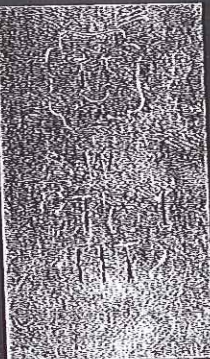
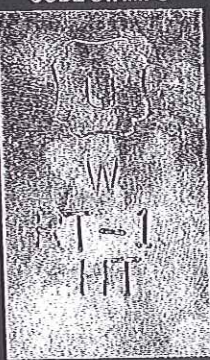


w/o 6097

CODE STAMPS		CERTIFIED BY	
			
FABRICATION INC.		P.O. BOX 7346 ODESSA, TEXAS 79760 (915) 362-9291	
M.A.W.P.	683/1201	PSI	AT 203/2351 °F
M.D.M.T.	-20	°F	AT 683/1201 PSI
MFG. SER. NO.	02550	YEAR	2003
HYDRO:	723/1201 PSI	NOM. THICK	TYPE MATERIAL
C.A.:	12	SHELL	0.375 PLATE SA516-70
		HEADS	0.375 2:1 SA516-70
VESSEL DESCRIPTION 375 PRIMA BOTTOM EXCHANGER 1201A			
CUSTOMER GIANT			

CODE STAMPS		CERTIFIED BY	
			
FABRICATION INC.		P.O. BOX 7346 ODESSA, TEXAS 79760 (915) 362-9291	
M.A.W.P.	683/1201	PSI	AT 203/2351 °F
M.D.M.T.	-20	°F	AT 683/1201 PSI
MFG. SER. NO.	02557	YEAR	2003
HYDRO:	723/1201 PSI	NOM. THICK	TYPE MATERIAL
C.A.:	12	SHELL	0.375 PLATE SA516-70
		HEADS	0.375 2:1 SA516-70
VESSEL DESCRIPTION 375 PRIMA BOTTOM EXCHANGER 1201A			
CUSTOMER GIANT			

FORM U-1 MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS
As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

106458

1. Manufactured and certified by RAMA FABRICATION, INC., 2310 PROSPECT ODESSA, TEXAS 79762
(Name and address of Manufacturer)

2. Manufactured for GIANT INDUSTRIES
(Name and address of Purchaser)

Location of installation YORKTOWN, VA
(Name and address)

3. Type: HORIZONTAL HEAT EXCHANGER 02857 - D-5860-V021 1136 2006
(Horiz., vert., or sphere) (Tank, separator, jkt. vessel, heat exh., etc.) (Mfg's serial No.) (CRN) (Drawing No.) (Nat'l. Bd. No.) (Year built)

5. ASME Code, Section VIII, Div. 1 2004, 2005
Edition and Addenda (date) Code Case No. Special Service per UG-120(d)

Items 6 - 11 incl. to be completed for single wall vessels, jackets of jacketed vessels, shell of heat exchangers, or chamber of multi-chamber vessels.

6. Shell (a) No. of course(s): 3 (b) Overall length (ft & in.): 21'-6 1/2"

Course(s)			Material	Thickness		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B & C)			Heat Treatment	
No.	Diameter, in.	Length (ft & in.)	Spec./Grade or Type	Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time
1	39" ID	7'-9 1/4"	SA-516 Gr 70	.375"	.125"	1	FULL	1	1	FULL	1	1150	1
2	39" ID	10'-0"	SA-516 Gr 70	.375"	.125"	1	FULL	1	1	FULL	1	1150	1
3	39" ID	8 5/8"	SA-516 Gr70	.375"	.125"	1	FULL	1	1	FULL	1	1150	1

7. Heads: (a) SA-516 Gr70 (b)
(Mat'l Spec. No., Grade or Type) H.T. - Time & Temp (Mat'l Spec. No., Grade or Type) H.T. - Time & Temp

	Location (Top, Bottom, Ends)	Thickness		Radius		Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure		Category A		
		Min.	Corr.	Crown	Knuckle					Convex	Concave	Type	Full, Spot, None	Eff.
(a)	END	.250"	.125"			2:1							Full	1
(b)														

If removable, bolts used (describe other fastening) Bonnet: 36 ea. 0.875" X 7.75" w/2 nuts ea. SA193-B7 & SA194-2H
(Mat'l Spec. No., Grade, size, No.)

8. Type of jacket Jacket closure
(Describe as ogee & weld, bar, etc.)

If bar, give dimensions If bolted, describe or sketch.

9. MAWP 55 psi at max. temp. 270 °F Min. design metal temp. -20 °F at 55 psi.
(internal) (external) (internal) (external)

Impact test NO at test temperature of °F
(Indicate yes or no and the component(s) impact tested)

11. ~~Hydro~~, ~~Proof~~, or comb. test press. Proof test

Items 12 and 13 to be completed for tube sections.

12. Tubesheet:
Stationary (Mat'l Spec. No.) Dia., in. (subject to press.) Nom. thk., in. Corr. Allow., in. Attachment (welded or bolted)

Floating (Mat'l Spec. No.) Dia., in. Nom. thk., in. Corr. Allow., in. Attachment

13. Tubes:
Mat'l Spec. No., Grade or Type O.D., in. Nom. thk., in. or gauge Number Type (Straight or U)

Items 14 - 18 incl. to be completed for inner chambers of jacketed vessels or channels of heat exchangers.

