MECHANICAL DRAWING LIST

DRAWING NO.	DRAWING NAME
M1.0	DRAWING LIST, SYMBOL LISTS, NOTES - MECHANICAL
M2.0	PARTIAL GROUND FLOOR DEMOLITION PLAN - HVAC
M2.1	PARTIAL GROUND FLOOR DEMOLITION PLAN - HVAC
M2.2	PARTIAL GROUND FLOOR DEMOLITION PLAN - HVAC
M2.3	PARTIAL GROUND FLOOR DEMOLITION PLAN - HVAC
M2.4	PARTIAL SECOND FLOOR DEMOLITION PLAN - HVAC
M2.5	PARTIAL SECOND FLOOR DEMOLITION PLAN - HVAC
M2.6	PARTIAL SECOND FLOOR DEMOLITION PLAN - HVAC
M2.7	PARTIAL SECOND FLOOR DEMOLITION PLAN - HVAC
M2.8	PARTIAL ROOF FLOOR DEMOLITION PLAN - HVAC
M3.0	PARTIAL GROUND FLOOR NEW WORK PLAN - HVAC
M3.1	PARTIAL GROUND FLOOR NEW WORK PLAN - HVAC
M3.2	PARTIAL GROUND FLOOR NEW WORK PLAN - HVAC
M3.3	PARTIAL GROUND FLOOR NEW WORK PLAN - HVAC
M3.4	PARTIAL SECOND FLOOR NEW WORK PLAN - HVAC
M3.5	PARTIAL SECOND FLOOR NEW WORK PLAN - HVAC
M3.6	PARTIAL SECOND FLOOR NEW WORK PLAN - HVAC
M3.7	PARTIAL SECOND FLOOR NEW WORK PLAN - HVAC
M3.8	PARTIAL ROOF NEW WORK PLAN - HVAC
M3.9	PARTIAL ROOF NEW WORK PLAN - HVAC
M3.10	PARTIAL ROOF NEW WORK PLAN - HVAC
M3.11	PARTIAL ROOF NEW WORK PLAN - HVAC
M3.12	PARTIAL ROOF NEW WORK PLAN - HVAC
M4.0	CONTROLS DIAGRAMS 1 - MECHANICAL
M4.1	CONTROLS DIAGRAMS 2 - MECHANICAL
M4.2	CONTROLS DIAGRAMS 3 - MECHANICAL
M4.3	CONTROLS DIAGRAMS 4 - MECHANICAL
M4.4	CONTROLS DIAGRAMS 5 - MECHANICAL
M5.0	EQUIPMENT SCHEDULES 1 - MECHANICAL
M5.1	EQUIPMENT SCHEDULES 2 - MECHANICAL
M6.0	DETAILS 1 - MECHANICAL
M6.1	DETAILS 2 - MECHANICAL
M6.2	DETAILS 3 - MECHANICAL

GENERAL NOTES

1. CONTRACTOR SHALL VISIT SITE PRIOR TO SUBMITTING BID TO VERIFY EXISTING CONDITIONS AND TO CONFIRM THAT EQUIPMENT AND SERVICES CAN BE INSTALLED AS INDICATED ON THE DRAWINGS. CONTRACTOR TO INCLUDE FOR ALL COSTS ASSOCIATED TO FACILITATE INSTALLATION. IT IS THE CONTRACTORS RESPONSIBILITY TO NOTIFY THE ENGINEERS OF ANY DISCREPANCIES, OMMISSIONS, AND INTERFERENCES.
2. ENSURE THAT ALL NEW AND EXISTING EQUIPMENT REQUIRING MAINTENANCE IS ACCESSIBLE AND THAT ACCESS REQUIREMENTS ARE NOT OBSTRUCTED BY NEW OR EXISTING SERVICES. PROVIDE ACCESS DOORS/PANELS TO MATCH BASE BUILDING STANDARDS WHERE REQUIRED.
3. PROVIDE ALL REQUIRED SCANNING, CORING/CUTTING AND PATCHING TO PERFORM THE SCOPE OF WORK AS OUTLINED IN THE DRAWINGS.
4. CONTRACTOR IS TO BE RESPONSIBLE FOR THE REMOVAL AND DISPOSAL OF ALL PIPING, DUCTWORK AND EQUIPMENT, AS SHOWN ON THE DEMOLITION PLAN. CUT, CAP, AND ISOLATE HEATING WATER AND DUCT CONNECTIONS FOR NEW WORK AS INDICATED.
5. NOT ALL EXISTING PIPING AND OBSTRUCTIONS ARE SHOWN ON THE DRAWINGS. WHERE INTERFERENCES EXIST, CONTRACTOR SHALL REROUTE THE NEW WORK TO SUIT.
6. INSULATE ALL NEW PIPING, DUCTWORK AND ANY EXISTING PIPING AND DUCTWORK WHERE INSULATION HAS BEEN REMOVED OR DAMAGED BY THIS WORK. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENT.
7. WHERE CONNECTING TO EXISTING SERVICES, CONTRACTOR TO MATCH ALL EXISTING PIPE/DUCT SIZES AND PROVIDE TRANSITIONS WHERE REQUIRED, UNLESS OTHERWISE NOTED.
8. NOT ALL EQUIPMENT CONNECTIONS ARE SHOWN. REFER TO EQUIPMENT MANUFACTURERS LITERATURE FOR ALL PIPING AND DUCTWORK CONNECTIONS.
9. NEW DIGITAL/ELECTRONIC CONTROLS TO BE COMPATIBLE WITH EXISTING BAS ON SITE.
10. CONTRACTOR TO FLUSH AND CLEAN ALL NEW WORK THOROUGHLY TO WHERE THE SYSTEMS CAN BE ISOLATED FOR THIS WORK AS PER THE SPECIFICATIONS PRIOR TO TIE IN TO THE EXISTING WORK/EQUIPMENT.
11. RENAME ALL EQUIPMENT TO SUIT NEW CONSTRUCTION AS INDICATED ON DOCUMENTS. THIS WORK SHALL INCLUDE PROVIDING OR REPLACING LAMACOIDS AT ALL EQUIPMENT AND ASSOCIATED CONTROL POINTS ON THE BAS.
12. ALL HEATING PIPING TO AND INCLUDING 50MMØ (2"Ø) SHALL BE SCREWED. PIPING 65MMØ (2.5"Ø) AND OVER SHALL BE WELDED. REFER TO SPECIFICATIONS FOR DETAILS.
13. CONTRACTOR TO REVIEW GROUNDING AND PIPING SUPPORTS FOR EXISTING GAS PIPING. PROVIDE NEW AS REQUIRED TO MEET CURRENT CODE REQUIREMENT.
14. APPLY FOR, OBTAIN, AND PAY FOR ALL PERMITS, FEES AND SERVICE CONNECTIONS FOR THE WORK AND THE INSPECTIONS REQUIRED BY AUTHORITIES HAVING JURISDICTION IN THE AREA WHERE THE WORK WILL TAKE PLACE, INCLUDING TSSA AND ESA.
15. CARRY BALANCING AGENT TO BALANCE THE AIR AND HYDRONIC SYSTEMS IN NEW WORK SCOPE. CONTRACTOR TO COORDIATE ALL WORK WITH THEM.
16. SUPPLY AND INSTALLATION OF ELECTRICAL CONDUITS FOR MECHANICAL EQUIPMENT SHALL BE BY ELECTRICAL DIVISION AND CONSISTENT WITH ELECTRICAL SPECIFICATIONS.
17. COORDINATE ALL TEMPORARY SHUT DOWNS WITH THE SCHOOL BOARD. PROVIDE ISOLATION VALVES AS REQUIRED.
18. SURVEY ALL AFFILIATED WORK AREAS AND REPORT ANOMALIES AND DISCREPANCIES TO CONSULTANT.
19. ALL DOMESTIC WATER PIPING, HEATING PIPING AND FITTINGS SHALL BE INSULATED. IN ADDITION, ALL EXPOSED PIPING AND FITTINGS SHALL BE PROVIDED WITH PVC INSULATING COVERS.

REFER TO SEALED SPECIFICATIONS DATED JUNE 17, 2024 FOR MECHANICAL SYSTEM INSTALLATION REQUIREMENTS.

DEMOLITION LEGEND

SYMBOL	DESCRIPTION
E	EXISTING TO REMAIN
D	DEMOLISH. REMOVE AND DISPOSE OF EQUIPMENT, DUCTWORK, SERVICES, ETC.
R	RELOCATE ITEM
	EXISTING TO REMAIN
	DEMOLISH OR RELOCATE
	NEW

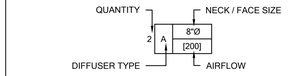
CONTROLS

SYMBOL	DESCRIPTION
	FAN
3A	GRILLE (SUPPLY / RETURN / EXHAUST)
F	FILTER BANK WITH DIFFERENTIAL PRESSURE SENSOR
HWS HWR HEATING CWS CWR COOLING	HEATING COIL (HOT WATER, GLYCOL, NAT. GAS) COOLING COIL (CHILLED WATER, GLYCOL, DX)
MD	MOTORIZED DAMPER
	CONTROL VALVE (2-WAY & 3-WAY)
T-1 H-1 CO2-1 (A0) (A0) (AI)	SENSORS (AIR OR WATER) (TEMPERATURE / HUMIDITY / CARBON DIOXIDE)
FLOW SWITCH (DI)	FLOW SWITCH (AIR OR WATER)
	CONTROL WIRING
(AI)	ANALOG INPUT
(AO)	ANALOG OUTPUT
(DI)	DIGITAL INPUT
(DO)	DIGITAL OUTPUT

TAGS

SYMBOL	DESCRIPTION
TAG-1	EQUIPMENT TAG
	AIRFLOW DIRECTION
CTE	CONNECT TO EXISTING
(###)	FLOW IN L/S

DIFFUSER TAG



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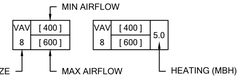
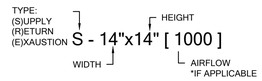


DUCTWORK



DUCTWORK

SYMBOL	DESCRIPTION
	SUPPLY AIR DUCT UP & DOWN
	RETURN / EXHAUST AIR DUCT UP & DOWN
	ROUND DUCT UP & DOWN
	SQUARE ELBOW WITH TURNING VANES
	DUCTWORK FLEXIBLE CONNECTION
	1" THICK ACOUSTICALLY LINED DUCTWORK
	EXTERNALLY INSULATED DUCTWORK (REFER TO SPECIFICATIONS FOR THICKNESS)
	DUCT CONTINUATION (ROUND & RECTANGULAR)
	SUPPLY AIR DIFFUSER C/W FLEX DUCT & SPIN ON CONNECTION WITH BALANCING DAMPER
	SUPPLY / RETURN GRILLE
	RETURN / EXHAUST GRILLE
T	THERMOSTAT
T	TEMPERATURE SENSOR
CO2	CARBON DIOXIDE (CO_2) SENSOR
S	SWITCH
OS	OCCUPANCY SENSOR
	CONTROL WIRING
	VAV BOX

MECHANICAL PIPING

SYMBOL	DESCRIPTION
	PIPE DOWN
	PIPE UP
	PIPE UP & DOWN
	VALVE
	BALANCING VALVE
	CHECK VALVE
	STRAINER
	LOCK-SHEILD VALVE
	PRESSURE REDUCING VALVE
	ELECTRONIC CONTROL VALVE (2-WAY & 3-WAY)
	PIPE CONTINUATION
CD	CONDENSATE DRAINAGE PIPING
G	NATURAL GAS PIPING
	FLOW DIRECTION
RL / RG	REFRIGERANT LIQUID AND GAS PIPING
	PUMP
CAP	CAPPED PIPE
	PRESSURE GAUGE
	THERMOMETER
	PRESSURE RELIEF VALVE

PLUMBING AND DRAINAGE

SYMBOL	DESCRIPTION
	P-TRAP
CO CO	CLEAN OUT (FLOOR & CEILING)
FD	ROUND FLOOR DRAIN
FD	SQUARE FLOOR DRAIN
HD	HUB DRAIN
	PIPE WYE CONNECTION
	PIPE 45° CONNECTION
	PIPE ELBOW
	PIPE TEE
-	DOMESTIC COLD WATER (DCW) PIPING
--	DOMESTIC HOT WATER (DHW) PIPING
SAN	SANITARY DRAINAGE (SAN) PIPING
	VENT PIPING
---	DOMESTIC HOT WATER RECIRC. (DHWR) PIPING

true north: / project north:

key plan:

No.	Revision	Date

CITY OF BURLINGTON
BUILDING SERVICES
REVIEWED
FOR PERMIT ISSUANCE
DATE June 21, 2024
PERMIT NUMBER 24-008472
EXAM WH

ALL CONSTRUCTION TO MEET ONTARIO BUILDING CODE REQUIREMENTS

RECEIVED
MAY 01 2024
CITY OF BURLINGTON
BUILDING DEPARTMENT

No.	Issue	Date
1	ISSUED FOR PERMIT	04/29/2024

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

seal: LICENSED PROFESSIONAL ENGINEER 4/29/2024 G.C. REA 100073703 PROVINCE OF ONTARIO

seal:

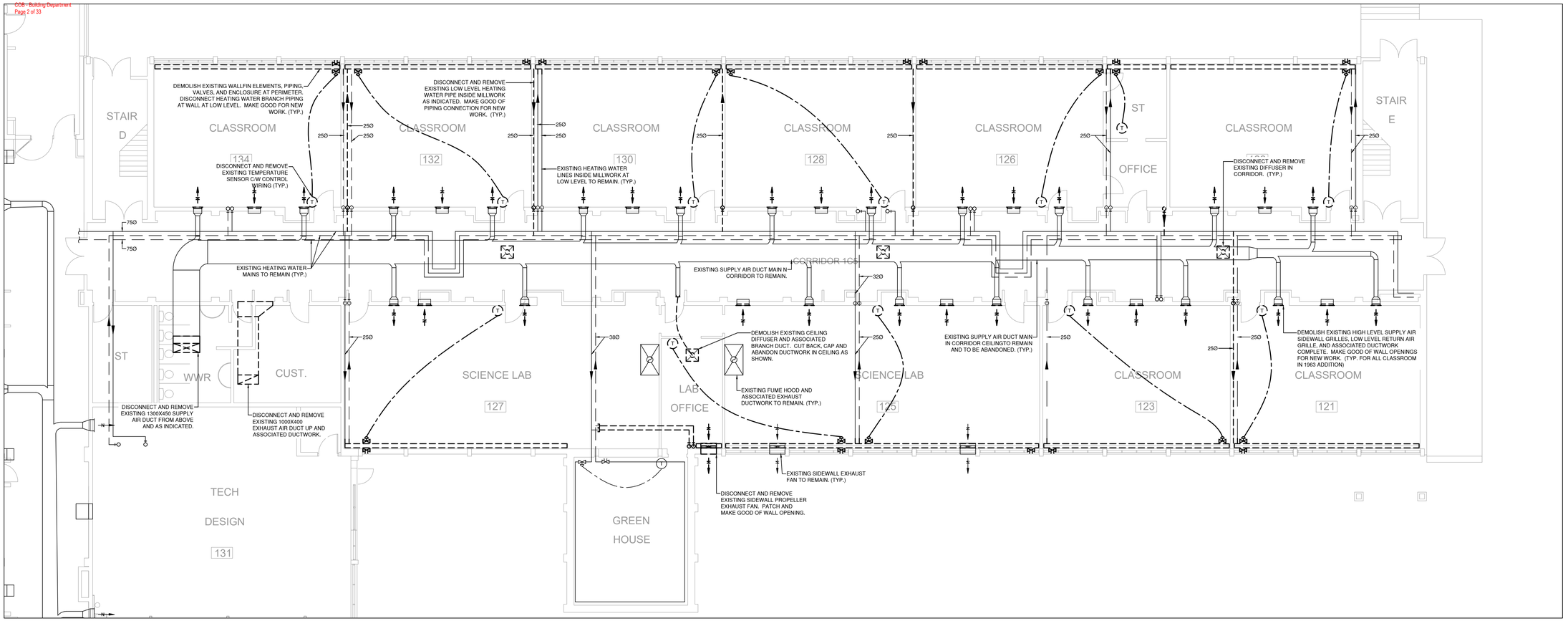
client:
HALTON DISTRICT SCHOOL BOARD

project name:
NELSON HIGH SCHOOL
BOILER RETROFIT AND AC UPGRADE

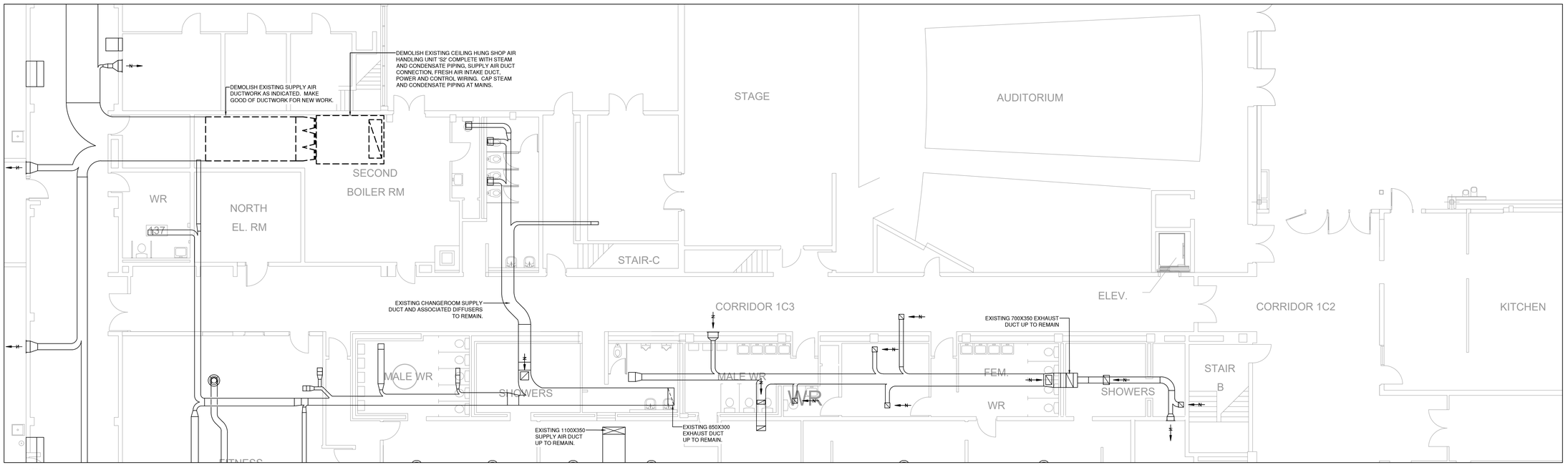
drawing name:
DRAWING LIST, SYMBOL LISTS, NOTES MECHANICAL

drawn by:	checked by:	drawing number:
SL	VK/GR	M1.0

date: ARPIL 2024
scale:
project number: 23178



1 M2.0 PARTIAL GROUND FLOOR PLAN
Scale: 1:100



2 M2.0 PARTIAL GROUND FLOOR PLAN
Scale: 1:100

true north:

project north:

key plan:

No.	Revision	Date

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

seal:

LICENSED PROFESSIONAL ENGINEER
4/29/2024
G.C. REA
100073703
PROVINCE OF ONTARIO

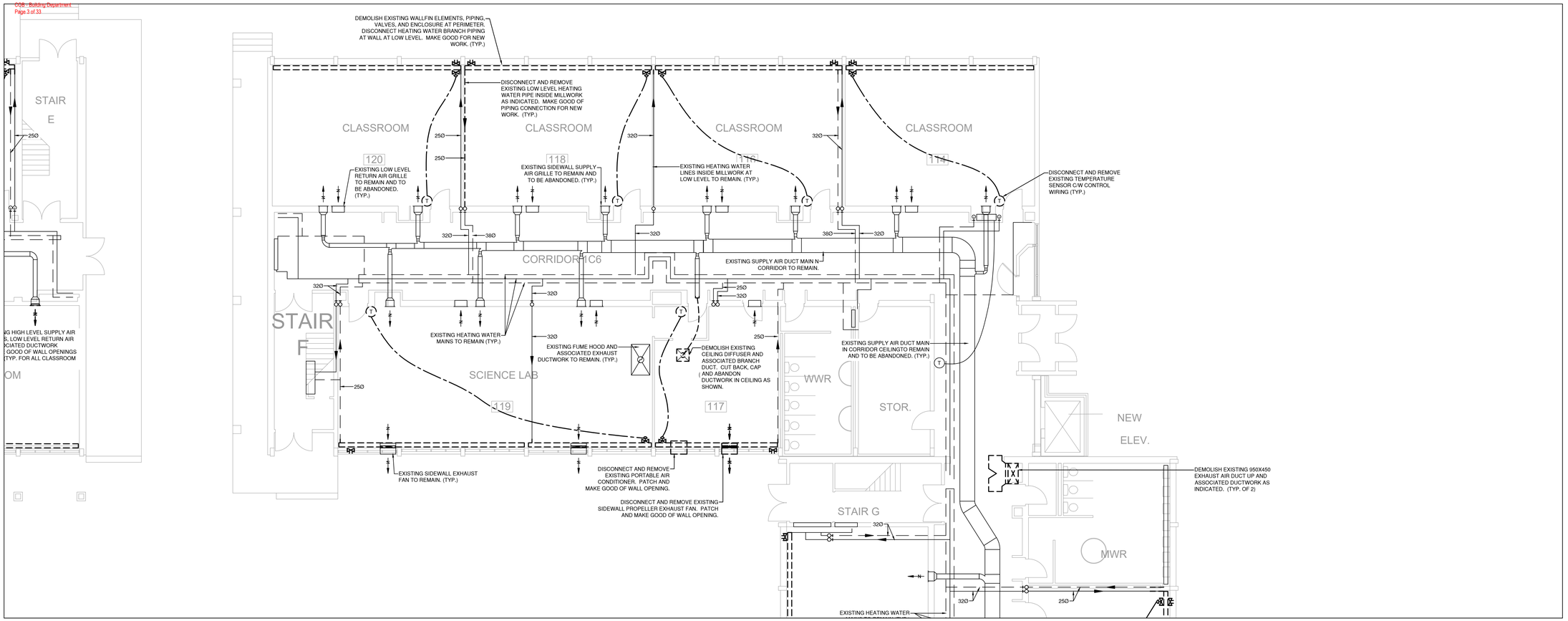
seal:

client:
HALTON DISTRICT SCHOOL BOARD

project name:
NELSON HIGH SCHOOL
BOILER RETROFIT AND AC UPGRADE

drawing name:
PARTIAL GROUND FLOOR DEMOLITION PLAN - HVAC

drawn by:	checked by:	drawing number:
SL	VK/GR	M2.0
date: ARPIL 2024		
scale: 1:100		
project number: 23178		



1 M2.1 PARTIAL GROUND FLOOR PLAN
Scale: 1:100

true north: N

project north: N

key plan:

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

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4/29/2024
G.C. REA
100073703
PROVINCE OF ONTARIO

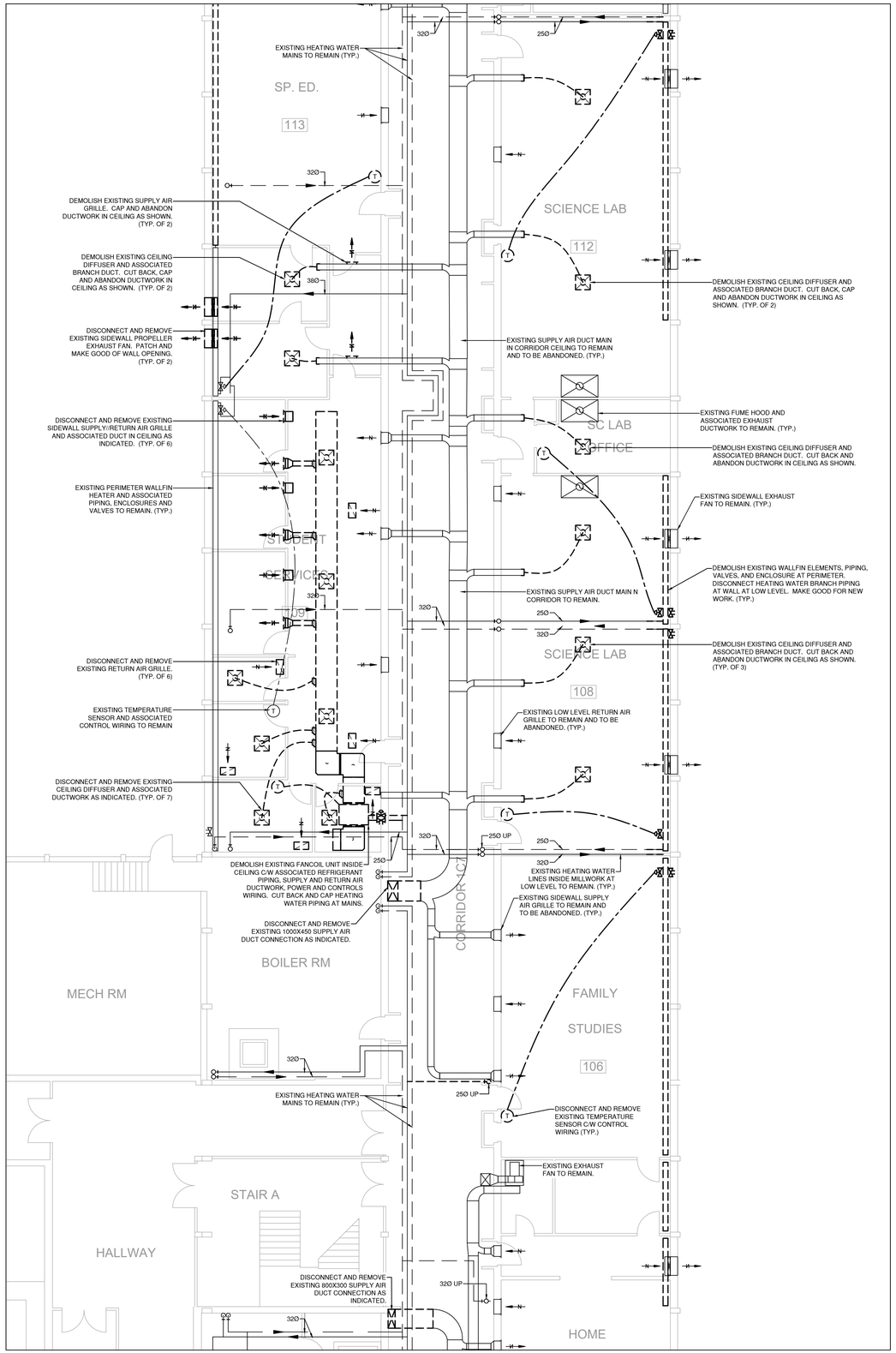
seal:

client:
HALTON DISTRICT SCHOOL BOARD

project name:
NELSON HIGH SCHOOL
BOILER RETROFIT AND AC UPGRADE

drawing name:
PARTIAL GROUND FLOOR DEMOLITION PLAN - HVAC

drawn by:	checked by:	drawing number:
SL	VK/GR	M2.1
date: ARPIL 2024		
scale: 1:100		
project number: 23178		



1 / M2.2 PARTIAL GROUND FLOOR PLAN
Scale: 1:100

true north:

project north:

key plan:

No.	Revision	Date
1	ISSUED FOR PERMIT	04/29/2024
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RDZ ENGINEERS LTD
17A - 30 Pennsylvania Avenue
Vaughan, Ontario L4K 4A5
email: info@rdzeng.ca

seal:

