temperature too high alarm (triggered above 42 °C and restored below 40 °C) for non-cooling systems, (triggered above 38 °C and restored below 36 °C) for cooling systems.

.5 Space temperature too low alarm (triggered below 14 °C and restored above 16 °C).

.6 Weekly fan runtime limit exceeded.

.7 Return air carbon dioxide too high alarm (triggered above 1700 ppm and restored below 1650 ppm) or too low alarm (triggered below 250 ppm and restored above 300 ppm) with a 15 minute delay.

.8 Software freezestat tripped.

.9 Low mixed air temperature alarm (triggered below 5 °C and restored above 7 °C).

.10 Low return air carbon dioxide alarm (triggered below 250 ppm and restored above 275 ppm) or high return air CO2 alarm (triggered above 1200 ppm and restored below 1100 ppm).

.11 High supply air static pressure alarm (triggered 30 % above setpoint and restored below 10 % above setpoint) or low supply air static pressure alarm (triggered 30 % below setpoint and restored above 10% below setpoint).

.12 High supply air temperature alarm (triggered above 40 °C and restored below 38°C) or low supply air temperature alarm (triggered below 8 °C and restored above 10°C).

.13 Low return air temperature alarm (triggered below 14 °C and restored above 15°C) or high return air temperature alarm (triggered above 40 °C and restored below 38 °C).

.14 Freezestat or differential pressure limit switch tripped.

.15 Hydronic heating coil pump status in wrong mode.

.16 Software freezestat tripped.

4.5 EXISTING AIR HANDLING UNIT (AHU-1) – added with ADD 01

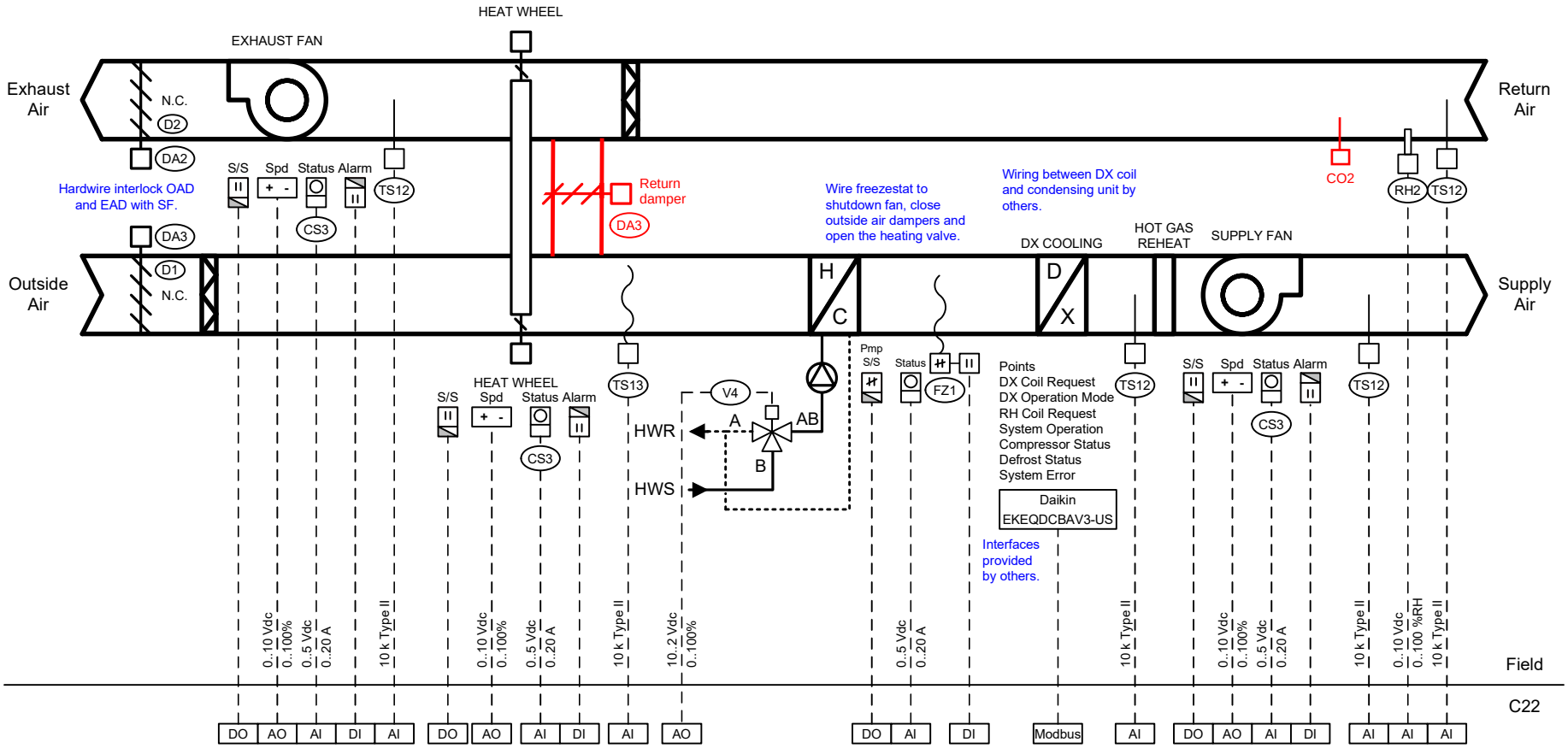
.1 New return air damper to be installed in existing AHU-1 (supplied by AHU manufacturer, installed by mechanical contractor). Integrate new return air damper into the BAS to enable air recirculation.

.2 Reprogram AHU-1 sequence of operation to match AHU-2 as described in item 4.3.

4.6 OTHER SYSTEMS – added with ADD 01

.1 Refer to sample control shop drawings prepared by Energy Controls & Mechanical Services Inc.

END OF SECTION



ENERGY EC CONTROLS & MECHANICAL SERVICES INC.	Job #: Job Name:	Owner: Waterloo Region District School Board	Drawn By: SH Revision Date: June 18, 2025	Title: **Air Handling Unit**

SEQUENCE OF OPERATION

Unoccupied Mode

Mode is active usually between 11:00 p.m. to 7:00 a.m. Monday to Friday and 24 hours Saturday and Sunday. The system will be in Unoccupied Mode when not in Occupied Mode. The supply fan is off, the exhaust fan is off, the heat wheel is off, cooling is disabled, the Global Ventilation Schedule is disabled, the outdoor air dampers are in the 0% outdoor air position. The heating valve modulates to maintain a supply air plenum temperature of 15°C when the outdoor air temperature is below 3°C. The heating valve is closed to the coil when the outdoor air is above 3°C.

Occupied Mode

A time of day schedule starts the unit along with an Optimum Start program usually between 7:00 a.m. and 4:00 p.m. Monday to Friday, when not overridden by a Holiday Schedule. The Global Ventilation Schedule is enabled. The supply fan and exhaust fan runs continuously. The heat wheel runs continuously (unless free cooling is required). Supply fan status is confirmed by a current sensor.

Supply Air Temperature Setpoint

The supply air temperature sensor TS12 modulates the heating valve, heat pump heating and mechanical cooling to maintain the Supply Air Temperature Setpoint that is reset between 16 °C to 20 °C (adjustable) as the outside air temperature falls from 10 °C to -15 °C (adjustable). The Supply Air Temperature Setpoint is limited to a range of 12 °C to 20 °C.

Heating Sequence

Outdoor Air Temperature used to determine Heating Enabled Mode: A set of thresholds that are user adjustable at a Global (board wide) or Local (site specific) level, triggers the heating enable mode based on the outdoor air temperature below the threshold. The threshold is further adjusted by a calendar schedule.
Typical default values are: 16 °C from September to May and 5 °C from June to August.

Call for Heating: Hydronic heating or heat pump heating (when OAT > 5°C) is used until the heating calls (from supply air temperature controller PID or Night Setback thresholds) are satisfied. For hydronic valves, 0% signal (10 Vdc) closes the heating valve. A 100% signal (below 2 Vdc) opens the heating valve.

Heat Wheel: The heat wheel operates continuously during occupied hours. The wheel speed is modulated to maintain exhaust air temperature above 2°C. The heat wheel is disabled when the outside air temperature is between 14°C & 23°C to allow for free cooling.

Cooling Sequence

Outdoor Air temperature used to determine cooling enable mode: A set of thresholds that are user adjustable at a global (board wide) or local (site specific) level, triggers the cooling enable mode based on the outdoor air temperature exceeding the threshold. The threshold is further adjusted by a calendar schedule.
Typical default values are: 18 °C from September to May and 21 °C from June to August.

Call for Cooling: Mechanical cooling will be used until the cooling calls (from supply air temperature controller PID) are satisfied.

Hot Gas Reheat

When DX cooling is enabled and the return air relative humidity is above 50% (adjustable), dehumidification mode is activated. During dehumidification mode, the leaving air temperature setpoint from the DX coil is set at 13°C and the hot gas reheat is cycled to maintain the supply air temperature setpoint.

ENERGY EC CONTROLS & MECHANICAL SERVICES INC.	Job #: Job Name:	Owner: Waterloo Region District School Board	Drawn By: SH Revision Date: June 18, 2025	Title: **Air Handling Unit Sequence of Operation**	

SEQUENCE OF OPERATION (Continued)

Discretionary Fire Alarm Shutdown Mode

The supply fan is off, the outdoor air dampers are in the 0% outdoor air position, heating is disabled and cooling (where applicable) is disabled. This is not intended to replace the hard-wired fan shutdown provided by others when required by Code. Normal HVAC unit functions are auto restored on relay signal from the fire alarm panel reset.

Limits and Safeties

1) The supply air temperature sensor acts as a high limit (60°/55°C)
2) The duct mounted supply air temperature sensor acts as a software freezestat (triggered below 1 °C, restored above 5 °C), 1 minute delay, auto reset after 5 minute delay).
3) The supply fan has a delay-off time of 90 seconds.
4) DX Cooling has a minimum-off time of 5 minutes.
5) DX cooling is disabled when the outdoor air temperature is below global DX disable setpoint (typically 2 °C below Cooling Enable setpoint) or when fan is off
6) Heating is disabled when the outdoor air temperature is above the global heating disable setpoint (typically 18 °C) or when the fan is off.
7) When the ventilation lockout switch (usually located at the custodial office) is engaged, the make up air unit is disabled.
8) Cooling cannot turn on until heating has been off for a minimum of 5 minutes.
9) Discretionary Fire Alarm Shutdown Mode to be enabled on the fire alarm status.
10) The heating coil pump turns off when the outside air temperature exceeds the heating disable setpoint (60 second delay-off time).
11) Heat pump heating is disabled when the outside air temperature is above 5°C (adjustable).

Alarms

An alarm will be generated upon the following conditions:

1) Supply fan status does not match the start/stop signal.
2) Supply air temperature too high (triggered above 65 °C and restored below 63 °C) or too low (triggered below 5 °C and restored above 7 °C)
3) Return air temperature too high triggered above 40 °C and restored below 38 °C) or too low (triggered below 14 °C and restored above 15 °C).
4) Return air humidity too high (triggered above 85%RH and restored below 83%RH) or too low (triggered below 8%RH and restored above 10%RH).
5) Heat wheel exhaust air temperature too high (triggered above 40 °C and restored below 38 °C) or too low (triggered below -1 °C and restored above 1 °C).
6) Heat wheel supply air temperature too high (triggered above 35 °C and restored below 33 °C) or too low (triggered 1 °C and restored below 3 °C)
7) Software freezestat tripped.
8) Hardware freezestat tripped.
9) Hydronic heating coil pump does not match the start/stop signal.
10) Alarm is active from the supply fan, exhaust fan or heat wheel.
11) Weekly fan runtime limit exceeded.

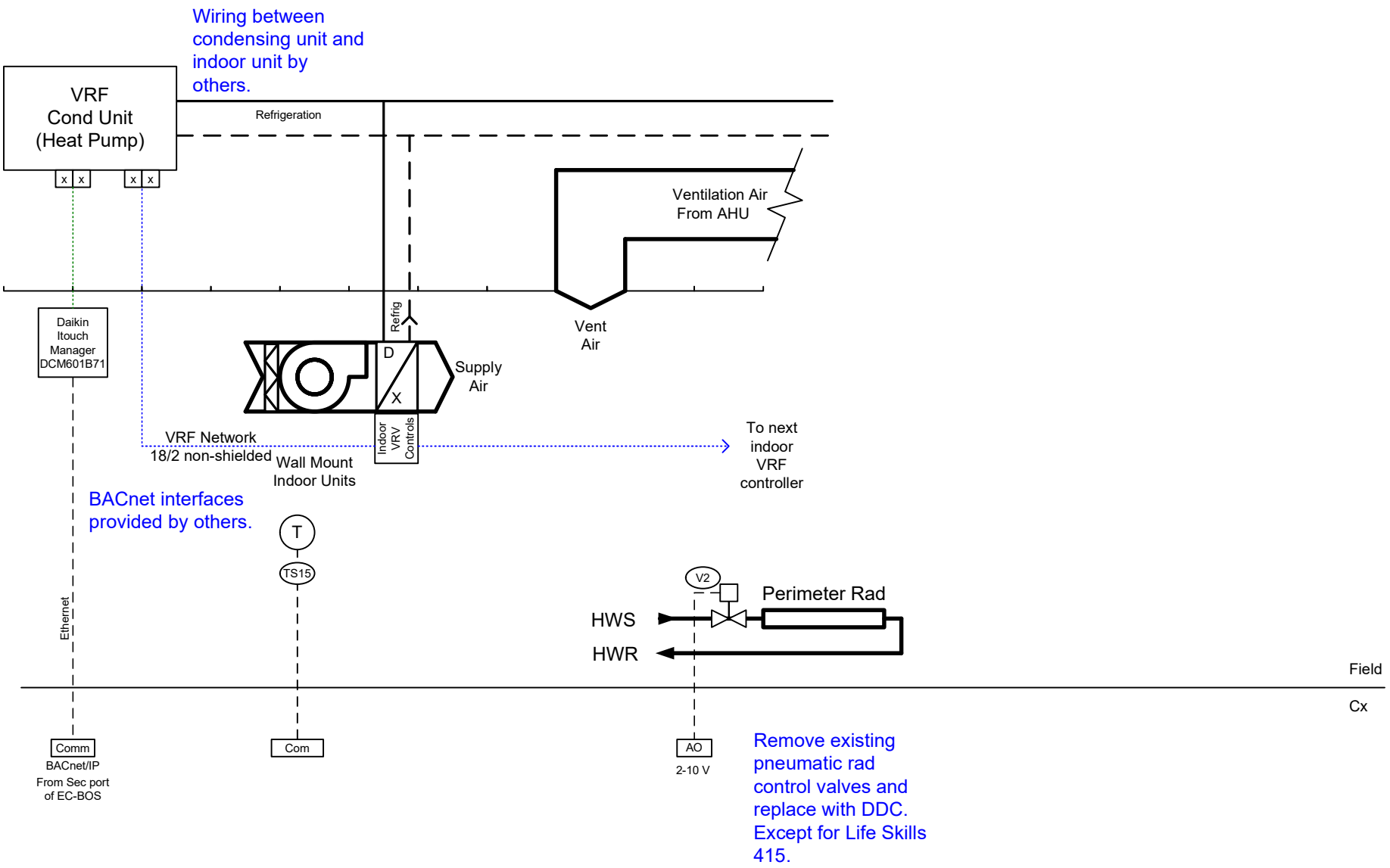
Heat Pump Sequence

.1) The heat pump sequence can only function when air entering the evaporator coil is above 6°C (43°F).
.2) Heat pump is used when heat is required based on discharge air required above 6°C (43°F) and the outdoor air is above -5°C (23°F).

CO2 Control

.1) Minimum outdoor air is provided when enabled by the global minimum outdoor air time schedule. The minimum outdoor air is adjustable from the graphic and is typically a default of 10 % open outdoor damper position.
.2) The return air carbon dioxide sensor acts as a high limit to increase the amount of minimum outdoor air from 0 % to 40 % as the reading increases from 1000 ppm to 1200 ppm (1000 ppm to 1200 ppm over a ramped 15 minute period).

ENERGY EC CONTROLS & MECHANICAL SERVICES INC.	Job #: Job Name:	Owner: Waterloo Region District School Board	Drawn By: SH Revision Date: June 18, 2025	Title: **Air Handling Unit Sequence of Operation**



ENERGY EC CONTROLS & MECHANICAL SERVICES INC.	Job #:	Owner: Waterloo Region District School Board	Drawn By: SH	Title: **VRF System Control Schematic**
	Job Name:		Revision Date: June 18, 2025	

SEQUENCE OF OPERATION

Unoccupied Mode

The system is off. If the pushbutton on the room sensor is pressed, the system will switch to the occupied mode for a period of 2 hours (adjustable). The rads function as first stage unoccupied heating.

Occupied Mode

The built-in return air temperature sensor on the ductless split cycles the heating or cooling to maintain the heating (typically 21.5 °C) or cooling setpoint (typically 24.5 °C). The setpoint is adjustable +/-1°C at the BAS room temperature sensor on the wall. This setpoint is sent to the ductless split. The heating or cooling can only be cycled on if the room temperature sensor is in the corresponding heating or cooling mode. If the system mode is different from the room mode (e.g. system is in heating mode but room requires cooling), the room waits for the system mode to change. Heat pump heating acts as first stage heating when available. If the ductless split is unable to maintain the heating setpoint for 10 minutes or if the ductless split is indicating fault/alarm, the rad heating valve modulates open until the heating call is satisfied.

System Heating/Cooling Decision Process

The heating/cooling mode in the Daikin control system is set at the master zone by the BAS. The system mode is determined by the BAS from the number of rooms that deviate from their respective room heating/cooling setpoints. If the total number of rooms requesting heating outnumber (or are equal to) the total number of rooms requesting cooling, the BAS sets the heating mode at the master zone. If the total number of rooms requesting cooling outnumber the total number of rooms requesting heating, the system is set to cooling mode. Once in the heating or cooling mode, the reference room becomes the room with the greatest call. The system will lock-in the selected mode until all rooms are satisfied or for a maximum of 20 minutes if rooms are in a mismatched mode. If any room is in a mismatched mode for more than 20 minutes, the system will “unlock”, and all 'calling rooms' will run their fans with no heating or cooling for 5 minutes, and then reselect the required mode of operation.

Limits and Safeties

1) The cooling mode is disabled when heating mode is enabled and when the Outside Air Temperature is below the global mechanical cooling disable setpoint (initially disabled below 16 °C and enabled above 18 °C).
2) The heating mode is disabled when cooling mode is enabled and when the Outside Air Temperature is above the global heating disable setpoint (initially disabled above 14 °C and enabled below 12 °C).
3) A minimum off-time of 5 minutes is provided.
4) Heat pump is disabled if the condensate pump fails. Hard-wired into the condensate pump safeties switch.
5) Heat Pump heat mode is disabled when the Outside Air Temperature is below 5 °C.

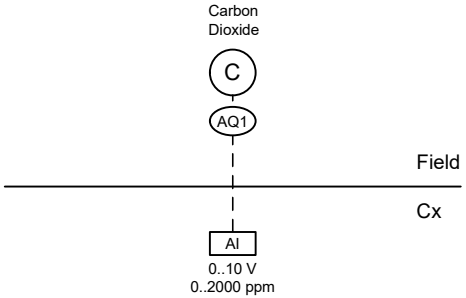
Alarms

An alarm is generated at the BAS if:

1) The room temperature is too cold (triggered below 14 °C and restored above 15 °C) or too hot (triggered above 36 °C and restored below 35 °C).
2) The ductless split fan status does not match the start/stop point.
3) Weekly fan runtime limit exceeded.
4) Air filter alarm is active from the ductless split
5) Alarm is active on the ductless split.

ENERGY EC CONTROLS & MECHANICAL SERVICES INC.	Job #:	Owner: Waterloo Region District School Board	Drawn By: SH	Title: **VRF System Sequence of Operation**	
	Job Name:		Revision Date: June 18, 2025		

CLASSROOM CO2 MONITORING



SEQUENCE OF OPERATION

Carbon dioxide sensor AQ1 monitors the CO2 levels in occupied spaces. CO2 data is trended every 10 minutes during occupied hours and all trend logs are accessible from the BAS graphics.

Alarms

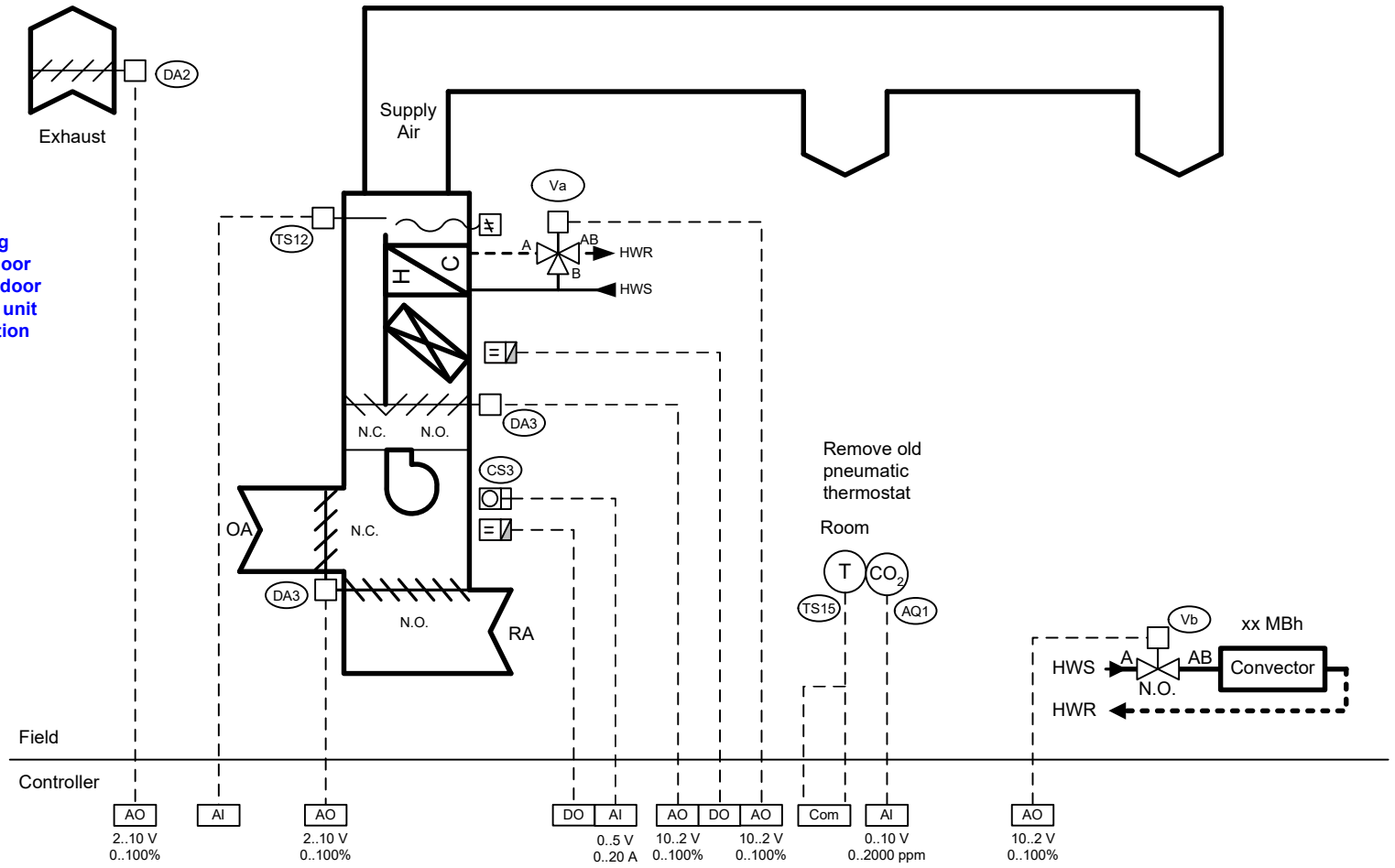
1) CO2 level too high (triggered above 1700 ppm and restored below 1650 ppm) or too low (triggered below 250 ppm and restored above 300 ppm).

ENERGY EC CONTROLS & MECHANICAL SERVICES INC.	Job #:	Owner: Waterloo Region District School Board	Drawn By: SH	Title: **Classroom CO2 Monitoring**	
	Job Name:		Revision Date: June 18, 2025		

Notes:
1) FZ1: Freezestat is factory wired to shut down fan and close outside air damper.

UNIT VENT

Note: Wiring between indoor unit and outdoor condensing unit by refrigeration contractor.



	Job #:	Owner: Waterloo Region District School Board	Drawn By:	Title: **UV- Control Schematic**
	Job Name:		Revision Date: March 26, 2024	

SEQUENCE OF OPERATION

Unoccupied Mode

The fan is off, the heating valve is open, the face & bypass damper is in the bypass position. The DX cooling is off, the mixing dampers are in the 0% outside air position and the exhaust damper is closed. The fan cycles with full heating to maintain the unoccupied heating setpoint (initially 17.5°C). If the pushbutton on the room sensor is pressed, the system will revert to occupied mode for a period of 2 hours.

Occupied Mode

An optimized start routine for heating advances the system start time when morning warm-up is required. The room temperature sensor modulates the mixing dampers in sequence with DX cooling to maintain the cooling setpoint, and modulates the heating valve, face & bypass dampers and perimeter heating valve in sequence to maintain the heating setpoint. The setpoint can be adjusted +/-2°C at the room sensor. Fan status is monitored by a current sensor.

Exhaust Damper Operation

The exhaust dampers will be modulated based on the outdoor air position of the unit vent.

OA Position	EA Position
30% OA	0% EA
100% OA	100% EA

Limits and Safeties

1) If the outside air temperature exceeds the free cooling setpoint based on outdoor temperature and humidity, the mixing dampers return to minimum position.
2) Mixed air damper minimum position control is provided during occupied periods (initially 10% OA).
3) Air quality sensor AQ1 increases the amount of minimum outside air as the space CO_2 reading increases from 1000 ppm to 1200 ppm.
4) The fan must be running before the mixing dampers and DX cooling will operate.
5) The supply air temperature sensor acts as a low limit to ensure temperature does not fall below setpoint (initially 16°C, reset to 13°C on a call for free cooling).
6) A software freezestat on the supply air temperature shuts the fan down and closes the outdoor air damper when the supply air temperature is below 3°C for 30 seconds (resets at 6°C with 5 minute delay before restart).
7) The heating valve opens as the outside air temperature drops from 3°C to -3°C.
8) If the hard-wired freezestat trips, the fan shuts down, outside air damper closes and heating valve opens.
9) DX cooling is disabled when the outside air temperature falls below the global mechanical cooling disable setpoint (initially 14°C).
10) DX cooling has a minimum off time of 5 minutes.
11) DX cooling has a supply air temperature low limit (6/12°C).
12) The face & bypass damper is in the face position when DX cooling is operating.

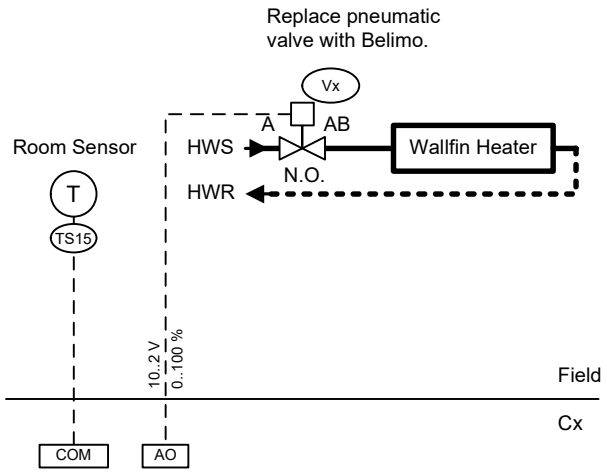
Alarms

An alarm is indicated at the operator's terminal if any of the following occur:

1) Fan status does not match fan start/stop signal.
2) Room temperature too high (38/36°C) or too low (14/15°C).
3) Supply air temperature too high (65/60°C) or too low (5/7°C).
4) Room CO_2 level too high (1700/1600 ppm) or too low (250/300 ppm).
5) Software freezestat tripped.
6) Fan runtime exceeded weekly runtime setpoint.

	Job #:	Owner: Waterloo Region District School Board	Drawn By:	Title: **UV- Control Sequence**	
	Job Name:		Revision Date: March 26, 2024		

PERIMETER RADIATION



SEQUENCE OF OPERATION

Space sensor TS15 modulates the heating valve for heating to maintain room temperature setpoint, which is reduced during unoccupied hours.

