MODEL 9400
DISK STORAGE
SYSTEM

SERVICING DIAGRAMS

System Industries 525 Oakmead Parkway, Sunnyvale, California 94086, (408) 732-1650, Telex 346-459

SI Computer Systems, Ltd.
Guildford Road
Woking, Surrey
England GU22 7HB
Phone: (04862) 5077
Telex: 859124

System Industries GmbH
Am Forsthaus Gravenbruch 9-11
D6078 Neu Isenburg 2,
West Germany
Phone: (06102) 5464/5
Telex: 417606

System Industries, Inc. Scandinavia AB
Grev Magnigatan 5,
S-114 55 Stockholm
Sweden
Phone: 08-63 62 74
Telex: 12697

TECHNICAL MANUAL

SERVICING DIAGRAMS

9400 DISK STORAGE SYSTEM WITH RP04 OR RM03 EMULATORS FOR PDP-11 COMPUTERS

SYSTEM INDUSTRIES

VOLUME 2

1 APRIL 1979

CHANGE 3 30 SEPTEMBER 1980

11-1. **INTRODUCTION.** This chapter contains servicing and logic diagrams for the 9400 Disk Controller System.

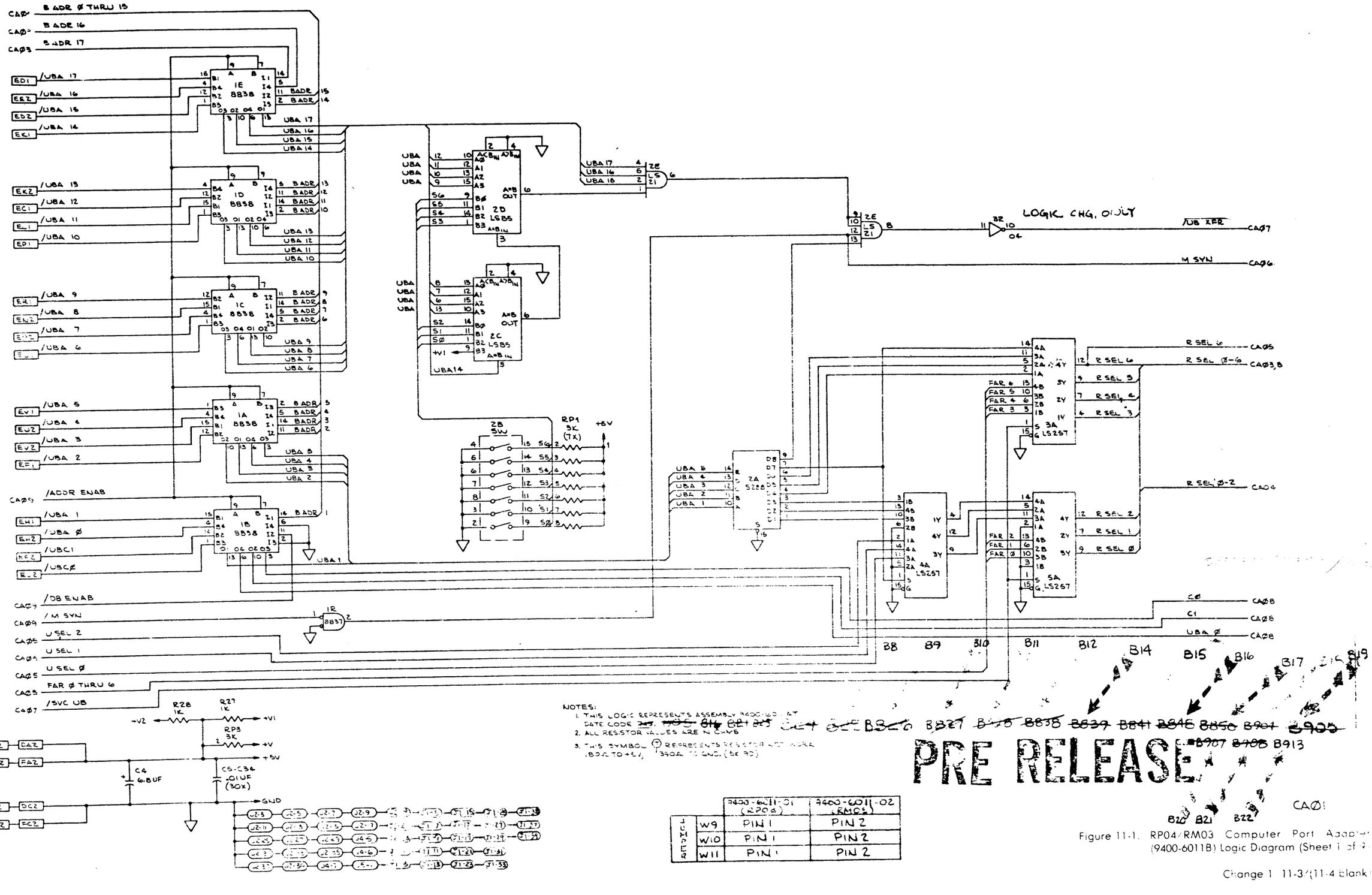
11-2. **DIAGRAMS.** The servicing diagrams, with their figure and page numbers, are listed in Table 11-1. Source and destination callouts on the schematics are decoded as follows.

CA = Computer Port Adapater
XXX = DEC Backplane
XX-XX = 9400 Controller
CI = Computer Interface
BC = Basic Control
CS = Control Store
PS = Power Supply
DI = Drive Interface

Numbers appearing after CA, BC, and DI and not enclosed within a rectangle or oval, refer to the sheet number of the schematic that the signal comes from or goes to.

Table 11-1. Servicing Diagrams

Figure Number	Title	Part Number	Date Code	Page
11-1	RP04/RM03 CPA Logic Diagram, B-etch	9400-6011	B913	11-3
11-2	RP04/RM03 CPA Logic Diagram, C-etch	9400-6011	C913	11-21
11-3	Computer Interface Logic Diagram	9400-6007	B/C909	11-39
11-4	Control Store Logic Diagram	9400-6002	B/C745	11-41
11-5	Basic Control Logic Diagram, D-etch	9400-6004	D004	11-43
11-6	Basic Control Logic Diagram, E-etch	9400-6014	E030	11-77
11-7	CDC Radial Interface Logic Diagram	9400-6008	C835	11-109
11-8	Power Supply Diagram	9400-6010	C745	11-115
11-9	CDC Radial Interface Logic Diagram, D-etch	9400-6038	D947	11-117
11-10	CDC Radial Interface Logic Diagram, D-etch	9400-6028	D947	11-123
11-11	RP04/RM03 CPA Logic Diagram, D-etch	9400-6021	D913	11-129
11-12	RP04/RM03 CPA Logic Diagram, E-etch	9400-6021	E913	11-147
11-13	Address and Control Logic Diagram	9400-6101	A844	11-165
11-14	Control Buffer Logic Diagram	9400-6102	A839	11-169
11-15	Data Board Logic Diagram	9400-6103	A839	11-171
11-16	RP04/RM03 CPA Logic Diagram	9400-6031	Eng. 913	11-175
11-17	RP04/RM03 CPA Logic Diagram	9400-6031	A032	11-193
11-18	Basic Control Logic Diagram, F-etch	9400-6014	F030	11-211
11-19	CDC Daisychain I/F Logic Diagram, Eng-etch	9400-6009	A930	11-243
11-20	Address and Control Logic Diagram	9400-6111	A929	11-247
11-21	acdc Power Supply Schematic	68-397-709	C1	11-253
11-22	Xentek Power Supply Schematic	2903-S01	B	11-255
11-23	9400 11/70 CPA Logic Diagram, A-etch	9400-6104	A027	11-261
11-24	9400 11/70 CPA Logic Diagram, Eng-etch	9400-6104	Eng. 027	11-279
11-25	CDC Radial Interface Logic Diagram, E-etch	9400-6038	E947	11-297
11-26	Address and Control Logic Diagram, B-etch	9400-6111	B929	11-303
11-27	Data Board Logic Diagram, B-etch	9400-6103	B839	11-309
11-28	CDC Drive Terminator PCB Assembly Schematic Diagram, A-etch	9400-6001	B019	11-313
11-29	Dual Channel (SMV) Interrupts PCB Assembly Schematic Diagram, A-etch	9400-6003	A007	11-315



NOTES:
1. THIS LOGIC REPRESENTS ASSEMBLY 9400-6011-01 AT DATE CODE ~~340~~ ~~705~~ ~~814~~ ~~821~~ ~~825~~ B827 B830 B837 ~~B838~~ ~~B839~~ B841 ~~B845~~ ~~B850~~ B901 ~~B905~~ ~~B907~~ ~~B908~~ B913
2. ALL RESISTOR VALUES ARE IN OHMS
3. THIS SYMBOL ⓟ REPRESENTS RESISTOR NOT MORE THAN TO +5V, 390Ω TO GND. (SEE PD)

PRE RELEASE

JUMPER		9400-6011-01 (RP04)	9400-6011-02 (RM03)
	W9	PIN 1	PIN 2
	W10	PIN 1	PIN 2
	W11	PIN 1	PIN 2

Figure 11-1. RP04/RM03 Computer Port Adapter (9400-6011B) Logic Diagram (Sheet 1 of 2)

DATA MUX.

DATA MUX.

SIGNAL MUX.

CA08 VV

CA05 MDB Ø THRU 15

CD2 /UBD 15

CE2 /UBD 14

CF2 /UBD 13

CH2 /UBD 12

CA08 /UB READ HI

CH1 /UBD 11

CJ2 /UBD 10

CK2 /UBD 9

CL2 /UBD 8

CM2 /UBD 7

CV2 /UBD 6

CD2 /UBD 5

CH2 /UBD 4

CA08 /UB READ LO

CT2 /UBD 3

CU2 /UBD 2

CE2 /UBD 1

CS2 /UBD Ø

CA08 /MXG4

CA05 BC

CA04 ATA

CA05 TRE

CA08 PGE

CA03 BADR 17

CA03 BADR 16

CA08 MXCA

CA08 MXCB

CA03 B ADR 1 THRU 15

CA03 R FILE Ø THRU 15

CA08 XDY

CA04 DRY

CA05 IE

CA05 BAI

CA05 USEL 2

CA05 USEL 1

CA04 GO

CA08 /MXG 2

CA05 U SEL Ø

4L LS267

4K LS257

4J LS257

4H LS267

5E LS253

4E LS253

5D LS253

4D LS253

5C LS253

4C LS253

5B LS253

4B LS253

+V

5-25-78

4-6-78

SEE TABULATION ON SHT 1

/UBD Ø THRU 15 CA05

MDB Ø THRU 15 CA03

MDB Ø THRU 7 CA04

MDB 2 THRU 7 CA07,8

MDB Ø CA05,7,8

MDB 12 CA08

MDB 14 CA07

MDB 15 CA04

Figure 11-1. RP04/RM03 Computer Port Adapter (9400-6011B) Logic Diagram (Sheet 2 of 9)

BUS TRANS. MUX.

CA08 /WR B ADR
CA07 /CLR + RESET
CA09 /INCR B ADR
CA02 MDB Ø THRU 15
CA09 TO
CA07 /XCVR RLE HI
CA08 PGE (ECF 14)
CA05 CMD RDY
CA08 ERR CLR FLAG
CA08 CPL
CA07 /XCVR RLE LO
CA08 /XCVR OE
CA08 CPA INTR
CA08 PGM RST
CA08 SYS RST
CA08 ECF Ø
CA07 /XCVR BE LO
CA08 XCVR SEL
CA08 XCVR CP
CA07 /XCVR BE HI
CA08 /RF HI WR
CA01 R SEL Ø THRU 6
CA08 /RF LO WR
CA07 /LOAD FAR
J1-34 /MPD 7
J1-36 /MPD 6
J1-30 /MPD 5
J1-28 /MPD 4
J1-26 /MPD 3
J1-38 /MPD 2
J1-32 /MPD 1
J1-40 /MPD Ø
CA08 /LD BAE
CA06 BA EXT 16
CA05 BA EXT 17

10B 2905 L — MDB 7 MDB 6 MDB 5 MDB 4 → MDB 7 MDB 6 MDB 5 MDB 4
8A 2905 H — MDB 15 MDB 14 MDB 13 MDB 12 → MDB 15 MDB 14 MDB 13 MDB 12
10A 2905 L — MDB 3 MDB 2 MDB 1 MDB Ø → MDB 3 MDB 2 MDB 1 MDB Ø
8B 2905 H — MDB 11 MDB 10 MDB 9 MDB 8 → MDB 11 MDB 10 MDB 9 MDB 8
BS Ø BS1 BS2 BS3 → MPD 7 MPD 6 MPD 5 MPD 4

7D 74S240 ×8 (/MPD 7 … /MPD Ø)

FAR
6D LS374
FAR 6 FAR 5 FAR 4 FAR 3 FAR 2 FAR 1 FAR Ø

RF HI
7A 93L422 — MDB 15 MDB 14 MDB 13 MDB 12 → 10 R FILE 15 / 12 R FILE 14 / 14 R FILE 13 / 16 R FILE 12
7B 93L422 — MDB 11 MDB 10 MDB 9 MDB 8 → 10 R FILE 11 / 12 R FILE 10 / 14 R FILE 9 / 16 R FILE 8
RF LO
6B 93L422 — MDB 7 MDB 6 MDB 5 MDB 4 → 10 R FILE 7 / 12 R FILE 6 / 14 R FILE 5 / 16 R FILE 4
6A 93L422 — MDB 3 MDB 2 MDB 1 MDB Ø → 10 R FILE 3 / 12 R FILE 2 / 14 R FILE 1 / 16 R FILE Ø
R SEL Ø R SEL 1 R SEL 2 R SEL 3 R SEL 4 R SEL 5 R SEL 6
+V1 CS2 CS1 WE

3B LS197 — MDB 1 MDB 2 MDB 3 → B ADR 1 (J5-13) / B ADR 2 (J5-15) / B ADR 3 (J5-16)
3C LS197 — MDB 4 MDB 5 MDB 6 MDB 7 → B ADR 4 (J5-12) / B ADR 5 (J4-8) / B ADR 6 (J4-2) / B ADR 7 (J3-7)
3D LS197 — MDB 8 MDB 9 MDB 10 MDB 11 → B ADR 8 (J3-11) / B ADR 9 (J5-5) / B ADR 10 (J5-2) / B ADR 11 (J3-8)
3E LS197 — MDB 12 MDB 13 MDB 14 MDB 15 → B ADR 12 (J5-11) / B ADR 13 (J5-10) / B ADR 14 (J5-14) / B ADR 15 (J5-7)
3F LS197 — B ADR 16 (J5-8) / B ADR 17 (J3-6)
B ADR 1 THRU 15 CAØ1,2
B ADR 16 CAØ1,2,5
B ADR 17 CAØ1,2,5,7

R FILE ØTHRU 15 CAØ2
/MP READ CAØ8
FAR Ø THRU 6 CAØ1

CAØ3

Figure 11-1. RP04 RM03 Computer Port Adapter (9400-6011B) Logic Diagram (Sheet 3 of 9)

CSR

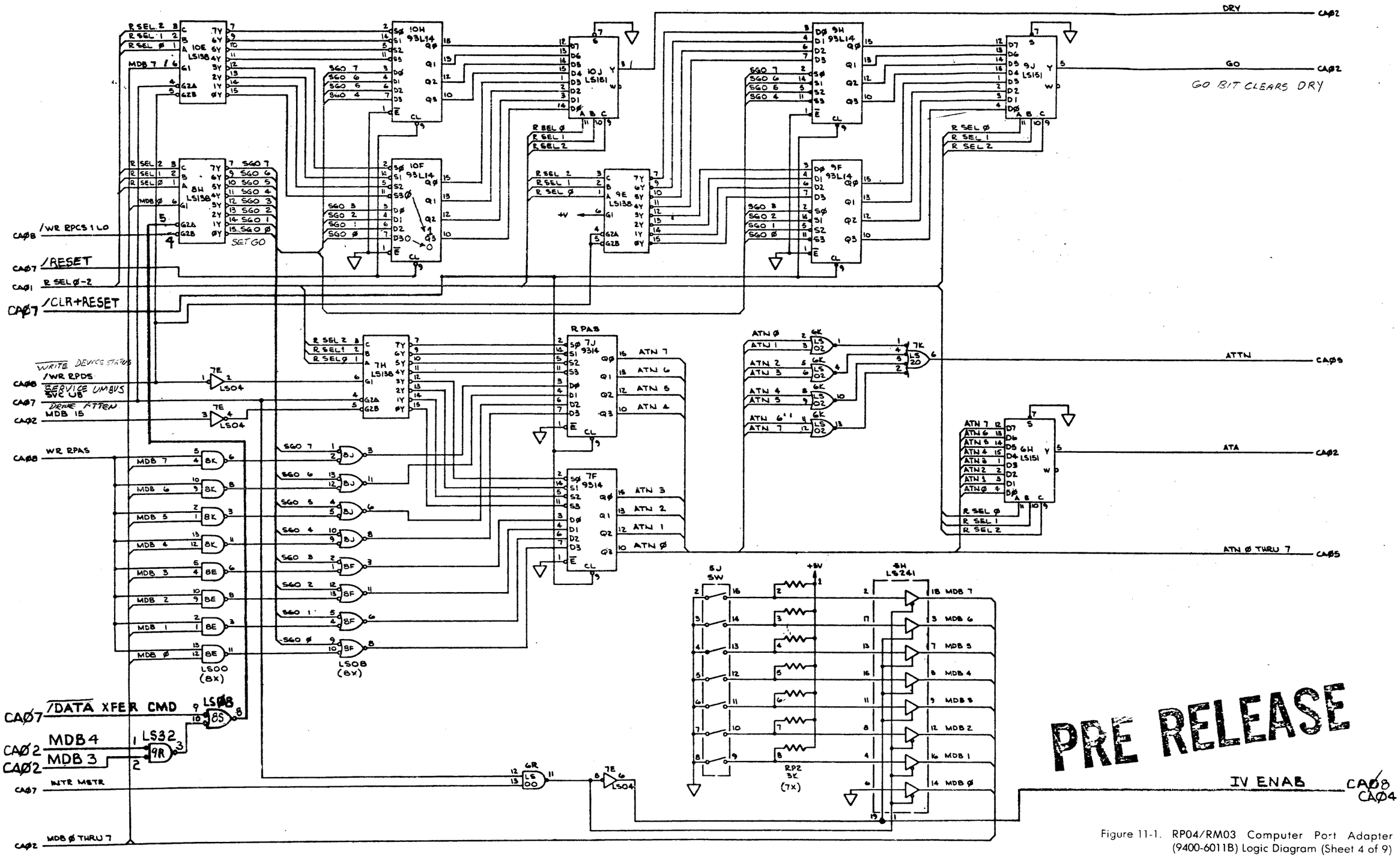
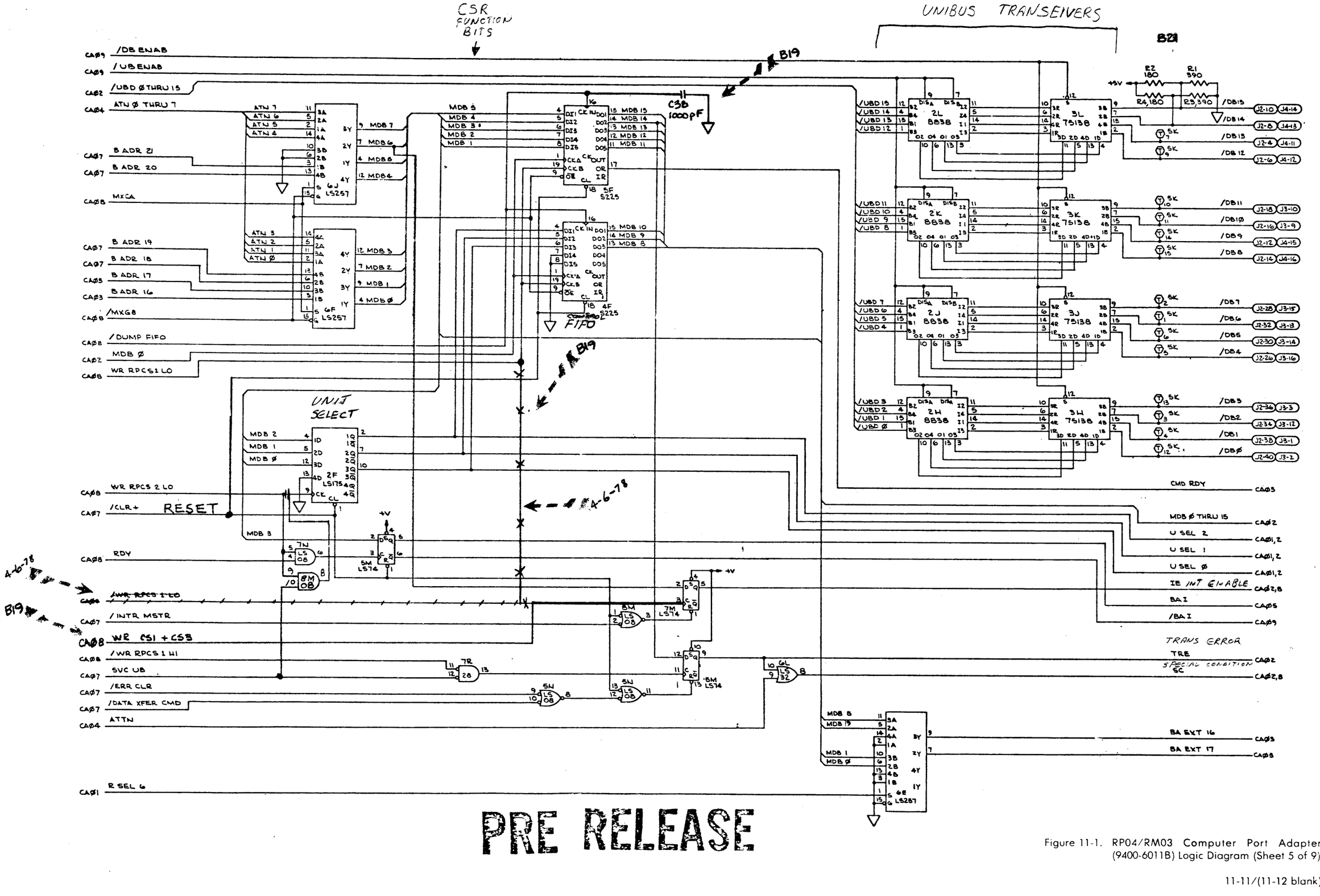


Figure 11-1. RP04/RM03 Computer Port Adapter (9400-6011B) Logic Diagram (Sheet 4 of 9)



PRE RELEASE

Figure 11-1. RP04/RM03 Computer Port Adapter (9400-6011B) Logic Diagram (Sheet 5 of 9)

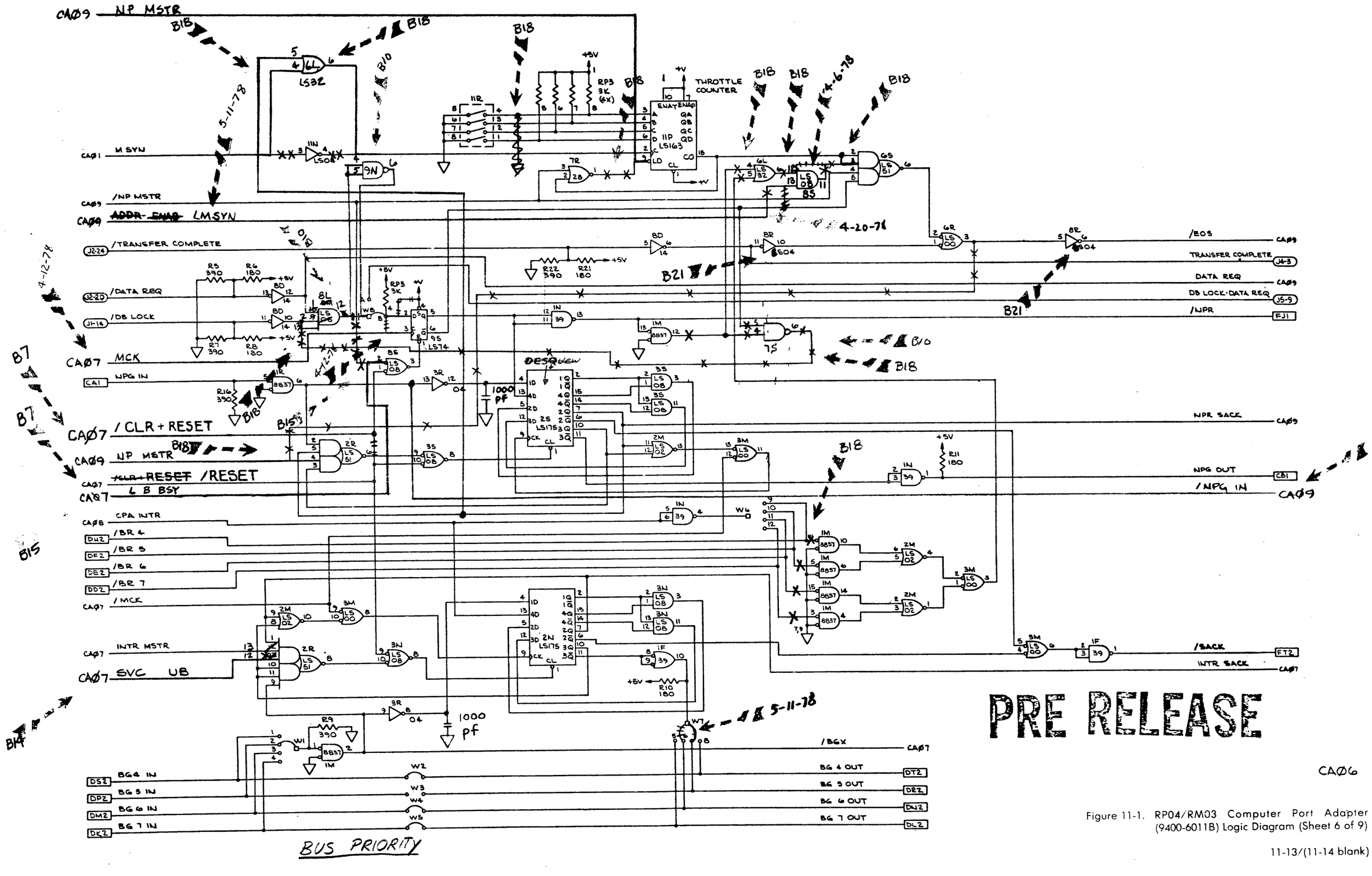


Figure 11-1. RP04/RM03 Computer Port Adapter (9400-6011B) Logic Diagram (Sheet 6 of 9)

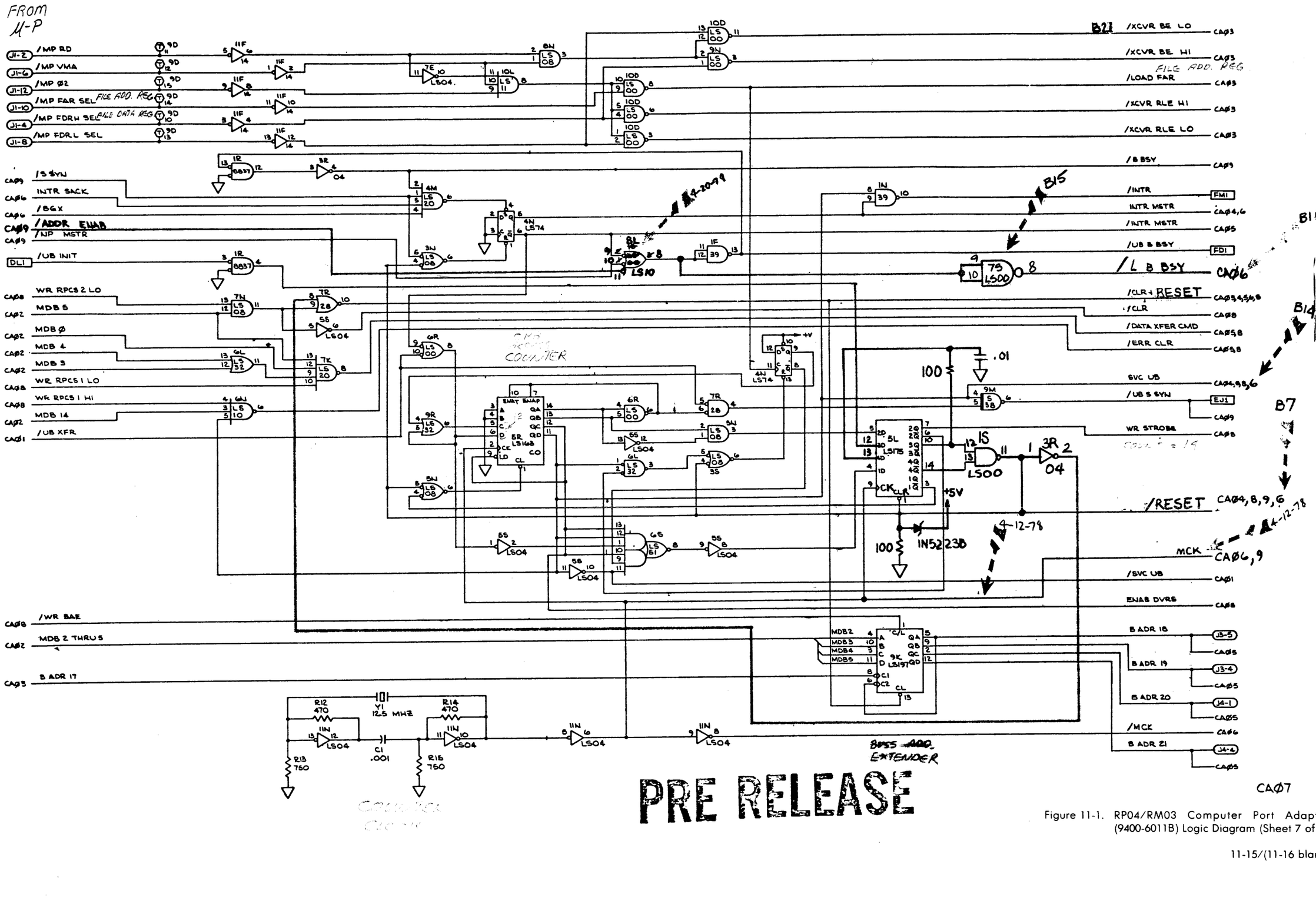
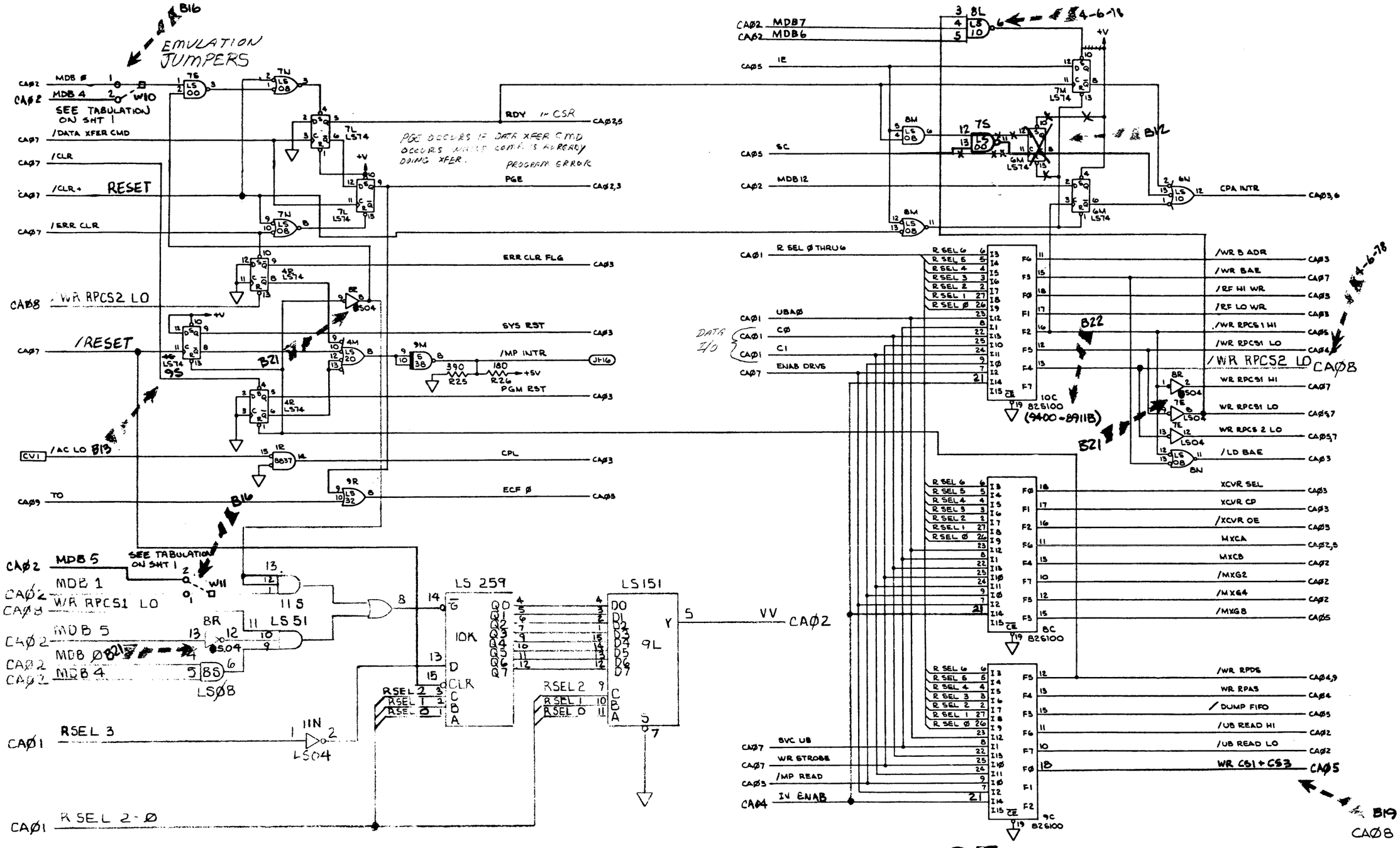


