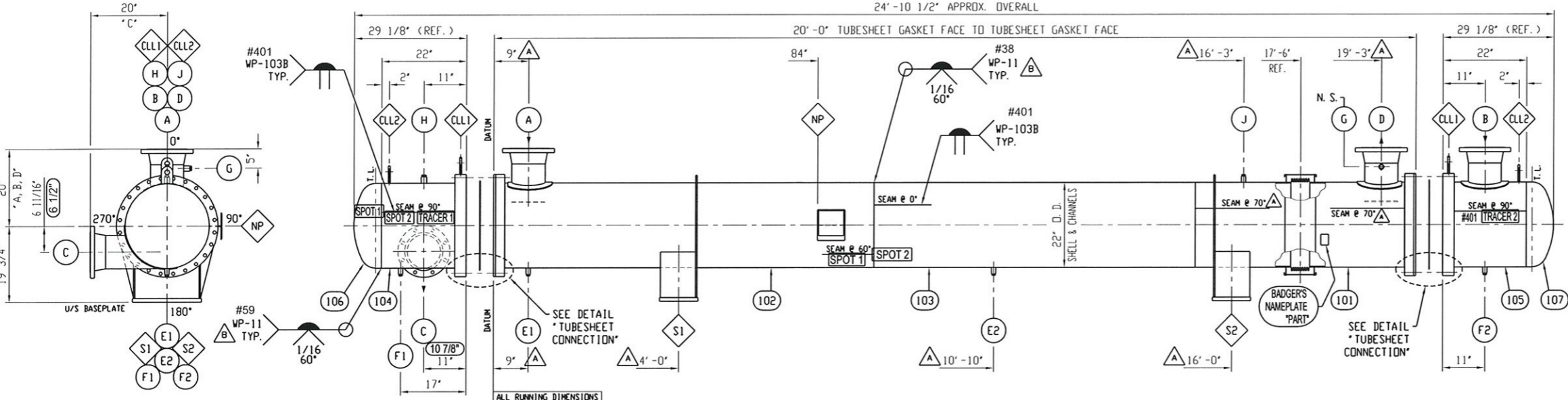


Parts List				
ITEM	NAME	QTY	DESCRIPTION	MATERIAL
20	LEFT TUBESHEET	1	2 1/2" (2.250" MIN.) x 26 1/2" FIN. DIA. c/w 0.375" MIN. EXPLOSION BONDED CLADDING (SB-551 B60702 (ANN.))	SA-240-304L
30	RIGHT TUBESHEET	1	2 1/2" (2.250" MIN.) x 26 1/2" FIN. DIA. c/w 0.375" MIN. EXPLOSION BONDED CLADDING (SB-551 B60702 (ANN.))	SA-240-304L
101	BELLOW EXP. JOINT	1	BELLOW - BARKER INDUSTRIES, MODEL No. 22-BF-W5, c/w 3/16" x 22" O.D. x 25' LG. STUB ENDS (SA-240-304L), OVERALL LENGTH = 55', c/w COVER (304L)	SA-240-304L
102	SHELL	1	3/16" x 68 1/2" x 96" (ROLL TO 22" O.D.)	SA-240-304L
103	SHELL	1	3/16" x 68 1/2" x 83 7/8" (ROLL TO 22" O.D.)	SA-240-304L
104	LEFT CHANNEL	1	1/4" x 68 5/16" x 21 5/8" (ROLL TO 22" O.D.)	SA-240-304L
105	RIGHT CHANNEL	1	1/4" x 68 5/16" x 21 5/8" (ROLL TO 22" O.D.)	SA-240-304L
106	LEFT CHANNEL HEAD	1	2-1 S.E. HEAD, 1/4" (O.1875" MIN.) x 22" O.D. c/w 1 1/2" S.F.	SA-240-304L
107	RIGHT CHANNEL HEAD	1	2-1 S.E. HEAD, 1/4" (O.1875" MIN.) x 22" O.D. c/w 1 1/2" S.F.	SA-240-304L
108	"A,B,C" FLG.	4	8" - CLASS 150, B16.5 R.F. N. FLANGE (SOL. NDS BORE)	SA-182-F304L
109	"E1,E2,F1,F2" CPLG.	5	1/2" - CLASS 3000, B16.11 MPT FULL COUPLING	SA-182-F304L
110	"G,H" CPLG.	2	3/4" - CLASS 3000, B16.11 MPT FULL COUPLING	SA-182-F304L
111	"I1,I2,F1,F2" PLUG	5	1/2" - B16.11 MPT HEX. PLUG	SA-182-F304L
112	"G,H" PLUG	2	3/4" - B16.11 MPT HEX. PLUG	SA-182-F304L
