

## APPENDIX B



# McIDAS IBM PC/AT<sup>®</sup> BASED WORKSTATION HARDWARE SCHEMATICS AND ASSEMBLY DRAWINGS

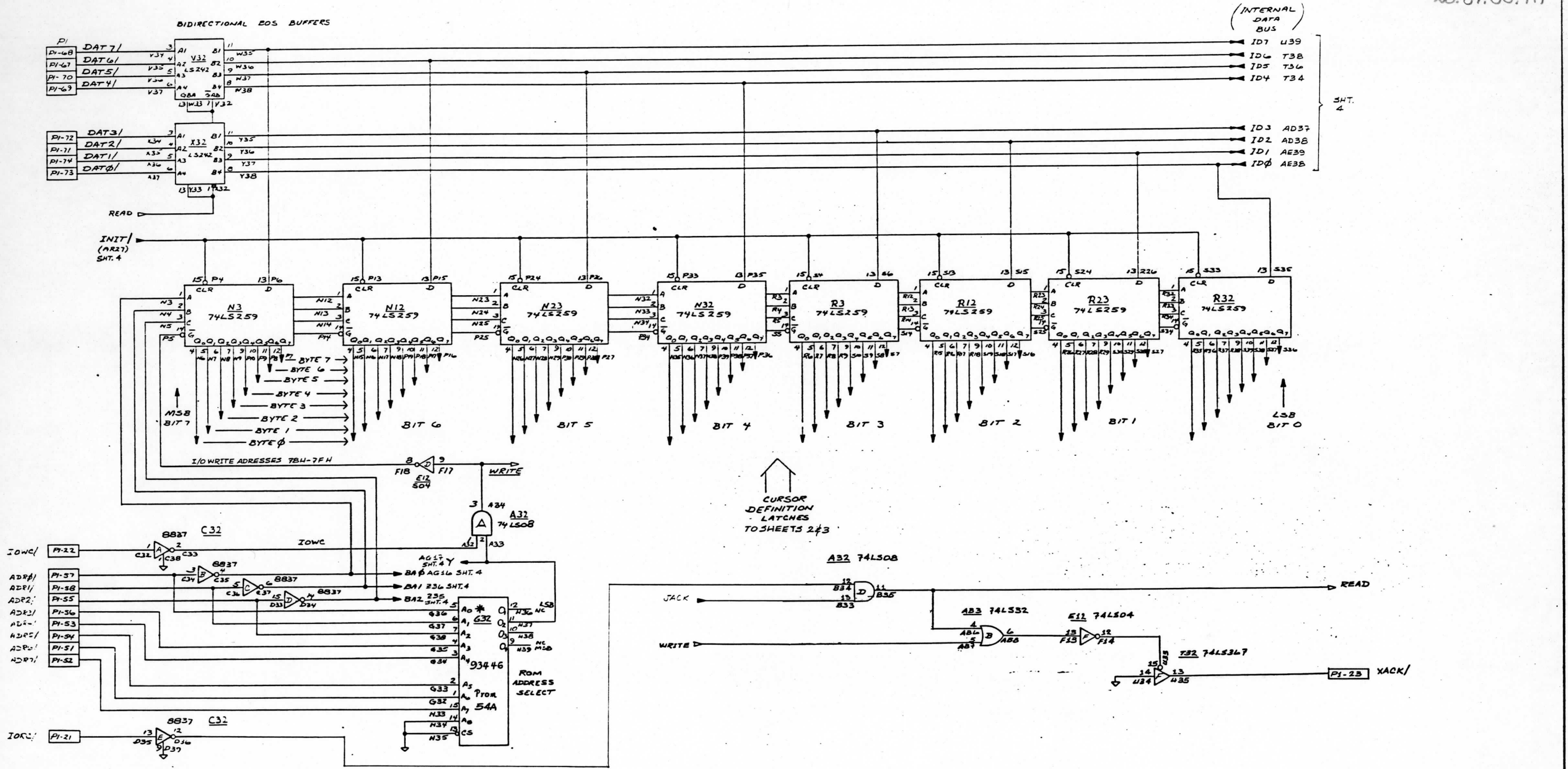


**SPACE SCIENCE AND ENGINEERING CENTER**

UNIVERSITY of WISCONSIN - MADISON  
1225 West Dayton Street  
Madison, Wisconsin 53706  
(608) 262-2455

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED

Space Station  
UW SSEC Publications  
No. 87.00.11



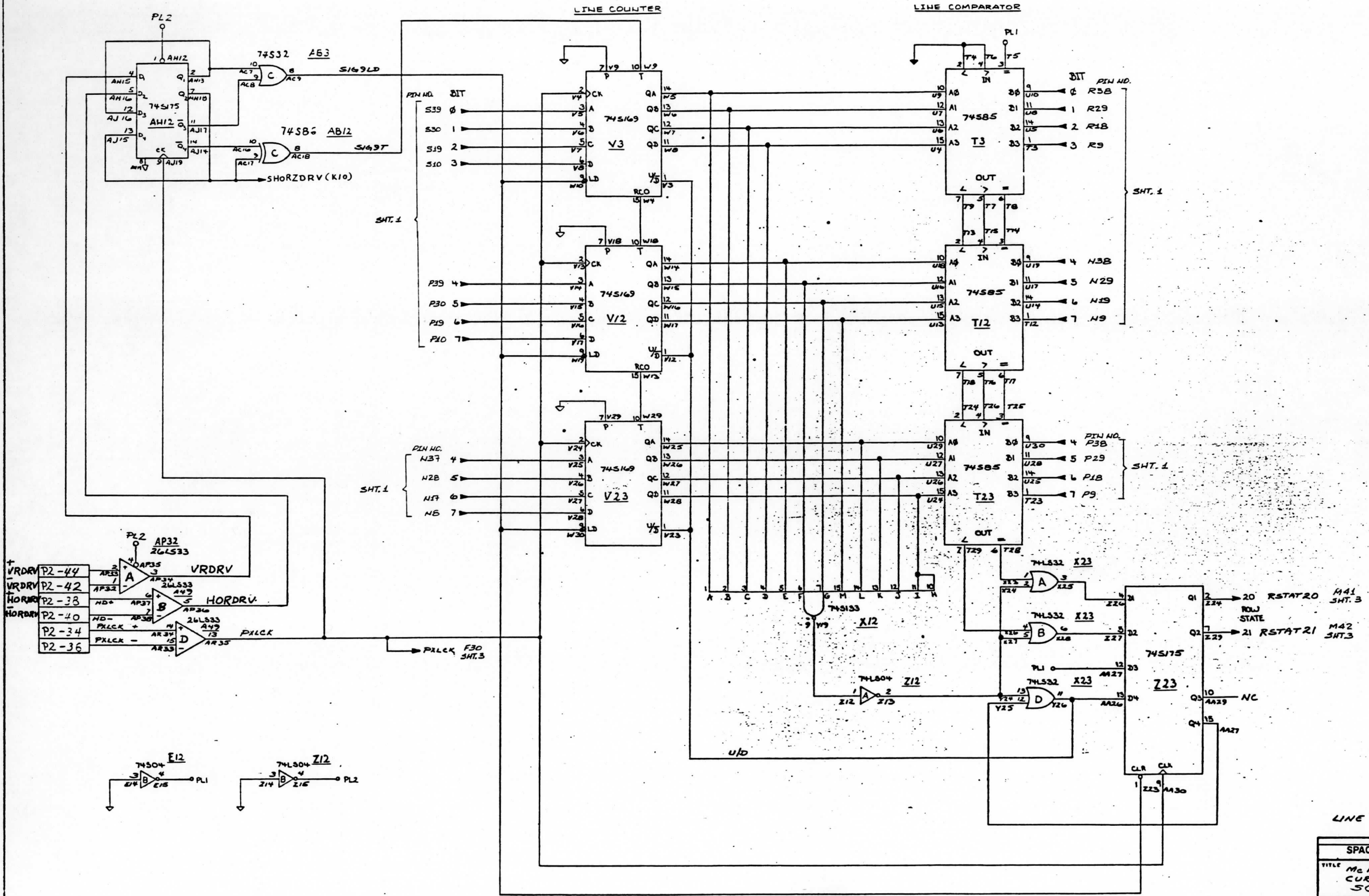
\*G32 - PROM 54B USED WITH PC/AT STYLE WORKSTATIONS

MOD L  
SBC BUS INTERFACE SECTION

THE UNIVERSITY OF WISCONSIN SPACE SCIENCE & ENGINEERING CENTER			
TITLE MCIDAS KC CURSOR GENERATOR SCHEMATIC			
SCALE NONE	DATE 11-11-86	DESIGNED BY WU 5-3-84	DATE 11-11-86
REVISED BY 1404-C-30	PRODUCT ASSURANCE	DATE	PROJECT APPROVAL
PROJECT NO. 3504	FILE D	SHEET 1 OF 4	DRAWING NO. 3504-029

B1

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED

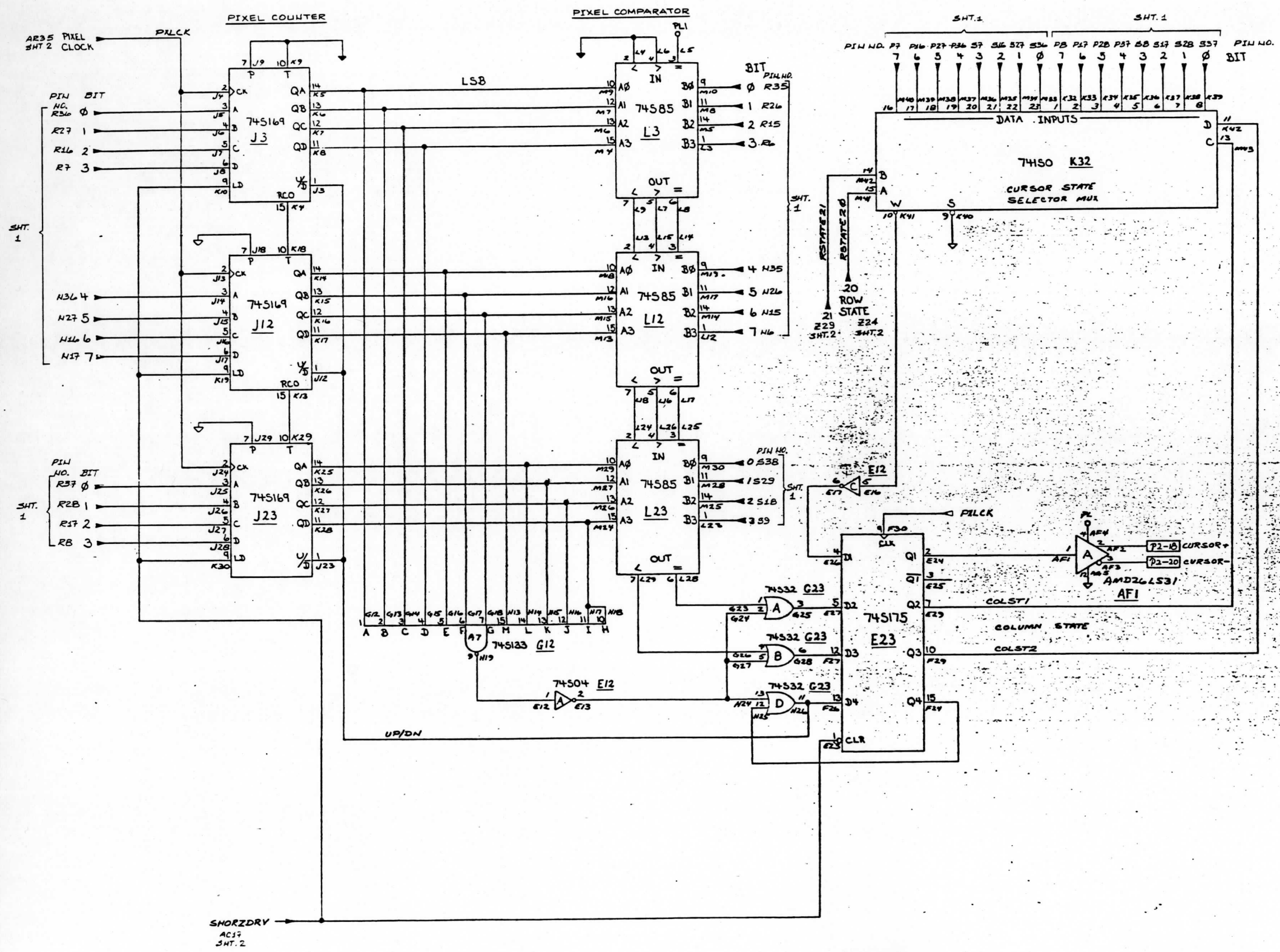


MOD L  
LINE COUNTER SECTION

THE UNIVERSITY OF WISCONSIN			
SPACE SCIENCE & ENGINEERING CENTER			
TITLE McIDAS K/C CURSOR GENERATOR SCHEMATIC			
SCALE NONE	DATE 11-5-82	DESIGNED BY [Signature]	DATE 11-21-82
REVISED BY 3504-030	PROJECT ASSURANCE	DATE	PROJECT APPROVAL
PROJECT NO. 3504	SHEET D	SHEET 2 OF 4	DRAWING NO. 3504-029

B2

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED



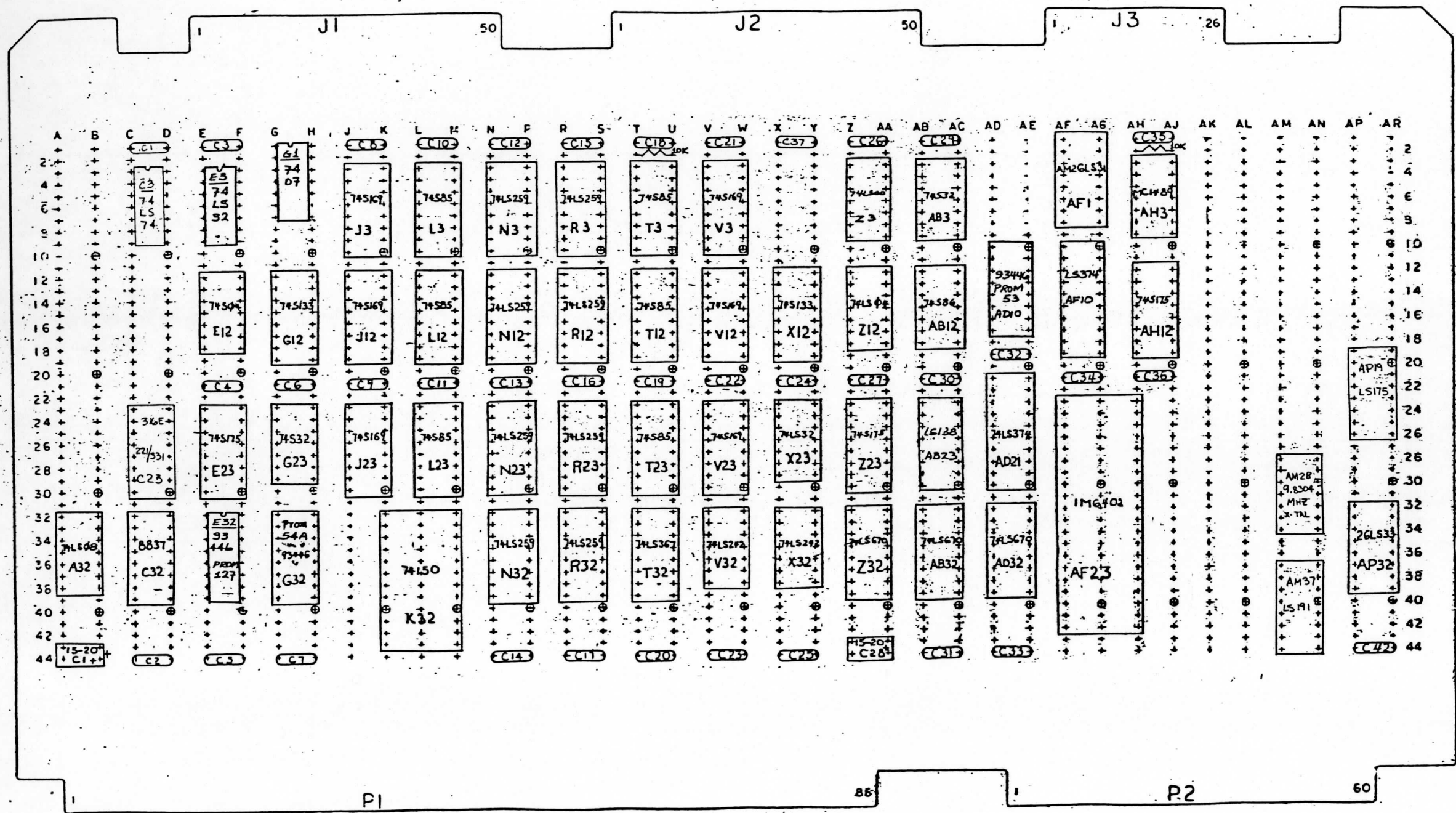
MOD L  
PIXEL COUNTER & CURSOR SELECT SECTION

THE UNIVERSITY OF WISCONSIN			
SPACE SCIENCE & ENGINEERING CENTER			
TITLE: McIDAS KC CURSOR GENERATOR SCHEMATIC			
SCALE: NONE	DESIGNER: AW 5-3-82	DATE: 11-2-82	BY: [Signature]
PROJECT NO: 3504-030	PRODUCT ASSIGNED: [Blank]	DATE PROJECT OFFICIAL: [Blank]	BY: [Blank]
PROJECT NO: 3504	SHEET 3 OF 4	DRAWING NO: 3504-029	DATE: [Blank]

B3



REVISIONS		
DESCRIPTION	DATE	APPROVED



⊙ TENTH ROW DESIGNATION

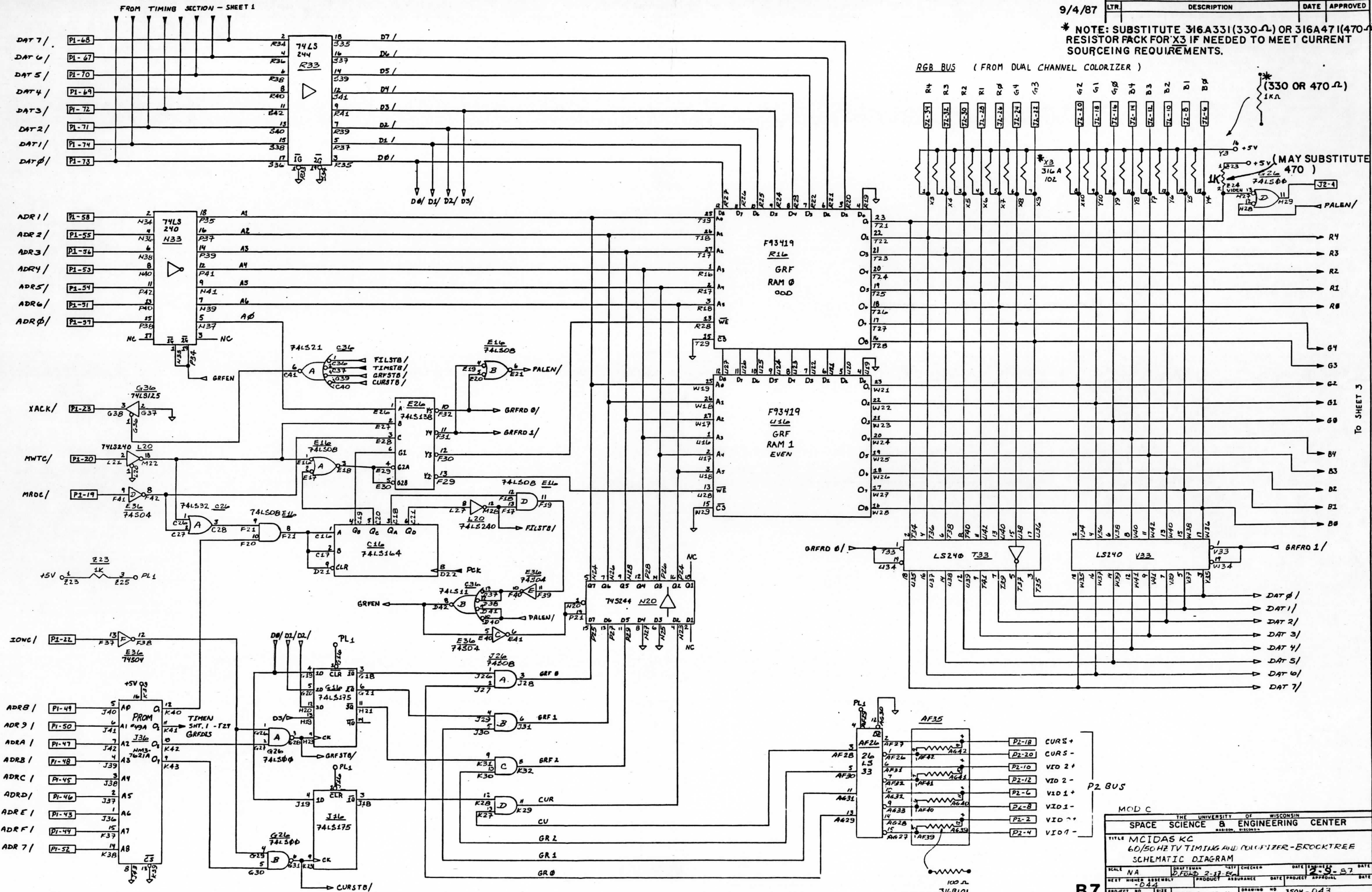
MOD L

THE UNIVERSITY OF TEXAS AT AUSTIN	
SPACE SCIENCE & ENGINEERING CENTER	
TITLE MCIDAS KC	
CURSOR GENERATOR	
ASSEMBLY DRAWING	
SCALE 2:1	DATE 12-2-74
DESIGNED BY J. D. ...	CHECKED BY ...
DRAWN BY ...	APPROVED BY ...
PROJECT NO. 3504-029	DRAWING NO. 3504-030

B5



\* NOTE: SUBSTITUTE 316A331(330Ω) OR 316A471(470Ω) RESISTOR PACK FOR X3 IF NEEDED TO MEET CURRENT SOURCING REQUIREMENTS.



