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IF	C (OBUS) LOADED INTO
WRITE A = H	A ACCUMULATOR SPECIFIED BY A LOC (3:4)
WRITE B = H	TEMPORARY SPECIFIED BY BWLOC (0:2)
DB CTRL 1 L = H AND DB CTRL 2 L = L	DATA BUFFER

SIGNAL PIN	CBS				FUNCTION
	ARITH 0	ARITH 1	ARITH 2	ARITH 3	
L	L	L	L	L	A+B+CARRY (15 BITS) TO OBUS
L	L	L	H	H	(A+B+CARRY)*2 + TO OBUS (2*B)
L	L	H	L	L	(A+B+CARRY) LOGICALLY RIGHT ROTATED 3 PL TO OBUS
L	L	H	H	H	(3*B+CARRY) (15 BITS) TO OBUS (3*B)
L	H	L	L	L	(3*B+CARRY)*2 + TO OBUS (6*B)
L	H	L	H	H	A+B+CARRY (12 BITS) TO OBUS
L	H	H	L	L	0 TO OBUS (15 BITS)
L	H	H	H	H	A SIGN (0000 OR 7777) TO OBUS
H	L	L	L	L	B TO OBUS (12 BITS)
H	L	L	H	H	A+B+CARRY (12 BITS) TO OBUS (A-B)
H	L	H	L	L	EXP SIZE
H	L	H	H	H	OVFLO RECOVERY (COMPLEMENT OF SIGN → SIGN, SHIFT RT)
H	H	L	L	L	(A+B+CARRY)*2 + SHIFT BIT X (12 BITS) TO OBUS
H	H	L	H	H	(A+B+CARRY) ÷ 2 + SHIFT BIT X (12 BITS) TO OBUS
H	H	H	L	L	DIV FINAL
H	H	H	H	H	MUL/DIV STEP

ADDRESS CALCULATION
(15-BIT ARITHMETIC)

DATA MANIPULATION
(12-BIT ARITHMETIC)

* A READ MUST BE LOW
X SHIFT BIT IF EXTEND IS H; SIGN BIT IF EXTEND IS L AND RIGHT SHIFT; 0 IF EXTEND IS L AND LEFT SHIFT
EXTEND = LOW: CARRY BIT TO ALU, ZERO OR SIGN TO VACATED BIT POSITION
EXTEND = HIGH: CARRY FROM LAST OPERATION TO ALU, SHIFTED BIT FROM LAST OPERATION TO VACATED BIT
A LOC (0:4) DEFINE ONE OF 32 15-BIT ACCUMULATORS USED FOR READ AND/OR WRITE, IF READ A=1, IF READ A=0, A INPUT TO ADDER = 0
BR LOC (0:4) DEFINE ONE OF 8 TEMPORARIES, 0, ONE OF 3 WORDS FROM DB OR FIR, CONSTANTS AS INPUTS TO ALU.

FILE ASSIGNMENTS		
ADDRESS	FILE A	FILE B
0	FPC	TEMP
1	X0	TEMP 1
2	BR	TEMP 2
3	OPADD	TEMP 3
4	APTP	TEMP 4
5	TEMA	TEMP 5
6	FIELD	TEMP 6
7		TEMP 7
10	FACE	
11	FAC M (FAC (0:11))	
12	FAC N (FAC (12:23))	
13	FAC P (FAC (24:35))	
14	FAC R (FAC (36:47))	
15	FAC S (FAC (48:59))	
16		
17	SC	
20	SCRATCH E	
21	SCRATCH M	
22	SCRATCH N	
23	SCRATCH P	
24	SCRATCH R	
25	SCRATCH S	
26	SCRATCH T	
27		
30	MQE	
31	MQM	
32	MQN	
33	MQP	
34	MGR	
35	MQS	
36		
37		

TRIANGLE INDICATES PIN 1

J1 - CABLE SIGNALS

12	GND	12	GND
13	DP4 NMD H	13	DP4 NMD H
14	DP4 ONES L	14	DP4 ONES L
15	DP4 SEEN L	15	DP4 SEEN L
16	DP4 EXSGN H	16	DP4 EXSGN H
17	GND	17	GND
18	GND	18	GND
19	CBA TICK H	19	CBA TICK H
20	CBA BRK EQ H	20	CBA BRK EQ H
21	GND	21	GND
22	CBS BR LOC 3 L	22	CBS BR LOC 3 L
23	GND	23	GND
24	CBS CARRY BIT L	24	CBS CARRY BIT L
25	DP3 FP BREAK H	25	DP3 FP BREAK H
26	CBI FP TOT L	26	CBI FP TOT L
27	CBS BR LOC 0 L	27	CBS BR LOC 0 L
28	CBS ARITH 0 H	28	CBS ARITH 0 H
29	CBS ARITH 3 H	29	CBS ARITH 3 H
30	CBS WRITE 0 H	30	CBS WRITE 0 H
31	CBS ARITH 2 H	31	CBS ARITH 2 H
32	CBS ARITH 1 H	32	CBS ARITH 1 H
33	CBS WRITE 1 H	33	CBS WRITE 1 H
34	CBS BK CMD 1 L	34	CBS BK CMD 1 L
35	CBS A LOC 1 L	35	CBS A LOC 1 L
36	CBI DB IN TOT H	36	CBI DB IN TOT H
37	GND	37	GND

SIGNAL PIN	CBS					TO ALU
	BR0	BR1	BR2	BR3	BR4	
L	H	X	X	X	X	TEMPORARY DEFINED BY BR (2:4)
L	L	H	H	H	H	TEMP (1:3), DB
L	L	H	H	L	L	BITS (1:3) = 0, BITS (4:15) = DATA BUFFER
L	L	H	L	L	L	IF FIR 4 = 0: 0, FIR (9:11)
L	L	L	L	L	L	IF FIR 4 = 1: 0, FIR (5:11)
L	L	L	L	L	L	0, FIR (6:8)
L	L	L	L	L	L	NOT USED
L	L	L	L	L	L	NOT USED
L	L	L	L	L	L	BITS (1:3) OF A TO BITS (13:15)
L	L	L	L	L	L	BITS (1:3) OF A TO BITS (103: TO BITS (4:12)
H	H	H	H	H	H	0
H	H	H	H	L	L	+1
H	H	H	L	L	L	+2
H	H	H	L	L	L	+3
H	H	L	H	H	H	-1
H	H	L	H	L	L	-2
H	H	L	L	L	L	-73
H	L	H	H	H	H	BITS (1:3) OF TEMP 0, OTHER BITS 0.
H	L	H	H	L	L	+19
H	L	H	L	L	L	-19
H	L	H	L	L	L	-5
H	L	L	H	H	H	-6
H	L	L	L	L	L	2000
H	L	L	L	L	L	4000
H	L	L	L	L	L	-30

DB CONTROL (CBG)