Figure 11-1. RP04/RM03 Computer Port Adapter (9400-6011B) Logic Diagram (Sheet 7 of 9)



PRE RELEASE

Figure 11-1. RP04/RM03 Computer Port Adapter (9400-6011B) Logic Diagram (Sheet 8 of 9)

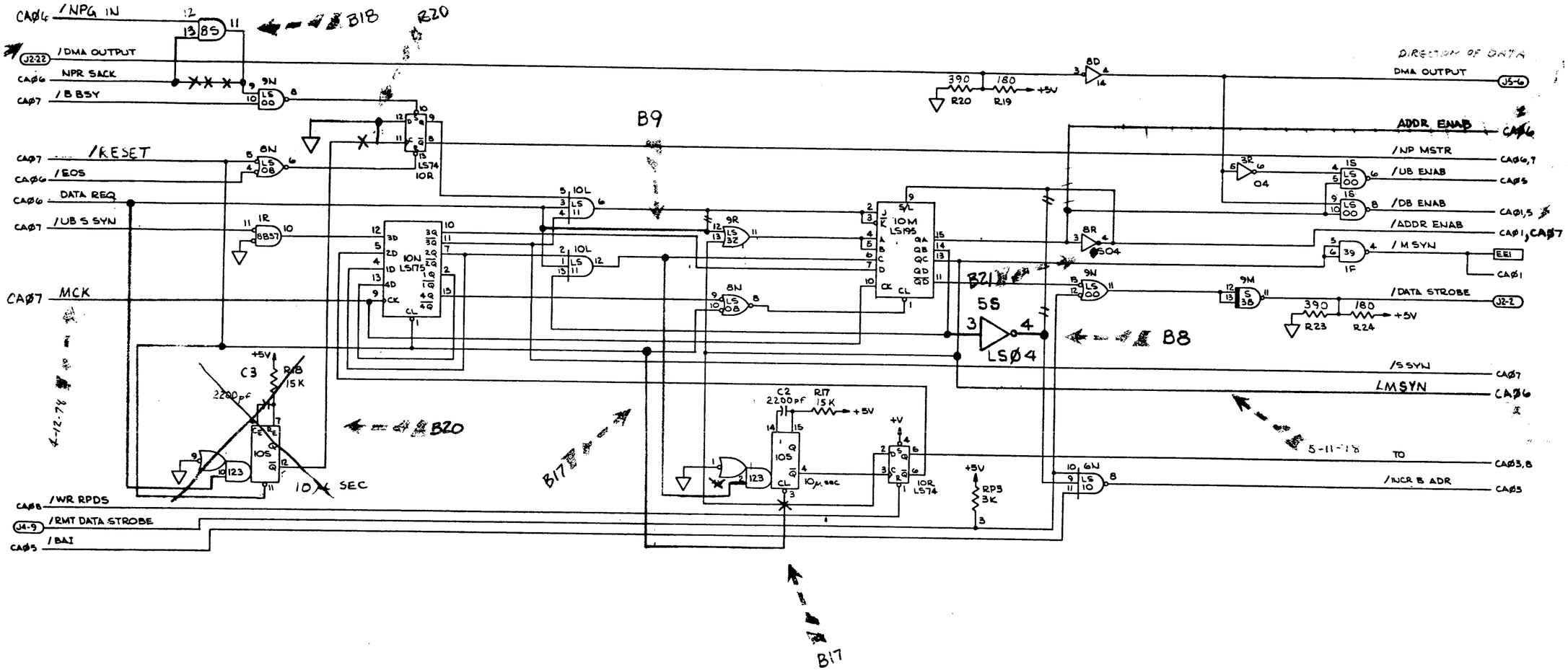
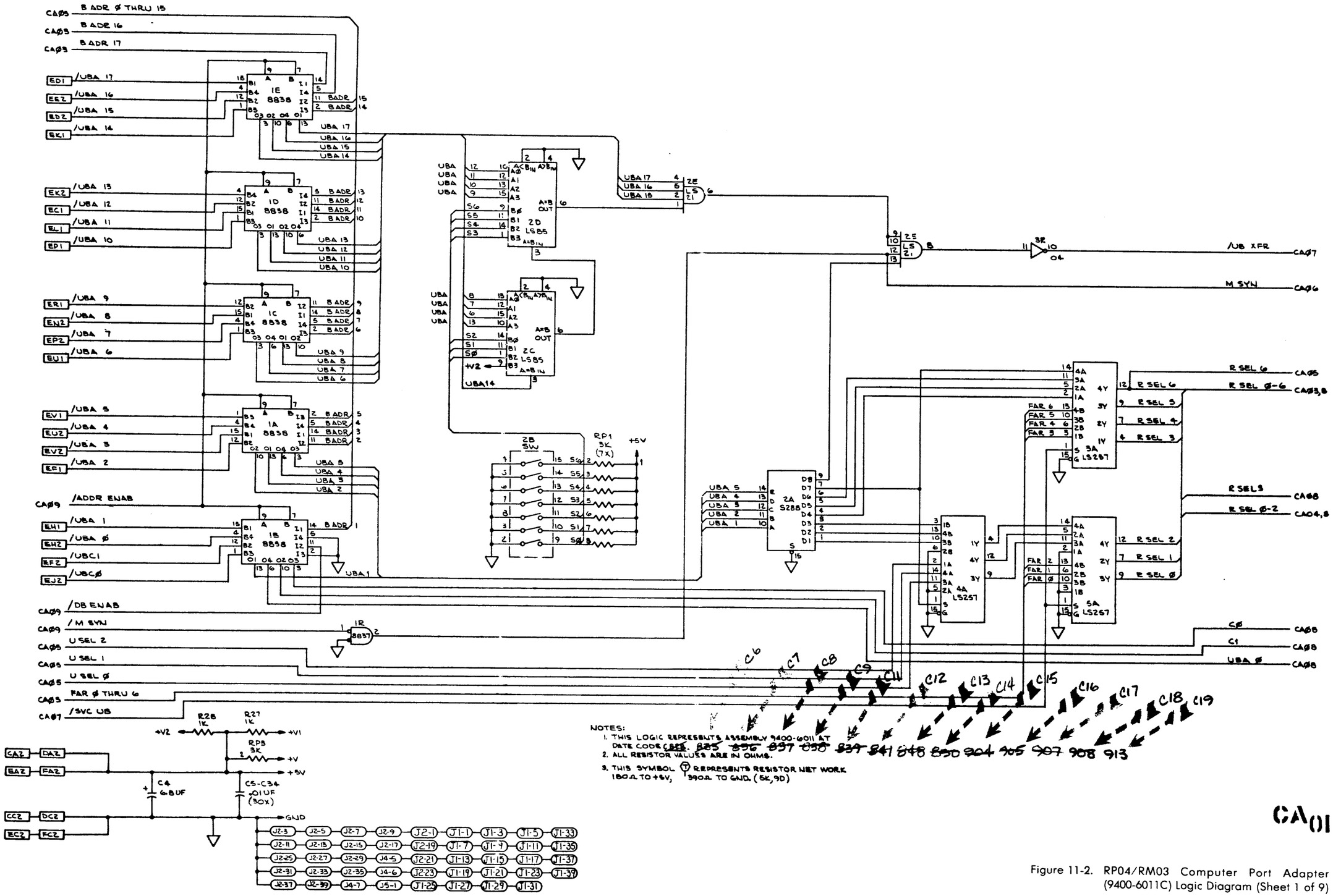


Figure 11-1. RP04/RM03 Computer Port Adapter (9400-6011B) Logic Diagram (Sheet 9 of 9)



CA01

Figure 11-2. RP04/RM03 Computer Port Adapter (9400-6011C) Logic Diagram (Sheet 1 of 9)

CA02

Figure 11-2. RP04/RM03 Computer Port Adapter (9400-6011C) Logic Diagram (Sheet 2 of 9)

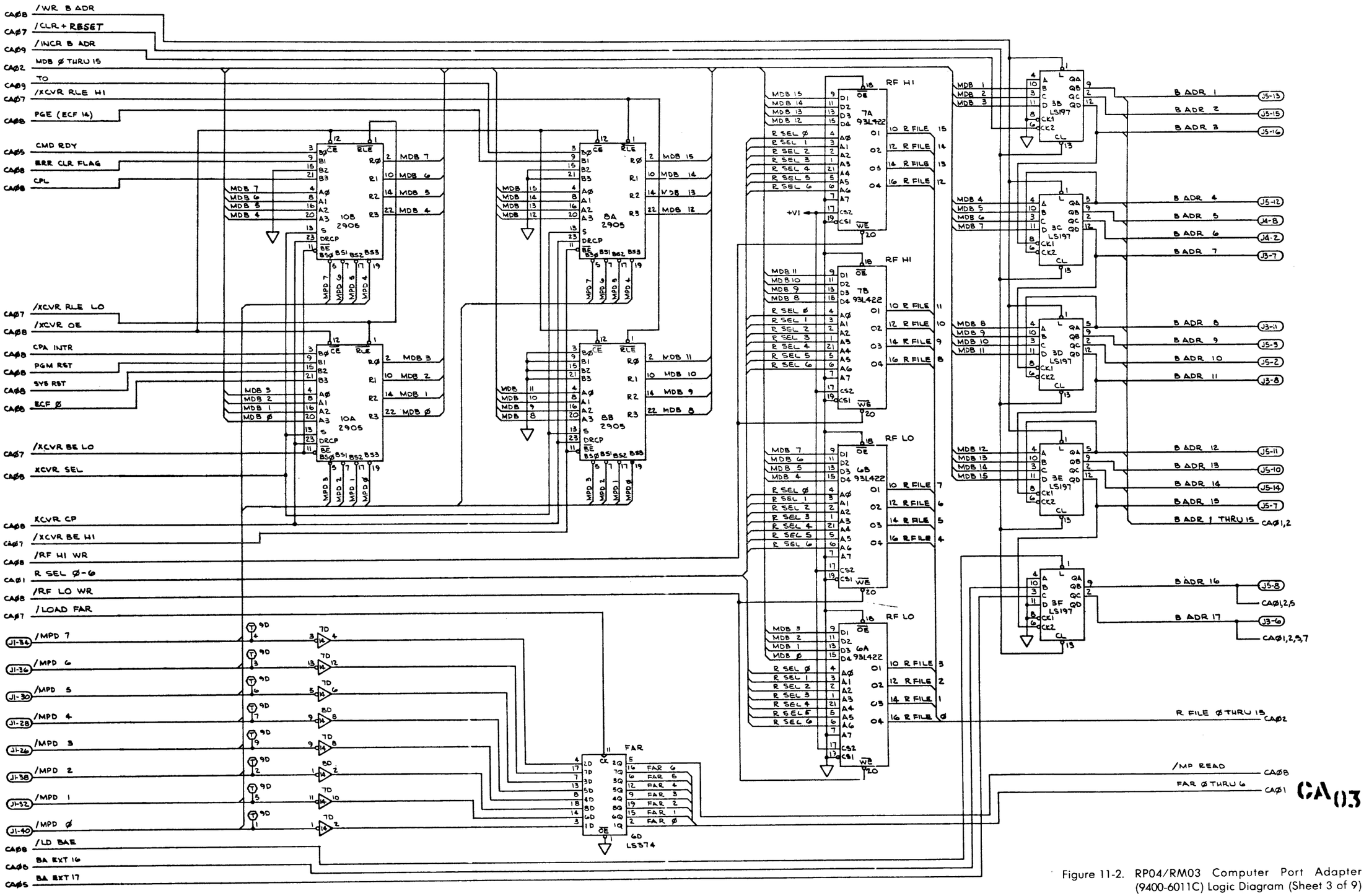


Figure 11-2. RP04/RM03 Computer Port Adapter (9400-6011C) Logic Diagram (Sheet 3 of 9)

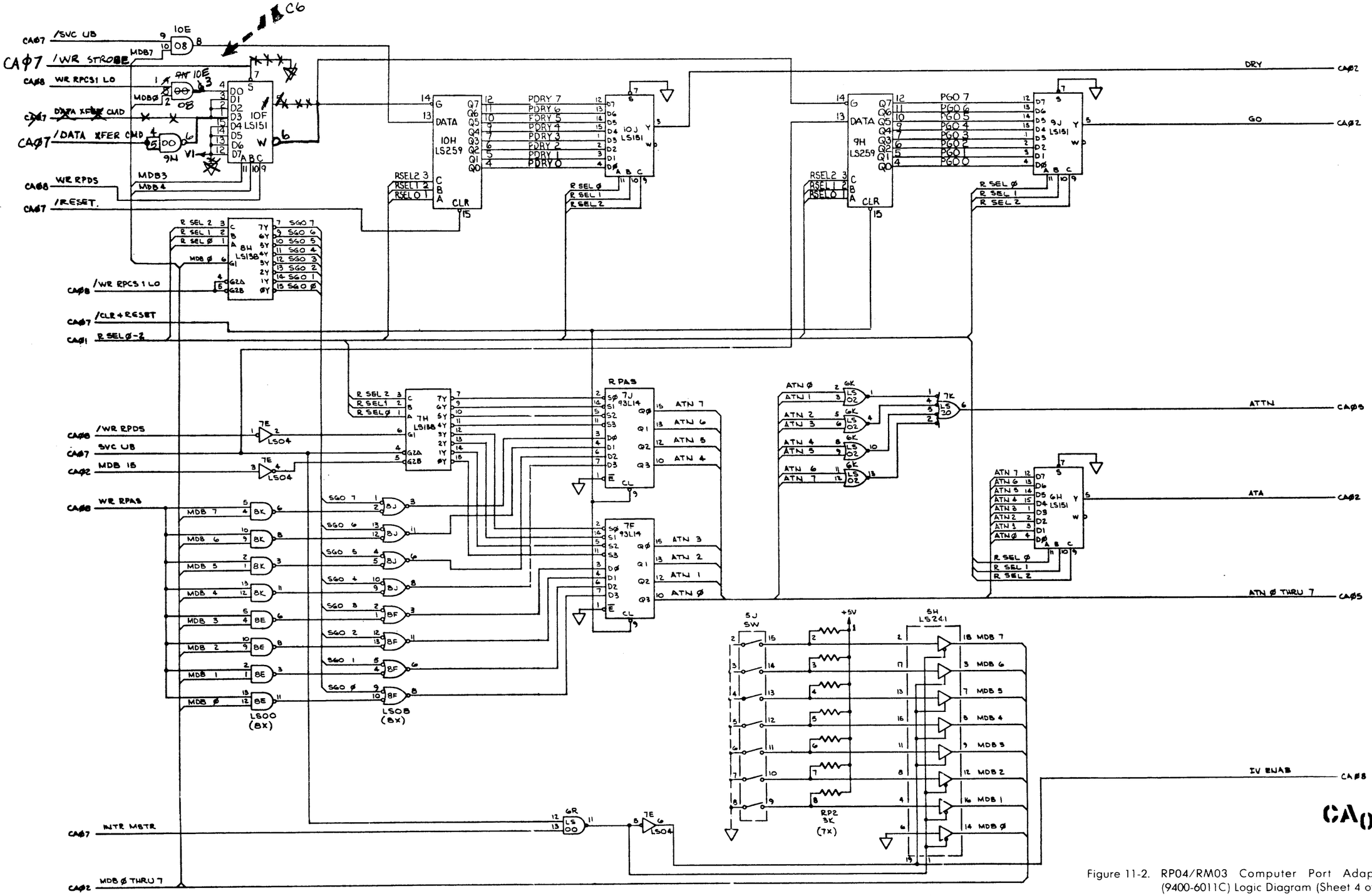


Figure 11-2. RP04/RM03 Computer Port Adapter (9400-6011C) Logic Diagram (Sheet 4 of 9)

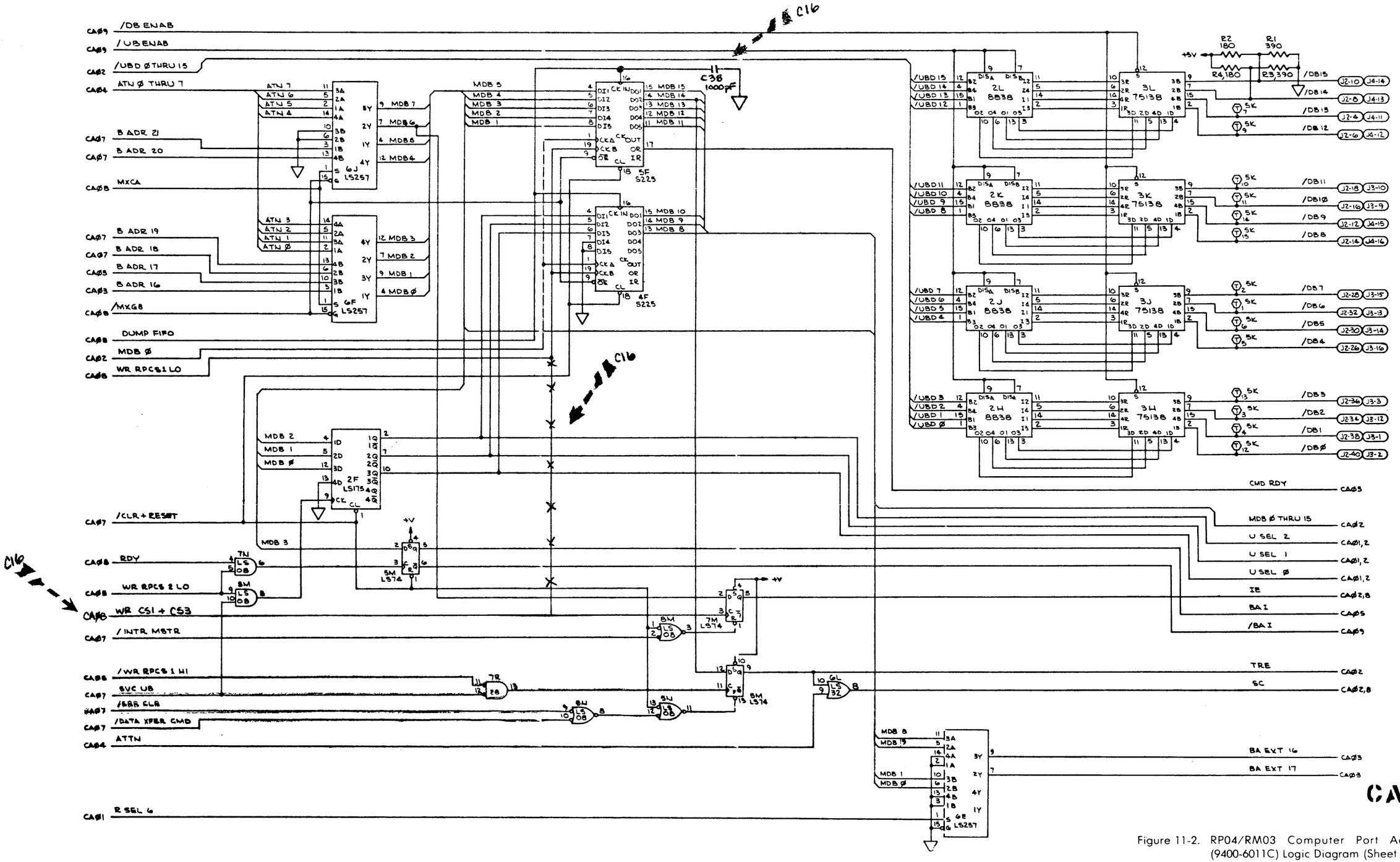


Figure 11-2. RP04/RM03 Computer Port Adapter (9400-6011C) Logic Diagram (Sheet 5 of 9)

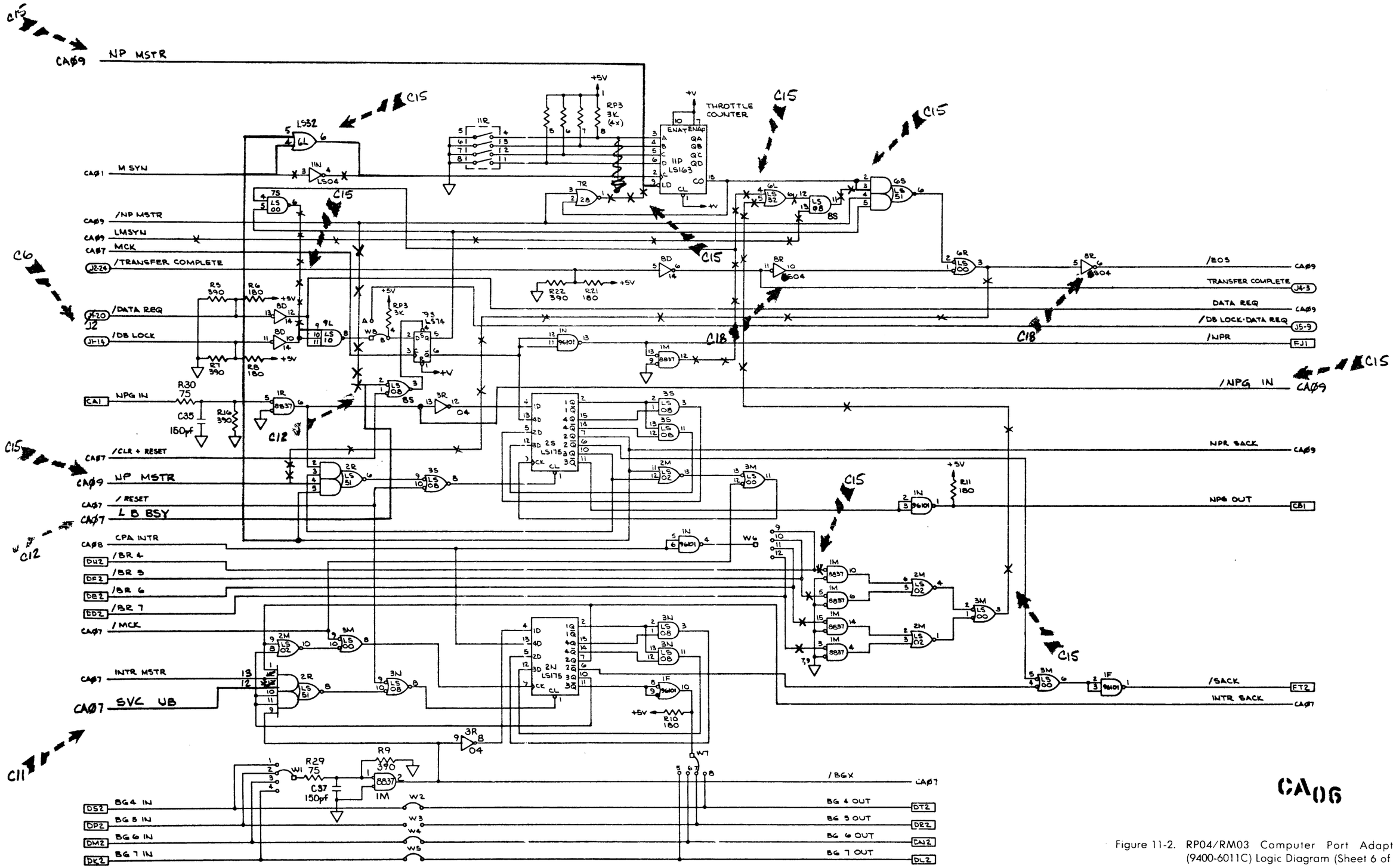


Figure 11-2. RP04/RM03 Computer Port Adapter (9400-6011C) Logic Diagram (Sheet 6 of 9)

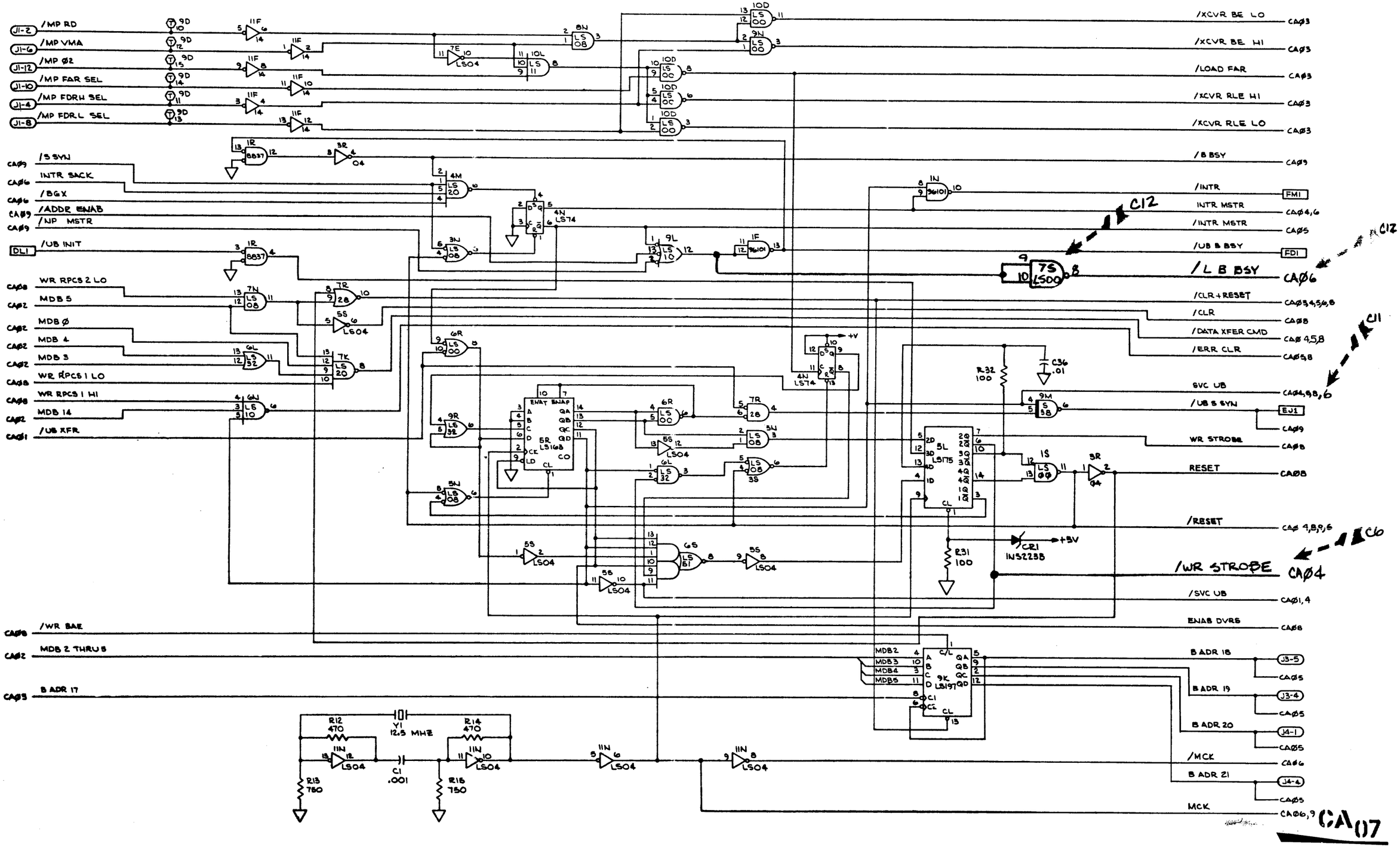


Figure 11-2. RP04/RM03 Co uter Port Adapter (9400-6011C) Lo Diagram (Sheet 7 of 9)

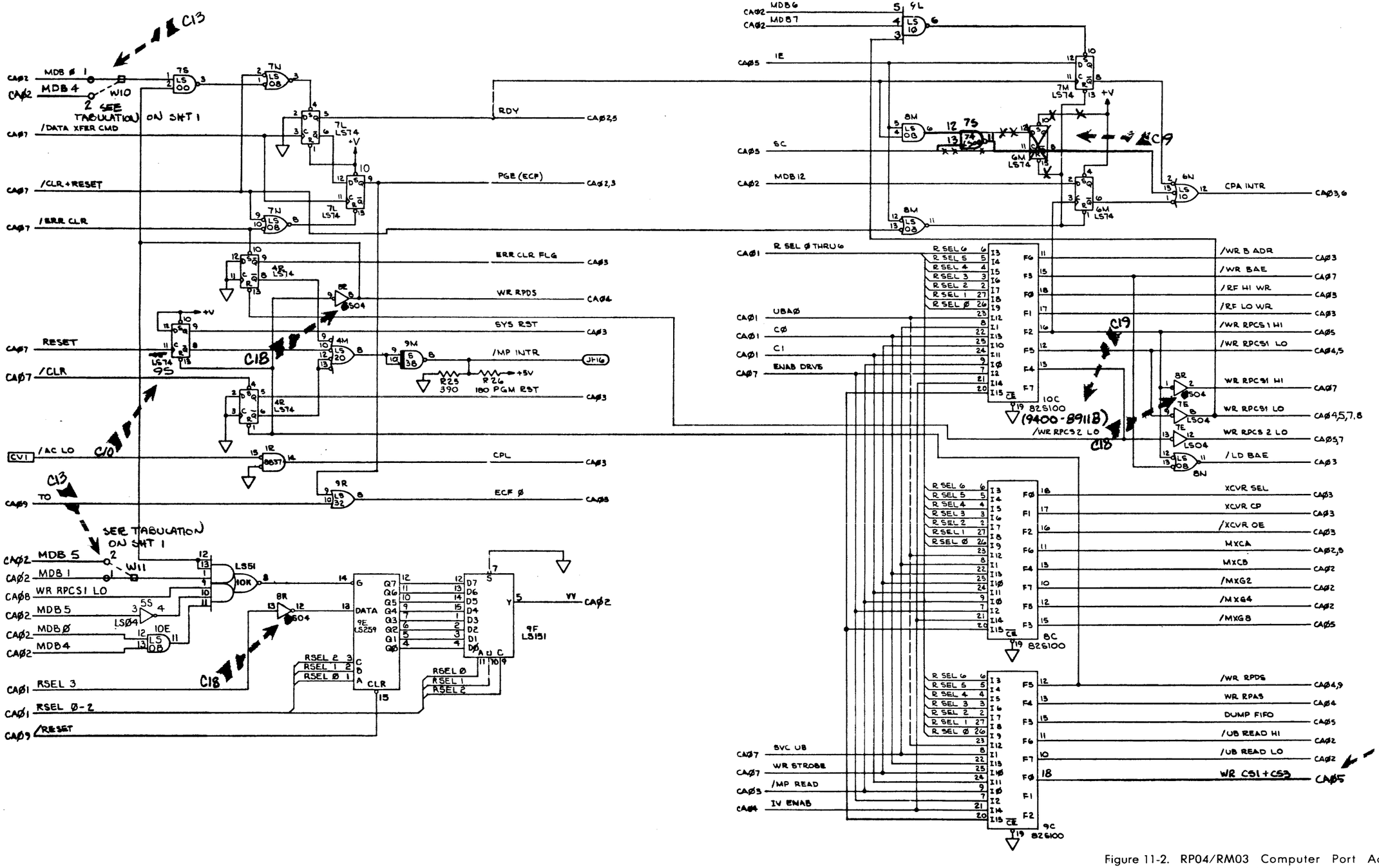
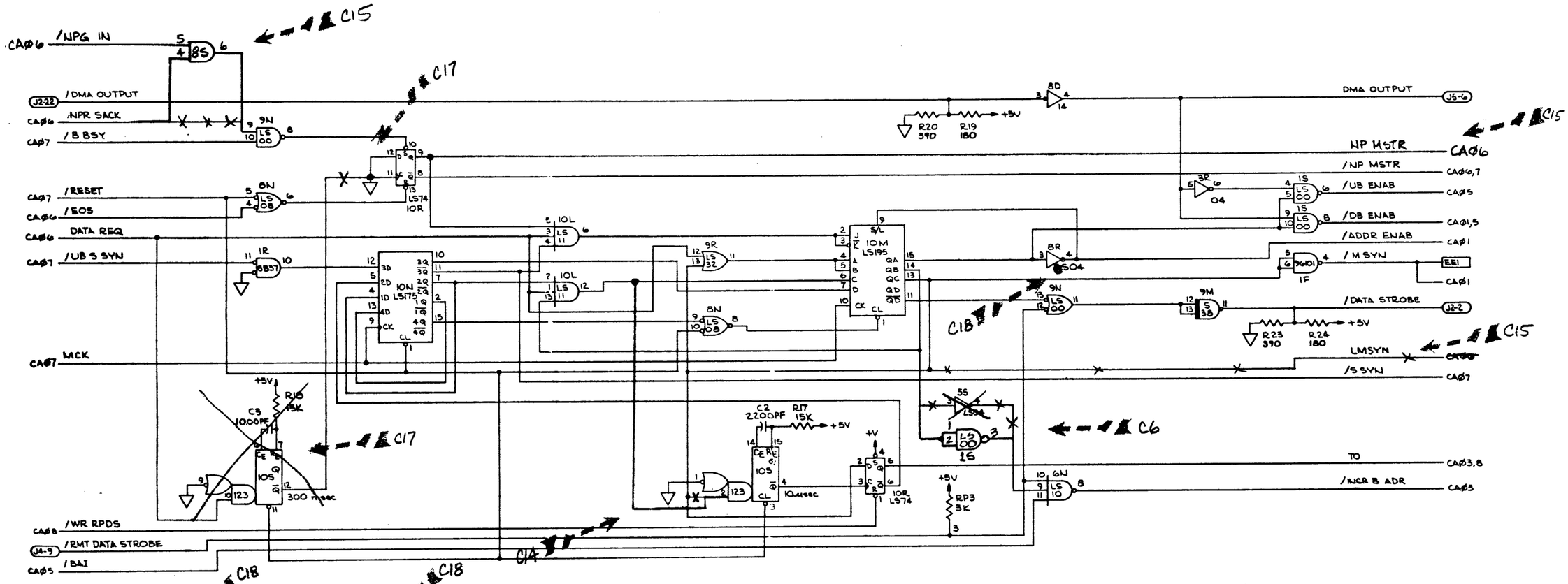


Figure 11-2. RP04/RM03 Computer Port Adapter (9400-6011C) Logic Diagram (Sheet 8 of 9)