TO SHEET 3

REVISIONS			
DATE	DESCRIPTION	DATE	APPROVED
9/4/87			

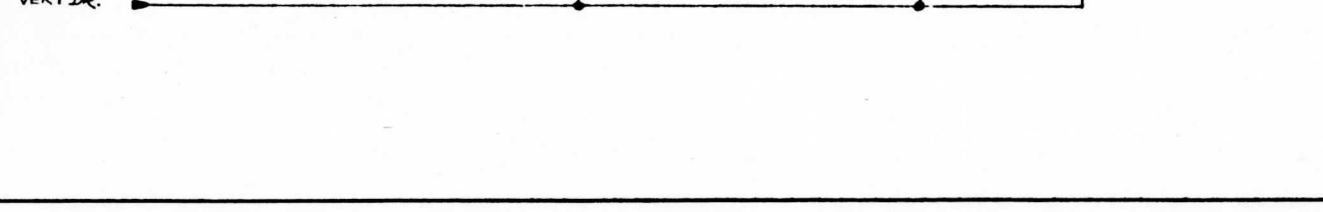
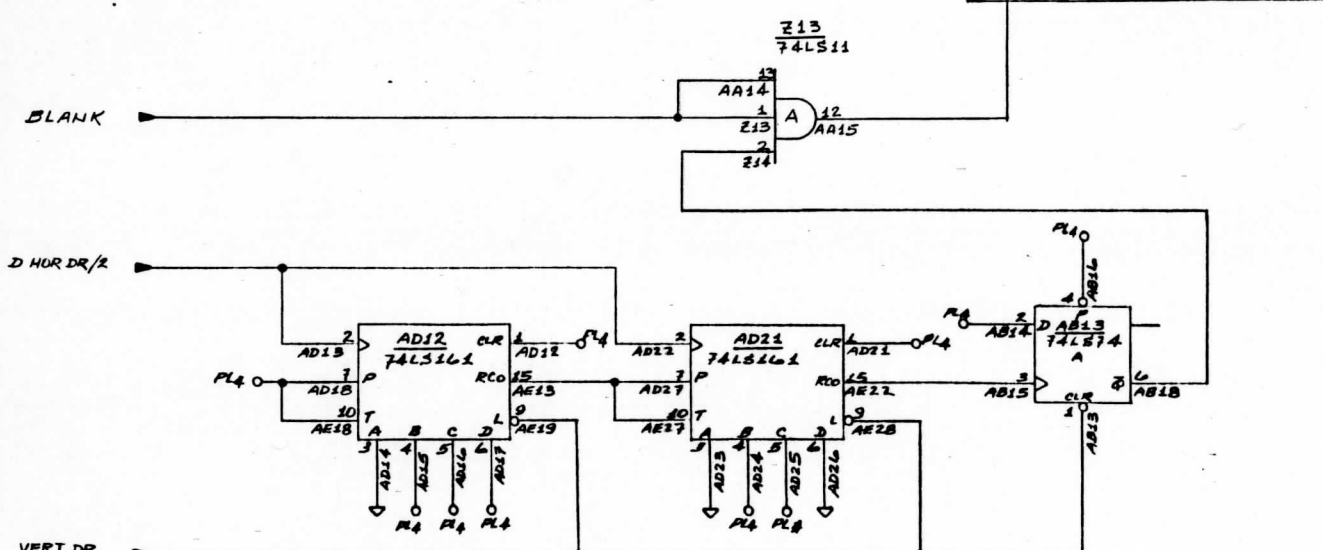
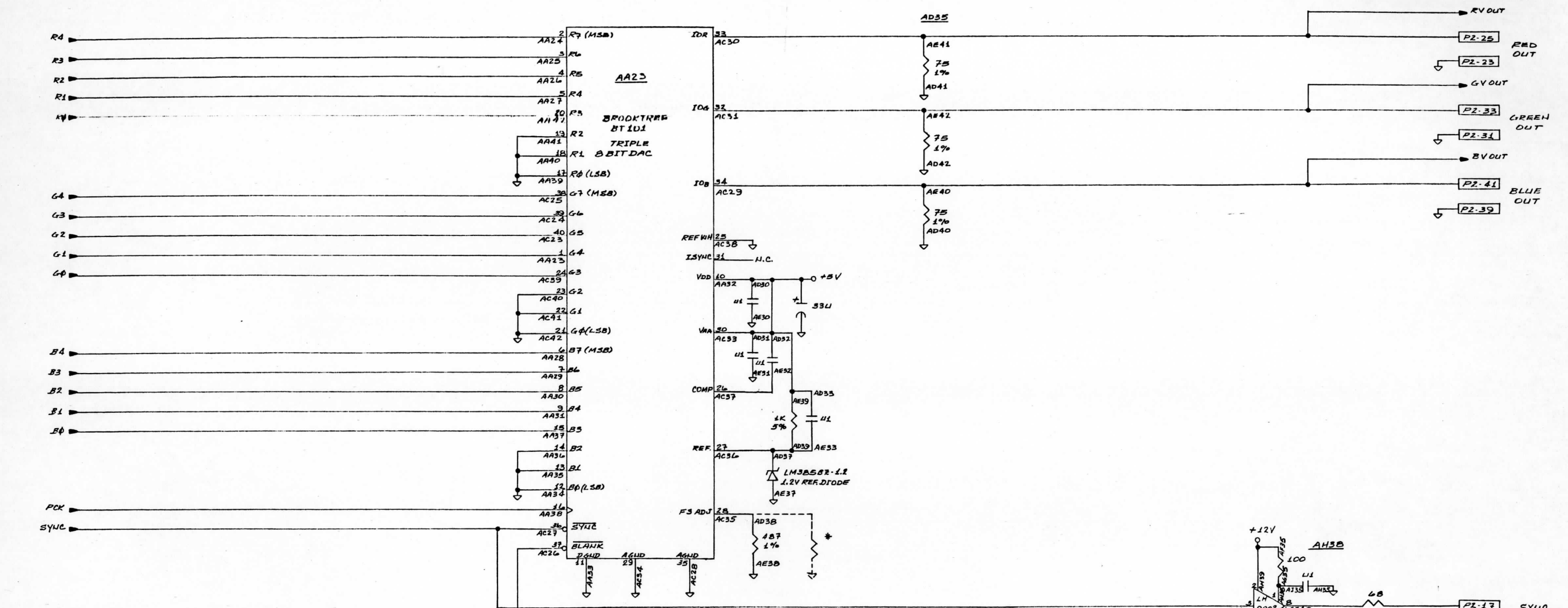
  

MOD C			
THE UNIVERSITY OF WISCONSIN			
SPACE SCIENCE & ENGINEERING CENTER			
TITLE MCIDAS KC			
60/50HZ TV TIMING AND COMPARATOR-BROCKTREE			
SCHEMATIC DIAGRAM			
SCALE NA	DRAWNMAN D.F.D. 2-17-87	CHECKED	DATE 9-8-87
WEST HIGHER ASSEMBLY -044	PRODUCT ASSURANCE	DATE	PROJECT APPROVAL
PROJECT NO 1018	SIZE D	SHEET 2 OF 4	DRAWING NO 3504-D43

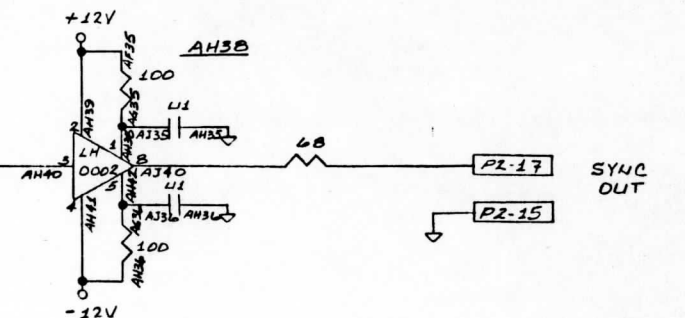
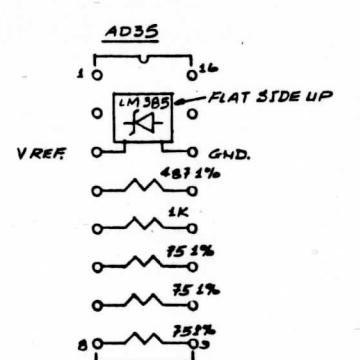
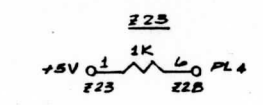
B7



REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED



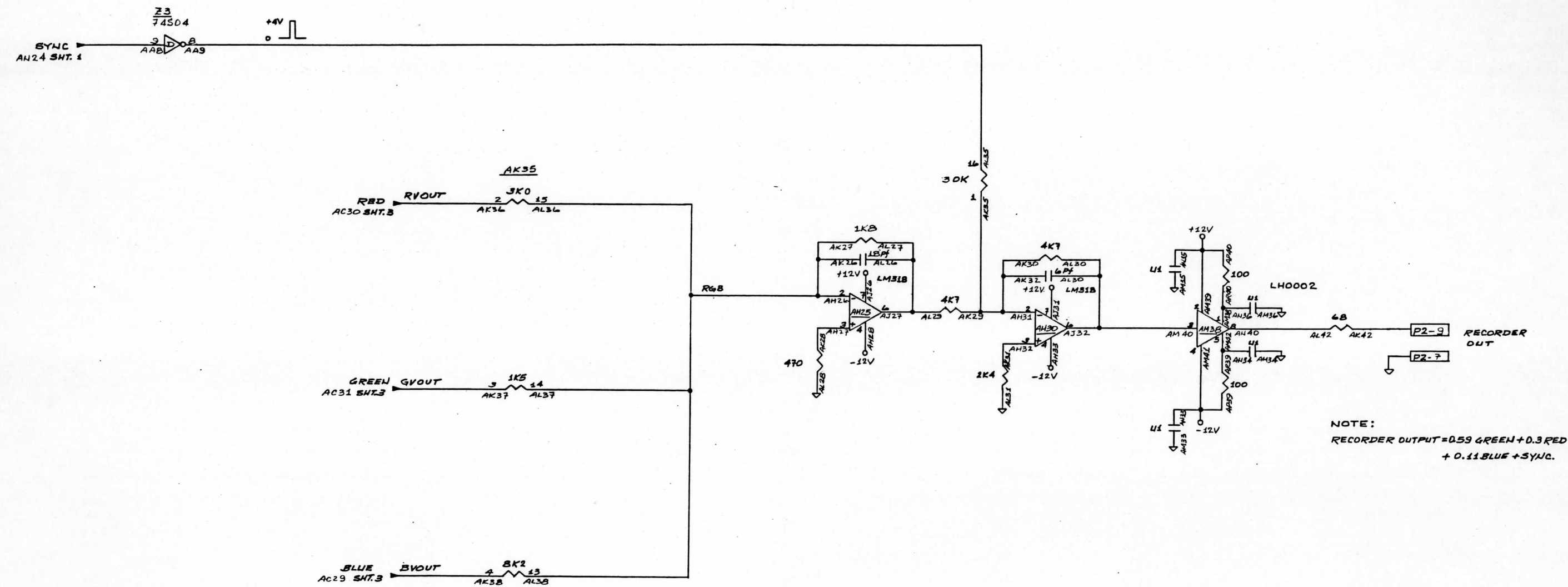
\* NOTE:  
THIS RESISTOR MAY BE  
TRIMMED WITH A RESISTOR  
IN PARALLEL TO GIVE 0.7V  
R-G-B OUTPUT AT P2 TERMINALS  
WITH 75% COLOR BARS.



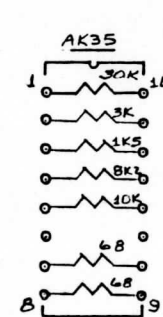
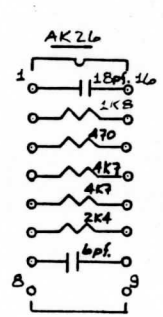
B8

MOD C			
THE UNIVERSITY OF WISCONSIN SPACE SCIENCE & ENGINEERING CENTER MADISON, WISCONSIN			
TITLE MCIDAS KC 60/50 HZ TV TIMING AND COLORIZER-BROOK TREE SCHEMATIC DIAGRAM			
SCALE N/A	DRAWN D.F. 2-12-84	CHECKED	DATE 2-9-87
NEXT HIGHER ASSEMBLY -044	PROJECT ASSURANCE	DATE	PROJECT APPROVAL
PROJECT NO 1018	SIZE D	SHEET 3 OF 4	DRAWING NO 3504-043

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED



NOTE:  
RECORDER OUTPUT = 0.59 GREEN + 0.3 RED  
+ 0.11 BLUE + SYNC.

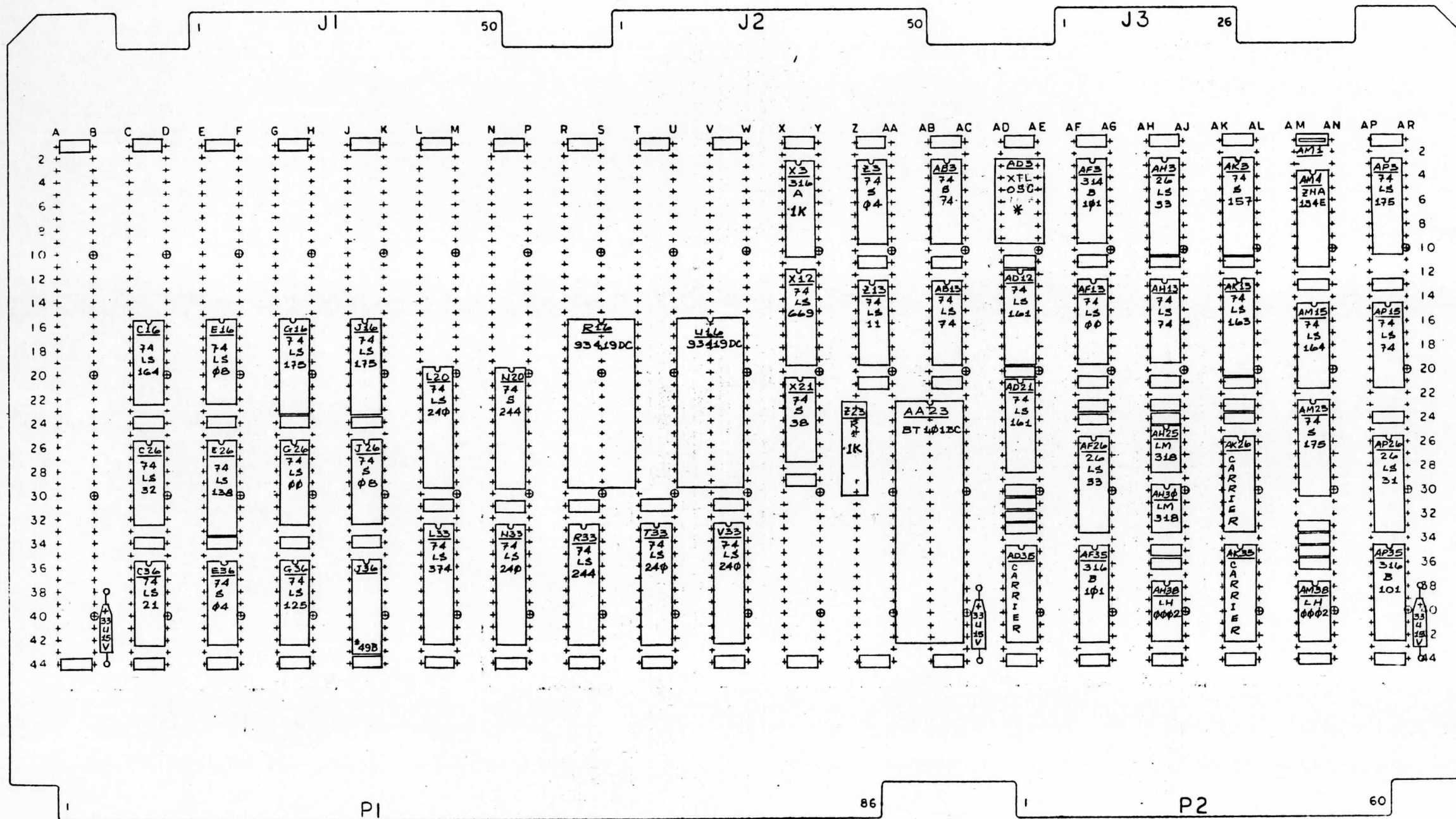


COMPOSITE VIDEO (RECEIVER) SECTION

MOD C			
THE UNIVERSITY OF WISCONSIN SPACE SCIENCE & ENGINEERING CENTER			
TITLE MCIDAS K.C. 60/50HZ TV TIMING AND COLORIZER - BROOKTREE SCHEMATIC DIAGRAM			
SCALE	DATE	CHECKER	DATE
NA	2-12-82		2-9-82
DESIGNER	DATE	ENGINEER	DATE
PROJECT NO.	SIZE	SHEET	OF
IC18	D	4	4
DRAWING NO.		3504-C43	

B9

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED



\* AD3-XTL.03C.  
 50 HZ - 25.625 MHE  
 60 HZ - 25.830 MHE

⊙ TENTH ROW DESIGNATION

MOD C

THE UNIVERSITY OF WISCONSIN  
 SPACE SCIENCE & ENGINEERING CENTER

TITLE MCIDAS  
 60/50 HZ TV TIMING AND COLORIZER - BROOKTREE

ASSEMBLY DRAWING

DATE 2-9-82

DESIGNER D.FORD

PRODUCT 043

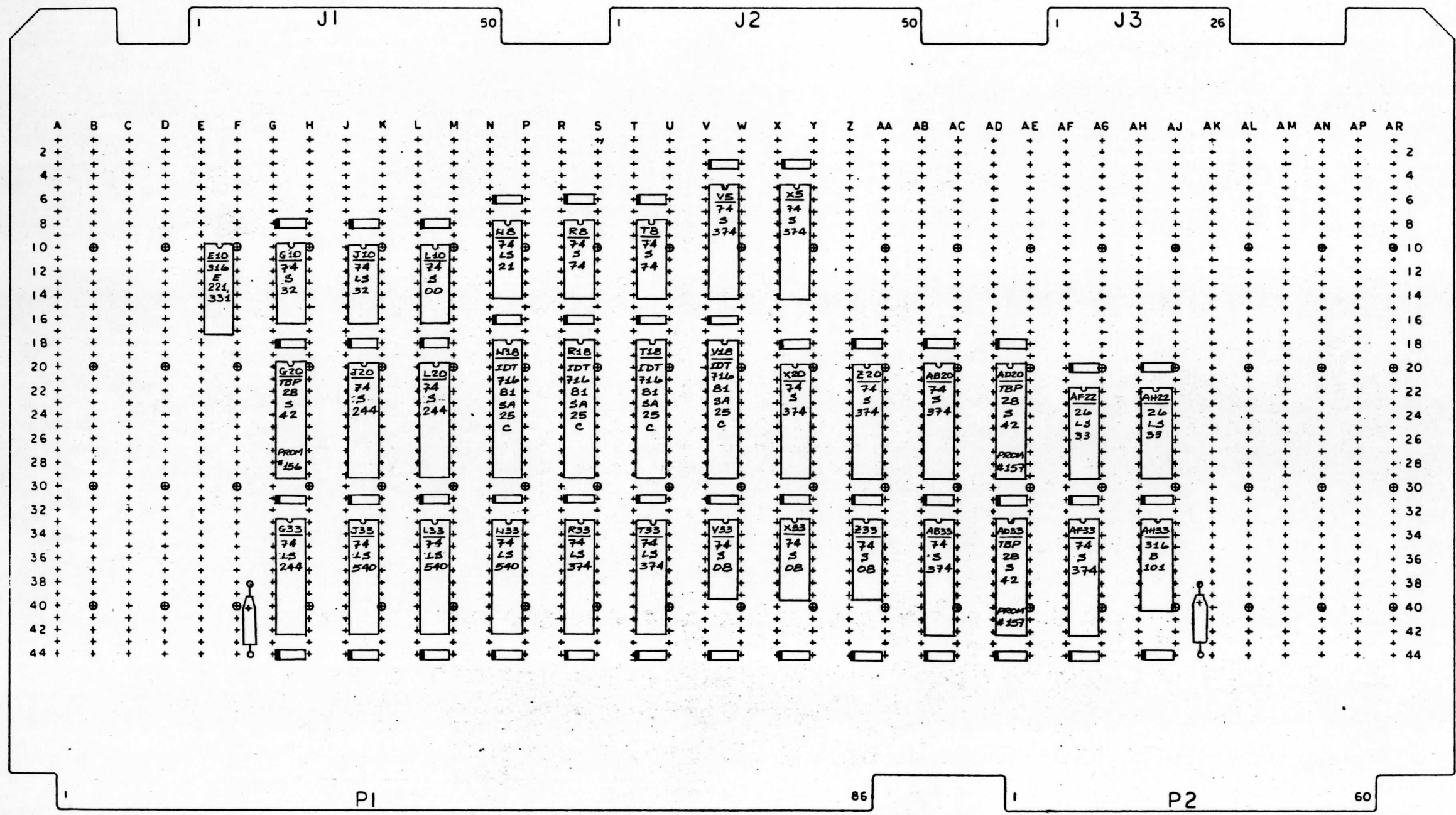
3504-044

B10





REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED

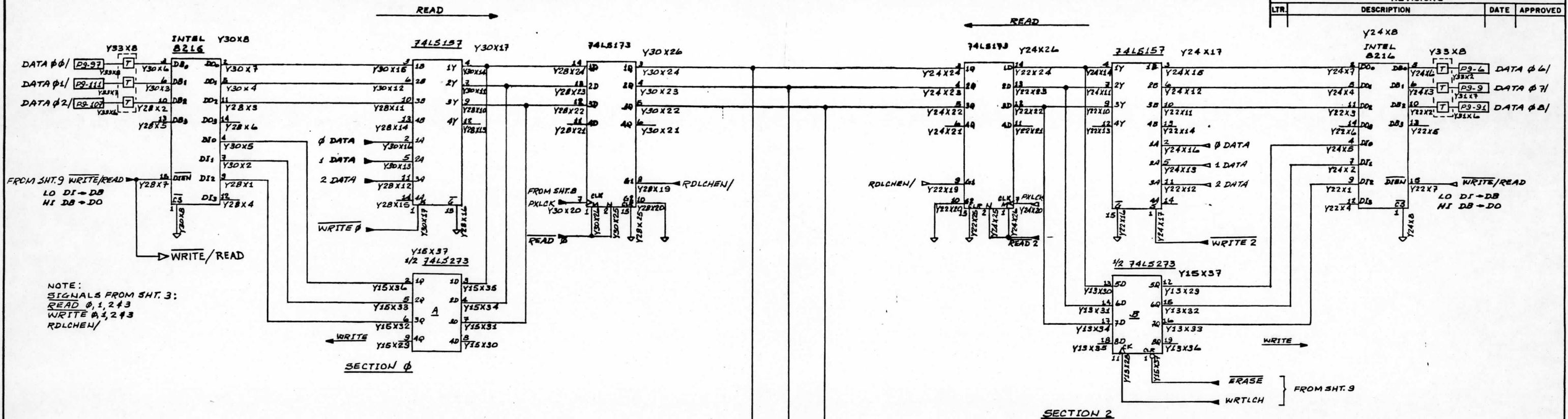


⊙ TENTH ROW DESIGNATION

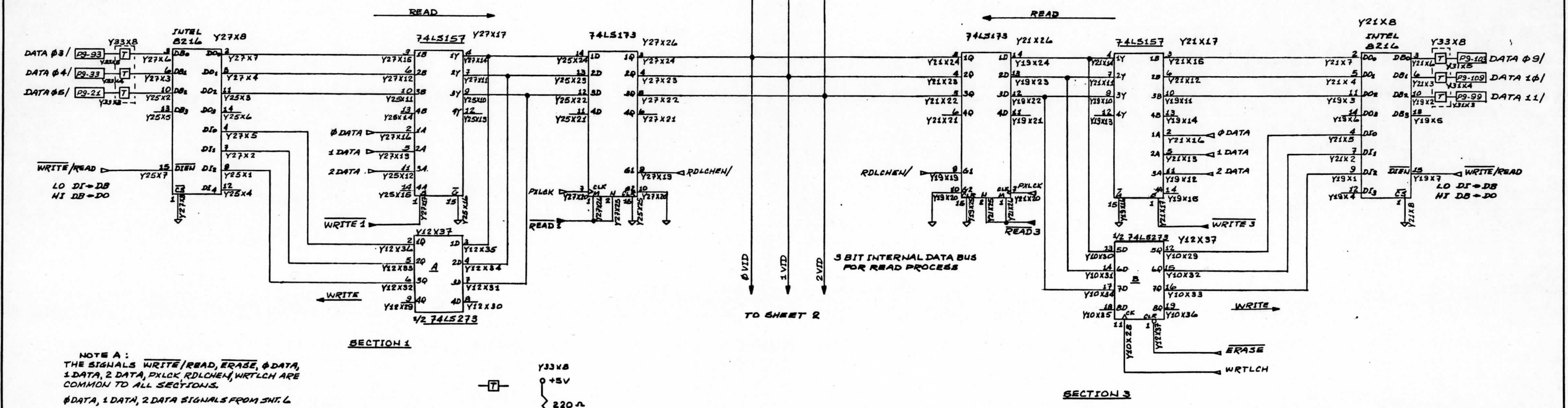
B13

THE UNIVERSITY OF WISCONSIN					
SPACE SCIENCE & ENGINEERING CENTER					
TITLE MCIDAS					
12 BIT (DUAL CHANNEL) COLORIZER-IDT RAM VERSION					
ASSEMBLY DRAWING					
SCALE	DATE	CHECKER	DATE	ENGINEER	DATE
2:1	6-4-86	DFD	6-4-86	6-24-86	
DESIGN	ASSIGNED	PRODUCT	ASSURANCE	DATE	PROJECT
PROJECT NO.	SIZE	SHEET	OF	DRAWING NO.	
	D	1	1	3504-046	

