

IN ACCORDANCE WITH SECTION VIII, DIVISION No. 1 OF THE 1982 EDITION OF THE UNFIRE PRESSURE VESSEL COD. FOR OPERATION IN THE STATE OF N.J.

ASME CODE INSPECTION	YES
CODE STAMP	YES
SPOT RADIOGRAPHED	NO
FULLY X-RAYED	NO
CORR. ALLOW.	"0"

DESIGN DATA (MAX):	TUBE SIDE	SHELL SIDE
PRESSURE (PSIG)	75	75
TEMPERATURE F.	320	320
MIN. DES. TEMP °F	20	20
HYDROSTATIC TEST (PSIG)	119	113

MATERIAL SPECIFICATIONS
 BONNET HEADS 3/16" THK # 1 MILL FINISH
 SHELL # 10 CATHK (.135") # 2 B FINISH

SHELL 18" O.D. x 18" I.C. (312") THK WLD. PIPE
 SA-53-GR 60

BAFFLES, TIE RODS & PIPE SPACERS

	TUBE SIDE	SHELL SIDE
NOZZLE (PIPE)	SA-312 (WLDGD)	SA-312 (WLDGD)
NECKS	T-316L S/S	C/S
NOZZLE (FORGED)	SA-105 C/S	SA-105 C/S
FLANGES		
TUBES 3/4" O.D. x 13 GA. (WLDGD)		
TUBE SHEETS 1/8" (NOW) THK SA-240 T-316L S.S.		
BODY FLANGES	C/S SA-515 GR 70	
BOLTING SA-193-B7 1/2 NUTS-SA-193-B7 1/2		
GASKETS COMP ASBESTOS		

- GENERAL NOTES**
- ALL WELDED CONSTRUCTION
 - ALL INT. WELDS ASME CODE WELDED, PICKLED AND BRUSHED
 - ALL EXT. WELDS ASME CODE WELDED, PICKLED AND BRUSHED
 - ALL S.S.T. SURFACES PASSIVATED
 - ALL CARBON STEEL TO RECEIVE ONE EPOXY SHOP COAT OF PRIMER PER MIL-P-53022 (ME)
 - ALL FLANGE BOLT HOLES TO STRADDLE CENTER LINES OF HEAT EXCHN EXCEPT AS OTHERWISE NOTED.
- ESTM. WT. (EMPTY) 1900 lbs
 ESTM. WT. (FULL OF WATER) 3000 lbs

FITTING SCHEDULE

MARK	SIZE	SCH.	RATING	DESCRIPTION	QUAN.
A #2	4"	10	150°	FLG. CONN., SEE DWG. # D-ND-70, DET. 7-7	2
B	4"	40		FLG. CONN., SEE DWG. # D-ND-72,	1
C	2"	40			1
D	3/4"	40			2
E #2	3/4"		3000	FULL COMP. PIPING W/BUG T-316L S/S	2
F	3/4"		3000	FULL COMP. PIPING W/BUG T-316L S/S	1

REFERENCE DWG'S:

AN/AI REVIEW
 APR 02 1991
 BY: [Signature] B-61275

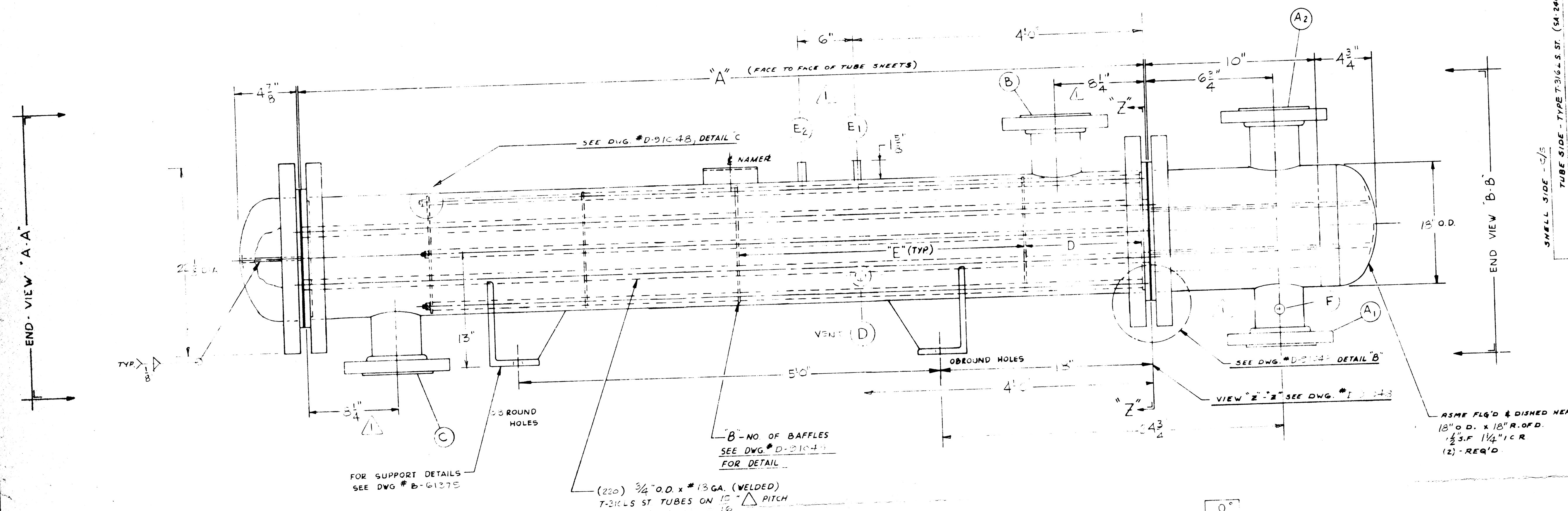
D-ND-72 NOZZLE DETAILS
 D-ND-48 CONDENSER/HEAT EXCHANGER DETAILS
 D-ND-70 NOZZLE DETAILS
 B-61275 SUPPORT DETAILS

