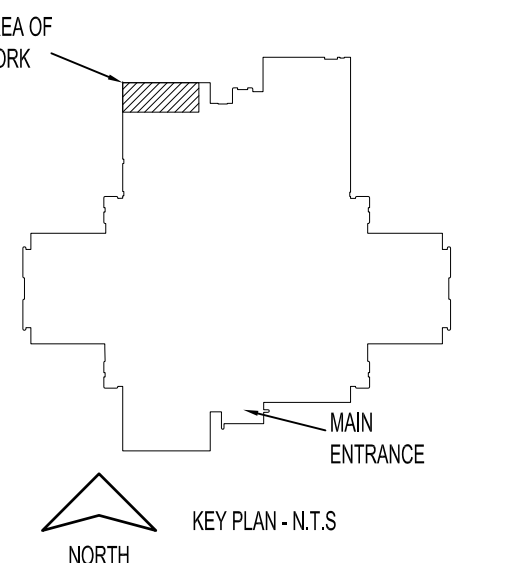
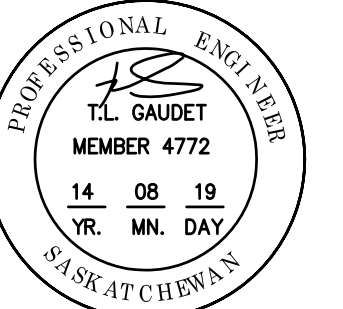




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## DO NOT SCALE DRAWINGS

1	ISSUED FOR TENDER	2014.00.00
0	99% REVIEW	2014.06.26
Revision / Révision	Description / Description	Date / Date

## Public Works and Government Services Canada

100 - 167 Lombard Avenue  
Winnipeg, Manitoba Canada R3C 2Z1

Project title/Titre du projet  
**National Hydrology Research Centre  
#11 Innovation Blvd  
Saskatoon, Saskatchewan S7N 3H5**

## Chemical Room Acid Storage Retrofit

Approved by/Approuvé par  
**RPMD-EC**

Designed by/Concept par  
**STANTEC Consulting Ltd.**

Drawn by/Dessiné par  
**JBA, STANTEC Consulting Ltd.**

PWOSC Project Manager/Administrateur de Projets TPSSC  
**AM, RPMD-EC**

PWOSC Architectural and Engineering Resources Manager/  
Ressources Architecturales et de Directeur d'ingénierie, TPSSC

Client/client

**TS, RPMD-EC**

Drawing title/Titre du dessin

## MECHANICAL SCHEDULES FLOW DIAGRAM CONTROL DIAGRAM

Project No./No. du projet <b>NHRC-002-J1115</b>	Sheet/Feuille <b>W-M4</b> OF XX	Revision no./ Loi Révision <b>1</b>
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## PLATE HEAT EXCHANGER (PHE)

UNIT NUMBER	DUTY	DESCRIPTION	BUILDING SIDE				TRANSFER SIDE (50/50 ETHYLENE GLYCOL/WATER)				HTG CAPACITY Kw
			LIQUID FLOW L/S	EWT ° C	LWT ° C	WPD KPa.	LIQUID FLOW L/S	EWT ° C	LWT ° C	WPD KPa.	
PHE-100	1661 STORAGE ROOMS	BRAZED PLATE 112 WIDE x 313 HIGH x 55 DEEP, ALLOY 316/ S.S. PLATES, 0.25mm THK, 25MM CONNECTIONS	0.428	82.22	60	11.23	0.4725	35	57.22	13.788	38.88

