

ITEM NO. E4511-ZR

CPO# 55512

SO# F-73671

E-4511-2A

FORM U-1 MANUFACTURERS' DATA REPORT FOR PRESSURE VESSELS

as required by the provisions of the ASME Code rules, Section VIII, Division 1

31" HT. EXCH.

1. Manufactured and certified by GASTON COUNTY DYEING MACHINE COMPANY - MT. HOLLY, NC 28120
(name and address of manufacturer)
2. Manufactured for CAPE INDUSTRIES - HWY 421 NORTH - (Box 327) - WILMINGTON, NC 28402-0327
(name and address of purchaser)
3. Location of installation SAME AS LINE 2
(name and address)
4. Type HORIZ. HT. EXCH. F73671-187-1 EF-066 18660 1987
(horiz. or vert., tank) (mfr's. serial no.) (CRN) (drawing no.) (Nat'l. Bd. no.) (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 Code, Section VIII, Division 1: 1986
(year)

(addenda (date)) (Code Case no.) (special service per UG-120(d))

Items 6-11 inclusive to be completed for single wall vessels, jackets of jacketed vessels, or shells of heat exchangers.

6. Shell: SA285 Gr C 3/8" 1/16" 2' 6 1/4" 19' 11 15/16"
(mat'l. (spec. no., grade)) (nom. thickness (in.)) (corr. allow. (in.)) (dia. ID (ft. & in.)) (length (overall) (ft. & in.))
7. Seams: WLD DBL BUTT NONE 70% N/A WLD DBL BUTT NONE 3
(long. (dbl., singl.)) (RT (spot or full)) (eff. (%)) (HT temp. (°F)) (time) (girth (dbl., singl.)) (RT (spot, partial, or full)) (no. of courses)
8. Heads: (a) _____ (mat'l. (spec. no., grade)) (b) _____ (mat'l. (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)										
(b)										

If removable, bolts used (describe other fastenings): _____ (mat'l., spec. no., gr., size, no.)

9. Type of jacket: _____ Proof test: _____ If bolted, describe or sketch.
10. Jacket closure: _____ If bar, give dimensions: _____
11. MAWP: 50 at max. temp. 300 Min. temp.: _____ Hydro. test press.: 75
(psi) (°F) (when less than -20°F) (psi)

Items 12 and 13 to be completed for tube sections.

12. Tubesheets: SA240-304 31" 1 1/2" 0 WELDED
(stationary mat'l. (spec. no., gr.)) (dia. (in.) (subject to pressure)) (nom. thickness (in.)) (corr. allow. (in.)) (attachment (welded, bolted))
13. Tubes: SA249-304 3/4" 16 GA. 720 STRAIGHT
(mat'l. (spec. no., gr.)) (OD (in.)) (nom. thickness (in. or gauge)) (no.) (type (straight or U))

Items 14-17 inclusive to be completed for inner chambers of jacketed vessels or channels of heat exchangers.

14. Shell: SA240-304 3/16" 0 2' 6 5/8" 18"
(mat'l. (spec. no., gr.)) (nom. thickness (in.)) (corr. allow. (in.)) (dia. ID (ft. & in.)) (length (overall) (ft. & in.))
15. Seams: WLD DBL BUTT NONE 70% N/A WLD DBL BUTT NONE 2
(long. (dbl., singl.)) (RT (spot or full)) (eff. (%)) (HT temp. (°F)) (time) (girth (dbl., singl.)) (RT (spot, partial, or full)) (no. of courses)
16. Heads: (a) SA515 Gr 70 (mat'l. (spec. no., grade)) (b) _____ (mat'l. (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)	ENDS	1 3/4" NOM.	0						37 1/2"	0.D.
(b)										

If removable, bolts used (describe other fastenings): SA193 B7 - 1 1/8" - 40 (mat'l., spec. no., gr., size, no.)

17. MAWP: 120/130 at max. temp. 250 Min. temp.: _____ Hydro. test press.: 180
(psi) (°F) (when less than -20°F) (psi)

Items on reverse side to be completed for all vessels where applicable.

This form may be obtained from The National Board of Boiler and Pressure Vessel Inspectors, 1055 Crupper Ave., Col's., OH 43229

FORM U-1 (back)

18. Nozzles, inspection and safety valve openings:

Purpose (inlet, outlet, drain, etc.)	Number	Dia. or Size	Type	Mat'l.	Nom. Thickness	Reinforcement Material	How Attached	Location
OUTLET	1	16"	FLANGED	SA516 Gr 70	.375		WELDED	SHELL
IN, OUTLET	2	6"	FLANGED	SA312 TP304	.280		WELDED	SHELL
OUTLET	2	4"	FLANGED	SA106 Gr B	.237		WELDED	SHELL
IN, OUTLET	2	1"	FLANGED	SA106 Gr B	.133		WELDED	SHELL
OUTLET	2	1 1/2"	COUPLING	SA105	3000#		WELDED	NOZZLE
OUTLET	2	3/4"	COUPLING	SA105	3000#		WELDED	NOZZLE
OUTLET	2	3/4"	COUPLING	SA105	3000#		WELDED	EXPANSION JOINT

19. Supports: Skirt NO Lugs 0 Legs 0 Other 2-SADDLES Attached WELDED TO SHELL
(yes or no) (no.) (no.) (describe) (where and how)

20. Remarks: Manufacturers' Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report: _____
(name of part, item number, mfr's. name and identifying stamp)

UG46(a)-OVERALL LENGTH OF SHELL SIDE INCLUDES EXPANSION JOINT WHICH CONSIST OF (2) FLANGED & FLUED HEADS - SA285 Gr C - PROOF TESTED PER UG 101(1).

THE FOLLOWING IDENTIFICATION IS SCRIBED WITHIN 8" OF THE CODE NAMEPLATE: NB 18660 G.C.

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. 11254 expires 1 - 31, 19 90

Date 6/5/87 Name GASTON COUNTY DYE MACH. CO.
(manufacturer)

Signed Bobby B. Shelton
(representative)

CERTIFICATE OF SHOP INSPECTION

Vessel constructed by GASTON COUNTY DYEING MACHINE CO. at MT. HOLLY, NC

I, the undersigned, holding a valid commission issued by The National Board of Boiler and Pressure Vessel Inspectors and the state or province of NORTH CAROLINA and employed by DEPARTMENT OF LABOR

of N.C. have inspected the pressure vessel described in this Manufacturers' Data Report on 6 - 5, 19 76 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 the Manufacturers' 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. OHIO COMM. - PA WC 1962

Date 6/5/87 Signed John Ward Commissions NC 722 NB 6072
(Authorized Inspector) (Nat'l. Bd. (incl. endorsements) state, prov. and no.)

CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE

We certify that the field assembly construction of all parts of this vessel conforms with the requirements of Section VIII, Division 1 of the ASME BOILER AND PRESSURE VESSEL CODE.

"U" Certificate of Authorization no. _____ expires _____, 19 _____

Date _____ Name _____ Signed _____
(assembler that certified and constructed field assembly) (by representative)