CUSTOMER: ENDERG PROCEED EQUIP. CORP. TAG NO. HE-A & HE-B

PERRY PRODUCTS COMPANY
 STAINLESS STEEL FABRICATORS

MOUNT LAUREL ROAD • HAINESPORT, NEW JERSEY 08058

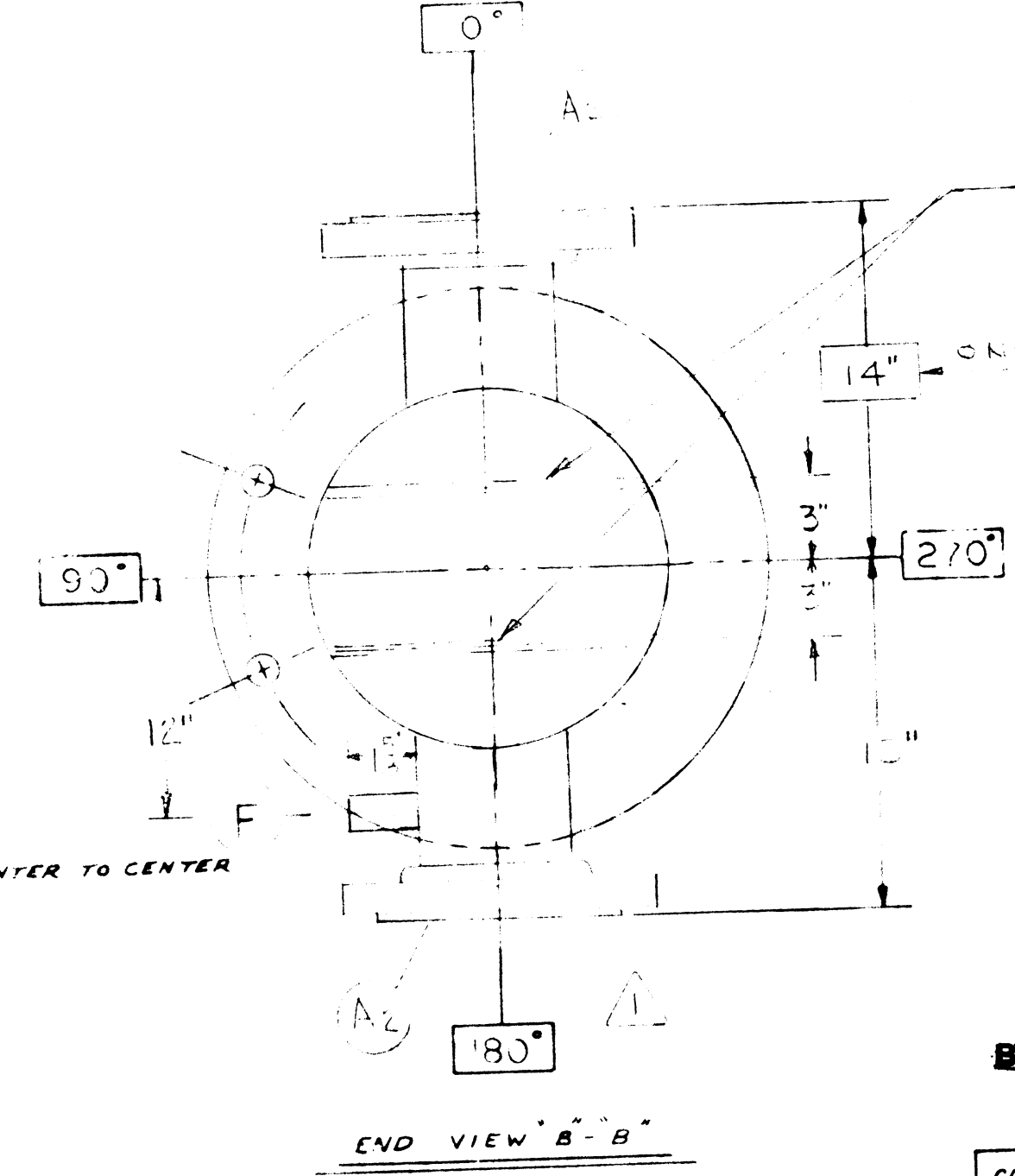
DRN. [Signature]
 DATE 2/27/91 (2) 18" SIZE CONDENSER/HEAT EXCHANGER
 CHKD. J/L [Signature] (4) - PAGES TUBE SIDE (4) - PAGES SHELL SIDE
 SER. NO. B-4557, 1#2 JOB NO. 13801 DWG. NO. D-91047



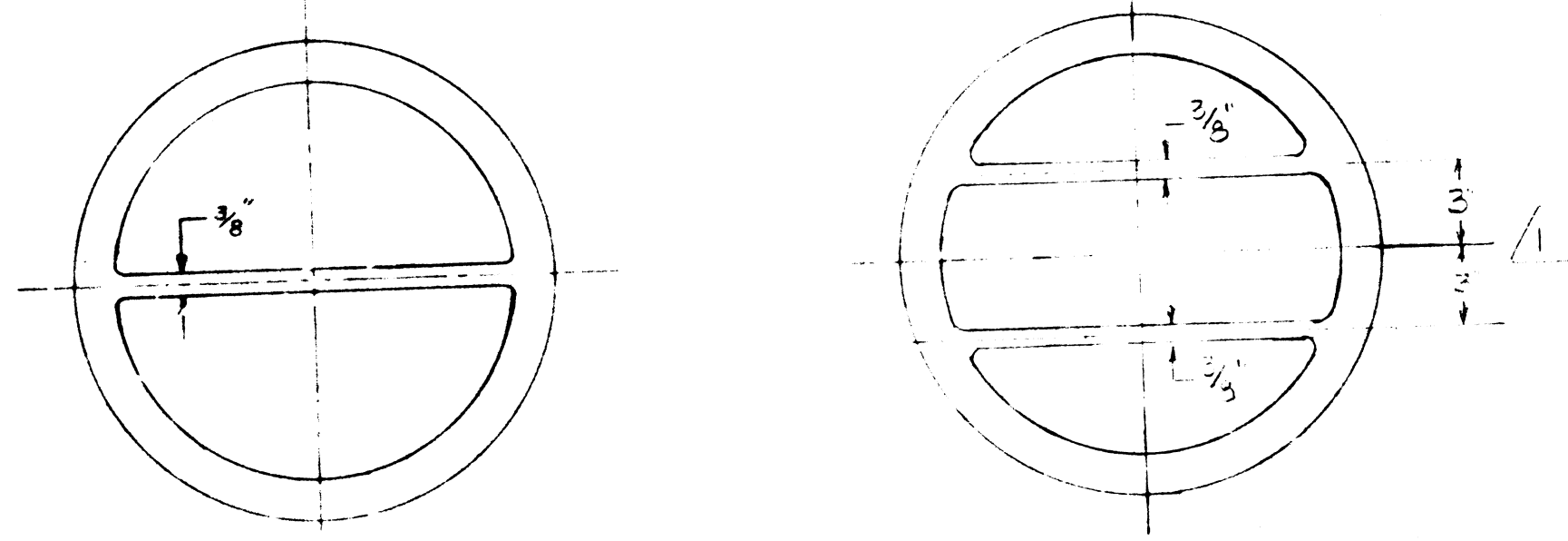
CONDENSER/HEAT EXCHANGER SIZE

SQ. FT.	"A"	"B"	"C"	EXPANSION JOINT	"D"	"E"
246	7 1/4"	4"		NC	18 3/4"	12 9/16"

