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 ROOF DEMOLITION PLAN - HVAC
M2.2	ENLARGED BOILER & SECOND BOILER ROOM DEMOLITION PLANS - MECHANICAL
M3.0	PARTIAL GROUND FLOOR NEW WORK PLAN - HVAC
M3.1	PARTIAL ROOF NEW WORK PLAN - HVAC
M3.2	ENLARGED BOILER & SECOND BOILER ROOM NEW WORK PLANS - HVAC
M3.3	PARTIAL ROOF NEW WORK PLAN - PLUMBING
M3.4	ENLARGED BOILER & SECOND BOILER ROOM NEW WORK PLANS - PLUMBING
M4.0	HVAC FLOW DIAGRAMS - MECHANICAL
M5.0	CONTROLS DIAGRAMS 1 - MECHANICAL
M5.1	CONTROLS DIAGRAMS 2 - MECHANICAL
M6.0	EQUIPMENT SCHEDULES 1 - MECHANICAL
M6.1	EQUIPMENT SCHEDULES 2 - MECHANICAL
M7.0	DETAILS 1 - MECHANICAL
M7.1	DETAILS 2 - MECHANICAL
M7.2	DETAILS 3 - MECHANICAL
M7.3	DETAILS 4 - MECHANICAL
M7.4	DETAILS 5 - 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 SCOPE OF WORK. 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.

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

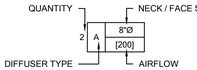
CONTROLS

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

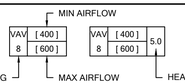
TAGS

SYMBOL	DESCRIPTION
TAG-1	EQUIPMENT TAG
	AIRFLOW DIRECTION
CTE	CONNECT TO EXISTING
(###)	FLOW IN L/S
FD	FUSIBLE LINK FIRE DAMPER
FSD	COMBINATION FIRE SMOKE DAMPER

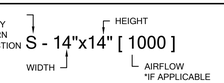
DIFFUSER TAG



VAV BOX TAG



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

Halton District School Board

2050 Guelph Line
Burlington, Ontario

NELSON HIGH SCHOOL BOILER REPLACEMENT

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:

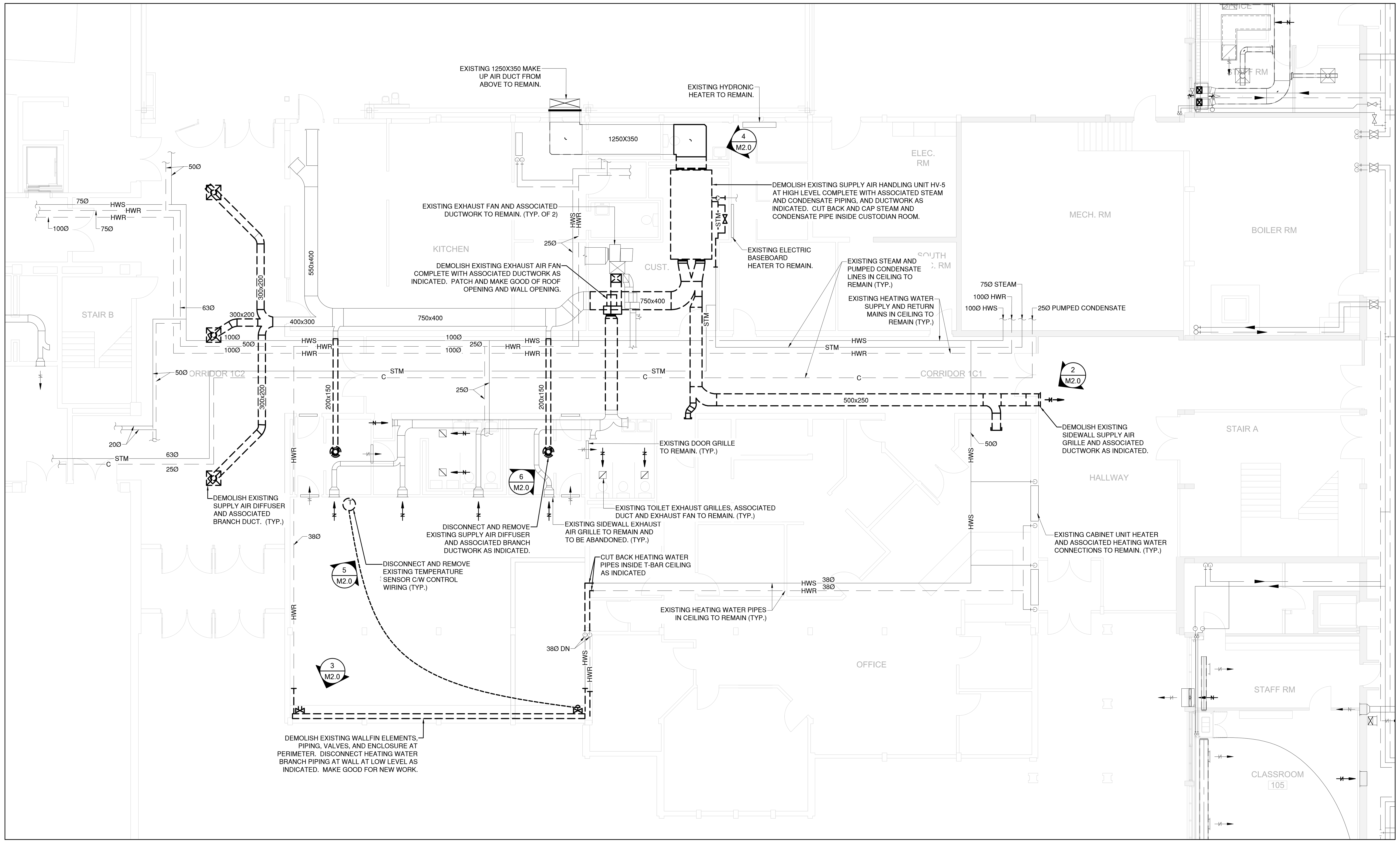
Key Plan N.T.S.

Project North True North

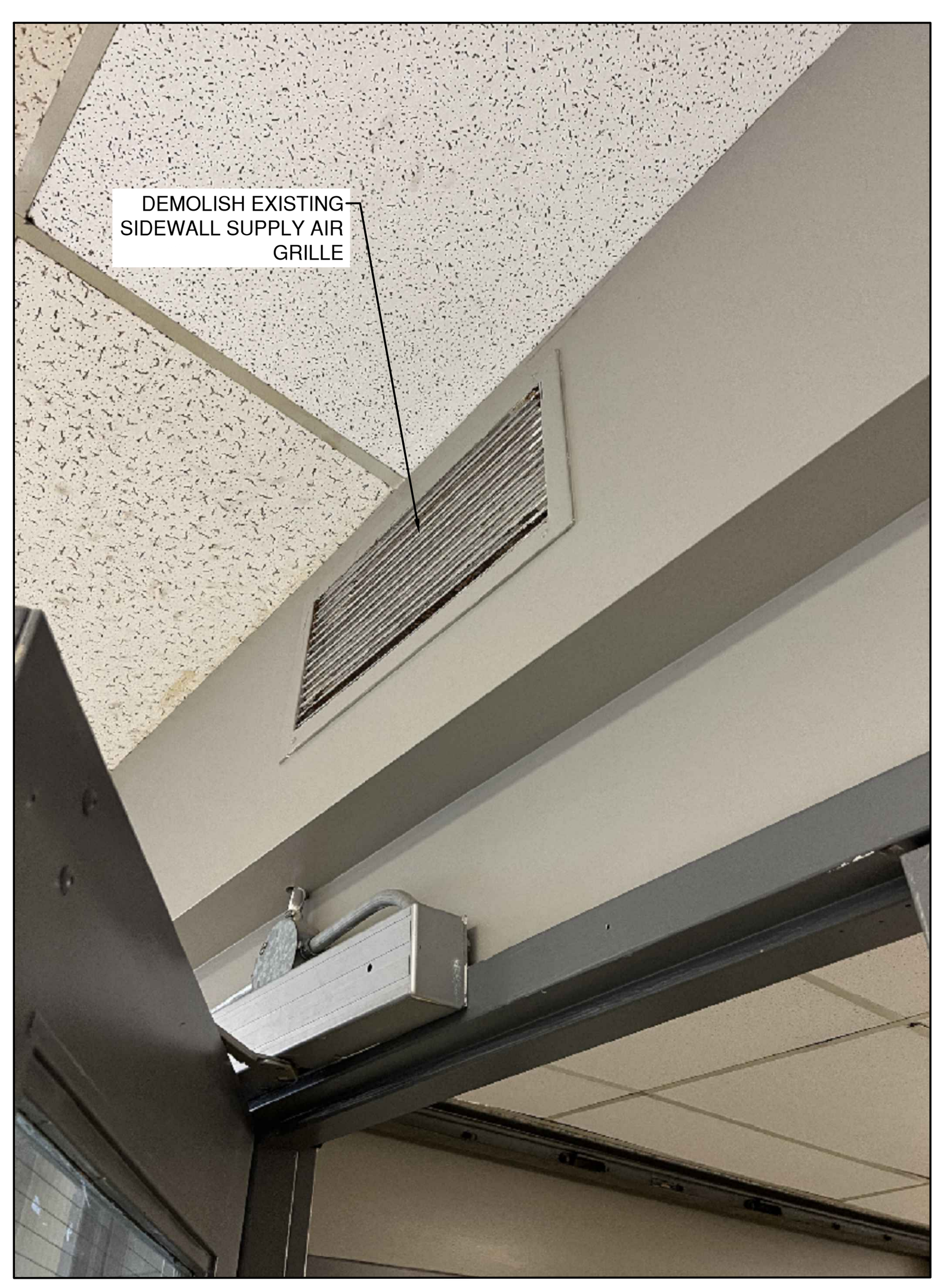
No.	Revisions	Date
2.	ISSUED FOR CONSTRUCTION	03/19/2025
1.	ISSUED FOR PERMIT & PRICING	10/30/2024
No.	Issue	Date

Drawing Title:
DRAWING LIST, SYMBOL LIST, NOTES MECHANICAL

Scale:	N.T.S.	Date:	10/05/2024
Drawn by:	SL	Checked by:	VK
Job No.	23178A	Drawing No.	M1.0

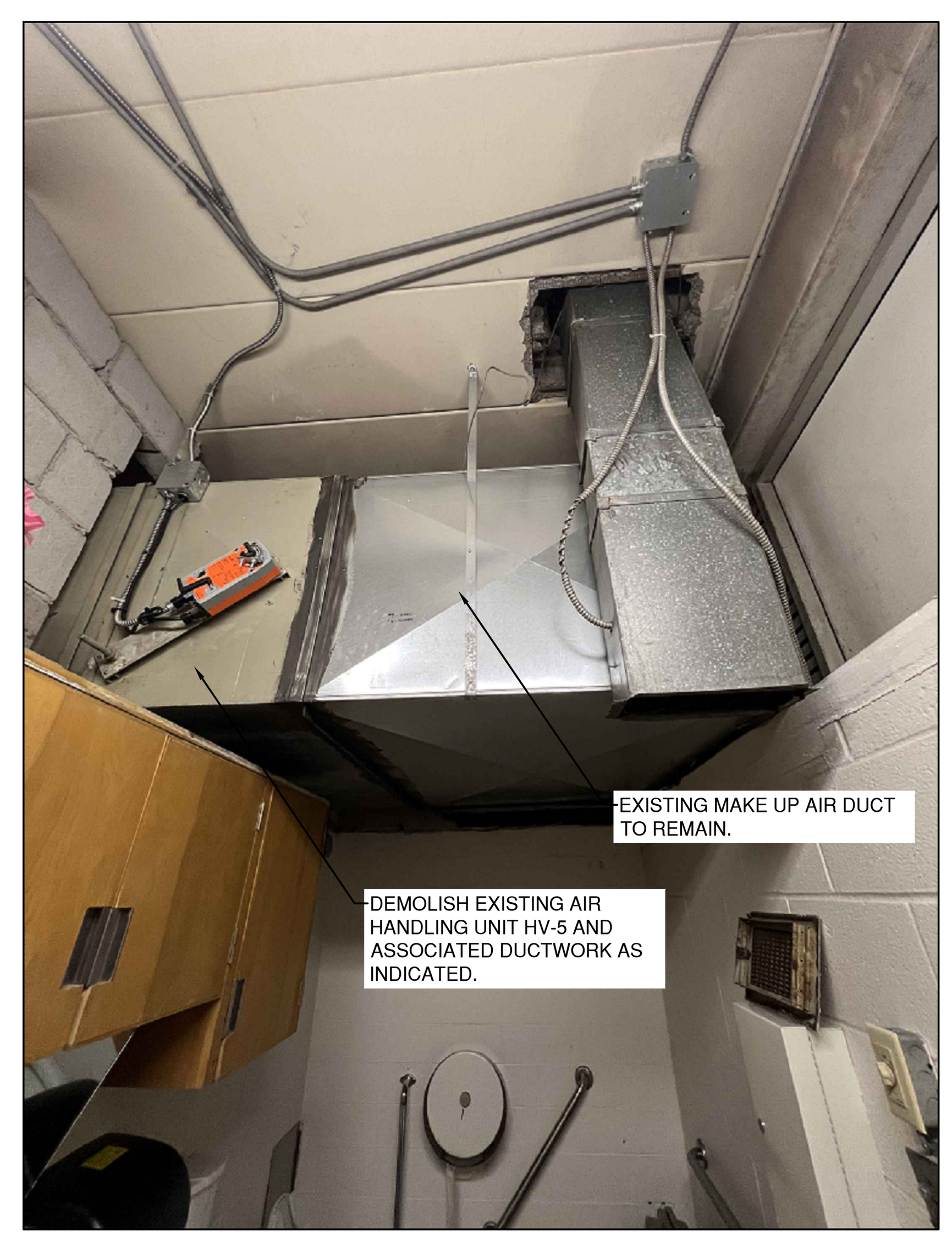


1 / M2.0 PARTIAL GROUND FLOOR DEMOLITION PLAN - HVAC
Scale: 1:100

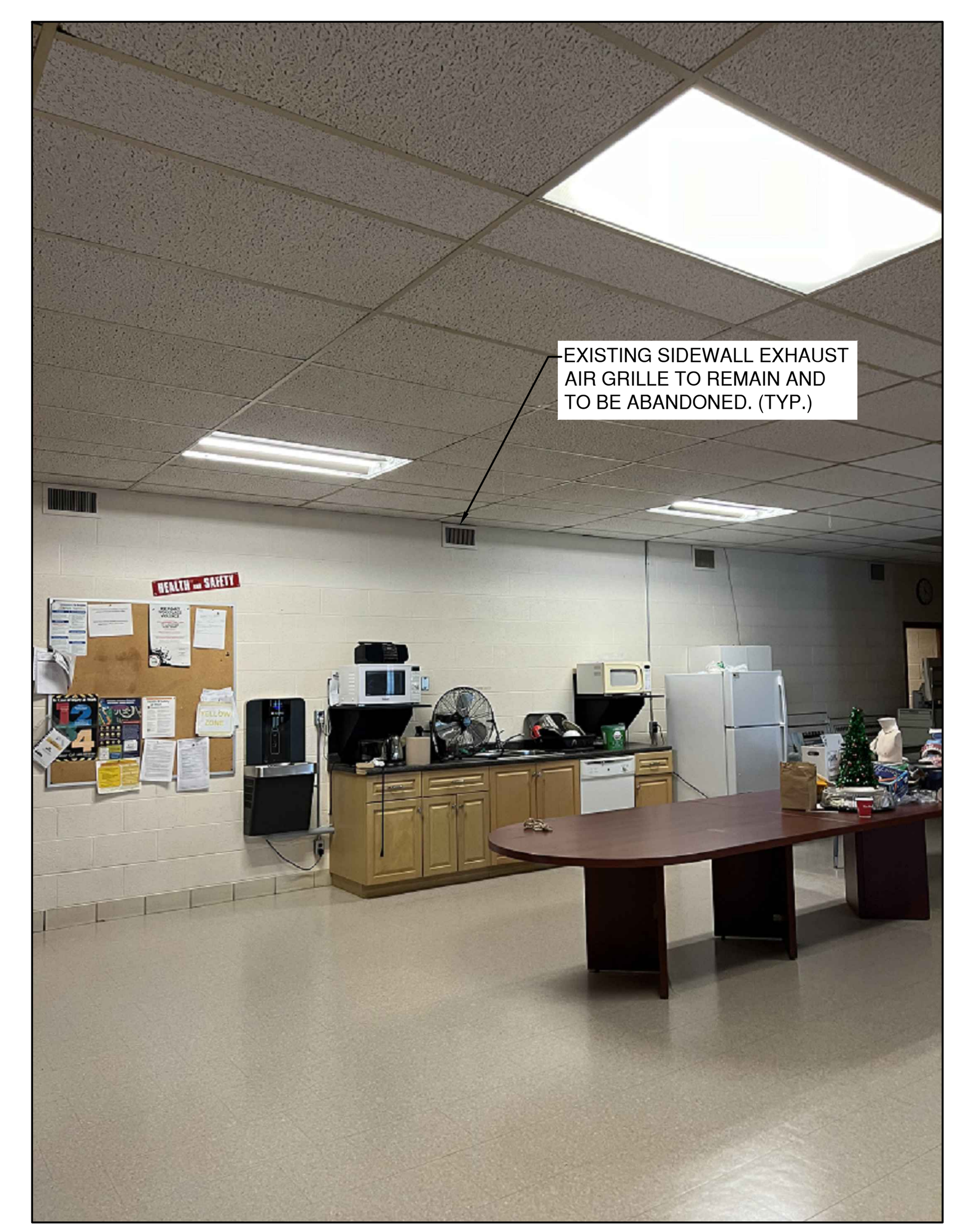


2 / M2.0 DETAIL #2
Scale: N.T.S.