TYPE	POSITION	UNUSED ELEMENTS	+5V	GND
74LS00	1S,3M,6R,7S,8E,8K,9N,10D	1S1,7S3,4	14	7
74LS02	2M,6K		14	7
74LS04	5S,7E,[illegible],11N,	[illegible],11N1	14	7
74LS08	3N,3S,5N,7N,8F,8J,8M,8N,8S,10E	10E1,2;8S3;3S2,6M3	14	7
74LS10	6N,9L		14	7
74LS11	10L		14	7
7414	7D,8D,11F	8D1,4	14	7
74LS20	4M,7K		14	7
74LS21	2E		14	7
74LS32	6L,9R	9R1	14	7
74S38	9M	9M1	14	7
74LS51	2R,6S,10K	10K1	14	7
74LS74	4N,4R,4S,5M,6M,7L,7M,9G,10R	4S1,9S2	14	7
74LS85	2C,2D		16	8
74123	10S		16	8
74LS138	7H,8H		16	8
74LS151	6H,9J,10J,9F,10F		16	8
74LS163	5R,11P		16	8
74LS175	2F,2N,2S,5L,10N		16	8
74LS195	10M		16	8
74LS197	3B,3C,3D,3E,3F,9K		14	7
74S225	4F,5F		20	10
74LS241	5H		20	10
74LS253	4B,4C,4D,4E,5B,5C,5D,5E		16	8
74LS257	3A,4A,4H,4J,4K,4L,5A,6E,6F,6J		16	8

TYPE	POSITION	UNUSED ELEMENTS	+5V	GND
75138	3H,3J,3K,3L		16	8
2905	8A,8B,10A,10B		24	6/18
8838	1A,1B,1C,1D,1E,1H,1J,1K,1L,2H,2J,2K,2L		16	8
8837	1M,1R		16	8
96101	1F,1N		14	7
93L14	7F,7J		16	8
93L422	6A,6B,7A,7B		22	8
74LS259	9E,9H,10H		16	8
7404	3R		14	7
7428	7R		14	7
74LS374	6D		20	10
825100	8C,9C,10C		28	14
745288	2A		16	8
74S08		8R6	14	7
R-PAK				
180/390	5K,9D		16	8
SW.SPST8	2B 5J	2B1,5J1		
SW.SPST4	11R			

REFERENCE DESIGNATOR LAST USED	REFERENCE DESIGNATOR NOT USED
R32	R18
~~C37~~ C38	C3
CR1	
Y1	
RP3	
J5	

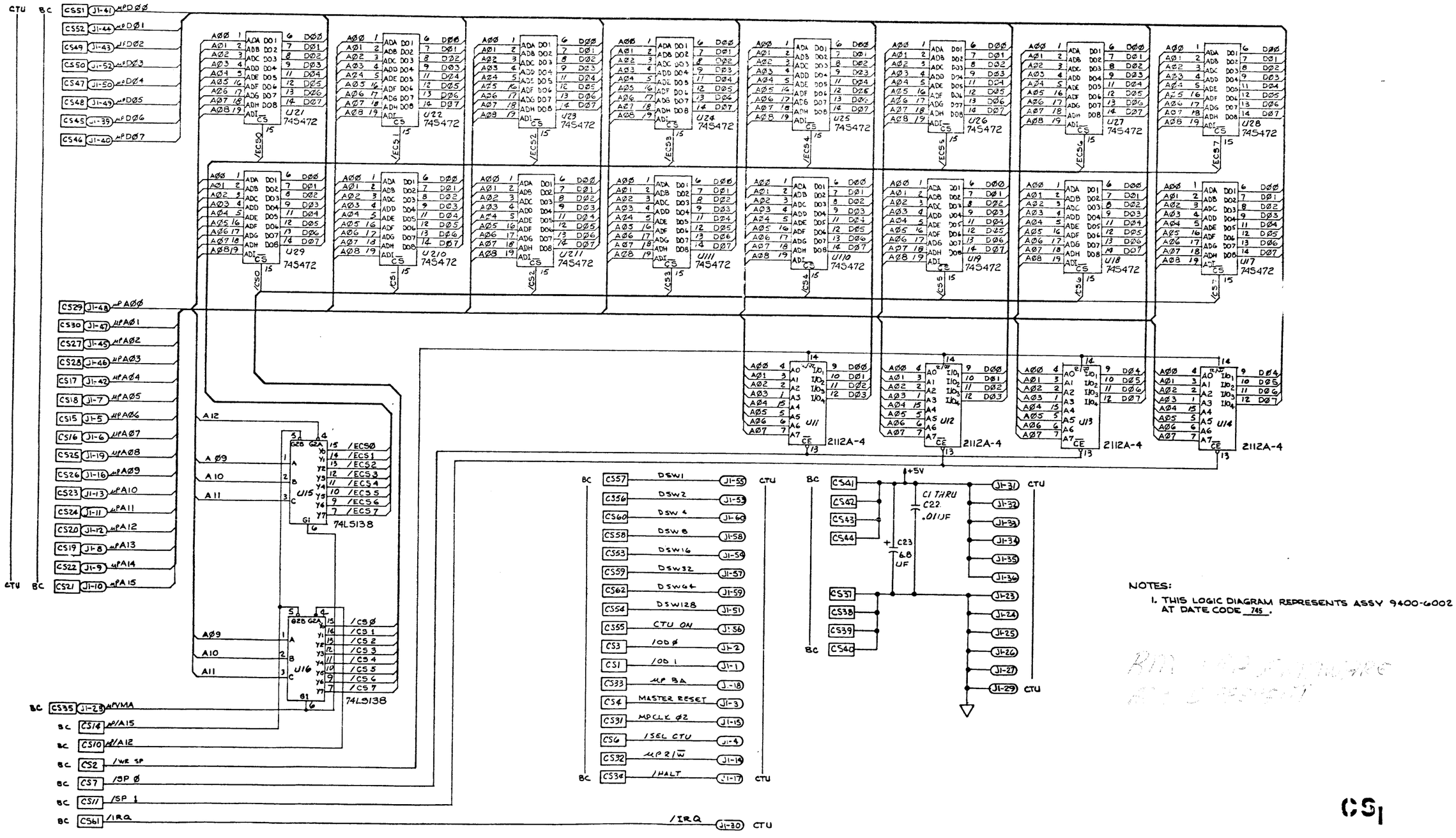
CA09

Figure 11-2. RP04/RM03 Computer Port Adapter (9400-6011C) Logic Diagram (Sheet 9 of 9)

NOTES: UNLESS OTHERWISE SPECIFIED:
1. ALL CAPACITORS ARE IN MICROFARADS.
2. THIS SCHEMATIC REPRESENTS ASSY 9400-6007 AT DATE CODE ~~345~~ 909

REWORK SCHEMATIC

Figure 11-3. Computer Interface (9400-6007B/C) Logic Diagram (Sheet 1 of 1)



NOTES:

1. THIS LOGIC DIAGRAM REPRESENTS ASSY 9400-6002 AT DATE CODE 745.

CS1

Figure 11-4. Control Store (9400-6002B/C) Logic Diagram (Sheet 1 of 1)

TYPE	POSITION	UNUSED ELEMENTS	+5V	GND	-5V
74S00	U2K,5R,5S,7T,11H,11F,8T		14	7	
74LS00	U7E,8K,11T,12A,12U,15B,18K,19B,18N,3K	U3K1,4;2K2	14	7	
74S02	U7U,11A,10D	U10D2,4	14	7	
74LS02	U7J,11U,17C		14	7	
74S04	U2N,1P	U1P4,5,1	14	7	
7405	U8U	U8U2,6	14	7	
74LS04	U6L,6U,7D,7P,7R,8F,10C,10U,12E,14S,18A,18B,18J,18M	U18A5,6;GL4,5,6;10U2	14	7	
74S08	U1M,2J,3E,10A,7L,7F	U3E3	14	7	
74LS08	U6D,7K,9R,11R,12D,12F,14A,14B,16B,16N,20S	U19A4;9R2,4	14	7	
74S10	U3N	U3N1,2	14	7	
74LS10	U8D,8E,10B,16C,19S,9D.11B	U9D3;8D3	14	7	
74S11	U2L,13C		14	7	
74LS11	U3M,8M,11C,13B,15C	U13B3	14	7	
74LS20	U13S,14U,6N		14	7	
74LS21	U1H		14	7	
74LS27	U9C,14T		14	7	
7437	U7A	U7A			
74S32	U2E,8J,9S,13D	U9S1,2,4	14	7	
74LS32	U10R,11D,14C,11E	U11G 2,3,4	14	7	
74S38	U3J	U3J1,4	14	7	
74LS38	U6F,12C	U12C1,4;6F4	14	7	
74LS74	U1K,1L,6E,6K,6T,8H,8L,8R,9E,9F,9A,9T,10F,10T,11B,12B,17B,19A,19R,19T,20A,1D	U6K2	14	7	
74LS85	U11L,13P,14L,14P,15E,16F		16	8	
74S86	U2M,3D	U3D3	14	7	
74LS112	U1F,7H		16	8	
74121	U16A,17A		14	7	
74LS123	U9U		16	8	
74132	U8B	U8B1,2	14	7	
74LS138	U18C,18E,16L		16	8	
74LS139	U 6M,13T	U16M2	16	8	
74LS151	U8S		16	8	
74LS153	U11K,12K,14K,15K,16E,16H,16M,17E,17F,17H,18F,18H,18L		16	8	
74S157	U2D,3L,10K,10L,13E,17D		16	8	
74LS157	U14N		16	8	
74S163	U1R,2H,2P,2R,3P		16	8	
74S174	U3R,4R		16	8	
74S175	U4S		16	8	
74LS175	U12N,12P,16P,12S,12T,15L		16	8	
74S189	U12M,13F,14F,14M		16	8	
74LS193	U13N,19D,19E,19J,19K,19N,19P,20B,20C,20D,20J,20K,20N,20P		16	8	
74S195	U10H,10J,10M,11M,14D,14E,15D,16D		16	8	
74LS215	U11J,12J		16	8	
74LS221	U8A,9B,15A	U8A2	16	8	
74LS240	U13M,14H		20	10	
74LS241	U13L,15H,15S,15T,16U		20	10	
74LS243	U17S,17T		14	7	
74LS261	U3H,4H,4N,4P,5H,5N,5P,6H,8N,8P,9N,9P,10N,10P,11N,11P,19F,19H,19L,19M,20F,20H,20L,20M		16	8	
74S257	U6P,6R,18S,18T		16	8	
74S260	U13U,18D		14	7	
74273	U16R		20	10	
74279	U3U,5U	U3U3,4;5U4	16	8	
74LS280	U12L,14J,15F,15U		14	7	
74S374	U16J,16K,17J,17K		20	10	
8504	U4D,4E,4F,4J,4K,4L,4M,5D,5E,5F,5J,5K,5L,5M,6J		16	8	
9401	U7S		14	7	
6800	U16S		8	1,21	
6875	U17U		16	8	
74S472	U1T,2T,3T,4T		20	10	
74S287	U10S,18P,19C		16	8	
74S288	U1N		16	8	
2114-2	U12H,13H,13J,13K				
RPAK 1K	U4U,13R				

REF DESIGNATION LAST USED	REF DESIGNATION NOT USED
~~R33 R34 R35~~	~~R16~~
C149	C54
RP5	RP3-2,3,4;RP4-3
CR5	
Y1	
S5	
SP10	
TP29	
W1	
W16	

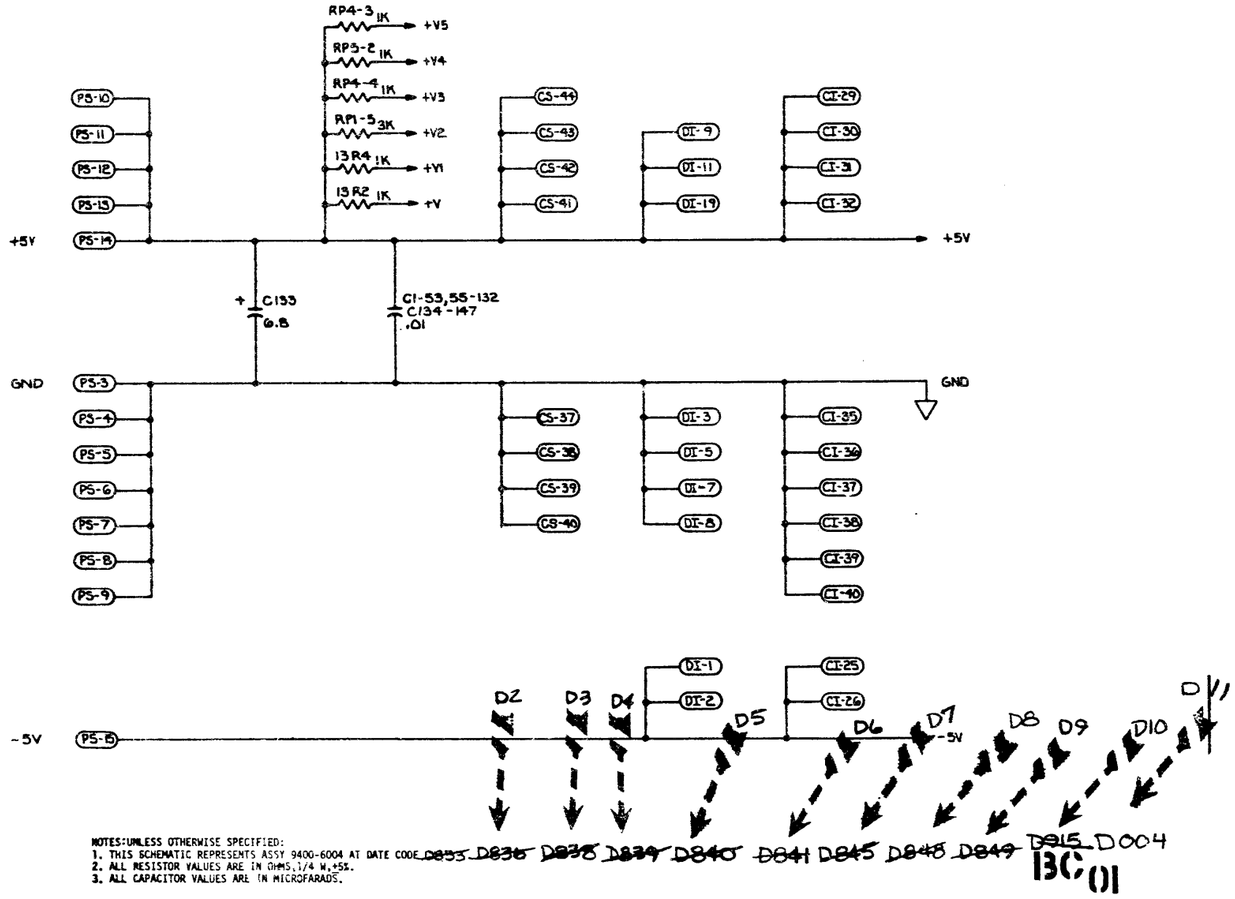


Figure 11-5. Basic Control (9400-6004D) Logic Diagram (Sheet 1 of 17)

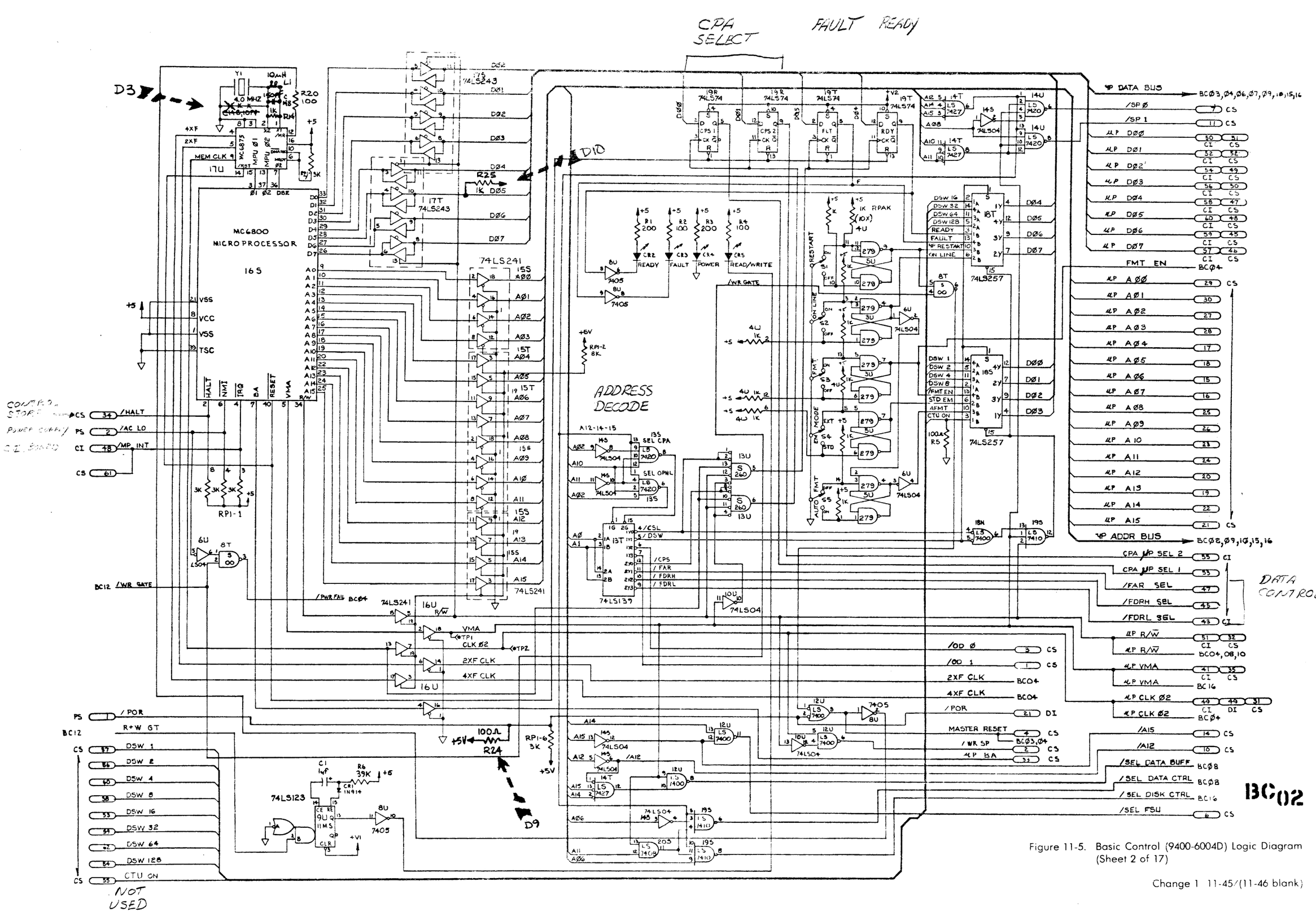


Figure 11-5. Basic Control (9400-6004D) Logic Diagram (Sheet 2 of 17)

DATA OPERATION
CONTROL SIGNALS

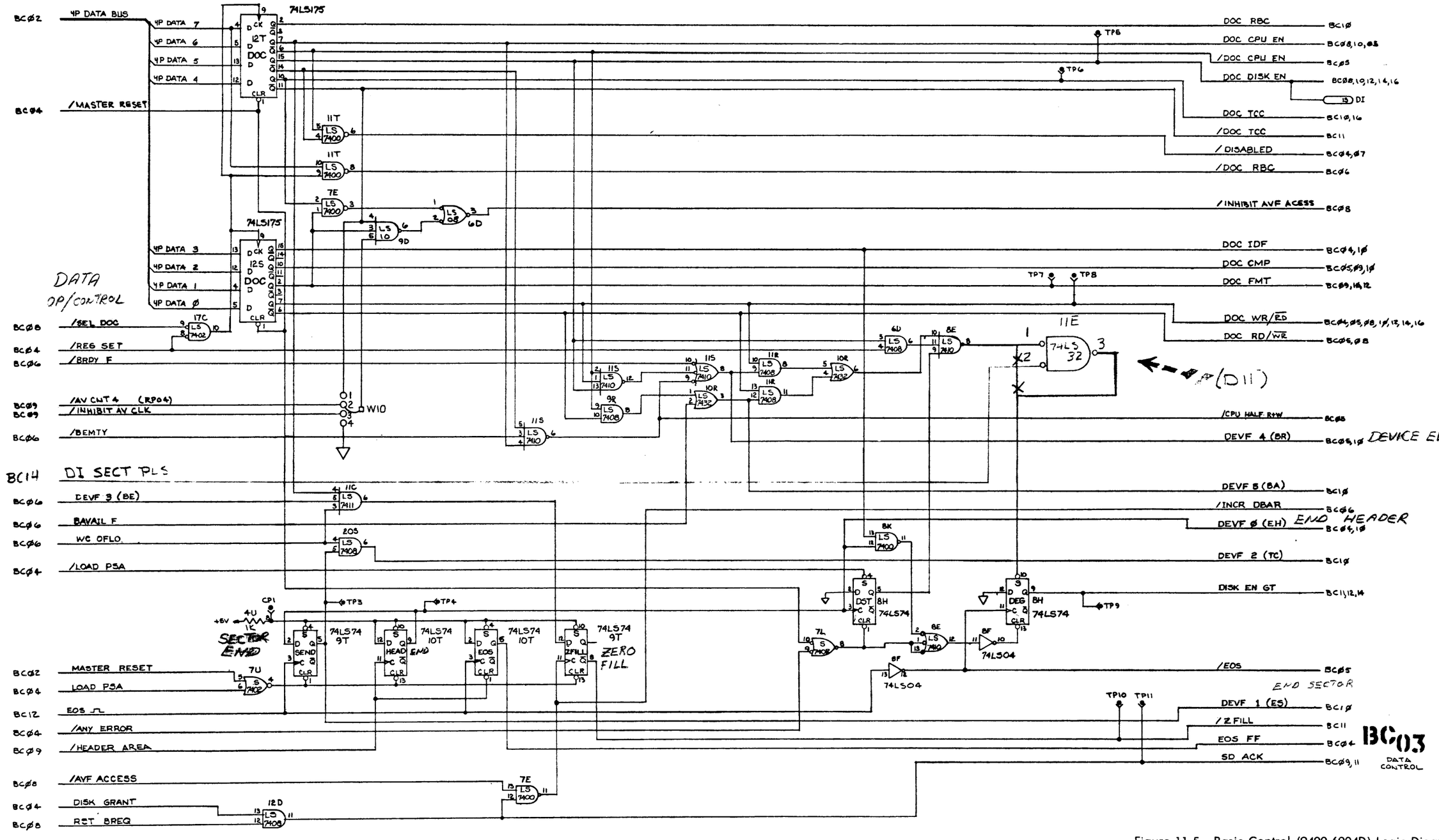


Figure 11-5. Basic Control (9400-6004D) Logic Diagram (Sheet 3 of 17)

DERF ⇒ DEVICE ERROR FLAG

PHYSICAL SECTOR ADDRESS

BCØ 7,12,14,16 DERF BUS
BCØ2 4P DATA BUS
BCØ2 /PWR FAIL

74LS175 (9P)
4P DATA 7 → PSA 128, /PSA 128
4P DATA 6 → PSA 64, /PSA 64
4P DATA 5 → PSA 32, /PSA 32
4P DATA 4 → PSA 16, /PSA 16

74LS175 (12P)
4P DATA 3 → PSA 8, /PSA 8
4P DATA 2 → PSA 4, /PSA 4
4P DATA 1 → PSA 2, /PSA 2
4P DATA Ø → PSA 1, /PSA 1

74S287 (10S)
DEVF Ø (EH)
EOS FF
DOC IDF
DOC WR
DERF 12 (WPF)
DERF 13 (BBF)
DERF 3 (AVE)

DERF 1 (CRC), DERF 4 (DVE) → 8J 7438
74S260 10D
7402 9R
74LS74 8R (+5 4U 1K, → TP12)
74LS74 AE 8R
6F LS 7438

DERF 1 (CRC)
DERF 2 (ECC) BC 14
DERF 7 (SO) BC 12
LS 32 11D
LS 08 14A

4P DATA Ø → 17C LS 7402 → 74LS74 ESI 12B

74LS175 DPA 15L
4P DATA 6
4P DATA 5
4P DATA 1
4P DATA Ø

DI DATA SEL 2 → BCIØ → 16 DI
DI DATA SEL 1 → BCIØ → 14 DI
CPA DATA SEL 2 → BCIØ → 20 CI
CPA DATA SEL 1 → BCIØ → 19 CI
22 DI
+5V RM 1K
/MASTER RESET → BCØ3, Ø5, Ø6, 11, 16
DEVF 7 (AE) → BCØ5, 1Ø
/ANY ERROR → BCØ3
DERF Ø (ESI) → BC1Ø
/LOAD PSA → BCØ3
LOAD PSA → BCØ3
/REG SET → BCØ3, 16
17C LS 7402
18A 74LS04 REG SET → BCØ6, Ø8, Ø9, 16

PSA BUS → BC10
/PSA BUS → BC11

BCØ8 /SEL DERF LO
BCØ8 /SEL PSA → 17C LS 7402 → 10U 74LS04
BCØ2 4P R/W
BCØ2 4P CLOCK Ø2 → 7D 74LS04 → 8E LS 7410
BCØ2 2XF CLOCK
BCØ8 /SEL DPA

BCØ3 DEVF Ø (EH)
BCØ3 EOS FF
BCØ3 DOC IDF
BCØ3 DOC WR/RD
BCØ9 WT PROT CLK
BCØ2 MASTER RESET
BC13 RD BUS 15
BC13 RD BUS 14
BCØ9 ~~FLAG CLK~~ BAD BK CLK
BCØ3 FMT EN → 6U 74LS04
BCØ3 /DISABLED
BC11 S/D REQUEST
BCØ8 RST BREQ
BCØ5 CPU REQUEST
BCØ5 /ERROR STOP
BCØ2 4XF CLK

DB

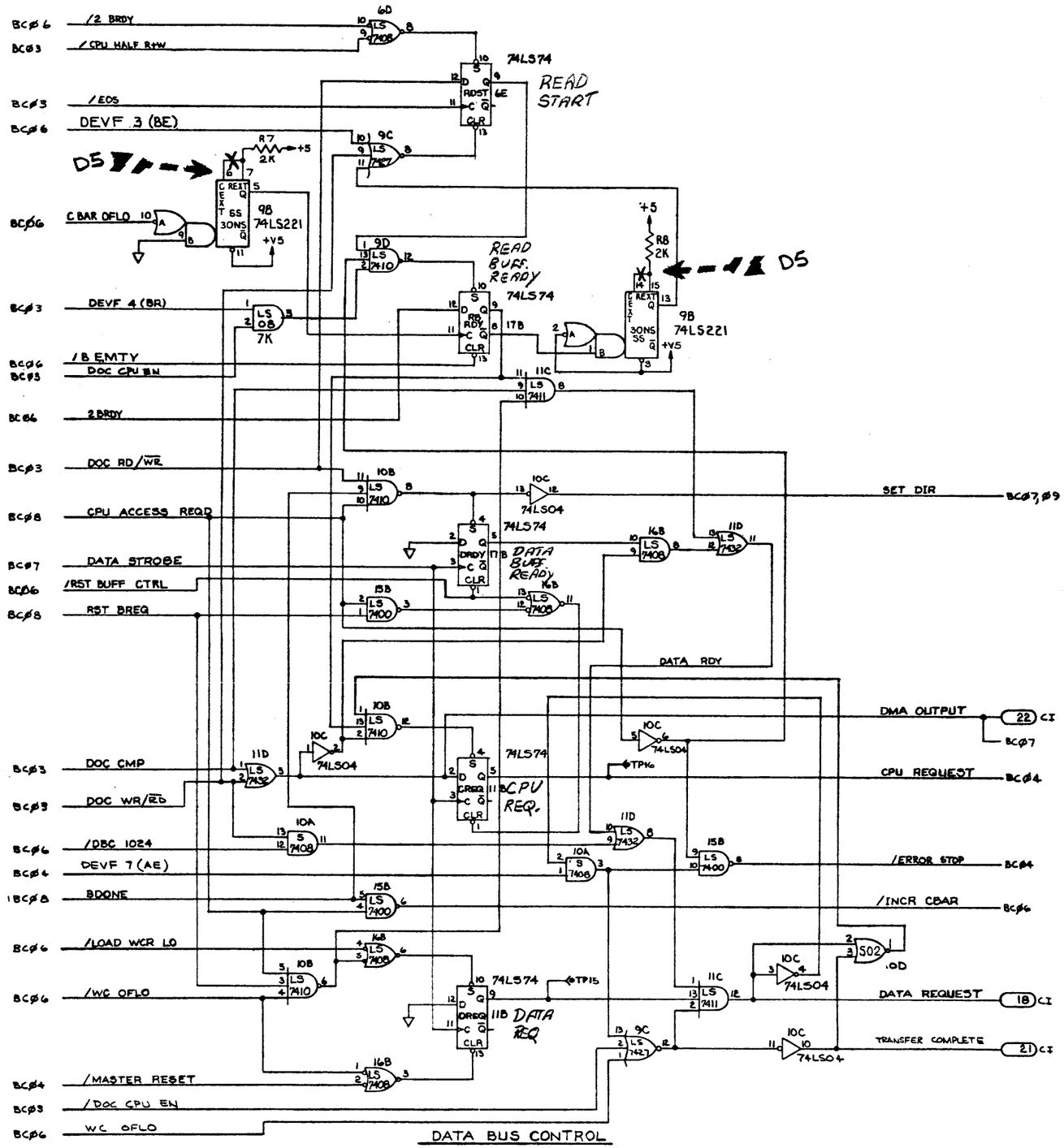
74LS574 WPF 9E → WRITE PROTECT
74LS574 BBF 9E → BAD BLOCK
3K LS 00, W13
8M LS 7411

11A 7402, 12A 7400 → 12B 74LS574
13B LS 7411

DERF 12 (WPF) → BC 15
DERF 13 (BBF) → BC 15
TP13 DISK GRANT → BCØ3, Ø8
TP14 CPU GRANT → BCØ8

BC04
DATA CONTROL

Figure 11-5. Basic Control (9400-6004D) Logic Diagram (Sheet 4 of 17)



BC05

DATA CONTROL

Figure 11-5. Basic Control (9400-6004D) Logic Diagram (Sheet 5 of 17)

BC∅2 4P DATA BUS

BC∅4 /MASTER RESET

BC∅8 /SEL DBAR HI

BC∅8 /SEL CBAR HI

BC∅4 REG SET

BC∅8 /SEL WCR HI

BC∅3 /INCR DBAR

BC∅8 /SEL CBAR LO

BC∅5 /INCR CBAR

BC∅8 /SEL DBAR LO

BC∅7 /DATA STROBE

BC∅6 /SEL WCR LO

BC∅3 /DOC RBC

BC∅8 /SEL DBC HI

BC∅6 /SEL DBC LO

BC∅8 /DECR DBC

BC∅8 /INCR DBC

BC∅8 B DONE

CBAR OFLO BC∅5

WCR BUS BC1∅ WORD COUNT REG

DBAR BUS BC∅8,1∅ DISK BUFF ADR REG

CBAR BUS BC∅8,1∅ CPU BUFF ADR REG

74LS193 WCR 15 WCR 14 WCR 13 WCR 12

74LS193 WCR 11 WCR 10 WCR 9 WCR 8

74LS193 WCR 7 WCR 6 WCR 5 WCR 4

74LS193 WCR 3 WCR 2 WCR 1 WCR ∅

WORD COUNT REG

RST BUFF CTRL

74LS193 DBAR 512 DBAR 256

74LS193 DBAR 128 DBAR 64 DBAR 32 DBAR 16

74LS193 DBAR 8 DBAR 4 DBAR 2 DBAR 1

DISK BUFFER ADR REG

74LS193 CBAR 512 CBAR 256

74LS193 CBAR 128 CBAR 64 CBAR 32 CBAR 16

74LS193 CBAR 8 CBAR 4 CBAR 2 CBAR 1

CPU BUFFER ADR REG

74LS193 DBC 1024 DBC 512 DBC 256

74LS193 DBC 128 DBC 64 DBC 32 DBC 16

74LS193 DBC 8 DBC 4 DBC 2 DBC 1

DATA BUFFER CNTR

/RST BUFF CTRL BC∅5

DBC BUS BC1∅

/BE MTY BC∅3,∅5

/BRDY F BC∅3

/2 BRDY BC∅5

/2 BRDY BC∅6

BAVAIL F BC∅3

WC OFLO BC∅3,∅5

/WC OFLO BC∅5

/LOAD WCR LO BC∅5

BC06 DATA CONTROL

Figure 11-5. Basic Control (9400-6004D) Logic Diagram (Sheet 6 of 17)

BC08 BADR BUS
BC13 AD BUS
BC09 WR BUS
BC02 4P DATA BUS

DATA TO DISK

CI
2 DATA STROBE
16 DATA BUS 15 BIDI
7 DATA BUS 14 BIDI
5 DATA BUS 13 BIDI
8 DATA BUS 12 BIDI
6 DATA BUS 11 BIDI
4 DATA BUS 10 BIDI
3 DATA BUS 9 BIDI
1 DATA BUS 8 BIDI
14 DATA BUS 7 BIDI
9 DATA BUS 6 BIDI
15 DATA BUS 5 BIDI
17 DATA BUS 4 BIDI
11 DATA BUS 3 BIDI
13 DATA BUS 2 BIDI
12 DATA BUS 1 BIDI
10 DATA BUS Ø BIDI
CI

IN TO CPU
DATA IN REG

OUT TO DISK
DATA OUT REG

745374 DO 15 DO 14 DO 13 DO 12 DO 11 DO 10 DO 9 DO 8
DATA OUT BUS
745374 DO 7 DO 6 DO 5 DO 4 DO 3 DO 2 DO 1 DO Ø

17J 745374 WR 15 WR 14 WR 13 WR 12 WR 11 WR 10 WR 9 WR 8
16J 745374 WR 7 WR 6 WR 5 WR 4 WR 3 WR 2 WR 1 WR Ø

BC08 DISK ACCESS REQD
BC08 CPU ACCESS REQD
BC08 SET DIR
BC05 DMA OUTPUT
BC08 BUFF R/W
BC08 /SEL DATA BUFF HI
BC08 /SEL DATA BUFF LO
BC09 SEL DATA BUFF HI
BC09 SEL DATA BUFF LO
BC07 /DISABLED
BC08 BDO RDY
BC09 AV CLK
BC09 DV CLK

