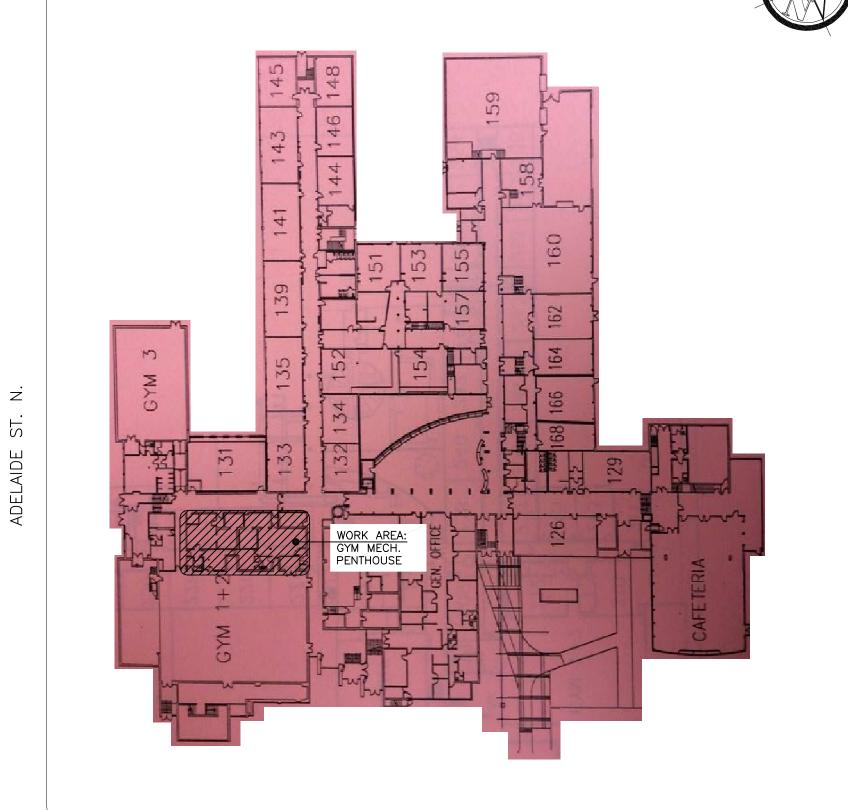
# TLDSB LINDSAY COLLEGIATE & VOCATIONAL INSTITUTE

260 KENT ST. LINDSAY ON, K9V 2Z5

ISSUED FOR TENDER
JUNE 2021



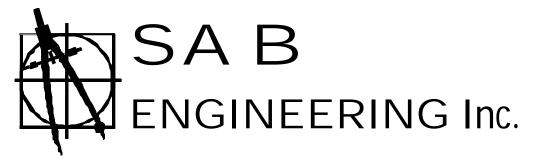




KENT ST. W.

## DRAWING LIST

NO.	DRAWING TITLE
	MECHANICAL
M-1	SYMBOLS LIST, EQUIPMENT SCHEDULES & DETAILS - MECHANICAL
M-2	GYM MECH. PENTHOUSE - EXISTING & DEMOLITION WORK - MECHANICAL
M-3	GYM MECH. PENTHOUSE - NEW WORK - MECHANICAL
M-4	ROOF PLAN - MECHANICAL
M-5	CONTROL DIAGRAMS
M-6	EQUIPMENT DETAILS
	ELECTRICAL
E-1	SYMBOL LIST, EQUIPMENT WIRING SCHEDULE & NOTES ELECTRICAL
E-2	GYM MECH. PENTHOUSE & PART OF ROOF PLAN — ELECTRICAL
E-3	ELECT. RM & SINGLE LINE DIAGRAM — ELECTRICAL



	SCHEDULE OF SUPPLY AIR HANDLING UNITS																			
TAG	SERVING	MANUFACTURER	MODEL	SUPPLY FAI	PERFORMANCE SPEED	MIN. OUTSIDE	CAPACITY	HEATING PER	`	(40% P-GLYCC	<u> </u>	TOTAL CAP.		OOLING PERFORMANCE		WEIGHT KG [LBS]	POWER SUPPLY (V/PH/Hz)	MCA (AMPS)	MOCP (AMPS)	REMARKS
AHU-GYM1	DOUBLE GYMNASIUM	ENGINEERED AIR	LM6/MV	(CFM) Pa [IN 5,500 375 [1	RPM TF	0 2250	kW [MBH] 108 [370]	EAT		FLUID FLOW (L/S) [GPM] 2.0 [31]	kPa [FT WC] 4.6 [1.6]		kW [MBH] 35 [119]	EDBT/EWBT	LDBT/LWBT 16.6/15.5 [62/60]	1780 [3950]	208/3/60	23.3	35	
	DOUBLE GYMNASIUM & STAGE		LM6/MV	6,000 375 [1	-		113 [385]			2.1 [34]		54 [182]	42 [142]		15.6/14.8 [60/59]		208/3/60	32.7	50	
MAU-LR	LOCKER ROOMS	ENGINEERED AIR	LM4/MV	3,000 375 [1	5] 1334 3.	3000	94 [319] -	-23 [-10]	31 [89]	1.0 [15]	6.3 [2.1]	-		N/A —	-	800 [1750]	208/3/60	17.2	25	

SCHEDULE OF DX COOLING COIL									
TAG	MANUFACTURER AIR FLOW TOTAL CAP. SENS. CAP. KW [MBH] SENS. CAP. KW [MBH] EDBT/EWBT LDBT/LWBT REMARKS						REMARKS		
CC-RTU6	ENGINEERED AIR	6,000	53 [180]	40 [136]	27/19 [80/67]	15/14 [59/58]	APPROX. SIZE 952H x 1225L x 6R8		
NOTE: R-	NOTE: R-410a, STAINLESS STEEL FRAMES AND TRAYS; C/W REFRIGERANT ACCESSORIES: FILTERS/DRYERS, SIGHT GLASSES, TX VALVES, SOLENOID VALVE, ISOLATION VALVES.								

	SCHEDULE OF UNIT HEATER										
TAG	MANUFACTURER	MODEL	HEATING CAPACITY . kW [MBH]	HEATING AGENT (P-GLYCOL)  SUPPLY RETURN FLOW  'C ['F] 'C ['F] L/S [GPM]		POWER SUPPLY  VOLTAGE MOTOR HP		DIMENSIONS (WxDxH) MM	WEIGHT KG [LBS]	REMARKS	
UH-1	ENGINEERED AIR	H5	18.6 [63.6]	82 [180]	71 [160]	0.40 [6.5]	120V/1PH	1/6	686x305x622	27 [59]	C/W THERMOSTAT

GLAVANIZED

DUCT WIDTH

TO SUIT INSULATED

U-CHANNEL

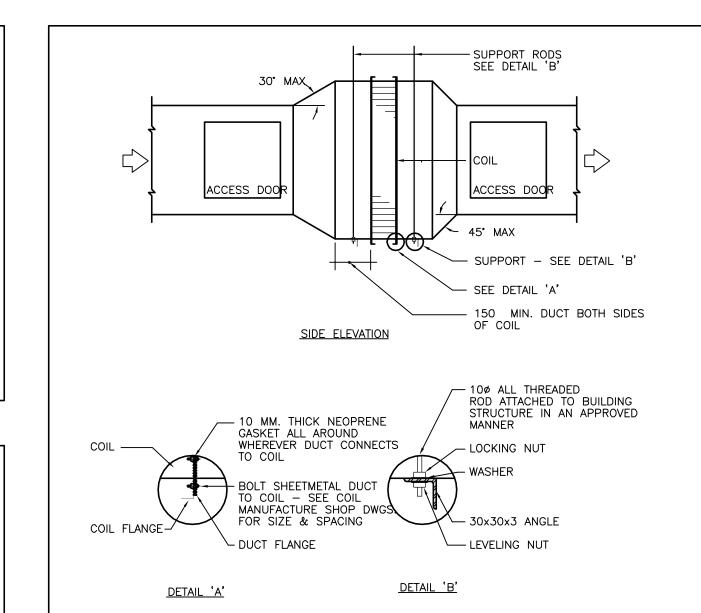
\_\_ ROOF PAD

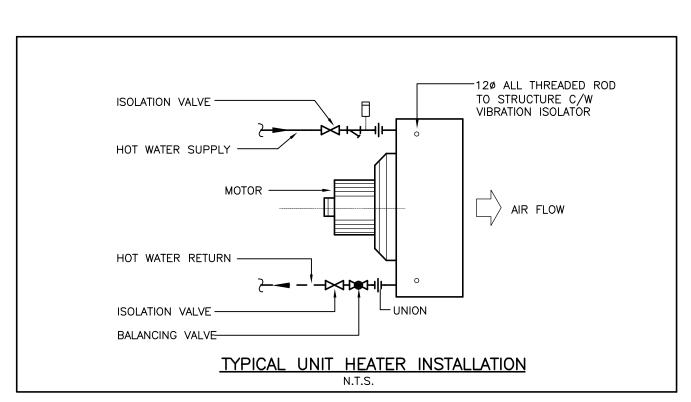
\_\_ ROOF PAD

GLAVANIZED

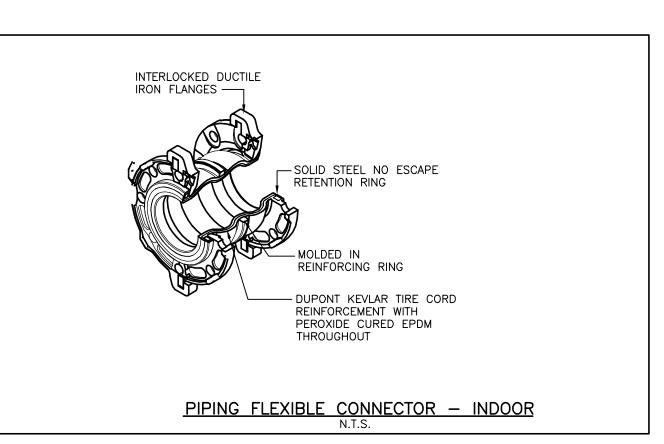
UNI-STRUT SUPPORT

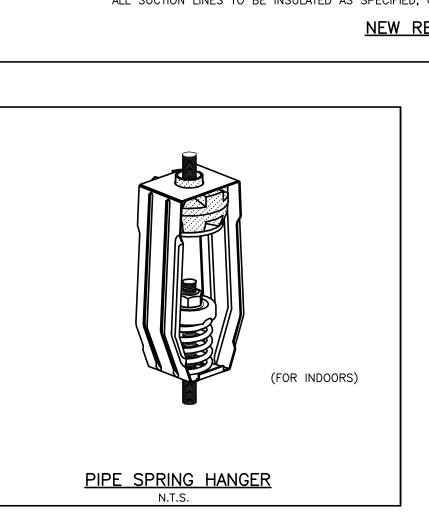
U-CHANNEL

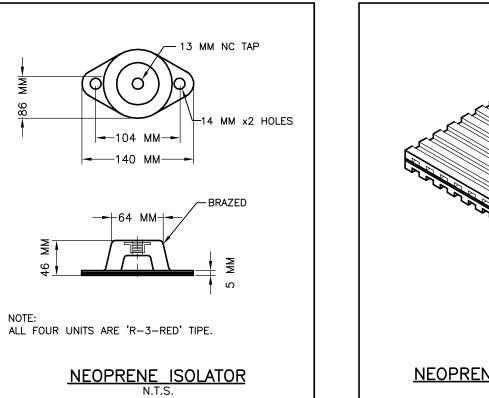


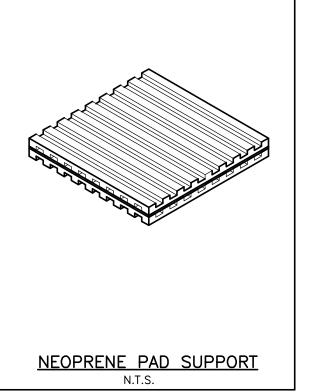


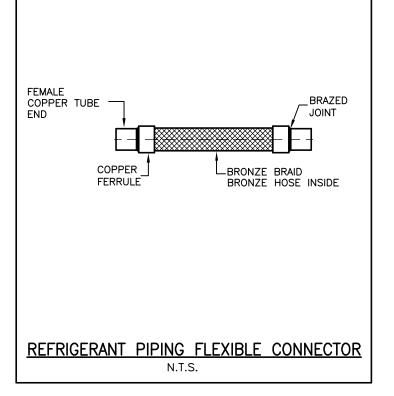
IN-DUCT COIL INSTALLATION DETAIL

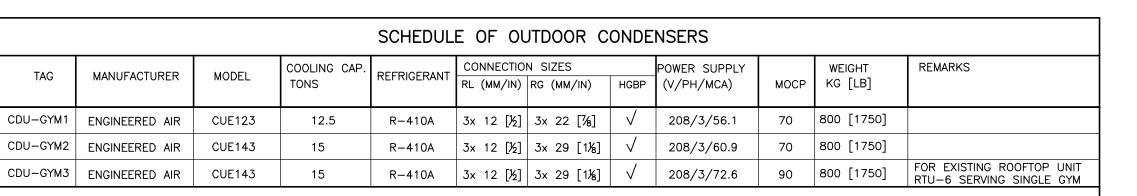


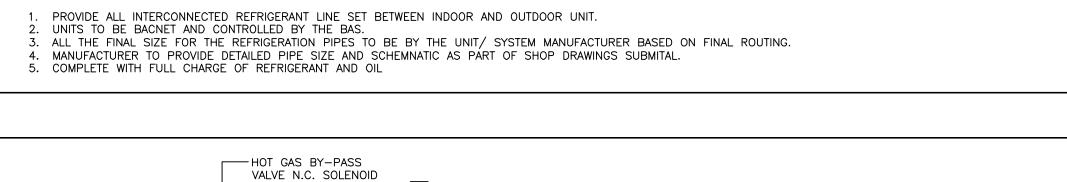


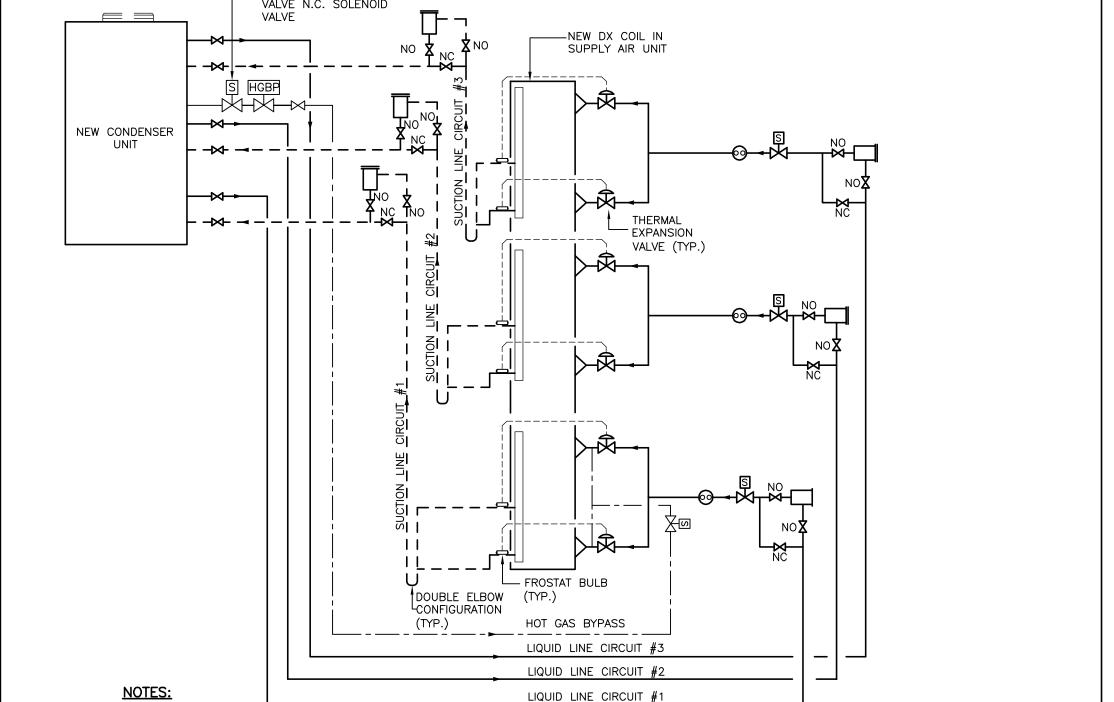












PROVIDE ALL NECESSARY CONTROL'S WIRING, REFRIGERANT ACCESSORIES AND POWER TO THE SOLENOID VALVES, INCLUDING STEP-DOWN TRANSFORMERS. INSTALL THE REFRIGERANT PIPING OIL TRAPS, REFRIGERANT DISTRIBUTORS, TX VALVES, SOLENOID VALVES, ISOLATION VALVES, SENSING BULBS, FILTERS/DRYERS, SIGHT GLASSES AND OTHER ACCESSORIES IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

PITCH THE LIQUID LINES SLIGHTLY (1:300) TOWARDS THE COILS, SO THAT THE REFRIGERANT DRAINS TOWARDS THE EVAPORATOR. PITCH THE SUCTION LINES SLIGHTLY (1:300) TOWARDS THE COILS, SO THAT ANY LIQUID ENTRAINED DRAINS BACK TOWARDS THE EVAPORATOR. SLIGHTLY PITCH (1:300) THE OUTLET LINE FROM THE SUCTION HEADER TOWARDS THE SUCTION RISER IN THE DIRECTION OF FLOW. USE TUBE DIAMETER THAT

MATCHES THE SUCTION-HEADER CONNECTION.

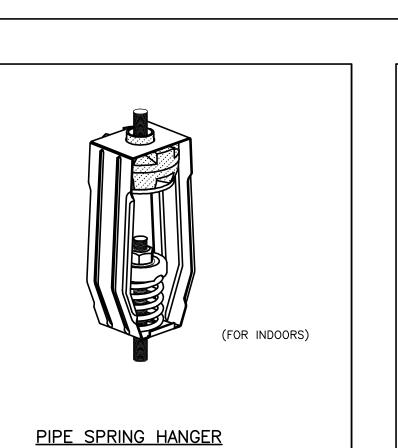
ARRANGE THE SUCTION LINE SO THAT THE REFRIGERANT GAS LEAVING THE COIL FLOWS DOWNWARDS PAST THE LOWEST SUCTION HEADER OUTLET, BEFORE TURNING UPWARDS. USE A DOUBLE ELBOW CONFIGURATION TO ISOLATE THE FROSTAT BULB FROM OTHER SUCTION HEADERS.