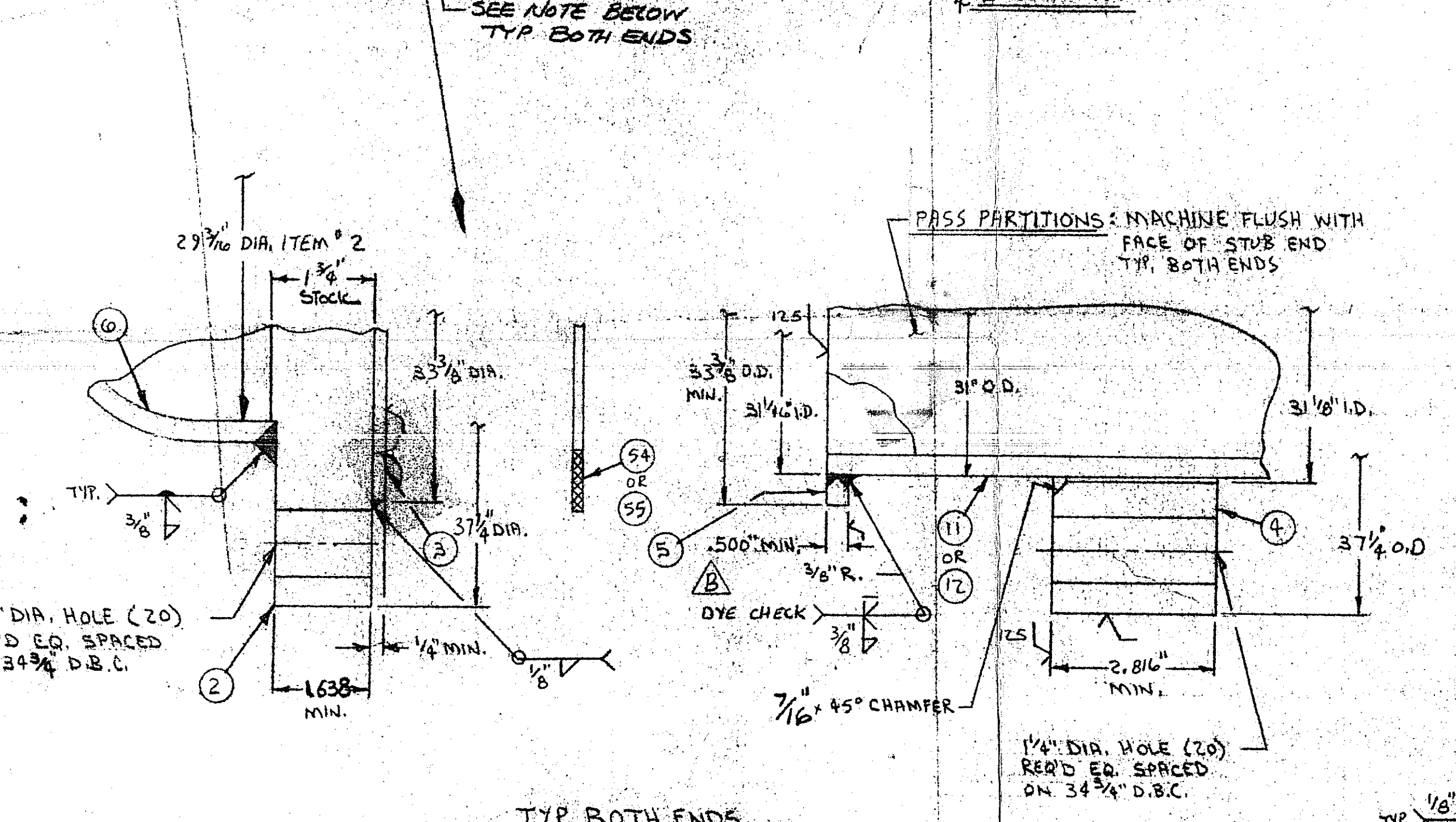
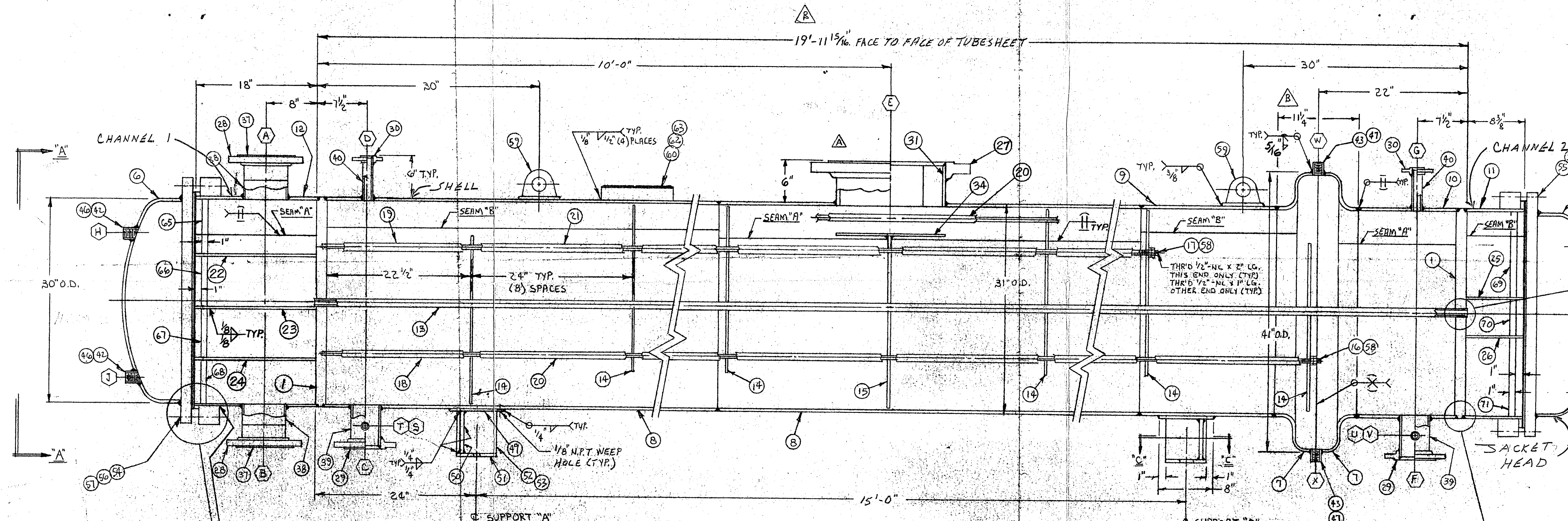
CERTIFICATE OF FIELD ASSEMBLY INSPECTION

