

CUST NO.	ITEM NO.	NO. REQD.	PART NO.	DESCRIPTION	DRAWING NO.
	1	1	S30/S31	SHELL ASSY .1874" 304 S/S W/18GA INFLATED TP	FP15839D
	2	1	331	TEMP-PLATE ASSY INFLATED 18GA 304 S/S ON .1874" 304 S/S	
	4	6	333	TEMP-PLATE ASSY INFLATED 18GA 304 S/S ON .1874" 304 S/S	
	5	8	9900872	HEADER DIMPLED DBL FLOW 48" LG 304 S/S 2B SA240	9900872B
	6	4	9801781	NIPPLE 304/304L S/S 1.5"NPT X 6"LG SCH 40 TOE SA-312 (OUTLET)	
	7	4	9801781	NIPPLE 304/304L S/S 1.5"NPT X 6"LG SCH 40 TOE SA-312 (INLET)	
	3	1	332	TEMP-PLATE ASSY INFLATED 18GA 304 S/S ON .1874" 304 S/S	
	9	8	C03	DIMPLE COIL SECTION 14GA 304 S/S	
	8	1	D03	CONE ASSY .25" 304 S/S W/ 14GA 304 DIMPLE COIL 90DEG 9"IKR 1.5"SF	FP15839D
	10	1	115W305103	NIPPLE 304/304L S/S 1.5"NPT X 8"LG SCH 40 TOE SA-312 (INLET)	
	11	1	115W305103	NIPPLE 304/304L S/S 1.5"NPT X 8"LG SCH 40 TOE SA-312 (OUTLET)	

NOTES:

- ALL WELDING TO BE DONE BY ASME CERTIFIED WELDERS.
- MATERIAL SPECIFICATIONS FOR ASME S/S SHEET PLATE (SA-240) S/S PIPE (SA-312)
- SHELL & HEAD ARE RATED PER ASME CODE, TEMP-PLATE IS NOT.
- SUITABLE PRESSURE RELIEF VALVE MUST BE INSTALLED BY CUSTOMER FOR HEAT TRANSFER OPERATION
- ALL DIMENSIONS ARE IN INCHES UNLESS SPECIFIED OTHERWISE.
- RESISTANCE SPOT WELDS ADJACENT TO HEADER(S) ARE TO BE IN STRAIGHT LINE AS SHOWN.
- TEMP-PLATE SURFACE(S) TO BE POLISHED IN SHEET POLISHER TO REMOVE HEAT TINT.
- INSTALL CONNECTIONS IN DIMPLED HEADER & DIMPLE PER DRAWING 9000729 C; DETAIL "B".
- INSTALL DIMPLED HEADERS PER 9900872 B.
- OK TO INFLATE THROUGH HEADERS & FITTINGS.
- MDMT = -20F @ 100 PSIG. MAEWP = 0 PSIG @ 100F
- LITER LEVELS ARE FOR CUSTOMER REFERENCE ONLY.
- CONCENTRIC PATTERN ON CONE NOT TO EXCEED 2 1/2".
- REFERENCE DRAWING NO. FP15838D FOR MAIN TANK ASSY.
- CUSTOMER: REDHOOK BREWERY PORTSMOUTH, NH CUSTOMER ORDER NO.: 40042

CERTIFIED CORRECT AND
RELEASED FOR FABRICATION

FABRICATION WILL BE IN ACCORDANCE WITH
THIS DRAWING. ANY FURTHER CHANGES WILL
BE REVIEWED FOR COST AND DELIVERY
ADJUSTMENTS.

