

∇ = 125/250 AARH UNLESS OTHERWISE NOTED.  
 ∇ = CONTINUOUS SPIRAL GROOVE GENERATED BY A 1/16" R. ROUND-NOSED TOOL AT A FEED OF 1/32" PER REVOLUTION.

**13A NOZZLE 'I' ASSEMBLY**  
(1) REQD.

**A - PROCEED** FLUOR DANIEL  
 Notification to proceed does not constitute acceptance nor relieve Contractor/Seller of any liability. Acceptance is accomplished under the terms of the Contractor/Purchase Order.

VITAMIN C EXPANSION PROJECT  
 10-Apr-97  
 FLUOR DANIEL Cont'l No.: 23618510-4-0203-26-1  
 TAG/ITEM NO.: 214T0553 *XVF 23500*  
 TAG NO. 214T0553  
 PROJECT NO. 23618500  
 VITAMIN-C EXPANSION PROJECT

FLUOR DANIEL, INC. P.O.#618550-4-0203  
 ASTRO M.O.# 60606

**NOZZLE 'I' DETAIL**

WELDING NOTE  
 UNLESS NOTED OTHERWISE:  
 ALL WELDING DESIGNATED ON THIS DRAWING IS PER WELDING SPECIFICATION NUMBER: 151-P3  
 UTILIZING WELD FILLER NUMBER: ERTi-1

THIS DRAWING USED IN CONJUNCTION WITH:  
 "THIS DOCUMENT IS THE PROPERTY OF ASTRO METALLURGICAL, INC. AND THE INFORMATION CONTAINED THEREIN IS CONSIDERED CONFIDENTIAL. THIS DOCUMENT IS NOT TO BE USED, REPRODUCED OR DISCLOSED, IN WHOLE OR IN PART IN ANY WAY DETRIMENTAL TO THE INTEREST OF THIS COMPANY WITHOUT THE PRIOR WRITTEN PERMISSION OF ASTRO. IT IS SUBJECT TO RETURN UPON REQUEST."  
 CERTIFIED DIMENSIONAL PRINT BY TLY DATE 4/4/97  
 RELEASE FOR FABRICATION ASTRO ENG. DEPT.  
 BY TLY DATE 4/4/97

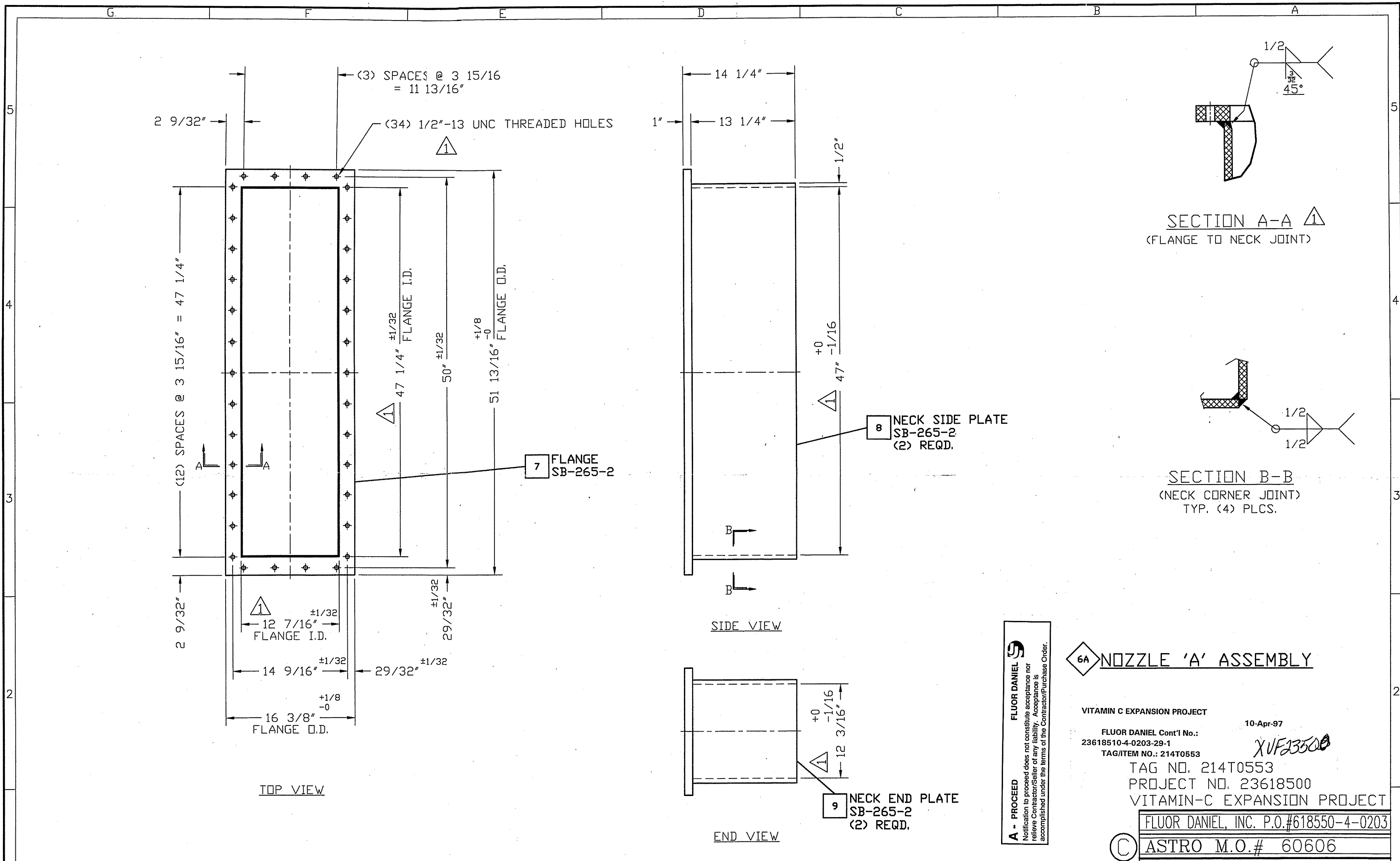
ASTRO Metallurgical, Inc.  
 3225 West Old Lincoln Way  
 Wooster, Ohio 44691

NO.	DATE	BY	DATE	BY	DESCRIPTION
1	3/27/97	TLY	3/27/97	JED	DWG. NO. WAS C-1241-B, NOW C-1241-C (WAS 'B' SIZE); DWG. WAS FOR NOZ. 'J' STUDDING PAD (NEW NOZ. IN DWG#C-1240-B)
REVISIONS APPROVED					

ASTRO	ASTRO Metallurgical, Inc. 3225 West Old Lincoln Way Wooster, Ohio 44691
DRAWN BY TLY	DATE 2/25/97
CHECKED	DATE
APPROVED JED	DATE 4/4/97
DRAWING NO. C-1241-C	REV. 1

108272 26-1





VITAMIN C EXPANSION PROJECT

10-Apr-97

FLUOR DANIEL Cont'l No.: 23618510-4-0203-29-1

TAG/ITEM NO.: 214T0553

TAG NO. 214T0553

PROJECT NO. 23618500

VITAMIN-C EXPANSION PROJECT

FLUOR DANIEL, INC. P.O.#618550-4-0203

**C** ASTRO M.O.# 60606

**NOZZLE 'A' DETAIL**

ASTRO Metallurgical, Inc.  
3225 West Old Lincoln Way  
Wooster, Ohio 44691

SCALE 1 1/2" = 1'-0"

DRAWN BY TLY DATE 2/26/97

CHECKED DATE

APPROVED JED DATE 4/4/97

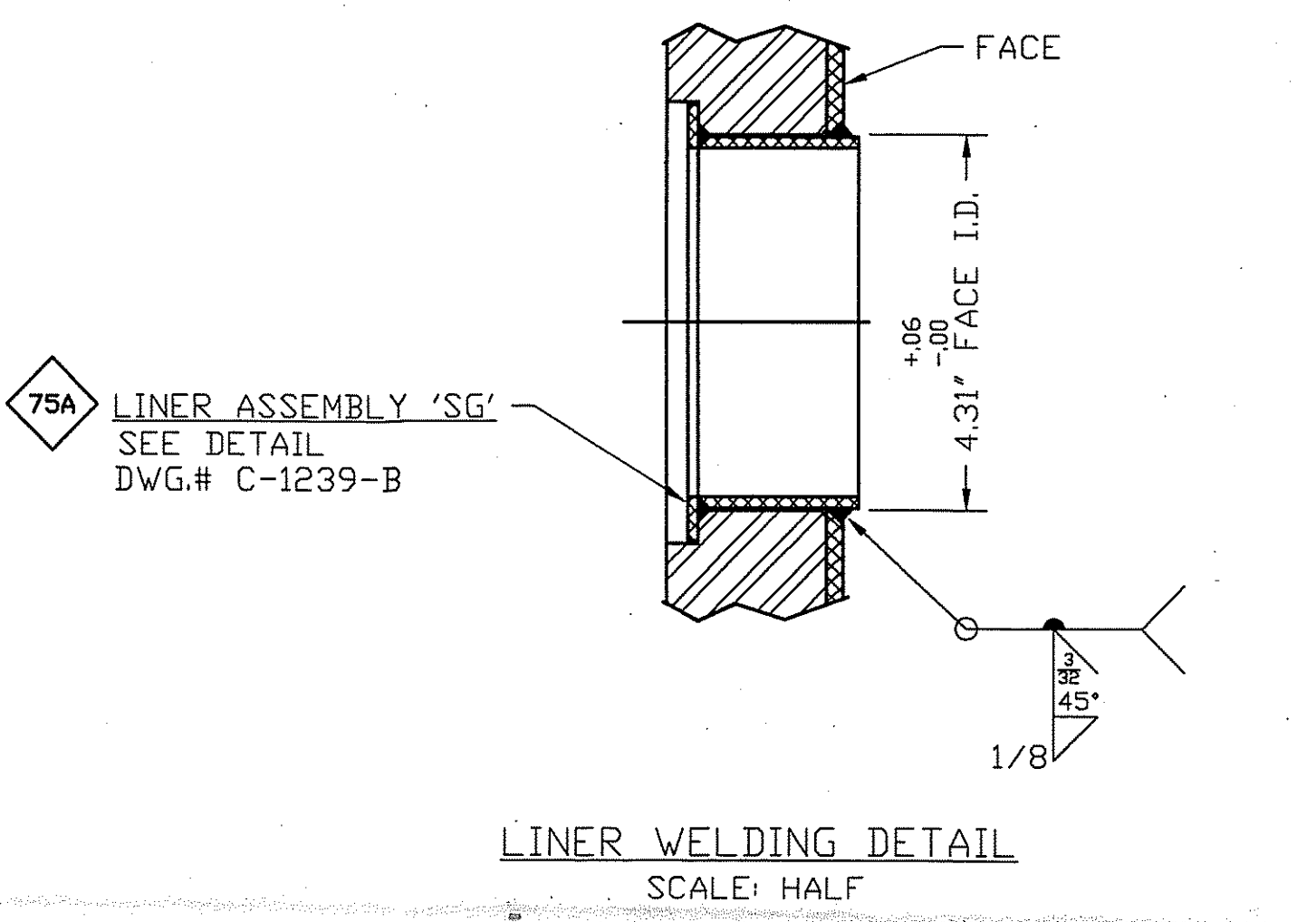
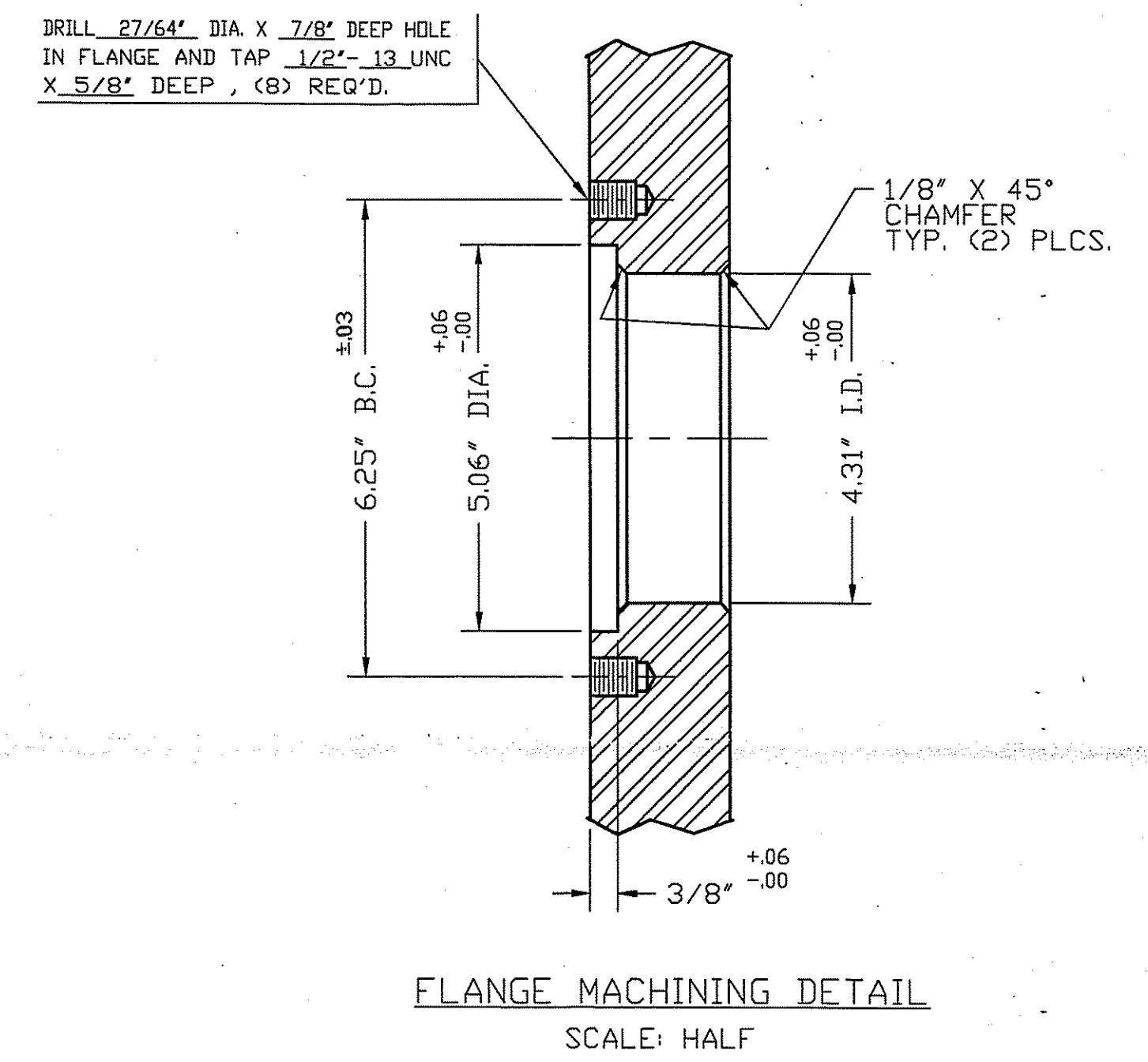
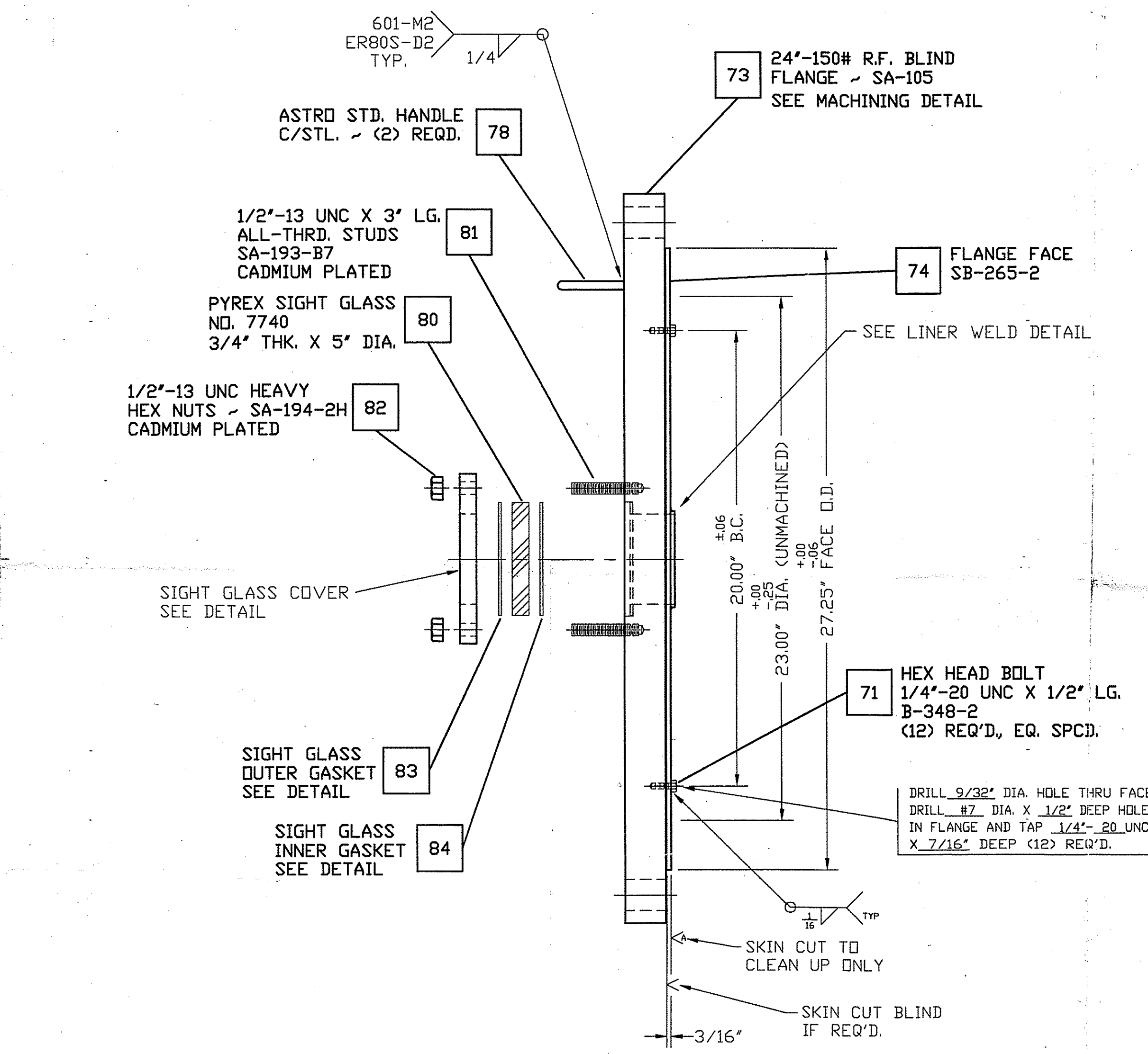
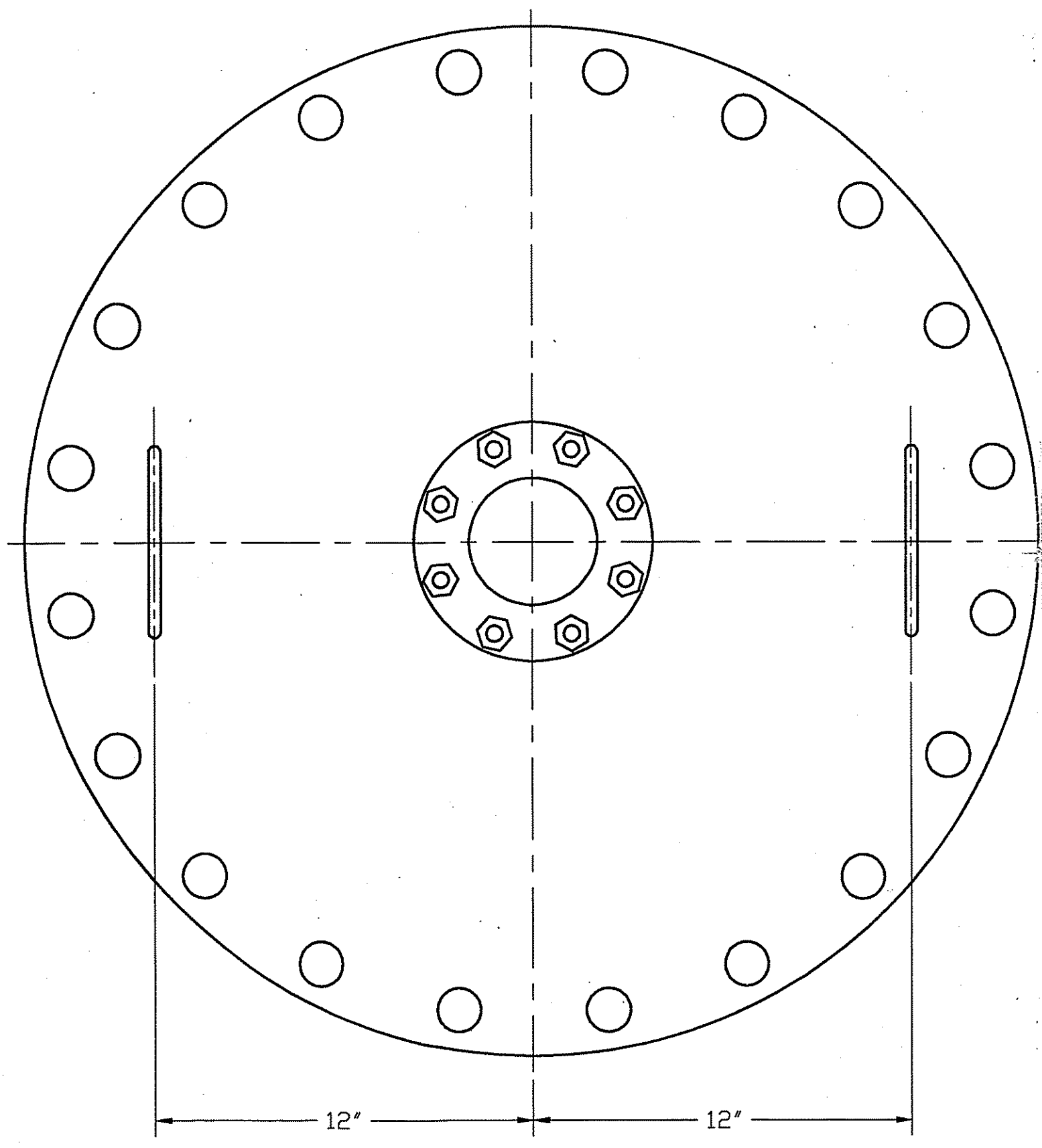
NO. DATE BY DATE BY

