



PIPING CLASS A1a-1 (IG / FG / SG VENTS)
 SERVICE : STANDARD TEMP. PIPING
 MATERIAL & RATING : CARBON STEEL, 150 CL ANSI
 TEMPERATURE RANGE : -20°F TO 650°F
 MAXIMUM PRESSURE : 285 psig @ 100°F
 CORROSION ALLOWANCE : 1/16"
 RADIOGRAPHY : 5% OF ALL BUTT WELDS
 MAG. PARTICLE INSPECTION : NONE
 STRESS RELIEVE : NO
 PIPE : ASTM SA-106-B SEAMLESS
 1/2" TO 1 1/2" SCH. XH
 2" SCH. XH
 3"-24" SCH. STD
 NIPPLES/SWAGES : SAME SPEC. AND SCHEDULE AS PIPE
 FLANGES : ANSI 150CL RF ASTM SA-105N
 1/2" TO 1 1/2" SOCKETWELD
 2" AND LARGER WELDNECK,
 BORED TO SUIT PIPE
 GASKETS : SPIRAL WOUND, ASBESTOS FREE, 304 SS,
 FLEXITALLIC STYLE CG OR EQUAL, API-601
 BOLTING : STUDS ASTM SA-193-GRADE B7
 NUTS : ASTM SA-194-GRADE 2H
 FITTINGS : 1/2" TO 1 1/2" 3000 CL, FORGED STEEL,
 ASTM SA-105N, THREADED OR SOCKETWELD
 2" AND LARGER FORGED STEEL,
 ASTM SA-234-WPB, BUTTWELD, SCHEDULE
 SAME AS PIPE

PIPING CLASS A1b-1 (IG / FG / VENTS)
 SERVICE : LOW TEMP. PIPING
 MATERIAL & RATING : CARBON STEEL, 150 CL ANSI
 TEMPERATURE RANGE : -49°F TO 650°F
 MAXIMUM PRESSURE : 285 psig @ 100°F
 CORROSION ALLOWANCE : 1/16"
 RADIOGRAPHY : 5% OF ALL BUTT WELDS
 MAG. PARTICLE INSPECTION : NONE
 STRESS RELIEVE : NONE
 PIPE : ASTM SA-333-6 SEAMLESS
 1/2" TO 1 1/2" SCH. XH
 2" SCH. XH
 3" TO 24" SCH. STD
 NIPPLES/SWAGES : SAME SPEC. AND SCHEDULE AS PIPE
 FLANGES : ANSI 150 CL RF ASTM SA-350-LF2 CL1
 1/2" TO 1 1/2" SOCKET WELD
 2" AND LARGER WELDNECK,
 BORED TO SUIT PIPE
 GASKETS : SPIRAL WOUND, ASBESTOS FREE, 316L SS,
 FLEXITALLIC STYLE CG OR EQUAL, API-601
 BOLTING : STUDS ASTM SA-193-GRADE B7M
 NUTS : ASTM SA-194-GRADE 2HM
 FITTINGS : 1/2" TO 1 1/2" 3000 CL, FORGED STEEL,
 ASTM SA-350-LF2 CL1, THREADED OR SOCKET WELD
 2" AND LARGER FORGED STEEL,
 ASTM SA-420-WPL6, BUTTWELD, SCHEDULE
 SAME AS PIPE

PIPING CLASS A2a-1 (SOUR GAS VENTS)
 SERVICE : STANDARD TEMP. PIPING
 MATERIAL & RATING : CARBON STEEL, 150 CL ANSI
 TEMPERATURE RANGE : -20°F TO 650°F
 MAXIMUM PRESSURE : 285 psig @ 100°F
 CORROSION ALLOWANCE : 1/8"
 RADIOGRAPHY : 100% OF ALL BUTTWELDS
 MAG. PARTICLE INSPECTION : NONE
 STRESS RELIEVE : NO
 PIPE : ASTM SA-106-B SEAMLESS
 1/2" SCH. XXH
 3/4" TO 1 1/2" SCH. 160
 2" SCH. XH
 3"-24" SCH. STD
 NIPPLES/SWAGES : SAME SPEC. AND SCHEDULE AS PIPE
 FLANGES : ANSI 150 CL RF ASTM SA-105N
 1/2" TO 1 1/2" SOCKETWELD
 2" AND LARGER WELDNECK,
 BORED TO SUIT PIPE
 GASKETS : SPIRAL WOUND, ASBESTOS FREE, 316L SS,
 FLEXITALLIC STYLE CG OR EQUAL, API-601
 BOLTING : STUDS ASTM SA-193-GRADE B7M
 NUTS : ASTM SA-194-GRADE 2HM
 FITTINGS : 1/2" TO 1 1/2" 3000 CL, FORGED STEEL,
 ASTM SA-105N, THREADED OR SOCKETWELD
 2" AND LARGER FORGED STEEL,
 ASTM SA-234-WPB, BUTTWELD, SCHEDULE
 SAME AS PIPE

