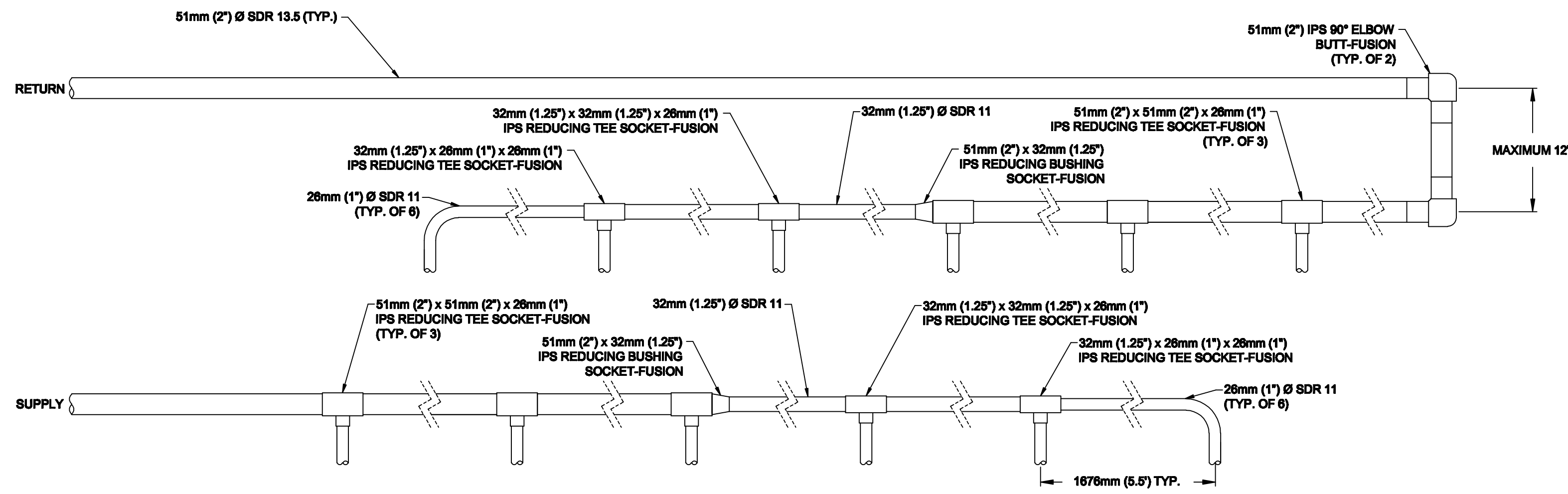
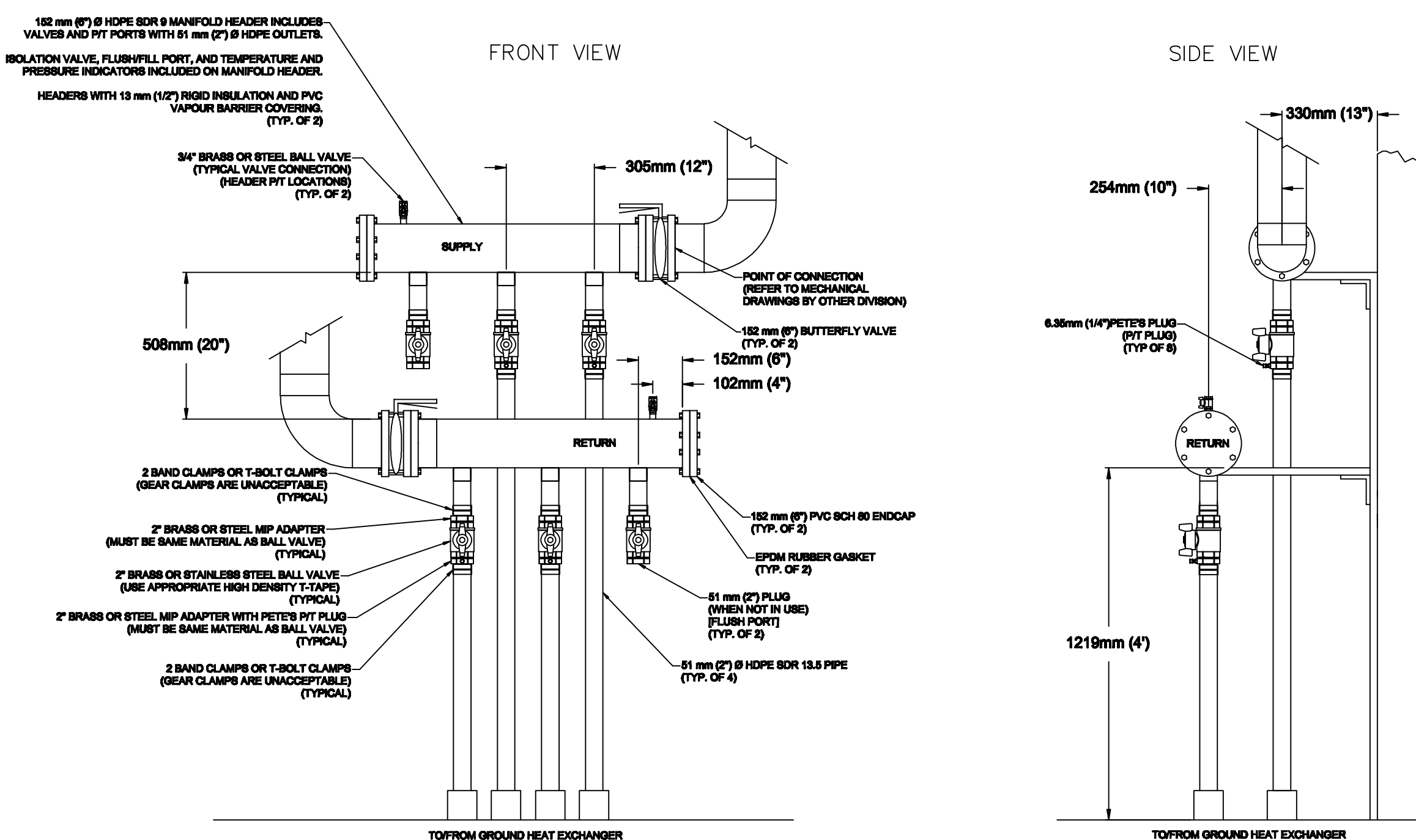


