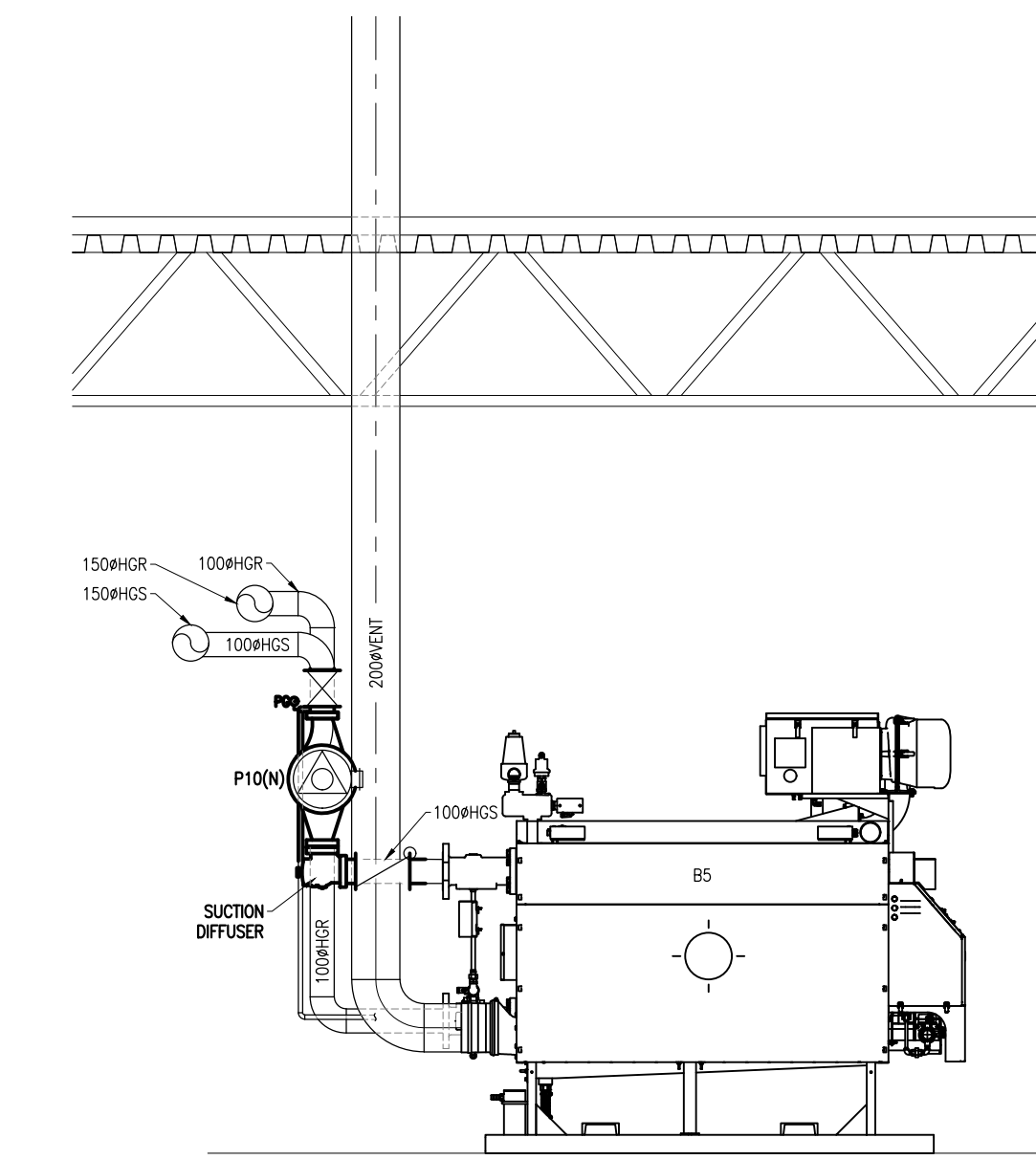
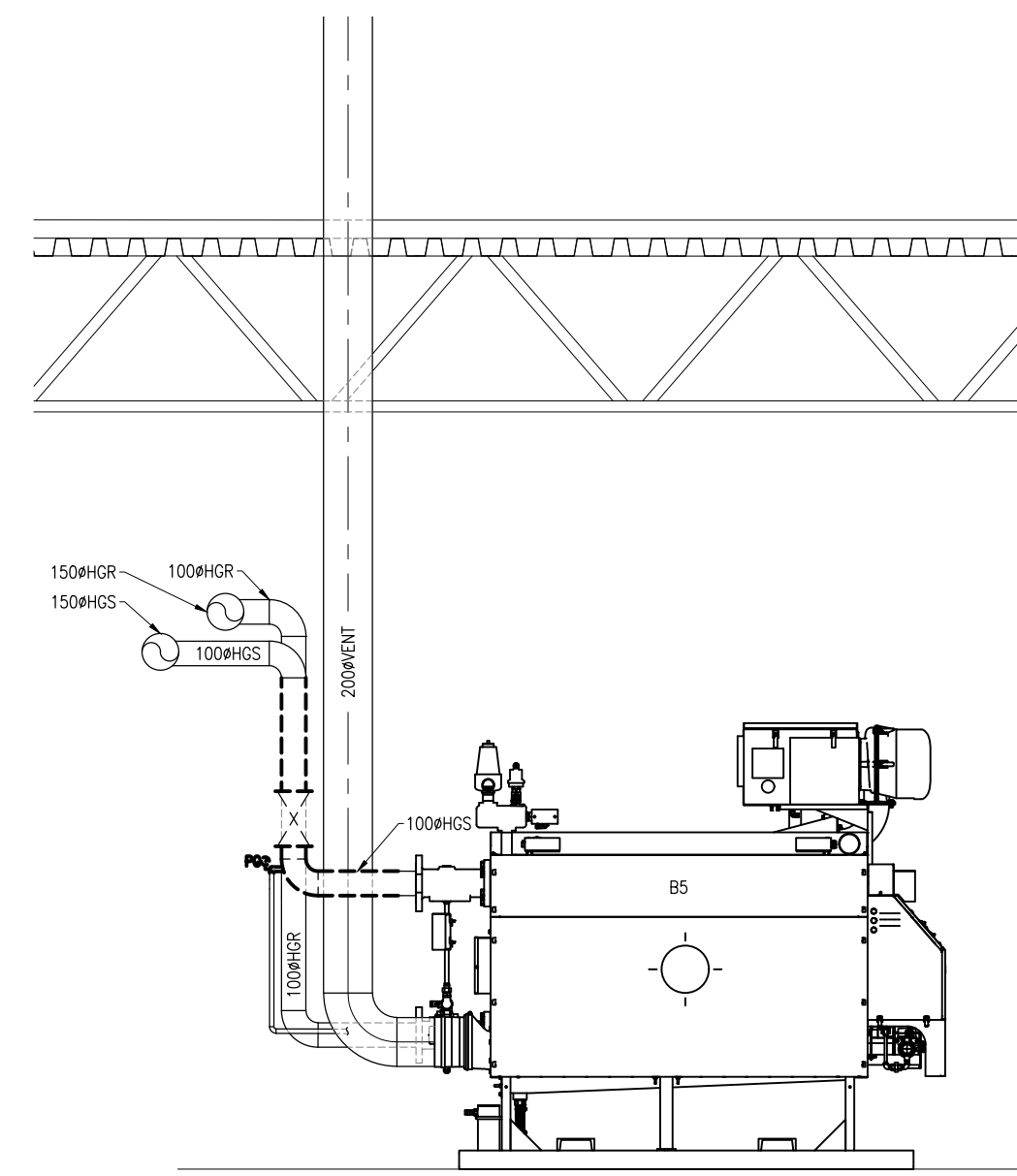
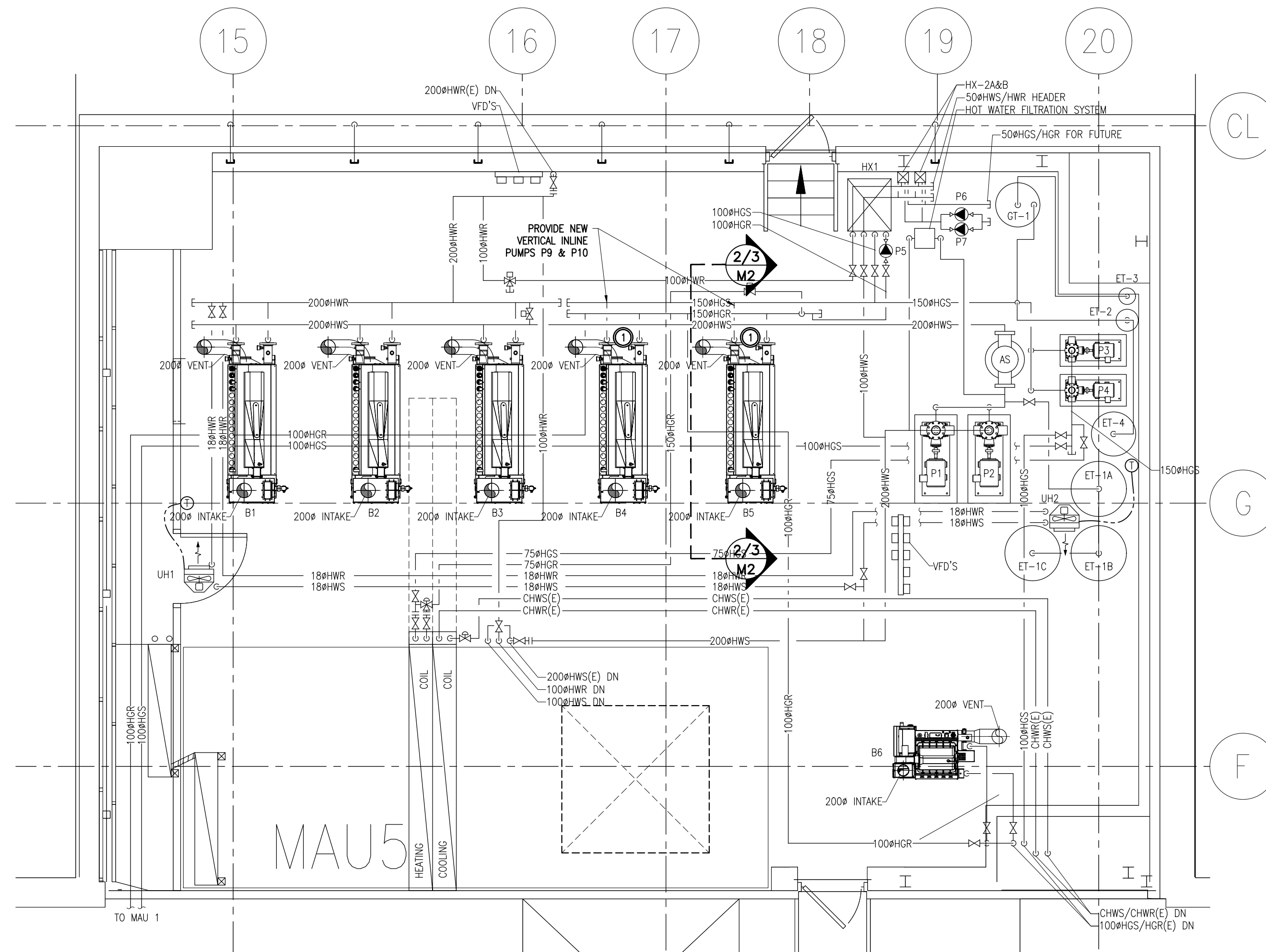
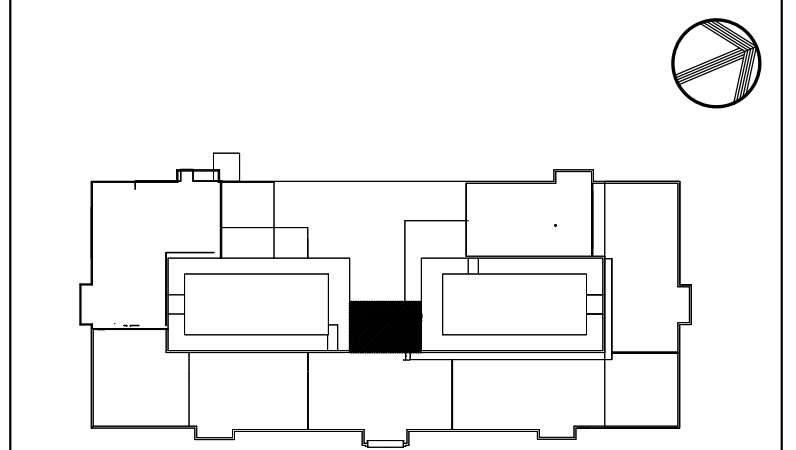


