SIZE	CODE	NUMBER	REV.
B	DD	M8541-Ø	

DRAWING NO.	NO. OF SHTS	PART NO.	DESCRIPTION	REVISIONS
	-		MODULE REVISION	A
D-UA-M8541-Ø-Ø	5		CONTROL RAM ADDRESS	-
D-CS-M8541-Ø-CRA1	1		CONTROL RAM ADR CR ADR ØØ-Ø6	-
D-CS-M8541-Ø-CRA2	1		CONTROL RAM ADR CR ADR Ø7-1Ø	-
D-CS-M8541-Ø-CRA3	1		CONTROL RAM ADR REGISTERS	-
D-CS-M8541-Ø-CRA4	1		CONTROL RAM ADR SBR STACK	-
D-CS-M8541-Ø-CRA5	1		CONTROL RAM ADR 2K RAM & DIAG.	-
D-CS-M8541-Ø-CRA6	1		CONTROL RAM ADR POWER, GND, CAPS	-
D-CS-M8541-Ø-RES	2		CONTROL RAM ADR TERMINATORS	-
D-AH-M8541-Ø-5	4		CONTROL RAM ADDRESS	-
		5011887	ETCHED CIRCUIT BOARD	B
M8541-Ø-L			P.C. DESIGN DATA BASE	REF
M8541-Ø-PL			INSERTION P/L DATA BASE	REF
POO-M8541-ØØ			PROCESS SHEETS	REF

NOTES:

REVISIONS	CHG NO.	REV
DATE		

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT ©1976, DIGITAL EQUIPMENT CORPORATION"

digital

USED ON OPTION/MODEL	
KL1Ø	

DRN.	C.F. Lucier	2 SEP 76
CHK'D	R.W. Courter	2 Sept 76
ENG.	Tom Eggen	5 Oct 76
PROD.	Bill Cuky	15 Oct 76

TITLE: CONTROL RAM ADDRESS

SIZE	CODE	NUMBER	REV.
B	DD	M8541-Ø	

SHEET 1 OF 1

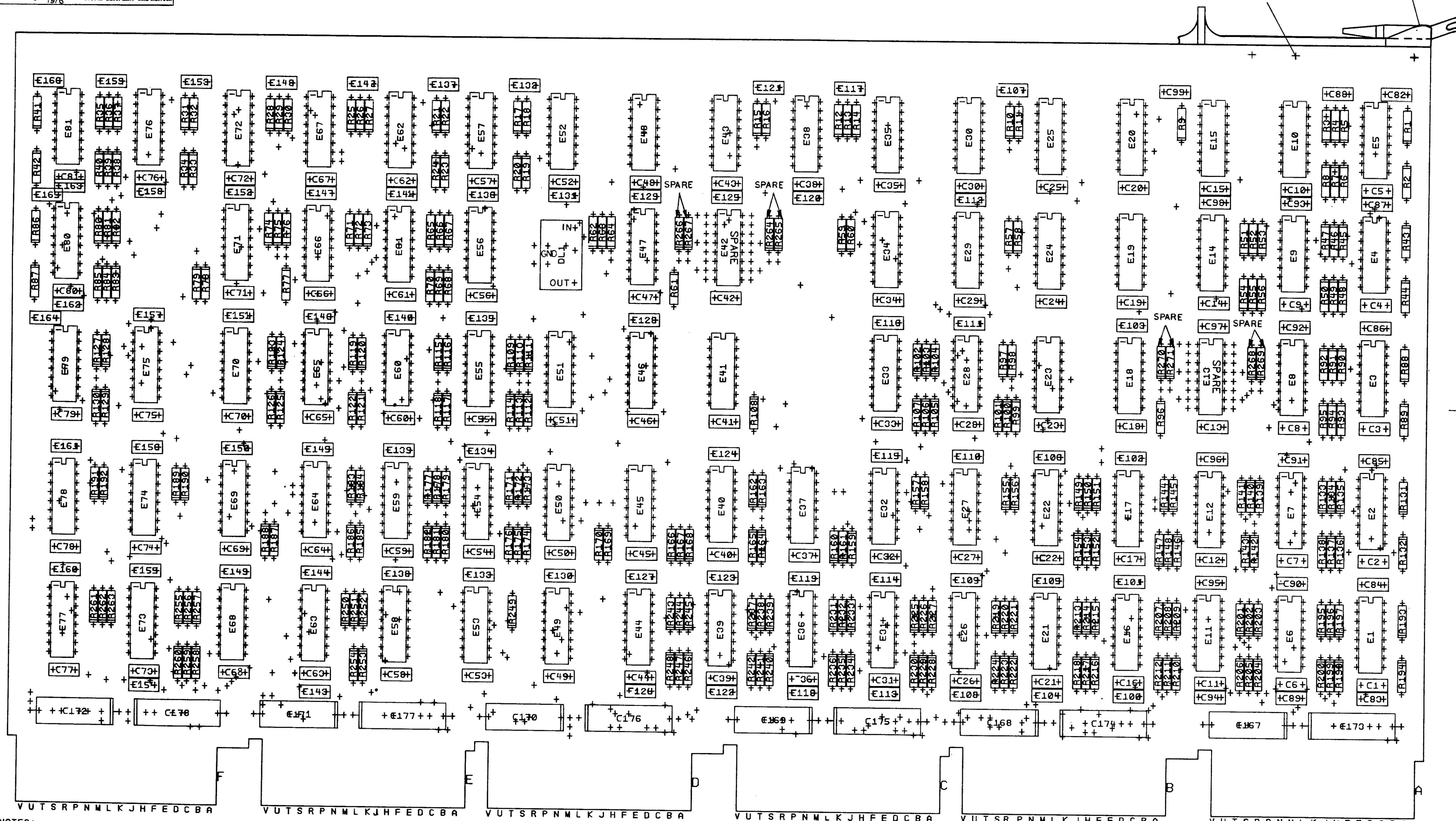
DRB 126 EN-01149-16-N176(325)

344

MR

THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976 DIGITAL EQUIPMENT CORPORATION

D | UA | M8541-0-0 | 2



NOTES:

CHK	CHANGE NO	REV

SIGNATURES	DATE
DRN. M. R. Pleault	20FEB76
CHK'D. R.W. Counter	20SEPT76
ENG. Tom Eggers	5 Oct 76
PROJ. ENG. T Eggers	5 Oct 76
PROD. Bill Ewing	15 Oct 76
SCALE 2 TO 1	
SHT. 2 OF 5	
ETCH REV	FIRST USED ON KL10

