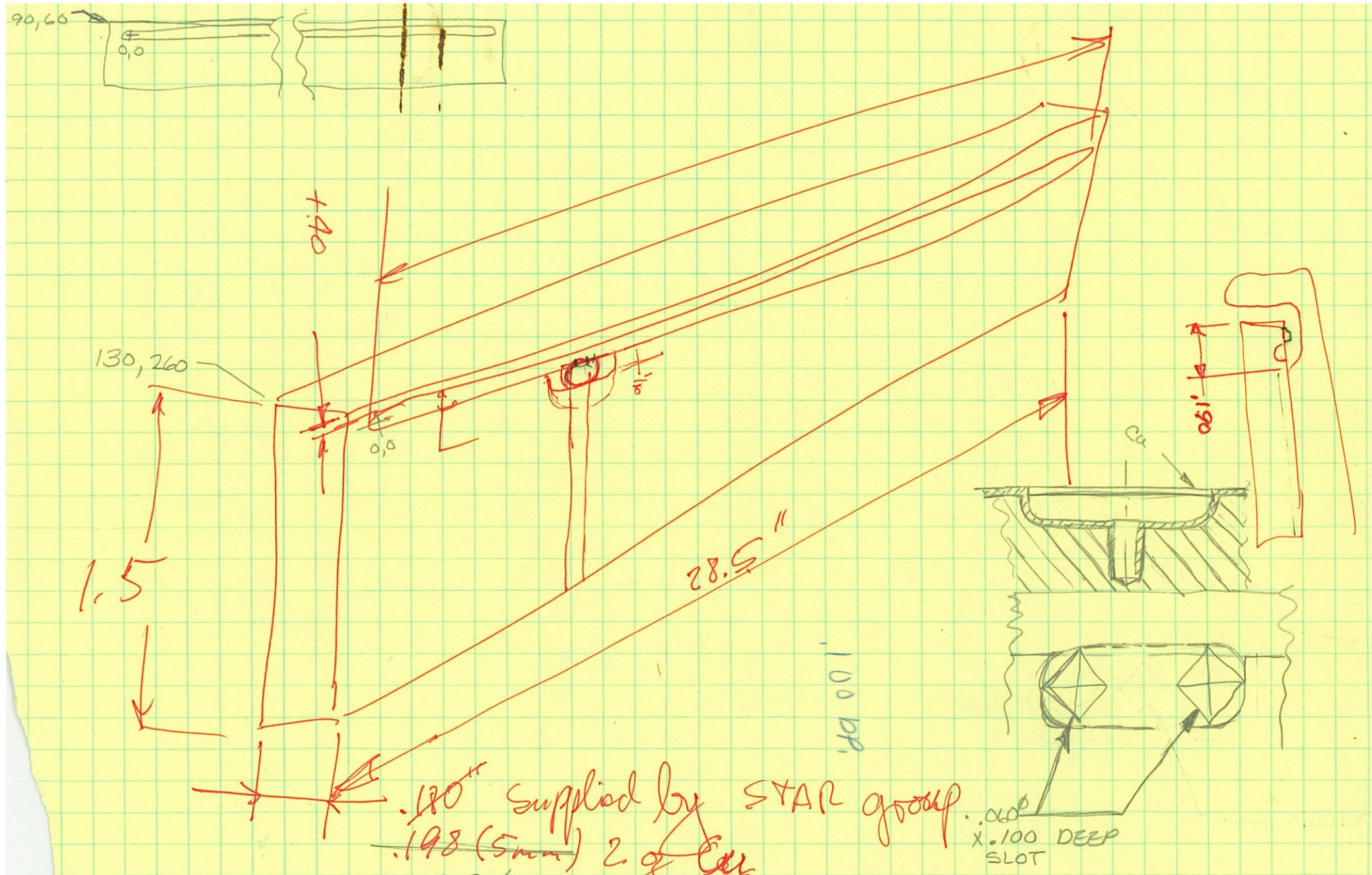

a900u1
24A4541

```
************************* LBL BOARD A000900U1 *************************
*************************** MARCH 21, 1995 ****************************
**************************** WHEEL W900INFO ****************************
NEED 1 STANDARD PHOTOPLOT, 1 POSITIVE AND 1 NEGATIVE.
FILM SIZE IS APPROXIMATELY 28.500 X 1.50 12.400 INCHES.
DELIVERY DATE: MARCH 24, 1995 OR SOONER.
PHOTOPLOT FILES IN POSITIVE FORMAT:
  PL900U1 - SINGLE SIDED BOARD
PLEASE MAKE CONTACT COPIES OF PLOT FILE (1).  I NEED ONE (1) POSITIVE
  AND ONE (1) NEGATIVE, EMULSION DOWN, RIGHT READING.
IF THERE ARE ANY QUESTIONS OR PROBLEMS PLEASE CALL -JUDY- (916)
  547-4005.

tr10 10 circle trace 10;
tr12 11 circle trace 12;
tr15 12 circle trace 15;
tr20 13 circle trace 20;
tr30 14 circle trace 30;
tr40 15 circle trace 40;
tr50 16 circle trace 50;
tr60 17 circle trace 60;
tr70 18 circle trace 70;
tr80 19 circle trace 80;
tr90 70 circle trace 90;
tr100 71 circle trace 100;
tr120 20 circle trace 120;
tr130 21 circle trace 130;
tr150 22 circle trace 150;
f140 23 circle flash 40;
f150 24 circle flash 50;
f160 25 circle flash 60;
f170 26 circle flash 70;
f175 27 circle flash 75;
f185 28 circle flash 85;
f190 29 circle flash 90;
f1100 72 circle flash 100;
f1110 73 circle flash 110;
f1120 30 circle flash 120;
f1130 31 circle flash 130;
f1140 32 circle flash 140;
f1150 33 circle flash 150;
f1160 34 circle flash 160;
f1200 35 circle flash 200;
PADEXO 36 rectangle flash 80 55;
PADEXO 37 rectangle flash 55 80;
PADEXR 38 rectangle flash 75 55;
PADEXR 39 rectangle flash 55 75;
ftarget 40 square special 1.0;
fs60 41 square flash 60;
fs70 42 square flash 70;
fs75 43 square flash 75;
fs85 44 square flash 85;
fs100 45 square flash 100;
fs110 46 square flash 110;
fs120 47 square flash 120;
fs130 48 square flash 130;
fs140 49 square flash 140;
fs150 50 square flash 150;
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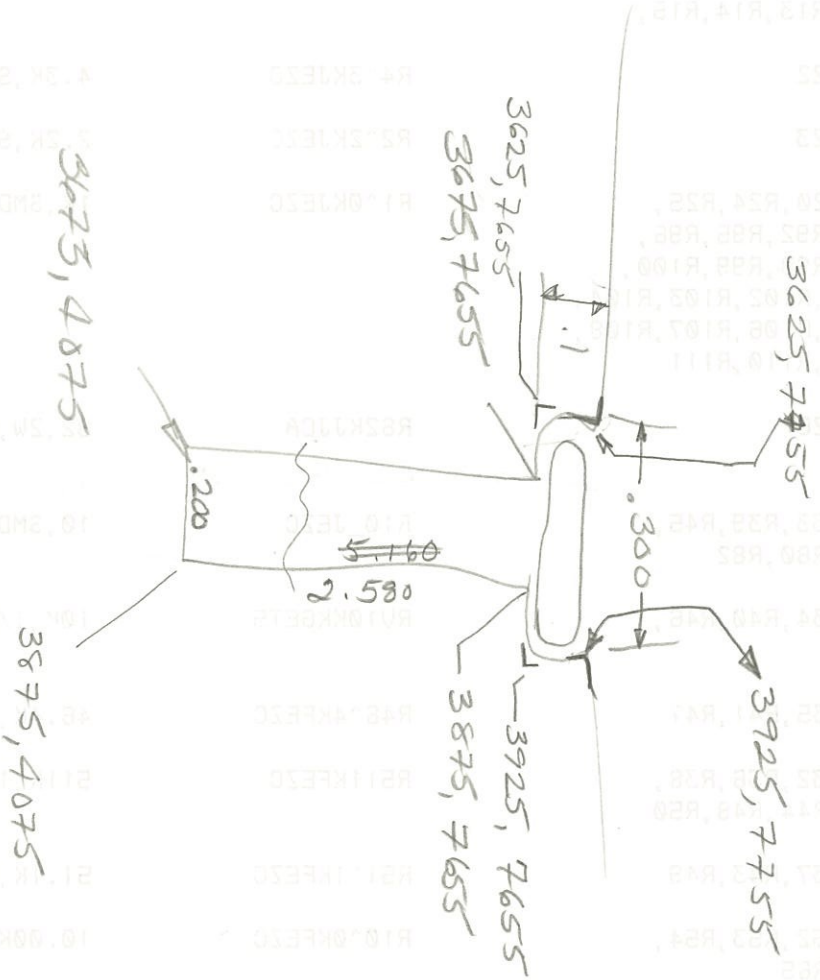
~~KAT~~

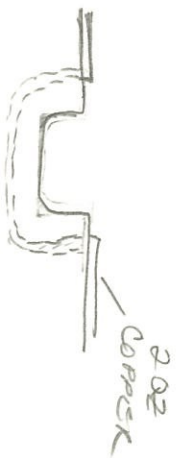
-1370, 260
-.1370, -20030

20290
9090

260
9030
9290

20030
9030
11000





PARTS LIST

TITLE: STAR TPC
TEST ELECTRONICS
SAS-16, AUTOTESTER DUT BOARD

FILE NO.: a000899c1 REV:
PRINT NO.: 24A4531 C-1
CHANGES (*):

ENGINEER: CHINH VU
DRAFTER: STIRKKINEN

DATE: 03/13/95
PAGE: 3 OF 6

Reference	Stock No.	Part Type	Description
		** RESISTORS **	
R1,R2,R3,R4,R5,R6, R7,R8,R9,R10,R11, R12,R13,R14,R15, R16		R510_JEZC	510,SMD
R17,R22		R4^3KJEZC	4.3K,SMD
R18,R23		R2^2KJEZC	2.2K,SMD
R19,R20,R24,R25, R76,R92,R95,R96, R97,R98,R99,R100, R101,R102,R103,R104, R105,R106,R107,R108, R109,R110,R111		R1^0KJEZC	1K,SMD
R21,R26		R82KJJCA	82,2W,CC
		R1_0EZC	1, 1%, 1/8W, M.F.
R27,R33,R39,R45, R78,R80,R82		R10_JEZC	10,SMD
R28,R34,R40,R46, R94		RV10KKGET5	10K,1/2W
R29,R35,R41,R47		R46^4KFEZC	46.4K,1%,SMD
R30,R32,R36,R38, R42,R44,R48,R50		R511KFEZC	511K,1%,SMD
R31,R37,R43,R49		R51^1KFEZC	51.1K,1%,SMD
R51,R52,R53,R54, R64,R65		R10^0KFEZC	10.00K,1%,SMD
R55,R83,R84,R85, R86,R87,R88,R89, R90		R10KJEZC	10K,SMD, SIZE 1206
R56		R75KJEZC	75K,SMD
R57,R58		R56KJEZC	56K,SMD
R59,R60,R61,R62, R66,R67		R10^0KJEZC	10K,SMD
R63		R100KJEZC	100K,SMD

28240
-18950

9290
- 200

9090
- 50

9040

-7950
260

8210

- 8000
260

8260

4648 / 2

9,290

~~20040~~

28,100
20,040

8,040
ADDED MATERIAL 200

8,100

d660
2
1320

28,100
~~20,040~~

8,010

20,090
50

20,040

11
9,040

9240
19000
28240

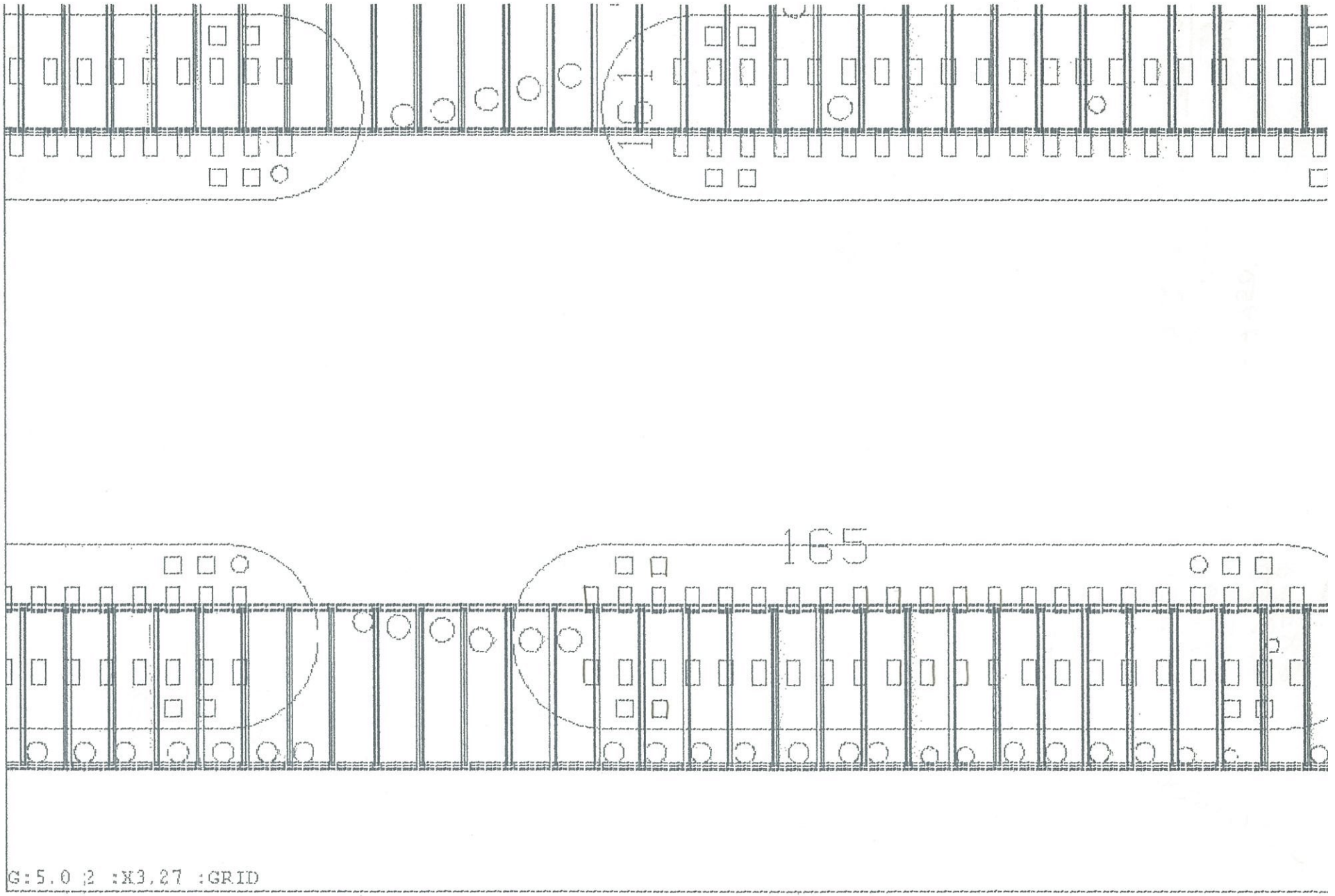
28,100
60
28,040

1,030
8010
9090

Bottom .280
Top .230

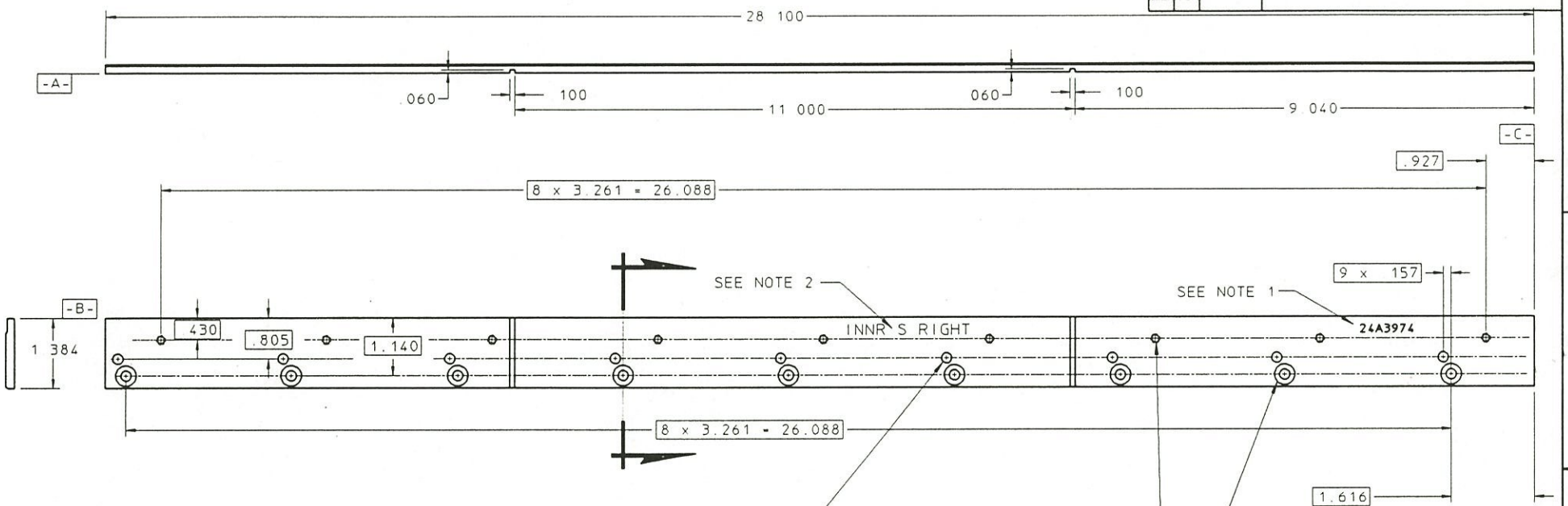
8,260

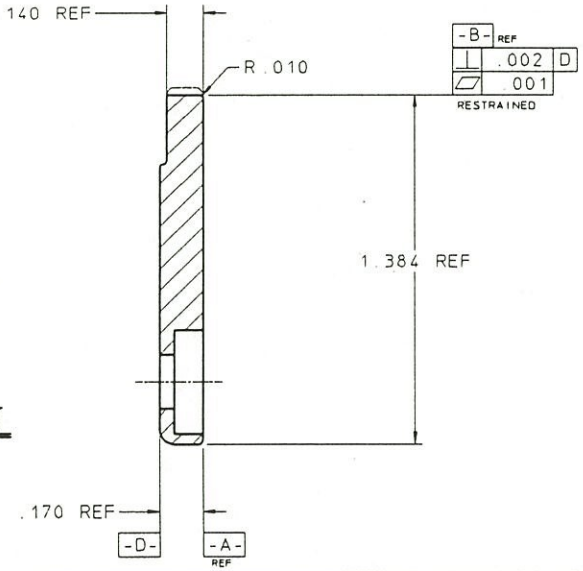
-28240
-19000



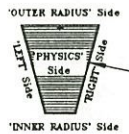
3/28/95

REQ	ITEM	PART NUMBER	DESCRIPTION
		24A3993	INNER SHIELD GRID WIRE MOUNT EXTRUSION





SECTION
SCALE 4:1



LOCATION of THIS PART in ASSEMBLY

NOTES

1. VIBRA-ETCH or ENGRAVE PART No 24A3974 IN .15 HIGH CHARACTERS IN LOCATION SHOWN.
2. VIBRA ETCH or ENGRAVE "INNR S RIGHT" IN .2 CHARACTERS IN LOCATION SHOWN.

REVISIONS	REV	DWG	CHK	ZONE	DATE	CHANGES

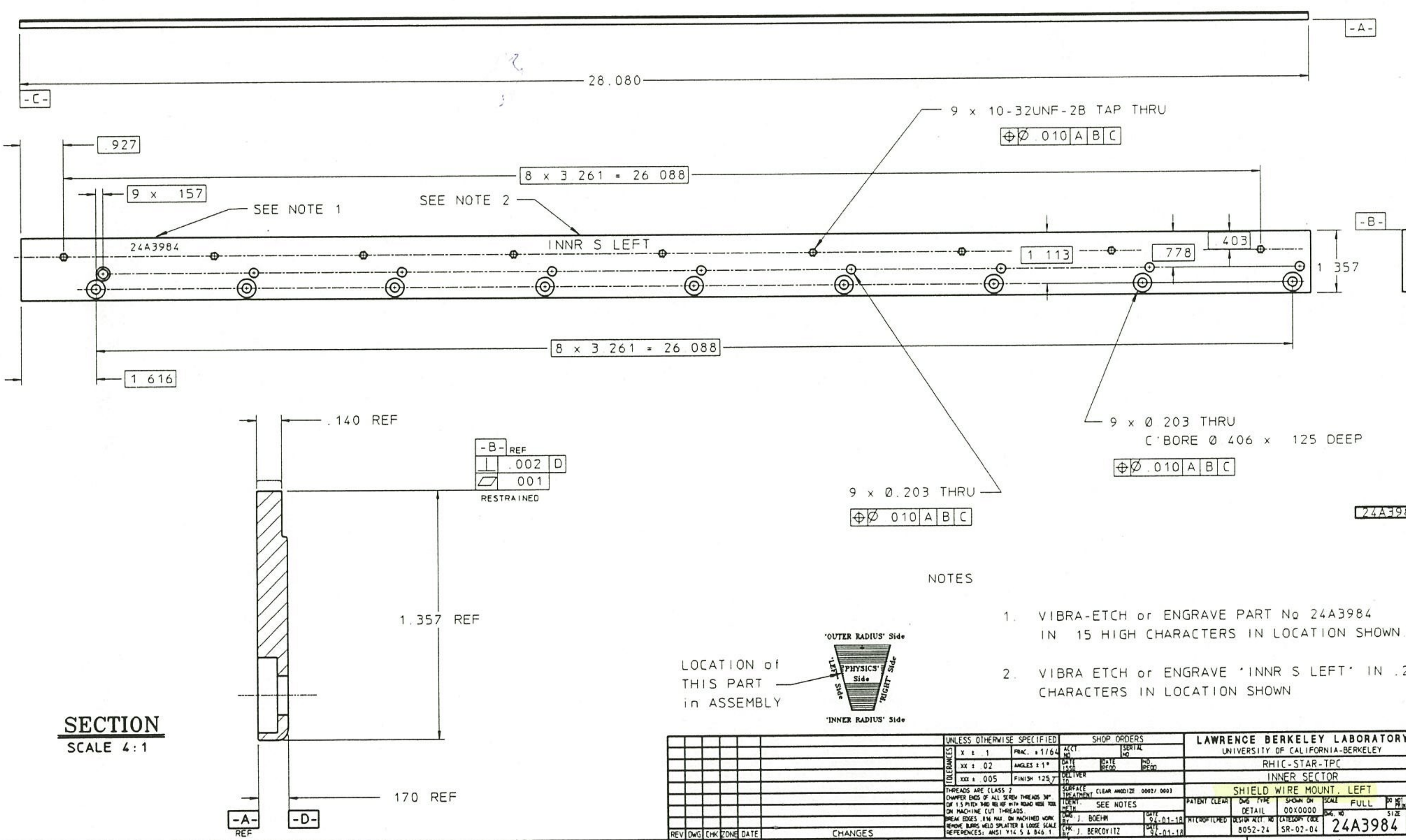
UNLESS OTHERWISE SPECIFIED
X ± .1 FRAC. ± 1/64
XX ± .02 ANGLES ± 1°
XXX ± .005 FINISH 125
THREADS ARE CLASS 2
CHAMFER ENDS OF ALL SCREW THREADS 30° OR 1.5 PITCH AND RELIEF WITH ROUND NOSE TOOL ON MACHINE CUT THREADS.
BREAK EDGES .016 MAX. ON MACHINED WORK
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE
REFERENCES: ANSI Y14.5 & B46.1

SHOP ORDERS
ACCT NO
SERIAL NO
DATE ISSD
DATE REQD
NO. REQD
DELIVER TO
SURFACE TREATMENT: CLEAR ANODIZE .0002/.0003
IDENT METH: SEE NOTES
DWG BY: J. BOEHM DATE 92-01-14
CHK BY: J. BERCOVITZ DATE 92-01-14

LAWRENCE BERKELEY LABORATORY
UNIVERSITY OF CALIFORNIA-BERKELEY
RHIC-STAR-TPC
INNER SECTOR
SHIELD WIRE MOUNT, RIGHT

PATENT CLEAR	DWG TYPE	SHOWN ON	SCALE	DO NOT SCALE PRINTS
	DETAIL	00X0000	FULL	
MICROFILMED	DESIGN ACCT NO	CATEGORY CODE	DWG NO	SIZE / REV.
	8052-24	SR-02-04	24A3974	

REQ	ITEM	PART NUMBER	DESCRIPTION
		24A3993	INNER SHIELD GRID WIRE MOUNT EXTRUSION



NOTES

1. VIBRA-ETCH or ENGRAVE PART No 24A3984 IN .15 HIGH CHARACTERS IN LOCATION SHOWN

2. VIBRA ETCH or ENGRAVE 'INNR S LEFT' IN .2 CHARACTERS IN LOCATION SHOWN

LOCATION of THIS PART in ASSEMBLY

REV	DWG	CHK	ZONE	DATE	CHANGES

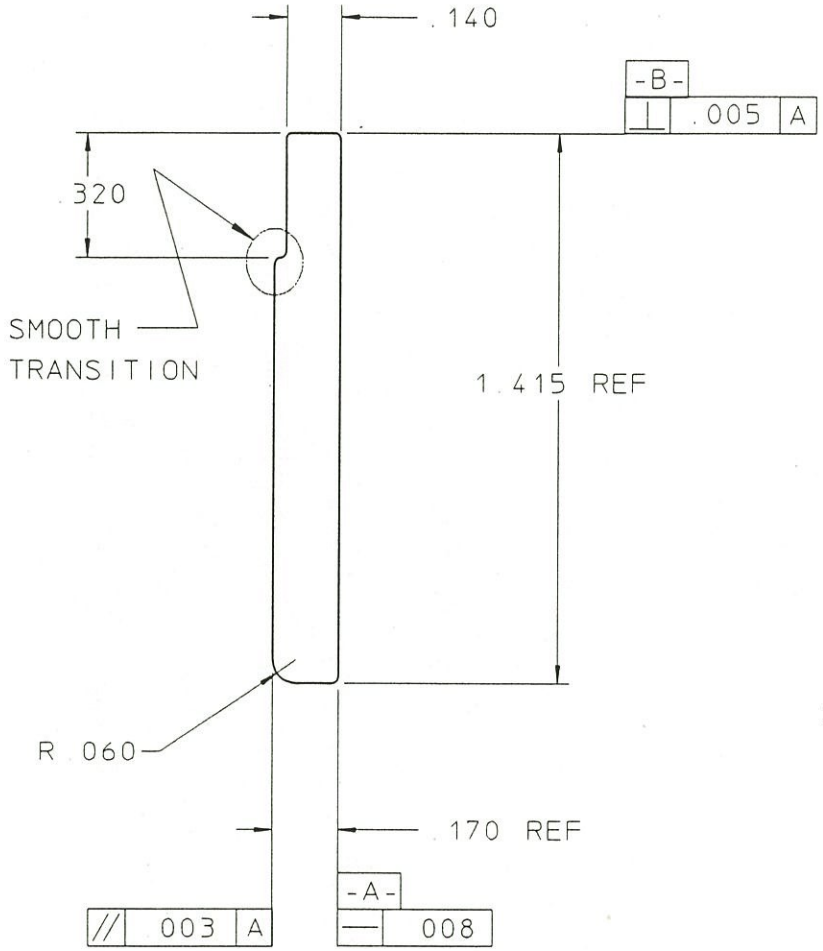
UNLESS OTHERWISE SPECIFIED
TOLERANCES: X ± .1; XX ± .02; XXX ± .005; FRAC. ± 1/64; ANGLES ± 1°; FINISH 125
THREADS ARE CLASS 2. CHAMFER ENDS OF ALL SCREW THREADS 30° OR 1.5 PITCH THRD RELIEF WITH ROUND NOSE TOOL ON MACHINE CUT THREADS. BREAK EDGES .016 MAX. ON MACHINED WORK. REMOVE BURRS WELD SPLATTER & LOOSE SCALE. REFERENCES: ANSI Y14.5 & B46.1

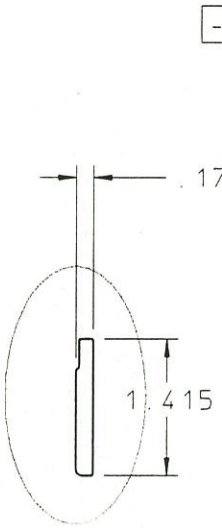
SHOP ORDERS — ACCT NO / SERIAL NO / DATE ISSD / DATE REQD / NO. REQD / DELIVER TO
SURFACE TREATMENT: CLEAR ANODIZE .0002/.0003
IDENT. METH: SEE NOTES
DWG. BY: J. BOEHM — DATE 94-01-18
CHK. BY: J. BERCOVITZ — DATE 94-01-18

LAWRENCE BERKELEY LABORATORY
UNIVERSITY OF CALIFORNIA-BERKELEY
RHIC-STAR-TPC
INNER SECTOR
SHIELD WIRE MOUNT, LEFT

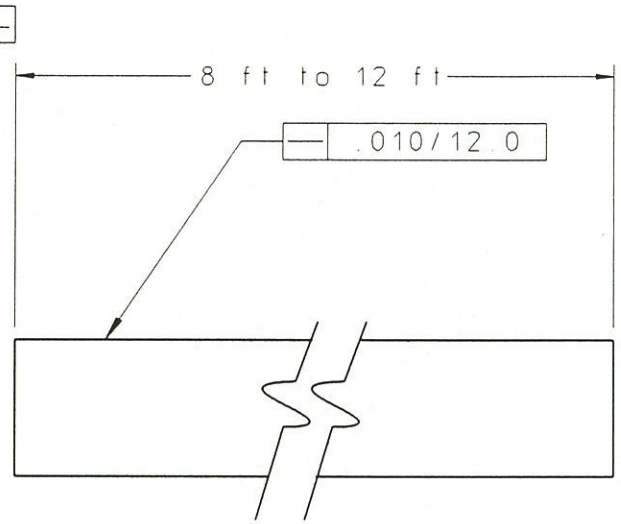
PATENT CLEAR	DWG TYPE	SHOWN ON	SCALE	DO NOT SCALE PRINTS
	DETAIL	00X0000	FULL	
MICROFILMED	DESIGN ACCT. NO	CATEGORY CODE	DWG. NO	SIZE / REV.
	8052-24	SR-02-04	24A3984	

REQ	ITEM	PART NUMBER	DESCRIPTION
			ALUMINUM 6063-T5





SEE DETAIL



24A3993

NOTE

1. ALL RADII .015" UNLESS OTHERWISE NOTED
2. WEIGHT .270 lbs/ft
3. TWIST NOT TO EXCEED .010/12

DETAIL
SCALE 4:1

REV	DWG	CHK	ZONE	DATE	CHANGES

UNLESS OTHERWISE SPECIFIED

TOLERANCES: X ± .1 | FRAC ± 1/64 | .XX ± .02 | ANGLES ± .01° | .XXX ± .005 | FINISH 125

THREADS ARE CLASS 2.
CHAMFER ENDS OF ALL SCREW THREADS 30°.
CUT 1.5 PITCH THRD RELIEF WITH ROUND NOSE TOOL ON MACHINE CUT THREADS.
BREAK EDGES .016 MAX. ON MACHINED WORK.
REMOVE BURRS WELD SPLATTER & LOOSE SCALE
REFERENCES ANSI Y14.5 & B46.1

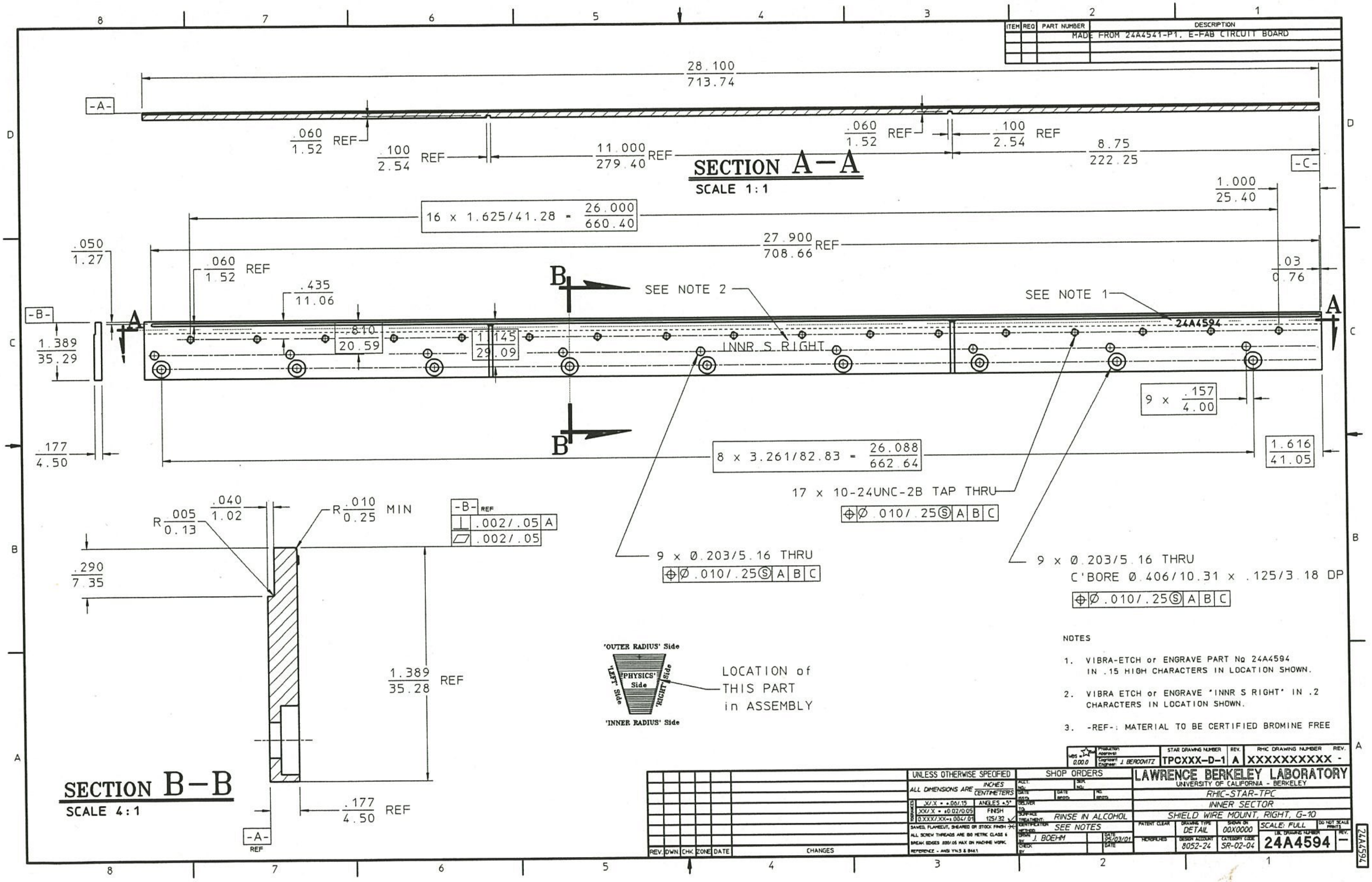
SHOP ORDERS

ACCT NO | SERIAL NO.
DATE ISSD | DATE REQD. | NO REQD
DELIVER TO
SURFACE TREATMENT: DEGREASE
IDENT. METH: TAG
DWG. BY: J. BOEHM — DATE: 94-01-18
CHK. BY: J. BERCOVITZ — DATE: 93-11-05

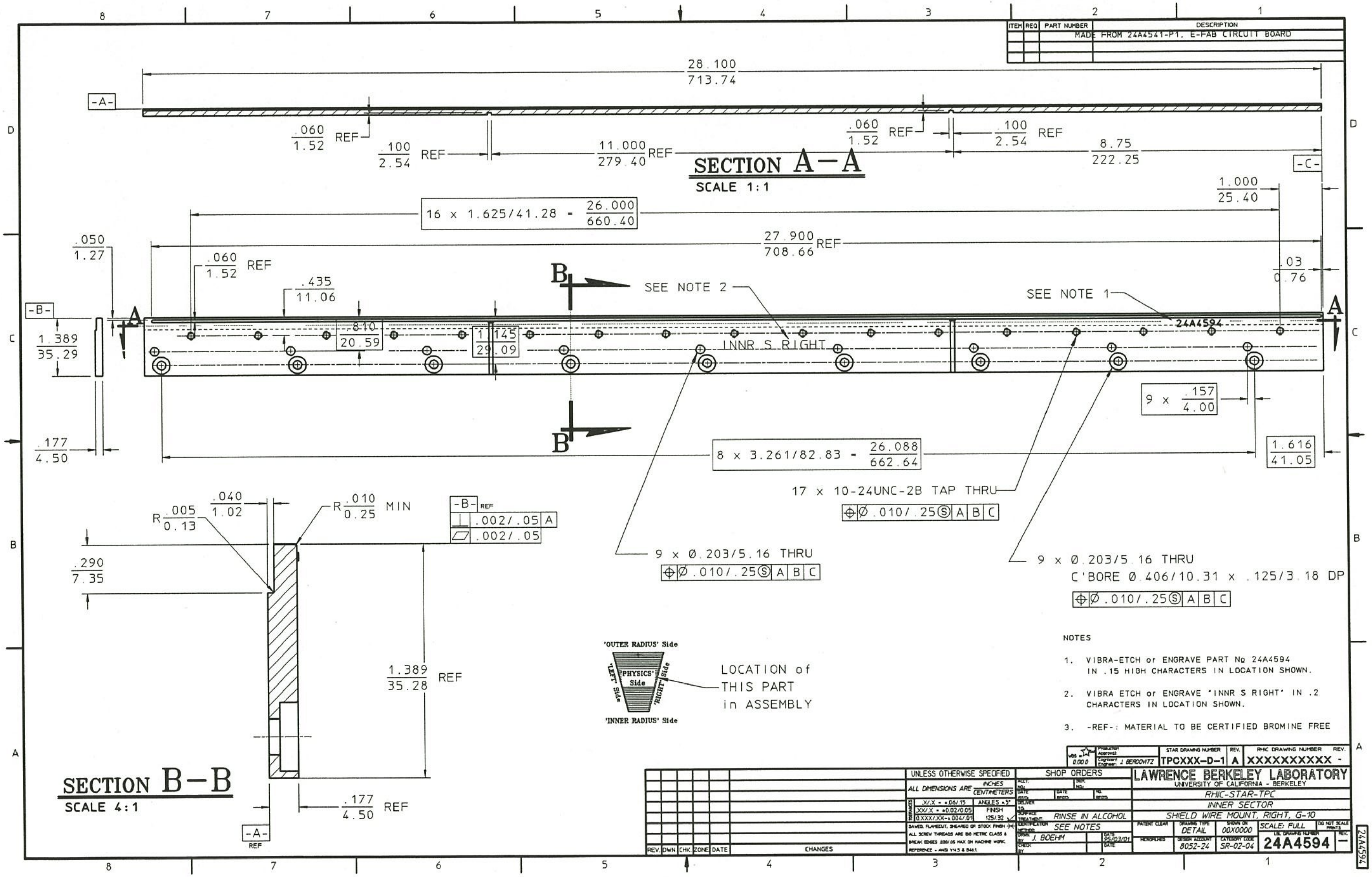
LAWRENCE BERKELEY LABORATORY
UNIVERSITY OF CALIFORNIA-BERKELEY

RHIC STAR TPC
INNER SECTOR ASSEMBLY
SHIELD GRID WIRE MOUNT EXTRUSION

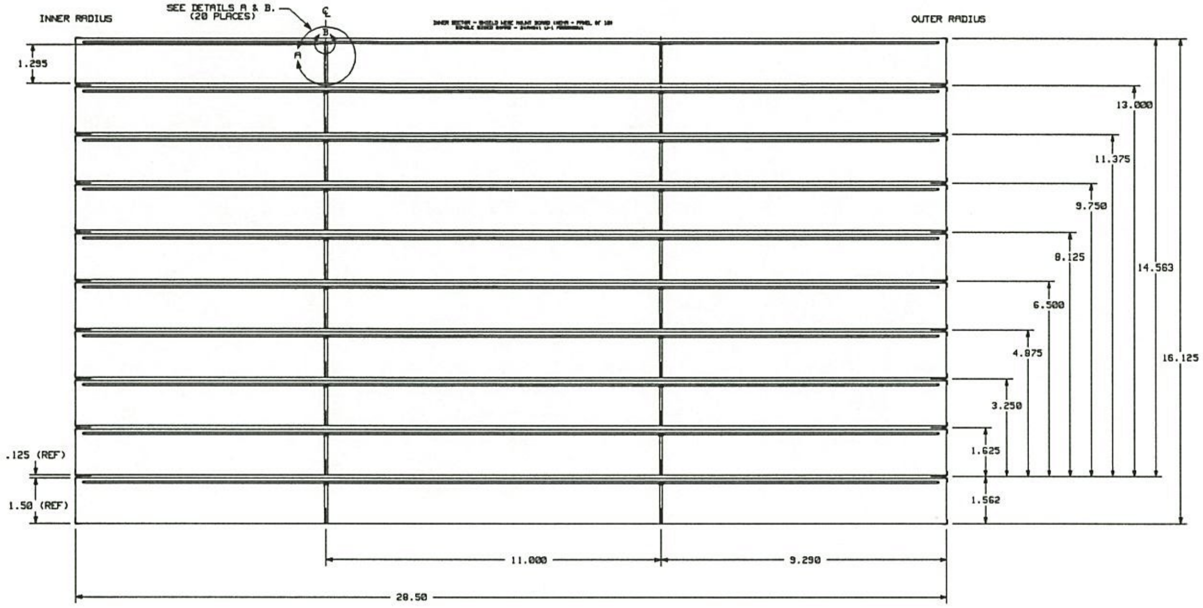
PATENT CLEAR	DWG. TYPE	SHOWN ON	SCALE	DO NOT SCALE PRINTS
	DETAIL	00X0000	FULL	
MICROFILMED	DESIGN ACCT NO	CATEGORY CODE	DWG. NO	SIZE / REV
	8052-24	6R-02-04	24A3993	



MADE FROM 24A4541-P1, E-FAB CIRCUIT BOARD
ITEM REQ PART NUMBER DESCRIPTION
SECTION A-A
SCALE 1:1
28.100 / 713.74
11.000 / 279.40 REF
8.75 / 222.25
16 x 1.625/41.28 = 26.000 / 660.40
27.900 / 708.66 REF
8 x 3.261/82.83 = 26.088 / 662.64
SEE NOTE 2
SEE NOTE 1
24A4594
INNR S RIGHT
9 x .157 / 4.00
1.616 / 41.05
17 x 10-24UNC-2B TAP THRU
⌖Ø.010/.25Ⓢ A B C
9 x Ø.203/5.16 THRU
⌖Ø.010/.25Ⓢ A B C
9 x Ø.203/5.16 THRU
C'BORE Ø.406/10.31 x .125/3.18 DP
⌖Ø.010/.25Ⓢ A B C
SECTION B-B
SCALE 4:1
1.389 / 35.28 REF
.177 / 4.50 REF
'OUTER RADIUS' Side
'PHYSICS' Side
'LEFT' Side
'RIGHT' Side
'INNER RADIUS' Side
LOCATION of THIS PART in ASSEMBLY
NOTES
1. VIBRA-ETCH or ENGRAVE PART No 24A4594 IN .15 HIGH CHARACTERS IN LOCATION SHOWN.
2. VIBRA ETCH or ENGRAVE 'INNR S RIGHT' IN .2 CHARACTERS IN LOCATION SHOWN.
3. -REF-: MATERIAL TO BE CERTIFIED BROMINE FREE
STAR DRAWING NUMBER TPCXXX-D-1 REV. A
RHIC DRAWING NUMBER XXXXXXXXXX
LAWRENCE BERKELEY LABORATORY
UNIVERSITY OF CALIFORNIA - BERKELEY
RHIC-STAR-TPC
INNER SECTOR
SHIELD WIRE MOUNT, RIGHT, G-10
UNLESS OTHERWISE SPECIFIED
SHOP ORDERS
RINSE IN ALCOHOL
SEE NOTES
J. BOEHM
J. BERCOVITZ
DETAIL
SCALE: FULL
8052-24
SR-02-04
24A4594

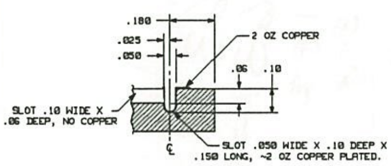

ITEM REQ PART NUMBER DESCRIPTION
MADE FROM 24A4541-P1, E-FAB CIRCUIT BOARD
28.100
713.74
-A-
.060
1.52
REF
.100
2.54
REF
11.000
279.40
REF
SECTION A-A
SCALE 1:1
8.75
222.25
-C-
1.000
25.40
16 x 1.625/41.28 = 26.000
660.40
27.900
708.66
REF
.050
1.27
.435
11.06
.03
0.76
SEE NOTE 2
SEE NOTE 1
-B-
1.389
35.29
.810
20.59
1.145
29.09
24A4594
INNR S RIGHT
9 x .157
4.00
.177
4.50
8 x 3.261/82.83 = 26.088
662.64
1.616
41.05
17 x 10-24UNC-2B TAP THRU
⌖ Ø .010/.25Ⓢ A B C
R .005
0.13
.040
1.02
R .010
0.25
MIN
-B- REF
⊥ .002/.05 A
▱ .002/.05
.290
7.35
9 x Ø.203/5.16 THRU
⌖ Ø .010/.25Ⓢ A B C
9 x Ø.203/5.16 THRU
C'BORE Ø.406/10.31 x .125/3.18 DP
⌖ Ø .010/.25Ⓢ A B C
1.389
35.28
REF
'OUTER RADIUS' Side
'PHYSICS' Side
'LEFT' Side
'RIGHT' Side
'INNER RADIUS' Side
LOCATION of
THIS PART
in ASSEMBLY
NOTES
1. VIBRA-ETCH or ENGRAVE PART No 24A4594 IN .15 HIGH CHARACTERS IN LOCATION SHOWN.
2. VIBRA ETCH or ENGRAVE 'INNR S RIGHT' IN .2 CHARACTERS IN LOCATION SHOWN.
3. -REF-: MATERIAL TO BE CERTIFIED BROMINE FREE
SECTION B-B
SCALE 4:1
.177
4.50
REF
-A-
REF
UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE INCHES / CENTIMETERS
.X/X = ±.06/.15 ANGLES ±.5°
.XX/X = ±0.02/0.05 FINISH
0.XXX/XX = ±.004/.01 125/32
SAWED, FLAMECUT, SHEARED OR STOCK FINISH
ALL SCREW THREADS ARE ISO METRIC CLASS &
BREAK EDGES .030/.05 MAX ON MACHINE WORK
REFERENCE - ANSI Y14.5 & B46.1
SHOP ORDERS
RINSE IN ALCOHOL
SEE NOTES
J. BOEHM
05/03/01
J. BERCOVITZ
STAR DRAWING NUMBER TPCXXX-D-1 REV. A
RHIC DRAWING NUMBER XXXXXXXXXX -
LAWRENCE BERKELEY LABORATORY
UNIVERSITY OF CALIFORNIA - BERKELEY
RHIC-STAR-TPC
INNER SECTOR
SHIELD WIRE MOUNT, RIGHT, G-10
DETAIL
00X0000
SCALE: FULL
8052-24
SR-02-04
24A4594
REV. DWN CHK ZONE DATE CHANGES
24A4594

REV.	CHANGES	DRAWN	DATE	CHKD.	DATE



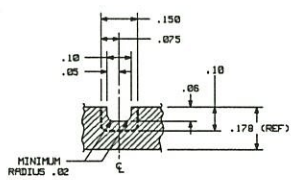
WIRE MOUNT SIDE VIEW

SCALE: ~.5:1



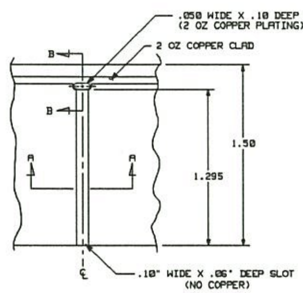
SECTION B-B

NO SCALE



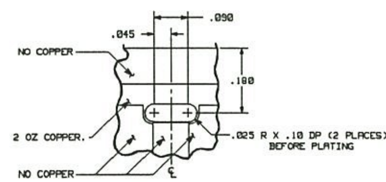
SECTION A-A

NO SCALE



DETAIL A

NO SCALE



DETAIL B

NO SCALE

NOTES:

1. BOARD MATERIAL: .170 THICK NEMA G10, CERTIFIED BROMIDE FREE, 2 OZ. COPPER CLAD - ONE SIDE. THERE IS NO TIN PLATING ON THIS BOARD. MATERIAL WILL BE SUPPLIED BY LBL.
2. MANUFACTURER MAY NOT PUT ANY IDENTIFICATION NOMENCLATURE ON PRINTED CIRCUIT BOARD, EITHER SIDE.
3. BOARD SIZE IS 28.50 LONG X 1.50 WIDE X .178 THICK. DIMENSIONS ARE IN INCHES. TOLERANCES ARE .XX = .015 AND .XXX = .005.
4. CREATE SLOTS BEFORE COPPER PLATING.
5. FINAL ROUTING TO CREATE 10 INDIVIDUAL BOARDS.
6. REFERENCE DRAWINGS:

24A4533 M-1	a000900m1	BOARD OUTLINE/FABRICATION (SINGLE BOARD)
24A4594	-	SHIELD WIRE MOUNT BOARD (RIGHT SIDE-FINAL FAB. FROM MECHANICAL DEPARTMENT)

DIST I:	TITLE STAR TPC		
II:	INNER SECTOR ELECTRONICS		
III:	SHIELD GRID WIRE MOUNT BOARD (NEMA-RT)		
SHOWN ON	BOARD OUTLINE/FABRICATION - PANEL OF 10		
ACCOUNT NUMBER 8052-24	DRAWN STIRKKINEN	DATE 03/27/95	LAWRENCE BERKELEY LABORATORY UNIVERSITY OF CALIFORNIA OFFICE OF ELECTRONICS ENGINEERING
SERIAL NUMBER	CHECKED	DATE	
DATE ISSUED / NO. REQD.	APPROVED	DATE	FILE NO. a000900m1 / SIZE 4 / DRAWING NO. 24A4543 M-2 / REV.
DATE REQD.	ENGINEER FRED BIESER		
DEL. TO	SCALE NONE	E2,E5,L12,E19	SHEET 2 OF 2

