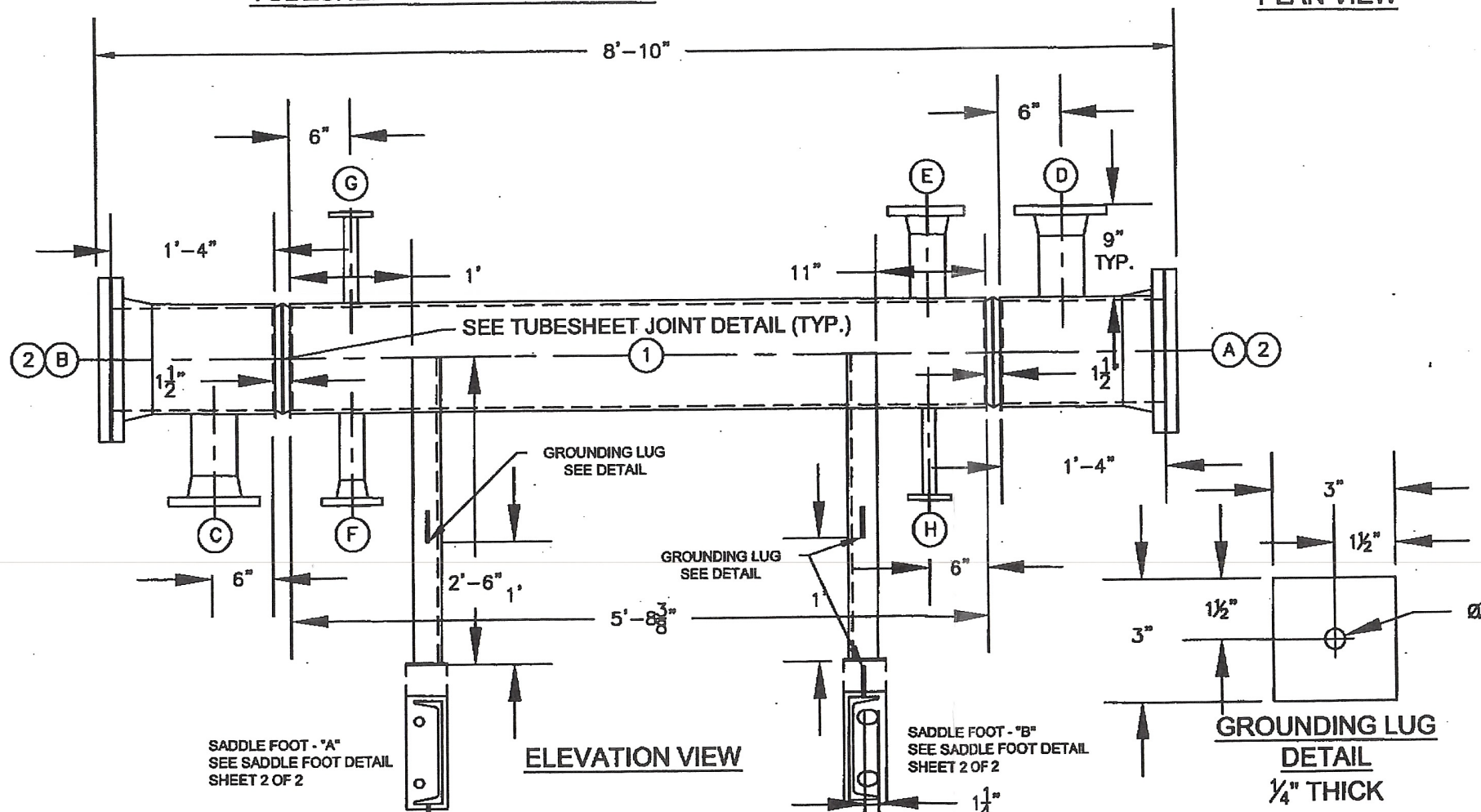
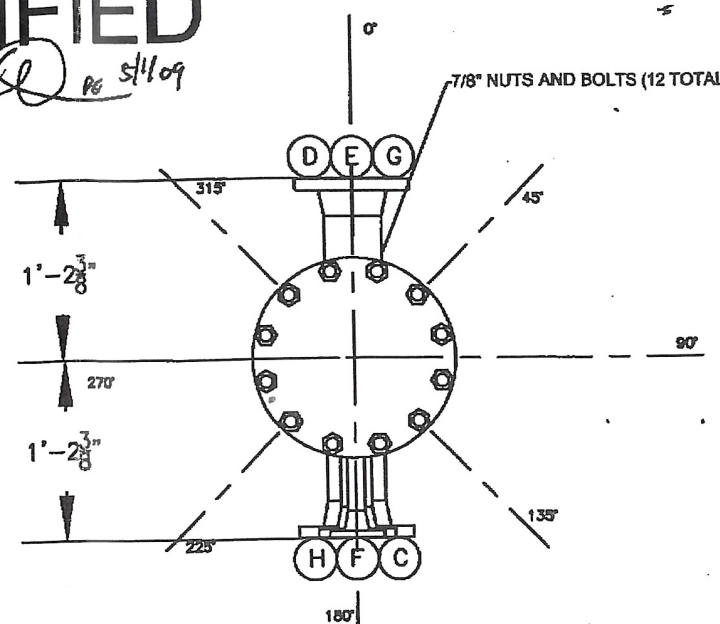