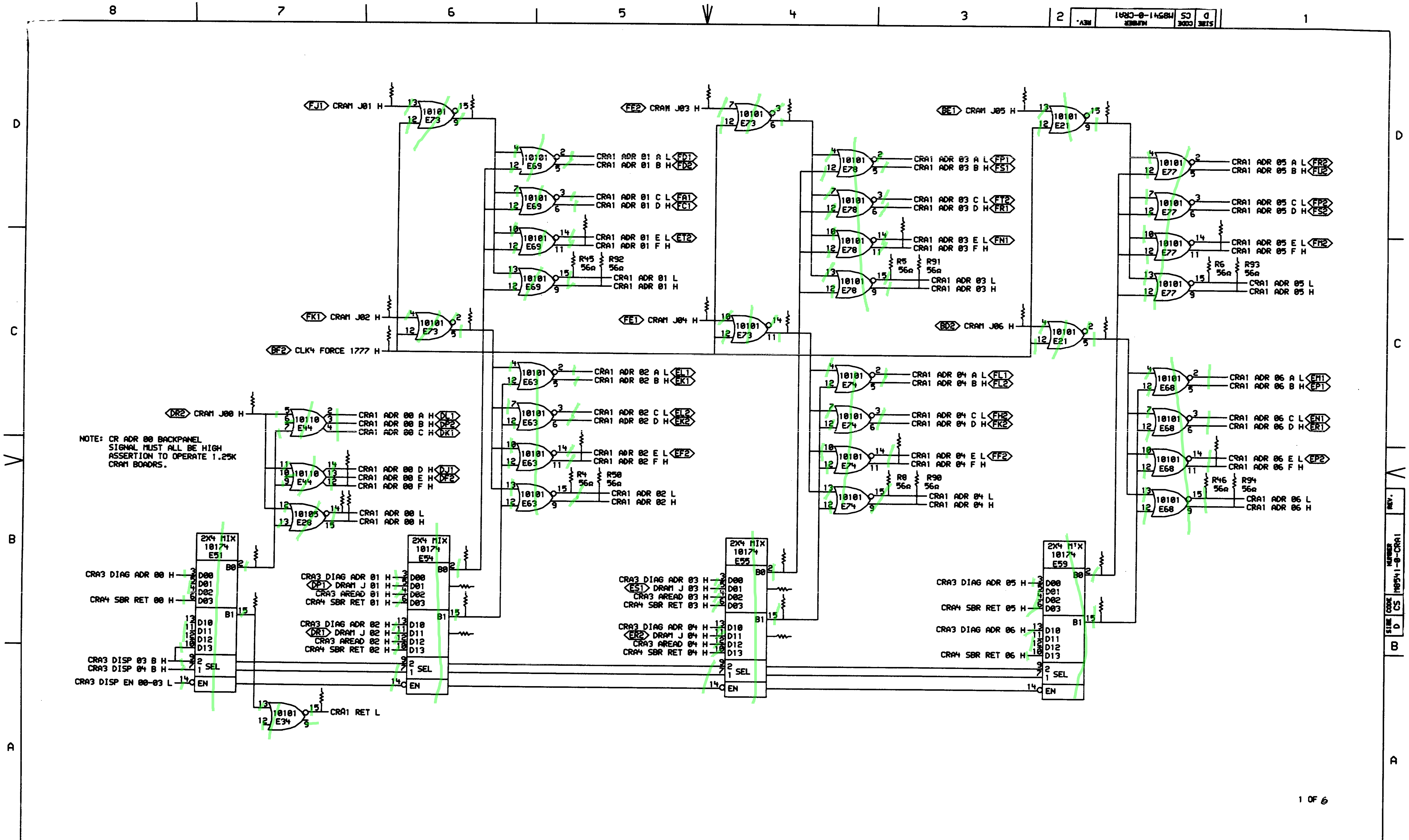
digital

TITLE CONTROL RAM ADDRESS

SIZE	CODE	NUMBER	REV
D	UA	M8541-0-0	

MR 1 MS# 30219

345



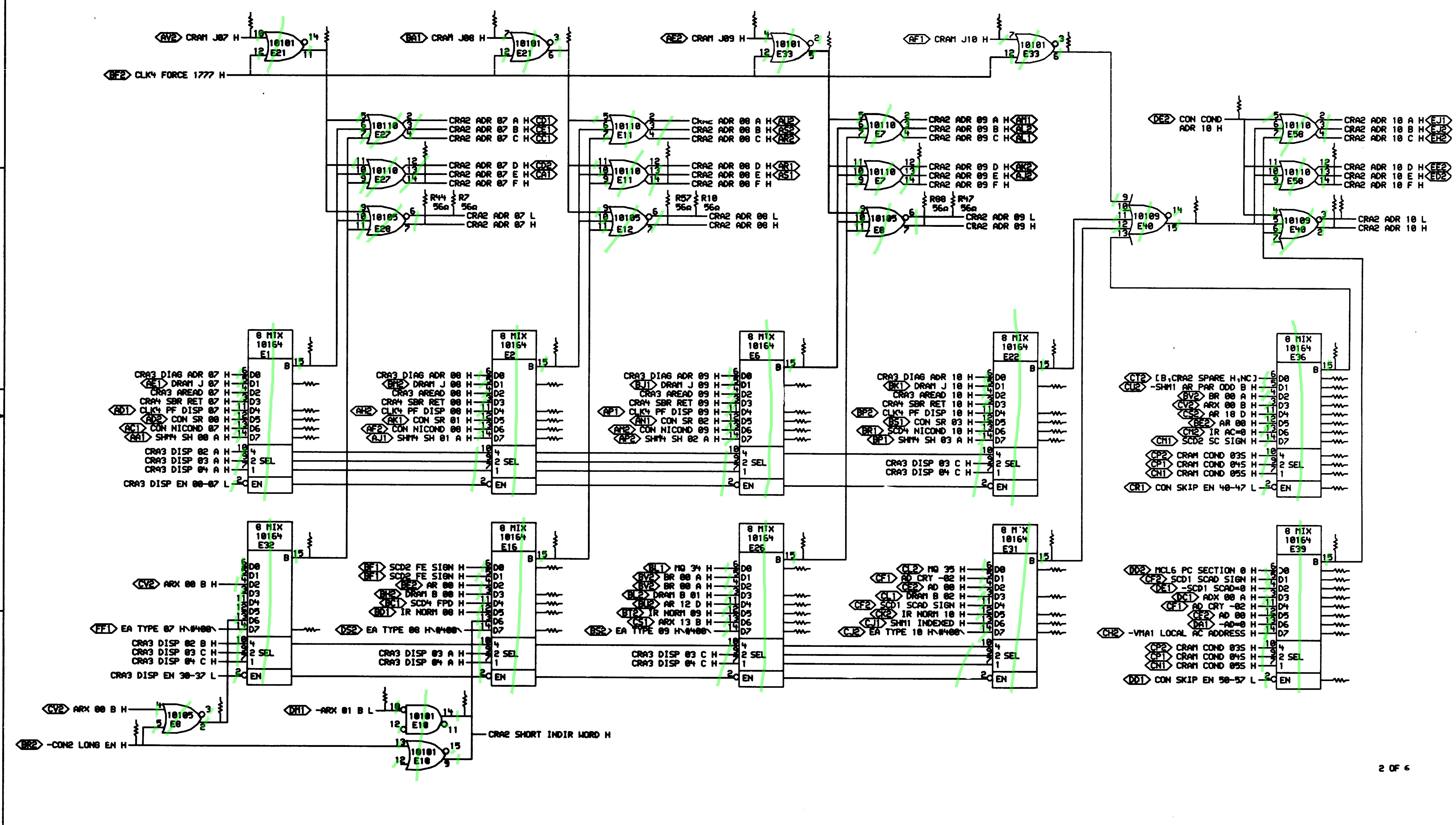
"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976, DIGITAL EQUIPMENT CORPORATION"

REVISIONS		
CHK	CHANGE NO.	REV

digital

DRN.	DATE 20-SEP-76	ENG.	DATE 2/Sept 76	TITLE: CONTROL RAM ADR CR ADR 00-06
CHKD.	DATE 2/Sept 76	BOARD LOCATION: 4AF45	SHEET 1 OF 1	
CRA1EA.RLS(4,161)	17-SEP-76 22:21	NEXT HIGHER ASSEMBLY:		SIZE D · CODE CS · NUMBER M8541-0-CRA1 · REV.
FIRST USED ON OPTION/MODEL: KL10		B-DD-M8541-0		

346



"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976, DIGITAL EQUIPMENT CORPORATION"

