

REVISIONS		DESCRIPTION		DATE	
SYN.	ZONE	MINOR REVS TO DRAWING AND PARTS LIST	DATE	APP.	REV.
A		MINOR REVS TO DRAWING AND PARTS LIST	8/22/02	YH	
B		MINOR REVS TO PARTS LIST BELOW	10/2/02	YH	
C		MINOR REVS TO PARTS LIST BELOW	3/4/03	KS	

SECTION B-B
 CESR-c 7-40 WIGGLER OUTER RADIATION SHIELD ASSEMBLY
 D-6070-007-01
 SCALE: 1:4
 QTY: 1 REQ'D.
 NOTE: THIS ASSEMBLY IS PART 'B' IN D-6070-004 (VENDOR DISREGARD)

ITEM	DWG. NO.	DESCRIPTION	Q1	Q2	Q3	REMARKS	REV.
26		SET SCREW, #6-32 x 1/2	28			PURCHASED	
25		NUT #6-32	28			PURCHASED	
24		FASTEN PTS 4,5,6,10 TO PT 2 PLUS 1 EACH IN 'R' HOLES	39			PURCHASED	
23		FASTEN PTS 8 TO PT 3	40			PURCHASED	
22		FASTEN PTS 9 TO PT 2	48			PURCHASED	
21		FLG 1 1/3" W 1/4 BORE	4			PURCHASED	
20		FLG 1 1/3" W 1/4 TAP ROT	2			PURCHASED	
19	D-6070-007-11	COOLING OUTPUT TUBE	1				
18	D-6070-007-11	COOLING INPUT TUBE	1				
17	D-6070-007-11	COOLING MAIN TUBE (22ft.)	1				
16	D-6070-007-10	FASTEN STRIP, L 41	2				
15	D-6070-007-10	FASTEN STRIP, L 37	2				
14	D-6070-007-10	FASTEN STRIP, L 49	4				
13	D-6070-007-10	TUBE CLAMP, L 41	1				
12	D-6070-007-10	TUBE CLAMP, L 37	1				
11	D-6070-007-10	TUBE CLAMP, L 49	2				
10	D-6070-007-08	SHIELD PATCH, COMBINED	1				
9	D-6070-007-09	OUTER SHIELD END COVER	2				
8	D-6070-007-08	OUTER SHIELD END FLANGE	2				
7	D-6070-007-07	LN2 COOLING LINE	1			X	
6	D-6070-007-06	SHIELD PATCH, SHORT	1				
5	D-6070-007-06	SHIELD PATCH, LONG	2				
4	D-6070-007-06	SHIELD PATCH, LARGE	1				
3	D-6070-007-05	OUTER RADIATION SHIELD CYLINDER	1				
2	D-6070-007-03	CYLINDER/FLANGE/TUBE, SUB-ASSM	1			X	
1	D-6070-007-01	OUTER RADIATION SHIELD, ASSM.	1			X	

PRINT DATE: 03/04/03
 CAD FILE NAME: z:\web\araha\6000\6070\6070-004_CESRc_7-40_Wiggler_Cryostat_Arm\Radiation_Shield\asmb_007-007.dwg

UNLESS OTHERWISE SPECIFIED:
 DIMENSIONS ARE IN INCHES
 TOLERANCES ON FRACTIONS: ±1/64
 ON DECIMALS: ±0.005
 ANGLES: ±0.5°
 ALL SURFACES

CHECKED BY: Yun He
 APPROVED BY: Yun He

DATE: 01/18/02
 SCALE: 1:4

REVISIONS:
 D 6070-007
 SH. NO. 1 CONT. ON 2

REVISIONS:
 G1 G2 G3 QUANTITY

DESCRIPTION

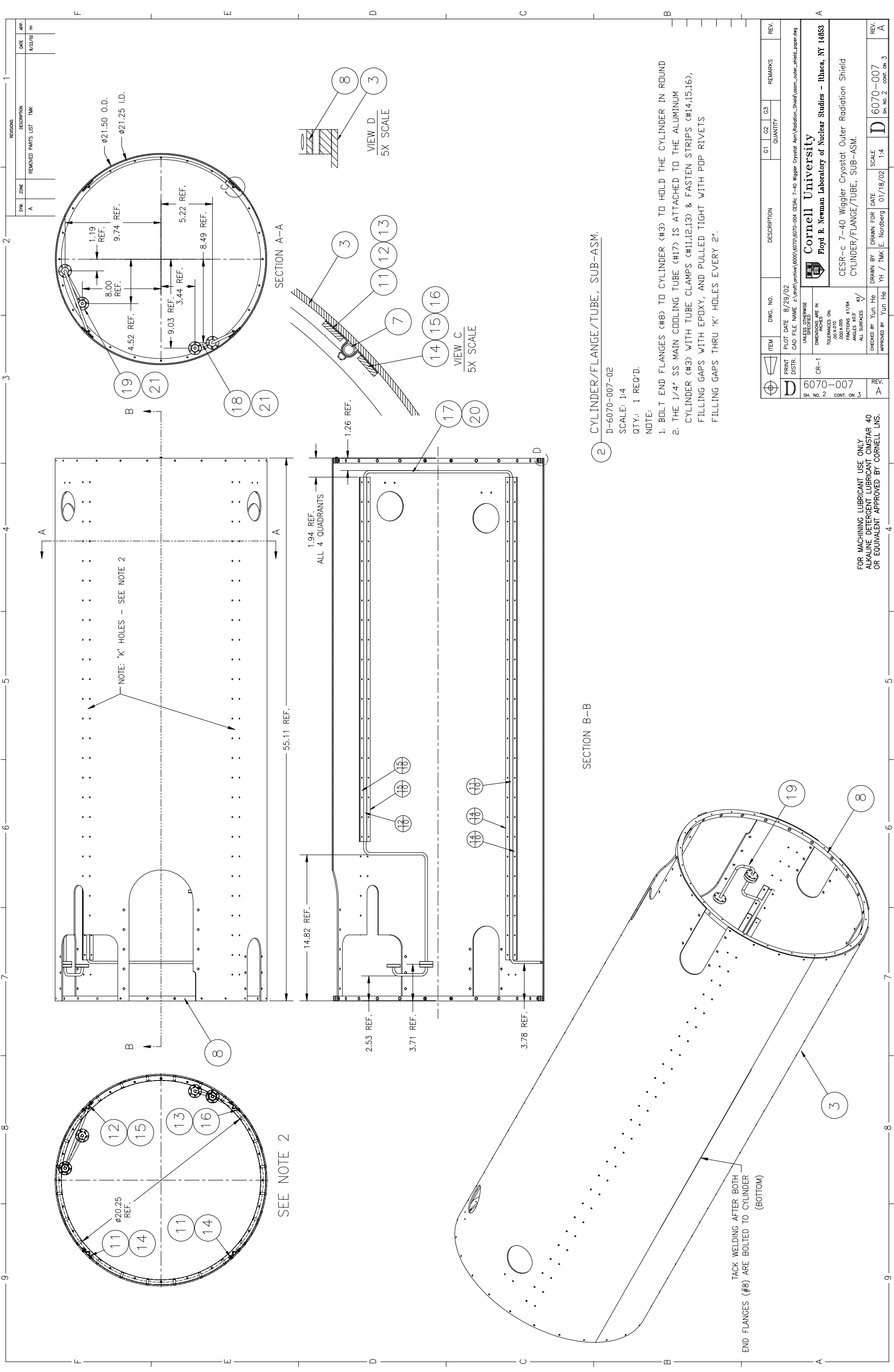
REMARKS

REV.

Cornell University
 Floyd B. Newman Laboratory of Nuclear Studies - Ithaca, NY 14853

CESR-c 7-40 Wiggler Cryostat Outer Radiation Shield
 OUTER RADIATION SHIELD, ASSEMBLY

FOR MACHINING LUBRICANT USE ONLY
 ALKALINE DETERGENT LUBRICANT CIMSTAR 40
 OR EQUIVALENT APPROVED BY CORNELL LNS.