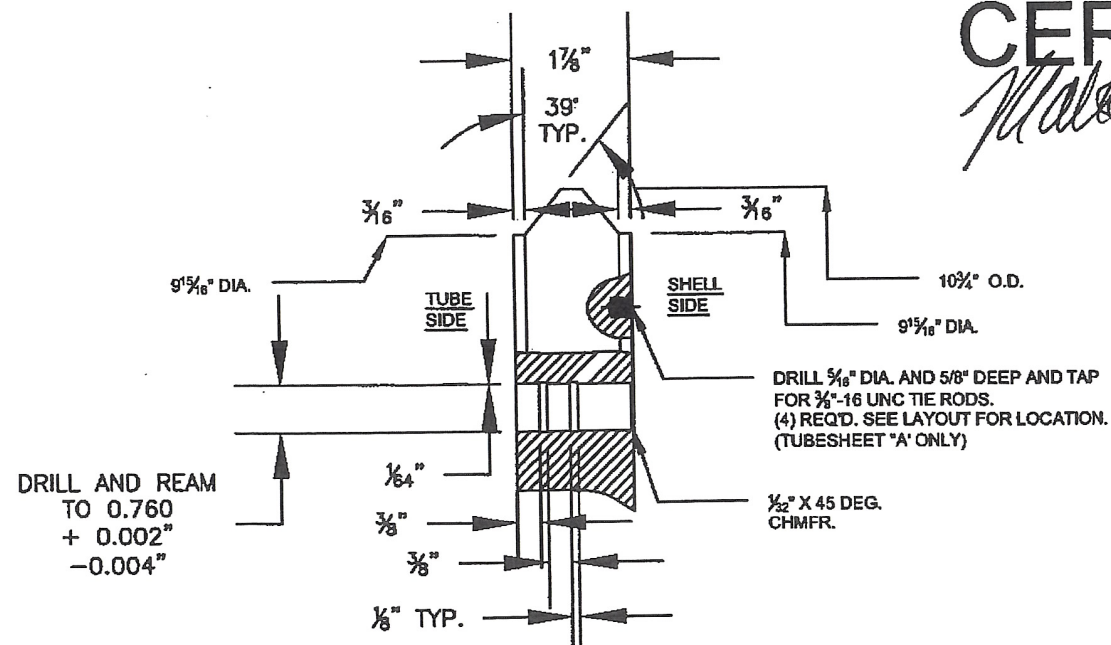