REVISIONS		
CHK	CHANGE NO.	REV

digital

TITLE: CONTROL RAM ADR CR ADR 07-10

CRA2EA.RLS(4,161) 17-SEP-76 22:22

FIRST USED ON OPTION/MODEL: KL10

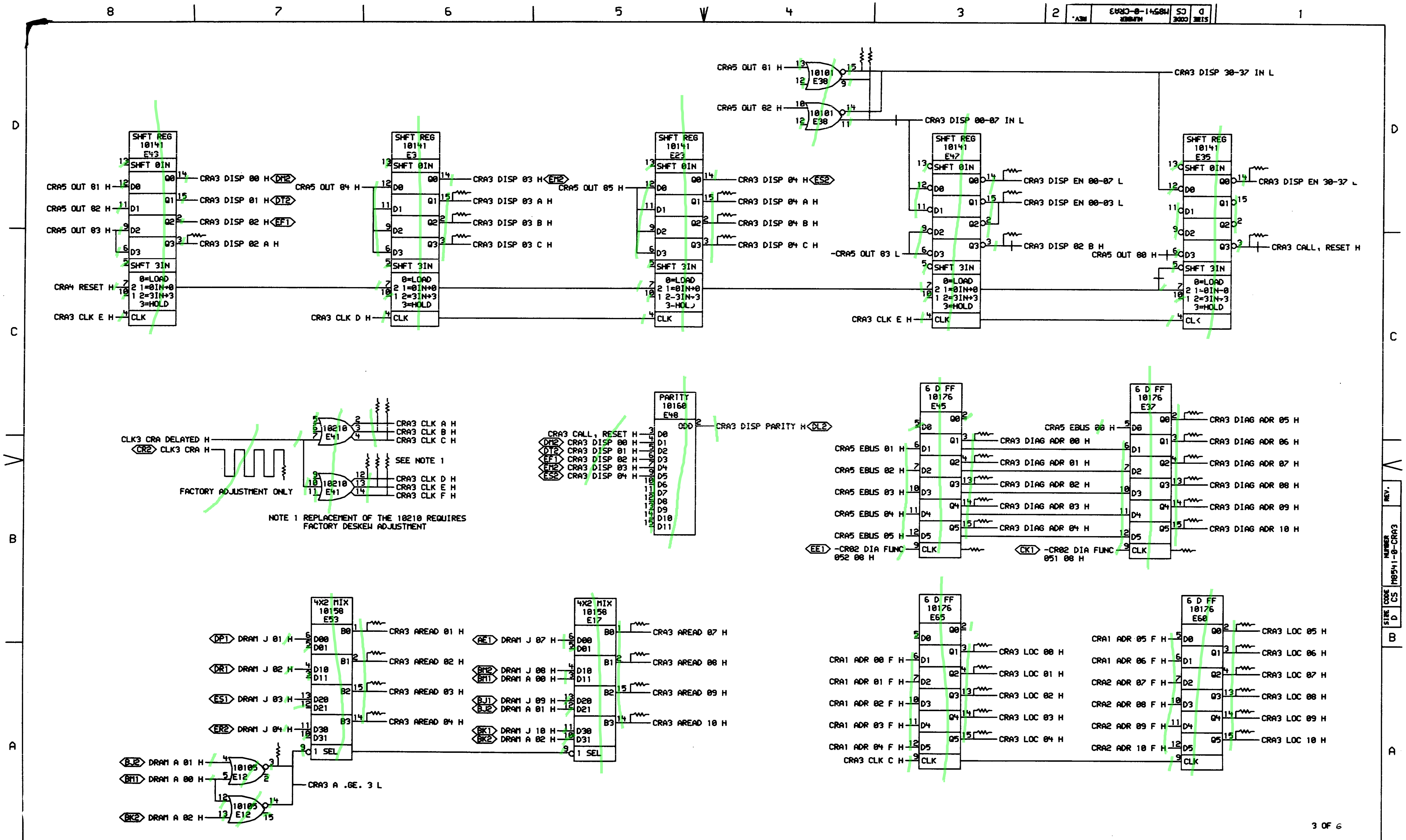
NEXT HIGHER ASSEMBLY: B-DD-M8541-0

BOARD LOCATION: 4AF45

SHEET 1 OF 1

SIZE D CODE CS NUMBER M8541-0-CRA2 REV.

347



"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976, DIGITAL EQUIPMENT CORPORATION"

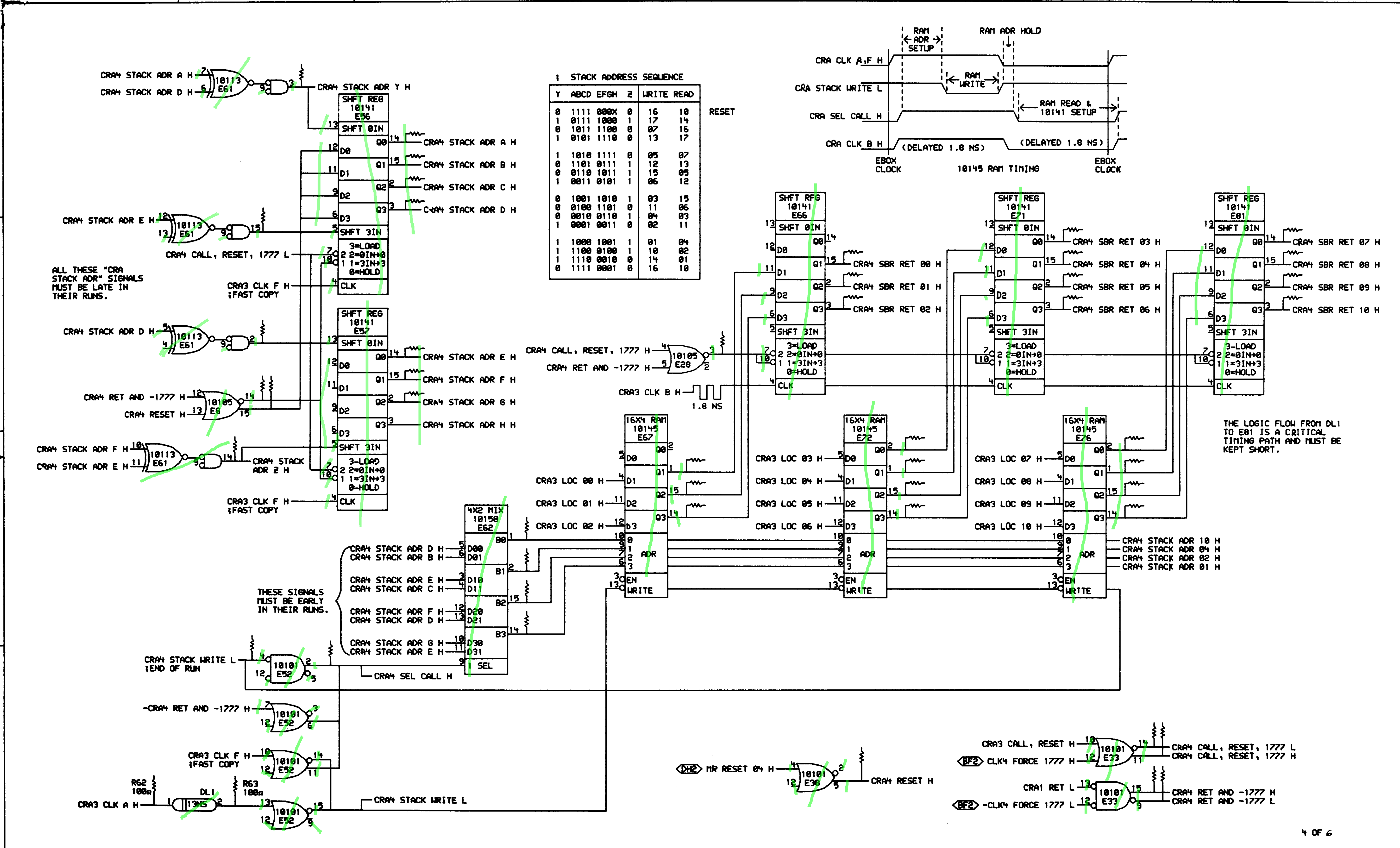
REVISIONS			
CHK	C A BE NO.	REV	

digital

TITLE: CONTROL RAM ADR REGISTERS

CRA3EA.RLS[4,161] 17-SEP-76 22:23
FIRST USED ON OPTION/MODEL: KL10
NEXT HIGHER ASSEMBLY: B-DD-M8541-0
BOARD LOCATION: 4AF45
SHEET 1 OF 1

