

FORM U-1A MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS
(Alternative Form for Single Chamber, Completely Shop-Fabricated Vessels Only)
As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

Copy
T-634 PR

1. Manufactured and certified by Midland Steel Corporation 1940 Shop Rd., Columbia, SC 29201
(Name and address of manufacturer)

2. Manufactured for FMC Corporation, 1701 East Patapsco Ave., Baltimore, MD 21226
(Name and address of purchaser)

3. Location of installation FMC Corporation, 1701 East Patapsco Ave., Baltimore, MD 21226
(Name and address)

4. Type Horiz 4747-140 4747-1 140 1984
(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 Rules, Section VIII, Division 1. 1983
Year

to SUM-84 1518-2 none
Addenda (Date) Code Case Nos. Special Service per UG-120(d)

6. Shell: SA-240-304L .25 .063 108" 12' 9"
Matl. (Spec. No., Grade) Nom. Thk. (in.) Corr. Allow. (in.) Diam. I.D. (ft. & in.) Length (overall) (ft. & in.)

7. Seams: WLD-DBL-Butt spot 85 n/a n/a WLD-DBL-Butt spot 2
Long. (Welded, Dbl., Engr., Lap, Butt) R.T. (Spot or Full) EH. (%) H.T. Temp. (°F) Time (hr) Girth (Welded, Dbl., Engr., Lap, Butt) R.T. (Spot, Partial, or Full) No. of Courses

8. Heads: (a) Matl. SA-240-304L (b) Matl. SA-240-304L
(Spec. No., Grade) (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)	end	.281	.063	108	6.5					concave
(b)	end	.281	.063	108	6.5					concave

If removable, bolts used (describe other fastenings) n/a
(Matl., Spec. No., Gr., Size, No.)

9. MAWP 20 psi at max. temp. 400
Min. temp. (when less than -20°F) °F Hydro. pneum or comb. test pressure 25 psi

10. Nozzles, inspection and safety valve openings:

Purpose (Inlet, Outlet, Drain)	No.	Diam. or Size	Type	Matl.	Nom. Thk.	Reinforcement Matl.	How Attached	Location
Inlets	2	2"	pipe	SA-312-304L	SCH40	none	welded	shell
Inlets	4	3"	pipe	SA-312-304L	SCH40	none	welded	shell
Outlets	2	3"	pipe	SA-312-304L	SCH40	none	welded	shell
Inlet	1	8"	pipe	SA-312-304L	SCH40	none	welded	shell
Manway	1	24"	plate	SA-240-304L	25	none	welded	shell

11. Supports: Skirt Yes Lugs No Saddles 25 Attached Bottom-welded
(Yes or no) (No.) (No.) (Describe) (Where and how)

12. Remarks: Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report: Heads-welded butt seam by Brighton (copy attached). Spot X-ray longitudinal and lateral seams.
(Name of part, item number, Mfr's name and identifying stamp)

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. 18,935 expires 10-20, 1986
Date 12-4-84 Co. name Midland Steel Corp (Manufacturer) Signed John H. Harrison (Representative)

CERTIFICATE OF SHOP INSPECTION

Vessel constructed by Midland Steel Corp. at 1940 Shop Rd., Columbia, SC
I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province of North Carolina and employed by Commercial Union
have inspected the component described in this Manufacturer's Data Report on 12-4, 19 84, 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 12-4-84 Signed J. E. Kiser (Authorized Inspector) Commissions NB 6646 NC 773
(Nat'l. Board (incl. endorsements), State, Prov. and No.)

BRIGHTON CORPORATION

93727

FORM U-2 MANUFACTURER'S PARTIAL DATA REPORT A part of a Pressure Vessel Fabricated by One Manufacturer for Another Manufacturer As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

- Manufactured and certified by Brighton Corporation, 11861 Mosteller Rd., Cincinnati OH 45241
(Name and address of manufacturer)
- Manufactured for Midland Steel Corp, 1940 Shop Rd, Columbia S.C, 29201
(Name and address of purchaser)
- Location of installation _____
- Type 25764-1-2 1984
(HORIZ. or VERT. TANK) (SAIG's serial No. of Part) (CRN) (Drawing No.) (Natl. Bd. No.) (Year built)
- 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 Rules, Section VIII, Division 1 1983
(Year)

Summer 84

Addenda (date)

Code Case No.

