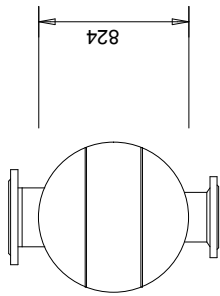
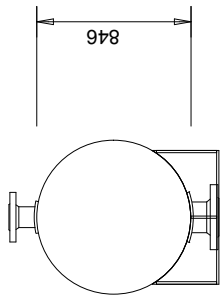


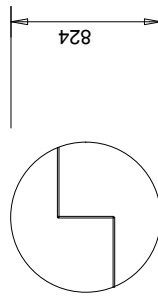
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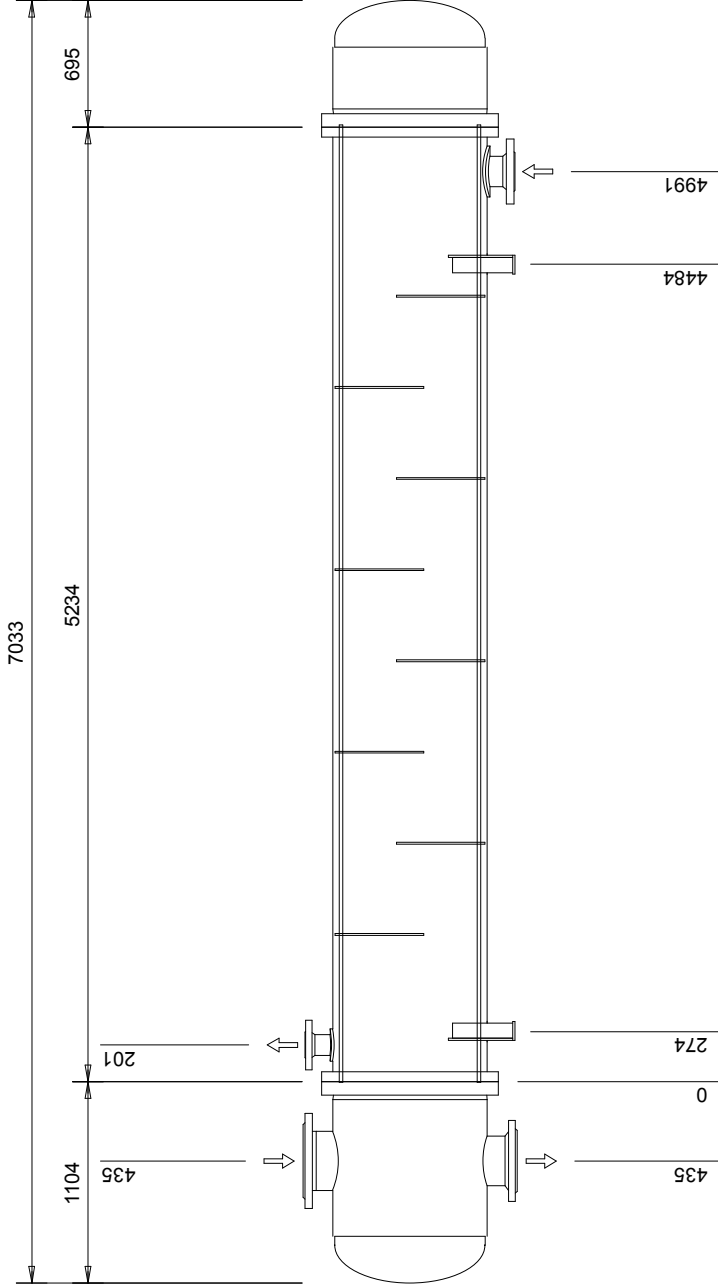
Front Head



Shell



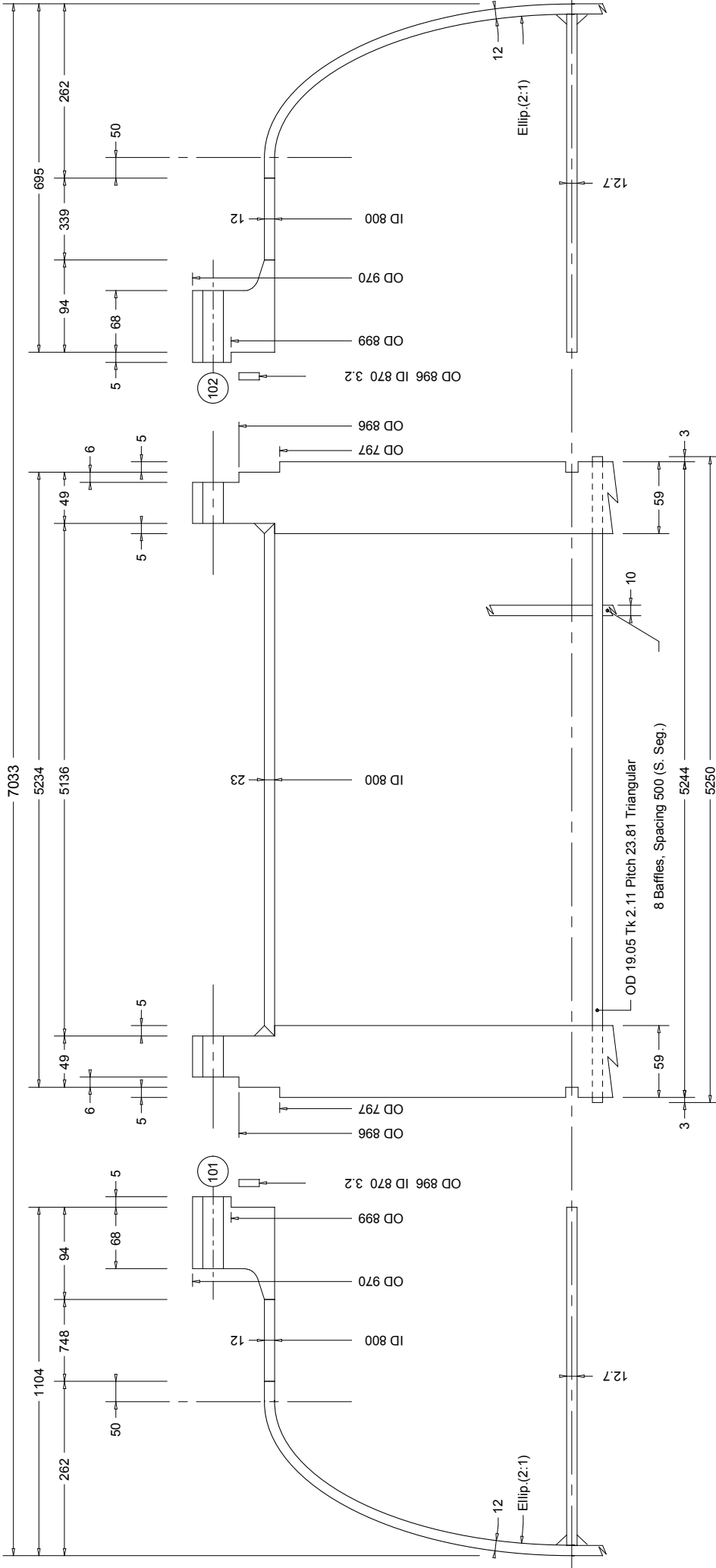
Rear Head



Nozzles		(1)		(2)		Couplings / Supports		Design Specifications		Shell		Tube		HP Boiler Feedwater Heater	
Label	Size:	Description	Project.	Label	Size:	Description	Project.	Design Pressure	bar	bar	55	14	Location:	HP Boiler Feedwater Heater	
S1	168.3	600 # ANSI S.O.RF	576	SS1	2	23.0 Bolt Holes	576	Test Pressure	bar	71.5	18.2	Service of Unit:	Location:		
S2	114.3	600 # ANSI S.O.RF	576	SS2	2	23.0 x 46.0 Slots	576	Design Temperature	C	205	250	Item No.:	Service of Unit:		
T1	323.9	300 # ANSI S.O.RF	576					Number of Passes		1	4	Date:	Item No.:		
T2	273	300 # ANSI S.O.RF	576					Corrosion Allowance	mm	3.2	3.2		Date:		
								Radiographing		Spot	Spot		Rev No.:		
								Wt Empty: 8648 Full: 11653 Bundle: 4876 kg					Company Name		
								Rev: Date: Description		Dwg	Ckd	Appd	City, State		
													Setting Plan		
													ASME VIII-1 2010		
													TEMA Type: BEM		
													Size: 800-5250		
													TEMA Class: R		
													Dwg No.:		
													HP_Boiler_Feedwater_Heater 01		
													Rev:		