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KEY PLAN PLAN CLÉ



1 M2 BOILER ROOM NEW WORK
1:50

2 M2 BOILER ROOM DEMOLITION WORK SECTION VIEW
N.T.S.

3 M2 BOILER ROOM NEW WORK SECTION VIEW
N.T.S.

BOILER ROOM NEW WORK NOTES

- 1 PROVIDE VERTICAL INLINE PUMP AND FLANGED SUCTION DIFFUSER ON BOILER SUPPLY. REFER TO 2,3/M2 FOR INSTALLATION DETAILS.

PUMP SCHEDULE

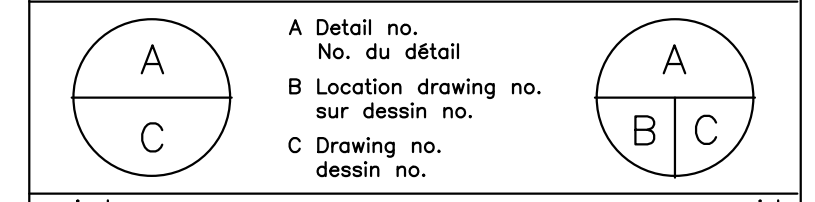
TAG	LOCATION	FUNCTION	TYPE	PUMP DATA				END SUCTION DIFFUSER (YES/NO)	ELECTRICAL DATA		BASIS OF DESIGN	REMARKS
				DESIGN FLOW (L/s)	DESIGN HEAD (kPa)	RPM	MIN. EFFICIENCY (%)		MOTOR SIZE (HP)	V/PH/Hz		
P9, P10	PENTHOUSE MECHANICAL ROOM	BOILER 4 & 5 PUMPING	SENSORLESS	18.9	30	1127	56.8	YES	1 1/2	575/60/3	BELL & GOSSETT E-80	BRONZE BODY, 100mm DIA. FLANGED CONNECTIONS, C/W VFD.

