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# FIELD MAINTENANCE PRINT SET

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UNIT VARIATIONS COVERED BY THIS PRINT SET
MS11-MA
MS11-MB
MS11-MC
MS11-MD

MS11-M

**Field Maintenance  
Print Set**

**Digital Equipment  
Corporation**

PRINT SET ORDER NO. MP-ØØ742

REVISIONS	REV	A	USED ON OPTION/MODEL	11/44	DRN. H. DARAKJIAN	DATE	31	TITLE:	MS11-M ECC MOS MEMORY	digital	
	CHG. NO.						DATE				JAN 79
	INT. RELEASE						DATE				1-15-80
	DATE	12-79					PROJ. ENG.				J. MANTON
							DATE				DEC 79
				FIELD SERV.	DATE	JAN-9	SIZE	CODE	NUMBER	REV.	
				SHEET 1 OF 1	DATE	80	B	TC	MS11-M-1	A	
				DIST.							

REV. NUMBER

SIZE CODE B TC



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# DRAWING DIRECTORY

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## UNIT VARIATIONS

VAR	TITLE
MS11-MA	128K BYTE ECC MOS MEMORY
MS11-MB	256K BYTE ECC MOS MEMORY
MS11-MC	512K BYTE ECC MOS MEMORY (2-MS11-MB)
MS11-MD	768K BYTE ECC MOS MEMORY (3-MS11-MB)

REVISIONS	REV.	A	USED ON OPTION/MODEL	DRN.	H.	DATE	31	TITLE				<b>digital</b>
	CHANGE NO.		11/44	DARAKJIAN		JAN 79						
INT. RELEASE	A			CHK'D.	J.	DATE	19	SIZE	CODE	NUMBER	REV	
				DINOPOULOS		DEC 79		B	DD	MS11-M	A	
				PROJ. ENG.	J. MANTON	DATE	19	DIST.				
						DEC 79						
CHK	-			PROD.	<i>Bob Schaf</i>	DATE	1/9/80					
			SHEET 1 OF 2									



# DIGITAL EQUIPMENT CORPORATION PARTS LIST

MADE BY DATE	H. DARAKJIAN 31 JAN 79	CHECKED DATE	D. HEALY 26 DEC 79	SECTION 1
ENG DATE	J. E. MANTON 1-15-80	PROD DATE	B. SCHAAF 1-15-80	ISSUED SECTION 1

## QUANTITY / VARIATION

MS11-MA	MS11-MB	MS11-MC	MS11-MD										
NOTE 1	-	-	-										
-	NOTE 2	NOTE 3	NOTE 4										
1	1	1	1										

**NOTES:**

1. QTY OF 1 DEPENDING ON VARIATION USED (MS11-MA)
2. QTY OF 1 DEPENDING ON VARIATION USED (MS11-MB)

### REF DESIGNATION

ITEM NO.	DRAWING NO.	PART NO.	DESCRIPTION
1	K-PL-M8722-AA-DBP	M8722-AB	128K BYTES/MOSTEK 16K CHIPS
2	K-PL-M8722-AA-DBP	M8722-AC	128K BYTES/FUJITSU 16K CHIPS
3	K-PL-M8722-AA-DBP	M8722-AF	128K BYTES/HITACHI 16K CHIPS
4	K-PL-M8722-BA-DBP	M8722-BB	256K BYTES/MOSTEK 16K CHIPS
5	K-PL-M8722-BA-DBP	M8722-BC	256K BYTES/FUJITSU 16K CHIPS
6	K-PL-M8722-BA-DBP	M8722-BF	256K BYTES/HITACHI 16K CHIPS
7	B-PL-MS11-M		MS11-M SHIPPING LIST

**NOTES:**

3. A QTY OF 2 MS11-MB MODULES (SEE NOTE 2 FOR VARIATION)
4. A QTY OF 3 MS11-MB MODULES (SEE NOTE 2 FOR VARIATION)

E.C.O. NO.

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**TITLE**  
ECC MOS MEMORY (MS11-M)

**ASSY NO.**  
B-DD-MS11-M

SHEET 1 OF 1

**SIZE**  
**B**

**CODE**  
**PL**

**NUMBER**  
MS11-M-0

**REV.**  
A

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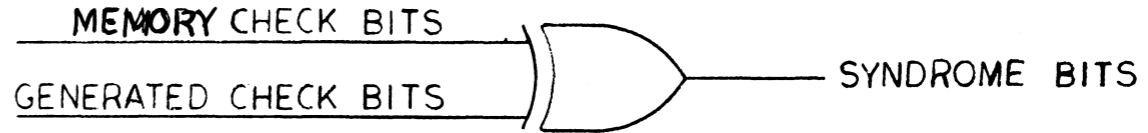
MODIFIED HAMMING CODE MATRIX

	BYTE 0							BYTE 1							BYTE 2							BYTE 3							CHECK BITS										
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	C <sub>1</sub>	C <sub>2</sub>	C <sub>4</sub>	C <sub>8</sub>	C <sub>16</sub>	C <sub>32</sub>	C <sub>T</sub>
DATA BITS																																							
SYNDROME BITS	S <sub>1</sub>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
	S <sub>2</sub>		X	X			X	X		X	X			X	X		X	X			X	X				X	X			X	X			X					
	S <sub>4</sub>				X	X	X	X				X	X	X	X				X	X	X	X					X	X	X	X			X						
	S <sub>8</sub>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X									X	X	X	X	X	X	X	X			X				
	S <sub>16</sub>	X	X	X	X	X	X	X	X								X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X				
	S <sub>32</sub>									X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X			
ST	X		X		X	X	X	X		X		X	X	X		X		X	X	X		X		X	X		X		X		X		X			X			

EACH CHECK BIT IS THE RESULT OF ODD PARITY GENERATED ON THE DATA BITS DESIGNATED BY X. I.E. C<sub>1</sub> IS P(1,3,5,7,9... 29,31). C<sub>32</sub> IS P(8 THRU 31). THE EXCEPTION IS C<sub>T</sub>, WHICH IS THE RESULT OF EVEN PARITY.

- SYNDROME BITS (S<sub>1</sub> ETC.) ARE FORMED BY A COMPARISON OF THE CHECK BITS READ FROM MEMORY AND THE NEW CHECK BITS GENERATED ON THE DATA READ FROM MEMORY.
- A SINGLE ERROR WILL CAUSE AN ODD NUMBER OF SYNDROME BITS TO GO HIGH  
 E.G. IF BIT 1 FAILS S<sub>1</sub>, S<sub>8</sub> & S<sub>16</sub> WILL GO HIGH.  
 IF BIT 15 FAILS S<sub>1</sub>, S<sub>2</sub>, S<sub>4</sub>, S<sub>8</sub> & S<sub>32</sub> WILL GO HIGH.
- A DOUBLE ERROR WILL CAUSE AN EVEN NUMBER OF SYNDROME BITS TO GO HIGH.

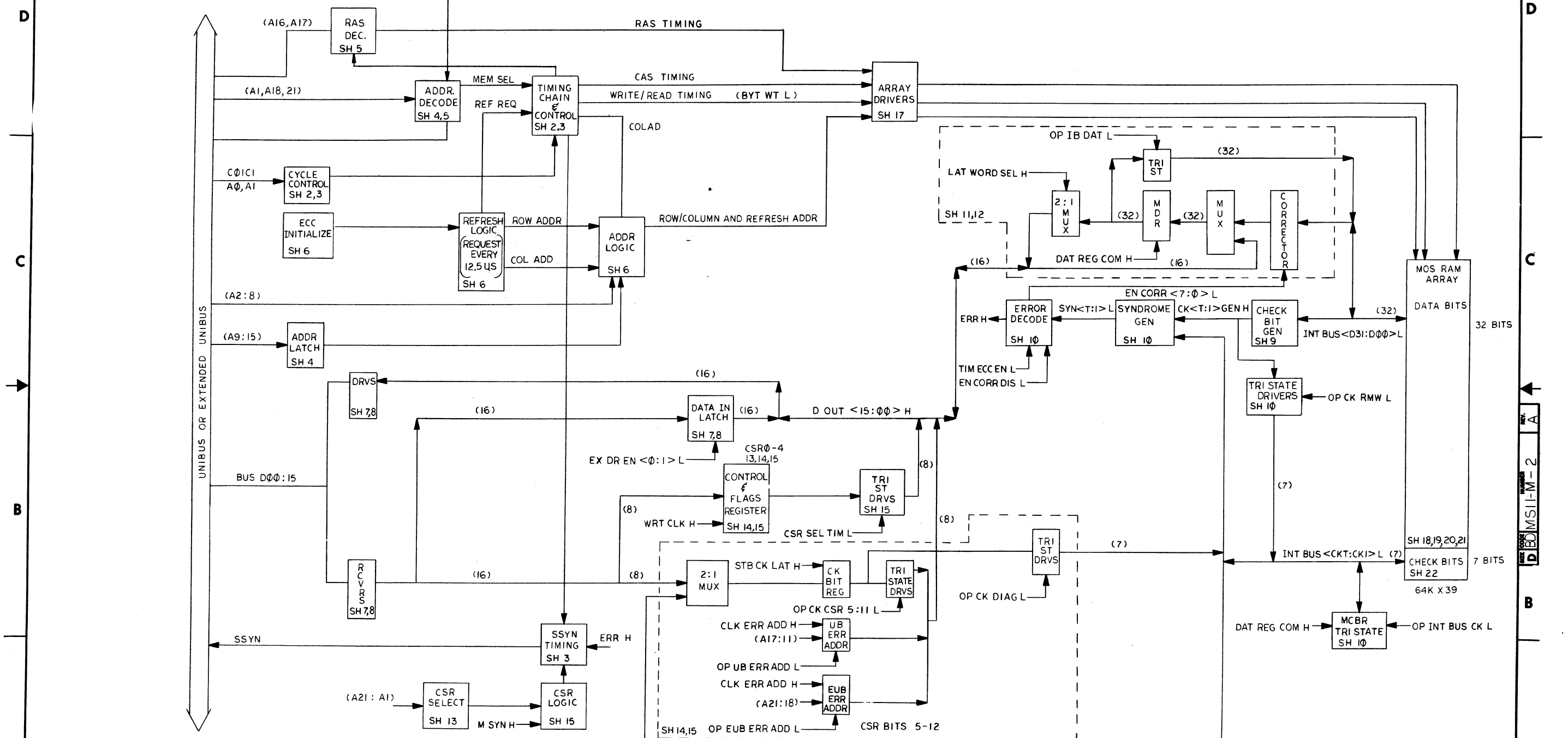
E.G. IF BITS 0 & 1 FAIL S<sub>1</sub> & S<sub>T</sub> WILL GO HIGH, BUT S<sub>8</sub> & S<sub>16</sub> WILL NOT SINCE C<sub>8</sub> & C<sub>16</sub> ARE COMMON TO BITS 0 & 1 AND THE PARITY REMAINS UNCHANGED.



REVISIONS	REV.	A
CHANGE NO.		
INT. RELEASE		
CHK		

QUANTITY & VARIATION	DESCRIPTION	DWG./PART NO.	ITEM NO.
	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		
	ANGLES ± 0° 30'	CLASS OF ACCURACY (CHECK ONE)	NOMINAL DIMENSION RANGE INCHES
	SURFACE QUALITY IN	MEDIUM <input type="checkbox"/>	OVER 0 TO 0.2 ±.004
	MICROINCHES	PREFERRED <input type="checkbox"/>	OVER 0.2 TO 1.2 ±.008
			OVER 1.2 TO 4.0 ±.012
			OVER 4.0 TO 12.0 ±.016
			OVER 12.0 TO 40.0 ±.024
			OVER 40.0 TO 80.0 ±.04
			OVER 80.0 TO 160.0 ±.063
			OVER 160.0 TO 320.0 ±.1
THIRD ANGLE PROJECTION	DRN. <i>Reg. Canon</i> 12-22-78	FIRST USED ON	11/44 <b>digital</b>
REMOVE BURRS AND BREAK SHARP CORNERS	CHK'D <i>John Dinspacher</i> 12-20-79	TITLE	MSII-M
DO NOT SCALE DWG	ENG. <i>J.B. Martin</i> 12-14-79		ERROR CHECK CODE
MATERIAL	PROD. <i>B. Schaff</i> 1/9/80		
FINISH	NEXT HIGHER ASSY.		
	B-DD-MSII-M	SIZE	B
		CODE	BS
		NUMBER	MSII-M-7
		REV.	A
		SHEET	
		OF	
		DIST.	

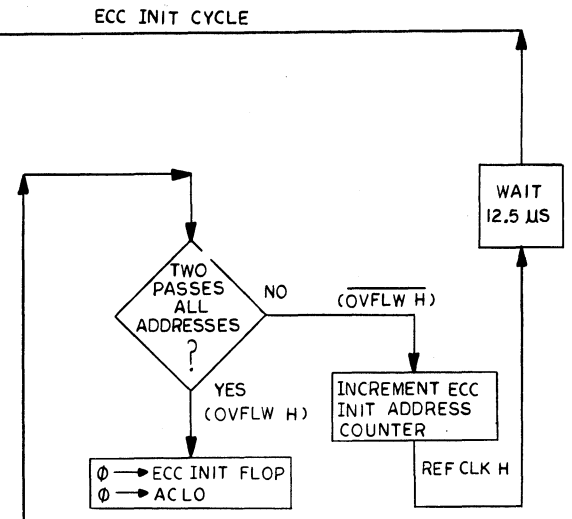
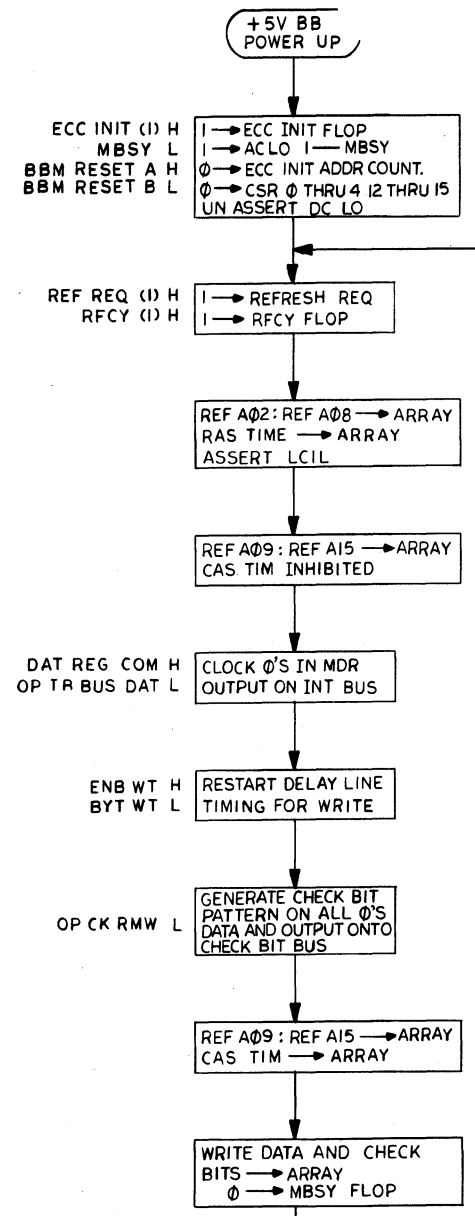
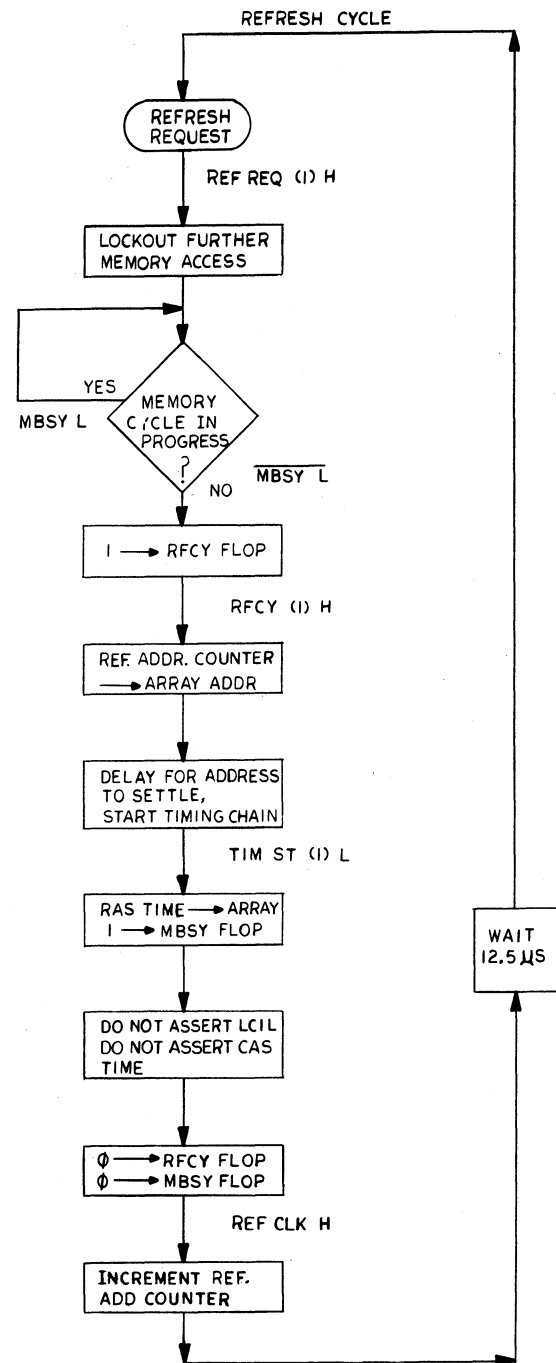
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REV. A	INT-RELEASE
CHG	1
REVISIONS	
MAINTENANCE P-188	

DRN. (Byg Jonsson) 12-21-78	FIRST USED ON 11/44	digital
CHK'D BY (Byg Jonsson) 12-18-78	TITLE MSII-M BLOCK DIAGRAM	
ENG. (Byg Jonsson) 12-19-78		
PROD. ENG. (Byg Jonsson) 12-19-78		
PROD. (Byg Jonsson) 1/7/80		
NEXT HIGHER ASSY.		
B-DD-MSII-M	SIZE CODE D BD	NUMBER MSII-M-2
SCALE		REV. A
SHEET	OF	DIST.

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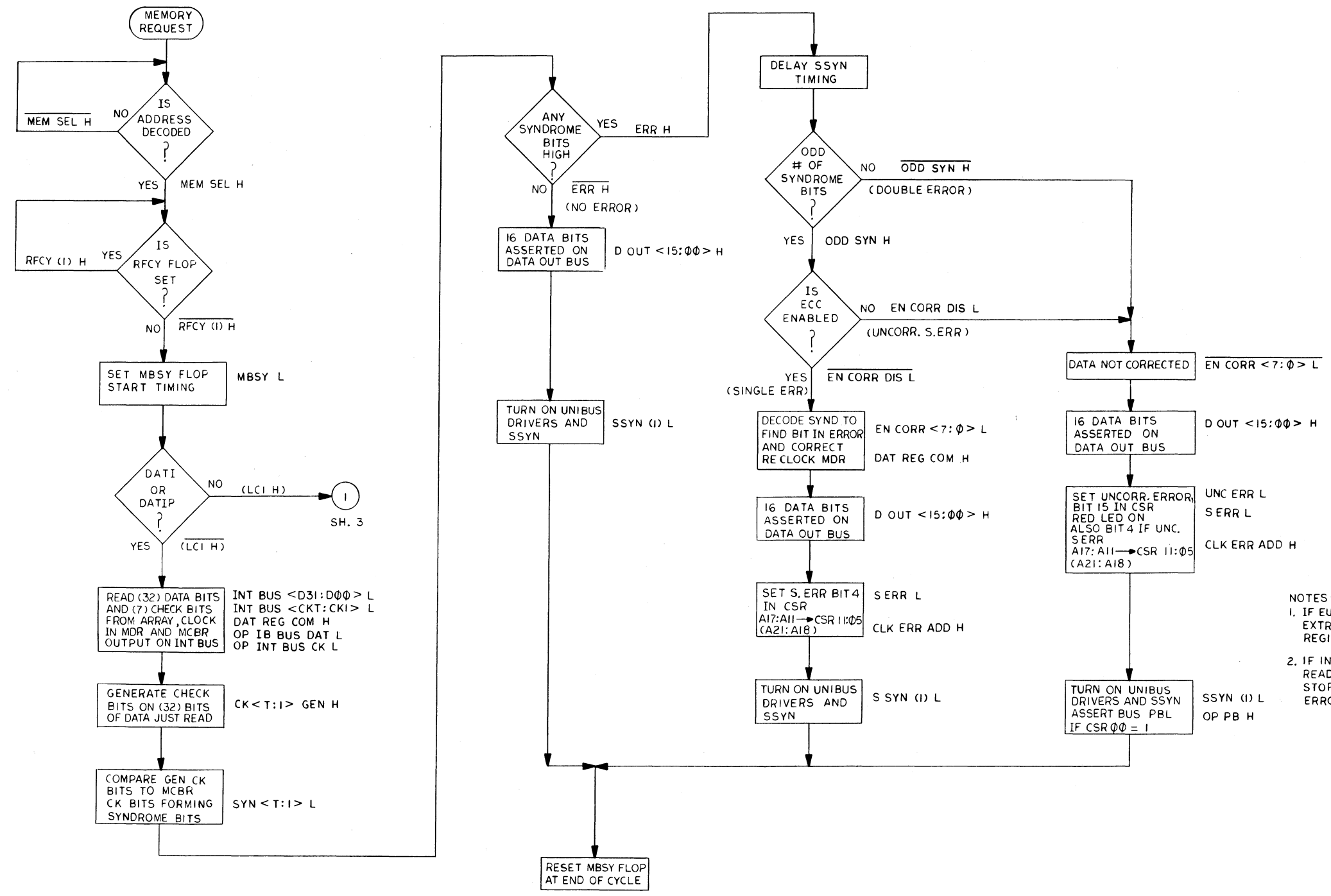


REV. A	INT. RELEASE
CHG	

DRN. (Byg. Control)	12-27-78	FIRST USED ON	11/44	digital
CHK'D (Byg. Control)	12-19-78	TITLE	MS11-M	
ENG. (J. Hinton)	12-19-78	NUMBER	FLOW DIAGRAM	
PROJ. ENG. (M. J. ...)	12-19-78	SIZE	D	
PROD. (S. ...)	11/17/80	SCALE	+	
NEXT HIGHER ASSY.	B-DD-MS11-M	REV.	A	
SHEET	1	OF	4	



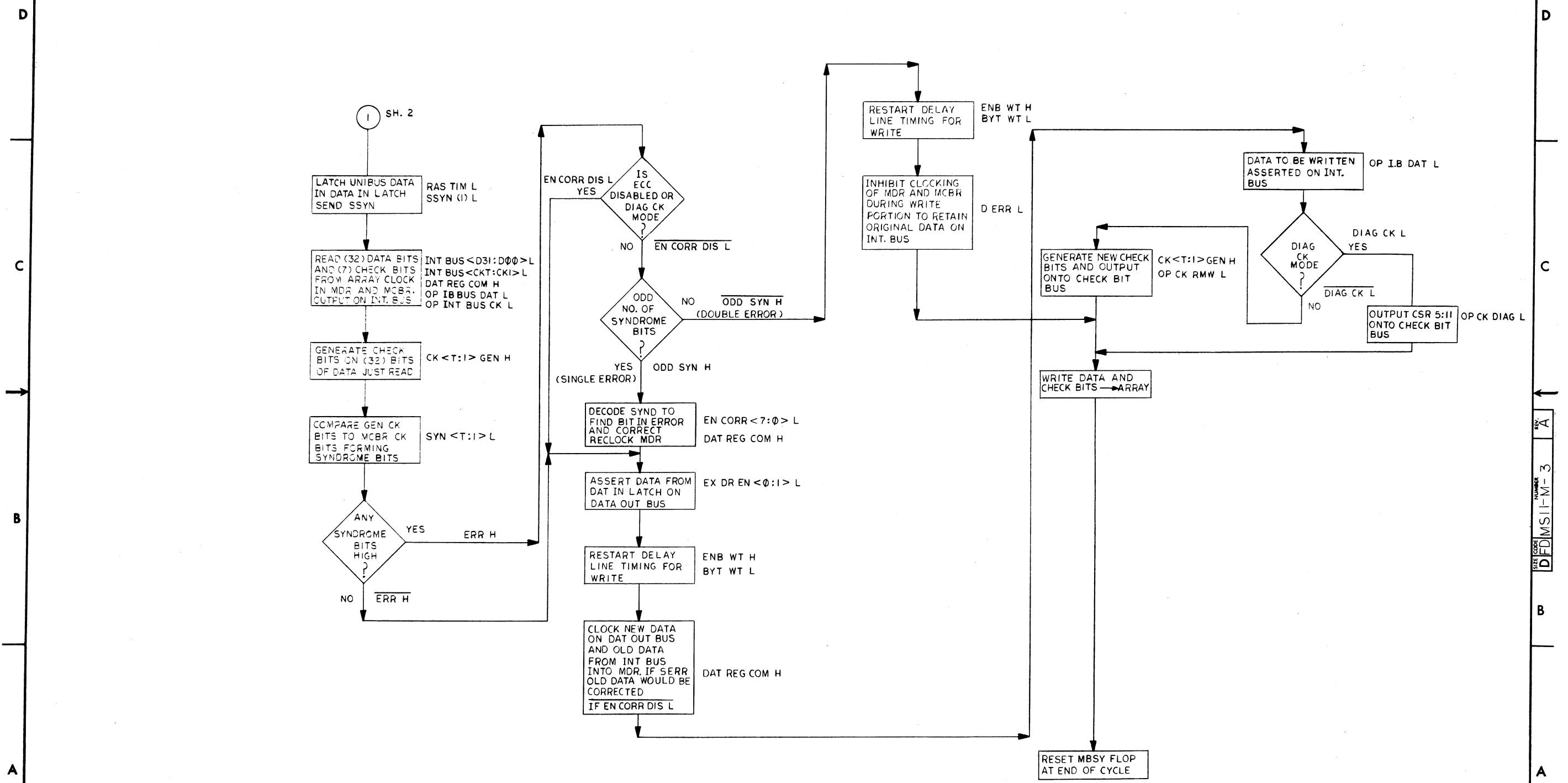
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NOTES:  
 1. IF EUB ON ERROR A21:11 -> CSR 11:05 EXTRA 4 BITS STORED IN BACKUP REGISTER.  
 2. IF IN DIAG CK MODE CHECK BITS READ FROM ARRAY ARE ALWAYS STORED IN CSR <5:11> WHETHER ERROR OCCURS OR NOT

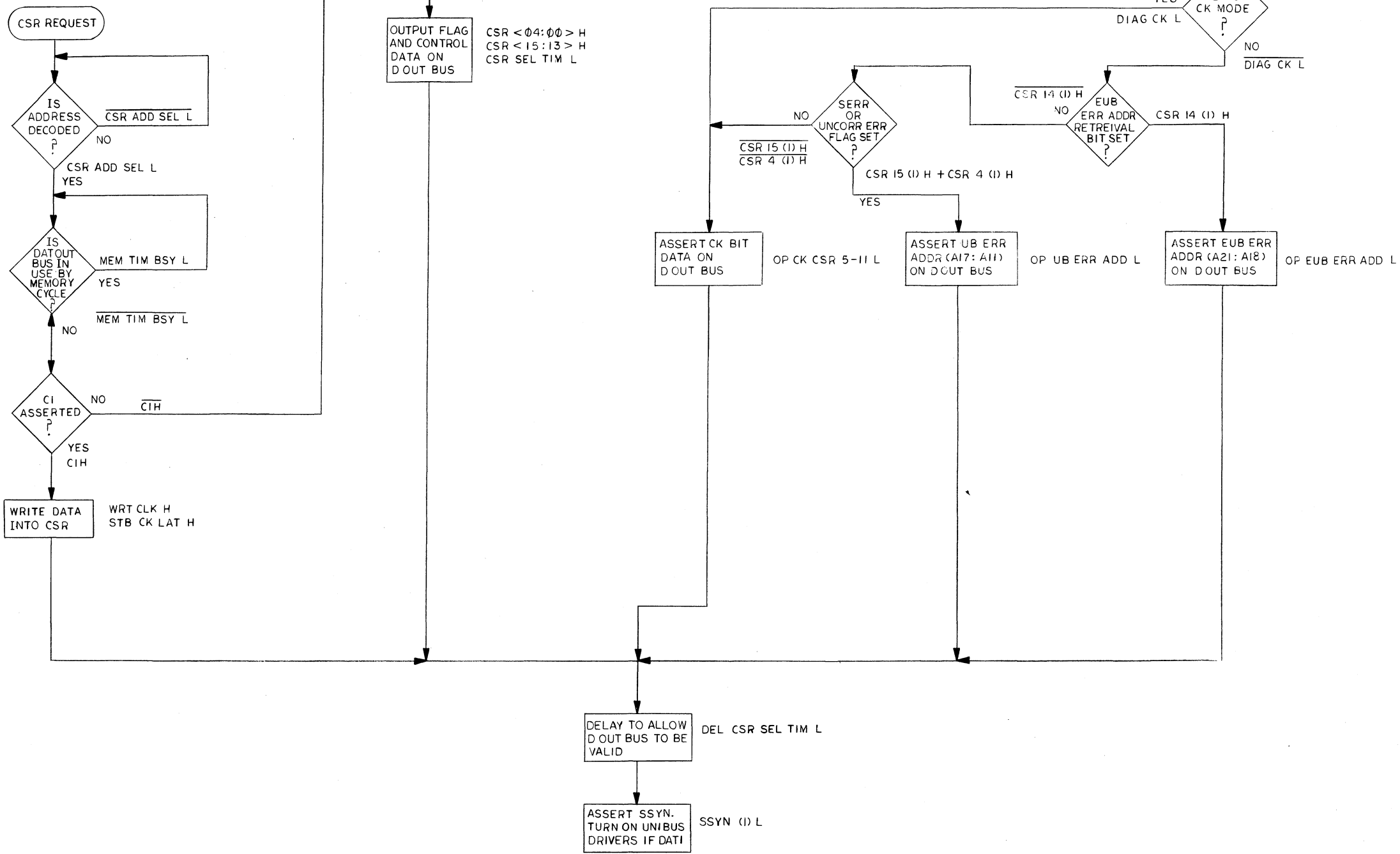
REVISIONS		
CHK	CHANGE NO.	REV.