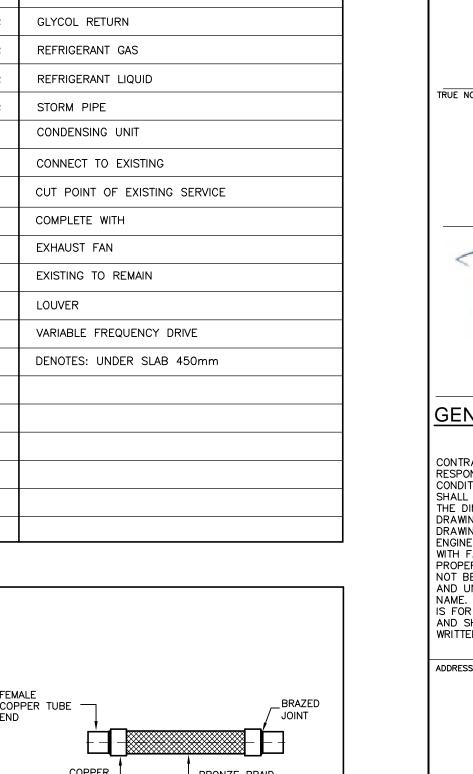
ENSURE THAT THE TOP OF THE SUCTION RISERS ARE ABOVE THE EVAPORATOR SECTIONS THEY SERVE.

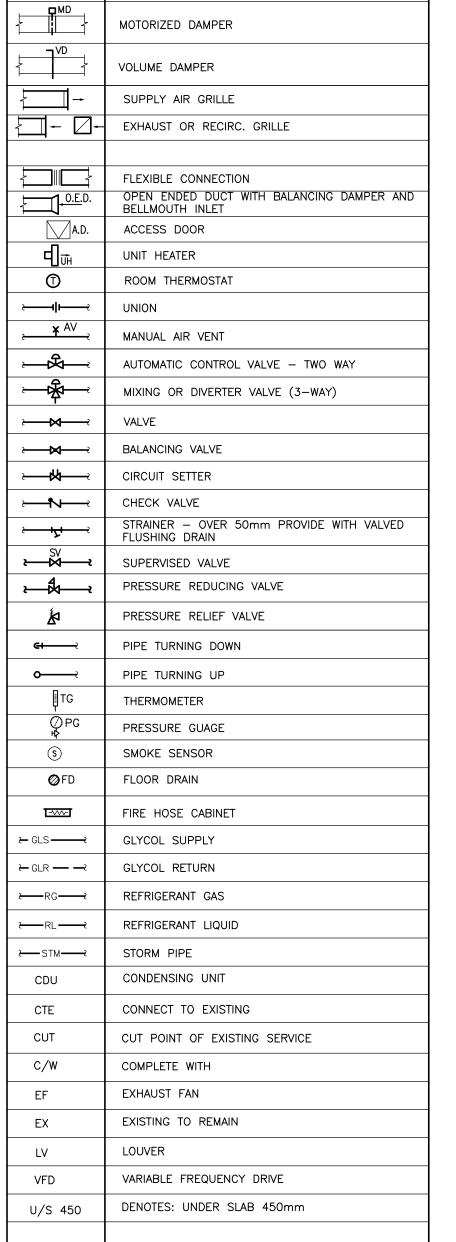
SIZE ALL REFRIGERANT LINES IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS, BASED ON THE FINAL ROUTING AND LENGTH OF PIPING. ALL LINES TO BE SUPPORTED AND INSULATED AS INDICATED IN THE SPECIFICATIONS AND ON DETAILS ON DWG.

ALL SUCTION LINES TO BE INSULATED AS SPECIFIED; ON THE ROOF, PROVIDE JACKETING AND SADDLE SUPPORTS AS SPECIFIED.

NEW REFRIGERANT PIPING SCHEMATIC DIAGRAMS







SYMBOLS LIST

SHEET METAL RISER UP - SUPPLY

SHEET METAL RISER DOWN - SUPPLY

SHEET METAL DUCT — FIRST FIGURE INDICATES

SHEET METAL RISER UP - RETURN AND EXHAUST

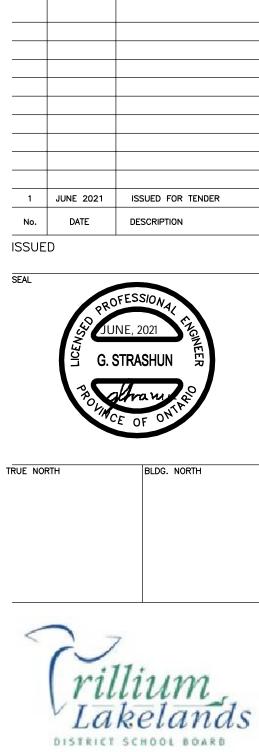
SHEET METAL RISER DOWN - RETURN AND EXHAUS

FUSIBLE LINK FIRE DAMPER WITH ACCESS DOOR

DESCRIPTION

IN DUCT

DIMENSION SHOWN



## GENERAL NOTES :

CONTRACTORS SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS AND CONDITIONS ON THE JOB AND THE ENGINEER SHALL BE INFORMED OF ANY VARIATIONS FROM THE DIMENSIONS AND CONDITIONS SHOWN ON THE DRAWINGS. DO NOT SCALE DRAWINGS. SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE PROCEEDING WITH FABRICATION. THIS DRAWING IS THE PROPERTY OF SAB ENGINEERING INC. AND SHALL NOT BE REPRODUCED WITHOUT THEIR PERMISSION AND UNLESS THE REPRODUCTION CARRIES THEIR NAME. ALL INFORMATION SHOWN ON THIS DRAWING IS FOR USE ON THE SPECIFIED PROJECT ONLY AND SHALL NOT BE USED OTHERWISE WITHOUT WRITTEN PERMISSION OF SAB ENGINEERING INC.

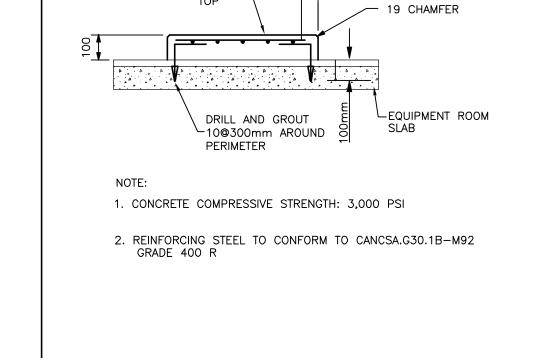
> Lindsay Collegiate Vocational Institute H.V.A.C. UPGRADES

260 Kent St W, Lindsay, ON K9V 2Z5

DRAWING TITLE

SYMBOLS LIST, EQUIPMENT SCHEDULES & DETAILS -MECHANICAL

JUNE 2021 DRAWN BY DWG. No. 2021-52



TYPICAL CONCRETE PAD DETAIL N.T.S.

BASE SIZE TO SUIT EQUIPMENT

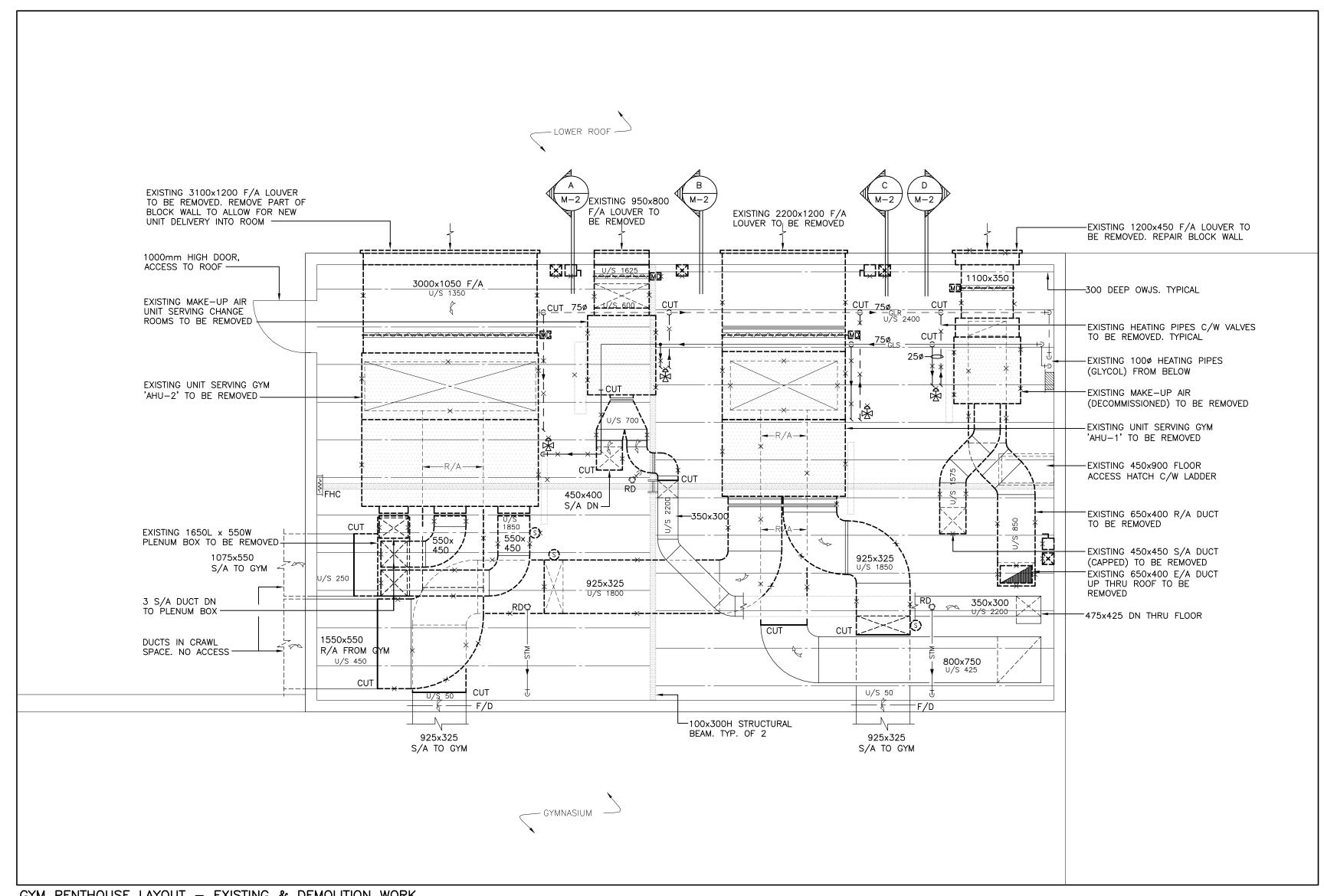
100mm

SEE PLAN FOR LOCATION

10@300mm

EA. WAY.

TOP



GYM PENTHOUSE LAYOUT — EXISTING & DEMOLITION WORK
SCALE: 1:50

#### **DEMOLITION WORK NOTES:**

THESE NOTES SHALL BE READ IN CONJUNCTION WITH, AND SHALL FORM AN INTEGRAL PART OF THE SPECIFICATIONS.

PRIOR TO COMMENCING THE DEMOLITION WORK, EXAMINE CAREFULLY THE ELEMENTS OF THE EXISTING SYSTEMS TO BE REMOVED. FOR REASONS OF CLARITY, THE DRAWINGS DO NOT SHOW ALL BUILDING SERVICES LOCATED IN THE MECHANICAL ROOM OR ALL STRUCTURAL ELEMENTS. ALL BUILDING SERVICES AND OTHER UTILITIES NOT AFFECTED BY THIS WORK SHALL REMAIN OPERATIONAL. ANY DAMAGE TO BUILDING SERVICES AND UTILITIES NOT AFFECTED BY THE WORK SHALL BE PROMPTLY REPAIRED BY THE CONTRACTOR, AT NO COST TO THE OWNER.

THE SIZES AND LOCATION OF PIPING, DUCTWORK, EQUIPMENT AND OTHER UTILITIES INDICATED ON THE DRAWINGS WERE SITE MEASURED OR TAKEN FROM EXISTING DRAWINGS. MAKE ANY CHANGES REQUIRED TO SUIT THE ACTUAL SITE CONDITIONS AT NO COST TO THE OWNER.

EXACT LOCATION OF CUT AND RECONNECT TO THE EXISTING DUCT TO BE TERMINATED ON SITE TO FACILITATE CONNECTION TO THE NEW EQUIPMENT.

LOCATION OF HEATING PIPING CUT-OFF AND RE-CONNECTION IS APPROXIMATE. EXACT LOCATION TO BE ESTABLISHED ON SITE.

REMOVE EXISTING SUPPLY AIR HANDLING UNITS (TOTAL OF 4) AS INDICATED.

REMOVE SECTIONS OF DUCTWORK AS REQUIRED FOR THE INSTALLATION OF THE NEW EQUIPMENT. REMOVE ALL SUPPORTS, VIBRATION ISOLATORS. DISCONNECT FROM POWER SUPPLY AND CONTROLS. REMOVE ALL ELECTRICAL POWER SUPPLY WIRING, CONDUITS AND DEVICES SUCH AS DISCONNECTS (REFER TO

ELECTRICAL DRAWINGS FOR FULL SCOPE); MAKE SAFE ALL REMAINING WIRING.

REMOVE ALL THE CONTROLS ASSOCIATED WITH THE EQUIPMENT TO BE
DEMOLISHED, INCLUDING SENSORS, DEVICES, (PRESSURE SENSORS, HUMIDITY
AND TEMPERATURE SENSORS). TUBING AND WIRING. REMOVE ALL EXISTING

CONTROL PANELS THAT ARE REDUNDANT.

CONTRACTOR IS RESPONSIBLE FOR DISPOSAL OF ALL REMOVED EQUIPMENT AND MATERIALS.

REMOVE ALL CONDUITS ATTACHED TO THE EQUIPMENT AND DUCTS TO BE

DEMOLISHED. REMOVE BACK TO SOURCE AND MAKE SAFE ALL REDUNDANT CONDUITS AND WIRING. REINSTATE THE ONES THAT ARE TO BE REUSED.

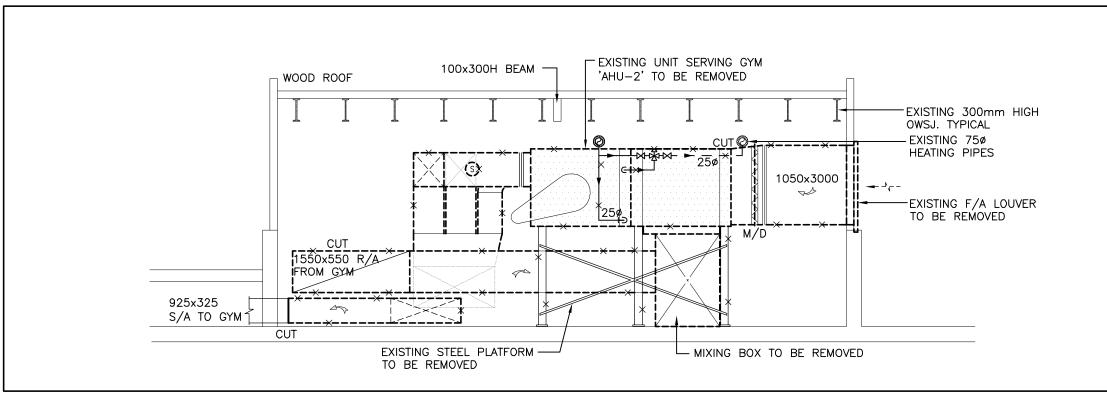
REMOVE PORTION OF THE HEATING WATER PIPES, VALVES AND ACCESSORIES AS

EU.

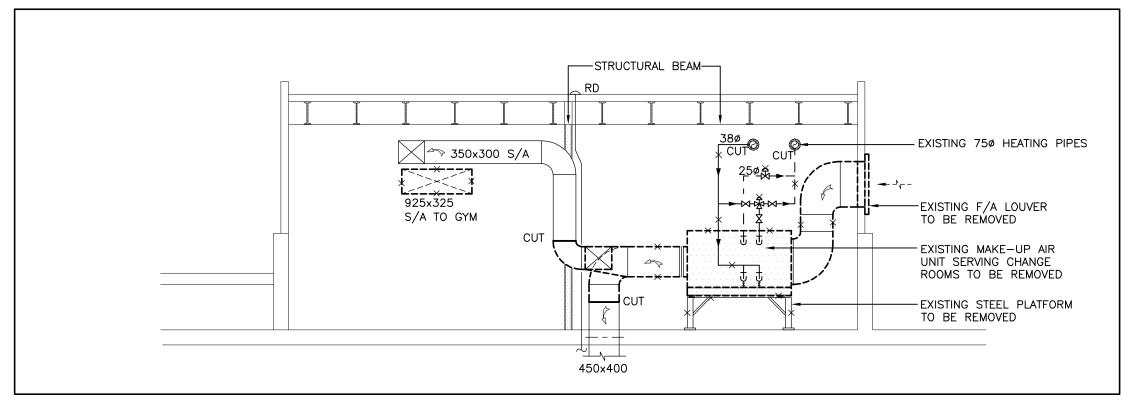
REMOVE THE EXISTING LOUVER AS INDICATED ON THE DRAWING, TO ALLOW FOR UNIT DEMOLITION AND INSERTION OF NEW UNIT. CUT EXISTING BLOCK WALLS AS REQUIRED. PROVIDE TEMPORARY SHORING TO AVOID WALL COLLAPSE.

REMOVE ALL REMAINING EXISTING EXTERNAL DUCT INSULATION AND RE-INSULATE AS PER SPECIFICATIONS. ALL EXISTING AND NEW DUCTS INSIDE THE MECH. ROOM SHALL BE INSULATED INCLUDING SUPPLY, RETURN, EXHAUST AND OUTSIDE AIR DUCTWORK AND PLENUMS.

