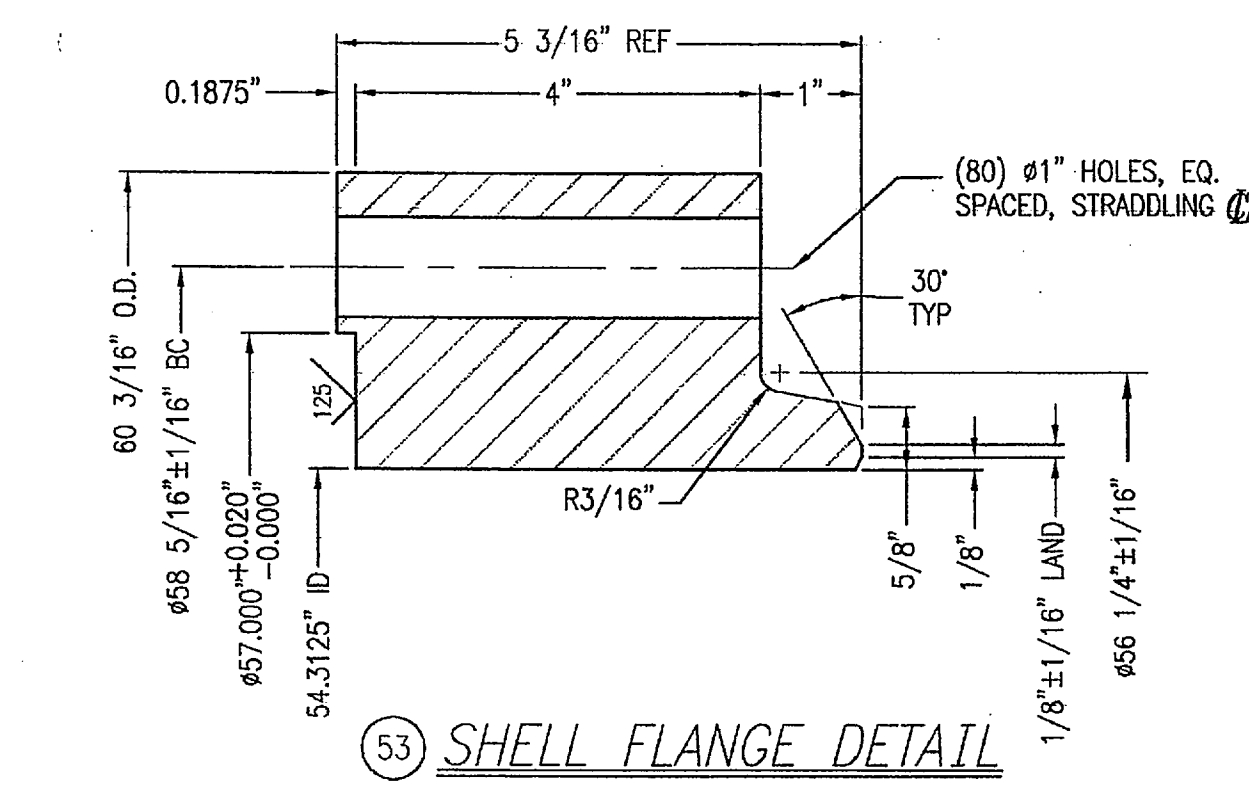
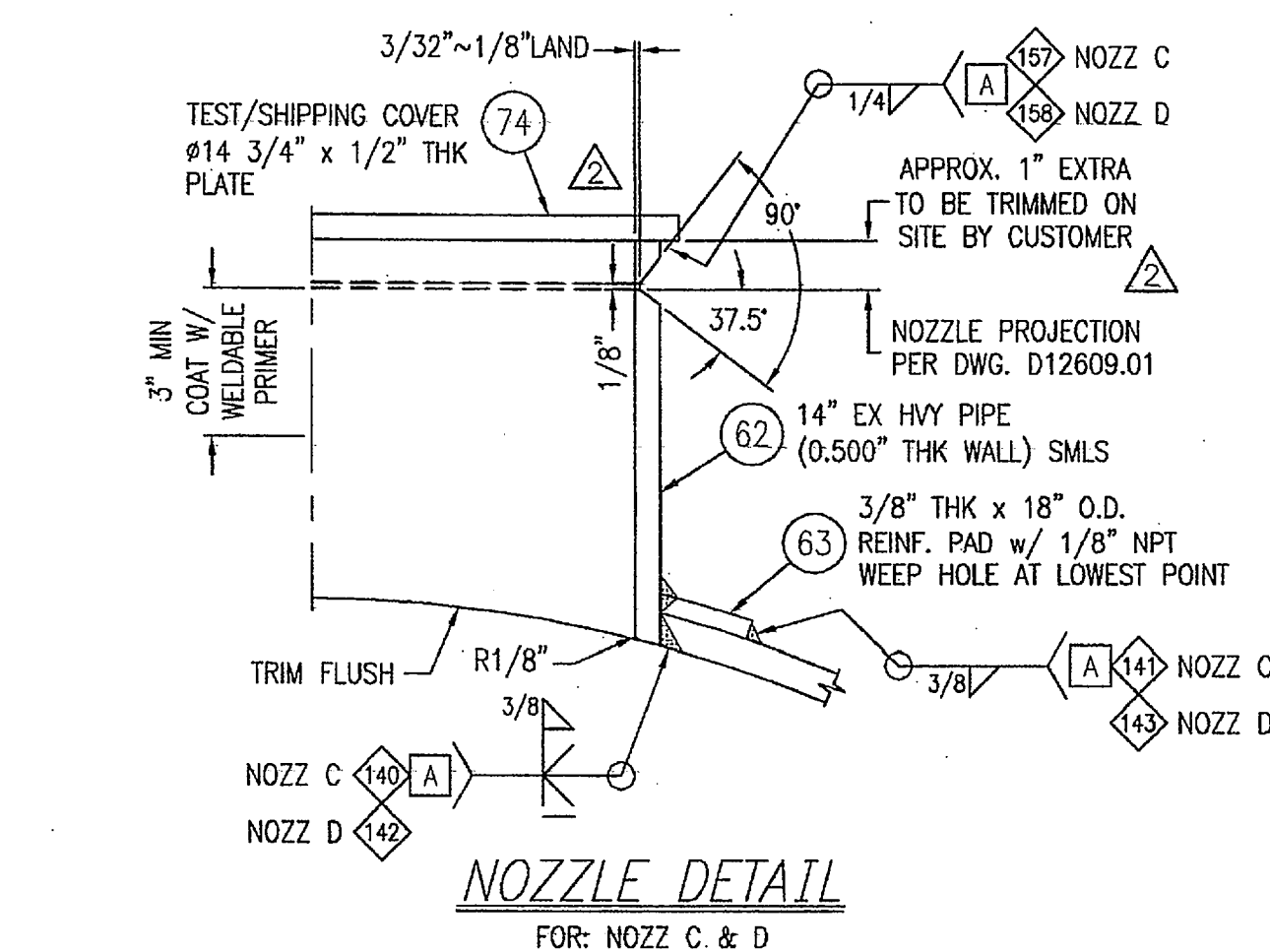
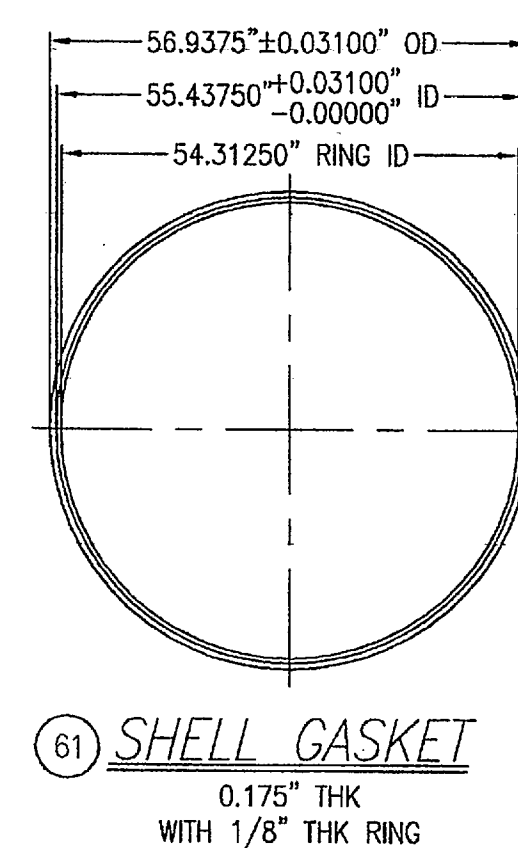
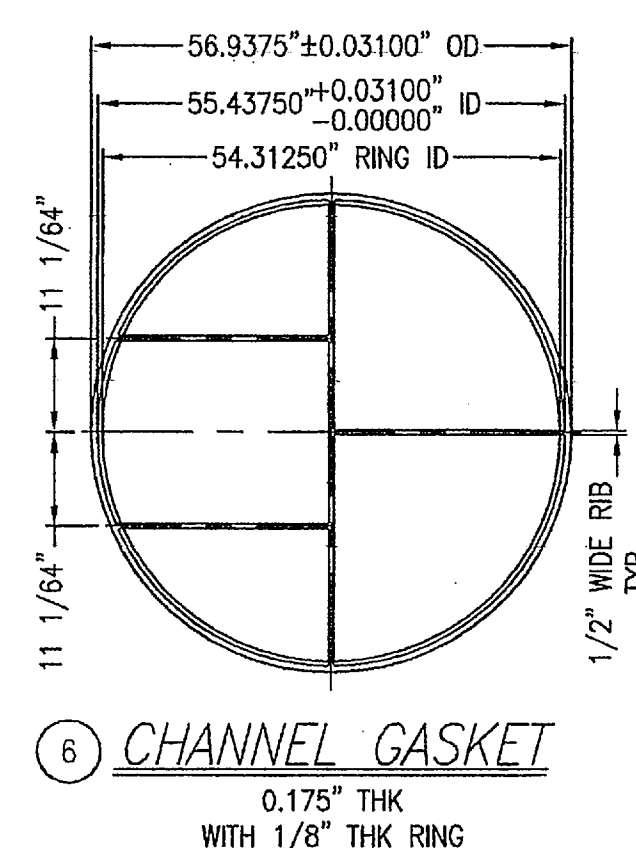