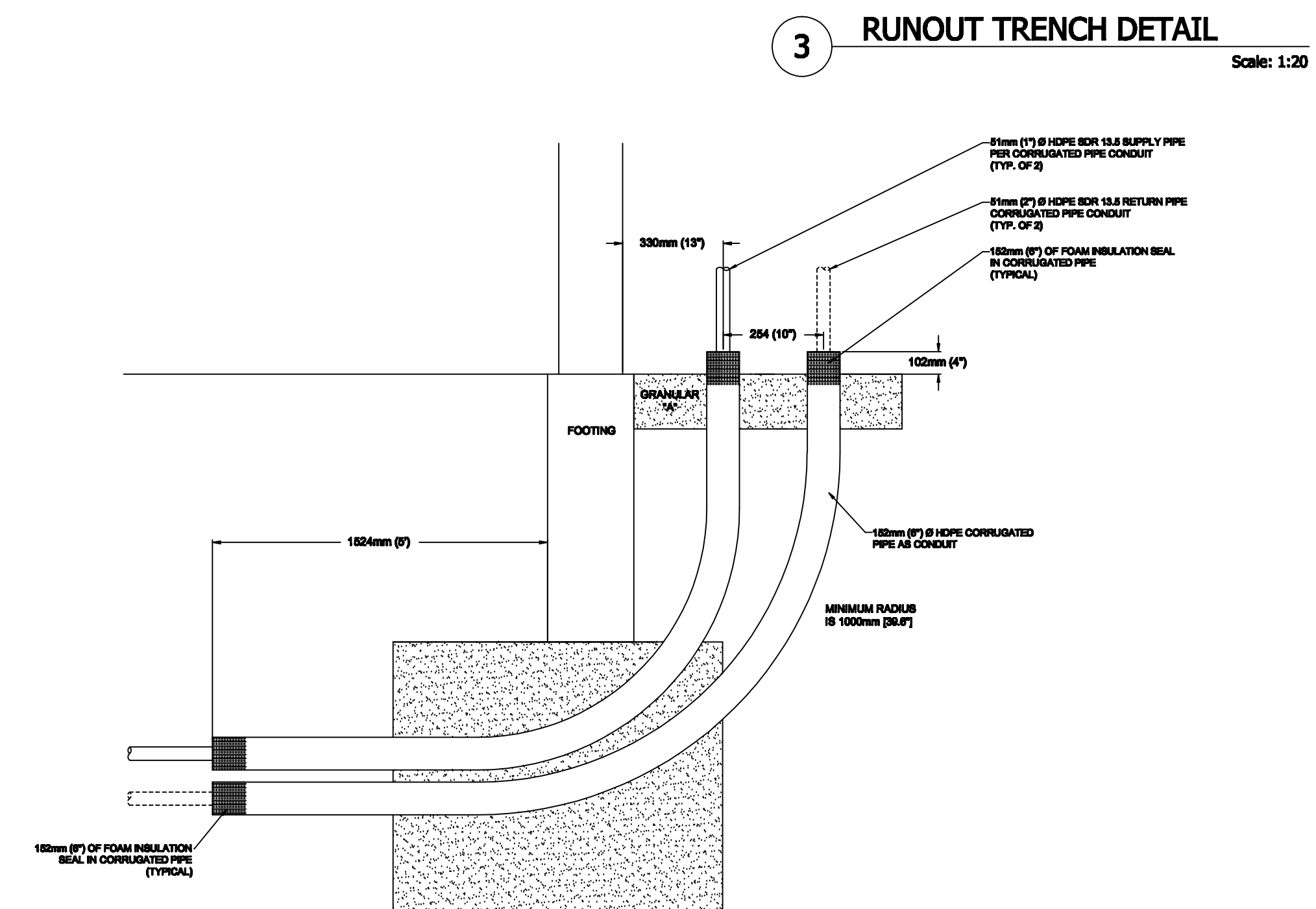
1 GHX CROSS SECTION DETAIL
Scale: 1:40



2 RUNOUT HEADER DETAIL
Scale: NTS



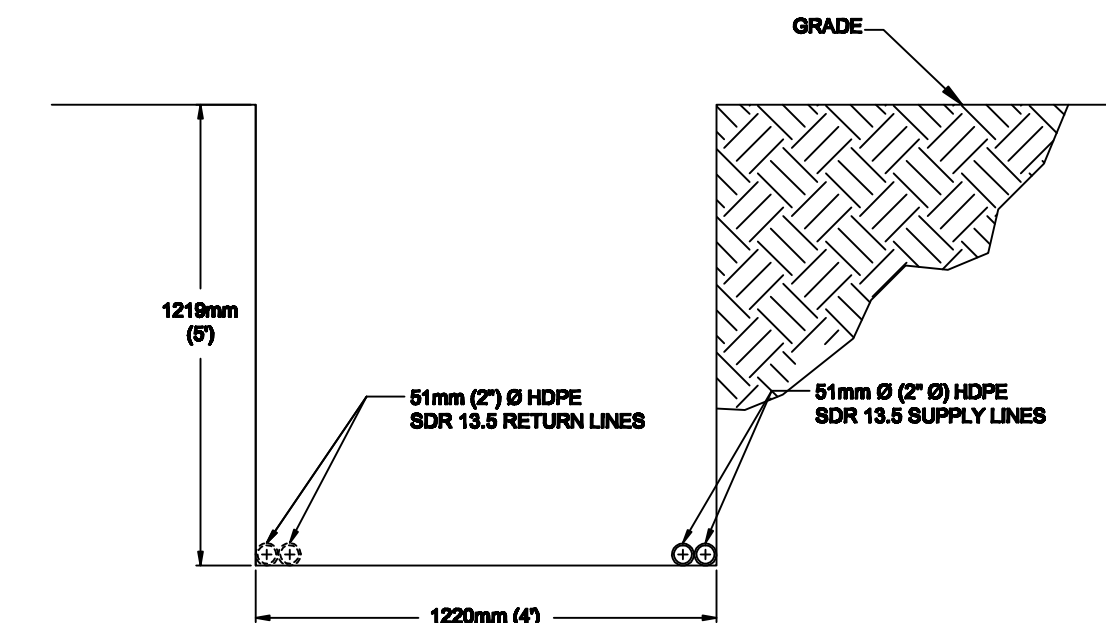
4 MANIFOLD DETAIL
Scale: 1:16



5 PIPE ENTRY INTO BUILDING DETAIL
Scale: NTS

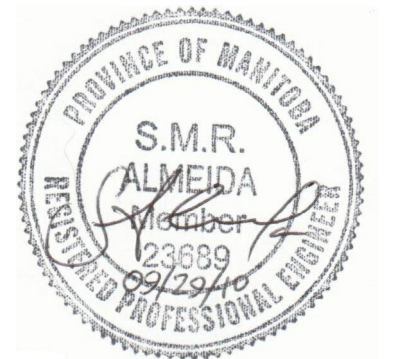
GENERAL NOTES:

- REFER TO GROUND HEAT EXCHANGER SPECIFICATIONS FOR FULL DETAILS.
- THE GROUND HEAT EXCHANGER CONSISTS OF 2 RUNOUTS EACH WITH 6 CIRCUITS. EACH CIRCUIT CONSISTS OF TWO LAYERED HORIZONTAL BOREHOLES, FOR A TOTAL OF 24 HORIZONTAL BOREHOLES [12 AT A DEPTH OF 3.7 m (12 ft), 12 AT A DEPTH OF 5.5 m (18 ft)], WITH A HORIZONTAL LENGTH OF 64.5 m (211 ft) PER BOREHOLE. TOTAL PIPING LENGTH IS ESTIMATED AT 67 m (220 ft) FOR THE 3.7 m (12 ft) DEPTH BOREHOLES, AND 69 m (225 ft) FOR THE 5.5 m (18 ft) DEPTH BOREHOLES.
- BOREHOLES ARE TO BE A MINIMUM OF 3.05 m (10 ft) AWAY FROM BUILDINGS AND A MINIMUM OF 1.53 m (5 ft) AWAY FROM PROPERTY LINES.
- A MINIMUM FLOW RATE OF 136 L/min (36 USGPM) FOR EACH 51 mm (2 in) Ø RUNOUT IS REQUIRED FOR FLUSHING AND PURGING THE GHX BEFORE COMMISSIONING.
- ANTIFREEZE TO BE USED IS 15% BY VOLUME METHANOL, PREMIXED WITH WATER AND SUITABLE CORROSION INHIBITORS BY MANUFACTURER, TO HAVE A FREEZE PROTECTION TO -13.8°C (7.2°F).
- CIRCUIT PIPES TO BE CONNECTED TO THE HEADER IN A REVERSE-RETURN LAYOUT AS SHOWN IN DETAIL 2.
- GHX CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH UTILITY SERVICES UNDERNEATH THE GHX.
- MINIMUM BENDING RADIUS IS 20 TIMES THE OUTER DIAMETER FOR ANY PIPE CURVATURE.
- NO PETROLEUM BASED PRODUCTS ARE TO BE IN CONTACT WITH HDPE PIPE AT ANY TIME.
- ALL PIPES AND FITTINGS ARE PE 3408, PE 4710, UNLESS OTHERWISE APPROVED BY ENGINEER IN WRITING
- SOCKET FUSION, BUTT-FUSION, OR ELECTROFUSION, AS PER MANUFACTURER'S INSTRUCTIONS, ARE THE ONLY ACCEPTABLE METHODS OF JOINING HDPE PIPE.
- FUSION IS TO BE PERFORMED BY ACCREDITED FUSION INSTALLERS OR NATURAL GAS FITTERS.
- ALL PIPING IS TO BE CAPPED AND PRESSURIZED TO 103kPa (15 PSIG) USING FUSION WELDED ENDCAPS ONCE THE U-BEND PIPING ASSEMBLY HAS BEEN INSTALLED.
- NO OPEN PIPE ENDS ARE TO BE LEFT UNATTENDED AT ANY TIME. PIPING MUST MAINTAIN 103kPa (15 PSIG) BEFORE AND AFTER BACKFILLING OF TRENCHES.
- ALL PIPING IS TO BE PRESSURE TESTED TO 690 kPa (100 PSIG) FOR 24 HOURS.
- A FIELD INSPECTION OF THE GHX MUST BE PERFORMED BY GEO-XERGY SYSTEMS, PRIOR TO BACKFILLING
- ALL BURIED PIPING SHALL INCLUDE METALLIC TRACER WIRE FOR EASE OF LOCATION.
- A WARNING STRIP 38 mm (1.5 in) WIDE, INDICATING "CAUTION: GEOTHERMAL PIPING," TO BE BURIED 305 mm (12 in) TO 457 mm (18 in) BELOW GRADE.
- ALL TRENCHES TO BE BACKFILLED USING EXCAVATED SPOILS OR OTHER NATIVE SOIL. SOIL SURROUNDING PIPES (WITHIN 300 mm RADIUS) MUST BE FREE OF ANY ROCKS AND ABRASIVE MATERIAL; OTHERWISE, SAND CAN BE USED SURROUNDING PIPES.
- TRENCH SHORING MUST MEET REQUIREMENTS OF PROVINCIAL STANDARDS.



3 RUNOUT TRENCH DETAIL
Scale: 1:20

NO.	REVISION / ISSUE	DATE
1	TENDER	09/29/10



SCALE:	NTS
DRAWN BY:	RTW
CHECKED BY:	I.J.L.
REVIEWED BY:	SA
DRAWING DATE:	09/29/10

PROJECT NAME:
**SAGE CREEK
FIRE HALL**
Winnipeg, MB

DRAWING NAME:
**GROUND HEAT
EXCHANGER
DETAILS**



DRAWING NUMBER:
G1.2