

This drawing does not relieve the vendor of his responsibility to meet all requirements of the purchase order.

☒ **APPROVED PROCEED WITH FABRICATION**
 OF THIS DRAWING.

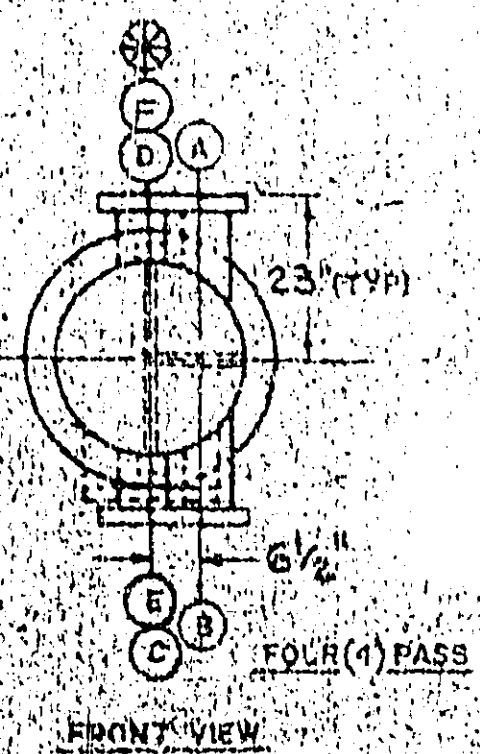
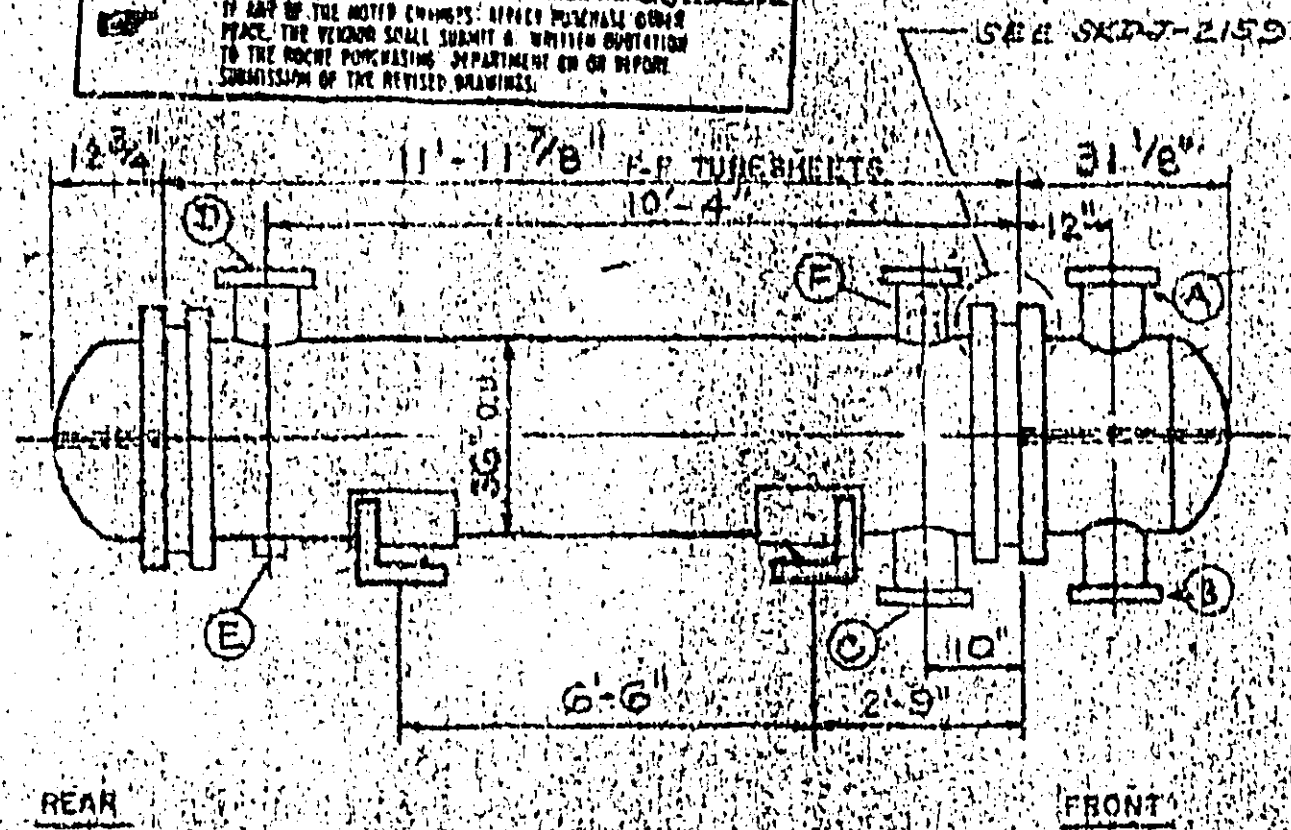
☐ **APPROVED AS NOTED**
 Proceed with fabrication in accordance with comments -
 submit corrected drawings certified for record.