FROM INSIDE FACE OF TUBE SHEET

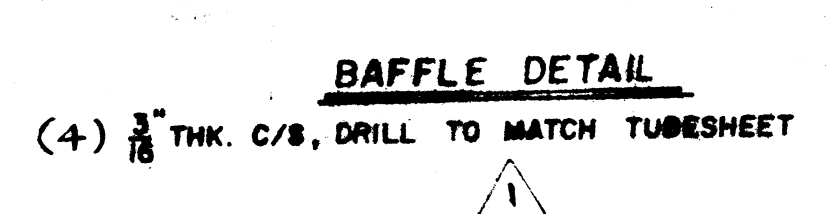
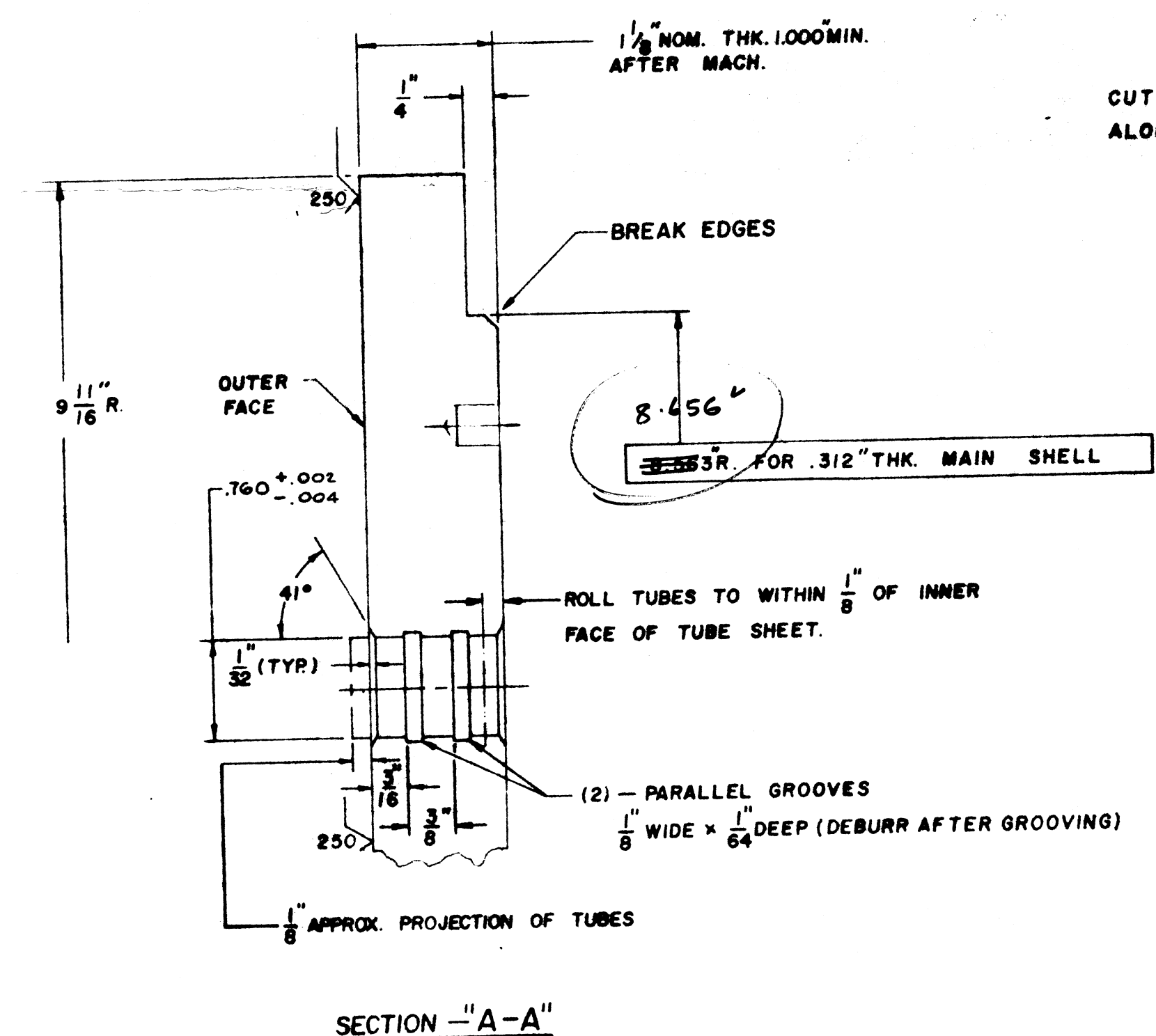
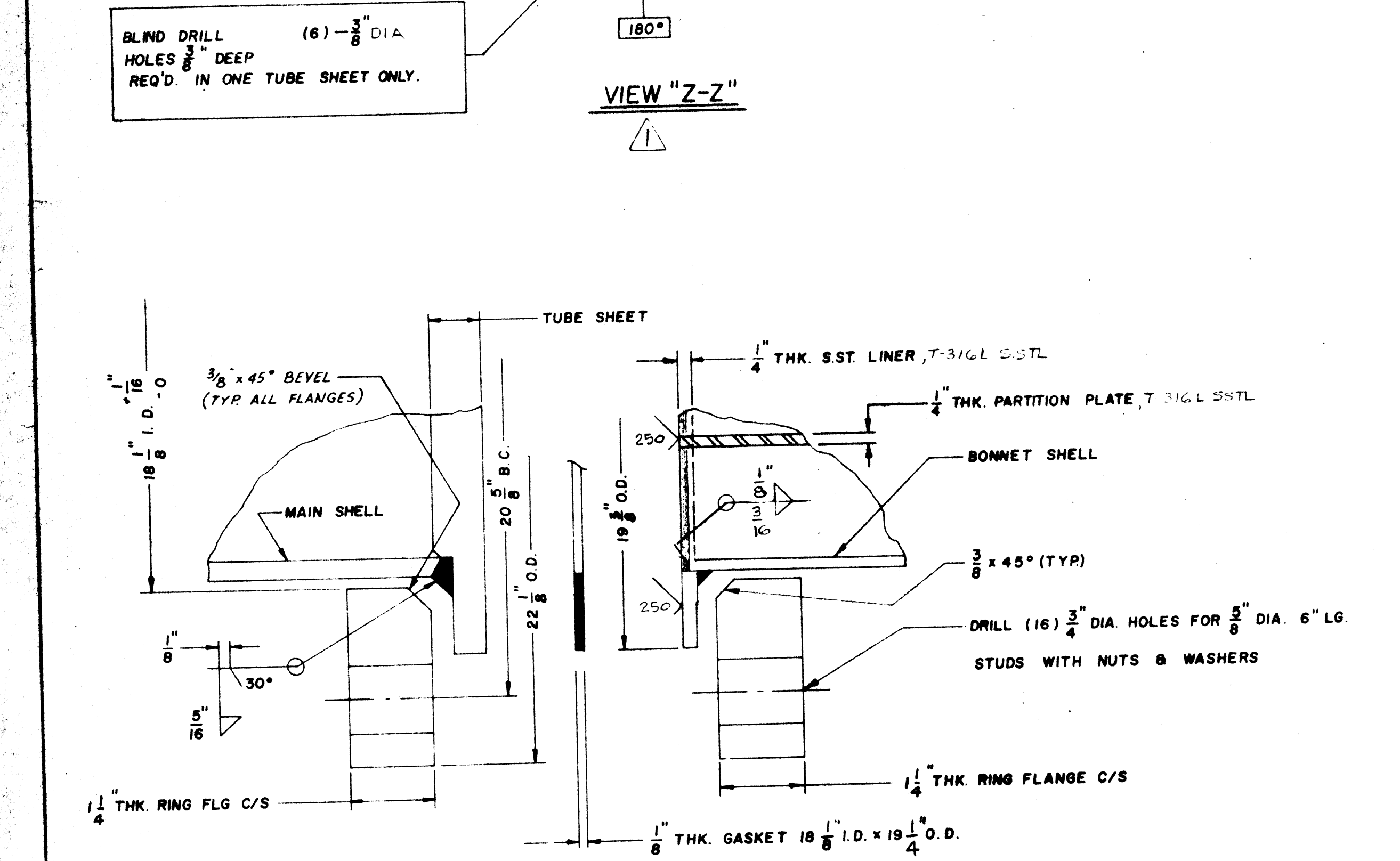