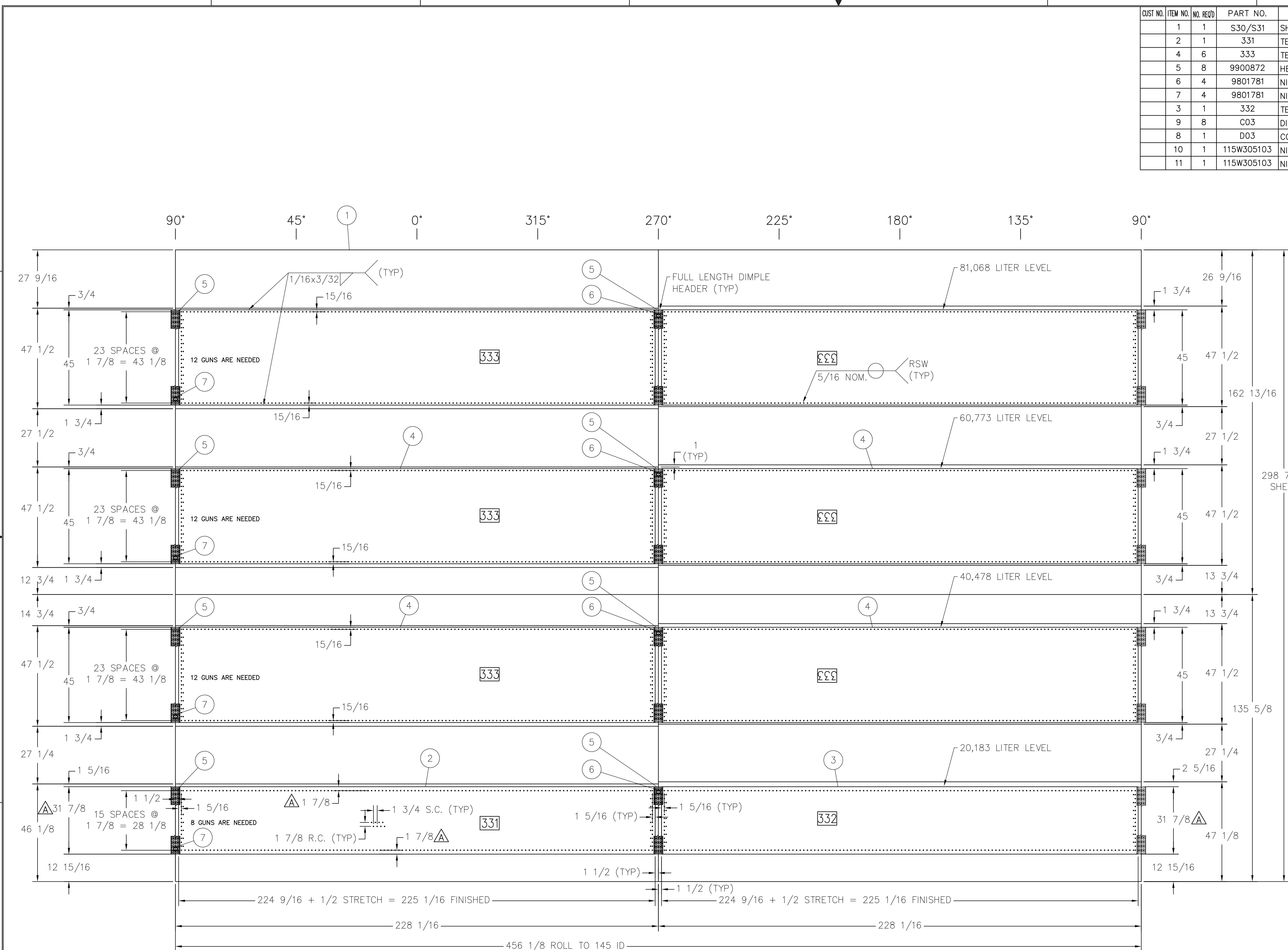
PAUL MUELLER COMPANY

TEST PLATE NO.:	7738101A (SHELL)	A-718A (HEAD)
TEMP-PLATE TYPE:	<input checked="" type="checkbox"/> INFL. <input checked="" type="checkbox"/> DIMPLED <input type="checkbox"/> DEFORMED	
ROW AND SPOT SPACINGS ON INFLATED TYPE CANNOT EXCEED 1/16" MORE THAN DIMENSIONS SHOWN ON THIS DRAWING FOR ASME EQUIPMENT. (REF. SECT. VII, DIV. 1, APX. 17.)		
MACHINE NO's: SPOT WELDS		SEAM WELDS
PROTECTIVE PAINT:		
SURFACES TO BE PAINTED:		
TRIM EDGES:	<input type="checkbox"/> ENDS ONLY	<input type="checkbox"/> ALL EDGES
MATERIAL FINISHES	WELD FINISHES	
INTERIOR	2B/HRAP	FINE GRIND #4
EXTERIOR	2B/HRAP	BUFF (BF)
<input type="checkbox"/> ASME 'U' STAMPED	<input type="checkbox"/> ASME DESIGNED (No Stamp)	
<input checked="" type="checkbox"/> NON ASME	<input type="checkbox"/> ASME MATERIAL & WELDING (No Stamp)	