18J 74LS04

ADDRESS DATA VERIFY

14L 74L585 WR 3 WR 2 WR 1 WR Ø BDI 3 BDI 2 BDI 1 BDI Ø
11L 74L585 WR 7 WR 6 WR 5 WR 4 BDI 7 BDI 6 BDI 5 BDI 4
16F 74L585 WR 11 WR 10 WR 9 WR 8 BDI 11 BDI 10 BDI 9 BDI 8
15E 74L585 WR 15 WR 14 WR 13 WR 12 BDI 15 BDI 14 BDI 13 BDI 12
+5 R9 1K

DB PARITY OPTION

PC HI 15J 74LS280 WR 15 WR 14 WR 13 WR 12 WR 11 WR 10 WR 9 WR 8
PC LO 14J 74LS280 WR 7 WR 6 WR 5 WR 4 WR 3 WR 2 WR 1 WR Ø
W1 12F LS 7408
W2 12F LS 7408
12E 74LS04

PG HI 15F 74LS280 BDI 15 BDI 14 BDI 13 BDI 12 BDI 11 BDI 10 BDI 9 BDI 8
PG LO 12L 74LS280 BDI 7 BDI 6 BDI 5 BDI 4 BDI 3 BDI 2 BDI 1 BDI Ø

BDI BUS BC09

P HI 11J 74LS215 BADR 1 BADR 2 BADR 4 BADR 8 BADR 16 BADR 32 BADR 64 BADR 128 BADR 256 BADR 512
P LO 12J 74LS215 BADR 1 BADR 2 BADR 4 BADR 8 BADR 16 BADR 32 BADR 64 BADR 128 BADR 256 BADR 512

DATA STROBE BC05
/DATA STROBE BC06
18K 74LS00

CP6
9F 74LS74 DERF 6 (DPH) BC10
9F 74LS74 DERF 5 (BPE) BC10
10F 74LS74 DERF 3 (AVE) BC04,10
10F 74LS74 DERF 4 (DVE) BC04,10

BUFF DATA INPUT MUX
MUXES DATA ONTO BDI BUS

14K 74LS153 4P DATA 1 RD 1 DO 1 4P DATA Ø RD Ø DO Ø
15K 74LS153 4P DATA 3 RD 3 DO 3 4P DATA 2 RD 2 DO 2
12K 74LS153 4P DATA 5 RD 5 DO 5 4P DATA 4 RD 4 DO 4
11K 74LS153 4P DATA 7 RD 7 DO 7 4P DATA 6 RD 6 DO 6
16H 74LS153 4P DATA 1 RD 9 DO 9 4P DATA 8 RD 8 DO 8
17H 74LS153 4P DATA 3 RD 11 DO 11 4P DATA 2 RD 10 DO 10
16E 74LS153 4P DATA 5 RD 13 DO 13 4P DATA 4 RD 12 DO 12
17E 74LS153 4P DATA 7 RD 15 DO 15 4P DATA 6 RD 14 DO 14

BC07
DATA CONTROL

Figure 11-5. Basic Control (9400-6004D) Logic Diagram (Sheet 7 of 17)

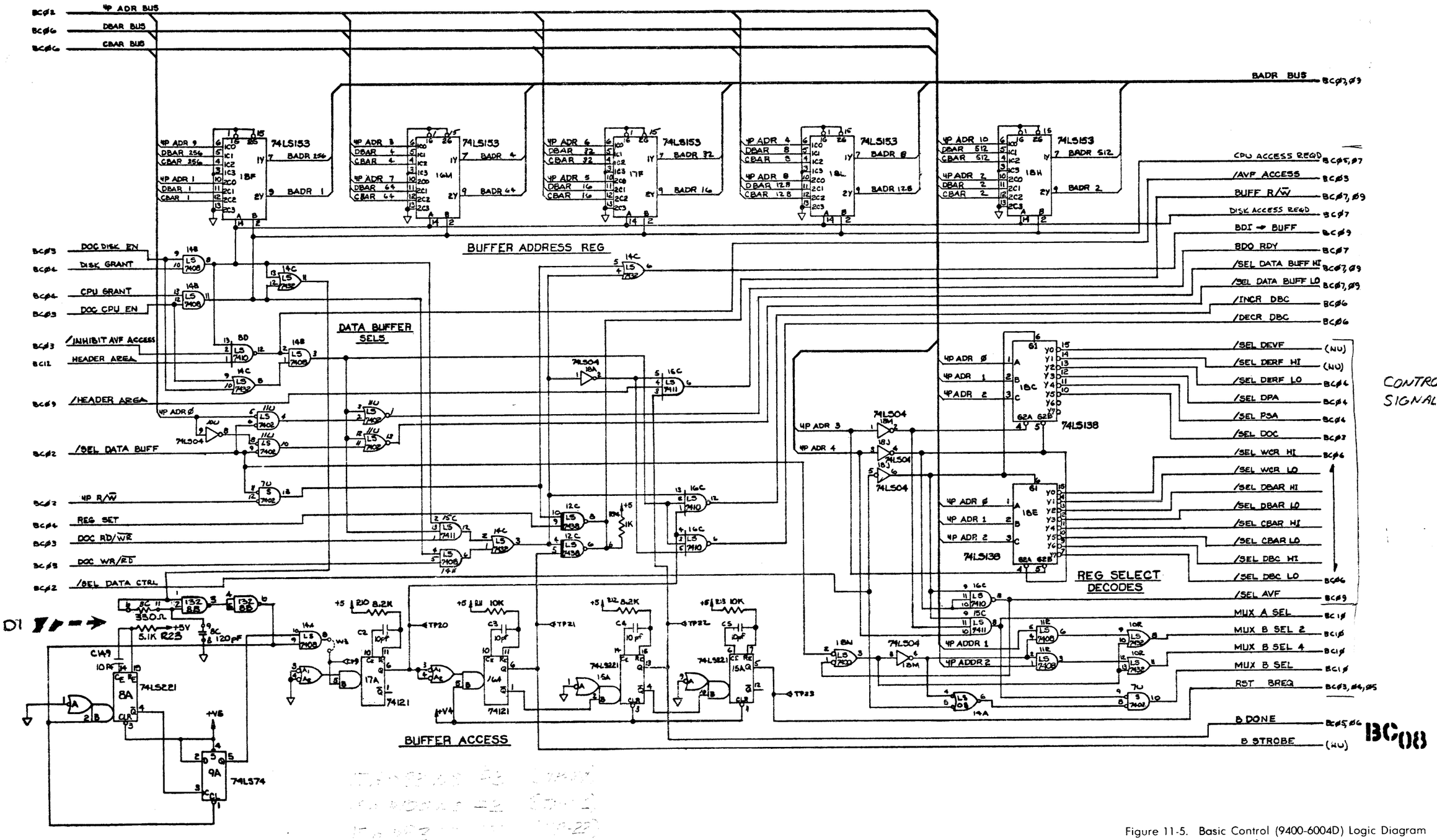


Figure 11-5. Basic Control (9400-6004D) Logic Diagram (Sheet 8 of 17)

BDI BUS

DBI → WR

RAMS

BUS ADDR 1-512

DATA BUFFER

STORES 4 SECTORS OF DATA

A.V.F. ADDRESS

ADDRESS VERIFY FILE

Figure 11-5. Basic Control (9400-6004D) Logic Diagram (Sheet 9 of 17)

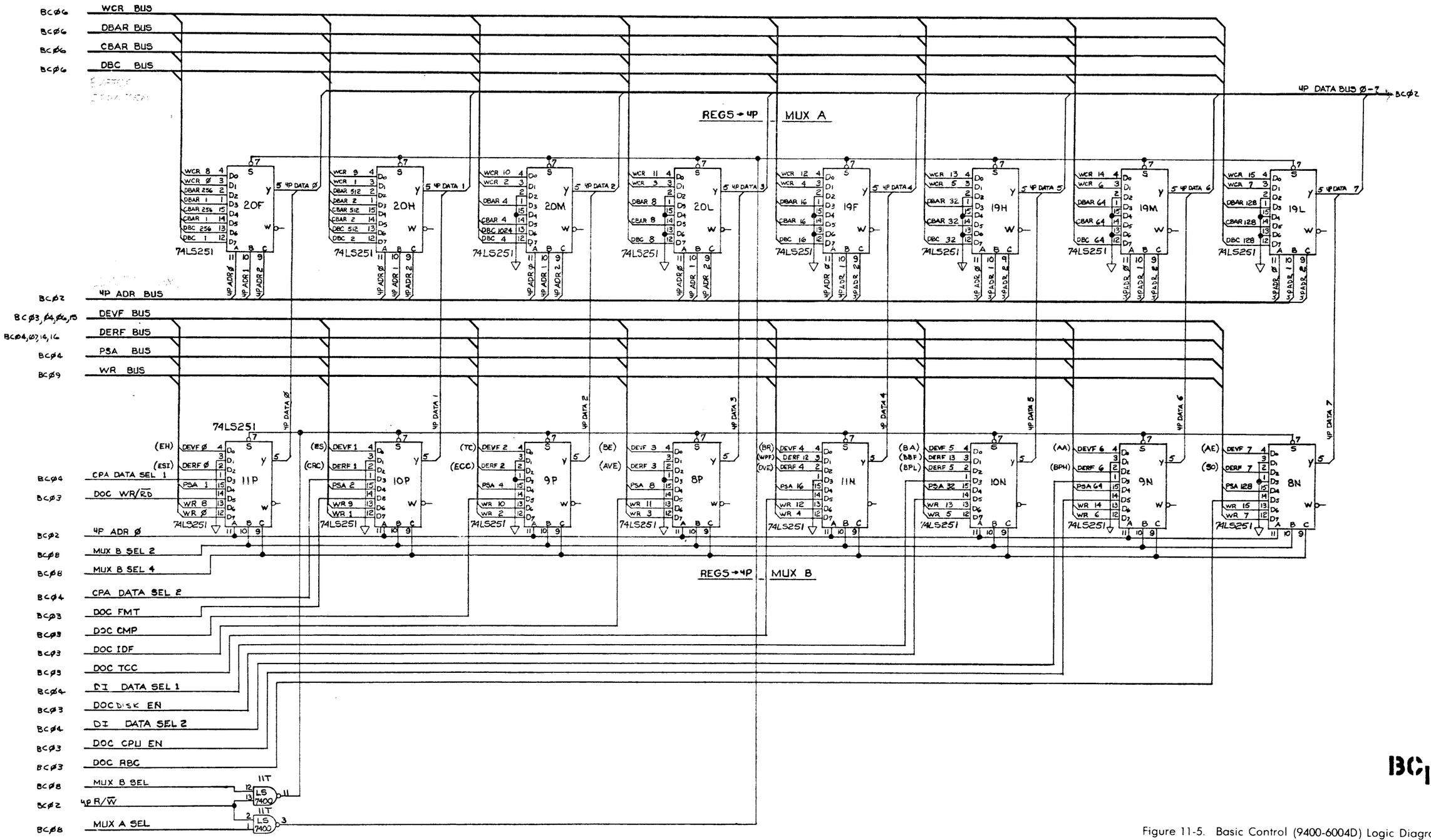
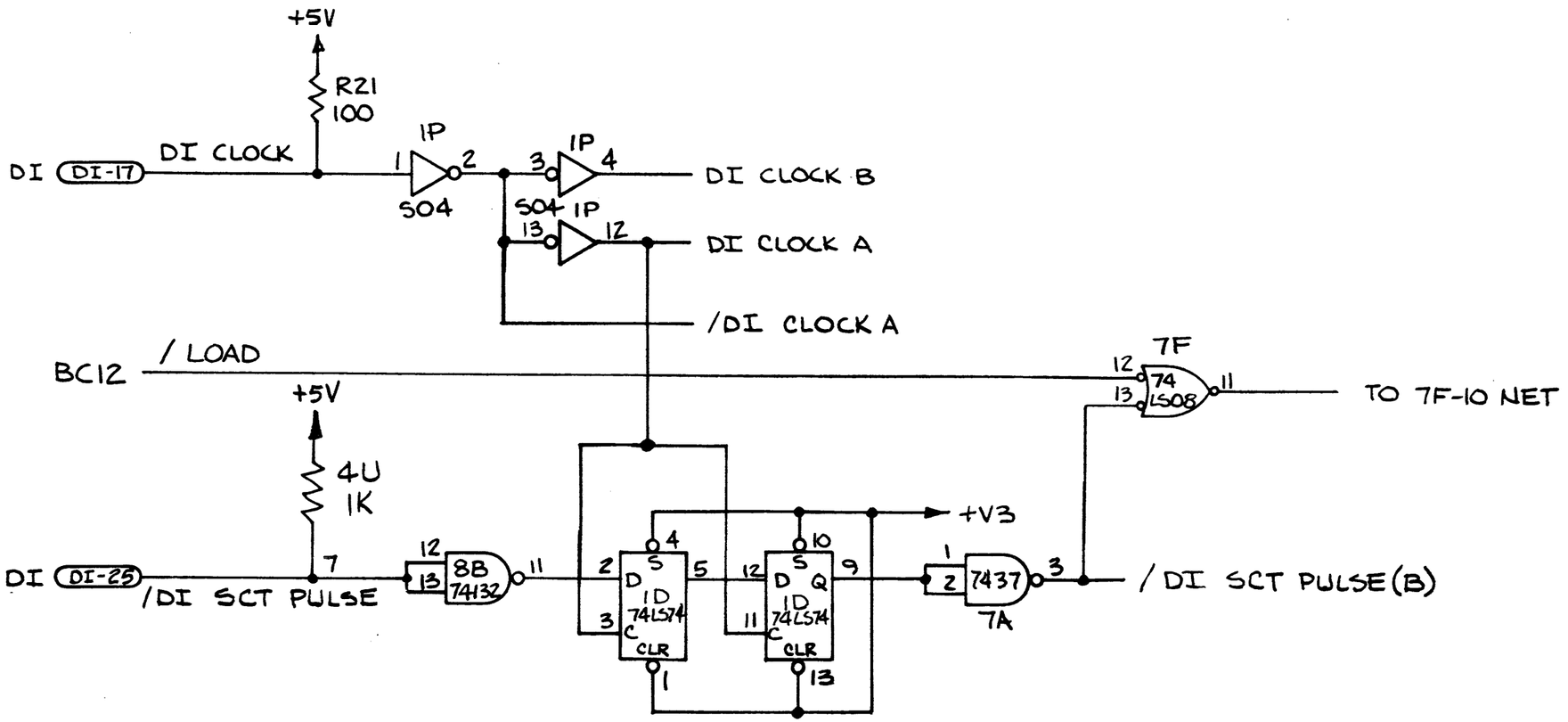


Figure 11-5. Basic Control (9400-6004D) Logic Diagram (Sheet 10 of 17)

BC12 WR H-CC REQ·D REQ
BC12 INHIBIT WR CRC+ECC
BCØ3 /DOC TCC
BC12 INHIBIT RD CRC+ECC
BC12 RD GATE
BC12 RD H-CC REQ·D REQ
BCØ3 /Z FILL
BCØ3 SD ACK
BCØ4 /MASTER RESET
BC12 /WR GATE
BC12 WR GATE
BC12 LD SYNC BYTE
BC12 DATA FIELD
BC12 /INHIBIT COUNT (SYNC SEARCH)
WRT EN A
RD EN A
74LS74
S/D REQUEST BCØ4
74LS04
D7
7J 74S02 S/D STROBE PLS BC13
END WORD
2L 74S11 SYNC BIT BC16
D6
THIS SECTION SUPERSEDED BY BC11A
D5
74S163
"END WORD CNTR"
16 BITS
74S04
74S12
"ODD/EVEN FLOP"
/LD EVEN BC13
/LD ODD BC13
DI CLOCK B BC12,13
D2
/DI SCT PULSE (B) BC12,13,14
RD MUX SEL BC13
S/D MUX SEL BC16
SC=SA BC12
DI CLOCK A BC12,16
END WORD CNTR-C BC12
/DI CLOCK A BC14
DI CLOCK
/LOAD
/DI SCT PULSE
DISK EN GT
/DI SCT CNT 1
/DI SCT CNT 2
/DI SCT CNT 4
/DI SCT CNT 8
/PSA BUS
/DI CLOCK
/DI SCT CNT 16
/DI SCT CNT 32
/DI SCT CNT 64
/DI SCT CNT 128
13R (8X)
LS85 13P
LS85 14P
74LS74 6T
+5V
+V3

BC11
DISK CONTROL

Figure 11-5. Basic Control (9400-6004D) Logic Diagram (Sheet 11 of 17)



SUPERSEDES CORRESPONDING SECTION OF BC11 ←-11 D6

BC11A

Figure 11-5. Basic Control (9400-6004D) Logic Diagram (Sheet 12 of 17)

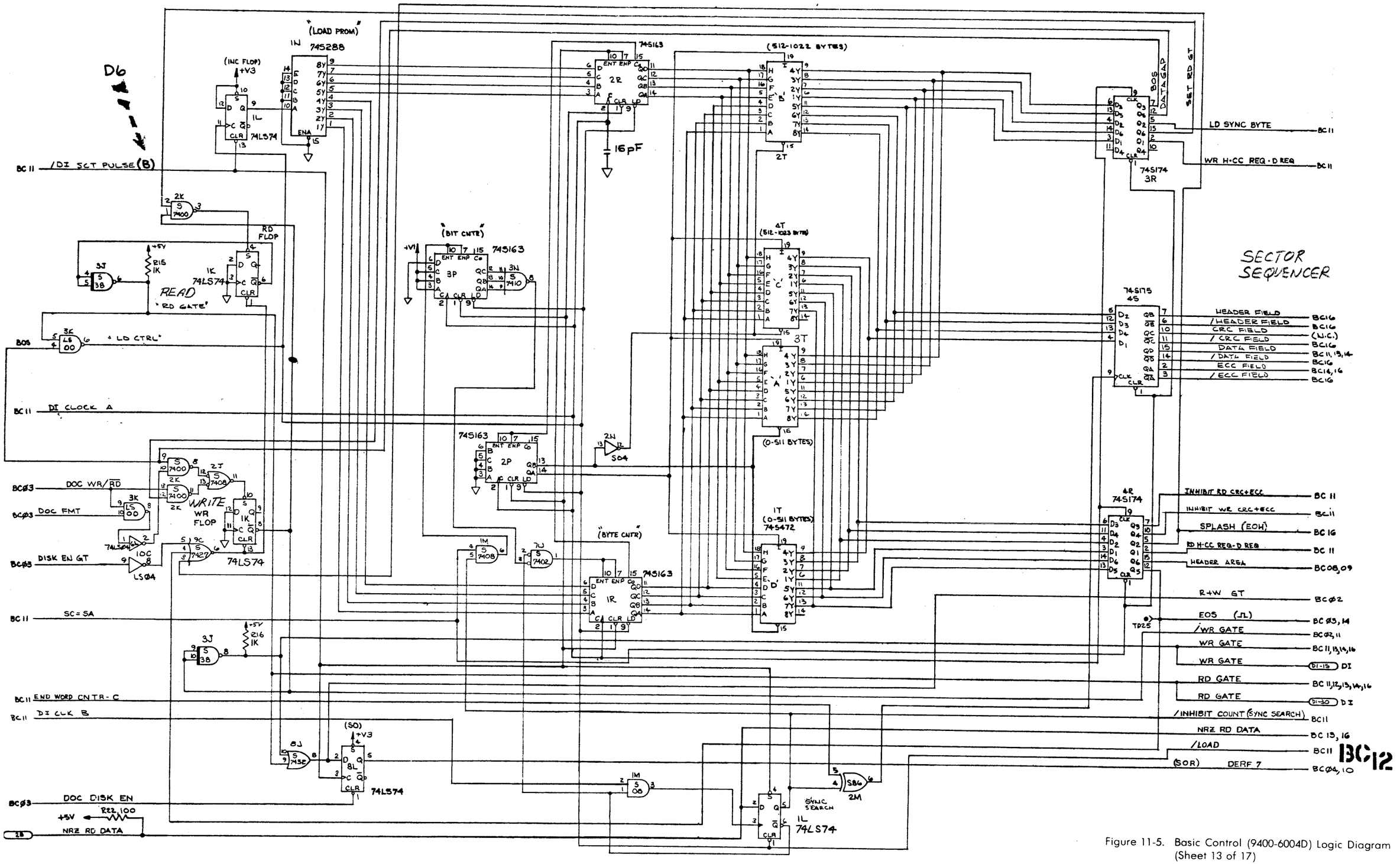


Figure 11-5. Basic Control (9400-6004D) Logic Diagram (Sheet 13 of 17)

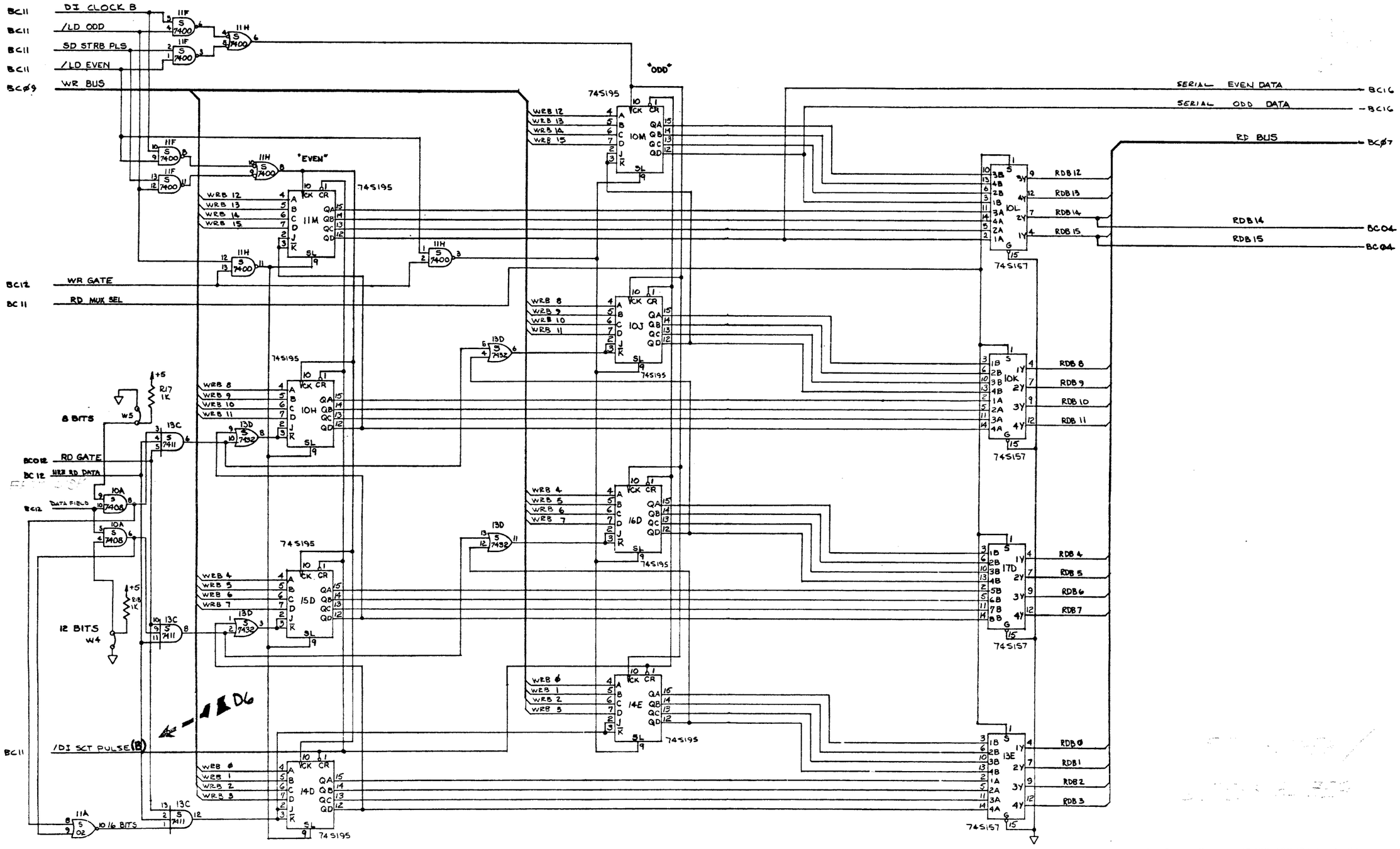


Figure 11-5. Basic Control (9400-6004D) Logic Diagram (Sheet 14 of 17)

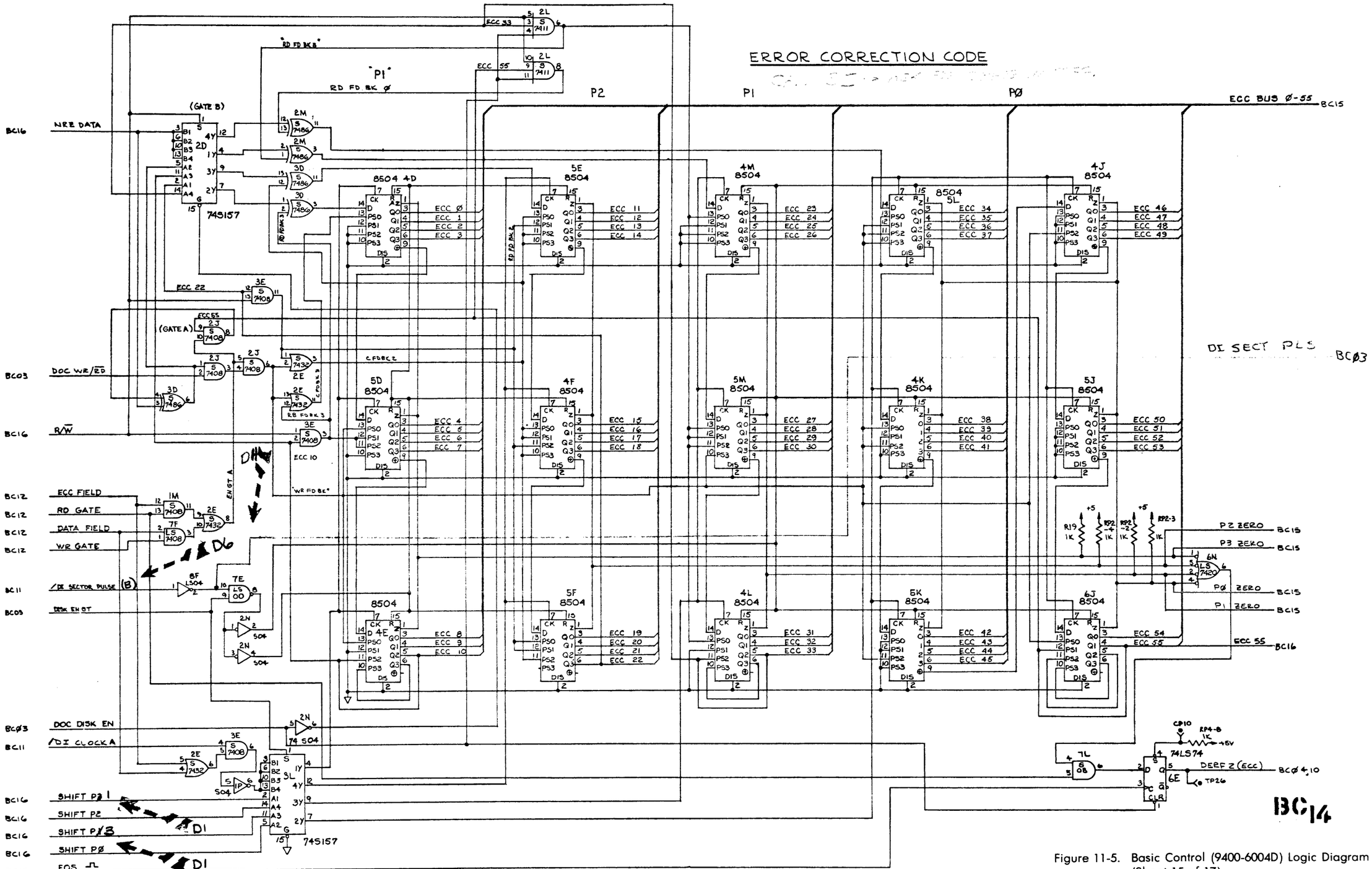


Figure 11-5. Basic Control (9400-6004D) Logic Diagram (Sheet 15 of 17)

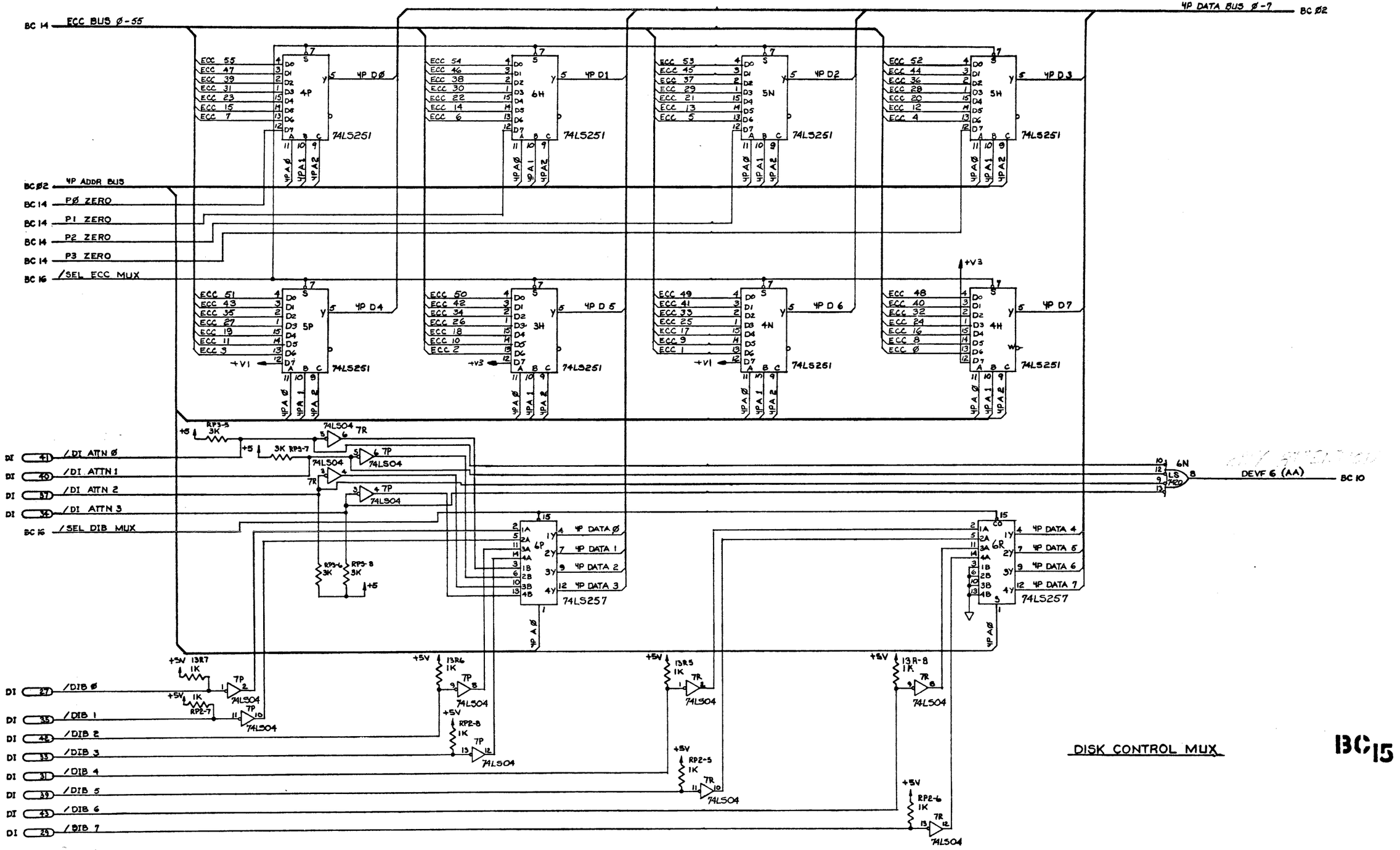


Figure 11-5. Basic Control (9400-6004D) Logic Diagram (Sheet 16 of 17)