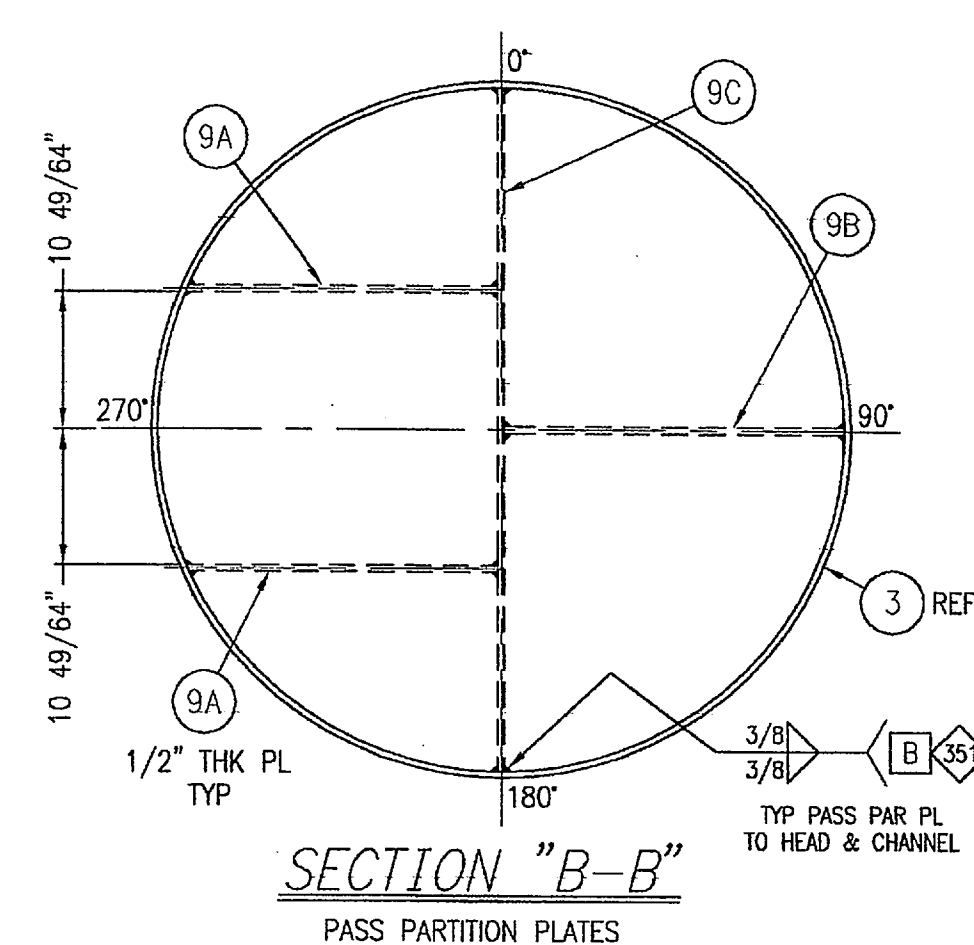
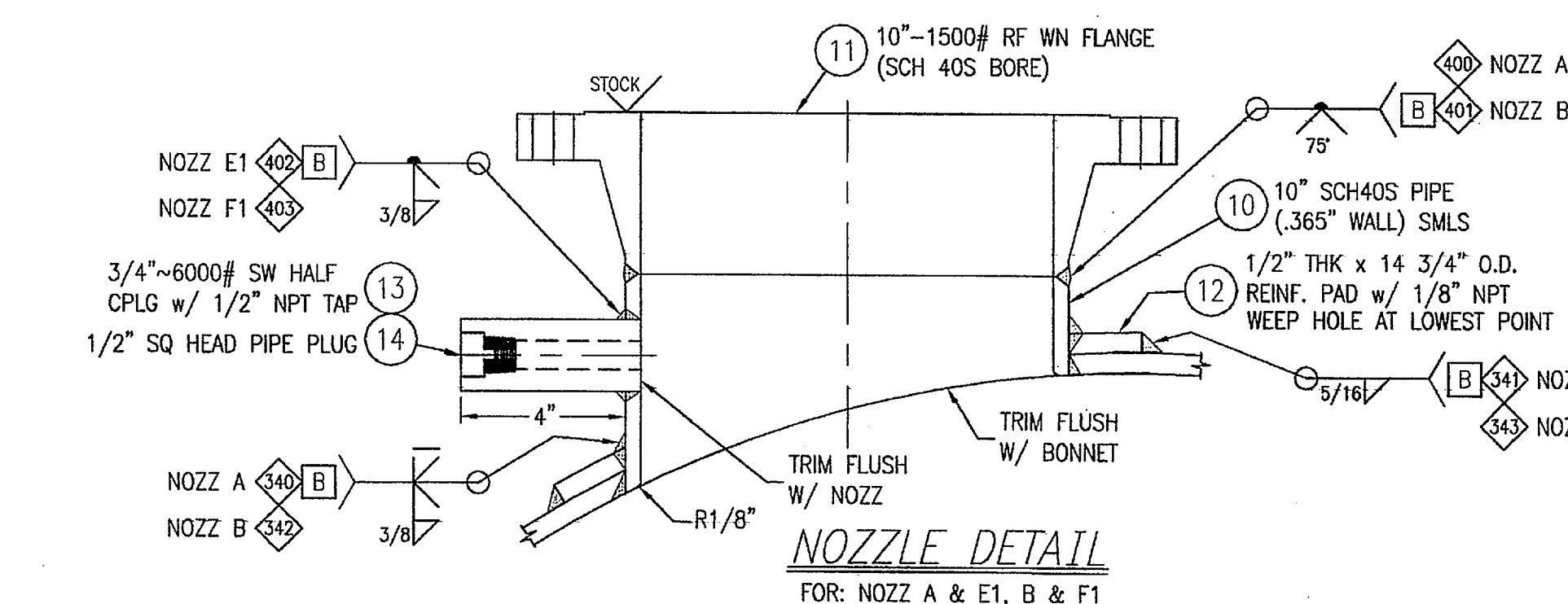
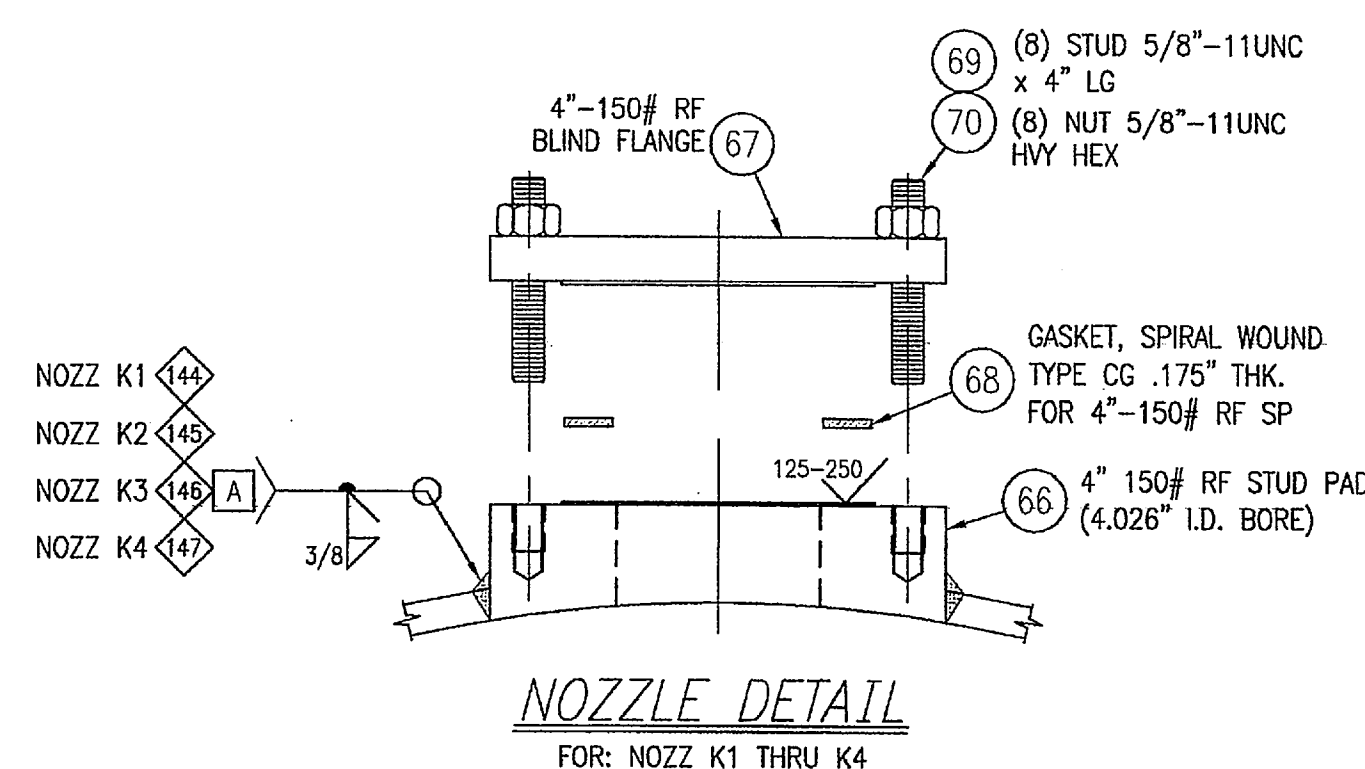
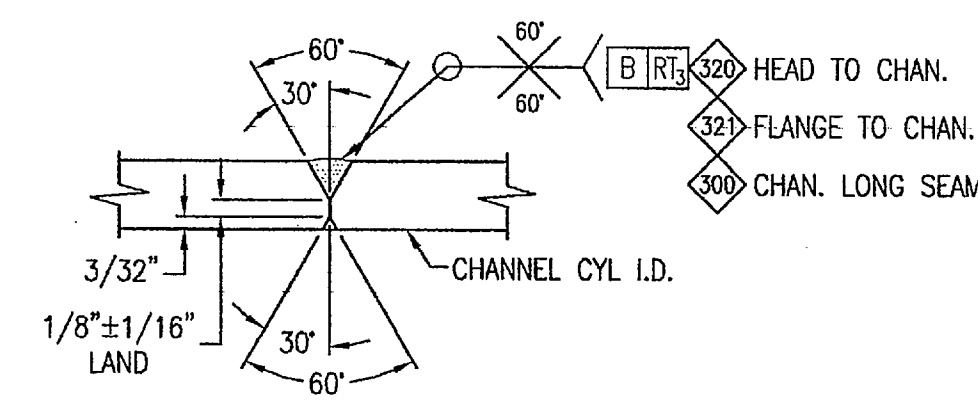