Component		O.D.	Thk.	Materials of Construction		Dimensions: mm
Nozzle	S1 Inlet	168.3	11.0	600 # ANSI S.O.RF Flg SA-105 on SA-106 K03006 Grd B Smpls. pipe		
Pad	S1 Inlet	279.0	15.0	SA-516 K02700 Grd 70 Plate		
Nozzle	S2 Outlet	114.3	11.1	600 # ANSI S.O.RF Flg SA-105 on SA-106 K03006 Grd B Smpls. pipe		
Pad	S2 Outlet	177.0	14.0	SA-516 K02700 Grd 70 Plate		
Nozzle	T1 Inlet	323.9	8.4	300 # ANSI S.O.RF Flg SA-105 on SA-106 K03006 Grd B Smpls. pipe		
Nozzle	T2 Outlet	273.0	9.3	300 # ANSI S.O.RF Flg SA-105 on SA-106 K03006 Grd B Smpls. pipe		
Shell Cylinder		846	23.0	SA-516 K02700 Grd 70 Plate		
Head Cylinders		824	12.0	SA-516 K02700 Grd 70 Plate		
Head Covers		824	12.0	SA-516 K02700 Grd 70 Plate (Ellipsoidal Cover)		
Tubesheets		970	59.0	SA-516 K02700 Grd 70 Plate		
Head Flanges at Tbshts		970	73.0	SA-105 K03504 Forgings (Hub Flange)		
Head Gaskets at Tbshts		896	3.2	Flat Metal Jacket Fiber Iron (Periph. Width 13.0 mm)		
Head Bolting at Tbshts		19		SA-193 G41400 Grd B7 Bolt (44 Bolts on 928.0 mm B.C.)		
Tubes		19.05	2.1	SA-214 K01807 Wld. tube (Plain Tubes)		
Baffles		795	10.0	SA-285 K02801 Grd C Plate		
Shell Supports			13.0	SA-285 K02801 Grd C Plate		
Design Specifications						
				Design Pressure	bar	55
				Test Pressure	bar	71.5
				Design Temperature	C	205
				Number of Passes		1
				Corrosion Allowance	mm	3.2
				Radiographing		Spot
				TEMA Type: BEM	Size: 800-5250	Area: 271 m2
				Tube Type: Plain	# Holes: 861	Length: 5250 mm
				Layout: 23.81 mm (30)	Tube-Ts Joint: Expanded-NoGrv	
				Baffle Type: Single Seg.	Cut: 40% H	No: 8
				Baffle Spacing (C-C): 500	Inlet: 807 mm	
				Impingement Protection: None		
				Code: ASME VIII-1 2010	TEMA Class: R	
				Wt Empty: 8649	Full: 11654	Bundle: 4877 kg
				Drawn By:	Ckd By:	Apvd By:
				Dwg No.:	Rev:	Date:
				HP Boiler Feedwater Heater		
				Location:		
				Service of Unit:		
				Item No.:		
				Date:		
				Rev No.:		
Company Name						
City, State						
				Bill Of Material		
				Dwg No.:		
				HP_Boiler_Feedwater_Heater_02		
				Rev:		

All Dimensions
In Millimeters



HP Boiler Feedwater Heater

Location:
Service of Unit:
Item No.:
Date:

Rev No.:

Company Name

City, State

Notes:

Scale:

Rev:	Date:	Description	Dwg	Ckd	Appd

ASME VIII-1 2010
TEMA Type: BEM
Size: 800-5250
TEMA Class: R

102	44	19.05	200	928	22.05
101	44	19.05	200	928	22.05
Ref	No	Bolt Dia.	Bolt Length	Bolt Circle	Bolt Hole

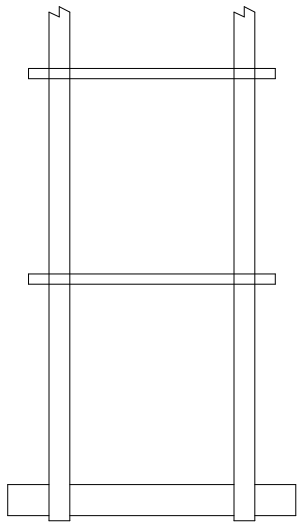
Bolting

Sectional Plan
Dwg No.: HP_Boiler_Feedwater_Heater_03
Rev:

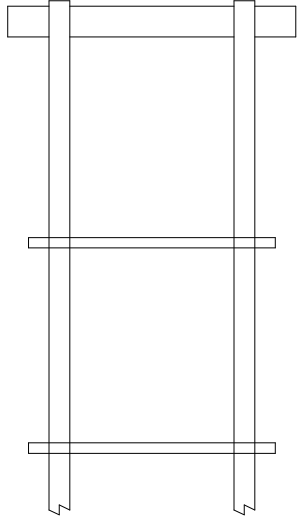
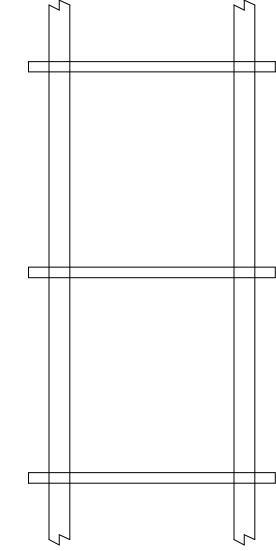
Dimensions: mm

Top View

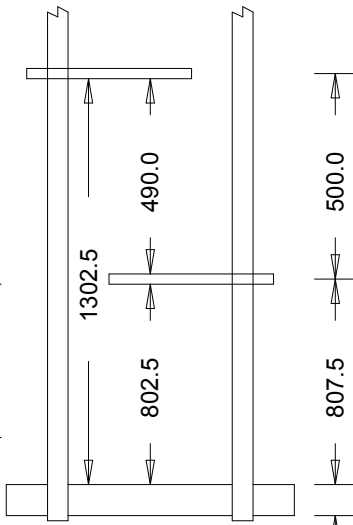
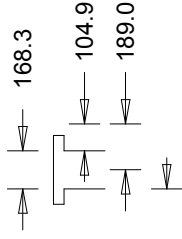
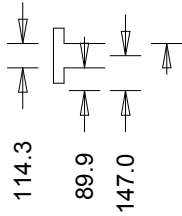
TEMA Type: E



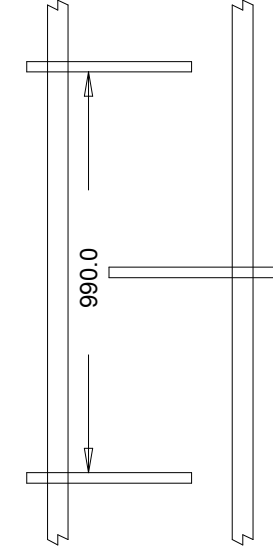
Front



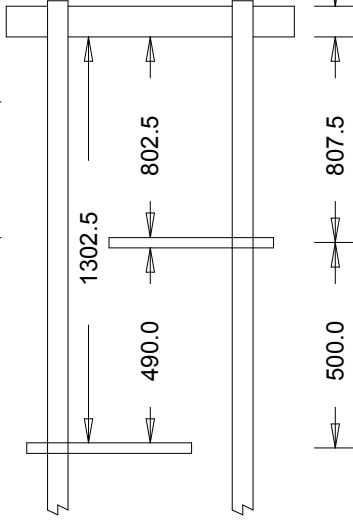
Rear



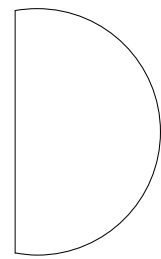
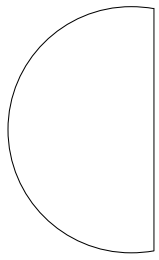
59.0



Side View



59.0



Baffles

Notes:

HP Boiler Feedwater Heater
 Location:
 Service of Unit:
 Item No.:
 Date:

Rev No.:

Company Name

City, State

Bundle Detail

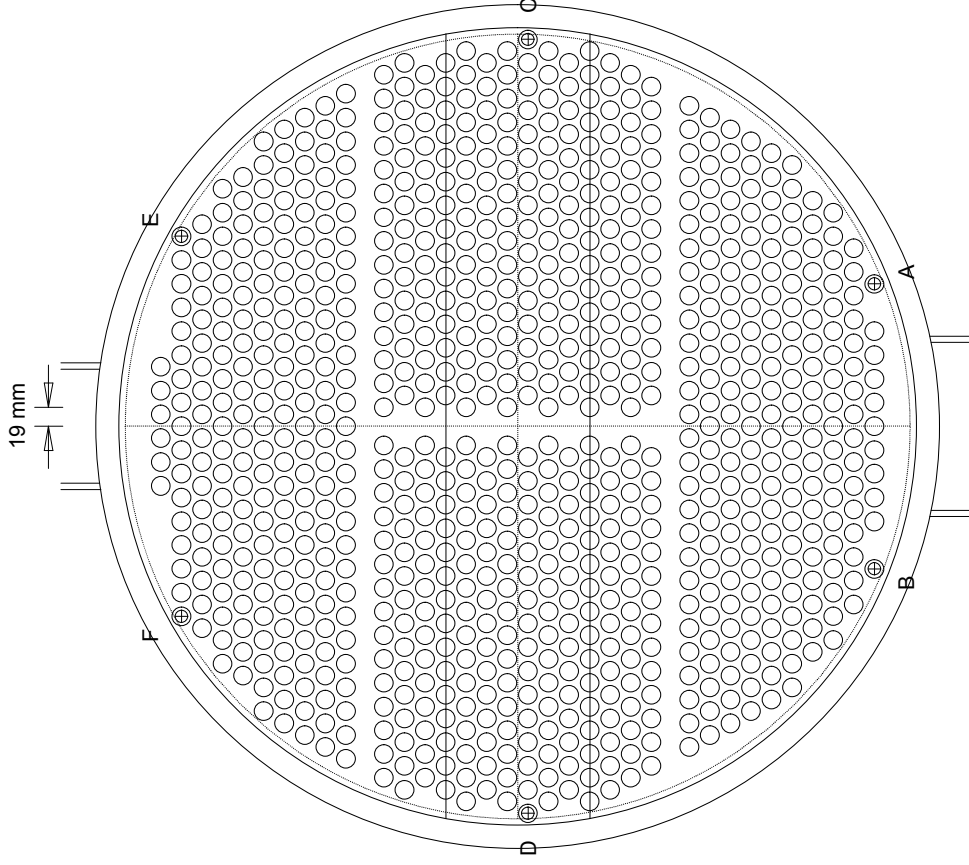
ASME VIII-1 2010
 TEMA Type: BEM

Size: 800-5250
 TEMA Class: R

Dwg No.:
 HP_Boiler_Feedwater_Heater_04

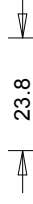
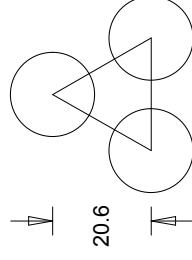
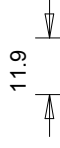
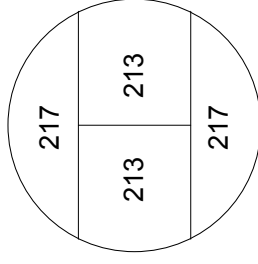
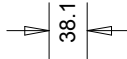
Rev:

Shell ID 800 mm
 O.T.L. 787.3 mm
 Baffle cut to C/L 72.2 mm



Row Holes

- 34 6
- 33 15
- 32 18
- 31 21
- 30 22
- 29 25
- 28 26
- 27 27
- 26 28
- 25 29
- 24 30
- 23 30
- 22 30
- 21 30
- 20 32
- 19 30
- 18 30
- 17 30
- 16 32
- 15 30
- 14 32
- 13 30
- 12 30
- 11 28
- 10 28
- 9 27
- 8 26
- 7 25
- 6 24
- 5 23
- 4 20
- 3 19
- 2 16
- 1 9
- 860



Design Specifications

Number of Tube Holes	860	Tie Rod Locations	A 142.9	-357.7
Tube Outside Diameter	19 mm	B	-142.9	-357.7
Tube Pitch	23.8 mm	C	388	-10.3
Tube Pattern	Triangular	D	-388	-10.3
Tube Passes	4 Mixed	E	190.5	337.1
Number of Tie Rods	6	F	-190.5	337.1
Tie Rod Diameter	12.7 mm			
Baffle Diameter	795.2 mm			
Baffle Type	Single Segmental			
Baffle Cut	41%			
Tube Thickness	2.1 mm			

Notes:

HP Boiler Feedwater Heater

Location:
 Service of Unit:
 Item No.:
 Date:

Rev No.:

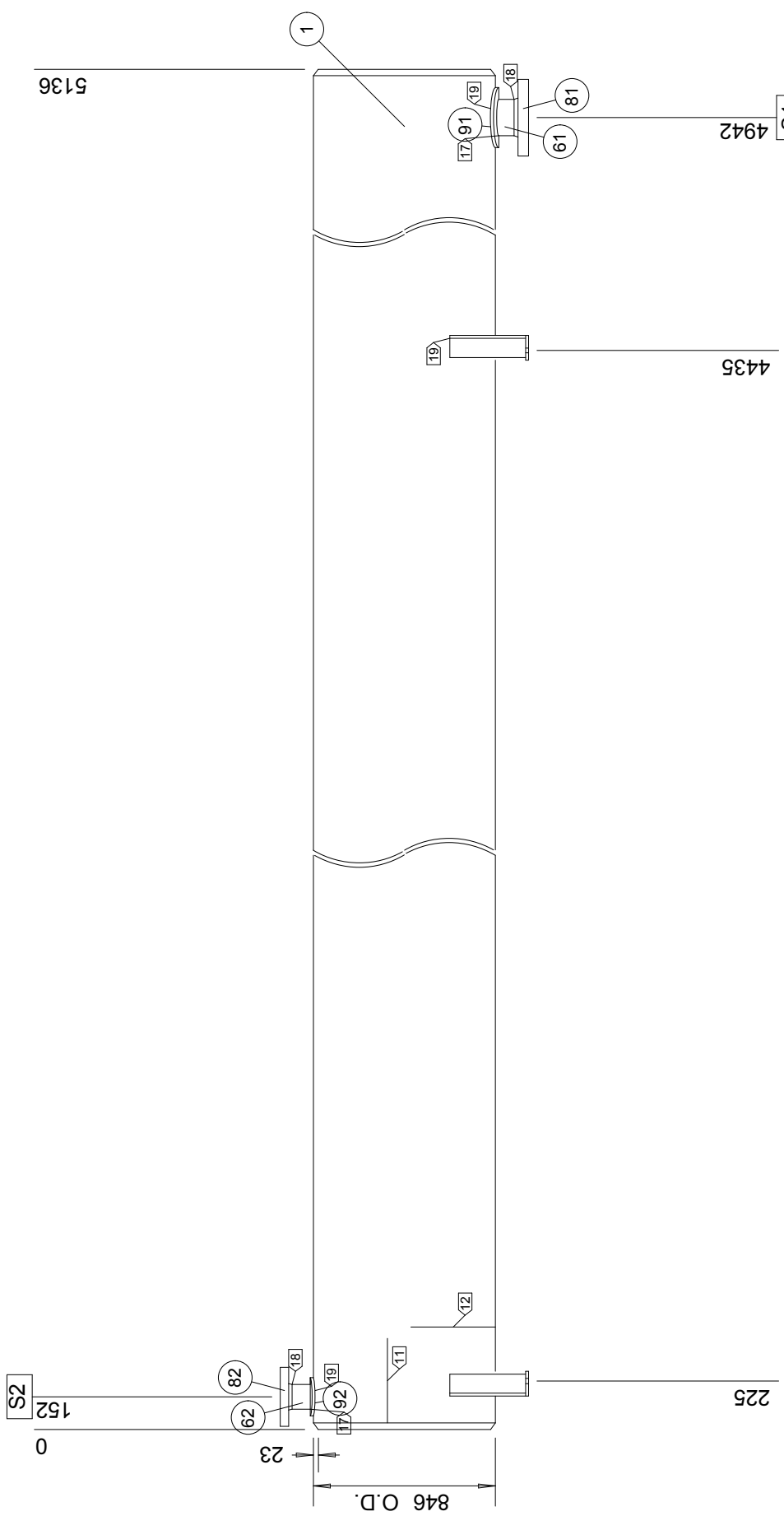
Company Name

City, State

ASME VIII-1 2010
 TEMA Type: BEM
 Size: 800-5250
 TEMA Class: R

Tube Layout

Dwg No.:
 HP_Boiler_Feedwater_Heater_05
 Rev:



Side View

Notes:
 All Dimensions In Millimeters
 Bolt holes to straddle centerlines
 Weld joint details per drawing 20

HP Boiler Feedwater Heater
 Location:
 Service of Unit:
 Item No. :
 Date: Rev No.:

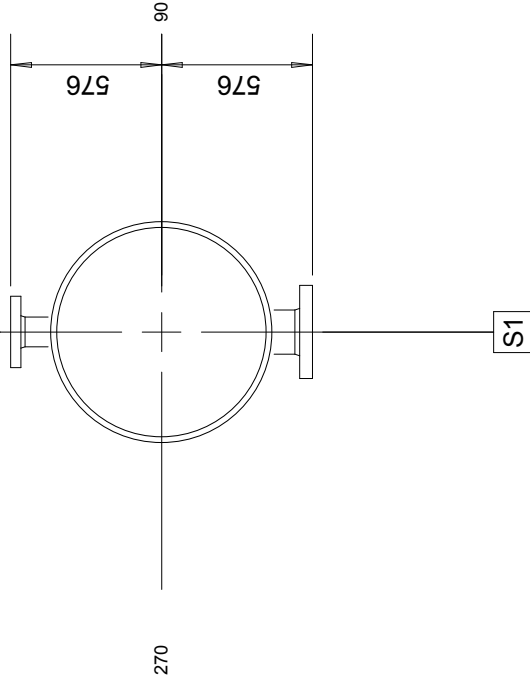
Company Name
 City, State

Rev.	Date:	Description	Dwg	Ckd	Appd	Shell Detail
						ASME VIII-1 2010
						TEMA Type: BEM
						Size: 800-5250
						TEMA Class: R

Scale: 1: 31
 Dwg No.: HP_Boiler_Feedwater_Heater_06A
 Rev:

0

S2



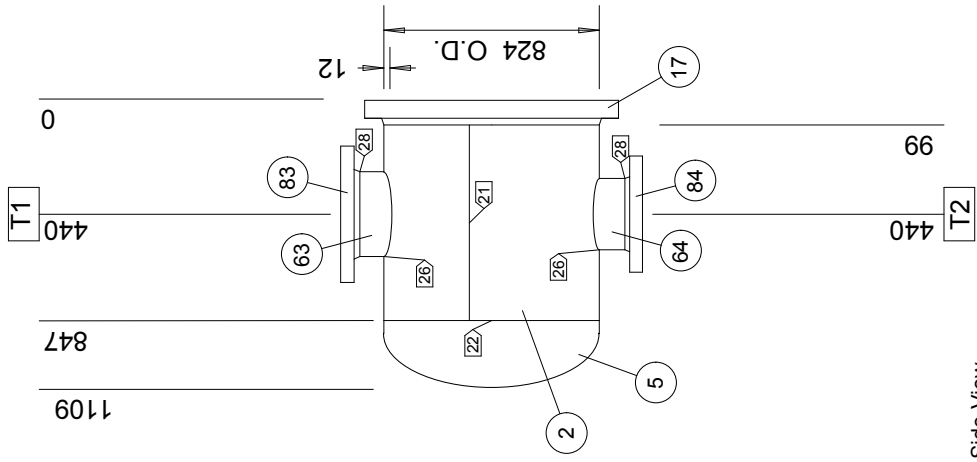
180

Front End View

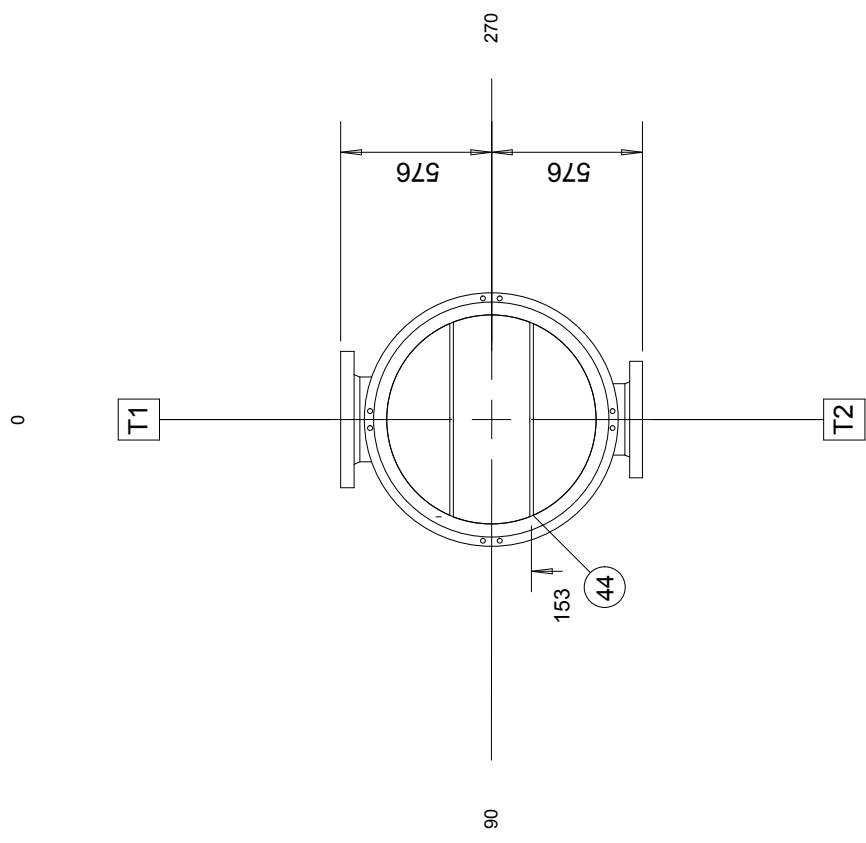
Notes:				
All Dimensions In Millimeters				
Bolt holes to straddle centerlines				
Weld joint details per drawing 20				
Scale:	1: 31			
Rev:	Date:	Description	Dwg	Ckd