14. Shell (a) No. of course(s): 1 (b) Overall length (ft & in.):

Course(s)			Material	Thickness		Long. Joint (Cat. A)			Circum. Joint (Cat. A, B & C)			Heat Treatment	
No.	Diameter, in.	Length (ft & in.)	Spec./Grade or Type	Nom.	Corr.	Type	Full, Spot, None	Eff.	Type	Full, Spot, None	Eff.	Temp.	Time
1	39" ID	11 1/2"	SA-516 Gr 70	.375"	.125"	1	FULL	1	1	FULL	1	1150	1
2													
3													

15. Heads: (a) SA-105 (b)
(Mat'l Spec. No., Grade or Type) H.T. - Time & Temp (Mat'l Spec. No., Grade or Type) H.T. - Time & Temp

	Location (Top, Bottom, Ends)	Thickness		Radius		Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure		Category A		
		Min.	Corr.	Crown	Knuckle					Convex	Concave	Type	Full, Spot, None	Eff.
(a)	END	3.6875"	.125"						44.875"					
(b)														

If removable, bolts used (describe other fastening) Channel: 36 ea. .0875" X 9.75" w/2 nuts ea. SA193-B7 & SA194-2H
(Mat'l Spec. No., Grade, Size, No.)

16. MAWP 120 psi at max. temp. 235 °F Min. design metal temp. -20 °F at 120 psi.
(internal) (external) (internal) (external)

17. Impact test NO at test temperature of °F
(Indicate yes or no and the component(s) impact tested)

18. Hydro., test press. 156 Proof test

19. Nozzles, inspection, and safety valve openings:

Purpose (Inlet, Outlet, Drain, etc.)	No.	Diameter or Size	Flange Type	Material		Nozzle Thickness		Reinforcement Material	How Attached		Location (Insp. Q)
				Nozzle	Flange	Nom.	Corr.		Nozzle	Flange	
Inlet/Outlet	4	6" 150#	RFWN	SA-106 GR B	SA-105	.280	.125"	Inherent	WELD	WELD	SHELL
CC, Vent, Drain	6	3/4"	Cplg	SA-105	-	6000#	.125"	Inherent	-	-	SHELL/NOZ
CC	4	1"	Cplg	SA-105	-	6000#	.125"	Inherent	-	-	SHELL

20. Supports: Skirt NO Lugs (Yes or No) Legs 2 (No.) Others NA (Describe) Attached WELD TO SHELL (Where and How)

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

(List the name of part, item number, mfg's. name and identifying number)

None

22. Remarks:

All Flanges are SA-105.

Vessel Exempt Per UG-20(f)

Relief Per UG-125 Non-Lethal Service

CERTIFICATE OF SHOP 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 Code for Pressure Vessels, Section VIII, Division 1,

U Certificate of Authorization No. 17,022 Expires 6/07/2008

Date 6/12/2006 Name RAMA FABRICATION, INC. Signed (Manufacturer) (Representative)

CERTIFICATE OF SHOP INSPECTION

I, the undersigned, holding a valid commission issued by The National Board of Boiler and Pressure Vessel Inspectors and the State or Province of TX and employed by HSBCT of HARTFORD have inspected the pressure vessel described in this Manufacturer's Data Report on 6/12/2006, and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME Code, Section VIII, Division 1. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the inspector nor his 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 6/12/2006 Signed (Authorized Inspector) Commissions N.B. 12,612 A.B Texas 1723 (Nat'l Board incl. endorsement, State, Province and No.)

CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE

We certify that the statements on this report are correct and that the field assembly construction of all parts of this vessel conforms with the requirements of ASME Code, Section VIII, Division 1,