SPECIFICATIONS	TOP HEAD	SHELL
DESIGN PRESSURE PSI		100
DESIGN TEMP. °F		100
MAX. HYDROSTATIC INFLATION PSIG		650
HYDROSTATIC TEST PSIG		130
MAX. PNEUMATIC INFLATION PSIG		
PNEUMATIC TEST PSIG		
PILLOW DEPTH INCHES	.100	.25
HEATING MEDIUM		
COOLING MEDIUM	GLYCOL	GLYCOL
DEHYDRATION (per MFTP100)		
TEMP-PLATE CONTACT AREA (S.F.)	523.58	80.67
TEMP-PLATE VOLUME CU.FT.	3.18	1.41
QUANTITY:	ONE	

APPROVED BY :

ALL MATERIALS OR COMPONENT PARTS CALLED OUT ON THIS DRAWING SHALL BE AS SPECIFIED OR APPROVED EQUAL			
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DRAWN BY D. HUTCHISON	DATE 4/18/2008	SALES ORDER MODEL(S) 384634 -3 F	
REVIEWED BY <i>Steve Mackay</i>	DATE 4/29/2008	SCALE 1/2"=1'	SIZE 88000 LITER
TITLE SHELL & BOTTOM HEAD HEAT TRANSFER ASSY	DRAWING NO. FP15839-1	SHEET 1 OF 2	

SHELL FLAT LAYOUT



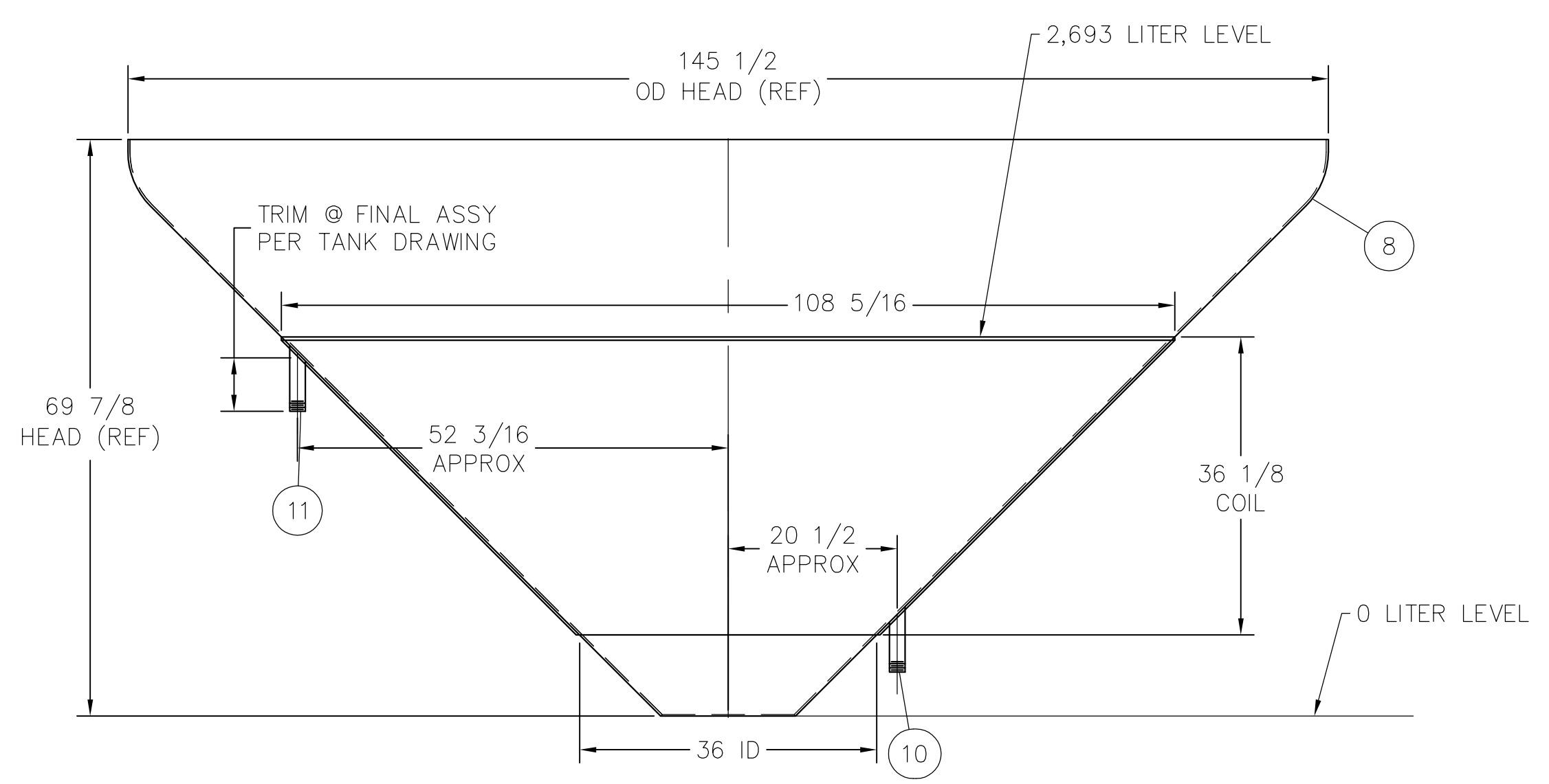
SEPIA FROM DWG. NO.