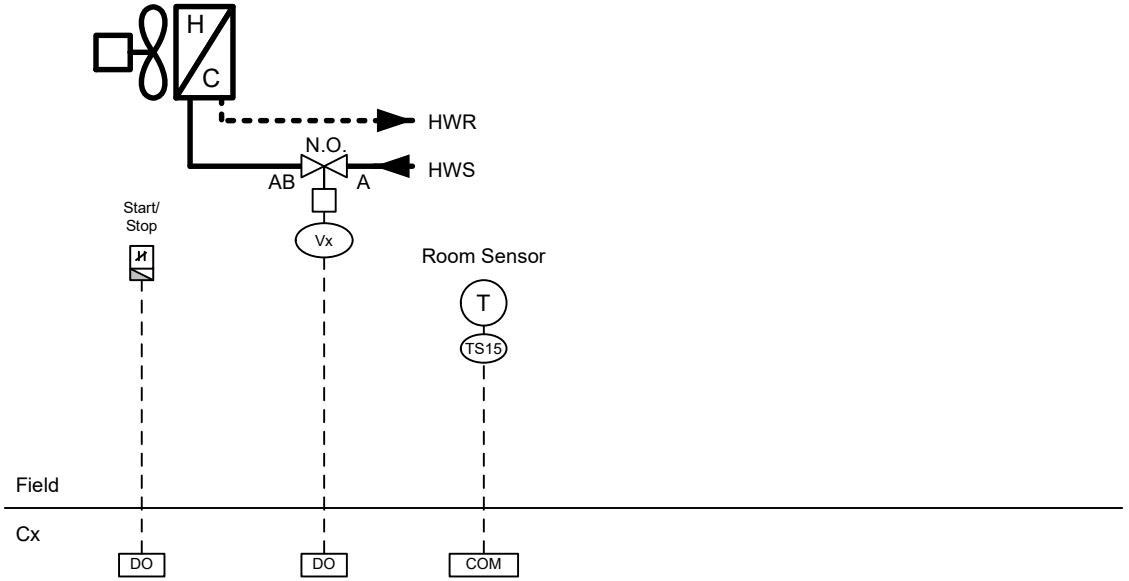
Alarms

An alarm is generated at the BAS when:

1) The space temperature is too low alarm (triggered below 14 °C and restored above 16 °C)
2) The space temperature is too high alarm (triggered above 38 °C and restored below 36 °C)
3) Low temperature alarm to be integrated through security to On-Call Response

ENERGY EC CONTROLS & MECHANICAL SERVICES INC.	Job #:	Owner: Waterloo Region District School Board	Drawn By: SH	Title: **Perimeter Heating**
	Job Name:		Revision Date: June 18, 2025	

UNIT HEATERS



SEQUENCE OF OPERATION

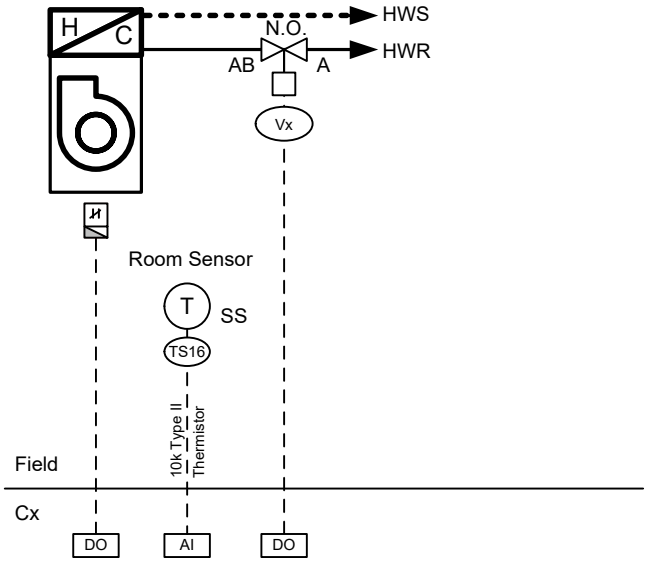
Space sensor TS15 cycles the fan and modulates the heating valve to maintain room temperature setpoint, which is reduced during unoccupied hours.

Alarms

An alarm is generated at the BAS when:

1) The space temperature is too low alarm (triggered below 14 °C and restored above 16 °C)
2) The space temperature is too high alarm (triggered above 38 °C and restored below 36 °C)
3) Low temperature alarm to be integrated through security to On-Call Response

CABINET HEATERS



SEQUENCE OF OPERATION

Space sensor TS16 modulates the heating valve for heating to maintain room temperature setpoint.

Limits and Safeties

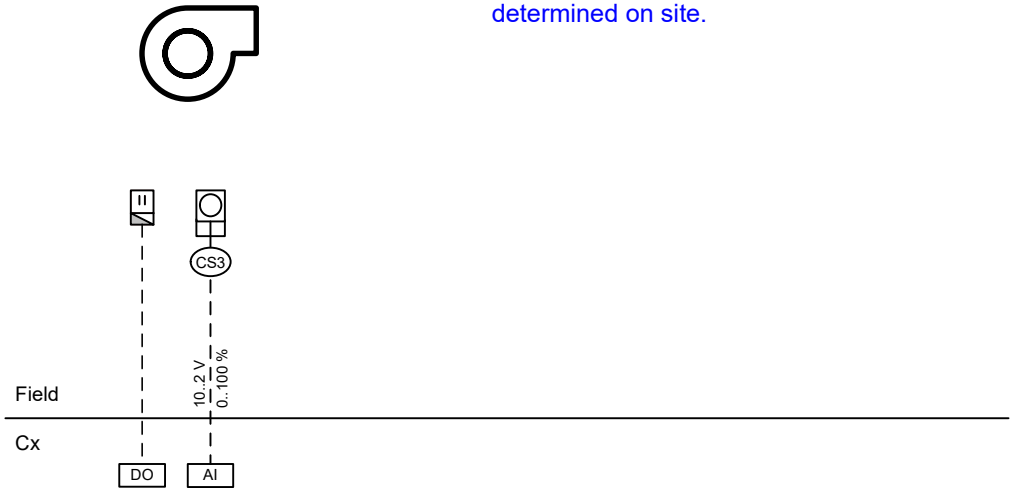
1) Hydronic heating control valves are to fail open to heat.

Alarms

An alarm is generated at the BAS when:

1) The space temperature is too low alarm (triggered below 14 °C and restored above 16 °C)
2) The space temperature is too high alarm (triggered above 38 °C and restored below 36 °C)
3) Low temperature alarm to be integrated through security to On-Call Response

GENERAL EXHAUST FANS



Existing exhaust fan numbering to be determined on site.

SEQUENCE OF OPERATION

Unoccupied Mode:

Mode is typically active between 4:00 pm to 7:00 am. Monday to Friday and 24 hours Saturday and Sunday.

Occupied Mode:

The exhaust fan runs continuously during occupied hours as determined by a time of day schedule (typically 7:00 am to 4:00 pm Monday to Friday) when not overridden by the Holiday Schedule or unoccupied mode. Exhaust fan status is determined by a current sensor.

Limits and Safeties

1) The exhaust fans have a delay-off time of 90 seconds.
2) Start times are staggered across all exhaust fan groups.

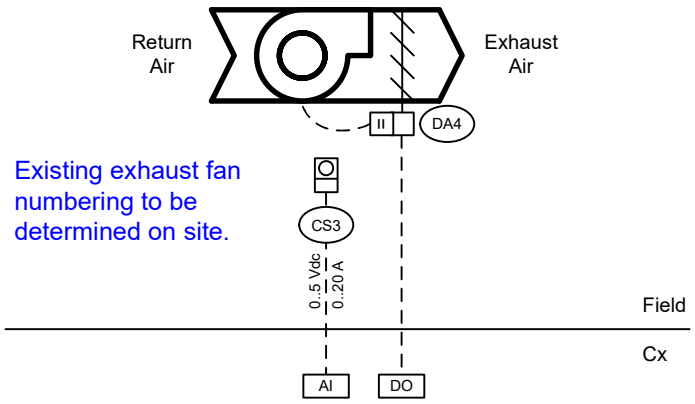
Alarms

An alarm will be generated upon the following conditions:

1) The fan status does not match the start/stop signal.
2) Weekly fan runtime limit exceeded

ENERGY EC CONTROLS & MECHANICAL SERVICES INC.	Job #:	Owner: Waterloo Region District School Board	Drawn By: SH	Title: **Miscellaneous Controls**
	Job Name:		Revision Date: June 18, 2025	

EXHAUST FANS WITH DAMPER



SEQUENCE OF OPERATION

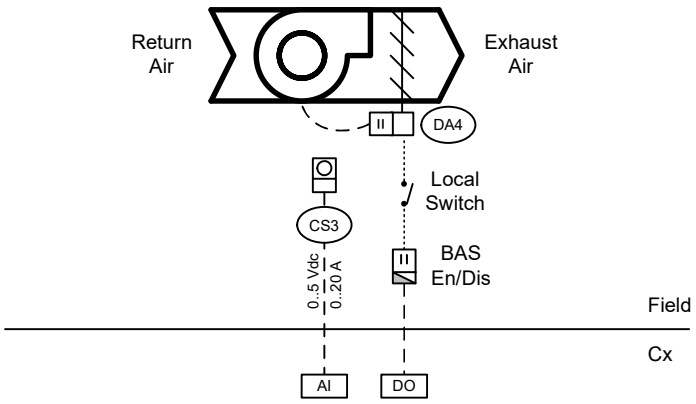
Unoccupied Mode:
Mode is typically active between 4:00 pm to 7:00 am. Monday to Friday and 24 hours Saturday and Sunday.

Occupied Mode:
The exhaust fan runs continuously during occupied hours as determined by a time of day schedule (typically 7:00 am to 4:00 pm Monday to Friday) when not overridden by the Holiday Schedule or unoccupied mode. When commanded on, the fan will start once the damper is proved open by the damper end switch. Fan status is provided by a current sensor.

Limits and Safeties
1) Exhaust fans have a delay off time of 90 seconds
2) Start times are staggered across exhaust fan groups.
3) Exhaust fans will shutdown on a fire alarm condition. Normal operation resumes when the fire alarm is cleared.

Alarms
An alarm will be generated upon the following conditions:
1) Fan status does not match the start/stop signal
2) Weekly fan runtime limit exceeded.

EXHAUST FANS WITH DAMPER AND LOCAL SWITCH



SEQUENCE OF OPERATION

Unoccupied Mode:
Mode is typically active between 4:00 pm to 7:00 am. Monday to Friday and 24 hours Saturday and Sunday.

Occupied Mode:
The BAS provides AUTO/ENABLE with a manual operator's Start/Stop switch control of the exhaust fan according to a time schedule. When commanded on, the fan will start once the damper is proved open by the damper end switch. Fan Status is monitored by a current sensor.

Limits and Safeties
1) The BAS system cycles the fan every 6 hours for 30 minutes (auto-flush). Typically auto-flushes at 6:00 a.m. noon, 6:00 p.m. and midnight.

Alarms
An alarm will be generated upon the following conditions:
1) Fan status does not match the start/stop signal.
2) Weekly fan runtime limit exceeded.

ENERGY EC CONTROLS & MECHANICAL SERVICES INC.	Job #:	Owner: Waterloo Region District School Board	Drawn By: SH	Title: **Miscellaneous Controls**
	Job Name:		Revision Date: June 18, 2025	

AIR HANDLING UNIT SCHEDULE

Acceptable Manufacturers: Daikin, Engineered Air, Valent

CAPACITY INDICATED ON SCHEDULE REFER TO SPECIFICATION FOR CONSTRUCTION STANDARDS, ACCESSORIES AND ADDITIONAL INFORMATION.

Item	Type	Supply Air Fan Array Data: Capacity cfm	ESP in wc	Drive	Size hp	Electrical Data: Voltage	MCA	MOCP	Return/Exhaust Air Fan Array Data: Capacity cfm	ESP in wc	Drive	Size hp	Electrical Data: Voltage	MCA	MOCP
AHU-2	INDOOR AIR HANDLING UNIT - 2&3RD FLOOR	6600	1.5	ECM (x2)	6.7	208/3/60	37.4	50	6000	1.0	ECM (x2)	3.8	208/3/60	20	25

Item	VRF ASHP COIL (COOLING): Medium	Type	Sens.Cap. BTU/HR	Total Cap. BTU/HR	Ent AIR db/wb °F	LVG AIR db/wb °F	PD. Air in.	Face Vel. fpm	VRF ASHP COIL (HEATING): Total Cap. BTU/HR	Ent AIR db °F	LVG AIR db °F	HOT GAS REHEAT COIL: Total Cap. BTU/HR	Ent AIR db °F	LVG AIR db °F
AHU-2	DX	R410a	138,300	214,700	79.3/66.9	59.9/56.6	0.23	457.0	147,760	-6.0	65.8	88,190	60.0	72.3

Item	HOT WATER COIL: Medium	Capacity BTU/HR	Ent Air °F db	LVG Air °F db	Face Vel. fpm	PD. Air in.	Ent Fluid °F	LVG Fluid °F	Flow Rate gpm	PD. Fluid ft.hd
AHU-2	WATER	618,664	-5	80.7	377	0.13	170.0	149.8	66.0	3.3

Item	ENERGY RECOVERY: Type	Model	Heating Capacity (BTU/HR) @ -5° db/-6° wb	Effectiveness Heating (%)	Cooling Capacity (BTU/HR) @ 88° db/74° wb	Effectiveness Cooling (%)	Net Airflow CFM (SUPPLY)	Net Airflow CFM (EXHAUST)	Manufacturer	Model	Remarks
AHU-2	WHEEL	SXA-1600-MW	446,634	72.76	181,151	71.39	6600	6000	DAIKIN	CAH019GHCM	INTERLOCK CU-5A/B

PLUMBING FIXTURE SCHEDULE

Item	Type	Connection Sizes: HW	CW	TW	Drain	Vent	Fixture: Acceptable Manufacturer	Fixture Description
U-1	URINAL FLUSH VALVE, HANDS FREE		3/4		2	1 1/2	AMERICAN STANDARD WASHBROOK 6590.001 KOHLER ZURN	VITREOUS CHINA, WASHOUT TYPE, INTEGRAL FLUSHING RIM, EXTENDED SHIELDS, INTEGRAL TRAP, BACK OUTLET, WALL-MOUNTED, TOP SUPPLY SPUD, MIN 2" TRAP WAY, MAXIMUM 0.5 litres (0.125 gal) PER FLUSH. C/W FLOOR MOUNTED CARRIER
FFD-1	FUNNEL FLOOR DRAIN				NOTED	1 1/2	ZURN ZN-415-BF MIFAB F1100-C-EG CONTOUR C2000-R5HNB WATTS FD-100-C-EG-1	COMBINATION FUNNEL FLOOR DRAIN CAST IRON BODY WITH INTEGRAL SEEPAGE PAN, CLAMPING COLLAR, NICKEL-BRONZE ADJUSTABLE HEAD STRAINER WITH INTEGRAL FUNNEL. C/W TRAP PRIMER.

Item	Trim: Acceptable Manufacturer	Trim Description	Accessories: Acceptable Manufacturer	Accessory Description
U-1	DELTA 81T231BTA-05 KOHLER SLOAN	POLISHED CHROME PLATED VANDAL RESISTANT METAL COVER WITH BATTERY OPERATED WALLMOUNTED SENSOR, RIGHT OR LEFT-HAND SUPPLY INSTALLATION, AUTOMATIC OPERATION HARDWIRE POWERED SENSOR. INFRARED SENSOR TO HAVE A RANGE ADJUSTMENT OF 200mm - 600mm (8"-24") AND ELECTRONIC MANUAL OVERRIDE BUTTON. WATER CONSERVING FIXED, NON-ADJUSTABLE FLUSH VOLUME, FACTORY SET TO 0.5 LITRE (0.125 GAL.). C/W 24 HOUR AUTO FLUSH SET TO ON. STANDARD AA ALKALINE BATTERIES.	WATTS ZURN	PROVIDE FLOOR MOUNTED CARRIER
FFD-1				

PUMP SCHEDULE

Acceptable Manufacturers: Bell & Gossett, Armstrong, Grunfos

CAPACITY INDICATED ON SCHEDULE REFER TO SPECIFICATION FOR CONSTRUCTION STANDARDS, ACCESSORIES AND ADDITIONAL INFORMATION.

Item	Type	Capacity USgpm	Head ft	Size	Electrical Voltage	Manufacturer & Model	Remarks
P-10	AHU HEATING COIL PUMP	70	40	2 HP	208/3/60	BELL & GOSSETT ECOCIRC XL 95-160	C/W ECM MOTOR

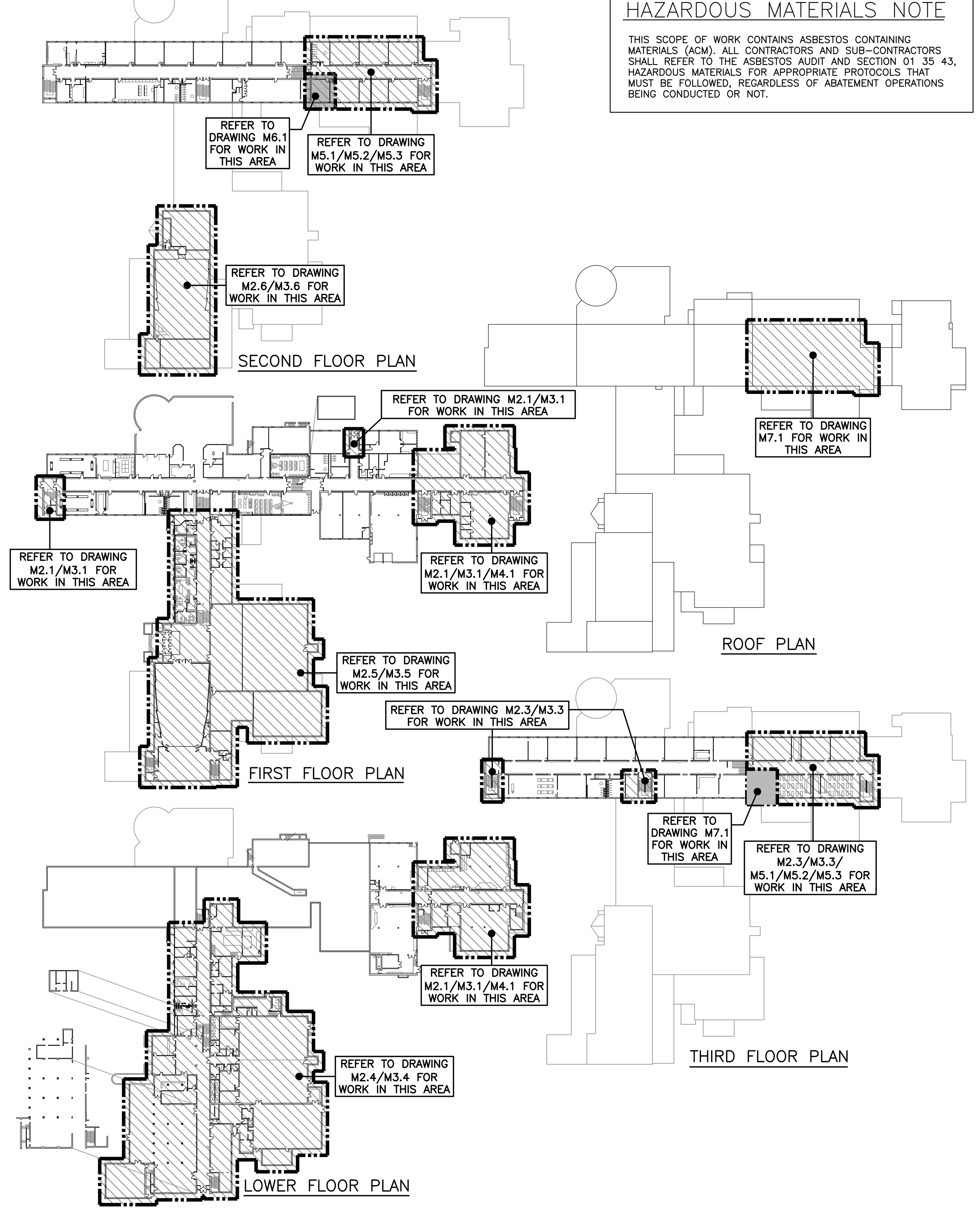
CONDENSATE PUMP SCHEDULE

Acceptable Manufacturers: Aspen, Little Giant, Sauermann

Item	Type	Capacity USgph	Head ft	Size	Electrical Voltage	Manufacturer & Model	Remarks
CP-1	CONDENSATE PUMP	6.0	10	0.2A	208/1/60	ASPEN MAXI ORANGE (SUPPLIED BY DS MANUFACTURER)	INSTALLED IN MANUFACTURER SUPPLIED SIDE SLEEVE. POWERED THROUGH DS UNIT.

HAZARDOUS MATERIALS NOTE

THIS SCOPE OF WORK CONTAINS ASBESTOS CONTAINING MATERIALS (ACM). ALL CONTRACTORS AND SUB-CONTRACTORS SHALL REFER TO THE ASBESTOS AUDIT AND SECTION 01 35 43, HAZARDOUS MATERIALS FOR APPROPRIATE PROTOCOLS THAT MUST BE FOLLOWED, REGARDLESS OF ABATEMENT OPERATIONS BEING CONDUCTED OR NOT.



KEY PLAN

VRF INDOOR SCHEDULE

Acceptable Manufacturers: Daikin, Mitsubishi, LG

CAPACITY INDICATED ON SCHEDULE REFER TO SPECIFICATION FOR CONSTRUCTION STANDARDS, ACCESSORIES AND ADDITIONAL INFORMATION.

Item	Type	Capacity: tons	cfm	Cooling Capacity MBH	Heating Capacity MBH	Electrical: Voltage	MCA	MOCP	Manufacturer & Model	Remarks
DS-15	WALL MOUNTED AC UNIT	2.0	635	24	26.5	208/1/60	0.6	15	DAIKIN FXAQ24PVJU	CONNECT TO CU-4
DS-16	WALL MOUNTED AC UNIT	1.0	290	12	13.5	208/1/60	0.4	15	DAIKIN FXAQ12PVJU	CONNECT TO CU-4
DS-17	WALL MOUNTED AC UNIT	2.0	635	24	26.5	208/1/60	0.6	15	DAIKIN FXAQ24PVJU	CONNECT TO CU-4
DS-18	WALL MOUNTED AC UNIT	2.0	635	24	26.5	208/1/60	0.6	15	DAIKIN FXAQ24PVJU	CONNECT TO CU-4
DS-19	WALL MOUNTED AC UNIT	2.0	635	24	26.5	208/1/60	0.6	15	DAIKIN FXAQ24PVJU	CONNECT TO CU-4
DS-20	WALL MOUNTED AC UNIT	2.0	635	24	26.5	208/1/60	0.6	15	DAIKIN FXAQ24PVJU	CONNECT TO CU-4

NOTE: ALL WALL MOUNTED DUCTLESS SPLIT UNITS SHALL BE PROVIDED WITH SIDE SLEEVE ACCESSORY TO CONCEAL POWER/CONTROL WIRING AND CONDENSATE PUMP.

VRF BRANCH SELECTOR BOX SCHEDULE

Acceptable Manufacturers: Daikin, Mitsubishi, LG

CAPACITY INDICATED ON SCHEDULE REFER TO SPECIFICATION FOR CONSTRUCTION STANDARDS, ACCESSORIES AND ADDITIONAL INFORMATION.

Item	Type	Max. Port Capacity MBH	Electrical: Voltage	MCA	MOCP	Manufacturer & Model	Remarks
BSB-5A	4-PORT	144	208/1/60	0.4	15	DAIKIN BSF4Q54TAVJ	LOW PROFILE MODEL, MAX 250mm HEIGHT. CONNECT TO CU-5A
BSB-5B	4-PORT	144	208/1/60	0.4	15	DAIKIN BSF4Q54TAVJ	LOW PROFILE MODEL, MAX 250mm HEIGHT. CONNECT TO CU-5B

VRF HEAT PUMP UNIT SCHEDULE

Acceptable Manufacturers: Daikin, Mitsubishi, LG

CAPACITY INDICATED ON SCHEDULE REFER TO SPECIFICATION FOR CONSTRUCTION STANDARDS, ACCESSORIES AND ADDITIONAL INFORMATION.

Item	Type	Nom. Tons	Cooling Capacity: Corrected* MBH @95°F (db)	Rated EER/IEER (Ducted)	Heating Capacity: Ambient Temp. °F (db)	Corrected* MBH @Ambient	COP @47°F /17°F	Refrigerant: Type	Factory Charge lbs	Connected Capacity Ratio %	Electrical: Voltage	MCA	MOP	Manufacturer & Model	Remarks
CU-4	VRF HEAT PUMP UNIT	10	118.6	10.3/ 15.6	47.0 -4.0 -13.0	139.2 73.9 66.7	3.5/ 2.3	R-410A	25.79	100.0	575/3/60	18.2	25	DAIKIN REYQ120XBYCA	C/W SNOW/WIND HOODS BY SAME MANUFACTURER, BIG FOOT STAND AND VIBRATION ISOLATION.
CU-5A	VRF HEAT PUMP UNIT	10	118.6	10.3/ 15.6	47.0 -4.0 -13.0	139.2 73.9 66.7	3.5/ 2.3	R-410A	25.79	100.0	575/3/60	18.2	25	DAIKIN REYQ120XBYCA	C/W SNOW/WIND HOODS BY SAME MANUFACTURER, BIG FOOT STAND AND VIBRATION ISOLATION.
CU-5B	VRF HEAT PUMP UNIT	10	118.6	10.3/ 15.6	47.0 -4.0 -13.0	139.2 73.9 66.7	3.5/ 2.3	R-410A	25.79	100.0	575/3/60	18.2	25	DAIKIN REYQ120XBYCA	C/W SNOW/WIND HOODS BY SAME MANUFACTURER, BIG FOOT STAND AND VIBRATION ISOLATION.

GENERAL VRF SYSTEM OUTDOOR UNIT NOTES:
1. EQUIPMENT EFFICIENCY INDICATED IN HEATING IS RATED COP AT TWO DIFFERENT OUTDOOR AIR TEMPERATURES FOR EQUIPMENT CONNECTED TO DUCTLESS INDOOR FAN COIL UNITS AND DUCTED INDOOR AIR HANDLING UNIT.
2. NOMINAL RATED COOLING AND HEATING CAPACITIES ARE RATED CAPACITIES FOR OUTDOOR EQUIPMENT RATED IN ACCORDANCE WITH AHRI 1230.
3. CORRECTED COOLING AND HEATING CAPACITIES ARE MINIMUM PERMITTED CAPACITIES AS CORRECTED FOR SPECIFIC SYSTEM GEOMETRY.

FAN SCHEDULE

CAPACITY INDICATED ON SCHEDULE REFER TO SPECIFICATION FOR CONSTRUCTION STANDARDS, ACCESSORIES AND ADDITIONAL INFORMATION.

Item	Type	Capacity cfm	ESP in wc	Fan Speed rpm	Motor: hp	Voltage	Acceptable Manufacturer	Description
EF-20	ROOF EXHAUST FAN (W/Rs)	800	1.0	1486	1/3	120/1/60	GREENHECK GB100	SPUN ALUMINUM MOTOR COVER & FAN SHROUD, DOWN DISCHARGE, W/BELT DRIVE CENTRIFUGAL BACKWARD INCLINED FAN, GALV BIRD SCREEN, 24" HIGH INSULATED ROOF CURB, & BACKDRAFT DAMPER

GENERAL FAN NOTES:
1. ACCEPTABLE MANUFACTURERS: GREENHECK, PENN-BARRY, COOK, CARNES, ACME, TWIN CITY, JENCO, BUFFALO. (CEILING FANS: BROAN, GREENHECK, ZONEX)
2. PROVIDE 24" TALL PREFABRICATED, INSULATED ROOF CURB FOR ALL ROOF MOUNTED FANS.

GRILLE SCHEDULE

CAPACITY INDICATED ON SCHEDULE REFER TO SPECIFICATION FOR CONSTRUCTION STANDARDS, ACCESSORIES AND ADDITIONAL INFORMATION.

Item	Type	Equalizing Grid	Volume Damper	Acceptable Manufacturer	Description
D1	SQUARE CEILING DIFFUSER	YES	NONE	EH PRICE SCDA	MULTICONE, FULLY ADJUSTABLE, 24x24, STEEL CEILING DIFFUSER W/ROUND NECK. SUITABLE FOR LAY-IN T-BAR CEILING, OR DRYWALL CEILING WHEN C/W FRAME.
E1	EXHAUST GRILLE (DUCTED)	NO	YES	EH PRICE 80-FA	1/2x1/2x1/2 ALUMINUM EGGCRATE CORE, C/W 1 1/4" FLAT BORDER & SCREWED FASTENING FOR SURFACE MOUNTING. PROVIDE FIRE FLAP.