U Certificate of Authorization No. Expires

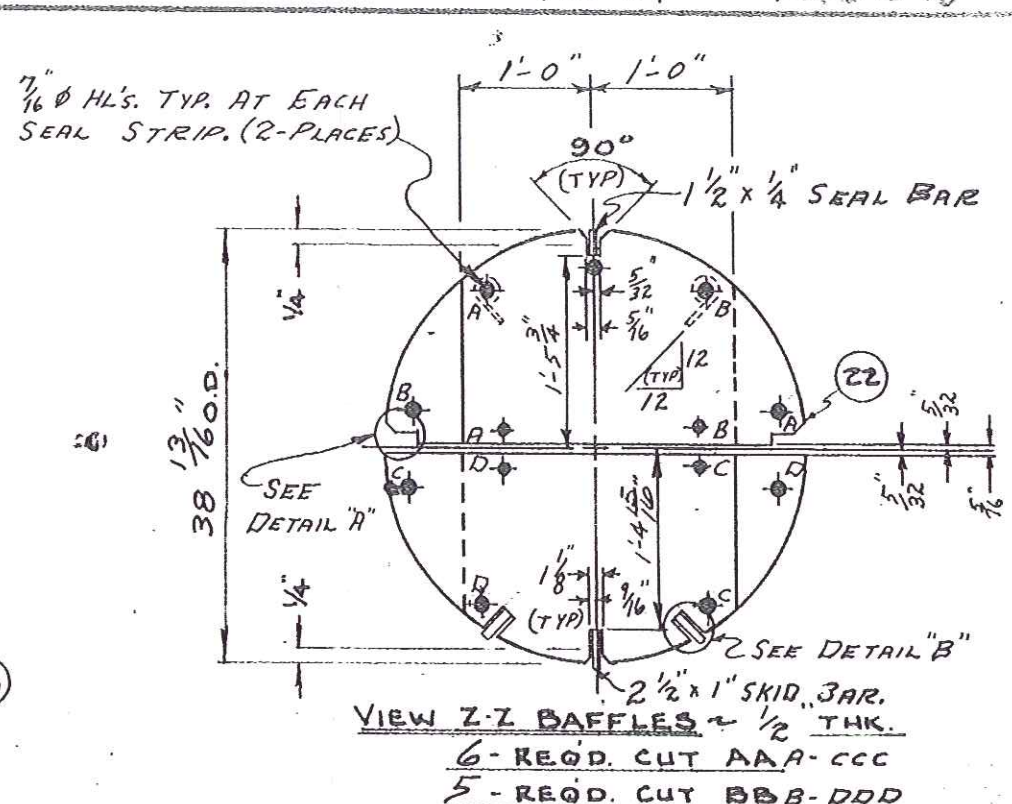
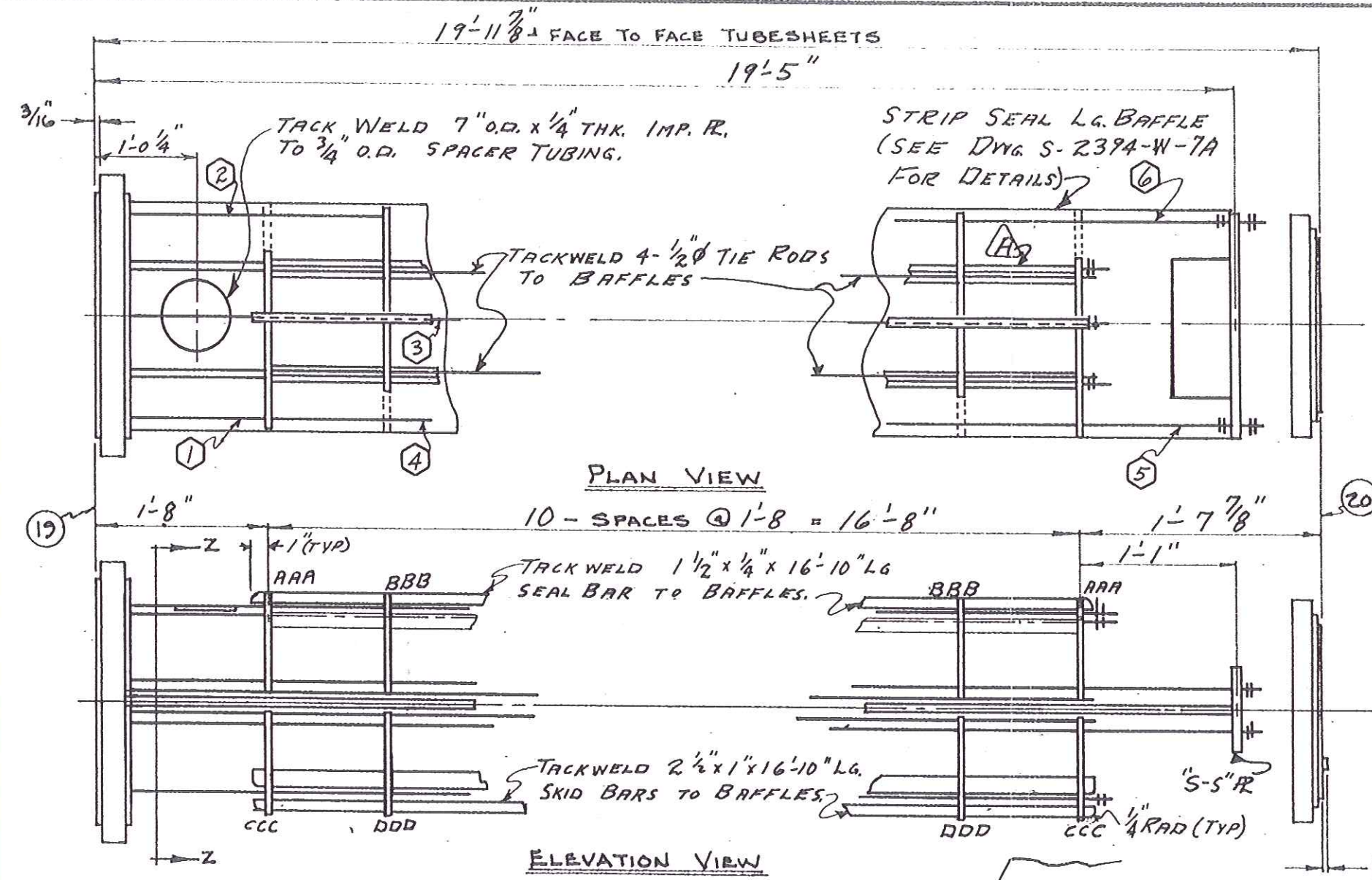
Date Name Signed (Assembler) (Representative)

