

BOILER SCHEDULE									
DWG REF	MANUF.	MODEL	INPUT [MBH] (KW)	OUTPUT [MBH] (KW)	FLOW [GPM] (L/S)	ΔT [°F] (°C)	PRESS. DROP [FT W.C.] (KPA)	FLUID TYPE	REMARKS
B-101,102,103	LOCHINVAR	KBN285	285 (83.5)	264 (77.4)	20 (1.26)	30 (1.89)	1.3 (4)	50% P-GLYCOL	PROVIDE C/W CONDENSATE NEUTRALIZING KIT, LOW WATER CUTOFF, FLOW SWITCH, AND INLET/ OUTLET TEMP SENSORS.
B-104,105,106	LOCHINVAR	KBN285	285 (83.5)	264 (77.4)	20 (1.26)	30 (1.89)	1.3 (4)	50% P-GLYCOL	PROVIDE C/W CONDENSATE NEUTRALIZING KIT, LOW WATER CUTOFF, FLOW SWITCH, AND INLET/ OUTLET TEMP SENSORS.

APPROVED MANUFACTURERS:
LOCHINVAR, WEIL McLAIN, SMITH, HYDROTHERM, VISSMANN, LAARS

PUMP SCHEDULE										
DWG REF	SERVING	MANUF.	MODEL	FLOW [GPM] (L/S)	HEAD [ft.wg] (kPa)	EFF. [%]	MOTOR [HP]	RPM	VOLTAGE	REMARKS
P-101,102	SMITH STREET SYSTEM	TACO	SKV1507	44 (3)	37 (111)	48	1.5	1760	208/3/60	SELF SENSING PUMP C/W INTEGRAL VFD AND PRESSURE CONTROL. FOR USE WITH 50% P-GLYCOL
P-103,104,105	B-101,102,103	TACO	0010	20 (1)	6 (18)	-	1/8	3250	115/1/60	FOR USE WITH 50% P-GLYCOL, PROVIDED WITH BOILERS
P-106,107	DONALD STREET SYSTEM	TACO	SKV1507	38 (2)	37 (111)	46	1.5	1760	208/3/60	SELF SENSING PUMP C/W INTEGRAL VFD AND PRESSURE CONTROL. FOR USE WITH 50% P-GLYCOL
P-108,109,110	B-104,105,106	TACO	0010	20 (1)	6 (18)	-	1/8	3250	115/1/60	FOR USE WITH 50% P-GLYCOL, PROVIDED WITH BOILERS

APPROVED MANUFACTURERS:
BELL AND GOSSETT, TACO, ARMSTRONG, GRUNDFOS

EXPANSION TANK SCHEDULE							
DWG REF	MANUF.	MODEL	TANK VOLUME [GAL] (L)	ACCEPTANCE VOLUME [GAL] (L)	MINIMUM PRESSURE [PSI] (KPA)	MAXIMUM PRESSURE [PSI] (KPA)	REMARKS
EXP-101/102	TACO	CA-90	23 (87.1)	23 (87.1)	12 (35.9)	42 (125.5)	-

APPROVED MANUFACTURERS:
AMTROL, BELL & GOSSETT

DIGITAL POINT SCHEDULE												
POINT DESCRIPTION	INPUT		OUTPUT		FEATURES			REMARKS				
	DIGITAL	ANALOG	DIGITAL	ANALOG	DIAGNOSTIC	ALARMS	CONTROL					
WATER TEMPERATURE SENSORS												
SNOW MELT BOILERS	X	X						MODULATING, ALARM ON HIGH LIMIT OR LOW WATER				
CIRCULATION PUMPS	X											
FOUR WAY CONTROL VALVE							X	MODULATING.				
GLYCOL TANK FLOAT SWITCH	X							ALARM ON LOW WATER				
OUTDOOR AIR TEMP SENSOR												
SNOW/ICE/RAIN SENSORS	X											
SUMP PUMPS (P-15/P-16)	X	X	X	X				ALARM ON HIGH WATER. EXISTING SUMP TO BE RECONNECTED.				