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REVISIONS		
CHK	CHANGE NO.	REV.

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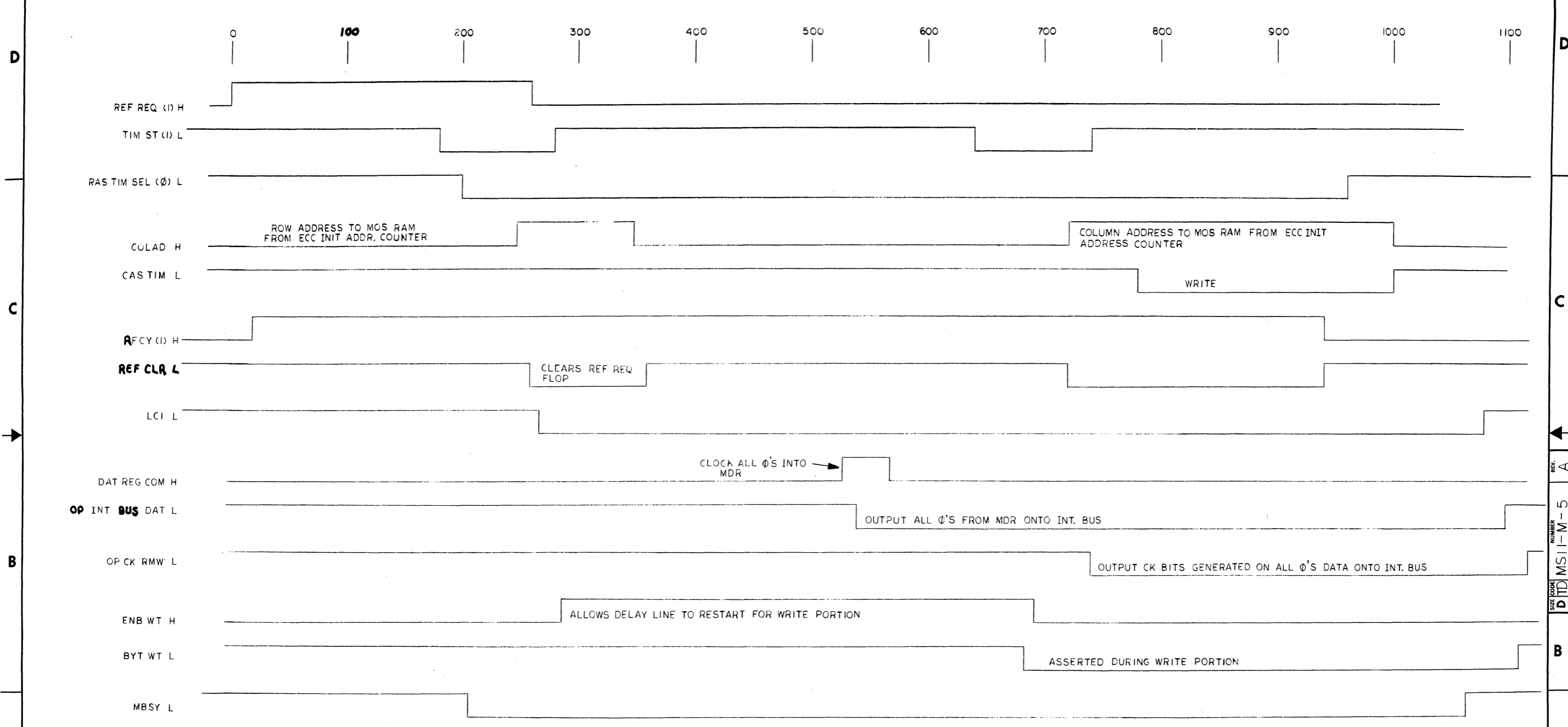
REVISIONS		
CHK	CHANGE NO.	REV.

REV. A  
NUMBER MSII-M-3  
DATE CODE DFD

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NOTE:  
WRITE ALL  $\Phi$ 'S DATA WITH CORRECT CHECK BITS THROUGHOUT MEMORY ON INITIAL POWER UP

ECC INIT CYCLE



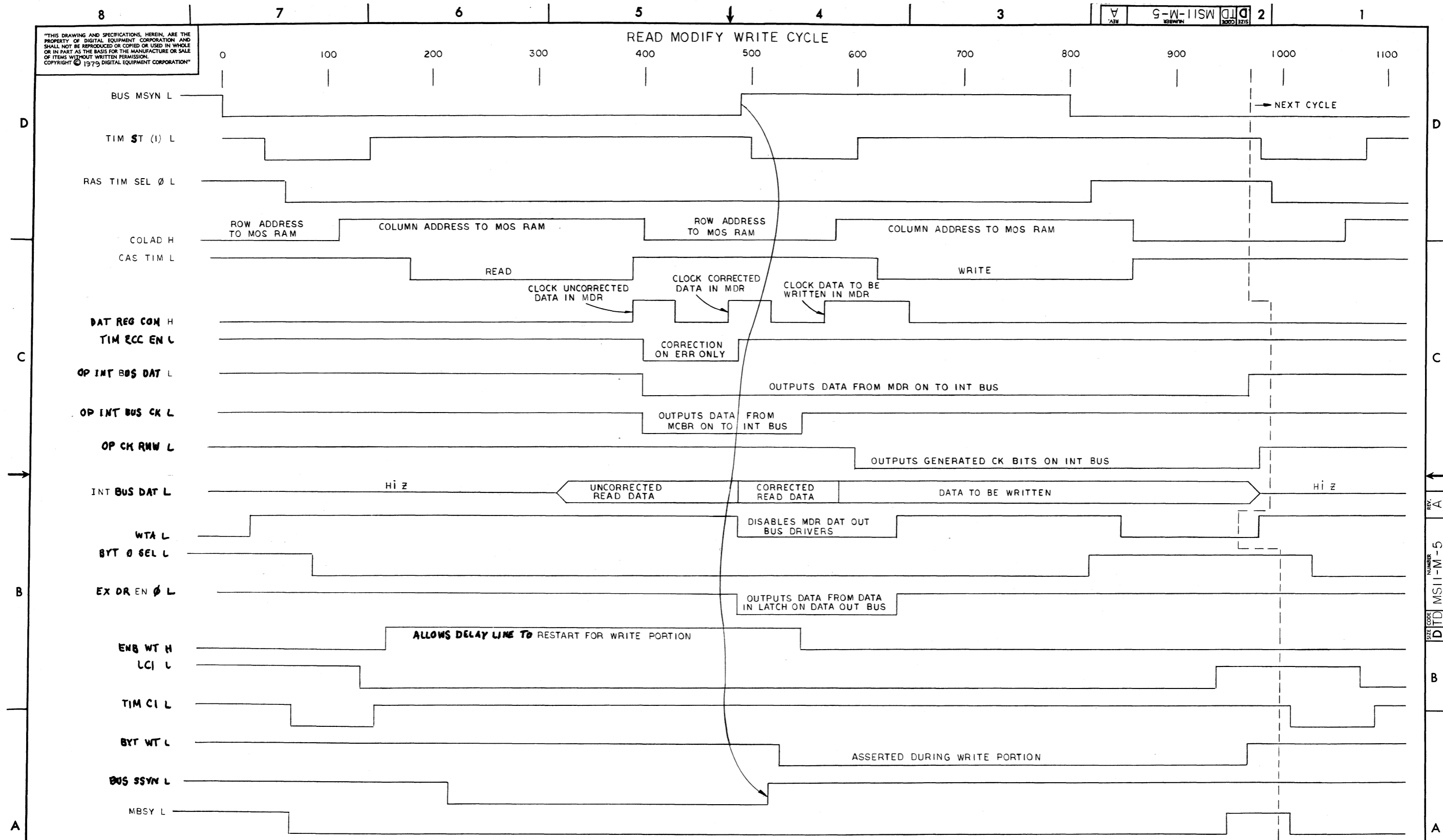
DRN. 11/44		FIRST USED ON 11/44		digital
CHK'D	11/44	11/44	11/44	
ENG.	11/44	11/44	11/44	TITLE
PROD. ENG.	11/44	11/44	11/44	MSII-M
PROD.	11/44	11/44	11/44	TIMING DIAGRAM
NEXT HIGHER ASSY.				
E-OP-MSII-M		SIZE CODE	NUMBER	REV.
SCALE + +		D TD	MSII-M-5	A
SHEET 1 OF 4		DIST.		

REV.	A
INT. RELEASE	
CHANGE NO.	
CHK	

DEC FORM NO. 102-0

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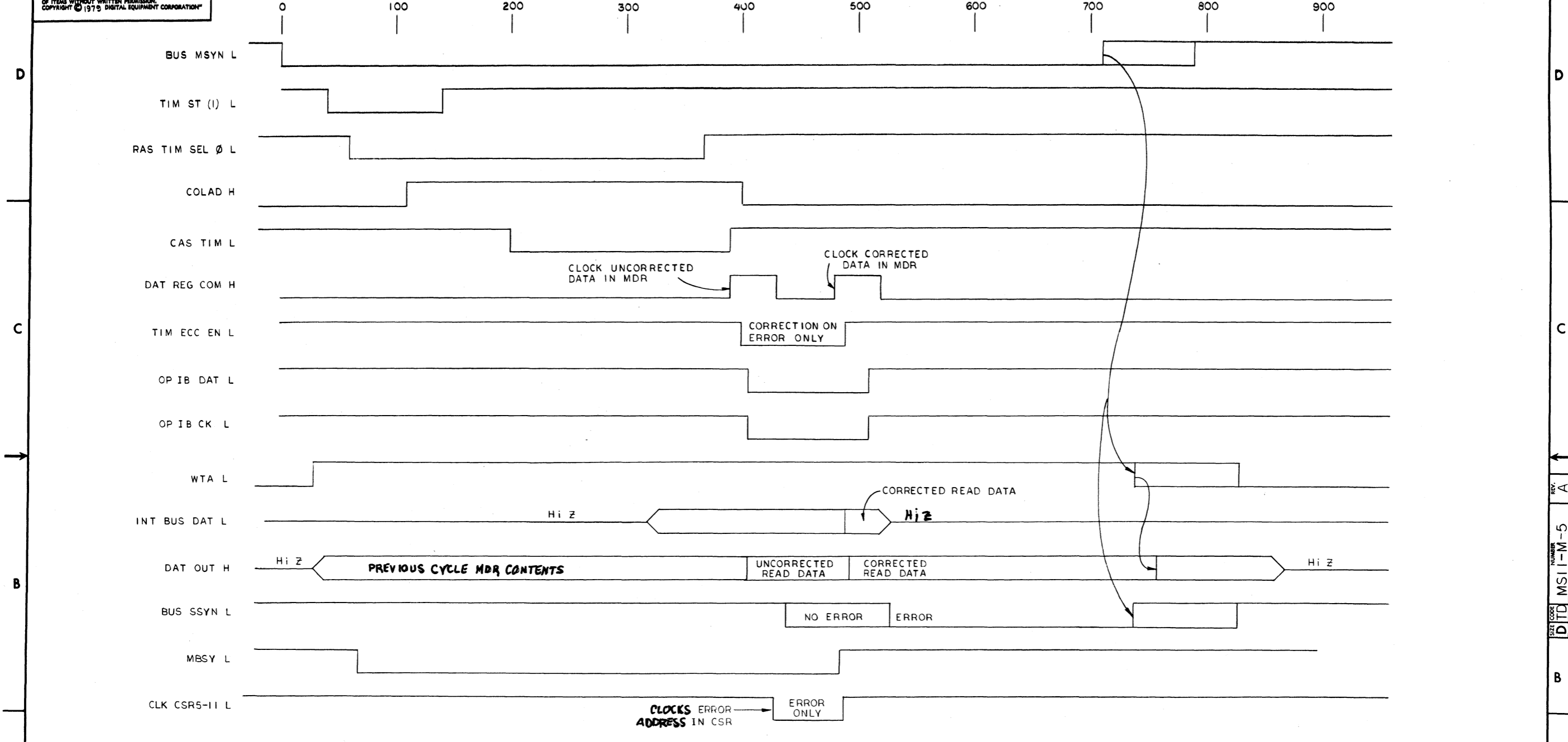
READ MODIFY WRITE CYCLE



REVISIONS		
CHK	CHANGE NO.	REV.

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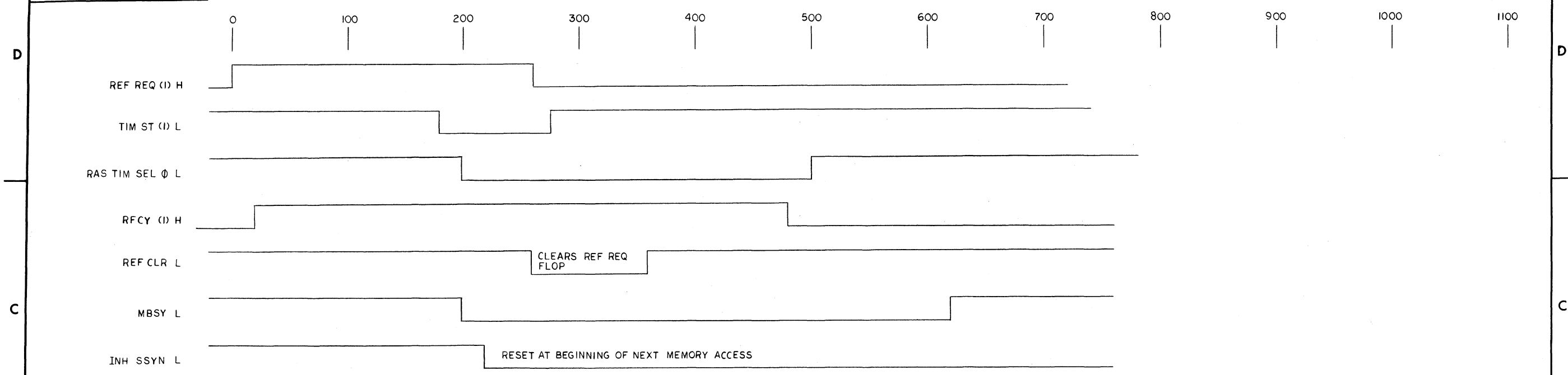
READ CYCLE



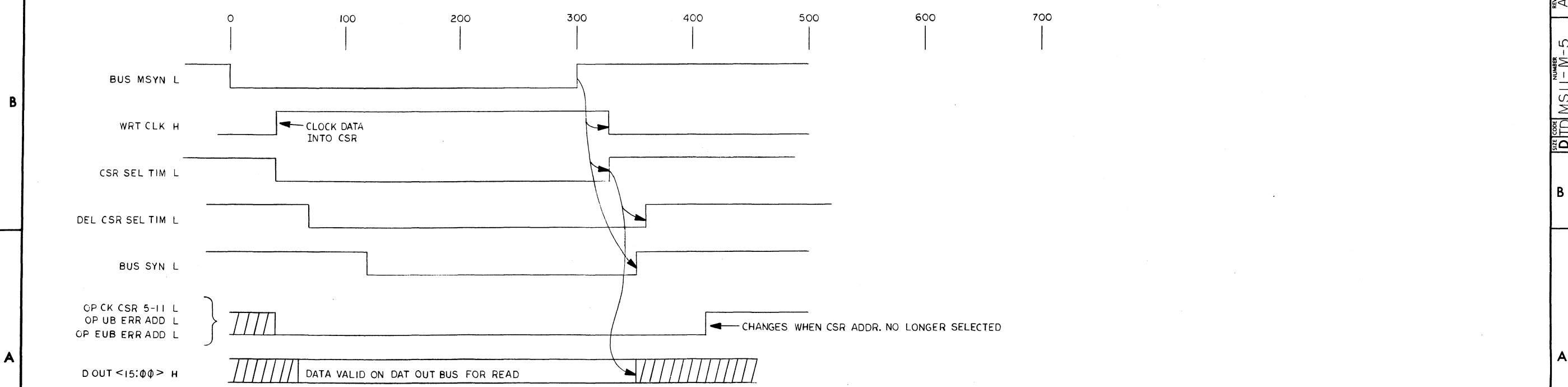
REVISIONS		
CHK	CHANGE NO.	REV.

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REFRESH CYCLE



CSR READ AND WRITE



REVISIONS		
CHK	CHANGE NO.	REV.

REV. A  
NUMBER MSII-M-5  
SIZE CODE D TD





DRAWING NO.	NO. OF SHTS.	PART NO.	DESCRIPTION	REVISIONS																		
				1	2	3	4	5	6	7	8	9	10	11	12							
B-DD-M8722-0	1		ECC MOS MEMORY	A	B	C																
D-UA-M8722-0-0	9		ECC MOS MEMORY	B	C	D																
D-CS-M8722-0-1	22		ECC MOS MEMORY	B	C	D																
D-MD-5013505-0-0	5		DRILL & ETCH DRAWING	B	B	B																
		5013505	ETCHED BOARD	C	C	C																
K-PC-M8722-0-DBC	-		P.C. DESIGN DATA BASE (M8722)	A	A	A																
K-PL-M8722-BA-DBP	-		PARTS LIST DATA BASE (Z0472)	B	B	B																
K-PL-M8722-AA-DBP	-		PARTS LIST DATA BASE (Z0471)	B	B	B																

**NOTES:**

REVISIONS		DATE	CHG NO.	REV.
	ORIG			A
	ML001	3-24		B
	ML002	4-30		C

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USED ON OPTION/MODEL 11/44	DRN. P. BOSSMAN	10 JAN 79	TITLE ECC MOS MEMORY
	CHK'D <i>P. Bossman</i>	12 JAN 79	SIZE CODE NUMBER B DD M8722-0
	ENG. <i>J. L. Manton</i>	19 DEC 79	REV. C
	PRD. <i>Bob Schaefer</i>	1/9/80	SHEET 1 OF 1

LINE	ITEM	DOCUMENT NUMBER	PART NUMBER	DESCRIPTION	QTY PER VARIATION			REFERENCE DESIGNATOR
					BB	BC	BF	
1	1		5013505-00	128K ECC UNIBUS MEM ETCH CIR. BD	1	1	1	
2	2		1012219-00	47. MFD 30V 6% 600D AL EL	2	2	2	C400,C401
3	3		1012121-00	220.0 MMF 100V 1%200PPM DM15S	4	4	4	C1,C3,C4,C7
4	4		1001610-00	.01 MFD 50V -20+80 Z5U AXIAL	33	33	33	C2,C111-C131,C220-C230
5	5		1012084-01	8 MFD 25V 6% 30D AL EL	5	5	5	C100-C103,C200
6	6		1010279-01	.47 MFD 25V 20% 2C023 CER.	101	101	101	C210-C214,C310-C357,C410-C457
7	7		1110994-00	1N 751A VZ= 5.1 5% .40W	1	1	1	D5
8	8		1109991-00	1N 754A VZ= 6.8 5% .40W	1	1	1	D4
9	9		1104860-00	*** THIS ITEM IS NOT USED ***	-	-	-	
10	10		1110324-00	LED 1MCD@10MA FIV=3	1	1	1	D2
11	11		1114384-00	LED 105MW 35MA GREEN	1	1	1	D3
12	12		1210711-02	HANDLE,MODULE,HEX	1	1	1	
13	13		1211164-04	SW,DIP 1P 1A 8POS	1	1	1	E46
14	14		1211164-00	SW,DIP 1P 1A 4POS	1	1	1	E61
15	15		1302124-00	18.0 .25 W 5.0 % CC	2	2	2	R7,R31
16	16		1301890-00	560.0 .25 W 5.0 % CC	1	1	1	R2
17	17		1304863-00	316 1/4W 1% RN55D-F 100PPM	2	2	2	R11,R12
18	18		1301424-00	*** THIS ITEM IS NOT USED ***	-	-	-	
19	19		1300447-00	4.70 K .25 W 5.0 % CC	11	11	11	R10,R13,R14,R18-R20,R22-R24,E26, R30
20	20		1300316-00	470.0 .25 W 5.0 % CC	1	1	1	R21
21	21		1300365-00	1.0 K .25 W 5.0 % CC	1	1	1	R15
22	22		1300309-00	*** THIS ITEM IS NOT USED ***	-	-	-	
23	23		1300229-00	100.0 .25 W 5.0 % CC	1	1	1	R5
24	24		1301972-00	270.0 .25 W 5.0 % CC	2	2	2	R27,R28
25	25		1300202-00	47.0 .25 W 5.0 % CC	1	1	1	R29
26	26		1300444-00	3.90 K .25 W 5.0 % CC	1	1	1	R4
27	27		1311594-00	30.1 K 1/4W 1% RN55D-F 100PPM	1	1	1	R6
28	28		1315339-00	R NETWORK 4-5K 5.0 % 5PIN	3	3	3	R100-R102
29	29		1316187-00	R NETWORK 3-18 5.0 % 6PIN	8	8	8	R200-R207

REVISION HISTORY		BASIC PART NO: M8722		DRN: J.LIZOTTE		DATE: 14-DEC-78		D I G I T A L	
ENG	ECD NUMBER	REV	SECTION A OF A	CHK'D				TITLE	PARTS LIST
	INITIAL	B	SECTION, VARIATION INDEX		D. CARUSSO		14-DEC-78		ECC MOS MEMORY
			[A] BB, BC, BF		J. MANTON		14-DEC-78		
			[B]		J. MANTON		14-DEC-78		
			[C]		J. MANTON		14-DEC-78		
			[D]		J. MANTON		14-DEC-78		
			[E]		J. MANTON		14-DEC-78		DOCUMENT NUMBER
			[F]		J. MANTON		14-DEC-78		
			[G]		R. SCHAAF		14-DEC-78		SIZE! CODE! NUMBER ! REV !
			[H]						
			[J]						
			[K]						
			[L]						
			[M]						
			[N]						
					ASSEMBLY NUMBER:		TOP DOCUMENT NUMBER:		FILE NAME: ! EDIT #!
					D-UA-M8722-0-0				Z0472B.PLS ! 3 !