HP Boiler Feedwater Heater	
Location:	
Service of Unit:	
Item No.:	
Date:	Rev No.:
Company Name	
City, State	
ASME VIII-1 2010	Shell Detail
TEMA Type: BEM	
Size: 800-5250	Dwg No.:
TEMA Class: R	HP_Boiler_Feedwater_Heater_06B

Rev:



Side View



Rear End View

Notes:
 All Dimensions In Millimeters
 Bolt holes to straddle centerlines
 Weld joint details per drawing 20

HP Boiler Feedwater Heater

Location:
 Service of Unit:
 Item No.:
 Date:

Rev No.:

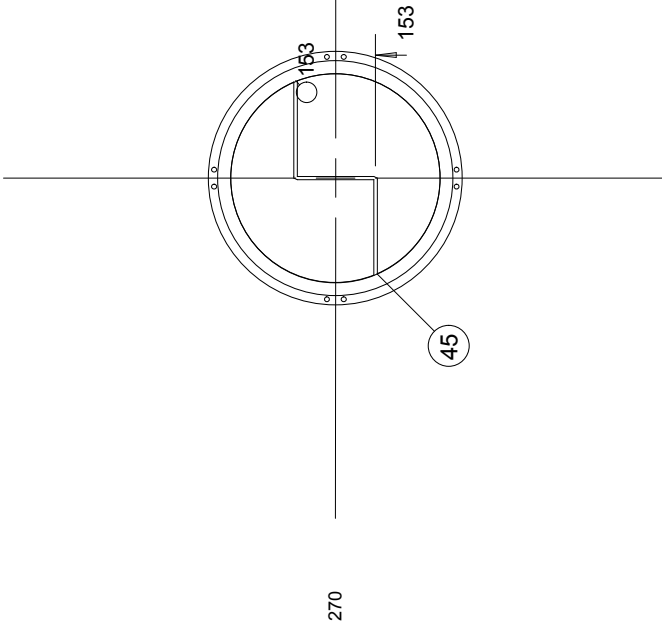
Company Name

City, State

Rev:	Date:	Description	Dwg	Ckd	Appd	ASME VIII-1 2010	Front Head Detail
						TEMA Type: BEM	
						Size: 800-5250	Dwg No.:
						TEMA Class: R	HP_Boiler_Feedwater_Heater_08

Rev:

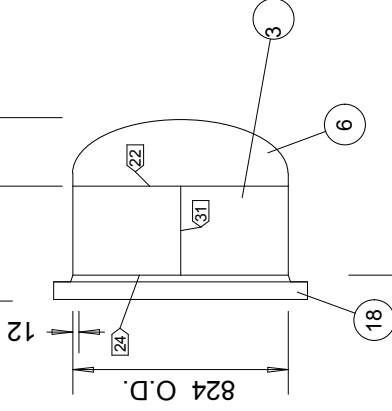
0



Front End View

180

0
438
700



Side View

Notes:
 All Dimensions In Millimeters
 Bolt holes to straddle centerlines
 Weld joint details per drawing 20

Rev:	Date:	Description	Dwg	Ckd	Appd

HP Boiler Feedwater Heater
 Location:
 Service of Unit:
 Item No.:
 Date:

Rev No.:
Company Name
 City, State

ASME VIII-1 2010	Rear Head Detail
TEMA Type: BEM	
Size: 800-5250	
TEMA Class: R	

Dwg No.:
 HP_Boiler_Feedwater_Heater_09
 Rev:

5244

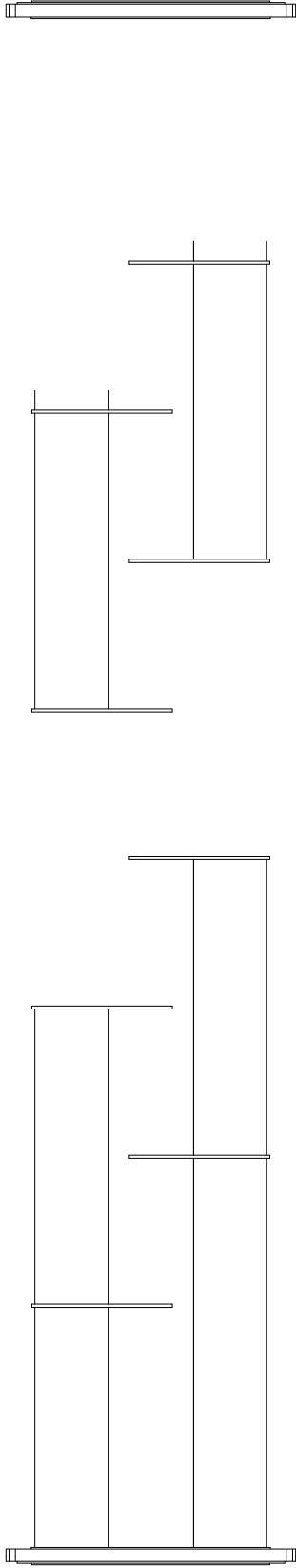
7 x 500 = 3500

807

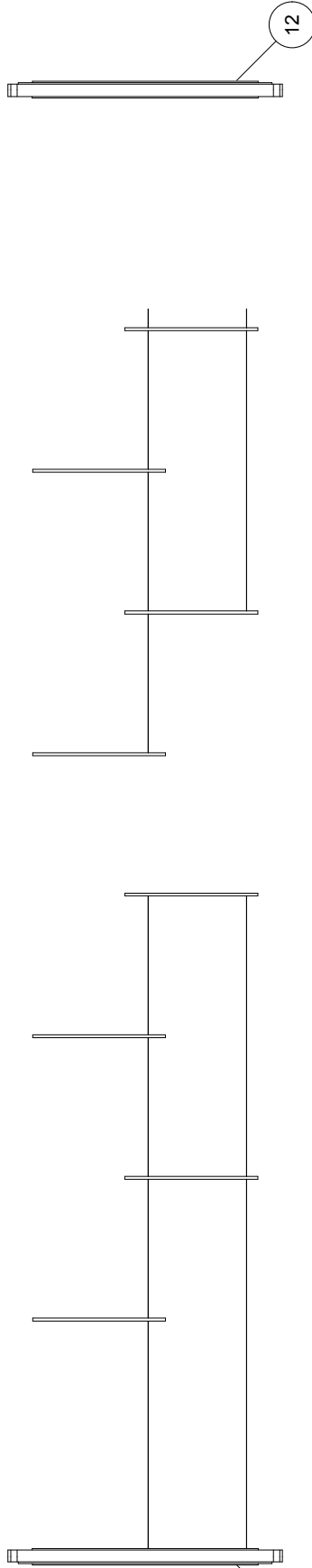
819

59

Plan View



Elevation View



Notes:

- All Dimensions In Millimeters
- Bolt holes to straddle centerlines
- Weld joint details per drawing 20

HP Boiler Feedwater Heater

Location:
 Service of Unit:
 Item No.:
 Date:

Rev No.:

Company Name

City, State

Bundle Detail

ASME VIII-1 2010

TEMA Type: BEM

Size: 800-5250

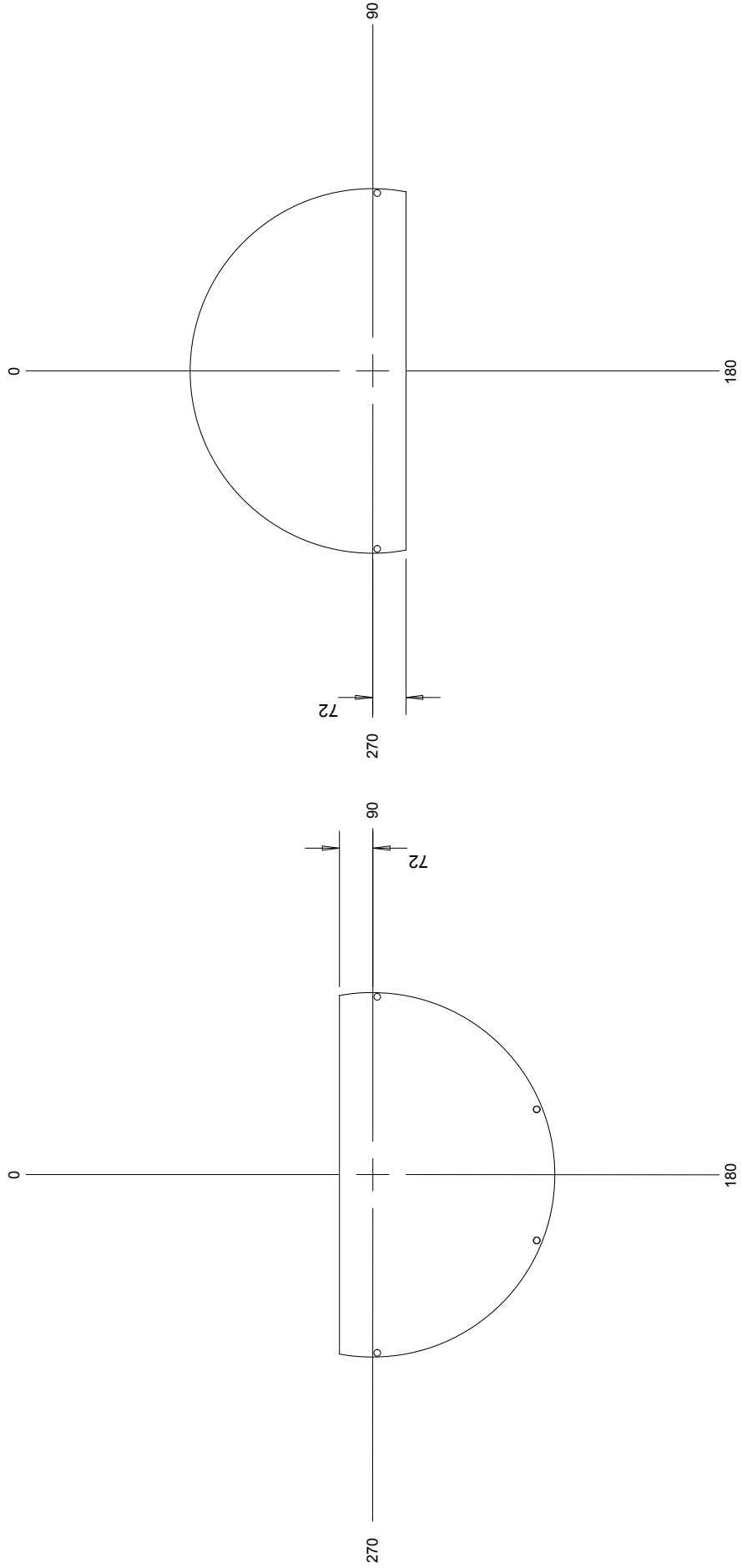
TEMA Class: R

Scale: 1: 26

Rev:	Date:	Description	Dwg	Ckd	Appd

Dwg No.: HP_Boiler_Feedwater_Heater 11

Rev:



39 A

4 Baffles

795 O.D.

10 Tk

39 B

4 Baffles

795 O.D.

10 Tk

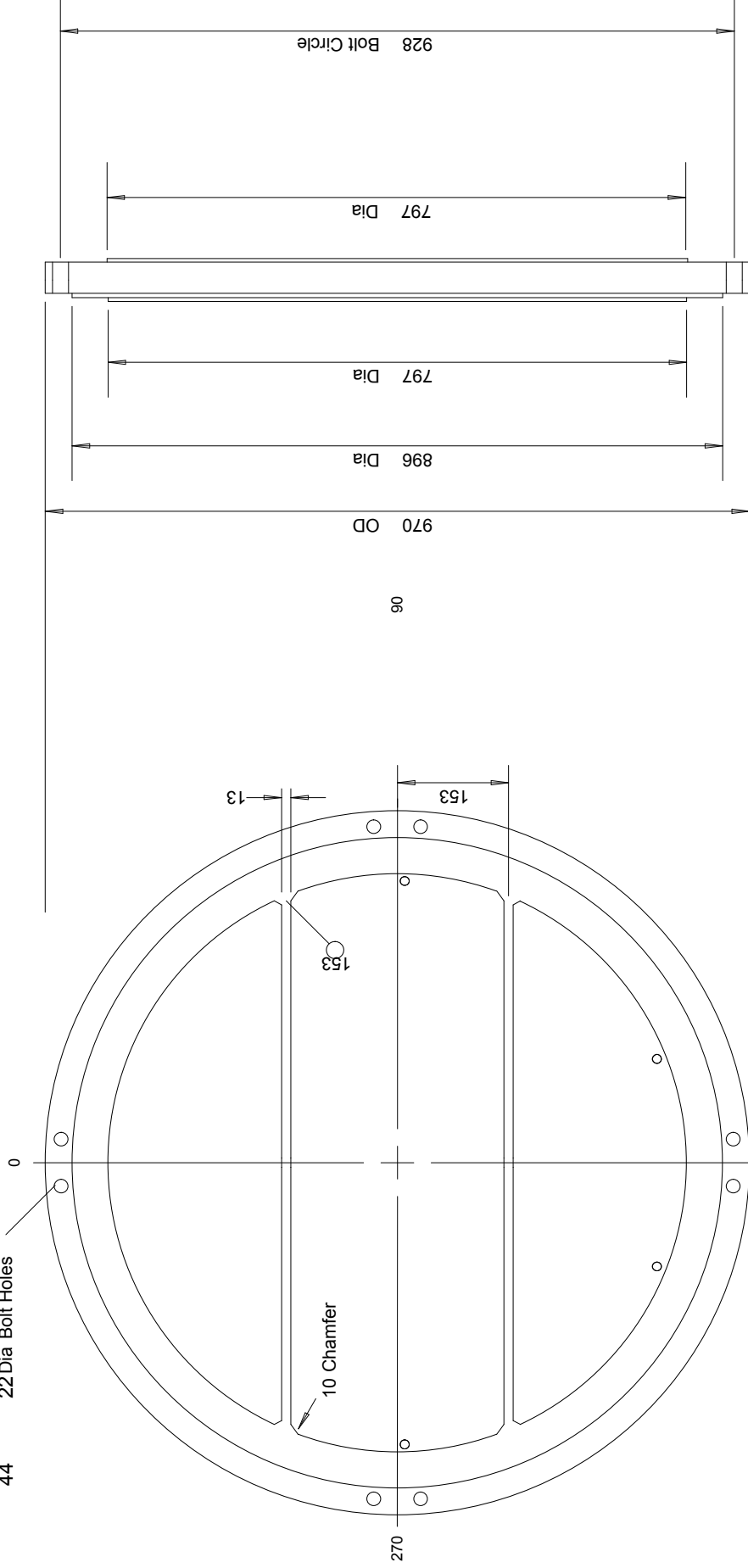
Notes:
All Dimensions In Millimeters
Weld joint details per drawing 20

Rev:	Date:	Description	Dwg	Ckd	Appd

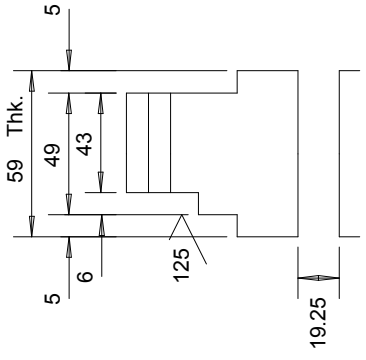
HP Boiler Feedwater Heater
Location:
Service of Unit:
Item No.:
Date: Rev No.:

Company Name		City, State	
		Baffle Detail	
ASME VIII-1 2010		Baffle Detail	
TEMA Type: BEM		Dwg No.:	
Size: 800-5250		HP_Boiler_Feedwater_Heater 12	
TEMA Class: R		Rev:	

44 22 Dia Bolt Holes



180 Front End View



13 Front TubSh

Notes:
 All Dimensions In Millimeters
 Bolt holes to straddle centerlines

Rev:	Date:	Description	Dwg	Ckd	Appd

HP Boiler Feedwater Heater
 Location:
 Service of Unit:
 Item No.:
 Date: Rev No.:

Company Name
 City, State

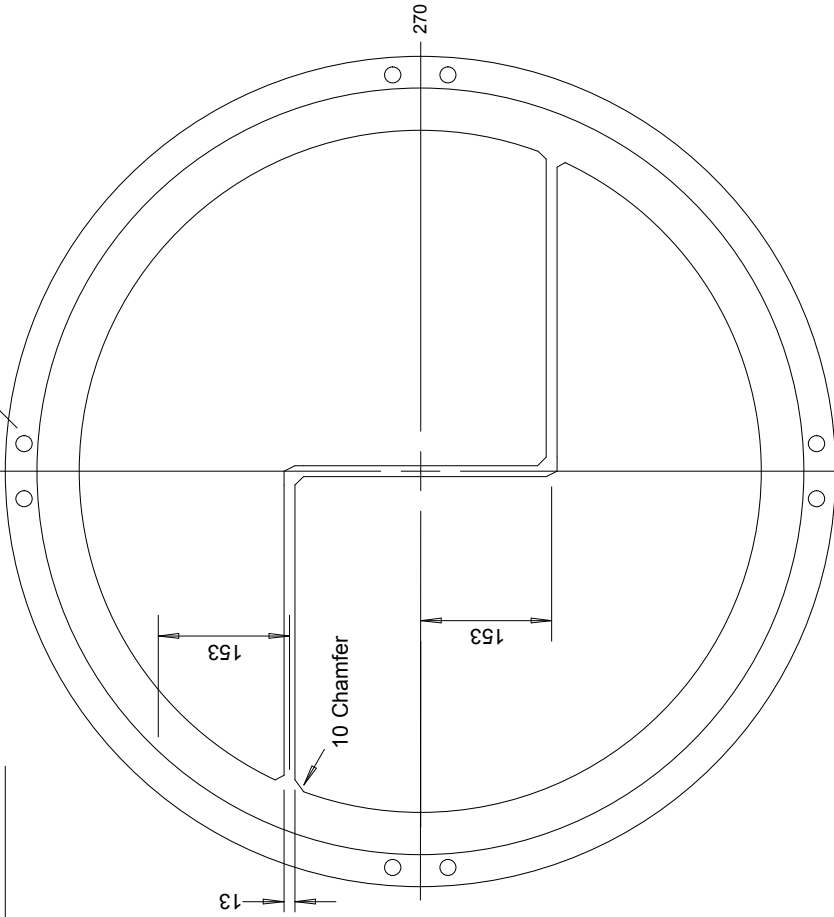
ASME VIII-1 2010
 TEMA Type: BEM
 Size: 800-5250
 TEMA Class: R