⑤ CHAN FLANGE DETAIL

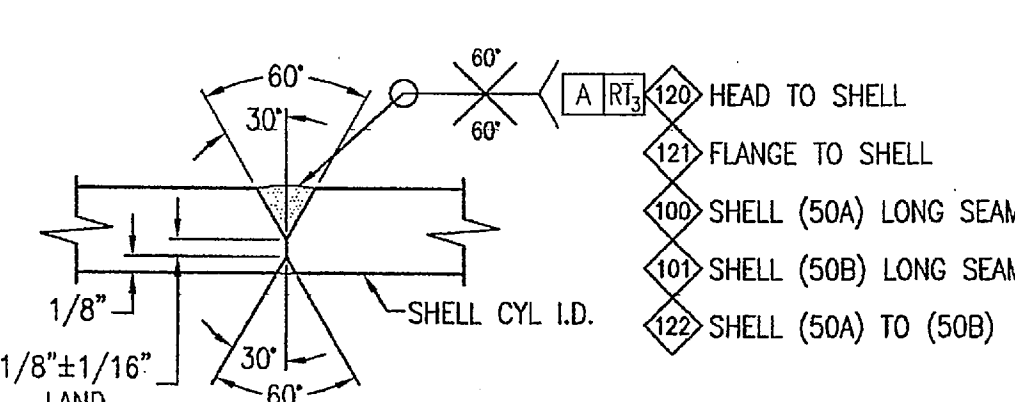


⑤③ SHELL FLANGE DETAIL

NOZZLE DETAIL
FOR: NOZZ C & D⑥① SHELL GASKET
0.175\"/>
⑥ CHANNEL GASKET
0.175\"/>
SECTION "B-B"
PASS PARTITION PLATESNOZZLE DETAIL
FOR: NOZZ A & E1, B & F1NOZZLE DETAIL
FOR: NOZZ K1 THRU K4

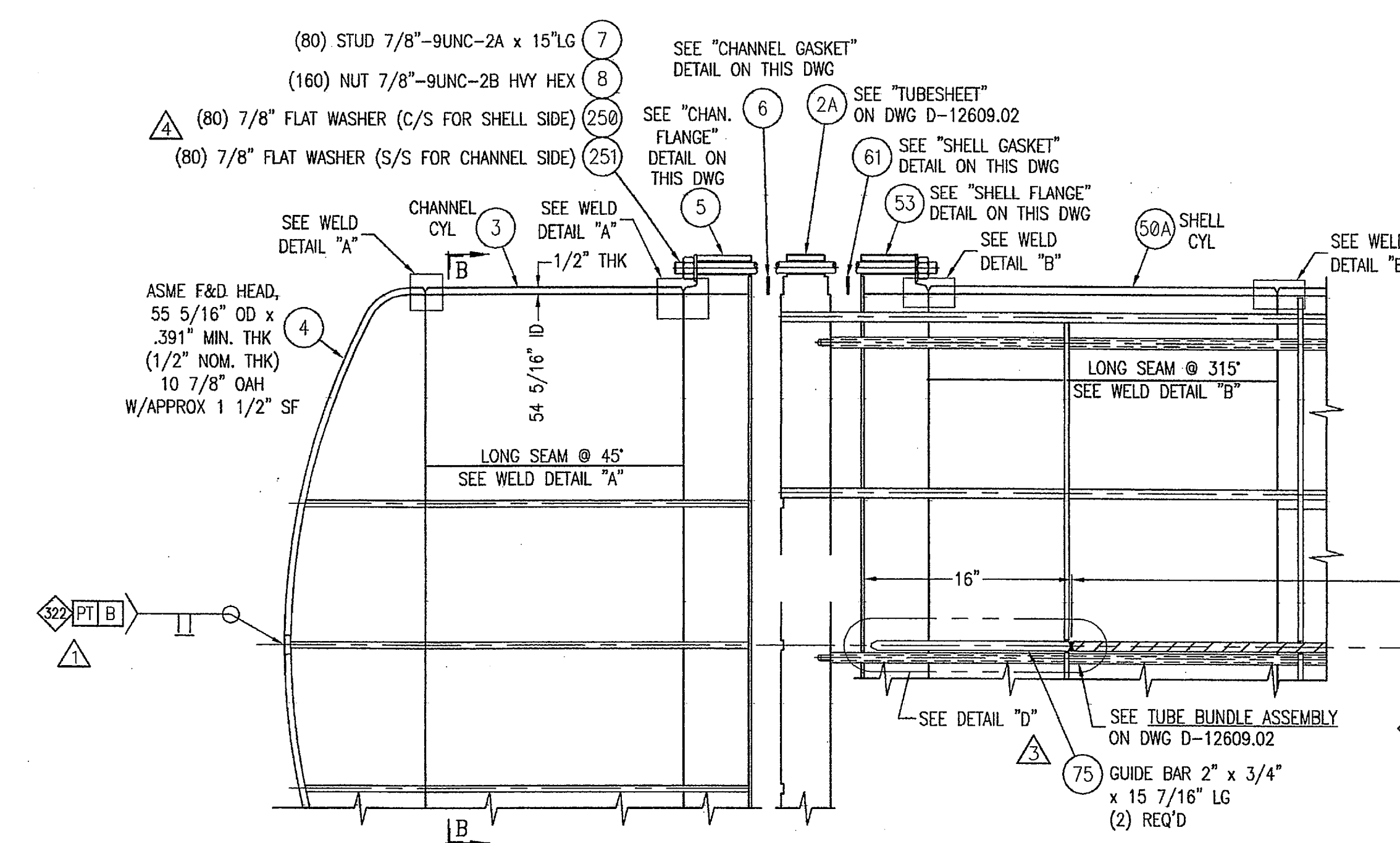
WELD DETAIL "A"

NOTE:
WHERE HEAD TO SHELL GIRTH SEAM ARE TO BE COVERED BY NOZZLE RE-PADS SHALL BE GROUND SMOOTH ON THE OUTSIDE & RT EXAMINED.