SIZE	CODE	NUMBER	REV.
D	CS	M8541-0-CRA3	


CRA CLK A,F H
CRA STACK WRITE L
CRA SEL CALL H
CRA CLK B H
RAM ADR SETUP
RAM ADR HOLD
RAM WRITE
RAM READ & 10141 SETUP
(DELAYED 1.8 NS)
EBOX CLOCK
10145 RAM TIMING
CRA4 STACK ADR A H
CRA4 STACK ADR D H
CRA4 STACK ADR Y H
CRA4 STACK ADR E H
CRA4 CALL, RESET, 1777 L
ALL THESE "CRA STACK ADR" SIGNALS MUST BE LATE IN THEIR RUNS.
CRA3 CLK F H ;FAST COPY
CRA4 RET AND -1777 H
CRA4 RESET H
CRA4 STACK ADR F H
CRA4 STACK ADR Z H
SHFT REG 10141 E56
SHFT REG 10141 E57
3=LOAD 2 2=0IN+0 1 1=3IN+3 0=HOLD
CRA4 STACK ADR B H
CRA4 STACK ADR C H
CRA4 STACK ADR G H
CRA4 STACK ADR H H
CRA4 CALL, RESET, 1777 H
CRA4 RET AND -1777 H
CRA3 CLK B H
1.8 NS
SHFT REG 10141 E66
SHFT REG 10141 E71
SHFT REG 10141 E81
CRA4 SBR RET 00 H
CRA4 SBR RET 01 H
CRA4 SBR RET 02 H
CRA4 SBR RET 03 H
CRA4 SBR RET 04 H
CRA4 SBR RET 05 H
CRA4 SBR RET 06 H
CRA4 SBR RET 07 H
CRA4 SBR RET 08 H
CRA4 SBR RET 09 H
CRA4 SBR RET 10 H
16X4 RAM 10145 E67
16X4 RAM 10145 E72
16X4 RAM 10145 E76
CRA3 LOC 00 H
CRA3 LOC 01 H
CRA3 LOC 02 H
CRA3 LOC 03 H
CRA3 LOC 04 H
CRA3 LOC 05 H
CRA3 LOC 06 H
CRA3 LOC 07 H
CRA3 LOC 08 H
CRA3 LOC 09 H
CRA3 LOC 10 H
THE LOGIC FLOW FROM DL1 TO E81 IS A CRITICAL TIMING PATH AND MUST BE KEPT SHORT.
4X2 MIX 10158 E62
THESE SIGNALS MUST BE EARLY IN THEIR RUNS.
CRA4 STACK ADR 10 H
CRA4 STACK ADR 04 H
CRA4 STACK ADR 02 H
CRA4 STACK ADR 01 H
CRA4 STACK WRITE L ;END OF RUN
CRA4 SEL CALL H
-CRA4 RET AND -1777 H
CRA3 CLK A H
R62 100Ω
R63 100Ω
DL1 13NS
CRA4 STACK WRITE L
MR RESET 04 H
CRA4 RESET H
CRA3 CALL, RESET H
CLK4 FORCE 1777 H
CRA1 RET L
-CLK4 FORCE 1777 L
CRA4 CALL, RESET, 1777 L
CRA4 RET AND -1777 H
CRA4 RET AND -1777 L

‡ STACK ADDRESS SEQUENCE

Y	ABCD	EFGH	Z	WRITE	READ	
0	1111	000X	0	16	10	RESET
1	0111	1000	1	17	14	
0	1011	1100	0	07	16	
1	0101	1110	0	13	17	
1	1010	1111	0	05	07	
0	1101	0111	1	12	13	
0	0110	1011	1	15	05	
1	0011	0101	1	06	12	
0	1001	1010	1	03	15	
0	0100	1101	0	11	06	
0	0010	0110	1	04	03	
1	0001	0011	0	02	11	
1	1000	1001	1	01	04	
1	1100	0100	1	10	02	
1	1110	0010	0	14	01	
0	1111	0001	0	16	10	

4 OF 6

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976, DIGITAL EQUIPMENT CORPORATION"

REVISIONS		
CHK	CHANGE NO.	REV

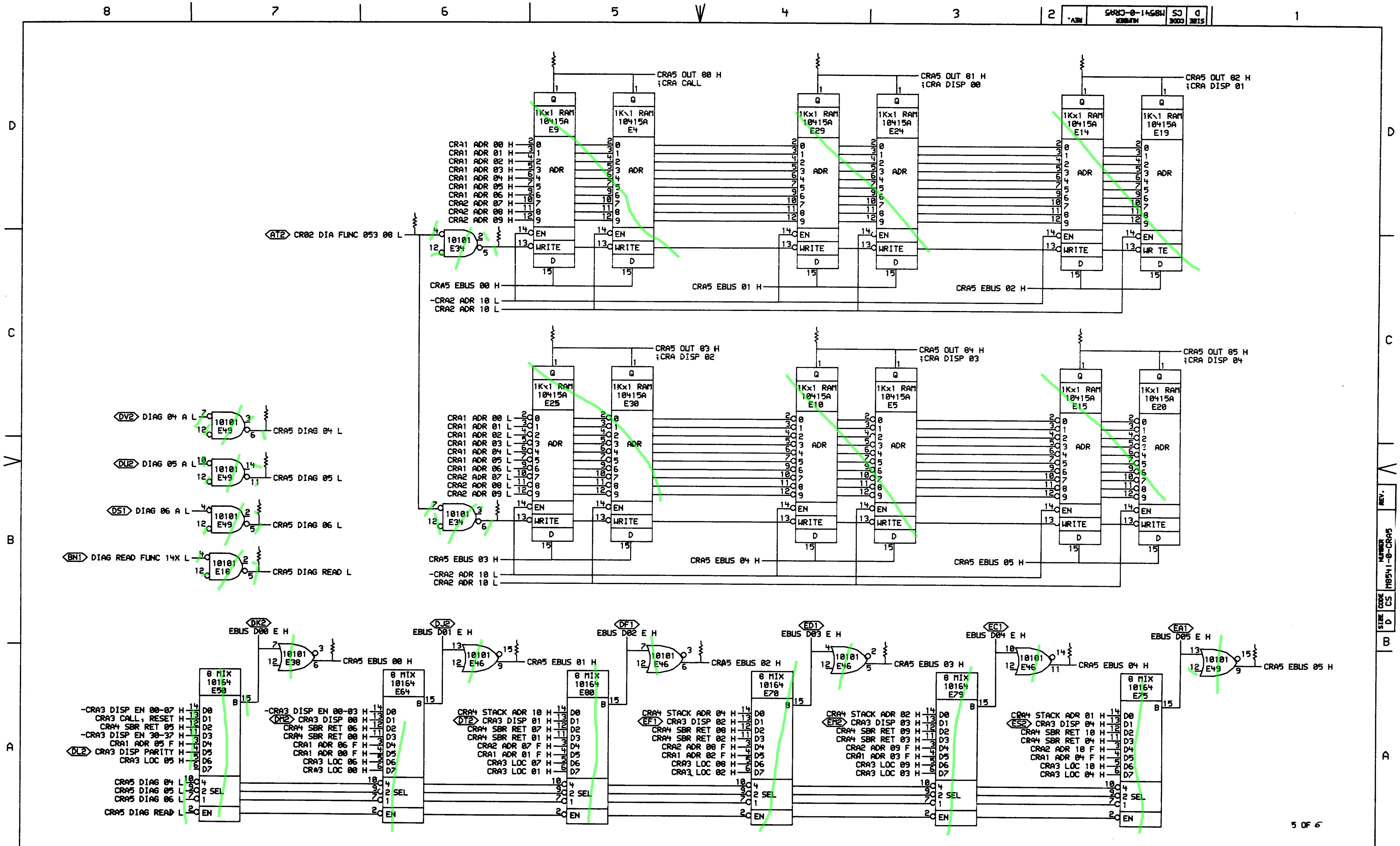
digital

DRN. [signature] DATE 20-SEP-76 | ENG. Tom Egan DATE 23 Sept 76
CHK'D Tom Egan DATE 23Sept76 | BOARD LOCATION: 4AF45 | SHEET 1 OF 1
CRA4EA.RLS(4,161) 17-SEP-76 22:30 | NEXT HIGHER ASSEMBLY: B-DD-M8541-0
FIRST USED ON OPTION/MODEL: KL10

TITLE: CONTROL RAM ADR SBR STACK

SIZE D | CODE CS | NUMBER M8541-0-CRA4 | REV.