REVISIONS APPROVED

C-1243-C 1

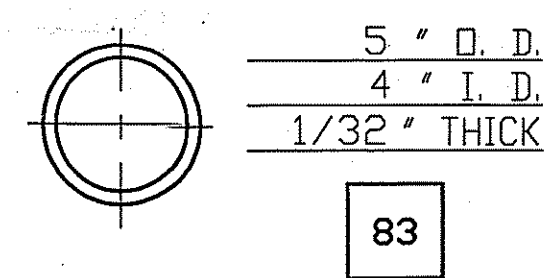
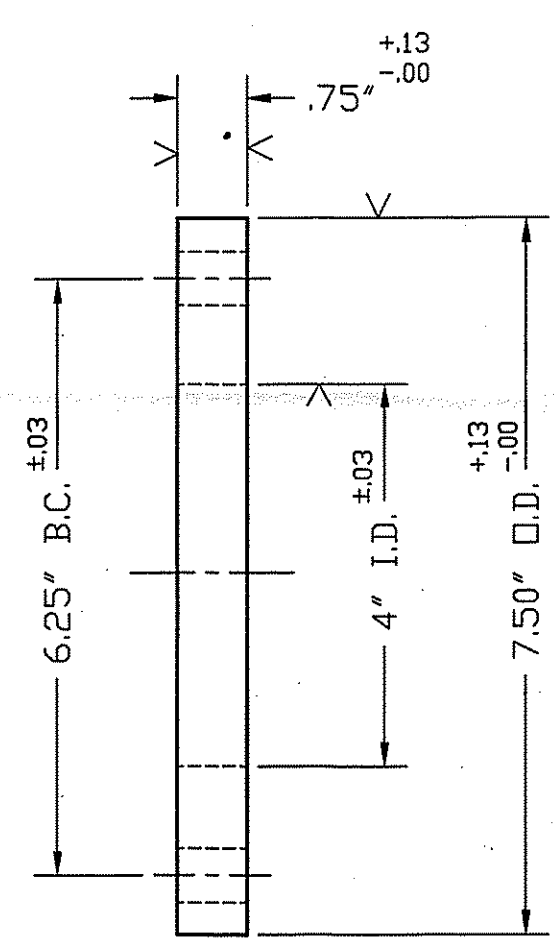
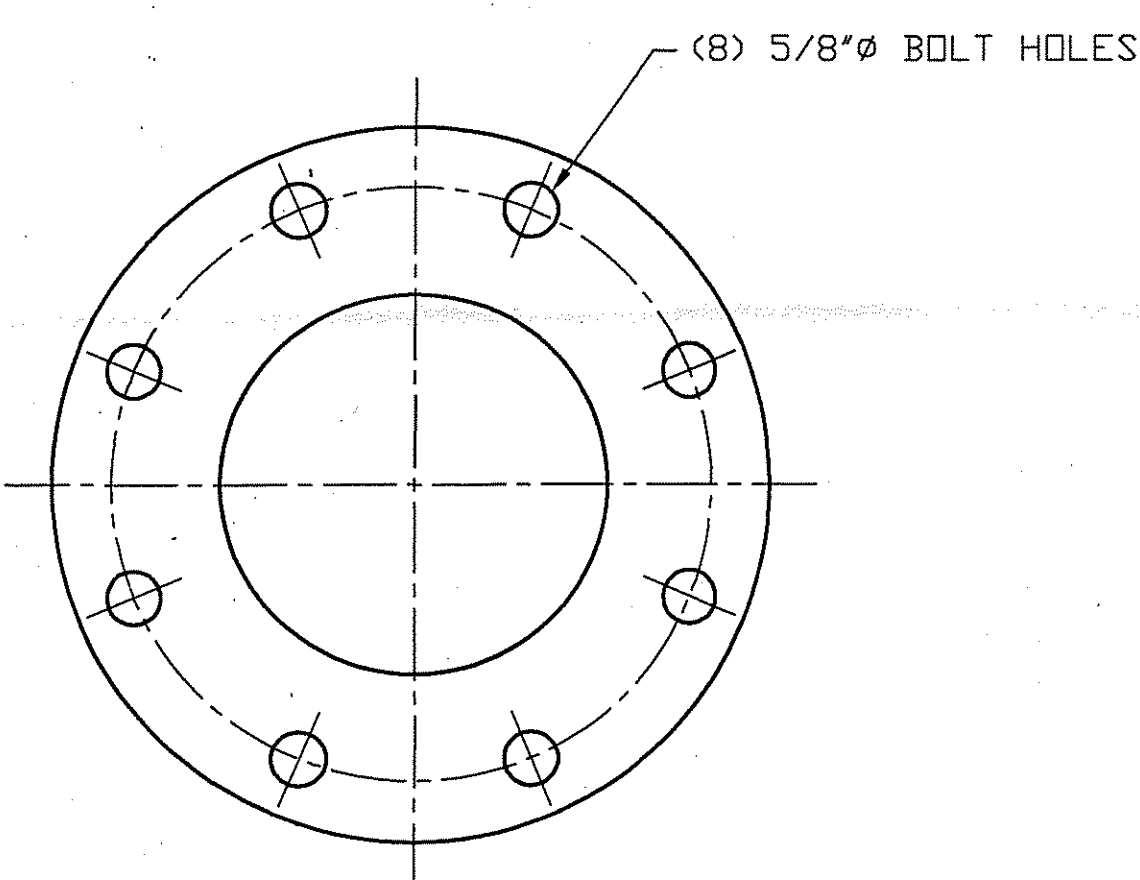
WELDING NOTE UNLESS NOTED OTHERWISE: ALL WELDING DESIGNATED ON THIS DRAWING IS PER WELDING SPECIFICATION NUMBER: 151-T2 UTILIZING WELD FILLER NUMBER: ERTI-1	THIS DRAWING USED IN CONJUNCTION WITH:		RELEASE FOR FABRICATION ASTRO ENG. DEPT. BY TLY DATE 4/4/97		DESCRIPTION 12.716" WAS 12.1316"; 47 1/4" WAS 48.5165; 47" WAS 47.114"; 12.316" WAS 10.314; 1/2"-13 UNC HOLES WERE 9/16" REVISED SECTION "A-A"	NO. DATE BY DATE BY REVISIONS APPROVED	APPROVED JED DATE 4/4/97	DRAWING NO. REV. C-1243-C 1
	"THIS DOCUMENT IS THE PROPERTY OF ASTRO METALLURGICAL, INC. AND THE INFORMATION CONTAINED THEREIN IS CONSIDERED CONFIDENTIAL. THIS DOCUMENT IS NOT TO BE USED, REPRODUCED OR DISCLOSED, IN WHOLE OR IN PART IN ANY WAY DETRIMENTAL TO THE INTEREST OF THIS COMPANY WITHOUT THE PRIOR WRITTEN PERMISSION OF ASTRO. IT IS SUBJECT TO RETURN UPON REQUEST."	CERTIFIED DIMENSIONAL PRINT BY TLY DATE 4/4/97	ASTRO Metallurgical, Inc. 3225 West Old Lincoln Way Wooster, Ohio 44691	1 3/25/97 TLY 3/25/97 JED				

108272

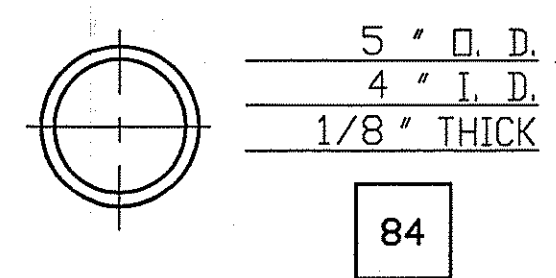


72A MANWAY COVER ASSEMBLY

75A LINER ASSEMBLY 'SG' SEE DETAIL DWG.# C-1239-B



GASKET DETAIL  
(1) REQ'D. N.T.S.  
SIGHT GLASS (OUTER)  
MATL: DURABLA



GASKET DETAIL  
(1) REQ'D. N.T.S.  
SIGHT GLASS (INNER)  
MATL: GARLOCK GYLON 3510

NOTES

- FLANGE BOLT HOLES AND FACE BOLTS TO STRADDLE COMMON CENTER LINE.
  - FACE TO BE TIGHT AGAINST C/STL. BLIND PRIOR TO MACHINING. NO GAPS PERMITTED. MACHINE GASKET SURFACE TO CLEAN UP.
  - V = 125/250 AARH UNLESS OTHERWISE NOTED.
- ∇ = CONTINUOUS SPIRAL GROOVE GENERATED BY A 1/16" R. ROUND-NOSED TOOL AT A FEED OF 1/32" PER REVOLUTION.

79 SIGHT GLASS COVER DETAIL  
(1) REQ'D. SA-516-70  
SCALE: HALF

ASTRO  
STANDARD DIMENSIONAL TOLERANCES  
(UNLESS NOTED OTHERWISE)  
ANGULAR TOLERANCE - 2'  
FRACTIONAL DIMENSIONS - ±1/16"  
(1) PLACE DECIMAL (.0) - ±.002"  
(2) PLACE DECIMAL (.00) - ±.003"  
(3) PLACE DECIMAL (.000) - ±.005"  
TOLERANCES ARE NOT ACCUMULATIVE

WELDING NOTE  
UNLESS NOTED OTHERWISE:  
ALL WELDING DESIGNATED ON THIS DRAWING IS PER WELDING SPECIFICATION NUMBER: 151-12  
UTILIZING WELD FILLER NUMBER: ERTI-1

THIS DRAWING USED IN CONJUNCTION WITH:  
ASTRO ENG. DEPT.  
RELEASE FOR FABRICATION  
BY: TLY DATE: 4/4/97

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CERTIFIED DIMENSIONAL PRINT  
BY: TLY DATE: 4/4/97  
Astro Metallurgical, Inc.  
3225 West Old Lincoln Way  
Wooster, Ohio 44691

A - PROCEED  
FLUOR DANIEL  
Notification to proceed does not constitute acceptance nor relieve Contractor/Supplier of any liability. Acceptance is accomplished under the terms of the Contractor/Purchase Order.

VITAMIN C EXPANSION PROJECT  
10-Apr-97  
FLUOR DANIEL Cont'l No.: 23618510-4-0203-37-1  
TAG/ITEM NO.: 214T0553

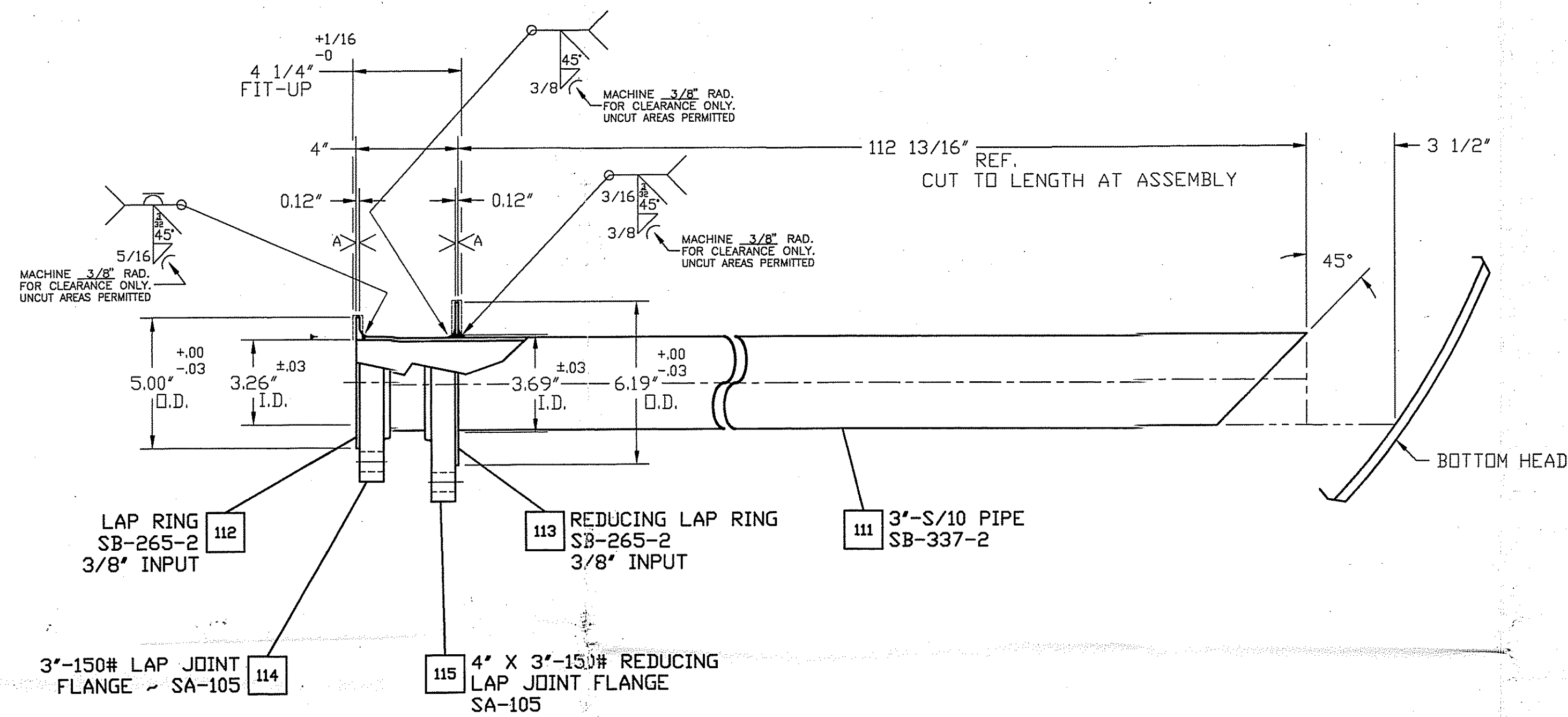
XVF23500  
TAG NO. 214T0553  
PROJECT NO. 23618500  
VITAMIN-C EXPANSION PROJECT  
FLUOR DANIEL, INC. P.O.#618550-4-0203  
ASTRO M.O.# 60606

MANWAY COVER DETAIL

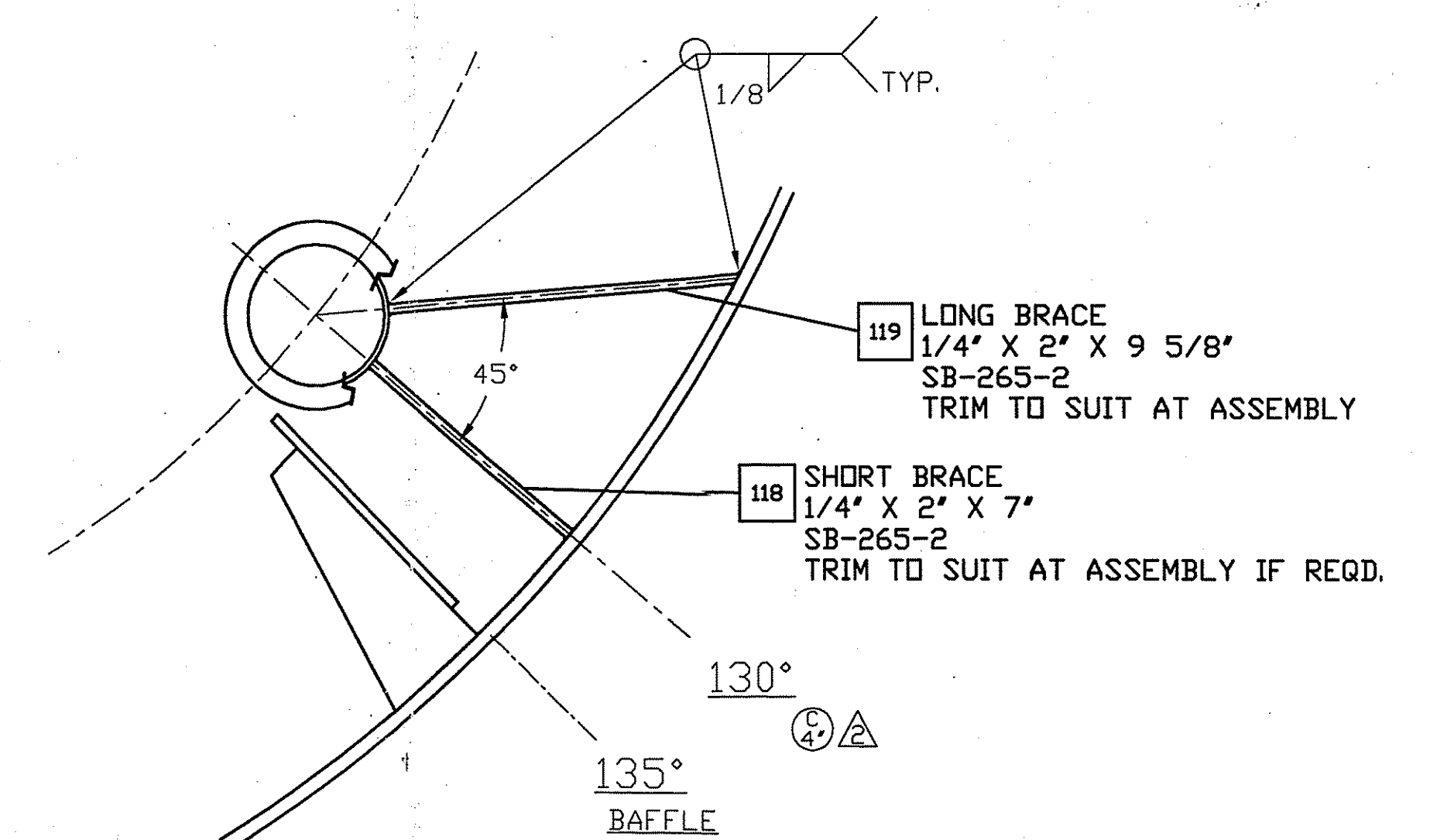
NO.	DATE	BY	DATE	BY	CHECKED	DATE	BY	APPROVED	DATE	BY
		TLY	2/28/97		JED	4/4/97				
REVISIONS										
APPROVED										

ASTRO Metallurgical, Inc.  
3225 West Old Lincoln Way  
Wooster, Ohio 44691  
DRAWN BY: TLY DATE: 2/28/97 SCALE: 3"=1'-0"  
CHECKED: JED DATE: 4/4/97 DRAWING NO.: C-1238-D  
REV.





110A NOZZLE  $\frac{1}{2}$ " DIP TUBE ASSEMBLY  
(1) REQD.



116A NOZZLE  $\frac{1}{2}$ " DIP TUBE GUIDE ASSEMBLY  
(1) REQD.

∇ = 125/250 AARH UNLESS OTHERWISE NOTED.  
 ⌀ = CONTINUOUS SPIRAL GROOVE GENERATED BY A 1/16" R. ROUND-NOSED TOOL AT A FEED OF 1/32" PER REVOLUTION.

**ASTRO**  
 STANDARD DIMENSIONAL TOLERANCES  
 (UNLESS NOTED OTHERWISE)  
 ANGULAR TOLERANCE - ±1/8"  
 FRACTIONAL DIMENSIONS - ±1/8"  
 (1) PLACE DECIMAL (.0) - ±.082"  
 (2) PLACE DECIMAL (.00) - ±.032"  
 (3) PLACE DECIMAL (.000) - ±.005"  
 TOLERANCES ARE NOT ACCUMULATIVE.