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0	21 12 2021	ISSUED FOR 66% REVIEW	GWAL

Date Printed 25 03 2022 Date imprimée

- Verify all dimensions and site conditions and be responsible for same
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project BOILERS #4+5 MODIFICATIONS projet

NRC S-77 BUILDING

drawing BOILER ROOM NEW WORK AND SCHEDULES dessin

designed	conçu	date	date
SH.		25-03-2022	
drawn	dessiné	scale	échelle
T.M.		AS SHOWN	
checked	vérifié	sheet	feuille
SH.		2 of/de 5	
approved	approuvé	W.O.no.	D.T.no.
SH.		A1-011224-16-01	

dwg.no. 6067-M2 dessin no.

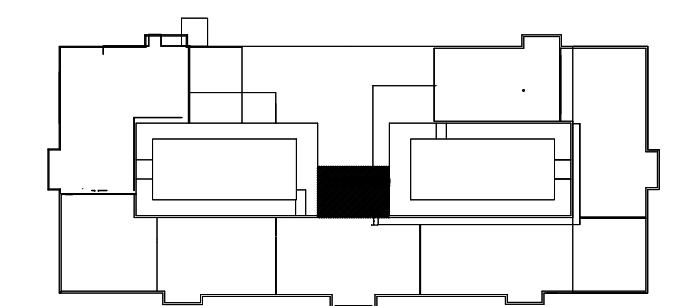


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KEY PLAN

PLAN CLÉ



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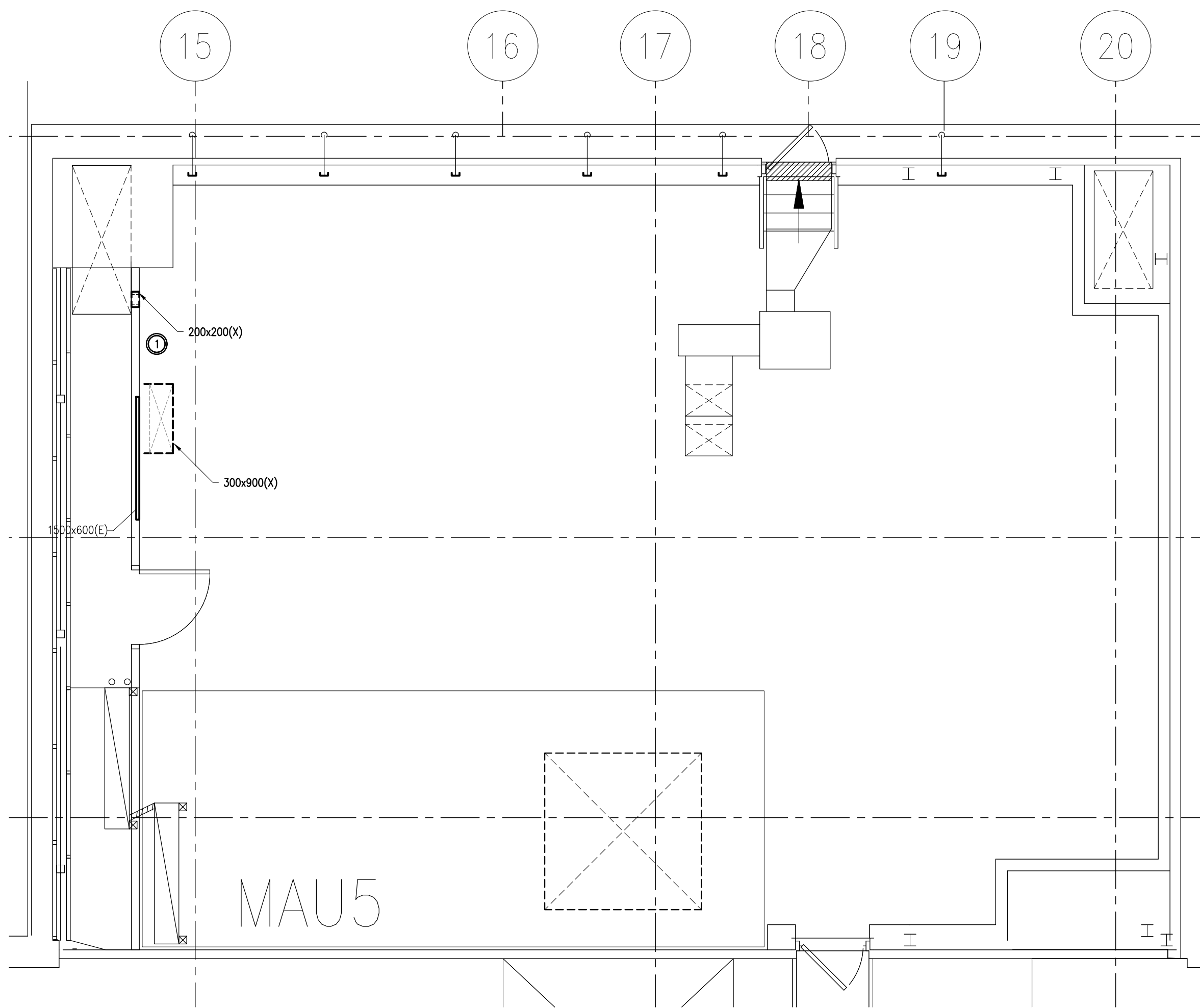
A	A Detail no. No. du détail	A
C	B Location drawing no. sur dessin no.	B
	C Drawing no. dessin no.	C

project BOILERS #4+5 MODIFICATIONS projet

NRC S-77 BUILDING
 drawing BOILER ROOM VENTILATION DEMOLITION AND NEW WORK dessin

designed	SH.	conçu	date	25-03-2022	date
drawn	T.M.	dessiné	scale	AS SHOWN	échelle
checked	SH.	vérifié	sheet	3 of/de 5	feuille
approved	SH.	approuvé	W.O.no.	A1-011224-16-01	D.T.no.

dwg.no. 6067-M3 dessin no.