GENERAL DIFFUSER/GRILLE NOTES:
1. ACCEPTABLE MANUFACTURERS: EH PRICE, NAILOR, TITUS, KRUEGER, CARNES, METALAIRE, TUTTLE & BAILEY
2. GRILLE COLOURS ARE SELECTED BY ARCHITECT FROM STANDARD COLOUR CHART, UNLESS OTHERWISE NOTED.
3. PAINT INTERIOR OF DUCTWORK BEHIND GRILLE MATT BLACK (WHERE VISIBLE THRU GRILLE).

LOUVERED PENTHOUSE SCHEDULE

CAPACITY INDICATED ON SCHEDULE REFER TO SPECIFICATION FOR CONSTRUCTION STANDARDS, ACCESSORIES AND ADDITIONAL INFORMATION.

No.	Type	CFM	SP	Throat (in.)	Height (in.)	Manufacturer & Model	Remarks
1	EXHAUST	6000	0.10	72x18	20	VENTEX PH2425B	18" HIGH ROOF CURB

MECHANICAL LEGEND

Item	Description	Item	Description
- - - - - -	ITEM TO BE REMOVED		BUTTERFLY VALVE
	CUT EXISTING & CONNECT NEW PIPING	NC / COMM / NO	3-WAY MIXING VALVE
	FLOW DIRECTION	NO / COMM / NC	3-WAY DIVERTING VALVE
- -SAN-EX- -	EXISTING SAN ABOVE FLOOR	M	MOTORIZED VALVE ACTUATOR
- -SAN-EX- -	EXISTING SAN BELOW FLOOR		CONTROL VALVE ACTUATOR
— —SAN— —	SANITARY ABOVE FLOOR	S	SOLENOID VALVE
— —SAN— —	SANITARY BELOW FLOOR		VALVE ON RISER
STM-EX	EXISTING STM ABOVE FLOOR	BV	BALANCING VALVE
STM-EX	EXISTING STM BELOW FLOOR		INLINE PUMP
-STM- — · —	STORM ABOVE FLOOR	TCV	2-WAY TEMPERATURE CONTROL VALVE
-STM- — · —	STORM BELOW FLOOR	TCV	3-WAY TEMPERATURE CONTROL VALVE
—CD—	CONDENSATE DRAIN	CO	FLOOR CLEANOUT
— — -V- — —	VENT	CO	LINE CLEANOUT
—RL—	REFRIGERANT LIQUID	T	THERMOMETER
—RS—	REFRIGERANT SUCTION	FS	FLOW SWITCH
FD	FLOOR DRAIN	G T	THERMOSTAT (WITH GUARD WHERE INDICATED)
P	TRAP PRIMER		TURNING VANES
G	TRAP GUARD		SUPPLY AIR DUCT
	TEE CONNECTION		RETURN/EXHAUST AIR DUCT
	PIPE DOWN		ACOUSTIC DUCT LINING
	PIPE UP		THERMAL INSULATION
	FLEXIBLE CONNECTION	BD	BALANCING DAMPER
	REDUCER/INCREASER	M	MOTORIZED DAMPER
	CHECK VALVE	FD	FIRE DAMPER
	DOUBLE CHECK BACKFLOW PREVENTOR	FSD	FIRE/SMOKE DAMPER
	REDUCED PRESSURE BACKFLOW PREVENTOR	FF	FIRE FLAP
	UNION		RECTANGULAR DUCTWORK
	STRAINER		RIGID ROUND DUCT
	SCREWED OR WELDED PIPE CAP	Type Size Capacity	DIFFUSER/GRILLE SIZE (imp), TYPE & CAPACITY (cfm)
NO	NORMALLY OPEN	RIC	RETURN IN CABINET
NC	NORMALLY CLOSED	AFF	ABOVE FINISHED FLOOR
	BALL VALVE	AFR	ABOVE FINISHED ROOF
	GATE VALVE	EX	EXISTING DUCT (SIZE AS INDICATED)
	GLOBE VALVE		TRANSFER DUCT (SIZE AS INDICATED)

GENERAL NOTES

A. ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE PREPARED SPECIFICATION.

B. THIS CONTRACTOR SHALL TRACK REVISIONS ON SITE AND SUBMIT AS-BUILTS TO CONSULTANT TO DIGITIZE. REFER TO SPECIFICATION 20 02 51.

C. SANITARY VENT PIPING IS NOT SHOWN. PROVIDE ALL NECESSARY VENT PIPING FROM ALL FIXTURES FOR A COMPLETE SYSTEM TO ALL LOCAL PLUMBING CODE & LOCAL AUTHORITY REQUIREMENTS, CONNECTED TO EXISTING VENTS OR NEW VENTS AS REQUIRED. CO-ORDINATE VENT LOCATION(S) WITH GENERAL CONTRACTOR. MAINTAIN MIN 14'-0" FROM ANY AIR INLET. INSTALL VENT PIPING HIGH IN JOIST SPACE.

D. WHERE DUCTWORK PENETRATES CORRIDOR WALL, CENTER DUCT(S) BETWEEN OWSJ.

E. CO-ORDINATE WITH THE GENERAL CONTRACTOR ANY OWSJ BRIDGING/CROSS BRACING RELOCATION OR REMOVAL/REPLACEMENT REQUIRED FOR INSTALLATION OF DUCTWORK.

F. UPON COMPLETION OF THE PROJECT OR UPON COMPLETION OF EACH INDIVIDUAL PHASE OF THE PROJECT THE CONTRACTORS SHALL PROVIDE THE FOLLOWING CERTIFICATES BEFORE CONFORMANCE LETTERS ARE ISSUED BY THE CONSULTANT:
- TSSA CERTIFICATE OF AUTHORIZATION FOR SPLIT AIR CONDITIONING SYSTEMS (EXCEEDING 5 TONS)
ALL CERTIFICATES ARE TO BE SUBMITTED TOGETHER IN A SINGLE PACKAGE.

No.	REVISIONS	DATE
1	RE-ISSUED FOR ADDENDUM 01	2026-03-16

CHRONOLOGY	DATE
ISSUED FOR TENDER/PERMIT	2026.03.02

DEI Consulting Engineers
MECHANICAL | ELECTRICAL | AQUATIC

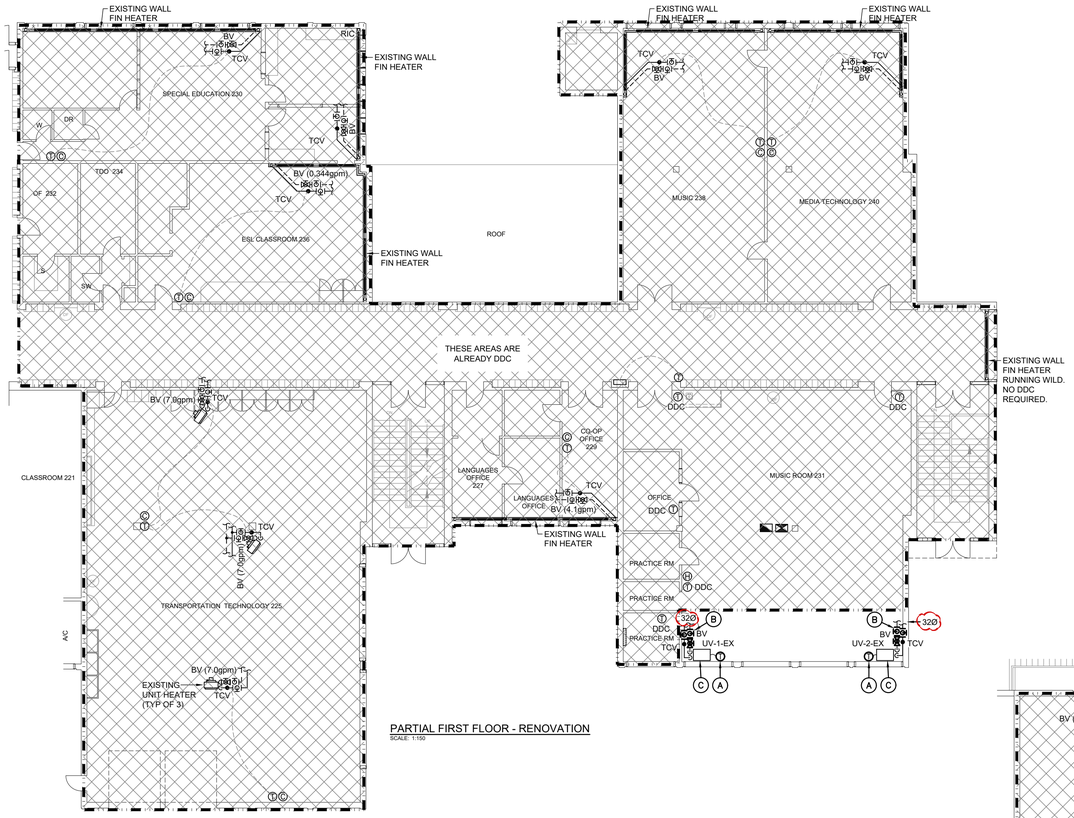
aba architects inc.

CLIENT
WATERLOO REGION DISTRICT SCHOOL BOARD

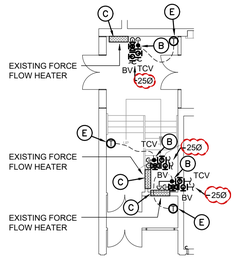
PROJECT NAME
WATERLOO COLLEGIATE INSTITUTE HVAC AND EXTERIOR UPGRADES PHASE 2
300 HAZEL ST., WATERLOO, ON, N2L 3P2

DRAWING TITLE
GENERAL NOTES, LEGEND & SCHEDULES

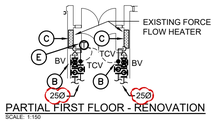
SCALE: AS NOTED
SHEET SIZE: 24x36
PROJECT NUMBER: 2025-153
DRAWING NUMBER: M1.1



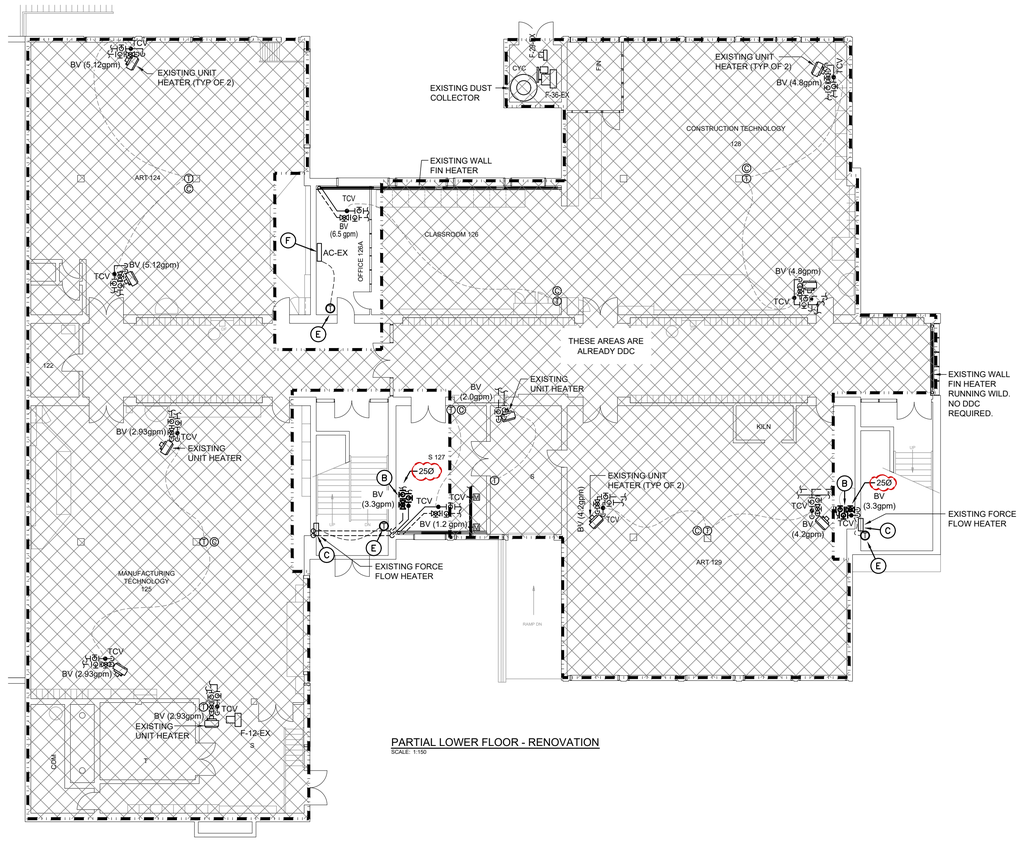
PARTIAL FIRST FLOOR - RENOVATION
SCALE: 1:100



PARTIAL FIRST FLOOR - RENOVATION
SCALE: 1:100



PARTIAL FIRST FLOOR - RENOVATION
SCALE: 1:100



PARTIAL LOWER FLOOR - RENOVATION
SCALE: 1:100

GENERAL RENOVATION NOTES

- CONTRACTOR TO CARRY IN THEIR PRICING TO DRAIN SYSTEM OR FREEZE PIPING TO COMPLETE WORK

SPECIFIC RENOVATION NOTES

A. PROVIDE NEW DDC THERMOSTAT/CO2 SENSOR.

B. PROVIDE NEW TCV, ISOLATION & BALANCING VALVES IN EXISTING PIPING. REFER TO DETAIL.

C. PROVIDE NEW DDC CONTROLS FOR EXISTING HEATER. REFER TO DETAIL.

D. PROVIDE NEW DDC EXHAUST FAN CONTROL.

E. PROVIDE DDC THERMOSTAT.

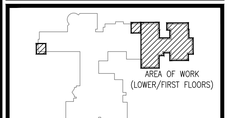
F. EXISTING AIR CONDITIONING UNIT AND ASSOCIATED OUTDOOR CONDENSING UNIT SHALL BE FULLY RE-COMMISSIONED. PROVIDE NEW DDC CONTROLS AND VERIFY OPERATION.

REBALANCE SYSTEM TO EXISTING DESIGN FLOW RATES

The contractor shall verify all dimensions and report all errors and discrepancies to the Consultant before commencement of the work.
The drawings show general arrangement of services. Follow as closely as actual building construction will permit. Obtain approval for relocation of service from Consultant before commencement of the work.
The drawings do not indicate all offsets fitting and accessories which may be required. Provide the same to meet the required conditions.
Drawings and specifications, etc., prepared and issued by the Consultant are the property of the Consultant and must be returned at the completion of the project. These documents are not to be duplicated or copied without the consent of the Consultant.
Do not scale this drawing.

PROJECT NORTH

No.	REVISIONS	DATE
1	RE-ISSUED FOR ADDENDUM 01	2026-03-16



KEY PLAN

ISSUED FOR TENDER/PERMIT	2026.03.02
CHRONOLOGY	DATE

DEI Consulting Engineers
MECHANICAL | ELECTRICAL | AQUATIC
55 Northland Road, Waterloo, ON, N2V 1Y8
Phone: 519-749-3555
Website: deiassociates.ca
Project Number: 25493

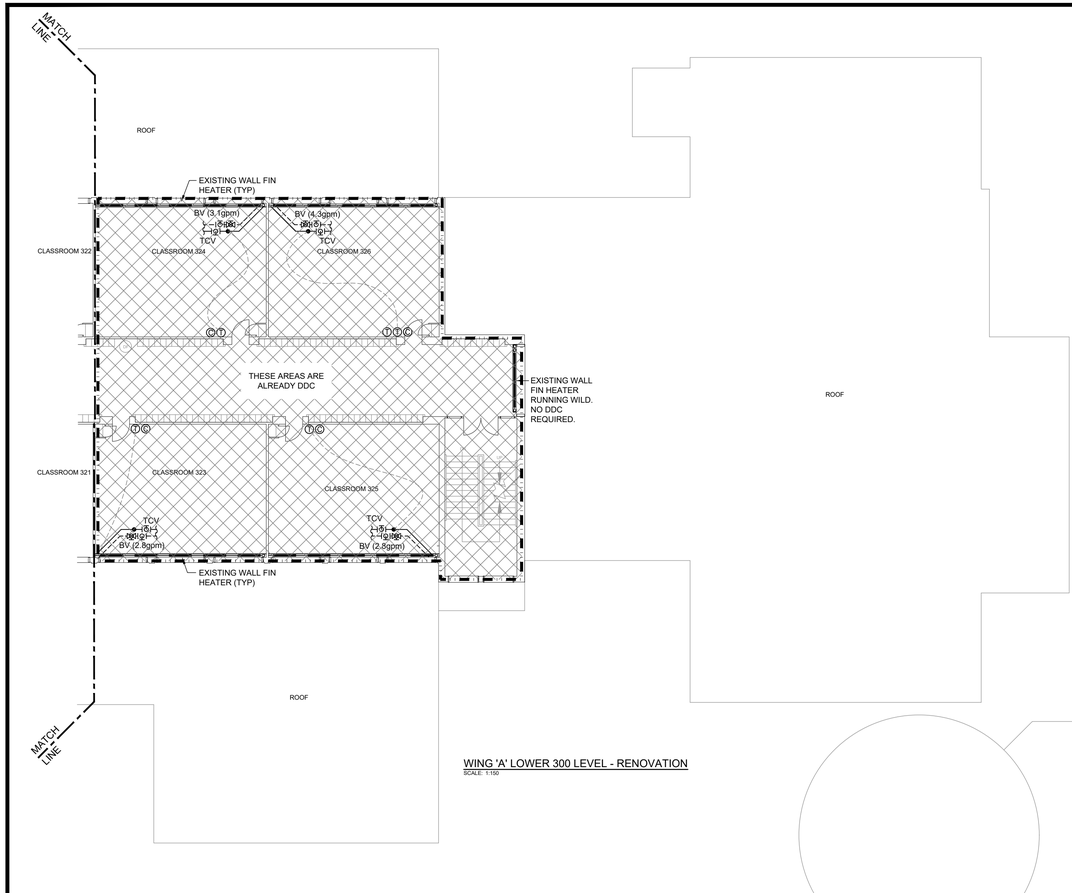
aba architects inc.
102 Randall Drive, Unit 6, Waterloo ON, N2V 1C5 www.abainc.ca

CLIENT
WATERLOO REGION DISTRICT SCHOOL BOARD

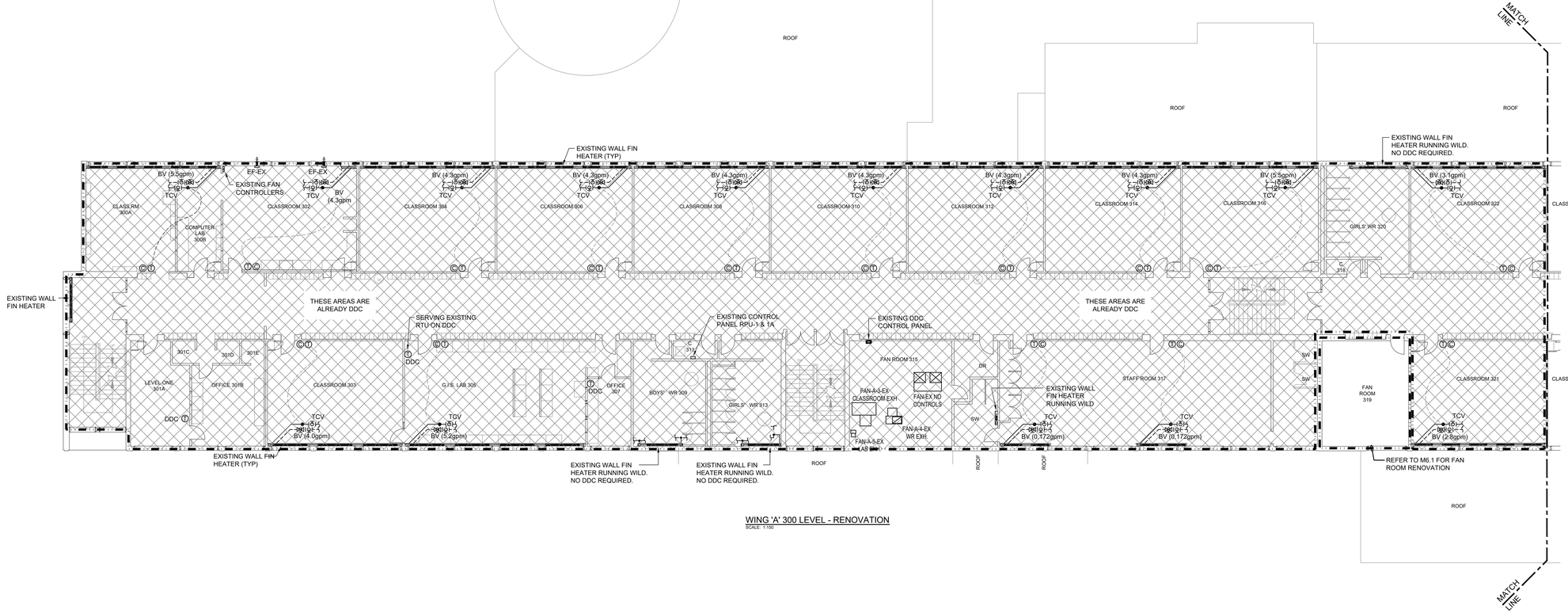
PROJECT NAME
WATERLOO COLLEGIATE INSTITUTE
HVAC AND EXTERIOR UPGRADES PHASE 2
300 HAZEL ST., WATERLOO, ON. N2L 3P2

DRAWING TITLE
PARTIAL LOWER/FIRST FLOORS DDC RENOVATION

SCALE	AS NOTED
SHEET SIZE	24x36
PROJECT NUMBER	2025-153
DRAWING NUMBER	M3.1



WING 'A' LOWER 300 LEVEL - RENOVATION
SCALE: 1:150



WING 'A' 300 LEVEL - RENOVATION
SCALE: 1:150

GENERAL RENOVATION NOTES

- CONTRACTOR TO CARRY IN THEIR PRICING TO DRAIN SYSTEM OR FREEZE PIPING TO COMPLETE WORK

SPECIFIC RENOVATION NOTES

A. PROVIDE NEW DDC THERMOSTAT/CO2 SENSOR.

B. PROVIDE NEW TCV, ISOLATION & BALANCING VALVES IN EXISTING PIPING. REFER TO DETAIL.

C. PROVIDE NEW DDC CONTROLS FOR EXISTING HEATER. REFER TO DETAIL.

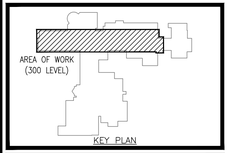
D. PROVIDE NEW DDC EXHAUST FAN CONTROL.

E. PROVIDE DDC THERMOSTAT.

REBALANCE SYSTEM TO EXISTING DESIGN FLOW RATES

PROJECT NORTH

No.	REVISIONS	DATE
1	RE-ISSUED FOR ADDENDUM 01	2026-03-16



ISSUED FOR TENDER/PERMIT	2026.03.02
CHRONOLOGY	DATE

DEI Consulting Engineers
MECHANICAL | ELECTRICAL | AQUATIC
57 Northland Road, Waterloo, ON, N2V 1Y8
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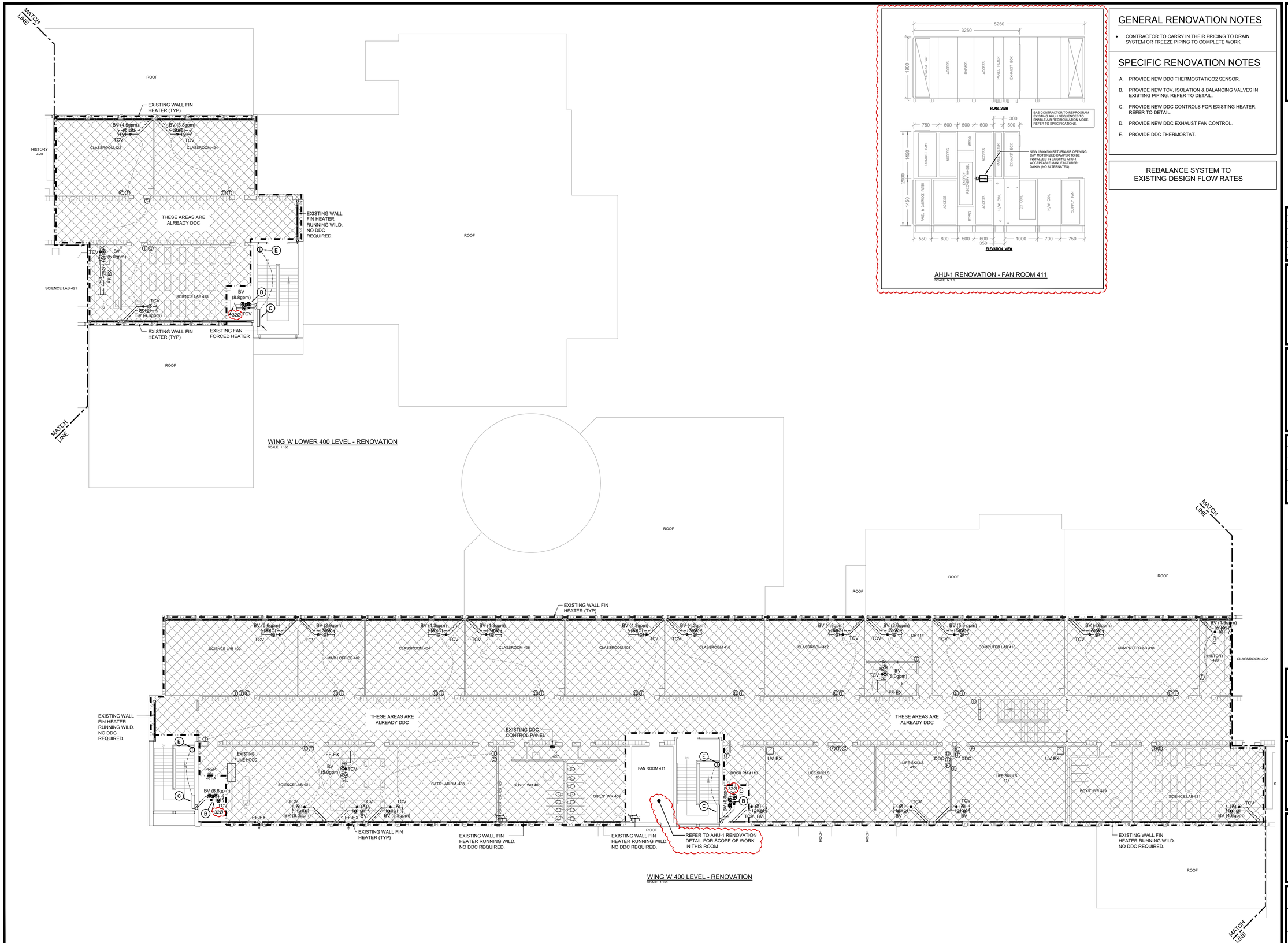
CLIENT
WATERLOO REGION DISTRICT SCHOOL BOARD

PROJECT NAME
WATERLOO COLLEGIATE INSTITUTE HVAC AND EXTERIOR UPGRADES PHASE 2
300 HAZEL ST., WATERLOO, ON, N2L 3P2

DRAWING TITLE
300 LEVEL PLAN WING A DDC RENOVATION

SCALE	AS NOTED
SHEET SIZE	24x36
PROJECT NUMBER	2025-153
DRAWING NUMBER	M3.2



WING 'A' LOWER 400 LEVEL - RENOVATION
SCALE: 1:150

AHU-1 RENOVATION - FAN ROOM 411
SCALE: N.T.S.

GENERAL RENOVATION NOTES

- CONTRACTOR TO CARRY IN THEIR PRICING TO DRAIN SYSTEM OR FREEZE PIPING TO COMPLETE WORK

SPECIFIC RENOVATION NOTES

A. PROVIDE NEW DDC THERMOSTAT/CO2 SENSOR.

B. PROVIDE NEW TCV, ISOLATION & BALANCING VALVES IN EXISTING PIPING. REFER TO DETAIL.

C. PROVIDE NEW DDC CONTROLS FOR EXISTING HEATER. REFER TO DETAIL.

D. PROVIDE NEW DDC EXHAUST FAN CONTROL.

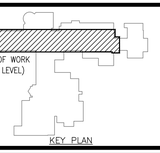
E. PROVIDE DDC THERMOSTAT.