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 _____

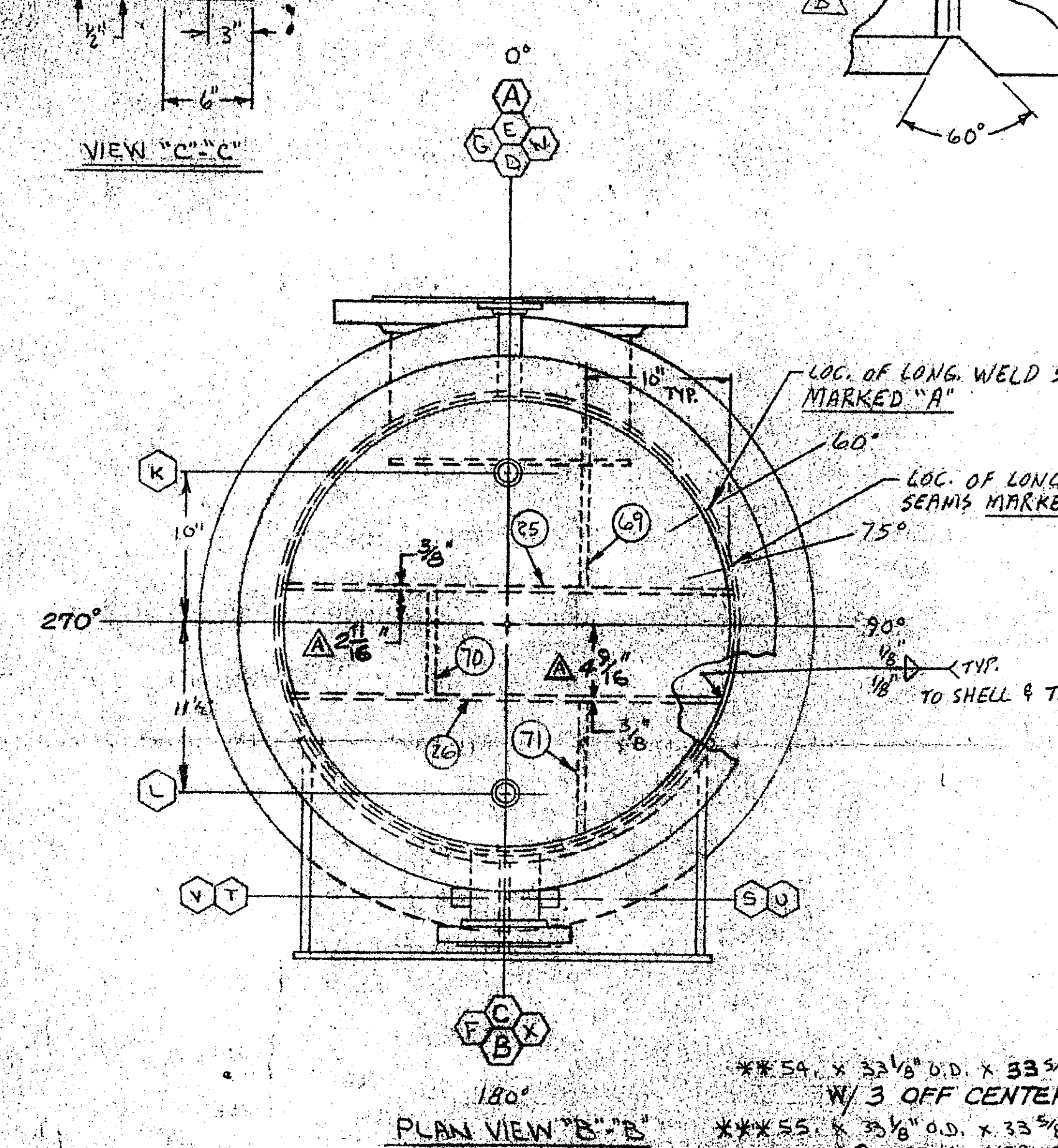
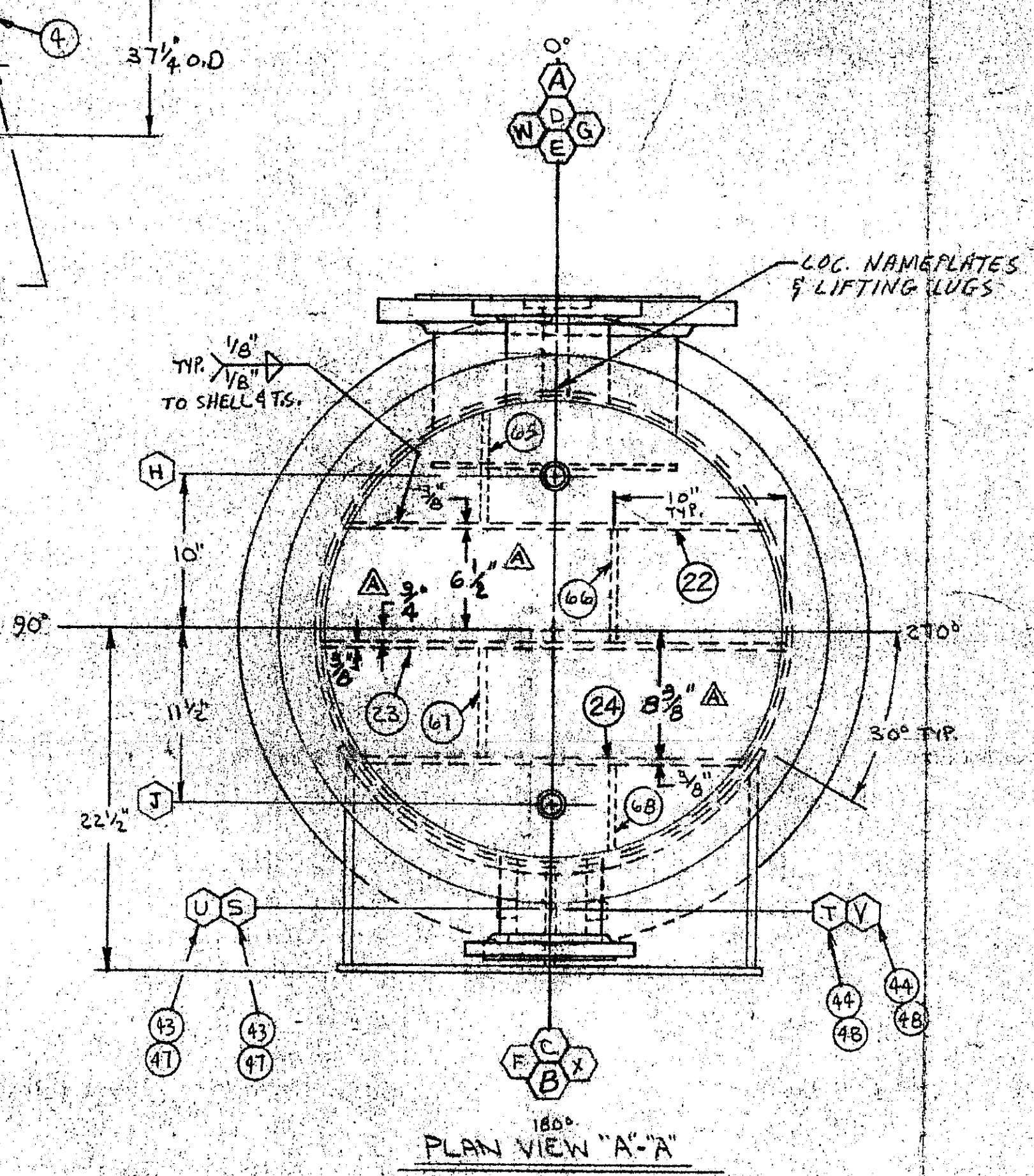
of _____ have compared the statements in this Manufacturers' Data Report with the described pressure vessel and state that parts referred to as data items _____, not included in the certificate of shop inspection, have been inspected by me and that to the best of my knowledge and belief, the manufacturer 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 the Manufacturers' 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 _____ Commissions _____
(Authorized Inspector) (Nat'l. Bd. (incl. endorsements) state, prov. and no.)



ELEVATION VIEW
SEE PLAN VIEW FOR TRUE ORIENTATION



NO.	QTY.	SIZE	RATING	TYPE	NOZZLE SCHEDULE
X	1	3/4"	3000*	CPUG	DRAIN
W	1	1/2"	3000*	CPUG	VENT
Y	1	1/2"	3000*	CPUG	PRESS. GAUGE
U	1	3/4"	3000*	CPUG	THERMO
T	1	1/2"	3000*	CPUG	PRESS. GAUGE
S	1	3/4"	3000*	CPUG	THERMO
L	1	1"	3000*	CPUG	WATER OUT
K	1	1"	3000*	CPUG	WATER IN
J	1	1"	3000*	CPUG	WATER OUT
H	1	1"	3000*	CPUG	WATER IN
G	1	1"	150*	S.O.	VENT
F	1	4"	150*	S.O.	COND. OUT
E	1	16"	150*	S.O.	STEAM INLET
D	1	1"	150*	S.O.	VENT
C	1	4"	150*	S.O.	COND. OUT
B	1	6"	150*	L.T.	CHANN.
A	1	6"	150*	L.T.	CHANN.

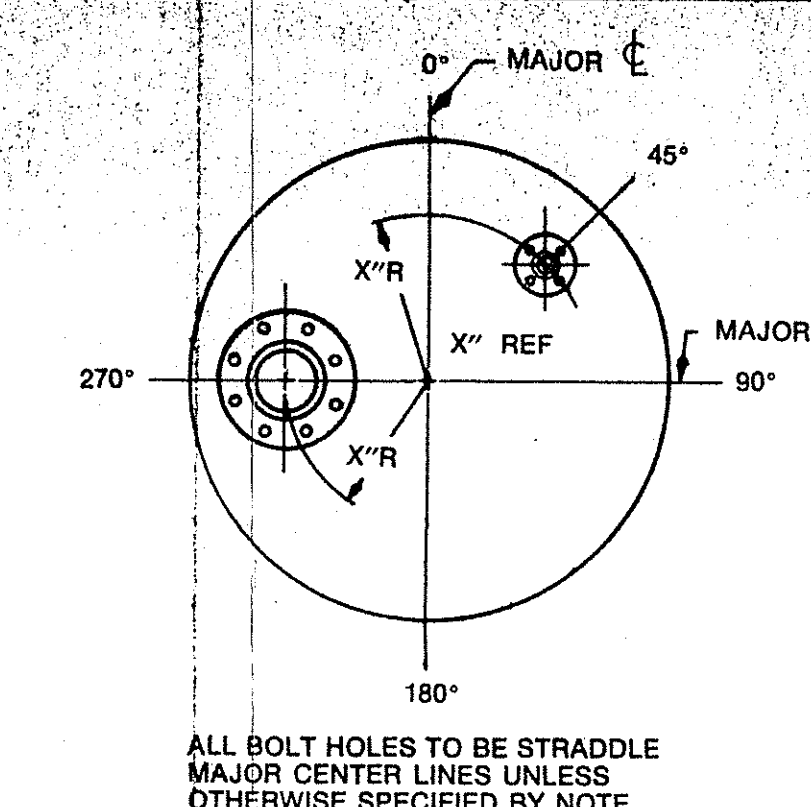
FABRICATION DIVISION NAMEPLATE	
Serial No.	F-734711-187-1
Size	2800 FT
Customer	P.O. No. P-55512
Item No.	E-4511-2

ASME CODE SPECIFICATION	
Date	2-24-87
Shell Design	50 PSI @ 300*
Tube Design	120 PSI @ 250*
Material	SA-285-C CS
Material	SA-240 304
Hydrostatic Test Pressure	7.2 PSI (WELD & MTS)
Hydrostatic Test Pressure	180 PSI (WELD & MTS)