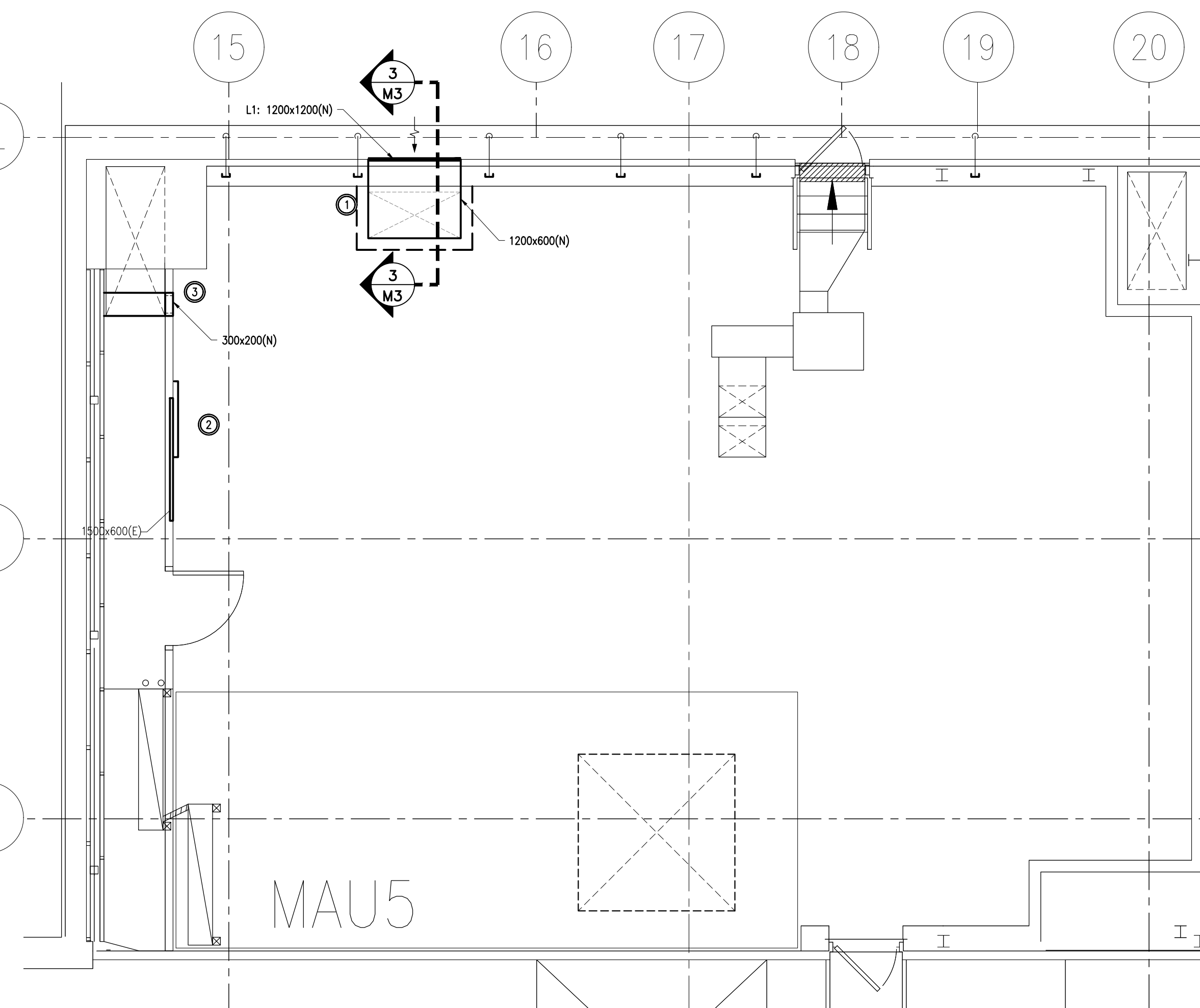


1
M3
 BOILER ROOM VENTILATION DEMOLITION WORK

1:50

BOILER ROOM VENTILATION DEMOLITION WORK NOTES

- 1 REMOVE EXISTING COMBUSTION AIR INLETS AS INDICATED.

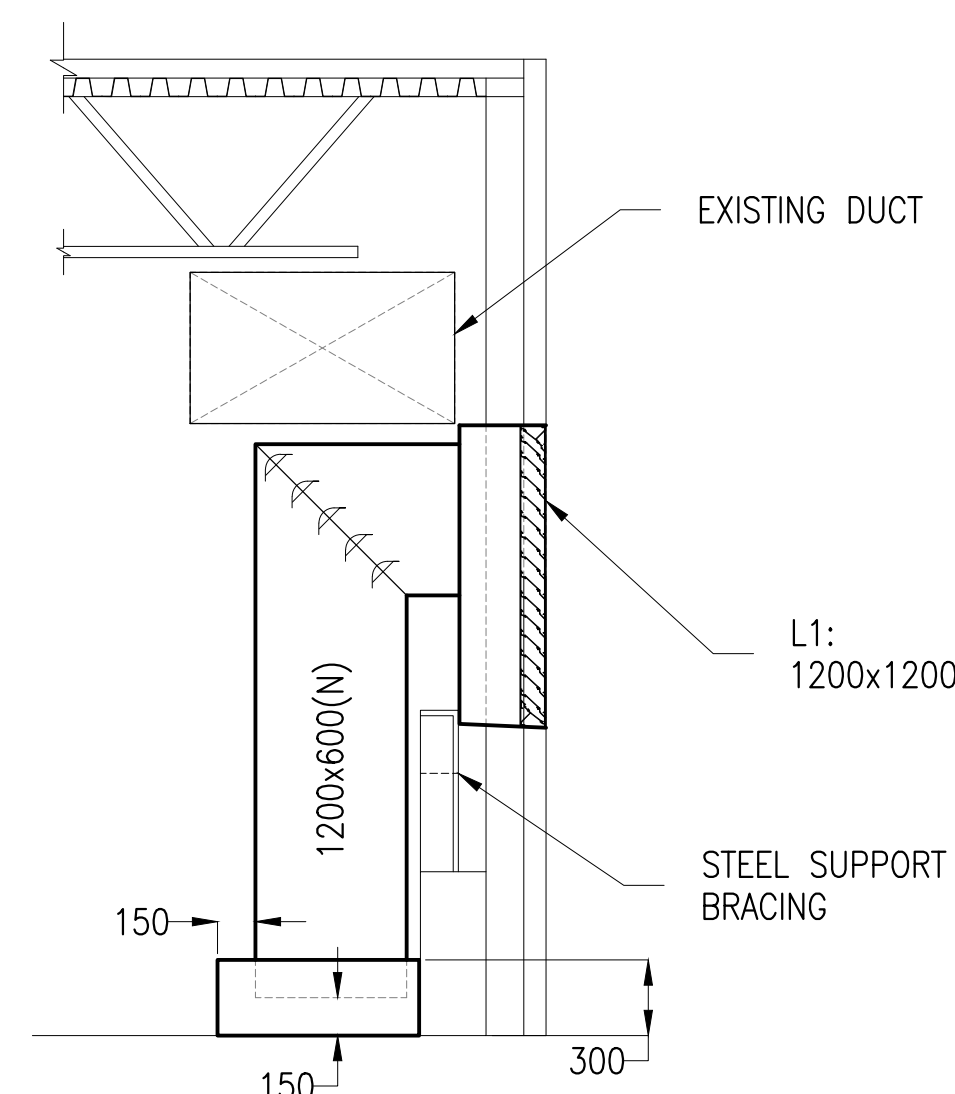


2
M3
 BOILER ROOM VENTILATION NEW WORK

1:50

BOILER ROOM VENTILATION NEW WORK NOTES

- 1 PROVIDE NEW COMBUSTION AIR INLET AS INDICATED. POSITION BETWEEN EXISTING STEEL BRACING, REFERENCE DETAILS 3/M3 AND 4/M3 FOR SPECIFIC LOCATIONS.
- 2 CAP EXISTING DUCTWORK AS INDICATED.
- 3 PROVIDE NEW 300x200 VENTILATION AIR INLET AS INDICATED.