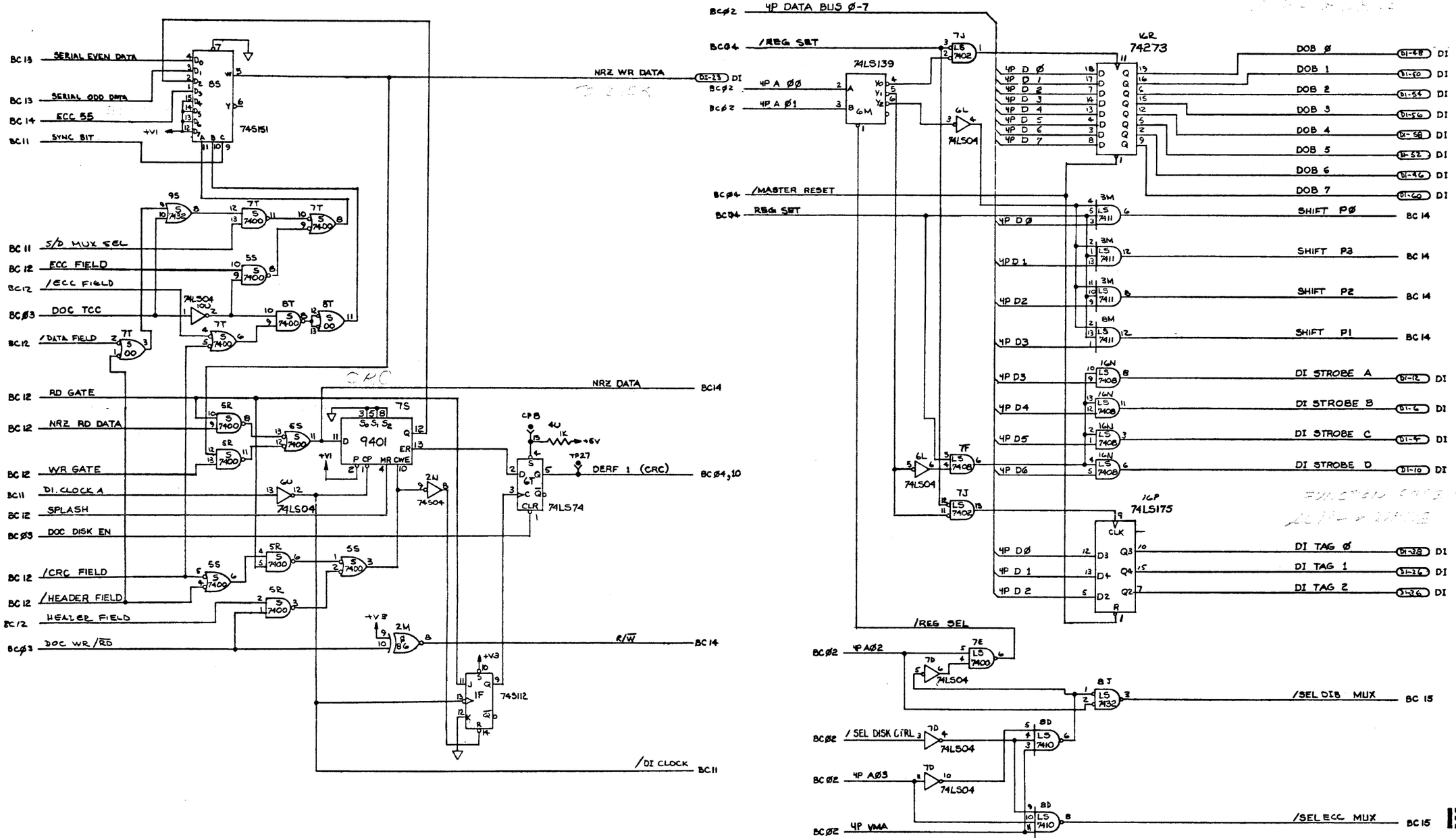


Figure 11-5. Basic Control (9400-6004D) Logic Diagram (Sheet 17 of 17)

TYPE	POSITION	UNUSED ELEMENTS	E	+5V	GND	-5V
74S00	8K, 5K, 5S, 7T, 11H, 11F, 8T			14	7	
74LS00	9E, 8K, 11T, 12A, 12U, 15B, 15K, 19B, 18N, 5K	8K1,4; 12K2; 12A1,2		14	7	
74S02	9U, 11A, 10D	8D0 2,4		14	7	
74LS02	9J, 11U, 17C	8U1,2		14	7	
74S04	12N, 1P	8P4,5,1		14	7	
7405	8BU	8BU 2,6		14	7	
74LS04	9L, 6U, 7D, 7P, 7R, 8F, 10C, 10U, 12E, 14S, 18A, 18B, 18J, 18M	8BA5,6; 6L 4,5,6; 10D2		14	7	
74S08	8M, 2J, 3E, 10A, 7L, 7F, 20T	8SEE, 20T 2, 3, 4		14	7	
74LS08	8D, 7K, 9R, 11R, 12D, 12F, 14A, 14B, 16B, 16N, 20S	8K14A3,4; 9R2,4		14	7	
74S10	8N	8N1,2		14	7	
74LS10	8BD, 8E, 10B, 16C, 19S, 9D, 11B	8D03; 8D3		14	7	
7437	8A	8A				
74S11	8L, 13C			14	7	
74LS11	8M, 8M, 11C, 13B, 15C	8SB3		14	7	
74LS20	8J, 3S, 14U, 6N			14	7	
74LS21	8H			14	7	
74LS27	9C, 14T			14	7	
7432	8C	8C2,3,4		14	7	
74S32	8E, 8J, 9S, 13D	8S9S1,2,4		14	7	
74LS32	8DR, 11D, 14C, 11E	8E11E 2, 3, 4		14	7	
74S38	8J	8SJ1,4		14	7	
74LS38	8GF, 12C	8H2C1,4; GF4		14	7	
74LS74	8K, 1L, 6E, 6K, 6T, 8H, 8L, 8R, 9E, 9F, 9A, 9T, 10F, 10T, 11B, 12B, 17B, 19A, 19R, 19T, 20A, 1D, 7M	8GK2 7M-1		14	7	
74123	8A	8A		16	8	
74LS85	8L, 13P, 19L, 14P, 15E, 16F			16	8	
74S86	8M, 3D	8S03		14	7	
74S112	8F, 7H			16	8	
74121	8A, 17A			14	7	
74LS123	9U			16	8	
74132	8B	8B1,2		14	7	
74LS138	8C, 18E, 16L			16	8	
74LS139	6M, 13T	8GM2		16	8	
74S151	8S			16	8	
74LS153	8R, 12K, 14K, 15K, 16E, 16H, 16M, 17E, 17F, 17H, 1RF, 18H, 18L			16	8	
74S157	8D, 3L, 10K, 10L, 13E, 17D			16	8	
7427	8E			14	7	
74LS157	8N			16	8	
74S163	8R, 2H, 2P, 2R, 3P			16	8	
74S174	8R, 4R			16	8	
74S175	8S			16	8	
74LS175	8N, 12P, 16P, 12S, 12T, 15L			16	8	
74S189	8M, 13F, 14F, 19M			16	8	
74LS193	8N, 19D, 19E, 19J, 19K, 19N, 19P, 20B, 20C, 20D, 20J, 20K, 20N, 20P			16	8	
74S195	8H, 10J, 10M, 11M, 14D, 14E, 15D, 16D			16	8	
74LS215	8J, 12J			16	8	
74LS221	9B, 15A			16	8	
74LS240	8M, 14H			20	10	
74LS241	8L, 15H, 15S, 15T, 16U			20	10	
74LS243	8T, 17T			14	7	
74LS251	8H, 4H, 4N, 4P, 5H, 5N, 5P, 6H, 8N, 8P, 9N, 9P, 10N, 10P, 11N, 11P, 19F, 19H, 19L, 19M, 20F, 20H, 20L, 20M			16	8	
74S257	8P, 6A, 18S, 18T			16	8	
74S260	8U, 15D			14	7	
74273	8R			20	10	
74279	9U, 5U	8S03,4 ; 5U4		16	8	
74LS280	8L, 14J, 15F, 15T			14	7	
74S374	8J, 3J, 16K, 17J, 17K			20	10	
8504	4D, 4E, 4F, 4J, 4K, 4L, 4M, 5D, 5E, 5F, 5J, 5K, 5L, 5M, 6J			16	8	
9401	7S			14	7	
6800 68800	8G			8	1, 21	
6875	7U			16	8	
74S472	1T, 2T, 3T, 4T			20	10	
74S287	10S, 16P, 19C			16	8	
74S288	8N			16	8	
2114-2	12H, 13H, 13J, 13K					
RPAK 1K	4U, 13R					

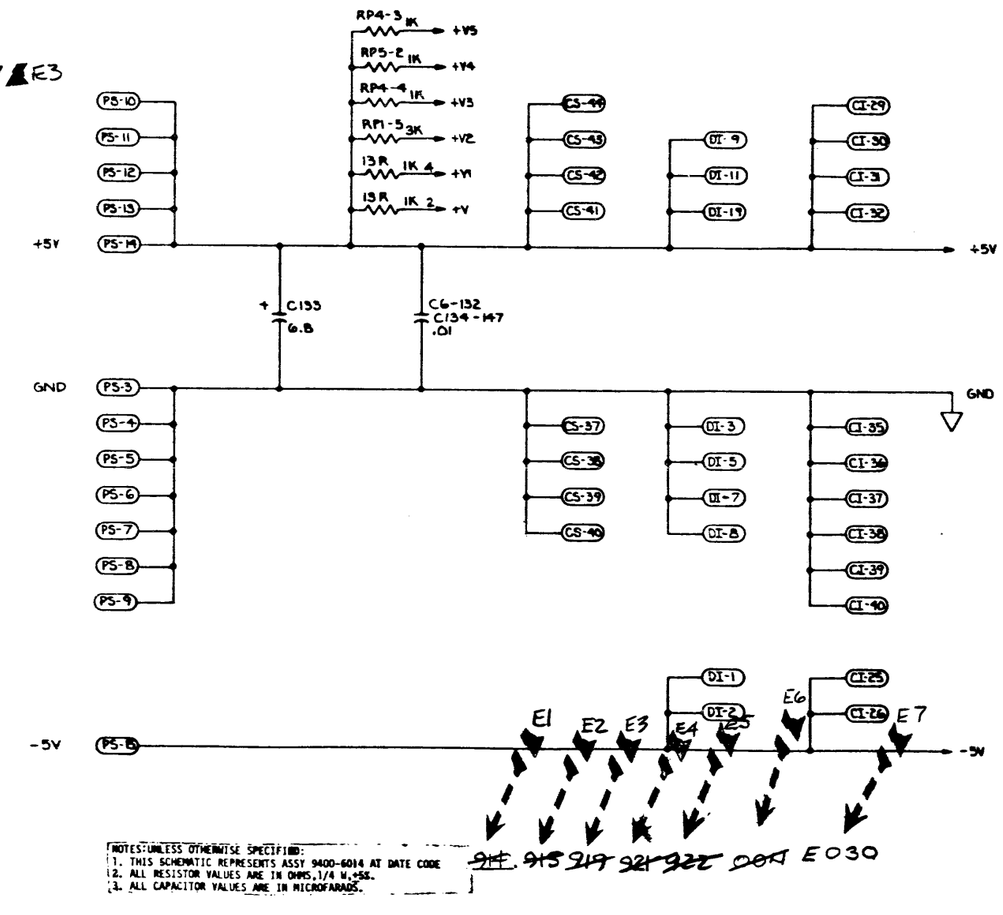
E7

E1

E2 E3

REF DESIGNATION LAST USED	REF DESIGNATION NOT USED
~~R24, R25~~ R26	
C149	
RP5	RP3-2,3,4; RP4-3
CR5	
Y1	
S5	
CP10	
TP29	
L1	
W12	

JUMPER	9400-6014-01 (RP04)	9400-6014-02 (RP03)
W12	PIN 2	PIN 1
W11A	PIN 5	PIN 1
W10	PIN 2	PIN 3



NOTES: UNLESS OTHERWISE SPECIFIED:
1. THIS SCHEMATIC REPRESENTS ASSY 9400-6014 AT DATE CODE ~~914~~ 915 ~~917~~ ~~921~~ ~~922~~ 004
2. ALL RESISTOR VALUES ARE IN OHMS, 1/4 W, +5%.
3. ALL CAPACITOR VALUES ARE IN MICROFARADS.

BC01

Figure 11-6. Basic Control (9400-6014E) Logic Diagram (Sheet 1 of 16)

Figure 11-6. Basic Control (9400-6014E) Logic Diagram (Sheet 2 of 16)

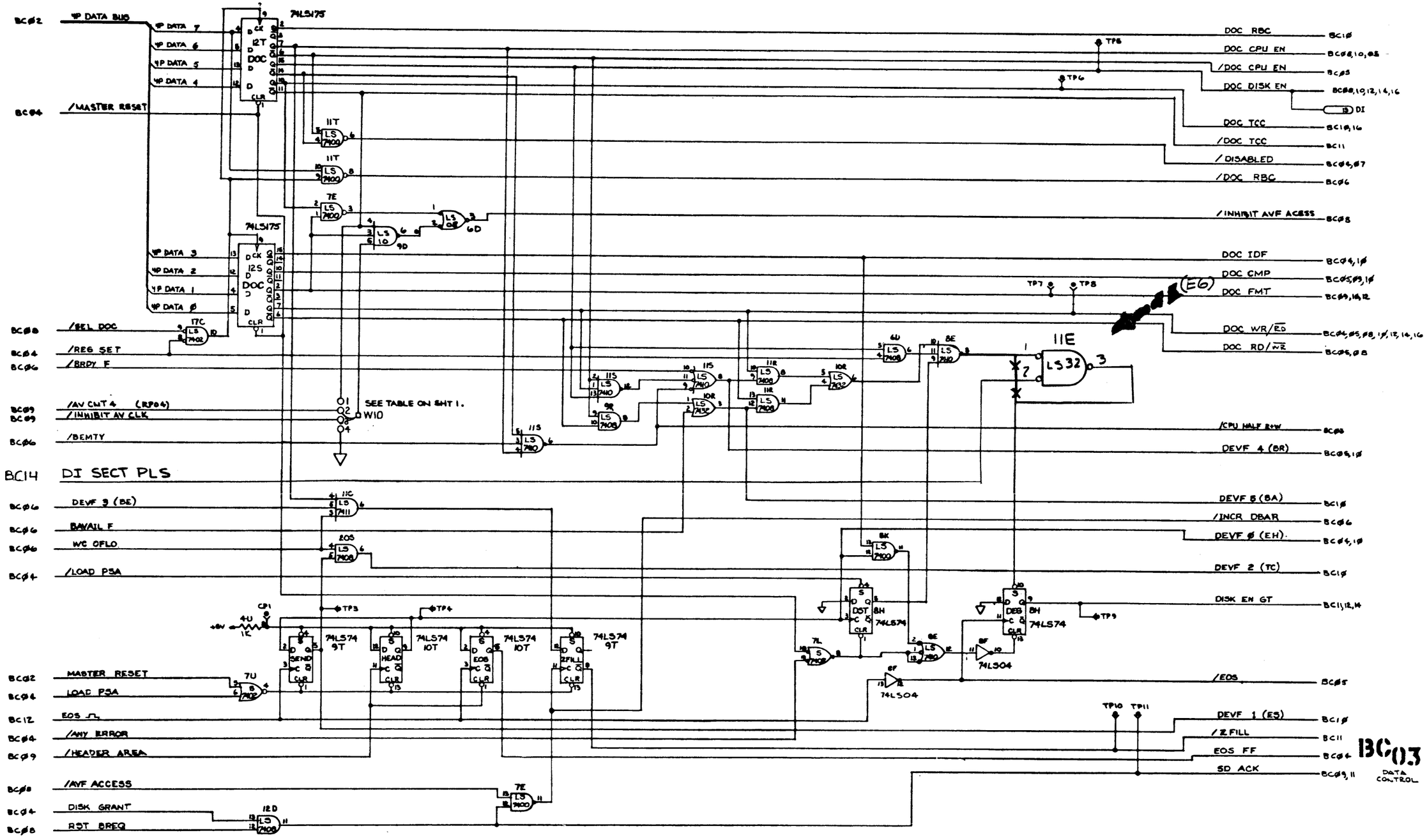


Figure 11-6. Basic Control (9400-6014E) Logic Diagram (Sheet 3 of 16)

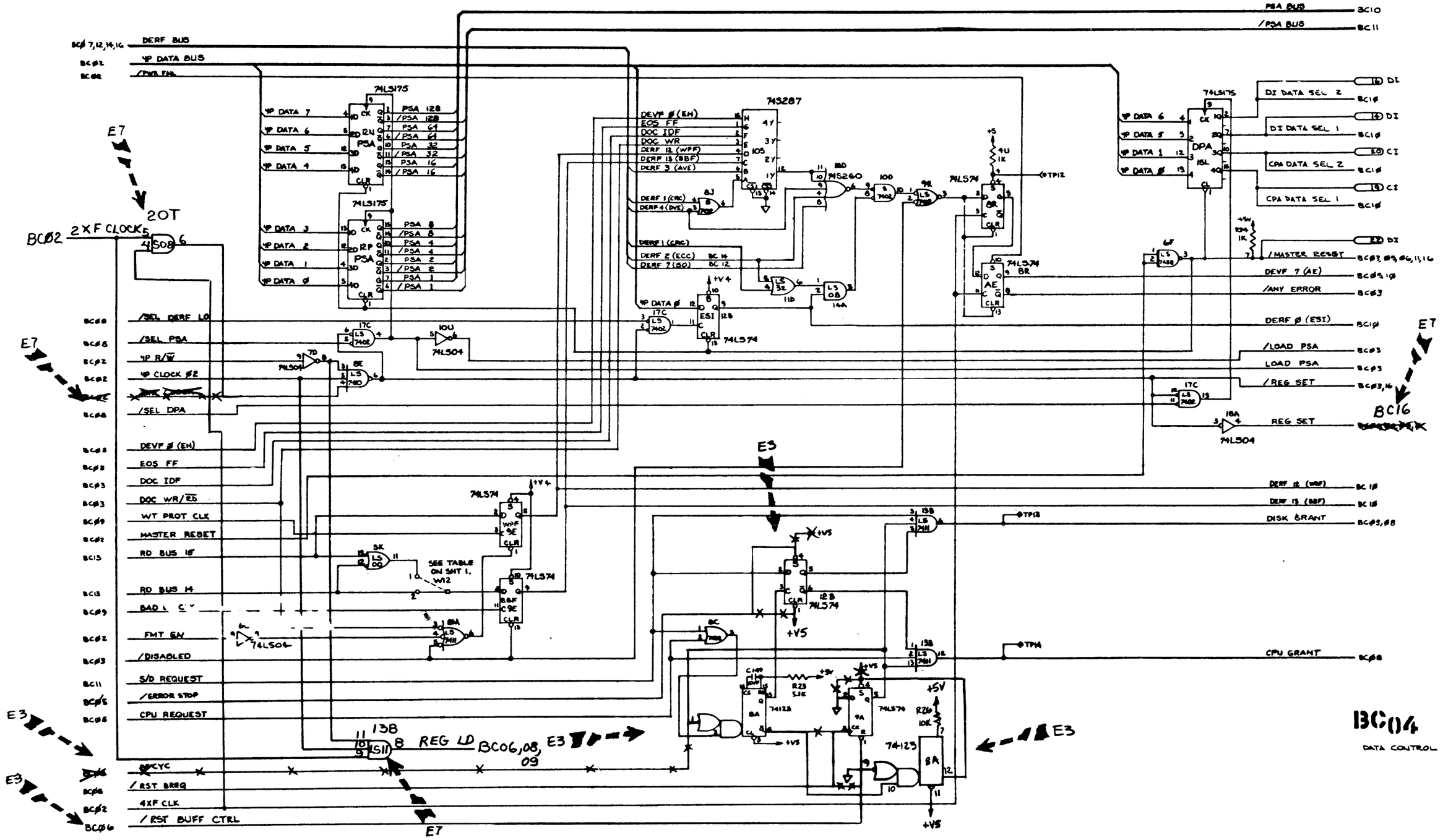
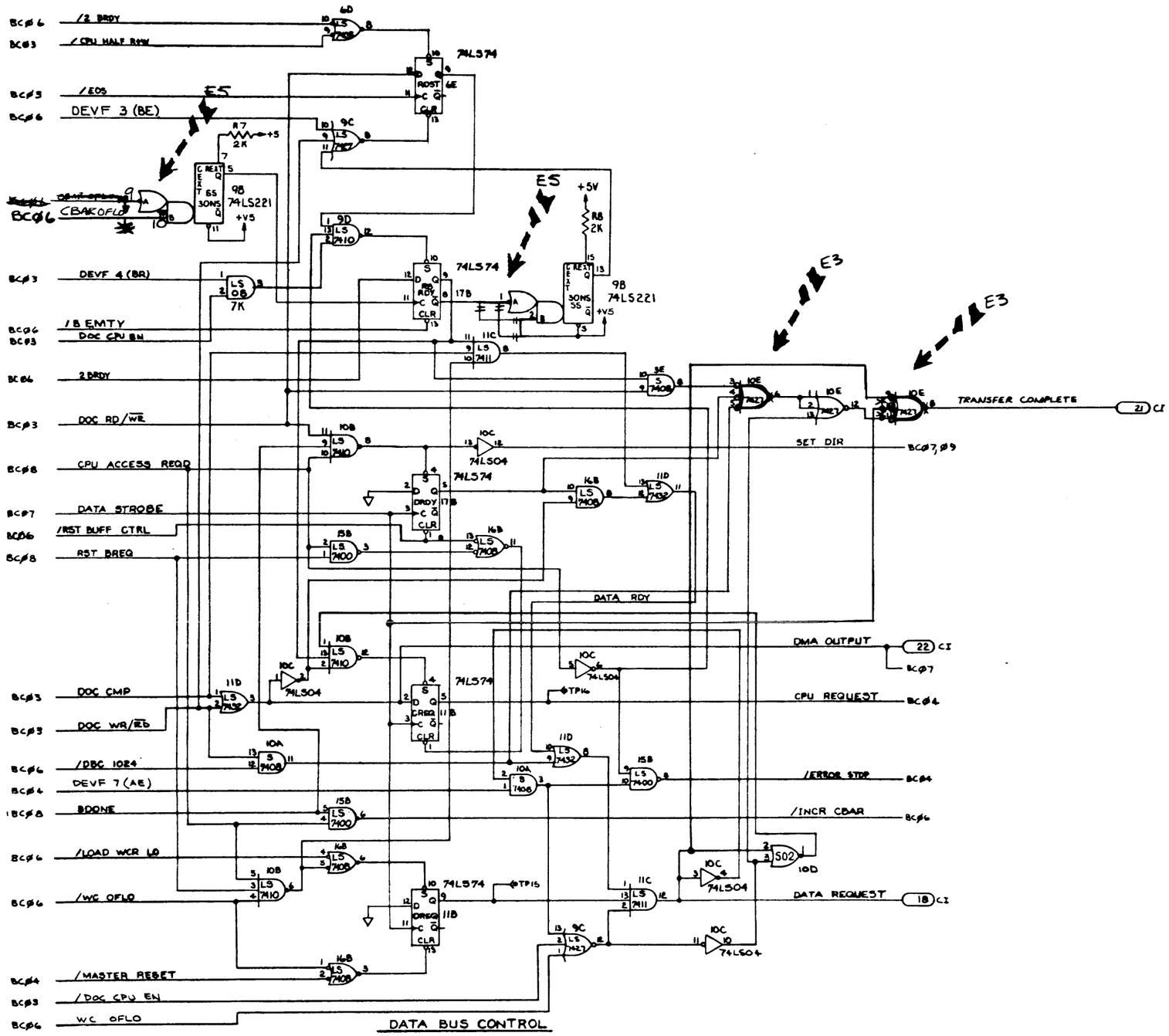


Figure 11-6. Basic Control (9400-6014E) Logic Diagram (Sheet 4 of 16)



BC05

Figure 11-6. Basic Control (9400-6014E) Logic Diagram (Sheet 5 of 16)

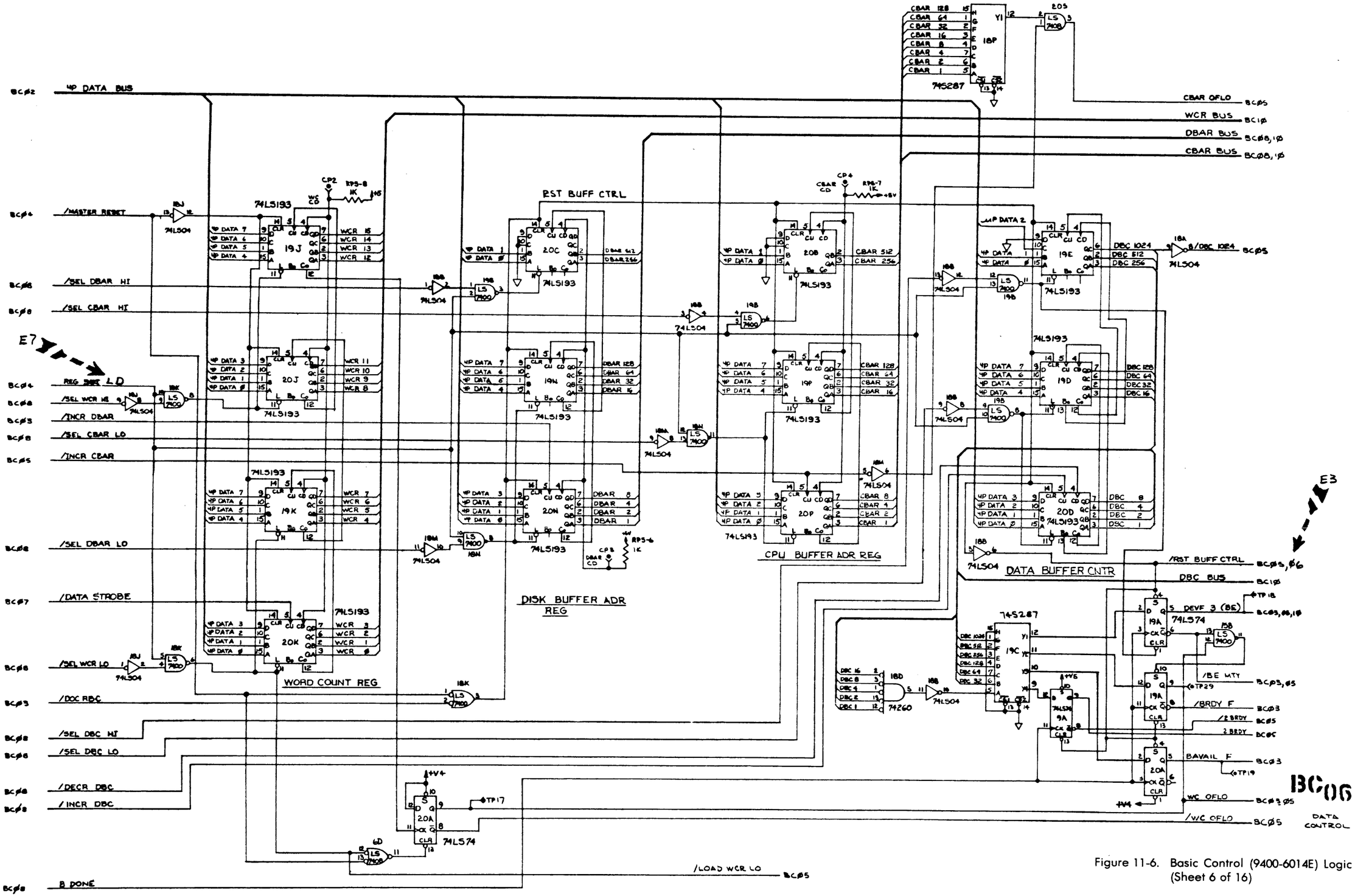


Figure 11-6. Basic Control (9400-6014E) Logic Diagram (Sheet 6 of 16)

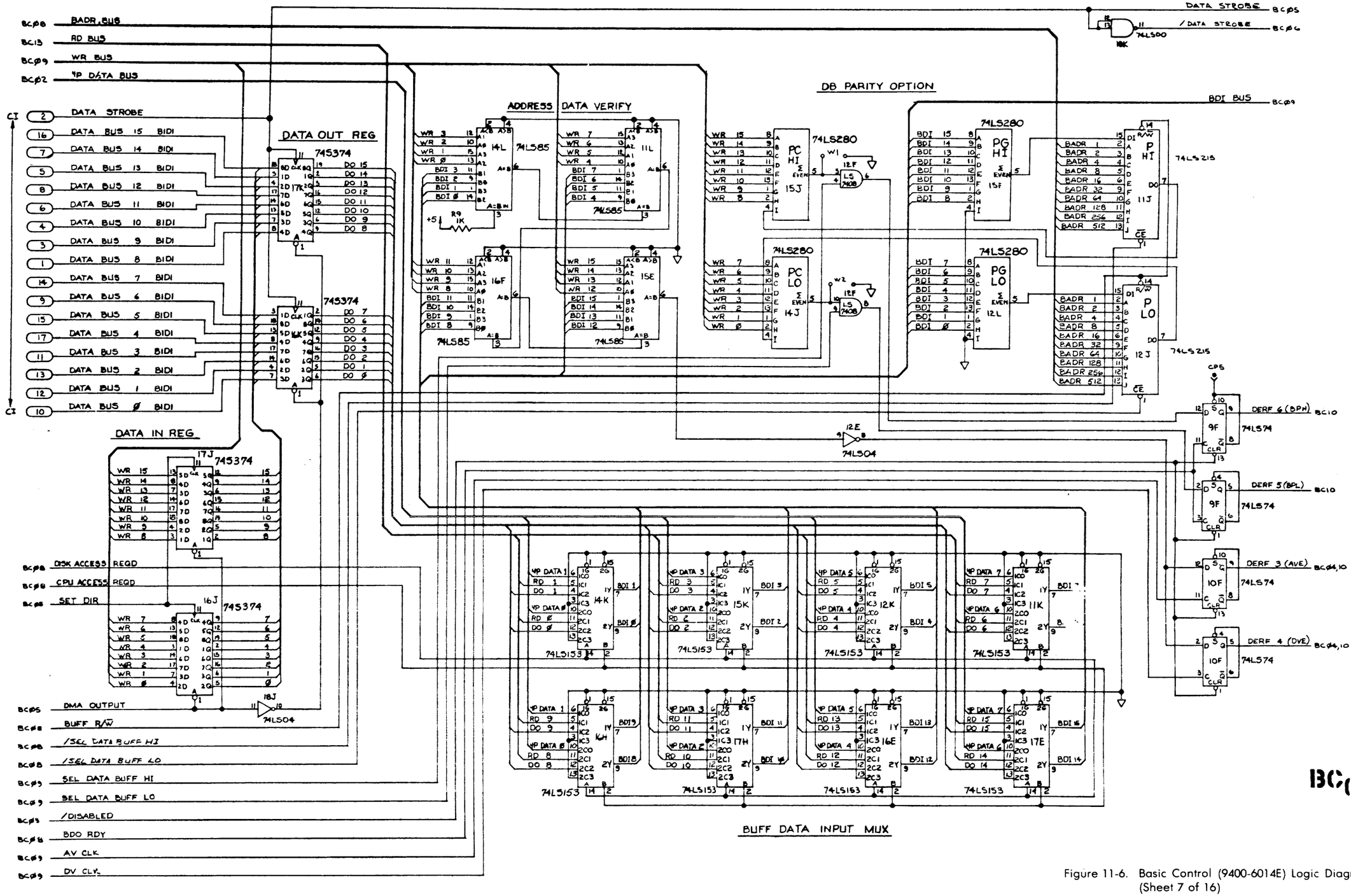


Figure 11-6. Basic Control (9400-6014E) Logic Diagram (Sheet 7 of 16)

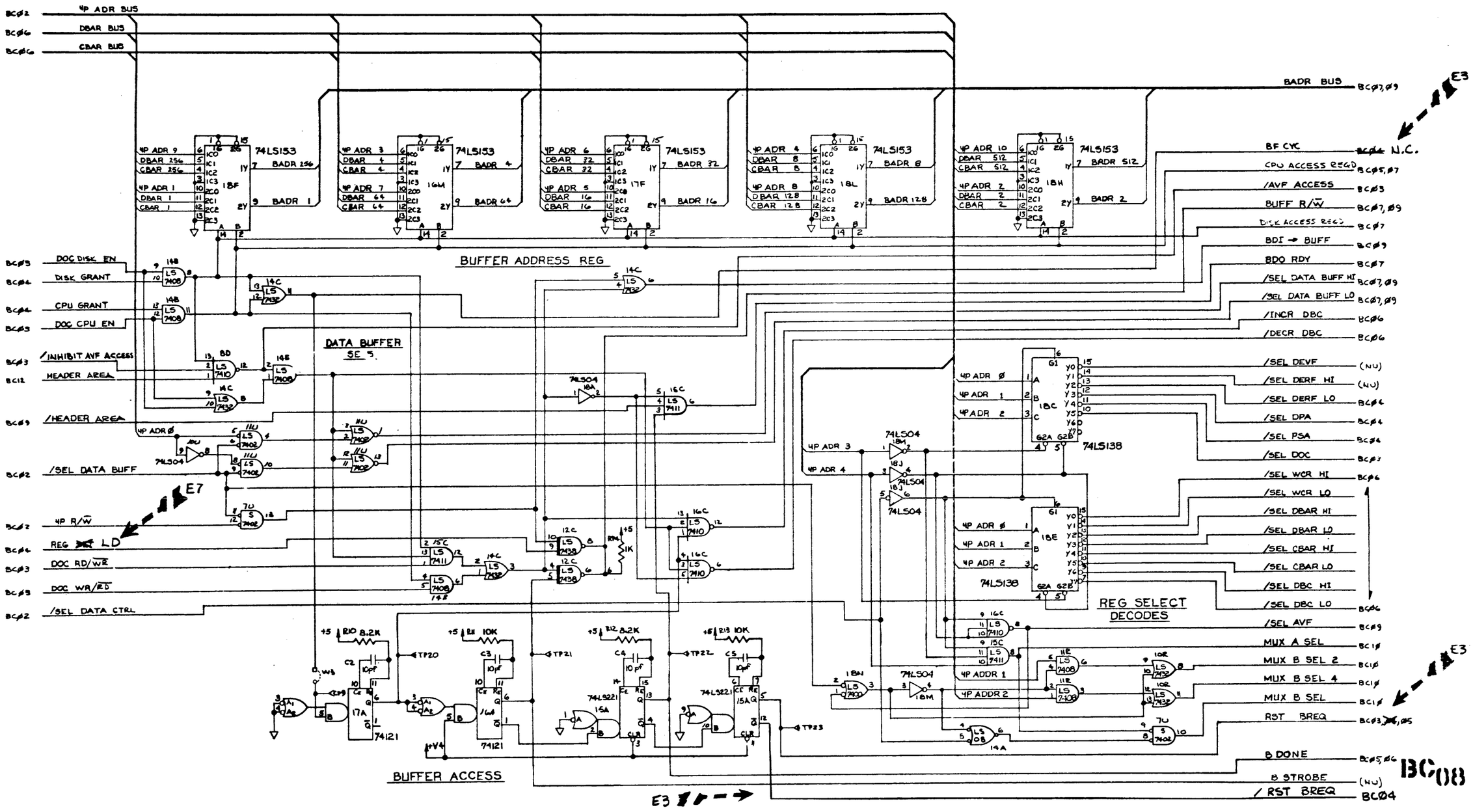


Figure 11-6. Basic Control (9400-6014E) Logic Diagram (Sheet 8 of 16)

