

NOTE * M8150 & M8153 ARE USED ON RH70-A
 M8124 & M8125 ARE USED ON RH70-C

TITLE	DRAWING DIRECTORY RH70	SHEET 2 OF 3	SIZE	CODE	NUMBER	REV
			B	DD	RH70-0	A

CUSTOMER PRINT SET		ELECTRICAL						CUSTOMER PRINT SET		ELECTRICAL						
1		MFG. SET	FIND NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO./FILE DATE	1		MFG. SET	FIND NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO./FILE DATE	
X			1		1	MASSBUS CONTROLLER							1	B-MH-M8152-Ø-6	1	MODULE ECO HISTORY
					1	MODULE HOLDER										
X					3	MASSBUS TRANSCEIVER										
X					1	WRITE COMMAND FLOW DIAG.										
X					1	WRITE CHECK COMM. FLOW DIAG.										
X					1	READ COMMAND FLOW DIAG.										
X					4	RH7Ø DATA BUFFER TIM. DIAG.										
X					1	WRITE MASSBUS TIMING DIAG.										
X					1	MASSBUS TIMING DIAG.		X			6		6	D-CS-M8153-Ø-1	6	UNIBUS CONTROL
						RH7Ø ENGIN. SPEC.								1	1	X-Y COOR. HOLE LOCATION
						RH7Ø MANUF. CHECK. PROC.								1	1	ASSY/DRILLING HOLE LAYOUT
X					1	UNIBUS CABLE & GRANT CHAIN								1	1	MODULE ECO HISTORY
					4	11/70 UNIT ASSY (REF)										
						KB11-B WIRELIST (REF)		X			7		6	D-CS-M8125-0-1	6	UNIBUS CONTROL
X					4	RH70-C DATA BUFFER TIM. DIAG.								4	4	UNIT ASSEMBLY
X					1	RH70-C WRITE MASSBUS TIM. DIAG.								2	2	PARTS LIST
X			2		9	MASSBUS DATA PATH		X			8		2	D-CS-M59Ø4-Ø-1	2	CONTROLLER TRANSCEIVER
					1	X-Y COOR. HOLE LOCATION								1	1	X-Y COOR. HOLE LOCATION
					1	ASSY/DRILLING HOLE LAYOUT								1	1	ASSY/DRILLING HOLE LAYOUT
					1	MODULE ECO HISTORY								1	1	MODULE ECO HISTORY
X			3		10	MASSBUS DATA PATH										
					4	UNIT ASSEMBLY										
					2	PARTS LIST										
X			4		6	CONTROL & STATUS		X			9		1	D-CS-H87Ø-Ø-1	1	MASSBUS TERMINATOR
					1	X-Y COOR. HOLE LOCATION								1	1	X-Y COOR. HOLE LOCATION
					1	ASSY/DRILLING HOLE LAYOUT								1	1	ASSY/DRILLING HOLE LAYOUT
					1	MODULE ECO HISTORY								1	1	MODULE ECO HISTORY
X			5		7	ADDR. & WORD COUNT REGS.										
					1	X-Y COOR. HOLE LOCATION										
					1	ASSY/DRILLING HOLE LAYOUT										

CUSTOMER PRINT SET CODES
X = PRINT OF DOCUMENT INCLUDED IN PRINT SET
C = INCLUDES ALL PRINTS INDICATED ON DOCUMENT
S = CONFIDENTIAL AUTHORIZED SIGNATURE REQUIRED

TITLE
DRAWING DIRECTORY RH7Ø

SIZE CODE
SHEET 3 OF 3 B DD

NUMBER
RH7Ø-Ø

REV
A

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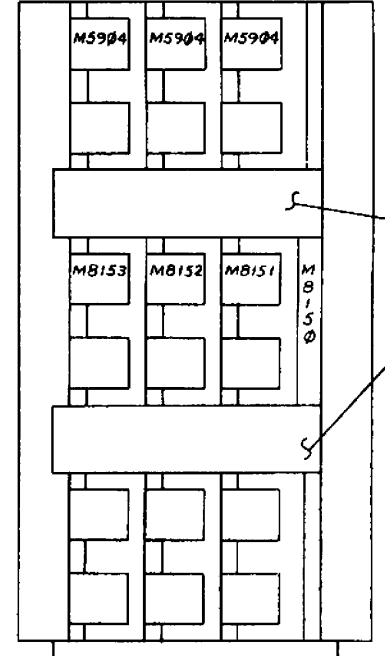
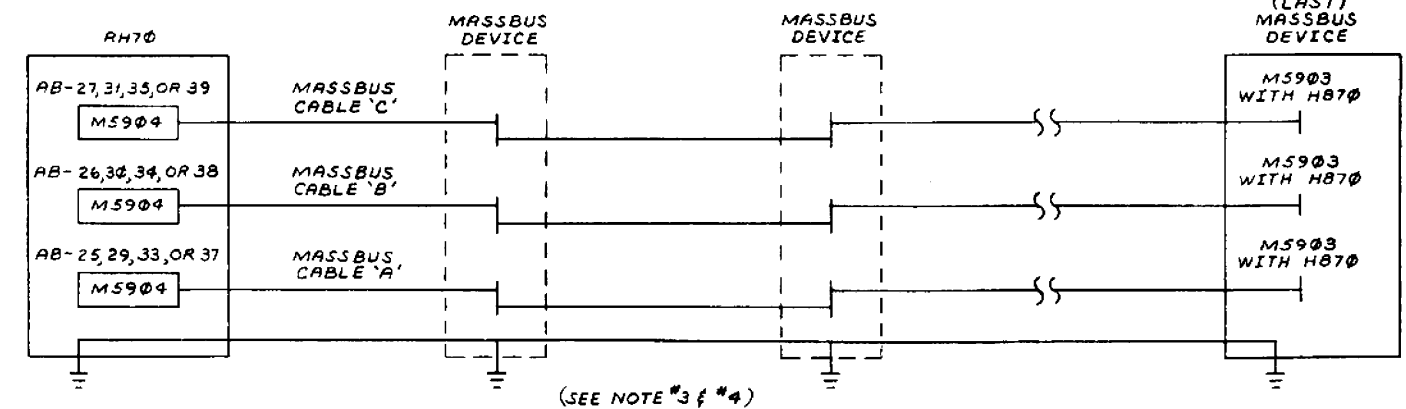
NOTES:

- VIEW OF LOGIC IS FROM MODULE SIDE.
- SELECT PROPER JUMPER SETTINGS FOR UNIBUS ADDRESS, REGISTER LENGTH FIELD, AND VECTOR ADDRESS AS PER MASSBUS DEVICE USED.
- INSERT ONE H870 MASSBUS TERMINATOR MODULE IN J2 (ETCH SIDE OF H870 TO COMPONENT SIDE OF M5903) OF EACH OF THE M5903 MASSBUS TRANSCIEVER MODULES IN THE LAST MASSBUS DRIVE.
- COLOR EDGE OF MASSBUS CABLES SHOULD BE FACING MODULE HANDLE OF M5904 IN RH70 & M5903 IN MASSBUS DRIVES.
- ONE H870 MASSBUS TERMINATOR MODULE WILL BE INSERTED IN J1 (COMPONENT SIDE OUT) OF EACH OF THE 3 M5904 MODULES FOR SHIPMENT ONLY.
- M5904 MODULES MUST BE ETCH REVISION E OR LATER FOR PROPER MECHANICAL POSITION OF CABLE CONNECTOR ON MODULE.
- ROMS FOR M5912 BOOTSTRAP MODULE (PARTS LIST ITEMS 9, 10 & 11) SHOULD BE SHIPPED IN BOX (ITEM 8).
- RH70-A USES MB150 & MB153
RH70-C USES MB124 & MB125
SEE PARTS LIST

LEGEND	
NUMBER	VARIATION
RH70-A	MASSBUS CONTROLLER PDP11/70
RH70-C	MASSBUS CONTROLLER PDP11/70 & PDP 11/74

	4TH RH70				3RD RH70				2ND RH70				1ST RH70			
	CONTROLLER D				CONTROLLER C				CONTROLLER B				CONTROLLER A			
	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24
	M5904	M5904	M5904	MB150	M5904	M5904	M5904	MB150	M5904	M5904	M5904	MB150	M5904	M5904	M5904	MB150
A	CONTROL- LER TRANS (MBSA)	CONTROL- LER TRANS (MBSB)	CONTROL- LER TRANS (MBSA)	(MB124) SEE NOTE #8	CONTROL- LER TRANS (MBSA)	CONTROL- LER TRANS (MBSB)	CONTROL- LER TRANS (MBSA)	(MB124) SEE NOTE #8	CONTROL- LER TRANS (MBSA)	CONTROL- LER TRANS (MBSB)	CONTROL- LER TRANS (MBSA)	(MB124) SEE NOTE #8	CONTROL- LER TRANS (MBSA)	CONTROL- LER TRANS (MBSB)	CONTROL- LER TRANS (MBSA)	(MB124) SEE NOTE #8
B	SEE NOTES 4&5	SEE NOTES 4&5	SEE NOTES 4&5		SEE NOTES 4&5	SEE NOTES 4&5	SEE NOTES 4&5		SEE NOTES 4&5	SEE NOTES 4&5	SEE NOTES 4&5		SEE NOTES 4&5	SEE NOTES 4&5	SEE NOTES 4&5	
C	MB153	MB152	MB151	MASSBUS DATA PATH (MDP)	MB153	MB152	MB151	MASSBUS DATA PATH (MDP)	MB153	MB152	MB151	MASSBUS DATA PATH (MDP)	MB153	MB152	MB151	MASSBUS DATA PATH (MDP)
D	UNIBUS CNTRL (BCT)	ADDR & WC REGS (AWR)	CONTROL & STATUS (CST)		UNIBUS CNTRL (BCT)	ADDR & WC REGS (AWR)	CONTROL & STATUS (CST)		UNIBUS CNTRL (BCT)	ADDR & WC REGS (AWR)	CONTROL & STATUS (CST)		UNIBUS CNTRL (BCT)	ADDR & WC REGS (AWR)	CONTROL & STATUS (CST)	
F	SEE NOTE 2				SEE NOTE 2				SEE NOTE 2				SEE NOTE 2			

VIEW FROM MODULE SIDE



RH70
CONTROLLER

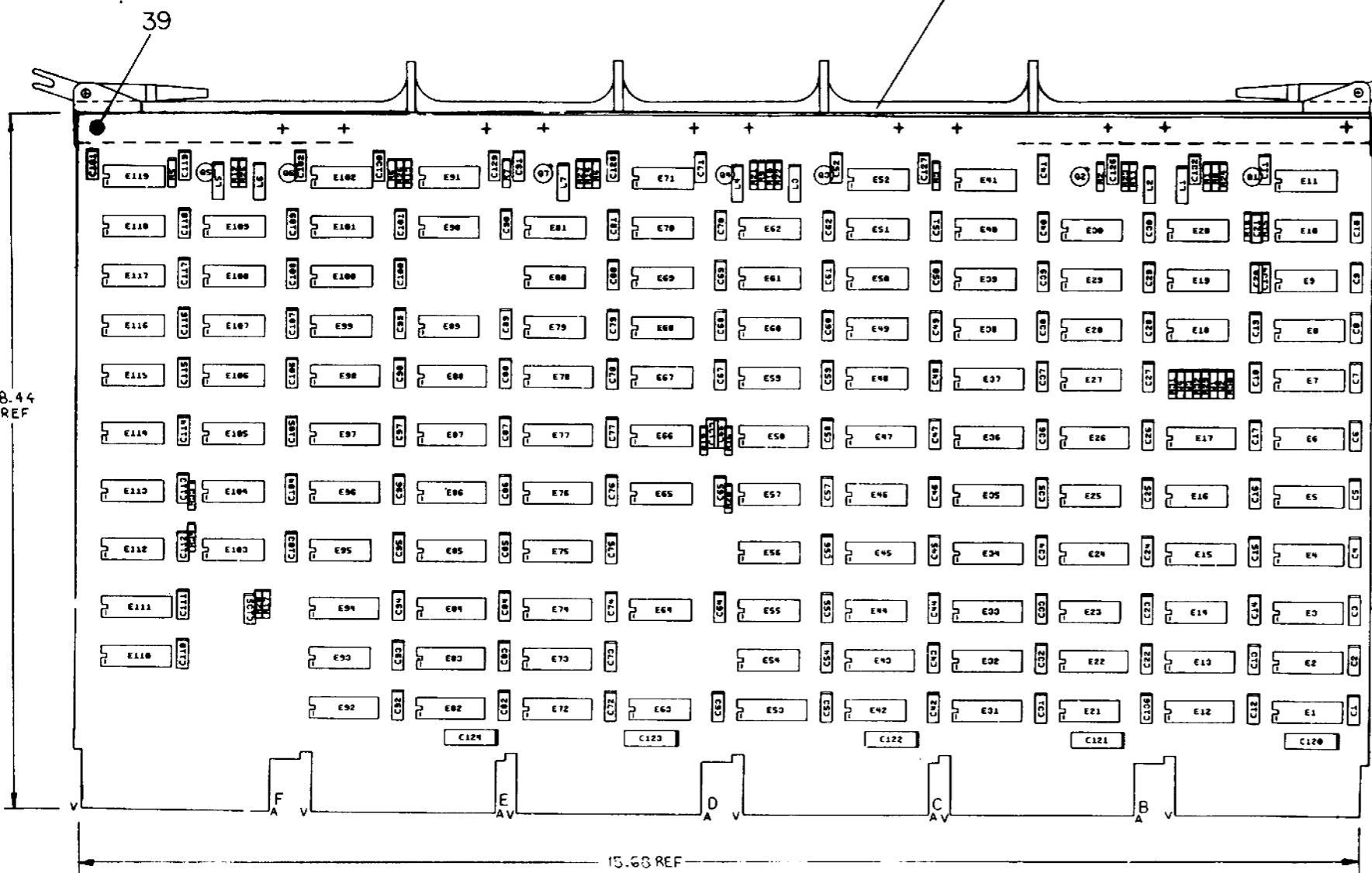
	RH70-C	RH70-A			
1			UNIBUS CONTROL	MB125	20
1			MASSBUS DATA PATH	MB124	19
1	1		LABEL, SHIPPING	3615855	18
1	1		BAG, 3.5 x 7 IN.	9905129-10	17
7FT	7FT		TAPE, FILAMENT	9905729	16
1	1		BOX, FOLDING HEX	9905816	15
3	3		BOX, FOLDING QUAD	9905621	14
3	3		BOX, FOLDING DOUBLE	9905622	13
1	1		CARTON, MODULE SET	9906401	12
1	1		ROM FOR RS03, 04	2375449	11
1	1		ROM FOR TU16, TM21, TM7, TM83	23757A9	10
1	1		ROM FOR RPA4, 05, 06, RPA2, 03	23755A9	9
1	1		BOX	9906228	8
			UNIT ASSEMBLY	9906228	8
			MASSBUS TERMINATOR	H870	7
3	3		MASSBUS TERMINATOR	H870	7
2	2		MODULE HOLDER	1209856	6
3	3		CONTROLLER TRANSCIEVER	M5904	5
1	1		UNIBUS CONTROL	MB153	4
1	1		ADDR. & WORD COUNT REGS.	MB152	3
1	1		CONTROL & STATUS	MB151	2
1	1		MASSBUS DATA PATH	MB150	1

REV	CHANGE NO.	DATE	BY
A	00001	7/1/75	D. THOMPSON
B	00002	7/1/75	D. THOMPSON
C	00003	7/1/75	D. THOMPSON
D	00004	7/1/75	D. THOMPSON
E	00005	7/1/75	D. THOMPSON
F	00006	7/1/75	D. THOMPSON

FIRST USED ON OPTION/MODEL		QTY.	DESCRIPTION	PART NO.	ITEM NO.
RH70					
DIMENSIONAL TOLERANCE					
DIMENSIONS ARE MILLIMETERS UNLESS OTHERWISE SPECIFIED					
MILLIMETERS	INCHES	ANGLES			
XX ±0.10	XX ±0.008	30° 30'			
XX ±0.5	XX ±.02				
X ±.2	X ±.1				
THIRD ANGLE PROJECTION	REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓	NEXT HIGHER ASSY.			
MATERIAL	FINISH	B-DD-RH70-0	SIZE CODE	NUMBER	REV.
		SCALE	DUA	RH70-0-0	D
		SHEET 1 OF 1	DIST.		

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NOTES: IC SLOTS E12, E53, E110, AND E111 ARE SPARES.

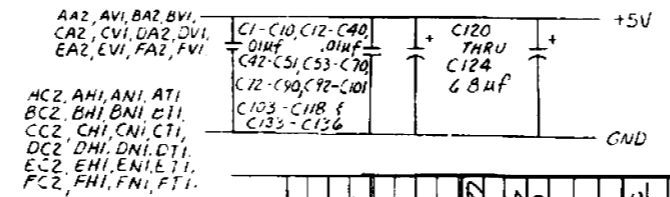


REF	X-Y COORDINATE HOLE LOCATION	K-CD-8150-0-4	1
REF	ASSY/DRILLING HOLE LAYOUT	D-AM-8150-0-5	2
REF	MODULE ECO HISTORY	B-MM-8150-0-6	3
1	ETCHED CIRCUIT BOARD	5011276	4
116	C1 THRU C10 C12 THRU C40, C42 THRU C51 C53 THRU C70, C72 THRU C90, C92 THRU C101, C103 THRU C118, C133 THRU C136	CAP .01uf 20% 100V DISC	1001810-01
5	C120 THRU C124	CAP 6.8uf 10% 35V	1005308
7	C126 THRU C132	CAP 82pf 5% 100V	1000015
7	C11, C41, C52, C71, C91, C102, C119	CAP .22uf 50V CERAMIC	1610274-00
7	R1 THRU R7	RES 100 OHM 5% 1/4W	1300229
7	R8 THRU R14	RES 120 OHM 5% 1/4W	1300247
3	R15, R16, R17	RES 330 OHM 5% 1/4W	1300295
3	R18, R19, R20	RES 680 OHM 5% 1/4W	1301424
8	R21 THRU R29	RES 1K 5% 1/4W	1300365
4	R29 THRU R32	RES 1.5K 5% 1/4W	1300391
7	Q1 THRU Q7	TRANSISTOR DEC 3009B	1503100
7	L1 THRU L7	INDUCTOR 100uh	1610862
7	E11, E41, E52, E71, E91, E102, E105	DELAY - 10 TAP 250ns 100 OHM	1611243
8	E19, E38, E50, E59, E62, E80, E99, E100	IC DEC 74500	1910532
9	E42, E55, E56, E57, E63 THRU E67	IC DEC 74H01	1909849-00
1	E115	IC DEC 7402	1909004
6	E20, E51, E70, E101, E112, E118	IC DEC 74S04	1910534
2	E40, E90	IC DEC 74S10	1910536
8	E10, E30, E80, E86, E107, E108, E114, E116	IC DEC 74S11	1910537
1	E49	IC DEC 74H30	1909056
1	E54	IC DEC 74H40	1905506
2	E39, E89	IC DEC 74H50	1909060
6	E28, E61, E104, E105, E106, E113	IC DEC 74S64	1910542
8	E9, E29, E69, E79, E109, E117, E48, E81	IC DEC 74S74	1910544
2	E18, E103	IC DEC 7486	1910011
4	E92, E94, E96, E98	IC DEC 74157	1910855
14	E31, E33, E35, E37, E72, E74, E76, E78, E58, E82, E84, E8F, E88, E97	IC DEC 74S157	1910548
3	E22, E24, E26	IC DEC 74174	1910852
18	E2, E4, E6, E13, E15, E17, E32, E34, E36, E73, E75, E77, E83, E85, E87, E43, E45, E47	IC DEC 74S174	1910550
5	E1, E3, E5, E7, E8	IC DEC 74298	1911271
4	E21, E23, E25, E27	IC DEC 8242	1909712
8	E14, E16, E44, E46, E93, E95	IC DEC 82S62	1911291
4	W1 THRU W4	INSULATED JUMPERS	9009185
1		HANDLE	1210711-02
12		EYELET	9006732
1	R33	RES 270 OHM 5% 1/4 W	1301972
1	R34	RES 560 OHM 5% 1/4 W	1301890
A/R		WIRE #30AWG BUSS (RETROFIT)	9105740-55

IC TYPE	QTY	DESCRIPTION
IC DEC 74157	8	16
IC DEC 74S157	8	16
IC DEC 74S174	8	16
IC DEC 74174	8	16
IC DEC 74298	8	16
IC TYPE	GND	+5V

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE.

IC PIN LOCATIONS



FIRST USED ON OPTION MODEL
RH70

ETCH BOARD REV C

REVISIONS

CHK	CHANGE NO	REV

DEC NO DEC NO EIA NO

SEMICONDUCTOR CONVERSION CHART

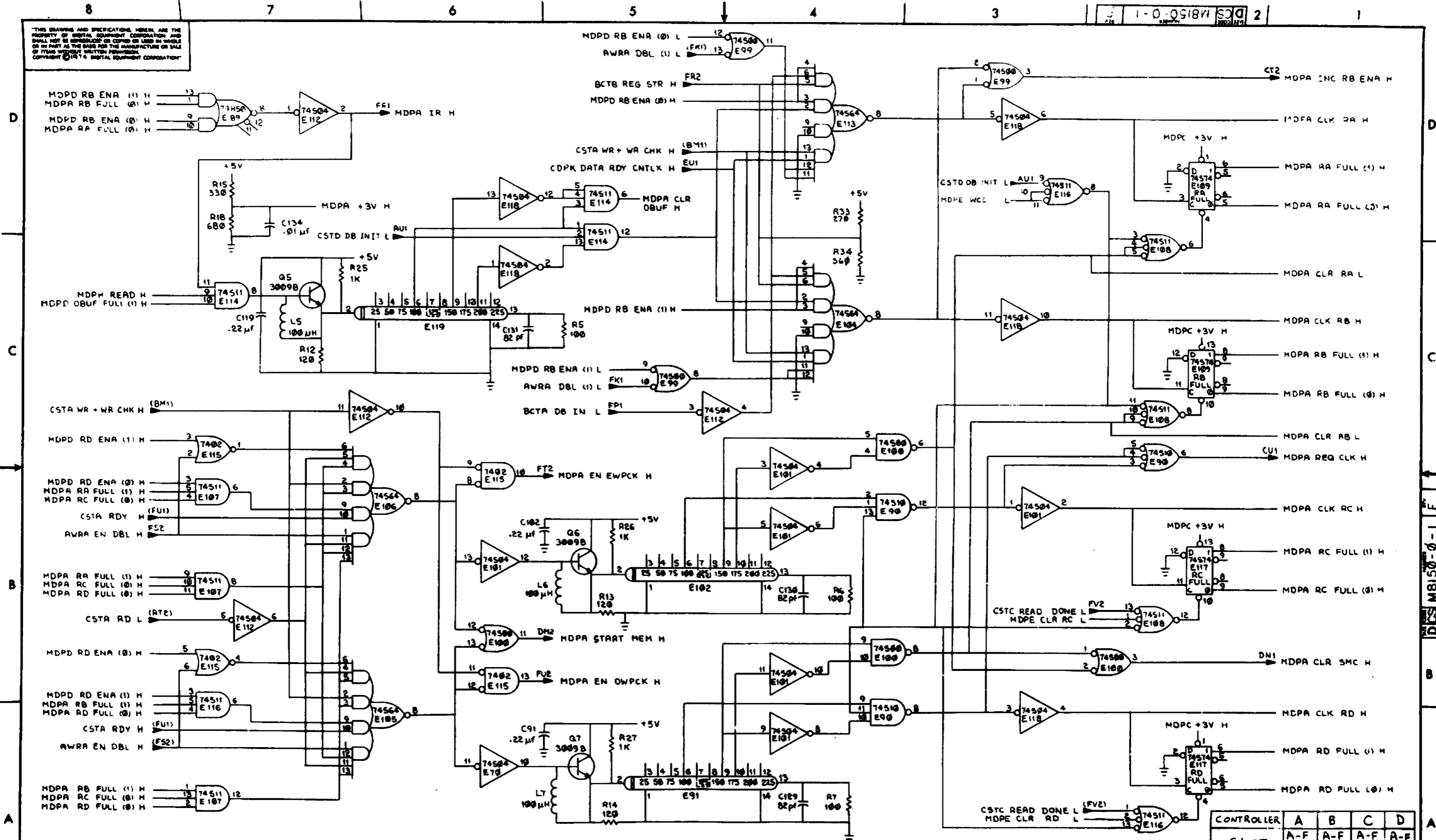
DATE 9-15-78
DATE 12-19-78
DATE 1/29/79
DATE 7/29/79
DATE 11/20/79

digital EQUIPMENT CORPORATION
MASSBUS DATA PATH (MDP)

SIZE CODE DCS NUMBER M8150-0-1 REV. F

SHEET 1 OF 9

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REVISIONS		
CHK	CHANGE NO.	REV.

CONTROLLER	A	B	C	D
SLOT	A-F 24	A-F 28	A-F 32	A-F 36

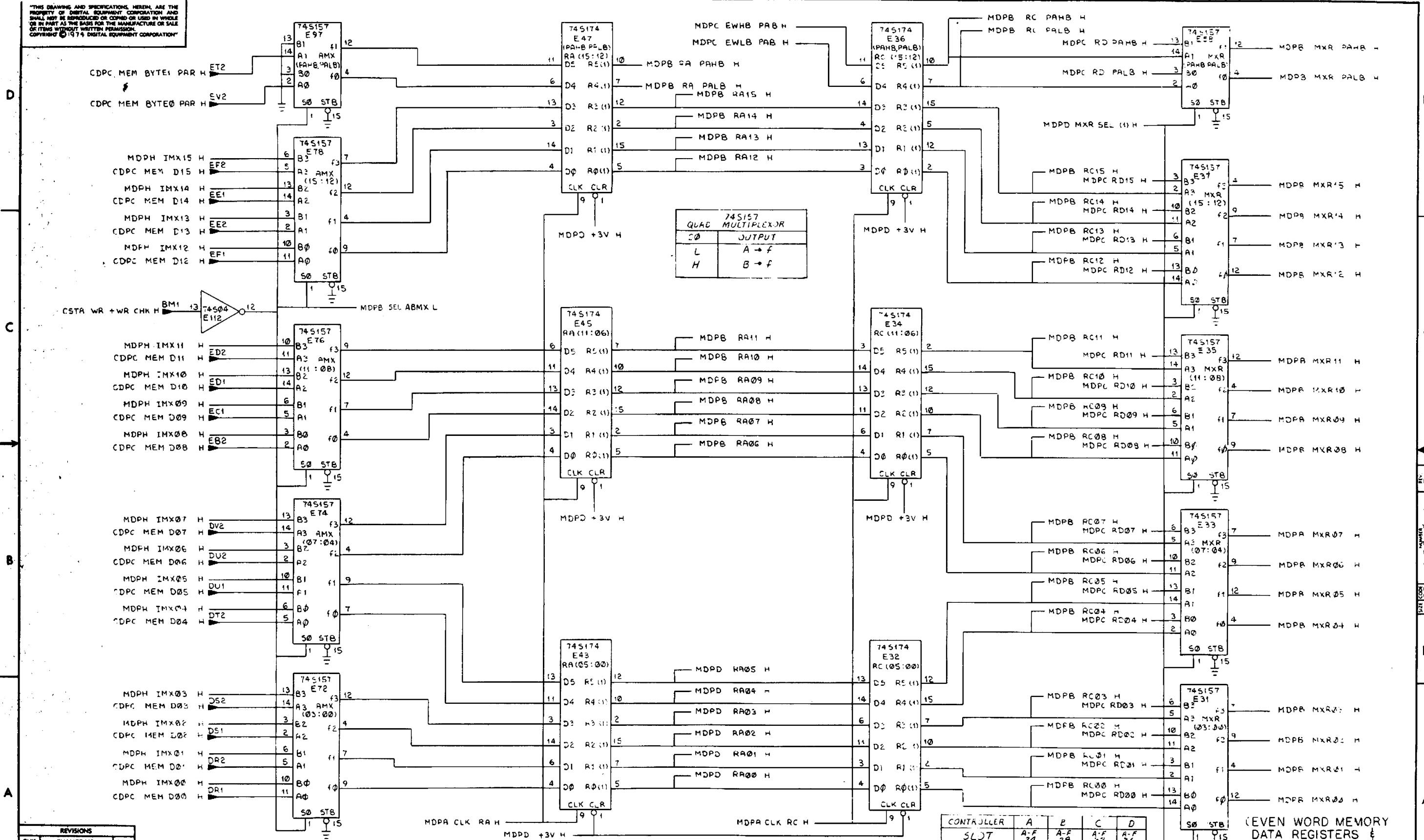
(MEMORY REGISTERS CONTROL)
 TITLE MASSBUS DATA PATH (MDPA)
 DCS MB150-0-1 F
 SCALE 1:1 SHEET 2 OF 9 DIST.

DCS MB150-0-1

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D
C
B
A

D
C
B
A



74S157 MUX	
Q	JUTPUT
L	A → f
H	B → f

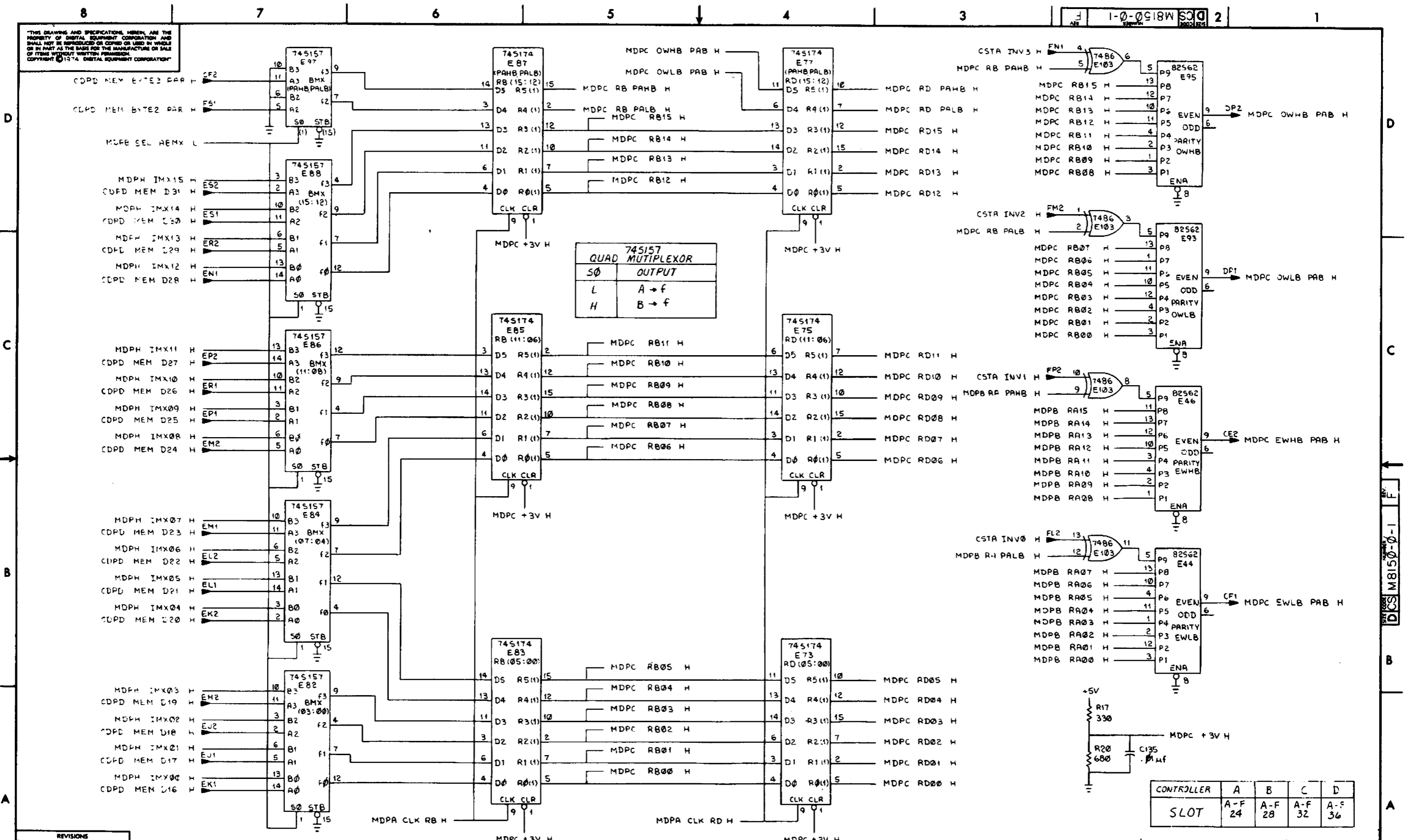
CONTROLLER	A	B	C	D
SLOT	A-F	A-F	A-F	A-F
	24	28	32	36

(EVEN WORD MEMORY DATA REGISTERS & MIXER)

REVISIONS		
CHK	CHANGE NO.	REV.