DB CTRL 1 L	DB CTRL 2 L	TO DB
H	H	NO OP
H	L	DB ← 0
L	H	DB ← ALU
L	L	DB ← MD

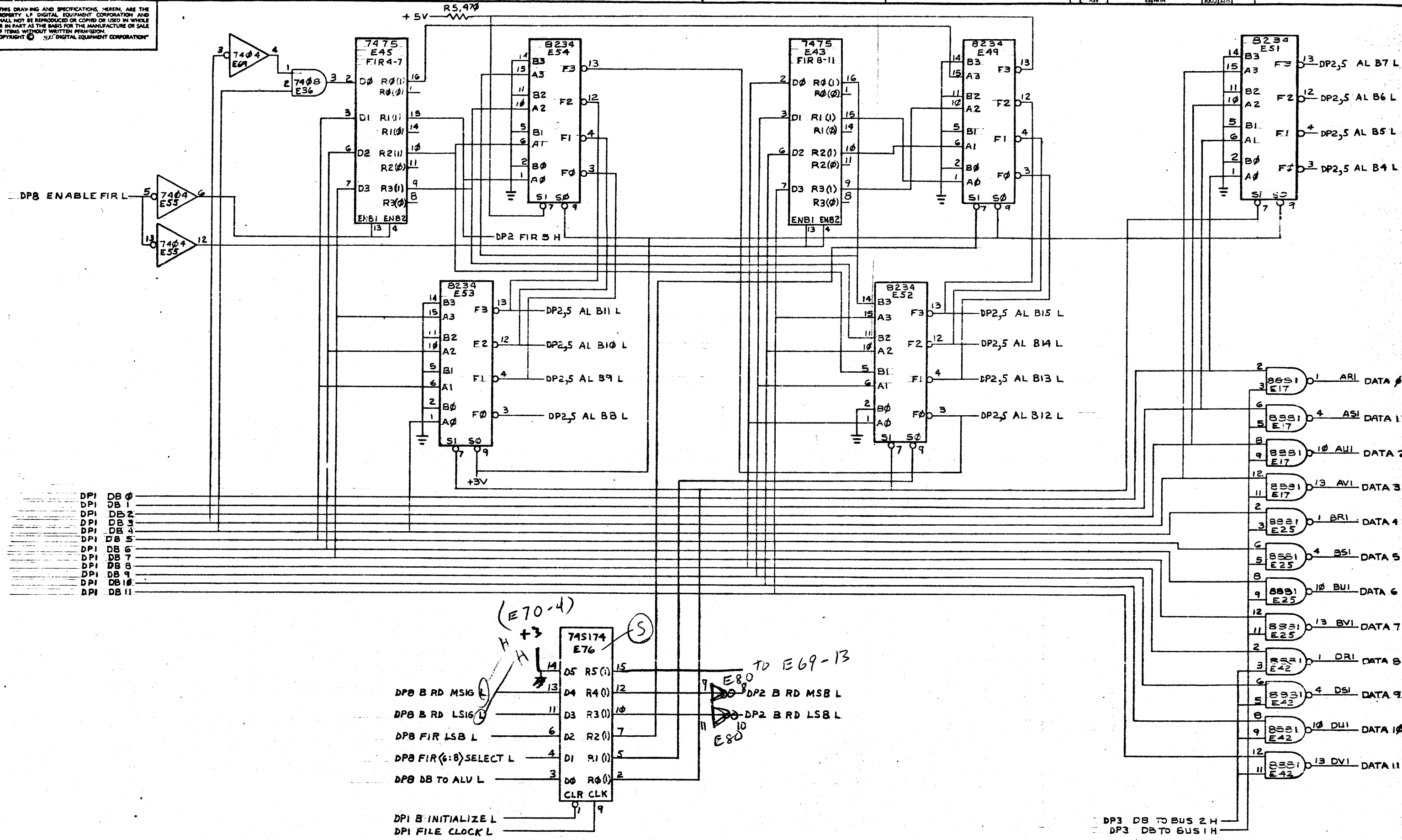
FIRST USED ON FPP8-A

TITLE FPP8-A DATA PATH BD.