2 CYLINDER/FLANGE/TUBE, SUB-ASM.

D-6070-007-02

SCALE: 1:4

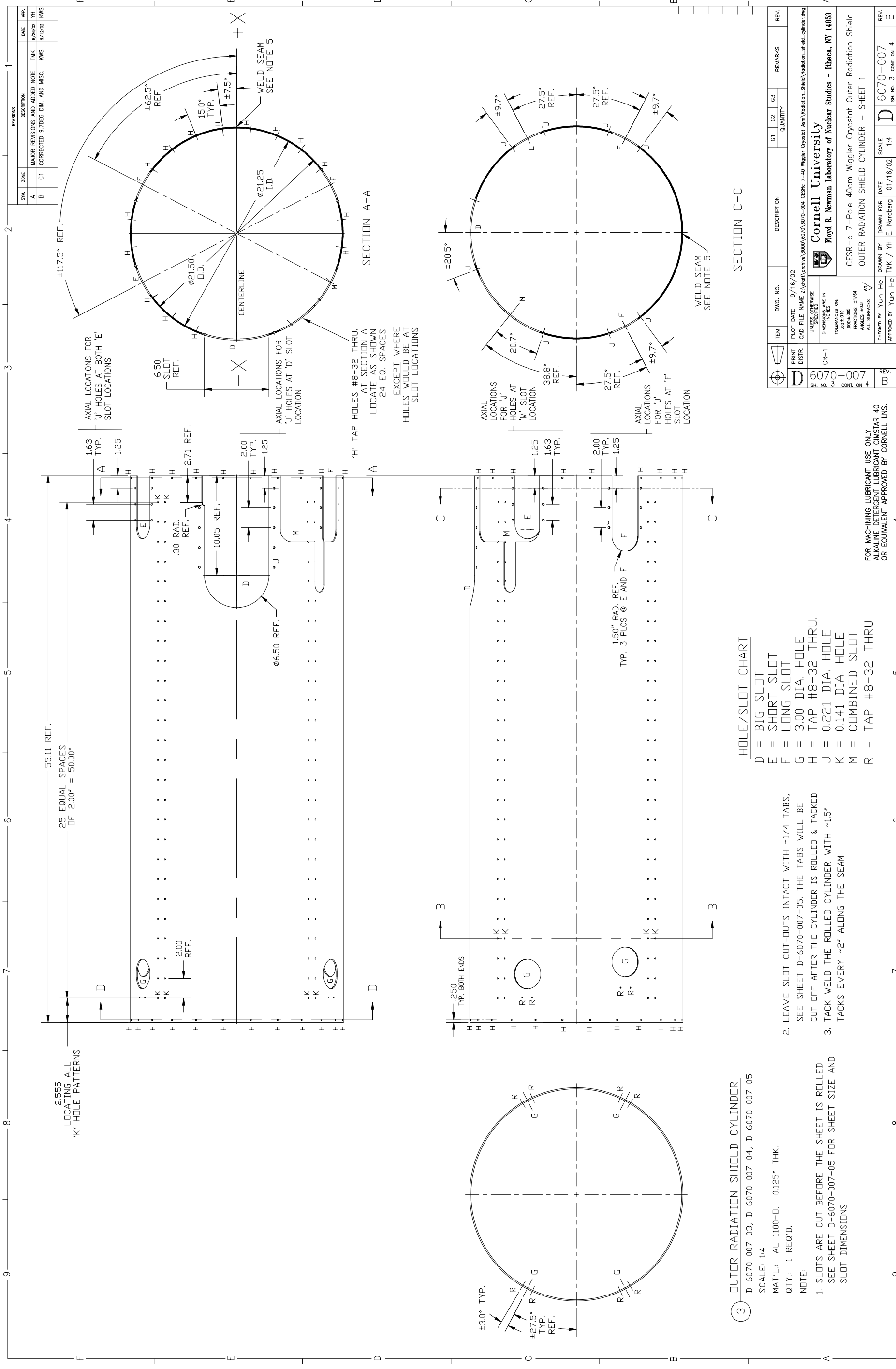
QTY.: 1 REQ'D.

NOTE:

1. BOLT END FLANGES (#8) TO CYLINDER (#3) TO HOLD THE CYLINDER IN ROUND
2. THE 1/4" SS MAIN COOLING TUBE (#17) IS ATTACHED TO THE ALUMINUM CYLINDER (#3) WITH TUBE CLAMPS (#11,12,13) & FASTEN STRIPS (#14,15,16), FILLING GAPS WITH EPOXY, AND PULLED TIGHT WITH POP RIVETS FILLING GAPS THRU 'K' HOLES EVERY 2".

PRINT	ITEM	DWG. NO.	DESCRIPTION	G1	G2	G3	QUANTITY	REMARKS	REV.
D	6070-007	8/29/02							
CR-1									
UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. TOLERANCES ON DIMENSIONS: DECIMALS: .005, FRACTIONS: 1/64, ANGLES: .015. ALL SURFACES.									
Cornell University Floyd R. Newman Laboratory of Nuclear Studies - Ithaca, NY 14853									
CESR-c 7-40 Wiggler Cryostat Outer Radiation Shield CYLINDER/FLANGE/TUBE, SUB-ASM.									
DRAWN BY: Yun He / DATE: 01/18/02 / SCALE: 1:4 CHECKED BY: Yun He / YH / T/MK: E. Nordberg									
D 6070-007 / CONT. ON 2 / CONT. ON 3									

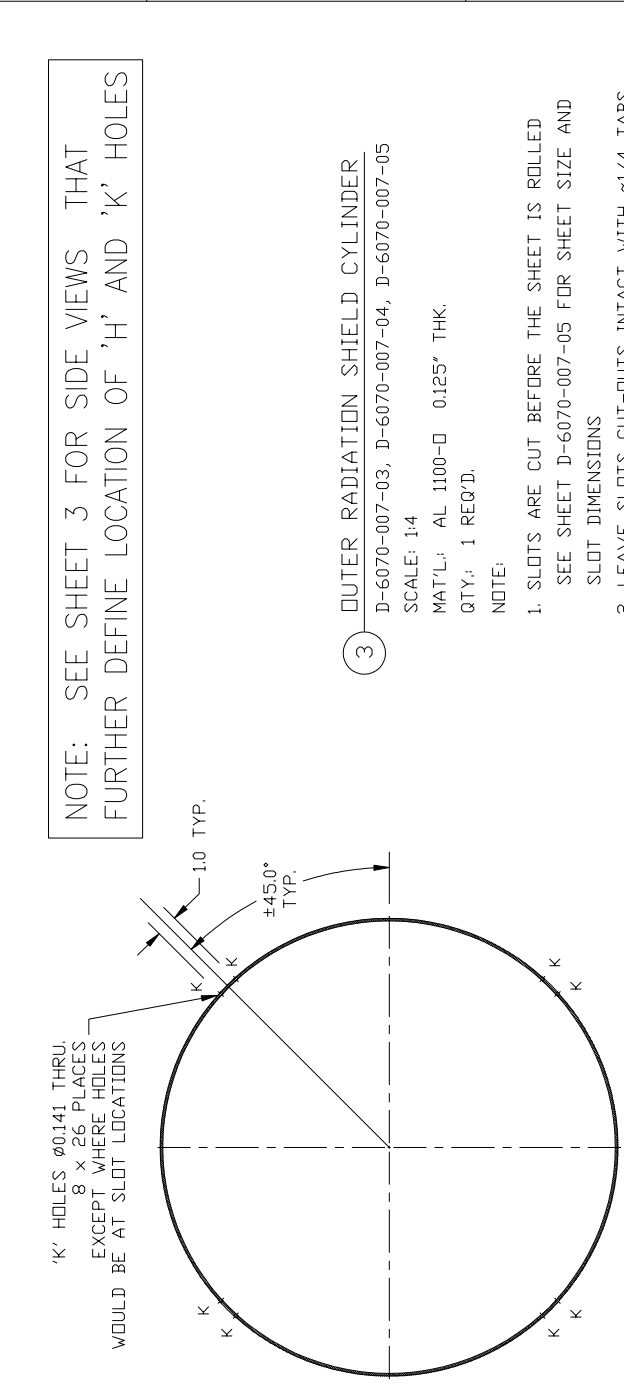
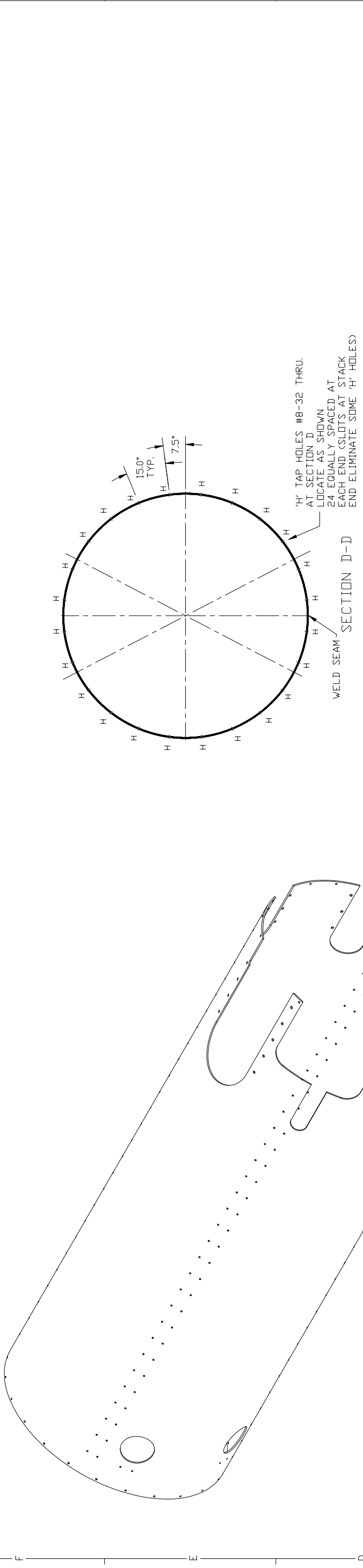
FOR MACHINING LUBRICANT USE ONLY
 ALKALINE DETERGENT LUBRICANT CIMSTAR 40
 OR EQUIVALENT APPROVED BY CORNELL I.N.S.