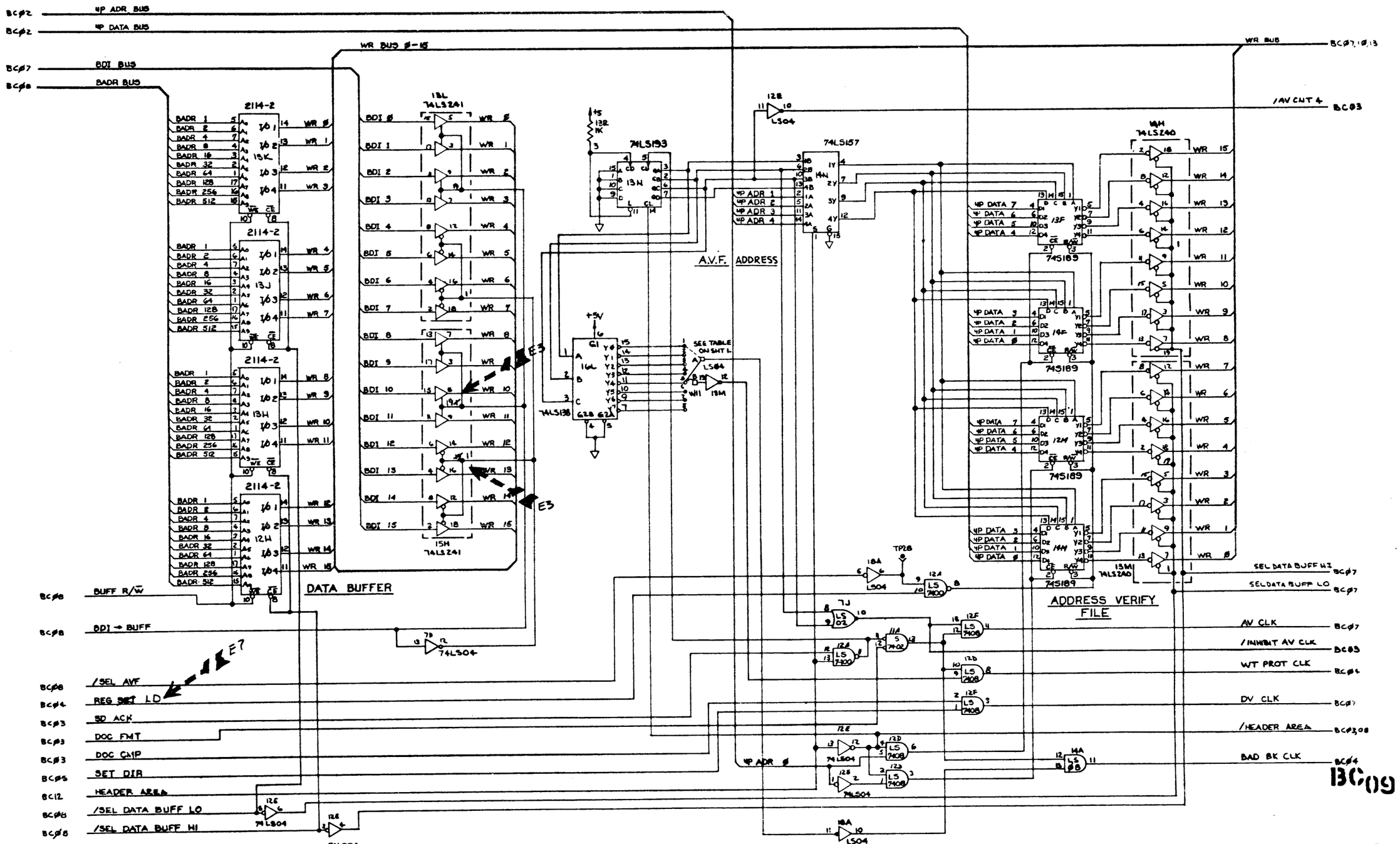
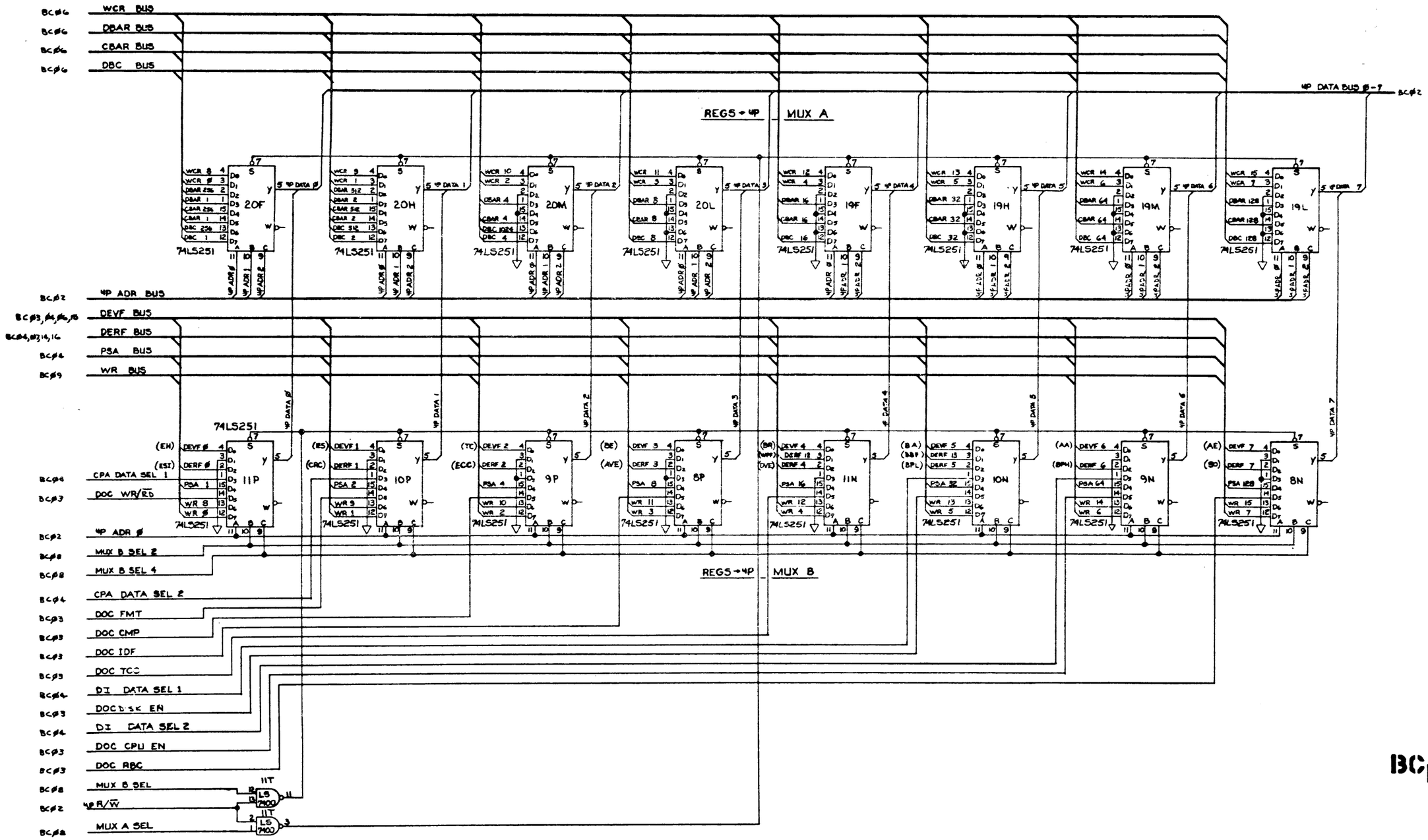
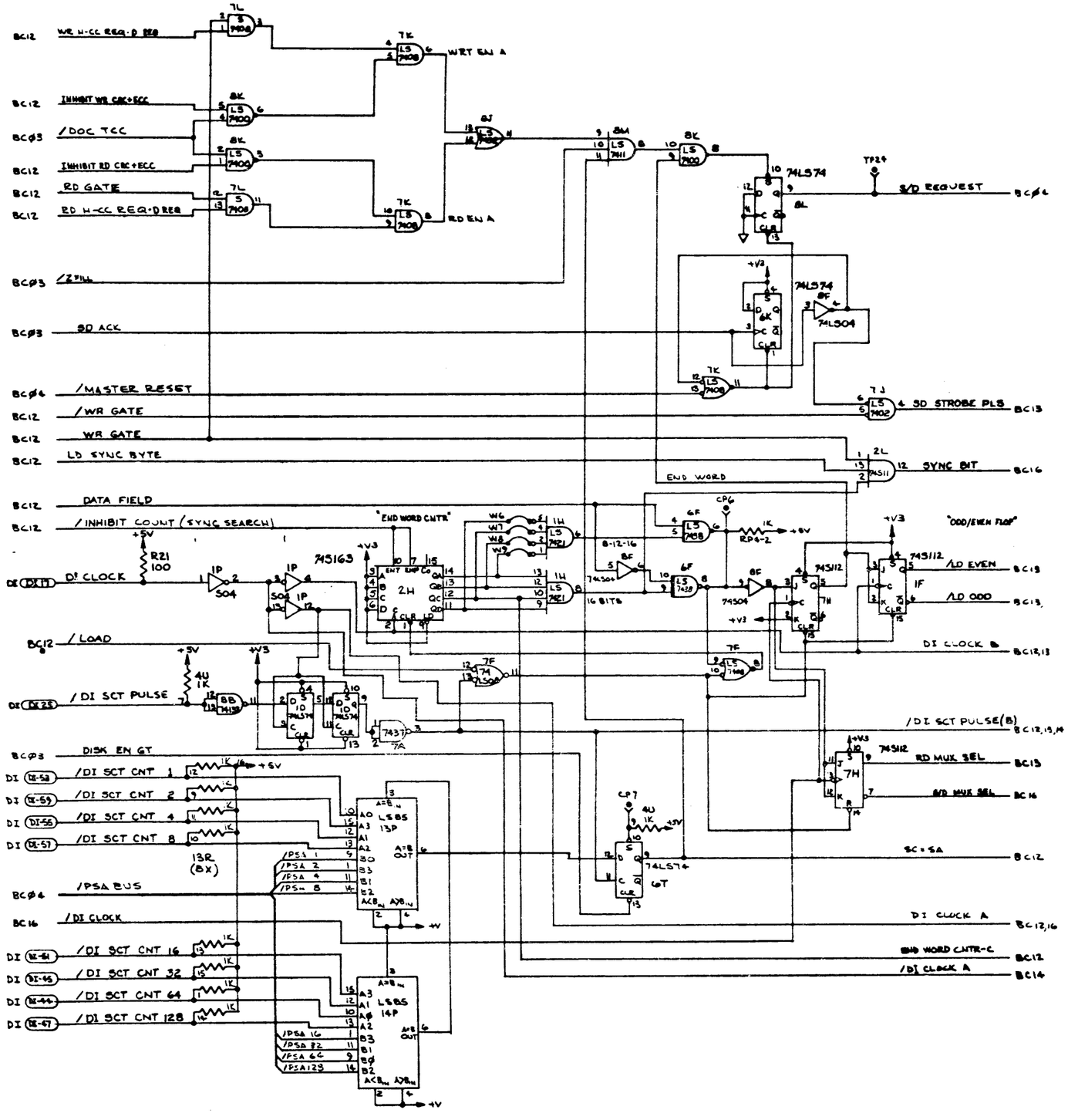


Figure 11-6. Basic Control (94C0-6014E) Logic Diagram (Sheet 9 of 16)



BC10

Figure 11-6. Basic Control (9400-6014E) Logic Diagram (Sheet 10 of 16)



BC11

Figure 11-6. Basic Control (9400-6014E) Logic Diagram (Sheet 11 of 16)

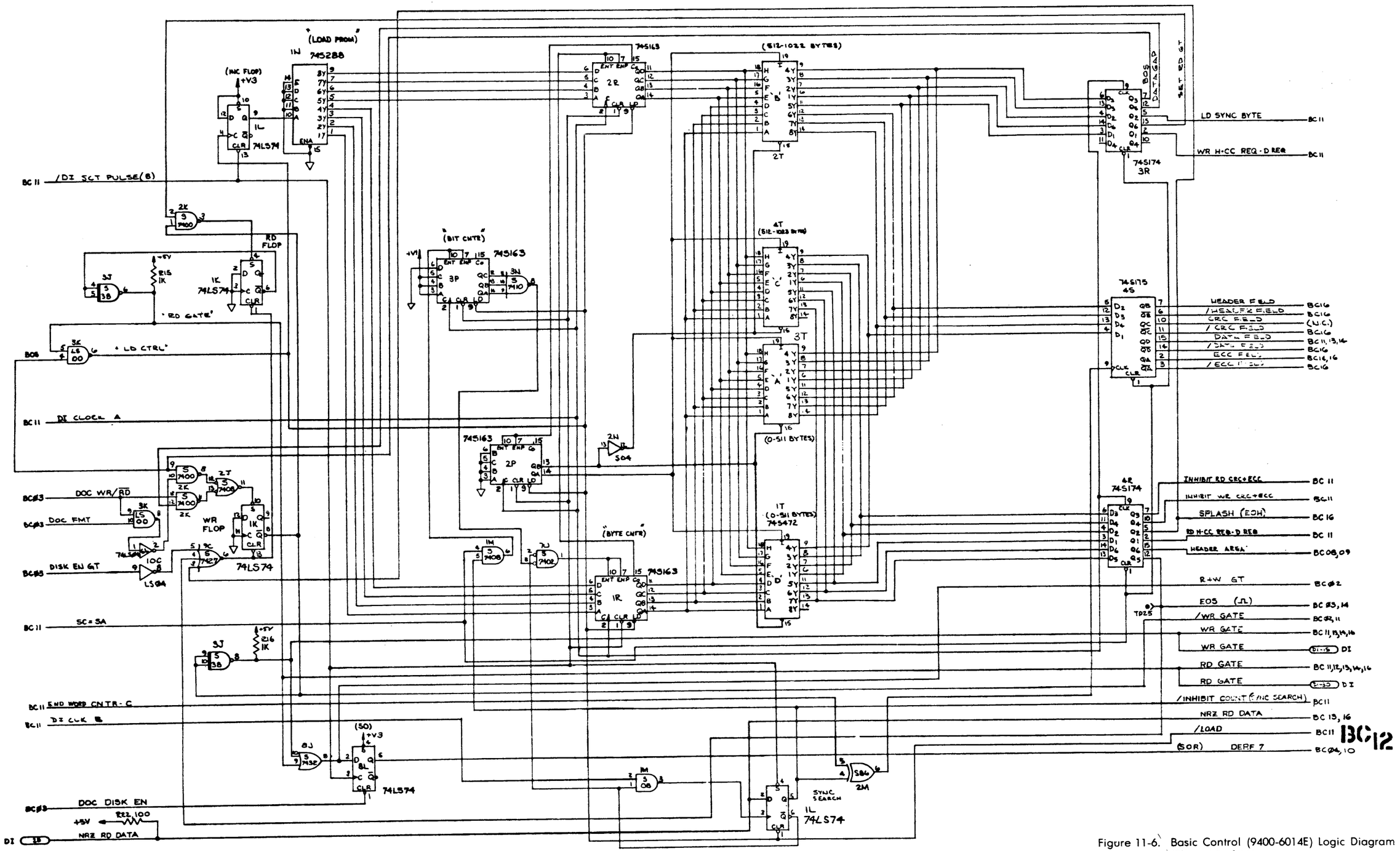
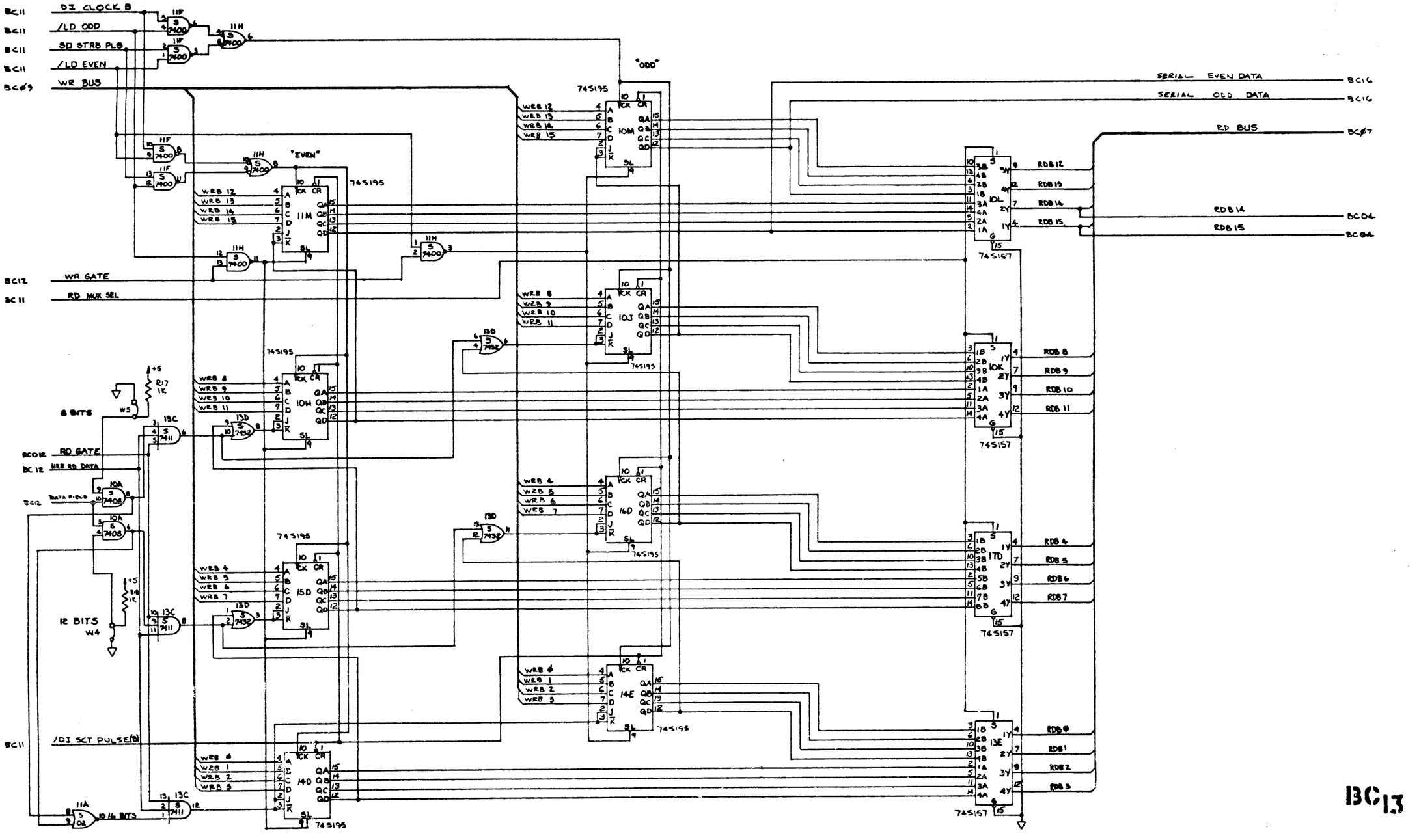


Figure 11-6. Basic Control (9400-6014E) Logic Diagram (Sheet 12 of 16)



BC13

Figure 11-6. Basic Control (9400-6014E) Logic Diagram (Sheet 13 of 16)

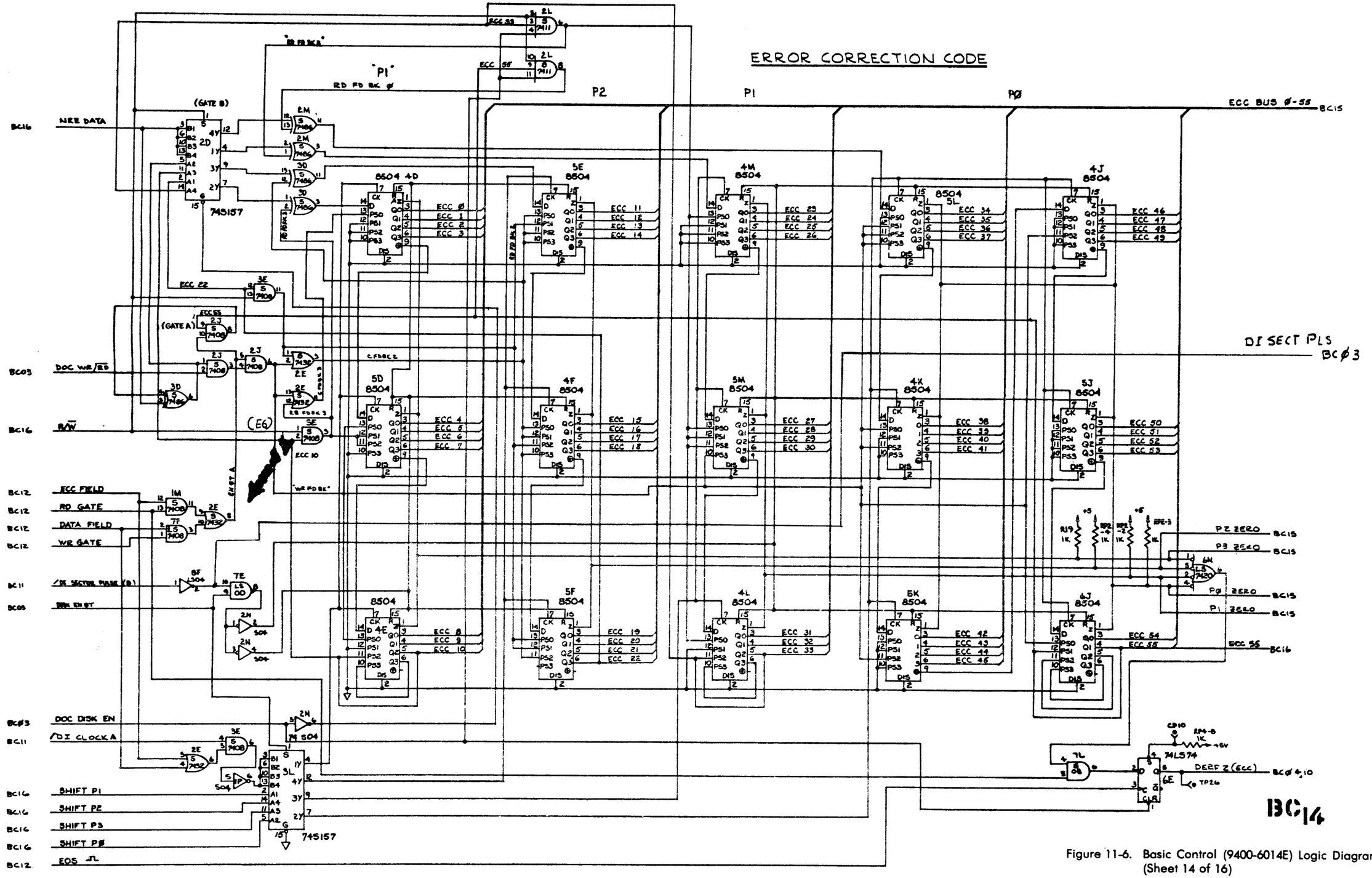
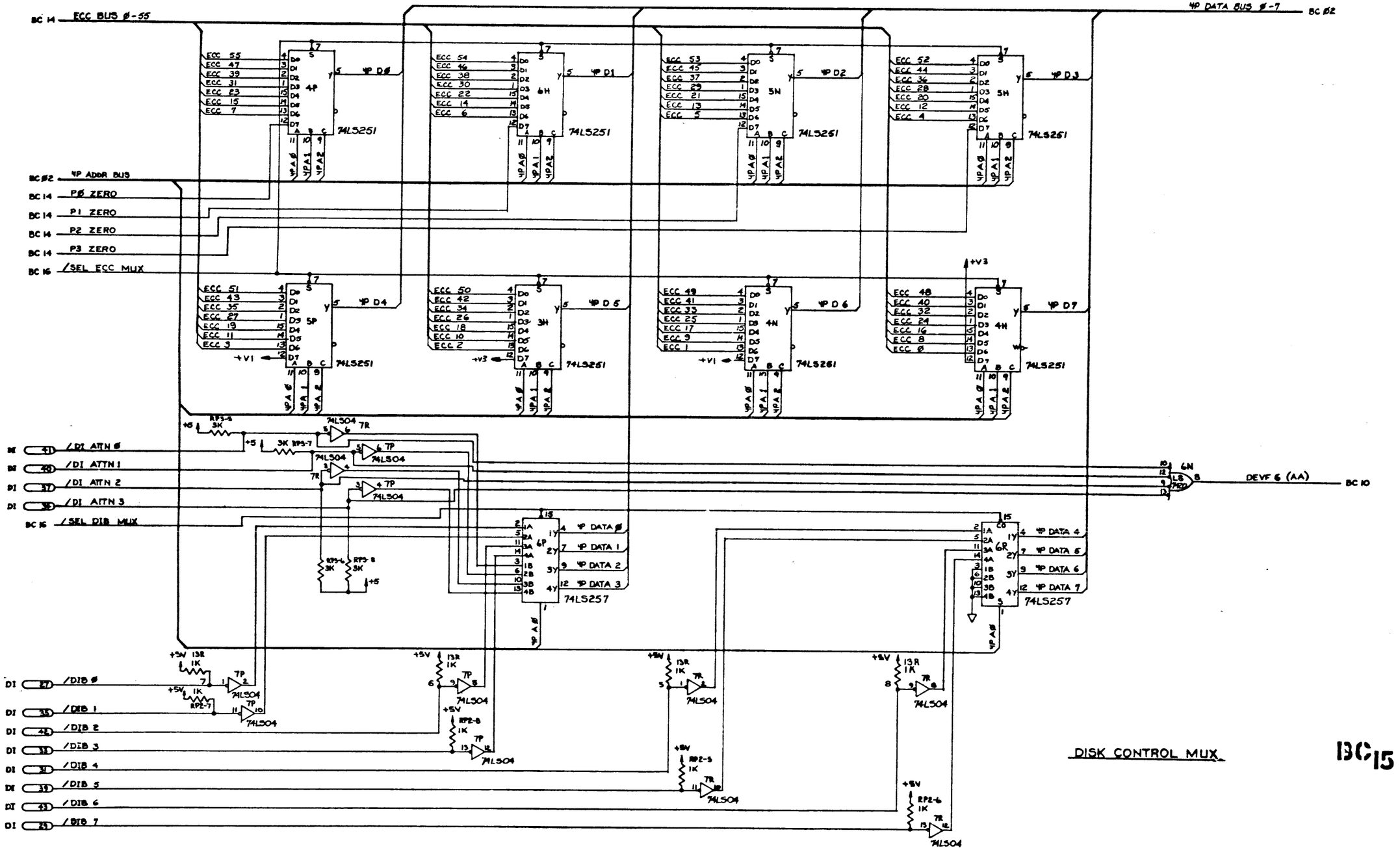


Figure 11-6. Basic Control (9400-6014E) Logic Diagram (Sheet 14 of 16)



DISK CONTROL MUX

BC 15

Figure 1.1-6. Basic Control (9400-6014E) Logic Diagram (Sheet 15 of 16)

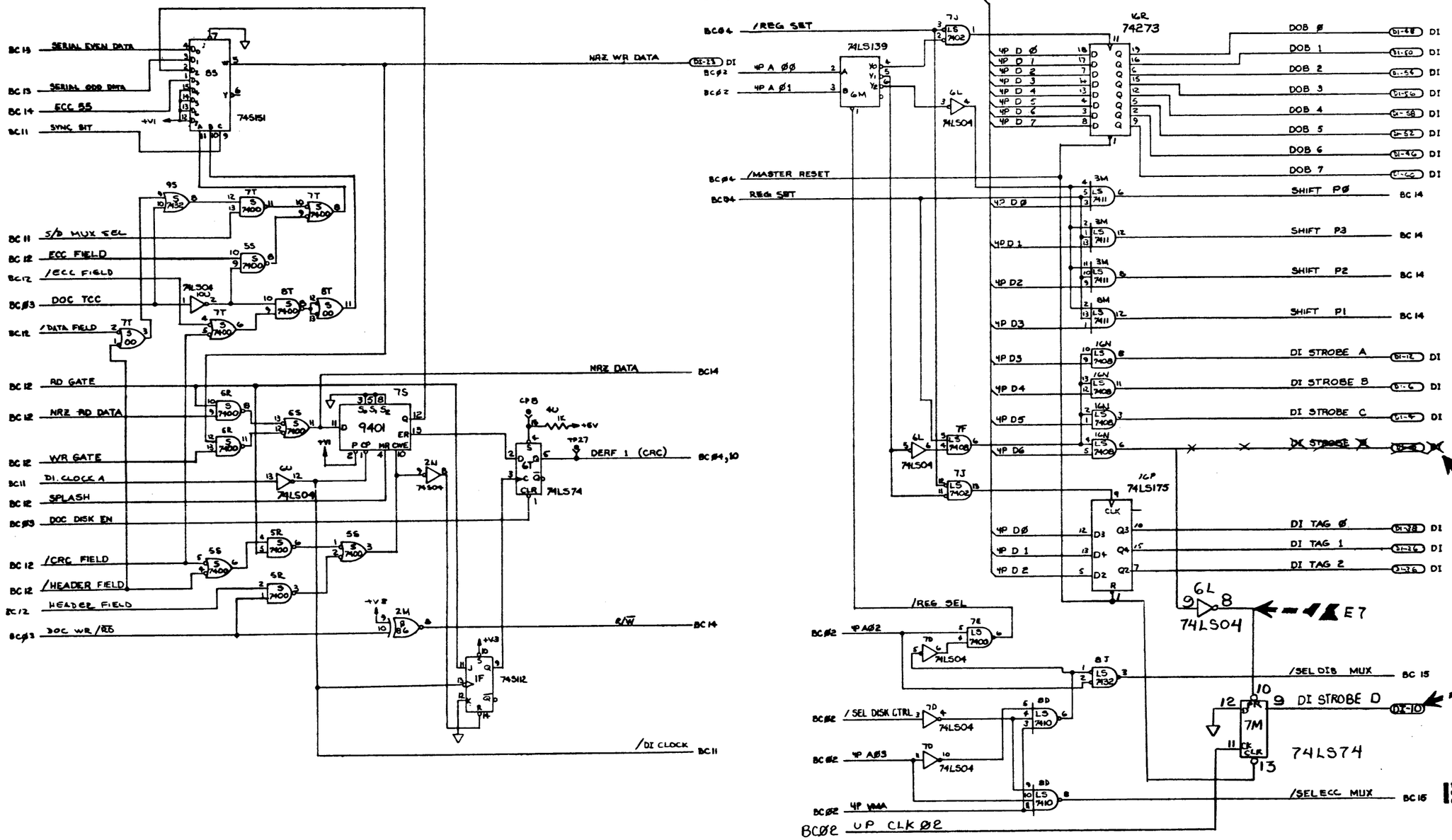
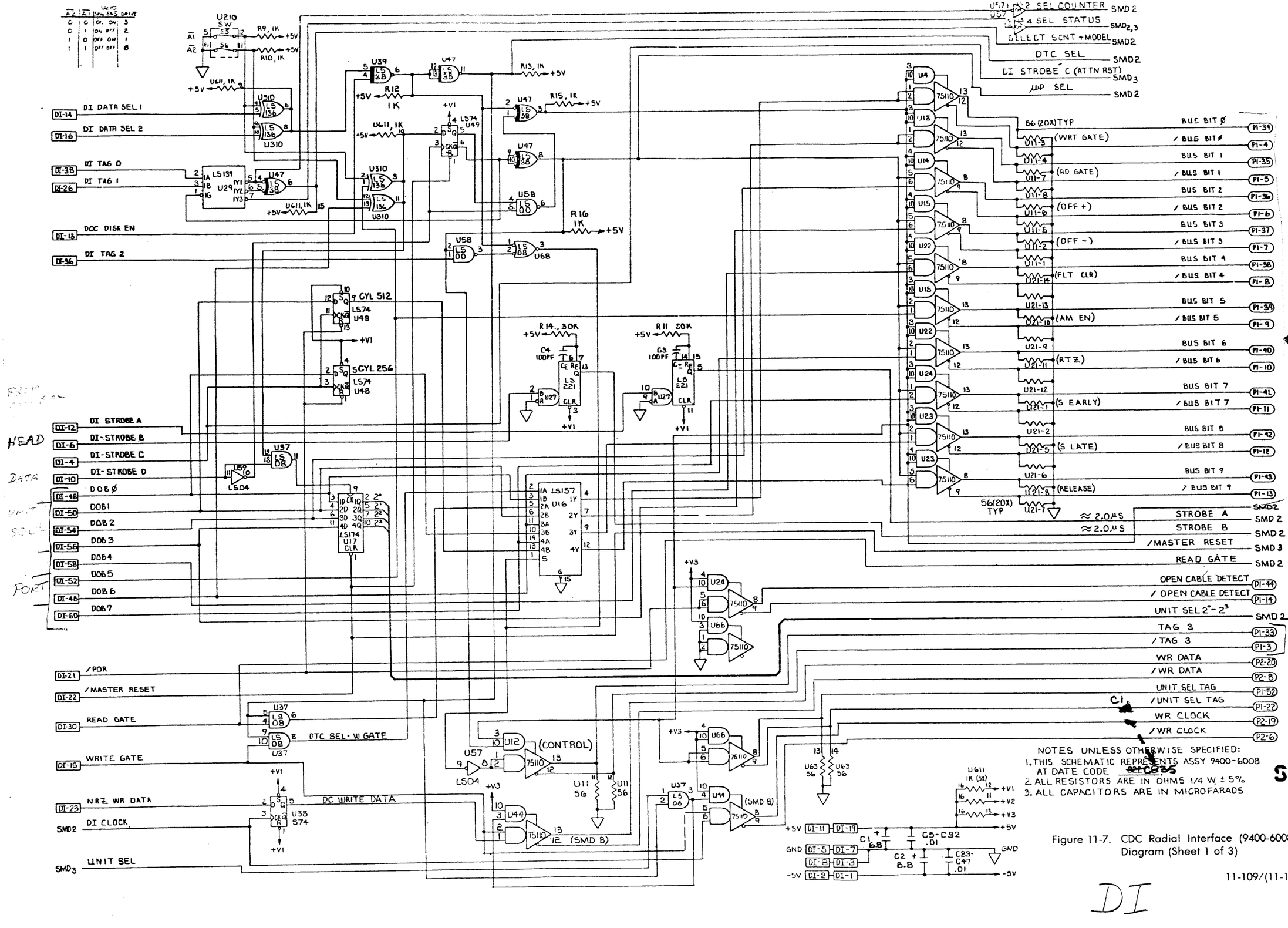