LICENSED PROFESSIONAL ENGINEER
4/29/2024
G.C. REA
100073703
PROVINCE OF ONTARIO

seal:

client:
HALTON DISTRICT SCHOOL BOARD

project name:
NELSON HIGH SCHOOL
BOILER RETROFIT AND AC UPGRADE

drawing name:
PARTIAL GROUND FLOOR DEMOLITION PLAN - HVAC

drawn by:	checked by:	drawing number:
SL	VK/GR	M2.2
date: ARPIL 2024		
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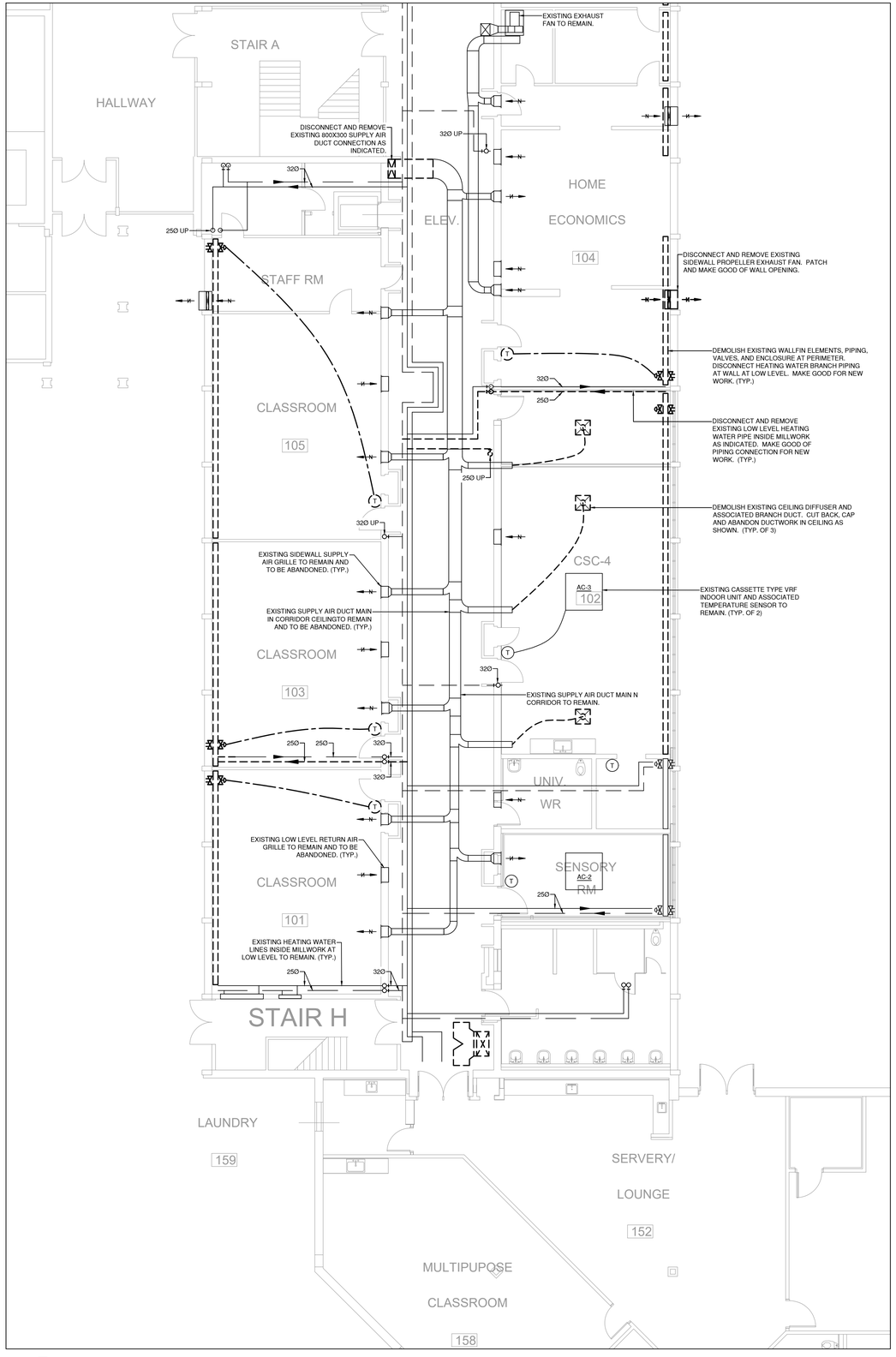
project number: 23178		



1 M2.3 PARTIAL GROUND FLOOR PLAN
Scale: 1:100

true north:

project north:

key plan:

No.	Revision	Date

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

seal:

LICENSED PROFESSIONAL ENGINEER
4/29/2024
G.C. REA
100073703
PROVINCE OF ONTARIO

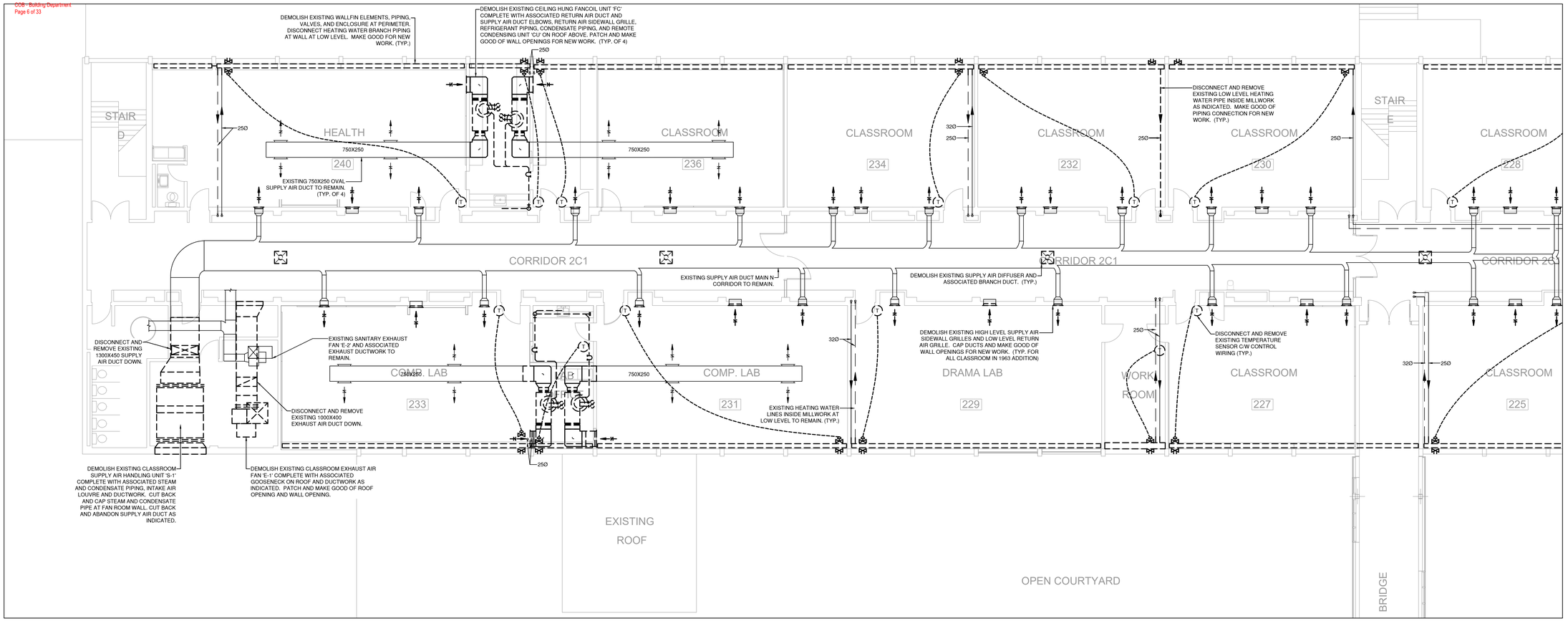
seal:

client:
HALTON DISTRICT SCHOOL BOARD

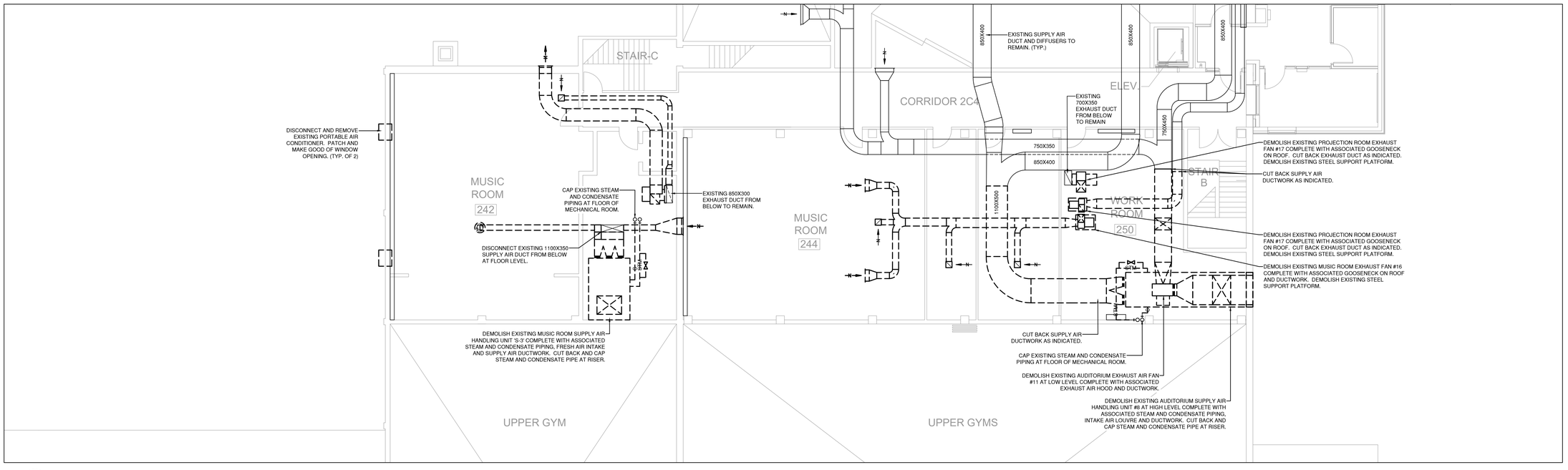
project name:
NELSON HIGH SCHOOL
BOILER RETROFIT AND AC UPGRADE

drawing name:
PARTIAL GROUND FLOOR DEMOLITION PLAN - HVAC

drawn by: SL	checked by: VK/GR	drawing number: M2.3
date: ARPIL 2024		
scale: 1:100		
project number: 23178		



1 M2.4 PARTIAL SECOND FLOOR PLAN
Scale: 1:100



2 M2.4 PARTIAL SECOND FLOOR PLAN
Scale: 1:100

true north: / project north:

key plan:

No.	Revision	Date

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1	ISSUED FOR PERMIT	04/29/2024

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

seal: LICENSED PROFESSIONAL ENGINEER 4/29/2024 G.C. REA 100073703 PROVINCE OF ONTARIO

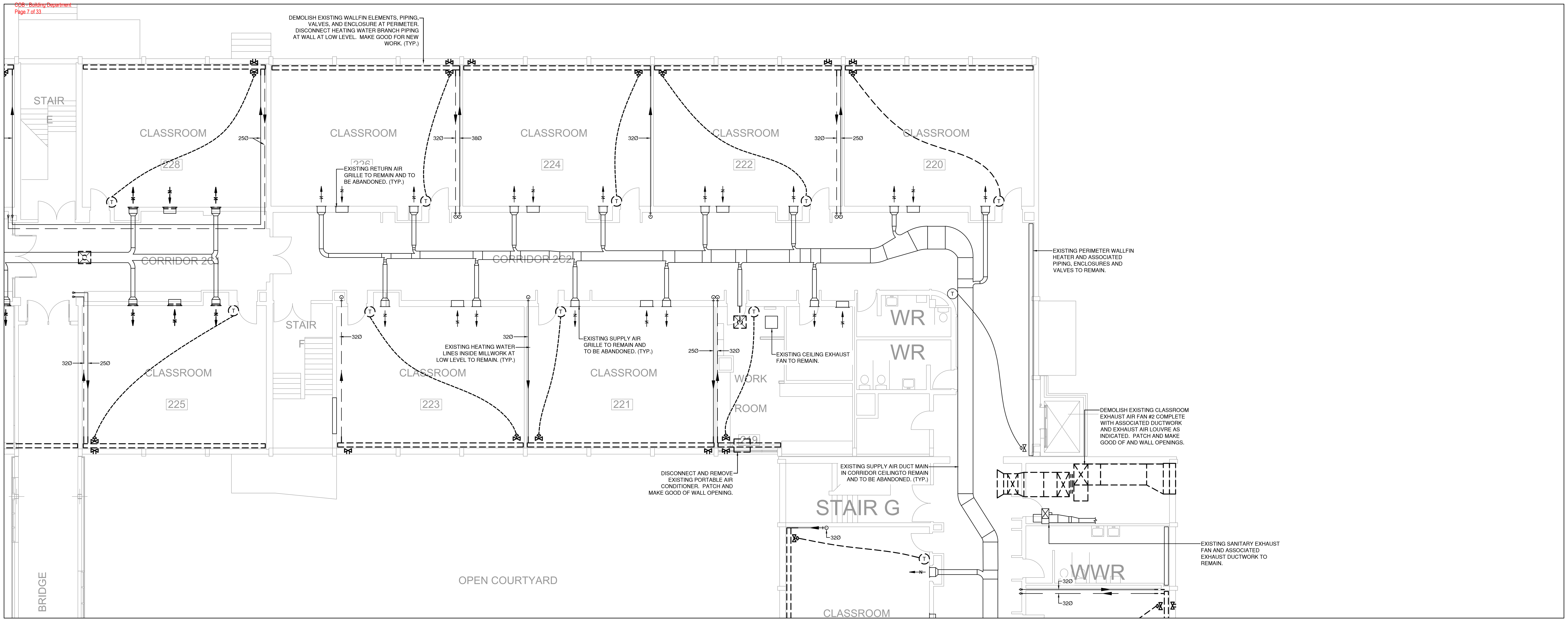
seal:

client: HALTON DISTRICT SCHOOL BOARD

project name: NELSON HIGH SCHOOL BOILER RETROFIT AND AC UPGRADE

drawing name: PARTIAL SECOND FLOOR DEMOLITION PLAN - HVAC

drawn by:	checked by:	drawing number:
SL	VK/GR	M2.4
date: ARPIL 2024		
scale: 1:100		
project number: 23178		



1 / M2.5 PARTIAL SECOND FLOOR PLAN
Scale: 1:100

true north: N

project north: N

key plan:

No.	Revision	Date

ALL CONSTRUCTION TO MEET ONTARIO BUILDING CODE REQUIREMENTS

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MAY 01 2024
CITY OF BURLINGTON
BUILDING DEPARTMENT

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email: info@rdzeng.ca

seal: LICENSED PROFESSIONAL ENGINEER 4/29/2024 G.C. REA 100073703 PROVINCE OF ONTARIO

seal:

client:
HALTON DISTRICT SCHOOL BOARD

project name:
NELSON HIGH SCHOOL BOILER RETROFIT AND AC UPGRADE

drawing name:
PARTIAL SECOND FLOOR DEMOLITION PLAN - HVAC

drawn by: SL
checked by: VK/GR
date: ARPIL 2024
scale: 1:100
project number: 23178
drawing number: M2.5

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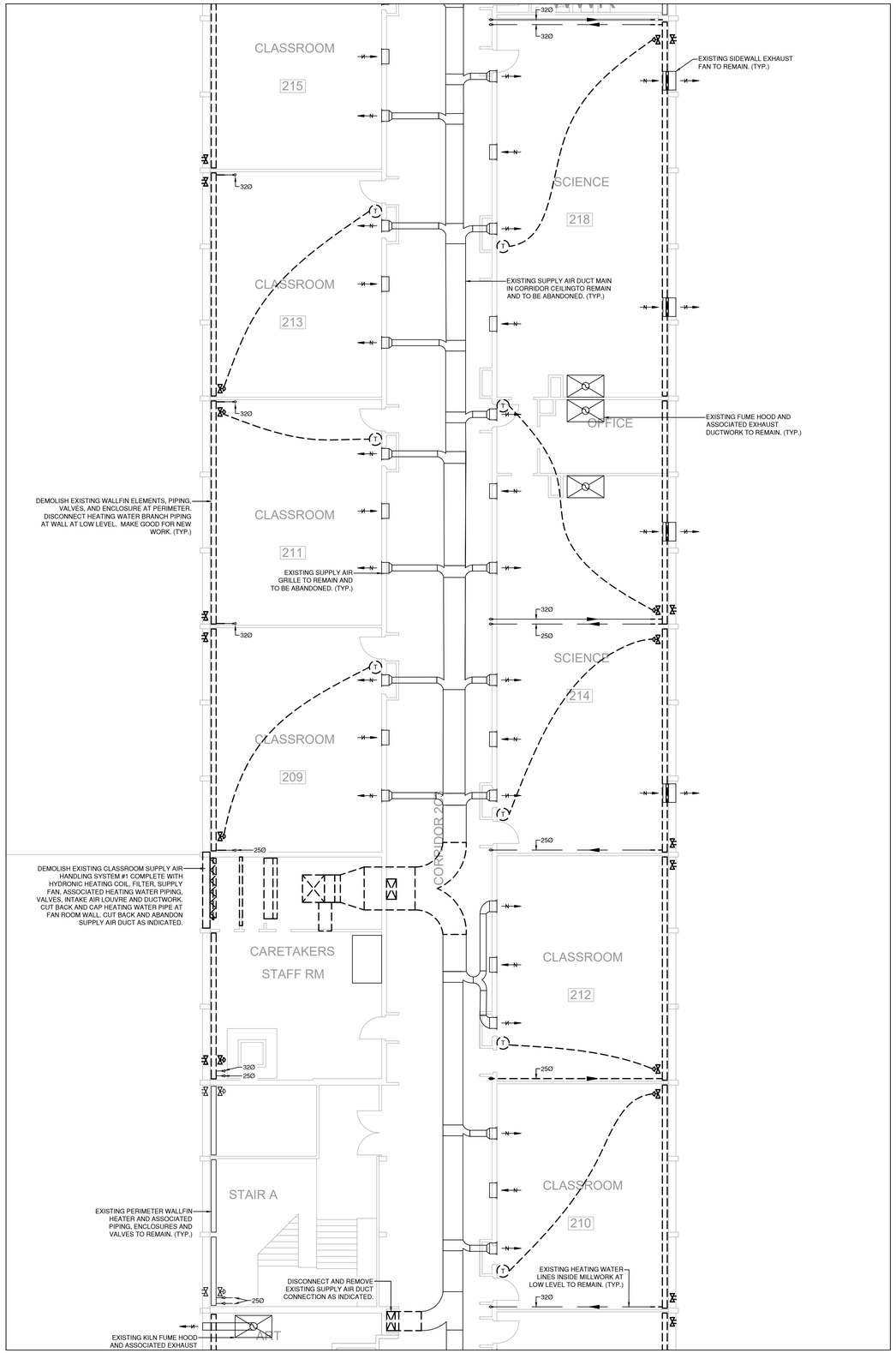
Page 7 of 33



1 / M2.6 PARTIAL GROUND FLOOR PLAN
Scale: 1:100

true north: / project north:

key plan:

No.	Revision	Date

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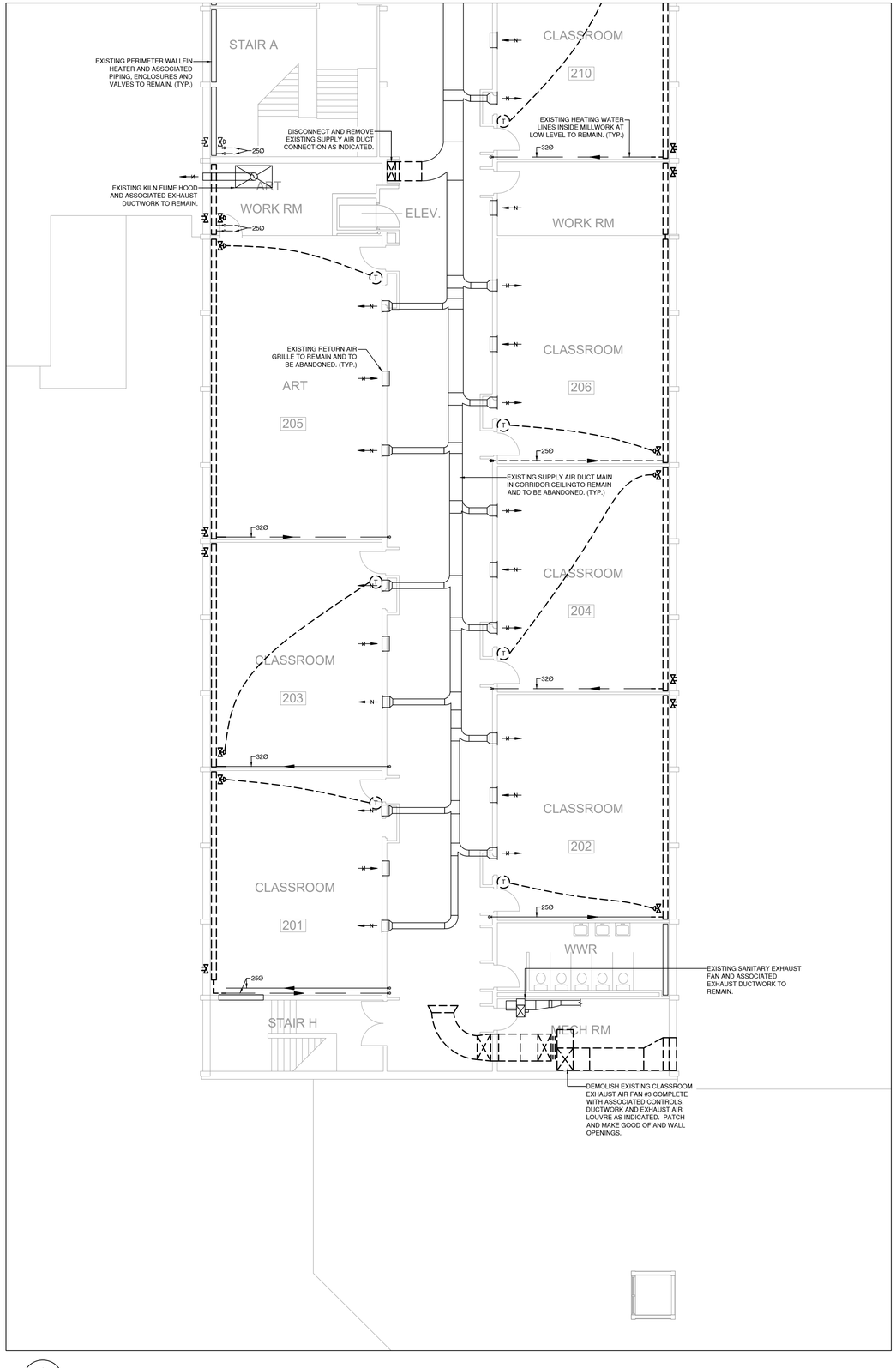
seal:

client: HALTON DISTRICT SCHOOL BOARD

project name: NELSON HIGH SCHOOL BOILER RETROFIT AND AC UPGRADE

drawing name: PARTIAL GROUND FLOOR DEMOLITION PLAN - HVAC

drawn by:	checked by:	drawing number:
SL	VK/GR	M2.6
date: ARPIL 2024		
scale: 1:100		
project number: 23178		



1 M2.7 PARTIAL GROUND FLOOR PLAN
Scale: 1:100

true north:

project north:

key plan:

No.	Revision	Date

ALL CONSTRUCTION TO MEET ONTARIO BUILDING CODE REQUIREMENTS

RECEIVED
MAY 01 2024
CITY OF BURLINGTON
BUILDING DEPARTMENT

1	ISSUED FOR PERMIT	04/29/2024
No.	Issue	Date

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

seal:

LICENSED PROFESSIONAL ENGINEER
4/29/2024
G.C. REA
100073703
PROVINCE OF ONTARIO

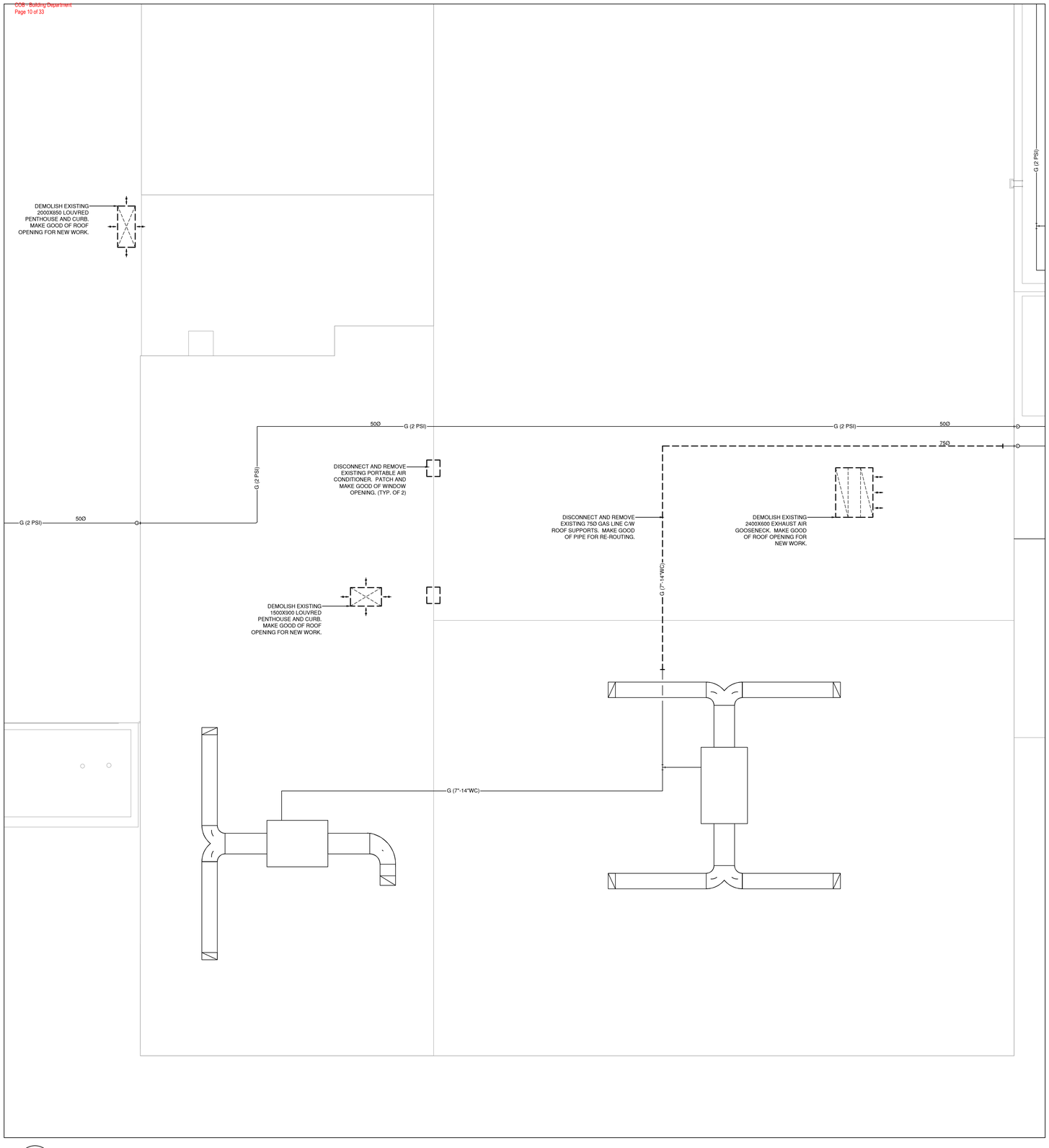
seal:

client:
HALTON DISTRICT SCHOOL BOARD

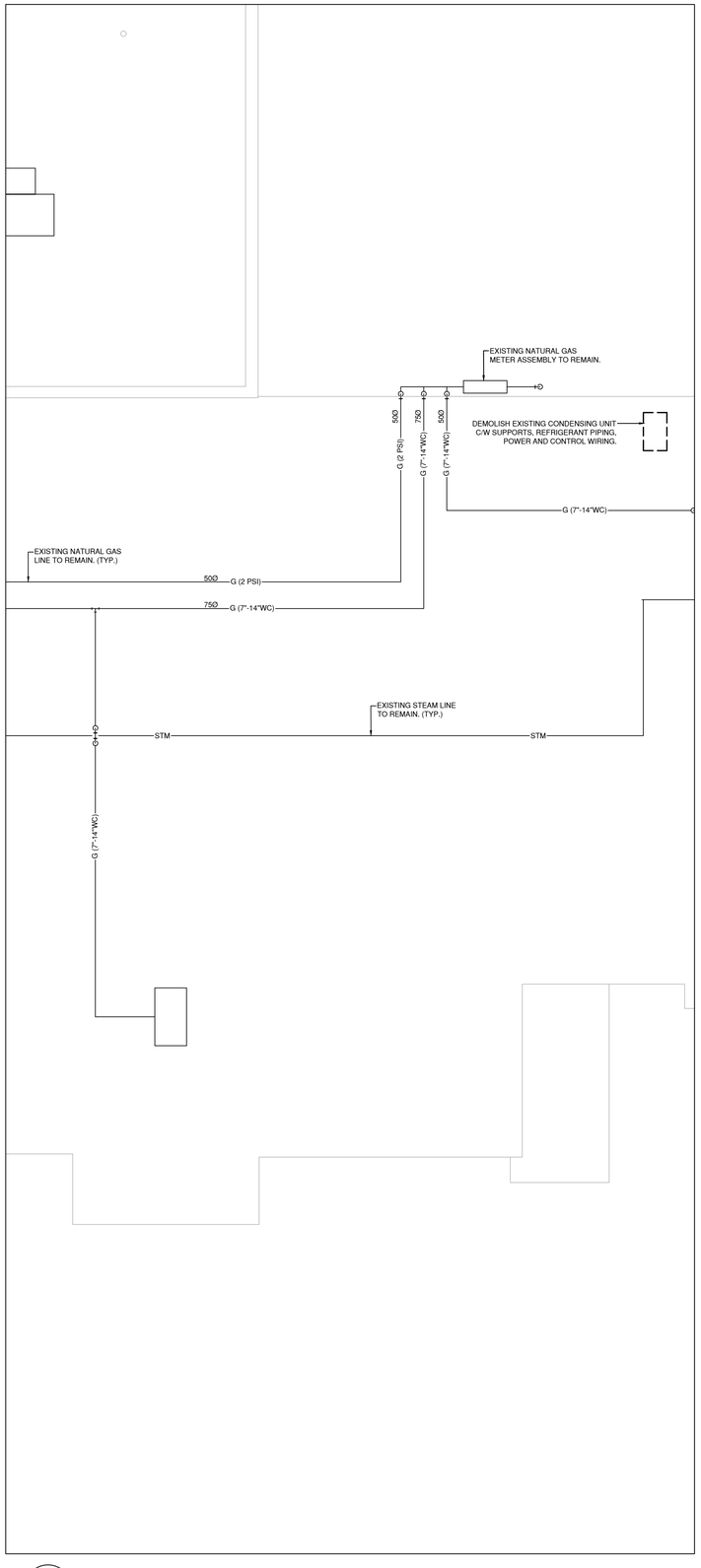
project name:
NELSON HIGH SCHOOL
BOILER RETROFIT AND AC UPGRADE

drawing name:
PARTIAL GROUND FLOOR DEMOLITION PLAN - HVAC

drawn by: SL	checked by: VK/GR	drawing number: M2.7
date: ARPIL 2024		
scale: 1:100		
project number: 23178		