0 LITER LEVEL (NOTE 12)

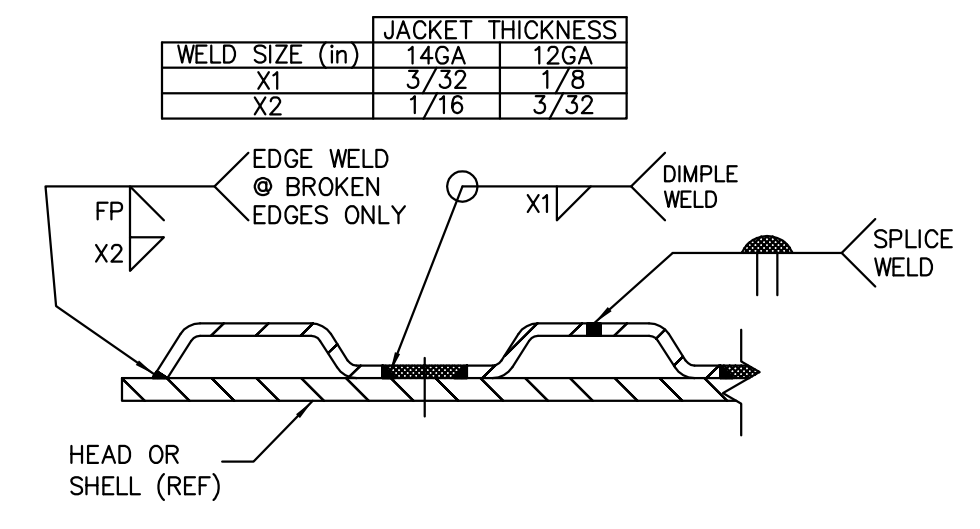
June 9/2009

SYM.	CHANGE	BY	DATE
A	ROW TO EDGE WAS 2 3/16**TEMP-PLATE PANEL WAS 32 1/2**	DLH	7/22/2008
	REVISIONS		

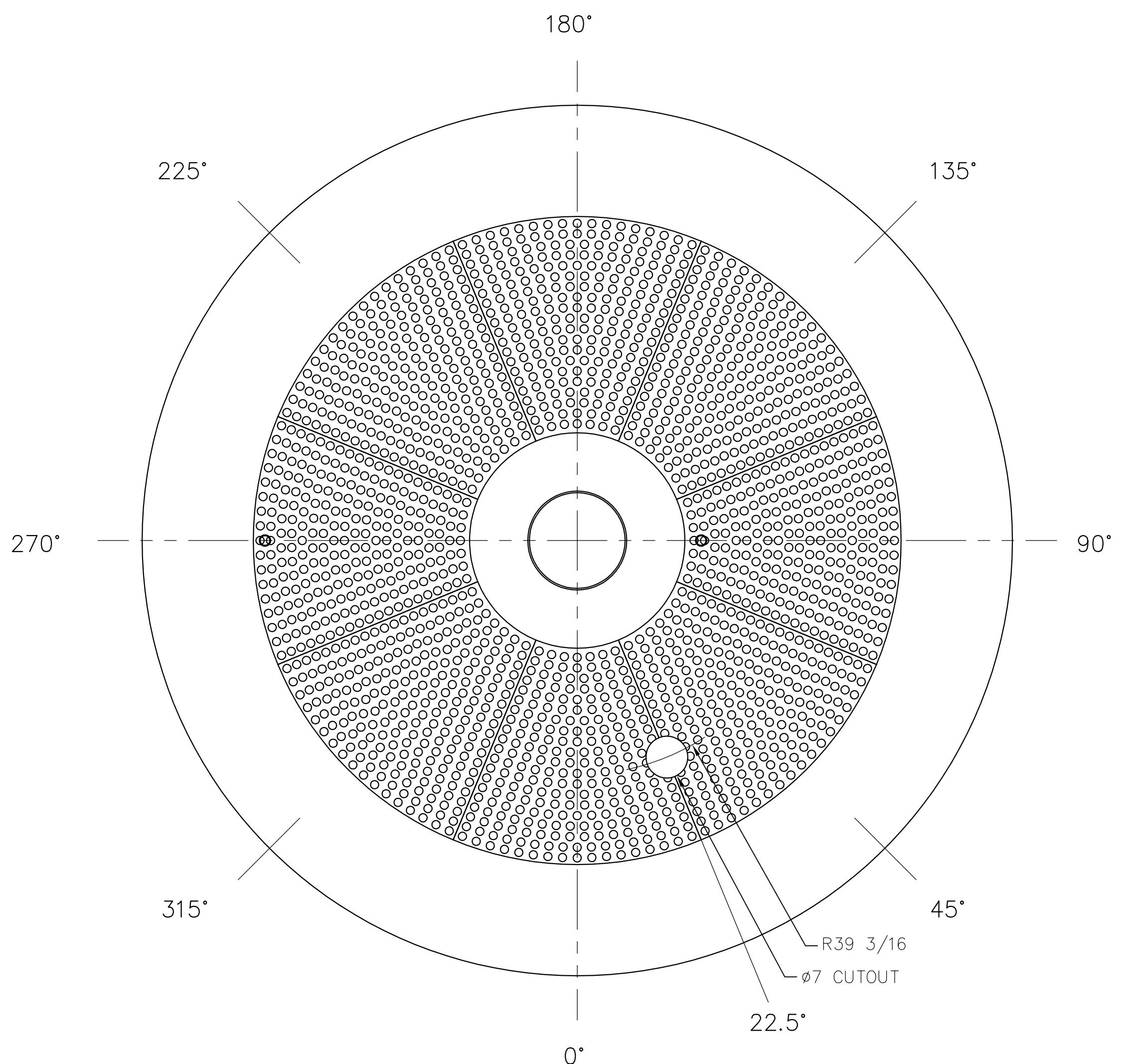
8 7 6 5 4 3 2 1



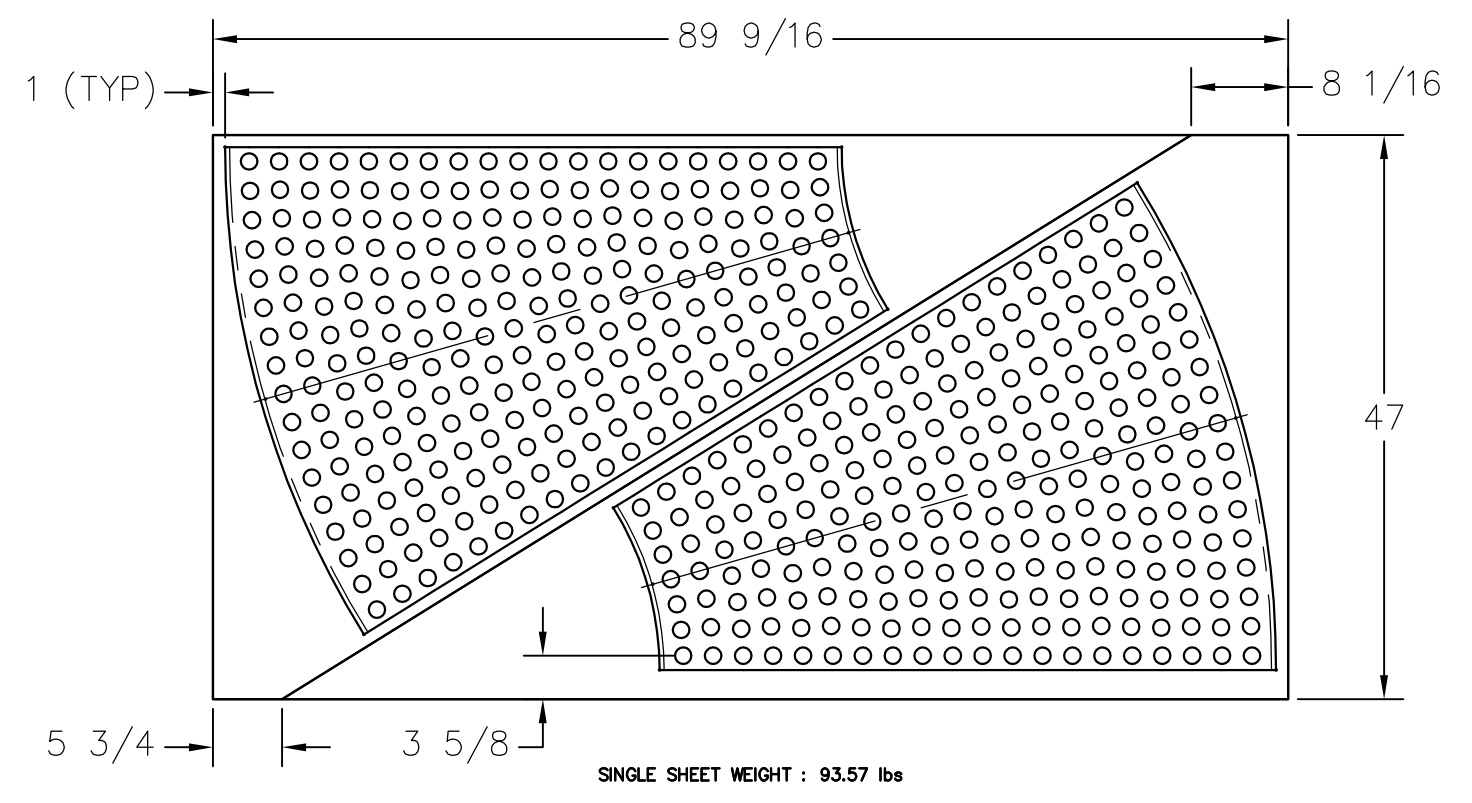
**ELEVATION VIEW
BOTTOM HEAD HEAT TRANSFER**



**DIMPLE TEMP-PLATE
WELD DETAILS**
(ALL WELDS ARE TYPICAL UNLESS OTHERWISE SPECIFIED)



**BOTTOM VIEW OF
BOTTOM HEAD HEAT TRANSFER**



INCLUDED ANGLE OF CONE HEAD = 90°
 TEMP-PLATE THICKNESS = .076"
 FORMED SECTION INCLUDED ANGLE = 45°
 FLAT PATTERN INCLUDED ANGLE = .56°
 NUMBER OF TEMP-PLATE SECTIONS = 8
 AREA COVERED BY TEMP-PLATE = 80.94 SQ. FT.
 TEMP-PLATE INSIDE RADIUS = 25.62"
 TEMP-PLATE OUTSIDE RADIUS = 77"
 ROW SPACING ENTERED = 2.5"
 ROW SPACING CALCULATED = 2.4937"
 SPOT SPACING = 2.5"
 RADIUS OF FIRST ROW OF SPOTS = 27.62"
 RADIUS OF LAST ROW OF SPOTS = 75"
 STANDARD DIMPLE 1/4" DEEP WITH 1/2" DIAMETER HOLE
 FIT BY CENTERLINE