SIZE CODE NUMBER D CS M8411-0-1

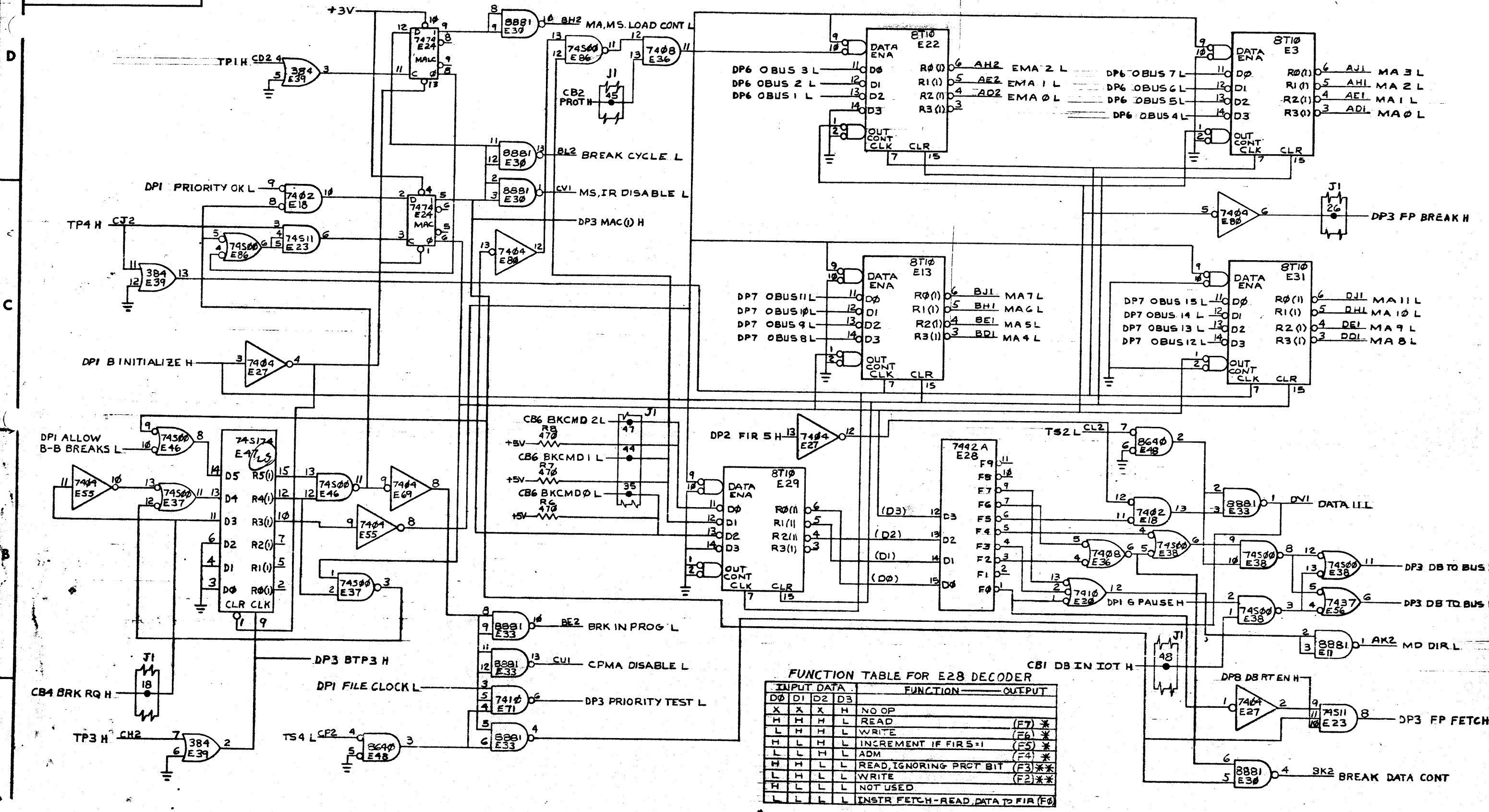
SHEET / OF 9

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FUNCTION TABLE FOR E28 DECODER

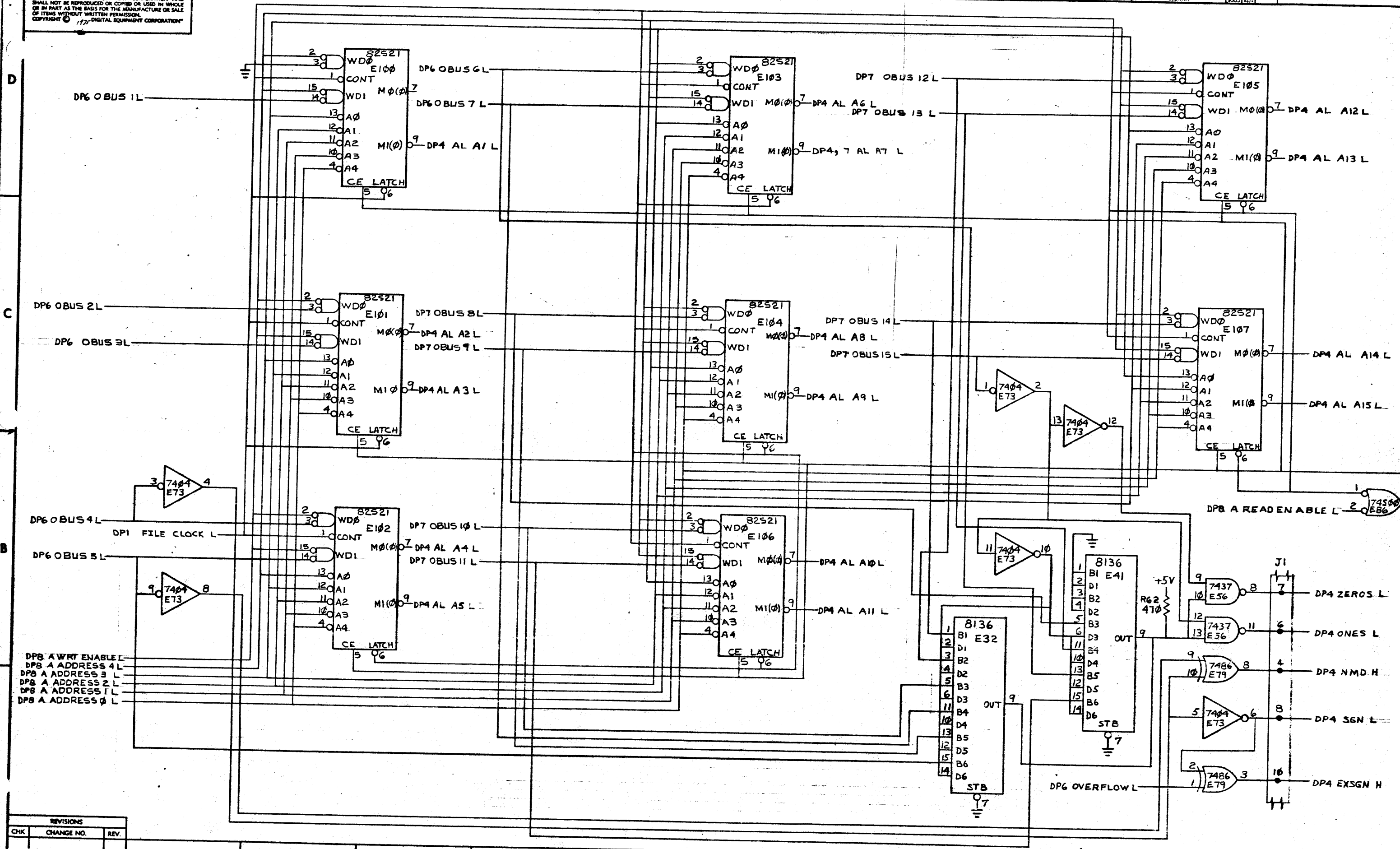
INPUT DATA				FUNCTION	OUTPUT
D0	D1	D2	D3		
X	X	X	H	NO OP	
H	H	H	L	READ	(F7) *
L	H	H	L	WRITE	(F6) *
H	L	H	L	INCREMENT IF FIRS=1	(F5) *
L	L	H	L	ADM	(F4) *
H	H	L	L	READ, IGNORING PROT BIT	(F3) **
L	L	L	L	WRITE	(F2) **
H	L	L	L	NOT USED	
L	L	L	L	INSTR FETCH-READ, DATA TO FIR (F0)	