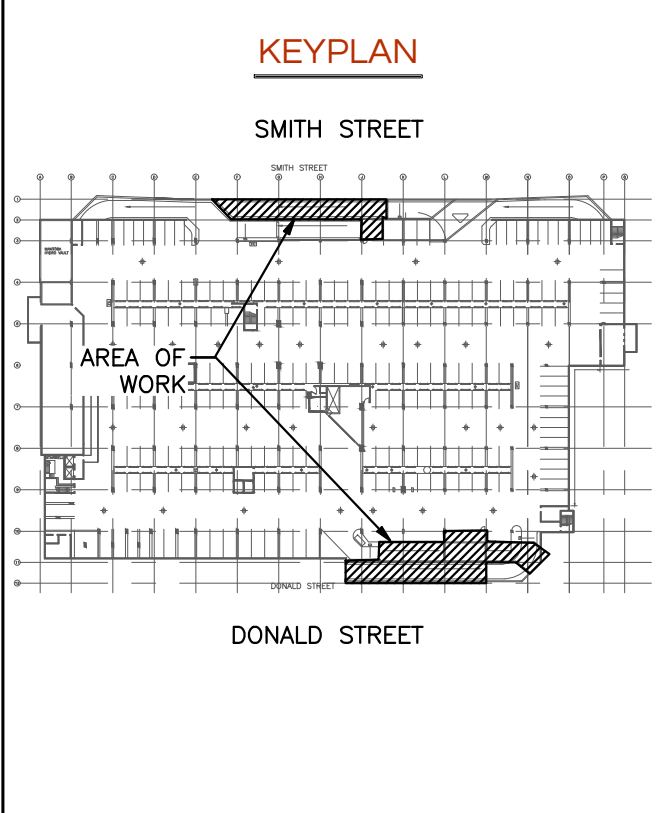
REFER TO MECHANICAL CONTROL NOTES FOR ADDITIONAL INFORMATION AND SEQUENCES.

AIR SEPARATOR SCHEDULE				
DWG REF	MANUF.	MODEL	SIZE [in.] (mm)	REMARKS
AS-101	TACO	AC025F-125	2-1/2 (-11)	C/W S.S. STRAINER

APPROVED MANUFACTURERS:
TACO, ARMSTRONG, BELL AND GOSSETT

- GENERAL MECHANICAL NOTES:
- REMOVE EXISTING SNOW MELT SUPPLY AND RETURN PIPING FROM EXISTING RAMPS BACK TO EXISTING MECHANICAL ROOM. CAP EXISTING PIPING IN BOILER ROOM AT FLOOR.
 - INSTALL COMPLETE SNOW MELT SYSTEM IN STRICT CONFORMANCE WITH MANUFACTURERS PUBLISHED RECOMMENDATIONS AND SPECIFICATIONS SECTION 1551.0.
 - COORDINATE WATER FLOWS WITH FINAL SNOW MELT SHOP DRAWINGS PRIOR TO BALANCING.
 - FLOW AND HEAT REQUIREMENTS BASED ON A SYSTEM FLUID CONTENT OF 50% PROPYLENE GLYCOL/WATER MIXTURE. SYSTEM SUPPLY WATER TEMPERATURE OF 140°F(60°C), 5/8" TUBING ON 6" CENTERS.
 - MAXIMUM PRESSURE DROP ACROSS MANIFOLD AND ASSOCIATED VALVES SHALL NOT EXCEED 7 FEET OF HEAD. MAXIMUM HEADLOSS FOR ANY LOOP INCLUDING MANIFOLD AND TUBING SHALL NOT EXCEED 20 FEET OF HEAD.
 - AT SAWCUT/EXPANSION JOINT LOCATIONS INSTALL TUBING AS PER MANUFACTURERS INSTRUCTIONS.
 - PROVIDE CAST IRON PIPE SLEEVES WHERE REQUIRED TO PERMIT INSTALLATION OF SNOW MELT TUBING PRIOR TO POURING OF CONCRETE/ COORDINATE WITH ALL TRADES.
 - CONTRACTOR TO REMOVE EXISTING DX-9100 CONTROLLERS AND TURN OVER TO THE CITY.