349


CRA5 OUT 00 H
;CRA CALL
CRA5 OUT 01 H
;CRA DISP 00
CRA5 OUT 02 H
;CRA DISP 01
CRA5 OUT 03 H
;CRA DISP 02
CRA5 OUT 04 H
;CRA DISP 03
CRA5 OUT 05 H
;CRA DISP 04
1Kx1 RAM
10415A
E9
E4
E29
E24
E14
E19
E25
E30
E10
E5
E15
E20
ADR
EN
WRITE
D
Q
CRA1 ADR 00 H
CRA1 ADR 01 H
CRA1 ADR 02 H
CRA1 ADR 03 H
CRA1 ADR 04 H
CRA1 ADR 05 H
CRA1 ADR 06 H
CRA2 ADR 07 H
CRA2 ADR 08 H
CRA2 ADR 09 H
CRA1 ADR 00 L
CRA1 ADR 01 L
CRA1 ADR 02 L
CRA1 ADR 03 L
CRA1 ADR 04 L
CRA1 ADR 05 L
CRA1 ADR 06 L
CRA2 ADR 07 L
CRA2 ADR 08 L
CRA2 ADR 09 L
AT2 CR02 DIA FUNC 053 00 L
10101
E34
CRA5 EBUS 00 H
CRA5 EBUS 01 H
CRA5 EBUS 02 H
CRA5 EBUS 03 H
CRA5 EBUS 04 H
CRA5 EBUS 05 H
-CRA2 ADR 10 L
CRA2 ADR 10 L
DV2 DIAG 04 A L
E49
CRA5 DIAG 04 L
DU2 DIAG 05 A L
CRA5 DIAG 05 L
DS1 DIAG 06 A L
CRA5 DIAG 06 L
BN1 DIAG READ FUNC 14X L
E18
CRA5 DIAG READ L
DK2 EBUS D00 E H
DJ2 EBUS D01 E H
DF1 EBUS D02 E H
ED1 EBUS D03 E H
EC1 EBUS D04 E H
EA1 EBUS D05 E H
E38
E46
8 MIX
10164
E50
E64
E80
E70
E79
E75
SEL
-CRA3 DISP EN 00-07 H
CRA3 CALL, RESET H
CRA4 SBR RET 05 H
-CRA3 DISP EN 30-37 H
CRA1 ADR 05 F H
DL2 CRA3 DISP PARITY H
CRA3 LOC 05 H
-CRA3 DISP EN 00-03 H
DM2 CRA3 DISP 00 H
CRA4 SBR RET 06 H
CRA4 SBR RET 00 H
CRA1 ADR 06 F H
CRA1 ADR 00 F H
CRA3 LOC 06 H
CRA3 LOC 00 H
CRA4 STACK ADR 10 H
DT2 CRA3 DISP 01 H
CRA4 SBR RET 07 H
CRA4 SBR RET 01 H
CRA2 ADR 07 F H
CRA1 ADR 01 F H
CRA3 LOC 07 H
CRA3 LOC 01 H
CRA4 STACK ADR 04 H
EF1 CRA3 DISP 02 H
CRA4 SBR RET 08 H
CRA4 SBR RET 02 H
CRA2 ADR 08 F H
CRA1 ADR 02 F H
CRA3 LOC 08 H
CRA3 LOC 02 H
CRA4 STACK ADR 02 H
EM2 CRA3 DISP 03 H
CRA4 SBR RET 09 H
CRA4 SBR RET 03 H
CRA2 ADR 09 F H
CRA1 ADR 03 F H
CRA3 LOC 09 H
CRA3 LOC 03 H
CRA4 STACK ADR 01 H
ES2 CRA3 DISP 04 H
CRA4 SBR RET 10 H
CRA4 SBR RET 04 H
CRA2 ADR 10 F H
CRA1 ADR 04 F H
CRA3 LOC 10 H
CRA3 LOC 04 H
5 OF 6

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976, DIGITAL EQUIPMENT CORPORATION"

REVISIONS		
CHK	CHANGE NO.	REV

digital

DRN.	DATE 20-SEP-76	ENG.	DATE 23Sep76
CHKD.	DATE 23Sep76	BOARD LOCATION: 4AF45	SHEET 1 OF 1

CRA5EA.RLS(4,161) 17-SEP-76 22:24 NEXT HIGHER ASSEMBLY: B-DD-M8541-0

FIRST USED ON OPTION/MODEL: KL10

TITLE: CONTROL RAM ADR 2K RAM & DIAG

SIZE	CODE	NUMBER	REV.
D	CS	M8541-0-CRA5	

350

SIZE	CODE	NUMBER	REV.
D	CS	M8541-0-CRA6	

-5.2V\V\ GND ECL\G#19\

C1 10nF 100V
C2 10nF 100V
C3 10nF 100V
C4 10nF 100V
C5 10nF 100V
C6 10nF 100V
C7 10nF 100V
C8 10nF 100V
C9 10nF 100V
C10 10nF 100V
C11 10nF 100V
C12 10nF 100V
C13 10nF 100V
C14 10nF 100V
C15 10nF 100V
C16 10nF 100V
C17 10nF 100V
C18 10nF 100V
C19 10nF 100V
C20 10nF 100V

AB2 AU1 BB2 BU1 CB2 CU1 DB2 DU1 EB2 EU1 FB2 FU1

AC2 AH1 AN2 AT1 BC2 BH1 BN2 BT1 CC2 CH1 CT1 DC2 DH1 DN1 DN2 DT1 EC2 EH1 EN2 ET1 EU2 EV2 FC2 FH1 FN2 FT1 FV2

-5.2V\V\ GND ECL\G#19\

C21 10nF 100V
C22 10nF 100V
C23 10nF 100V
C24 10nF 100V
C25 10nF 100V
C26 10nF 100V
C27 10nF 100V
C28 10nF 100V
C29 10nF 100V
C30 10nF 100V
C31 10nF 100V
C32 10nF 100V
C33 10nF 100V
C34 10nF 100V
C35 10nF 100V
C36 10nF 100V
C37 10nF 100V
C38 10nF 100V
C39 10nF 100V
C40 10nF 100V

-5.2V\V\ GND ECL\G#19\

C41 10nF 100V
C42 10nF 100V
C43 10nF 100V
C44 10nF 100V
C45 10nF 100V
C46 10nF 100V
C47 10nF 100V
C48 10nF 100V
C49 10nF 100V
C50 10nF 100V
C51 10nF 100V
C52 10nF 100V
C53 10nF 100V
C54 10nF 100V
C55 10nF 100V
C56 10nF 100V
C57 10nF 100V
C58 10nF 100V
C59 10nF 100V
C60 10nF 100V

-5.2V\V\ GND ECL\G#19\

C61 10nF 100V
C62 10nF 100V
C63 10nF 100V
C64 10nF 100V
C65 10nF 100V
C66 10nF 100V
C67 10nF 100V
C68 10nF 100V
C69 10nF 100V
C70 10nF 100V
C71 10nF 100V
C72 10nF 100V
C73 10nF 100V
C74 10nF 100V
C75 10nF 100V
C76 10nF 100V
C77 10nF 100V
C78 10nF 100V
C79 10nF 100V
C80 10nF 100V

-5.2V\V\ GND ECL\G#19\

C81 10nF 100V
C167 68µF 15V
C168 68µF 15V
C169 68µF 15V
C170 68µF 15V
C171 68µF 15V
C172 68µF 15V

[B,GND ECL, GND CLK\G#20\] — CN2
[B,NC,GND ECL\G#19\] — AA2
[B,NC,GND ECL\G#19\] — AV1
[B,NC,GND ECL\G#19\] — BA2
[B,NC,GND ECL\G#19\] — BV1
[B,NC,GND ECL\G#19\] — CA2
[B,NC,GND ECL\G#19\] — CV1
[B,NC,GND ECL\G#19\] — DA2
[B,NC,GND ECL\G#19\] — DV1
[B,NC,GND ECL\G#19\] — EA2
[B,NC,GND ECL\G#19\] — EV1
[B,NC,GND ECL\G#19\] — FA2
[B,GND ECL,NC] — FJ2
[B,GND ECL,NC] — FM1
[B,NC,GND ECL\G#19\] — FV1
GND ECL

NOTE:

1. THE FOLLOWING PIN NUMBERS APPLY TO ECL DIP PACKAGES

GND	-5.2	MANUFACTURES' PART NUMBER
1 16	8	ALL 10,000 SERIES UNLESS OTHERWISE SPECIFIED
1 15 16	8	10110 & 10210
16	8	10158 & 10173

-2.0V\V\ GND ECL\G#19\

C82 10nF 100V
C83 10nF 100V
C84 10nF 100V
C85 10nF 100V
C86 10nF 100V
C87 10nF 100V
C88 10nF 100V
C89 10nF 100V
C90 10nF 100V
C91 10nF 100V
C92 10nF 100V
C93 10nF 100V
C94 10nF 100V
C95 10nF 100V
C96 10nF 100V
C97 10nF 100V
C98 10nF 100V
C99 10nF 100V
C100 10nF 100V
C101 10nF 100V

AB1 BB1 CB1 DB1 EB1 FB1

-2.0V\V\ GND ECL\G#19\

C102 10nF 100V
C103 10nF 100V
C104 10nF 100V
C105 10nF 100V
C106 10nF 100V
C107 10nF 100V
C108 10nF 100V
C109 10nF 100V
C110 10nF 100V
C111 10nF 100V
C112 10nF 100V
C113 10nF 100V
C114 10nF 100V
C115 10nF 100V
C116 10nF 100V
C117 10nF 100V
C118 0nF 100V
C119 10nF 100V
C120 10nF 100V
C121 10nF 100V