CERTIFICATE OF FIELD ASSEMBLY INSPECTION

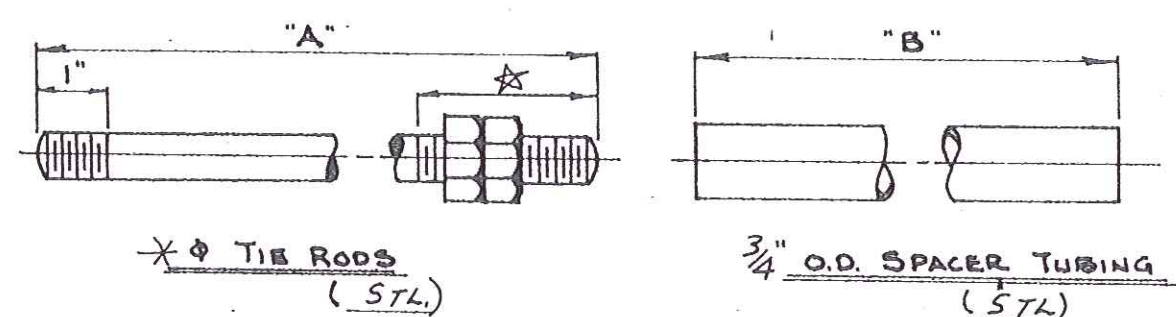
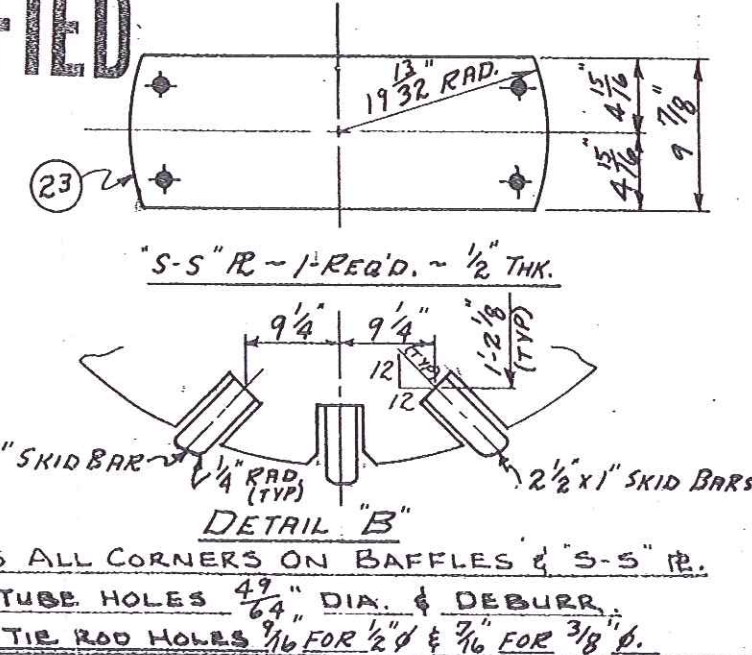
I, the undersigned, holding a valid commission issued by The National Board of Boiler and Pressure Vessel Inspectors and the State or Province of and employed by have compared the statements in this Manufacturer's Data Report with the described pressure vessel and state that parts referred to as data items, not included in the certificate of shop inspection, have been inspected by me and to the best of my knowledge and belief, the Manufacturer has constructed and assembled this pressure vessel in accordance with ASME Code, Section VIII, Division 1. The described vessel was inspected and subjected to a hydrostatic test of psi. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his 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 Signed (Authorized Inspector) Commissions (Nat'l Board incl. endorsement, State, Province and No.)

129.7" 15.53%



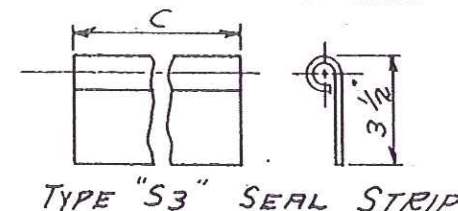
CERTIFIED



* REQ'D.	"A"
1/2"	4 19'-5 1/4"
1/2"	7 18'-4 1/4"
3/8"	2 18'-4 1/4"

THD. 4 TIE RODS 5" - 5 - 2
 (THD. 4-1" ONE END ONLY)

REQ'D.	"B"
① 7	1'-5 3/4"
② 2	3'-1 3/4"
③ 30	1'-7 1/2"
④ 18	3'-3 1/2"
⑤ 2	11"
⑥ 2	2'-7"



REQ'D	"C"
20	1'-7 1/2"