☐ **DISAPPROVED - DO NOT FABRICATE**
 Resubmit drawings for approval.

ROCHE **HOFFMANN LA ROCHE INC.**
 HUTLEY, NEW JERSEY

By: *D.M.B.* Date: *6/9/79*
 Project No. *2112* Position No. *88-E512*

IF ANY OF THE NOTED CHANGES AFFECT PURCHASE ORDER
 PRICE, THE VENDOR SHALL SUBMIT A WRITTEN QUOTATION
 TO THE ROCHE PURCHASING DEPARTMENT ON OR BEFORE
 SUBMISSION OF THE REVISED DRAWINGS.



MATERIALS OF CONSTRUCTION				NOZZLES & FITTINGS			
				MARK	SIZE	DESCRIPTION	NECK SCH
SHELL	36" ID. 316 SS. CYLINDER SA-240	1/4" TH		A	8"	150# STD ANSI B16.5 NO. 1815	30
TUBESHEETS	31 1/8" O.D. 316 SS	SA-240	1 3/8" TH	B	8"	150# STD ANSI B16.5 NO. 1815	30
TUBES	1022 3/4" O.D. x 16' L. 316 SS TUBES	12' LG. x 15 1/16" Δ PITCH		C	4"	150# STD ANSI B16.5 NO. 1815 WITH STUD END	10
BONNET FLG	40 1/2" O.D. x 16' L. QUALITY MEEG SA-181	2 1/2" TH		D	18"	150# STD ANSI B16.5 NO. 1815 FACED W/ S.	1/8
BONNET CYL.	36" O.D. x 16' L. CYLINDER SA-285 C	3/8" TH		E	3/4"	3000# HARDENED SA-182 316 SS	WSS FLUG
BONNET COVER	36" O.D. x 16' L. CYLINDER SA-285 C	3/8" TH		F	4"	150# STD ANSI B16.5 NO. 1815 WITH STUD END	10
SUPPORTS (4)	316 SS. SEGMENTED TYPE	27" HIGH PITCH 45° VERT CUT					
GASKETS	TEF. ENVELOPED ASB FILLED	37 7/8" O. x 36 1/8" I.D.					
BOLTING	ALLOY SA-193 OMSTUDS & SA-193 IN NUTS	32" DIA. x 39 1/8" LG					
SHELL SUPPORTS	STEEL ANCHORS 6" DIA. x 42" C	WITH 2" PAD					
SHELL BACKWING	40 1/2" O.D. SA-181 Q. T.	2 1/2" TH					

D & R STD MODEL **VS 3604-12H**

316 SS. SHELLSIDE CONSTRUCTION WITH STEEL BONNETS

GENERAL NOTES

CONSTRUCTION TO COMPLY WITH ASME CODE SECTION VIII DIV. 1 LATEST EDITION W 77

ASME STAMP & N. A. 1. 80 INSPECTION 12 YES 1 NO

TEMA CLASS B TYPE BEM

2525 SQ. FT. HEAT TRANSFER SURFACE

ALL HOOT HOLES TO STRADDLE CENTERLINE

SEE FRONT VIEW FOR TUBE NOZZLE ORIENTATION

PAINT: CARBON STEEL ONLY
 ONE SHOP COAT GRAY ZINC CHROMATE PRIMER

WEIGHT 11,500 LBS EMPTY

18,000 LBS FLOODED WITH WATER

WELD TUBES TO TUBESHEET C/W S. WND.