REV. F
DCS M8150-0-1

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74517 QUAD MULTIPLEXOR	
S0	OUTPUT
L	A → f
H	B → f

CONTROLLER	A	B	C	D
SLOT	A-F 24	A-F 28	A-F 32	A-F 36

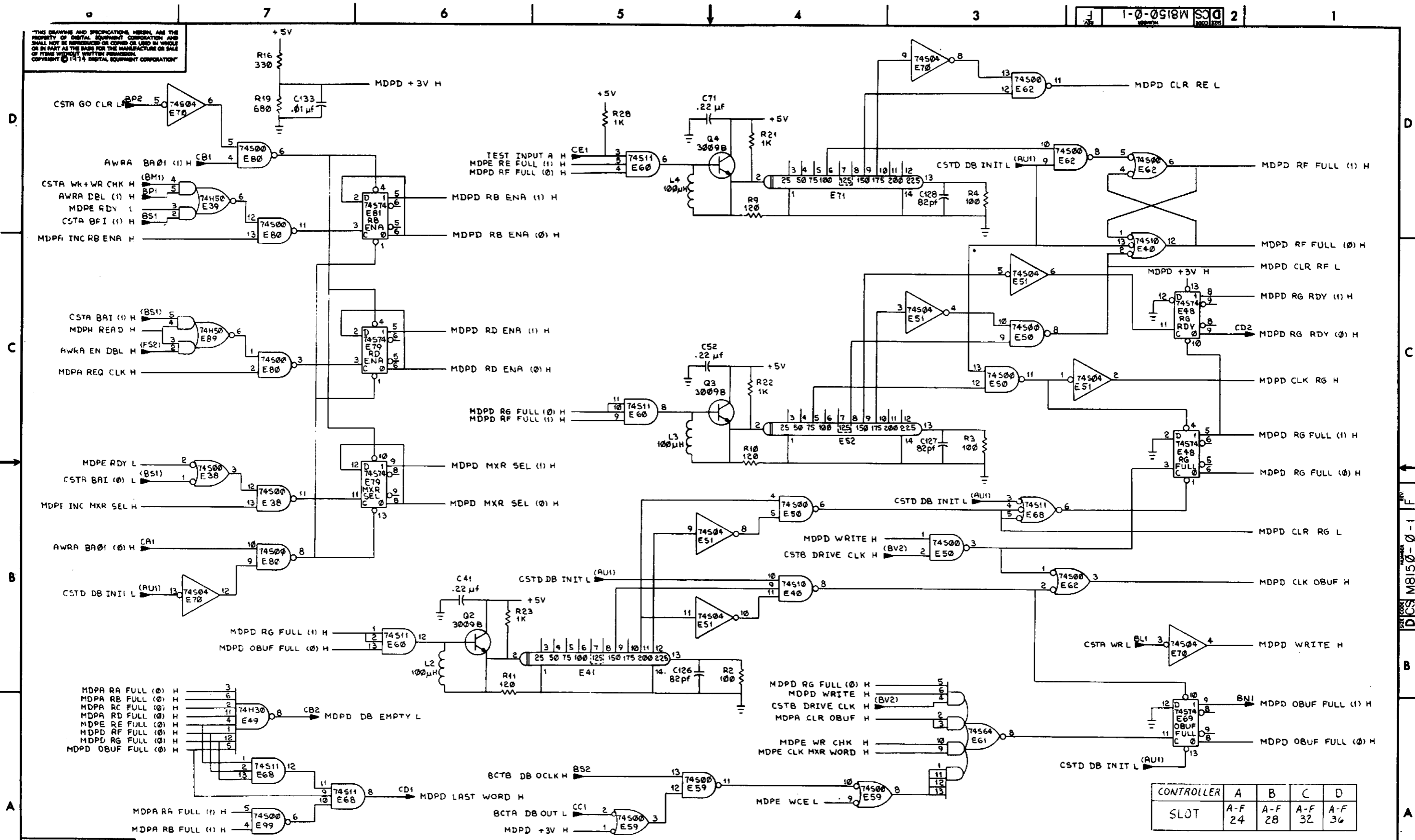
(ODD WORD MEMORY DATA REGISTERS & MEMORY PARITY GEN/CHECKERS)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	MASSBUS DATA PATH (MDPC)	SIZE CODE	DCS	NUMBER	M8150-0-1	REV.	f
SCALE		SHEET	4 OF 9	DIST.			

REV. F
DCS M8150-0-1

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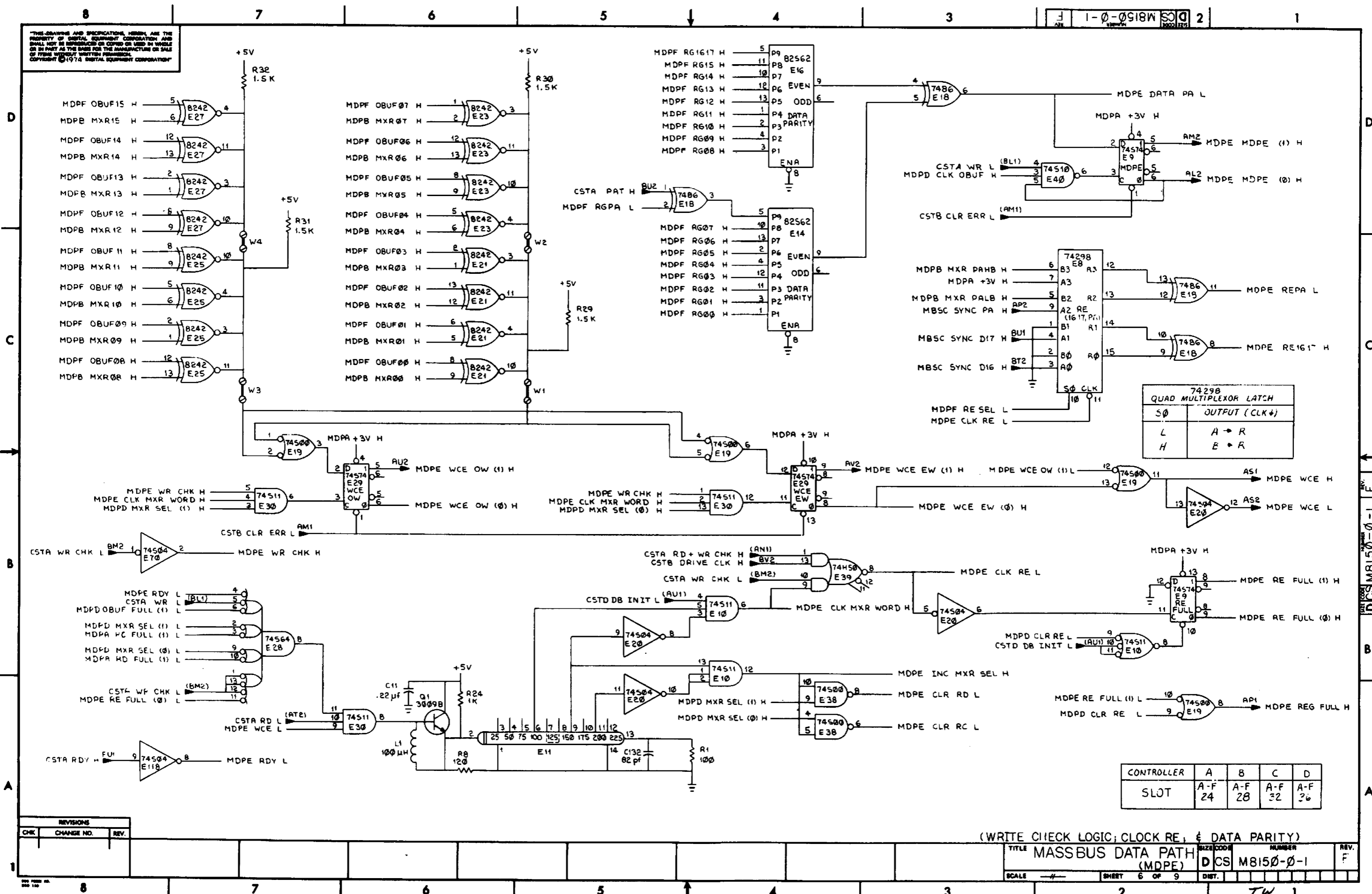
REVISIONS		
CHK	CHANGE NO.	REV.

CONTROLLER	A	B	C	D
SLOT	A-F 24	A-F 28	A-F 32	A-F 36

REV. F DCS M8150-0-1

A

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74298 QUAD MULTIPLEXOR LATCH	
S ₀	OUTPUT (CLK+)
L	A → R
H	E → R

CONTROLLER	A	B	C	D
SLOT	A-F	A-F	A-F	A-F

(WRITE CHECK LOGIC; CLOCK RE, & DATA PARITY)

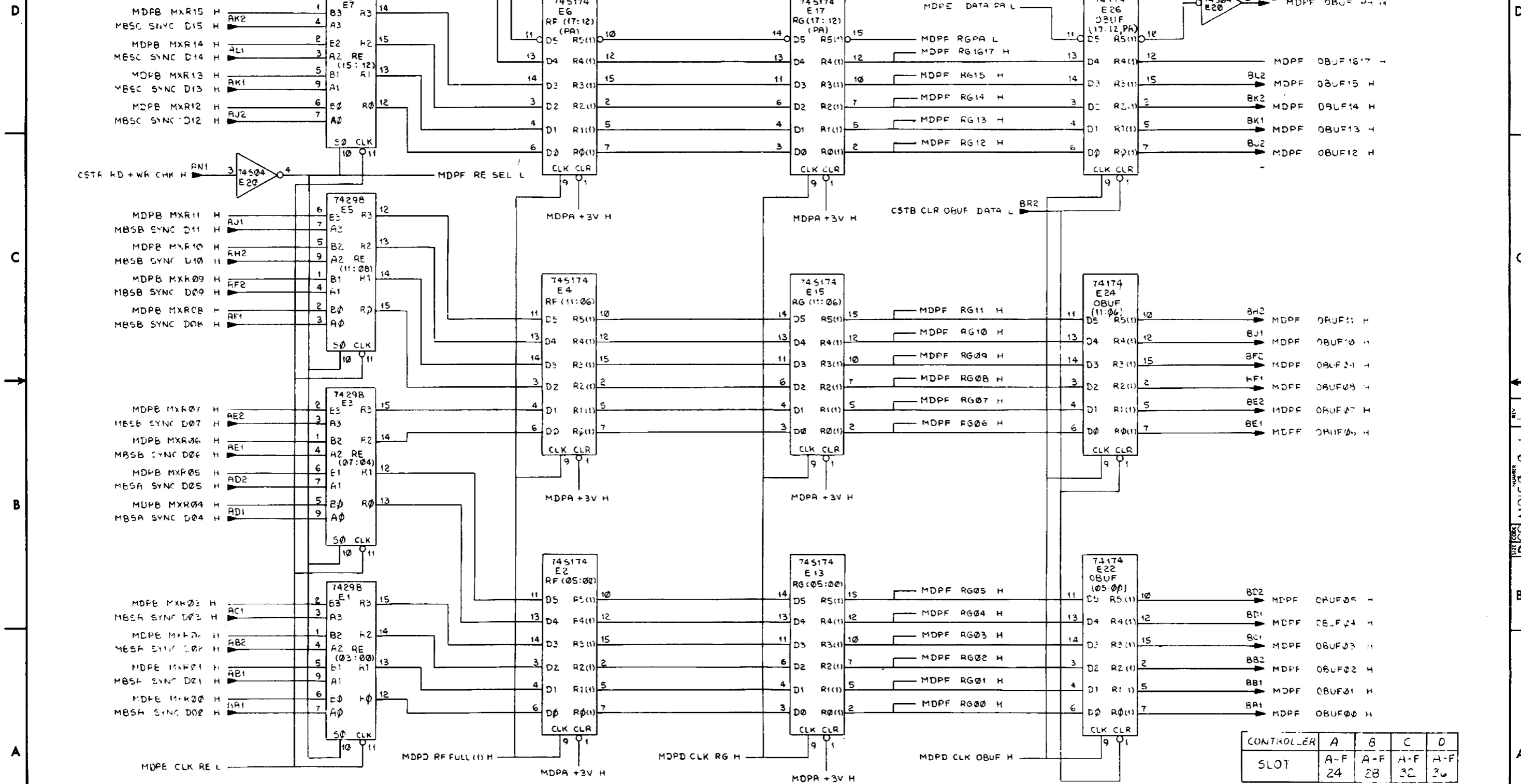
TITLE	MASSBUS DATA PATH (MDPE)	SIZE/NO.	D CS M8150-0-1	NUMBER		REV.	F
SCALE	1	SHEET	6 OF 9	DIST.			

REVISIONS		
CHK	CHANGE NO.	REV.

74298
QUAD MULTIPLEXOR LATCH

S ϕ	OUTPUT (CLK \dagger)
L	A \rightarrow R
H	B \rightarrow R

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CONTROLLER	A	B	C	D
SLOT	A-F	A-F	A-F	A-F
	24	28	32	36

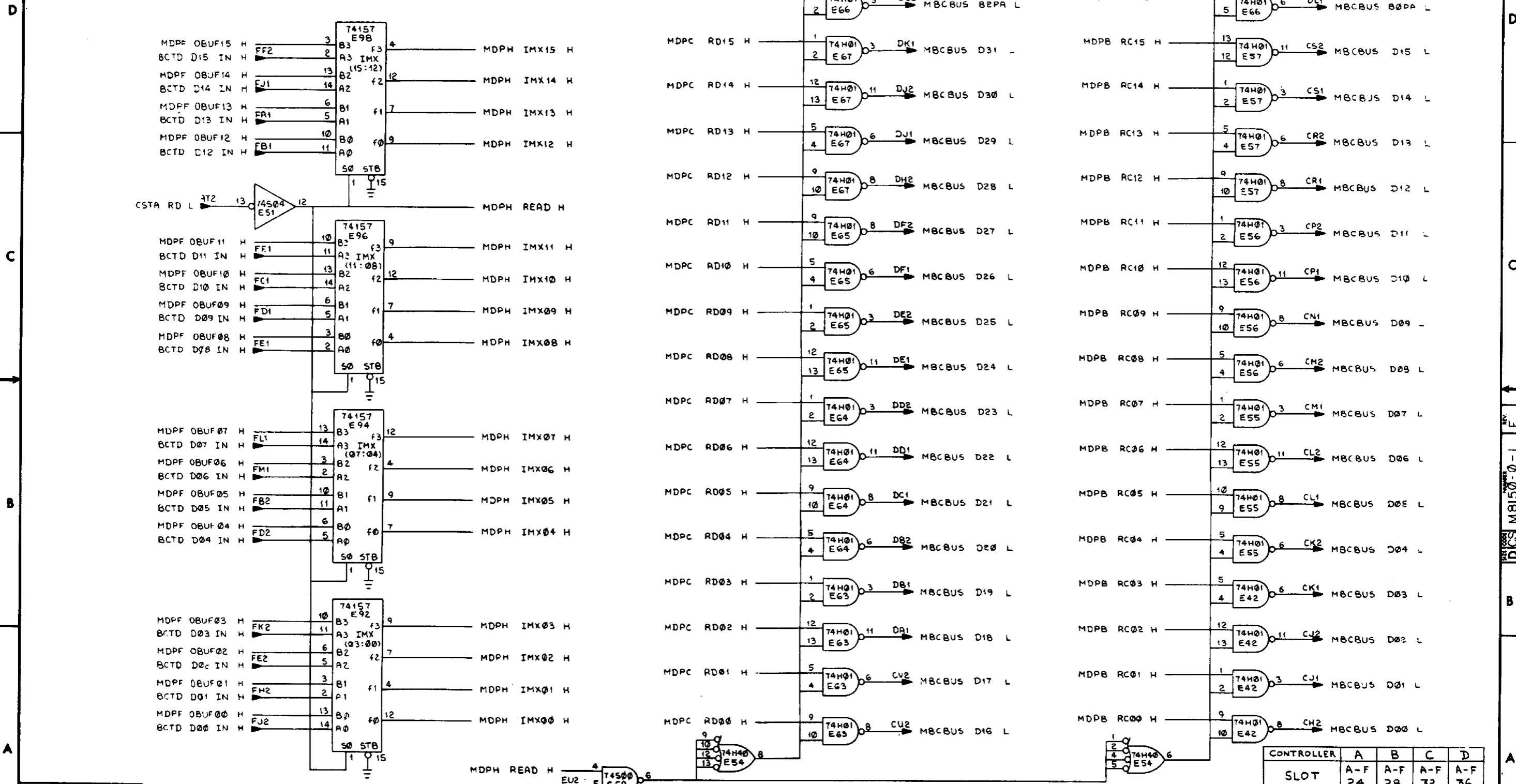
(DATA BUFFER REGISTERS)

REVISIONS		
CHK	CHANGE NO.	REV.

REV. NUMBER DCS M8150-0-1

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74157 QUAD MULTIPLEXOR	
S ₀	OUTPUT
L	A → f
H	B → f



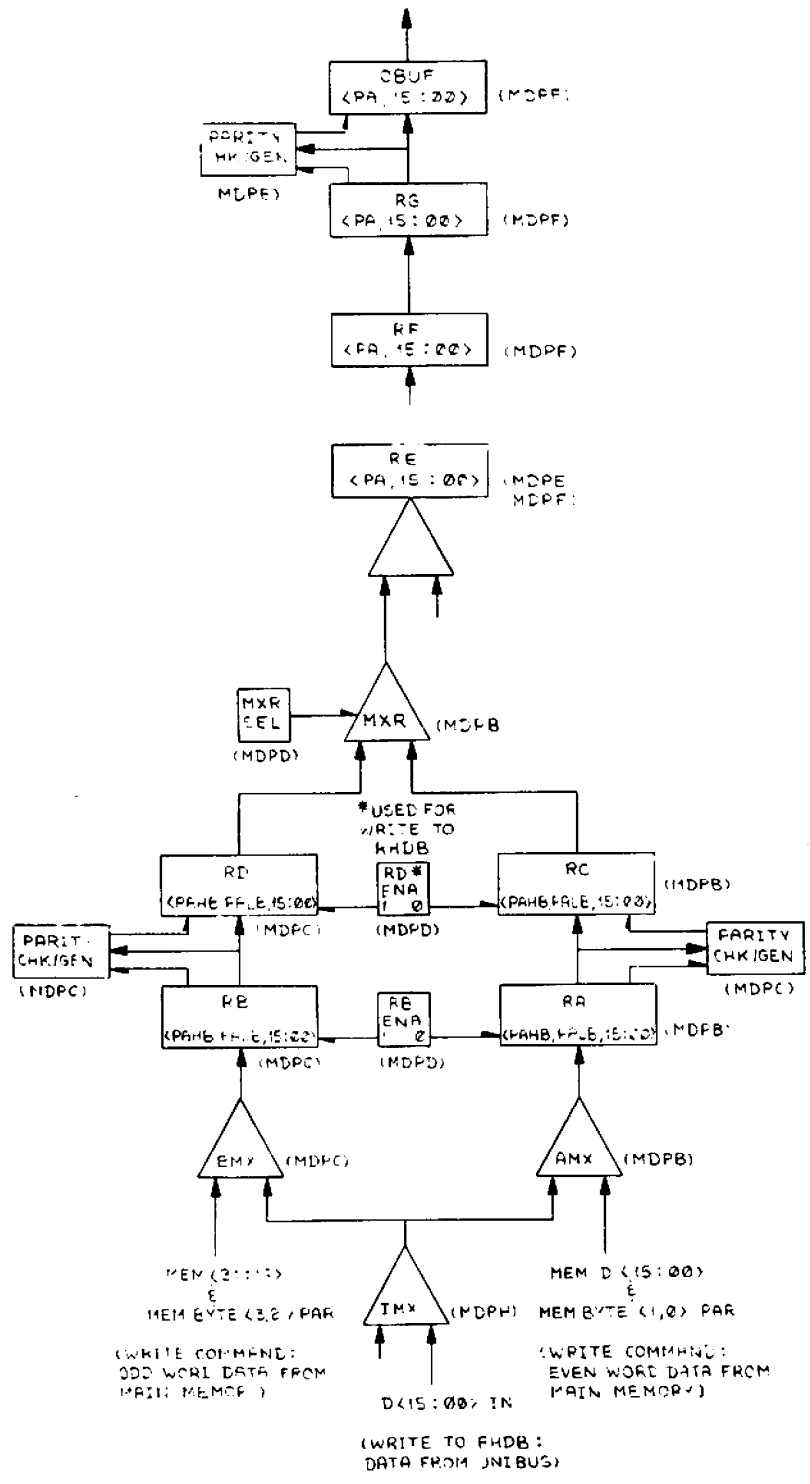
REVISIONS		
CHK	CHANGE NO.	REV.

CONTROLLER	A	B	C	D
SLOT	A-F	A-F	A-F	A-F
	24	28	32	36

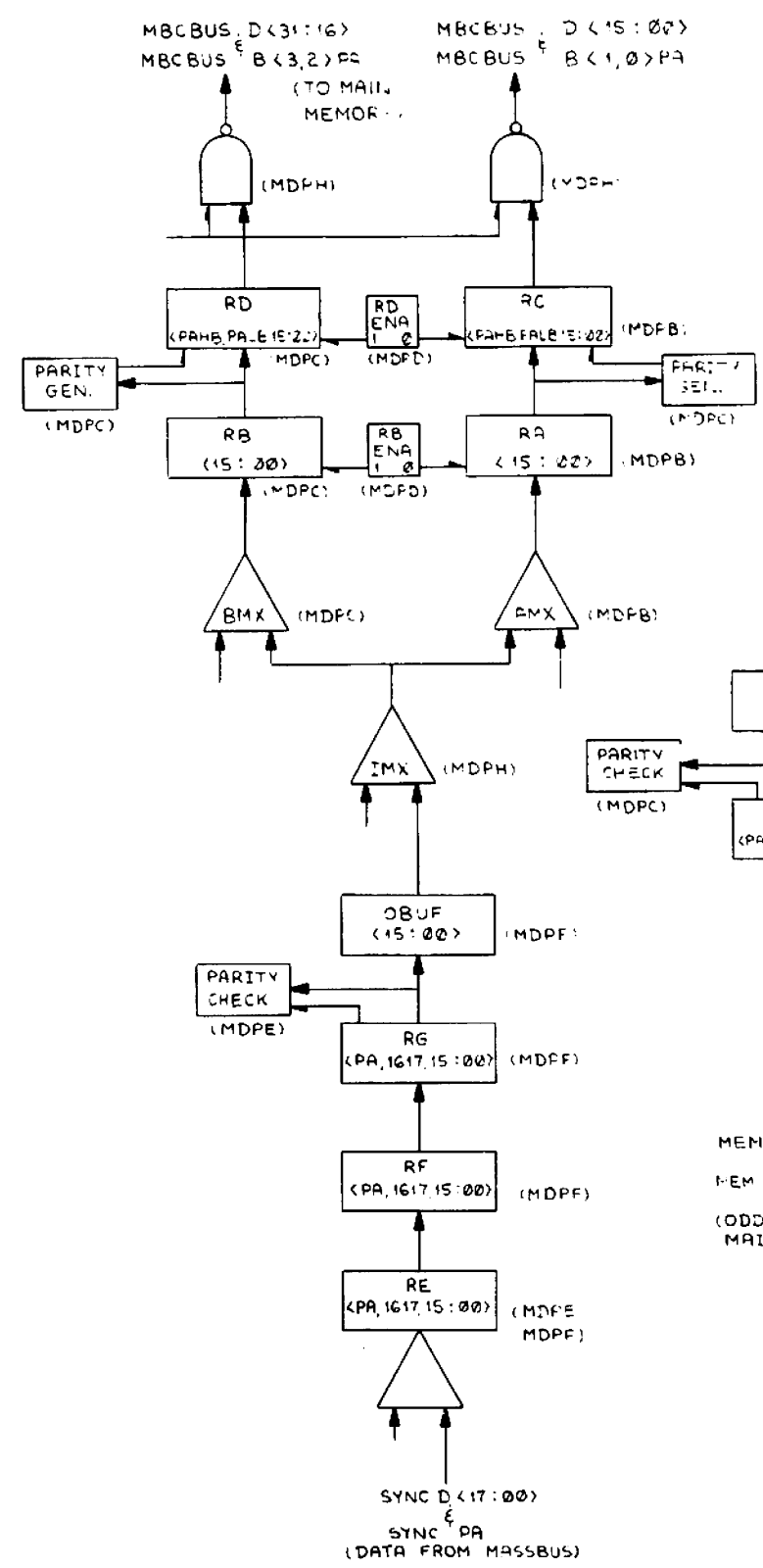
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D
C
B
A

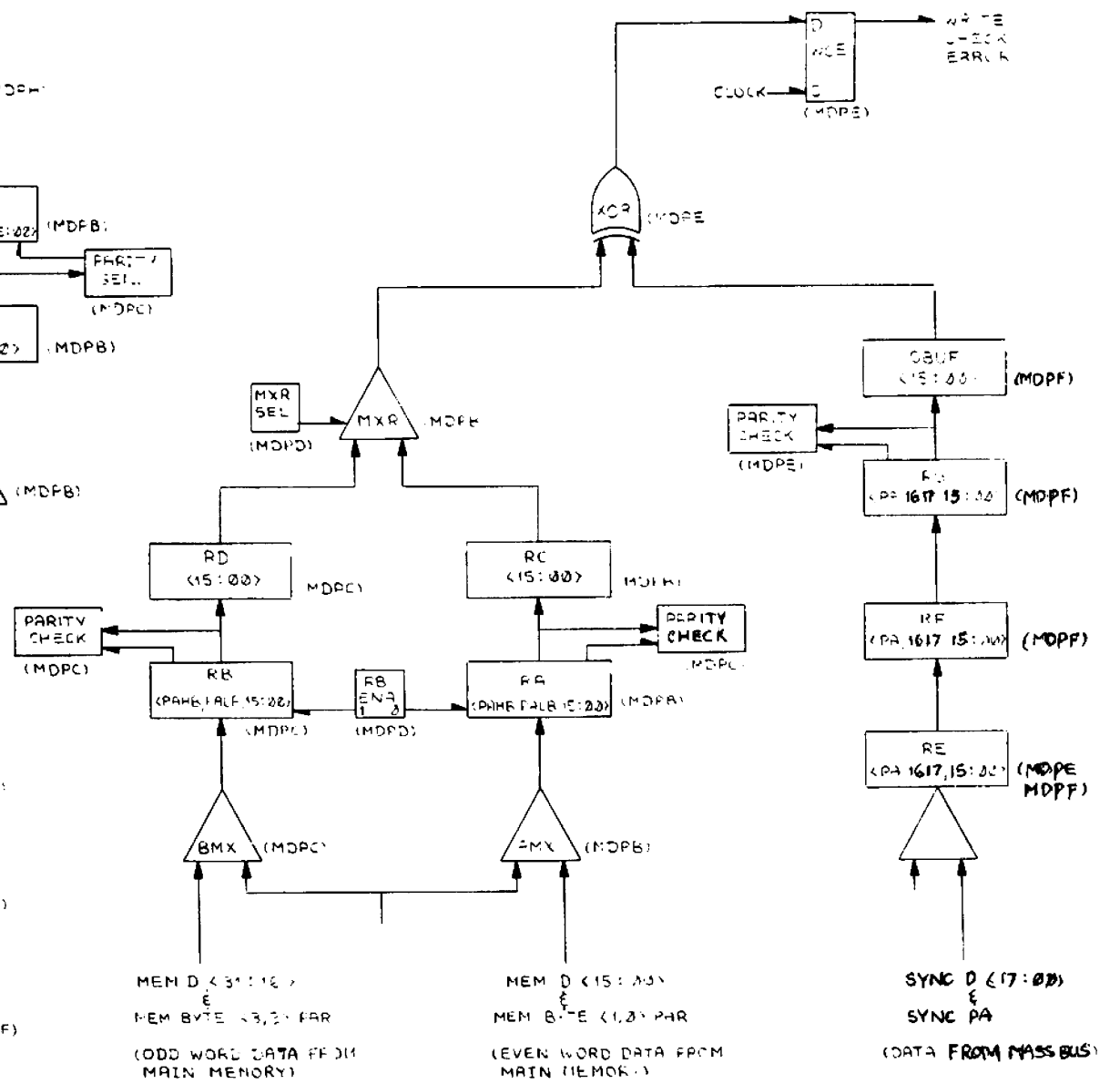
WRITE COMMAND
OR
READ-WRITE RWD REGISTER
(READ FROM FADB TO JNIBUS)
(WRITE COMMAND : TO MASSBUS)



READ COMMAND



WRITE CHECK COMMAND



D
C
B
A

CONTROLLER	A	B	C	D
SLOT	A-F 24	A-F 23	A-F 32	A-F 30

(DATA PATH BLOCK DIAGRAM)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	MASSBUS DATA PATH (MDPJ)	SIZE CODE	D CS	NUMBER	M8150-0-1	REV.	F
SCALE		SHEET	9 OF 9	DIST.			

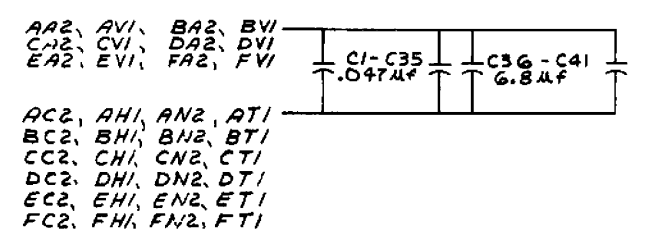
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INPUT	PIN	OUTPUT
MBSA SYNC D00 H	AA1	
+5V	AA2	
MBSA SYNC D01 H	AB1	
MBSA SYNC D02 H	AB2	
MBSA SYNC D03 H	AC1	
GND	AC2	
MBSA SYNC D04 H	AD1	
MBSA SYNC D05 H	AD2	
MBSB SYNC D06 H	AE1	
MBSB SYNC D07 H	AE2	
MBSB SYNC D08 H	AF1	
MBSB SYNC D09 H	AF2	
GND	AH1	
MBSB SYNC D10 H	AH2	
MBSB SYNC D11 H	AJ1	
MBSB SYNC D12 H	AJ2	
MBSB SYNC D13 H	AK1	
MBSB SYNC D14 H	AK2	
	AL1	MDPE MDPE (0) H
	AL2	
CSTB CBR ERR L	AM1	MDPE MDPE (1) H
	AM2	
CSTA RD+WR CHK L	AN1	
GND	AN2	
	AP1	MDPE REG FULL H
	AP2	
MBSB SYNC PA H	AR2	MDPF OBUF PA H
	AS1	MDPE WCE H
	AS2	MDPE WCE L
GND	AT1	
CSTA RD L	AT2	
CSTD DB INIT L	AU1	
	AU2	MDPE WCE OW(1) H
+5V	AV1	
	AV2	MDPE WCE EW(1) H
	BA1	MDPF OBUF 00 H
+5V	BA2	
	BB1	MDPF OBUF 01 H
	BB2	MDPF OBUF 02 H
	BC1	MDPF OBUF 03 H
GND	BC2	
	BD1	MDPF OBUF 04 H
	BD2	MDPF OBUF 05 H
	BE1	MDPF OBUF 06 H
	BE2	MDPF OBUF 07 H
	BF1	MDPF OBUF 08 H
	BF2	MDPF OBUF 09 H
GND	BH1	
	BH2	MDPF OBUF 11 H
	BJ1	MDPF OBUF 10 H
	BJ2	MDPF OBUF 12 H
	BK1	MDPF OBUF 13 H
	BK2	MDPF OBUF 14 H
	BL1	
	BL2	MDPF OBUF 15 H
CSTA WR L	BM1	
CSTA WR-WR CHK L	BM2	
CSTA WR CHK L	BN1	MDPD OBUF FULL(1) H
GND	BN2	
	BP1	
AWRA DBL (1) H	BP2	
CSTA GO CLK L	BR2	
CSTA CLR OBUF DATA L	BS1	
CSTA BAI (1) H	BS2	
BCTB DB OCLR H	BT1	
GND	BT2	
MBSB SYNC D16 H	BU1	
MBSB SYNC D17 H	BU2	
CSTA PAT H	BV1	
+5V	BV2	
CSTB DRIVE CLK H		

INPUT	PIN	OUTPUT
AWRA BAI (0) H	CA1	
+5V	CA2	
AWRA BAI (1) H	CB1	
	CB2	MDPD DB EMPTY L
BCTA DB OUT L	CC1	
GND	CC2	
	CD1	MDPD LAST WORD H
	CD2	MDPD RG RDY (0) H
TEST INPUT	CE1	
	CE2	MDPC EWHB PAB H
	CF1	MDPC EWLB PAB H
	CF2	
CDPD MEM BYTE 3 PAR H	CH1	
GND	CH2	
MBCBUS D00 L	CJ1	
MBCBUS D01 L	CJ2	
MBCBUS D02 L	CK1	
MBCBUS D03 L	CK2	
MBCBUS D04 L	CL1	
MBCBUS D05 L	CL2	
MBCBUS D06 L	CM1	
MBCBUS D07 L	CM2	
MBCBUS D08 L	CN1	
MBCBUS D09 L	CN2	
GND	CP1	
MBCBUS D10 L	CP2	
MBCBUS D11 L	CR1	
MBCBUS D12 L	CR2	
MBCBUS D13 L	CS1	
MBCBUS D14 L	CS2	
MBCBUS D15 L	CT1	
GND	CT2	MDPA INC RB ENA H
	CU1	MDPA REQ CLK H
	CU2	
MBCBUS D16 L	CV1	
+5V L	CV2	
MBCBUS D17 L		
	DA1	MBCBUS D18 L
	DA2	
+5V	DB1	MBCBUS D19 L
	DB2	MBCBUS D20 L
	DC1	MBCBUS D21 L
	DC2	
GND	DD1	MBCBUS D22 L
	DD2	MBCBUS D23 L
	DE1	MBCBUS D24 L
	DE2	MBCBUS D25 L
	DF1	MBCBUS D26 L
	DF2	MBCBUS D27 L
GND	DH1	
	DH2	MBCBUS D28 L
	DJ1	MBCBUS D29 L
	DJ2	MBCBUS D30 L
	DK1	MBCBUS D31 L
	DK2	MBCBUS B1PA L
	DL1	MBCBUS B2PA L
	DL2	MBCBUS B3PAL
	DM1	
DN2	DM2	MDPA START MEM H
	DN1	MDPA CLR SMC H
	DN2	
	DP1	MDPC OWLB PAB H
	DP2	MDPC OWHB PAB H
	DR1	
CDPC MEM D00 H	DR2	
CDPC MEM D01 H	DS1	
CDPC MEM D02 H	DS2	
CDPC MEM D03 H	DT1	
GND	DT2	
CDPC MEM D04 H	DU1	
CDPC MEM D05 H	DU2	
CDPC MEM D06 H	DV1	
+5V	DV2	
CDPC MEM D07 H		