* IF PROT=1, BK EMA NOT LOADED.
 ** USED FOR APT GET & PUT

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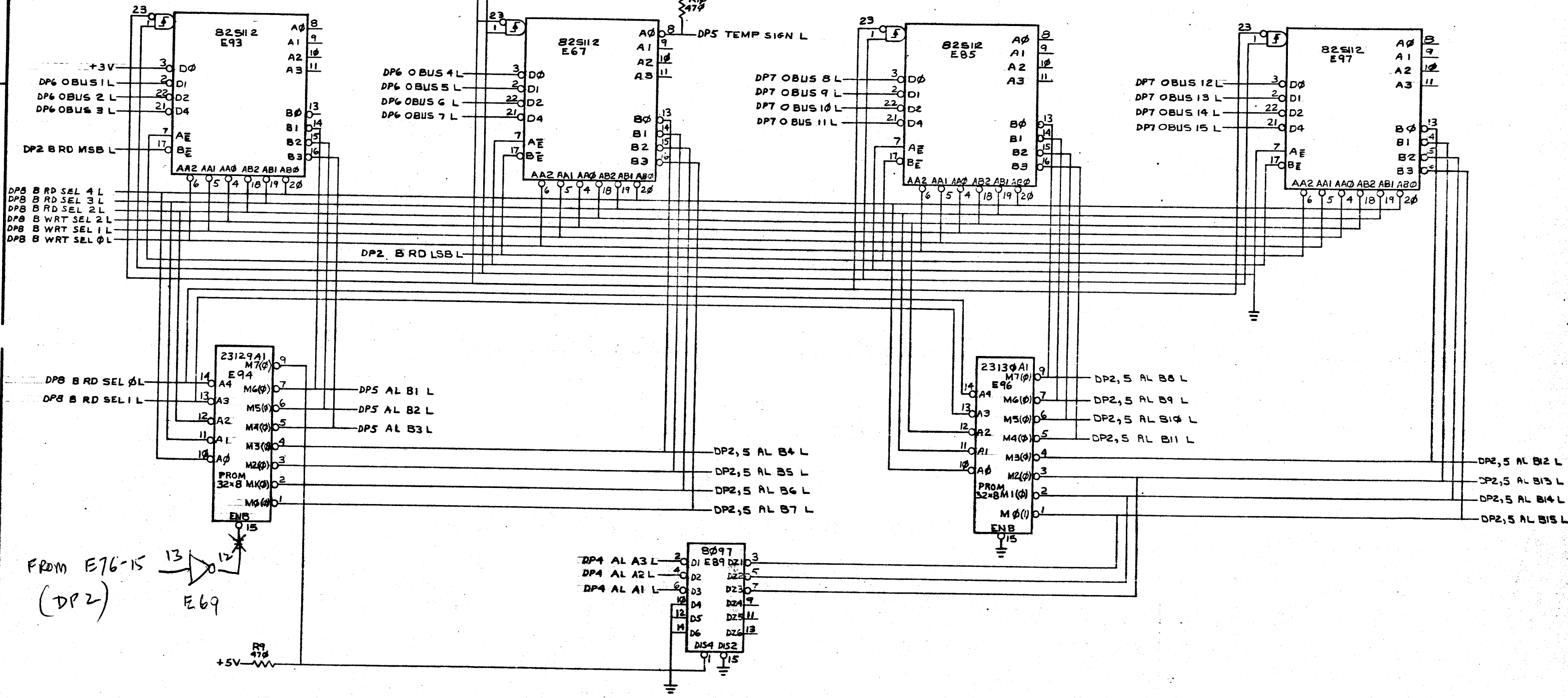
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DPI FILE CLOCK L → 5 **7404 E69** → 6 DPS FILE CLOCK H

DPB B WRT ENABLE L

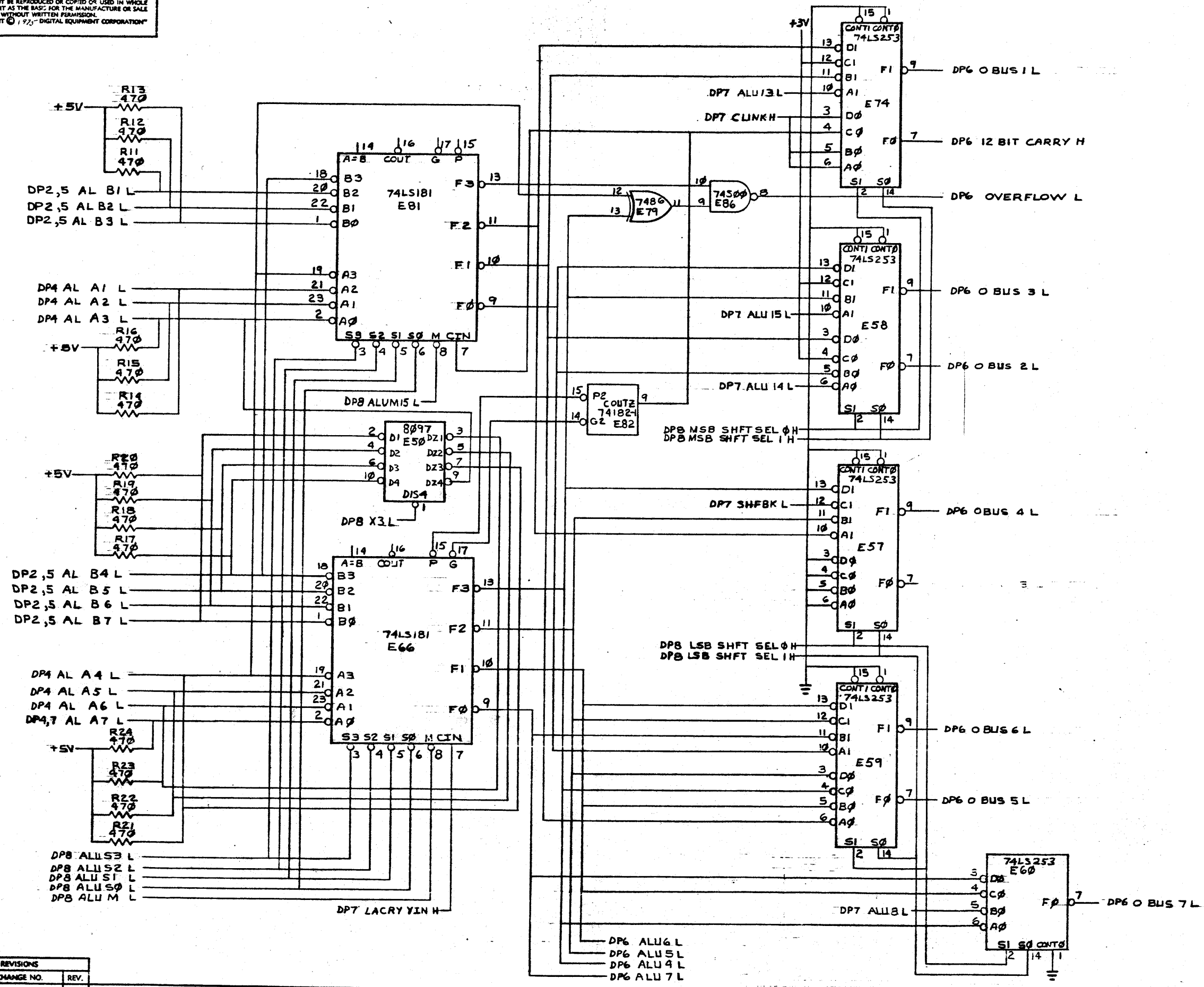
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D
C
B
A



REVISIONS		
CHK	CHANGE NO.	REV.

(ALU & SHIFT 1)

TITLE	FRP8-A DATA PATH BD (DP6)	SIZE CODE	D CS	NUMBER	V8411-0-1	REV.	B
SCALE	/ /	SHEET	7 OF 9	DIST.			