-2.0V\V\ GND ECL\G#19\

C122 10nF 100V
C123 10nF 100V
C124 10nF 100V
C125 10nF 100V
C126 10nF 100V
C127 10nF 100V
C128 10nF 100V
C129 10nF 100V
C130 10nF 100V
C131 10nF 100V
C132 10nF 100V
C133 10nF 100V
C134 10nF 100V
C135 10nF 100V
C136 10nF 100V
C137 10nF 100V
C138 10nF 100V
C139 10nF 100V
C140 10nF 100V
C141 10nF 100V

-2.0V\V\ GND ECL\G#19\

C142 10nF 100V
C143 10nF 100V
C144 10nF 100V
C145 10nF 100V
C146 10nF 100V
C147 10nF 100V
C148 10nF 100V
C149 10nF 100V
C150 10nF 100V
C151 10nF 100V
C152 10nF 100V
C153 10nF 100V
C154 10nF 100V
C155 10nF 100V
C156 10nF 100V
C157 10nF 100V
C158 10nF 100V
C159 10nF 100V
C160 10nF 100V
C161 10nF 100V

-2.0V\V\ GND ECL\G#19\

C162 10n 100V
C163 10nF 100V
C164 10nF 100V
C165 10nF 100V
C166 10nF 100V
C173 330µF 6V
C174 330µF 6V
C175 330µF 6V
C176 330µF 6V
C177 330µF 6V
C178 330µF 6V

6 OF 6

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEM WITHOUT WR ITEN PERMISSION.
COPYR GHT © 1976, DIGITAL EQUIPMENT COR-ORATION"

REVISIONS		
CHK	CHANGE NO.	REV

digital

DRN. JC Taormina
CHKD Tom Eggert
DATE 23-SEP-76
ENG Tom Eggert
DATE 23-SEP-76
BOARD LOCATION: 4AF45
SHEET 1 OF 1
CRAGEA.RL54,161] 03-AUG-76 10:51
NEXT HIGHER ASSEMBLY: B-DD-M8541-0
FIRST USED ON OPTION/MODEL: KL10

TITLE: CONTROL RAM ADR POWER, GND, CAPS

SIZE	CODE	NUMBER	REV.
D	CS	M8541-0-CRA6	

351

RESISTOR LOC(PIN)	SHOWN DRW#	ON REF	VALUE	TERMINATES SIGNAL
R63(1)	CRA4	A7	100Ω	%DL1(2)
R101(1)	CRA2	C7	68Ω	%EI(15)
R145(1)	CRA2	B5	68Ω	%E16(15)
R210(1)	CRA2	C5	68Ω	%E2(15)
R100(1)	CRA2	D7	68Ω	%E21(11)
R256(1)	CRA1	C2	68Ω	%E21(5)
R144(1)	CRA2	D5	68Ω	%E21(6)
R262(1)	CRA1	D2	68Ω	%E21(9)
R163(1)	CRA2	C3	68Ω	%E22(15)
R141(1)	CRA2	B4	68Ω	%E26(15)
R40(1)	CRA4	C4	68Ω	%E28(3)
R162(1)	CRA2	B3	68Ω	%E31(15)
R90(1)	CRA2	B7	68Ω	%E32(15)
R143(1)	CRA2	D4	68Ω	%E33(5)
R164(1)	CRA2	D3	68Ω	%E33(6)
R49(1)	CRA5	C6	68Ω	%E34(5)
R2(1)	CRA5	B6	68Ω	%E34(6)
R165(1)	CRA2	C1	68Ω	%E36(15)
R253(1)	CRA2	B1	68Ω	%E39(15)
R254(1)	CRA2	C2	68Ω	%E40(15)
R59(1)	CRA1	B7	68Ω	%E51(15)
R97(1)	CRA1	B7	68Ω	%E51(2)
R258(1)	CRA1	B6	68Ω	%E54(15)
R187(1)	CRA1	B6	68Ω	%E54(2)
R189(1)	CRA1	B4	68Ω	%E55(15)
R191(1)	CRA1	B4	68Ω	%E55(2)
R257(1)	CRA1	B2	68Ω	%E59(15)
R261(1)	CRA1	B2	68Ω	%E59(2)
R140(1)	CRA2	C4	68Ω	%E6(15)
R67(1)	CRA4	C7	68Ω	%E61(15)
R17(1)	CRA4	C7	68Ω	%E61(2)
R71(1)	CRA4	B5	68Ω	%E67(1)
R77(1)	CRA4	B5	68Ω	%E67(14)
R72(1)	CRA4	B5	68Ω	%E67(15)
R75(1)	CRA4	B3	68Ω	%E72(1)
R79(1)	CRA4	B3	68Ω	%E72(14)
R78(1)	CRA4	B3	68Ω	%E72(15)
R74(1)	CRA4	B3	68Ω	%E72(2)
R190(1)	CRA1	C4	68Ω	%E73(11)
R251(1)	CRA1	C6	68Ω	%E73(5)

RESISTOR LOC(PIN)	SHOWN DRW#	ON REF	VALUE	TERMINATES SIGNAL
R192(1)	CRA1	D4	68Ω	%E73(6)
R166(1)	CRA1	D6	68Ω	%E73(9)
R39(1)	CRA4	B2	68Ω	%E76(1)
R42(1)	CRA4	B2	68Ω	%E76(14)
R38(1)	CRA4	B2	68Ω	%E76(15)
R35(1)	CRA4	B2	68Ω	%E76(2)
R20(1)	CRA4	C7	68Ω	%E8(14)
R68(1)	CRA4	C7	68Ω	%E8(15)
R157(1)	CRA2	A7	68Ω	%E8(2)
R237(1)	CRA2	B1	68Ω	AD 00 H
R241(1)	CRA2	B1	68Ω	AD CRY -02 H
R244(1)	CRA2	A1	68Ω	-AD=0 H
R166(1)	CRA2	B1	68Ω	ADX 00 A H
R231(1)	CRA2	B1	68Ω	AR 00 H
R224(1)	CRA2	B4	68Ω	AR 12 D H
R236(1)	CRA2	B1	68Ω	AR 18 D H
R55(1)	CRA2	B1	68Ω	ARX 00 B H
R96(1)	CRA2	A6	68Ω	ARX 01 B H
R228(1)	CRA2	A4	68Ω	ARX 13 B H
R232(1)	CRA2	B1	68Ω	BR 00 A H
R100(1)	CRA3	B7	68Ω	CLK3 CRA H
R255(1)	CRA1	C6	68Ω	CLK4 FORCE 1777 H
R198(1)	CRA2	B7	68Ω	CLK4 PF DISP 07 H
R136(1)	CRA2	B6	68Ω	CLK4 PF DISP 08 H
R200(1)	CRA2	B4	68Ω	CLK4 PF DISP 09 H
R153(1)	CRA2	B3	68Ω	CLK4 PF DISP 10 H
R252(1)	CRA2	D2	68Ω	CON COND ADR 10 H
R194(1)	CR-2	B7	68Ω	CON NICOND 07 H
R131(1)	CRA2	B6	68Ω	CON NICOND 08 H
R201(1)	CRA2	B4	68Ω	CON NICOND 09 H
R238(1)	CRA2	B1	68Ω	-CON SKIP EN 40-47 H
R167(1)	CRA2	A1	68Ω	-CON SKIP EN 50-57 H
R199(1)	CRA2	B7	68Ω	CON SR 00 H
R138(1)	CRA2	B6	68Ω	CON SR 01 H
R204(1)	CRA2	B4	68Ω	CON SR 02 H
R149(1)	CRA2	B3	68Ω	CON SR 03 H
R56(1)	CRA2	A8	68Ω	-CON2 LONG EN H
R159(1)	CRA3	B2	68Ω	-CR02 DIA FUNC 051 00 H
R169(1)	CRA3	B3	68Ω	-CR02 DIA FUNC 052 00 H
R60(1)	CRA5	C6	68Ω	-CR02 DIA FUNC 053 00 H