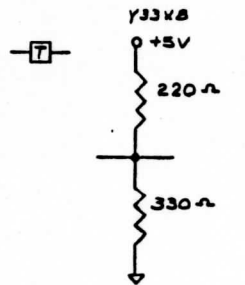
REVISIONS			
LTR.	DESCRIPTION	DATE	APPROVED



NOTE:  
SIGNALS FROM SHT. 3:  
READ #, 1, 2, 3  
WRITE #, 1, 2, 3  
RDLCHEN/



NOTE A:  
THE SIGNALS WRITE/READ, ERASE, #DATA,  
1 DATA, 2 DATA, PXLCK, RDLCHEN, WRTLCH ARE  
COMMON TO ALL SECTIONS.  
#DATA, 1 DATA, 2 DATA SIGNALS FROM SHT. 6

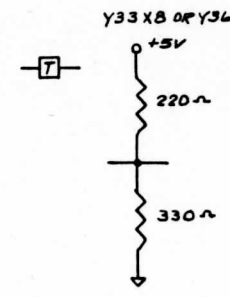
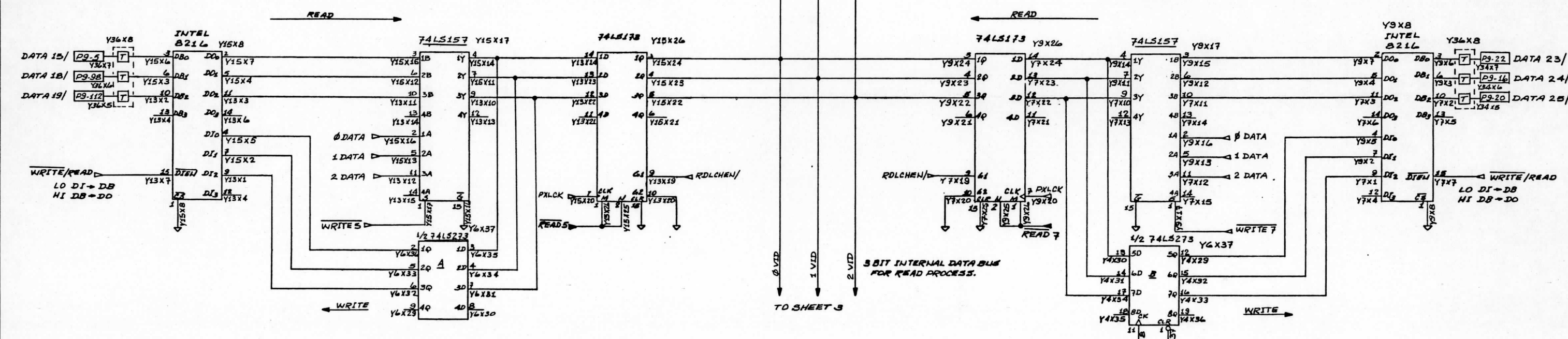
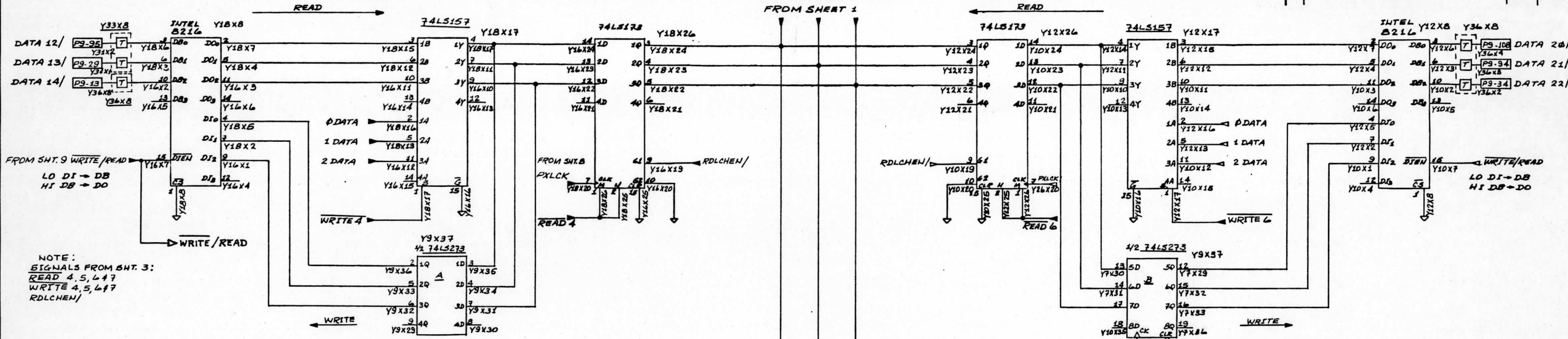


THIS SCHEMATIC CORRESPONDS TO WIREMASTER  
MODIFICATION E DATED 4-23-84

BIDIRECTIONAL DATA BUS - SECTIONS 0, 1, 2, 3			
THE UNIVERSITY OF WISCONSIN			
SPACE SCIENCE & ENGINEERING CENTER			
MADISON, WISCONSIN			
TITLE MCIDAS			
DATA RAM CONTROL (DR-2295)			
SCHEMATIC DIAGRAM			
DATE	DRAWN	CHECKED	DATE
11-3-84	M.A.	R.F.B.	11-3-84
DATE	DESIGNED	DATE	ENGINEER
DATE	PROJECT	DATE	APPROVAL
PROJECT NO.	SIZE	SHEET 1 OF 10	DRAWING NO.
7001	2		6450-0377

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED

3 BIT INTERNAL DATA BUS  
FROM SHEET 1



THIS SCHEMATIC CORRESPONDS TO WIREMASTER  
MODIFICATION # DATED 4-25-84

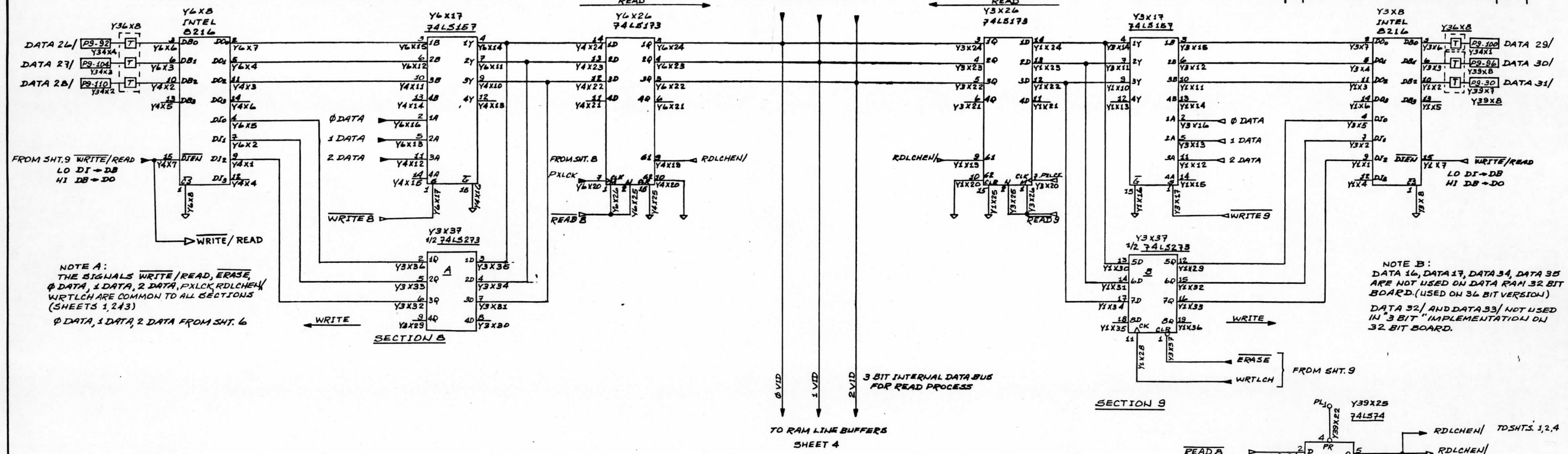
BIDIRECTIONAL DATA BUS SECTIONS 4, 5, 6, 7

THE UNIVERSITY OF WISCONSIN			
SPACE SCIENCE & ENGINEERING CENTER			
TITLE MCIDAS			
DATA RAM CONTROL (DR-2295)			
SCHEMATIC DIAGRAM			
SCALE	DRAWN BY	CHECKED	DATE
1:1	D. FORD	D. FORD	11-5-86
REVISION	DATE	BY	APPROVAL
0378			
PROJECT NO.	SIZE	SHEET	DRAWING NO.
7001	D	2 OF 10	6450-0377



REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED

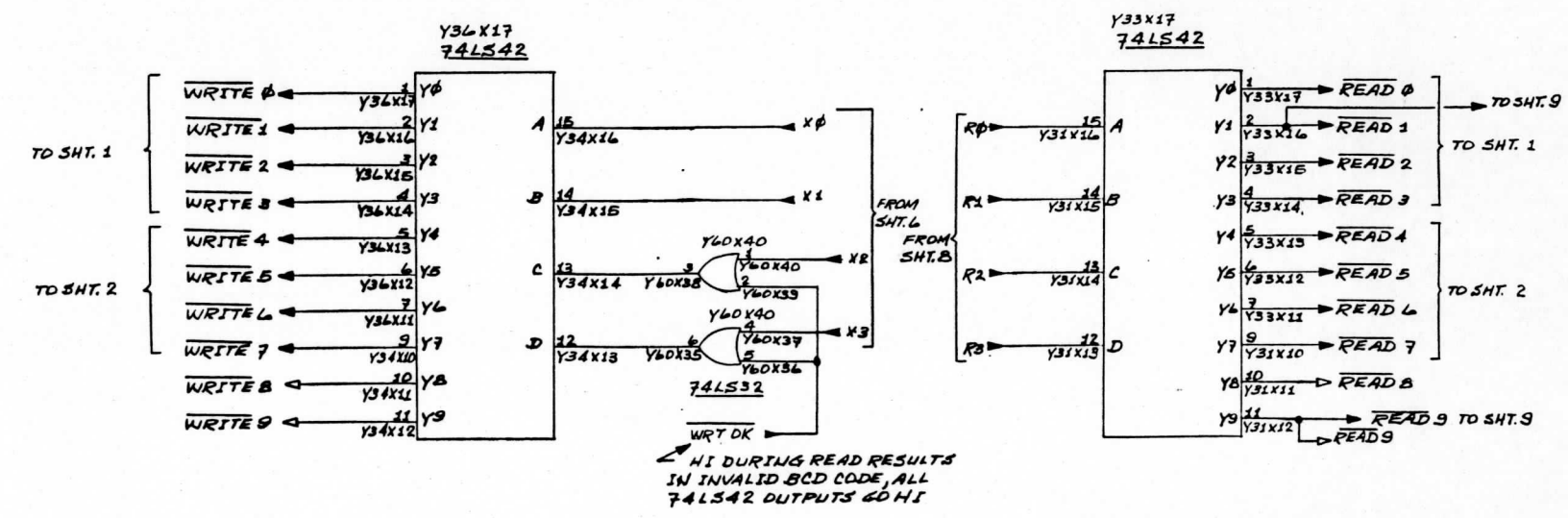
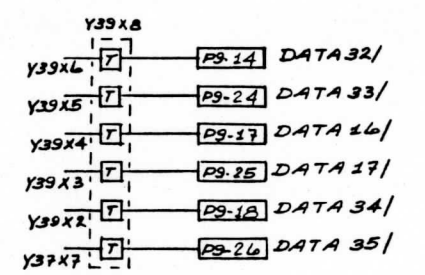
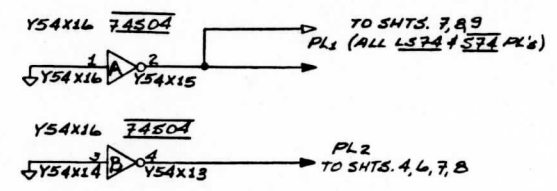
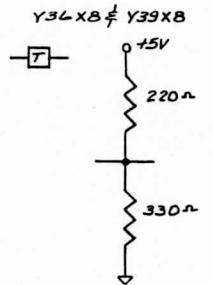
3 BIT INTERNAL DATA BUS FROM SHEET 2



NOTE A:  
THE SIGNALS WRITE/READ, ERASE,  $\phi$  DATA, 1 DATA, 2 DATA, PXLCK, RDLCHEN, WRTLCH ARE COMMON TO ALL SECTIONS (SHEETS 1, 2, 3)  
 $\phi$  DATA, 1 DATA, 2 DATA FROM SHT. 6

NOTE B:  
DATA 16, DATA 17, DATA 34, DATA 35 ARE NOT USED ON DATA RAM 32 BIT BOARD. (USED ON 36 BIT VERSION)  
DATA 32/ AND DATA 33/ NOT USED IN "3 BIT" IMPLEMENTATION ON 32 BIT BOARD.

SECTION	DATA		
0	$\phi$ 6	$\phi$ 1	$\phi$ 2
1	$\phi$ 3	$\phi$ 4	$\phi$ 5
2	$\phi$ 6	$\phi$ 7	$\phi$ 8
3	$\phi$ 9	$\phi$ 10	$\phi$ 11
4	12	13	14
5	15	18	19
6	20	21	22
7	23	24	25
8	26	27	28
9	29	30	31



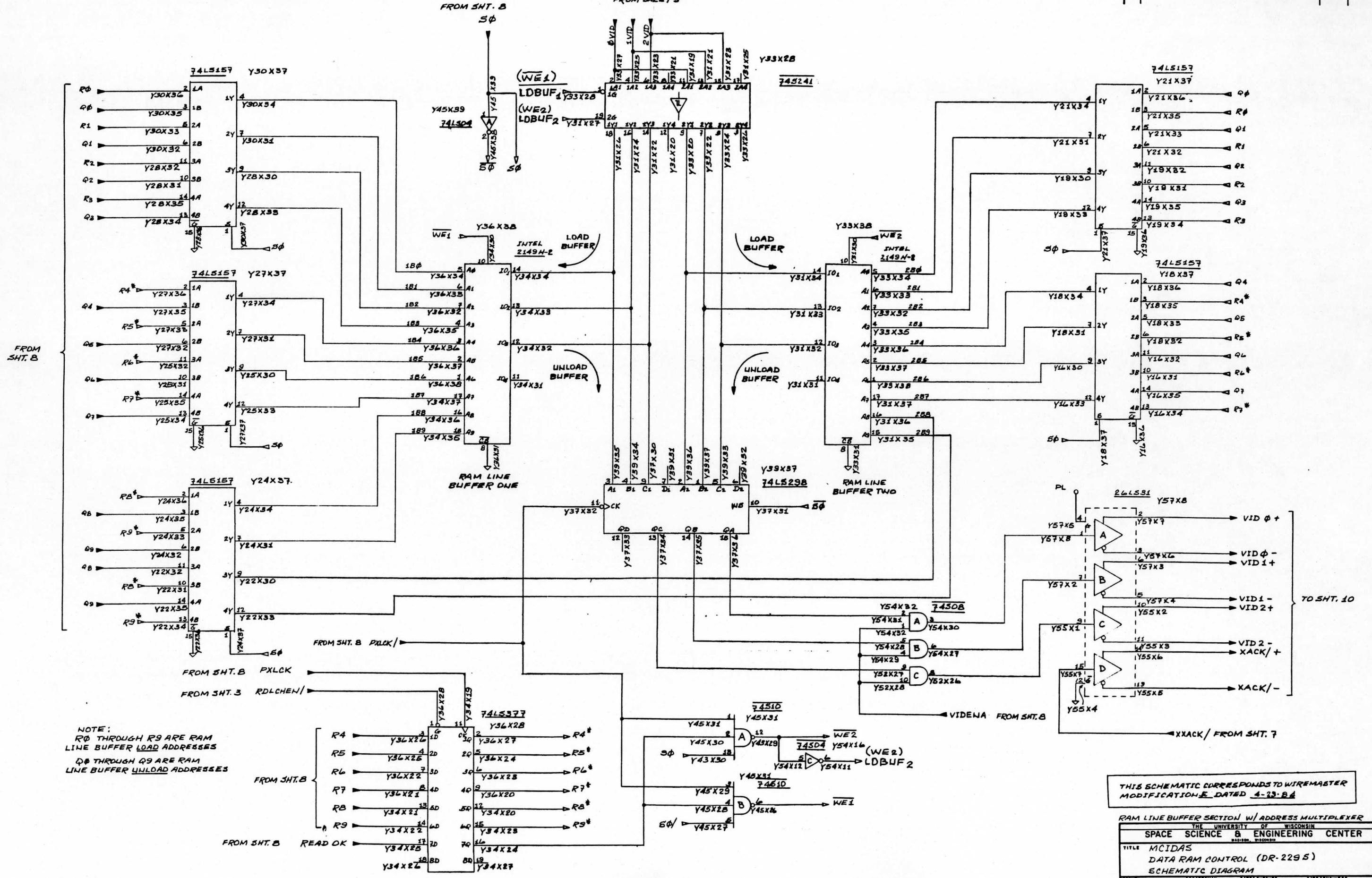
THIS SCHEMATIC CORRESPONDS TO WIREMASTER MODIFICATION # DATEL 4-23-84

BIDIRECTIONAL DATA BUS-SECTIONS 8, 9.

THE UNIVERSITY OF WISCONSIN			
SPACE SCIENCE & ENGINEERING CENTER			
MADISON, WISCONSIN			
TITLE MCIDAS			
DATA RAM CONTROL (DR-2295)			
SCHEMATIC DIAGRAM			
SCALE N/A	DRAWN BY D.F.	CHECKED BY S.S.	DATE 11-3-86
NEXT HIGHER ASSEMBLY 0378	PRODUCT ASSURANCE	DATE	PROJECT APPROVAL
PROJECT NO 7001	SIZE D	SHEET 3 OF 10	DRAWING NO 6450-0377

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED

3 BIT INTERNAL DATA BUS FROM SHEET B



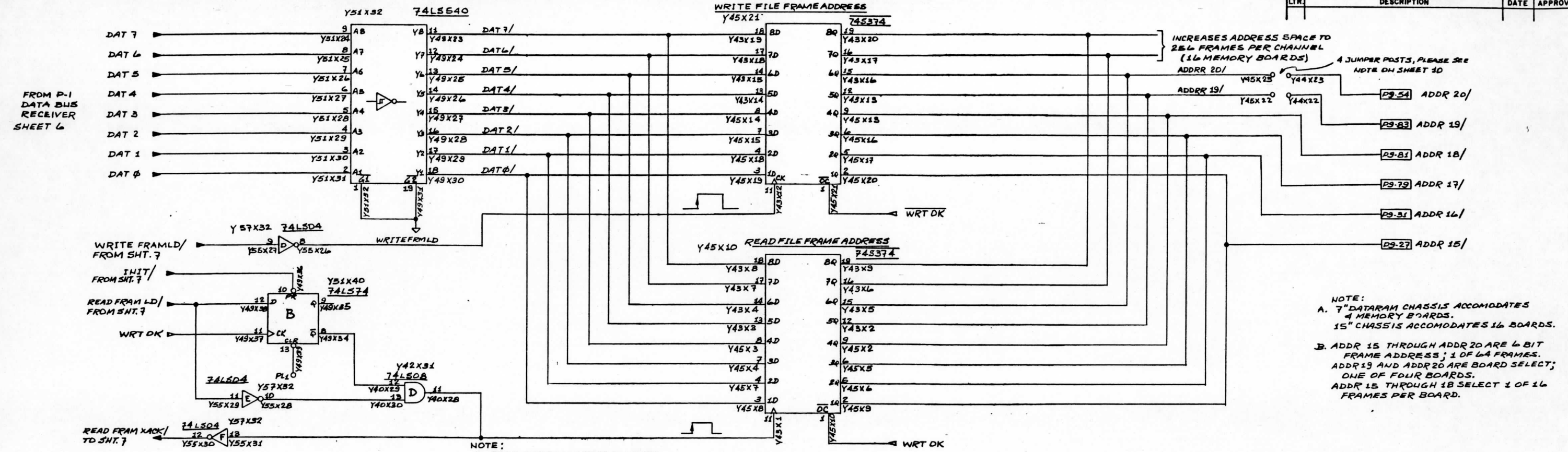
NOTE:  
R0 THROUGH R9 ARE RAM LINE BUFFER LOAD ADDRESSES  
Q0 THROUGH Q9 ARE RAM LINE BUFFER UNLOAD ADDRESSES

