2-1974

Macromodular Computer Design, Part 2, Volume 12, Frame Section and Base Pedestal

Computer Systems Laboratory, Washington University

MACROMODULAR COMPUTER DESIGN PART 2 MANUFACTURING DESCRIPTION

VOLUME XII

FRAME SECTION AND BASE PEDESTAL

Technical Report No. 41

FINAL REPORT - FEBRUARY, 1974
CONTRACT SD-302 (ARPA)

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR COMPUTER DESIGN

FINAL REPORT - CONTRACT SD-302

FEBRUARY, 1974

Technical Report No. 41

PART 2 - MANUFACTURING DESCRIPTION

VOL. XII-FRAME SECTION AND BASE PEDESTAL

This work has been supported by the Advanced Research Projects Agency of the Department of Defense under Contract SD-302 and by the Division of Research Facilities and Resources of the National Institutes of Health under Grant RR-00396.
The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the Advanced Research Projects Agency or the U.S. Government.

Computer Systems Laboratory
Washington University
St. Louis, Missouri

ABSTRACT

Complete manufacturing documents regarding electrical and mechanical components and assembly procedures for the macromodular frame block and base-pedestal are contained in this report.

INDEX

FRAME SECTION SUB ASSEMBLY

CHG.	E.C.O.	DATE	APPR	CHG	E.C.O.	DATE	APPR	CHG.	E.C.O.	DATE	APPR.
ISSUE	0173	4-27-71	RJA								
A	0270	8-16-72	RJA								

F RAME SECTION

PARTS LIST

QTY.	C.S.L. DOC.	PART
1	401-7	FRONT POST
1	401-8	REAR POST
8	401-9	RAIL
1	401-6	PLATE
4	—	8-32 x 3/4 LONG CADMIUM PLATED STEEL CUP POINT SOCKET SET SCREW
10	—	3/32 D x 5/16 LONG CADMIUM PLATED STEEL ROLL PIN (POST PIN)
4	—	3/32 D x 9/16 LONG CADMIUM PLATED STEEL ROLL PIN (RAIL PIN)
8	—	3/32 D x 5/16 LONG CADMIUM PLATED STEEL ROLL PIN (FPB STOP PIN)
16	—	4-40 x 7/16 STAINLESS STEEL SOCKET HEAD CAP SCREW

CHG.	E.C.O.	DATE	APPR.	CHG.	E.C.O.	DATE	APPR.	CHG.	E.C.O.	DATE	APPR.
ISSUE	0173	4-21-71	RJA								
A	0270	8-16-72	RJA								

Assembly Procedure and Descriptive Notes

This document contains manufacturing information for production of the macromodular frame section sub assembly. On the following pages will be found a complete set of mechanical drawings fully describing components and assembly of the frame section. In addition, an inspection drawing is included as a guide for assertion of the quality control of production methods employed in manufacture.

Frame Section Description

The frame section is a sub assembly used to contruct a larger assembly known as the frame block. The frame section is made up of four components - the front post, rear posts, rails and section plate. Front and rear post, in addition to acting as load bearing members serve as keys to permit vertical stacking of sections. The rails, mounted on the section plate; guide and hold electronic packages inserted into the frame block assembly.

Manufacturing Notes

Provision has been made for hold down points on the section plate to be employed for machining operations (see dwg. 401-6). Should the manufacturer desire hole sizes or locations different from those indicated approval must be granted for such changes by the Computer Systmes Lab.

It will be noted that tolerance specification on rail spacing is to be closely maintained. This is due to the fact that series tolerance accumulation may result from the use to which the frame sections are put (A maximum tolerance magnification of sixteen could be possible). Therefore, care must be exercised in final assembly of these rails. It is highly recommended that an assembly jig be used for this purpose.

Tolerance specifications and material finishes are listed on the mechanical drawings. For further information pertaining to finish specifications the manufacturer is referred to CSL document 010-General Standards.

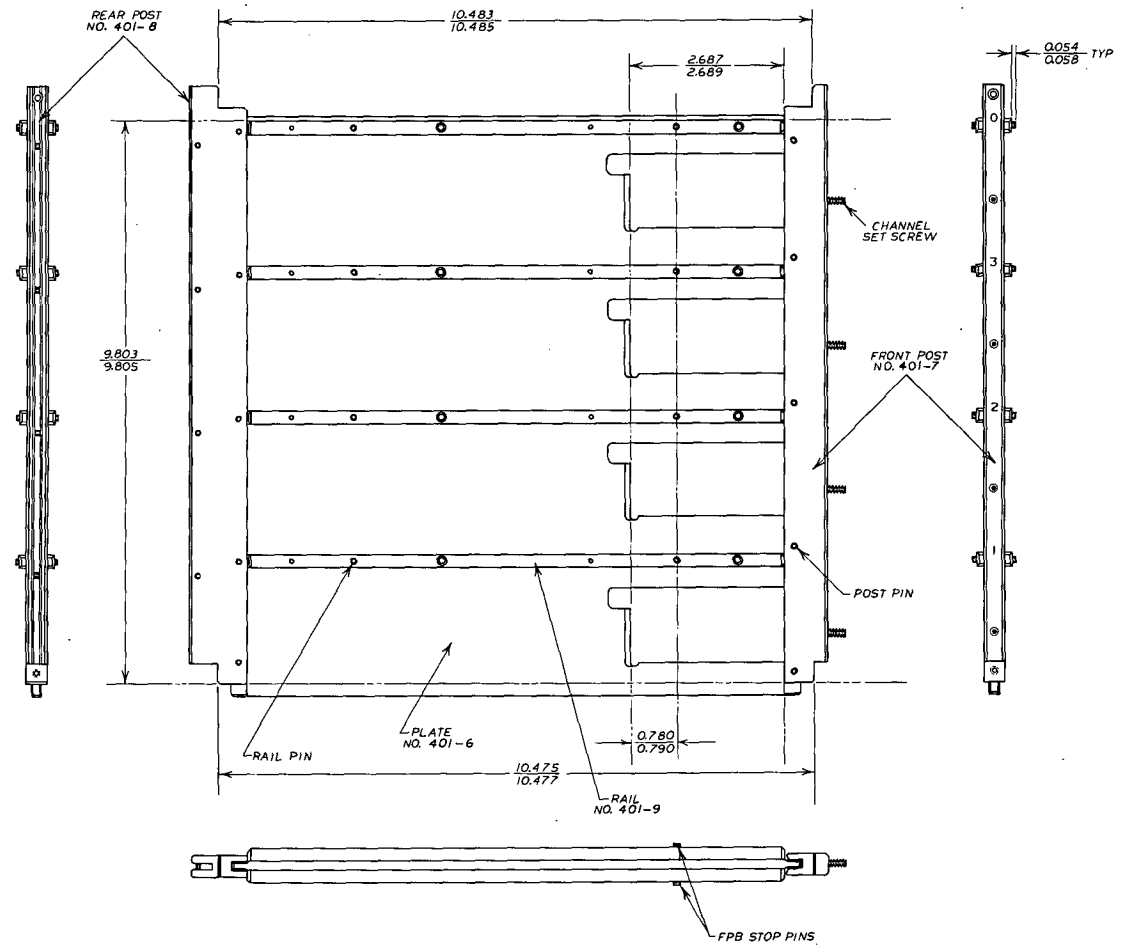
All tolerances and specifications relating to the frame section must be adherred to in order to produce acceptable assemblies. The manufacturer must assure himself that these requirements can be met by analyzing component and assembly documentation, his tooling, and characteristics his production process.

			APPR.
Issue	0173	5/3/71	RJA

Assembly Procedure

1. The rails are assembled to the section plate by pressing in the rail pins and installing the 4-40 screws. The rail pins shall be centered in the plate.
2. The plate, front post and rear post are then secured in an assembly jig.
3. Drill the spotted holes in the posts using a No. 41 drill bit, and insert the post pins with the slots randomly oriented. The pins shall be .031 below the surface on both sides. (Deburr holes)
4. Insert the FPB stop pins in the rails. Sink the pins with all slots facing the rear post. This pin is to be positively stopped upon insertion by the bottom of a hole into which it is pressed. This may be accomplished by letting the pin bottom on the section plate and grinding to length or by drilling to appropriate depth a hole through the rail and into the section plate at assembly.

CHG.	E.C.O.	DATE	APPR.
A	0270	8-16-72	RJA



NOTE:
THE DIMENSION $\frac{2.687}{2.689}$ SHALL BE MAINTAINED IN EACH OF THE FOUR OPENINGS.

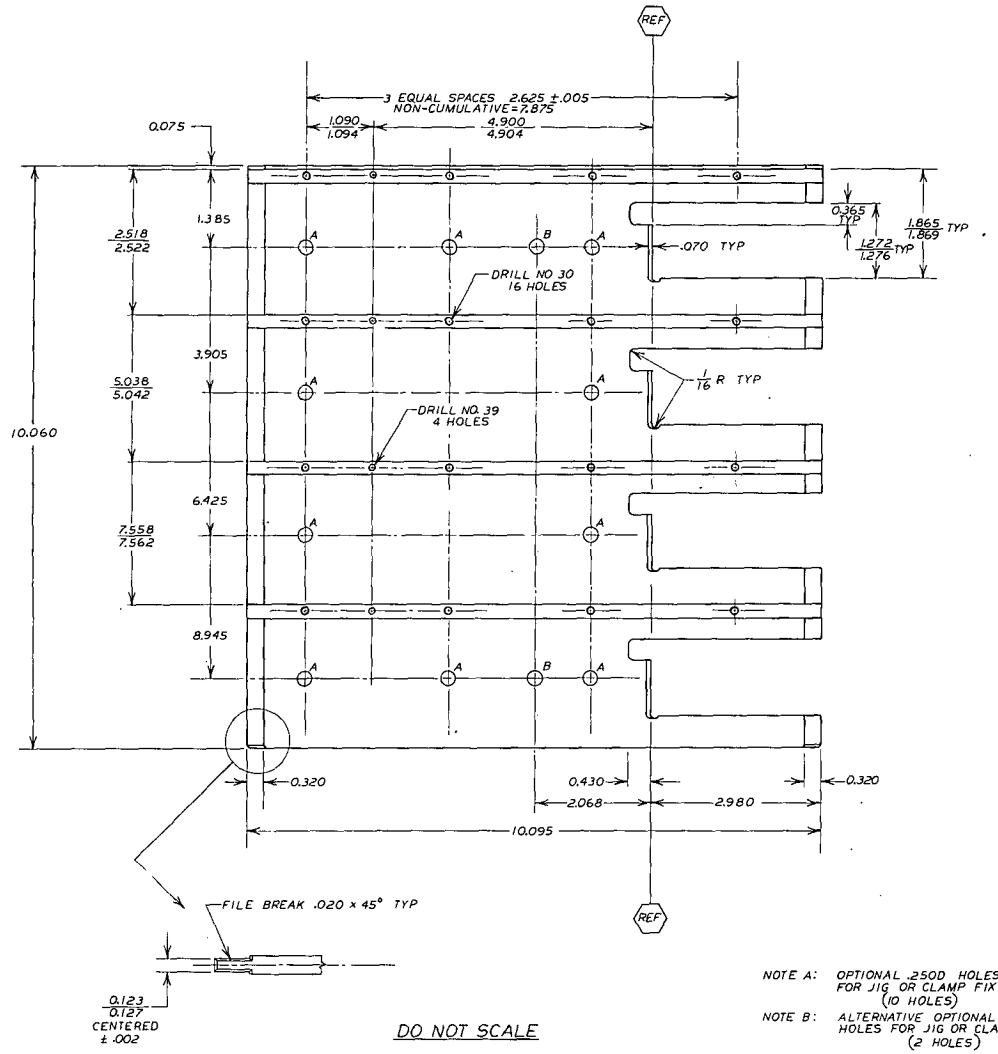
CHANGE NO.	DATE	DESCRIPTION
ISSUE 4	26-71	E.C.O. 0173 R.J.A

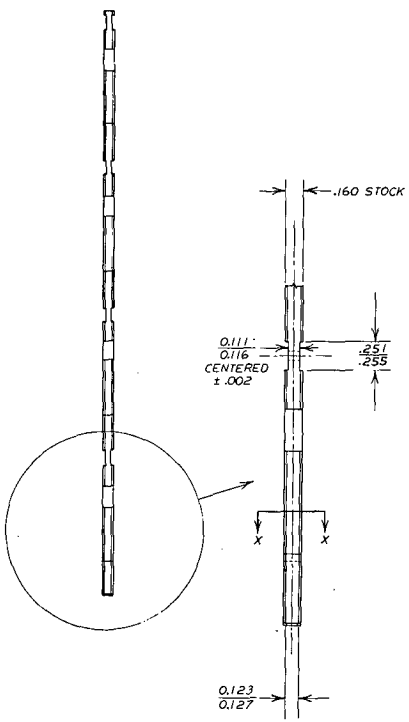
COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

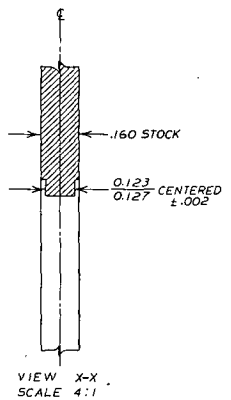
MACROMODULAR PROJECT

TITLE: FRAME SECTION ASSEMBLY

APPROVED BY	FOR	DATE	ENG.	DRAWING NO.
RJA	PROD	6-8-70	WAC	401-5
			DRAWN BY PLL	
			CHECKED BY WAC	DATE 6-4-70







VIEW X-X
SCALE 4:1

DO NOT SCALE

NOTE A: OPTIONAL .250D HOLES FOR JIG OR CLAMP FIXTURE. (10 HOLES)

NOTE B: ALTERNATIVE OPTIONAL .250 D HOLES FOR JIG OR CLAMP FIXTURE. (2 HOLES)

MAT'L: .160 ALUM 2024-T351
DIM: ± .005 U.O.N.
FINISH: CSL SPEC MF1
FLAT WITHIN .007 OVERALL

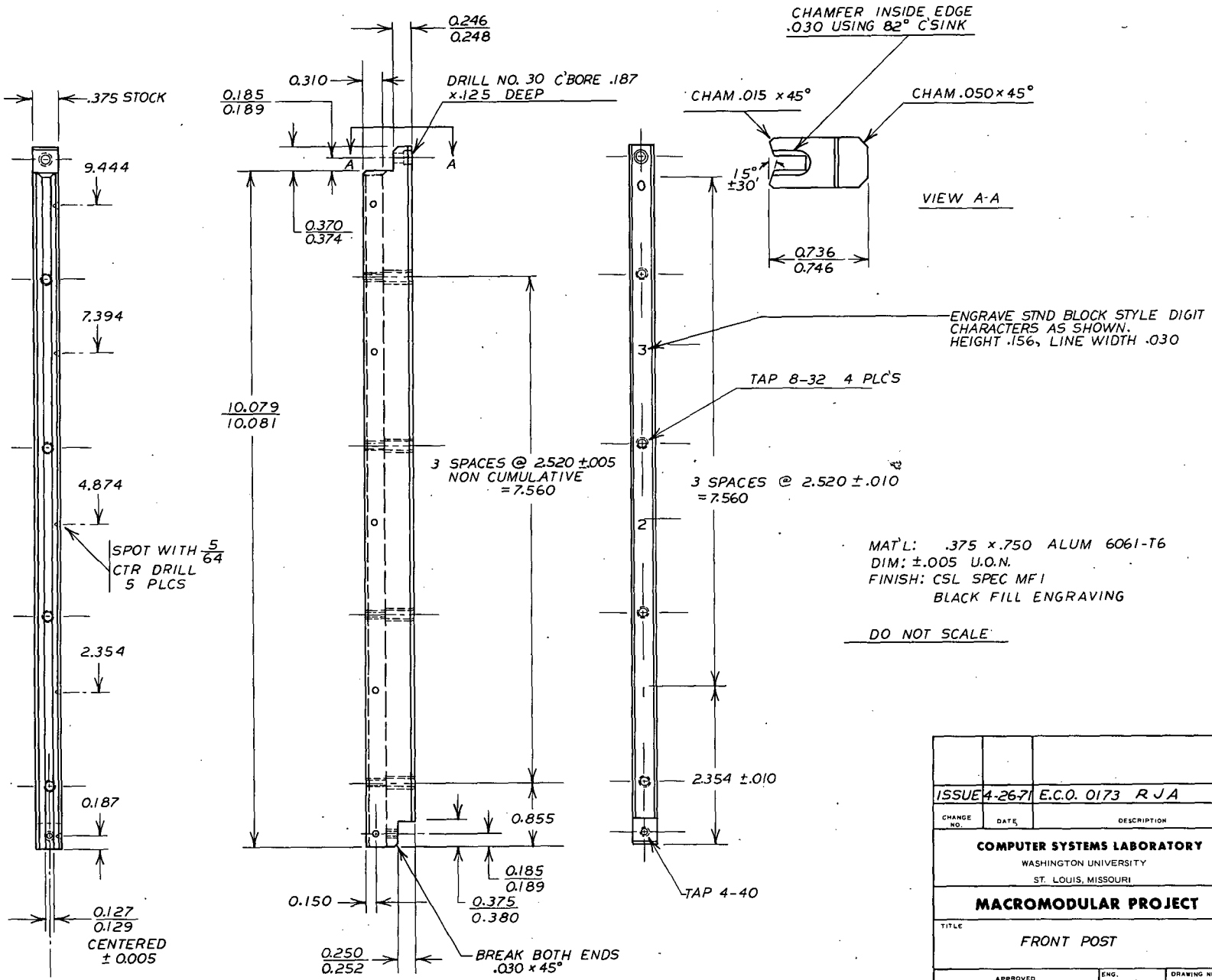
ISSUE	DATE	DESCRIPTION
4	4-26-71	E.C.O. 0173 R J A

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE: PLATE

APPROVED BY	FOR	DATE	ENG.	DRAWING NO
DEJ	PROD	6-3-70	WAC	401-6
			DRAWN BY PLL	
			CHECKED [illegible]	DATE 5-27-70



MAT'L: .375 x .750 ALUM 6061-T6
DIM: ±.005 U.O.N.
FINISH: CSL SPEC MF1
BLACK FILL ENGRAVING

DO NOT SCALE

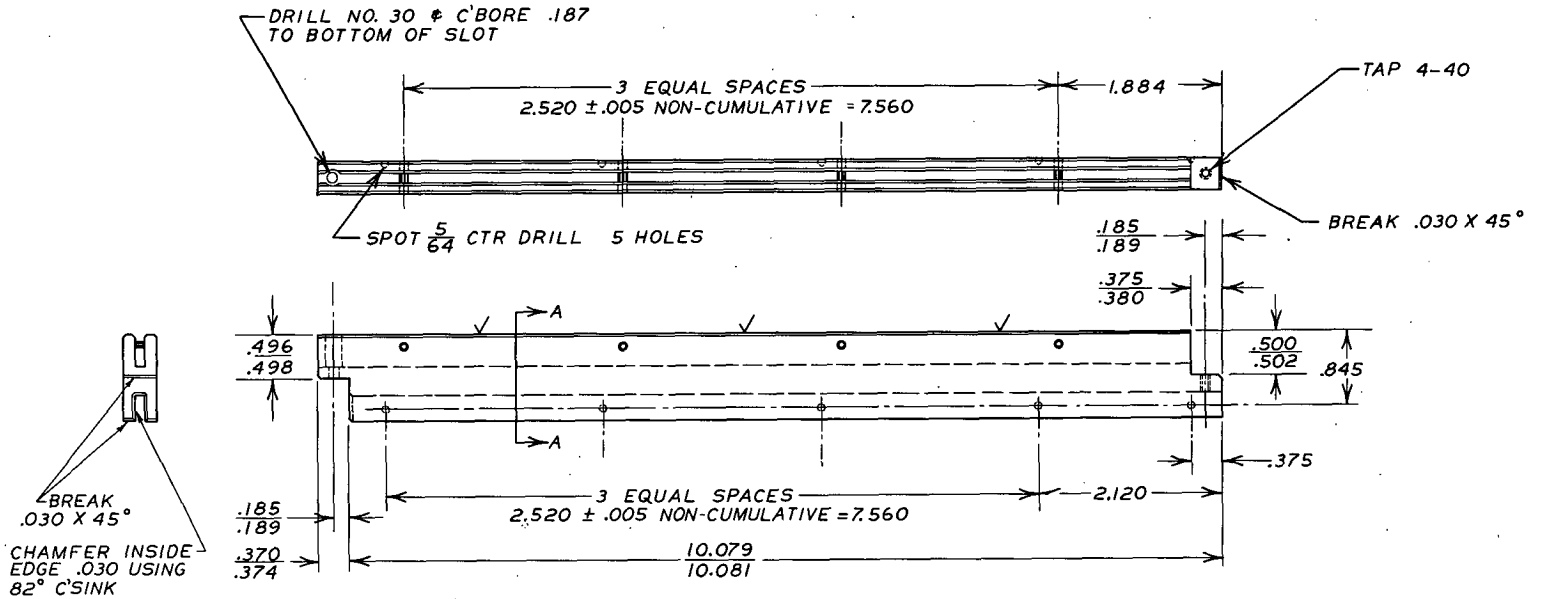
CHANGE NO.	DATE	DESCRIPTION
ISSUE 4	4-26-71	E.C.O. 0173 RJA

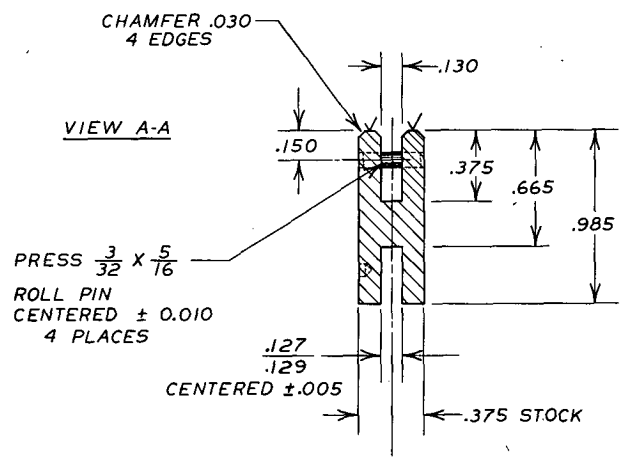
COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE: FRONT POST

APPROVED BY	APPROVED FOR	APPROVED DATE	ENG.	DRAWING NO.
			WAC	401-7
DRAWN BY: PLL				
CHECKED: WAC			DATE: 5-27-70	





MATERIAL: .375 X 1.000 ALUM 6061-T6
DIMENSIONS: ± .005 U.O.N.
FINISH: CSL SPEC MF-1

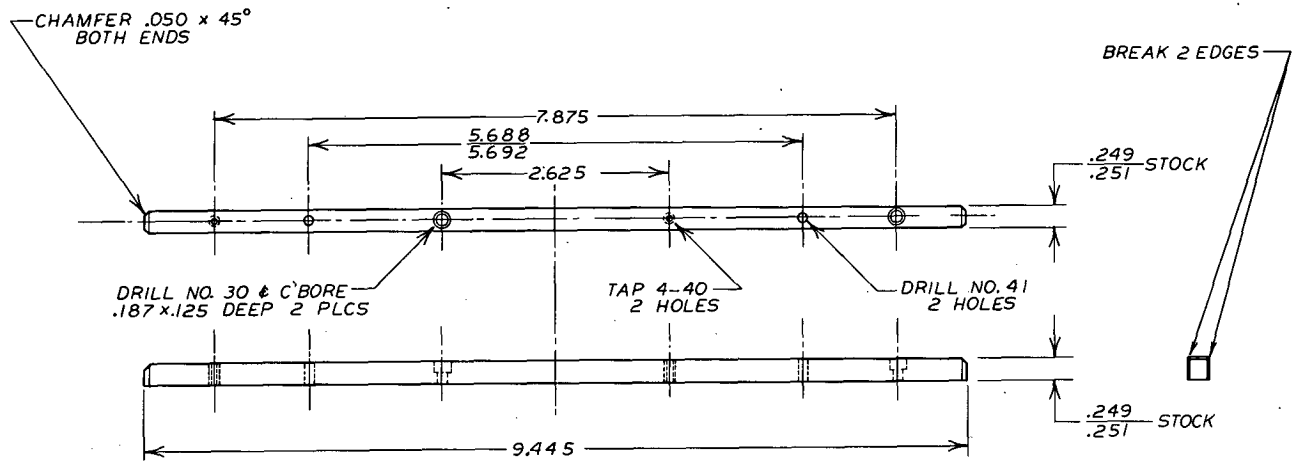
CHANGE NO.	DATE	DESCRIPTION
ISSUE	4-26-71	E.C.O. 0173 R J A

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE: REAR POST/LADDER

APPROVED BY	FOR	DATE	ENG.	DRAWING NO.
WAC	Prod	10/28/70	WAC	401-8
			DRAWN BY PLL	
			CHECKED RJA	DATE 10-21-70



MAT'L: .250 ±.001 SQUARE EXTRUDED ALUM
2024-T4

DEBURR ALL HOLES
FINISH: CSL SPEC MF1
DIM: ±.005 U.O.N.

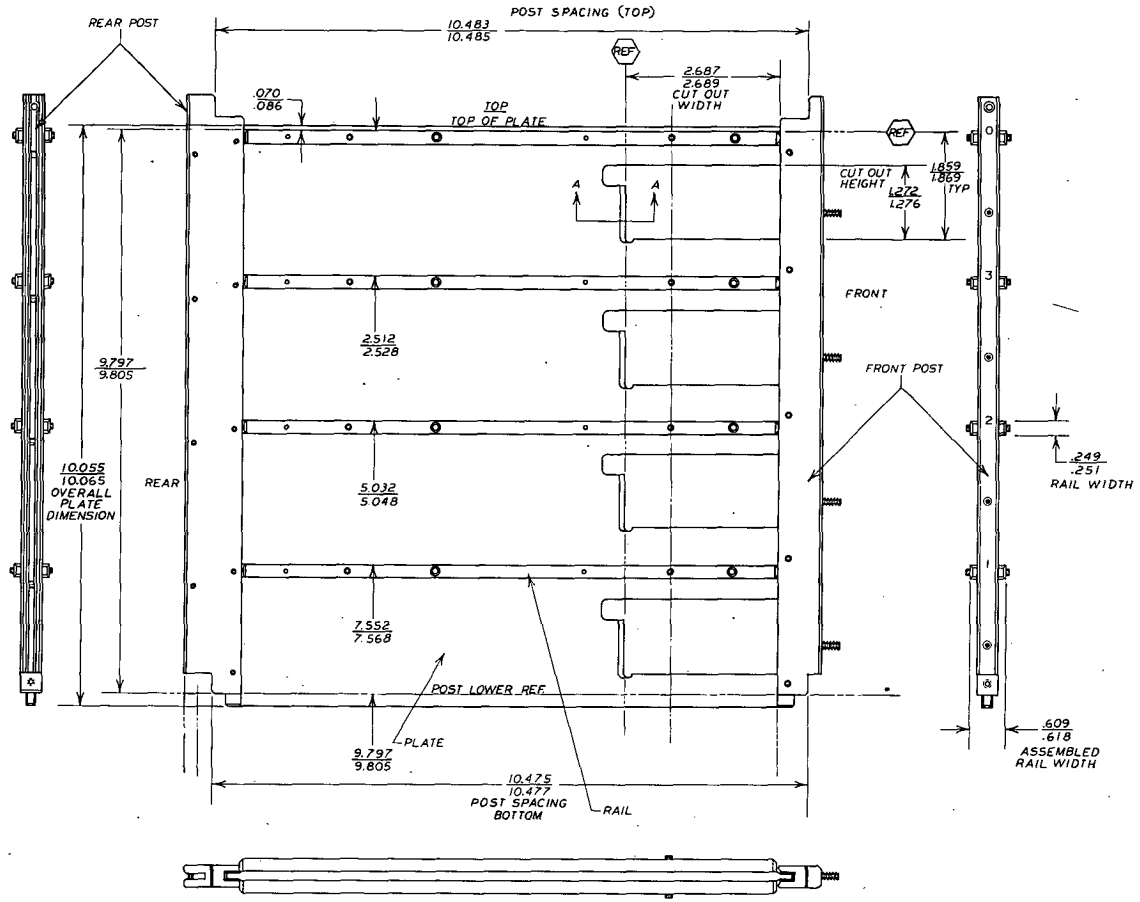
CHANGE NO.	DATE	DESCRIPTION
ISSUE 4-26-71		E.C.O. 0173 R J A

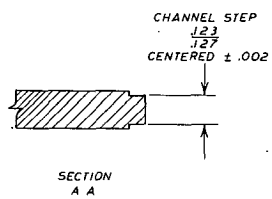
COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE: RAIL

APPROVED BY	APPROVED FOR	APPROVED DATE	ENG.	DRAWING NO.
DCJ	PROD	6-3-70	WAC	401-9
			DRAWN BY PLL	
			CHECKED WAC	DATE 5-27-70





CHANGE NO	DATE	DESCRIPTION
ISSUE 4-2671		E.C.O. 0173 R J A

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE: FRAME ASSEMBLY INSPECTION DIMENSIONS

APPROVED	JOB	DATE	ENG.	DRAWING NO
WLC	PROD.	5-5-71	R J A	401-10
			DRAWN BY P L L	
			CHECKED R J A	DATE 9-24-70

LATERAL CHANNEL PARTS AND PRINTED CIRCUIT BOARDS

CHG.	E.C.O.	DATE	APPR	CHG.	E.C.O.	DATE	APPR	CHG.	E.C.O.	DATE	APPR.
ISSUE	0174	4-27-71	RJA								

Lateral Channel Sub Assembly

This document contains manufacturing information for production of metal components and printed circuit boards used in the macromodular lateral channel sub assembly. Documentation in the form of verbal descriptions, mechanical drawings and illustration will be found on the pages following.

Lateral Channel Description

Mechanically, the lateral channel, together with its cover, serves as a primary structural element in the frame block assembly and as a protective housing for printed circuit boards and ducting. Printed circuit boards provide electrical pathways within the channel while ducting conveys convective cooling air to macromodular electronics packages being serviced by the lateral channel sub assembly.

[illegible]	[illegible]	[illegible]	[illegible]
issue	0174	4/28/71	RJA

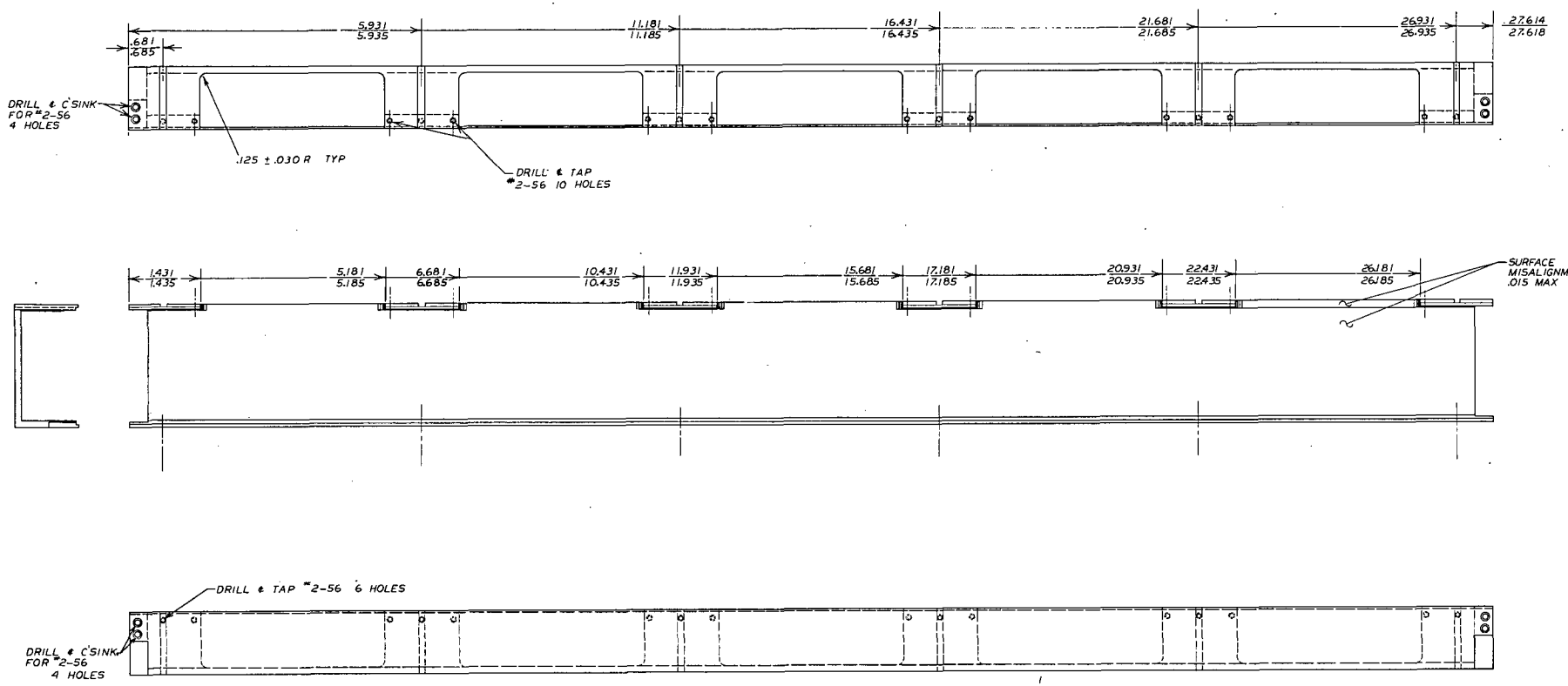
Manufacturing Notes

In addition to the functions listed above the lateral channel sub assembly is a controlling factor in the lateral spacing of frame sections making up the frame block. In order that tolerance accumulation problems be kept to a minimum strict tolerance control must be maintained in the location of frame slots (see 402-5) The same is true of the ten 2-56 tapped holes in the cut out side of the channel. These holes determine connector location and, therefore, the ability or disability of connectors to mate. Tolerance specifications and material finishes are listed on each mechanical drawing. For further information concerning specifications and workmanship relating to metal parts and circuit boards the manufacturer is referred to CSL document 010 - General standards.

Notes to Manufacturer

This document deals exclusively with the components of the lateral channel sub assembly. Should the manufacturer have need, complete assembly instructions for lateral channel circuit boards are found in document 403 while the lateral channel assembly is treated in document 404.

All tolerances and specifications relating to the lateral channel components must lie adhered to in order to produce acceptable units. The manufacturer must assure himself that these requirements can be met by analyzing component documentation his tooling, and characteristics of his production processes.



REFER TO DWG 402-5 FOR DETAIL

MAT'L.
6061-T6 ALUMINUM CHANNEL
2.500 X 1.375 X 0.125
ALCOA SECTION NO. 5174 OR EQUIVALENT
FINISH: CSL SPEC MF1

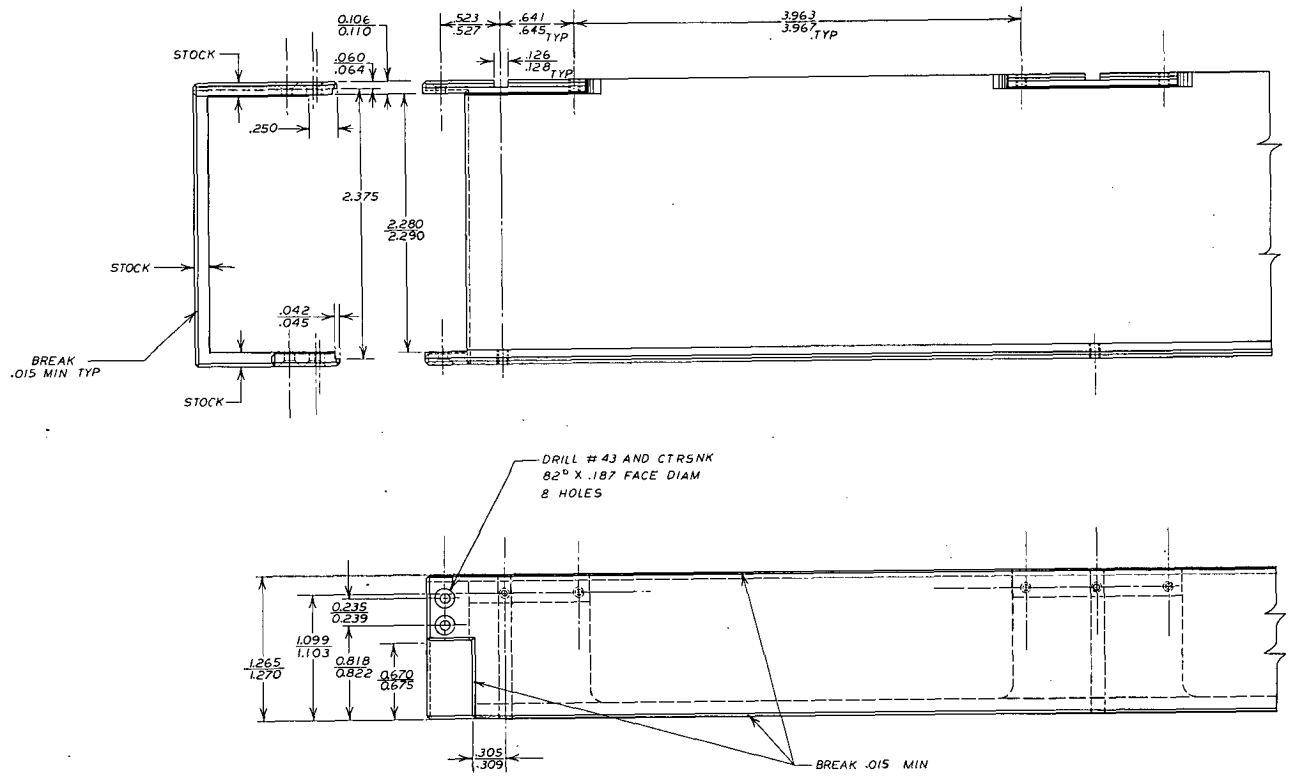
CHANGE NO.	DATE	DESCRIPTION
ISSUE 4-26.7		E.C.O. 0174 R J A

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE: LATERAL CHANNEL

APPROVED BY	FOR	DATE	ENG.	DRAWING NO.
[illegible]	PROD	6-5-70	WAC	402-4
			DRAWN BY PLL	
			CHECKED WJC	DATE 1-29-70



REFER TO 402-4 FOR OVERALL DIMENSIONING
TOLERANCE: ±.005 U.O.N.
DEBURR HOLES

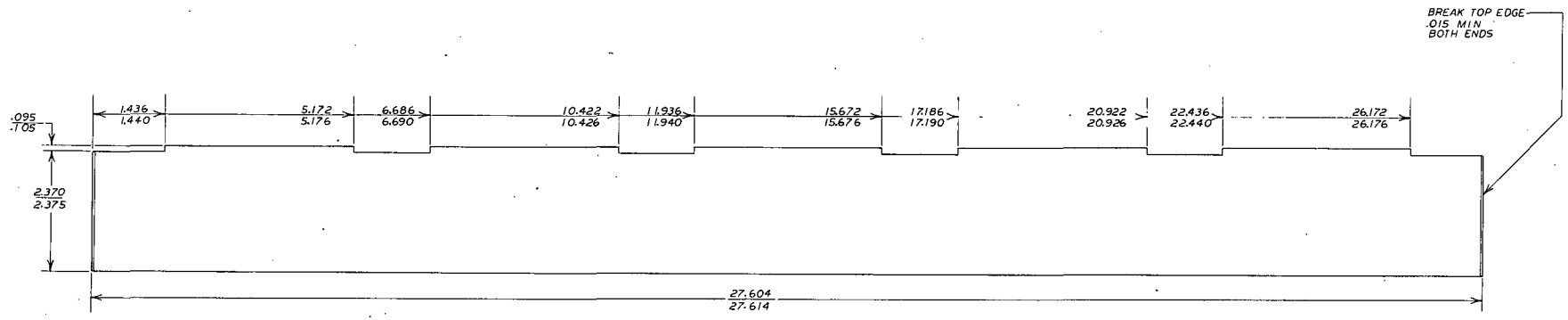
ISSUE	DATE	DESCRIPTION
4-267		ECO 0174 R J A

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE: LATERAL CHANNEL DETAIL

APPROVED			ENG	DRAWING NO
RJ	CDR	DATE	WAC	402-5
RJ	PROD	6-3-70	DRAWN BY PLL	
			CHECKED JWE	DATE 1-29-70



COVER

.MAT'L:

.040 6061-T6 ALUM

FINISH:

CSL SPEC MF1

ISSUE 4-26-71 E.C.O. 0174 R J A

CHANGE NO	DATE	DESCRIPTION

COMPUTER SYSTEMS LABORATORY

WASHINGTON UNIVERSITY

ST. LOUIS MISSOURI

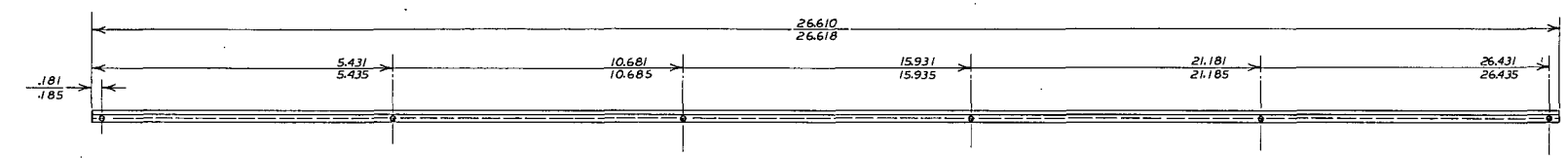
MACROMODULAR PROJECT

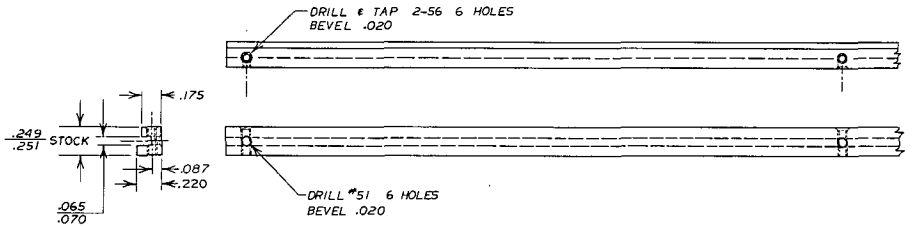
TITLE: COVER

APPROVED BY	FOR	DATE	ENG. WAC
RCJ	PROD	6-3-70	DRAWN BY PLL
			CHECKED

DRAWING NO 402-6

DATE 1-30-70





BREAK ALL EDGES

MAT'L: 2024-T4 ALUM
.250 ±.001 SQUARE EXTRUSION

FINISH: CSL SPEC MF1

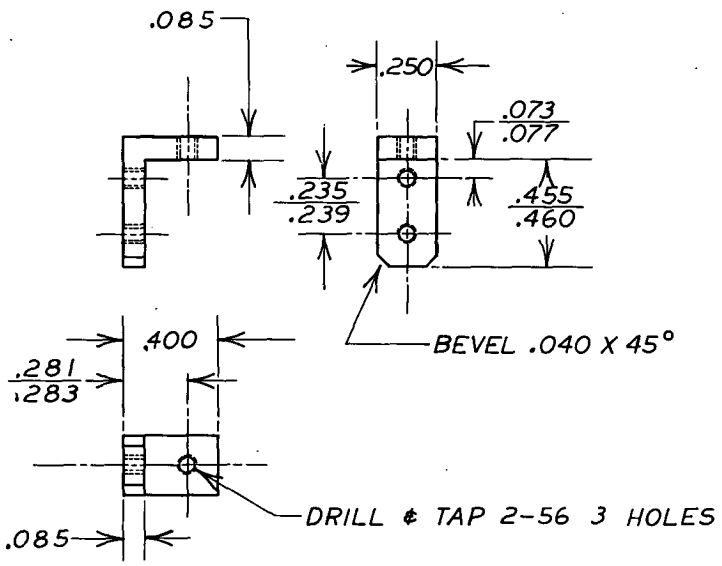
CHANGE NO.	DATE	DESCRIPTION
ISSUE 4	4-26-71	E.C.O. 0174 R J A