CERTIFIED CORRECT AND
 RELEASED FOR FABRICATION

FABRICATION WILL BE IN ACCORDANCE WITH
 THIS DRAWING. ANY FURTHER CHANGES WILL
 BE REVIEWED FOR COST AND DELIVERY
 ADJUSTMENTS.

PAUL MUELLER COMPANY

SEPIA FROM DWG. NO.

June 9/7/2008

ALL MATERIALS OR COMPONENT PARTS CALLED OUT ON THIS DRAWING SHALL BE AS SPECIFIED OR APPROVED EQUAL			
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	DATE 4/28/2008	SCALE 3/4"=1'	SIZE 88000 LITER
REVIEWED BY <i>DLH</i>	DATE 4/29/2008	MUELLER P. O. BOX 828 / SPRINGFIELD, MISSOURI 65801-0828, U.S.A.	
SYMBOLS	CHANGES	BY	DATE
TITLE SHELL & BOTTOM HEAD HEAT TRANSFER ASSY			
DRAWING NO. FP15839			SHEET 2 OF 2

8 7 6 5 4 3 2 1

FORM U-1A MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS

Size Category _____

(Alternative Form for Single Chamber, Completely Shop or Field Fabricated Vessels Only)
As Required by the Provisions of the ASME Boiler and Pressure Vessel Code Rules, Section VIII, Division 1

1. Manufactured and certified by **Paul Mueller Company, 1600 W. Phelps, Springfield, Missouri, 65802, USA**
(Name and address of manufacturer)

2. Manufactured for **REDHOOK BREWERY, 35 CORPORATE DRIVE, PORTSMOUTH, New Hampshire, 03801, USA**
(Name and address of purchaser)

3. Location of Installation **REDHOOK BREWERY, 35 CORPORATE DRIVE, PORTSMOUTH, New Hampshire, 03801, USA**
(Name and address)

4. Type **Vertical** **384634-3** **N/A** **FP15838 rev. A** **45317** **2008**
(Horizontal or vertical, tank) (Manufacturer's serial number) (CRN) (Drawing No.) (National Board number) (Year built)

5. The chemical and physical properties of all parts meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE. The design, construction, and workmanship conform to ASME Rules, Section VIII, Division 1 **2007** to **N/A**
(Code Case numbers) (Special Service per UG-120(d)) (year) [Addenda (Date)]

6. Shell: **SA-240 304** **.1874"** **0 in** **12' 1.0" (ID)** **24' 10.4375"**
(Material spec. number, grade) (Nominal thickness) (Corr. allow.) (Inner diameter) [Length (overall)]

7. Seams: **Welded / Butt** **Spot** **85%** **N/A** **N/A** **Welded / Butt** **None** **70%** **9**
[Long. (welded, dbl., sngl., lap, butt)] R.T. (Spot or Full) Eff. (%) (H.T. temp) Time (hr) [Girth. (welded, dbl., sngl., lap, butt)] [R.T. (spot or full)] Eff. (%) No. of Courses

8. Heads: (a) Material **SA-240 304** (b) Material **SA-240 304**
(Spec. no., grade) (Spec. no., grade)

	Location (Top, Bottom, Ends)	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure (Convex or Concave)
(a)	Top	.2805"	0	145.0"	9"	N/A	N/A	N/A	N/A	Both
(b)	Bottom	.227"	0	N/A	9"	N/A	90	N/A	N/A	Both

If removable, bolts used (describe other fastenings) _____
(Material, spec. number, grade, size, number)

9. MAWP **25 psi** **.1444 psi** at max. temp. **100 °F** **100 °F**
(Internal) (External) (Internal) (External)

Min. design metal temp. **-20 °F** at **25 psi** Hydro, pneu., or comb. test pressure **HYDRO at 33 PSI**