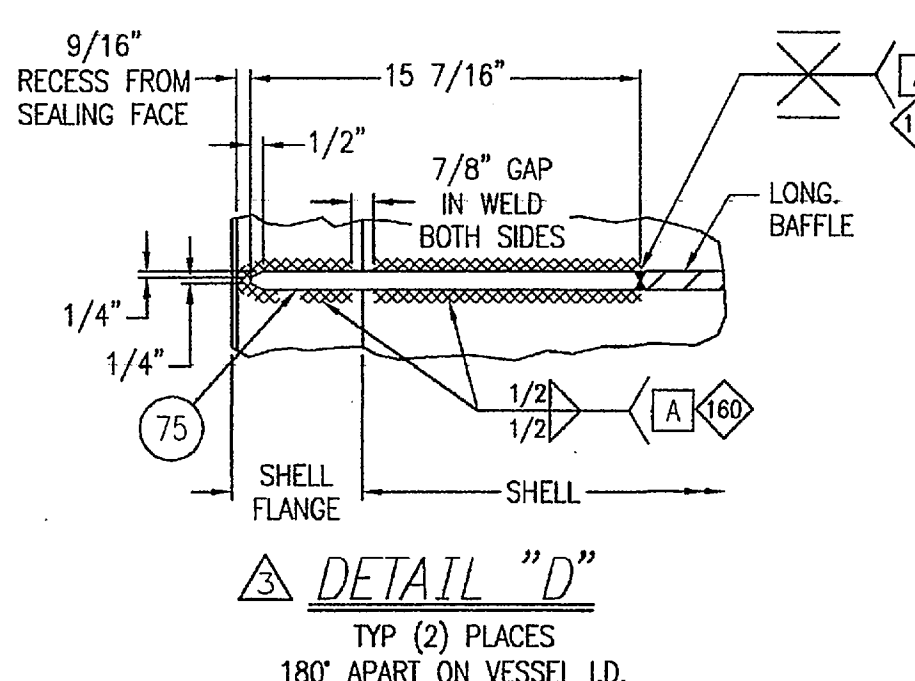
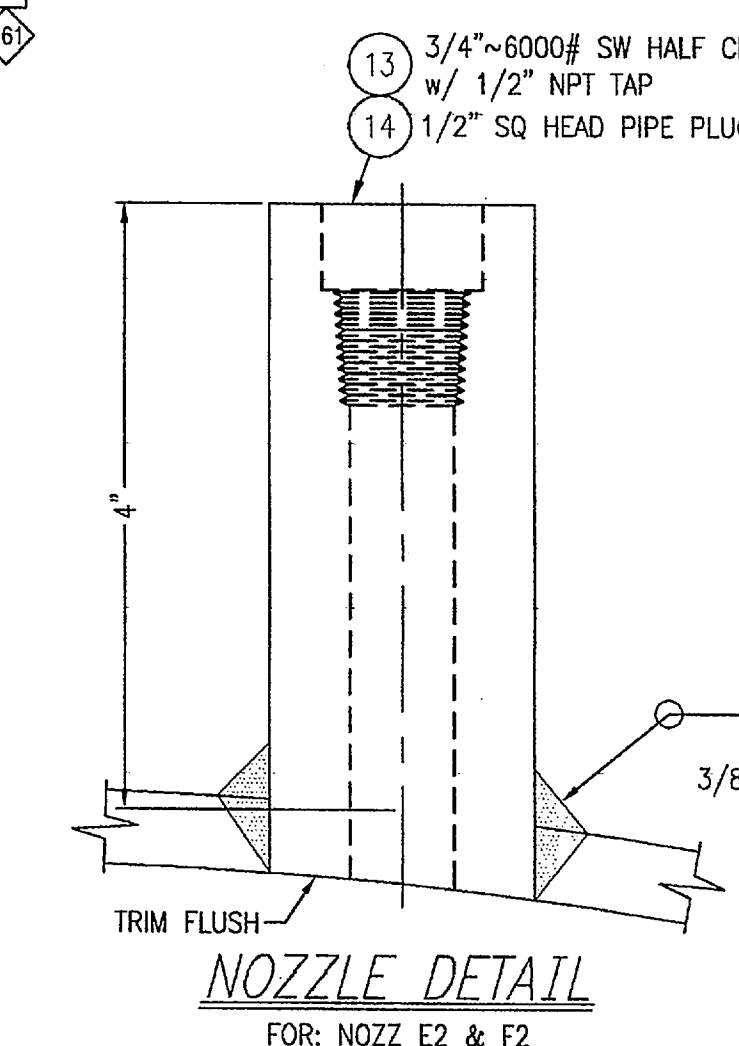
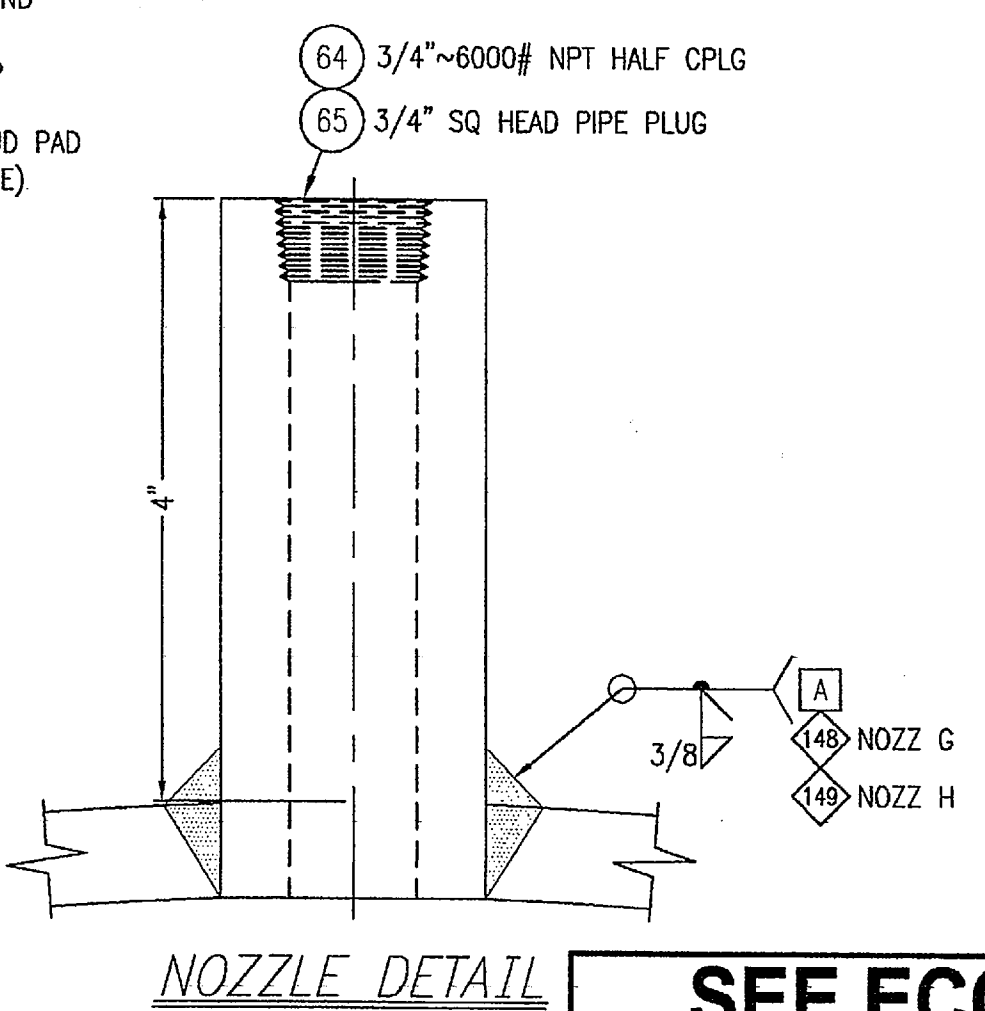


WELD DETAIL "B"

NOTE:
WHERE HEAD TO SHELL GIRTH SEAM ARE TO BE COVERED BY NOZZLE RE-PADS SHALL BE GROUND SMOOTH ON THE OUTSIDE & RT EXAMINED.



PARTIAL SECTION VIEW

DETAIL "D"
TYP (2) PLACES
180° APART ON VESSEL I.D.NOZZLE DETAIL
FOR: NOZZ E2 & F2NOZZLE DETAIL
FOR: NOZZ G & H

SEE ECO

No. 1
No. 2
No. 3
No. 4
No. 5

BECHTEL POWER CORPORATION		SUPPLIER DOCUMENT REVIEW STATUS	
STATUS CODE:	1	2	3
1	2	3	4
2	3	4	5
3	4	5	6
4	5	6	7
5	6	7	8
6	7	8	9
7	8	9	10
8	9	10	11
9	10	11	12
10	11	12	13
11	12	13	14
12	13	14	15
13	14	15	16
14	15	16	17
15	16	17	18
16	17	18	19
17	18	19	20
18	19	20	21
19	20	21	22
20	21	22	23
21	22	23	24
22	23	24	25
23	24	25	26
24	25	26	27
25	26	27	28
26	27	28	29
27	28	29	30
28	29	30	31
29	30	31	32
30	31	32	33
31	32	33	34
32	33	34	35
33	34	35	36
34	35	36	37
35	36	37	38
36	37	38	39
37	38	39	40
38	39	40	41
39	40	41	42
40	41	42	43
41	42	43	44
42	43	44	45
43	44	45	46
44	45	46	47
45	46	47	48
46	47	48	49
47	48	49	50
48	49	50	51
49	50	51	52
50	51	52	53
51	52	53	54
52	53	54	55
53	54	55	56
54	55	56	57
55	56	57	58
56	57	58	59
57	58	59	60
58	59	60	61
59	60	61	62
60	61	62	63
61	62	63	64
62	63	64	65
63	64	65	66
64	65	66	67
65	66	67	68
66	67	68	69
67	68	69	70
68	69	70	71
69	70	71	72
70	71	72	73
71	72	73	74
72	73	74	75
73	74	75	76
74	75	76	77
75	76	77	78
76	77	78	79
77	78	79	80
78	79	80	81
79	80	81	82
80	81	82	83
81	82	83	84
82	83	84	85
83	84	85	86
84	85	86	87
85	86	87	88
86	87	88	89
87	88	89	90
88	89	90	91
89	90	91	92
90	91	92	93
91	92	93	94
92	93	94	95
93	94	95	96
94	95	96	97
95	96	97	98
96	97	98	99
97	98	99	100

6/12/12	E6	BJB	6/12/12	ES
5/3/12	C5,D3,E1,F1	PJH	5/3/12	5/4/12
11/15/11	A5,C3,H3	PJH	11/15/11	11/15/11
9/26/11	B5,E5	JJC	9/27/11	9/28/11
DATE	DESCRIPTION	BY	APPROV'D BY	
REVISIONS				
D-12609.01 OUTLINE / ASSEMBLY DRAWING				
J.O.C. DWG NO. DESCRIPTION				
REFERENCE DRAWINGS				
THIS DOCUMENT IS THE PROPERTY OF JOSEPH OAT CORPORATION AND CAN NOT BE USED, REPRODUCED, TRANSMITTED, AND/OR DISCLOSED WITHOUT PRIOR WRITTEN PERMISSION.				
JOSEPH OAT CORPORATION CHEMICAL ENGINEERS/DESIGNERS/FABRICATORS EST. 1788 2500 BROADWAY CAMDEN, N.J.				
SECTION VIEW & DETAILS SPENT FUEL POOL COOLING HEAT EXCHANGER A & B				
FOR: TVA / BECHTEL POWER WATTS BAR UNIT 1 & UNIT 2				
DRAWN BY: BJB	DATE: 5/9/11	ENG/QC: Y.Bu	6/22/11	QTY: 2
CHECKED BY: Y.Bu	DATE: 6/22/11	JOB No: J-2692 A/B		REV
SPECIFICATION:		DWG No: D-12609.03		4
P.O. No: 241916	PROD. No:			