```
************************* LBL BOARD A000900U1 *************************
*************************** APRIL 06, 1995 ****************************
**************************** WHEEL W900INFO ***************************
NEED 1 STANDARD PHOTOPLOT, 1 POSITIVE AND 1 NEGATIVE.
FILM SIZE IS APPROXIMATELY 28.50 X 17.50 INCHES.
DELIVERY DATE: APRIL 11, 1995 OR SOONER.
PHOTOPLOT FILE IS IN POSITIVE FORMAT:
  PL900U1 - SINGLE SIDED BOARD
PLEASE MAKE CONTACT COPIES OF PLOT FILE (1).  I NEED ONE (1) POSITIVE
  AND ONE (1) NEGATIVE, EMULSION DOWN, RIGHT READING.
IF THERE ARE ANY QUESTIONS OR PROBLEMS PLEASE CALL -JUDY- (916)
  547-4005.

tr10 10 circle trace 10;
tr12 11 circle trace 12;
tr15 12 circle trace 15;
tr20 13 circle trace 20;
tr30 14 circle trace 30;
tr40 15 circle trace 40;
tr50 16 circle trace 50;
tr60 17 circle trace 60;
tr70 18 circle trace 70;
tr80 19 circle trace 80;
tr90 70 circle trace 90;
tr100 71 circle trace 100;
tr120 20 circle trace 120;
tr130 21 circle trace 130;
tr150 22 circle trace 150;
fl40 23 circle flash 40;
fl50 24 circle flash 50;
fl60 25 circle flash 60;
fl70 26 circle flash 70;
fl75 27 circle flash 75;
fl85 28 circle flash 85;
fl90 29 circle flash 90;
fl100 72 circle flash 100;
fl110 73 circle flash 110;
fl120 30 circle flash 120;
fl130 31 circle flash 130;
fl140 32 circle flash 140;
fl150 33 circle flash 150;
fl160 34 circle flash 160;
fl200 35 circle flash 200;
PADEXO 36 rectangle flash 80 55;
PADEXO 37 rectangle flash 55 80;
PADEXR 38 rectangle flash 75 55;
PADEXR 39 rectangle flash 55 75;
ftarget 40 square special 1.0;
fs60 41 square flash 60;
fs70 42 square flash 70;
fs75 43 square flash 75;
fs85 44 square flash 85;
fs100 45 square flash 100;
fs110 46 square flash 110;
fs120 47 square flash 120;
fs130 48 square flash 130;
fs140 49 square flash 140;
fs150 50 square flash 150;
```

PARTS LIST

TITLE: STAR TPC
TEST ELECTRONICS
SAS-16, AUTOTESTER DUT BOARD

FILE NO.: a000899c1 REV:
PRINT NO.: 24A4531 C-1
CHANGES (*):

ENGINEER: CHINH VU
DRAFTER: STIRKKINEN

DATE: 03/13/95

Reference	Stock No.	Part Type	Description	Qty
		** DIODES **		
CR10	NS	DJ1N4153	1N4153	1
		** TRANSISTORS **		
Q1	5961-58000	QJ2N2219	2N2219A,NPN,Si,40V,800MV	1
Q2	5961-58001	QJ2N2905	2N2905A,PNP,Si,60V,600MV	1
Q3,Q4,Q8,Q9	NS	QSSD214	SD214,FET	4
Q5,Q7	5961-62037	QJ2N3906	2N3906,PNP,TO-92	2
Q6	5961-65296	QJ2N3904	2N3904,NPN	1
		** IC'S **		
U1,U2,U3,U4	5961-67615	ULSSD5000	SD5000N,D-MOS FET QUAD ANALOG,DIP (16)	4
U5	NS	SASCHIP	68 PIN,PLCC,LBL CHIP	1
U6,U7,U10,U11,U12, U13	5961-66967	ULSOP27F	OP-27,OP-AMP LOW NOISE, DIP (8)	6
U8,U9,U31,U32	5961-70647	74HC4051	74HC4051,8 CHANNEL ANALOG MULTIPLEXER/DEMULTIPLEXER,DIP (16)	4
U14	5961-70461	74HCT04	74HCT04,HEX INV,TTL COMPATIBLE,DIP (14)	1
U15,U16,U17,U18, U19,U20,U21,U22, U23,U24,U25,U26, U27,U28,U29,U30, U39		ULSLM6161J	LM6161J,OP-AMP,DIP,(8)	17
U33,U37		ULSLF353	LF353,OP-AMP,DIP (8)	2
U35		ULSLM6164J	LM6164J,OP-AMP,DIP (8)	1
U36		ULSLM6162J	LM6162J,OP-AMP,DIP (8)	1
U43(U20),U44(U21) ***	5961-62970	75453	75453BN,DUAL PERIPHERAL DRIVER,NOR INP,DIP (8)	2

ORIGIN -300 17000
WHEEL WLBL1

a900u2
(SINGLE SIDED BOARD)

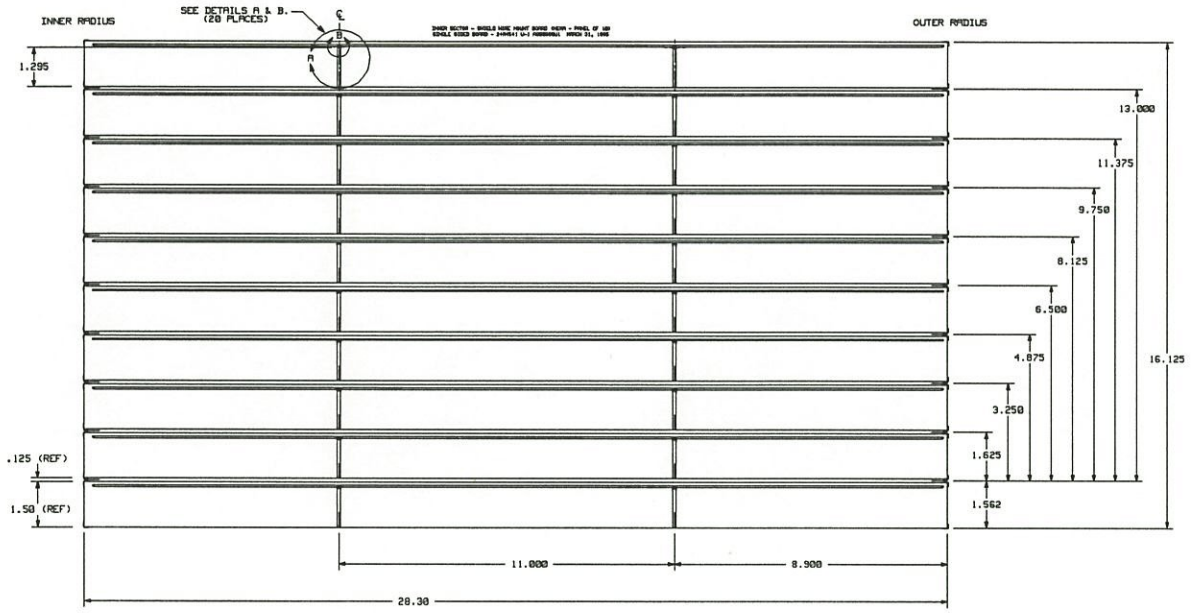
COMPONENT SIDE = #E5 #E9 #E3 = a900u1_g

CMD00

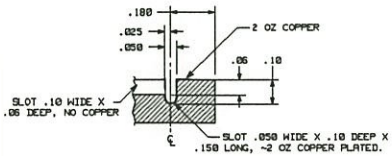
DRILL INFO = #C1 #E56 = a900u1_g

CMD900

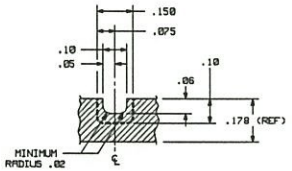
REV.	CHANGES	DRAWN	DATE	CHKD.	DATE



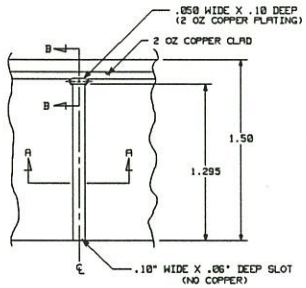
COPPER SIDE VIEW
SCALE: ~.5:1



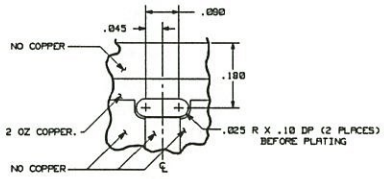
SECTION B-B
NO SCALE



SECTION A-A
NO SCALE



DETAIL A
NO SCALE



DETAIL B
NO SCALE

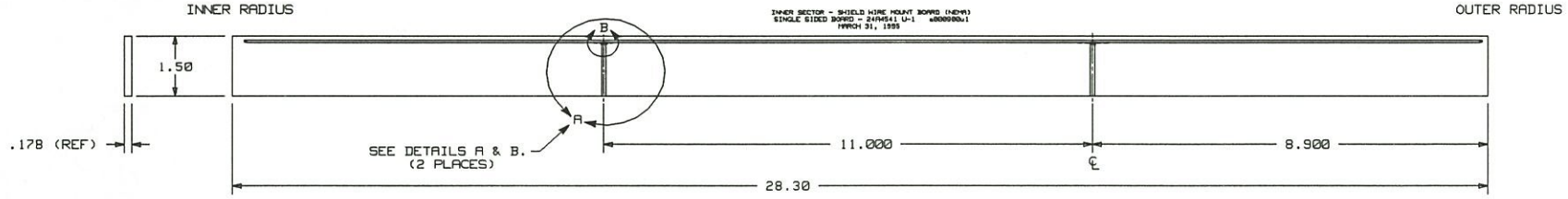
NOTES:

1. BOARD MATERIAL: .178 THICK NEMA G10. CERTIFIED BROMINE FREE, 2 OZ. COPPER CLAD - ONE SIDE. THERE IS NO TIN PLATING ON THIS BOARD. THIS IS A SINGLE SIDED BOARD. MATERIAL WILL BE SUPPLIED BY LBL.
2. MANUFACTURER MAY NOT PUT ANY IDENTIFICATION NOMENCLATURE ON PRINTED CIRCUIT BOARD, EITHER SIDE.
3. BOARD SIZE IS 28.50 LONG X 1.50 WIDE X .178 THICK. DIMENSIONS ARE IN INCHES. TOLERANCES ARE .XX = .015 AND .XXX = .005.
4. CREATE SLOTS BEFORE COPPER PLATING.
5. VERTICAL DIMENSIONS ARE CENTERS FOR A .125 BIT ROUTER. THIS WILL CREATE 10 INDIVIDUAL BOARD PER PANEL.
6. FINAL BOARD DIMENSIONS ARE 28.100 LONG X 1.389 WIDE X .178 THICK. SEE MECHANICAL DRAWING 24A4594 FOR INSTRUCTIONS. FINAL ROUTING WILL BE DONE BY LBL.
7. REFERENCE DRAWINGS:

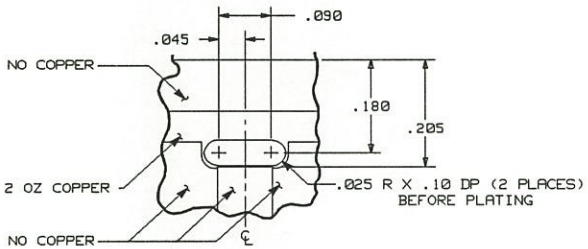
24A4533 M-1	a000900m1	BOARD OUTLINE/FABRICATION (SINGLE BOARD-RIGHT,G10)
24A4594	-	SHIELD WIRE MOUNT BOARD (RIGHT,G10) FINAL FAB. DWG.

TITLE	STAR TPC		
	INNER SECTOR ELECTRONICS		
	SHIELD GRID WIRE MOUNT BOARD (RIGHT,G10)		
	BOARD OUTLINE/FABRICATION - PANEL OF 10		
DRAWN BY	ST BRAUNEN	DATE 03/31/99	LAWRENCE BERKELEY LABORATORY UNIVERSITY OF CALIFORNIA OFFICE OF ELECTRONICS ENGINEERING
CHECKED		DATE	
APPROVED		DATE	
ENGINEER	FRED BIESER	FILE NO. a000900m2	SIZE 4
SCALE	NONE	E2,E5,L12,E19	SHEET 2 OF 2
DRAWING NO.	24A4543 M-2	REV.	

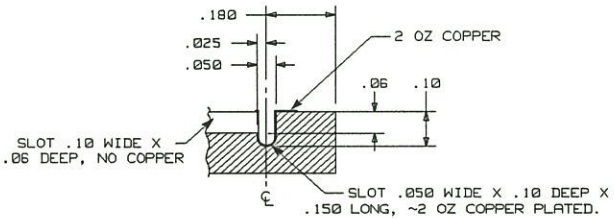
REV.	CHANGES	DRAWN	DATE	CHKD.	DATE



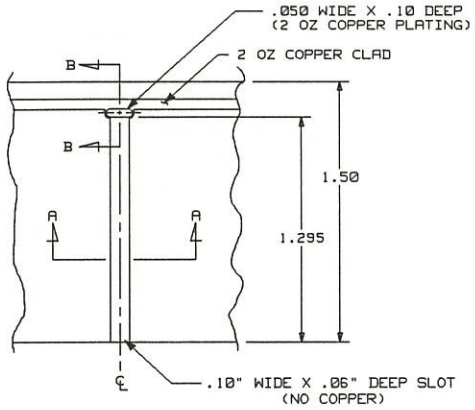
WIRE MOUNT SIDE VIEW
SCALE: ~.5:1



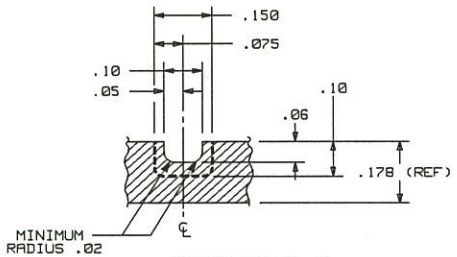
DETAIL B
NO SCALE



SECTION B-B
NO SCALE



DETAIL A
NO SCALE



SECTION A-A
NO SCALE

NOTES:

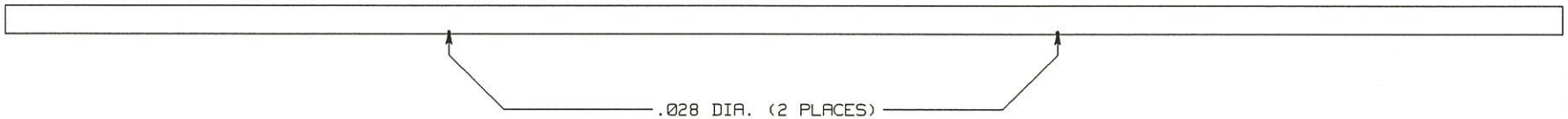
1. BOARD MATERIAL: .178 THICK NEMA G10, CERTIFIED BROMIDE FREE, 2 OZ. COPPER CLAD - ONE SIDE. THERE IS NO TIN PLATING ON THIS BOARD. THIS IS A SINGLE SIDED BOARD. MATERIAL WILL BE SUPPLIED BY LBL.
2. MANUFACTURER MAY NOT PUT ANY IDENTIFICATION NOMENCLATURE ON PRINTED CIRCUIT BOARD, EITHER SIDE.
3. BOARD SIZE IS 28.30 LONG X 1.50 WIDE X .178 THICK. DIMENSIONS ARE IN INCHES. TOLERANCES ARE .XX = .015 AND .XXX = .005.
4. CREATE SLOTS BEFORE COPPER PLATING.
5. FINAL BOARD DIMENSIONS ARE 28.100 LONG X 1.389 WIDE X .178 THICK. SEE DRAWING 24A4594 FOR ROUTING INSTRUCTIONS. FINAL ROUTING TO BE DONE BY LBL.
6. REFERENCE DRAWINGS:

24A4534 M-2	a000900m2	BOARD OUTLINE/FABRICATION - PANEL OF 10 BOARDS - RIGHT SIDE - G10
24A4594	-	SHIELD WIRE MOUNT BOARD (RIGHT SIDE,G-10) FINAL FAB. DRAWING

DIST I:	TITLE	STAR TPC	
DIST II:		INNER SECTOR ELECTRONICS	
DIST III:		SHIELD GRID WIRE MOUNT BOARD (RIGHT,G10)	
SHOWN ON		BOARD OUTLINE/FABRICATION	
ACCOUNT NUMBER 8052-24	DRAWN STIRKKINEN	DATE 03/31/95	LAWRENCE BERKELEY LABORATORY
SERIAL NUMBER	CHECKED	DATE	UNIVERSITY OF CALIFORNIA
DATE ISSUED / NO. REQD.	APPROVED	DATE	OFFICE OF ELECTRONICS ENGINEERING
DATE REQD.	ENGINEER FRED BIESER	FILE NO. a000900m1	SIZE 3 / DRAWING NO. 24A4543 M-1 / REV.
DEL. TO	SCALE NONE	E2,E5,E12	SHEET 1 OF 2

REV.	CHANGES	DRAWN	DATE	CHKD.	DATE

PAD VIEW



NOTES:

1. BOARD MATERIAL: .005 THICK KAPTON WITH 1 OZ COPPER, BOTH SIDES. THERE IS NO TIN PLATING ON THIS BOARD.
2. MANUFACTURER MAY NOT PUT ANY IDENTIFICATION NOMENCLATURE ON PRINTED CIRCUIT BOARD, EITHER SIDE.
3. THIS BOARD TO BE THROUGH HOLE PLATED.
4. SPECIFIED HOLE DIA. SIZE IS FOR FINISHED HOLES AFTER PLATING.
5. BOARD SIZE IS .515 +/-.005 X 28.100 +/-.005. DIMENSIONS ARE IN INCHES. BOARD OUTLINE DRAWING IS 24A3662 M-1 (a000893m1).
6. SOLDERMASK IS NOT USED ON THIS BOARD.
7. REFERENCE DRAWINGS:

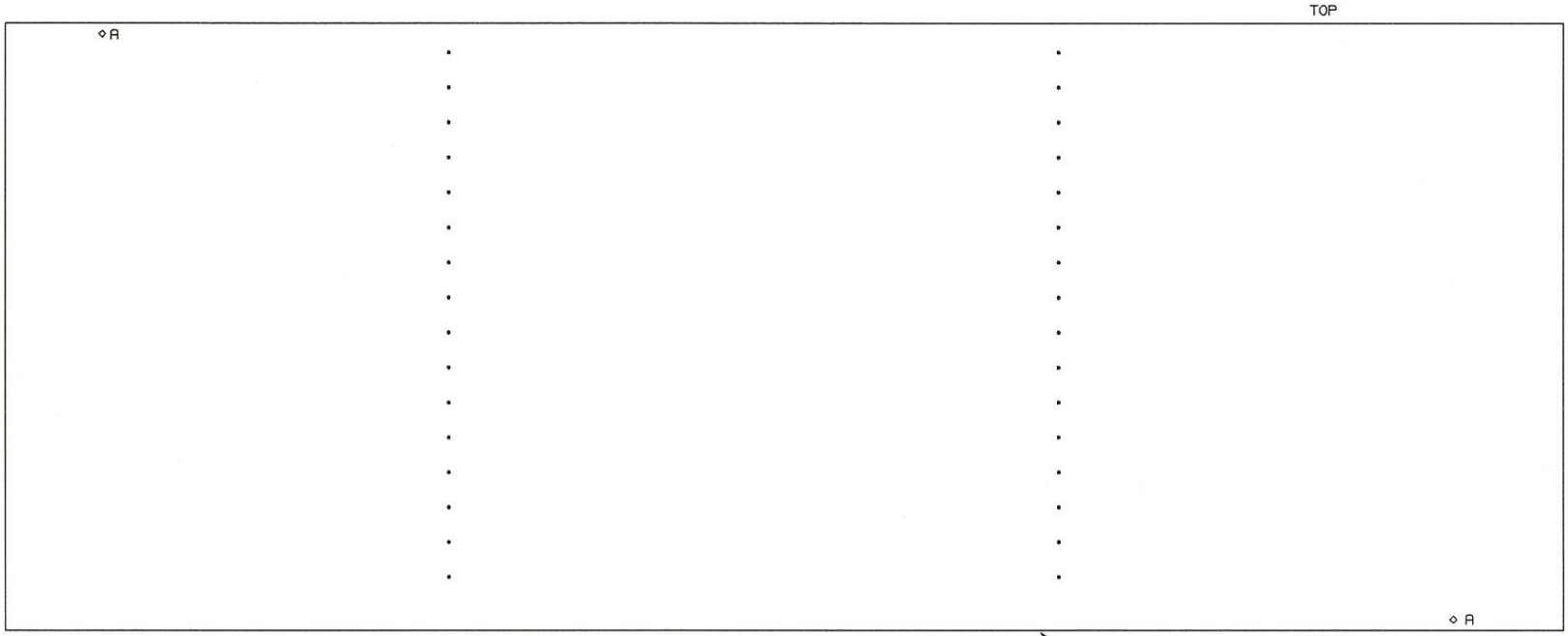
24A3662 M-1	a000893m1	BOARD OUTLINE - SINGLE BOARD
24A3663 M-2	a000893m2	BOARD OUTLINE - PANEL OF 16 BOARDS
24A3663 E-2	a000893e2	HOLE SCHEDULE - PANEL OF 16 BOARDS

DIST	I:	TITLE	STAR TPC		
	II:		INNER SECTOR ELECTRONICS		
	III:		SHIELD GRID WIRE MOUNT BD (SINGLE BOARD)		
SHOWN ON			HOLE SCHEDULE - 24A3661 U-1 (A000893U1)		
ACCOUNT NUMBER	8052-24	DRAWN STIRKKINEN	DATE 4/1/94	LAWRENCE BERKELEY LABORATORY UNIVERSITY OF CALIFORNIA OFFICE OF ELECTRONICS ENGINEERING	
SERIAL NUMBER		CHECKED	DATE		
DATE ISSUED	NO. REQD.	APPROVED	DATE		
DATE REQD.		ENGINEER THOMAS NOGGLE		FILE NO. a000893e1 / SIZE 2 / DRAWING NO. 24A3662 E-1	REV.
DEL. TO		SCALE NONE	E2,C3	SHEET 1 OF 2	

REV.	CHANGES	DRAWN	DATE	CHKD.	DATE

PAD SIDE VIEW

SCALE: NONE



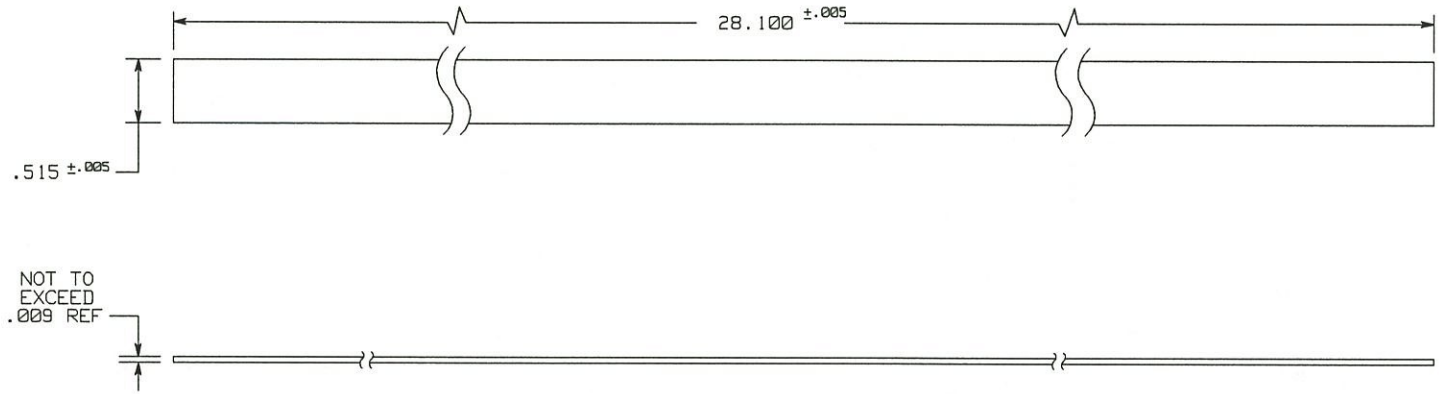
NOTES:

1. BOARD MATERIAL: .005 THICK KAPTON WITH 1 OZ COPPER, BOTH SIDES. THERE IS NO TIN PLATING ON THIS BOARD.
2. SEE HOLE SCHEDULE FOR HOLE SIZES.
3. THIS BOARD TO BE THROUGH HOLE PLATED.
4. SPECIFIED HOLE DIA. SIZES ARE FOR FINISHED HOLES AFTER PLATING.
5. BOARD SIZE IS 11.125 +/-.010 X 28.100 +/-.005. SINGLE BOARD SIZE IS .515 X 28.100 +/-.005. DIMENSIONS ARE IN INCHES. BOARD OUTLINE DRAWING IS 24A3663 M-2 (a000893m2).
6. SOLDERMASK IS NOT USED ON THIS BOARD.
7. REFERENCE DRAWINGS:
   24A3662 M-1 a000893m1 BOARD OUTLINE - SINGLE BOARD
   24A3663 M-2 a000893m2 BOARD OUTLINE - PANEL OF 16 BOARDS
   24A3662 E-1 a000893e1 HOLE SCHEDULE - SINGLE BOARD

HOLE SCHEDULE		
CODE	HOLE DIA.	COUNT
NONE	.028	32
A	.125	2

DIST I:	TITLE STAR TPC		
DIST II:	INNER SECTOR ELECTRONICS		
DIST III:	SHIELD GRID WIRE MOUNT BD (PANEL OF 16)		
SHOWN ON	HOLE SCHEDULE - 24A3661 U-2 (A000893U2)		
ACCOUNT NUMBER 8052-24	DRAWN STIRKKINEN DATE 4/1/94	LAWRENCE BERKELEY LABORATORY	
SERIAL NUMBER	CHECKED DATE	UNIVERSITY OF CALIFORNIA	
DATE ISSUED / NO. REQD.	APPROVED DATE	OFFICE OF ELECTRONICS ENGINEERING	
DATE REQD.	ENGINEER JIM HUNTER	FILE NO. a000893e2 / SIZE 3 / DRAWING NO. 24A3663 E-2	REV.
DEL. TO	SCALE NONE	C1,C3,E14	SHEET 2 OF 2

REV.	CHANGES	DRAWN	DATE	CHKD.	DATE



NOTES:

1. BOARD MATERIAL: .005 KAPTON WITH 1 OZ COPPER, BOTH SIDES; THERE IS NO TIN PLATING ON THIS BOARD. BOARD THICKNESS NOT TO EXCEED .009".
2. DIMENSIONS ARE IN INCHES.
3. BOARD SIZE IS .515 +/-.005 X 28.100 +/-.005.
4. REFERENCE DRAWINGS:

24A3662 E-1	a000893e1	HOLE SCHEDULE - SINGLE BOARD
24A3663 E-2	a000893e2	HOLE SCHEDULE - PANEL OF 16 BOARDS
24A3663 M-2	a000893m2	BOARD OUTLINE - PANEL OF 16 BOARDS

DIST	I:	TITLE	STAR TPC		
	II:		INNER SECTOR ELECTRONICS		
	III:		INNER-SHIELD WIRE MOUNT BOARD(SINGLE BD)		
SHOWN ON			BOARD OUTLINE - 24A3661 U-1 (A000893U1)		
ACCOUNT NUMBER	8052-24	DRAWN STIRKKINEN	DATE 3/31/94	LAWRENCE BERKELEY LABORATORY UNIVERSITY OF CALIFORNIA OFFICE OF ELECTRONICS ENGINEERING	
SERIAL NUMBER		CHECKED	DATE		
DATE ISSUED	NO. REQD.	APPROVED	DATE		
DATE REQD.		ENGINEER JIM HUNTER		FILE NO. a000893m1 / SIZE 2 / DRAWING NO. 24A3662 M-1	REV.
DEL. TO		SCALE NONE	E2		SHEET 1 OF 2

130
125

255
1500

1755

28240
500

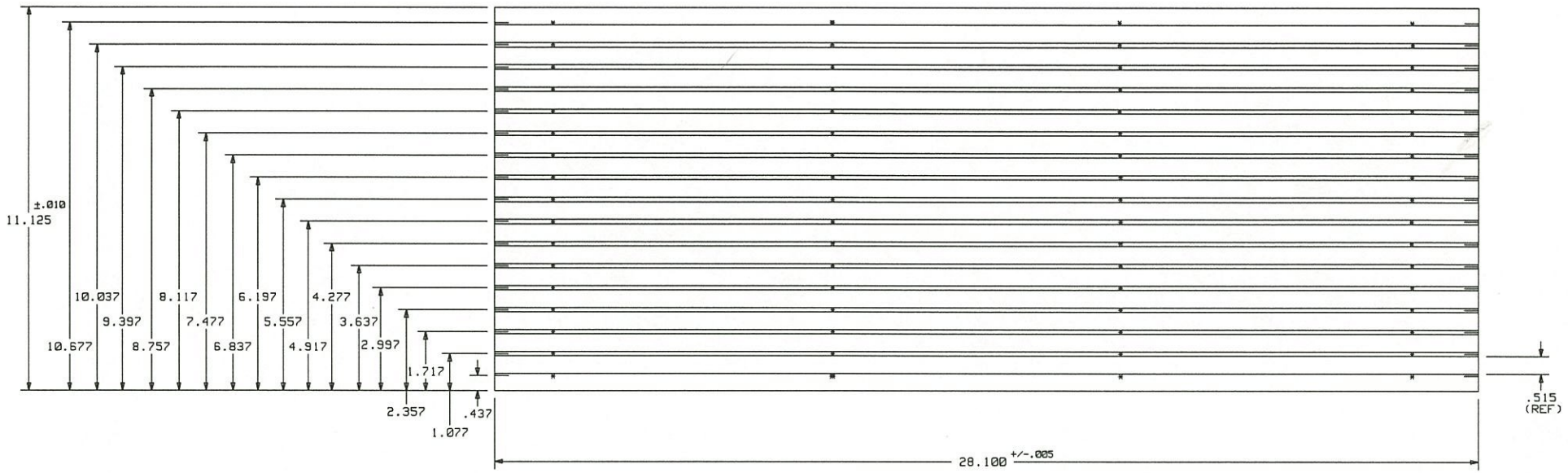
~~8~~17740

9033 -1370

REV.	CHANGES	DRAWN	DATE	CHKD.	DATE

TRACE SIDE VIEW

SCALE: NONE



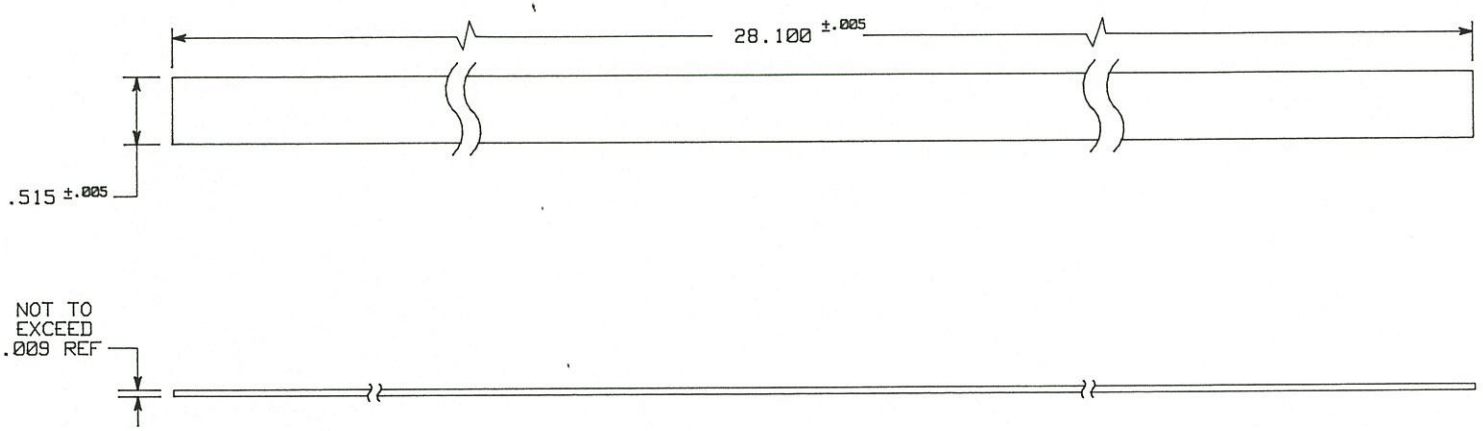
NOTES:

1. BOARD MATERIAL: .005 KAPTON WITH 1 OZ COPPER, BOTH SIDES. THERE IS NO TIN PLATING ON THIS BOARD. TOTAL THICKNESS NOT TO EXCEED .009".
2. BOARD PANEL SIZE IS 11.125 +/-.010 X 28.100 +/-.005. SINGLE BOARD SIZE IS .515 +/-.005 X 28.100 +/-.005. DIMENSIONS ARE IN INCHES. UNLISTED TOLERANCES ARE +/-.005.
3. * = APPROXIMATE PLACEMENT OF .050 TABS. SLOTS TO BE .125 WIDE.
4. REFERENCE DRAWINGS:

24A3662 E-1	a000893e1	HOLE SCHEDULE - SINGLE BOARD
24A3663 E-2	a000893e2	HOLE SCHEDULE - PANEL OF 16 BOARDS
24A3662 M-1	a000893m1	BOARD OUTLINE - SINGLE BOARD

DIST I:		TITLE	STAR TPC		
DIST II:			INNER SECTOR ELECTRONICS		
DIST III:			SHIELD GRID WIRE MOUNT BD (PANEL OF 16)		
SHOWN ON			BOARD OUTLINE - 24A3661 U-2 (A000893U2)		
ACCOUNT NUMBER	8052-24	DRAWN STIRKKINEN	DATE 4/01/94	LAWRENCE BERKELEY LABORATORY	
SERIAL NUMBER		CHECKED	DATE	UNIVERSITY OF CALIFORNIA	
DATE ISSUED	NO. REQD.	APPROVED	DATE	OFFICE OF ELECTRONICS ENGINEERING	
DATE REQD.		ENGINEER THOMAS NOGGLE		FILE NO. a000893m2 / SIZE 3 / DRAWING NO. 24A3663 M-2	REV.
DEL. TO		SCALE NONE	E2		SHEET 2 OF 2

REV.	CHANGES	DRAWN	DATE	CHKD.	DATE



NOTES:

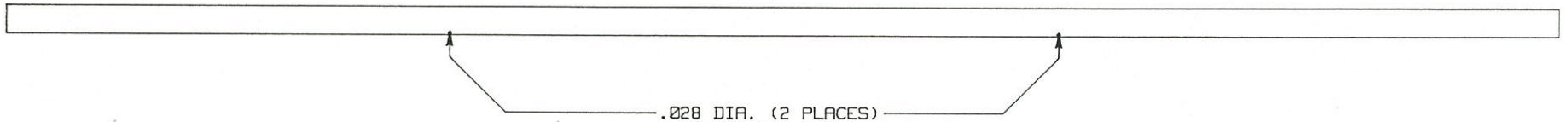
1. BOARD MATERIAL: .005 KAPTON WITH 1 OZ COPPER, BOTH SIDES; THERE IS NO TIN PLATING ON THIS BOARD. BOARD THICKNESS NOT TO EXCEED .009".
2. DIMENSIONS ARE IN INCHES.
3. BOARD SIZE IS .515 +/-.005 X 28.100 +/-.005.
4. REFERENCE DRAWINGS:

24A3662 E-1	a000893e1	HOLE SCHEDULE - SINGLE BOARD
24A3663 E-2	a000893e2	HOLE SCHEDULE - PANEL OF 16 BOARDS
24A3663 M-2	a000893m2	BOARD OUTLINE - PANEL OF 16 BOARDS

DIST I:		TITLE	STAR TPC		
DIST II:			INNER SECTOR ELECTRONICS		
DIST III:			INNER-SHIELD WIRE MOUNT BOARD(SINGLE BD)		
SHOWN ON			BOARD OUTLINE - 24A3661 U-1 (A000893U1)		
ACCOUNT NUMBER	8052-24	DRAWN STIRKKINEN	DATE 3/31/94	LAWRENCE BERKELEY LABORATORY UNIVERSITY OF CALIFORNIA OFFICE OF ELECTRONICS ENGINEERING	
SERIAL NUMBER		CHECKED	DATE		
DATE ISSUED	NO. REQD.	APPROVED	DATE		
DATE REQD.		ENGINEER	JIM HUNTER	FILE NO. a000893m1 / SIZE 2 / DRAWING NO. 24A3662 M-1	REV.
DEL. TO		SCALE NONE	E2		SHEET 1 OF 2

REV.	CHANGES	DRAWN	DATE	CHKD.	DATE

PAD VIEW

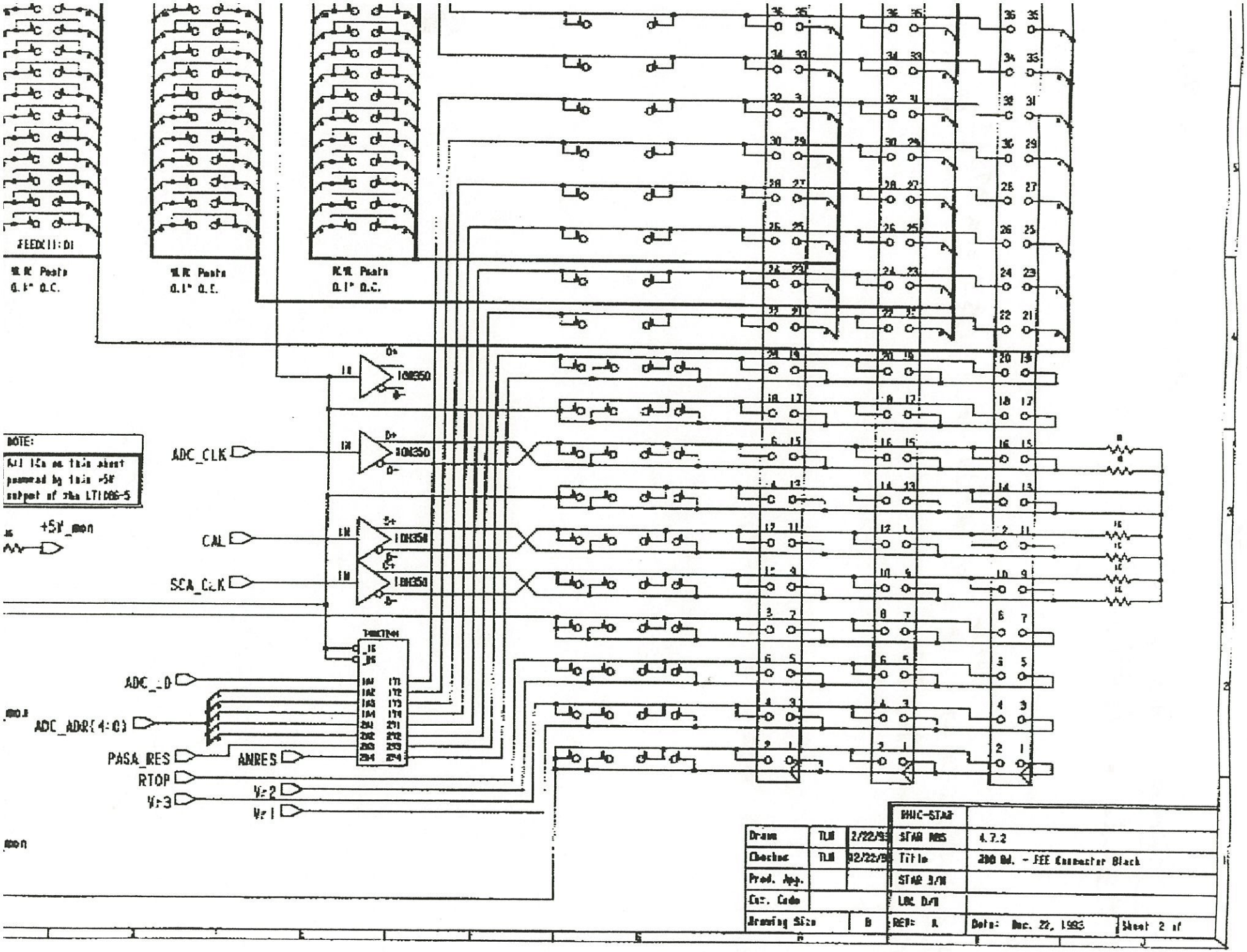


NOTES:

1. BOARD MATERIAL: .005 THICK KAPTON WITH 1 OZ COPPER, BOTH SIDES. THERE IS NO TIN PLATING ON THIS BOARD.
2. MANUFACTURER MAY NOT PUT ANY IDENTIFICATION NOMENCLATURE ON PRINTED CIRCUIT BOARD, EITHER SIDE.
3. THIS BOARD TO BE THROUGH HOLE PLATED.
4. SPECIFIED HOLE DIA. SIZE IS FOR FINISHED HOLES AFTER PLATING.
5. BOARD SIZE IS .515 +/-.005 X 28.100 +/-.005. DIMENSIONS ARE IN INCHES. BOARD OUTLINE DRAWING IS 24A3662 M-1 (a000893m1).
6. SOLDERMASK IS NOT USED ON THIS BOARD.
7. REFERENCE DRAWINGS:

24A3662 M-1	a000893m1	BOARD OUTLINE - SINGLE BOARD
24A3663 M-2	a000893m2	BOARD OUTLINE - PANEL OF 16 BOARDS
24A3663 E-2	a000893e2	HOLE SCHEDULE - PANEL OF 16 BOARDS

DIST I:		TITLE	STAR TPC		
DIST II:			INNER SECTOR ELECTRONICS		
DIST III:			SHIELD GRID WIRE MOUNT BD (SINGLE BOARD)		
SHOWN ON			HOLE SCHEDULE - 24A3661 U-1 (A000893U1)		
ACCOUNT NUMBER	8052-24	DRAWN STIRKKINEN	DATE 4/1/94	LAWRENCE BERKELEY LABORATORY UNIVERSITY OF CALIFORNIA OFFICE OF ELECTRONICS ENGINEERING	
SERIAL NUMBER		CHECKED	DATE		
DATE ISSUED	NO. REQD.	APPROVED	DATE	FILE NO. a000893e1	SIZE 2
DATE REQD.		ENGINEER THOMAS NOGGLE		DRAWING NO. 24A3662 E-1	REV.
DEL. TO		SCALE NONE	E2, C3	SHEET 1 OF 2	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CAL
SCA_CLK
ADC_D
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PASA_RES
ANRES
RTOP
Vr2
Vr3
Vr1
+5V_mon
BHUC-STAR
Drawn
Checked
Prod. App.
Cur. Code
Drawing Size
STAR NBS
Title
STAR S/N
LBL D/N
REV: A
Date: Dec. 22, 1993
Sheet 2 of
4.7.2
200 Bd. - FEE Connector Block

ORIGIN: -100, ~~9400~~ 11 300

a000893u2 24A3661 U-1

SHIELD GRID WIRE MOUNT (PANEL OF 16)

INNER SECTOR

LAYER 1 => TRACE & PADS => #E5 #E29 -P29 #E55 #E9 = a89311.

CMD893L1 = A893L1 =

LAYER 2 => PADS ONLY => #E6 #E19 #E29 -P29 #E55 = a89312-g

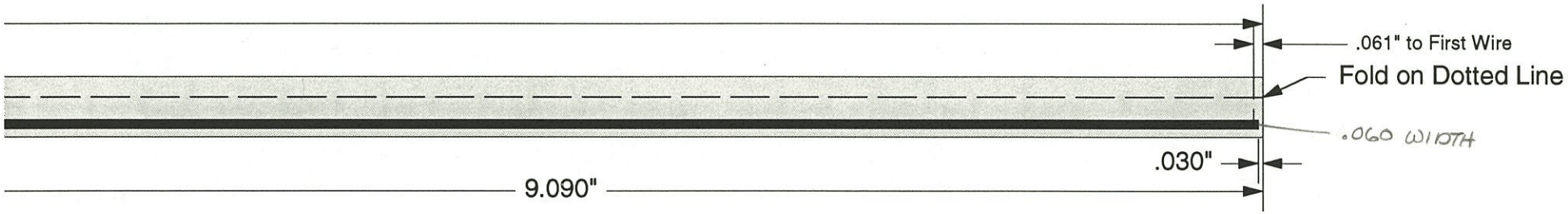
CMD893L2 = A893L2 =

DRILL => #C1 #E56 = a893dr-g

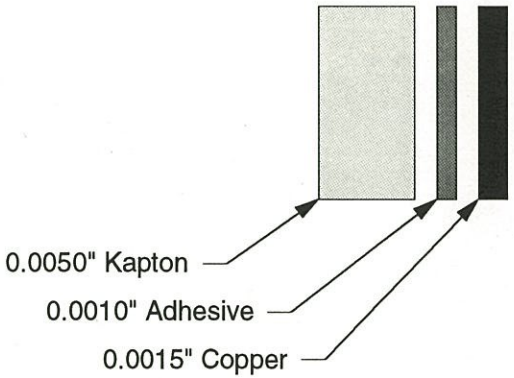
```
************************* LBL BOARD A000893U2 *************************
***************************** MAY 17, 1994 ****************************
***************************** WHEEL W893INFO ***************************
NEED 2 STANDARD PHOTOPLOTS, 2 POSITIVES AND 2 NEGATIVES.
FILM SIZE IS APPROXIMATELY 28.300 X 12.400 INCHES.
DELIVERY DATE: MAY 19, 1994 OR SOONER.
PHOTOPLOT FILES IN POSITIVE FORMAT:
  PL893L1 - LAYER 1 SOLDER SIDE
  PL893L2 - LAYER 2 PADS ONLY
PLEASE MAKE CONTACT COPIES OF PLOT FILES (2).  I NEED ONE (1) POSITIVE
  AND ONE (1) NEGATIVE OF EACH FILE, EMULSION DOWN, RIGHT READING.
  THIS IS A TOTAL OF TWO (2) POSITIVES AND TWO (2) NEGATIVES.
IF THERE ARE ANY QUESTIONS OR PROBLEMS PLEASE CALL -JUDY- (916)
  547-4005 OR -JIM- (510)486-7084.