1 M2.8 PARTIAL ROOF FLOOR PLAN
Scale: 1:100



2 M2.8 PARTIAL ROOF FLOOR PLAN
Scale: 1:100

true north:

project north:

key plan:

No.	Revision	Date

ALL CONSTRUCTION TO MEET ONTARIO BUILDING CODE REQUIREMENTS

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MAY 01 2024
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BUILDING DEPARTMENT

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RDZ ENG
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17A - 30 Pennsylvania Avenue
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email: info@rdzeng.ca

seal:

LICENSED PROFESSIONAL ENGINEER
4/29/2024
G.C. REA
100073703
PROVINCE OF ONTARIO

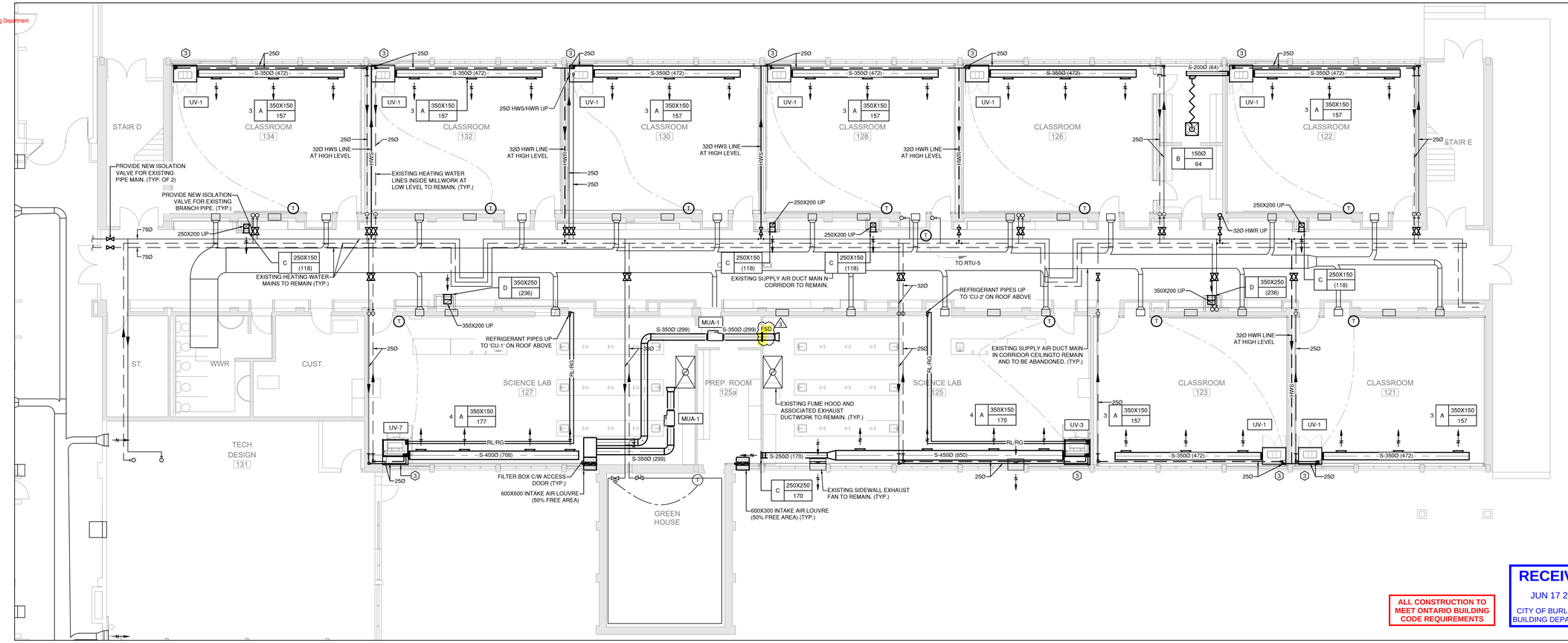
seal:

client:
HALTON DISTRICT SCHOOL BOARD

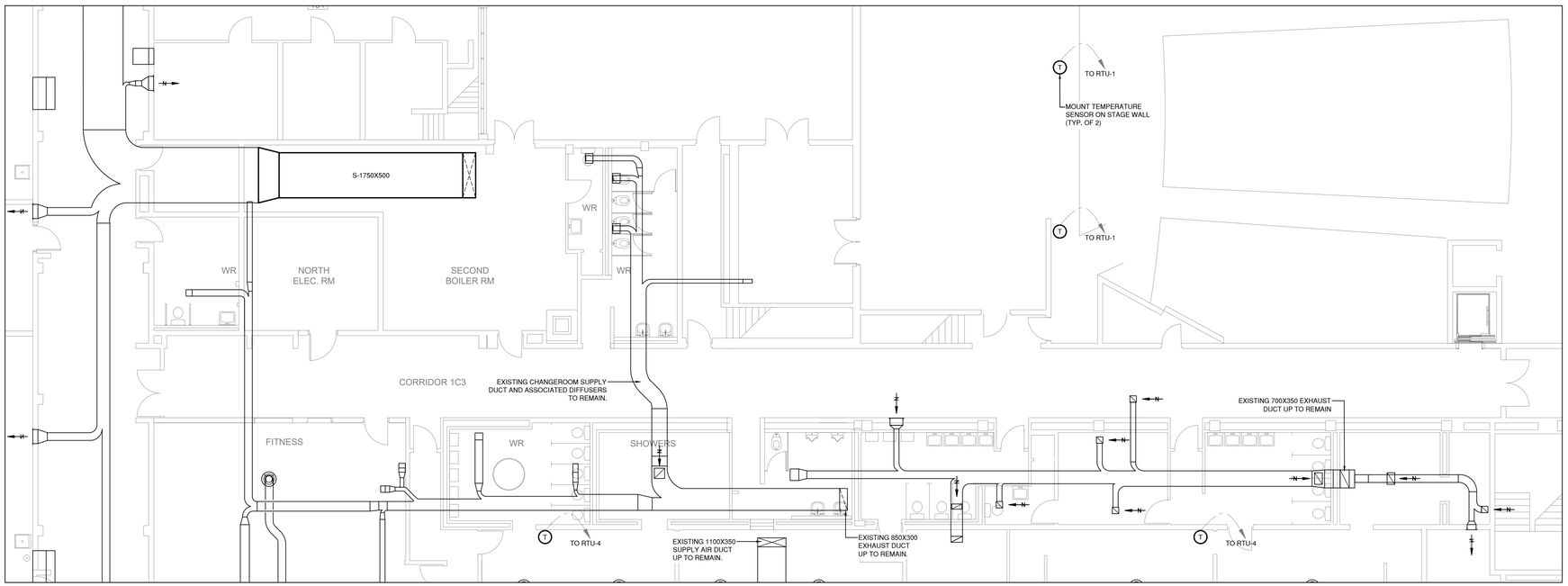
project name:
NELSON HIGH SCHOOL BOILER RETROFIT AND AC UPGRADE

drawing name:
PARTIAL ROOF FLOOR DEMOLITION PLAN - HVAC

drawn by:	checked by:	drawing number:
SL	VK/GR	M2.8
date: ARPIL 2024		
scale: 1:100		
project number: 23178		



1 M3.0 PARTIAL GROUND FLOOR PLAN
Scale: 1:100



2 M3.0 PARTIAL GROUND FLOOR PLAN
Scale: 1:100

NEW WORK GENERAL NOTES

1. CORRIDORS IN 1956 AND 1958 ADDITIONS TO REMAIN AS IS.
2. PROVIDE INSULATION FOR HORIZONTAL UNIT VENTILATORS' FRESH AIR DUCT FOR AT LEAST 3000MM (10') FROM THE EXTERIOR WALL.
3. ALL UNIT VENTILATOR SUPPLY AIR PLENUM, DUCT SLEEVE, AND SUPPLY AIR DUCTWORK TO BE PAINTED WHITE BY PAINTING CONTRACTOR/GC. MECHANICAL CONTRACTOR TO PROVIDE THE ABOVE TO PAINTING CONTRACTOR TO PRIME AND 1ST PAINT COAT PRIOR TO INSTALLATION. COMPLETE INSTALLATION ONCE PAINTING IS COMPLETED.
4. MECHANICAL CONTRACTOR RESPONSIBLE FOR REFRIGERANT LINE SIZING AND EQUIVALENT LENGTH TO MEET THE PERFORMANCE OF EQUIPMENT AND TSSA REQUIREMENT. INCLUDE ALL ACCESSORIES REQUIRED TO MEET THE MANUFACTURER'S RECOMMENDATION AND SPECIFIED PERFORMANCE.
5. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR THE COMPLETE INSTALLATION OF ALL MECHANICAL WIRING FROM INDOOR UNITS TO ASSOCIATED CONDENSING UNIT. ALL WIRING SHALL BE INSTALLED IN EMT CONDUIT. REFER TO CONDENSING UNIT SHOP DRAWINGS FOR FIELD WIRING DIAGRAM.
6. TERMINATE 20MM CONDENSATE DRAIN C/W P-TRAP OF VERTICAL UNIT VENTILATOR THROUGH UNIT'S FRESH AIR LOUVRE. (TYP.)
7. CONDENSATE DRAIN TO BE METALLIC UNTIL TERMINATION. PLASTIC TUBING WILL NOT BE ACCEPTED.
8. UNIT C/W SUPPLY AIR PLENUM ABOVE VERTICAL UNIT VENTILATOR. PROVIDE FLEXIBLE DUCT CONNECTORS. CONTRACTOR TO COORDINATE EXACT HEIGHT OF PLENUM TO SUIT EXISTING SITE CONDITIONS.
9. PROVIDE METAL SLEEVE CONNECTING UNIT VENTILATOR AND ITS ASSOCIATED INTAKE ARE LOUVRE. CONTRACTOR TO COORDINATE SIZE OF SLEEVE TO SUIT EXISTING SITE CONDITIONS.
10. PROVIDE LOUVRE BLANK-OFF PANELS AS REQUIRED FOR SECTIONS OF INTAKE AIR LOUVRE NOT USED BY THE UNIT VENTILATORS.
11. PROVIDE BASE CURB UNDER UNIT VENTILATORS TO ALIGN THE INTAKE AIR OPENING OF THE UNIT WITH LOUVRE OPENING. CONTRACTOR TO COORDINATE HEIGHT OF CURB TO SUIT EXISTING SITE CONDITIONS.

KEYED NOTES

1. PROVIDE ISOLATION VALVE C/W DRAIN PORT TO FACILITATE PHASE OF NEW WORK.
2. PROVIDE ISOLATION VALVE ON BRANCH PIPE TO FACILITATE PHASING OF NEW WORK.
3. VERTICAL UNIT VENTILATOR ACTIVE MECHANICAL LOUVRE AREA:
   - UV-1 1025MM x 950MM
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   - UV-3 927MM x 420MM
   - UV-4 1025MM x 950MM
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   PROVIDE BLANK OFF PANEL FOR INACTIVE LOUVRE AREA.

ALL CONSTRUCTION TO MEET ONTARIO BUILDING CODE REQUIREMENTS

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Halton District School Board

2050 Guelph Line
Burlington, Ontario

NELSON HIGH SCHOOL RENOVATIONS

4181 NEW STREET
Burlington, Ontario

Mechanical

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

Architect
Snyder Architects Inc.
100 Broadview Ave, Suite 301, Toronto, ON M4M 3H3
tel. 416 966 5444
www.snyderarchitects.ca

Consultants
Mechanical and Electrical Consultants
RDZ Engineering Ltd
30 Pennsylvania Avenue, Unit 17A
Vaughan, Ontario, L4K 4A5
Tel: - -

Structural Consultants
Kalos Engineering Inc.
3oo York Boulevard,
Hamilton, Ontario, L8R 3K6
Tel: 905-333-9119

Key Plan:

Key Plan N.T.S.

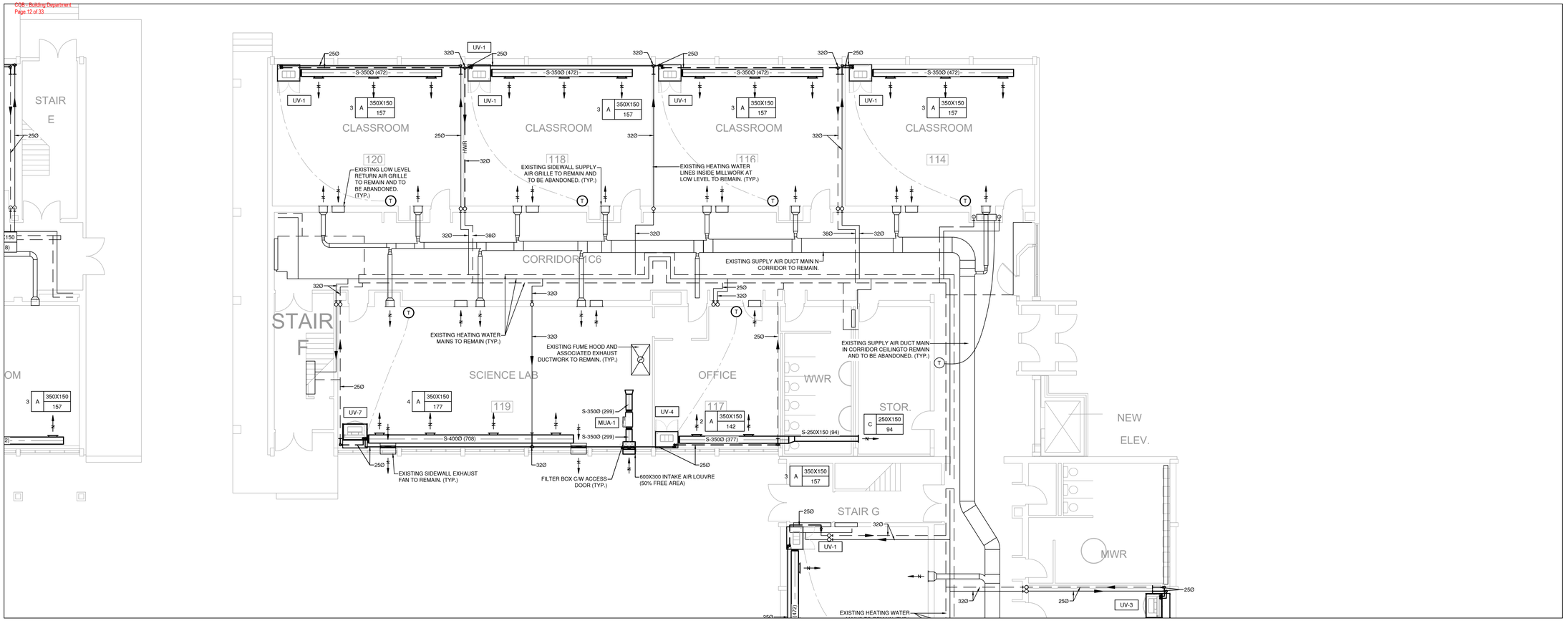
Project North | True North

No.	Revisions	Date
3.	PERMIT COMMENTS	06/11/2024
2.	ISSUED FOR BID	05/13/2024
1.	ISSUED FOR PERMIT	04/29/2024
No.	Issue	Date

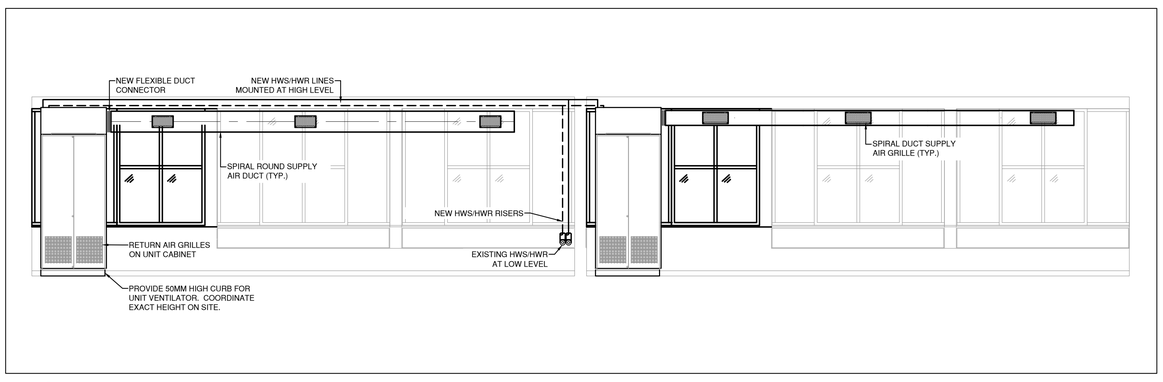
LICENSED PROFESSIONAL ENGINEER
6/11/2024
G.C. REA
100073703
PROVINCE OF ONTARIO

Drawing Title:
PARTIAL GROUND FLOOR NEW WORK PLAN - HVAC

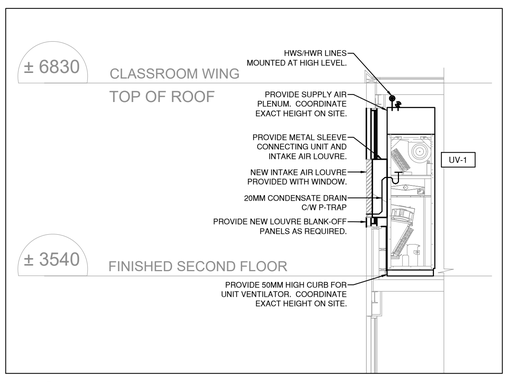
Scale:	1:100	Date:	10/05/2024
Drawn by:	SL	Checked by:	VK
Job No.	2323	Drawing No.	M3.0



1 M3.1 PARTIAL GROUND FLOOR PLAN
Scale: 1:100



2 M3.1 TYPICAL UNIT VENTILATOR ELEVATION DETAIL
1:50



3 M3.1 TYPICAL UNIT VENTILATOR SECTION DETAIL
Scale: 1:50

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true north: project north:

key plan:

No.	Revision	Date
1	ISSUED FOR PERMIT	04/29/2024
No.	Issue	Date

ALL CONSTRUCTION TO MEET ONTARIO BUILDING CODE REQUIREMENTS

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MAY 01 2024
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BUILDING DEPARTMENT

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

seal: LICENSED PROFESSIONAL ENGINEER 4/29/2024 G.C. REA 100073703 PROVINCE OF ONTARIO

seal:

client:
HALTON DISTRICT SCHOOL BOARD

project name:
NELSON HIGH SCHOOL BOILER RETROFIT AND AC UPGRADE

drawing name:
PARTIAL GROUND FLOOR NEW WORK PLAN - HVAC

drawn by:	checked by:	drawing number:
SL	VK/GR	M3.1
date: ARPIL 2024		
scale: 1:100		
project number: 23178		

NEW WORK GENERAL NOTES

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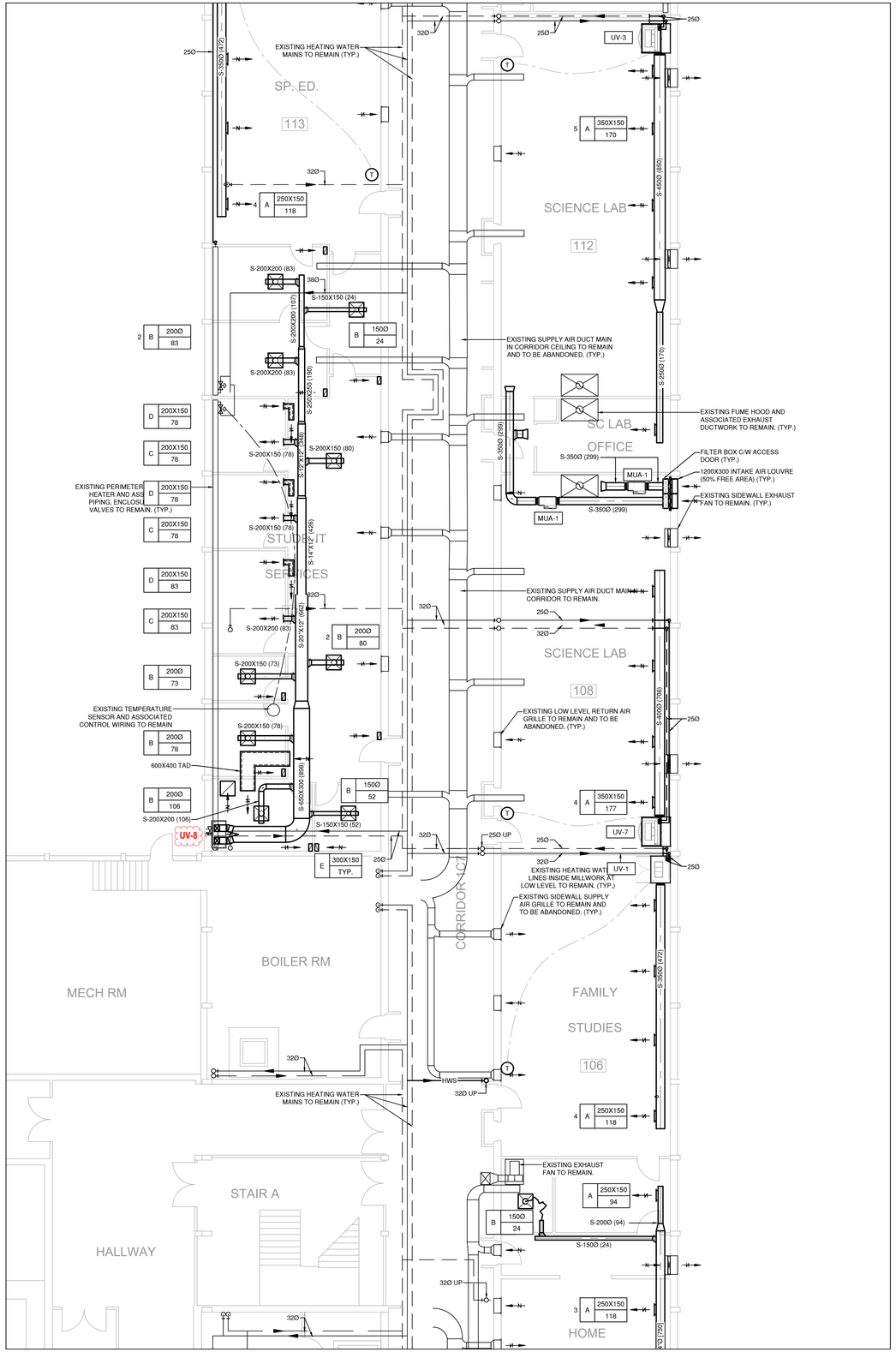

1 / M3.2 PARTIAL GROUND FLOOR PLAN
Scale: 1:100

true north: / project north:

key plan:

No.	Revision	Date
1	ISSUED FOR PERMIT	04/29/2024
No.	Issue	Date

ALL CONSTRUCTION TO MEET ONTARIO BUILDING CODE REQUIREMENTS

RECEIVED
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BUILDING DEPARTMENT

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

seal: LICENSED PROFESSIONAL ENGINEER 4/29/2024 G.C. REA 100073703 PROVINCE OF ONTARIO

seal:

client: HALTON DISTRICT SCHOOL BOARD

project name: NELSON HIGH SCHOOL BOILER RETROFIT AND AC UPGRADE

drawing name: PARTIAL GROUND FLOOR NEW WORK PLAN - HVAC

drawn by:	checked by:	drawing number:
SL	VK/GR	M3.2
date: ARPIL 2024		
scale: 1:100		
project number: 23178		

NEW WORK GENERAL NOTES

1. CORRIDORS IN 1956 AND 1958 ADDITIONS TO REMAIN AS IS.
2. PROVIDE INSULATION FOR HORIZONTAL UNIT VENTILATORS' FRESH AIR DUCT FOR AT LEAST 3000MM (10') FROM THE EXTERIOR WALL.
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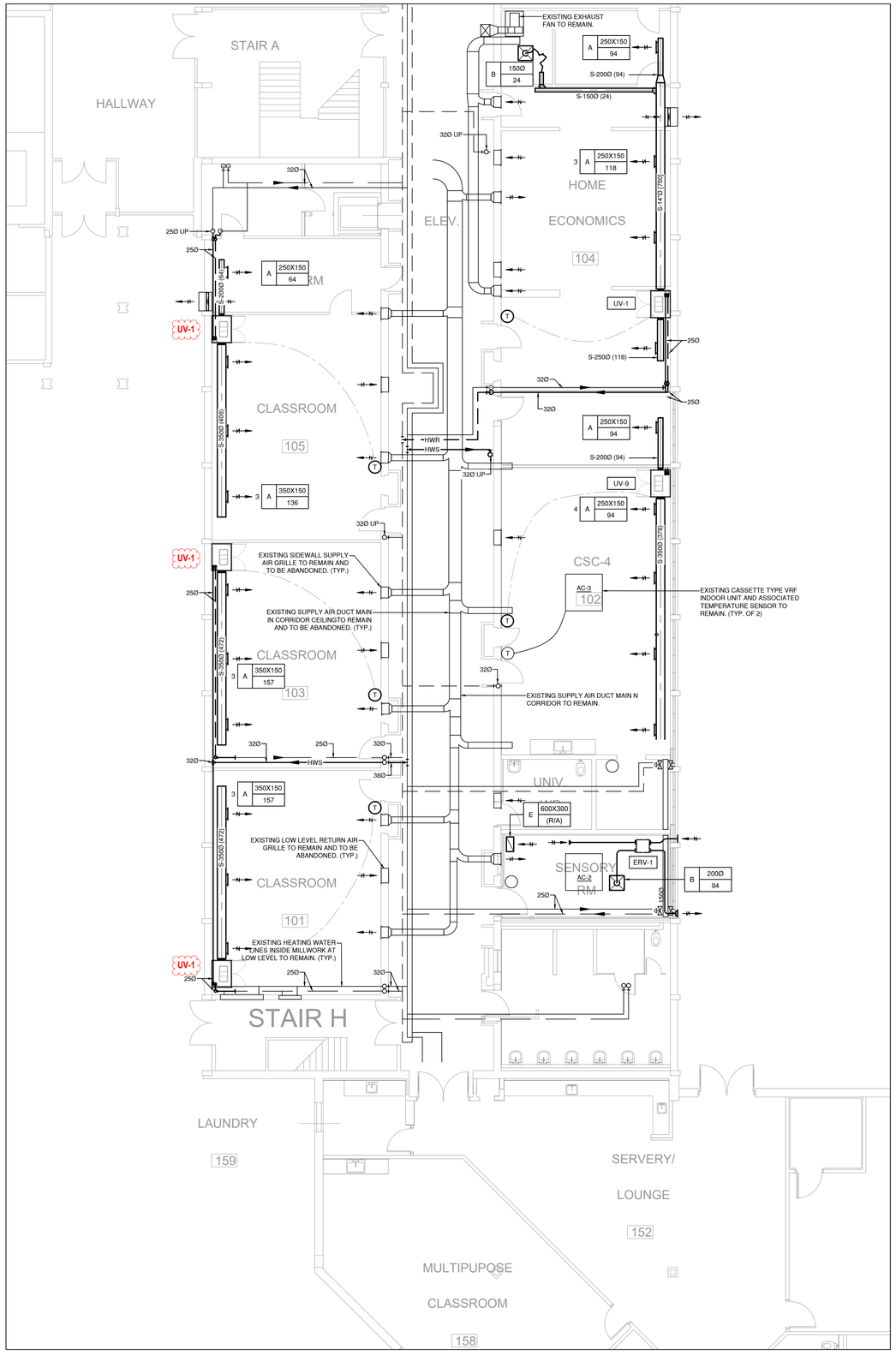

1 / M3.3 PARTIAL GROUND FLOOR PLAN
Scale: 1:100

true north: project north:

key plan:

No.	Revision	Date
1	ISSUED FOR PERMIT	04/29/2024
No.	Issue	Date

ALL CONSTRUCTION TO MEET ONTARIO BUILDING CODE REQUIREMENTS

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CITY OF BURLINGTON
BUILDING DEPARTMENT

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

seal: LICENSED PROFESSIONAL ENGINEER 4/29/2024 G.C. REA 100073703 PROVINCE OF ONTARIO

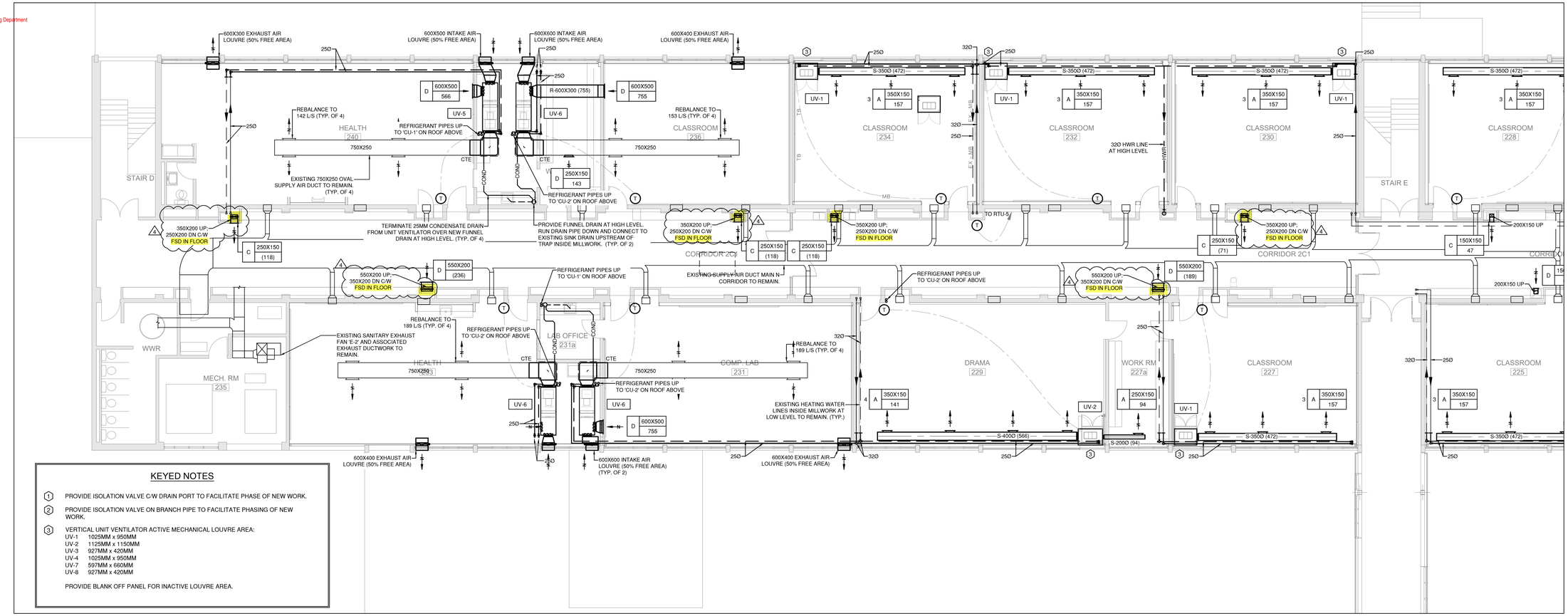
seal:

client: HALTON DISTRICT SCHOOL BOARD

project name: NELSON HIGH SCHOOL BOILER RETROFIT AND AC UPGRADE

drawing name: PARTIAL GROUND FLOOR NEW WORK PLAN - HVAC

drawn by:	checked by:	drawing number:
SL	VK/GR	M3.3
date: ARPIL 2024		
scale: 1:100		
project number: 23178		



KEYED NOTES

1. PROVIDE ISOLATION VALVE C/W DRAIN PORT TO FACILITATE PHASE OF NEW WORK.
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   PROVIDE BLANK OFF PANEL FOR INACTIVE LOUVRE AREA.

