

FORM U-1 MANUFACTURERS' DATA REPORT FOR UNFIRED PRESSURE VESSELS

1. Manufactured by ENGINEERS & F RICATORS, INC. HOUSTON, TEXA

2. Manufactured for C. F. Braun & Company Alhambra, California
(Name and address of Purchaser)

3. Type Horiz Kind Ht Exch Vessel No. (S-13854) (Mfrs.' Serial) (State & State No.) Nat'l Bd. No. _____ Yr. Built 1966

Items 4-9 incl. to be completed for single wall vessels (such as air tanks), jackets of jacketed vessels, or shells of heat exchangers.

SHELL: Material SA-240-T304 T.S. 75,000 Nominal Thickness 1/16 in. Corrosion Allowance 0 in. Diam. 2 ft 7-5/8 in. Length 19 ft 8 in.
(Kind & Spec. No.) (Fig. or F.B. & lowest T.S.)

4A. SHELL COVER: Matl. _____ T.S. _____ Nominal Thickness _____ in. Corrosion Allowance _____ in. Diam. _____ ft. _____ in. Length _____ ft. _____ in.
(Kind & Spec. No.) (Fig. or F.B. & lowest T.S.)

5. SEAMS: Long Dbl Butt S.R. No X.R. Spot Sectioned No Efficiency 85 %
(Welded, Dbl., Single, Lap, Butt) (Yes or No) (Spot or Complete) (Yes or No)

Girth Dbl Butt & B.U. S.R. No X.R. Spot Sectioned No No. of Courses 3

6. HEADS: (a) Material _____ T.S. _____ (b) Material _____ T.S. _____

Location (Top, bottom, ends)	Thickness	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 _____ Other fastening _____
(Material, Spec. No., T.S., Size, Number) (Describe or Attach Sketch)

7. STAYBOLTS: _____ If hollow _____ Attachment _____ Pitch _____ X _____ Diam. _____
(Material) (Size of Hole) (Threaded, Welded) (Horiz.) (Vert.) (Nominal)

8. JACKET CLOSURE: _____
(Describe as ogee & weld, bar, etc. If bar, give dimensions. If bolted, describe or sketch.)

9. Constructed for Int. Full Vac to 25 psi. Max. Temp. 400 °F. Subzero _____ °F. Hydrostatic Test 40 psi

Items 10 and 11 to be completed for tube sections.

10. TUBE SHEETS: Stationary. Material SA-240T304 Diam. 26-5/8 in. Thickness 1-7/8 in. Attachment Welded
(Kind & Spec. No.) (Subject to Pressure) (Welded, Bolted)

Floating. Material SA-240T304 Diam. 26-5/8 in. Thickness 1-7/8 in. Attachment Welded

11. TUBES: Material SA-249-T304 O.D. 1 in. Thickness #14 BWG or gage. Number 433 Type Straight
(Kind & Spec. No.) (Straight or U)

Items 12-15 incl. to be completed for inner chambers of jacketed vessels, or channels of heat exchangers.

12. CHANNEL "A" Material SA-285-C T.S. 55,000 Nominal Thickness 3/8 in. Corrosion Allowance 1/16 in. Diam. 2 ft 7-3/4 in. Length 2 ft 1/4 in.
(Kind & Spec. No.) (Fig. or F.B. & lowest T.S.)

12A CHANNEL "B" Material SA-285-C T.S. 55,000 Nominal Thickness 3/8 in. Corrosion Allowance 1/16 in. Diam. 2 ft 7-3/4 in. Length 1 ft 5 1/2 in.
(Kind & Spec. No.) (Fig. or F.B. & lowest T.S.)

13. SEAMS: Long Dbl Butt S.R. No X.R. Spot Sectioned No Efficiency 85 %
(Welded, Dbl., Single, Lap, Butt) (Yes or No) (Spot or Complete) (Yes or No)

Girth Dbl Butt & F.W. S.R. No X.R. Spot Sectioned No No. of Courses 1 each

14. HEADS: (a) Material SA-212-B T.S. 70,000 (b) Material SA-212-B T.S. 70,000 (c) Material _____ T.S. _____

Location	Thickness	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure (Convex or Concave)
(a) CHANNEL "A"	<u>3/8"</u>	-	-	<u>2:1</u>	-	-	-	<u>Concave</u>
(b) CHANNEL "B"	<u>3/8"</u>	-	-	<u>2:1</u>	-	-	-	<u>Concave</u>
(c) Floating								

If removable, bolts used (a) SA-193-B7 125,000 3/4" 28 (b) SA-193-B7 125,000 3/4" 28
(Material, Spec. No., T.S., Size, Number)

(c) _____ Other fastening _____
(Describe or Attach Sketch)

15. Constructed for Int. pressure of 75 psi. Max. Temp. 400 °F. Subzero _____ °F. Hydrostatic Test 115 psi

Items below to be completed for all vessels where applicable.