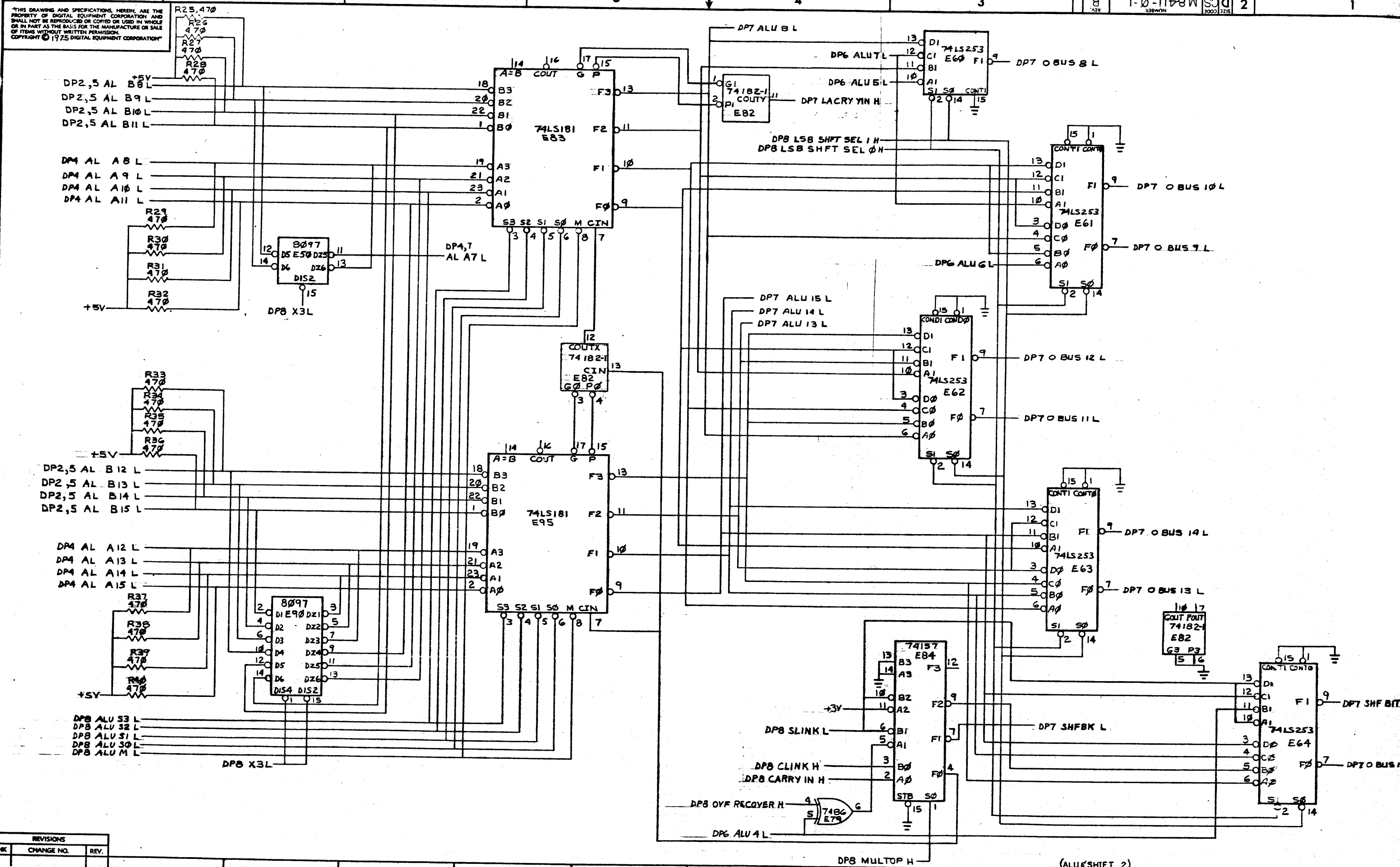
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D