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE: SPLINE

APPROVED BY	APPROVED FOR	DATE	ENG.	DRAWING NO.
DEJ	PROD	6-3-72	WAC	402-7
			DRAWN BY PLL	
			CHECKED WAC	DATE 1-30-70



MAT'L: 6061-T6 ALUM
DIM: ± .005 U.O.N.
FINISH: CSL SPEC MF1

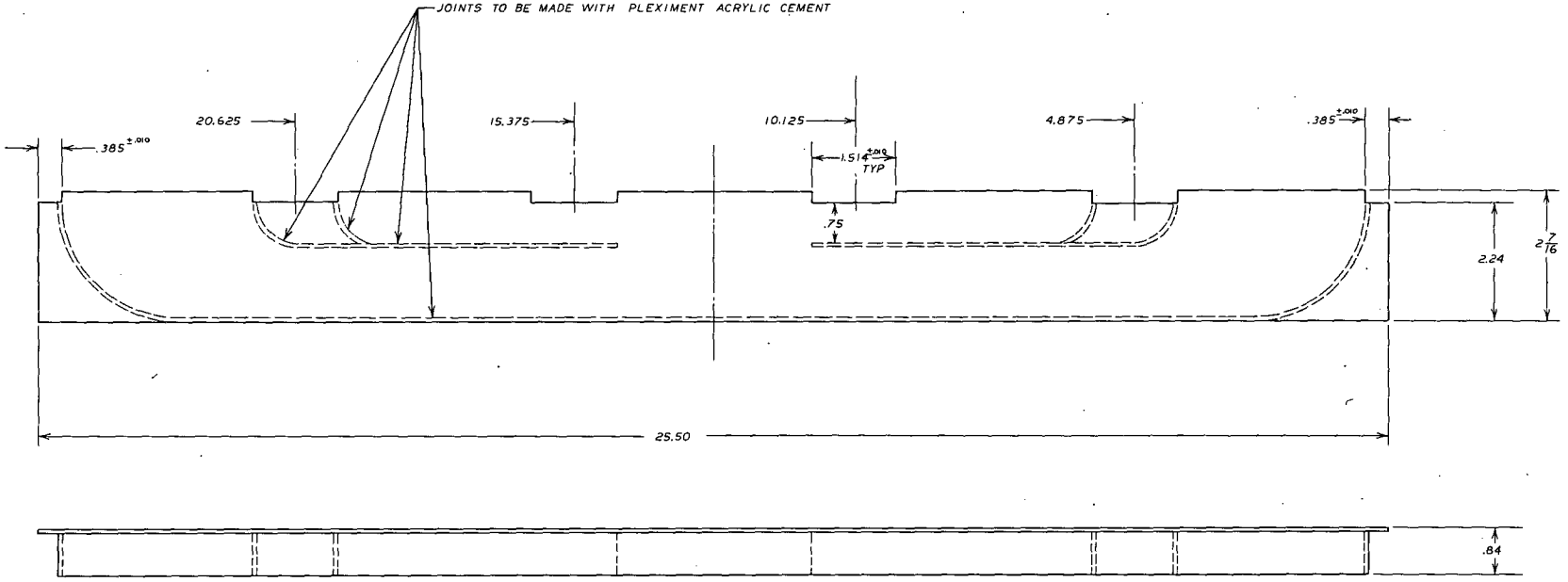
ISSUE 4-26-71	E.C.O. 0174 RJA	
	DESCRIPTION	

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE
BOARD BRACKET

APPROVED BY	FOR	DATE	ENG.	DRAWING NO.
JCJ	PROD	6-3-70	WAC	402-8
			DRAWN BY PLL	
			CHECKED WAC	DATE 1-30-70



CHANNEL: DUCT MATERIAL 1/16 ACRYLIC (BLACK)

TOLERANCE U.O.N.
.XXX ± .005
.XX ± .010
X/X ± 1/64

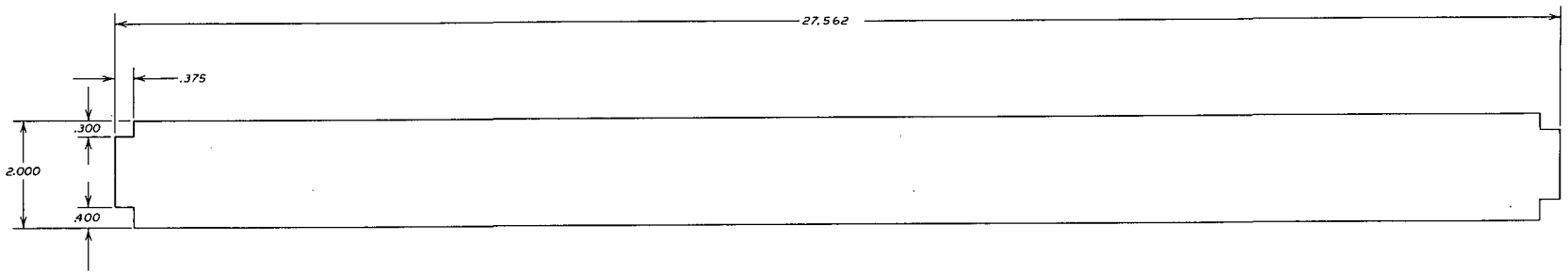
CHANGE NO	DATE	DESCRIPTION
	ISSUED: 2-6-71	E.C.O. 0174 R J A

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE: CHANNEL DUCT

APPROVED BY	FOR	DATE	ENG.	DRAWING NO
[illegible]	PROD.	5-5-71	R J A	402-9
			DRAWN BY P L L	
			CHECKED R J A	DATE 1-27-71



DIMENSIONS: ± 0.010

MATERIAL: MYLAR .005 THICK

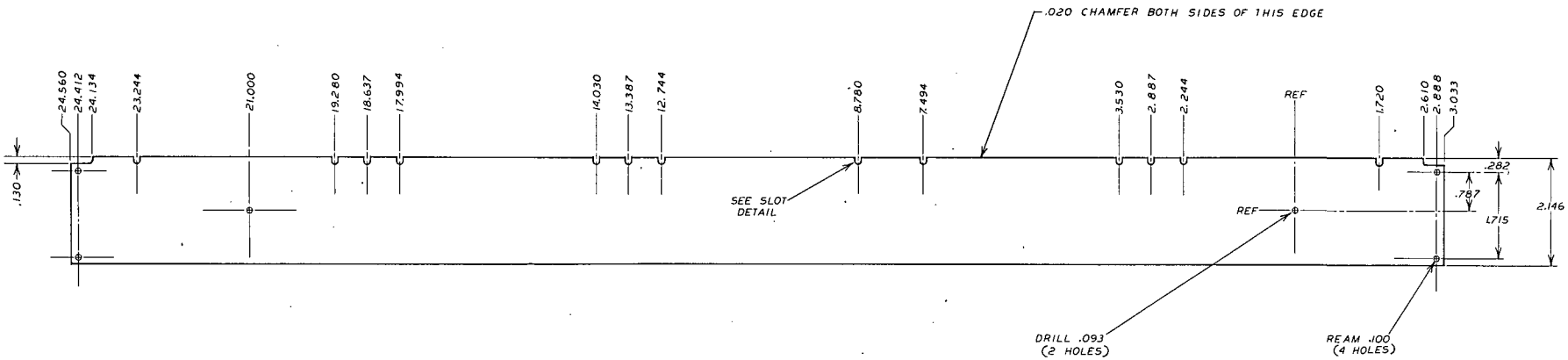
CHANGE NO	DATE	DESCRIPTION
ISSUE	4-26-71	E.C.O. 0174 R J A

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

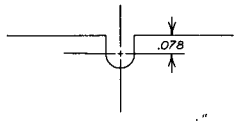
MACROMODULAR PROJECT

TITLE: CHANNEL SIGNAL BOARD
INSULATOR STRIP

APPROVED			ENG	DRAWING NO
BY	JOB	DATE	NTK	402-10
	PROD.	5-5-71	DRAWN BY PLL	
			CHECKED NTK.	DATE 2-19-71



SLOT DETAIL



USE $\frac{1}{8}$" ROUTING CUTTER

(13 SLOTS)

CHANGE NO.	DATE	DESCRIPTION
		ISSUE 4-26-71 E.C.O. 0174 R J A

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

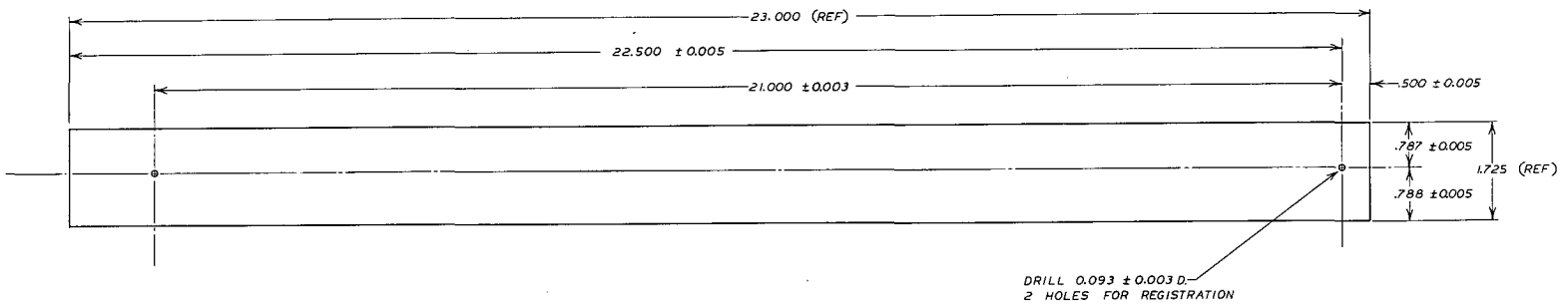
MACROMODULAR PROJECT

TITLE: CHANNEL SIGNAL BOARD ROUTING OUTLINE

APPROVED BY	FOR	DATE
CRM	MANUF.	11-24-70

ENG. NTK
DRAWN BY PLL
CHECKED RJA

DRAWING NO. 402-11
DATE 9-20-70



CHANGE NO	DATE	DESCRIPTION
ISSUE 4	26-71	E.C.O. 0174 R J A

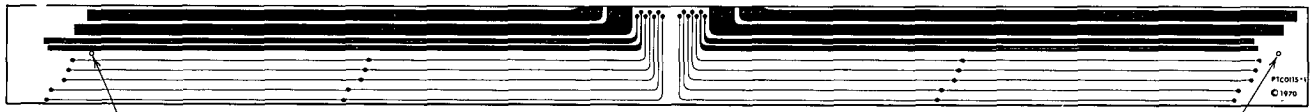
COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE: CHANNEL POWER BOARD ROUTING OUTLINE

APPROVED BY	FOR	DATE
Camm	MANUF.	28 Sep 70

ENG. N.T.K.
DRAWN BY P.L.L.
CHECKED R.J.A.
DRAWING NO 402-12
DATE 9-15-70



REGISTRATION HOLE

REGISTRATION HOLE

NOTE.
SEE MACROMODULAR SYSTEMS PROJECT DOCUMENT 010 UNDER PC-1 PAGES 010-12 THRU 010-16 FOR GENERAL SPECIFICATIONS.

EXCEPTIONS ARE AS FOLLOWS

1. THIS IS A ONE SIDED BOARD.
2. MATERIAL IS 1/32 LAMINATE.
3. 2 REGISTRATION HOLES TO BE DRILLED AS SHOWN IN DRAWING 402-12.
4. NO PLATED THROUGH HOLES ON THIS BOARD.

ARTWORK SUPPLIED AS 2:1 CRONAFLEX PRINT

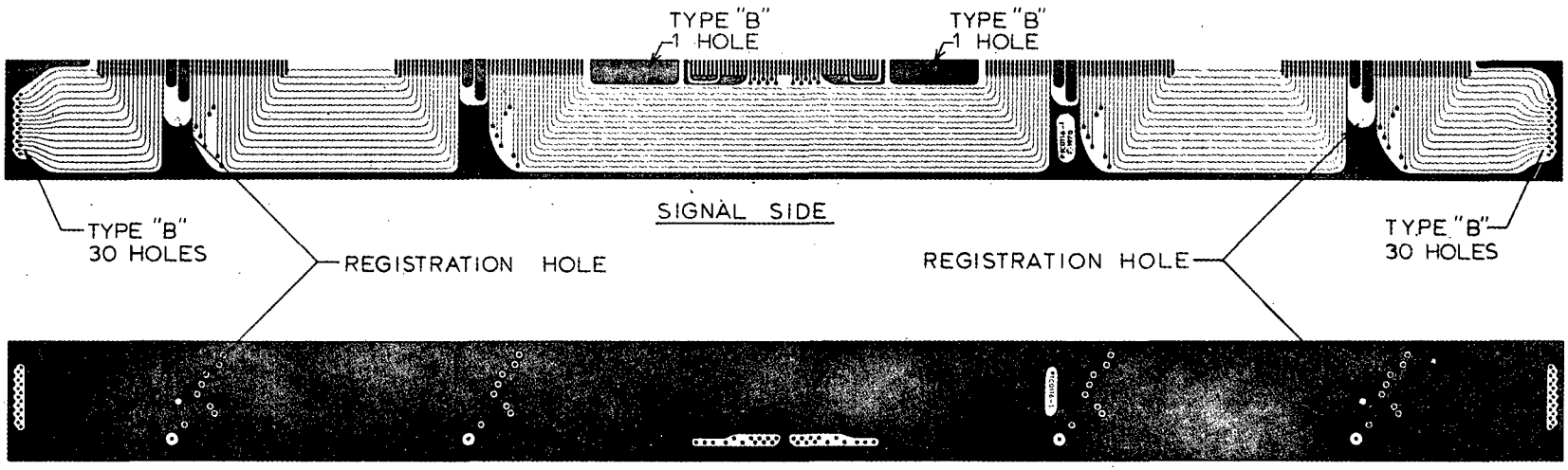
CHANGE NO	DATE	DESCRIPTION
ISSUE 4	4-26-71	E.C.O. 0174 R J A

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE
CHANNEL POWER BOARD ARTWORK

APPROVED BY	FOR	DATE	DWN	DRAWING NO
Cam	P&D.	5/5/71	DLS	402-13
			DRAWN BY PLL	
			CHECKED PJK	DATE 11-30-70



NOTE.
SEE MACROMODULAR SYSTEMS PROJECT DOCUMENT 010 UNDER PC-1 PAGES 010-12 THRU 010-16 FOR GENERAL SPECIFICATIONS.

EXCEPTIONS ARE AS FOLLOWS

1. LAMINATE THICKNESS IS 1/16
2. 62 PLATED THROUGH HOLES TYPE "B" IN MARKED LOCATIONS. DO NOT DRILL OTHER PADS.
3. 6 HOLES, NOT PLATED THROUGH SHOULD BE DRILLED ACCORDING TO DWG. 402-11.

ARTWORK SUPPLIED AS 2:1 CRONAFLEX PRINT

CHANGE NO.	DATE	DESCRIPTION
ISSUE	4-26-71	E.C.O. 0174

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE: CHANNEL SIGNAL BOARD ARTWORK

APPROVED BY	FOR	DATE
Cern	PROD	5/5/71

ENG. DLS
DRAWN BY PLL
CHECKED Cern
DRAWING NO. 402-14
DATE 11-20-70

LATERAL CHANNEL BOARD
ASSEMBLY PROCEDURE

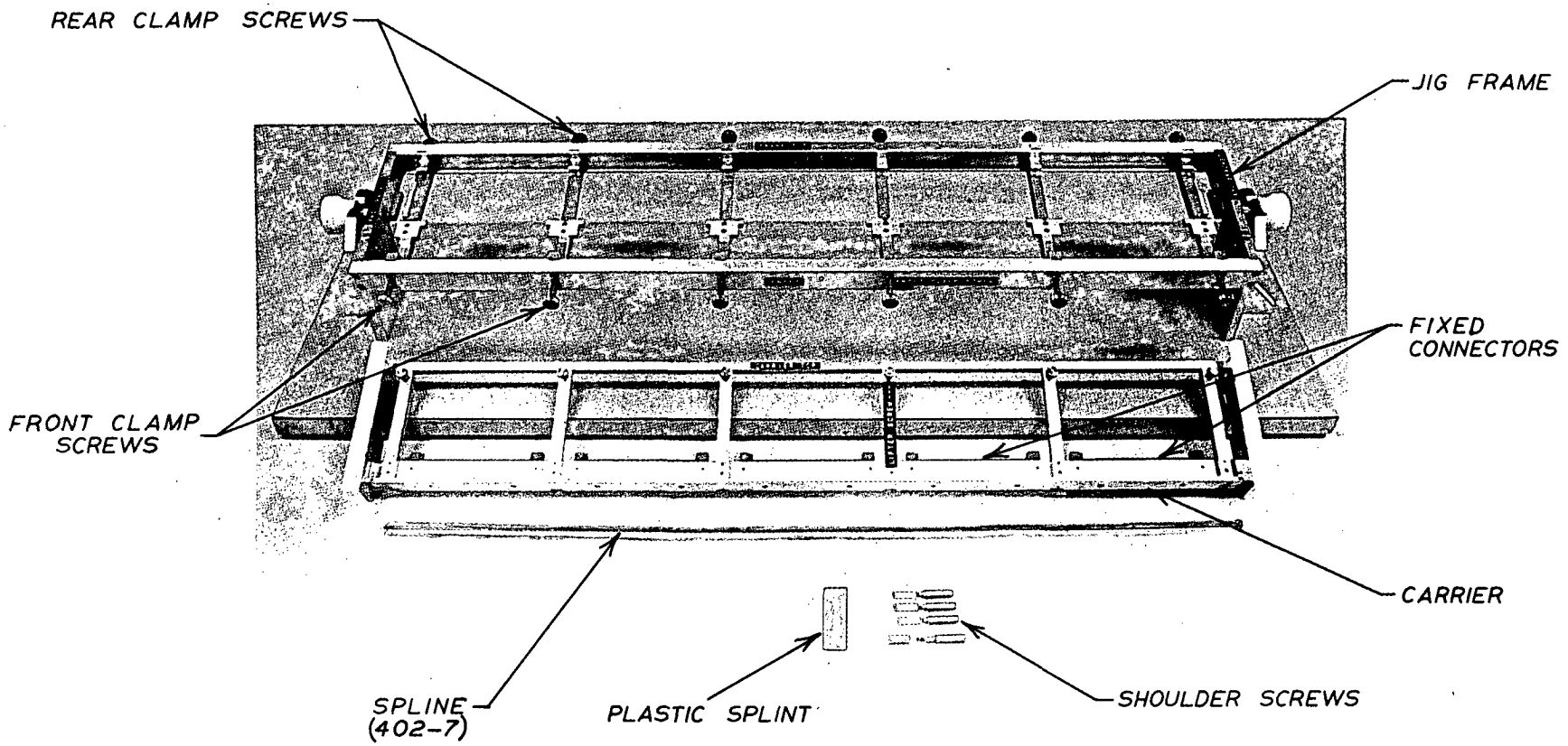
CHG.	E.C.O.	DATE	APPR.	CHG	E.C.O.	DATE	APPR	CHG.	E.C.O.	DATE	APPR.
ISSUE	–	3–24–71	RJA								

LATERAL CHANNEL BOARD
ASSEMBLY PROCEDURE
PARTS LIST

QTY.	C.S.L. DOC.	PART
1	901	LATERAL CHANNEL BOARD ASSEMBLY JIG
2	—	END CONNECTORS A-MP 202844-5
5	—	FEMALE CONNECTORS A-MP 4-202 844-1
64	—	JUMPER 22 GA. TINNED COPPER WIRE ½ INCH LONG
1	402-14	CHANNEL SIGNAL BOARD ARTWORK (PTC0116-1)
1	402-13	CHANNEL POWER BOARD ARTWORK (PTC0115-1)

NOTE: POWER BOARD PTC0115-1 IS BONDED TO
GROUND SIDE OF SIGNAL BOARD PTC0116-1

CHG.	E.C.O.	DATE	APPR.	CHG.	E.C.O.	DATE	APPR.	CHG.	E.C.O.	DATE	APPR.
ISSUE	–	3-24-71	RJA								



REF. CSL DOCUMENT 901

CHANGE NO.	DATE	DESCRIPTION
ISSUE	3-24-71	R J A

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

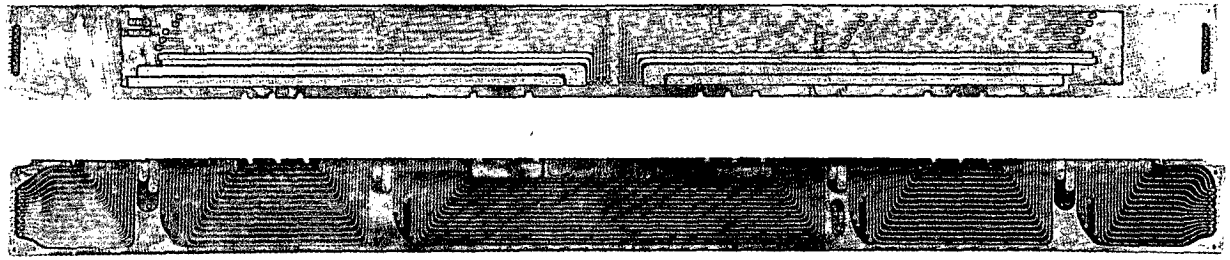
MACROMODULAR PROJECT

TITLE: LATERAL CHANNEL BOARD ASSEMBLY JIG IDENTIFICATION

APPROVED BY	FOR	DATE
WAC	ASS'Y	5-10-71

ENG. WAC
DRAWN BY DHO
CHECKED R J A
DRAWING NO. 403-3
DATE 3-24-71

PTC 0115-1 BOARD IS BONDED TO PTC 0116-1 BOARD GROUND SIDE

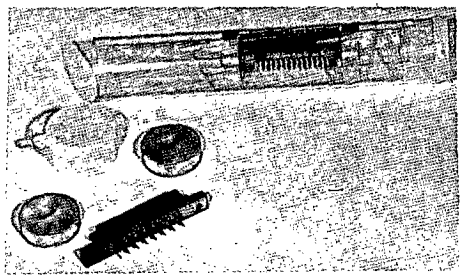


GROUND SIDE

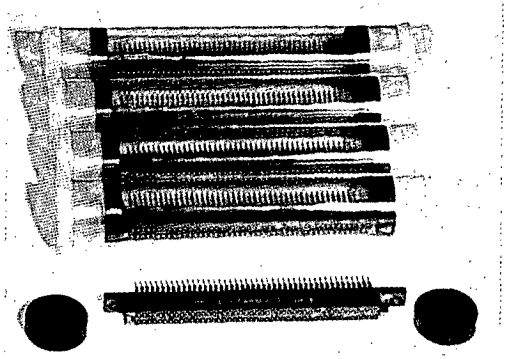
SIGNAL SIDE

LATERAL CHANNEL BOARD

JUMPERS



END CONNECTORS



FEMALE CONNECTORS

CHANGE NO.	DATE	DESCRIPTION
ISSUE	3-24-71	RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

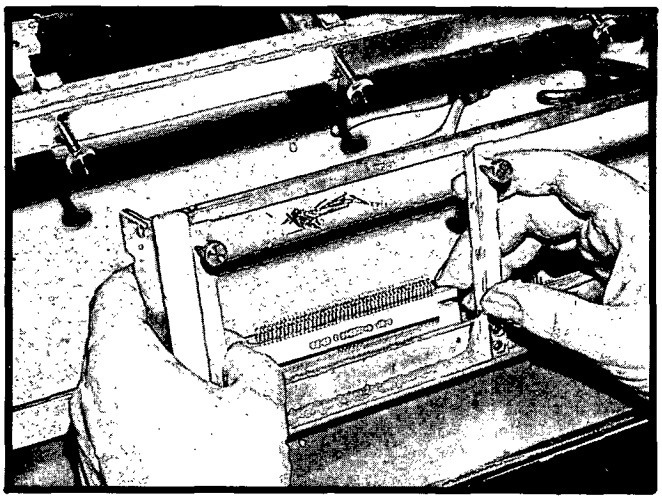
MACROMODULAR PROJECT

TITLE: LATERAL CHANNEL BOARD ASSEMBLY
PARTS IDENTIFICATION

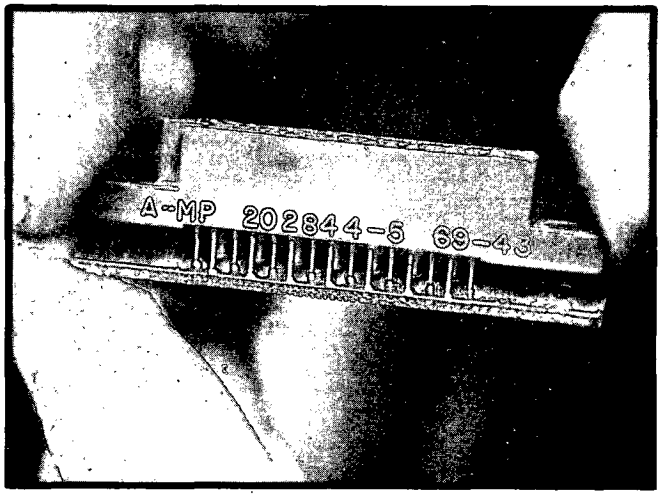
APPROVED BY	FOR	DATE
WAS	ASS'Y	5-10-71

ENG. DLS
DRAWN BY DHO
CHECKED RJA
DRAWING NO. 403-4
DATE 3-24-71

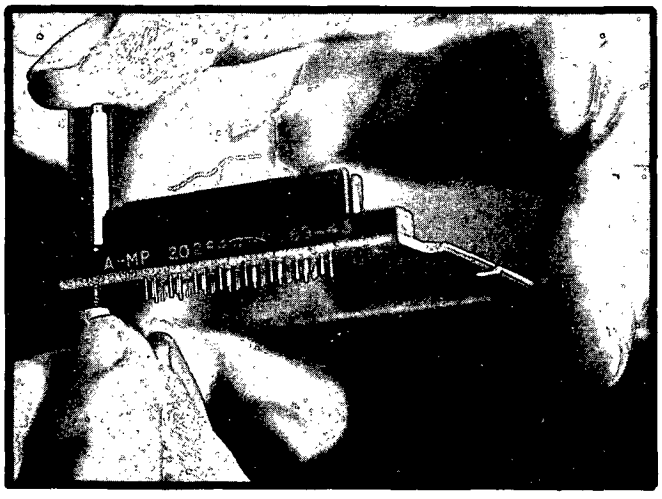
1. Loosen front and rear clamp screws and remove carrier from frame. With carrier removed push five female connectors A–MP 202844–1 onto the five male connectors which are permanently fixed to carrier. (set aside until called for.)



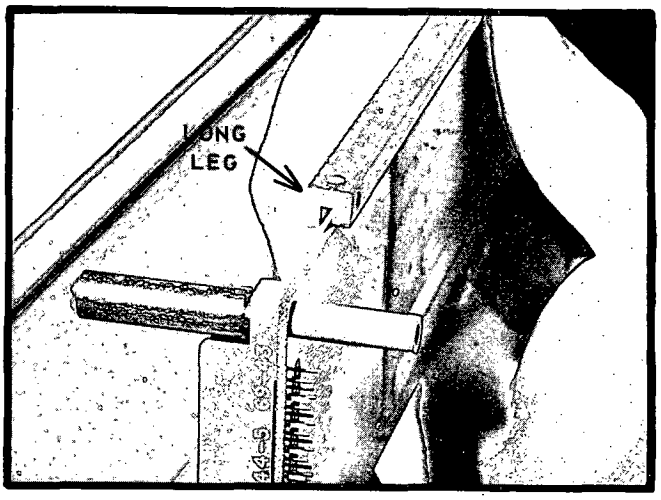
2. Place end connector on board by passing the solder tabs through the holes in the circuit board from the signal side. (There is only one way in which this connector can be placed in the predrilled hole configuration of the board.)



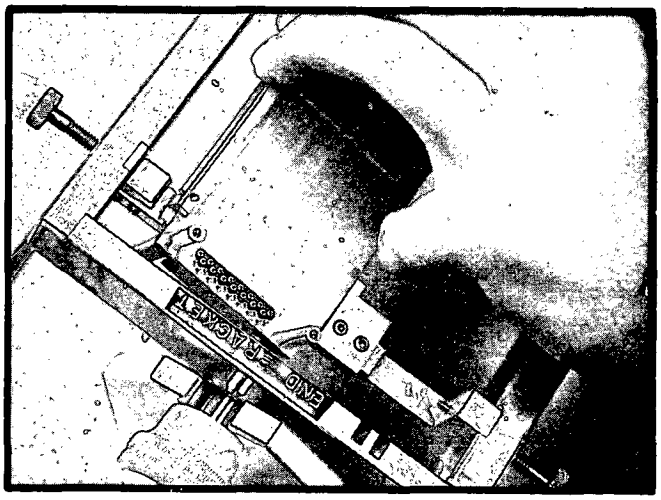
3. The end connectors are alligned, and held in place with the four shoulder screws assembled through the connector mounting holes from the signal side of the circuit board.



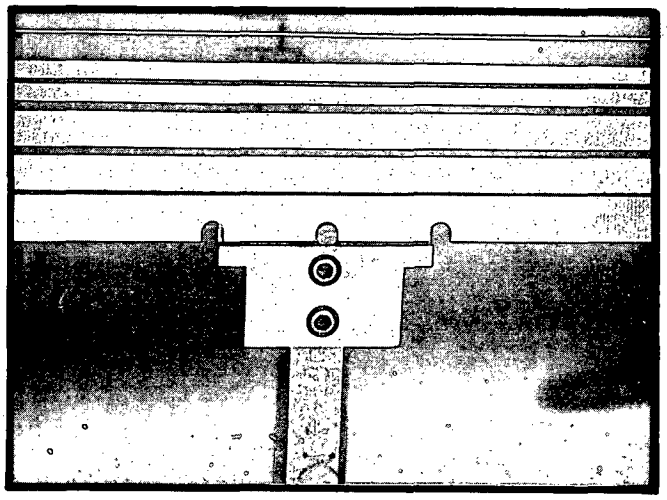
4. Place spline onto back of lateral channel board with long leg of spline on signal side of board.



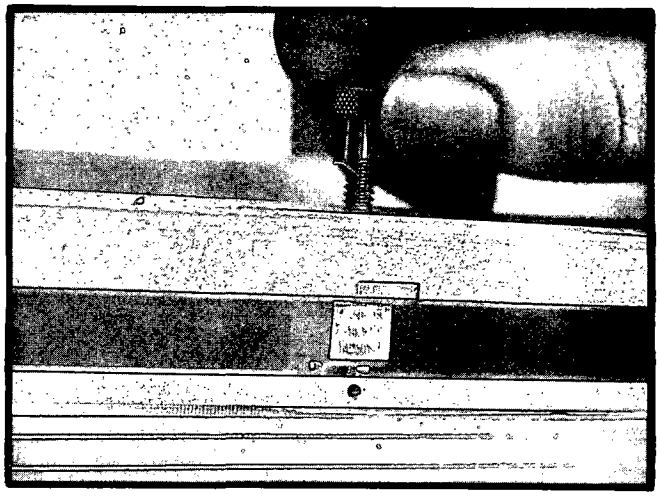
5. Make sure that front and rear clamp screws are in retracted position in preparation for loading board into frame.



6. Place assembly (board, end connector and spline) in frame with signal side down. Align board notches with keys of frame (top of frame is up during this operation, there is only one way in which the board will fit into the frame).



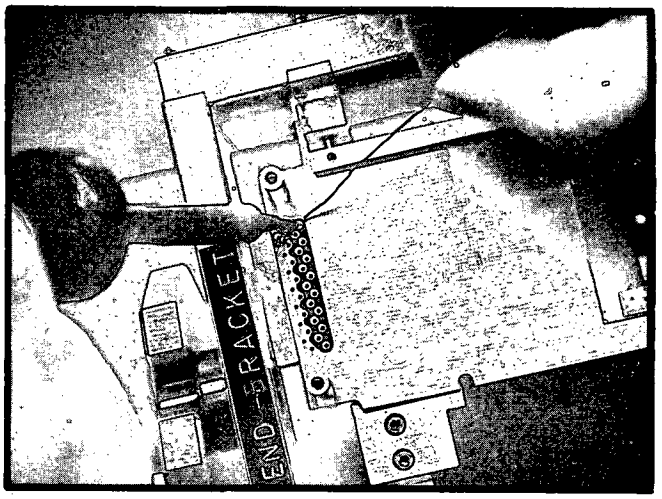
7. Lock spline and board in frame by tightening rear clamp screws. These screws fit mating holes in the rear of spline.



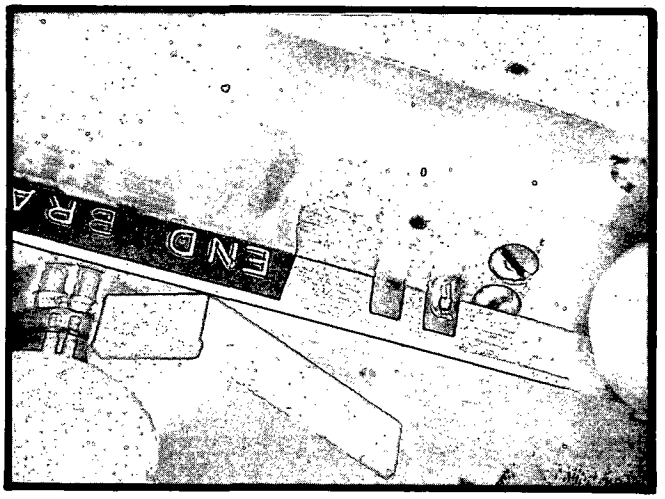
8. Solder the end connector tabs to circuit board at both ends.

9. Clip off excess tab when soldering is completed.

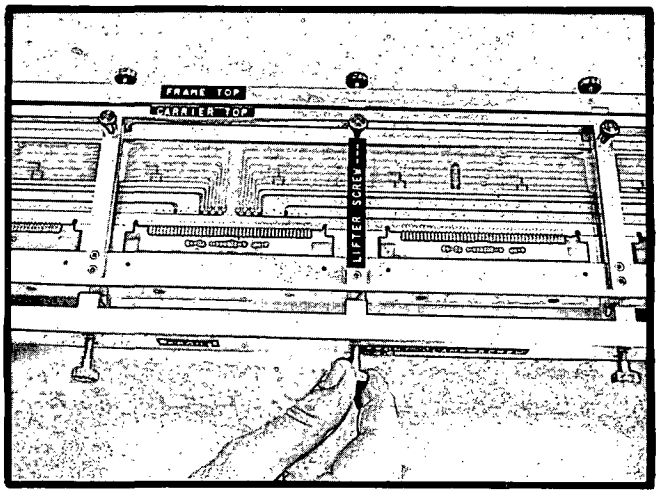
10. Remove shoulder screws that have temporarily held end connectors.



11. Place previously loaded carrier into frame. Guide pins on carrier engage front set of notches in end bracket. Carefully lower carrier into frame taking care that solder tabs on connector do not strike channel board.



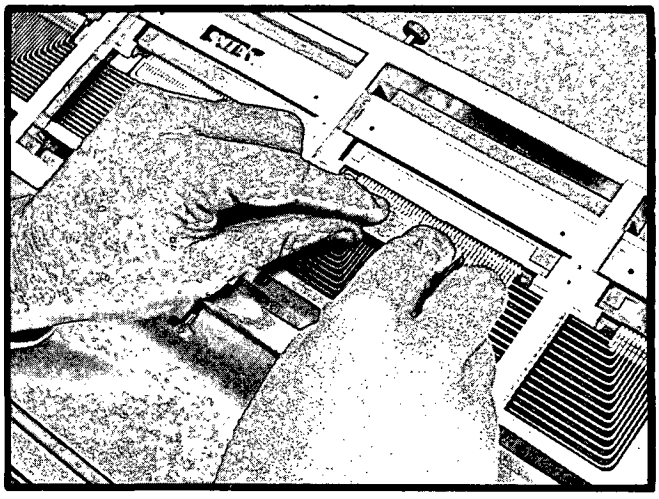
12. Front clamp screws on frame are now very carefully screwed into engagement with carrier. As screws are tightened, solder tabs on connector will be pushed into engagement with circuit board in frame.



13. Rotate jig and place plastic splint against solder tabs and firmly push solder tabs toward connector. This step assures that the connector pins are fully extended before soldering in place.

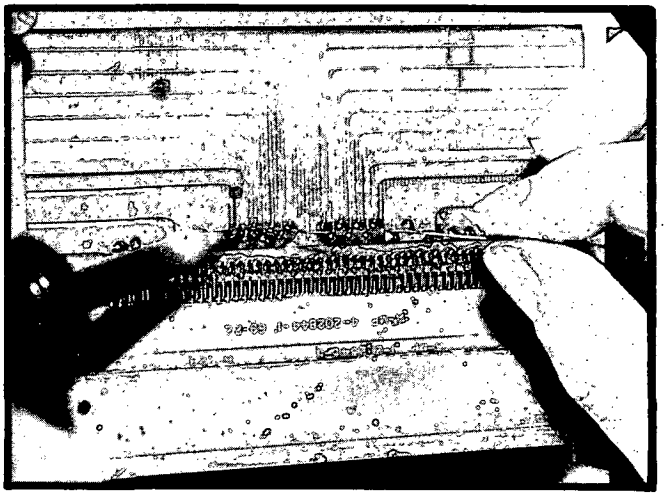
14. Solder connector tabs to the board making sure that tab is laying against board fingers. A 600° F iron tip is recommended.

15. Repeat steps 13 & 14, then go to Step 16.

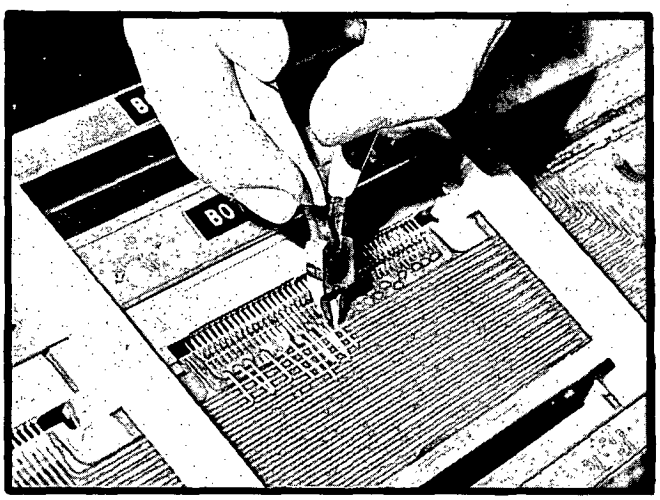


16. Insert jumpers from top side of jig at every through hole location on PTC0115–1 board. The jumper is a piece of 22 ga. wire approximately ½ long with a right angle bend forming a short leg approximately 1 8 long. The long leg is inserted through the hole while the short leg is aligned perpendicular to the PC line.

17. Solder short leg of jumper to PC board.

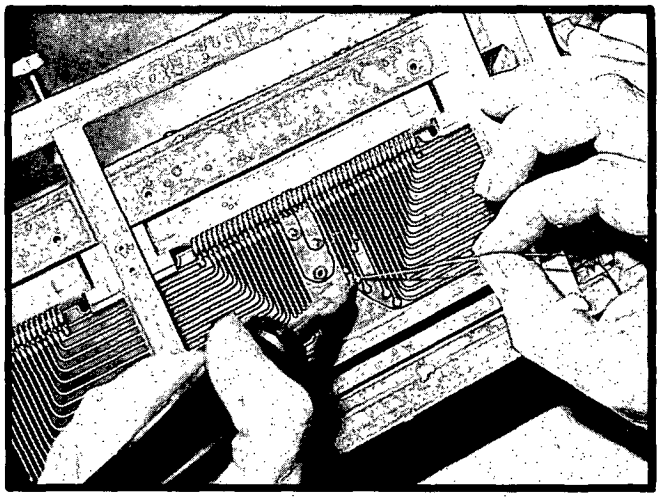


18. Rotate jig, bend over long jumper leg parallel to and away from the PC line and clip excess wire leaving a short right angle leg similar to that on the previous side (this will prevent pins from falling back through hole while soldering).



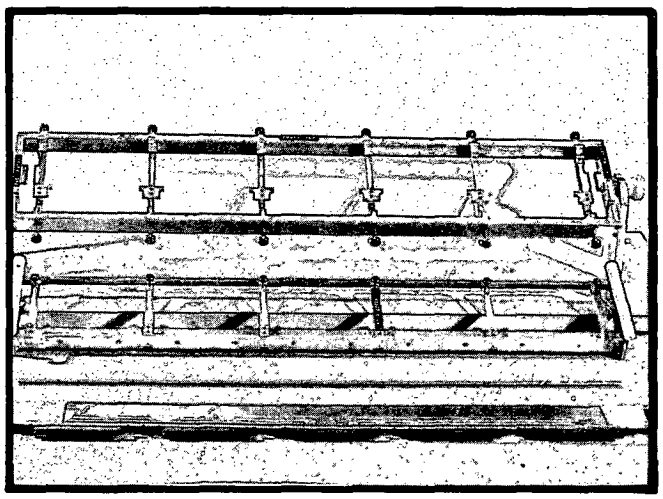
19. Solder all jumpers to this side of board then clip excess wire.

20. Rotate jig, clip excess wire from jumpers.



21. Loosen front and rear clamp screws and lift carrier from the frame.

22. Remove board from carrier, remove spline from board, board is ready for cleaning and inspection.



LATERAL CHANNEL ASSEMBLY

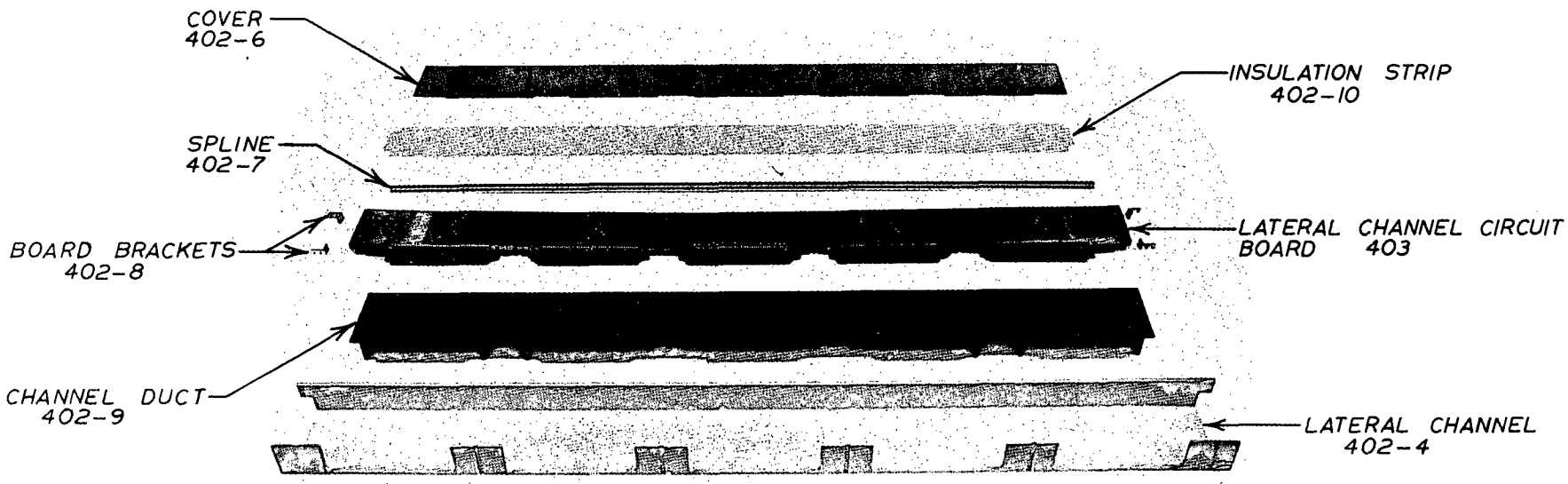
CHG.	E.C.O.	DATE	APPR	CHG	E.C.O.	DATE	APPR	CHG.	E.C.O.	DATE	APPR.
ISSUE	–	5–5–71	RJA								

LATERAL CHANNEL ASSEMBLY

PARTS LIST

QTY.	C.S.L. DOC.	PART
1	402-4	Lateral channel
1	402-6	Cover
1	402-7	spline
4	402-8	Board Bracket
1	402-9	Channel Duct
1	402-10	Channel signal board insulation strip
8	-	2-56 x 1/8 flathead machine screw
14	-	2-56 x 3/16 filister head machine screw
1	403	lateral channel board
6	-	2-56 x 3/16 Socket head set screws

CHG.	E.C.O.	DATE	APPR.	CHG.	E.C.O.	DATE	APPR.	CHG.	E.C.O.	DATE	APPR.
issue	-	5/5/71	RJA								



CHANGE NO.	DATE	DESCRIPTION
ISSUE	5-6-71	RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

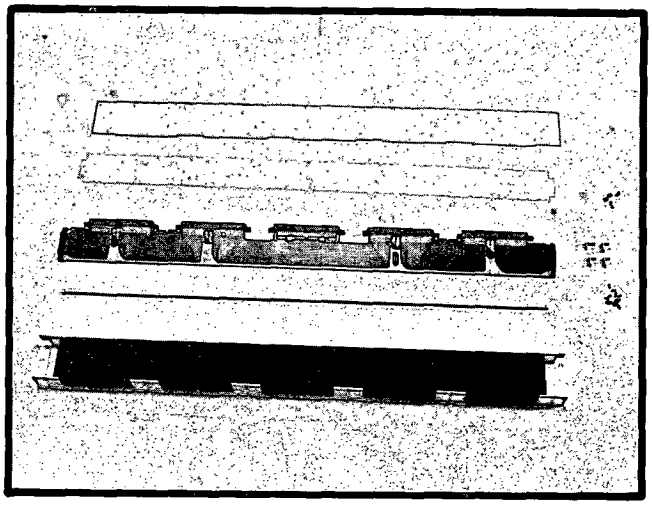
MACROMODULAR PROJECT

TITLE: LATERAL CHANNEL ASSEMBLY
PARTS IDENTIFICATION

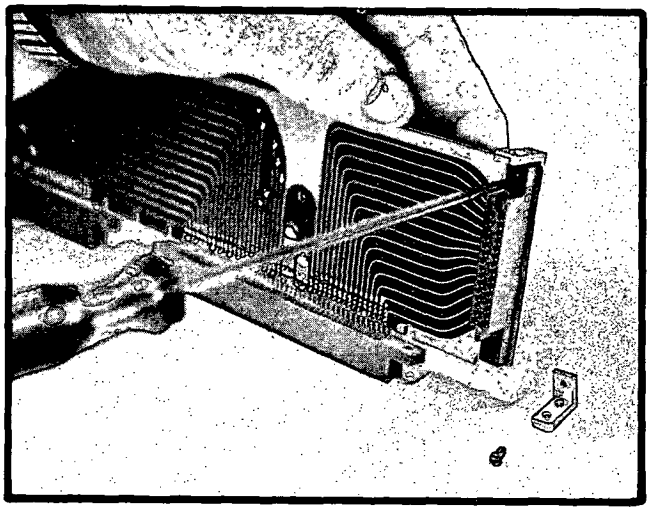
APPROVED BY	FOR	DATE
[illegible]	ASS'Y	5-10-71

ENG. DSL
DRAWN BY DSL
CHECKED RJA
DRAWING NO. 404-3
DATE 5-6-71

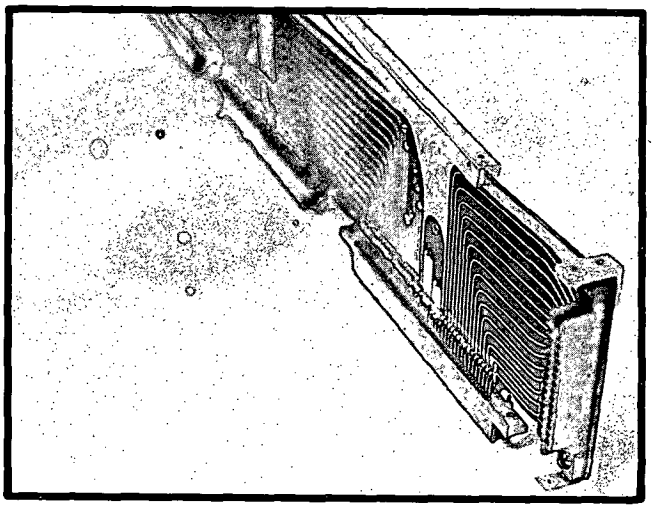
1. Place channel duct into lateral channel with flat side of duct in up position.