113	"A,B,C" NECK	3	8" - SOL. NDS (O.322") PIPE x 7" LG. (INCL. TRHD)	SA-312-1P304L SLS
114	"C" NECK	1	8" - SOL. NDS (O.322") PIPE x 17" LG. (INCL. TRHD)	SA-312-1P304L SLS
115	"A,B,C" REPAD	3	1/4" x 12 5/8" x 12 7/8"	SA-240-304L
116	"C" REPAD	1	1/4" x 14" x 20 3/8"	SA-240-304L
117	LEFT CHANNEL FLANGE	1	3" (2.6875" MIN.) x 26 1/2" FIN. O.D. x 22 1/8" FIN. I.D.	SA-182-F304L
118	RIGHT CHANNEL FLANGE	1	3" (2.6875" MIN.) x 26 1/2" FIN. O.D. x 22 1/8" FIN. I.D.	SA-182-F304L
119	LEFT CHANNEL GASKET	3	0.175" x 23 1/4" O.D. x 22 3/8" I.D. SPIRAL WOUND GASKET, c/w 1/8" x 21 5/8" I.D. INNER RING (304L S.S.F.L.), AND 1/8" x 24 1/8" O.D. CENTERING RING (304L S.S.F.L.), QUANTITY INCLUDES (1) SPONGE RUB. (1) TEST GASKET.	304L S.S.F.L. w/ GRAPHITE FILLER
120	RIGHT CHANNEL GASKET	3	0.175" x 23 1/4" O.D. x 22 3/8" I.D. SPIRAL WOUND GASKET, c/w 1/8" x 21 5/8" I.D. INNER RING (304L S.S.F.L.), AND 1/8" x 24 1/8" O.D. CENTERING RING (304L S.S.F.L.), QUANTITY INCLUDES (1) SPONGE RUB. (1) TEST GASKET.	304L S.S.F.L. w/ GRAPHITE FILLER
121	CHANNEL STUDS	48	3/4" - 10NC x 8 1/4" LG. STUDS	SA-192-80 CL. 2
122	CHANNEL NUTS	96	3/4" - 10NC HEAVY HEX. NUT	SA-192-8
123	CHANNEL WASHERS	96	3/4" SAE FLAT WASHERS	S.S.F.L.
124	"D" IMPINGEMENT PLATE	1	1/4" x 8 1/2" x 17 7/8"	SA-240-304L

304L = DUAL CERTIFICATION REQUIRED
SUBSTITUTION OF 304L WITH 316L IS NOT ALLOWED



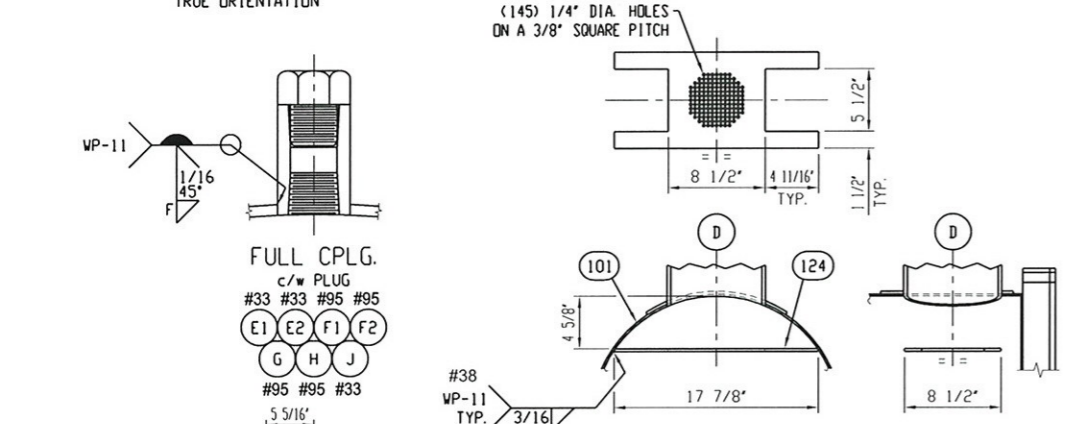
GENERAL ARRANGEMENT
SCALE: 3/4" = 1'-0"