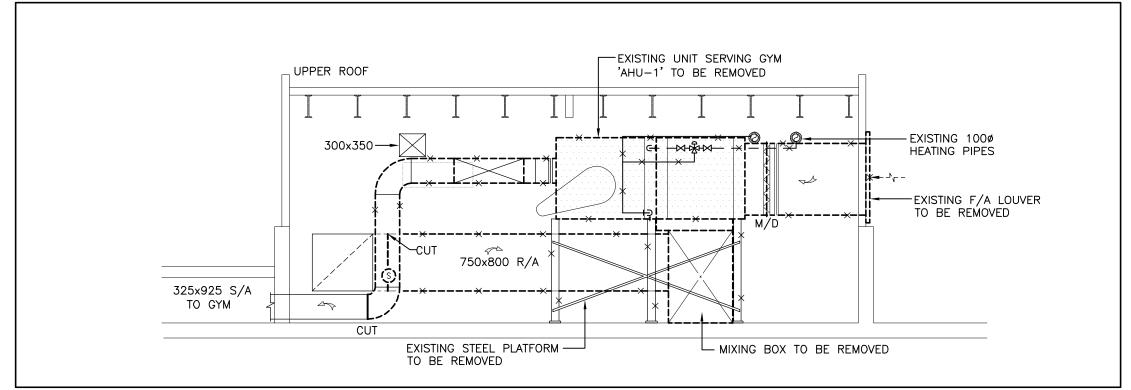
CONTRACTOR TO ALLOW FOR ADDITIONAL DUCT, PIPES DEMOLITION IN ORDER TO COMPLETE THE JOB AT NO ADDITIONAL COST TO OWNER.



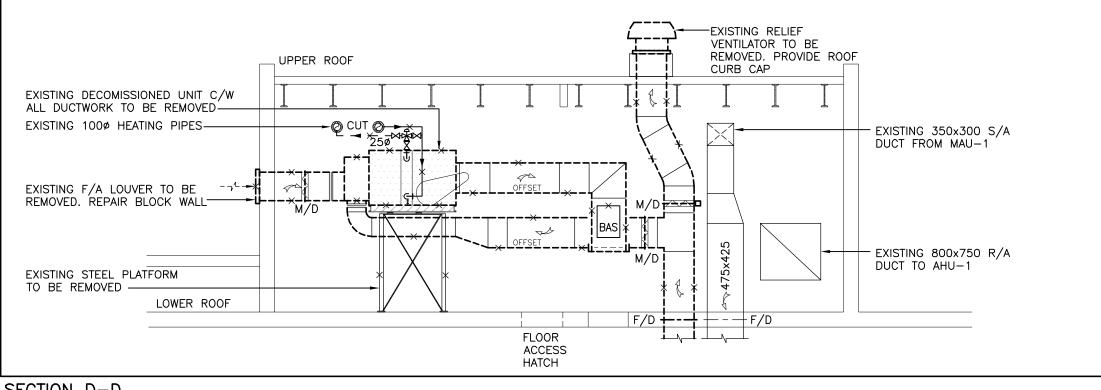
# SECTION A—A SCALE: 1:50



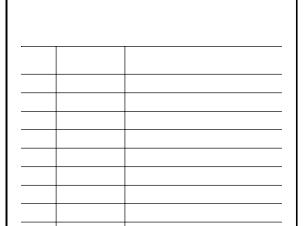
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#### SECTION C-C SCALE: 1:50

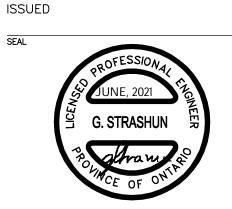


SECTION D-D
SCALE: 1:50



1 JUNE 2021 ISSUED FOR TENDER

No. DATE DESCRIPTION



TRUE NORTH BLDG. NORTH



#### **GENERAL NOTES:**

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Lindsay Collegiate
Vocational Institute

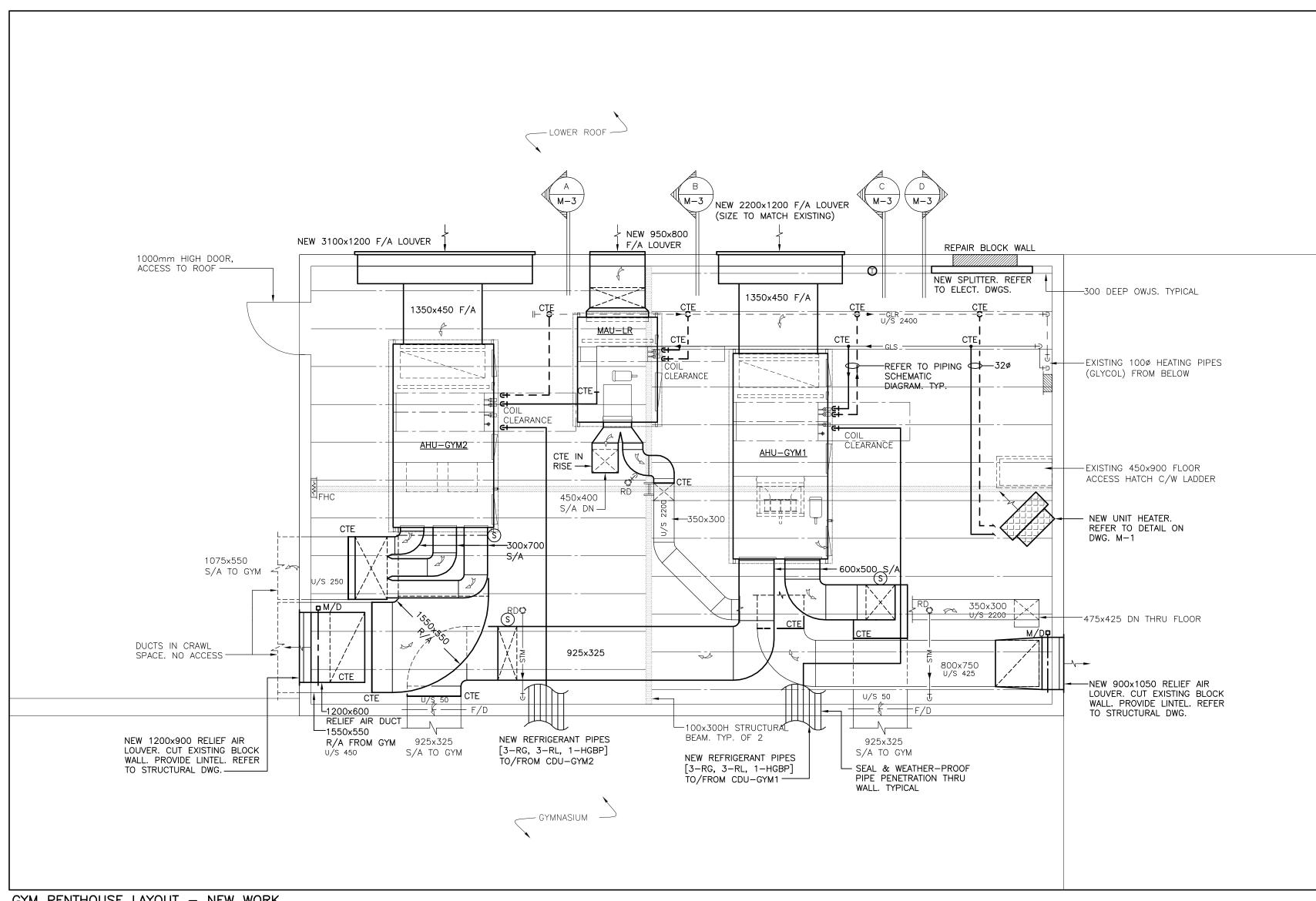
H.V.A.C. UPGRADES

260 Kent St W, Lindsay, ON K9V 2Z5

GYM MECH. PENTHOUSE — EXISTING & DEMOLITION WORK — MECHANICAL

DRAWING TITLE

DRAWN BY A.S.	DWG. No. M-2
JUNE 2021	AS SHOWN
DATE	SCALE



<u>GYM PENTHOUSE LAYOUT - NEW WORK</u>

### **NEW WORK NOTES:**

FOR REASONS OF CLARITY. THE ROOM LAYOUT DOES NOT SHOW ALL VALVES. FITTINGS AND SENSORS/GAUGES. FOR FULL EXTENT OF FITTINGS AND INSTRUMENTATION, REFER TO THE NEW PIPING SCHEMATIC AND CONTROL DIAGRAMS.

THE DRAWINGS DO NOT SHOW ALL STRUCTURAL ELEMENTS AND BUILDING SERVICES LOCATED IN THE MECHANICAL ROOM. ALL TEMPORARY INTERRUPTION OF SERVICES SHALL BE COORDINATED WITH THE OWNER.

SUPPLY AND INSTALL NEW SUPPLY AIR UNITS AND MAKE-UP AIR UNIT AS INDICATED ON THE DRAWING.

ALL THE UNITS TO BE SUPPLIED IN SECTIONS IN ORDER TO FIT INTO THE MECHANICAL ROOM.

DELIVER UNITS THRU FRESH AIR LOUVER & WALL OPENING. THE CONTRACTOR SHALL TEMPORARILY REMOVE ANY OTHER BUILDING SERVICES THAT INTERFERE WITH THE RE-ASSEMBLY OF THE EQUIPMENT. AT THE CONCLUSION OF THE RE-ASSEMBLY WORK, ALL BUILDING SERVICES AND EQUIPMENT SHALL BE REINSTATED. ALL TEMPORARY SERVICES REMOVAL AND RE-INSTALLATION ARE PART OF THE SCOPE OF WORK.

THE AIR HANDLING EQUIPMENT SHALL BE ASSEMBLED ON SITE UNDER THE SUPERVISION OF THE MANUFACTURER'S TRAINED TECHNICIANS. AT THE CONCLUSION OF THE RE-ASSEMBLY WORK, THE MANUFACTURER'S TECHNICIANS SHALL ISSUE A REPORT CONFIRMING THAT THE EQUIPMENT HAS BEEN ASSEMBLED IN ACCORDANCE WITH THE FACTORY

ALL INTERNAL WIRING OF THE NEW AIR HANDLING UNITS BY THE MANUFACTURER. ALL EXTERNAL WIRING BETWEEN THE UNIT AND EXTERNAL COMPONENTS BY THE CONTRACTOR.

RE-CONNECT THE NEW AIR HANDLING UNITS TO EXISTING SUPPLY, RETURN & OUTSIDE AIR DUCTWORK; MANUFACTURE SHEET METAL TRANSITIONS AS REQUIRED BY THE NEW SIZE AND LOCATION OF UNIT'S OPENINGS AND NEW DUCTWORK LOCATION. INSULATE ALL THE DUCTWORK IN THE MECHANICAL ROOM (EXISTING AND NEW).

CONNECT NEW CONDENSING UNIT TO NEW DX COOLING COIL BY REFRIGERANT LINES. COORDINATE ROUTING OF NEW REFRIGERANT LINES WITH EXISTING BUILDING SERVICES AND STRUCTURAL ELEMENTS. SEAL ALL OPENINGS THROUGH WALL AND FLOOR. FOR FULL EXTENT OF REFRIGERANT ACCESSORIES AND INSTRUMENTATION, REFER TO REFRIGERANT PIPING DIAGRAM. NEW REFRIGERANT SUCTION LINES TO BE FULLY INSULATED. PROVIDE NEW PIPE SUPPORTS FOR THE NEW REFRIGERANT PIPES. LOCATE THE SUPPORTS AS PER MANUFACTURER RECOMMENDATIONS. INDOORS, USE SUPPORTS AS SPECIFIED FOR COPPER PIPING, INCLUDING DIELECTRIC PROTECTION. DO NOT USE OTHER MECHANICAL/ELECTRICAL EQUIPMENT OR DUCTWORK TO SUPPORT REFRIGERANT PIPING OR CONDUITS.

MAKE REFRIGERANT CONNECTIONS TO OUTDOOR CONDENSER AND INDOOR COIL IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. USE VIBRATION ISOLATION FLEXIBLE CONNECTORS AS SPECIFIED. FINAL SIZE OF

REFRIGERANT PIPING: BY MANUFACTURER, TO SUIT LOCAL EQUIPMENT ARRANGEMENT.

CONNECT NEW EQUIPMENT TO POWER SOURCE (REFER TO ELECTRICAL DRAWINGS).

PROVIDE NEW 100mm HIGH CONCRETE PADS TO MATCH THE SIZE OF THE NEW UNITS.

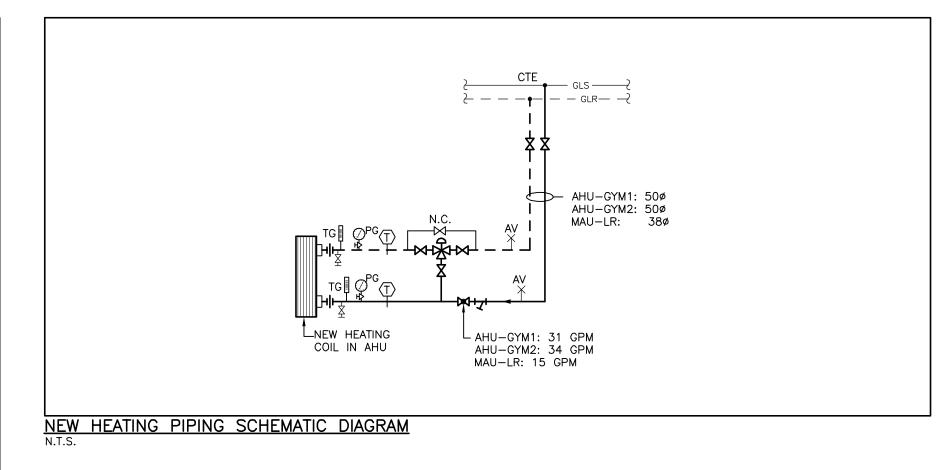
PROVIDE ALL REQUIRED SUPPORTS FOR THE NEW DUCTWORK AND PIPES, INCLUDING HANGERS, SPRING ISOLATORS, FLOOR OR WALL SUPPORTS.

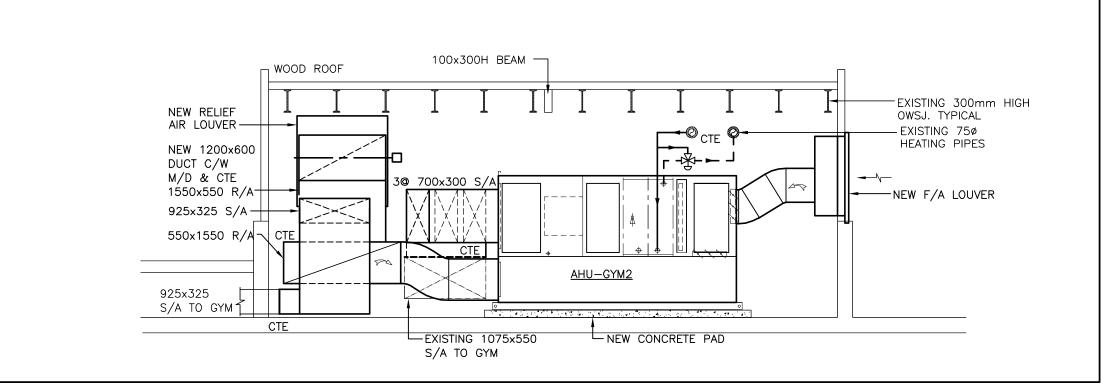
INSTALL NEW SENSORS AS SHOWN ON THE PIPING AND CONTROL SCHEMATIC. CONNECT TO THE EXISTING BAS.

INSTALL NEW SMOKE SENSORS IN THE DUCTS AND CONNECT TO POWER AND FIRE ALARM.

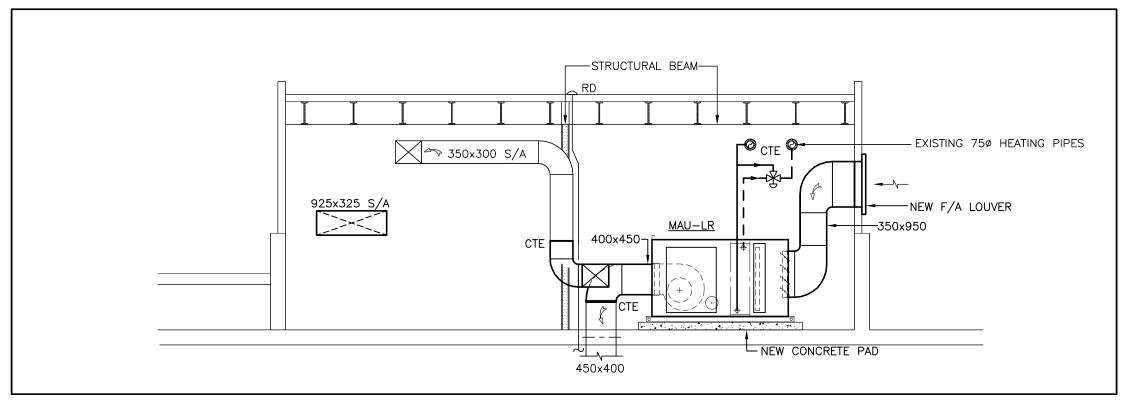
MAKE GOOD ALL SURFACES AFFECTED BY THE WORK.

ALLOW FOR DRAINAGE OF THE HEATING WATER SYSTEM (GLYCOL). FLUSH AND CLEAN THE ENTIRE SYSTEM.