16. SAFETY VALVE OUTLETS: Number _____ Size _____ Location In Line

17. NOZZLES:

Purpose (Inlet, Outlet, Drain)	Number	Diam. or Size	Type	Material	Thickness	Reinforcement Material	How Attached
Inlet, Outlet	<u>2</u>	<u>6"</u>	<u>SO</u>	<u>SA-181-1</u>	<u>1"</u>	<u>SA-106-B</u>	<u>Welded</u>
Inlet, Outlets, Vent	<u>4</u>	<u>10", 3", 2", 3/4"</u>	<u>SO</u>	<u>SA-181-1</u>	<u>1-3/16", 15/16", 3/4", 1/2"</u>	<u>SA-312F304</u>	<u>Welded</u>
Vent, Drain	<u>2</u>	<u>1"</u>	<u>SO</u>	<u>SA-181-1</u>	<u>9/16"</u>	<u>SA-106-B</u>	<u>Welded</u>
Various	<u>1</u>	<u>2"</u>	<u>SO</u>	<u>SA-181-1</u>	<u>3/4"</u>	<u>SA-106-B</u>	<u>Welded</u>

18. INSPECTION Manholes, No. _____ Size _____ Location _____

OPENINGS: Handholes, No. _____ Size _____ Location _____

Threaded, No. _____ Size _____ Location _____

19. SUPPORTS: Skirt No Lugs _____ Legs _____ Other 2 Saddles Attached Welded to Shell
(Yes or No) (Number) (Number) (Describe) (Where & How)

20. REMARKS: ITEM: 25-HE-506 PRIMARY STRIKE CONDENSER

SHELL SIDE: Alcohol TUBE SIDE: Water

7447

We certify that the statements made in this report are correct and that all details of design, material, construction, and workmanship of this unfired pressure vessel conform to the ASME Code for Unfired Pressure Vessels.

Date 4-19-1966 Signed ENGINEERS FABRICATORS, INC. By Ralph Smith
Ralph Smith

Certificate of Authorization Expires 12-31-67

CERTIFICATE OF SHOP INSPECTION

VESSEL MADE BY ENGINEERS & FABRICATORS, INC., AT HOUSTON, TEXAS

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State of Texas and employed by Hartford Steam Boiler Inspection and Insurance Company of Hartford, Conn.

have inspected the pressure vessel described in this manufacturer's data report on 4-19-1966, and state that to the best of my knowledge and belief, the manufacturer has constructed this pressure vessel in accordance with the applicable sections of the ASME Boiler and Pressure Vessel Code.

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 4-19-1966
J. M. Westmoreland
Inspectors Signature

Commissions Texas No. 532
Nat'l Board or State and No.

75495

CERTIFICATE OF FIELD ASSEMBLY INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State of _____ and employed by _____ of _____