LEFT END VIEW
TRUE ORIENTATION

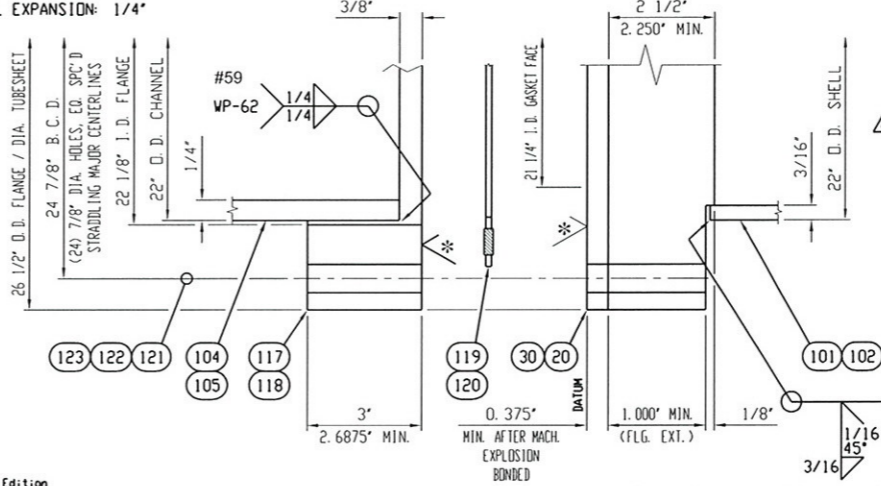
REPLACEMENT UNIT, MAINTAIN DIMENSIONS.

SHELL MOVEMENT DUE TO THERMAL EXPANSION: 1/4"

REMOVE ALL OXIDES FROM TUBESHEET FACE PRIOR TO DRILLING



"D" IMPINGEMENT PLATE



TUBESHEET CONNECTION
(LEFT SHOWN, TYP. RIGHT)

* MACHINE GASKET FACE AFTER ALL FABRICATION IS COMPLETE. 125 - 250 RMS SPIRAL SERRATION

DESIGN AND FABRICATION

In accordance with: 1) ASME Section VIII, Div. 1, 2007 Edition
2) TEMA Class "C"
N. B. N. 719 3) Customer's Specification
ERS Specification: 2007-11-HE-002 Rev. 2

DESIGN CONDITIONS

	SHELL SIDE	TUBE SIDE
Design Pressure Internal	75 psig	150 psig
Design Pressure External	-	FV
Design Temperature	200°F	550°F
Corrosion Allowance	0.0625" (NIL ON BELLOW)	0.0625" (NIL ON TUBES)
Type of Heads	-	2-1 S.E.
Stress Relief	NONE	NONE
Radiograph	SPOT UW-11(c)	SPOT UW-11(c)
Joint Efficiency:		
Cat A - Shell	0.85 per UW-12(b)	0.85 per UW-12(b)
Cat B - Shell	0.85 per UW-12(b)	0.85 per UW-12(b)
Noneplate Marking	R13	R13
Hydrostatic Test Pressure	98 psig	215 psig
Hydrostatic Test Temperature	60°F - 100°F	60°F - 100°F
N.A.W.P.	75 psig @ 200°F	165 psig / FV @ 550°F
N.A.W.P. Limited By	EXP. JOINT	TUBESHEET
Minimum Design Metal Temp.	-20°F @ 75 psig	-20°F @ 165 psig / FV
No Impact Test Per	UW-51(d)(1)(a), UW-65	UW-51(d)(1)(a), UW-65
Number of Passes	1	1
Contents	COOLING WATER	PROCESS GAS
Specific Gravity of Contents	1.0	-

Data report to include UHX-19.2.2 note
Over pressure protection is the RESPONSIBILITY OF THE OWNER/USER per UG-125.
No inspection opening required per UG-46(a).
Removable pressure parts shall be marked as per UG-116(1).