REBALANCE SYSTEM TO EXISTING DESIGN FLOW RATES

WING 'A' 400 LEVEL - RENOVATION
SCALE: 1:150

PROJECT NORTH

No.	REVISIONS	DATE
1	RE-ISSUED FOR ADDENDUM 01	2026-03-16



KEY PLAN

ISSUED FOR TENDER/PERMIT	2026.03.02
CHRONOLOGY	DATE

DEI Consulting Engineers
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CLIENT
WATERLOO REGION DISTRICT SCHOOL BOARD

PROJECT NAME
WATERLOO COLLEGIATE INSTITUTE HVAC AND EXTERIOR UPGRADES PHASE 2
300 HAZEL ST., WATERLOO, ON, N2L 3P2

DRAWING TITLE
400 LEVEL PLAN WING A DDC RENOVATION

SCALE	AS NOTED
SHEET SIZE	24x36
PROJECT NUMBER	2025-153
DRAWING NUMBER	M3.3

GENERAL RENOVATION NOTES

- CONTRACTOR TO CARRY IN THEIR PRICING TO DRAIN SYSTEM OR FREEZE PIPING TO COMPLETE WORK

SPECIFIC RENOVATION NOTES

A. PROVIDE NEW DDC THERMOSTAT/CO2 SENSOR.

B. PROVIDE NEW TCV, ISOLATION & BALANCING VALVES IN EXISTING PIPING. REFER TO DETAIL.

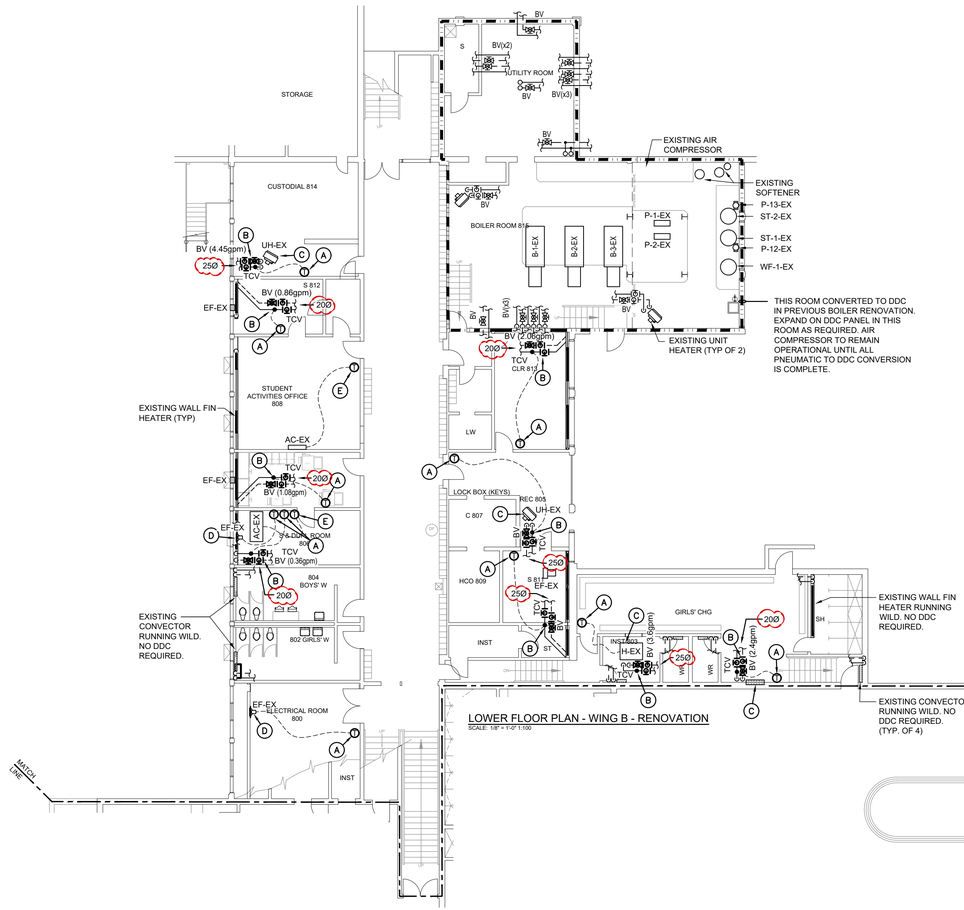
C. PROVIDE NEW DDC CONTROLS FOR EXISTING HEATER. REFER TO DETAIL.

D. PROVIDE NEW DDC EXHAUST FAN CONTROL.

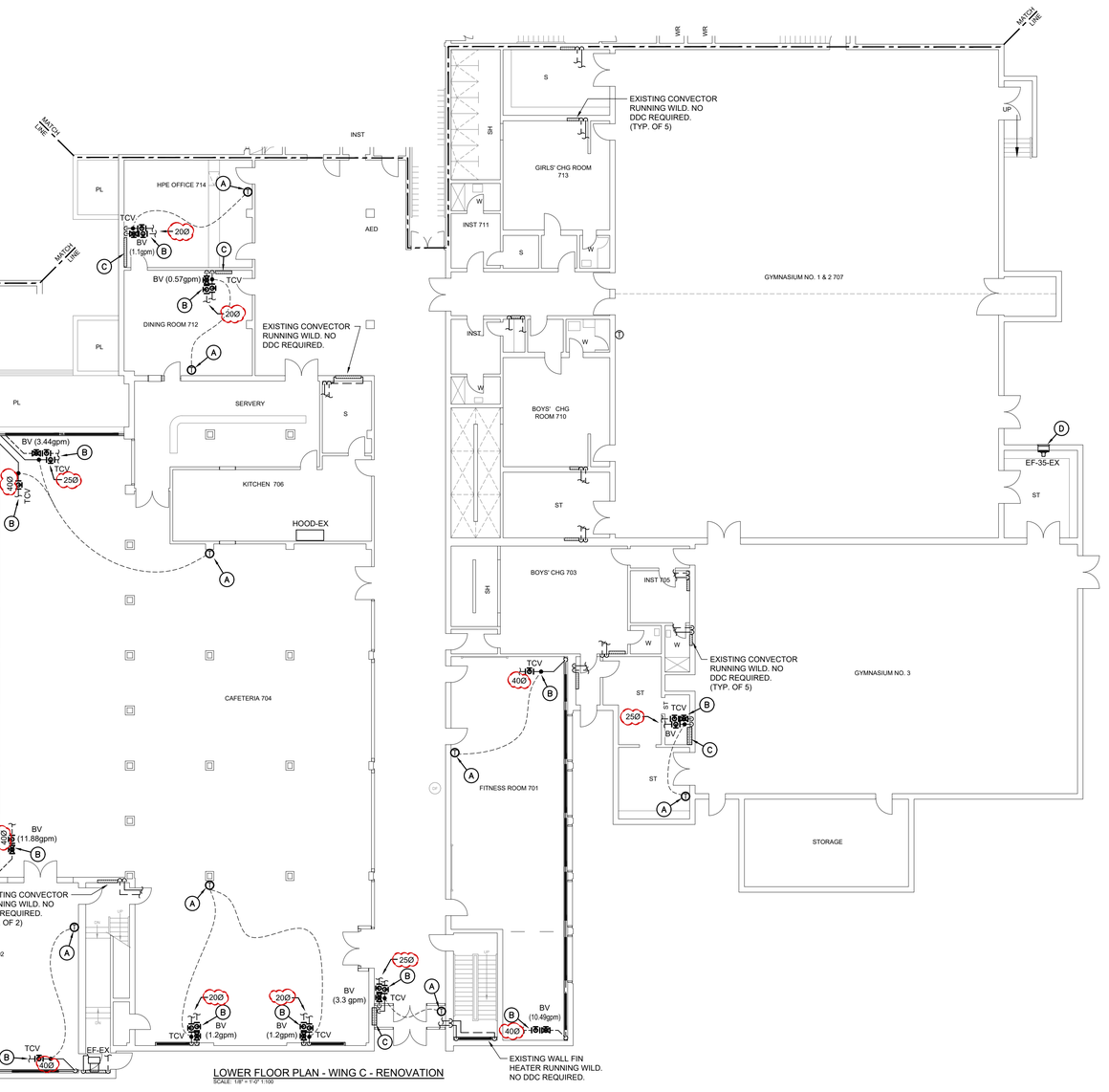
E. PROVIDE DDC THERMOSTAT.

REBALANCE SYSTEM TO EXISTING DESIGN FLOW RATES

COORDINATE WITH BAS CONTRACTOR AND ALL OTHER TRADES FOR LOCATION OF NEW BAS PANELS. BAS PANELS SHALL BE MOUNTED ON THE WALL, WITHIN ACCESSIBLE LOCATION, AT 1500mm AFF. DO NOT MOUNT BAS PANELS ABOVE CEILINGS



LOWER FLOOR PLAN - WING B - RENOVATION
SCALE: 1/8" = 1'-0" 1:100



LOWER FLOOR PLAN - WING C - RENOVATION
SCALE: 1/8" = 1'-0" 1:100

The contractor shall verify all dimensions and report all errors and discrepancies to the Consultant before commencement of the work.
The drawings show general arrangement of services. Follow as closely as actual building construction will permit. Obtain approval for relocation of service from Consultant before commencement of the work.
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PROJECT NORTH

No.	REVISIONS	DATE
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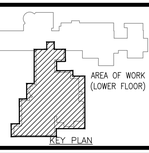

ISSUED FOR TENDER/PERMIT	2026.03.02
CHRONOLOGY	DATE

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CLIENT
WATERLOO REGION DISTRICT SCHOOL BOARD

PROJECT NAME
WATERLOO COLLEGIATE INSTITUTE
HVAC AND EXTERIOR UPGRADES PHASE 2
300 HAZEL ST., WATERLOO, ON, N2L 3P2

DRAWING TITLE
LOWER FLOOR PLAN
WING B & C
DDC RENOVATION

SCALE	AS NOTED
SHEET SIZE	24x36
PROJECT NUMBER	2025-153
DRAWING NUMBER	M3.4

GENERAL RENOVATION NOTES

- CONTRACTOR TO CARRY IN THEIR PRICING TO DRAIN SYSTEM OR FREEZE PIPING TO COMPLETE WORK

SPECIFIC RENOVATION NOTES

A. PROVIDE NEW DDC THERMOSTAT/CO2 SENSOR.

B. PROVIDE NEW TCV, ISOLATION & BALANCING VALVES IN EXISTING PIPING. REFER TO DETAIL.

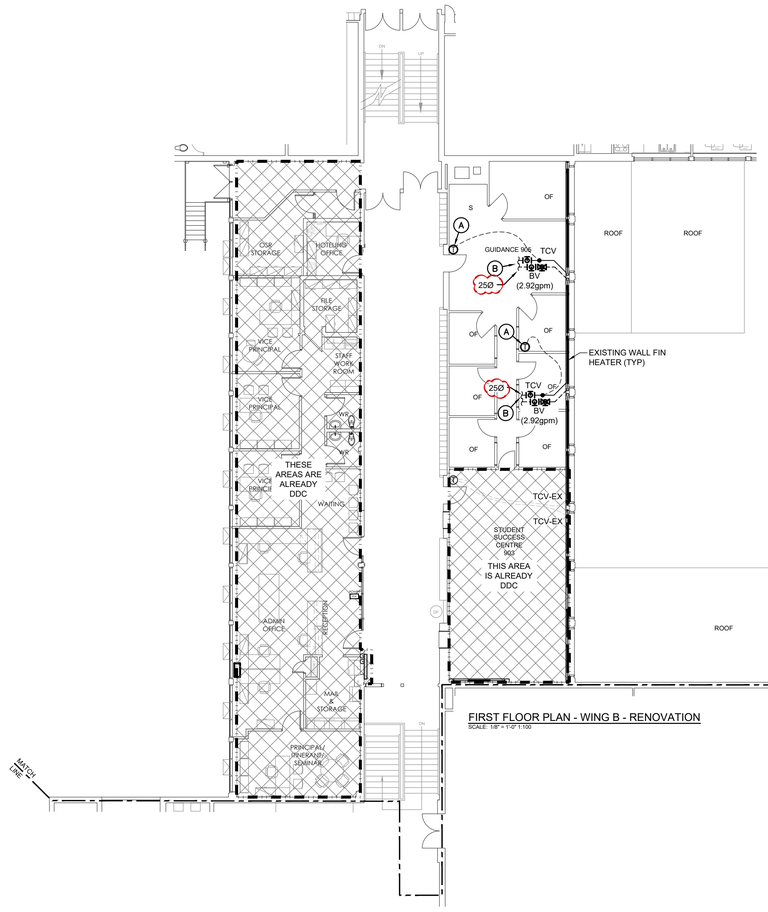
C. PROVIDE NEW DDC CONTROLS FOR EXISTING HEATER. REFER TO DETAIL.

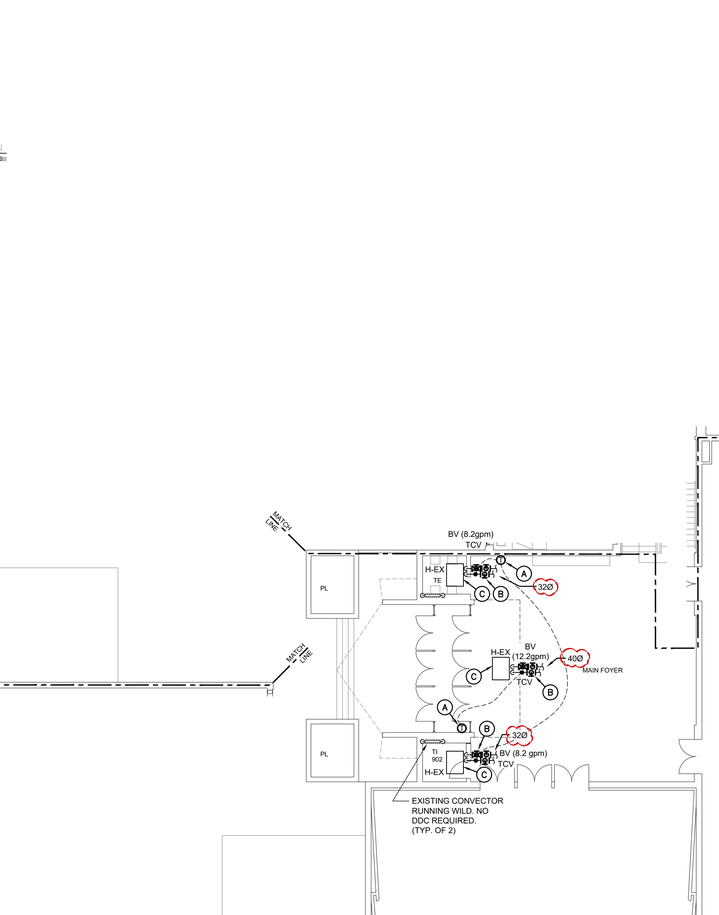
D. PROVIDE NEW DDC EXHAUST FAN CONTROL.

E. PROVIDE DDC THERMOSTAT.

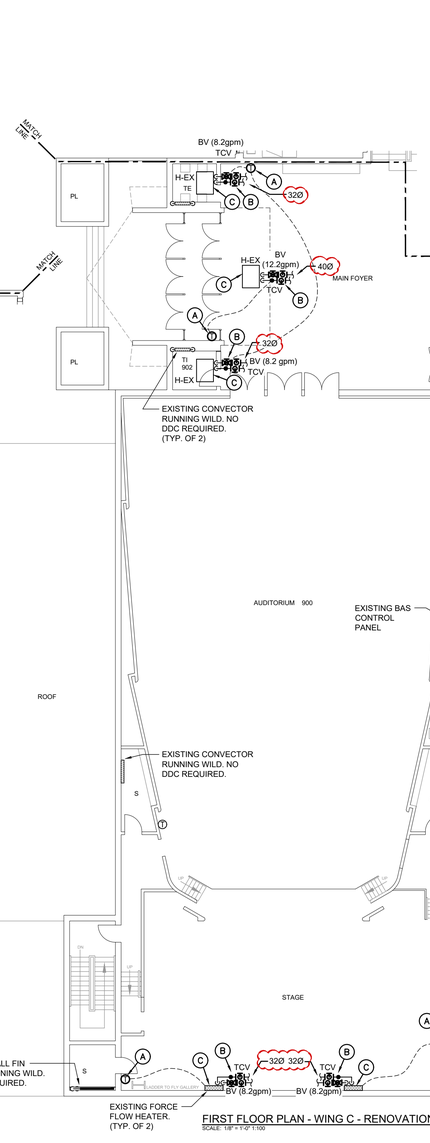
REBALANCE SYSTEM TO EXISTING DESIGN FLOW RATES

COORDINATE WITH BAS CONTRACTOR AND ALL OTHER TRADES FOR LOCATION OF NEW BAS PANELS. BAS PANELS SHALL BE MOUNTED ON THE WALL, WITHIN ACCESSIBLE LOCATION, AT 1500mm AFF. DO NOT MOUNT BAS PANELS ABOVE CEILINGS

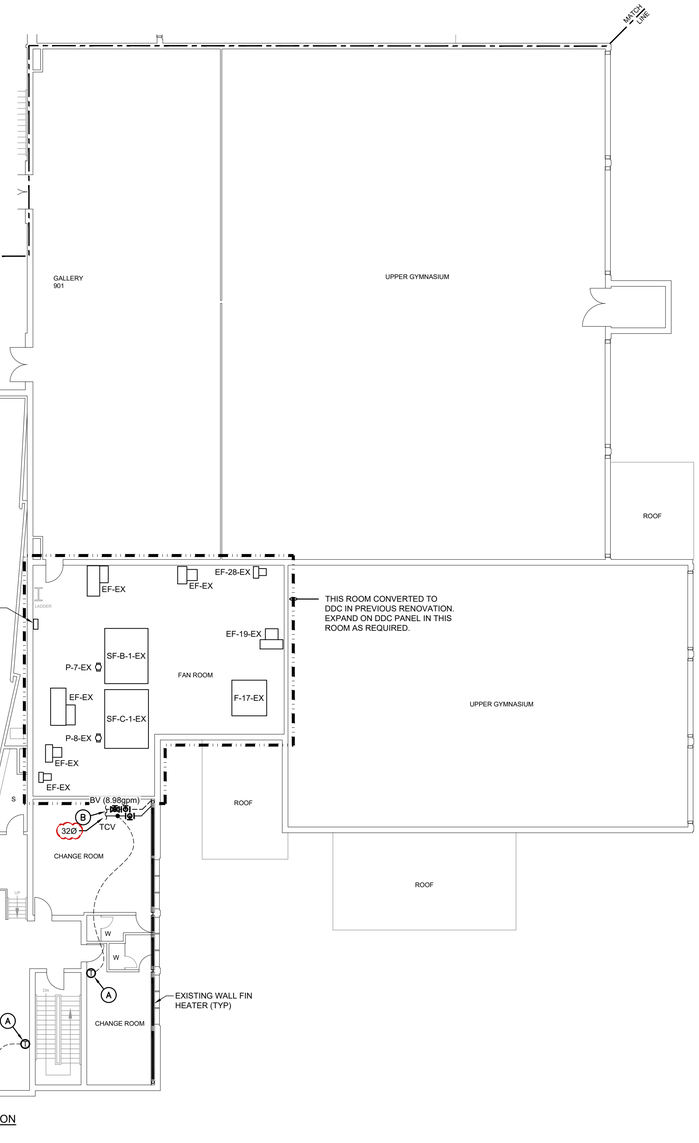




FIRST FLOOR PLAN - WING B - RENOVATION
SCALE: 1/8" = 1'-0" 1:100



FIRST FLOOR PLAN - WING C - RENOVATION
SCALE: 1/8" = 1'-0" 1:100



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PROJECT NORTH

No.	REVISIONS	DATE
1	RE-ISSUED FOR ADDENDUM 01	2026-03-16

ISSUED FOR TENDER/PERMIT	2026.03.02
CHRONOLOGY	DATE

DEI Consulting Engineers
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Project Number: 25407

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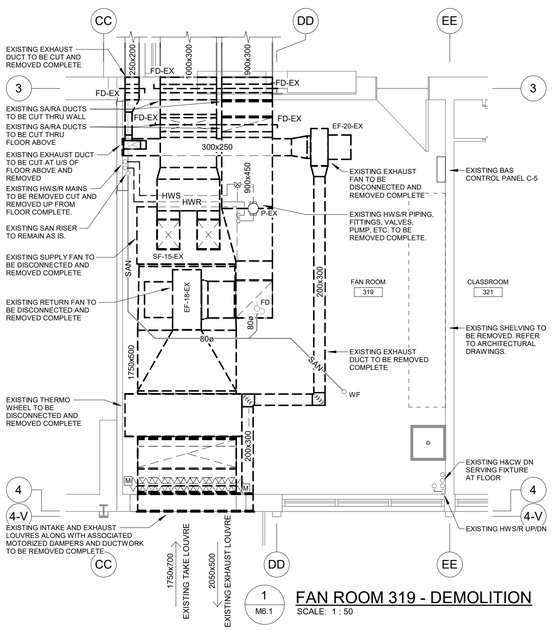
CLIENT
WATERLOO REGION DISTRICT SCHOOL BOARD

PROJECT NAME
WATERLOO COLLEGIATE INSTITUTE
HVAC AND EXTERIOR UPGRADES PHASE 2
300 HAZEL ST., WATERLOO, ON, N2L 3P2

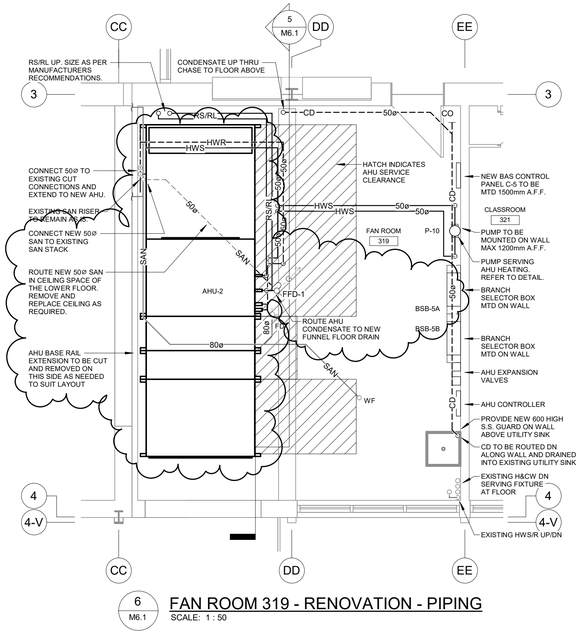
DRAWING TITLE
FIRST FLOOR PLAN
WING B & C
DDC RENOVATION

SCALE	DRAWING NUMBER
AS NOTED	M3.5
SHEET SIZE: 24x36	
PROJECT NUMBER: 2025-153	



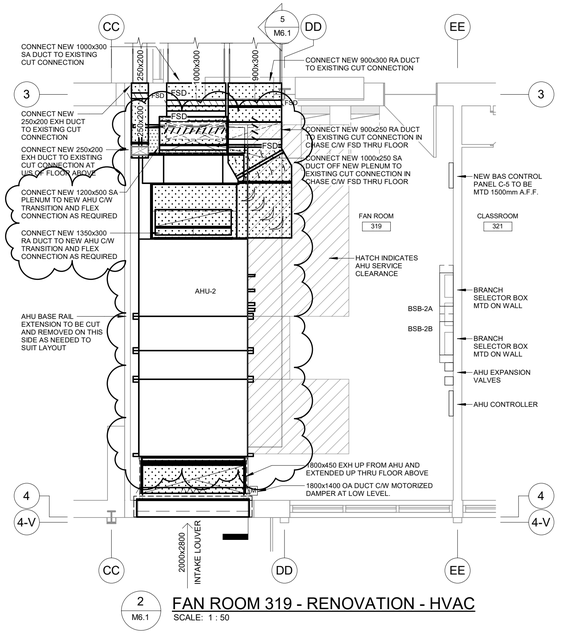
1 / M6.1 — FAN ROOM 319 - DEMOLITION
SCALE: 1 : 50

- **EXISTING AHU TO REMAIN OPERATIONAL UNTIL NEW UNIT IS ON SITE AND READY TO BE INSTALLED**



6 / M6.1 — FAN ROOM 319 - RENOVATION - PIPING
SCALE: 1 : 50

- **THIS CONTRACTOR SHALL CAREFULLY COORDINATE WITH ELECTRICIAN TO MAINTAIN ALL EQUIPMENT SERVICE CLEARANCES. SUBMIT DIMENSIONED ROOM LAYOUT SHOWING ALL EXISTING AND NEW EQUIPMENT TO CONSULTANT FOR REVIEW. LAY OUT EQUIPMENT ON ROOM FLOOR PRIOR TO STARTING INSTALLATION.**
- **CONTRACTOR TO FIELD MEASURE ALL EXISTING DUCTWORK ON SITE PRIOR TO WORK AND INFORM ENGINEER OF ANY DISCREPANCIES.**



2 / M6.1 — FAN ROOM 319 - RENOVATION - HVAC
SCALE: 1 : 50

- **THIS CONTRACTOR SHALL CAREFULLY COORDINATE WITH ELECTRICIAN TO MAINTAIN ALL EQUIPMENT SERVICE CLEARANCES. SUBMIT DIMENSIONED ROOM LAYOUT SHOWING ALL EXISTING AND NEW EQUIPMENT TO CONSULTANT FOR REVIEW. LAY OUT EQUIPMENT ON ROOM FLOOR PRIOR TO STARTING INSTALLATION.**
- **CONTRACTOR TO FIELD MEASURE ALL EXISTING DUCTWORK ON SITE PRIOR TO WORK AND INFORM ENGINEER OF ANY DISCREPANCIES.**

GENERAL DEMOLITION NOTES

A. EXISTING MECHANICAL ITEMS NOT SHOWN SHALL REMAIN UNLESS NOTED OTHERWISE.

B. EXISTING MECHANICAL ITEMS SHOWN BUT NOT NOTED AS BEING REMOVED OR RENOVATED SHALL REMAIN AS PRESENTLY INSTALLED AND OPERATING.

C. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ON SITE ALL LOCATIONS AND SIZES OF ALL SERVICES & EQUIPMENT PRIOR TO THE COMMENCEMENT OF WORK.

D. ALL OPENINGS THAT RESULT FROM THE REMOVAL OF EQUIPMENT OR SERVICES SHALL BE NEATLY PATCHED WITH SUITABLE NEW MATERIALS TO SUIT EXISTING CONSTRUCTION.

E. PLUMBING VENTS ARE NOT INDICATED OR IDENTIFIED. REMOVE ALL REDUNDANT VENTS WHILE MAINTAINING INTEGRITY OF EXISTING SYSTEMS TO REMAIN.

F. REMOVAL OF EXISTING PIPING, OR DUCT SYSTEMS INCLUDES REMOVAL OF ALL HANGERS, INSULATION, FITTINGS, ETC.

G. MAINTAIN INTEGRITY OF EXISTING SYSTEMS THAT ARE TO REMAIN OR BE MODIFIED.

H. INSTALL NEW SYSTEM OR SERVICES WHERE REQUIRED TO MAINTAIN SYSTEM OPERATION PRIOR TO DEMOLITION OF EXISTING SERVICES.

I. THIS CONTRACTOR IS TO REMOVE & REPLACE CEILINGS AS REQUIRED FOR REMOVAL/REPLACEMENT OF SERVICES.

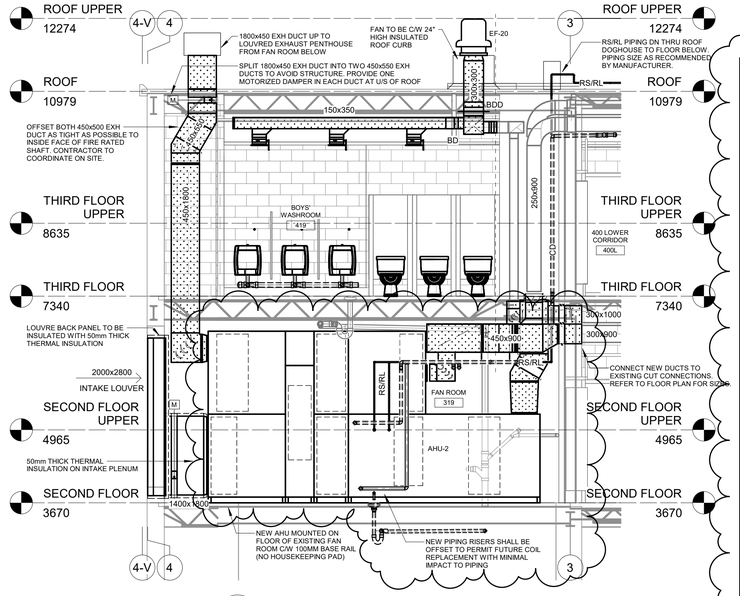
GENERAL RENOVATION NOTES

- CONTRACTOR TO LOCATE ISOLATION VALVES AND DRAIN SYSTEMS TO ALLOW PROPOSED WORK TO PROCEED. REFILL SYSTEMS AS INDICATED. FLUSHING, CLEANING, & REFILLING WITH CLEAN WATER & CHEMICAL TO WATER TREATMENT CONTRACTOR REQUIREMENTS.
- FREEZE OR DRAIN EXISTING PIPING AS REQUIRED TO FACILITATE CUT IN.