## FAN SCHEDULE (F)

FAN No.	DUTY	DESCRIPTION	AIR FLOW L/S	STATIC PRESSURE Pa.	FAN RPM	ELECTRICAL
F-CRE-1661	1661 VOLATILE STORAGE	CENTRIFUGAL FIBERGLASS EXHAUST AIR FAN, 247mm (9.75in) WHEEL, CURVE BLADE	94	186	1463	187WATT 1PH 120 VOLT, 1750 RPM MOTOR
F-CRE-1662	1662 HAZARDOUS WASTE	CENTRIFUGAL FIBERGLASS EXHAUST AIR FAN, 247mm (9.75in) WHEEL, CURVE BLADE	94	186	1463	187WATT 1PH 120 VOLT, 1750 RPM MOTOR
F-CRE-1663	1663 COMPRESSED GAS	CENTRIFUGAL FIBERGLASS EXHAUST AIR FAN, 247mm (9.75in) WHEEL, CURVE BLADE	94	186	1463	187WATT 1PH 120 VOLT, 1750 RPM MOTOR
F-CRE-1664	1664 ACIDS	CENTRIFUGAL FIBERGLASS EXHAUST AIR FAN, 247mm (9.75in) WHEEL, CURVE BLADE	94	186	1463	187WATT 1PH 120 VOLT, 1750 RPM MOTOR
F-CRE-1665	1665 BATTERY STORAGE	CENTRIFUGAL FIBERGLASS EXHAUST AIR FAN, 247mm (9.75in) WHEEL, CURVE BLADE	94	186	1463	187WATT 1PH 120 VOLT, 1750 RPM MOTOR

## FAN NOTES :

F-CRE-1661, F-CRE-1662, F-CRE-1663, F-CRE-1664, F-CRE-1665  
ALL FIBER-REINFORCED PLASTIC (FRP) FAN CONSTRUCTION, WHEEL & HOUSING. UV INHIBITORS FOR OUTDOOR INSTALLATION. SHAFT TO BE 316 STAINLESS STEEL. FAN AND ARE TO BE BAKED POLYESTER COATED. BUILT-IN ACCESS DOOR TO ACCESS MOTOR, DRIVE & ELECTRICAL JUNCTION BOX. FAN TO BE BELT DRIVE, TOP ANGULAR UP DISCHARGE. PROVIDE ROUND SLIP INLET & DISCHARGE CONNECTION, UNDRILLED.

SOUND POWER LEVEL										SOUND PRESSURE LEVEL dB(A) CALCULATED FREE-FIELD									
1	2	3	4	5	6	7	8	LWA		1	3	5	10	15	50	100	150	FEET	
74	72	71	74	69	66	64	64	75		78	68	64	58	54	44	38	34		

## FILTER SCHEDULE (FL)

FILTER NUMBER	DUTY	DESCRIPTION	AIR FLOW L/S	FACE AREA M2	FACE VELOCITY M/S
FL-100	1661 VOLATILE STORAGE	PLEATED PANEL FILTER, MERV 8 RATING, NOMINAL 500W x 300W x 25 THICK	94	0.15 (1.66 FT2)	0.602 (120 FPM)
FL-101	1662 HAZARDOUS WASTE	PLEATED PANEL FILTER, MERV 8 RATING, NOMINAL 500W x 300W x 25 THICK	94	0.15 (1.66 FT2)	0.602 (120 FPM)
FL-102	1663 COMPRESSED GAS	PLEATED PANEL FILTER, MERV 8 RATING, NOMINAL 500W x 300W x 25 THICK	94	0.15 (1.66 FT2)	0.602 (120 FPM)
FL-103	1664 ACIDS	PLEATED PANEL FILTER, MERV 8 RATING, NOMINAL 500W x 300W x 25 THICK	94	0.15 (1.66 FT2)	0.602 (120 FPM)
FL-104	1665 BATTERY STORAGE	PLEATED PANEL FILTER, MERV 8 RATING, NOMINAL 500W x 300W x 25 THICK	94	0.15 (1.66 FT2)	0.602 (120 FPM)

PROVIDE FOR EACH FILTER NOTED 2 SETS OF SIDE SLIDEOUT FRAMES, AND HINGED ACCESS PANEL SUCH THAT FILTERS MAY BE ALTERNATED BETWEEN SUMMER AND WINTER USE (SUMMER UPSTREAM OF HEATING COIL, WINTER DOWNSTREAM OF HEATING COIL)