Insulation (By others): SHELL SIDE: NONE
TUBE SIDE: NONE

HEAT TRANSFER AREA

930 SQ. FT.

Shell Section:	3,943 LBS.
Left Channel:	410 LBS.
Right Channel:	375 LBS.
Complete Unit - Empty:	4,797 LBS.
Complete Unit - Full of water:	8,717 LBS.

WEIGHTS

GENERAL NOTES

- All bolt holes shall straddle major centre lines.
- Clean and drain before shipment.
- All welds shall be made using approved welding procedures.
- No spatter or arc strikes on unit.
- No centre punch marks on unit.

MATERIAL NOTES

- Each tube to be hydrotested, UT, and Eddy Current Tested. Tubes to be Annealed in vacuum, SB-523 Section 10.1 and 12.7.3 apply.
- Tubesheet material to comply with document "Z1RC CLAD TS"

FABRICATION NOTES

- Positive Material Identification (PMI) shall be provided. Carbon Content must be verified during PMI check for all "L" grade S.S.F.L. 5% PMI sample tubes on an identifiable heat number basis. Non-pressure alloy components shall be PMI checked using ID Made only. Studs and nuts are exempt from PMI provided proper NIR verification is available. Surfaces exposed to exchanger contents, i.e. vapor, or condensate, shall be free of gouges, deep scratches, pits, cracks or other surface defects. Shop shall avoid crevices, holes, pockets, weld craters, depressions, etc.
- When repairs are more than one segment, each segment to have at least (1) 1/4" NPT tell-tale hole at low point.
- Test gaskets for shop fabricated flanges and all flanges larger than 18" shall be of the same size, material and type as the service gaskets.
- Test all repairs @ 15 PSIG air and soop solution (Snoop) applied over all welded joints before hydrotest.
- The water used for hydrostatic testing shall be clean tap water with chloride content not to exceed 150 ppm. Following the hydrotest, the water shall be drained and the exchanger dried.
- Threads of external studs and nuts shall be lubricated with a high temperature thread lubricant such as FEL-PRD C-102 or JT LUBE SS-30.
- All flange face and machined surfaces shall be coated with an easy removable rust preventative such as RUST BAN 326.
- All openings shall be covered securely with blind flanges or plugs of suitable design, and the unit shall be made air tight for shipment.
- The P.D. No., Item No., and Weight shall be prominently marked with point in legible block letters (at least 3" high) on the side of the exchanger.