INPUT	PIN	OUTPUT
+5V	EA2	
CDPC MEM D06 H	EB2	
CDPC MEM D07 H	EC1	
GND	EC2	
CDPC MEM D10 H	ED1	
CDPC MEM D11 H	ED2	
CDPC MEM D14 H	EE1	
CDPC MEM D13 H	EE2	
CDPC MEM D12 H	EF1	
CDPC MEM D15 H	EF2	
GND	EH1	
CDPD MEM D19 H	EH2	
CDPD MEM D17 H	EJ1	
CDPD MEM D18 H	EJ2	
CDPD MEM D16 H	EK1	
CDPD MEM D20 H	EK2	
CDPD MEM D21 H	EL1	
CDPD MEM D22 H	EL2	
CDPD MEM D23 H	EM1	
CDPD MEM D24 H	EM2	
CDPD MEM D28 H	EN1	
GND	EN2	
CDPD MEM D25 H	EP1	
CDPD MEM D27 H	EP2	
CDPD MEM D26 H	ER1	
CDPD MEM D29 H	ER2	
CDPD MEM D30 H	ES1	
CDPD MEM D31 H	ES2	
GND	ET1	
CDPD MEM BYTE1 PAR H	ET2	
CDPC DATA RDY CTRLX H	EU1	
CDPC SEL DATA CTRLX H	EU2	
+5V L	EV1	
CDPC MEM BYTE0 PAR H	EV2	
	FA1	BCTD D13 IN H
	FA2	
+5V	FB1	BCTD D12 IN H
	FB2	BCTD D05 IN H
	FC1	BCTD D10 IN H
GND	FC2	
	FD1	BCTD D09 IN H
	FD2	BCTD D04 IN H
	FE1	BCTD D08 IN H
	FE2	BCTD D02 IN H
	FF1	BCTD D11 IN H
	FF2	BCTD D15 IN H
GND	FH1	
	FH2	BCTD D01 IN H
	FJ1	BCTD D14 IN H
	FJ2	BCTD D00 IN H
	FK1	AWRA DBL (0) H
	FK2	BCTD D03 IN H
	FL1	BCTD D07 IN H
	FL2	CSTA INVO H
	FM1	BCTD D06 IN H
	FM2	CSTA INV2 H
	FN1	CSTA INV3 H
	FN2	
	FP1	BCTA DB IN L
	FP2	CSTA INVI H
	FR1	MDPA IR H
	FR2	
	FS1	BCTA REG STR H
	FS2	CDPD MEM BYTE2 PAR H
	FT1	AWRA EN DBL H
	FT2	
	FU1	MDPA EN BWPCK H
	FU2	MDPA EN OWPCK H
	FV1	
+5V	FV2	
CSTC READ DONE L		

IC TYPE	REF	OUTPUT PINS
74504	E1	4,6,8,10
74504	E97	8
74551	E99	8
74574	E99	8

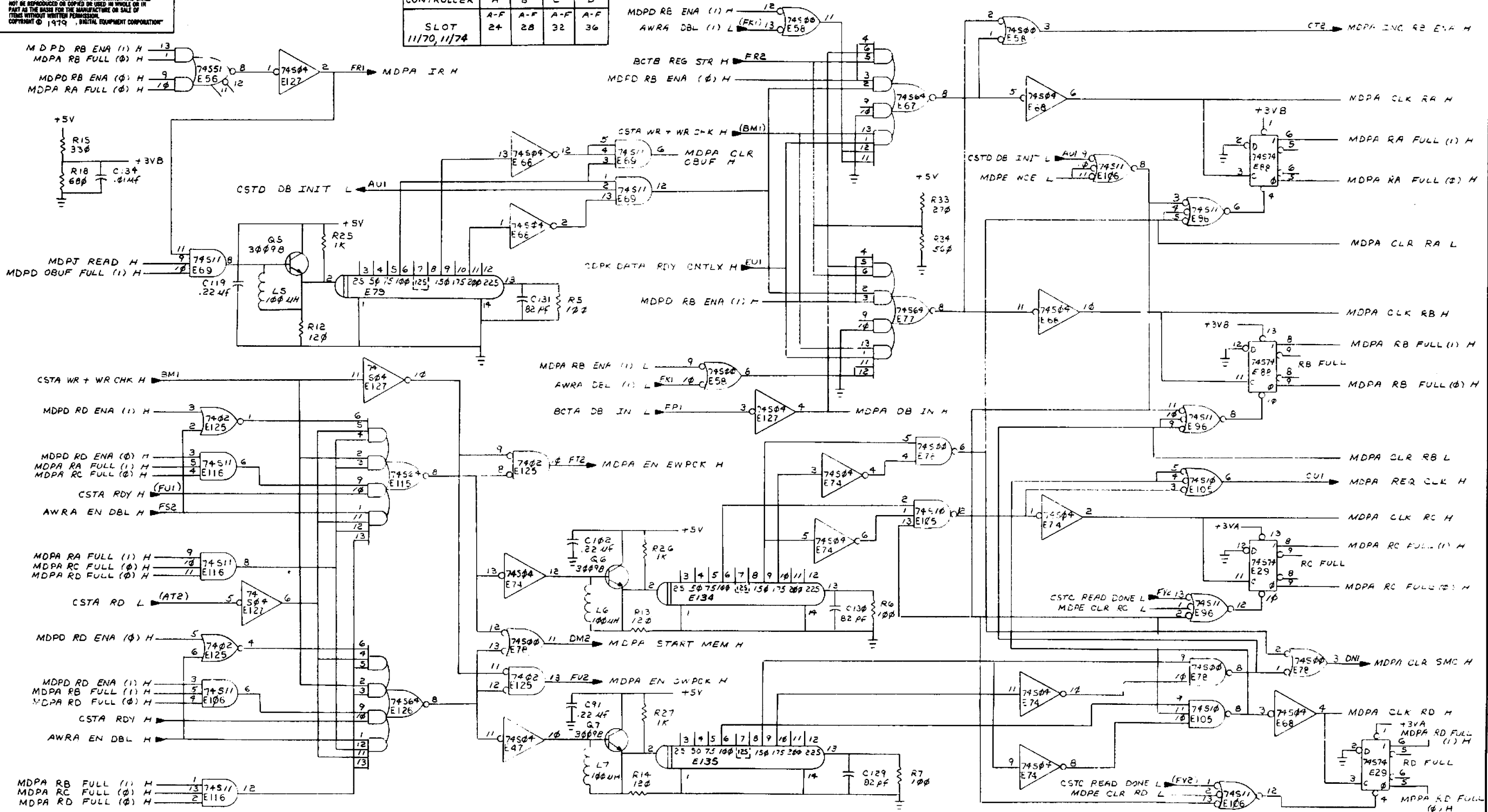


REVISIONS
NO. CHANGE NO.

DRN: <i>John</i>	5/79	FIRST USED ON	digital
CHK'D: <i>John</i>	6/79	TITLE	
ENG: <i>W.S.</i>	8/79	PROJECT	MASSBUS DATA PATH
PROD: <i>W.S.</i>	5/79	NEXT HIGHER ASSY.	
SCALE	NONE	SIZE	CODE
SHEET	OF 10	NUMBER	REV.
		D CS M8124-0-1	*

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CONTROLLER	A	B	C	D
SLOT	A-F	A-F	A-F	A-F
	24	28	32	36



(MEMORY REGISTERS CONTROL)

DRN. <i>Wilson</i> 2/27/79	FIRST USED ON	digital
CHK'D <i>Jones</i> 3/2/79	ENG. <i>Wilson</i> 2/27/79	TITLE
PROJ ENG. <i>Wilson</i> 2/27/79	PROD. <i>Wilson</i> 2/27/79	MASSBUS DATA PATH (MDPA)
NEXT HIGHER ASSY.	E-DD-M8124-0	SIZE CODE
SCALE NONE	D	NUMBER
SHEET 2 OF 10	DIST.	REV. *

REV.	CHANGE NO.

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D

D

C

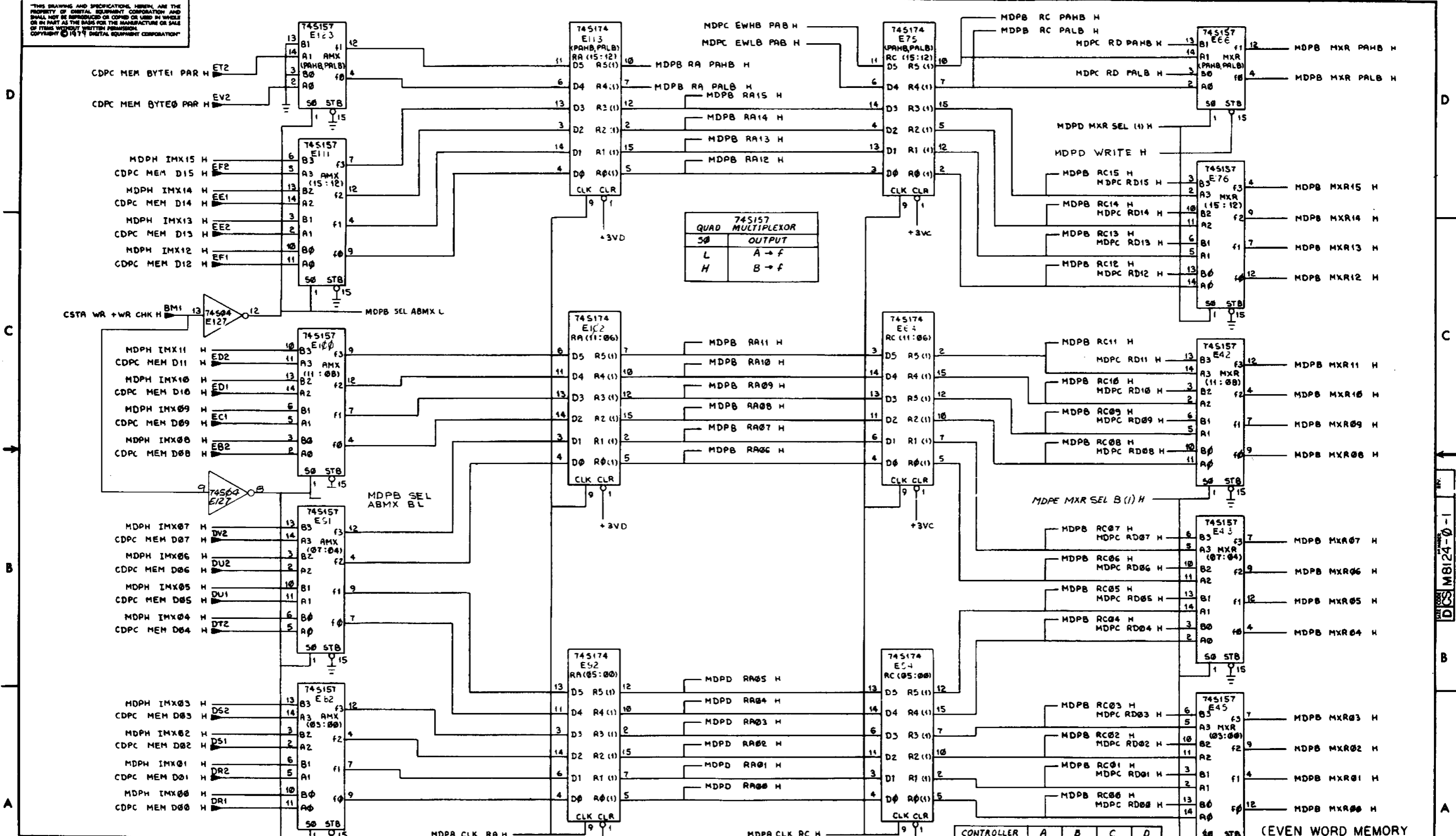
C

B

B

A

A



74S157 QUAD MULTIPLEXOR

SELECT	OUTPUT
L	A → f
H	B → f

CONTROLLER	A	B	C	D
SLOT	A-F	A-F	A-F	A-F
	24	28	32	36

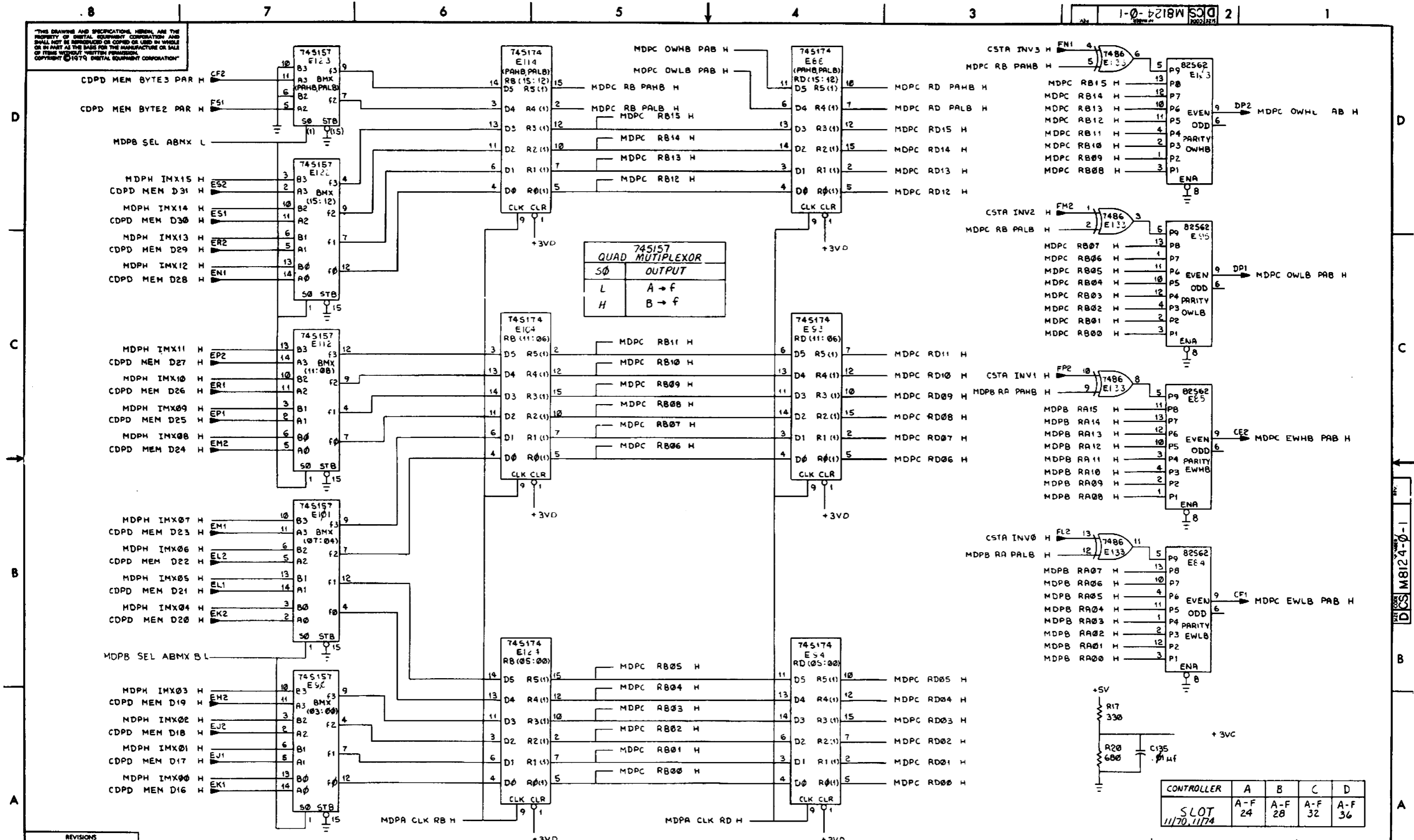
(EVEN WORD MEMORY DATA REGISTERS & MIXER)

REVISIONS		
CHK	CHANGE NO.	REV.

DCS M8124-0-1

TW 1

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745174 QUAD MULTIPLEXOR	
S0	OUTPUT
L	A → f
H	B → f

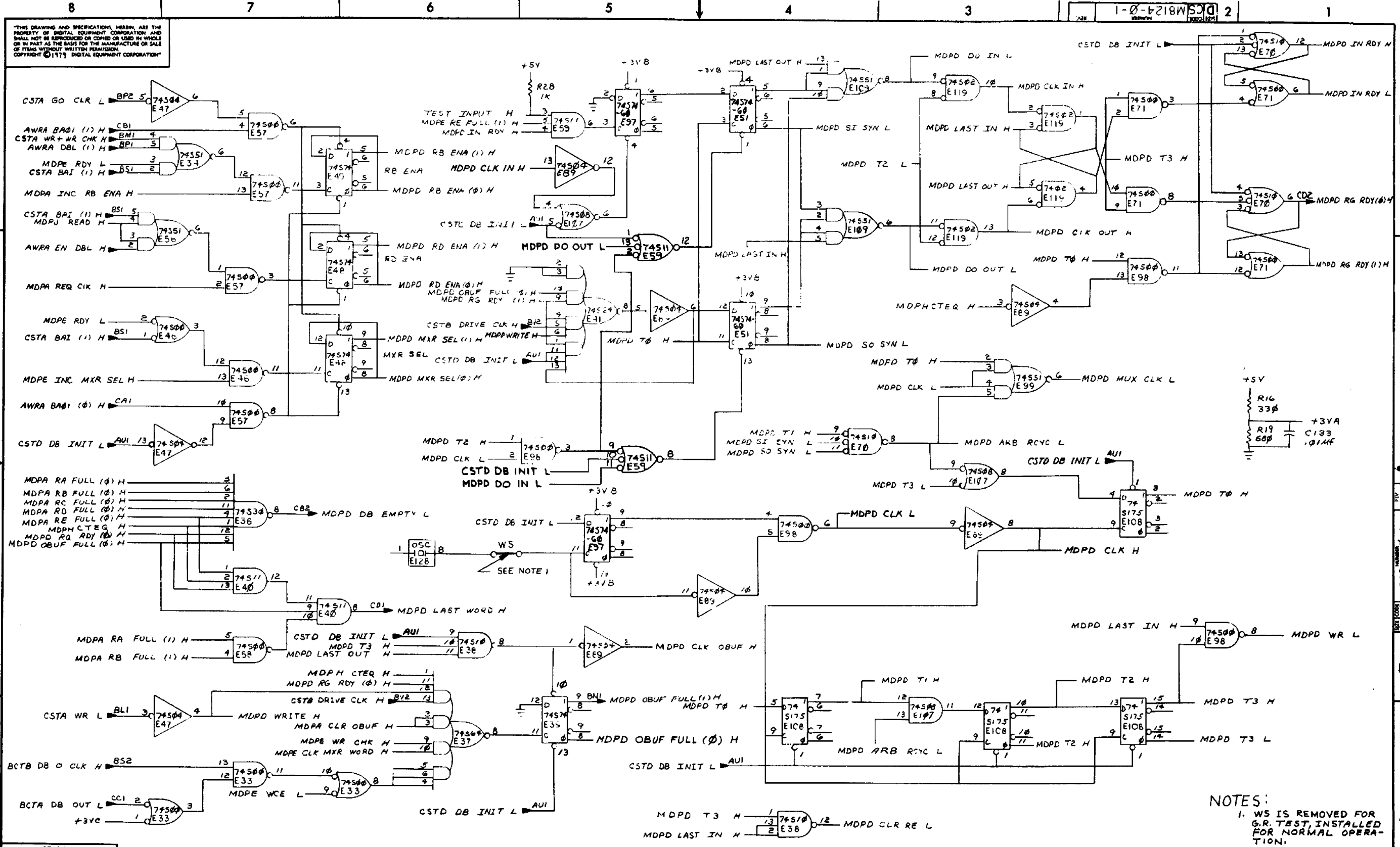
CONTROLLER	A	B	C	D
SLOT 1170, 1174	A-F 24	A-F 28	A-F 32	A-F 36

(ODD WORD MEMORY DATA REGISTERS & MEMORY PARITY GEN/CHECKERS)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE CODE	NUMBER	REV.
MASSBUS DATA PATH (MDPC)	DCS	M8124-0-1	*
SCALE	SHEET 4 OF 10	DIST.	

DCS M8124-0-1



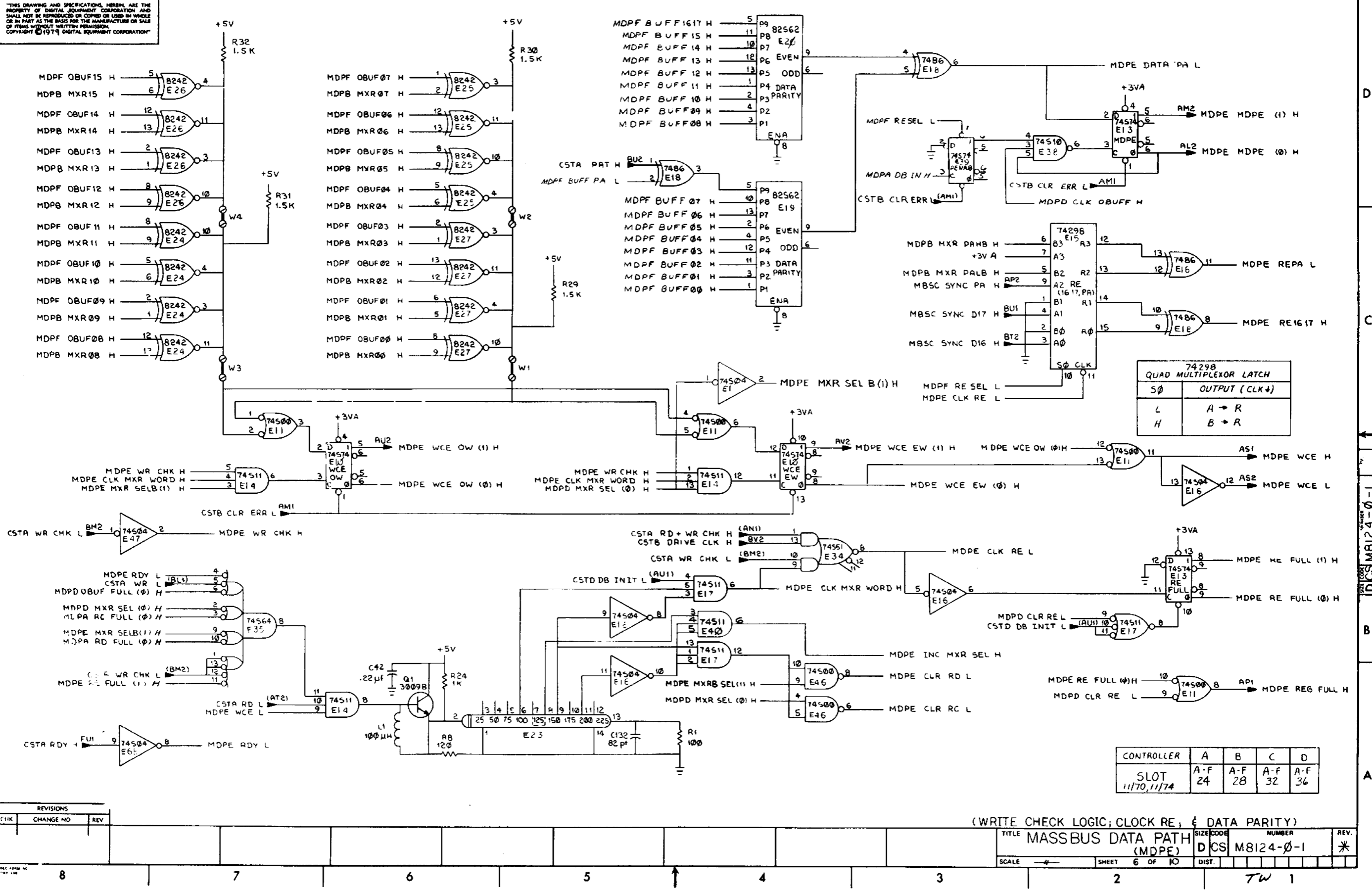
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REVISIONS		
CHK	CHANGE NO.	REV.

DATA REGISTERS CONTROL			
TITLE	SIZE/SCALE	NUMBER	REV.
MASSBUS DATA PATH (MDPD)	DCS M8124-0-1		
SCALE	SHEET 5 OF 10	DIST.	

NOTES:
1. W5 IS REMOVED FOR G.R. TEST, INSTALLED FOR NORMAL OPERATION.

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74298 QUAD MULTIPLEXOR LATCH	
S \emptyset	OUTPUT (CLK \downarrow)
L	A \rightarrow R
H	B \rightarrow R

CONTROLLER	A	B	C	D
SLOT	A-F	A-F	A-F	A-F
	11/70,11/74	24	28	32
				36

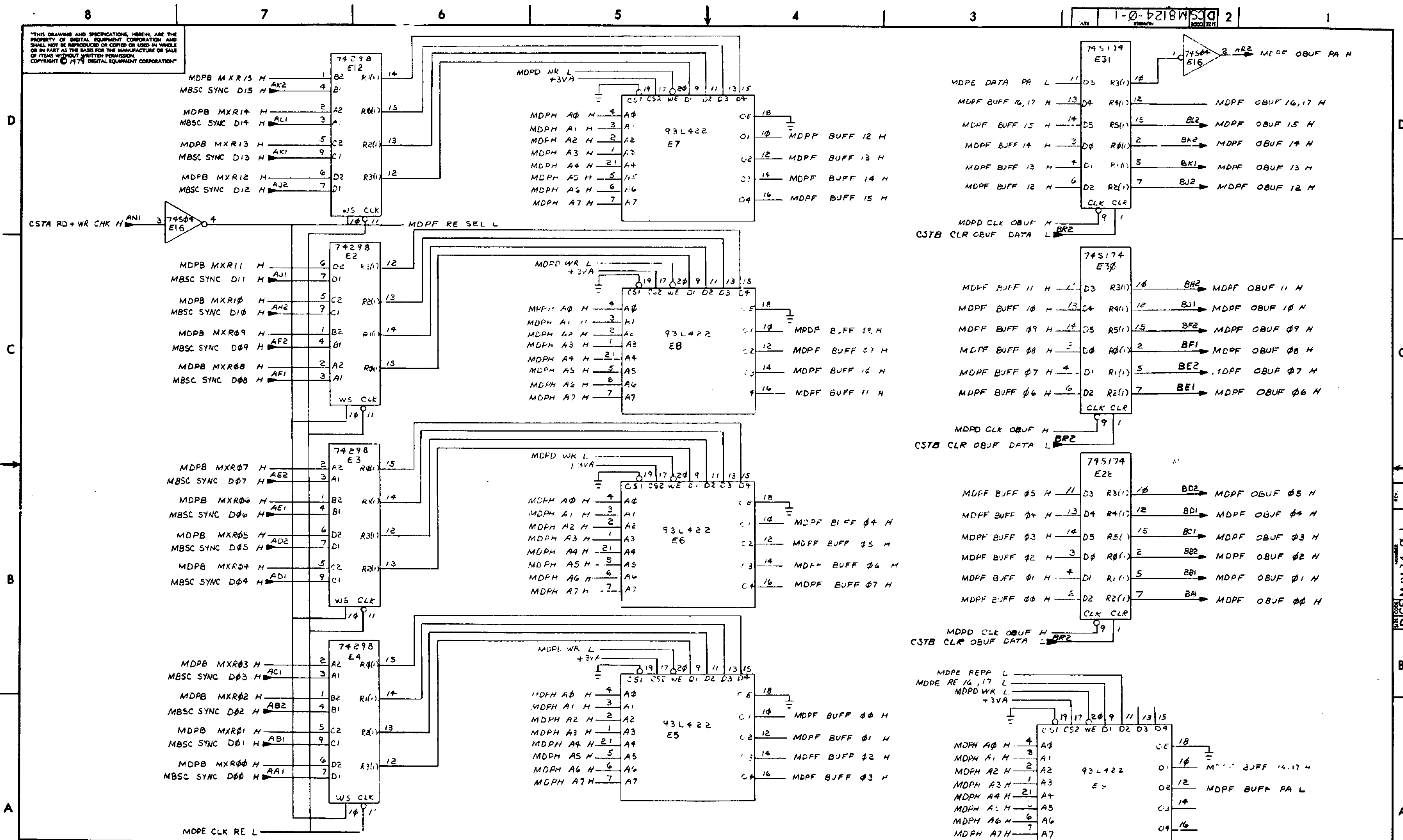
(WRITE CHECK LOGIC; CLOCK RE; & DATA PARITY)

REVISIONS		
CHK	CHANGE NO	REV

TITLE	MASSBUS DATA PATH (MDPE)	SIZE CODE	D CS	NUMBER	M8124-0-1	REV.	*
SCALE		SHEET	6 OF 10	DIST.			

DCS M8124-0-1

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REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	MASS BUS DATA PATH (MDPF)	SIZE CODE	D	NUMBER	CSM8124-0-1	REV.	*
SCALE		SHEET	7	OF 10		DIST.	

REV. NUMBER CSM8124-0-1

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D

C

B

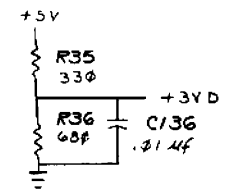
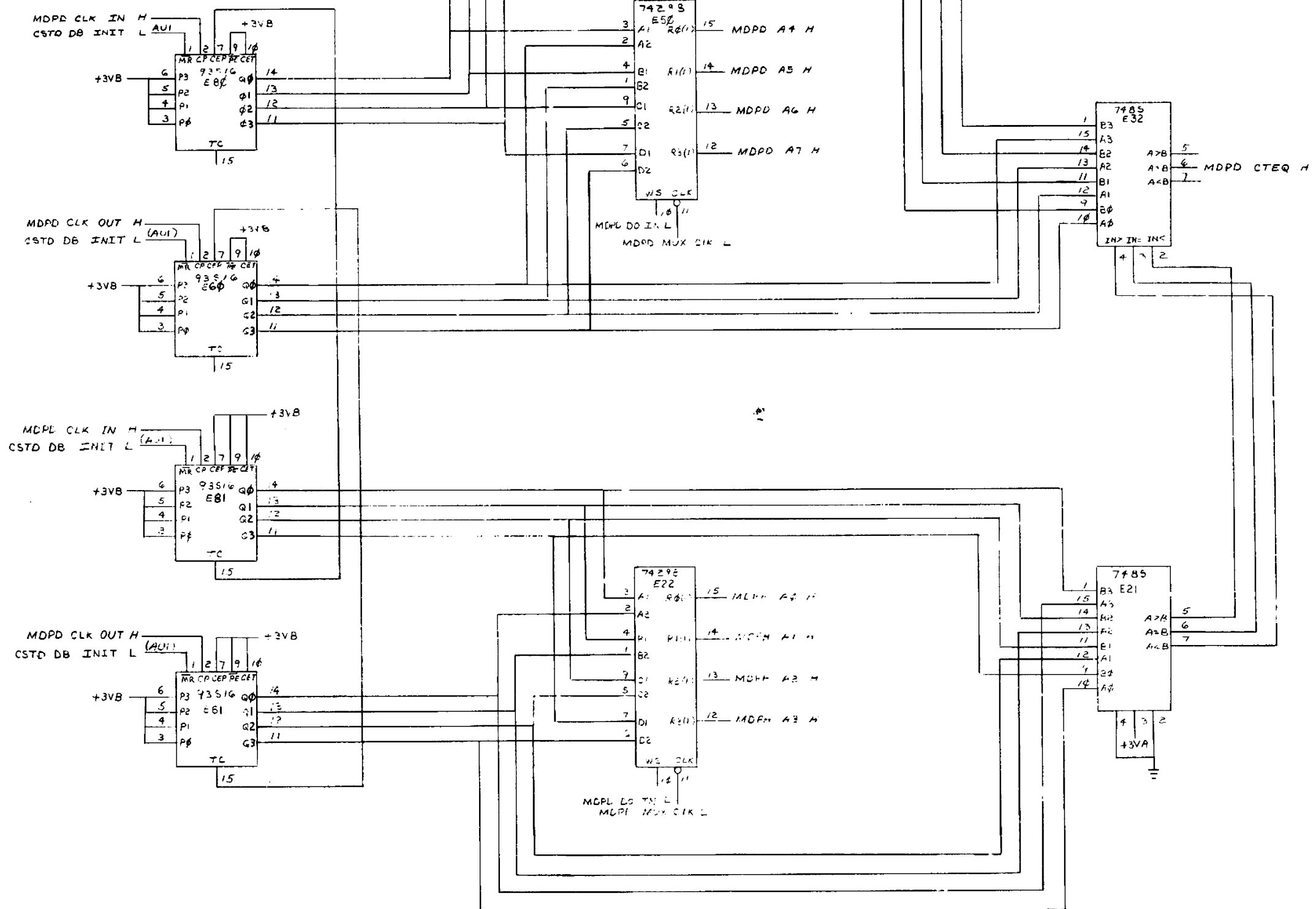
A