TUBE SIDE	
Tube Side or Wye	120 PSI @ 250*
Design	120 PSI @ 250*
Material	SA-240 304
Hydrostatic Test Pressure	180 PSI (WELD & MTS)

Drawn by	MOODY
Checked by	DATE
Approved	DATE

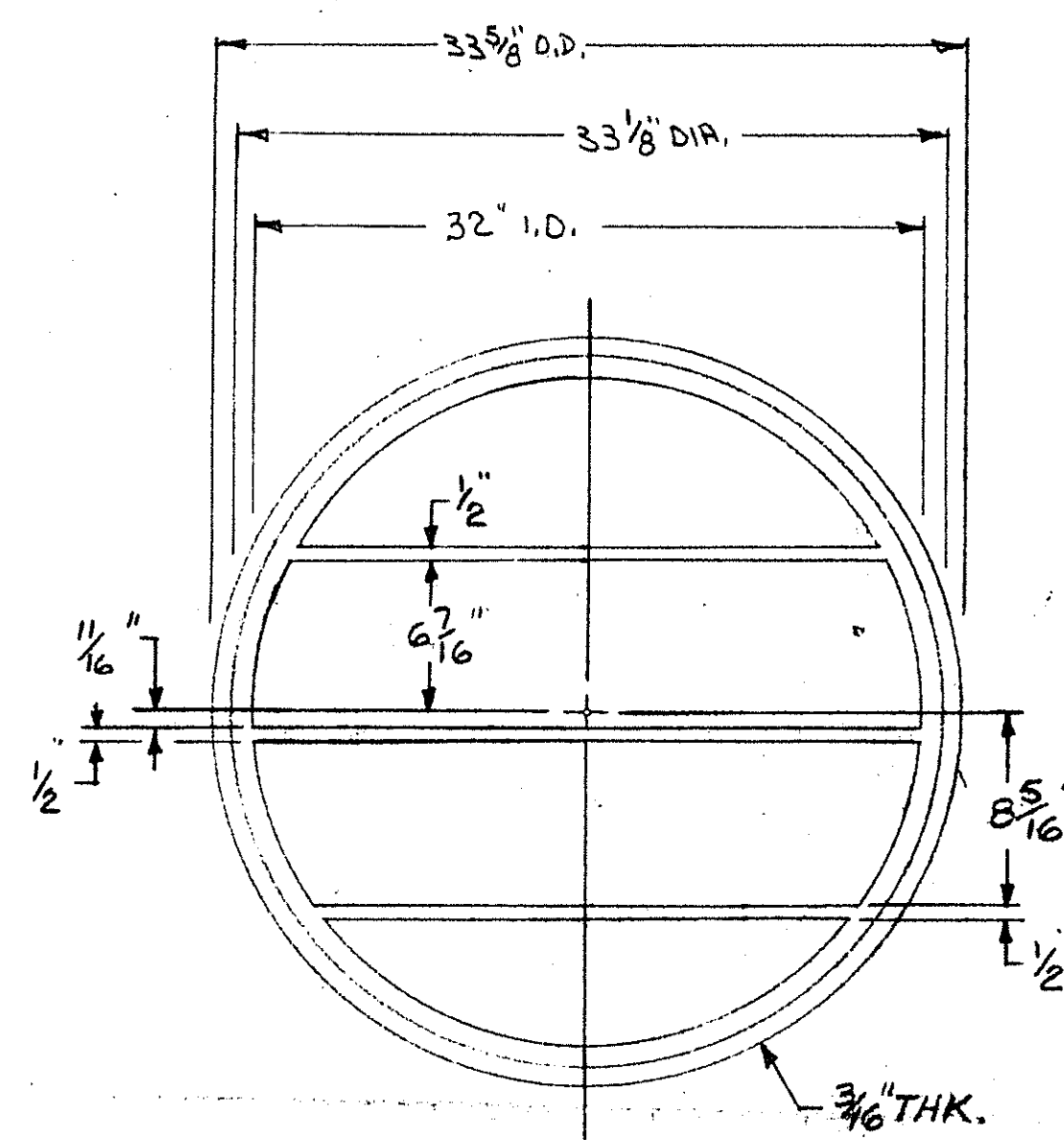
GASTON COUNTY FABRICATION	
Customer	CAPE INDUSTRIES
Customer P.O. No.	P-55512
Customer Item No.	E-4511-2R
Shop Order No.	F-734711
No. Required	ONE
Scale	6" = 1'-0"
No.	EF-0166



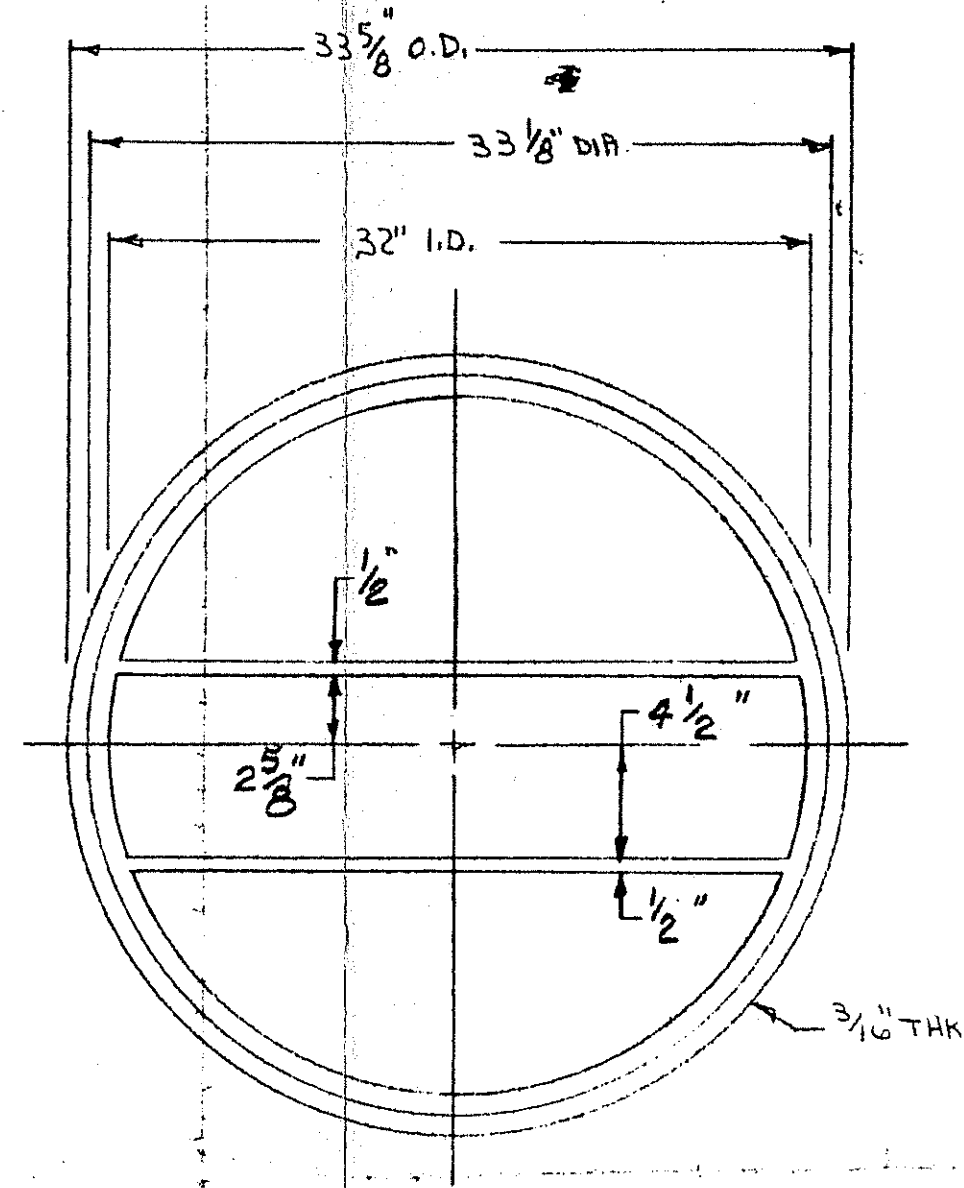
- NOTES:
- WELD ALL FLANGES WITH BOLT HOLES STRADDLE MAJOR CENTER LINE UNLESS OTHERWISE NOTED.
 - ALL NOZZLES TO BE COVERED PRIOR TO SHIPPING VESSEL.
 - THIS VESSEL DESIGNED FOR NON LETHAL SERVICE.
 - 1/2" NPT WEEP HOLES TO BE LOCATED AT THE LOWEST POINT WHERE INDICATED.
 - APPROXIMATE SHIPPING WEIGHT EMPTY. 21,050 LBS.
 - APPROXIMATE WEIGHT FULL OF WATER. 27,575 LBS.
 - CORROSION ALLOWANCE = 1/16" SHELL SIDE, 0" TUBE SIDE.
 - FURNISH CUSTOMER WITH 2 SETS OF MILL TEST REPORTS.
 - REMOVE ALL BURRS, WELD, SLAG, GREASE AND BREAK SHARP EDGES.
 - PROTECT GASKET SURFACES AND POLISHED MATERIAL SURFACES AT ALL TIMES.
 - BEFORE BLAST ALL EXTERIOR CARBON STEEL SURFACES AND APPLY (1) COAT OF CARBOLINE CARBOZING C-711, 3 MIL. MIN., 5 MIL. MAX. DFT.
 - IN A CONSPICUOUS LOCATION ON SHELL STENCIL IN 3" HIGH CHARACTERS, EQUIP. NO. E-4511-2R.
 - ALL CPUGS ARE HALF CPUGS, 3000* THR'D.
 - APPLY (2) COATS OF DRAINAGE THURMALOX TO BLACK MIN. 1.5 MIL. DFT. TO ALL EXTERIOR STAINLESS STEEL SURFACES THAT HAVE BEEN CLEANED OF ALL DUST, DIRT, WELD SPATTER, GREASE, ETC.