Figure 11-6. Basic Control (9400-6014E) Logic Diagram (Sheet 16 of 16)



NOTES UNLESS OTHERWISE SPECIFIED:
1. THIS SCHEMATIC REPRESENTS ASSY 9400-6008 AT DATE CODE ~~8FEC835~~
2. ALL RESISTORS ARE IN OHMS 1/4 W, ± 5%
3. ALL CAPACITORS ARE IN MICROFARADS

Figure 11-7. CDC Radial Interface (9400-6008C) Logic Diagram (Sheet 1 of 3)

DI

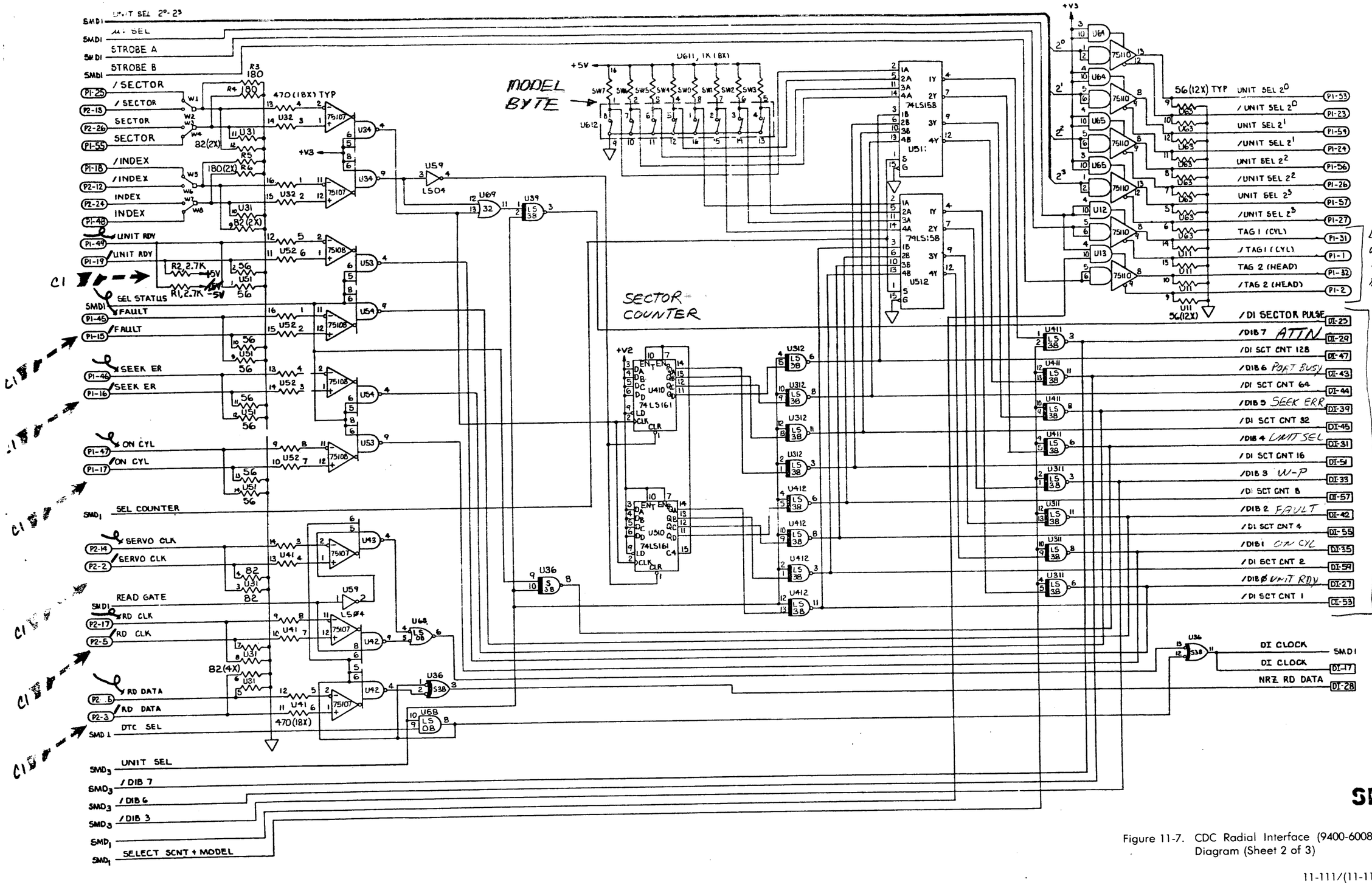
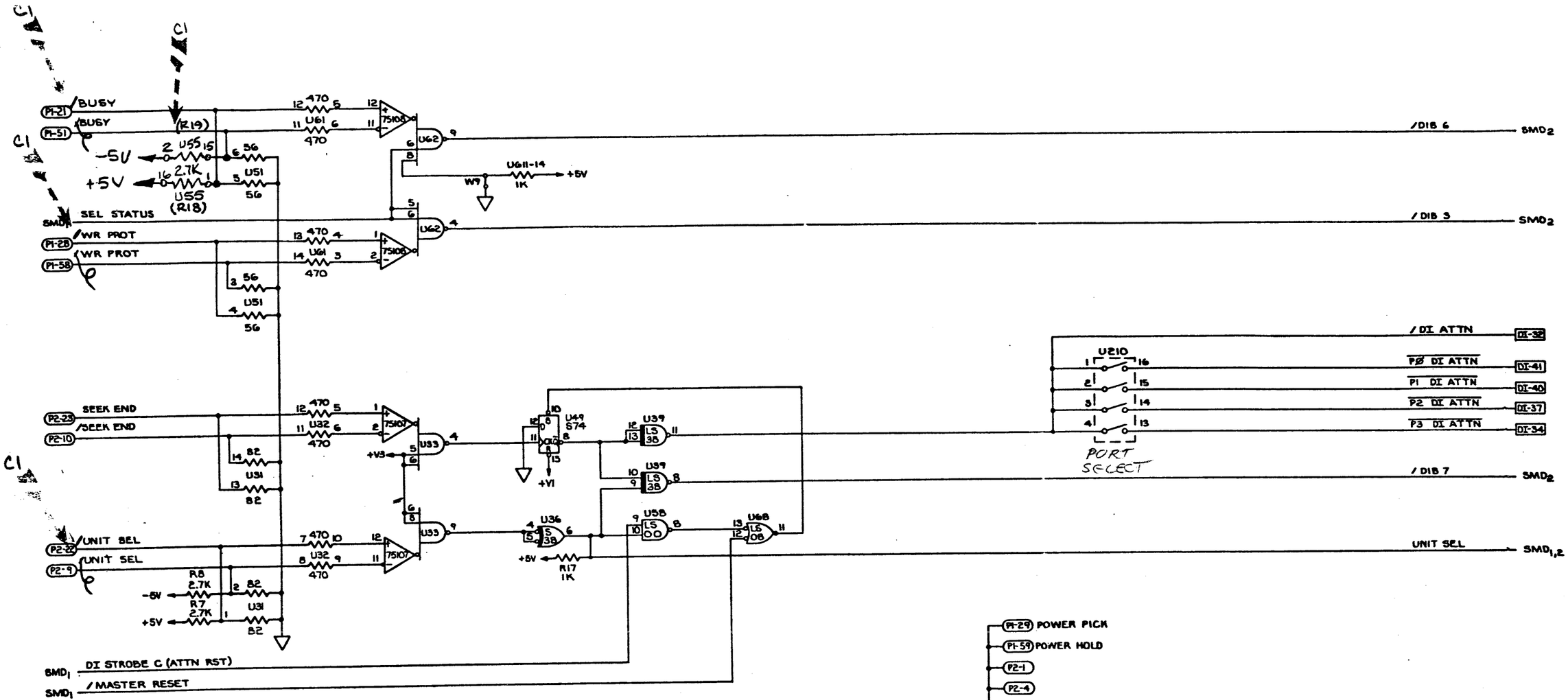


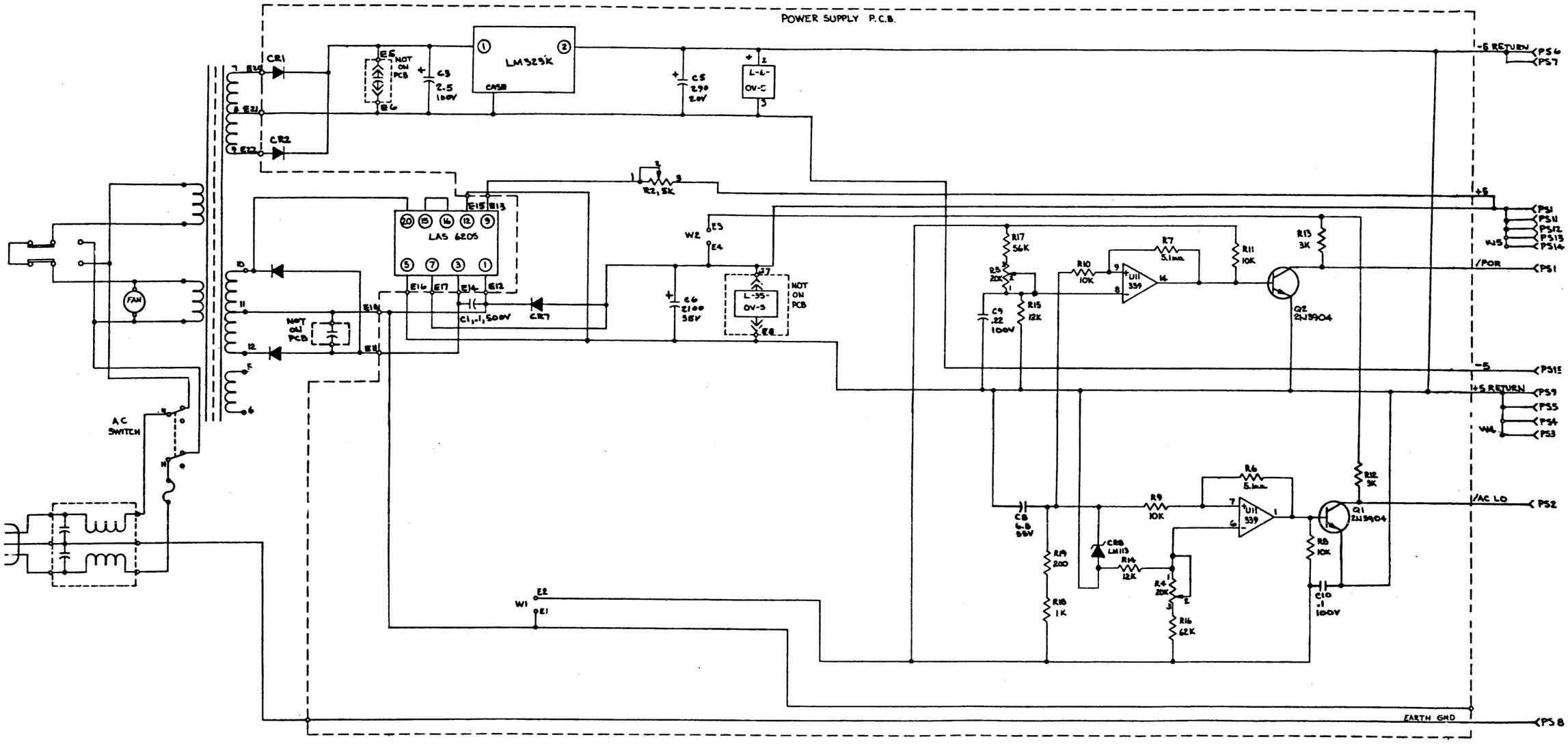
Figure 11-7. CDC Radial Interface (9400-6008C) Logic Diagram (Sheet 2 of 3)



TYPE	POSITION	UNUSED ELEMENTS	+5V	GND	-5V
74LS00	U58	U58-4	14	7	
74LS04	U57.59	U59-3,4,6;57-3,4,5,6	14	7	
74LS08	U37.68		14	7	
7432	U69	U69-1,2,3	14	7	
74S38	U36		14	7	
74LS38	U39,311,312,47,411,412		14	7	
74S74	U38	U38-2	14	7	
74LS74	U48,49		14	7	
74LS136	U310		14	7	
74LS139	U29	U29-2	16	8	
74LS157	U16		16	8	
74LS158	U511,512		16	8	
74LS161	U410,510		16	8	
74LS174	U17		16	8	
74LS221	U27		16	8	
7510?	U33,34,42,43	U43-2	14	7	13
75108	U53,54,62		14	7	13
75110	U12,13,14,15,22,23,24,44,64,65,66	U66-1	14	7	11
R-PAK 82	U31	U31-15			
R-PAK 56	U11,21,51,63	U11-15;U21-3,4;61-7,8,15			
		63-1,2,3,4,15			
R-PAK 470	U32,41,52,61	U41-1,2;52-3,4			
		61-1,2,7,8			
R-PAK 1K	U611				
SW SPST 8	U210,612	U210-7,8			

REF DESIGNATOR LAST USED	REF DESIGNATOR NOT USED
R17	
C47	
DI	
P2	

Figure 11-7. CDC Radial Interface (9400-6008C) Logic Diagram (Sheet 3 of 3)



NOTES:

1. THIS LOGIC REPRESENTS ASSY 9400-6010 AT DATE CODE 745
2. UNLESS OTHER WISE SPECIFIED:
   ALL RESISTOR VALUES ARE IN OHMS, 1/4W, ±5%.
3. ALL CAPACITOR VALUES ARE IN MICROFARADS.
4. ALL DIODES ARE IN914 OR EQUIL.

PS1

Figure 11-8. Power Supply (9400-6010C) Diagram (Sheet 1 of 1)

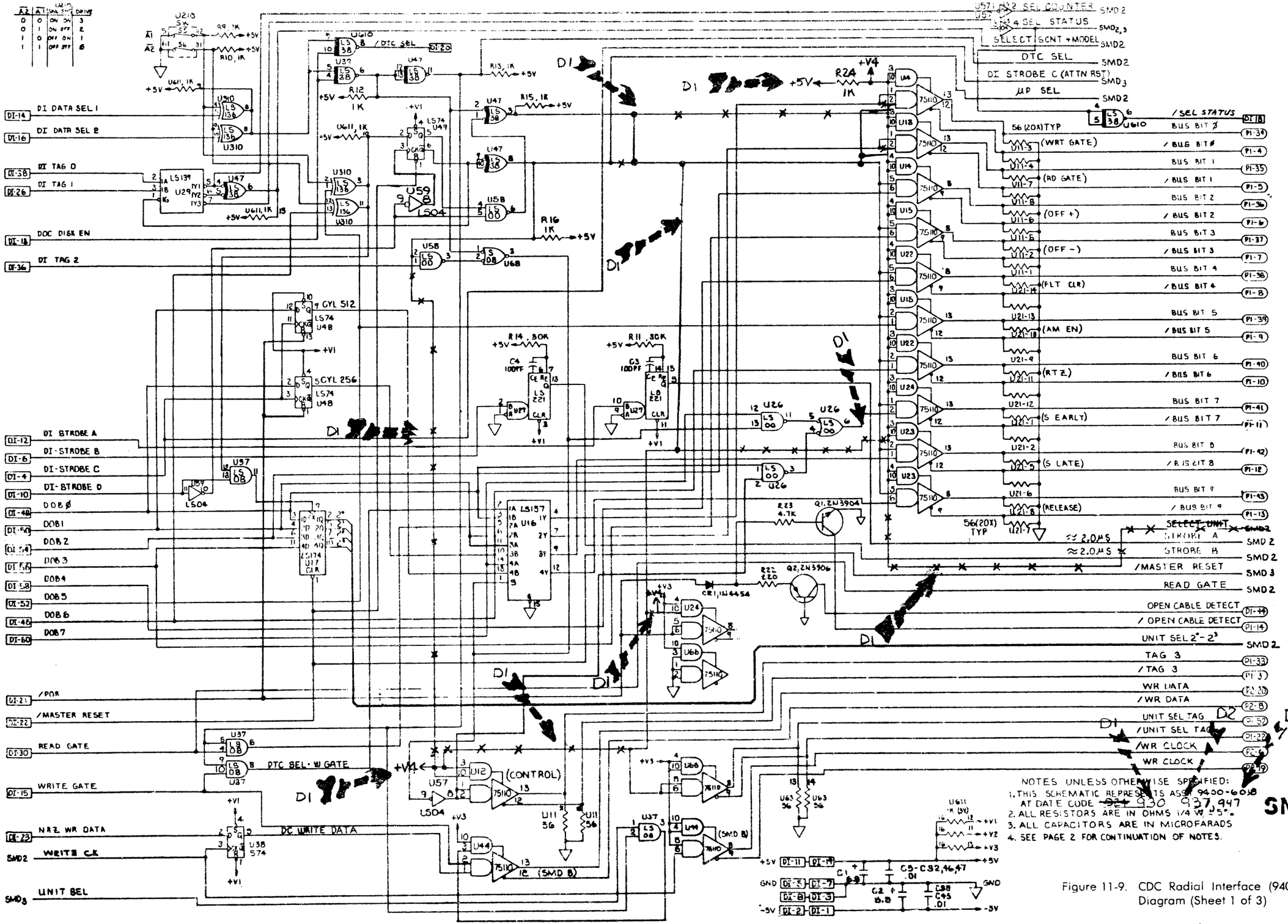
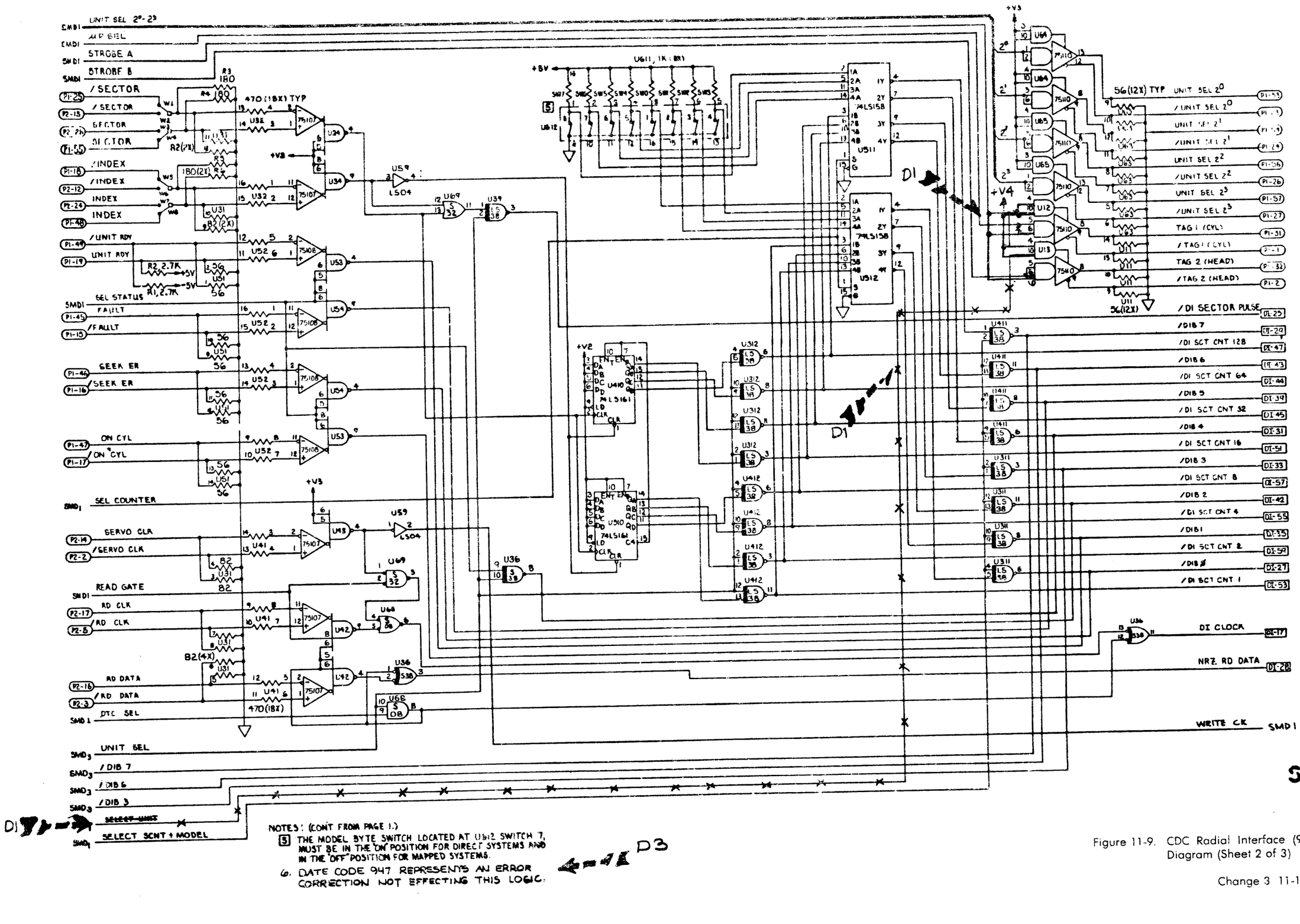


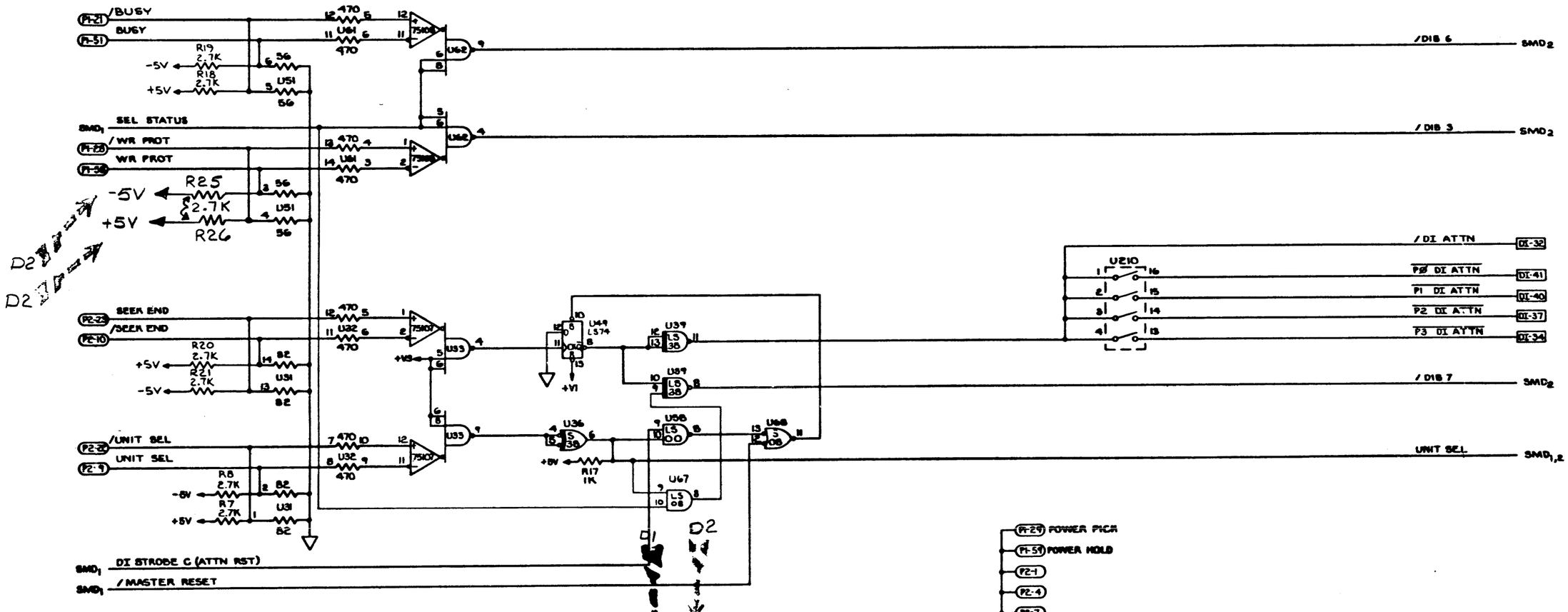
Figure 11-9. CDC Radial Interface (9400-6038D) Logic Diagram (Sheet 1 of 3)



NOTES: (CONT FROM PAGE 1.)

5. THE MODEL BYTE SWITCH LOCATED AT U612 SWITCH 7, MUST BE IN THE 'ON' POSITION FOR DIRECT SYSTEMS AND IN THE 'OFF' POSITION FOR MAPPED SYSTEMS.
6. DATE CODE 947 REPRESENTS AN ERROR CORRECTION NOT EFFECTING THIS LOGIC.

Figure 11-9. CDC Radial Interface (9400-6038D) Logic Diagram (Sheet 2 of 3)



TYPE	POSITION	UNUSED ELEMENTS	+5V	GND	-5V
74LS00	U58,26	U58-4,26-3	14	7	
74LS04	U57,59	U59-3, 6, U57-3, 5,8	14	7	
74LS08	U37,67	U67-1,2,4	14	7	
74S32	U69	U69- 2,3	14	7	
74S38	U36		14	7	
74LS38	U39,311,312,47,411,412,610	U610-1,4	14	7	
74S74	U38	U38-2	14	7	
74LS74	U48,49		14	7	
74LS136	U310		14	7	
74LS139	U29	U29-2	16	8	
74LS157	U16		16	8	
74LS158	U511,512		16	8	
74LS161	U410,510		16	8	
74LS174	U17		16	8	
74LS221	U27		16	8	
75107	U33,34,42,43	U43-2	14	7	13
75108	U53,54,62		14	7	13
75110	U12,13,14,15,22,23,24,44,64,65,66		14	7	11
R-PAK 82	U31	U31-15			
R-PAK 56	U11,21,51,63	U11-15; U21-3,4,15; U51-7, 8,15; U63-1,2,3,4,15			
R-PAK 470	U32,41,52,61	U41-1,2			
		61-1,2,7,8			
R-PAK 1K	U611	611-14			
SW SPST 8	U210,612	U210-7,8			
74S08	U68		14	7	

REF DESIGNATOR LAST USED	REF DESIGNATOR NOT USED
RES R24 R26	
C 47	
D1	
P2	
W8	
Q2	

SMD$_3$

Figure 11-9. CDC Radial Interface (9400-6038D) Logic Diagram (Sheet 3 of 3)

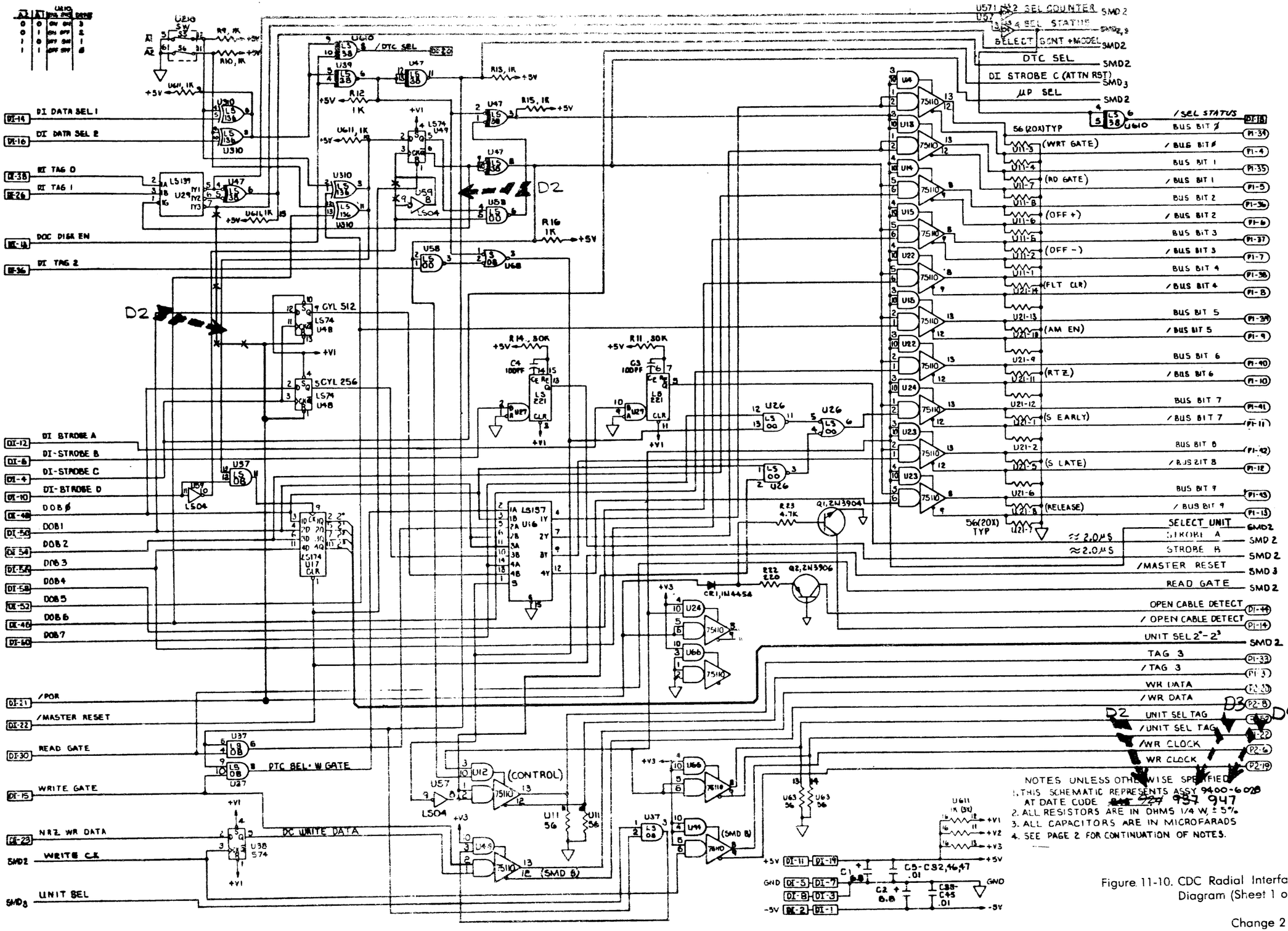
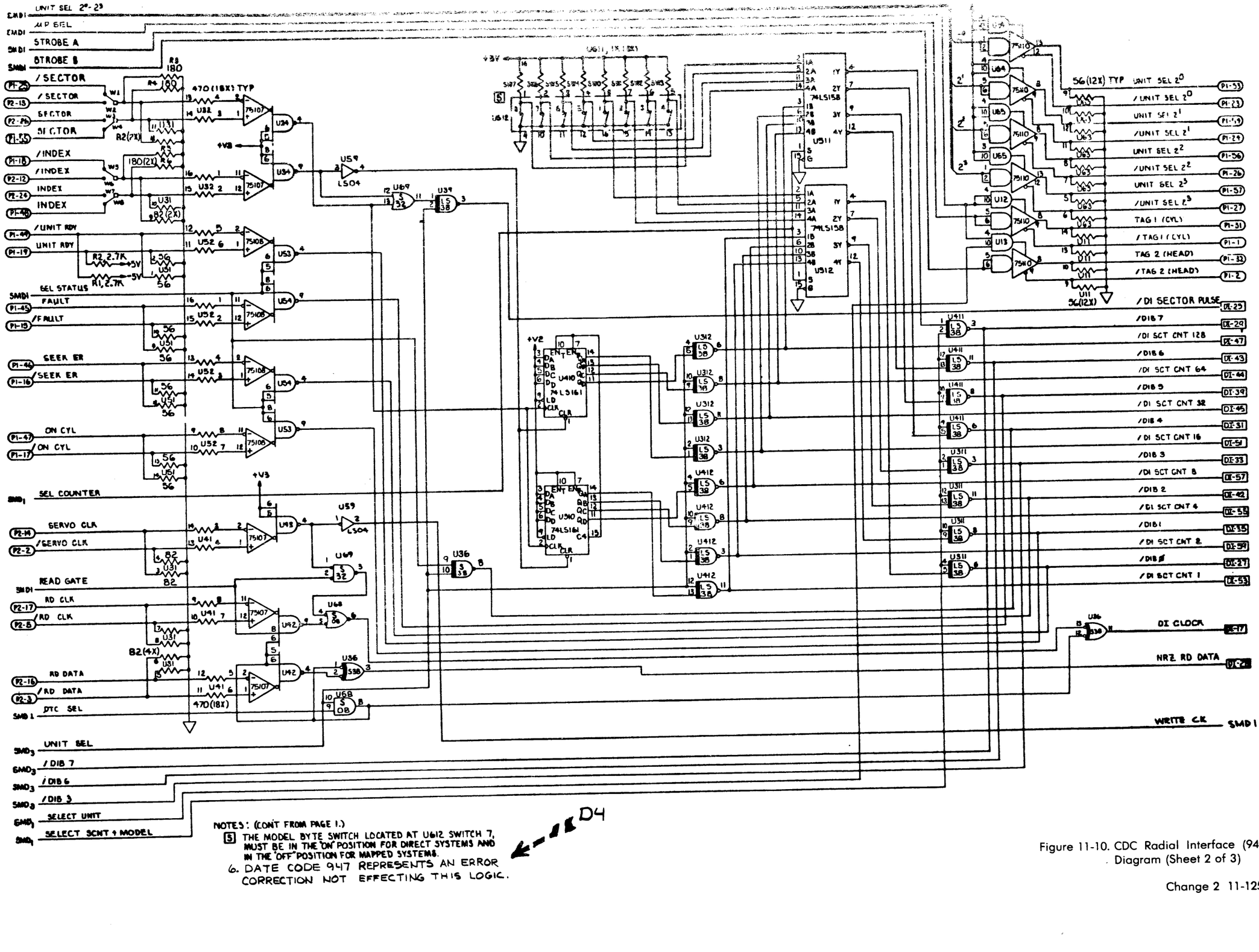


Figure 11-10. CDC Radial Interface (9400-6028D) Logic Diagram (Sheet 1 of 3)



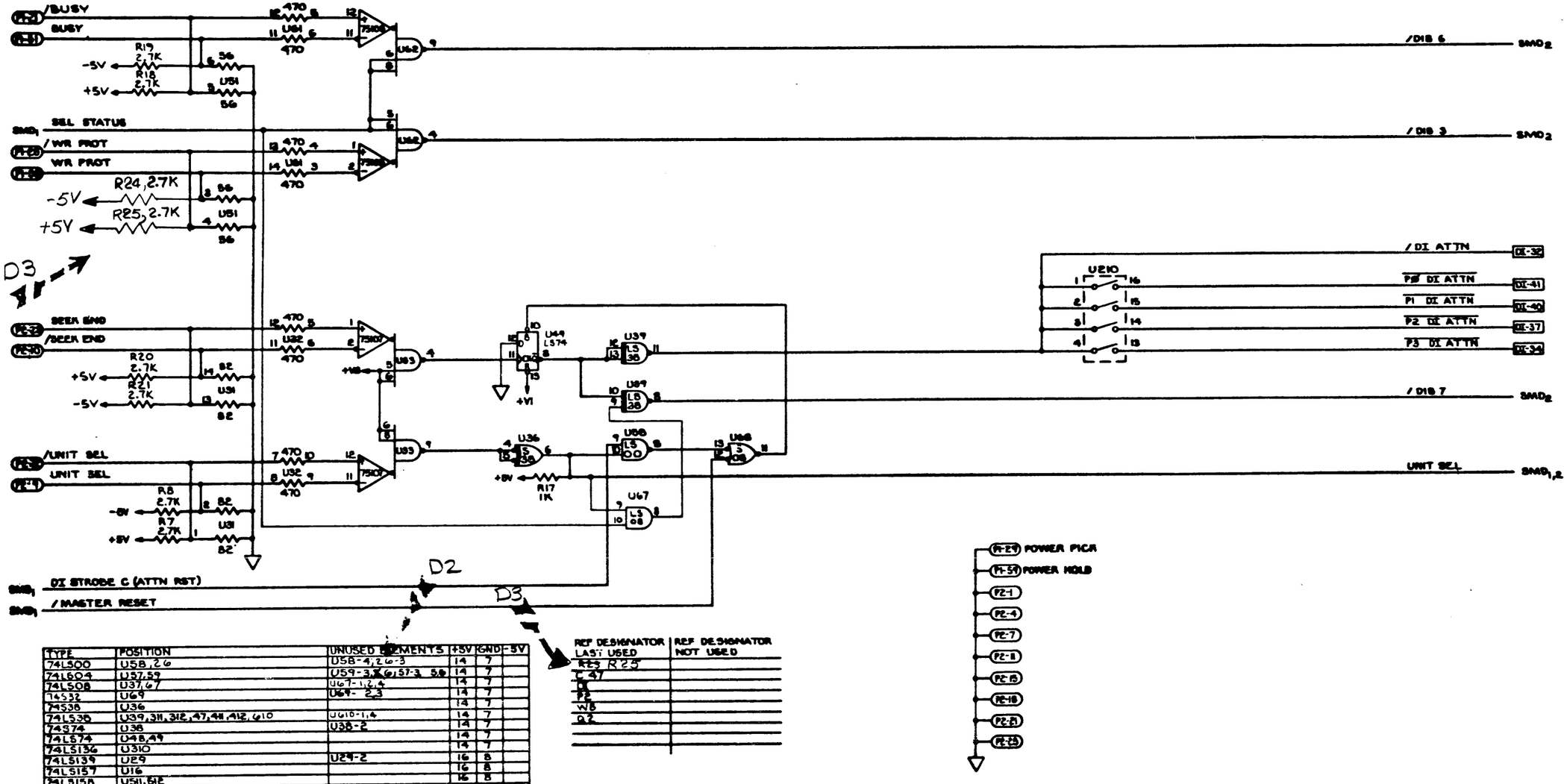
NOTES: (CONT FROM PAGE 1.)