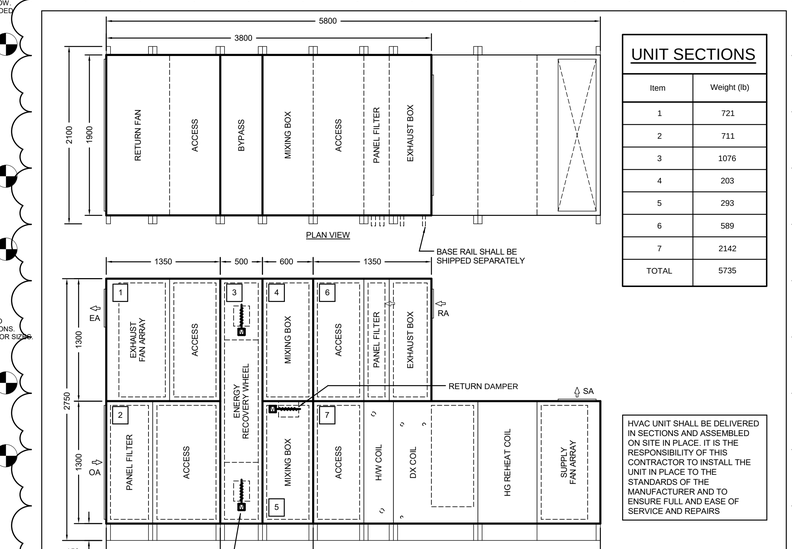
ASHRAE 62.1 2016 COMPLIANCE

Area	Max. OA	Min. OA	Remarks
CLASSROOM 321	350	100	
CLASSROOM 322	350	100	
CLASSROOM 323	350	100	
CLASSROOM 324	350	100	
CLASSROOM 325	350	100	
CLASSROOM 326	350	100	
COMPUTER LAB 418	450	200	
STAFF OFFICE 420	50	20	
SCIENCE LAB 421	450	200	
CLASSROOM 422	350	100	
SCIENCE LAB 423	450	200	
CLASSROOM 424	350	100	
TOTAL	4200	1420	

NOTES:
1. BALANCE AHU-2 OA RATE TO 1420 CFM (MIN.) & 4200 CFM (MAX.) DURING OCCUPIED HOURS. DEMAND-CONTROL VENTILATION TO ADJUST BETWEEN MIN./MAX.
2. MAX OA RATE IS BASED ON AREA X OCCUPANT DENSITY/1000FT2 X CFM/OCCUPANT
3. MIN OA RATE IS BASED ON AREA X AREA OUTDOOR AIR RATE MULTIPLIER



5 / M6.1 — FAN ROOM - EAST ELEVATION
SCALE: 1 : 50



UNIT SECTIONS

Item	Weight (lb)
1	721
2	711
3	1076
4	203
5	293
6	589
7	2142
TOTAL	5735

HVAC UNIT SHALL BE DELIVERED IN SECTIONS AND ASSEMBLED ON SITE IN PLACE. IT IS THE RESPONSIBILITY OF THIS CONTRACTOR TO INSTALL THE UNIT IN PLACE TO THE STANDARDS OF THE MANUFACTURER AND TO ENSURE FULL AND EASE OF SERVICE AND REPAIRS

AIR HANDLING UNIT DETAIL
SCALE: N.T.S.

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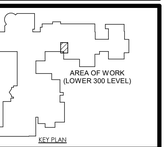
PROJECT NORTH

No.	REVISIONS	DATE
1	RE-ISSUED FOR ADDENDUM 01	2026-03-12



ISSUED FOR TENDER/PERMIT	2026.03.02
CHRONOLOGY	DATE

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Phone: 519 725 1555
Website: deiassociates.ca
Project Number:zzwr

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CLIENT
WATERLOO REGION DISTRICT SCHOOL BOARD

PROJECT NAME
WATERLOO COLLEGIATE INSTITUTE HVAC AND EXTERIOR UPGRADES PHASE 2
300 Hazel St, Waterloo, ON N2L 3P2

DRAWING TITLE
FAN RM 319 (WING A) - DEMO/RENO

SCALE: AS NOTED
SHEET SIZE: 24X36
PROJECT NUMBER: 2025-153
DRAWING NUMBER: M6.1

DEI Consulting Engineers
MECHANICAL | ELECTRICAL | AQUATIC

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Tel: 519-725-3555
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March 18, 2026

Client: ABA Architects Inc.
101 Randall Drive, Unit B
Waterloo, ON N2V 1C5

RE: Waterloo Collegiate Institute
HVAC & Exterior Upgrades Phase 2
Waterloo, ON

Job #: 25407

Attn: Peter Quashigah/Sean Habermehl/Kyle Shiry

ADDENDUM 02

MECHANICAL

Item 1

1.0 No mechanical content.

ELECTRICAL

Item 1

1.0 Reference Drawing E1.1

.1 Detail B – Wing A 200, lower level key plan – In Stair #4, the existing wall mounted lighting is to be replaced with Luminaire type A4, refer to updated light fixture schedule.

Item 2

2.0 Reference Attached Reissued Drawing E1.2

.1 Light fixture schedule (interior) – add new type A4.

Item 3

3.0 Reference Attached Reissued Drawing E1.3

.1 Equipment wiring schedule revised as follows:

.1 AHU-2A – AHU-2D, DS-15-DS-20, interlock as indicated.

.2 CU-1, renamed to CU-4 and voltage revised to 600 V.

.3 CU-2A and CU-2B, renamed to CU-5A and CU-5B respectively.

.4 BSB-2A and BSB-2B, renamed to BSB-5A and BSB-5B respectively.

.5 CP-2, revise to 120 V connection.

Item 4

4.0 Reference Attached Reissued Drawings E3.1 to E3.3

.1 Lighting renovation plans, in the corridors, add occupancy sensors and power packs as indicated.

Item 5

5.0 Reference Drawing E3.4

.1 CU-4, revise connection to HM4-13,15,17. Refer to partial distribution riser diagram and panel HM4 schedule.

Item 6

6.0 Reference Attached Reissued Drawing E4.1

.1 Add new lighting sequence detail.

Item 7

7.0 Reference Attached Reissued Drawing E5.1

.1 Panel HM4, revise as indicated.

.2 Panel LM4, revise as indicated.

.3 Partial distribution riser, revise as indicated

Dustin McConkey, LEL
Partner
25407 Addendum 02 (E-EWS Revisions)(various reissued dwgs) Mar 18 26
dm/sms/ma

LIGHT FIXTURE SCHEDULE (INTERIOR)

Item	Manufacturer/Catalog Number	Voltage	Lamp: Type	Lamp: Lumens	Lamp: Colour Temperature	Lamp: Wattage	Lamp: CRI	Mounting	Listings	Description
A1	COOPER CAT. #24GR-LD5-38-F125-UNV-L840-CD-1 LITHONIA CAT. #2GTL 4 40L A12125 MVOLT GZ1 LP840 VISCOR CAT. #LRTA2X4-LED840K-040L-UNV-P98	120V	LED	3459	4000K	26.7	80	RECESSED	N/A	2'X4' (610mmX1220mm) LED TROFFER C/W 0.125" (3.2mm) THICK PATTERN 12 FROSTED LENS, 10% 0-10V DIMMING DRIVER, AND WHITE FINISH.
A2	COOPER CAT. #4SNX LW UNV CC83 CD1 C/W WG-SNX/SN-4FT-B LITHONIA CAT. #CSS L48 ALO3 UVOLT SWW3 80CRI SIGNIFY CAT. #SDS42448L8CST-UN3-DIM C/W FKR-126-& SDS4WG (SET TO 4000K AND 4850LM)	120V	LED	4100	4000K	33	80	SUSPENDED	N/A	3"x4' (75mmx1220mm) LED TROFFER C/W ALUMINUM HOUSING, A12 PRISMATIC LENS, AND ELECTRONIC DRIVER
A3	COOPER CAT. #14CGT-NUV LITHONIA CAT. #CPX 1X4 ALO7 SWW7 SWL 120 SIGNIFY CAT. #1SBP3040L8CS-4-UN3-DIM	120V	LED	4712	4000K	37.6W	80	RECESSED	N/A	1'X4' (305mmX1220mm) LED BACKLIT FLAT PANEL FIXTURE C/W FIELD SELECTABLE LUMENS AND COLOUR TEMPERATURE, WHITE FROSTED LENS, 10% 0-10V DIMMING DRIVER, AND WHITE FINISH.
A4	COOPER CAT. #4NWS3C3-NUV LITHONIA CAT. #FMLWL 48 840 ZT MVOLT	120V	LED	4595	4000K	32.7W	80	SURFACE	N/A	4' (1220mm) WRAPAROUND LED FIXTURE C/W SMOOTH WHITE LENS, WHITE FINISH, AND 10% 0-10V DIMMING DRIVER.
C1	COOPER CAT. #HC615D010-HM612840-61MDHWF LITHONIA CAT. #LDN6 40/15 LO6AR LSS MVOLT GZ1 TRW LIGHTOLIER CAT. #6RN-C6L15840MZ10U-C6RDLXX SIGNIFY CAT. #M6RDL159CSMCLZ10U	120V	LED	1421	4000K	14.5W	80	RECESSED	N/A	RECESSED 6" (150mm) DIAMETER LED DOWNLIGHT C/W SELF-FLANGED 60 DEGREE BEAM REFLECTOR, SEMI-SPECULAR CLEAR FINISH, AND 1% 0-10V DIMMING DRIVER. ARCHITECT TO CONFIRM FLANGE FINISH.
EMERG. LIGHTS	AIMLITE #EBWL SERIES: EM-1 #EBWL-EMWHT-TB-2-ATD/VDR STANPRO CAT. #SWL SERIES EM-1 #SWL-EMWH-TB-W-AT/TP LUMACELL #LBL SERIES EM-1 #LBL-EM C/W KIT-5R-L	12V /120V	LED	-	-	-	N/A	SUSPENDED	N/A	LONG LIFE, SEALED RECHARGABLE VANDAL RESISTANT BATTERY C/W ADJUSTABLE 14W LED MODULES, POLYCARBONATE BODY, 90 MINUTE BATTERY DURATION, RECESSED T-BAR MOUNTING, AND AUTOTEST FEATURE.
EXIT SIGN	AIMLITE CAT. #RPALWUMWHTUNVDC STANPRO CAT. #RMXL0WH-UDC LUMACELL CAT. #LA3WUX	12V/120V	LED	-	-	2.5 WATT (MAX.)AC 2 WATT (MAX.)DC	N/A	SURFACE	N/A	LED EXTRUDED ALUMINUM PICTOGRAM FIXTURE C/W GREEN FACE AND WHITE LEGEND, UNIVERSAL MOUNTING TO SUIT WALL, END OR CEILING, AND MAXIMUM 2.5" (63mm) THICKNESS. FACES AND CHEVRONS TO SUIT DRAWINGS.

A

Notes:

1. LED LUMEN VALUES QUOTED FOR FIXTURES ARE TO BE CONSIDERED MINIMUM, AND AS ABSOLUTE OR DELIVERED LUMENS. LUMEN VALUES SHOULD NOT EXCEED MORE THAN 10% OF SPECIFIED OUTPUT.
2. TENDER PRICE TO INCLUDE ONLY APPROVED MANUFACTURERS LISTED ON SCHEDULE. EQUAL MANUFACTURERS ARE NOT BEING CONSIDERED FOR THIS TENDER UNLESS SPEIFICALLY IDENTIFIED ON SCHEDULE FOR NOTED FIXTURE TYPES. FOR NOTED APPROVED EQUALS TO BE CONSIDERED APPROVED, MANUFACTURERS/SUPPLIERS MUST CONFIRM THE PROPOSED EQUAL BY EMAIL WITH CONSULTANTS OFFICE PRIOR TO PROJECT ADDENDUM PERIOD CLOSE.
3. WHERE NOTED ABOVE THAT FIXTURES ARE TO HAVE FINISH TO SUIT ARCHITECT THE FINISH WILL BE SELECTED FROM MANUFACTURER'S AVAILABLE STANDARD FINISHES.
4. IT IS THE RESPONSIBILITY OF THIS ELECTRICAL CONTRACTOR TO IDENTIFY TO THE ELECTRICAL CONSULTANT'S ATTENTION ANY DISCREPANCIES BETWEEN THE FIXTURE CATALOG NUMBER AND FIXTURE DESCRIPTION, AND OR VOLTAGE, OUTPUT, OR MOUNTING, PRIOR TO TENDER CLOSE. NO EXTRAS WILL BE ENTERTAINED FOR FAILURE TO DO SO. FINAL FIXTURE CHARACTERISTICS AND DESCRIPTION WILL BE MARKED BY CONSULTANT AT THE TIME OF SHOP DRAWING REVIEW. FOR THE PURPOSES OF BIDDING, INCLUDE FOR A FIXTURE MATCHING THE VOLTAGE, MOUNTING, LOCATION AND NOTATIONS SHOWN ON LIGHTING DESIGN DRAWINGS.

ELECTRICAL SYMBOLS

NOTE: ALL SYMBOLS MAY NOT BE USED

LIGHTING

Symbol	Description
X	LIGHT FIXTURE TYPE AS INDICATED
X	LIGHT FIXTURE (HATCHING DENOTES NIGHTLIGHT)
EM-X DC-X X-X	COMBINATION EMERGENCY/EXIT TYPE AS INDICATED (EM-X INDICATES BATTERY UNIT TYPE, DC-X INDICATES DC CIRCUIT AND X-X INDICATES AC SOURCE CIRCUIT)
X X	CEILING OR WALL MOUNTED LIGHT FIXTURE TYPE AS INDICATED
	WALL MOUNTED EXIT LIGHT SHADING INDICATES FACE
	CEILING MOUNTED EXIT LIGHT ARROWS DENOTE DIRECTION SHADING INDICATES FACE
	SINGLE OR TWIN EMERGENCY LIGHTING FIXTURE
	RECESSED REMOTE EMERGENCY FIXTURES
BU EM-X DC-X X-X	CEILING RECESSED BATTERY UNIT C/W INTEGRAL EMERGENCY FIXTURES (EM-X INDICATES BATTERY UNIT TYPE, DC-X INDICATES DC CIRCUIT AND X-X INDICATES AC SOURCE CIRCUIT)
BU EM-X DC-X X-X	BATTERY UNIT WITH INTEGRAL EMERGENCY FIXTURE (EM-X INDICATES BATTERY UNIT TYPE, DC-X INDICATES DC CIRCUIT AND X-X INDICATES AC SOURCE CIRCUIT)
$	SINGLE POLE SWITCH (3=3 WAY, 4=4 WAY, P=PILOT LIGHT, K=KEYED, DM=DIMMER, M=MOTOR RATED)
$ OS	OCCUPANCY SENSOR (PASSIVE)
OSD/OSR $	OCCUPANCY SENSOR: OSD=DUAL TECHNOLOGY OSR=DUAL CIRCUIT/DUAL TECHNOLOGY
OS	CEILING MOUNTED MOTION SENSOR

FIRE ALARM

Symbol	Description
	HEAT DETECTOR (135 DEGREE RATE OF RISE AND FIXED TEMPERATURE)
	HEAT DETECTOR (135 DEGREE FIXED TEMPERATURE)
	HEAT DETECTOR (194 DEGREE FIXED TEMPERATURE)
	HEAT DETECTOR (194 DEGREE RATE OF RISE AND FIXED TEMPERATURE)
S	DUCT TYPE SMOKE DETECTOR
IM	ISOLATING MODULE
	ALARM HORN
	ALARM STROBE
	COMBINATION HORN/STROBE
	ALARM BELL
FSD	FIRE SMOKE DAMPER

POWER

Symbol	Description
	WALL MOUNTED RECEPTACLE (15A-120V)
	WALL MOUNTED T-SLOT RECEPTACLE (20A-120V)
	T-SLOT RECEPTACLE MTD. ABOVE COUNTER (20A-120V)
HD	HAND DRYER
	DIRECT CONNECTION
JB	JUNCTION BOX
	PANEL AS INDICATED
	FUSED DISCONNECT
	UNFUSED DISCONNECT

DATA

Symbol	Description
	SINGLE WALL MOUNTED TELEPHONE OUTLET C/W 1/2" (13mm) C TO CABLE MANAGEMENT SYSTEM.
	SINGLE COMPUTER OUTLET C/W 3/4" (21mm) C TO CABLE MANAGEMENT SYSTEM.
#/# VOICE DATA	COMBINATION SINGLE VOICE/SINGLE COMPUTER OUTLET UNLESS OTHERWISE NOTED C/W 1" (27mm) C TO CABLE MANAGEMENT SYSTEM. # INDICATES THE QUANTITY OF ACTIVE PARTS. LEFT VALUE ALWAYS INDICATES VOICE.
WAP	WIRELESS ACCESS POINT. PROVIDE 3/4" (21mm) C TO CABLE MANAGEMENT SYSTEM.
TV	TELEVISION OUTLET C/W 1" (27mm) C TO CABLE MANAGEMENT SYSTEM.
C	HANGER SYSTEM (REFER TO DETAILS)
A	AUXILIARY ROUGH-IN FOR USE AS NOTED

COMMUNICATIONS

Symbol	Description
	WALL MOUNTED SPEAKER C/W CALL IN SWITCH
	WALL MOUNTED SPEAKER (CS = COLUMN SPEAKER)

SECURITY

Symbol	Description
	SECURITY DETECTOR (SURFACE MOUNTED)
C	CEILING MOUNTED CAMERA

GENERAL

Symbol	Description
ER	INDICATES EXISTING ITEM TO REMAIN
D	INDICATES EXISTING ITEM TO BE DELETED
R	INDICATES EXISTING ITEM TO BE RELOCATED/IN RELOCATED POSITION
WG	WIREGUARD
GF	GROUND FAULT
WP	WEATHERPROOF
CLG	CEILING MOUNTED
X	NOTE INDICATOR
X	LIGHTING ZONE INDICATOR
SEQ. #	LIGHTING CONTROL SEQUENCE INDICATOR

STANDARD CIRCUIT LABELLING

A - 1 - 1

POWER PANEL LABEL

CIRCUIT INDICATION

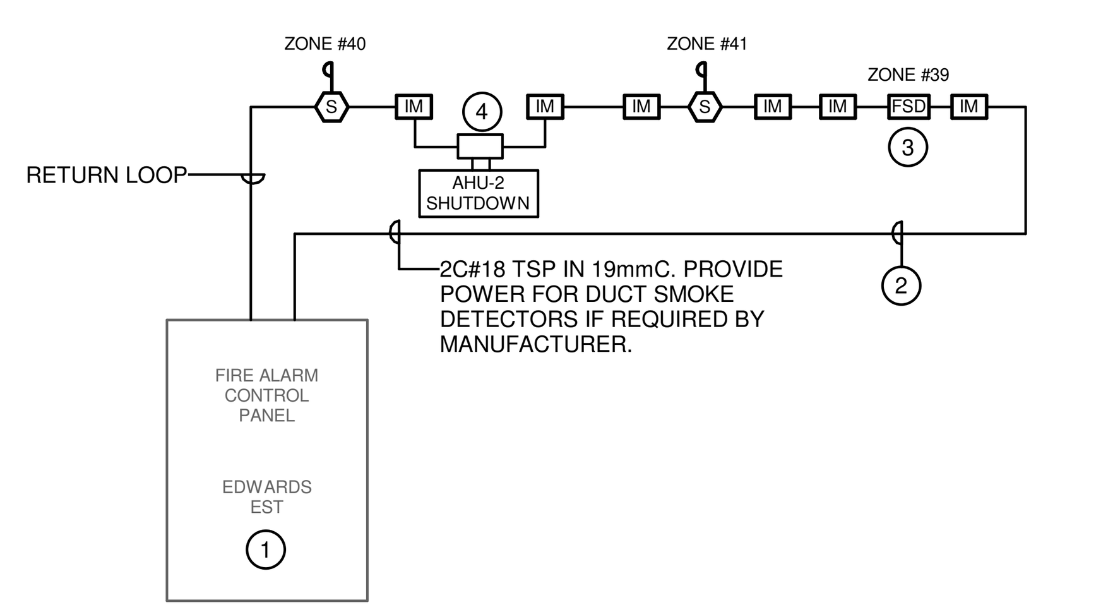
SWITCH LEG (IF APPLICABLE)

FIRE ALARM ANNUNCIATOR SCHEDULE

Zone	Description		Alarm	Supervisory
1	FOYER & AUDITORIUM	(EX)	•	
2	ADMINISTRATION	(EX)	•	
3	1ST FLR CLASSROOM	(EX)	•	
4	MIDDLE SHOPS	(EX)	•	
5	1ST FLR SHOPS EAST	(EX)	•	
6	BASEMENT SHOPS	(EX)	•	
7	GYM	(EX)	•	
8	CUSTODIAN CORRIDOR	(EX)	•	
9	CAFETERIA WING	(EX)	•	
10	LIBRARY BASEMENT	(EX)	•	
11	2ND FLR CLASSROOMS	(EX)	•	
12	LOWER 2ND FLR CLASSROOMS	(EX)	•	
13	LOWER 3RD FLR CLASSROOMS	(EX)	•	
14	3RD FLR CLASSROOMS	(EX)	•	
15	PORTABLES	(EX)	•	
16	BOILER RM. 815	(EX)	•	
17	TRANSFORMER RM. 800	(EX)	•	
18	AUTOSHOP RM. 225	(EX)	•	
19	STAIR #1 AUD. EAST	(EX)	•	
20	STAIR #2 AT FOYER	(EX)	•	
21	STAIR #3	(EX)	•	
22	STAIR #4	(EX)	•	
23	STAIR #5	(EX)	•	
24	STAIR #6	(EX)	•	
25	STAIR #7	(EX)	•	
26	STAIR #8	(EX)	•	
27	STAIR #9	(EX)	•	
28	STAIR #10	(EX)	•	
29	MIDDLE SCHOOL HALL	(EX)	•	
30	AUDITORIUM CRAWL SPACE	(EX)	•	
31	SPARK ARRESTOR PANEL IN ALARM	(EX)	•	
32	DUCT SMOKE – GYM FAN ROOM	(EX)	•	
33	DUCT SMOKE – 4TH FLOOR	(EX)	•	
34	DUCT SMOKE – 3RD FLOOR	(EX)	•	
35	DUCT SMOKE – MECHANICAL RM 315	(EX)	•	
36	RM 215 KIT HOOD	(EX)	•	
37	SPARE	(EX)		
38	SPARE	(EX)		
39	FIRE SMOKE DAMPERS - LEVEL 3	(NEW)	•	
40	AHU-2 LEVEL 3 SHUT DOWN	(NEW)	•	
41	AHU-2 LEVEL 4 SHUT DOWN	(NEW)	•	
42	SPARE	(EX)		
43	SPARE	(EX)		
44	SPARE	(EX)		
45	SPARE	(EX)		
46	SPARE	(EX)		
47	SPARE	(EX)		
48	SPARE	(EX)		

-'EX' DENOTES EXISTING ZONE

-ALL OTHER ZONES ARE TO BE CONSIDERED NEW



ALL EXISTING ZONES ARE NOT SHOWN ON RISER. OBTAIN COPY OF EXISTING GRAPHIC AND UPDATE TO SUIT NEW LAYOUT AND ADDITIONAL ZONES. SUBMIT SHOP DRAWING. INCLUDE FOR INTEGRATED LIFE SAFETY TESTING PER SPECIFICATIONS

NOTES

1 PROVIDE NEW ALARM ZONES AS NOTED IN FIRE ALARM ANNUNCIATOR SCHEDULE. UPDATE ANNUNCIATOR ACCORDINGLY.

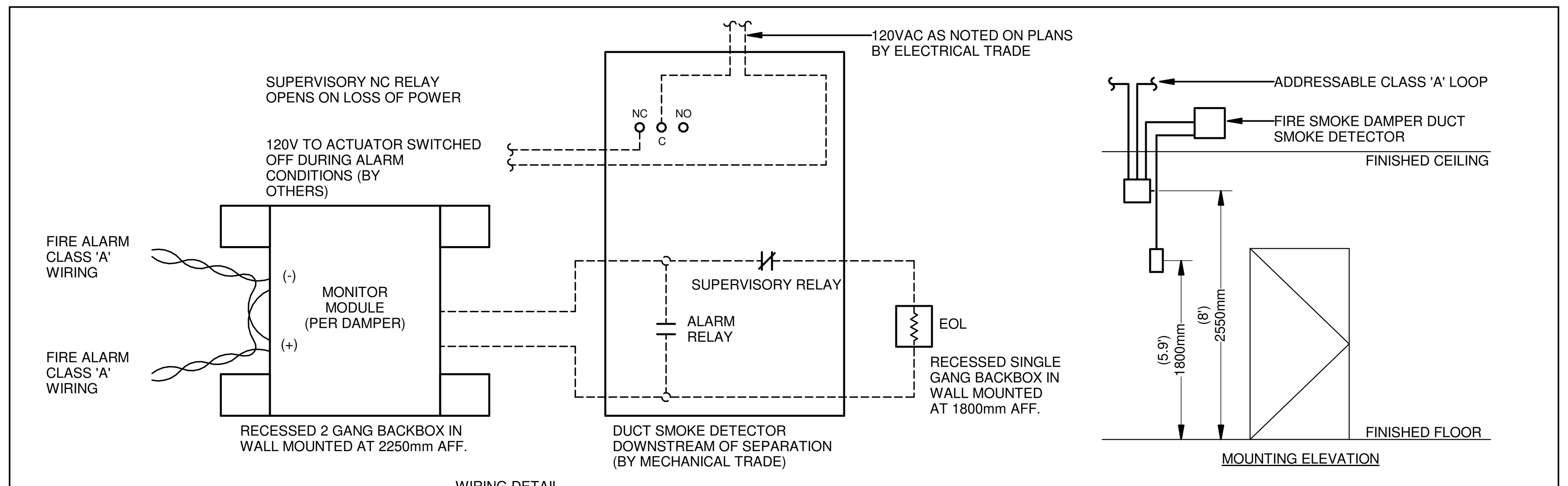
2 PROVIDE NEW FIRE ALARM LOOP FOR NEW DEVICES, CONFIRM WIRING REQUIREMENTS WITH RESPECTIVE SYSTEM MANUFACTURER.

3 INDICATES 120V POWER AND FIRE ALARM CONNECTIONS TO SMOKE/FIRE DAMPER WITH INTEGRAL SMOKE DETECTOR. REFER TO FIRE ALARM SPECIFICATIONS. COORDINATE EXACT LOCATION/CONNECTION REQUIREMENTS WITH MECHANICAL CONTRACTOR. SMOKE/FIRE DAMPER AND ASSOCIATED INTEGRAL SMOKE DETECTOR TO BE PROVIDED AND INSTALLED BY MECHANICAL CONTRACTOR. PROVIDE MONITORING MODULE(S) PER SMOKE/FIRE DAMPER TO 120V POWER SUPPLY CONNECTION TO THE DAMPER ACTUATOR, AND INTEGRAL SMOKE DETECTOR AS ALARM SIGNAL. A TROUBLE CONDITION SHALL BE ACTIVATED DUE TO THE LOSS OF AC POWER AT THE MAIN CONTROL PANEL, CONSISTING OF AUDIBLE AND VISUAL TROUBLE SIGNAL UNTIL ACKNOWLEDGED BY OPERATOR. REFER TO PLANS FOR QUANTITIES.

4 AIR HANDLING UNIT SHUTDOWN BY FIRE ALARM ON GENERAL ALARM.

A - PARTIAL FIRE ALARM RISER DIAGRAM

SCALE: NTS



NOTES:
1. MONITOR MODULE AND END OF LINE RESISTOR DEVICE MOUNTING HEIGHTS SHALL BE PER CAN/ULC S524 (LATEST EDITION). EACH DAMPER SHALL BE PROVIDED WITH AN INDIVIDUAL MONITOR MODULE.
2. MOUNT DEVICES WITHIN ACCESSIBLE LOCATIONS IN SERVICE ROOMS, WHERE POSSIBLE, IN THE VICINITY OF RESPECTIVE FIRE SMOKE DAMPER. DEVICES IN FINISHED SPACES TO BE C/W FLUSH MOUNT DEVICE BOXES AND COVERS. DEVICE COVERS TO BE LABELLED PER CAN/ULC S524 (LATEST EDITION).

SEQUENCE OF OPERATIONS

NORMAL CONDITION:
ALARM CONTACT OPEN, AUXILIARY CONTACT CLOSED, AC POWER IS PROVIDED TO DAMPER ACTUATOR, DAMPER IS OPEN.

ALARM CONDITION:
ALARM CONTACT CLOSES, BUILDING FIRE ALARM IS ACTIVATED, AUXILIARY CONTACT OPENS, AC POWER IS REMOVED FROM DAMPER ACTUATOR.

SUPERVISION:
LOSS OF AC POWER, COVER LEFT OFF, WIRING ISSUE WILL CAUSE TROUBLE CONDITION. SUPERVISORY CONTACT OPENS, MAIN FIRE ALARM CONTROL PANEL WILL INDICATE TROUBLE, ADDRESSABLE MODULE WILL INDICATE DAMPER LOCATION. DAMPER POSITION IS NOT MONITORED BY FIRE ALARM CONTROL PANEL.