PIPING CLASS A2b-1 (SOUR GAS VENTS)
 SERVICE : LOW TEMP. PIPING
 MATERIAL & RATING : CARBON STEEL, 150 CL ANSI
 TEMPERATURE RANGE : -49°F TO 650°F
 MAXIMUM PRESSURE : 285 psig @ 100°F
 CORROSION ALLOWANCE : 1/8"
 RADIOGRAPHY : 100% ALL BUTTWELDS
 MAG. PARTICLE INSPECTION : NONE
 STRESS RELIEVE : NONE
 PIPE : ASTM SA-333-6 SEAMLESS
 1/2" SCH. XXH
 3/4" TO 1 1/2" SCH. 160
 2" SCH. XH
 3' TO 24" SCH. STD
 NIPPLES/SWAGES : SAME SPEC. AND SCHEDULE AS PIPE
 FLANGES : ANSI 150 CL RF ASTM SA-350-LF2 CL1
 1/2" TO 1 1/2" SOCKETWELD
 2" AND LARGER WELDNECK,
 BORED TO SUIT PIPE
 GASKETS : SPIRAL WOUND, ASBESTOS FREE, 316L SS,
 FLEXITALLIC STYLE CG OR EQUAL, API-601
 BOLTING : STUDS ASTM SA-193-GRADE B7M
 NUTS : ASTM SA-194-GRADE 2HM
 FITTINGS : 1/2" TO 1 1/2" 3000#, FORGED STEEL,
 ASTM SA-350-LF2 CL1, THREADED OR SOCKET WELD
 2" AND LARGER FORGED STEEL,
 ASTM SA-420-WPL6, BUTTWELD, SCHEDULE
 SAME AS PIPE

PIPING CLASS D1a-2 (GLYCOL)
 SERVICE : STANDARD TEMP. PIPING
 MATERIAL & RATING : CARBON STEEL, 900 CL ANSI
 TEMPERATURE RANGE : -20°F TO 650°F
 MAXIMUM PRESSURE : 2027 psig @ 212°F
 CORROSION ALLOWANCE : 1/16"
 RADIOGRAPHY : 5% OF ALL BUTT WELDS
 MAG. PARTICLE INSPECTION : NONE
 STRESS RELIEVE : REQ'D ON PIPING 3/4" THK & GREATER
 OR PER CUSTOMER REQUIREMENTS
 PIPE : ASTM SA-106-B SEAMLESS
 1" TO 1 1/4" SCH. XXH
 1 1/2" SCH. 160
 2" TO 3 1/2" SCH. XH
 > 3 1/2" USE LOW TEMP. TO SATISFY
 CONDITIONS ABOVE
 NIPPLES/SWAGES : SAME SPEC. AND SCHEDULE AS PIPE
 FLANGES : ANSI 900 CL RF ASTM SA-105N
 1/2" TO 1 1/2" SOCKETWELD
 2" AND LARGER WELDNECK, BORED TO SUIT PIPE
 GASKETS : SPIRAL WOUND, ASBESTOS FREE, 304 STAINLESS
 FLEXITALLIC STYLE CG OR EQUAL, API-601
 BOLTING : STUDS ASTM SA-193-GRADE B7
 NUTS : ASTM SA-194-GRADE 2H
 FITTINGS : 1/2" TO 1 1/2" 6000 CL, FORGED STEEL,
 ASTM SA-105N, THREADED OR SOCKETWELD
 2" AND LARGER FORGED STEEL,
 ASTM SA-234-WPB, BUTTWELD, SCHEDULE
 SAME AS PIPE