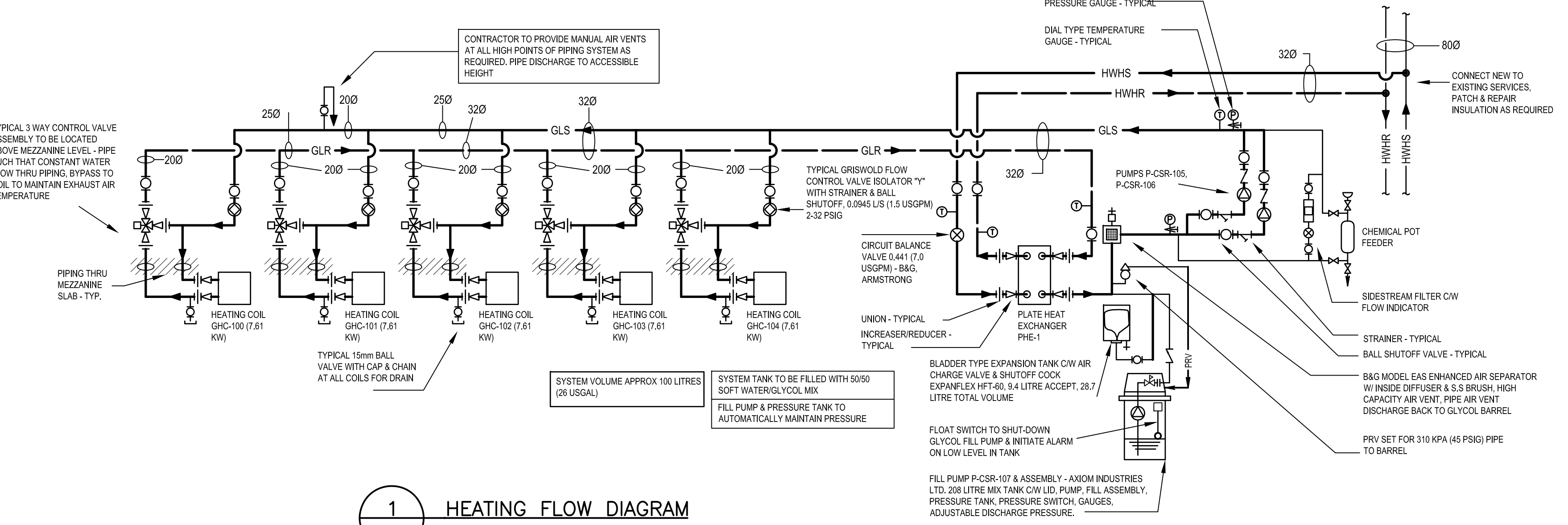
PROVIDE SET OF FILTERS FOR SYSTEM STARTUP, AND ONE SET OF FILTERS UPON TURNOVER OF SYSTEMS TO OWNERS AND ONE ADDITIONAL SET OF FILTERS.