INDUSTRIAL FABRICATING CO.
 TULSA, OKLAHOMA

BUNDLE DETAILS

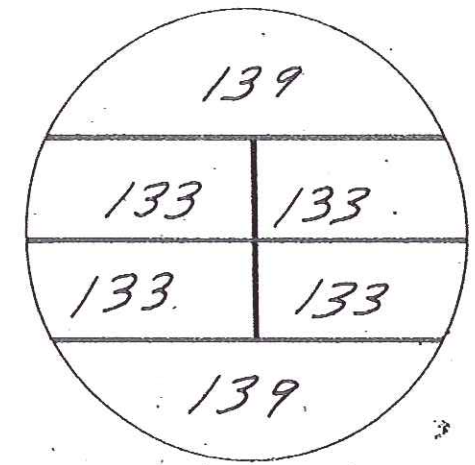
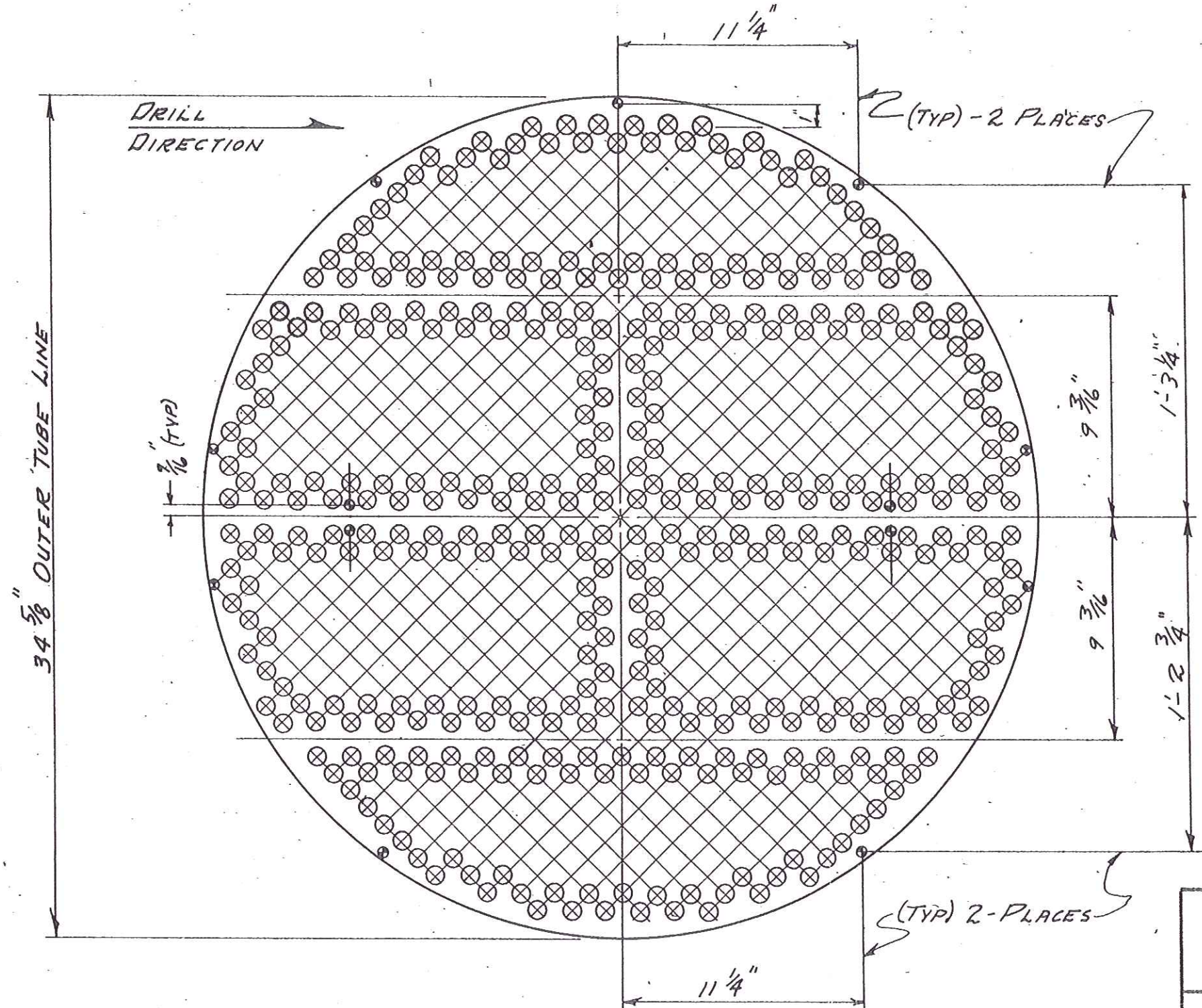
SIZE: 39" x 20'

JOB: S-2394 1-REQ'D.

DRAWN Joe DATE 11-29-63 CHECKED HA

S-2394 W-7

106457
 106458



TUBES PER PASS

NOTES:

1. DRILL & REAM TUBE HOLES IN TUBE SHEETS TO $0.760 \pm .002$ O.D. FOR $8'10 - 3/4$ O.D. TUBES.
2. TUBE PITCH $1 \frac{1}{4}$
3. 6 - PASS
4. SEE DWG. 5-2394-W-5 FOR TUBE HOLE GROOVING DETAIL.