DESIGN CONDITIONS	SHELL SIDE	TUBE SIDE
DESIGN TEMPERATURE	200°	150°
DESIGN PRESSURE	20 PSIG	100 PSIG
TEST PRESSURE	30 PSIG	150 PSIG
CORROSION ALLOWANCE C/S ONLY	NONE	1/16"
RADIOGRAPHY	NONE	AS REQ.

CUSTOMER **HOFFMANN LA ROCHE INC.**

HLR PROJECT NO. **2112**

P.O. NO. **E 665502 B**

DNR JOB NO. **J-2159-8**

TAG POSITION NO. **BB-E-522 (Q. CODE NO. CSF 5)**

NO. UNITS REQD. **ONE (1)**

DOYLE & ROTH MFG CO INC
 ONE BROADWAY NEW YORK, N.Y. 10004

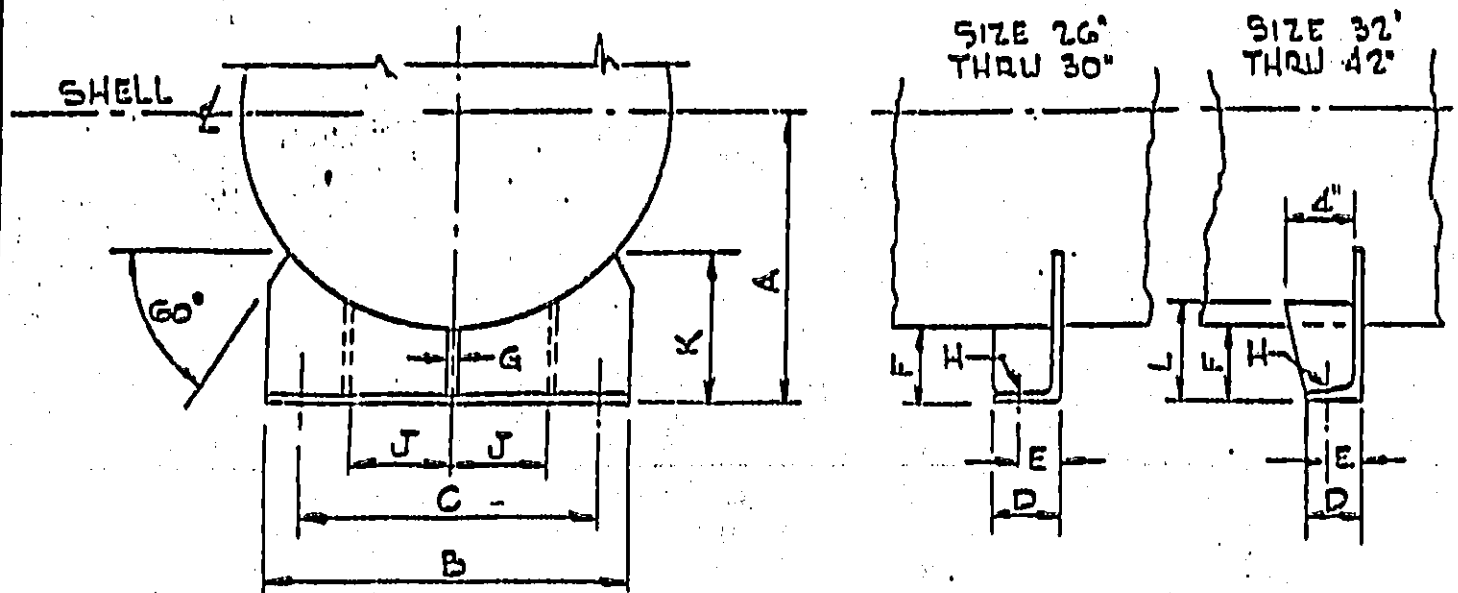
CSF-5

DRAWN **GSC** SCALE NONE

CHECKED **BY** DATE **6/15/79**

APPROVED **BY** DATE **6/15/79**

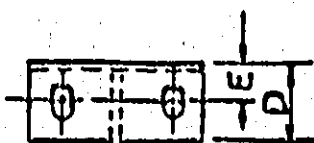
DER STANDARD CARBON STEEL SHELL SUPPORTS