WELDING NOTE  
 UNLESS NOTED OTHERWISE:  
 ALL WELDING DESIGNATED ON THIS DRAWING IS PER WELDING SPECIFICATION NUMBER: 151-T2  
 UTILIZING WELD FILLER NUMBER: ERTI-1

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CERTIFIED DIMENSIONAL PRINT  
 BY TLY DATE 5/14/97  
 ASTRO Metallurgical, Inc.  
 3225 West Big Lincoln Way  
 Wooster, Ohio 44691

RELEASE FOR FABRICATION  
 ASTRO ENG. DEPT.  
 BY TLY DATE 5/14/97

THIS DRAWING REPLACES DWG.# C-1245-B (DEL. NOZ. 'C' BLIND);  
 NO. DATE BY DATE BY  
 REVISIONS APPROVED

DESCRIPTION  
 NO. DATE BY DATE BY  
 REVISIONS APPROVED

B- PROCEED AS NOTED. CHANGE AS NOTED AND RESUBMIT.  
 Notification to proceed does not constitute acceptance nor relieve Contractor/Seller of any liability. Acceptance is accomplished under the terms of the Contractor/Purchase Order.

VITAMIN C EXPANSION PROJECT  
 FLUOR DANIEL Cont'l No.: 23618510-4-0203-2B-2  
 TAG/ITEM NO.: 214T0553

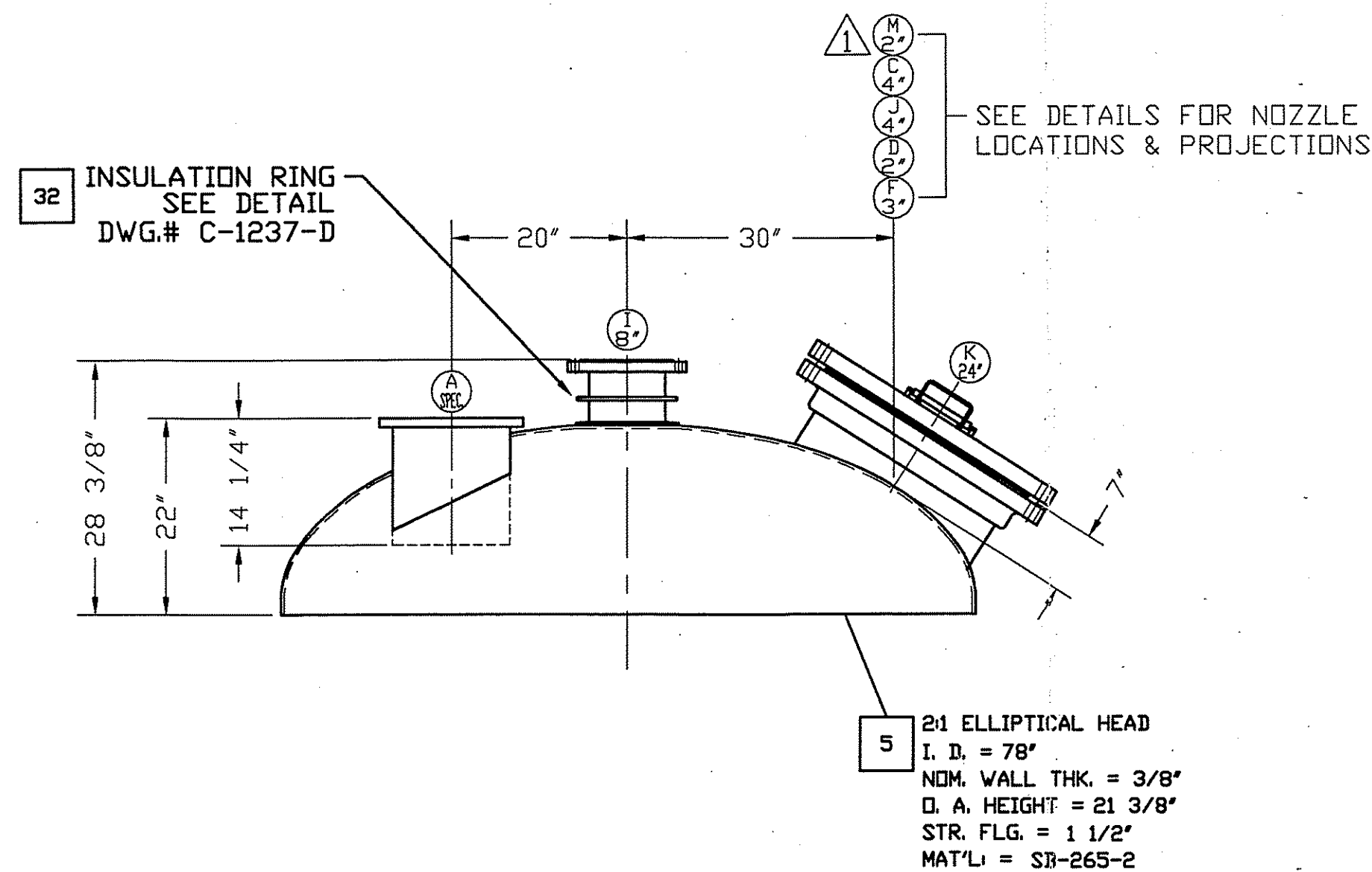
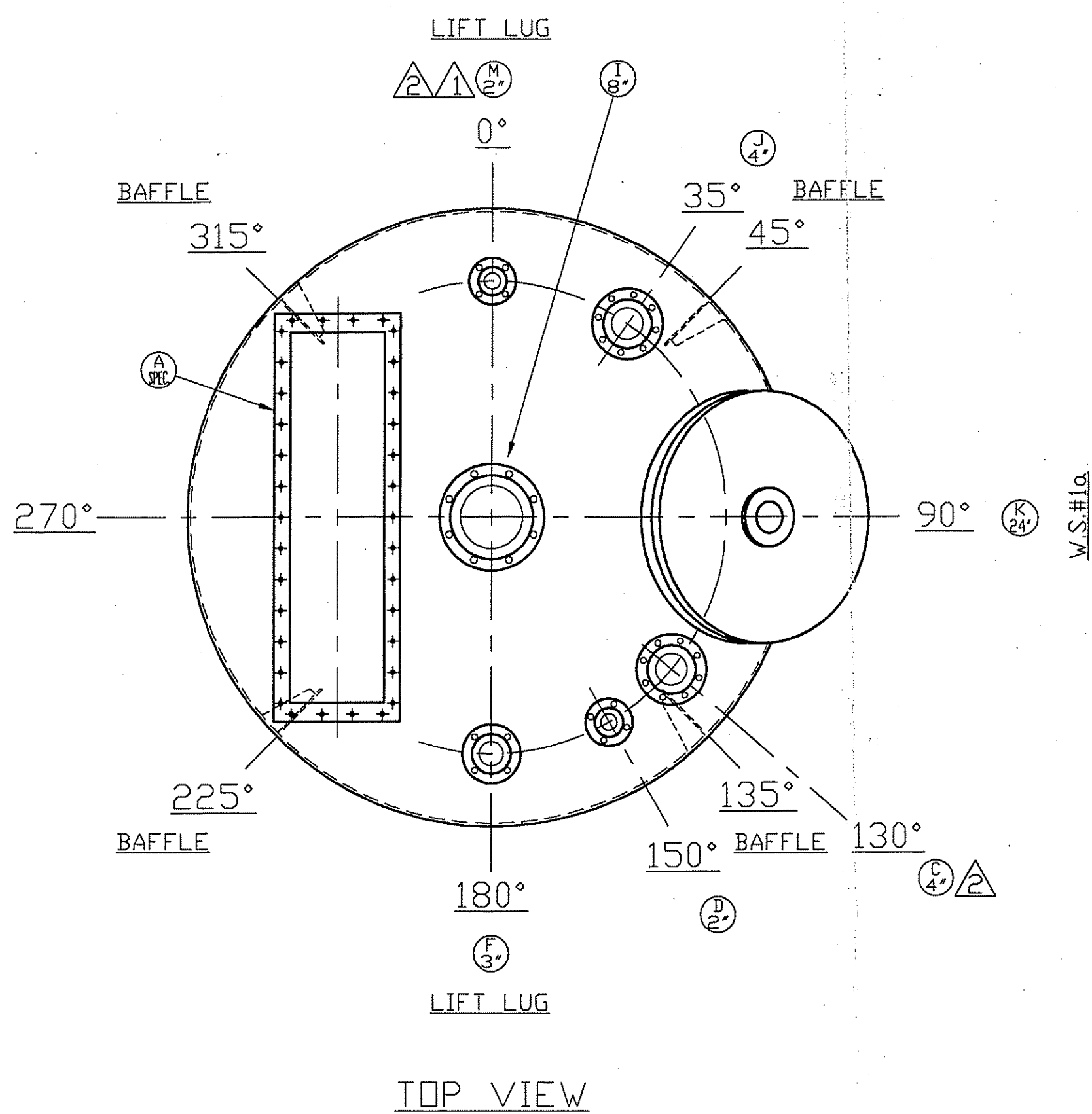
TAG NO. 214T0553  
 PROJECT NO. 23618500  
 VITAMIN-C EXPANSION PROJECT

FLUOR DANIEL, INC. P.O.#618550-0203  
 C ASTRO M.O.# 60606

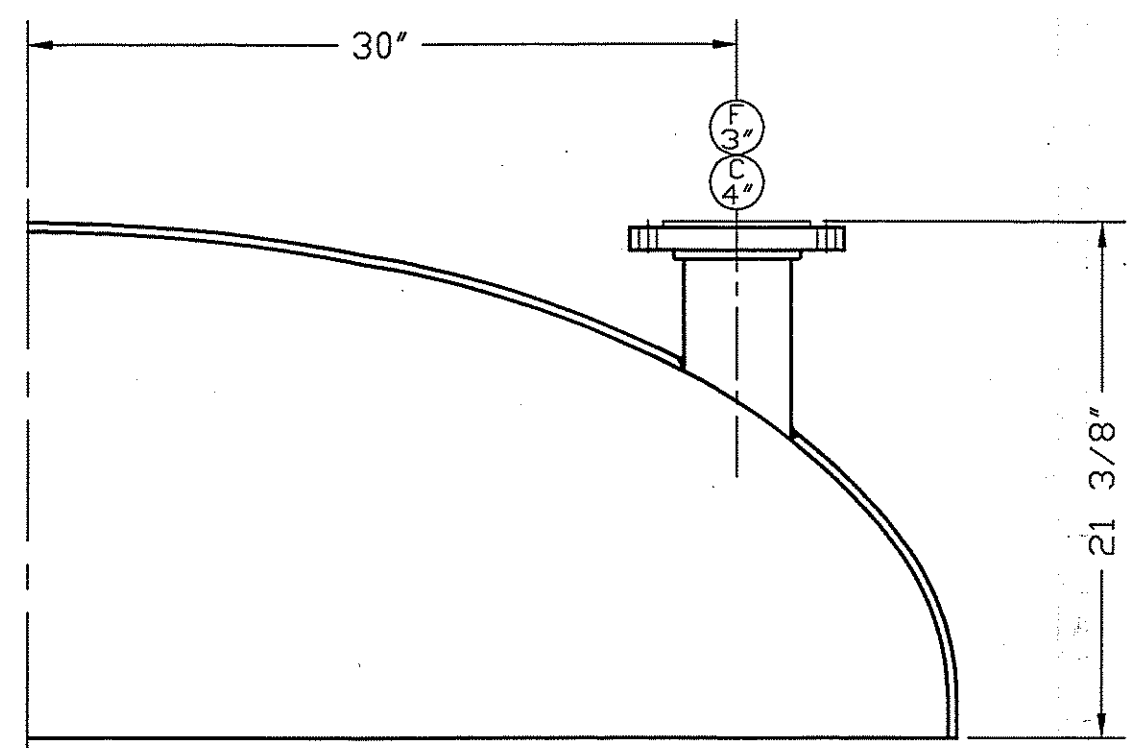
NOZZLE  $\frac{1}{2}$ " DIP TUBE & GUIDE DETAILS  
 Astro Metallurgical, Inc.  
 3225 West Big Lincoln Way  
 Wooster, Ohio 44691  
 DRAWN BY TLY DATE 5/13/97 SCALE 3"=1'-0"  
 CHECKED DATE DATE  
 APPROVED JED DATE 12/13/97  
 C-1245-D 1

108272

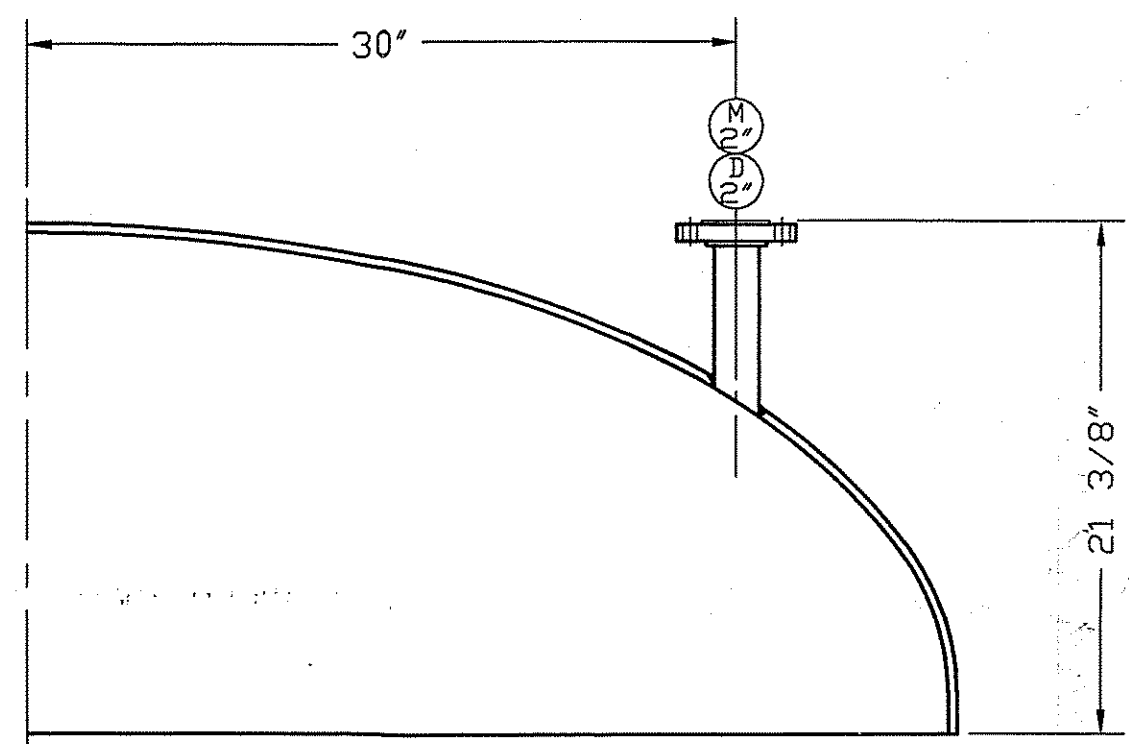
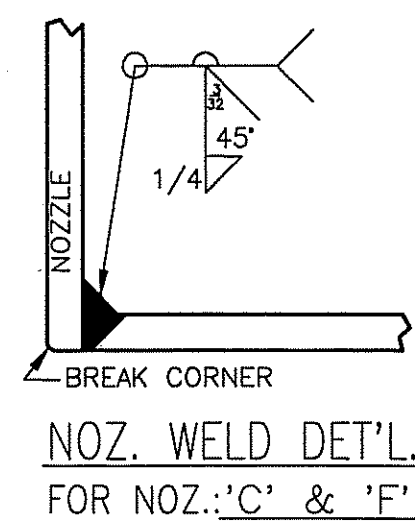
282



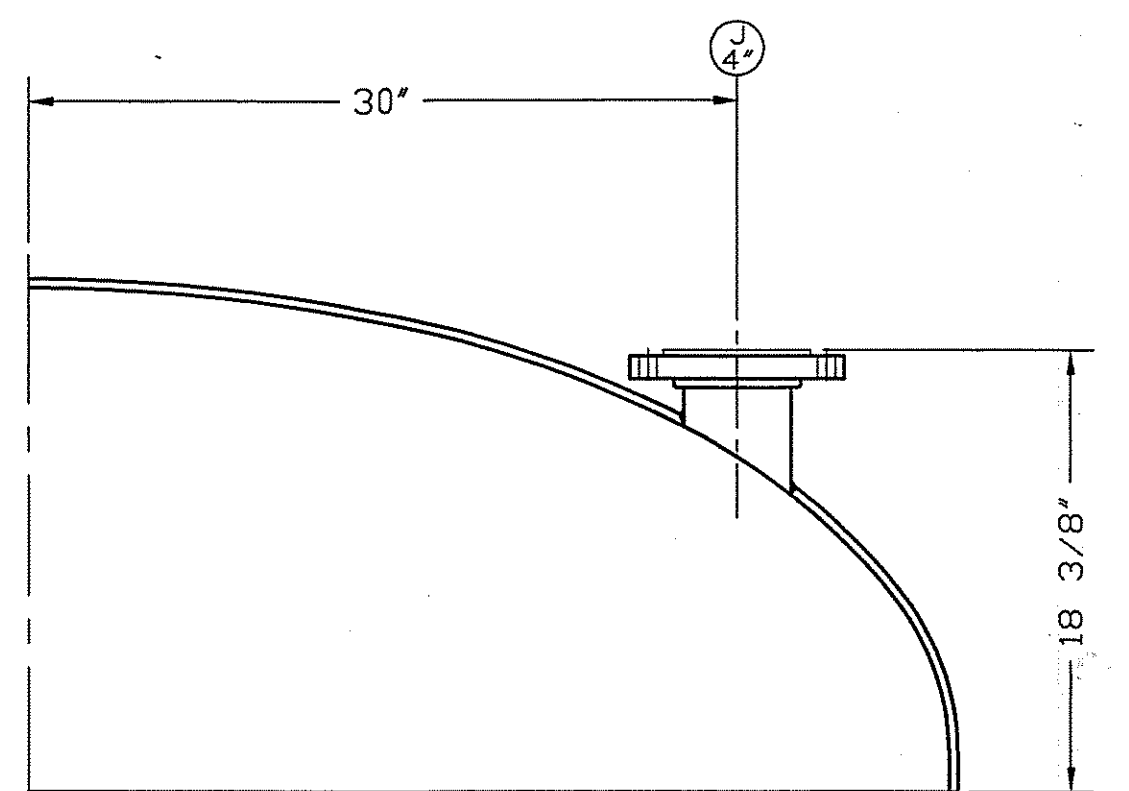
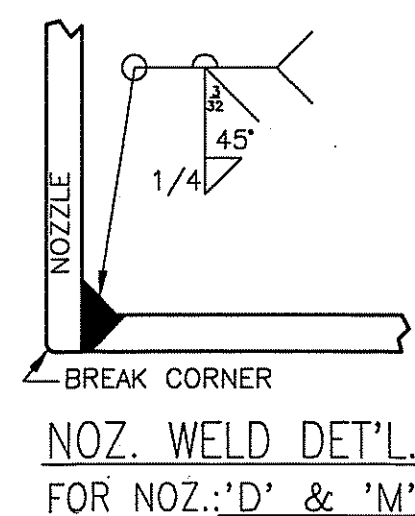
4A TOP HEAD ASSEMBLY



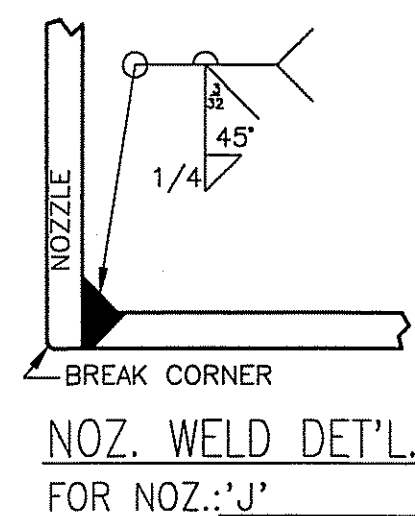
NOZZLE 'C' & 'F' WELD DETAIL



NOZZLE 'D' & 'M' WELD DETAIL

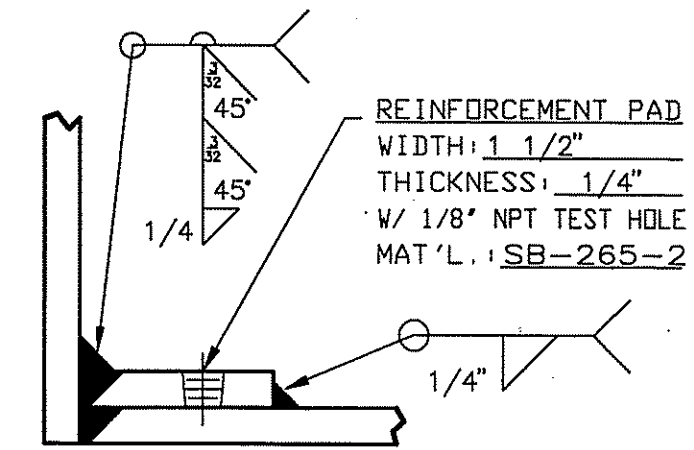


NOZZLE 'J' WELD DETAIL

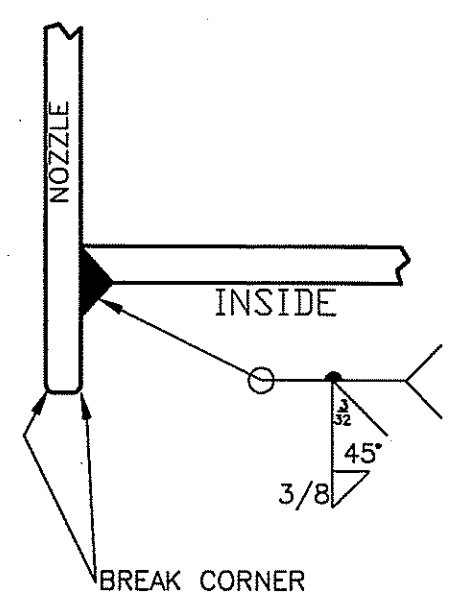


NOZZLE SCHEDULE				FLANGE STOPS		FLANGE DATA			REMARKS
ASSEMBLY NUMBER	MARK NO.	REQ'D SIZE	QTY	ITEM #	DRAWING No.	ROUNDS LENGTH	FLANGE TYPE	RATING (PSI)	
6A	A	1 SPECIAL 1/2"	---	---	C-1243-C	143	---	---	CRUDE OIL INLET
16A	C	1 4" .237"	2	31	C-1240-B	100	RF-LJ	150	28 WITH DIP TUBE
24A	D	1 2" .154"	2	31	C-1240-B	100	RF-LJ	150	30 DI WATER INLET
21A	F	1 3" .216"	2	31	C-1240-B	100	RF-LJ	150	29 VENT TO FILTER
13A	I	1 8" .250"	---	---	C-1241-C	090	RF-SO	150	---
19A	J	1 4" .237"	2	31	C-1240-B	075	RF-LJ	150	28 DRAIN LIQUID FROM FILTER
10A	K	1 2.4" .250"	4	31	C-1239-B	120	RF-LJ	150	27 MANWAY W/ SIGHTGLASS
24A	M	1 2" .154"	2	31	C-1240-B	100	RF-LJ	150	30 RUPTURE DISC