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LINE	ITEM	DOCUMENT NUMBER	PART NUMBER	DESCRIPTION	QTY PER VARIATION			REFERENCE DESIGNATOR
					BB	BC	BF	
30	30		1316186-00	R NETWORK 1-12 2-18 6PIN	8	8	8	R300-R307
31	31		1613120-00	DELAY= 200NS,10TAPS	2	2	2	E5,E21
32	32		1910532-00	74S00 NAND GATE-QUAD 2IN	1	1	1	E31
33	33		1912799-00	LS00 NAND-GATE-QUAD 2IN,P	1	1	1	E25
34	34		1912388-00	74S02 NOR GATE-QUAD 2IN,PO	1	1	1	E42
35	35		1911469-00	DEC 8640 RECEIVER,BUS,QUAD,U	1	1	1	E38
36	36		1910533-00	74S03 NAND GATE-QUAD 2IN,O	1	1	1	E22
37	37		1909705-00	DEC 8881 NAND GATE-QUAD 2IN O	1	1	1	E27
38	38		1914451-00	74LS393 COUNTER,BINARY,4BIT	2	2	2	E54,E56
39	39		1910547-00	74S153 MUX 1 OF 4 (DUAL)	5	5	5	E40,E41,E47,E49,E53
40	40		1911944-00	555CN TIMER,FUNCT,BLOCK	1	1	1	E11
41	41		1910534-00	74S04 INVERTER GATE-HEX 1I	1	1	1	E60
42	42		1910544-01	74S74-60GG-D DUAL,EDGE TRIG	1	1	1	E26
43	43		1912824-00	LS74 FF-D DUAL,EDGE TRIGG	2	2	2	E15,E43
44	44		1911116-00	DEC 8837 RECEIVER,BUS,HEX,UN	4	4	4	E23,E32,E44,E50
45	45		1915219-00	LS373 FF-D OCTAL-TRANSFARE	3	3	3	E3,E18,E39
46	46		1914214-00	LS374 FF-D OCTAL EDGE TRIG	3	3	3	E7,E28,E68
47	47		1911579-00	8641 TRANSCEIVER,BUS,QUA	4	4	4	E1,E6,E12,E17
48	48		1910539-00	74S20 NAND GATE-DUAL 4INPU	1	1	1	E37
49	49		1912828-00	LS85 COMPARATOR,4BIT MAGN	1	1	1	E65
50	50		1912697-00	LS174 FF-D HEX W/CLEAR	1	1	1	E0
51	51		1915193-00	LS244 DRIVER,LINE,OCTAL,T	1	1	1	E14
52	52		1911573-00	74S280 PARITY GEN/CHKR,9BIT	11	11	11	E48,E66,E69,E71,E72,E75,E78, CONT E81-E84
53	53		1912096-00	DEC 74S86 XOR GATE,QUAD 2IN	2	2	2	E36,E64
54	54		1914086-00	74S30 NAND GATE-POS 8IN	1	1	1	E55
55	55		1913777-00	LS240 DRIVER,LINE,OCTAL,T	1	1	1	E9
56	56		1912389-00	74S08 AND GATE-QUAD 2IN,PO	1	1	1	E24
57	57		1912125-00	74S135 XOR/NOR GATE-QUAD 2I	1	1	1	E59
58	58		1913493-00	74S241 OCTAL BUFFER,TRI-STA	5	5	5	E70,E76,E77,E79,E80
59	59		2113825-01	16K MOS RAM 200NS 1	156	-	-	E100-E138,E200-E238,E300-E338, CONT E400-E438
60	60		23259F1-00	F1-01	1	1	1	E34
61	61		23001J5-00	J5-01	1	1	1	E10
62	62		23002J5-00	J5-01	1	1	1	E19
63	63		23003J5-00	J5-01	1	1	1	E4
64	64		23004J5-00	J5-01	1	1	1	E30
65	65		23005J5-00	J5-01	1	1	1	E25
66	66		23006J5-00	J5-01	1	1	1	E33
67	67		23007J5-00	J5-01	1	1	1	E20
68	68		23008J5-00	J5-01	1	1	1	E29
69	69		23009J5-00	J5-01	1	1	1	E52
70	70		23001K3-00	K3-01	8	8	8	E45,E51,E57,E58,E62,E63,E67,E73
71	71		23002K3-00	K3-01	2	2	2	E2,E13
72	72		9009185-00	*** THIS ITEM IS NOT USED ***	-	-	-	
73	73		9000024-01	EYELET, ROLLED FLANGE, .121 OD X	12	12	12	
74	74		9009149-00	PIN, STAKING, P.C. BOARD, .025 X	2	2	2	TP1,TP2
75	75		2114408-01	16K MOS RAM 200NS 1	-	156	-	E100-E138,E200-E238,E300-E338,

DI	GI	TI	AI	LI	TITLE	SECTION	OF	SIZE	CODE	DOCUMENT NUMBER	REV
					ECC MOS MEMORY	A	A			M8722-BA-DBP	B

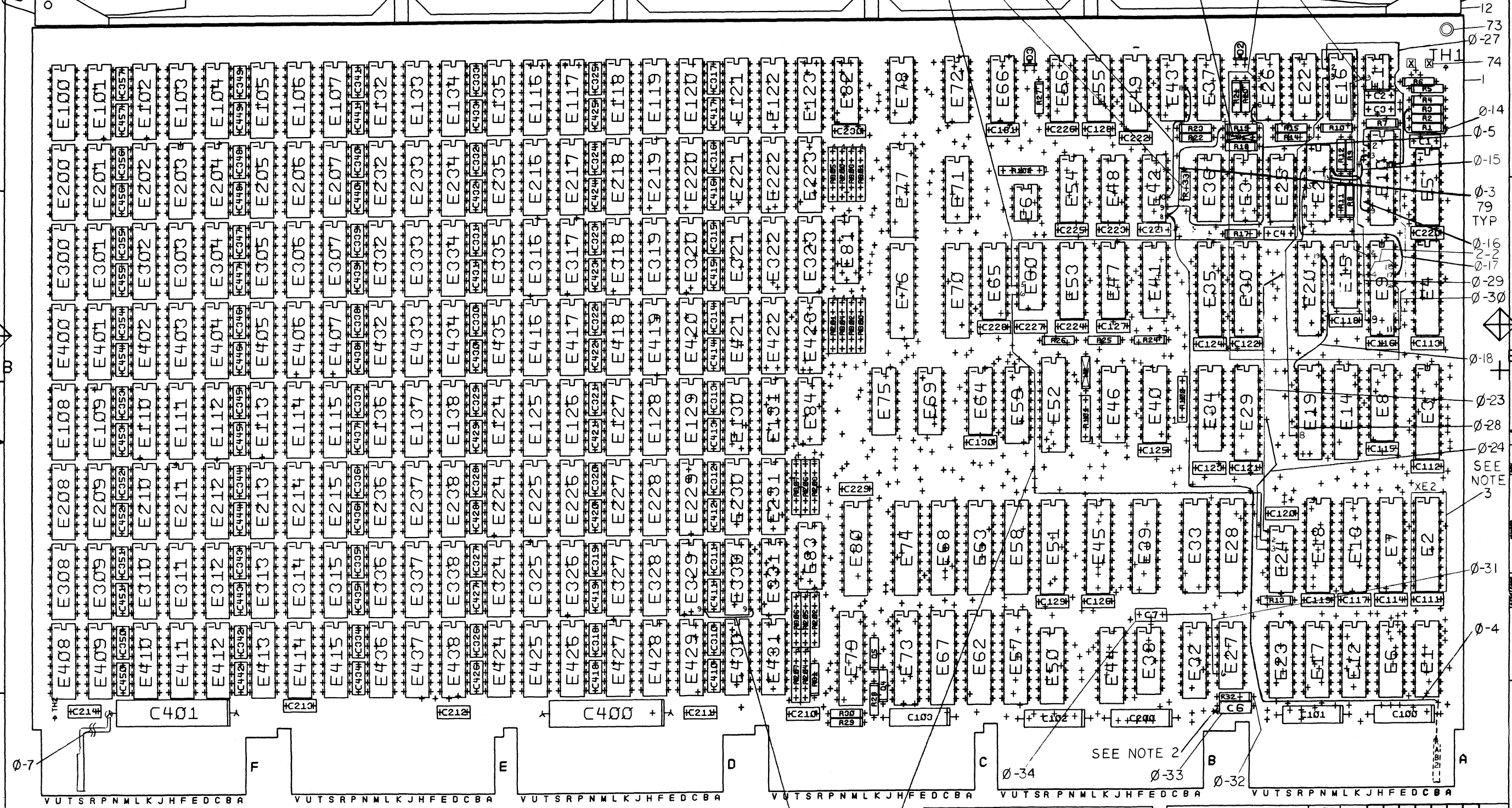
LINE ITEM	DOCUMENT NUMBER	PART NUMBER	DESCRIPTION	QTY PER VARIATION			REFERENCE DESIGNATOR
				BB	BC	BF	
							CONT E400-E438
76	76	2114695-01	*** THIS ITEM IS NOT USED ***	-	-	-	
77	77	2114927-01	*** THIS ITEM IS NOT USED ***	-	-	-	
78	78	2114897-01	16K MOS RAM 200NS 1	-	-	156	E100-E138,E200-E238,E300-E338, CONT E400-E438
79	79	9105740-55	WIRE(WRAF)30AWG UL1423	A/R	A/R	A/R	
80	80	B-DD-M8722-0-0	DWG DIRECTORY	REF	REF	REF	
81	81	D-UA-M8722-0-0	UNIT ASSY	REF	REF	REF	
82	82	D-MD-5013505-0-0	DRILL & ETCH DWG	REF	REF	REF	
83	83	D-CS-M8722-0-1	CIRCUIT SCHEMATIC	REF	REF	REF	
84	84	9107256-09	*** THIS ITEM IS NOT USED ***	-	-	-	
85	85	1000064-00	3.9MFD 10V 10% 150D S.TA	1	1	1	C6
86	86	1302956-00	196 1/4W 1% RN55D-F 100PPM	1	1	1	R3
87	87	1302858-00	100 1/4W 1% RN55D-F 100PPM	2	2	2	R17,R25
88	88	1313583-00	150 1/4W 1% RN55D-F 100PPM	2	2	2	R1,R33
89	89	1303047-00	464 1/4W 1% RN55D-F 100PPM	2	2	2	R8,R9
90	90	1913462-00	74S240 OCTAL BUFFER,INVERTI	1	1	1	E74
91	91	1309418-00	24.3 K 1/4W 1% RN55D-F 100PPM	1	1	1	R32
92	92	1912746-00	DEC 74S37 NAND GATE-QUAD 2IN	1	1	1	E16
93	93	SEE NOTE 4	1215006-04 SOCKET 20PIN IC LOW PROFILE	19	19	19	XE2,XE4,XE10,XE13,XE19,XE20, CONT XE29,XE30,XE33,XE35,XE45,XE51, CONT XE52,XE57,XE58,XE62,XE63,XE67, CONT XE73

- 94 NOTE: 0 M8722-BA IS THE PRIMARY VARIATION OF THE 128K X 16 BITS SYSTEM (NOT A MODULE TYPE).  
 95 NOTE: 1 M8722-BB IS A MODULE TYPE USING MOSTEK 16K MOS DEVICES.  
 96 NOTE: 2 M8722-BC IS A MODULE TYPE USING FUJITSU 16K MOS DEVICES.  
 97 NOTE: 3 M8722-BF IS A MODULE TYPE USING HITACHI MOS DEVICES.  
 98 NOTE: 4 AMP VENDOR ONLY (640894-1).

! D ! I ! G ! I ! T ! A ! L !	! TITLE	! SECTION A OF A	! ! SIZE ! CODE !	! DOCUMENT NUMBER	! REV !
! ! ! ! ! ! ! !	ECC MOS MEMORY	! ! ! ! ! ! ! !	! ! ! ! ! ! ! !	! M8722-BA-DBP !	! B !

VARIATION B A

COMPONENT SIDE VIEW



NOTES:  
 1. A WI IN FOR UNIBUS CONFIGURATION.  
 B. WI OUT FOR EXTENDED UNIBUS CONFIGURATION.  
 2. \*INDICATES PLUS END OF C6.  
 3. 20 PIN SOCKET- XE2, XE4, XE10, XE13, XE19, XE20, XE29, XE30, XE33, XE35, XE45, XE51, XE52, XE57, XE58, XE62, XE63, XE67, XE73

CHG	NO	REV	DATE	BY
M8722	-	C		
ML001			9/1/79	J. WANTON
ML002			11/1/79	J. WANTON

4. SEE SHEET 2 FOR WIRE ADDS

SIGNATURES		DATE	digital
DRN.		12/14/79	
CHK'D.		12/14/79	TITLE ECC
ENG.		12/14/79	MOS MEMORY
PROJ. ENG.		12/14/79	SIZE CODE NUMBER
PROD.		1/9/79	D UAI M8722-0-0
SCALE	2/1		REV D
SHT.	1 OF 9		
NEXT HIGHER ASSY: B-DD-M8722-0			ETCH REV. C

1980

LAYER 1  
M8722 5013505 C L1

2 DUA M8722-0 0

0-20  
A-3 Z-0

CS\*ABCDEFGHIJKLMNPRS  
E101 E102 E103

E132 E133

E118 E119

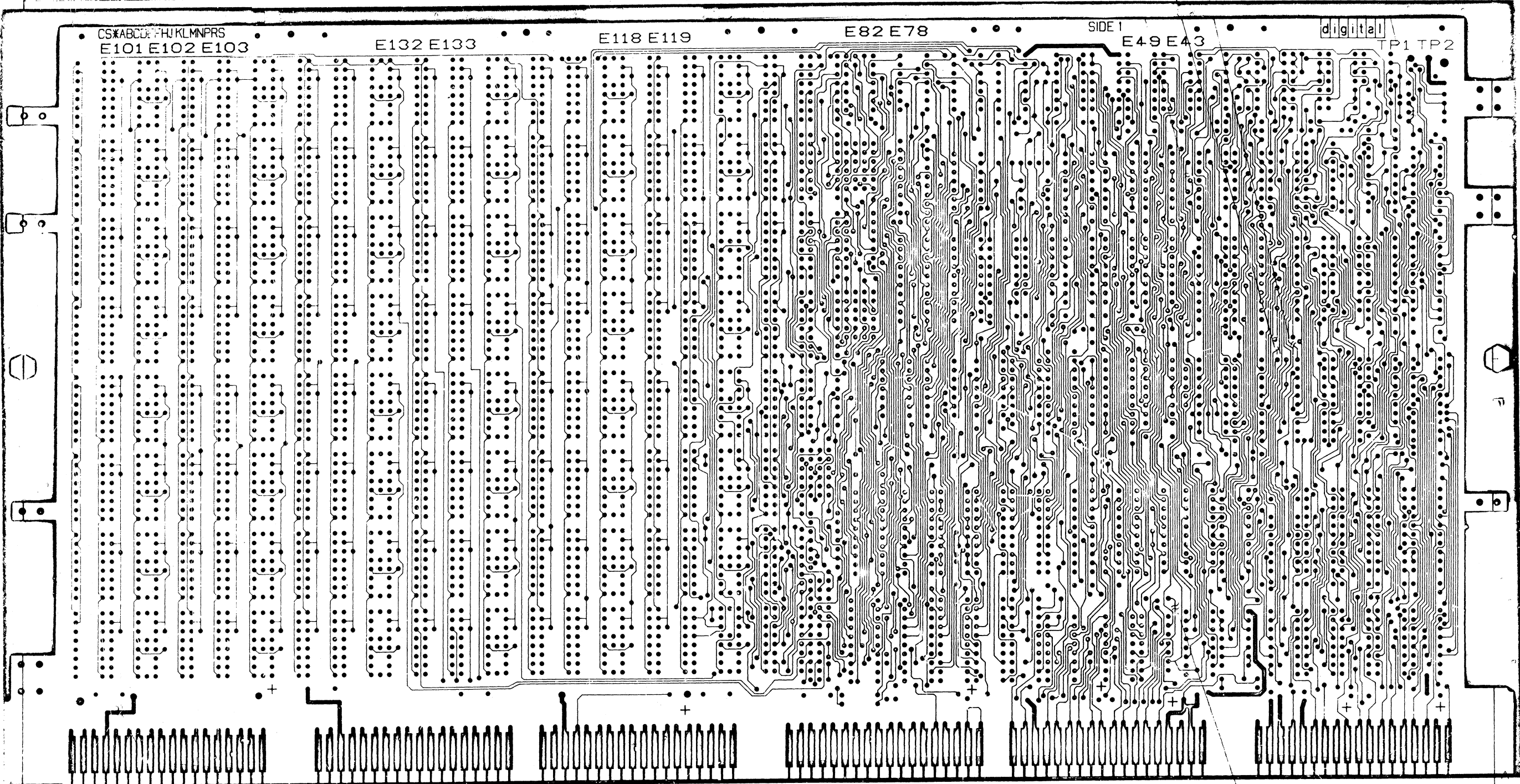
E82 E78

SIDE 1

E49 E43

digital

TP1 TP2



0-26

REVISIONS  
CHANGE NO. REV.

0-7

ECC MOS MEMORY		DUA	M8722-0 0	D
SCALE 2/1	SHEET 5 OF 9			

2

7

6

5

4

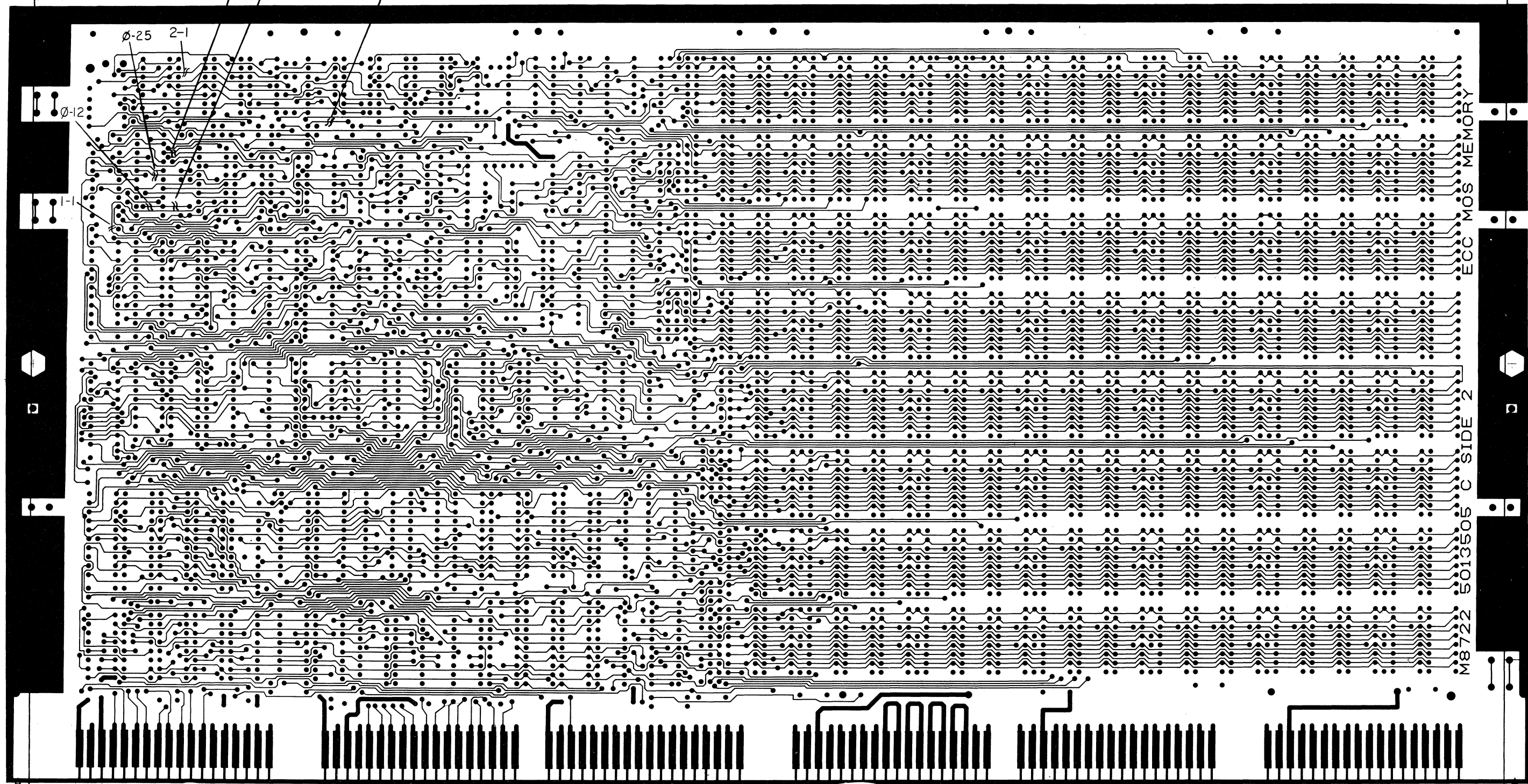
3

2

1

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L4  P  A3YA J



REVISIONS		
CHK	CHANGE NO	REV

TITLE	ECC MOS MEMORY	SIZE CODE	DUA	NUMBER	M8722-0-0	REV.	D
SCALE	2/1	SHEET	8	OF	9	DIST.	

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**M8722**  
**FIRST RELEASE**  
**ETCH CUT - SIDE 2:**  
 # - 1. CUT ETCH BETWEEN E43-11 AND R19 ( TO THE LEFT OF THE FEED THRU).  
 # - 11. CUT ETCH BETWEEN E10-9 AND FEED THRU (RIGHT SIDE OF PIN).  
 # - 12. CUT ETCH BETWEEN E10-9 AND FEED THRU (LEFT SIDE OF PIN, ISOLATING E10-9).  
 # - 13. CUT ETCH BETWEEN E10-3 AND FEED THRU (RIGHT SIDE).  
 # - 25. CUT ETCH BETWEEN E10-16 AND FEED THRU (RIGHT SIDE).  
**ETCH CUTS - SIDE 1:**  
 # - 7. CUT ETCH BETWEEN C401 AND FINGER FS1.  
 # - 8. CUT ETCH BETWEEN R1 AND R3.  
 # - 9. CUT ETCH BETWEEN THE 1ST AND 2ND FEED THRU E42-13 (RIGHT SIDE).  
 # - 10. CUT ETCH BETWEEN E19-1 AND E20-3.  
 # - 20. CUT ETCH BETWEEN THE FIRST AND SECOND FEED THRU OF E30-18 (RIGHT SIDE).  
 # - 26. CUT ETCH NO MORE THAN 1/4" FROM C7 (220PF) (RIGHT SIDE) AS SHOWN.  
**WIRE ADDS:**  
 # - 2. ADD A WIRE FROM E42-10 TO E43-11.  
 # - 3. ADD A WIRE FROM E42-8 TO R19 (LEFT SIDE).  
 # - 4. ADD A WIRE FROM E42-8 THRU A FEED THRU TO FINGER AB2.  
 # - 5. ADD A WIRE FROM E42-9 TO E26-6.  
 # - 6. ADD A WIRE FROM E330-9 TO E329-9 FOR 'BA' VARIATIONS ONLY.  
 # - 14. ADD WIRE FROM R1 TO R3 (AS SHOWN).  
 # - 15. ADD WIRE FROM E10-3 TO E21-13.  
 # - 16. ADD WIRE FROM E10-9 TO E21-14.  
 # - 17. ADD WIRE FROM E9-17 TO E21-3.  
 # - 18. ADD WIRE FROM E20-19 TO E19-1.  
 # - 21. ADD WIRE FROM E80-5 TO E21-5.  
 # - 22. ADD WIRE FROM E80-6 TO E24-2.  
 # - 23. ADD WIRE FROM E24-1 TO FIRST FEED THRU OF E30-18 ( AS SHOWN).  
 # - 24. ADD WIRE FROM E24-3 TO SECOND FEED THRU OF E30-18 (AS SHOWN).  
 # - 27. ADD WIRE FROM E16-1 TO E10-17.  
 # - 28. ADD WIRE FROM E16-3 TO E19-8.  
 # - 29. ADD WIRE FROM E16-2 TO E9-9.  
 # - 30. ADD WIRE FROM E9-11 TO E10-2.  
 # - 31. ADD WIRE FROM C7 (220PF) (RIGHT SIDE) TO E27-6.  
**REPLACEMENT COMPONENTS:**  
 # - 32. REPLACE D1 WITH R32, 24.3K, 1%.  
 # - 33. REPLACE R16 WITH C6, 3.9UF, 10V.  
 # - 34. REPLACE C5 WITH C7, 220PF, 100V.  
**COMPONENT ADD:**  
 # - 35. ADD R33, 150  $\frac{1}{4}$ W, 1% AS SHOWN.

ECO NO. 2  
**ETCH CUT - SIDE 2**  
 2-1 CUT ETCH BETWEEN E11-3 TO E26-3  
**WIRE ADDS - SIDE 1**  
 2-2 ADD WIRE FROM E9-4 TO E9-18  
 2-3 ADD WIRE FROM E9-2 TO E11-3  
 2-4 ADD WIRE FROM E9-16 TO E26-3

ECO # 1  
**ETCH CUT - SIDE 2**  
 1-1 CUT ETCH BETWEEN E10-11 AND FEEDTHRU (RIGHT SIDE)  
**WIRE ADDS - SIDE 1**  
 1-2 ADD WIRE FROM E24-11 TO E10-11  
 1-3 ADD WIRE FROM E24-12 TO E9-7  
 1-4 ADD WIRE FROM E24-13 TO E29-19

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	ECC MOS MEMORY	SIZE CODE	DUA	NUMBER	M8722-0-0	REV.	D
SCALE	2/1	SHEET	9 OF 9	DIST.			

REV. D  
 NUMBER M8722-0-0  
 SIZE CODE DUA



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NOTES:

- SIGNAL NAMES WILL BE REFERENCED AS FOLLOWS:  
 [X/Z] SIGNAL NAME [X/Z]  
 NUMBER OF CONNECTION POINTS ON DESTINATION SHEET.  
 DESTINATION SHEET NUMBER.  
 NUMBER OF CONNECTION POINTS ON SOURCE SHEET.  
 SOURCE SHEET NUMBER.

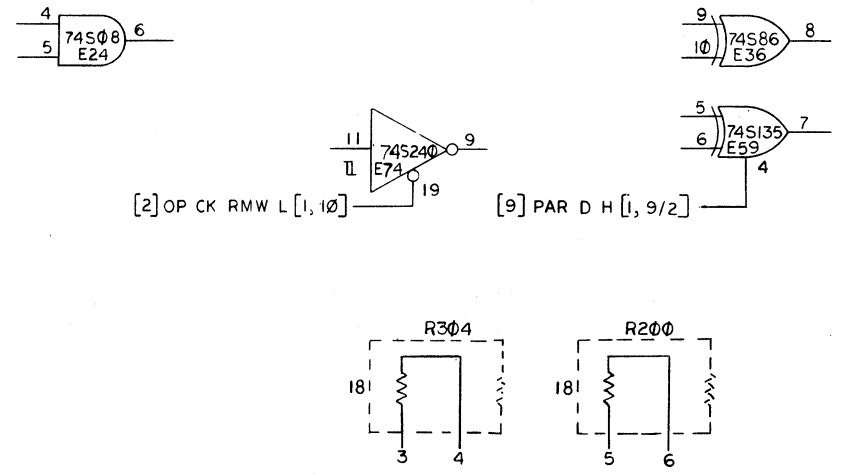
2. \* INDICATES BATTERY BACKED UP.