tr10 10 circle trace 10;
tr12 11 circle trace 12;
tr15 12 circle trace 15;
tr20 13 circle trace 20;
tr30 14 circle trace 30;
tr40 15 circle trace 40;
tr50 16 circle trace 50;
tr60 17 circle trace 60;
tr70 18 circle trace 70;
tr80 19 circle trace 80;
tr90 70 circle trace 90;
tr100 71 circle trace 100;
tr120 20 circle trace 120;
tr130 21 circle trace 130;
tr150 22 circle trace 150;
fl40 23 circle flash 40;
fl50 24 circle flash 50;
fl60 25 circle flash 60;
fl70 26 circle flash 70;
fl75 27 circle flash 75;
fl85 28 circle flash 85;
fl90 29 circle flash 90;
fl100 72 circle flash 100;
fl110 73 circle flash 110;
fl120 30 circle flash 120;
fl130 31 circle flash 130;
fl140 32 circle flash 140;
fl150 33 circle flash 150;
fl160 34 circle flash 160;
fl200 35 circle flash 200;
PADEXO 36 oval flash 75 55;
PADEXO 37 oval flash 55 75;
PADEXR 38 rectangle flash 75 55;
PADEXR 39 rectangle flash 55 75;
ftarget 40 square special 1.0;
fs45 41 square flash 45;
fs70 42 square flash 70;
fs75 43 square flash 75;
fs85 44 square flash 85;
fs100 45 square flash 100;
fs110 46 square flash 110;
fs120 47 square flash 120;
fs130 48 square flash 130;
fs140 49 square flash 140;
fs150 50 square flash 150;
```

a 000893w1



Outer Radius

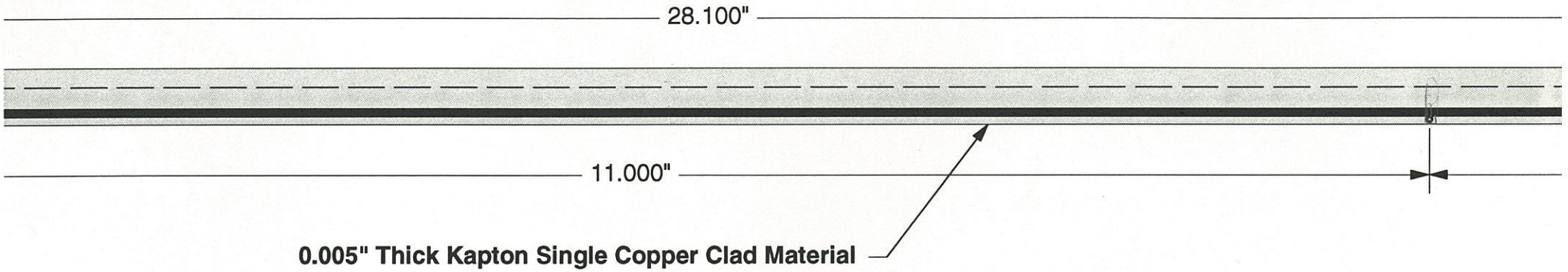


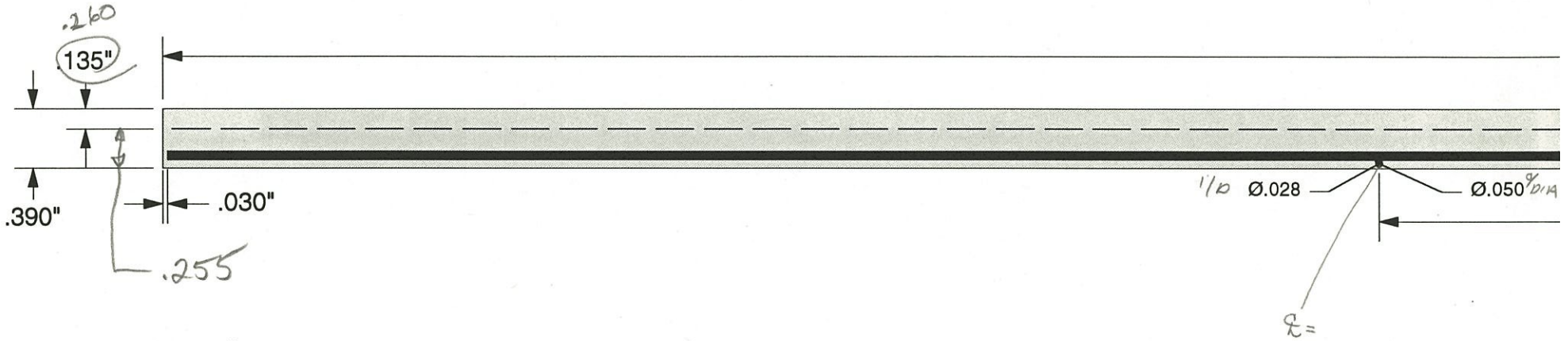
"5 Mil Kapton"
1 oz. Copper

J.B. Hunter
Original: 3-11-94
Updated:

a000893u1 24A3661

STAR Shield Grid Wire Mount P.C.B., Inner Sector





Inner Radius

390
135
255

.390
.125
.515

JOHN WIRTH
4/15/94

135
125
.260

PRINT LIST

TITLE: STAR TPC
INNER SECTOR ELECTRONICS
SHIELD GRID WIRE MOUNT BOARD
(PANEL OF 16 BOARDS)

FILE NO.: a000893p1 REV:
PRINT NO.: 24A3661 P-1
CHANGES (*)

ENGINEER: JIM HUNTER
DRAFTER: STIRKKINEN

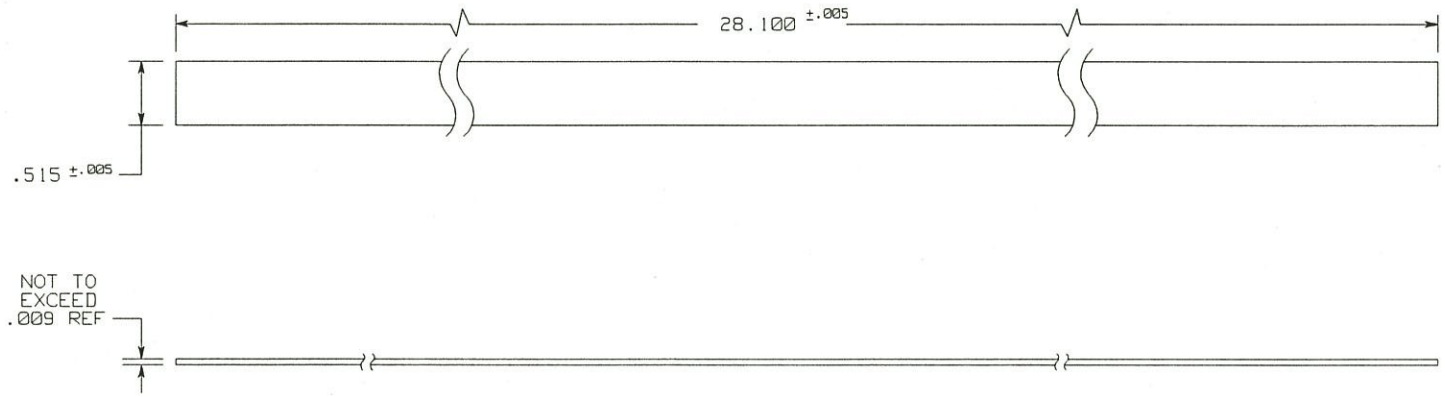
DATE: 04/01/94
PAGE: 1 OF 1

Drawing No.	Chg. Ltr.	Title
24A3662 M-1 (a000893m1)		BOARD OUTLINE - SINGLE BOARD
24A3663 M-2 (a000893m2)		BOARD OUTLINE - PANEL OF 16
24A3662 E-1 (a000893e1)		HOLE SCHEDULE - SINGLE BOARD
24A3663 E-2 (a000893e2)		HOLE SCHEDULE - PANEL OF 16
24A3661 U-1 (a000893u1)		ARTWORK - SINGLE BOARD
24A3661 U-2 (a000893u2)		ARTWORK - PANEL OF 16 24A3661 U-1'S

** THE FOLLOWING DRAWINGS NOT REQUIRED FOR THIS PACKAGE:
PARTS LIST, SILKSCREEN, PC BOARD ASSEMBLY

NUMBERS WITHIN ( ) REFER TO EGS COMPUTER FILES

REV.	CHANGES	DRAWN	DATE	CHKD.	DATE



NOTES:

1. BOARD MATERIAL: .005 KAPTON WITH 1 OZ COPPER, BOTH SIDES; THERE IS NO TIN PLATING ON THIS BOARD. BOARD THICKNESS NOT TO EXCEED .009".
2. DIMENSIONS ARE IN INCHES.
3. BOARD SIZE IS .515 +/-.005 X 28.100 +/-.005.
4. REFERENCE DRAWINGS:

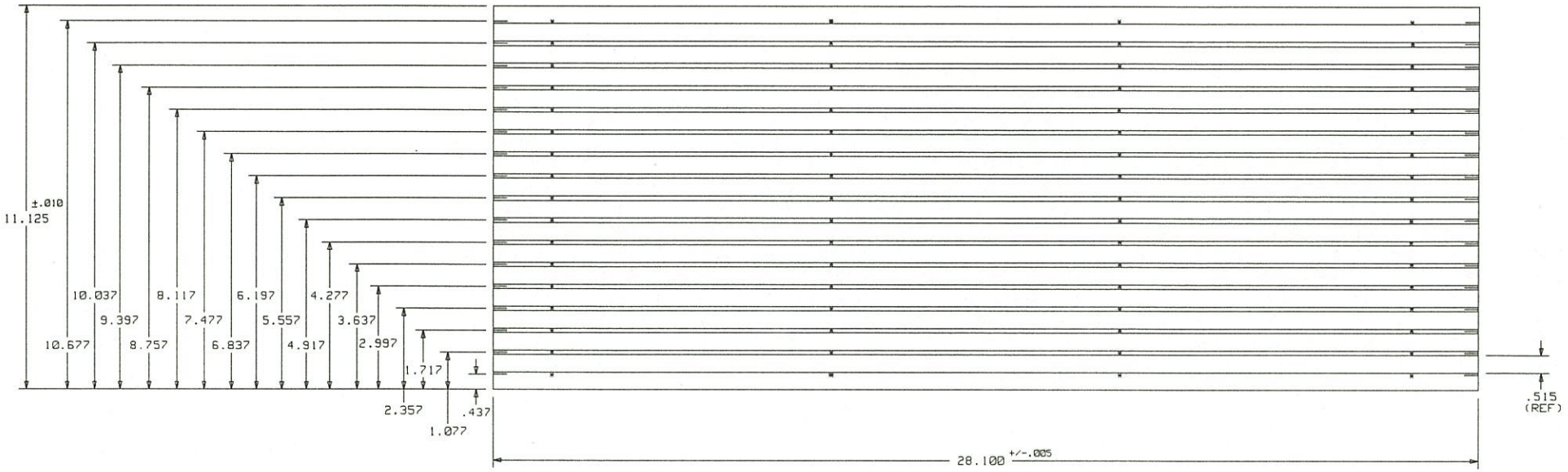
24A3662 E-1	a000893e1	HOLE SCHEDULE - SINGLE BOARD
24A3663 E-2	a000893e2	HOLE SCHEDULE - PANEL OF 16 BOARDS
24A3663 M-2	a000893m2	BOARD OUTLINE - PANEL OF 16 BOARDS

DIST	I:	TITLE	STAR TPC		
	II:		INNER SECTOR ELECTRONICS		
	III:		INNER-SHIELD WIRE MOUNT BOARD(SINGLE BD)		
SHOWN ON			BOARD OUTLINE - 24A3661 U-1 (A000893U1)		
ACCOUNT NUMBER	8052-24	DRAWN STIRKKINEN	DATE 3/31/94	LAWRENCE BERKELEY LABORATORY	
SERIAL NUMBER		CHECKED	DATE	UNIVERSITY OF CALIFORNIA	
DATE ISSUED	NO. REQD.	APPROVED	DATE	OFFICE OF ELECTRONICS ENGINEERING	
DATE REQD.		ENGINEER JIM HUNTER		FILE NO. a000893m1 / SIZE 2 / DRAWING NO. 24A3662 M-1 / REV.	
DEL. TO		SCALE NONE	E2	SHEET 1 OF 2	

REV.	CHANGES	DRAWN	DATE	CHK'D.	DATE

TRACE SIDE VIEW

SCALE: NONE



NOTES:

1. BOARD MATERIAL: .005 KAPTON WITH 1 OZ COPPER, BOTH SIDES. THERE IS NO TIN PLATING ON THIS BOARD. TOTAL THICKNESS NOT TO EXCEED .009".

2. BOARD PANEL SIZE IS 11.125 +/-.010 X 28.100 +/-.005. SINGLE BOARD SIZE IS .515 +/-.005 X 28.100 +/-.005. DIMENSIONS ARE IN INCHES. UNLISTED TOLERANCES ARE +/-.005.

3. * = APPROXIMATE PLACEMENT OF .050 TABS. SLOTS TO BE .125 WIDE.

4. REFERENCE DRAWINGS:

24A3662 E-1	a000893e1	HOLE SCHEDULE - SINGLE BOARD
24A3663 E-2	a000893e2	HOLE SCHEDULE - PANEL OF 16 BOARDS
24A3662 M-1	a000893m1	BOARD OUTLINE - SINGLE BOARD

DIST I:		TITLE	STAR TPC
DIST II:			INNER SECTOR ELECTRONICS
DIST III:			SHIELD GRID WIRE MOUNT BD (PANEL OF 16)
SHOWN ON			BOARD OUTLINE - 24A3661 U-2 (A000893U2)
ACCOUNT NUMBER	8052-24	DRAWN STIRKKINEN	DATE 4/01/94
SERIAL NUMBER		CHECKED	DATE
DATE ISSUED	NO. REQD.	APPROVED	DATE
DATE REQD.		ENGINEER THOMAS NOGGLE	
DEL. TO		SCALE NONE	E2

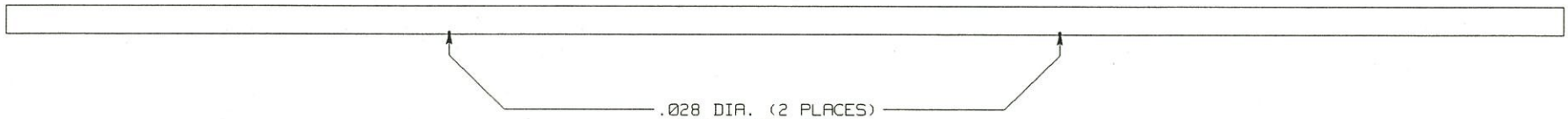
LAWRENCE BERKELEY LABORATORY
UNIVERSITY OF CALIFORNIA
OFFICE OF ELECTRONICS ENGINEERING

FILE NO.	SIZE	DRAWING NO.	REV.
a000893m2	3	24A3663 M-2	

SHEET 2 OF 2

REV.	CHANGES	DRAWN	DATE	CHKD.	DATE

PAD VIEW



NOTES:

1. BOARD MATERIAL: .005 THICK KAPTON WITH 1 OZ COPPER, BOTH SIDES. THERE IS NO TIN PLATING ON THIS BOARD.
2. MANUFACTURER MAY NOT PUT ANY IDENTIFICATION NOMENCLATURE ON PRINTED CIRCUIT BOARD, EITHER SIDE.
3. THIS BOARD TO BE THROUGH HOLE PLATED.
4. SPECIFIED HOLE DIA. SIZE IS FOR FINISHED HOLES AFTER PLATING.
5. BOARD SIZE IS .515 +/-.005 X 28.100 +/-.005. DIMENSIONS ARE IN INCHES. BOARD OUTLINE DRAWING IS 24A3662 M-1 (a000893m1).
6. SOLDERMASK IS NOT USED ON THIS BOARD.
7. REFERENCE DRAWINGS:

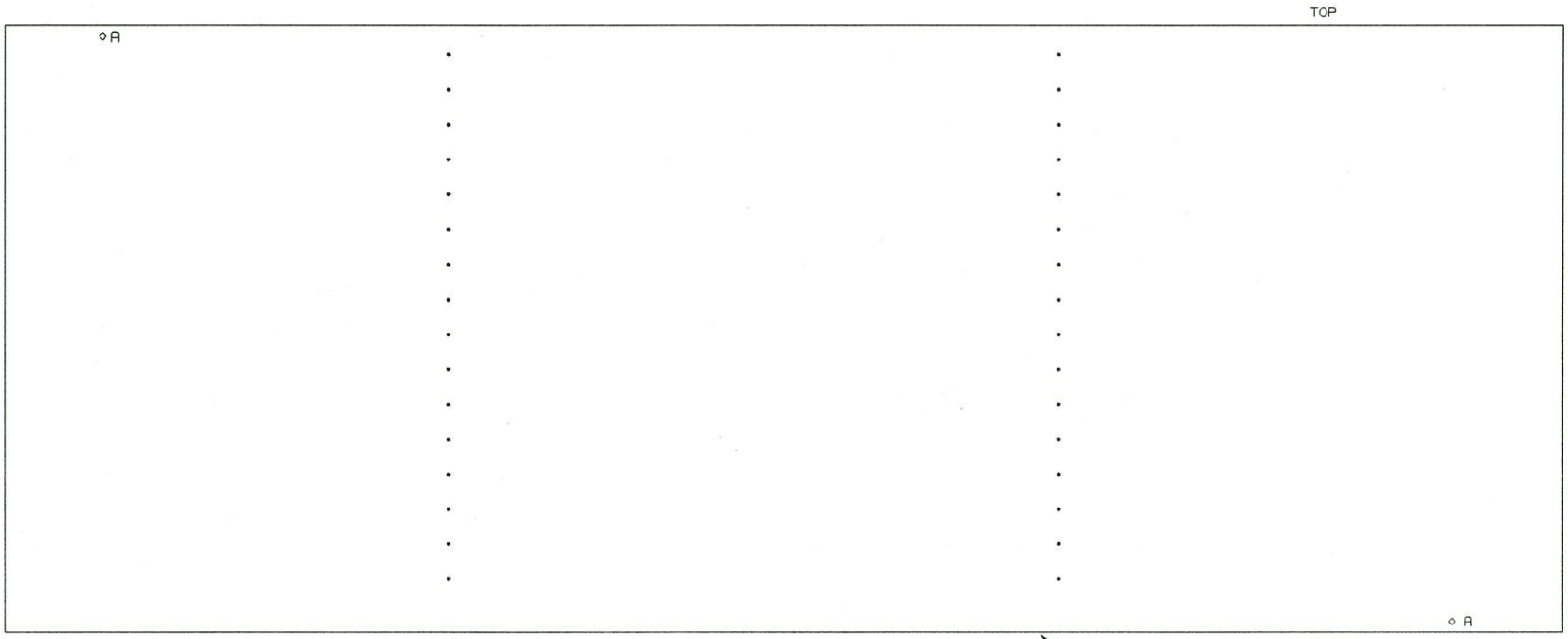
24A3662 M-1	a000893m1	BOARD OUTLINE - SINGLE BOARD
24A3663 M-2	a000893m2	BOARD OUTLINE - PANEL OF 16 BOARDS
24A3663 E-2	a000893e2	HOLE SCHEDULE - PANEL OF 16 BOARDS

DIST I:		TITLE	STAR TPC		
DIST II:			INNER SECTOR ELECTRONICS		
DIST III:			SHIELD GRID WIRE MOUNT BD (SINGLE BOARD)		
SHOWN ON			HOLE SCHEDULE - 24A3661 U-1 (A000893U1)		
ACCOUNT NUMBER	8052-24	DRAWN STIRKKINEN	DATE 4/1/94	LAWRENCE BERKELEY LABORATORY	
SERIAL NUMBER		CHECKED	DATE	UNIVERSITY OF CALIFORNIA	
DATE ISSUED	NO. REQD.	APPROVED	DATE	OFFICE OF ELECTRONICS ENGINEERING	
DATE REQD.		ENGINEER THOMAS NOGGLE		FILE NO. a000893e1 / SIZE 2 / DRAWING NO. 24A3662 E-1	REV.
DEL. TO		SCALE NONE	E2,C3	SHEET 1 OF 2	

REV.	CHANGES	DRAWN	DATE	CHKD.	DATE

PAD SIDE VIEW

SCALE: NONE



NOTES:

1. BOARD MATERIAL: .005 THICK KAPTON WITH 1 OZ COPPER, BOTH SIDES. THERE IS NO TIN PLATING ON THIS BOARD.
2. SEE HOLE SCHEDULE FOR HOLE SIZES.
3. THIS BOARD TO BE THROUGH HOLE PLATED.
4. SPECIFIED HOLE DIA. SIZES ARE FOR FINISHED HOLES AFTER PLATING.
5. BOARD SIZE IS 11.125 +/-.010 X 28.100 +/-.005. SINGLE BOARD SIZE IS .515 X 28.100 +/-.005. DIMENSIONS ARE IN INCHES. BOARD OUTLINE DRAWING IS 24A3663 M-2 (a000893m2).
6. SOLDERMASK IS NOT USED ON THIS BOARD.
7. REFERENCE DRAWINGS:
   - 24A3662 M-1 a000893m1 BOARD OUTLINE - SINGLE BOARD
   - 24A3663 M-2 a000893m2 BOARD OUTLINE - PANEL OF 16 BOARDS
   - 24A3662 E-1 a000893e1 HOLE SCHEDULE - SINGLE BOARD

HOLE SCHEDULE		
CODE	HOLE DIA.	COUNT
NONE	.028	32
A	.125	2

DIST I:		TITLE	STAR TPC		
DIST II:			INNER SECTOR ELECTRONICS		
DIST III:			SHIELD GRID WIRE MOUNT BD (PANEL OF 16)		
SHOWN ON			HOLE SCHEDULE - 24A3661 U-2 (A000893U2)		
ACCOUNT NUMBER	8052-24	DRAWN STIRKKINEN	DATE 4/1/94	LAWRENCE BERKELEY LABORATORY	
SERIAL NUMBER		CHECKED	DATE	UNIVERSITY OF CALIFORNIA	
DATE ISSUED	NO. REQD.	APPROVED	DATE	OFFICE OF ELECTRONICS ENGINEERING	
DATE REQD.		ENGINEER JIM HUNTER		FILE NO. a000893e2 / SIZE 3 / DRAWING NO. 24A3663 E-2	REV.
DCL. TO		SCALE NONE	C1,C3,E14		SHEET 2 OF 2

PRINT LIST

TITLE: STAR TPC
INNER SECTOR ELECTRONICS
LITTLE ORPHAN ANODE BOARD
(PANEL OF 10 24A4511 U-1,
a000897u1)

FILE NO.: a000897p1 REV:
PRINT NO.: 24A4511 P-1
CHANGES (*)

ENGINEER: JIM HUNTER
DRAFTER: STIRKKINEN

DATE: 04/15/94
PAGE: 1 OF 1

Drawing No.	Chg. Ltr.	Title
24A4511 C-1 (a000897c1)		PARTS LIST (PANEL)
24A4512 M-1 (a000897m1)		BOARD OUTLINE (PANEL)
24A4512 E-1 (a000897e1)		HOLE SCHEDULE (PANEL)
24A4512 L-1 (a00089711)		PC BOARD ASSEMBLY (PANEL)
24A4511 U-1 (a000897u1)		PC BOARD - ISOR/10 WIRE (SINGLE BOARD)
24A4511 U-2 (a000897u2)		PC BOARD - ISOR/10 WIRE (PANEL)

** DRAWINGS NOT REQUIRED FOR THIS PACKAGE - SILKSCREEN **

NUMBERS WITHIN ( ) REFER TO EGS COMPUTER FILES

*

PARTS LIST

TITLE: STAR TPC
INNER SECTOR ELECTRONICS
LITTLE ORPHAN ANODE BOARD
(PANEL OF 10 BOARDS)

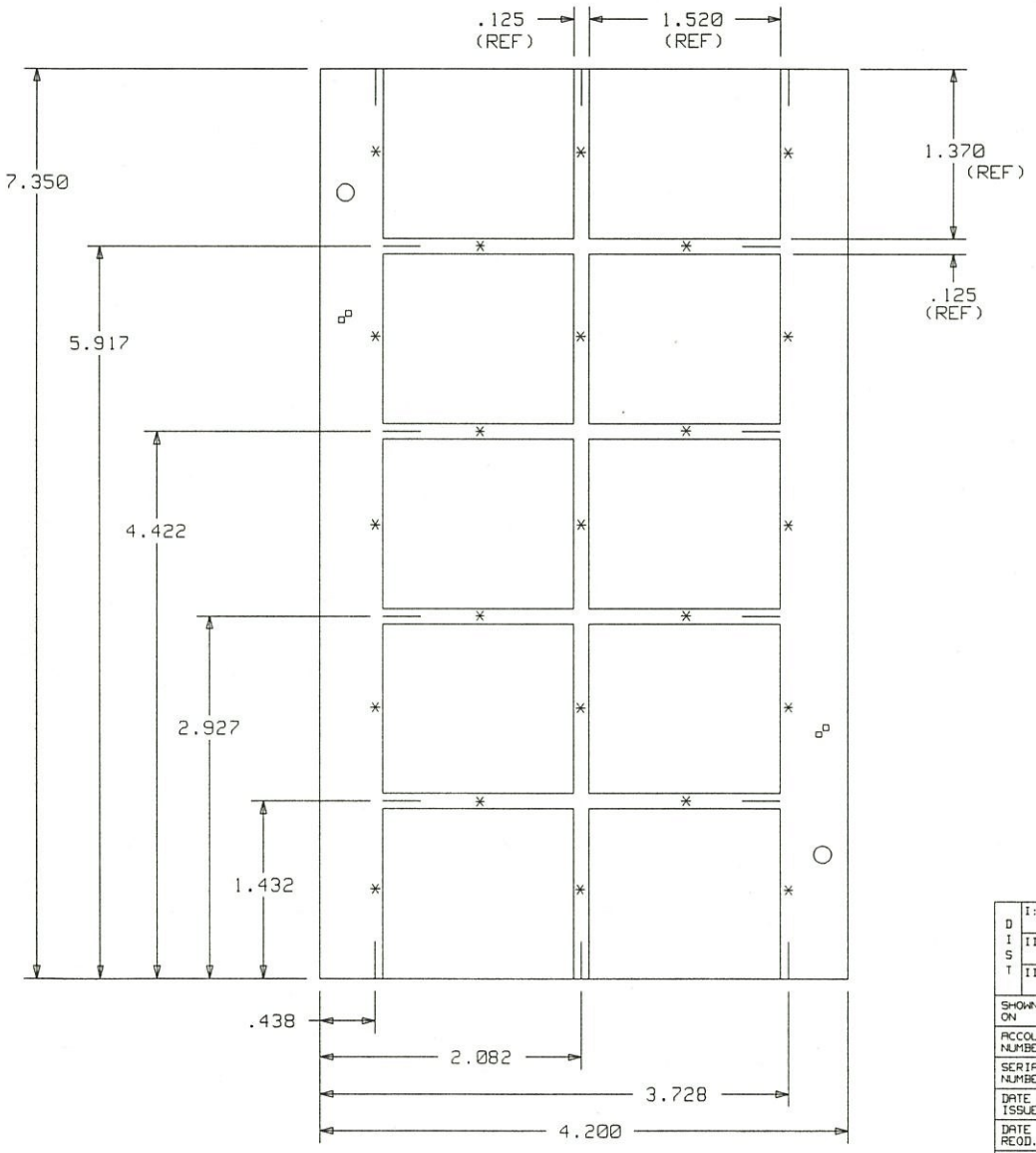
FILE NO.: a000897c1 REV:
PRINT NO.: 24A4511 C-1
CHANGES (*)

ENGINEER: JIM HUNTER
DRAFTER: STIRKKINEN

DATE: 04/15/94

Reference	Stock No.	Part Type	Description	Qty
		CAPACITORS		
C1,C2,C3,C4,C5, C6,C7,C8,C9, C10,C11	NS	.001uF	.001uF,3KV,CERAMIC,SMT, SIZE .120 X .180	110
		RESISTORS		
R1,R2,R3,R4,R5, R6,R7,R8,R9, R10,R11	NS	10M	10M,1/8W,5%,SMT,SIZE	110
		MISCELLANEOUS		
J1	NS	CN11SROW	11 PIN,SINGLE ROW CONNECTOR,STRAIGHT,SAMTEC #SSK-111-S-G,SOLDER TAIL	10
-	NS	CN1SROW	1 PIN,SINGLE ROW CONNECTOR,STRAIGHT,SAMTEC #SSK-101-S-G,SOLDER TAIL	4
-	NS	24A4511 U-2 (a000897u2)	24A4511 U-2,PC BD,PANEL OF 10 BOARDS (24A4511 U-1 , a000897u1)	1

COMPONENT SIDE VIEW



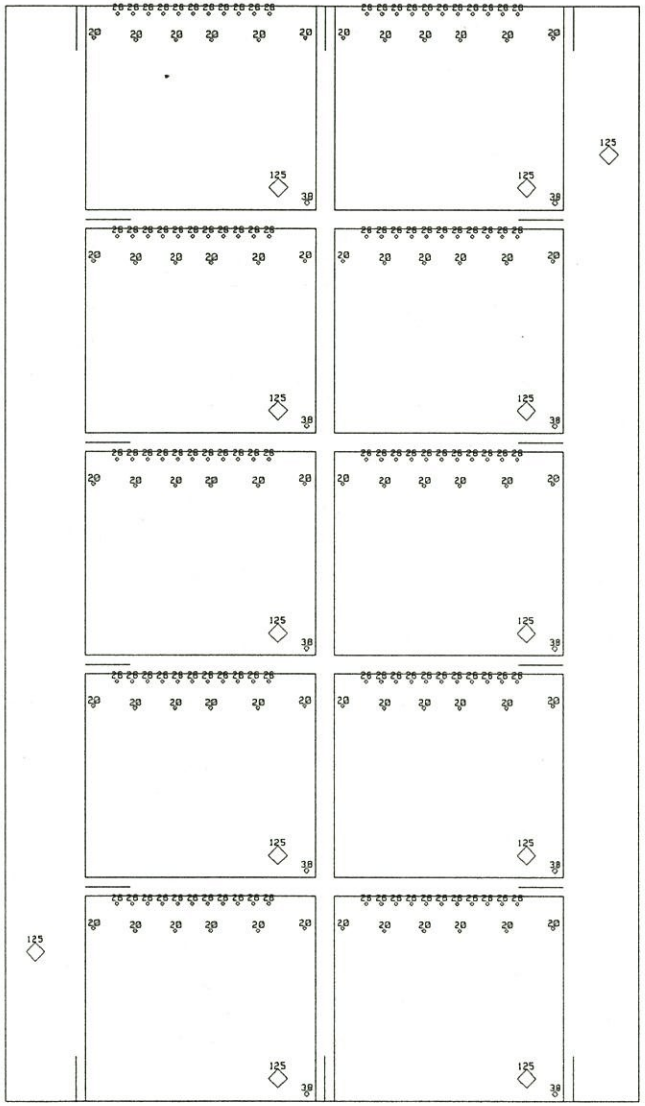
REV.	CHANGES	DRAWN	DATE	CHKD.	DATE

NOTES:

1. BOARD MATERIAL: .062 THICK NEMA G10 PER MIL-P-13949G FL-GEN 062C-1/1-A1A (1 OZ. COPPER EACH SIDE).
2. PANEL SIZE IS 4.200 +/-.010 X 7.350 +/-.005. SINGLE BOARD SIZE IS 1.520 X 1.370 +/-.005. DIMENSIONS ARE IN INCHES.
3. * = APPROXIMATE PLACEMENT OF .050 TABS. SLOTS TO BE .125" WIDE.
4. UNSPECIFIED TOLERANCES ARE +/-.005.
5. REFERENCE DRAWINGS:

24A4511 C-1	a000897c1	PARTS LIST (PANEL)
24A4512 E-1	a000897e1	HOLE SCHEDULE (PANEL)
24A4512 L-1	a00089711	P.C. BD. ASSY (PANEL)

DIST I:		TITLE	STAR TPC		
DIST II:			INNER SECTOR ELECTRONICS		
DIST III:			LITTLE ORPHAN ANODE BD (ISOR)-10 WIRES		
SHOWN ON			BOARD OUTLINE-PANEL OF 10 (24A4511 U-2)		
ACCOUNT NUMBER	8052-24	DRAWN STIRKKINEN	DATE 04/15/94	LAWRENCE BERKELEY LABORATORY	
SERIAL NUMBER		CHECKED	DATE	UNIVERSITY OF CALIFORNIA	
DATE ISSUED	NO. REQD.	APPROVED	DATE	OFFICE OF ELECTRONICS ENGINEERING	
DATE REQD.		ENGINEER JIM HUNTER		FILE NO. a000897m1	SIZE 2
DEL. TO		SCALE NONE	E2,R19	DRAWING NO. 24A4512 M-1	REV.
				SHEET 1 OF 1	



SOLDER SIDE VIEW

REV.	CHANGES	DRAWN	DATE	CHKD.	DATE

NOTES:

1. BOARD MATERIAL: .062 THICK NEMA G10 GLASS EPOXY PER MIL-P-13949G FL-GEN 062C-1/1-A1A (1 OZ. COPPER BOTH SIDES).
2. SEE HOLE SCHEDULE FOR HOLE SIZES.
3. THIS BOARD TO BE THROUGH HOLE PLATED.
4. SPECIFIED HOLE DIA. SIZES ARE FOR FINISHED HOLES AFTER PLATING.
5. THIS PANEL BOARD IS NOT TO BE SILKSCREENED.
6. PANEL SIZE IS 4.200 +/-.010 X 7.350 +/-.005. SINGLE BOARD SIZE IS 1.520 X 1.370 +/-.005. DIMENSIONS ARE IN INCHES. BOARD OUTLINE IS DRAWING 24A4512 M-1 (a000897m1).
7. SOLDERMASK IS NOT USED ON THIS BOARD.
8. REFERENCE DRAWINGS:

24A4511 C-1	a000897c1	PARTS LIST (PANEL)
24A4512 M-1	a000897m1	BOARD OUTLINE (PANEL)
24A4512 L-1	a00089711	P.C. BOARD ASSEMBLY (PANEL)

HOLE SCHEDULE		
TOOLING NO.	HOLE DIA.	COUNT
1	.026	110
2	.020	60
3	.038	10
4	.125	12

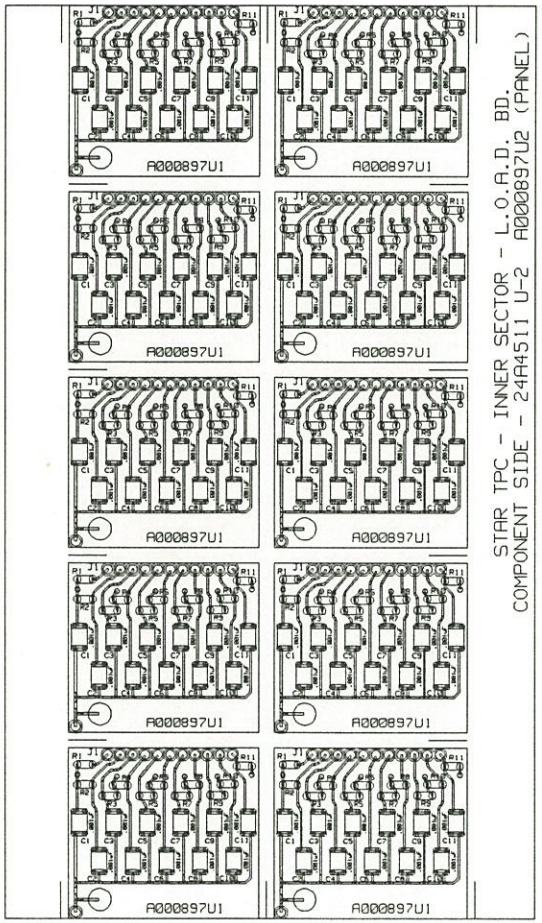
TOTAL HOLE COUNT = 192.

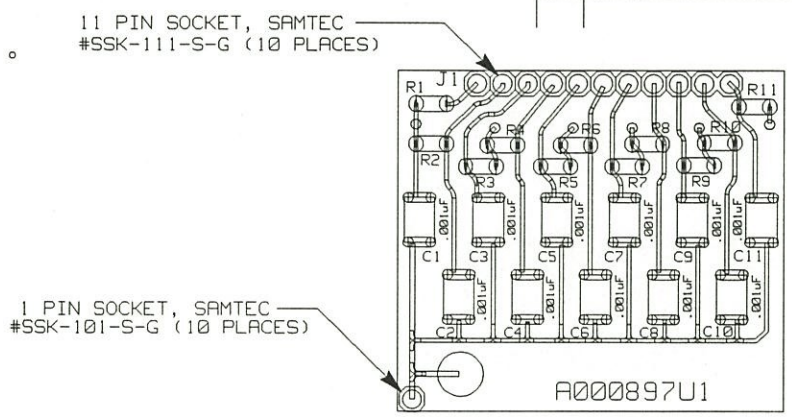
FOR TOOLING NOS. 1 & 3 USE .033 DIA. HOLE. (COUNT = 120 HOLES)

USE .016 DIA. HOLE

DIST I:	TITLE STAR TPC		
DIST II:	INNER SECTOR ELECTRONICS		
DIST III:	LITTLE ORPHAN ANODE BOARD (ISOR)-10 WIRES		
SHOWN ON	HOLE SCHEDULE - PANEL OF 10 (24A4511 U-2)		
ACCOUNT NUMBER 8052-24	DRAWN STIRKKINEN	DATE 04/15/94	LAWRENCE BERKELEY LABORATORY