AS BUILT LEGEND

- AS BUILT
- WELDERS MAP (IDENTIFICATION)
- X-RAY LOCATIONS

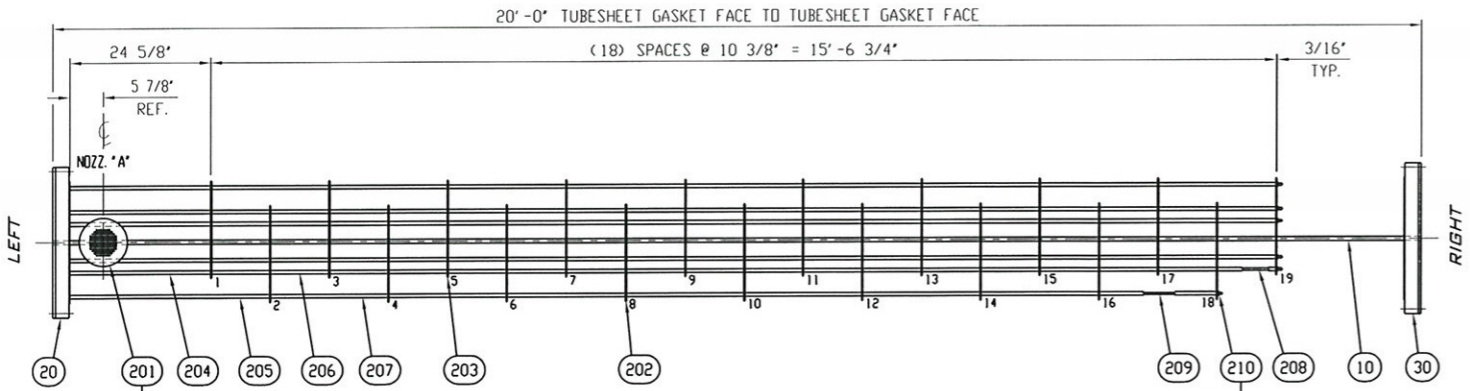


B	08/01/08	S.E.	AS BUILT LEGEND ADDED / AS NOTED / CERTIFIED AS BUILT
A	03/31/08	C.O.	AS PER CUST. E-MAIL 03/28/08 / AS NOTED / CERTIFIED FOR CONSTRUCTION
REV. DATE BY REVISIONS			
CUSTOMER PURCHASE ORDER No:		THIS DRAWING IS COPYRIGHTED AND IS THE PROPERTY OF ELLETT INDUSTRIES LTD. THE INFORMATION THEREIN MAY NOT BE USED, LENT, NOR REPRODUCED WITHOUT WRITTEN PERMISSION.	
GENEVA NITROGEN LLC		22" O. D. COOLER CONDENSER	
PROJECT: WEATHERLY NITRIC ACID PLANT DREN, UTAH, U.S.A.		ITEM No.: E-610 (REPLACEMENT)	
ELLETT Industries Ltd. - Port Coquitlam, B.C.			
ELLETT JOB No.	DRAWN: C.D.	DATE: 02/26/08	SCALE: N.T.S.
43890	CHECKED: A.S.K.	DATE: 03/10/08	U.N.D.
	APPROVED: [Signature]	DATE: 03/10/08	
			DRAWING NUMBER: H4-1965-1
			SHEET 1 OF 2

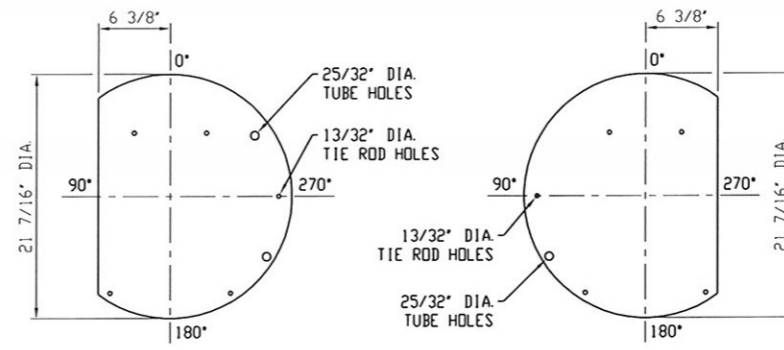
MK.	SIZE	NO.	RTG TYPE		ITEM	MIN.	ITEM THK.	WID.	ITEM	R	E	F	SERVICE	REMARKS		
			FLANGE	NECK											LAP RING	RE-PAD
J	1/2"	1	3000	F/CPLG	109	1 1/8"	-	-	-	-	-	-	1/8"	SHELL SIDE - PRESSURE INDICATOR	c/w PLUG	111
H	3/4"	1	3000	F/CPLG	110	1 3/8"	-	-	-	-	-	-	1/8"	TUBE SIDE - TEMPERATURE INDICATOR	c/w PLUG	112
G	3/4"	1	3000	F/CPLG	110	1 3/8"	-	-	-	-	-	-	1/8"	SHELL SIDE - TEMPERATURE INDICATOR	c/w PLUG	112
F1,F2	1/2"	2	3000	F/CPLG	109	1 1/8"	-	-	-	-	-	-	1/8"	TUBE SIDE - DRAIN	c/w PLUG	111
E1,E2	1/2"	2	3000	F/CPLG	109	1 1/8"	-	-	-	-	-	-	1/8"	SHELL SIDE - DRAIN	c/w PLUG	111
C	8"	1	150	R/FWN	108	8 5/8"	9"	113	-	-	-	-	1/4"	SHELL SIDE - WATER OUTLET	c/w IMPINGEMENT PLATE	A
D	8"	1	150	R/FWN	108	8 5/8"	9"	113	-	-	-	-	1/4"	TUBE SIDE - GAS OUTLET		
B	8"	1	150	R/FWN	108	8 5/8"	9"	113	-	-	-	-	1/4"	TUBE SIDE - GAS INLET		
A	8"	1	150	R/FWN	108	8 5/8"	9"	113	-	-	-	-	1/4"	SHELL SIDE - WATER INLET	c/w IMPINGEMENT PLATE	

SCHEDULE OF NOZZLES

ALL TELL-TALE HOLES 1/4" NPT @ LOW POINT / ALL GASKET FACES: 125-250 RMS, SPIRAL SERRATION (U.N.D.)