PIPING CLASS D1b-2 (GLYCOL)
 SERVICE : LOW TEMP. PIPING
 MATERIAL & RATING : CARBON STEEL, 900 CL ANSI
 TEMPERATURE RANGE : -49°F TO 650°F
 MAXIMUM PRESSURE : 2027 psig @ 212°F
 CORROSION ALLOWANCE : 1/16"
 RADIOGRAPHY : 5% OF ALL BUTT WELDS
 MAG. PARTICLE INSPECTION : NONE
 STRESS RELIEVE : REQ'D ON PIPING 3/4" THK & GREATER
 OR PER CUSTOMER REQUIREMENTS
 PIPE : ASTM SA-333-Gr.6 SEAMLESS
 1/2" TO 1 1/4" SCH. XXH
 1 1/2" SCH. 160
 2" TO 3 1/2" SCH. XH
 4"-24" SCH. 160
 NIPPLES/SWAGES : SAME SPEC. AND SCHEDULE AS PIPE
 FLANGES : ANSI 900 CL RF ASTM SA-350-LF2 CL1
 1/2" TO 1 1/2" SOCKETWELD
 2" AND LARGER WELDNECK, BORED TO SUIT PIPE
 GASKETS : SPIRAL WOUND, ASBESTOS FREE, 304 STAINLESS
 FLEXITALLIC STYLE CG OR EQUAL, API-601
 BOLTING : STUDS ASTM SA-193-GRADE B7M
 NUTS : ASTM SA-194-GRADE 2HM
 FITTINGS : 1/2" TO 1 1/2" 6000 CL, FORGED STEEL,
 ASTM SA-350-LF2 CL1, THREADED OR SOCKETWELD
 2" AND LARGER FORGED STEEL,
 ASTM SA-420-WPL6, BUTTWELD, SCHEDULE
 SAME AS PIPE

PIPING CLASS D1a-2 (SOUR PROCESS GAS)
 SERVICE : STANDARD TEMP. PIPING
 MATERIAL & RATING : CARBON STEEL, 900 CL ANSI
 TEMPERATURE RANGE : -20°F TO 650°F
 MAXIMUM PRESSURE : 2027 psig @ 212°F
 CORROSION ALLOWANCE : 1/16"
 RADIOGRAPHY : 5% OF ALL BUTT WELDS
 MAG. PARTICLE INSPECTION : NONE
 STRESS RELIEVE : REQ'D ON PIPING 3/4" THK & GREATER
 OR PER CUSTOMER REQUIREMENTS
 PIPE : ASTM SA-106-B SEAMLESS
 1/2" TO 1 1/4" SCH. XXH
 1 1/2" SCH. 160
 2" TO 3 1/2" SCH. XH
 > 3 1/2" USE LOW TEMP TO SATISFY
 CONDITIONS ABOVE
 NIPPLES/SWAGES : SAME SPEC. AND SCHEDULE AS PIPE
 FLANGES : ANSI 900 CL RF ASTM SA-105N
 1/2" TO 1 1/2" THRD OR SW
 2" AND LARGER - WELDNECK, BORED TO SUIT PIPE
 GASKETS : SPIRAL WOUND, ASBESTOS FREE, 304 SS,
 FLEXITALLIC STYLE CG OR EQUAL, API-601
 BOLTING : STUDS ASTM SA-193-GRADE B7
 NUTS : ASTM SA-194-GRADE 2H
 FITTINGS : 1/2" TO 1 1/2" 6000 CL, FORGED STEEL,
 ASTM SA-105N, THREADED OR SOCKETWELD
 2" AND LARGER FORGED STEEL,
 ASTM SA-234-WPB, BUTTWELD, SCHEDULE
 SAME AS PIPE