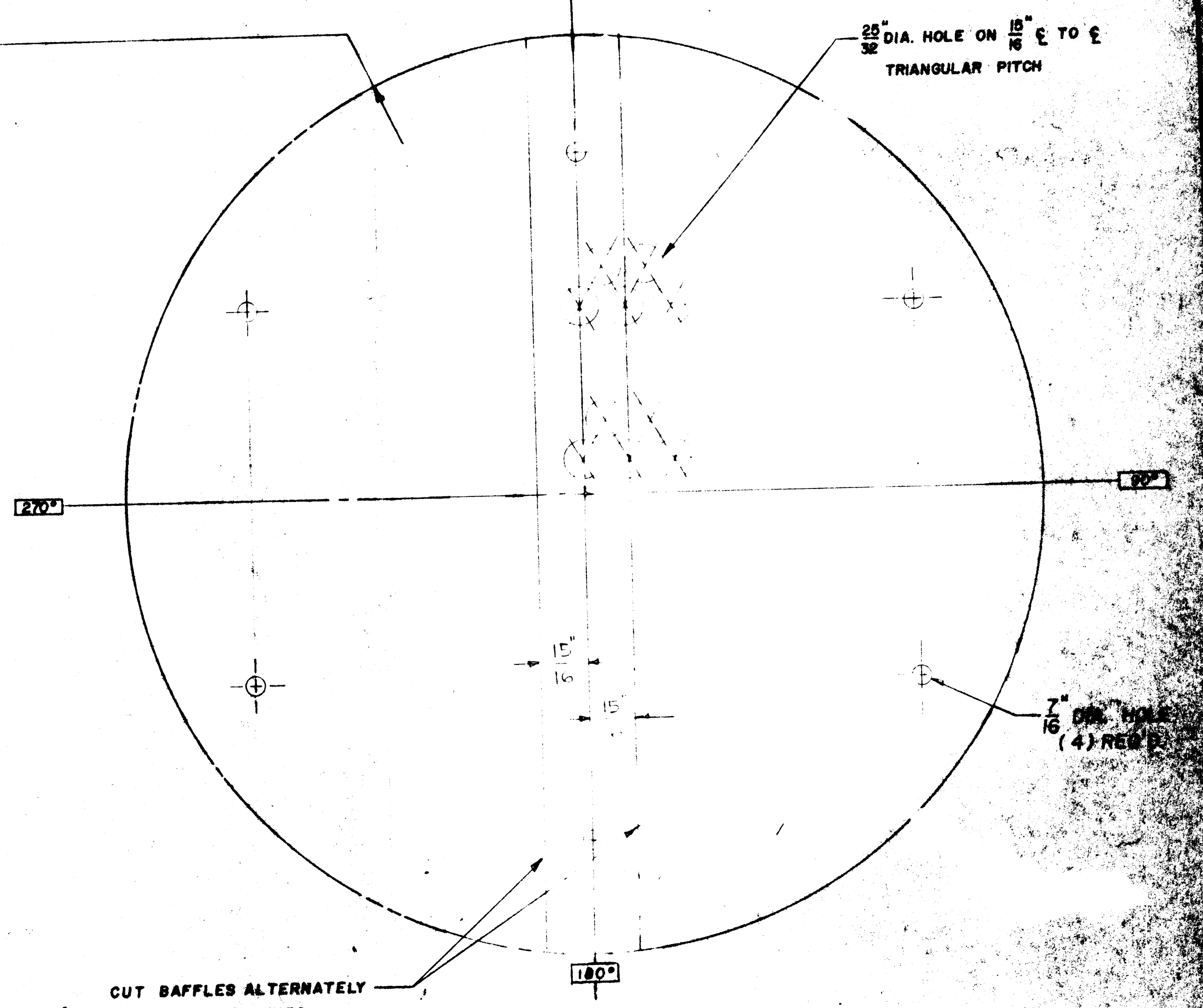
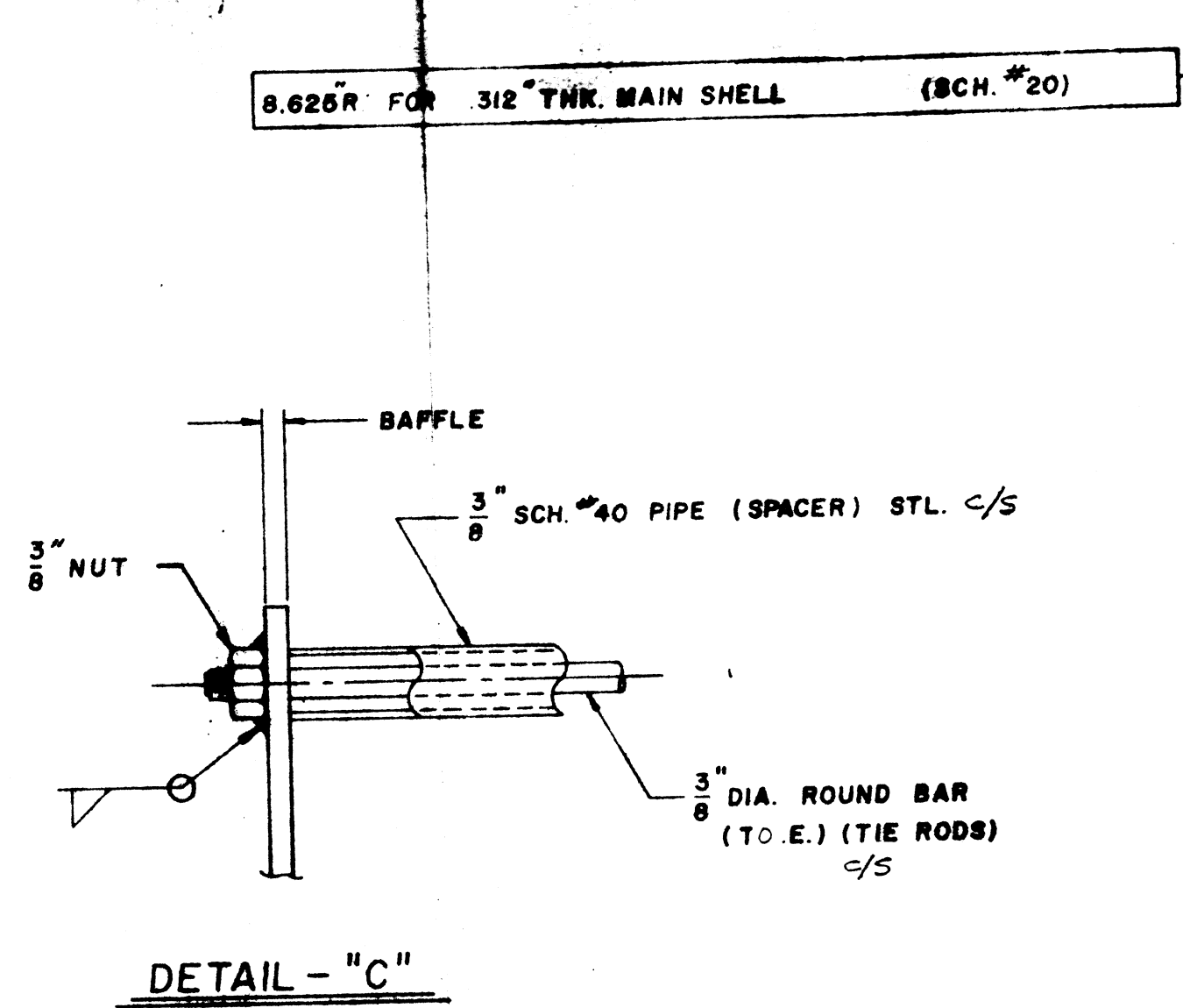
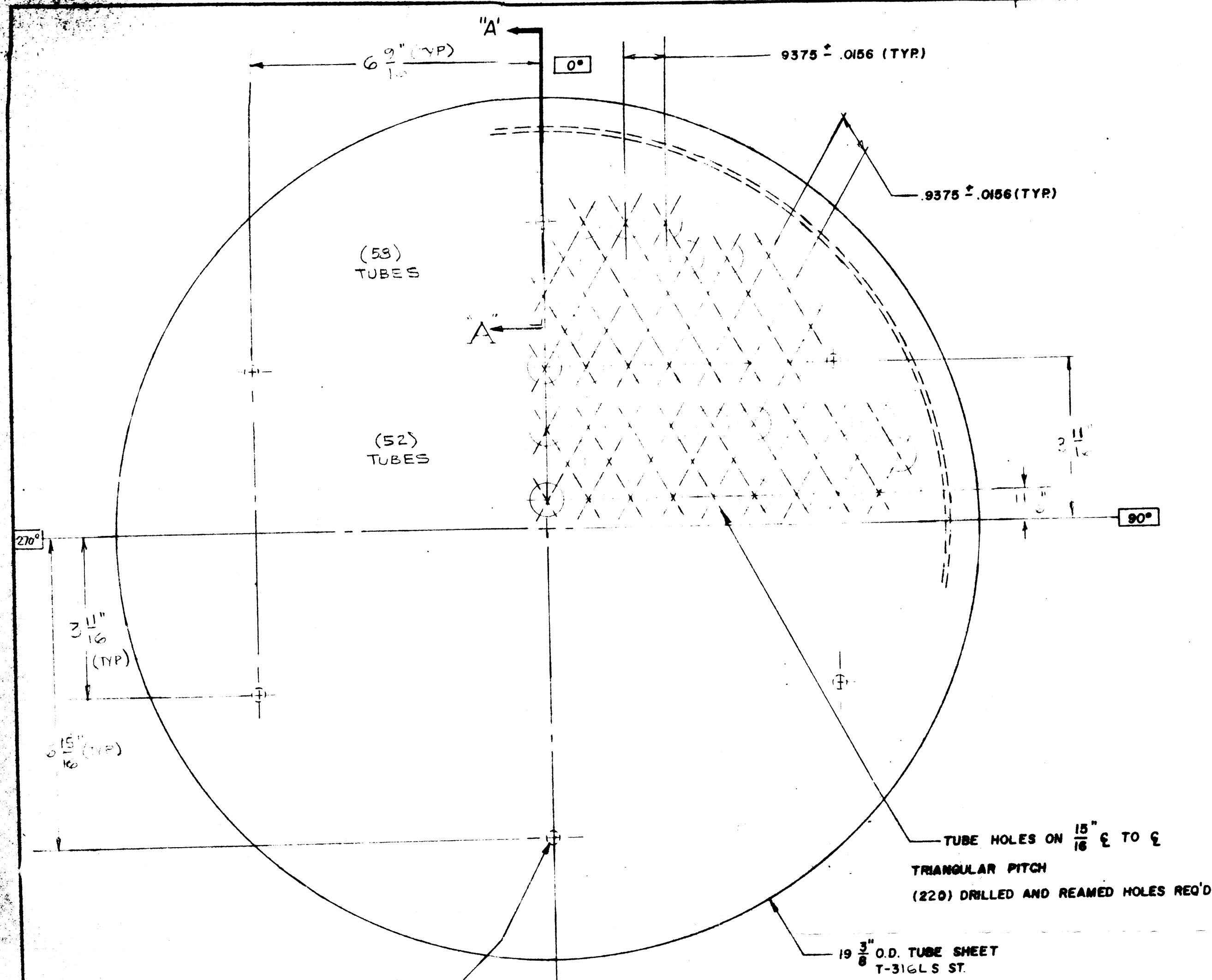