3
M3
 BOILER ROOM VENTILATION WORK SECTION VIEW

N.T.S.



4
M3
 BOILER ROOM STEEL BRACING REFERENCE

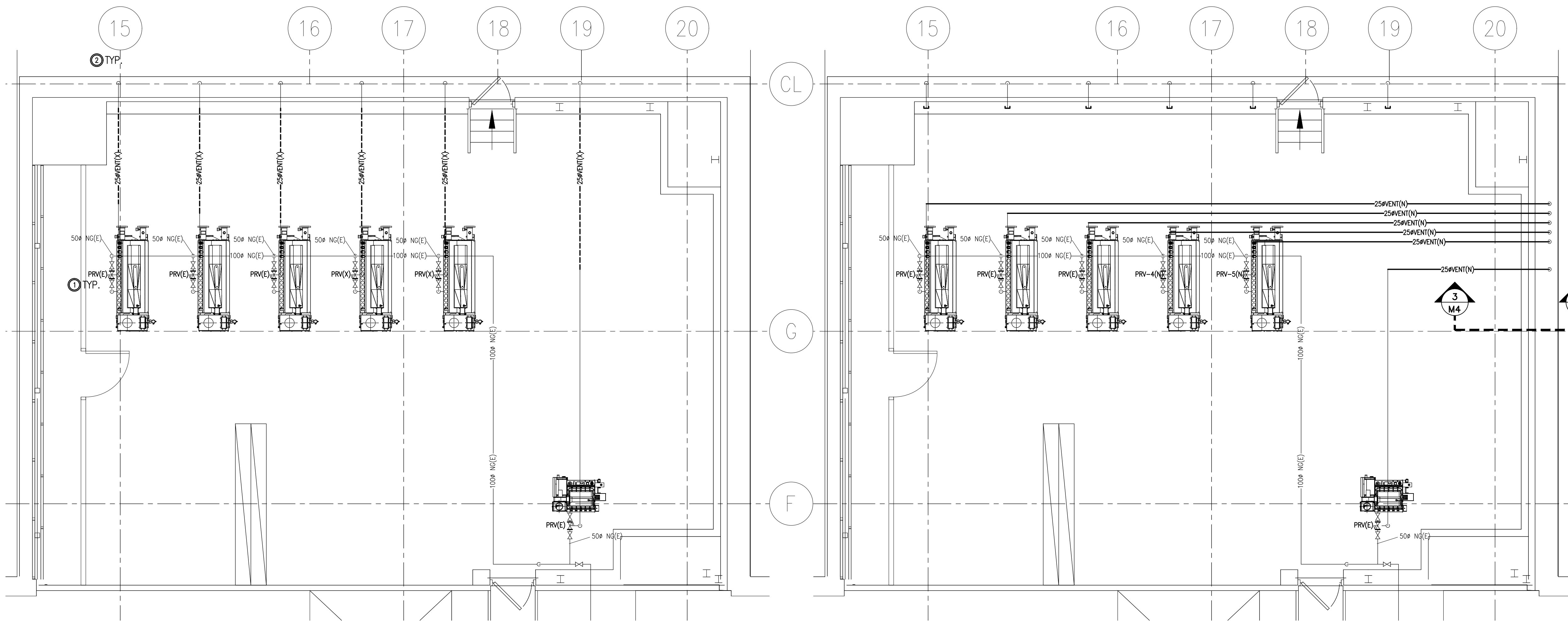
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KEY PLAN PLAN CLÉ



1
 M4 1:50
 BOILER ROOM NATURAL GAS DEMOLITION WORK

BOILER ROOM NATURAL GAS NOTES

- REPLACE EXISTING GAS REGULATORS WITH NEW, NEW REGULATORS TO OPERATE BETWEEN 750 Pa AND 3450 Pa.
- REMOVE EXISTING PIPING AND CAP INSIDE MECHANICAL ROOM. PROVIDE NEW PIPING AS INDICATED. PROVIDE EXTERIOR WALL PENETRATIONS AND MAKE WATER-PROOF. ROUTING TO BE APPROVED BY DEPARTMENTAL REPRESENTATIVE PRIOR TO INSTALLATION.

2
 M4 1:50
 BOILER ROOM NATURAL GAS NEW WORK

EXISTING GLYCOL BOILER PLANT CONTROL

SYSTEM START-UP

- THE SYSTEM IS STARTED BY SATISFYING THE FOLLOWING TWO CONDITIONS WHICH SETS THE BOILER ENABLE FLAG TO ON
- THE GLYCOL HEATING SEASON MUST BE ON, INITIAL SET AT A START DATE OF SEPTEMBER 1st AND AN END DATE OF JUNE 30th
- THE OUTDOOR AIR TEMPERATURE MUST BE BELOW THE GLYCOL BOILER ENABLE SETPOINT, INITIALLY SET TO 65°F
- WHEN THE "BLENDABLE" FLAG IS ON
- THE LEAD PUMP IS STARTED (P3 OR P4), THE LEAD PUMP IS ROTATED EVERY WEEK OR IF A PUMP FAILS
- ONCE A POSITIVE STATUS IS RETURNED FROM THE LEAD PUMP THE "HEATNET" IS ENABLED ("BACKUP OBJECT", "HEATDEMAND")
- THE BOILER PLANT WILL THEN START AND CONTROL TO THE SUPPLY WATER SETPOINT. THE SUPPLY WATER SETPOINT IS CALCULATED BY THE "BAS" AND SENT TO THE "HEATNET" WHEN THE VALUE CHANGES BY 0.1°F OR AFTER 10 MINUTES.

SETPPOINT CALCULATION

- THE GLYCOL SUPPLY SETPOINT IS CALCULATED USING THE OAT LIMITED BETWEEN A MAXIMUM VALUE OF 135°F AND MINIMUM VALUE OF 80°F
- GLYCOL BOILER SUPPLY WATER SETPOINT WILL BE RESET FROM THE FOUR HEATING COIL CONTROL VALVES, MAU 1, 2, 3 AND MAU 5. THE SETPOINT IS ADJUSTED BETWEEN +0.0°F/-5.0°F
- IF ANY VALVE IS GREATER THAN 90% RESET THE SETPOINT UP
- IF ALL VALVES ARE LESS THAN 85% RESET THE SETPOINT DOWN

EXISTING HX-1 CONTROL

HX-1 PROVIDES BACKUP HEAT FROM THE HOT WATER BOILER PLANT TO THE GLYCOL BOILER PLANT. IT ALSO SHIFTS LOAD FROM THE GLYCOL BOILER PLANT TO THE HOT WATER BOILER PLANT WHICH REDUCES FIRING RATES OF THE BOILER PLANT TO INCREASE OVERALL EFFICIENCY.