3. GND AND +5V ARE AS FOLLOWS:

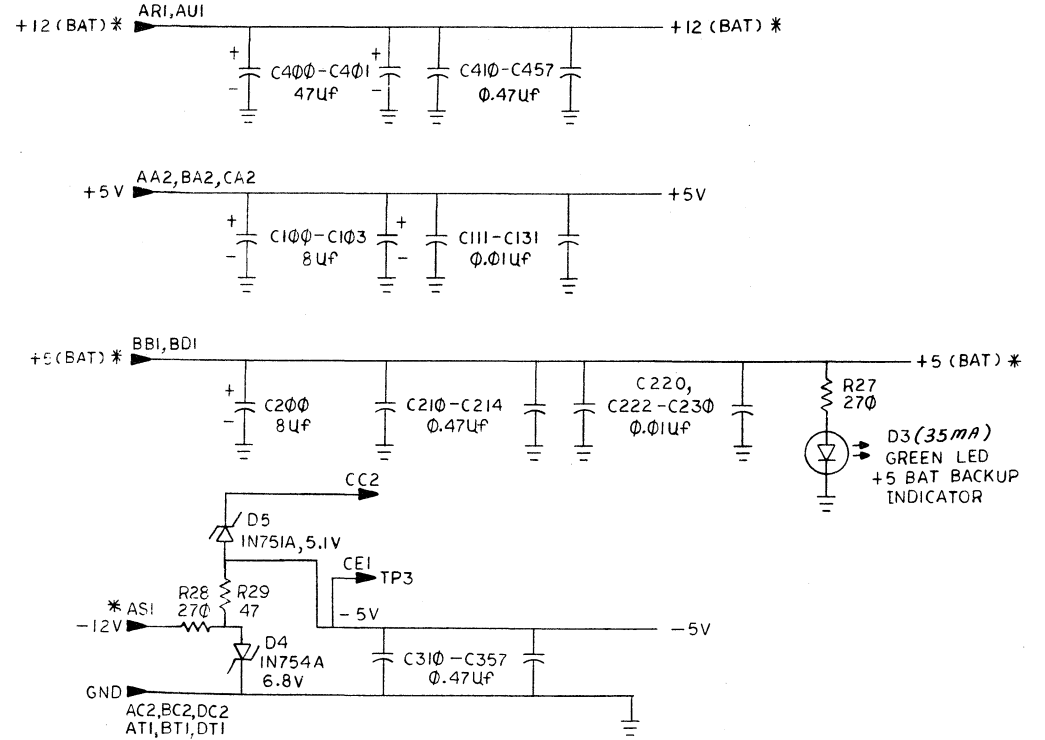
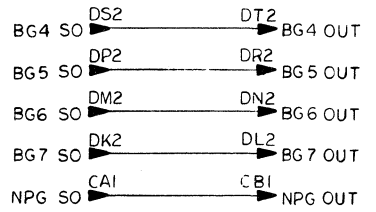
	GND	+5V
14 PIN DIP	7	14
16 PIN DIP	8	16
18 PIN DIP	9	18
20 PIN DIP	10	20

EXCEPTIONS ARE  
 8640 1 8

SPARES



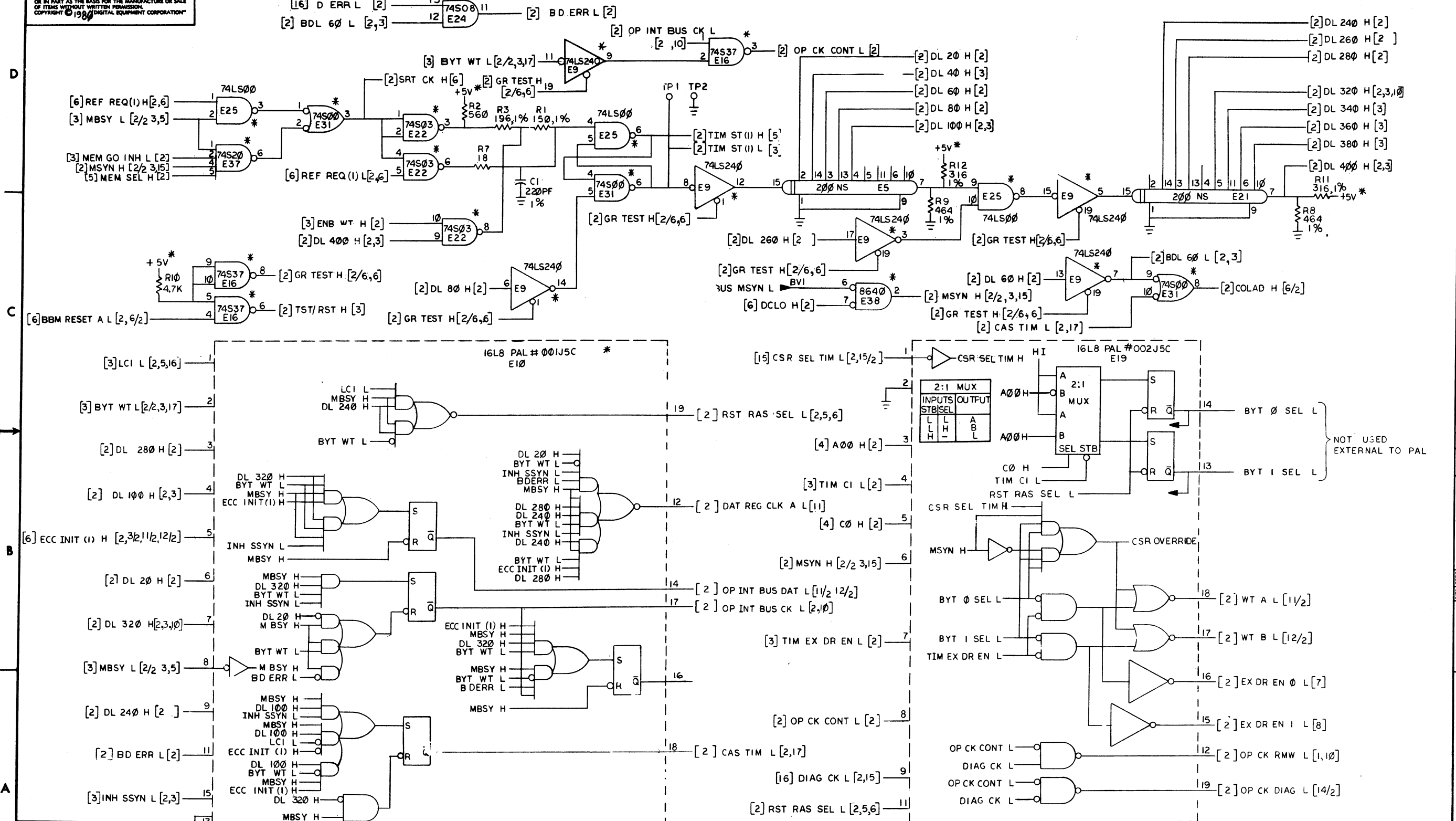
BUS GRANT LINES



REV.	CHANGE NO.	BY	DATE
1	ML001	JOHN MANTON	12/18/80
2	ML002	JOHN MANTON	12/19/80

DRN. 12-15-80	FIRST USED ON 11/44	DIGITAL
CHK'D 12-18-80	TITLE	
ENG. 12-19-80	ECC MOS MEMORY	(MS11M)
PROD. 12-19-80	NUMBER	D CS M8722-0-1
NEXT HIGHER ASSY.	SCALE	DIST.
B-DD-M8722-0	SIZE	REV. D
SHEET 1 OF 22		

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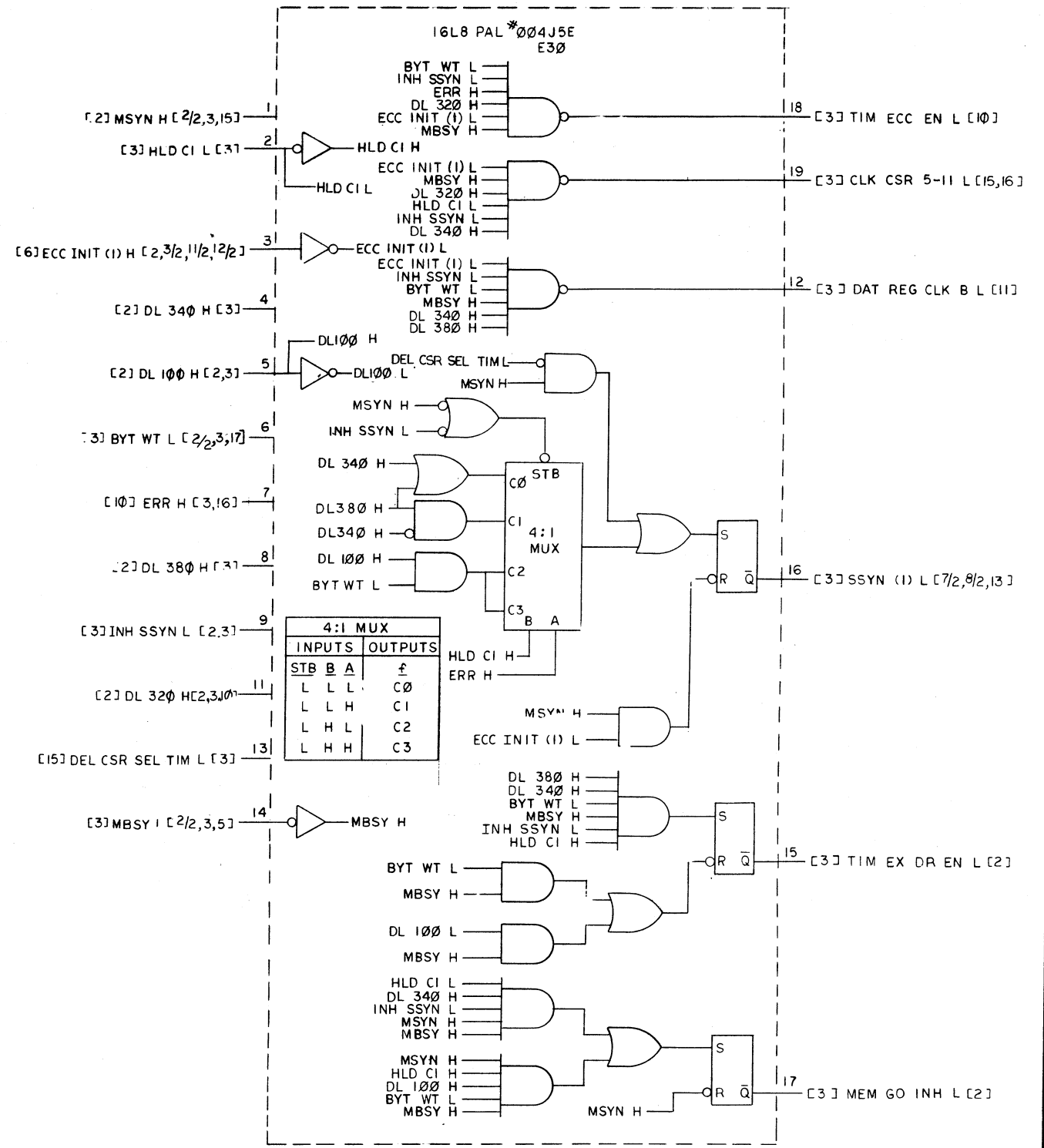
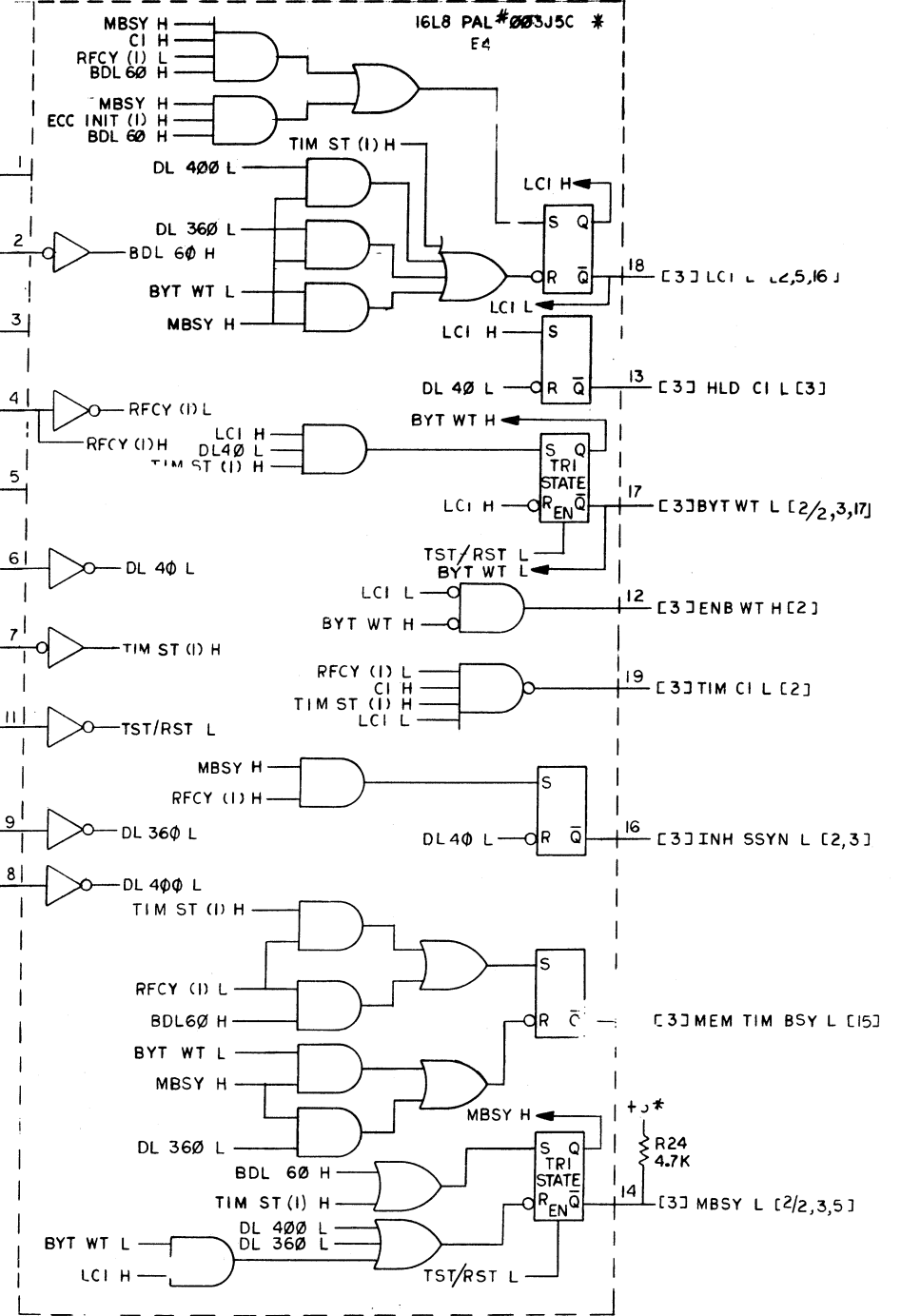
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	ECC MOS MEMORY (MS11M)	SIZE CODE	DCS	NUMBER	M8722-0-1	REV.	D
SCALE	+	SHEET	2	OF	22	DIST.	

REV. D NUMBER M8722-0-1

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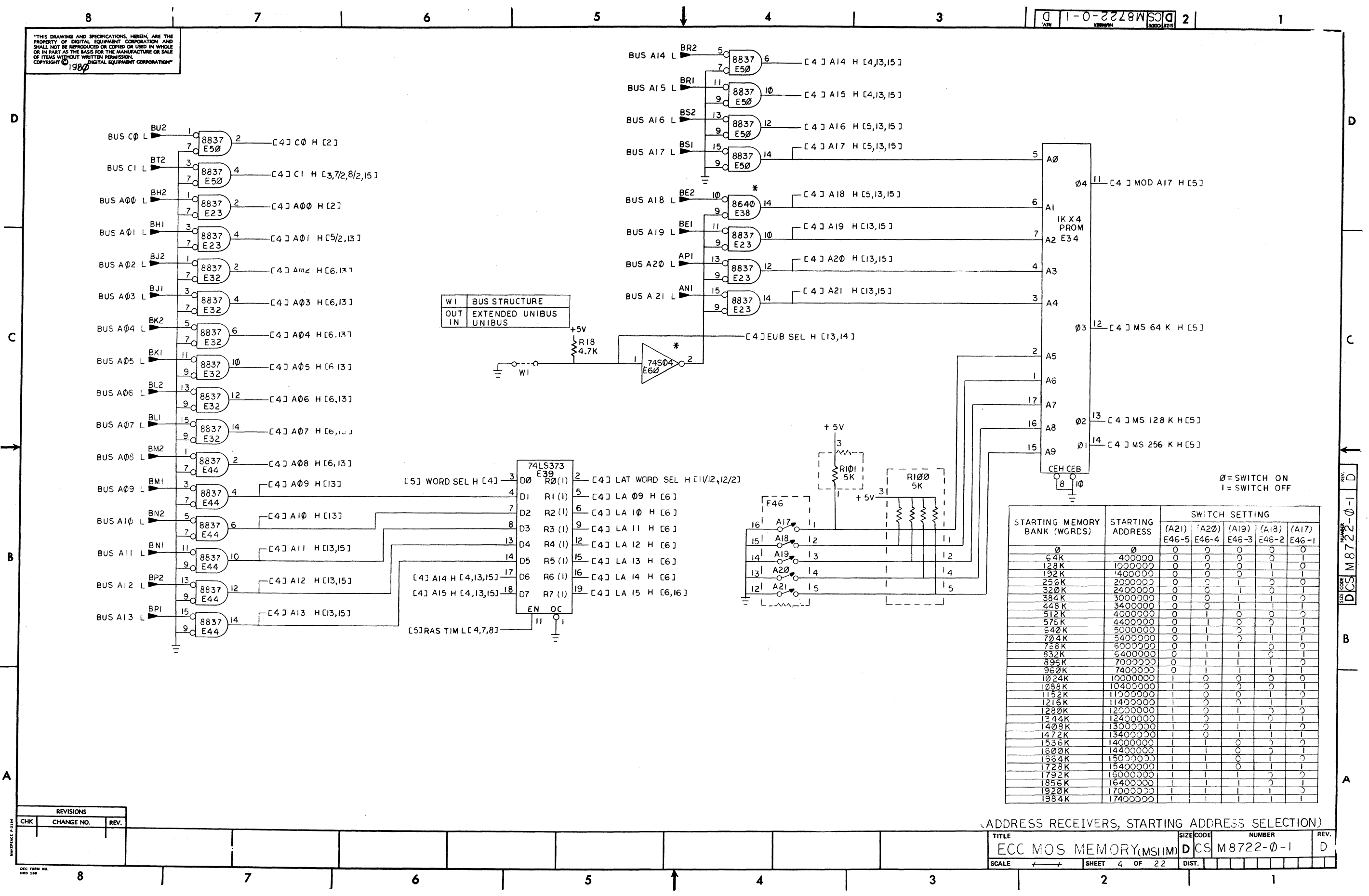
D CS M8722-0-1



(TIMING AND CONTROL)

REVISIONS		
CHK	CHANGE NO.	REV.

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W1	BUS STRUCTURE
OUT IN	EXTENDED UNIBUS

STARTING MEMORY BANK (WORDS)	STARTING ADDRESS	SWITCH SETTING				
		(A21) E46-5	(A20) E46-4	(A19) E46-3	(A18) E46-2	(A17) E46-1
0	0	0	0	0	0	0
64K	4000000	0	0	0	0	0
128K	10000000	0	0	0	1	0
192K	14000000	0	0	0	1	1
256K	20000000	0	0	1	0	0
320K	24000000	0	0	1	0	1
384K	30000000	0	0	1	1	0
448K	34000000	0	0	1	1	1
512K	40000000	0	1	0	0	0
576K	44000000	0	1	0	0	1
640K	50000000	0	1	0	1	0
704K	54000000	0	1	0	1	1
768K	60000000	0	1	1	0	0
832K	64000000	0	1	1	0	1
896K	70000000	0	1	1	1	0
960K	74000000	0	1	1	1	1
1024K	100000000	1	0	0	0	0
1088K	104000000	1	0	0	0	1
1152K	110000000	1	0	0	1	0
1216K	114000000	1	0	0	1	1
1280K	120000000	1	0	1	0	0
1344K	124000000	1	0	1	0	1
1408K	130000000	1	0	1	1	0
1472K	134000000	1	0	1	1	1
1536K	140000000	1	1	0	0	0
1600K	144000000	1	1	0	0	1
1664K	150000000	1	1	0	1	0
1728K	154000000	1	1	0	1	1
1792K	160000000	1	1	1	0	0
1856K	164000000	1	1	1	0	1
1920K	170000000	1	1	1	1	0
1984K	174000000	1	1	1	1	1

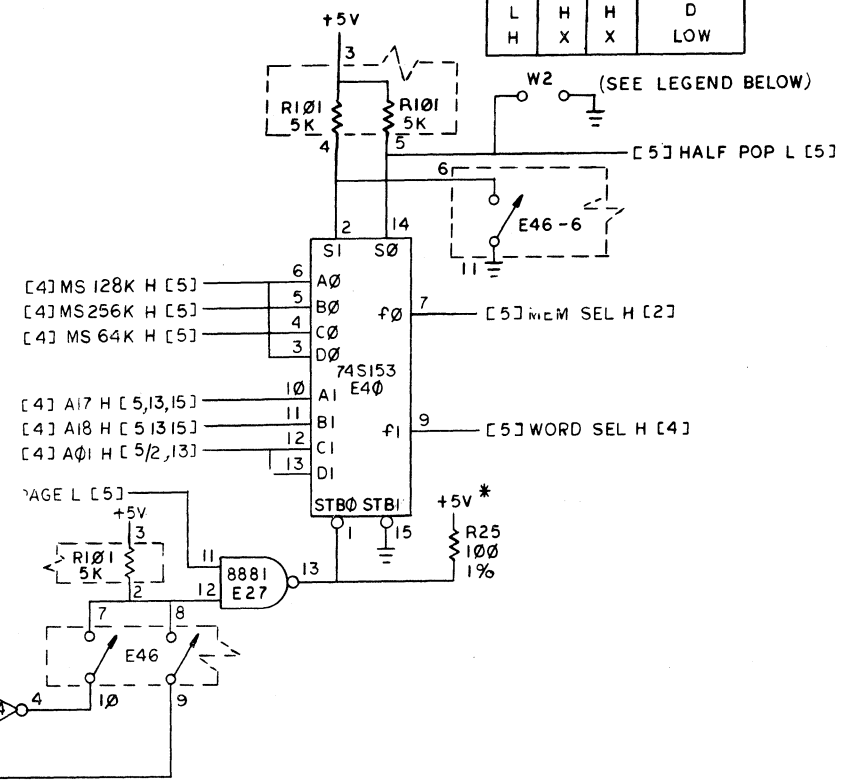
(ADDRESS RECEIVERS, STARTING ADDRESS SELECTION)

TITLE	SIZE CODE	NUMBER	REV.
ECC MOS MEMORY (MSIM)	DCS	M8722-0-1	D
SCALE	SHEET	OF	DIST.
	4	22	

REVISIONS		
CHK	CHANGE NO.	REV.