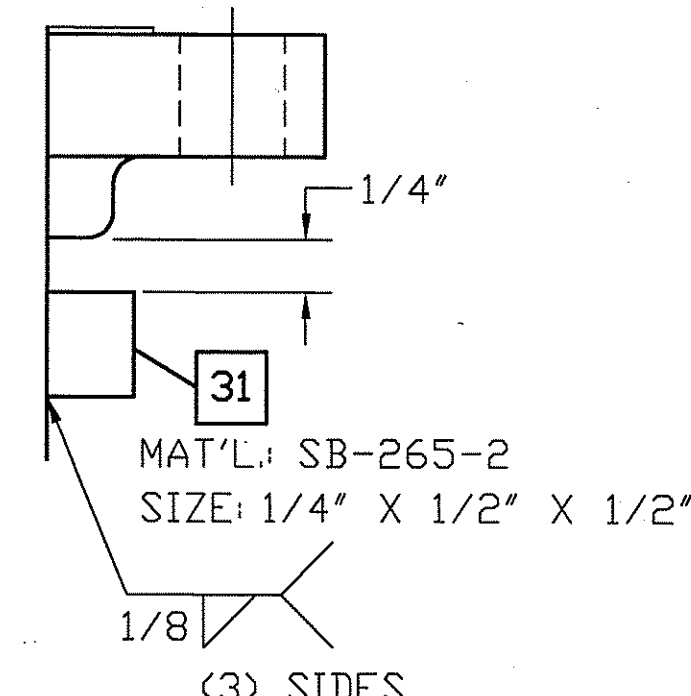
NOZZLE C IS SPARE



NOZZLE WELD DETAIL FOR NOZ.: 'I'



NOZ. WELD DET'L FOR NOZ.: 'A'



FLANGE STOP DETAIL N.T.S.

B. PROCEED AS NOTED. CHANGE AS NOTED AND RESUBMIT. FLUOR DANIEL S  
Notification to proceed does not constitute acceptance nor relieve Contractor of any liability. Acceptance is accomplished under the terms of the Contractor's Purchase Order.

VITAMIN C EXPANSION PROJECT  
FLUOR DANIEL Cont'l No.: 23618510-4-0203-33-2  
TAG/ITEM NO.: 214T0553

ASTRO  
SINGULAR DIMENSIONS - FRACTIONS  
(UNLESS NOTED OTHERWISE)  
ANGULAR DIMENSIONS - 1/16"  
FRACTIONAL DIMENSIONS - 1/16"  
(1) PLACE DECIMAL (.00) = .000"  
(2) PLACE DECIMAL (.00) = .001"  
(3) PLACE DECIMAL (.000) = .0005"  
RESOURCES: THE "AS" ACCORDANCE

TAG NO. 214T0553  
PROJECT NO. 23618500  
VITAMIN-C EXPANSION PROJECT

FLUOR DANIEL, INC. P.O.#618550-4-0203  
ASTRO M.O.# 60606

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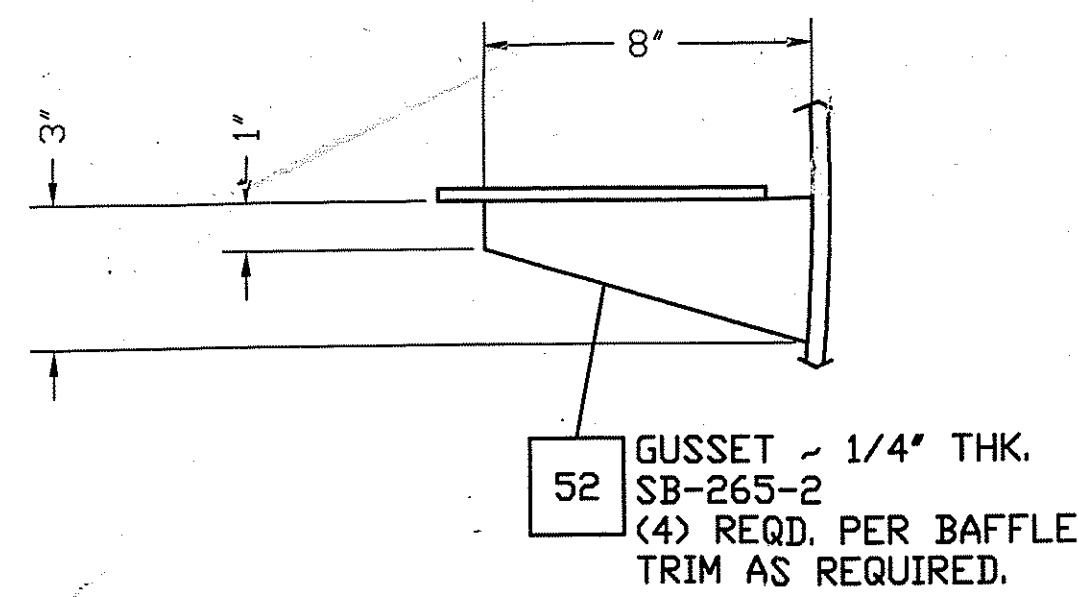
CONNECTION	SIZE	LENGTH	QTY	ITEM #	SIZE	QTY	ITEM #
				STUDS			NUTS
				BOLTING			

THIS DRAWING USED IN CONJUNCTION WITH:			
DWG.	TITLE	DWG.	TITLE

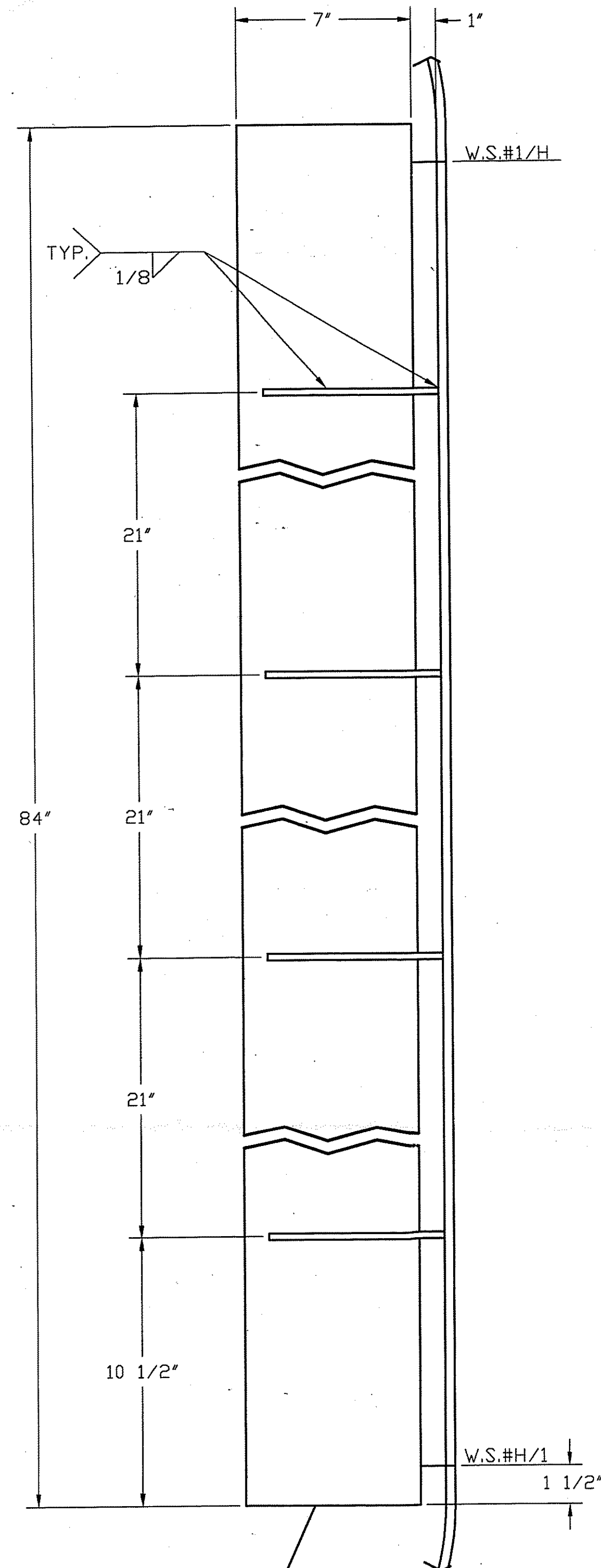
DESCRIPTION		NO.	DATE	BY	DATE	BY
NOZ. 'M' WAS @ 130°; NOZ. 'C' WAS @ 0°		2	5/12/97	TLY	5/12/97	JED
NOZ. 'J' WAS STUDDING PAD; NOZ. HAD L.J. FLANGE, NOW SLIP-ON; ADDED NOZ. 'M'		1	3/25/97	TLY	3/25/97	JED

DATE	BY	DATE	BY
4/4/97	JED		

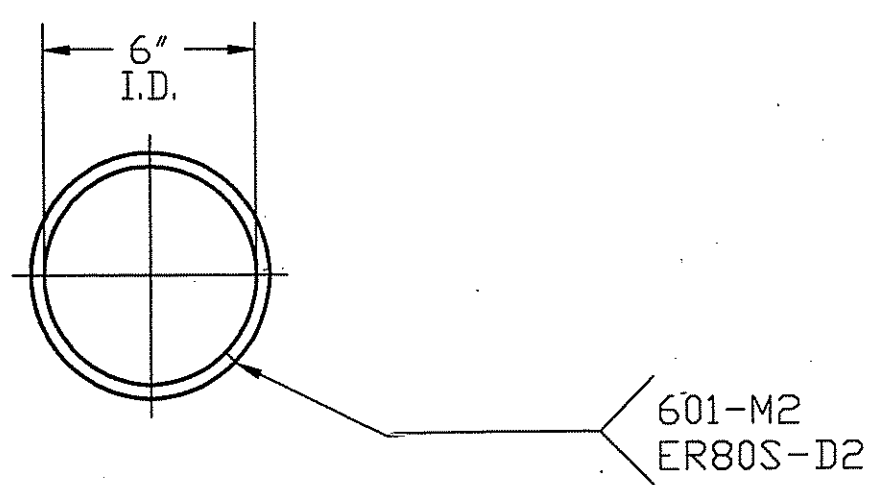
108272 33-2



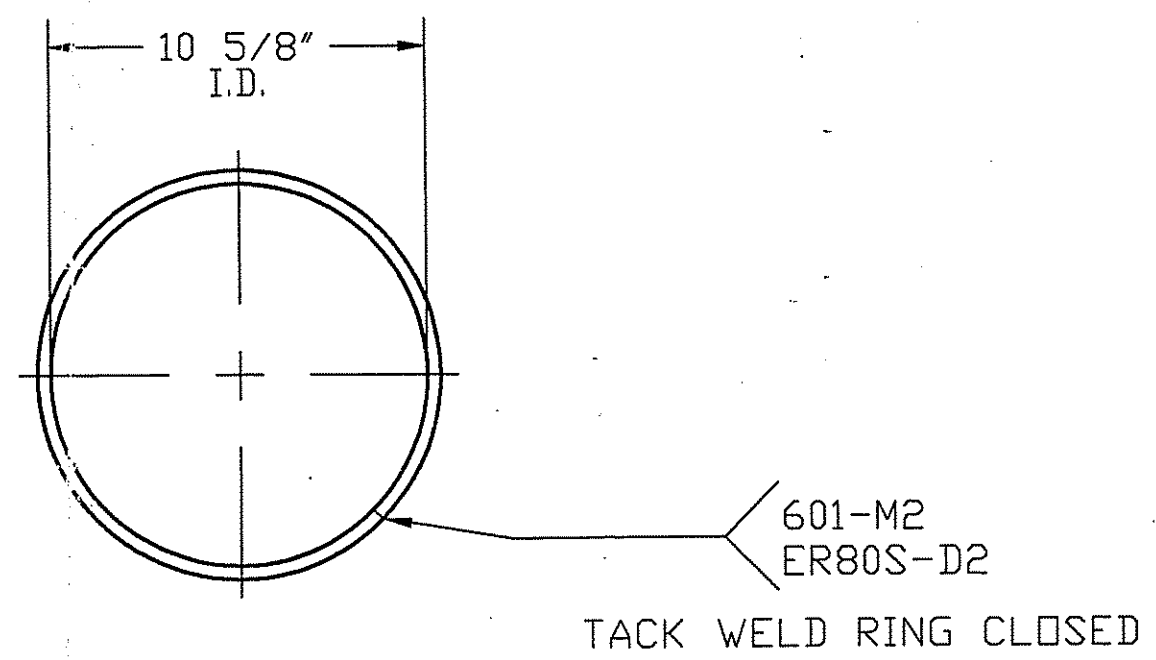
52 GUSSET - 1/4" THK. SB-265-2 (4) REQD. PER BAFFLE TRIM AS REQUIRED.



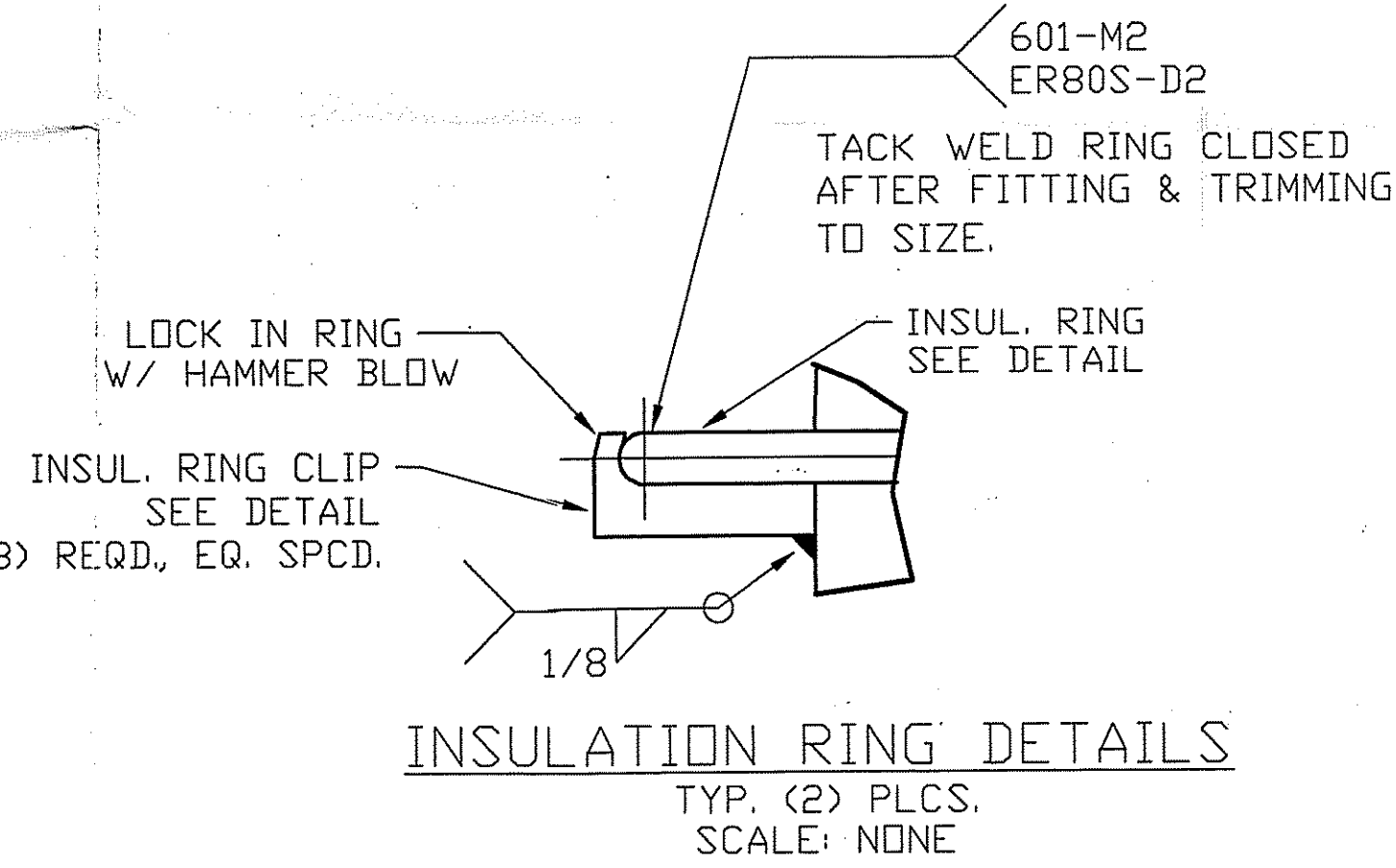
50A BAFFLE ASSEMBLY (4) REQD. - SCALE: 3"=1'-0"



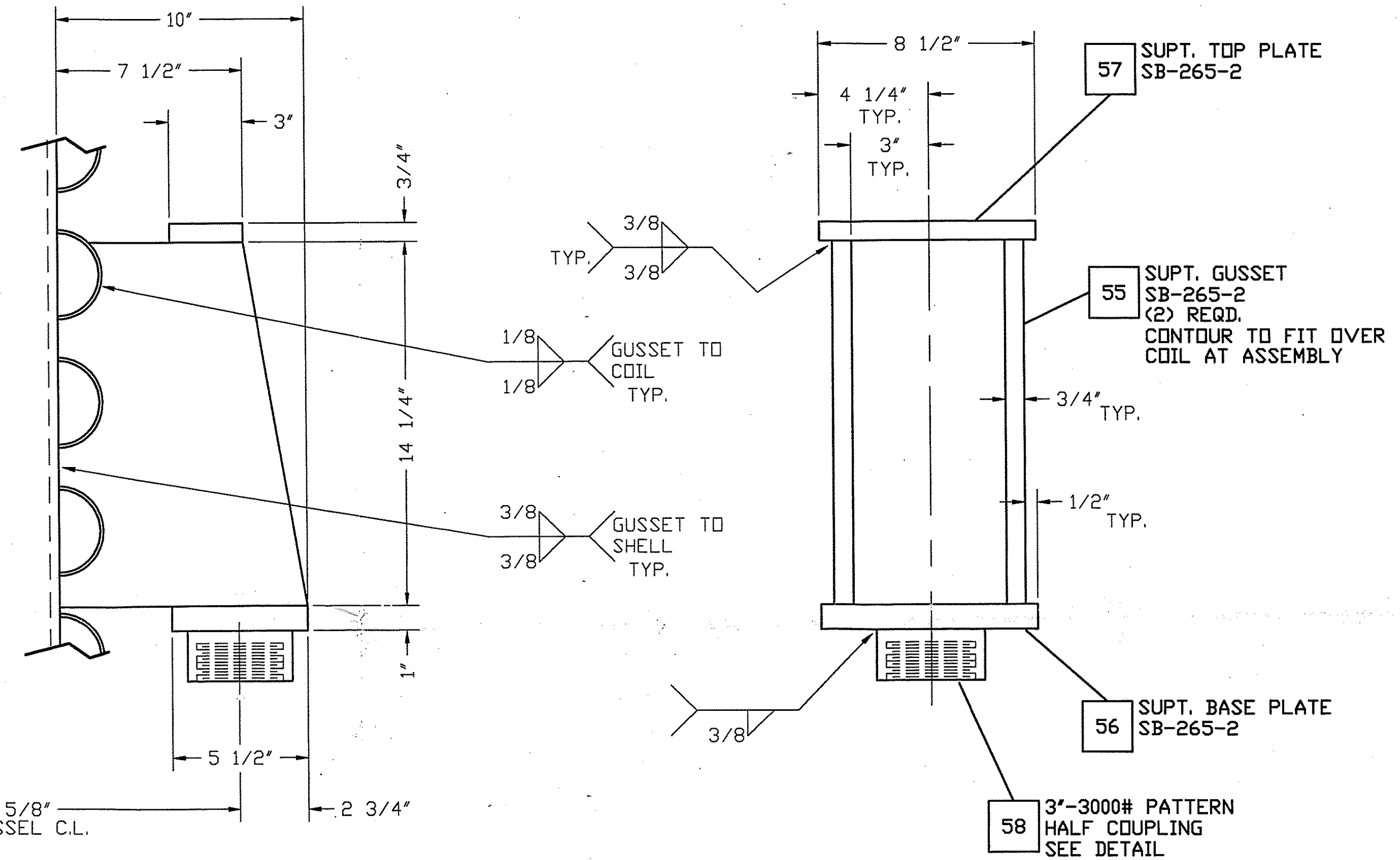
44 NOZ. 'B' INSULATION RING 3/8" Ø BAR - C\STL. (1) REQD. SCALE: NONE