- SEQUENCE OF OPERATION
- Strength weld tube to tubesheet.
 - Remove excess roll over from id. of tube.
 - Hydrostatic test shell side - check for leaks.
 - Weld tubes to tubesheet. No expansion of tubes shall be performed within 1/8" of weld fusion zone or 1/8" of inner face of tubesheet, shell side.
 - Hydrostatic test shell side, hold for 2 hours - check for leaks.
 - Dye check all tubes.

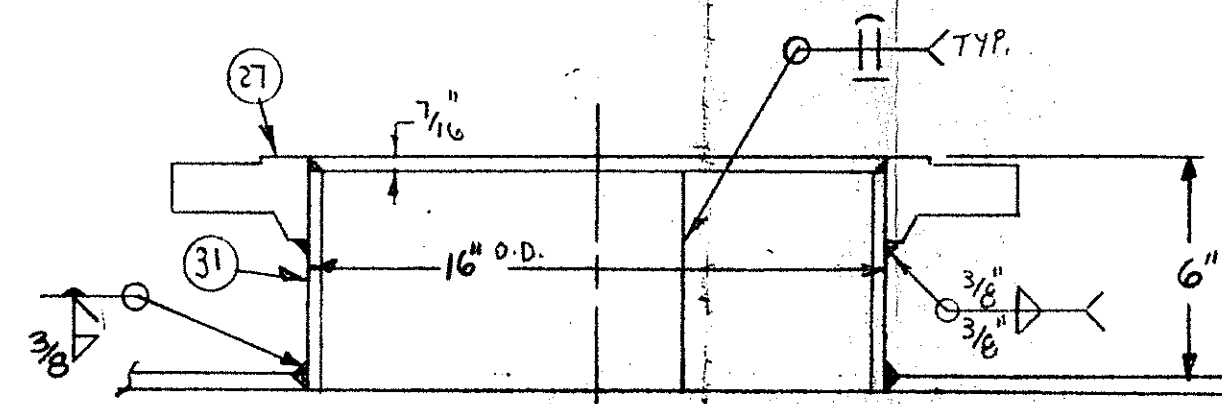
ITEM NO.	QTY.	DESCRIPTION	MATERIAL	DWG. NO./PART NO.
71	1	PLATE, 3/8" THK. X 1" X 9 3/4" LG.	SA-240 304	6600010
72	1	PLATE, 3/8" THK. X 1" X 7 3/4" LG.	SA-240 304	6600011
73	1	PLATE, 3/8" THK. X 1" X 7 3/4" LG.	SA-240 304	6600012
74	1	PLATE, 3/8" THK. X 1" X 7 3/4" LG.	SA-240 304	6600013
75	1	PLATE, 3/8" THK. X 1" X 7 3/4" LG.	SA-240 304	6600014
76	1	PLATE, 3/8" THK. X 1" X 7 3/4" LG.	SA-240 304	6600015
77	1	PLATE, 3/8" THK. X 1" X 7 3/4" LG.	SA-240 304	6600016
78	1	PLATE, 3/8" THK. X 1" X 7 3/4" LG.	SA-240 304	6600017
79	1	PLATE, 3/8" THK. X 1" X 7 3/4" LG.	SA-240 304	6600018
80	1	PLATE, 3/8" THK. X 1" X 7 3/4" LG.	SA-240 304	6600019
81	1	NAMEPLATE, FAB. DIN.	SA-240 304	6600020
82	1	NAMEPLATE, ASME CODE	SA-240 304	6600021
83	1	BRACKET, NAMEPLATE	SA-240 304	6600022
84	1	LIFTING LUGS	SA-240 304	6600023
85	1	LIFTING LUGS	SA-240 304	6600024
86	1	LIFTING LUGS	SA-240 304	6600025
87	1	LIFTING LUGS	SA-240 304	6600026
88	1	LIFTING LUGS	SA-240 304	6600027
89	1	LIFTING LUGS	SA-240 304	6600028
90	1	LIFTING LUGS	SA-240 304	6600029
91	1	LIFTING LUGS	SA-240 304	6600030
92	1	LIFTING LUGS	SA-240 304	6600031
93	1	LIFTING LUGS	SA-240 304	6600032
94	1	LIFTING LUGS	SA-240 304	6600033
95	1	LIFTING LUGS	SA-240 304	6600034
96	1	LIFTING LUGS	SA-240 304	6600035
97	1	LIFTING LUGS	SA-240 304	6600036
98	1	LIFTING LUGS	SA-240 304	6600037
99	1	LIFTING LUGS	SA-240 304	6600038
100	1	LIFTING LUGS	SA-240 304	6600039