- MECHANICAL CONTROL NOTES:
- GENERAL:
MODIFY EXISTING CONTROLS SYSTEM TO ACCOMMODATE BOTH THE EXISTING AND ADDITIONAL SNOW MELT COMPONENTS. PROVIDE NEW CONTROLLERS, DEVICES, AND PROGRAMMING AS REQUIRED TO PROVIDE THE SEQUENCE OF OPERATIONS NOTED.
- PROVIDE THE SERVICES OF THE BOILER MANUFACTURERS REPRESENTATIVE TO START-UP AND TEST BOILERS AND ASSOCIATED CONTROL SYSTEM, PAY ALL ASSOCIATED COSTS.
- DEVICES:
PROVIDE THE FOLLOWING DEVICES AND ANY ADDITIONAL COMPONENTS REQUIRED FOR A COMPLETE AND FULLY FUNCTIONING SNOW MELTING SYSTEM.
- PROVIDE NEW IN SLAB TEMPERATURE/SNOW/ICE DETECTORS. COORDINATE LOCATION WITH MECHANICAL TRADE.
- REPLACE EXISTING OUTDOOR TEMPERATURE SENSOR WITH NEW. LOCATE IN A RAIN & SUN SHIELD.
- PROVIDE NEW WATER TEMPERATURE SENSORS WHERE INDICATED ON THE DRAWINGS.
- INSTALL CONTROLS PROVIDED WITH BOILER.
- PROVIDE NEW BACNET IP CONTROLLER COMPLETE WITH GATEWAY TO CONNECT TO EXISTING JCI METASTAS SYSTEM FRONT END.
- SEQUENCE OF OPERATIONS:
BOILER CONTROLLER SHALL ENABLE BOILERS TO ALTERNATE ON A LEAD/LAG SCHEDULE EVERY SEVEN DAYS.
- SNOW MELT CONTROLLER SHALL ALTERNATE SYSTEM PUMPS ON A LEAG/LAG SCHEDULE EVERY SEVEN DAYS
- INITIATE THE FOLLOWING SEQUENCE OF OPERATIONS WHEN SNOW AND/OR ICE IS DETECTED AT THE SLAB SENSOR AND OUTDOOR AMBIENT TEMPERATURE IS 38°F(3.3°C) OR BELOW.
- A) BOILER CONTROLLER SHALL CYCLE ASSOCIATED BOILER PUMP ON AND MODULATE VALVE TO MAINTAIN A SUPPLY WATER TEMPERATURE OF 140°F(60°C), ADJUSTABLE. MEASURED AT TEMPERATURE SENSOR TS1/TS3.
- B) SNOW MELT CONTROLLER SHALL CYCLE SYSTEM PUMP P-101/P-102 OR P-106/P-107 ON.
- C) SNOW MELT CONTROLLER SHALL MODULATE THE FOURWAY CONTROL VALVE TO GRADUALLY RAISE THE SUPPLY WATER TEMPERATURE TO 140°F(60°C) (ADJUSTABLE). MEASURED AT TEMPERATURE SENSOR TS2/TS4.
- D) WHEN SNOW MELT CONTROLLER IS SATISFIED, BOILER CONTROLLER SHALL CYCLE ASSOCIATED BOILER PUMP AND BOILER OFF. SYSTEM PUMPS P-101/P-102 OR P-106/P-107 SHALL CONTINUE TO RUN FOR 30 MINUTES.
- DISABLE THE SNOW MELT SYSTEM WHEN THE OUTDOOR AIR IS ABOVE 38°F(3.3°C).
- *CONTROLS SUBCONTRACTOR TO ENSURE SYSTEM IS INSTALLED TO PREVENT THERMAL SHOCK TO THE RAMP SLAB.



CONCENTRIC
CLIENT-CENTRIC. CHALLENGE DRIVEN.