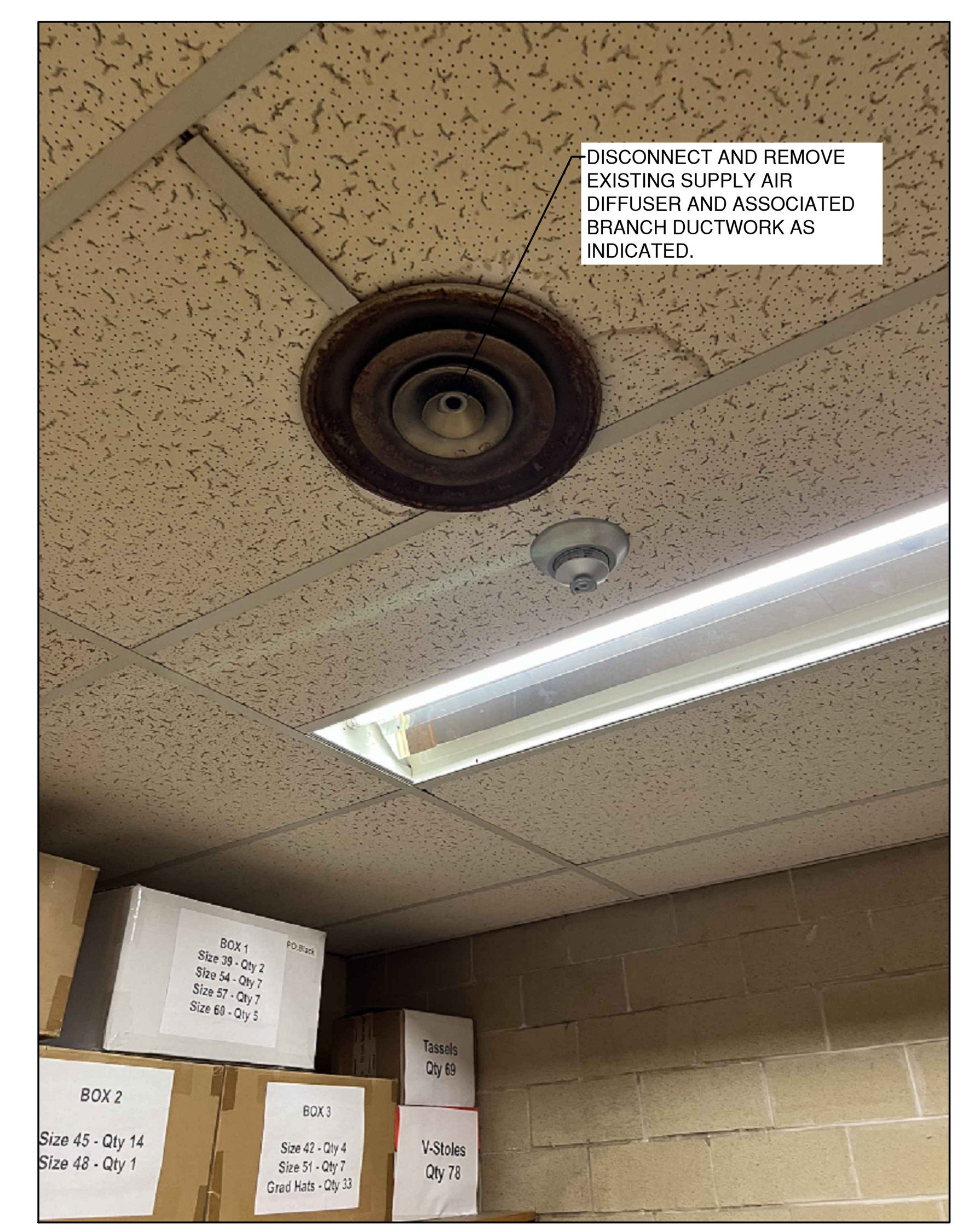
3 / M2.0 DETAIL #3
Scale: N.T.S.



4 / M2.0 DETAIL #4
Scale: N.T.S.



5 / M2.0 DETAIL #5
Scale: N.T.S.



6 / M2.0 DETAIL #6
Scale: N.T.S.

Halton District School Board

2050 Guelph Line
Burlington, Ontario

NELSON HIGH SCHOOL BOILER REPLACEMENT

4181 NEW STREET
Burlington, Ontario

Mechanical

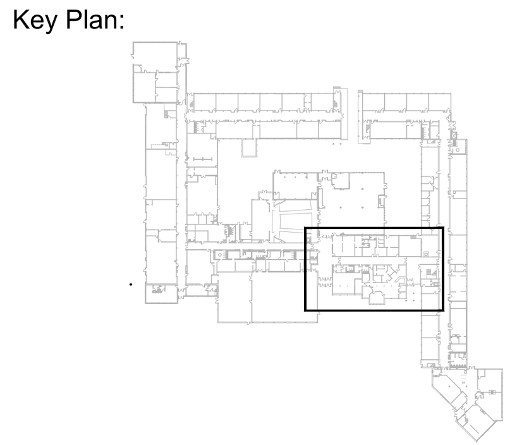
RDZ ENGINEERS LTD
17A - 30 Pennsylvania Avenue
Vaughan, Ontario L4K 4A5
email: info@rdzeng.ca

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.
300 York Boulevard,
Hamilton, Ontario, L8R 3K6
Tel: 905-333-9119

Key Plan:



Key Plan N.T.S.

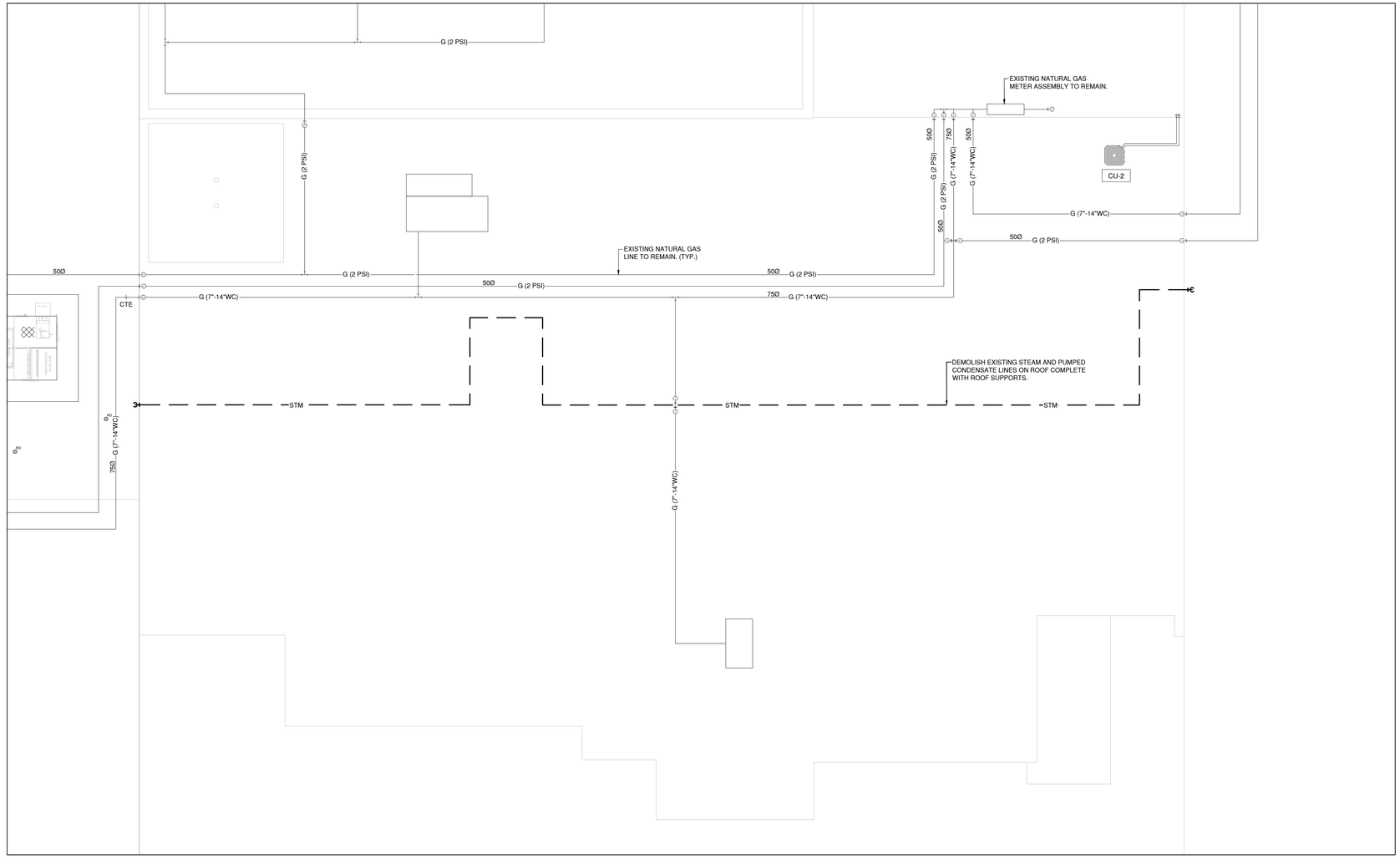
Project North | True North

No.	Revisions	Date

No.	Issue	Date
2.	ISSUED FOR CONSTRUCTION	03/19/2025
1.	ISSUED FOR PERMIT & PRICING	10/30/2024

Drawing Title:
PARTIAL GROUND FLOOR DEMOLITION PLAN - HVAC

Scale:	1:100	Date:	10/05/2024
Drawn by:	SL	Checked by:	VK
Job No.	23178A	Drawing No.	M2.0



1 / M2.1 PARTIAL ROOF DEMOLITION PLAN - HVAC

Scale: 1:100

Halton District School Board

2050 Guelph Line
Burlington, Ontario

NELSON HIGH SCHOOL BOILER REPLACEMENT

4181 NEW STREET
Burlington, Ontario

Mechanical

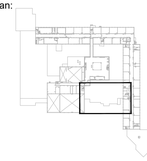
RDZ ENG
RDZ ENGINEERS LTD
17A - 30 Pennsylvania Avenue
Vaughan, Ontario L4K 4A5
email: info@rdzeng.ca

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.

N N

Project North True North

No.	Revisions	Date
2.	ISSUED FOR CONSTRUCTION	03/19/2025
1.	ISSUED FOR PERMIT & PRICING	10/30/2024
No.	Issue	Date

Drawing Title:

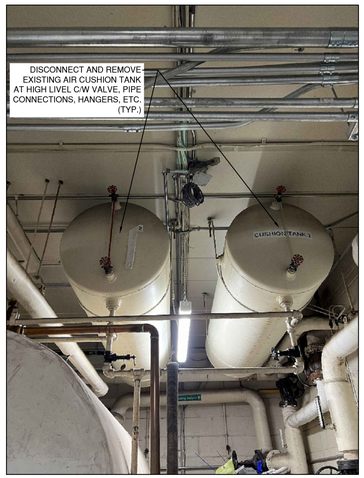
PARTIAL ROOF DEMOLITION PLAN HVAC

Scale:	1:100	Date:	10/05/2024
Drawn by:	SL	Checked by:	VK
Job No.	23178A	Drawing No.	M2.1

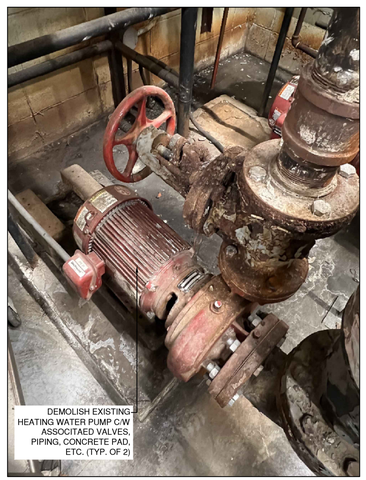
3 / M2.2 DETAIL #3
Scale: N.T.S.

4 / M2.2 DETAIL #4
Scale: N.T.S.

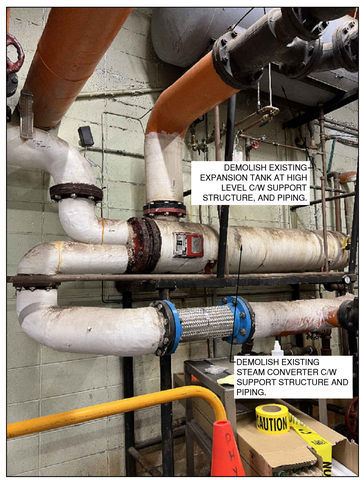
5 / M2.2 DETAIL #5
Scale: N.T.S.



6 / M2.2 DETAIL #6
Scale: N.T.S.

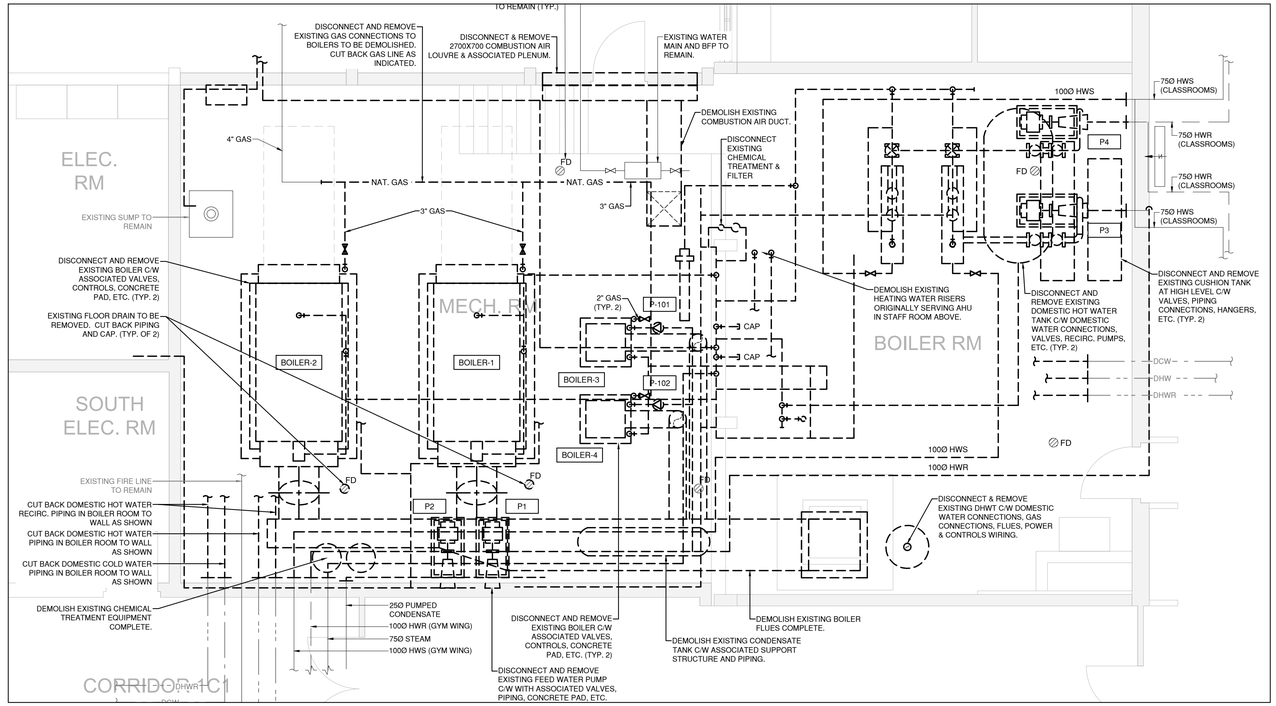


7 / M2.2 DETAIL #7
Scale: N.T.S.



8 / M2.2 DETAIL #8
Scale: N.T.S.

9 / M2.2 DETAIL #9
Scale: N.T.S.



1 / M2.2 BOILER ROOM DEMOLITION PLAN - MECHANICAL
Scale: 1:50

2 / M2.2 SECOND BOILER ROOM DEMOLITION PLAN - MECHANICAL
Scale: 1:50

Halton District School Board

2050 Guelph Line
Burlington, Ontario

NELSON HIGH SCHOOL BOILER REPLACEMENT

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
2.	ISSUED FOR CONSTRUCTION	03/19/2025
1.	ISSUED FOR PERMIT & PRICING	10/30/2024
No.	Issue	Date

Drawing Title:
ENLARGED BOILER & SECOND BOILER ROOM DEMOLITION PLANS - MECHANICAL

Scale:	1:50	Date:	10/05/2024
Drawn by:	SL	Checked by:	VK
Job No.	23178A	Drawing No.	M2.2

NEW WORK GENERAL NOTES

1 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.

2 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.

3 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.

4 TERMINATE 20MM CONDENSATE DRAIN C/W P-TRAP OF VERTICAL UNIT VENTILATOR 'UV-1' THROUGH UNIT'S FRESH AIR LOUVRE.

5 TERMINATE 20MM CONDENSATE DRAIN C/W P-TRAP OF VERTICAL UNIT VENTILATOR 'UV-9' OVER EXISTING FLOOR DRAIN INSIDE CUSTODIAN ROOM.

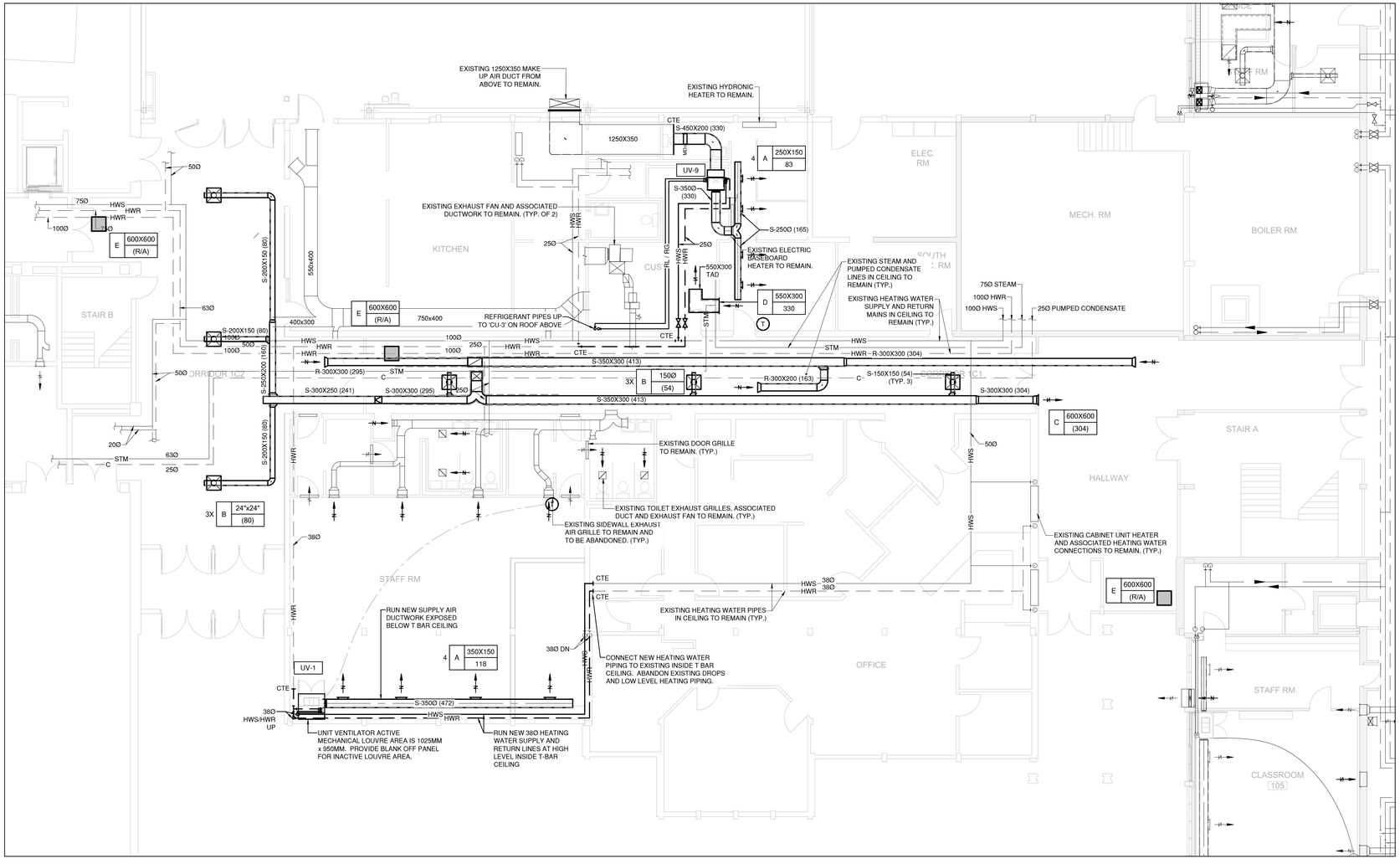
6 CONDENSATE DRAIN TO BE METALLIC UNTIL TERMINATION. PLASTIC TUBING WILL NOT BE ACCEPTED.

7 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.