## PUMP SCHEDULE (P)

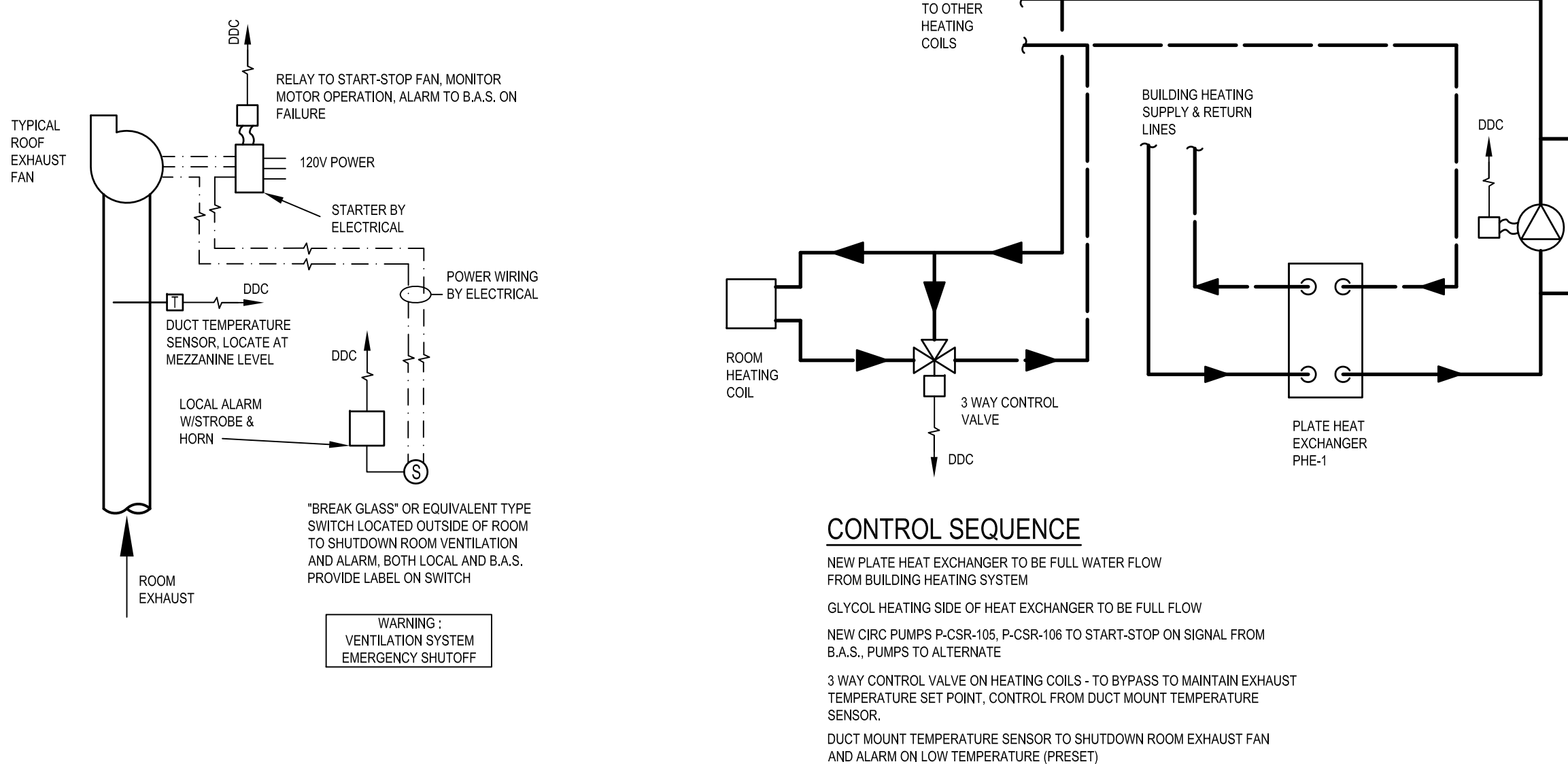
FILTER NUMBER	DUTY	DESCRIPTION	FLOW L/S	HEAD KPa.	ELECTRICAL	NOTE
P-CSR-106	GLYCOL HEATING SYSTEM CIRC	INLINE BOOSTER PUMP, 3IN IMPELLER, 50/50 WATER/ETHYLENE GLYCOL SOLUTION	0.4725	83.66	186.5 W 1 PH 120 VOLTS 3300 MOTOR RPM, BOTH PUMPS ON EPOWER	1 PUMP TO OPERATE (1 PUMP ON STANDBY), CONTROL FROM B.A.S.
P-CSR-107	GLYCOL SYSTEM FILL	PACKAGED MAKE-UP WATER ASSEMBLY WITH PUMP, BARREL, LID	0.06	345 KPA	0.7 AMP W 1 PH 120 VOLTS, PLUG-IN POWER CONNECTION	SELF CONTAINED UNIT