Cornell University
Floyd R. Newman Laboratory of Nuclear Studies - Ithaca, NY 14853

PRINT DIST.	ITEM	DWG. NO.	DESCRIPTION	G1	G2	G3	QUANTITY	REMARKS	REV.
D	6070-007	9/15/02	6070-007						
<small>UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES. TOLERANCES ON: DECIMALS .010; FRACTIONS 1/64; ANGLES .015; ALL SURFACES.</small>									
DR	YUN	HE							
CHECKED BY	YUN	HE							
APPROVED BY	YUN	HE							
DRAWN FOR	DATE	SCALE							
TMK / YH	01/16/02	1:4							
			D	6070-007		SH. NO. 3 CONT. ON 4		REV. B	

SYN. ZONE		REVISIONS	
SYN.	ZONE	DESCRIPTION	DATE
A		MAJOR REVISIONS AND ADDED NOTE	TMK 8/26/02
B		SHOW HOLES ADDED PICTORALLY PER CHANGES ON SHEET 5, REVISION D.	3/26/03 KMS D.M.E.

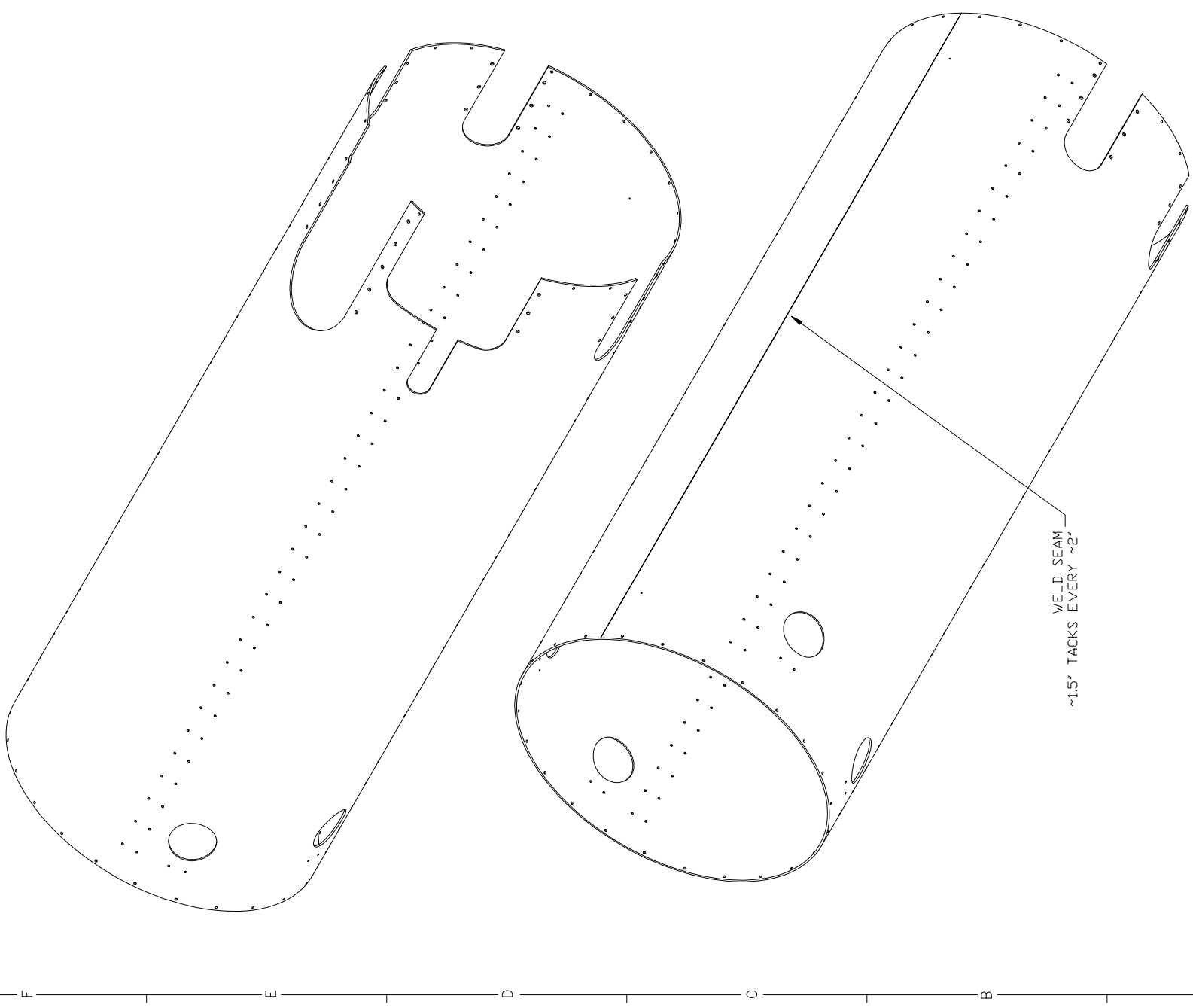


NOTE: SEE SHEET 3 FOR SIDE VIEWS THAT FURTHER DEFINE LOCATION OF 'H' AND 'K' HOLES

3 OUTER RADIATION SHIELD CYLINDER
D-6070-007-03, D-6070-007-04, D-6070-007-05
SCALE: 1:4

MAT'L: AL 1100-O 0.125" THK.
QTY: 1 REQ'D.
NOTE:

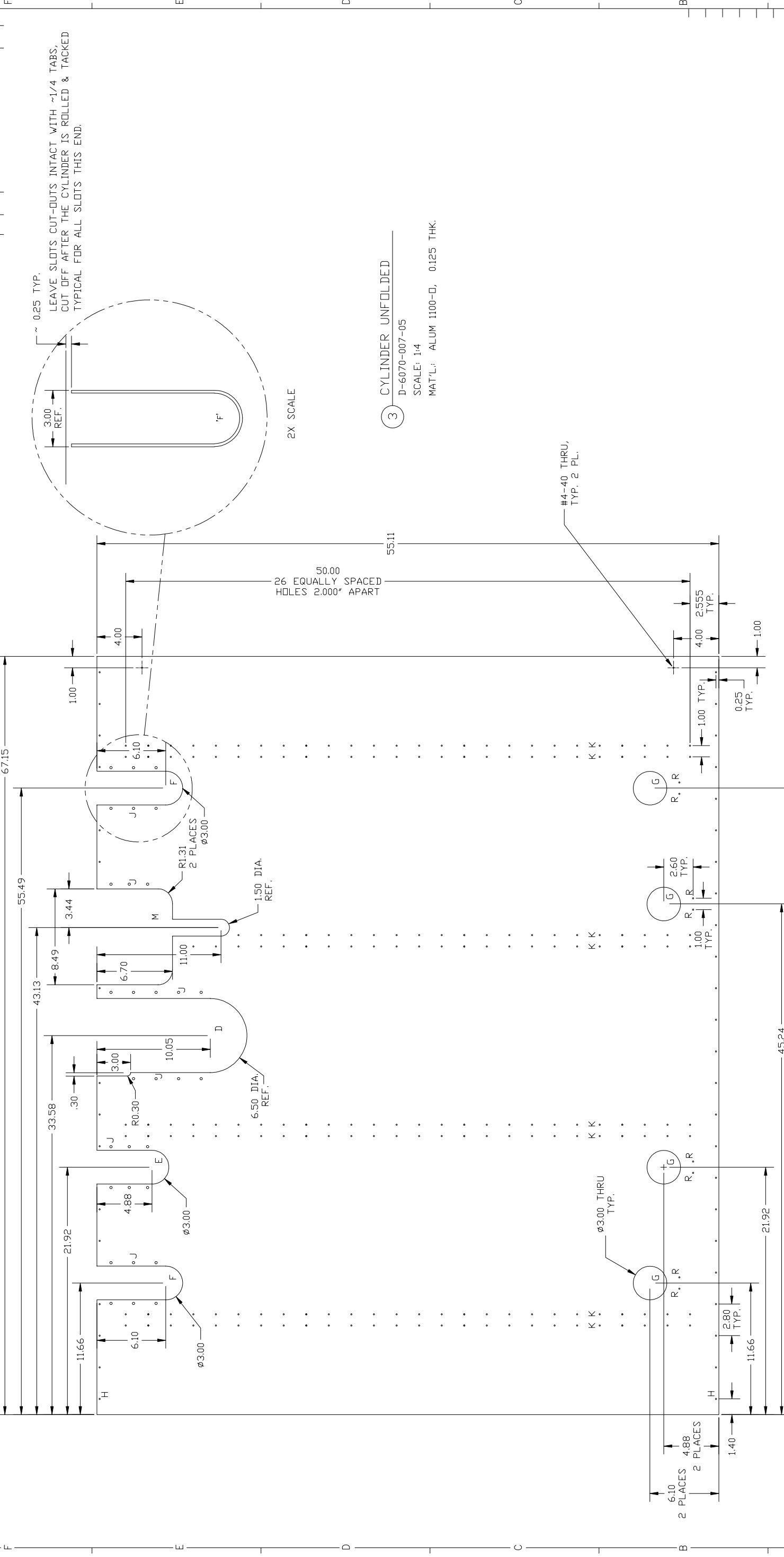
1. SLOTS ARE CUT BEFORE THE SHEET IS ROLLED
SEE SHEET D-6070-007-05 FOR SHEET SIZE AND SLOT DIMENSIONS
2. LEAVE SLOTS CUT-OUTS INTACT WITH ~1/4 TABS,
SEE SHEET D-6070-007-05. THE TABS WILL BE CUT OFF AFTER THE CYLINDER IS ROLLED & TACKED
3. TACK WELD THE ROLLED CYLINDER WITH ~1.5" TACKS EVERY ~2" ALONG THE SEAM