LONDON: Toll Free 1-866-919-4531
OTTAWA: Toll Free 1-866-919-4530
IQUALUIT: Toll Free 1-866-919-4533
SASKATOON: Toll Free 1-866-919-8899
WINNIPEG: Toll Free 1-866-919-4531
TORONTO: Tel. 1-647-351-0095
COQUITLAM: Tel. 1-604-553-4056

REVISIONS			
NO.	REVISIONS	DATE	BY
00	ISSUED FOR CLIENT REVIEW	17.10.11	IOH
01	ISSUED FOR BID SUBMISSION	18.02.27	IOH
02	REVISID FOR BID SUBMISSION	18.04.06	IOH



DESIGN	IOH	DRAWN	IOH
CHECKED	RAS	REVIEWED	SGH

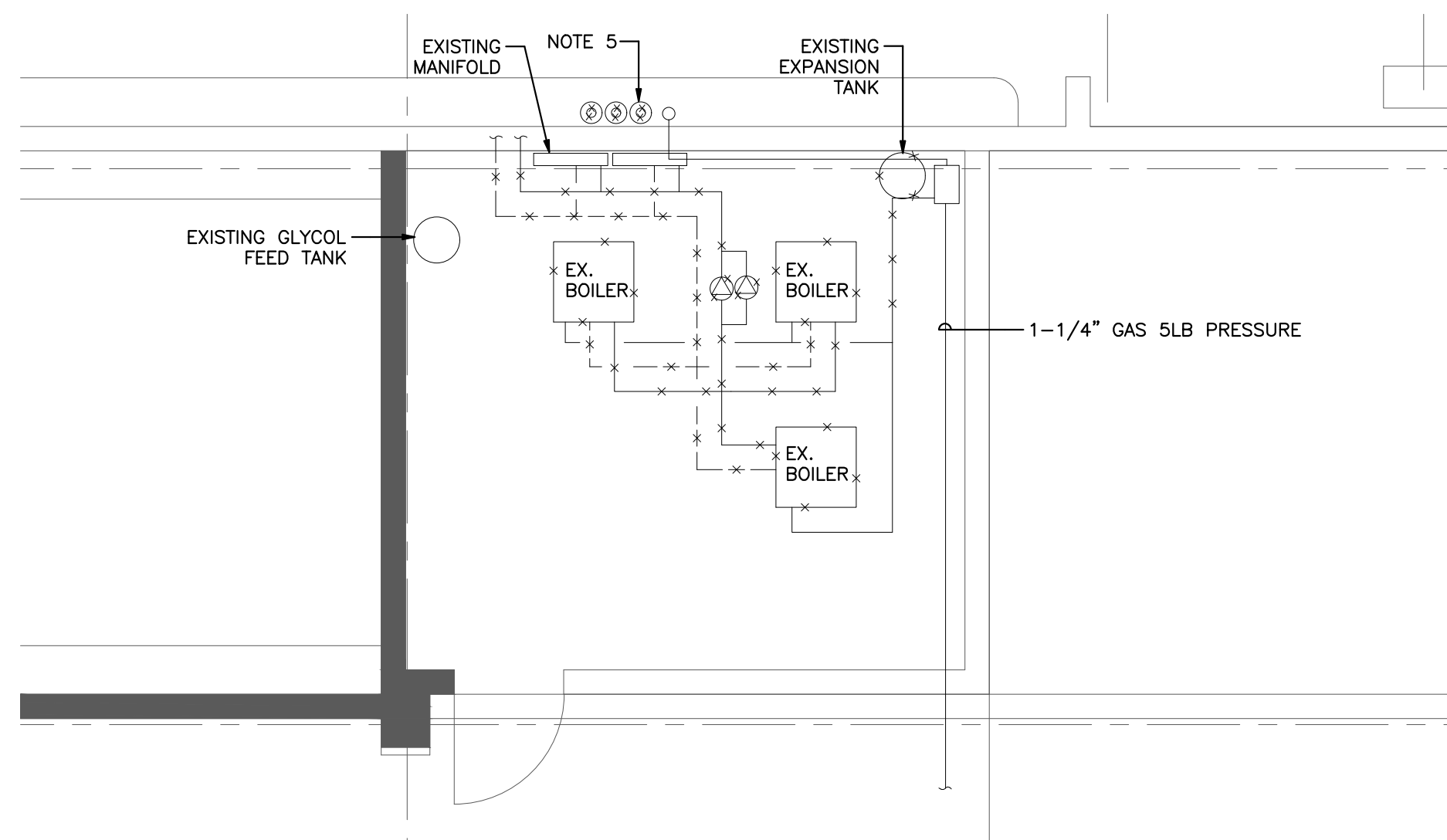
PROJECT
MILLENNIUM LIBRARY
SNOW MELT DESIGN