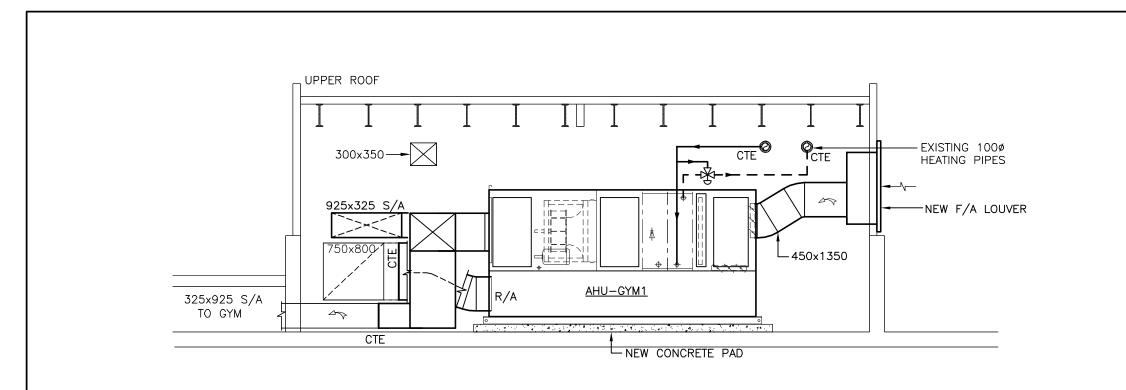




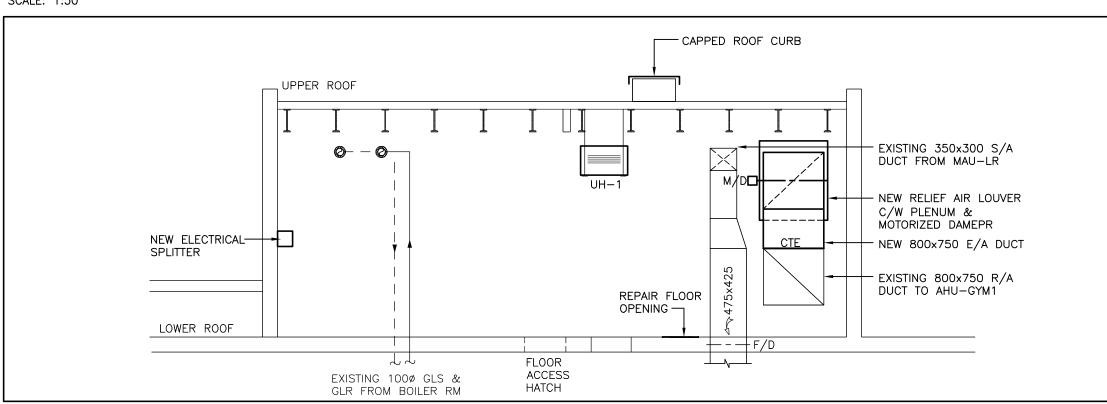
# SECTION A—A SCALE: 1:50



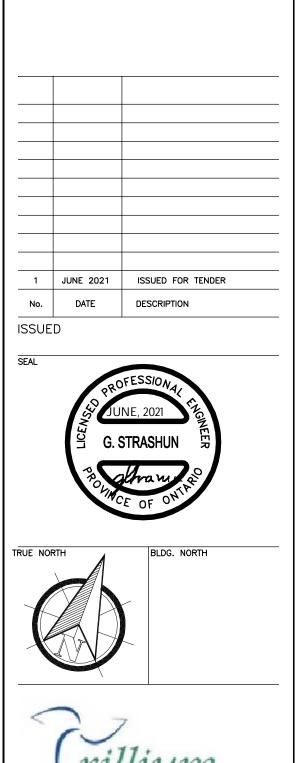
# SECTION B-B SCALE: 1:50



# SECTION C-C



SECTION D-D



DISTRICT SCHOOL BOARD

**GENERAL NOTES:** 

CONTRACTORS SHALL VERIFY AND BE

RESPONSIBLE FOR ALL DIMENSIONS AND

CONDITIONS ON THE JOB AND THE ENGINEER

DRAWINGS. DO NOT SCALE DRAWINGS. SHOP

DRAWINGS SHALL BE SUBMITTED TO THE

SHALL BE INFORMED OF ANY VARIATIONS FROM

THE DIMENSIONS AND CONDITIONS SHOWN ON THE

ENGINEER FOR APPROVAL BEFORE PROCEEDING WITH FABRICATION. THIS DRAWING IS THE PROPERTY OF SAB ENGINEERING INC. AND SHALL

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AND UNLESS THE REPRODUCTION CARRIES THEIR

IS FOR USE ON THE SPECIFIED PROJECT ONLY AND SHALL NOT BE USED OTHERWISE WITHOUT WRITTEN PERMISSION OF SAB ENGINEERING INC.

NAME. ALL INFORMATION SHOWN ON THIS DRAWING

Lindsay Collegiate

Vocational Institute

H.V.A.C. UPGRADES

260 Kent St W, Lindsay, ON K9V 2Z5

GYM MECH. PENTHOUSE -

NEW WORK - MECHANICAL

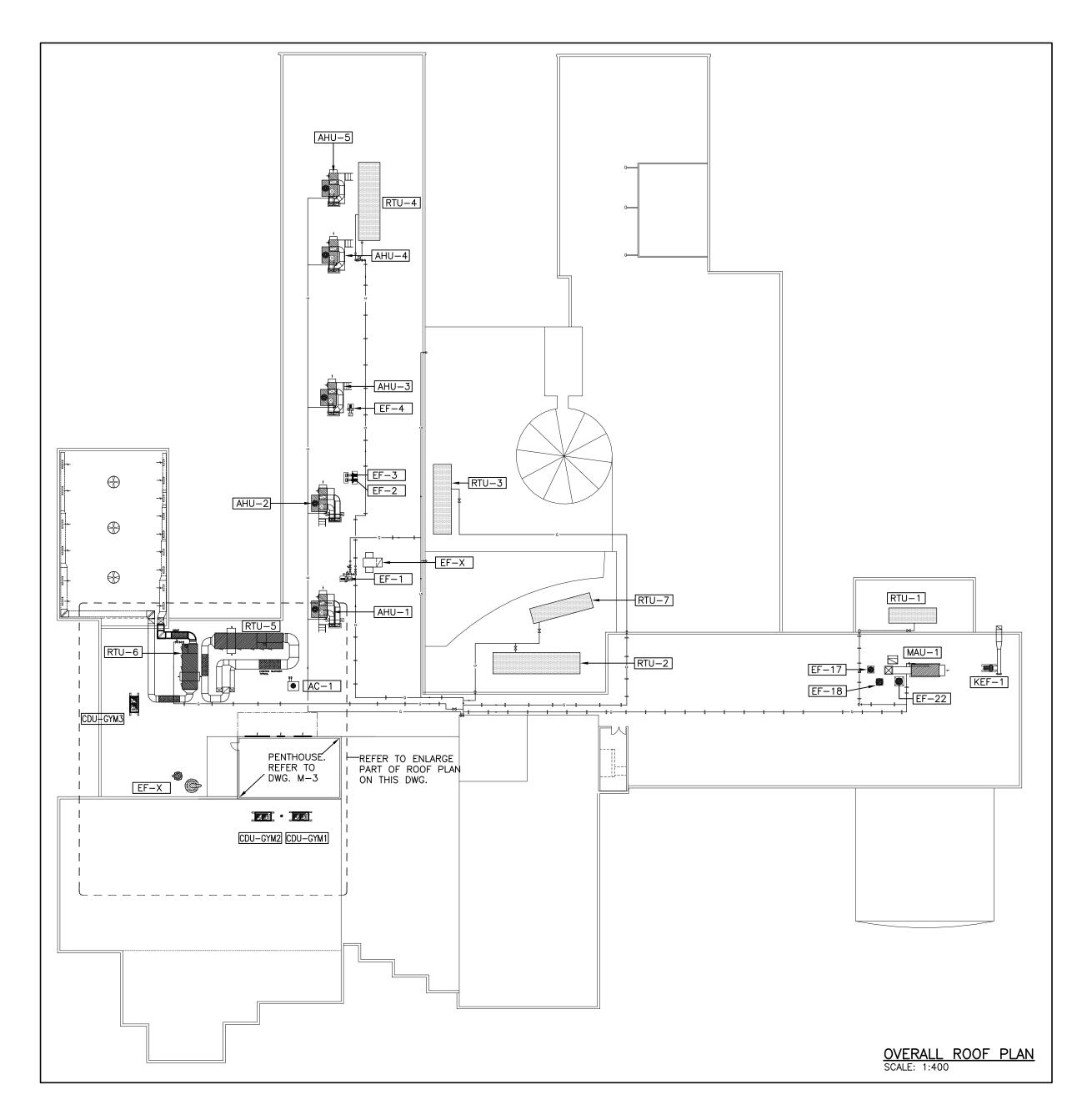
AS SHOWN

2021-52

DRAWING TITLE

JUNE 2021

DRAWN BY





INSTALL THE NEW CONDENSING UNITS ON NEW SLEEPERS FOR THE UNITS' SUPPORT. PROVIDE ALL REQUIRED ROOFING AND FLASHING FOR THE NEW SLEEPERS.

COORDINATE WITH STRUCTURAL DRAWINGS FOR ANY REQUIRED REINFORCEMENT OF THE ROOF STRUCTURE AND EXACT LOCATION OF THE CONDENSERS.

ATTACH SECURELY NEW CONDENSERS TO SLEEPERS VIA NEOPRENE ISOLATORS, BOLTED TO THE SLEEPERS.

INSTALL THE NEW DX COOLING COIL IN OUTDOOR SUPPLY AIR DUCT FROM ROOFTOP UNIT 'RTU-6' AND REPAIR DUCTWORK TO MAKE IT AIR-LEAK PROOF. CUT EXISTING S/A DUCT AS REQUIRED FOR PROPER COIL INSTALLATION. PROVIDE CONDENSATE DRAIN WITH A MIN. 500 TRAP AND DISCHARGE TO ROOF.

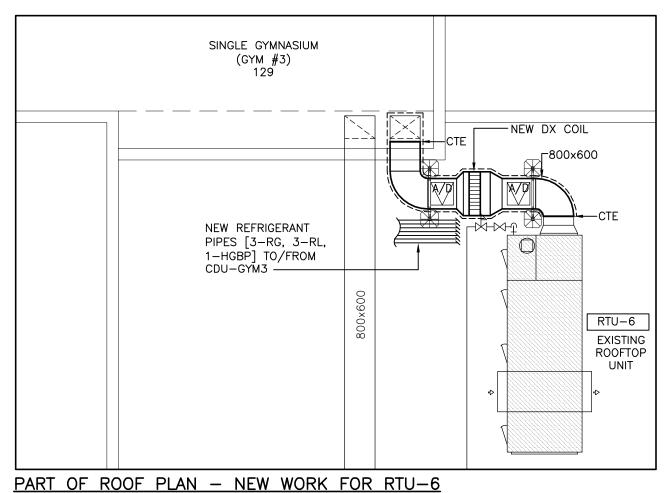
CONNECT NEW CONDENSING UNITS TO NEW DX COOLING COIL BY REFRIGERANT LINES. COORDINATE ROUTING OF NEW REFRIGERANT LINES WITH EXISTING HEATING LINES AND OTHER UTILITIES. REFER TO REFRIGERANT PIPING SCHEMATIC. SEAL ALL OPENINGS THROUGH THE WALL. FOR FULL EXTENT OF REFRIGERANT ACCESSORIES AND INSTRUMENTATION, REFER TO PIPING DIAGRAM. SUCTION LINE TO BE FULLY INSULATED INDOORS AND OUTDOORS. PROVIDE NEW ROOF SUPPORTS FOR THE NEW REFRIGERANT AND ELECTRICAL CONDUITS (INCLUDING BAS). INDOORS, USE SUPPORTS AS SPECIFIED FOR COPPER PIPING, INCLUDING DIELECTRIC PROTECTION. DO NOT USE OTHER MECHANICAL/ELECTRICAL EQUIPMENT OR DUCTWORK TO SUPPORT REFRIGERANT PIPING OR CONDUITS.

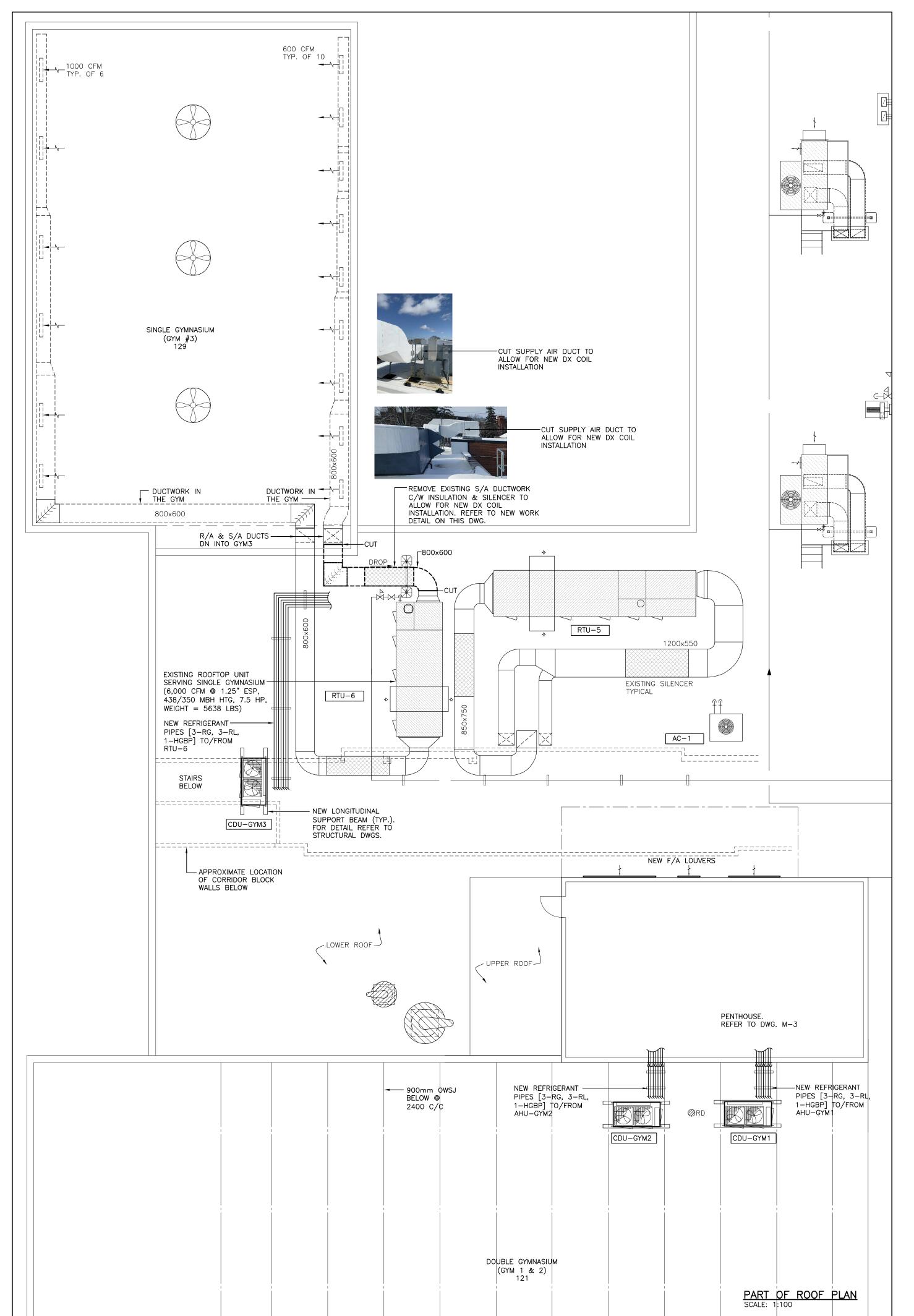
MAKE REFRIGERANT CONNECTIONS TO ROOF CONDENSERS AND INDOOR COILS IN STRICT ACCORDANCE WITH WITH MANUFACTURER'S INSTRUCTIONS. USE VIBRATION ISOLATION FLEXIBLE CONNECTORS AS SPECIFIED. FINAL SIZE OF REFRIGERANT PIPING: BY MANUFACTURER, TO SUIT LOCAL EQUIPMENT ARRANGEMENT.

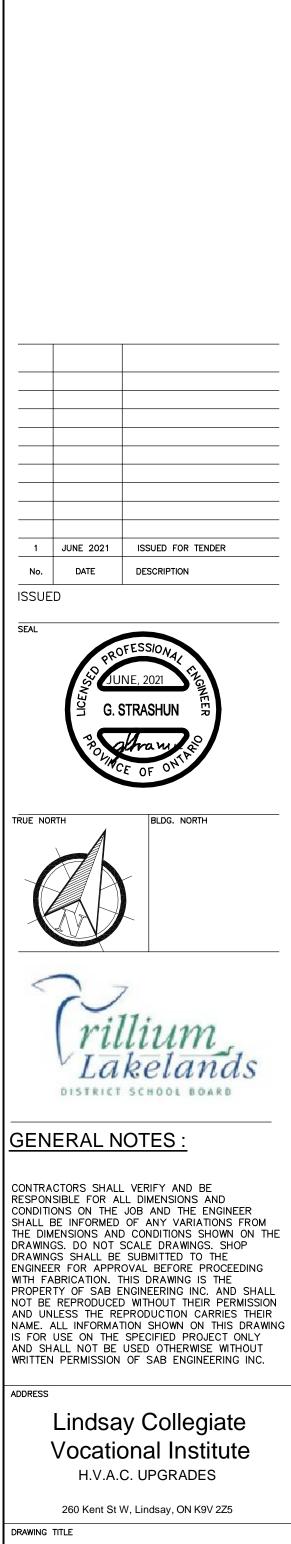
CONNECT THE NEW CONDENSERS TO POWER SOURCE. REFER TO ELECTRICAL DRAWINGS. PROVIDE NEW WEATHER PROOF DISCONNECTS OUTDOORS. CONNECT THE NEW CONDENSING UNIT AND REFRIGERANT SOLENOID VALVES TO BAS. REFER TO SEQUENCE OF OPERATION.

PROVIDE NEW BAS SENSORS, OPERATORS AND DEVICES AS NOTED IN THE BAS DIAGRAM. PROVIDE POWER TO ALL BAS SENSORS AND DEVICES FROM THE NEAREST SOURCE OF 115V/1PH VIA A DEDICATED 15A BREAKER. LABEL THE BREAKER ACCORDINGLY. INCLUDE ALL ANCILLARY DEVICES SUCH AS STEP DOWN TRANSFORMERS, RELAYS, PUSH BUTTONS, ETC. ADJUST TX VALVES AND BALANCE AIR FLOW.

MAKE GOOD ALL SURFACES AFFECTED BY THE WORK. SEAL ALL PENETRATIONS THROUGH EXTERIOR WALLS AND ROOF.