Special service per UG-120(d)

- (a) Drawing prepared by _____ (b) Description of part inspected See Remarks
- Post weld heat treatment: Temp. _____ °F Time _____

Items 8-13 incl. to be completed for single wall vessels, jackets of jacketed vessels, or shells of heat exchangers

- Shell: _____
(Matl. Spec. No., Grade) (Nom. Thk. (in.)) (Corr. Allow. (in.)) (Diam. I.D. (ft. & in.)) (Length (Overall) (ft. & in.))

- Seams: _____
(Long. (Wld., Dbl., Singl., Lap, Butt)) (R.T. (Spot or Full)) (ER (%) (H.T. Temp. (°F)) (Time) (Girth (Wld., Dbl., Singl., Lap, Butt)) (R.T. (Spot, Partial, or Full)) (No. of Courses)

- Heads: (a) Matl. SA240-304 Elc (b) Matl. _____
(Spec. No., Grade) (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)		.250		108.0	6.5					
(b)										

If removable, bolts used (describe other fastenings) _____

(Matl. Spec. No., Gr., Size, No.)

- Type of Jacket _____ Proof Test _____
- Jacket Closure _____
(Describe as open & weld, bar, etc.) If bar, give dimensions _____
- MAWP _____ psi at max. temp. _____ °F Min. temp. (when less than -20°F) _____ °F
Hydro, pneu., or comb. test press. _____

Items 14 and 15 to be completed for tube sections

- Tubesheets: _____
(Stationary Matl. (Spec. No., Gr.) (Diam. (in.) (Subject to pressure) (Nom. Thk. (in.)) (Corr. Allow. (in.)) (Attach (Welded, Bolted))
_____ (Floating Matl. (Spec. No., Gr.) (Diam. (in.)) (Nom. Thk. (in.)) (Corr. Allow. (in.)) (Attach

- Tubes: _____
(Matl. (Spec. No., Gr.) (O.D. (in.)) (Nom. Thk. (in. or Gauge) (No. (Type (Straight or "U"))

Items 16-18 incl. to be completed for inner chambers of jacketed vessels or channels of heat exchangers

- Shell: _____
(Matl. (Spec. No., Gr.) (Nom. Thk. (in.)) (Corr. Allow. (in.)) (Diam. I.D. (ft. & in.)) (Length (Overall) (ft. & in.))

- Seams: _____
(Long. (Wld., Dbl., Singl., Lap, Butt)) (R.T. (Spot or Full)) (ER (%) (H.T. Temp. (°F)) (Time) (Girth (Wld., Dbl., Singl., Lap, Butt)) (R.T. (Spot, Partial, or Full)) (No. of Courses)

- Heads: (a) Matl. _____ (b) Matl. _____
(Spec. No., Grade) (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) _____

(Matl. Spec. No., Gr., Size, No.)

JOB 4747
TANK
T634 PR

Form U-2 (Back)

19. MAWP _____ psi at max. temp. _____ ° F. Min. temp. (when less than -20°F) _____ ° F.
Hydro, pneu., or comb. test press. _____ psi.

Items below to be completed for all vessels where applicable

20. Nozzles, Inspection and Safety Valve Openings:

[illegible]

21. Supports: Skirt _____ Lugs _____ Legs _____ Other _____ Attached _____
(Yes or no) (No.) (No.) (Describe) (Where and how)

22. Remarks: Two (2) 304 Elc A.S.M.E. (2 pc) Hds. 108 OD x .3125 Nom thk
welded; double butt; radiographed; 100%; Annealed; No. No design
functions performed by Brighton Corporation.

Refer to P.O. 14889; Sold to Midland Steel Corp. 1940 Shop Rd.
Columbia S.C. 29201

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. 144 expires March 31, 19 86.
Date 10/4/84 Co. name Brighton Corporation Signed C. Keith
(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/or the State or Province of Ohio and employed by *

I, Lawrence Harold, have inspected the pressure vessel described in this Manufacturer's Partial Data Report on 10-11-84, 1984, and state that, to the best of my knowledge and belief, the Manufacturer has constructed this part in accordance with the ASME Boiler and Pressure Vessel Code, Section VIII, Division 1. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the part described in this Manufacturer's Partial 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 10-11-84 Signed Lawrence Harold (Authorized Inspector) Commissions NR 502 Ohio 6744, w
(Natl Board, State, Province and No.)