ADDRESS
251 DONALD STREET
WINNIPEG MANITOBA

PROJECT NO.
CE-3749

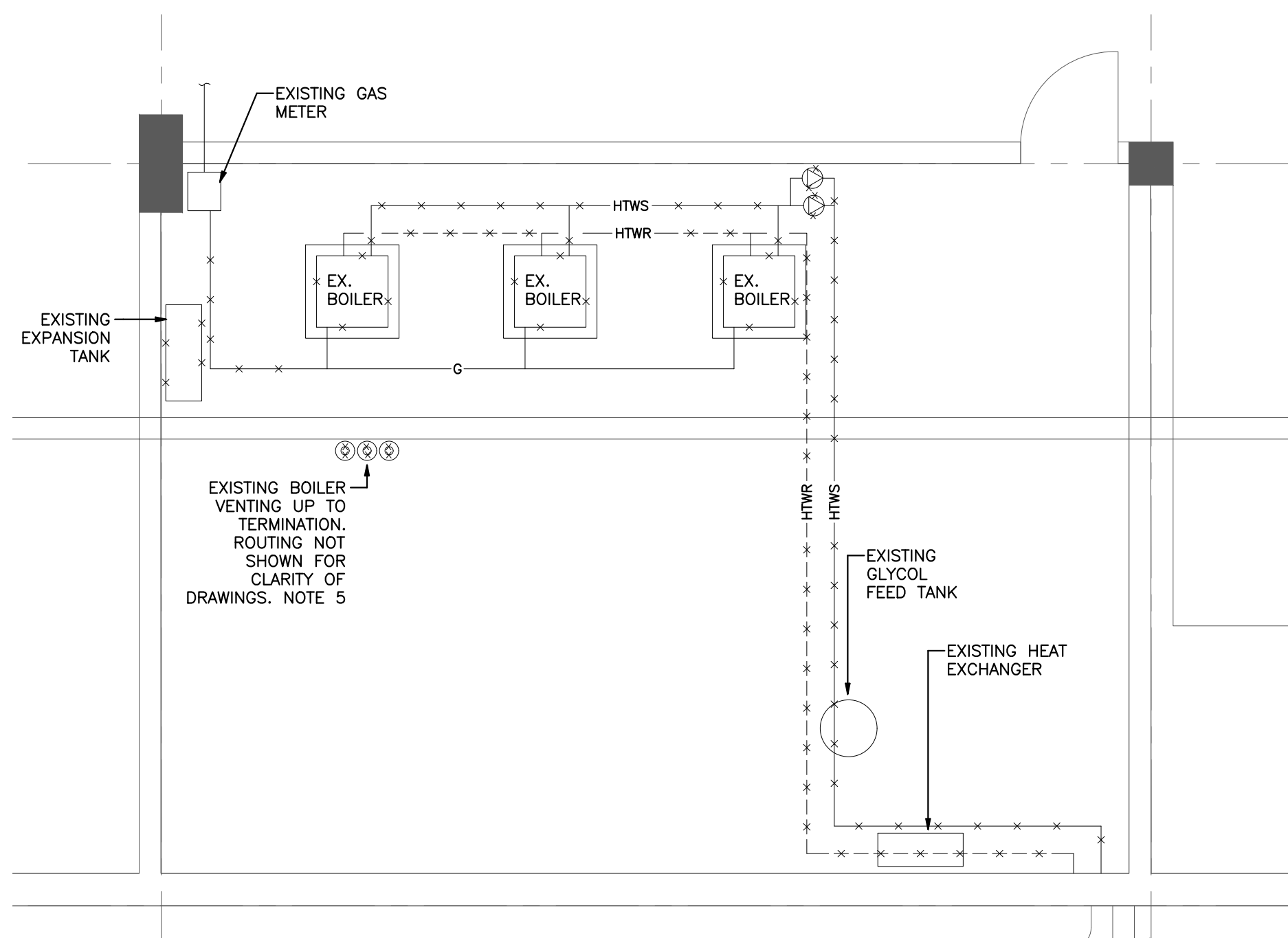
DRAWING TITLE
MECHANICAL ROOM LAYOUTS
AND SCHEDULES