RESISTOR LOC(PIN)	SHOWN DRW#	ON REF	VALUE	TERMINATES SIGNAL
R53(1)	CRA1	B7	68Ω	CRA1 ADR 00 H
R3(1)	CRA1	B7	68Ω	-CRA1 ADR 00 H
R125(1)	CRA1	B7	68Ω	CRA1 ADR 00 F H
R92(1)	CRA1	C5	56Ω	CRA1 ADR 01 H
R45(1)	CRA1	C5	56Ω	-CRA1 ADR 01 H
R81(1)	CRA1	C5	68Ω	CRA1 ADR 01 F H
R50(1)	CRA1	B5	56Ω	CRA1 ADR 02 H
R4(1)	CRA1	B5	56Ω	-CRA1 ADR 02 H
R126(1)	CRA1	B5	68Ω	CRA1 ADR 02 F H
R91(1)	CRA1	C3	56Ω	CRA1 ADR 03 H
R5(1)	CRA1	C3	56Ω	-CRA1 ADR 03 H
R128(1)	CRA1	C3	68Ω	CRA1 ADR 03 F H
R90(1)	CRA1	B3	56Ω	CRA1 ADR 04 H
R8(1)	CRA1	B3	56Ω	-CRA1 ADR 04 H
R119(1)	CRA1	B3	68Ω	CRA1 ADR 04 F H
R93(1)	CRA1	C1	56Ω	CRA1 ADR 05 H
R6(1)	CRA1	C2	56Ω	-CRA1 ADR 05 H
R173(1)	CRA1	C1	68Ω	CRA1 ADR 05 F H
R94(1)	CRA1	B1	56Ω	CRA1 ADR 06 H
R46(1)	CRA1	B2	56Ω	-CRA1 ADR 06 H
R121(1)	CRA1	B1	68Ω	CRA1 ADR 06 F H
R102(1)	CRA	A7	68Ω	-CRA1 RET H
R44(1)	CRA2	C6	56Ω	CRA2 ADR 07 H
R7(1)	CRA2	C5	56Ω	-CRA2 ADR 07 H
R84(1)	CRA2	D6	68Ω	CRA2 ADR 07 F H
R47(1)	CRA2	C5	56Ω	CRA2 ADR 08 H
R10(1)	CRA2	C5	56Ω	-CRA2 ADR 08 H
R123(1)	CRA2	D5	68Ω	CRA2 ADR 08 F H
R88(1)	CRA2	C3	56Ω	CRA2 ADR 09 H
R47(1)	CRA2	C3	56Ω	-CRA2 ADR 09 H
R130(1)	CRA2	D3	68Ω	CRA2 ADR 09 F H
R51(1)	CRA2	C1	68Ω	CRA2 ADR 10 H
R43(1)	CRA2	C1	68Ω	-CRA2 ADR 10 H
R127(1)	CRA2	D1	68Ω	CRA2 ADR 10 F H
R148(1)	CRA2	A6	68Ω	CRA2 SHORT INDIR WORD H
R240(1)	CR42	C1	68Ω	CRA2 SPARE H
R249(1)	CRA3	A7	68Ω	-CRA3 A .GE. 3 H
R181(1)	CRA3	B6	68Ω	CRA3 AREAD 01 H
R171(1)	CRA3	A6	68Ω	CRA3 AREAD 02 H
R117(1)	CRA3	A6	68Ω	CRA3 AREAD 03 H

RESISTOR LOC(PIN)	SHOWN DRW#	ON REF	VALUE	TERMINATES SIGNAL
R109(1)	CRA3	A6	68Ω	CRA3 AREAD 04 H
R197(1)	CRA3	B5	68Ω	CRA3 AREAD 07 H
R134(1)	CRA3	A5	68Ω	CRA3 AREAD 08 H
R209(1)	CRA3	A5	68Ω	CRA3 AREAD 09 H
R151(1)	CRA3	A5	68Ω	CRA3 AREAD 10 H
R107(1)	CRA3	C1	68Ω	CRA3 CALL, RESET H
R62(1)	CRA4	A8	100Ω	CRA3 CLK A H
R41(1)	CRA3	C6	68Ω	CRA3 CLK B H
R122(1)	CRA3	C6	68Ω	CRA3 CLK C H
R95(1)	CRA3	B6	68Ω	CRA3 CLK D H
R14(1)	CRA3	B6	68Ω	CRA3 CLK E H
R76(1)	CRA3	B6	68Ω	CRA3 CLK F H
R111(1)	CRA3	C3	68Ω	CRA3 DIAG ADR 00 H
R178(1)	CRA3	B3	68Ω	CRA3 DIAG ADR 01 H
R172(1)	CRA3	B3	68Ω	CRA3 DIAG ADR 02 H
R115(1)	CRA3	B3	68Ω	CRA3 DIAG ADR 03 H
R110(1)	CRA3	B3	68Ω	CRA3 DIAG ADR 04 H
R104(1)	CRA3	C2	68Ω	CRA3 DIAG ADR 05 H
R177(1)	CRA3	C2	68Ω	CRA3 DIAG ADR 06 H
R196(1)	CRA3	B2	68Ω	CRA3 DIAG ADR 07 H
R142(1)	CRA3	B2	68Ω	CRA3 DIAG ADR 08 H
R205(1)	CRA3	B2	68Ω	CRA3 DIAG ADR 09 H
R156(1)	CRA3	B2	68Ω	CRA3 DIAG ADR 10 H
R61(1)	CRA3	D3	68Ω	-CRA3 DISP 00-07 IN H
R132(1)	CRA3	C7	68Ω	CRA3 DISP 02 A H
R217(1)	CRA3	C3	68Ω	CRA3 DISP 02 B H
R211(1)	CRA3	D6	68Ω	CRA3 DISP 03 A H
R182(1)	CRA3	D6	68Ω	CRA3 DISP 03 B H
R229(1)	CRA3	C6	68Ω	CRA3 DISP 03 C H
R216(1)	CRA3	D4	68Ω	CRA3 DISP 04 A H
R105(1)	CRA3	D4	68Ω	CRA3 DISP 04 B H
R220(1)	CRA3	C4	68Ω	CRA3 DISP 04 C H
R12(1)	CRA3	D4	68Ω	-CRA3 DISP 30-37 IN H
R183(1)	CRA3	D3	68Ω	-CRA3 DISP EN 00-03 H
R202(1)	CRA3	D3	68Ω	-CRA3 DISP EN 00-07 H
R170(1)	CRA3	D1	68Ω	-CRA3 DISP EN 30-37 H
R30(1)	CRA3	B3	68Ω	CRA3 LOC 00 H
R86(1)	CRA3	A3	68Ω	CRA3 LOC 01 H
R25(1)	CRA3	A3	68Ω	CRA3 LOC 02 H
R33(1)	CRA3	A3	68Ω	CRA3 LOC 03 H

NOTE:

1. ALL TERMINATORS HAVE PIN TWO CONNECTED TO -2.0V AND ARE 5% 1/4WATT UNLESS OTHERWISE SPECIFIED
2. ENTRIES ARE SORTED BY SIGNAL NAME
3. % INDICATES OUTPUT OF DIP LOC AND () INDICATES PIN NUMBER

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976, DIGITAL EQUIPMENT CORPORATION"

REVISIONS		
CHK	CHANGE NO.	REV

digital

DRN. G Smith DATE 17-SEP-76
CHK'D [illegible] DATE 23-SEP-76
M8541.BLS[4,161] 17-SEP-76 22:46
FIRST USED ON OPTION/MODEL: KL10