CERTIFIED

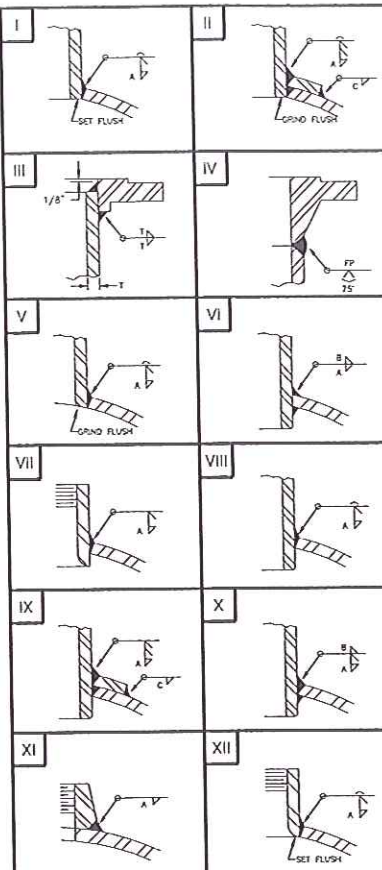
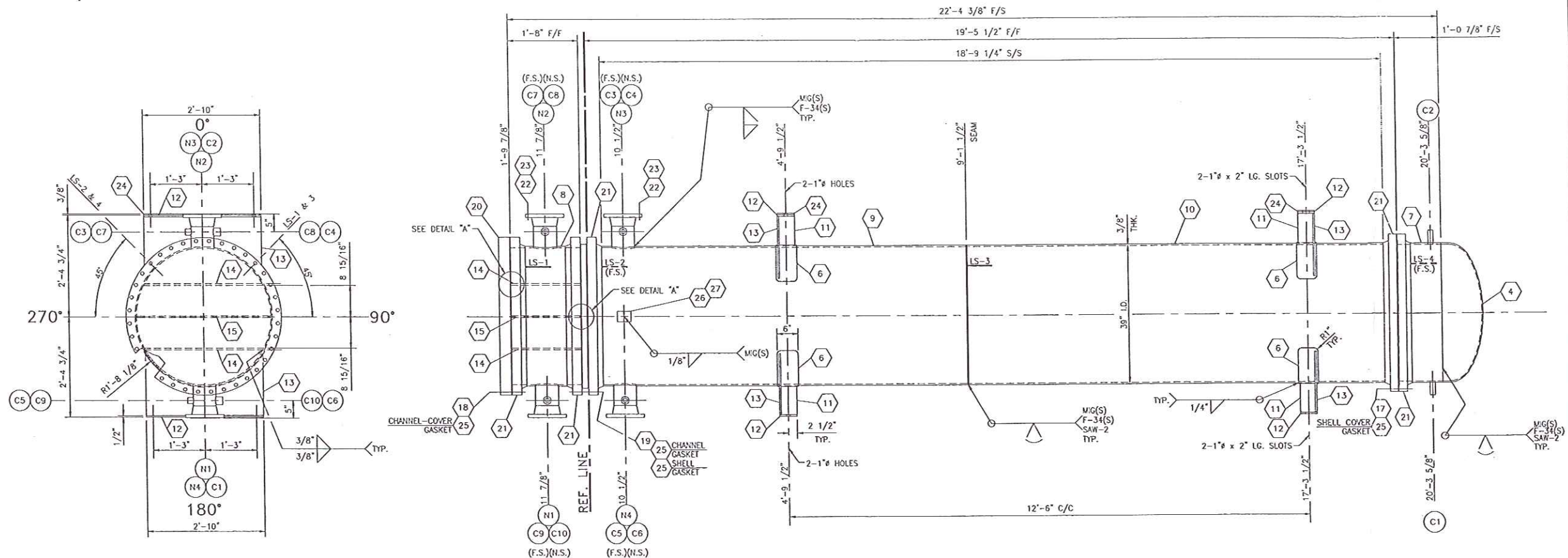
106457
106458

INDUSTRIAL FABRICATING COMPANY
TULSA, OKLAHOMA

TUBE LAYOUT

SIZE: 39"X20'		1-REQD.	
JOB: 5-2394			
DWN. Joe	DATE 11-26-63	CK H	5-2394 W-6
SCALE			

VIEW LOOKING @ SHELL SIDE OF #19 TUBE SHEET



- NOTES:
1. Flange bolt holes to straddle vessel centerlines unless otherwise noted.
 2. Drill & tap 1/4\"/>

ISSUED FOR CONSTRUCTION
DATE: 03/30/06
BY: JMW

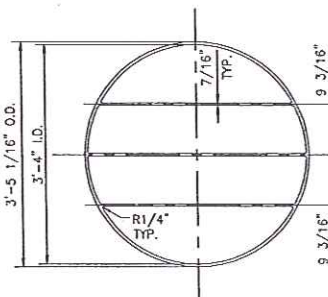
* Heads must conform to UCS-79 and UCS-81, Section VIII, Div. I and Section II for materials. MTR's are required.
** All other materials UG-80, 80, Section VIII, Div. I. MTR's and/or COC's are required.