8 PROVIDE METAL SLEEVE CONNECTING UNIT VENTILATOR AND ITS ASSOCIATED INTAKE ARE LOUVRE. CONTRACTOR TO COORDINATE SIZE OF SLEEVE TO SUIT EXISTING SITE CONDITIONS.

9 PROVIDE LOUVRE BLANK-OFF PANELS AS REQUIRED FOR SECTIONS OF INTAKE AIR LOUVRE NOT USED BY THE UNIT VENTILATOR 'UV-1'.

10 PROVIDE BASE CURB UNDER UNIT VENTILATOR 'UV-1' TO ALIGN THE INTAKE AIR OPENING OF THE UNIT WITH LOUVRE OPENING. CONTRACTOR TO COORDINATE HEIGHT OF CURB TO SUIT EXISTING SITE CONDITIONS.



1 / M3.0 PARTIAL GROUND FLOOR NEW WORK PLAN - HVAC

Scale: 1:100

Halton District School Board

2050 Guelph Line
Burlington, Ontario

NELSON HIGH SCHOOL BOILER REPLACEMENT

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:

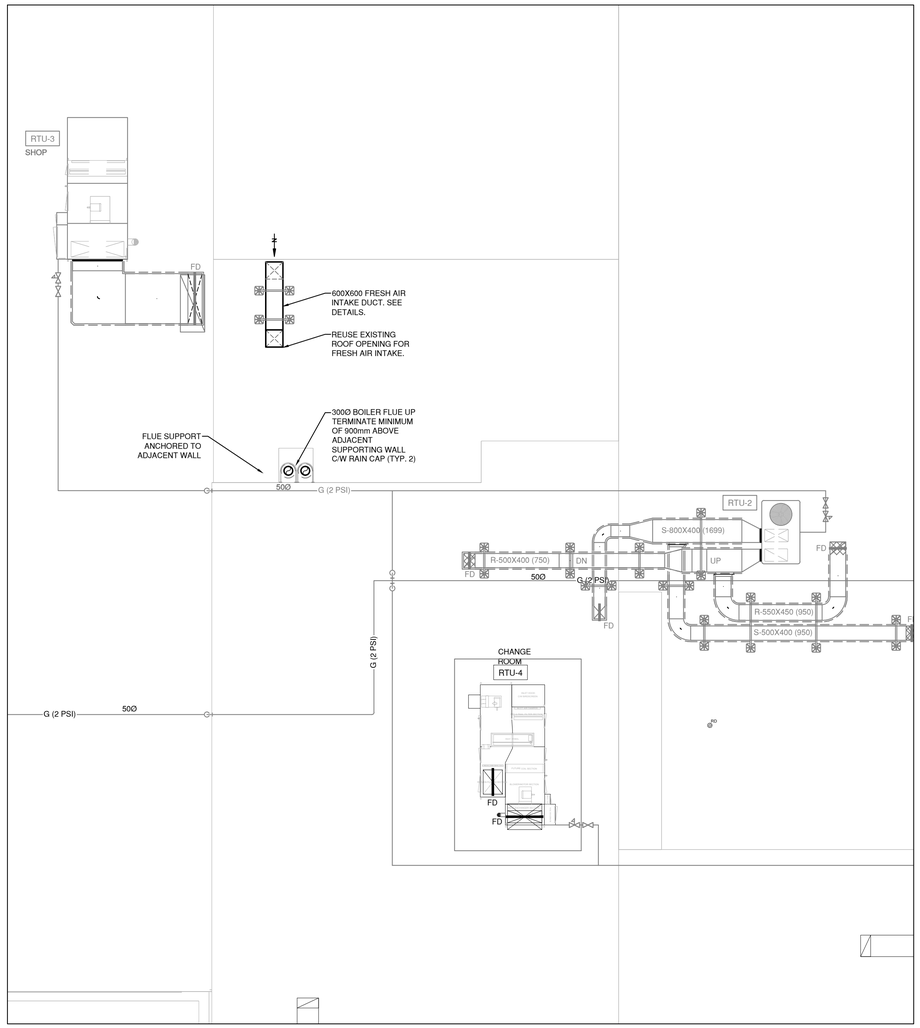
Key Plan N.T.S.

Project North / True North

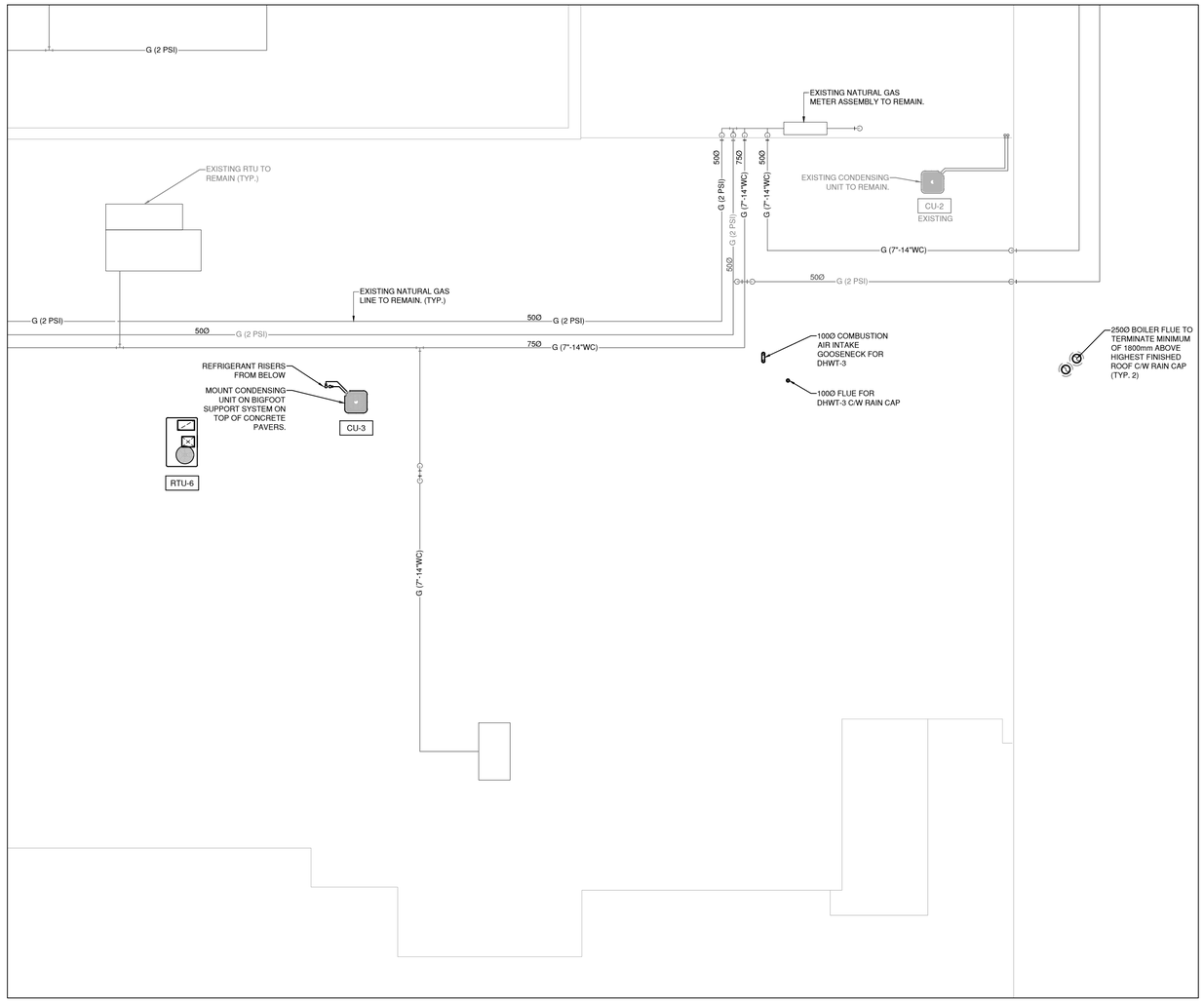
No.	Revisions	Date
2.	ISSUED FOR CONSTRUCTION	03/19/2025
1.	ISSUED FOR PERMIT & PRICING	10/30/2024
No.	Issue	Date

Drawing Title:
PARTIAL GROUND FLOOR NEW WORK PLAN - HVAC

Scale:	1:100	Date:	10/05/2024
Drawn by:	SL	Checked by:	VK
Job No.	23178A	Drawing No.	M3.0



1 M3.1 PARTIAL ROOF NEW WORK PLAN - HVAC
Scale: 1:100



2 M3.1 PARTIAL ROOF NEW WORK PLAN - HVAC
Scale: 1:100

NEW WORK NOTES

1. ANY ROOF RELATED WORK IS TO BE EXECUTED BY HDIB APPROVED VENDORS AND COMPATIBLE ROOFING MATERIAL ARE TO BE USED. CONTRACTOR IS RESPONSIBLE FOR ALL COORDINATION 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 CGA B149.1. LABEL GAS PIPING COMPLETE WITH GAS PRESSURE ON WEATHERPROOF LABELS AS PER CGA B149.1.

Halton District School Board

2050 Guelph Line
Burlington, Ontario

NELSON HIGH SCHOOL BOILER REPLACEMENT

4181 NEW STREET
Burlington, Ontario

Mechanical

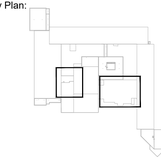
RDZ ENG
RDZ ENGINEERS LTD
17A - 30 Pennsylvania Avenue
Vaughan, Ontario L4K 4A5
email: info@rdzeng.ca

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

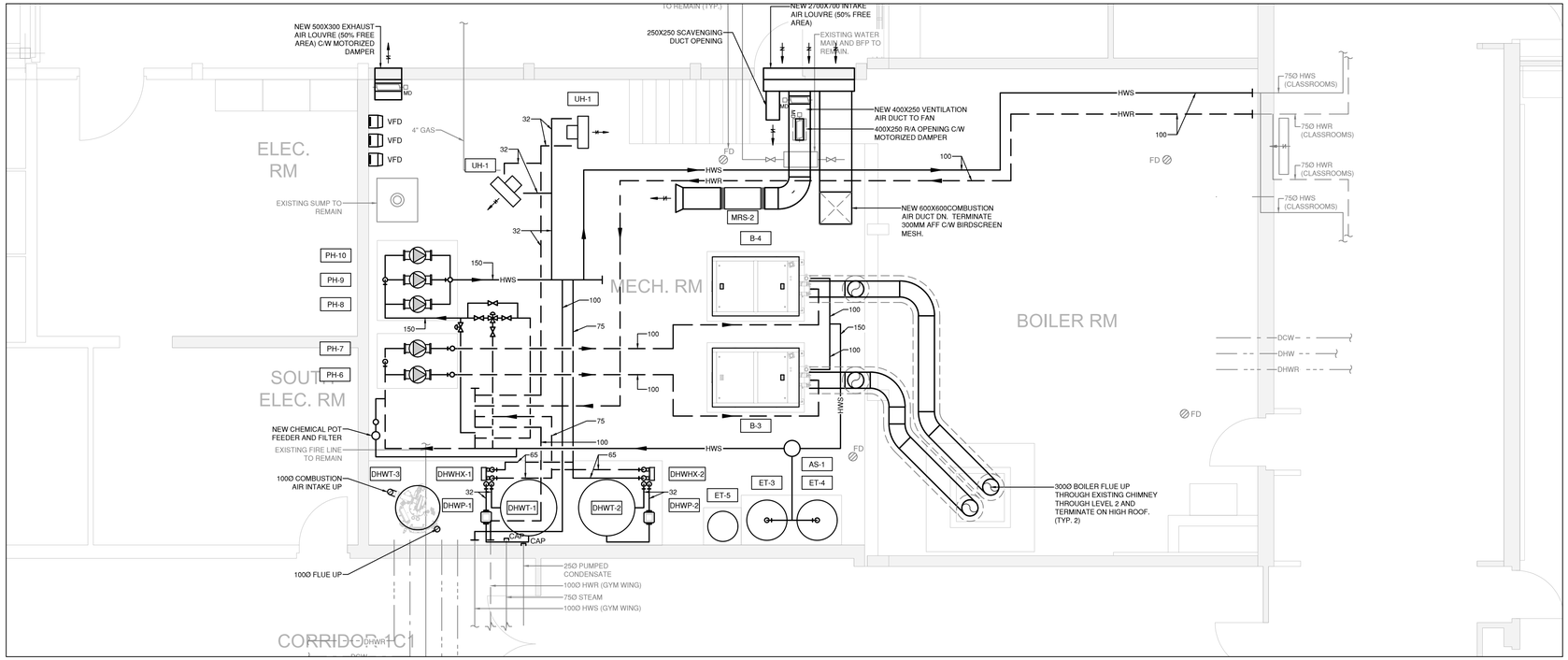
No.	Revisions	Date
2.	ISSUED FOR CONSTRUCTION	03/19/2025
1.	ISSUED FOR PERMIT & PRICING	10/30/2024
No.	Issue	Date

Drawing Title:
PARTIAL ROOF NEW WORK PLAN HVAC

Scale:	1:100	Date:	10/05/2024
Drawn by:	SL	Checked by:	VK
Job No.	23178A	Drawing No.	M3.1

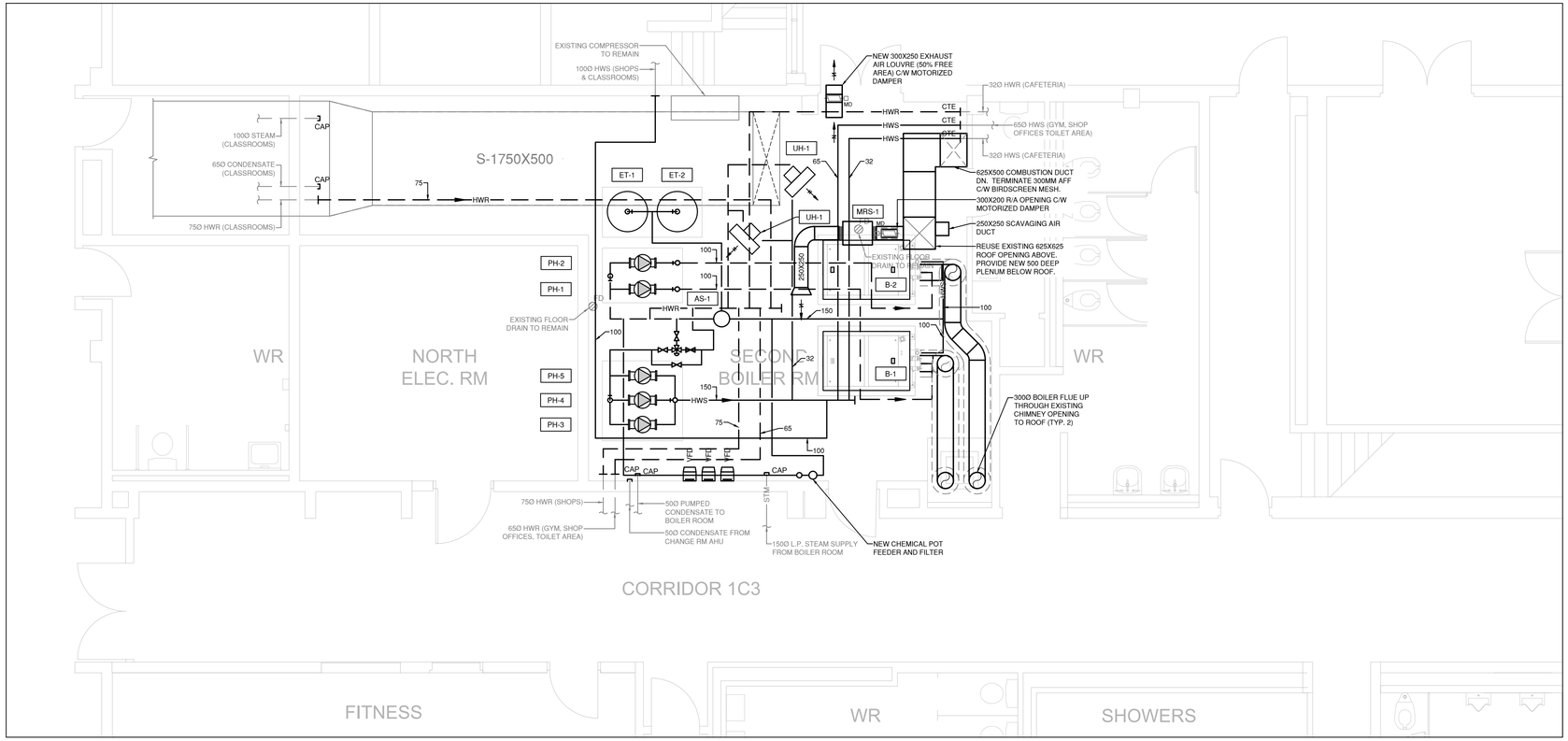
NEW WORK GENERAL NOTES

1. CARRY BALANCING AGENT TO BALANCE THE SYSTEM. CONTRACTOR TO COORDINATE ALL WORK WITH THEM.
2. MEASURE EXISTING FLOW RATES AND PRESSURE DIFFERENTIAL FOR EACH HEATING WATER PIPING CONNECTION WITHIN SCOPE OF WORK PRIOR TO CONSTRUCTION. CONTRACTOR TO PROVIDE TEST PORTS FOR EACH PIPING CONNECTION FOR MEASUREMENT. RECORD FLOW RATES AND PROVIDE REPORT. REPLACE CIRCUIT BALANCING VALVES FOR EACH CONNECTION TO RECORDED VALUE UPON COMPLETION OF WORK.
3. HEATING SYSTEM TO BE DRAINED TO POINT OF ISOLATION FOR THIS WORK.
4. PROVIDED FOR THE CLEANING AND FLUSHING OF THE HEATING WATER PIPING AS PER THE SPECIFICATIONS.
5. NOT ALL EXISTING PIPING AND OBSTRUCTIONS ARE SHOWN ON THE DRAWAINGS. WHERE INTERFERENCES EXIST, CONTRACTOR SHALL REROUTE THE NEW WORK TO SUIT THE EXISTING PIPING.
6. INSULATE ALL NEW AND EXISTING PIPING (HEATING WATER, DOMESTIC WATER, ETC.) AS PER THE SPECIFICATIONS.
7. BALANCE SECONDARY PUMPS FOR DUTY/DUTY/STANDBY OPERATION TO MATCH EXISTING FLOW RATES. BALANCER TO SET DIFFERENTIAL PRESSURE TO MEET MINIMUM FLOW RATE.
8. BOILERS SECTIONS AND HEATING COILS TO BE SHIPPED AND ASSEMBLED ON SITE WITHIN RESPECTIVE BOILER ROOM AND FAN ROOMS. PROVIDE FOR MANUFACTURERS' REPRESENTATIVES TO BE PRESENT ON SITE DURING ASSEMBLY TO VERIFY WARRANTY OF EQUIPMENT.
9. PROVIDED NEW 100MM HIGH CONCRETE HOUSEKEEPING PADS FOR ALL NEW EQUIPMENT AS INDICATED.
10. CONTRACTOR TO REVIEW GROUNDING AND PIPING SUPPORTS FOR EXISTING GAS PIPING. PROVIDED NEW AS REQUIRED TO MEET CURRENT CODE REQUIREMENTS.
11. APPLY FOR, OBTAIN, AND PAY FOR ALL PERMITS, FEES AND SERVICES 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. HAVE THE WORK INSPECTED AND CERTIFIED BY PV [BOILERS AND PRESSURE VESSELS REG.], OE [OPERATING ENGINEERS REG.] AND FS [FUEL SAFETY REG.] BRANCHES OF TSSA. AT THE END OF THE WORK, THE NEW PLANT SHALL BE FULLY TSSA CERTIFIED BY ALL BRANCHES NOTED HEREIN.
12. PAINT THE ENTIRE FLOOR (MIN. THREE COATS) OF THE BOILER ROOM AND FAN ROOM #5 WITH URETHANE-BASED PAINT BATTLE SHIP GRAY, YELLOW FOR HOUSEKEEPING PADS AND WHITE FOR CEILING & WALLS. FOLLOW PAINT MANUFACTURER'S INSTRUCTIONS PERTAINING TO PRIMING AND PRE-TREATING THE SURFACES PRIOR TO PAINTING.
13. 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.
14. CONTRACTOR RESPONSIBLE TO RELOCATE ALL EXISTING WIRING, PIPING AND EQUIPMENT THAT INTERFERES WITH INSTALLATION OF NEW HEATING COIL SECTION. REVIEW THE EXISTING CONDITIONS ON SITE PRIOR TO SUBMITTING YOUR BID.
15. ONCE HEATING COIL SECTIONS ARE INSTALLED, BALANCING CONTRACTOR TO BALANCE SUPPLY FANS AND CHANGE FAN PULLEYS/SHEAVES IF REQUIRED TO BALANCE UNIT TO AIRFLOWS MEASURED PRIOR TO START OF WORK. ADJUST THE EXISTING FAN VFDS AS REQUIRED.