1 M3.4 PARTIAL SECOND FLOOR PLAN
Scale: 1:100

NEW WORK GENERAL NOTES

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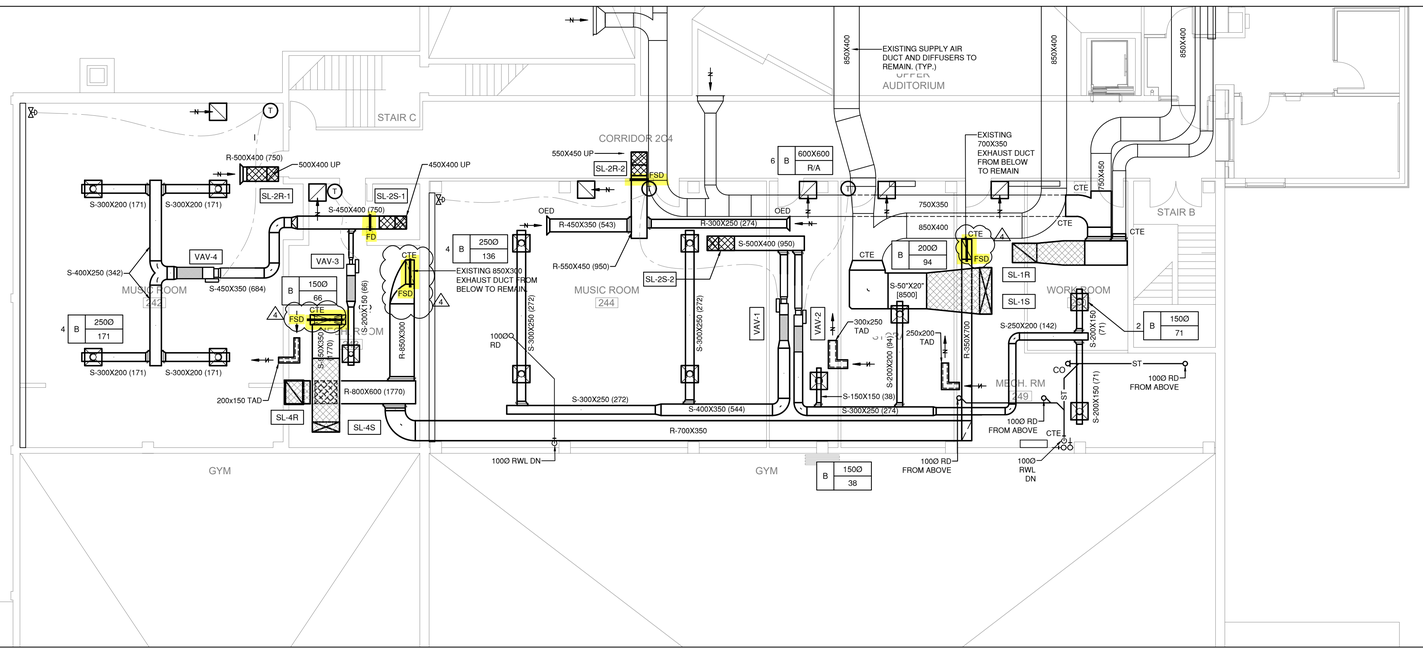

2 M3.4 PARTIAL SECOND FLOOR PLAN
Scale: 1:100

ALL CONSTRUCTION TO MEET ONTARIO BUILDING CODE REQUIREMENTS

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Halton District School Board

2050 Guelph Line
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Architect
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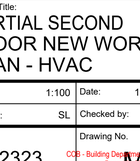
Key Plan:



Key Plan N.T.S.

Project North | True North

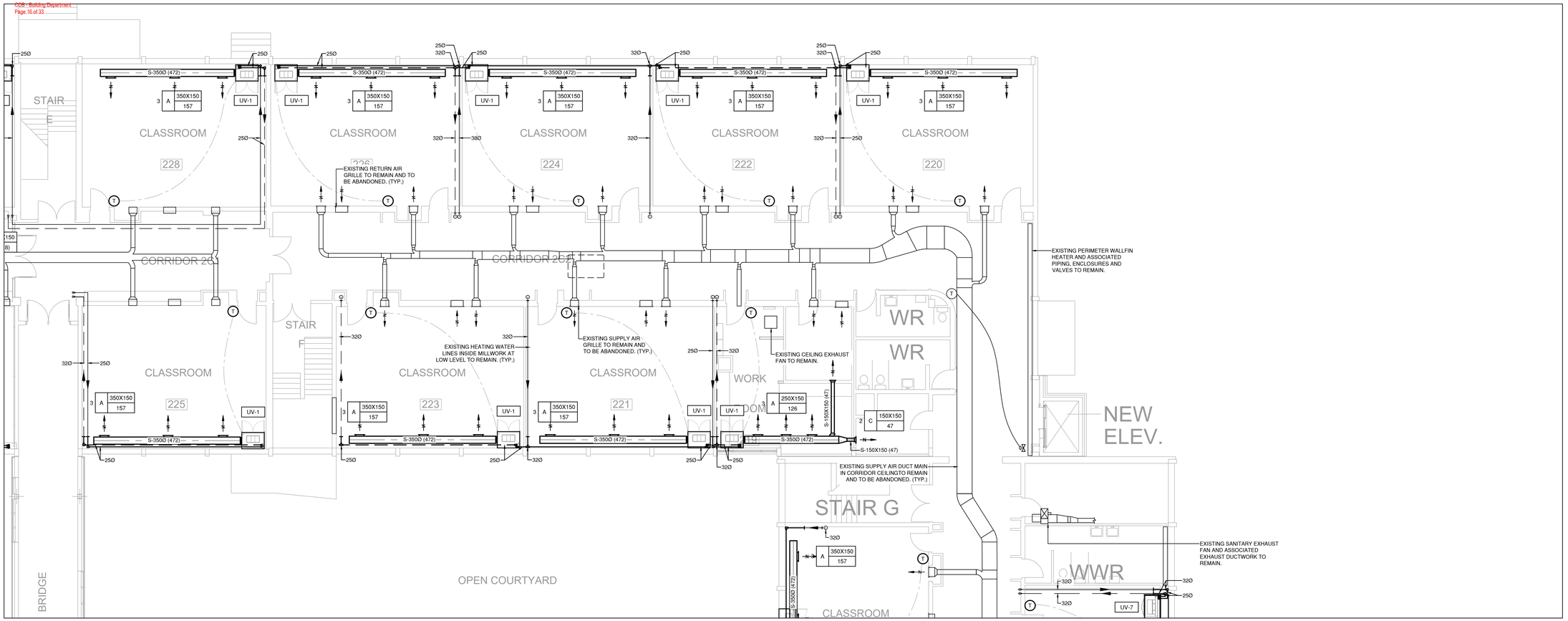
No.	Revisions	Date
4	PERMIT COMMENTS	06/11/2024
3	ISSUED FOR ADD M-02	05/30/2024
2.	ISSUED FOR BID	05/13/2024
1.	ISSUED FOR PERMIT	04/29/2024
No.	Issue	Date

LICENSED PROFESSIONAL ENGINEER
6/11/2024
G.C. REA
100073703
PROVINCE OF ONTARIO

Drawing Title:
PARTIAL SECOND FLOOR NEW WORK PLAN - HVAC

Scale:	1:100	Date:	10/05/2024
Drawn by:	SL	Checked by:	VK
Job No.	2323	Drawing No.	M3.4

COB - Building Department
Page 15 of 33



1 M3.5 PARTIAL SECOND FLOOR PLAN

Scale: 1:100

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true north: project north:

key plan:

No.	Revision	Date
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ALL CONSTRUCTION TO MEET ONTARIO BUILDING CODE REQUIREMENTS

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BUILDING DEPARTMENT

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seal:

LICENSED PROFESSIONAL ENGINEER
4/29/2024
G.C. REA
100073703
PROVINCE OF ONTARIO

seal:

client:
HALTON DISTRICT SCHOOL BOARD

project name:
NELSON HIGH SCHOOL
BOILER RETROFIT AND AC UPGRADE

drawing name:
PARTIAL SECOND FLOOR NEW WORK PLAN - HVAC

drawn by:	checked by:	drawing number:
SL	VK/GR	M3.5
date: ARPIL 2024		
scale: 1:100		
project number: 23178		

NEW WORK GENERAL NOTES

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2. PROVIDE INSULATION FOR HORIZONTAL UNIT VENTILATORS' FRESH AIR DUCT FOR AT LEAST 3000MM (10') FROM THE EXTERIOR WALL.
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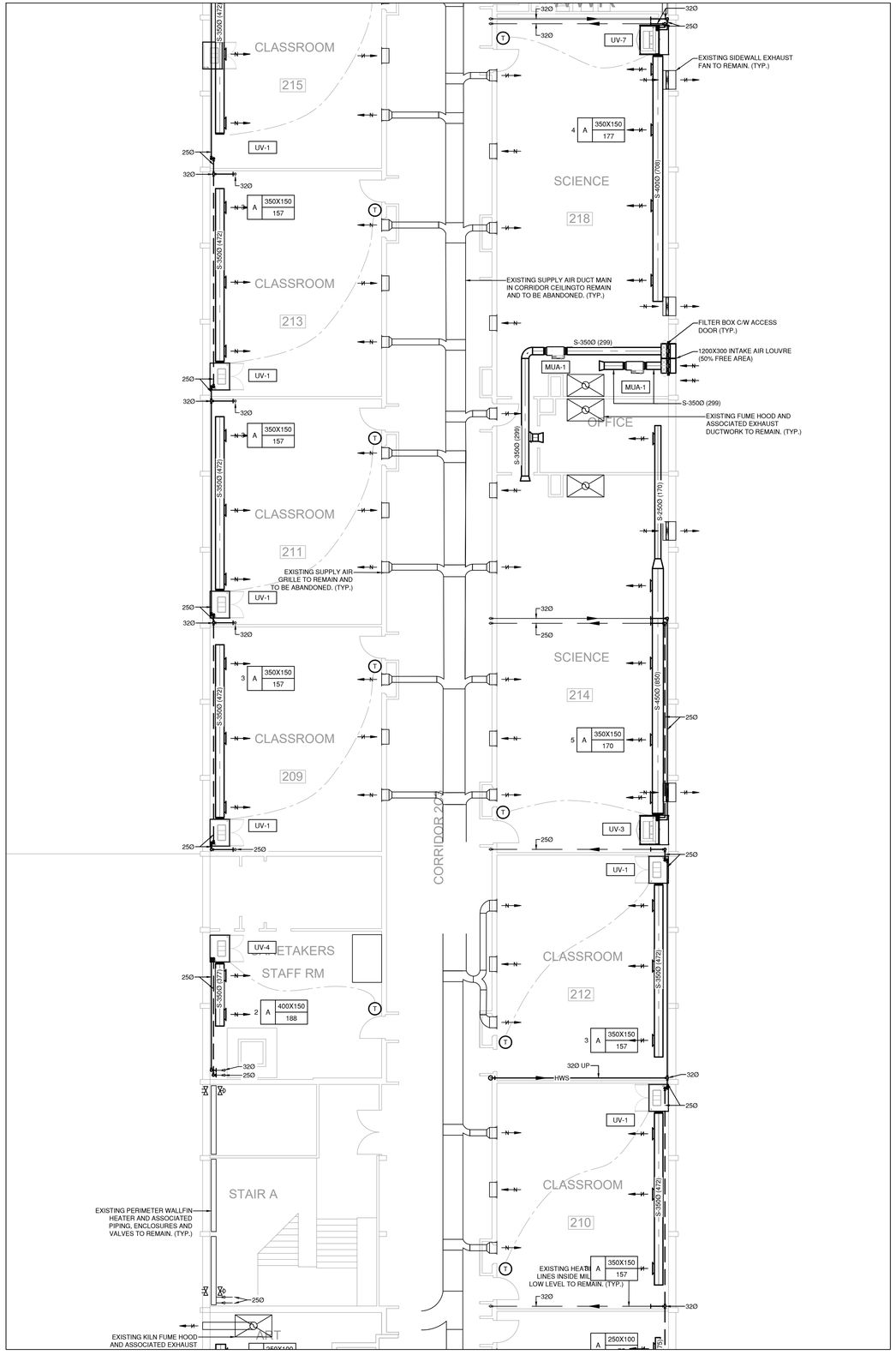
4. MECHANICAL CONTRACTOR RESPONSIBLE FOR REFRIGERANT LINE SIZING AND EQUIVALENT LENGTH TO MEET THE PERFORMANCE OF EQUIPMENT AND TSSA REQUIREMENT. INCLUDE ALL ACCESSORIES REQUIRED TO MEET THE MANUFACTURER'S RECOMMENDATION AND SPECIFIED PERFORMANCE.
5. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR THE COMPLETE INSTALLATION OF ALL MECHANICAL WIRING FROM INDOOR UNITS TO ASSOCIATED CONDENSING UNIT. ALL WIRING SHALL BE INSTALLED IN EMT CONDUIT. REFER TO CONDENSING UNIT SHOP DRAWINGS FOR FIELD WIRING DIAGRAM.
6. TERMINATE 20MM CONDENSATE DRAIN C/W P-TRAP OF UNIT VENTILATOR THROUGH UNITS FRESH AIR LOUVRE.
7. CONDENSATE DRAIN TO BE METALLIC UNTIL TERMINATION. PLASTIC TUBING WILL NOT BE ACCEPTED.
8. PROVIDE SUPPLY AIR PLENUM C/W FLEXIBLE DUCT CONNECTORS ABOVE VERTICAL UNIT VENTILATOR. CONTRACTOR TO COORDINATE EXACT HEIGHT OF PLENUM TO SUIT EXISTING SITE CONDITIONS.
9. PROVIDE METAL SLEEVE CONNECTING UNIT VENTILATOR AND ITS ASSOCIATED INTAKE ARE LOUVRE. CONTRACTOR TO COORDINATE SIZE OF SLEEVE TO SUIT EXISTING SITE CONDITIONS.
10. PROVIDE LOUVRE BLANK-OFF PANELS AS REQUIRED FOR SECTIONS OF INTAKE AIR LOUVRE NOT USED BY THE UNIT VENTILATORS.
11. PROVIDE 50MM HIGH CURB UNDER UNIT VENTILATORS TO ALIGN THE INTAKE AIR OPENING OF THE UNIT WITH LOUVRE OPENING. CONTRACTOR TO COORDINATE HEIGHT OF CURB TO SUIT EXISTING SITE CONDITIONS.



1 M3.6 PARTIAL SECOND FLOOR PLAN
Scale: 1:100

true north: project north:

key plan:

No.	Revision	Date

ALL CONSTRUCTION TO MEET ONTARIO BUILDING CODE REQUIREMENTS

RECEIVED
MAY 01 2024
CITY OF BURLINGTON
BUILDING DEPARTMENT

No.	Issue	Date
1	ISSUED FOR PERMIT	04/29/2024

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

seal: LICENSED PROFESSIONAL ENGINEER 4/29/2024 G.C. REA 100073703 PROVINCE OF ONTARIO

seal:

client: HALTON DISTRICT SCHOOL BOARD

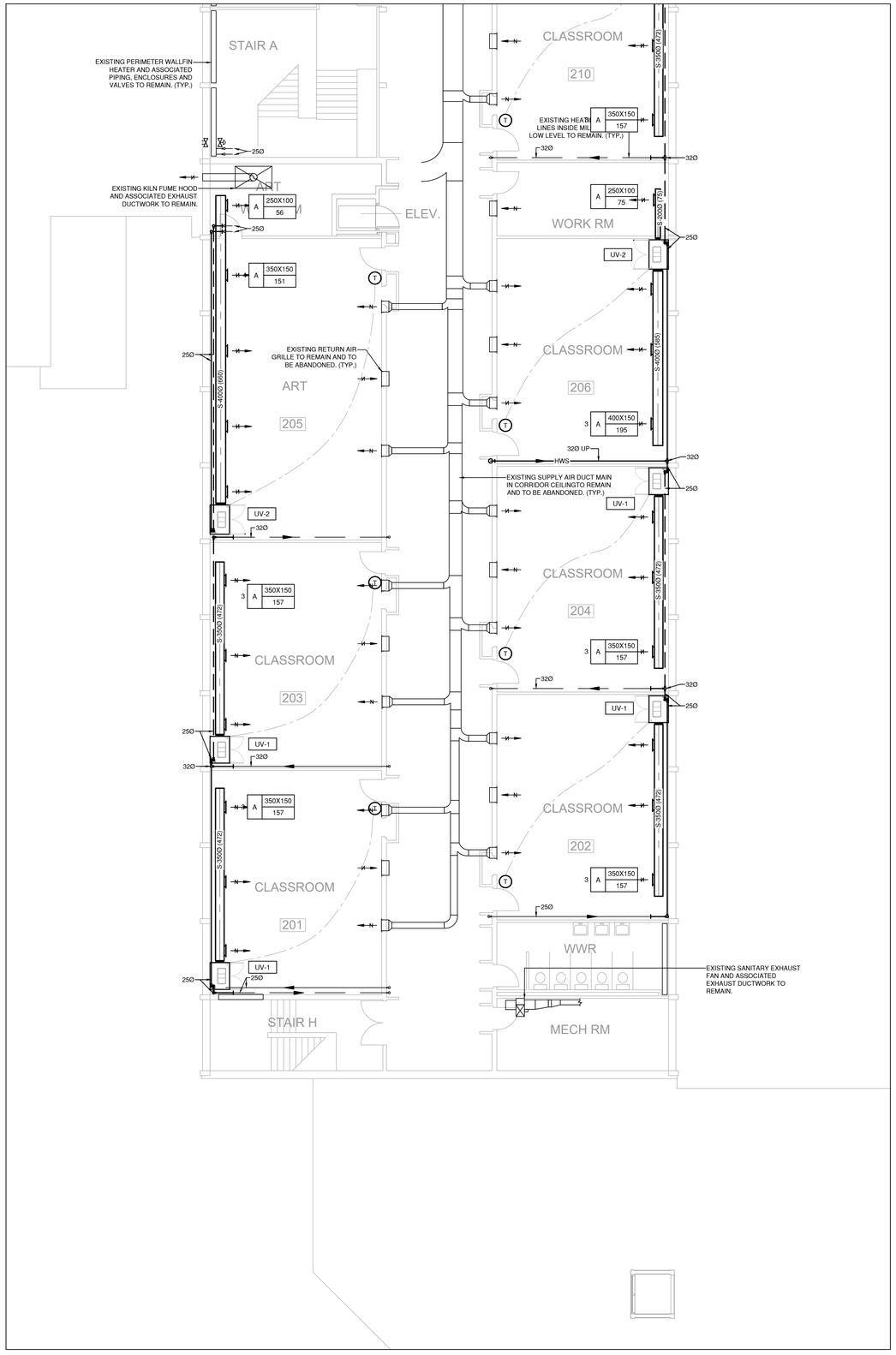
project name: NELSON HIGH SCHOOL BOILER RETROFIT AND AC UPGRADE

drawing name: PARTIAL SECOND FLOOR NEW WORK PLAN - HVAC

drawn by:	checked by:	drawing number:
SL	VK/GR	M3.6
date: ARPIL 2024		
scale: 1:100		
project number: 23178		

NEW WORK GENERAL NOTES

1. CORRIDORS IN 1956 AND 1958 ADDITIONS TO REMAIN AS IS.
2. PROVIDE INSULATION FOR HORIZONTAL UNIT VENTILATORS' FRESH AIR DUCT FOR AT LEAST 3000MM (10') FROM THE EXTERIOR WALL.
3. ALL EXPOSED DUCTWORK TO BE PAINTED WHITE OR TO ARCHITECT'S DIRECTION.
4. MECHANICAL CONTRACTOR RESPONSIBLE FOR REFRIGERANT LINE SIZING AND EQUIVALENT LENGTH TO MEET THE PERFORMANCE OF EQUIPMENT AND TSSA REQUIREMENT. INCLUDE ALL ACCESSORIES REQUIRED TO MEET THE MANUFACTURER'S RECOMMENDATION AND SPECIFIED PERFORMANCE.
5. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR THE COMPLETE INSTALLATION OF ALL MECHANICAL WIRING FROM INDOOR UNITS TO ASSOCIATED CONDENSING UNIT. ALL WIRING SHALL BE INSTALLED IN EMT CONDUIT. REFER TO CONDENSING UNIT SHOP DRAWINGS FOR FIELD WIRING DIAGRAM.
6. TERMINATE 20MM CONDENSATE DRAIN C/W P-TRAP OF UNIT VENTILATOR THROUGH UNIT'S FRESH AIR LOUVRE.
7. CONDENSATE DRAIN TO BE METALLIC UNTIL TERMINATION. PLASTIC TUBING WILL NOT BE ACCEPTED.
8. PROVIDE SUPPLY AIR PLENUM C/W FLEXIBLE DUCT CONNECTORS ABOVE VERTICAL UNIT VENTILATOR. CONTRACTOR TO COORDINATE EXACT HEIGHT OF PLENUM TO SUIT EXISTING SITE CONDITIONS.
9. PROVIDE METAL SLEEVE CONNECTING UNIT VENTILATOR AND ITS ASSOCIATED INTAKE ARE LOUVRE. CONTRACTOR TO COORDINATE SIZE OF SLEEVE TO SUIT EXISTING SITE CONDITIONS.
10. PROVIDE LOUVRE BLANK-OFF PANELS AS REQUIRED FOR SECTIONS OF INTAKE AIR LOUVRE NOT USED BY THE UNIT VENTILATORS.
11. PROVIDE 50MM HIGH CURB UNDER UNIT VENTILATORS TO ALIGN THE INTAKE AIR OPENING OF THE UNIT WITH LOUVRE OPENING. CONTRACTOR TO COORDINATE HEIGHT OF CURB TO SUIT EXISTING SITE CONDITIONS.



1 M3.7 PARTIAL SECOND FLOOR PLAN
Scale: 1:100

true north: / project north:

key plan:

No.	Revision	Date

ALL CONSTRUCTION TO MEET ONTARIO BUILDING CODE REQUIREMENTS

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BUILDING DEPARTMENT

No.	Issue	Date
1	ISSUED FOR PERMIT	04/29/2024

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

seal: LICENSED PROFESSIONAL ENGINEER 4/29/2024 G.C. REA 100073703 PROVINCE OF ONTARIO

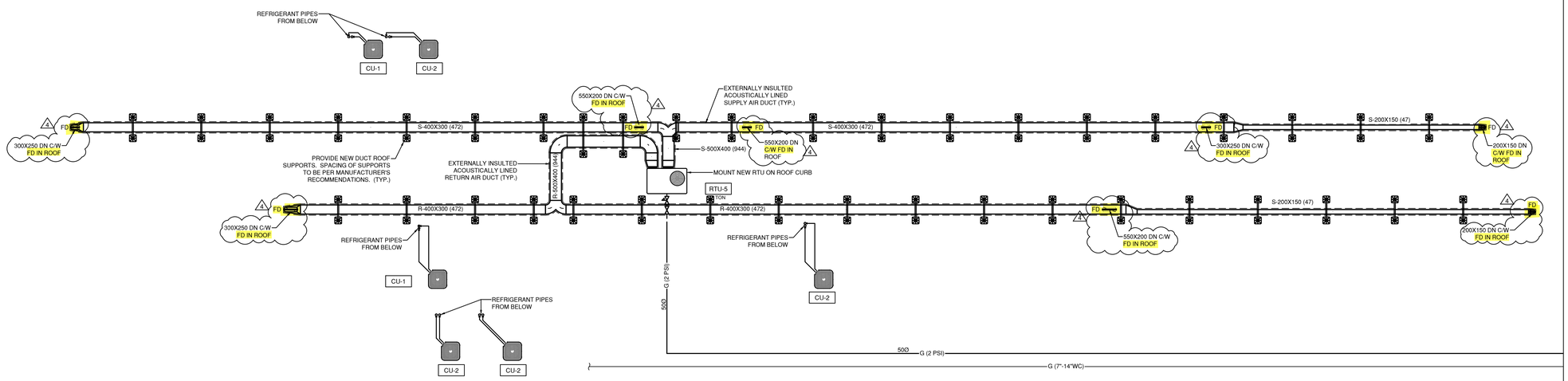
seal:

client: HALTON DISTRICT SCHOOL BOARD

project name: NELSON HIGH SCHOOL BOILER RETROFIT AND AC UPGRADE

drawing name: PARTIAL SECOND FLOOR NEW WORK PLAN - HVAC

drawn by:	checked by:	drawing number:
SL	VK/GR	M3.7
date: ARPIL 2024		
scale: 1:100		
project number: 23178		



1 M3.8 PARTIAL ROOF PLAN
Scale: 1:100

NEW WORK NOTES

1. ANY ROOF RELATED WORK IS TO BE EXECUTED BY HDSB APPROVED VENDORS AND COMPATIBLE ROOFING MATERIAL ARE TO BE USED. CONTRACTOR IS RESPONSIBLE TO NOTIFY AND COORDINATE WORK ON ROOF WITH ALL PARTIES PRIOR TO CONSTRUCTION.
2. PATCH, SEAL, AND MAKE GOOD OF ALL ROOF OPENINGS. ALL ROOFING WORK TO BE PROVIDED BY HDSB'S PRE-QUALIFIED ROOFING CONTRACTORS.
3. PAINT FULL CIRCUMFERENCE OF GAS PIPE YELLOW AS PER CSA B149.1. LABEL GAS PIPING COMPLETE WITH GAS PRESSURE ON WEATHERPROOF LABELS AS PER CSA B149.1.

Halton District School Board

2050 Guelph Line
Burlington, Ontario

NELSON HIGH SCHOOL RENOVATIONS

4181 NEW STREET
Burlington, Ontario

Mechanical

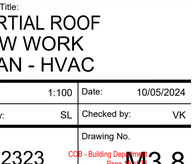
RDZ ENG
RDZ ENGINEERS LTD
17A - 30 Pennsylvania Avenue
Vaughan, Ontario L4K 4A5
email: info@rdzeng.ca

Architect
snyder
Snyder Architects Inc.
100 Broadview Ave, Suite 301, Toronto, ON M4M 3H3
tel. 416.966.5444
www.snyderarchitects.ca

Consultants
Mechanical and Electrical Consultants
RDZ Engineering Ltd
30 Pennsylvania Avenue, Unit 17A
Vaughan, Ontario, L4K 4A5
Tel: - -

Structural Consultants
Kalos Engineering Inc.
3oo York Boulevard,
Hamilton, Ontario, L8R 3K6
Tel: 905-333-9119

Key Plan:



Key Plan N.T.S.