D

C

B

A

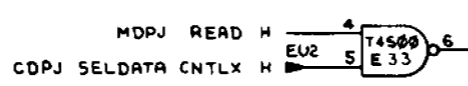
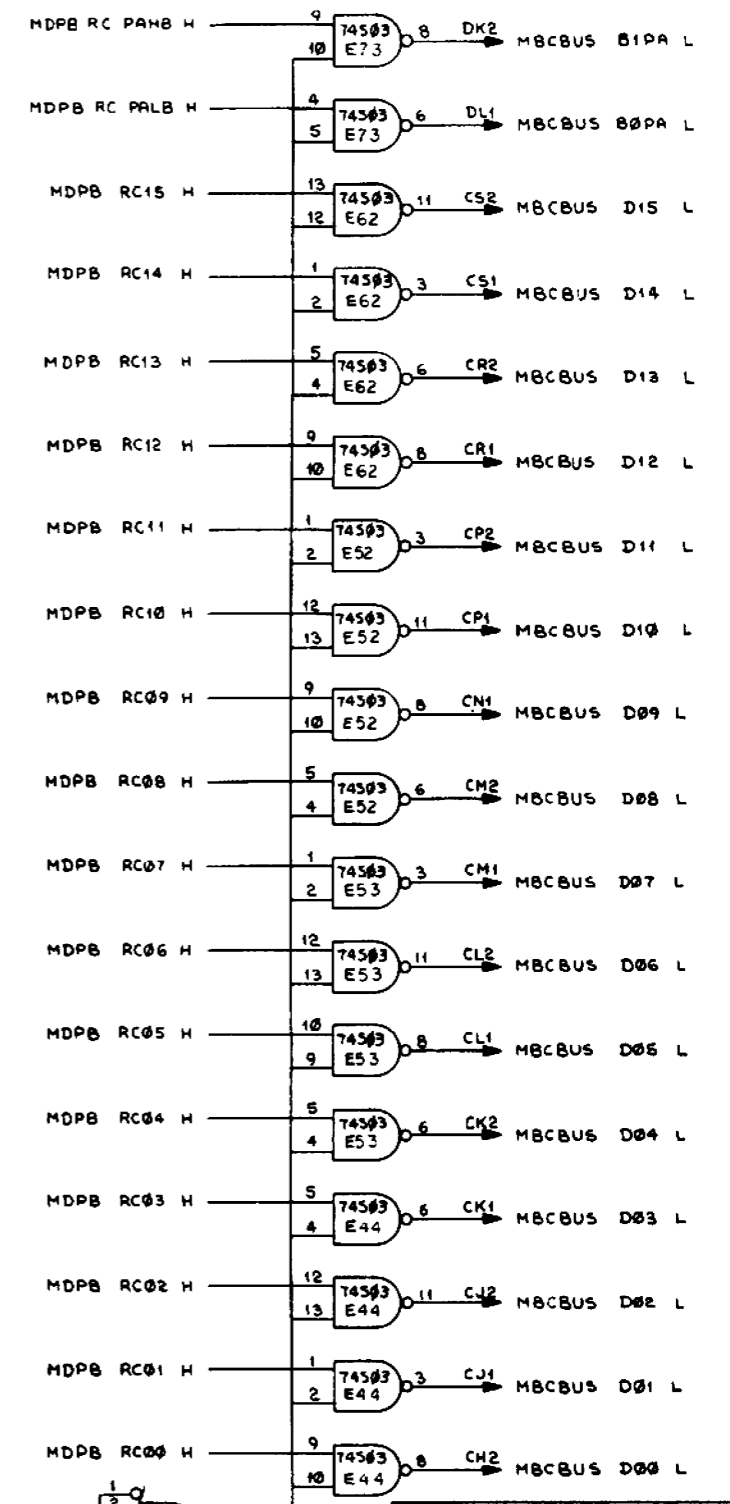
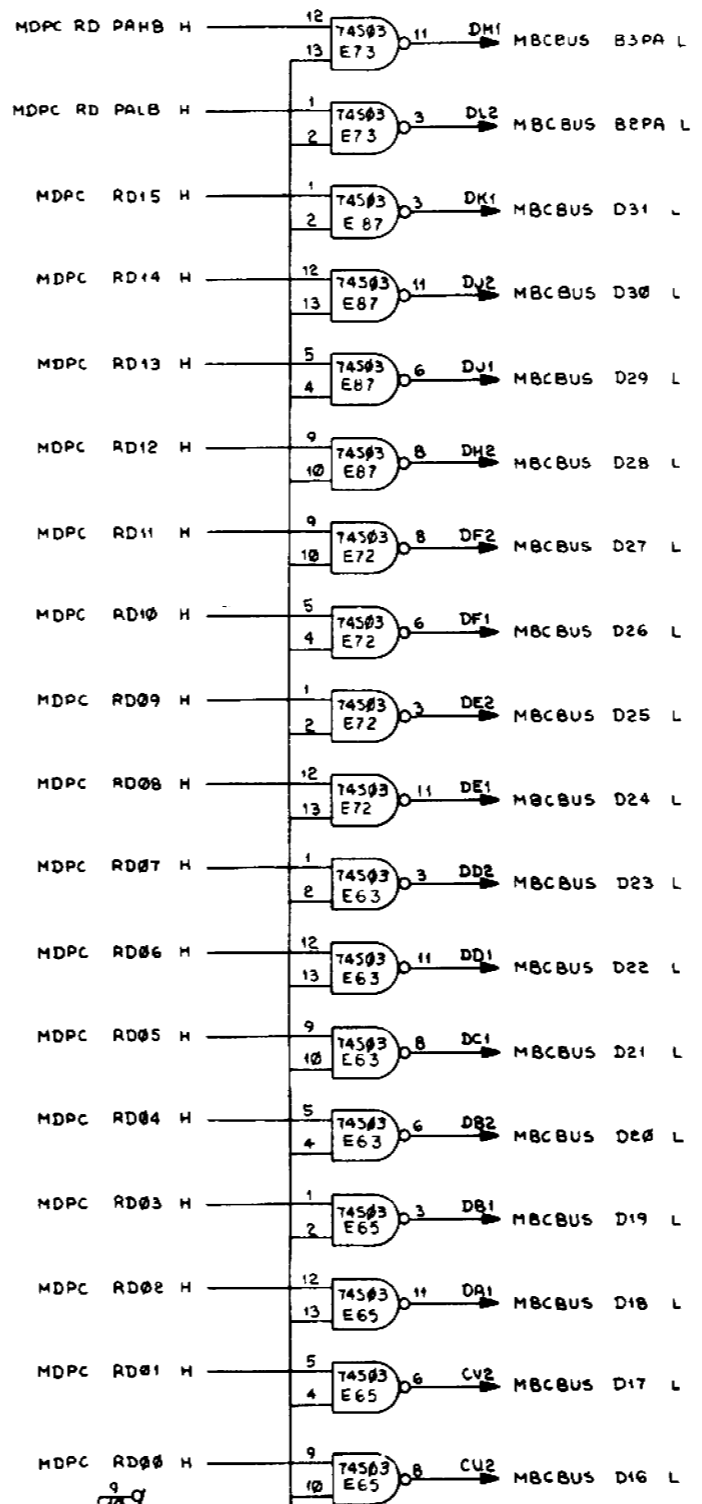
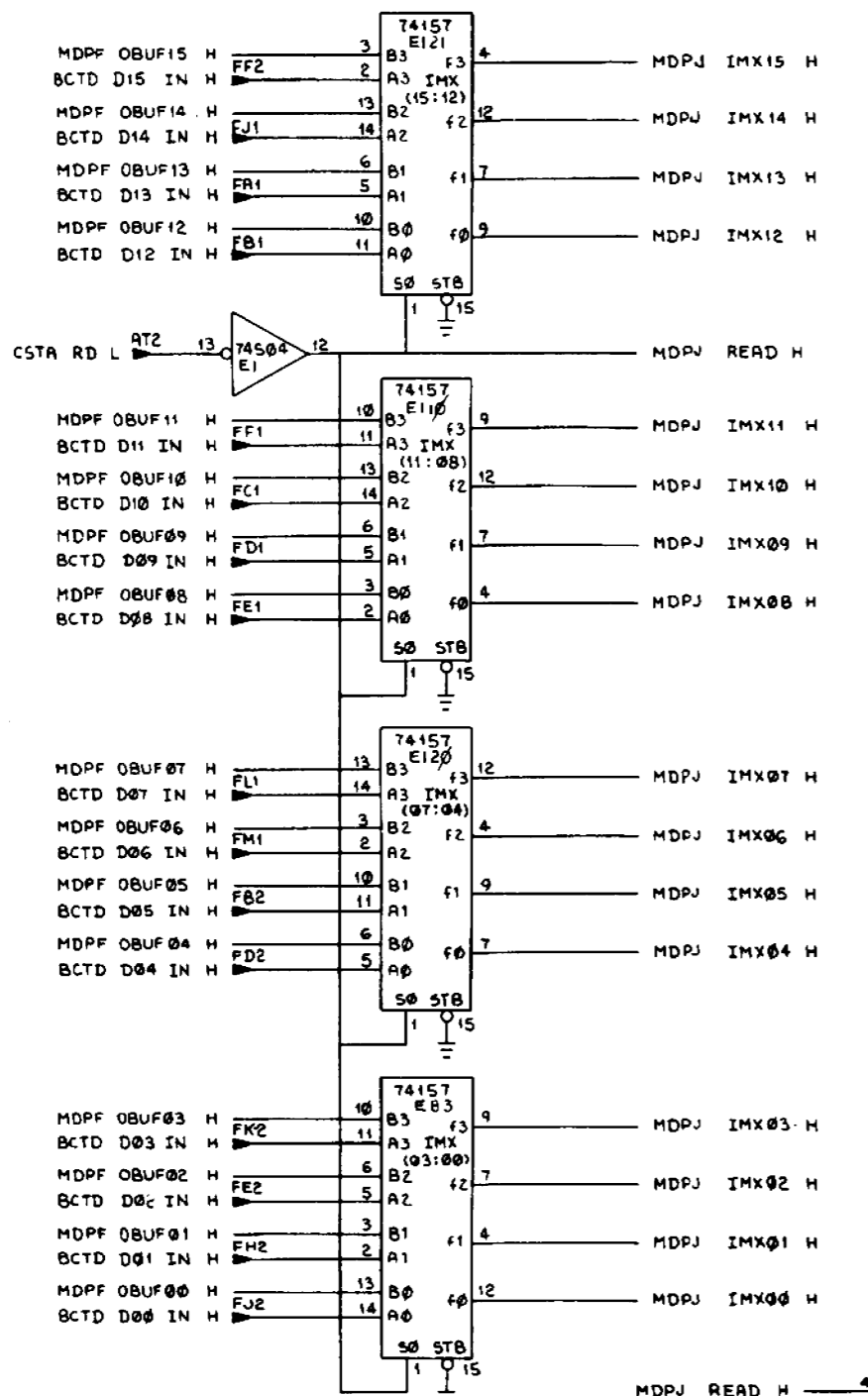


REVISIONS		
CHK	CHANGE NO.	REV.

TITLE		RAM ADDRESS + COMPARE	
MASSBUS DATA PATH (MDPH)		SIZE CODE	NUMBER
DCS M8124-0-		DIST.	REV. *
SCALE	SHEET 5 OF 10	T	

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74157 QUAD MULTIPLEXOR	
S0	OUTPUT
L	A → f
H	B → f



CONTROLLER	A	B	C	D
SLOT	A-F	A-F	A-F	A-F
11/70, 11/74	24	28	32	36

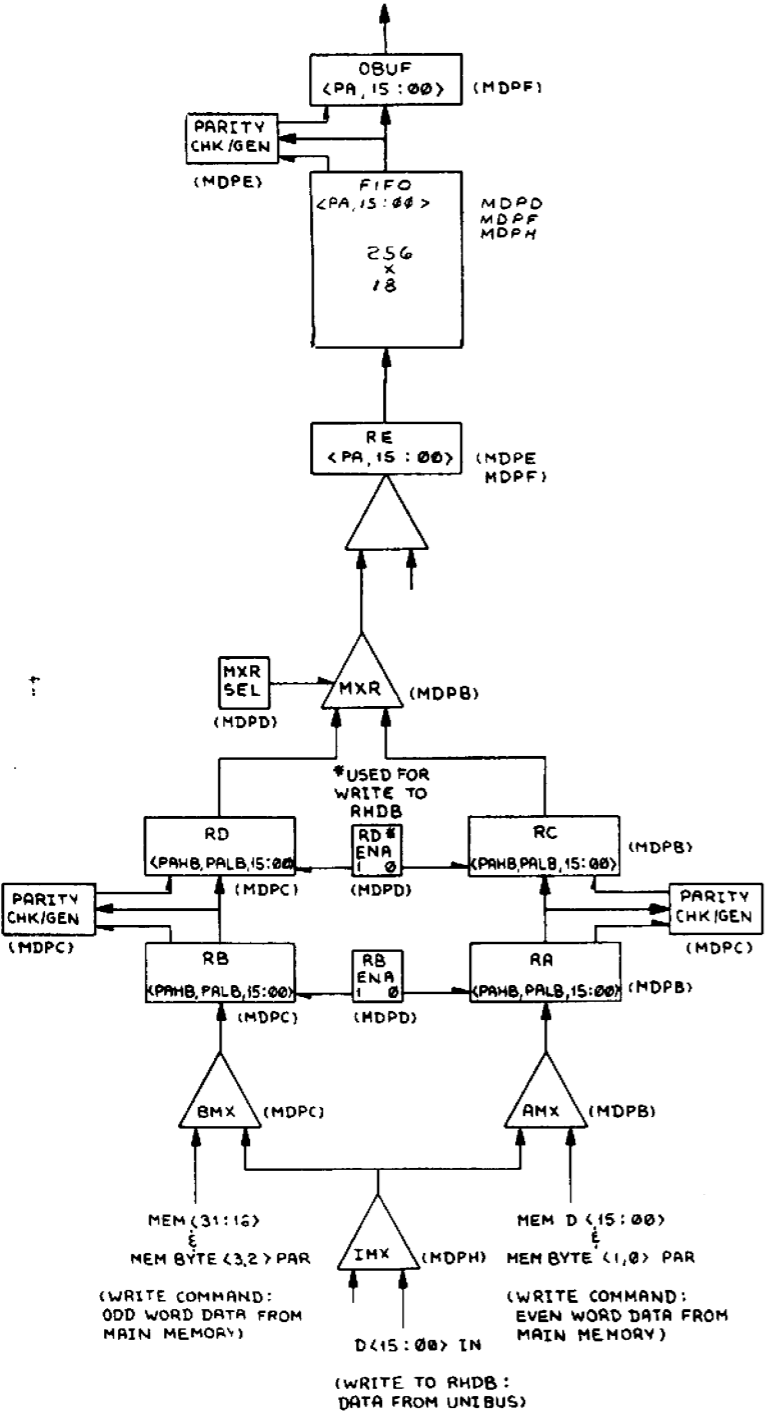
(IMX & DATA DRIVERS)

REVISIONS		
CHK	CHANGE NO.	REV.

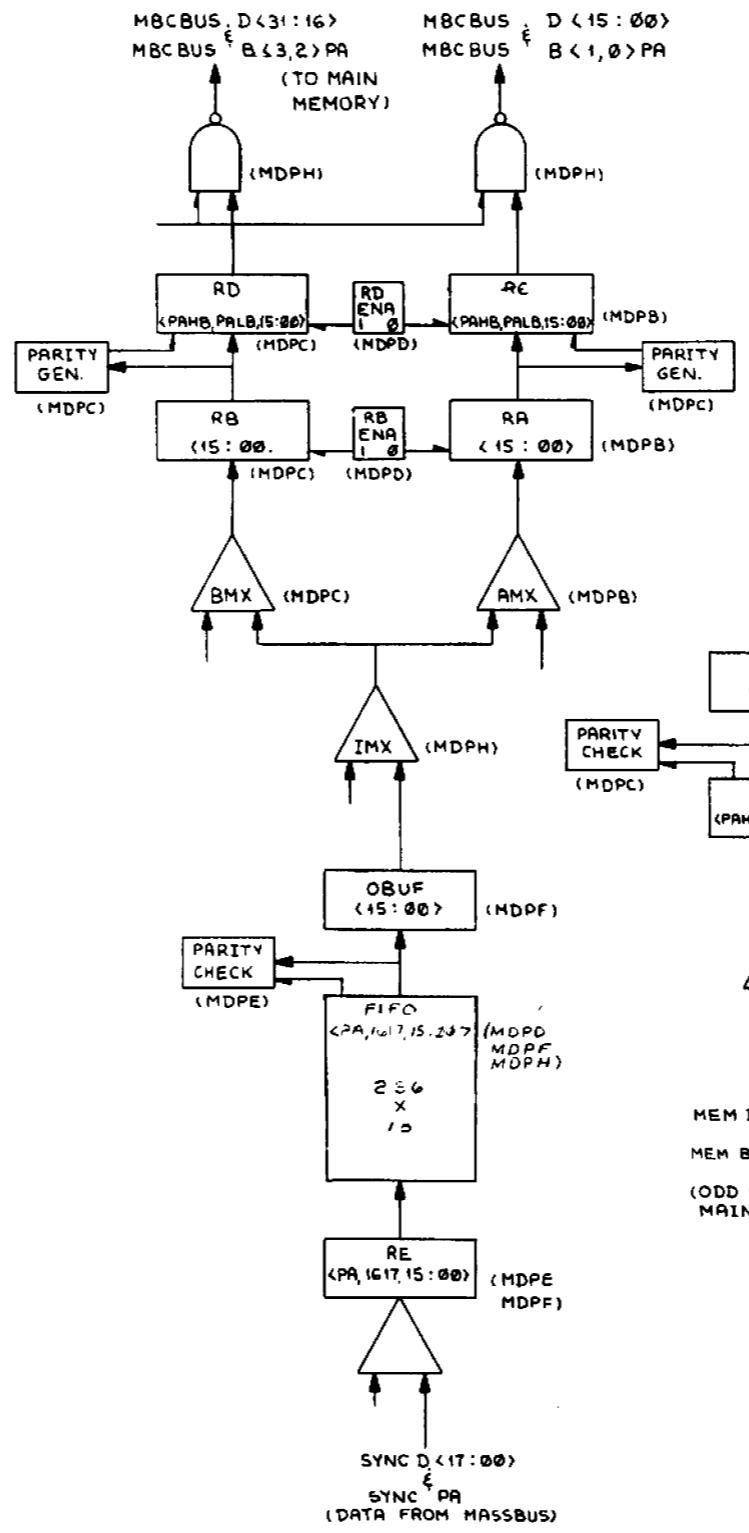
TITLE	MASSBUS DATA PATH (MDPJ)	SIZE/CODE	DCS	NUMBER	M8124-0-1	REV.	*
SCALE		SHEET	9 OF 10	DIST.			

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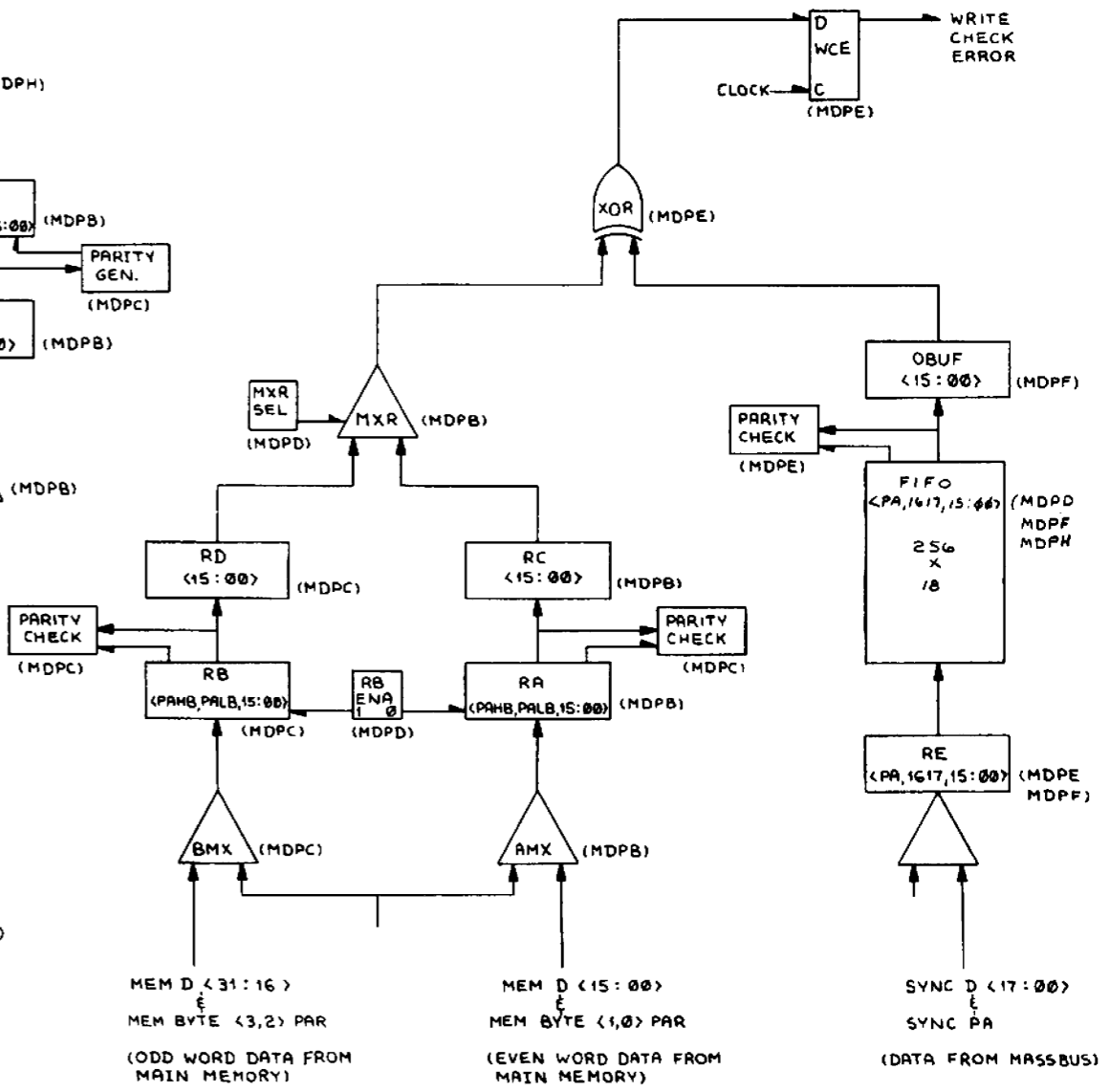
**WRITE COMMAND
OR
READ-WRITE RHDB REGISTER**
(READ FROM RHDB : TO UNIBUS)
(WRITE COMMAND : TO MASSBUS)



READ COMMAND



WRITE CHECK COMMAND



CONTROLLER	A	B	C	D
SLOT	A-F	A-F	A-F	A-F
	24	28	32	36

(DATA PATH BLOCK DIAGRAM)

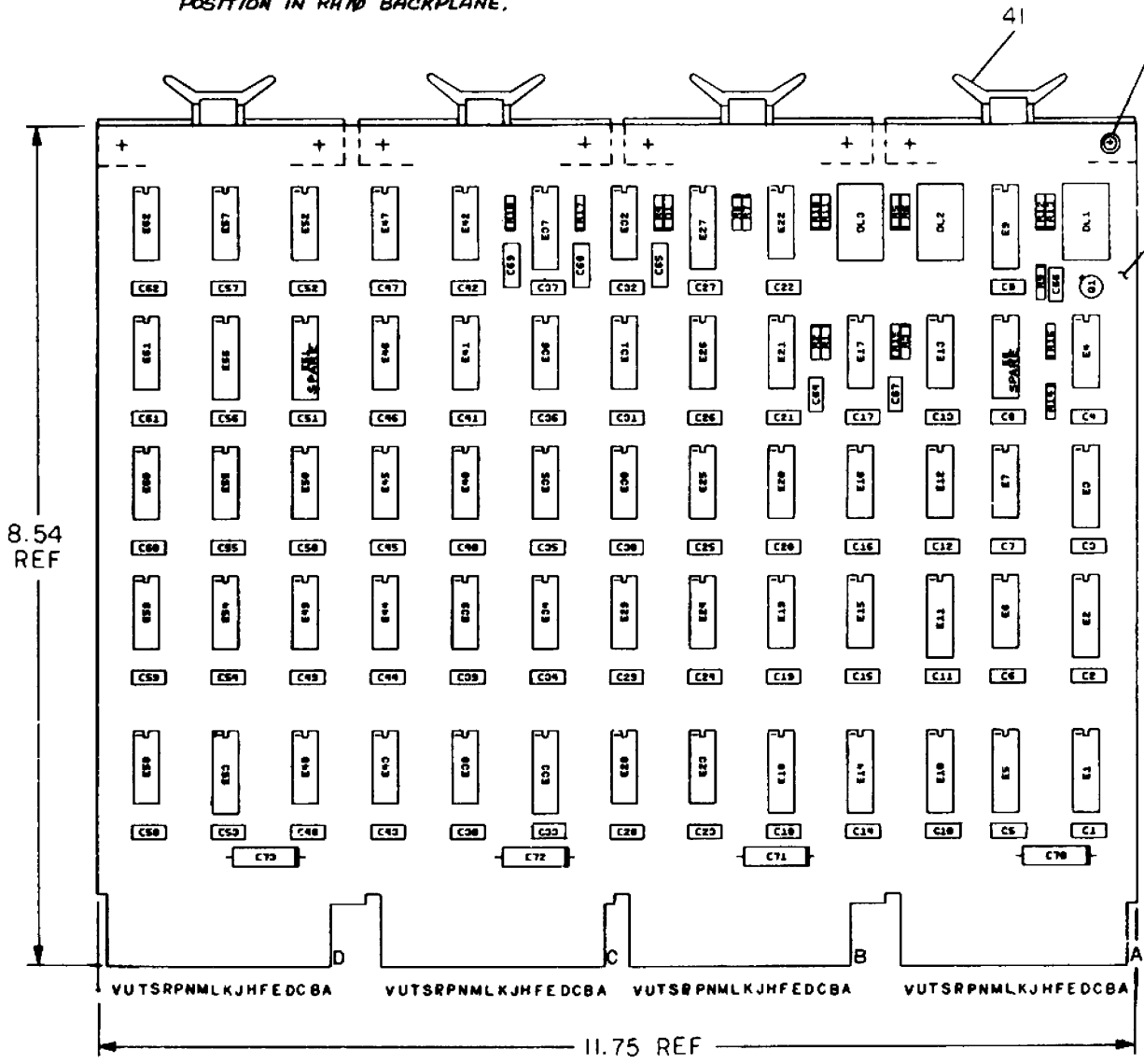
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	MASSBUS DATA PATH (MDPK)	SIZE CODE	D CS	NUMBER	ME124-0-1	REV.	*
SCALE		SHEET	10 OF 10	DIST.			

REV. 10/74 DCS ME124-0-1

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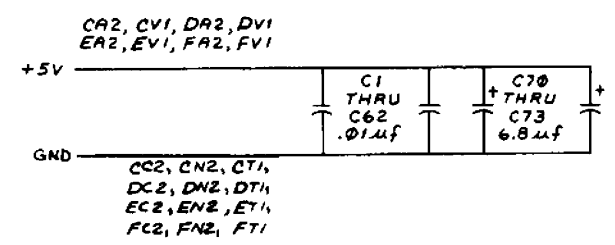
NOTES:
 1. IC SLOTS E0 & E51 ARE SPARES.
 2. PIN DESIGNATIONS ON CIRCUIT SCHEMATICS REFER TO MODULE POSITION IN RH70 BACKPLANE.



PIN NOMENCLATURE

MODULE PIN	BACKPLANE PIN
A	C
B	D
C	E
D	F

REF	X-Y COORDINATE HOLE LOCATION	K-CD-M0151-0-4	1
REF	ASSY/DRILLING HOLE LAYOUT	D-AM-M0151-0-5	2
REF	MODULE ECO HISTORY	B-MH-M0151-0-0	3
1	ETCHED CIRCUIT BOARD	5011350	4
64	C1 THRU C62, C64, C66	CAPACITOR .01uf 100V, 20%	5
4	C70 THRU C73	CAPACITOR 6.8uf 10% 35V	6
1	C65	CAPACITOR .47uf 20% 25V	7
1	C67	CAPACITOR .47uf 5% 100V	8
2	C68, C69	CAPACITOR 180pf 5% 100V	9
1	D1	DIODE D664	10
3	R5, R10, R12	RESISTOR 150 OHM, 1/4 W, 5%	11
3	R6, R11, R13	RESISTOR 300 OHM, 1/4 W, 5%	12
2	R1, R8	RESISTOR 330 OHM, 1/4 W, 5%	13
2	R2, R9	RESISTOR 800 OHM, 1/4 W, 5%	14
3	R3, R14, R15	RESISTOR 1K OHM, 1/4 W, 5%	15
4	R7, R17, R18, R4	RESISTOR 5.6K OHM, 1/4 W, 5%	16
1	R16	RESISTOR 8.2K OHM, 1/4 W, 5%	17
1	Q1	TRANSISTOR DEC 3009 B	18
3	DL1, DL2, DL3	DELAY 50 NS	19
2	E45, E46	IC DEC 7400	20
3	E7, E12, E62	IC DEC 74H00	21
2	E39, E48	IC DEC 74S00	22
2	E34, E42	IC DEC 7402	23
4	E6, E36, E43, E49	IC DEC 74H04	24
4	E35, E41, E58, E59	IC DEC 7400	25
3	E40, E44, E52	IC DEC 7410	26
2	E24, E32	IC DEC 74H10	27
5	E4, E25, E50, E54, E57	IC DEC 74H11	28
2	E22, E31	IC DEC 7437	29
1	E56	IC DEC 7442	30
1	E20	IC DEC 74H30	31
1	E28	IC DEC 74H50	32
10	E13, E15, E16, E21, E28, E30, E47, E55, E60, E61	IC DEC 74H74	33
3	E19, E23, E29	IC DEC 74S74	34
1	E38	IC DEC 74S64	35
2	E27, E37	IC DEC 74123	36
2	E33, E53	IC DEC 74175	37
1	E9	IC DEC 74193	38
8	E1, E2, E3, E5, E10, E11, E14, E18	IC DEC 8234	39
1	E17	IC DEC 8840	40
4		HANDLE, FLIP CHIP (MAGENTA)	41
8		EYELET	42
A/R	WIRE # 30 AWG BUSS	9105740-55	43



IC TYPE	GND	+5V
I.C. DEC 74175	8	16
I.C. DEC 74123	8	16
I.C. DEC 8640	1	8
I.C. DEC 8234	8	16
I.C. DEC 7442	8	16
I.C. DEC 74193	8	16
IC TYPE	GND	+5V

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE.

IC PIN LOCATIONS

FIRST USED ON OPTION MODEL RH70

ETCH BOARD REV A

REVISIONS

CHK	CHG	NO	REV

DATE 11-7-74
 DATE 10-26-74
 DATE 7-2-74
 DATE 1-2-74
 DATE 1/11/75

digital EQUIPMENT CORPORATION
 TITLE CONTROL AND STATUS (CST)
 B-DD-RH70-0
 DCS MB151-0-1
 SHEET 1 OF 6

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D

C

B

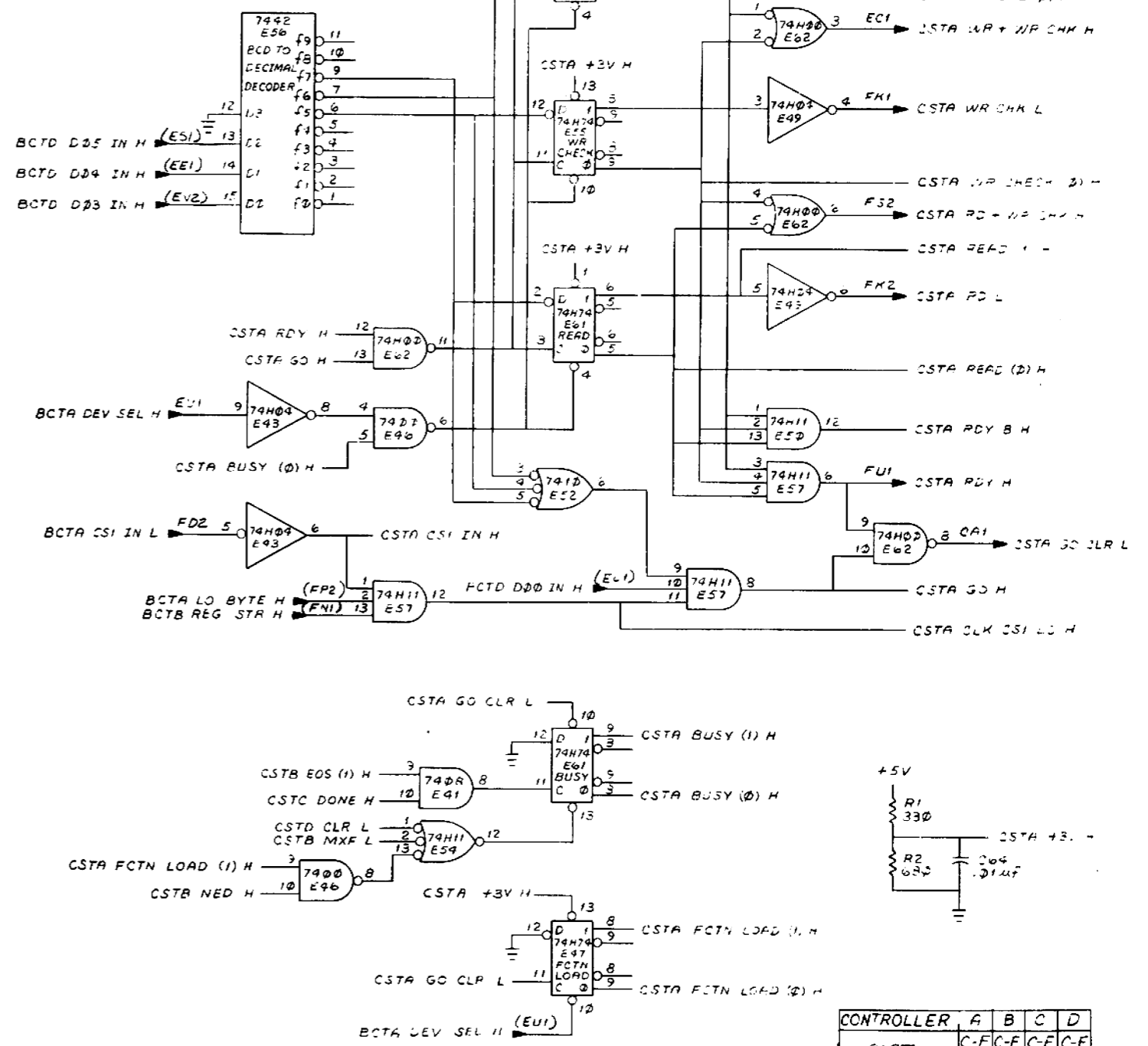
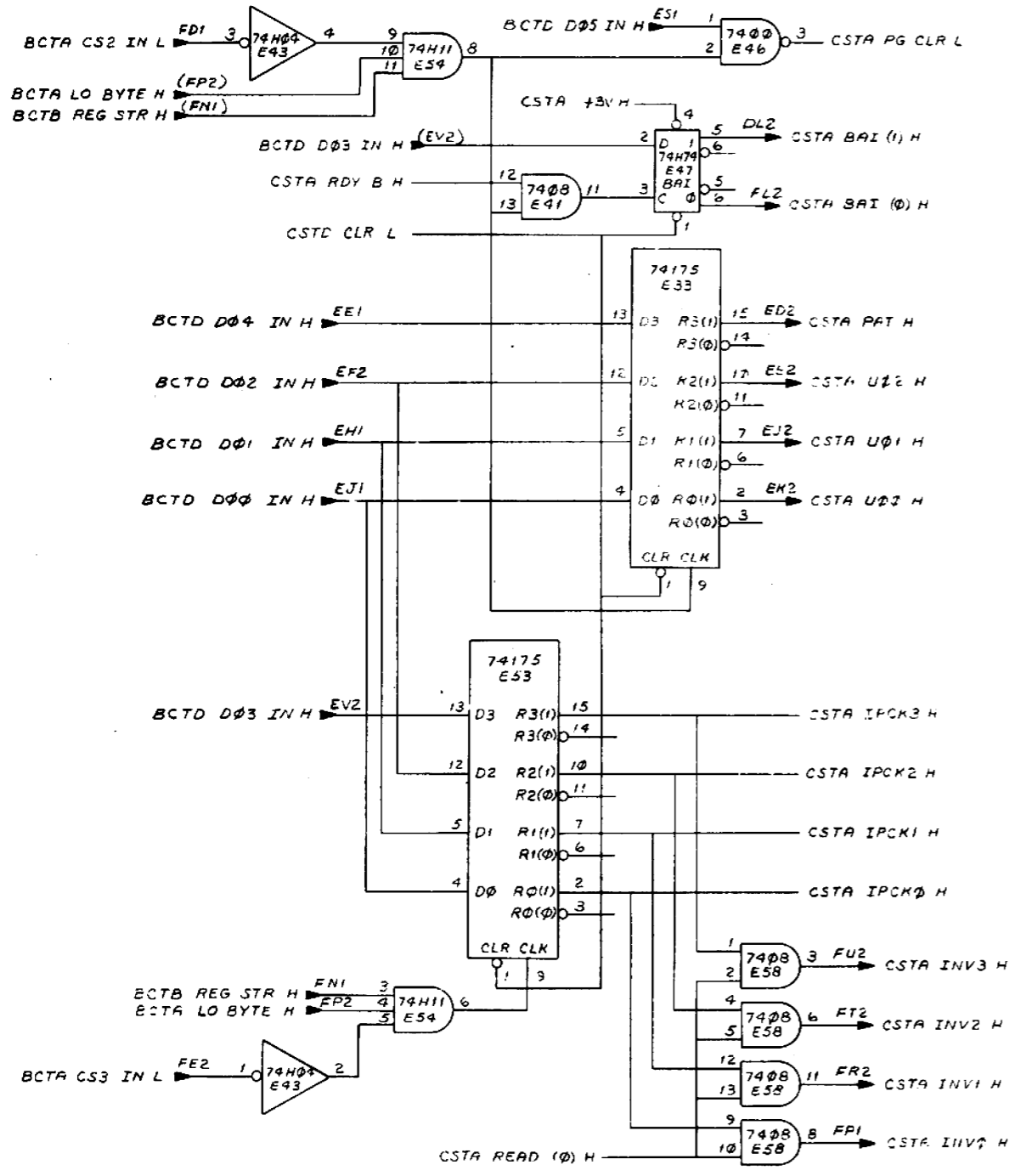
A