SYSTEM START-UP

- HX-1 IS ENABLED WHEN THE GLYCOL "BLENDABLE" FLAG IS ON, AND THE GLYCOL BOILER PLANT CONTROL SIGNAL IS GREATER THAN 80% OR COMMUNICATION HAS BEEN LOST WITH THE BOILER 4 WHICH IS THE MASTER BOILER FOR THE GLYCOL BOILER PLANT. WHEN HX-1 IS ENABLED THEN
- P5 IS STARTED
- THE HOT WATER VALVE FOR HX-1 WILL CONTROL TO THE HX-1 LEAVING GLYCOL SETPOINT
- HX-1 IS DISABLED WHEN THE GLYCOL "BLENDABLE" FLAG IS OFF OR THE GLYCOL BOILER PLANT CONTROL SIGNAL IS LESS THAN 50% AND COMMUNICATION HAS BEEN RESTORED

P5 SPEED CONTROL

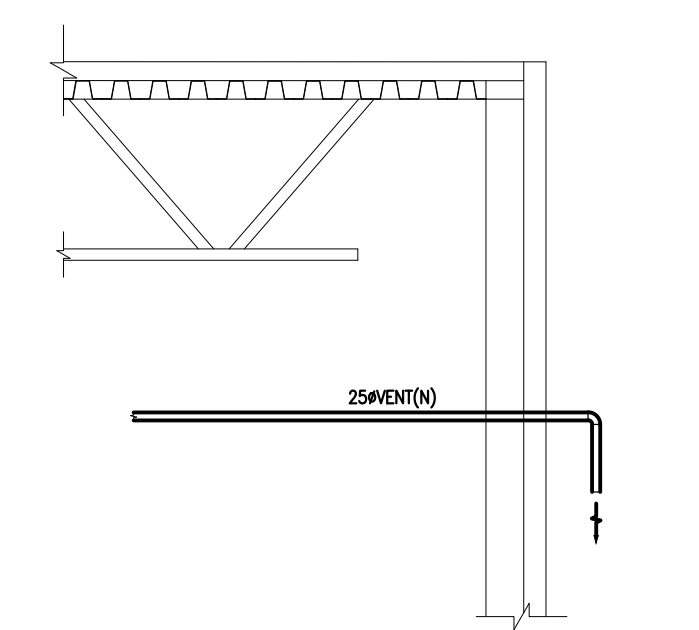
- P5 VARIES ITS SPEED TO MAINTAIN THE GLYCOL SUPPLY TEMPERATURE AT 2°F BELOW THE GLYCOL SUPPLY SETPOINT. THIS WILL KEEP THE PUMP AT A MINIMUM SPEED UNTIL A SIGNIFICANT LOSS OF BOILER CAPACITY EXISTS
- THE MINIMUM SPEED OF P5 IS RESET FROM THE GLYCOL BOILER PLANT CONTROL SIGNAL

HX-1 SETPOINT CALCULATION

- THE GLYCOL TEMPERATURE LEAVING HX-1 IS CALCULATED BY ADDING TWO ADJUSTMENTS TO THE GLYCOL SUPPLY SETPOINT
- FROM THE ERROR THAT EXISTS BETWEEN THE GLYCOL SUPPLY SETPOINT AND THE GLYCOL SUPPLY TEMPERATURE PLUS
- AN ADJUSTMENT DETERMINED BY THE GLYCOL BOILER PLANT CONTROL SIGNAL
- HX-1 SETPOINT = GLYCOL SUPPLY SETPOINT + HX-1 ADJUST + PLANT ADJUST

NEW CONTROLS

- PUMP P9 & P10 WILL START WHEN ASSOCIATED BOILER IS ENABLED
- PUMP WILL BE CONTROLLED BY ASSOCIATED BOILER CONTROLLER
- PROVIDE STATUS POINT ON BAS FOR EACH PUMP AND UPDATE GRAPHICS ACCORDINGLY.



3
 M4 1:50
 BOILER ROOM VENTING NEW WORK SECTION VIEW

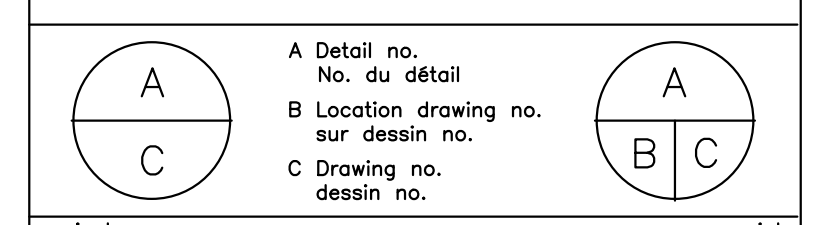
GAS PRV SCHEDULE						
TAG	LOCATION	LOAD (kW)	INLET PRESSURE (kPa)	OUTLET PRESSURE (kPa)	RELIEF VALVE PRESSURE SETPOINT (kPa)	REMARKS
PRV-4 & -5	BOILER ROOM NATURAL GAS	879	34.5	1.75	3.5	

NOTES: 1. FOR DETAILS REFER TO SPECIFICATIONS.
 2. GAS PRV'S SHALL BE SELECTED SUCH THAT ACCEPTABLE OUTLET PRESSURE IS MAINTAINED THROUGHOUT ENTIRE OPERATING RANGE (COORDINATE WITH EQUIPMENT SHOP DRAWINGS).

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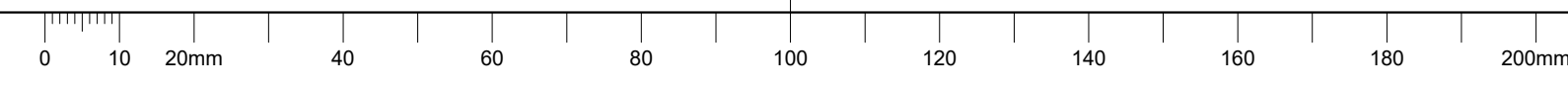


project BOILERS #4+5 MODIFICATIONS projet

NRC S-77 BUILDING
 drawing BOILER ROOM NATURAL GAS DEMOLITION AND NEW WORK dessin

designed	conçu	date	date
SH.		25-03-2022	
drawn	dessiné	scale	échelle
T.M.		AS SHOWN	
checked	vérifié	sheet	feuille
SH.		4 of/de 5	
approved	approuvé	W.O.no.	D.T.no.
SH.		AI-011224-16-01	