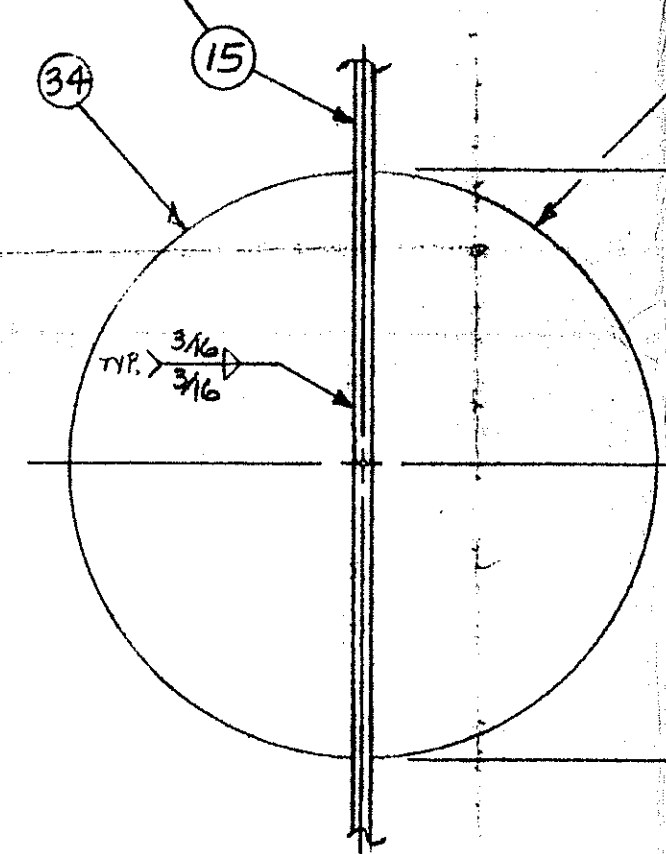
(54) GASKET
(1) REQ'D
SCALE: NONE



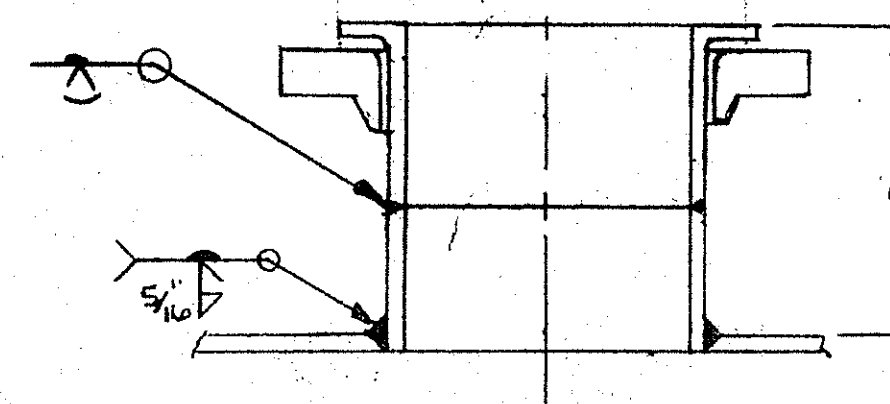
(55) GASKET
(2) REQ'D
SCALE: NONE



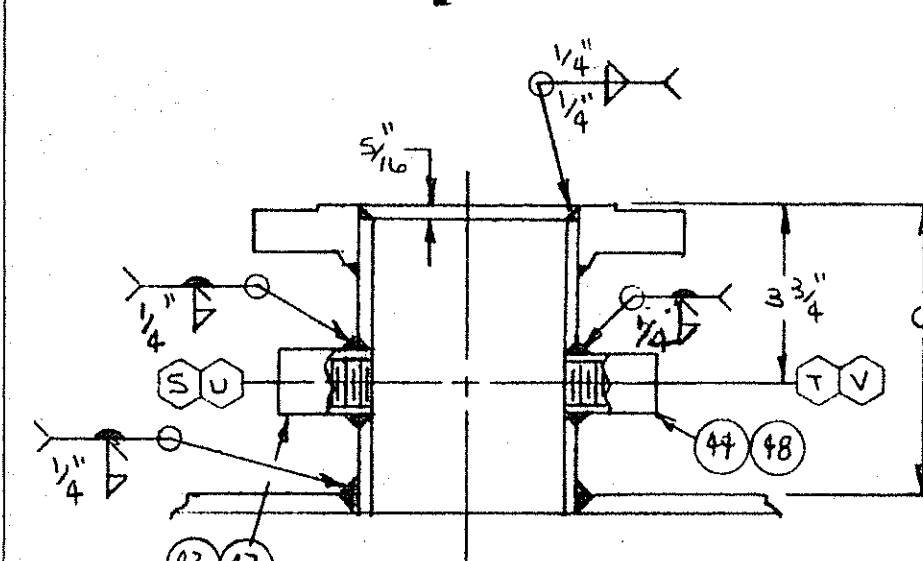
TUBE SUPP. PLT.



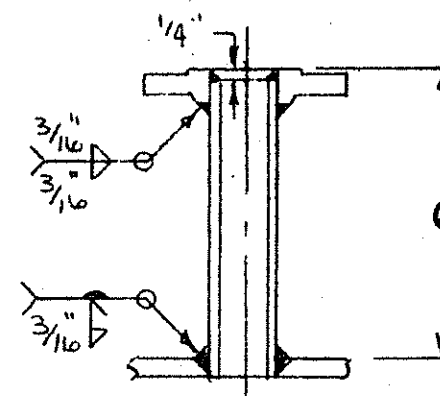
DETAIL NOZZ. "E"



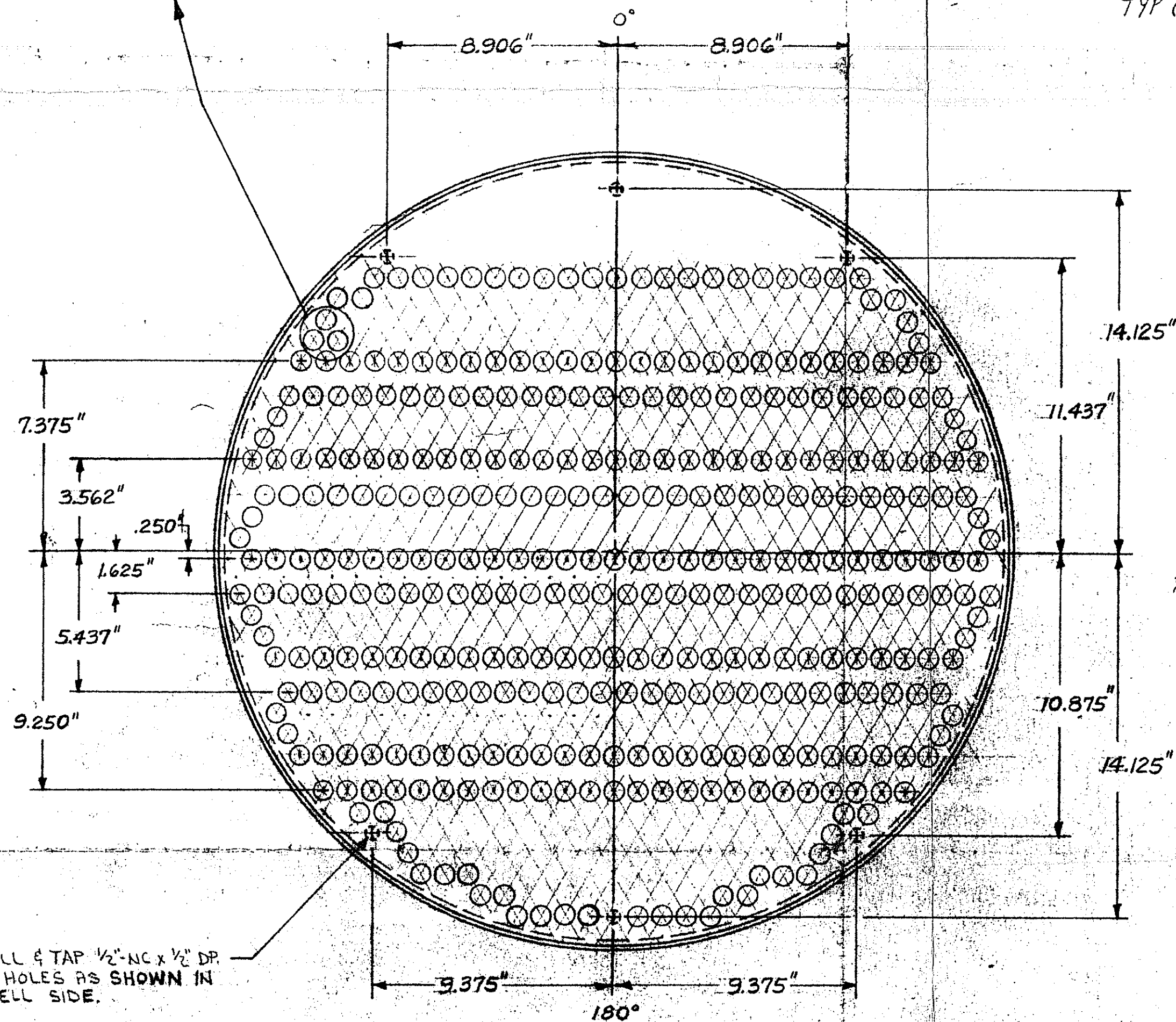
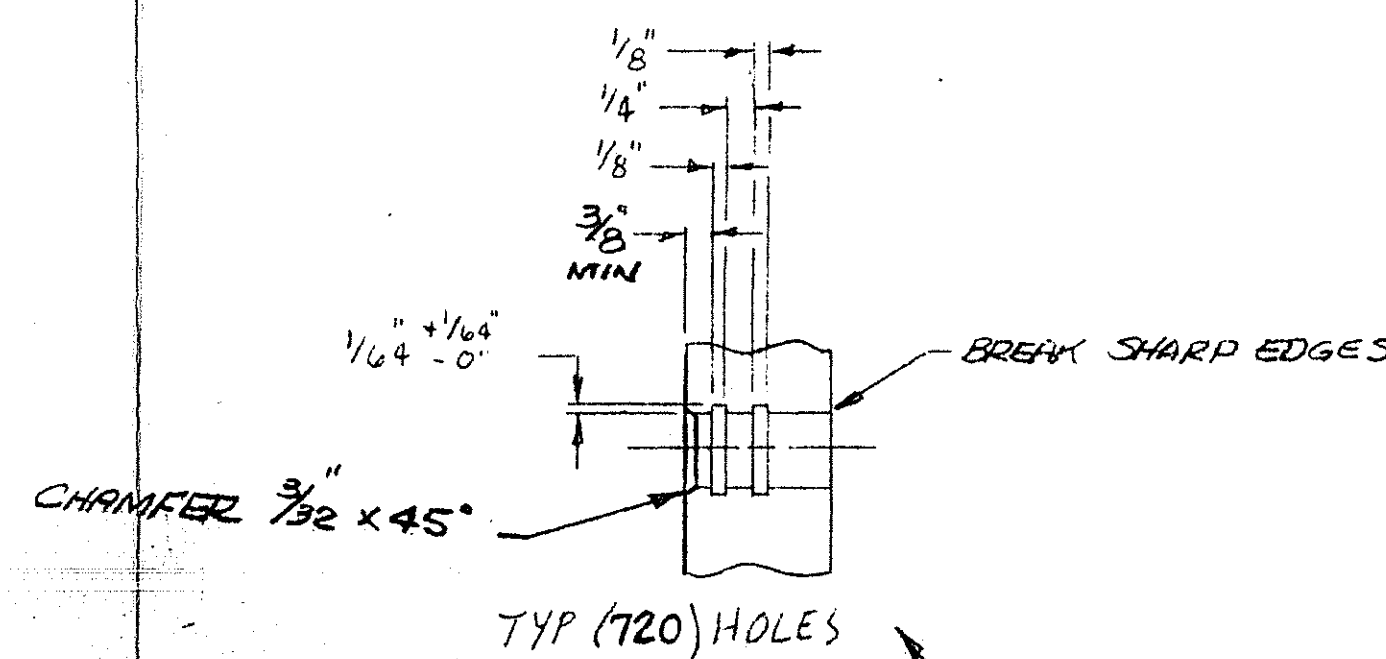
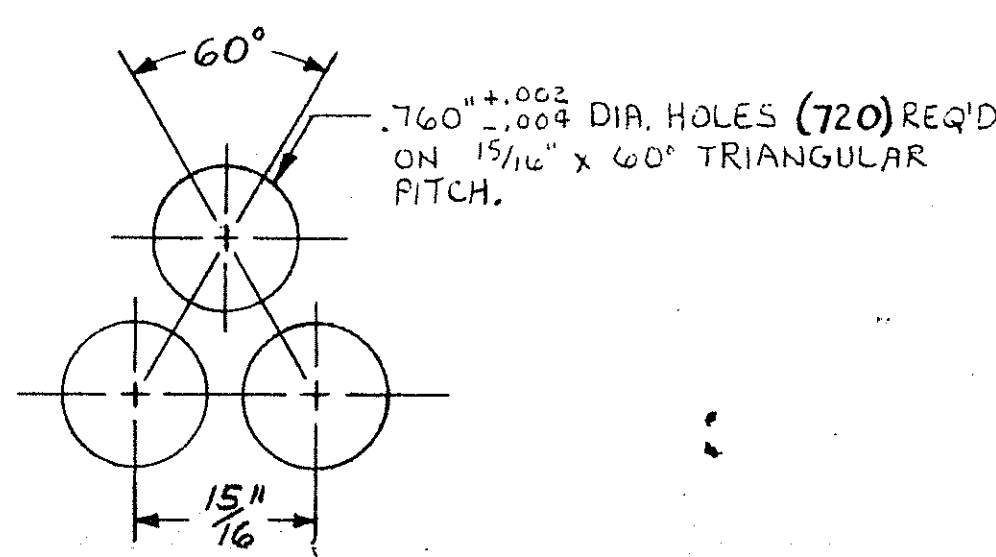
DETAIL NOZZ. "A" & "B"