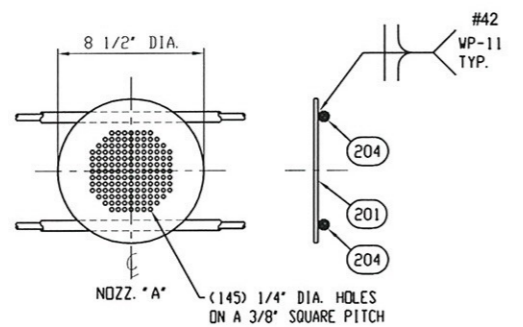


BUNDLE ASSEMBLY VIEWED @ 0°

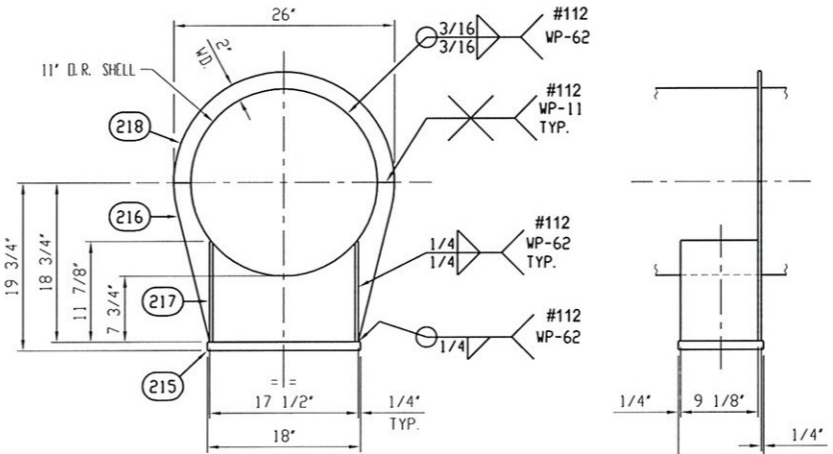


(203) ODD BAFFLE QUANTITY = 10

(202) EVEN BAFFLE QUANTITY = 9



A IMPINGEMENT PLATE

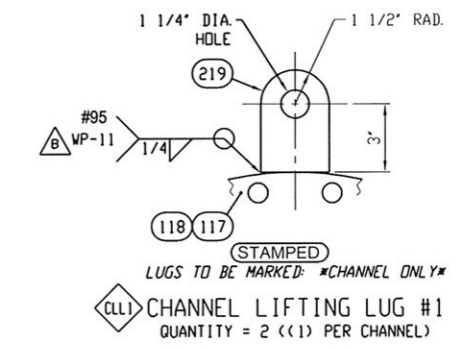


SADDLE SUPPORT

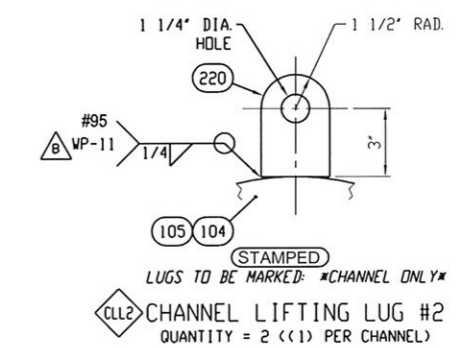
- S1 SADDLE #1 (AS SHOWN) QUANTITY = 1
- S2 SADDLE #2 (MIRRORED) QUANTITY = 1

Parts List				
ITEM	NAME	QTY	DESCRIPTION	MATERIAL
10	TUBES	237	3/4" O.D. x 18 B.W.G. (0.049") AVG. WALL TUBE x 240" LG.	SA-210-304L (ANNE.)
201	*A* IMPINGEMENT PLATE	1	1/4" x 8 1/2" DIA.	304L S.S. PL.
202	EVEN BAFFLE	9	3/16" x 21 7/16" DIA.	304L S.S. PL.
203	ODD BAFFLE	10	3/16" x 21 7/16" DIA.	304L S.S. PL.
204	SPACER	5	5/8" O.D. x 18 B.W.G. (0.049") TUBE x 24 5/8" LG.	304L S.S. PL.
205	SPACER	1	5/8" O.D. x 18 B.W.G. (0.049") TUBE x 25" LG.	304L S.S. PL.
206	SPACER	72	5/8" O.D. x 18 B.W.G. (0.049") TUBE x 10 3/16" LG.	304L S.S. PL.
207	SPACER	17	5/8" O.D. x 18 B.W.G. (0.049") TUBE x 20 9/16" LG.	304L S.S. PL.