1 / M3.2 PHASE 2: MAIN BOILER ROOM NEW WORK PLAN - MECHANICAL

Scale: 1:50



2 / M3.2 PHASE 1: SECOND BOILER ROOM NEW WORK PLAN - MECHANICAL

Scale: 1:50

Halton District School Board

2050 Guelph Line
Burlington, Ontario

NELSON HIGH SCHOOL BOILER REPLACEMENT

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.

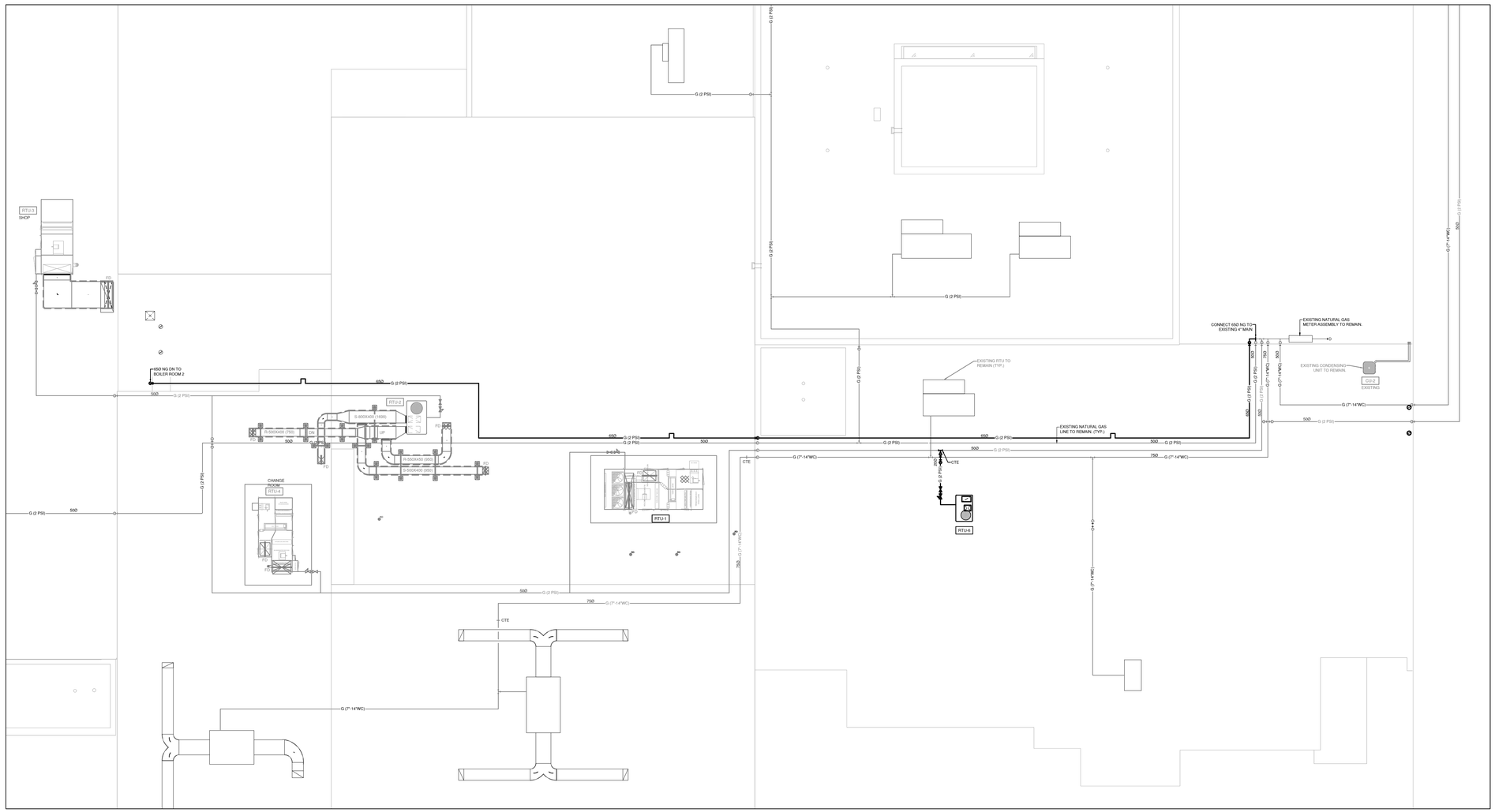
N

Project North True North

No.	Revisions	Date
2.	ISSUED FOR CONSTRUCTION	03/19/2025
1.	ISSUED FOR PERMIT & PRICING	10/30/2024
No.	Issue	Date

Drawing Title:
ENLARGED BOILER & SECOND BOILER ROOM NEW WORK PLANS - HVAC

Scale:	1:50	Date:	10/05/2024
Drawn by:	SL	Checked by:	VK
Job No.	23178A	Drawing No.	M3.2



1
M3.3
PARTIAL ROOF NEW WORK PLAN - PLUMBING
Scale: 1:150

Halton District School Board

2050 Guelph Line
Burlington, Ontario

NELSON HIGH SCHOOL BOILER REPLACEMENT

4181 NEW STREET
Burlington, Ontario

Mechanical

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

Architect

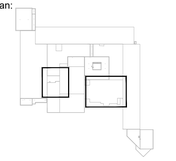
snyder
Snyder Architects inc.
100 Broadview Ave, Suite 301, Toronto, ON M4M 3H3
tel. 416.960.5444
www.snyderarchitects.ca

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:



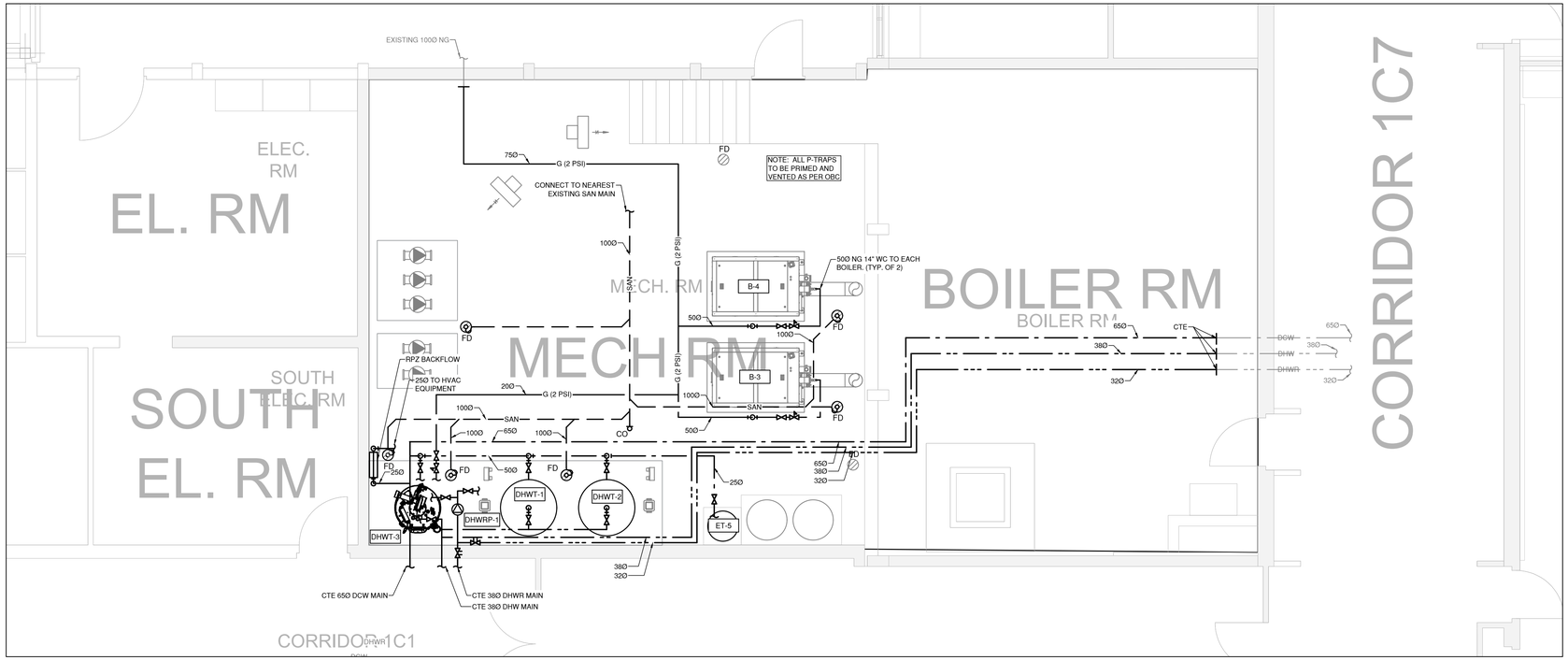
Key Plan N.T.S.

Project North True North

No.	Revisions	Date
2.	ISSUED FOR CONSTRUCTION	03/19/2025
1.	ISSUED FOR PERMIT & PRICING	10/30/2024
No.	Issue	Date

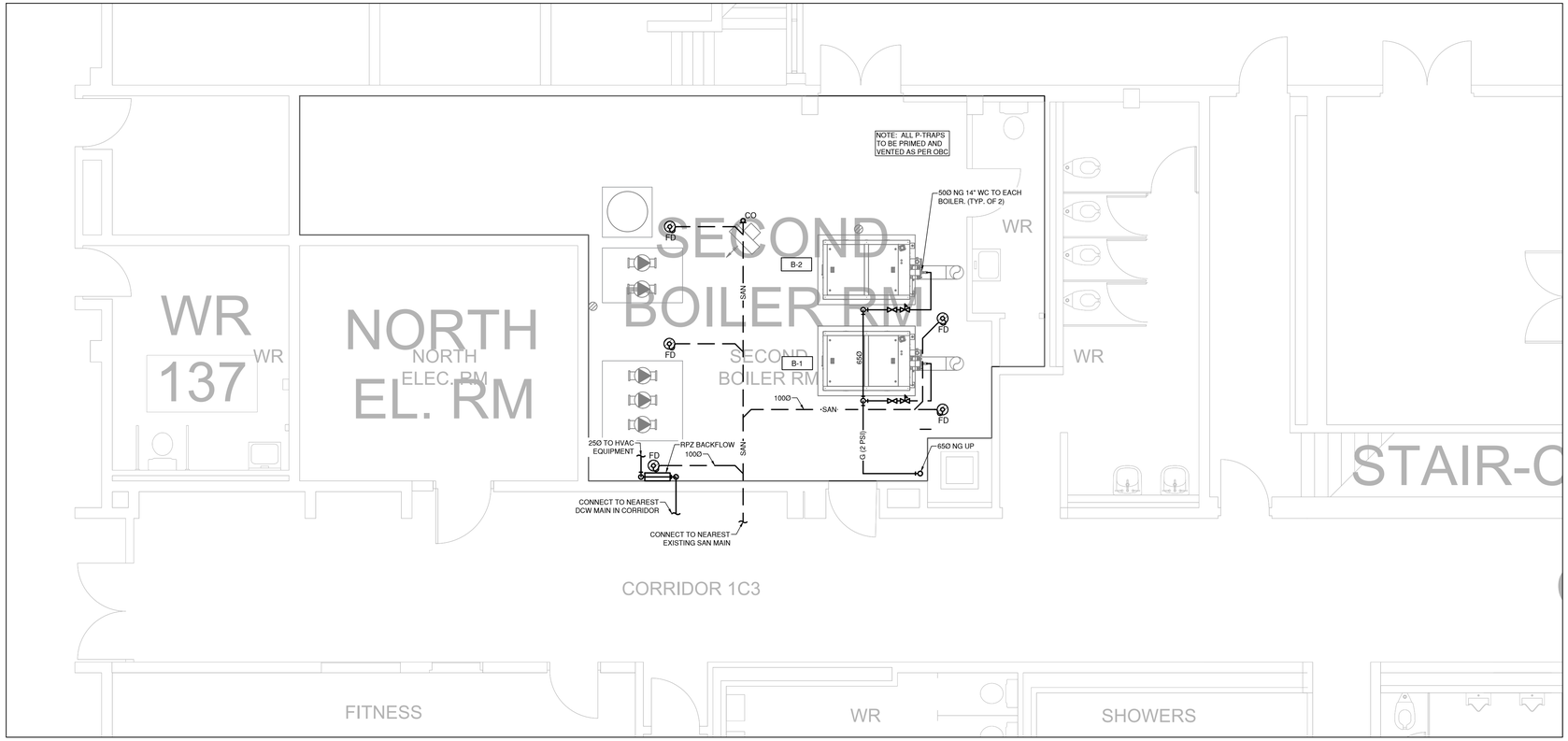
Drawing Title:
PARTIAL ROOF NEW WORK PLAN PLUMBING

Scale:	1:100	Date:	10/05/2024
Drawn by:	KL	Checked by:	VK
Job No.	23178A	Drawing No.	M3.3



1 / M3.4 PHASE 2: MAIN BOILER ROOM NEW WORK PLAN - PLUMBING

Scale: 1:50



2 / M3.4 PHASE 1: SECOND BOILER ROOM NEW WORK PLAN - PLUMBING

Scale: 1:50

Halton District School Board

2050 Guelph Line
Burlington, Ontario

NELSON HIGH SCHOOL BOILER REPLACEMENT

4181 NEW STREET
Burlington, Ontario

Mechanical

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

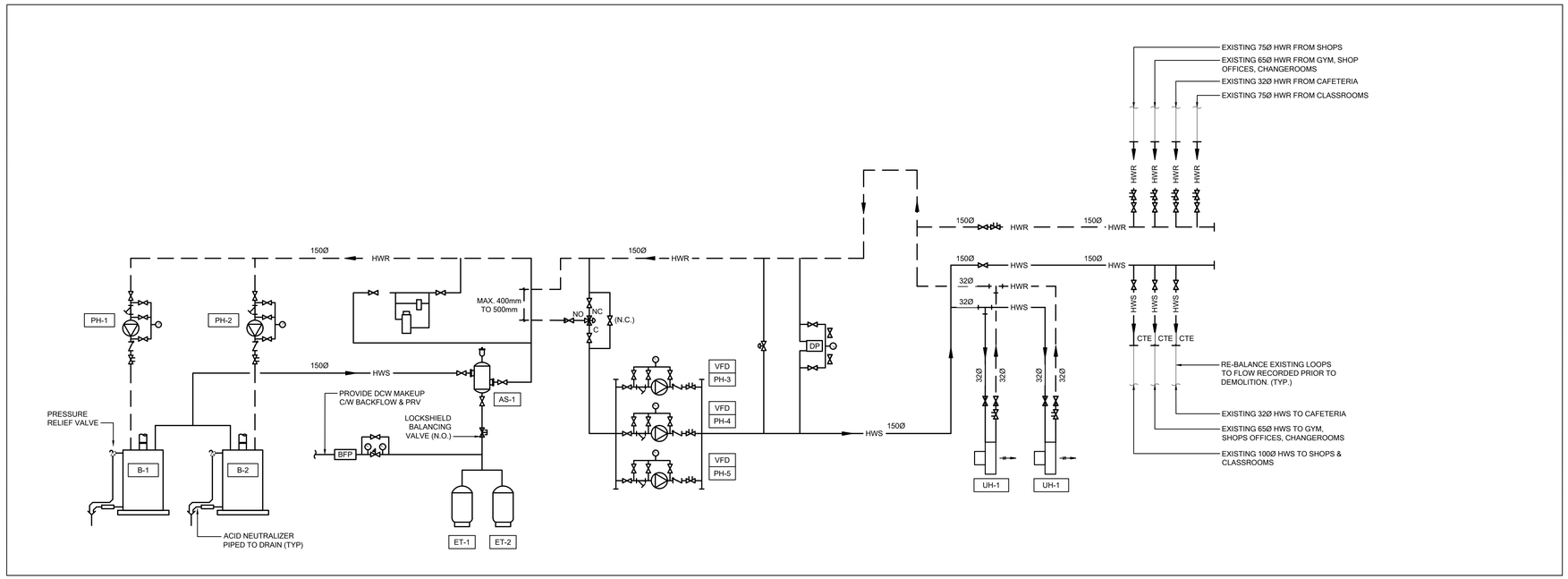
No.	Revisions	Date
2.	ISSUED FOR CONSTRUCTION	03/19/2025
1.	ISSUED FOR PERMIT & PRICING	10/30/2024
No.	Issue	Date

Drawing Title:
ENLARGED BOILER & SECOND BOILER ROOM NEW WORK PLANS - PLUMBING

Scale:	1:50	Date:	10/05/2024
Drawn by:	KL	Checked by:	VK
Job No.	23178A	Drawing No.	M3.4

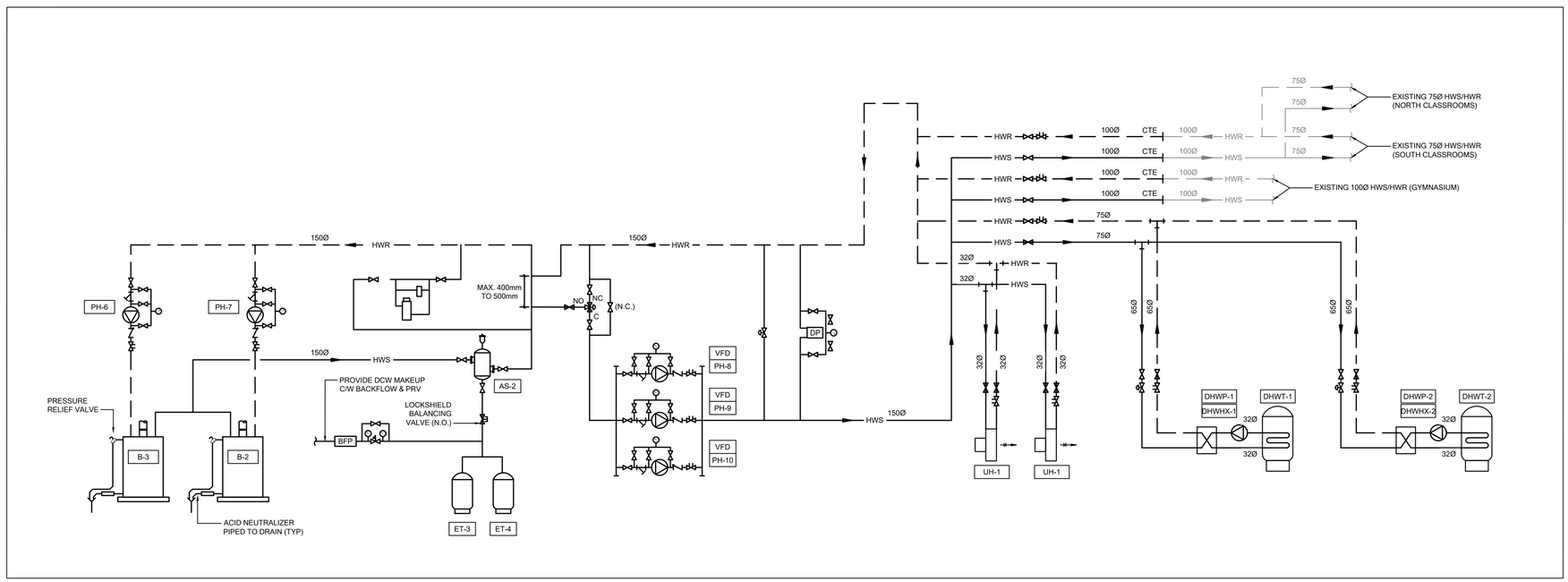
NOTES

1. PROVIDE NEW CIRCUIT BALANCING VALVE FOR EXISTING HYDRONIC LOOP CONNECTIONS ORIGINALLY SERVED BY STEAM CONVERTERS AND RE-BALANCE TO RECORDED VALUE UPON COMPLETION OF WORK.