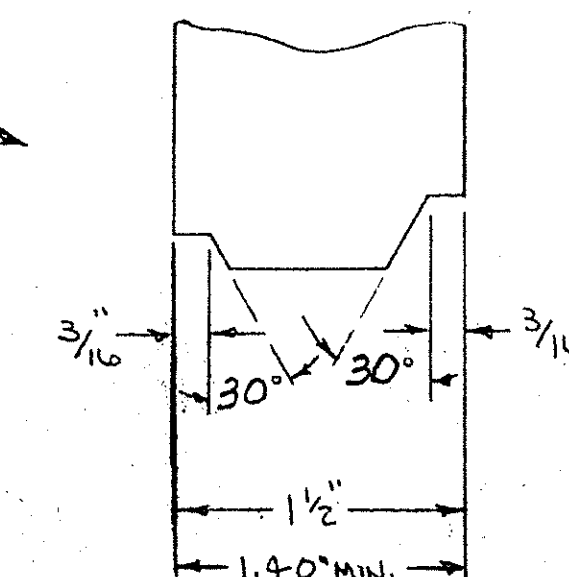
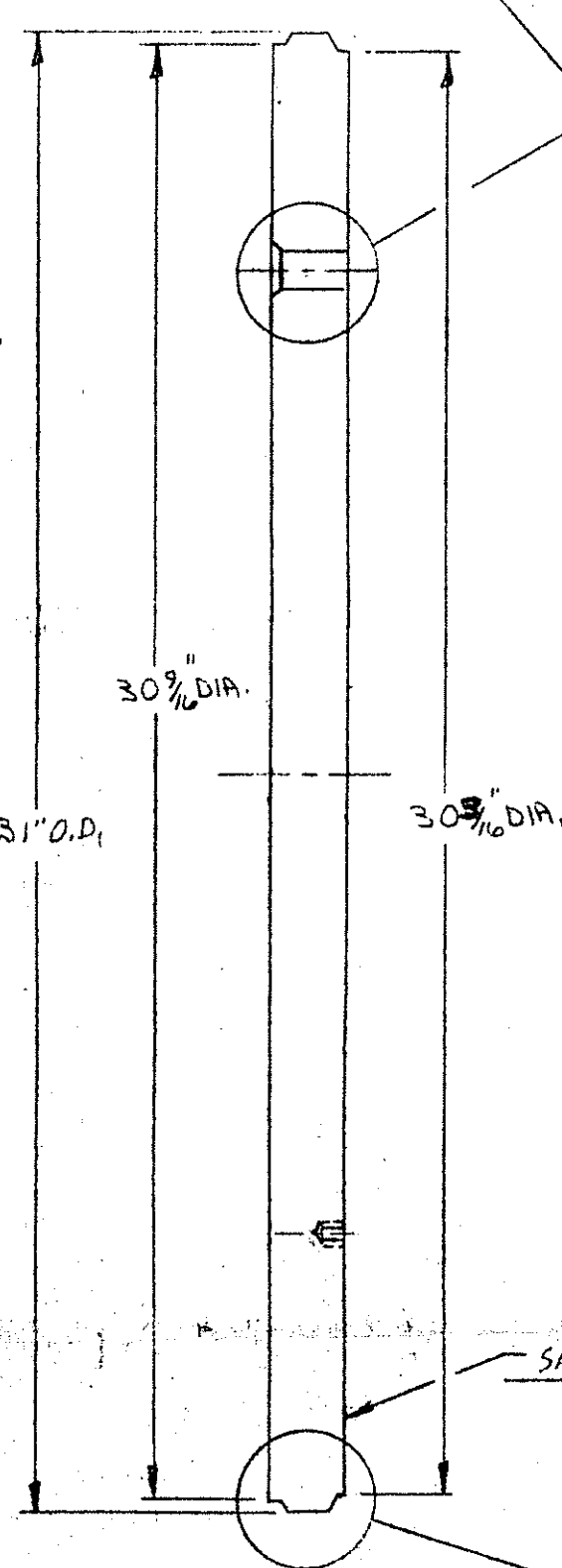
DETAIL NOZZ. "C" & "F"



DETAIL NOZZ. "D" & "G"