(7/83) * Arkwright Boston Manufacturers Mutual Ins. Co.
** Factory Mutual System, Norwood MA

PAINT NOTES.
① ALL CARBON STEEL TO BE COMMERCIAL BLAST (SSPC- SP6)
FIRST COAT BRINER 4977 2 1/2 MIL DFT.
SECOND COAT BRINER 4946 1 1/2 MIL DFT.

- GENERAL NOTES
- VESSEL TO BE FABRICATED PER ASME SECTION VIII, DIVISION-1, 1983-SUM-F4 & FMC SPEC. 4001
 - ALL NOZZLE BOLT HOLES TO STRADDLE NORMAL CENTERLINES
 - ALL INTERNAL WELDS TO BE GROUND SMOOTH NOT FLUSH.

NAT'L BD.
SERIAL NUMBER: 140
CERTIFIED BY MIDLAND STEEL CORP.
VESSEL MAX. ALLOW. WKG. PRESS. 20 PSI @ 420 F
JACKET MAX. ALLOW. WKG. PRESS. PSI @ F
MFG'R'S SN. 4747-140 YR. BUILT 1984

MIDLAND STEEL CORP.
1940 SHOP RD.
COLUMBIA, S.C. 29201

SHELL THICKNESS 1/2" HEAD THICKNESS 3/8"
EQUIP. NO. T-634-PR P.O. NO. 234189

SPECIFIC NOTES

SHELL MAT'L SA-240-304-L NOM. THK. 1/4"
HEAD MAT'L SA-240-304-L NOM. THK. 5/16"
CORR. ALLOW. 1/16"

DESIGN PRESS (INT) 20 PSI OPER. PRESS (INT) 0-PSI
DESIGN PRESS (EXT) 0-PSI OPER. PRESS (EXT) ATM

DESIGN TEMP 400°F OPER. TEMP AMB

RADIOGRAPH X-RAY SPOT 85%

MISC. MAT'L

SADDLES CS
GASKETS ASBESTOS
NUTS 304 FOR SS FLGS.
SA-194 GR 2H FOR CS FLGS.

BOLTS 304 FOR SS FLGS.
SA-193 GR 77 FOR CS FLGS.

BILL OF MATERIAL					
SHIPPING MARK	PC MARK	NO. PCS REQD.	MATERIAL	REMARKS	SEE DET.
T-634-PR		1	HEPTANE STORAGE TANK		
	1	1	SHELL R 1/4" X 117" X 23'-2 1/2"	SA-240-304-L	
	2	2	HEADS ASME F&D X 108" OD SA-240-304-L X 5/16" NOM.		
	3	1	24" M.H.		
	3-A	1	R 1/4" X 7 1/2" X 6'-2 3/8"	SA-240-304-L	
	3-B	1	24" 150# RF50	CS	
	3-D	1	24" 150# BLIND	CS	
	3-E	1	R 1/4" X 27 1/2" Ø	SA 240	
	4	1	MIDCO DAVIT DWS DAV-1		
	5	1	DIP TUBE	SA 240	
	5-A	1	3" 150# BLIND	SA 240	
	5-B	1	2" 150# RF50	SA 240	
	5-C	1	2" SCH 40 PIPE X 9'-6"	SA 240	
	6	3	R 1/4" X 2" X 9"	SA 240	
	7	2	R 1/4" X 8" X 9'-7 1/2"	SA 240	
	8	4	R 1/4" X 6" X 3'-2 1/2"	CS	
	9	8	R 1/4" X 2 1/2" X 1'-1 1/2"	CS	
	10	2	R 1/4" X 3" X 8'-2 1/2"	CS	
	11	2	R 1/4" X 3'-2" X 7'-10 1/2"	CS	
	12	1	R 1/4" X 26 1/2" OD	SA 240	

NOZZLE SCHEDULE					
SERVICE	AL. MARK	QTY	SIZE	FLG	PIPE
XCV	A	1	2"	150# RF50	SCH 40 SA 240
NE PAD	B	1	2"		
DIP TUBE	C	1	3"		
LT/LI	D	1	3"		
XEV	E	1	2"		
SIGHTGLASS	F	1	2"		
FLANGE	G	1	3"		
FLANGE	H	1	3"	150# RF50	SCH 40 SA 240
FLANGE	I	1	3"		SCH 40 SA 240