DRAWING NUMBER
M1 OF 4



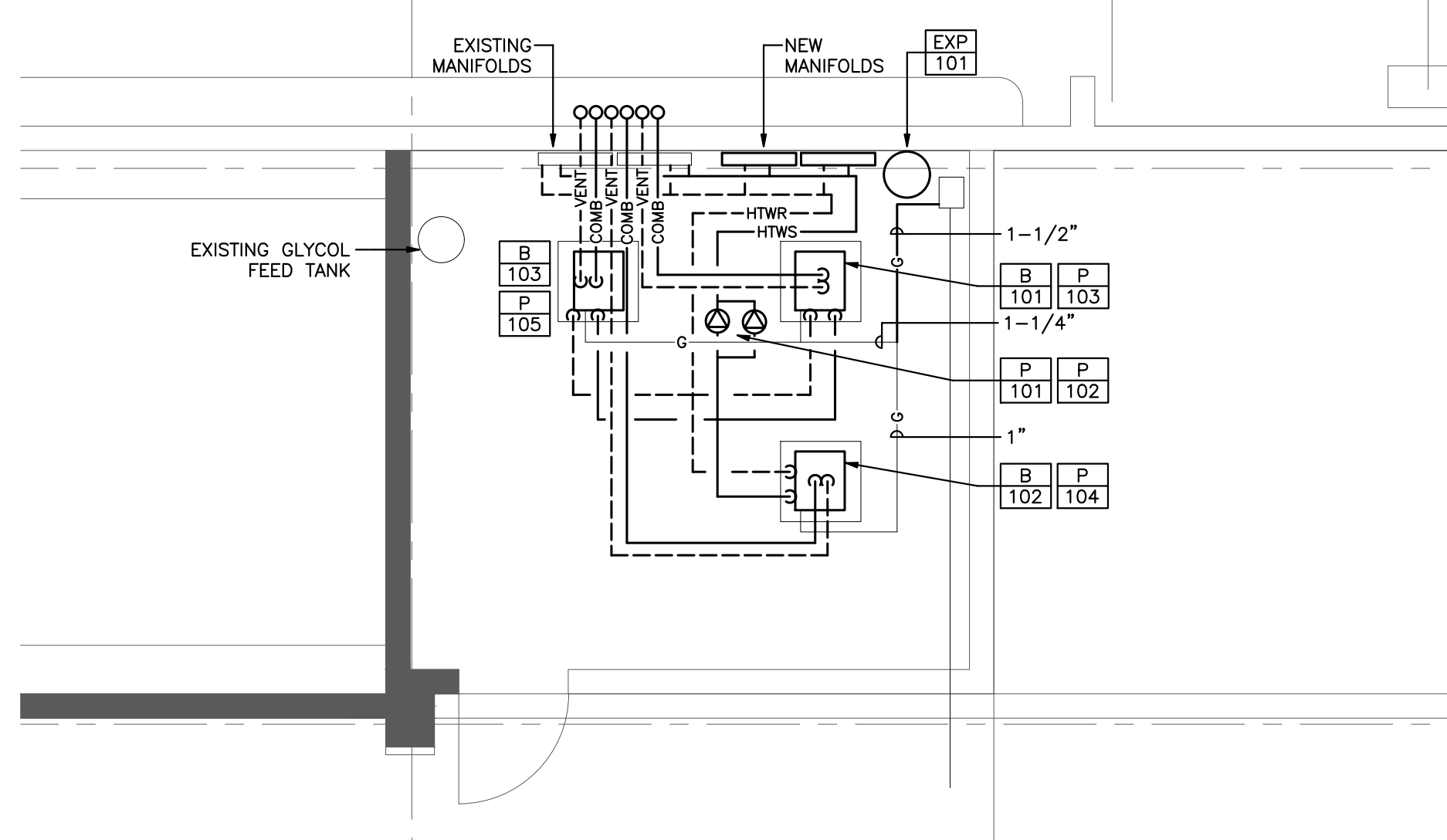
SMITH ST. BOILER ROOM - DEMO

SCALE: 1/4" = 1'-0"