Tubesheet Detail

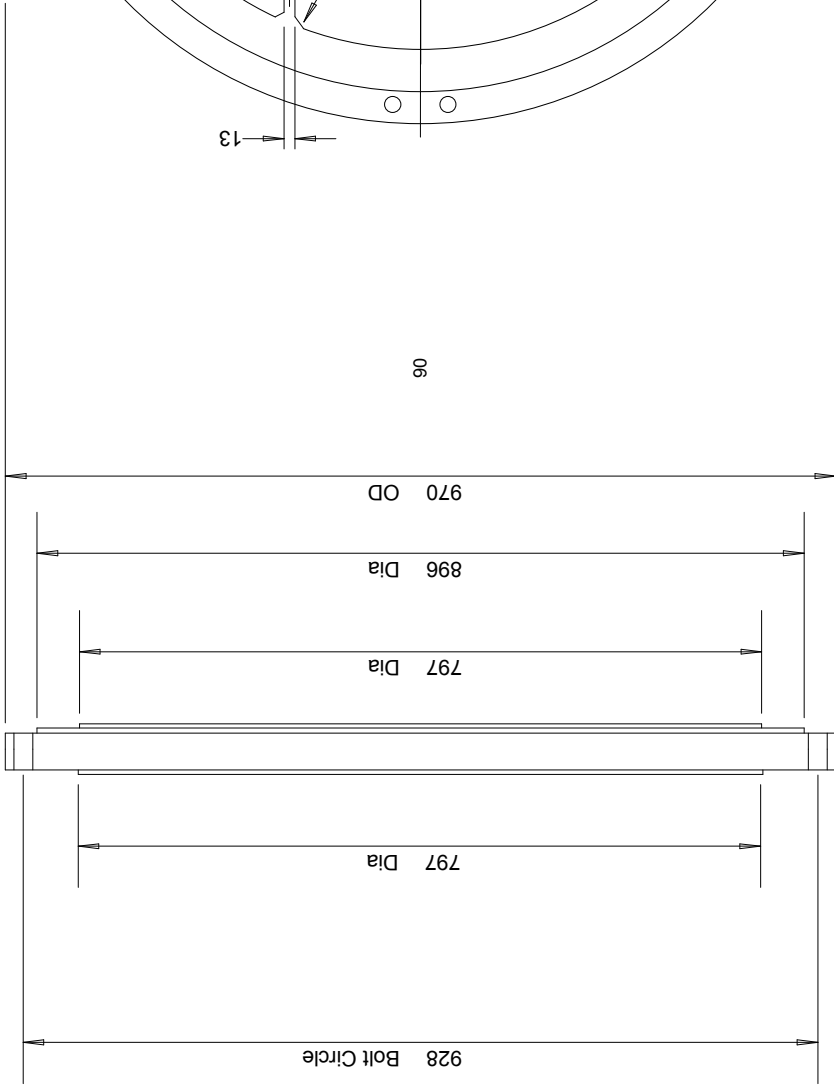
Dwg No.:
 HP_Boiler_Feedwater_Heater 14

Rev:

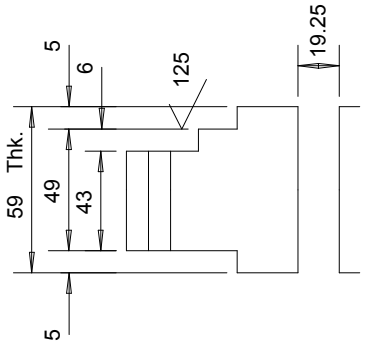
44 22 Dia Bolt Holes



180 Rear End View



14 Rear TubSh



HP Boiler Feedwater Heater

Location:

Service of Unit:

Item No.:

Date: Rev No.:

Company Name

City, State

Tubesheet Detail

ASME VIII-1 2010

TEMA Type: BEM

Size: 800-5250

TEMA Class: R

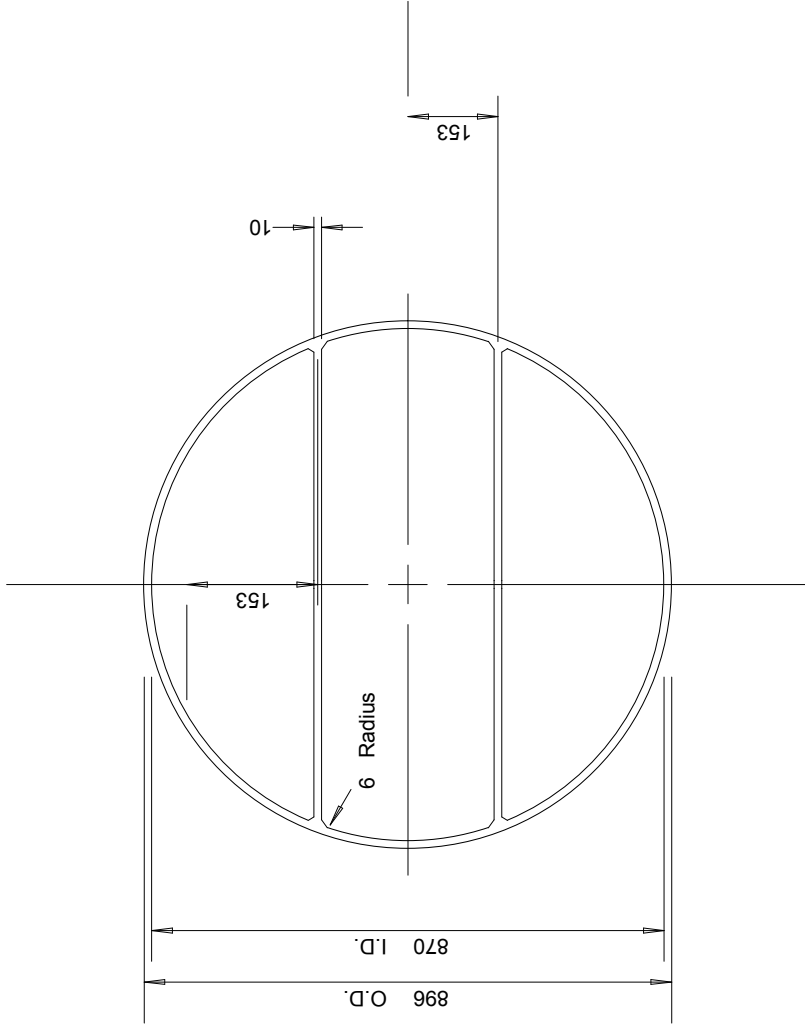
Dwg No.: HP_Boiler_Feedwater_Heater 15

Rev:

Notes:
All Dimensions In Millimeters
Bolt holes to straddle centerlines

Scale: 1: 9.5

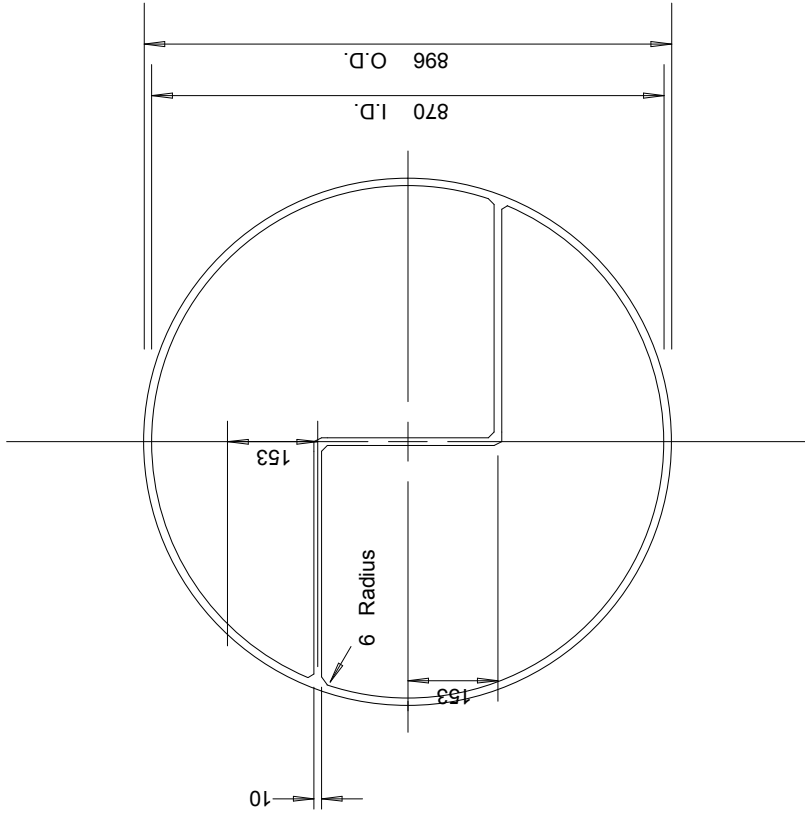
Rev:	Date:	Description	Dwg	Ckd	Appd



31 Front Head Gaskets at Tbshts

3.175 Thk.

Notes:		HP Boiler Feedwater Heater	
All Dimensions In Millimeters		Location:	
Bolt holes to straddle centerlines		Service of Unit:	
		Item No.:	
		Date:	
		Rev No.:	
		Company Name	
		City, State	
Scale: 1: 13.7		ASME VIII-1 2010	Gasket Detail
Rev:	Date:	TEMA Type: BEM	
		Size: 800-5250	Dwg No.:
		TEMA Class: R	HP_Boiler_Feedwater_Heater_17A
			Rev:



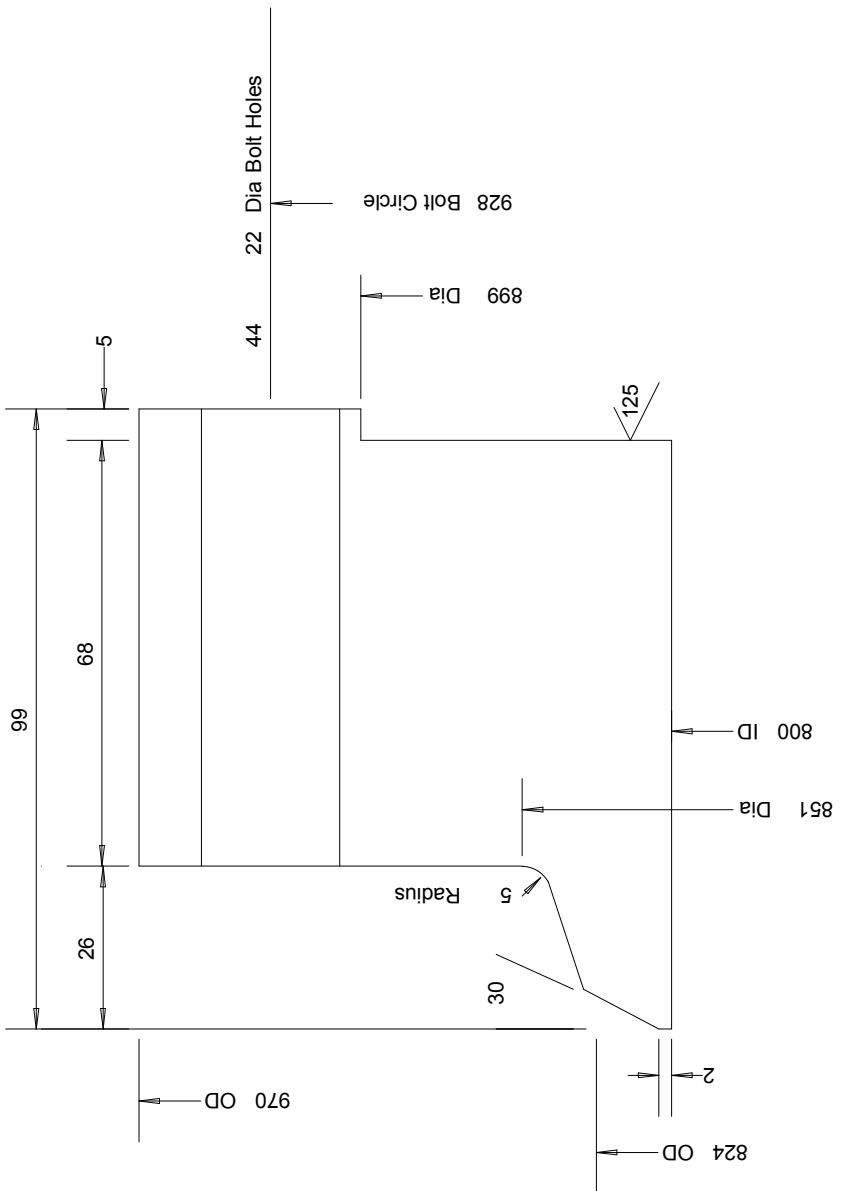
32

Rear Head Gaskets at Tbshts

3.175 Thk.

Notes: All Dimensions In Millimeters Bolt holes to straddle centerlines			
Scale: 1: 13.7			
Rev:	Date:	Description	Dwg Ckd Appd

HP Boiler Feedwater Heater	
Location:	
Service of Unit:	
Item No.:	
Date:	Rev No.:
Company Name	
City, State	
ASME VIII-1 2010	Gasket Detail
TEMA Type: BEM	
Size: 800-5250	
TEMA Class: R	
Dwg No.:	Rev:
HP_Boiler_Feedwater_Heater 17B	HP_Boiler_Feedwater_Heater 17B

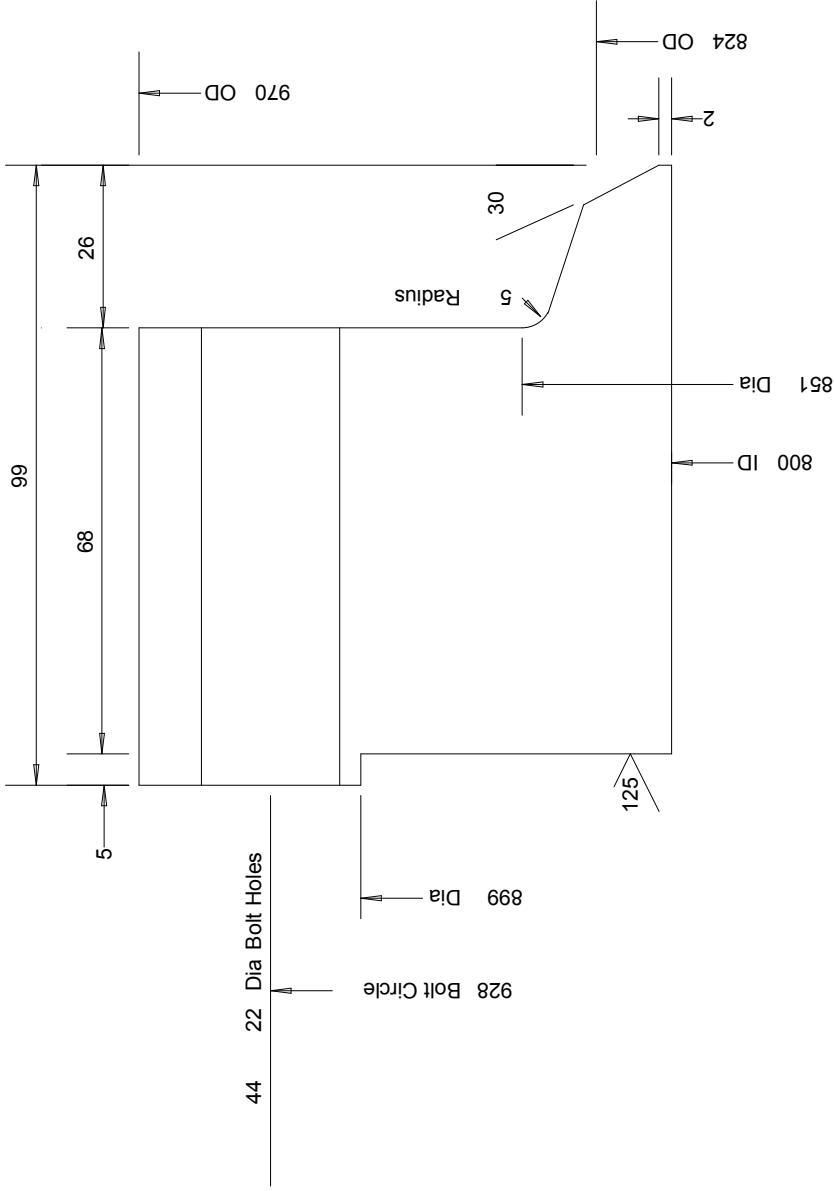


17
Fr Hd Flng TubSh

Notes:
All Dimensions In Millimeters
Bolt holes to straddle centerlines

Scale:	Date:	Description	Dwg	Ckd	Appd
1: 1.3					
Rev:					

HP Boiler Feedwater Heater	
Location:	
Service of Unit:	
Item No.:	
Date:	Rev No.:
Company Name	
City, State	
ASME VIII-1 2010	Flange Detail
TEMA Type: BEM	
Size: 800-5250	
TEMA Class: R	
Dwg No.:	Rev:
HP_Boiler_Feedwater_Heater 18A	18A



18

Re Hd Fling TubSh

Notes:				
All Dimensions In Millimeters				
Bolt holes to straddle centerlines				
Scale:	1: 1.3			
Rev:	Date:	Description	Dwg	Ckd

HP Boiler Feedwater Heater
 Location:
 Service of Unit:
 Item No.:
 Date:

Rev No.:

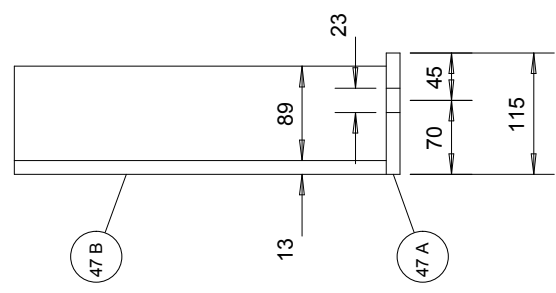
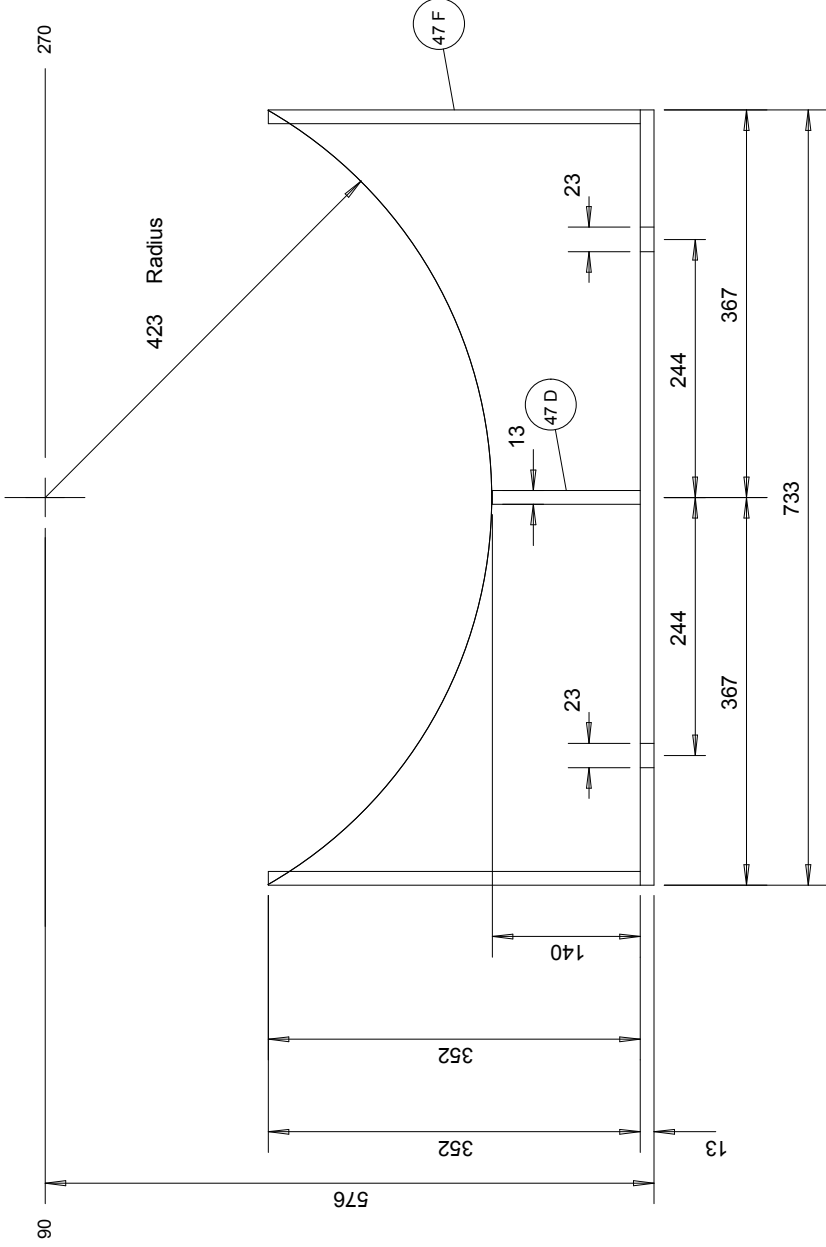
Company Name