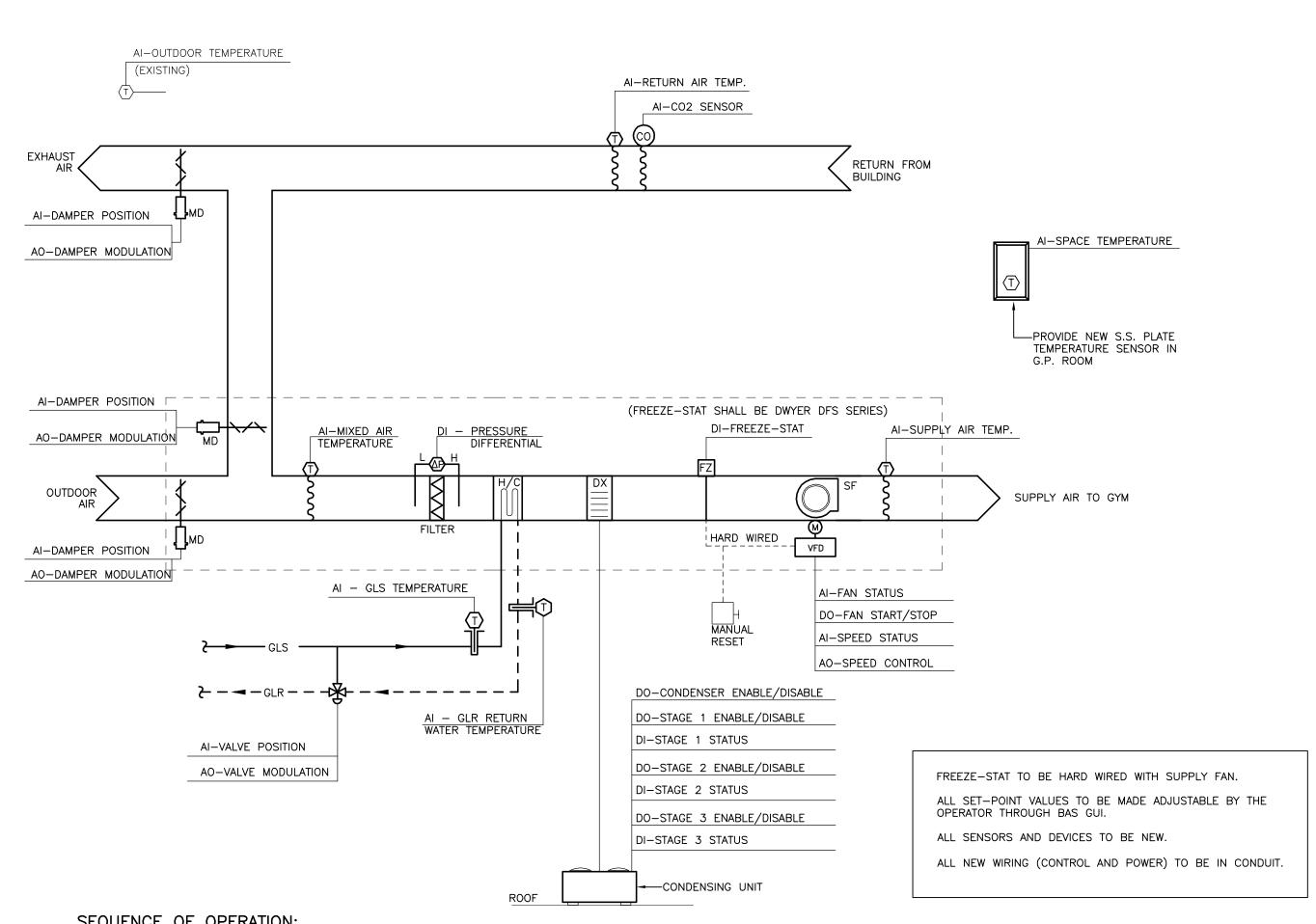


ROOF PLAN - MECHANICAL

JUNE 2021

DRAWN BY

AS SHOWN



#### **SEQUENCE OF OPERATION:**

#### HEATING/VENTILATION MODE SWITCHOVER

THE SYSTEM SHALL BE CONSIDERED IN HEATING MODE WHEN THE HEATING PLANT IS ENABLED, AT ALL OTHER TIMES, THE SYSTEM SHALL BE IN VENTILATION/COOLING MODE.

OCCUPIED/UNOCCUPIED SCHEDULE SHALL REMAIN AS PER THE CURRENT BAS STRATEGY

THE AHU SHALL BE ENABLED/DISABLED BY BAS IN ACCORDANCE WITH THE SCHOOL'S OCCUPANCY SCHEDULE. THE SUPPLY FAN SHALL START, RAMP UP TO PRE-SET RPM VALUES AND RUN CONTINUOUSLY. THE FINAL FAN RPM SETTINGS SHALL BE DETERMINED DURING THE AIR BALANCING STAGE, THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING BETWEEN BALANCER AND CONTROLS TO ENSURE PROPER FAN RPM SETTINGS.

#### COOLING MODE - OCCUPIED HOURS

AT START OF COOLING MODE, THE FRESH AIR DAMPER SHALL OPEN TO THE MINIMUM POSITION (AS PER SCHEDULE). THE EXHAUST AND RETURN AIR DAMPERS SHALL BE POSITIONED AS REQUIRED TO MAINTAIN THE TOTAL AIR FLOW OF THE UNIT. CO2 SENSOR SHALL BE ENABLED. AFTER A TIME DELAY OF 5 MINUTES, THE FRESH AIR DAMPER SHALL COME UNDER THE CONTROL OF THE CO2 SENSOR AND SHALL MODULATE AS REQUIRED TO MAINTAIN A RETURN AIR CONCENTRATION OF MAX. 800 PPM. THE EXHAUST AND RETURN AIR DAMPERS SHALL MODULATE ACCORDINGLY, TO MAINTAIN THE TOTAL AIR FLOW REQUIREMENT

AT OUTDOOR TEMPERATURES BELOW 23°C (ADJUSTABLE), AND RETURN AIR CO2 CONCENTRATION BELOW 800 PPM, THE FRESH AIR DAMPER SHALL OPEN BEYOND THE MINIMUM POSITION, TO MAINTAIN THE MIXED AIR TEMPERATURE AT 23°C. THE EXHAUST AND RETURN AIR DAMPERS SHALL BE REPOSITIONED ACCORDINGLY, TO MAINTAIN THE TOTAL AIRFLOW OF THE UNIT.

AT OUTDOOR TEMPERATURES ABOVE 23°C (ADJUSTABLE), THE FRESH AIR DAMPER SHALL COME UNDER THE CONTROL OF THE CO2 SENSOR AND SHALL MODULATE AS REQUIRED TO MAINTAIN A RETURN AIR CONCENTRATION OF MAX. 800 PPM. THE EXHAUST AND RETURN AIR DAMPERS SHALL MODULATE ACCORDINGLY, TO MAINTAIN THE TOTAL AIR FLOW REQUIREMENT OF THE UNIT.

THE BAS SHALL ENABLE/DISABLE THE COOLING STAGES AS REQUIRED IN ORDER TO MAINTAIN THE SPACE AIR TEMPERATURE AT 24°C (ADJUSTABLE BY OPERATOR THROUGH BAS). DISCHARGE AIR TEMPERATURE

#### MUST NOT DROP BELOW 10°C. COOLING MODE - UNOCCUPIED HOURS:

THE UNIT SHALL BE DE-ENERGIZED; THE FAN WILL STOP, EXHAUST AND FRESH AIR DAMPERS WILL CLOSE, THE RETURN AIR DAMPER SHALL OPEN. CONDENSER SHALL BE DISABLED.

#### HEATING MODE - OCCUPIED HOURS

#### CONDENSER IS DISABLED.

AT START OF HEATING MODE, THE FRESH AIR DAMPER SHALL OPEN TO ALLOW AN OUTDOOR AIR FLOW EQUAL TO THE MINIMUM VALUE NOTED IN THE SCHEDULE. THE MIXED AIR AND EXHAUST DAMPER SHALL BE POSITIONED TO MAINTAIN THE TOTAL AIRFLOW OF THE UNIT. AFTER A TIME DELAY OF 5 MINUTES, THE FRESH AIR DAMPER SHALL COME UNDER THE CONTROL OF THE CO2 SENSOR AND SHALL MODULATE BEYOND THE MINIMUM POSITION AS REQUIRED TO MAINTAIN A RETURN AIR CONCENTRATION OF MAX. 800 PPM. THE OPENING OF THE FRESH AIR DAMPER SHALL BE SUBJECT TO A MINIMUM MIXED AIR TEMPERATURE OF: 5°C (ADJUSTABLE).

THE EXHAUST AIR AND RETURN DAMPERS SHALL MODULATE ACCORDINGLY, TO MAINTAIN THE AIR FLOW REQUIREMENTS OF THE SYSTEM. SHOULD THE MIXED AIR TEMPERATURE DROP BELOW 4°C, THE FRESH AIR DAMPER SHALL GRADUALLY CLOSE TO THE MINIMUM POSITION TO PREVENT A FURTHER DROP IN TEMPERATURE, REGARDLESS OF THE CO2 SENSOR READING. AS THE OUTDOOR TEMPERATURE RISES, AND THE MIXED AIR TEMPERATURE RISES ABOVE: 4°C, THE FRESH AIR DAMPER SHALL RETURN UNDER CO2 SENSOR CONTROL. THE RETURN AND EXHAUST AIR DAMPERS SHALL MODULATE ACCORDINGLY, TO MAINTAIN THE TOTAL AIR FLOW OF THE SYSTEM.

#### THE 3-WAY CONTROL VALVE MODULATES (BY BAS) AS REQUIRED TO MAINTAIN THE SPACE AIR TEMPERATURE AT THE SETPOINT (22°C, ADJUSTABLE).

#### HEATING MODE, UNOCCUPIED HOURS

THE UNIT SHALL BE DE-ENERGIZED; THE FAN WILL STOP, EXHAUST AND FRESH AIR DAMPERS WILL CLOSE, THE RETURN AIR DAMPER SHALL OPEN. CONDENSER SHALL BE DISABLED. THE 3-WAY HOT WATER COIL CONTROL VALVE SHALL BE 75% OPEN TO THE COIL.

ON A CALL FOR HEAT WHEN SPACE TEMPERATURE DROPS BELOW UNOCCUPIED SETPOINT, 19°C (ADJUSTABLE), THE SUPPLY FAN SHALL START AND SHALL OPERATE UNTIL THE SETPOINT IS SATISFIED. FAN SHALL RUN FOR A MINIMUM OF 15 MINUTES TO PREVENT CYCLING. 3-WAY HOT WATER COIL CONTROL VALVE SHALL REMAIN 75% OPEN TO THE COIL. EXHAUST AND FRESH AIR DAMPERS SHALL REMAIN CLOSED, THE RETURN AIR DAMPER SHALL REMAIN OPEN.

#### OCCUPANCY OVERRIDE:

INCLUDE AN OCCUPANCY OVERRIDE BUTTON AND THE OVERRIDE TIME DURATION SELECT, ON THE AHU GRAPHICAL USER INTERFACE. WHEN ENABLED, THE OCCUPANCY SHALL SWITCH TO "OCCUPIED MODE" FOR THE AMOUNT OF TIME SET BY THE OVERRIDE TIME DURATION SELECT. DEFAULT SHALL BE 1 HOUR WITH 1 HOUR INCREMENTS. THE OCCUPANCY OVERRIDE SHALL EXPIRE AT THE END OF THE TIME DURATION PERIOD AND AHU SHALL RETURN TO CURRENT SCHEDULE.

## FREEZE-STAT OPERATION

IF THE FREEZE-STAT SENSES A SUPPLY AIR TEMPERATURE OF LESS THAN 4°C, IT SHALL:

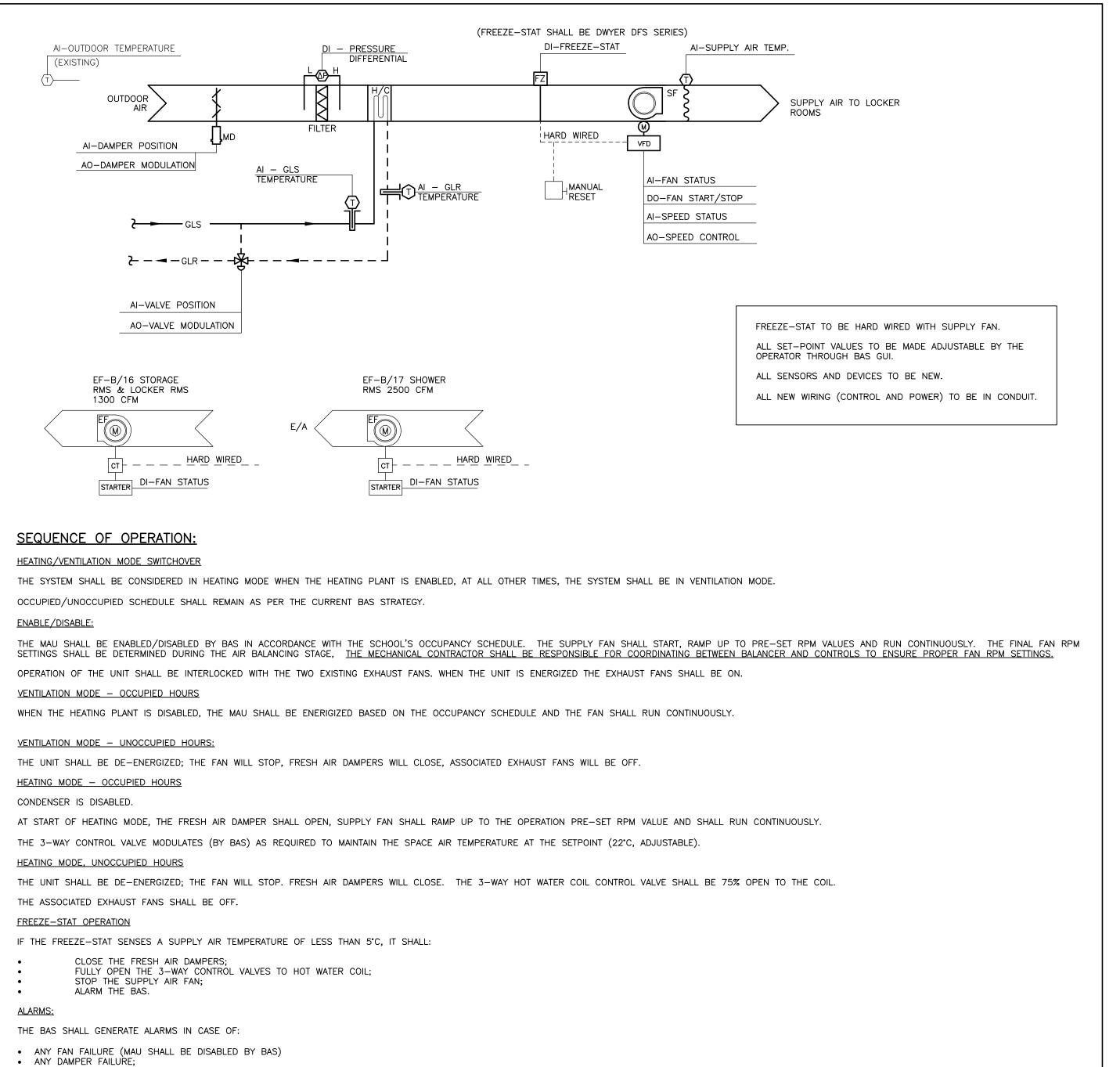
- CLOSE THE FRESH AIR AND EXHAUST AIR DAMPERS AND FULLY OPEN THE RETURN DAMPER;
- FULLY OPEN THE 3-WAY CONTROL VALVES TO HOT WATER COIL; STOP THE SUPPLY AIR FAN; ALARM THE BAS.

#### <u>ALARMS:</u>

THE BAS SHALL GENERATE ALARMS IN CASE OF:

- ANY FAN FAILURE (AHU SHALL BE DISABLED BY BAS)
- ANY DAMPER FAILURE;
- DIRTY FILTER:
- SPACE AIR TEMPERATURE IS BELOW 16°C OR ABOVE 27°C; MIXED AIR TEMPERATURE LOWER THAN 4°C (IN ADDITION TO ALARM, THE FRESH AIR DAMPERS SHALL CLOSE AND UNIT SHALL BE TURN OFF);
- RETURN AIR CO2 CONCENTRATION IS ABOVE 900 PPM; CONDENSER OR ANY COOLING STAGE FAILURE.