THIS SCHEMATIC CORRESPONDS TO WIREMASTER MODIFICATION E DATED 4-23-84

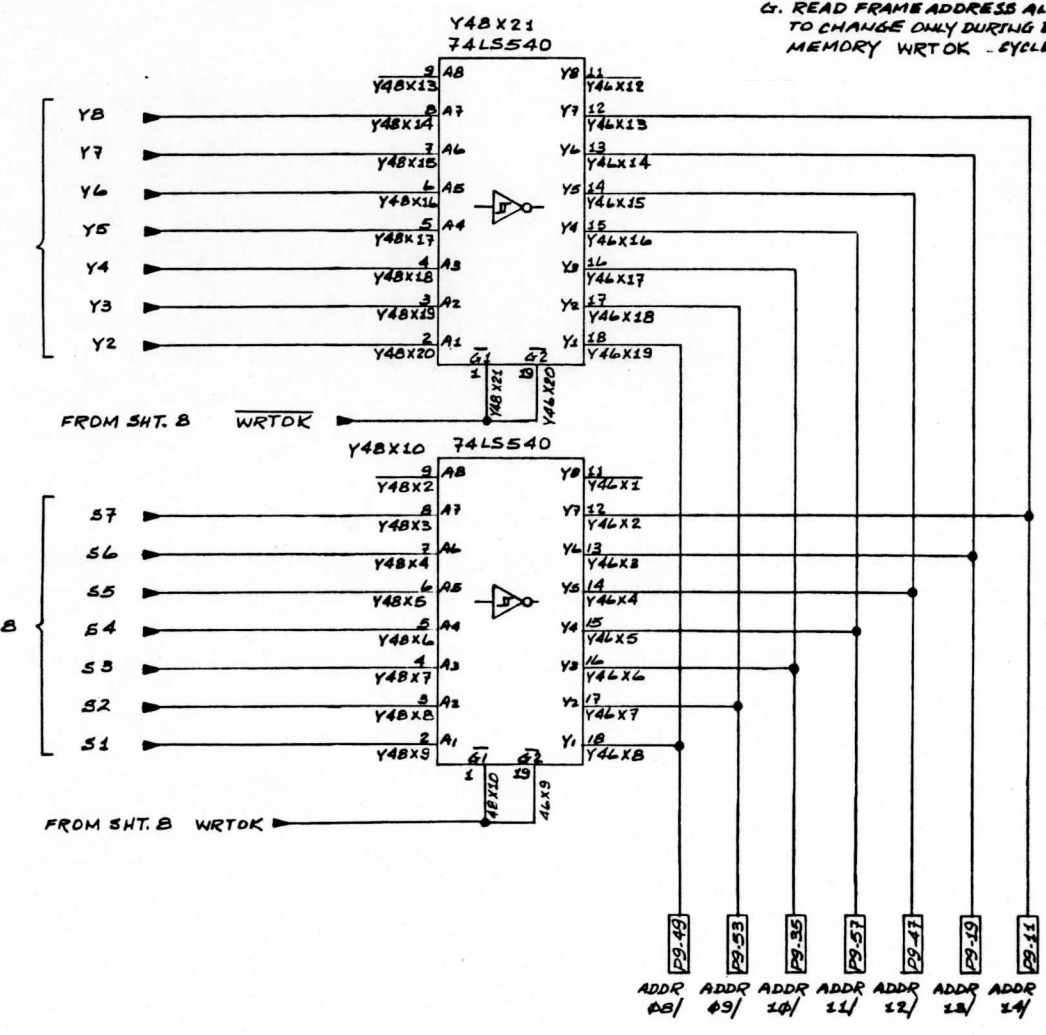
RAM LINE BUFFER SECTION W/ ADDRESS MULTIPLEXER			
THE UNIVERSITY OF WISCONSIN			
SPACE SCIENCE & ENGINEERING CENTER			
TITLE MCIDAS			
DATA RAM CONTROL (DR-2295)			
SCHEMATIC DIAGRAM			
SCALE	DRAWN	CHECKED	DATE
N/A	D.FORC	B.A.	11-3-84
NEXT REVIEW	ASSEMBLY	PRODUCT	ASSURANCE
0378			
PROJECT NO	SHEET	OF 10	DRAWING NO
7001	4	10	6450-0377

B17

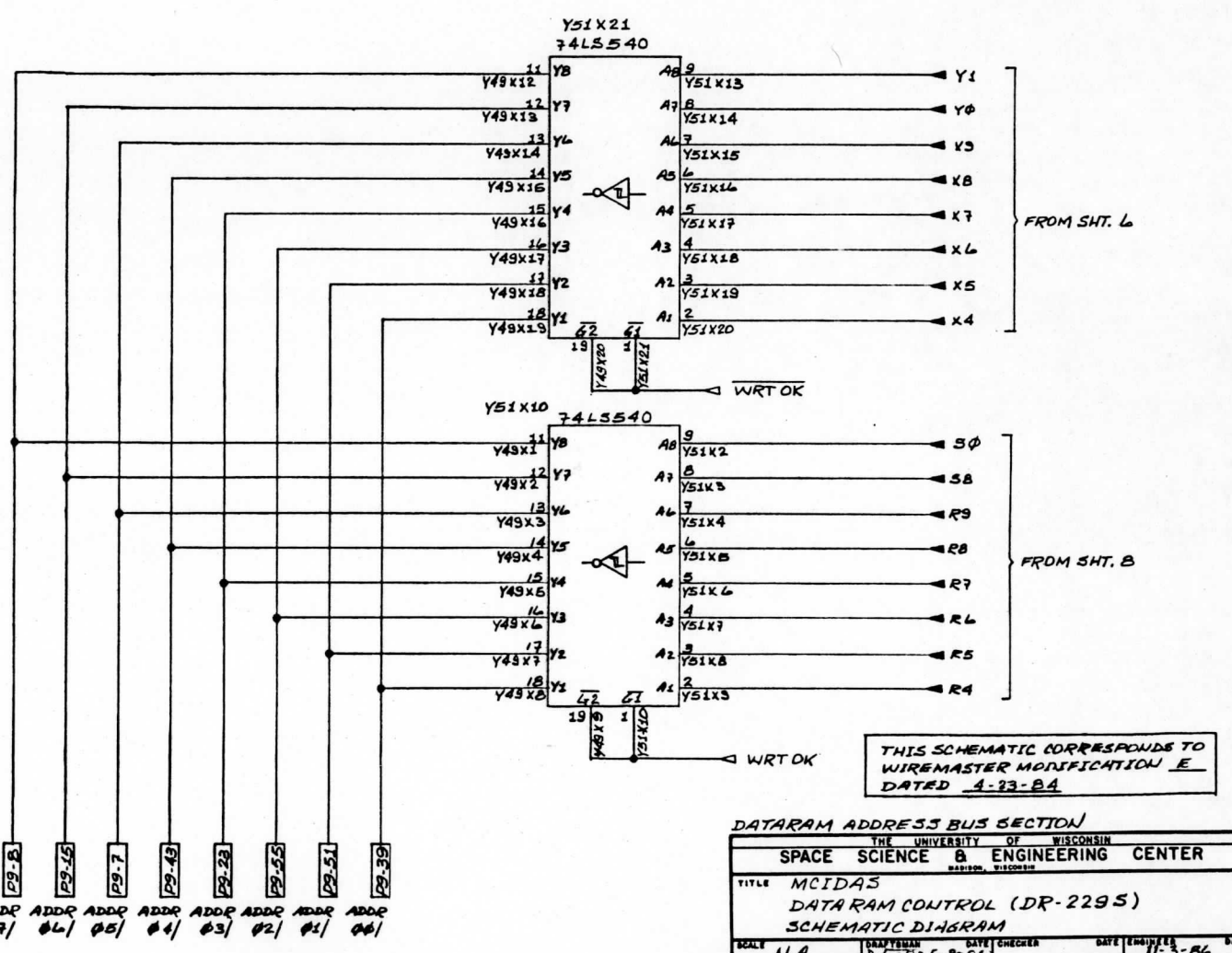
REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED



NOTE:  
 A. 7" DATARAM CHASSIS ACCOMMODATES 4 MEMORY BOARDS.  
 15" CHASSIS ACCOMMODATES 16 BOARDS.  
 B. ADDR 15 THROUGH ADDR 20 ARE 6 BIT FRAME ADDRESSES; 1 OF 64 FRAMES.  
 ADDR 19 AND ADDR 20 ARE BOARD SELECT; ONE OF FOUR BOARDS.  
 ADDR 15 THROUGH 18 SELECT 1 OF 16 FRAMES PER BOARD.



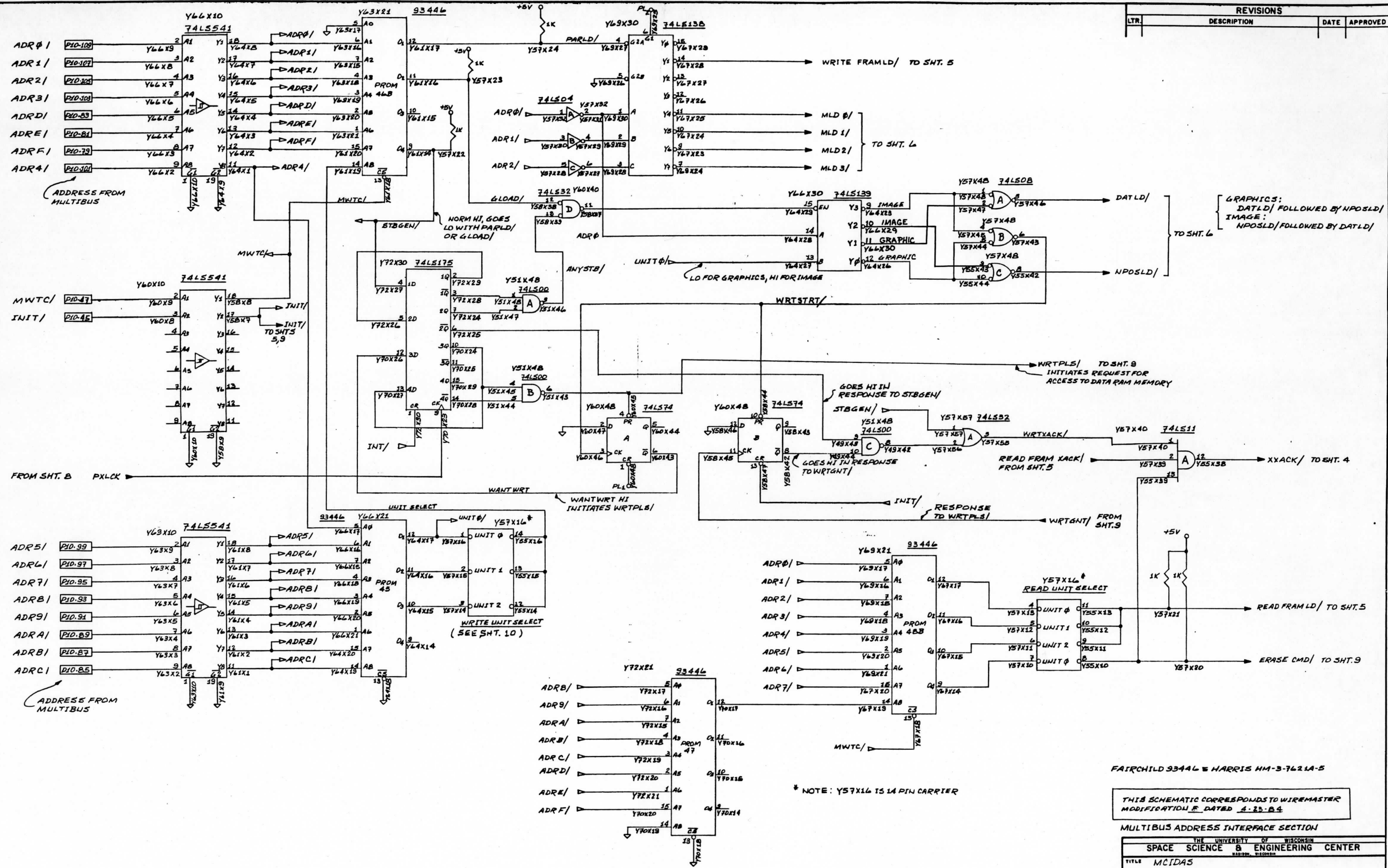
NOTE:  
 C. ADDR 00 THROUGH ADDR 14 SELECT A WORD ADDRESS WITHIN A FRAME.  
 D. DATARAM WORD IS 32 BITS WIDE, THIS IMPLEMENTATION USES 30 BITS.  
 3 BITS/PIXEL  
 10 PIXELS/WORD  
 64 WORDS/LINE  
 640 PIXELS/LINE  
 E. X'S AND Y'S ARE WRITE ADDRESSES. R'S AND S'S ARE READ ADDRESSES.  
 F. SB IS LOWEST ORDER 'Y'-ADDRESS BIT FOR ODD/EVEN FIELD INTERLACE DURING READ PROCESS.



DATARAM ADDRESS BUS SECTION			
THE UNIVERSITY OF WISCONSIN			
SPACE SCIENCE & ENGINEERING CENTER			
TITLE MCIDAS			
DATARAM CONTROL (DR-2295)			
SCHEMATIC DIAGRAM			
SCALE	DRAWN BY	CHECKED BY	DATE
N/A	D. F. 206	D. F. 206	11-5-86
BEST NUMBER ASSEMBLY	PRODUCT ASSURANCE	DATE	PROJECT APPROVAL
037A			
PROJECT NO.	SIZE	SHEET NO.	DRAWING NO.
7001	D	5 OF 10	6450-0377



REVISIONS			
LTR.	DESCRIPTION	DATE	APPROVED



FAIRCHILD 93446 & HARRIS MM-3-7621A-5

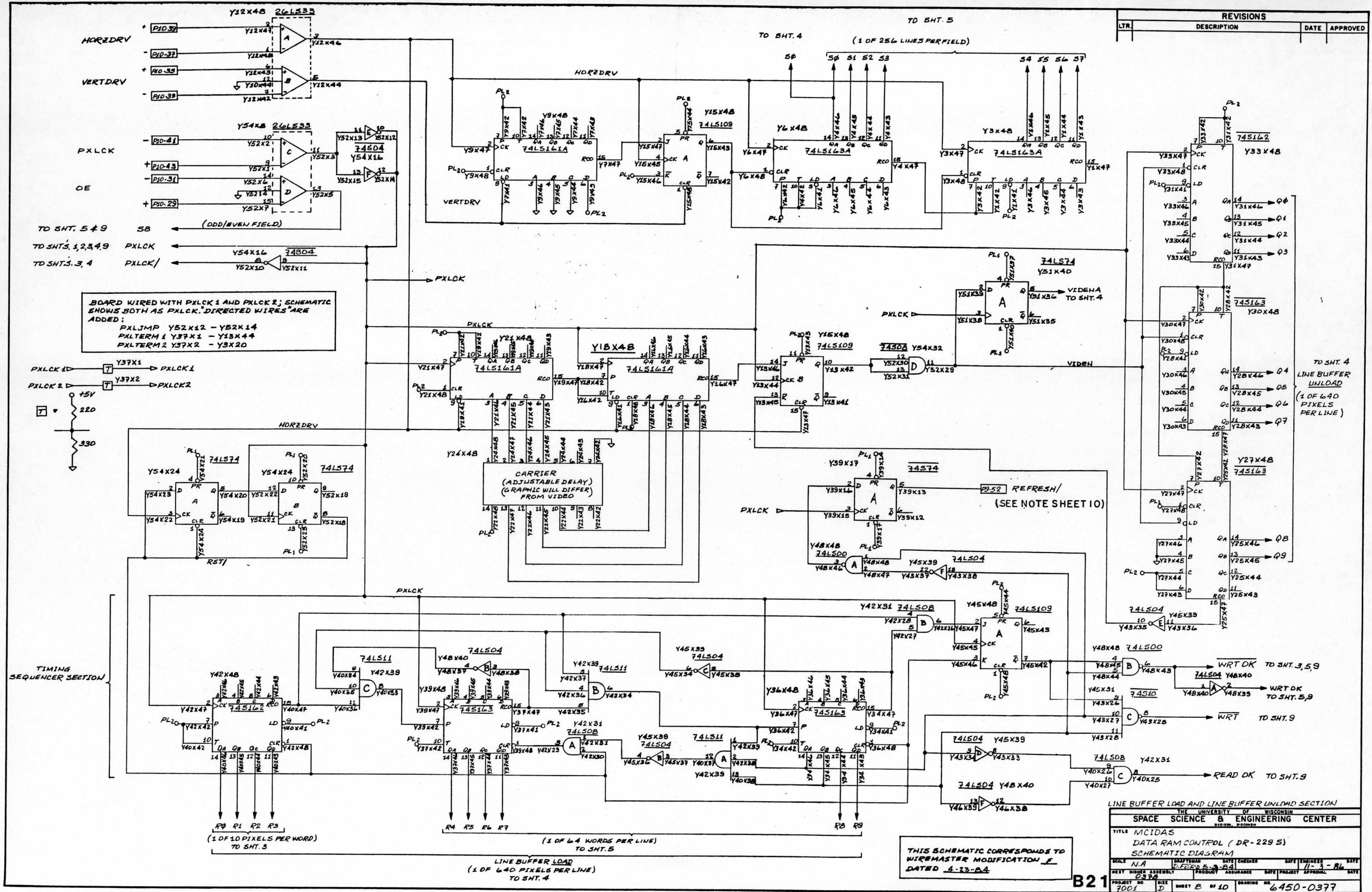
THIS SCHEMATIC CORRESPONDS TO WIREMASTER MODIFICATION # DATED 4-23-84

MULTIBUS ADDRESS INTERFACE SECTION

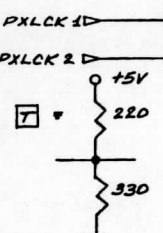
THE UNIVERSITY OF WISCONSIN			
SPACE SCIENCE & ENGINEERING CENTER			
TITLE MCIDAS			
DATA RAM CONTROL (DR-2295)			
SCHEMATIC DIAGRAM			
SCALE N.A.	DESIGNED BY D.FORD	CHECKED BY S.B.S.	DATE 11-3-84
NEXT HIGHER ASSEMBLY 0378	PROJECT ASSURANCE	DATE PROJECT APPROVAL	DATE
PROJECT NO 7001	SHEET 7 OF 10	DRAWING NO. 6450-0377	

\* NOTE: Y57X16 IS 14 PIN CARRIER

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED



BOARD WIRED WITH PXLCK 1 AND PXLCK 2; SCHEMATIC SHOWS BOTH AS PXLCK. DIRECTED WIRES ARE ADDED:  
 PXLJMP Y52X12 - Y52X14  
 PXLTERM 1 Y37X1 - Y33X44  
 PXLTERM 2 Y37X2 - Y3X20



THIS SCHEMATIC CORRESPONDS TO WIREMASTER MODIFICATION E DATED 4-23-84

LINE BUFFER LOAD AND LINE BUFFER UNLOAD SECTION

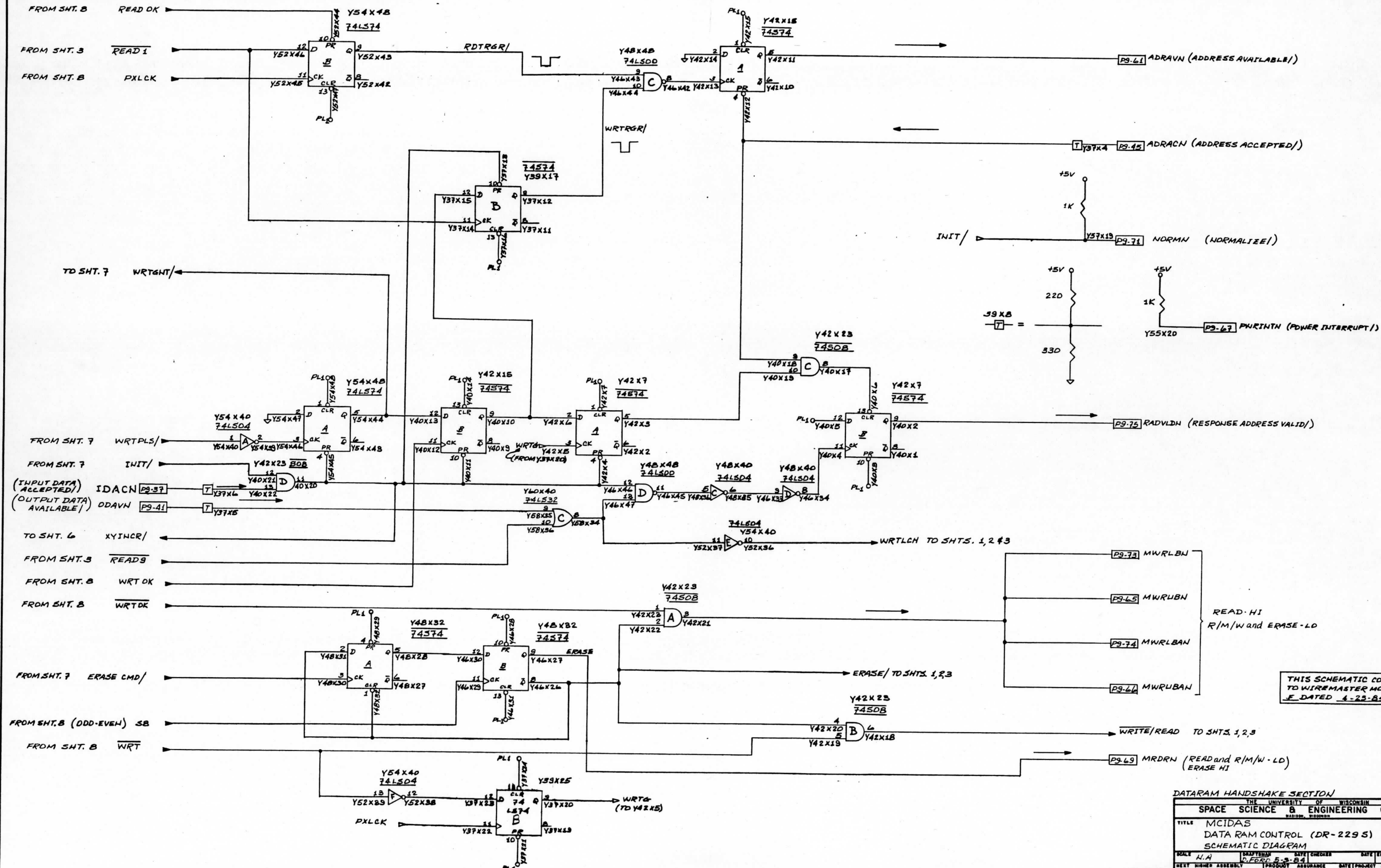
THE UNIVERSITY OF WISCONSIN  
 SPACE SCIENCE & ENGINEERING CENTER  
 MADISON, WISCONSIN

TITLE MCIDAS  
 DATA RAM CONTROL (DR-229 S)  
 SCHEMATIC DIAGRAM

SCALE N.A. DATE/ISSUE 11-3-84  
 NEXT NUMBER ASSEMBLY 0532 PRODUCT ASSURANCE DATE/PROJECT APPROVAL  
 PROJECT NO. 7001 SHEET E OF 10 DRAWING NO. 6450-0377

B21

REVISIONS			
LTR.	DESCRIPTION	DATE	APPROVED



THIS SCHEMATIC CORRESPONDS TO WIREMASTER MODIFICATION E DATED 4-22-84

DATARAM HANDSHAKE SECTION

THE UNIVERSITY OF WISCONSIN			
SPACE SCIENCE & ENGINEERING CENTER			
TITLE MCIDAS DATA RAM CONTROL (DR-229 S) SCHEMATIC DIAGRAM			
SCALE N.A.	DATE 5-3-84	DATE CHECKED 11-3-84	DATE APPROVED
NEXT HIGHER ASSEMBLY P128	PRODUCT ASSURANCE	DATE PROJECT APPROVAL	DATE
PROJECT NO. 7001	SIZE D	SHEET 9 OF 10	DRAWING NO. 6450-0377