# CERTIFIED

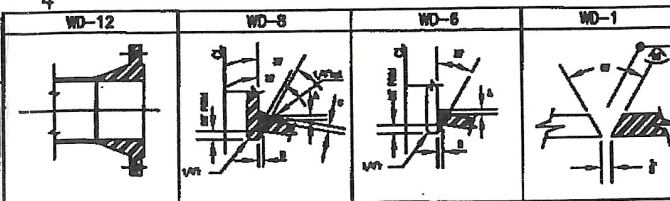
*Walter E. Rogers* PG 5/1/09



- NOTES:**
1. ALL BOLT HOLES TO STRADDLE NATURAL CENTERLINES OF VESSEL.
  2. ANTISIEZE TO BE APPLIED TO ALL BOLTING PRIOR TO TIGHTENING
  3. ALL WELD JOINTS AND 1" ON EITHER SIDE OF JOINT TO BE CLEANED PRIOR TO WELDING.
  4. ALL WELDED CONSTRUCTION.
  5. FOR PAINTING, USE THE ENGINEERING SPEC 5441-42.1443.02-5 SPECIFICATION FOR K2 SOPERTON PLANT PAINTING.
  6. ALL WETTED MATERIALS SHALL COMPLY WITH NACE MR0175.
  7. REVISION DESIGNATION CHANGED FROM USING NUMERIC TO USING ALPHABETIC PRIOR TO FABRICATION. PREVIOUS REVISIONS 1 AND 2 ARE NOW REVISIONS A AND B. DRAWING IS REVISION 0 WHEN RELEASED FOR FABRICATION.

**NOTICE**

THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION AND IT SHALL NOT BE USED OR REPRODUCED OR ITS CONTENTS DISCLOSED IN WHOLE OR IN PART WITHOUT THE PRIOR WRITTEN CONSENT OF PRECISION PIPE & VESSEL, LLC 303-307-3001



**SCHEDULE OF OPENINGS & WELD TYPES**

MARK	SIZE	QTY	PAVING	TYPE	OS PROJ	INT PROJ	WD	A	B	C
A	10"	1	150#	RFLN	RIGHT CHANNEL	N/A	N/A	12	0.5"	
B	10"	1	150#	RFLN	LEFT CHANNEL	N/A	N/A	12	0.5"	
C	4"	1	150#	RFLN	TUBE SIDE INLET	0"	0"	6	0.5"	0.5"
D	4"	1	150#	RFLN	TUBE SIDE OUTLET	0"	0"	6	0.5"	0.5"
E	3"	1	150#	RFLN	SHELL SIDE INLET	0"	0"	6	0.5"	0.5"
F	2"	1	150#	RFLN	SHELL SIDE OUTLET	0"	0"	6	0.5"	0.5"
G	1"	1	150#	RFLN	SHELL SIDE VENT	0"	0"	6	0.5"	0.5"
H	1"	1	150#	RFLN	SHELL SIDE DRAIN	0"	0"	6	0.5"	0.5"
I										
J										
K										
L										
M										
N										