WELDING PROCEDURES:

	MATERIAL:	WPS:	WIRE:	PROCESS:
A	C/S TO C/S (P1 TO P1)	4101	E7018	SMAW
		7104	E70C-6M	GMAW
		8101	ER70S-2	GTAW
		5101	EH14	SAW
B	S/S 304/304L TO S/S 304/304L (P8 TO P8) S/S 201 TO S/S 201	4303	E308L	SMAW
		5301	ER308L	SAW
		7303	ER308L	GMAW
		8303	ER308L	GTAW
C	TUBE TO TUBESHEET (P8 TO P8)	305	NONE	GTAW (AUTO)
		8303	ER308L	GTAW
D	C/S TO S/S (P1 TO P8) C/S TO S/S 201	8301	ER309	GTAW

WELDING NOTES:

1. WELD AND BASE METAL REPAIRS TO BE PERFORMED IN ACCORDANCE WITH WPS-1-2692.

WELDING INSPECTION NOTES:

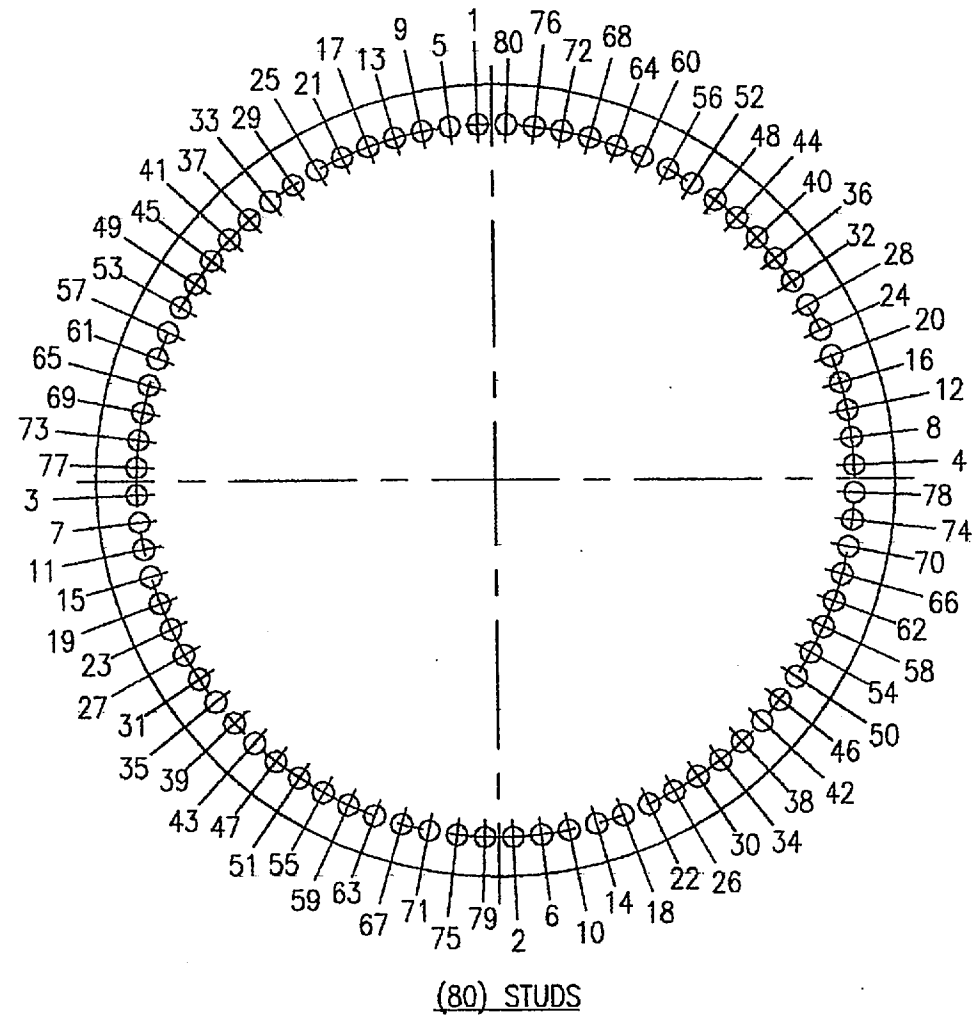
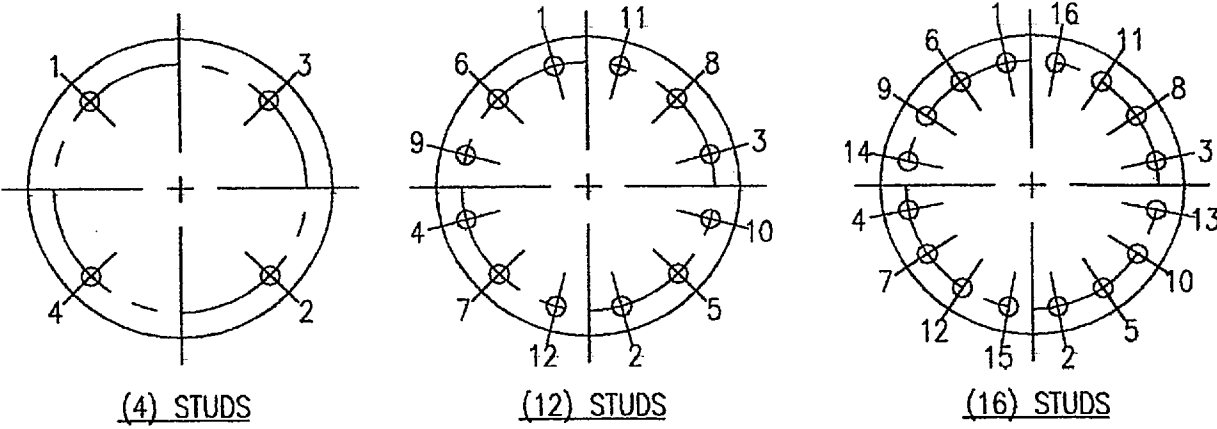
- RT₁ SPOT RADIOGRAPHY PER QC-2692-20
PT LIQUID PENETRANT EXAMINATION PER QC-2692-10.
1. VISUALLY EXAMINE ALL FINAL WELDS PER QC-2692-60
ZZZ INDICATES WELD IDENTIFICATION NUMBER.

HYDROTEST NOTES:

1. MAXIMUM CHLORIDE CONTENT OF TEST WATER SHALL BE 50ppm.
2. VESSEL SHALL BE DRAINED IMMEDIATELY AFTER HYDROTEST AND DRIED BY BLOWING WARM SHOP AIR THROUGH VESSEL UNTIL VISIBLY DRY.
3. TEST TEMPERATURE SHALL BE IN THE RANGE OF 40°F TO 120°F.
4. HYDROTEST HOLDING TIME SHALL BE AT LEAST ONE HOUR.

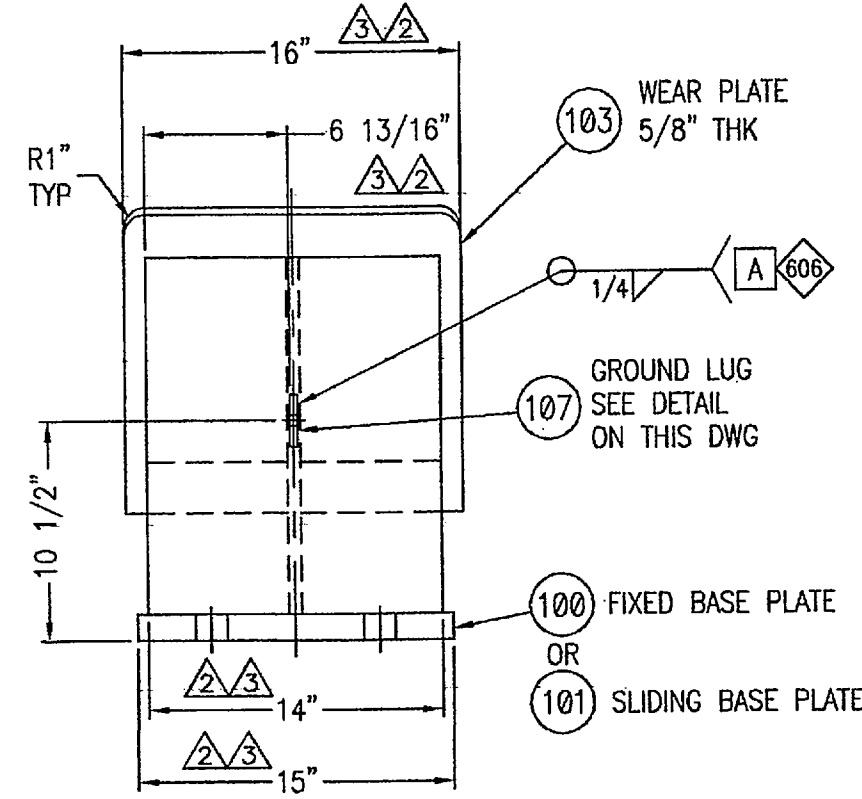
GENERAL NOTES:

1. HYDROTEST VESSEL RER QC-2692-40
2. AIR TEST TUBE TO TUBESHEET JOINTS PER QC-2692-30
3. CLEANING TO BE PER CLEANING PROCEDURE JP-2692-40.
4. PACKING AND SHIPPING TO BE PER SHIPPING PROCEDURE JP-2692-45.
5. PAINT C/S EXTERIOR PER JP-2692-50.
6. TORQUE PROCEDURE PER JP-2692-55.
7. TUBE EXPANSION PROCEDURE PER JP-2692-60.
8. SPARE GASKETS AND TUBE PLUGS WILL BE SHIPPED LOOSE.
9. THE FLANGE GASKET SURFACE FINISH SHALL BE 125-250AA PHONO.
10. ALL NOZZLES SHALL BE FLUSH WITH INSIDE OF VESSEL.
11. ALL EXTERNAL SHARP EDGES SHALL BE GROUND "SMOOTH" FOR PERSONNEL PROTECTION.
12. ALL MARKING MATERIALS SHALL BE FREE OF LOW MELTING SALTS OR METALS, AND OF CHLORIDES TO AVOID STRESS CORROSION CRACKING IN THE STAINLESS STEEL.
13. BOLT HOLES STRADDLE NORMAL CENTERLINE.
14. THE TUBESIDE WETTED SURFACE OF THE BONNET, TUBESHEET AND TUBES ARE ELECTROPOLISHED AND PASSIVATED. THE TUBESIDE OF TUBESHEET AND TUBE INSIDE SURFACE ARE ELECTROPOLISHED AND PASSIVATED PRIOR TO INSTALLATION. THE TUBESHEET IS ELECTROPOLISHED PRIOR TO DRILLING. THE REMAINING SURFACE BETWEEN THE TUBE-TO-TUBESHEET WELDS MAY BE DEGRADED FROM THE ELECTROPOLISHED CONDITION AND NO FURTHER TREATMENT WILL BE PERFORMED. THE TUBE-TO-TUBESHEET WELDS ARE NOT TREATED. THE TUBE INTERIOR SURFACE INSIDE THE TUBESHEET WILL NOT BE TREATED AFTER TUBE ROLLING/EXPANSION. THE BONNET IS ELECTROPOLISHED AND PASSIVATED AFTER ASSEMBLY. ITEMS ARE SENT TO THE POLISHER IN THE AS-RECEIVED CONDITION FOR THESE OPERATIONS. PASSIVATION IS PER ASTM A967. NO SURFACES ON THE SHELLSIDE ARE TREATED. THE FINAL WELD JOINTS AND CONNECTIONS, WELD OVERLAYS AND WELD BUILDUP SURFACES WILL BE POLISHED SMOOTH, ELIMINATING ANY PITS, CREVICES AND PORES THAT COULD ENTRAP RADIOACTIVITY.
15. BOLTED COVER AND FLANGE JOINTS SHOULD BE TIGHTENED UNIFORMLY AND IN A DIAMETRICALLY STAGGERED PATTERN IN FOUR STEPS, TYPICALLY AS SHOWN IN THE INCLUDED DIAGRAMS. STEP 3 IS RECOMMENDED FOR FIELD INSTALLATION TO ACHIEVE THE GASKET SEAL. STEP 4 SHOULD BE USED IF GASKET SEAL LEAKS. IN CASE IT STILL LEAKS AFTER STEP 4, THEN MANUFACTURE SHOULD BE CONTACTED.
16. BASE LINE EDDY CURRENT OF TUBES AFTER BUNDLE IS INSERTED INTO SHELL BUT PRIOR TO FINAL ASSEMBLY WILL BE PREFORMED BY CUSTOMER.
17. HANDLING & STORAGE PER SP-1624

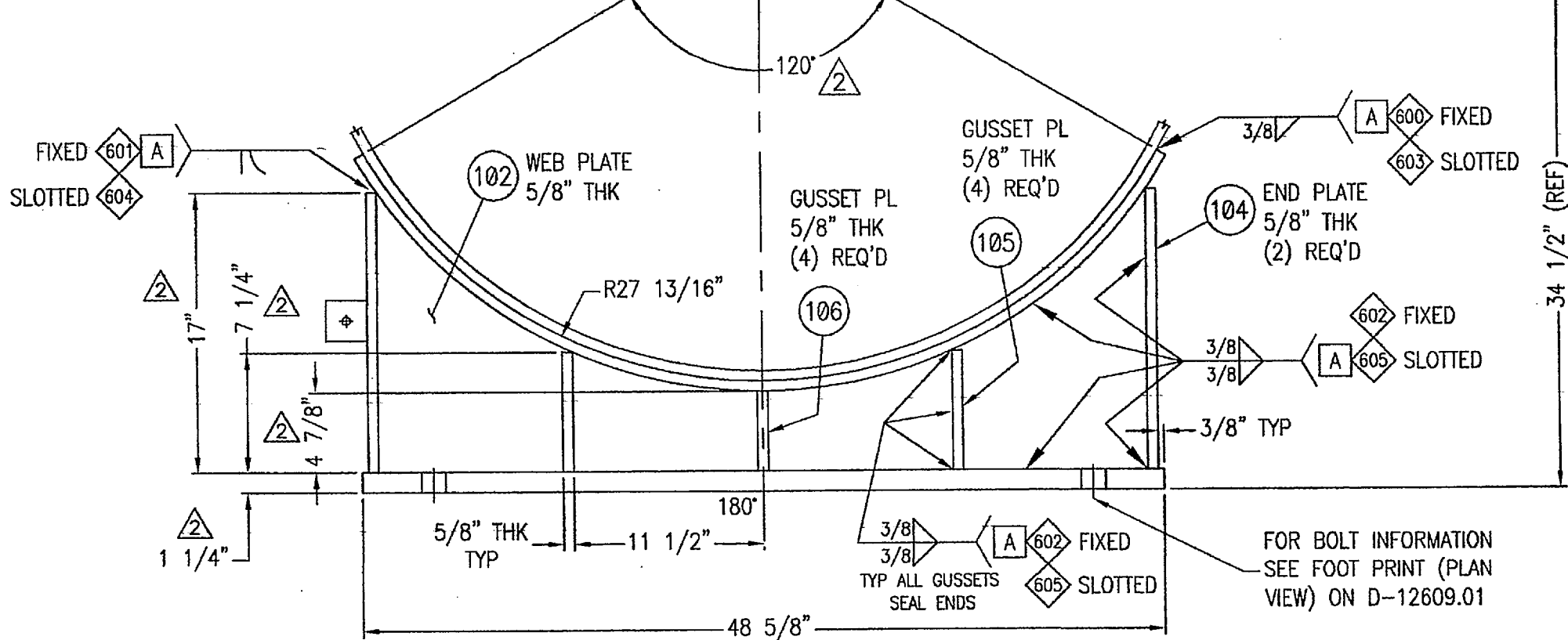


TORQUE VALUES FOR SA193-B7 BOLTING (FT-LB)				
BOLT SIZE	STEP 1	STEP 2	*STEP 3	STEP 4
5/8"-11UNC	HAND TIGHT	30	60	90
7/8"-9UNC	HAND TIGHT	80	160	380
1"-8UN	HAND TIGHT	125	250	400

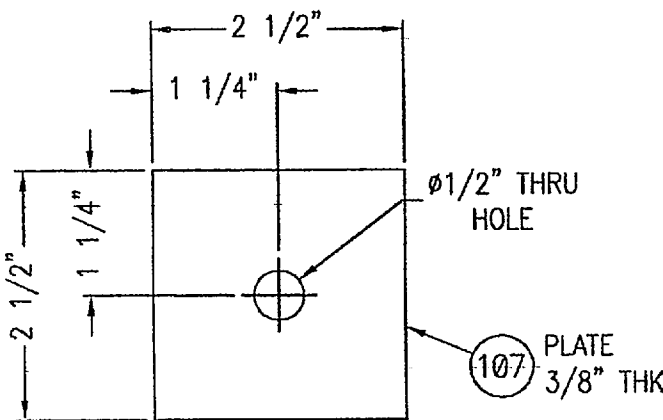
* RECOMMENDED FOR FIELD INSTALLATION.