B22



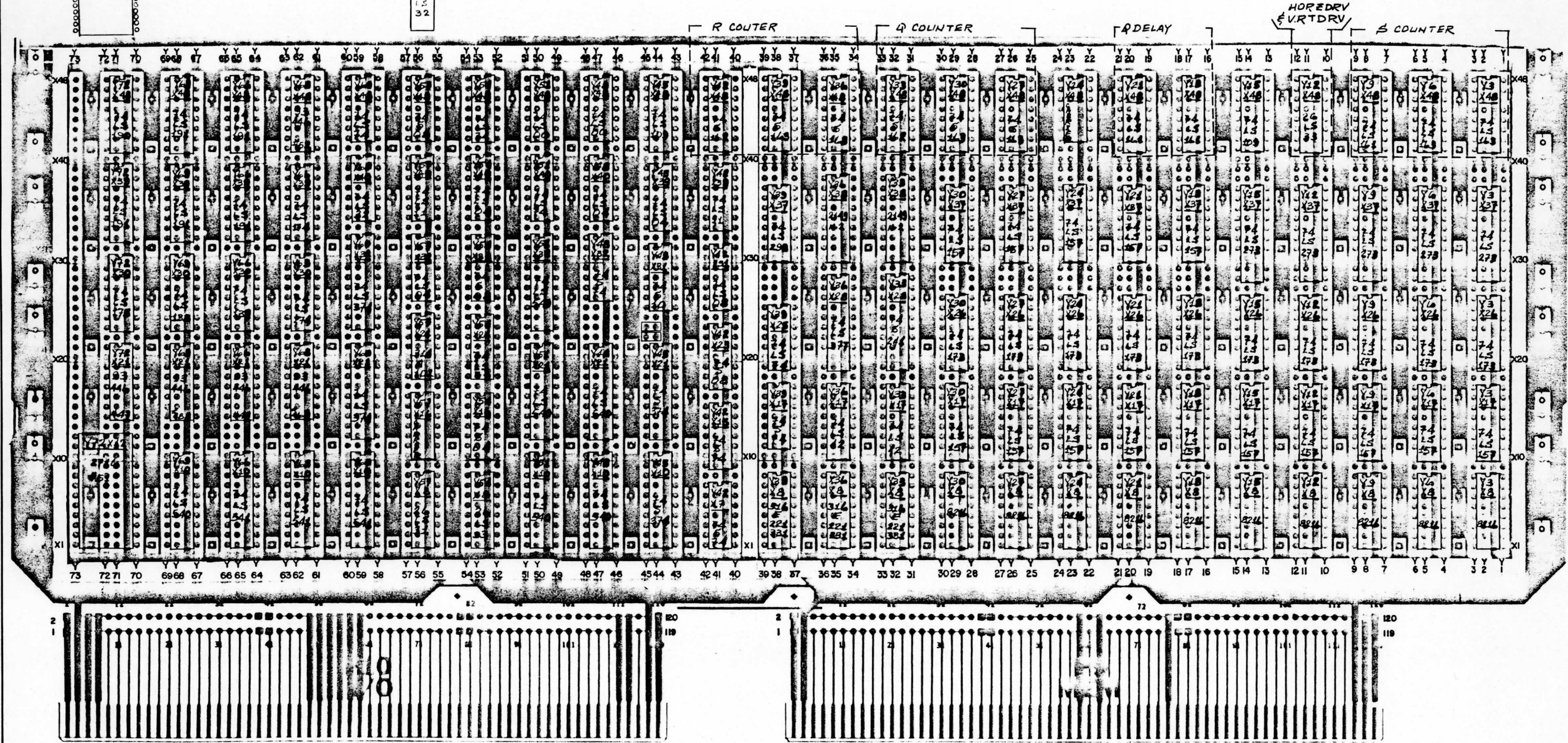


REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED

Y73  
X68

40 PIN CARRIER  
NOTE:  
NOT 2/1 SCALE

Y57  
X54  
Y55  
X52

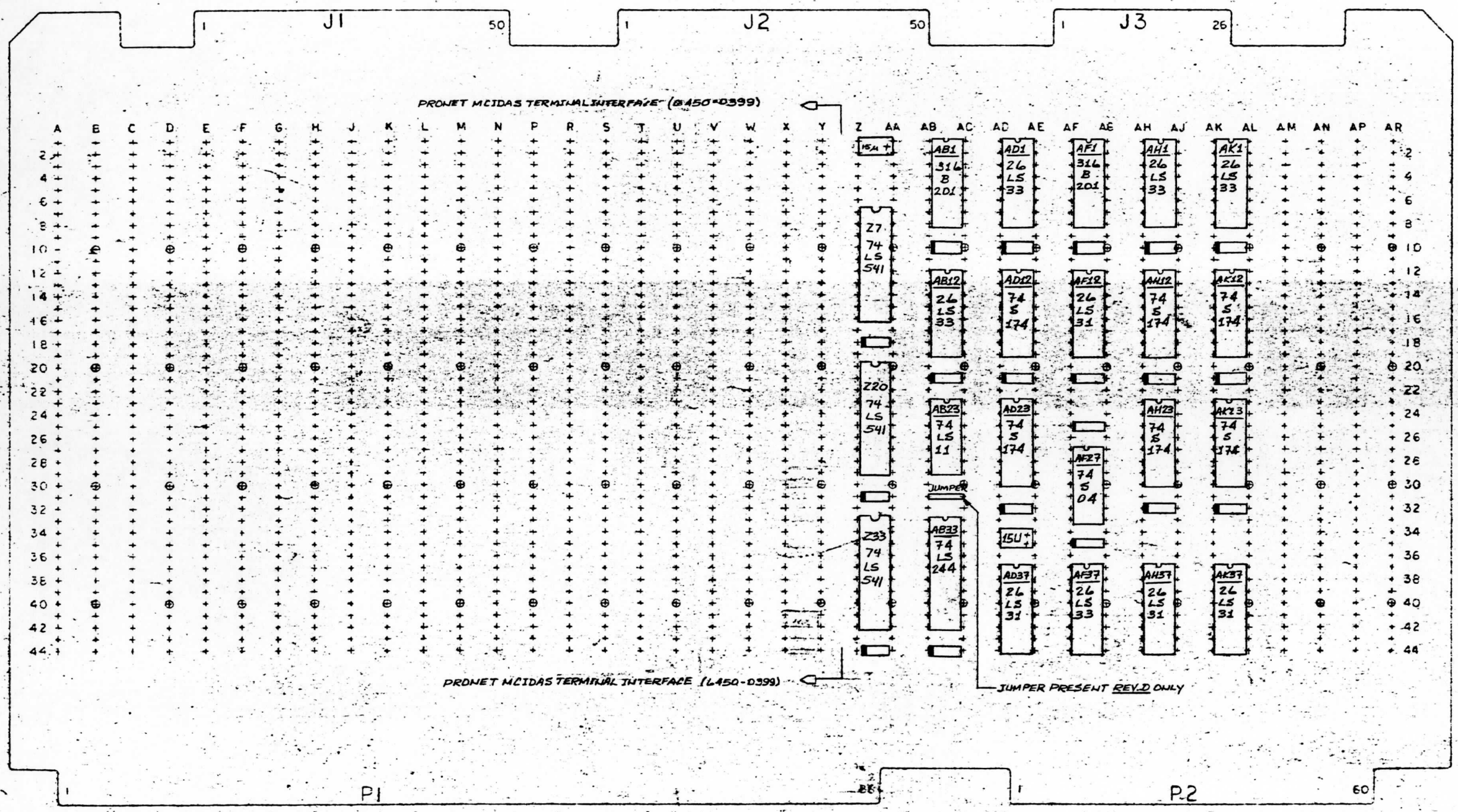


THIS ASSEMBLY CORRESPONDS TO WIREMASTER MODIFICATION E DATED 4-23-84

THE UNIVERSITY OF WISCONSIN			
SPACE SCIENCE & ENGINEERING CENTER			
TITLE MCIDAS			
DATA RAM CONTROL (DR-229S)			
ASSEMBLY DIAGRAM			
SCALE 2/1	DRAFTSMAN E.F.P.D. 5-4-84	DATE CHECKER	DATE ENGINEER
NEXT HIGHER ASSEMBLY 0377	PRODUCT ASSURANCE	DATE PROJECT APPROVAL	DATE
PROJECT NO 7001	SIZE D	SHEET 1 OF 1	DRAWING NO 6450-0378

B24





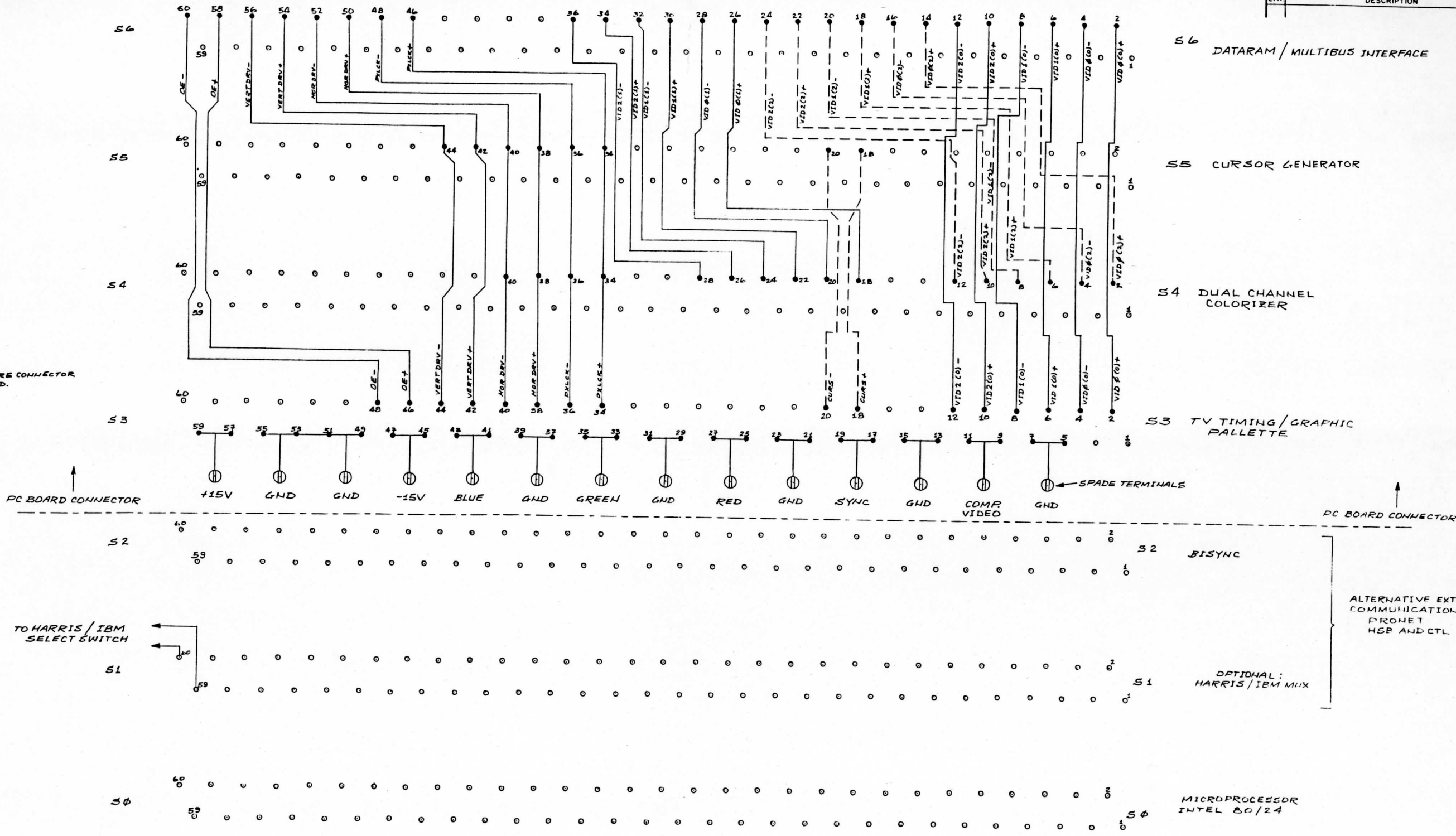
THIS ASSEMBLY CORRESPONDS TO WIREMASTER MODIFICATION D DATED 2-12-84  
E DATED 3-14-84

⊙ TENTH ROW DESIGNATION

THE UNIVERSITY OF WISCONSIN			
SPACE SCIENCE & ENGINEERING CENTER			
TITLE MCIDAS 2			
TRIPLE CHASSIS DATARAM / MULTIBUS INTERFACE			
ASSEMBLY DRAWING			
SCALE 2:1	DATE 4-14-83	DATE CHECKED	DATE REVISION 2-12-84
PROJECT 6450-0379	DESIGNER	APPROVED	DATE PROJECT APPROVAL
PROJECT NO 7001	SHEET 1	OF 1	DRAWING NO 6450-0380

B26

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVE



NOTE:  
DASHED LINES ARE CONNECTOR  
SIDE OF P.C. BOARD.

S6 DATARAM / MULTIBUS INTERFACE

S5 CURSOR GENERATOR

S4 DUAL CHANNEL  
COLORIZER

S3 TV TIMING / GRAPHIC  
PALLETTE

S2 BISYNC

OPTIONAL:  
HARRIS / IBM MIX

MICROPROCESSOR  
INTEL 8024

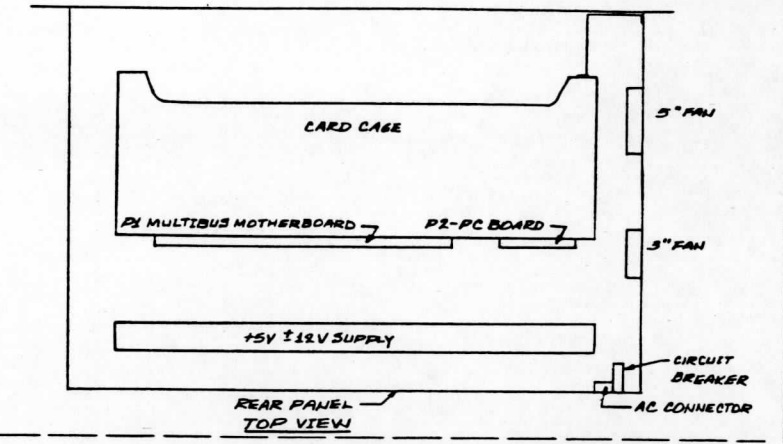
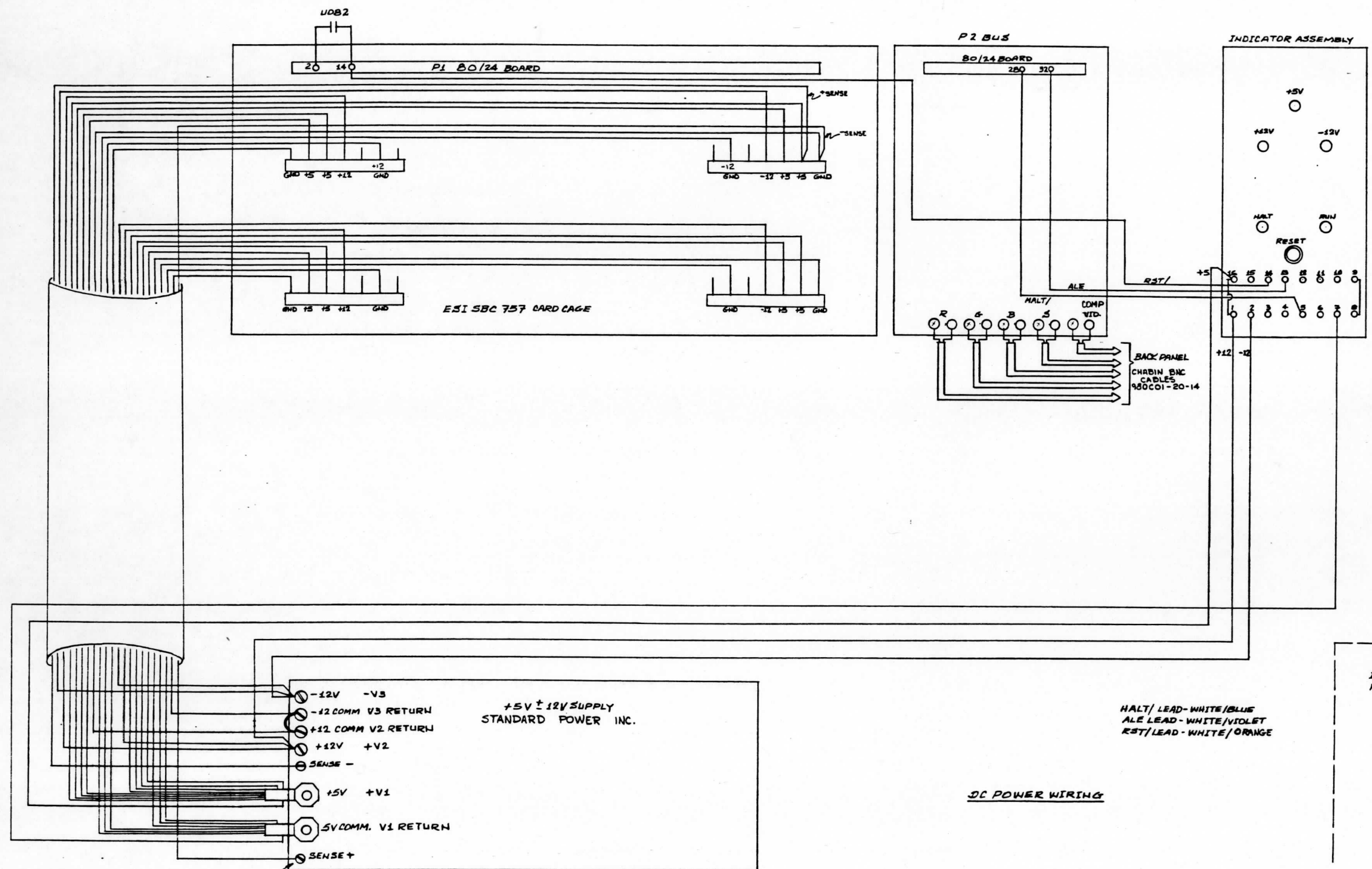
ALTERNATIVE EXTERNAL  
COMMUNICATIONS:  
PROHET  
HSP AND CTL

NOTE:  
BACK VIEW OF P2 BUS.  
STAGGERED PIN LOCATIONS SHOWN FOR  
CLARITY OF WIRE ROUTING.

B27

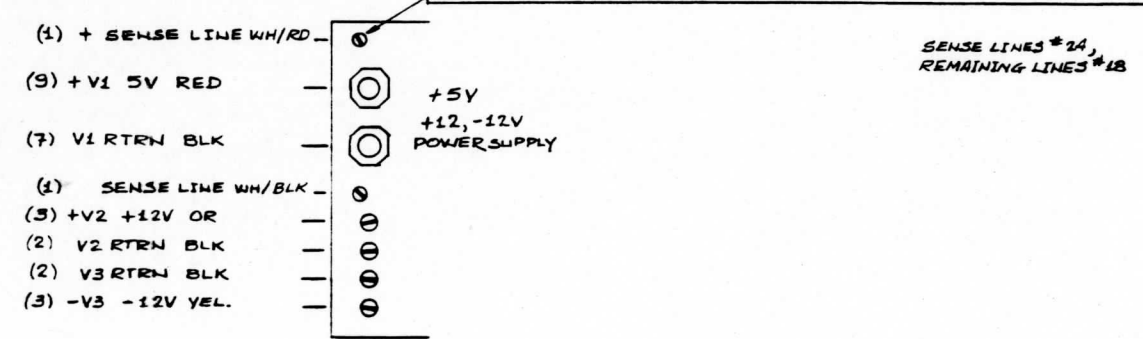
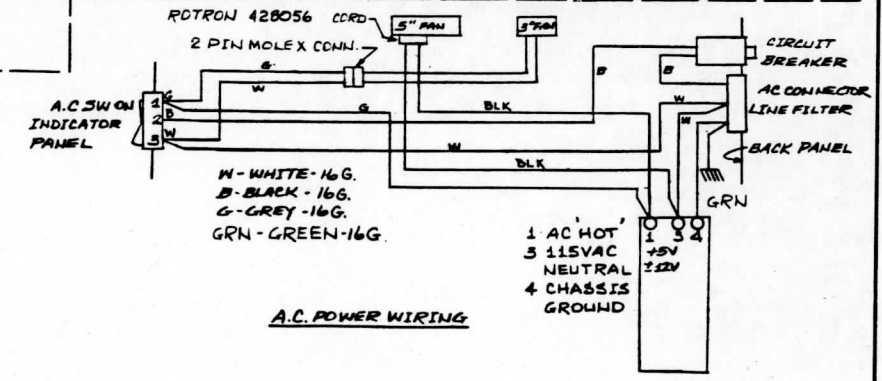
THE UNIVERSITY OF WISCONSIN			
SPACE SCIENCE & ENGINEERING CENTER			
TITLE MCIDAS			
TRIPLE CHASSIS DATARAM P2 BUS			
SCALE N/A	DRAWNMAN D. FURD 1-13-83	DATE CHECKER	DATE ENGINEER
BEST MFG. ASSEMBLY	PROJECT ASSURANCE	DATE PROJECT APPROVAL	DATE
PROJECT NO 7001	SIZE D	SHEET 1 OF 1	DRAWING NO 6450-0363

REVISIONS			
LTR.	DESCRIPTION	DATE	APPROVED



BOARD LOCATOR-SLOT NO.	TOP OF MULTIBUS CARD CAGE	SOLDERED	PRIORITY
BO/24	15	15L BPRN/15R PRN	PRIORITY 1
UNUSED	16	16L BPRN/16R PRN	W/N CONNECTION TO BE MADE ON P1 MOTHERBOARD
BIT 3	15	15L BPRN/15R PRN	PRIORITY 3
COLTV TIMING	15	15L BPRN/15R PRN	
DUAL CHAN. CCL.	15	15L BPRN/15R PRN	
CURSOR GEN.	15	15L BPRN/15R PRN	
DATARAM MULTIBUS INT.	15	15L BPRN/15R PRN	PRIORITY 2

\* PIN 15-16 SOLID LINE CONNECTIONS ARE MADE BY PC ON P1 MOTHERBOARD  
 7 SLOT CARD CAGE  
 CSIS-DATARAM-PRONET  
 SERIAL PRIORITY RESOLUTION