C

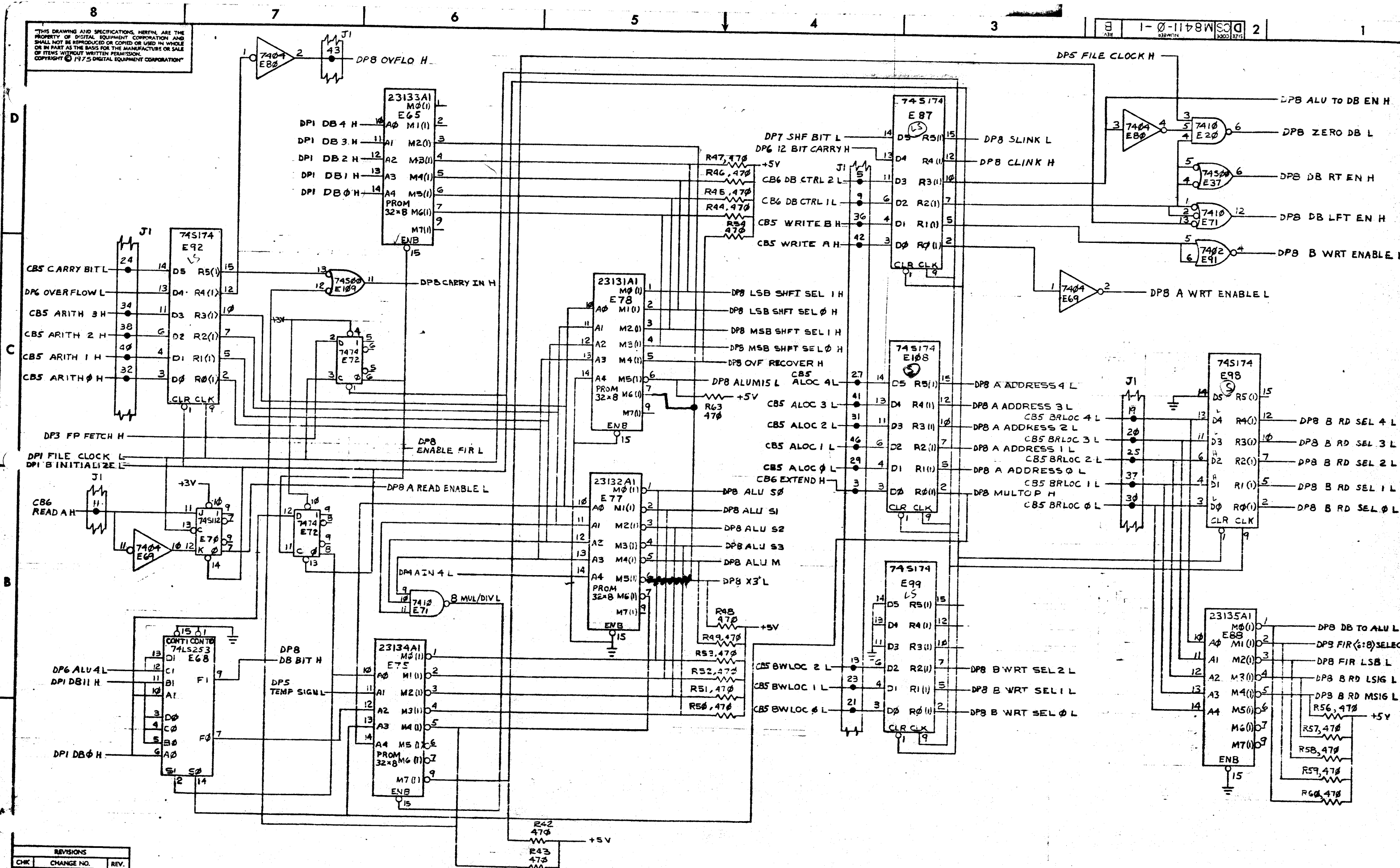
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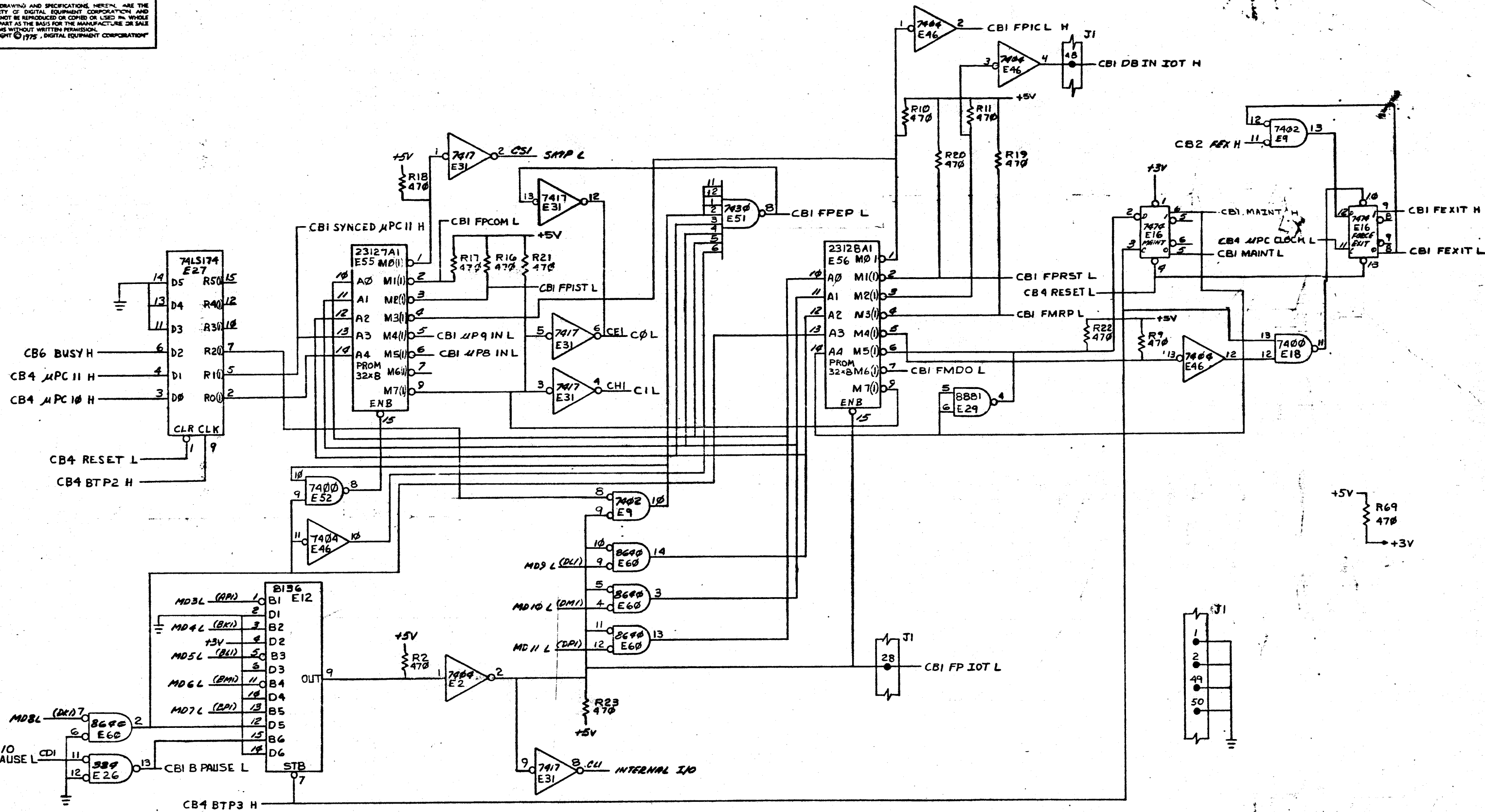
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CHK	CHANGE NO.	REV.

REVISIONS		(PIPE LINE REGISTER)	
CHK	CHANGE NO.	TITLE	REV.
		FPP8-A DATA PATH BD (DPB)	B
		SIZE CODE	
		NUMBER	
		DCS M8411-0-1	
		SHEET 9 OF 9	
		DIST.	

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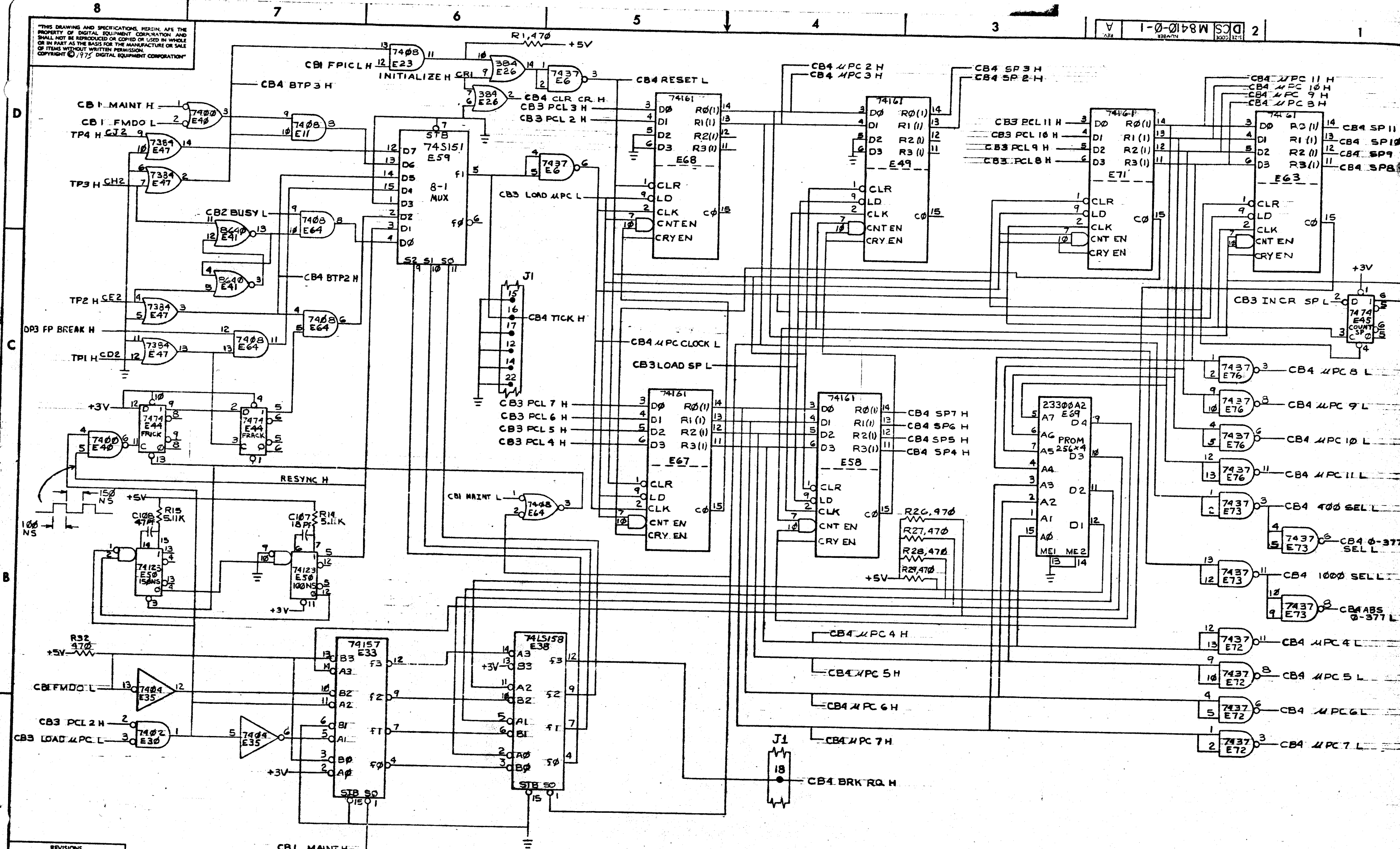