2. Assemble 4 board brackets onto the two end connectors of the previously assembled lateral channel board using 2–56 x 3/16 filister head machine screws.

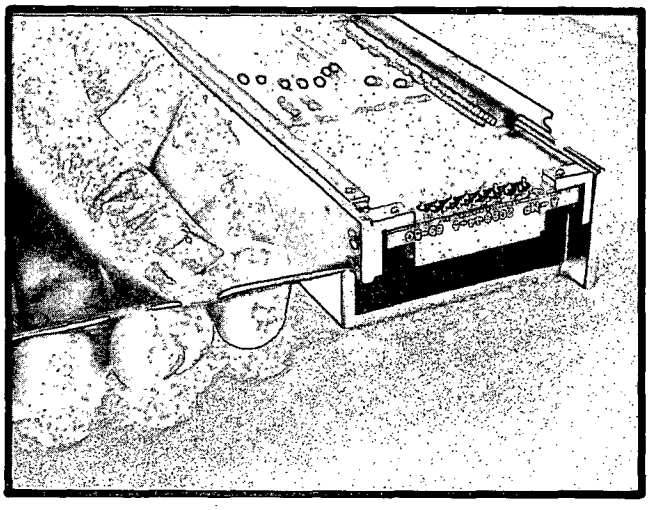


3. Place spline on lateral board with long leg of spline on signal side and load assembly into lateral channel.

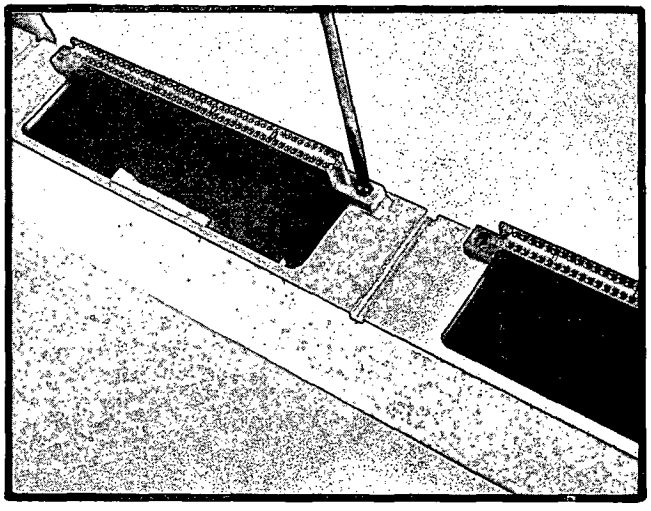


4. Carefully place lateral channel board in lateral channel, signal side down.

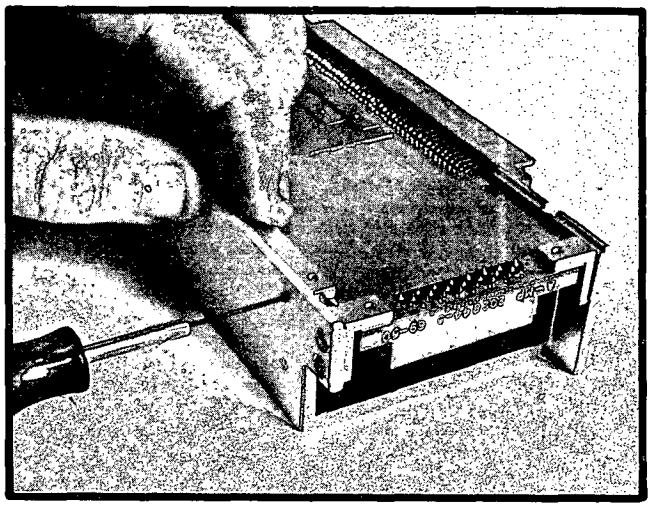
5. Screw board bracket to face of channel using 2–56 x 1/8 flat head machine screws.



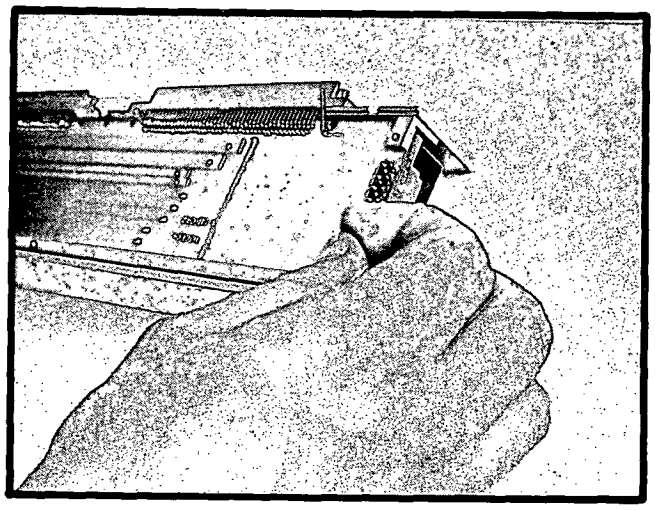
6. Fasten the five channel board connectors to the channel face. Assembly is made with 2–56 x 3/16 fillister head machine screws at each connector mounting hole.



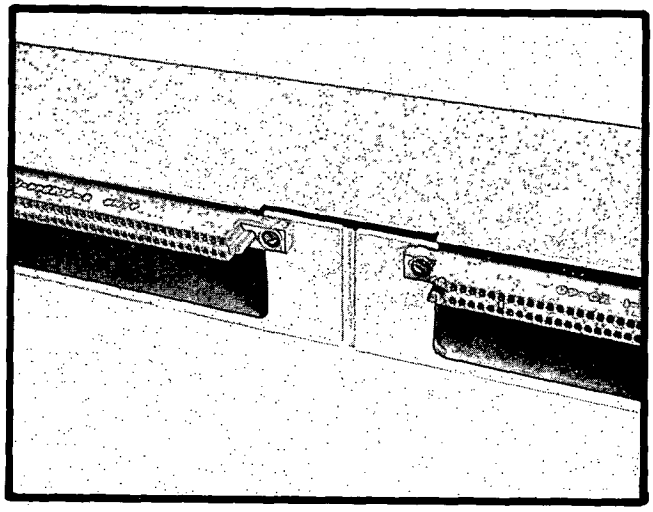
7. Lock spline in place with 2–56 x 3/16 socket head set screws from rear of channel at 6 locations.



8. Place channel signal board insulation strip on top of board with long notch of insulation strip placed toward front of channel. Be careful to clear end brackets.



9. Complete assembly by placing cover on lateral channel making sure that the chamfers on the ends of the cover are facing up.



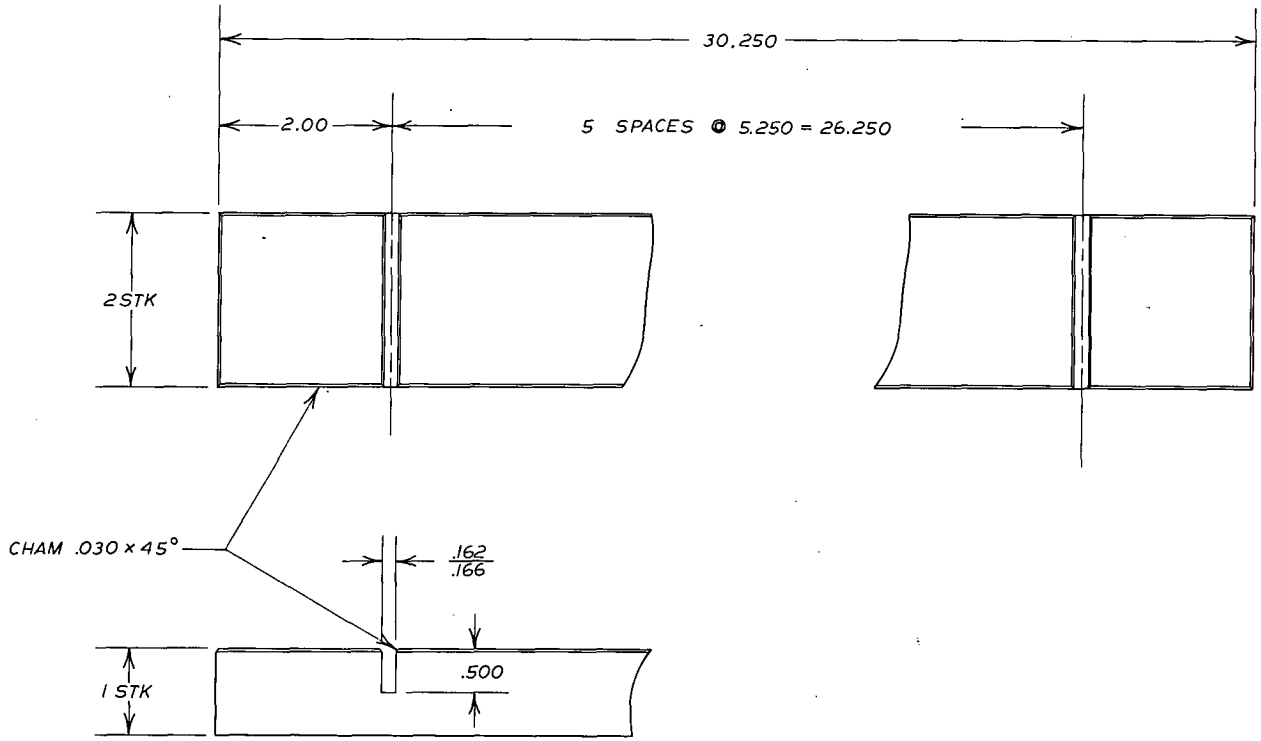
FRAME BLOCK ASSEMBLY

CHG.	E.C.O.	DATE	APPR	CHG	E.C.O.	DATE	APPR	CHG.	E.C.O.	DATE	APPR.
ISSUE	–	5-3-71	RJA								

FRAME BLOCK
PARTS LIST

QTY.	C.S.L. DOC.	PART
2	405-3	FRAME BLOCK ASSEMBLY AIDE
6	401	FRAME SECTION
4	404	LATERAL CHANNEL

CHG.	E.C.O.	DATE	APPR.	CHG.	E.C.O.	DATE	APPR.	CHG.	E.C.O.	DATE	APPR.
ISSUE	-	5-3-71	RJA								



TOLERANCE U. O. N.

.XXX = ±.005

.XX = ±.010

$\frac{X}{X} = \pm\frac{1}{64}$

FRAME ASS'Y AIDE MAT'L ALUMINUM OR PLEXIGLAS
2 REQUIRED

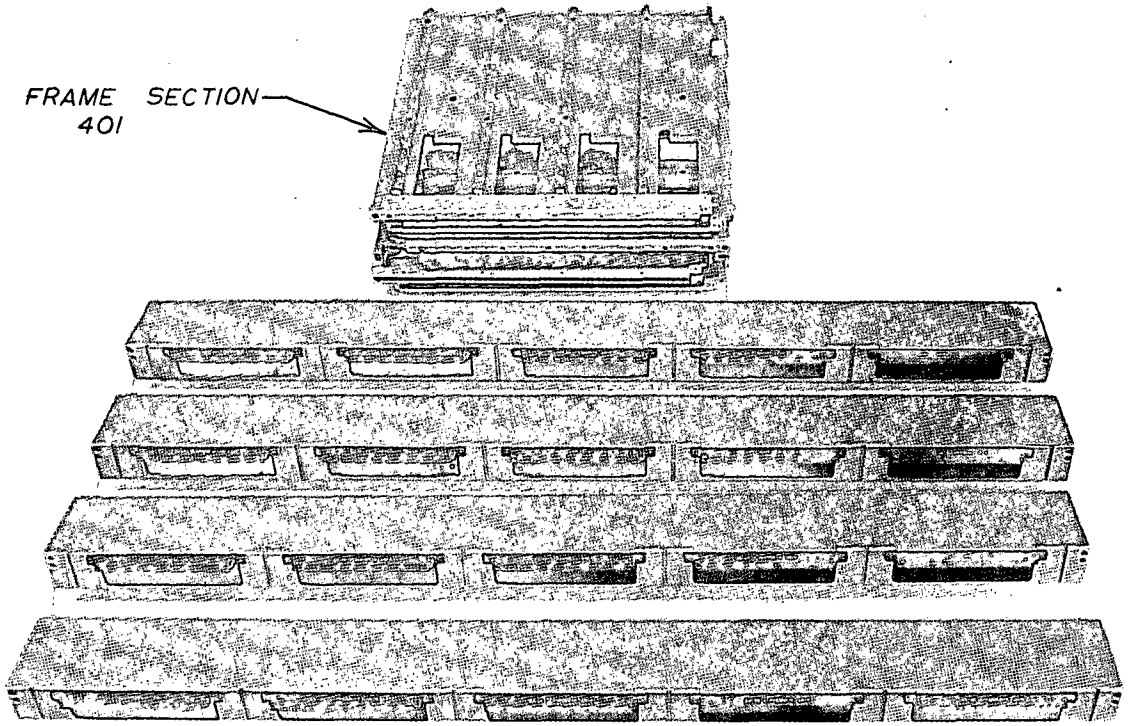
CHANGE NO.	DATE	DESCRIPTION
ISSUE	5-10-71	RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE
FRAME BLOCK ASSEMBLY AIDE

APPROVED BY	FOR	DATE	ENG.	DRAWING NO.
WAG	PROD.	5-5-71	RJA	405-3
			DRAWN BY DHO	
			CHECKED RJA	DATE 3-29-71



CHANGE NO.	DATE	DESCRIPTION
ISSUE	5-10-71	R J A

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

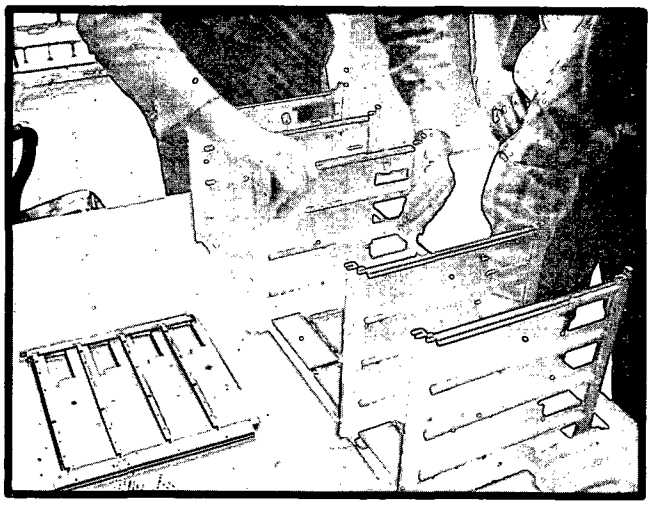
TITLE: FRAME BLOCK ASSEMBLY
PARTS IDENTIFICATION

APPROVED BY	FOR	DATE
[signature]	ASS'Y	5-10-71

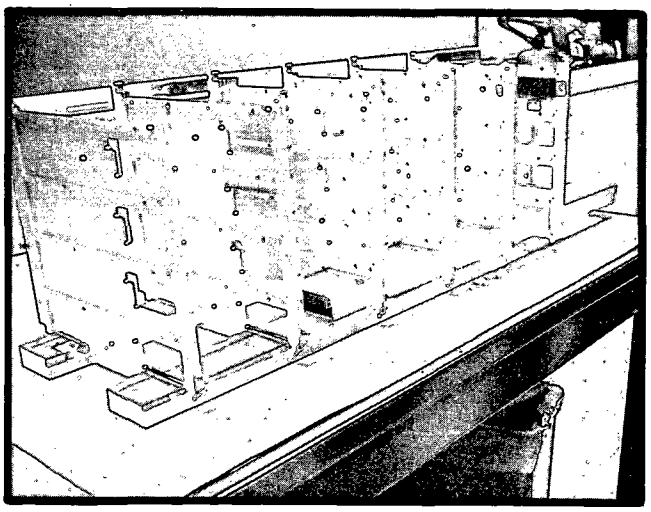
ENG. R J A
DRAWN BY DLS
CHECKED R J A

DRAWING NO. 405-4
DATE 5-10-71

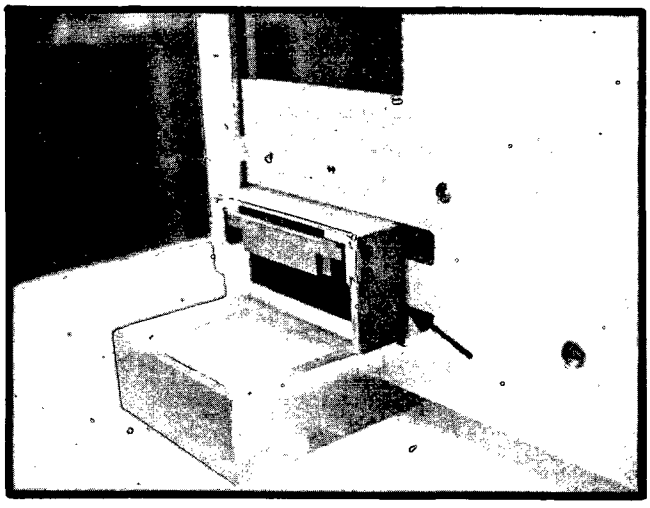
1. Place the six frame sections in the assembly aide. Make sure the front posts of the frame sections are in alignment with one another.



2. Carefully slip one completed lateral channel Assembly through a channel cut out in the frame section.

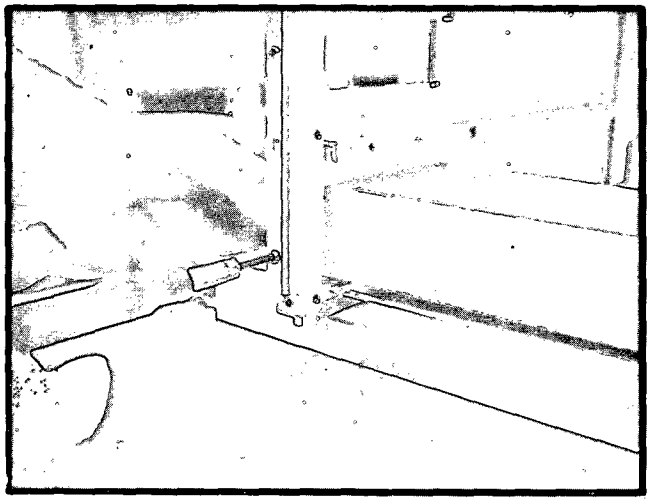


3. Make sure the lateral channel assembly slots on the lateral channel face engage the machined step on the frame section.

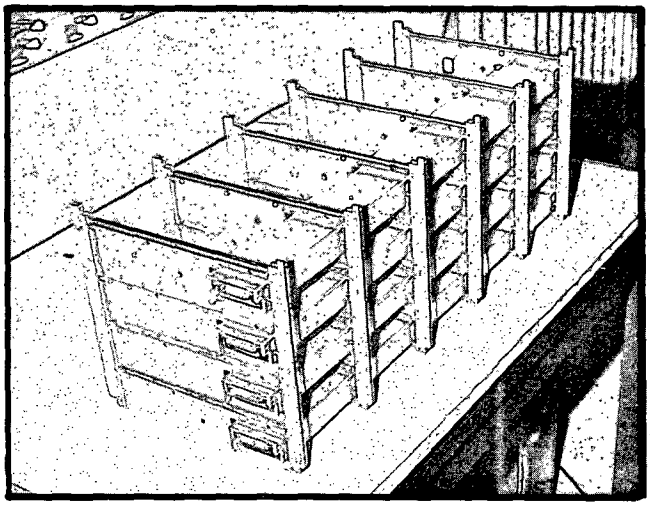


4. Slowly tighten the socket head set screws adjacent to the channel in the front posts at each frame location to lock the lateral channel assembly in place.

5. Repeat steps 2, 3, & 4 until the four lateral channel Assemblies have been loaded into and secured to the six frame sections.



6. The frame block is complete and may be lifted from the Assembly aide.



7. It is now necessary to remove the four roll pins located in the rails on the outboard side of the two end frame sections. This final step is required in order that the lateral channel coupler may slide into place.

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY

421

BASE PEDESTAL

CHG.	E.C.O.	DATE	APPR	CHG.	E.C.O.	DATE	APPR	CHG.	E.C.O.	DATE	APPR.
ISSUE	0228	11-3-71	RJA								
A	0261	4-26-72	RJA								
B	0267	7-11-72	RJA								
C	0269	10-10-72	RJA								
D	0282	1-8-73	RJA								

CHG.	E.C.O.	DATE	APPR	CHG.	E.C.O.	DATE	APPR	CHG.	E.C.O.	DATE	APPR.
ISS.	0228	11-3-71	RJA								
A	0261	4-26-72	RJA								
B	0267	7-11-72	RJA								
C	0269	10-10-72	RJA								
D	0282	1-8-72	RJA								

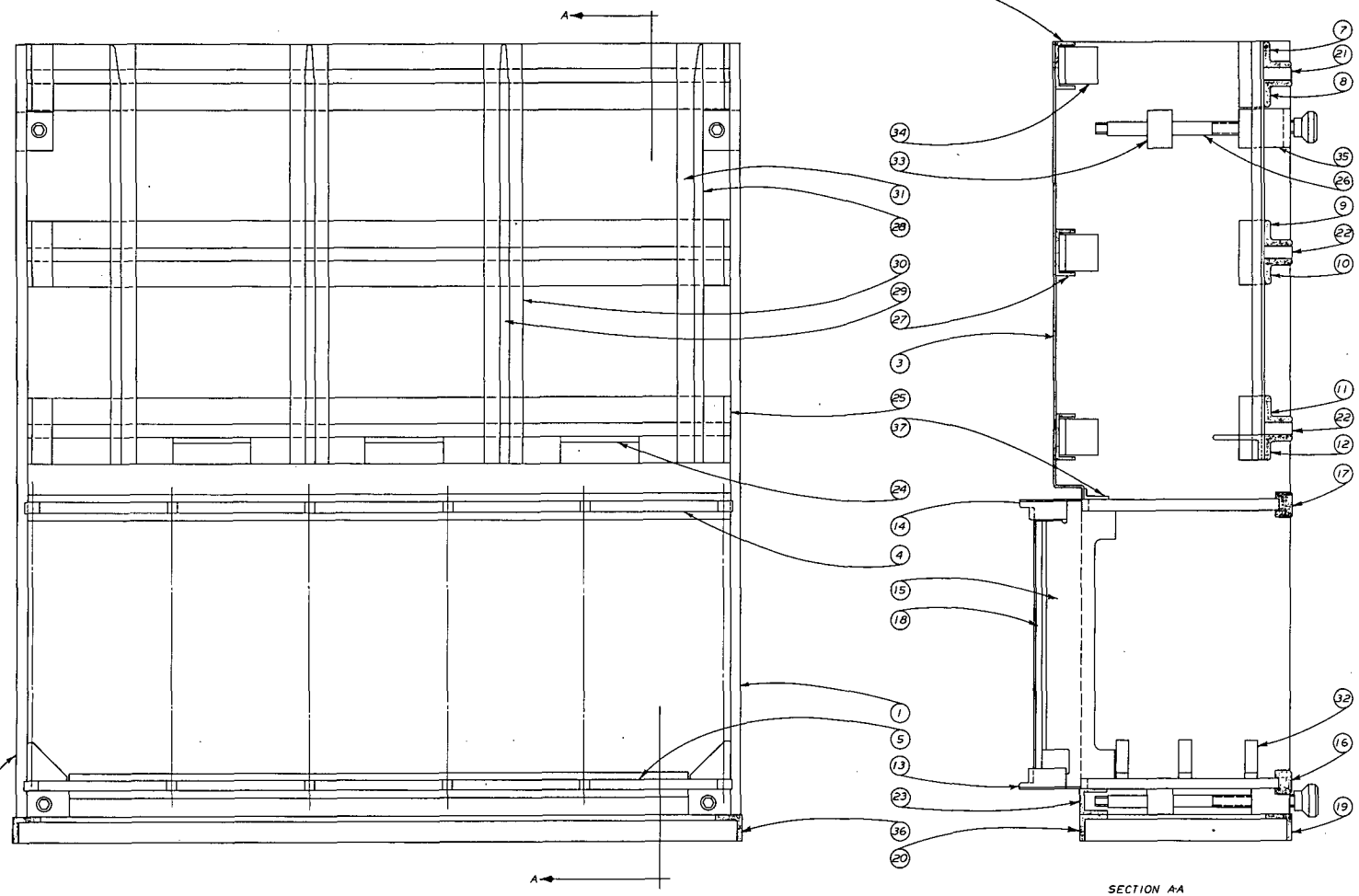
BASE PEDESTAL - MANUFACTURE

AND SPECIFICATION OF MECHANICAL COMPONENTS

The intent of this document (421.) is to set forth manufacturing specifications for mechanical parts relating to the Macromodular base-pedestal. On the following pages of this document drawings will be found fully describing materials, tolerances, and finishes relating to each component. Quantities indicated herein are for the production of a single unit. A partial assembly drawing of the base pedestal is included for the manufacturer to illustrate the relationship between various assembled components. Complete assembly procedures may be found in document (425).

All tolerances and specifications relating to the base pedestal components must be adhered to in order to produce acceptable assemblies. The manufacturer must assure himself that these requirements can be met by analyzing component and assembly documentation, his tooling, and characteristics of his production processes.

CHG.	E.C.O.	DATE	APPR
Iss.	0228	11/71	RJA
A	0261	4/26/72	RJA



TOP VIEW WITH COVER, FRAME ADAPTERS, COVER SUPPORT ANGLES, ANGLE FRAME SPACER AND UPPER FRAME ANGLE REMOVED FOR CLARITY.

SECTION A-A

1. RIGHT SIDE WALL	421-7
2. LEFT SIDE WALL	421-8
3. COVER	421-9
4. REAR WALL	421-10
5. FRONT WALL	421-11
6. BACK COVER SUPPLY CHANNEL	421-12
7. RAIL SUPPORT ANGLE TYPE 1	421-24
8. RAIL SUPPORT ANGLE TYPE 2	421-25
9. RAIL SUPPORT ANGLE TYPE 3	421-26
10. RAIL SUPPORT ANGLE TYPE 4	421-27
11. RAIL SUPPORT ANGLE TYPE 5	421-28
12. RAIL SUPPORT ANGLE TYPE 6	421-29
13. FRONT POST ADAPTER	421-23
14. REAR POST ADAPTER	421-22
15. FRAME ADAPTER	421-19
16. FRONT SPLINE	421-16
17. REAR SPLINE	421-17
18. RAIL	421-14
19. LOWER FRAME ANGLE	421-47
20. UPPER FRAME ANGLE	421-46
21. RAIL SUPPORT BAR TYPE 1	421-44
22. RAIL SUPPORT BAR TYPE 2	421-45
23. ANGLE FRAME SPACER	421-43
24. CONNECTOR ADAPTER	421-37
25. RAIL SUPPORT CLIP ANGLE	421-36
26. SCREW	421-35
27. CHANNEL	423-34
28. END GUIDE RAIL	421-33
29. GUIDE RAIL	421-32
30. SLIDE PLATE	421-31
31. END SLIDE PLATE	421-30
32. CORNER STIFFENER	421-55
33. SCREW GUIDE	421-54
34. CLIP ANGLE	421-53
35. NUT	421-51
36. SIDE FRAME ANGLES	421-48
37. COVER SUPPORT ANGLE	421-52

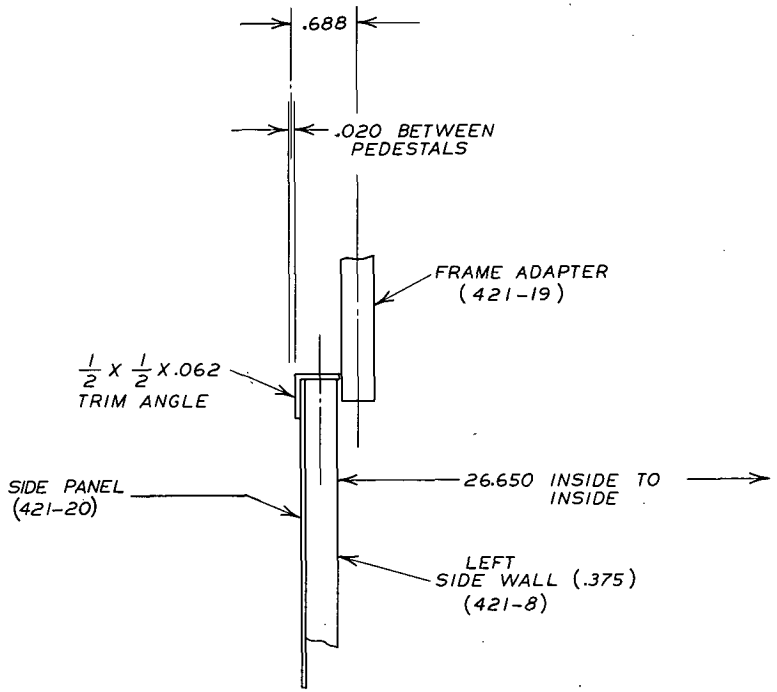
CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

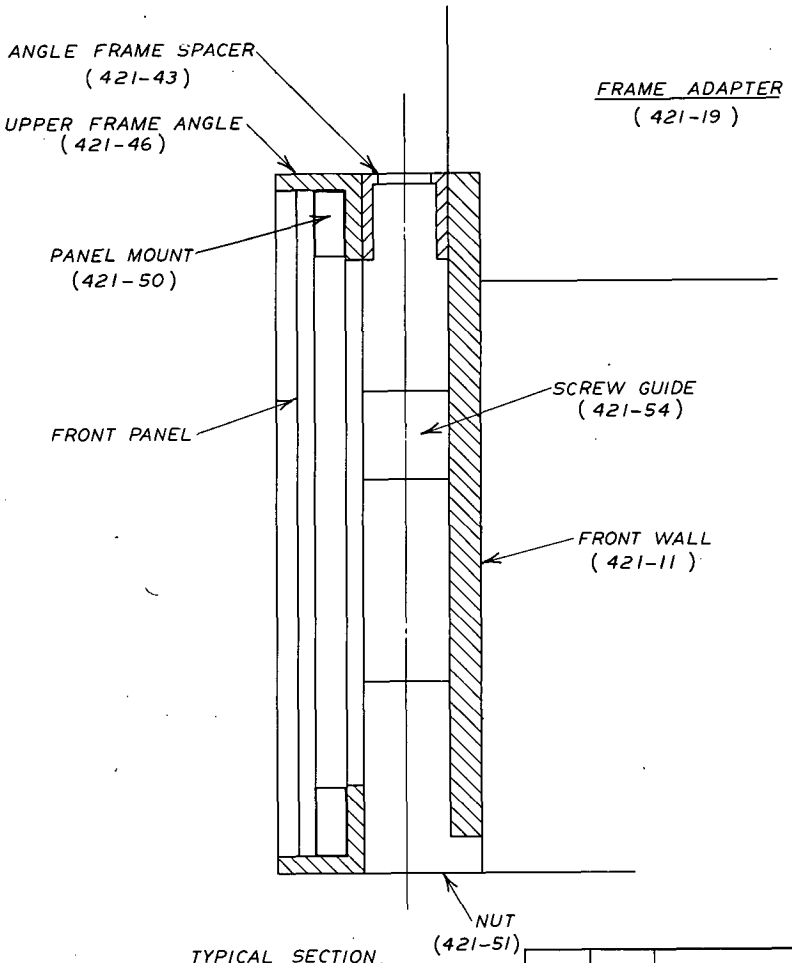
MACROMODULAR PROJECT

TITLE
BASE PEDESTAL
PARTIAL MECHANICAL SUBASSEMBLY

APPROVED BY	FOR	DATE	ENG.	DRAWING NO.
RJA	PROJ	1-10-72	RJA	421-4
			DRAWN BY PLL	
			CHECKED GM	DATE 8-21-71



TYPICAL SECTION THRU SIDEWALL AT FRAME ADAPTER



TYPICAL SECTION THRU FRONT WALL & PANEL

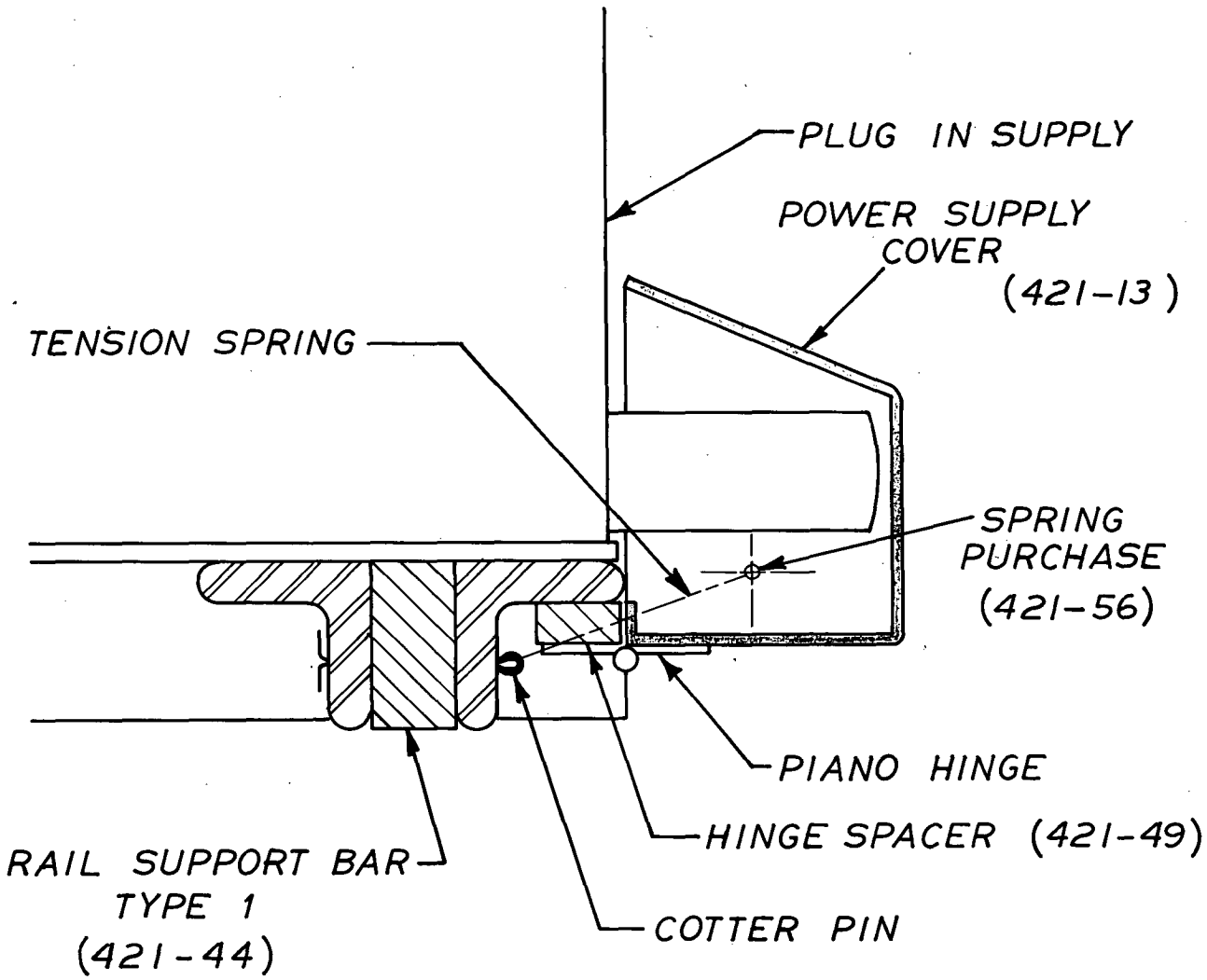
CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

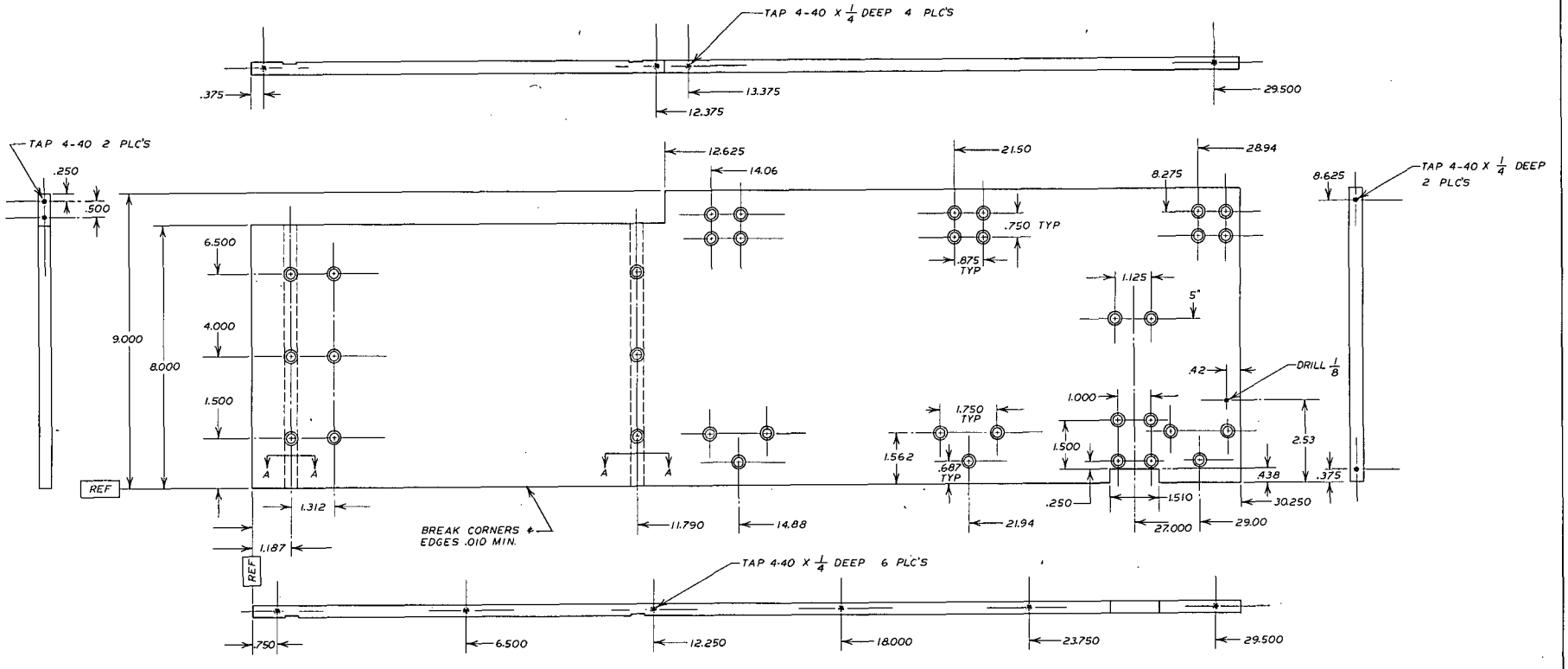
MACROMODULAR PROJECT

TITLE: BASE PEDESTAL TYPICAL SECTIONS

APPROVED BY	FOR	DATE	ENG.	DRAWING NO.
RJA	PROD	1-10-72	RJA	421-5
			DRAWN BY PLL	
			CHECKED GM	DATE 8-23-71



COMPUTER SYSTEMS LABORATORY WASHINGTON UNIVERSITY ST. LOUIS, MISSOURI			MACROMODULAR PROJECT				
			TITLE: BASE PEDESTAL COVER SUBASSEMBLY				
			APPROVED			ENG: RJA	DRAWING NO.: 421-6
			BY: RJA	FOR: PROD	DATE: 1-10-72	DRAWN BY: PLL	
ISSUE	1-10-72	E.C.O. 0228 RJA				CHECKED: GM	DATE: 8-21-71
CHANGE NO.	DATE	DESCRIPTION					



MAT'L: 3/8 ALUM 2024-T3

FINISH: LIGHT SHOT PEEN & ALODINE

TOLERANCE UON.

.XXX ±.005

.XX ±.010

X/X ± 1/64

1 REQ'D.

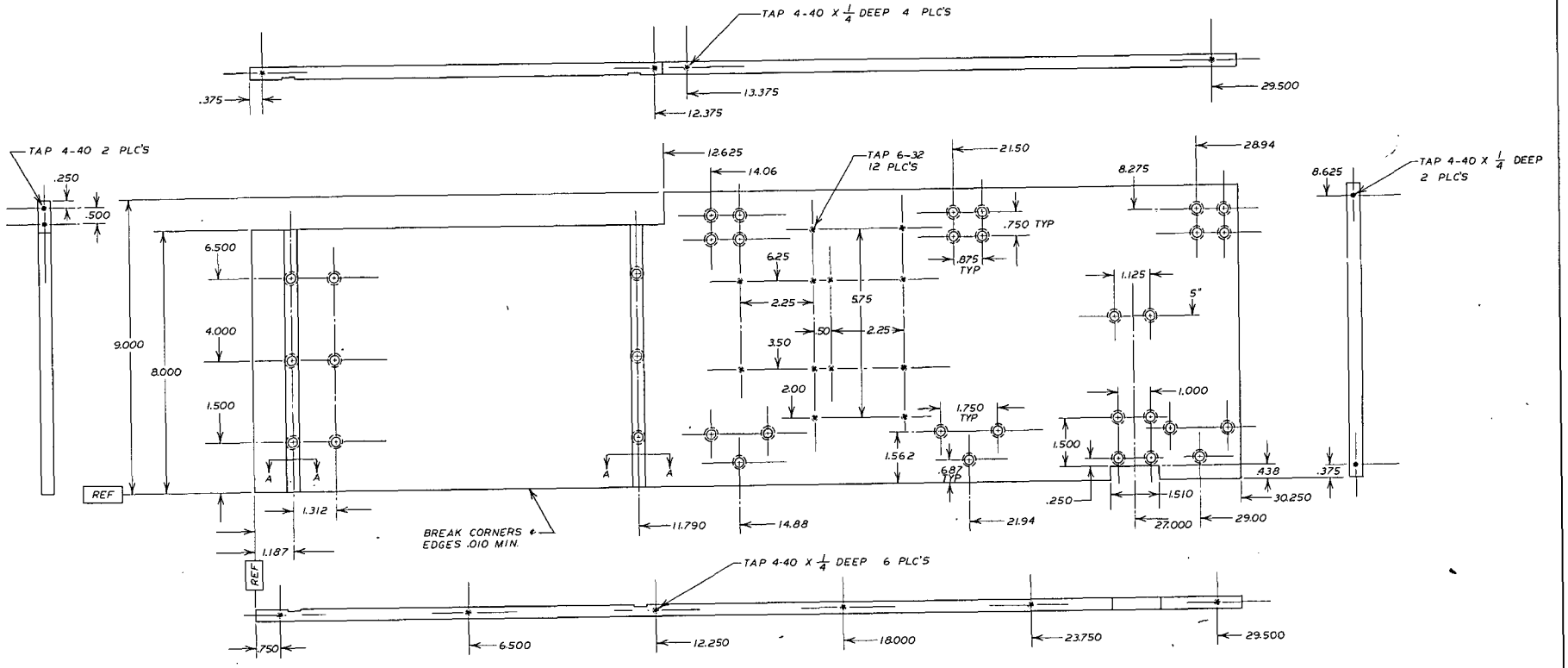
ISSUE	DATE	DESCRIPTION
	1-10-72	E.C.O. 0228 R J A

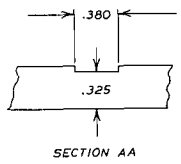
COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

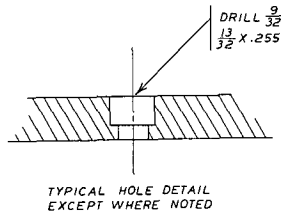
MACROMODULAR PROJECT

TITLE: BASE PEDESTAL
RIGHT SIDE WALL

APPROVED BY	JOB	DATE	ENG.	DRAWING NO.
RJA	PROD	1-10-72	RJA	421-7
			DRAWN BY PLL	
			CHECKED GM	DATE 8-24-71







MAT'L: 3/8 ALUM 2024-T3

FINISH: LIGHT SHOT PEEN & ALODINE

TOLERANCE U.O.N.