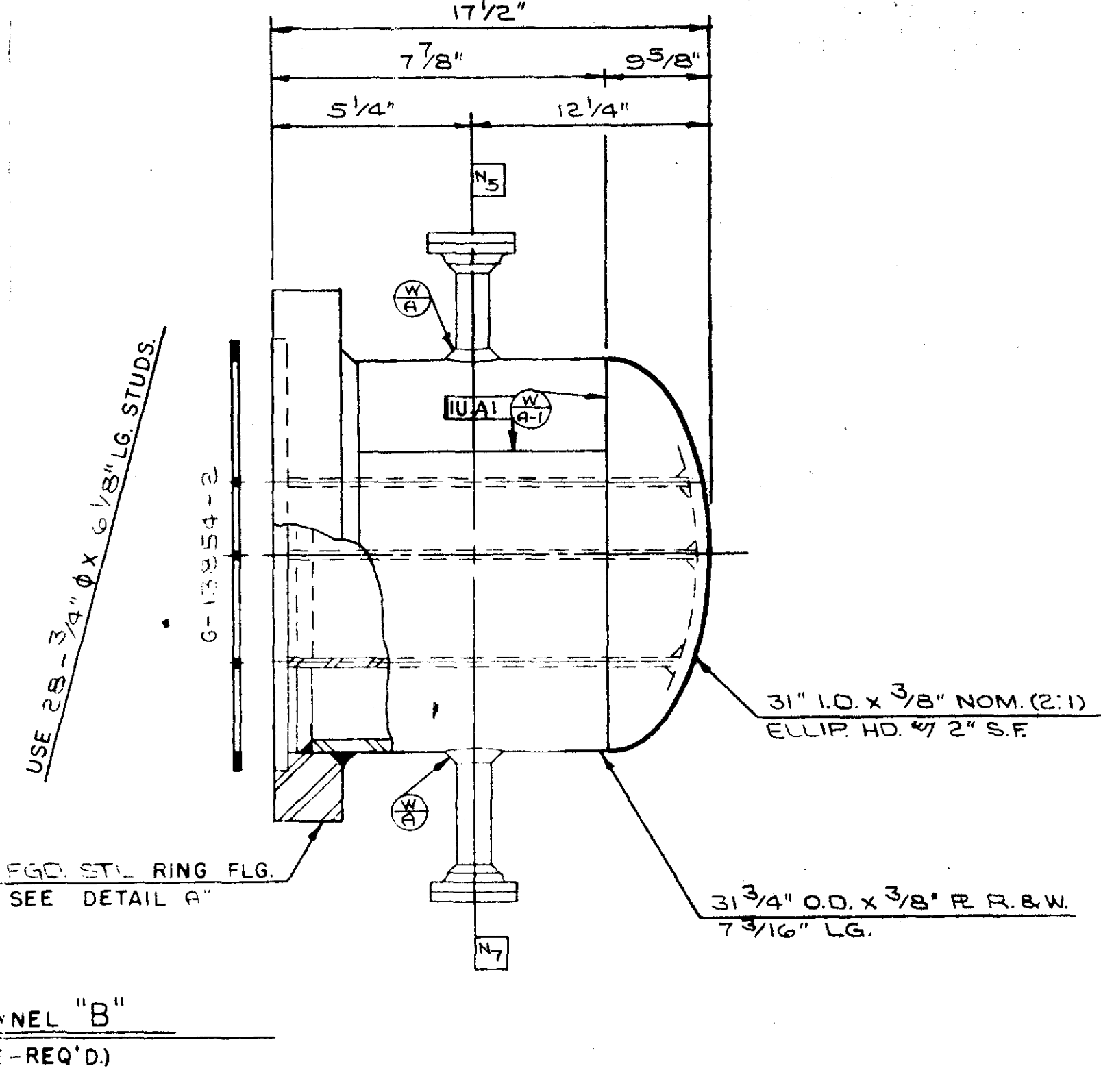
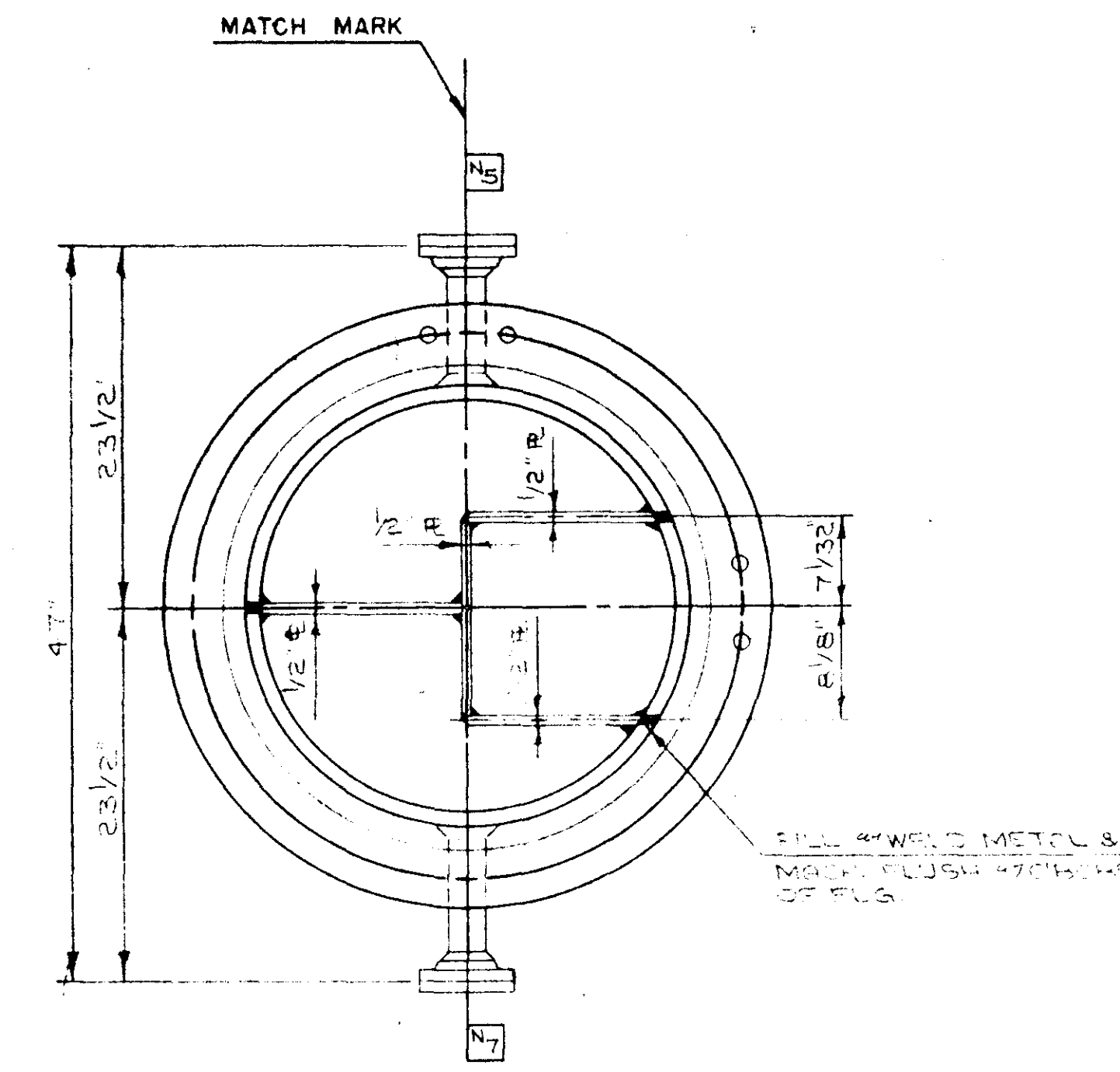
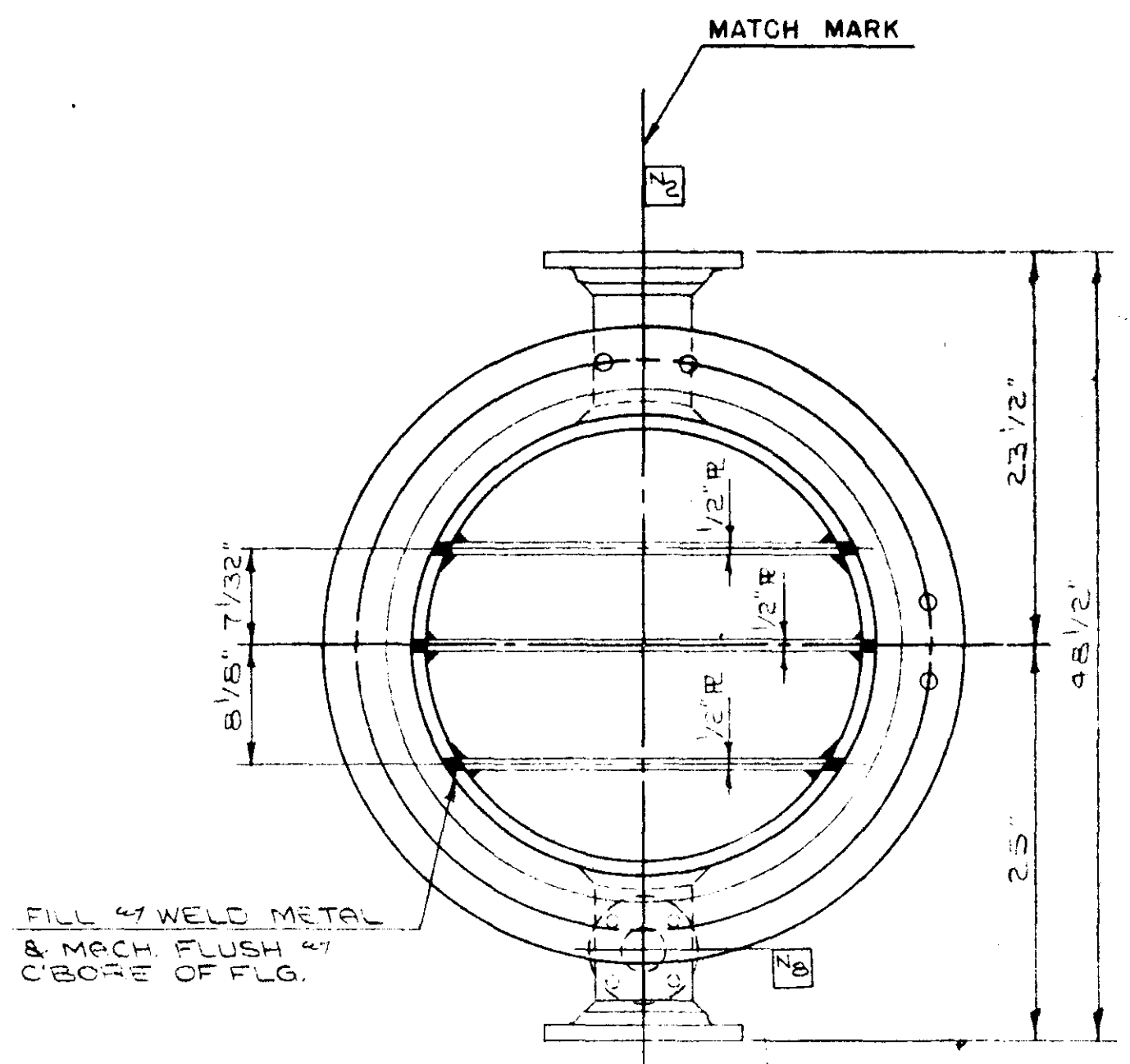
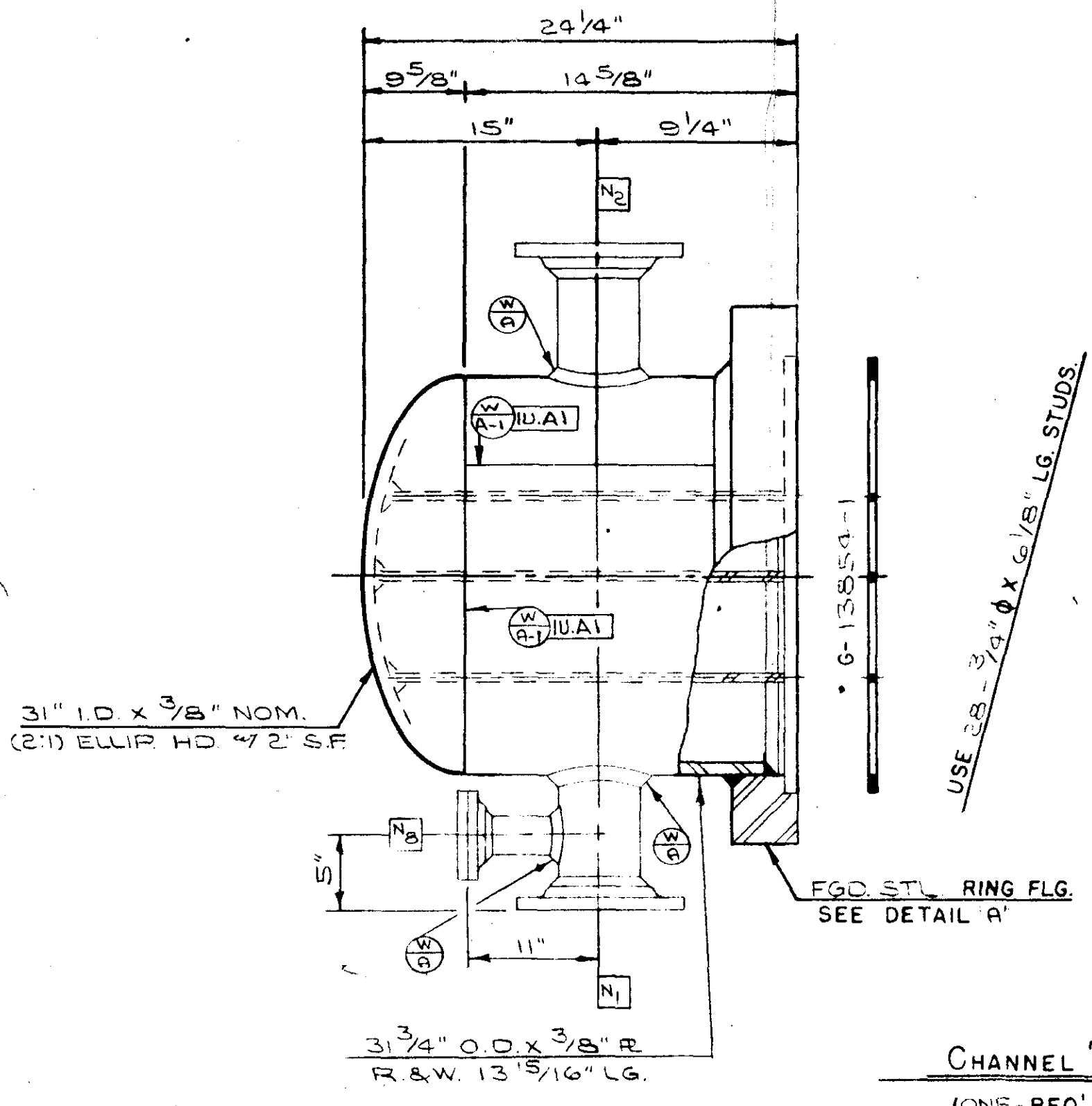
have compared the statements in this manufacturer's data report with the described pressure vessel and state that parts referred to as data items _____, not included in the certificate of shop inspection have been inspected by me and that to the best of my knowledge and belief the manufacturer has constructed and assembled this pressure vessel in accordance with the applicable sections of the ASME Boiler and Pressure Vessel Code. 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 _____ 19 _____