**DESIGN DATA**

REGISTRATION	NATIONAL BOARD	YEAR BUILT	2000
CONSTRUCTION	ASME SEC. VIII, DIV. 1, 07 A	SERIAL NO.	CH-0888
DESIGN PRESSURE	150 PSII SHELL, 200 PSII TUBE SIDE	CAPACITY (VOL.)	30 GALLONS
DESIGN TEMP	400F - SHELL SIDE, 250F TUBE SIDE	SHIPPING WT (EMPTY)	1913 LB.
EXTERNAL PRESSURE	PSI @ 350F	WT. FULL OF WATER	2375 LB.
OPERATING PRESSURE	60/75 PSII SHELL, 80/95 PSII TUBE	VESSEL SHELL MAT'L	SA-108 GR. B
OPERATING TEMP	324/320F SHELL, 102/125F TUBE	TOP/LEFT HEAD	SA-108 GR. B
MIN. DES. METAL TEMP	20F	BOTTOM/RIGHT HEAD	SA-108 GR. B
WIND CRITERIA	IBC 2006, 100 MPH	NOZZLES	SA-108 GR. B / SA-108
SEISMIC CRITERIA	IBC 2006, SDS-0.181, SD-0.083	GASKETS	SS SPUN WOUND
HYDRO TEST PRESS	185 PSII SHELL, 280 PSII TUBE	STUDS & NUTS	SA-185 GR. B7, SA-184 GR. 2H HW
CORROSION ALLOW.	0.0025" SHELL/TUBE SIDE, N/A TUBES	SURFACE PREP	CLEAN PER NF 15890
INSPECTION	RT-1	PRIMER	NONE PER NF 15890
POST WELD HEAT TREAT	N/A	FINISH PAINT	
CORROSION ALLOW. FOR CLAD	N/A	INSULATION	CLADDED SLOTTED
MATERIAL THICKNESS	N/A	AUTHORIZED QUALITY CONTROL PROGRAM	

**BILL OF MATERIAL**

ITEM	QTY	PART	DESCRIPTION	MATERIAL	WT
32					
31					
30					
29					
28					
27					
26					
25					
24					
23					
22					
21					
20					
19					
18	24		7/8" - 16 UNC BOLTS	SA-185 GR. B7	
17	24		7/8" - 16 UNC NUTS	SA-184 2H HEAVY	
16	2		CHANNEL FOOT - SEE SHEET 2 OF 2		
15	2		10 X 20# CHANNEL - 30L	SA-30	
14	2		SS SPUN WOUND GASKET		
13	2		10.75" X 1 7/8" CS FLUTE - TUBESHEET	SA-516 - 70	
12	2		10" 150# BLIND FLANGE	SA-105	
11	2	GM	1" 150# RFLN CS FLANGE	SA-105	
10	1	F	2" 150# RFLN CS FLANGE, SCH 40 BORE	SA-105	
9	1	E	3" 150# RFLN CS FLANGE, SCH 40 BORE	SA-105	
8	2	CD	4" 150# RFLN CS FLANGE, SCH 40 BORE	SA-105	
7	1	F	2" S40 CS SMLS PIPE (0.875" I)	SA-108 GR. B	
6	1	E	3" S40 CS SMLS PIPE (0.875" I)	SA-108 GR. B	
5	2	CD	4" S40 CS SMLS PIPE (0.875" I)	SA-108 GR. B	
4	2	AD	10" 150# RFLN CS FLANGE, SCH STD BORE	SA-105	
3	01		3/4" 14 GA CS TUBE (0L)	SA-178	
2	2	AD	10" STD CS SMLS PIPE (1.315" I) - CHANNEL	SA-108 GR. B	
1	1		10" STD CS SMLS PIPE (0.375" I) - SHELL	SA-108 GR. B	

REV	DESCRIPTION	BY	APPD	DATE
0	CERTIFIED - ISSUED FOR FABRICATION	MDH	DRR	5/1/09
C	CHANGED SHELL INLET FLANGE TO 3"	MDH	DRR	4/15/09
B	CORRECTED GENERAL COMMENTS	MDH	DRR	4/14/09
A	UPDATED SADDLES AND MISC. CLEARUP	MDH	DRR	3/23/09

**PRECISION PIPE AND VESSEL, LLC**  
 6535 WASHINGTON AVE.  
 DENVER, CO 80229

**CUSTOMER**  
 RANGE FUELS SOPERTON PLANT

**JOB NO:** 4358 SOP 10525  
**PAGE NUMBER:** 1 OF 2

**TITLE / PROJECT:** HP LIQUID HEATER 31-E-236

**DRAWN BY:** MDH **CHECKED BY:** DRR **APPROVED BY:** DRR **DATE:** 5/1/09 **SCALE:** NTS **DRAWING NO:** D-1497 **REV:** 0