.XXX ±.005

.XX ±.010

X/X ± 1/64

1 REQ'D.

ISSUE	1-10-72	E.C.O. 0228 RJA
CHANGE NO.	DATE	DESCRIPTION

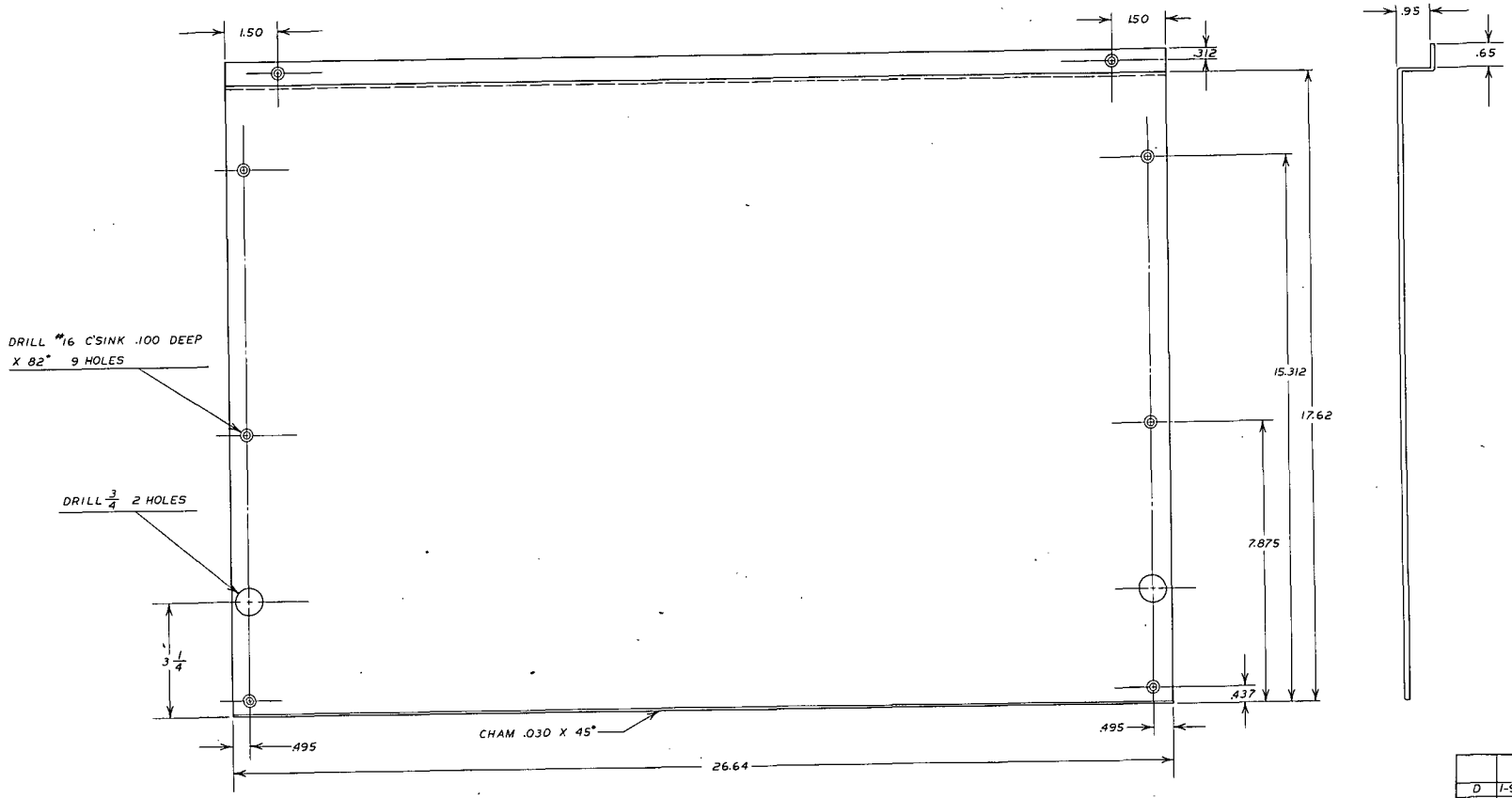
COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE: BASE PEDESTAL
LEFT SIDE WALL

APPROVED BY	FOR	DATE
RJA	PROD	1-10-72

ENG. RJA
DRAWN BY PLL
CHECKED JH
DRAWING NO. 421-8
DATE 8-24-71



MAT'L: .100 ALUM 3003-H14

FINISH: CSL SPEC MF 1

TOLERANCE U.O.N.
.XXX ± .005
.XX ± .010
X/X ± 1/64

1 REQ'D.

CHANGE NO	DATE	DESCRIPTION
D	1-9-73	E.C.O. 0282 RJA
ISSUE	4-10-72	E.C.O. 0228 RJA

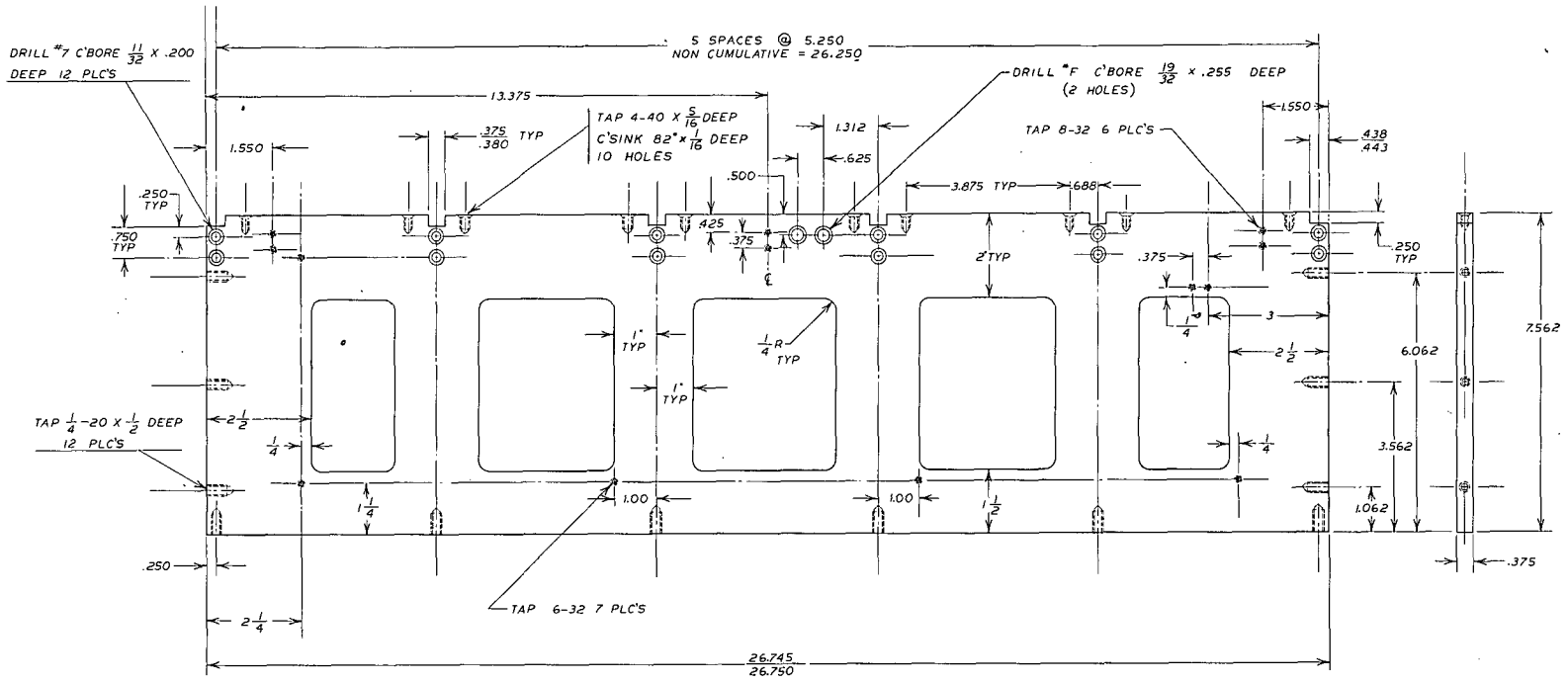
COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE: BASE PEDESTAL COVER

APPROVED BY	FOR	DATE
RJA	PROD	4-10-72

ENG.	RJA
DRAWN BY	PLL
CHECKED	GM
DRAWING NO	421-9
DATE	8-25-71



MAT'L: 2024-T3 ALUM

TOLERANCE U.O.N.

.XXX ± .005

.XX ± .010

X ± 1/64

FINISH: LIGHT SHOT PEEN & ALODINE

1 REQ'D.

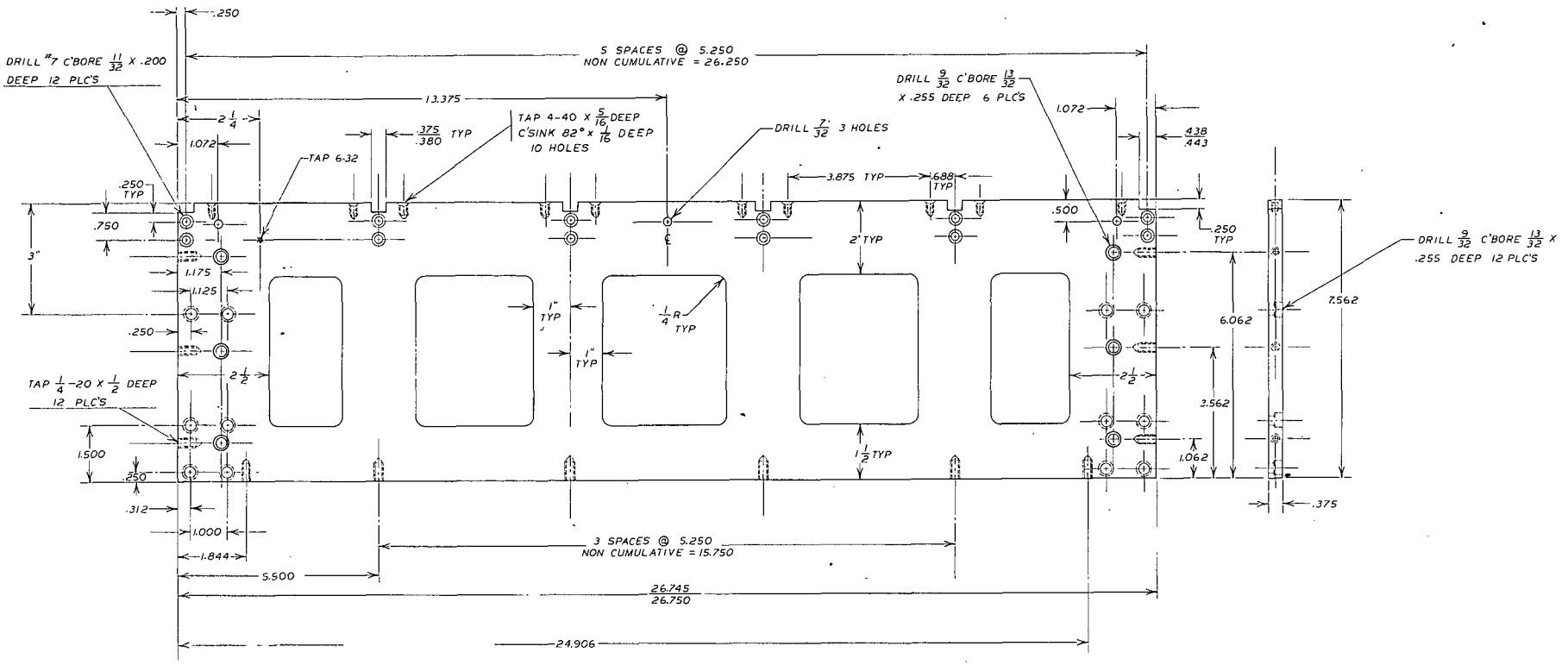
CHANGE NO.	DATE	DESCRIPTION
D	1-9-73	E.C.O. 0282 RJA
B	7-11-72	E.C.O. 0247 RJA
A	4-25-72	E.C.O. 0261 RJA
ISSUE	1-10-72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE: BASE PEDESTAL REAR WALL

APPROVED BY	JOB	DATE	ENG.	DRAWING NO.
RJA	DROO	1-10-72	RJA	421-10
			DRAWN BY PLL	
			CHECKED GH	DATE 8-26-71



MAT'L: 2024-T3 ALUM

TOLERANCE U.O.N.
.XXX ±.005
.XX ±.010
X/X ±1/64

1 REQ'D.

FINISH: LIGHT SHOT PEEN & ALODINE

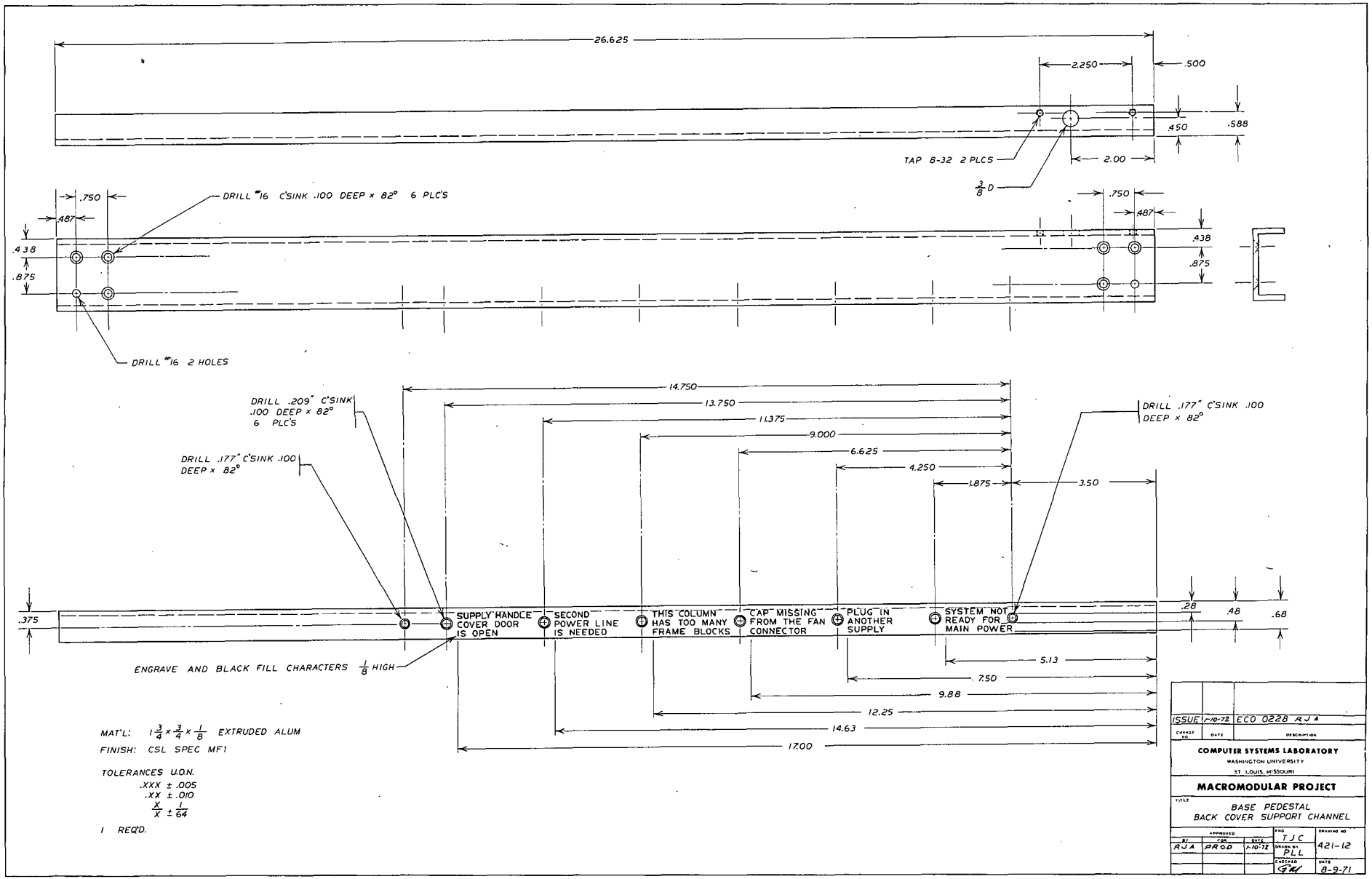
CHANGE NO.	DATE	DESCRIPTION
D	1-9-73	E.C.O. 0282 RJA
ISSUE	1-10-72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE: BASE PEDESTAL
FRONT WALL

BY	APPR. FOR	DATE	ENG.	DRAWING NO.
RJA	PROD	1-10-72	RJA	421-11
			DRAWN BY PLL	
			CHECKED	DATE 8-26-71



MAT'L: $1\frac{3}{4} \times \frac{3}{4} \times \frac{1}{8}$ EXTRUDED ALUM

FINISH: CSL SPEC MF1

TOLERANCES U.O.N.

.XXX ± .005

.XX ± .010

$\frac{X}{X} \pm \frac{1}{64}$

1 REQ'D.

ISSUE	1-10-72	ECO 0228 RJA
CHANGE NO.	DATE	DESCRIPTION

COMPUTER SYSTEMS LABORATORY

WASHINGTON UNIVERSITY

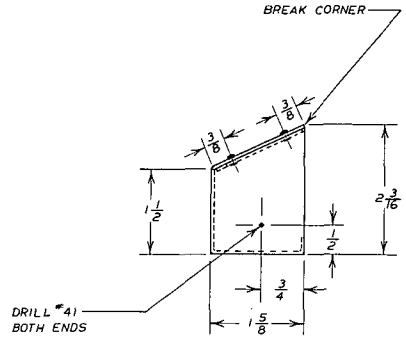
ST. LOUIS, MISSOURI

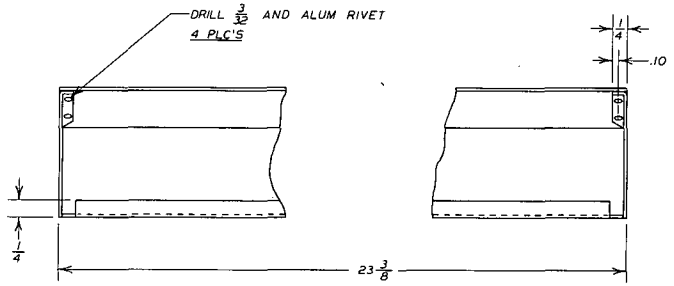
MACROMODULAR PROJECT

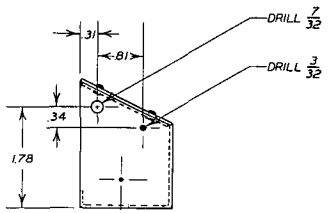
TITLE

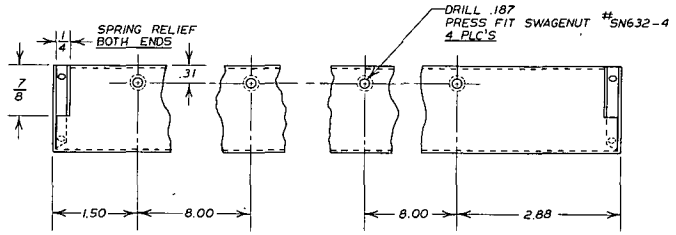
BASE PEDESTAL
BACK COVER SUPPORT CHANNEL

APPROVED BY	APPROVED FOR	DATE	ENG	DRAWING NO
RJA	PROD	1-10-72	TJC	421-12
			DRAWN PLL	
			CHECKED GH	DATE 8-9-71









TOLERANCE U.O.N.

.XXX	± .005
.XX	± .01
X/X	± 1/64

MAT'L: .050 ALUM 3003-H14
FINISH: CSL SPEC. MF-1
REQ'D: 1

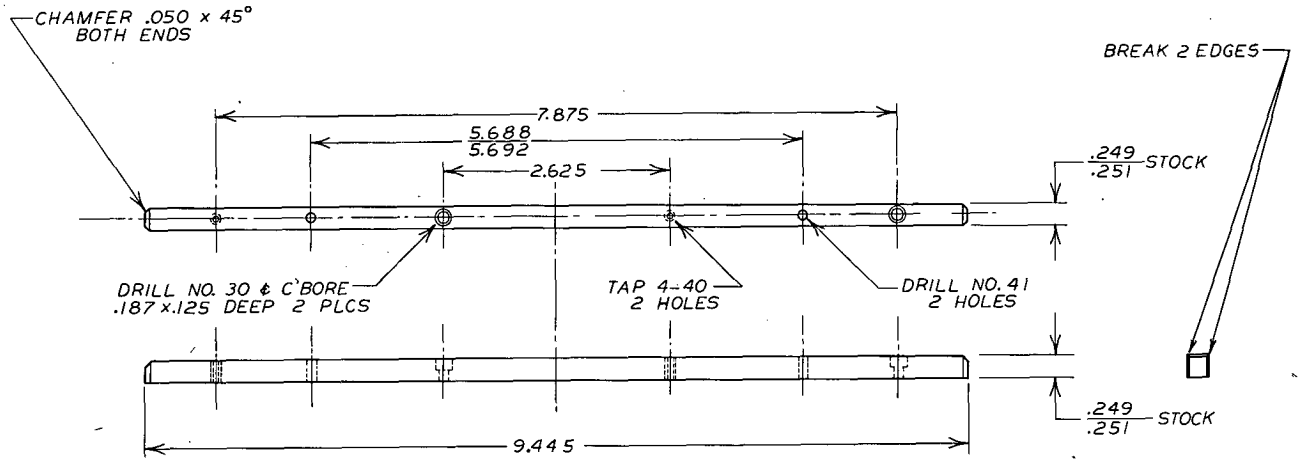
CHANGE NO	DATE	DESCRIPTION
ISSUE	1-10-72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE: BASE PEDESTAL
POWER SUPPLY COVER

APPROVED BY	TITLE	DATE	ENG RJA	DRAWING NO
R.J.A	PROD	1-10-72	DRAWN BY DHO	421-13
			CHECKED GM	DATE 9-21-71



MAT'L: .250 ±.001 SQUARE EXTRUDED ALUM
2024-T4 12 REQ'D.

DEBURR ALL HOLES
FINISH: CSL SPEC MF1
DIM: ±.005 U.O.N.

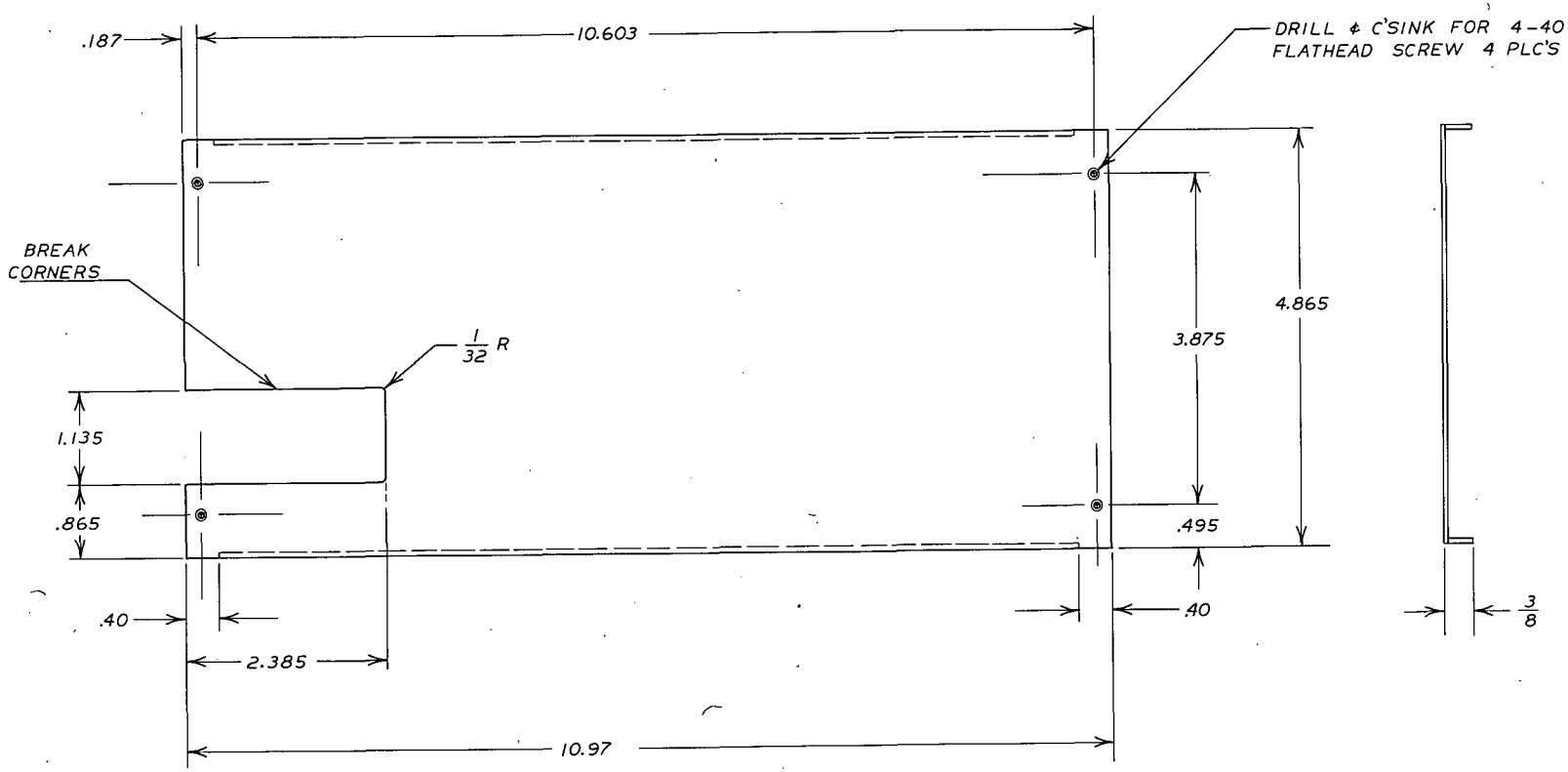
CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE
BASE PEDESTAL
RAIL

APPROVED BY	FOR	DATE	ENG.	DRAWING NO
RJA	PROD	1-10-72	WAC	421-14
			DRAWN BY PLL	
			GM	DATE 10-19-71



MAT'L: .050 ALUM 3003-H14

FINISH: ALODINE

TOLERANCE U.O.N.

.XXX ± .005

.XX ± .010

X/X ± 1/64

1 REQ'D.

CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY

WASHINGTON UNIVERSITY

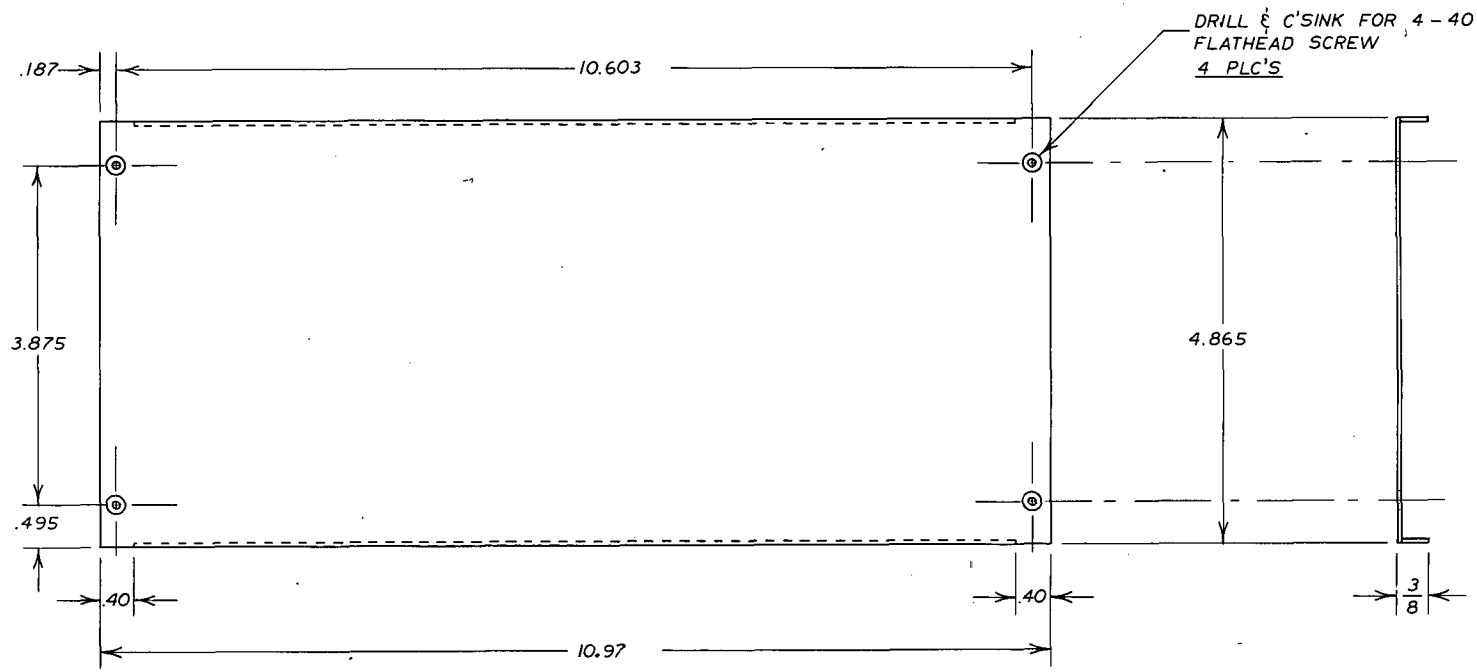
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE

BASE PEDESTAL
CONNECTOR ADAPTER COVER

APPROVED BY	APPROVED FOR	APPROVED DATE	ENG.	DRAWING NO.
RJA	PROD	1-10-72	RJA	421-15
			DRAWN BY PLL	
			CHECKED GM	DATE 8-23-71



TOLERANCE U.O.N.

.XXX	±.005
.XX	±.01
X/X	+1/-64

MAT'L: .050 ALUM 3003-H14
FINISH: ALODINE

4 REQ'D

CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-72	E.C.O. 0228 R J A

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

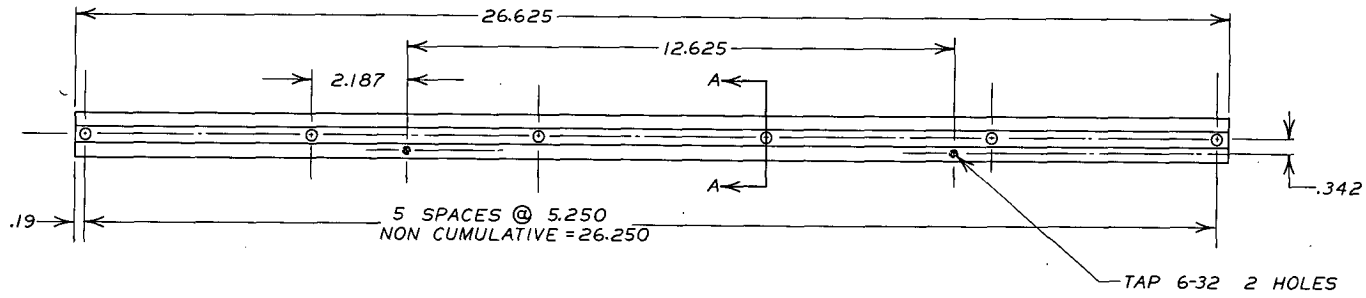
MACROMODULAR PROJECT

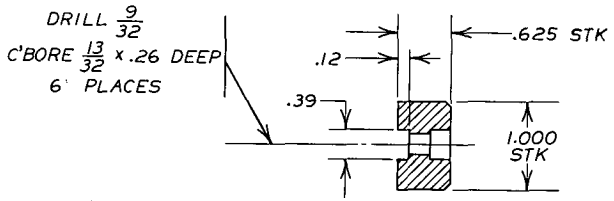
TITLE
BASE PEDESTAL
RESIDENT COVERS

APPROVED BY	FOR	DATE
R J A	PROD	1-10-72

ENG. RJA
DRAWN BY DHO
CHECKED GM

DRAWING NO. 421-16
DATE 8-23-71





SECTION AA

MAT'L: 2024-T3 ALUM

FINISH: LIGHT SHOT PEEN & ALODINE

TOLERANCE U O N
.XXX ±.005
.XX ±.010
$\frac{X}{X} \pm \frac{1}{64}$

1 REQ'D.

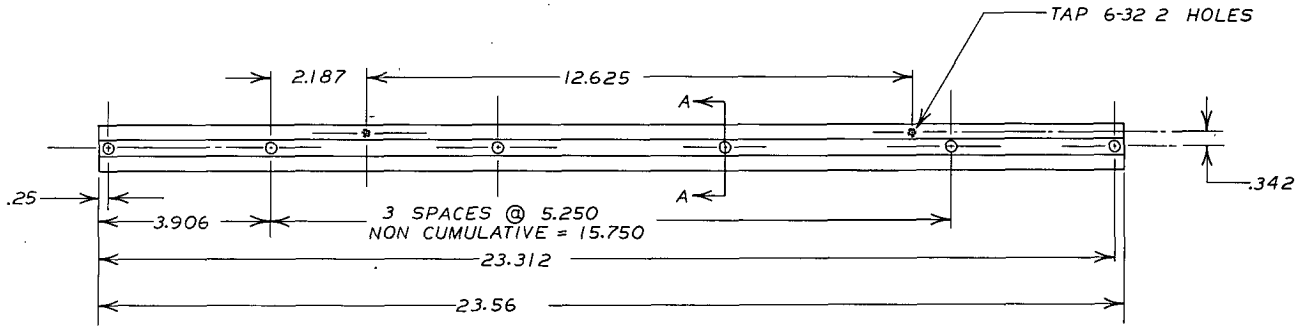
CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-72	E.C.O. 0228 RJA

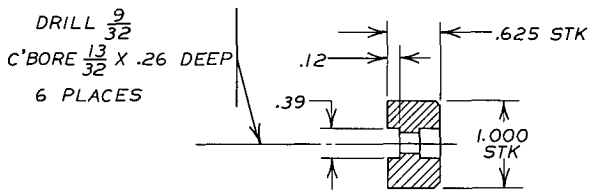
COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE
BASE PEDESTAL
REAR SPLINE

APPROVED BY	FOR	DATE	ENG.	DRAWING NO.
RJA	PROD	1-10-72	RJA	421-17
			DRAWN BY PLL	
			CHECKED GA	DATE 8-23-71





SECTION AA

MAT'L: ALUM 2024-T3

FINISH: LIGHT SHOT PEEN & ALODINE

TOLERANCE U.O.N.

.XXX ±.005
.XX ±.010
X/X ± 1/64

1 REQ'D.

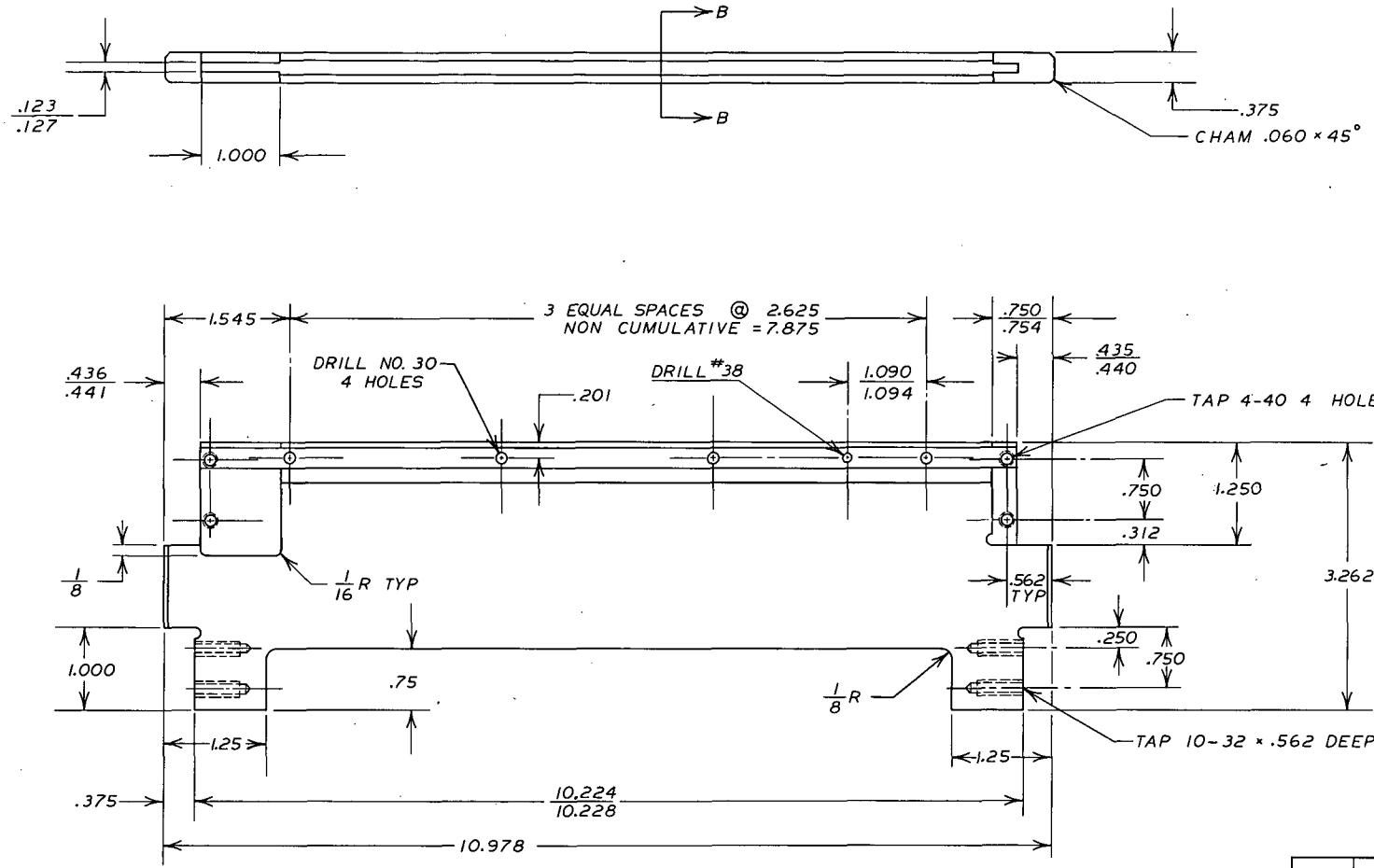
CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

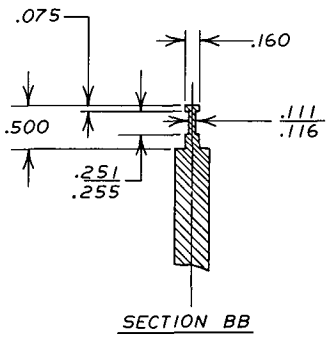
TITLE
BASE PEDESTAL
FRONT SPLINE

APPROVED BY	APPROVED FOR	APPROVED DATE	ENG.	DRAWING NO.
RJA	PROD	1-10-72	RJA	421-18
			DRAWN BY PLL	
			CHECKED GM	DATE 8-20-71



TOLERANCE U.O.N.

.XXX ±.005
.XX ±.010
X ± 1/64



MAT'L: 2024-T3 ALUM

FINISH: CSL SPEC MF 1

6 REQ'D.

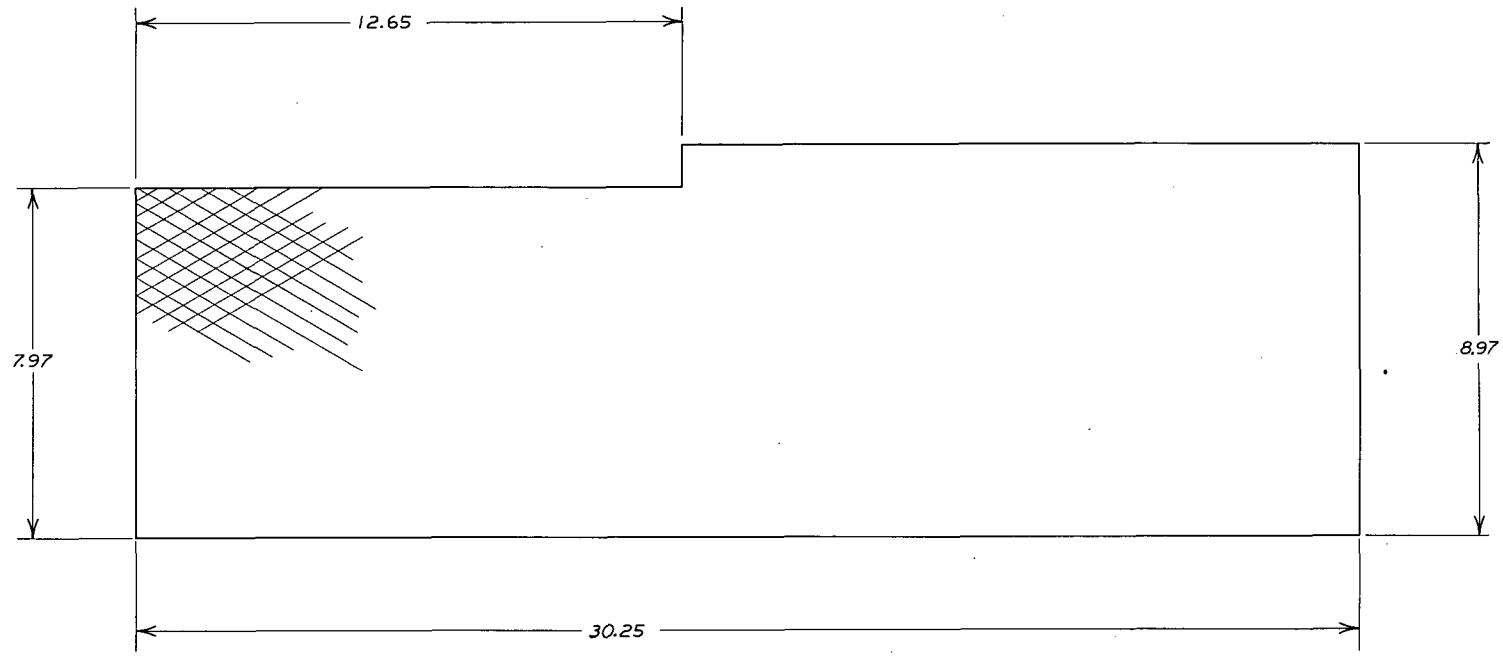
CHANGE NO.	DATE	DESCRIPTION
D	1-9-73	E.C.O. 0282 RJA
ISSUE	1-10-72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE
BASE PEDESTAL
FRAME ADAPTER

APPROVED BY	FOR	DATE	ENG.	DRAWING NO.
RJA	PROD	1-10-72	RJA	421-19
			DRAWN BY PLL	
			CHECKED GM	DATE 8-18-71



MAT'L: .040 ALUM 3003-H114
DIAMOND PATTERN

FINISH: CSL SPEC MF 1

TOLERANCE ±.010

2 REQ'D.

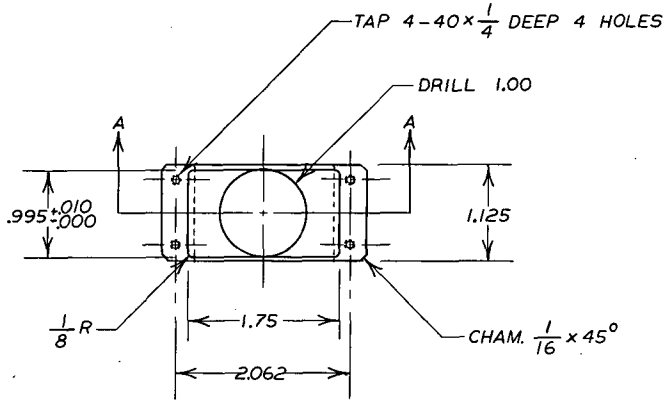
CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

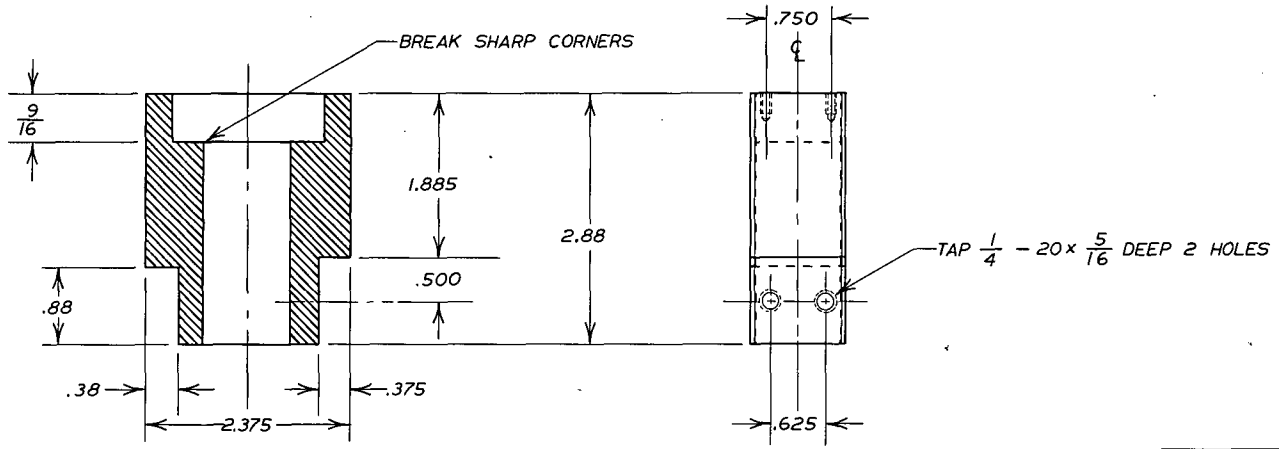
TITLE
BASE PEDESTAL
SIDE PANELS

APPROVED BY	APPROVED FOR	APPROVED DATE	ENG.	DRAWING NO.
RJA	PROD	1-10-72	RJA	421-20
			DRAWN BY PLL	
			CHECKED GM	DATE 8-23-71



TOLERANCE U.O.N.