HALT/ LEAD - WHITE/BLUE  
 ALE LEAD - WHITE/VIOLET  
 RST/LEAD - WHITE/ORANGE

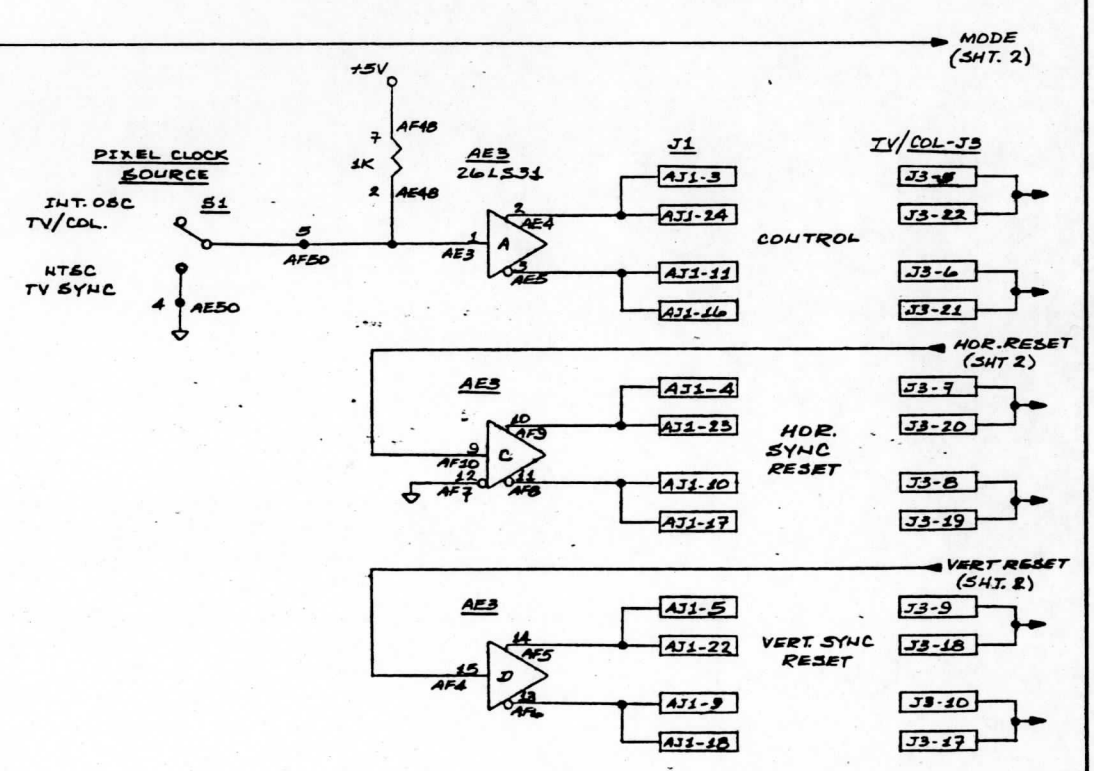
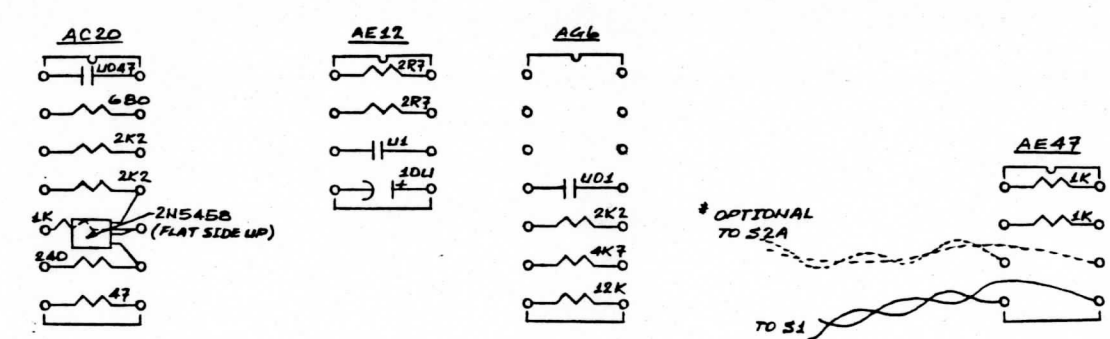
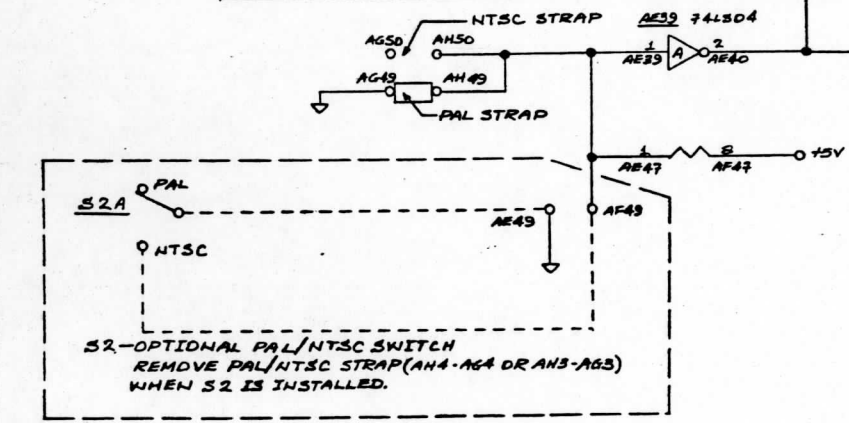
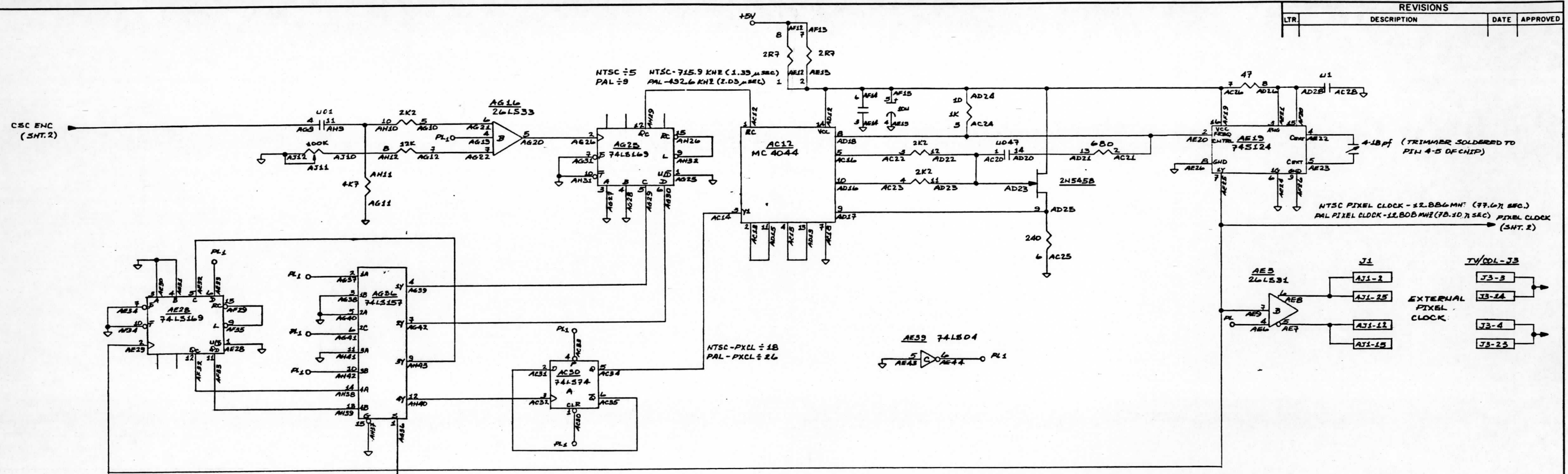
**DC POWER WIRING**

**A.C. POWER WIRING**

B28

THE UNIVERSITY OF WISCONSIN			
SPACE SCIENCE & ENGINEERING CENTER			
MADISON, WISCONSIN			
TITLE MCIDAS			
MULTIBUS CHASSIS			
MECHANICAL DRAWING			
SCALE NA	DRAWN BY D. F. FRY	CHECKED J. D. B. S.	DATE 4-7-87
NEXT HIGHER ASSEMBLY	PRODUCT ASSURANCE	DATE	PROJECT APPROVAL
PROJECT NO 1015	SIZE D	SHEET 7 OF 10	DRAWING NO 6450-0476

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED

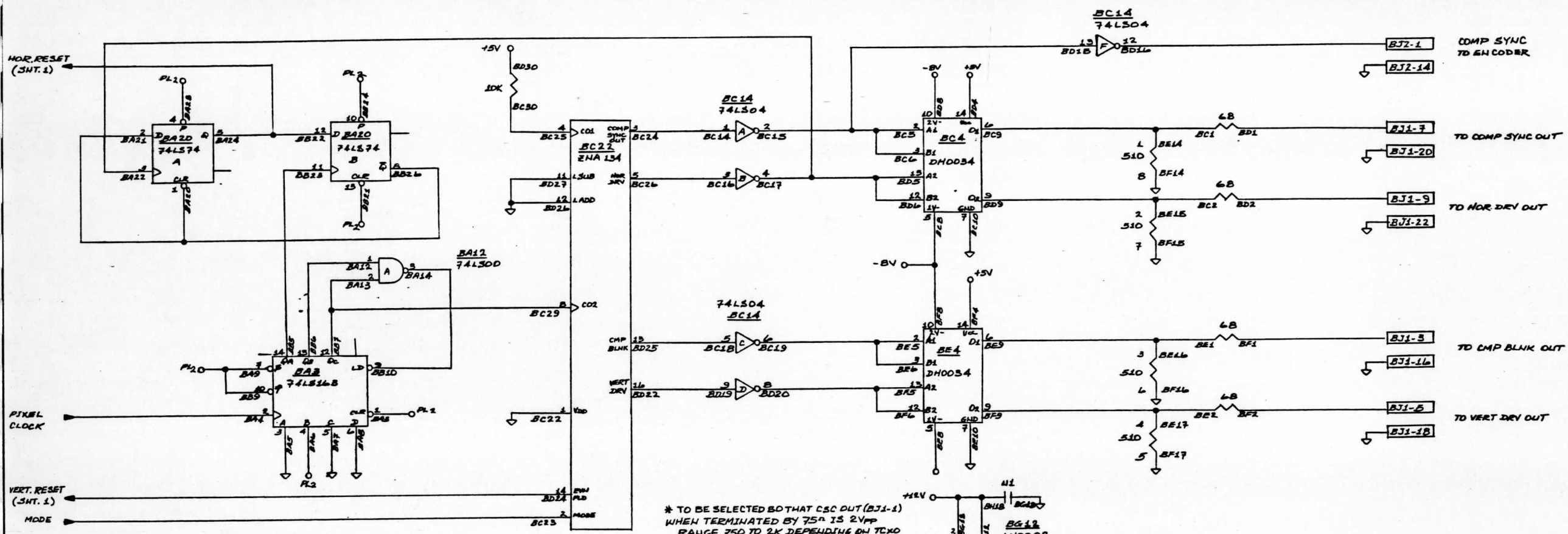


REV C

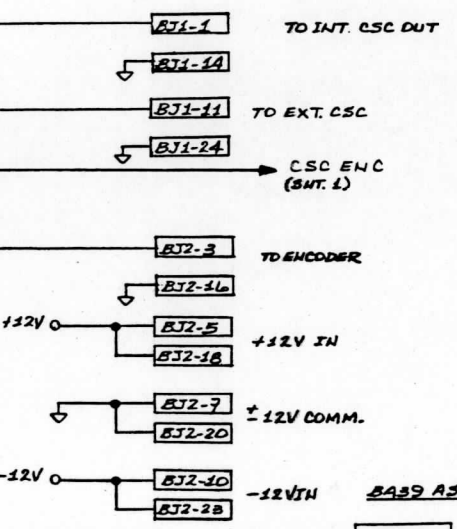
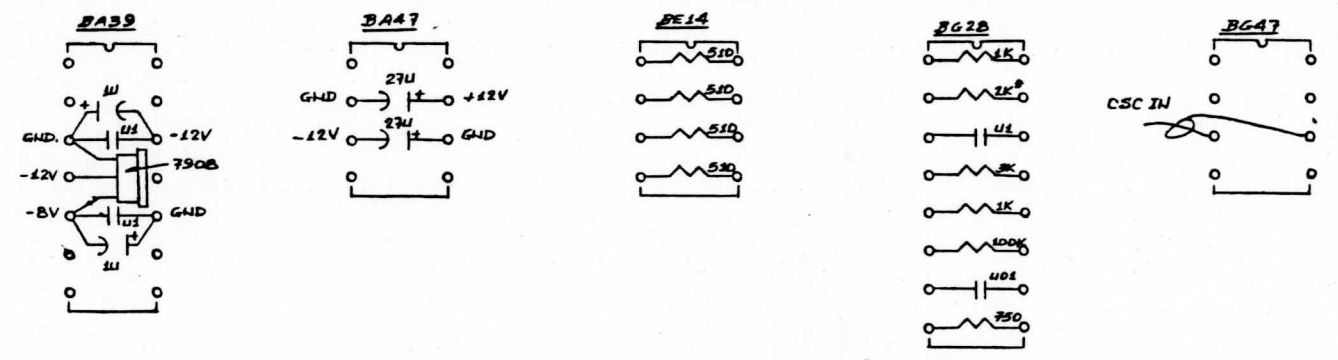
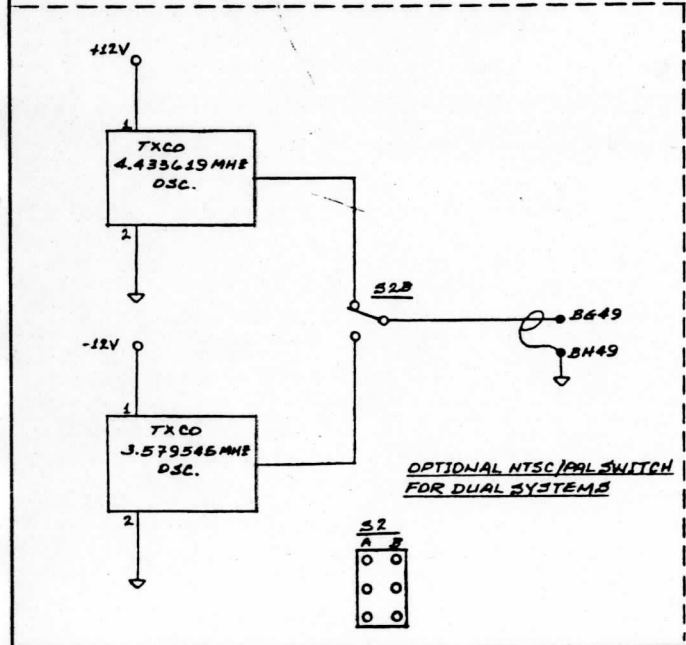
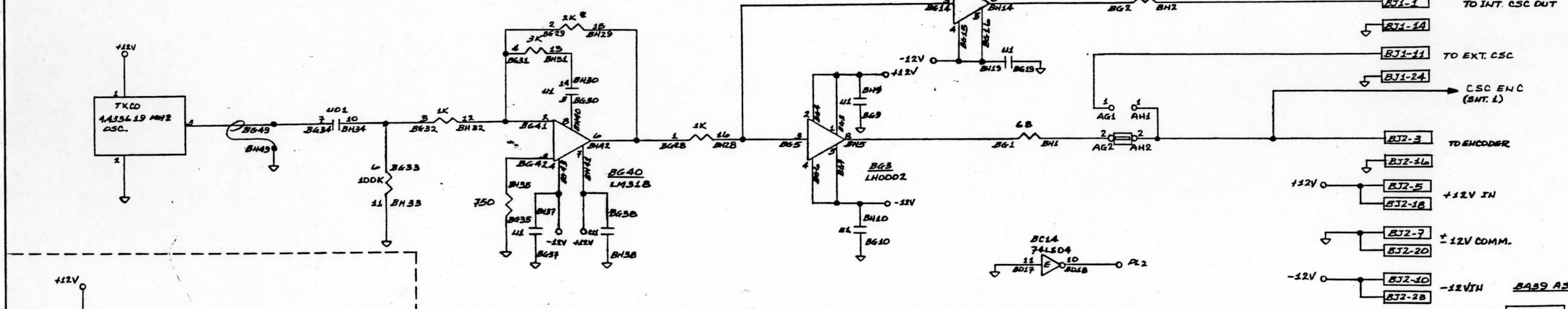
THE UNIVERSITY OF WISCONSIN SPACE SCIENCE & ENGINEERING CENTER MADISON, WISCONSIN			
TITLE MCIDAS PAL(NTSC) TV SYNC BOARD SCHEMATIC DIAGRAM			
SCALE N.A.	DATE 1-6-86	CHECKER D.F. FORD	DATE 6-27-86
NEXT HIGHER ASSEMBLY -0456	PRODUCT ASSURANCE	DATE	PROJECT APPROVAL
PROJECT NO. 1015	DRAWING NO. D	SHEET 1	OF 2 DRAWING NO. 6450-0492

B29

REVISIONS			
LTR.	DESCRIPTION	DATE	APPROVED



\* TO BE SELECTED SO THAT CSC OUT (BJ1-1) WHEN TERMINATED BY 75Ω IS 2VPP RANGE 750 TO 2K DEPENDING ON TCXO OUTPUT

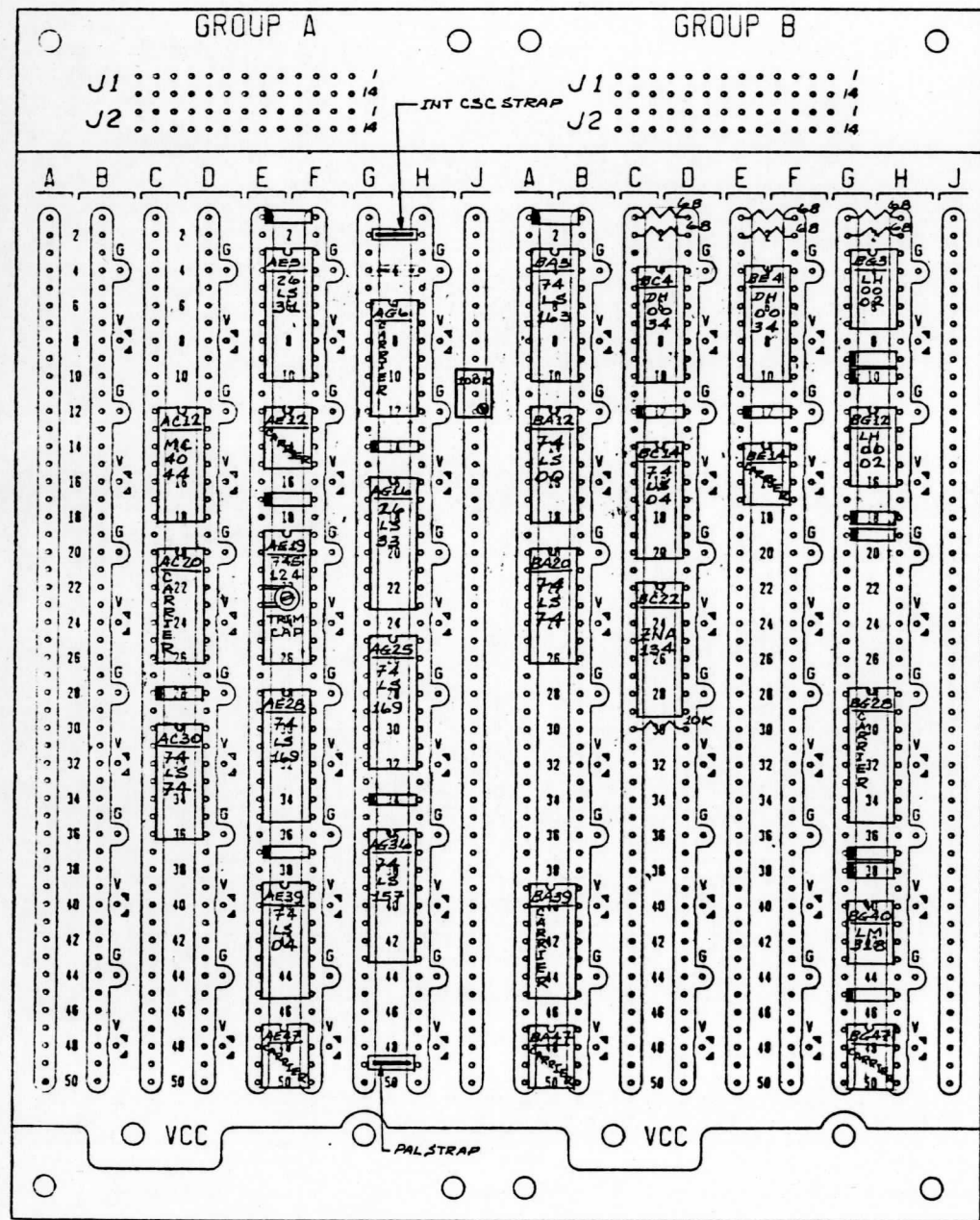


B30

REV. C

THE UNIVERSITY OF WISCONSIN			
SPACE SCIENCE & ENGINEERING CENTER			
TITLE MCIDAS			
PAL NTSC TV SYNC BOARD			
SCHEMATIC DIAGRAM			
SCALE	DATE	CHECKED	DATE
N.A.	12/10/80	1/6/81	6-27-84
BY	DESIGNED	PRODUCT	ASSURANCE
3015	D	SHEET 2 OF 2	DRAWING NO. 6450-0492

REVISIONS			
LTR	DESCRIPTION	DATE	APPROV



B31

MOD C

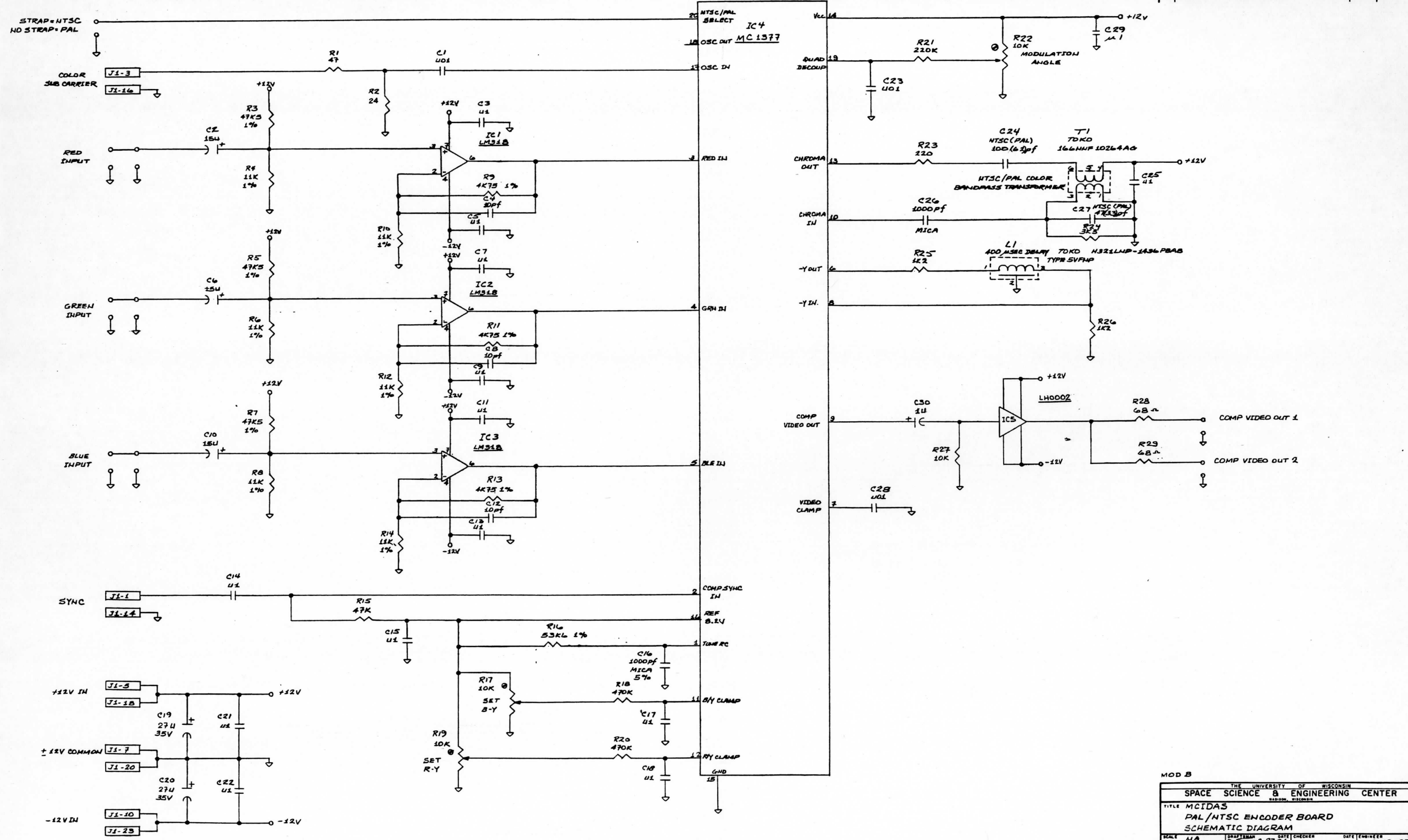
THE UNIVERSITY OF WISCONSIN  
SPACE SCIENCE & ENGINEERING CENTER

TITLE MCIDAS  
PAL(NTSC)TV SYNC BOARD  
ASSEMBLY DRAWING

SCALE	DATE	CHECKER	DATE	APPROVER
N.A.	10/16/66	D. Ford	10/16/66	G-27-B6
SHEET NUMBER	TOTAL SHEETS	PROJECT ASSURANCE	DATE	PROJECT APPROVAL
0485	1			
PROJECT NO	DATE	SHEET	OF	DRAWING NO
1015	D	1	1	6450-0493



REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED

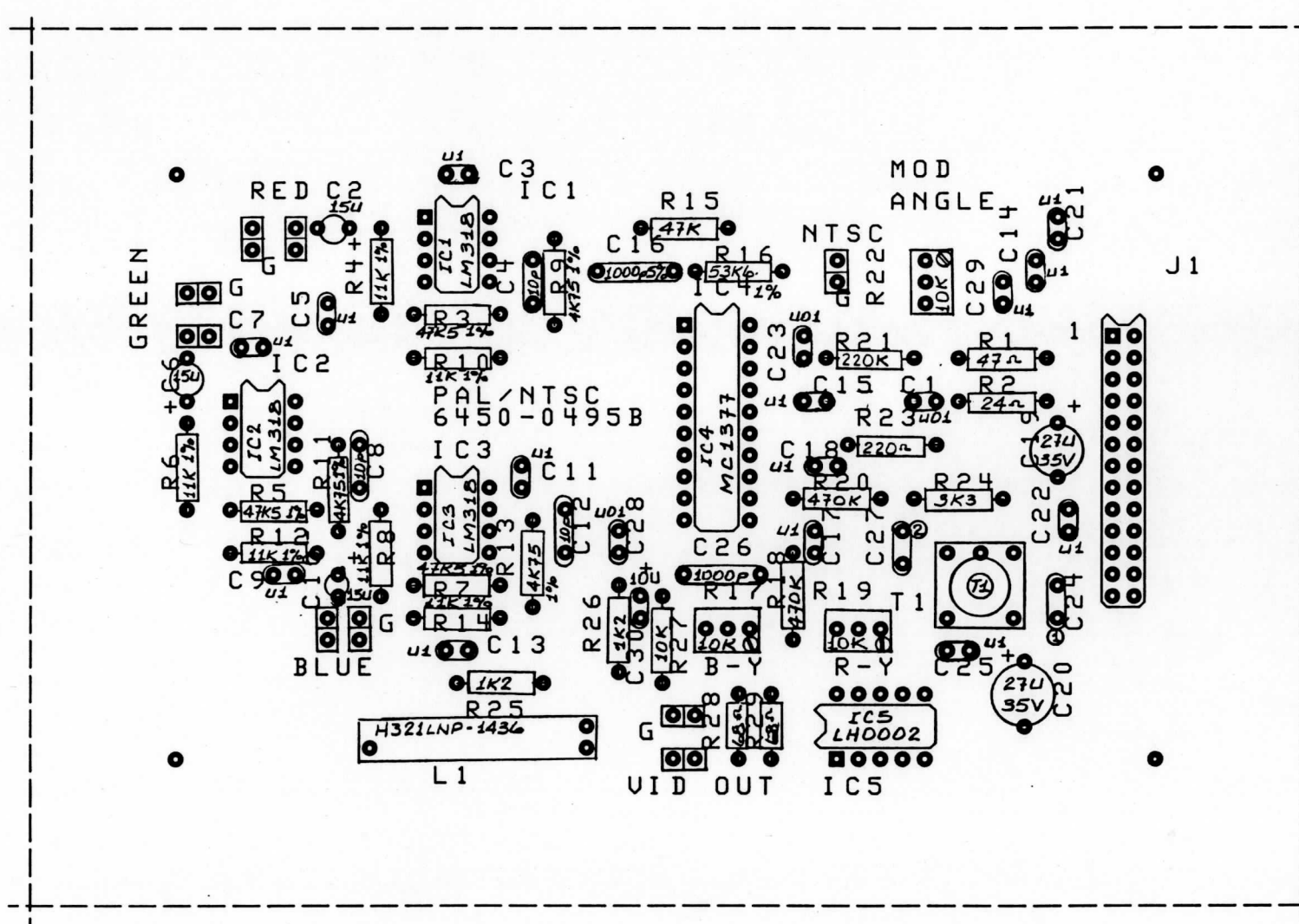


**B32**

MOD B

THE UNIVERSITY OF WISCONSIN SPACE SCIENCE & ENGINEERING CENTER MADISON, WISCONSIN			
TITLE MCIDAS PAL/NTSC ENCODER BOARD SCHEMATIC DIAGRAM			
SCALE N/A	DRAWN BY D. FORD	CHECKER 2-27-86	DATE 2-13-87
NEXT HIGHER ASSEMBLY - 0494-0496	PRODUCT ASSURANCE	DATE	PROJECT APPROVAL
PROJECT NO 2300	SIZE D	SHEET 1 OF 1	DRAWING NO 6450-0494

REVISIONS			
LTR.	DESCRIPTION	DATE	APPROVED



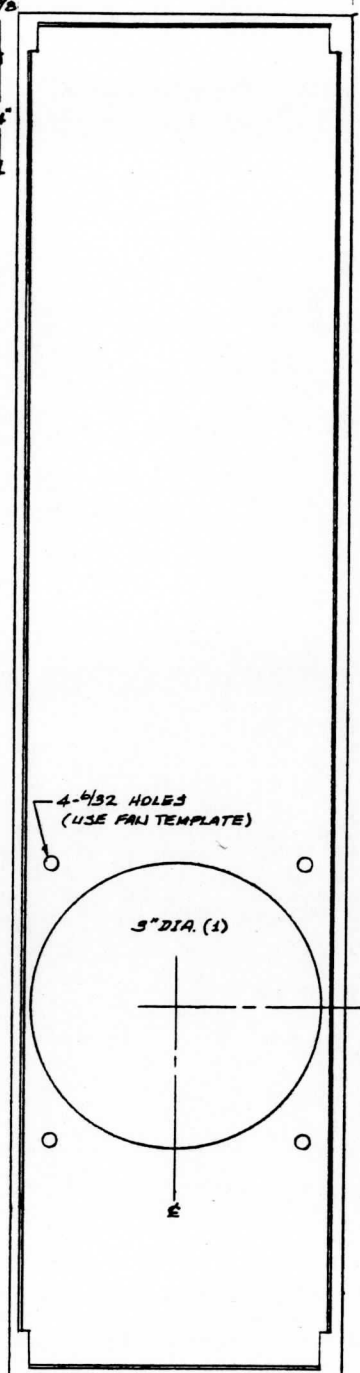
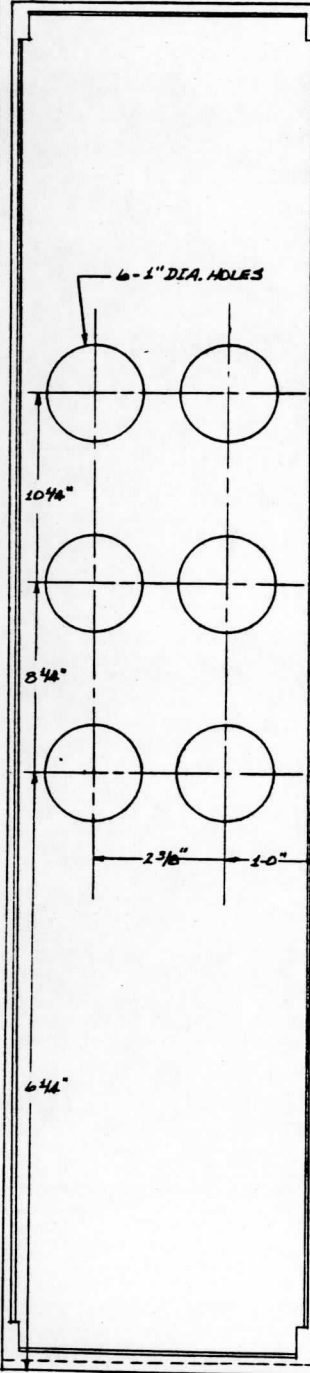
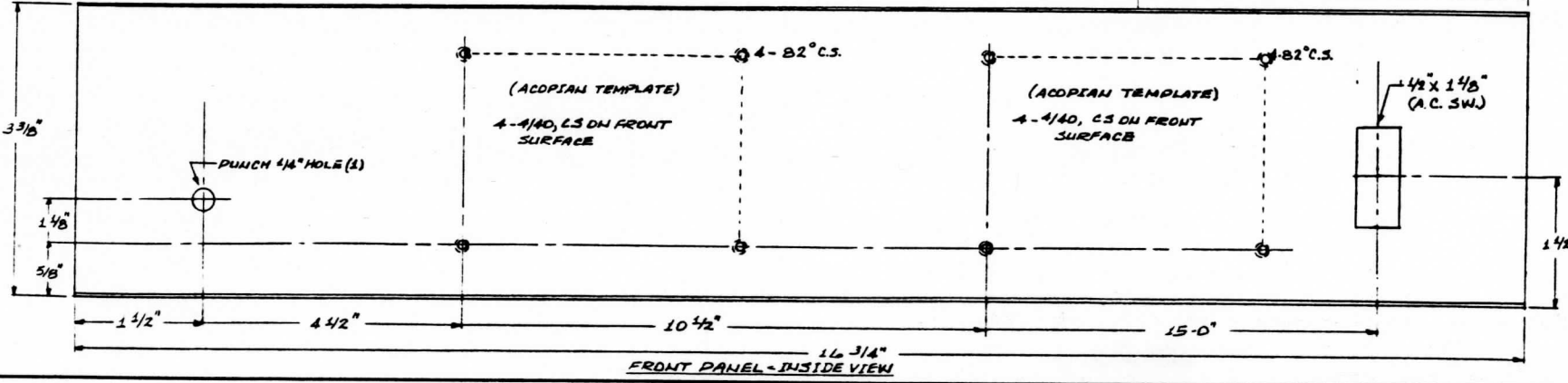
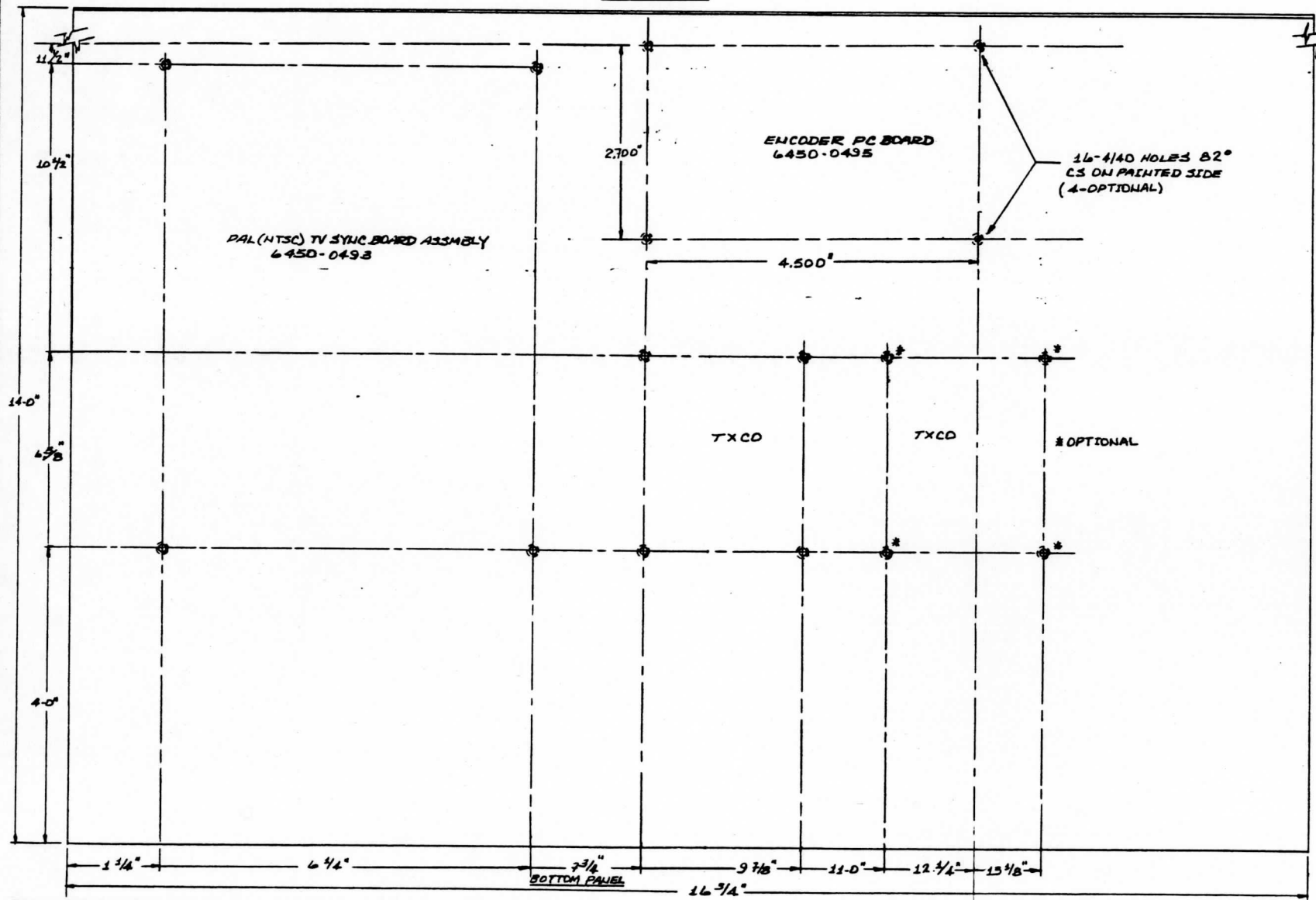
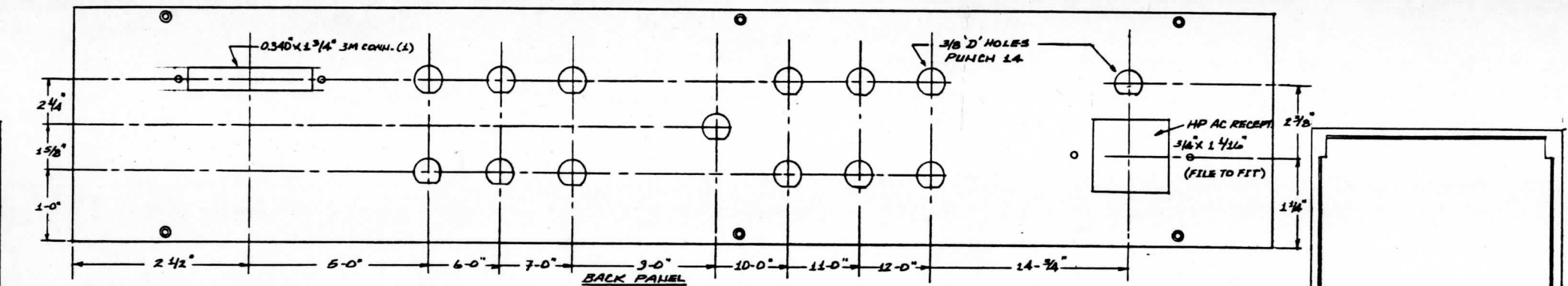
NOTE:  
 ① C24 VALUE IS 100P FOR NTSC  
 62P FOR PAL  
 ② C27 VALUE IS 47P FOR NTSC  
 33P FOR PAL  
 T1-TOKO 166NHF10264A5

MOD. B

THE UNIVERSITY OF WISCONSIN			
SPACE SCIENCE & ENGINEERING CENTER			
MADISON, WISCONSIN			
TITLE MCIDAS			
PAL/NTSC ENCODER BOARD			
ASSEMBLY DRAWING			
SCALE	DRAFTSMAN	DATE CHECKER	DATE ENGINEER
2:1	D.F.D.	2-13-87	3-13-87
NEXT HIGHER ASSEMBLY	PRODUCT ASSURANCE	DATE PROJECT APPROVAL	DATE
PROJECT NO	SIZE	SHEET	DRAWING NO
3540	C	1 OF 1	6450-0496

B33

REVISIONS			
LTR.	DESCRIPTION	DATE	APPROVED



MATERIAL:  
 MODULINE MCL5 3X17X14  
 (BLACK & WHITE)  
 MODULINE SPR 3-14  
 (BLACK)

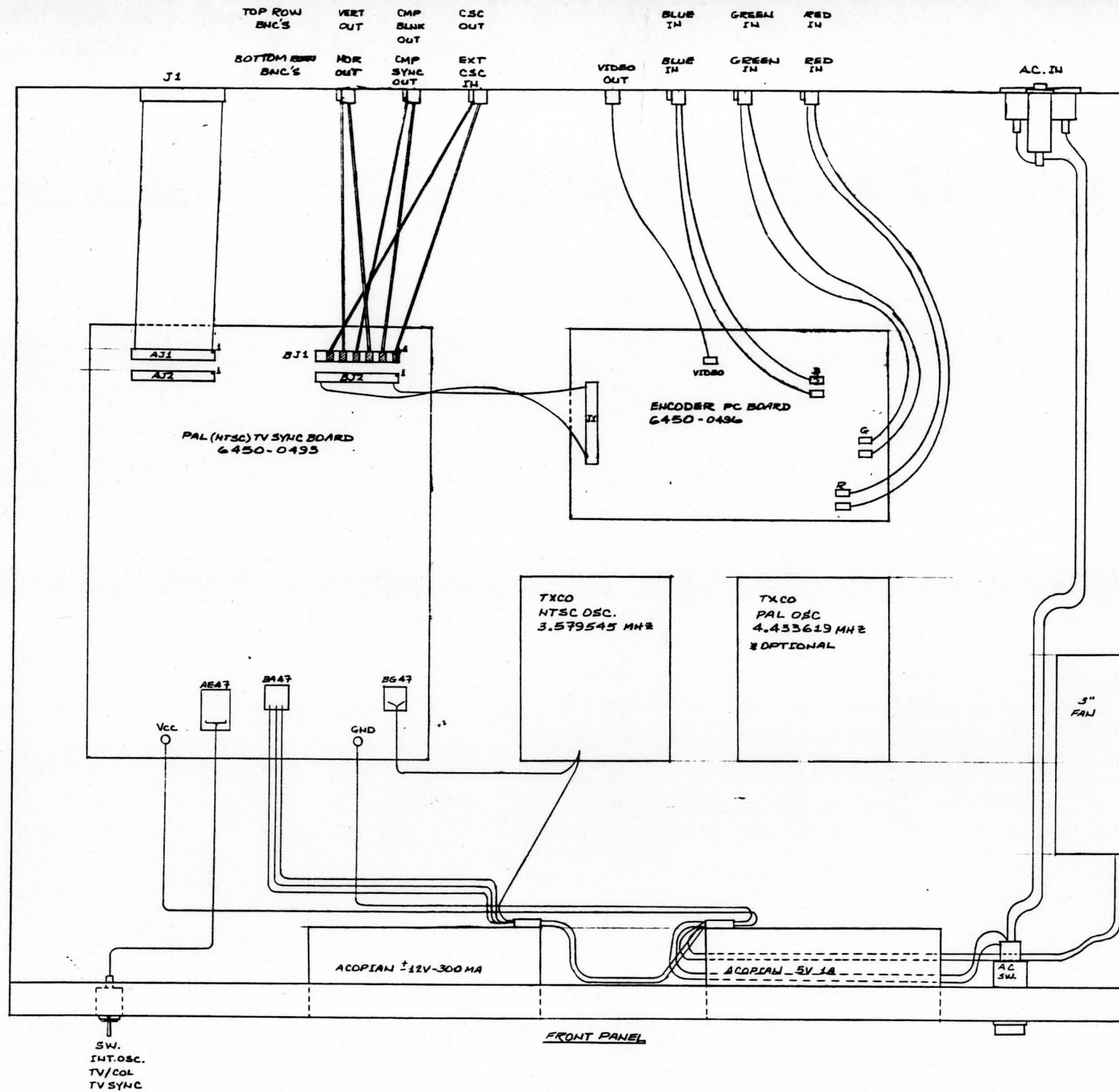
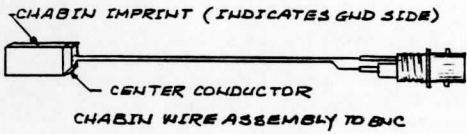
THE UNIVERSITY OF WISCONSIN			
SPACE SCIENCE & ENGINEERING CENTER			
TITLE MCIDAS			
PAL TV SYNC/ENCODER ENCLOSURE			
MECHANICAL DRAWING			
SCALE FULL	DRAFTSMAN D. FORD	DATE 1-9-86	CHECKER DATE ENGINEER DATE
BEST WENNER SYSTEM	PROJECT ASSURANCE	DATE PROJECT APPROVAL	DATE
PROJECT NO -0456	SIZE 7	SHEET 1 OF 2	DRAWING NO 6450-0497

B34

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED

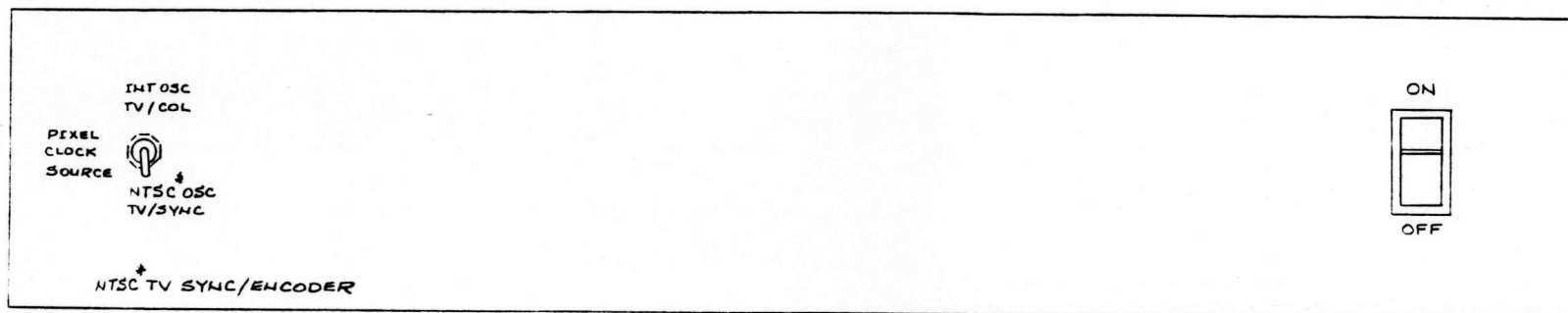
CHABIN WIRE ASSEMBLIES TO BACK PANEL BNC'S

BNC-SIGNAL	BJ1 - PIN NO'S
CSC OUT	BJ1-1
GND	BJ1-14
CMP BLANK OUT	BJ1-3
GND	BJ1-16
VERT. OUT	BJ1-5
GND	BJ1-18
CMP SYNC OUT	BJ1-7
GND	BJ1-20
HOR OUT	BJ1-9
GND	BJ1-22
EXT. CSC IN	BJ1-11
GND	BJ1-24