1 / M4.0 PHASE 1 - SECOND BOILER ROOM HEATING WATER FLOW DIAGRAM - NEW WORK

Scale: N.T.S.



2 / M4.0 PHASE 2 - MAIN BOILER ROOM HEATING WATER FLOW DIAGRAM - NEW WORK

Scale: N.T.S.

Halton District School Board

2050 Guelph Line
Burlington, Ontario

NELSON HIGH SCHOOL BOILER REPLACEMENT

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. 416.960.5444
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.

N

Project North | True North

No.	Revisions	Date
2.	ISSUED FOR CONSTRUCTION	03/19/2025
1.	ISSUED FOR PERMIT & PRICING	10/30/2024
No.	Issue	Date

Drawing Title:
HVAC FLOW DIAGRAMS MECHANICAL

Scale:	N.T.S.	Date:	10/05/2024
Drawn by:	SL	Checked by:	VK
Job No.	23178A	Drawing No.	M4.0

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.

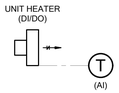
3. COORDINATE FINAL INSTALLATION POSITION OF EACH THERMOSTAT AND ALL OTHER CONTROLS RELATED DEVICES THAT ARE LOCATED ON WALLS, CEILINGS, FLOORS, ETC. IN ALL AREAS ON SITE WITH OWNER PRIOR TO ROUGH IN. WALL MOUNTED TEMPERATURE, HUMIDITY AND/OR CO2 SENSORS ARE TO BE MOUNTED AS PER LOCAL GOVERNING AUTHORITY 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



SEQUENCE OF OPERATION (HYDRONIC UNIT HEATER)

1. IN HEATING MODE, SPACE TEMPERATURE SENSOR TO ENABLE/DISABLE FAN TO MAINTAIN ROOM TEMPERATURE SETPOINT OF 15.6°C (60°F - ADJUSTABLE).

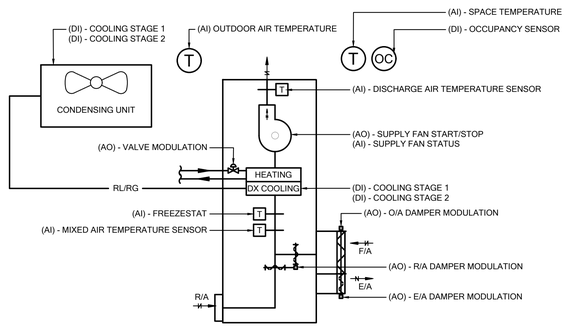
NOTES

1. REFER TO FLOOR PLAN FOR LOCATIONS OF UNIT HEATERS.

2. HEATERS DISABLED WHEN O/A TEMPERATURE IS ABOVE 6°C (43°F - ADJUSTABLE).

TYPICAL MOTORIZED HEATER

CONTROL DIAGRAM



SEQUENCE OF OPERATION

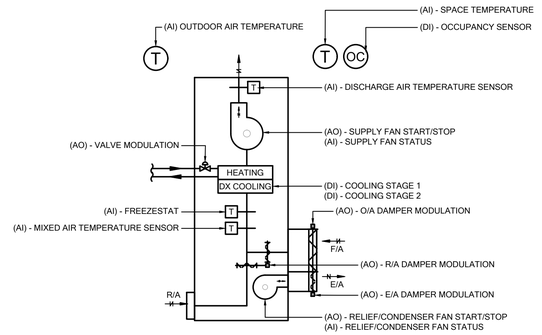
1. BAS TO ENABLE/DISABLE UNIT VENTILATOR BASED ON A TIME OF DAY SCHEDULE.
2. OCCUPIED MODE:
   1. ONCE ENABLED, BAS TO:

      MODULATE MOTORIZED FRESH AIR, RETURN AIR AND EXHAUST AIR DAMPERS AT FIXED FRESH AIR POSITION.

      ENABLE SUPPLY FAN TO OPERATE CONTINUOUSLY DURING OCCUPIED PERIODS.
   2. WHEN ON CALL FOR HEATING, BAS SHALL MODULATE HEATING VALVE TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 21.1°C (70°F).
   3. WHEN ON CALL FOR COOLING, BAS TO ENABLE DX COOLING STAGES AND REMOTE 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), BAS TO ENABLE AIR SIDE ECONOMIZER MODE. DX COOLING DISABLED AND HEATING VALVE CLOSED. MODULATE FRESH AIR AND EXHAUST AIR DAMPERS TO 100% FRESH AIR POSITION (RETURN AIR DAMPER 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, BAS TO CLOSE MOTORIZED FRESH AIR AND EXHAUST AIR DAMPERS (RETURN AIR DAMPER REMAINS OPEN) AND STOP FAN.
   2. IF SPACE TEMPERATURE DROPS BELOW SETPOINT OF 18°C (65°F) IN HEATING SEASON, BAS 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, BAS TO ENABLE UNIT IN OCCUPIED MODE. WHEN OCCUPANCY IS NOT DETECTED FOR 15 MINS, BAS 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 VENTILATOR (UV-9)

CONTROL DIAGRAM



SEQUENCE OF OPERATION

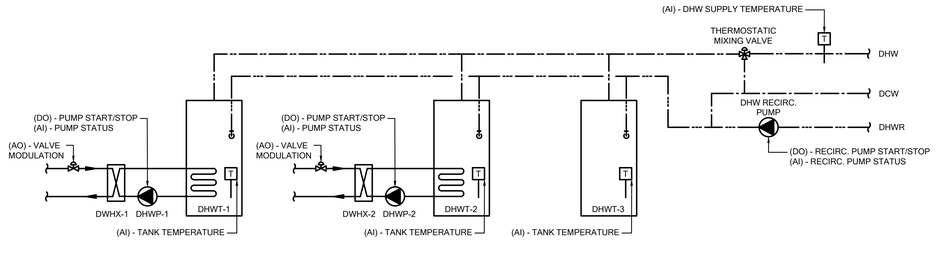
1. BAS TO ENABLE/DISABLE UNIT VENTILATOR BASED ON A TIME OF DAY SCHEDULE.
2. OCCUPIED MODE:
   1. ONCE ENABLED, BAS TO:

      MODULATE MOTORIZED FRESH AIR, RETURN AIR AND EXHAUST AIR DAMPERS AT FIXED FRESH AIR POSITION.

      ENABLE SUPPLY FAN AND RELIEF/CONDENSER FAN TO OPERATE CONTINUOUSLY DURING OCCUPIED PERIODS
   2. WHEN ON CALL FOR HEATING, BAS SHALL MODULATE HEATING VALVE TO MAINTAIN SPACE TEMPERATURE SETPOINT OF 21.1°C (70°F).
   3. WHEN ON CALL FOR COOLING, BAS TO ENABLE DX COOLING STAGES 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), BAS TO ENABLE AIR SIDE ECONOMIZER MODE. DX COOLING DISABLED AND HEATING VALVE CLOSED. MODULATE FRESH AIR AND EXHAUST AIR DAMPERS TO 100% FRESH AIR POSITION (RETURN AIR DAMPER CLOSED). MODULATE RELIEF/CONDENSER FAN TO 100% FRESH AIR OPERATION. 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, BAS TO CLOSE MOTORIZED FRESH AIR AND EXHAUST AIR DAMPERS (RETURN AIR DAMPER REMAINS OPEN) AND STOP FANS.
   2. IF SPACE TEMPERATURE DROPS BELOW SETPOINT OF 18°C (65°F) IN HEATING SEASON, BAS 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, BAS TO ENABLE UNIT IN OCCUPIED MODE. WHEN OCCUPANCY IS NOT DETECTED FOR 15 MINS, BAS 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 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 VENTILATOR (UV-1)

CONTROL DIAGRAM

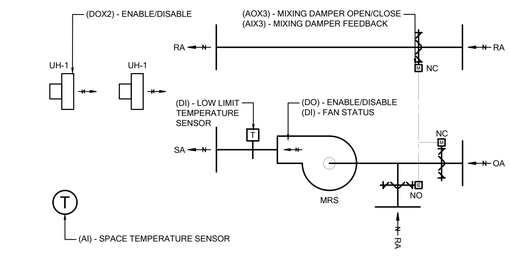


SEQUENCE OF OPERATION

1. DHW SUPPLY WATER TEMPERATURE SENSOR MONITORS SUPPLY WATER TEMPERATURE AND ALARMS BAS WHEN WATER TEMPERATURE IS BELOW 37.8°C (100°F - ADJUSTABLE) OR HIGHER THAN 51.7°C (125°F - ADJUSTABLE).
2. THERMOSTATIC MIXING VALVE TO MAINTAIN DHW SUPPLY TEMPERATURE OF 120°F (ADJUSTABLE) AT SUPPLY WATER TEMPERATURE SENSOR .
3. BAS TO ENABLE THE ASSOCIATED CIRCULATOR AND OPEN ASSOCIATED 2-WAY HEATING CONTROL VALVE TO MAINTAIN WATER STORAGE TEMPERATURE SETPOINT OF 140°F (60°C - ADJUSTABLE) IN TANK 'DHWT-1' OR 'DHWT-2".
4. STANDALONE TANK AQUASTAT IN 'DHWT-3' TO ENABLE UNIT AND MAINTAIN WATER STORAGE TEMPERATURE SETPOINT OF 140°F (60°C - ADJUSTABLE).
5. WHEN BOILERS ARE OFF, BAS TO DISABLE CIRCULATORS 'DHWP-1' AND 'DHWP-2', DISABLE ASSOCIATED HEATING CONTROL VALVES AND TANK TEMPERATURE SENSORS. 'DHWT-3' WILL BE THE PRIMARY DHW SOURCE.
6. DHW RECIRCULATION PUMP TO BE DISABLED AT NIGHT / UNOCCUPIED PERIODS. PUMP TO RUN FOR 15 MIN OF EVERY HOUR DURING OCCUPIED PERIODS.

DOMESTIC HOT WATER HEATERS

CONTROL DIAGRAM



SEQUENCE OF OPERATION

1. SPACE TEMPERATURE SENSOR TO ENABLE SUPPLY FAN 'MRS-1' AND MODULATE POSITIONS OF OUTDOOR AIR, RETURN AIR AND RELIEF AIR DAMPERS IN SEQUENCE TO MAINTAIN ROOM TEMPERATURE SETPOINT OF 27°C (80°F - ADJUSTABLE) IN SUMMER AND 15.6°C (60°F - ADJUSTABLE) IN WINTER.
2. ON CALL FOR COOLING, BAS TO DISABLE UNIT HEATERS AND CLOSE ASSOCIATED HEATING CONTROL VALVES.
3. ON CALL FOR HEATING, BAS TO ENABLE UNIT HEATERS TO MEET TEMPERATURE SETPOINT.
4. LOW LIMIT DISCHARGE TEMPERATURE SENSOR TO ALARM BAS IF DISCHARGE AIR TEMPERATURE DROPS BELOW THE SETPOINT OF 4.4°C (40°F - ADJUSTABLE).

MECHANICAL PENTHOUSE SUPPLY FAN SYSTEM 'MRS'

CONTROL DIAGRAM

Halton District School Board

2050 Guelph Line
Burlington, Ontario

NELSON HIGH SCHOOL BOILER REPLACEMENT

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:

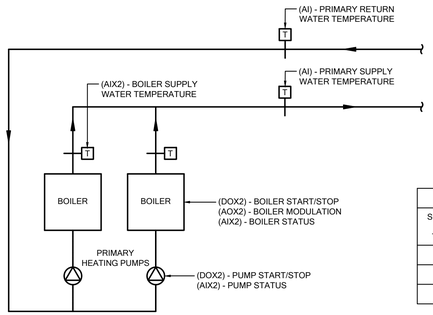
Key Plan N.T.S.

Project North | True North

No.	Revisions	Date
2.	ISSUED FOR CONSTRUCTION	03/19/2025
1.	ISSUED FOR PERMIT & PRICING	10/30/2024
No.	Issue	Date

Drawing Title:
CONTROLS DIAGRAMS 1 MECHANICAL

Scale:	N.T.S.	Date:	10/05/2024
Drawn by:	SL	Checked by:	VK
Job No.	23178A	Drawing No.	M5.0



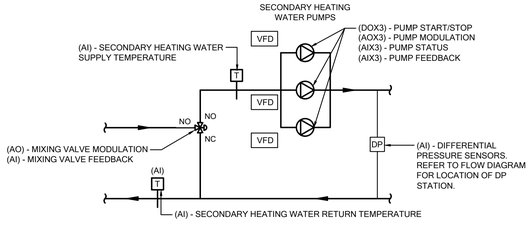
BOILER RESET SCHEDULE	
SUPPLY HEATING WATER TEMPERATURE	OUTDOOR AIR TEMPERATURE
43.3°C	15.6°C
60.0°C	0°C
71.1°C	-22.0°C

SEQUENCE OF OPERATION

1. THE HEATING PLANT IS ENABLED THROUGH THE BAS BETWEEN DECEMBER 15TH AND MARCH 31ST. THE BAS SHALL CONTINUOUSLY ENABLE THE HEATING PLANT WITH ANY CALL FOR HEATING FROM THE HYDRONIC HEATING WATER LOOP SERVING THE UNIT VENTILATORS, THE PERIMETER WALLFIN HEATERS, UNIT HEATERS, DOMESTIC HOT WATER SYSTEMS, ETC.
2. EACH BOILER OPERATES ON ITS OWN SYSTEMS OF CONTROL AND SAFETIES TO MAINTAIN HEAT WATER SUPPLY TEMPERATURE PER BOILER RESET SCHEDULE.
3. HEATING WATER SUPPLY TEMPERATURE SETPOINT SHALL BE MAINTAINED THROUGH THE BAS. IF SYSTEM DEMAND IS GREATER THAN THE OUTPUT OF THE LEAD BOILER ON LOW FIRE, IT SHALL MODULATE TO HIGH FIRE AS REQUIRED TO SATISFY THE DEMAND. IF THE LEAD BOILER CANNOT SATISFY OR MAINTAIN SYSTEM DEMAND WITHIN 30 MINUTES (ADJUSTABLE), THEN THE LAG BOILER WILL BE ADDED TO THE LINE AT LOW FIRE AND SHALL MODULATE TO SATISFY DEMAND. AN ADJUSTABLE TIME DELAY SHALL BE ACTIVATED BEFORE THE LEAD BOILER REACHES HIGH FIRE TO ALLOW IT A REASONABLE LENGTH OF TIME TO SATISFY SYSTEM DEMAND ON ITS OWN BEFORE BRINGING ON THE LAG BOILER. AS THE SYSTEM DEMAND IS SATISFIED THE LEAD BOILER WILL MODULATE TO LOW FIRE POSITION AND SHUT OFF AS DEMAND DICTATES. EACH BOILER MUST RETURN TO THE LOW FIRE POSITION BEFORE SHUT OFF.
4. ON CALL FOR HEATING, THE LEAD BOILER IS ENABLED AND LEAD PRIMARY HEATING WATER PUMP IS ENABLED. AS FLOW IS PROVEN, THE LEAD BOILER SHALL FIRE UNDER ITS OWN CONTROLS AS NOTED ABOVE TO MAINTAIN HEATING WATER SUPPLY TEMPERATURE SETPOINT. THE LAG BOILER AND PUMP SHALL FOLLOW IN THE SAME MANNER AS SYSTEM DEMAND REQUIRES. IF THE LEAD BOILER OR PUMP STATUS DOES NOT CHANGE TO "ON" OR IF FLOW IS NOT PROVEN WITHIN 5 MINUTES (ADJUSTABLE), THE LAG BOILER OR PUMP SHALL BE ENABLED IMMEDIATELY AND ALARM GENERATED AT BAS.
5. PROVIDE AUTOMATIC ALTERNATION OF LEAD BOILER AND PUMP EVERY TUESDAY AT 9:00AM TO MAINTAIN EQUAL RUN TIME.
6. ALL HEATING SYSTEM PUMPS SHALL RUN FOR 15 MINUTES MINIMUM PER WEEK.