.XXX	± .005
.XX	± .01
X/X	± 1/64



SECTION AA

MAT'L: ALUM 2024-T3
FINISH: CSL SPEC MF-1

1 REQ'D

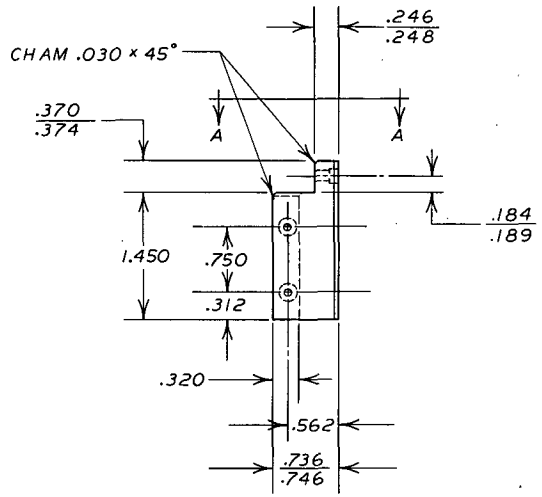
CHANGE NO.	DATE	DESCRIPTION
D	1-9-73	E.C.O. 0282 RJA
A	4-25-72	E.C.O. 0261 RJA
ISSUE	1-10-72	E.C.O. 0228 RJA

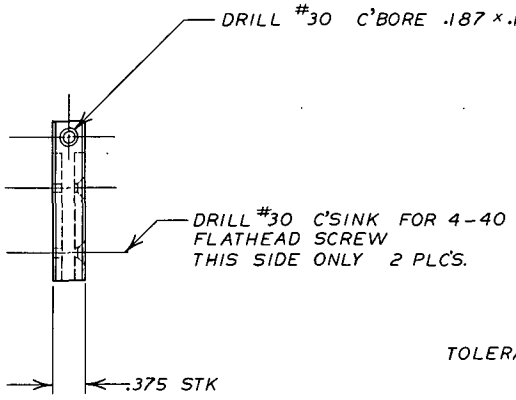
COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE: BASE PEDESTAL FAN MODULE CONNECTOR ADAPTER

APPROVED BY	FOR	DATE	ENG.	DRAWING NO.
RJA	PROD.	1-10-72	RJA	421-21
			DRAWN BY: DHO	
			CHECKED: GM	DATE: 8-19-71





TOLERANCE U.O.N.

.XXX ±.005

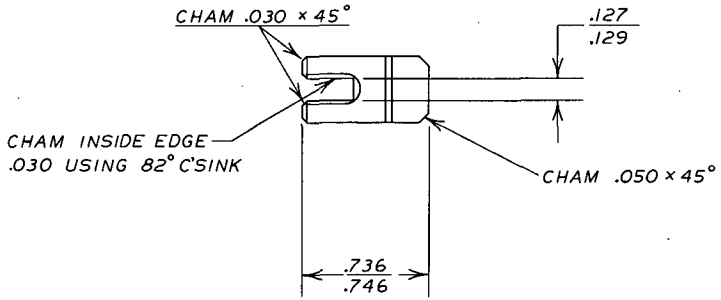
.XX ±.010

$\frac{X}{X} \pm \frac{1}{64}$

MAT'L: 6061-T6 ALUM 6 REQ'D.

FINISH: CSL SPEC MF1

6 REQ'D.



VIEW AA

CHANGE NO.	DATE	DESCRIPTION
B	7-11-72	E.C.O. 0267 RJA
A	4-25-72	E.C.O. 0261 RJA
ISSUE	1-10-72	E.C.O. 0228 RJA

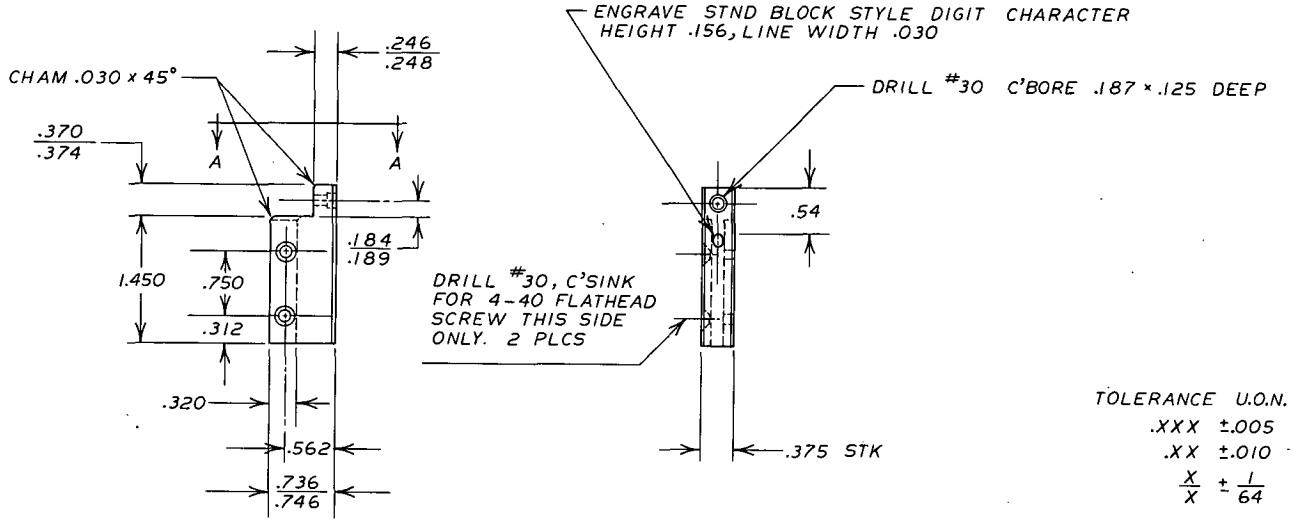
COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE

BASE PEDESTAL
REAR POST ADAPTER

APPROVED BY	APPROVED FOR	APPROVED DATE	ENG.	DRAWING NO.
RJA	PROD	1-10-72	RJA	421-22
			DRAWN BY PLL	
			CHECKED GM	DATE 8-19-71



TOLERANCE U.O.N.

.XXX ±.005

.XX ±.010

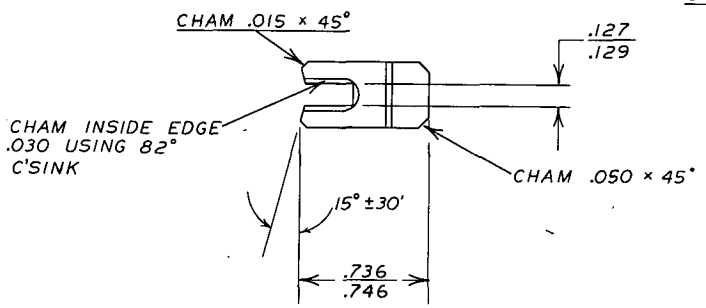
$\frac{X}{X}$ ± $\frac{1}{64}$

FRONT POST ADAPTER

MAT'L: 6061-T6 ALUM 6 REQ'D.

FINISH: CSL SPEC MF1

6 REQ'D.



VIEW AA

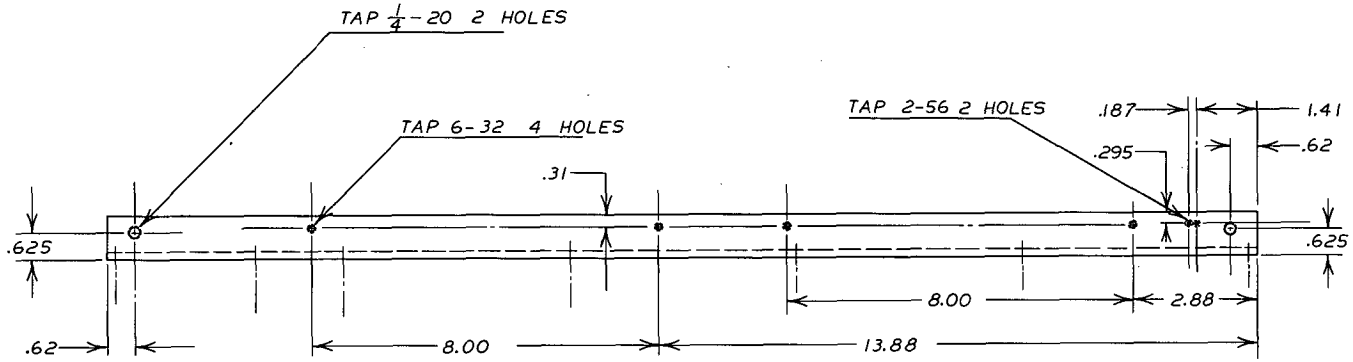
CHANGE NO.	DATE	DESCRIPTION
B	7-11-72	E.C.O.0247 RJA
A	4-25-72	E.C.O. 0261 RJA
ISSUE	1-10-72	E.C.O. 0228 RJA

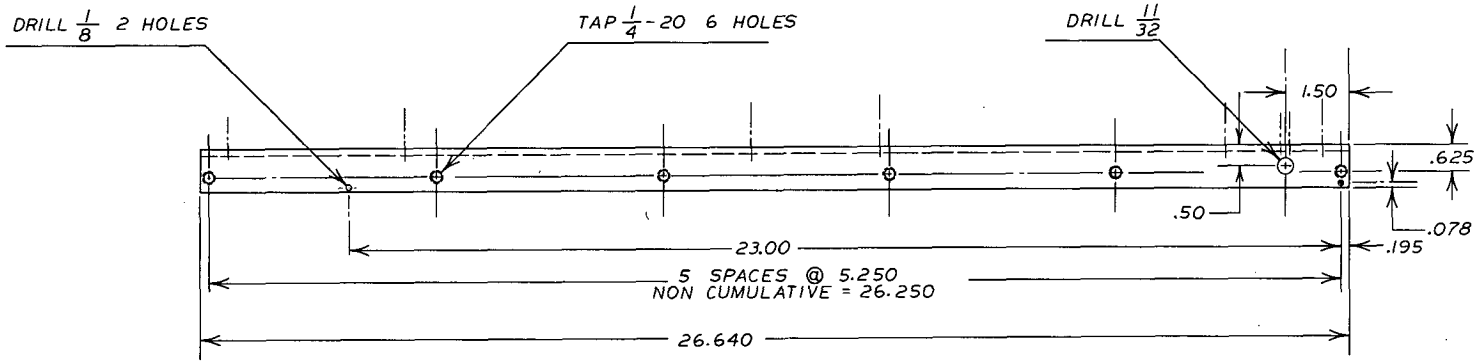
COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE
BASE PEDESTAL
FRONT POST ADAPTER

APPROVED BY	APPROVED FOR	APPROVED DATE	ENG.	DRAWING NO.
RJA	PROD	1-10-72	RJA	421-23
			DRAWN BY PLL	
			CHECKED GM	DATE 8-18-71





MAT'L: STEEL L 1 × 1 × 3/16

FINISH: SHOT PEEN TO REMOVE SCALE
ZINC PLATE & BLUE BRIGHT

1 REQ'D.

TOLERANCE U.O.N.
.XXX ±.005
.XX ±.010
X/X ± 1/64

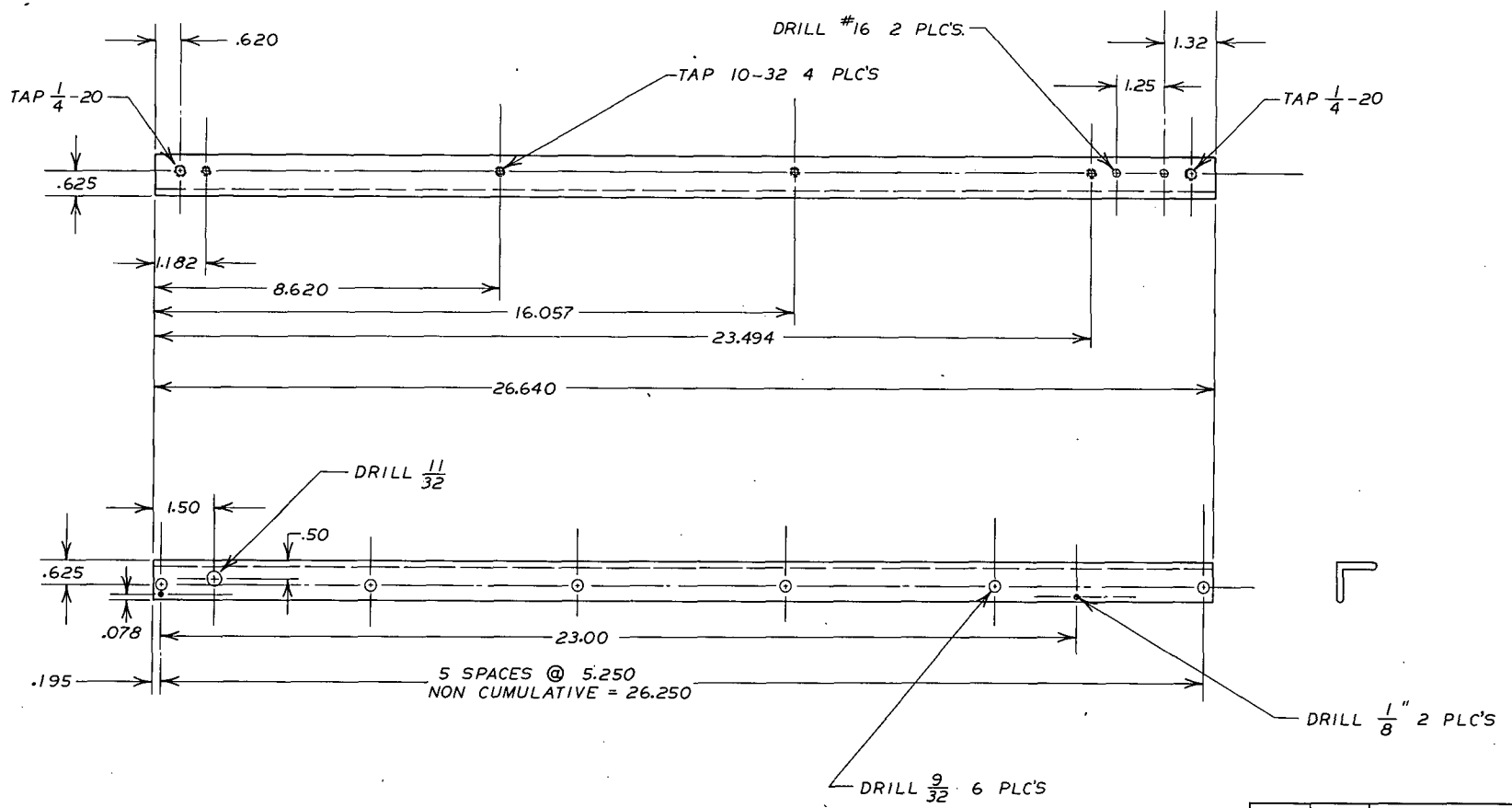
CHANGE NO.	DATE	DESCRIPTION
D	1-9-73	E.C.O. 0282 RJA
ISSUE	1-10-72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE
BASE PEDESTAL
RAIL SUPPORT ANGLE TYPE 1

APPROVED BY	APPROVED FOR	APPROVED DATE	ENG.	DRAWING NO.
RJA	PROD	1-10-'72	RJA	421-24
			DRAWN BY PLL	
			CHECKED GM	DATE 8-19-71



MAT'L: STEEL L 1 X 1 X 3/16

FINISH SHOT PEEN TO REMOVE SCALE
ZINC PLATE & BLUE BRIGHT

TOLERANCE U.O.N.
.XXX ± .005
.XX ± .010
X/X ± 1/64

1 REQ'D.

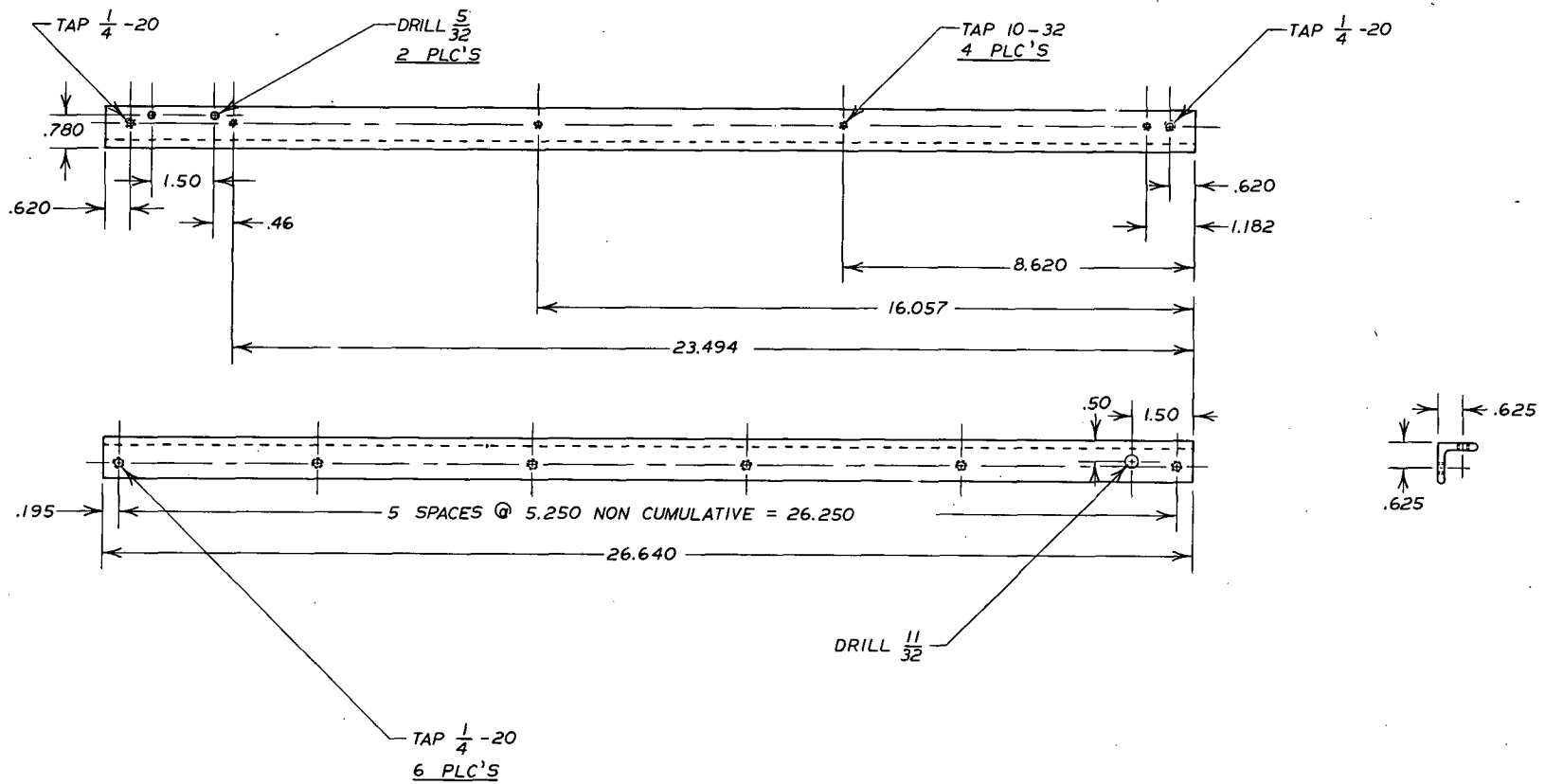
CHANGE NO.	DATE	DESCRIPTION
D	1-9-73	E.C.O. 0282 RJA
ISSUE	1-10-72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE
BASE PEDESTAL
RAIL SUPPORT ANGLE TYPE 2

APPROVED BY	APPROVED FOR	APPROVED DATE	ENG.	DRAWING NO.
RJA	PROD	1-10-72	RJA	421-25
			DRAWN B. PLL	
			CHECKED GM	DATE 8-25-71



TOLERANCE U.O.N.

.XXX	± .005
.XX	± .01
X/X	± 1/64

MAT'L: STEEL ANGLE 1 x 1 x 3/16

FINISH: SHOT PEEN TO REMOVE SCALE
ZINC PLATE & BLUE BRIGHT

1 REQ'D

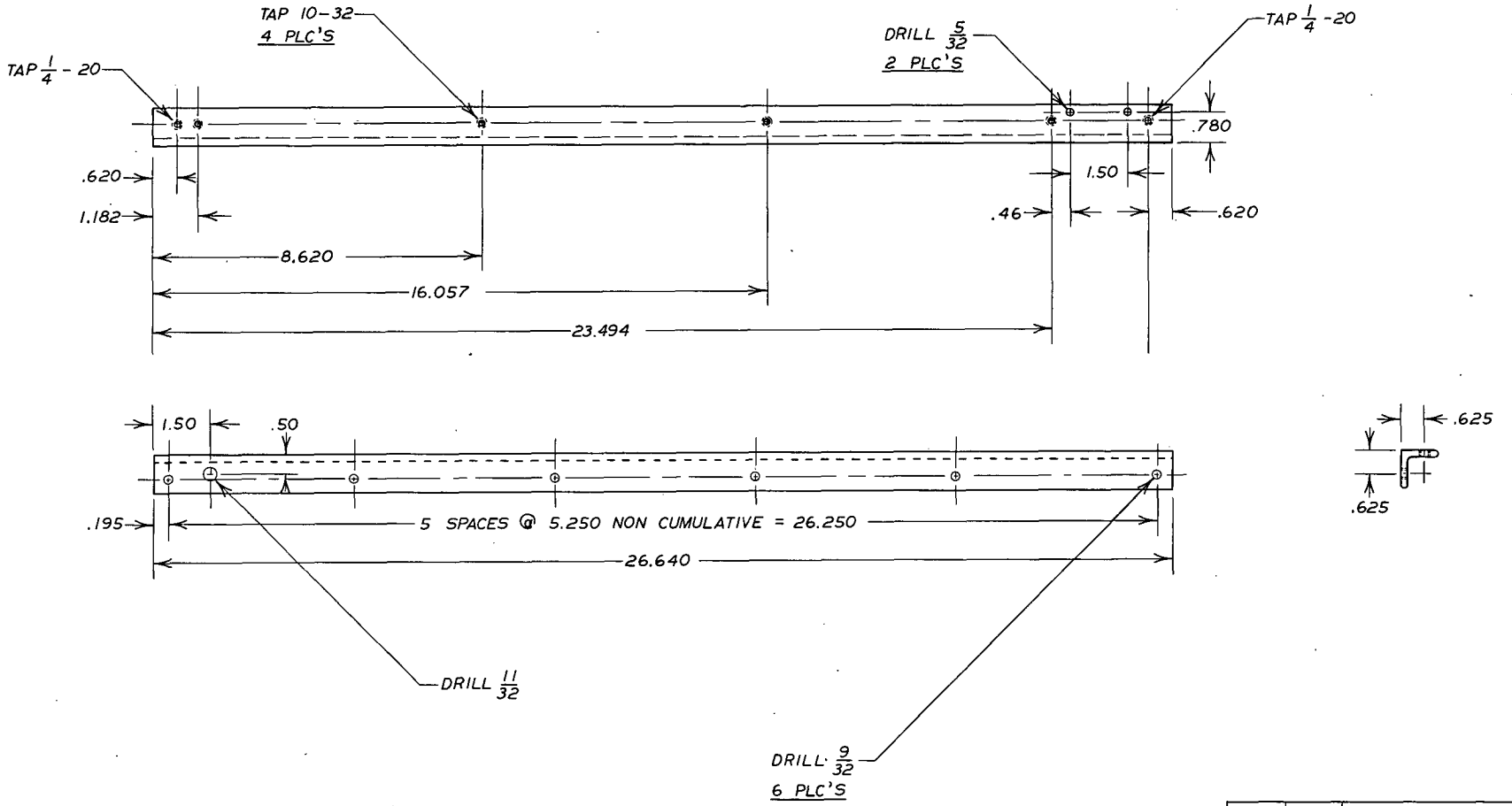
CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE
BASE PEDESTAL
RAIL SUPPORT ANGLE TYPE 3

APPROVED BY	APPROVED FOR	APPROVED DATE	ENG.	DRAWING NO.
RJA	PROD	1-10-72	RJA	421-26
			DRAWN BY DHO	
			CHECKED GM	DATE 8-31-71



TOLERANCE U.O.N.

.XXX	± .005
.XX	± .01
X/X	± 1/64

MAT'L: STEEL ANGLE 1 x 1 x 3/16

FINISH: SHOT PEEN TO REMOVE SCALE
ZINC PLATE & BLUE BRIGHT

1 REQ'D

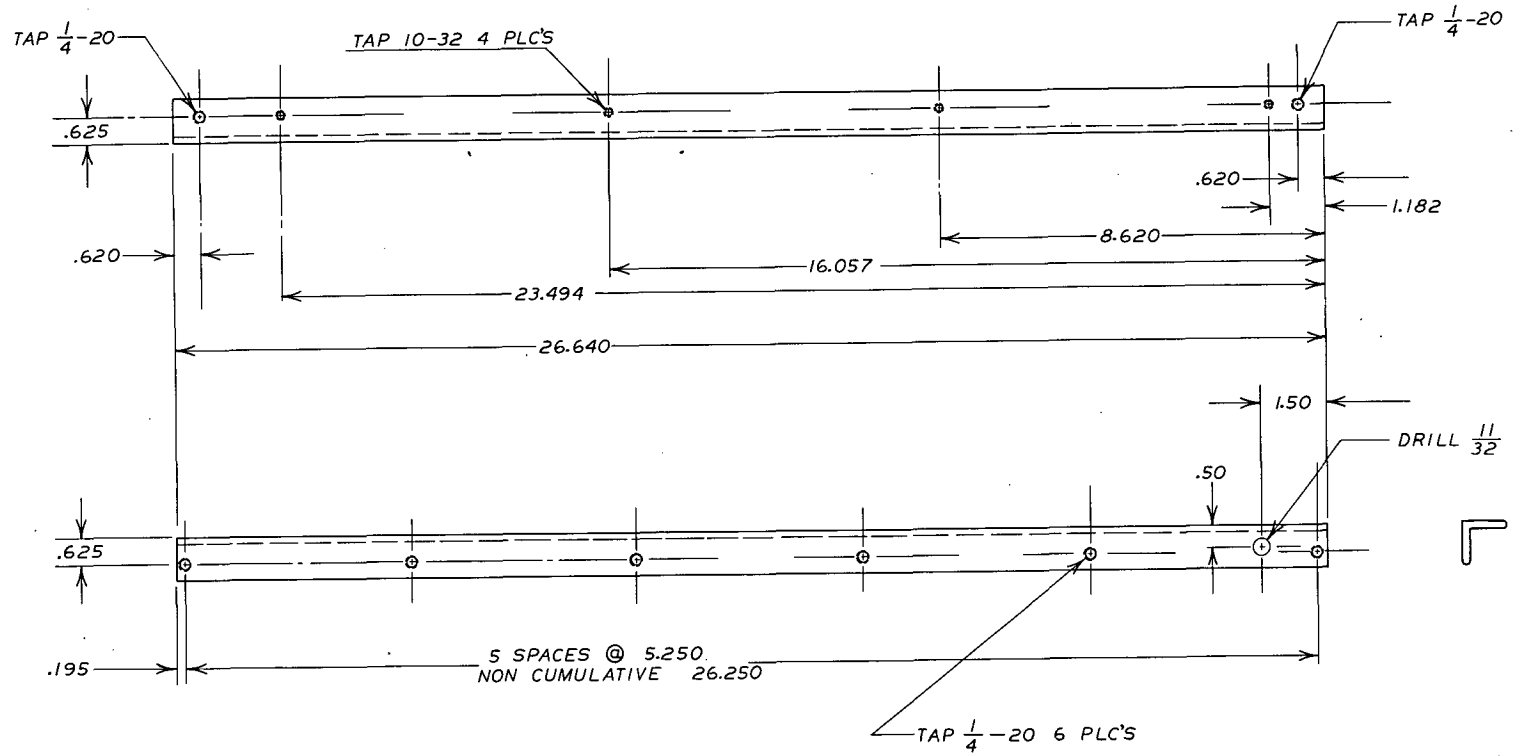
ISSUE	1-10-72	E.C.O. 0228 RJA
CHANGE NO.	DATE	DESCRIPTION

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE
BASE PEDESTAL
RAIL SUPPORT ANGLE TYPE 4

APPROVED BY	FOR	DATE	ENG. RJA	DRAWING NO.
RJA	PROD	1-10-'72	DRAWN BY DHO	421-27
			CHECKED GM	DATE 8-31-71



MAT'L: STEEL L 1 X 1 X 3/16

FINISH: SHOT PEEN TO REMOVE SCALE
ZINC PLATE & BLUE BRIGHT

TOLERANCE U.O.N.
.XXX ± .005
.XX ± .010
X/X ± 1/64

1 REQ'D.

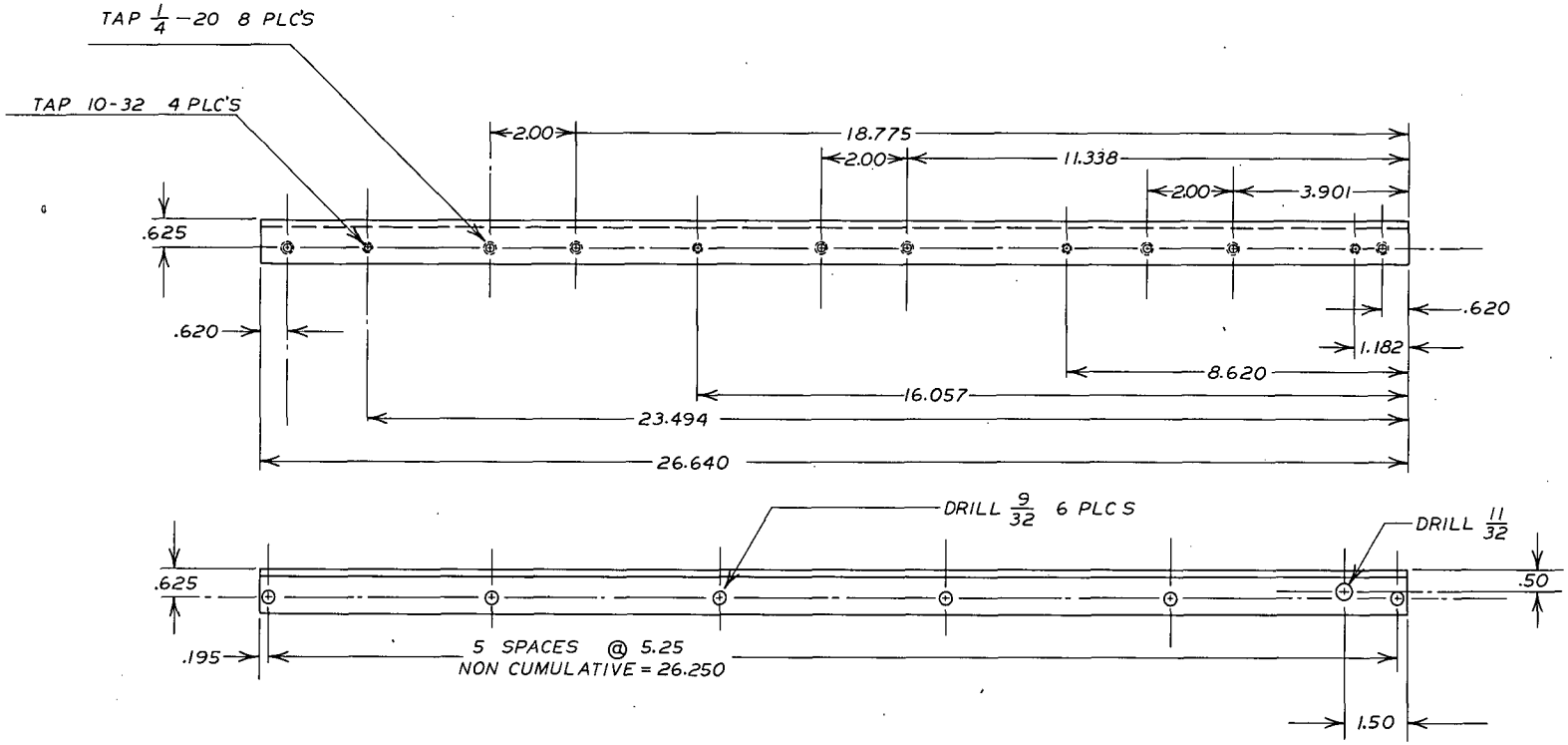
CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE
BASE PEDESTAL
RAIL SUPPORT ANGLE TYPE 5

APPROVED BY	FOR	DATE	ENG.	DRAWING NO.
RJA	PROD	1-10-72	RJA	421-28
			DRAWN BY PLL	
			CHECKED GM	DATE 8-25-71



MAT'L: STEEL L $1 \times 1 \times \frac{3}{16}$

FINISH: SHOT PEEN TO REMOVE SCALE
ZINC PLATE & BLUE BRIGHT

TOLERANCE UON
.XXX ±.005
.XX ±.010
$\frac{X}{X} \pm \frac{1}{64}$

1 REQ'D.

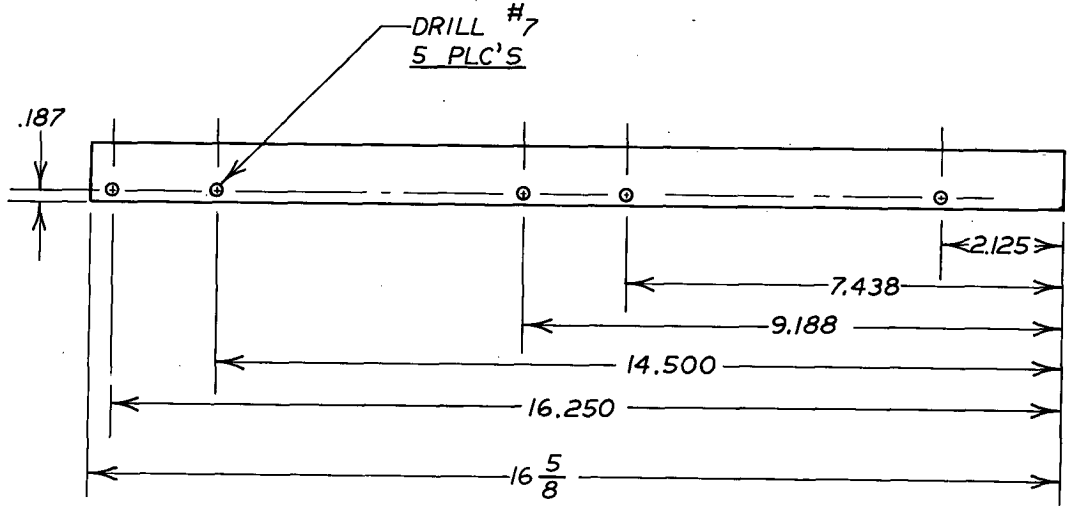
CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE
BASE PEDESTAL
RAIL SUPPORT ANGLE TYPE 6

APPROVED BY	APPROVED FOR	APPROVED DATE	ENG.	DRAWING NO.
RJA	PROD	1-10-72	RJA	421-29
			DRAWN BY PLL	
			CHECKED GM	DATE 8-20-71



TOLERANCE U.O.N.

.XXX	±.005
.XX	±.01
X/X	± 1/64

MAT'L: STEEL 1" x .125"
FINISH: ZINC PLATE & BLUE BRIGHT
REQ'D: 2

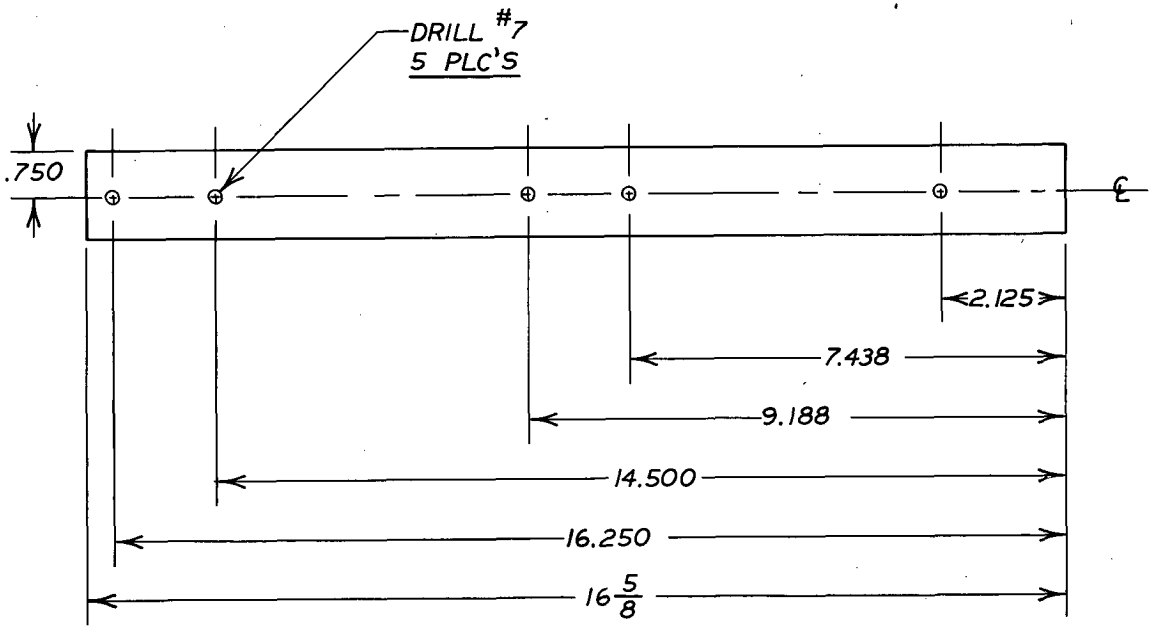
CHANGE NO.	DATE	DESCRIPTION
D	1-9-73	E.C.O. 0282 RJA
ISSUE	1-10-72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE
BASE PEDESTAL
END SLIDE PLATE

APPROVED BY	APPROVED FOR	APPROVED DATE	ENG.	DRAWING NO.
RJA	PROD	1-10-72	RJA	421-30
			DRAWN BY DHO	
			CHECKED GM	DATE 8-20-71



TOLERANCE U.O.N.

.XXX	±.005
.XX	±.01
X/X	± 1/64

MAT'L: STEEL 1.500" x .125"
FINISH: ZINC PLATE & BLUE BRIGHT
2 REQ'D

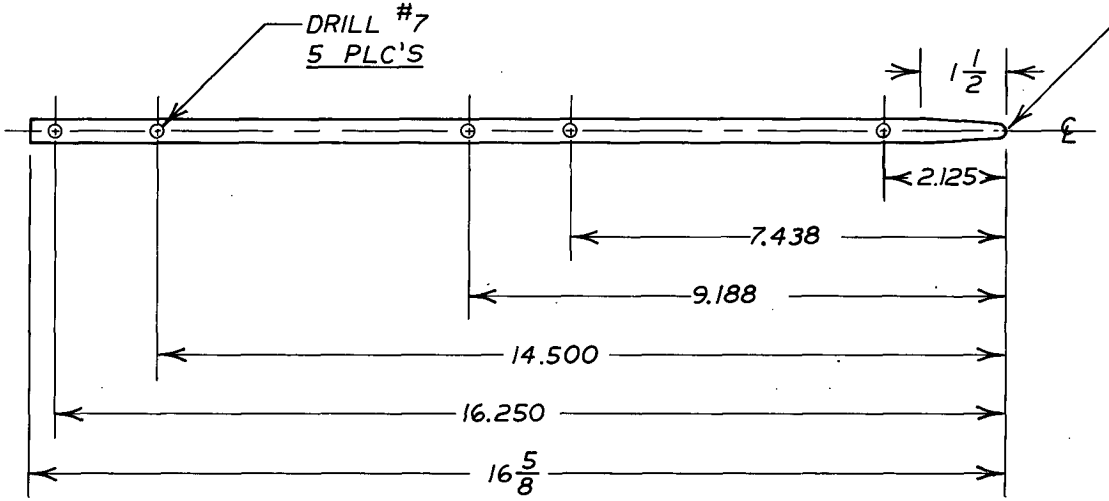
CHANGE NO.	DATE	DESCRIPTION
D	1-9-73	E.C.O. 0282 RJA
ISSUE	1-10-'72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE
BASE PEDESTAL
SLIDE PLATE

APPROVED BY	FOR	DATE	ENG.	DRAWING NO.
RJA	PROD	1-10-'72	RJA	421-31
			DRAWN BY DHO	
			CHECKED GM	DATE 8-27-71



TOLERANCE U.O.N.

.XXX	±.005
.XX	±.01
X/X	± 1/64

MAT'L: STEEL .375 × .375 STOCK
FINISH: ZINC PLATE & BLUE BRIGHT
2 REQ'D

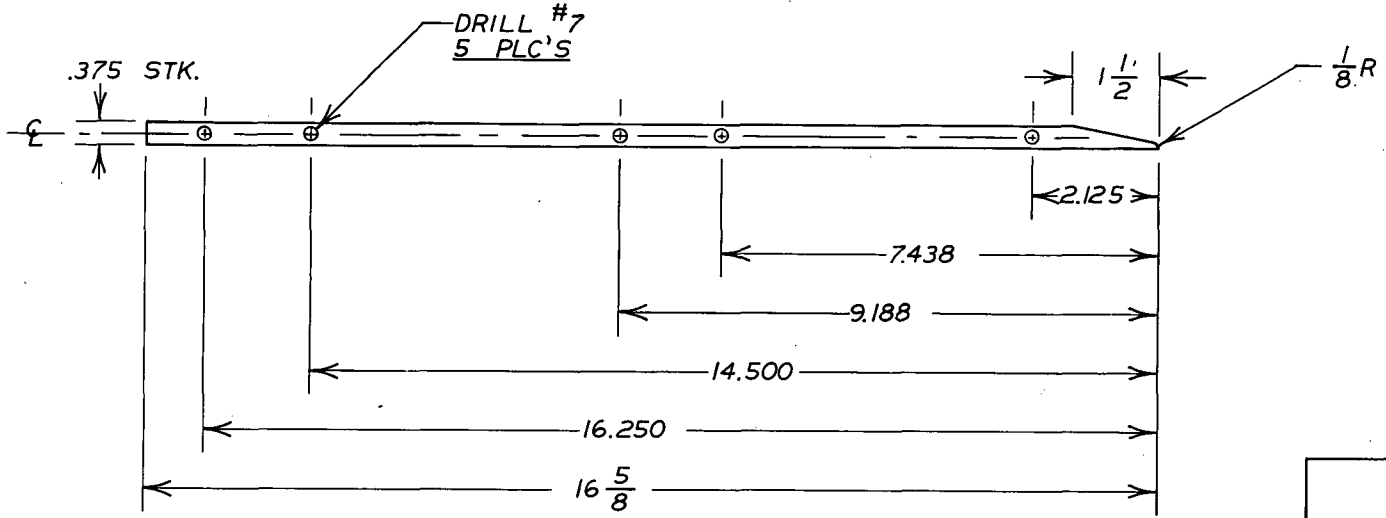
CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-'72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE
BASE PEDESTAL
GUIDE RAIL

APPROVED BY	FOR	DATE	ENG.	DRAWING NO.
RJA	PROD	1-10-'72	RJA	421-32
			DRAWN BY DHO	
			CHECKED GM	DATE 8-27-71



TOLERANCE U.O.N.