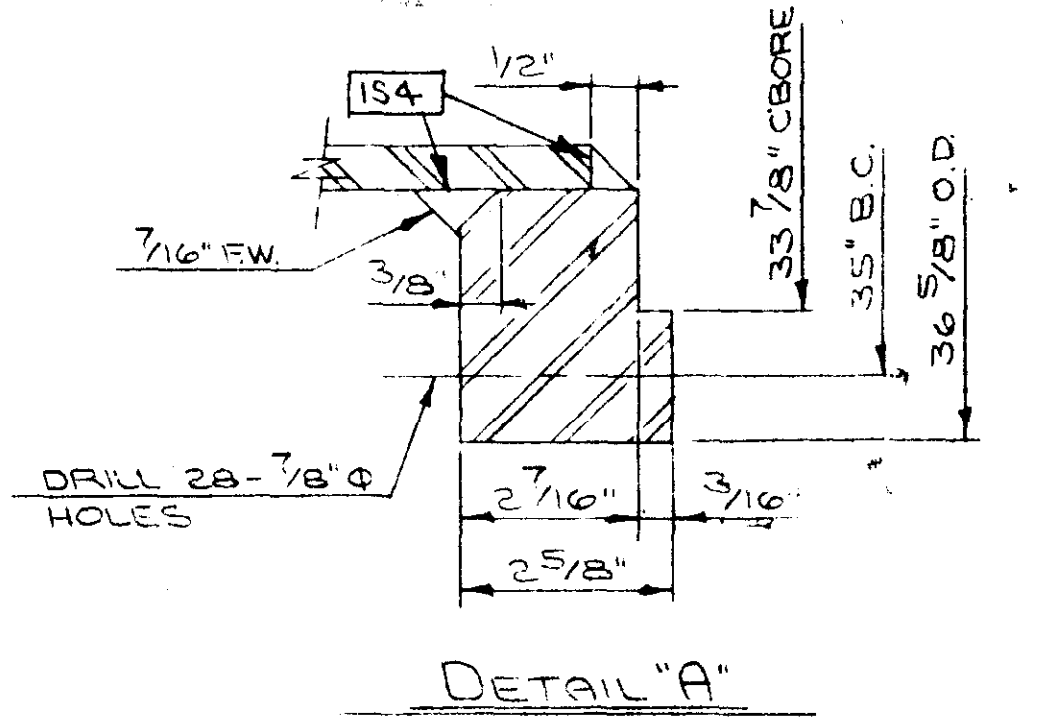
Inspectors Signature

Commissions _____
Nat'l Board or State and No.



CHANNEL "A"
(ONE-REQ'D.)

CHANNEL "B"
(ONE-REQ'D.)



FURNISH 4-5/8" Ø x 3 1/4" LG. STUDS.
472-HEX NUTS EA. & ONE 1 1/8"
O.D. x 2 1/8" I.D. x 1/16" THK. J.M.#60
GASKET.