SERIAL NUMBER	CHECKED	DATE	UNIVERSITY OF CALIFORNIA
DATE ISSUED / NO. REQD.	APPROVED	DATE	OFFICE OF ELECTRONICS ENGINEERING
DATE REQD.	ENGINEER JIM HUNTER		FILE NO. a000897e1 / SIZE 2 / DRAWING NO. 24A4511 E-1 / REV.
DEL. TO	SCALE NONE	C1,E2,E56	SHEET 1 OF 1

REV.	CHANGES	DRAWN	DATE	CHKD.	DATE





SCALE: ~2:1

NOTES:

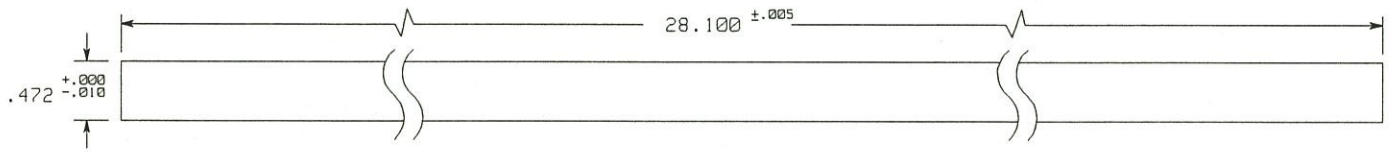
1. UNLESS OTHERWISE SPECIFIED:
   A. RESISTORS ARE 10M, 1/8W, 5%, SURFACE MOUNT, SIZE 1206.
   B. CAPACITORS ARE .001uF, 3KV, CERAMIC, SURFACE MOUNT, SIZE .120" X .180".
2. PANEL BOARD SIZE IS 4.200 +/-.010 X 7.350 +/-.005. SINGLE BOARD SIZE IS 1.520 X 1.370 +/-.005. DIMENSIONS ARE IN INCHES. BOARD OUTLINE IS 24A4512 M-1 (a000897m1).
3. REFERENCE DRAWINGS:

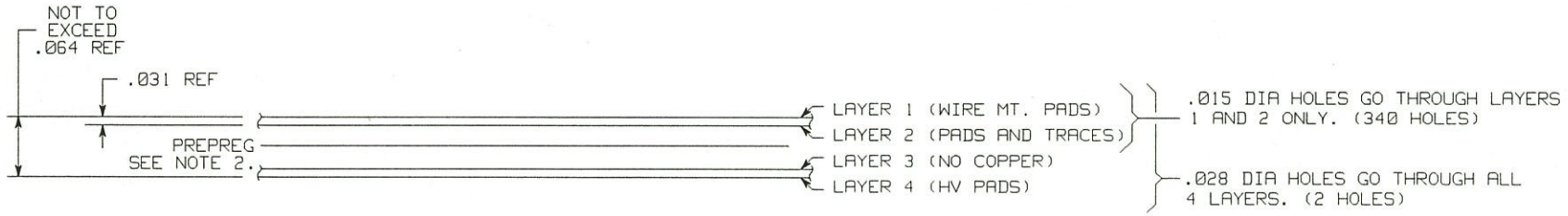
24A4511 C-1	a000897c1	PARTS LIST (PANEL)
24A4512 M-1	a000897m1	BOARD OUTLINE (PANEL)
24A4512 E-1	a000897e1	HOLE SCHEDULE (PANEL)

DIST I:		TITLE	STAR TPC		
DIST II:			INNER SECTOR ELECTRONICS		
DIST III:			LITTLE ORPHAN ANODE BOARD (ISOR)-10 WIRES		
SHOWN ON			P.C. BD. ASSY - PANEL OF 10 (24A4511 U-2)		
ACCOUNT NUMBER	8052-24	DRAWN STIRKKINEN	DATE 04/15/94	LAWRENCE BERKELEY LABORATORY	
SERIAL NUMBER		CHECKED	DATE	UNIVERSITY OF CALIFORNIA	
DATE ISSUED	NO. REQD.	APPROVED	DATE	OFFICE OF ELECTRONICS ENGINEERING	
DATE REQD.		ENGINEER JIM HUNTER		FILE NO. a00089711 / SIZE 2 / DRAWING NO. 24A4512 L-2 / REV.	
DEL. TO		SCALE NONE	E2,E3,E5,E27,E26,E52,E53	SHEET 1 OF 1	

REV.	CHANGES	DRAWN	DATE	CHKD.	DATE

LAYER 1 VIEW





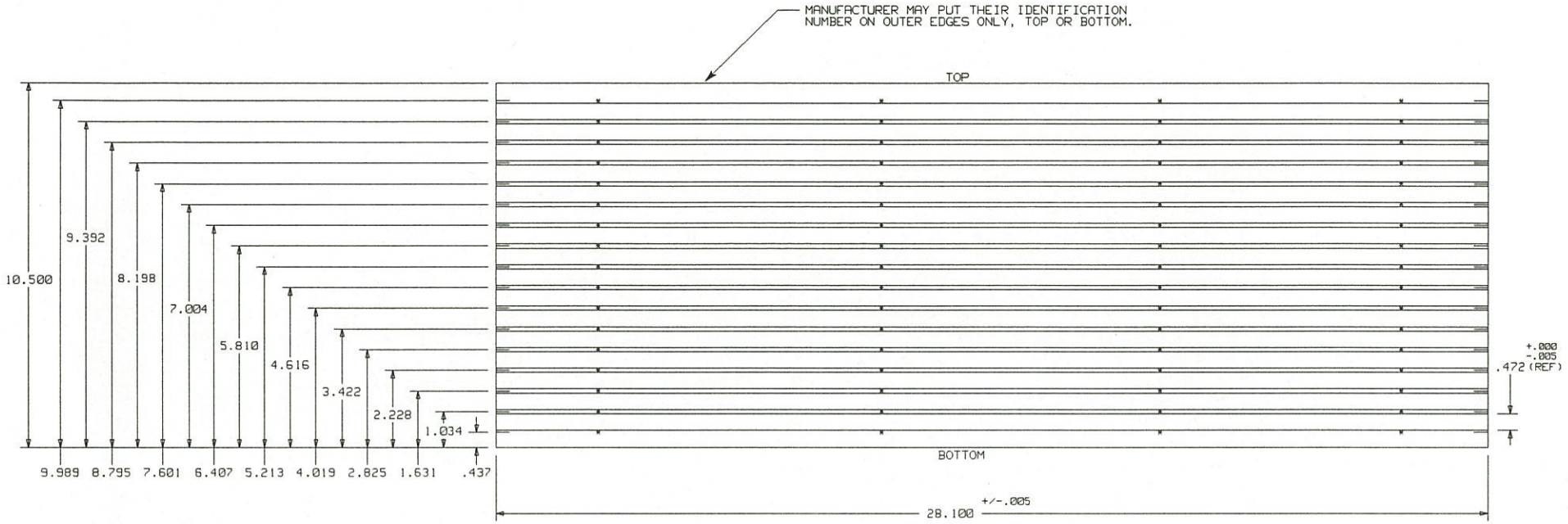
NOTES:

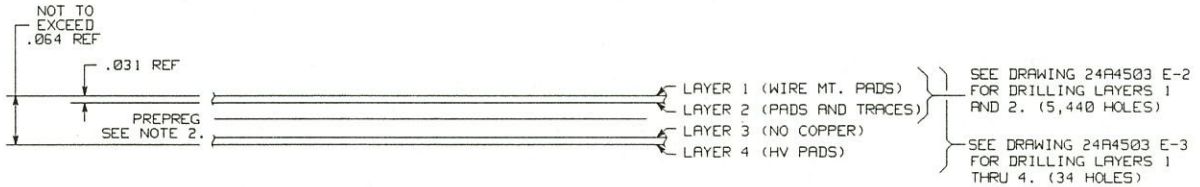
1. BOARD MATERIAL: .031 THICK G10 PER MIL-P-55617 FL-GEN 031C-1/1-A1A (1 OZ. COPPER EACH SIDE). THIS IS A MULTILAYER BOARD (4 LAYERS). TOTAL THICKNESS NOT TO EXCEED .064.
2. PREPREG THICKNESS TO BE DETERMINED BY MANUFACTURER PER IPC-L-109A OR MIL-P-55617.
3. MANUFACTURER MAY NOT PUT ANY IDENTIFICATION NOMENCLATURE ON PRINTED CIRCUIT BOARD.
4. PLEASE NOTE THAT THERE IS NO COPPER ON LAYER 3.
5. DIMENSIONS ARE IN INCHES.
6. BOARD SIZE IS .472 +.000/-.010 X 28.100 +/-.005.
7. REFERENCE DRAWINGS:

24A4502 E-1	a000896e1	HOLE SCHEDULE - SINGLE BOARD
24A4503 E-2	a000896e2	HOLE SCHEDULE - PANEL OF 16 (BLIND VIAS)
24A4503 E-3	a000896e3	HOLE SCHEDULE - PANEL OF 16
24A4503 M-2	a000896m2	BOARD OUTLINE - PANEL OF 16

DIST I:		TITLE	STAR TPC		
DIST II:			INNER SECTOR ELECTRONICS		
DIST III:			GATED GRID WIRE MOUNT BOARD - SINGLE BD.		
SHOWN ON			BOARD OUTLINE - 24A4501 U-1 (A000896U1)		
ACCOUNT NUMBER	8052-24	DRAWN STIRKKINEN	DATE 4/08/94	LAWRENCE BERKELEY LABORATORY	
SERIAL NUMBER		CHECKED	DATE	UNIVERSITY OF CALIFORNIA	
DATE ISSUED	NO. REQD.	APPROVED	DATE	OFFICE OF ELECTRONICS ENGINEERING	
DATE REQD.		ENGINEER JIM HUNTER		FILE NO. a000896m1 / SIZE 2 / DRAWING NO. 24A4502 M-1 / REV.	
DEL. TO		SCALE NONE	E2	SHEET 1 OF 2	

REV.	CHANGES	DRAWN	DATE	CHKD.	DATE





NOTES:

1. BOARD MATERIAL: .031 THICK G10 PER MIL-P-55617 FL-GEN 031C-1/1-A1A (1 OZ. COPPER EACH SIDE). THIS IS A MULTILAYER BOARD (4 LAYERS). TOTAL THICKNESS NOT TO EXCEED .064.
2. PREPREG THICKNESS TO BE DETERMINED BY MANUFACTURER PER IPC-L-109A OR MIL-P-55617.
3. PLEASE NOTE THAT THERE IS NO COPPER ON LAYER 3.
4. BOARD PANEL SIZE IS 10.500 +/-.010 X 28.100 +/-.005. SINGLE BOARD SIZE IS .472 +.000/-.010 X 28.100 +/-.005. DIMENSIONS ARE IN INCHES.
5. * = APPROXIMATE PLACEMENT OF .050 TABS. SLOTS TO BE .125 WIDE.
6. REFERENCE DRAWINGS:

24A4502 E-1	a000896e1	HOLE SCHEDULE - SINGLE BOARD
24A4503 E-2	a000896e2	HOLE SCHEDULE - PANEL OF 16 (BLIND VIAS)
24A4503 E-3	a000896e3	HOLE SCHEDULE - PANEL OF 16
24A4502 M-1	a000896m1	BOARD OUTLINE - SINGLE BOARD

DIST I:		TITLE	STAR TPC		
DIST II:			INNER SECTOR ELECTRONICS		
DIST III:			GATED GRID WIRE MOUNT BOARD - PANEL OF 16		
SHOWN ON			BOARD OUTLINE - 24A4501 U-2 (A000896U2)		
ACCOUNT NUMBER	8052-24	DRAWN STARKKINEN	DATE 4/08/94	LAWRENCE BERKELEY LABORATORY	
SERIAL NUMBER		CHECKED	DATE	UNIVERSITY OF CALIFORNIA	
DATE ISSUED	NO. REQD.	APPROVED	DATE	OFFICE OF ELECTRONICS ENGINEERING	
DATE REQD.		ENGINEER JIM HUNTER		FILE NO. a000896m2 / SIZE 3 / DRAWING NO. 24A4503 M-2	REV.
DCL. TO		SCALE NONE	E2		SHEET 2 OF 2

PRINT LIST

TITLE: STAR TPC
INNER SECTOR ELECTRONICS
LITTLE ORPHAN ANODE BOARD
(PANEL OF 10 24A4511 U-1,
a000897u1)

FILE NO.: a000897p1 REV: A
PRINT NO.: 24A4511 P-1
CHANGES (*) 09/28/94

ENGINEER: JIM HUNTER
DRAFTER: STIRKKINEN

DATE: 04/15/94
PAGE: 1 OF 1

Drawing No.	Chg. Ltr.	Title
24A4511 C-1 (a000897c1)		PARTS LIST (PANEL)
24A4512 M-1 (a000897m1)		BOARD OUTLINE (PANEL)
24A4512 E-1 (a000897e1)		HOLE SCHEDULE (PANEL)
24A4512 L-1 (a00089711)	A	PC BOARD ASSEMBLY (PANEL) *
24A4511 U-1 (a000897u1)		PC BOARD - ISOR/10 WIRE (SINGLE BOARD)
24A4511 U-2 (a000897u2)		PC BOARD - ISOR/10 WIRE (PANEL)

** DRAWINGS NOT REQUIRED FOR THIS PACKAGE - SILKSCREEN **

NUMBERS WITHIN ( ) REFER TO EGS COMPUTER FILES

*

PRINT LIST

TITLE: STAR TPC
INNER SECTOR ELECTRONICS
GATED GRID WIRE MOUNT BOARD
(PANEL OF 16 BOARDS)

FILE NO.: a000896p1 REV:
PRINT NO.: 24A4501 P-1
CHANGES (*)

ENGINEER: JIM HUNTER
DRAFTER: STIRKKINEN

DATE: 04/08/94
PAGE: 1 OF 1

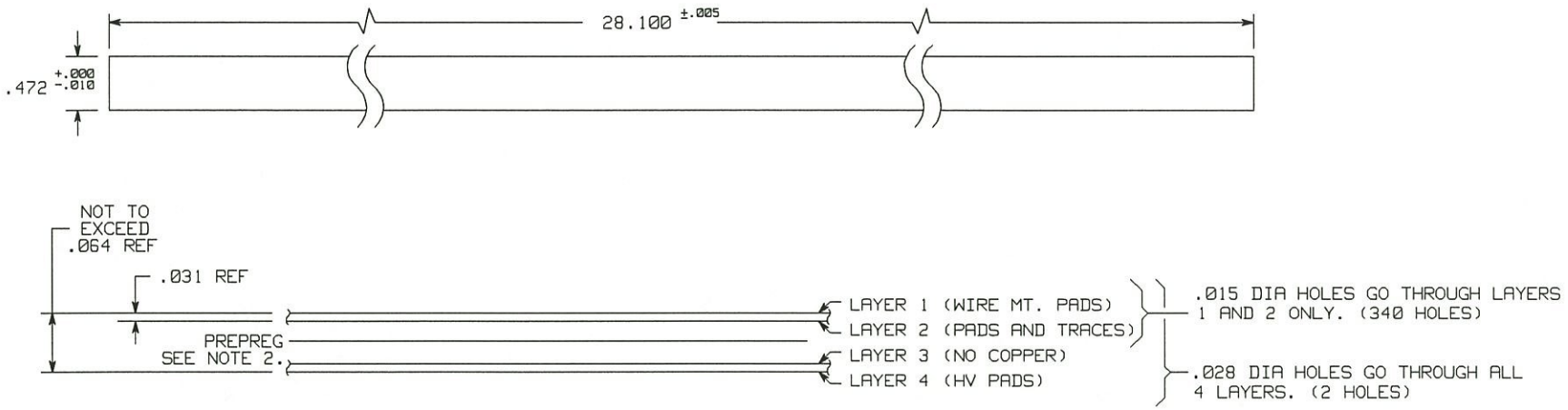
Drawing No.	Chg. Ltr.	Title
24A4502 M-1 (a000896m1)		BOARD OUTLINE - SINGLE BOARD
24A4503 M-2 (a000896m2)		BOARD OUTLINE - PANEL OF 16
24A4502 E-1 (a000896e1)		HOLE SCHEDULE - SINGLE BOARD
24A4503 E-2 (a000896e2)		HOLE SCHEDULE - PANEL OF 16 (BLIND VIAS)
24A4503 E-3 (a000896e3)		HOLE SCHEDULE - PANEL OF 16
24A4501 U-1 (a000896u1)		ARTWORK - SINGLE BOARD LAYER 1 - WIRE MOUNT PADS LAYER 2 - PADS AND TRACES LAYER 3 - NO COPPER (BLANK) LAYER 4 - H.V. PADS
24A4501 U-2 (a000896u2)		ARTWORK - PANEL OF 16 24A4501 U-1'S

** THE FOLLOWING DRAWINGS NOT REQUIRED FOR THIS PACKAGE:
PARTS LIST, SILKSCREEN, PC BOARD ASSEMBLY

NUMBERS WITHIN ( ) REFER TO EGS COMPUTER FILES

REV.	CHANGES	DRAWN	DATE	CHKD.	DATE

LAYER 1 VIEW



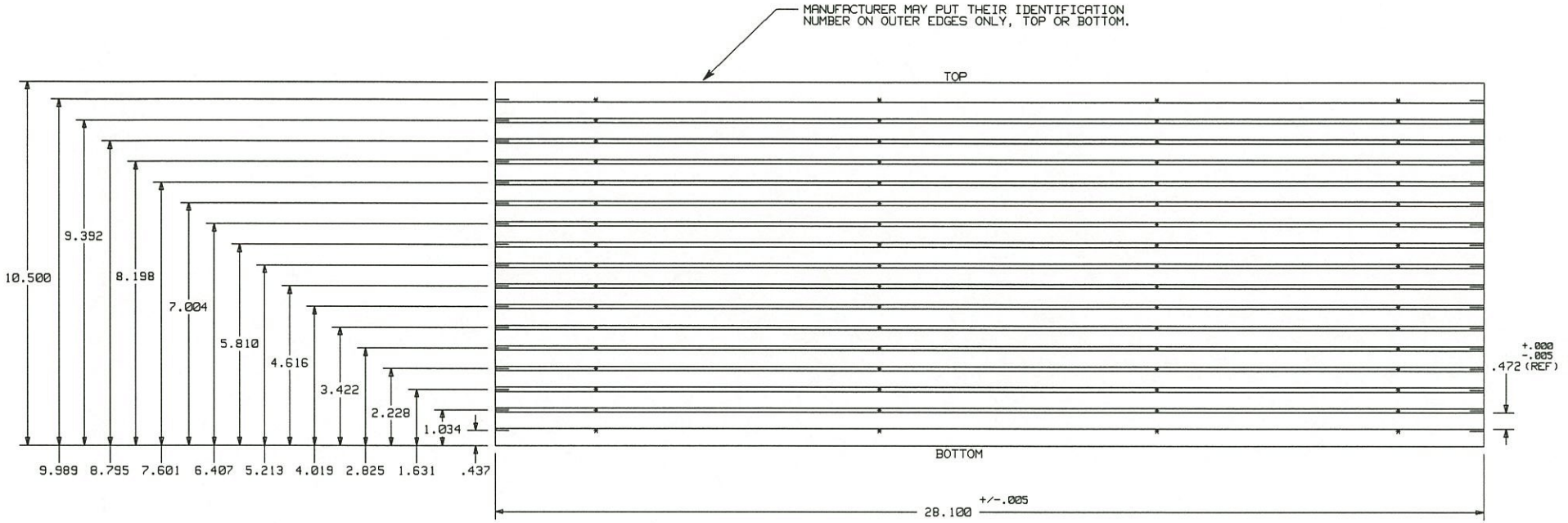
NOTES:

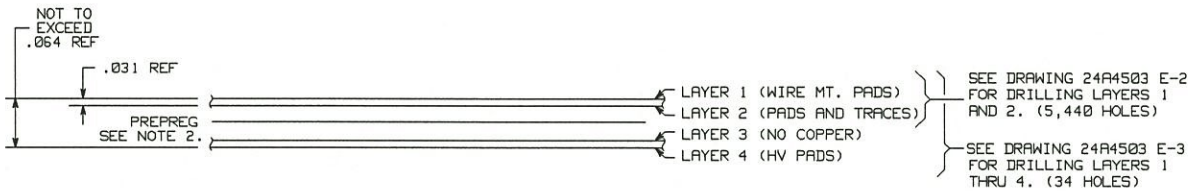
1. BOARD MATERIAL: .031 THICK G10 PER MIL-P-55617 FL-GEN 031C-1/1-A1A (1 OZ. COPPER EACH SIDE). THIS IS A MULTILAYER BOARD (4 LAYERS). TOTAL THICKNESS NOT TO EXCEED .064.
2. PREPREG THICKNESS TO BE DETERMINED BY MANUFACTURER PER IPC-L-109A OR MIL-P-55617.
3. MANUFACTURER MAY NOT PUT ANY IDENTIFICATION NOMENCLATURE ON PRINTED CIRCUIT BOARD.
4. PLEASE NOTE THAT THERE IS NO COPPER ON LAYER 3.
5. DIMENSIONS ARE IN INCHES.
6. BOARD SIZE IS .472 +.000/−.010 X 28.100 +/−.005.
7. REFERENCE DRAWINGS:

24A4502 E-1	a000896e1	HOLE SCHEDULE - SINGLE BOARD
24A4503 E-2	a000896e2	HOLE SCHEDULE - PANEL OF 16 (BLIND VIAS)
24A4503 E-3	a000896e3	HOLE SCHEDULE - PANEL OF 16
24A4503 M-2	a000896m2	BOARD OUTLINE - PANEL OF 16

DIST I:		TITLE	STAR TPC		
DIST II:			INNER SECTOR ELECTRONICS		
DIST III:			GATED GRID WIRE MOUNT BOARD - SINGLE BD.		
SHOWN ON			BOARD OUTLINE - 24A4501 U-1 (A000896U1)		
ACCOUNT NUMBER	8052-24	DRAWN STIRKKINEN	DATE 4/08/94	LAWRENCE BERKELEY LABORATORY	
SERIAL NUMBER		CHECKED	DATE	UNIVERSITY OF CALIFORNIA	
DATE ISSUED	NO. REQD.	APPROVED	DATE	OFFICE OF ELECTRONICS ENGINEERING	
DATE REQD.		ENGINEER JIM HUNTER		FILE NO. a000896m1 / SIZE 2 / DRAWING NO. 24A4502 M-1	REV.
DEL. TO		SCALE NONE	E2		SHEET 1 OF 2

REV.	CHANGES	DRAWN	DATE	CHKD.	DATE





NOTES:

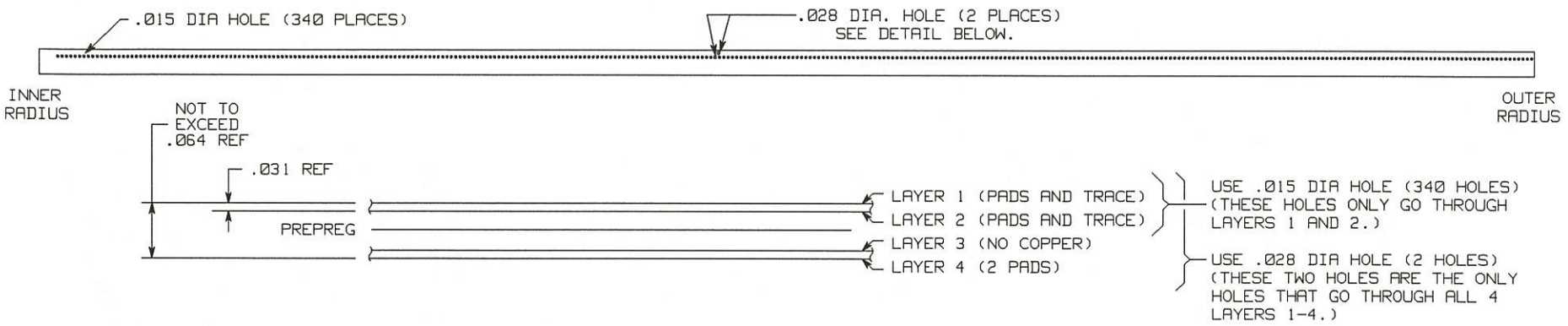
1. BOARD MATERIAL: .031 THICK G10 PER MIL-P-55617 FL-GEN 031C-1/1-A1A (1 OZ. COPPER EACH SIDE). THIS IS A MULTILAYER BOARD (4 LAYERS). TOTAL THICKNESS NOT TO EXCEED .064.
2. PREPREG THICKNESS TO BE DETERMINED BY MANUFACTURER PER IPC-L-109A OR MIL-P-55617.
3. PLEASE NOTE THAT THERE IS NO COPPER ON LAYER 3.
4. BOARD PANEL SIZE IS 10.500 +/-.010 X 28.100 +/-.005. SINGLE BOARD SIZE IS .472 +.000/-.010 X 28.100 +/-.005. DIMENSIONS ARE IN INCHES.
5. * = APPROXIMATE PLACEMENT OF .050 TABS. SLOTS TO BE .125 WIDE.
6. REFERENCE DRAWINGS:

24A4502 E-1	a000896e1	HOLE SCHEDULE - SINGLE BOARD
24A4503 E-2	a000896e2	HOLE SCHEDULE - PANEL OF 16 (BLIND VIAS)
24A4503 E-3	a000896e3	HOLE SCHEDULE - PANEL OF 16
24A4502 M-1	a000896m1	BOARD OUTLINE - SINGLE BOARD

DIST I:		TITLE	STAR TPC		
DIST II:			INNER SECTOR ELECTRONICS		
DIST III:			GATED GRID WIRE MOUNT BOARD - PANEL OF 16		
SHOWN ON			BOARD OUTLINE - 24A4501 U-2 (A000896U2)		
ACCOUNT NUMBER	8052-24	DRAWN STIRKKINEN	DATE 4/08/94	LAWRENCE BERKELEY LABORATORY	
SERIAL NUMBER		CHECKED	DATE	UNIVERSITY OF CALIFORNIA	
DATE ISSUED	NO. REQD.	APPROVED	DATE	OFFICE OF ELECTRONICS ENGINEERING	
DATE REQD.		ENGINEER	JIM HUNTER	FILE NO. a000896m2 / SIZE 3 / DRAWING NO. 24A4503 M-2	REV.
DEL. TO		SCALE	NONE	E2	SHEET 2 OF 2

REV.	CHANGES	DRAWN	DATE	CHKD.	DATE

LAYER ONE VIEW



NOTES:

1. BOARD MATERIAL: .031 THICK G10 PER MIL-P-55617 FL-GEN 031C-1/1-A1A (1 OZ. COPPER EACH SIDE). THIS IS A MULTILAYER BOARD (4 LAYERS). TOTAL THICKNESS NOT TO EXCEED .064.
2. MANUFACTURER MAY NOT PUT ANY IDENTIFICATION NOMENCLATURE ON PRINTED CIRCUIT BOARD.
3. PLEASE NOTE THAT THERE IS NO COPPER ON LAYER 3.
4. THIS BOARD TO BE THROUGH HOLE PLATED. SEE DETAIL FOR BLIND VIAS (340 HOLES).
5. SPECIFIED HOLE DIA. SIZES ARE FOR FINISHED HOLES AFTER PLATING.
6. BOARD SIZE IS .472 +.000/-.010 X 28.100 +/-.005. DIMENSIONS ARE IN INCHES. BOARD OUTLINE DRAWING IS 24A4502 M-1 (a000896m1).
7. SOLDERMASK IS NOT USED ON THIS BOARD.
8. REFERENCE DRAWINGS:

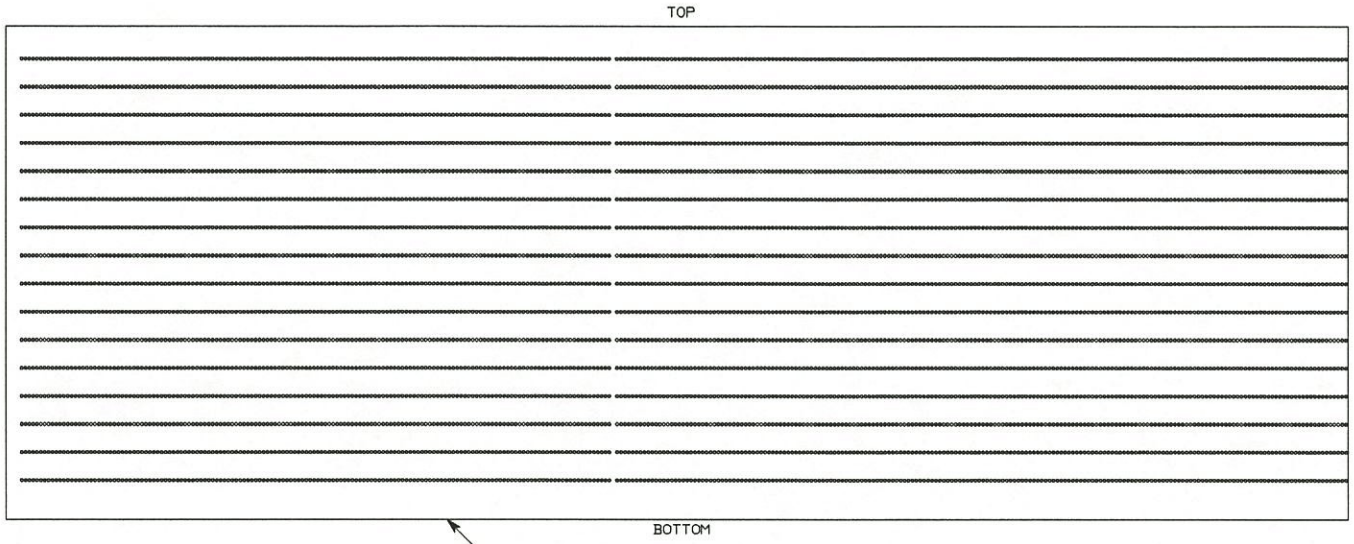
24A4502 M-1	a000896m1	BOARD OUTLINE - SINGLE BOARD
24A4503 M-2	a000896m2	BOARD OUTLINE - PANEL OF 16
24A4503 E-2	a000896e2	HOLE SCHEDULE - PANEL OF 16 (BLIND VIAS)
24A4503 E-3	a000896e3	HOLE SCHEDULE - PANEL OF 16

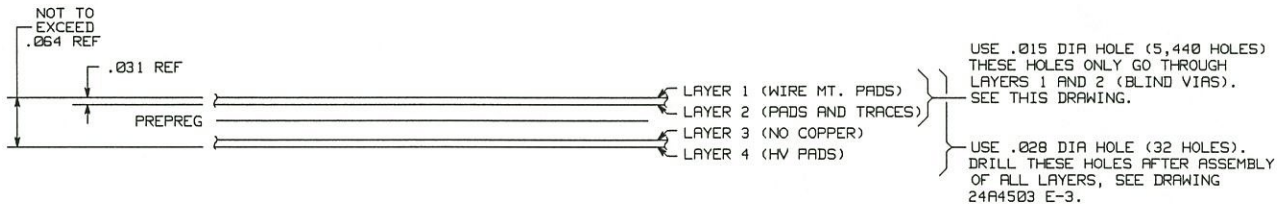
DIST I:		TITLE	STAR TPC		
DIST II:			INNER SECTOR ELECTRONICS		
DIST III:			GATED GRID WIRE MOUNT BOARD - SINGLE BD.		
SHOWN ON			HOLE SCHEDULE - 24A4501 U-1 (A000896U1)		
ACCOUNT NUMBER	8052-24	DRAWN STIRKKINEN	DATE 4/8/94	LAWRENCE BERKELEY LABORATORY	
SERIAL NUMBER		CHECKED	DATE	UNIVERSITY OF CALIFORNIA	
DATE ISSUED	NO. REQD.	APPROVED	DATE	OFFICE OF ELECTRONICS ENGINEERING	
DATE REQD.		ENGINEER	JIM HUNTER	FILE NO. a000896e1 / SIZE 2 / DRAWING NO. 24A4502 E-1 / REV.	
DEL. TO		SCALE	NONE	E2, C3	SHEET 1 OF 3

REV.	CHANGES	DRAWN	DATE	CHKD.	DATE

LAYER TWO VIEW

SCALE: NONE





NOTES:

1. BOARD MATERIAL: .031 THICK G10 PER MIL-P-55617 FL-GEN 031C-1/1-A1A (1 OZ. COPPER EACH SIDE). THIS IS A MULTILAYER BOARD (4 LAYERS). TOTAL THICKNESS NOT TO EXCEED .064.
2. PLEASE NOTE THAT THERE IS NO COPPER ON LAYER 3.
3. THIS BOARD TO BE THROUGH HOLE PLATED.
4. SPECIFIED HOLE DIA. SIZES ARE FOR FINISHED HOLES AFTER PLATING.
5. BOARD SIZE IS 10.500 +/-.010 X 28.100 +/-.005. DIMENSIONS ARE IN INCHES. BOARD OUTLINE DRAWING IS 24A4503 M-2 (a000896m2).
6. SOLDERMASK IS NOT USED ON THIS BOARD.
7. REFERENCE DRAWINGS:

24A4502 M-1	a000896m1	BOARD OUTLINE - SINGLE BOARD
24A4503 M-2	a000896m2	BOARD OUTLINE - PANEL OF 16
24A4502 E-1	a000896e1	HOLE SCHEDULE - SINGLE BOARD
24A4503 E-3	a000896e3	HOLE SCHEDULE - PANEL OF 16

HOLE SCHEDULE		
CODE	HOLE DIA.	COUNT
NONE	.015	5,440

DIST	I:	TITLE	STAR TPC
	II:		INNER SECTOR ELECTRONICS