SADDLE END VIEW
SLIDING / FIXED SADDLE SUPPORT



SADDLE DETAIL
SLIDING / FIXED SADDLE SUPPORT



GROUNDING LUG
(1) REQ'D
ON FIXED SADDLE ONLY

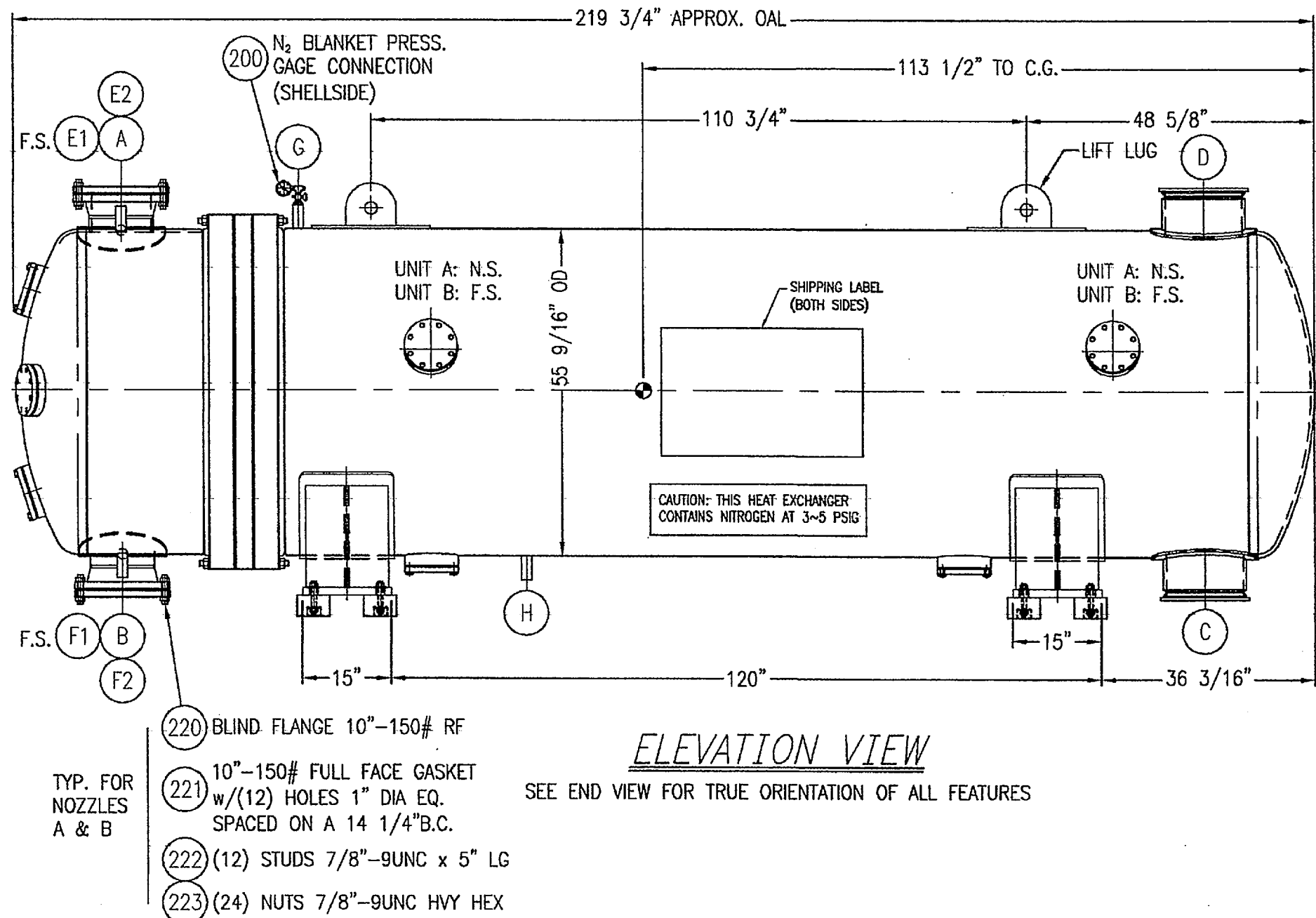
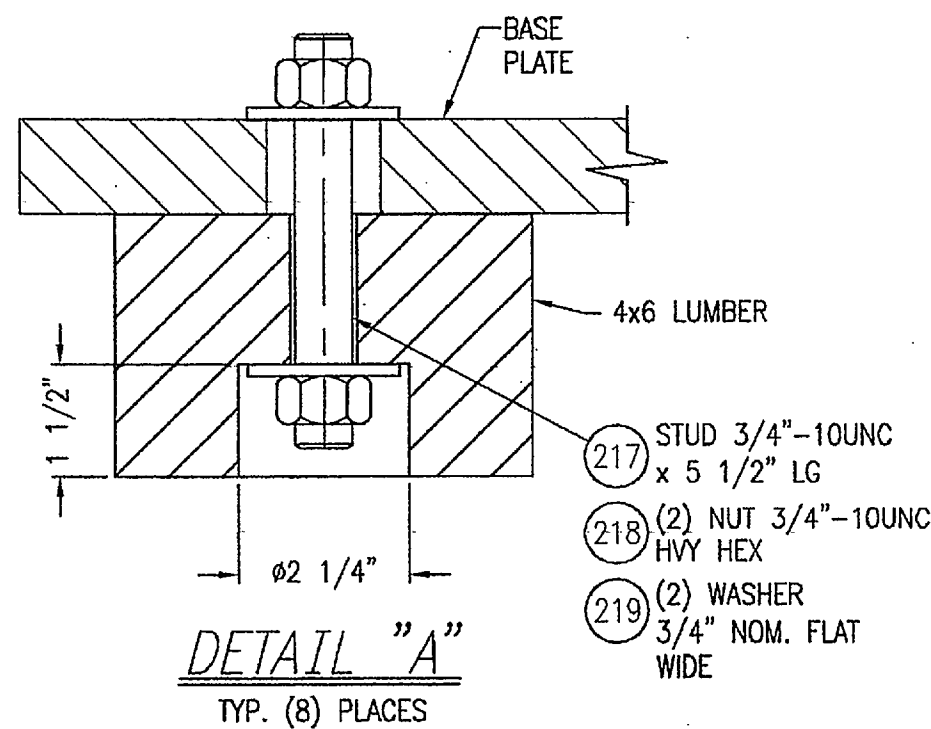
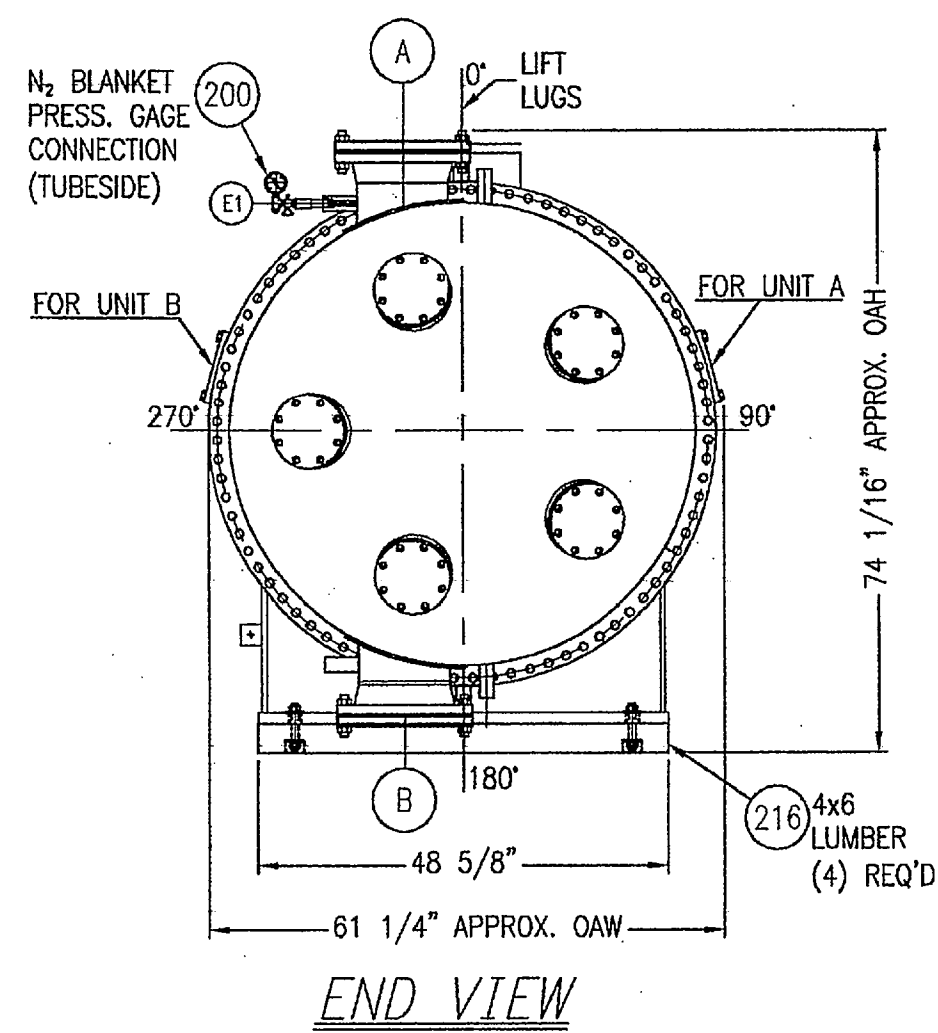
BECHTEL POWER CORPORATION		Job Number: 25402	
SUPPLIER DOCUMENT REVIEW STATUS			
STATUS CODE:			
1	<input checked="" type="checkbox"/> Work may proceed.	3	<input type="checkbox"/> Rejected. Revise and resubmit.
1C	<input type="checkbox"/> Work may proceed. Editorial comments need only be incorporated if revised for other purposes.	4	<input type="checkbox"/> Review not required. Work may proceed.
2	<input type="checkbox"/> Revise and resubmit. Work may proceed subject to incorporation of changes indicated.		
Permission to proceed does not constitute acceptance or approval of design details, calculations, analysis, test methods, or materials developed or selected by the Supplier and does not relieve the Supplier from full compliance with contractual obligations.			
Reviewed by	Arch	Civil	CS
Y.Bu	Y.Bu	Y.Bu	Y.Bu
9/22/11	9/22/11	9/22/11	9/22/11
DATE	DATE	DATE	DATE
19 JUN 12			

SEE ECO

No. 1
No. 2
No. 3
No. 4
No. 5

D-12609.01	OUTLINE / ASSEMBLY DRAWING
J.O.C. DWG NO.	DESCRIPTION
REFERENCE DRAWINGS	
THIS DOCUMENT IS THE PROPERTY OF JOSEPH OAT CORPORATION AND CAN NOT BE USED, REPRODUCED, TRANSMITTED, AND/OR DISCLOSED WITHOUT PRIOR WRITTEN PERMISSION.	
JOSEPH OAT CORPORATION CHEMICAL ENGINEERS/DESIGNERS/FABRICATORS EST. 1788 2500 BROADWAY CAMDEN, N.J.	
SUPPORT & TRUNNION DETAILS, NOTES DWG SPENT FUEL POOL COOLING HEAT EXCHANGER A & B	
FOR: TVA / BECHTEL POWER WATTS BAR UNIT 1 & UNIT 2	
DRAWN BY: BJB	DATE: 5/9/11
CHECKED BY: Y.Bu	DATE: 6/22/11
SPECIFICATION:	DWG No: D-12609.04
P.O. No: 241916	PROD. No:

DATE	DESCRIPTION	BY	APPROV'D BY
6/12/12	H2	BJB	Y.Bu
4/12/12	F3,H3,H5,H6	BJB	Y.Bu
11/21/11	D5,D6	JUC	Y.Bu
9/28/11	B6,C5,D5,D6	BJB	Y.Bu
7/15/11	B4,B5,D5	BJB	Y.Bu



NOTES

1. PACKAGING & SHIPPING PER JP-2692-45.
2. WRAP UNIT WITH POLYETHYLENE PLASTIC SHEET LEAVING THE LIFTING LUGS & NITROGEN PURGE PRESSURE GAGE EXPOSED.
3. CAUTION SHALL BE TAKEN TO AVOID DAMAGE TO EXTERIOR PAINT.
4. NET WEIGHT OF ASSEMBLY IS APPROXIMATELY 26,900 LBS. ESTIMATED SHIPPING WEIGHT IS 27,000 LBS.
5. THE UNIT IS NITROGEN BLANKETED AT 3-5 PSIG. AFFIX A CAUTION LABEL ON THE OUTSIDE (SEE JP-2692-45).