## HEATING COIL SCHEDULE (GHC/HC)

COIL NUMBER	DUTY	DESCRIPTION	AIR FLOW L/S	FACE AREA M2	FACE VELOCITY M/S	APD Pa.	EAT ° C	LAT ° C	LIQUID FLOW L/S	EWT ° C	LWT ° C	WPD Pa.	HTG CAPACITY Kw
GHC-100	1661 VOLATILE STORAGE	4 ROW, 14 FINS/IN, NOMINAL 400W x 300W 50/50 GLYCOL/WATER MIX	94	0.120 (1.3 FT2)	0.75 (150 FPM)	18	-40	30	0.0945	57.22	34.72	29.8	7.61
GHC-101	1662 HAZARDOUS WASTE	4 ROW, 14 FINS/IN, NOMINAL 400W x 300W 50/50 GLYCOL/WATER MIX	94	0.120 (1.3 FT2)	0.75 (150 FPM)	18	-40	30	0.0945	57.22	34.72	29.8	7.61
GHC-102	1663 COMPRESSED GAS	4 ROW, 14 FINS/IN, NOMINAL 400W x 300W 50/50 GLYCOL/WATER MIX	94	0.120 (1.3 FT2)	0.75 (150 FPM)	18	-40	30	0.0945	57.22	34.72	29.8	7.61
GHC-103	1664 ACIDS	4 ROW, 14 FINS/IN, NOMINAL 400W x 300W 50/50 GLYCOL/WATER MIX	94	0.120 (1.3 FT2)	0.75 (150 FPM)	18	-40	30	0.0945	57.22	34.72	29.8	7.61
GHC-104	1665 BATTERY STORAGE	4 ROW, 14 FINS/IN, NOMINAL 400W x 300W 50/50 GLYCOL/WATER MIX	94	0.120 (1.3 FT2)	0.75 (150 FPM)	18	-40	30	0.0945	57.22	34.72	29.8	7.61