ENG [illegible] DATE 23-SEP-76
BOARD LOCATION:
SHEET 1 OF 2
NEXT HIGHER ASSEMBLY: B-DD-M8541-0

TITLE: CONTROL RAM ADR TERMINATORS

SIZE	CODE	NUMBER	REV.
D	CS	M8541-0-RES	

MR

352

RESISTOR LOC(PIN)	SHOWN DRW#	ON REF	VALUE	TERMINATES SIGNAL
R32(1)	CRA3	A3	68Ω	CRA3 LOC 04 H
R29(1)	CRA3	B1	68Ω	CRA3 LOC 05 H
R28(1)	CRA3	B1	68Ω	CRA3 LOC 06 H
R37(1)	CRA3	A1	68Ω	CRA3 LOC 07 H
R36(1)	CRA3	A1	68Ω	CRA3 LOC 08 H
R34(1)	CRA3	A1	68Ω	CRA3 LOC 09 H
R31(1)	CRA3	A1	68Ω	CRA3 LOC 10 H
R104(1)	CRA4	A2	68Ω	CRA4 CALL, RESET, 1777 H
R23(1)	CRA4	A2	68Ω	-CRA4 CALL, RESET, 1777 H
R139(1)	CRA4	A4	68Ω	CRA4 RESET H
R54(1)	CRA4	A2	68Ω	CRA4 RET AND -1777 H
R19(1)	CRA4	A2	68Ω	-CRA4 RET AND -1777 H
R112(1)	CRA4	C4	68Ω	CRA4 SBR RET 00 H
R100(1)	CRA4	C4	68Ω	CRA4 SBR RET 01 H
R176(1)	CRA4	C4	68Ω	CRA4 SBR RET 02 H
R110(1)	CRA4	C2	68Ω	CRA4 SBR RET 03 H
R114(1)	CRA4	C2	68Ω	CRA4 SBR RET 04 H
R174(1)	CRA4	C2	68Ω	CRA4 SBR RET 05 H
R186(1)	CRA4	C2	68Ω	CRA4 SBR RET 06 H
R195(1)	CRA4	C1	68Ω	CRA4 SBR RET 07 H
R133(1)	CRA4	C1	68Ω	CRA4 SBR RET 08 H
R200(1)	CRA4	C1	68Ω	CRA4 SBR RET 09 H
R155(1)	CRA4	C1	68Ω	CRA4 SBR RET 10 H
R24(1)	CRA4	A7	68Ω	CRA4 SEL CALL H
R128(1)	CRA4	B5	68Ω	CRA4 STACK ADR 01 H
R129(1)	CRA4	B5	68Ω	CRA4 STACK ADR 02 H
R124(1)	CRA4	B5	68Ω	CRA4 STACK ADR 04 H
R82(1)	CRA4	B5	68Ω	CRA4 STACK ADR 10 H
R69(1)	CRA4	D6	68Ω	CRA4 STACK ADR A H
R26(1)	CRA4	D6	68Ω	CRA4 STACK ADR B H
R27(1)	CRA4	D6	68Ω	CRA4 STACK ADR C H
R73(1)	CRA4	D6	68Ω	CRA4 STACK ADR D H
R65(1)	CRA4	C6	68Ω	CRA4 STACK ADR E H
R70(1)	CRA4	C6	68Ω	CRA4 STACK ADR F H
R21(1)	CRA4	C6	68Ω	CRA4 STACK A,R G H
R66(1)	CRA4	D7	68Ω	CRA4 STACK ADR Y H
R22(1)	CRA4	B7	68Ω	CRA4 STACK ADR Z H
R18(1)	CRA4	A7	68Ω	-CRA4 STACK WRITE H
R85(1)	CRA5	C7	68Ω	-CRA5 DIAG 04 H
R83(1)	CRA5	B7	68Ω	-CRA5 DIAG 05 H
R87(1)	CRA5	B7	68Ω	-CRA5 DIAG 06 H
R80(1)	CRA5	B7	68Ω	-CRA5 DIAG READ H
R48(1)	CRA5	A7	68Ω	CRA5 EBUS 00 H
R50(1)	CRA5	A6	68Ω	CRA5 EBUS 01 H
R52(1)	CRA5	A4	68Ω	CRA5 EBUS 02 H
R11(1)	CRA5	A3	68Ω	CRA5 EBUS 03 H
R1(1)	CRA5	A2	68Ω	CRA5 EBUS 04 H
R9(1)	CRA5	A1	68Ω	CRA5 EBUS 05 H
R13(1)	CRA5	D5	68Ω	CRA5 OUT 00 H
R15(1)	CRA5	D4	68Ω	CRA5 OUT 01 H
R16(1)	CRA5	D2	68Ω	CRA5 OUT 02 H
R64(1)	CRA5	C5	68Ω	CRA5 OUT 03 H
R89(1)	CRA5	C4	68Ω	CRA5 OUT 04 H
R99(1)	CRA5	C2	68Ω	CRA5 OUT 05 H
R242(1)	CRA2	B1	68Ω	CRAM COND 03S H
R247(1)	CRA2	B1	68Ω	CRAM COND 04S H
R246(1)	CRA2	B1	68Ω	CRAM COND 05S H
R105(1)	CRA1	C7	68Ω	CRAM J00 H
R258(1)	CRA1	D6	68Ω	CRAM J01 H
R263(1)	CRA1	C6	68Ω	CRAM J02 H
R259(1)	CRA1	D4	68Ω	CRAM J03 H
R268(1)	CRA1	C4	68Ω	CRAM J04 H
R213(1)	CRA1	D3	68Ω	CRAM J05 H
R221(1)	CRA1	C3	68Ω	CRAM J06 H
R218(1)	CRA2	D7	68Ω	CRAM J07 H
R222(1)	CRA2	D6	68Ω	CRAM J08 H
R103(1)	CRA2	D4	68Ω	CRAM J09 H
R106(1)	CRA2	D3	68Ω	CRAM J10 H
R214(1)	CRA2	B6	68Ω	DRAM B 00 H
R227(1)	CRA2	B4	68Ω	DRAM B 01 H
R233(1)	CRA2	B3	68Ω	DRAM B 02 H
R179(1)	CRA1	B6	68Ω	DRAM J 01 H
R175(1)	CRA1	B6	68Ω	DRAM J 02 H
R116(1)	CRA1	B4	68Ω	DRAM J 03 H
R113(1)	CRA1	B4	68Ω	DRAM J 04 H
R146(1)	CRA2	C7	68Ω	DRAM J 07 H
R135(1)	CRA2	C6	68Ω	DRAM J 08 H
R203(1)	CRA2	C4	68Ω	DRAM J 09 H
R152(1)	CRA2	C3	68Ω	DRAM J 10 H
R158(1)	CRA2	A7	68Ω	EA TYPE 07 H\8400\
R147(1)	CRA2	A6	68Ω	EA TYPE 08 H\8400\
R219(1)	CRA2	A4	68Ω	EA TYPE 09 H\8400\
R225(1)	CRA2	A3	68Ω	EA TYPE 10 H\8400\
R161(1)	CRA2	B1	68Ω	IR AC=0 H
R207(1)	CRA2	B6	68Ω	IR NORM 08 H
R223(1)	CRA2	B4	68Ω	IR NORM 09 H
R235(1)	CRA2	B3	68Ω	IR NORM 10 H
R248(1)	CRA2	B1	68Ω	MCL6 PC SECTION 0 H
R238(1)	CRA2	B4	68Ω	MQ 34 H
R234(1)	CRA2	B3	68Ω	MQ 35 H
R245(1)	CRA2	B1	68Ω	SCD1 SCAD SIGN H
R243(1)	CRA2	B1	68Ω	-SCD1 SCAD=0 H
R215(1)	CRA2	B6	68Ω	SCD2 FE SIGN H
R160(1)	CRA2	B1	68Ω	SCD2 SC SIGN H
R212(1)	CRA2	B6	68Ω	SCD4 FPD H
R150(1)	CRA2	B3	68Ω	SCD4 NICOND 10 H
R239(1)	CRA2	C1	68Ω	-SHM1 AR PAR ODD B H
R226(1)	CRA2	A3	68Ω	SHM1 INDEXED H
R193(1)	CRA2	B7	68Ω	SHM4 SH 00 A H
R137(1)	CRA2	B6	68Ω	SHM4 SH 01 A H
R206(1)	CRA2	B4	68Ω	SHM4 SH 02 A H
R154(1)	CRA2	B3	68Ω	SHM4 SH 03 A H
R168(1)	CRA2	A1	68Ω	-VMA1 LOCAL AC ADDRESS H

NOTE:

1. ALL TER INATORS HAVE PIN TWO CONNECTED TO -2.0V AND ARE 5% 1/4WATT UNLESS OTHERWISE SPECIFIED
2. ENTRIES ARE SORTED BY SIGNAL NAME
3. % INDICATES OUTPUT OF DIP LOC AND () INDICATES PIN NUMBER

"THIS DRAWING AND SPECIFICATIONS, HEREIN, ARE THE PROPERTY OF DIGITAL EQUIPMENT CORPORATION AND SHALL NOT BE REPRODUCED OR COPIED OR USED IN WHOLE OR IN PART AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION.
COPYRIGHT © 1976, DIGITAL EQUIPMENT CORPORATION"

REVISIONS		
CHK	CHANGE NO.	REV

DRN. C Smith	DATE 17-SEP-76	ENG. Tom Hyde	DATE 23-Sep-76
CHK'D. Hyde	DATE 23-Sep-76	BOARD LOCATION:	
M8541.2.RLS(4.161)	17-SEP-76 22:14	SHEET 2 OF 2	
FIRST USED ON OPTION/MODEL: KL10		NEXT HIGHER ASSEMBLY: B-DD-M8541-0	

TITLE: CONTROL RAM ADR TERMINATORS

SIZE	CODE	NUMBER	REV.
D	CS	M8541-0-RES	