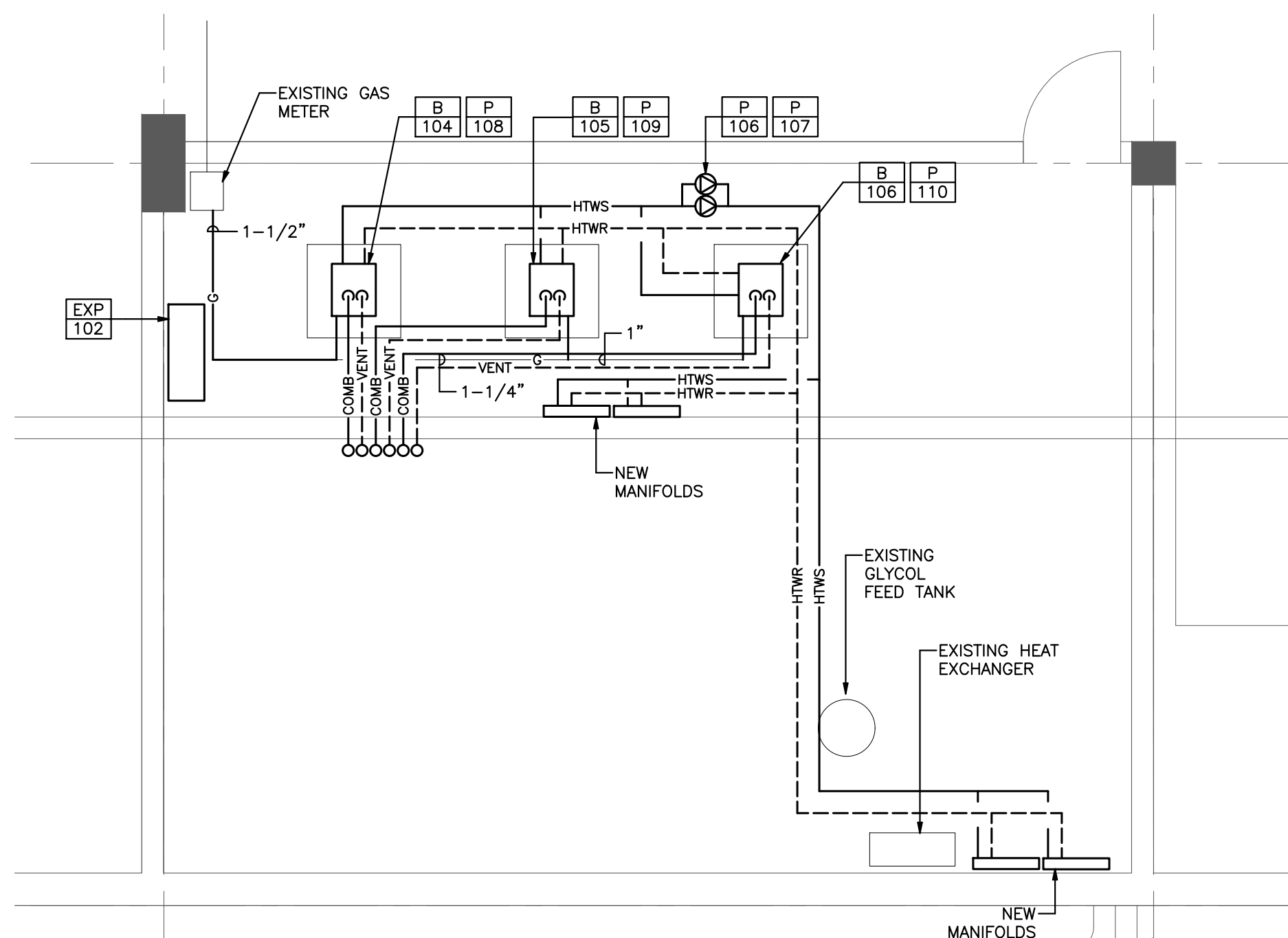
DONALD ST. BOILER ROOM - DEMO

SCALE: 1/4" = 1'-0"