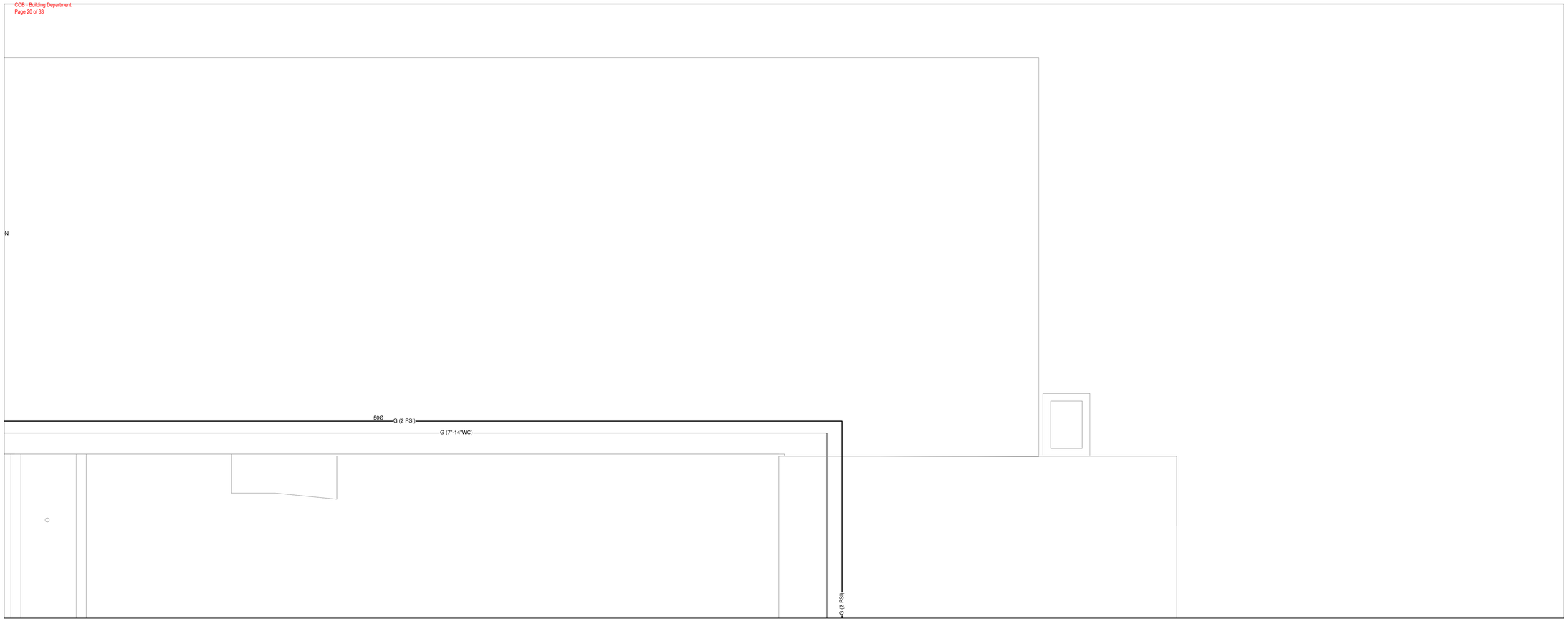
Project North | True North

No.	Revisions	Date
4	PERMIT COMMENTS	06/11/2024
3	ISSUED FOR ADD M-02	05/30/2024
2.	ISSUED FOR BID	05/13/2024
1.	ISSUED FOR PERMIT	04/29/2024
No.	Issue	Date

LICENSED PROFESSIONAL ENGINEER
6/11/2024
G.C. REA
100073703
PROVINCE OF ONTARIO

Drawing Title:
PARTIAL ROOF NEW WORK PLAN - HVAC

Scale:	1:100	Date:	10/05/2024
Drawn by:	SL	Checked by:	VK
Job No.	2323	Drawing No.	M3.8



1 / M3.9 PARTIAL ROOF PLAN
Scale: 1:100

NEW WORK NOTES

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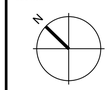
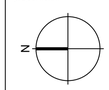
3. PAINT FULL CIRCUMFERENCE OF GAS PIPE YELLOW AS PER CSA B149.1. LABEL GAS PIPING COMPLETE WITH GAS PRESSURE ON WEATHERPROOF LABELS AS PER CSA B149.1.

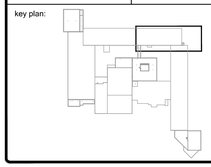
true north:



project north:



key plan:



No.	Revision	Date

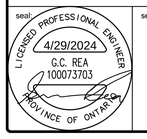
ALL CONSTRUCTION TO MEET ONTARIO BUILDING CODE REQUIREMENTS

RECEIVED
MAY 01 2024
CITY OF BURLINGTON
BUILDING DEPARTMENT

No.	Revision	Date
1	ISSUED FOR PERMIT	04/29/2024
No.	Issue	Date

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

seal:



seal:

client:
HALTON DISTRICT SCHOOL BOARD

project name:
NELSON HIGH SCHOOL
BOILER RETROFIT AND AC UPGRADE

drawing name:
PARTIAL ROOF NEW WORK PLAN - HVAC

drawn by:	checked by:	drawing number:
SL	VK/GR	M3.9
date: ARPIL 2024		
scale: 1:100		
project number: 23178		

NEW WORK NOTES

1. ANY ROOF RELATED WORK IS TO BE EXECUTED BY HDSB APPROVED VENDORS AND COMPATIBLE ROOFING MATERIAL ARE TO BE USED. CONTRACTOR IS RESPONSIBLE TO NOTIFY AND COORDINATE WORK ON ROOF WITH ALL PARTIES PRIOR TO CONSTRUCTION.
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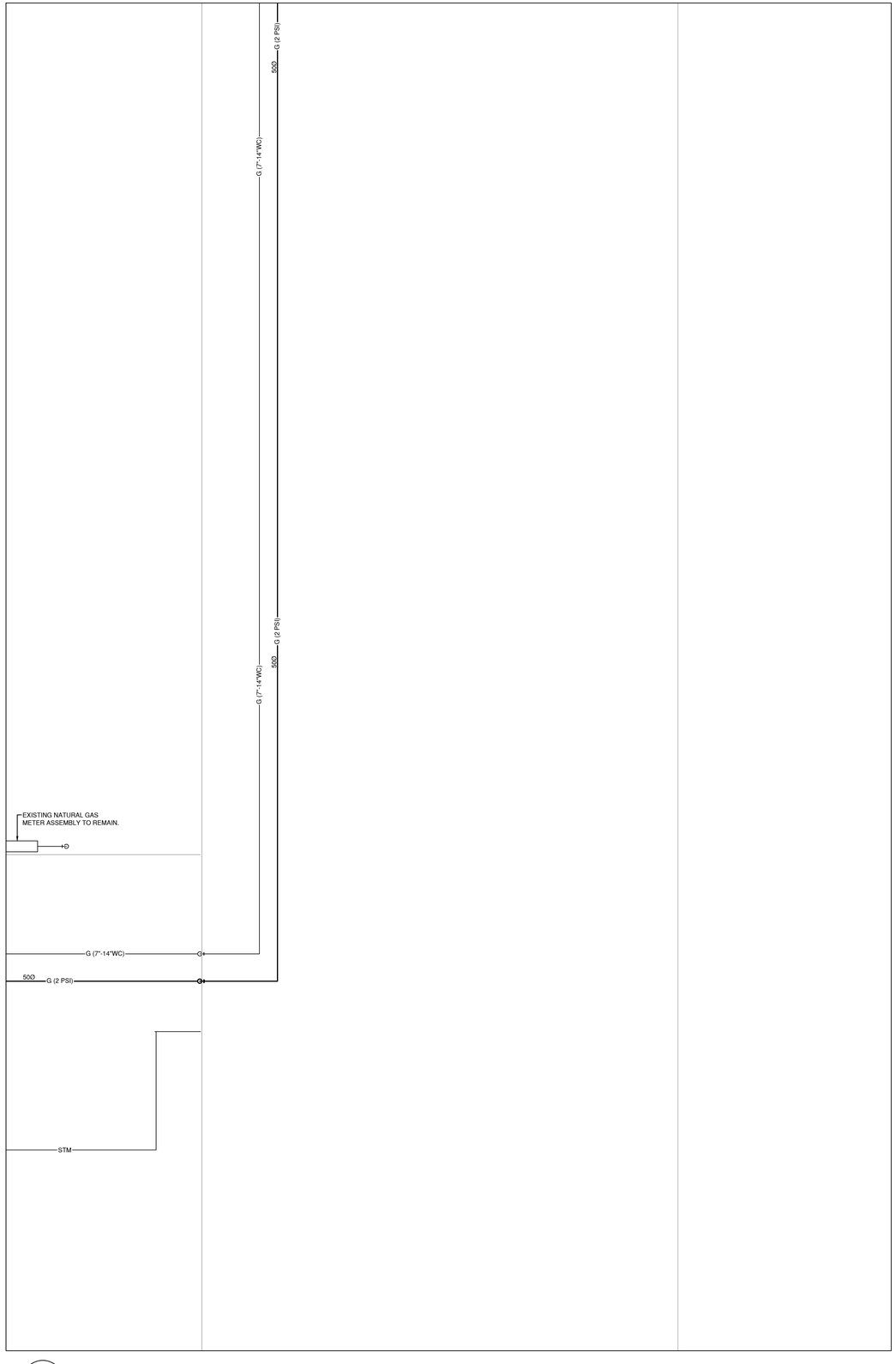
3. PAINT FULL CIRCUMFERENCE OF GAS PIPE YELLOW AS PER CSA B149.1. LABEL GAS PIPING COMPLETE WITH GAS PRESSURE ON WEATHERPROOF LABELS AS PER CSA B149.1.



1 M3.10 PARTIAL ROOF PLAN
Scale: 1:100

true north:

project north:

key plan:

No.	Revision	Date

ALL CONSTRUCTION TO MEET ONTARIO BUILDING CODE REQUIREMENTS

RECEIVED
MAY 01 2024
CITY OF BURLINGTON
BUILDING DEPARTMENT

No.	Issue	Date
1	ISSUED FOR PERMIT	04/29/2024

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

seal:

LICENSED PROFESSIONAL ENGINEER
4/29/2024
G.C. REA
100073703
PROVINCE OF ONTARIO

seal:

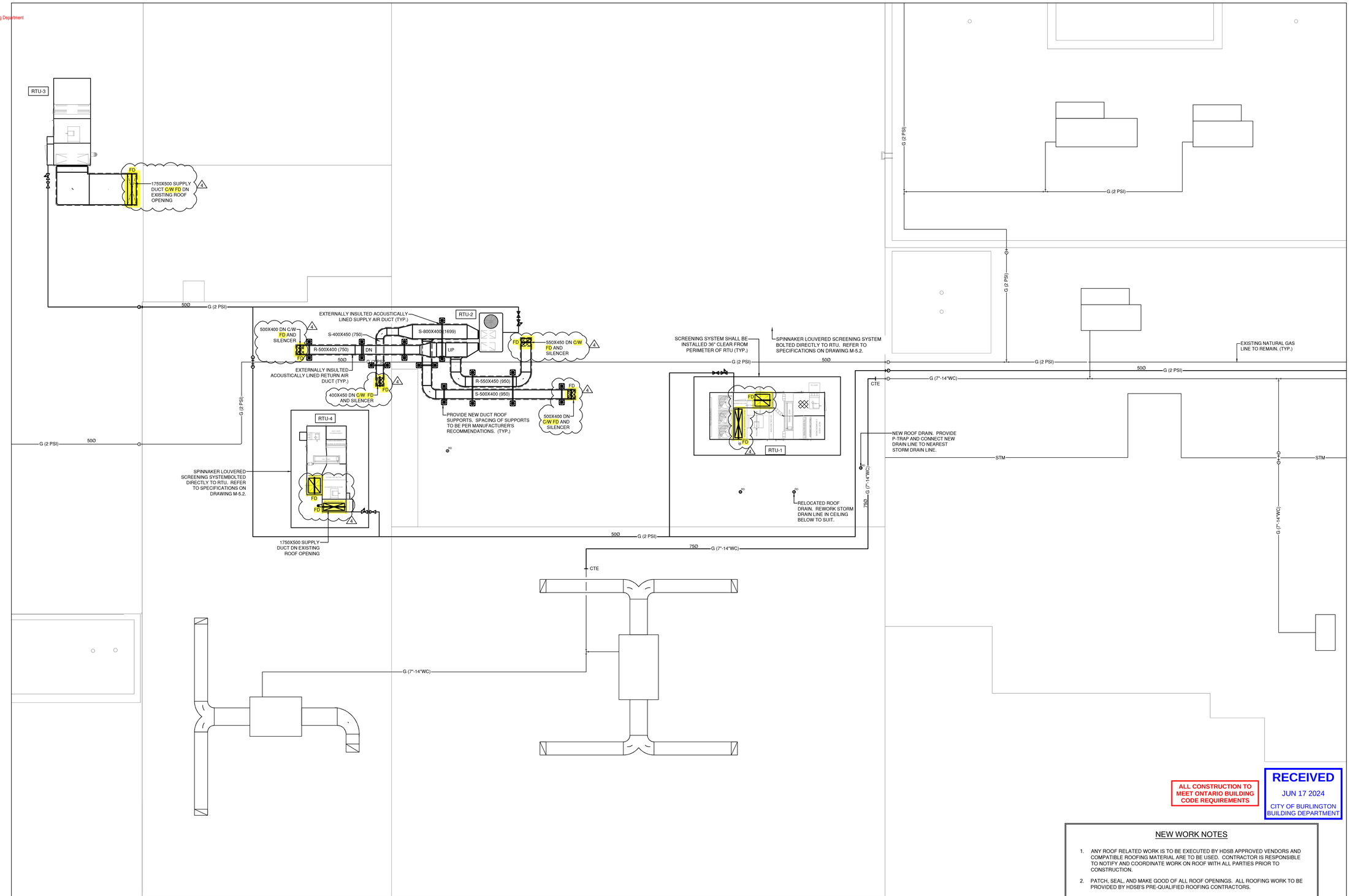
client:
HALTON DISTRICT SCHOOL BOARD

project name:
NELSON HIGH SCHOOL
BOILER RETROFIT AND AC UPGRADE

drawing name:
PARTIAL ROOF NEW WORK PLAN - HVAC

drawn by:	checked by:	drawing number:
SL	VK/GR	M3.10

date: ARPIL 2024
scale: 1:100
project number: 23178



1 M3.11 PARTIAL ROOF PLAN
Scale: 1:100

ALL CONSTRUCTION TO MEET ONTARIO BUILDING CODE REQUIREMENTS

RECEIVED
JUN 17 2024
CITY OF BURLINGTON
BUILDING DEPARTMENT

NEW WORK NOTES

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Halton District School Board

2050 Guelph Line
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Mechanical

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

Architect
Snyder Architects Inc.
100 Broadview Ave, Suite 301, Toronto, ON M4M 3H3
tel. 416.960.5444
www.snyderarchitects.ca

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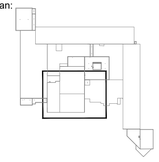
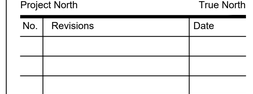
Key Plan:

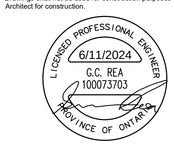


Key Plan N.T.S.



Project North | True North

No.	Revisions	Date
4	PERMIT COMMENTS	06/11/2024
3	ISSUED FOR ADD M-02	05/30/2024
2.	ISSUED FOR BID	05/13/2024
1.	ISSUED FOR PERMIT	04/29/2024
No.	Issue	Date



Drawing Title:
PARTIAL ROOF NEW WORK PLAN - HVAC

Scale:	1:100	Date:	10/05/2024
Drawn by:	SL	Checked by:	VK
Job No.	2323	Drawing No.	M3.11

NEW WORK NOTES

1. ANY ROOF RELATED WORK IS TO BE EXECUTED BY HDSB APPROVED VENDORS AND COMPATIBLE ROOFING MATERIAL ARE TO BE USED. CONTRACTOR IS RESPONSIBLE TO NOTIFY AND COORDINATE WORK ON ROOF WITH ALL PARTIES PRIOR TO CONSTRUCTION.
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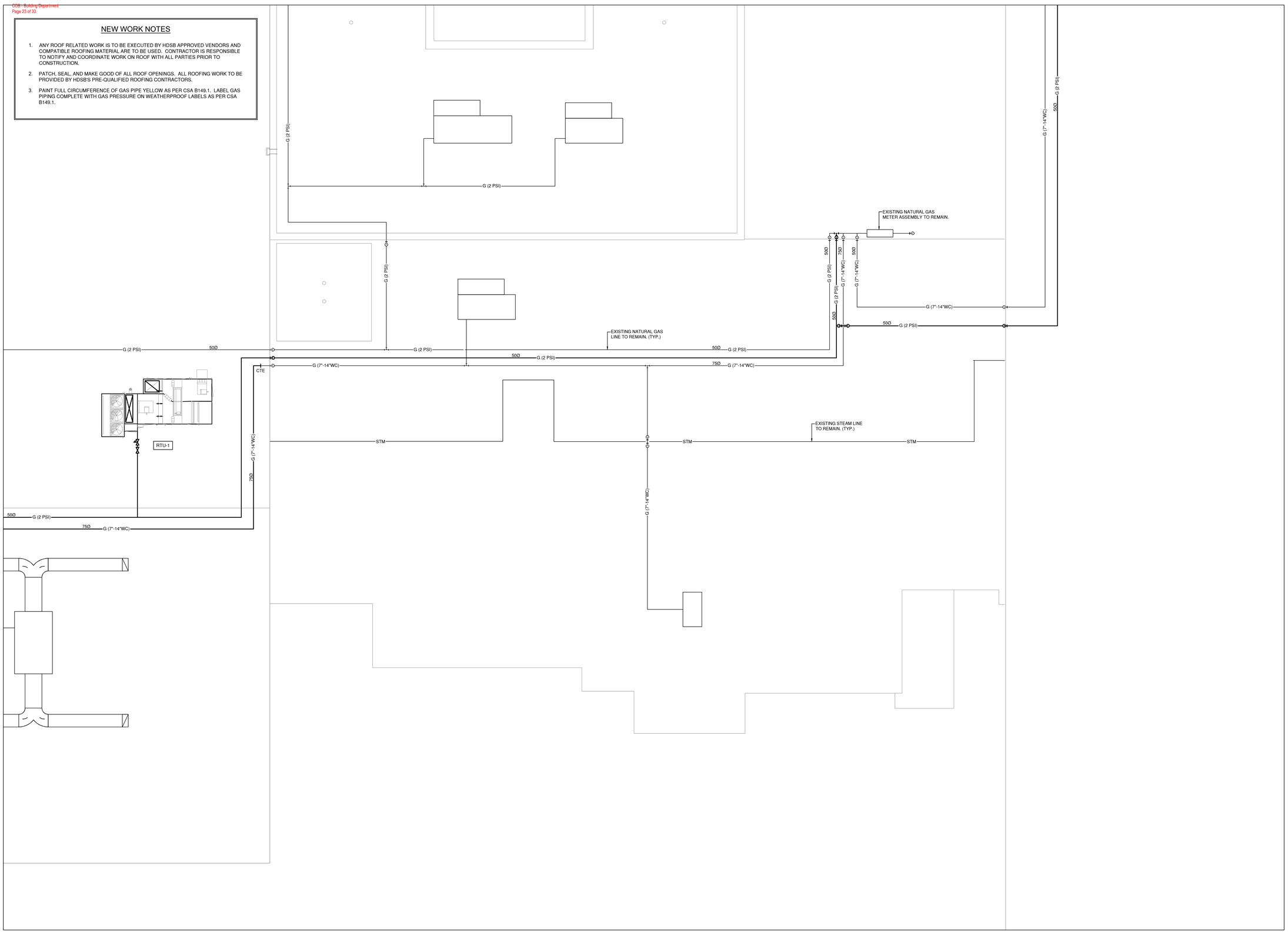
3. PAINT FULL CIRCUMFERENCE OF GAS PIPE YELLOW AS PER CSA B149.1. LABEL GAS PIPING COMPLETE WITH GAS PRESSURE ON WEATHERPROOF LABELS AS PER CSA B149.1.



1 M3.12 PARTIAL ROOF PLAN
Scale: 1:100

true north: / project north:

key plan:

No.	Revision	Date

ALL CONSTRUCTION TO MEET ONTARIO BUILDING CODE REQUIREMENTS

RECEIVED
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BUILDING DEPARTMENT

No.	Issue	Date
1	ISSUED FOR PERMIT	04/29/2024

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

seal: LICENSED PROFESSIONAL ENGINEER 4/29/2024 G.C. REA 100073703 PROVINCE OF ONTARIO

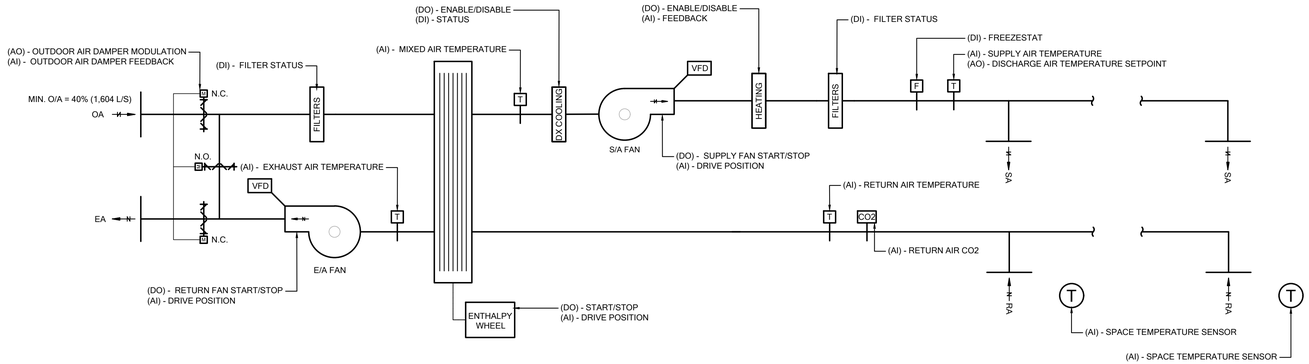
seal:

client: HALTON DISTRICT SCHOOL BOARD

project name: NELSON HIGH SCHOOL BOILER RETROFIT AND AC UPGRADE

drawing name: PARTIAL ROOF NEW WORK PLAN - HVAC

drawn by:	checked by:	drawing number:
SL	VK/GR	M3.12
date: ARPIL 2024		
scale: 1:100		
project number: 23178		



SEQUENCE OF OPERATION

1. SYSTEM IS ENABLED THROUGH BAS BASED ON TIME OF DAY SCHEDULE (ADJUSTABLE).
2. ROOM TEMPERATURE SETPOINTS ARE SET TO A NETWORK OCCUPIED SETPOINT, RESET AT 7AM EACH OCCUPIED PERIOD, FROM 21°C TO 24°C BASED ON OUTDOOR AIR TEMPERATURE -10°C TO 27°C, RESPECTIVELY. A +/- 2°C SETPOINT OFFSET SHALL BE PROVISIONED THROUGH THE ROOM SENSOR.
3. HEATING OR COOLING IS TO BE ENABLED WHEN THE ROOM TEMPERATURE IS 1°C AWAY FROM SETPOINT AND WILL BE DISABLED USING A 1°C DEADBAND. THERE SHALL BE A 30 MINS DELAY BETWEEN HEATING AND COOLING.
4. UNIT SHALL BE PROVIDED WITH FACTORY MOUNTED CONTROLS, WIRED AND PIPED, TO PROVIDE A FULLY AUTOMATED STARTUP AND ACCURATELY MODULATED DISCHARGE AIR TEMPERATURE.
5. ALL DX COOLING, GAS HEATING, FANS, ENTHALPY WHEEL, MODULATION OR STAGING CONTROL AND ALL SAFETIES AS REQUIRED, SHALL BE BY A UNIT MOUNTED MICRO PROCESSOR CONTROLLER.
6. PRE-OCCUPANCY MODE:
   1. BAS TO ENABLE SUPPLY AND EXHAUST AIR FANS 30 MINUTES (ADJUSTABLE) PRIOR TO START OF OCCUPIED PERIOD. START EXHAUST AIR FAN FOLLOWED BY THE SUPPLY AIR FAN. INCREASE FAN SPEED GRADUALLY TO FULL SPEED VIA VFDS.
   2. OUTDOOR AIR & EXHAUST AIR DAMPERS REMAIN CLOSED. RETURN AIR DAMPER REMAINS OPEN.
   3. BAS TO POLL SPACE TEMPERATURES IN AUDITORIUM AT LOCAL TEMPERATURE SENSORS. MODULATE DX COOLING (IN COOLING MODE) AND GAS HEATING (IN HEATING MODE) TO MAINTAIN AVERAGE SPACE TEMPERATURE SETPOINT AT 22°C (72°F - ADJUSTABLE).
7. OCCUPIED MODE:
   1. BAS TO ENABLE UNIT. MODULATE MIXED AIR DAMPERS TO MINIMUM OUTDOOR AIR POSITION (40%).
   2. ENABLE ENTHALPY WHEEL. EXHAUST AIR TEMPERATURE SENSOR SHALL MODULATE ENTHALPY WHEEL SPEED ROTATION FOR FROST CONTROL TO MAINTAIN AN EXHAUST AIR TEMPERATURE ABOVE 2°C (35.6°F) WB.
   3. THE MIXED AIR TEMPERATURE SENSOR SHALL NITIATE A HIGH PRIORITY ALARM AT A LOW LIMIT OF -1.0°C (30°F) AND A HIGH LIMIT OF 30°C (86°F).
   4. UPON ACTIVATION OF THE FREEZE STAT AT 2.0°C THE SUPPLY AND RETURN AIR FANS SHALL STOP AND NOT AUTOMATICALLY RE-START. THE FREEZE STAT MUST BE MANUALLY RESET. PROVIDE AN ALARM AT THE BAS INDICATING THAT THE UNIT WAS TURNED OFF AS A RESULT OF A FREEZE ALARM.
   5. THE CO2 SENSOR SHALL MODULATE THE OUTDOOR AIR, RETURN AIR AND EXHAUST AIR DAMPERS TO MAINTAIN THE CO2 SETPOINT OF 800 PPM. (ADJUSTABLE)
   6. WHEN OUTDOOR AIR TEMPERATURE IS BELOW 12°C (54°F - ADJUSTABLE), ROOFTOP UNIT IS IN ECONOMIZER (FREE COOLING) MODE. ENTHALPY WHEEL IS DISABLED, DX COOLING AND GAS BURNERS DISABLED. ONCE OUTDOOR AIR TEMPERATURE DROPS BELOW 5°C (41°F - ADJUSTABLE), AIR SIDE ECONOMIZER OPERATION STOPS, UNIT RETURN TO NORMAL OPERATION. FREE COOLING MODE TO BE ENABLED ONLY WHEN ON CALL FOR COOLING.
8. UNOCCUPIED MODE:
   1. DISABLE SUPPLY AND EXHAUST FANS.
   2. CLOSE OUTSIDE AIR & EXHAUST AIR DAMPERS BY MECHANICAL SPRING RETURN. RETURN AIR DAMPER TO BE RELEASED AND OPEN BY WAY OF MECHANICAL SPRING RETURN. OUTDOOR AIR DAMPER TO REMAIN CLOSED DURING UNOCCUPIED TIMES.
   3. DISABLE ENTHALPY WHEEL.
   5. BAS TO POLL SPACE TEMPERATURES IN AUDITORIUM AT LOCAL TEMPERATURE SENSORS. WHEN SPACE TEMPERATURE IS OUTSIDE OF SETPOINT RANGE, THEN ENABLE SUPPLY AND EXHAUST FANS, MODULATE DX COOLING (IN COOLING MODE) AND GAS HEATING (IN HEATING MODE) TO MAINTAIN AVERAGE SPACE TEMPERATURE BETWEEN 18°C (64°F - ADJUSTABLE) AND 25°C (77°F - ADJUSTABLE).

NOTES

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

ROOFTOP AIR HANDLING UNIT 'RTU-1' (AUDITORIUM)

CONTROL DIAGRAM

NOTES

1. THE EXISTING BASE BUILDING BUILDING CONTROL SYSTEM IS DISTECH CONTROLS.

   ALL CONTROL WORK FOR THIS PROJECT SHALL BE PERFORMED BY THE BASE BUILDING CONROLS CONTRACTOR - ENERGY CONTROLS. CONTACT INFO BELOW:

   ENERGY CONTROLS
   (519)893-2638
   INFO@ENERGYCONTROLS.CA
2. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL RELAYS, DRY CONTACTS, CONTACTORS, TRANSDUCERS, ETC. AS REQUIRED TO OPERATE THE SYSTEMS AS INTENDED.
3. COORDINATE FINAL INSTALLATION POSITION OF EACH THERMOSTAT AND ALL OTHER CONTROLS RELATED DEVICES THAT ARE LOCATED ON WALLS, CEILINGS, FLOORS, ETC. IN ALL AREAS ON SITE WITH OWNER PRIOR TO ROUGH IN. WALL MOUNTED TEMPERATURE, HUMIDITY AND/OR CO2 SENSORS ARE TO BE MOUNTED AS PER LOCAL GOVERNING AUTHORITY AND BARRIER FREE REQUIREMENTS.
4. REFER TO ELECTRICAL DRAWINGS FOR LOCATIONS OF JUNCTION BOXES PROVIDED BY THE ELECTRICAL TRADE, FOR THE PROVISION OF POWER TO CONTROLS SYSTEMS.
5. ALL CONTROL WIRING IN AREAS WITH EXPOSED CEILINGS SHALL BE PROVIDED IN CONDUIT.
6. RENAME ALL NEW EQUIPMENT TAG AND CONTROL POINTS ON BAS TO SUIT NEW CONSTRUCTION AS INDICATED ON DOCUMENTS.