.XXX	±.005
.XX	±.01
X/X	+1/-1/64

MAT'L: STEEL .375 x .375 STOCK
FINISH: ZINC PLATE & BLUE BRIGHT
2 REQ'D

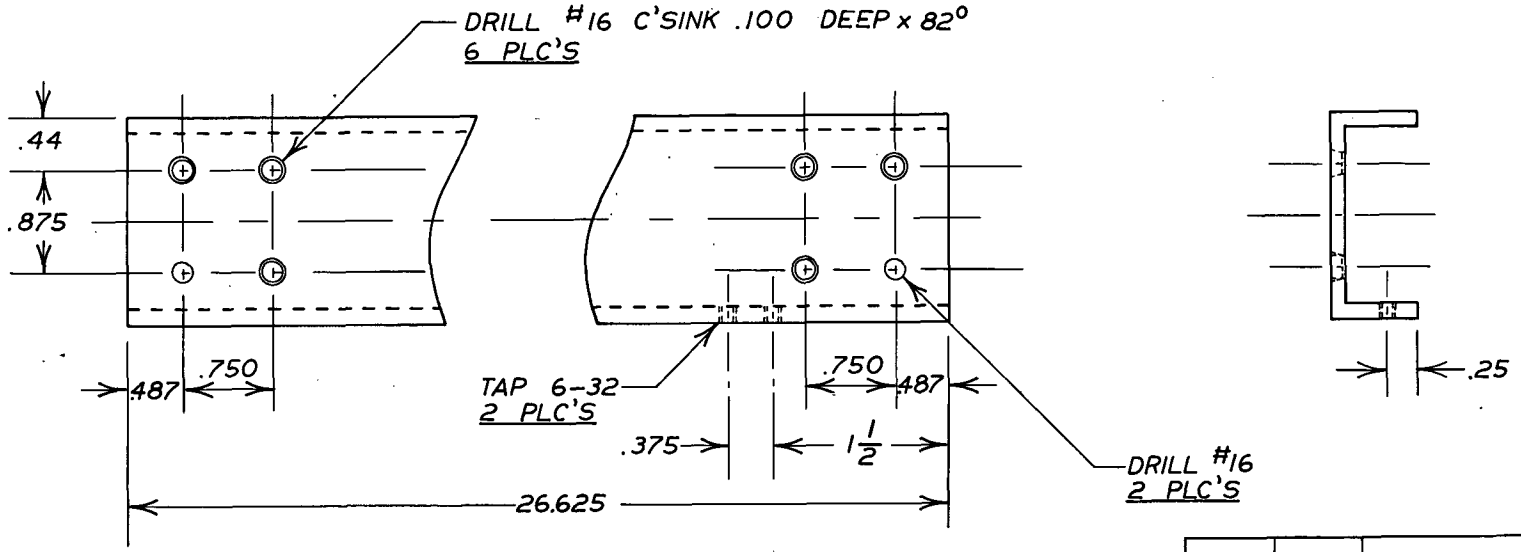
CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-'72	E.C.O. 0228 R J A

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE
BASE PEDESTAL
END GUIDE RAIL

APPROVED BY	FOR	DATE	ENG.	DRAWING NO.
R J A	PROD	1-10-'72	RJA	421-33
			DRAWN BY DHO	
			CHECKED GM	DATE 8-26-71



TOLERANCE U.O.N.

.XXX	±.005
.XX	±.01
X/X	± 1/64

MAT'L: EXTRUDED ALUM $1\frac{3}{4} \times \frac{3}{4} \times \frac{1}{8}$
FINISH: ALODINE

2 REQ'D

CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-'72	E.C.O. 0228 RJA

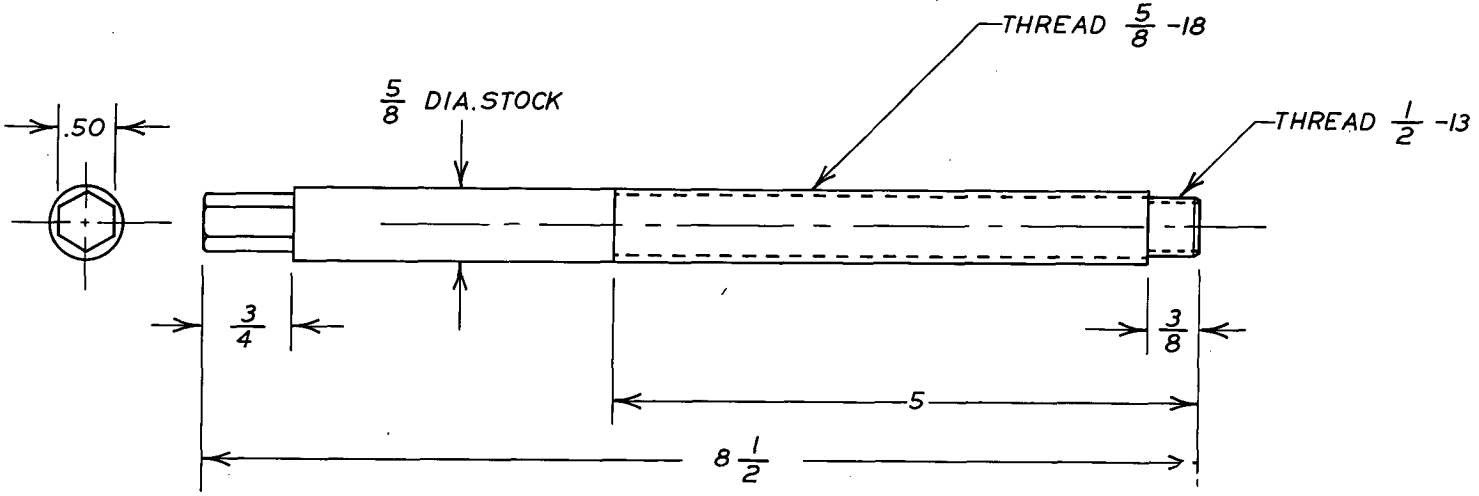
COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE: BASE PEDESTAL CHANNEL

APPROVED BY	FOR	DATE
RJA	PROD	1-10-'72

ENG.	RJA
DRAWN BY	DHO
CHECKED	GM
DRAWING NO.	421-34
DATE	8-20-71



TOLERANCE U.O.N.

.XXX	±.005
.XX	±.01
X/X	± 1/64

MAT'L: STEEL
FINISH: ZINC PLATE & BLUE BRIGHT

4 REQ'D

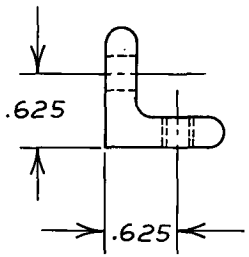
CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-'72	E.C.O. 0228 RJA

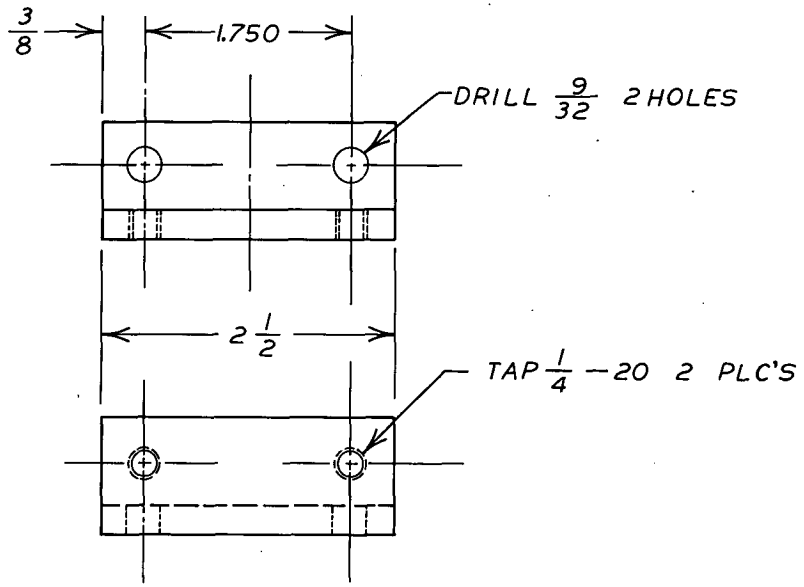
COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE: BASE PEDESTAL SCREW

APPROVED BY	APPROVED FOR	APPROVED DATE	ENG.	DRAWING NO.
RJA	PROD	1-10-'72	RJA	421-35
			DRAWN BY: DHO	
			CHECKED: GM	DATE: 8-23-71





MAT'L: STEEL L 1 x 1 x 1/4

6 REQ'D

FINISH: SHOT PEEN TO REMOVE SCALE
ZINC PLATE & BLUE BRIGHT

TOLERANCE U.O.N.
.XXX ±.005
.XX ±.010
X/X ± 1/64

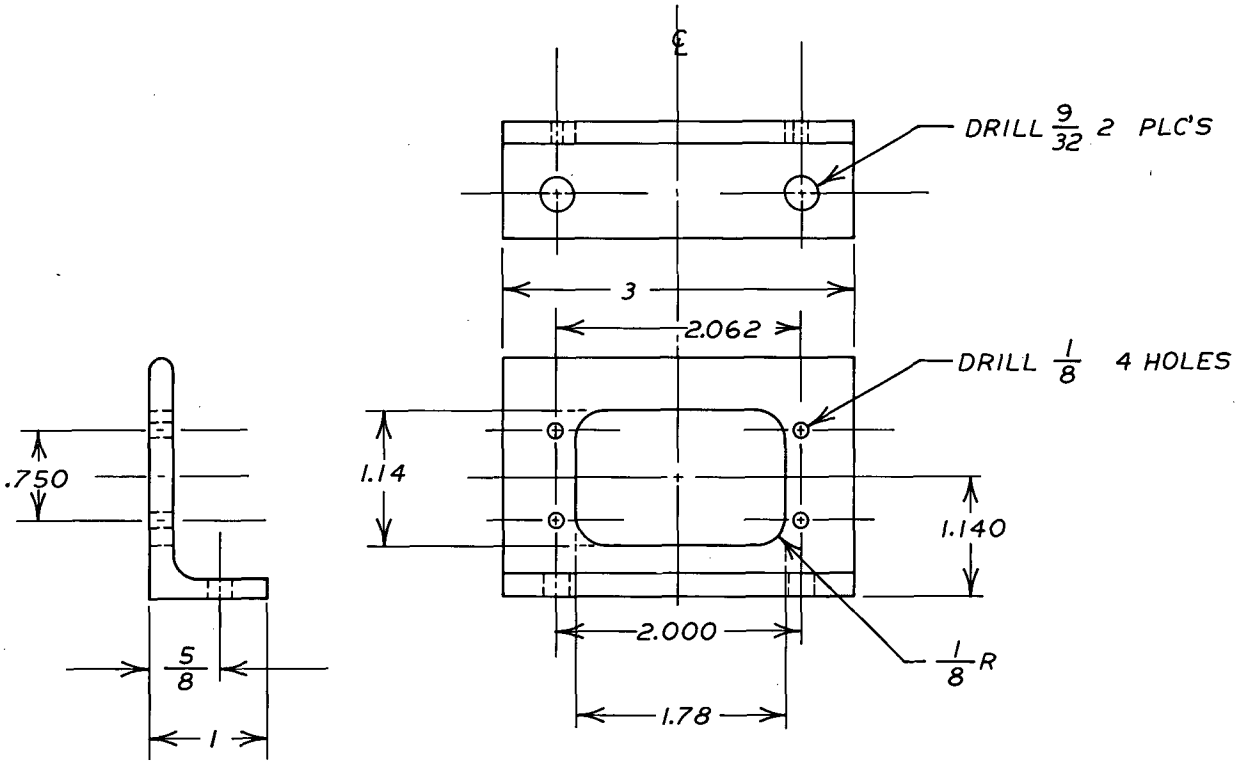
CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE
BASE PEDESTAL
RAIL SUPPORT CLIP ANGLE

APPROVED BY	APPROVED FOR	APPROVED DATE	ENG.	DRAWING NO.
RJA	PROD	1-10-72	RJA	421-36
			DRAWN BY PLL	
			CHECKED GM	DATE 8-19-71



TOLERANCE U.O.N.

.XXX ±.005

.XX ±.010

X/X ± 1/64

MAT'L: STEEL L 2×2×3/16

3 REQ'D

FINISH: SHOT PEEN TO REMOVE SCALE
ZINC PLATE & BLUE BRIGHT

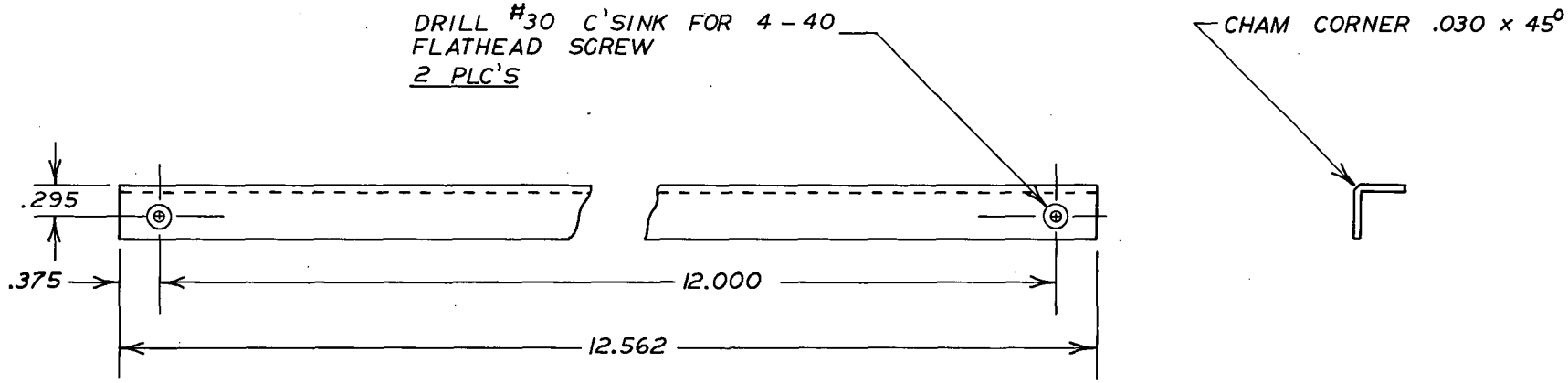
CHANGE NO.	DATE	DESCRIPTION
A	4-25-72	E.C.O. 0261 RJA
ISSUE	1-10-72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE
BASE PEDESTAL
CONNECTOR, ADAPTER

APPROVED BY	APPROVED FOR	APPROVED DATE	ENG.	DRAWING NO.
RJA	PROD	1-10-72	RJA	421-37
			DRAWN BY PLL	
			CHECKED GM	DATE 8-20-71



TOLERANCE U.O.N.

.XXX	±.005
.XX	±.01
X/X	±1/64

MAT'L: EXTRUDED ALUM ANGLE $\frac{1}{2} \times \frac{1}{2} \times .062$

FINISH: CSL SPEC MF 1

1 L.H. & 1 R.H. REQ'D

CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-'72	E.C.O. 0228 RJA

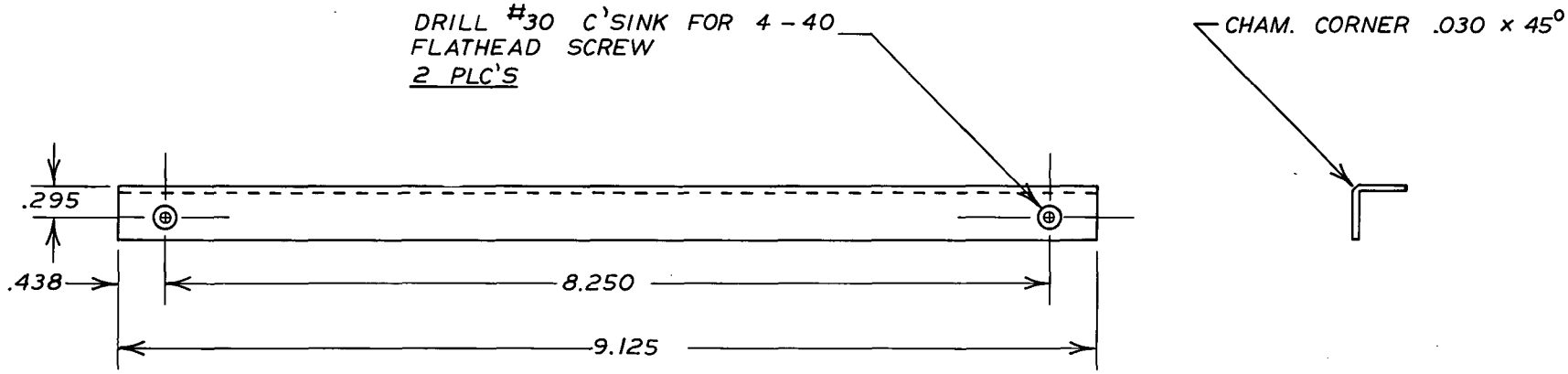
COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE
BASE PEDESTAL
TRIM ANGLE TYPE 1

APPROVED BY	APPROVED FOR	APPROVED DATE
RJA	PROD	1-10-'72

ENG. RJA	DRAWING NO. 421-38
DRAWN BY DHO	
CHECKED GM	DATE 8-24-71



TOLERANCE U.O.N.

.XXX	±.005
.XX	±.01
X/X	± 1/64

MAT'L: EXTRUDED ALUM ANGLE $\frac{1}{2} \times \frac{1}{2} \times .062$

FINISH: CSL SPEC SPEC MF 1

2 REQ'D

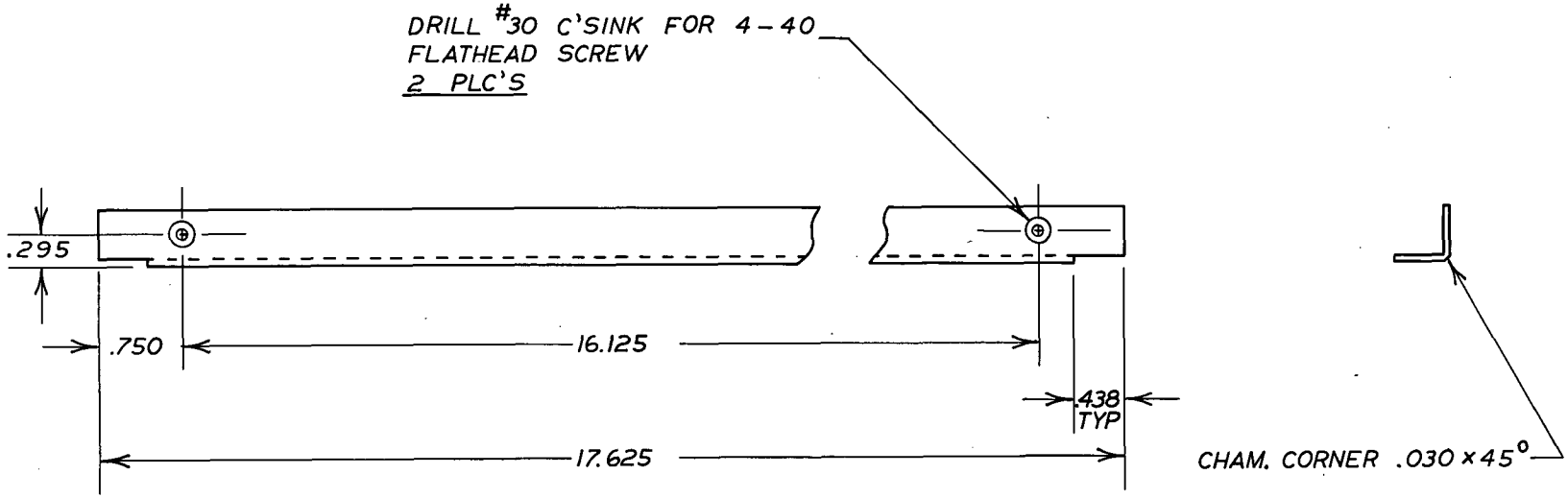
CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-'72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE: BASE PEDESTAL
TRIM ANGLE TYPE 2

APPROVED BY	FOR	DATE	ENG.	DRAWING NO.
RJA	PROD.	1-10-'72	RJA	421-39
			DRAWN BY: DHO	
			CHECKED: GM	DATE: 8-23-71



TOLERANCE U.O.N.

.XXX	±.005
.XX	±.01
X/X	±1/64

MAT'L: EXTRUDED ALUM ANGLE $\frac{1}{2} \times \frac{1}{2} \times .062$

FINISH: CSL SPEC MF 1

2 REQ'D

CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-'72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

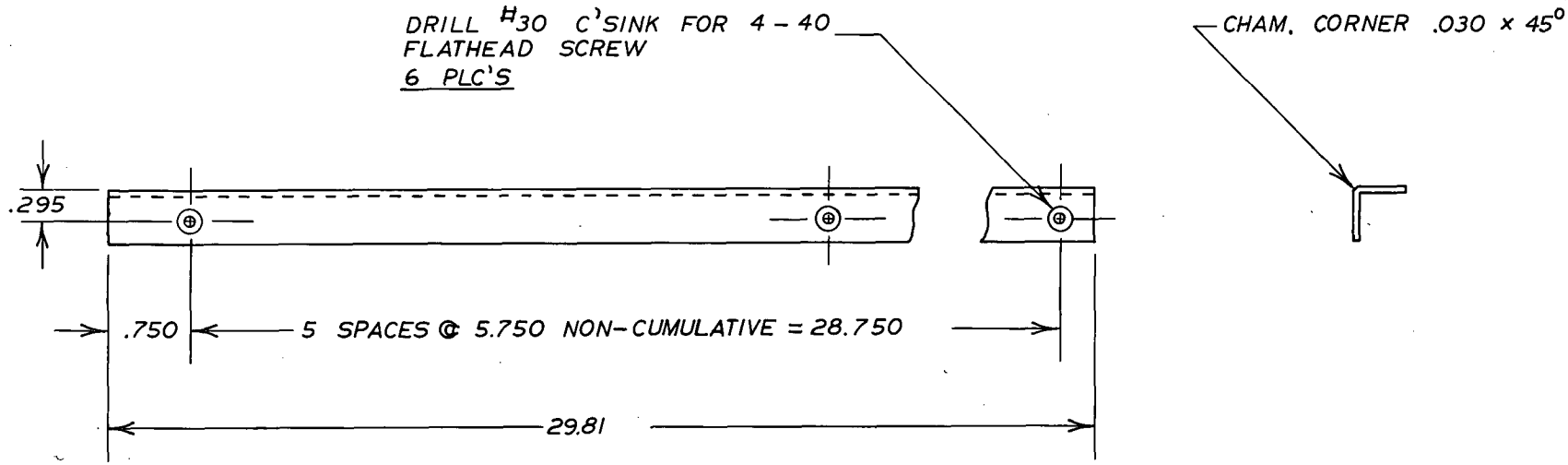
MACROMODULAR PROJECT

TITLE
BASE PEDESTAL
TRIM ANGLE TYPE 3

APPROVED BY	FOR	DATE
RJA	PROD.	1-10-'72

ENG. RJA
DRAWN BY DHO
CHECKED GM

DRAWING NO. 421-40
DATE 8-24-71



TOLERANCE U.O.N.

.XXX	±.005
.XX	±.01
X/X	± 1/64

MAT'L: EXTRUDED ALUM ANGLE $\frac{1}{2} \times \frac{1}{2} \times .062$

FINISH: CSL SPEC MF 1

1 L.H. & 1 R.H. REQ'D

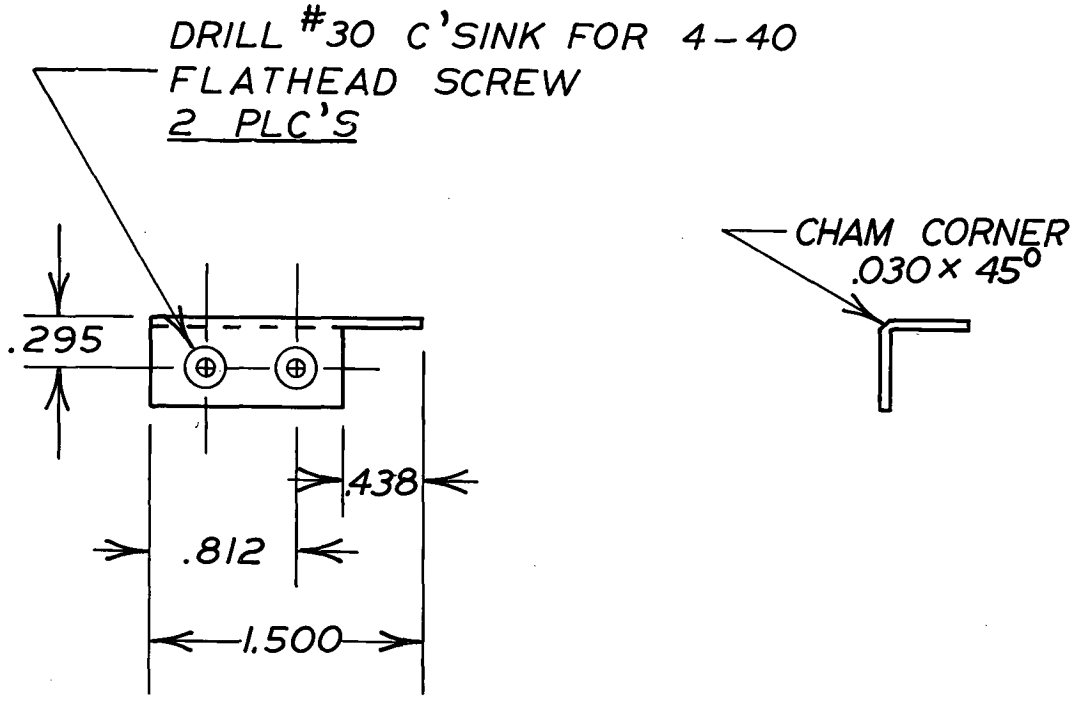
CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE
BASE PEDESTAL
TRIM ANGLE TYPE 4

APPROVED BY	APPROVED FOR	APPROVED DATE	ENG.	DRAWING NO.
RJA	PROD	1-10-72	RJA	421-41
			DRAWN BY DHO	
			CHECKED GM	DATE 8-24-71



TOLERANCE U.O.N.

.XXX	±.005
.XX	±.01
X/X	±1/64

MAT'L: EXTRUDED ALUM ANGLE $\frac{1}{2} \times \frac{1}{2} \times .062$
FINISH: CSL SPEC MF 1
1 L.H. & 1 R.H. REQ'D

ISSUE	1-10-72	E.C.O.0228 RJA
CHANGE NO.	DATE	DESCRIPTION

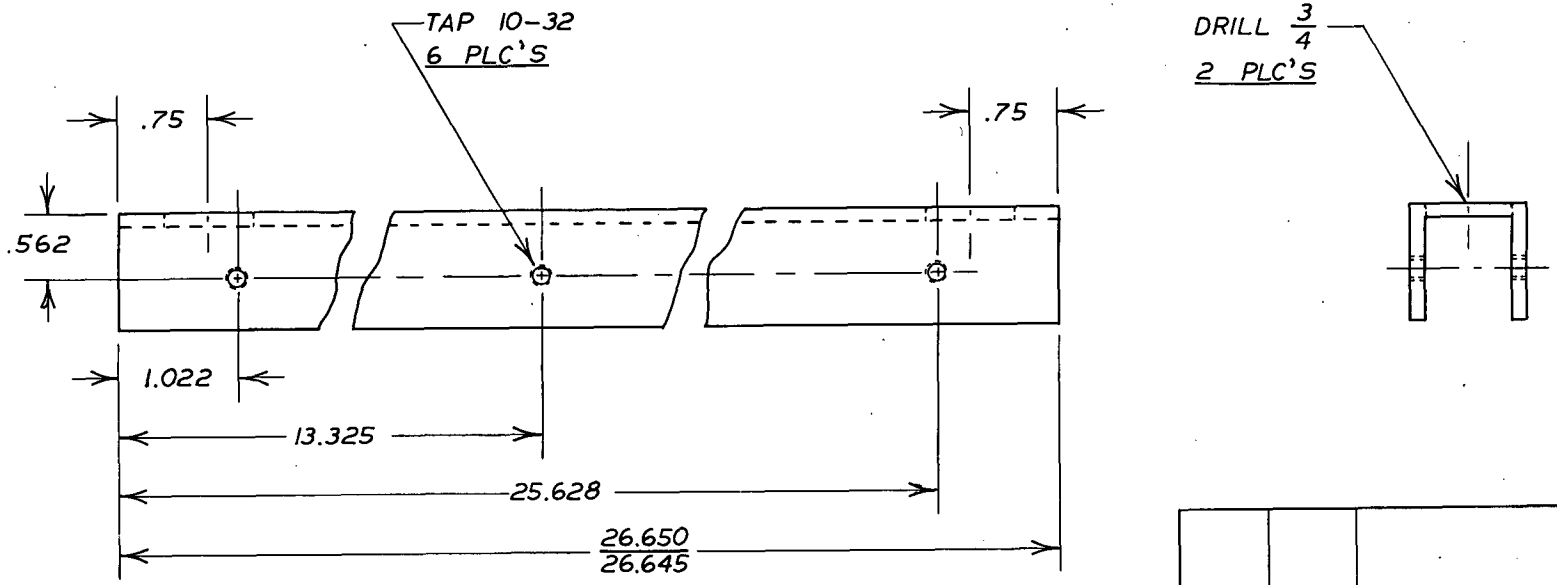
COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE: BASE PEDESTAL
TRIM ANGLE TYPE 5

APPROVED BY	FOR	DATE
RJA	PROD	1-10-72

ENG RJA
DRAWN BY DHO
CHECKED GM
DRAWING NO. 421-42
DATE 8-24-71



CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

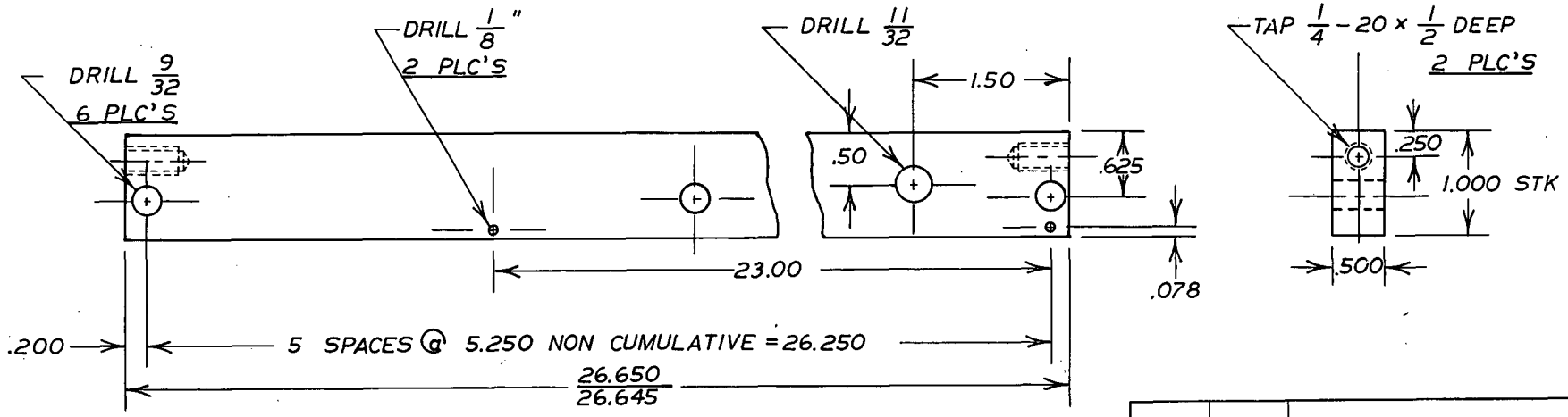
TITLE
BASE PEDESTAL
ANGLE FRAME SPACER

TOLERANCE U.O.N.
.XXX ± .00
.XX ± .01
X/X ± 1/64

MAT'L: EXTRUDED ALUM CHANNEL 1x1x.125
FINISH: CSL SPEC MF 1

1 REQ'D

APPROVED BY	FOR	DATE	ENG	DRAWING NO.
RJA	PROD	1-10-72	RJA	421-43
			DRAWN BY DHO	
			CHECKED GM	DATE 9-1-71



TOLERANCE U.O.N.

.XXX	± .005
.XX	± .01
X/X	± 1/64

MAT'L: ALUM 1.000 x .500 STOCK 2024-T3

FINISH: LIGHT SHOT PEEN & ALODINE

1 REQ'D

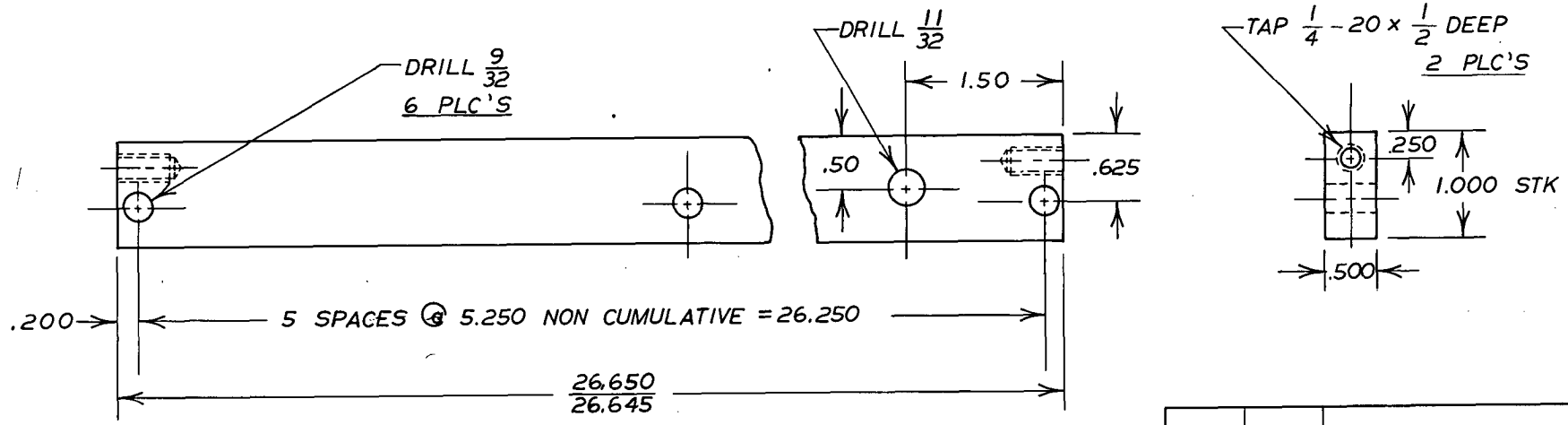
CHANGE NO.	DATE	DESCRIPTION
D	1-8-73	E.C.O. 0282 RJA
ISSUE	1-10-'72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE
BASE PEDESTAL
RAIL SUPPORT BAR TYPE 1

APPROVED BY	APPROVED FOR	APPROVED DATE	ENG.	DRAWING NO.
RJA	PROD	1-10-'72	RJA	421-44
			DRAWN BY DHO	
			CHECKED GM	DATE 8-30-71



TOLERANCE U.O.N.

.XXX	± .005
.XX	± .01
X/X	± 1/64

MAT'L: ALUM 1.000 x .500 STOCK 2024-T3

FINISH: LIGHT SHOT PEEN & ALODINE

2 REQ'D

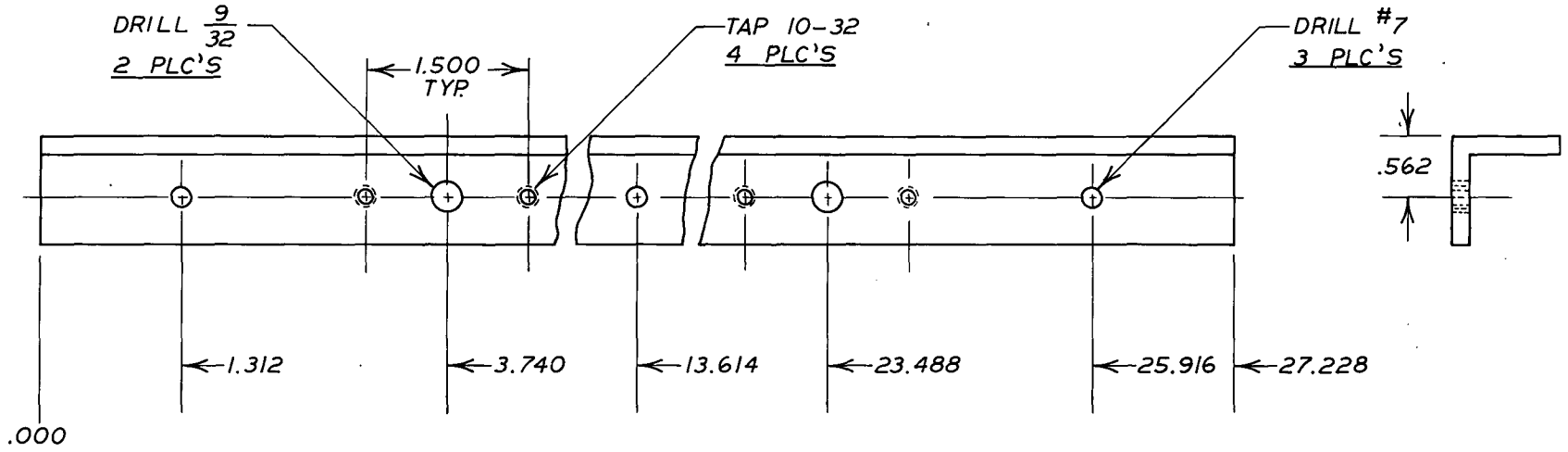
CHANGE NO.	DATE	DESCRIPTION
D	1-9-73	E.C.O. 0282 RJA
ISSUE	1-10-72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE
BASE PEDESTAL
RAIL SUPPORT BAR TYPE 2

APPROVED BY	APPROVED FOR	APPROVED DATE	ENG.	DRAWING NO.
RJA	PROD	1-10-72	RJA	421-45
			DRAWN BY DHO	
			CHECKED GM	DATE 8-30-71



TOLERANCE U.O.N.

.XXX	±.005
.XX	±.01
X/X	± 1/64

MAT'L: EXTRUDED ALUM ANGLE 1x1x.188
FINISH: CSL SPEC MF-1
REQ'D: 1

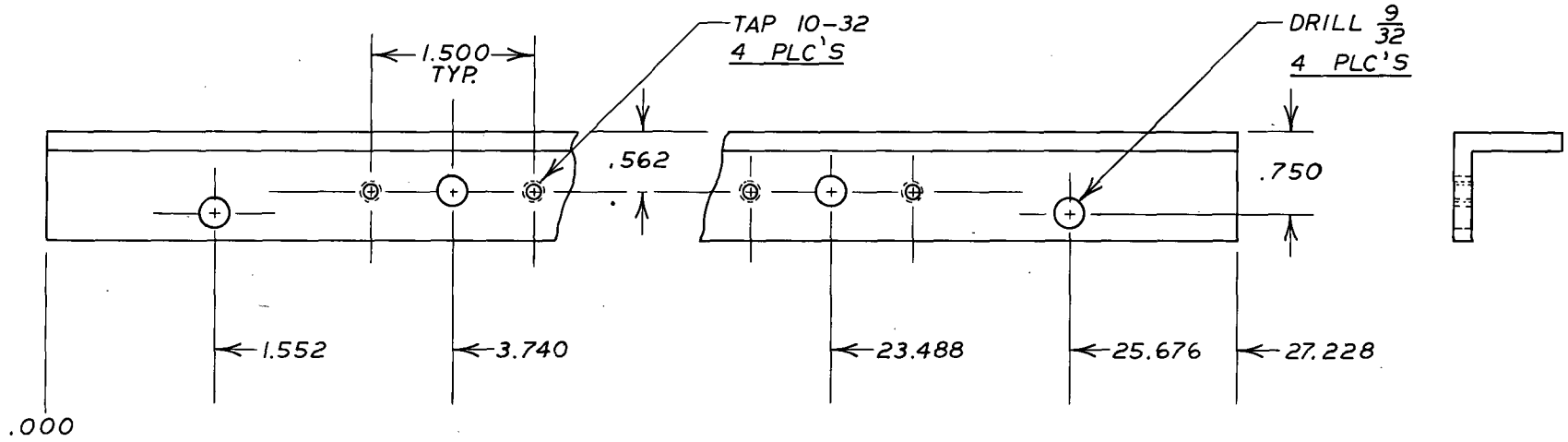
CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE
BASE PEDESTAL
UPPER FRAME ANGLE

APPROVED BY	APPROVED FOR	APPROVED DATE	ENG.	DRAWING NO.
RJA	PROD	1-10-72	RJA	421-46
			DRAWN BY: DHO	
			CHECKED: GM	DATE: 9-1-71



TOLERANCE U.O.N.

.XXX	±.005
.XX	±.01
X/X	±1/64

MAT'L: EXTRUDED ALUM ANGLE 1×1×.188
FINISH: CSL SPEC. MF-1
REQ'D 1

CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-72	E.C.O. 0228 RJA

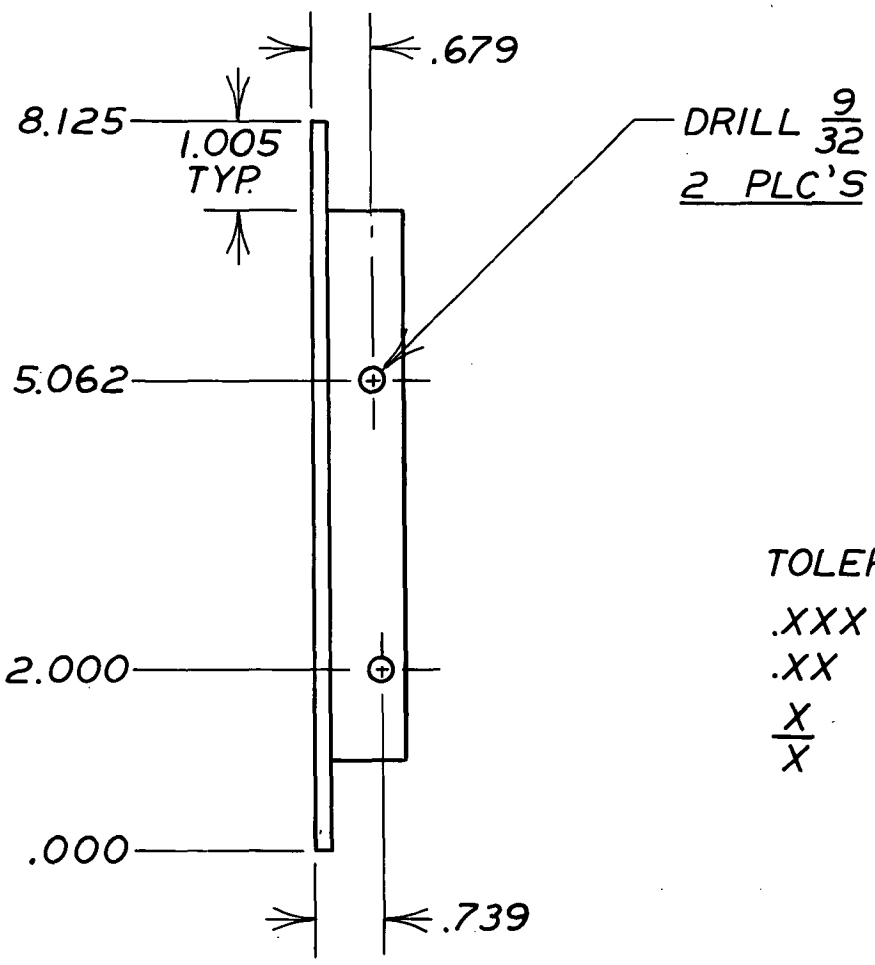
COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE
BASE PEDESTAL
LOWER FRAME ANGLE

APPROVED BY	FOR	DATE
RJA	PROD	1-10-72

ENG. RJA
DRAWN BY DHO
CHECKED GM
DRAWING NO. 421-47
DATE 9-1-71



TOLERANCE U.O.N.

.XXX	±.005
.XX	±.01
X/X	± 1/64

MAT'L: EXTRUDED ALUM ANGLE 1 x 1 x .188
FINISH: CSL SPEC MF-1
REQ'D: 1 L.H. & 1 R.H.

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

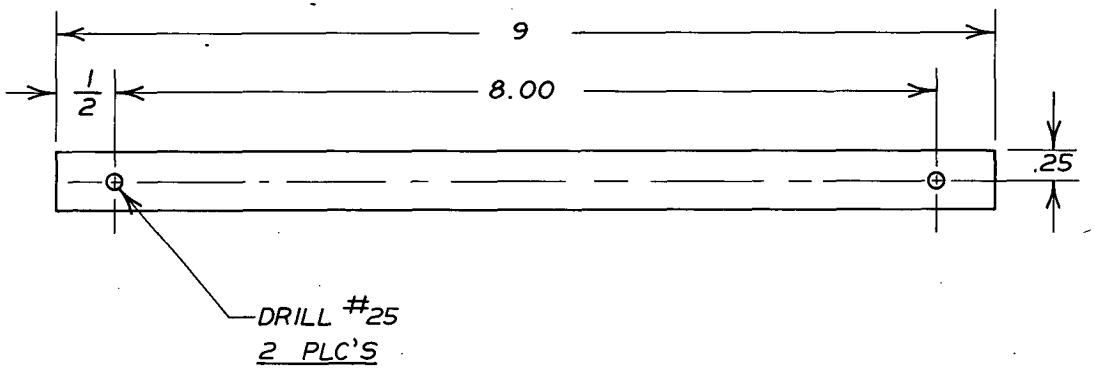
MACROMODULAR PROJECT

TITLE: BASE PEDESTAL
SIDE FRAME ANGLES

CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-'72	E.C.O. 0228 RJA

APPROVED BY	APPROVED FOR	APPROVED DATE
RJA	PROD	1-10-'72

ENG RJA
DRAWN BY DHO
CHECKED GM
DRAWING NO. 421-48
DATE 9-1-71



TOLERANCE U.O.N.