NOM SHELL SIZE	SIZE OF ANGLE OR CHANNEL	A	B	C	D	E	F	G	H DIA.	I	K	L
26"	9" x 4" x 1/2" L	17 1/2"	22"	18"	4"	2 1/2"	4 1/2"	1 1/2"	7/8"	—	9"	—
28"		18 1/2"	24"	20"						—		—
30"		19 1/2"	26"	22"						—		—
32"		20 1/2"	28"	24"						7 1/2"		6 3/8"
34"		21 1/2"	29"	25"								6 1/4"
36"	12" x 30" C	22 1/2"	27"	23"	3 1/8"	1 3/4"					10 5/8"	6 3/16"
38"		23 1/2"	28"	24"								6 1/16"
40"		24 1/2"	29"	25"							10 3/4"	6"
42"		25 1/2"	30"	26"								5 7/8"

NOTE:

HOLES (2) IN ONE SUPPORT TO BE SLOTTED WITH SLOTS 1 5/8" LONG PARALLEL TO LONGITUDINAL AXIS OF SHELL.



POS. NO. BB-E522
EQUIP. CODE NO. CSF5
HOFFMANN-LA ROCHE INC.
HLR JOB NO. 2119

FINAL CERTIFIED

BY A. SANDERS/G.H. DATE 6/10/79

HOFFMANN-LA ROCHE INC.

FOR NOM SHELL SIZES 26" THRU 42"

DOYLE & ROTH

REF: B-4786

Manufacturing CO. INC.