208	TIE ROD	5	3/8" DIA. R/RWR x 21 3" LG.	304L S.S. PL.
209	TIE ROD	1	3/8" DIA. R/RWR x 20 1/2" LG.	304L S.S. PL.
210	TIE ROD NUT	6	3/8" - 16NC HEX NUT	304L S.S. PL.
211		0	- VOID -	
212		0	- VOID -	
213		0	- VOID -	
214		0	- VOID -	
215	"S1, S2" MISERPLATE	2	1" x 10" x 18"	SA-210-304L
216	"S1, S2" WEB PLATE	2	3/8" x 18 3/4" x 26"	SA-210-304L
217	"S1, S2" GUSSETS	4	3/8" x 9 1/8" x 11 7/8"	SA-210-304L
218	"S1, S2" STIFFENER	2	3/8" x 13" O.R. x 11 1/16" L.R. (180 B.W.G. SEC.)	SA-210-304L
219	"CLL1" LUG	2	1/2" x 3" x 4 1/2"	SA-210-304L
220	"CLL2" LUG	2	1/2" x 3" x 4 1/2"	SA-210-304L
221	"NP" BRACKET	1	3/16" x 3" x 8"	SA-210-304L
222	"NP" BRACKET	1	3/16" x 3" x 8"	S.S. PL.
223	"NP" NAMEPLATE	1	ELLETT STA. NAMEPLATE	S.S. PL.

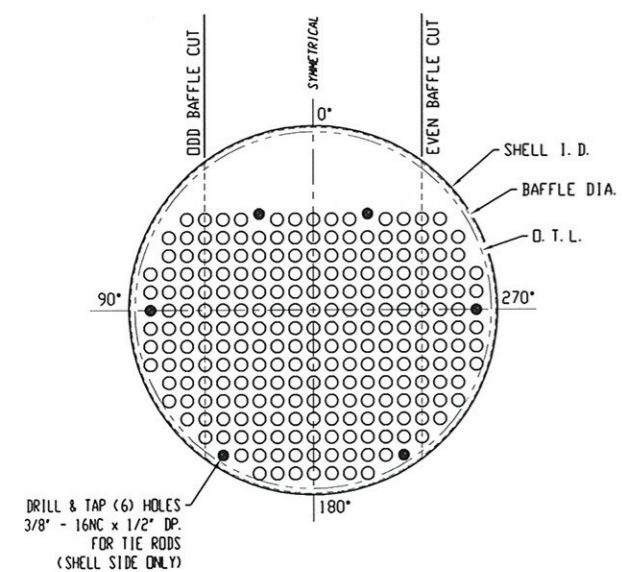
304/L = DUAL CERTIFICATION REQUIRED
SUBSTITUTION OF 304/L WITH 316/L IS NOT ALLOWED



CHANNEL LIFTING LUG #1 QUANTITY = 2 ((1) PER CHANNEL)



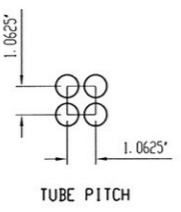
CHANNEL LIFTING LUG #2 QUANTITY = 2 ((1) PER CHANNEL)