B - FIRE/SMOKE DAMPER INSTALLATION DETAIL

SCALE: NTS

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No.	REVISIONS	DATE
A	ISSUED FOR ADDENDUM #2	2026-03-17

CHRONOLOGY	DATE
ISSUED FOR TENDER/PERMIT	2026.02.27
ISSUED FOR 100% REVIEW	2026.02.23
ISSUED FOR 70% REVIEW	2026.02.17

aba architects inc.

CLIENT
WATERLOO REGION DISTRICT SCHOOL BOARD

PROJECT NAME
WATERLOO COLLEGIATE INSTITUTE - HVAC & EXTERIOR UPGRADES
300 HAZEL STREET, WATERLOO, ON. N2L 3P2

DRAWING TITLE
LEGEND AND LIGHTING FIXTURE SCHEDULE

SCALE
As indicated
24X36

DRAWING NUMBER
E1.2

PROJECT NUMBER
2024-168

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EQUIPMENT WIRING SCHEDULE

E = ELECTRICAL
M = MECHANICAL
O = OTHERS

Description			Electrical Data				Starter						Ctrl Device				Isolating Device				Remote Items																Other		Interlock		
Mechanical Item	Description	Provided By	Voltage	Size hp/kW/Amps	Phase	MOCP	Magnetic	Manual	Combination	Contactor	VFD	ECM	Hand/Off/Auto	On/Off Selector	High/Low/Off	Pilot Light	Disconnect	WP Disconnect	Breaker/Fuse	Starter/Device Wired by	Thermostat	RA Thermostat	Programmable Time Clock	Variable Speed Control	Current Sensor	Occ Sensor	Dual Voltage Relay	Interval Timer	Motor Rated Switch c/w Pilot Light	Smoke Control System Panel	Control Panel	Wired by	Bldg Auto System	Wired By	Miscellaneous 1	Miscellaneous 2	Interlock to	Interlock by	Remarks
AHU-2A	INDOOR AIR HANDELING UNIT (SUPPLY FAN)	M	208	37.4 M.C.A.	3	50					M								E	E	M										M	M	M			CU-5A/B	E	STARTED THRU CONTROL PANEL WITH INTEGRAL VFD, C/W FUSED DISCONNECT
AHU-2B	INDOOR AIR HANDELING UNIT (RETURN/EXHAUST FAN)	M	208	20 M.C.A.	3	25					M								E	E	M										M	M	M			CU-5A/B	E	STARTED THRU CONTROL PANEL WITH INTEGRAL VFD, C/W FUSED DISCONNECT
AHU-2C	INDOOR AIR HANDELING UNIT (ERV)	M	208	3 M.C.A.	3	15					M						E		E	E	M										M	M	M			CU-5A/B	E	STARTED THRU CONTROL PANEL WITH INTEGRAL VFD
AHU-2D	INDOOR AIR HANDELING UNIT (CONTROLS)	M	120	1 M.C.A.	1	15													E	E												M	M			CU-5A/B	E	
DS-15	WALL MTD AC UNIT	M	208	1 M.C.A.	1	15											E		E	E	M										M	M	M			CU-4	E	
DS-16	WALL MTD AC UNIT	M	208	1 M.C.A.	1	15											E		E	E	M										M	M	M			CU-4	E	
DS-17	WALL MTD AC UNIT	M	208	1 M.C.A.	1	15											E		E	E	M										M	M	M			CU-4	E	
DS-18	WALL MTD AC UNIT	M	208	1 M.C.A.	1	15											E		E	E	M										M	M	M			CU-4	E	
DS-19	WALL MTD AC UNIT	M	208	1 M.C.A.	1	15											E		E	E	M										M	M	M			CU-4	E	
DS-20	WALL MTD AC UNIT	M	208	1 M.C.A.	1	15											E		E	E	M										M	M	M			CU-4	E	
CU-4	VRF CONDENSING UNIT	M	575	18.2 M.C.A.	3	25												E	E	E												M	M			DS-15-20	E	
CU-5A	VRF CONDENSING UNIT	M	575	18.2 M.C.A.	3	25												E	E	E												M	M			AHU-2	E	
CU-5B	VRF CONDENSING UNIT	M	575	18.2 M.C.A.	3	25												E	E	E												M	M			AHU-2	E	
BSB-5A	VRF BRANCH SELECTOR BOX	M	208	1 M.C.A.	1	15											E		E	E												M	M			AHU-2	E	
BSB-5B	VRF BRANCH SELECTOR BOX	M	208	1 M.C.A.	1	15											E		E	E												M	M			AHU-2	E	
EF-1	ROOF MTD EXHAUST FAN (WASHROOM)	M	120	1/3 HP	1				E									E	E	E							M				E	M	M					
MD	MOTORIZED DAMPER	M	120	FHP	1														E	E										M	E					AHU-2	E	
P-10	AHU HEATING COIL PUMP	M	208	2 HP	3				E							E	E		E	E												M	M			AHU-2	E	
CP-1	CONDENSATE PUMP	M	208	FHP	1												E		E	E																			POWERED THRU AC
CP-2	CONDENSATE PUMP	M	120	FHP	1												E		E	E																			

Notes:

1 INDICATES BUILT-UP MECHANICAL HVAC UNIT WITH REMOTE VFD. PROVIDE MAIN FEED TO UNIT AND ADDITIONAL FEEDS FROM TERMINAL STRIPS WITHIN UNIT TO VARIABLE FREQUENCY DRIVE AND BACK TO UNIT (IN SEPARATE CONDUITS). COORDINATE CONDUCTOR SIZE TO AND FROM VARIABLE FREQUENCY DRIVE WITH MECHANICAL UNIT SHOP DRAWINGS.

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Project Number: 25407

NO.	REVISIONS	DATE
A	ISSUED FOR ADDENDUM #2	2026-03-17

ISSUED FOR TENDER/PERMIT	2026.02.27
ISSUED FOR 100% REVIEW	2026.02.23
ISSUED FOR 70% REVIEW	2026.02.17
CHRONOLOGY	DATE

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CLIENT

WATERLOO REGION DISTRICT SCHOOL BOARD

PROJECT NAME

WATERLOO COLLEGIATE INSTITUTE - HVAC & EXTERIOR UPGRADES

300 HAZEL STREET, WATERLOO, ON. N2L 3P2

DRAWING TITLE

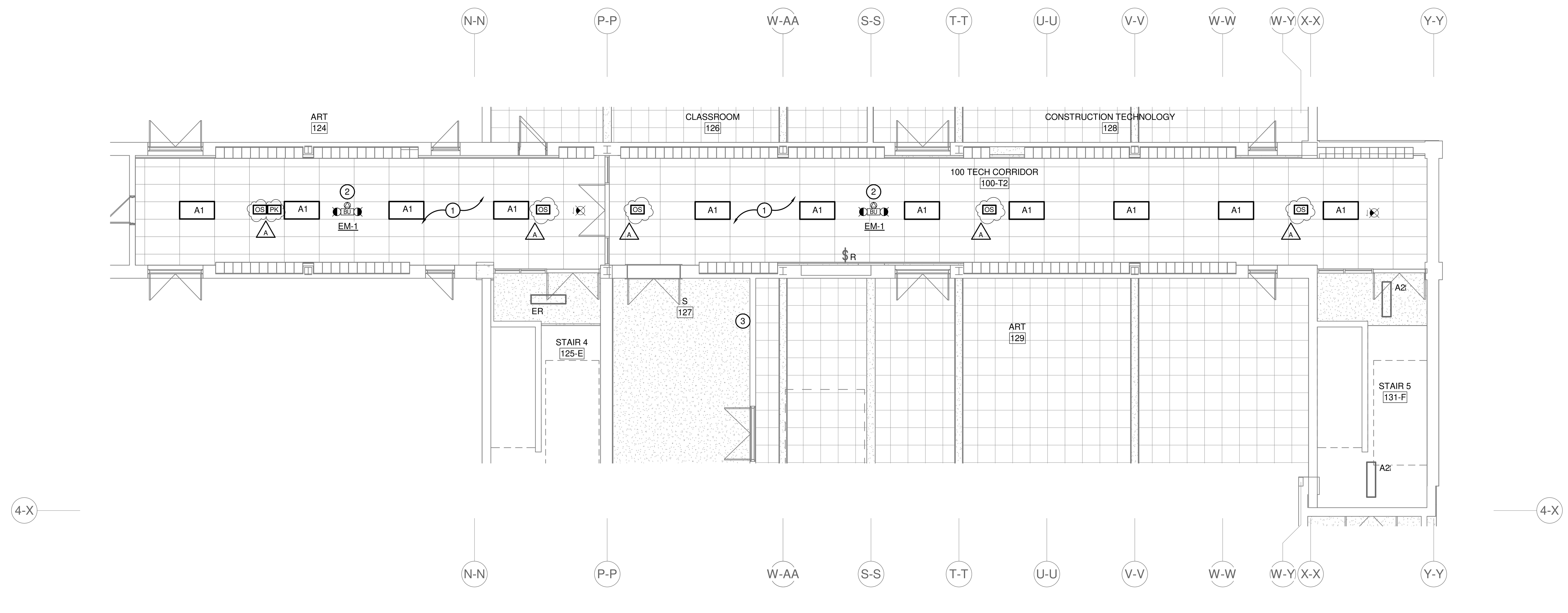
EQUIPMENT WIRING SCHEDULE

SCALE: As Indicated

24X36

PROJECT NUMBER: 2024-168

DRAWING NUMBER: E1.3



A - TECH WING 100 LEVEL - LIGHTING RENOVATION PLAN

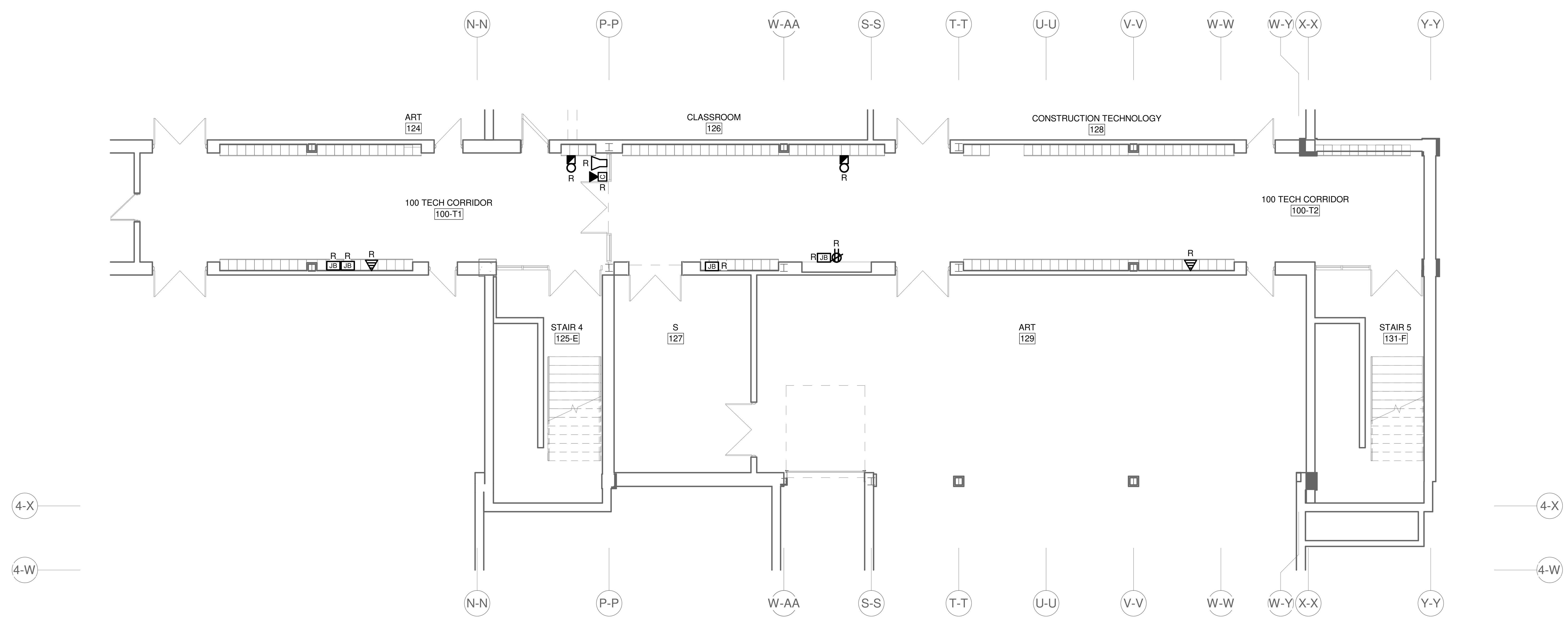
SCALE: 1 : 100

GENERAL RENOVATION NOTES

-	'ER' DENOTES EXISTING ITEM TO REMAIN.
-	EXISTING ELECTRICAL EQUIPMENT NOT SHOWN SHALL REMAIN UNLESS NOTED OTHERWISE.
-	'R' INDICATES EXISTING ITEM TO BE RELOCATED. REFER TO RENOVATION DRAWINGS AND RELOCATE DEVICE AND WIRING TO SUIT. UNLESS OTHERWISE NOTED.
-	'D' INDICATES EXISTING ITEM TO BE DELETED. UNLESS OTHERWISE NOTED DISCONNECT AND REMOVE NOTED DEVICE AND WIRING BACK TO SOURCE.
-	ALL LIGHTING FIXTURES BEING RELOCATED SHALL BE CLEANED AND CHECKED PRIOR TO BEING REINSTALLED.
-	CABLES FOR AUXILIARY SYSTEM DEVICES SHALL NOT BE CUT.

SPECIFIC NOTES

1	FIXTURES IN INDICATED AREA ARE TO BE CONNECTED TO EXISTING CIRCUIT. EXTEND EXISTING WIRING TO SUIT AS REQUIRED.
2	INDICATES NEW EMERGENCY FIXTURE TO BE CONNECTED TO UNSWITCHED SIDE OF LOCAL LIGHTING CIRCUIT, EXTEND FEEDS AS REQUIRED.
3	



B - TECH WING 100 LEVEL - POWER AND SYSTEMS RENOVATION PLAN

SCALE: 1 : 100

DEI Consulting Engineers

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Project Number: 25407

The contractor shall verify all dimensions and report all errors and discrepancies to the Consultant before commencement of the work.
The drawings show general arrangement of services. Follow as closely as actual building construction will permit. Obtain approval for relocation of service from Consultant before commencement of the work.
The drawings do not indicate all offsets fitting and accessories which may be required. Provide the same to meet the required conditions.
Drawings and specifications, etc., prepared and issued by the consultant are the property of the consultant and must be returned at the completion of the project. These documents are not to be duplicated or copied without the consent of the Consultant.
Do not scale this drawing.

No.	REVISIONS	DATE
A	ISSUED FOR ADDENDUM #2	2026-03-17

PROJECT NORTH

CHRONOLOGY	DATE
ISSUED FOR TENDER/PERMIT	2026.02.27
ISSUED FOR 100% REVIEW	2026.02.23
ISSUED FOR 70% REVIEW	2026.02.17

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CLIENT
WATERLOO REGION DISTRICT SCHOOL BOARD

PROJECT NAME
WATERLOO COLLEGIATE INSTITUTE - HVAC & EXTERIOR UPGRADES
300 HAZEL STREET, WATERLOO, ON. N2L 3P2

DRAWING TITLE
LOWER 100 LEVEL - RENOVATION PLAN

SCALE: As Indicated

24X36

PROJECT NUMBER: 2024-168

DRAWING NUMBER: E3.1

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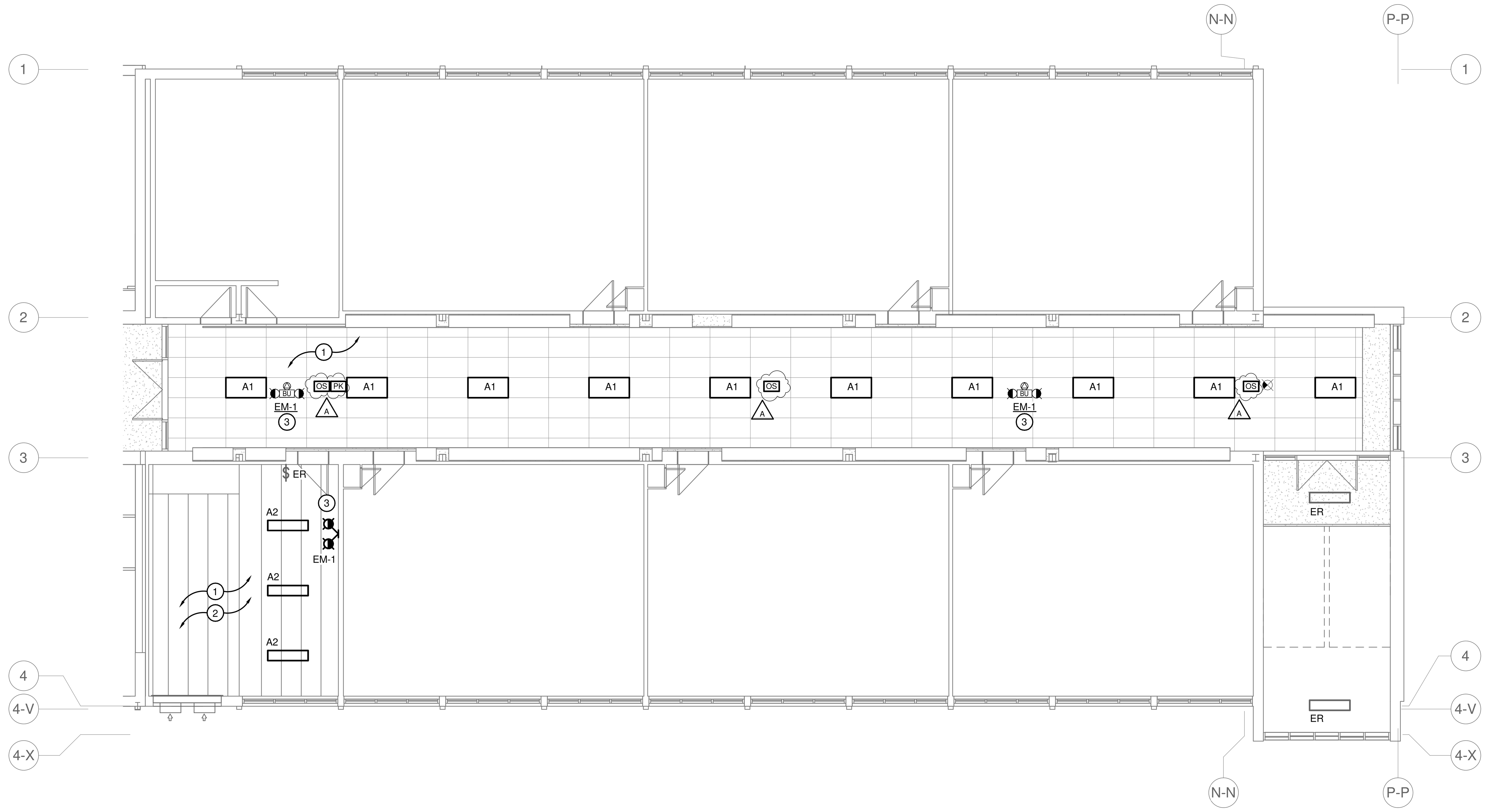
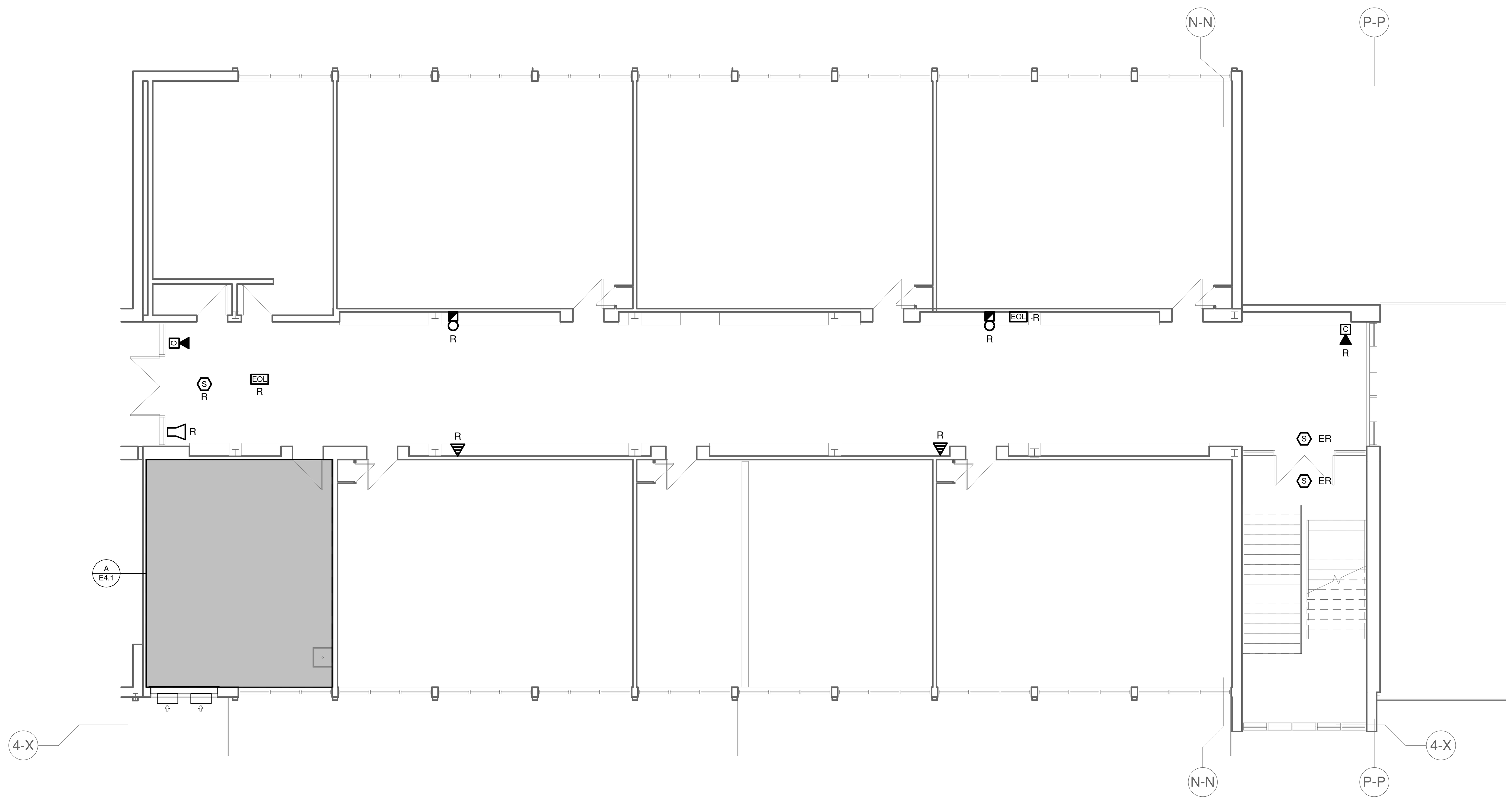


A - WING 'A' 300 LOWER LEVEL - LIGHTING RENOVATION PLAN
SCALE: 1 : 100



B - WING 'A' 300 LOWER LEVEL - POWER AND SYSTEMS RENOVATION PLAN
SCALE: 1 : 100

GENERAL RENOVATION NOTES

-	'ER' DENOTES EXISTING ITEM TO REMAIN.
-	EXISTING ELECTRICAL EQUIPMENT NOT SHOWN SHALL REMAIN UNLESS NOTED OTHERWISE.
-	'R' INDICATES EXISTING ITEM TO BE RELOCATED. REFER TO RENOVATION DRAWINGS AND RELOCATE DEVICE AND WIRING TO SUIT. UNLESS OTHERWISE NOTED.
-	'D' INDICATES EXISTING ITEM TO BE DELETED. UNLESS OTHERWISE NOTED DISCONNECT AND REMOVE NOTED DEVICE AND WIRING BACK TO SOURCE.
-	ALL LIGHTING FIXTURES BEING RELOCATED SHALL BE CLEANED AND CHECKED PRIOR TO BEING REINSTALLED.
-	CABLES FOR AUXILIARY SYSTEM DEVICES SHALL NOT BE CUT.

SPECIFIC NOTES

1	FIXTURES IN INDICATED AREA ARE TO BE CONNECTED TO EXISTING CIRCUIT. EXTEND EXISTING WIRING TO SUIT AS REQUIRED.
2	COORDINATE FIXTURE LOCATIONS WITH MECHANICAL EQUIPMENT TO MAINTAIN MAXIMUM HEADROOM, EXACT LOCATIONS ARE TO BE DETERMINED ON SITE.
3	INDICATES NEW EMERGENCY FIXTURE TO BE CONNECTED TO UNSWITCHED SIDE OF LOCAL LIGHTING CIRCUIT, EXTEND FEEDS AS REQUIRED.