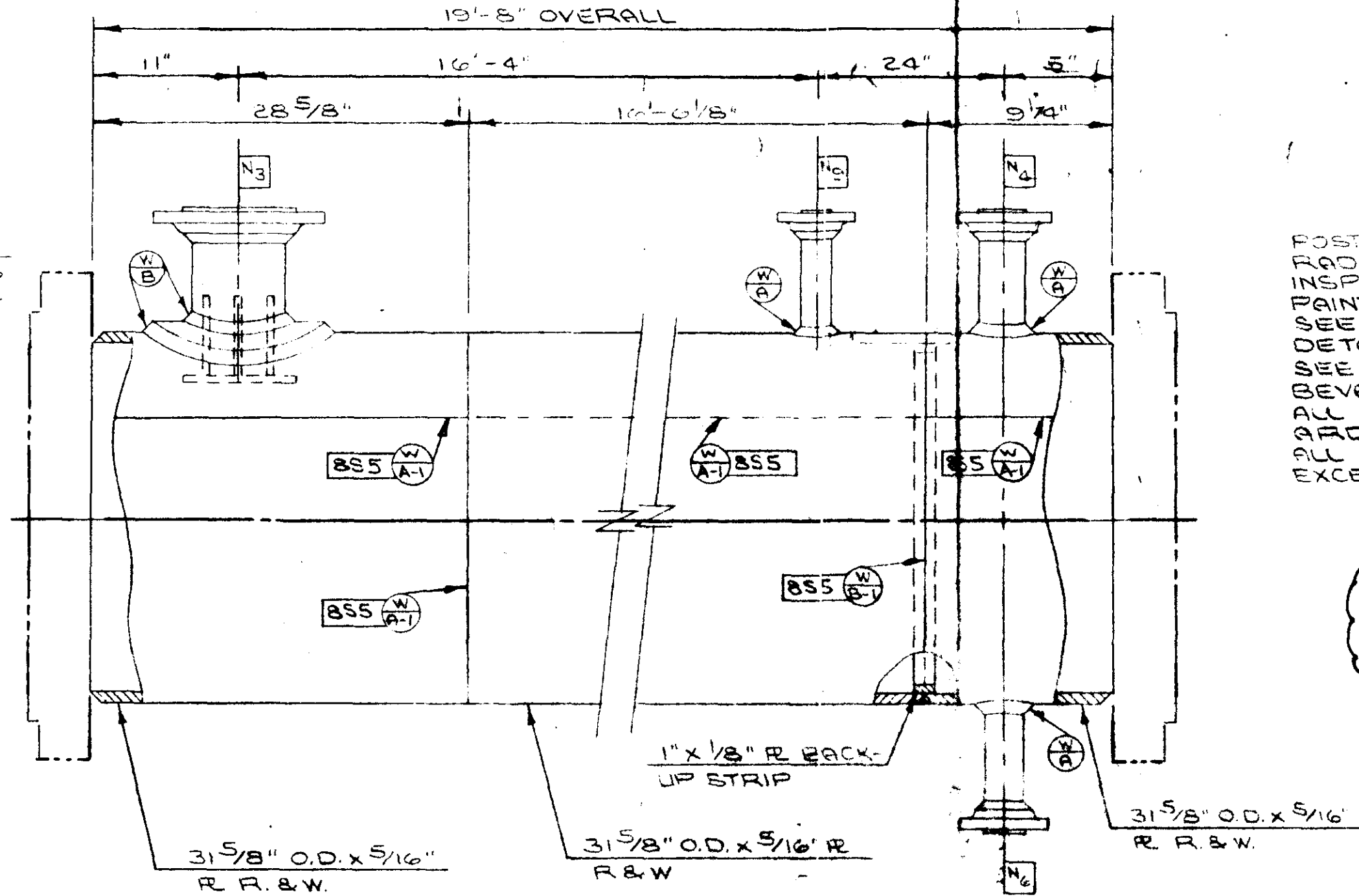
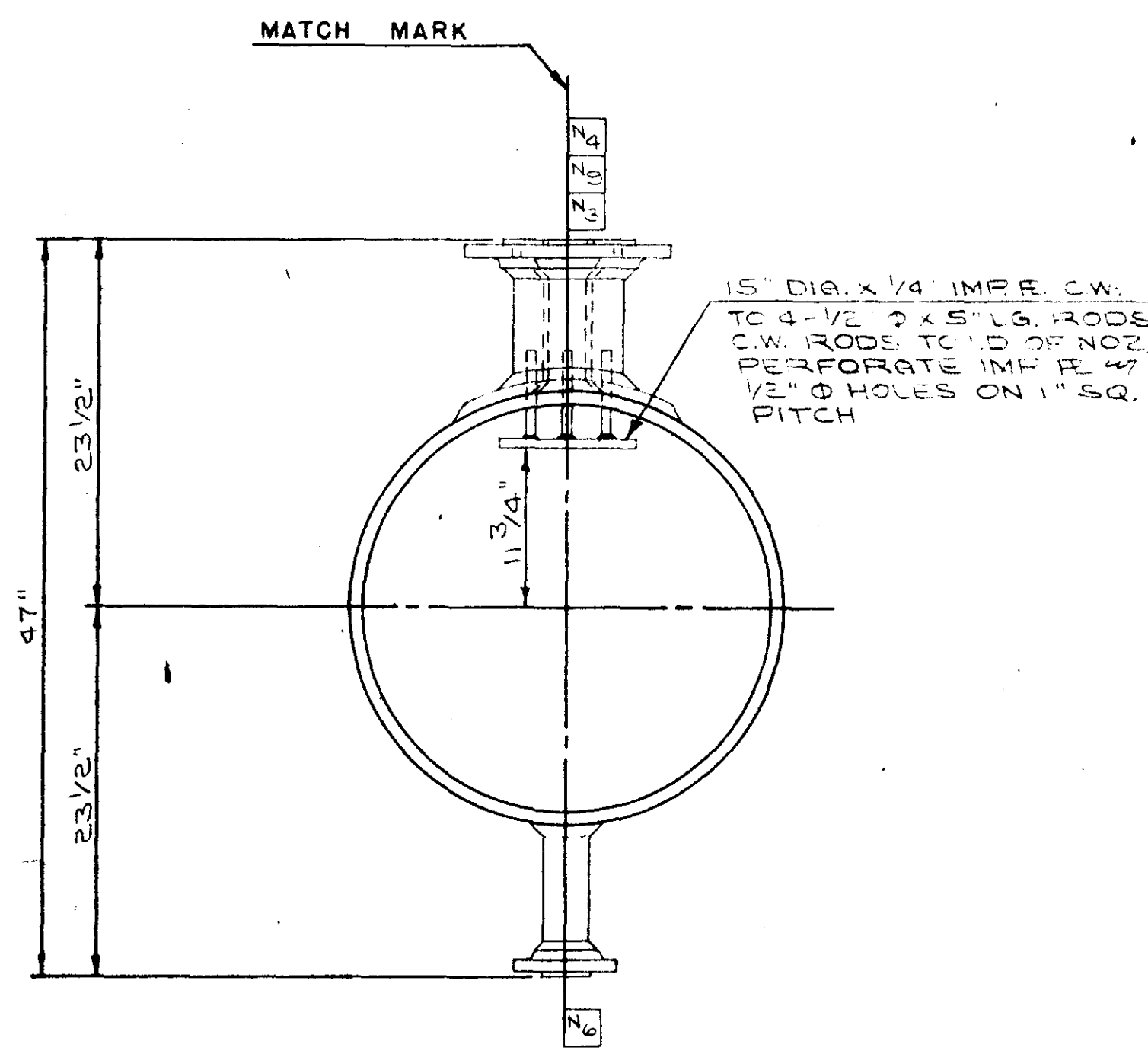
FURNISH EA. NOZ. 472-1/2" Ø x 2 1/2"
LG. STUDS 472-HEX NUTS EA. &
ONE 2 5/8" O.D. x 1 1/2" I.D. x 1/16" THK.
J.M.#60 GASKET.