ITEM	DWG. NO.	DESCRIPTION	Q1	Q2	Q3	REMARKS	REV.
PRINT	3/26/03						
DISTR.	CR-1						
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS ±1/64 DECIMALS ±0.005 ANGLES ±0.5 ALL SURFACES UNLESS OTHERWISE SPECIFIED							
CHECKED BY YUN HE DRAWN BY YUN HE DATE 01/16/02 SCALE 1:4 TMM / YH E. Nordberg							
Cornell University Floyd R. Newman Laboratory of Nuclear Studies - Ithaca, NY 14853 CESR-c 7-Pole 40cm Wiggler Cryostat Outer Radiation Shield OUTER RADIATION SHIELD CYLINDER - SHEET 2							
APPROVED BY YUN HE TMM / YH E. Nordberg DATE 01/16/02 SCALE 1:4 SH. NO. 4 CONT. ON 5							
FOR MACHINING LUBRICANT USE ONLY ALKALINE DETERGENT LUBRICANT CIMSTAR 40 OR EQUIVALENT APPROVED BY CORNELL LNS.							

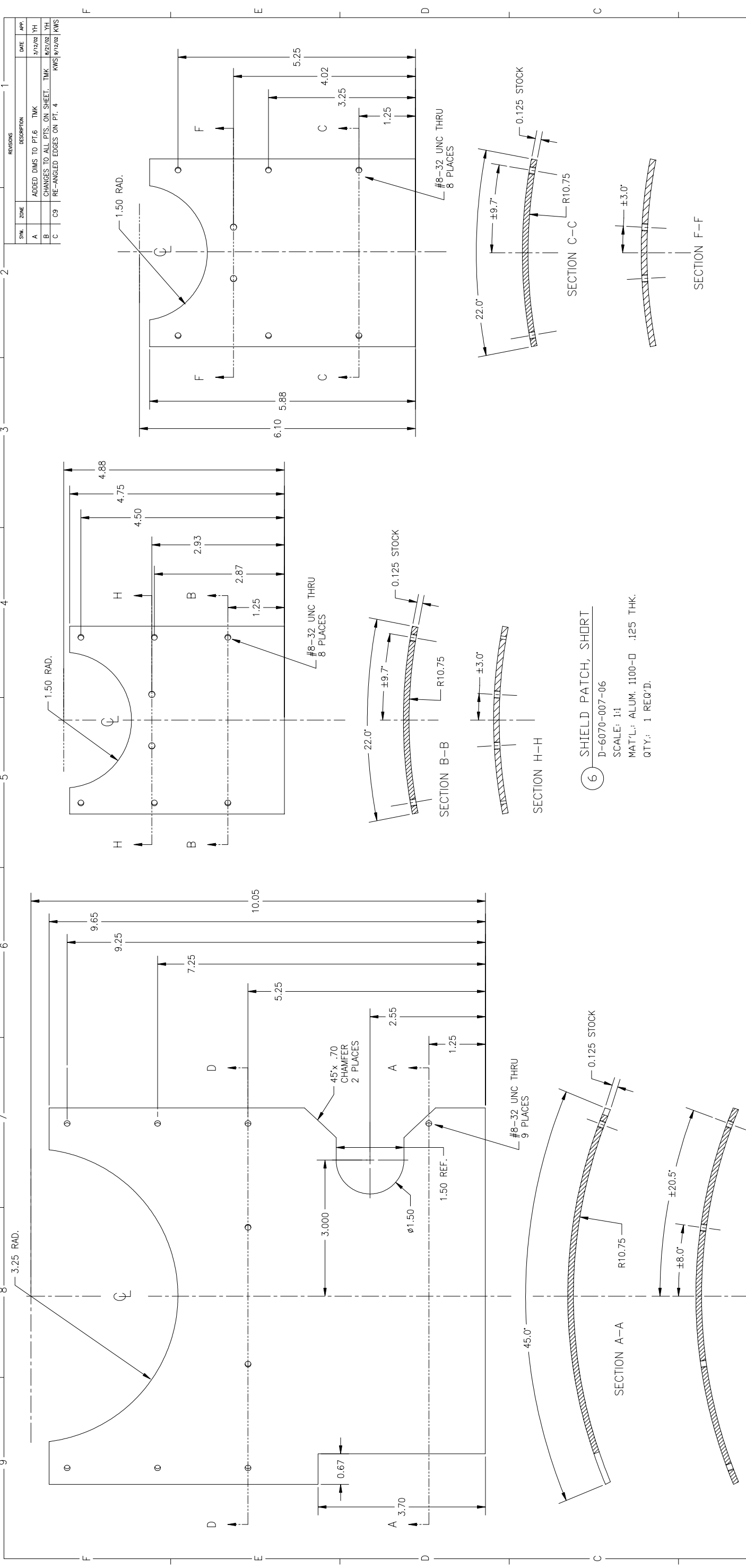
FOR MACHINING LUBRICANT USE ONLY
ALKALINE DETERGENT LUBRICANT CIMSTAR 40
OR EQUIVALENT APPROVED BY CORNELL LNS.

REVISIONS		
SYN.	ZONE	DESCRIPTION
A	FB	General revs to 2 dims
B	FB	MAJOR REVS. KWS+TMK
C		ADDED HOLE PATTERNS TO FLAT SHEET
D	BLE-4	ADDED (2) #4-40 THRU HOLES. D.M.E.



ITEM	DWG. NO.	DESCRIPTION	Q1	Q2	Q3	REMARKS	REV.
D	6070-007	CR-1					
PRINT DATE: 03/25/03 CAD FILE NAME: Z:\part\mchhe\6070\6070-04 CESR-7-40 Wiggler Cryostat Asm\Radiatn_Shield\Radiatn_Shield_cylinder.dwg UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS ±1/64 DECIMALS ±0.005 ANGLES ±0.5 ALL SURFACES CHECKED BY: Yun He DRAWN BY: TMK E. Nordberg DATE: 01/16/02 SCALE: 1:4 APPROVED BY: Yun He							
Cornell University Floyd B. Newman Laboratory of Nuclear Studies - Ithaca, NY 14853 CESR-c 7-40 Wiggler Cryostat Outer Radiation Shield Cylinder Unfolded - (REFERENCE ONLY)							
FOR MACHINING LUBRICANT USE ONLY ALKALINE DETERGENT LUBRICANT CIMSTAR 40 OR EQUIVALENT APPROVED BY CORNELL LNS.							
							D
							6070-007
							CONT. ON 5
							REV. D
							SH. NO. 5
							CONT. ON 6

NOTES: 1.) SHOWN FOR REFERENCE ONLY; LEPP MACHINE SHOP RETAINS FULL-SIZE TEMPLATE. (TEMPLATE ALSO IN THIS ELECTRONIC FILE)
 2.) SEE SHEET D-6070-007-03 & D-6070-007-04 FOR FURTHER MACHINING.



REVISIONS		SYN.	ZONE	DESCRIPTION	DATE	APP.
A				ADDED DIMS TO PT.6	TMK	3/12/02 YH
B				CHANGES TO ALL PTS. ON SHEET.	TMK	8/2/02 YH
C		C9		RE-ANGLED EDGES ON PT. 4	KWS	9/12/02 KWS