AHU-GYM1 & AHU-GYM2 (GYMNASIUM VENTILATION) CONTROL DIAGRAM

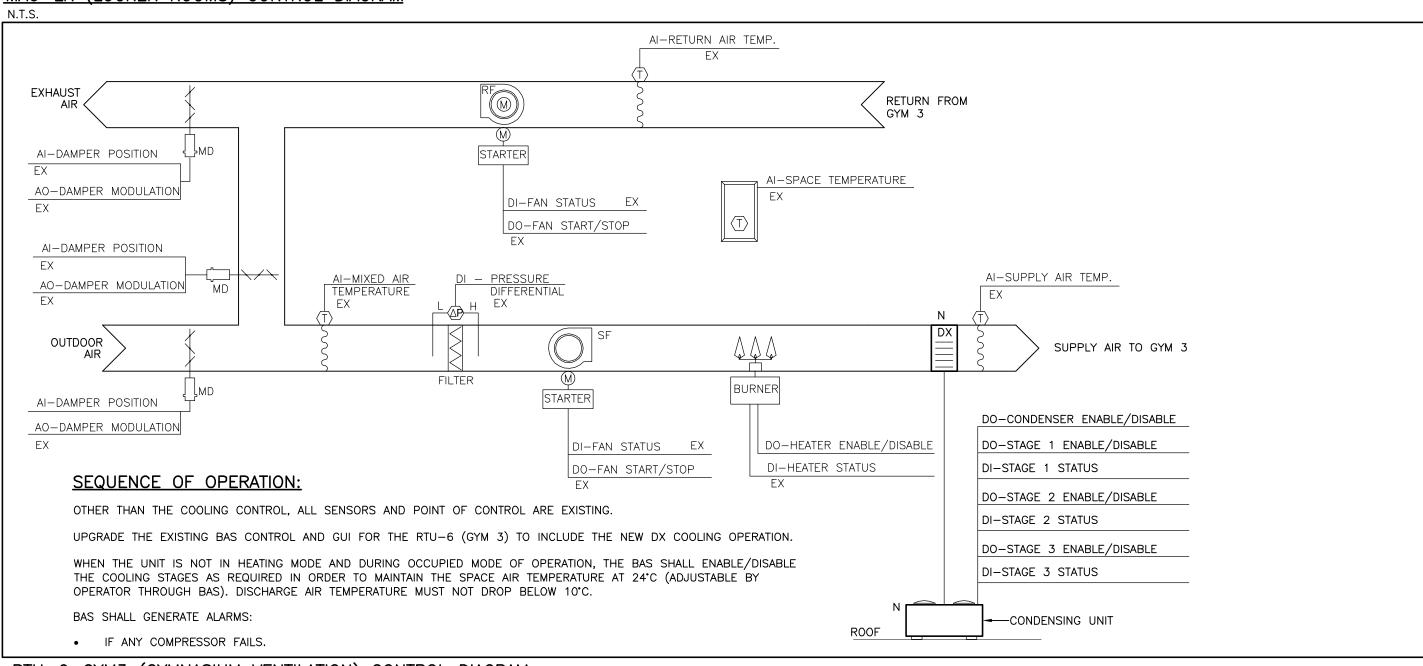


#### MAU-LR (LOCKER ROOMS) CONTROL DIAGRAM

• SUPPLY AIR TEMPERATURE LOWER THAN 5°C (IN ADDITION TO ALARM, THE FRESH AIR DAMPER SHALL CLOSE AND UNIT SHALL BE TURN OFF);

SPACE AIR TEMPERATURE IS BELOW 16°C;

DIRTY FILTER:



RTU-6-GYM3 (GYMNASIUM VENTILATION) CONTROL DIAGRAM

JUNE 2021 | ISSUED FOR TENDER DATE ISSUED G. STRASHUN BLDG. NORTH TRUE NORTH

DISTRICT SCHOOL BOARD

GENERAL NOTES :

CONTRACTORS SHALL VERIFY AND BE

RESPONSIBLE FOR ALL DIMENSIONS AND

CONDITIONS ON THE JOB AND THE ENGINEER

DRAWINGS. DO NOT SCALE DRAWINGS. SHOP

DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE PROCEEDING

WITH FABRICATION. THIS DRAWING IS THE PROPERTY OF SAB ENGINEERING INC. AND SHALL

SHALL BE INFORMED OF ANY VARIATIONS FROM THE DIMENSIONS AND CONDITIONS SHOWN ON THE

NOT BE REPRODUCED WITHOUT THEIR PERMISSION

AND UNLESS THE REPRODUCTION CARRIES THEIR

IS FOR USE ON THE SPECIFIED PROJECT ONLY AND SHALL NOT BE USED OTHERWISE WITHOUT

WRITTEN PERMISSION OF SAB ENGINEERING INC.

Lindsay Collegiate

Vocational Institute

H.V.A.C. UPGRADES

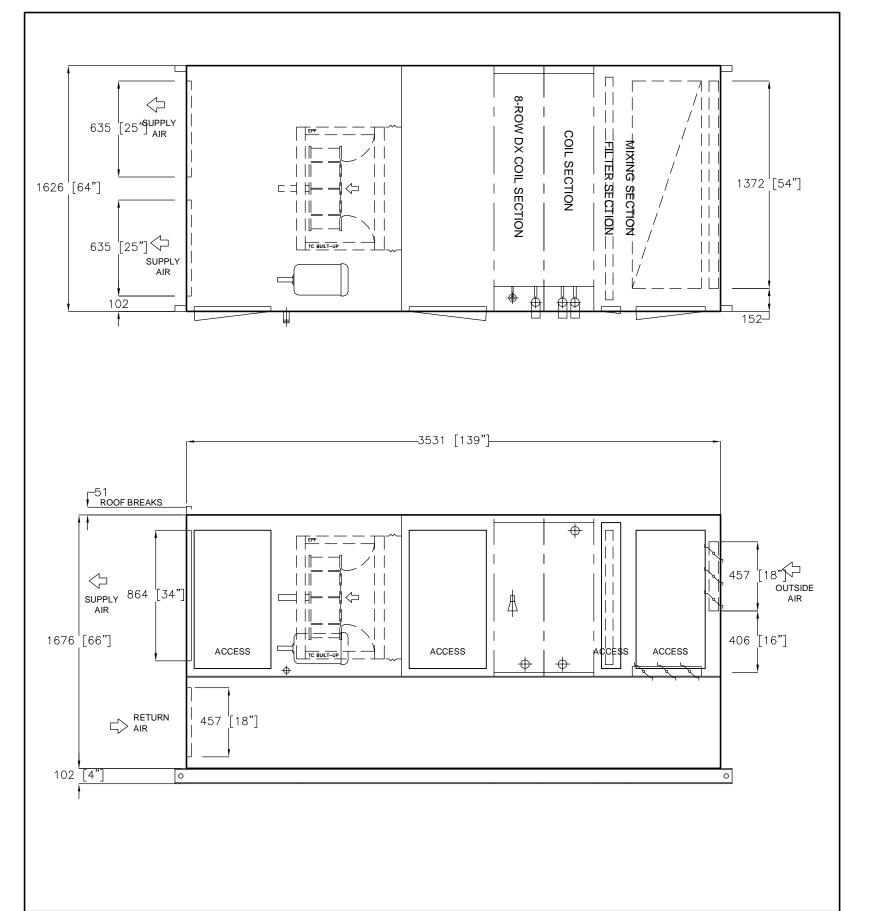
260 Kent St W, Lindsay, ON K9V 2Z5

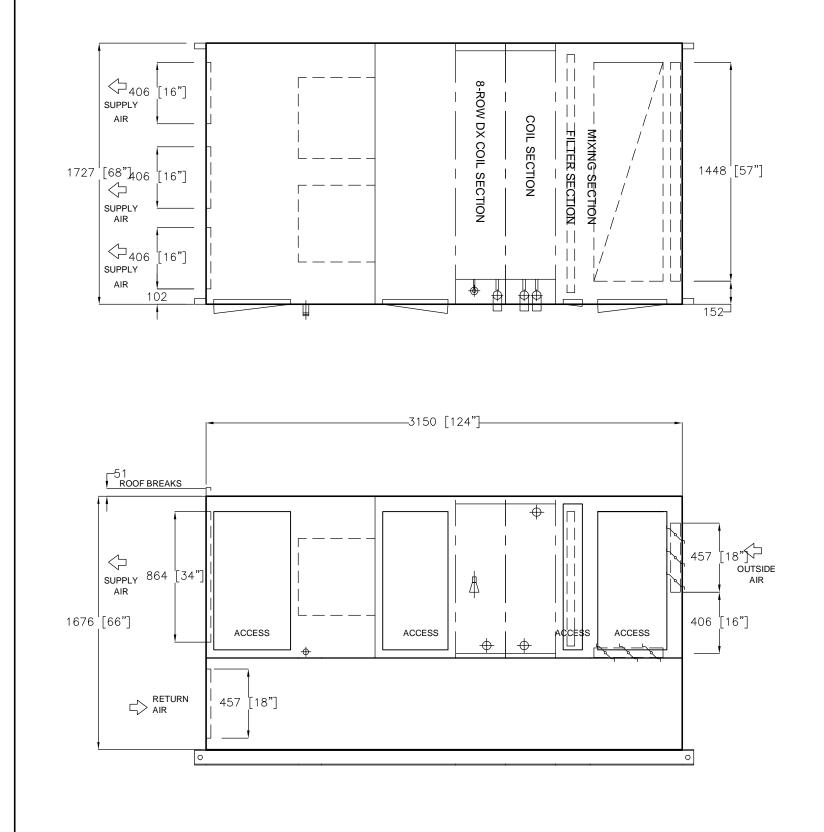
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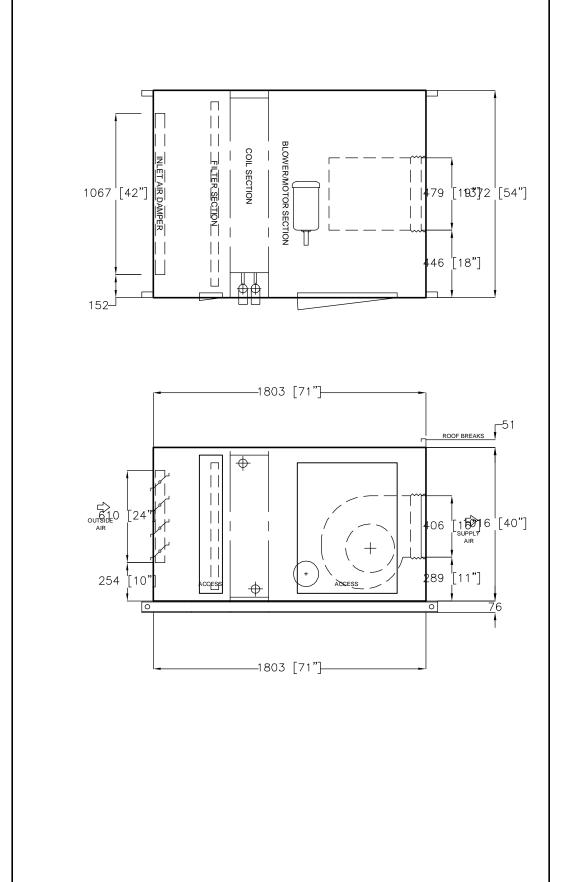
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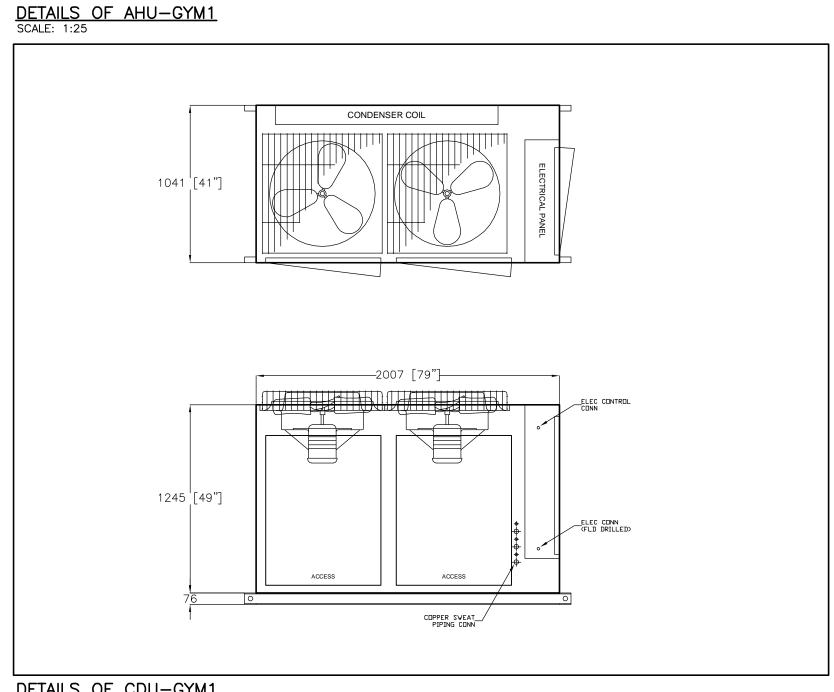
CONTROL DIAGRAMS

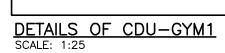


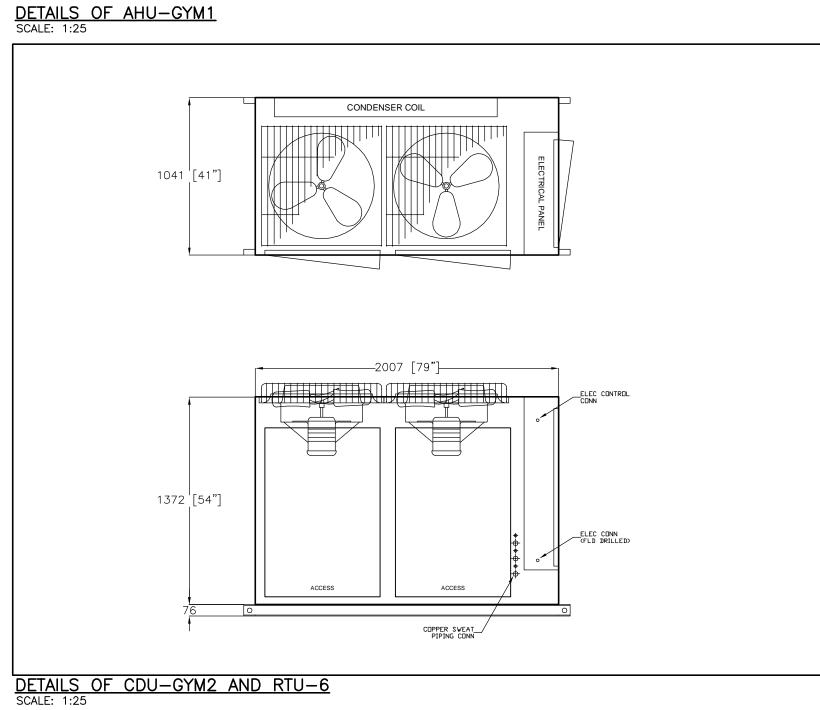




DETAILS OF MAU-LR SCALE: 1:25







DISTRICT SCHOOL BOARD **GENERAL NOTES:** 

1 JUNE 2021 ISSUED FOR TENDER

G. STRASHUN

BLDG. NORTH

No. DATE DESCRIPTION

ISSUED

TRUE NORTH

CONTRACTORS SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS AND CONDITIONS ON THE JOB AND THE ENGINEER SHALL BE INFORMED OF ANY VARIATIONS FROM THE DIMENSIONS AND CONDITIONS SHOWN ON THE DRAWINGS. DO NOT SCALE DRAWINGS. SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE PROCEEDING WITH FABRICATION. THIS DRAWING IS THE PROPERTY OF SAB ENGINEERING INC. AND SHALL NOT BE REPRODUCED WITHOUT THEIR PERMISSION AND UNLESS THE REPRODUCTION CARRIES THEIR NAME. ALL INFORMATION SHOWN ON THIS DRAWING IS FOR USE ON THE SPECIFIED PROJECT ONLY AND SHALL NOT BE USED OTHERWISE WITHOUT WRITTEN PERMISSION OF SAB ENGINEERING INC.

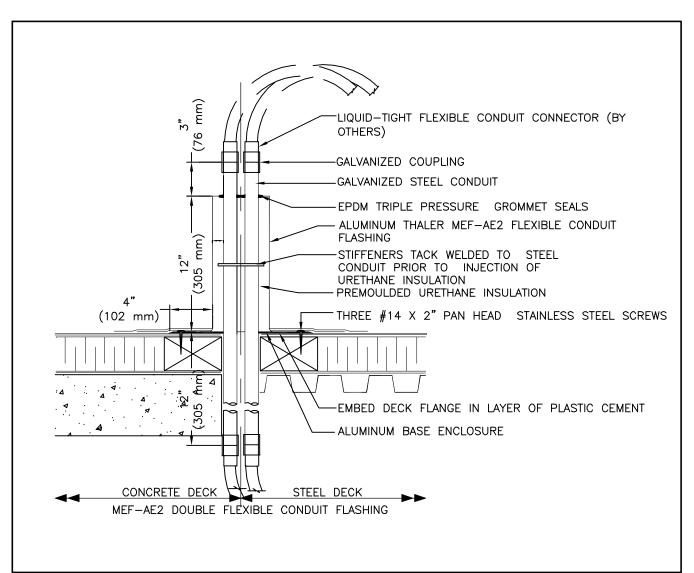
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260 Kent St W, Lindsay, ON K9V 2Z5

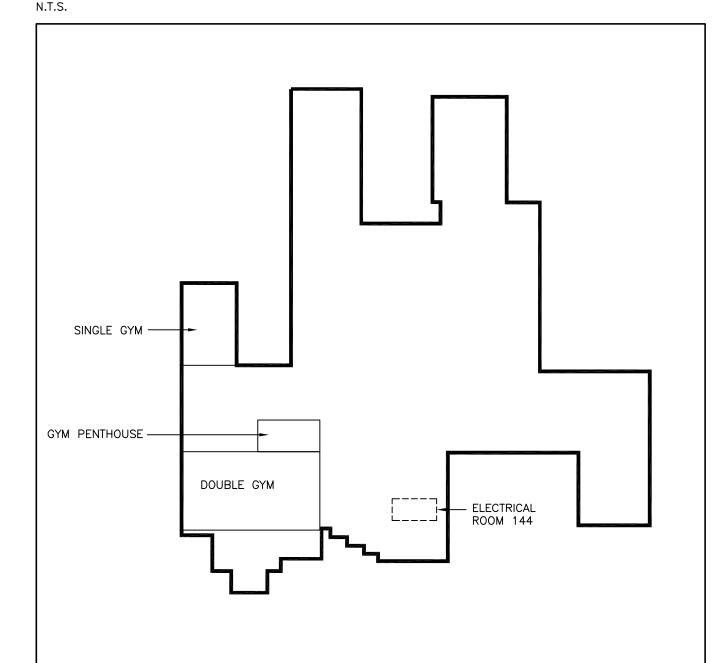
EQUIPMENT DETAILS

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JUNE 2021 N.T.S. DRAWN BY



#### <u>CONDUIT PENETRATION DETAIL</u>



PROVIDE CONNECTION TO MECHANICAL EQUIPMENT TO ENSURE THAT FULL OPERATIONAL SYSTEMS ARE DELIVERED TO THE BOARD.

PROVIDE SEPARATE DISCONNECTS FOR INDIVIDUAL MECHANICAL EQUIPMENT. SIZE AS INDICATED IN THE SCHEDULE.

PROVIDE POWER FOR CONTROLS AND STEPDOWN TRANSFORMER AS REQUIRED.

PROVIDE POWER CONNECTION TO ALL EQUIPMENT LISTED IN THE SCHEDULE. REFER TO ELECTRICAL AND MECHANICAL LAYOUTS FOR EXACT LOCATION OF EQUIPMENT.

RECONNECT ALL DUCT MOUNTED SMOKE DETECTORS TO THE FIRE ALARM. PROVIDE ALL REQUIRED DEVICES AND WIRING TO CONNECT ALL NEW EQUIPMENT BACK TO FIRE ALARM FOR SHUT-DOWN.