SMITH ST. BOILER ROOM - NEW

SCALE: 1/4" = 1'-0"



DONALD ST. BOILER ROOM - NEW

SCALE: 1/4" = 1'-0"

- SMITH STREET DEMO NOTES:
- REMOVE '3' EXISTING GAS FIRED BOILERS.
 - REMOVE EXISTING HOT WATER SUPPLY AND RETURN PIPING, HANGERS, AND APPURTENANCES BETWEEN THE BOILERS AND THE EXISTING MANIFOLDS.
 - REMOVE ALL EXISTING SNOW MELT PIPING IN RAMPS. SEE DWG M2.
 - REMOVE EXISTING SYSTEM PUMPS.
 - REMOVE EXISTING BOILER VENTING. ROUTING NOT SHOWN FOR CLARITY OF DRAWINGS.
 - DISCONNECT EXISTING GAS LINES. MAINTAIN FOR NEW BOILERS.
 - REFER TO DRAWING M3 FOR FURTHER DETAILS.

- DONALD STREET DEMO NOTES:
- REMOVE '3' EXISTING GAS FIRED BOILERS.
 - REMOVE EXISTING HOT WATER SUPPLY AND RETURN PIPING, HANGERS, AND APPURTENANCES BETWEEN THE BOILERS AND THE EXISTING MANIFOLDS.
 - REMOVE ALL EXISTING SNOW MELT PIPING IN RAMPS. SEE DWG M2.
 - REMOVE EXISTING SYSTEM PUMPS.
 - REMOVE EXISTING BOILER VENTING. ROUTING NOT SHOWN FOR CLARITY OF DRAWINGS.
 - DISCONNECT EXISTING GAS LINES. MAINTAIN FOR NEW BOILERS.
 - REFER TO DRAWING M3 FOR FURTHER DETAILS.

- SMITH STREET NEW DESIGN NOTES:
- MOUNT NEW BOILERS ON EXISTING METAL SUPPORT FRAME, MODIFY AS REQUIRED.
 - ROUTE ULC S636 DIRECT VENT PIPING OUT TO THE EXTERIOR WALL. TERMINATE VENTS ABOVE GRADE AS PER MANUFACTURERS INSTRUCTIONS AND CSA B149. ROUTE VENTS THROUGH EXISTING EXTERIOR WALL SLEEVE. CAULK WALL OPENING AS REQUIRED TO CREATE A COMPLETE WEATHER TIGHT SEAL.
 - PROVIDE NEW 1-1/2" GAS PIPING, CONNECTED TO EXISTING GAS METER. CO-ORDINATE WITH LOCAL UTILITY FOR CONNECTION TO EXISTING GAS SERVICE.
 - PROVIDE GAS CONNECTION TO NEW GAS FIRED BOILERS C/W GAS VALVE, UNION, AND DIRT TRAP. SEE DETAIL.

- DONALD STREET NEW DESIGN NOTES:
- MOUNT NEW BOILERS ON EXISTING CONCRETE PADS, MODIFY AS REQUIRED.
 - ROUTE ULC S636 DIRECT VENT PIPING OUT TO THE EXTERIOR WALL. TERMINATE VENTS ABOVE GRADE AS PER MANUFACTURERS INSTRUCTIONS AND CSA B149. ROUTE VENTS THROUGH EXISTING EXTERIOR WALL SLEEVE. CAULK WALL OPENING AS REQUIRED TO CREATE A COMPLETE WEATHER TIGHT SEAL.
 - PROVIDE NEW 1-1/2" GAS PIPING, CONNECTED TO EXISTING GAS METER. CO-ORDINATE WITH LOCAL UTILITY FOR CONNECTION TO EXISTING GAS SERVICE.
 - PROVIDE GAS CONNECTION TO NEW GAS FIRED BOILERS C/W GAS VALVE, UNION, AND DIRT TRAP. SEE DETAIL.