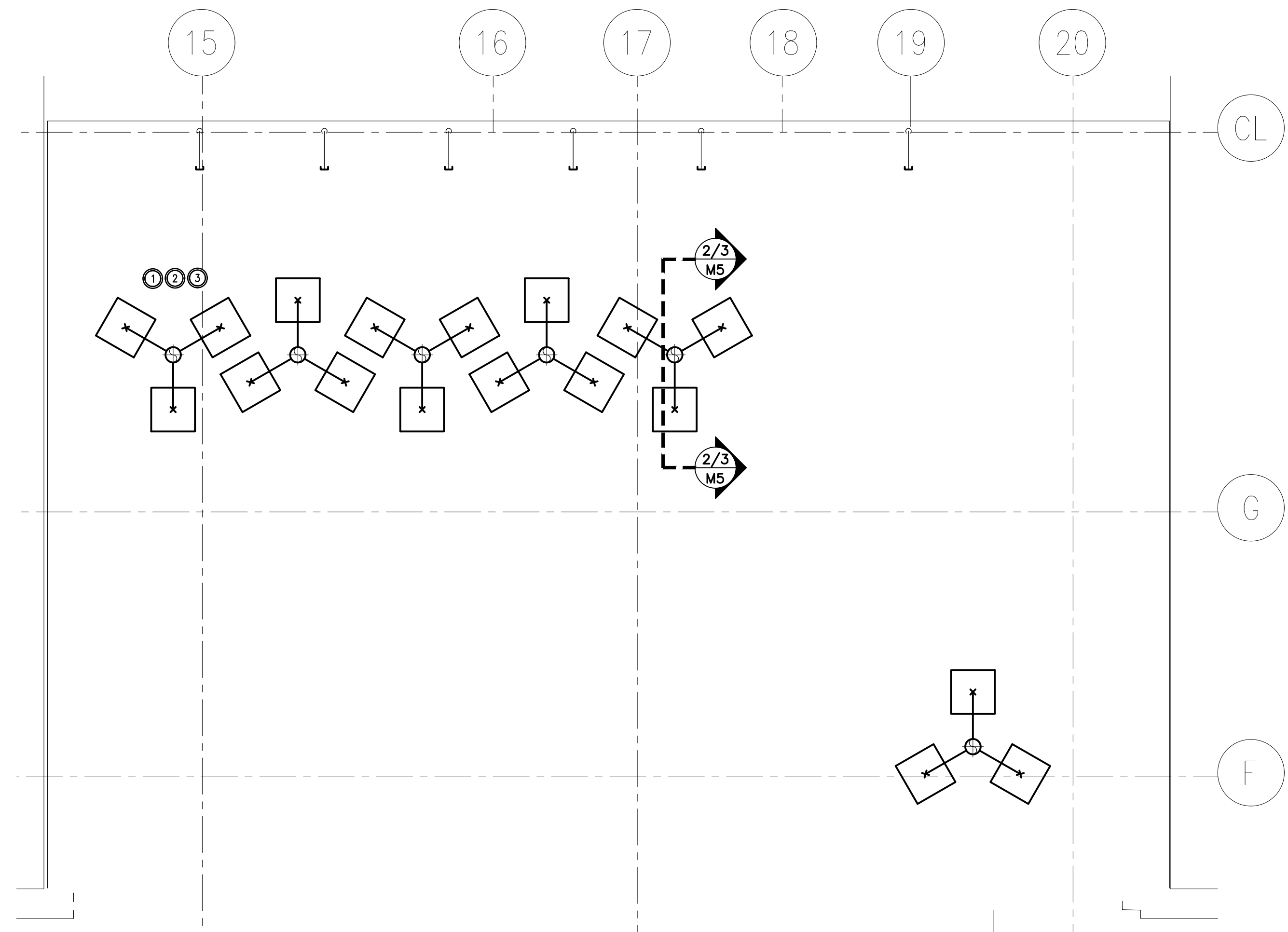
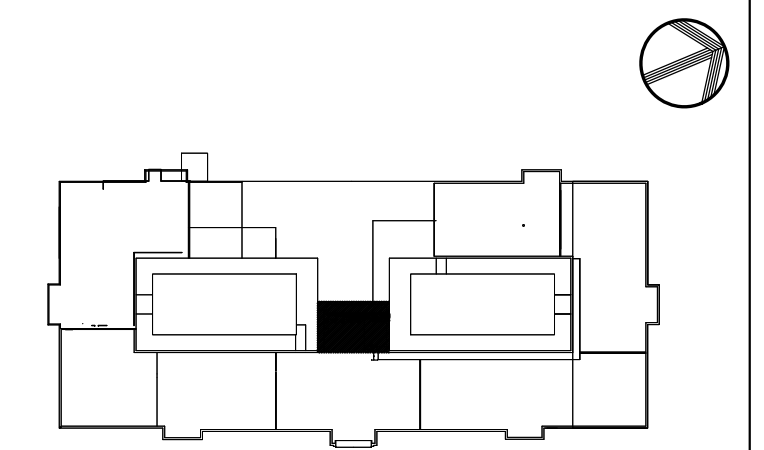
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GENERAL NOTES