ASME CODE



NO.	DATE	BY	REVISIONS

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ASME CODE

MACHINE SHOP & QUALITY CONTROL - PLEASE NOTE:
 96% OF TUBEHOLE DIAMETERS MUST NOT EXCEED THE +.002 TOLERANCE; REMAINDER NOT EXCEED +.010 TOLERANCE.

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NOTE: FOR MULTIPLE PASS UNITS REFER TO MAIN DWG. FOR GASKET DIM'S & DETAILS

NO.	DATE	BY	REVISIONS
1	3/14/91	[Signature]	CHANGE TUBE SHEET LAYOUT IN VIEW Z-Z AND BAFFLES TO SUIT.

PERRY PRODUCTS COMPANY
 STAINLESS STEEL FABRICATORS

MOUNT LAUREL ROAD • HAINESPORT, NEW JERSEY

DRN. [Signature] 18" TUBE SHEET & BAFFLE LAYOUT
 DATE 2/27/91
 CHKD. [Signature] 4-PASS, 3/4" TUBES ON 15/16" Δ PITCH

SER. NO. B-4557-172 JOB NO. 13891 DWG. NO. D-91048

L.P.S. SIZE	A	B	T ₁	T ₂	T ₃	r
4	6 3/16	4 9/16	.1875	.250	.375	7/16
5	7 5/16	5 5/8		.3125	↓	↓
6	8 1/2	6 11/16		↓	.4375	1/2
8	10 5/8	8 11/16		.375	.500	
10	12 3/4	10 13/16				
12	15	12 13/16	↓			
14	16 1/4	14 1/16	.250			
16	18 1/2	16 1/16				
18	21	18 1/16				
20	23	20 1/16	↓	↓	↓	↓

MINIMUM THICKNESS AFTER MACH.