10. Nozzles, inspection and safety valve openings:

Purpose (Inlet, Outlet, Drain)	Number	Diameter or Size	Type	Material	Nominal Thickness	Reinforcement Material	How Attached	Location
Inspection	1	16"	Manway	SA-240 304	.25"		UW16.1(c)	Bottom Head
Unknown	1	4"	Pipe Ext.	SA-312 304	sch.80		UW16.1(k)	
Unknown	1	3"	Pipe Ext.	SA-312 304	sch.80		UW16.1(k)	
Unknown	1	3"	Pipe Stub	SA-312 304	sch.40		UW16.1(c)	

Additional Nozzles - See Attached U-4...

11. Supports: Skirt **No** Lugs **N/A** Legs **Four** Other **N/A** Attached **Welded to bottom head and shell.**
(Yes or no) (Number) (Describe) (Where and how)

12. Remarks: Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors, have been furnished for the following items of the report:

N/A
(Name of part, item number, Manufacturer's name and identifying stamp)

Vessel is an 880 HL Bright Beer Tank with non-ASME HTS, hydro tested in the vertical position. Charpy Impact Test exempt per UHA-51(d,e,f). Radiography requirement for category A joints of bottom head is SPOT, 85% eff. Pressure relief to be located per UG-125.

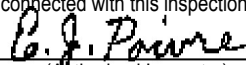
CERTIFICATE OF SHOP/FIELD COMPLIANCE

We certify that the statements made in this report are correct and that all details of design, material, construction, and workmanship of this vessel conform to the ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. "U" Certificate of Authorization No. **5594** expires **September 21,**

Date **08/19/2008** Co. name **Paul Mueller Company** Signed 
(Manufacturer) (Representative)

CERTIFICATE OF SHOP/FIELD INSPECTION

Vessel constructed by **Paul Mueller Company** at **1600 W. Phelps, Springfield, Missouri, 65802, USA**, I, the undersigned, holding a valid commission issued by The National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province **OK, KS, MO** and employed by **HSB CT, of Hartford, CT** have inspected the component described in this Manufacturer's Data Report on **August 21, 2008** and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. By signing this certificate neither the Inspector nor his/her employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his/her employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date **08/21/2008** Signed  Commissions **7376A, OK652, KS356, MO0132**
(Authorized Inspector) (National Board (incl. endorsements), State, Province and number)

FORM U-4 MANUFACTURER'S DATA REPORT SUPPLEMENTARY SHEET

As Required by the Provisions of the ASME Boiler and Pressure Vessel Code Rules, Section VIII, Division 1

1. Manufactured and certified by Paul Mueller Company, 1600 W. Phelps, Springfield, Missouri, 65802, USA
(Name and address of Manufacturer)

2. Manufactured for REDHOOK BREWERY, 35 CORPORATE DRIVE, PORTSMOUTH, New Hampshire, 03801, USA
(Name and address of Purchaser)

3. Location of installation REDHOOK BREWERY, 35 CORPORATE DRIVE, PORTSMOUTH, New Hampshire, 03801, USA
(Name and address)

4. Type Vertical N/A 384634-3
(Horizontal, vertical, or sphere) (Tank, separator, heat exch., etc.) (Manufacturer's serial number)

N/A FP15838 rev. A 45317 2008
(CRN) (Drawing number) (National Board number) (Year built)

Data Report
Item Number

Remarks

Additional nozzles, inspection and safety valve openings:

Purpose (Inlet, Outlet, Drain)	No.	Diam. or Size	Type	Mat'l.	Nom. Thk.	Reinforcement Mat'l.	How Attached	Location
Unknown	1	3"	Tube Ext.	SA-312 304	.065"		UW16.1(k)	
Unknown	4	.75"	T-Well	SA-479 316L	1.25"		UW16.1(k)	

Certificate of Authorization: Type "U" No. 5594 Expires September 21, 2010

Date 08/19/2008 Name Paul Mueller Company Signed *Mike Mitchell*
(Manufacturer) (Representative)

Date 08/21/2008 Signed *E. J. Poire* Commissions 7376A, OK652, KS356, MO0132
(Authorized Inspector) (National Board Authorized Inspector Commission number)