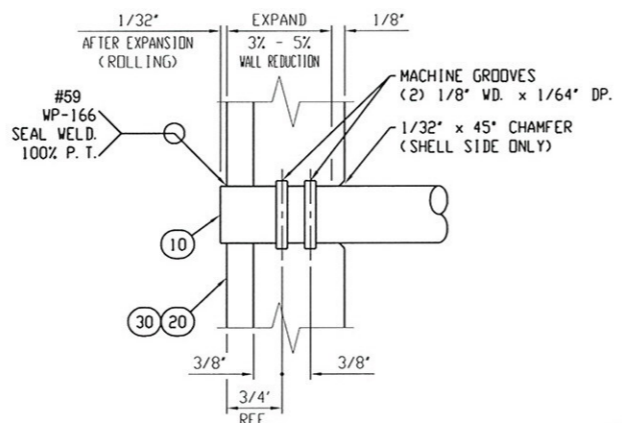
TUBE HOLE / TIE ROD LAYOUT VIEWED FROM SHELL SIDE

- (20) AS SHOWN
- (30) LESS TIE ROD HOLES

LAYOUT DATA
 TUBE HOLES
 Quantity: 237
 Tube Dia.: 3/4"
 Hole Dia.: 0.758" ±0.002
 Pattern: SQUARE
 Pitch: 1 1/16"
 Passes: 1
 TIE RODS
 Quantity: 6
 Diameter: 3/8"
 LAYOUT
 Shell I.D.: 21 5/8"
 O.T.L.: 20.9095"
 Baffle Dia.: 21 7/16"
 BAFFLES
 Type: SGL. SEG.
 Rotation: VERTICAL
 Cut: 20.5%

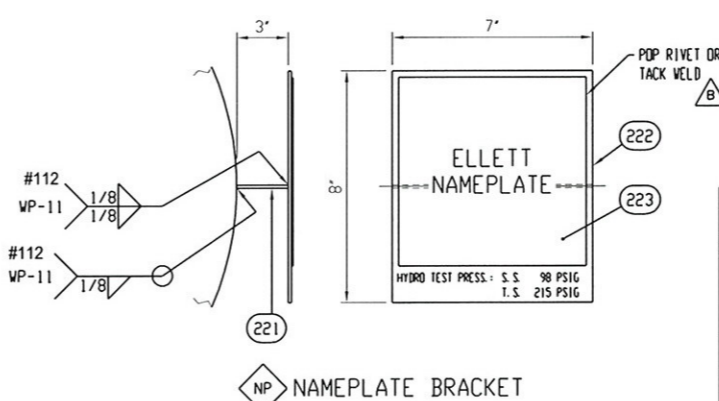


TUBE PITCH
237
TUBES PER PASS



- TUBE TO TUBESHEET INSTALLATION PROCEDURE**
- REMOVE ALL OXIDES FROM TUBES PRIOR TO TUBE INSTALLATION
 - ROLL EXPAND 3% - 5% WALL REDUCTION
 - AIR / SNODP TEST. REPORT REQ'D.
 - SEAL WELD
 - P. T. INSPECT PER UNF-58(b)
 - TUBE WALL REDUCTION CALCULATIONS ARE REQUIRED ON THE FIRST FIVE (5) TUBES AND A RANDOM CHECK OF 10% OF THE TOTAL TUBES. DOCUMENTATION OF TUBE WALL REDUCTION TESTING IS REQUIRED.

TUBE TO TUBESHEET (TYP.)



NAMEPLATE BRACKET

AS BUILT LEGEND

- - AS BUILT
- # - WELDERS MAP (IDENTIFICATION)

B	08/01/08	S.E.	AS BUILT LEGEND ADDED / AS NOTED / CERTIFIED AS BUILT
A	03/31/08	C.O.	AS PER CUST. E-MAIL 03/28/08 / AS NOTED / CERTIFIED FOR CONSTRUCTION
REVISIONS			
REV.	DATE	BY	
CUSTOMER PURCHASE ORDER No.: 3224			
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GENEVA NITROGEN LLC		22' O. D. COOLER CONDENSER	
PROJECT: WEATHERLY NITRIC ACID PLANT DREW. UTAH, U.S.A.		ITEM No.: E-610 (REPLACEMENT)	
ELLETT Industries Ltd. - Port Coquitlam, B.C.			
ELLETT JOB No.	DRAWN: C.D.	DATE: 02/26/08	SCALE: N.T.S.
43890	CHECKED: A.S.K.	DATE: 03/10/08	DRAWING NUMBER: H4-1965-2
APPROVED: [Signature]	DATE: 08/10/07		SHEET 2 OF 2