T₁ - WITH SCH. 10 PIPE
T₂ - WITH SCH. 40 PIPE
T₃ - WITH SCH. 80 PIPE

✓ = 250 AA MACHINED FINISH UNLESS OTHERWISE NOTED ON MAIN DRAWING.

METAL THICKNESS FOR THE THINNER OF THE PARTS JOINED BY WELDING. (WALL OF VESSEL OR NOZZLE)	D	H	J
1/8 to 3/16	3/16	3/16	⑤
1/4 to 3/8	3/8	3/8	⑤
7/16 to 5/8	9/16	3/8	⑤
11/16 to 3/4	11/16	1/2	1/2

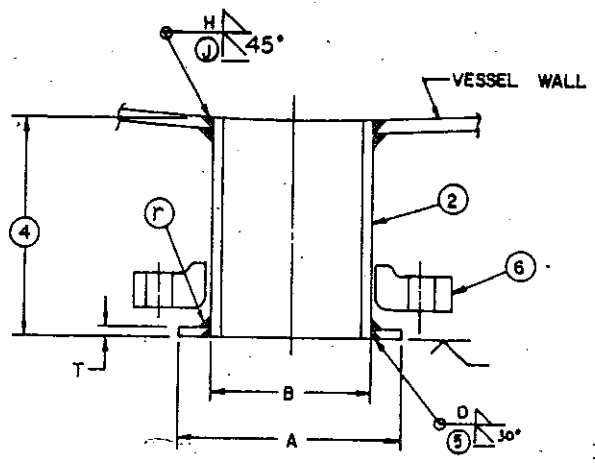
NOTES:

- ① (1) 1/8" NPT WEEP HOLE AT LOWEST POINT IN REINF PAD ONLY.
- ② NOZZLE NECK REFER TO MAIN DWG. FOR PIPE SCHEDULE.
- ③ REFER TO MAIN DWG. FOR THICKNESS, O.D. & MAT'L. OF REINF. PAD.
- ④ SEE MAIN DWG. FOR PROJECTION.
- ⑤ FULL PENETRATION WELDS.
- ⑥ ST'D. 150# C/S SA-181-GR.1 LAP JOINT FLANGE UNLESS OTHERWISE NOTED ON MAIN DRAWING.
- ⑦

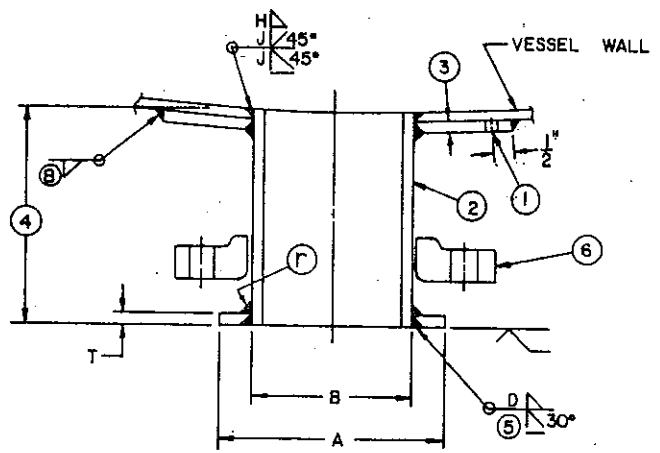
VESSEL WALL THICKNESS	NOZZLE PROJECTION
1/8 THRU 3/8	1/2
7/16 THRU 7/8	1
15/16 THRU 1	1 1/4

- ⑧ THINNER OF THE TWO PCS. WELDED TOGETHER UNLESS OTHERWISE NOTED ON MAIN DRAWING.

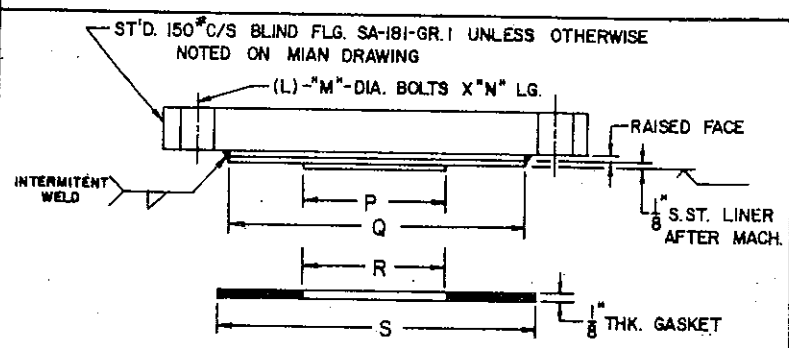
REVISED AND REDRAWN 9-20-82



DETAIL "7-7"



DETAIL "8-8"



DETAIL "9-9"

SIZE	L	M	N	P	Q	R	S
4"	8	5/8	3/2	3	6 3/16	4 1/2	6 7/8
5"	8	3/4	4	3 1/2	7 5/16	5 9/16	7 3/4
6"	8	3/4	4	4 1/2	8 1/2	6 5/8	8 3/4
8"	8	3/4	4 1/2	6 1/2	10 5/8	8 5/8	11
10"	12	7/8	5	8	12 3/4	10 3/4	13 3/8
12"	12	7/8	5	9 1/2	15	12 3/4	16 1/8
14"	12	1	5	11 1/2	16 1/4	14	17 3/4

PERRY PRODUCTS COMPANY
STAINLESS STEEL FABRICATORS



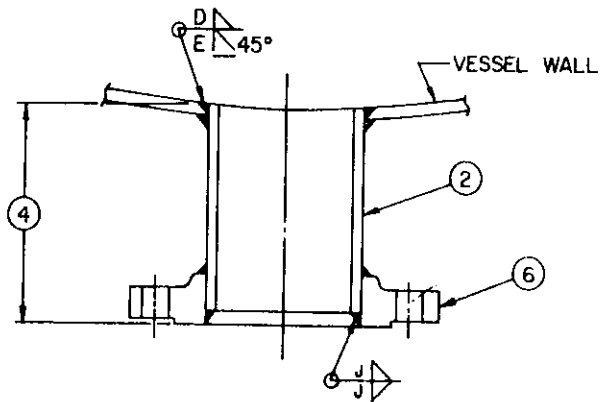
MOUNT LAUREL ROAD...HAINESPORT, NEW JERSEY 08034



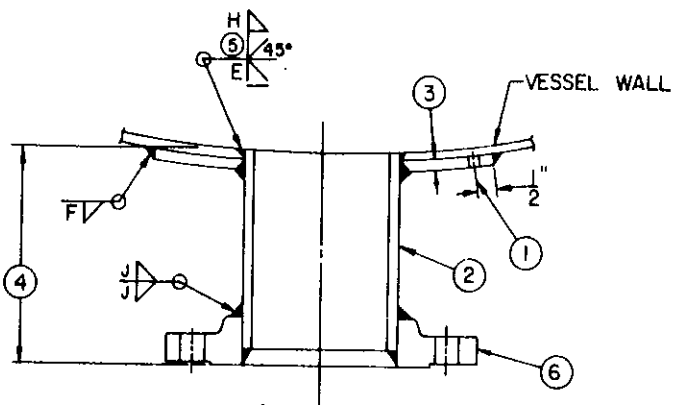
DRN. W.J.B.
DATE 5-12-78
CHKD. P.R.
SER. NO.