SPECIFICATIONS

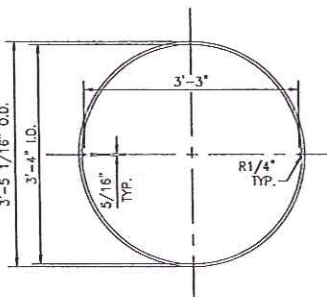
YEAR BUILT	2005	TAG/MODEL NUMBER	E601B
SERIAL NO.	02857	NATIONAL B. NO.	1135
DESIGN PRESSURE INTERNAL	55	PSIG @ TEMP. -20/270 °F MIN/MAX	
DESIGN PRESSURE EXTERNAL		PSIG @ TEMP.	-20/270 °F MIN/MAX
HYDRO PRESSURE INTERNAL	22	J.E. LONG SEAMS	100%
CORROSION ALLOWANCE	.125	J.E. ROUND SEAMS	100%
RADIOGRAPHY	RT-1 (FULL)	STRESS RELIEF	YES
FLANGE RATING	150	COUPLING RATING	6000
SHELL MATL. SPEC.	SA516-70	HEAD MATL. SPEC.	SA516-70
FLANGE MATL. SPEC.	SA105	CPLG. MATL. SPEC.	SA105
PIPE MATL. SPEC.	SA105-B	BW FIT. MATL. SPEC.	SA234-WPB
REPAIR MATL. SPEC.	SA516-70	STRUC. MATL. SPEC.	SA36
RF GSK. MATL. SPEC.	304 SS	FLG. STUD SPEC.	SA193-B7
RF GSK. MATL. SPEC.		FLG. NUT SPEC.	SA194-2H
EMPTY WEIGHT	21,800 LBS	FULL LIQUID WEIGHT	32,645 LBS
RF GSK. DESC.	1/8" SPIRAL WOUND VETAL/COMP.		
RF GSK. DESC.			
WELD PROCEDURE	WJ(S), F-34(S), SAW-2		
INSULATION DESC.	3" HOT		
INSPECTION BY	HSG-C & RAMA		
CONSTRUCTION CODE	ASME SEC. VIII, DIV. 1, 2005 ADDENDA		
INT. SURFACE TREATMENT	PER CUSTOMER SPEC'S		
EXT. SURFACE TREATMENT			

rama
FABRICATION, INC.

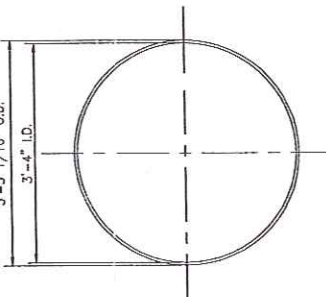
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39\"/>



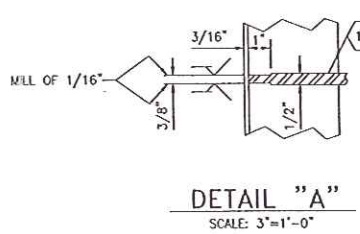
25 CHANNEL-COVER & CHANNEL GASKET DETAIL



25 SHELL GASKET DETAIL



25 SHELL COVER GASKET DETAIL



DETAIL "A"
SCALE: 3\"/>

REVISED
DATE: 05/03/06

BILL OF MATERIAL

QTY	MATL	DESCRIPTION
4	SA105	1 CPLG 0.75\"/>

CODE SHEET
W RT-1 HT
P.O. BOX 2445 DALLAS, TEXAS 75215
(409) 242-9251

DATE: 03/30/06
BY: JMW

MARK NO.	SERVICE	SIZE	RATING	TYPE	BORE	WALL	LG. NECK	MATL.	OD & THK REINFORCING PAD	MATL.	O.S.	I.S.	WELD DETAIL	A	B	C	PIPE NOZZLE MRP NO.
N4	1	OUTLET	6.00	0150	RFWN	6.06	0.280	6.7500	SA106-B	-	-	-	9.1250	TFIS	IV	V	1/4\"/>