GENERAL CONTROL NOTES

true north: project north:

key plan:

No.	Revision	Date

ALL CONSTRUCTION TO MEET ONTARIO BUILDING CODE REQUIREMENTS

RECEIVED
MAY 01 2024
CITY OF BURLINGTON
BUILDING DEPARTMENT

1	ISSUED FOR PERMIT	04/29/2024
No.	Issue	Date

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

seal: seal:

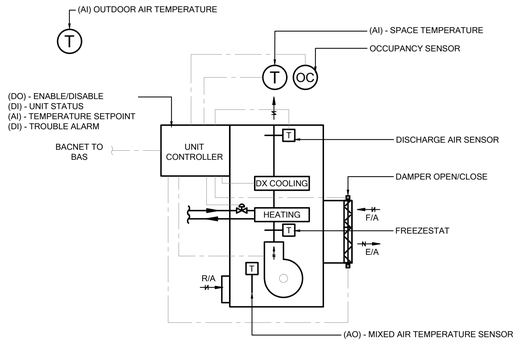
LICENSED PROFESSIONAL ENGINEER
4/29/2024
C.C. REA
100073703
PROVINCE OF ONTARIO

client:
HALTON DISTRICT SCHOOL BOARD

project name:
NELSON HIGH SCHOOL
BOILER RETROFIT AND AC UPGRADE

drawing name:
CONTROLS DIAGRAMS 1
MECHANICAL

drawn by: SL	checked by: VK/GR	drawing number: M4.0
date: ARPIL 2024		
scale:		
project number: 23178		



SEQUENCE OF OPERATION

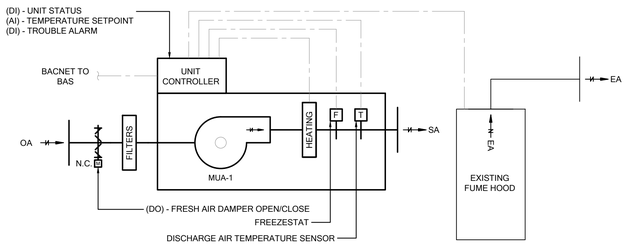
1. BAS TO ENABLE/DISABLE UNIT VENTILATOR BASED ON A TIME OF DAY SCHEDULE.
2. OCCUPIED MODE:
    1. ONCE ENABLED, UNIT CONTROLLER TO:

       OPEN MOTORIZED FRESH AIR AND EXHAUST AIR DAMPERS AT FIXED FRESH AIR.

       START FAN TO OPERATE CONTINUOUSLY DURING OCCUPIED PERIODS
    2. WHEN ON CALL FOR HEATING, UNIT CONTROLLER SHALL MODULATE HEATING VALVE TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 21.1°C (70°F).
    3. WHEN ON CALL FOR COOLING, UNIT CONTROLLER TO ENABLE DX COOLING TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 22.8°C (73°F).
    4. WHEN OUTDOOR AIR TEMPERATURE IS BETWEEN 10°C (50°F) TO 16°C (60°C), UNIT CONTROLLER TO ENABLE AIR SIDE ECONOMIZER MODE. DX COOLING DISABLED AND HEATING VALVE CLOSED. ONCE OUTDOOR AIR TEMPERATURE DROPS BELOW 8°C (46.4°F - ADJUSTABLE), AIR SIDE ECONOMIZER OPERATION STOPS, UNIT RETURN TO NORMAL OPERATION. ECONOMIZER MODE TO BE ENABLED ONLY WHEN ON CALL FOR COOLING.
3. UNOCCUPIED MODE:
    1. WHEN DISABLED, UNIT CONTROLLER TO CLOSE MOTORIZED DAMPERS AND STOP FAN.
    2. IF SPACE TEMPERATURE DROPS BELOW SETPOINT OF 18°C (65°F) IN HEATING SEASON, UNIT CONTROLLER TO START FAN AND MODULATE HEATING VALVE TO MAINTAIN TEMPERATURE SETPOINT. FRESH AIR AND EXHAUST AIR DAMPERS REMAIN CLOSED.
    3. WHEN OCCUPANCY IS DETECTED BY SENSOR, UNIT CONTROLLER TO ENABLE UNIT IN OCCUPIED MODE. WHEN OCCUPANCY IS NOT DETECTED FOR 15 MINS, UNIT CONTROLLER TO DISABLE UNIT.
4. IF MIXED AIR TEMPERATURE IN MIXED AIR PLENUM IS BELOW 10°C (50°F), TRIGGER ALARM AT BAS.
5. WHEN FREEZESTAT TRIPS, UNIT TO SHUT DOWN AND UNIT CONTROLLER TO SEND TROUBLE ALARM TO BAS. UNIT SHALL NOT RESTART AUTOMATICALLY.
6. DX COOLING IS LOCKED OUT WHEN AMBIENT TEMPERATURE IS BELOW 12.8°C (55°F).

PACKAGED UNIT VENTILATORS (UV-1, UV-2, UV-4)

CONTROL DIAGRAM

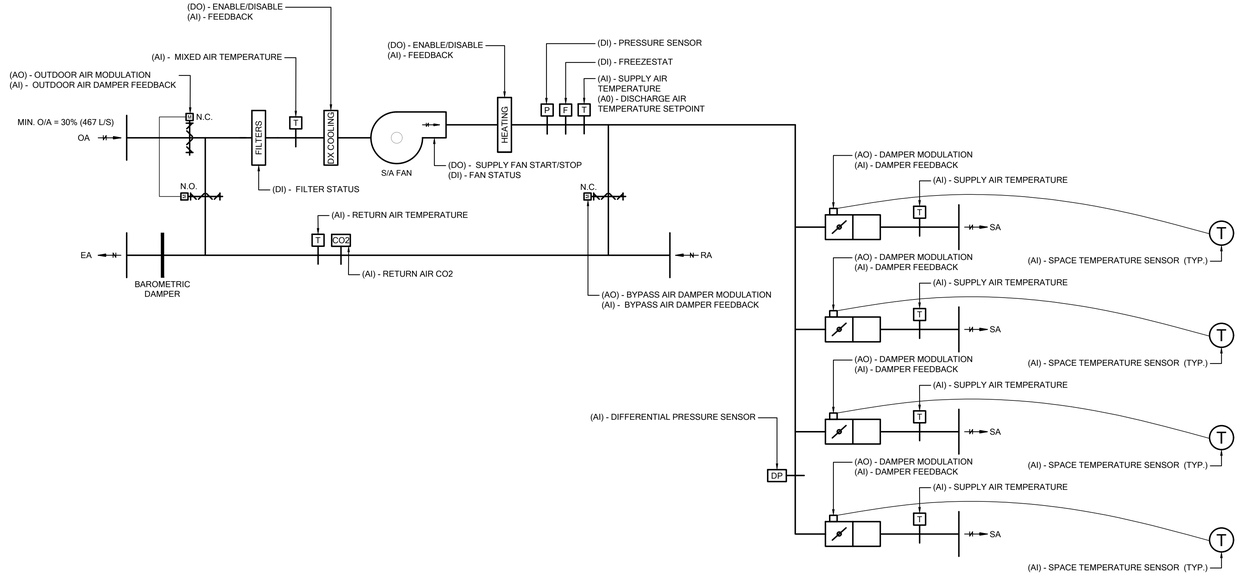


SEQUENCE OF OPERATION

1. INTERLOCK MINI MAKE UP AIR UNIT TO ASSOCIATED EXISTING FUME HOOD IN SCIENCE ROOM.
2. WHEN FUME HOOD IS ACTIVATED BY MANUAL SWITCH, UNIT CONTROLLER TO ENABLE MINI MAKE UP AIR UNIT. BAS TO OPEN FRESH AIR DAMPER 100%.
3. WHEN FUME HOOD IS ACTIVATED BY MANUAL SWITCH, UNIT CONTROLLER TO DISENABLE MINI MAKE UP AIR UNIT. BAS TO CLOSE FRESH AIR DAMPER COMPLETELY.
4. DISCHARGE AIR TEMPERATURE SENSOR TO ENABLE/DISABLE ELECTRIC HEATING COIL TO MAINTAIN DISCHARGE AIR TEMPERATURE SETPOINT OF 65°F/18.3°C (OPERATOR ADJUSTABLE).
5. UPON ACTIVATION OF THE FREEZE STAT AT 2°C, THE UNIT SHALL STOP AND NOT AUTOMATICALLY RESTART. THE FREEZE STAT MUST BE MANUALLY RESET. PROVIDE AN ALARM AT THE BAS INDICATING THAT THE UNIT WAS TURNED OFF AS A RESULT OF A FREEZE ALARM.

MINI MAKE UP AIR UNIT (MUA-1)

CONTROL DIAGRAM



SEQUENCE OF OPERATION

1. SYSTEM IS ENABLED THROUGH BAS BASED ON TIME OF DAY SCHEDULE (ADJUSTABLE).
2. ROOM TEMPERATURE SETPOINTS ARE SET TO A NETWORK OCCUPIED SETPOINT, RESET AT 7AM EACH OCCUPIED PERIOD, FROM 21°C (70°F) TO 24°C (75°F) BASE ON OUTDOOR AIR TEMPERATURE -10°C (14°F) TO 27°C (80.6°F), RESPECTIVELY. A +/- 2°C SETPOINT OFFSET SHALL BE PROVISIONED THROUGH THE ROOM SENSOR.
3. HEATING OR COOLING IS TO BE ENABLED WHEN THE ROOM TEMPERATURE IS 1°C AWAY FROM SETPOINT. VAV BOX DAMPER TO OPEN WHEN THERE IS A MINIMUM 5°C DIFFERENTIAL BETWEEN ROOM TEMPERATURE AND THE AIR SUPPLIED BY THE ROOFTOP UNIT (HEATING CALL SUPPLY AIR TO BE 5°C ABOVE ROOM TEMPERATURE, COOLING CALL SUPPLY AIR TO BE 5°C BELOW ROOM TEMPERATURE), OTHERWISE REMAIN AT MINIMUM POSITION. HEATING OR COOLING WILL BE DISABLED USING A 1°C DEADBAND. THERE SHALL BE A 30 MINS DELAY BETWEEN HEATING AND COOLING.
4. UNIT SHALL BE PROVIDED WITH FACTORY MOUNTED CONTROLS, WIRED AND PIPED, TO PROVIDE A FULLY AUTOMATED STARTUP AND ACCURATELY MODULATED DISCHARGE AIR TEMPERATURE.
5. ALL DX COOLING, GAS HEATING, FAN, MODULATION OR STAGING CONTROL AND ALL SAFETIES AS REQUIRED, SHALL BE BY A UNIT MOUNTED MICRO PROCESSOR CONTROLLER.
6. PRE-OCCUPANCY MODE:
    1. BAS TO ENABLE SUPPLY AIR FAN 30 MINUTES (ADJUSTABLE) PRIOR TO START OF OCCUPIED PERIOD.
    2. OUTDOOR AIR AND BYPASS AIR DAMPERS REMAIN CLOSED. RETURN AIR DAMPER REMAINS OPEN.
    3. MODULATE DX COOLING (IN COOLING MODE) AND GAS HEATING (IN HEATING MODE) TO MAINTAIN ROOFTOP UNIT SUPPLY AIR TEMPERATURE SETPOINT AT 12.7°C (55°F - ADJUSTABLE) IN COOLING MODE AND 18.3°C (65°F - ADJUSTABLE) IN HEATING MODE.
7. OCCUPIED MODE:
    1. BAS TO ENABLE UNIT. MODULATE OUTDOOR AIR DAMPER TO MINIMUM OUTDOOR AIR POSITION (30%).
    3. THE MIXED AIR TEMPERATURE SENSOR SHALL NITIATE A HIGH PRIORITY ALARM AT A LOW LIMIT OF -1.0°C (30°F) AND A HIGH LIMIT OF 30°C (86°F).
    4. UPON ACTIVATION OF THE FREEZE STAT AT 2.0°C THE SUPPLY AIR FAN SHALL STOP AND NOT AUTOMATICALLY RE-START. THE FREEZE STAT MUST BE MANUALLY RESET. PROVIDE AN ALARM AT THE BAS INDICATING THAT THE UNIT WAS TURNED OFF AS A RESULT OF A FREEZE ALARM.
    5. THE CO2 SENSOR SHALL MODULATE THE OUTDOOR AIR DAMPER TO MAINTAIN THE CO2 SETPOINT OF 800 PPM. (ADJUSTABLE)
    6. WHEN OUTDOOR AIR TEMPERATURE IS BELOW 12°C (54°F - ADJUSTABLE), ROOFTOP UNIT IS IN ECONOMIZER (FREE COOLING) MODE. DX COOLING AND GAS BURNERS DISABLED. ONCE OUTDOOR AIR TEMPERATURE DROPS BELOW 5°C (41°F - ADJUSTABLE), AIR SIDE ECONOMIZER OPERATION STOPS, UNIT RETURN TO NORMAL OPERATION. FREE COOLING MODE TO BE ENABLED ONLY WHEN ON CALL FOR COOLING.
    7. DIFFERENTIAL PRESSURE SENSOR 'DP' (LOCATED ⅔ OF LONGEST DUCT RUN DOWNSTREAM OF FAN) SHALL MAINTAIN SETPOINT BASED ON STATIC PRESSURE RESET CONTROL BY MODULATING BYPASS AIR DAMPER. BAS SHALL CONTINUALLY POLL VAV BOX DAMPER POSITION AND RESET THE STATIC PRESSURE SETPOINT TO MAINTAIN THE INLET PRESSURE OF THE MOST OPEN DAMPER GREATER THAN 95% OPEN. HIGH PRESSURE SENSOR 'P' C/W MANUAL RESET SHALL OVERRIDE VFD AND STOP SUPPLY FAN WHEN SETPOINT EXCEEDS 500Pa (ADJUSTABLE).
8. UNOCCUPIED MODE:
    1. DISABLE ROOFTOP UNIT SUPPLY FAN.
    2. CLOSE OUTSIDE AIR DAMPER BY MECHANICAL SPRING RETURN. RETURN AIR DAMPER TO BE RELEASED AND OPEN BY WAY OF MECHANICAL SPRING RETURN. OUTDOOR AIR DAMPER TO REMAIN CLOSED DURING UNOCCUPIED TIMES.
    3. RETURN VAV BOX DAMPER TO MINIMUM POSITION.
    4. COOLING AND HEATING SETPOINTS SHALL BE 18°C AND 27°C AND WILL BE DISABLED BY A 2°C DEADBAND.
9. PERIMETER HEAT:
    1. WHEN A ROOM IS PROVISIONED WITH PERIMETER HYDRONIC HEAT, CLOSE VAV BOX DAMPER TO MINIMUM POSITION AND MODULATE HEATING WATER VALVE TO MAINTAIN SPACE TEMPERATURE SETPOINT.

NOTES

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

ROOFTOP AIR HANDLING UNIT 'RTU-2' (MUSIC ROOMS)

CONTROL DIAGRAM

true north:

project north:

key plan:

No.	Revision	Date
1	ISSUED FOR PERMIT	04/29/2024
No.	Issue	Date

ALL CONSTRUCTION TO MEET ONTARIO BUILDING CODE REQUIREMENTS

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CITY OF BURLINGTON
BUILDING DEPARTMENT

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

seal:

LICENSED PROFESSIONAL ENGINEER
4/29/2024
C.C. REA
100073703
PROVINCE OF ONTARIO

seal:

client:
HALTON DISTRICT SCHOOL BOARD

project name:
NELSON HIGH SCHOOL BOILER RETROFIT AND AC UPGRADE

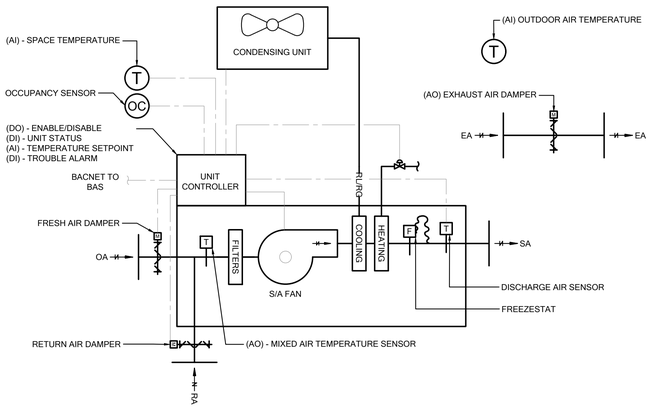
drawing name:
CONTROLS DIAGRAMS 2 MECHANICAL

drawn by:	checked by:	drawing number:
SL	VK/GR	M4.1

date: ARPIL 2024

scale:

project number: 23178



SEQUENCE OF OPERATION

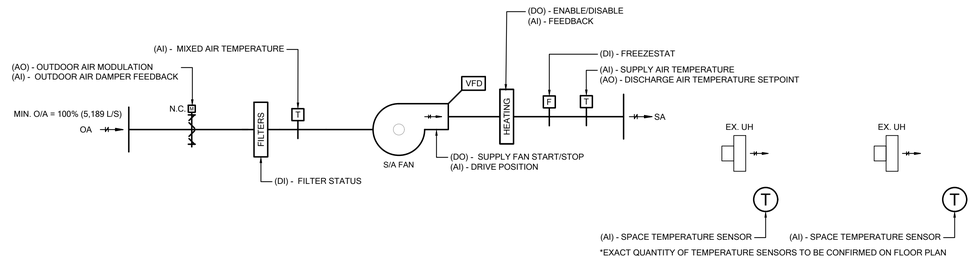
1. BAS TO ENABLE/DISABLE UNIT VENTILATOR BASED ON A TIME OF DAY SCHEDULE.
2. OCCUPIED MODE:
   1. ONCE ENABLED, BAS TO OPEN MOTORIZED EXHAUST AIR DAMPER. UNIT CONTROLLER TO:

      OPEN MOTORIZED FRESH AIR AND RETURN AIR DAMPERS AT FIXED FRESH AIR.

      START FAN TO OPERATE CONTINUOUSLY DURING OCCUPIED PERIODS
   2. WHEN ON CALL FOR HEATING, UNIT CONTROLLER SHALL MODULATE HEATING VALVE TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 21.1°C (70°F).
   3. WHEN ON CALL FOR COOLING, UNIT CONTROLLER TO ENABLE REMOTE DX CONDENSING UNIT TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 22.8°C (73°F).
   4. WHEN OUTDOOR AIR TEMPERATURE IS BETWEEN 10°C (50°F) TO 16°C (60°C), UNIT CONTROLLER TO ENABLE AIR SIDE ECONOMIZER MODE. DX COOLING DISABLED, HEATING VALVE CLOSED, OPEN FRESH AIR DAMPER 100% AND CLOSE RETURN AIR DAMPER. BAS TO OPEN MOTORIZED EXHAUST DAMPER TO 100%. ONCE OUTDOOR AIR TEMPERATURE DROPS BELOW 8°C (46.4°F - ADJUSTABLE), AIR SIDE ECONOMIZER OPERATION STOPS, UNIT RETURN TO NORMAL OPERATION. ECONOMIZER MODE TO BE ENABLED ONLY WHEN ON CALL FOR COOLING.
3. UNOCCUPIED MODE:
   1. WHEN DISABLED, UNIT CONTROLLER TO CLOSE MOTORIZED FRESH AIR DAMPER, OPEN RETURN AIR DAMPER 100% AND STOP FAN. BAS TO CLOSE MOTORIZED EXHAUST AIR DAMPER.
   2. IF SPACE TEMPERATURE DROPS BELOW SETPOINT OF 18°C (65°F) IN HEATING SEASON, UNIT CONTROLLER TO START FAN AND MODULATE HEATING VALVE TO MAINTAIN TEMPERATURE SETPOINT. FRESH AIR AND EXHAUST AIR DAMPERS REMAIN CLOSED.
   3. WHEN OCCUPANCY IS DETECTED BY SENSOR, UNIT CONTROLLER TO ENABLE UNIT IN OCCUPIED MODE. WHEN OCCUPANCY IS NOT DETECTED FOR 15 MINS, UNIT CONTROLLER TO DISABLE UNIT.
4. IF MIXED AIR TEMPERATURE IN MIXED AIR PLENUM IS BELOW 10°C (50°F), TRIGGER ALARM AT BAS.
5. WHEN FREEZESTAT TRIPS, UNIT TO SHUT DOWN AND UNIT CONTROLLER TO SEND TROUBLE ALARM TO BAS. UNIT SHALL NOT RESTART AUTOMATICALLY.
6. DX COOLING IS LOCKED OUT WHEN AMBIENT TEMPERATURE IS BELOW 12.8°C (55°F).

HORIZONTAL UNIT VENTILATORS (UV-5, UV-6)

CONTROL DIAGRAM



*EXACT QUANTITY OF TEMPERATURE SENSORS TO BE CONFIRMED ON FLOOR PLAN

SEQUENCE OF OPERATION

1. SYSTEM IS ENABLED THROUGH BAS BASED ON TIME OF DAY SCHEDULE (ADJUSTABLE).
2. ROOM TEMPERATURE SETPOINTS ARE SET TO A NETWORK OCCUPIED SETPOINT, RESET AT 7AM EACH OCCUPIED PERIOD, FROM 21°C TO 24°C BASED ON OUTDOOR AIR TEMPERATURE -10°C TO 27°C, RESPECTIVELY. A +/- 2°C SETPOINT OFFSET SHALL BE PROVISIONED THROUGH THE ROOM SENSOR.
3. HEATING IS TO BE ENABLED WHEN THE ROOM TEMPERATURE IS 1°C AWAY FROM SETPOINT AND WILL BE DISABLED USING A 1°C DEADBAND.
4. UNIT SHALL BE PROVIDED WITH FACTORY MOUNTED CONTROLS, WIRED AND PIPED, TO PROVIDE A FULLY AUTOMATED STARTUP AND ACCURATELY MODULATED DISCHARGE AIR TEMPERATURE.
5. ALL GAS HEATING, FAN, MODULATION OR STAGING CONTROL AND ALL SAFETIES AS REQUIRED, SHALL BE BY A UNIT MOUNTED MICRO PROCESSOR CONTROLLER.
6. PRE-OCCUPANCY MODE:
   1. BAS TO ENABLE RTU SUPPLY AIR FAN 30 MINUTES (ADJUSTABLE) PRIOR TO START OF OCCUPIED PERIOD. INCREASE FAN SPEED GRADUALLY TO FULL SPEED VIA VFD.
   2. OPEN OUTDOOR AIR DAMPER TO 100% AIR POSITION.
   3. THE DISCHARGE AIR TEMPERATURE SHALL RESET BETWEEN 18°C (64°F) TO 15°C (59°F) BAS ON OUTDOOR AIR TEMPERATURE OF 0°C (32°F) TO 20°C (68°C) RESPECTIVELY.
   4. MODULATE GAS HEATING TO MAINTAIN ROOFTOP UNIT DISCHARGE AIR TEMPERATURE SETPOINT.
7. OCCUPIED MODE:
   1. BAS TO ENABLE UNIT.
   2. ENABLE HYDRONIC UNIT HEATERS (1ST STAGE HEAT) AND MODULATE RTU GAS HEATING (2ND STAGE HEAT) TO MAINTAIN SPACE TEMPERATURE SETPOINT. A +/- 2°C SETPOINT OFFSET SHALL BE PROVISIONED THROUGH THE LOCAL SENSOR.
8. UNOCCUPIED MODE:
   1. DISABLE RTU SUPPLY FAN.
   2. CLOSE OUTSIDE AIR DAMPER BY MECHANICAL SPRING RETURN AND REMAIN CLOSED DURING UNOCCUPIED TIMES.
   3. ENABLE HYDRONIC UNIT HEATERS (1ST STAGE HEAT) AND GAS HEATING (2ND STAGE HEAT) TO MAINTAIN SPACE TEMPERATURE BETWEEN 18°C (64°F - ADJUSTABLE) AND 27°C (81°F - ADJUSTABLE).

NOTES

1. PROVIDE A DIFFERENTIAL PRESSURE SENSOR AT THE AIR FILTERS. PROVIDE AN ALARM AT THE BAS WHEN THE PRESSURE REACHES 500 PA (ADJUSTABLE).
2. FAN VFDS ARE PROVIDED FOR BALANCING PURPOSES. ONCE AIRFLOW IS ESTABLISHED, FANS TO OPERATE IN CONSTANT AIRFLOW MODE. CONTROL POINTS ARE DEFINED FOR EACH VFD AS:
   DO - ENABLE/DISABLE
   AO - FAN SPEED
   AI - MOTOR CURRENT
   AI - DRIVE POSITION
3. PROVIDE STATUS SIGNAL FROM OUTDOOR AIR DAMPER.
4. UPON ACTIVATION OF THE FREEZE STAT AT 2°C, THE SUPPLY AIR FAN SHALL STOP AND NOT AUTOMATICALLY RESTART. THE FREEZE STAT MUST BE MANUALLY RESET. PROVIDE AN ALARM AT THE BAS INDICATING THAT THE UNIT WAS TURNED OFF AS A RESULT OF A FREEZE ALARM.
5. OUTDOOR AIR DAMPER SHALL OPEN PRIOR TO FAN ACTIVATION.
6. IN THE EVENT OF POWER LOSS, OUTDOOR AIR DAMPER TO CLOSE BY MECHANICAL SPRING.

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

CONTROL DIAGRAM

true north:

project north:

key plan:

No.	Revision	Date

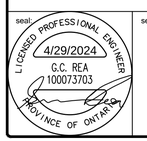
ALL CONSTRUCTION TO MEET ONTARIO BUILDING CODE REQUIREMENTS

RECEIVED
MAY 01 2024
CITY OF BURLINGTON
BUILDING DEPARTMENT

No.	Issue	Date
1	ISSUED FOR PERMIT	04/29/2024

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

seal:



seal:

client:
HALTON DISTRICT SCHOOL BOARD

project name:
NELSON HIGH SCHOOL
BOILER RETROFIT AND AC UPGRADE

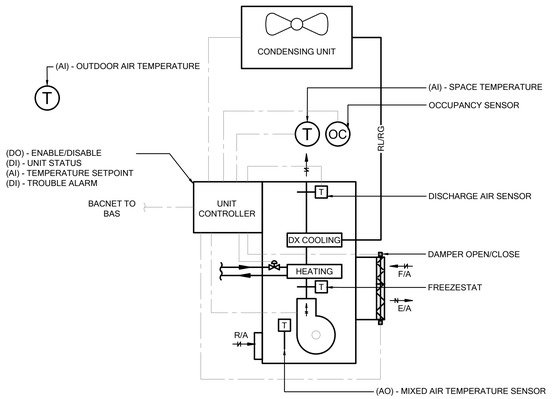
drawing name:
CONTROLS DIAGRAMS 3
MECHANICAL

drawn by:	checked by:	drawing number:
SL	VK/GR	M4.2

date: ARPIL 2024

scale:

project number: 23178



SEQUENCE OF OPERATION

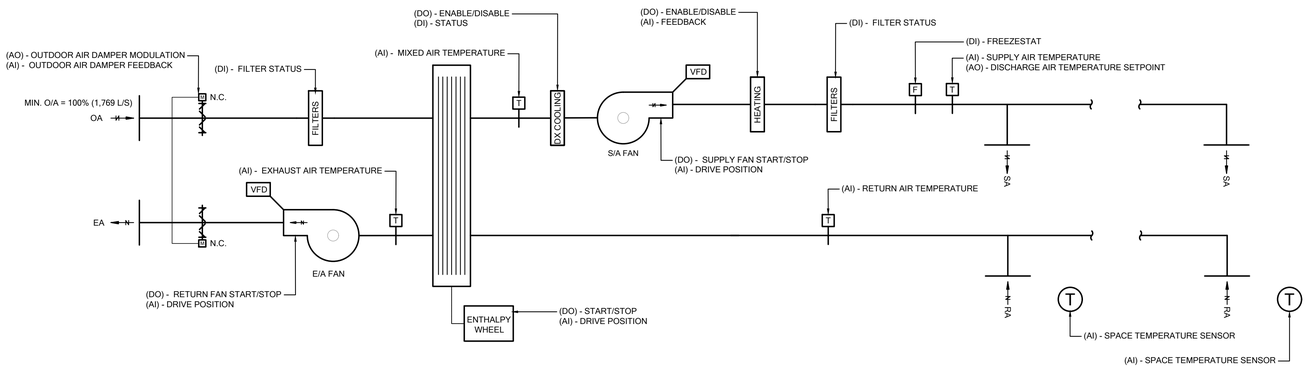
1. BAS TO ENABLE/DISABLE UNIT VENTILATOR BASED ON A TIME OF DAY SCHEDULE.
2. OCCUPIED MODE:
   1. ONCE ENABLED, UNIT CONTROLLER TO:

      OPEN MOTORIZED FRESH AIR AND EXHAUST AIR DAMPERS AT FIXED FRESH AIR.