PIPING CLASS D1b-2 (SOUR PROCESS GAS)
 SERVICE : LOW TEMP. PIPING
 MATERIAL & RATING : CARBON STEEL, 900 CL ANSI
 TEMPERATURE RANGE : -49°F TO 650°F
 MAXIMUM PRESSURE : 2027 psig @ 212°F
 CORROSION ALLOWANCE : 1/16"
 RADIOGRAPHY : 5% OF ALL BUTT WELDS
 MAG. PARTICLE INSPECTION : NONE
 STRESS RELIEVE : REQ'D ON PIPING 3/4" THK AND GREATER
 OR PER CUSTOMER REQUIREMENTS
 PIPE : ASTM SA-333-GR6 SEAMLESS
 1/2" TO 1 1/4" SCH. XXH
 1 1/2" SCH. 160
 2" TO 3 1/2" SCH. XH
 4"-24" SCH. 80
 NIPPLES/SWAGES : SAME SPEC. AND SCHEDULE AS PIPE
 FLANGES : ANSI 900 CL RF ASTM SA-350-LF2 CL1
 1/2" TO 1 1/2" THRD. OR SOCKETWELD
 2" AND LARGER WELDNECK, BORED TO SUIT PIPE
 GASKETS : SPIRAL WOUND, ASBESTOS FREE, 316L SS,
 FLEXITALLIC STYLE CG OR EQUAL, API-601
 BOLTING : STUDS ASTM SA-193-GRADE B7M
 NUTS : ASTM SA-194-GRADE 2HM
 FITTINGS : 1/2" TO 1 1/2" 6000 CL, FORGED STEEL,
 ASTM SA-350 LF2 CL1, THREADED OR SOCKETWELD
 2" AND LARGER FORGED STEEL,
 ASTM SA-420 WPL6, BUTTWELD, SCHEDULE
 SAME AS PIPE

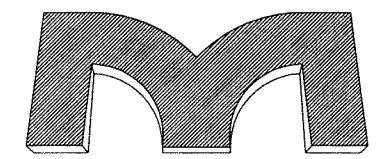
PIPING CLASS F2b-S (SPECIAL) (PROCESS GAS)
 SERVICE : LOW TEMP. PIPING
 MATERIAL & RATING : CARBON STEEL, 2500# ANSI
 TEMPERATURE RANGE : -49°F TO 650°F
 MAXIMUM PRESSURE : 4568.53 psig @ 212°F
 CORROSION ALLOWANCE : 1/8"
 RADIOGRAPHY : 100% ALL WELDS
 MAG. PARTICLE INSPECTION : NONE
 STRESS RELIEVE : REQ'D ON PIPING 3/4" THK & GREATER
 OR PER CUSTOMER REQUIREMENTS
 PIPE : 6" FORGING SA-350-LF2 CL1
 (0.86" THK.)
 FLANGES : ANSI 2500# RTJ ASTM SA-350-LF2 CL1
 1/2" TO 1 1/2" SOCKET WELD
 2" AND LARGER WELDNECK,
 BORED TO SUIT PIPE
 GASKETS : OVAL RINGS, MILD STEEL
 BOLTING : STUDS ASTM SA-193-GRADE B7M
 NUTS : ASTM SA-194-GRADE 2HM
 FITTINGS : 1/2" TO 1 1/2" 6000 CL, FORGED STEEL,
 ASTM SA-350-LF2 CL1, SOCKETWELD
 2" AND LARGER FORGED STEEL, SA-350-LF2 CL1

REV	DESCRIPTION	DATE	BY	CHK	APP	ADMIN
0	ISSUED FOR CONSTRUCTION	08-07-24	<i>[Signature]</i>	PAT	AN	
B	ISSUED FOR APPROVAL	08-07-21	LM	KHH	AN	
A	ISSUED FOR APPROVAL	08-06-24	KHH	PAT	AN	
REVISIONS						

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CUSTOMER					
TITLE Z-4000 LINE HEATER PACKAGE GENERAL ARRANGEMENT - MALONEY PIPING SPECS					
PROJECT # and NAME BC0127-004 - HORSESHOE - WELLSITE					
DRAWN	DATE	APPROVED	SCALE	WIP NO.	
KHH	08-06-24		NTS	015940-11	
NO. REQ'D	DRAWING NO.			SHT. NO.	REV.
1	015940-4-11			4 of 4	0