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Consulting Engineers
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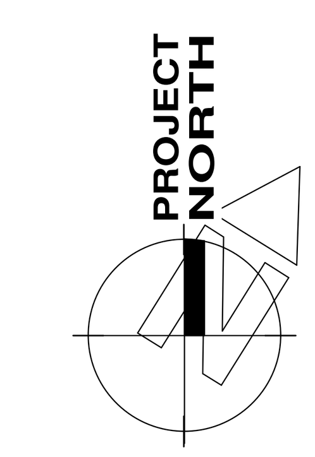
Project Number: 25407

No.	REVISIONS	DATE
A	ISSUED FOR ADDENDUM #2	2026-03-17



CHRONOLOGY	DATE
ISSUED FOR TENDER/PERMIT	2026.02.27
ISSUED FOR 100% REVIEW	2026.02.23
ISSUED FOR 70% REVIEW	2026.02.17

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CLIENT
WATERLOO REGION DISTRICT SCHOOL BOARD

PROJECT NAME
WATERLOO COLLEGIATE INSTITUTE - HVAC & EXTERIOR UPGRADES
300 HAZEL STREET, WATERLOO, ON. N2L 3P2

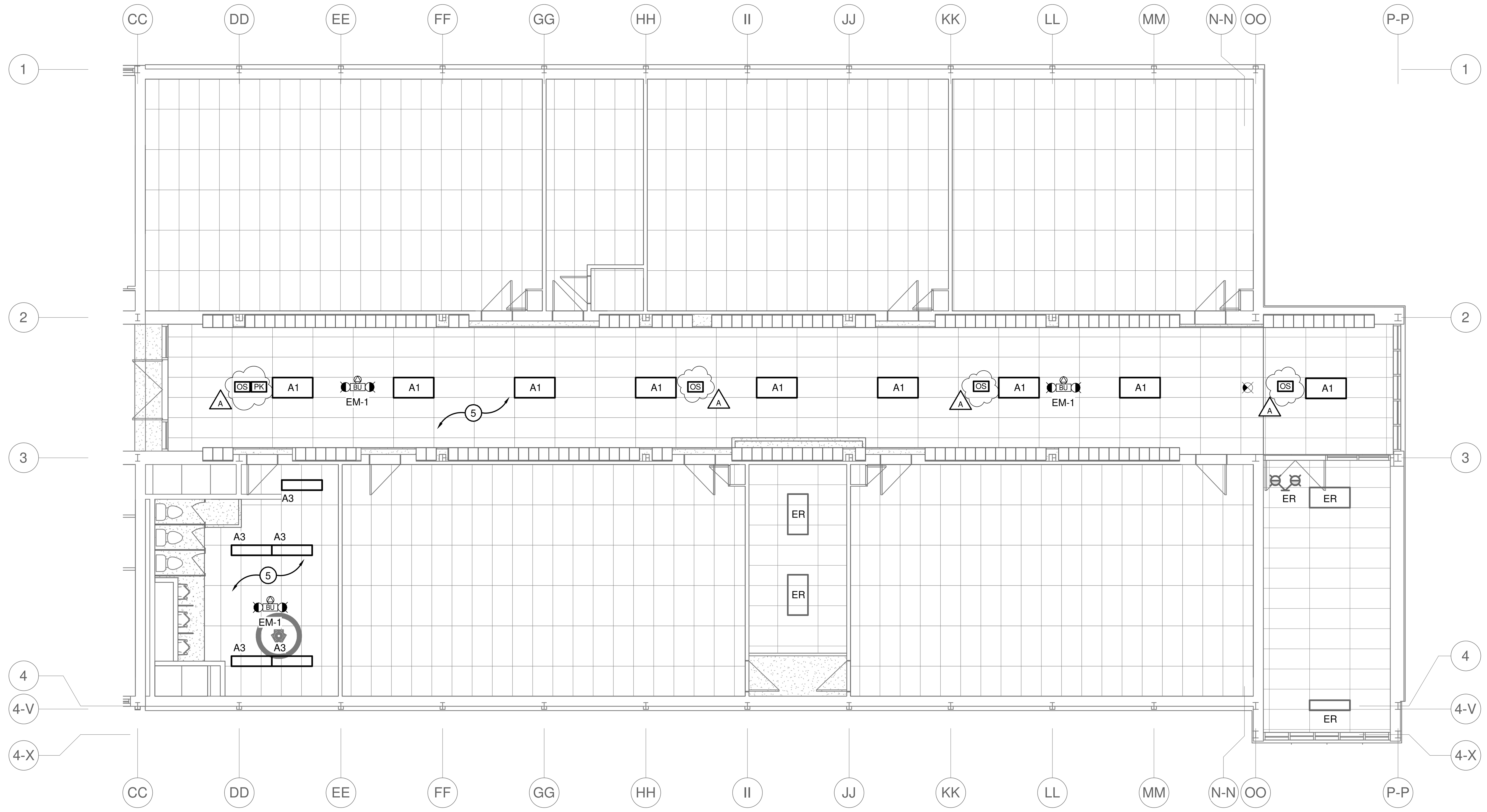
DRAWING TITLE
LOWER 300 LEVEL - RENOVATION PLAN

SCALE
As Indicated
24X36

PROJECT NUMBER
2024-168

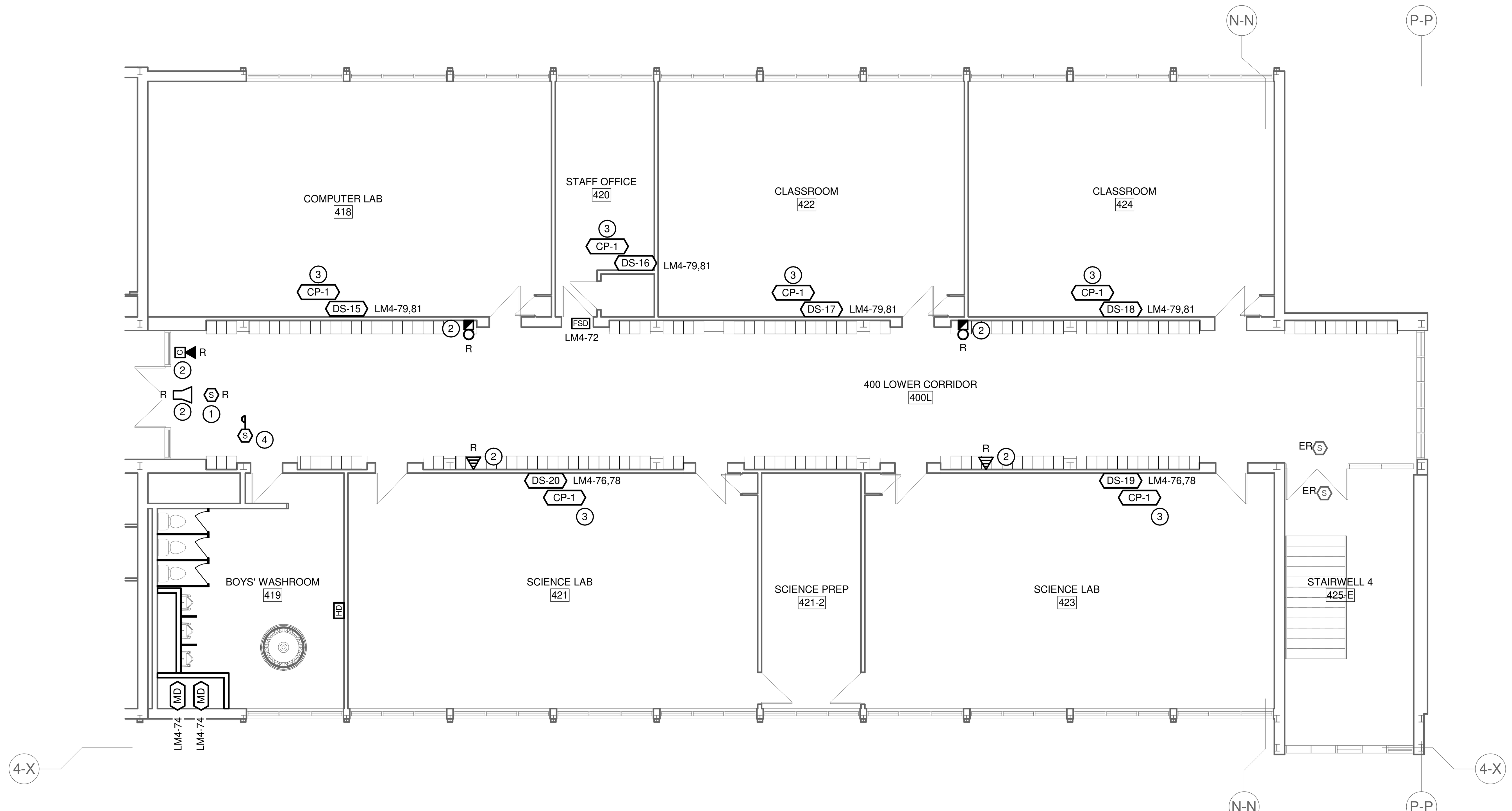
DRAWING NUMBER
E3.2

2026-03-17 1:24:30 PM C:_Revit\25407 WRDSB WCI Elec Central - Phase 2 (RVT25)_iyousefRQR4C.rvt



A - WING 'A' 400 LOWER LEVEL - LIGHTING RENOVATION PLAN

SCALE: 1 : 100



B - WING 'A' 400 LOWER LEVEL - POWER AND SYSTEMS RENOVATION PLAN

SCALE: 1 : 100

GENERAL RENOVATION NOTES

-	'ER' DENOTES EXISTING ITEM TO REMAIN.
-	EXISTING ELECTRICAL EQUIPMENT NOT SHOWN SHALL REMAIN UNLESS NOTED OTHERWISE.
-	'R' INDICATES EXISTING ITEM TO BE RELOCATED. REFER TO RENOVATION DRAWINGS AND RELOCATE DEVICE AND WIRING TO SUIT. UNLESS OTHERWISE NOTED.
-	'D' INDICATES EXISTING ITEM TO BE DELETED. UNLESS OTHERWISE NOTED DISCONNECT AND REMOVE NOTED DEVICE AND WIRING BACK TO SOURCE.
-	ALL LIGHTING FIXTURES BEING RELOCATED SHALL BE CLEANED AND CHECKED PRIOR TO BEING REINSTALLED.
-	CABLES FOR AUXILIARY SYSTEM DEVICES SHALL NOT BE CUT.

SPECIFIC NOTES

1	INDICATED CEILING DEVICE TO BE DISCONNECTED AND RECONNECTED TO ALLOW FOR CEILING REPLACEMENT. PROVIDE FIRE ALARM VERIFICATION FOR ALL NEW AND DISCONNECTED/RECONNECTED FIRE ALARM DEVICES.
2	INDICATED WALL MOUNTED DEVICE TO BE DISCONNECTED AND RECONNECTED TO ALLOW FOR CEILING REPLACEMENT.
3	INDICATES CONDENSATE PUMP TO BE FED FROM ASSOCIATED DS UNIT BY ELECTRICAL CONTRACTOR.
4	INDICATES DUCT TYPE SMOKE DETECTOR MOUNTED IN STRAIGHT SECTION OF SUPPLY DUCT OF MECHANICAL UNIT AS SHOWN. COORDINATE LOCATION WITH DUCT STRUCTURE AND ACCESSORIES (SILENCERS) FOR SUITABLE RUN.
5	FIXTURES IN INDICATED AREA ARE TO BE CONNECTED TO EXISTING CIRCUIT. EXTEND EXISTING WIRING TO SUIT AS REQUIRED.

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Project Number: 25407

The contractor shall verify all dimensions and report all errors and discrepancies to the Consultant before commencement of the work.
The drawings show general arrangement of services. Follow as closely as actual building construction will permit. Obtain approval for relocation of service from Consultant before commencement of the work.
The drawings do not indicate all offsets fitting and accessories which may be required. Provide the same to meet the required conditions.

No.	REVISIONS	DATE
A	ISSUED FOR ADDENDUM #2	2026-03-17

PROJECT NORTH

CHRONOLOGY	DATE
ISSUED FOR TENDER/PERMIT	2026.02.27
ISSUED FOR 100% REVIEW	2026.02.23
ISSUED FOR 70% REVIEW	2026.02.17

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CLIENT
WATERLOO REGION DISTRICT SCHOOL BOARD

PROJECT NAME
WATERLOO COLLEGIATE INSTITUTE - HVAC & EXTERIOR UPGRADES
300 HAZEL STREET, WATERLOO, ON. N2L 3P2

DRAWING TITLE
LOWER 400 LEVEL - RENOVATION PLAN

SCALE: As Indicated

24X36

PROJECT NUMBER: 2024-168

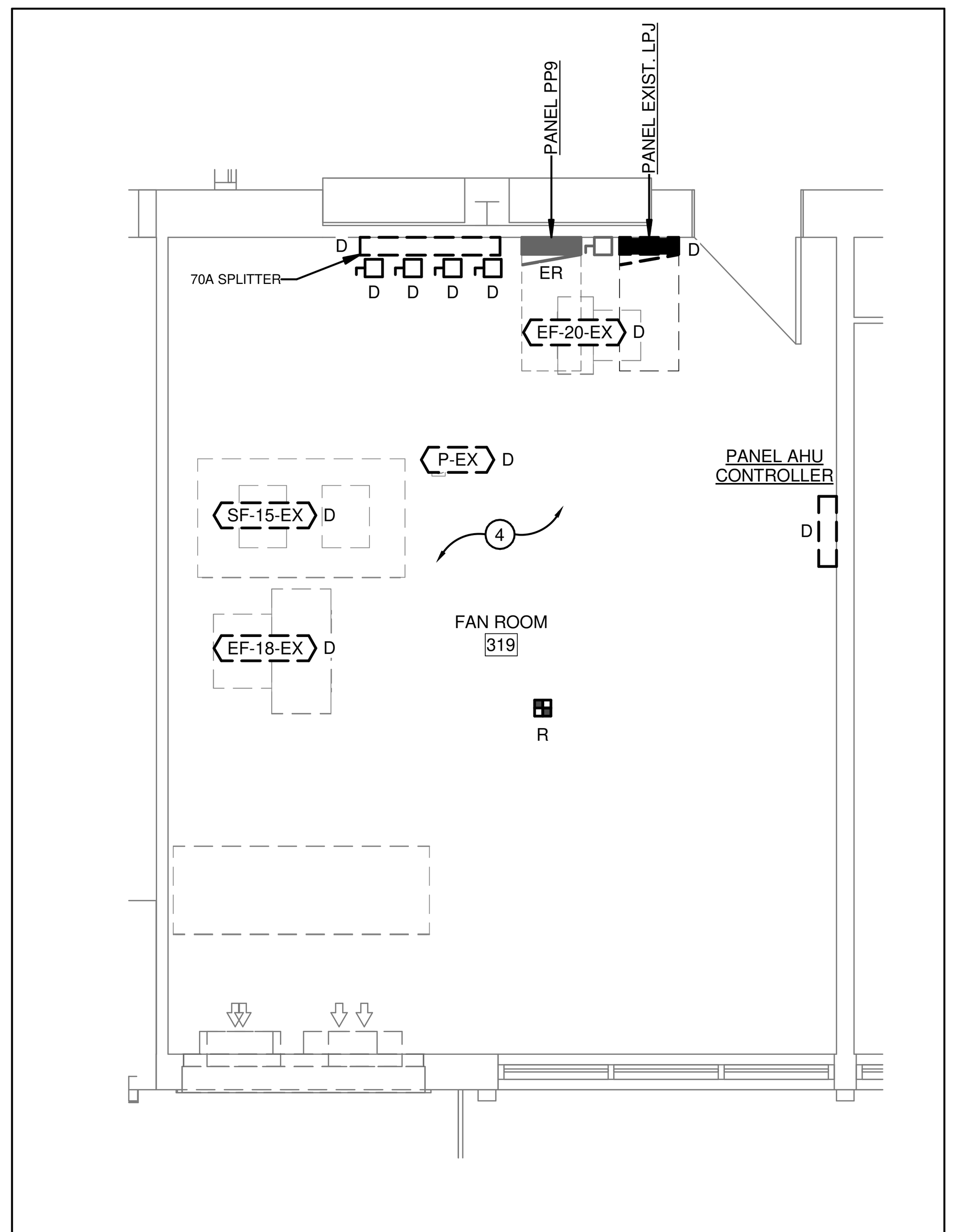
DRAWING NUMBER: E3.3

GENERAL RENOVATION NOTES

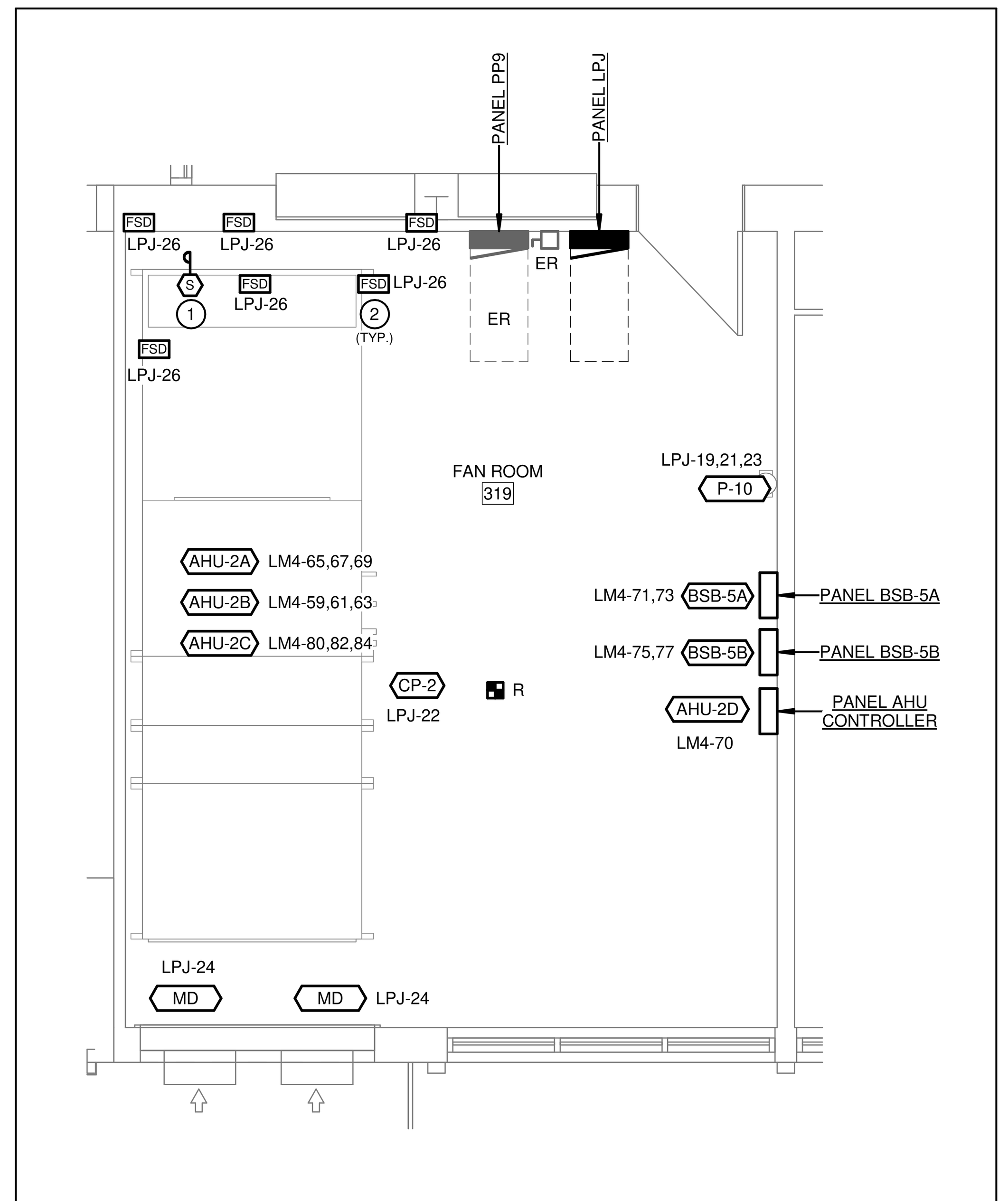
-	'ER' DENOTES EXISTING ITEM TO REMAIN.
-	EXISTING ELECTRICAL EQUIPMENT NOT SHOWN SHALL REMAIN UNLESS NOTED OTHERWISE.
-	'R' INDICATES EXISTING ITEM TO BE RELOCATED. REFER TO RENOVATION DRAWINGS AND RELOCATE DEVICE AND WIRING TO SUIT. UNLESS OTHERWISE NOTED.
-	'D' INDICATES EXISTING ITEM TO BE DELETED. UNLESS OTHERWISE NOTED DISCONNECT AND REMOVE NOTED DEVICE AND WIRING BACK TO SOURCE.
-	ALL LIGHTING FIXTURES BEING RELOCATED SHALL BE CLEANED AND CHECKED PRIOR TO BEING REINSTALLED.
-	CABLES FOR AUXILIARY SYSTEM DEVICES SHALL NOT BE CUT.

SPECIFIC NOTES

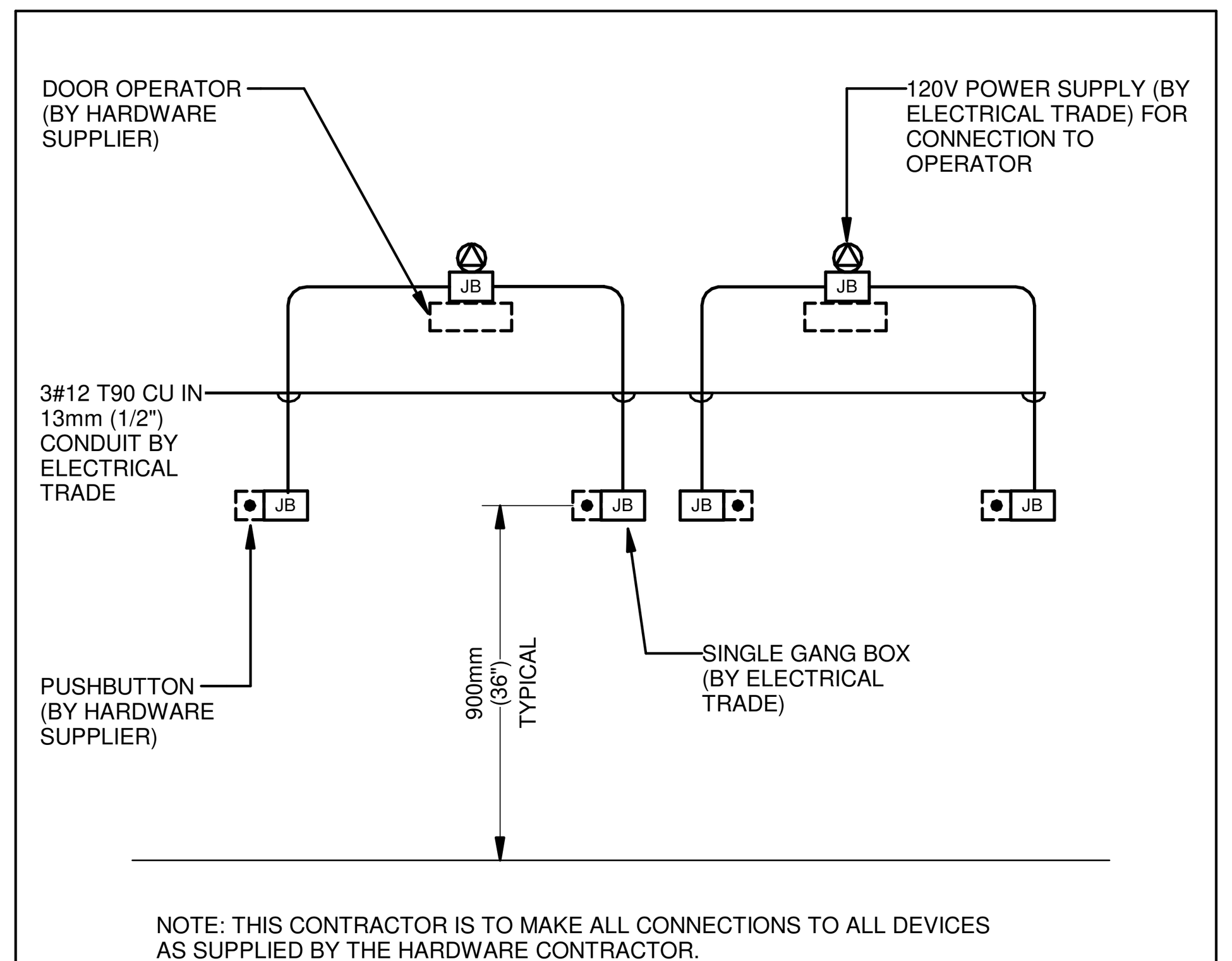
1	INDICATES DUCT TYPE SMOKE DETECTOR MOUNTED IN STRAIGHT SECTION OF SUPPLY DUCT OF MECHANICAL UNIT AS SHOWN. COORDINATE LOCATION WITH DUCT STRUCTURE AND ACCESSORIES (SILENCERS) FOR SUITABLE RUN.
2	INDICATES 120V POWER AND FIRE ALARM CONNECTIONS TO SMOKE/FIRE DAMPER WITH INTEGRAL SMOKE DETECTOR. ADD ONE TROUBLE SIGNAL TO FIRE ALARM PANEL FOR THE SUPERVISION OF 120V POWER CONNECTION. ALARM SIGNAL TO INTEGRAL SMOKE DETECTOR SHALL BE CONNECTED TO LOCAL SIGNALING ZONE. COORDINATE EXACT LOCATION/CONNECTION REQUIREMENTS WITH MECHANICAL CONTRACTOR. SMOKE/FIRE DAMPER AND ASSOCIATED INTEGRAL SMOKE DETECTOR TO BE PROVIDED AND INSTALLED BY MECHANICAL CONTRACTOR. PROVIDE TWO MONITORING MODULES PER SMOKE/FIRE DAMPER ONE TO SUPERVISE 120V POWER SUPPLY CONNECTION TO THE DAMPER ACTUATOR, AND ONE FOR INTEGRAL SMOKE DETECTOR ALARM SIGNAL.
3	INDICATES EXISTING HEATER TO BE DISCONNECTED DURING DEMOLITION TO FACILITATE VESTIBULE WORK. MAINTAIN EXISTING CIRCUIT AND BRANCH WIRING FOR RECONNECTION AS NOTED ON DEMOLITION DRAWINGS.
4	EXISTING CEILING IN MECHANICAL ROOM IS BEING REMOVED. ELECTRICAL CONTRACTOR IS TO INCLUDE TO REMOVE AND RE-INSTALL DEVICES AS REQUIRED FOR REMOVAL.
5	INDICATES NEW EMERGENCY FIXTURE TO BE CONNECTED TO UNSWITCHED SIDE OF LOCAL LIGHTING CIRCUIT, EXTEND FEEDS AS REQUIRED.
6	ELECTRICAL CONTRACTOR TO CONNECT NEW LIGHT FIXTURES TO NEAREST EXISTING LIGHTING CIRCUIT. EXTEND EXISTING WIRING AS REQUIRED TO SUIT FINAL FIXTURE LOCATIONS. VERIFY CIRCUIT VOLTAGE, CAPACITY, AND BREAKER SIZE ON SITE PRIOR TO CONNECTION. UPDATE PANEL SCHEDULES AS REQUIRED.
7	ELECTRICAL CONTRACTOR TO PROVIDE POWER CONNECTION TO NEW AUTOMATIC DOOR OPERATOR FROM NEAREST SUITABLE AVAILABLE CIRCUIT. IF NO BREAKER IS AVAILABLE IN THE PANEL, ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL ONE AS REQUIRED. COORDINATE ALL POWER REQUIREMENTS WITH DOOR OPERATOR MANUFACTURER. EXTEND WIRING AND PROVIDE CONDUIT AS REQUIRED TO SUIT FINAL EQUIPMENT LOCATION.
8	ELECTRICAL CONTRACTOR TO REVIEW EXISTING CONDITIONS AND IDENTIFY ANY ACCESS CONTROL DEVICES (CARD READERS, ELECTRIC STRIKES, DOOR CONTACTS, ETC.) WITHIN THE DEMOLITION AREA. WHERE EXISTING DEVICES ARE PRESENT, REMOVE AND REâ€‘INSTALL ALL DEVICES AS REQUIRED FOR DOOR REPLACEMENT. WHERE NO EXISTING DEVICES ARE PRESENT BUT NEW ACCESS CONTROL IS INDICATED AS PART OF THE RENOVATION SCOPE, PROVIDE ALL REQUIRED ROUGHâ€‘INS, CONDUITS, AND WIRING TO SUIT NEW DOOR AND FRAME CONDITIONS. COORDINATE EXACT REQUIREMENTS AND FINAL LOCATIONS WITH ARCHITECTURAL DRAWINGS AND ACCESS CONTROL SUPPLIER PRIOR TO ROUGHâ€‘IN.