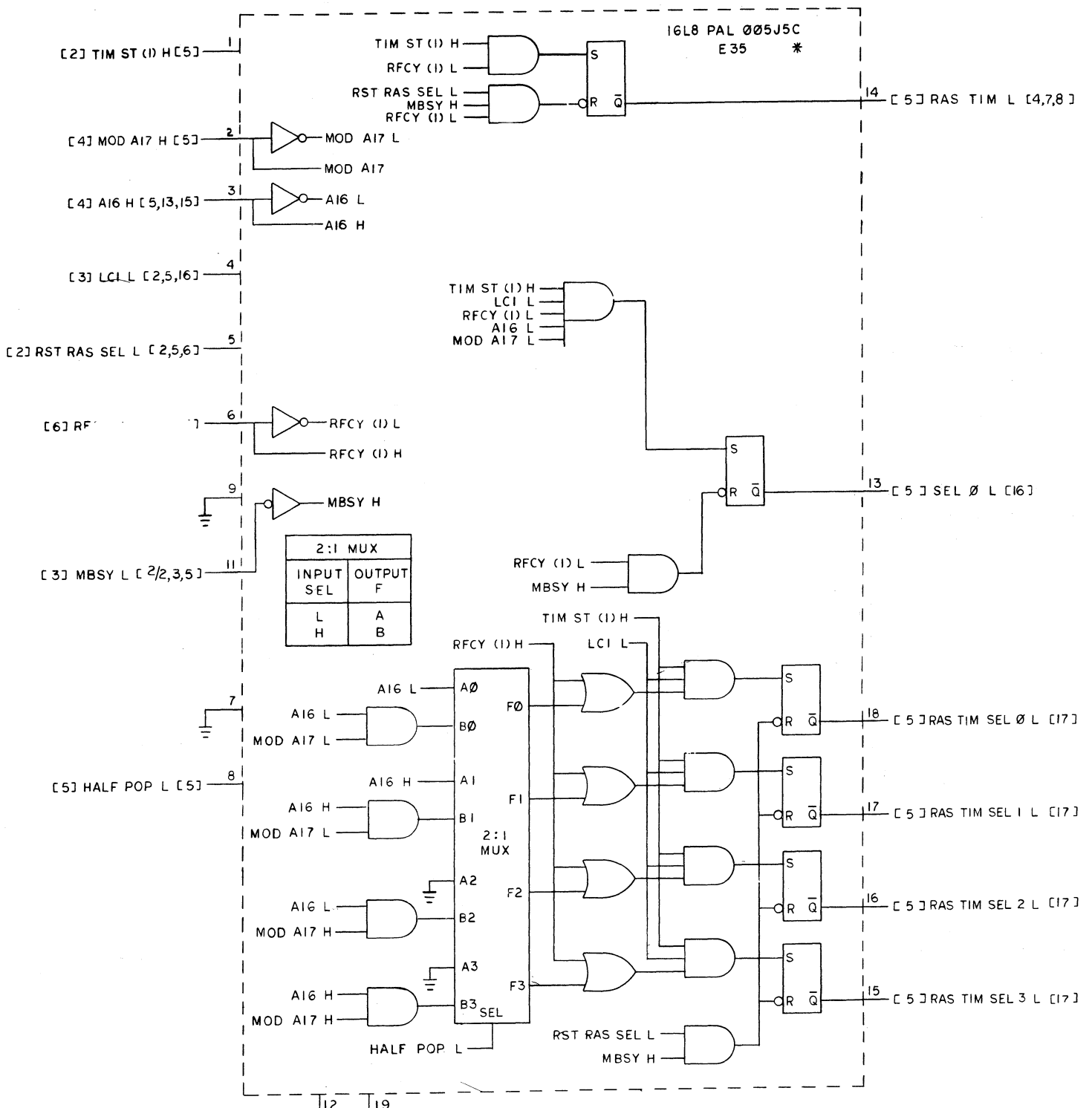
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74S153 4:1 MUX			
INPUTS			OUTPUTS
STB	S1	S0	F
L	L	L	A
L	L	H	B
L	H	L	C
L	H	H	D
H	X	X	LOW



SW POSITION			USAGE	MEMORY CAPACITY AND INTERLEAVING
8	7	6	JUMPER W2	
OFF	OFF	OFF	IN	64K 1/2 POP NON INTERL.
OFF	OFF	OFF	OUT	128K FULLY POP NON INTERL.
OFF	ON	ON	IN	64K 1/2 POP INTERL RESPONDS TO A01 H NON ASSERTED
OFF	ON	ON	OUT	128K FULLY POP INTERL RESPONDS TO A01 H NON ASSERTED
ON	OFF	ON	IN	64K 1/2 POP INTERL RESPONDS TO A01 H ASSERTED
ON	OFF	ON	OUT	128K FULLY POP INTERL RESPONDS TO A01 H ASSERTED

NOTE: SW 8 & 7 MUST NOT BE ON AT THE SAME TIME

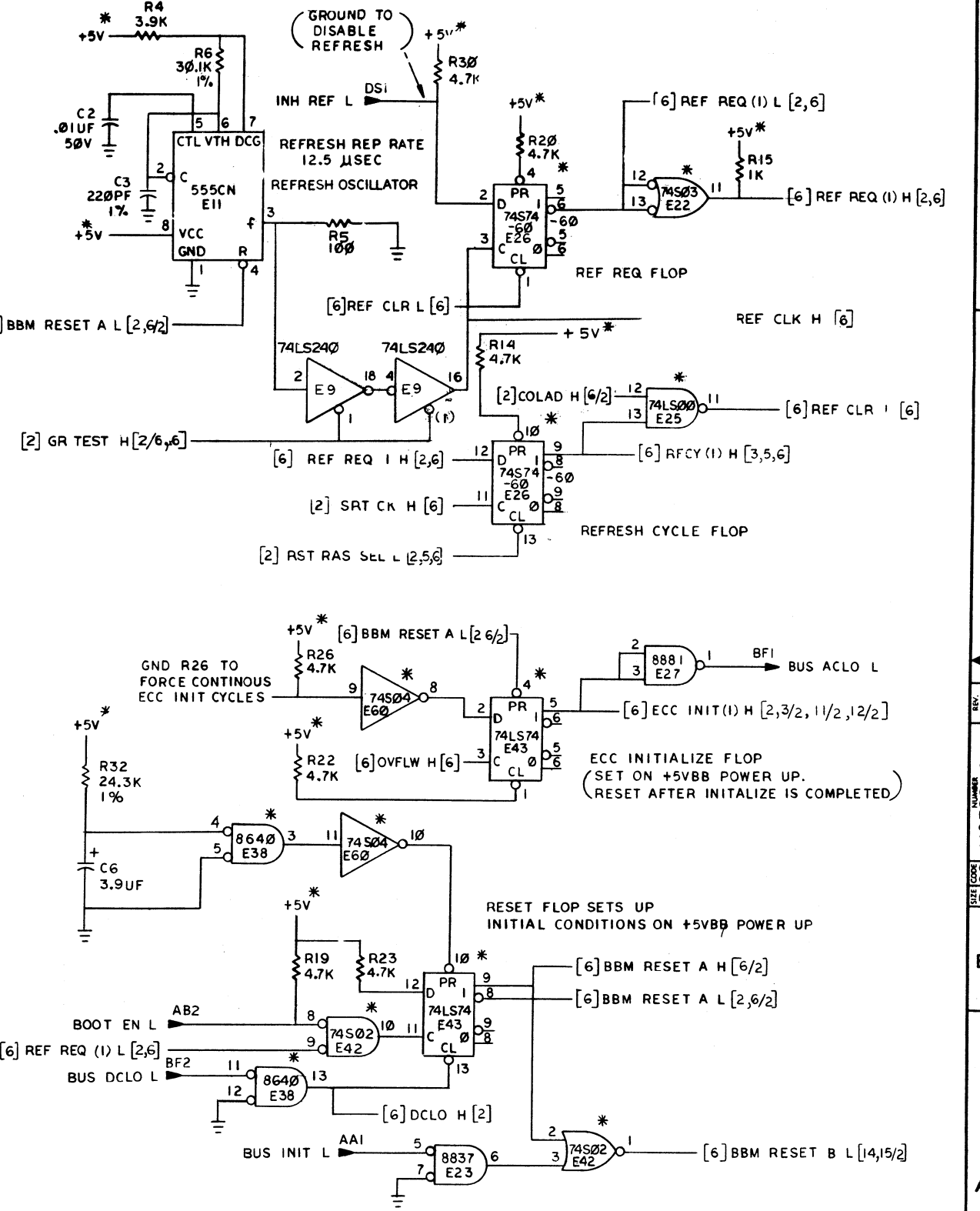
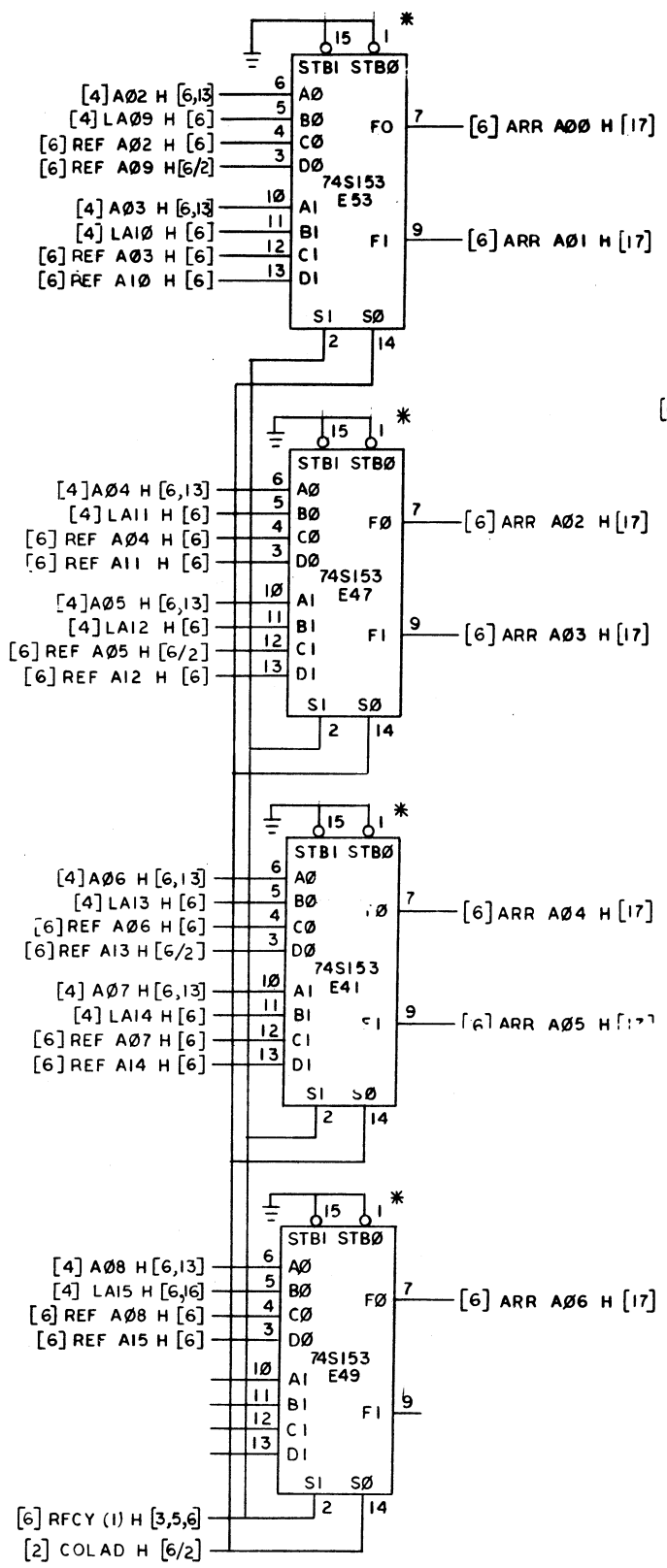
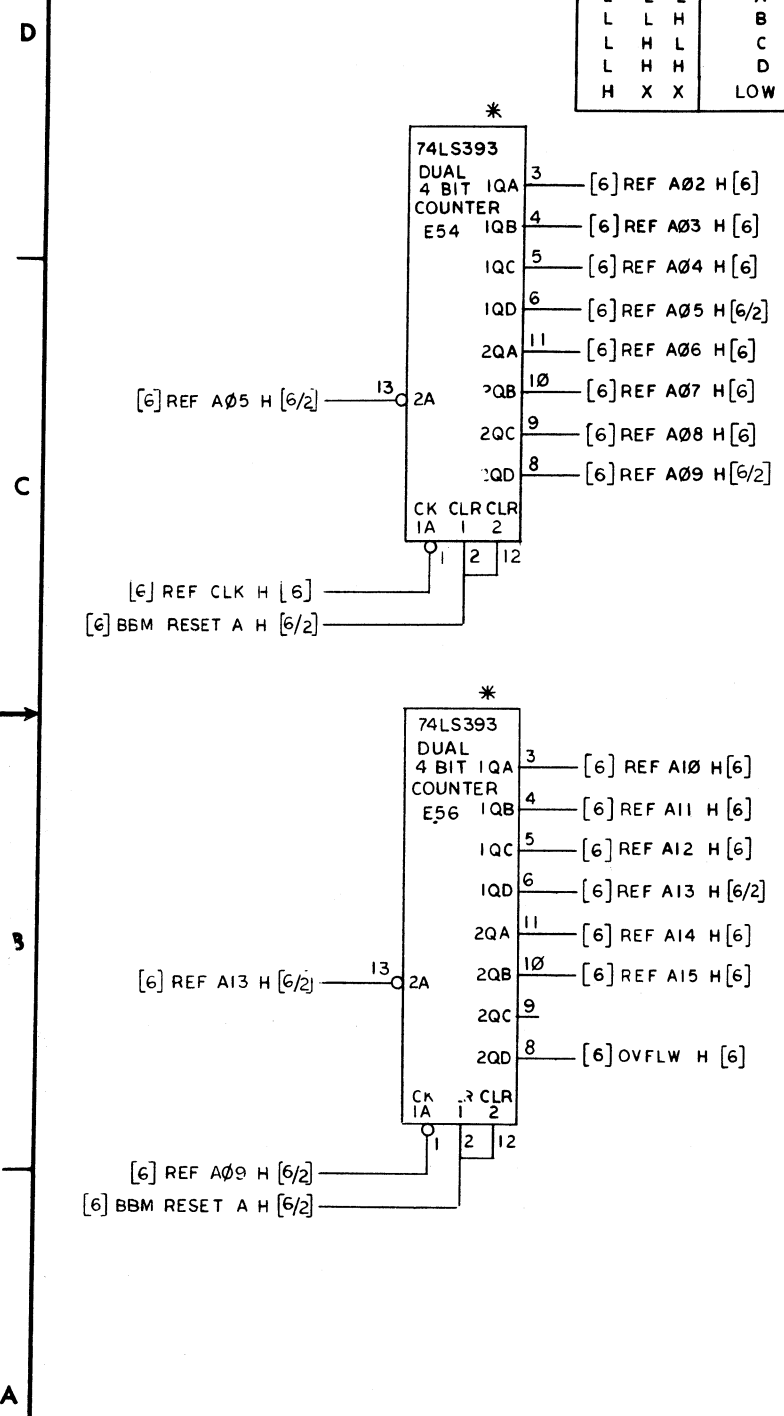


(MEMORY SELECT, INTERLEAVING RAS/TIM GENERATION)

REVISIONS		
CHK	CHANGE NO.	REV.

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74S153 4:1 MUX		
INPUTS	OUTPUTS	
STB SI SO	f	
L L L	A	
L L H	B	
L H L	C	
L H H	D	
H X X	LOW	



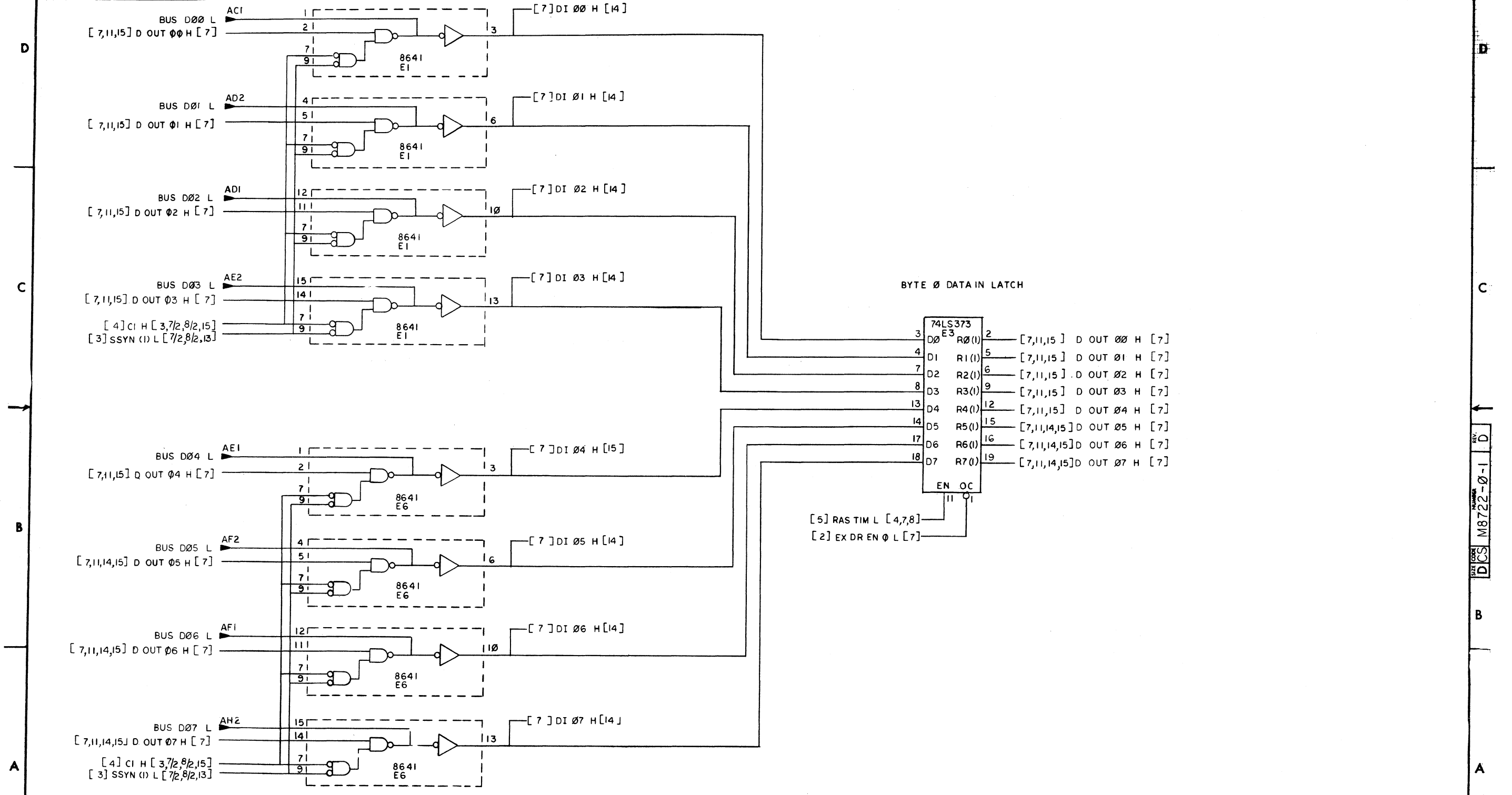
REVISIONS		
CHK	CHANGE NO.	REV.

(REFRESH, ECC INITIALIZE, ARRAY ADDRESS MUX)

TITLE	SIZE/SCALE	NUMBER	REV.
ECC MOS MEMORY (MS11M)	D CS	M8722-0-1	D
SCALE	SHEET 6 OF 22	DIST.	

D E S M 8 7 2 2 - 0 - 1

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BYTE 0 DATA IN LATCH

3	D0 R0(1)	2	[7,11,15] D OUT 00 H [7]
4	D1 R1(1)	5	[7,11,15] D OUT 01 H [7]
7	D2 R2(1)	6	[7,11,15] D OUT 02 H [7]
8	D3 R3(1)	9	[7,11,15] D OUT 03 H [7]
13	D4 R4(1)	12	[7,11,15] D OUT 04 H [7]
14	D5 R5(1)	15	[7,11,14,15] D OUT 05 H [7]
17	D6 R6(1)	16	[7,11,14,15] D OUT 06 H [7]
18	D7 R7(1)	19	[7,11,14,15] D OUT 07 H [7]

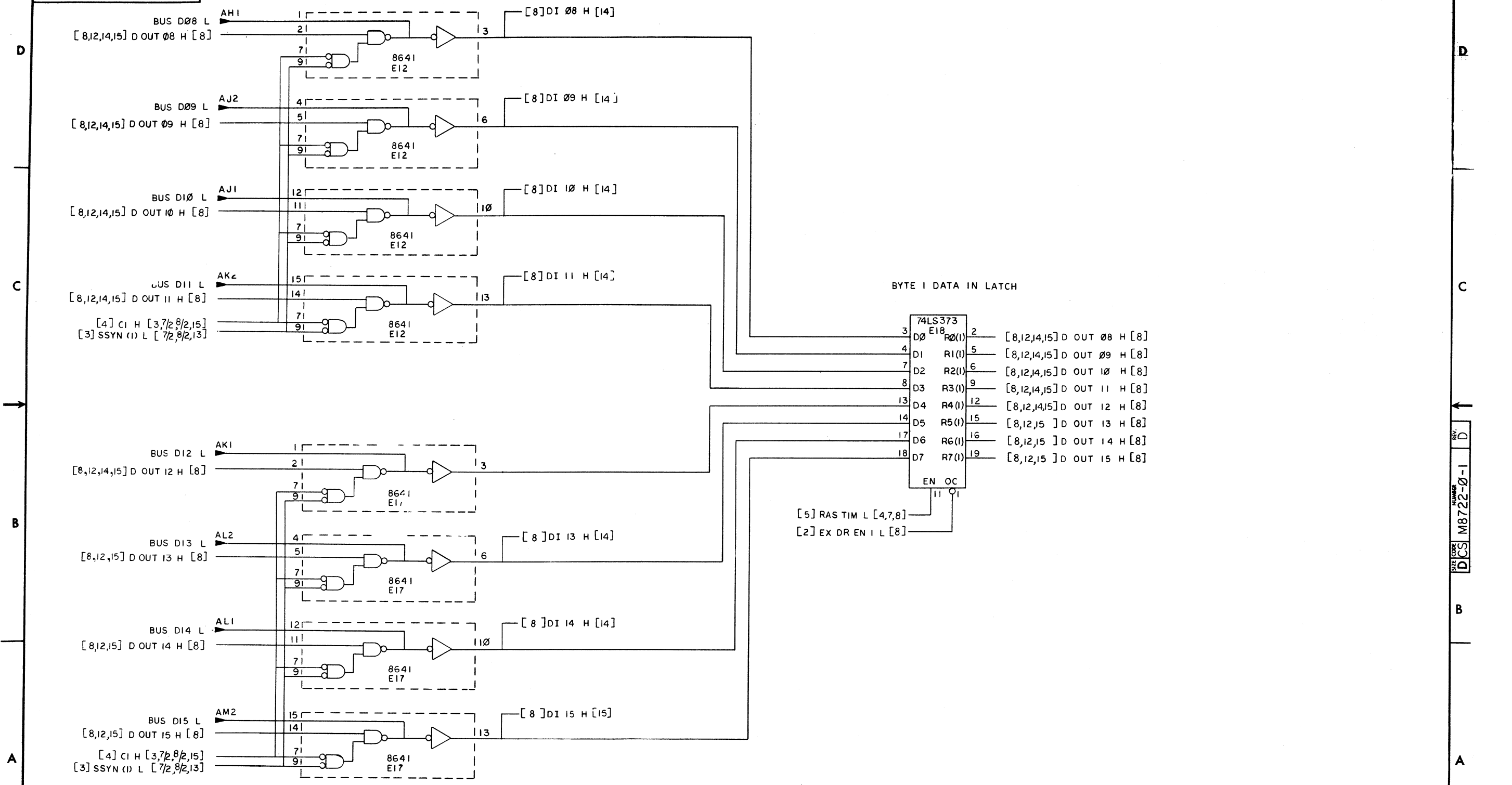
(BYTE 0 DATA DRIVERS, RECEIVERS AND LATCH)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	ECC MOS MEMORY(MSIIM)	SIZE CODE	D CS	NUMBER	M8722-0-1	REV	D
SCALE		SHEET	7	OF	22	DIST.	

REV. D  
M8722-0-1  
D CS

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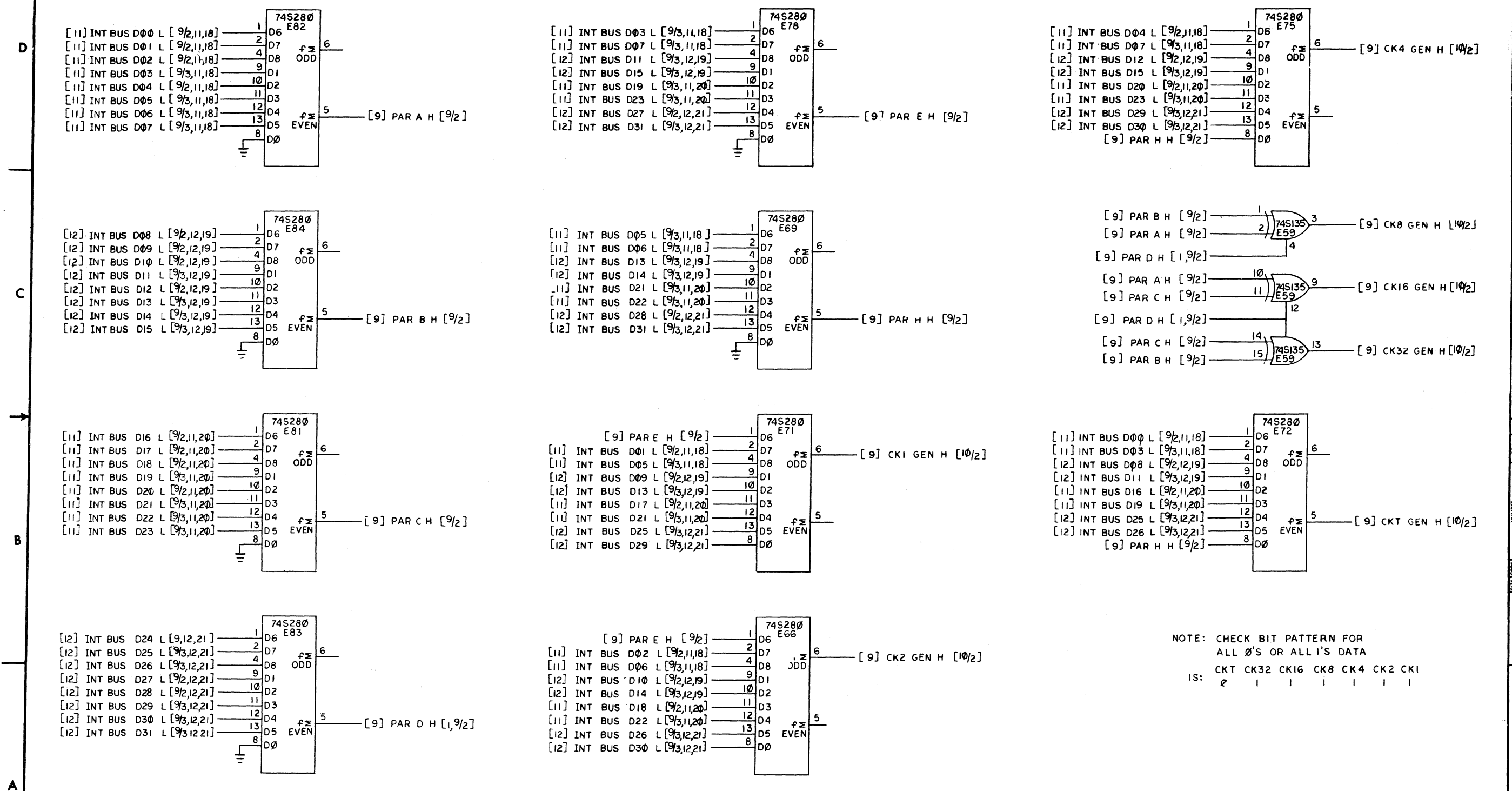
REVISIONS		
CHK	CHANGE NO.	REV.

(BYTE 1 DATA DRIVERS, RECEIVERS AND LATCH)		TITLE	SIZE CODE	NUMBER	REV.
ECC MOS MEMORY (MS11M)		DCS	M8722-0-1	D	D
SCALE	SHEET 8	OF 22	DIST.		