	III:		GATED GRID WIRE MOUNT BOARD - PANEL 0F 16
SHOWN ON			HOLE SCHEDULE - 24A4501 U-2 (BLIND VIAS)
ACCOUNT NUMBER	8052-24	DRAWN STIRKKINEN	DATE 4/08/94
SERIAL NUMBER		CHECKED	DATE
DATE ISSUED	NO. REQD.	APPROVED	DATE
DATE REQD.		ENGINEER JIM HUNTER	
DEL. TO		SCALE NONE	

LAWRENCE BERKELEY LABORATORY
UNIVERSITY OF CALIFORNIA
OFFICE OF ELECTRONICS ENGINEERING

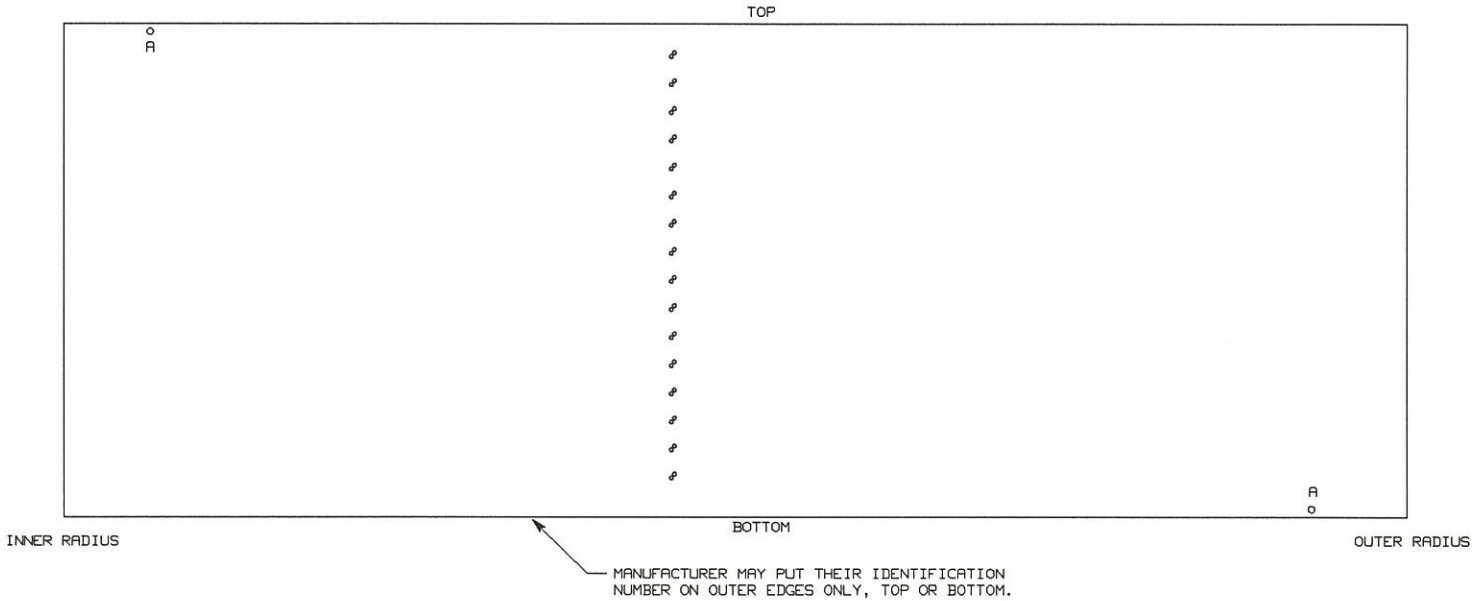
FILE NO.	SIZE	DRAWING NO.	REV.
a000896e2	3	24A4503 E-2	

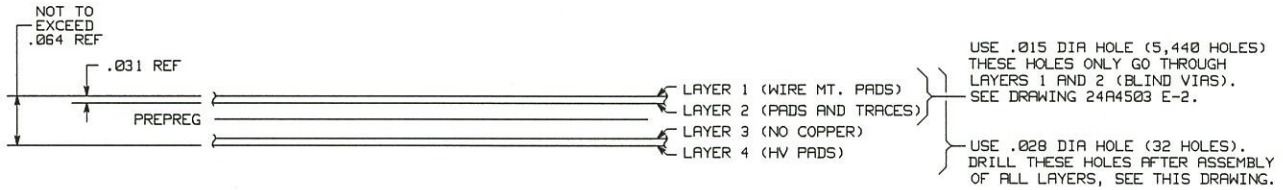
C8,E14

REV.	CHANGES	DRAWN	DATE	CHKD.	DATE

LAYER FOUR VIEW

SCALE: NONE





NOTES:

1. BOARD MATERIAL: .031 THICK G10 PER MIL-P-55617 FL-GEN 031C-1/1-A1A (1 OZ. COPPER EACH SIDE). THIS IS A MULTILAYER BOARD (4 LAYERS). TOTAL THICKNESS NOT TO EXCEED .064.
2. PLEASE NOTE THAT THERE IS NO COPPER ON LAYER 3.
3. THIS BOARD TO BE THROUGH HOLE PLATED.
4. SPECIFIED HOLE DIA. SIZES ARE FOR FINISHED HOLES AFTER PLATING.
5. BOARD SIZE IS 10.500 +/-.010 X 28.100 +/-.005. DIMENSIONS ARE IN INCHES. BOARD OUTLINE DRAWING IS 24A4503 M-2 (a000896m2).
6. SOLDERMASK IS NOT USED ON THIS BOARD.
7. REFERENCE DRAWINGS:

24A4502 M-1	a000896m1	BOARD OUTLINE - SINGLE BOARD
24A4503 M-2	a000896m2	BOARD OUTLINE - PANEL OF 16
24A4502 E-1	a000896e1	HOLE SCHEDULE - SINGLE BOARD
24A4503 E-2	a000896e2	HOLE SCHEDULE - PANEL OF 16,BLIND VIAS

HOLE SCHEDULE		
CODE	HOLE DIA.	COUNT
NONE	.028	32
A	.125	2

DIST I:		TITLE	STAR TPC		
DIST II:			INNER SECTOR ELECTRONICS		
DIST III:			GATED GRID WIRE MOUNT BOARD - PANEL OF 16		
SHOWN ON			HOLE SCHEDULE - 24A4501 U-2 (A000896U2)		
ACCOUNT NUMBER	8052-24	DRAWN STIRKKINEN	DATE 4/08/94	LAWRENCE BERKELEY LABORATORY	
SERIAL NUMBER		CHECKED	DATE	UNIVERSITY OF CALIFORNIA	
DATE ISSUED	NO. RECDD.	APPROVED	DATE	OFFICE OF ELECTRONICS ENGINEERING	
DATE RECDD.		ENGINEER	JIM HUNTER	FILE NO. a000896e3 / SIZE 3 / DRAWING NO. 24A4503 E-3	REV.
DEL. TO		SCALE	NONE	E14	SHEET 3 OF 3

PRINT LIST

TITLE: STAR PROJECT
SECTOR ELECTRONICS
GATED GRID CONNECTION BOARD
(PANEL OF 68 - 24A4521 U-1,
a000898u1)

FILE NO.: a000898p1 REV:
PRINT NO.: 24A4521 P-1
CHANGES (*)

ENGINEER: HOWARD WIEMAN
DRAFTER: STIRKKINEN

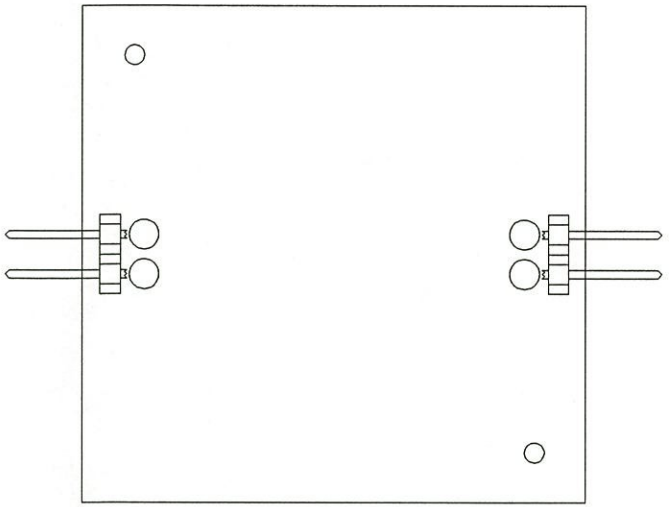
DATE: 09/28/94
PAGE: 1 OF 1

Drawing No.	Chg. Ltr.	Title
24A4524 M-1 (a000898m1)		BOARD OUTLINE (PANEL)
24A4523 E-1 (a000898e1)		HOLE SCHEDULE (PANEL)
24A4521 L-1 (a00089811)		PC BOARD ASSEMBLY (SINGLE)
24A4521 U-1 (a000898u1)		PC BOARD (SINGLE BOARD)
24A4521 U-2 (a000898u2)		PC BOARD (PANEL OF 68 24A4521 U-1)

** DRAWINGS NOT REQUIRED FOR THIS PACKAGE - SILKSCREEN
OR PARTS LIST **

NUMBERS WITHIN ( ) REFER TO EGS COMPUTER FILES

REV.	CHANGES	DRAWN	DATE	CHKD.	DATE



COMPONENT SIDE

NOTES:

1. CONNECTORS ARE 2 PINS, RIGHT ANGLE, SAMTEC # HMTSW-150-08-S-S-230-RA. (2 PLACES)
2. BOARD SIZE IS 1.250 X 1.250 +/-.010. DIMENSIONS ARE IN INCHES.
3. REFERENCE DRAWINGS:

24A4523 E-1	a000898e1	HOLE SCHEDULE - PANEL OF 68
24A4524 M-1	a000898m1	BOARD OUTLINE - PANEL OF 68

DIST	I:	TITLE	STAR TPC		
	II:		SECTORS ELECTRONICS		
	III:		GATED GRID CONNECTION BOARD		
SHOWN ON			PC BOARD ASSEMBLY-SINGLE BD.(24A4521 U-1)		
ACCOUNT NUMBER	8052-24	DRAWN STIRKKINEN	DATE 08/03/94	LAWRENCE BERKELEY LABORATORY UNIVERSITY OF CALIFORNIA OFFICE OF ELECTRONICS ENGINEERING	
SERIAL NUMBER		CHECKED	DATE		
DATE ISSUED	NO. REQD.	APPROVED	DATE	FILE NO. a00089811 / SIZE 1 / DRAWING NO. 24A4521 L-1	REV.
DATE REQD.		ENGINEER			
DEL. TO		SCALE ~2:1	E2,E3,E26		SHEET 1 OF 1

PRINT LIST

TITLE: STAR TPC
INNER SECTOR ELECTRONICS
SHIELD GRID WIRE MOUNT BOARD
(PANEL OF 16 BOARDS)

FILE NO.: a000893p1 REV:
PRINT NO.: 24A3661 P-1
CHANGES (*)

ENGINEER: JIM HUNTER
DRAFTER: STIRKKINEN

DATE: 04/01/94
PAGE: 1 OF 1

Drawing No.	Chg. Ltr.	Title
24A3662 M-1 (a000893m1)		BOARD OUTLINE - SINGLE BOARD
24A3663 M-2 (a000893m2)		BOARD OUTLINE - PANEL OF 16
24A3662 E-1 (a000893e1)		HOLE SCHEDULE - SINGLE BOARD
24A3663 E-2 (a000893e2)		HOLE SCHEDULE - PANEL OF 16
24A3661 U-1 (a000893u1)		ARTWORK - SINGLE BOARD
24A3661 U-2 (a000893u2)		ARTWORK - PANEL OF 16 24A3661 U-1'S

** THE FOLLOWING DRAWINGS NOT REQUIRED FOR THIS PACKAGE:
PARTS LIST, SILKSCREEN, PC BOARD ASSEMBLY

NUMBERS WITHIN ( ) REFER TO EGS COMPUTER FILES

PRINT LIST

TITLE: STAR TPC
INNER SECTOR ELECTRONICS
ANODE WIRE MOUNT BOARD
(PANEL OF SIX BOARDS)

FILE NO.: a000892p1 REV: A
PRINT NO.: 24A3651 P-1
CHANGES (*) 09/28/94

ENGINEER: JIM HUNTER
DRAFTER: STIRKKINEN

DATE: 04/14/94
PAGE: 1 OF 1

Drawing No.	Chg. Ltr.	Title
24A3651 C-1 (a000892c1)		PARTS LIST (PANEL)
24A3654 M-1 (a000892m1)		BOARD OUTLINE - CUTOUTS (PANEL)
24A3654 M-2 (a000892m2)		BOARD OUTLINE (PANEL)
24A3654 E-1 (a000892e1)		HOLE SCHEDULE - BLIND VIAS
24A3654 E-2 (a000892e2)	A	HOLE SCHEDULE - LAYERS 1 THRU 4 *
24A3654 L-1 (a00089211)		P.C. BOARD ASSEMBLY (PANEL)
24A3651 U-1 (a000892u1)		ARTWORK - SINGLE BOARD LAYER 1 - GROUND PLANE LAYER 2 - PADS LAYER 3 - H.V. CIRCUIT LAYER 4 - OUTER TRACE LAYER
24A3651 U-2 (a000892u2)		ARTWORK - PANEL OF SIX 24A3651 U-1'S

** THE FOLLOWING DRAWING NOT REQUIRED FOR THIS PACKAGE:
SILKSCREEN

NUMBERS WITHIN ( ) REFER TO EGS COMPUTER FILES

*

PARTS LIST

TITLE: STAR TPC
INNER SECTOR ELECTRONICS
ANODE WIRE MOUNT BOARD
(PANEL OF 6)

FILE NO.: a000892c1 REV:
PRINT NO.: 24A3651 C-1
CHANGES (*)

ENGINEER: JIM HUNTER
DRAFTER: STIRKKINEN

DATE: 04/14/94
PAGE: 1 OF 1

Reference	Stock No.	Part Type	Description	Qty
			HARDWARE	
-	NS	BBL-111-G-E	11 PIN SOCKET,STRAIGHT, SAMTEC #BBL-111-G-E	6
-	NS	BBL-121-G-E	21 PIN SOCKET,STRAIGHT, SAMTEC #BBL-121-G-E	96
-	NS	BBL-101-G-E	1 PIN SOCKET,STRAIGHT, SAMTEC #BBL-101-G-E	6
-	NS	104716-1	1 PIN CONNECTOR,RIGHT ANGLE,AMP #104716-1 OR SAMTEC #HMTSW-1-1-08-S-S230-RA	24
-	NS	a000892u2	24A3651 U-2,PRINTED CIRCUIT BOARD (PANEL OF 6 24A3651 U-1, a000892u1)	1

APRIL 24, 1995

HI WOODY:

HERE ARE THE DRILL FILES FOR JOB A000892U2. I DECIDED TO CREATE BOTH OF THEM. (PANEL OF 6 BOARDS)

DRILL FILE PL892B - BLIND VIAS

TOOLING NO.	DIA. SIZE	COUNT
1	.020	1020

DRILL FILE PL892T - THRU VIAS

TOOLING NO.	DIA. SIZE	COUNT
1	.125	92
2	.026	2088
3	.038	1032
4	.250	108

TOTAL HOLE COUNT = 3320.

HERE ARE THE DRILL FILES FOR JOB A000896U2 (PANEL OF 16 BOARDS).

DRILL FILE PL896B - BLIND VIAS

TOOLING NO.	DIA. SIZE	COUNT
1	.015	5440

DRILL FILE PL896T - THRU VIAS

TOOLING NO.	DIA. SIZE	COUNT
1	.125	2
2	.028	32

TOTAL HOLE COUNT = 34.

IF YOU HAVE ANY QUESTIONS OR PROBLEMS PLEASE CALL ME (JUDY) AT (916)547-4005. SORRY FOR THE DELAY. HAVE A GOOD WEEK!

APRIL 24, 1995

HI WOODY:

HERE ARE THE DRILL FILES FOR JOB A000892U2. I DECIDED TO CREATE BOTH OF THEM. (PANEL OF 6 BOARDS)

DRILL FILE PL892D1 - BLIND VIAS

TOOLING NO.	DIA. SIZE	COUNT
1	.020	1020

DRILL FILE PL892D2 - THRU VIAS

TOOLING NO.	DIA. SIZE	COUNT
1	.125	92
2	.026	2088
3	.038	1032
4	.250	108

TOTAL HOLE COUNT = 3320.

HERE ARE THE DRILL FILES FOR JOB A000896U2 (PANEL OF 16 BOARDS).

DRILL FILE PL896D1 - BLIND VIAS

TOOLING NO.	DIA. SIZE	COUNT
1	.015	5440

DRILL FILE PL896D2 - THRU VIAS

TOOLING NO.	DIA. SIZE	COUNT
1	.125	2
2	.028	32

TOTAL HOLE COUNT = 34.

IF YOU HAVE ANY QUESTIONS OR PROBLEMS PLEASE CALL ME (JUDY) AT (916)547-4005. SORRY FOR THE DELAY. HAVE A GOOD WEEK!

ORIGIN: -300, 3500
-300, 18400

STAR-INNER-ANODE WIRE MT. BD.
a00089zw1 (a000892a2)
28.100 x 18.300

3/29/94
4/11/94

LAYER 1 =
GND PLANE => #E24 #C19 #R19 => a892g1_g
CMD892L1G - A892L1G = PL892L1C (5/16/94)

CIRCUIT => #E3 #C19 #E11 #E55 = a892l1_g
CMD892L1C = A892L1C = PL892L1G (5/16/94)

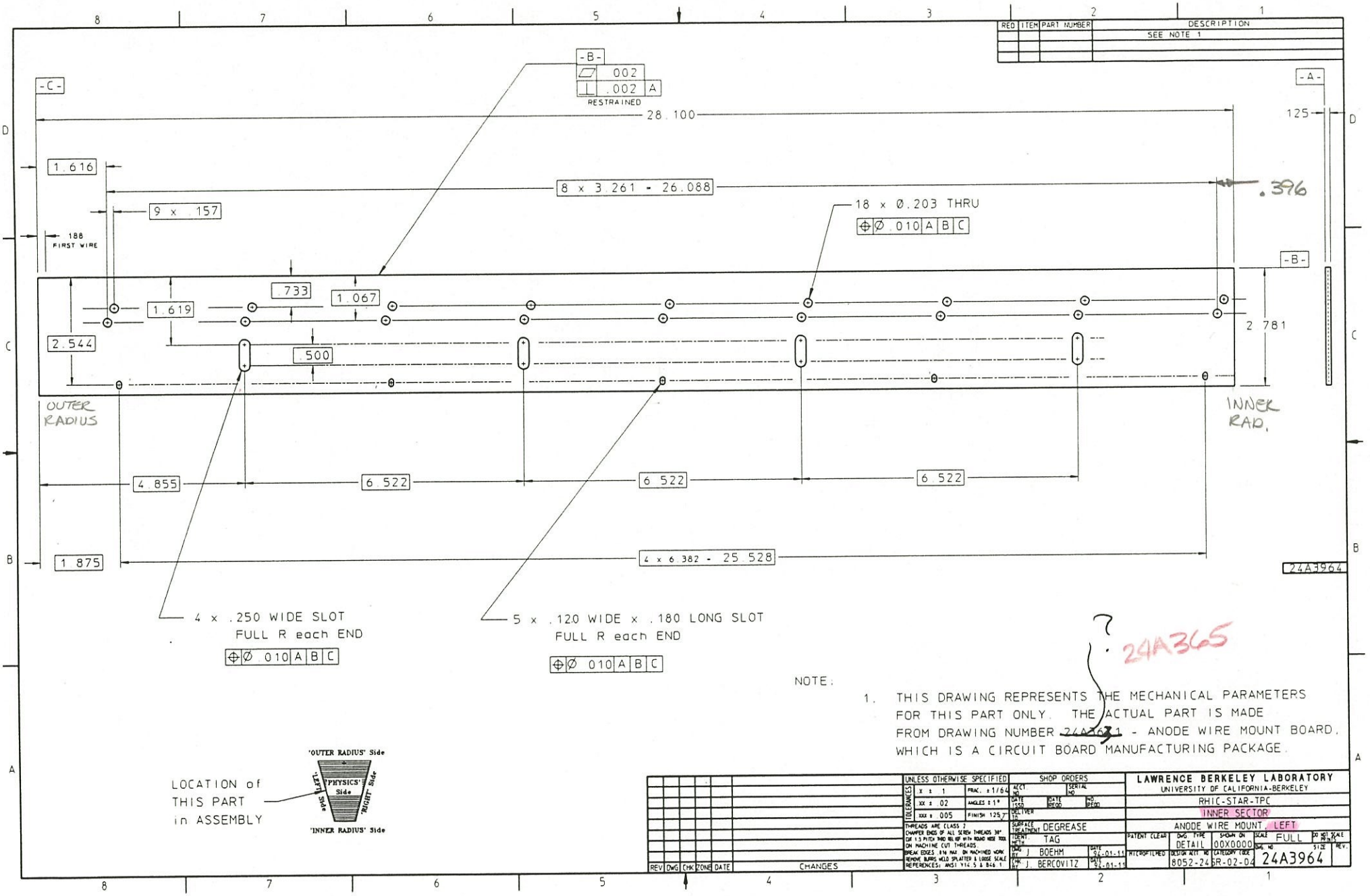
LAYER 2 => PADS ONLY => #E3 #E19 #R19 #E12 #E55 = a892L2_g
CMD892L2 = A892L2 = PL892L2 (5/16/94)

LAYER 3 => #E3 #E5 #E19 #R19 #E55 = a892L3_g
CMD892L3 = A892L3 = PL892L3 (5/16/94)

LAYER 4 => #E3 #E6 #E19 #E55 = a892L4_g
CMD892L4 = A892L4 = PL892L4 (5/16/94)

DRILL INFO (LAYERS #3 & #4) => #C23 #E56 = a892dr1_g
CMD892DR1 = PL892DR1

DRILL INFO (ALL LAYERS) => #C1 #E56 = a892dr2_g
CMD892DR2 = PL892DR2



REQ	ITEM	PART NUMBER	DESCRIPTION
			SEE NOTE 1

REV	DWG	CHK	ZONE	DATE	CHANGES

UNLESS OTHERWISE SPECIFIED
TOLERANCES: X ± 1 FRAC. ± 1/64; XX ± .02 ANGLES ± 1°; XXX ± .005 FINISH 125
THREADS ARE CLASS 2
CHAMFER ENDS OF ALL SCREW THREADS 39° OF 1.3 PITCH MAX BELOW MINOR DIAMETER ON MACHINE CUT THREADS.
BREAK EDGES .016 MAX. ON MACHINED SURFACES
REMOVE BURRS WELD SPLATTER & LOOSE SCALE
REFERENCES: ANSI Y14.5 & B46.1

SHOP ORDERS
ACCT NO
SERIAL NO
DATE ISSD
DATE REQD
WO REQD
DELIVER TO
SURFACE TREATMENT DEGREASE
IDENT METH TAG
DWG BY J. BOEHM DATE 96-01-11
CHK BY J. BERCOVITZ DATE 96-01-11

LAWRENCE BERKELEY LABORATORY
UNIVERSITY OF CALIFORNIA-BERKELEY
RHIC-STAR-TPC
INNER SECTOR
ANODE WIRE MOUNT, LEFT

PATENT CLEAR	DWG TYPE	SHOWN ON	SCALE	FULL	DO NOT SCALE PRINT
	DETAIL	00X0000			
MICROFILMED	DESIGN ACCT NO	CATEGORY CODE	DWG NO	SIZE	REV.
	8052-24	BR-02-04	24A3964		

27.547
~~27.381~~ = 169 sp. @ .163

170
~~168~~ WIRES

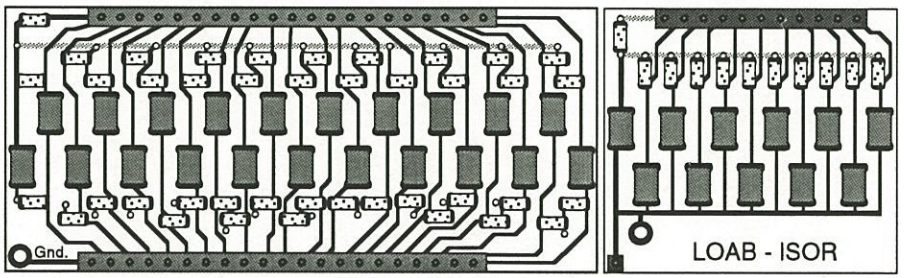
.163

.200"
.188"
2.782"
.062"
1.067"
.502"
.335
Alignment Pins
(no holes in AWB)
.157"
1.616"
1.462"
2.544"
.190"
3.260"
.229"
Feed-thru Bd.Pin
4.855"
.945"
.100
1.39
2.119"
.375"
2.400 x .500
Samtec
BBL-111-G-E
.430"
R.125"
1.875"
.049"
.605
Connector
Connector
.051"
1.481"
26,619.49
.163"
Edge View
Slot for H.V. Wire
Feed-thru Board
Feed-thru Board Tunnel in Casting (no hole)
Samtek BBL-101-G-E
2.275"
Strongback

Outer Radius

vslotmax
vslotmnsp
vcn21srw1
vpad7526c
140hole
vcn2lsrow
cn1ra
voval6

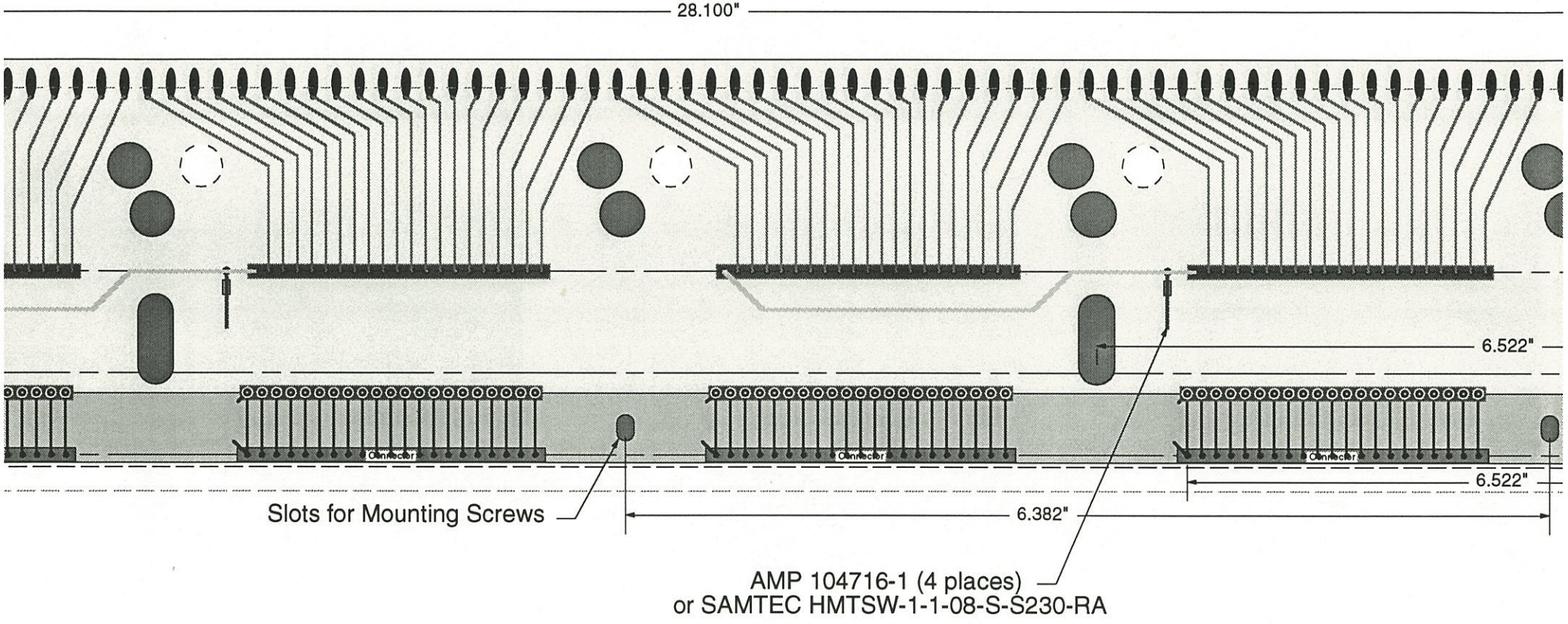
hvcir1



J.B. Hunter
Original: 3-9-94
Updated:

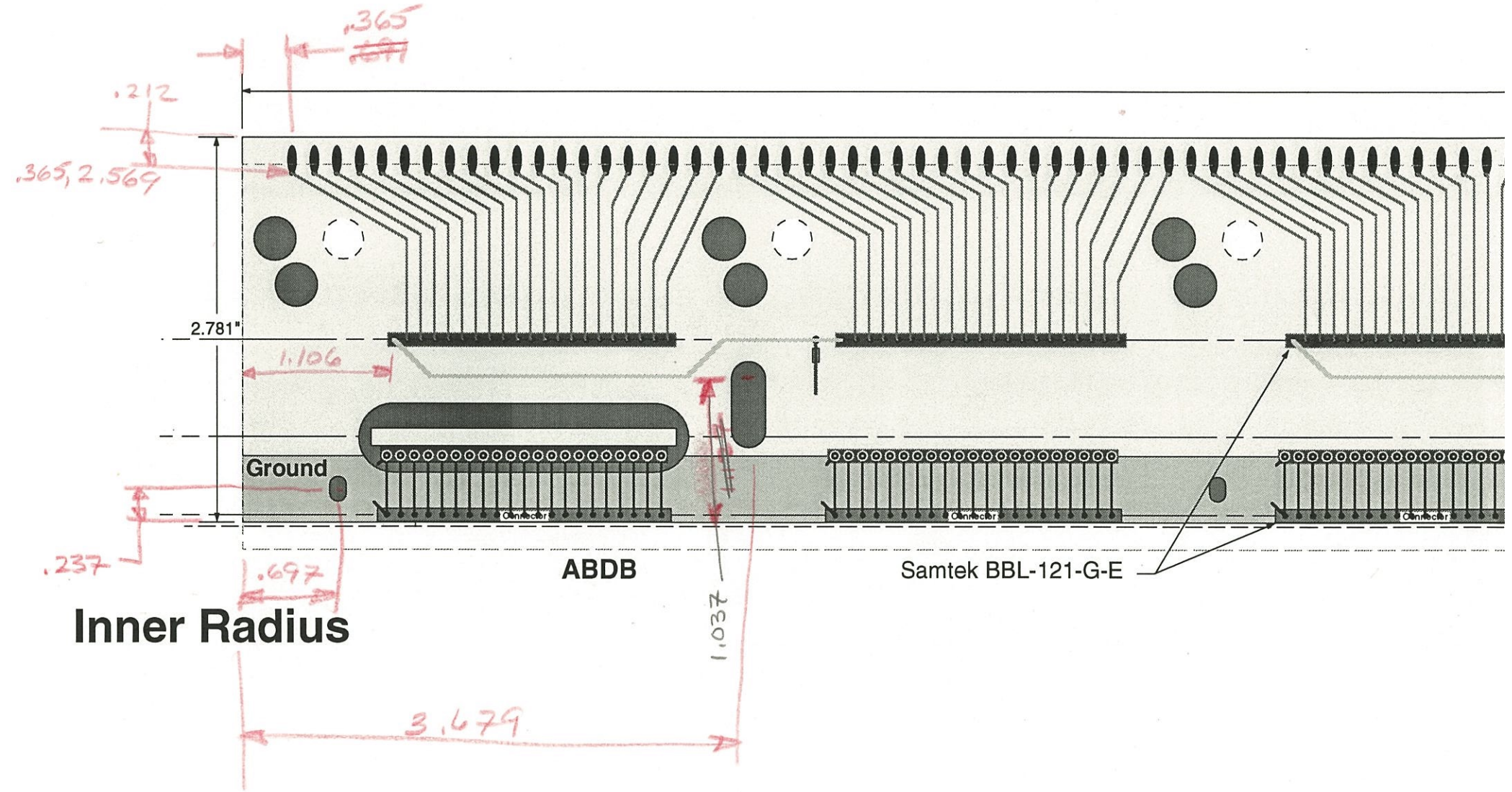
a000892u1 24A3651

Star TPC Anode Wire Mount, Inner Sector



SCALE: 1X

As Viewed from the Aluminium Strongback


.365
.212
.365, 2.569
2.781"
1.106
Ground
.237
.697
ABDB
1.037
3.679
Samtek BBL-121-G-E
Inner Radius

REQ	ITEM	PART NUMBER	DESCRIPTION
			HIGH PRESSURE EPOXY/GLASS WEAVE LAMINATE, per FED SPECS
			LP509a, TYPE 4 GRADE G-10 (non-FR-4)

-A-

125

28.100

-C-

-B-
.002
⊥ .002 A

9 x .157

.732

1.067

1.311

8 x 3.261 = 26.088

1.616

18 x Ø.203 THRU
⌖ Ø.010 A B C

24A3954

'OUTER RADIUS' Side

'PHYSICS' Side

'LEFT' Side

'RIGHT' Side

'INNER RADIUS' Side

LOCATION of THIS PART in ASSEMBLY

REV	DWG	CHK	CONF	DATE	CHANGES

UNLESS OTHERWISE SPECIFIED
TOLERANCES
X ± 1 — FRAC. ± 1/64
XX ± .02 — ANGLES ± 1°
XXX ± .005 — FINISH 125
THREADS ARE CLASS 2
CHAMFER ENDS OF ALL SCREW THREADS 30° OFF 1.5 PITCH DEEP RELIEF WITH ROUND NOSE TOOL ON MACHINE CUT THREADS
BREAK EDGES .016 MAX ON MACHINED WORK
REMOVE BURRS WELD SPLATTER & LOOSE SCALE
REFERENCES: ANSI Y14.5 & B46.1

SHOP ORDERS
ACCT NO
SERIAL NO
DATE ISSD
DATE REQD
WO REQD
DELIVER TO
SURFACE TREATMENT: DEGREASE
IDENT METH: TAG
DRN: J. BOEHM — DATE 96-01-11
CHK: J. BERCOVITZ — DATE 96-01-11

LAWRENCE BERKELEY LABORATORY
UNIVERSITY OF CALIFORNIA-BERKELEY

RHIC STAR TPC

INNER SECTOR

ANODE WIRE MOUNT, RIGHT

PATENT CLEAR
MICROFILMED
DWG TYPE: DETAIL
SHOWN ON: 00X0000
SCALE: FULL
DO NOT SCALE PRINT
DESIGN ACCT NO: 8052-24
CATEGORY CODE: 999999
DWG NO: 24A3954
SIZE
REV.

4/12/94