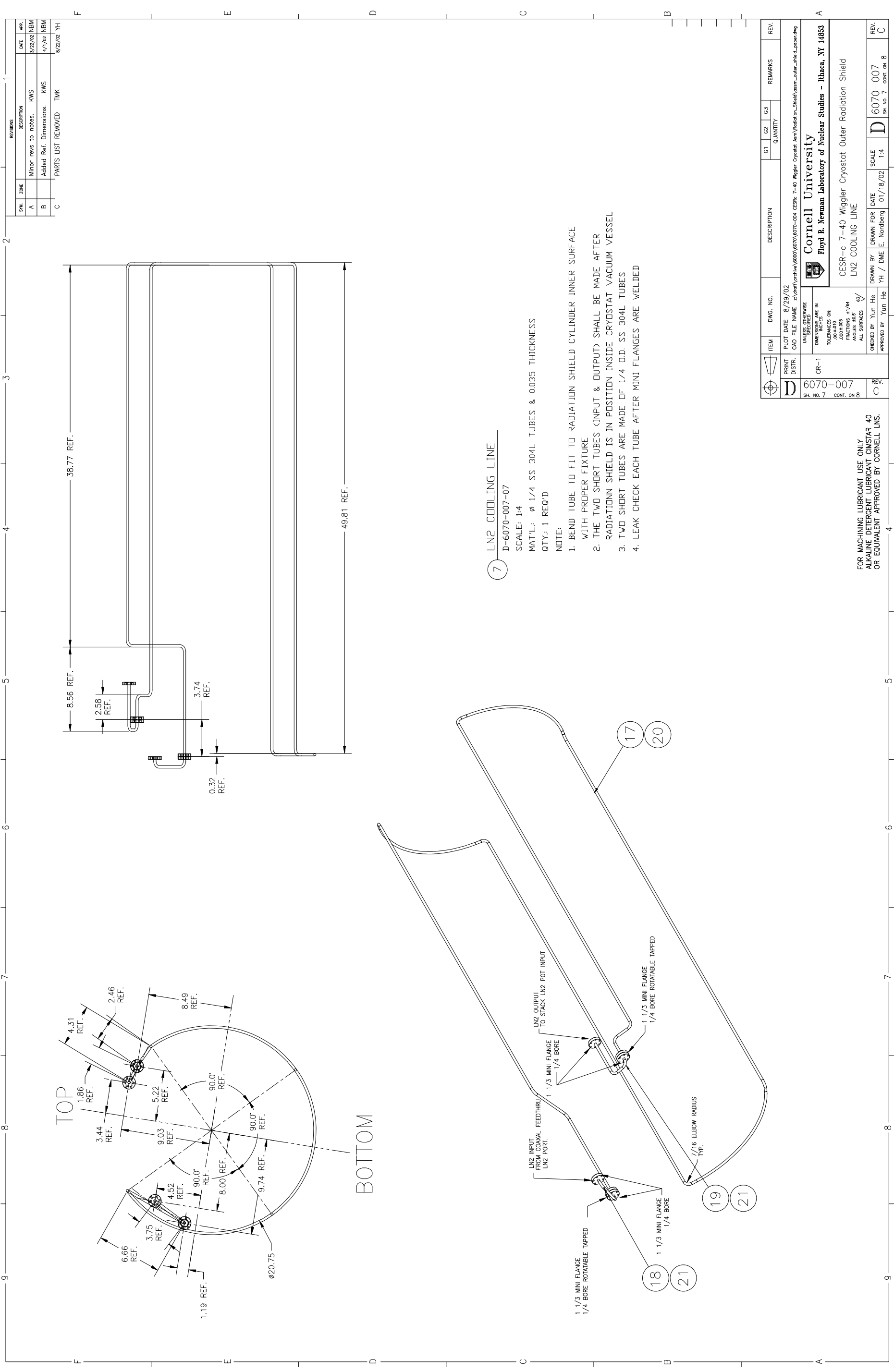
ITEM	DWG. NO.	DESCRIPTION	QTY.	REMARKS	REV.
5	D-6070-007-06	SHIELD PATCH, LONG			
6	D-6070-007-06	SHIELD PATCH, SHORT			
4	D-6070-007-06	SHIELD PATCH, LARGE			

PRINT DISTR.	D-6070-007	PLOT DATE	9/16/02	CAD FILE NAME	Z:\ent\amsha\6000\6070-004 CESR-c 7-40 Wiggler Cryostat Alm\Radiation_Shield\amsha_outer_shield_ppwr.dwg
UNLESS OTHERWISE SPECIFIED	CR-1	DIMENSIONS ARE IN INCHES		TOLERANCES ON FRACTIONS	±1/64
				ANGLES	±0.5
				ALL SURFACES	BY
CHECKED BY	Yun He	DRAWN FOR	DATE	SCALE	
APPROVED BY	Yun He	TMK	E. Nordberg	01/18/02	1:1
REV.	C	CONT. ON	7	REV.	D 6070-007
					SH. NO. 6 CONT. ON 7

Cornell University
 Floyd B. Newman Laboratory of Nuclear Studies - Ithaca, NY 14853

CESR-c 7-40 Wiggler Cryostat Outer Radiation Shield
 OUTER SHIELD PATCH COVERS

FOR MACHINING LUBRICANT USE ONLY
 ALKALINE DETERGENT LUBRICANT CIMSTAR 40
 OR EQUIVALENT APPROVED BY CORNELL LNS.



7 LN2 COOLING LINE

D-6070-007-07

SCALE: 1:4

MAT'L: ϕ 1/4 SS 304L TUBES & 0.035 THICKNESS

QTY: 1 REQ'D

NOTE:

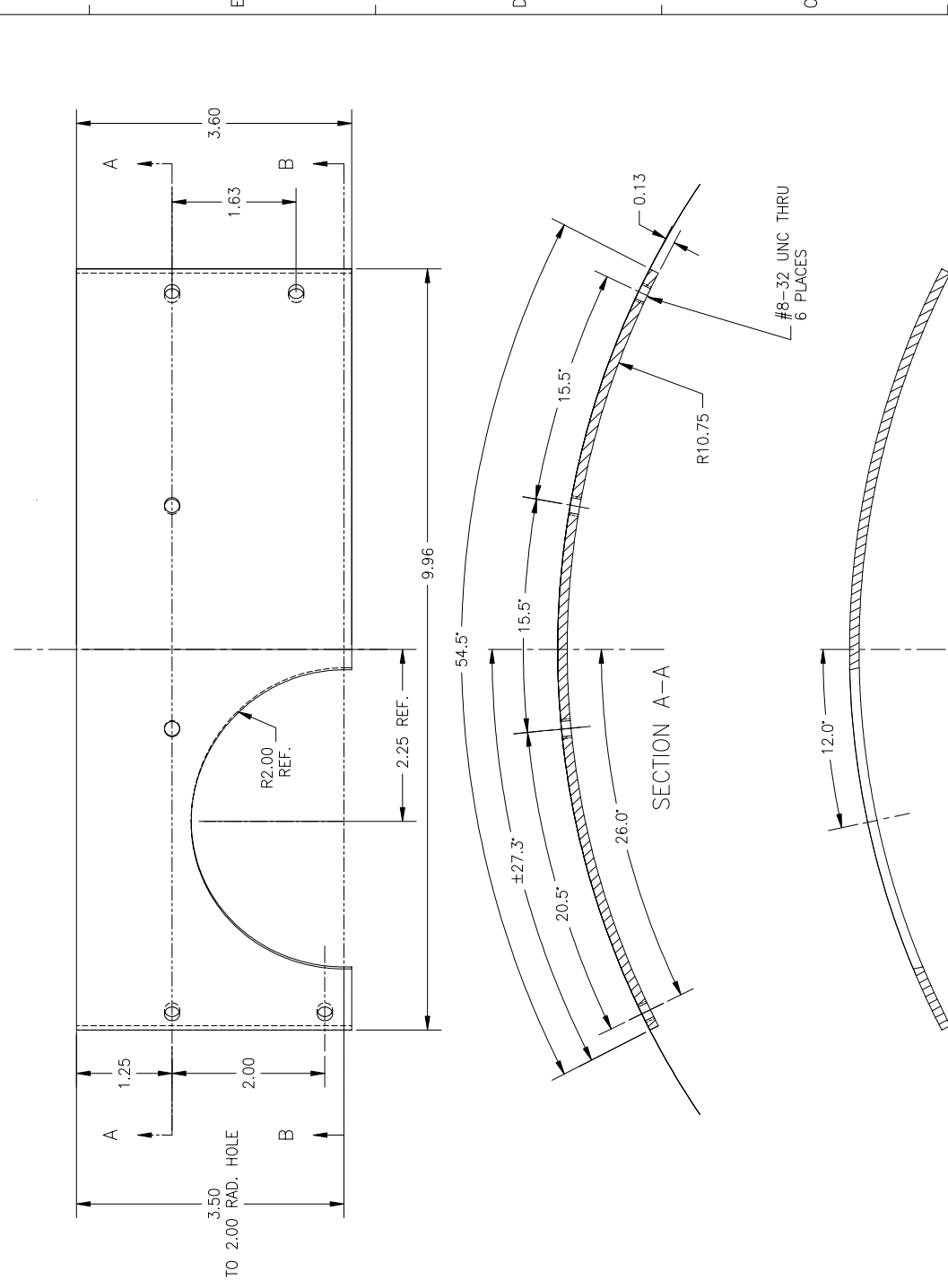
1. BEND TUBE TO FIT TO RADIATION SHIELD CYLINDER INNER SURFACE WITH PROPER FIXTURE
2. THE TWO SHORT TUBES (INPUT & OUTPUT) SHALL BE MADE AFTER RADIATION SHIELD IS IN POSITION INSIDE CRYOSTAT VACUUM VESSEL
3. TWO SHORT TUBES ARE MADE OF 1/4 O.D. SS 304L TUBES
4. LEAK CHECK EACH TUBE AFTER MINI FLANGES ARE WELDED

PRINT	ITEM	DWG. NO.	DESCRIPTION	Q1	Q2	Q3	REMARKS	REV.	
D	CR-1	8/29/02							
PLOT DATE: 8/29/02		UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES							
CAD FILE NAME: z:\grant\arch\me\6000\6070\6070-004 CESR-c 7-40 Wiggler Cryostat Item\Radiation_Shield\asst_cooling_line.dwg		TOLERANCES ON DIMENSIONS ARE: FRACTIONS: 1/64 ANGLES: 1/2 ALL SURFACES: <input checked="" type="checkbox"/> R							
6070-007		Cornell University Floyd R. Newman Laboratory of Nuclear Studies - Ithaca, NY 14853							
CONT. ON B		CESR-c 7-40 Wiggler Cryostat Outer Radiation Shield LN2 COOLING LINE							
REV. C		DRAWN BY: Yuh He		DATE: 01/18/02		SCALE: 1:4		D 6070-007	
		YH / DME E. Nordberg						CONT. ON B	