REV. D  
NUMBER  
DCS M8722-0-1



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NOTE: CHECK BIT PATTERN FOR ALL 0'S OR ALL 1'S DATA  
IS: CKT CK32 CK16 CK8 CK4 CK2 CK1  
0 1 1 1 1 1 1

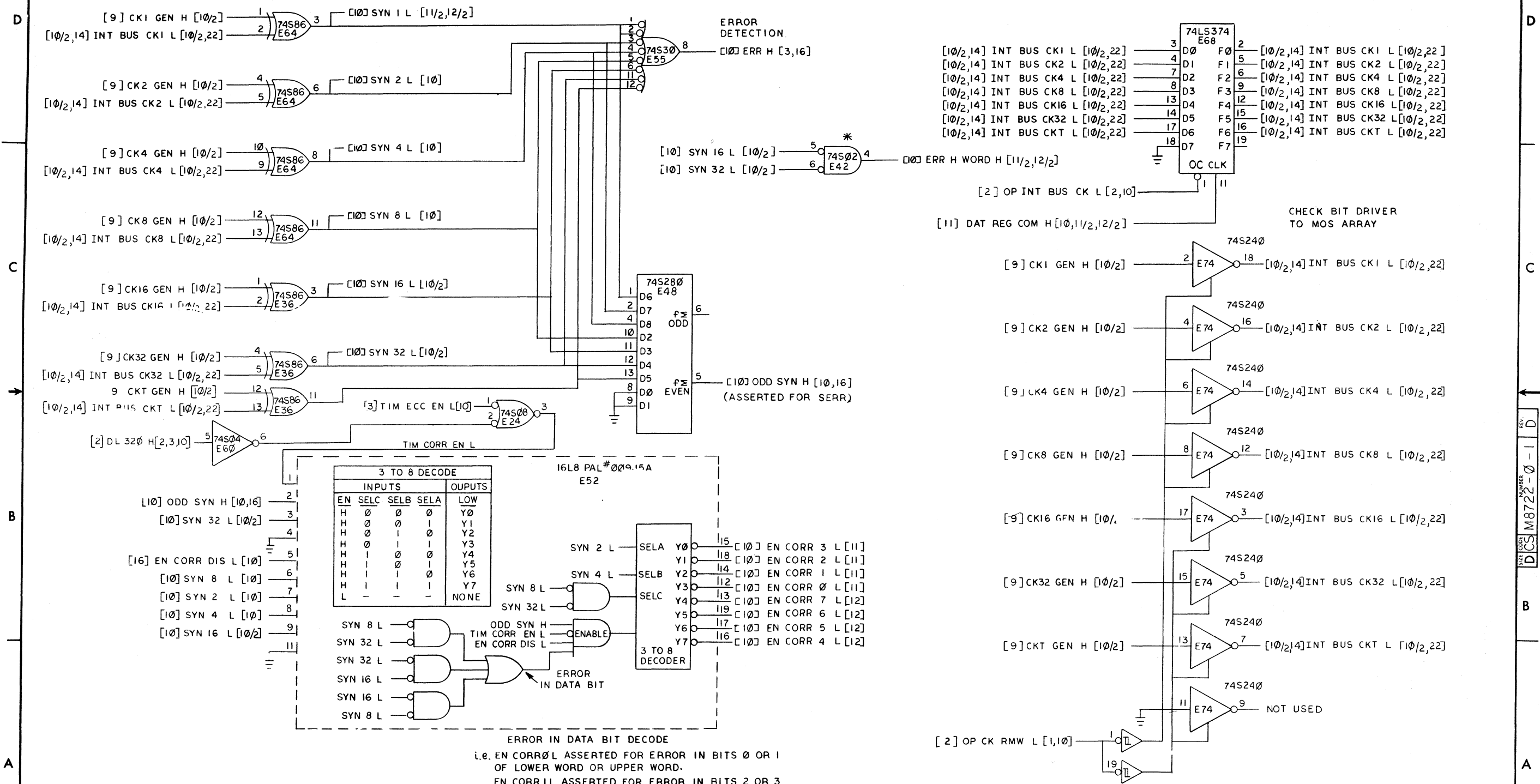
(CHECK BIT GENERATION)

REVISIONS			TITLE		SIZE CODE	NUMBER	REV.
CHK	CHANGE NO.	REV.	ECC MOS MEMORY (MS1HM)		DCS	M8722-0-1	D
			SCALE	SHEET 9 OF 22	DIST.		

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SYNDROME GENERATION ON CHECK BIT COMPARE

CHECK BIT REGISTER



3 TO 8 DECODE

INPUTS				OUTPUTS			
EN	SELC	SELB	SELA	LOW			
H	0	0	0	Y0			
H	0	0	1	Y1			
H	0	1	0	Y2			
H	0	1	1	Y3			
H	1	0	0	Y4			
H	1	0	1	Y5			
H	1	1	0	Y6			
H	1	1	1	Y7			
L	-	-	-	NONE			

ERROR IN DATA BIT DECODE  
 i.e. EN CORR 0 L ASSERTED FOR ERROR IN BITS 0 OR 1 OF LOWER WORD OR UPPER WORD.  
 EN CORR 1 L ASSERTED FOR ERROR IN BITS 2 OR 3 OF LOWER WORD OR UPPER WORD ETC.  
 NO OUTPUTS ASSERTED FOR ERROR IN CHECK BIT

REVISIONS

CHK	CHANGE NO.	REV.

TITLE: ECC MOS MEMORY (MS11M) SIZE CODE: DCS NUMBER: M8722-0-1 REV: D

SCALE: # SHEET 10 OF 22 DIST.:

REV. D NUMBER M8722-0-1

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D [2] WTA L [11/2,12/2] 12

[11] DAT REG COM H [10,11/2,12/2] 1

[11] INT BUS D00 L [9/2,11,18] 5

[11] INT BUS D01 L [9/2,11,18] 4

[11] INT BUS D16 L [9/2,11,20] 3

[11] INT BUS D17 L [9/2,11,20] 2

[10] ERR H WORD H [11/2,12/2] 6

[10] SYN I L [11/2,12/2] 7

[10] EN CORR 0 L [11] 8

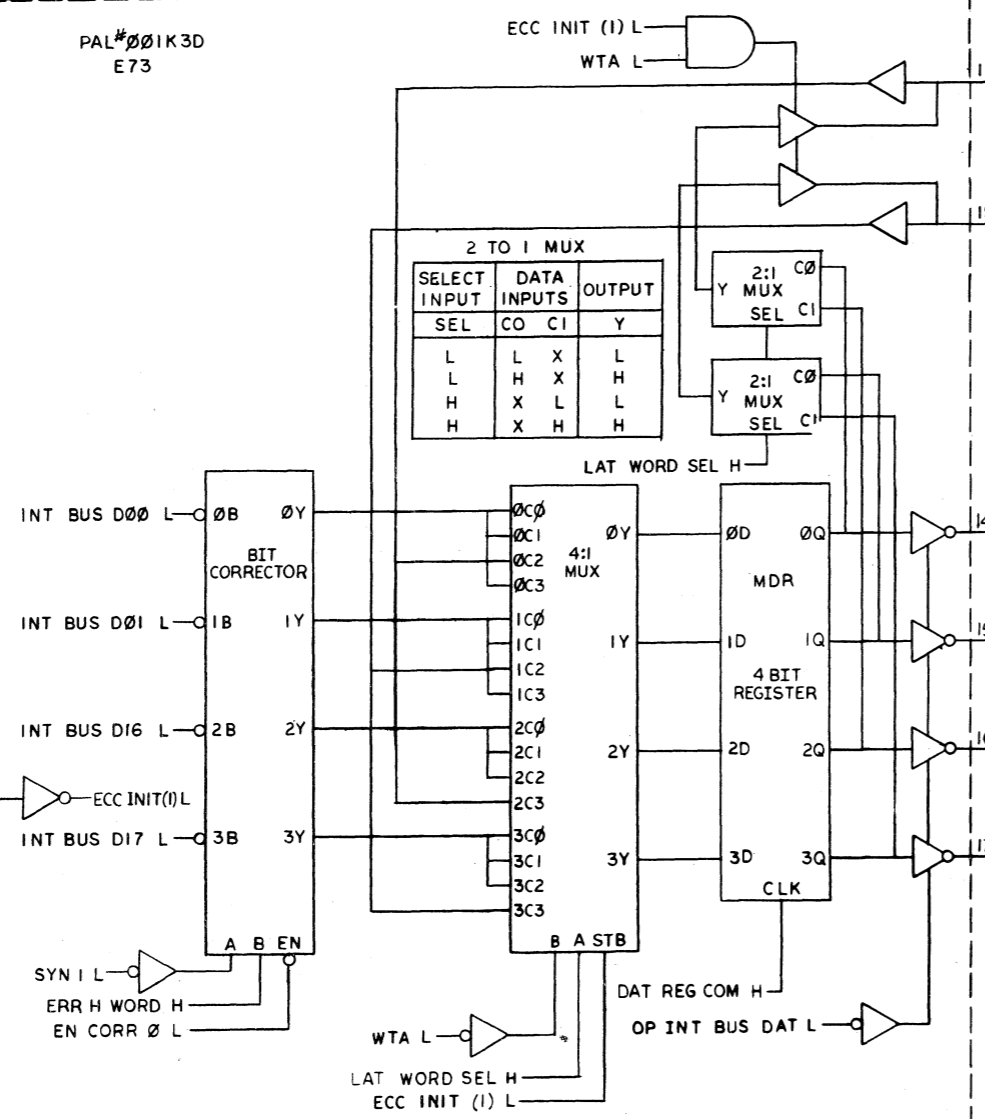
[6] ECC INIT (1) H [2,3/2,11/2,12/2] 9

[4] LAT WORD SEL H [11/2,12/2] 13

[2] OP INT BUS DAT L [11/2,12/2] 11

B

A



**BIT CORRECTOR**

INPUTS			OUTPUTS			
SELECT	ENABLE	EN	0Y	1Y	2Y	3Y
B	A		0B	1B	2B	3B
X	X	H	0B	1B	2B	3B
L	L	L	0B	1B	2B	3B
L	H	L	0B	1B	2B	3B
H	L	L	0B	1B	2B	3B
H	H	L	0B	1B	2B	3B

**4 TO 1 MUX**

SELECT INPUTS		DATA INPUTS				STROBE	OUTPUT
B	A	C0	C1	C2	C3	STB	Y
X	X	X	X	X	X	L	L
L	L	L	X	X	X	H	L
L	L	H	X	X	X	H	H
L	H	X	L	X	X	H	L
L	H	X	H	X	X	H	H
H	L	X	X	L	X	H	L
H	L	X	X	H	X	H	H
H	H	X	X	X	L	H	L
H	H	X	X	X	H	H	H

NOTE:  
EN CORR 0 L AND WTA L MUST NOT BE ASSERTED SIMULTANEOUSLY DURING DAT REG COM H

18 [7,11,15] D OUT 00 H [7]

19 [7,11,15] D OUT 01 H [7]

14 [1] INT BUS D00 L [9/2,11,18]

15 [1] INT BUS D01 L [9/2,11,18]

16 [1] INT BUS D16 L [9/2,11,20]

17 [1] INT BUS D17 L [9/2,11,20]

[11] INT BUS D04 L [9/2,11,18] 5

[11] INT BUS D05 L [9/3,11,18] 4

[11] INT BUS D20 L [9/2,11,20] 3

[11] INT BUS D21 L [9/3,11,20] 2

[10] EN CORR 2 L [11] 8

[11] INT BUS D06 L [9/3,11,18] 5

[11] INT BUS D07 L [9/3,11,18] 4

[11] INT BUS D22 L [9/3,11,20] 3

[11] INT BUS D23 L [9/3,11,20] 2

[10] EN CORR 3 L [11] 8

[11] INT BUS D02 L [9/2,11,18] 5

[11] INT BUS D03 L [9/3,11,18] 4

[11] INT BUS D18 L [9/2,11,20] 3

[11] INT BUS D19 L [9/3,11,20] 2

[10] EN CORR 1 L [11] 3

[10] ERR H WORD H [11/2,12/2]

[10] SYN I L [11/2,12/2]

[6] ECC INIT (1) H [2,3/2,11/2,12/2]

[2] WTA L [11/2]

[4] LAT WORD SEL H [11/2,12/2]

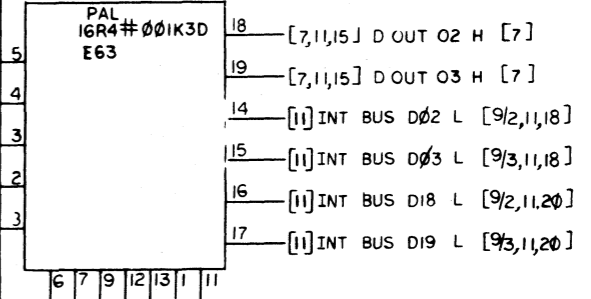
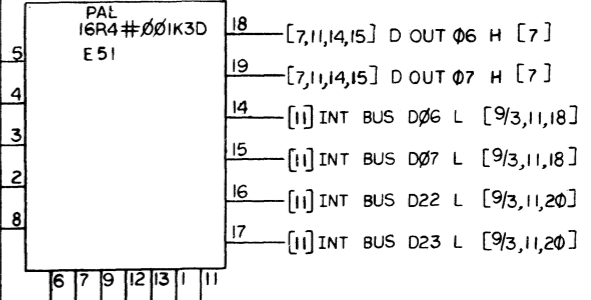
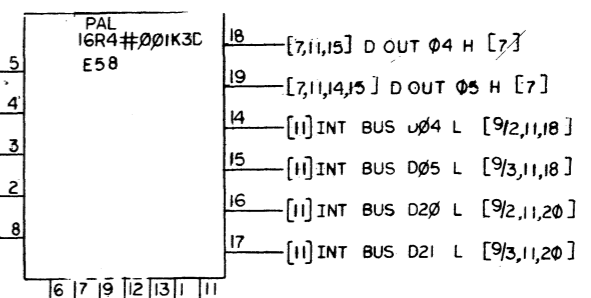
[11] DAT REG COM H [10,11/2,12/2]

[2] OP INT BUS DAT L [11/2,12/2]

[2] DAT REG CLK A L [11] 12

[3] DAT REG CLK B L [11] 13

[11] DAT REG COM H [10,11/2,12/2]



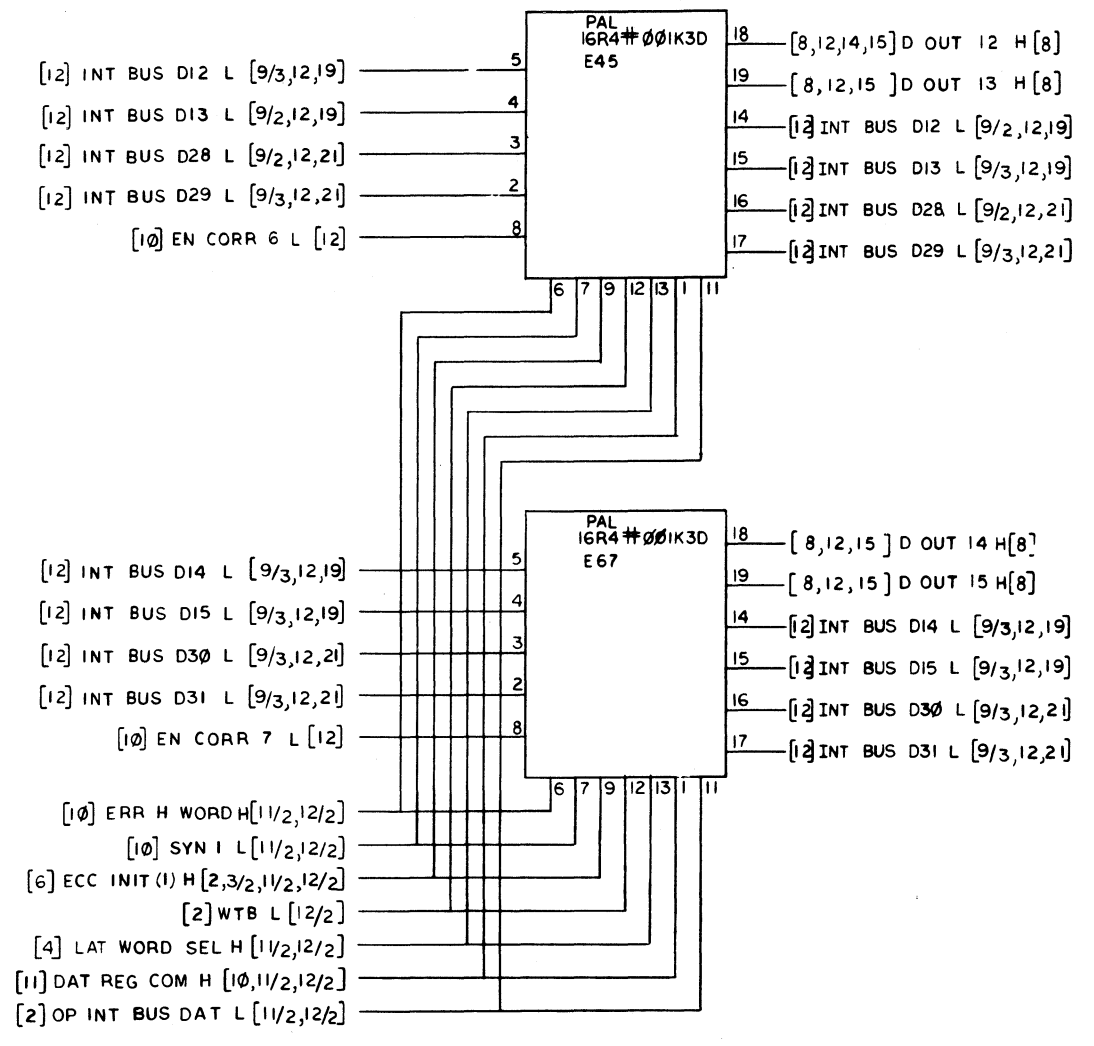
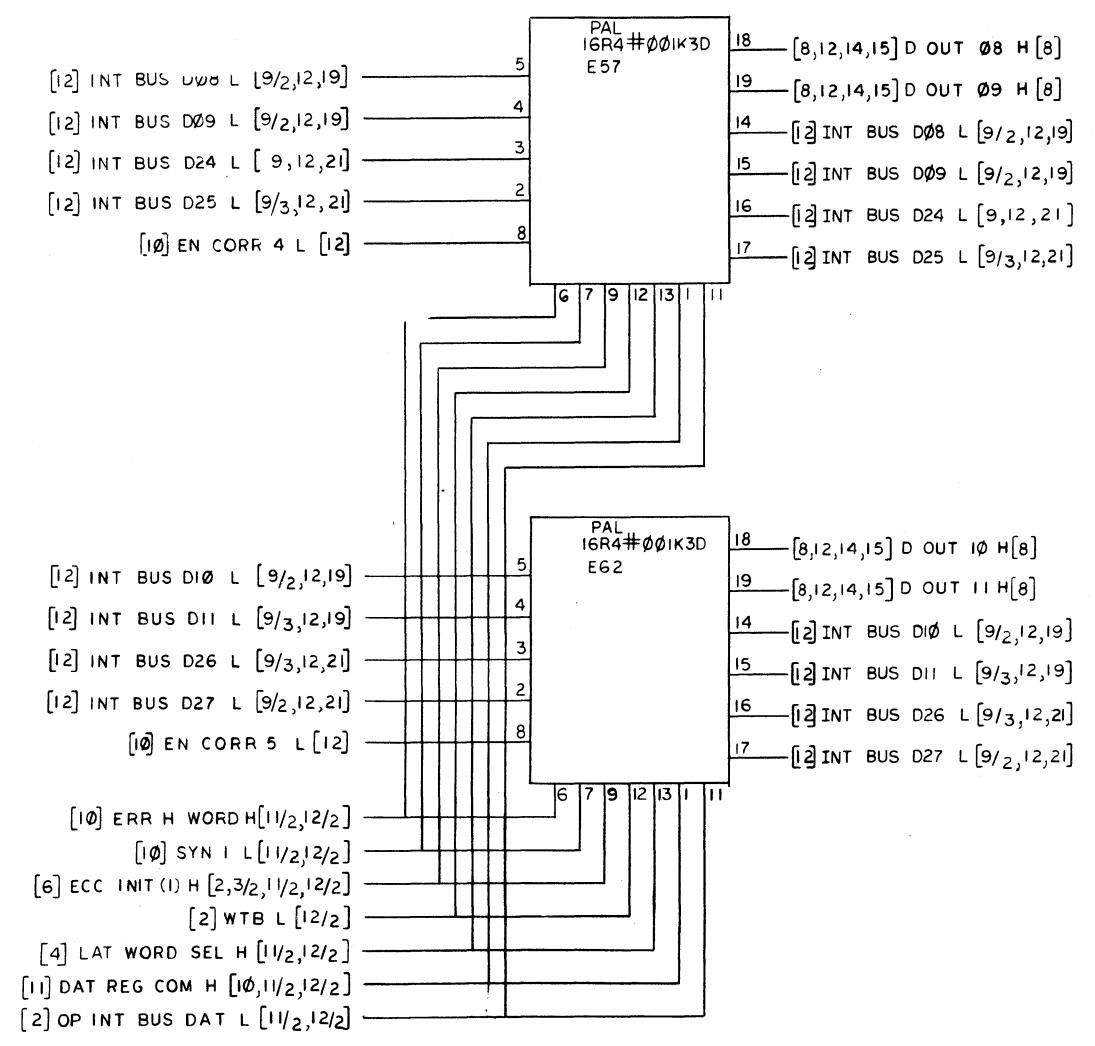
(DATA CORRECTOR, MDR)

REVISIONS

CHK	CHANGE NO.	REV.

REV. D DCS M8722-0-1

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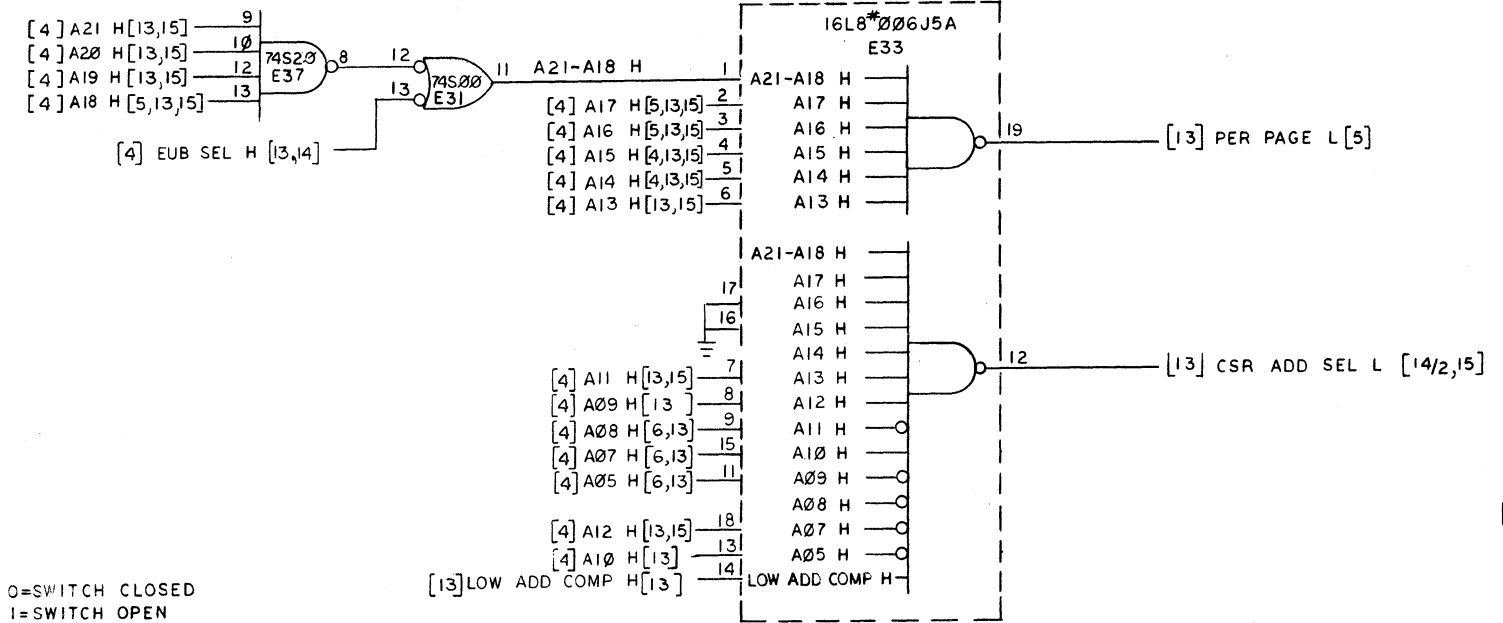


REVISIONS		
CHK	CHANGE NO.	REV.