D

C

B

A



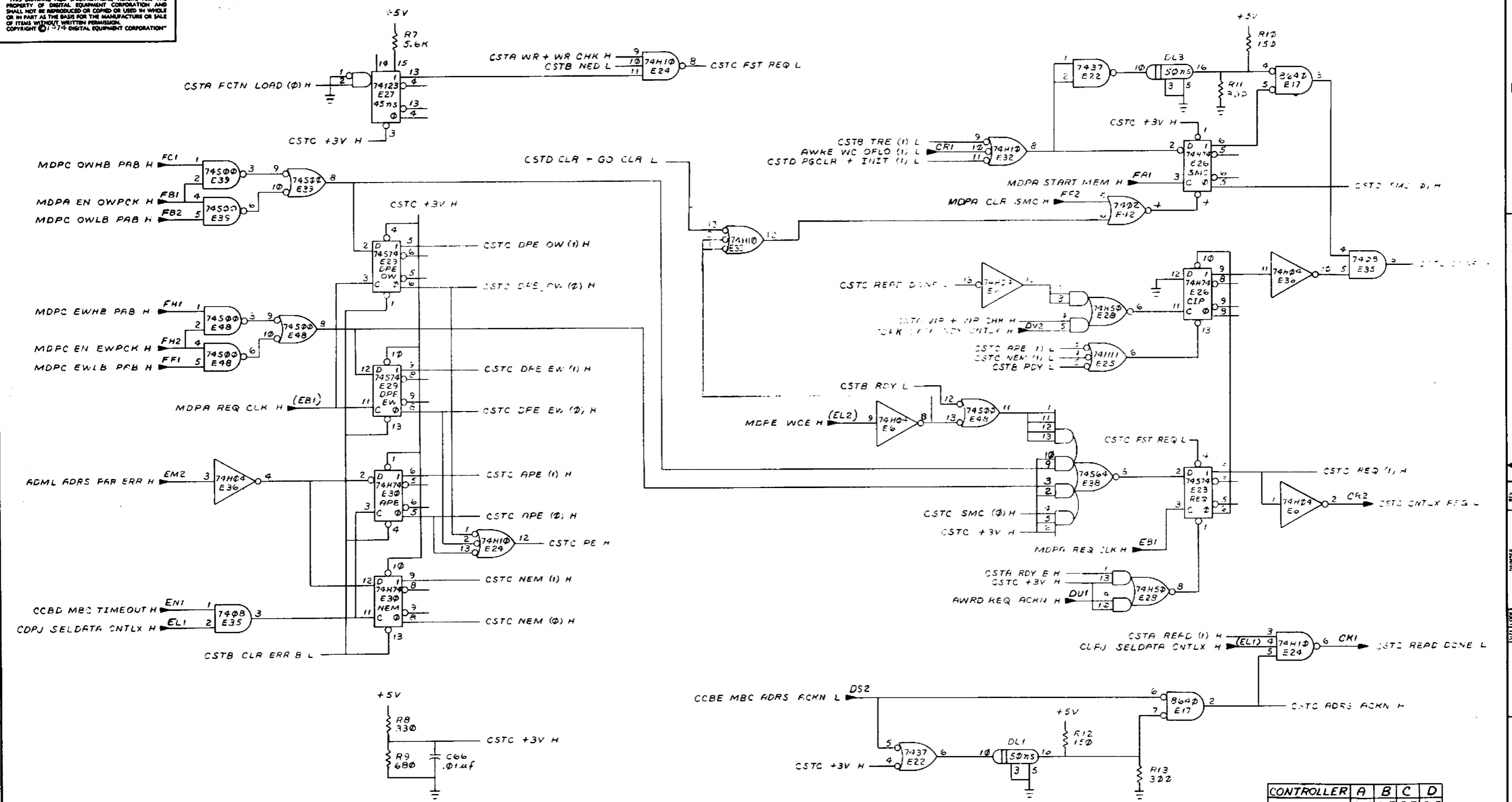
CONTROLLER	A	B	C	D
SLOT	C-F	C-F	C-F	C-F
	25	29	33	37

CSI, CS2, & CS3 CNTL & STATUS BITS; FUNCTION SELECT

REVISIONS		
CHK	CHANGE NO	REV.

TITLE	CONTROL AND STATUS (CSTA)	SIZE CODE	D	NUMBER	M8151-0-1	REV.	A
SCALE	1:1	SHEET	2	OF	6	DIST.	

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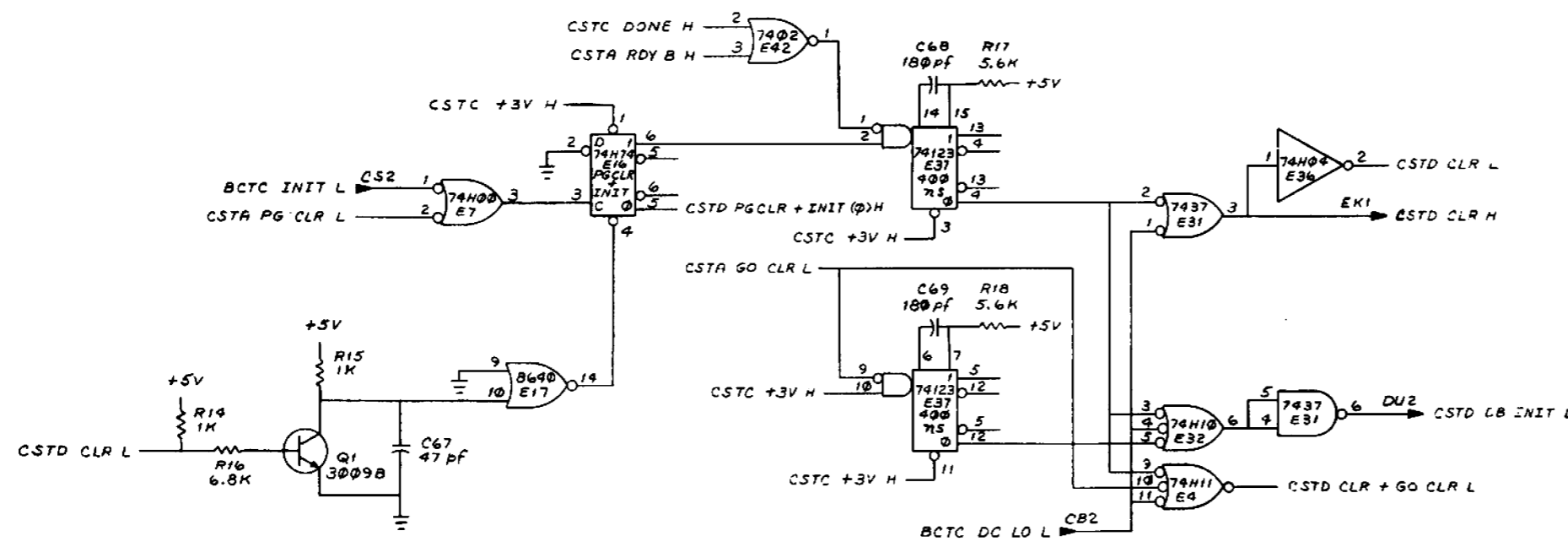
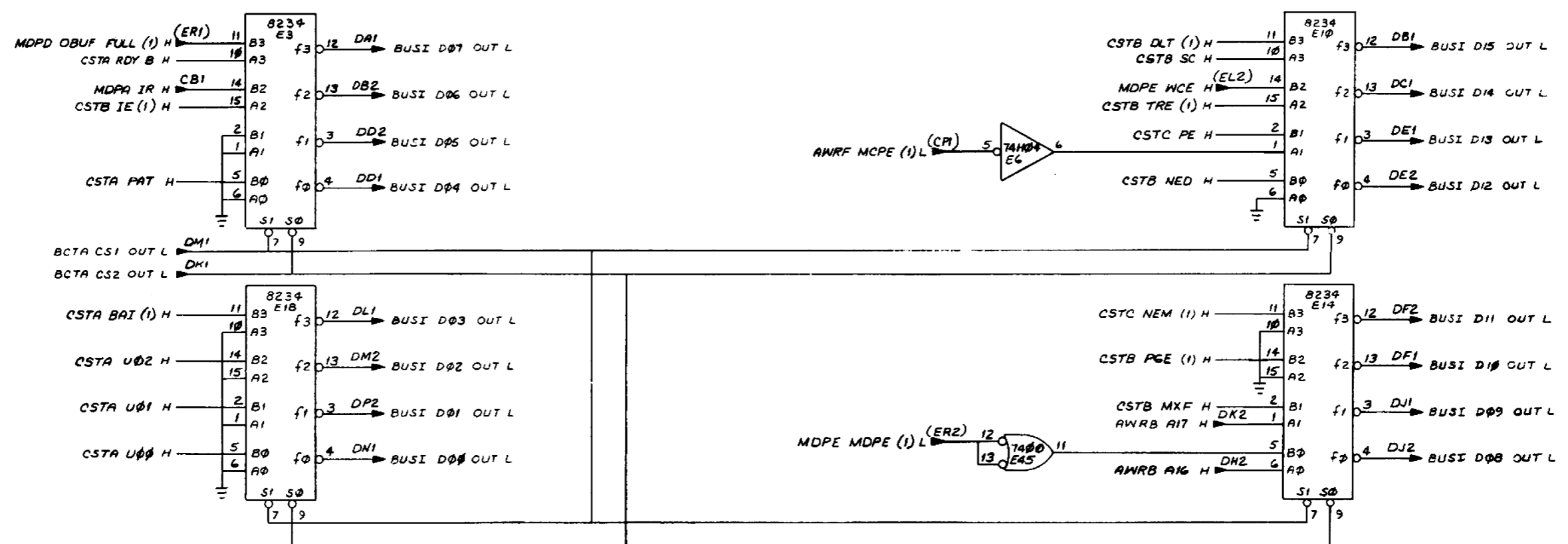
CONTROLLER	A	B	C	D
SLOT	C-F	C-F	C-F	C-F
	25	29	33	37

PE; NEM & MEMORY CYCLE CONTROL

REVISIONS		
CHK	CHANGE NO	REV.

TITLE	CONTROL AND STATUS (CSTC)	SIZE CODE	DCS	NUMBER	M8151-0-1	REV.	A
SCALE	1/1	SHEET	4 OF 6	DIST.			

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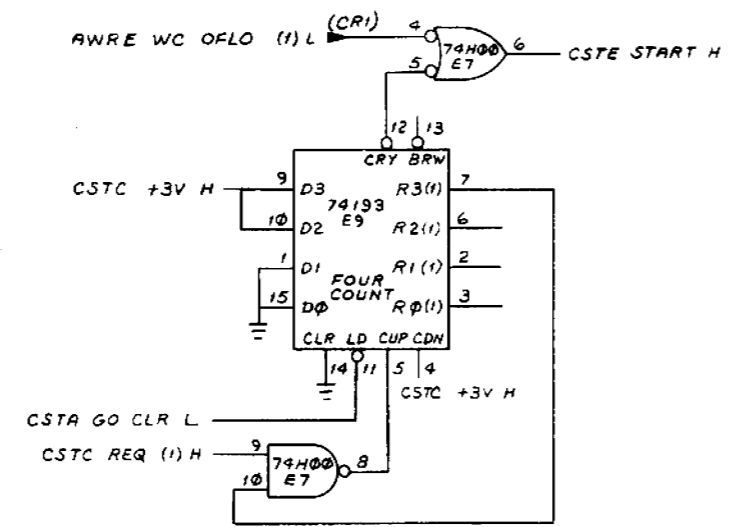
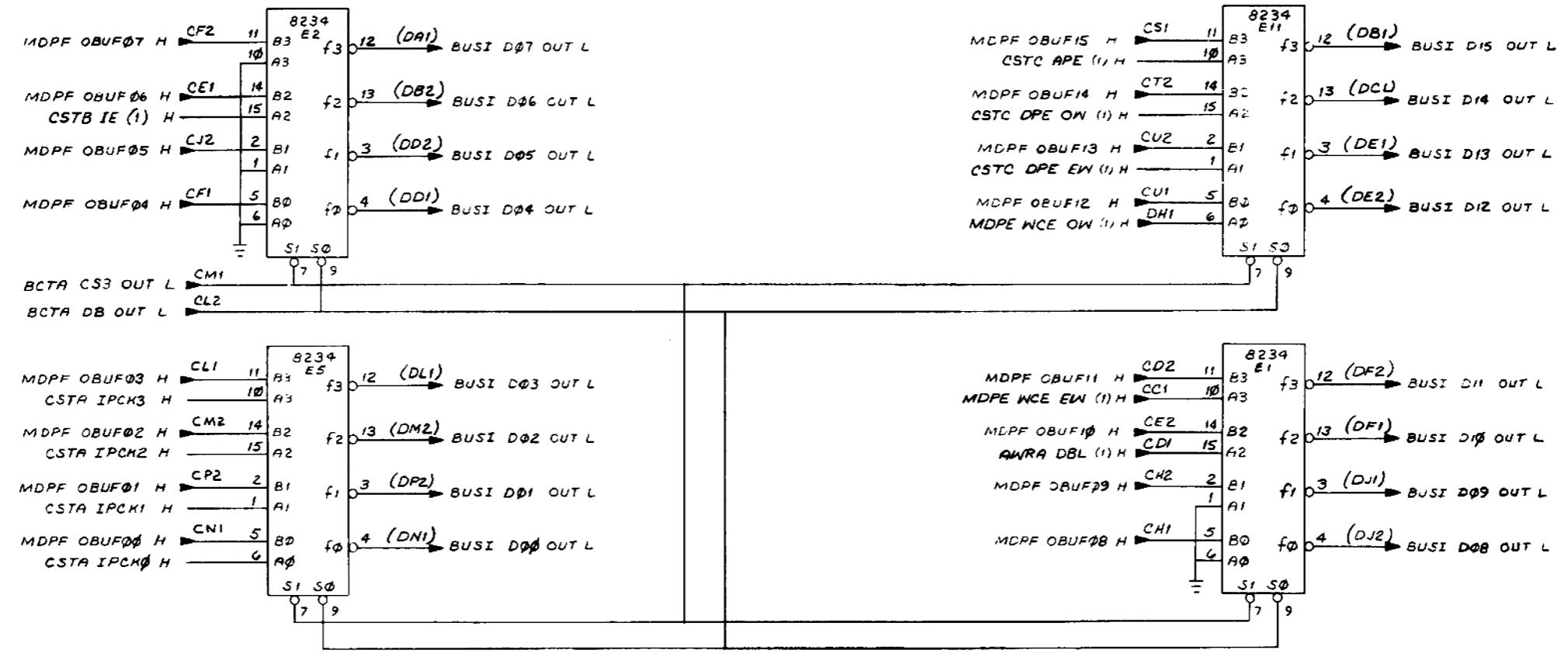
8234 OPEN COLLECTOR MULTIPLEXOR		
S0	S1	OUTPUT
L	L	B → f (NOT USED)
L	H	B → f
H	L	A → f
H	H	OFF

CONTROLLER	A	B	C	D
SLOT	C-F	C-F	C-F	C-F
	25	29	33	37

BUSI MUXS < CSI & CS2 REGS. > & CLEAR LOGIC

REVISIONS		
CHK	CHANGE NO.	REV.

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8234 OPEN COLLECTOR MULTIPLEXOR		
S0	S1	OUTPUT
L	L	B → f (NOT USED)
L	H	B → f
H	L	A → f
H	H	OFF

CONTROLLER	A	B	C	D
SLOT	C-F	C-F	C-F	C-F
	25	29	33	37

BUSI MUXS. <DB & CS3 REGS.> & START

REVISIONS		
CHK	CHANGE NO.	REV.

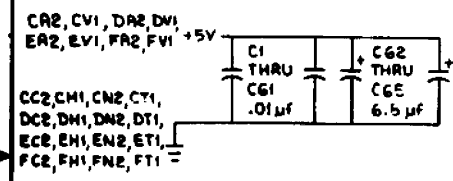
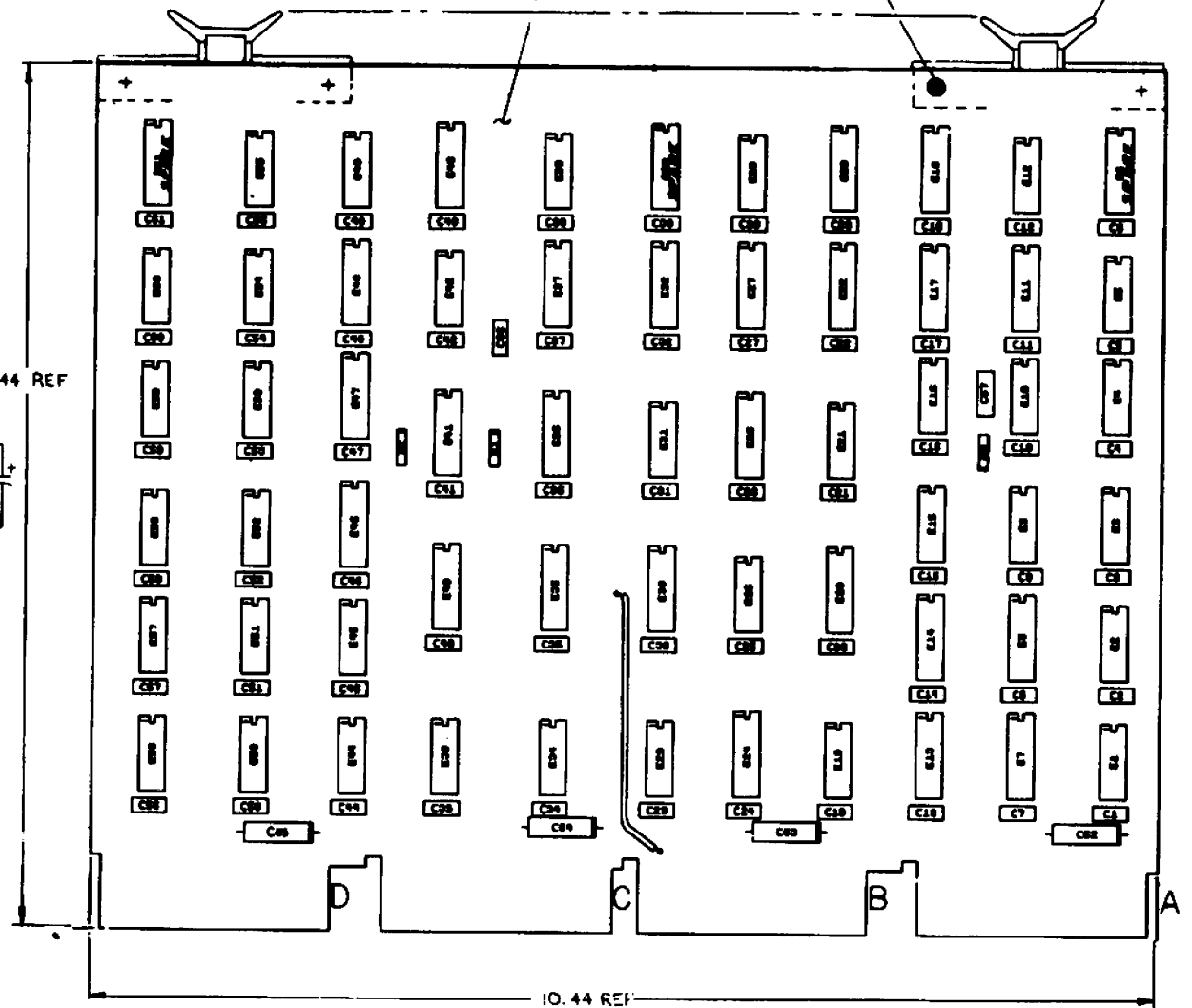
TITLE	CONTROL AND STATUS (CSTE)	SIZE CODE	D CS	NUMBER	M8151-0-1	REV.	A
SCALE	1:1	SHEET	6 OF 6	DIST.			

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- NOTES:**
- IC SLOTS EG, E33 AND EG1 ARE SPARES.
 - PIN DESIGNATIONS ON CIRCUIT SCHEMATICS REFER TO MODULE POSITION IN RH70 BACKPLANE

PIN NOMENCLATURE

MODULE PINS	BACKPLANE PINS
A	C
B	D
C	E
D	F



IC PIN LOCATIONS

IC TYPE	GND	+5V
IC DEC 8234	8	16
IC DEC 74193	8	16
IC DEC 74106	15	5
IC DEC 74157	8	16
IC DEC 74191	8	16

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE.

REF	X-Y COORDINATE HOLE LOCATION	K-CO-NO152-B-4	1
REF	ASSY/DRILLING HOLE LAYOUT	D-AN-NO152-B-5	2
REF	MODULE E.C.O. HISTORY	D-IN-NO152-B-6	3
1	ETCHED CIRCUIT BOARD	5011205	4
82	C1 THRU C81, C86	CAPACITOR, .01μf, 100V, 20% DISC	1001610-01
4	C82 THRU C85	CAPACITOR, 8.0μf, 35V, 10%	1005300
1	C87	CAPACITOR, 27pF, 100V, 5%	1001730
1	R1	RESISTOR, 330, 1/4W, 5%	1300295
1	R2	RESISTOR, 800, 1/4W, 5%	1301424
1	R3	RESISTOR, 1K, 1/4W, 5%	1300365
4	E10, E42, E52, E53	I.C. DEC 74H00	1900050
6	E19, E21, E25, E29, E31, E34	I.C. DEC 74H01	1900048-00
4	E11, E17, E18, E22	I.C. DEC 74191	1910090
8	E38, E57, E51	I.C. DEC 74H04	1900931
1	E50	I.C. DEC 7400	1910155
3	E20, E54, E80	I.C. DEC 74H10	1000057
3	E5, E40, E50	I.C. DEC 74H11	1009267
1	E55	I.C. DEC 7427	1010070
2	E8, E15	I.C. DEC 74H30	1009059
1	E45	I.C. DEC 74H55	1009063
1	E56	I.C. DEC 74H53	1009062
1	E16	I.C. DEC 74S40	1010541
3	E4, E12, E58	I.C. DEC 74H74	1009067
1	E40	I.C. DEC 74157	1010055
1	E48	I.C. DEC 74H106	1010400
4	E1, E2, E38, E44	I.C. DEC 74108	1010724
10	E23, E27, E32, E35, E36, E37, E41, E43, E46, E47	I.C. DEC 74103	1010018
8	E7, E9, E13, E14, E20, E24, E26, E30	I.C. DEC 8234	1011315
1	E3	I.C. DEC 74S04	1010534
4		HANDLES FLIP CHIP (MAGENTA)	0000337-6
8		EYELET HANDLES	0000792
4"		WIRE #30 AWG BUSS (RETROFIT)	9105740-55

FIRST USED ON OPTION MODEL
RH70

PARTS LIST

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.

ETCH BOARD REV A

digital EQUIPMENT CORPORATION
MAYNARD MASSACHUSETTS

TITLE: ADDR. & WORD COUNT REGS. (AWR)

NUMBER: DCS M8152-0-1

SCALE: 1 OF 7

SEMICONDUCTOR CONVERSION CHART

REVISIONS: P. SOINORR, M8152-00001, CHANGE NO. 1, REV. 1/18/73

DATE: 2/12/74

DATE: 12/7/73

DATE: 12/27/74

DATE: 1/18/75

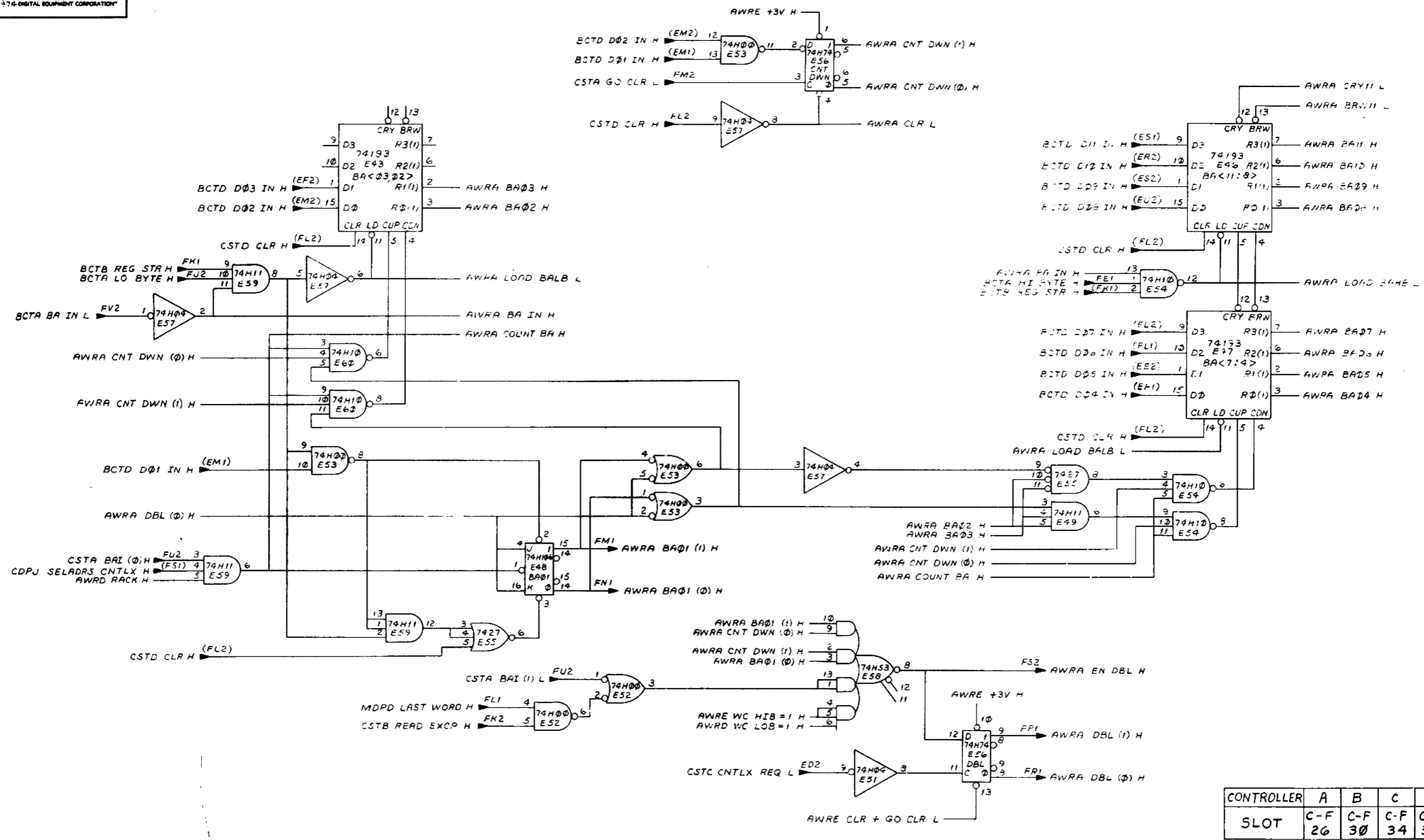
NEXT HIGHER ASSY: B-DD-RH70-0

UNIT LOCK DCS M8152-0-1 A

B

A

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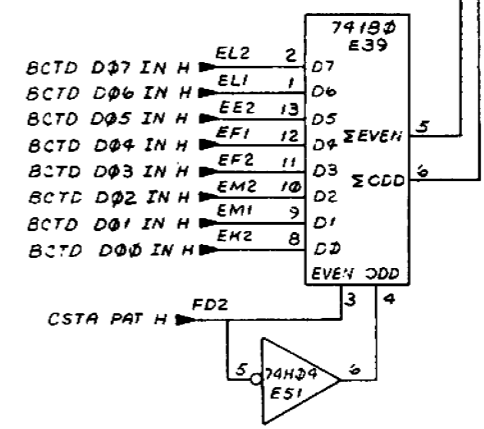
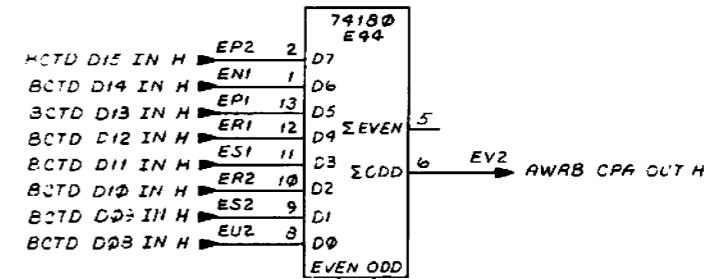
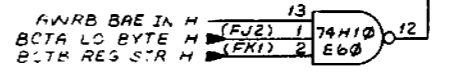
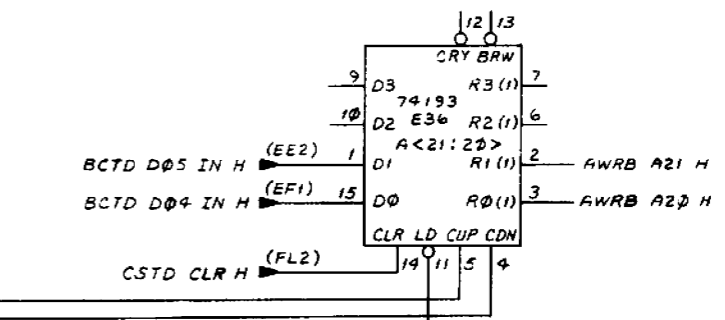
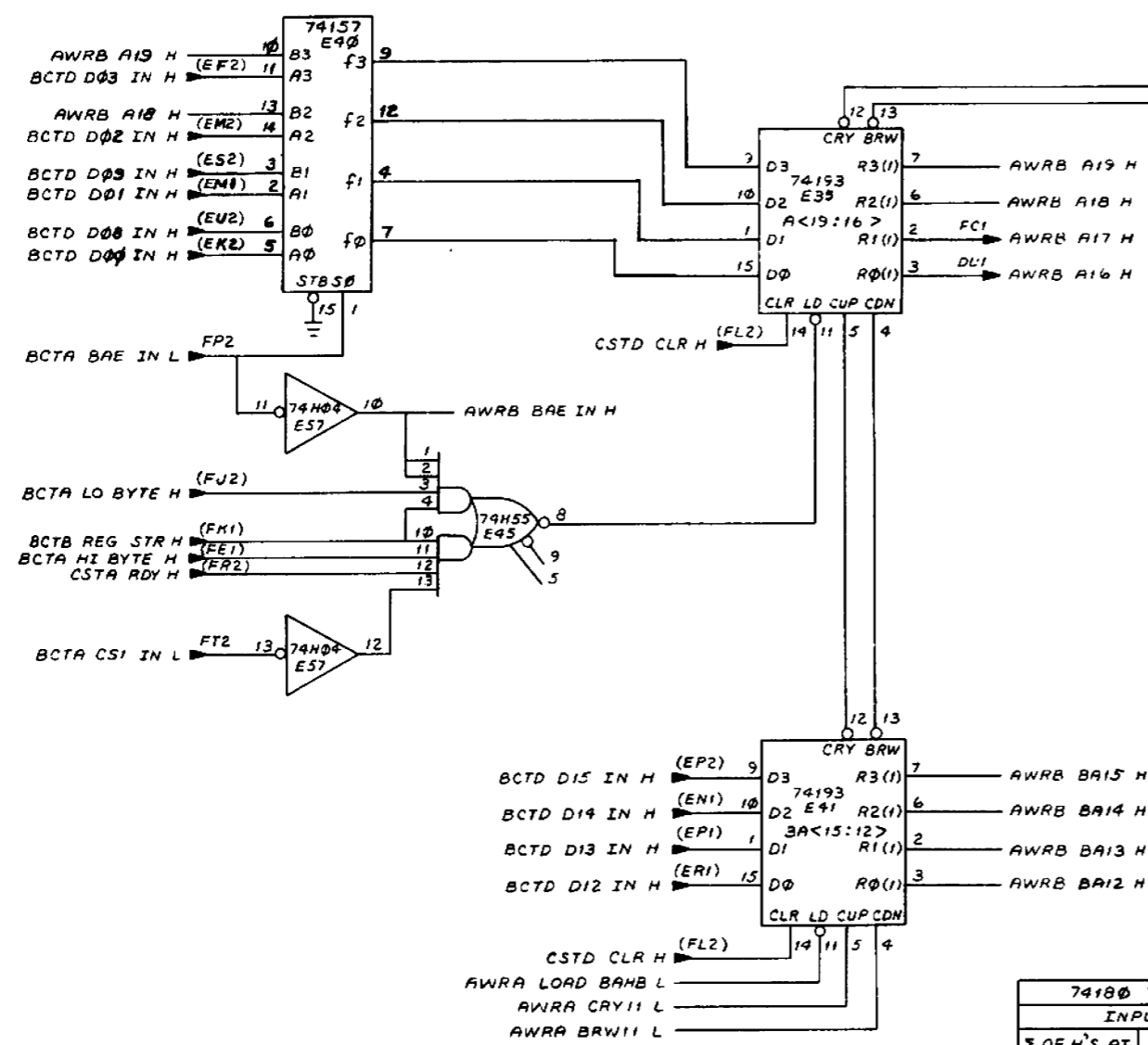
CONTROLLER	A	B	C	D
SLOT	C-F	C-F	C-F	C-F
	26	30	34	38

(BUS ADDR. REG. <11:01>)

REVISIONS		
CHK	CHANGE NO.	REV.