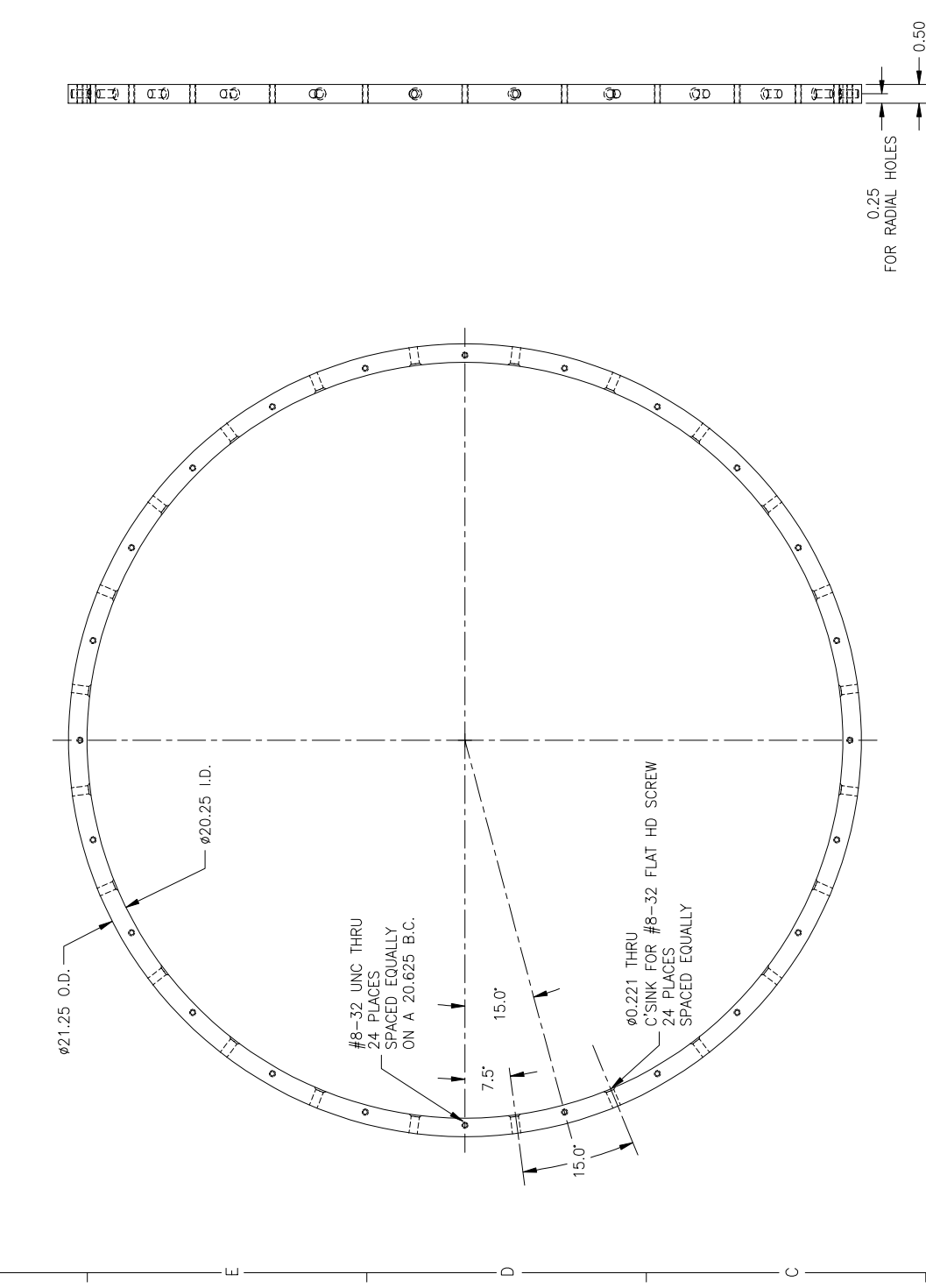
FOR MACHINING LUBRICANT USE ONLY
ALKALINE DETERGENT LUBRICANT CIMSTAR 40
OR EQUIVALENT APPROVED BY CORNELL LNS.

REVISIONS		SYN.	ZONE	DESCRIPTION	DATE	APP.
A				ADDED DIMS TO PT.10	7/12/02	YH
B				ADDED DIMENSIONS TO PT.10	8/27/02	YH
C				RE-ANGLED 2.00 HOLE PT.10	9/12/02	KWS

F
E
D
C
B
A



8 OUTER SHIELD FLANGE
 D-6070-007-08
 SCALE: 1:2
 MAT'L: ALUM. 6061 x .500 THK.
 QTY.: 2 REQ'D



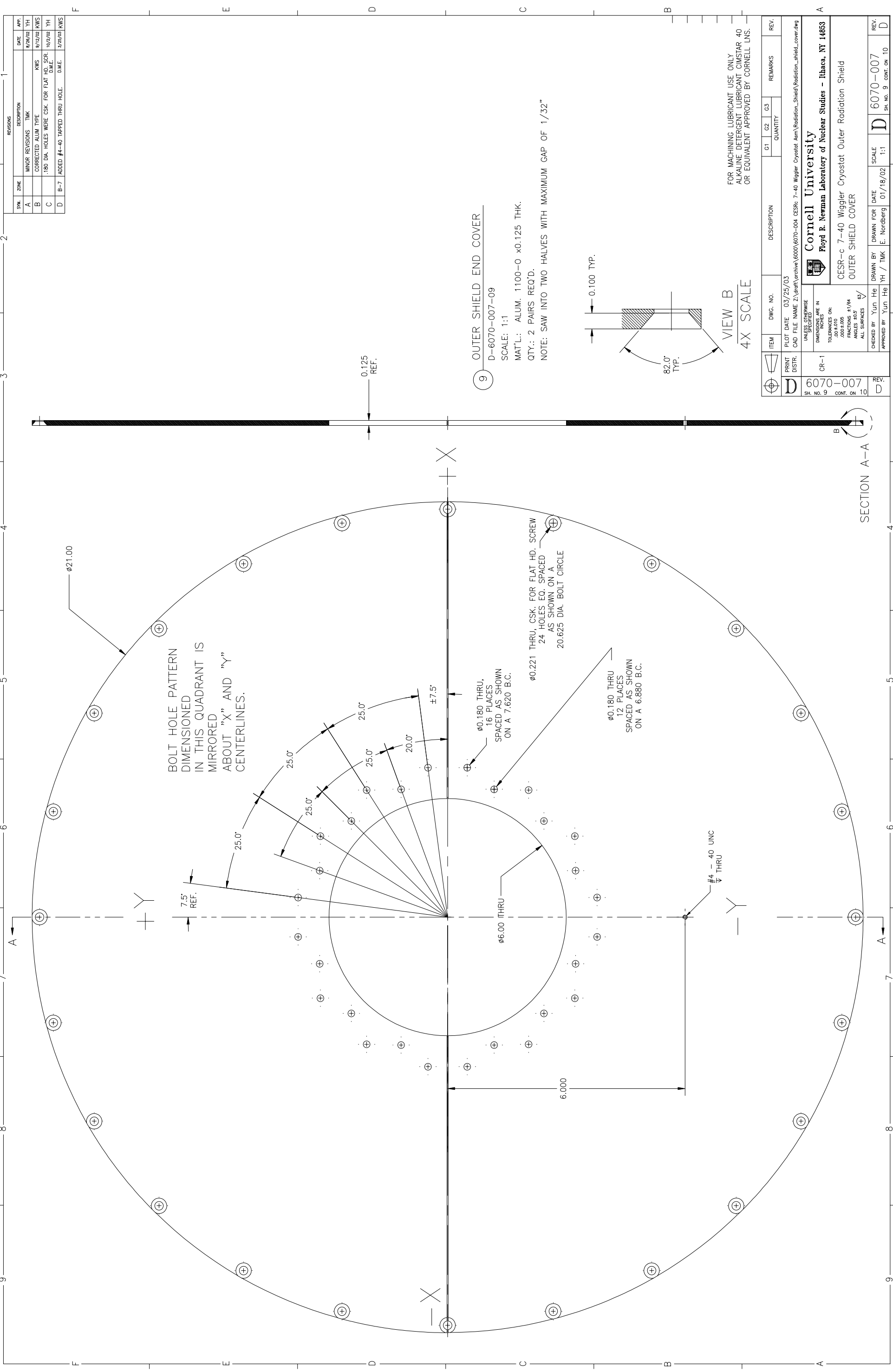
10 SHIELD PATCH, COMBINED
 D-6070-007-08
 SCALE: 1:1
 MAT'L: ALUM. 1100-0 .125 THK.
 QTY.: 1 REQ'D.