.XXX	±.005
.XX	±.01
X/X	± 1/64

MAT'L: 2024-T3 ALUM 1/2 x 1/4
FINISH: ALODINE
REQ'D: 2

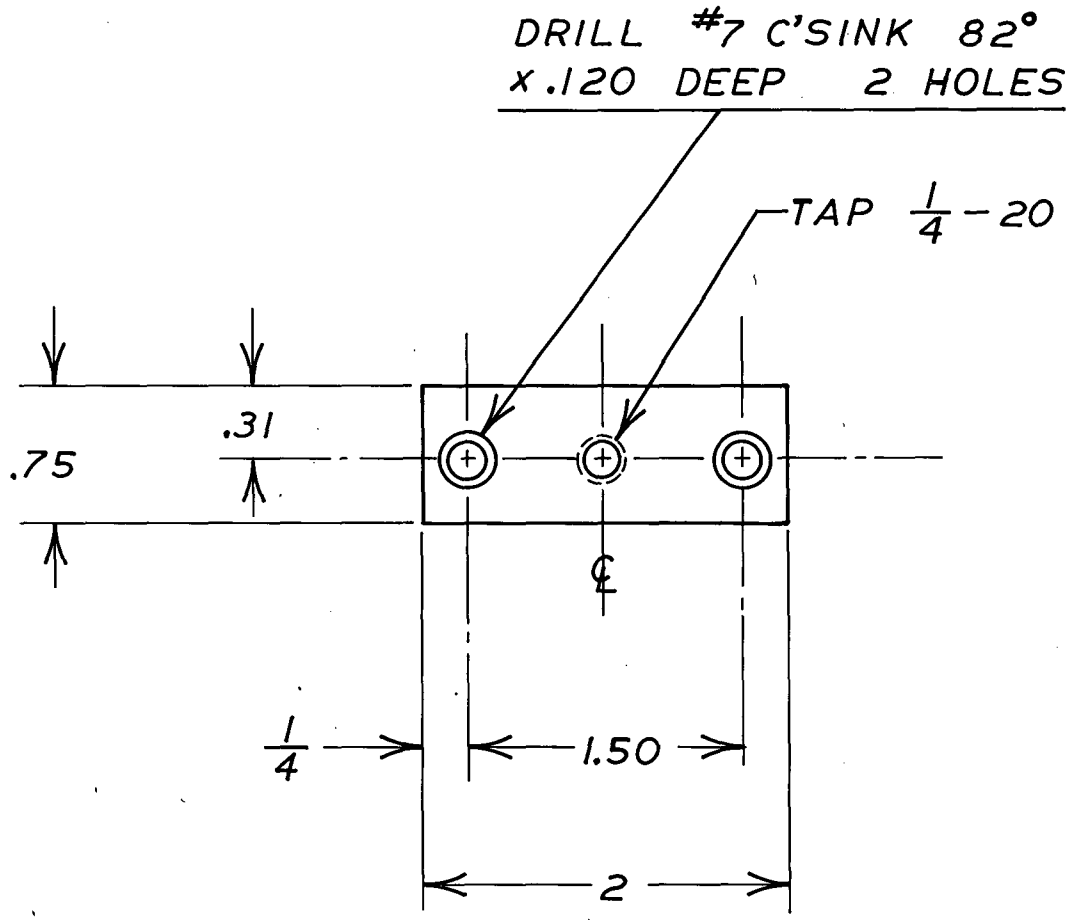
CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE
BASE PEDESTAL
HINGE SPACER

APPROVED BY	FOR	DATE	ENG.	DRAWING NO.
RJA	PROD	1-10-72	RJA	421-49
			DRAWN BY DHO	
			CHECKED GM	DATE 9-20-71

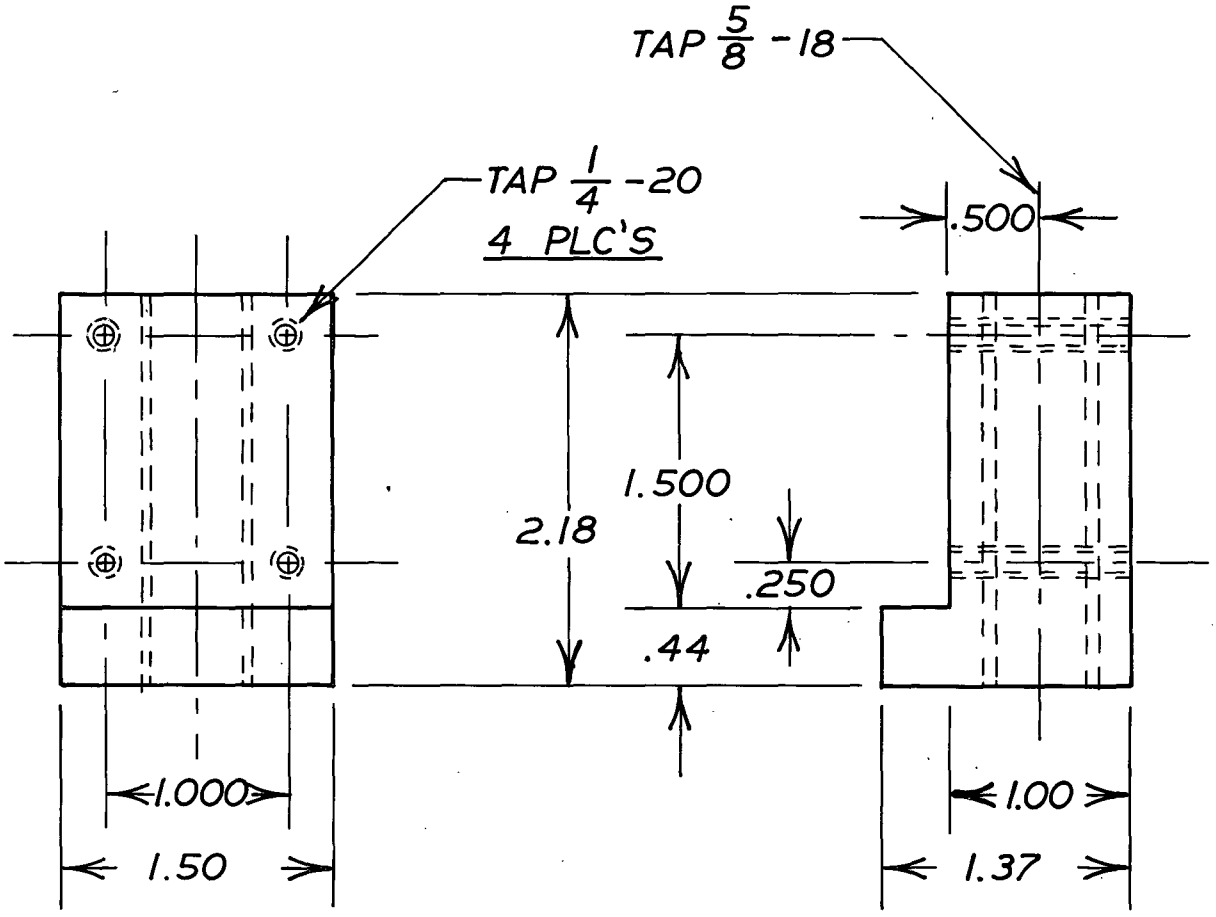


MAT'L: $\frac{5}{16}$ STEEL
4 REQ'D

TOLERANCE U.O.N.
.XXX ± .005
.XX ± .010
$\frac{X}{X}$ ± $\frac{1}{64}$

COMPUTER SYSTEMS LABORATORY WASHINGTON UNIVERSITY ST. LOUIS, MISSOURI			MACROMODULAR PROJECT		
			TITLE: BASE PEDESTAL PANEL MOUNT		
			APPROVED BY: RJA	FOR: PROD	DATE: 1-10-72
ISSUE	1-10-72	E.C.O. 0228 RJA			
CHANGE NO.	DATE	DESCRIPTION			

ENG	DRAWING NO.
RJA	421-50
DRAWN BY: PLL	
CHECKED: GM	DATE: 8-24-71



TOLERANCE U.O.N.

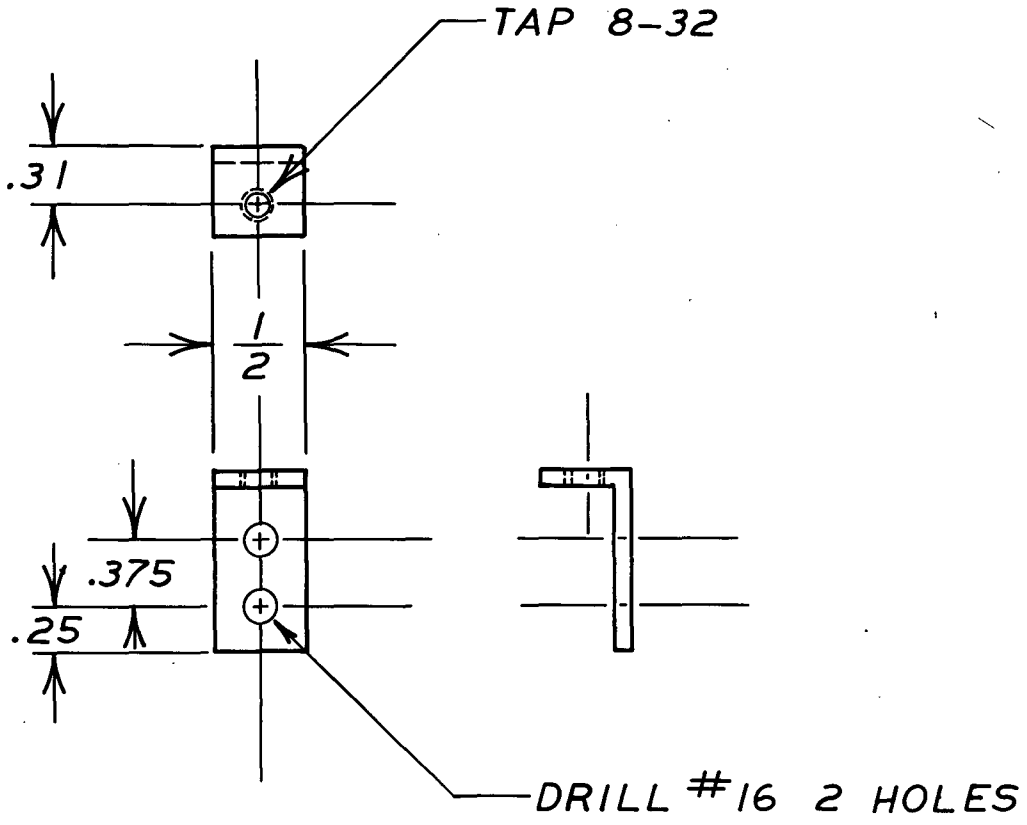
.XXX	±.005
.XX	±.01
X/X	+1/-64

MAT'L: CRS

FINISH: ZINC PLATE & BLUE BRIGHT

4 REQ'D

COMPUTER SYSTEMS LABORATORY WASHINGTON UNIVERSITY ST. LOUIS, MISSOURI			MACROMODULAR PROJECT				
			TITLE: BASE PEDESTAL NUT				
			APPROVED			ENG: RJA	DRAWING NO.: 421-51
			BY: RJA	FOR: PROD.	DATE: 1-10-72	DRAWN BY: DHO	
ISSUE	1-10-72	E.C.O. 0228 RJA				CHECKED: GM	DATE: 8-23-71
CHANGE NO.	DATE	DESCRIPTION					



MAT'L: 1/2 X 1 X .094 EXTRUDED ALUM ANGLE

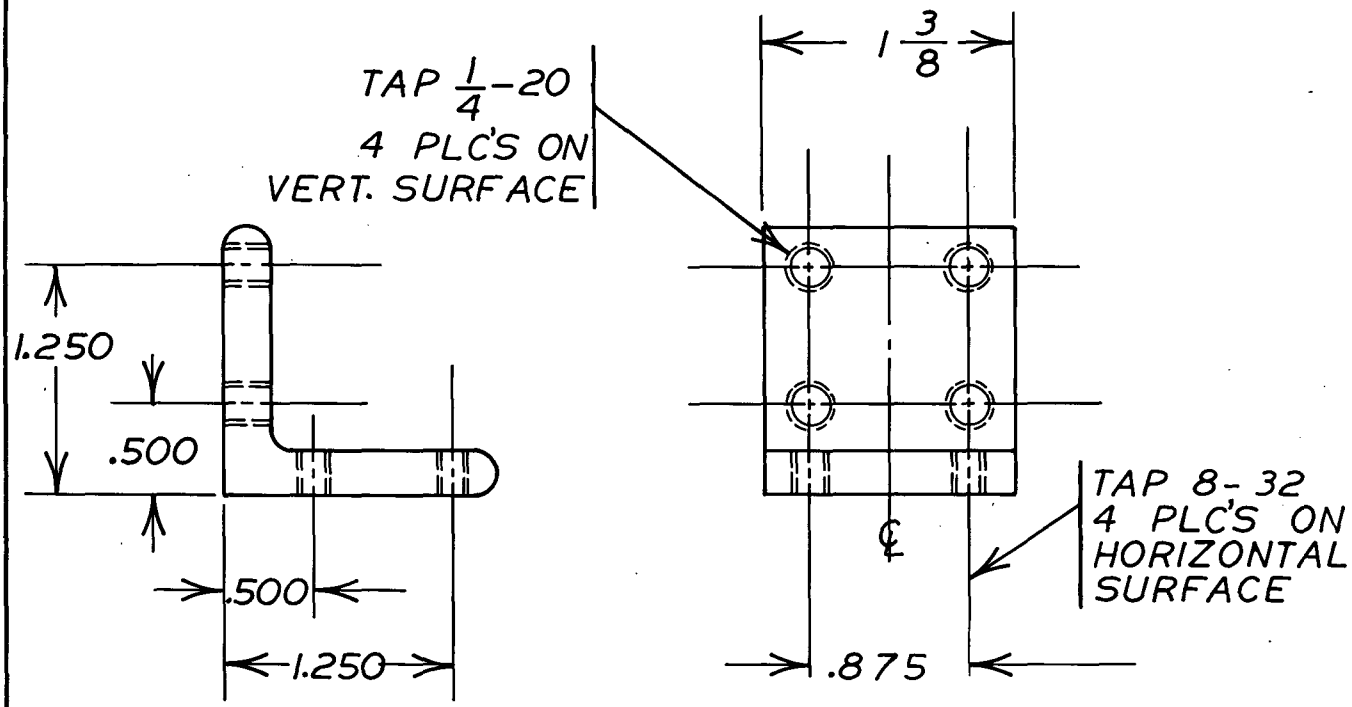
TOLERANCE

.XXX ±.005
.XX ±.010
X/X ± 1/64

3 REQ'D

COMPUTER SYSTEMS LABORATORY WASHINGTON UNIVERSITY ST. LOUIS, MISSOURI			MACROMODULAR PROJECT		
			TITLE: BASE PEDESTAL COVER SUPPORT ANGLE		
			APPROVED BY: RJA	FOR: PROD	DATE: 1-10-'72
ISSUE	1-10-'72	E.C.O. 0228 RJA			
CHANGE NO.	DATE	DESCRIPTION			

ENG	DRAWING NO.
RJA	421-52
DRAWN BY: PLL	
CHECKED: GM	DATE: 8-24-71



MAT'L: STEEL L $1\frac{1}{2} \times 1\frac{1}{2} \times \frac{1}{4}$

6 REQ'D.

FINISH: SHOT PEEN TO REMOVE SCALE
ZINC PLATE & BLUE BRIGHT

TOLERANCE U.O.N.

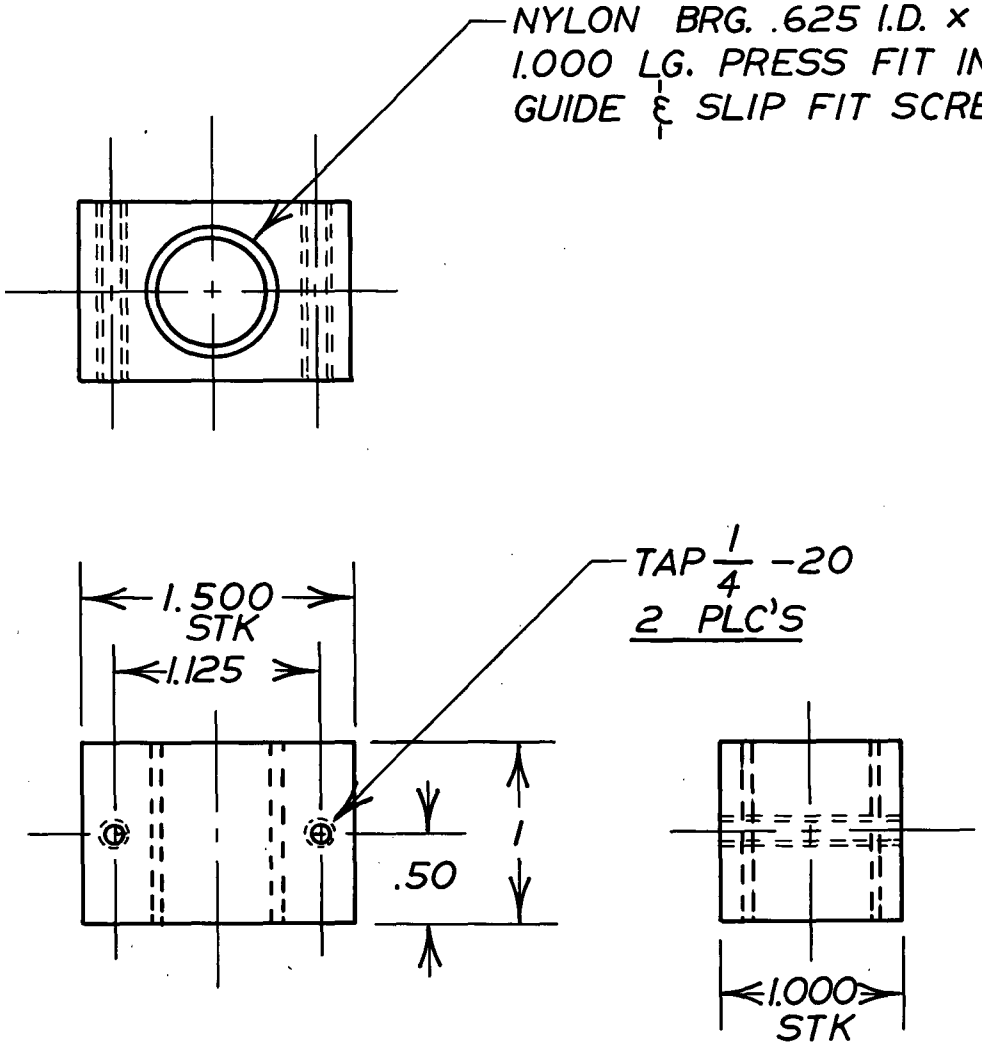
.XXX ±.005

.XX ±.010

$\frac{X}{X} \pm \frac{1}{64}$

COMPUTER SYSTEMS LABORATORY WASHINGTON UNIVERSITY ST. LOUIS, MISSOURI		MACROMODULAR PROJECT
		TITLE: BASE PEDESTAL CLIP ANGLE
		APPROVED BY: RJA FOR: PROD DATE: 1-10-72
		ENG: RJA
		DRAWN BY: PLL
		CHECKED: GM
		DRAWING NO.: 421-53
		DATE: 8-19-71

CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-72	E.C.O. 0228 RJA



TOLERANCE U.O.N.

.XXX	±.005
.XX	±.01
X/X	+1/-64

MAT'L: STEEL U.O.N.

FINISH: ZINC PLATE & BLUE BRIGHT

4 REQ'D

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE: BASE PEDESTAL SCREW GUIDE

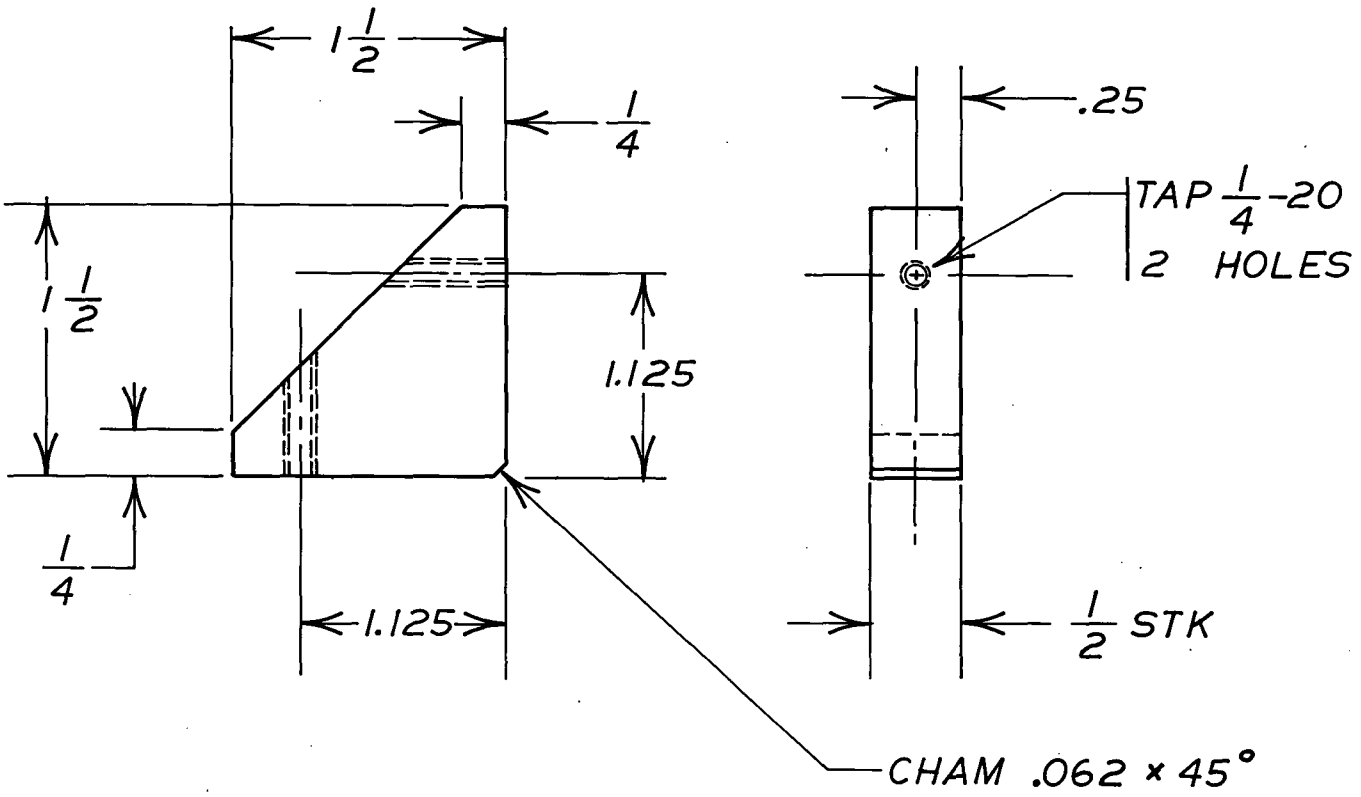
CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-72	E.C.O. 0228 RJA

APPROVED BY	FOR	DATE
RJA	PROD	1-10-72

ENG RJA | DRAWING NO. 421-54

DRAWN BY DHO

CHECKED GM | DATE 8-20-71



MAT'L: STEEL
6 REQ'D

FINISH: ZINC PLATE & BLUE BRIGHT

TOLERANCE UON

.XXX	±.005
.XX	±.010
X	± 1/64
X	

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

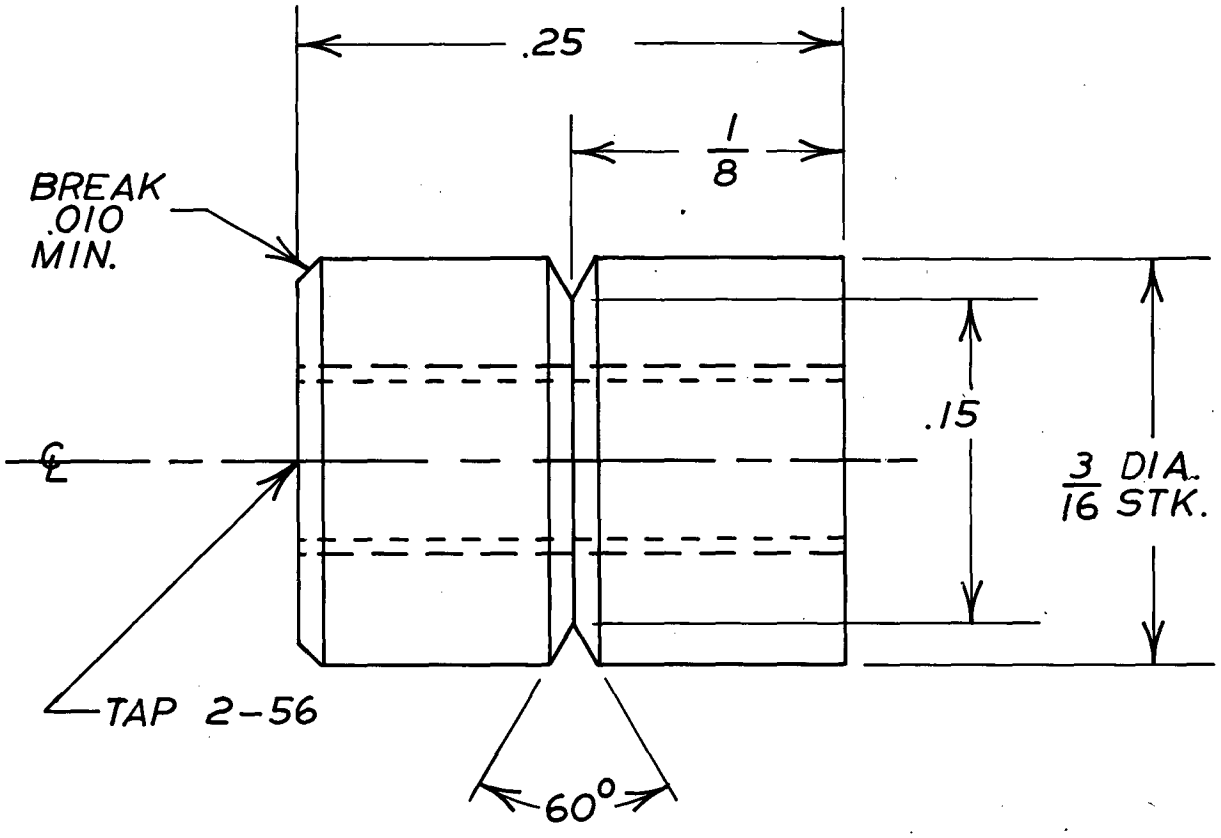
MACROMODULAR PROJECT

TITLE: BASE PEDESTAL CORNER STIFFENER

CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-72	E.C.O. 0228 RJA

APPROVED BY	FOR	DATE
RJA	PROD	1-10-72

ENG: RJA
DRAWN BY: PLL
CHECKED: GM
DRAWING NO.: 421-55
DATE: 8-20-71



TOLERANCE U.O.N.

.XXX	±.005
.XX	±.01
X/X	± 1/64

MAT'L: 3/16 ALUM ROD 2024-T3

FINISH: ALODINE

REQ'D: 2

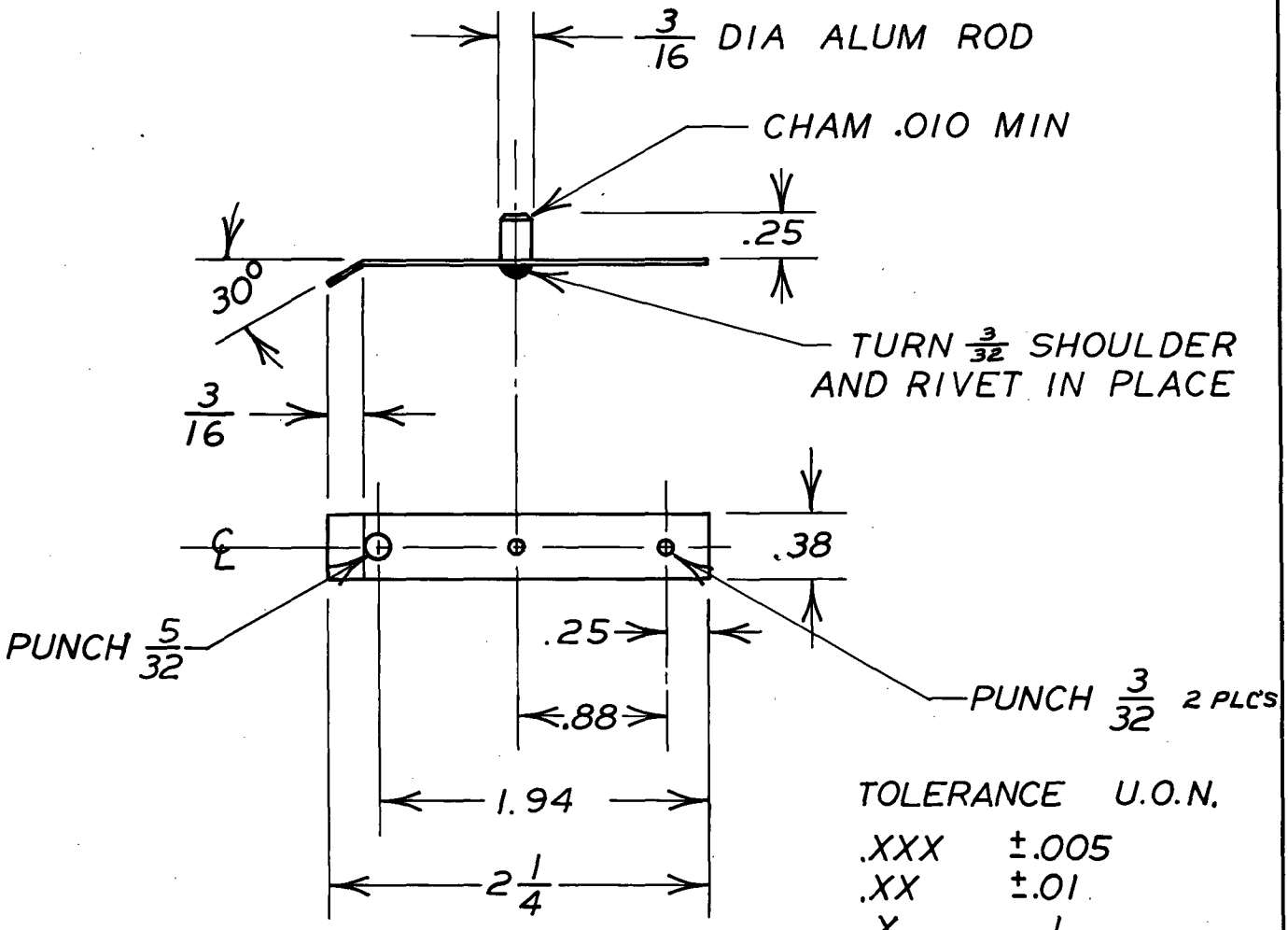
COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE: BASE PEDESTAL SPRING PURCHASE

APPROVED BY	FOR	DATE	ENG	DRAWING NO.
RJA	PROD	1-10-'72	RJA	421-56
			DRAWN BY: DHO	
			CHECKED: GM	DATE: 9-24-71

CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-'72	E.C.O. 0228 RJA

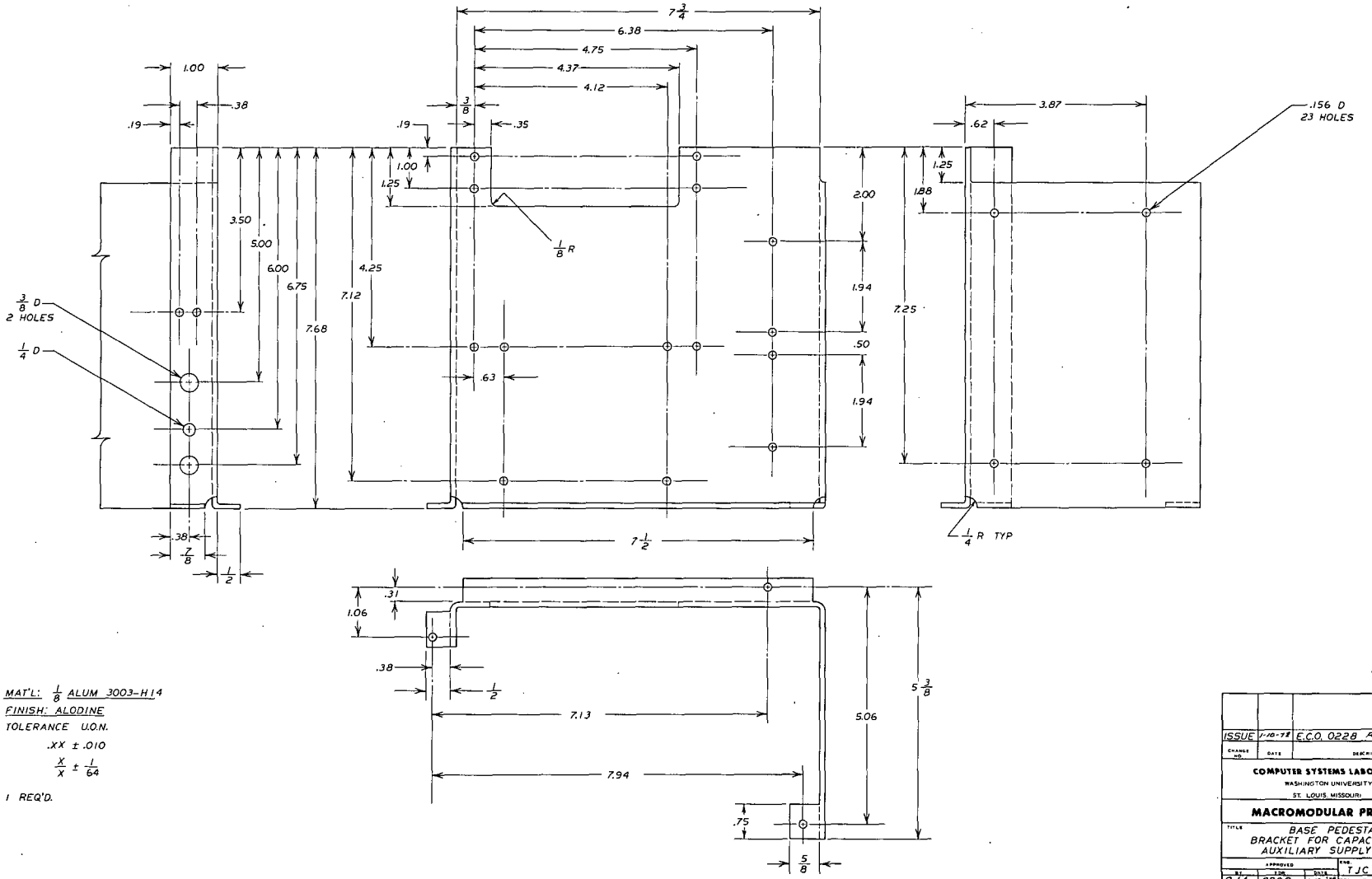


TOLERANCE U.O.N.

.XXX	±.005
.XX	±.01
X/X	± 1/64

MAT'L: .020 SPRING STOCK
FINISH: STOCK
REQ'D: 1

COMPUTER SYSTEMS LABORATORY WASHINGTON UNIVERSITY ST. LOUIS, MISSOURI			**MACROMODULAR PROJECT**
			TITLE: BASE PEDESTAL COVER CATCH
			APPROVED: BY RJA, FOR PROD, DATE 1-10-72
			ENG RJA
			DRAWN BY DHO
			CHECKED GM
			DRAWING NO. 421-57
			DATE 9-20-71
ISSUE	1-10-72	E.C.O. 0228 RJA	
CHANGE NO.	DATE	DESCRIPTION	



MAT'L: 1/8 ALUM 3003-H14

FINISH: ALODINE

TOLERANCE U.O.N.

.XX ± .010

X/X ± 1/64

1 REQ'D.

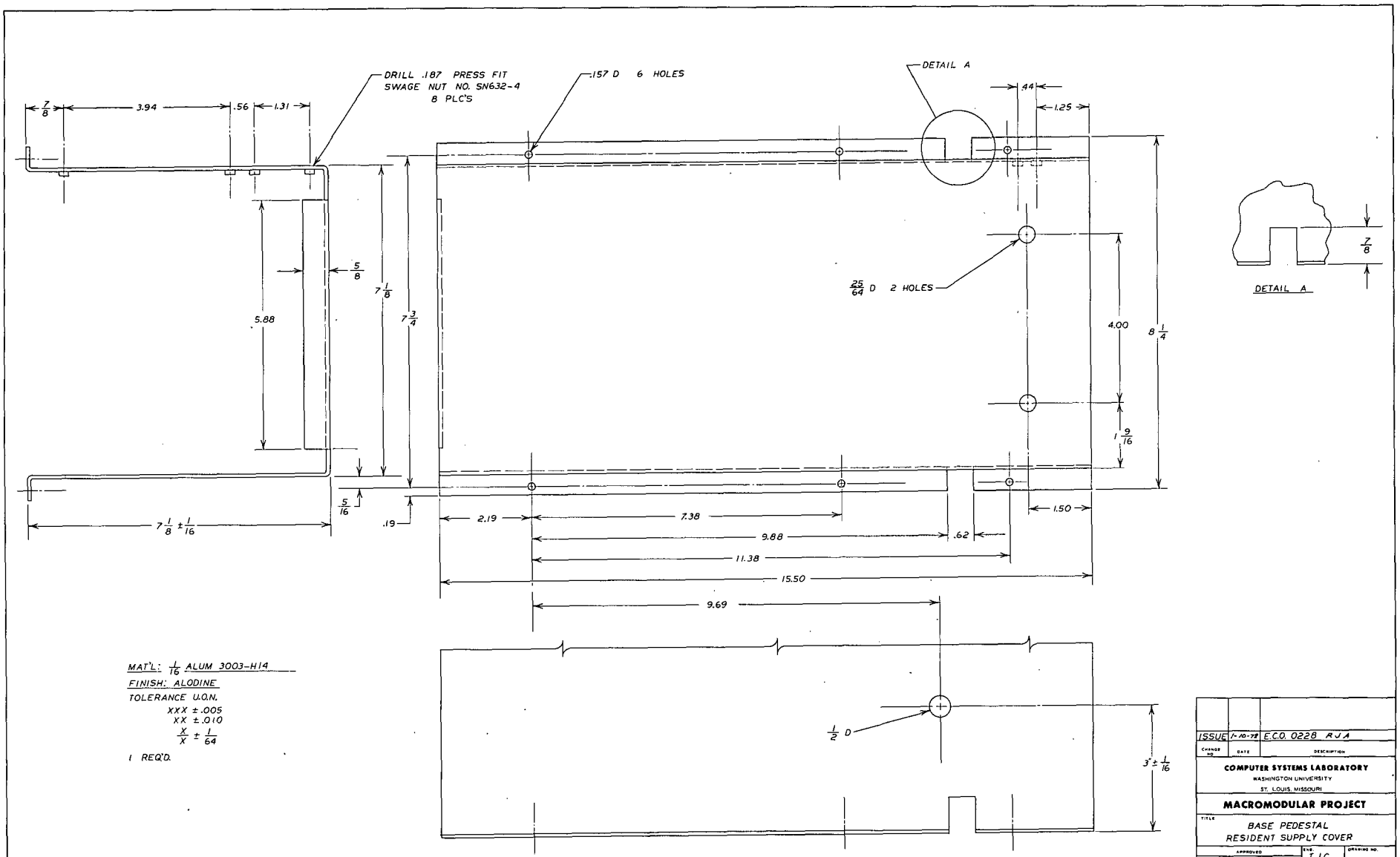
ISSUE	1-10-72	E.C.O. 0228 RJA
CHANGE NO.	DATE	DESCRIPTION

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE: BASE PEDESTAL BRACKET FOR CAPACITOR & AUXILIARY SUPPLY

APPROVED BY	CHK'D	DATE	DRAWN BY	DRAWING NO
RJA	PROD	1-10-72	TJC PLL	421-58
			CHECKED GM	DATE 8-8-71



MAT'L: 1/16 ALUM 3003-H14

FINISH: ALODINE

TOLERANCE U.O.N.