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74157 QUAD MULTIPLEXOR	
S ₀	OUTPUT
L	A → F
H	B → F



Σ OF 1'S AT D ₀ -D ₇	INPUTS		OUTPUTS	
	EVEN	ODD	Σ EVEN	Σ ODD
EVEN	L	H	L	H
ODD	L	H	H	L
EVEN	H	L	H	L
ODD	H	L	L	H

CONTROLLER	A	B	C	D
SLOTS	C-F	C-F	C-F	C-F
	26	30	34	38

(BUS ADDR & EXTENSION < 21:12 > & CNTL PARITY OUT)

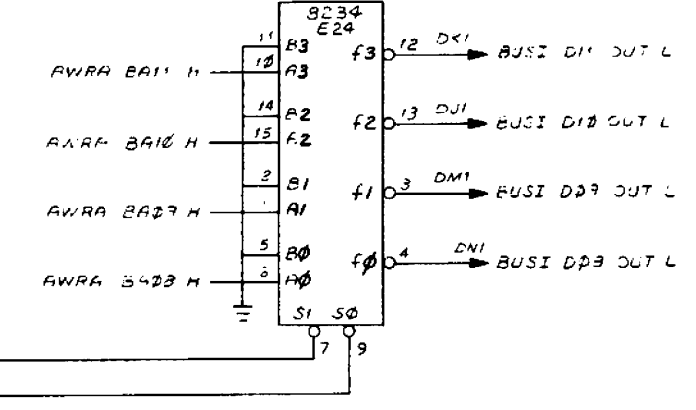
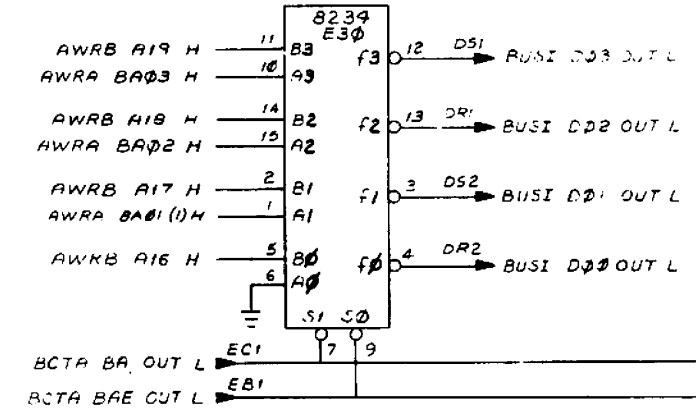
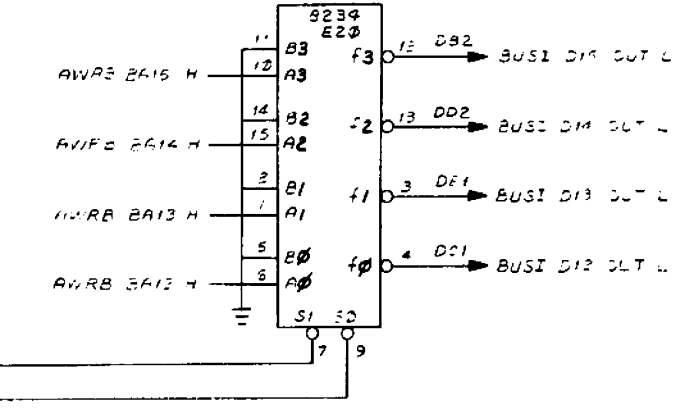
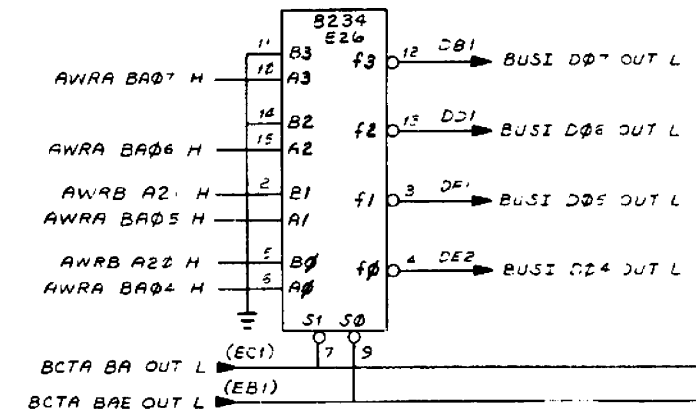
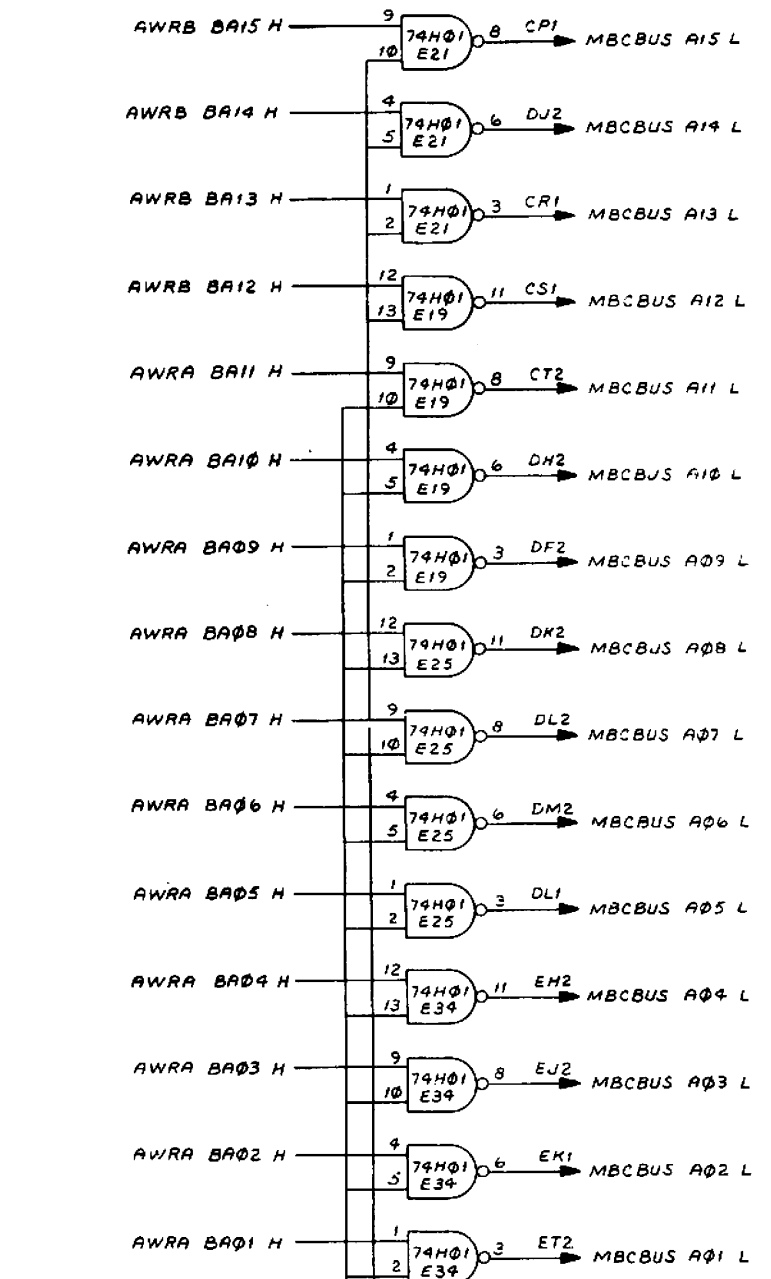
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE CODE	NUMBER	REV.
ADDR. & WORD COUNT REGS. (AWRB)	DCS	M8152-0-1	A
SCALE	SHEET	DIST.	
11	3 OF 7		

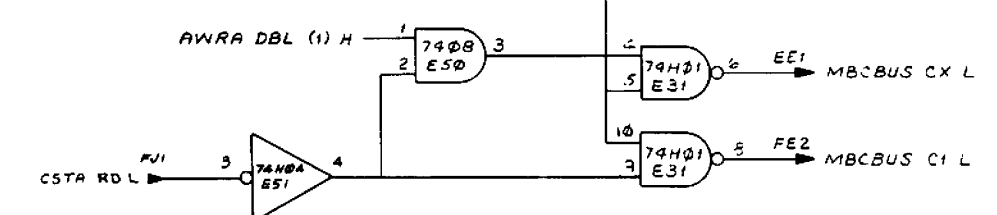
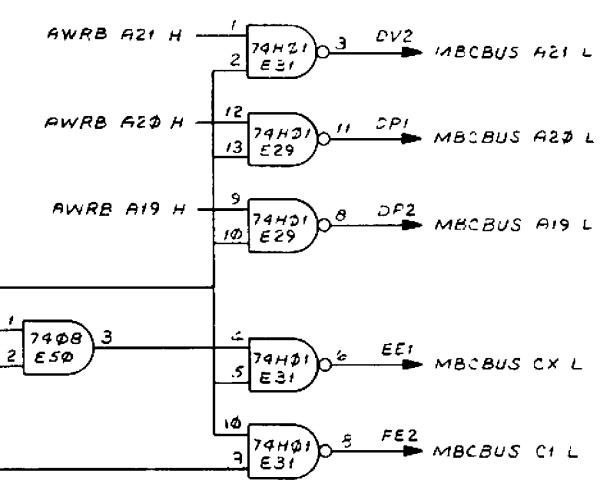
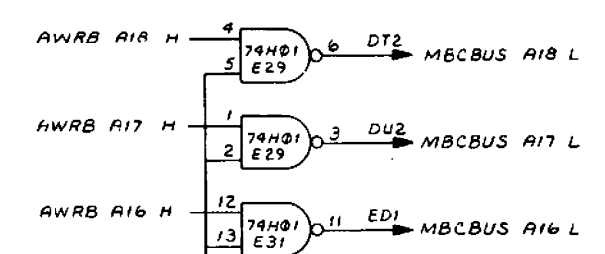
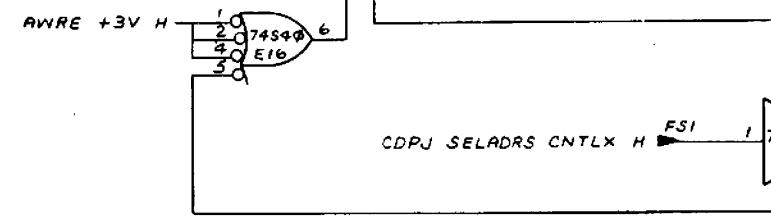
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D
C
B
A

D
C
B
A



8234 OPEN COLLECTOR MULTIPLEXOR		
S $\bar{\phi}$	S1	OUTPUT
L	L	B \rightarrow F (NOT USED)
L	H	B \rightarrow f
H	L	A \rightarrow f
H	H	OFF



CONTROLLER	A	B	C	D
SLOT	C-F	C-F	C-F	C-F
	26	30	34	38

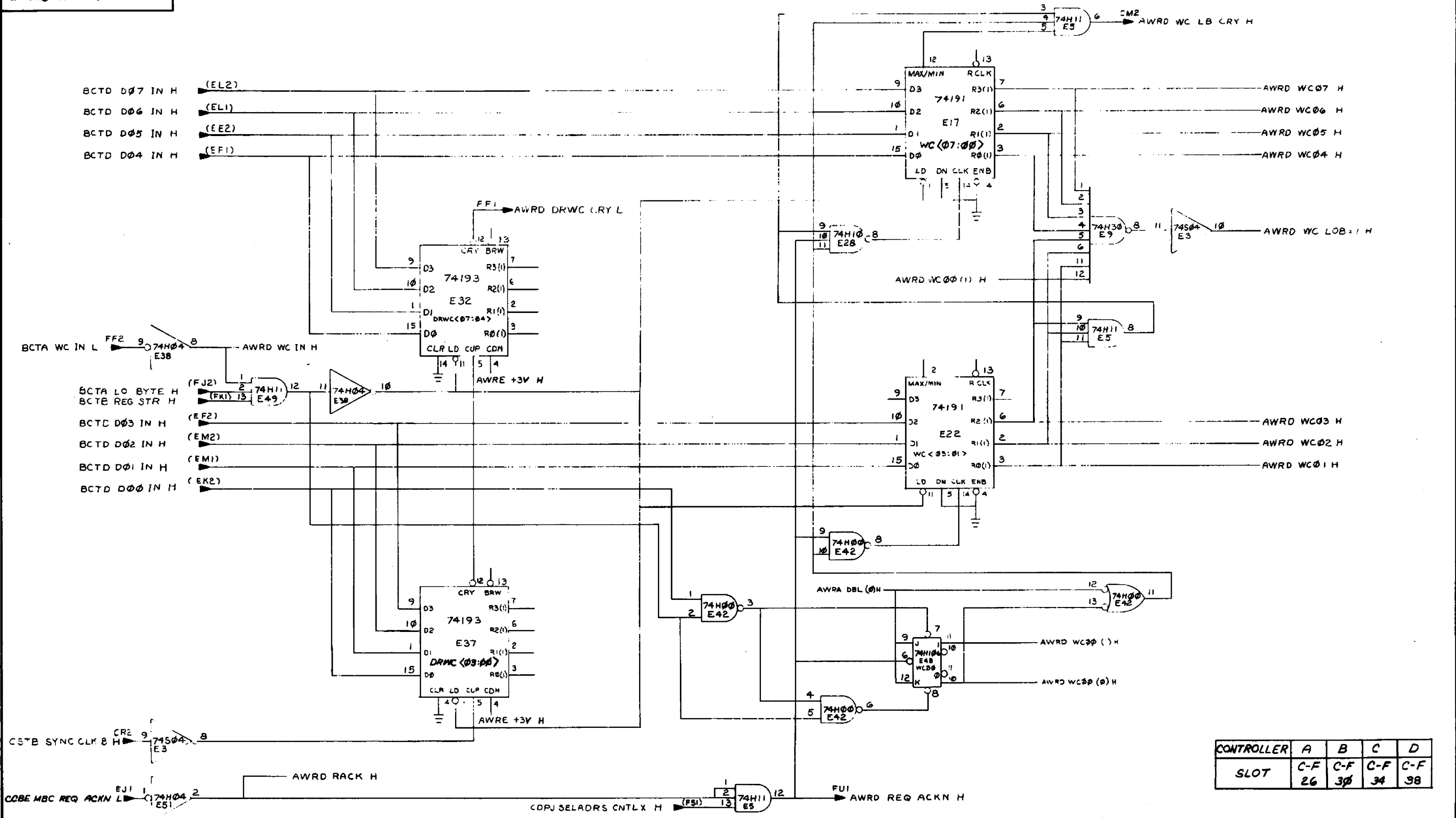
(BUSI MUXTS. <BA & BAE REGS.> & ADDRESS DRIVERS)

REVISIONS		
CHK	CHANGE NO.	REV.

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D
C
B
A

D
C
B
A



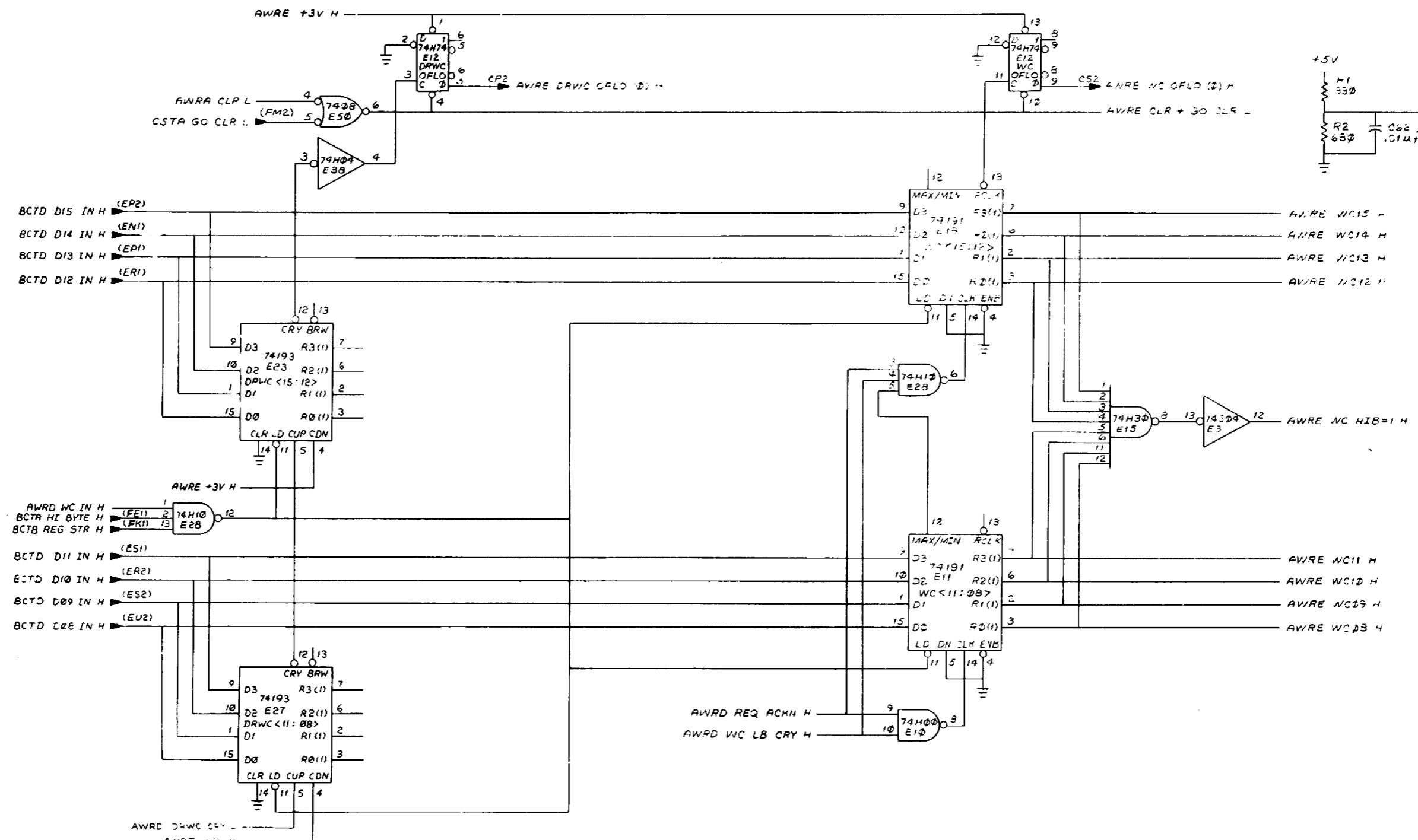
CONTROLLER	A	B	C	D
SLOT	C-F	C-F	C-F	C-F
	26	30	34	38

(WORD COUNT REGS. <07:00>)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	ADDR. & WORD COUNT RE.S. (AWRD)	SIZE CODE	Dcs	NUMBER	M8152-1-1	REV.	A
SCALE	1:1	SHEET	5 OF 7	DIST.			

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CONTROLLER	A	B	C	D
SLOT	C-F	C-F	C-F	C-F
	26	30	34	38

(WORD COUNT REGS <15:08> WC OFLO)

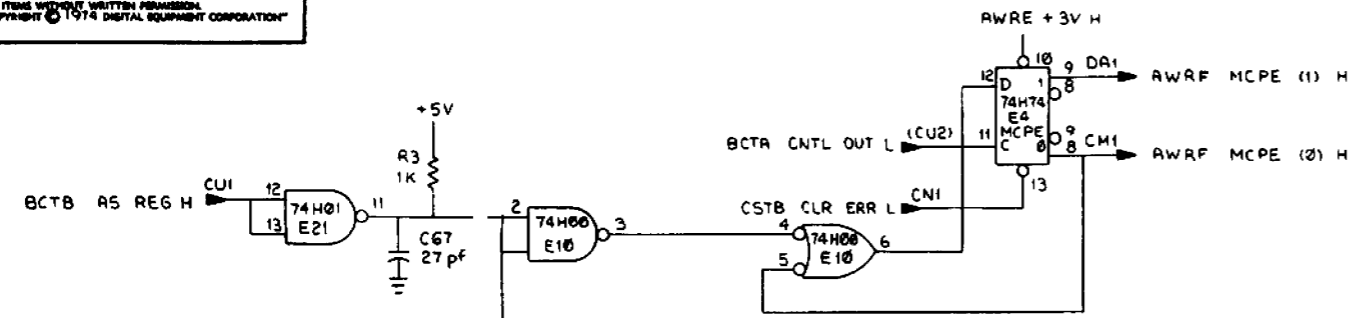
REVISIONS		
CHK	CHANGE NO.	REV

TITLE	ADDR. & WORD COUNT REGS. (AWRE)	SIZE CODE	D CS	NUMBER	M8152-0-1	REV.	A
SCALE		SHEET	6	OF	7	DIST.	

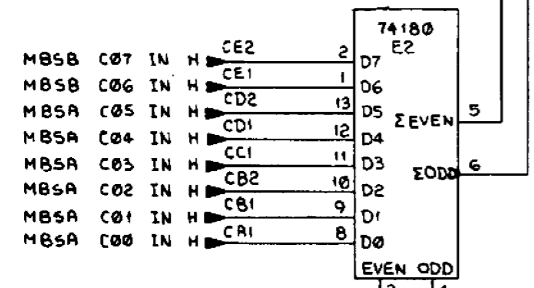
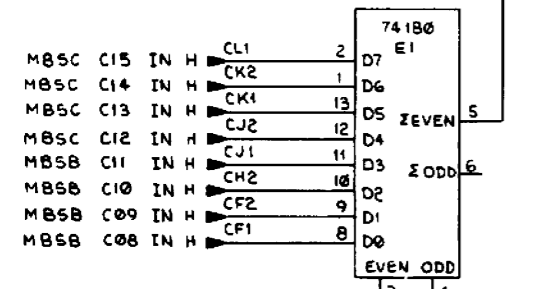
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D
C
B
A

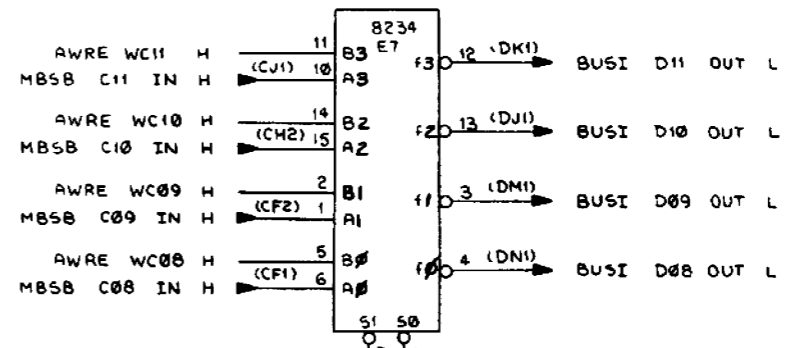
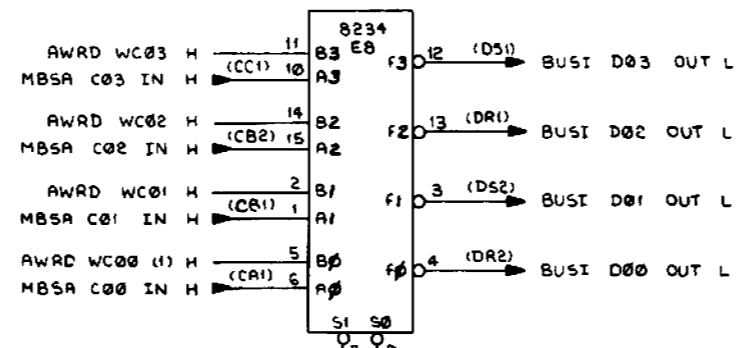
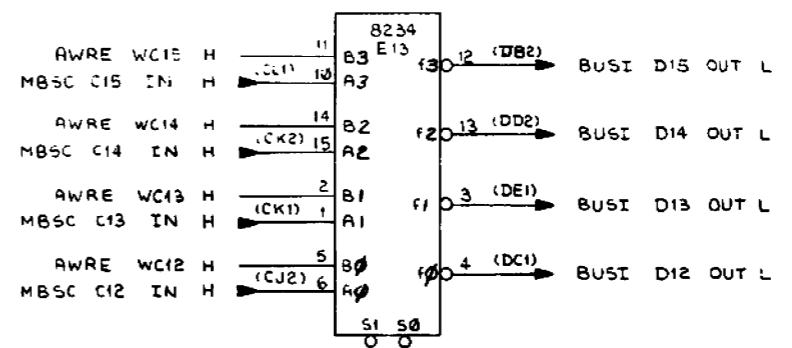
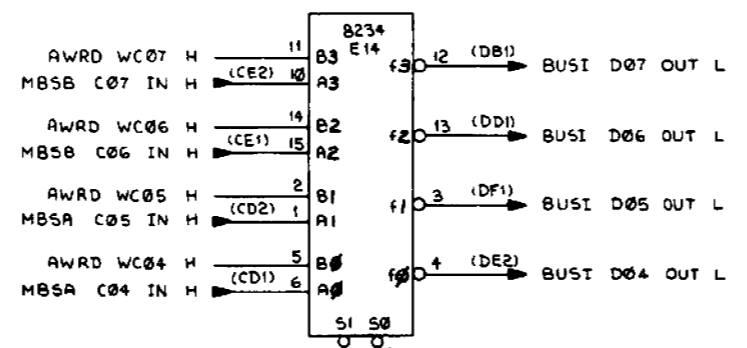
D
C
B
A



8234 OPEN COLLECTOR MULTIPLEXOR		
S0	S1	OUTPUT
L	L	B → f (NOT USED)
L	H	B → f
H	L	A → f
H	H	OFF



Σ OF 1'S AT D0 - D7	INPUTS		OUTPUTS	
	EVEN	ODD	ΣEVEN	ΣODD
EVEN	L	H	L	H
ODD	L	H	H	L
EVEN	H	L	H	L
ODD	H	L	L	H



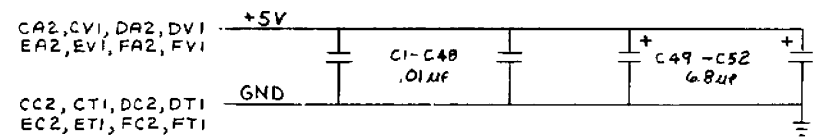
CONTROLLER	A	B	C	D
SLOT	C-F 26	C-F 30	C-F 34	C-F 38

REVISIONS		
CHK	CHANGE NO.	REV.

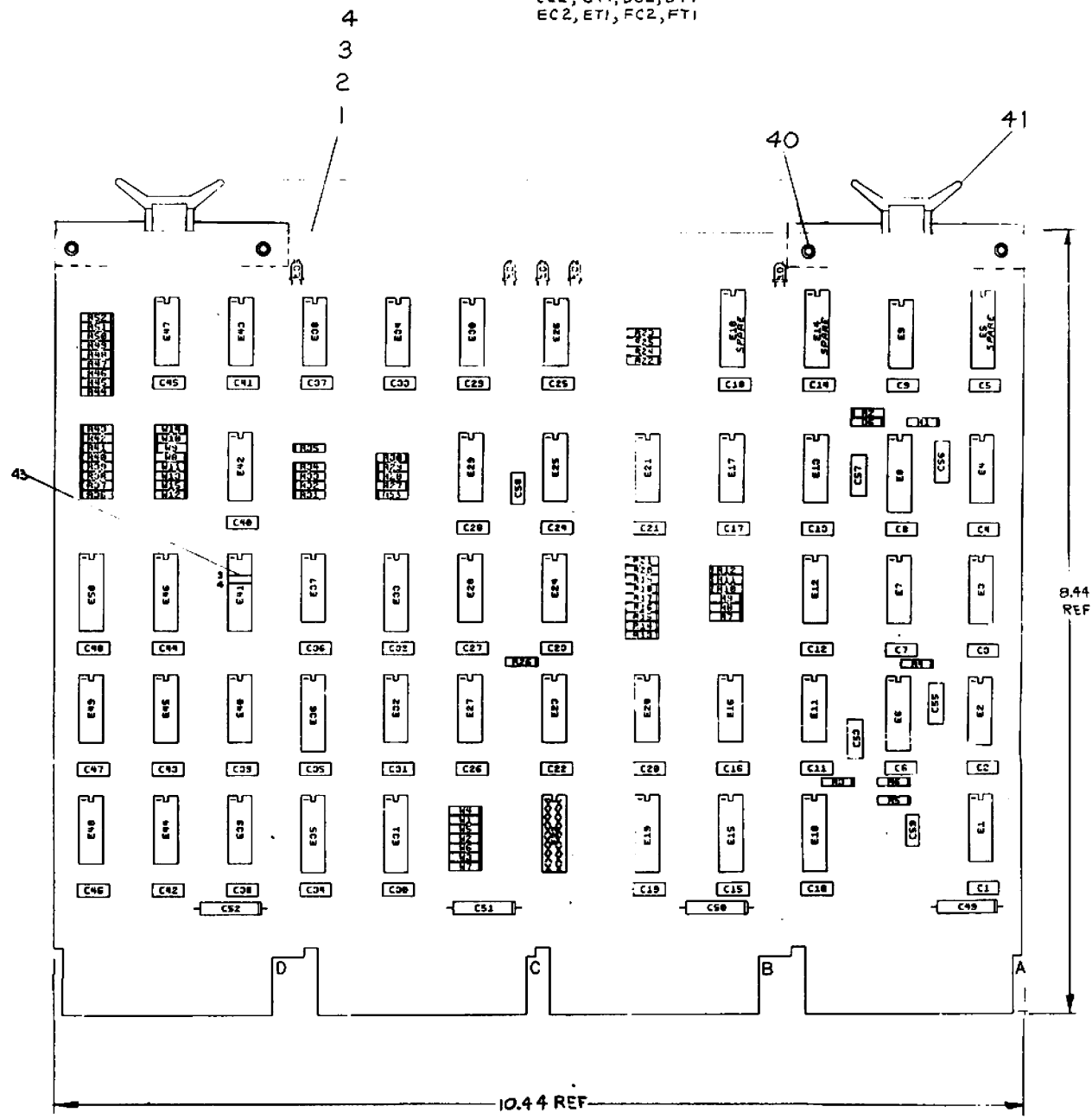
(BUSI MUXS. <WC & REMOTE REGS.> & MCPE)
 TITLE ADDR. & WORD COUNT REGS. (AWRF) DCS M8152-0-1
 SCALE 1 SHEET 7 OF 7 DIST. NUMBER REV. A

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NOTES:
 1. IC SLOTS E5, E14 AND E18 ARE SPARES.
 2. PIN DESIGNATIONS ON CIRCUIT SCHEMATICS REFER TO MODULE POSITION IN RH70 BACKPLANE.