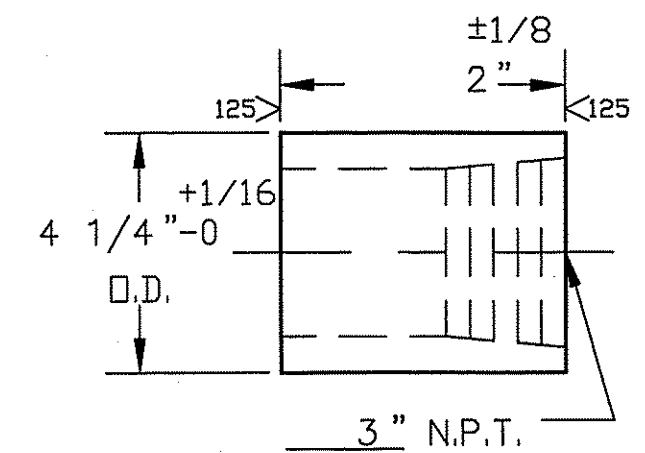
32 NOZ. 'I' INSULATION RING 3/8" Ø BAR - C\STL. (1) REQD. SCALE: NONE



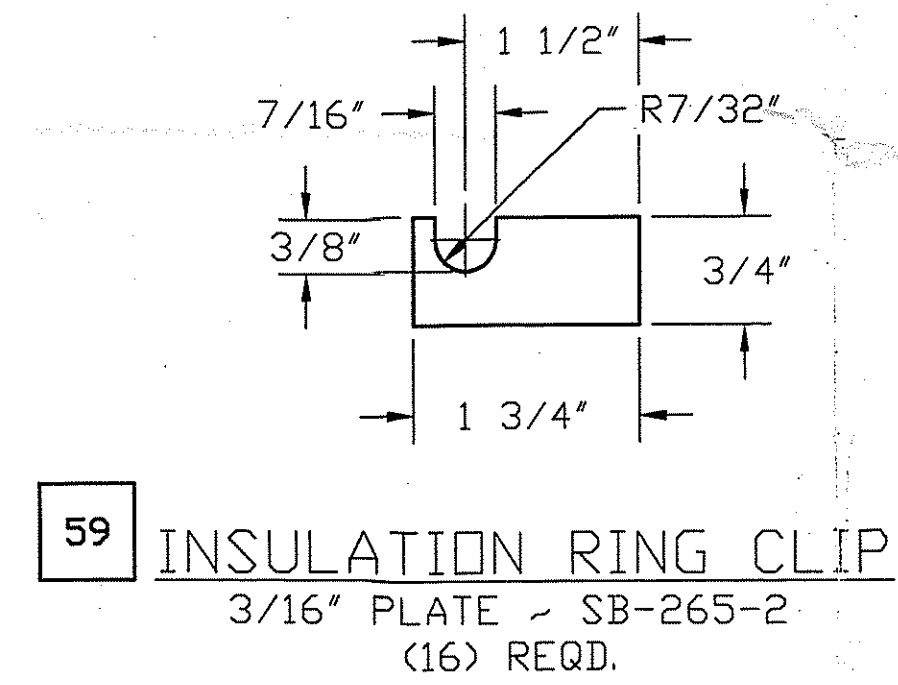
59 INSULATION RING DETAILS TYP. (2) PLCS. SCALE: NONE



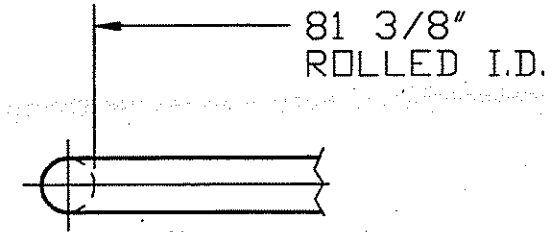
58 SUPPORT LUG DETAIL (4) REQD. SCALE: 3"=1'-0"



58 COUPLING DETAIL NOMINAL SIZE: 3" - 3000 # (PATTERN) MATERIAL: SB-348-2



59 INSULATION RING CLIP 3/16" PLATE - SB-265-2 (16) REQD.



60 INSULATION RING 3/8" Ø BAR - C\STL. (2) REQD.

A - PROCEED FLUOR DANIEL

XVF23500  
TAG. NO. 214T0553  
PROJECT NO. 23618500  
VITAMIN-C EXPANSION PROJECT

VITAMIN C EXPANSION PROJECT  
FLUOR DANIEL, Cont'l No.: 23618510-4-0203-36-1  
TAG/ITEM NO.: 214T0553

10-Apr-97

FLUOR DANIEL, INC. P.O.#618550-0203

ASTRO M.O.# 60606

MISC. DETAILS

ASTRO	Astro Metallurgical, Inc. 3225 West Old Lincoln Way Wooster, Ohio 44691
DRAWN BY	TLY
DATE	2/21/97
SCALE	NOTED
CHECKED	JED
DATE	4/4/97
DRAWING NO.	C-1237-D
REV.	

ASTRO  
STANDARD DIMENSIONAL TOLERANCES  
(ANGULAR TOLERANCE AS NOTED).  
FRACTIONAL DIMENSIONS - ±1/8"  
(1) PLACE DECIMAL (.0) - ±.002"  
(2) PLACE DECIMAL (.00) - ±.032"  
(3) PLACE DECIMAL (.000) - ±.002"  
UNLESS NOTED OTHERWISE

WELDING NOTE  
UNLESS NOTED OTHERWISE:  
ALL WELDING DESIGNATED ON THIS DRAWING  
IS PER WELDING SPECIFICATION NUMBER:  
151-T2  
UTILIZING WELD FILLER NUMBER:  
ERTI-1

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CONSIDERED CONFIDENTIAL. THIS DOCUMENT  
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DISCLOSED IN WHOLE OR IN PART IN  
ANY WAY DETRIMENTAL TO THE INTEREST  
OF THIS COMPANY WITHOUT THE PRIOR  
WRITTEN PERMISSION OF ASTRO. IT IS  
SUBJECT TO RETURN UPON REQUEST.

CERTIFIED DIMENSIONAL PRINT  
BY: ILY DATE: 4/4/97  
ASTRO  
Astro Metallurgical, Inc.  
3225 West Old Lincoln Way  
Wooster, Ohio 44691

RELEASE FOR FABRICATION  
ASTRO ENG. DEPT.  
BY: ILY DATE: 4/4/97

THIS DRAWING USED IN CONJUNCTION WITH:

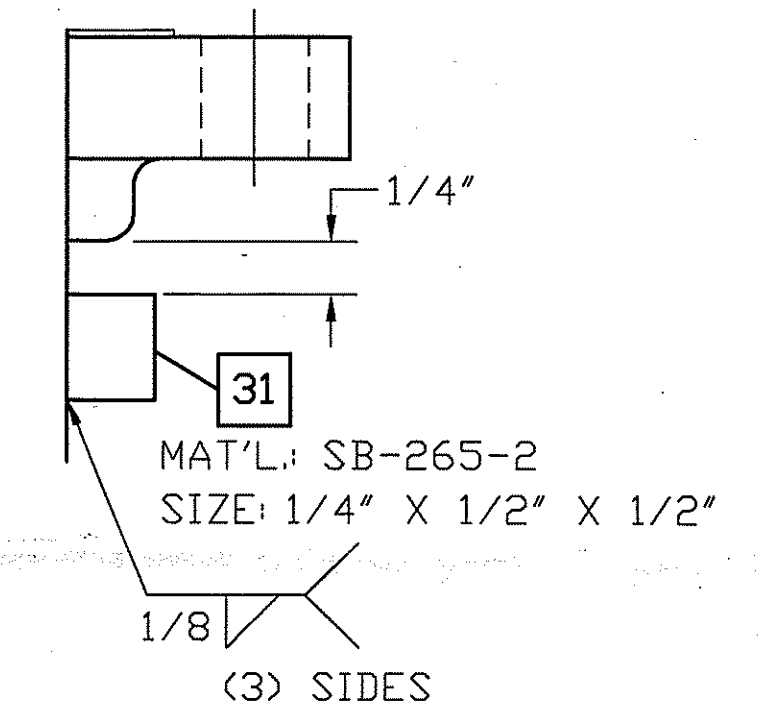
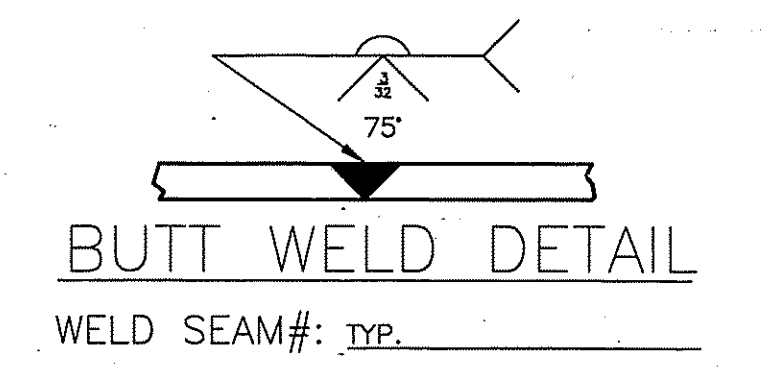
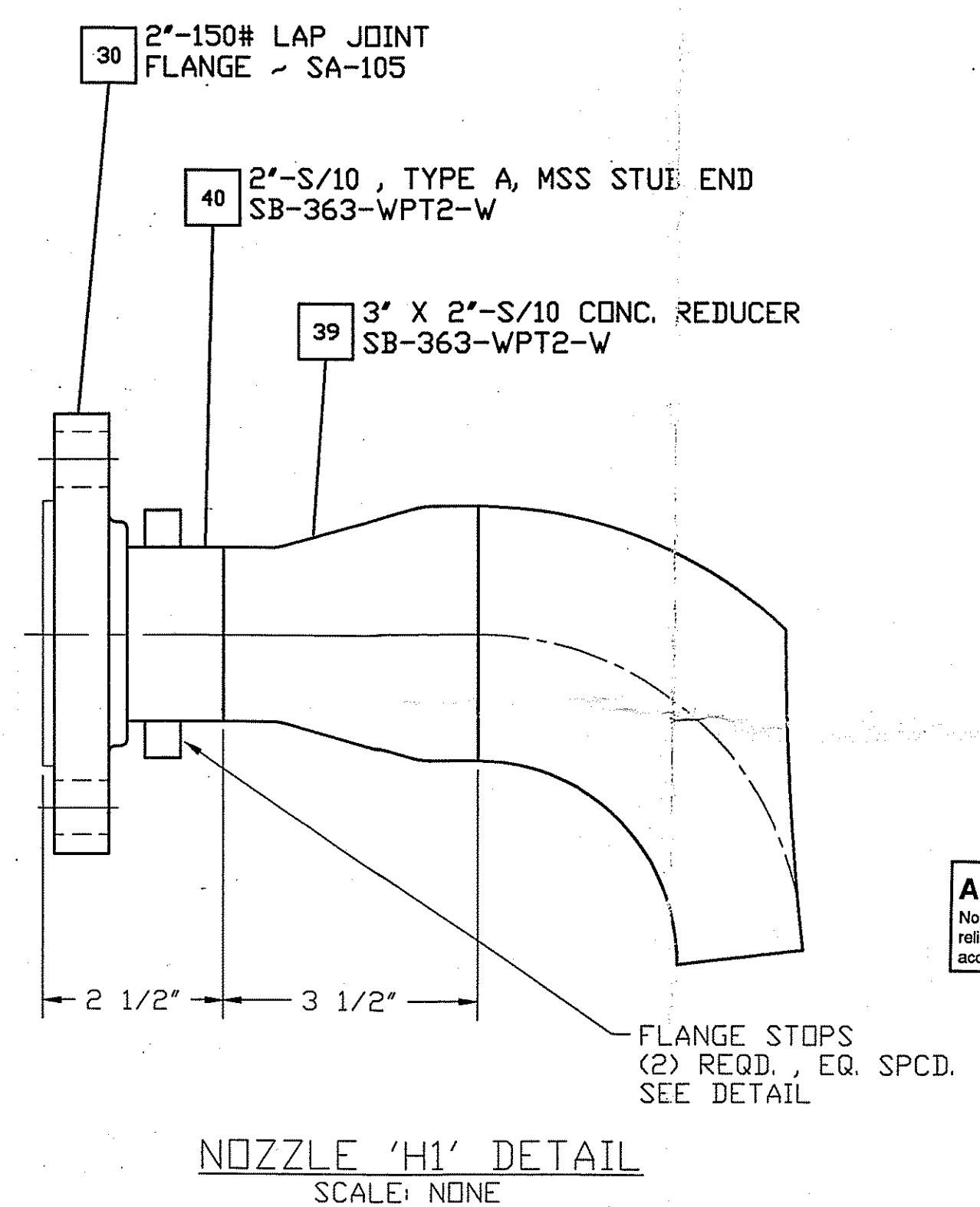
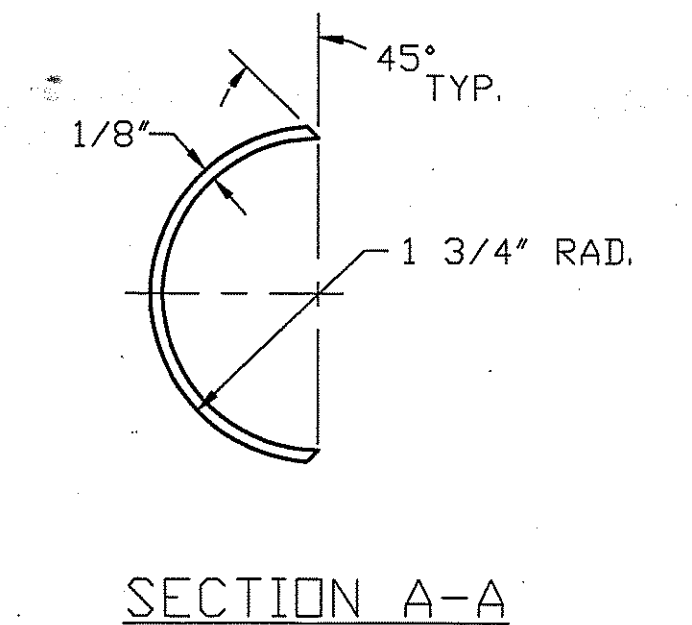
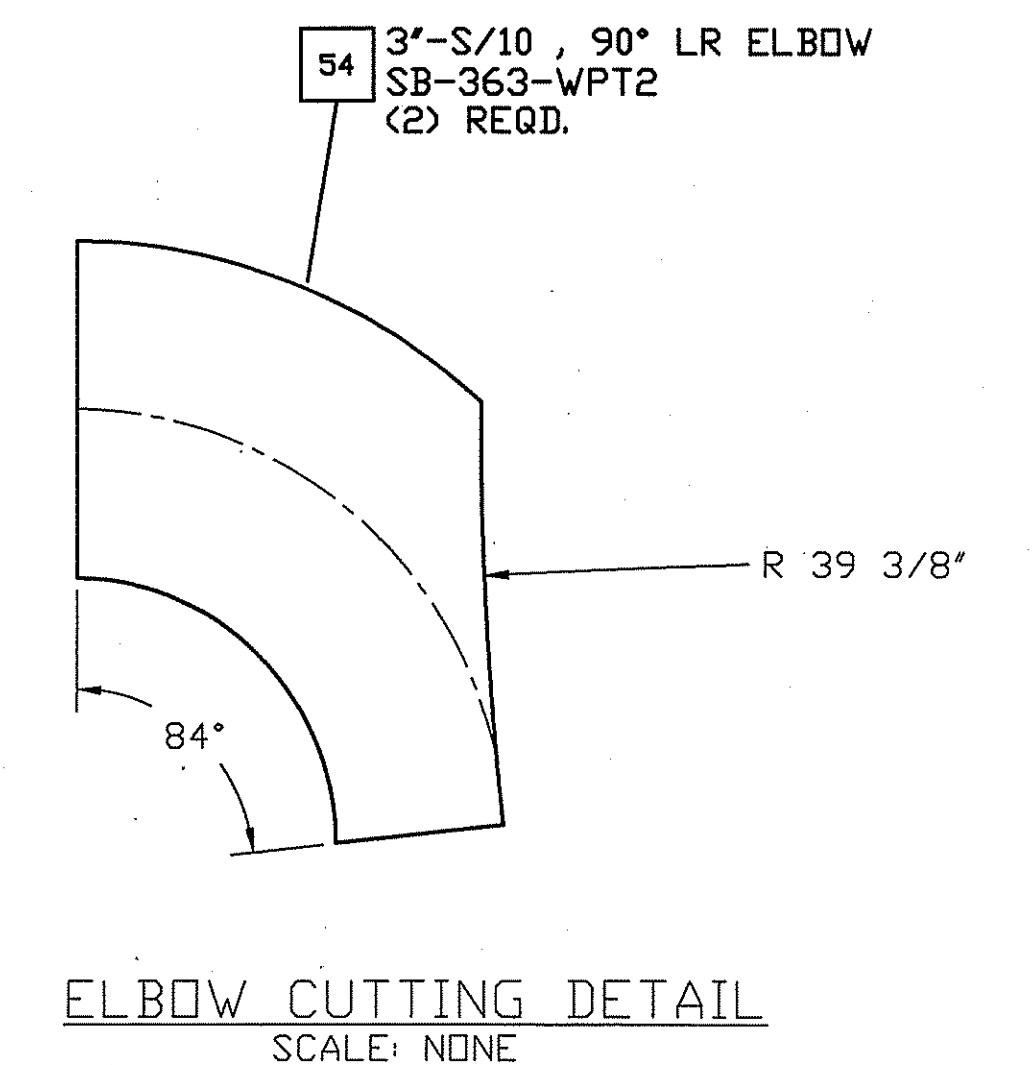
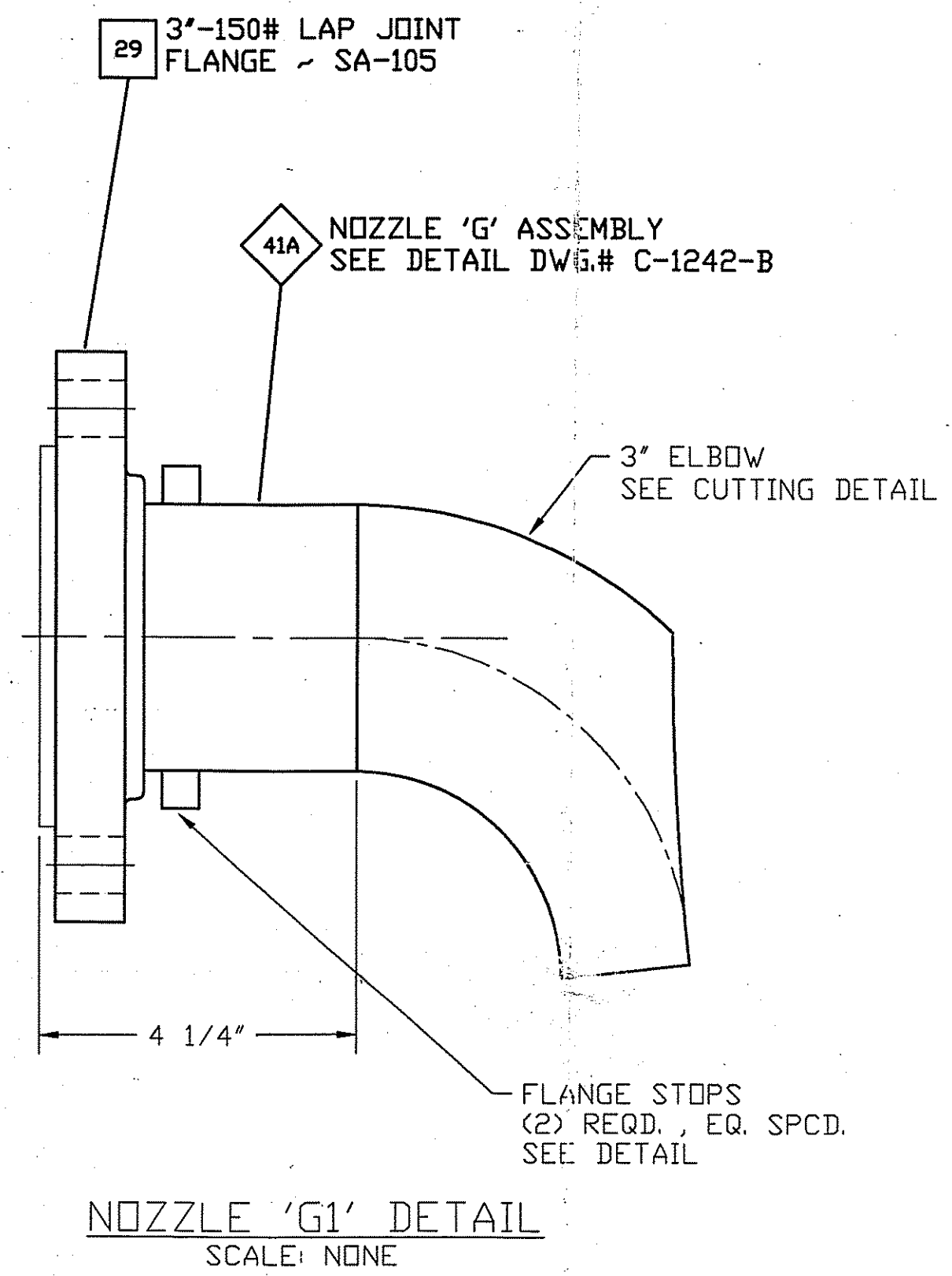
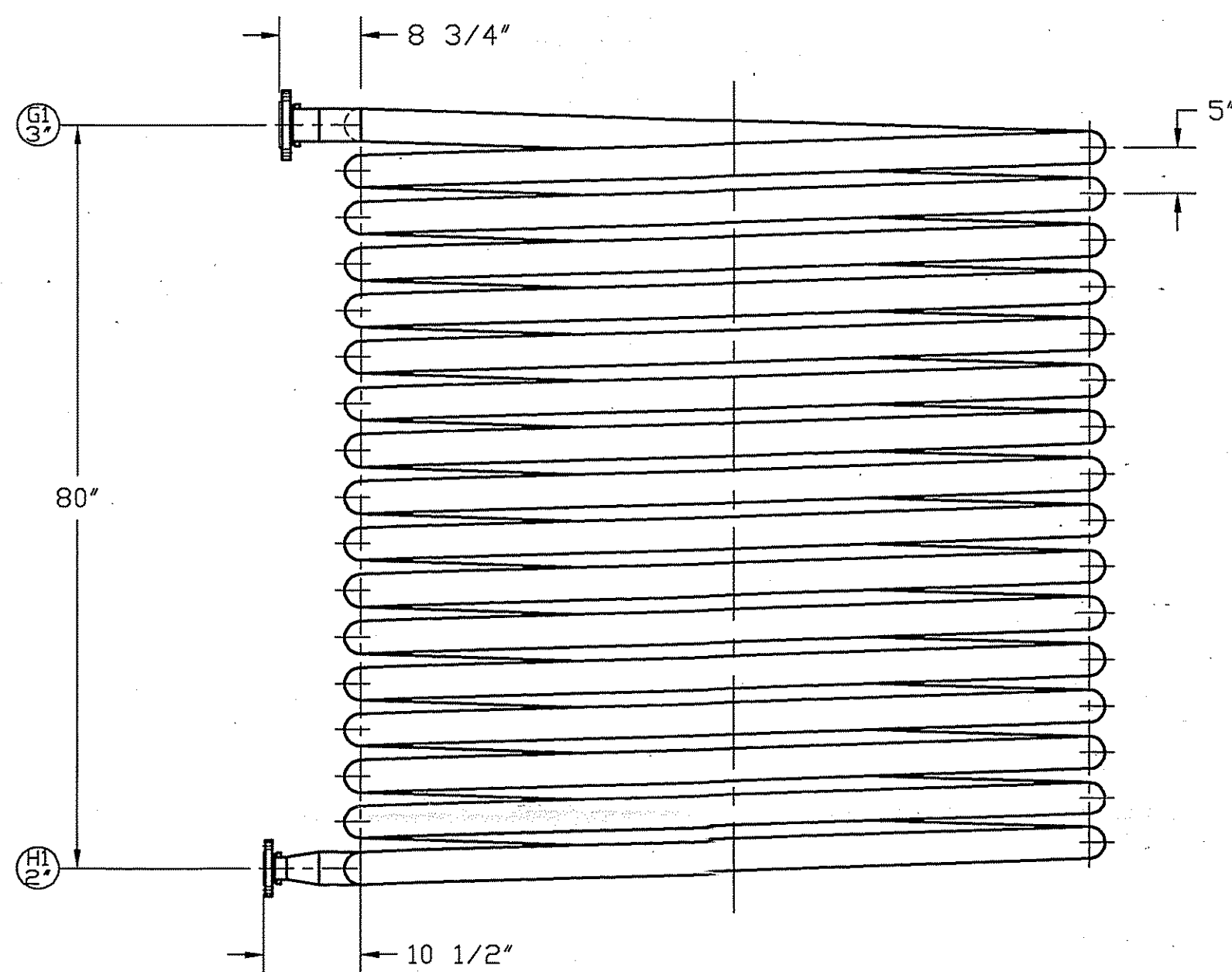
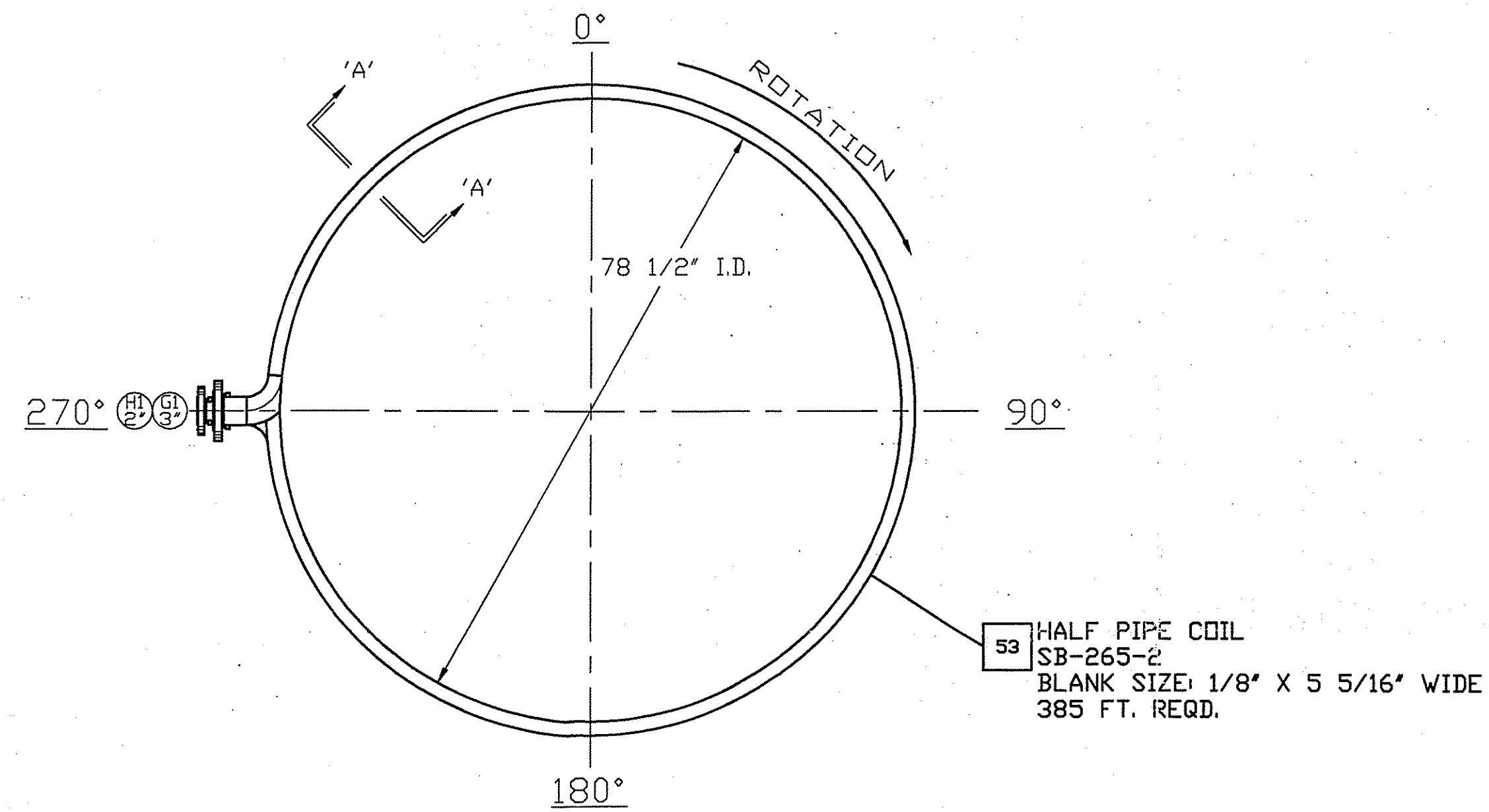
DESCRIPTION