MIDCO DESIGN DATA DESIGN BY: DATE: _____
CHECKED BY: DATE: _____
WELDING BY: DATE: _____
APP'D. FOR FAB: DATE: _____

CUSTOMER P.O. NO. _____
PIECE NO. _____
PART NO. _____
ESTIMATED WEIGHT _____

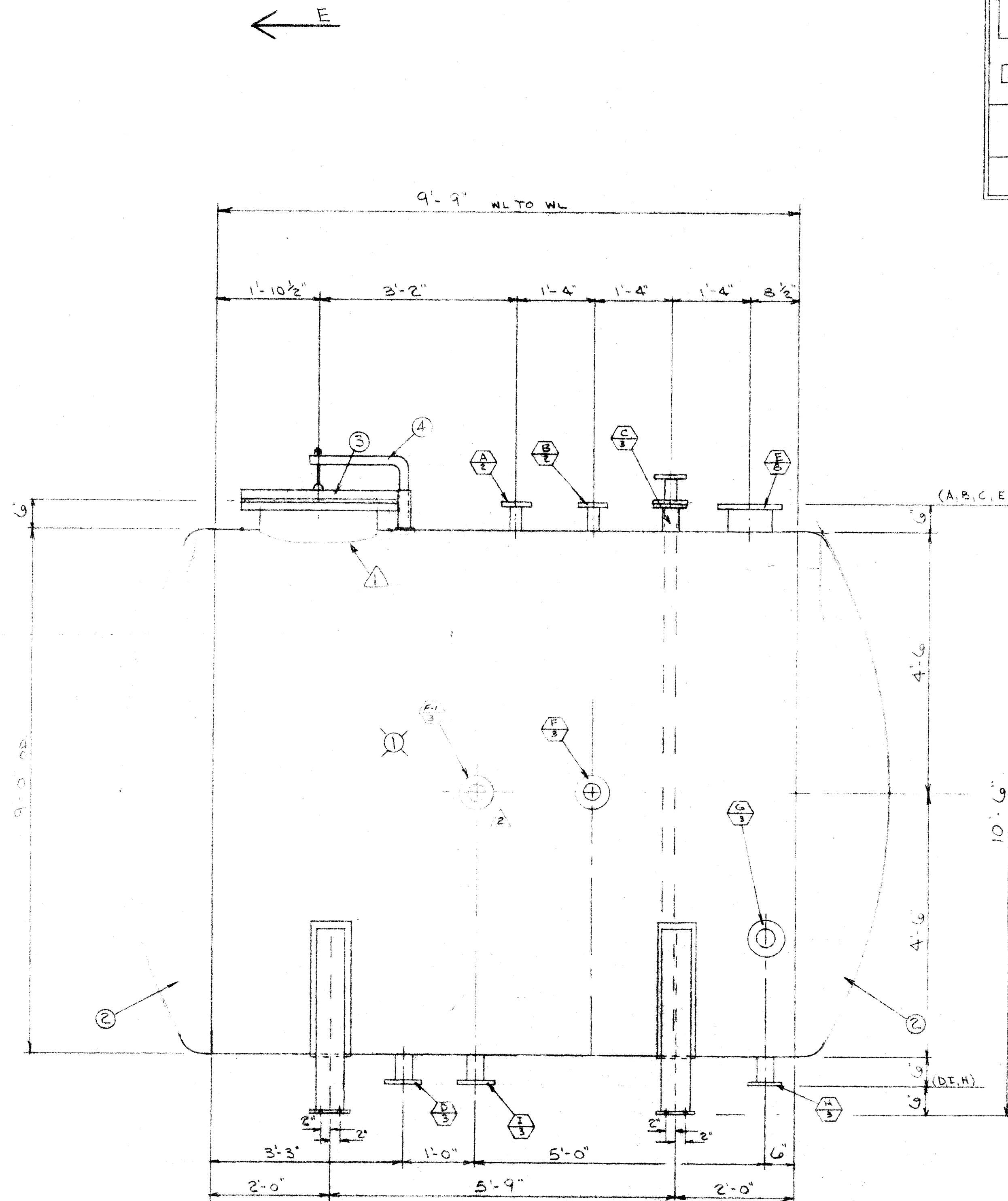
93727
T-634

MIDLAND STEEL CORP.
1940 SHOP ROAD
COLUMBIA S.C. 29201