ENCLOSE: MODULINE MCLS 3X17X14 (BLACK & WHITE)

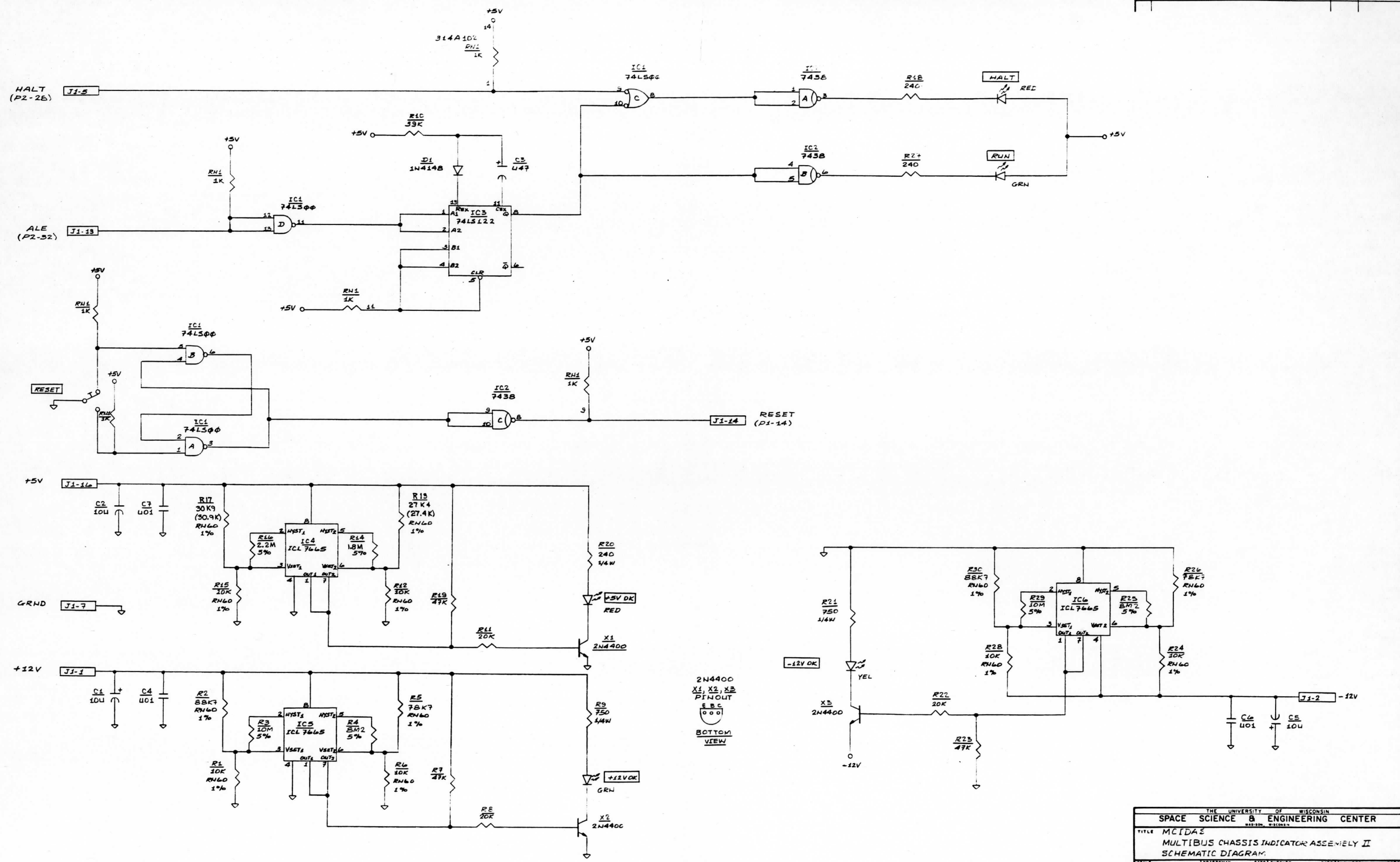
\* PAL OPTIONAL



B35

THE UNIVERSITY OF WISCONSIN SPACE SCIENCE & ENGINEERING CENTER MADISON, WISCONSIN							
TITLE: MCIDAS PAL TV SYNC/ENCODER ENCLOSURE MECHANICAL DRAWING							
SCALE: N.A.	DRAFTSMAN: D.FOR	DATE CHECKER: 1-9-81	DATE ENGINEER: 3-17-82	DATE PROJECT APPROVAL:	DATE:	DATE:	DATE:
PROJECT NO: -D493-0496	PRODUCT ASSURANCE:	DATE:	PROJECT APPROVAL:	DATE:	DATE:	DATE:	DATE:
PROJECT NO: 7000	SIZE: D	SHEET: 2 OF 2	DRAWING NO: 6450-0497	DATE:	DATE:	DATE:	DATE:

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED

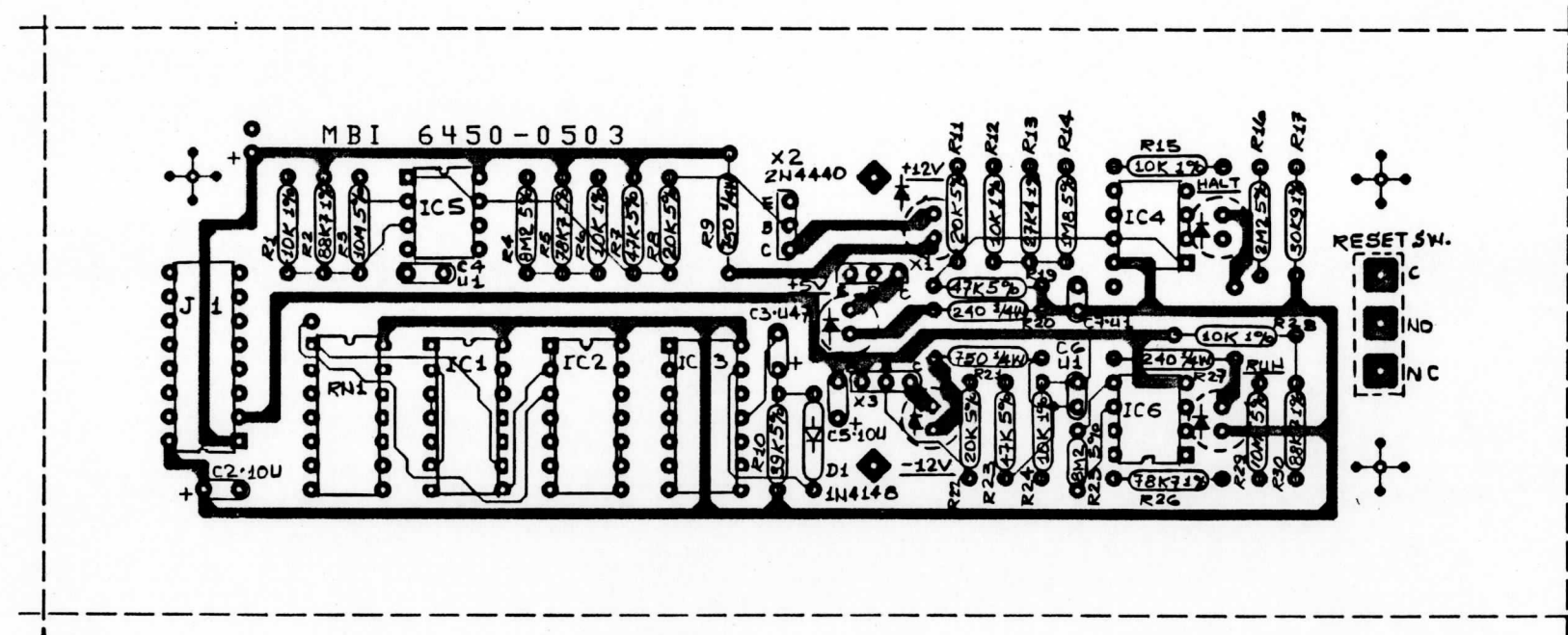


2N4400  
X1, X2, X3  
PINOUT  
E B C  
0 0 0  
BOTTOM  
VIEW

B36

THE UNIVERSITY OF WISCONSIN			
SPACE SCIENCE & ENGINEERING CENTER			
TITLE MCIDAS MULTIBUS CHASSIS INDICATOR ASSEMBLY II SCHEMATIC DIAGRAM			
SCALE N.A.	DRAWN BY D.F.O.L.D.	CHECKED BY 4-11-84	DATE 10-9-84
NEXT HIGHER ASSEMBLY 65LS	PROJECT ASSURANCE	DATE PROJECT APPROVAL	DATE
PROJECT NO 7000	SIZE D	SHEET 1 OF 1	DRAWING NO 6450-0503

REVISIONS			
LTR.	DESCRIPTION	DATE	APPROVED



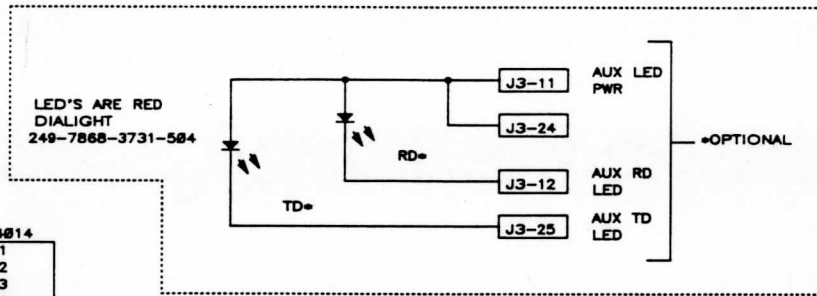
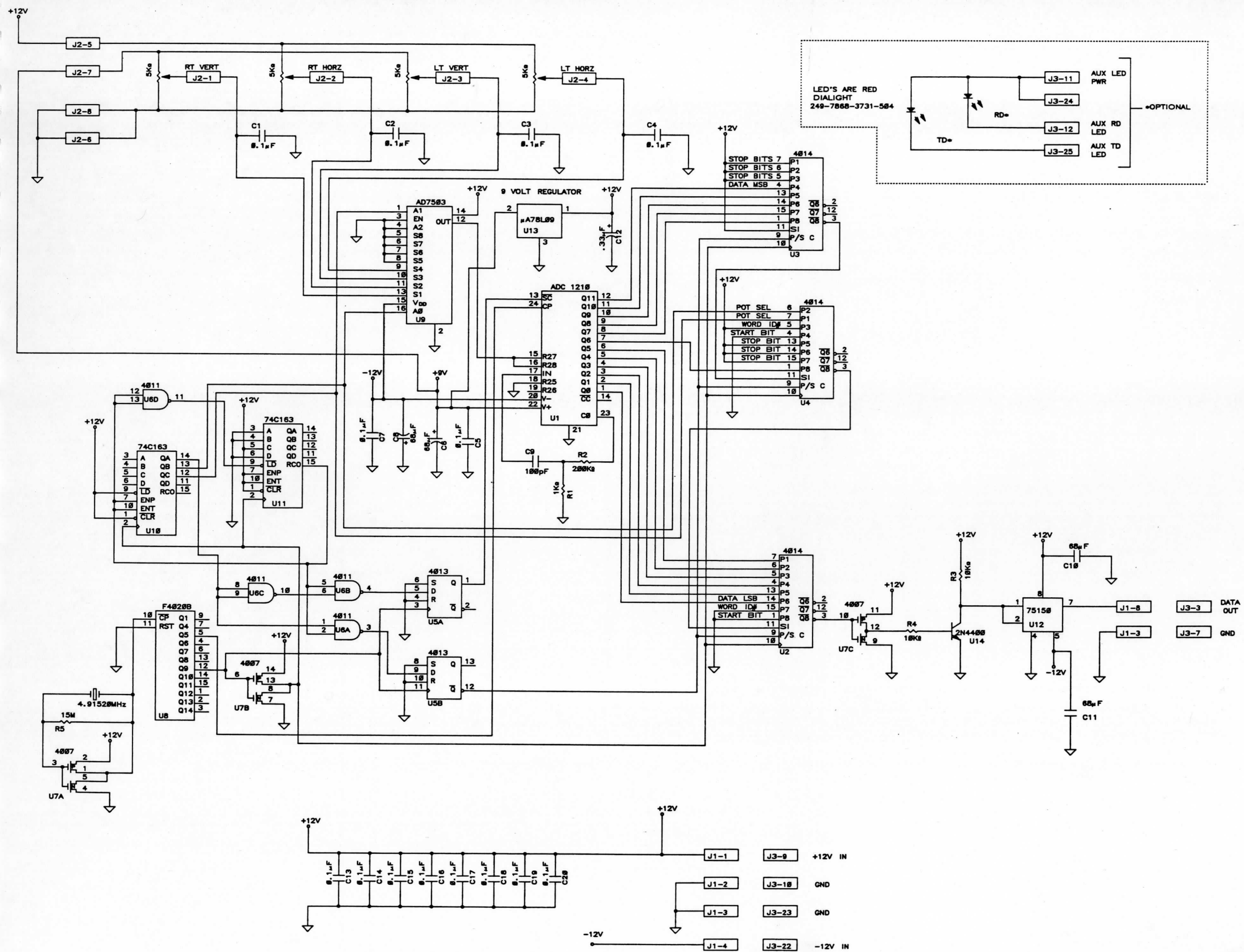
- PARTS LIST**  
 RN1 314A102  
 +5V LED HLMP-3301 (RED)  
 HALT LED HLMP-3301 (RED)  
 +12V LED HLMP-3507 (GRN)  
 RUN LED HLMP-3507 (GRN)  
 -12V LED HLMP-3401 (YEL)  
 RESET SW. C&K SPDT-8121C  
 IC1 - 74LS00  
 IC2 - 743B  
 IC3 - 74LS122  
 IC4, IC5, IC6 - ICL7665CPA (MAXIM)

ASSEMBLY DRAWING

THE UNIVERSITY OF WISCONSIN			
SPACE SCIENCE & ENGINEERING CENTER			
MADISON, WISCONSIN			
TITLE MCIDAS			
MULTIBUS INDICATOR			
ASSEMBLY DRAWING & DRILL GUIDE			
SCALE	DRAFTSMAN	DATE	CHECKER
2X	D. FORD	10-21-84	
DATE	ENGINEER	DATE	APPROVAL
PROJECT NO	SIZE	SHEET	DRAWING NO
3540	C	1 OF 2	6450-0505

B37

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED



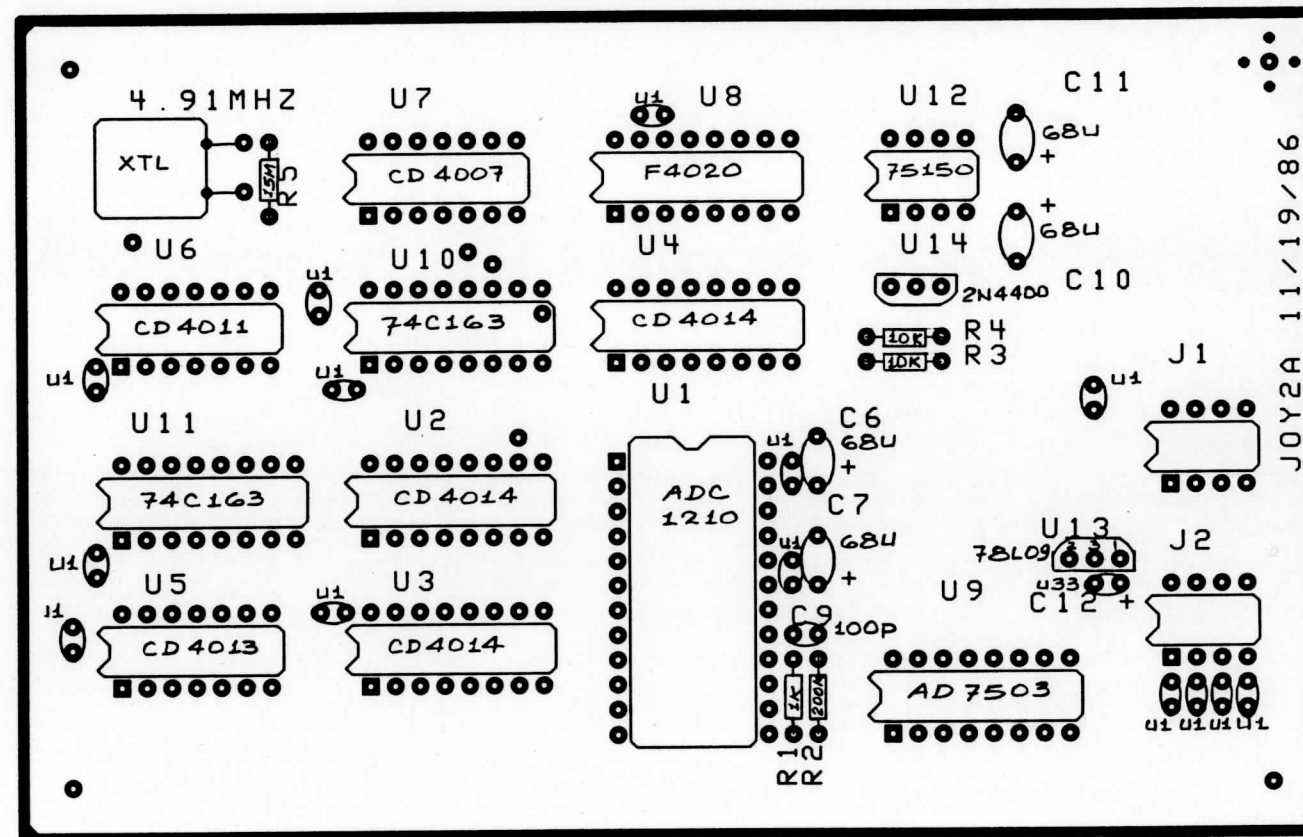
J3-3 DATA OUT  
J3-7 GND

MOD A

THE UNIVERSITY OF WISCONSIN			
SPACE SCIENCE & ENGINEERING CENTER			
TITLE McIDAS 2 DIGITAL JOYSTICK 2 SCHEMATIC DIAGRAM			
SCALE N/A	DRAWNMAN JCV	DATE 9-11-86	CHECKER
HEET NUMBER ASSEMBLY 6450-0522	PROJECT ASSURANCE FRIC	DATE PROJECT APPROVAL	DATE
PROJECT NO 3540	SIZE D	SHEET 1 OF 1	DRAWING NO 6450-0521

B38

REVISIONS			
LTR.	DESCRIPTION	DATE	APPROVED



JOY2A 11/19/86

REV. A

THE UNIVERSITY OF WISCONSIN			
SPACE SCIENCE & ENGINEERING CENTER			
MADISON, WISCONSIN			
TITLE MCIDAS			
DIGITAL JOYSTICK 2			
ASSEMBLY DRAWING			
SCALE 2:1	DRAFTSMAN D. FORD	DATE CHECKER 11-20-84	DATE ENGINEER
NEXT HIGHER ASSEMBLY -0520	PRODUCT ASSURANCE	DATE PROJECT APPROVAL	DATE
PROJECT NO 3540	SIZE C	SHEET 1 OF 1	DRAWING NO 6450-0522

B39





89108788480



b89108788480a

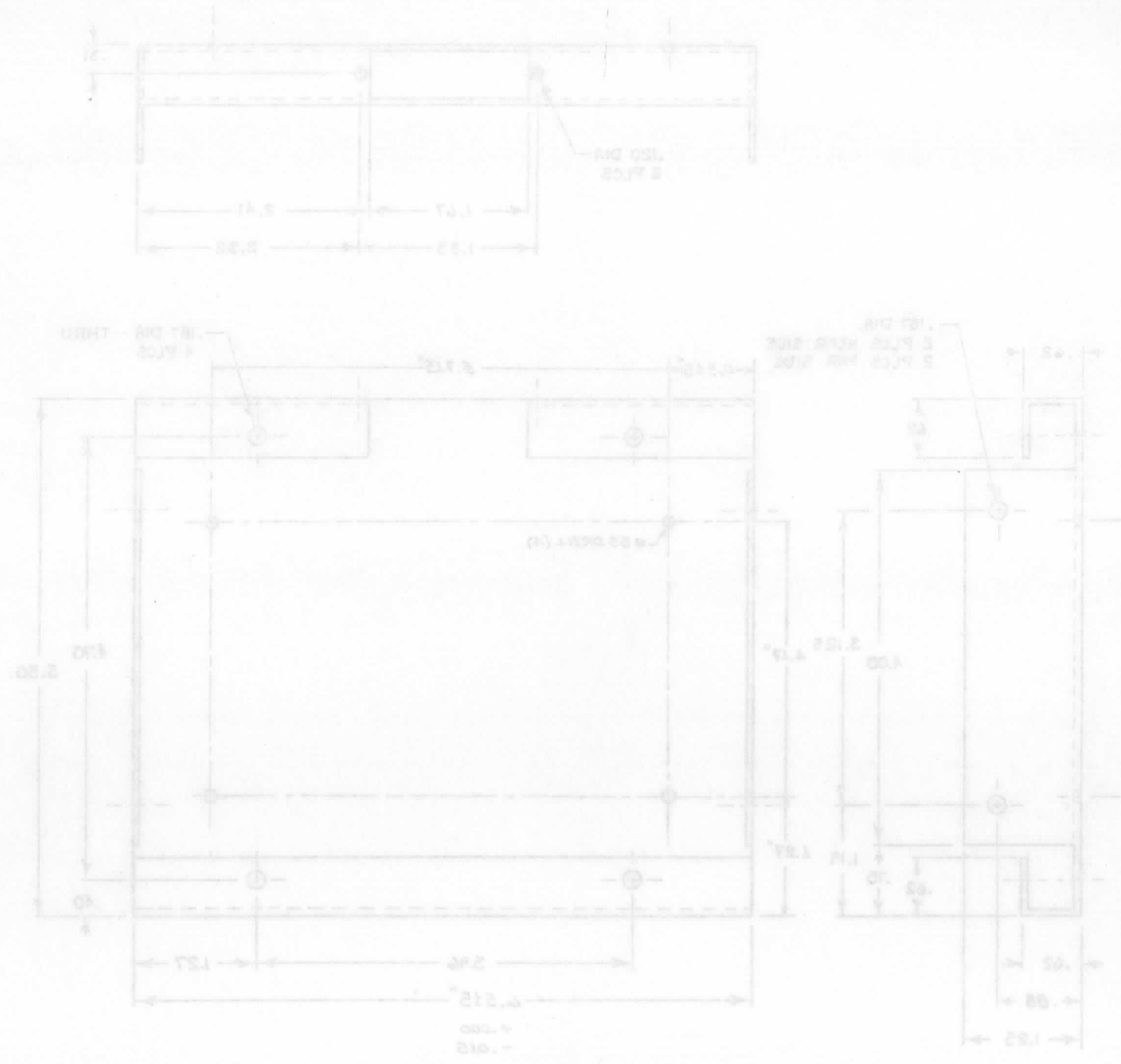


FIG. 1

SPACE SCIENCE & ENGINEERING CENTER		UNIVERSITY OF CALIFORNIA	
DIGITAL JOYSTICK 2		ELECTRONIC	
REV. 1		DATE: 1-1-68	
DRAWN BY: [Name]		CHECKED BY: [Name]	
SCALE: 1:1		SHEET: 1 OF 1	
PROJECT NO. 6430-0233		JOB NO. 6430-0233	

B40