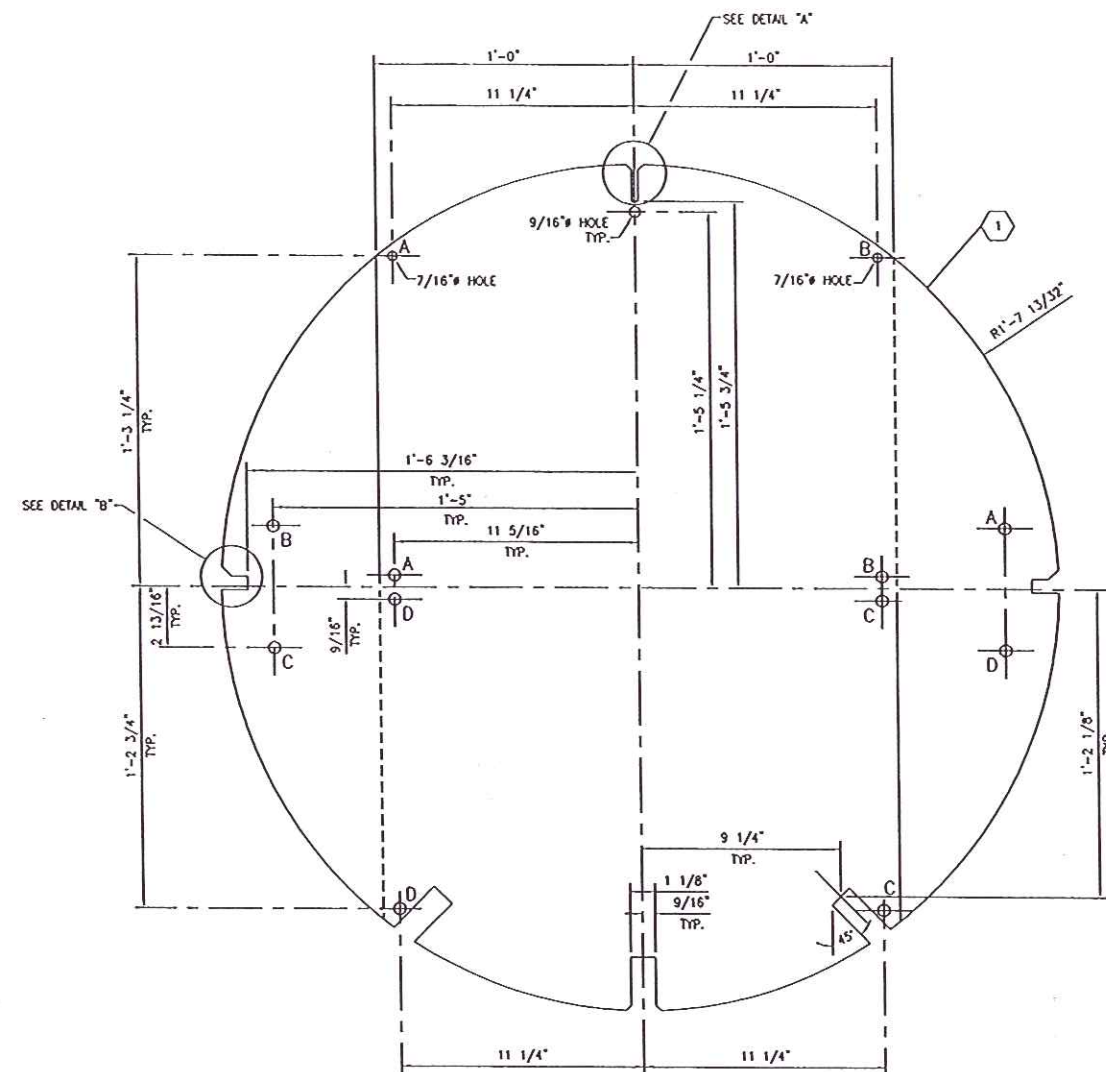
REFERENCE DRAWINGS

NUMBER	DESCRIPTION
0	ISSUED FOR CONSTRUCTION
1	REVISED WEIGHT

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BILL OF MATERIAL

NO.	DESCRIPTION	MATL	QTY
1	PL. 0.500" x 38.81" OD	- PL. DISK	SA36 11
2	PL. 0.500" x 38.81" x 9.875"	- PL. SD/REC	SA36 1



BAFFLE DETAILS "AAA" "BBB" "CCC" "DDD"

6 REQ'D CUT "AAA" & "CCC"
5 REQ'D CUT "BBB" & "DDD"

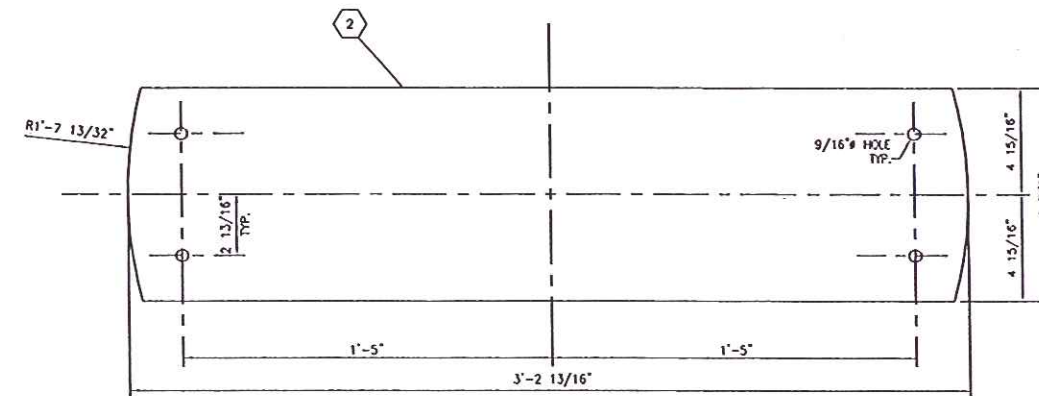
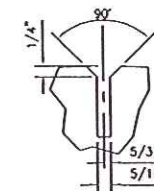
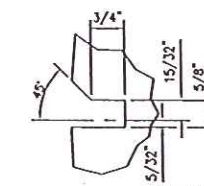


PLATE DETAIL



DETAIL "A"
SCALE: 6"=1'-0"



DETAIL "B"
TYP. FOR BAFFLES "AAA" & "BBB"
SCALE: 6"=1'-0"

ISSUED FOR
CONSTRUCTION

DATE: _____
BY: JDW

NOTES

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REFERENCE DRAWINGS

NUMBER	DESCRIPTION
0	ISSUED FOR CONSTRUCTION

REVISIONS

NO.	DESCRIPTION	DATE	BY	CHK	APV
0	ISSUED FOR CONSTRUCTION		JDW		

INTERSTATE TREATING, INC.

P.O. Box 1386
Odessa, Texas 79760-1386

DESCRIPTION	BAFFLE DETAILS FOR SWS FEED/BOTTOMS EXCHANGER (E601B)
CUSTOMER	GIANT YORKTOWN
SCALE: 3"=1'-0"	W.O. NO. 6097
CUST. PO/	QUOTE NO.
DRAWN JDW	DWG. NO.
CHECK	03/20/06
	0-5860-V022
	REV. 0