STANDARD SHELL SUPPORTS

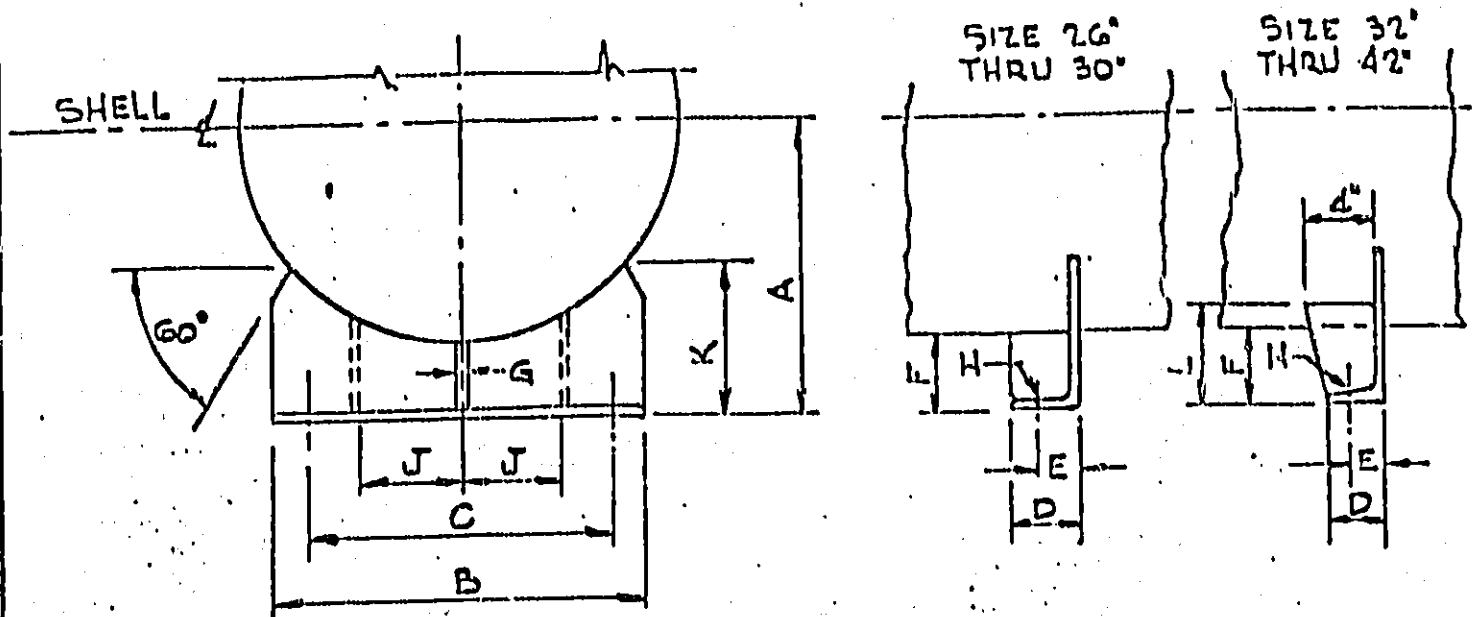
D & R DWG. NO. SK-42-C

CSF-5

This approval does not relieve the vendor of his
Responsibility to meet all requirements of the

EQUIP. CODE NO. CSF-5

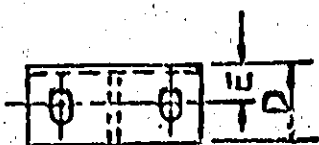
D & R STANDARD CARBON STEEL SHELL SUPPORTS



NOM SHELL SIZE	SIZE OF ANGLE OR CHANNEL	A	B	C	D	E	F	G	H DIA	J	K	L
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42"		25 1/2"	30"	26"								5 7/8"

NOTE:

HOLES (2) IN ONE SUPPORT TO BE SLOTTED WITH SLOTS 1 5/8" LONG PARALLEL TO LONGITUDINAL AXIS OF SHELL.



POS. NO. BB-E522
EQUIP. CODE NO. CSF5
HOFFMANN-LAROCHE INC.
HLR JOB NO. 2119

FOR NOM SHELL SIZES 26" THRU 42"

DOYLE & ROTH

REF: B-4786

Manufacturing CO. INC.

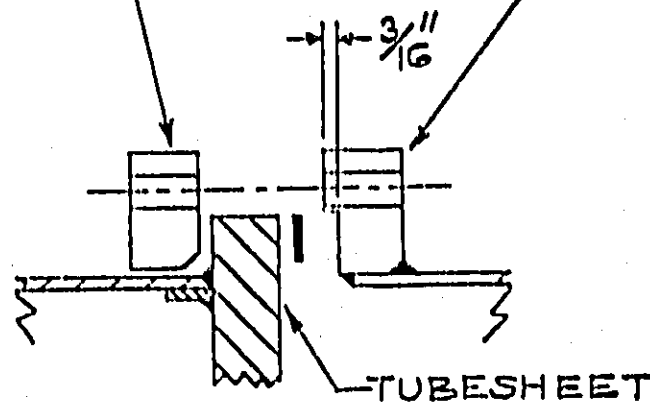
STANDARD SHELL SUPPORTS

D & R DWG. NO. SK-42-C

CSF-5

SHELL BACK. RING

BONNET FL'G.



TUBESHEET & JOINT DETAIL

REF:

B-4779 J-2159-1
B-4780 J-2159-2
B-4783 J-2159-5
B-4785 J-2159-7
B-4786 J-2159-8

Pos. Nos. BB-E501, BB-E505, BB-E518,
BB-E521, BB-E522

EQUIP CODE NOS.: CSF1, CSF2, CSF-3, CSF-4, CSF-5

HLR PROJECT 2119

CSF-5



DOYLE & ROTH MFG. CO. INC.
ONE BROADWAY, NEW YORK, N.Y. 10004

HOFFMANN-LAROCHE, INC.
P.O. BOX 5502 B

DRAWN 19-20-78

SCALE NONE

CHECKED

DATE

APPROVED

DATE

SKDJ-2159