ST'D. NOZZLE DETAIL (CODE)

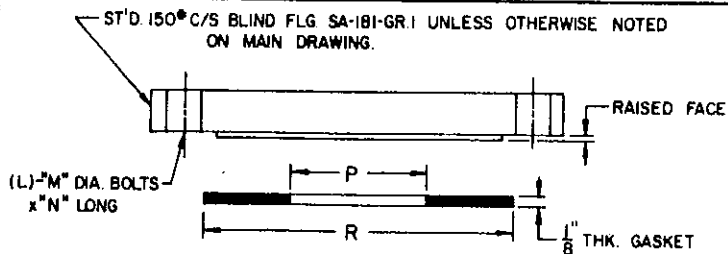
JOB NO. DWG. NO. **D-ND-70**



DETAIL "7-7"



DETAIL "8-8"



DETAIL "9-9"

SIZE	L	M	N	P	R
1	4	1/2	2 1/2	1 5/16	2 5/8
2	4	5/8	3	2 3/8	4 1/8
3	4	5/8	3 1/4	3 1/2	5 3/8
4	8	5/8	3 1/2	4 1/2	6 7/8
5	8	3/4	4	5 9/16	7 3/4
6	8	3/4	4	5 5/8	8 3/4
8	8	3/4	4 1/2	6 5/8	11
10	12	7/8	5	10 3/4	13 3/8
12	12	7/8	5	12 3/4	16 1/8

METAL THICKNESS FOR THE THINNER OF THE PARTS JOINED BY WELDING. WALL OF VESSEL OR WALL OF NOZZLE.	D	E	F	H	J
1/8 to 3/16	3/16	(5)	3/16	3/16	(9)
1/4 to 3/8	3/8	(5)	5/16	3/8	(9)
7/16 to 5/8	9/16	(5)	7/16	3/8	9/16
1 1/16 to 3/4	1 1/16	1/2	9/16	3/8	1 1/16

NOTES:

- (1) (1) 1/8" NPT WEEP HOLE AT LOWEST POINT IN REINF. PAD ONLY.
- (2) NOZZLE NECK REFER TO MAIN DWG. FOR PIPE SCHEDULE.
- (3) REFER TO MAIN DWG. FOR THICKNESS, OD. AND MATERIAL OF REINF. PAD.
- (4) SEE MAIN DRAWING FOR PROJECTION.
- (5) FULL PENETRATION WELDS.
- (6) ST'D. 150° C/S SA-181-GR.1 SLIP-ON FLANGE W/ ST'D. MACHINE FINISH UNLESS OTHERWISE NOTED ON MAIN DRAWING.
- (7)

VESSEL WALL THICKNESS	NOZ. PROJ.
1/8 THRU 3/8	1/2
7/16 THRU 7/8	1
15/16 THRU 1	1 1/4
- (8) THIS DWG. FOR 1" TO 12" I.P.S. PIPE SIZE.
- (9) FILLET WELD HEIGHT TO BE THICKNESS OF PIPE.

PERRY PRODUCTS COMPANY
STAINLESS STEEL FABRICATORS



MOUNT LAUREL ROAD • HAINESPORT, NEW JERSEY 08036



DRN W.J.B.

DATE 9-3-82

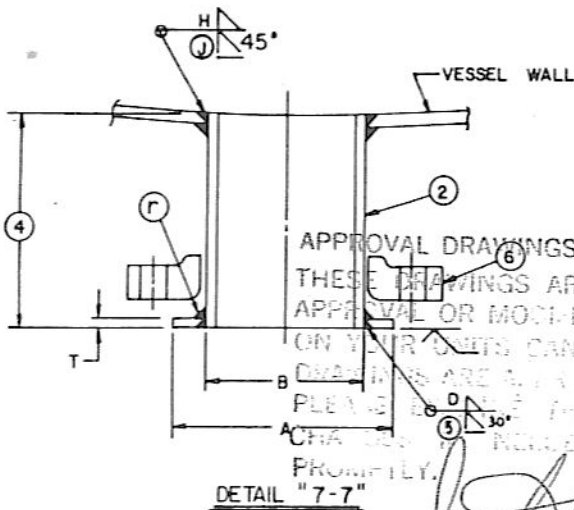
CHKD. P.R.

STANDARD NOZZLE DETAILS (CODE)

SFR. NO.

JOB NO.

DWG. NO. D-ND-72



DETAIL "7-7"

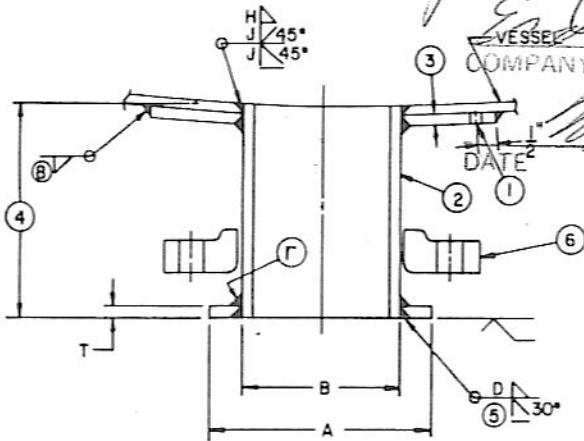
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[Signature]
 NAME

LPS. SIZE	A	B	T ₁	T ₂	T ₃	r
4	6 3/16	4 9/16	.1875	.250	.375	7/16
5	7 5/16	5 5/8		.3125	↓	↓
6	8 1/2	6 11/16		↓	.4375	1/2
8	10 5/8	8 11/16		.375	.500	
10	12 3/4	10 13/16				
12	15	12 13/16	↓			
14	16 1/4	14 1/16	.250			
16	18 1/2	16 1/16				
18	21	18 1/16				
20	23	20 1/16	↓	↓	↓	↓

MINIMUM THICKNESS AFTER MACH.

T₁ - WITH SCH. 10 PIPE
 T₂ - WITH SCH. 40 PIPE
 T₃ - WITH SCH. 80 PIPE



DETAIL "8-8"

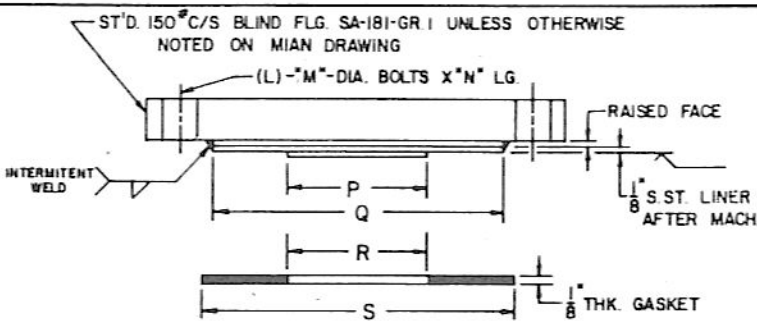
[Signature]
 VESSEL WALL COMPANY
 DATE: *March 9, 1991*
 * 250 AA MACHINED FINISH UNLESS OTHERWISE NOTED ON MAIN DRAWING.