```
**************************************
HP EGS PHOTOPLOT/DRILL POST-PROCESSOR

AUTOFLASH:          ON
ERROR MODE:         PAUSE ON ERROR
FILL WIDTH MODE:    ON

SORT DRILL:         MAJOR SORT ON X
SORT PROXIMITY:     X:   5.00000000000000L+002       Y:   5.00000000000000L+0
SORT APERTURE:      ON

DRILL FORMAT:       5.1
PHOTOPLOT FORMAT:   5.0
DR ORIGIN SOURCE:   -3.00L+002, 1.84L+004  OUTPUT:   5.00L+002, 5.00L+002
PH ORIGIN SOURCE:   -3.00L+002, 1.84L+004  OUTPUT:   5.00L+002, 5.00L+002

DRILL UNITS FACTOR:         1.00L+000
PHOTOPLOT UNITS FACTOR:     1.00L+000
PHOTOPLOT RESOLUTION:       3.00L+000

NO FILL USE:        none specified
NOTE USE:           tr10
POLYGON FILL USE:   none specified

ATTRIBUTES FILE:    /lbl/jobs/a892/RE892DR2
WHEEL FILE:         /users/sisu/wlbl1

CURRENT HP EGS GENERATE SOURCE FILES:
/lbl/jobs/a892/a892dr2_g

NO VIRTUAL DRILL FILES HAVE BEEN SPECIFIED.

ACTUAL DRILL FILE:
/lbl/jobs/a892/PL892DR2
   1  56

NO VIRTUAL PHOTOPLOT FILES HAVE BEEN SPECIFIED.

NO ACTUAL PHOTOPLOT FILES HAVE BEEN SPECIFIED.



TOOL LIST
tool number  count  diameter
-------------------------------------------

     1       92   1.25L+002
     2     2088   2.60L+001
     3     1032   3.80L+001
     4      108   1.40L+002

3320
WHEEL FILE DATA
aperture name
aperture number  count     type      shape       width       height
-------------------------------------------------------------------
```

4/12/94

```
************************************
HP EGS PHOTOPLOT/DRILL POST-PROCESSOR

AUTOFLASH:          ON
ERROR MODE:         PAUSE ON ERROR
FILL WIDTH MODE:    ON

SORT DRILL:         MAJOR SORT ON X
SORT PROXIMITY:     X:   5.00000000000000L+002       Y:   5.00000000000000L+0
SORT APERTURE:      ON

DRILL FORMAT:       5.1
PHOTOPLOT FORMAT:   5.0
DR ORIGIN SOURCE:   -3.00L+002, 1.84L+004  OUTPUT:   5.00L+002, 5.00L+002
PH ORIGIN SOURCE:   -3.00L+002, 1.84L+004  OUTPUT:   5.00L+002, 5.00L+002

DRILL UNITS FACTOR:        1.00L+000
PHOTOPLOT UNITS FACTOR:    1.00L+000
PHOTOPLOT RESOLUTION:      3.00L+000

NO FILL USE:        none specified
NOTE USE:           tr10
POLYGON FILL USE:   none specified

ATTRIBUTES FILE:    /lbl/jobs/a892/RE892DR1
WHEEL FILE:         /users/sisu/wlbl1

CURRENT HP EGS GENERATE SOURCE FILES:
/lbl/jobs/a892/a892dr1_g

NO VIRTUAL DRILL FILES HAVE BEEN SPECIFIED.

ACTUAL DRILL FILE:
/lbl/jobs/a892/PL892DR1
  23  56

NO VIRTUAL PHOTOPLOT FILES HAVE BEEN SPECIFIED.

NO ACTUAL PHOTOPLOT FILES HAVE BEEN SPECIFIED.



TOOL LIST
tool number  count  diameter
-------------------------------------

     1    1020   2.00L+001   OK


WHEEL FILE DATA
aperture name
aperture number  count     type      shape       width       height
-------------------------------------------------------------------
```

PRINT LIST

TITLE: STAR TPC
INNER SECTOR ELECTRONICS
ANODE WIRE MOUNT BOARD
(PANEL OF SIX BOARDS)

FILE NO.: a000892p1 REV:
PRINT NO.: 24A3651 P-1
CHANGES (*)

ENGINEER: JIM HUNTER
DRAFTER: STIRKKINEN

DATE: 04/14/94
PAGE: 1 OF 1

Drawing No.	Chg. Ltr.	Title
24A3651 C-1 (a000892c1)		PARTS LIST (PANEL)
24A3654 M-1 (a000892m1)		BOARD OUTLINE - CUTOUTS (PANEL)
24A3654 M-2 (a000892m2)		BOARD OUTLINE (PANEL)
24A3654 E-1 (a000892e1)		HOLE SCHEDULE - BLIND VIAS
24A3654 E-2 (a000892e2)		HOLE SCHEDULE - LAYERS 1 THRU 4
24A3654 L-1 (a00089211)		P.C. BOARD ASSEMBLY (PANEL)
24A3651 U-1 (a000892u1)		ARTWORK - SINGLE BOARD LAYER 1 - GROUND PLANE LAYER 2 - PADS LAYER 3 - H.V. CIRCUIT LAYER 4 - OUTER TRACE LAYER
24A3651 U-2 (a000892u2)		ARTWORK - PANEL OF SIX 24A3651 U-1'S

** THE FOLLOWING DRAWING NOT REQUIRED FOR THIS PACKAGE:
SILKSCREEN

NUMBERS WITHIN ( ) REFER TO EGS COMPUTER FILES

*

PARTS LIST

TITLE: STAR TPC
INNER SECTOR ELECTRONICS
ANODE WIRE MOUNT BOARD
(PANEL OF 6)

FILE NO.: a000892c1 REV:
PRINT NO.: 24A3651 C-1
CHANGES (*)

ENGINEER: JIM HUNTER
DRAFTER: STIRKKINEN

DATE: 04/14/94
PAGE: 1 OF 1

Reference	Stock No.	Part Type	Description	Qty
		HARDWARE		
-	NS	BBL-111-G-E	11 PIN SOCKET,STRAIGHT, SAMTEC #BBL-111-G-E	6
-	NS	BBL-121-G-E	21 PIN SOCKET,STRAIGHT, SAMTEC #BBL-121-G-E	96
-	NS	BBL-101-G-E	1 PIN SOCKET,STRAIGHT, SAMTEC #BBL-101-G-E	6
-	NS	104716-1	1 PIN CONNECTOR,RIGHT ANGLE,AMP #104716-1 OR SAMTEC #HMTSW-1-1-08-S-S230-RA	24
-	NS	a000892u2	24A3651 U-2,PRINTED CIRCUIT BOARD (PANEL OF 6 24A3651 U-1, a000892u1)	1

```
************************* LBL BOARD A000892U2 *************************
***************************** MAY 16, 1994 ****************************
*************************** WHEEL W892INFO ****************************
NEED 3 STANDARD PHOTOPLOTS, 1 COMPOSITE, 4 POSITIVES AND 4 NEGATIVES.
DELIVERY DATE: MAY 19, 1994 OR SOONER.
PHOTOPLOT FILES IN POSITIVE FORMAT:
  PL892L1C - LAYER 1 (DROP-IN-LAYER)
  PL892L2 - LAYER 2 PADS ONLY (INNER LAYER)
  PL892L3 - LAYER 3 H.V. CIRCUIT (INNER LAYER)
  PL892L4 - LAYER 4 (OUTER LAYER)
PHOTOPLOT FILE IN NEGATIVE FORMAT:
  PL892L1G - LAYER 1 (CLEARANCE LAYER)
FOR LAYER 1 COMPOSITE, USE PLOT FILE PL892L1C (POSITIVE) AND PL892L1G
  (NEGATIVE).
PLEASE MAKE CONTACT COPIES OF PLOT FILES (3) AND COMPOSITE (1).  I
  NEED ONE (1) POSITIVE AND ONE (1) NEGATIVE OF EACH FILE, EMULSION
  DOWN, RIGHT READING.  THIS IS A TOTAL OF FOUR (4) POSITIVES AND
  FOUR (4) NEGATIVES.
HI GARY!  I UNDERSTAND THAT THE BLANKET ORDER WAS EXTENDED BY A FARE
  AMOUNT, SO I'M GOING TO PROCESS 4 SETS OF FILMS (ONLY) IN THE NEXT
  COUPLE OF DAYS.  I THOUGHT I'D BETTER GET THEM OUT BEFORE SOMETHING
  ELSE HAPPENS.  SEE YA!
IF THERE ARE ANY QUESTIONS OR PROBLEMS PLEASE CALL -JUDY- (916)
  547-4005 OR -JIM- (510)486-7084.