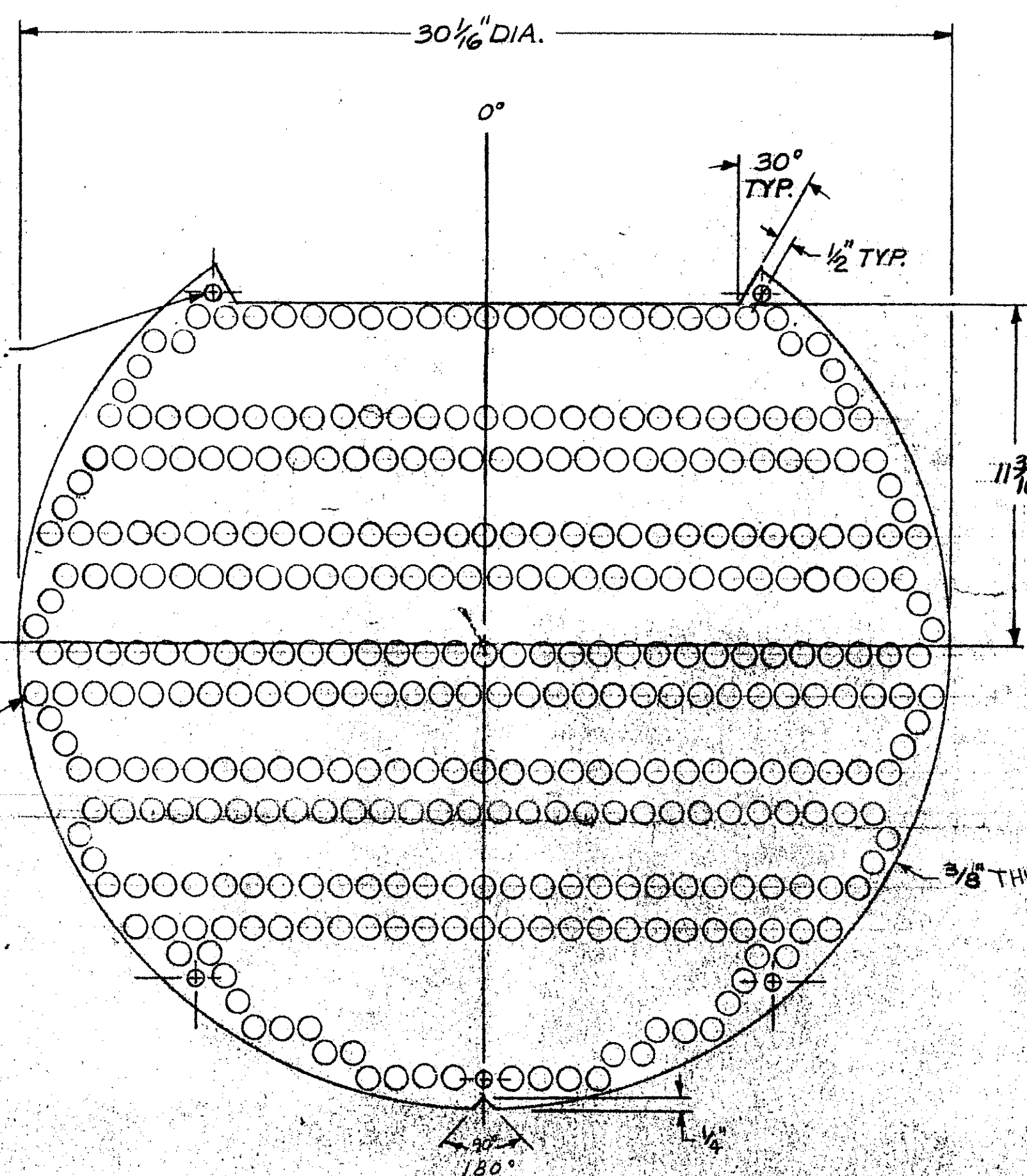


(1) TUBESHEET
(1) REQ'D WITH TAPPED HOLES
(1) REQ'D WITHOUT TAPPED HOLES
SCALE: 3\"/>

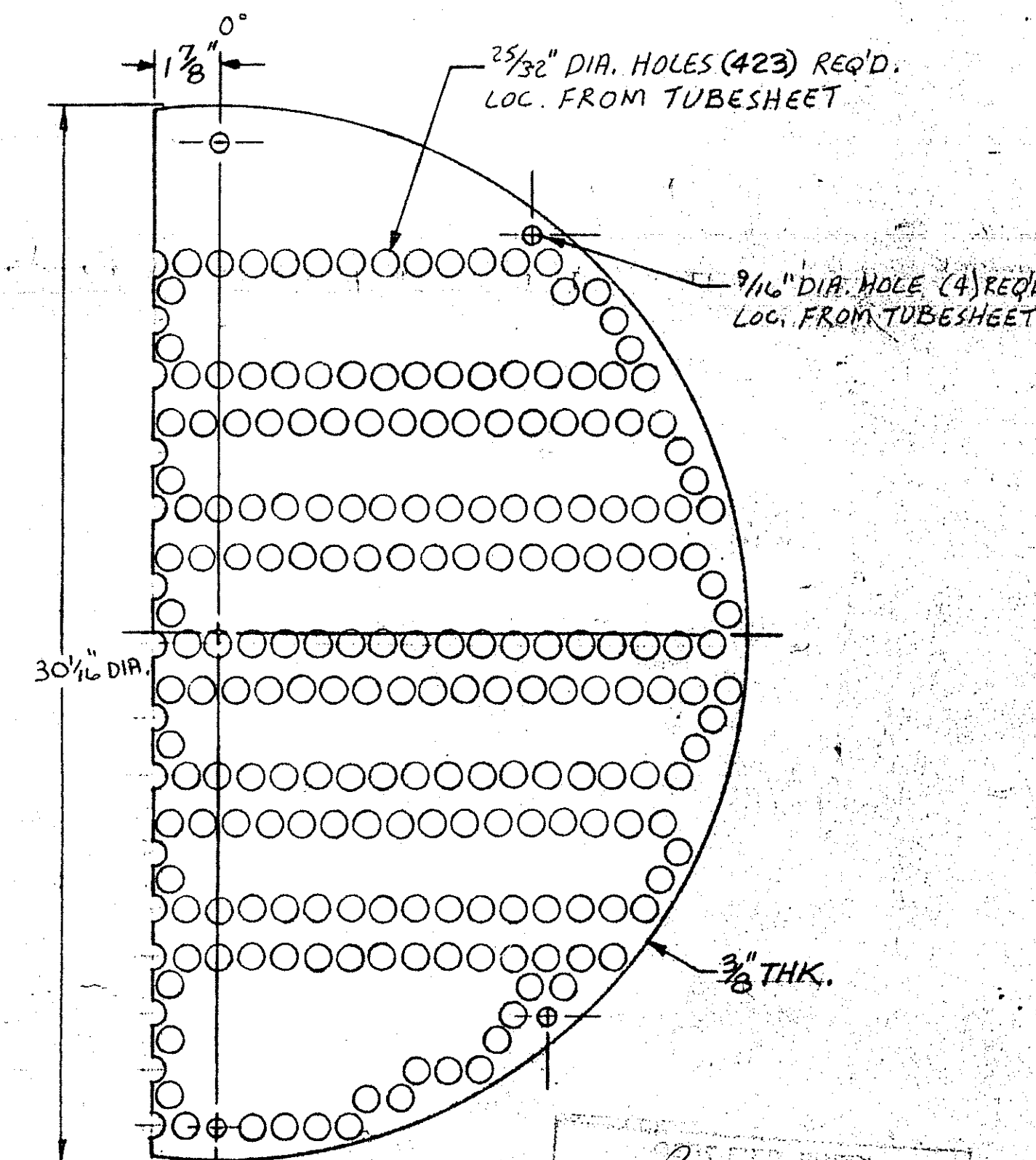


9/16\"/>

25/32\"/>



(15) TUBE SUPPORT PLATE
(1) REQ'D
SCALE: 3\"/>



(14) BAFFLE
(1) REQ'D
SCALE: 1/2\"/>

Robert McGehee
2-25-87

NO.	QTY.	SIZE	RATING	TYPE	SCH.	SERVICE/DESCRIPTION	GROUP	DATE
NOZZLE SCHEDULE								

FABRICATION DIVISION NAMEPLATE

Serial No. _____
Size _____ Material _____
Customer No. _____

ASME CODE SPECIFICATION

Date _____ Approval _____
SHELL DESIGN _____ PSI @ _____ °F DESIGN _____ PSI @ _____ °F
X-RAY _____ MATERIAL _____ X-RAY _____ MATERIAL _____
VACUUM _____ INCHES HG @ _____ °F VACUUM _____ INCHES HG @ _____ °F
HYDROSTATIC TEST PRESSURE _____ HYDROSTATIC TEST PRESSURE _____

REVISION	DATE	BY	CHECKED	APPROVED
G				
F				
E				
D				
C				
B				
A	2-24-87	10m		
CODE				

DRAWN BY: MOON
CHECKED BY: [Signature]
APPROVED BY: [Signature]
DATE: 2-24-87

GASTON COUNTY FABRICATION
A DIVISION OF GASTON COUNTY DYING MACHINE COMPANY
STANLEY, NORTH CAROLINA 28154-4705

CAPE INDUSTRIES
WILMINGTON, N.C. #104325
CUSTOMER P.O. NO. P-55512 CUSTOMER ITEM NO. E-4511-2R
DETAILS
SHOP ORDER NO. F-13671 NO. REQUIRED ONE SHEET 2 OF 2
SCALE NOTED & NONE No. EF-0166 REV. 5