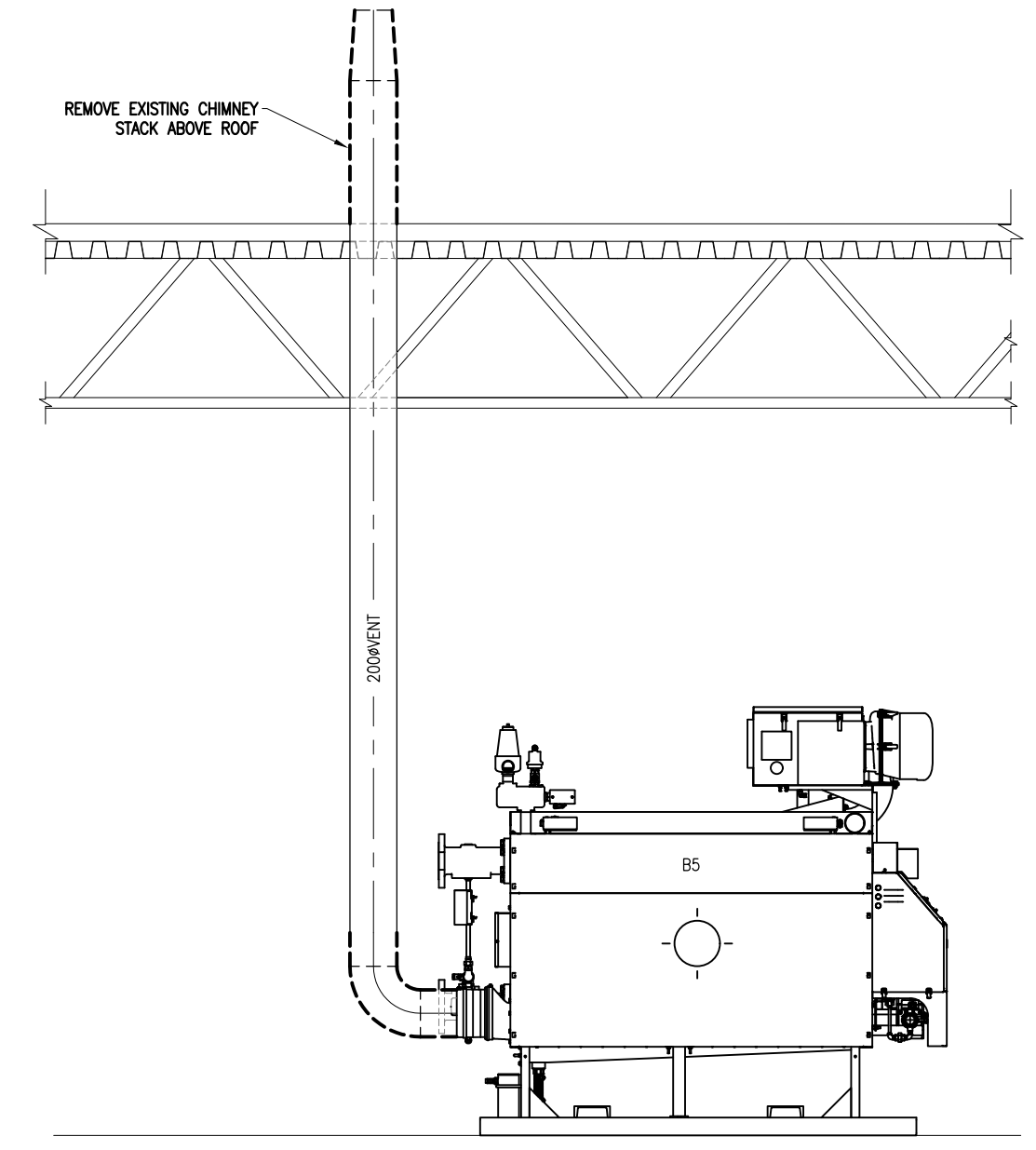
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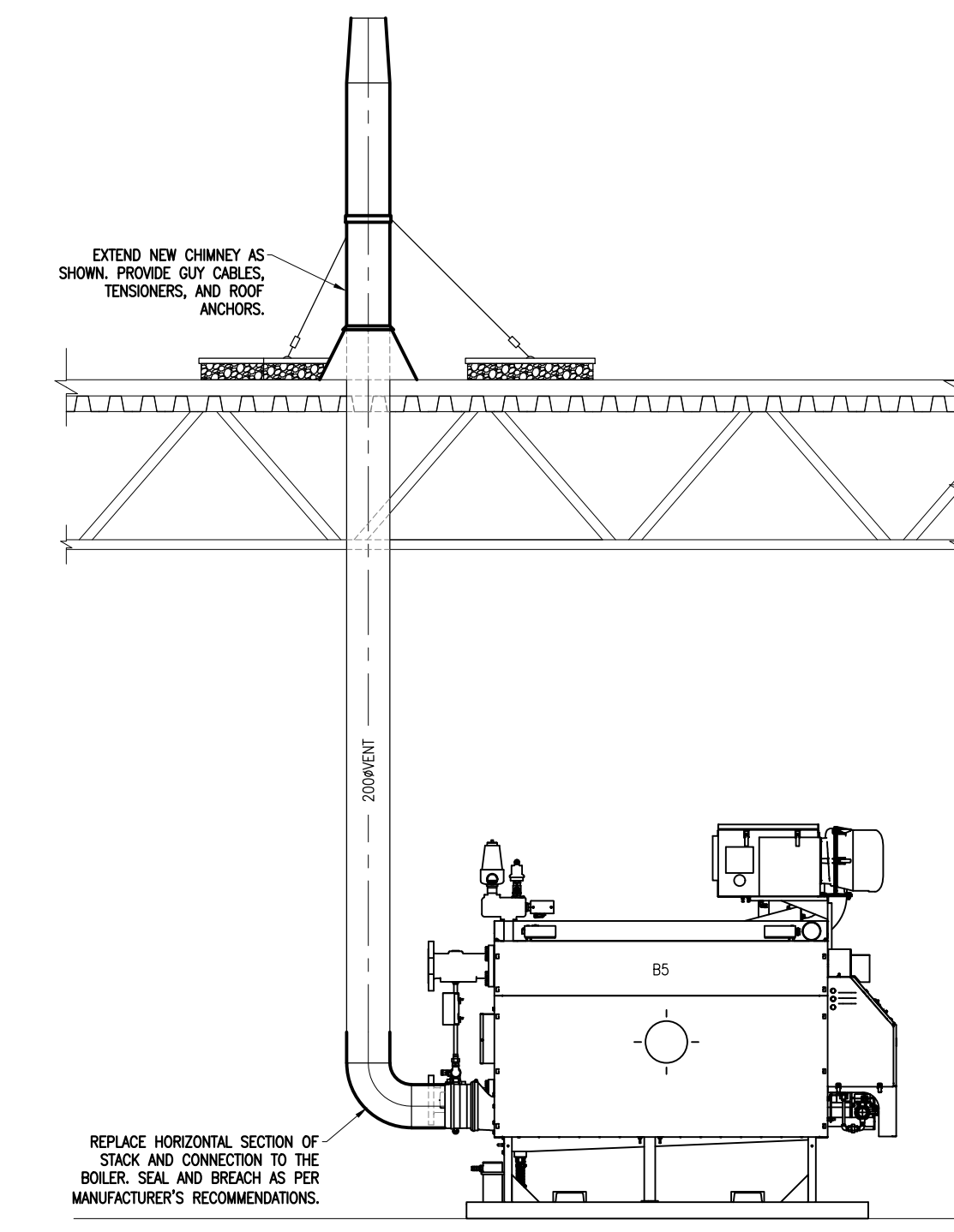


1
M5 1:50
ROOFTOP BOILER EXHAUST EXTENSION WORK

- ROOFTOP EXHAUST EXTENSION WORK NOTES**
- REPLACE EXISTING 900 HIGH VENT STACK ABOVE ROOF WITH 1675 HIGH, SECURE CHIMNEYS WITH GUY CABLE AND ROOF ANCHORS.
 - EXISTING STACK MODELS ARE SECURITY CHIMNEY SECURE SEAL SSD. STACK EXTENSIONS TO BE COMPATIBLE WITH EXISTING MODEL OF STACK.
 - FOLLOWING COMPLETION OF WORK, CLEAN ENTIRETY OF DUCTWORK AND APPLY FLASHING AND SEALANT TO ENSURE STACK IS WATERTIGHT. REAPPLY BREACHING AND SEALING TO HORIZONTAL SECTION OF DUCTWORK, AS SHOWN IN 3/M5.



2
M5 1:30
BOILER STACK DEMOLITION WORK SECTION VIEW

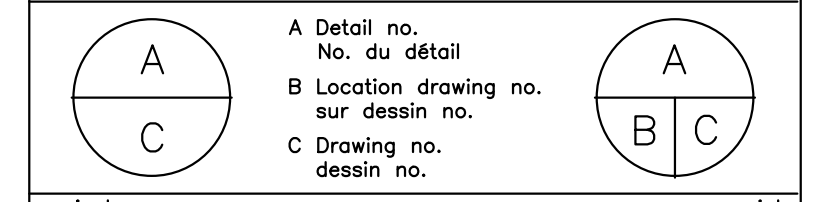


3
M5 1:30
BOILER STACK NEW WORK SECTION VIEW

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designed	conçu	date	date
SH.		25-03-2022	
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