TITLE		SIZE CODE	NUMBER	REV.
ECC MOS MEMORY (MSIIM)		D CS	M8722-0-1	D
SCALE	SHEET	OF	DIST.	
	12	22		

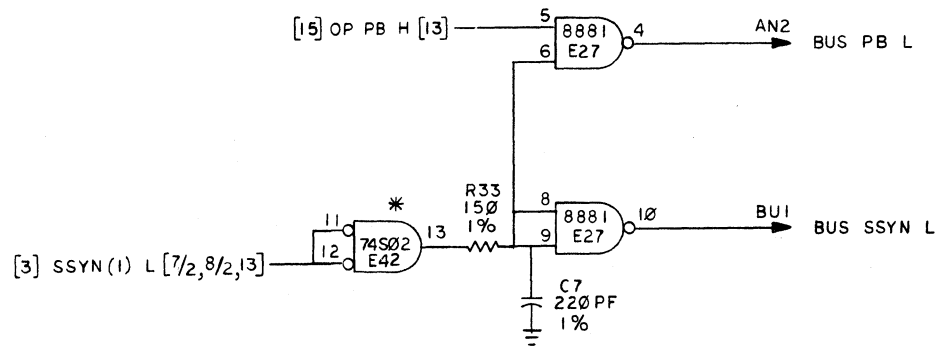
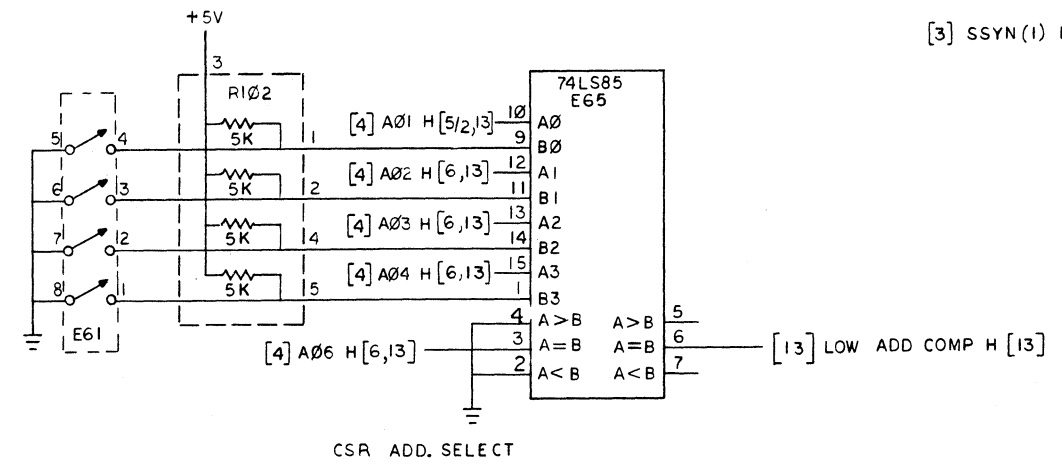
REV. D  
D 1-0-2228W SCS 2

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0=SWITCH CLOSED  
 1=SWITCH OPEN

CSR ADDRESS	E61			
	A04	A03	A02	A01
772100	0	0	0	0
772102	0	0	0	1
772104	0	0	1	0
772106	0	0	1	1
772110	0	1	0	0
772112	0	1	0	1
772114	0	1	1	0
772116	0	1	1	1
772120	1	0	0	0
772122	1	0	0	1
772124	1	0	1	0
772126	1	0	1	1
772130	1	1	0	0
772132	1	1	0	1
772134	1	1	1	0
772136	1	1	1	1



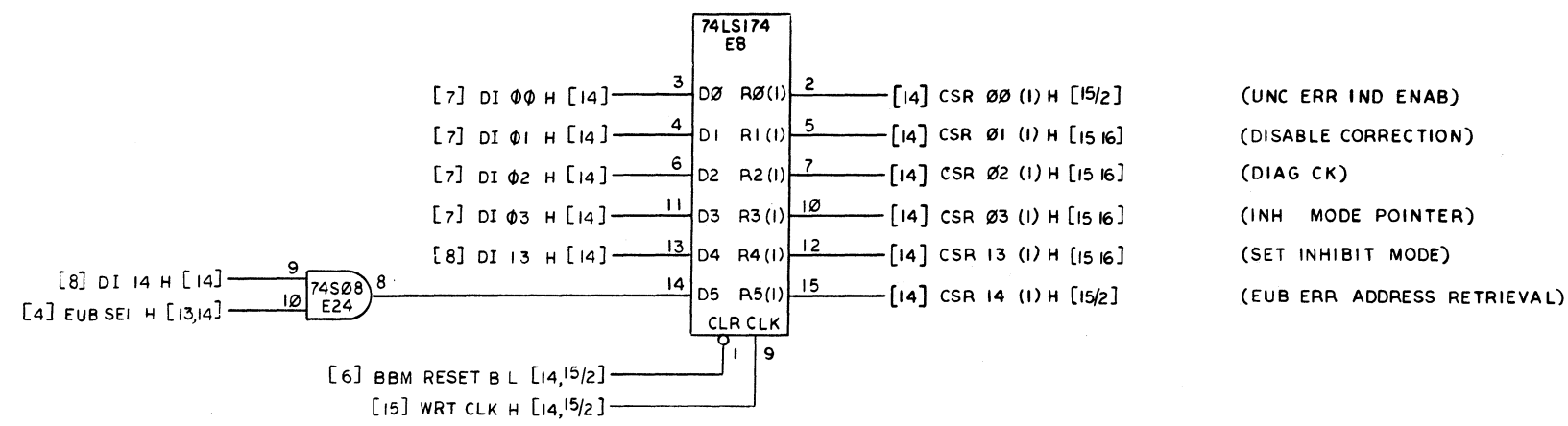
(CSR ADDRESS SELECTION)

REVISIONS		
CHK	CHANGE NO.	REV.

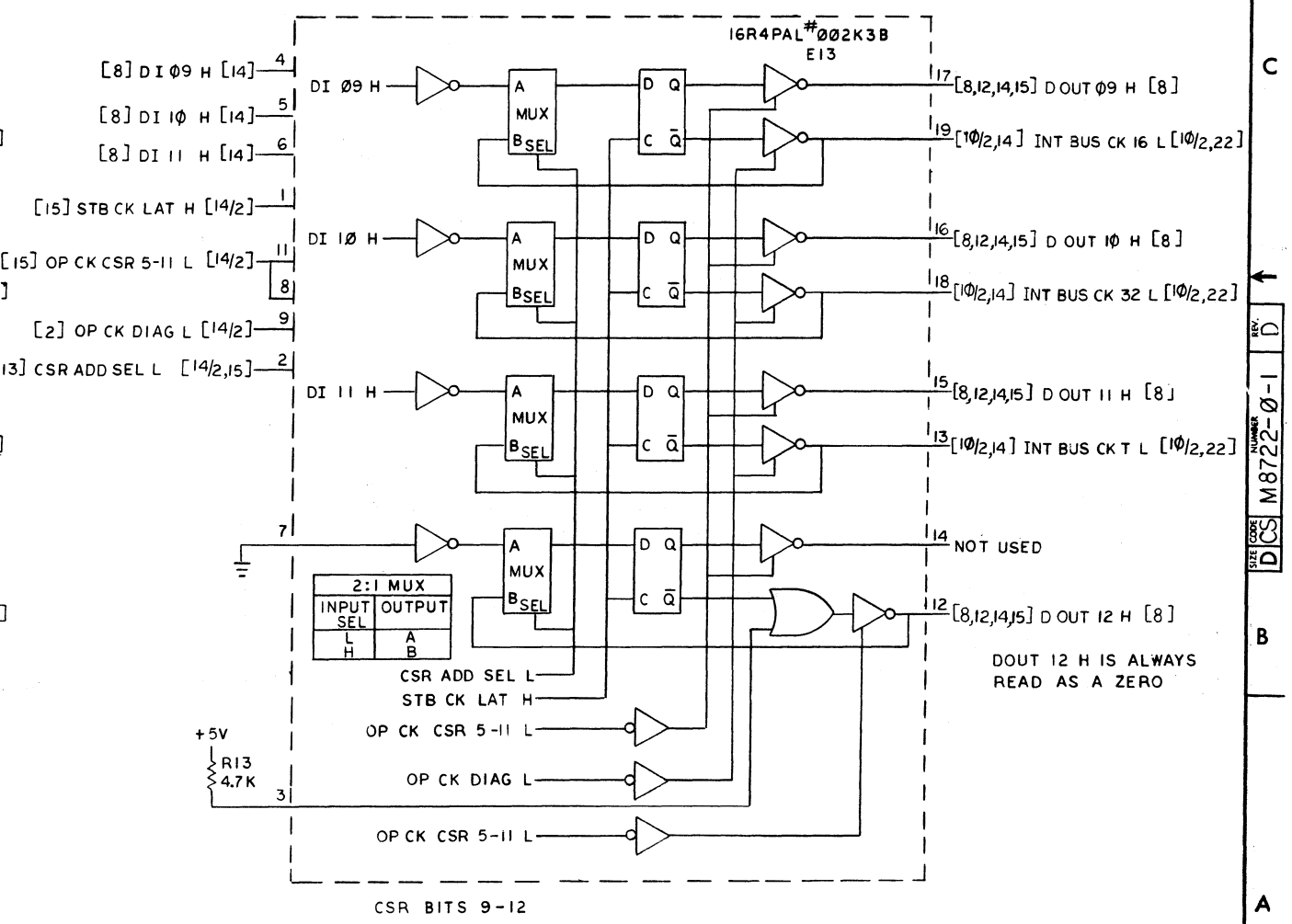
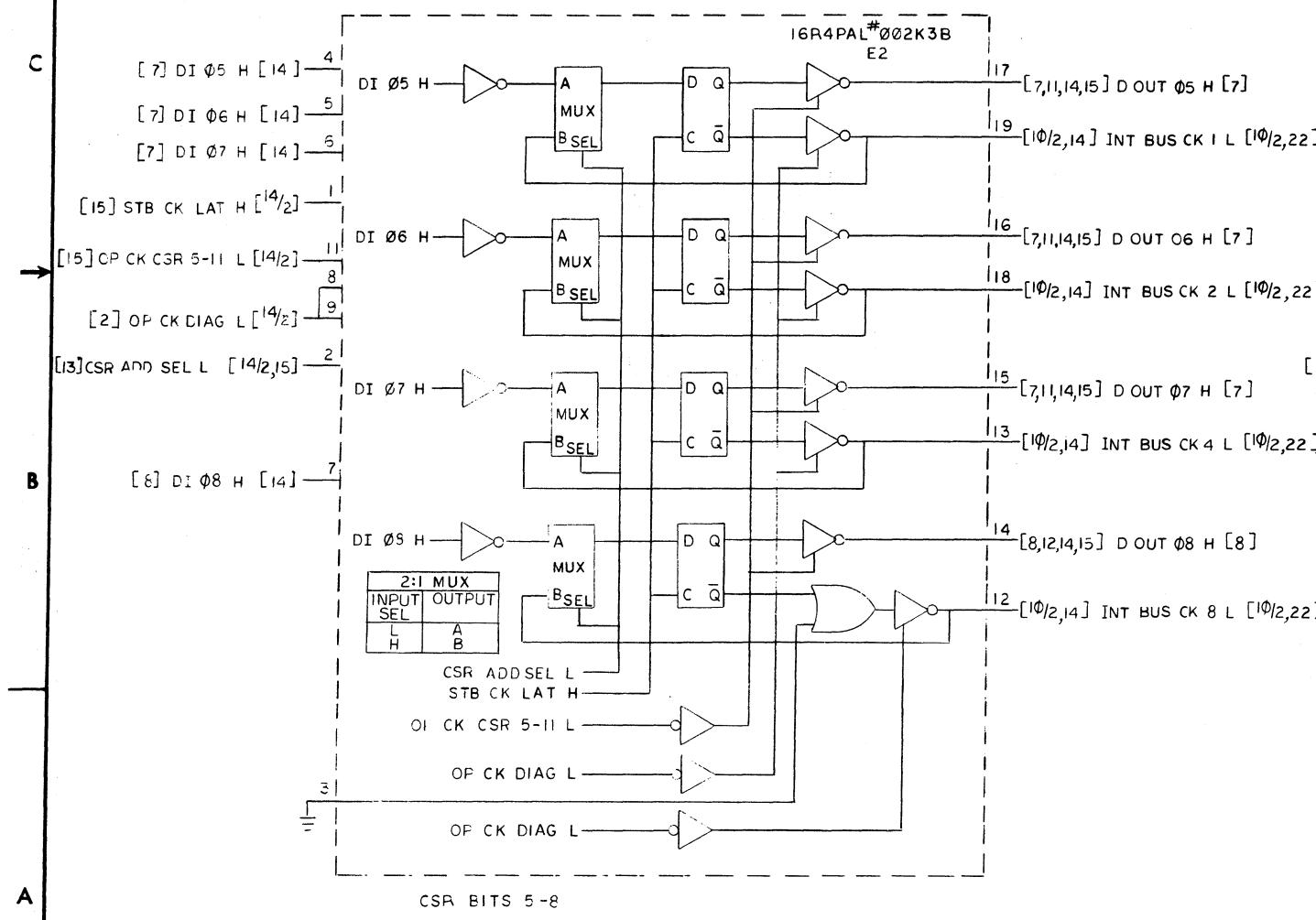
TITLE	SIZE CODE	NUMBER	REV.
ECC MOS MEMORY (MS11M)	D CS	M8722-0-1	D

SCALE: / / SHEET 13 OF 22 DIST. / /

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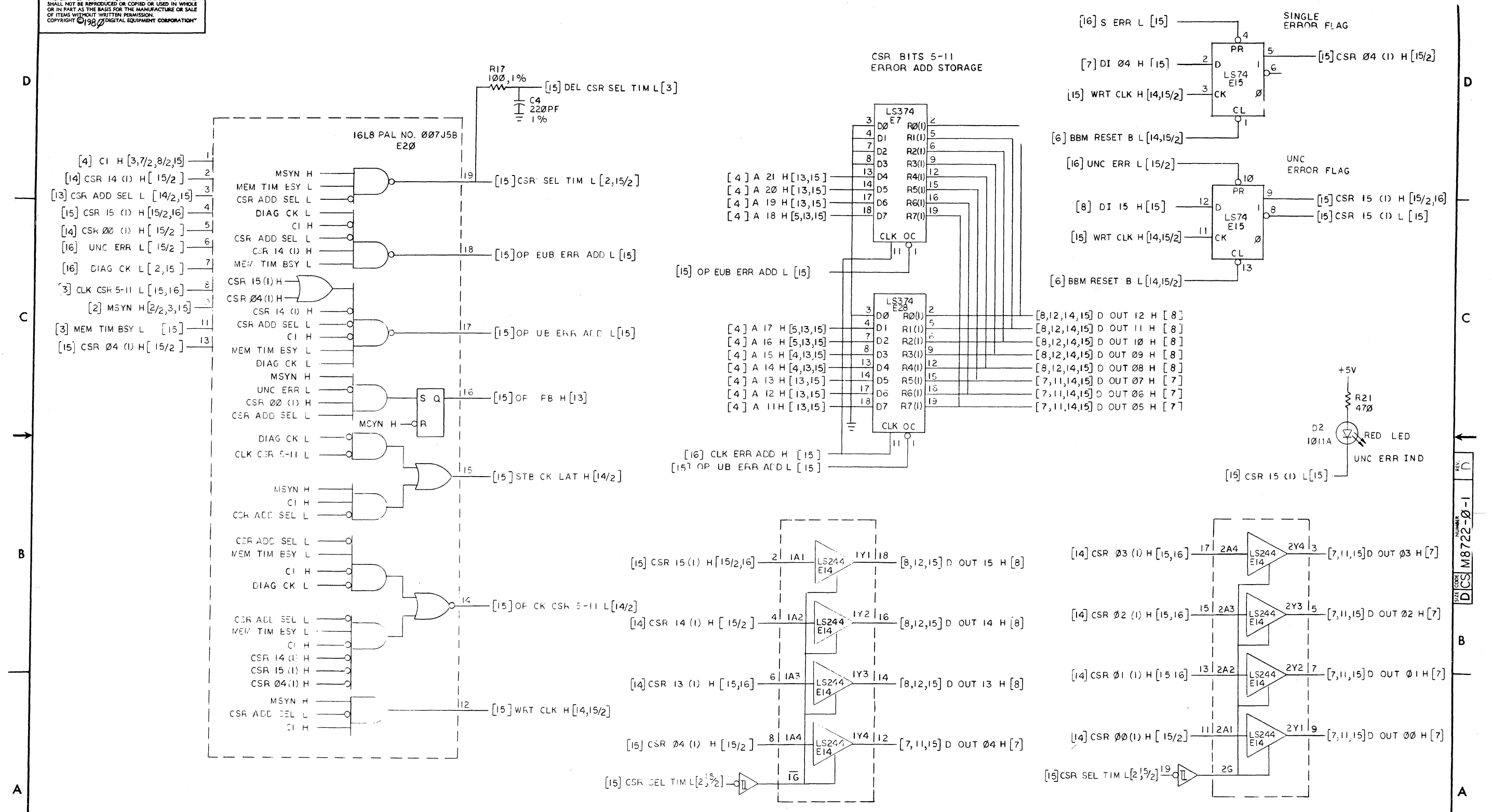
- (UNC ERR IND ENAB)
- (DISABLE CORRECTION)
- (DIAG CK)
- (INH MODE POINTER)
- (SET INHIBIT MODE)
- (EUB ERR ADDRESS RETRIEVAL)



REVISIONS		
CHK	CHANGE NO.	REV.

TITLE		SIZE/CODE	NUMBER	REV.
ECC MOS MEMORY (MSIIM)		D CS	M8722-0-1	D
SCALE	SHEET 14 OF 22	DIST.		

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CSR CONTROL, CSR ERR ADDR STORAGE, CSR BITS 04, 15

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	ECC MOS MEMORY (MS11M)	SIZE CODE	D CS	NUMBER	M8722-0-1	REV.	D
SCALE		SHEET	15	OF	22	DIST.	

DCS M8722-0-1

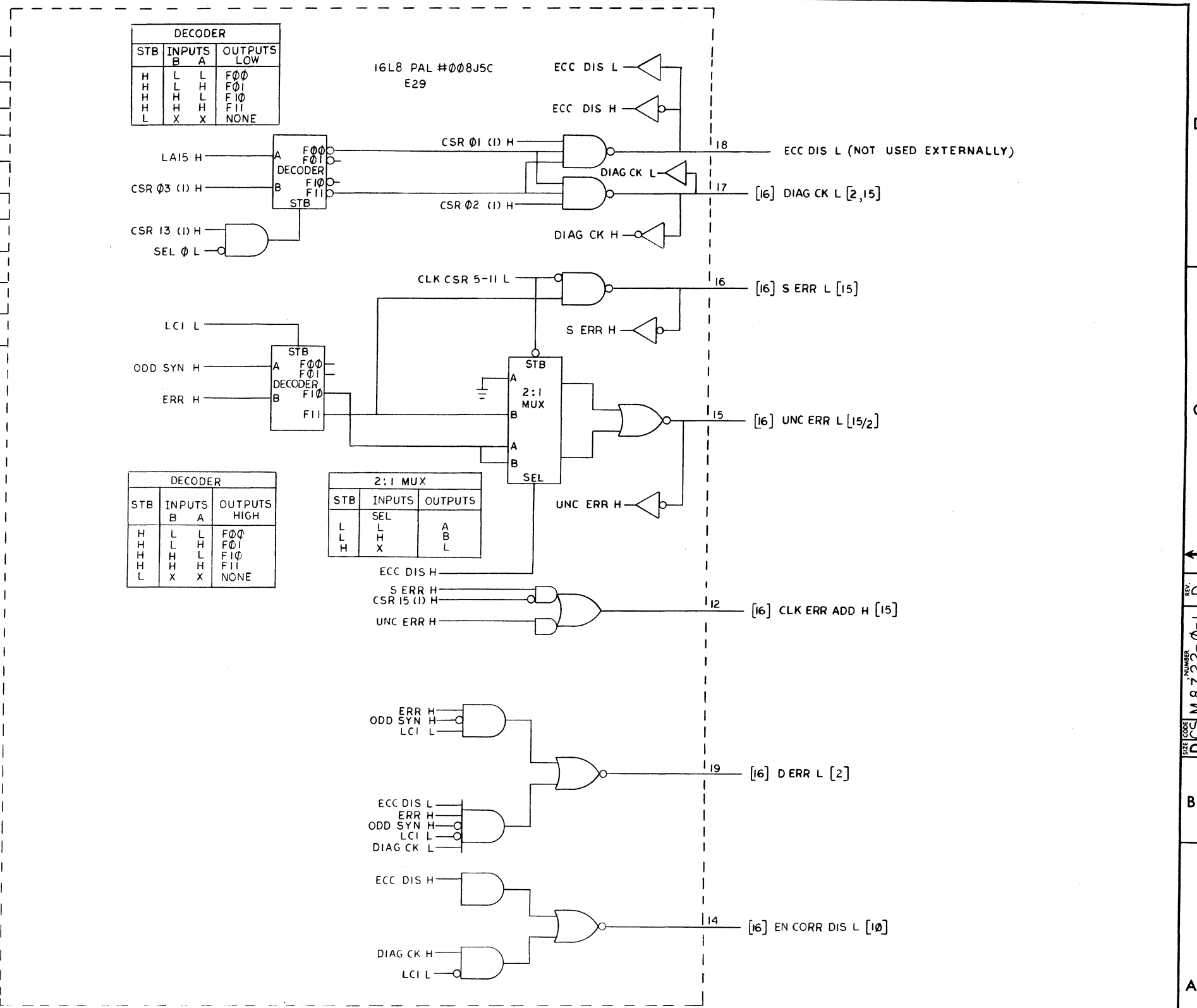
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- [14] CSR 01 (1) H [15,16] 1
- [4] LA 15 H [6,16] 2
- [14] CSR 03 (1) H [15,16] 3
- [14] CSR 02 (1) H [15,16] 4
- [14] CSR 13 (1) H [15,16] 5
- [5] SEL 0 L [16] 6
- [10] ODD SYN H [10,16] 7
- [10] ERR H [3,16] 8
- [3] CLK CSR 5-11 L [15,16] 9
- [3] LCI L [2,5,16] 11
- [15] CSR 15 (1) H [15/2,16] 13

DECODER			
STB	INPUTS		OUTPUTS
	B	A	LOW
H	L	L	F00
H	L	H	F01
H	H	L	F10
H	H	H	F11
L	X	X	NONE

DECODER			
STB	INPUTS		OUTPUTS
	B	A	HIGH
H	L	L	F00
H	L	H	F01
H	H	L	F10
H	H	H	F11
L	X	X	NONE

2:1 MUX		
STB	INPUTS	OUTPUTS
	SEL	A B
L	L	L
L	H	H
H	X	L



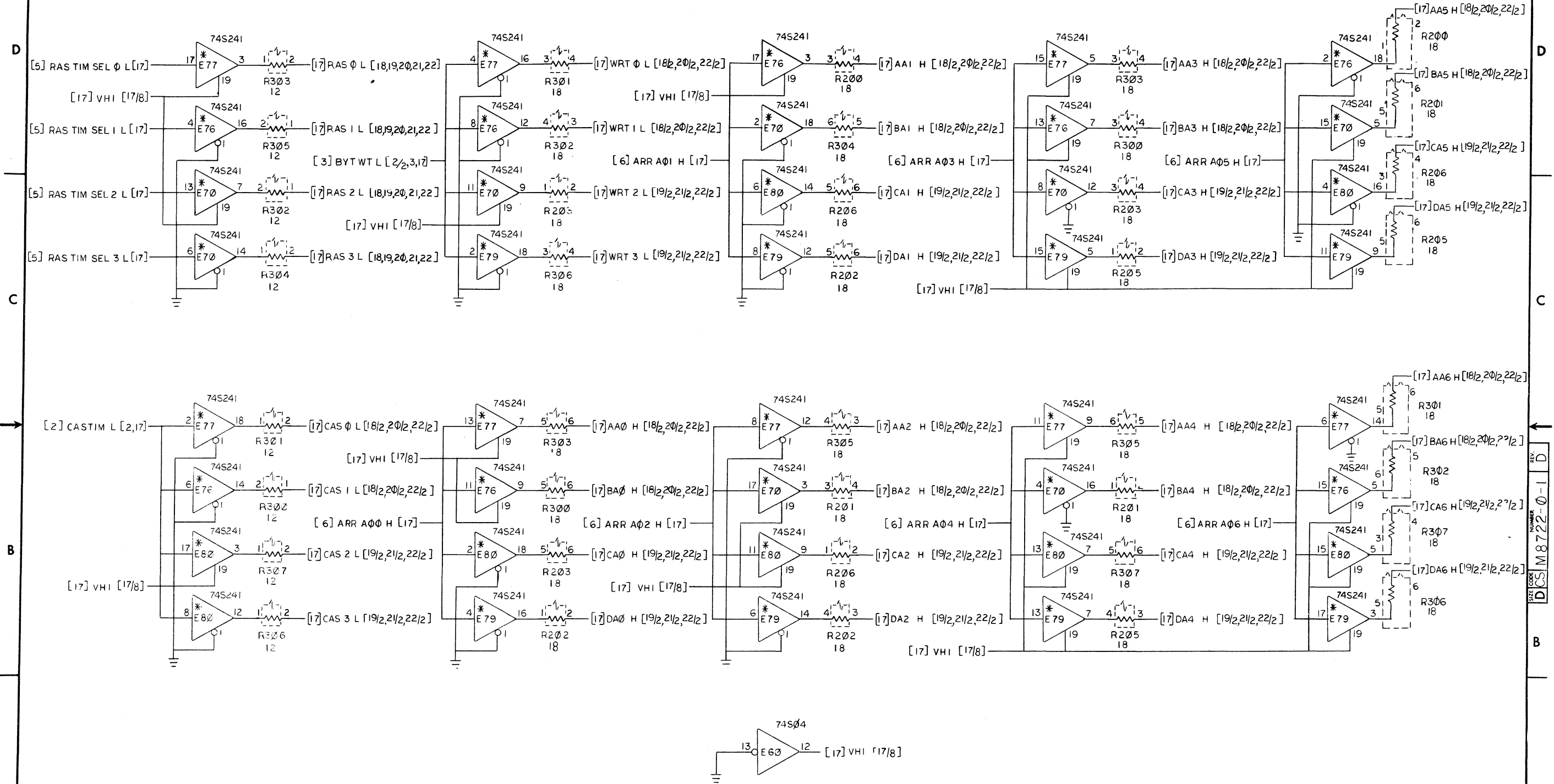
REVISIONS		
CHK	CHANGE NO.	REV.

(ERROR CONTROL)

TITLE	SIZE CODE	NUMBER	REV.
ECC MOS MEMORY(MSI IM)	DCS	M8722-0-1	D
SCALE	SHEET	OF	
	16	22	



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REVISIONS		
CHK	CHANGE NO.	REV.

(ARRAY DRIVERS)		TITLE	SIZE CODE	NUMBER	REV.
		ECC MOS MEMORY (MS11M)	D CS	M 8722-0-1	D
SCALE		SHEET 17	OF 22	DIST.	