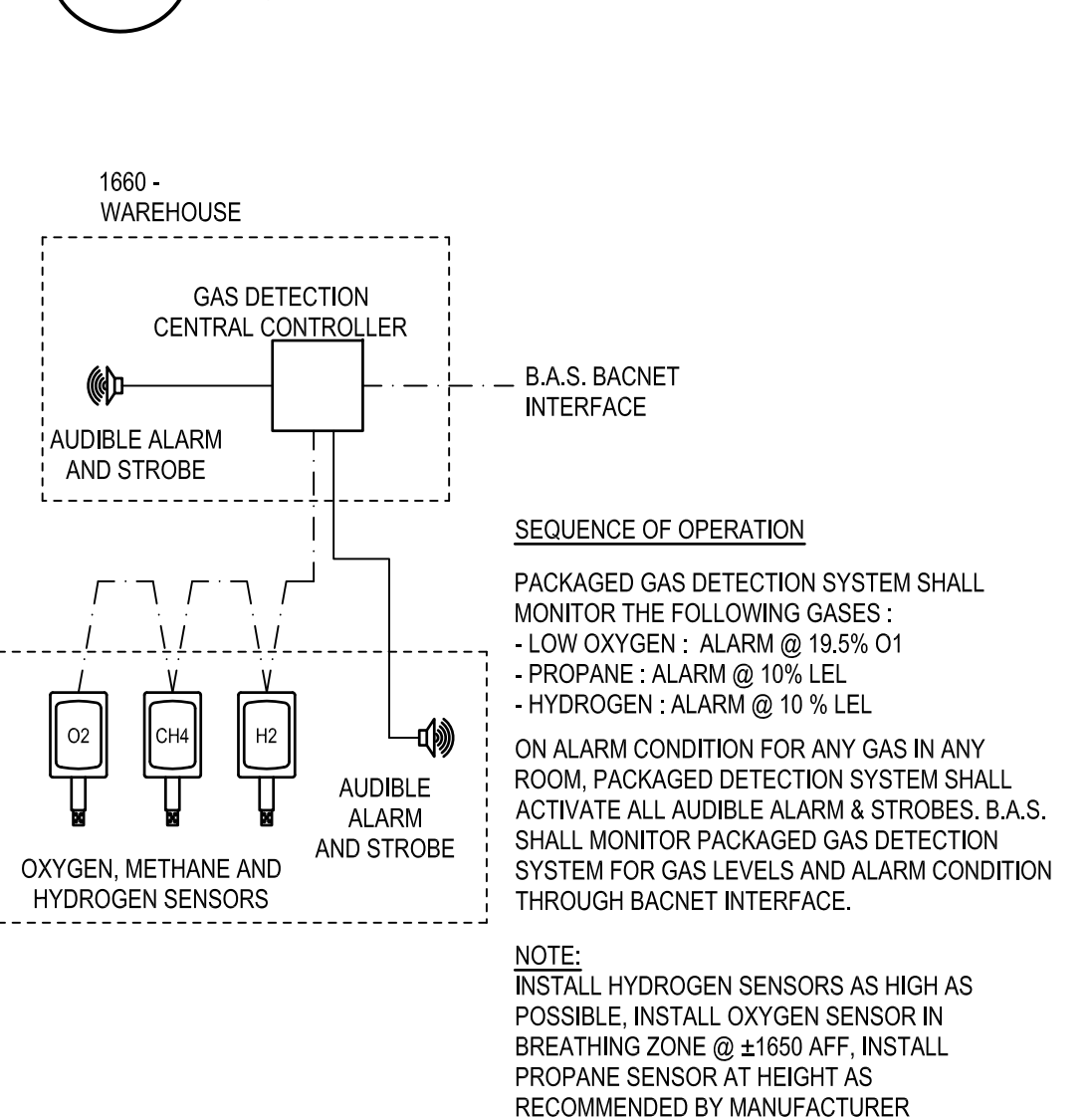


1 HEATING FLOW DIAGRAM  
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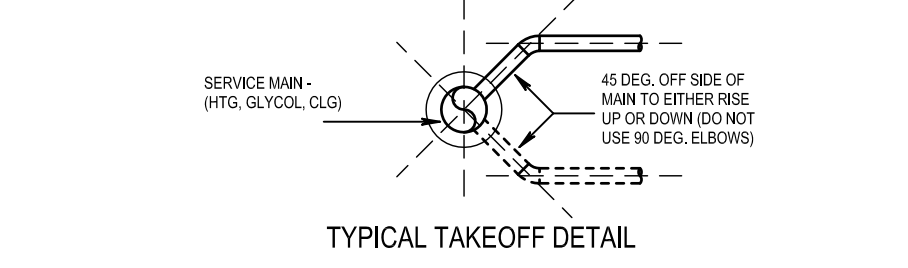
2 CONTROL SEQUENCE  
SCALE: N.T.S.

3 VENTILATION CONTROL DIAGRAM  
SCALE: N.T.S.

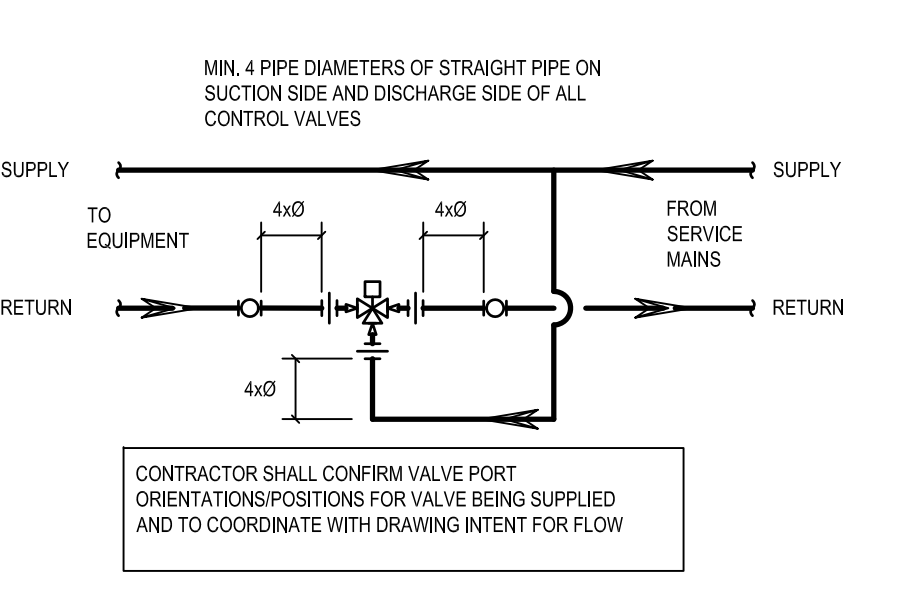


6 GAS DETECTION CONTROL SCHEMATIC RM. 1663  
SCALE: N.T.S.

2 HEATING CONTROL DIAGRAM  
SCALE: N.T.S.



5 TYPICAL PIPE TAKEOFF DETAIL  
SCALE: N.T.S.



4 TYPICAL CONTROL VALVE PIPING DETAIL  
SCALE: N.T.S.