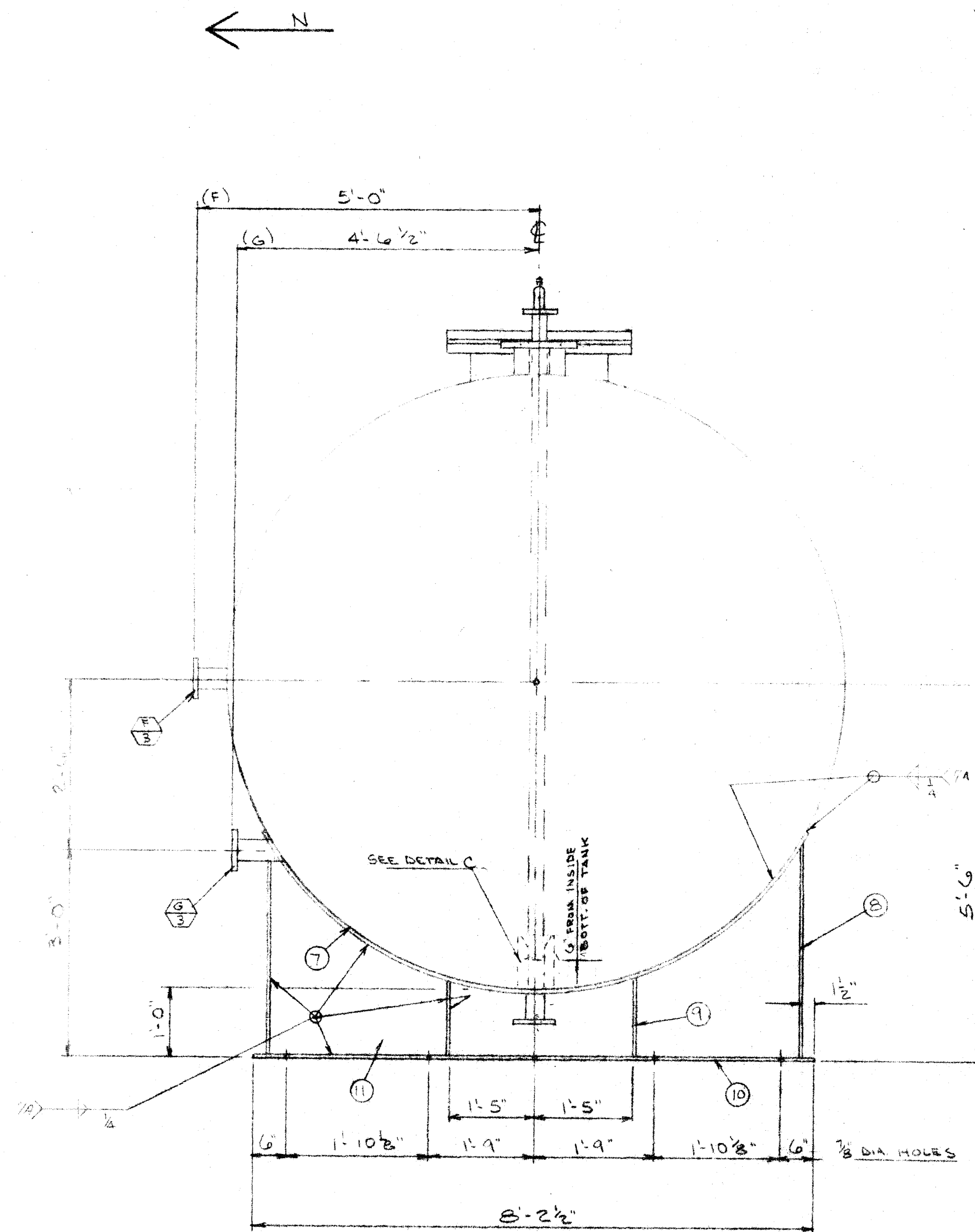
SCALE: 3/4" = 1'-0"
DATE: 8-20-84
WORK FOR: FMC CORP.

APPROVED BY: [Signature]
DRAWN BY: T.B.
REVISOR: [Signature]
REVISION: 10-24-84

ITEM: T-634-PR RECYCLED MATERIAL
REV. DATE: 8-20-84
JOB NO. 4147
DRAWING NUMBER 4347-F



SIDE VIEW



END VIEW