TVA WATTS BAR NUCLEAR PLANT LLC
C/O BECHTEL UNIT 2 WAREHOUSE
1270 NUCLEAR PLANT ROAD (HWY 68)
SPRING CITY, TN 37381
SPENT FUEL POOL COOLING
HEAT EXCHANGER A
JOSEPH OAT CORP. JOB No. J-2692

SHIPPING LABEL

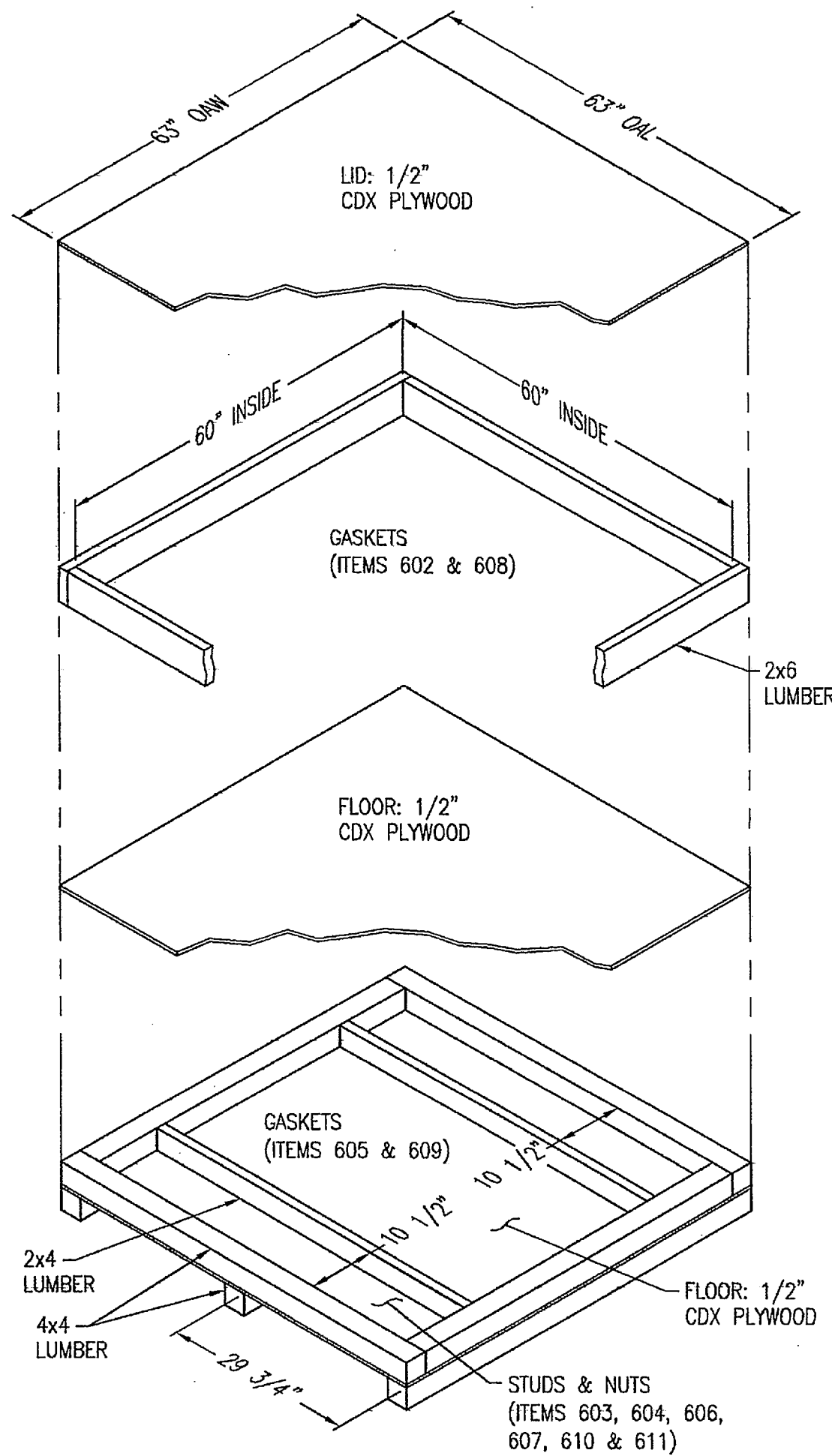
TVA WATTS BAR NUCLEAR PLANT LLC
C/O BECHTEL UNIT 2 WAREHOUSE
1270 NUCLEAR PLANT ROAD (HWY 68)
SPRING CITY, TN 37381
SPENT FUEL POOL COOLING
HEAT EXCHANGER B
JOSEPH OAT CORP. JOB No. J-2692

SHIPPING LABEL

TVA WATTS BAR NUCLEAR PLANT LLC
C/O BECHTEL UNIT 2 WAREHOUSE
1270 NUCLEAR PLANT ROAD (HWY 68)
SPRING CITY, TN 37381
SPARE GASKETS / FASTENERS
JOSEPH OAT CORP. JOB No. J-2692

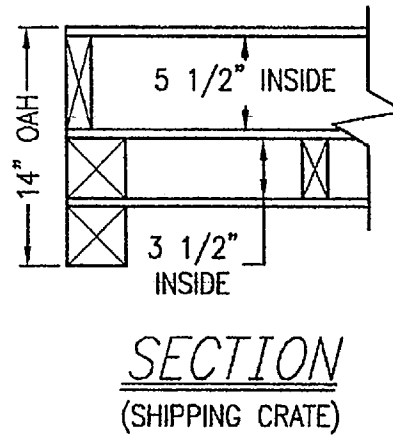
SHIPPING LABEL

NOTE: ITEM 601 CAN BE SHIPPED WITH PLASTIC TUBE FOR PROTECTION.



(215) EXPLODED VIEW
SHIPPING CRATE FOR SPARE PARTS
WEIGHT LOADED: APPROX. 370 LB

BOX CONTENTS		
ITEM No.	QTY	DESCRIPTION
602	4	GASKET 56 15/16"OD x 55 7/16"ID
603	16	STUD 7/8"-9UNC x 15"LG
604	32	NUT 7/8"-9UNC Hvy HEX
605	20	GASKET 4"-150# SPIRAL WOUND, CGI
606	8	STUD 5/8"-11UNC x 3 1/2"LG
607	16	NUT 5/8"-11UNC Hvy HEX NUT
608	4	SHELL FLG GASKET 56 15/16"OD x 55 7/16"ID
609	16	GASKET 4"-150# SPIRAL WOUND, CGI
610	8	STUD 5/8"-11UNC x 3 1/2"LG
611	16	NUT 5/8"-11UNC Hvy HEX NUT
612	16	7/8" FLAT WASHER (G/S)
613	16	7/8" FLAT WASHER (S/S)



BECHTEL POWER CORPORATION		Job Number: 25402	
SUPPLIER DOCUMENT REVIEW STATUS			
STATUS CODE:			
1	<input checked="" type="checkbox"/> Work may proceed.	3	<input type="checkbox"/> Rejected. Revise and resubmit.
1C	<input type="checkbox"/> Work may proceed. Editorial comments need only be incorporated if revised for other purposes.	4	<input type="checkbox"/> Review not required. Work may proceed.
2	<input type="checkbox"/> Revise and resubmit. Work may proceed subject to incorporation of changes indicated.		
Permission to proceed does not constitute acceptance or approval of design details, calculations, analysis, test methods, or materials developed or selected by the Supplier and does not relieve the Supplier from full compliance with contractual obligations.			
Reviewed by	Arch	Civil	CS
	N/A	N/A	N/A
Status By	Jeff K. Smith		DATE 19 JUN 12

6/12/12	B5	BJB	BY	APPROVED BY
DATE	DESCRIPTION	BY	APPROVED BY	

REVISIONS	
D-12609.01	OUTLINE / ASSEMBLY DRAWING
J.O.C. DWG NO.	DESCRIPTION

REFERENCE DRAWINGS

THIS DOCUMENT IS THE PROPERTY OF JOSEPH OAT CORPORATION AND CAN NOT BE USED, REPRODUCED, TRANSMITTED, AND/OR DISCLOSED WITHOUT PRIOR WRITTEN PERMISSION.

JOSEPH OAT CORPORATION
CHEMICAL ENGINEERS/DESIGNERS/FABRICATORS
EST. 1788
2500 BROADWAY CAMDEN, N.J.

SHIPPING DRAWING
SPENT FUEL POOL COOLING HEAT EXCHANGER A & B

FOR:
TVA / BECHTEL POWER
WATTS BAR UNIT 1 & UNIT 2

DRAWN BY: PJH	DATE: 10/7/11	ENG/QC: Y.Bu	DATE: 11/29/11	QTY: 2
CHECKED BY: Y.Bu	DATE: 11/28/11	JOB No: J-2692 A/B	REV	
SPECIFICATION: -	PROD. No: -	DWG No: D-12609.20		1
P.O. No: 241916				