NO. DATE BY DATE BY

REVISIONS APPROVED

APPROVED JED DATE 4/4/97





**A - PROCEED**  
 Notification to proceed does not constitute acceptance nor relieve Contractor/Seller of any liability. Acceptance is accomplished under the terms of the Contractor/Purchase Order.

VITAMIN C EXPANSION PROJECT  
 FLUOR DANIEL Cont'l No.: 23618510-4-0203-352  
 TAG/ITEM NO.: 214T0553

19-May-97

XVFA3500  
 TAG NO. 214T0553  
 PROJECT NO. 23618500  
 VITAMIN-C EXPANSION PROJECT

FLUOR DANIEL, INC. P.O.#618550-4-0203  
 ASTRO M.O.# 60606

**SHELL COIL DETAIL**

**ASTRO**  
 STANDARD DIMENSIONAL TOLERANCES  
 (UNLESS NOTED OTHERWISE)  
 ANGULAR TOLERANCE - ± 1/8°  
 FRACTIONAL DIMENSIONS - ± 1/8"  
 (1) PLACE DECIMAL (.0) - ± 0.062"  
 (2) PLACE DECIMAL (.00) - ± 0.031"  
 (3) PLACE DECIMAL (.000) - ± 0.015"  
 TOLERANCES ARE NOT ACCUMULATIVE

WELDING NOTE  
 UNLESS NOTED OTHERWISE:  
 ALL WELDING DESIGNATED ON THIS DRAWING IS PER WELDING SPECIFICATION NUMBER: 151-P3 OR 151-T2  
 UTILIZING WELD FILLER NUMBER: ERTI-1

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CERTIFIED DIMENSIONAL PRINT  
 BY: TLY DATE: 4/4/97  
 ASTRO  
 Astro Metallurgical, Inc.  
 3225 West Old Lincoln Way  
 Wooster, Ohio 44691

RELEASE FOR FABRICATION  
 ASTRO ENG. DEPT.  
 BY: TLY DATE: 4/4/97

NO.	DATE	BY	DATE	BY
1	5/14/97	TLY	5/14/97	JED

NO.	DATE	BY	DATE	BY
1	5/14/97	TLY	5/14/97	JED

NO.	DATE	BY	DATE	BY
1	5/14/97	TLY	5/14/97	JED

SCALE: 3/4" = 1'-0"  
 DRAWN BY: TLY DATE: 2/21/97  
 CHECKED BY: DATE: DATE: 4/4/97  
 APPROVED BY: DATE: 4/4/97  
 DRAWING NO.: C-1236-D  
 REV: 1

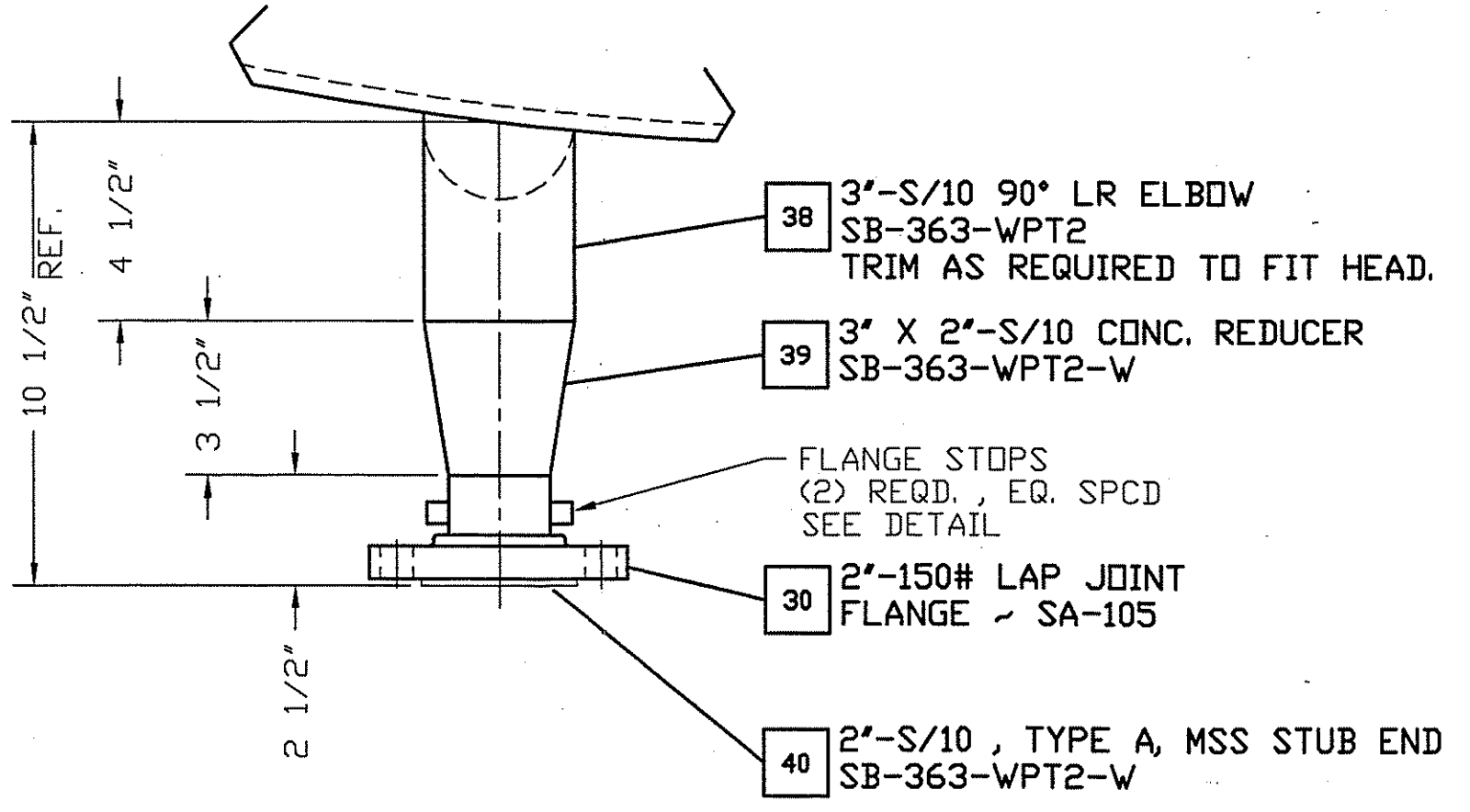
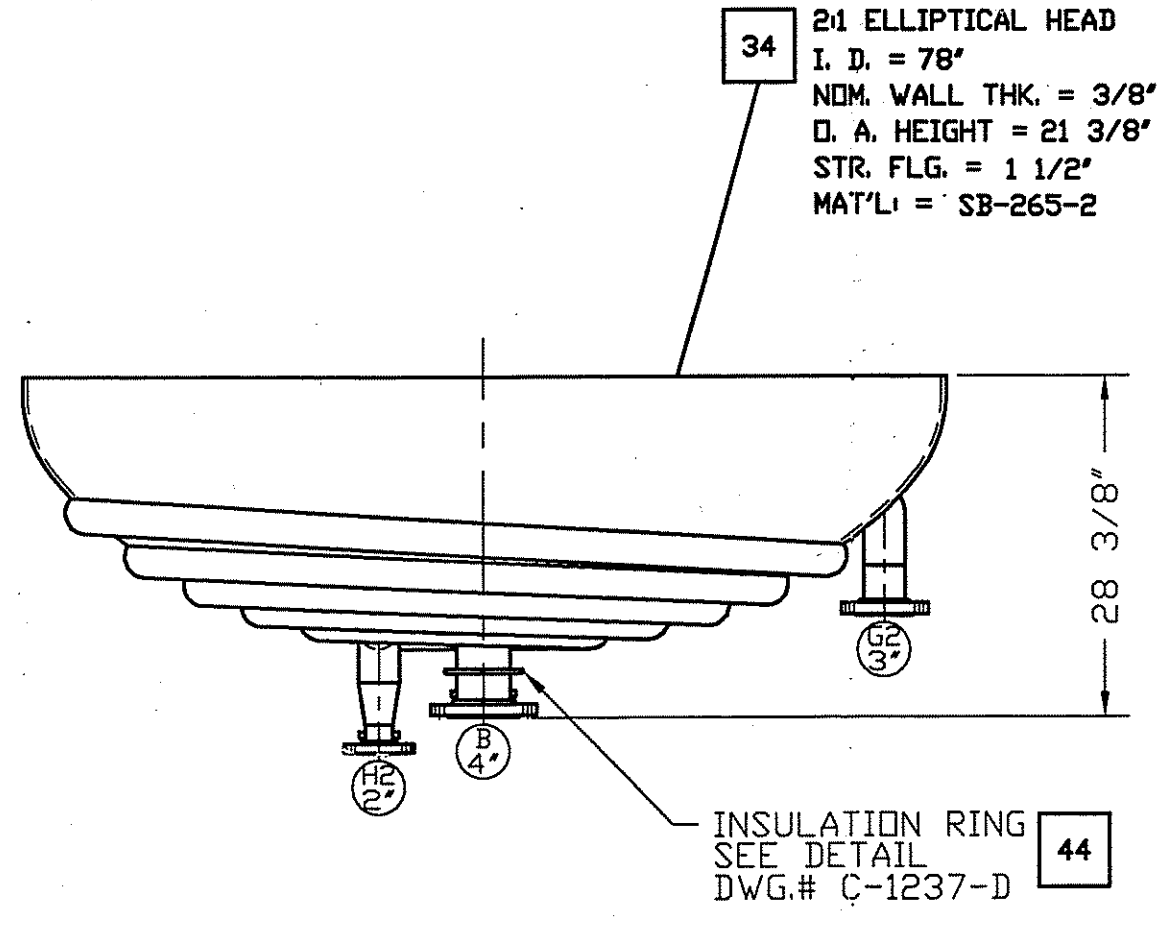
108272