XXX ±.005

XX ±.010

X/X ± 1/64

1 REQ'D.

ISSUE	1-10-72	E.C.O. 0228 RJA
CHANGE NO.	DATE	DESCRIPTION

COMPUTER SYSTEMS LABORATORY

WASHINGTON UNIVERSITY

ST. LOUIS, MISSOURI

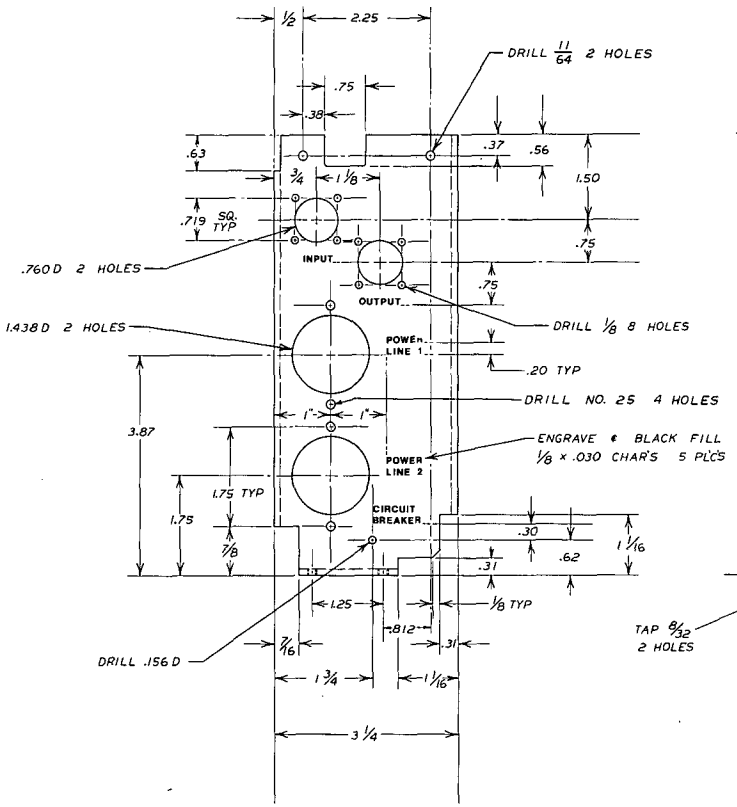
MACROMODULAR PROJECT

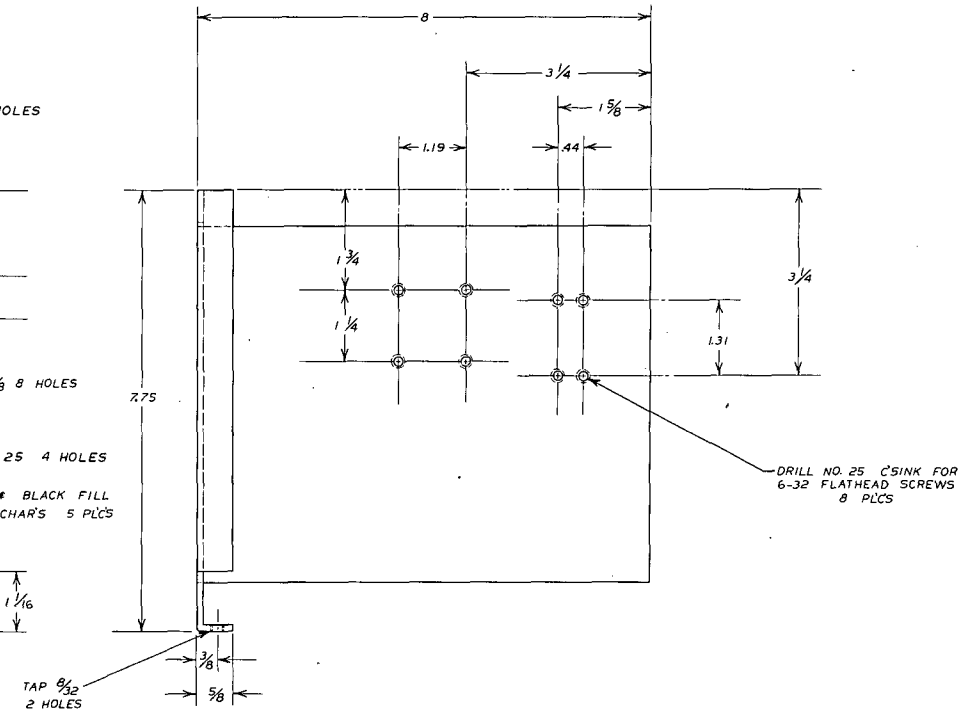
TITLE

BASE PEDESTAL

RESIDENT SUPPLY COVER

BY	APPROVED FOR	DATE	ENG. TJC	DRAWING NO.
RJA	PROD	1-10-72	DRAWN BY PLL	421-59
			CHECKED GM	DATE 8-8-71





MAT'L: 1/8 ALUM 3003-H14

FINISH: CSL SPEC MF-1

TOLERANCE U.O.N.
.XXX ± .005
.XX ± .010
X/X ± 1/64

1 REQ'D.

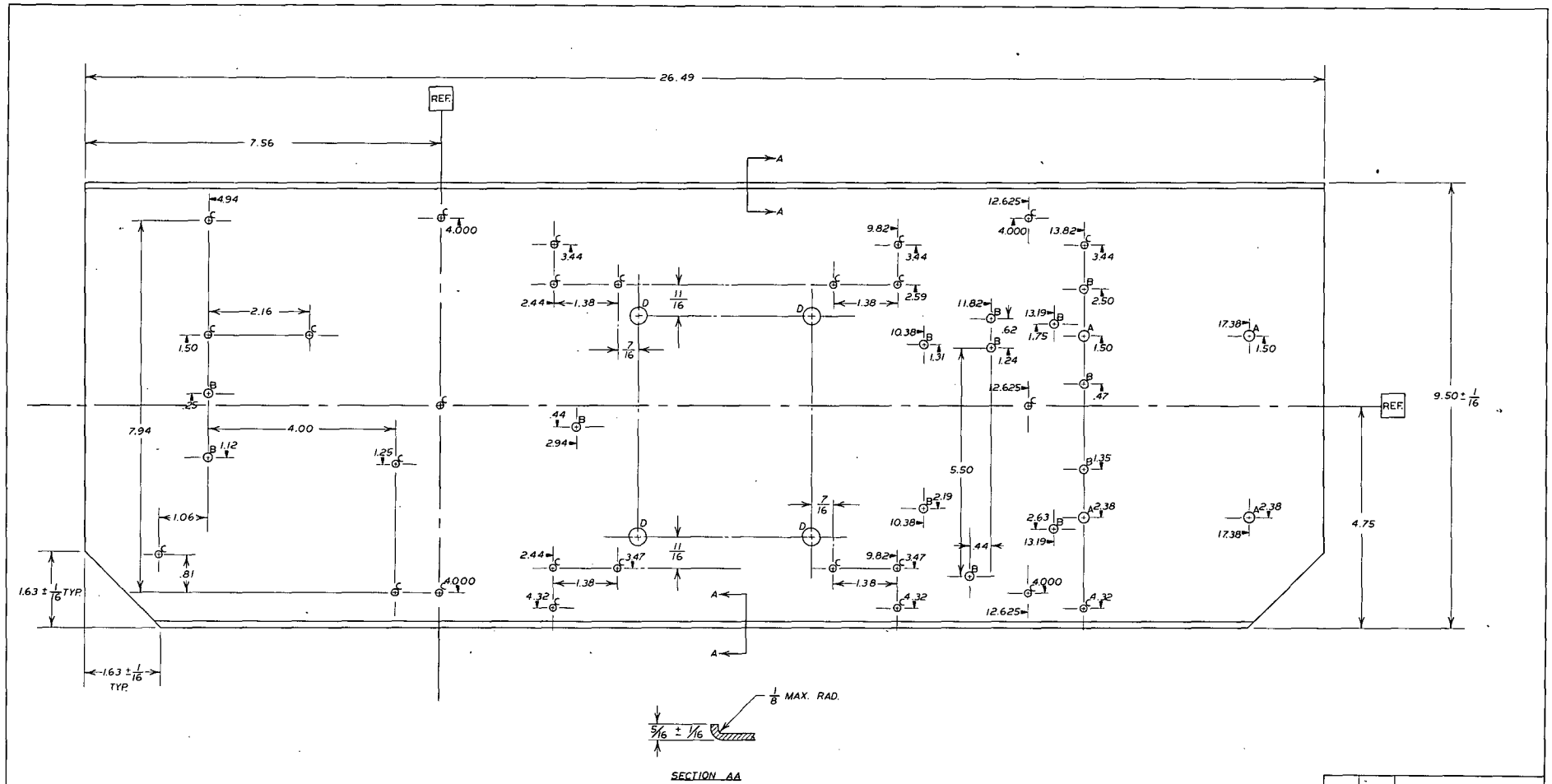
D	1-9-73	E.C.O. 0282 RJA
ISSUE	1-10-72	E.C.O. 0228 RJA
CHANGE NO.	DATE	DESCRIPTION

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE: BASE PEDESTAL CONNECTOR MOUNT

APPROVED			ENG.	DRAWING NO.
RJA	PROD	1-10-72	RJA	421-60
			DRAWN BY PLL	
			CHECKED GM	DATE 8-23-71



SECTION AA

HOLE SIZE:

A = 0.218 DIA. 4 PLC'S
B = 0.187 DIA. 13 PLC'S
C = 0.156 DIA. 26 PLC'S
D = 0.375 DIA. 4 PLC'S

TOLERANCE U.O.N.

.XXX ±.005
.XX ±.01
X/X ±1/64

MAT'L: 3003-H14 1/8 ALUM STOCK
FINISH: ALODINE
REQ'D: 1

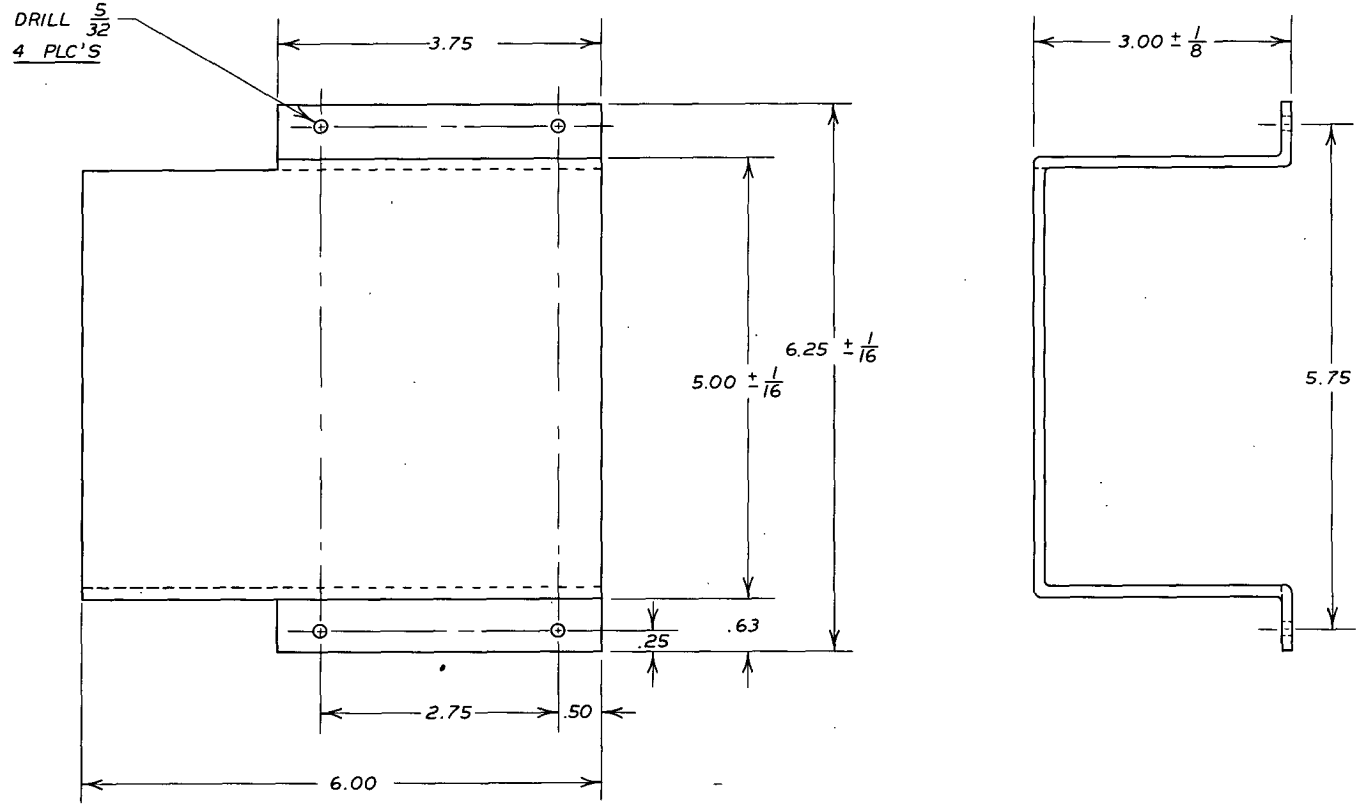
CHANGE NO.	DATE	DESCRIPTION
ISSUE A	10-7-71	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE: BASE PEDESTAL
RESIDENT SUPPLY ASS'Y BASE

APPROVED BY	FOR	DATE	ENG	DRAWING NO.
RJA	PROD	10-7-71	TJC	421-61
			DRAWN BY DHO	
			CHECKED GM	DATE 10-4-71



TOLERANCE U.O.N.

.XXX	± .005
.XX	± .01
X/X	± 1/64

MAT'L: ALUM. 1/8 STOCK 3003-H14
FINISH: ALODINE
REQ'D: 1

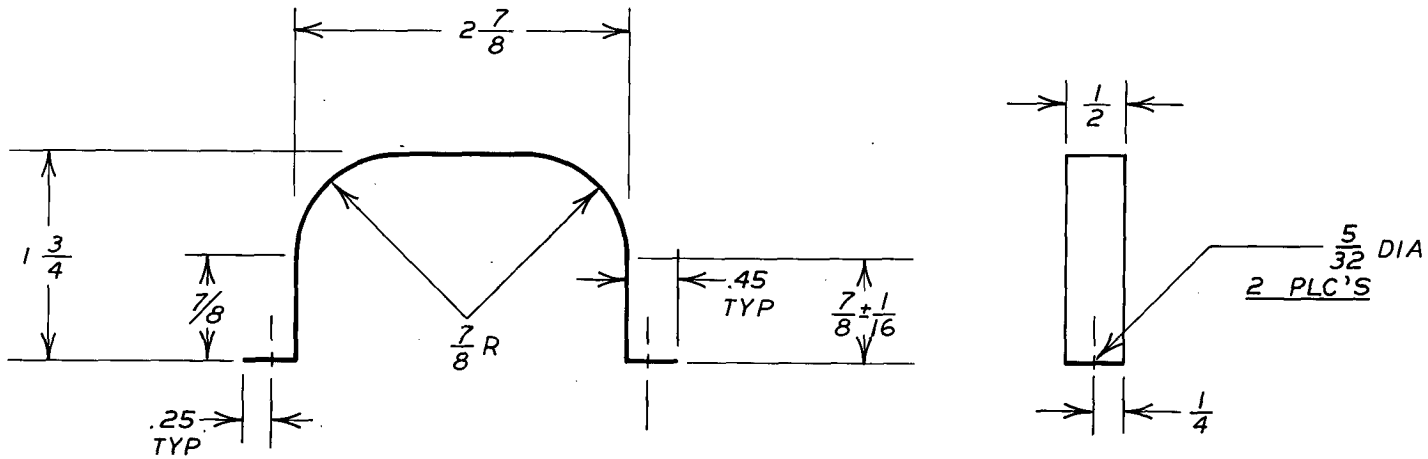
CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-72	E.C.O. 0228 R J A

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE: BASE PEDESTAL
SAFETY COVER TYPE 1

APPROVED BY	APPROVED FOR	APPROVED DATE	ENG.	DRAWING NO.
R J A	PROD	1-10-72	TJC	421-62
			DRAWN BY: DHO	
			CHECKED: GH	DATE: 9-7-71



TOLERANCE U.O.N.

.XXX	±.005
.XX	±.01
X/X	+1/−64

MAT'L: STAINLESS SHEET STEEL 304 .020 STK
FINISH: MILL
REQ'D: 2

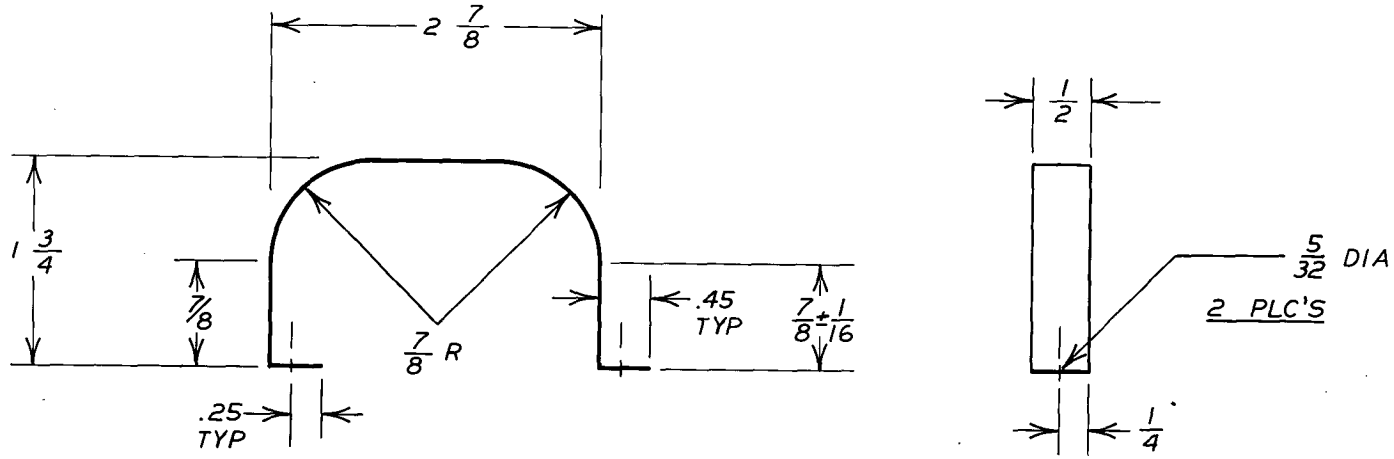
CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-'72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE
BASE PEDESTAL
CAPACITOR STRAP TYPE 1

APPROVED BY	APPROVED FOR	APPROVED DATE		
RJA	PROD	1-10-'72	ENG. TJC	DRAWING NO. 421-63
			DRAWN BY DHO	
			CHECKED GM	DATE 10-8-71



TOLERANCE U.O.N.

.XXX	± .005
.XX	± .01
X	± 1/64
.X	

MAT'L: STAINLESS SHEET STEEL 304 .020 STK
FINISH: MILL
REQ'D: 2

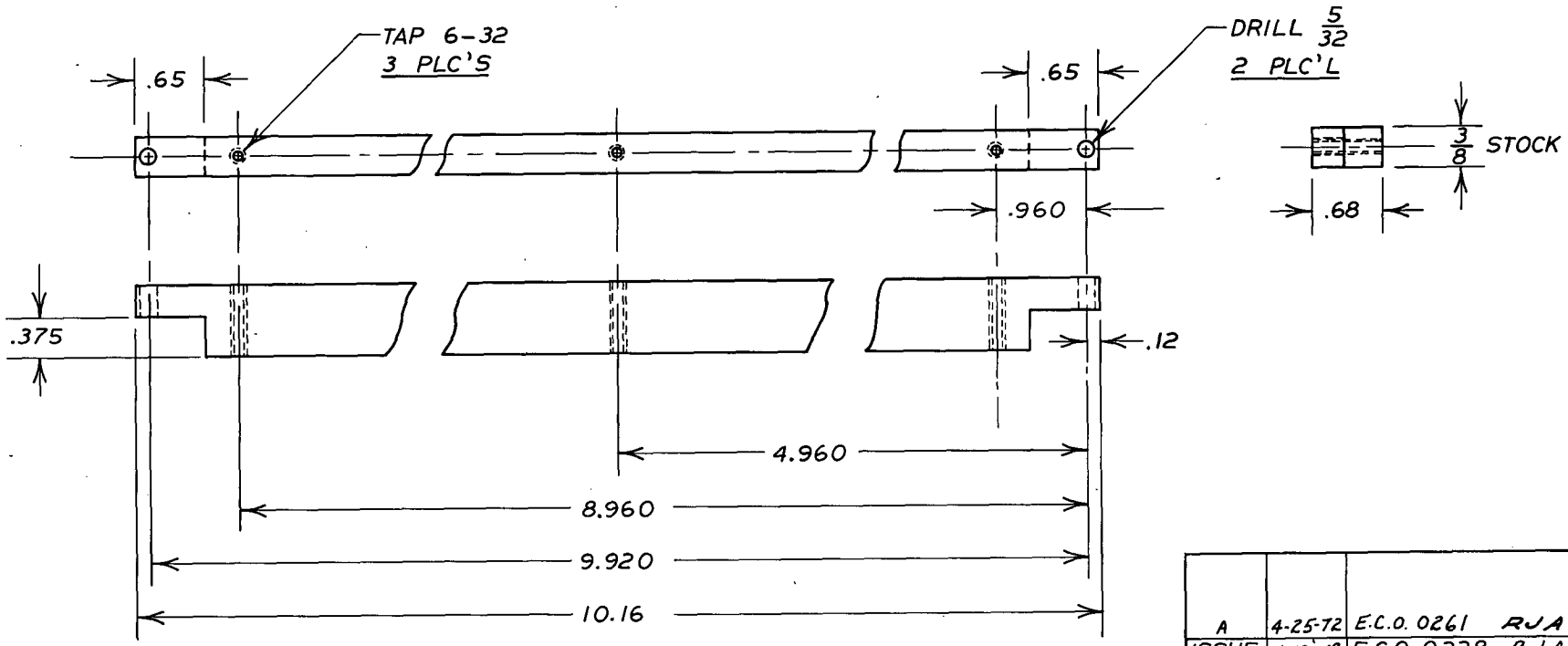
CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE: BASE PEDESTAL
CAPACITOR STRAP TYPE 2

APPROVED BY	APPROVED FOR	APPROVED DATE	ENG.	DRAWING NO.
RJA	PROD	1-10-72	TJC	421-64
			DRAWN BY: DHO	
			CHECKED: GM	DATE: 10-8-71



TOLERANCE U.O.N.

.XXX	±.005
.XX	±.01
X/X	± 1/64

MAT'L: ALUM 2024-T3
FINISH: ALODINE
REQ'D: 2

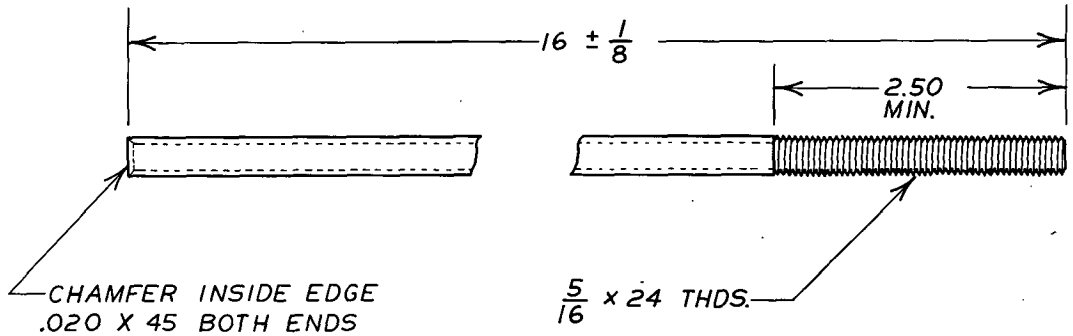
CHANGE NO.	DATE	DESCRIPTION
A	4-25-72	E.C.O. 0261 RJA
ISSUE	1-10-72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE
BASE PEDESTAL
PAN SUPPORT BAR

APPROVED BY	APPROVED FOR	APPROVED DATE	ENG.	DRAWING NO.
RJA	PROD	1-10-72	TJC	421-65
			DRAWN BY DHO	
			CHECKED GM	DATE 9-8-71



MAT'L: SEAMLESS ALUM. TUBING 5/16 DIA.
0.058 THK. WALL 6061-T6
FINISH: ALODINE
REQ'D: 1

CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE
BASE PEDESTAL
CABLE CONDUIT

APPROVED BY	APPROVED FOR	APPROVED DATE	ENG.	DRAWING NO.
RJA	PROD	1-10-72	TJC	421-66
			DRAWN BY DHO	
			CHECKED GM	DATE 9-7-71

TOLERANCE U.O.N.

.XXX	±.005
.XX	±.01
X/X	±1/64

MAT'L: STEEL ROD 1/8 x 8 3/8
FINISH: AS FABRICATED
REQ'D 1

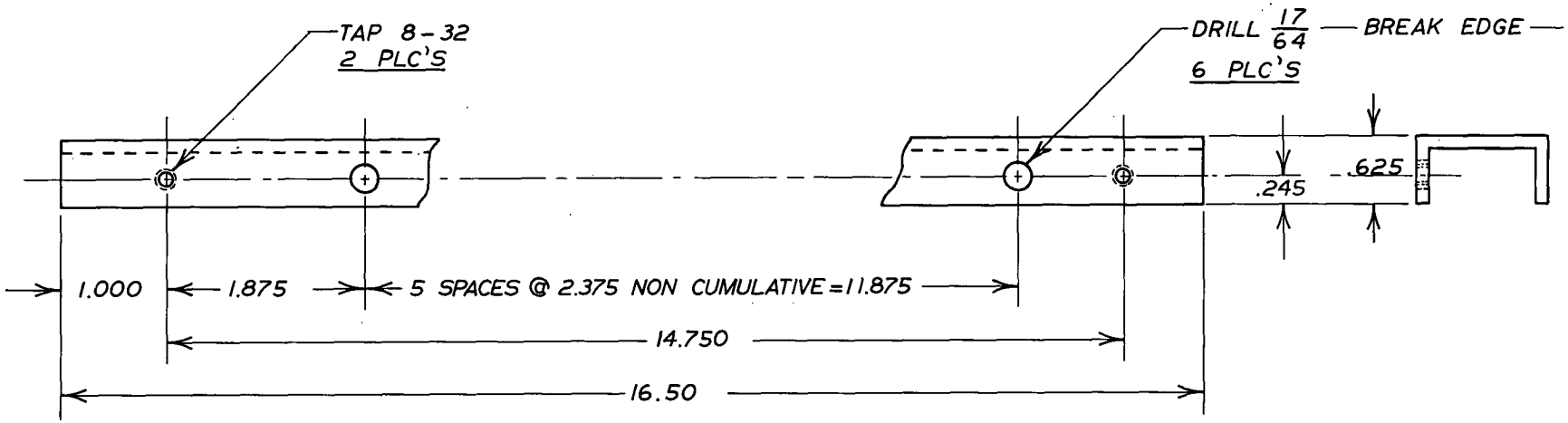
CHANGE NO.	DATE	DESCRIPTION
A	4-25-72	E.C.O. 0261 RJA
ISSUE	1-10-72	E.C.O. 0228 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE
BASE PEDESTAL
CIRCUIT BREAKER ROD

APPROVED BY	FOR	DATE	ENG.	DRAWING NO.
RJA	PROD	1-10-72	TJC	421-67
			DRAWN BY DHO	
			CHECKED GM	DATE 9-3-71



TOLERANCE U.O.N.

.XXX	±.005
.XX	±.01
X/X	±1/64

MAT'L: EXTRUDED ALUM CHANNEL $1\frac{1}{4} \times \frac{3}{4} \times .125$
FINISH: CSL SPEC. MF-1
REQ'D: 1

CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-72	E.C.O. 0228 RJA

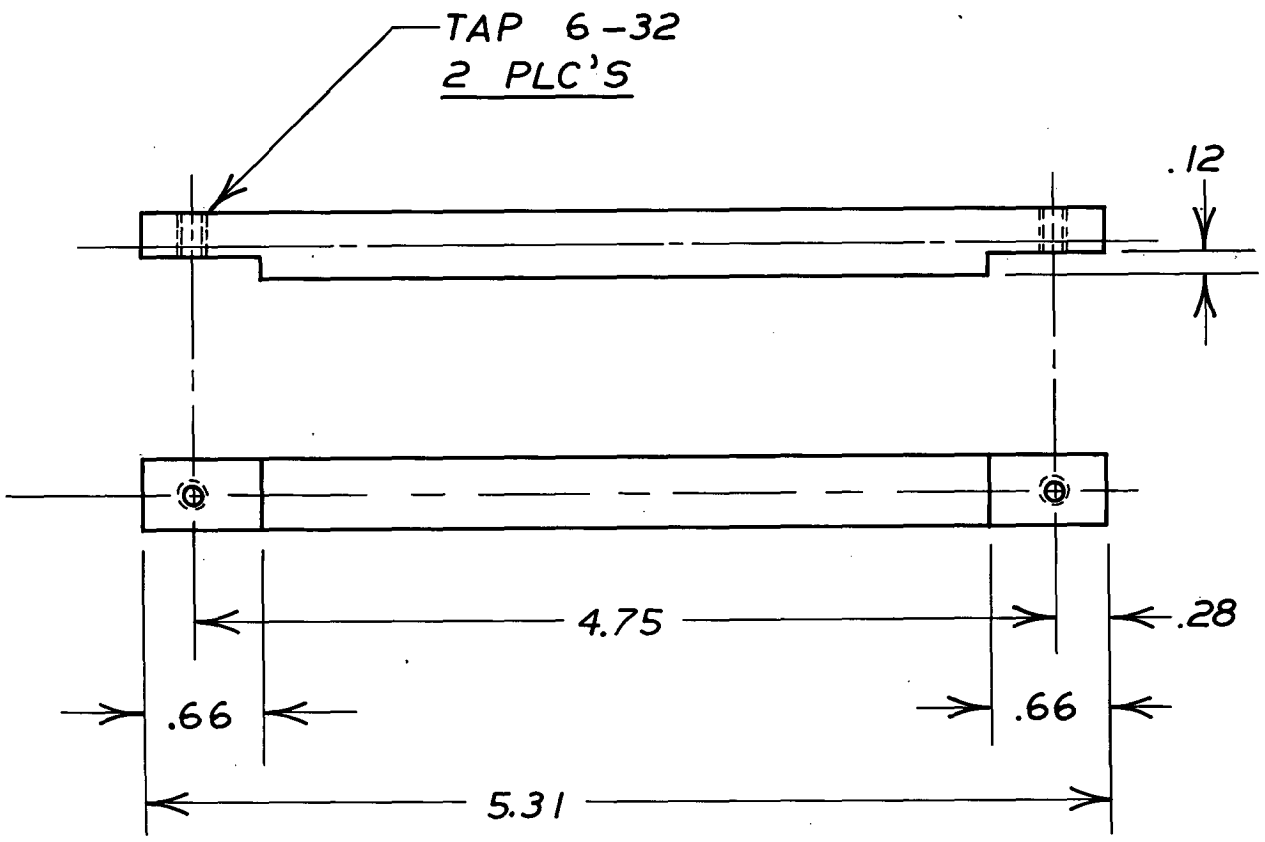
COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE
BASE PEDESTAL
INDICATOR WIRE CHASE CHANNEL

APPROVED BY	APPROVED FOR	APPROVED DATE
RJA	PROD	1-10-72

ENG.	TJC
DRAWN BY	DHO
CHECKED	GM
DRAWING NO.	421-68
DATE	9-3-71



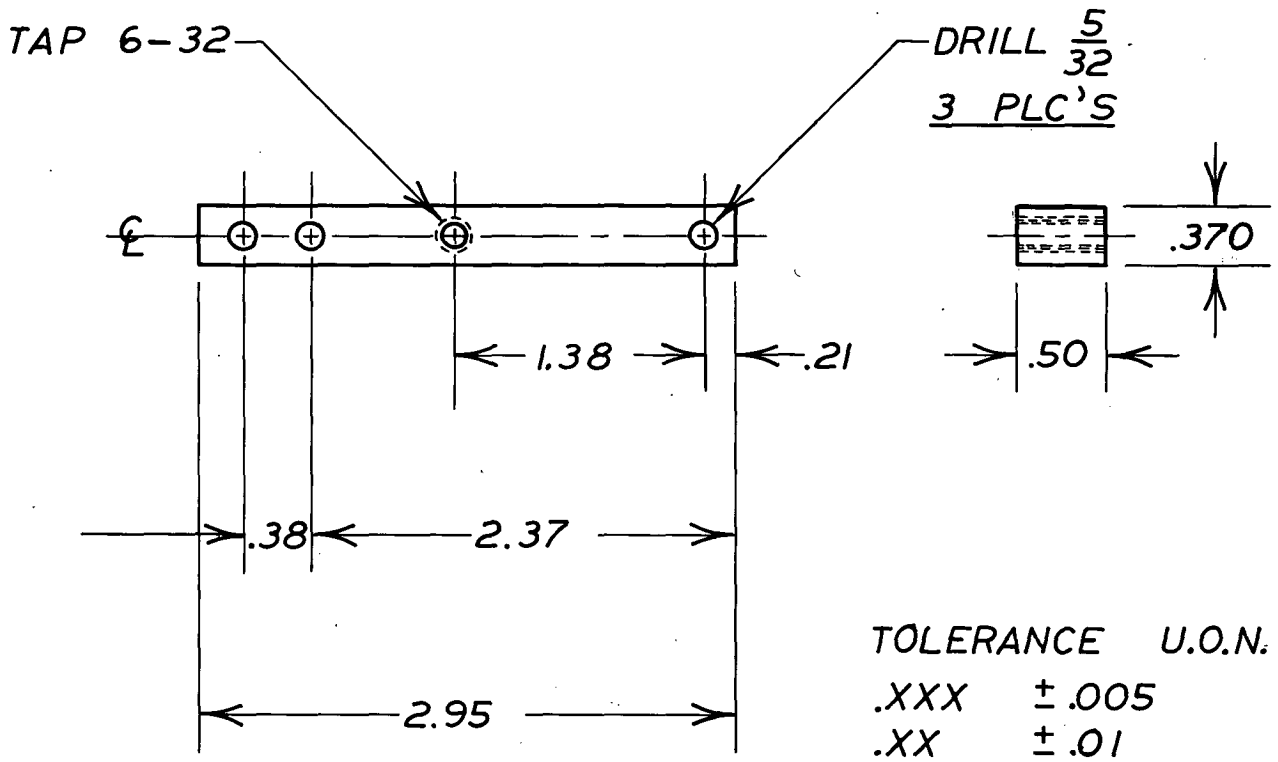
MAT'L: 2024-T3 ALUM ROD $\frac{3}{8}$ D STOCK

FINISH: ALODINE

REQ'D: 1

TOLERANCE: ±.01

COMPUTER SYSTEMS LABORATORY WASHINGTON UNIVERSITY ST. LOUIS, MISSOURI			MACROMODULAR PROJECT				
			TITLE BASE PEDESTAL BRACKET HANDLE				
			APPROVED			ENG TJC	DRAWING NO. 421-69
			BY	FOR	DATE		
ISSUE	1-10-'72	E.C.O. 0228 RJA	RJA	PROD	1-10-'72	DRAWN BY DHO	
CHANGE NO.	DATE	DESCRIPTION				CHECKED GM	DATE 9-7-71



TOLERANCE U.O.N.

.XXX	± .005
.XX	± .01
X/X	± 1/64

MAT'L: ALUM 2024-T3
FINISH: ALODINE
REQ'D: 1

CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-'72	E.C.O. 0228 RJA

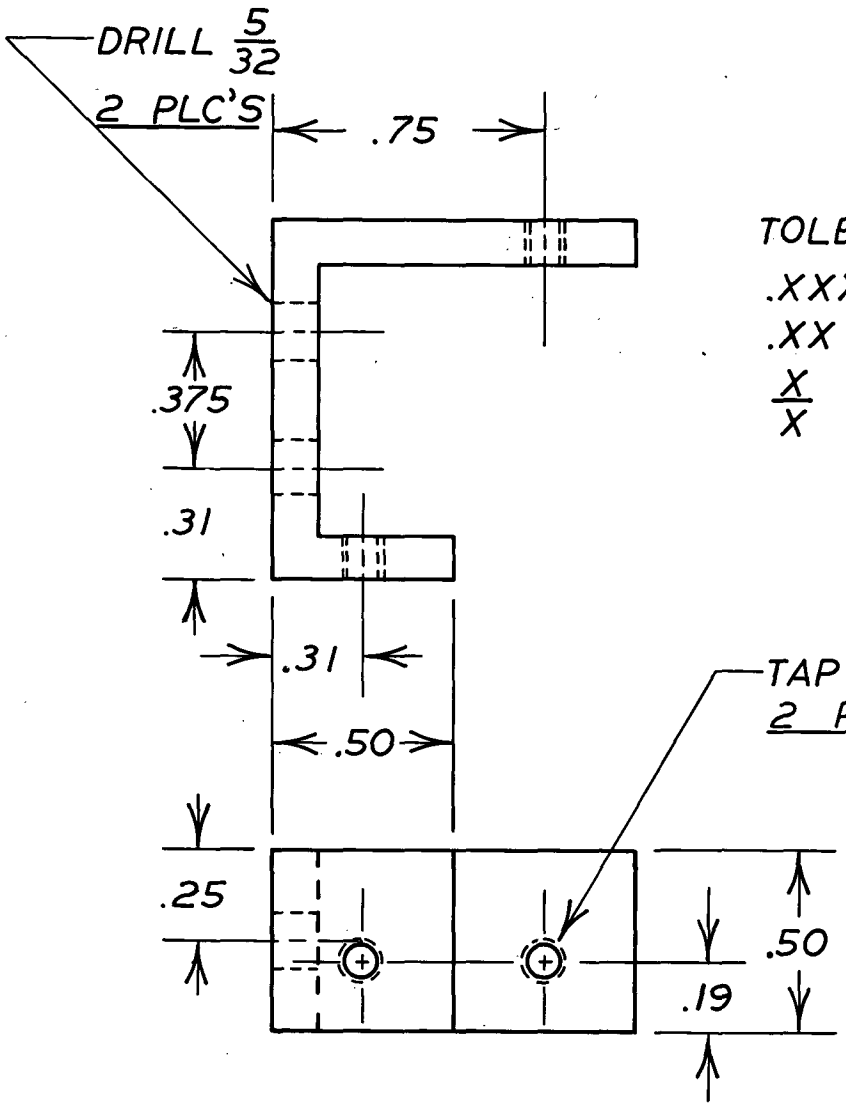
COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE: BASE PEDESTAL
DEC BLOCK BAR

APPROVED BY	APPROVED FOR	APPROVED DATE
RJA	PROD	1-10-'72

ENG: TJC
DRAWN BY: DHO
CHECKED: GM
DRAWING NO.: 421-70
DATE: 9-7-71



TOLERANCE U.O.N.

.XXX	±.005
.XX	±.01
X/X	±1/64

MAT'L: EXTRUDED ALUM CHANNEL 1 x 1 x .125
FINISH: ALODINE
REQ'D 3

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

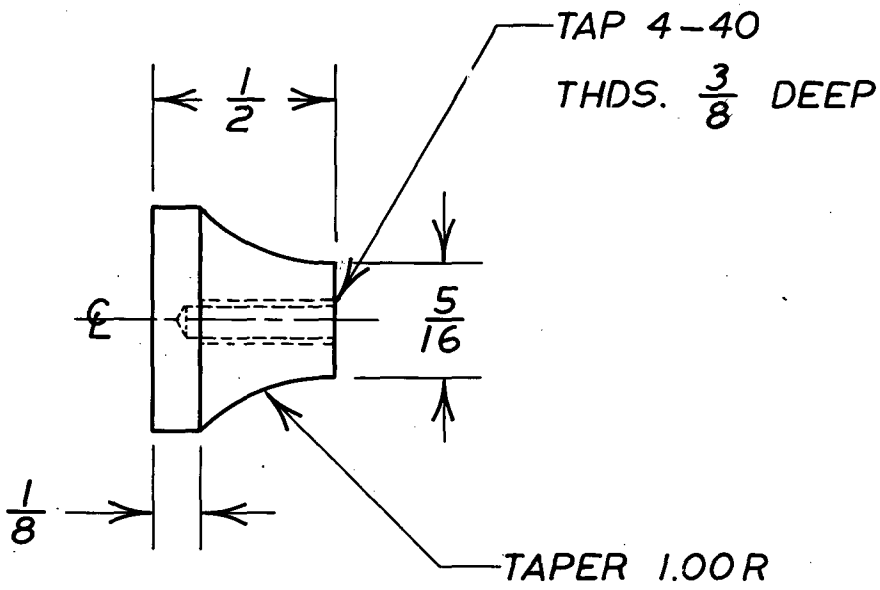
MACROMODULAR PROJECT

TITLE BASE PEDESTAL
WIRE BUNDLE SUPPORT CLIP

CHANGE NO.	DATE	DESCRIPTION
ISSUE	1-10-72	E.C.O. 0228 RJA

APPROVED BY	FOR	DATE
RJA	PROD	1-10-72

ENG TJC
DRAWN BY DHO
CHECKED GM
DRAWING NO. 421-71
DATE 9-1-71



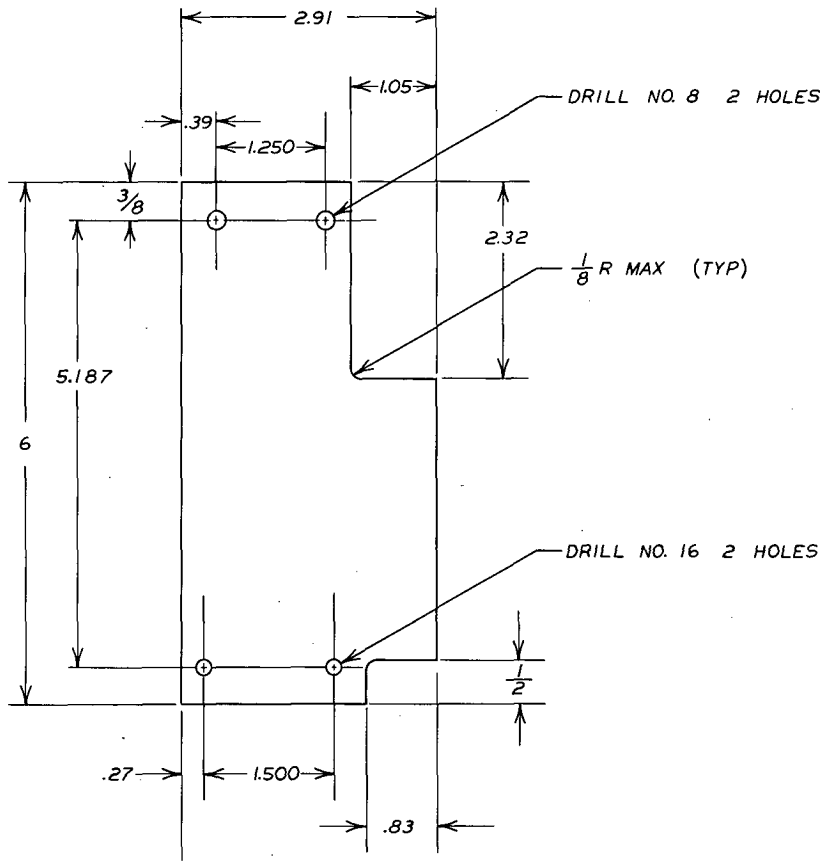
TOLERANCE U.O.N.

.XXX	±.005
.XX	±.01
X/X	±1/64

MAT'L: NYLON ROD 5/8 STOCK
FINISH: AS MACHINED
REQ'D: 1

COMPUTER SYSTEMS LABORATORY WASHINGTON UNIVERSITY ST. LOUIS, MISSOURI		**MACROMODULAR PROJECT**
		TITLE: BASE PEDESTAL CIRCUIT BREAKER KNOB
ISSUE	1-10-72	E.C.O. 0228 RJA
CHANGE NO.	DATE	DESCRIPTION

APPROVED BY	FOR	DATE	ENG	DRAWING NO.
RJA	PROD	1-10-72	TJC	421-72
			DRAWN BY: DHC	
			CHECKED: GM	DATE: 9-3-71



MAT'L: 1/16" ALUM STK 6061-T6

FINISH: ALODINE

DIMENSIONS U.O.N.
.XXX±.005
.XX±.010
X/X ± 1/64

1 REQ'D.

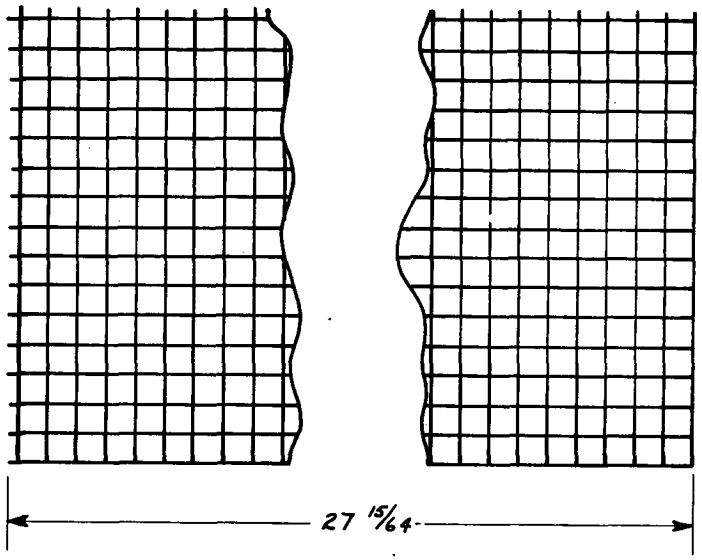
CHANGE NO.	DATE	DESCRIPTION
D	1-9-73	E.C.O. 0282 RJA
ISSUE	1-10-72	E.C.O. 0228 RJA

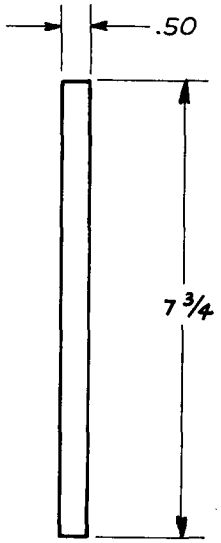
COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

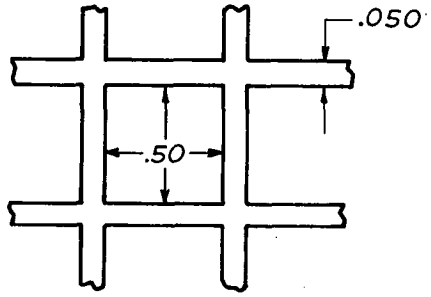
MACROMODULAR PROJECT

TITLE
BASE PEDESTAL
SAFETY COVER TYPE 2

APPROVED BY	FOR	DATE	ENG.	DRAWING NO.
RJA	DROD	1-10-72	PLL	421-73
			DRAWN BY PLL	
			CHECKED GM	DATE 12-3-71







TYPICAL CELL

TOLERANCE : ± 1/32"
MAT'L: PLASTIC
LIGHT DIFFUSER

CHANGE NO.	DATE	DESCRIPTION
C	10-3-72	E.C.O. 0269 RJA

COMPUTER SYSTEMS LABORATORY
WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI

MACROMODULAR PROJECT

TITLE
BASE PEDESTAL — GRILL

APPROVED BY	APPROVED FOR	APPROVED DATE	ENG	DRAWING NO.
RJA	PROD	10-20-72	TJC	421-74
			DRAWN BY PLL	
			CHECKED RJA	DATE 10-3-72

UNCLASSIFIED
Security Classification

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author)	2a. REPORT SECURITY CLASSIFICATION
Computer Systems Laboratory Washington University St. Louis, MO	UNCLASSIFIED
	2b. GROUP

3. REPORT TITLE

FRAME SECTION AND BASE PEDESTAL

4. DESCRIPTIVE NOTES (Type of report and inclusive dates)

Final Report 4/1/65 through 12/31/73

5. AUTHOR(S) (First name, middle initial, last name)

Robert J. Arnzen, Editor

6. REPORT DATE	7a. TOTAL NO. OF PAGES	7b. NO. OF REFS
February, 1974	119	

8a. CONTRACT OR GRANT NO.	9a. ORIGINATOR'S REPORT NUMBER(S)
DOD(ARPA) Contract SD-302	
b. PROJECT NO.	Volume XII of Part 2
ARPA Project Code No. 655	
c.	9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)
d.	Technical Report No. 41

10. DISTRIBUTION STATEMENT

Distribution of this document is unlimited.

11. SUPPLEMENTARY NOTES	12. SPONSORING MILITARY ACTIVITY
	ARPA - Information Processing Techniques, Washington, D.C.

13. ABSTRACT

Complete manufacturing documents regarding electrical and mechanical components and assembly procedures for the macromodular frame block and base-pedestal are contained in this report.

DD FORM 1 NOV 68 1473 REPLACES DD FORM 1473, 1 JAN 64, WHICH IS OBSOLETE FOR ARMY USE.

UNCLASSIFIED
Security Classification

14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
Macromodule Frame Block						
Macromodule Base-Pedestal						
Macromodule Lateral Channel						
Macromodule Frame Section						
Macromodule Lateral Extension						
Macromodule Cooling Duct						


WASHINGTON UNIVERSITY
SAINT LOUIS
PER VERI-
TATEM VIS
1853