DISCONNECTS LOCATIONS SHALL BE VERIFIED AND CO-ORDINATED ON SITE. ALL MAGNETIC STARTERS (WHERE REQUIRED) SHALL BE C/W OVERLOAD PROTECTION, H/O/A SWITCH AND GREEN-RUN AND RED-STOP PILOT LAMPS.

### SCHOOL KEY PLAN

NOTES:

MECHANICAL EQUIPMENT WIRING SCHEDULE									
EQUIPMENT DESCRIPTION	POWER SOURCE	STARTER TYPE	MCA/HP/ KW/AMP	VOLTS/PH./ FREQUENCY	BREAKER SIZE OR FUSE SIZE	FEEDER SIZE	REMARKS	CONNECTED TO FIRE ALARM	CONNECTED TO BAS
GYM PENTHOUSE NEW SPLITTER	ELECT. RM 144 MAIN SWITCHBOARD			208/3/60	400A-3P 250AF-3P	3#AWG250+G-78mmC	PROVIDE A NEW FUSED DISCONNECT IN AVAILABLE SPOT IN SWITCHBOARD. PROVIDE NEW WIRING IN CONDUIT FROM THE DISCONNECT UP TO GYM PENTHOUSE NEW SPLITTER.		
SUPPLY AIR UNIT 'AHU-GYM1'	GYM PENTHOUSE NEW SPLITTER I	VFD	5 HP 23.3 MCA EX 5HP	208/3/60	35A-3P	3#AWG10+G-21mmC	PROVIDE A NEW FUSED DISCONNECT IN SPLITTER. PROVIDE NEW WIRING IN CONDUIT FROM THE SPLITTER TO VFD TO UNIT. PROVIDE FLEXIBLE LIQUID TIGHT CONDUIT FOR THE LAST 900 MM.	YES	YES
SUPPLY AIR UNIT 'AHU-GYM2'		VFD	7.5 HP 32.7 MCA EX 5HP	208/3/60	50A-3P	3#AWG8+G-27mmC	PROVIDE A NEW FUSED DISCONNECT IN SPLITTER. PROVIDE NEW WIRING IN CONDUIT FROM THE SPLITTER TO VFD TO LOCAL NON-FUSED DISCONNECT TO UNIT. PROVIDE FLEXIBLE LIQUID TIGHT CONDUIT FOR THE LAST 900 MM.	YES	YES
MAKE-UP AIR UNIT 'MAU-LR'		VFD	3 HP 17.2 MCA EX 1HP	208/3/60	25A-3P	3#AWG12+G-21mmC	PROVIDE A NEW FUSED DISCONNECT IN SPLITTER. PROVIDE NEW WIRING IN CONDUIT FROM THE SPLITTER TO VFD TO LOCAL NON-FUSED DISCONNECT TO UNIT. PROVIDE FLEXIBLE LIQUID TIGHT CONDUIT FOR THE LAST 900 MM.	YES	YES
CONDENSING UNIT		MAGNETIC	56.1 MCA	208/3/60	70A-3P	3#AWG6+G-35mmC	PROVIDE A NEW FUSED DISCONNECT IN NEW SPLITTER. PROVIDE NEW WIRING IN CONDUIT FROM THE FUSED DISCONNECT TO LOCAL WEATHER—PROOF DISCONNECT OF THE CONDENSING UNIT. ALL WIRING TO BE IN EMT CONDUIT (INDOORS) AND IMC CONDUIT (OUTDOORS). USE NON—PENETRATING ROOF SUPPORTS FOR THE CONDUIT ON THE ROOF. PROVIDE FLEXIBLE LIQUID TIGHT CONDUIT FOR THE LAST 900 MM.	NO	YES
CONDENSING UNIT 'CDU-GYM2'		MAGNETIC	60.9 MCA	208/3/60	70A-3P	3#AWG6+G-35mmC	PROVIDE A NEW FUSED DISCONNECT IN NEW SPLITTER. PROVIDE NEW WIRING IN CONDUIT FROM THE FUSED DISCONNECT TO LOCAL WEATHER-PROOF DISCONNECT OF THE CONDENSING UNIT. ALL WIRING TO BE IN EMT CONDUIT (INDOORS) AND IMC CONDUIT (OUTDOORS). USE NON-PENETRATING ROOF SUPPORTS FOR THE CONDUIT ON THE ROOF. PROVIDE FLEXIBLE LIQUID TIGHT CONDUIT FOR THE LAST 900 MM.	NO	YES
CONDENSING UNIT 'CDU-GYM3'		MAGNETIC	60.9 MCA	208/3/60	70A-3P	3#AWG6+G-35mmC	PROVIDE A NEW FUSED DISCONNECT IN NEW SPLITTER. PROVIDE NEW WIRING IN CONDUIT FROM THE FUSED DISCONNECT TO LOCAL WEATHER—PROOF DISCONNECT OF THE CONDENSING UNIT. ALL WIRING TO BE IN EMT CONDUIT (INDOORS) AND IMC CONDUIT (OUTDOORS). USE NON—PENETRATING ROOF SUPPORTS FOR THE CONDUIT ON THE ROOF. PROVIDE FLEXIBLE LIQUID TIGHT CONDUIT FOR THE LAST 900 MM.	NO	YES

#### ELECTRICAL GENERAL NOTES

EXAMINE ARCHITECTURAL, STRUCTURAL AND MECHANICAL CONDITIONS AND AVAILABLE DRAWINGS BEFORE PROCEEDING WITH THE WORK. ANY DISCREPANCIES BETWEEN DRAWINGS AND/OR SPECIFICATIONS MUST BE REFERRED TO THE PRIME CONSULTANT BEFORE ANY AFFECTED WORK IS COMMENCED.

ALL MATERIALS USED THROUGHOUT SHALL BE NEW, OF BEST QUALITY CSA APPROVED AND OF ONE MANUFACTURER.

OBTAIN AND PAY FOR APPROVALS AND PERMITS FROM AUTHORITIES HAVING JURISDICTION.

PROVIDE ALL CONDUIT, WIRING, BOXES, SWITCHES, OUTLETS, DEVICES, ETC, AS REQUIRED. MAKE UP TO THE LAST 3 FT OF FINAL CONNECTIONS TO ROTATING EQUIPMENT WITH LIQUID TIGHT FLEXIBLE CONDUIT.

CONTRACTORS SHALL NOTE THAT THIS CONTRACT IS AN ALTERATION TO AN EXISTING BUILDING AND SHALL THOROUGHLY INVESTIGATE THE EXISTING ELECTRICAL INSTALLATION AND

DEMOLITION. REMOVE POWER CONNECTIONS AS SHOWN ON DRAWINGS C/W CONDUIT AND WIRING TO SOURCE.

#### CONDUCTORS AND CABLES

CONDUCTORS AND CABLES SHALL BE IN ACCORDANCE WITH NEMA WC-70 AND AS SPECIFIED HEREIN.

CONDUCTORS SHALL BE ANNEALED COPPER, STRANDED FOR SIZES NO. 8 AWG AND LARGER, SOLID FOR SIZES NO. 10 AWG AND SMALLER. CONDUCTORS SHALL BE MINIMUM SIZE NO. 12 AWG, EXCEPT WHERE SMALLER SIZES ARE SPECIFICALLY SHOWN ON THE DRAWINGS. MINIMUM SIZE WIRING FOR DC WIRING SHALL BE #10 GAUGE.

ALL WIRING SHALL BE 600 VOLT TYPE RW90 AND RUN IN METALLIC CONDUIT EXCEPT WHERE ALLOWED IN FLEXIBLE LIQUID-TIGHT FLEXIBLE ENCLOSURE (SEE SECTION 15241). MAXIMUM VOLTAGE DROP SHALL NOT EXCEED 2%. PROVIDE GROUND WIRES WITH ALL FEEDERS AND BRANCH CIRCUITS IN ACCORDANCE WITH APPLICABLE CODES AND ONTARIO ELECTRICAL SAFETY CODE REQUIREMENTS. PROVIDE MAIN GROUND TO ESA APPROVAL.

THHN-THWN SHALL BE IN ACCORDANCE WITH NEMA WC-70, UL 44, AND UL 83.

ALL CONDUIT SHALL BE RIGID ALUMINUM (OUTDOORS) OR EMT THINWALL (INDOORS) WITH STEEL SET SCREW COUPLINGS AND CONNECTORS WITH INSULATED THROATS UNLESS OTHERWISE NOTED. RUN CONDUITS PARALLEL TO BUILDING LINES AND CONCENTRIC RIGHT ANGLE BENDS ONLY SHALL BE USED.

SEAL ALL PENETRATIONS THROUGH FLOOR SLABS WITH AN APPROVED NON-SHRINK, WATERPROOF AND FIREPROOF SEALANT.

NEW CONDUIT HANGERS SHALL BE SUPPORTED FROM BUILDING STRUCTURE AND INDEPENDENTLY FROM OTHER EXISTING ELEMENTS SUCH AS DUCTWORK, CONDUITS, PIPING ETC.

#### POWER DISTRIBUTION SYSTEM

THE POWER DISTRIBUTION SYSTEM SHALL BE MODIFIED AS SHOWN ON THE PLANS AND AS HEREINAFTER SPECIFIED. BREAKERS RATING SHALL MATCH EXISTING EQUIPMENT TO WHICH THEY ARE INSTALLED.

#### SPLICES AND JOINTS

IN ACCORDANCE WITH UL 486A, C, D, E, AND NEC.

PACKAGING, SHALL BE STRICTLY FOLLOWED.

CONNECTORS: SOLDERLESS, SCREW ON, REUSABLE PRESSURE CABLE TYPE, RATED 600 V, 220° F [105° C], WITH INTEGRAL INSULATION, APPROVED FOR COPPER CONDUCTORS. THE INTEGRAL INSULATOR SHALL HAVE A SKIRT TO COMPLETELY COVER THE STRIPPED WIRES. THE NUMBER, SIZE, AND COMBINATION OF CONDUCTORS, AS LISTED ON THE MANUFACTURER'S

CONNECTORS SHALL BE INDENT, HEX SCREW, OR BOLT CLAMP TYPE OF HIGH CONDUCTIVITY AND CORROSION RESISTANT MATERIAL, LISTED FOR USE WITH COPPER AND ALUMINUM CONDUCTORS. FIELD-INSTALLED COMPRESSION CONNECTORS FOR CABLE SIZES 250 MCM AND LARGER SHALL HAVE NOT FEWER THAN TWO CLAMPING ELEMENTS OR COMPRESSION INDENTS

INSULATE SPLICES AND JOINTS WITH MATERIALS APPROVED FOR THE PARTICULAR USE, LOCATION, VOLTAGE, AND TEMPERATURE. SPLICE AND JOINT INSULATION LEVEL SHALL BE NOT LESS THAN THE INSULATION LEVEL OF THE CONDUCTORS BEING JOINED. PLASTIC ELECTRICAL INSULATING TAPE: PER ASTM D2304, FLAME—RETARDANT, COLD AND WEATHER RESISTANT.

#### LOW VOLTAGE FUSED AND NON-FUSED DISCONNECT SWITCHES RATED 600 AMPERES AND LESS

IN ACCORDANCE WITH UL 98, NEMA KS1, AND NEC. SHALL HAVE NEMA CLASSIFICATION GENERAL DUTY (GD) FOR 240 V SWITCHES AND NEMA CLASSIFICATION HEAVY DUTY (HD) FOR 600 V SWITCHES. SHALL BE HP RATED.

LOCATE IN THE PROXIMITY OF THE EQUIPMENT SERVED, IN ACCORDANCE WITH NEC REQUIREMENTS.

SHALL HAVE THE FOLLOWING FEATURES:

SWITCH MECHANISM SHALL BE THE QUICK-MAKE, QUICK-BREAK TYPE.

 COPPER BLADES, VISIBLE IN THE OFF POSITION. AN ARC CHUTE FOR EACH POLE.

 EXTERNAL OPERATING HANDLE SHALL INDICATE ON AND OFF POSITION AND HAVE LOCK OPEN PADLOCKING PROVISIONS. MECHANICAL INTERLOCK SHALL PERMIT OPENING OF THE DOOR ONLY WHEN THE SWITCH IS IN THE OFF POSITION, DEFEATABLE TO PERMIT INSPECTION.

FUSE HOLDERS FOR THE SIZES AND TYPES OF FUSES SPECIFIED (WHERE APPLICABLE).

WHERE APPLICABLE, FUSIBLE DISCONNECT SWITCHES SHALL BE FURNISHED COMPLETE WITH FUSES. ARRANGE FUSES SUCH THAT RATING INFORMATION IS READABLE WITHOUT REMOVING

 SOLID NEUTRAL FOR EACH SWITCH BEING INSTALLED IN A CIRCUIT WHICH INCLUDES A NEUTRAL CONDUCTOR. GROUND LUGS FOR EACH GROUND CONDUCTOR.

## **ENCLOSURES:**

SHALL BE THE NEMA TYPES SHOWN ON THE DRAWINGS FOR THE SWITCHES. WHERE THE TYPES OF SWITCH ENCLOSURES ARE NOT SHOWN, THEY SHALL BE THE NEMA TYPES MOST SUITABLE FOR THE AMBIENT ENVIRONMENTAL CONDITIONS. UNLESS OTHERWISE INDICATED ON THE PLANS, ALL OUTDOOR SWITCHES SHALL BE NEMA 3R. SHALL BE FINISHED WITH MANUFACTURER'S STANDARD GRAY BAKED ENAMEL PAINT OVER PRE-TREATED STEEL (FOR THE TYPE OF ENCLOSURE REQUIRED).

	SYMBOL LIST							
**	DEMOLITION							
	DIRECT POWER OUTLET FOR USE AS NOTED INCLUDING FINAL CONNECTION.							
	DISCONNECT SWITCH							
C	DISCONNECT SWITCH WITH OVER-CURRENT PROTECTION							
$\boxtimes$	COMBINATON MAGNETIC MOTOR STARTER WITH DISCONNECT SWITCH							
$\boxtimes$	MAGNETIC MOTOR STARTER							
M	COMBINATON MAGNETIC MOTOR STARTER WITH DISCONNECT SWITCH & OVERCURRENT PROTECTION							
Ф <sub>GFI</sub>	20A, 120V U-GROUND GROUND FAULT INTERRUPTER TYPE DUPLEX RECEPTACLE							
VFD	VARIABLE FREQUENCY DRIVE							
WP	WEATHERPROOF							
EX	DENOTES EXISTING TO REMAIN							
R	DENOTES EXISTING TO BE REMOVED ENTIRELY U.N.O.							
N	DENOTES NEW							

#### GENERAL NOTES

- IT IS MANDATORY FOR THE ELECTRICAL CONTRACTOR TO VISIT SITE AND REVIEW EXISTING CONDITIONS AND DEMOLITION SCOPE OF WORK TO SUIT EXISTING ARCHITECTURAL AND STRUCTURAL CONDITIONS AND MECHANICAL DRAWINGS.
- CAREFULLY EXAMINE OTHER EXISTING UTILITY LINES SUCH AS GAS, WATER ETC. PRIOR TO START THE ELECTRICAL CONSTRICTION WORKS AND COORDINATE WITH OTHER TRADES AND REPORT OF ANY DISCREPANCY PRIOR TO PROCEEDING.
- REFER TO ELECTRICAL AND MECHANICAL LAYOUTS FOR EXACT LOCATION OF ALL
- LOCATIONS OF ALL NEW DISCONNECT SWITCHES, VFDS AND STARTERS SHALL BE CONFIRMED WITH DIVISION 15 PRIOR TO INSTALLATION.

#### ELECTRICAL GENERAL NOTES

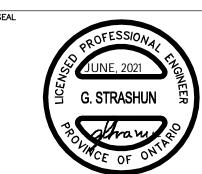
- OBTAIN ALL APPROVALS FROM PUBLIC AUTHORITIES HAVING JURISDICTION, BEFORE COMMENCING WORK AND PAY ALL ASSOCIATED INSPECTION FEES AND ALL PERMITS.
- 2. EXAMINE ARCHITECTURAL, STRUCTURAL AND MECHANICAL CONDITIONS AND AVAILABLE DRAWINGS BEFORE PROCEEDING WITH THE WORK. ANY DISCREPANCIES BETWEEN DRAWINGS AND/OR SPECIFICATIONS MUST BE REFEREED TO THE CONSULTANT BEFORE ANY AFFECTED WORK IS COMMENCED.
- . ALL CUTTING AND PATCHING REQUIRED FOR THE ELECTRICAL WORK SHALL BE INCLUDED. NO CHASING BLOCKWORK WILL BE ALLOWED. PROVIDE FIRE-STOPPING TO SUIT FT RATING OF THE FLOOR OR WALL PENETRATION TO SUIT. MAKE GOOD ALL BUILDING ELEMENTS AFFECTED BY THIS WORK TO THEIR ORIGINAL CONDITION OR BETTER.
- 4. ALL MATERIAL USED THROUGHOUT SHALL BE NEW, OF BEST QUALITY CSA APPROVED AND OF
- PROVIDE ALL CONDUIT, WIRING, BOXES, SWITCHES, OUTLETS, DEVICES, ETC., AS REQUIRED. MAKE FINAL CONNECTIONS TO VIBRATING EQUIPMENT WITH LIQUID TIGHT FLEXIBLE CONDUIT.

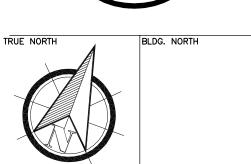
ONE MANUFACTURE.

WATERPROOF AND FIREPROOF SEALANT.