(I/O DECODERS)

DRN. <i>Nov 6 1975</i>	NOV 6 1975	FIRST USED ON	FPP8-A	digital
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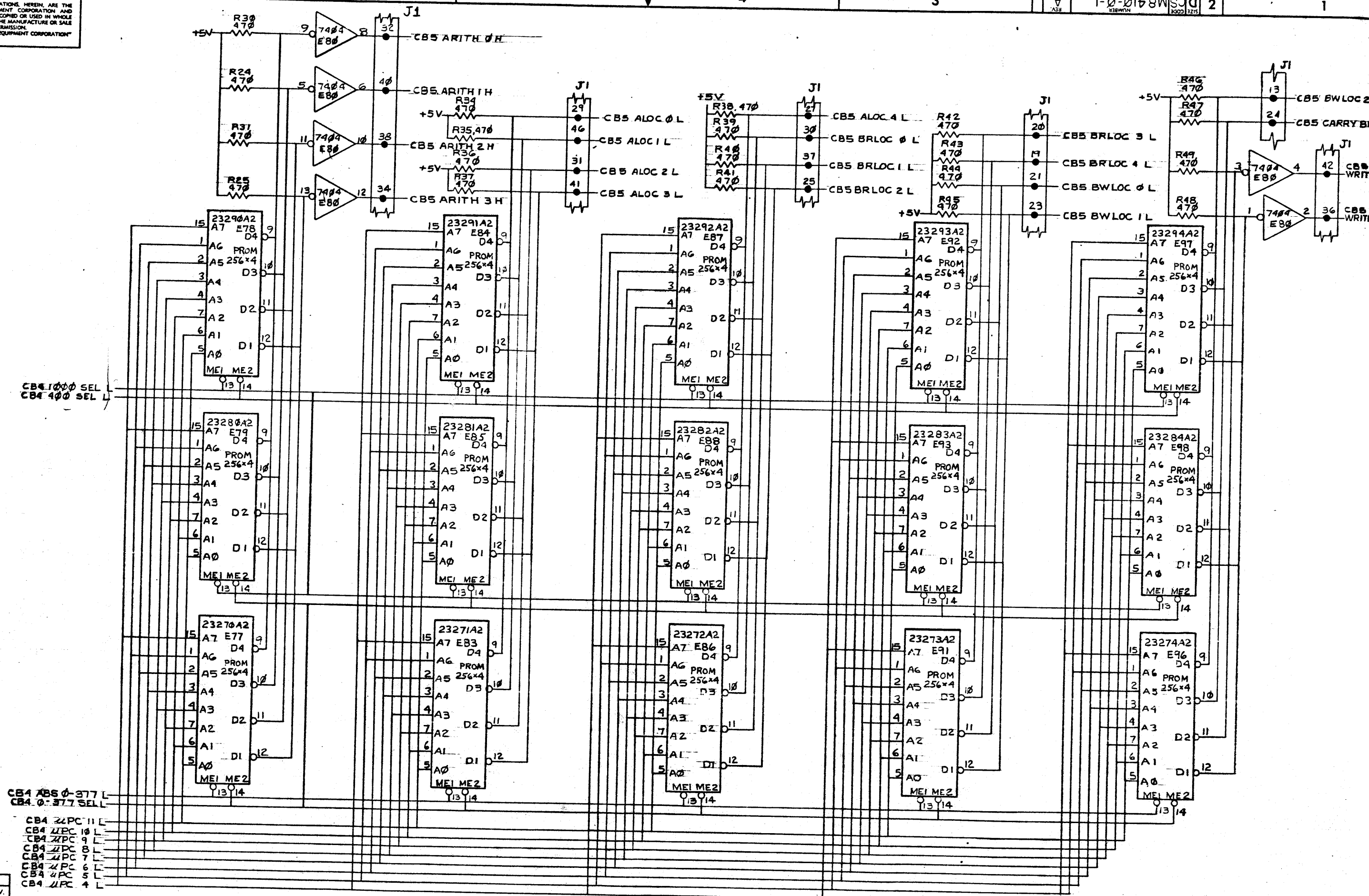
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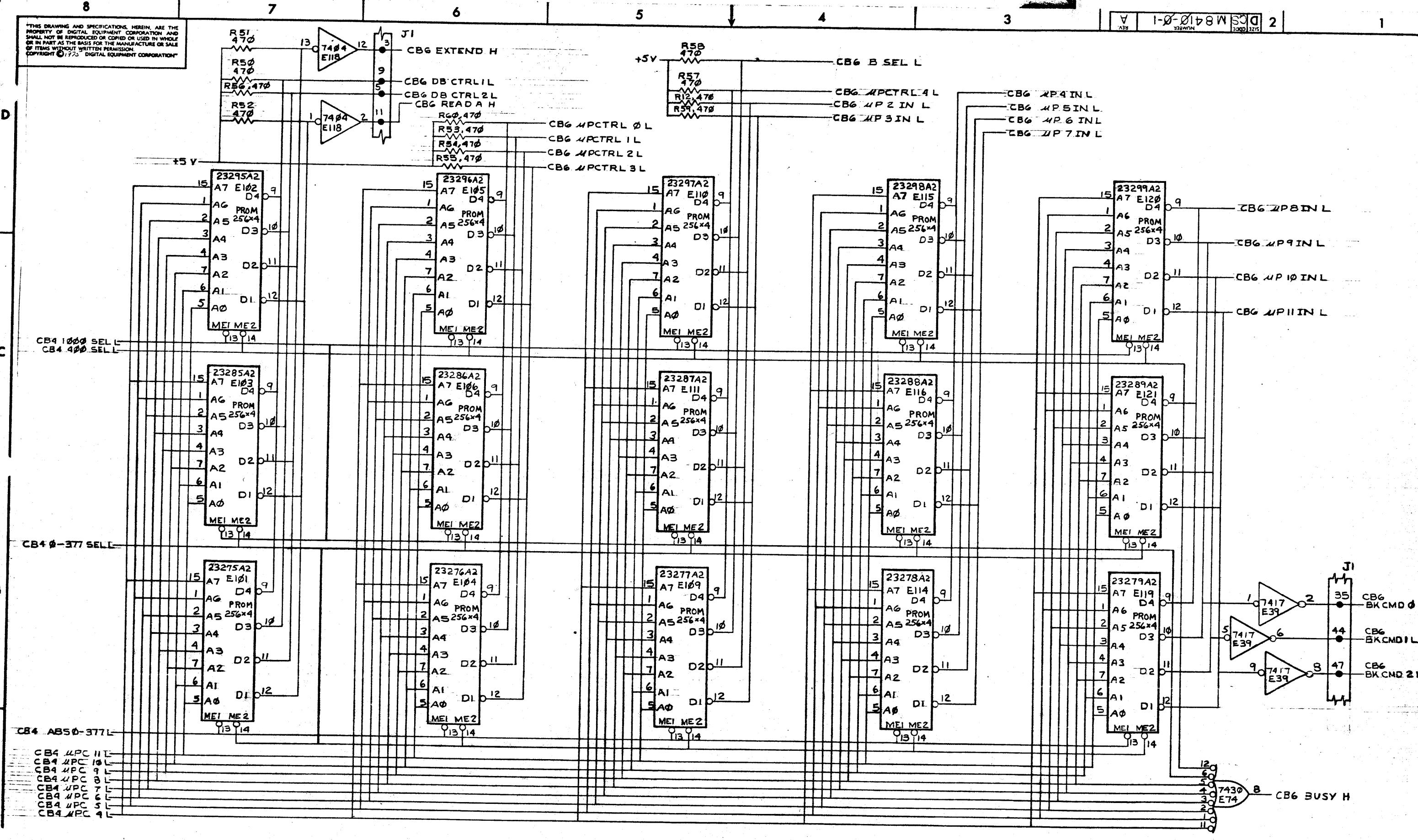
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CB4 400 SEL L