HEATING PLANT (TYP. OF 2)

CONTROL DIAGRAM



SECONDARY HEATING WATER LOOP TEMPERATURE RESET SCHEDULE	
SUPPLY HEATING WATER TEMPERATURE	OUTDOOR AIR TEMPERATURE
37.8°C	5.0°C
48.9°C	0°C
60.0°C	-22.0°C

SEQUENCE OF OPERATION

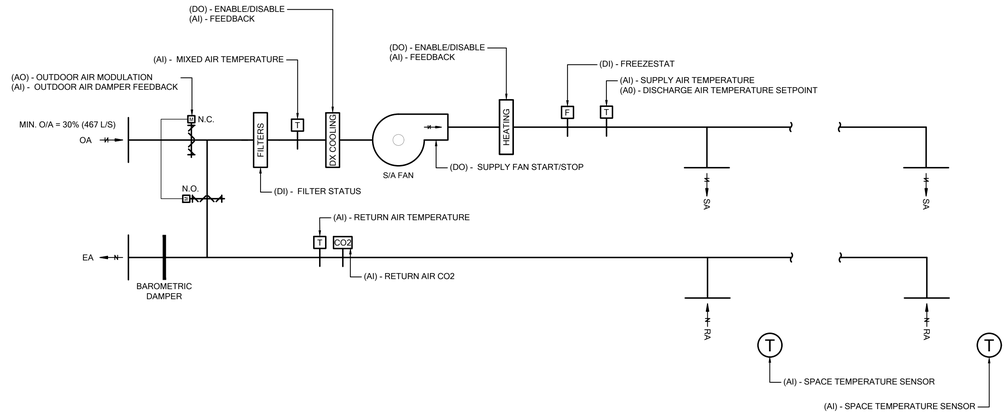
1. THE SYSTEM IS ENERGIZED WITH SECONDARY HEATING PUMPS ENABLED THROUGH THE BAS BETWEEN DECEMBER 15TH AND MARCH 31ST.
2. BETWEEN MARCH 31ST AND DECEMBER 14TH, THE SECONDARY HEATING PUMPS SHALL BE ENABLED ON IF THE OUTDOOR AIR TEMPERATURE IS LESS THAN 5°C (41°F - ADJUSTABLE) FOR 12 HOURS OR IF THERE IS A CALL FOR HEAT FOR THE PERIMETER HEATERS IN THE CAFETERIA. THE SECONDARY HEATING PUMPS REMAIN ENABLED UNTIL OUTDOOR AIR TEMPERATURE IS GREATER THAN 18°C (65°F - ADJUSTABLE)
3. VARIABLE SPEED SECONDARY HEATING PUMPS SHALL MODULATE PUMP SPEED TO MAINTAIN SETPOINT AT DIFFERENTIAL PRESSURE SENSOR (DP) IN ASSOCIATED SECONDARY LOOP.
4. THREE-WAY MIXING VALVE TO MODULATE TO MAINTAIN SECONDARY HEATING WATER SUPPLY TEMPERATURE PER RESET SCHEDULE. TEMPERATURE SETPOINT TO BE ADJUSTABLE.
5. BAS SHALL PROVIDE AUTOMATIC ALTERNATION OF DUTY PUMP EVERY TUESDAY AT 9:00AM TO MAINTAIN EQUAL RUN TIME. IN THE EVENT THE DUTY PUMP FAILS, THE STANDBY PUMP SHALL START IMMEDIATELY AND NOTIFICATION GENERATED. A 5 MINUTE TIME DELAY PRIOR TO RELEASE OF STANDBY PUMP UPON STATUS OF PUMP REINSTATEMENT.
6. ALL HEATING SYSTEM PUMPS SHALL RUN FOR 15 MINUTES MINIMUM PER WEEK.

NOTES

1. CONTROL POINTS ARE DEFINED FOR EACH VFD AS:
   - DO - ENABLE / DISABLE
   - AO - PUMP SPEED VARIABLE
   - AI - MOTOR CURRENT
   - AI - DRIVE POSITION
2. PRESSURE DIFFERENTIAL SENSORS (DP) LOCATED WITHIN THE MECHANICAL ROOM SHALL MODULATE THE VARIABLE SPEED OF HEATING WATER PUMP TO MAINTAIN REQUIRED FLOW. REFER TO FLOW DIAGRAMS FOR LOCATION OF SENSORS.
   - AS PRESSURE INCREASES THE PUMPS SHALL DECREASE IN SPEED
   - AS PRESSURE DECREASES THE PUMPS SHALL INCREASE IN SPEED

SECONDARY HEATING WATER LOOP (TYP. OF 2)

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. PROVIDE STATUS SIGNAL FROM O/A AND R/A DAMPERS.
3. 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.
4. OUTDOOR AIR DAMPER SHALL OPEN PRIOR TO FAN ACTIVATION.
5. IN THE EVENT OF POWER LOSS, OUTDOOR AIR DAMPER TO CLOSE BY MECHANICAL SPRING. RETURN AIR DAMPER SHALL OPEN BY WAY OF MECHANICAL SPRING.
6. DX COOLING IS LOCKED OUT WHEN AMBIENT TEMPERATURE IS BELOW 12.8°C (55°F).
7. THE COOLING COMPRESSORS WILL HAVE MINIMUM RUN TIME OF 5 MINUTES.
8. 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-6' (MAIN CORRIDOR)

CONTROL DIAGRAM

Halton District School Board

2050 Guelph Line
Burlington, Ontario

NELSON HIGH SCHOOL BOILER REPLACEMENT

4181 NEW STREET
Burlington, Ontario

Mechanical

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. 416.960.5444
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.

N N

Project North True North

No.	Revisions	Date
2.	ISSUED FOR CONSTRUCTION	03/19/2025
1.	ISSUED FOR PERMIT & PRICING	10/30/2024
No.	Issue	Date

Drawing Title:
CONTROLS DIAGRAMS 2 MECHANICAL

Scale:	N.T.S.	Date:	10/05/2024
Drawn by:	SL	Checked by:	VK
Job No.	23178A	Drawing No.	M5.1

SCHEDULE OF AIR HANDLING UNITS

TAG	MANUFACTURER	MODEL	LOCATION	AREA SERVED	WEIGHT (KG)	DIMENSIONS WIDTH (MM)	DIMENSIONS LENGTH (MM)	DIMENSIONS HEIGHT (MM)	CURB HEIGHT (MM)	DESIGN AIRFLOW (L/S)	OUTDOOR AIR (L/S)	OUTDOOR AIR %	AIR FILTRATION PRE-FILTER	AIR FILTRATION FINAL FILTER	DX COOLING EVAPORATOR CAPACITY (KW) TOTAL	DX COOLING EVAPORATOR CAPACITY (KW) SENSIBLE	DX COOLING EVAPORATOR EAT (°C) DB	DX COOLING EVAPORATOR EAT (°C) WB	DX COOLING EVAPORATOR LAT (°C) DB	DX COOLING EVAPORATOR LAT (°C) WB	DX COOLING OAT (°C) DB	DX COOLING APD (PA)	DX COOLING CONDENSATE DRAIN SIZE (MM)	DX COOLING NO. COOLING STAGES	HEATING FUEL TYPE	HEATING FUEL PRESSURE (IN. WC)	HEATING TURNDOWN	HEATING INPUT (KW)	HEATING OUTPUT (KW)	HEATING EAT (°C) DB	HEATING LAT (°C) DB	HEATING OAT (°C) DB	ENERGY RECOVERY PERFORMANCE (WINTER) AIRFLOW (L/S)	ENERGY RECOVERY PERFORMANCE (WINTER) AIR TEMP. EAT DB/WB (°C)	ENERGY RECOVERY PERFORMANCE (WINTER) AIR TEMP. LAT DB/WB (°C)	ENERGY RECOVERY PERFORMANCE (WINTER) APD (Pa)	ENERGY RECOVERY PERFORMANCE (WINTER) ENERGY RECOVERY (kW)	ENERGY RECOVERY PERFORMANCE (WINTER) EFF (%)
RTU-6	TRANE	YSC048GWRHB**D0E0A1	ROOF	MAIN CORRIDOR	348	1,125	1,775	1,039	350	708	118	17	50MM PLEATED MERV13	-	14.2	10.9	26.7	19.4	13.5	13.5	35.0	-	20	1	NAT. GAS	7" - 14" W.C.	2-STAGE HEATING	38.1	30.9	21.1	57.3	-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) AIRFLOW (L/S)	ENERGY RECOVERY PERFORMANCE (SUMMER) AIR TEMP. EAT DB/WB (°C)	ENERGY RECOVERY PERFORMANCE (SUMMER) AIR TEMP. LAT DB/WB (°C)	ENERGY RECOVERY PERFORMANCE (SUMMER) APD (Pa)	ENERGY RECOVERY PERFORMANCE (SUMMER) ENERGY RECOVERY (kW)	ENERGY RECOVERY PERFORMANCE (SUMMER) EFF (%)	SUPPLY FAN AIRFLOW (L/S)	SUPPLY FAN ESP (PA)	SUPPLY FAN TSP (PA)	SUPPLY FAN FAN RPM	SUPPLY FAN BHP	SUPPLY FAN MOTOR HP	SUPPLY FAN VFD	RETURN/EXHAUST FAN AIRFLOW (L/S)	RETURN/EXHAUST FAN ESP (PA)	RETURN/EXHAUST FAN TSP (PA)	RETURN/EXHAUST FAN FAN RPM	RETURN/EXHAUST FAN BHP	RETURN/EXHAUST FAN MOTOR HP	RETURN/EXHAUST FAN VFD	ELECTRICAL MCA	ELECTRICAL MOCP	ELECTRICAL POWER (V/PH/HZ)	EMERGENCY POWER	REMARKS
RTU-6	NO ENERGY RECOVERY						708	162	208	1,056	0.55	1.0	NO	NO RETURN FAN							10.0	15.0	575/3/60	NO	

SCHEDULE OF AIR SEPARATOR

TAG	SYSTEM	LOCATION	MANUFACTURER	MODEL	MAX FLOW RATE (L/S)	OUTLET SIZE (MM)	REMARKS
AS-1	PHASE 1 HEATING LOOP	SECOND BOILER RM.	TACO OR APPROVED EQUAL	AC06-150	60.3	150	
AS-2	PHASE 2 HEATING LOOP	MAIN BOILER RM.	TACO OR APPROVED EQUAL	AC06-150	60.3	150	

NOTES

1. REFER TO SPECIFICATIONS FOR ADDITIONAL DETAILS.

SCHEDULE OF EXPANSION TANKS

TAG	SYSTEM	LOCATION	MANUFACTURER	MODEL	TYPE	SIZE (DIA. x LENGTH)	VOLUME (L)	ACCEPTANCE VOLUME (L)	REMARKS
ET-1, ET-2	PHASE 1 HEATING LOOP	SECOND BOILER RM.	AMTROL OR APPROVED EQUAL	600L	BLADDER	762 x 1619	600	600	
ET-3, ET-4	PHASE 2 HEATING LOOP	MAIN BOILER RM.	AMTROL OR APPROVED EQUAL	600L	BLADDER	762 x 1619	600	600	
ET-5	DHW	MAIN BOILER RM.	WATTS OR APPROVED EQUAL	DETA-125	BLADDER	508 x 1270	227	151	ASME FOR POTABLE WATER

NOTES

1. REFER TO SPECIFICATIONS FOR ADDITIONAL DETAILS.

SCHEDULE OF DOMESTIC HOT WATER STORAGE TANKS

TAG	MANUFACTURER	MODEL	LOCATION	QUANTITY	STORAGE TANK DIMENSIONS (DIA. X H)	STORAGE TANK CAPACITY (L)	REMARKS
DHWT-1, DHWT-2	A.O. SMITH OR APPROVED EQUAL	TJV-400A	MAIN BOILER RM	2	1066Ø x 2667	1,635	-

NOTES

1. REFER TO SPECIFICATIONS FOR ADDITIONAL DETAILS.

SCHEDULE OF BOILERS

TAG	SYSTEM	LOCATION	MANUFACTURER	MODEL	SIZE (H x W x L) (MM)	WEIGHT (KG)	FUEL	GAS PRESSURE	INPUT (KW)	OUTPUT (KW)	FLOW RATE (L/S)	ΔT (°C)	HEAD LOSS (KPA)	TURN DOWN	VENT (MM)	RELIEF VALVE (PSI)	POWER V/Ø/HZ	REMARKS
B-1, B-2	PHASE 1 HEATING WATER LOOP	SECOND BOILER RM.	PATTERSON-KELLEY	ST-3000	1697 x 1121 x 1736	1,056	NAT. GAS	3.5"-14" W.C.	879	853	12.2	16.6	72.6	10:1	250	75	208/3/60	
B-3, B-4	PHASE 2 HEATING WATER LOOP	MAIN BOILER RM.	PATTERSON-KELLEY	ST-3000	1697 x 1121 x 1736	1,057	NAT. GAS	3.5"-14" W.C.	880	854	12.2	16.6	72.6	10:1	250	75	208/3/60	

NOTES

1. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS

2. PROVIDE AND INSTALL APPROPRIATE FLUE STACKS IN ACCORDANCE WITH LOCAL CODES AND AS PER MANUFACTURERS RECOMMENDATIONS

3. PROVIDE MANUFACTURERS RECOMMENDED NEUTRALIZER KIT

SCHEDULE OF PUMPS

TAG	SYSTEM	NO. REQ'D	OPERATION	LOCATION	MANUFACTURER	MODEL	SIZE	WEIGHT (KG)	FLOW (L/S)	HEAD (kPa)	RPM	MOTOR BHP	MOTOR HP	VFD	POWER (V/Ø/Hz)	EMERGENCY POWER	REMARKS
PH-1, PH-2	PHASE 1 PRIMARY HEATING WATER LOOP	2	DEDICATED	SECOND BOILER ROOM	TACO OR APPROVED EQUAL	KV-3007D	3x3x7.25	108	12.6	89.7	1760	2.35	3.0	NO	600/3/60	-	
PH-3, PH-4, PH-5	PHASE 1 SECONDARY HEATING WATER LOOP	3	DUTY/DUTY/STANDBY	SECOND BOILER ROOM	TACO OR APPROVED EQUAL	KS-3009D	3x3x9.5	170	12.6	209.2	1760	6.06	7.5	YES	600/3/60	-	
PH-6, PH-7	PHASE 2 PRIMARY HEATING WATER LOOP	2	DEDICATED	MAIN BOILER ROOM	TACO OR APPROVED EQUAL	KV-3007D	3x3x7.25	108	12.6	89.7	1760	2.35	3.0	NO	600/3/60	-	
PH-8, PH-9, PH-10	PHASE 2 SECONDARY HEATING WATER LOOP	3	DUTY/DUTY/STANDBY	MAIN BOILER ROOM	TACO OR APPROVED EQUAL	KS-3009D	3x3x9.5	170	12.6	209.2	1760	6.06	7.5	YES	600/3/60	-	
DHWP-1, DHWP-2	DOMESTIC HOT WATER CIRCULATORS	2	DEDICATED	MAIN BOILER ROOM	TACO OR APPROVED EQUAL	1911ECM	-	14.5	0.8	9.0	900	-	0.60	NO	208/1/60	-	STAINLESS STEEL PUMPS
DHWRP-1	DOMESTIC HOT WATER RECIRCULATION	1	DEDICATED	MAIN BOILER ROOM	TACO OR APPROVED EQUAL	1911ECM	-	14.5	0.8	55	900	-	0.60	NO	208/1/60	-	STAINLESS STEEL PUMPS

NOTES

1. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS

2. PUMP TO BE MOUNTED IN-LINE. SUPPORT PIPING AS REQUIRED.

SCHEDULE OF PLATE AND FRAME HEAT EXCHANGERS

TAG	MANUFACTURER	MODEL	LOCATION	CAPACITY (kW)	TOTAL HEAT TRANSFER AREA (M2)	HOT SIDE MEDIUM	HOT SIDE FLOW (L/S)	HOT SIDE EWT (°C)	HOT SIDE LWT (°C)	HOT SIDE P.D (KPA)	HOT SIDE CONNECTION SIZE (MM)	COLD SIDE MEDIUM	COLD SIDE FLOW (L/S)	COLD SIDE EWT (°C)	COLD SIDE LWT (°C)	COLD SIDE P.D (KPA)	COLD SIDE CONNECTION SIZE (MM)	REMARKS
DHWHX-1	TACO	TB35TM4DWX30	MAIN BOILER RM	146.5	2.6	HEATING WATER	3.2	65.6	54.4	26.6	50	DOMESTIC WATER	0.7	4.4	54.4	2.0	50	BRAZED COPPER STAINLESS STEEL
DHWHX-2	TACO	TB35TM4DWX30	MAIN BOILER RM	146.5	2.6	HEATING WATER	3.2	65.6	54.4	26.6	50	DOMESTIC WATER	0.7	4.4	54.4	2.0	50	BRAZED COPPER STAINLESS STEEL

NOTES

1. REFER TO SPECIFICATIONS FOR ADDITIONAL DETAILS.

Halton District School Board

2050 Guelph Line
Burlington, Ontario

NELSON HIGH SCHOOL BOILER REPLACEMENT

4181 NEW STREET
Burlington, Ontario

Mechanical

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.

N — Project North

N — True North

No.	Revisions	Date

No.	Issue	Date
2.	ISSUED FOR CONSTRUCTION	03/19/2025
1.	ISSUED FOR PERMIT & PRICING	10/30/2024

Drawing Title:
EQUIPMENT SCHEDULES 1 MECHANICAL

Scale: N.T.S. | Date: 10/05/2024

Drawn by: SL | Checked by: VK

Job No. 23178A

Drawing No. M6.0

SCHEDULE OF UNIT VENTILATORS

TAG	MANUFACTURER	MODEL	LOCATION	WEIGHT (KG)	DIMENSIONS DEPTH (MM)	DIMENSIONS LENGTH (MM)	DIMENSIONS HEIGHT (MM)	SUPPLY AIR AIFLOW (L/S)	FRESH AIR AIFLOW (L/S)	FILTRATION	DX COOLING TOTAL COOLING (KW)	DX COOLING SENSIBLE COOLING (KW)	DX COOLING APD (Pa)	DX COOLING EAT (°C) DB	DX COOLING EAT (°C) WB	DX COOLING LAT (°C) DB	DX COOLING LAT (°C) WB	DX COOLING OAT (°C)	HOT WATER HEATING MEDIUM	HOT WATER HEATING CAPACITY (KW)	HOT WATER HEATING WATER FLOW (L/S)	HOT WATER HEATING EWT (°C)	HOT WATER HEATING LWT (°C)	HOT WATER HEATING WPD (kPa)	HOT WATER HEATING EAT (°C)	HOT WATER HEATING LAT (°C)	HOT WATER HEATING OAT (°C)	FAN MOTOR HP	FAN ESP (Pa)	ELECTRICAL MCA (A)	ELECTRICAL MAX. BREAKER (A)	ELECTRICAL POWER (V/PH/HZ)	REMARKS
UV-1	SYSTEMAIR	HPA 36 1000 O B IQ	STAFF ROOM	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-9	TEMSPEC	VUD 1200D	CUSTODIAN RM	136	546	711	2,362	330	47	50MM MERV13	7.7	5.6	-	26.7	19.4	12.8	12.8	35.0	WATER	9.3	0.13	71.1	53.3	5.1	16.5	39.4	-20	1/2	211.7	7.0	15.0	208/3/60	UNIT C/W 300MM DEEP REAR PLENUM

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, BASE, AND WALL SLEEVE TO CONNECT UNIT TO LOUVRE.

SCHEDULE OF CONDENSING UNITS

TAG	MANUFACTURER	MODEL	LOCATION	SYSTEM SERVED	WEIGHT (KG)	DIMENSIONS WIDTH (MM)	DIMENSIONS LENGTH (MM)	DIMENSIONS HEIGHT (MM)	OUTDOOR FAN AIRFLOW (L/S)	OUTDOOR FAN MOTOR (HP)	OUTDOOR FAN RPM	CAPACITY TONNAGE	ELECTRICAL MCA	ELECTRICAL MOCP	ELECTRICAL POWER (V/PH/HZ)	REFRIGERANT TYPE	REFRIGERANT LIQUID LINE (MM)	REFRIGERANT SUCTION LINE (MM)	REMARKS
CU-3	KEEPRITE	N4A4S24AKANA	ROOF	UV-9	50	654	654	642	849	1/12	1100	2.0	15.1	25	208/1/60	R-410A	10	20	

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 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 EXTRUDED ALUMINUM FACE FRAME CURVED TO MATCH RADIUS OF DUCT	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	YES	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.