ITEM	DWG. NO.	DESCRIPTION	QTY	REMARKS	REV.
D	6070-007	CR-1			
PRINT DATE: 9/16/02 CAD FILE NAME: Z:\net\archiv\6070\6070-004 CESRc 7-40 Wiggler Cryostat Arm\Radiation_Shield\asm_outer_shield_upper.dwg UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS: ±1/64 DECIMALS: ±.005 ANGLES: ±0.5 ALL SURFACES: ✓ CHECKED BY: Yun He APPROVED BY: Yun He					
Cornell University Floyd R. Newman Laboratory of Nuclear Studies - Ithaca, NY 14853 CESR-c 7-40 Wiggler Cryostat Outer Radiation Shield END FLANGE & SHIELD PATCH					
D-6070-007-08		SCALE: 1:2	DATE: 01/18/02	SCALE: 1:2	REV. C
D-6070-007-08		SCALE: 1:1	DATE: 01/18/02	SCALE: 1:1	REV. D
D-6070-007-08		SCALE: 1:1	DATE: 01/18/02	SCALE: 1:1	REV. C

FOR MACHINING LUBRICANT USE ONLY
 ALKALINE DETERGENT LUBRICANT CIMSTAR 40
 OR EQUIVALENT APPROVED BY CORNELL LNS.

9
8
7
6
5
4
3
2
1

SYN. ZONE		REVISIONS		DESCRIPTION		DATE		APP.	
A	B	C	D	SYN.	ZONE	DESCRIPTION	DATE	APP.	TH
						MINOR REVISIONS	9/20/02		YH
						CORRECTED ALUM TYPE	9/12/02		KWS
						1.80 DIA. HOLES WERE CSK. FOR FLAT HD. SCR.	10/2/02		YH
						D.M.E.			
						ADDED #4-40 TAPPED THRU HOLE.	3/25/03		KWS
						D.M.E.			



ITEM	DWG. NO.	DESCRIPTION	QUANTITY	REMARKS	REV.
9		OUTER SHIELD END COVER			

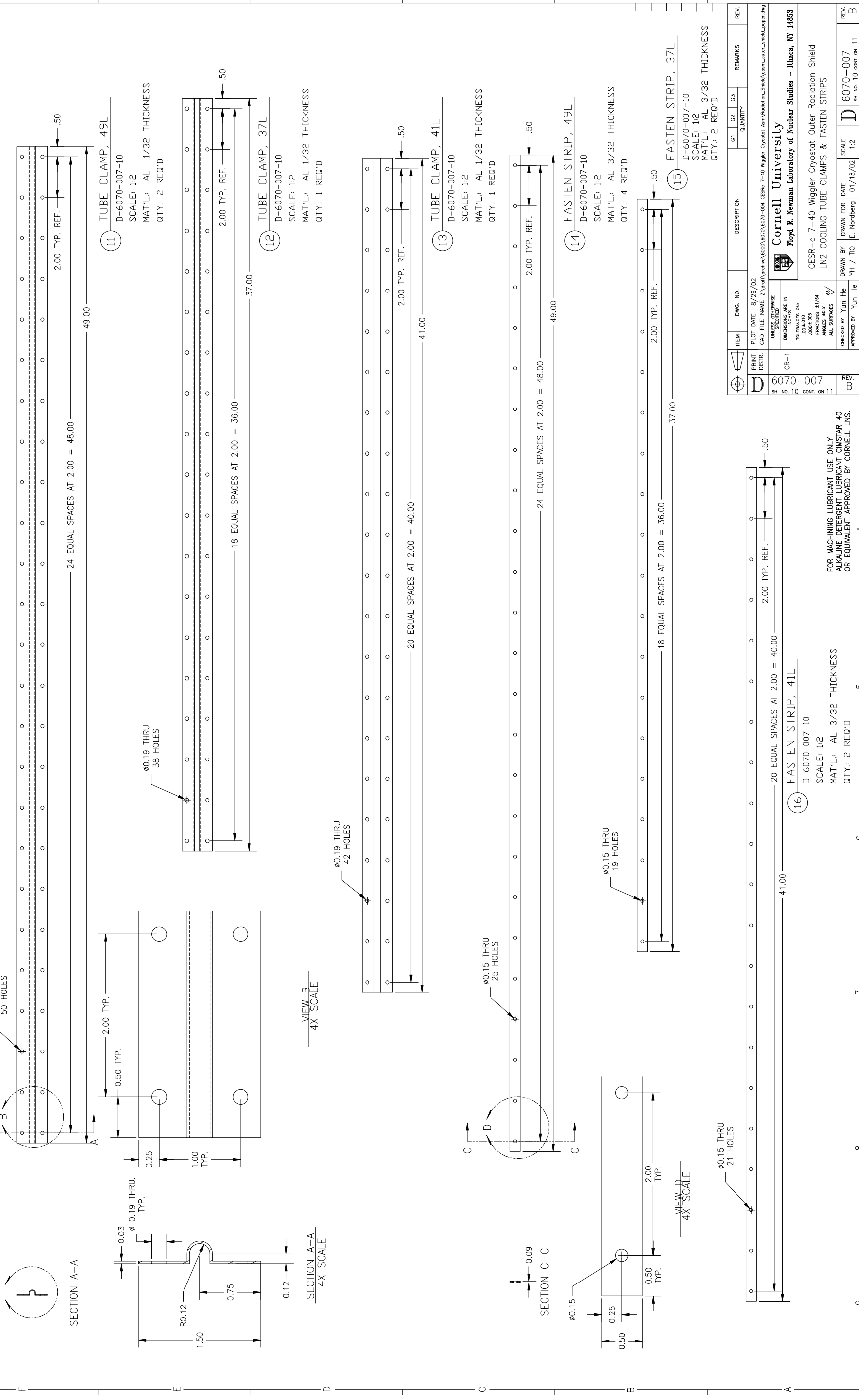
PRINT	DIST.	DWG. NO.	DATE	FILE NAME	DESCRIPTION
D	CR-1	6070-007	03/25/03	Z:\draft\archwa\6000\6070-004 CESRc 7-40 Wiggler Cryostat Asm\Radiation_Shield\Radiation_shield_cover.dwg	

UNLESS OTHERWISE SPECIFIED	
DIMENSIONS ARE IN INCHES	ALL SURFACES
TOLERANCES ON FRACTIONS	±1/64
TOLERANCES ON DECIMALS	±0.005
ANGLES	±0.5°

CHECKED BY	Yun He	DATE	01/18/02
APPROVED BY	Yun He	TH / TIK	E. Nordberg

SCALE	1:1
REV.	D
6070-007	CONT. ON 10
6070-007	CONT. ON 10

REVISIONS		DATE	APP.
NO.	DESCRIPTION		
A	ADDED HOLE DIMS. TO ALL PIS. TMK	3/12/02	YH
B	MAJOR REVS + ADDED HOLE COUNTS TMK	8/27/02	YH



ITEM	DWG. NO.	DESCRIPTION	QTY	REMARKS	REV.
11	D-6070-007-10	TUBE CLAMP, 49L	2		
12	D-6070-007-10	TUBE CLAMP, 37L	1		
13	D-6070-007-10	TUBE CLAMP, 41L	1		
14	D-6070-007-10	FASTEN STRIP, 49L	4		
15	D-6070-007-10	FASTEN STRIP, 37L	2		