tr10 10 circle trace 10;
tr12 11 circle trace 12;
tr15 12 circle trace 15;
tr20 13 circle trace 20;
tr30 14 circle trace 30;
tr40 15 circle trace 40;
tr50 16 circle trace 50;
tr60 17 circle trace 60;
tr70 18 circle trace 70;
tr80 19 circle trace 80;
tr90 70 circle trace 90;
tr100 71 circle trace 100;
tr120 20 circle trace 120;
tr130 21 circle trace 130;
tr150 22 circle trace 150;
fl40 23 circle flash 40;
fl50 24 circle flash 50;
fl60 25 circle flash 60;
fl70 26 circle flash 70;
fl75 27 circle flash 75;
fl85 28 circle flash 85;
fl90 29 circle flash 90;
fl100 72 circle flash 100;
fl110 73 circle flash 110;
fl120 30 circle flash 120;
fl130 31 circle flash 130;
fl140 32 circle flash 140;
fl150 33 circle flash 150;
fl160 34 circle flash 160;
fl200 35 circle flash 200;
PADEXO 36 rectangle flash 80 55;
PADEXO 37 rectangle flash 55 80;
PADEXR 38 rectangle flash 75 55;
PADEXR 39 rectangle flash 55 75;
ftarget 40 square special 1.0;
fs60 41 square flash 60;
fs70 42 square flash 70;
fs75 43 square flash 75;
fs85 44 square flash 85;
fs100 45 square flash 100;
fs110 46 square flash 110;
fs120 47 square flash 120;
fs130 48 square flash 130;
fs140 49 square flash 140;
fs150 50 square flash 150;
```

PRINT LIST

TITLE: STAR TPC
INNER SECTOR ELECTRONICS
LITTLE ORPHAN ANODE BOARD
(PANEL OF 10 24A4511 U-1,
a000897u1)

FILE NO.: a000897p1 REV: A
PRINT NO.: 24A4511 P-1
CHANGES (*) 09/28/94

ENGINEER: JIM HUNTER
DRAFTER: STIRKKINEN

DATE: 04/15/94
PAGE: 1 OF 1

Drawing No.	Chg. Ltr.	Title
24A4511 C-1 (a000897c1)		PARTS LIST (PANEL)
24A4512 M-1 (a000897m1)		BOARD OUTLINE (PANEL)
24A4512 E-1 (a000897e1)		HOLE SCHEDULE (PANEL)
24A4512 L-1 (a00089711)	A	PC BOARD ASSEMBLY (PANEL) *
24A4511 U-1 (a000897u1)		PC BOARD - ISOR/10 WIRE (SINGLE BOARD)
24A4511 U-2 (a000897u2)		PC BOARD - ISOR/10 WIRE (PANEL)

** DRAWINGS NOT REQUIRED FOR THIS PACKAGE - SILKSCREEN **

NUMBERS WITHIN ( ) REFER TO EGS COMPUTER FILES

*

PARTS LIST

TITLE: STAR TPC
INNER SECTOR ELECTRONICS
LITTLE ORPHAN ANODE BOARD
(PANEL OF 10 BOARDS)

FILE NO.: a000897c1 REV:
PRINT NO.: 24A4511 C-1
CHANGES (*)

ENGINEER: JIM HUNTER
DRAFTER: STIRKKINEN

DATE: 04/15/94
PAGE: 1 OF 1

Reference	Stock No.	Part Type	Description	Qty
		CAPACITORS		
C1,C2,C3,C4,C5, C6,C7,C8,C9, C10,C11	NS	.001uF	.001uF,3KV,CERAMIC,SMT, SIZE .120 X .180	110
		RESISTORS		
R1,R2,R3,R4,R5, R6,R7,R8,R9, R10,R11	NS	10M	10M,1/8W,5%,SMT,SIZE	110
		MISCELLANEOUS		
J1	NS	CN11SROW	11 PIN,SINGLE ROW CONNECTOR,STRAIGHT,SAMTEC #SSK-111-S-G,SOLDER TAIL	10
-	NS	CN1SROW	1 PIN,SINGLE ROW CONNECTOR,STRAIGHT,SAMTEC #SSK-101-S-G,SOLDER TAIL	4
-	NS	24A4511 U-2 (a000897u2)	24A4511 U-2,PC BD,PANEL OF 10 BOARDS (24A4511 U-1 , a000897u1)	1

MAY 9, 1995

HI FRANK:

THERE ARE A TOTAL OF 4 GERBER FILES. THEY ARE AS FOLLOWS:

P897C - COMPONENT SIDE CIRCUIT (POSITIVE FORMAT)
P897S - SOLDER SIDE - PADS AND TRACES (POSITIVE FORMAT)
P897G - SOLDER SIDE GROUND CLEARANCES (NEGATIVE FORMAT)
P897SP - SOLDER PASTE - COMPONENT SIDE (NEGATIVE FORMAT)

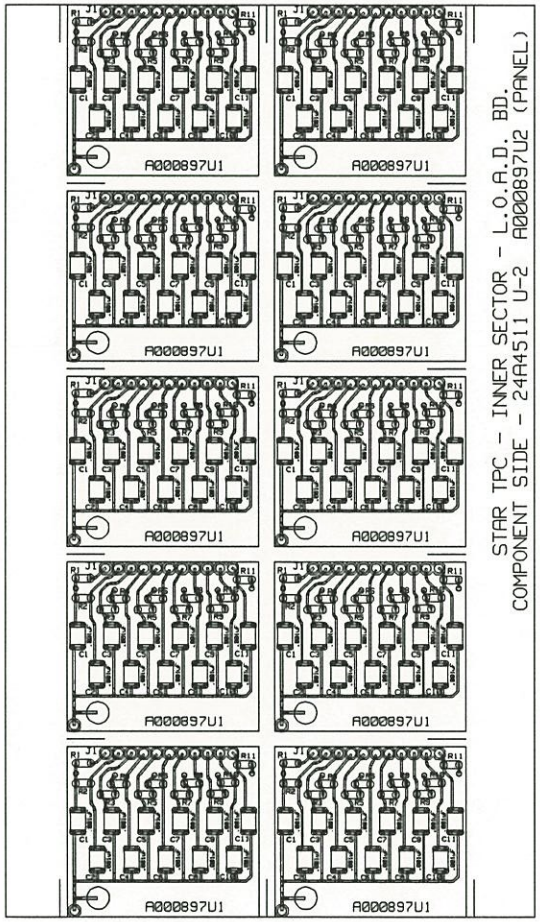
THERE ISN'T A SILKSCREEN OR SOLDERMASK FOR THIS BOARD.

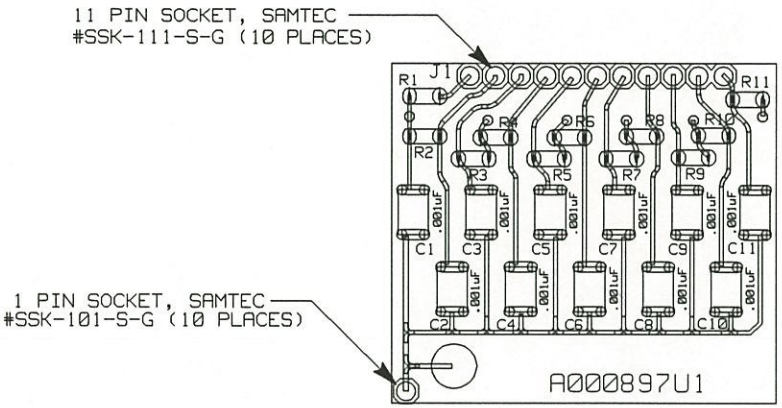
PLEASE ACCEPT MY APOLOGY ON THIS MIX UP. I HOPE THIS WILL TAKE CARE OF WHAT YOU NEED, IF NOT PLEASE CALL ME (JUDY) AT (916) 547-4005. HAVE A GOOD ONE. - JUDY

THE APERTURE LIST IS AS FOLLOWS:

tr10 10 circle trace 10;
tr12 11 circle trace 12;
tr15 12 circle trace 15;
tr20 13 circle trace 20;
tr30 14 circle trace 30;
tr40 15 circle trace 40;
tr50 16 circle trace 50;
tr60 17 circle trace 60;
tr70 18 circle trace 70;
tr80 19 circle trace 80;
tr90 70 circle trace 90;
tr100 71 circle trace 100;
tr120 20 circle trace 120;
tr130 21 circle trace 130;
tr150 22 circle trace 150;
fl40 23 circle flash 40;
fl50 24 circle flash 50;
fl60 25 circle flash 60;
fl70 26 circle flash 70;
fl75 27 circle flash 75;
fl85 28 circle flash 85;
fl90 29 circle flash 90;
fl100 72 circle flash 100;
fl110 73 circle flash 110;
fl120 30 circle flash 120;
fl130 31 circle flash 130;
fl140 32 circle flash 140;
fl150 33 circle flash 150;
fl160 34 circle flash 160;
fl200 35 circle flash 200;
PADEXO 36 rectangle flash 80 55;
PADEXO 37 rectangle flash 55 80;
PADEXR 38 rectangle flash 75 55;
PADEXR 39 rectangle flash 55 75;
ftarget 40 square special 1.0;
fs60 41 square flash 60;
fs70 42 square flash 70;
fs75 43 square flash 75;
fs85 44 square flash 85;
fs100 45 square flash 100;
fs110 46 square flash 110;
fs120 47 square flash 120;
fs130 48 square flash 130;
fs140 49 square flash 140;
fs150 50 square flash 150;
PADEXO5 51 rectangle flash 65 55;
PADEXO5 52 rectangle flash 55 65;
fr12040 53 rectangle flash 120 40;
fr16040 54 rectangle flash 160 40;
fr4860 55 rectangle flash 48 60;
fr4075 56 rectangle flash 40 75;
fr4030 57 rectangle flash 40 30;
fr13030 58 rectangle flash 130 30;
fr3040 59 rectangle flash 30 40;
fl30 60 circle flash 30;
fl180 61 circle flash 180;
fs45 62 square flash 45;
fr9040 63 rectangle flash 90 40;
fr4090 64 rectangle flash 40 90;
fr10030 65 rectangle flash 100 30;
fr30100 66 rectangle flash 30 100;

REV.	CHANGES	DRAWN	DATE	CHKD.	DATE
A	DRAWING NO. WAS 24A4512 L-2.	JJS	09/28/94		





SCALE: ~2:1

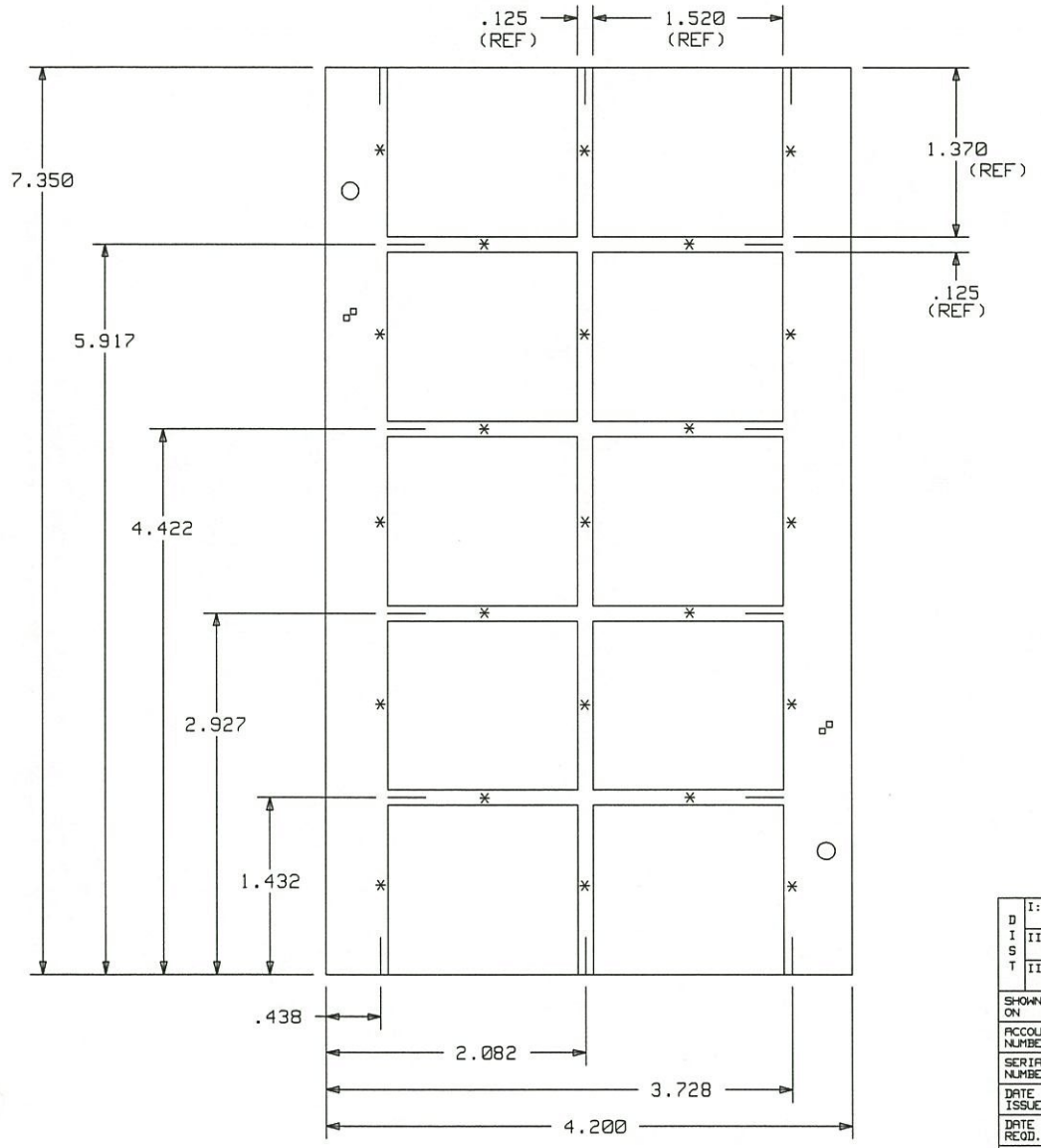
NOTES:

1. UNLESS OTHERWISE SPECIFIED:
   A. RESISTORS ARE 10M, 1/8W, 5%, SURFACE MOUNT, SIZE 1206.
   B. CAPACITORS ARE .001uF, 3KV, CERAMIC, SURFACE MOUNT, SIZE .120" X .180".
2. PANEL BOARD SIZE IS 4.200 +/-.010 X 7.350 +/-.005. SINGLE BOARD SIZE IS 1.520 X 1.370 +/-.005. DIMENSIONS ARE IN INCHES. BOARD OUTLINE IS 24A4512 M-1 (a000897m1).
3. REFERENCE DRAWINGS:

24A4511 C-1	a000897c1	PARTS LIST (PANEL)
24A4512 M-1	a000897m1	BOARD OUTLINE (PANEL)
24A4512 E-1	a000897e1	HOLE SCHEDULE (PANEL)

DIST I:	TITLE	STAR TPC		
DIST II:		INNER SECTOR ELECTRONICS		
DIST III:		LITTLE ORPHAN ANODE BOARD (ISOR)-10 WIRES		
SHOWN ON		P.C. BD. ASSY - PANEL OF 10 (24A4511 U-2)		
ACCOUNT NUMBER 8052-24	DRAWN STIRKKINEN	DATE 04/15/94	LAWRENCE BERKELEY LABORATORY UNIVERSITY OF CALIFORNIA OFFICE OF ELECTRONICS ENGINEERING	
SERIAL NUMBER	CHECKED	DATE		
DATE ISSUED / NO. REQD.	APPROVED	DATE	FILE NO. a00089711 / SIZE 2 / DRAWING NO. 24A4512 L-1 / REV. A	
DATE REQD.	ENGINEER JIM HUNTER			
DEL. TO	SCALE NONE	E2,E3,E5,E27,E26,E52,E53	SHEET 1 OF 1	

COMPONENT SIDE VIEW



REV.	CHANGES	DRAWN	DATE	CHKD.	DATE

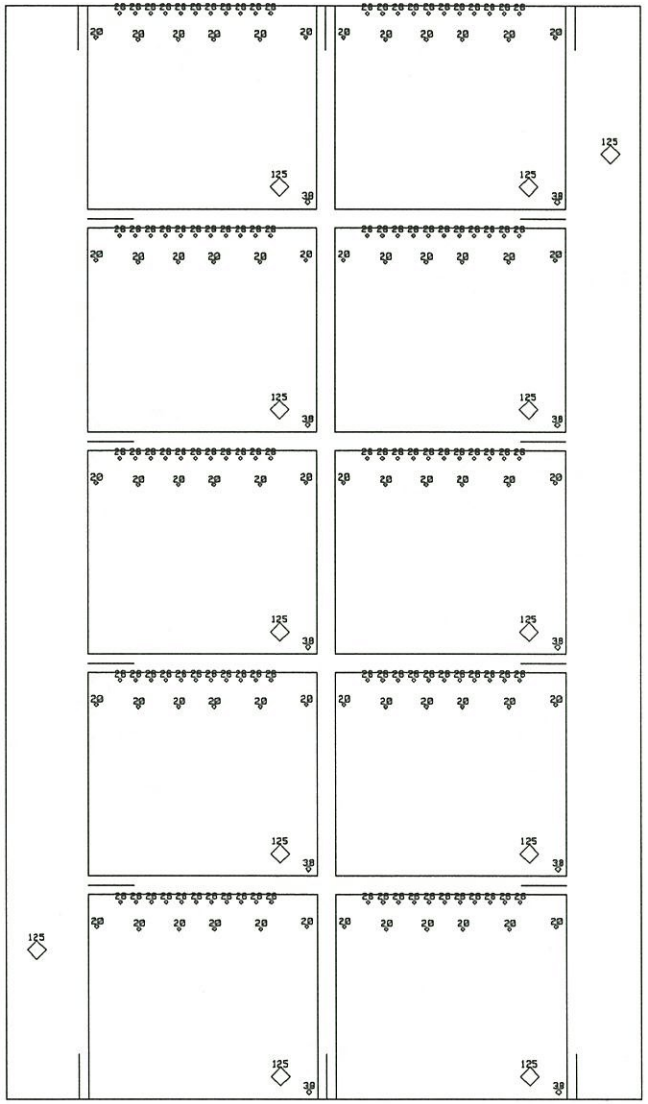
NOTES:

1. BOARD MATERIAL: .062 THICK NEMA G10 PER MIL-P-13949G FL-GEN 062C-1/1-A1A (1 OZ. COPPER EACH SIDE).
2. PANEL SIZE IS 4.200 +/-.010 X 7.350 +/-.005. SINGLE BOARD SIZE IS 1.520 X 1.370 +/-.005. DIMENSIONS ARE IN INCHES.
3. * = APPROXIMATE PLACEMENT OF .050 TABS. SLOTS TO BE .125" WIDE.
4. UNSPECIFIED TOLERANCES ARE +/-.005.
5. REFERENCE DRAWINGS:

24A4511 C-1	a000897c1	PARTS LIST (PANEL)
24A4512 E-1	a000897e1	HOLE SCHEDULE (PANEL)
24A4512 L-1	a00089711	P.C. BD. ASSY (PANEL)

DIST I:		TITLE	STAR TPC		
DIST II:			INNER SECTOR ELECTRONICS		
DIST III:			LITTLE ORPHAN ANODE BD (ISOR)-10 WIRES		
SHOWN ON			BOARD OUTLINE-PANEL OF 10 (24A4511 U-2)		
ACCOUNT NUMBER	8052-24	DRAWN STIRKKINEN	DATE 04/15/94	LAWRENCE BERKELEY LABORATORY	
SERIAL NUMBER		CHECKED	DATE	UNIVERSITY OF CALIFORNIA	
DATE ISSUED	NO. REQD.	APPROVED	DATE	OFFICE OF ELECTRONICS ENGINEERING	
DATE REQD.		ENGINEER JIM HUNTER		FILE NO. a000897m1 / SIZE 2 / DRAWING NO. 24A4512 M-1 / REV.	
DEL. TO		SCALE NONE	E2,R19	SHEET 1 OF 1	

REV.	CHANGES	DRAWN	DATE	CHKD.	DATE



SOLDER SIDE VIEW

NOTES:

1. BOARD MATERIAL: .062 THICK NEMA G10 GLASS EPOXY PER MIL-P-13949G FL-GEN 062C-1/1-A1A (1 OZ. COPPER BOTH SIDES).
2. SEE HOLE SCHEDULE FOR HOLE SIZES.
3. THIS BOARD TO BE THROUGH HOLE PLATED.
4. SPECIFIED HOLE DIA. SIZES ARE FOR FINISHED HOLES AFTER PLATING.
5. THIS PANEL BOARD IS NOT TO BE SILKSCREENED.
6. PANEL SIZE IS 4.200 +/-.010 X 7.350 +/-.005. SINGLE BOARD SIZE IS 1.520 X 1.370 +/-.005. DIMENSIONS ARE IN INCHES. BOARD OUTLINE IS DRAWING 24A4512 M-1 (a000897m1).
7. SOLDERMASK IS NOT USED ON THIS BOARD.
8. REFERENCE DRAWINGS:
   24A4511 C-1 a000897c1 PARTS LIST (PANEL)
   24A4512 M-1 a000897m1 BOARD OUTLINE (PANEL)
   24A4512 L-1 a00089711 P.C. BOARD ASSEMBLY (PANEL)

HOLE SCHEDULE		
TOOLING NO.	HOLE DIA.	COUNT
1	.026	110
2	.020	60
3	.038	10
4	.125	12

TOTAL HOLE COUNT = 192.

FOR TOOLING NOS. 1 & 3 USE .033 DIA. HOLE. (COUNT = 120 HOLES)

USE .016 DIA. HOLE

DIST	I:	TITLE	STAR TPC		
	II:		INNER SECTOR ELECTRONICS		
	III:		LITTLE ORPHAN ANODE BOARD (ISOR)-10 WIRES		
SHOWN ON			HOLE SCHEDULE - PANEL OF 10 (24A4511 U-2)		
ACCOUNT NUMBER	8052-24	DRAWN STIRKKINEN	DATE 04/15/94	LAWRENCE BERKELEY LABORATORY UNIVERSITY OF CALIFORNIA OFFICE OF ELECTRONICS ENGINEERING	
SERIAL NUMBER		CHECKED	DATE		
DATE ISSUED	NO. REQD.	APPROVED	DATE	FILE NO. a000897e1	SIZE 2
DATE REQD.		ENGINEER JIM HUNTER		DRAWING NO. 24A4511 E-1	REV.
DEL. TO		SCALE NONE	C1,E2,E56	SHEET 1 OF 1	

OBSOLETE 1/5/95
SEE REV A. - NO MFG. WORK CHANGE.

(5/17/94)

a000896u2 (PANEL OF 16)
GATED GRID WIRE MT. - INNER SECTOR

ORIGIN: -200, 10800
WHEEL W893

LAYER 1 => #E19 #E29 -P29 #E5 #E55 = a89611_g

CMD896L1 => A896L1 => PL896L1

LAYE 2 => #E6 #E8 #E19 = a89612-g

CMD896L2 => A896L2 => PL896L2

LAYER 3 => BLANK = NO PLOT

~~CMD896L3 => A896L3~~

LAYER 4 => #E7 #E9 = a89614_g

CMD896L4 = A896L4 = PL896L4

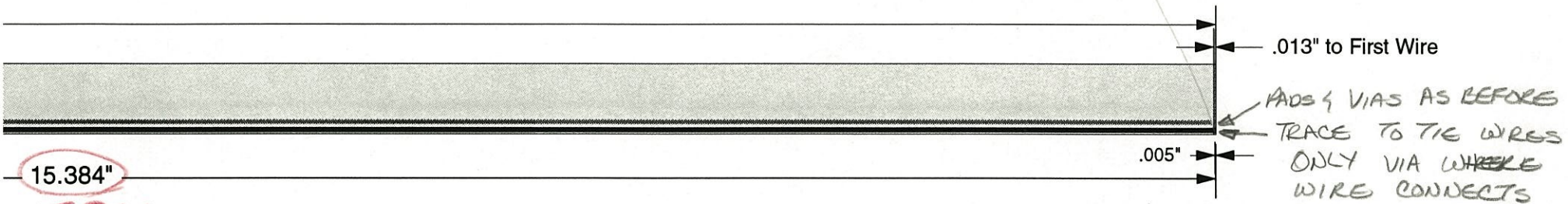
DRILL (BURIED VIAS) = #C1 #E56 = a896dr1_g

CHANGE DRILL TO .015

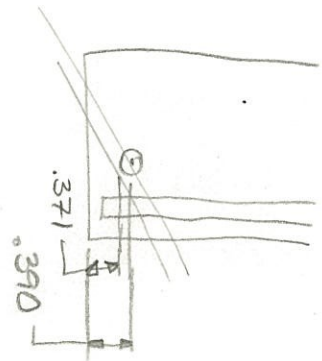
DRILL (THRU VIAS) = # C23 #E56 = a896dr2_g

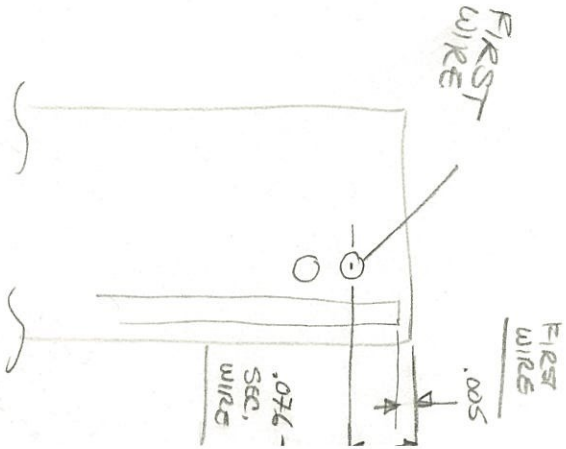
CHANGE DRILL TO .028

24A4501 a000896



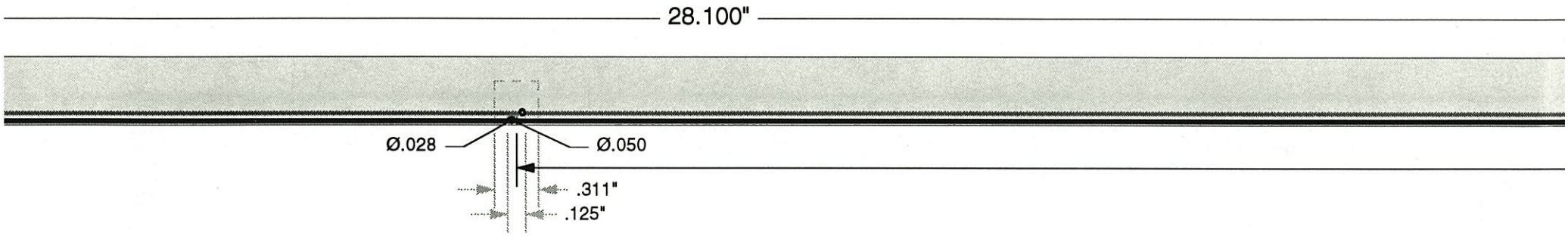
Outer Radius

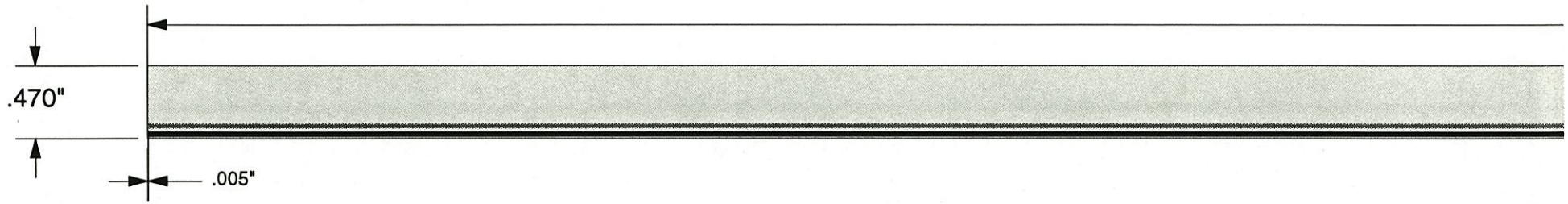




J.B. Hunter
Original: 3-11-94
Updated:

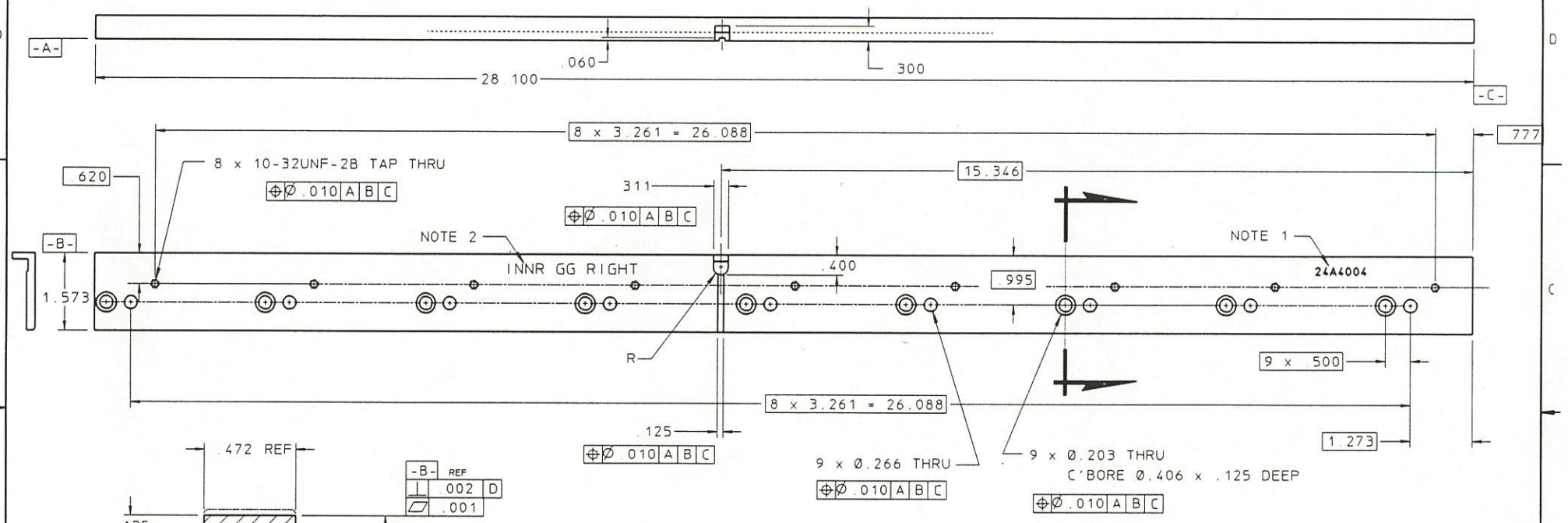
STAR Gated Grid Wire Mount P.C.B., Inner Sector

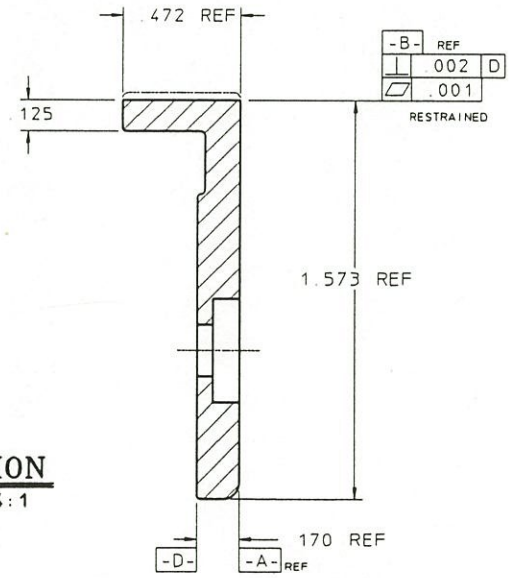




Inner Radius

REQ	ITEM	PART NUMBER	DESCRIPTION
		24A4023	INNER SECTOR GATED GRID WIRE MOUNT EXTRUSION



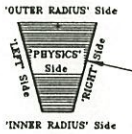


SECTION
SCALE 4:1

24A4004

NOTES

1. VIBRA-ETCH or ENGRAVE PART No 24A4004 IN .15 HIGH CHARACTERS IN LOCATION SHOWN.
2. VIBRA ETCH or ENGRAVE "INNR S RIGHT" IN .2 CHARACTERS IN LOCATION SHOWN



LOCATION of THIS PART in ASSEMBLY

REV	DWG	CHK	ZONE	DATE	CHANGES

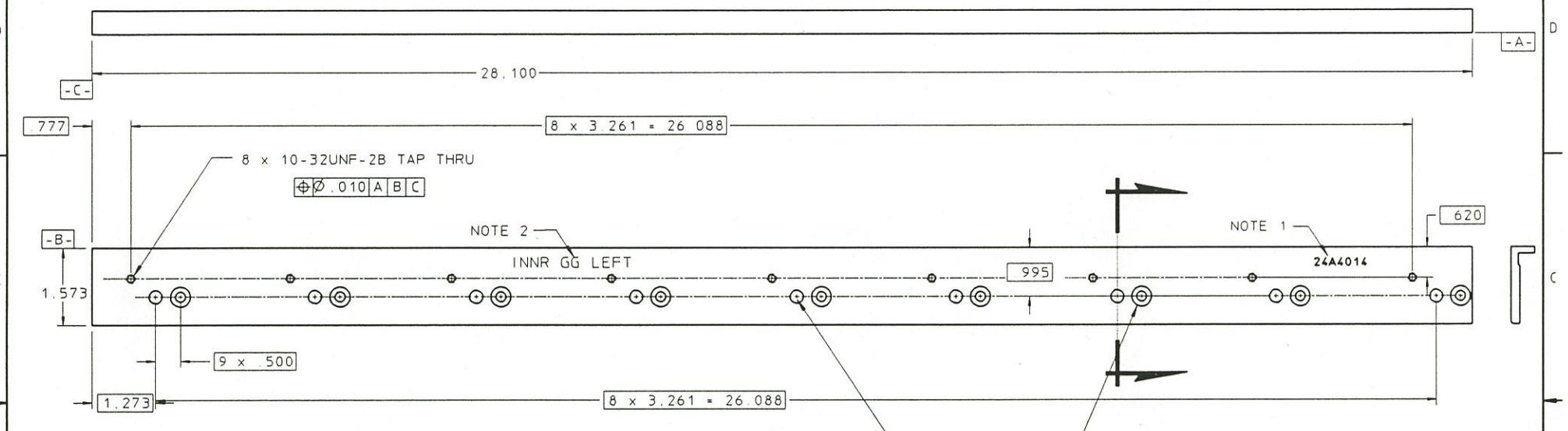
UNLESS OTHERWISE SPECIFIED
TOLERANCES: X ± 1 FRAC. ± 1/64; XX ± 02 ANGLES ± 1°; XXX ± 005 FINISH 125
THREADS ARE CLASS 2
CHAMFER ENDS OF ALL SCREW THREADS 30° OFF 1.5 PITCH AND RELIEF WITH ROUND NOSE TOOL ON MACHINE CUT THREADS.
BREAK EDGES .016 MAX ON MACHINED WORK
REMOVE BURRS WELD SPLATTER & LOOSE SCALE
REFERENCES: ANSI Y14.5 & B46.1.

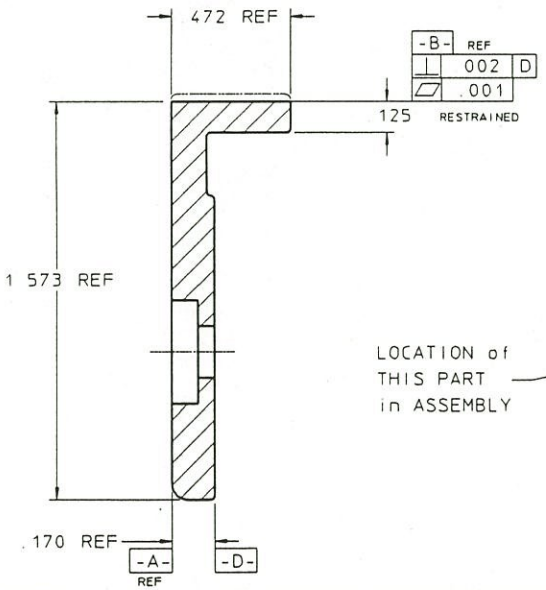
SHOP ORDERS
ACCT. NO. | SERIAL NO.
DATE ISSD. | DATE RECD. | NO. RECD.
DELIVER TO
SURFACE TREATMENT: CLEAR ANODIZE .0002/.0003
IDENT METH: SEE NOTES
DWG BY: J. BOEHM — DATE 94-01-19
CHK BY: J. BERCOVITZ — DATE 94-01-19

LAWRENCE BERKELEY LABORATORY
UNIVERSITY OF CALIFORNIA-BERKELEY
RHIC-STAR-TPC
INNER SECTOR
GATED GRID WIRE MOUNT, RIGHT

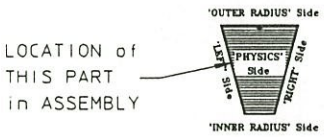
PATENT CLEAR	DWG TYPE	SHOWN ON	SCALE	FULL	DO NOT SCALE DRAWING
MICROFILMED	DETAIL	00X0000	DWG. NO.	SIZE	REV.
	DESIGN ACCT. NO. 8052-24	CATEGORY CODE SR-02-04	24A4004		

REQ	ITEM	PART NUMBER	DESCRIPTION
		24A4023	INNER SECTOR GATED GRID WIRE MOUNT EXTRUSION