      START FAN TO OPERATE CONTINUOUSLY DURING OCCUPIED PERIODS.
   2. WHEN ON CALL FOR HEATING, UNIT CONTROLLER SHALL MODULATE HEATING VALVE TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 21.1°C (70°F).
   3. WHEN ON CALL FOR COOLING, UNIT CONTROLLER TO ENABLE REMOTE DX CONDENSING UNIT TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 22.8°C (73°F).
   4. WHEN OUTDOOR AIR TEMPERATURE IS BETWEEN 10°C (50°F) TO 16°C (60°C), UNIT CONTROLLER TO ENABLE AIR SIDE ECONOMIZER MODE. DX COOLING DISABLED AND HEATING VALVE CLOSED. ONCE OUTDOOR AIR TEMPERATURE DROPS BELOW 8°C (46.4°F - ADJUSTABLE), AIR SIDE ECONOMIZER OPERATION STOPS, UNIT RETURN TO NORMAL OPERATION. ECONOMIZER MODE TO BE ENABLED ONLY WHEN ON CALL FOR COOLING.
3. UNOCCUPIED MODE:
   1. WHEN DISABLED, UNIT CONTROLLER TO CLOSE MOTORIZED DAMPERS AND STOP FAN.
   2. IF SPACE TEMPERATURE DROPS BELOW SETPOINT OF 18°C (65°F) IN HEATING SEASON, UNIT CONTROLLER TO START FAN AND MODULATE HEATING VALVE TO MAINTAIN TEMPERATURE SETPOINT. FRESH AIR AND EXHAUST AIR DAMPERS REMAIN CLOSED.
   3. WHEN OCCUPANCY IS DETECTED BY SENSOR, UNIT CONTROLLER TO ENABLE UNIT IN OCCUPIED MODE. WHEN OCCUPANCY IS NOT DETECTED FOR 15 MINS, UNIT CONTROLLER TO DISABLE UNIT.
4. IF MIXED AIR TEMPERATURE IN MIXED AIR PLENUM IS BELOW 10°C (50°F), TRIGGER ALARM AT BAS.
5. WHEN FREEZESTAT TRIPS, UNIT TO SHUT DOWN AND UNIT CONTROLLER TO SEND TROUBLE ALARM TO BAS. UNIT SHALL NOT RESTART AUTOMATICALLY.
6. DX COOLING IS LOCKED OUT WHEN AMBIENT TEMPERATURE IS BELOW 12.8°C (55°F).

UNIT VENTILATORS (UV-3, UV-7, UV-8)

CONTROL DIAGRAM



SEQUENCE OF OPERATION

1. SYSTEM IS ENABLED THROUGH BAS BASED ON TIME OF DAY SCHEDULE (ADJUSTABLE).
2. ROOM TEMPERATURE SETPOINTS ARE SET TO A NETWORK OCCUPIED SETPOINT, RESET AT 7AM EACH OCCUPIED PERIOD, FROM 21°C TO 24°C BASED ON OUTDOOR AIR TEMPERATURE -10°C TO 27°C, RESPECTIVELY. A +/- 2°C SETPOINT OFFSET SHALL BE PROVISIONED THROUGH THE ROOM SENSOR.
3. HEATING OR COOLING IS TO BE ENABLED WHEN THE ROOM TEMPERATURE IS 1°C AWAY FROM SETPOINT AND WILL BE DISABLED USING A 1°C DEADBAND. THERE SHALL BE A 30 MINS DELAY BETWEEN HEATING AND COOLING.
4. UNIT SHALL BE PROVIDED WITH FACTORY MOUNTED CONTROLS, WIRED AND PIPED, TO PROVIDE A FULLY AUTOMATED STARTUP AND ACCURATELY MODULATED DISCHARGE AIR TEMPERATURE.
5. ALL DX COOLING, GAS HEATING, FANS, ENTHALPY WHEEL, MODULATION OR STAGING CONTROL AND ALL SAFETIES AS REQUIRED, SHALL BE BY A UNIT MOUNTED MICRO PROCESSOR CONTROLLER.
6. PRE-OCCUPANCY MODE:
   1. BAS TO ENABLE SUPPLY AND EXHAUST AIR FANS 30 MINUTES (ADJUSTABLE) PRIOR TO START OF OCCUPIED PERIOD. START EXHAUST AIR FAN FOLLOWED BY THE SUPPLY AIR FAN. INCREASE FAN SPEED GRADUALLY TO FULL SPEED VIA VFDS.
   2. OUTDOOR AIR & EXHAUST AIR DAMPERS REMAIN CLOSED. RETURN AIR DAMPER REMAINS OPEN.
   3. BAS TO POLL SPACE TEMPERATURES IN CHANGEROOMS AT LOCAL TEMPERATURE SENSORS. MODULATE DX COOLING (IN COOLING MODE) AND GAS HEATING (IN HEATING MODE) TO MAINTAIN AVERAGE SPACE TEMPERATURE SETPOINT AT 22°C (72°F - ADJUSTABLE).
7. OCCUPIED MODE:
   1. BAS TO ENABLE UNIT. OPEN OUTDOOR AIR AND EXHAUST AIR DAMPERS TO 100% POSITION.
   2. ENABLE ENTHALPY WHEEL. EXHAUST AIR TEMPERATURE SENSOR SHALL MODULATE ENTHALPY WHEEL SPEED ROTATION FOR FROST CONTROL TO MAINTAIN AN EXHAUST AIR TEMPERATURE ABOVE 2°C (35.6°F) WB.
   3. THE MIXED AIR TEMPERATURE SENSOR SHALL NITIATE A HIGH PRIORITY ALARM AT A LOW LIMIT OF -1.0°C (30°F) AND A HIGH LIMIT OF 30°C (86°F).
   4. THE CO2 SENSOR SHALL MODULATE THE OUTDOOR AIR, RETURN AIR AND EXHAUST AIR DAMPERS TO MAINTAIN THE CO2 SETPOINT OF 800 PPM. (ADJUSTABLE)
   5. WHEN OUTDOOR AIR TEMPERATURE IS BELOW 12°C (54°F - ADJUSTABLE), ROOFTOP UNIT IS IN ECONOMIZER (FREE COOLING) MODE. ENTHALPY WHEEL IS DISABLED, DX COOLING AND GAS BURNERS DISABLED. ONCE OUTDOOR AIR TEMPERATURE DROPS BELOW 5°C (41°F - ADJUSTABLE), AIR SIDE ECONOMIZER OPERATION STOPS, UNIT RETURN TO NORMAL OPERATION. FREE COOLING MODE TO BE ENABLED ONLY WHEN ON CALL FOR COOLING.
8. UNOCCUPIED MODE:
   1. DISABLE SUPPLY AND EXHAUST FANS.
   2. CLOSE OUTSIDE AIR & EXHAUST AIR DAMPERS BY MECHANICAL SPRING RETURN. RETURN AIR DAMPER TO BE RELEASED AND OPEN BY WAY OF MECHANICAL SPRING RETURN. OUTDOOR AIR DAMPER TO REMAIN CLOSED DURING UNOCCUPIED TIMES.
   3. DISABLE ENTHALPY WHEEL.
   5. BAS TO POLL SPACE TEMPERATURES IN AUDITORIUM AT LOCAL TEMPERATURE SENSORS. WHEN SPACE TEMPERATURE IS OUTSIDE OF SETPOINT RANGE, THEN ENABLE SUPPLY AND EXHAUST FANS, MODULATE DX COOLING (IN COOLING MODE) AND GAS HEATING (IN HEATING MODE) TO MAINTAIN AVERAGE SPACE TEMPERATURE BETWEEN 18°C (64°F - ADJUSTABLE) AND 25°C (77°F - ADJUSTABLE).

NOTES

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

ROOFTOP AIR HANDLING UNIT 'RTU-4' (CHANGEROOMS)

CONTROL DIAGRAM

true north:

project north:

key plan:

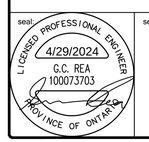
No.	Revision	Date
1	ISSUED FOR PERMIT	04/29/2024
No.	Issue	Date

ALL CONSTRUCTION TO MEET ONTARIO BUILDING CODE REQUIREMENTS

RECEIVED
MAY 01 2024
CITY OF BURLINGTON
BUILDING DEPARTMENT

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

seal:



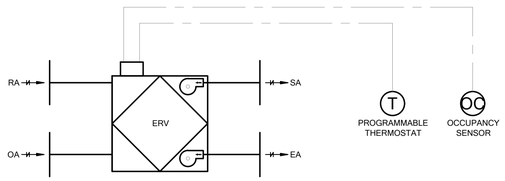
seal:

client:
HALTON DISTRICT SCHOOL BOARD

project name:
NELSON HIGH SCHOOL
BOILER RETROFIT AND AC UPGRADE

drawing name:
CONTROLS DIAGRAMS 4
MECHANICAL

drawn by:	checked by:	drawing number:
SL	VK/GR	M4.3
date: ARPIL 2024		
scale:		
project number: 23178		

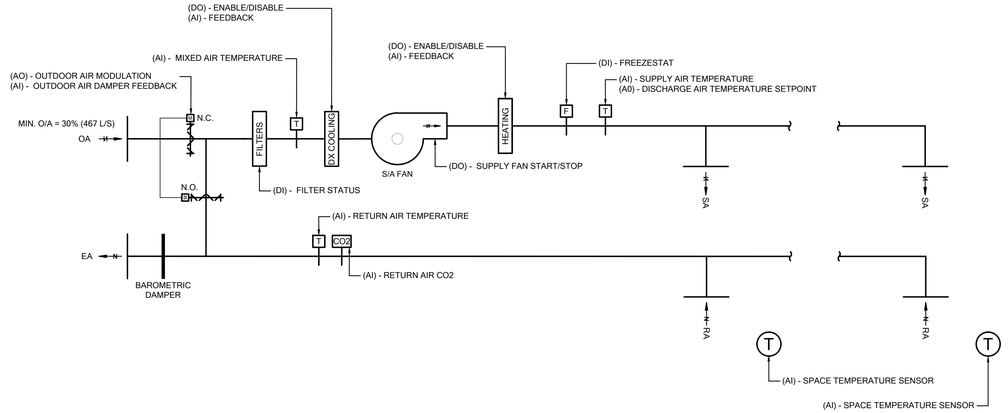


SEQUENCE OF OPERATION

1. THIS SYSTEM SHALL HAVE TWO (2) OPERATING MODES BASE ON TIME OF DAY SCHEDULE PER LOCAL PROGRAMMABLE THERMOSTAT:
2. WHEN IN 'OCCUPIED' MODE, LOCAL THERMOSTAT TO ENABLE ENERGY RECOVERY VENTILATOR (ERV) AND OPERATE CONTINUOUSLY AT SPECIFIED O/A AIRFLOW PER EQUIPMENT SCHEDULE.
3. WHEN IN 'UNOCCUPIED' MODE, LOCAL THERMOSTAT TO DISABLE ENERGY RECOVERY VENTILATOR.
4. WHEN MOTION IS DETECTED BY ANY OCCUPANCY SENSOR, OCCUPANCY SENSOR TO ENABLE SYSTEM IN 'OCCUPIED MODE' FOR 30 MINUTES THEN RETURN TO 'UNOCCUPIED' MODE WHEN NO MOTION IS DETECTED.

ENERGY RECOVERY VENTILATOR (ERV)

CONTROL DIAGRAM



SEQUENCE OF OPERATION

1. SYSTEM IS ENABLED THROUGH BAS BASED ON TIME OF DAY SCHEDULE (ADJUSTABLE).
2. SPACE TEMPERATURE SETPOINTS ARE SET TO A NETWORK OCCUPIED SETPOINT, RESET AT 7AM EACH OCCUPIED PERIOD, FROM 21°C (70°F) TO 24°C (75°F) BASE ON OUTDOOR AIR TEMPERATURE -10°C (14°F) TO 27°C (80.6°F), RESPECTIVELY. A +/- 2°C SETPOINT OFFSET SHALL BE PROVISIONED THROUGH THE SPACE SENSORS.
3. HEATING OR COOLING IS TO BE ENABLED WHEN THE SPACE TEMPERATURE IS 1°C AWAY FROM SETPOINT AND WILL BE DISABLED USING A 1°C DEADBAND. THERE SHALL BE A 30 MINS DELAY BETWEEN HEATING AND COOLING.
4. UNIT SHALL BE PROVIDED WITH FACTORY MOUNTED CONTROLS, WIRED AND PIPED, TO PROVIDE A FULLY AUTOMATED STARTUP AND ACCURATELY MODULATED DISCHARGE AIR TEMPERATURE.
5. ALL DX COOLING, GAS HEATING, FAN, MODULATION OR STAGING CONTROL AND ALL SAFETIES AS REQUIRED, SHALL BE BY A UNIT MOUNTED MICRO PROCESSOR CONTROLLER.
6. PRE-OCCUPANCY MODE:
    1. BAS TO ENABLE SUPPLY AIR FAN 30 MINUTES (ADJUSTABLE) PRIOR TO START OF OCCUPIED PERIOD.
    2. OUTDOOR AIR DAMPER REMAIN CLOSED. RETURN AIR DAMPER REMAINS OPEN.
    3. BAS TO POLL SPACE TEMPERATURES IN CORRIDORS AT LOCAL TEMPERATURE SENSORS. MODULATE DX COOLING (IN COOLING MODE) AND GAS HEATING (IN HEATING MODE) TO MAINTAIN AVERAGE SPACE TEMPERATURE SETPOINT AT 22°C (72°F - ADJUSTABLE).
7. OCCUPIED MODE:
    1. BAS TO ENABLE UNIT. MODULATE OUTDOOR AIR DAMPER TO MINIMUM OUTDOOR AIR POSITION (30%).
    3. THE MIXED AIR TEMPERATURE SENSOR SHALL NITIATE A HIGH PRIORITY ALARM AT A LOW LIMIT OF -1.0°C (30°F) AND A HIGH LIMIT OF 30°C (86°F).
    4. UPON ACTIVATION OF THE FREEZE STAT AT 2.0°C THE SUPPLY AIR FAN SHALL STOP AND NOT AUTOMATICALLY RE-START. THE FREEZE STAT MUST BE MANUALLY RESET. PROVIDE AN ALARM AT THE BAS INDICATING THAT THE UNIT WAS TURNED OFF AS A RESULT OF A FREEZE ALARM.
    5. THE CO2 SENSOR SHALL MODULATE THE OUTDOOR AIR DAMPER TO MAINTAIN THE CO2 SETPOINT OF 800 PPM. (ADJUSTABLE)
    6. WHEN OUTDOOR AIR TEMPERATURE IS BELOW 12°C (54°F - ADJUSTABLE), ROOFTOP UNIT IS IN ECONOMIZER (FREE COOLING) MODE. DX COOLING AND GAS BURNERS DISABLED. ONCE OUTDOOR AIR TEMPERATURE DROPS BELOW 5°C (41°F - ADJUSTABLE), AIR SIDE ECONOMIZER OPERATION STOPS, UNIT RETURN TO NORMAL OPERATION. FREE COOLING MODE TO BE ENABLED ONLY WHEN ON CALL FOR COOLING.
8. UNOCCUPIED MODE:
    1. DISABLE ROOFTOP UNIT SUPPLY FAN.
    2. CLOSE OUTSIDE AIR DAMPER BY MECHANICAL SPRING RETURN. RETURN AIR DAMPER TO BE RELEASED AND OPEN BY WAY OF MECHANICAL SPRING RETURN. OUTDOOR AIR DAMPER TO REMAIN CLOSED DURING UNOCCUPIED TIMES.
    3. COOLING AND HEATING SETPOINTS SHALL BE 18°C AND 27°C AND WILL BE DISABLED BY A 2°C DEADBAND.

NOTES

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

ROOFTOP AIR HANDLING UNIT 'RTU-2' (MUSIC ROOMS)

CONTROL DIAGRAM

true north:

project north:

key plan:

No.	Revision	Date

ALL CONSTRUCTION TO MEET ONTARIO BUILDING CODE REQUIREMENTS

RECEIVED
MAY 01 2024
CITY OF BURLINGTON
BUILDING DEPARTMENT

No.	Issue	Date
1	ISSUED FOR PERMIT	04/29/2024

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

seal:

LICENSED PROFESSIONAL ENGINEER
4/29/2024
G.C. REA
100073703
PROVINCE OF ONTARIO

seal:

client:
HALTON DISTRICT SCHOOL BOARD

project name:
NELSON HIGH SCHOOL
BOILER RETROFIT AND AC UPGRADE

drawing name:
CONTROLS DIAGRAMS 5
MECHANICAL

drawn by:	checked by:	drawing number:
SL	VK/GR	M4.4
date: ARPIL 2024		
scale:		
project number: 23178		

COB - Building Department
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SCHEDULE OF AIR HANDLING UNITS

TAG	MANUFACTURER	MODEL	LOCATION	AREA SERVED	WEIGHT	DIMENSIONS			CURB HEIGHT	DESIGN AIRFLOW	OUTDOOR AIR		AIR FILTRATION		DX COOLING									HEATING								ENERGY RECOVERY PERFORMANCE (WINTER)						
															EVAPORATOR						OAT (°C)	APD	CONDENSATE DRAIN SIZE	NO. COOLING STAGES	FUEL		TURNDOWN	INPUT	OUTPUT	EAT (°C)	LAT (°C)	OAT (°C)	AIRFLOW	AIR TEMP.		APD	ENERGY RECOVERY	EFF
						WIDTH	LENGTH	HEIGHT					PRE-FILTER	FINAL FILTER	CAPACITY (KW)		EAT (°C)		LAT (°C)						TYPE	PRESSURE								EAT	LAT			
					(KG)	(MM)	(MM)	(MM)	(MM)	(L/S)	(L/S)	%			TOTAL	SENSIBLE	DB	WB	DB	WB	DB	(PA)	(MM)			(IN. WC)		(KW)	(KW)	DB	DB	DB	(L/S)	DB/WB (°C)	DB/WB (°C)	(Pa)	(kW)	(%)
RTU-1	ENGINEERED AIR	FWE184/DJX60/HRW1200 /O/MV	ROOF	AUDITORIUM	4,990	3,480	6,655	1,981	400	4,010	1,604	40	50MM PLEATED MERV8	100MM PLEATED MERV13	71.1	60.2	24.8	17.4	12.4	12.0	35.0	182.6	-	4	NAT. GAS	7" - 14" W.C.	15:1	161.2	146.8	4.7	35.0	-20.0	1,604	-20.0 / -20.0	6.3 / 2.6	209	62.6	74.3
RTU-2	TRANE	YHJ120AWS0H**D4D	ROOF	MUSIC ROOMS	574	1,353	2,237	1,292	400	1,698	510	30	50MM PLEATED MERV13	-	37.2	27.3	26.7	19.4	13.5	13.1	35.0	-	20	2	NAT. GAS	7" - 14" W.C.	1 HEATING STAGE	70.3	57.0	10.0	37.4	-20.0	NO ENERGY RECOVERY					
RTU-3	ENGINEERED AIR	DJX140/O/MV	ROOF	SHOPS	2,041	2,515	4,877	1,880	400	5,189	5,189	100	50MM PLEATED MERV8	100MM PLEATED MERV13	NO COOLING										NAT. GAS	7" - 14" W.C.	15:1	322.4	293.4	-20.0	26.7	-20.0	NO ENERGY RECOVERY					
RTU-4	ENGINEERED AIR	DJX60/HRW1500/O/MV	ROOF	CHANGE ROOMS	3,289	2,286	4,978	1,829	400	1,769	1,769	100	50MM PLEATED MERV8	100MM PLEATED MERV13	NO COOLING										NAT. GAS	7" - 14" W.C.	15:1	131.9	120.2	-20.0	36.1	-20.0	1,769	-20.0 / -20.0	6.2 / 2.5	145	70.2	78.3
RTU-5	TRANE	YSC060GWRHB**D000A1	ROOF	1963 ADDITION CORRIDOR	362	1,124	1,775	1,038	350	943	189	20	50MM PLEATED MERV13	-	17.6	14.6	26.7	19.4	15.3	14.6	35.0	-	20	1	NAT. GAS	7" - 14" W.C.	2-STAGE HEATING	43.9	35.6	21.1	52.4	-20.0	NO ENERGY RECOVERY					

NOTES

1 EACH UNIT SHALL BE COMPLETE WITH A SINGLE POINT POWER CONNECTION
2 EACH FAN SHALL BE COMPLETE WITH INTERNAL VIBRATION ISOLATION SPRINGS AND FLEXIBLE CONNECTIONS.
3 FAN MOTORS FOR UNITS IDENTIFIED WITH "VFD" SHALL BE PREMIUM EFFICIENCY INVERTER DUTY RATED.
4 EACH UNIT SHALL BE IN COMPLIANCE WITH ASHRAE STANDARD 90.1 EFFICIENCY REQUIREMENTS.
5 EACH UNIT SHALL BE TERMINAL STRIP ONLY.
6 REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

TAG	ENERGY RECOVERY PERFORMANCE (SUMMER)						SUPPLY FAN							RETURN/EXHAUST FAN							ELECTRICAL			EMERGENCY POWER	REMARKS
	AIRFLOW	AIR TEMP.		APD	ENERGY RECOVERY	EFF	AIRFLOW	ESP	TSP	FAN RPM	BHP	MOTOR HP	VFD	AIRFLOW	ESP	TSP	FAN RPM	BHP	MOTOR HP	VFD	MCA	MOCP	POWER (V/PH/HZ)		
		EAT	LAT																						
	(L/S)	DB/WB (°C)	DB/WB (°C)	(Pa)	(kW)	(%)	(L/S)	(PA)	(PA)					(L/S)	(PA)	(PA)									
RTU-1	1,604	32.2 / 22.8	26.1 / 18.6	239	28.2	74.3	4,010	311	1,146	1,867	8.1	10.0	YES	4,010	249	673	965	6.93	10.0	YES	57.0	60.0	575/3/60	NO	
RTU-2	NO ENERGY RECOVERY						1,698	299	384	1,458	2.12	3.0	YES	NO RETURN FAN							24.0	30.0	575/3/60	NO	
RTU-3	NO ENERGY RECOVERY						5,189	311	623	694	7.24	15.0	YES	NO RETURN FAN							27.0	40.0	575/3/60	NO	
RTU-5	1,769	32.2 / 22.8	25.7 / 18.3	164.4	32.9	78.3	1,769	299	1,071	3,107	4.66	5.0	YES	2,394	249	697	1,384	4.57	5.0	YES	21.0	25.0	575/3/60	NO	
RTU-5	NO ENERGY RECOVERY						943	124	169	1,039	0.81	1.0		NO RETURN FAN							10.0	15.0	575/3/60	NO	

SCHEDULE OF INDOOR ERV

TAG	MANUFACTURER	MODEL	WEIGHT	DIMENSIONS			ENERGY RECOVERY CORE PERFORMANCE		SUPPLY FAN		EXHAUST FAN		ELECTRICAL			
				W	L	H	EAT	EFFECTIVENESS SENSIBLE	AIRFLOW	ESP	AIRFLOW	ESP	POWER (W)	MCA	MOCP	POWER (V/PH/HZ)
			(KG)	(MM)	(MM)	(MM)	(°C)	(%)	(L/S)	(Pa)	(L/S)	(Pa)				
ERV-1	RENEWAIRE	EV PREMIUM MH	16	603	572	340	0	62	94	150	94	150	192	10	10	120/1/60

NOTES

1. REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR FURTHER DETAILS.
2. UNIT C/W 50MM MERV 13 O/A FILTER, BACKDRAFT DAMPER, LOUVERED WALL VENT.

true north:

project north:

key plan:

No.	Revision	Date

ALL CONSTRUCTION TO MEET ONTARIO BUILDING CODE REQUIREMENTS

RECEIVED
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CITY OF BURLINGTON
BUILDING DEPARTMENT

No.	Issue	Date
1	ISSUED FOR PERMIT	04/29/2024

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email: info@rdzeng.ca

seal:

LICENSED PROFESSIONAL ENGINEER
4/29/2024
G.C. REA
100073703
PROVINCE OF ONTARIO

seal:

client:
HALTON DISTRICT SCHOOL BOARD

project name:
NELSON HIGH SCHOOL
BOILER RETROFIT AND AC UPGRADE

drawing name:
EQUIPMENT SCHEDULES 1
MECHANICAL

drawn by:	checked by:	drawing number:
SL	VK/GR	M5.0
date: ARPIL 2024		
scale:		
project number: 23178		

SCHEDULE OF UNIT VENTILATORS

TAG	MANUFACTURER	MODEL	LOCATION	WEIGHT	DIMENSIONS			SUPPLY AIR AIFLOW	FRESH AIR AIFLOW	FILTRATION	DX COOLING							HOT WATER HEATING								FAN		ELECTRICAL			REMARKS
					DEPTH	LENGTH	HEIGHT				TOTAL COOLING	SENSIBLE COOLING	APD	EAT (°C)		LAT (°C)		OAT	MEDIUM	CAPACITY	WATER FLOW	EWT	LWT	WPD	EAT	LAT	OAT	MOTOR HP	ESP	MCA	MAX. BREAKER	POWER	
				(KG)	(MM)	(MM)	(MM)	(L/S)	(L/S)		(KW)	(KW)	(Pa)	DB	WB	DB	WB	(°C)		(KW)	(L/S)	(°C)	(°C)	(kPa)	(°C)	(°C)	(°C)		(Pa)	(A)	(A)	(V/PH/HZ)	
UV-1	SYSTEMAIR	HPA 36 1000 O B IQ	CLASSROOMS	454	813	1,118	2,311	472	212	(2) 50MM MERV13	10.2	7.4	49.8	26.7	19.4	12.6	12.6	35.0	WATER	19.2	0.25	71.1	54.5	2.2	3.1	33.0	-20	1/2	62.3	22.94	30.0	208/3/60	
UV-2	SYSTEMAIR	HPA 48 1400 O B IQ	CLASSROOMS	499	813	1,219	2,311	660	212	(2) 50MM MERV13	13.4	10.1	69.7	26.7	19.4	13.2	13.2	35.0	WATER	21.8	0.29	71.1	54.6	2.8	8.5	32.9	-20	3/4	62.3	30.34	40.0	208/3/60	
UV-3	ENGINEERED AIR	RUV-1800	SCIENCE CLASSROOMS	590	813	1,219	2,464	849	271	50MM MERV13	16.5	12.2	59.8	26.6	18.9	14.7	13.4	35.0	WATER	28.1	0.42	71.1	54.8	5.7	8.7	36.0	-20	3/4	62.3	8.5	15.0	575/3/60	UNIT C/W 375MM DEEP REAR PLENUM
UV-4	SYSTEMAIR	HPA 24 800 O B IQ	CLASSROOMS	454	813	1,118	2,311	377	177	(2) 50MM MERV13	7.1	5.6	27.4	26.7	19.4	13.9	13.9	35.0	WATER	16.7	0.22	71.1	54.7	1.7	2.3	34.7	-20	1/2	62.3	19.18	25.0	208/3/60	
UV-5	ENGINEERED AIR	SUV-1200	SPECIALTY CLASSROOMS	227	762	2,388	762	566	212	50MM MERV13	11.1	7.4	56.7	27.8	20.0	14.8	13.4	35.0	WATER	18.22	0.27	71.1	54.4	5.2	3.1	35.1	-20	1/2	62.3	7.8	15.0	575/3/60	
UV-6	ENGINEERED AIR	SUV-1200	SPECIALTY CLASSROOMS	227	762	2,388	762	755	212	50MM MERV13	14.4	9.6	74.0	27.2	19.4	13.2	12.2	35.0	WATER	20.07	0.29	71.1	54.2	6.0	6.1	35.5	-20	1/2	62.3	7.8	15.0	575/3/60	
UV-7	ENGINEERED AIR	RUV-1600	SCIENCE CLASSROOMS	590	813	1,219	2,464	708	248	50MM MERV13	12.2	9.9	77.1	26.8	19.2	15.2	14.4	35.0	WATER	24.2	0.37	71.1	55.0	4.6	7.3	35.7	-20	3/4	62.3	9.5	15.0	575/3/60	UNIT C/W 375MM DEEP REAR PLENUM
UV-8	TEMSPEC	VUD 2000D	STUDENT SERVICES	-	584	1,118	2,362	943	212	50MM MERV13	16.8	13.1	34.8	26.7	19.4	15.6	13.9	35.0	WATER	32.0	0.35	71.1	48.3	4.5	7.2	35.0	-20	1/2	199.1	13	15.0	575/3/60	UNIT C/W 375MM DEEP REAR PLENUM
UV-9	SYSTEMAIR	HPA 36 1000 O B IQ	CSC -4 RM 102	454	813	1,118	2,311	472	212	(2) 50MM MERV13	NO DX COOLING								WATER	19.2	0.25	71.1	54.5	2.2	3.1	33.0	-20	1/2	62.3	22.94	30.0	208/3/60	

NOTES

1. REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR FURTHER DETAILS.
2. UNIT TO BE PROVIDED WITH ASSOCIATED DAMPERS AND ACTUATORS, VALVE PACKAGE INCLUDING ELECTRONIC 2-WAY CONTROL VALVE AND CIRCUIT BALANCING VALVE, AND BACNET COMPATIBLE UNIT CONTROLLER.
3. CONTRACTOR TO PROVIDE TOP SUPPLY AIR PLENUM AND WALL SLEEVE TO CONNECT UNIT TO LOUVRE.