- ALSO REFER TO SECTION 15241. . PROVIDE ALL HANGERS, INSERTS AND SUPPORTS OF APPROVED TYPES REQUIRED FOR THE ELECTRICAL WORK. PROVIDE CONDUIT FOR ALL SERVICES PENETRATING THE FLOOR SLAB. SEAL ALL PENETRATIONS THROUGH FLOOR SLABS WITH AN APPROVED NON-SHRINK,
- . ALL CONDUIT SHALL BE EMT THINWALL WITH STEEL SET SCREW COUPLINGS AND CONNECTORS WITH INSULATED THROATS UNLESS OTHERWISE NOTED. PAINT CONDUIT TO MATCH EXISTING SURFACE THEY ARE INSTALLED ON. IN FINISHED AREA, RUN PARALLEL TO BUILDING WALLS AND CONCENTRIC RIGHT ANGLE BENDS ONLY SHALL BE USED.
- 8. ALL WIRING SHALL BE MINIMUM #12 GAUGE COPPER, EXCEPT AS OTHERWISE NOTED. ALL WIRING SHALL BE 600 VOLT TYPE RW90 AND RUN IN CONDUITS. MINIMUM SIZE WIRING FOR DC WIRING SHALL BE #10 GAUGE. MAXIMUM VOLTAGE DROP NOT EXCEED 2 PERCENT. PROVIDE GROUND WIRES WITH ALL FEEDERS AND BRANCH CIRCUITS IN ACCORDANCE WITH APPLICABLE CODES AND ONTARIO ELECTRICAL SAFETY CODE REQUIREMENTS. PROVIDE MAIN GROUND TO ESA APPROVAL.
- . PROVIDE ALL CONDUIT, WIRING, SPLITTERS, OUTLET BOXES AND DISCONNECT SWITCHES AS SHOWN AND AS REQUIRED TO MAKE THE EQUIPMENT FULLY OPERATIONAL. SUPPLY AND INSTALL ALL STARTERS AND WIRE COMPLETE. COORDINATE THE FINAL LOCATION OF DISCONNECT SWITCHES AND VFD DEVICES SUCH AS TO MAINTAIN THE PRESCRIBED CLEARANCES AND AVOID INTERFERENCE WITH OTHER EQUIPMENT.
- 10. CONTRACTORS SHALL NOTE THAT THIS CONTRACT IS AN ALTERATION TO AN EXISTING BUILDING AND SHALL THOROUGHLY INVESTIGATE THE EXISTING ELECTRICAL INSTALLATION AND
- 11. DEMOLITION OF EXISTING SERVICES: REMOVE POWER CONNECTIONS AS SHOWN ON DRAWINGS C/W CONDUIT AND WIRING TO SOURCE.
- 12. ALL WORK SHALL BE DONE WITH MINIMUM POSSIBLE INTERRUPTION TO EXISTING BUILDING SYSTEMS AND IN THE TIME SCHEDULE PERMITTED BY THE PROJECT MANAGER. INCLUDE FOR AFTER HOURS/WEEKEND WORK FOR POWER SHUTDOWN & CONNECTION WORK.
- 13. PROVIDE LAMACOID LABEL AT EACH EQUIPMENT DISCONNECT SWITCH STATING PANEL SOURCE, OVER-CURRENT PROTECTION AND BRANCH WIRING SIZE.

1	JUNE 2021	ISSUED FOR TENDER
No.	DATE	DESCRIPTION







#### GENERAL NOTES:

CONTRACTORS SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS AND CONDITIONS ON THE JOB AND THE ENGINEER SHALL BE INFORMED OF ANY VARIATIONS FROM THE DIMENSIONS AND CONDITIONS SHOWN ON THE DRAWINGS. DO NOT SCALE DRAWINGS. SHOP DRAWINGS SHALL BE SUBMITTED TO THE FNGINFER FOR APPROVAL BEFORE PROCEEDING WITH FABRICATION. THIS DRAWING IS THE PROPERTY OF SAB ENGINEERING INC. AND SHALL NOT BE REPRODUCED WITHOUT THEIR PERMISSION AND UNLESS THE REPRODUCTION CARRIES THEIR NAME. ALL INFORMATION SHOWN ON THIS DRAWING IS FOR USE ON THE SPECIFIED PROJECT ONLY AND SHALL NOT BE USED OTHERWISE WITHOUT WRITTEN PERMISSION OF SAB ENGINEERING INC.

## Lindsay Collegiate Vocational Institute

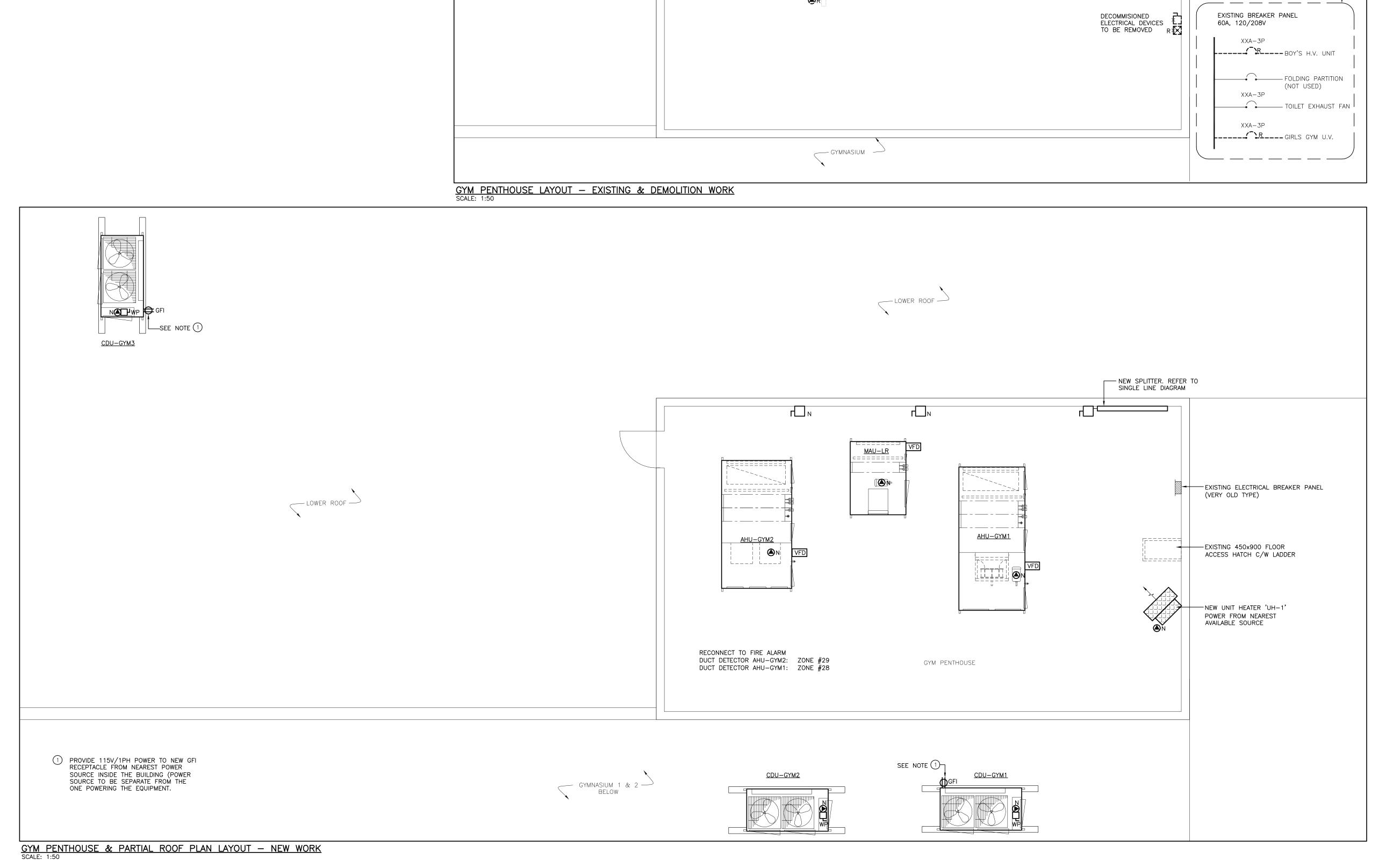
260 Kent St W, Lindsay, ON K9V 2Z5

H.V.A.C. UPGRADES

SYMBOL LIST, EQUIPMENT WIRING SCHEDULE & NOTES ELECTRICAL

DRAWING TITLE

DATE	SCALE	
JUNE 2021		AS NOTED
DRAWN BY	DWG. No.	
A.S.		E-1



— LOWER ROOF —

1000mm HIGH DOOR, ACCESS TO ROOF -

EXISTING MAKE-UP AIR UNIT SERVING LOCKER
ROOMS TO BE REMOVED

EXISTING UNIT SERVING GYM 'AHU-2' TO BE REMOVED -

EXISTING STARTER AND DISCONNECT

\_\_\_\_\_

L\_\_\_\_\_\_

FOR AHU-2 TO BE REMOVED -

\_\_\_\_\_\_\_

-----

— EXISTING STARTER FOR MAKE-UP

\_\_\_\_\_\_

AIR UNIT TO BE REMOVED

EXISTING STARTER AND DISCONNECT

FOR AHU-1 TO BE REMOVED

**(♣)**R

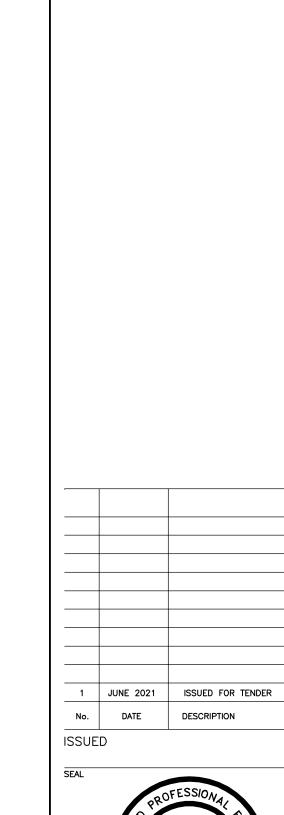
EXISTING MAKE-UP AIR

(DECOMMISIONED) TO BE REMOVED

EXISTING ELECTRICAL BREAKER PANEL —

EXISTING UNIT SERVING GYM 'AHU-1' TO BE REMOVED

—EXISTING 450x900 FLOOR ACCESS HATCH C/W LADDER



TRUE NORTH

BLDG. NORTH

DISTRICT SCHOOL BOARD

CONTRACTORS SHALL VERIFY AND BE
RESPONSIBLE FOR ALL DIMENSIONS AND
CONDITIONS ON THE JOB AND THE ENGINEER
SHALL BE INFORMED OF ANY VARIATIONS FROM

THE DIMENSIONS AND CONDITIONS SHOWN ON THE

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NAME. ALL INFORMATION SHOWN ON THIS DRAWING IS FOR USE ON THE SPECIFIED PROJECT ONLY AND SHALL NOT BE USED OTHERWISE WITHOUT WRITTEN PERMISSION OF SAB ENGINEERING INC.

Lindsay Collegiate Vocational Institute H.V.A.C. UPGRADES

260 Kent St W, Lindsay, ON K9V 2Z5

GYM MECH. PENTHOUSE &

AS SHOWN

2021-52

PART OF ROOF PLAN -

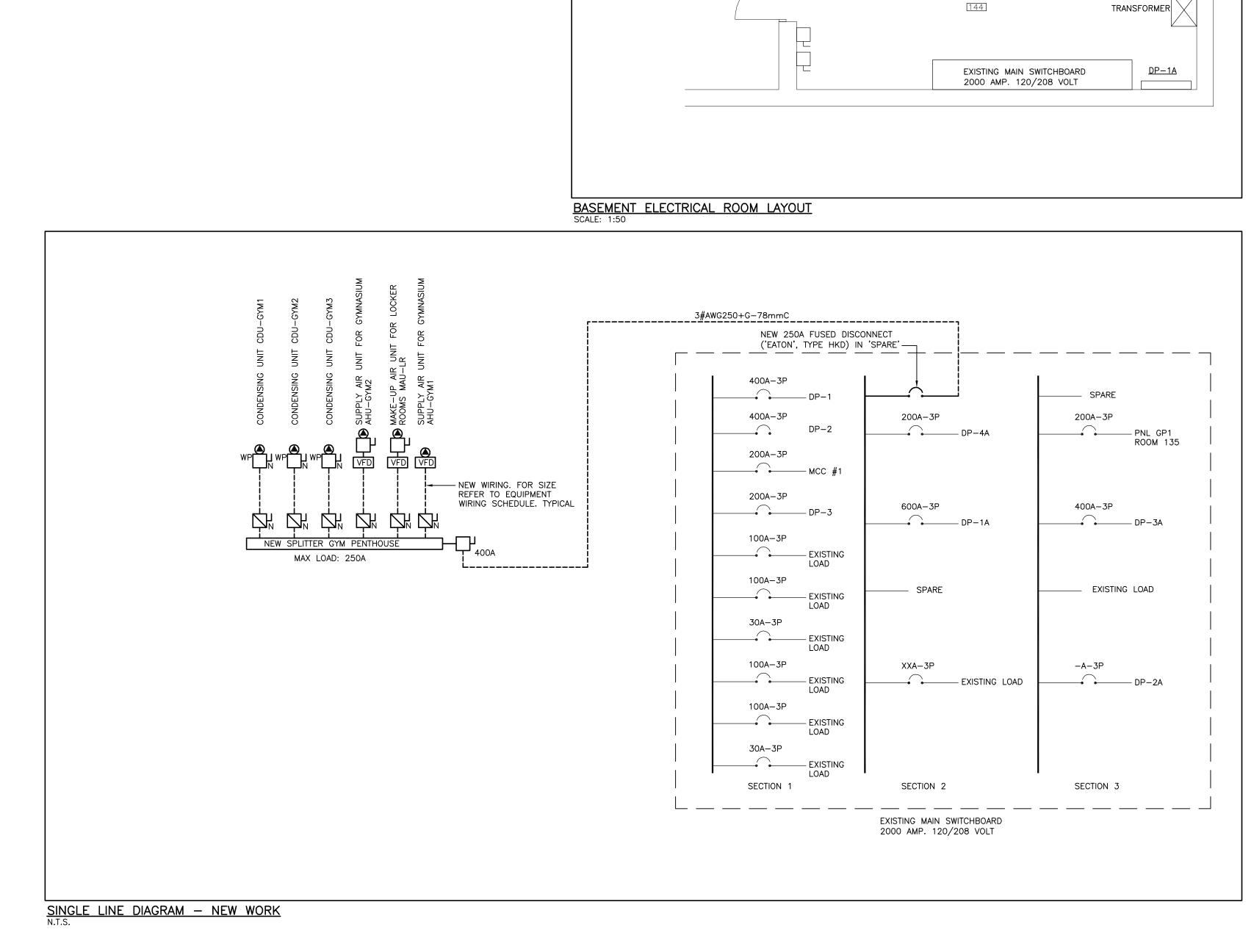
DRAWING TITLE

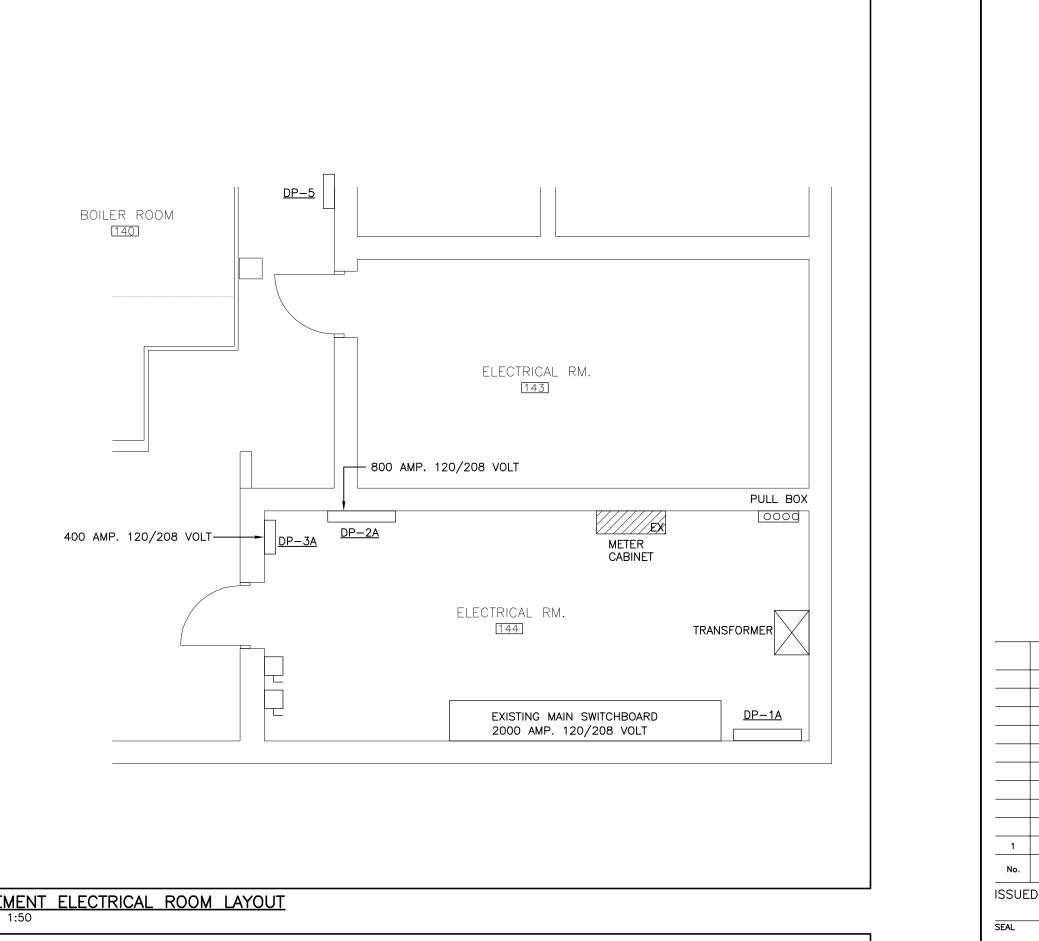
ELECTRICAL

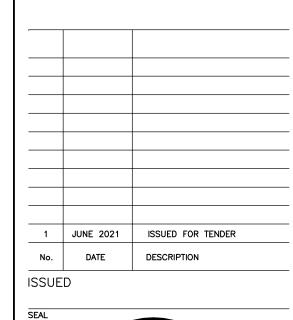
JUNE 2021

DRAWN BY

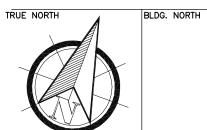
GENERAL NOTES:













**GENERAL NOTES:** 

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Lindsay Collegiate
Vocational Institute

260 Kent St W, Lindsay, ON K9V 2Z5

H.V.A.C. UPGRADES

ELECT. RM & SINGLE LINE DIAGRAM — ELECTRICAL

DRAWING TITLE

DATE	SCALE
JUNE 2021	AS SHOWN
DRAWN BY	DWG. No.
A.S.	E-3
JOB No.	2021-52