METAL THICKNESS FOR THE THINNER OF THE PARTS JOINED BY WELDING. (WALL OF VESSEL OR NOZZLE)	D	H	J
1/8 to 3/16	3/16	3/16	⑤
1/4 to 3/8	3/8	3/8	⑤
7/16 to 5/8	9/16	3/8	⑤
11/16 to 3/4	11/16	1/2	1/2

NOTES:

- (1) 1/8" NPT WEEP HOLE AT LOWEST POINT IN REINF. PAD ONLY.
- (2) NOZZLE NECK REFER TO MAIN DWG. FOR PIPE SCHEDULE.
- (3) REFER TO MAIN DWG. FOR THICKNESS, O.D. & MAT'L. OF REINF. PAD.
- (4) SEE MAIN DWG. FOR PROJECTION.
- (5) FULL PENETRATION WELDS.
- (6) STD. 150° C/S SA-181-GR 1 LAP JOINT FLANGE UNLESS OTHERWISE NOTED ON MAIN DRAWING.
- (7)


VESSEL WALL THICKNESS	NOZZLE PROJECTION
1/8 THRU 3/8	1/2
7/16 THRU 7/8	1
15/16 THRU 1	1 1/4
- (8) THINNER OF THE TWO PCS. WELDED TOGETHER UNLESS OTHERWISE NOTED ON MAIN DRAWING.



DETAIL "9-9"

REVISED AND REDRAWN 9-20-82

SIZE	L	M	N	P	Q	R	S
4"	8	5/8	3 1/2	3	6 3/16	4 1/2	6 7/8
5"	8	3/4	4	3 1/2	7 5/16	5 9/16	7 3/4
6"	8	3/4	4	4 1/2	8 1/2	6 5/8	8 3/4
8"	8	3/4	4 1/2	6 1/2	10 5/8	8 9/8	11
10"	12	7/8	5	8	12 3/4	10 3/4	13 3/8
12"	12	7/8	5	9 1/2	15	12 3/4	16 1/8
14"	12	1	5	11 1/2	16 1/4	14	17 3/4



PERRY PRODUCTS COMPANY
 STAINLESS STEEL FABRICATORS

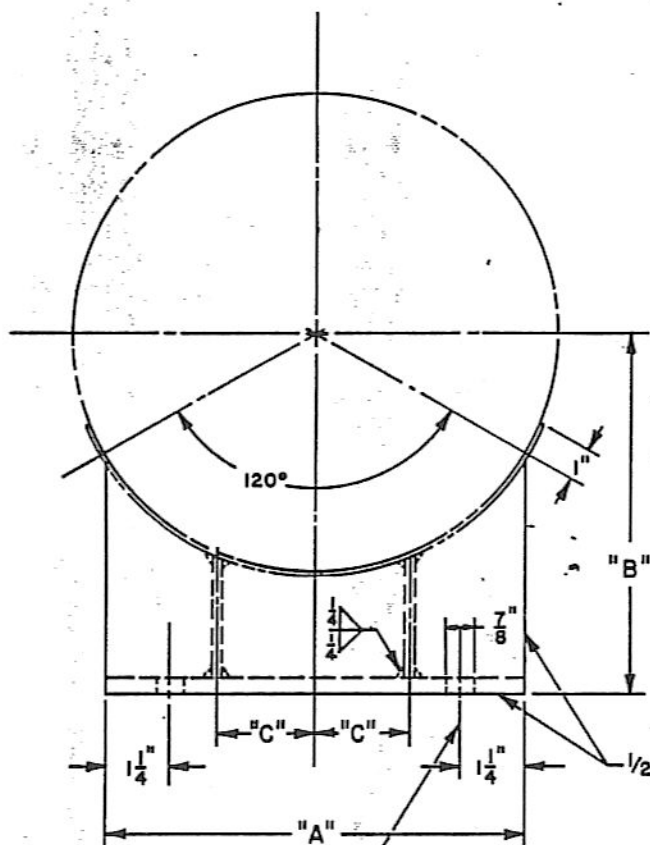
MOUNT LAUREL ROAD • HAINESPORT, NEW JERSEY 08036

DRN W.J.B.
 DATE 5-12-78
 CHKD P.R.

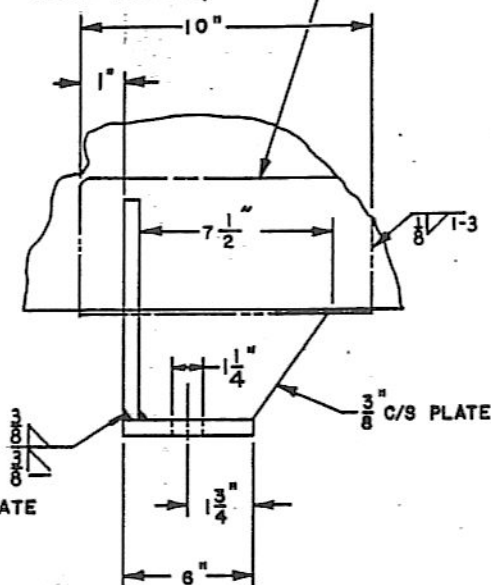
ST'D. NOZZLE DETAIL (CODE)

JOB NO. DWG. NO. **D-ND-70**

PERY FOR PROCESS EQUIPMENT



No. 11 GA. T-304 S. ST. PAD
(APPLICABLE IN CASE OF
S. ST. SHELLS)



(1) SADDLE TO HAVE
7/8" DIA. ROUND HOLES
& (1) SADDLE TO HAVE
7/8" x 1/4" OBROUND HOLES

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SIZE	"A"	"B"	"C"
18"	15 1/2"	13"	4 3/4"
20"	17 1/4"	14"	5 1/2"
22"	19"	15"	6 1/2"
24"	20 3/4"	16"	7 1/2"
26"	22 1/2"	17"	8 1/4"
28"	24 1/4"	18"	9"
30"	26"	19"	10"

DATE

Handwritten signatures and date:
 [Signature]
 [Signature]
 COMPANY
 March 6 1991

NO.	DATE	BY	REVISIONS

PERRY PRODUCTS COMPANY
STAINLESS STEEL FABRICATORS



MOUNT LAUREL ROAD • HAINESPORT, NEW JERSEY 08036

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PERRY
FOR
PROCESS
EQUIPMENT

DRN. W. J. B.

DATE 6-16-75

CHKD. J. J. J.

SER. NO.

HEAT EXCHANGER / CONDENSER
SADDLE DETAILS

JOB NO.

DWG. NO. B-61375