SCHEDULE OF GAS-FIRED DOMESTIC HOT WATER STORAGE HEATERS

TAG	MANUFACTURER	MODEL	LOCATION	SIZE DIA. x HEIGHT (mm)	STORAGE CAPACITY (L)	GAS INPUT (kW)	GAS PRESSURE ("WC)	RECOVERY (LPH @ 56°C RISE)	VENTS (mm)	POWER (V/PH/Hz)	REMARKS
DHWT-3	A.O. SMITH	CYCLONE MXi BTH-300A	MAIN BOILER ROOM	841Ø x 1924	451	88.0	4.8 TO 14.0	1321	150	120/1/60	

NOTES

1. 95% EFFICIENT WATER HEATER

SCHEDULE OF VIBRATION ISOLATION

EQUIPMENT	MANUFACTURER	TYPE OF BASE & THICKNESS (MM)	TYPE OF ISOLATION	STATIC DEFLECTION (MM)	REMARKS
CONDENSING UNIT	VIBRO ACOUSTICS OR APPROVED EQUAL	-	NSN	3.8	
VERTICAL UNIT VENTILATORS	VIBRO ACOUSTICS OR APPROVED EQUAL	-	NSN	3.8	
BOILERS	VIBRO ACOUSTICS OR APPROVED EQUAL	-	NSN	3.8	
VERTICAL IN-LINE PUMPS	VIBRO ACOUSTICS OR APPROVED EQUAL	-	SIPS + NSN	3.8	
IN-LINE FANS	VIBRO ACOUSTICS OR APPROVED EQUAL	-	SHR	25.0	

NOTES:

1. SPS - SEISMIC INLINE PUMP STANDS
2. CSR - RESTRAINED SPRING FLOOR MOUNT
3. NSN - NEOPRENE/STEEL/NEOPRENE PAD
4. SHR - SPRING HANGER

SCHEDULE OF MOTORIZED HEATERS

TAG	MANUFACTURER	MODEL	LOCATION	CAPACITY (kW)	AIRFLOW (L/S)	WATER (L/S)	EWT (°C)	DELTA T (°C)	MOTOR HP (AMPS)	MOTOR RPM	MOTOR VOLTAGE	REMARKS
UH-1	ENGINEERED AIR OR APPROVED EQUAL	H9	MAIN BOILER RM AND SECOND BOILER RM	29.3	1618	0.43	71.1	16.7	1/2 (9.9)	1050	120/1/60	

NOTES

1. REFER TO SPECIFICATIONS FOR ADDITIONAL DETAILS.

SCHEDULE OF FANS

TAG	MANUFACTURER	MODEL	LOCATION	AREA SERVED	WEIGHT (KG)	DESIGN AIRFLOW (L/S)	ESP (Pa)	RPM	INPUT WATTS	MOTOR HP	VFD	SOUND (SONES)	ELECTRICAL FLA (A)	ELECTRICAL POWER (V/Ø/Hz)	REMARKS
MRS-1	GREENHECK	CSP-A700	SECOND BOILER RM	SECOND BOILER RM	16.8	189	199.3	996	368W	-	NO	3.0	3.3	120/1/60	1-3
MRS-2	GREENHECK	CSP-A1050	MAIN BOILER RM	MAIN BOILER RM	28.1	387	199.3	1070	467W	-	NO	2.0	5.0	120/1/60	1-3

NOTES

1. UNIT TO BE COMPLETE WITH SPEED CONTROLLER FOR BALANCING.
2. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS
3. INLINE FANS SHALL BE PROVIDED WITH NSN TYPE MOUNTING HANGARS.

LOOSE MOTOR STARTER SCHEDULE

ITEM NO.	DESCRIPTION	MOTOR HP	FULL LOAD (AMPS)	COMBINATION STARTER & DISCONNECT: FUSED DISC. REQUIRED	FUSED DISC. FUSE	STARTER SIZE	STARTER TYPE	MODIFICATIONS: CONTROL TRANSFORMER (24V)	START/STOP PUSH BUTTON	H.O.A. SELECTOR SWITCH	PILOT LIGHT	AUX. CONT. NORMALLY OPEN	AUX. CONT. NORMALLY CLOSED	BRANCH FEEDERS: CABLE OR BUS	CONDUIT SIZE	WP DISCONNECT AT MOTOR	DISCONNECT AT MOTOR	DISCONNECT ONLY	F.A. SHUT DOWN	REMARKS
PH-1, PH-2	PHASE 1 PRIMARY HEATING WATER LOOP	3.0	3.9	NOTE 2	NOTE 2	1	FVNR	YES	-	YES	YES	2	2	NOTE 2	NOTE 2	-	YES	-	-	600 - 3Ø RATED
PH-6, PH-7	PHASE 2 PRIMARY HEATING WATER LOOP	3.0	3.9	NOTE 2	NOTE 2	1	FVNR	YES	-	YES	YES	2	2	NOTE 2	NOTE 2	-	YES	-	-	600 - 3Ø RATED
DHWP-1, DHWP-2	DOMESTIC HOT WATER CIRCULATORS	0.60	4.4	NOTE 2	NOTE 2	1	FVNR	YES	-	YES	YES	2	2	NOTE 2	NOTE 2	-	YES	-	-	208 - 1Ø RATED
MRS-1	SECOND BOILER RM SUPPLY FAN	368W	3.3	NOTE 2	NOTE 2	1	FVNR	YES	-	YES	YES	2	2	NOTE 2	NOTE 2	-	YES	-	-	120 - 1Ø RATED
MRS-2	MAIN BOILER RM SUPPLY FAN	467W	5.0	NOTE 2	NOTE 2	1	FVNR	YES	-	YES	YES	2	2	NOTE 2	NOTE 2	-	YES	-	-	120 - 1Ø RATED
UH-1	BOILER ROOM HEATERS	1/2	9.9	NOTE 2	NOTE 2	1	FVNR	YES	-	YES	YES	2	2	NOTE 2	NOTE 2	-	YES	-	-	120 - 1Ø RATED

NOTES

1. ALL STARTERS TO BE COMPLETE WITH EXTERNAL OVERLOAD RESET PUSH BUTTONS.
2. REFER TO ELECTRICAL FLOOR PLANS, PANEL SCHEDULES, AND SINGLE LINE DIAGRAM FOR ELECTRICAL REQUIREMENT SUCH AS FUSE SIZE, CIRCUIT, BRANCH FEEDER, BREAKER REQUIREMENT.

Halton District School Board

2050 Guelph Line
Burlington, Ontario

NELSON HIGH SCHOOL
BOILER REPLACEMENT

4181 NEW STREET
Burlington, Ontario

Mechanical

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.

N

N

Project North True North

No.	Revisions	Date

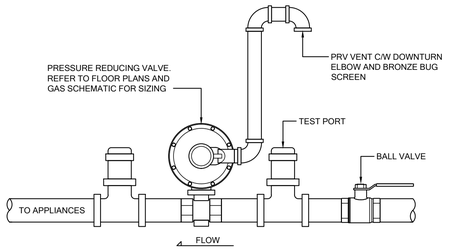
No.	Issue	Date
2.	ISSUED FOR CONSTRUCTION	03/19/2025
1.	ISSUED FOR PERMIT & PRICING	10/30/2024

Drawing Title:
EQUIPMENT SCHEDULES 2 MECHANICAL

Scale: N.T.S. Date: 10/05/2024

Drawn by: SL Checked by: VK

Job No. 23178A Drawing No. M6.1

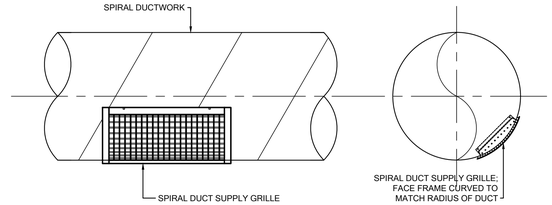


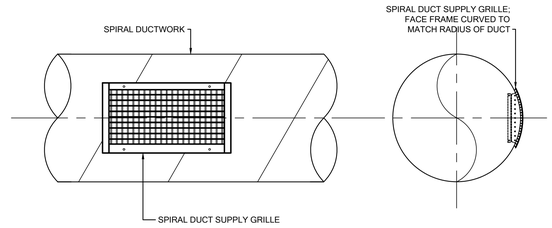
NOTES

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

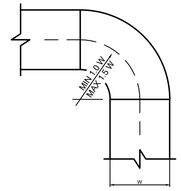




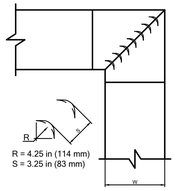
NOTE:
REFER TO FLOOR PLANS AND SCHEDULES FOR SIZES AND QUANTITIES OF GRILLES

DETAIL OF SPIRAL DUCT SUPPLY AIR GRILLE

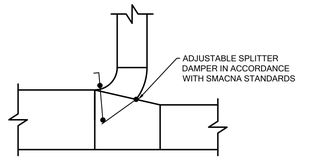
SCALE: NTS



SMOOTH ELBOW



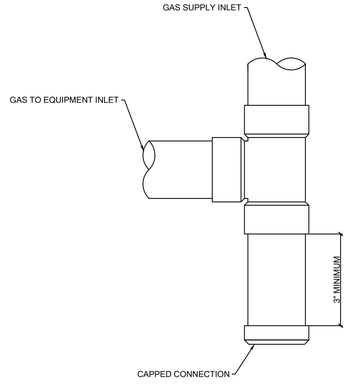
SMOOTH ELBOW



BRANCH DUCT TAKEOFF FROM MAIN

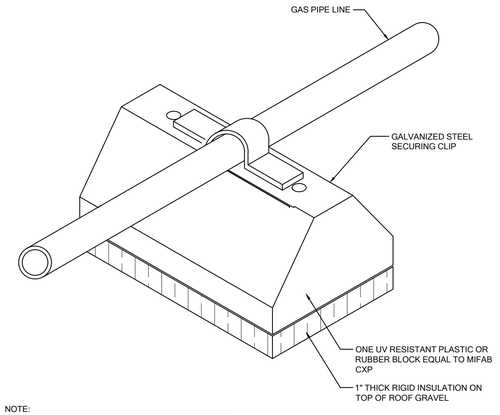
DETAIL OF TYPICAL DUCTWORK FITTINGS

SCALE: NTS



DETAIL OF GAS PIPING DRIP LEG

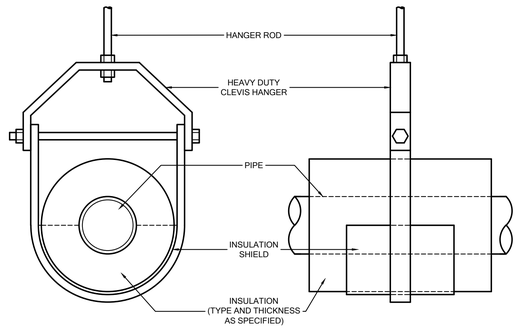
SCALE: NTS



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



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

Halton District School Board

2050 Guelph Line
Burlington, Ontario

NELSON HIGH SCHOOL BOILER REPLACEMENT

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. 416.960.5444
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.

N

Project North

N

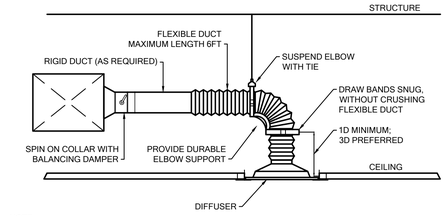
True North

No.	Revisions	Date
2.	ISSUED FOR CONSTRUCTION	03/19/2025
1.	ISSUED FOR PERMIT & PRICING	10/30/2024
No.	Issue	Date

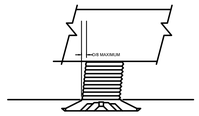
Drawing Title:

DETAILS 1 MECHANICAL

Scale:	N.T.S.	Date:	10/05/2024
Drawn by:	SL	Checked by:	VK
Job No.	23178A	Drawing No.	M7.0

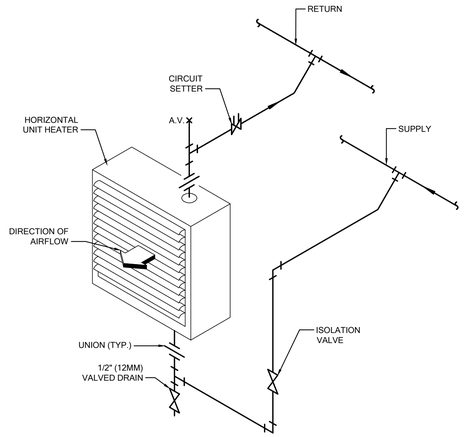


NOTE:
1. WHEN LENGTH OF STRAIGHT DUCT UPSTREAM OF DIFFUSER IS LESS THAN 3D, PROVIDE AN EQUALIZING GRID



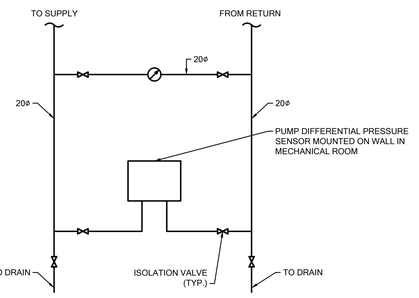
DETAIL OF FLEXIBLE DUCTWORK CONNECTION TO DIFFUSER

SCALE: NTS



DETAIL OF UNIT HEATER PIPING CONNECTIONS

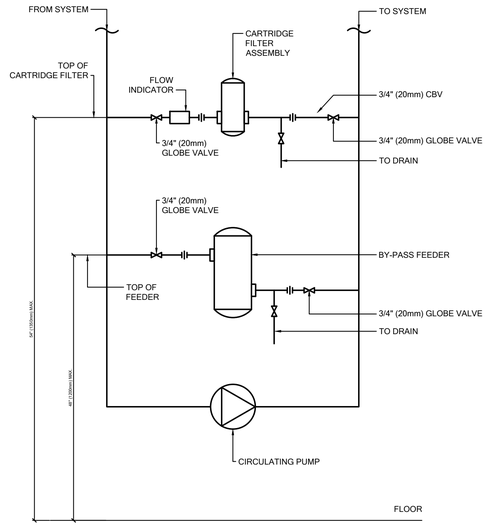
SCALE: NTS



NOTE:
1. SET PRESSURE DIFFERENTIAL SETPOINTS AS PROVIDED BY BALANCER ONCE BALANCING HAS BEEN COMPLETED.
2. PIPING CONNECTIONS TO SUPPLY & RETURN SHALL BE WITHIN MECHANICAL ROOM.

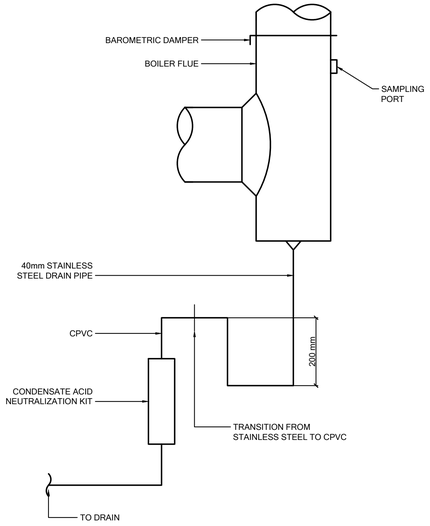
DETAIL OF VFD PUMP DIFFERENTIAL PRESSURE STATION

SCALE: NTS



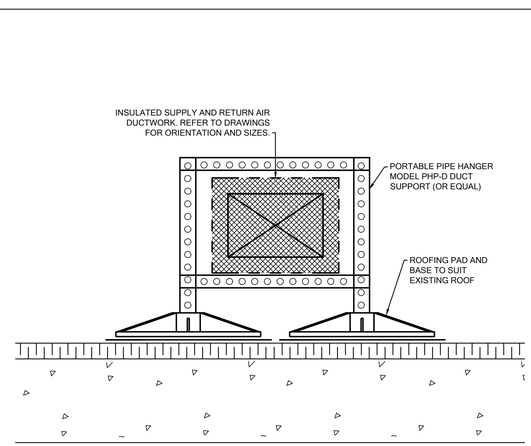
DETAIL OF BY-PASS FEEDER INSTALLATION

SCALE: NTS



DETAIL OF BOILER FLUE VENT DRAINAGE

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.

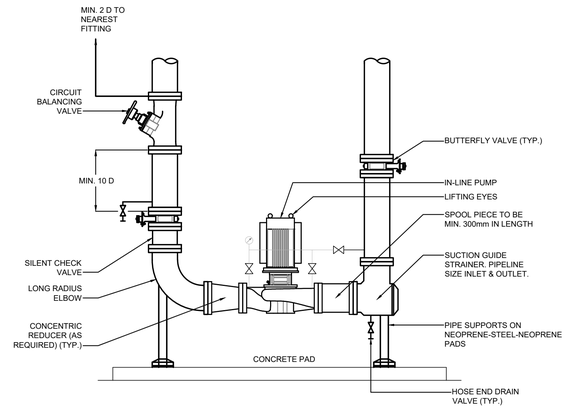
EXTERIOR DUCTWORK INSULATION:
- INSULATION: CERTAINTEED "CERTAPRO" RIGID BOARD INSULATION, MIMIMUM 1-1/2" THICK OR AS REQUIRED BY LOCAL CODES.
- INSULATION JACKET: VENTURE CLAD "1577CW NATURAL ALUMINUM" ZERO PERMEABILITY INSULATION CLADDING AND JACKETING MATERIAL C/W SELF ADHESIVE PROPERTIES

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

DETAIL OF ROOF DUCT SUPPORT

SCALE: NTS

NOTE:
1. PROVIDE LIFTING LUGS OR STEEL BEAM FOR REMOVAL OF ALL MOTORS 3.7KW (5HP) & LARGER.
2. PROVIDE FLEXIBLE PUMP CONNECTIONS FOR PUMPS AS PER SPECIFICATIONS.



NOTE: THIS CONFIGURATION IS FOR NEW PUMPS IN BOILER ROOM.

DETAIL OF VERTICAL INLINE FLOOR MOUNTED PUMP (BOILER RM)

SCALE: NTS

Halton District School Board

2050 Guelph Line
Burlington, Ontario

NELSON HIGH SCHOOL BOILER REPLACEMENT

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.

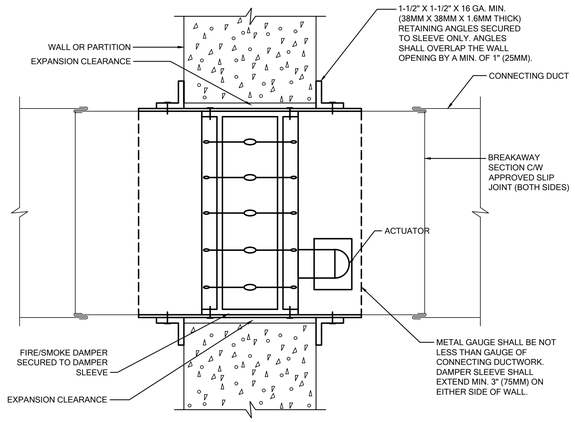
Project North | True North

No.	Revisions	Date
2.	ISSUED FOR CONSTRUCTION	03/19/2025
1.	ISSUED FOR PERMIT & PRICING	10/30/2024
No.	Issue	Date

Drawing Title:

DETAILS 2 MECHANICAL

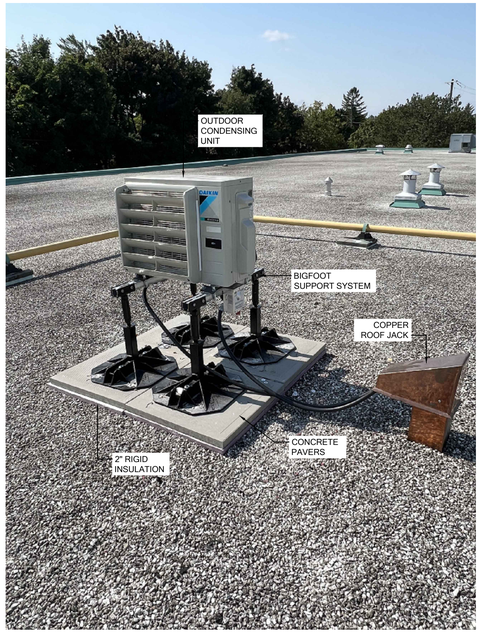
Scale:	N.T.S.	Date:	10/05/2024
Drawn by:	SL	Checked by:	VK
Job No.	23178A	Drawing No.	M7.1



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.