35-2

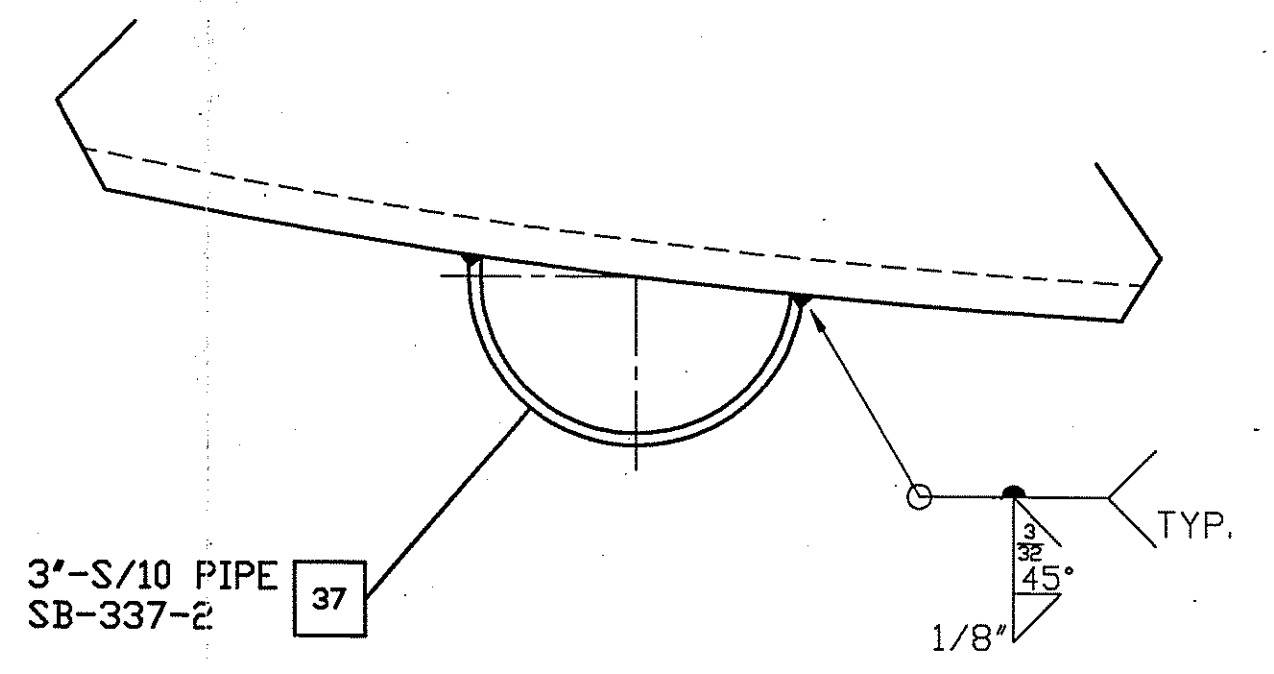




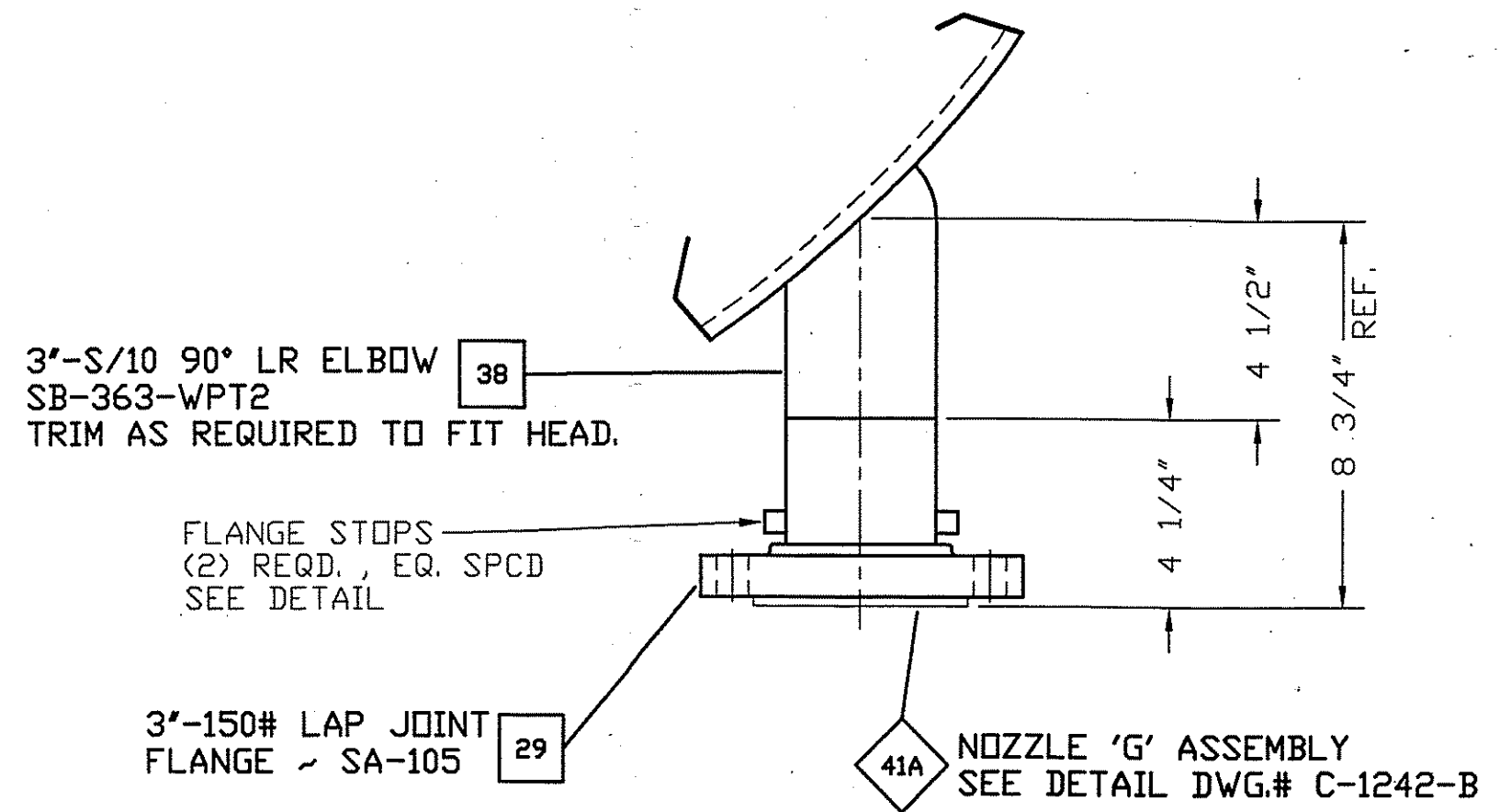
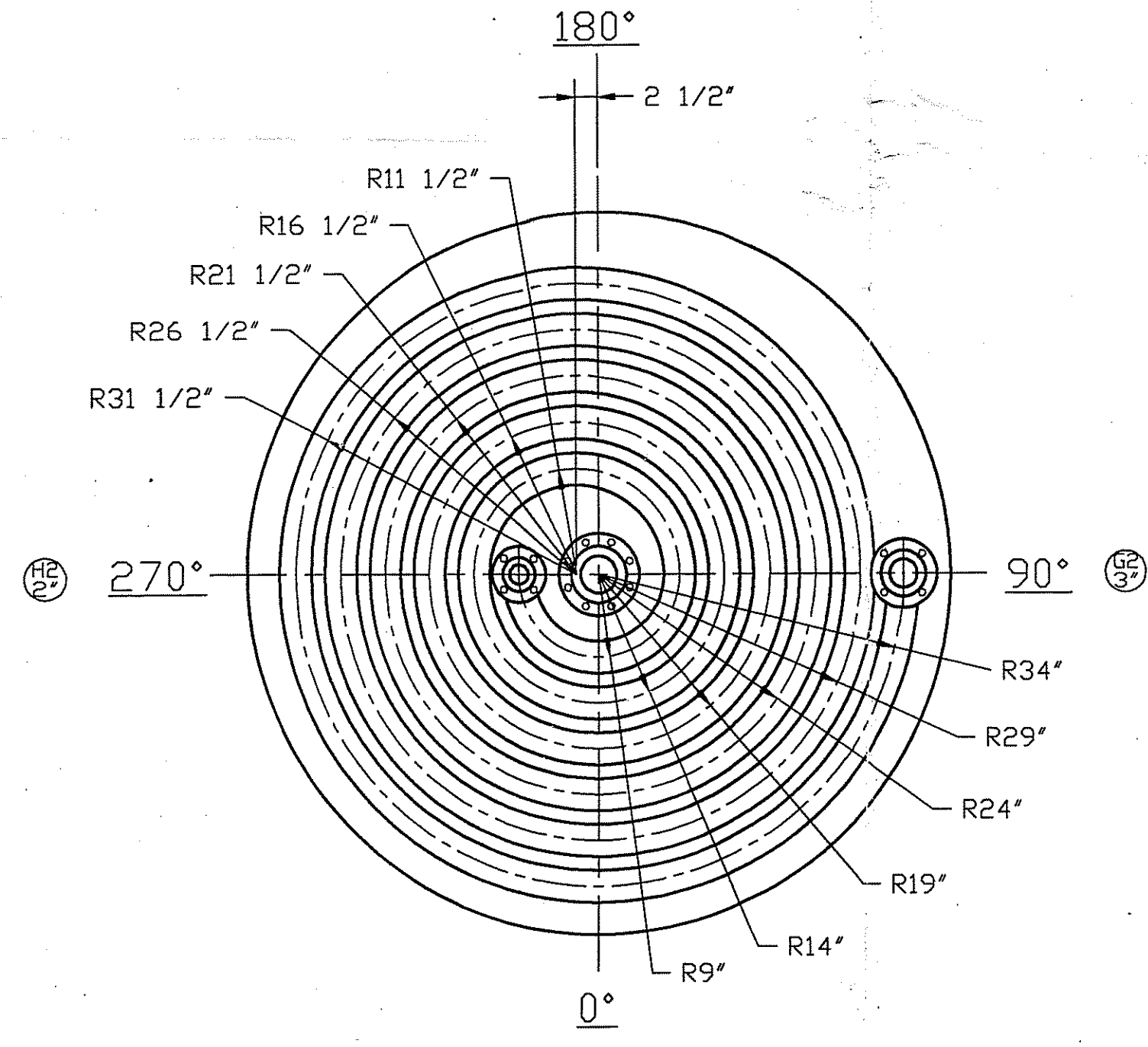
NOZZLE SCHEDULE					FLANGE STOPS		FLANGE DATA				REMARKS	
ASSEMBLY NUMBER	MARK	NO.	REQD. SIZE	NOMINAL WALL THK.	QUANTITY/ASSEMBLY	ITEM NO.	DRAWING No.	ROUGH LENGTH	FLANGE TYPE	RATING (PSI)		ITEM #
35A	B	1	4"	.237	2	31	C-1240-B	090	RF-LJ	150	28	DISSOLVED CRUDE OUTLET
41A	C	1	3"	.120	2	31	C-1242-B	---	RF-LJ	150	29	STEAM INLET
40	H	1	2"	.109	2	31	---	---	RF-LJ	150	30	CONDENSATE OUTLET



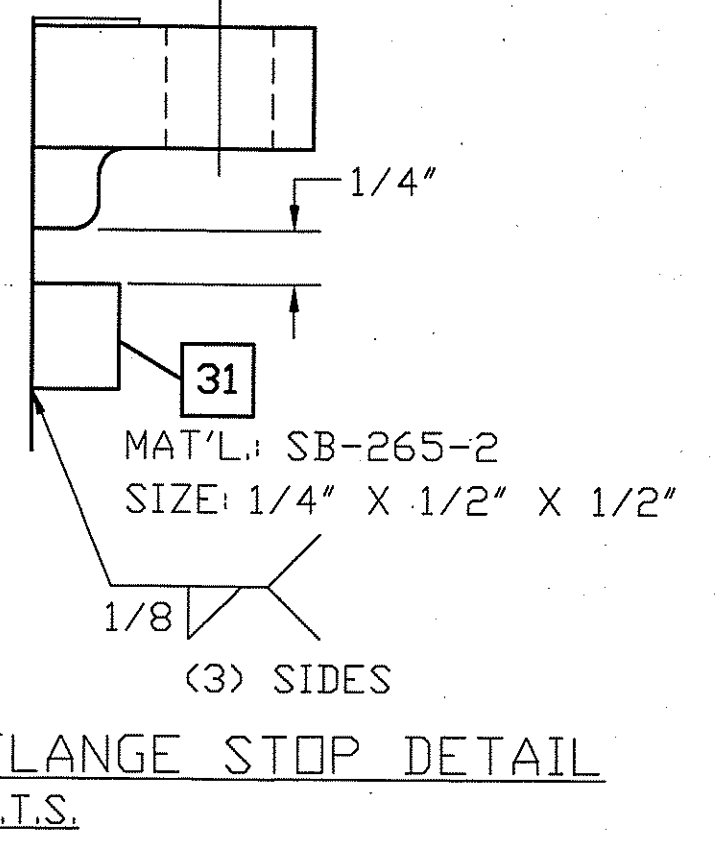
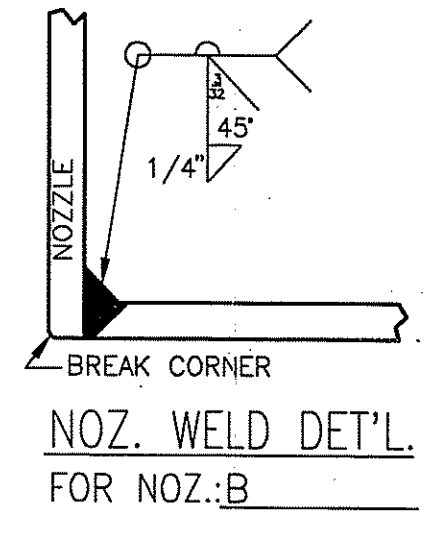
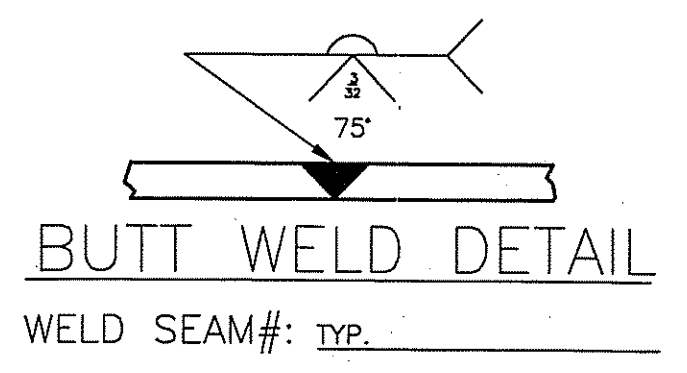
NOZZLE 'H2' DETAIL  
SCALE: NONE



COIL WELDING DETAIL



NOZZLE 'G2' DETAIL  
SCALE: NONE



**A - PROCEED** FLUOR DANIEL  
Notification to proceed does not constitute acceptance nor  
relieve Contractor/Seller of any liability. Acceptance is  
accomplished under the terms of the Contract/Purchase Order.

VITAMIN C EXPANSION PROJECT  
FLUOR DANIEL Cont'l No.:  
23618510-4-0203-34-1  
TAG/ITEM NO.: 214T0553  
10-Apr-97

TAG NO. 214T0553  
PROJECT NO. 23618500  
VITAMIN-C EXPANSION PROJECT

FLUOR DANIEL, INC. P.O.#618550-4-0203  
ASTRO M.O.# 60606

BOTTOM HEAD ASSEMBLY DETAIL

**ASTRO**  
STANDARD DIMENSIONAL TOLERANCES  
(ANGULAR TOLERANCE AS NOTED.)  
FRACTIONAL DIMENSIONS - ±1/32"  
(1) PLACE DECIMAL (.0) - ±.062"  
(2) PLACE DECIMAL (.00) - ±.031"  
(3) PLACE DECIMAL (.000) - ±.005"  
UNLESS NOTED OTHERWISE

WELDING NOTE  
UNLESS NOTED OTHERWISE,  
ALL WELDING DESIGNATED ON THIS DRAWING  
IS PER WELDING SPECIFICATION NUMBER:  
151-T2  
UTILIZING WELD FILLER NUMBER:  
ERT-1

THIS DRAWING USED IN CONJUNCTION WITH:  
CERTIFIED DIMENSIONAL PRINT  
BY: TLY DATE: 4/4/97  
Astro Metallurgical, Inc.  
3225 West Old Lincoln Way  
Wooster, Ohio 44691