NO	QTY	SIZE	MATERIAL	DESCRIPTION	UNIT	REMARKS
N9	ONE	3/4"	150# S.O. FF SA-182-F304	1.050" O.D. x 0.154" WALL STNLS. TP-304 PIPE 8" LG.	7 1/16"	NO
N8	ONE	2"	150# S.O. FF SA-181-10A II	2 3/8" O.D. x 0.218" WALL SMLS. SA-53-B OR EQ. PIPE 8" LG.	7 1/16"	NO
N7	ONE	1"	150# S.O. FF SA-181-10A II	1.315" O.D. x 0.250" WALL SMLS. SA-53-B OR EQ. PIPE 8" LG.	5 5/8"	NO
N6	ONE	1"	150# S.O. FF SA-182-F304	2 3/8" O.D. x 0.218" WALL STNLS. TP-304 PIPE 8 1/8" LG.	7 1/16"	NO
N5	ONE	1 1/2"	150# S.O. FF SA-181-10A II	1.315" O.D. x 0.250" WALL SMLS. SA-53-B OR EQ. PIPE 8" LG.	5 5/8"	NO
N4	ONE	5"	150# S.O. FF SA-182-F304	3 1/2" O.D. x 0.300" WALL STNLS. TP-304 PIPE 8 1/8" LG.	7 1/16"	NO
N3	ONE	10"	150# S.O. FF SA-182-F304	10 3/4" O.D. x 0.500" WALL STNLS. TP-304 PIPE 9" LG.	7 1/16"	NO
N2	ONE	5"	150# S.O. FF SA-181-10A II	6 5/8" O.D. x 0.432" WALL SMLS. SA-53-B OR EQ. PIPE 8 7/8" LG.	7 5/8"	NO
N1	ONE	5"	150# S.O. FF SA-181-10A II	6 5/8" O.D. x 0.432" WALL SMLS. SA-53-B OR EQ. PIPE 8 7/8" LG.	9 1/8"	NO
M	NO.	SIZE	SIZES & FLG.	NECK		PROV. COUP. REMARKS

SCHEDULE OF OPENINGS FOR ONE UNIT ONLY
ONE-UNIT REQ'D.

GENERAL NOTES
POSTWELD HEAT TREATING NOT REQ'D.
RADIOGRAPH: SPOT X-RAY REQ'D.
INSPECTION: CUSTOMER & CODE
PAINTING: DO NOT PAINT
SEE DWG. NO. Q-1180 FOR TELL-TALE HOLE
DETAIL.
SEE DWG. NO. W-100 REV. C FOR WELD
BEVEL DETAILS.
ALL NOZZLE FLANGES PER AMERICAN STAND-
ARD ASA-B10.5
ALL LONG & GIRTH SEAMS SHALL BE (W)
EXCEPT AS SHOWN.

**MODIFIED EQUIPMENT
NO. HE-1303**



SHELL
(ONE-REQ'D.)

PART	SPECIFICATION
IMPACT R	TP-304 STNLS. STL.
NUTS	STL. ASME SA-194-GR. 2H
STUDS	STL. ASME SA-193-GR. B7
GASKETS	J.M.#60
REIN. PAD	STNLS. STL. ASME SA-240 TP-304
BACK-UP STRIP	TP-304 STNLS. STL.
SHELL CYL.	STNLS. STL. ASME SA-240 TP-304
CHAN. HEADS	STL. ASME SA-212-B-FBQ
CHAN. PASS PART.	CARBON STL.
CHAN. CYL'S.	STL. ASME SA-258-C-FBQ
BODY FLG'S.	F&G. STL. ASME SA-181-10A II

MATERIAL LIST	
2780	28-526
(EFGO)	
ENGINEERS & FABRICATORS, INC. HOUSTON, TEXAS	

REV.	DESCRIPTION	BY	DATE	DATE: 1-10-65	JOB NO. 3746	DWG. NO. 9EM-13854

NAME: CHANNEL "A", CHANNEL "B", & SHELL DETAILS
DRAWN BY: R.B.P. ITEM NO. 25-HE-506
DATE: 1-10-65 JOB NO. 3746 DWG. NO. 9EM-13854