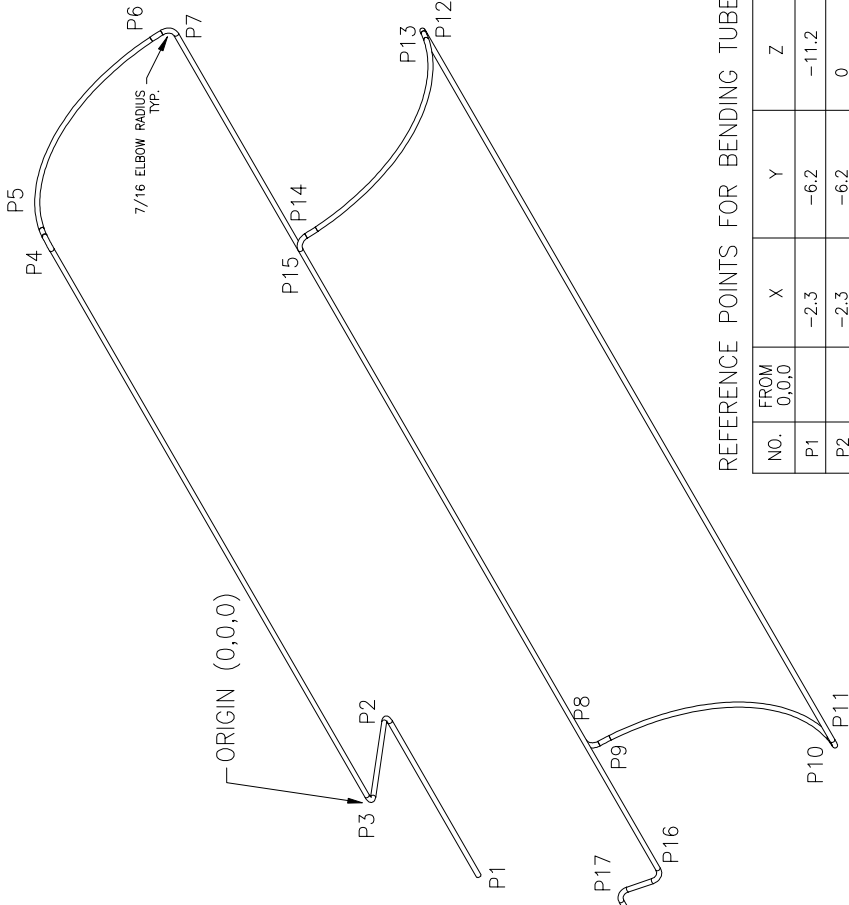
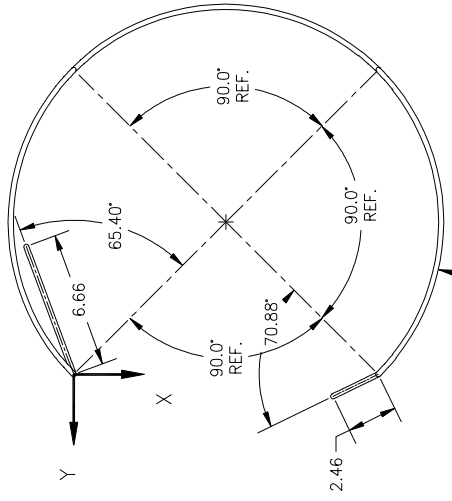
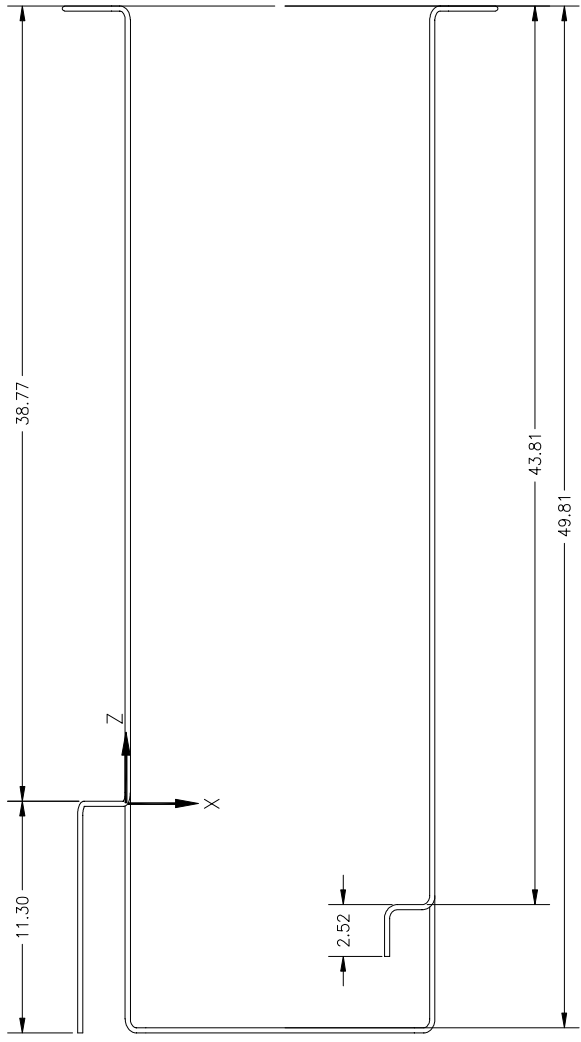
PRINT DISTR: CR-1 PLOT DATE: 8/29/02 CAD FILE NAME: Z:\proj\archive\6070\6070-004.cesr: 7-40 Wiggler Cryostat Asm (Radiation Shield) (asm_outer_shield_paper.dwg)	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON: DIMENSIONS: .0014 DIA. FRACTIONS: 1/64 ANGLES: .015 ALL SURFACES: <input checked="" type="checkbox"/>	CHECKED BY: Yun He APPROVED BY: Yun He	DRAWN FOR: YH / TIO DATE: 01/18/02	SCALE: 1:2 SH. NO. 10 CONT. ON 11
---	---	---	---------------------------------------	--------------------------------------

Cornell University
Floyd R. Newman Laboratory of Nuclear Studies - Ithaca, NY 14853
 CESR-c 7-40 Wiggler Cryostat Outer Radiation Shield
 LN2 COOLING TUBE CLAMPS & FASTEN STRIPS

REV.	DATE	SCALE	BY	CHKD.	APP'D.
B	01/18/02	1:2	E. Nordberg	D	

FOR MACHINING LUBRICANT USE ONLY
 ALKALINE DETERGENT LUBRICANT CIMSTAR 40
 OR EQUIVALENT APPROVED BY CORNELL LNS.

REV. NO.		DATE	APP.
MIN.	ZONE		
DESCRIPTION			
MINOR REVS. + NEW CHART T/MK			
A		8/28/02	YH



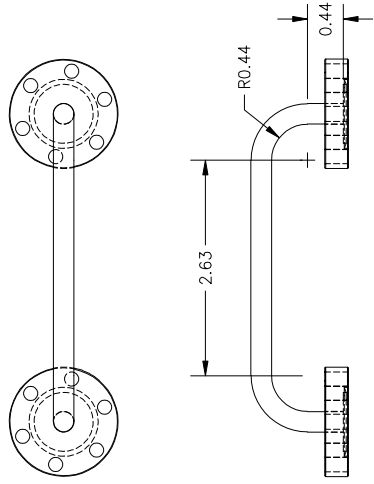
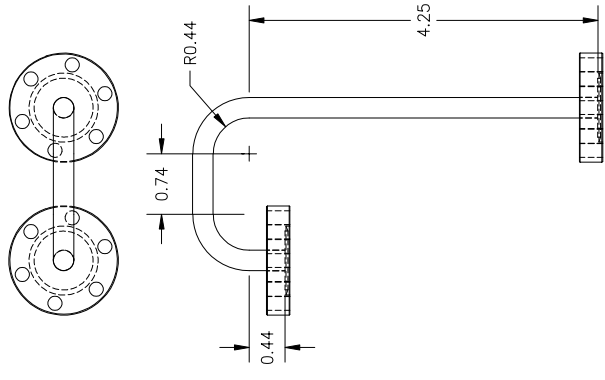
17 COOLING MAIN TUBE

D-6070-007-11
SCALE: 1:4
MAT'L: ϕ 1/4 SS 304L TUBES & 0.035 THICKNESS
QTY: 1 REQ'D

REFERENCE POINTS FOR BENDING TUBE

NO.	FROM	X	Y	Z
P1	0,0,0	-2.3	-6.2	-11.2
P2		-2.3	-6.2	0
P3	ORIGIN	0.0	0.0	0
P4		0.0	0.0	38.8
P5		-0.6	-0.6	38.8
P6		-0.6	-14.2	38.8
P7		0.0	-14.8	38.8
P8		0.0	-14.8	-11
P9		0.6	-15.4	-11
P10		14.2	-15.4	-11
P11		14.8	-14.8	-11
P12		14.8	-14.8	38.8
P13		15.4	-14.2	38.8
P14		15.4	-0.6	38.8
P15		14.8	0.0	38.8
P16		14.8	0.0	-5.0
P17		12.6	1.1	-5.0
P18		12.6	1.1	-7.4

- NOTE:
- BEND MAIN TUBE (#17) TO FIT TO RADIATION SHIELD CYLINDER INNER SURFACE WITH PROPER FIXTURE
 - THE TWO SHORT TUBES (#18 & #19) SHALL BE MADE AFTER RADIATION SHIELD IS IN POSITION INSIDE CRYOSTAT VACUUM VESSEL
 - LEAK CHECK EACH TUBE AFTER MINI FLANGES ARE WELDED



18 COOLING INPUT TUBE

D-6070-007-11
SCALE: 1:1
MAT'L: ϕ 1/4 SS 304L TUBES & 0.035 THICKNESS
QTY: 1 REQ'D

19 COOLING OUTPUT TUBE

D-6070-007-11
SCALE: 1:1
MAT'L: ϕ 1/4 SS 304L TUBES & 0.035 THICKNESS
QTY: 1 REQ'D

ITEM	DWG. NO.	DESCRIPTION	G1	G2	G3	QUANTITY	REMARKS	REV.	
PRINT	PLOT DATE: 8/29/02								
DISTR.	CAD FILE NAME: z:\work\cvtch\6000\6070\6070-004 CESR- 7-40 Wiggler Cryostat Asm\Radiation_Shield\asmb_cooler_shield.dwg								
CR-1	UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES								
	TOLERANCES ON DIMENSIONS ARE IN INCHES								
	DECIMALS: .001								
	FRACTIONS: 1/64								
	ANGLES: .005								
	ALL SURFACES								
	CHECKED BY: Yun He								
	APPROVED BY: Yun He								
D-6070-007		DATE: 01/18/02		SCALE: 1:4		D-6070-007		REV. A	
SH. NO. 11		CONT. OF 1				D-6070-007		SH. NO. 11 CONT. OF FIN. A	

Cornell University
Floyd R. Newman Laboratory of Nuclear Studies - Ithaca, NY 14853

CESR-c 7-40 Wiggler Cryostat Outer Radiation Shield
LNZ COOLING TUBES

FOR MACHINING LUBRICANT USE ONLY
ALKALINE DETERGENT LUBRICANT CIMSTAR 40
OR EQUIVALENT APPROVED BY CORNELL LNS.