CB4 ABS 0-377 L
CB4 0-377 SEL L

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CB4 22PC 6 L
CB4 22PC 5 L
CB4 22PC 4 L

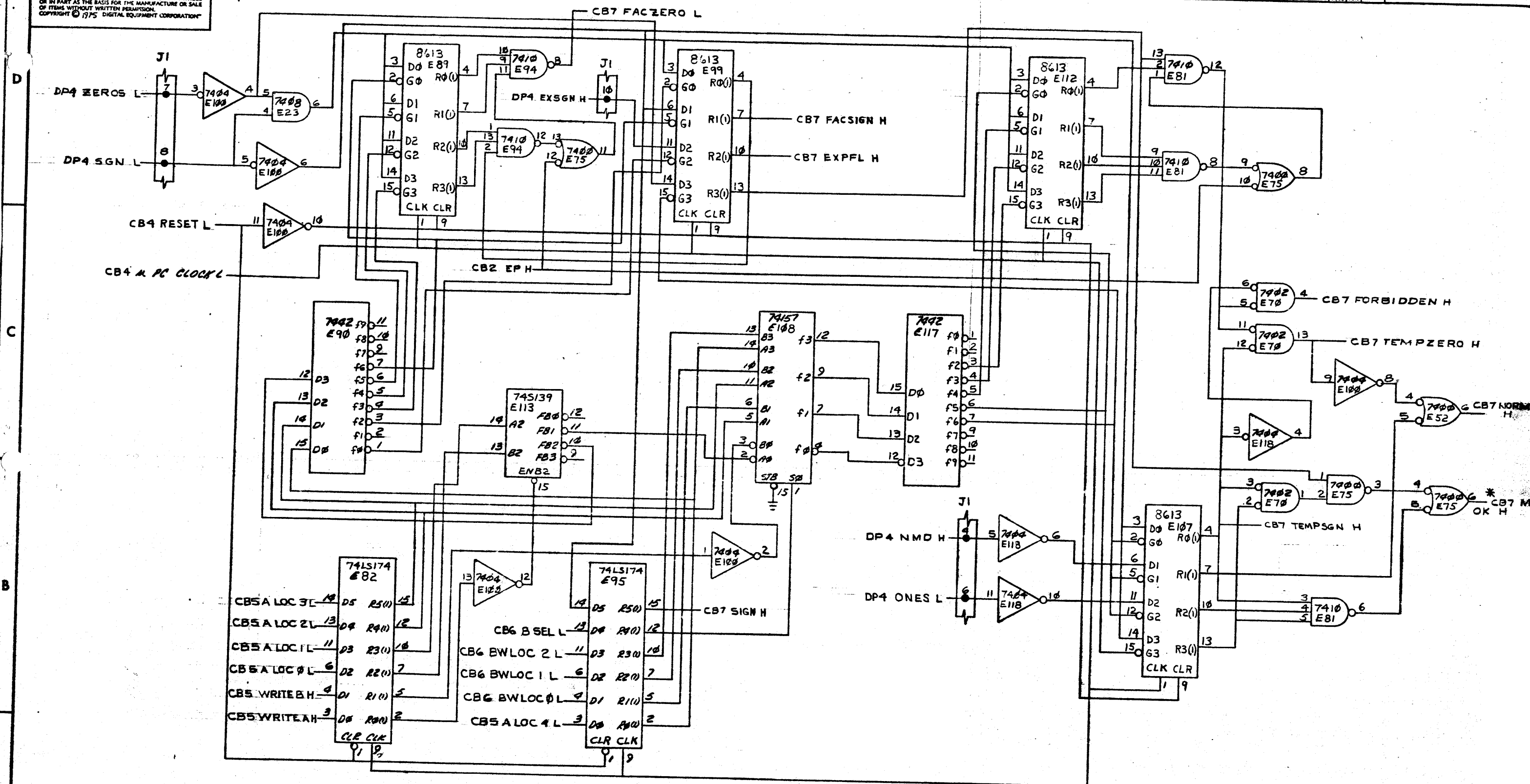
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