PIN NOMENCLATURE	
MODULE PINS	BACKPLANE PINS
A	C
B	D
C	E
D	F



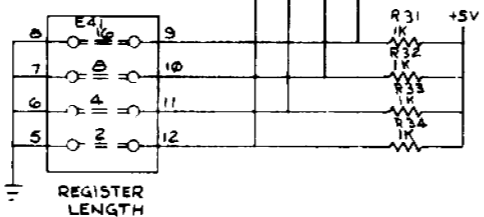
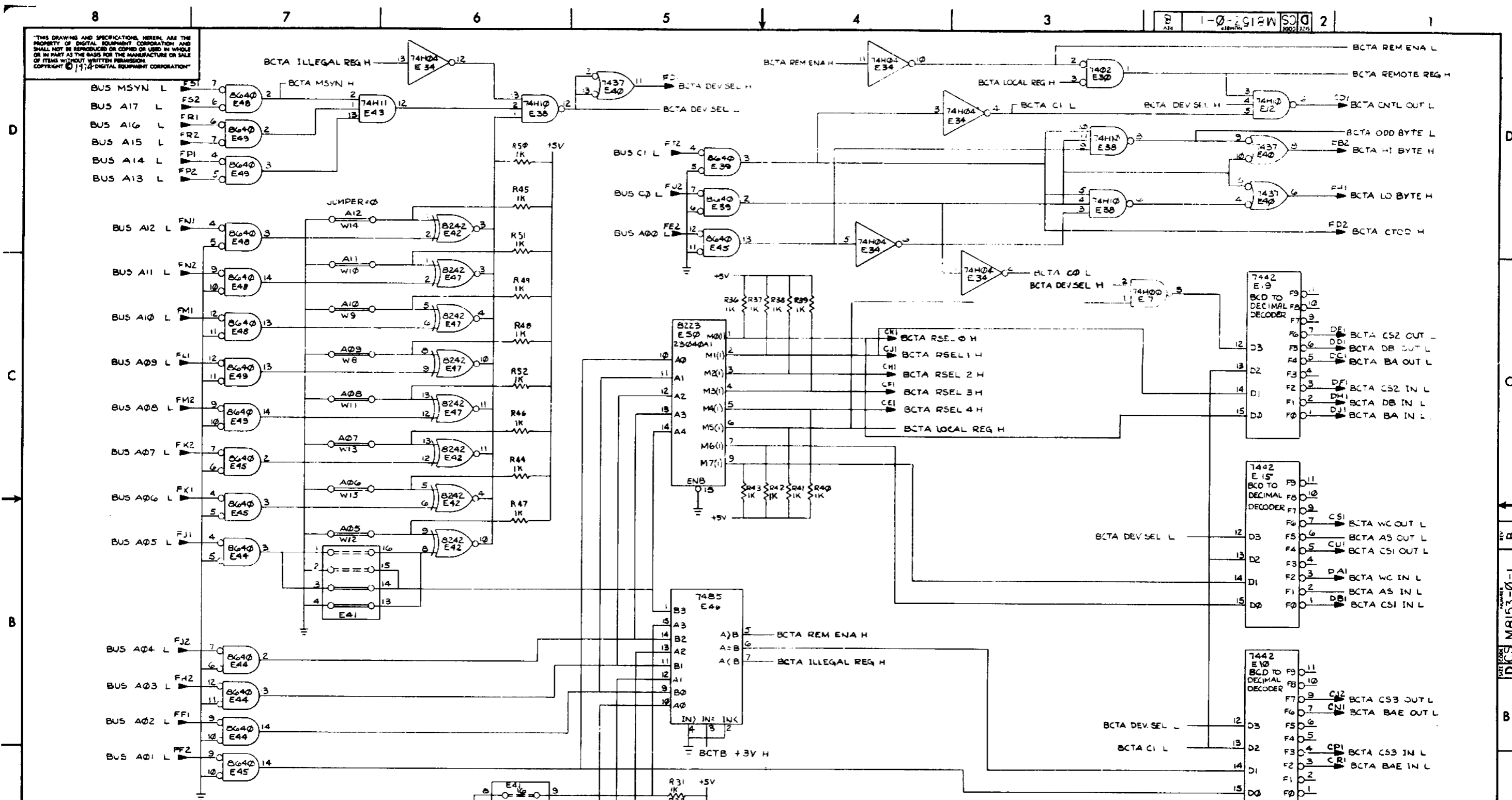
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REF	ASSY/DRILLING HOLE LAYOUT	0-AH-M8153-0-5
REF	MODULE ECO HISTORY	8-MH-M8153-0-6
1	ETCHED CIRCUIT BOARD	5011271
1 C53	CAPACITOR, 47pf, 100V, 5%	1000011
1 C56	CAPACITOR, 100pf, 100V, 5%	1000016
1 C57	CAPACITOR, 220pf, 100V, 5%	1000021
1 C58	CAPACITOR, 330pf, 100V, 5%	1000023
49 C1 THRU C48, C59	CAPACITOR, .01µf, 100V, 20% DISC	1001610-01
4 C49 THRU C52	CAPACITOR, 6.8µf, 35V, 10%	1005306
1 C55	CAPACITOR, 22pf, 100V, 5%	1005820
1 D6	DIODE, D864	1100114
5 D1 THRU D5	DIODE, LED	1110864
1 E22	I.C. SOCKET 16 PIN	1209638
1 E41	I.C. COMPONENT CARRIER	1211323
1 R29	RESISTOR, 47, 1/4W, 5%	1300202
7 R6, R22 THRU R25, R28, R35	RESISTOR, 390, 1/4W, 5%	1300309
38 R7 THRU R21, R26, R30 THRU R34, R36 THRU R52	RESISTOR, 1K, 1/4W, 5%	1300385
3 R5, R27, R53	RESISTOR, 180, 1/4W, 5%	1301322
3 R1, R3, R4	RESISTOR, 5.6K, 1/4W, 5%	1301874
1 R2	RESISTOR, 27K, 1/4W, 5%	1305346
2 E1, E30	I.C. DEC 7402	1909004
2 E7, E9	I.C. DEC 74H00	1909056
2 E12, E38	I.C. DEC 74H10	1909057
2 E13, E43	I.C. DEC 74H11	1909267
4 E11, E17, E24, E26	I.C. DEC 74H74	1909667
5 E4, E27, E28, E29, E32	I.C. DEC 8081	1909705
2 E42, E47	I.C. DEC 8242	1909712
5 E3, E16, E20, E23, E34	I.C. DEC 74H04	1909931
3 E10, E15, E19	I.C. DEC 7442	1910046
2 E2, E40	I.C. DEC 7437	1910091
1 E25	I.C. DEC 7400	1910155
1 E46	I.C. DEC 7485	1910224
2 E6, E8	I.C. DEC 74123	1910436
1 E21	I.C. DEC 7427	1910678
4 E31, E33, E35, E36	I.C. DEC 8080	1911117
6 E37, E39, E44, E45, E48, E49	I.C. DEC 8640	1911484
1 E50	I.C. DEC 8223 PROM	23040A1
1 (E22)	PRIORITY JUMPER LEVEL #5	5406778
8	EYELET	9006732
4	HANDLE, FLIP CHIP (MAGENTA)	9008337-06
15 W1 THRU W15	JUMPER, INSULATED	9009185
A/R (E41)	#22 AWG BUSS WIRE (UNINSULATED)	9907560-01

IC DEC 8640	1	8
IC DEC 8838	8	16
IC DEC 74123	8	16
IC DEC 7485	8	16
IC DEC 7442	8	16
IC DEC 8223	8	16
IC TYPE	GND	+5V
GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY. EXCEPTIONS ARE STATED ABOVE		
IC PIN LOCATIONS		

FIRST USED ON OPTION MODEL		PARTS LIST	
RH70		ETCH BOARD REV C	
DRN <i>[Signature]</i> DATE 11/21/77		TITLE UNIBUS CONTROL (BCT)	
CHKD <i>[Signature]</i> DATE 1/2/78		SIZE CODE DCS	
ENGR <i>[Signature]</i> DATE 1-14-78		NUMBER M8153-0-1	
PRG <i>[Signature]</i> DATE 1-14-78		REV B	
NEXT HIGHER ASSY B-DD-RH70-0		SCALE 1/16	
DEC NO.		EIA NO.	
SEMICONDUCTOR CONVERSION CHART			
SHEET 1		OF 6	

DCSM 5153-0-1

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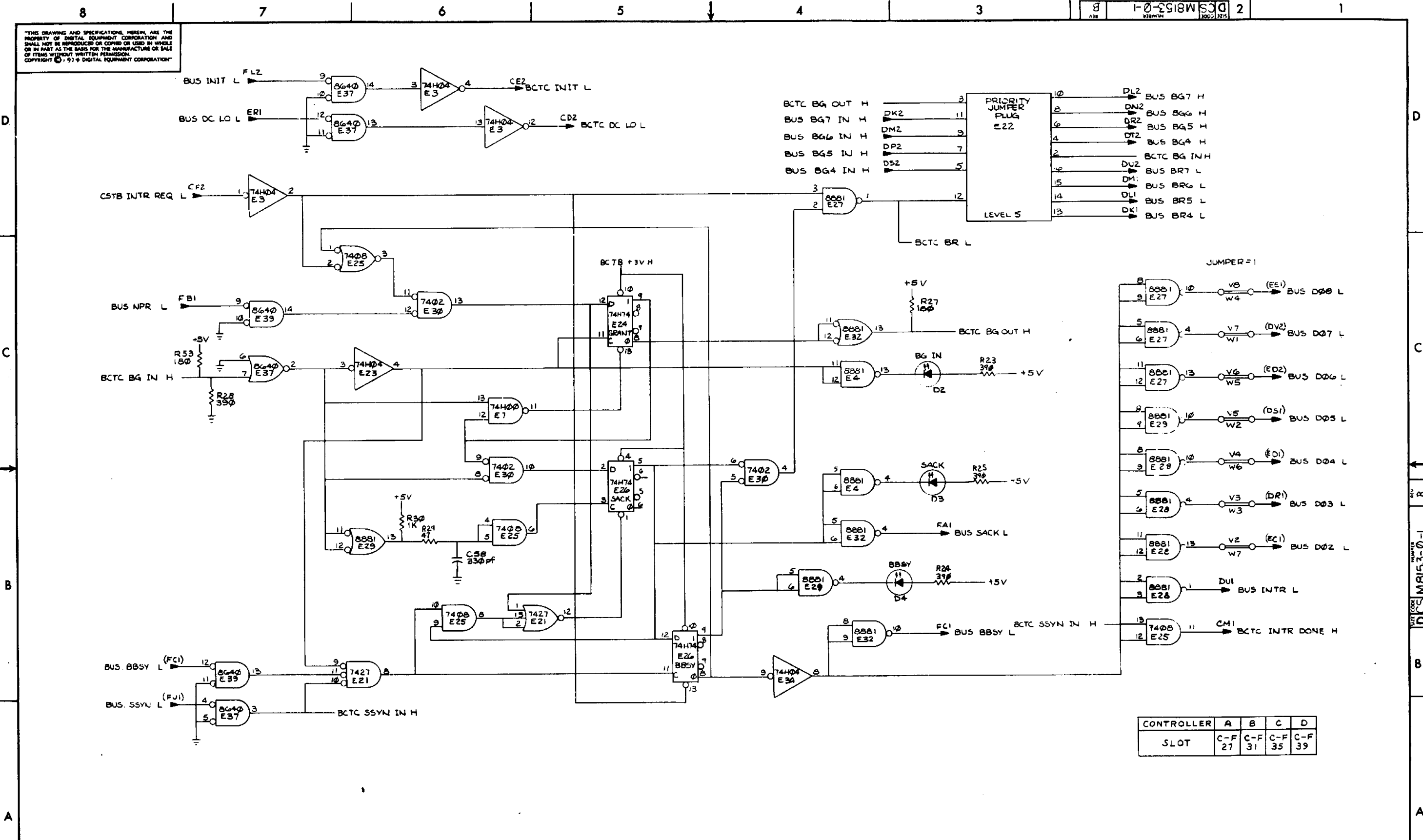
REGISTER LENGTH SELECTION		
JUMPERS	TO SELECT UP TO 16 REGISTERS	TO SELECT UP TO 32 REGISTERS
E41 (1-16) (2-15)	IN	OUT
E41 (3-14) (4-13)	OUT	IN (A05 MUST BE IN)
E41 (5-12) (6-11) (7-10) (8-9)	THE SUM OF THE WEIGHTED VALUES OF JUMPERS REMOVED PLUS 2 IS THE NO. OF REGS SELECTED	

CONTROLLER	A	B	C	D
SLOT	C-F 27	C-F 31	C-F 35	C-F 39

(REGISTER SELECTION)

REVISIONS		
CHK	CHANGE NO.	REV.

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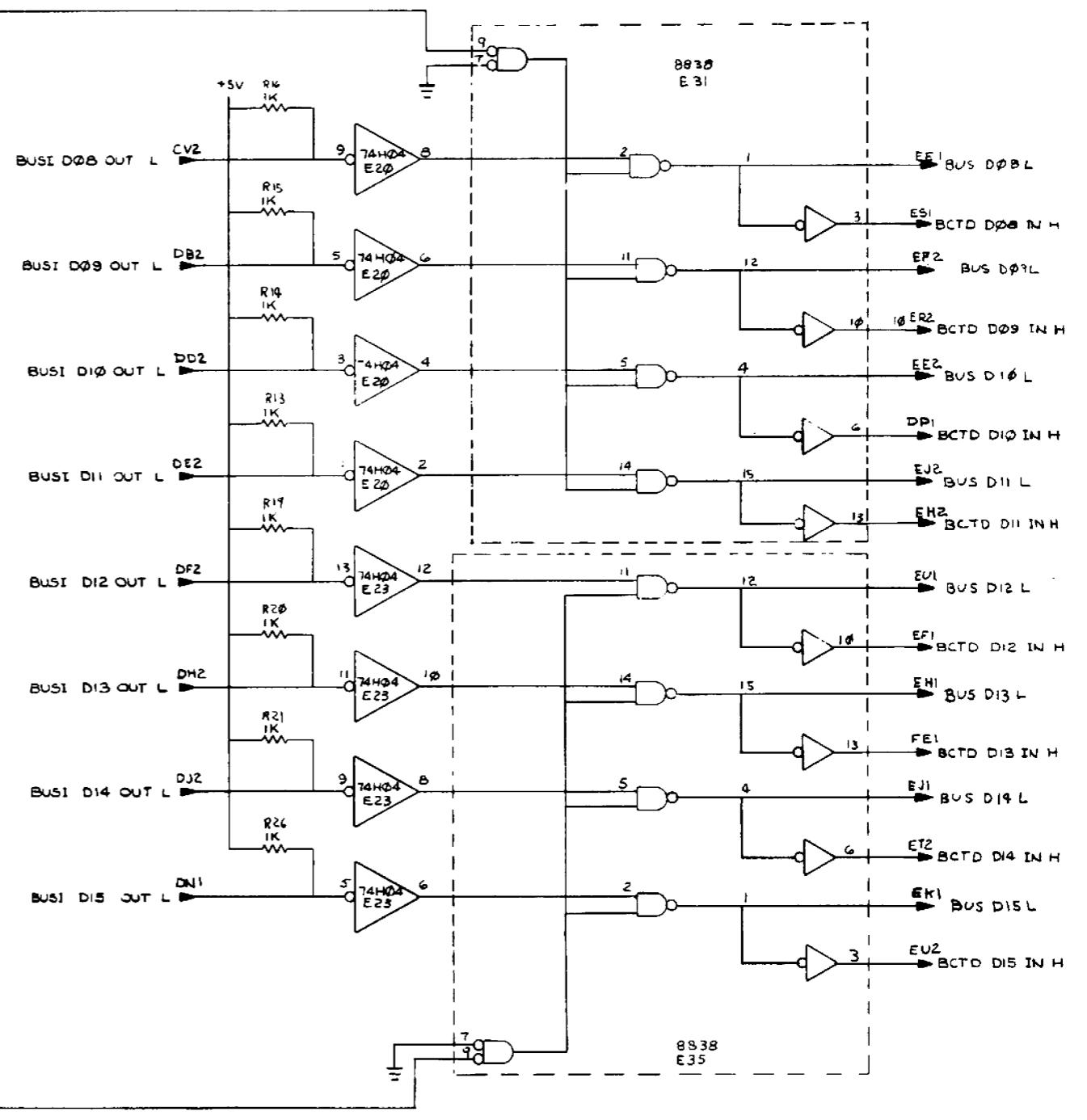
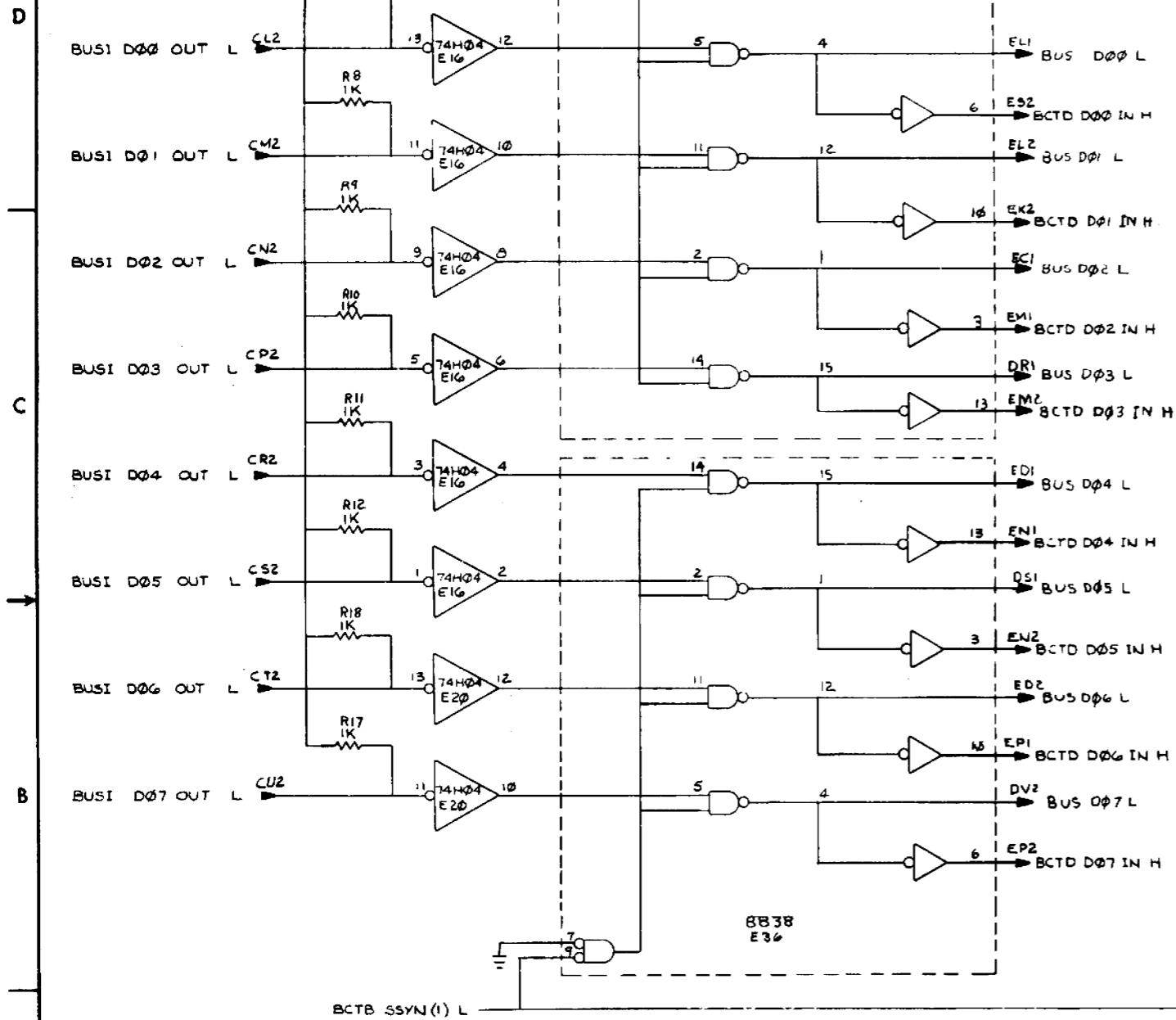


CONTROLLER	A	B	C	D
SLOT	C-F 27	C-F 31	C-F 35	C-F 39

REVISIONS		
CHK	CHANGE NO.	REV.

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BCTB S5YN (1) L



CONTROLLER	A	B	C	D
SLOT	C-F 27	C-F 31	C-F 35	C-F 39

REVISIONS		
CHK	CHANGE NO	REV

(UNIBUS DATA TRANSCEIVERS)

TITLE	UNIBUS CONTROL(BCTD)	SIZE CODE	D CS	NUMBER	M8153-0-1	REV.	B
SCALE	1/1	SHEET	5 OF 6	DIST.			

D E S I G N M A N U A L DCS M8153-0-1

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NOTES:
 1. THE RHBAE & RHCS3 REGISTERS WILL BE SELECTED AS THE LAST TWO REGISTERS IN THE REGISTER SET. THE JUMPERS ON BCTA SELECT THE DESIRED NUMBER OF REGISTERS IN THE SET. WHEN RHBAE OR RHCS3 IS SELECTED THE MASSBUS REGISTER SELECTION WILL BE DISABLED.

REGISTER SELECT PROM - 23040A1 (8223)								
OCTAL ADDR	M7	M6	LOCAL REG M5	RSEL 4 M4	RSEL 3 M3	RSEL 2 M2	RSEL 1 M1	RSEL 0 M0
00	L	L	L	L	L	L	L	L
01	H	L	H	L	L	L	H	H
02	H	H	H	L	L	L	L	L
03	H	H	L	L	L	H	L	H
04	H	H	H	L	L	L	H	L
05	H	H	L	L	L	L	L	H
06	H	H	L	L	L	L	H	L
07	L	H	L	L	L	H	L	L
08	H	H	L	L	L	H	H	H
09	H	H	H	L	L	L	L	H
10	H	H	L	L	L	L	H	H
11	H	H	L	L	L	H	H	L
12	H	H	L	L	L	L	H	H
13	H	H	L	L	L	H	H	L
14	H	H	L	L	H	L	L	L
15	H	H	L	L	H	L	L	H
16	H	H	L	L	H	L	H	L
17	H	H	L	L	H	L	H	H
18	H	H	L	L	H	H	L	L
19	H	H	L	L	H	H	L	H
20	H	H	L	L	H	H	L	L
21	H	H	L	L	H	H	L	H
22	H	H	L	L	H	H	H	L
23	H	H	L	L	H	H	H	H
24	H	H	L	H	L	L	L	L
25	H	H	L	H	L	L	L	H
26	H	H	L	H	L	L	H	L
27	H	H	L	H	L	L	H	H
28	H	H	L	H	L	H	L	L
29	H	H	L	H	L	H	L	H
30	H	H	L	H	L	H	L	L
31	H	H	L	H	L	H	L	H
32	H	H	L	H	L	H	H	L
33	H	H	L	H	L	H	H	H
34	H	H	L	H	H	L	L	L
35	H	H	L	H	H	L	L	H
36	H	H	L	H	H	L	H	L
37	H	H	L	H	H	L	H	H

REGISTER SELECTED SEE NOTE #1	UNIBUS ADDRESS SEE NOTE #1
RHCS1 & MASSBUS (00)	BASE ADDR5
RHWC	BASE +2
RHBA	BASE +4
MASSBUS (05)	BASE +6
RHCS2	BASE +10
MASSBUS (01)	BASE +12
MASSBUS (02)	BASE +14
MASSBUS (04)	BASE +16
MASSBUS (07)	BASE +20
RHDB	BASE +22
MASSBUS (03)	BASE +24
MASSBUS (26)	BASE +26
MASSBUS (10)	BASE +30
MASSBUS (11)	BASE +32
MASSBUS (12)	BASE +34
MASSBUS (13)	BASE +36
MASSBUS (14)	BASE +40
MASSBUS (15)	BASE +42
MASSBUS (16)	BASE +44
MASSBUS (17)	BASE +46
MASSBUS (20)	BASE +50
MASSBUS (21)	BASE +52
MASSBUS (22)	BASE +54
MASSBUS (23)	BASE +56
MASSBUS (24)	BASE +60
MASSBUS (25)	BASE +62
MASSBUS (26)	BASE +64
MASSBUS (27)	BASE +66
MASSBUS (30)	BASE +70
MASSBUS (31)	BASE +72
MASSBUS (32)	BASE +74
MASSBUS (33)	BASE +76

RHBAE, RHCS3

CONTROLLER	A	B	C	D
SLOT	C-F 27	C-F 31	C-F 35	C-F 39

(PROM TRUTH TABLE)

REVISIONS		
CHK	CHANGE NO	REV.

REV B
 NAME M8153-0-1
 DCS

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MODULE - BACKPLANE I/O LIST

INPUT → PIN → OUTPUT

AA1
AA2
AB1
AB2
AC1
AC2
AD1
AD2
AE1
AE2
AF1
AF2
AH1
AH2
AJ1
AJ2
AK1
AK2
AL1
AL2
AM1
AM2
AN1
AN2
AP1
AP2
AR1
AR2
AS1
AS2
AT1
AT2
AU1
AU2
AV1
AV2

BA1
BA2
BB1
BB2
BC1
BC2
BD1
BD2
BE1
BE2
BF1
BF2
BH1
BH2
BJ1
BJ2
BK1
BK2
BL1
BL2
BM1
BM2
BN1
BN2
BP1
BP2
BR1
BR2
BS1
BS2
BT1
BT2
BU1
BU2
BV1
BV2

INPUT → PIN → OUTPUT

+5V CA1 BCTB REG STR H
MBSC TRA H CA2
CSTB STOP DEM L CB1
GND CC1 BCTB AS REG
GND CC2
CA1 BCTA CNTL OUT L
CD2 BCTC DCLO L
CE1 BCTA RSEL4 L
CE2 BCTC INIT L
CF1 BCTA RSEL3 H
CF2
CH1 BCTA RSEL2 H
CH2 BCTB GATE CNTL H
CJ1 BCTA RSEL1 H
CJ2 BCTA CS3 OUT L
CK1 BCTA RSEL0 H
CK2 BCTB SET NED L
CL1 BCTB DEMAND(1) H
CL2
CM1 BCTB INTR DONE H
CM2
CN1 BCTA BAE OUT L
CP1
CP2 BCTA CS3 IN L
CR1 BCTA BAE IN L
CR2
CS1 BCTA WC OUT L
CS2
CT1
CT2
CU1 BCTA CSI OUT L
CU2
CV1
CV2

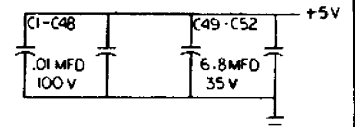
+5V LA1 BCTA WC IN L
DA2
DB1 BCTA CSI IN L
DB2
DC1 BCTA EA OUT L
DC2
DD1 BCTA DB OUT L
DD2
DE1 BCTA CS2 OUT L
DE2
DF1 BCTA CS2 IN L
DF2
DH1 BCTA DB IN L
DH2
DJ1 BCTA BA IN L
DJ2
DK1
DK2
DL1
DL2
DM1
DM2
DN1
DN2
DP1 BCTD D10 IN H
DP2
DR1
DR2
DS1
DS2
DT1
DT2
DU1
DU2
DV1
DV2

INPUT → PIN → OUTPUT

-5V EA1
RMSPRES L EA2
EB1
EB2
BUS D02 L EC1
GND EC2
BUS D04 L ED1
BUS D06 L ED2
BUS D08 L EE1
BUS D10 L EE2
EF1 BCTD D12 IN H
EF2
EH1
EH2 BCTD D11 IN H
EJ1
EJ2
EK1 BCTD D01 IN H
EK2
EL1
EL2
EM1 BCTD D02 IN H
EM2 BCTD D03 IN H
EN1 BCTD D04 IN H
EN2 BCTD D05 IN H
EP1 BCTD D06 IN H
EP2 BCTD D07 IN H
ER1
ER2 BCTD D09 IN H
ES1 BCTD D08 IN H
ES2 BCTD D00 IN H
ET1 BCTD D14 IN H
ET2
EU1 BCTD D15 IN H
EU2
EV1
EV2

BUS SACK L FA1
+5V FA2
BUS NPR L FB1
FB2 BCTA HI BYTE H
BUS BBSY L FC1
GND FC2
FD1 BCTA DEV SEL H
FD2 BCTA CTOD H
FE1 BCTD D13 IN H
FE2
FF1
FF2
FH1 BCTA LO BYTE H
FH2
FJ1
FJ2
FK1
FK2
FL1
FL2
FM1
FM2
FN1
FN2
FV1
FV2 BCTB DB OCLK H

SPARE I/O CIRCUITS		
TYPE	LOCATION	OUTPUT PINS
7402	E1	10
74500	E9	8, 11
74511	E43	0
74574	E24	5
8881	E4	
74504	E3	8
7437	E0	3, 6
7437	E40	3
7408	E18	6, 8, 11
7427	E21	6

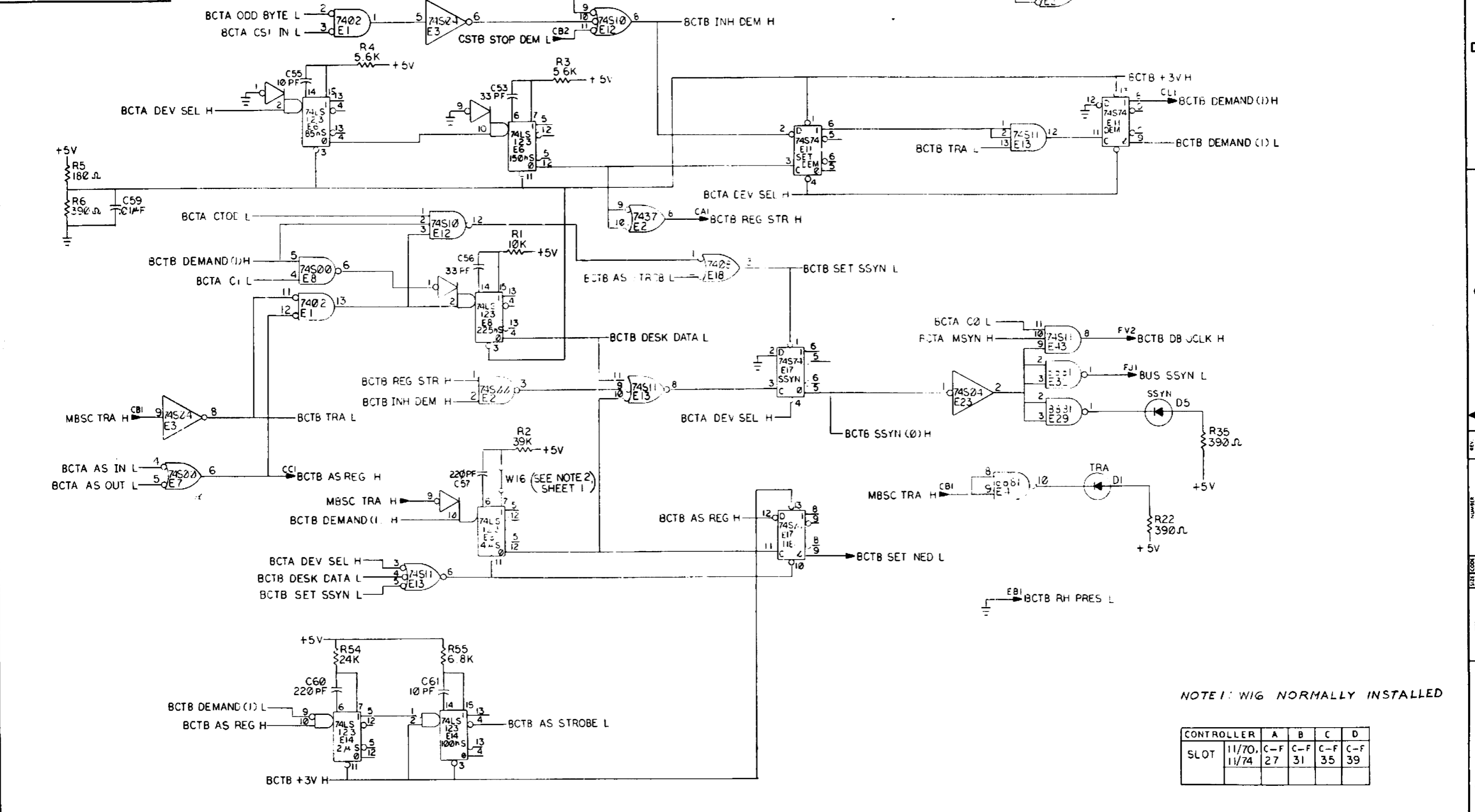


NOTES: 1 MODULE IS QUAD HEIGHT
INSTALLED IN ROW C-F ONLY
2 SHEET 3 W/6 NORMALLY
INSTALLED

REV. A	DATE 11/11/77
DESIGNED BY: [Signature]	CHECKED BY: [Signature]
DRAWN BY: [Signature]	APPROVED BY: [Signature]

DRN: [Signature]	9/28/77	FIRST USED ON	digital
CHK'D: [Signature]	12/2/77	TITLE	
ENG: [Signature]	1/1/78	UNIBUS CONTROL	
PROJ. ENG: [Signature]		SIZE	CODE
PROD: [Signature]	2/22/79	D	CS
NEXT HIGHER ASSY.		NUMBER	REV.
D-UA-M8125-0-0		M8125-0-1	A
SCALE		DIST.	
SHEET 1 OF 6			

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NOTE 1: W16 NORMALLY INSTALLED

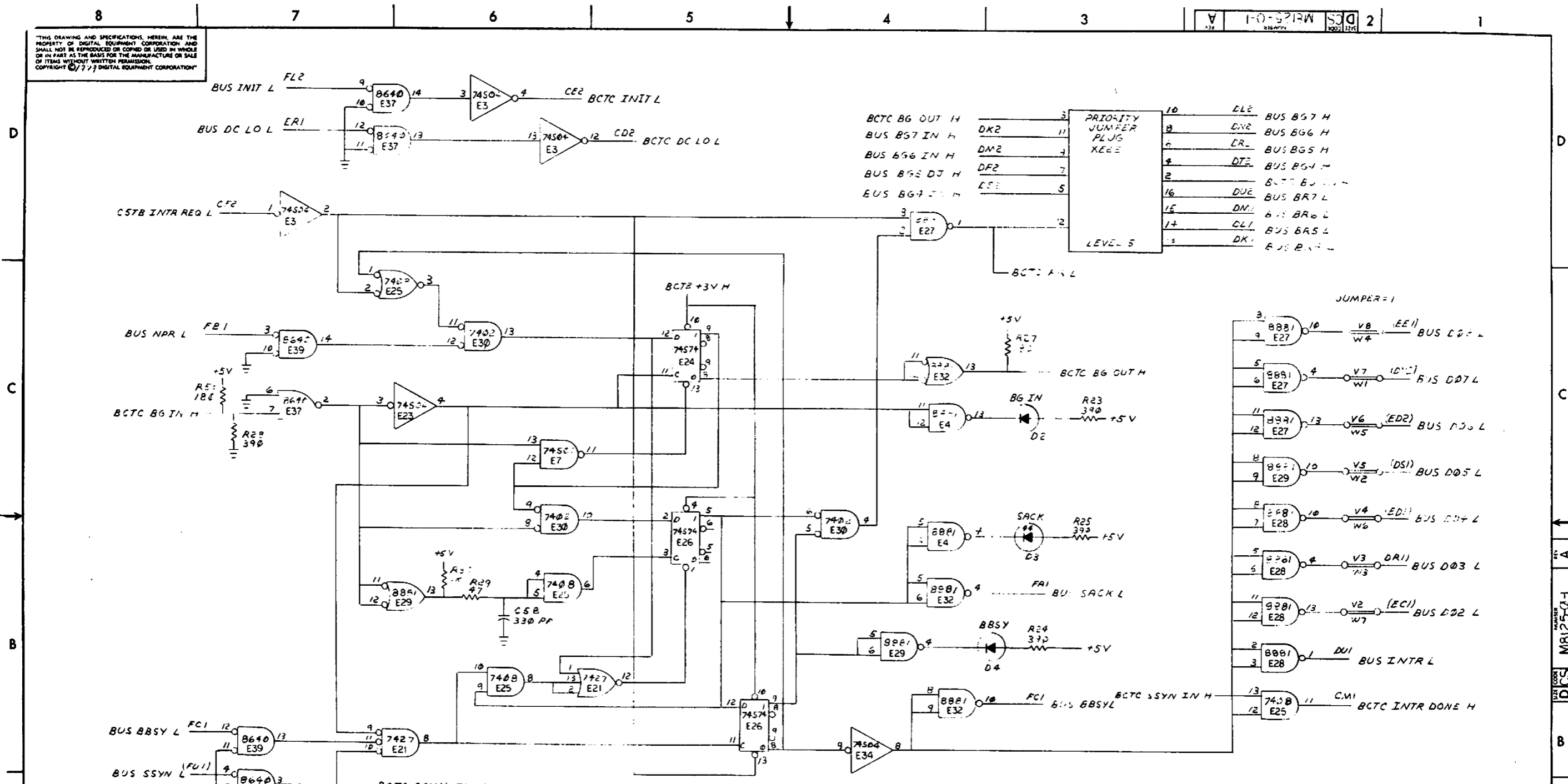
CONTROLLER	A	B	C	D
SLOT	11/70, 11/74	C-F 27	C-F 31	C-F 35 39

(SSYN & DEMAND LOGIC)

REVISIONS		
CHK	CHANGE NO.	REV.