SCHEDULE OF VIBRATION ISOLATION

EQUIPMENT	MANUFACTURER	TYPE OF BASE & THICKNESS (MM)	TYPE OF ISOLATION	STATIC DEFLECTION (MM)	REMARKS
HORIZONTAL UNIT VENTILATORS	VIBRO ACOUSTICS OR APPROVED EQUAL	-	SHR	25	
CONDENSING UNIT	VIBRO ACOUSTICS OR APPROVED EQUAL	-	NSN	3.8	
VERTICAL UNIT VENTILATORS	VIBRO ACOUSTICS OR APPROVED EQUAL	-	NSN	3.8	

NOTES:

1. CSR - RESTRAINED SPRING FLOOR MOUNT
2. NSN - NEOPRENE/STEEL/NEOPRENE PAD
3. SHR - SPRING HANGER

SCHEDULE OF VARIABLE AIR VOLUME BOXES

UNIT DESIGNATION	MANUFACTURER	MODEL	AIRFLOW RANGE (CFM)		ATTENUATOR LENGTH (IN.)	DISCHARGE NC	OPTIONS	REMARKS
			MIN.	MAX.				
4	E.H. PRICE	SDV5000	50	225	36	24	VAV BOX: ACCESS DOOR: ADQ LINER: SM-3/4" THICK COORDINATE 24V POWER CONNECTION FROM NEARBY POWER SUPPLY. NC VALUES TAKEN AT 7P = 1.5"w.c. ACROSS UNIT	
8	E.H. PRICE	SDV5000	132	800	36	24		
12	E.H. PRICE	SDV5000	304	2100	36	24		

NOTES

1. ALL VAV BOXES SHALL BE PROVIDED WITH DEDICATED ROOM TEMPERATURE SENSOR
2. PRESSURE INDEPENDENT COMPLETE WITH CROSS FLOW SENSOR.
3. DDC CONTROLLER/ACTUATOR SHALL BE SUPPLIED BY CONTROLS CONTRACTOR AND INSTALLED BY VAV BOX MANUFACTURER.
4. REFER TO FLOOR PLANS FOR LOCATIONS AND QUANTITIES.
5. MOUNT VAV BOXES MAXIMUM 24" ABOVE CEILING FOR MAINTENANCE

SCHEDULE OF CONDENSING UNITS

TAG	MANUFACTURER	MODEL	LOCATION	SYSTEM SERVED	QTY	WEIGHT	DIMENSIONS			OUTDOOR FAN			CAPACITY	ELECTRICAL			REFRIGERANT			REMARKS
							WIDTH	LENGTH	HEIGHT	AIRFLOW	MOTOR	RPM		MCA	MOCP	POWER (V/PH/HZ)	TYPE	LIQUID LINE (MM)	SUCTION LINE (MM)	
						(KG)	(MM)	(MM)	(MM)	(L/S)	(HP)		TONNAGE							
CU-1	ENGINEERED AIR	CU31	ROOF	UV-5	-	273	1041	1245	1142	613	3/4	1160	3.0	7.6	15	575/3/60	R-410A	13	22	
CU-2	ENGINEERED AIR	CU41	ROOF	UV-6	-	273	1041	1245	1142	736	3/4	1160	4.0	8.6	15	575/3/60	R-410A	13	22	

NOTES

1 REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR FURTHER DETAILS.
2 MOUNT UNIT ON CONCRETE PAVER C/W VIBRATION ISOLATION.
3 CONFIRM REFRIGERANT PIPING LENGTHS AND INSTALLATION LOCATION WITH MANUFACTURER PRIOR TO INSTALL.
4 PROVIDE COMPRESSOR SOUND COVER, COMPRESSOR HARD START KIT AND INDOOR BLOWER OFF DELAY RELAY.

SCHEDULE OF MINI MAKE UP AIR UNIT

TAG	MANUFACTURER	MODEL	LOCATION	AREA SERVED	DESIGN AIRFLOW	ESP	HEATING			ELECTRICAL		REMARKS
							CAPACITY	EAT	LAT	POWER	MCA	
					(L/S)	(Pa)	(kW)	(°C)	(°C)	(V/Φ/Hz)		
MUA-1	NEPTRONIC	CMU12J140FD	SCIENCE CLASSROOMS	SCIENCE CLASSROOMS	299	62	14	-20	18.3	600/3/60	-	

NOTES

1. REFER TO SPECIFICATIONS FOR ADDITIONAL DETAILS.
2. UNIT TO BE INTERLOCKED WITH ASSOCIATED SCIENCE ROOM FUME HOOD.
3. UNIT TO BE PROVIDED WITH IN DUCT TEMPERATURE SENSOR, FREEZESTAT AND UNIT CONTROLLER WITH BACNET CAPABILITY.

SCHEDULE OF GRILLES AND DIFFUSERS

TYPE	MANUFACTURER	MODEL	DESCRIPTION	VOLUME CONTROL	FINISH	OPTIONS	REMARKS
A	E.H. PRICE	SDGE	SPIRAL DUCT SUPPLY GRILLE	YES	TO ARCH. DIRECTION	FASTENING: TYPE A	REFER TO FLOOR PLANS FOR SIZE OF GRILLES.
B	E.H. PRICE	SCD	SQUARE CONE DIFFUSER	YES	TO ARCH. DIRECTION	SIZE: 24"x24" (600mm x 600mm) FRAME: 31 SURFACE MOUNT	REFER TO FLOOR PLANS FOR NECK SIZE AND AIRFLOWS.
C	E.H. PRICE	520D	LOUVERED SUPPLY GRILLE	YES	TO ARCH. DIRECTION	DOUBLE DEFLECTION 3/4" BLADE SPACING STEEL CONSTRUCTION SURFACE MOUNT: F BORDER L BLADE ORIENTATION	REFER TO FLOOR PLANS FOR SIZE OF GRILLES.
D	E.H. PRICE	530	LOUVERED RETURN GRILLE	NO	TO ARCH. DIRECTION	SINGLE DEFLECTION 3/4" BLADE SPACING SURFACE MOUNT: F BORDER FASTENING: CONCEALED "C" L BLADE ORIENTATION	REFER TO FLOOR PLANS FOR SIZE OF GRILLES.
E	E.H. PRICE	80	EGG CRATE	NO	TO ARCH. DIRECTION	DUCTED: F BORDER NON-DUCTED: CORE	REFER TO FLOOR PLANS FOR SIZE OF GRILLES.

NOTES

1. CONFIRM FINISH WITH ARCHITECT PRIOR TO ORDER
2. REFER TO DRAWINGS FOR QUANTITIES.

true north:

project north:

key plan:

No.	Revision	Date

ALL CONSTRUCTION TO MEET ONTARIO BUILDING CODE REQUIREMENTS

RECEIVED
MAY 01 2024
CITY OF BURLINGTON
BUILDING DEPARTMENT

No.	Issue	Date
1	ISSUED FOR PERMIT	04/29/2024

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

seal:

LICENSED PROFESSIONAL ENGINEER
4/29/2024
G.C. REA
100073703
PROVINCE OF ONTARIO

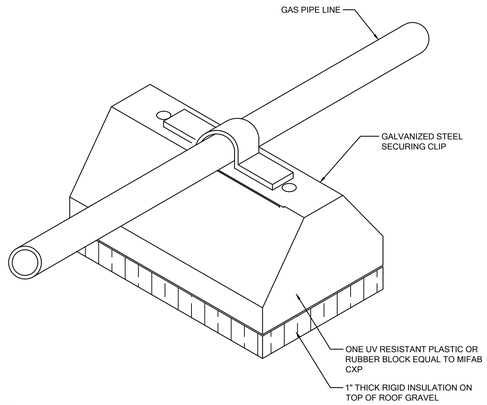
seal:

client:
HALTON DISTRICT SCHOOL BOARD

project name:
NELSON HIGH SCHOOL BOILER RETROFIT AND AC UPGRADE

drawing name:
EQUIPMENT SCHEDULES 2 MECHANICAL

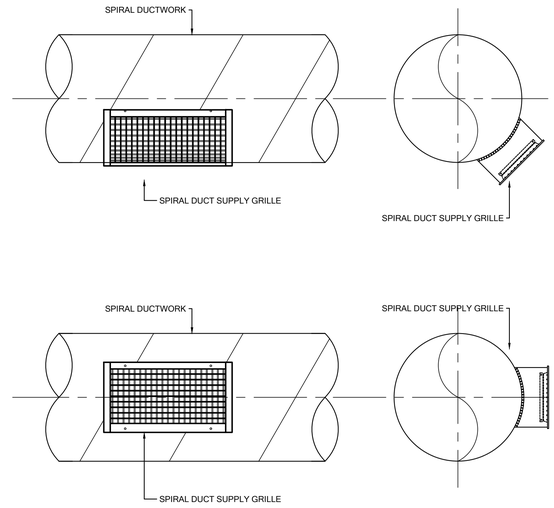
drawn by:	checked by:	drawing number:
SL	VK/GR	M5.1
date: ARPIL 2024		
scale:		
project number: 23178		



NOTE:
1. REFER TO MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION REQUIREMENTS
2. SPACING OF SUPPORTS TO BE AS PER CSA B149.1

DETAIL OF GAS PIPING SUPPORT ON ROOF

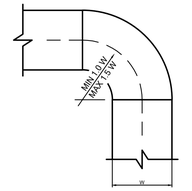
SCALE: NTS



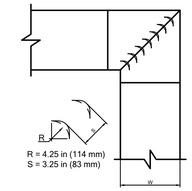
NOTE:
REFER TO FLOOR PLANS AND SCHEDULES FOR SIZES AND QUANTITIES OF GRILLES

DETAIL OF SPIRAL DUCT SUPPLY AIR GRILLE

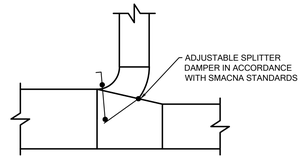
SCALE: NTS



SMOOTH ELBOW



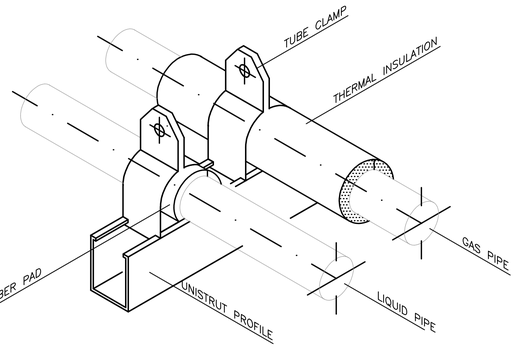
SMOOTH ELBOW



BRANCH DUCT TAKEOFF FROM MAIN

DETAIL OF TYPICAL DUCTWORK FITTINGS

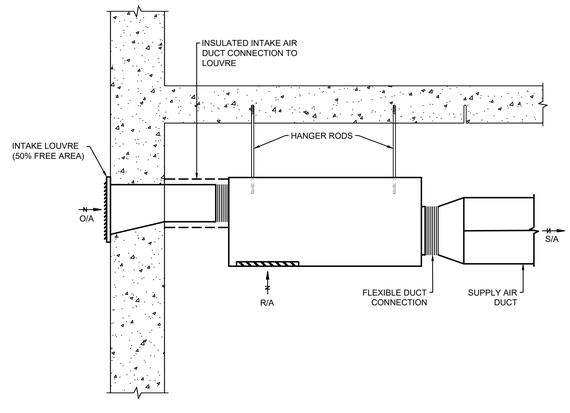
SCALE: NTS



NOTES:
1. PROVIDE A SECTION OF HIGH COMPRESSION STRENGTH INSULATION AT EACH HANGER. INSULATION MAY BE TO HALF ROUND OR FULL ROUND AND EXTEND A MINIMUM OF 50 mm (2") BEYOND INSULATION SHIELD IN EACH DIRECTION. REFER TO SPECIFICATIONS FOR ADDITIONAL DETAILS.
2. INSULATION SHIELD TO BE MINIMUM 16 GA.
3. CONTRACTOR IS RESPONSIBLE TO PROVIDE AN ENGINEERED SYSTEM FOR PIPE HANGERS SUITABLE TO SUPPORT THE SIZE AND WEIGHT OF THE PIPE BEING SUPPORTED.

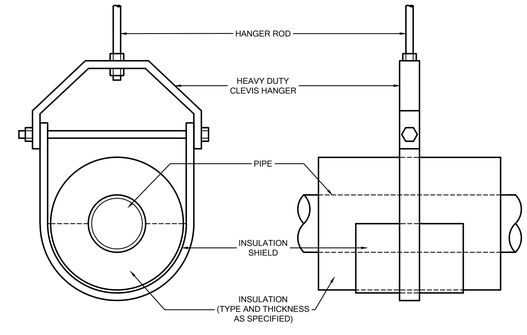
DETAIL OF PIPE HANGER

SCALE: NTS



DETAIL OF HORIZONTAL UNIT VENTILATOR

SCALE: NTS



PIPE SIZE		(mm)	25	30	40	50	65	75	100	125	150	200	250	300
		(INCH)	1	1-1/4	1-1/2	2	2-1/2	3	4	5	6	8	10	12
HANGER SPACING (FT)	STD. STEEL	WATER	7	7	9	10	11	12	14	14	17	19	20	23
		STEAM	9	9	12	13	14	15	17	17	21	24	26	30
	COPPER	WATER	6	6	8	8	9	10	12	12	14	16	18	19
HANGER ROD DIAMETER (INCH)			1/4	3/8	3/8	3/8	3/8	3/8	1/2	1/2	1/2	5/8	3/4	7/8

NOTES:
1. PROVIDE A SECTION OF HIGH COMPRESSION STRENGTH INSULATION AT EACH HANGER. INSULATION MAY BE TO HALF ROUND OR FULL ROUND AND EXTEND A MINIMUM OF 50 mm (2") BEYOND INSULATION SHIELD IN EACH DIRECTION. REFER TO SPECIFICATIONS FOR ADDITIONAL DETAILS.
2. INSULATION SHIELD TO BE MINIMUM 16 GA.
3. CONTRACTOR IS RESPONSIBLE TO PROVIDE AN ENGINEERED SYSTEM FOR PIPE HANGERS SUITABLE TO SUPPORT THE SIZE AND WEIGHT OF THE PIPE BEING SUPPORTED.

DETAIL OF PIPE HANGER

SCALE: NTS

true north: / project north:

key plan:

No.	Revision	Date

ALL CONSTRUCTION TO MEET ONTARIO BUILDING CODE REQUIREMENTS

1	ISSUED FOR PERMIT	04/29/2024
No.	Issue	Date

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

seal: LICENSED PROFESSIONAL ENGINEER 4/29/2024 G.C. REA 100073703 PROVINCE OF ONTARIO

seal:

client:
HALTON DISTRICT SCHOOL BOARD

project name:
NELSON HIGH SCHOOL BOILER RETROFIT AND AC UPGRADE

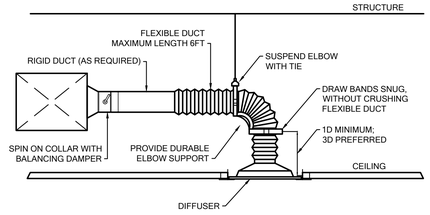
drawing name:
DETAILS 1
MECHANICAL

drawn by:	checked by:	drawing number:
SL	VK/GR	M6.0

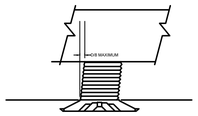
date: ARPIL 2024

scale:

project number: 23178

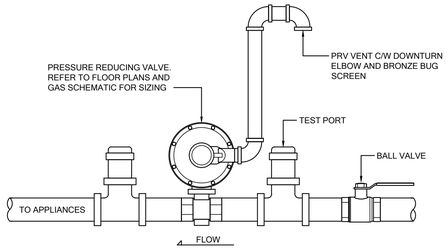


NOTE:
1. WHEN LENGTH OF STRAIGHT DUCT UPSTREAM OF DIFFUSER IS LESS THAN 3D, PROVIDE AN EQUALIZING GRID



DETAIL OF FLEXIBLE DUCTWORK CONNECTION TO DIFFUSER

SCALE: NTS

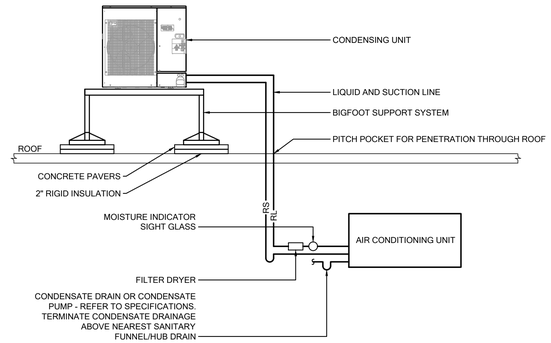


NOTES

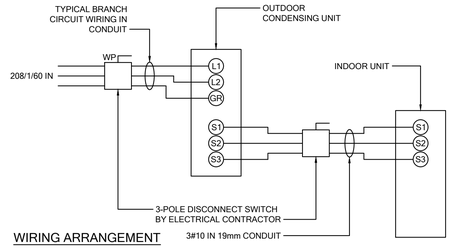
1. VENT ALL INDOOR PRVS TO OUTDOORS PER CSA B149.
2. TEST PORTS TO BE PROVIDED UPSTREAM AND DOWNSTREAM OF PRV.
3. LOCATE OUTDOOR PRVS A MINIMUM OF 12" FROM WALKWAYS AND 10FT FROM EQUIPMENT AIR INTAKES AND BUILDING OPENINGS.
4. INDICATE OPERATING SETPOINTS, RELIEF SETTINGS, AND VENT ARRANGEMENTS FOR EACH REGULATING STATION ON AS-BUILT RECORD DRAWINGS.
5. ALL ISOLATION VALVES ON PIPING ASSOCIATED WITH A NATURAL GAS GENERATOR ARE TO BE PROVIDED WITH A POSITION INDICATED DEVICE AND WIRED TO THE FIRE ALARM OR GENERATOR CONTROL PANEL.

DETAIL OF NATURAL GAS PRV STATION

SCALE: NTS



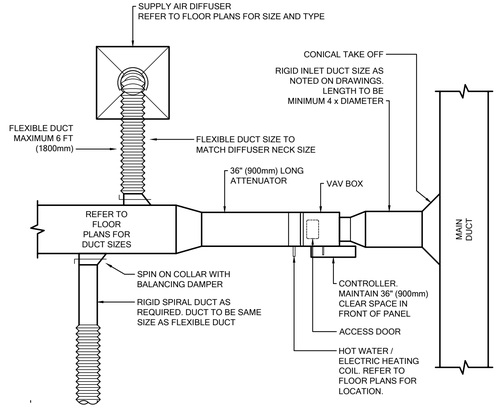
PIPING ARRANGEMENT



WIRING ARRANGEMENT

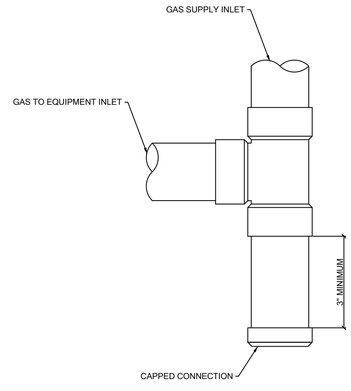
DETAIL OF SPLIT AC UNIT

SCALE: NTS



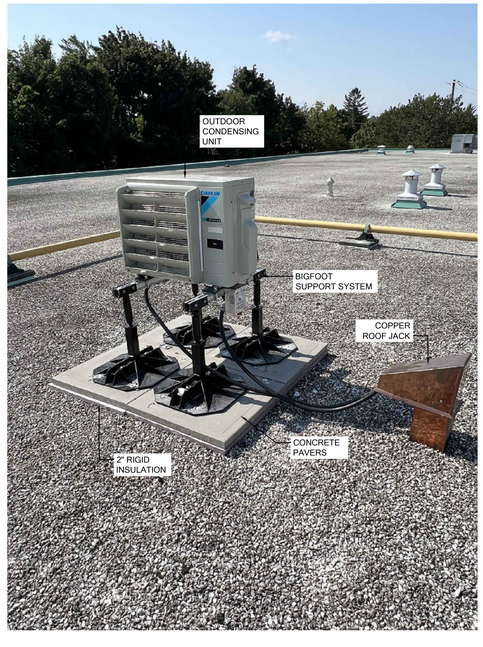
DETAIL OF VAV BOX INSTALLATION

SCALE: NTS



DETAIL OF GAS PIPING DRIP LEG

SCALE: NTS



DETAIL OF OUTDOOR CONDENSING UNIT INSTALLATION

SCALE: NTS

true north: project north:

key plan:

No.	Revision	Date

ALL CONSTRUCTION TO MEET ONTARIO BUILDING CODE REQUIREMENTS

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4/29/2024
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100073703
PROVINCE OF ONTARIO

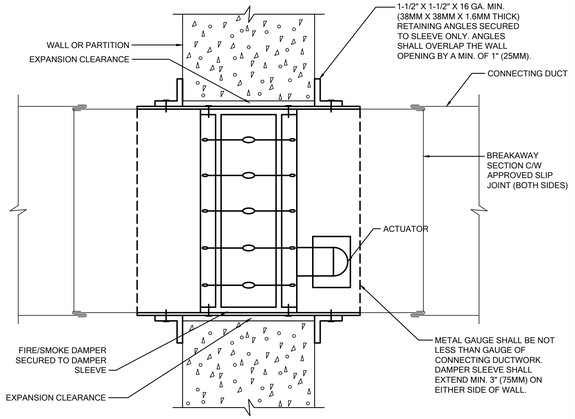
seal:

client:
HALTON DISTRICT SCHOOL BOARD

project name:
NELSON HIGH SCHOOL
BOILER RETROFIT AND AC UPGRADE

drawing name:
DETAILS 2
MECHANICAL

drawn by: SL	checked by: VK/GR	drawing number: M6.1
date: ARPIL 2024		
scale:		
project number: 23178		

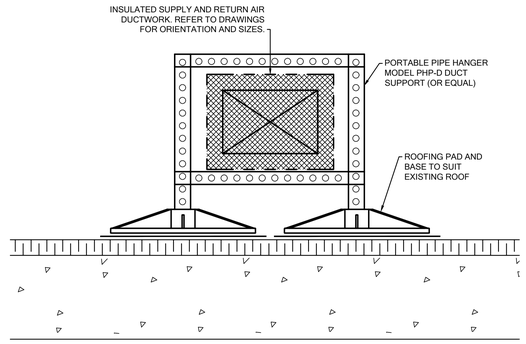


NOTES:
1. HORIZONTAL INSTALLATION SHALL BE SIMILAR, BUT DAMPER SHALL BE C/W S.S. CLOSURE SPRING.
2. SEAL BREAKAWAY SECTIONS AFTER INSTALLATION. FOR HIGH PRESSURE INSTALLATIONS, PROVIDE DUCT TAPE ON JOINTS AFTER SEALING.

Combination fire and smoke dampers shall be installed in conformance with Div. B, 3.1.8.9A. and NFPA 80-2013, 19.2.

DETAIL OF COMBINATION FIRE SMOKE DAMPER INSTALLATION

SCALE: NTS



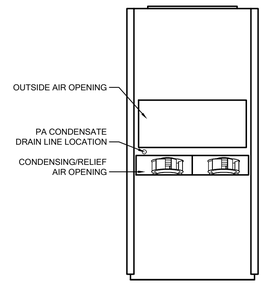
NOTES:
1. ROOF DUCT SUPPORTS ARE TO BE INSTALLED DIRECTLY ON EXISTING ROOF WITHOUT ROOF PENETRATIONS, FLASHING, OR DAMAGE TO ROOFING MATERIAL
2. SYSTEM SHALL BE DESIGNED TO SUPPORT ALL WEIGHT AND EQUIPMENT AS INDICATED IN THE DRAWINGS.
3. REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS.

EXTERIOR DUCTWORK INSULATION:
- INSULATION: CERTAINTEED "CERTAPRO" RIGID BOARD INSULATION, MIMIMUM 1-1/2" THICK OR AS REQUIRED BY LOCAL CODES.
- INSULATION JACKET: VENTURE CLAD "1577CW NATURAL ALUMINUM" ZERO PERMEABILITY INSULATION CLADDING AND JACKETING MATERIAL C/W SELF ADHESIVE PROPERTIES

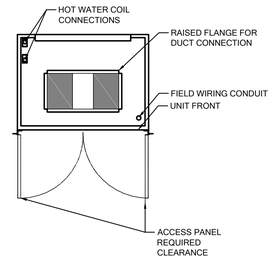
REFER TO SPECIFICATIONS FOR ADDITIONAL DETAILS REGARDING FASTENERS, TAPE, ETC.

DETAIL OF ROOF DUCT SUPPORT

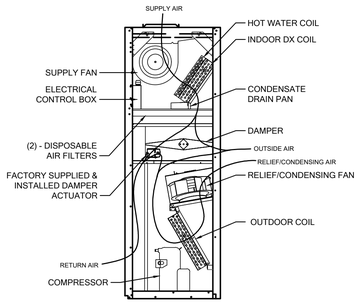
SCALE: NTS



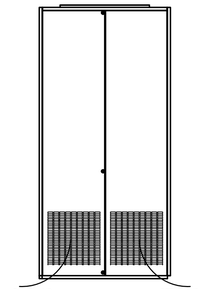
BACK VIEW



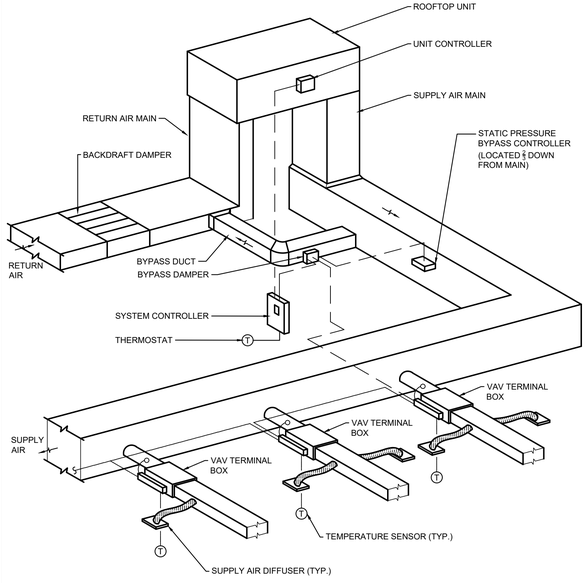
TOP VIEW



RIGHT SIDE VIEW

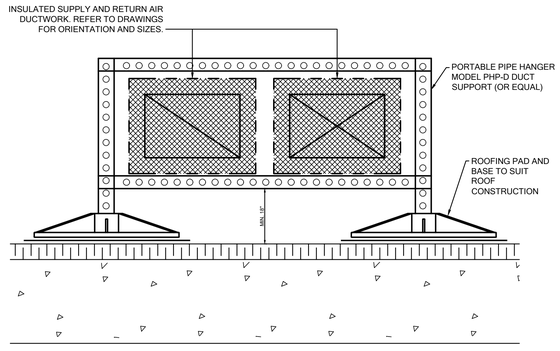


FRONT VIEW



DETAIL OF ROOFTOP UNIT AND VAV BOXES CONTROL DIAGRAM

SCALE: NTS



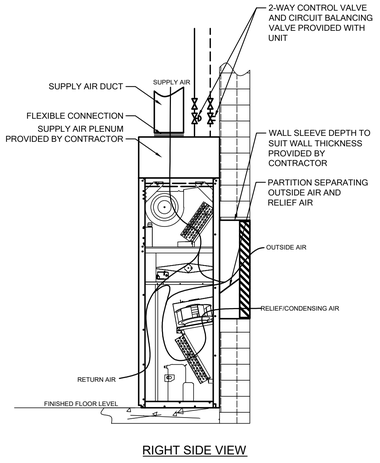
NOTES:
1. ROOF DUCT SUPPORTS ARE TO BE INSTALLED DIRECTLY ON EXISTING ROOF WITHOUT ROOF PENETRATIONS, FLASHING, OR DAMAGE TO ROOFING MATERIAL.
2. SYSTEM SHALL BE DESIGNED TO SUPPORT ALL WEIGHT AND EQUIPMENT AS INDICATED IN THE DRAWINGS.
3. REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS.

EXTERIOR DUCTWORK INSULATION:
- INSULATION: CERTAINTEED "CERTAPRO" RIGID BOARD INSULATION, MIMIMUM 1-1/2" THICK OR AS REQUIRED BY LOCAL CODES.
- INSULATION JACKET: VENTURE CLAD "1577CW NATURAL ALUMINUM" ZERO PERMEABILITY INSULATION CLADDING AND JACKETING MATERIAL C/W SELF ADHESIVE PROPERTIES

REFER TO SPECIFICATIONS FOR ADDITIONAL DETAILS REGARDING FASTENERS, TAPE, ETC.

DETAIL OF ROOF DUCT SUPPORT

SCALE: NTS



RIGHT SIDE VIEW

DETAIL OF PACKAGED VERTICAL UNIT VENTILATOR

SCALE: NTS

true north: N

project north: N

key plan:

No.	Revision	Date

ALL CONSTRUCTION TO MEET ONTARIO BUILDING CODE REQUIREMENTS

RECEIVED
MAY 01 2024
CITY OF BURLINGTON
BUILDING DEPARTMENT

No.	Issue	Date
1	ISSUED FOR PERMIT	04/29/2024

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

seal: LICENSED PROFESSIONAL ENGINEER 4/29/2024 G.C. REA 100073703 PROVINCE OF ONTARIO

seal:

client:
HALTON DISTRICT SCHOOL BOARD

project name:
NELSON HIGH SCHOOL
BOILER RETROFIT AND AC UPGRADE

drawing name:
DETAILS 3
MECHANICAL

drawn by:	checked by:	drawing number:
SL	VK/GR	M6.2

date: ARPIL 2024

scale:

project number: 23178