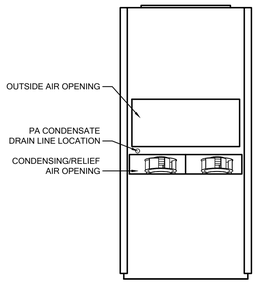
DETAIL OF COMBINATION FIRE SMOKE DAMPER INSTALLATION

SCALE: NTS

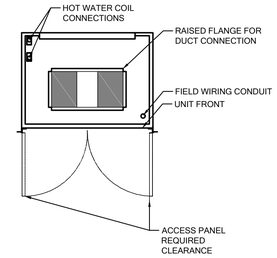


DETAIL OF OUTDOOR CONDENSING UNIT INSTALLATION

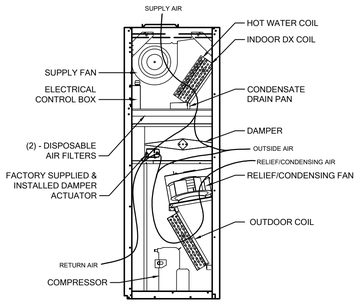
SCALE: NTS



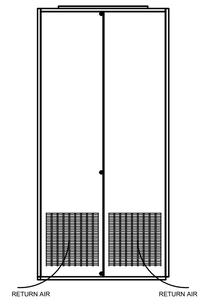
BACK VIEW



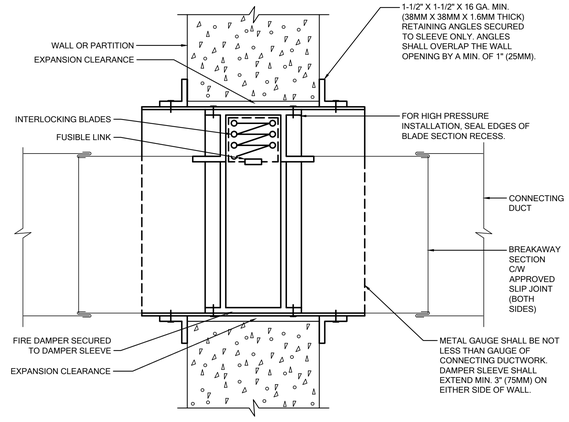
TOP VIEW



RIGHT SIDE VIEW



FRONT VIEW

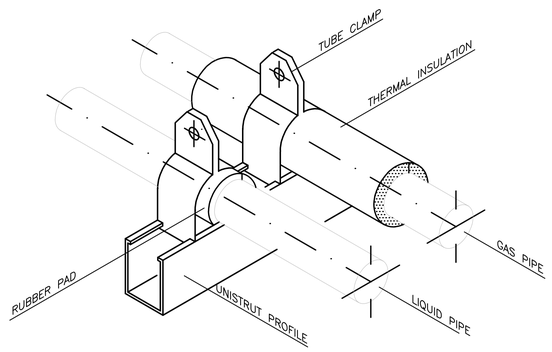


NOTES

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
3. PROVIDE DUCT ACCESS DOOR LOCATED TO ALLOW FOR MAINTENANCE OF THE FUSIBLE LINK DAMPER. DUCT ACCESS DOOR TO BE LABELED WITH "FLD" AND BE SUITABLY SIZED TO MAINTAIN THE DAMPER. WHERE SECTIONALIZED DAMPERS ARE PROVIDED IN LARGE DUCTS, PROVIDE A PLENUM TYPE ACCESS DOOR TO SUIT, C/W WITH REINFORCED DUCTS AS REQUIRED.

DETAIL OF VERTICAL MOUNTED FIRE DAMPER INSTALLATION

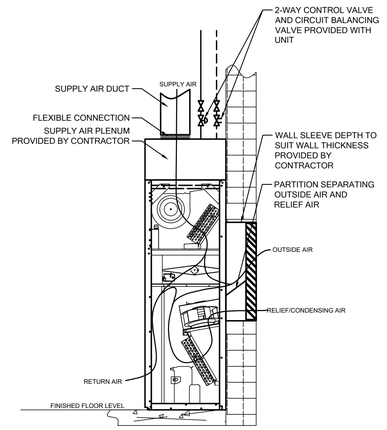
SCALE: NTS



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



RIGHT SIDE VIEW

DETAIL OF PACKAGED VERTICAL UNIT VENTILATOR (UV-1, UV-2, UV-4)

SCALE: NTS

Halton District School Board

2050 Guelph Line
Burlington, Ontario

NELSON HIGH SCHOOL BOILER REPLACEMENT

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. 416.960.5444
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.

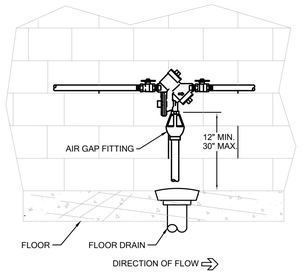
Project North | True North

No.	Revisions	Date
2.	ISSUED FOR CONSTRUCTION	03/19/2025
1.	ISSUED FOR PERMIT & PRICING	10/30/2024
No.	Issue	Date

Drawing Title:

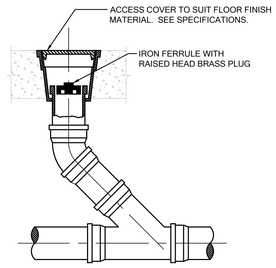
DETAILS 3 MECHANICAL

Scale:	N.T.S.	Date:	10/05/2024
Drawn by:	SL	Checked by:	VK
Job No.	23178A	Drawing No.	M7.2



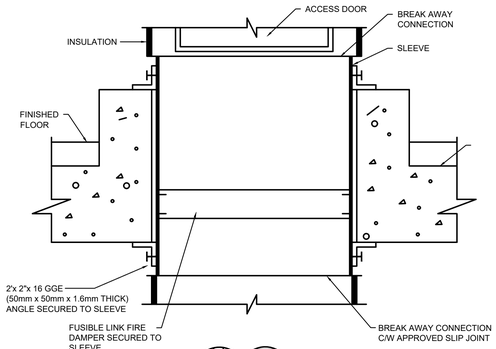
DETAIL OF RPZA BACKFLOW INSTALLATION

SCALE: NTS



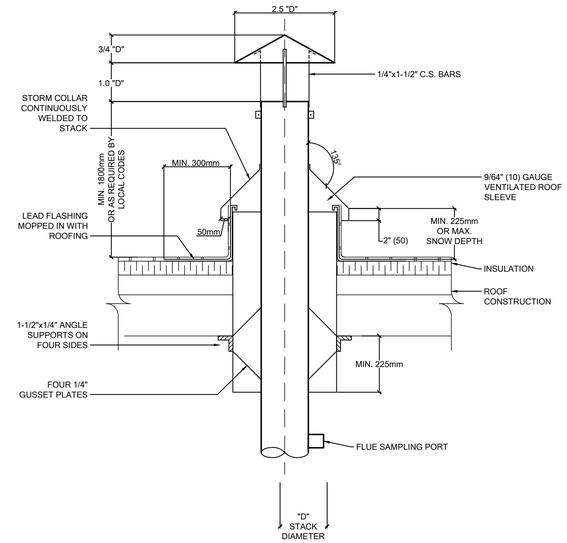
DETAIL OF DRAINAGE CLEANOUT

SCALE: NTS



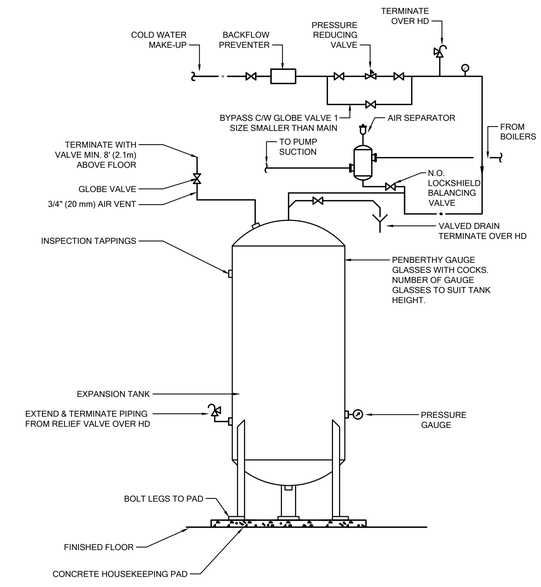
DETAIL OF PIPE & DUCT PENETRATIONS - WATERPROOF FLOOR

SCALE: NTS



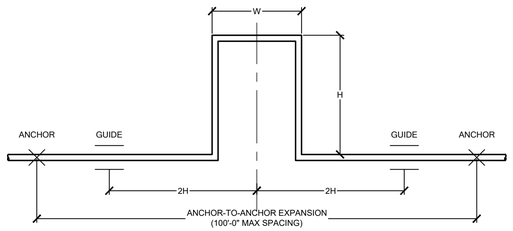
DETAIL OF BOILER FLUE THROUGH ROOF

SCALE: NTS



DETAIL OF VERTICAL EXPANSION TANK

SCALE: NTS



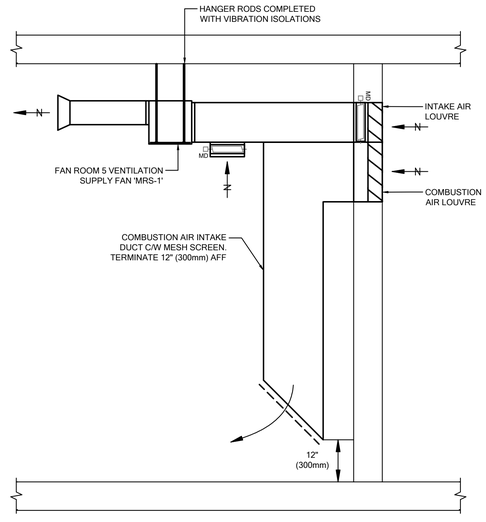
EXPANSION LOOP DIMENSIONS

PIPE SIZE	"W"	"H"	PIPE SIZE	"W"	"H"
1" (25mm)	3'-0"	6'-0"	12" (300mm)	9'-0"	18'-0"
2" (50mm)	4'-0"	8'-0"	14" (350mm)	9'-6"	19'-0"
3" (75mm)	5'-0"	10'-0"	16" (400mm)	10'-0"	20'-0"
4" (100mm)	5'-6"	11'-0"	18" (450mm)	11'-0"	22'-0"
6" (150mm)	6'-6"	13'-0"	20" (500mm)	11'-6"	23'-0"
8" (200mm)	7'-6"	15'-0"	24" (600mm)	12'-6"	25'-0"
10" (250mm)	8'-6"	17'-0"			

NOTES:
1. W = L/5, H = 2W, 2H + W = L, WHERE "L" IS THE TOTAL LENGTH OF THE LOOP, CALCULATED BASED ON ALLOWABLE EXPANSION IN PIPE.
2. ABOVE DIMENSIONS ARE BASED ON CARBON STEEL PIPE WITH ANCHOR TO ANCHOR DISTANCE OF 100 FT AND RATED UP TO 400°F.

DETAIL OF STEEL PIPE EXPANSION LOOP

SCALE: NTS



NOTE: PROVIDE SHEET METAL SUPPORTS AS PER SMACNA REQUIREMENTS

DETAIL OF FAN RM. #5 COMBUSTION AIR DUCT

SCALE: NTS

Halton District School Board

2050 Guelph Line
Burlington, Ontario

NELSON HIGH SCHOOL BOILER REPLACEMENT

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.

N N

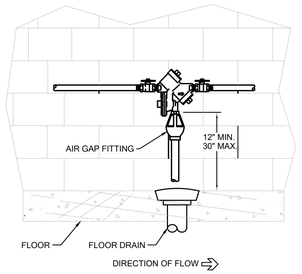
Project North True North

No.	Revisions	Date
2.	ISSUED FOR CONSTRUCTION	03/19/2025
1.	ISSUED FOR PERMIT & PRICING	10/30/2024
No.	Issue	Date

Drawing Title:

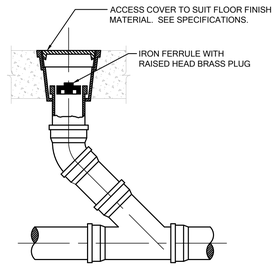
DETAILS 4 MECHANICAL

Scale:	N.T.S.	Date:	10/05/2024
Drawn by:	SL	Checked by:	VK
Job No.	23178A	Drawing No.	M7.3



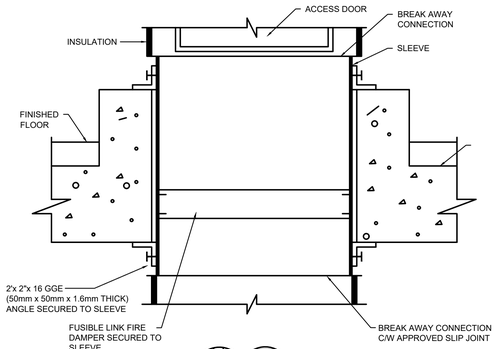
DETAIL OF RPZA BACKFLOW INSTALLATION

SCALE: NTS



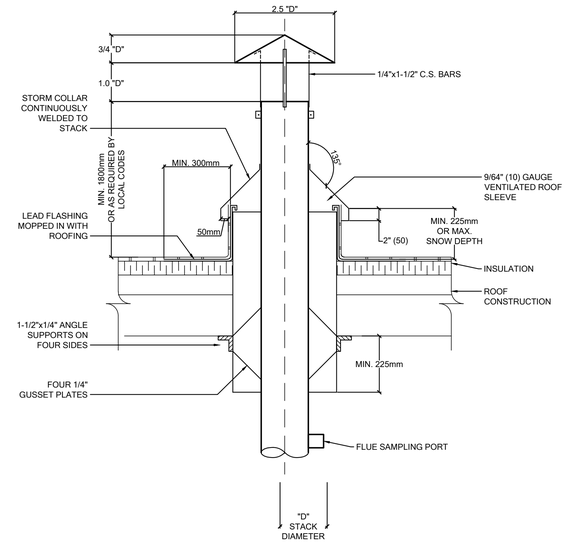
DETAIL OF DRAINAGE CLEANOUT

SCALE: NTS



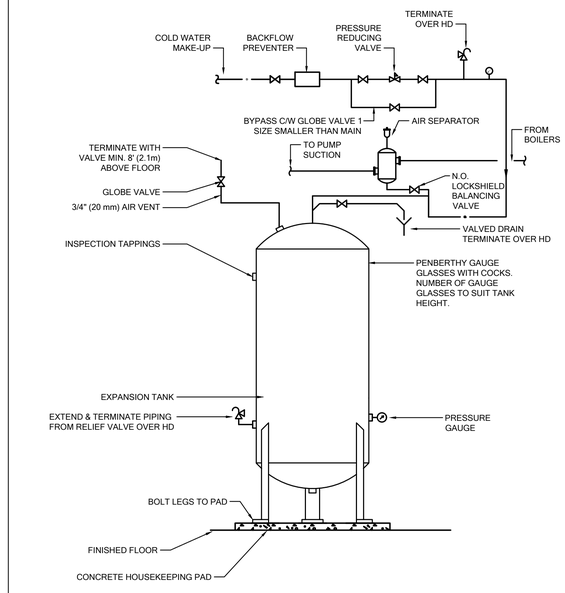
DETAIL OF PIPE & DUCT PENETRATIONS - WATERPROOF FLOOR

SCALE: NTS



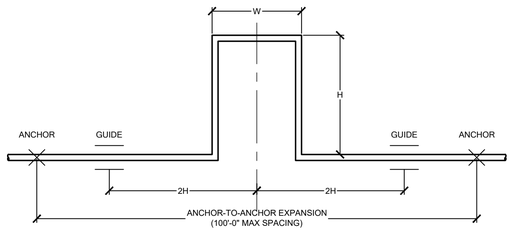
DETAIL OF BOILER FLUE THROUGH ROOF

SCALE: NTS



DETAIL OF VERTICAL EXPANSION TANK

SCALE: NTS



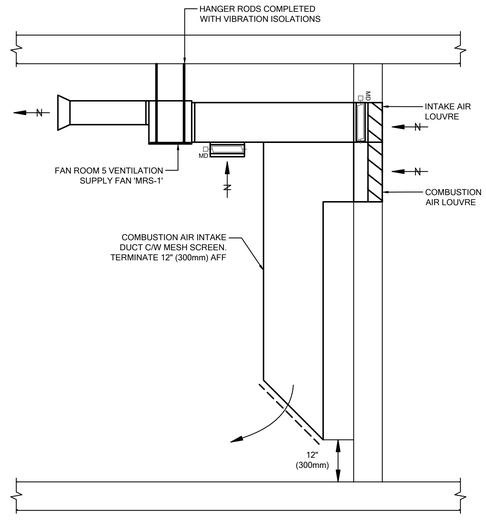
EXPANSION LOOP DIMENSIONS

PIPE SIZE	"W"	"H"	PIPE SIZE	"W"	"H"
1" (25mm)	3'-0"	6'-0"	12" (300mm)	9'-0"	18'-0"
2" (50mm)	4'-0"	8'-0"	14" (350mm)	9'-6"	19'-0"
3" (75mm)	5'-0"	10'-0"	16" (400mm)	10'-0"	20'-0"
4" (100mm)	5'-6"	11'-0"	18" (450mm)	11'-0"	22'-0"
6" (150mm)	6'-6"	13'-0"	20" (500mm)	11'-6"	23'-0"
8" (200mm)	7'-6"	15'-0"	24" (600mm)	12'-6"	25'-0"
10" (250mm)	8'-6"	17'-0"			

NOTES:
1. W = L/5, H = 2W, 2H + W = L, WHERE "L" IS THE TOTAL LENGTH OF THE LOOP, CALCULATED BASED ON ALLOWABLE EXPANSION IN PIPE.
2. ABOVE DIMENSIONS ARE BASED ON CARBON STEEL PIPE WITH ANCHOR TO ANCHOR DISTANCE OF 100 FT AND RATED UP TO 400°F.

DETAIL OF STEEL PIPE EXPANSION LOOP

SCALE: NTS



NOTE: PROVIDE SHEET METAL SUPPORTS AS PER SMACNA REQUIREMENTS

DETAIL OF FAN RM. #5 COMBUSTION AIR DUCT

SCALE: NTS

Halton District School Board

2050 Guelph Line
Burlington, Ontario

NELSON HIGH SCHOOL BOILER REPLACEMENT

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
2.	ISSUED FOR CONSTRUCTION	03/19/2025
1.	ISSUED FOR PERMIT & PRICING	10/30/2024
No.	Issue	Date

Drawing Title:

DETAILS 5 MECHANICAL

Scale:	N.T.S.	Date:	10/05/2024
Drawn by:	SL	Checked by:	VK
Job No.	23178A	Drawing No.	M7.4