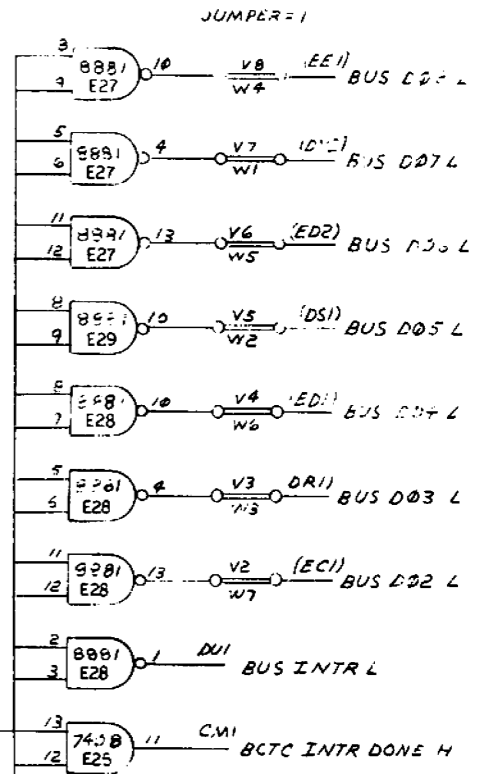
TITLE	UNIBUS CONTROL (BCTB)	SIZE CODE	D	NUMBER	CSM8125-0-1	REV.	A
SCALE		SHEET	3 OF 6	DIST.			

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PRIORITY JUMPER PLUG XE22

10	EL2	BUS B67 H
8	DN2	BUS B66 H
6	ER	BUS B65 H
4	DTE	BUS B64 H
2	BCTC B63 H	
16	DUE	BUS B62 L
15	DM1	BUS B61 L
14	CL1	BUS B60 L
13	DK	BUS B59 L



CONTROLLER	A	B	C	D
SLOT 11/70	C-F	C-F	C-F	C-F
SLOT 11/74	27	31	35	39

REVISIONS		
CHK	CHANGE NO	REV.

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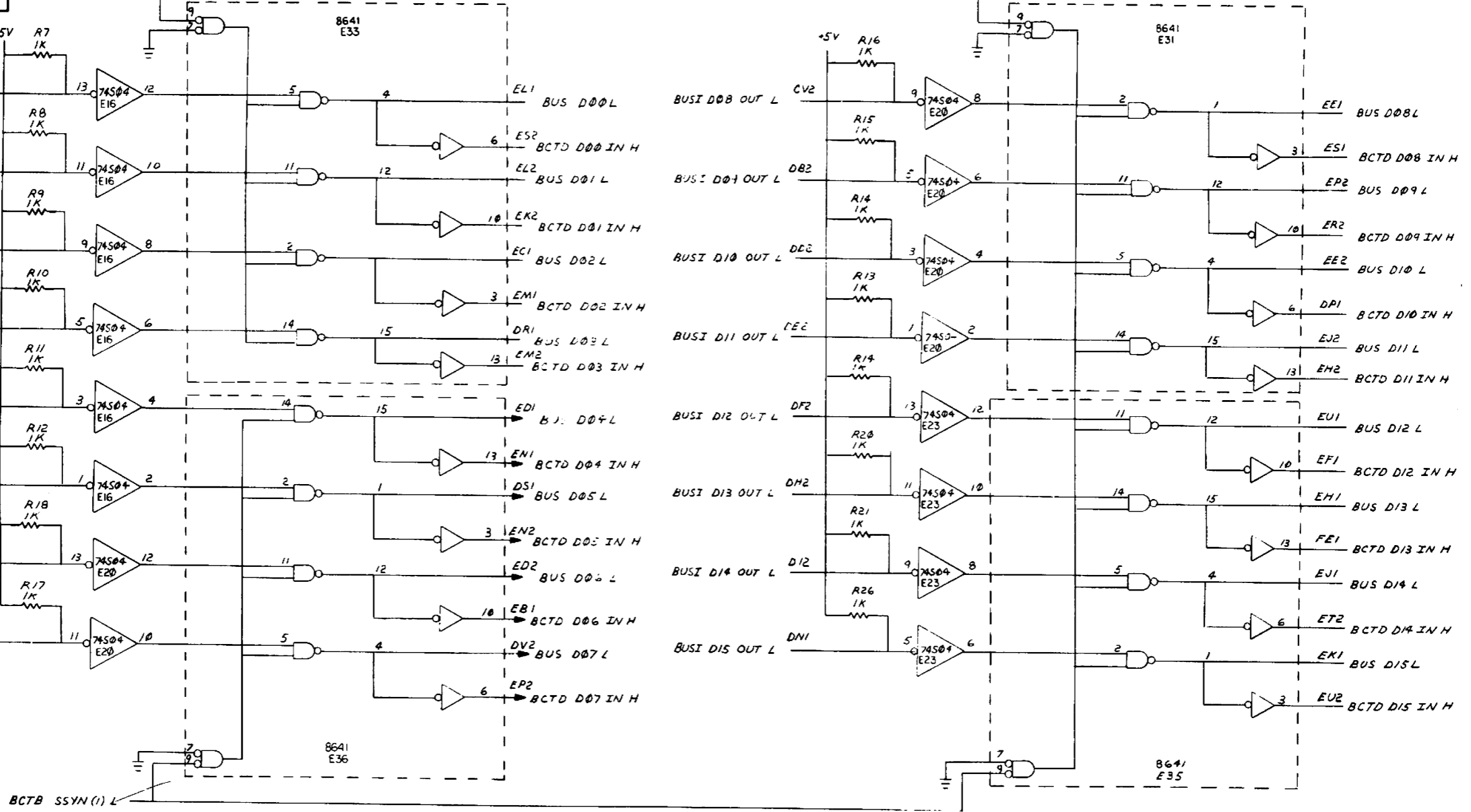
BCTB SSYN(1) L

D
C
B
A

D
C
B
A

REVISIONS		
CHK	CHANGE NO.	REV.

49



CONTROLLER	A	B	C	D
SLOT	11/70, C-F	C-F	C-F	C-F
	11/74, 27	31	35	39

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NOTES:

1. THE RHBAE & RHCS3 REGISTERS WILL BE SELECTED AS THE LAST TWO REGISTERS IN THE REGISTER SET. THE JUMPERS ON BCTA SELECT THE DESIRED NUMBER OF REGISTERS IN THE SET WHEN RHBAE OR RHCS3 IS SELECTED THE MASS BUS REGISTERS SELECTION WILL BE DISABLED

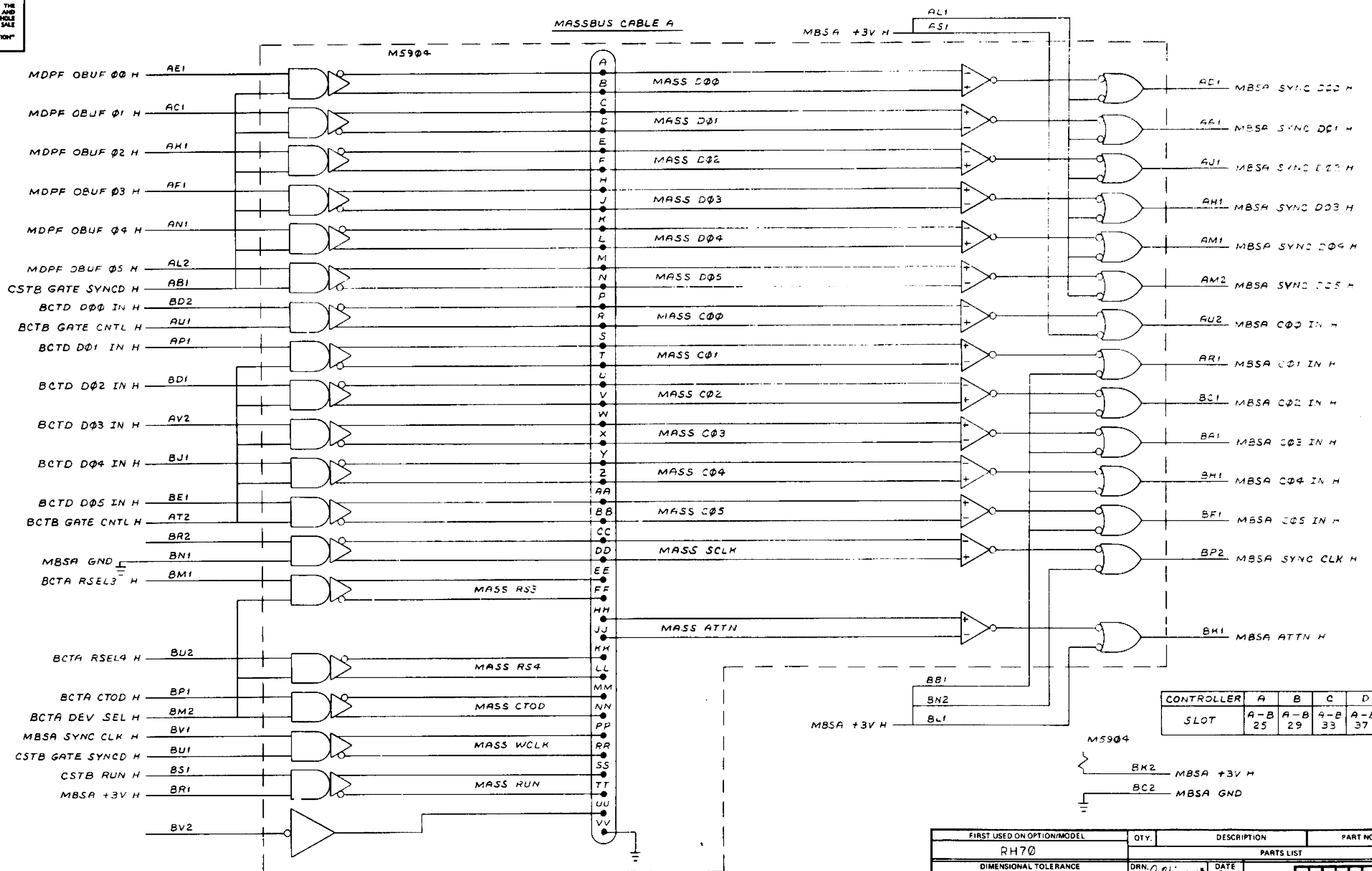
REGISTER SELECT FROM -23040A1 (B223)								
OCTAL ADOR	M7	M6	M5	M4	M3	M2	M1	M0
00	L	L	L	L	L	L	L	L
01	H	L	H	L	L	L	H	H
02	H	H	H	L	L	L	L	L
03	H	H	L	L	L	H	L	H
04	H	H	H	L	L	L	H	L
05	H	H	L	L	L	L	L	H
06	H	H	L	L	L	L	H	L
07	L	H	L	L	L	H	L	L
10	H	H	L	L	L	H	H	H
11	H	H	H	L	L	L	L	H
12	H	H	L	L	L	L	H	H
13	H	H	L	L	L	H	H	L
14	H	H	L	L	H	L	L	L
15	H	H	L	L	H	L	L	H
16	H	H	L	L	H	L	H	L
17	H	H	L	L	H	L	H	H
20	H	H	L	L	H	H	L	L
21	H	H	L	L	H	H	L	H
22	H	H	L	L	H	H	H	L
23	H	H	L	L	H	H	H	H
24	H	H	L	H	L	L	L	L
25	H	H	L	H	L	L	L	H
26	H	H	L	H	L	L	H	L
27	H	H	L	H	L	L	H	H
30	H	H	L	H	L	H	L	L
31	H	H	L	H	L	H	L	H
32	H	H	L	H	L	H	H	L
33	H	H	L	H	L	H	H	H
34	H	H	L	H	H	L	L	L
35	H	H	L	H	H	L	L	H
36	H	H	L	H	H	L	H	L
37	H	H	L	H	H	L	H	H

REGISTER SELECTED SEE NOTE *1	UNIBUS ADDRESS SEE NOTE *1
RHCBI2 MASSBUS (00)	BASE ADDR5
RHWC	BASE +2
RHBA	BASE +4
MASSBUS (05)	BASE +6
RHCS2	BASE +10
MASSBUS (01)	BASE +12
MASSBUS (02)	BASE +14
MASSBUS (04)	BASE +16
MASSBUS (07)	BASE +20
RHDB	BASE +22
MASSBUS (08)	BASE +24
MASSBUS (06)	BASE +26
MASSBUS (10)	BASE +30
MASSBUS (11)	BASE +32
MASSBUS (12)	BASE +34
MASSBUS (13)	BASE +36
MASSBUS (14)	BASE +40
MASSBUS (15)	BASE +42
MASSBUS (16)	BASE +44
MASSBUS (17)	BASE +46
MASSBUS (20)	BASE +50
MASSBUS (21)	BASE +52
MASSBUS (22)	BASE +54
MASSBUS (23)	BASE +56
MASSBUS (24)	BASE +60
MASSBUS (23)	BASE +62
MASSBUS (26)	BASE +64
MASSBUS (27)	BASE +66
MASSBUS (30)	BASE +70
MASSBUS (31)	BASE +72
MASSBUS (32)	BASE +74
MASSBUS (33)	BASE +76

CONTROLLER	A	B	C	D
SLOT 11/70, 11/74	C-F 27	C-F 31	C-F 35	C-F 39

REVISIONS		
CHK	CHANGE NO.	REV.

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REV.	
CHANGE	
NO.	

FIRST USED ON OPTION/MODEL		QTY.	DESCRIPTION	PART NO.	ITEM NO.
RH70					
DIMENSIONAL TOLERANCE		PARTS LIST			
DIMENSIONS ARE MILLIMETERS		DRN. J. Verrill	DATE 1-31-75		
UNLESS OTHERWISE SPECIFIED		CHK'D. F. ...	DATE 4-11-75		
		ENG. S. Jenkins	DATE 4-10-75		
MILLIMETERS	INCHES	ANGLES	PROJ. ENG. S. Jenkins	DATE 4-10-75	TITLE MASSBUS TRANSCEIVER (MBSA)
.XXX ±0.10	.XX ±.005	90° 30'	PROJ. S. Jenkins	DATE 4-10-75	
X.X ±0.05	.X ±.02		PROJ. T. Taylor	DATE 4/11/75	SIZE CODE D BS RH70-0-1
X ±.2	.X ±.1				NUMBER REV.
THIRD ANGLE PROJECTION	REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY	NEXT HIGHER ASSY.	B-DD-RH70-0	SCALE	SHEET 1 OF 3
MATERIAL	FINISH				DIST.

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D

C

B

A

1

8

7

6

5

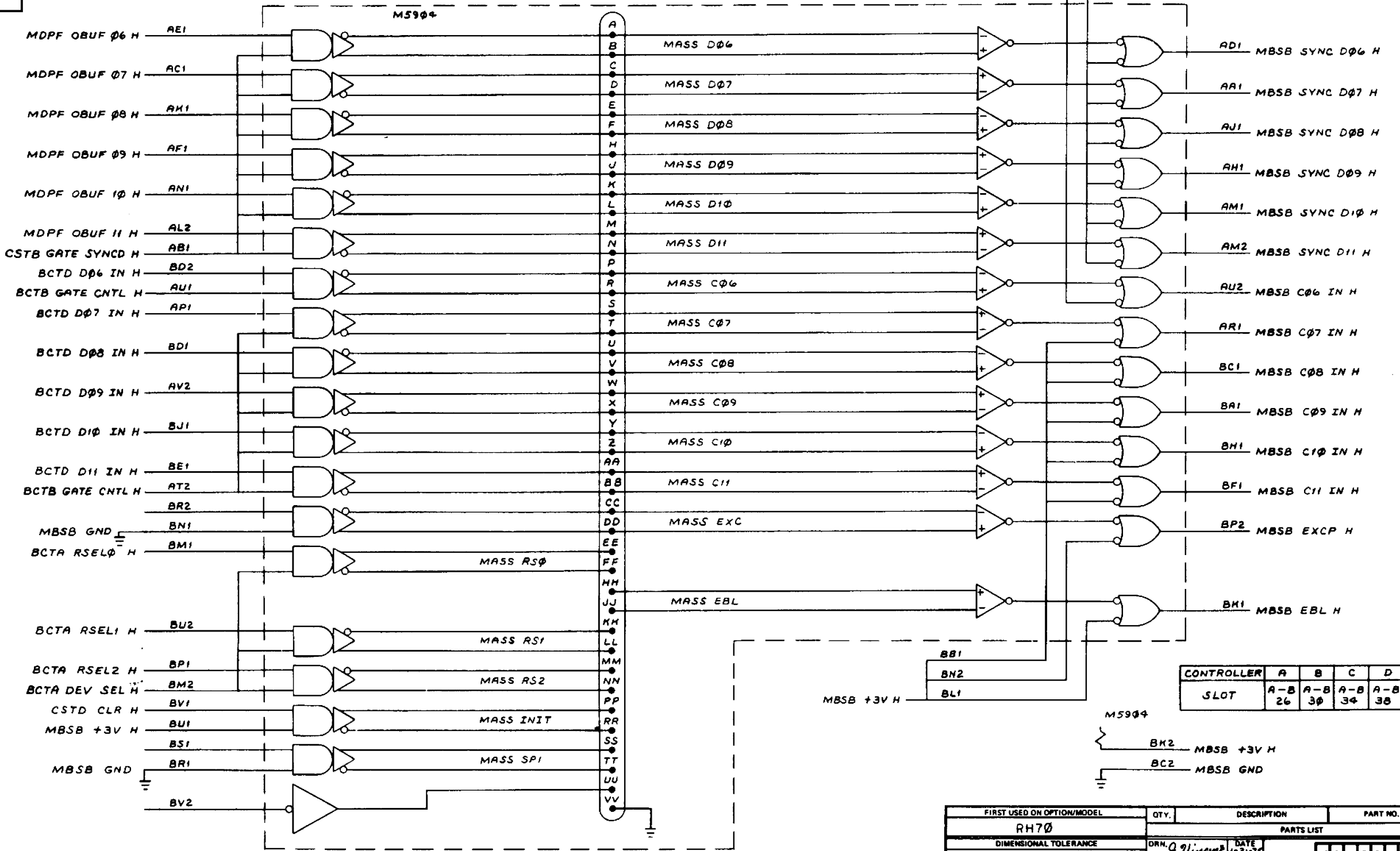
4

3

2

1

MASSBUS CABLE B



CONTROLLER	A	B	C	D
SLOT	A-B	A-B	A-B	A-B
	26	30	34	38

FIRST USED ON OPTION/MODEL		QTY.	DESCRIPTION	PART NO.	ITEM NO.
RH70					
DIMENSIONAL TOLERANCE		PARTS LIST			
DIMENSIONS ARE MILLIMETERS UNLESS OTHERWISE SPECIFIED		DRN. <i>J. Vincent</i>	DATE 1-31-75		
		CHKD. <i>J. Vincent</i>	DATE 4/1/75		
		ENG. <i>J. Vincent</i>	DATE 1-31-75		
		PROJ. <i>J. Vincent</i>	DATE 4/1/75		
TITLE		MASSBUS TRANSCEIVER (MBSB)			
MATERIAL		NEXT HIGHER ASSY.		SIZE CODE	NUMBER
FINISH		B-DD-RH70-0		D BS	RH70-0-1
THIRD ANGLE PROJECTION		REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY		SCALE	REV.
				SHEET 2 OF 3	

REV.	CHANGE NO.	DATE

D

C

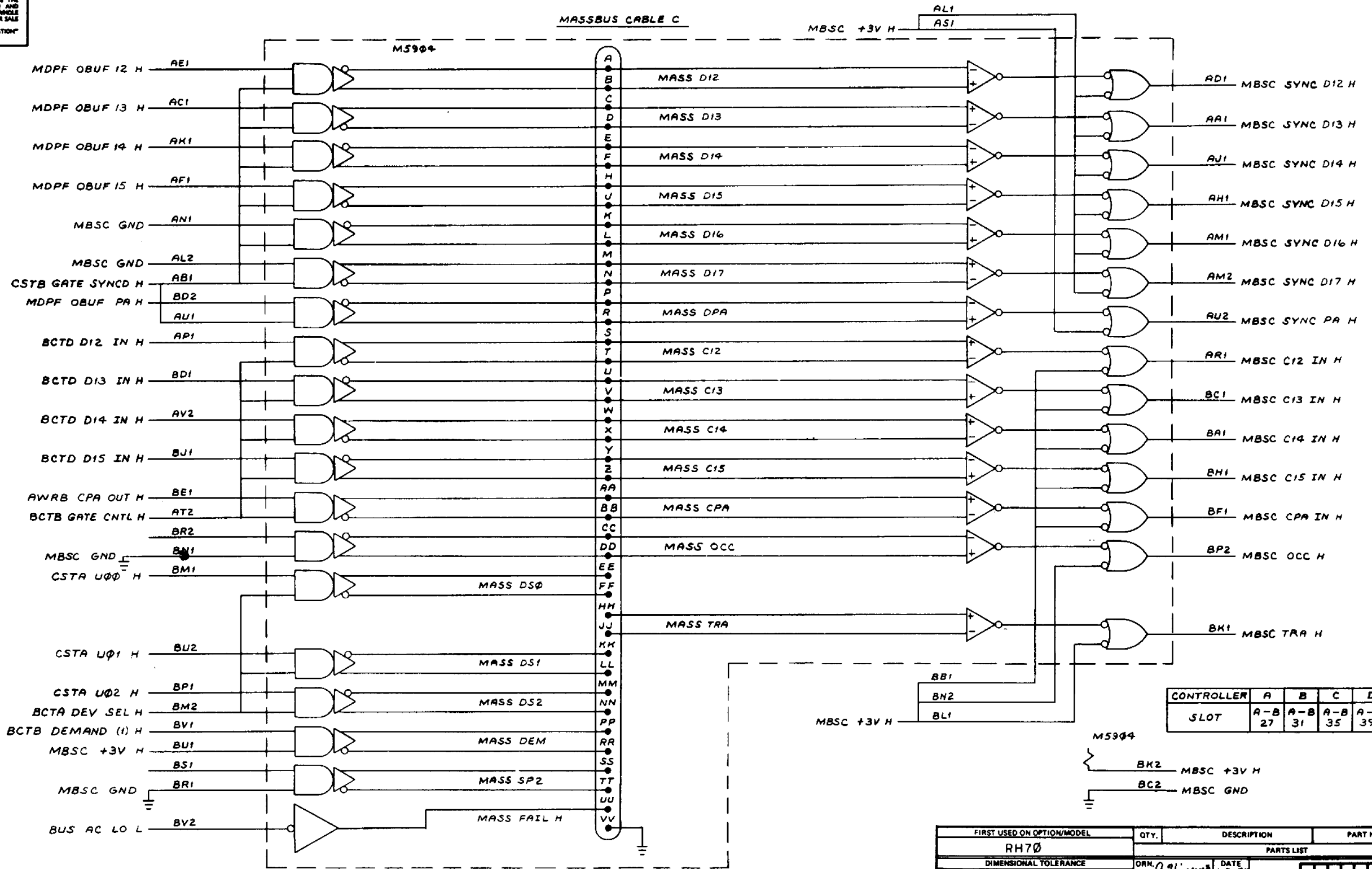
B

A

1

52

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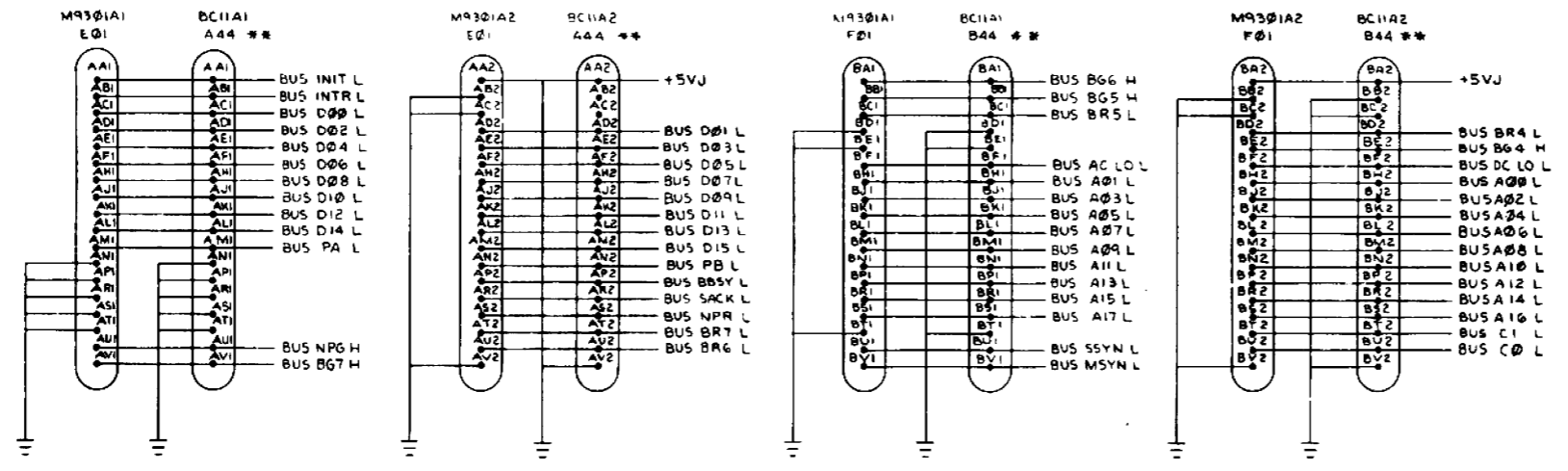
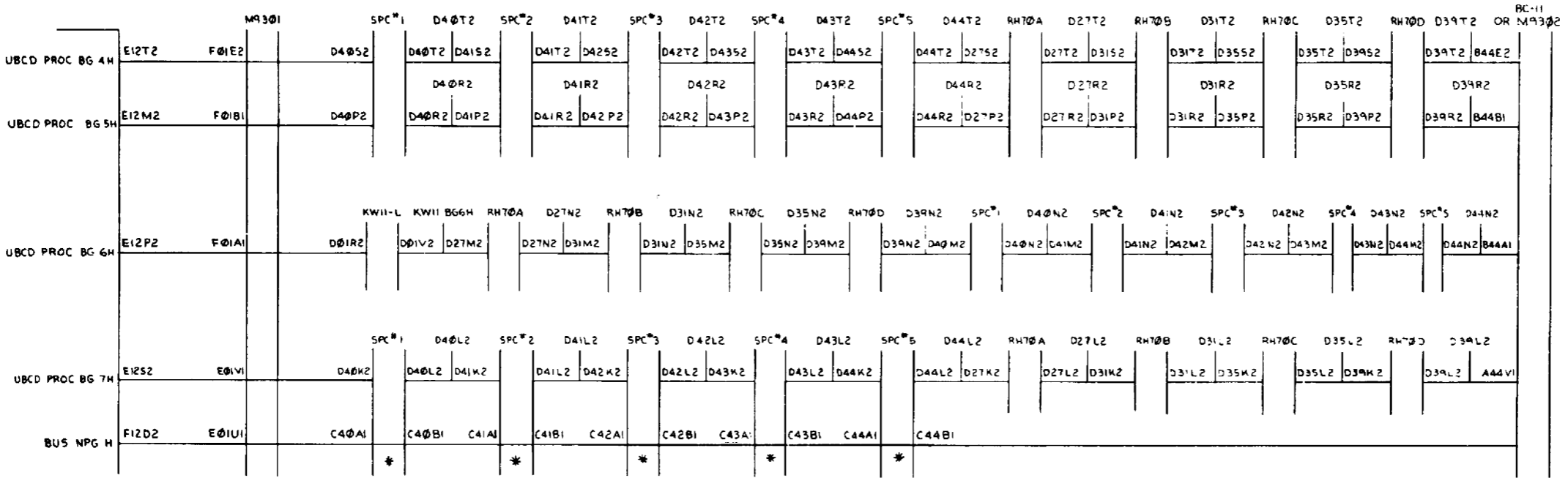


CONTROLLER	A	B	C	D
SLOT	A-B 27	A-B 31	A-B 35	A-B 39

FIRST USED ON OPTION/MODEL RH70		QTY.	DESCRIPTION	PART NO.	ITEM NO.
DIMENSIONAL TOLERANCE		PARTS LIST			
DIMENSIONS ARE MILLIMETERS UNLESS OTHERWISE SPECIFIED		DRN. <i>J. Vincent</i>	DATE 1-31-75		
		CHK'D. <i>E. ...</i>	DATE 4/11/75		
		ENG. <i>J. ...</i>	DATE 4-14-75		
		PRG. <i>J. ...</i>	DATE 4-10-75		
		PROD. <i>J. ...</i>	DATE 4/11/75	TITLE MASSBUS TRANSCEIVER (MBSC)	
THIRD ANGLE PROJECTION	REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY ✓	NEXT HIGHER ASSY.		SIZE CODE	NUMBER
MATERIAL	FINISH	B-DD-RH70-0		DBS	RH70-0-1
		SCALE	SHEET 3 OF 3		REV.
		DIST.			

REV.	NO.	DATE	BY

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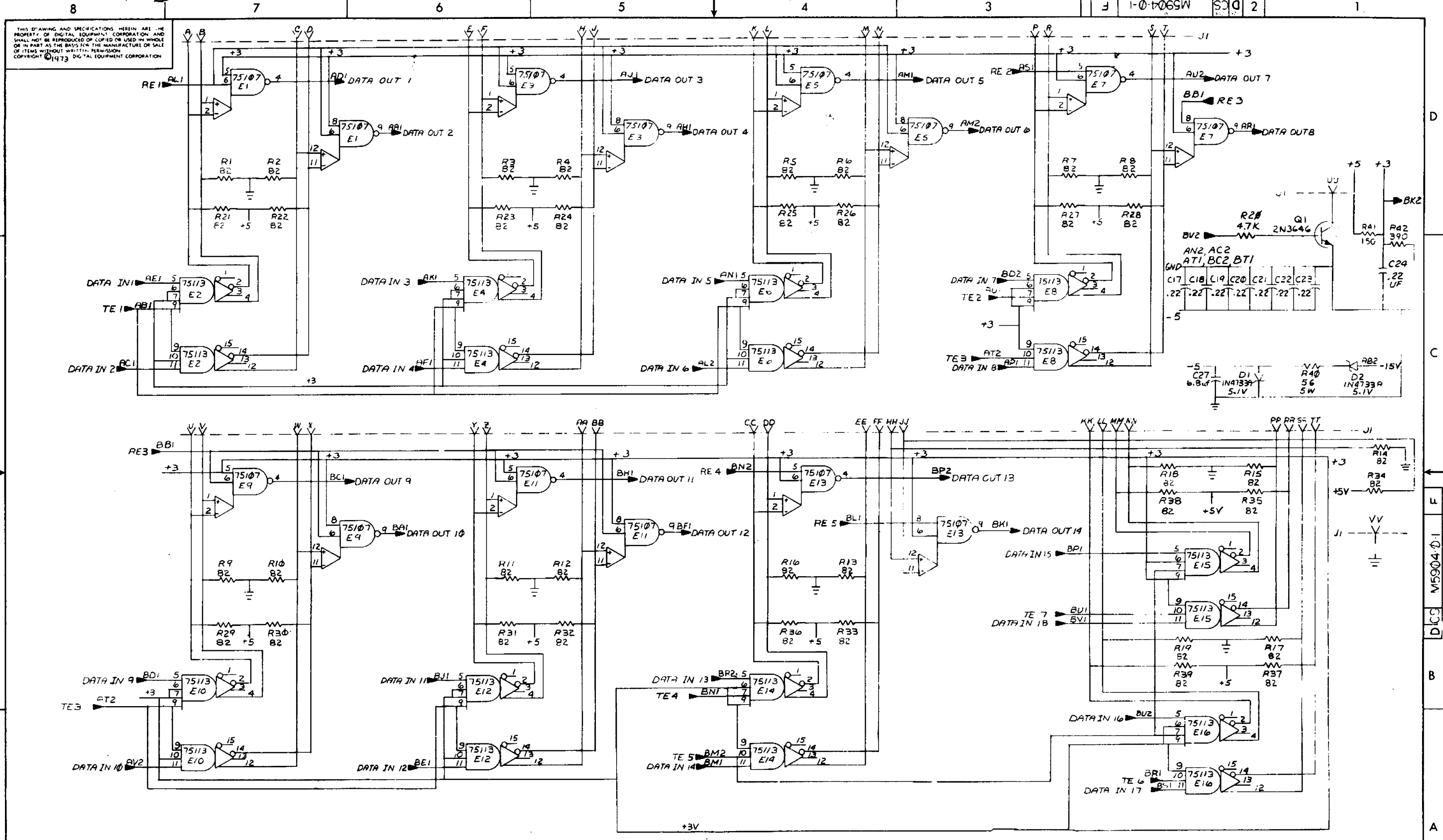
* A TO B JUMPER CONNECTION TO BE REMOVED IF AN NPG DEVICE IS INSERTED IN AN S.P.C. SLOT.
 ** IF NO UNIBUS DEVICES ARE PRESENT, REPLACE BC11 CABLE WITH M9302 UNIBUS TERM.

REV.	CHANGE NO.	DATE	BY
1	1	11/15/74	J.P. DUBRE

FIRST USED ON OPTION/MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
KB11				
PARTS LIST				
DIMENSIONAL TOLERANCE		DRN	DATE	
DIMENSIONS ARE UNLESS OTHERWISE SPECIFIED		CHK'D	DATE	
INCHES ANGLES		ENG.	DATE	
.XXX = ± .008		PROJ. ENG.	DATE	
.XX = ± .02		PROD.	DATE	
.X = ± .1				
THIRD ANGLE PROJECTION	REMOVE BURRS AND BREAK SHARP CORNERS SURFACE QUALITY	NEXT HIGHER ASSY.		
MATERIAL	B-DD-KB11-B	SIZE CODE	NUMBER	REV.
FINISH	SCALE NONE	D I C	KB11-B-7	A
SHEET 1 OF 1	DIST.			



UNIBUS CABLE AND GRANT CHAIN



REVISIONS		
CHK	CHANGE NO	REV

TITLE	SIZE CODE	NUMBER	REV
CONTROLLER TRANSCEIVER	D CS	M5904-0-1	F
SCALE	SHEET 2 OF 2	DIST.	

170