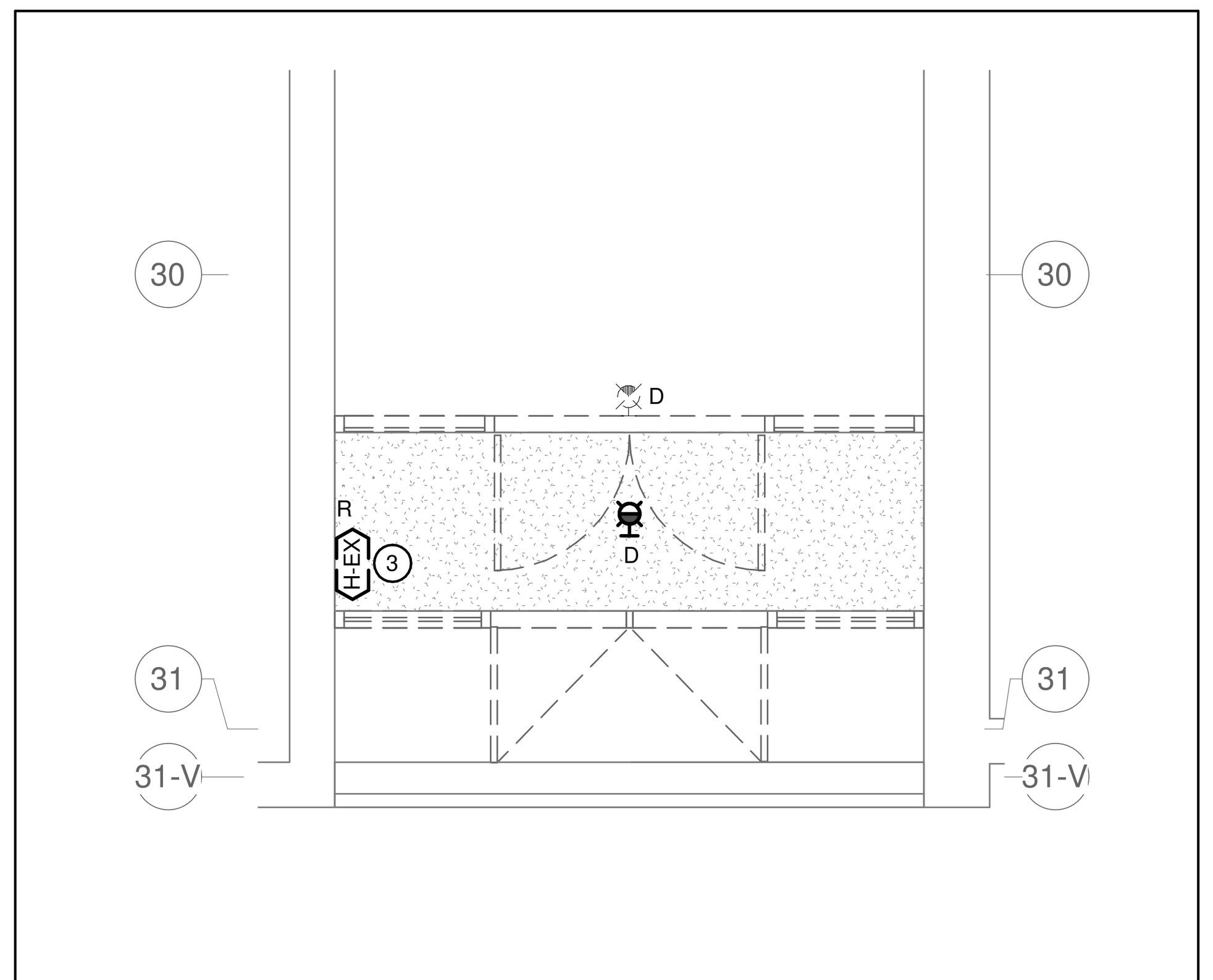
A - ENLARGED FAN ROOM 319 - DEMOLITION PLAN
SCALE: 1 : 50



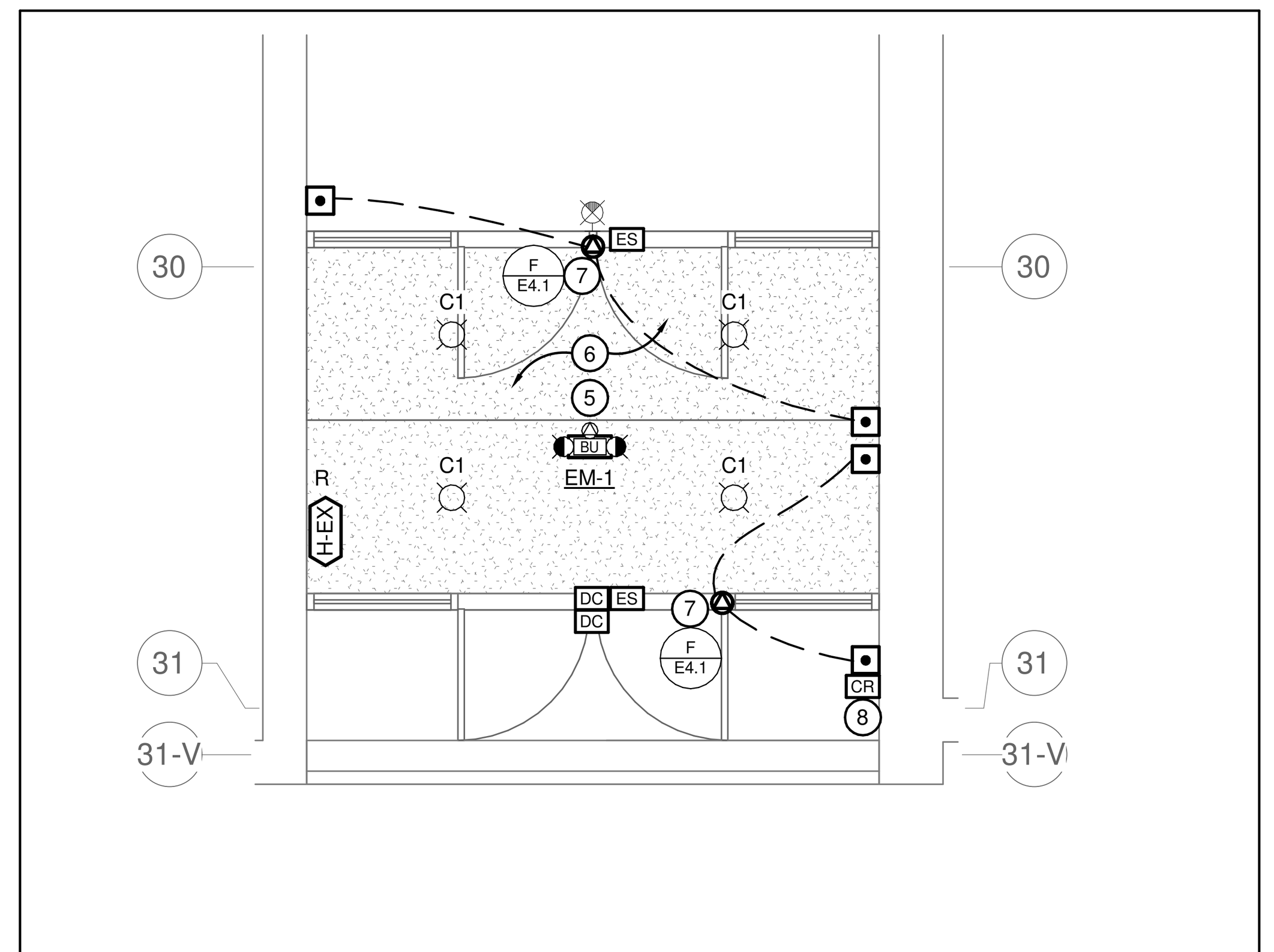
B - ENLARGED FAN ROOM 319 - RENOVATION PLAN
SCALE: 1 : 50



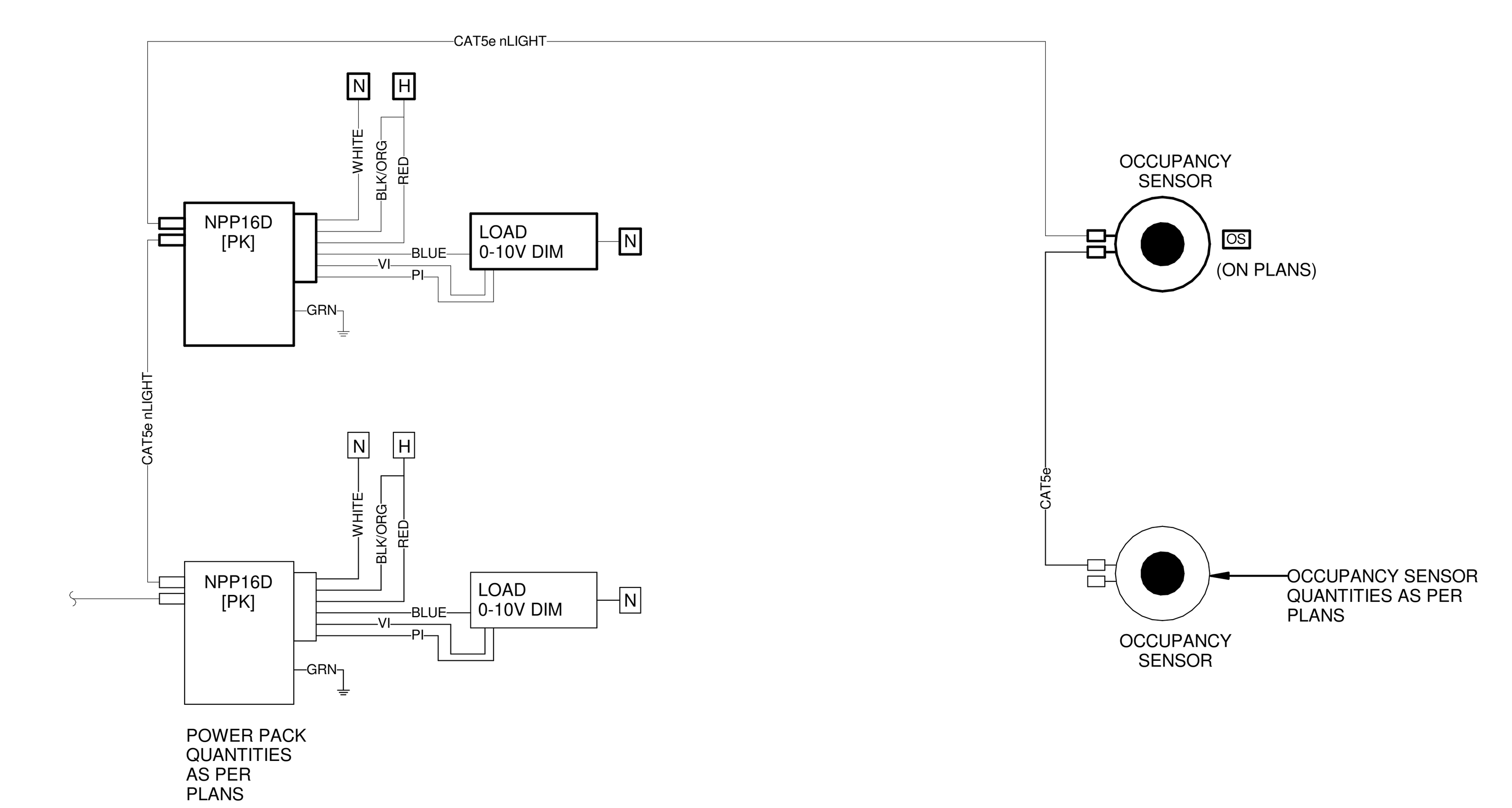
F - DOOR OPERATOR DETAIL
SCALE: NTS



D - WING C - VESTIBULE G-30 DEMOLITION PLAN
SCALE: 1 : 50



C - WING C - VESTIBULE G-30 RENOVATION PLAN
SCALE: 1 : 50



G - LIGHTING SEQUENCE #1
SCALE: NTS

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Project Number: 25407

The contractor shall verify all dimensions and report all errors and discrepancies to the Consultant before commencement of the work.
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The drawings do not indicate all offsets fitting and accessories which may be required. Provide the same to meet the required conditions.

No.	REVISIONS	DATE
A	ISSUED FOR ADDENDUM #2	2026-03-17

PROJECT NORTH

ISSUED FOR TENDER/PERMIT	2026.02.27
ISSUED FOR 100% REVIEW	2026.02.23
ISSUED FOR 70% REVIEW	2026.02.17
CHRONOLOGY	DATE

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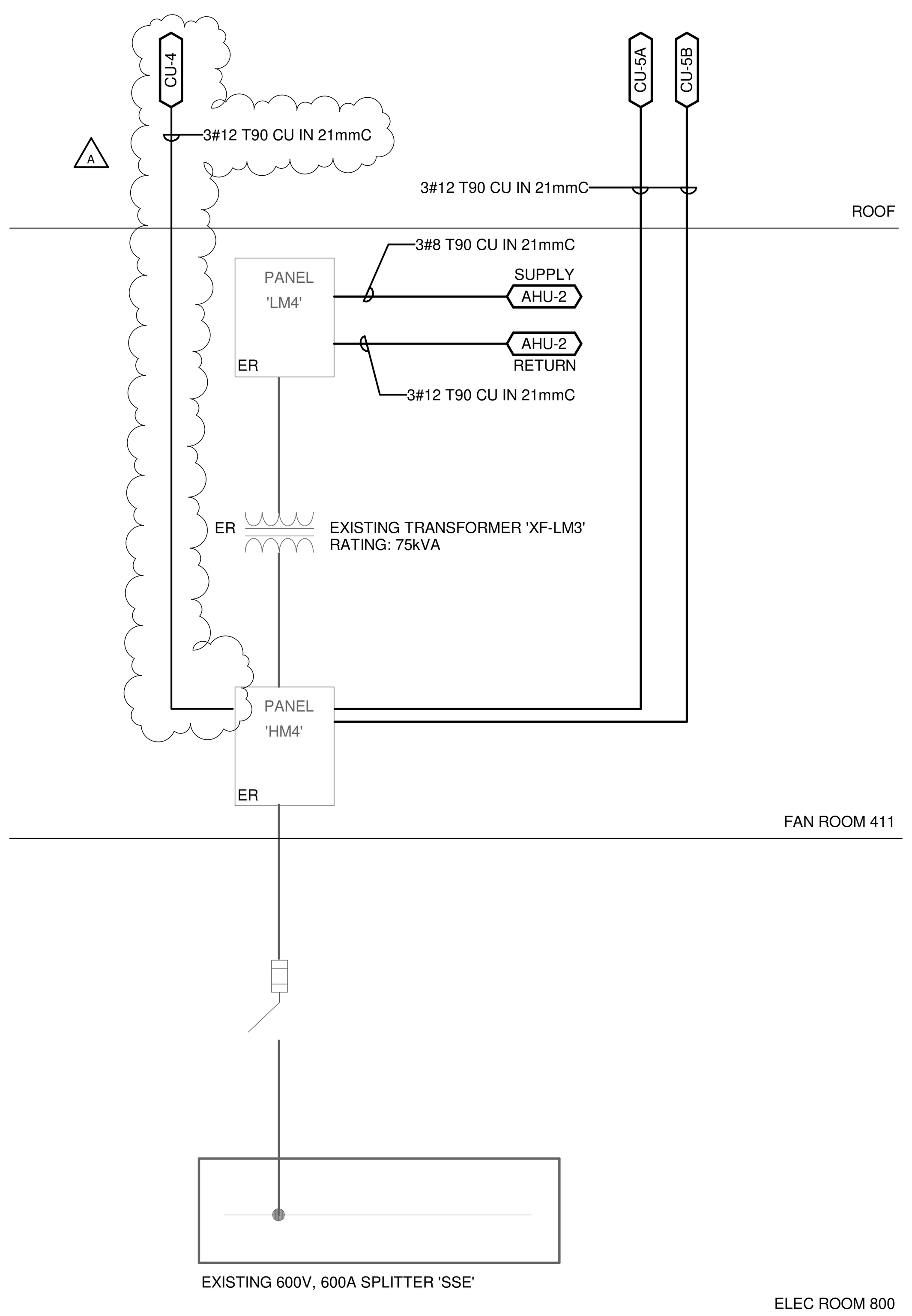
CLIENT
WATERLOO REGION DISTRICT SCHOOL BOARD

PROJECT NAME
WATERLOO COLLEGIATE INSTITUTE - HVAC & EXTERIOR UPGRADES
300 HAZEL STREET, WATERLOO, ON. N2L 3P2

DRAWING TITLE
ENLARGED PLANS AND DETAILS

SCALE	DRAWING NUMBER
As Indicated	E4.1
24X36	
PROJECT NUMBER 2024-168	

2026-03-17 1:24:33 PM



PARTIAL DISTRIBUTION RISER

SCALE: NTS

DISTRIBUTION RISER NOTES

1	REFER TO SPECIFICATION FOR INFORMATION REGARDING MOULDED CASE CIRCUIT BREAKERS.
2	ALL DISTRIBUTION EQUIPMENT ARE TO BE PROVIDED WITH WARNING LABELS CONFORMING TO THE ONTARIO ELECTRICAL SAFETY CODE RULE #2-306(1),(2)
3	INSTALL GROUND WIRE TO SUIT THE ELECTRICAL SAFETY CODE IN ALL CONDUIT.
4	ALL LIGHTING CIRCUITS ARE TO BE PROVIDED WITH SEPARATE NEUTRALS. SIZE BRANCH CONDUITS ACCORDINGLY.

PANEL EXIST. LPJ

MAINS: 100.0 A **VOLTAGE:** 120/208 3P4W **INTERRUPTING CAPACITY:** 10,000
MOUNTING: SURFACE **NEUTRAL BUS:** 100.00% **ENCLOSURE:** TYPE 2
MAKE/MODEL: FPE NLAB

DES	CKT	Load Name	Type	Rating	Poles	A	B	C	Poles	Rating	Type	Load Name	CKT	DES
ER	1	FAN ROOM LIGHTS	--	15.0 A	1				1	15.0 A	--	FAN ROOM RECEPTACLE	2	ER
ER	3	WASHROOM LIGHTS	--	15.0 A	1				1	15.0 A	--	ROOM 218 RECEPTACLE	4	ER
ER	5	HALL LIGHTS	--	15.0 A	1				1	15.0 A	--	ROOM 322 PROJECTOR	6	ER
ER	7	HALL LIGHTS	--	15.0 A	1				1	15.0 A	--	ROOMS 325/326 PROJECTOR	8	ER
ER	9	HALL RECEPTACLE	--	20.0 A	1				1	15.0 A	--	EMERGENCY LIGHTS	10	ER
ER	11	STAFF ROOM A/C	--	15.0 A	1				1	15.0 A	--	BAS CONTROL	12	ER
ER	13	STAFF ROOM A/C	--	15.0 A	1				2	15.0 A	--	PUMP-10	14	ER
ER	15	ROOM 325 PROJECTOR	--	15.0 A	1								16	
ER	17	SPARE	--	15.0 A	1				2	30.0 A	--	GIRLS HAND DRYER	18	ER
	19	SPACE	--	--	1								20	
	21	SPACE	--	--	1				1	--	--	SPACE	22	
	23	SPACE	--	--	1				1	--	--	SPACE	24	
	25	SPACE	--	--	1				1	--	--	SPACE	26	
	27	SPACE	--	--	1				1	--	--	SPACE	28	
	29	SPACE	--	--	1				1	--	--	SPACE	30	

DESIGNATION (DES);

'ER' INDICATES EXISTING SERVICE AND BREAKER THAT SHOULD REMAIN UNTOUCHED
'SP' INDICATES EXISTING BREAKER THAT MAY BECOME SPARE DUE TO DEMOLITION. (CONFIRM ON SITE)
'RW' INDICATES EXISTING BREAKER THAT SHOULD BE REWIRED TO SERVICE DEVICES INDICATED ON PLAN
'SB' INDICATES SPARE BREAKER TO BE USED FOR NEW SERVICE INDICATED.
'NB' INDICATES NEW BREAKER AND WIRING TO SERVICE INDICATED. PROVIDE MOUNTING HARDWARE AS REQUIRED.
'D' INDICATES EXISTING BREAKER TO BE REMOVED COMPLETE. PROVIDE FILLER PLATES AS REQUIRED.

NOTES:

THIS CONTRACTOR IS TO INVESTIGATE BREAKERS AND REVISE PANEL SCHEDULES TO SUIT RENOVATION, NOTING ANY BREAKERS THAT BECOME SPARE DUE TO DEMOLITION. THIS CONTRACTOR IS ALSO TO NOTIFY THE CONSULTANT OF ANY BREAKERS THAT ARE INDICATED TO BE DEMOLISHED OR REUSED, BUT WHICH ARE IN USE BY OTHER DEVICES OR SERVICES.

PANEL HM4

MAINS: 200.0 A **VOLTAGE:** 347/600V 3P4W **INTERRUPTING CAPACITY:** 22,000
MOUNTING: SURFACE **NEUTRAL BUS:** 100.00% **ENCLOSURE:** TYPE 2
MAKE/MODEL: SQUARE D - I LINE

DES	CKT	Load Name	Type	Rating	Poles	A	B	C	Poles	Rating	Type	Load Name	CKT	DES
	1												2	
ER	3	TRANSFORMER 'XF-LM3' (75 KVA)		90.0 A	3				3	20.0 A		CU-3A	4	ER
	5												6	
	7												8	
ER	9	CU-3B		20.0 A	3				3	20.0 A		CU-3C	10	ER
	11												12	
	13												14	
ER	15	CU-4		15.0 A	3				3	15.0 A	--	SPARE	16	ER
	17												18	
	19	SPACE	--	--	1				1	--	--	SPACE	20	
	21	SPACE	--	--	1				1	--	--	SPACE	22	
	23	SPACE	--	--	1				1	--	--	SPACE	24	
	25												26	
NB	27	CU-2A		25.0 A	3				3	25.0 A		CU-2B	28	NB
	29												30	
	31	SPACE	--	--	1				1	--	--	SPACE	32	
	33	SPACE	--	--	1				1	--	--	SPACE	34	
	35	SPACE	--	--	1				1	--	--	SPACE	36	
	37	SPACE	--	--	1				1	--	--	SPACE	38	
	39	SPACE	--	--	1				1	--	--	SPACE	40	
	41	SPACE	--	--	1				1	--	--	SPACE	42	

DESIGNATION (DES);

'ER' INDICATES EXISTING SERVICE AND BREAKER THAT SHOULD REMAIN UNTOUCHED
'SP' INDICATES EXISTING BREAKER THAT MAY BECOME SPARE DUE TO DEMOLITION. (CONFIRM ON SITE)
'RW' INDICATES EXISTING BREAKER THAT SHOULD BE REWIRED TO SERVICE DEVICES INDICATED ON PLAN
'SB' INDICATES SPARE BREAKER TO BE USED FOR NEW SERVICE INDICATED.
'NB' INDICATES NEW BREAKER AND WIRING TO SERVICE INDICATED. PROVIDE MOUNTING HARDWARE AS REQUIRED.
'D' INDICATES EXISTING BREAKER TO BE REMOVED COMPLETE. PROVIDE FILLER PLATES AS REQUIRED.

NOTES:

THIS CONTRACTOR IS TO INVESTIGATE BREAKERS AND REVISE PANEL SCHEDULES TO SUIT RENOVATION, NOTING ANY BREAKERS THAT BECOME SPARE DUE TO DEMOLITION. THIS CONTRACTOR IS ALSO TO NOTIFY THE CONSULTANT OF ANY BREAKERS THAT ARE INDICATED TO BE DEMOLISHED OR REUSED, BUT WHICH ARE IN USE BY OTHER DEVICES OR SERVICES.

NEW PANEL LPJ

MAINS: 100.0 A **VOLTAGE:** 120/208 3P4W **INTERRUPTING CAPACITY:** 10,000
MOUNTING: SURFACE **NEUTRAL BUS:** 100.00% **ENCLOSURE:** TYPE 2
MAKE/MODEL: ITE - NLAB

DES	CKT	Load Name	Type	Rating	Poles	A	B	C	Poles	Rating	Type	Load Name	CKT	DES
ER	1	FAN ROOM LIGHTS	--	15.0 A	1				1	15.0 A	--	FAN ROOM RECEPTACLE	2	ER
ER	3	WASHROOM LIGHTS	--	15.0 A	1				1	15.0 A	--	ROOM 218 RECEPTACLE	4	ER
ER	5	HALL LIGHTS	--	15.0 A	1				1	15.0 A	--	ROOM 322 PROJECTOR	6	ER
ER	7	HALL LIGHTS	--	15.0 A	1				1	15.0 A	--	ROOMS 325/326 PROJECTOR	8	ER
ER	9	HALL RECEPTACLE	--	20.0 A	1				1	15.0 A	--	EMERGENCY LIGHTS	10	ER
ER	11	STAFF ROOM A/C	--	15.0 A	1				1	15.0 A	--	BAS CONTROL	12	ER
ER	13	STAFF ROOM A/C	--	15.0 A	1				2	15.0 A	--	PUMP-10	14	ER
ER	15	ROOM 325 PROJECTOR	--	15.0 A	1								16	
ER	17	SPARE	--	15.0 A	1				2	30.0 A	--	GIRLS HAND DRYER	18	ER
	19												20	
NB	21	P-10		15.0 A	3				1	15.0 A		CP-2	22	NB
	23								1	15.0 A		MOTORIZED DAMPER MD	24	NB
	25								1	15.0 A		FIRE SMOKE DAMPERS	26	NB
	27												28	
	29												30	
	31												32	
	33												34	
	35												36	
	37												38	
	39												40	
	41												42	

DESIGNATION (DES);

'ER' INDICATES EXISTING SERVICE AND BREAKER THAT SHOULD REMAIN UNTOUCHED
'SP' INDICATES EXISTING BREAKER THAT MAY BECOME SPARE DUE TO DEMOLITION. (CONFIRM ON SITE)
'RW' INDICATES EXISTING BREAKER THAT SHOULD BE REWIRED TO SERVICE DEVICES INDICATED ON PLAN
'SB' INDICATES SPARE BREAKER TO BE USED FOR NEW SERVICE INDICATED.
'NB' INDICATES NEW BREAKER AND WIRING TO SERVICE INDICATED. PROVIDE MOUNTING HARDWARE AS REQUIRED.
'D' INDICATES EXISTING BREAKER TO BE REMOVED COMPLETE. PROVIDE FILLER PLATES AS REQUIRED.

NOTES:

THIS CONTRACTOR IS TO INVESTIGATE BREAKERS AND REVISE PANEL SCHEDULES TO SUIT RENOVATION, NOTING ANY BREAKERS THAT BECOME SPARE DUE TO DEMOLITION. THIS CONTRACTOR IS ALSO TO NOTIFY THE CONSULTANT OF ANY BREAKERS THAT ARE INDICATED TO BE DEMOLISHED OR REUSED, BUT WHICH ARE IN USE BY OTHER DEVICES OR SERVICES.

PANEL LM4

MAINS: 400.0 A **VOLTAGE:** 120/208 3P4W **INTERRUPTING CAPACITY:** 10,000
MOUNTING: SURFACE **NEUTRAL BUS:** 100.00% **ENCLOSURE:** TYPE 2
MAKE/MODEL: SQUARE D - NQ484L4C

DES	CKT	Load Name	Type	Rating	Poles	A	B	C	Poles	Rating	Type	Load Name	CKT	DES
	1												2	
ER	3	CU-1		80.0 A	3				3	40.0 A		CU-2	4	ER
	5												6	
	7												8	
ER	9	AHU-1 SUPPLY		50.0 A	3				3	25.0 A		AHU-1 RETURN	10	ER
	11												12	
ER	13	AHU-1 CONTROLS	--	15.0 A	1								14	
ER	15	DS-1		15.0 A	2				3	15.0 A	--	AHU-1 ERV	16	ER
	17												18	
ER	19	DS-3		15.0 A	2				2	15.0 A		DS-2	20	ER
	21												22	
ER	23	DS-5		15.0 A	2				2	15.0 A		DS-4	24	ER
	25												26	
ER	27	DS-7		15.0 A	2				2	15.0 A		DS-6	28	ER
	29												30	
ER	31	DS-9		15.0 A	2				2	15.0 A		DS-8	32	ER
	33												34	
ER	35	DS-11		15.0 A	2				2	15.0 A		DS-10	36	ER
	37												38	
ER	39	DS-13		15.0 A	2				2	15.0 A		DS-12	40	ER
	41												42	
ER	43	MOTORIZED DAMPER MD-1		15.0 A	1				2	15.0 A		DS-14	44	ER
ER	45	ROOF RECEPTACLE		20.0 A	1								46	
ER	47	*HEAT TRACE		15.0 A	2				1	25.0 A		EF-1	48	ER
	49								2	15.0 A		BSB-3A	50	ER
ER	51	*HEAT TRACE	--	15.0 A	2								52	
	53								2	15.0 A		BSB-3B	54	ER
ER	55	SPARE	--	15.0 A	2								56	
	57								2	15.0 A		BSB-3C	58	ER
	59												60	
NB	61	AHU-2B - RETURN EXHAUST FAN		25.0 A	3				1	15.0 A	--	SPARE	62	NB
	63								1	15.0 A	--	SPARE	64	NB
	65								1	15.0 A	--	SPARE	66	NB
NB	67	AHU-2A - SUPPLY FAN		50.0 A	3				1	20.0 A		ROOF CONVENIENCE RECEPTACLE	68	NB
	69								1	15.0 A		AHU-2D - CONTROLS	70	NB
NB	71	BSB-5A		15.0 A	2				1	15.0 A		FIRE SMOKE DAMPER - STAFF OFFICE 420	72	NB
	73								1	15.0 A		MOTORIZED DAMPER - BOYS WR 419	74	NB
NB	75	BSB-5B		15.0 A	2				2	15.0 A		WALL MOUNTED AC UNITS DS-19/20	76	NB
	77												78	
NB	79	WALL MOUNTED AC UNITS DS-15/16/17/18		15.0 A	2								80	
	81								3	15.0 A		AHU-2C - ERV	82	NB
NB	83	EF-1		15.0 A	1								84	

DESIGNATION (DES);

'ER' INDICATES EXISTING SERVICE AND BREAKER THAT SHOULD REMAIN UNTOUCHED
'SP' INDICATES EXISTING BREAKER THAT MAY BECOME SPARE DUE TO DEMOLITION. (CONFIRM ON SITE)
'RW' INDICATES EXISTING BREAKER THAT SHOULD BE REWIRED TO SERVICE DEVICES INDICATED ON PLAN
'SB' INDICATES SPARE BREAKER TO BE USED FOR NEW SERVICE INDICATED.
'NB' INDICATES NEW BREAKER AND WIRING TO SERVICE INDICATED. PROVIDE MOUNTING HARDWARE AS REQUIRED.
'D' INDICATES EXISTING BREAKER TO BE REMOVED COMPLETE. PROVIDE FILLER PLATES AS REQUIRED.

NOTES:

THIS CONTRACTOR IS TO INVESTIGATE BREAKERS AND REVISE PANEL SCHEDULES TO SUIT RENOVATION, NOTING ANY BREAKERS THAT BECOME SPARE DUE TO DEMOLITION. THIS CONTRACTOR IS ALSO TO NOTIFY THE CONSULTANT OF ANY BREAKERS THAT ARE INDICATED TO BE DEMOLISHED OR REUSED, BUT WHICH ARE IN USE BY OTHER DEVICES OR SERVICES.

* INDICATES 33mA GROUND FAULT STYLE BREAKER.

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Project Number: 25407

No.	REVISIONS	DATE
A	ISSUED FOR ADDENDUM #2	2026-03-17

CHRONOLOGY	DATE
ISSUED FOR TENDER/PERMIT	2026.02.27
ISSUED FOR 100% REVIEW	2026.02.23
ISSUED FOR 70% REVIEW	2026.02.17

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CLIENT
WATERLOO REGION DISTRICT SCHOOL BOARD

PROJECT NAME
WATERLOO COLLEGIATE INSTITUTE - HVAC & EXTERIOR UPGRADES
300 HAZEL STREET, WATERLOO, ON. N2L 3P2

DRAWING TITLE
DISTRIBUTION RISER DIAGRAM & PANEL SCHEDULE

SCALE: As Indicated
24X36
PROJECT NUMBER: 2024-168
DRAWING NUMBER: E5.1