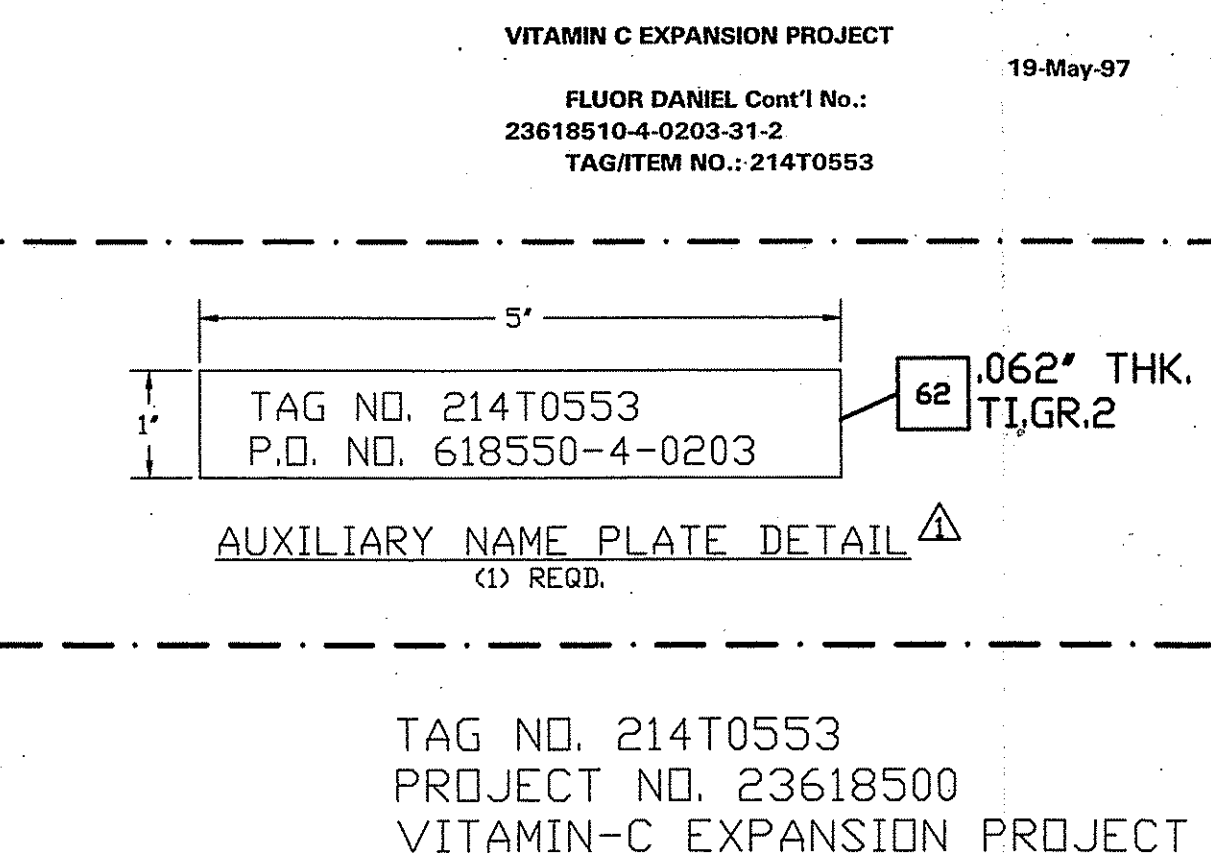
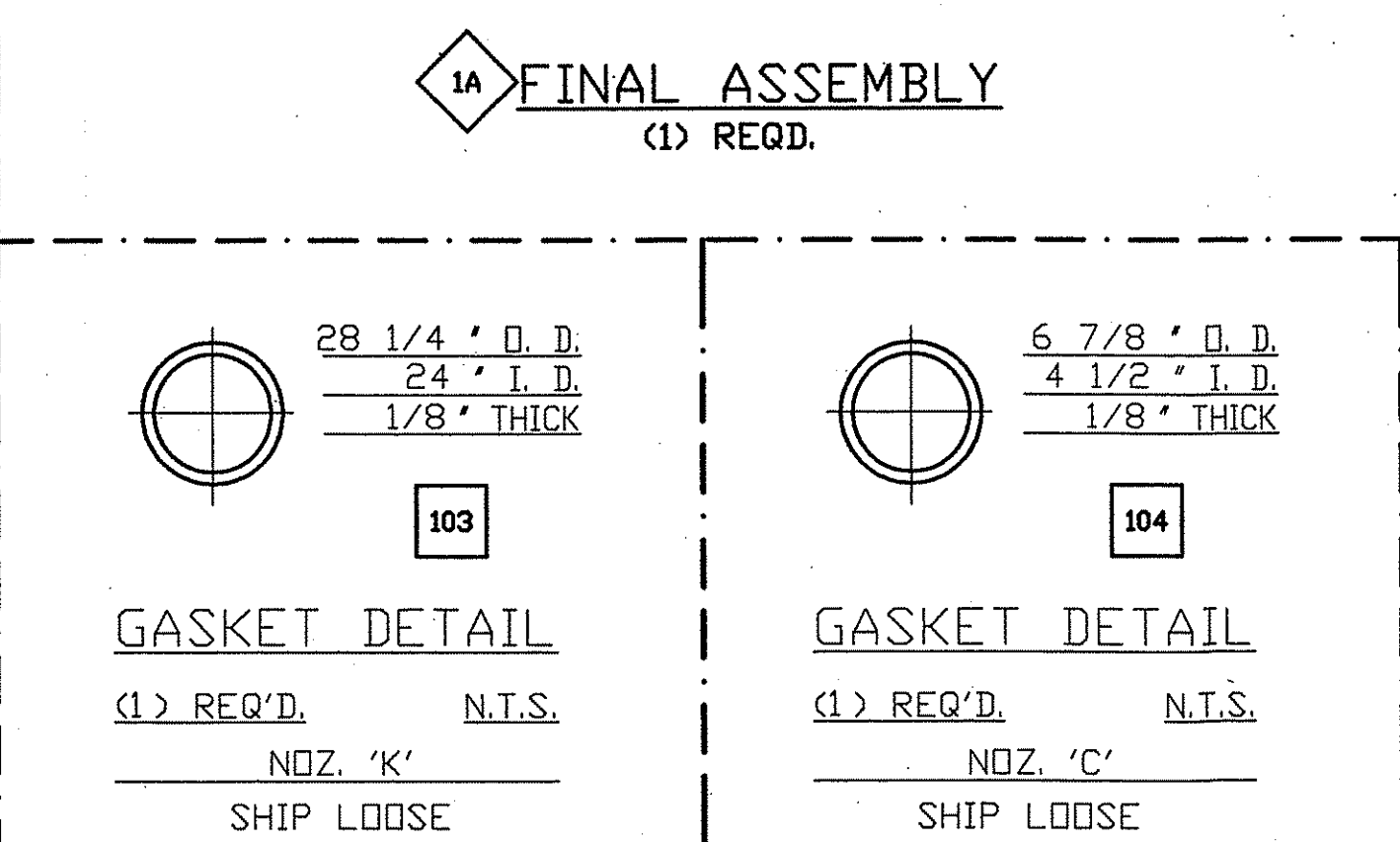
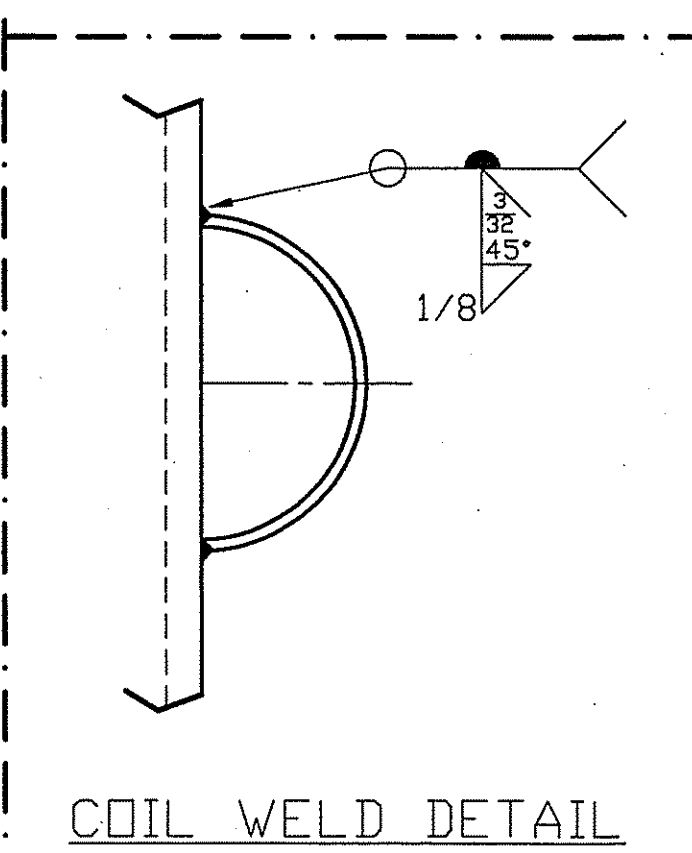
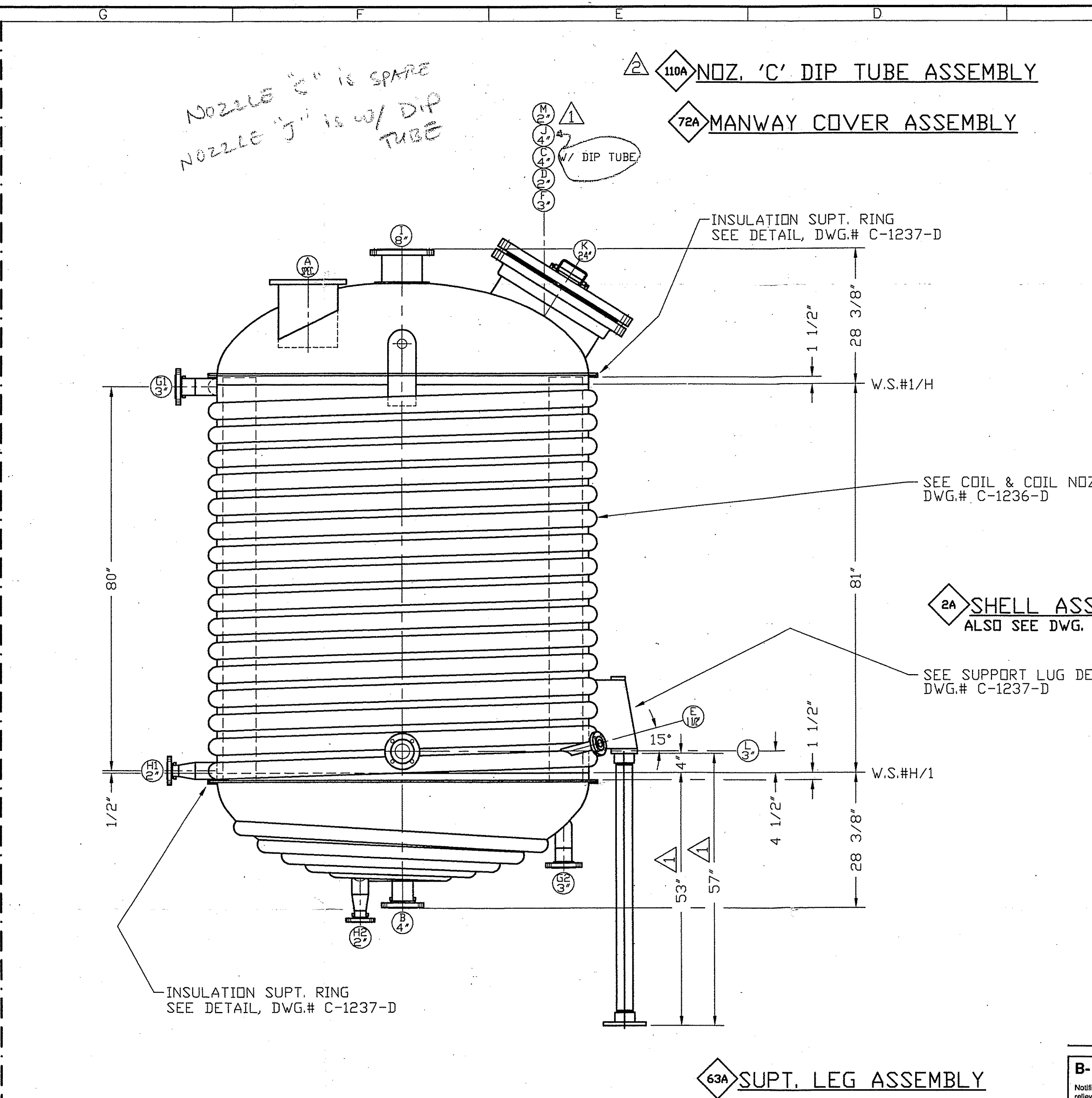
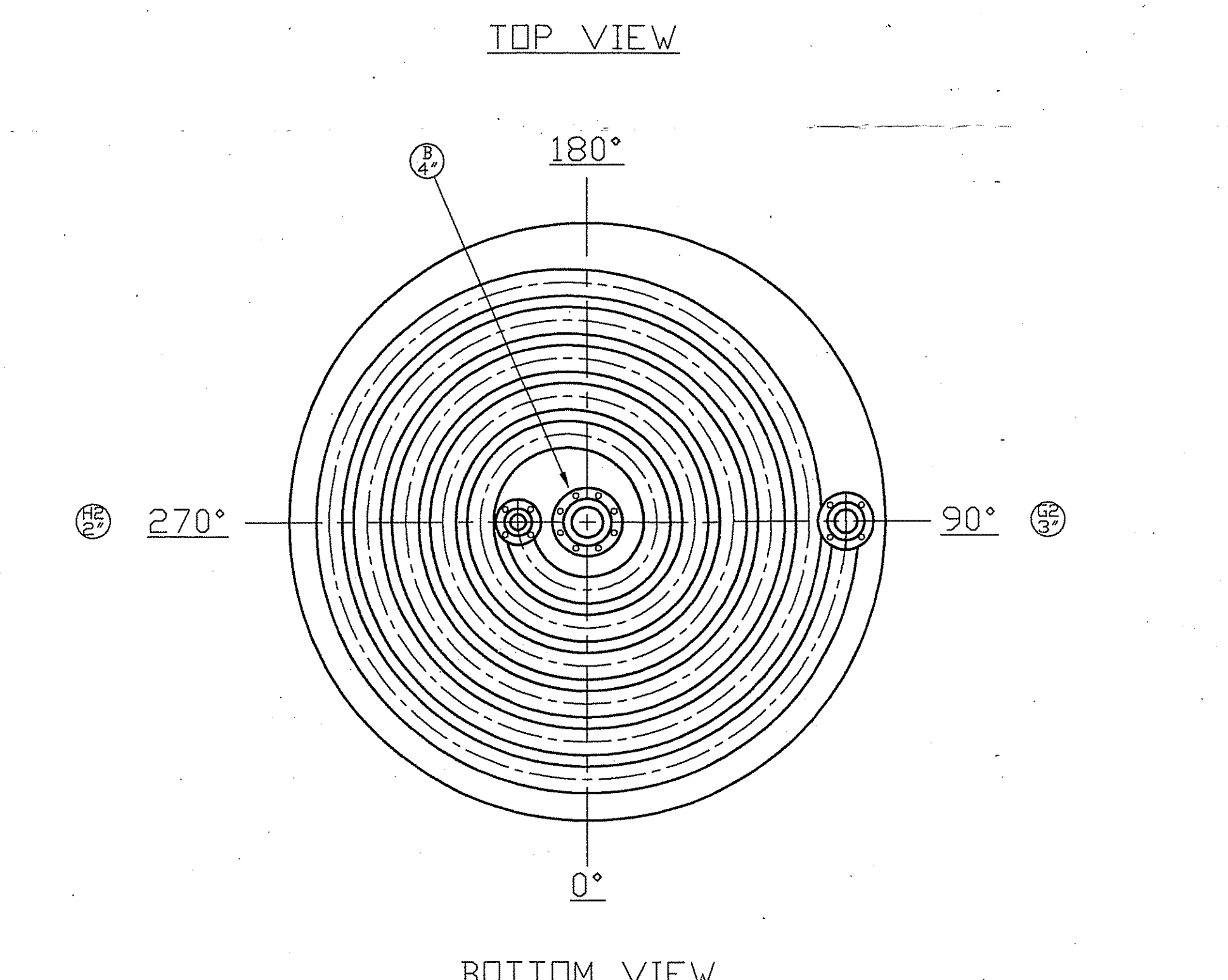
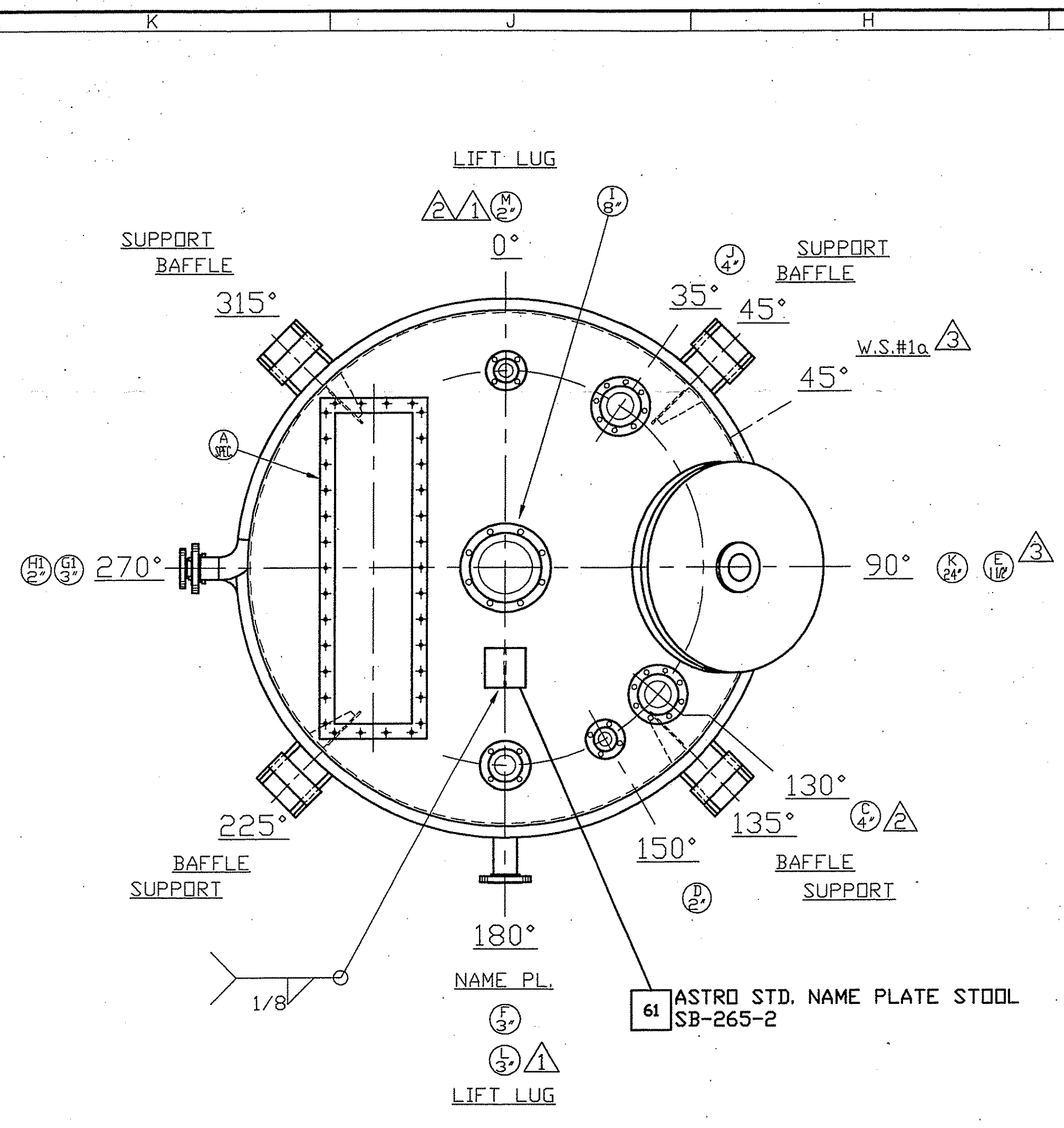
RELEASE FOR FABRICATION  
ASTRO ENG. DEPT.  
BY: TLY DATE: 4/4/97

DESCRIPTION

NO.	DATE	BY	DATE	BY	CHECKED	DATE	SCALE	DRAWING NO.	REV.
							3/4"=1'-0"	C-1235-D	

108272





NOZZLE SCHEDULE				FLANGE STOPS		FLANGE DATA	
ASSEMBLY NUMBER	MARK	NO. REQ'D	SIZE	ROUGH IDENR	FLANGE TYPE	RATING (PSI)	REMARKS
A	1	SPECIAL	1 1/2"				CRUDE CAKE INLET
B	1	4"	.237"		RF-LJ	150	DISSOLVED CRUDE OUTLET
C	1	4"	.237"		RF-LJ	150	WITH DIP TUBE
D	1	2"	.154"		RF-LJ	150	DI WATER INLET
E	1	1 1/2"	.145"		RF-LJ	150	TI CONNECTION
F	1	3"	.216"		RF-LJ	150	VENT TO FILTER
G	2	3"	.120"		RF-LJ	150	STEAM INLET
H	2	2"	.109"		RF-LJ	150	CONDENSATE OUTLET
I	1	8"	.250"		RF-SO	150	AGITATOR MOUNT
J	1	4"	.237"		RF-LJ	150	DRAIN LIQUID FROM FILTER
K	1	24"	.250"		RF-LJ	150	MANWAY W/ SIGHTGLASS
L	1	3"	.216"		RF-LJ	150	LEVEL TRANS
M	1	2"	.154"		RF-LJ	150	RUPTURE DISC

**NOTES**

- CODE: ASME SECTION VIII, DIV. 1, 1995, ADD. '95, CASE: ---
- CUSTOMER SPECS. & DRWGS.: DWG. #68-24-270-1533, SPEC. # 000-239-5900, #G09-901P/INTERIM, G15-051P/0, V18-050P/0, I2-120/0, I2-113/0, I2-115/0
- CUSTOMER INSPECTION: FINAL
- R.T. FULL ON CAT. A & B WELDS.
- P.T.: ALL TITANIUM WELDS
- N.B. STAMP. --- REQ'D. --- REQ'D.
- CORR. ALLOW. --- 0" --- 0
- DESIGN TEMP. MIN.: --- -20 F --- -20 F; MAX.: --- 450 F --- 450 F
- DESIGN PRESS. --- 25 & -2.5 PSIG --- 150 & FV PSIG
- TEST PRESS. --- 38 PSIG --- 225 PSIG
- HOLD TIME --- 1/2 HR. TEST POSITION: VERTICAL
- PAINTING INSTRUCTIONS:** SAND BLAST EXTERIOR STEEL PER SSPC-SP6 & PAINT ONE COAT CARBOLINE CARBOZINC 12 (2-3 MDT), CARBOLINE THINNER #21.
- ALL BOLT HOLES TO STRADDLE NATURAL CENTER LINES UNLESS OTHERWISE NOTED.
- UNLESS OTHERWISE NOTED = 125-250 AARH.
- CONTINUOUS SPIRAL GROOVE GENERATED BY A 1/16" R. ROUND-NOSED TOOL AT A FEED OF 1/32" PER REVOLUTION.
- TOLERANCES PER ASTRO STD. A-700 UNLESS NOTED OTHERWISE.

WEIGHTS			
15. VESSEL	EMPTY	3500 LBS.	
SKIRT			
ASSEMBLED	FULL OF WATER	22,500 LBS.	FULL OF PROCESS 24,400 LBS.

**MATERIALS**

- SHELL: SB-265-2
- JACKET: SB-265/337-2
- HEADS: TOP, BOTTOM, JACKET
- MATERIAL: SB-265-2, SB-265-2, N/A
- NOZZLE NECK: SB-265/337-2
- STUD PAD: SB-265-2
- NOZ. REINF: SB-265-2
- NOZ. FLG: SA-105
- LAP RINGS: SB-265-2
- THREADED FTGS. ---
- GASKETS: GARLOCK GYLON 3510
- BODY FLANGES: ---
- BOLTING: studs SA-197-B7\*, nuts SA-194-2H\*
- VESSEL SUPPORTS: SB-265-2
- SUPPORT LEGS: CARBON STEEL

\* BOLTING TO BE CADMIUM PLATED.

- AFTER INSPECTION & TESTING, EQUIPMENT SHALL BE COMPLETELY FREE OF WATER, DRIED, AND PREPARED FOR SHIPMENT.
- NOZZLE C & K SERVICE BOLTING AND GASKETS ARE NOT TO BE USED FOR HYDRO TESTING. PARTS TO BE SUITABLY BOXED AND MARKED FOR FIELD INSTALLATION. (MARK WITH TAG#, PROJECT#, P.O.# AND DESCRIPTION OF PARTS.)
- SHIPPING COVERS: NOZZLES A,B,C,D,E,F,G,H,J,K & L TO USE HYDRO FLANGES & SERVICE COVERS AS SHIPPING COVERS. NOZZLE 'I' TO HAVE 1/4" THK. STL. SHIPPING COVER. USE HYDRO BOLTS ON COVERS.
- HYDRO & SHIPPING GASKETS ARE GARLOCK 3200.
- PNEUMATICALLY TEST REINFORCING PAD AT MINIMUM PRESSURE OF 90 PSIG.

CONNECTION	SIZE	LENGTH	QTY	ITEM #	SIZE	QTY	ITEM #
NOZZLE 'C'	5/8" - 11UNC	4 1/4"	8	107	5/8" HEAVY HEX	16	108
MANWAY 'K'	1 1/4" - 8UNC	7 1/2"	20	105	1 1/4" HEAVY HEX	40	106

STUDS  
BOLTING SHIP LOOSE  
NUTS

WELDING NOTE  
UNLESS NOTED OTHERWISE:  
ALL WELDING DESIGNATED ON THIS DRAWING IS PER WELDING SPECIFICATION NUMBER: 151-P3 OR 151-T2  
UTILIZING WELD FILLER NUMBER: ERTi-1

DWG.	TITLE	DWG.	TITLE
C-1233-D	SHELL ASSEMBLY	C-1238-B	MANWAY COVER ASSEMBLY
C-1234-D	TOP HEAD ASSEMBLY	C-1239-B	NOZZLE DETAILS
C-1235-D	BOTTOM HEAD ASSEMBLY	C-1243-D	
C-1236-D	SHELL COIL ASSEMBLY	C-1244-D	SUPPORT LEG DETAILS
C-1237-D	MISC. DETAILS	C-1245-D	NOZ. 'C' DIP TUBE & GUIDE DET.

NO.	DATE	BY	DATE	BY
3	5/14/97	TLY	5/14/97	JED
2	5/13/97	TLY	5/13/97	JED
1	3/27/97	TLY	3/27/97	JED

DESCRIPTION

XVF23500  
FLUOR DANIEL, INC. P.O.#618550-4-0203  
ASTRO M.O.# 60606  
TI-2 CRUDE DISSOLVING KETTLE

ASTRO Metallurgical, Inc.  
3225 West Old Lincoln Way  
Wooster, Ohio 44691

DRAWN BY TLY DATE 2/24/97 SCALE 3/4"=1'-0"  
CHECKED DATE DATE  
APPROVED DATE 4/4/97  
APPROVED JED DATE 4/4/97  
C-1232-D 3

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FLUOR DANIEL  
B- PROCEED AS NOTED. CHANGE AS NOTED AND RESUBMIT.  
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VITAMIN C EXPANSION PROJECT  
FLUOR DANIEL Cont'l No.: 23618510-4-0203-311-2  
TAG/ITEM NO.: 214T0553  
19-May-97

TAG NO. 214T0553  
PROJECT NO. 23618500  
VITAMIN-C EXPANSION PROJECT