City, State

Flange Detail

ASME VIII-1 2010
 TEMA Type: BEM
 Size: 800-5250
 TEMA Class: R

Dwg No.:
 HP_Boiler_Feedwater_Heater_18B
 Rev:



HP Boiler Feedwater Heater
 Location:
 Service of Unit:
 Item No.:
 Date:

Rev No.:

Company Name
 City, State

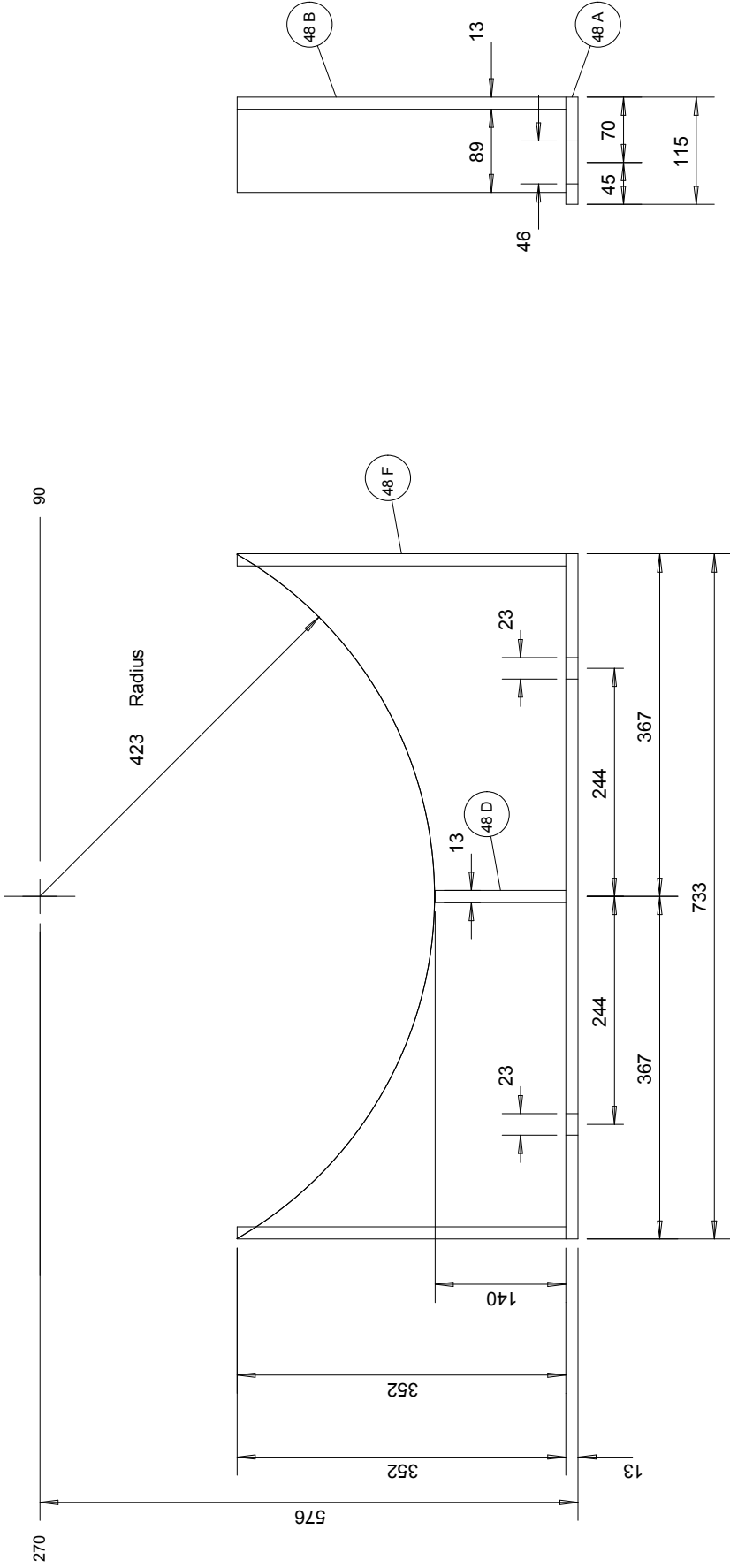
Notes:
 All Dimensions In Millimeters

Rev:	Date:	Description	Dwg	Ckd	Appd

Scale: 1: 7.7
 ASME VIII-1 2010
 TEMA Type: BEM
 Size: 800-5250
 TEMA Class: R

Front Support Detail

Dwg No.:
 HP_Boiler_Feedwater_Heater_19A
 Rev:



Notes:
All Dimensions In Millimeters

Rev:	Date:	Description	Dwg	Ckd	Appd

HP Boiler Feedwater Heater
 Location:
 Service of Unit:
 Item No.:
 Date: Rev No.:

Company Name
 City, State

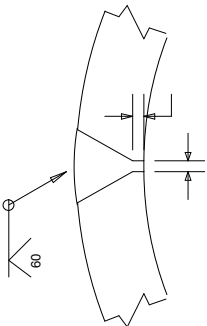
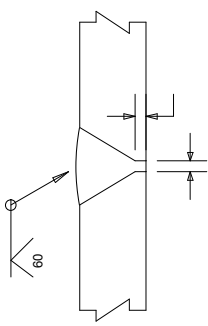
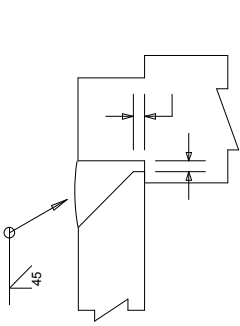
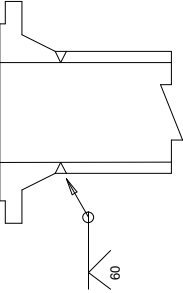
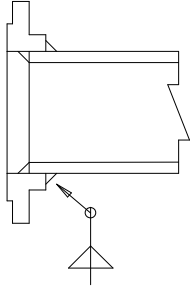
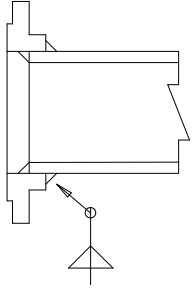
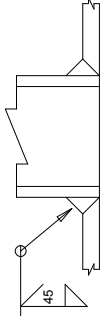
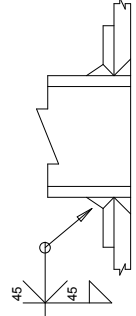
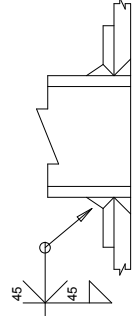
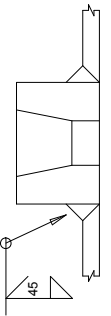
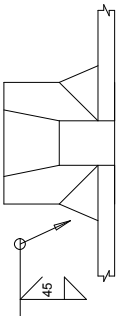
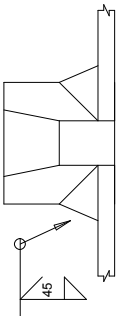
Scale: 1: 7.7

Rev:	Date:	Description	Dwg	Ckd	Appd

ASME VIII-1 2010
 TEMA Type: BEM
 Size: 800-5250
 TEMA Class: R

Rear Support Detail

Dwg No.:
 HP_Boiler_Feedwater_Heater_19B
 Rev:

WELD JOINT				WELD JOINT				WELD JOINT				WELD JOINT			
<p>11 21 31</p>	<p>16 26</p>	<p>18 28</p>	<p>15 25 35</p>	<p>16 26 36</p>	<p>61 71 81</p>	<p>61 71 81</p>	<p>61 71 81</p>	<p>16 26 36</p>	<p>61 71 81</p>	<p>61 71 81</p>	<p>61 71 81</p>	<p>61 71 81</p>	<p>61 71 81</p>	<p>61 71 81</p>	<p>61 71 81</p>

<p>Notes: All Dimensions In Millimeters Welding in accordance with Code</p>				<p>HP Boiler Feedwater Heater Location: Service of Unit: Item No.: Date:</p>				<p>Rev No.:</p>						
<p>Company Name City, State</p>				<p>ASME VIII-1 2010 TEMA Type: BEM Size: 800-5250 TEMA Class: R</p>				<p>Weld Joint Detail Dwg No.: HP_Boiler_Feedwater_Heater 20</p>						
<p>Scale:</p>	<p>Rev:</p>	<p>Date:</p>	<p>Description</p>	<p>Dwg</p>	<p>Ckd</p>	<p>Appd</p>	<p>Rev:</p>	<p>Date:</p>	<p>Description</p>	<p>Dwg</p>	<p>Ckd</p>	<p>Appd</p>	<p>Rev:</p>	<p>Date:</p>