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[17] RAS  $\phi$  L [18,19,20,21,22]  
 [17] CAS  $\phi$  L [18/2,20/2,22/2]  
 [17] WRT  $\phi$  L [18/2,20/2,22/2]

[17] AA $\phi$  H [18/2,20/2,22/2]  
 [17] AA1 H [18/2,20/2,22/2]  
 [17] AA2 H [18/2,20/2,22/2]  
 [17] AA3 H [18/2,20/2,22/2]  
 [17] AA4 H [18/2,20/2,22/2]  
 [17] AA5 H [18/2,20/2,22/2]  
 [17] AA6 H [18/2,20/2,22/2]

[17] RAS 1 L [18,19,20,21,22]  
 [17] CAS  $\phi$  L [18/2,20/2,22/2]  
 [17] WRT  $\phi$  L [18/2,20/2,22/2]

[17] AA $\phi$  H [18/2,20/2,22/2]  
 [17] AA1 H [18/2,20/2,22/2]  
 [17] AA2 H [18/2,20/2,22/2]  
 [17] AA3 H [18/2,20/2,22/2]  
 [17] AA4 H [18/2,20/2,22/2]  
 [17] AA5 H [18/2,20/2,22/2]  
 [17] AA6 H [18/2,20/2,22/2]

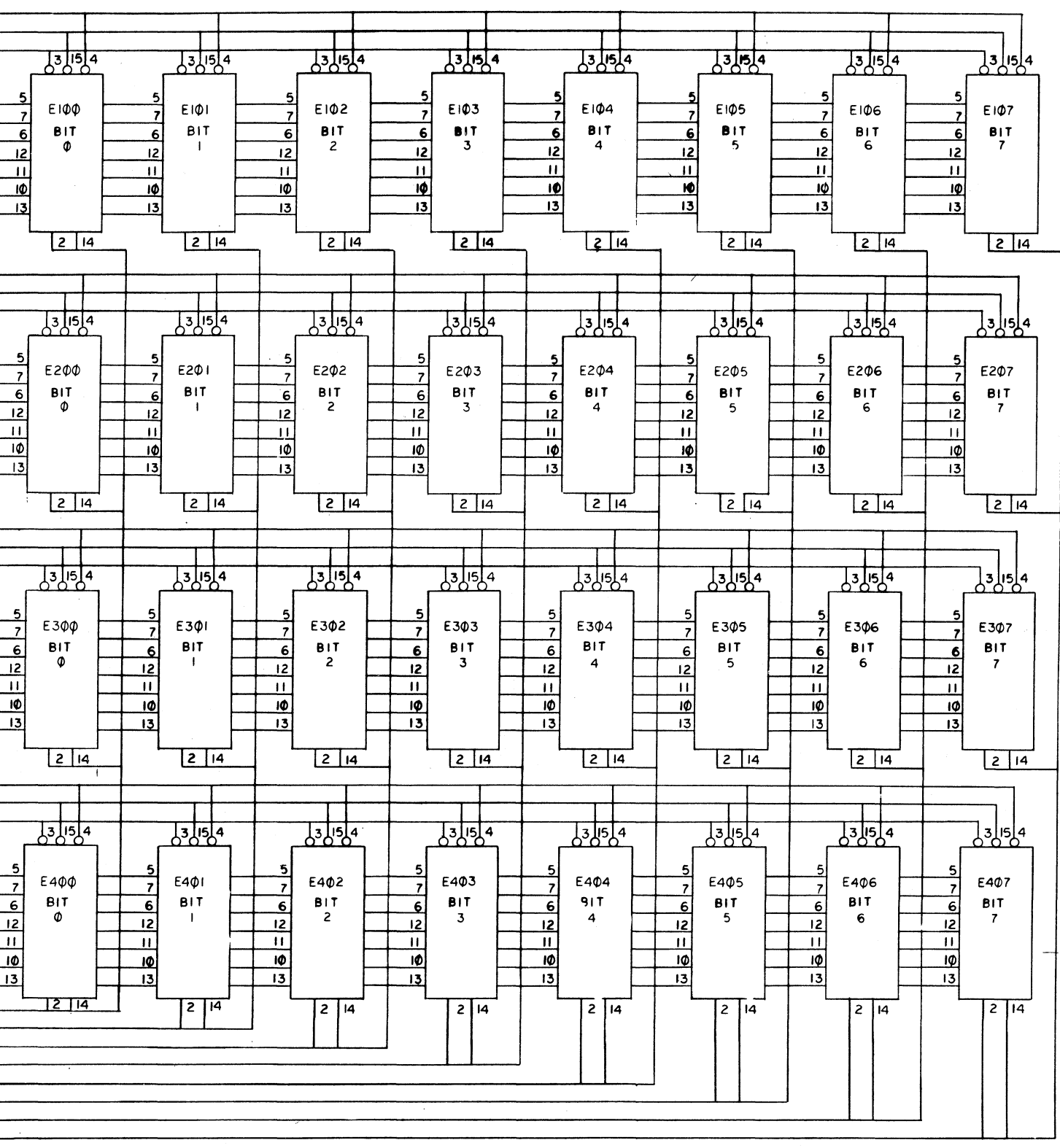
[17] RAS 2 L [18,19,20,21,22]  
 [17] CAS 1 L [18/2,20/2,22/2]  
 [17] WRT 1 L [18/2,20/2,22/2]

[17] BA $\phi$  H [18/2,20/2,22/2]  
 [17] BA1 H [18/2,20/2,22/2]  
 [17] BA2 H [18/2,20/2,22/2]  
 [17] BA3 H [18/2,20/2,22/2]  
 [17] BA4 H [18/2,20/2,22/2]  
 [17] BA5 H [18/2,20/2,22/2]  
 [17] BA6 H [18/2,20/2,22/2]

[17] RAS 3 L [18,19,20,21,22]  
 [17] CAS 1 L [18/2,20/2,22/2]  
 [17] WRT 1 L [18/2,20/2,22/2]

[17] BA $\phi$  H [18/2,20/2,22/2]  
 [17] BA1 H [18/2,20/2,22/2]  
 [17] BA2 H [18/2,20/2,22/2]  
 [17] BA3 H [18/2,20/2,22/2]  
 [17] BA4 H [18/2,20/2,22/2]  
 [17] BA5 H [18/2,20/2,22/2]  
 [17] BA6 H [18/2,20/2,22/2]

[11] INT BUS D $\phi$  L [9/2,11,18]  
 [11] INT BUS D01 L [9/2,11,18]  
 [11] INT BUS D02 L [9/2,11,18]  
 [11] INT BUS D03 L [9/3,11,18]  
 [11] INT BUS D04 L [9/2,11,18]  
 [11] INT BUS D05 L [9/3,11,18]  
 [11] INT BUS D06 L [9/3,11,18]  
 [11] INT BUS D07 L [9/3,11,18]



GND PIN 16  
 -5V PIN 1  
 +5V PIN 9  
 +12V PIN 8

FOR 16K MOS RAM

NOTE:  
 ALL MOS RAM VOLTAGES ARE BATTERY BACKED UP

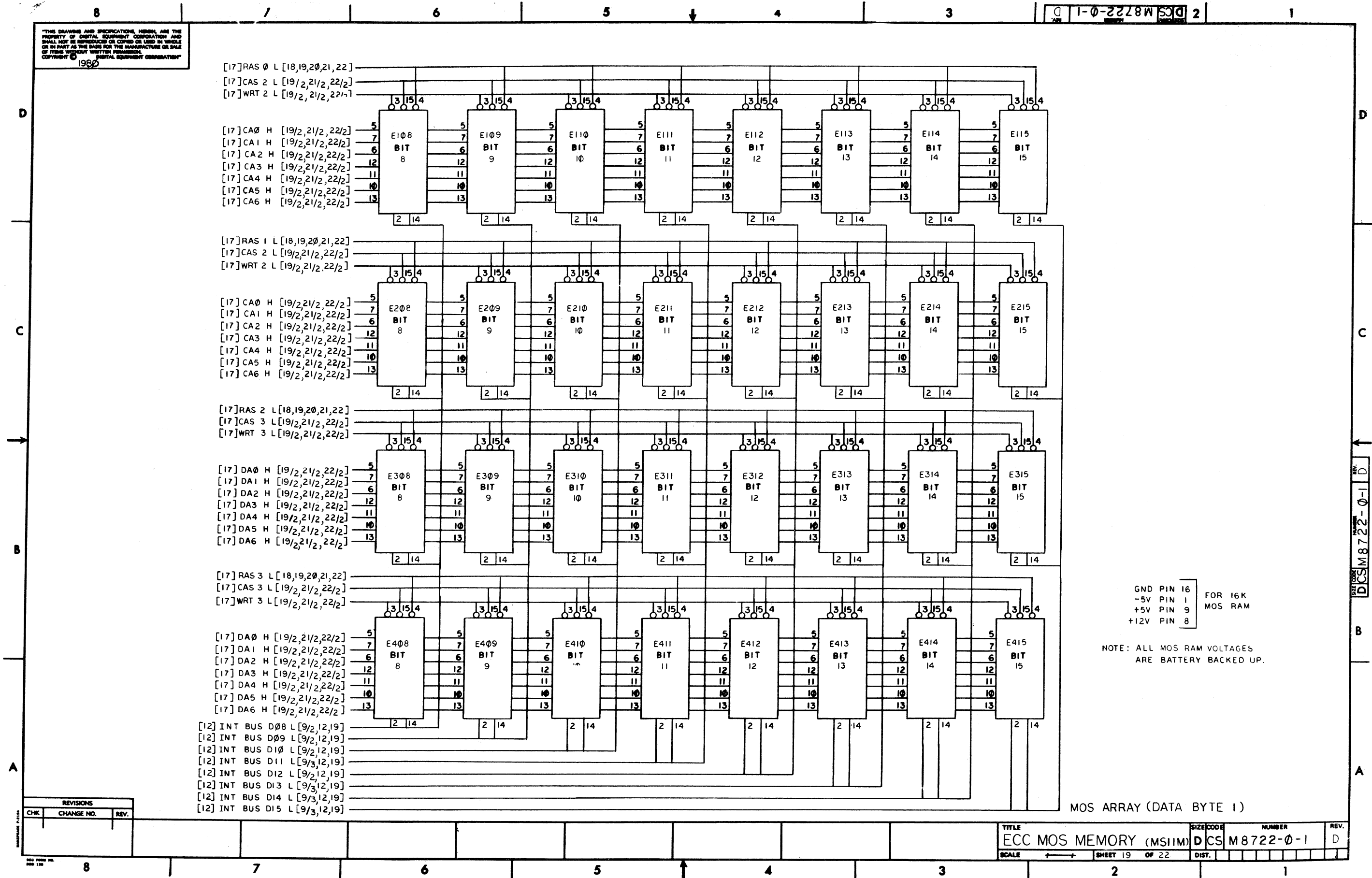
MOS ARRAY (DATA BYTE  $\phi$ )

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE CODE	NUMBER	REV.
ECC MOS MEMORY (MS11M)	D	CS M8722-0-1	D
SCALE	SHEET 18 OF 22	DIST.	

REV. D CS M8722-0-1

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GND PIN 16 FOR 16K  
 -5V PIN 1 MOS RAM  
 +5V PIN 9  
 +12V PIN 8

NOTE: ALL MOS RAM VOLTAGES ARE BATTERY BACKED UP.

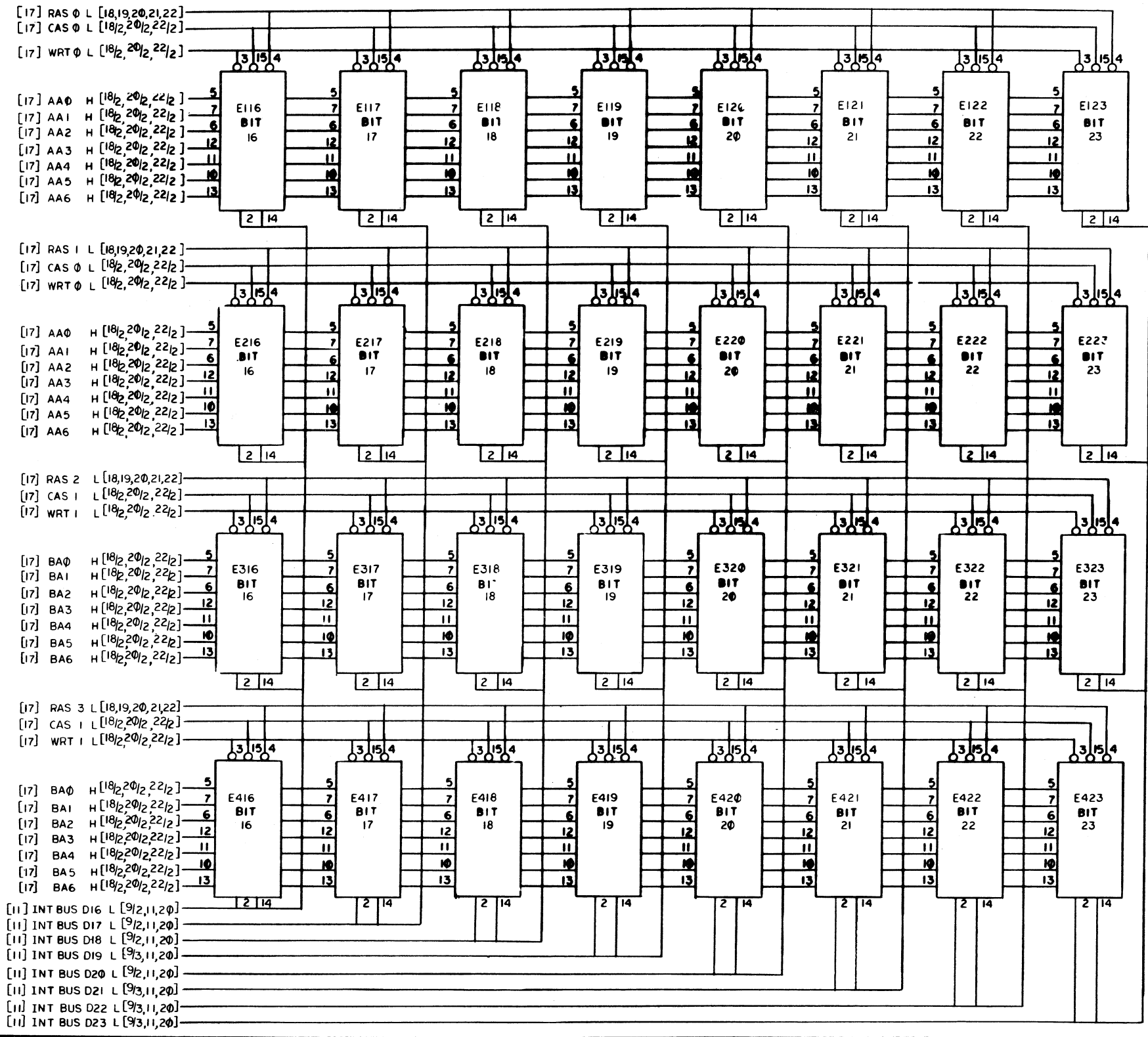
MOS ARRAY (DATA BYTE 1)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE CODE	NUMBER	REV.
ECC MOS MEMORY (MS1M)	D CS	M 8722-0-1	D
SCALE	SHEET	OF	DIST.
	19	22	

DCS M8722-0-1-D

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GND PIN 16  
 -5V PIN 1  
 +5V PIN 9  
 +12V PIN 8

FOR 16K MOS RAM

NOTE:  
 ALL MOS RAM VOLTAGES ARE BATTERY BACKED UP

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE		SIZE CODE	NUMBER	REV.
ECC MOS MEMORY (MSIIM)		DCS	M8722-0-1	D
SCALE	SHEET	OF	DIST.	
	20	22		

MOS ARRAY (DATA BYTE 2)

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[17] RAS 0 L [18,19,20,21,22]  
 [17] CAS 2 L [9/2, 21/2, 22/2]  
 [17] WRT 2 L [9/2, 21/2, 22/2]

[17] CA0 H [9/2, 21/2, 22/2]  
 [17] CA1 H [9/2, 21/2, 22/2]  
 [17] CA2 H [9/2, 21/2, 22/2]  
 [17] CA3 H [9/2, 21/2, 22/2]  
 [17] CA4 H [9/2, 21/2, 22/2]  
 [17] CA5 H [9/2, 21/2, 22/2]  
 [17] CA6 H [9/2, 21/2, 22/2]

[17] RAS 1 L [18,19,20,21,22]  
 [17] CAS 2 L [9/2, 21/2, 22/2]  
 [17] WRT 2 L [9/2, 21/2, 22/2]

[17] CA0 H [9/2, 21/2, 22/2]  
 [17] CA1 H [9/2, 21/2, 22/2]  
 [17] CA2 H [9/2, 21/2, 22/2]  
 [17] CA3 H [9/2, 21/2, 22/2]  
 [17] CA4 H [9/2, 21/2, 22/2]  
 [17] CA5 H [9/2, 21/2, 22/2]  
 [17] CA6 H [9/2, 21/2, 22/2]

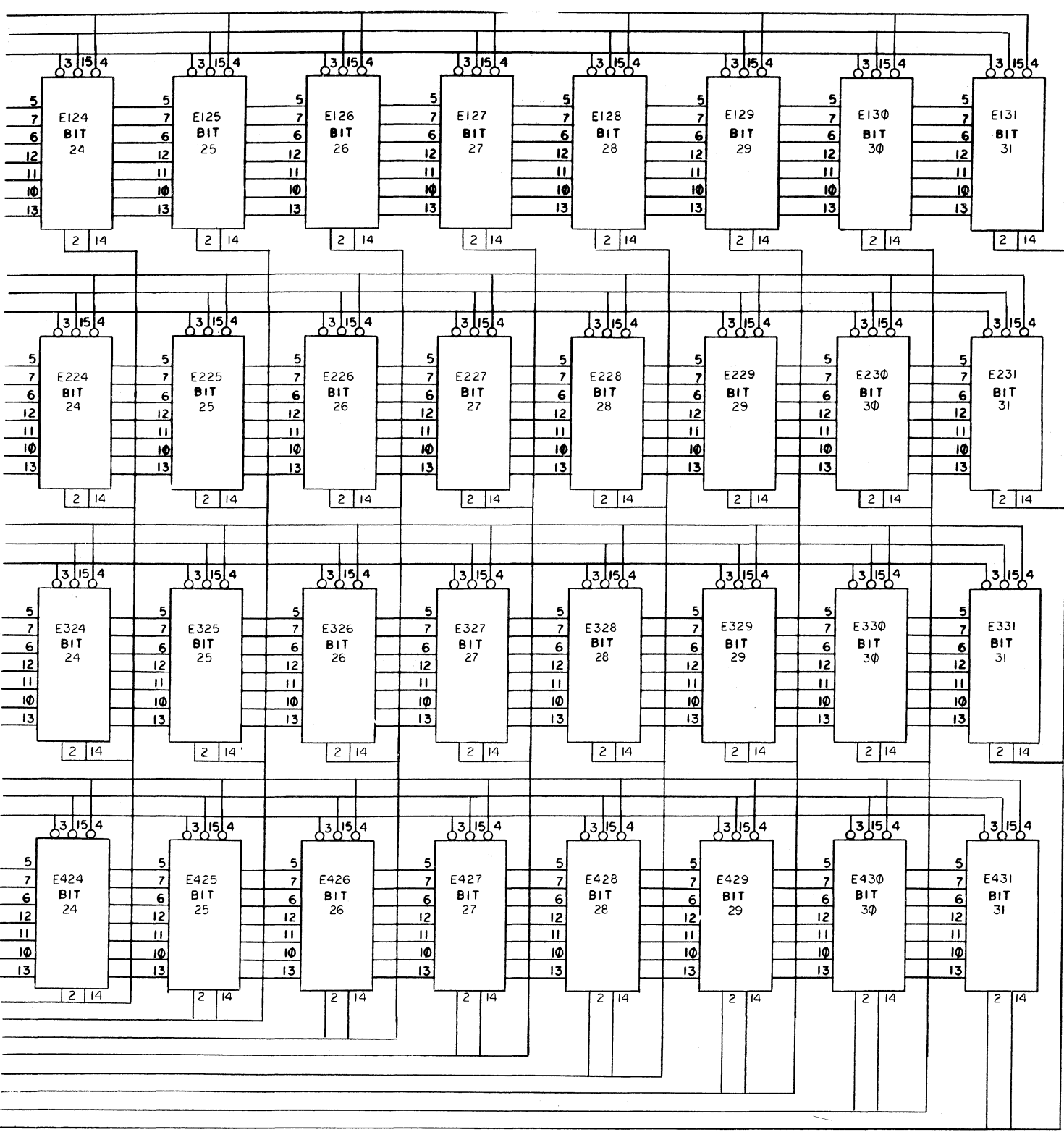
[17] RAS 2 L [18,19,20,21,22]  
 [17] CAS 3 L [9/2, 21/2, 22/2]  
 [17] WRT 3 L [9/2, 21/2, 22/2]

[17] DA0 H [9/2, 21/2, 22/2]  
 [17] DA1 H [9/2, 21/2, 22/2]  
 [17] DA2 H [9/2, 21/2, 22/2]  
 [17] DA3 H [9/2, 21/2, 22/2]  
 [17] DA4 H [9/2, 21/2, 22/2]  
 [17] DA5 H [9/2, 21/2, 22/2]  
 [17] DA6 H [9/2, 21/2, 22/2]

[17] RAS 3 L [18,19,20,21,22]  
 [17] CAS 3 L [9/2, 21/2, 22/2]  
 [17] WRT 3 L [9/2, 21/2, 22/2]

[17] DA0 H [9/2, 21/2, 22/2]  
 [17] DA1 H [9/2, 21/2, 22/2]  
 [17] DA2 H [9/2, 21/2, 22/2]  
 [17] DA3 H [9/2, 21/2, 22/2]  
 [17] DA4 H [9/2, 21/2, 22/2]  
 [17] DA5 H [9/2, 21/2, 22/2]  
 [17] DA6 H [9/2, 21/2, 22/2]

[12] INT BUS D24 L [9,12,21]  
 [12] INT BUS D25 L [9,12,21]  
 [12] INT BUS D26 L [9,12,21]  
 [12] INT BUS D27 L [9,12,21]  
 [12] INT BUS D28 L [9,12,21]  
 [12] INT BUS D29 L [9,12,21]  
 [12] INT BUS D30 L [9,12,21]  
 [12] INT BUS D31 L [9,12,21]



GND PIN 16  
 -5V PIN 1  
 +5V PIN 9  
 +12V PIN 8  
 FOR 16K MOS RAM

NOTE:  
 ALL MOS RAM VOLTAGES ARE BATTERY BACKED UP

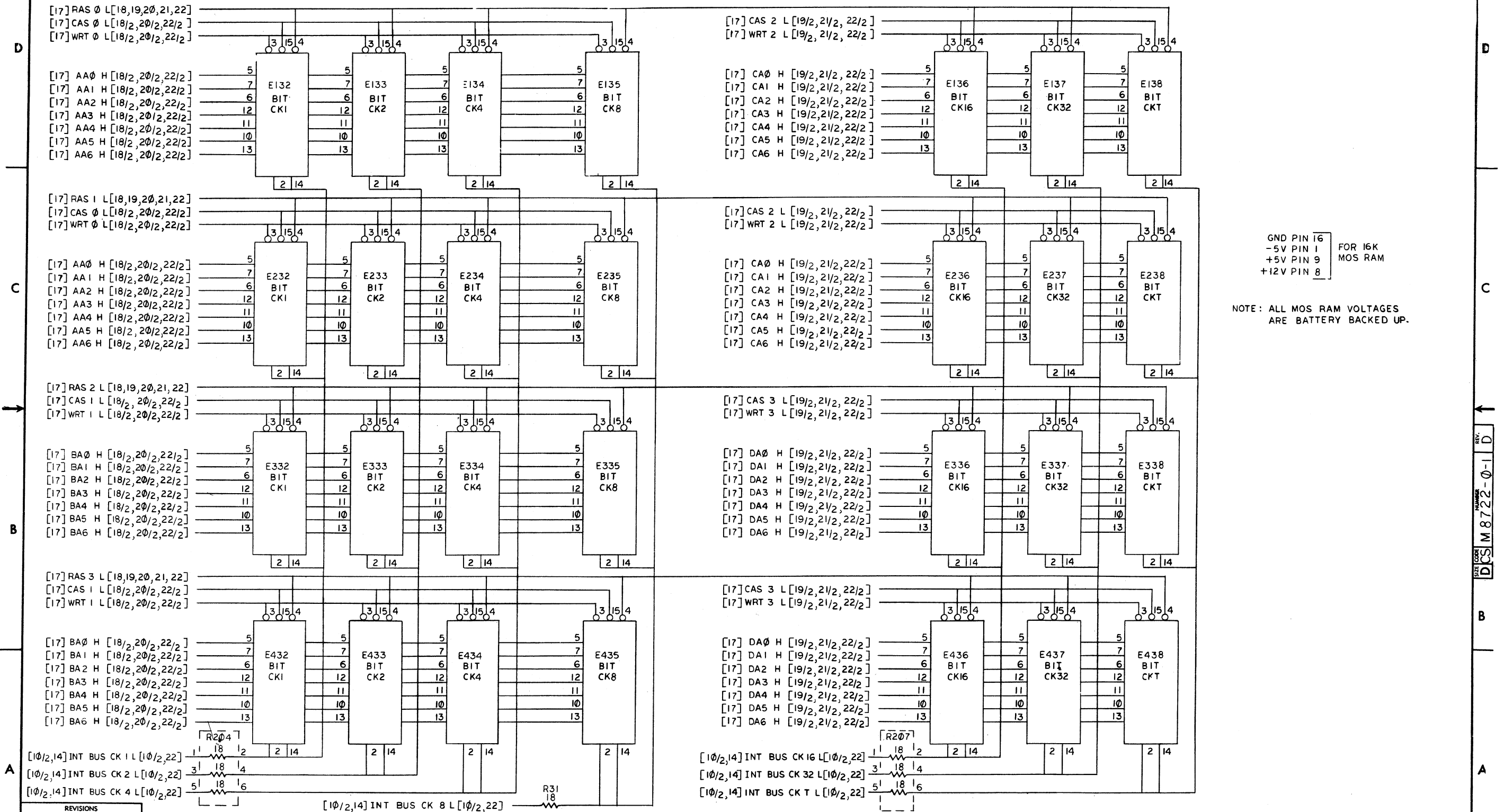
MOS ARRAY (DATA BYTE 3)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE CODE	NUMBER	REV.
ECC MOS MEMORY (MS11M)	D	CS M8722-0-1	D
SCALE	SHEET 21	OF 22	DIST.

REV. D  
 SHEET 21 OF 22  
 DIST.  
 DCS M8722-0-1

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REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
ECC MOS MEMORY (MS1M)	D	CS	M8722-0-1	D
SCALE	SHEET	OF	DIST.	
	22	22		

DIGITAL EQUIPMENT CORPORATION PARTS LIST				QUANTITY / VARIATION										NOTES:				
MADE BY H. DARAKJIAN DATE 28 MAR 79		CHECKED D. HEALY DATE 26 DEC 79		SECTION 1														
ENG <i>John B. Manton</i> DATE 1-15-80		PROD <i>Bob Schaaf</i> DATE 1-15-80		ISSUED SECTION 1														
ITEM NO.	DRAWING NO.	PART NO.	DESCRIPTION	MS11-MA	MS11-MB	MS11-MC	MS11-MD											REF DESIGNATION
1	B-TC-MS11-M-1	MP00742	PRINT SET MS11-M	1	1	1	1											
2		EK-MS11M-UG	MS11-M ECC MOS MEMORY USERS GUIDE	1	1	1	1											
3		AC-F294A-MC	MS11-M & MS11-L DIAGNOSTIC LISTING	1	1	1	1											
4		AK-F293A-MC	PAPER TAPE	1	1	1	1											

E.C.O. NO.

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TITLE  
MS11-M SHIPPING LIST

ASSY NO.  
B-DD-MS11-M  
SHEET 1 OF 1

SIZE **B** CODE **PL** NUMBER MS11-M  
INSERTION PARTS LIST DATA BASE REV

REV.  
A