SECTION
SCALE 4:1



NOTES

1. VIBRA-ETCH or ENGRAVE PART No 24A4014 IN .15 HIGH CHARACTERS IN LOCATION SHOWN
2. VIBRA ETCH or ENGRAVE "INNR S LEFT" IN .2 CHARACTERS IN LOCATION SHOWN.

24A4014

REV	DWG	CHK	ZONE	DATE	CHANGES

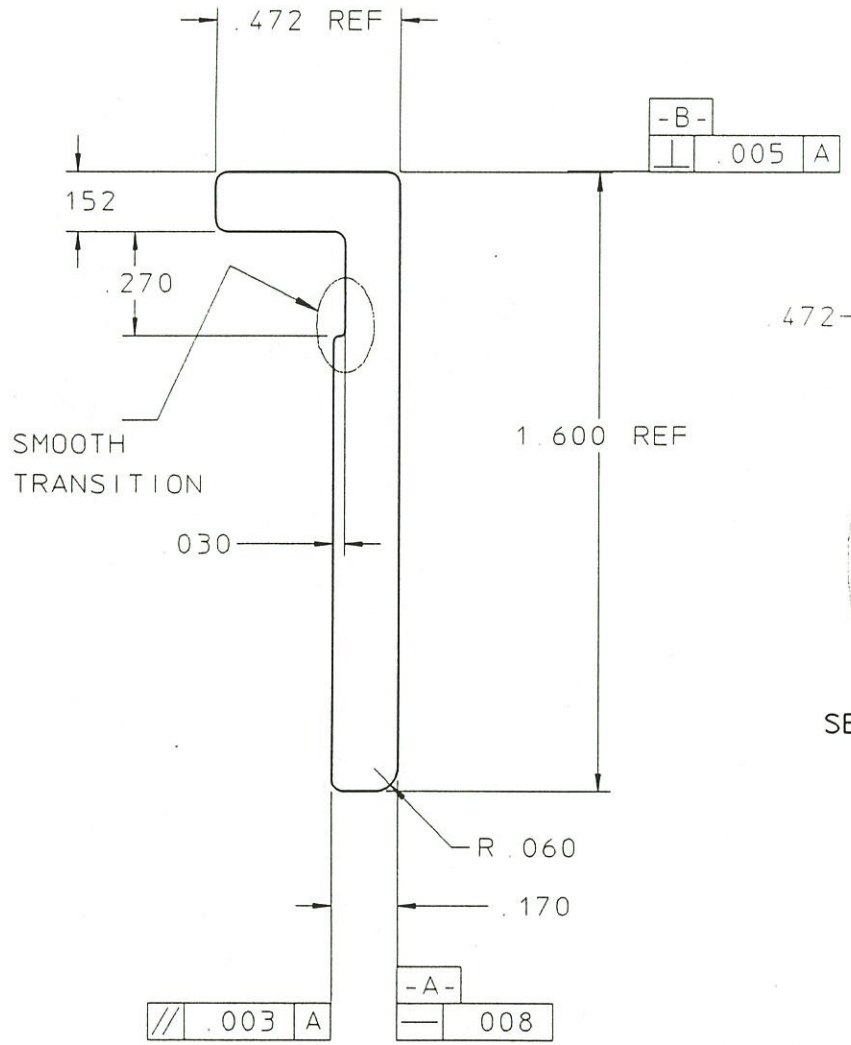
UNLESS OTHERWISE SPECIFIED
TOLERANCES: X ± .1 FRAC. ± 1/64; XX ± .02 ANGLES ± 1°; XXX ± .005 FINISH 125
THREADS ARE CLASS 2
CHAMFER ENDS OF ALL SCREW THREADS 30° OR 1.5 PITCH AND RELIEF WITH ROUND NOSE TOOL ON MACHINE CUT THREADS.
BREAK EDGES .016 MAX. ON MACHINED WORK
REMOVE BURRS, WELD SPLATTER & LOOSE SCALE
REFERENCES: ANSI Y14.5 & B46.1.

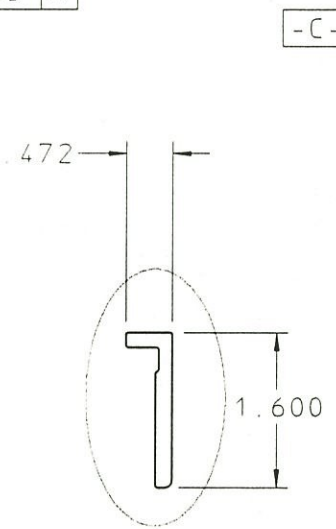
SHOP ORDERS
ACCT. NO.
SERIAL NO.
DATE
DATE REQD
NO. REQD
DEL'VER TO:
SURFACE TREATMENT: CLEAR ANODIZE .0002/.0003
IDENT METH: SEE NOTES
DWG BY: J. BOEHM DATE 92-01-20
CHK BY: J. BERCOVITZ DATE 92-01-20

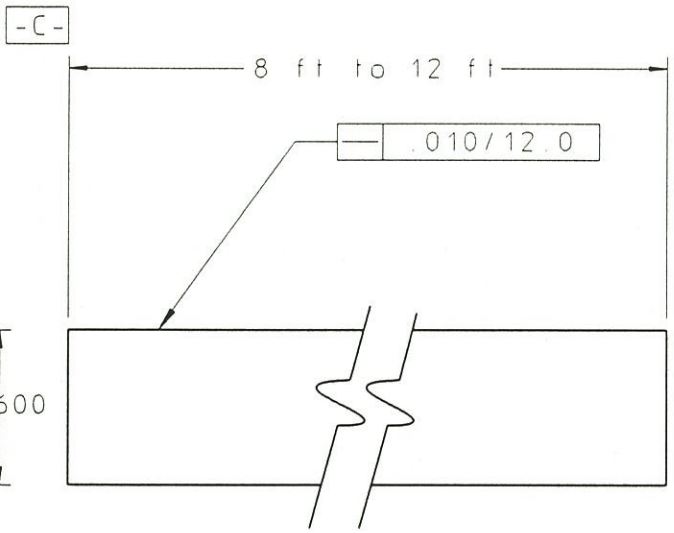
LAWRENCE BERKELEY LABORATORY
UNIVERSITY OF CALIFORNIA-BERKELEY
RHIC-STAR-TPC
INNER SECTOR
GATED GRID WIRE MOUNT, LEFT

PATENT CLEAR	DWG. TYPE	SHOWN ON	SCALE	FULL	DO NOT SCALE PRINTS
	DETAIL	00X0000	DWG. NO.		SIZE REV.
NTI/MOFILMED	DESIGN ACCT. NO.	CATEGORY CODE	24A4014		
	8052-24	SR-02-04			

REQ	ITEM	PART NUMBER	DESCRIPTION
			ALUMINUM 6063-T5







24A4023

NOTE

1. ALL RADII .015" UNLESS OTHERWISE NOTED
2. WEIGHT .30 lbs/ft
3. TWIST NOT TO EXCEED .010/12

DETAIL
SCALE 4:1

REV	DWG	CHK	ZONE	DATE	CHANGES

UNLESS OTHERWISE SPECIFIED

TOLERANCES: x ± .1 | FRAC ±1/64 | .xx ± .02 | ANGLES ±.01° | .xxx ± .005 | FINISH 125

THREADS ARE CLASS 2
CHAMFER ENDS OF ALL SCREW THREADS 30°.
CUT 1.5 PITCH THRD RELIEF WITH ROUND NOSE TOOL ON MACHINE CUT THREADS.
BREAK EDGES .016 MAX. ON MACHINED WORK.
REMOVE BURRS WELD SPLATTER & LOOSE SCALE
REFERENCES: ANSI Y14.5 & B46.1

SHOP ORDERS

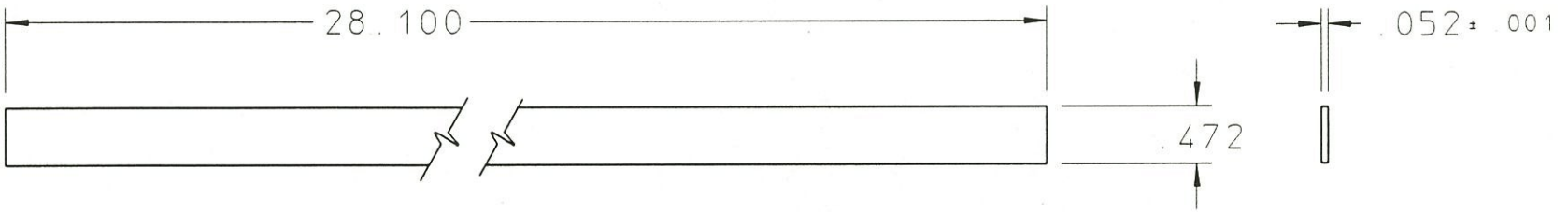
ACCT NO. | SERIAL NO.
DATE ISSD | DATE REQD. | NO REQD
DELIVER TO
SURFACE TREATMENT: DEGREASE
IDENT METH: TAG
DWG BY: J BOEHM | DATE 94-01-21
CHK BY: J BERCOVITZ | DATE 94-01-21

LAWRENCE BERKELEY LABORATORY
UNIVERSITY OF CALIFORNIA-BERKELEY

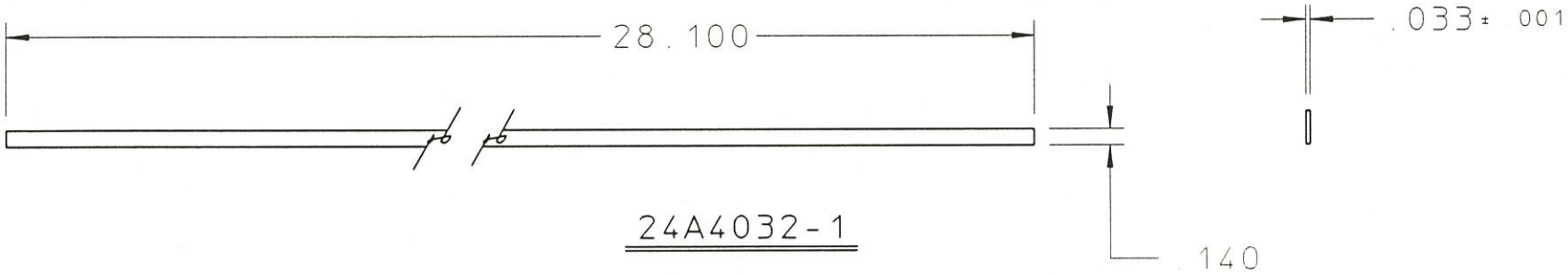
RHIC STAR TPC
INNER SECTOR ASSEMBLY
GATED GRID WIRE MOUNT EXTRUSION

PATENT CLEAR	DWG TYPE	SHOWN ON	SCALE	DO NOT SCALE PRINTS
	DETAIL	00X0000	FULL	
MICROFILMED	DESIGN ACCT NO	CATEGORY CODE	DWG NO	SIZE / REV
	8052-24	SR-02-04	24A4023	

24A4032	REQD	ITEM	PART NUMBER	DESCRIPTION
			HIGH PRESSURE	EPOXY/GLASS LAMINATE, per FED SPEC's LP509a.
			TYPE 4 GRADE	G-10 (DO NOT USE FR-4)



24A4032-2



24A4032-1

REV	DWN	CHK	DATE	DESCRIPTION

UNLESS OTHERWISE SPECIFIED

TOLERANCE .X ± .1 .XX ± .02 .XXX ± .005

SURFACE FINISH 125 √

1. SAWED, FLAMECUT, SHEARED OR CUT STOCK FINISH.
2. THREADS CLASS 2.
3. CHAMFER ENDS OF ALL SCREW THRDS 30°.
4. 1 1/2 PITCH RELIEF WITH ROUND NOSE TOOL ON ALL MACHINE CUT THRDS
5. BREAK EDGES 1/64 MAX. ON MACHINE WORK.
6. REMOVE BURRS, LOOSE SCALE AND WELD SPLATTER
7. REF.-USASI OR ASA STDS SECT Y-14 & B46-1

SHOP ORDERS

ACCT NO | SER NO

DATE ISSD | DATE REQD | NO REQD

DELIVER TO

SURFACE TREATMENT: RINSE W/ALCOHOL

IDENTIFIC METHOD: BAG & TAG

DWG BY: J BOEHM | DATE: 94-01-21

CHK BY: J BERCOVITZ | DATE: 94-01-21

LAWRENCE BERKELEY LABORATORY
UNIVERSITY OF CALIFORNIA-BERKELEY

RHIC-STAR-TPC

INNER SECTOR

WIRE MOUNT INSULATING BOARD

PAT CLEAR	DWG TYPE	SHOWN ON	SCALE: FULL
	DETAIL	24A0000	DO NOT SCALE PRINTS
MICROFILMED	DESIGN ACCT NO	CATEGORY CODE	DWG NO / REV
	8052-24	SR-02-04	24A4032

*

PRINT LIST

TITLE: STAR TPC
INNER SECTOR ELECTRONICS
GATED GRID WIRE MOUNT BOARD
(PANEL OF 16 BOARDS)

FILE NO.: a000896p1 REV:
PRINT NO.: 24A4501 P-1
CHANGES (*)

ENGINEER: JIM HUNTER
DRAFTER: STIRKKINEN

DATE: 04/08/94
PAGE: 1 OF 1

Drawing No.	Chg. Ltr.	Title
24A4502 M-1 (a000896m1)		BOARD OUTLINE - SINGLE BOARD
24A4503 M-2 (a000896m2)		BOARD OUTLINE - PANEL OF 16
24A4502 E-1 (a000896e1)		HOLE SCHEDULE - SINGLE BOARD
24A4503 E-2 (a000896e2)		HOLE SCHEDULE - PANEL OF 16 (BLIND VIAS)
24A4503 E-3 (a000896e3)		HOLE SCHEDULE - PANEL OF 16
24A4501 U-1 (a000896u1)		ARTWORK - SINGLE BOARD LAYER 1 - WIRE MOUNT PADS LAYER 2 - PADS AND TRACES LAYER 3 - NO COPPER (BLANK) LAYER 4 - H.V. PADS
24A4501 U-2 (a000896u2)		ARTWORK - PANEL OF 16 24A4501 U-1'S

** THE FOLLOWING DRAWINGS NOT REQUIRED FOR THIS PACKAGE:
PARTS LIST, SILKSCREEN, PC BOARD ASSEMBLY

NUMBERS WITHIN ( ) REFER TO EGS COMPUTER FILES

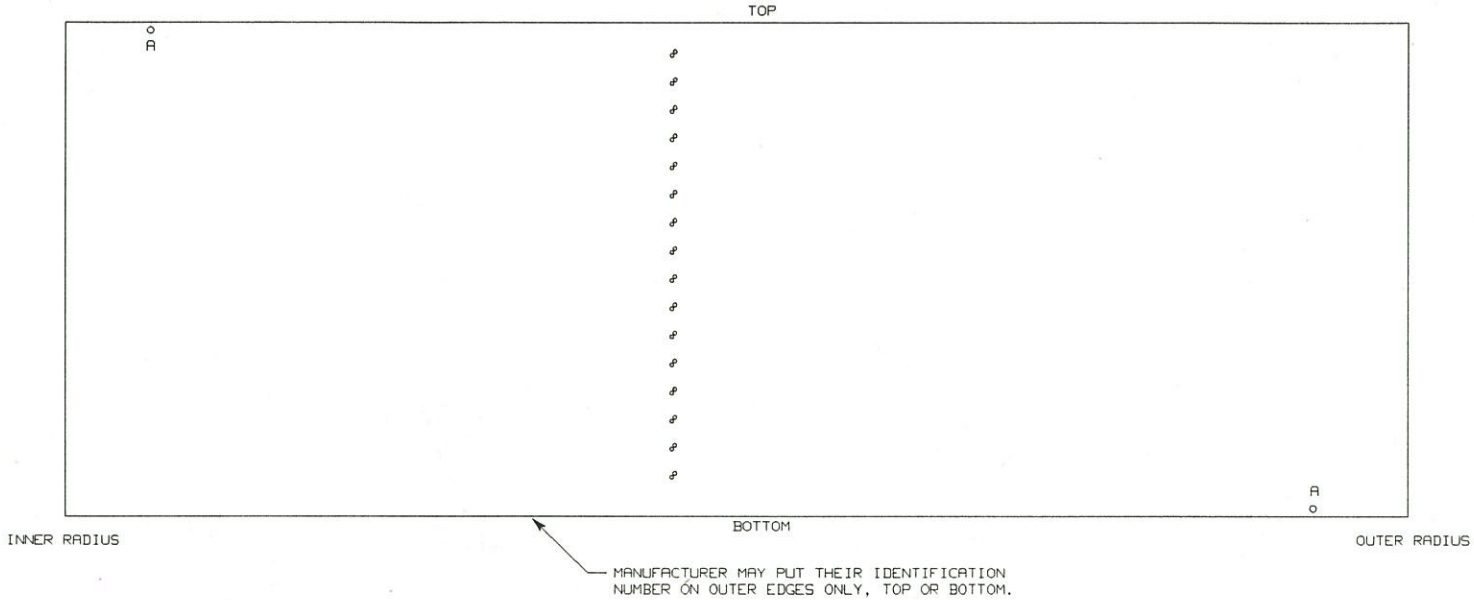
********** LBL BOARD A000896U2 **********
********** MAY 17, 1994 **********
********** WHEEL W896INFO **********

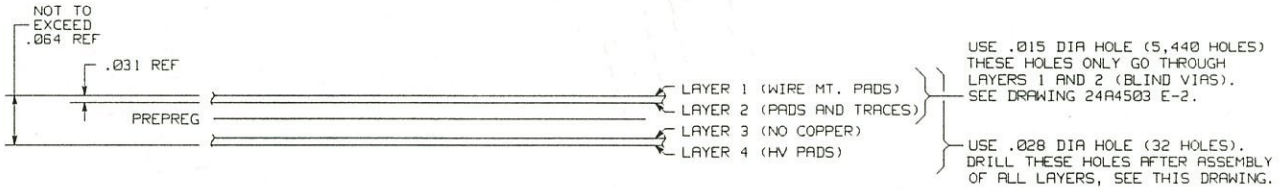
NEED 3 STANDARD PHOTOPLOTS, 3 POSITIVES AND 3 NEGATIVES.
FILM SIZE IS APPROXIMATELY 28.300 X 12.800 INCHES.
DELIVERY DATE: MAY 19, 1994 OR SOONER.
PHOTOPLOT FILES IN POSITIVE FORMAT:
  PL896L1 - LAYER 1 SOLDER SIDE
  PL896L2 - LAYER 2 PADS AND TRACES
          - LAYER 3 (NO PLOT-BLANK LAYER)
  PL896L4 - LAYER 4 H.V. PADS
PLEASE MAKE CONTACT COPIES OF PLOT FILES (3). I NEED ONE (1) POSITIVE
  AND ONE (1) NEGATIVE OF EACH FILE, EMULSION DOWN, RIGHT READING.
  THIS IS A TOTAL OF THREE (3) POSITIVES AND THREE (3) NEGATIVES.
PLEASE NOTE THIS USES THE SAME WHEEL AS JOB A000893U2.
IF THERE ARE ANY QUESTIONS OR PROBLEMS PLEASE CALL -JUDY- (916)
  547-4005 OR -JIM- (510)486-7084.

REV.	CHANGES	DRAWN	DATE	CHK'D.	DATE

LAYER FOUR VIEW

SCALE: NONE





NOTES:

1. BOARD MATERIAL: .031 THICK G10 PER MIL-P-55617 FL-GEN 031C-1/1-A1A (1 OZ. COPPER EACH SIDE). THIS IS A MULTILAYER BOARD (4 LAYERS). TOTAL THICKNESS NOT TO EXCEED .064.
2. PLEASE NOTE THAT THERE IS NO COPPER ON LAYER 3.
3. THIS BOARD TO BE THROUGH HOLE PLATED.
4. SPECIFIED HOLE DIA. SIZES ARE FOR FINISHED HOLES AFTER PLATING.
5. BOARD SIZE IS 10.500 +/-.010 X 28.100 +/-.005. DIMENSIONS ARE IN INCHES. BOARD OUTLINE DRAWING IS 24A4503 M-2 (a000896m2).
6. SOLDERMASK IS NOT USED ON THIS BOARD.
7. REFERENCE DRAWINGS:

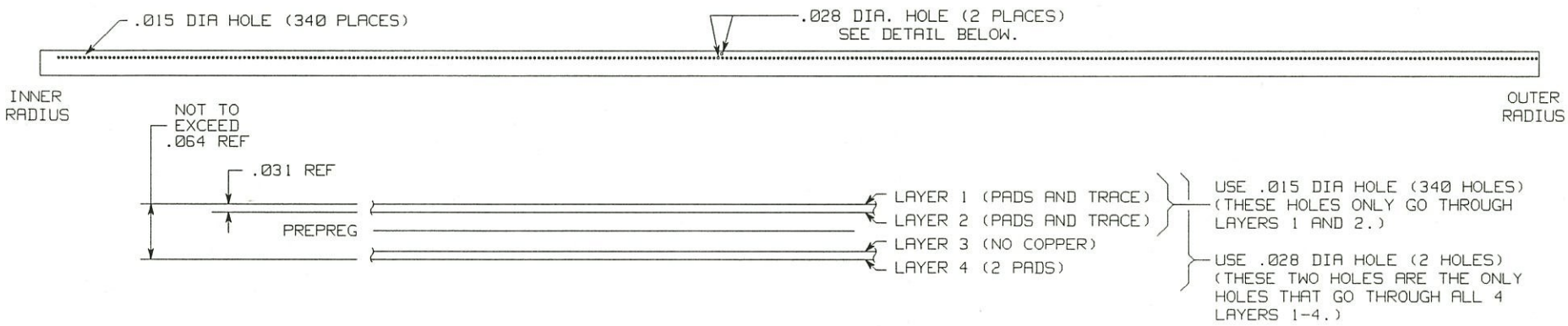
24A4502 M-1	a000896m1	BOARD OUTLINE - SINGLE BOARD
24A4503 M-2	a000896m2	BOARD OUTLINE - PANEL OF 16
24A4502 E-1	a000896e1	HOLE SCHEDULE - SINGLE BOARD
24A4503 E-2	a000896e2	HOLE SCHEDULE - PANEL OF 16,BLIND VIAS

HOLE SCHEDULE		
CODE	HOLE DIA.	COUNT
NONE	.028	32
A	.125	2

DIST I:		TITLE STAR TPC			
DIST II:		INNER SECTOR ELECTRONICS			
DIST III:		GATED GRID WIRE MOUNT BOARD - PANEL OF 16			
SHOWN ON		HOLE SCHEDULE - 24A4501 U-2 (A000896U2)			
ACCOUNT NUMBER 8052-24		DRAWN STIRAKINEN	DATE 4/08/94	LAWRENCE BERKELEY LABORATORY	
SERIAL NUMBER		CHECKED	DATE	UNIVERSITY OF CALIFORNIA	
DATE ISSUED	NO. REQD.	APPROVED	DATE	OFFICE OF ELECTRONICS ENGINEERING	
DATE REQD.		ENGINEER JIM HUNTER		FILE NO. a000896e3 / SIZE 3 / DRAWING NO. 24A4503 E-3	REV.
DEL. TO		SCALE NONE		E14	SHEET 3 OF 3

REV.	CHANGES	DRAWN	DATE	CHKD.	DATE

LAYER ONE VIEW



NOTES:

1. BOARD MATERIAL: .031 THICK G10 PER MIL-P-55617 FL-GEN 031C-1/1-A1A (1 OZ. COPPER EACH SIDE). THIS IS A MULTILAYER BOARD (4 LAYERS). TOTAL THICKNESS NOT TO EXCEED .064.
2. MANUFACTURER MAY NOT PUT ANY IDENTIFICATION NOMENCLATURE ON PRINTED CIRCUIT BOARD.
3. PLEASE NOTE THAT THERE IS NO COPPER ON LAYER 3.
4. THIS BOARD TO BE THROUGH HOLE PLATED. SEE DETAIL FOR BLIND VIAS (340 HOLES).
5. SPECIFIED HOLE DIA. SIZES ARE FOR FINISHED HOLES AFTER PLATING.
6. BOARD SIZE IS .472 +.000/-.010 X 28.100 +/-.005. DIMENSIONS ARE IN INCHES. BOARD OUTLINE DRAWING IS 24A4502 M-1 (a000896m1).
7. SOLDERMASK IS NOT USED ON THIS BOARD.
8. REFERENCE DRAWINGS:

24A4502 M-1	a000896m1	BOARD OUTLINE - SINGLE BOARD
24A4503 M-2	a000896m2	BOARD OUTLINE - PANEL OF 16
24A4503 E-2	a000896e2	HOLE SCHEDULE - PANEL OF 16 (BLIND VIAS)
24A4503 E-3	a000896e3	HOLE SCHEDULE - PANEL OF 16

DIST I:		TITLE	STAR TPC		
DIST II:			INNER SECTOR ELECTRONICS		
DIST III:			GATED GRID WIRE MOUNT BOARD - SINGLE BD.		
SHOWN ON			HOLE SCHEDULE - 24A4501 U-1 (A000896U1)		
ACCOUNT NUMBER	8052-24	DRAWN STIRKKINEN	DATE 4/8/94	LAWRENCE BERKELEY LABORATORY UNIVERSITY OF CALIFORNIA OFFICE OF ELECTRONICS ENGINEERING	
SERIAL NUMBER		CHECKED	DATE		
DATE ISSUED	NO. REQD.	APPROVED	DATE	FILE NO. a000896e1	SIZE 2
DATE REQD.		ENGINEER JIM HUNTER		DRAWING NO. 24A4502 E-1	REV.
DEL. TO		SCALE NONE	E2,C3	SHEET 1 OF 3	

*

PRINT LIST

TITLE: STAR TPC
INNER SECTOR ELECTRONICS
GATED GRID WIRE MOUNT BOARD
(PANEL OF 16 BOARDS)

FILE NO.: a000896p1 REV:
PRINT NO.: 24A4501 P-1
CHANGES (*)

ENGINEER: JIM HUNTER
DRAFTER: STIRKKINEN

DATE: 04/08/94
PAGE: 1 OF 1

Drawing No.	Chg. Ltr.	Title
24A4502 M-1 (a000896m1)		BOARD OUTLINE - SINGLE BOARD
24A4503 M-2 (a000896m2)		BOARD OUTLINE - PANEL OF 16
24A4502 E-1 (a000896e1)		HOLE SCHEDULE - SINGLE BOARD
24A4503 E-2 (a000896e2)		HOLE SCHEDULE - PANEL OF 16 (BLIND VIAS)
24A4503 E-3 (a000896e3)		HOLE SCHEDULE - PANEL OF 16
24A4501 U-1 (a000896u1)		ARTWORK - SINGLE BOARD LAYER 1 - WIRE MOUNT PADS LAYER 2 - PADS AND TRACES LAYER 3 - NO COPPER (BLANK) LAYER 4 - H.V. PADS
24A4501 U-2 (a000896u2)		ARTWORK - PANEL OF 16 24A4501 U-1'S

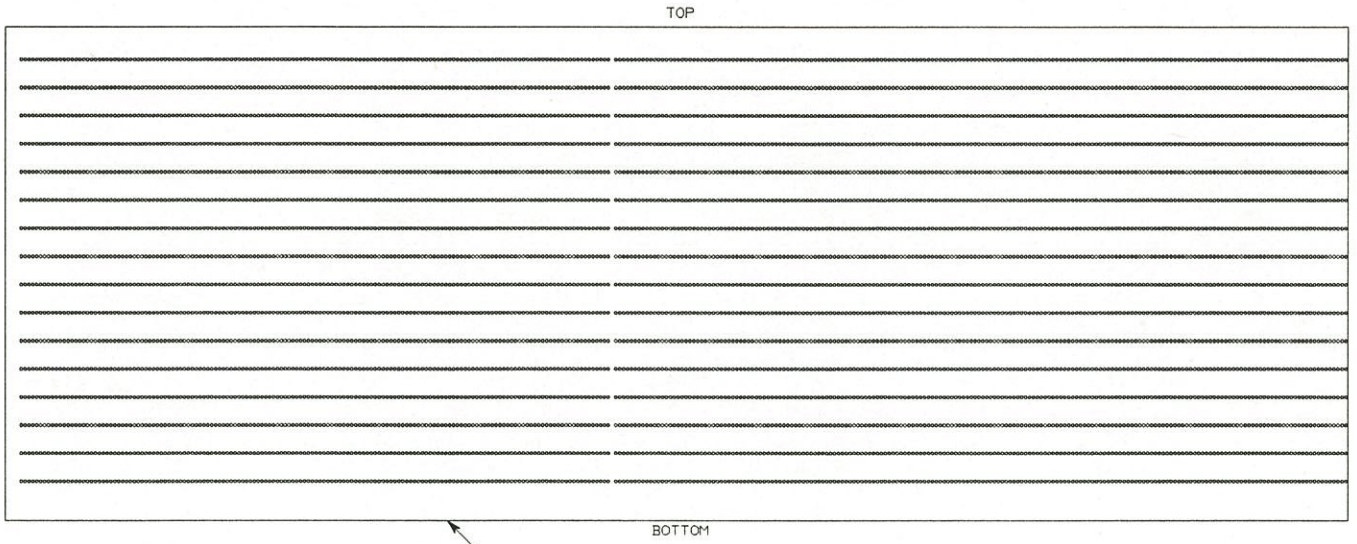
** THE FOLLOWING DRAWINGS NOT REQUIRED FOR THIS PACKAGE:
PARTS LIST, SILKSCREEN, PC BOARD ASSEMBLY

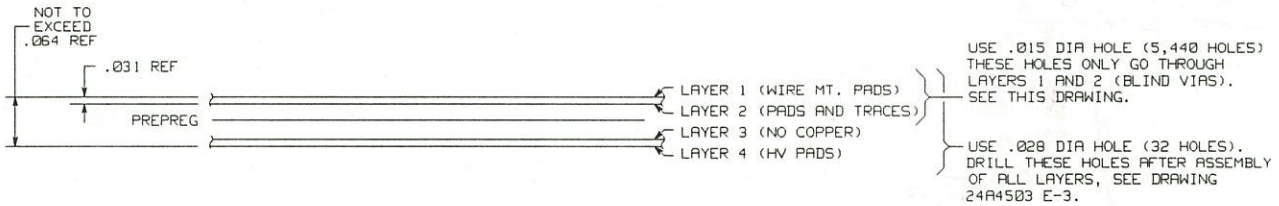
NUMBERS WITHIN ( ) REFER TO EGS COMPUTER FILES

REV.	CHANGES	DRAWN	DATE	CHK'D.	DATE

LAYER TWO VIEW

SCALE: NONE





NOTES:

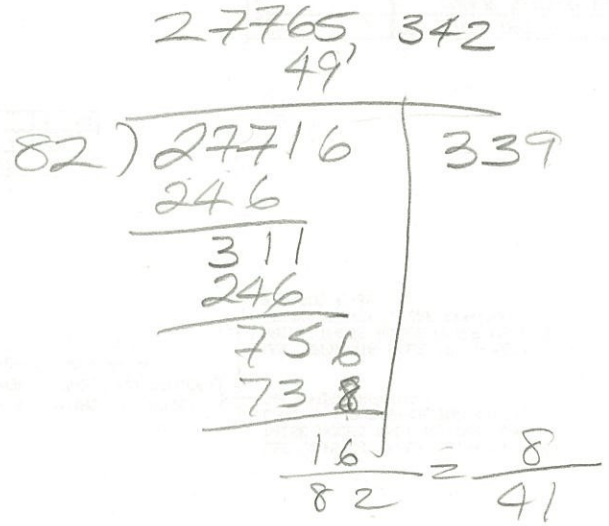
1. BOARD MATERIAL: .031 THICK G10 PER MIL-P-55617 FL-GEN 031C-1/1-A1A (1 OZ. COPPER EACH SIDE). THIS IS A MULTILAYER BOARD (4 LAYERS). TOTAL THICKNESS NOT TO EXCEED .064.
2. PLEASE NOTE THAT THERE IS NO COPPER ON LAYER 3.
3. THIS BOARD TO BE THROUGH HOLE PLATED.
4. SPECIFIED HOLE DIA. SIZES ARE FOR FINISHED HOLES AFTER PLATING.
5. BOARD SIZE IS 10.500 +/-.010 X 28.100 +/-.005. DIMENSIONS ARE IN INCHES. BOARD OUTLINE DRAWING IS 24A4503 M-2 (a000896m2).
6. SOLDERMASK IS NOT USED ON THIS BOARD.
7. REFERENCE DRAWINGS:

24A4502 M-1	a000896m1	BOARD OUTLINE - SINGLE BOARD
24A4503 M-2	a000896m2	BOARD OUTLINE - PANEL OF 16
24A4502 E-1	a000896e1	HOLE SCHEDULE - SINGLE BOARD
24A4503 E-3	a000896e3	HOLE SCHEDULE - PANEL OF 16

HOLE SCHEDULE		
CODE	HOLE DIA.	COUNT
NONE	.015	5,440

DIST I:		TITLE	STAR TPC
DIST II:			INNER SECTOR ELECTRONICS
DIST III:			GATED GRID WIRE MOUNT BOARD - PANEL OF 16
SHOWN ON			HOLE SCHEDULE - 24A4501 U-2 (BLIND VIAS)
ACCOUNT NUMBER	8052-24	DRAWN STIRKKINEN	DATE 4/08/94
SERIAL NUMBER		CHECKED	DATE
DATE ISSUED	NO. REQD.	APPROVED	DATE
DATE REQD.		ENGINEER JIM HUNTER	FILE NO. a000896e2 / SIZE 3 / DRAWING NO. 24A4503 E-2 / REV.
DEL. TO		SCALE NONE	C8,E14 / SHEET 2 OF 3

LAWRENCE BERKELEY LABORATORY
UNIVERSITY OF CALIFORNIA
OFFICE OF ELECTRONICS ENGINEERING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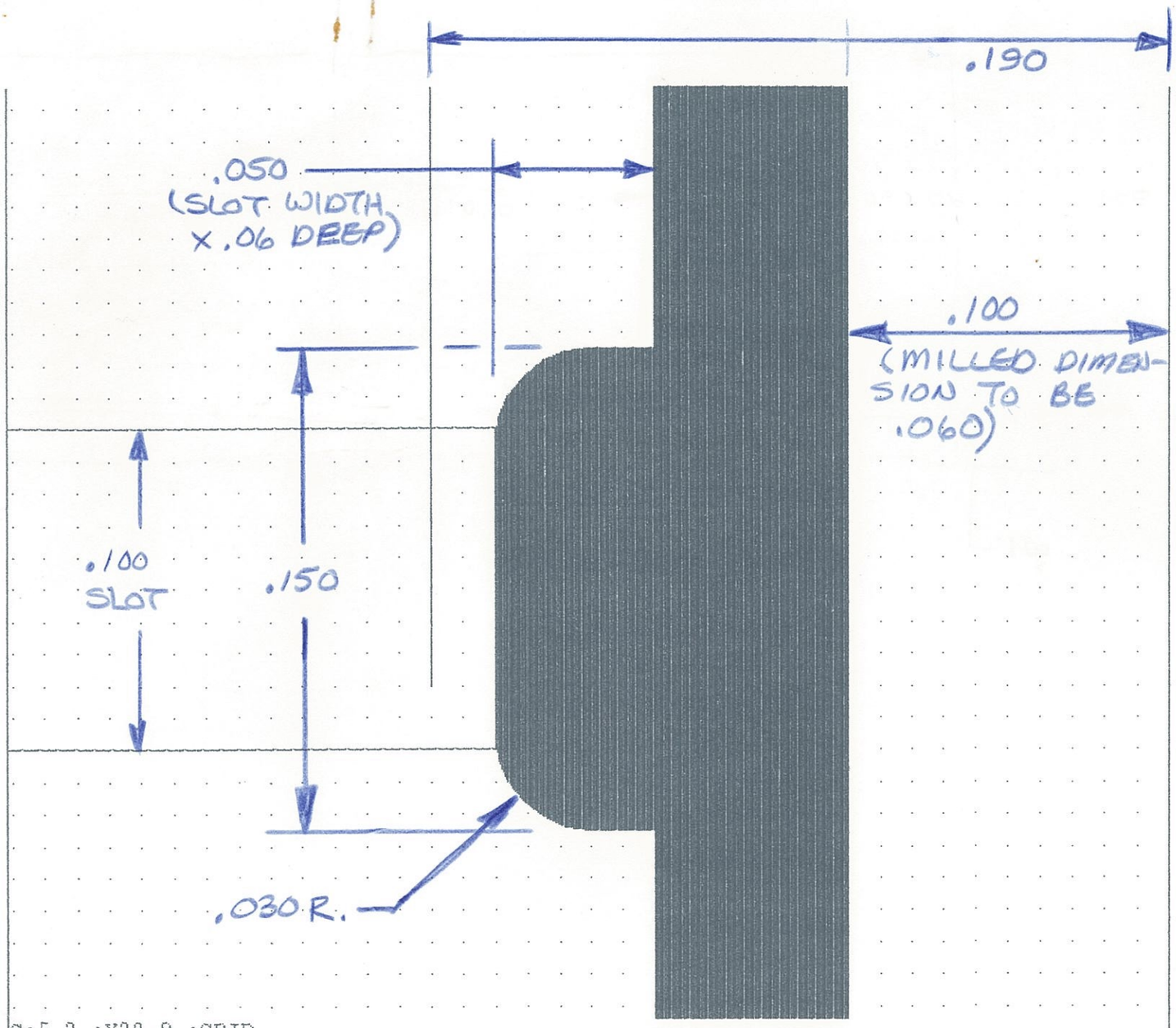
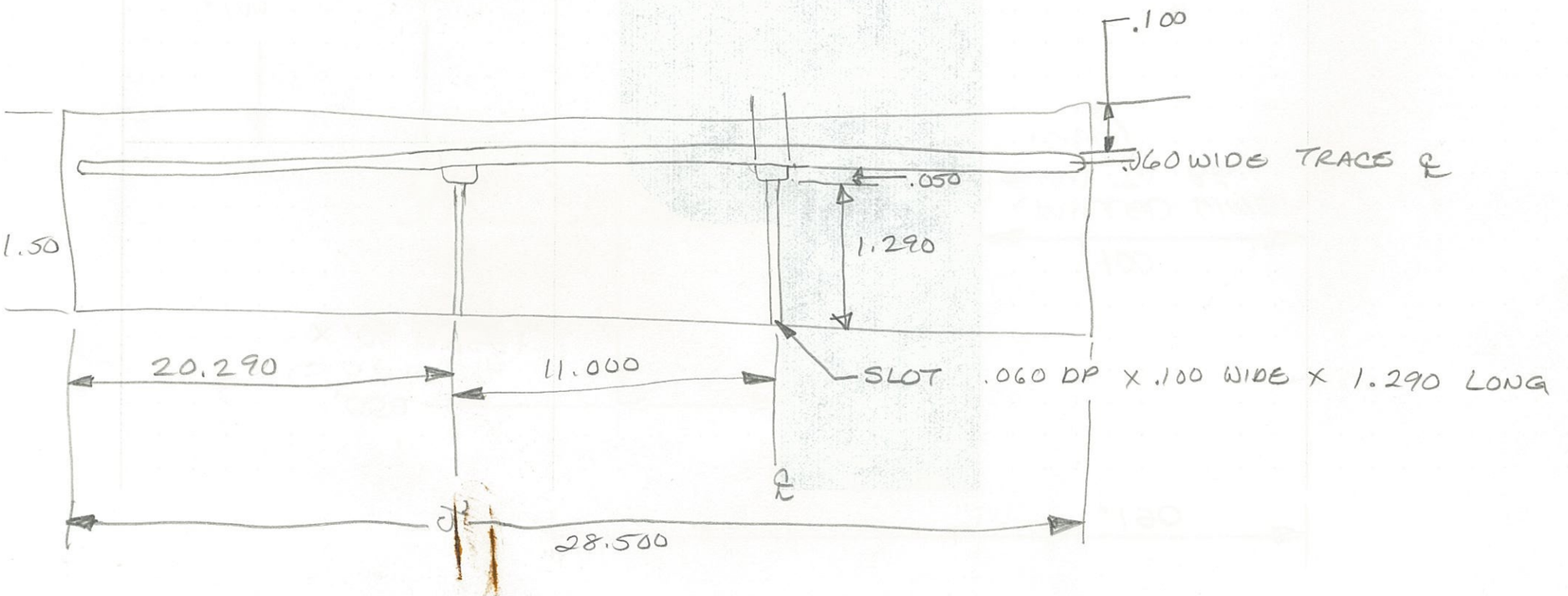


1.50"

$GR	$VR	$IN	$P	$R
Edit_PCB		Make_Prt		
Layr 5		BK	UNDO*	
ADD*		DELETE*		
MODIFY*		STRETCH*		
MOVE*		GATHER*		
COPY*		STEP*		
WRAP*		SMASH*		
ROUTE*		MODNOTE*		
~Line		~Polygon		
~Rectang		~Hatch		
~Arcs		~Circle		
~Note		~Text		
~Part		~Net_Nam		
*FILL	*WDTH	*EDIT		
*LAYR	*FONT	*SLNT		
*SCAL	*ROT	*MIR		
ENT	0	1	2	3	4	.	+
EOC	5	6	7	8	9	,	-
INFO*	HELP*	OUT*					
RULE*	WIND*	SHOW*					
PLOT*	DUMP*	SAVE*					

171 -9000

G:5 2 :X28.9 :GRID


-50, -.1985
-50, -.20075
.090
.100
.060 WIDE TRACE ℄
.050
1.290
1.50
20.290
11.000
SLOT .060 DP X .100 WIDE X 1.290 LONG
28.500