[S] THE MODEL BYTE SWITCH LOCATED AT U612 SWITCH 7, MUST BE IN THE 'ON' POSITION FOR DIRECT SYSTEMS AND IN THE 'OFF' POSITION FOR MAPPED SYSTEMS.

6. DATE CODE 947 REPRESENTS AN ERROR CORRECTION NOT EFFECTING THIS LOGIC.

D4

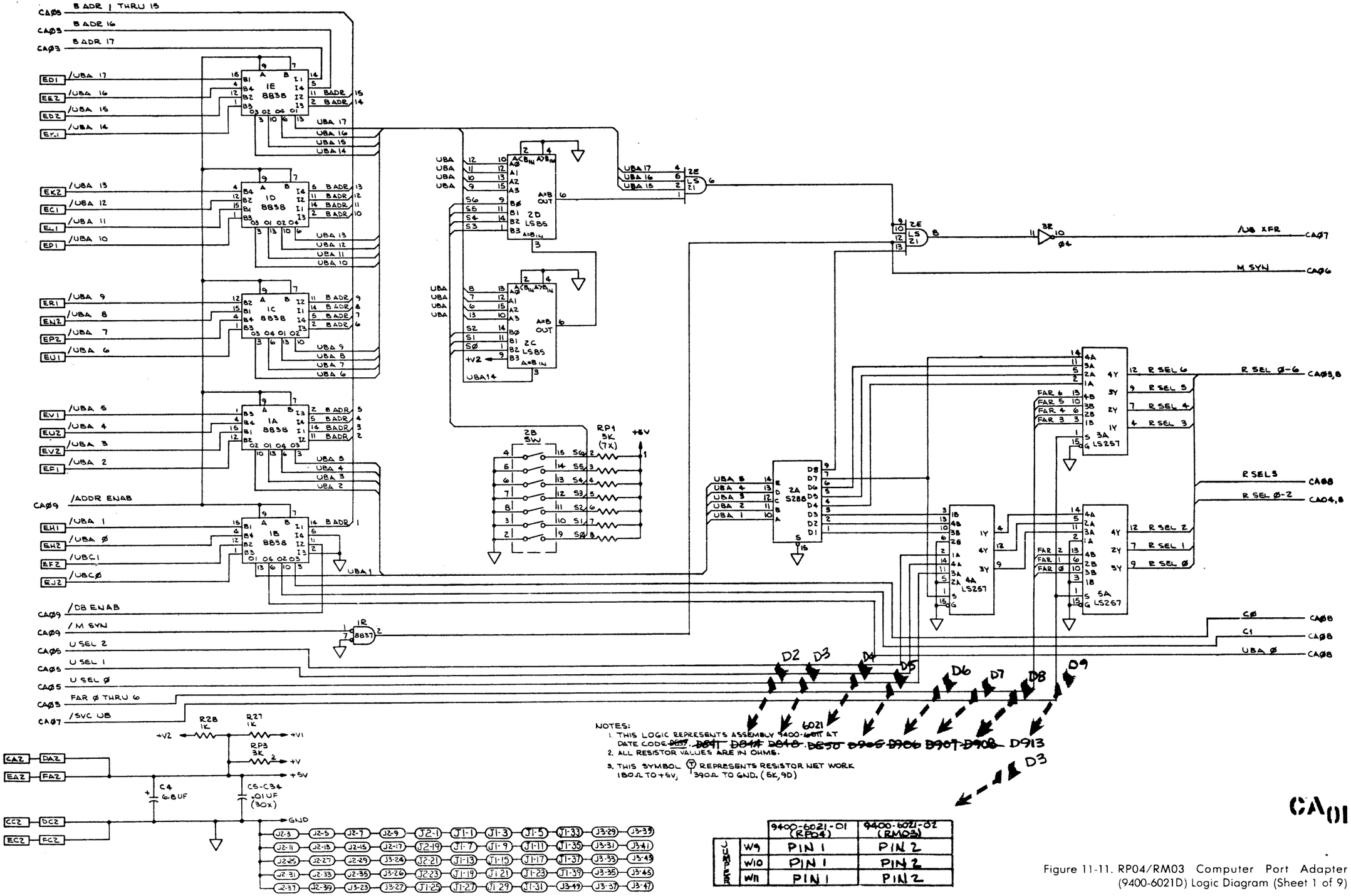
Figure 11-10. CDC Radial Interface (9400-6028D) Logic Diagram (Sheet 2 of 3)



TYPE	POSITION	UNUSED SEGMENTS	+5V	GND	-5V
74LS00	U58,26	U58-4,2,6-3	14	7	
74LS04	U37,59	U59-3,5,6;57-3,5,6	14	7	
74LS08	U37,67	U67-1,2,4	14	7	
74S32	U69	U69-2,3	14	7	
74S38	U36		14	7	
74LS30	U39,311,312,47,411,412,610	U610-1,4	14	7	
74S74	U38	U38-2	14	7	
74LS74	U48,49		14	7	
74LS136	U310		14	7	
74LS139	U29	U29-2	16	8	
74LS157	U16		16	8	
74LS158	U511,512		16	8	
74LS161	U410,510		16	8	
74LS174	U17		16	8	
74LS221	U27		16	8	
75107	U33,34,42,43	U43-2	14	7	13
75108	U53,54,62		14	7	13
75110	U12,13,14,15,22,23,24,44,64,65,66		14	7	11
R-PAK 82	U31	U31-15			
R-PAK 56	U11,21,51,61	U11-15;U21-3,4,15;U51-7,8,15;U61-1,2,3,4,15			
R-PAK 470	U32,41,52,62	U41-1,2 61-1,2,7,8 61-14			
R-PAK 1K	U611	U210-7,8			
SPST 8	U210,612				
74S05	U68		14	7	

REF DESIGNATOR LAST USED	REF DESIGNATOR NOT USED
R25	
C47	
P2	
W5	
Q2	

Figure 11-10. CDC Radial Interface (9400-6028D) Logic Diagram (Sheet 3 of 3)



NOTES:
1. THIS LOGIC REPRESENTS ASSEMBLY 9400-6021 AT DATE CODE ~~D637~~ ~~D641~~ ~~D644~~ ~~D648~~ ~~D650~~ ~~D905~~ ~~D906~~ ~~D907~~ ~~D908~~ D913
2. ALL RESISTOR VALUES ARE IN OHMS.
3. THIS SYMBOL (Y) REPRESENTS RESISTOR NET WORK 180Ω TO +5V, 390Ω TO GND. (5K, 9D)

		9400-6021-01 (RP04)	9400-6021-02 (RM03)
JUMPERS	W9	PIN 1	PIN 2
	W10	PIN 1	PIN 2
	W11	PIN 1	PIN 2

CA01

Figure 11-11. RP04/RM03 Computer Port Adapter (9400-6021D) Logic Diagram (Sheet 1 of 9)

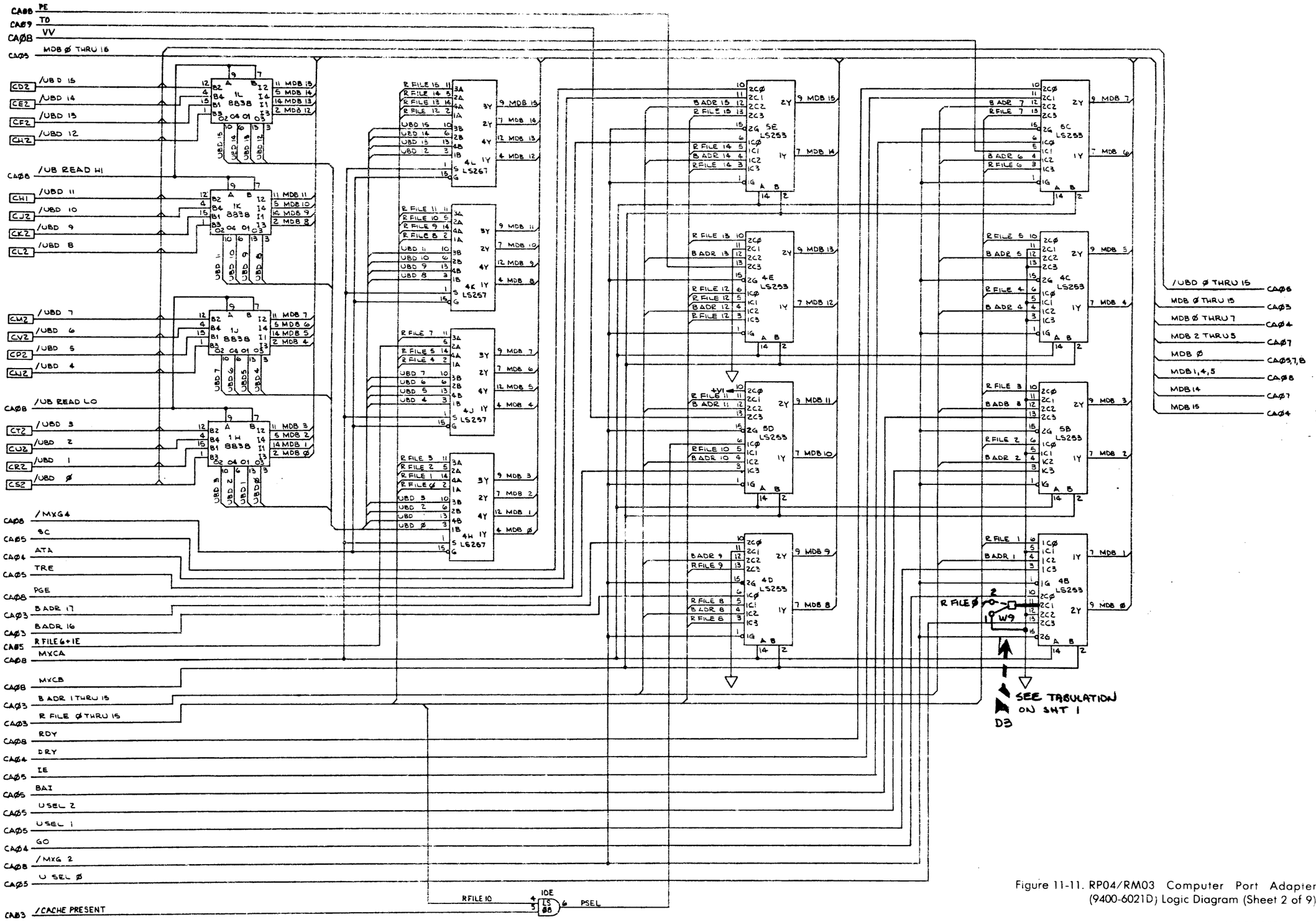


Figure 11-11. RP04/RM03 Computer Port Adapter (9400-6021D) Logic Diagram (Sheet 2 of 9)

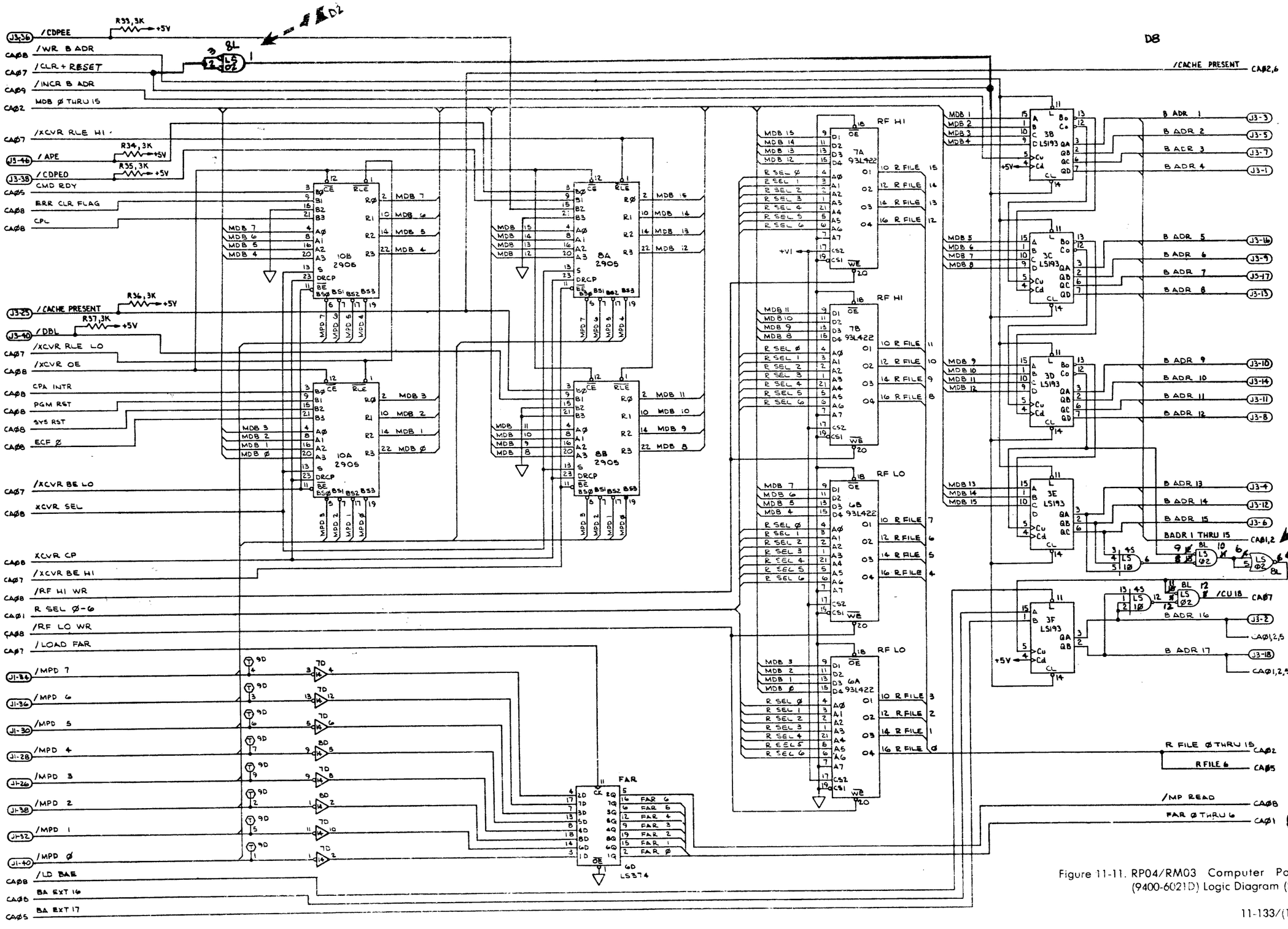


Figure 11-11. RP04/RM03 Computer Port Adapter (9400-6021D) Logic Diagram (Sheet 3 of 9)

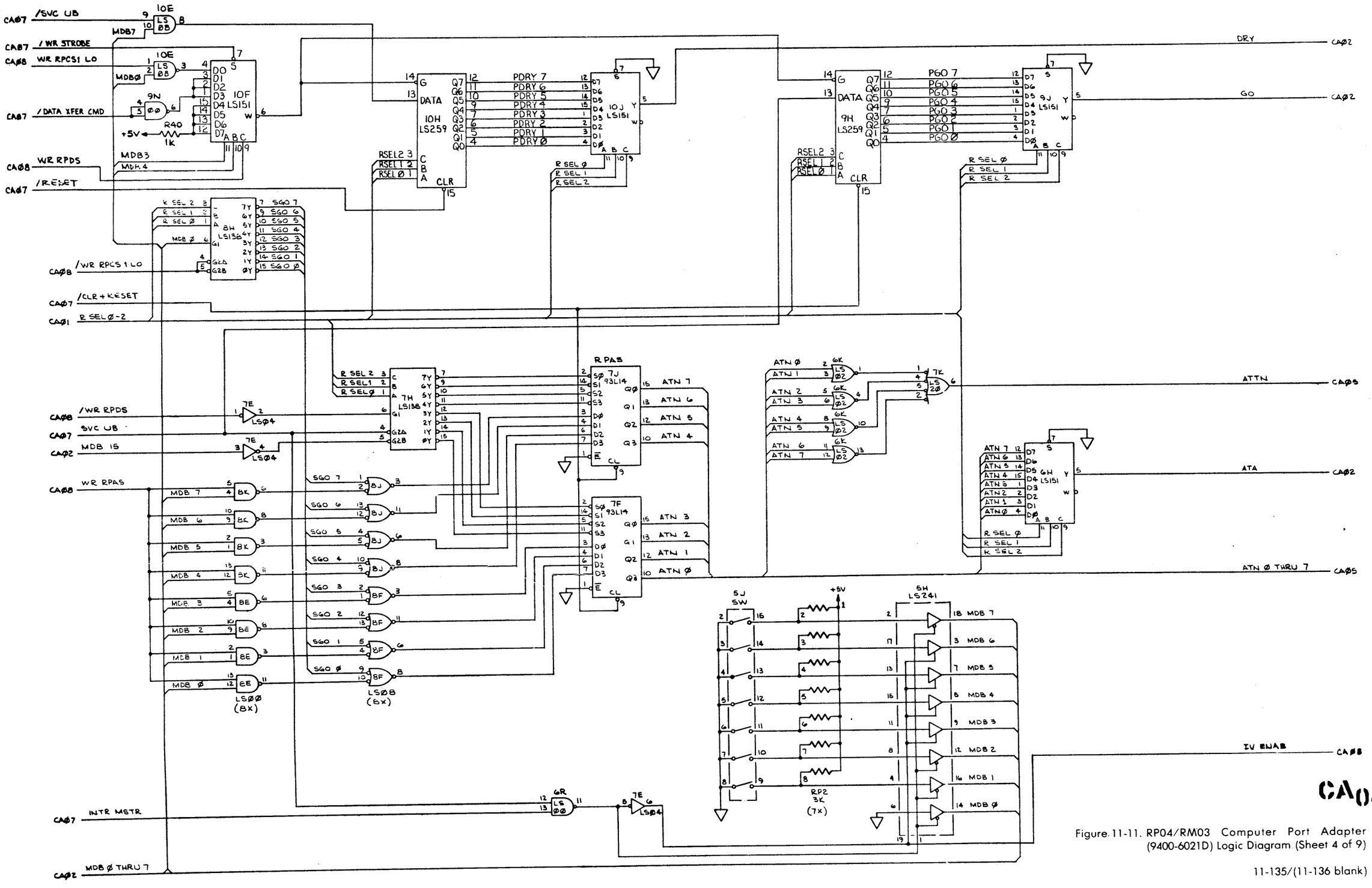


Figure 11-11. RP04/RM03 Computer Port Adapter (9400-6021D) Logic Diagram (Sheet 4 of 9)

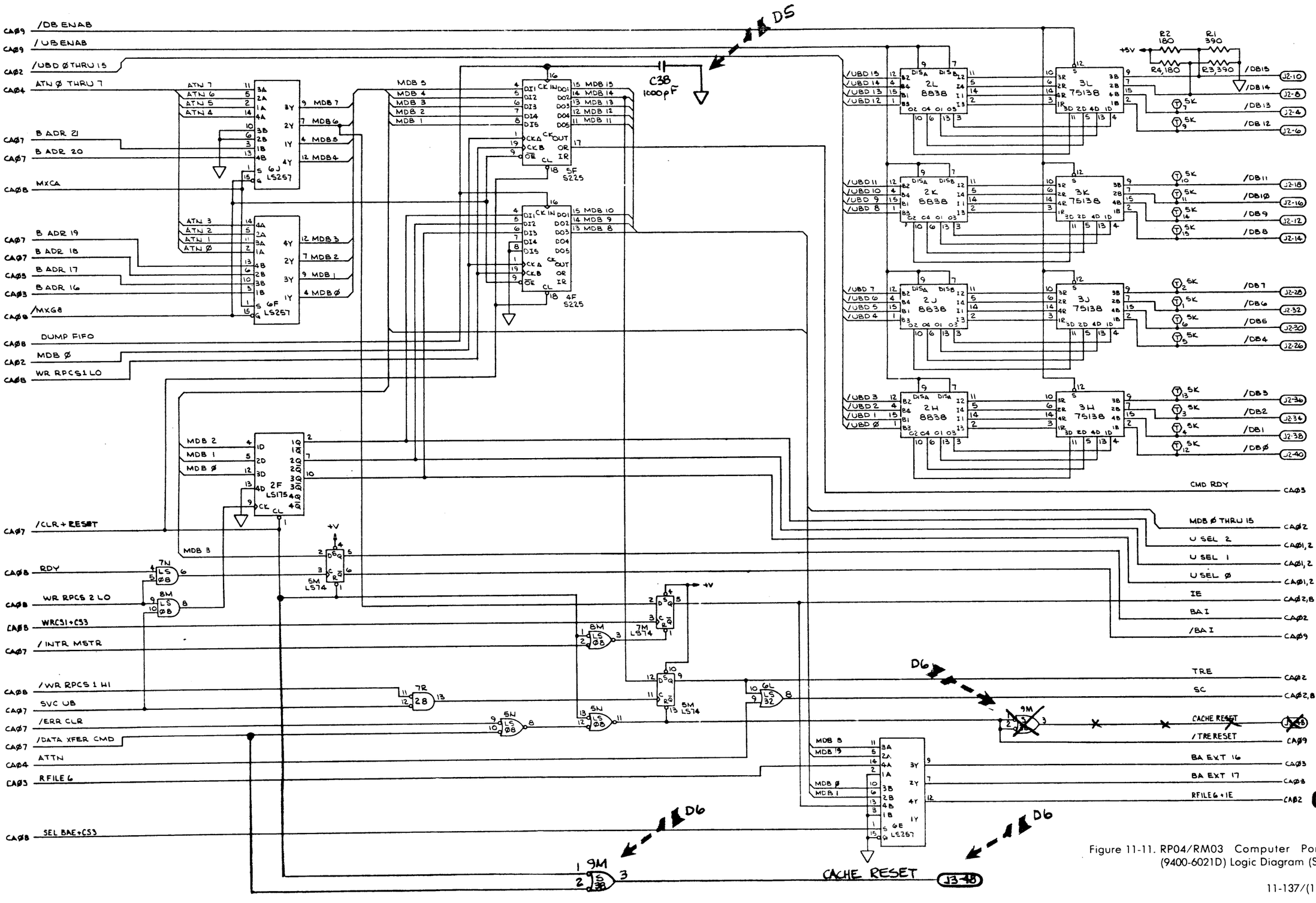
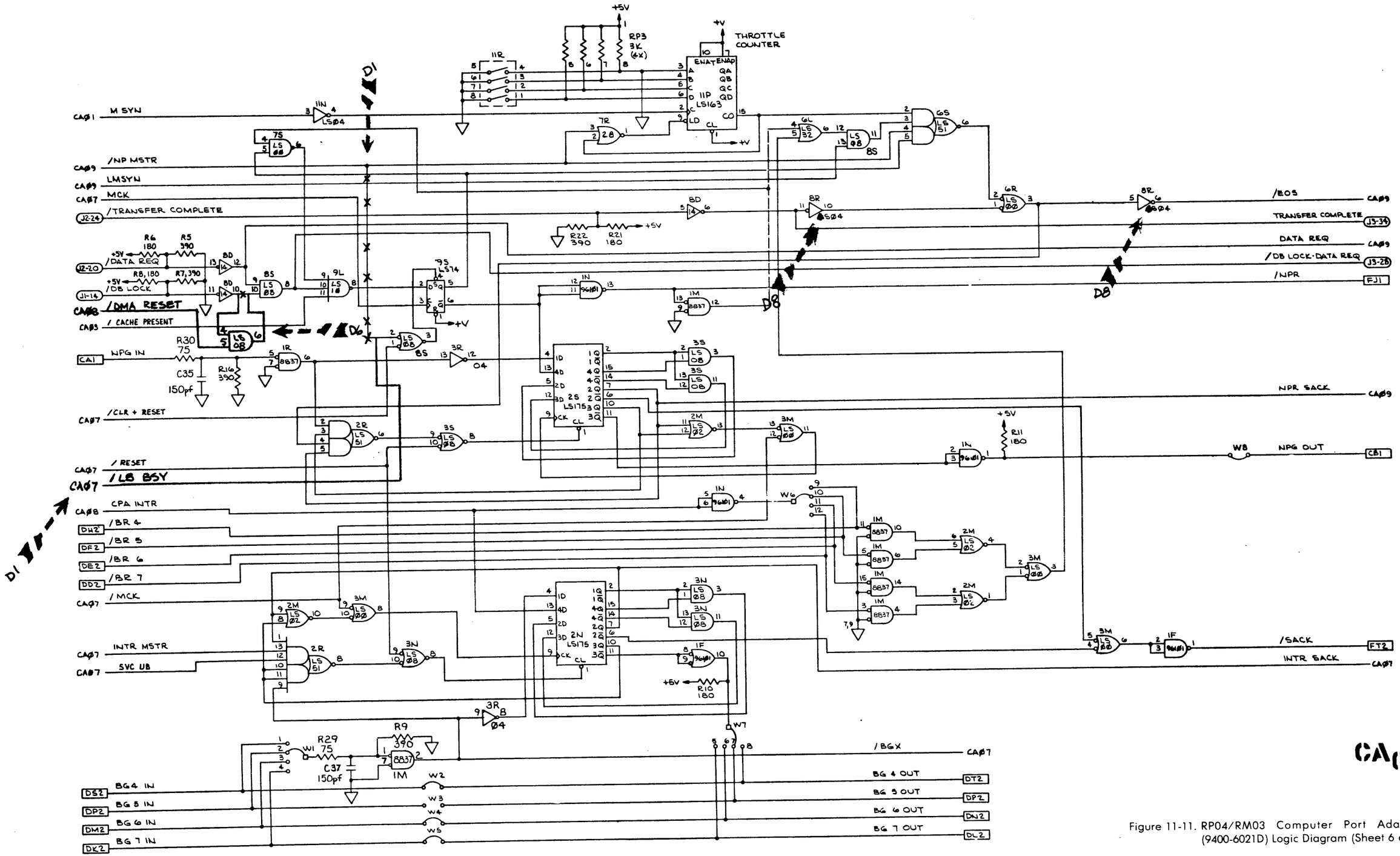


Figure 11-11. RP04/RM03 Computer Port Adapter (9400-6021D) Logic Diagram (Sheet 5 of 9)



CA06

Figure 11-11. RP04/RM03 Computer Port Adapter (9400-6021D) Logic Diagram (Sheet 6 of 9)

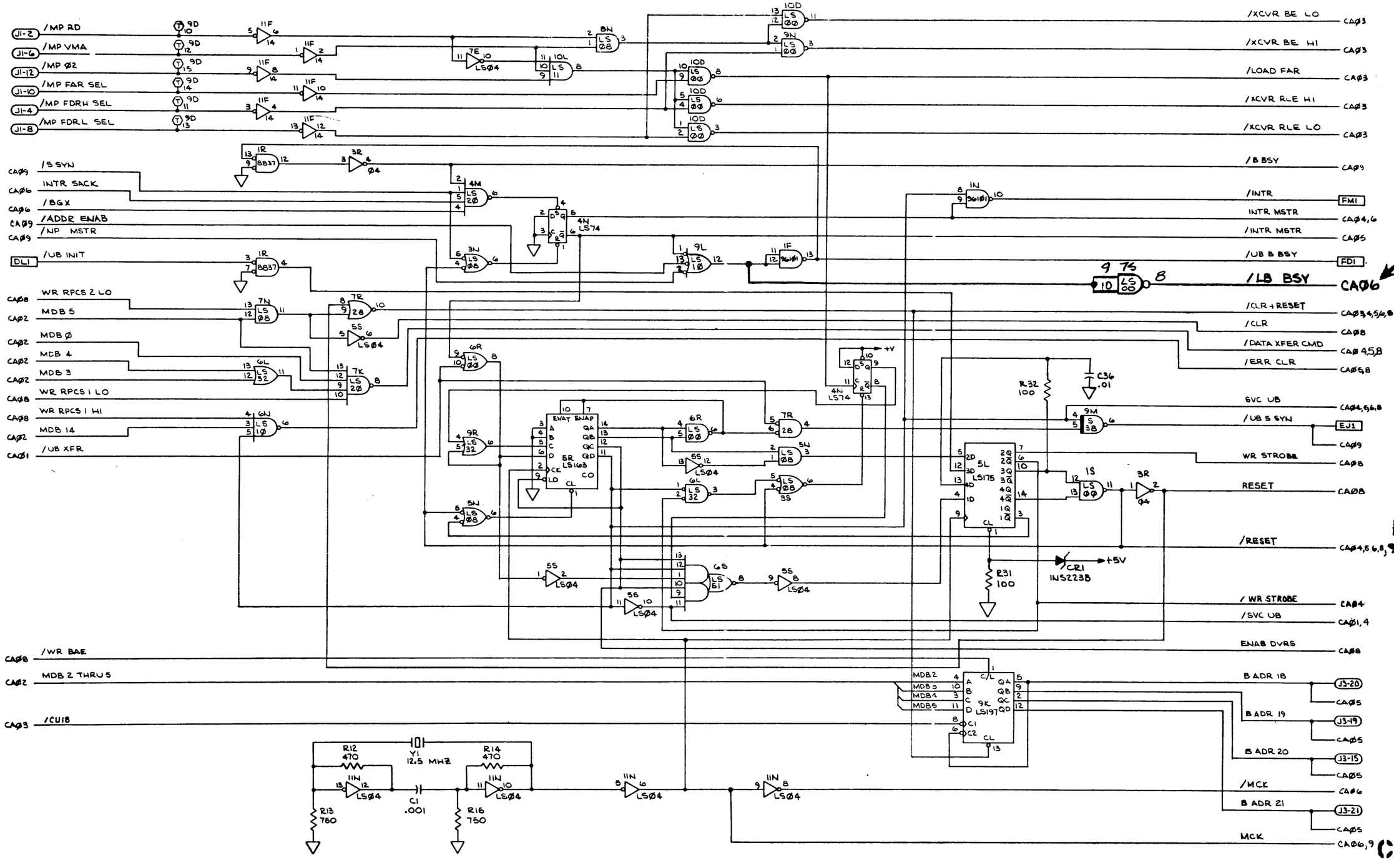
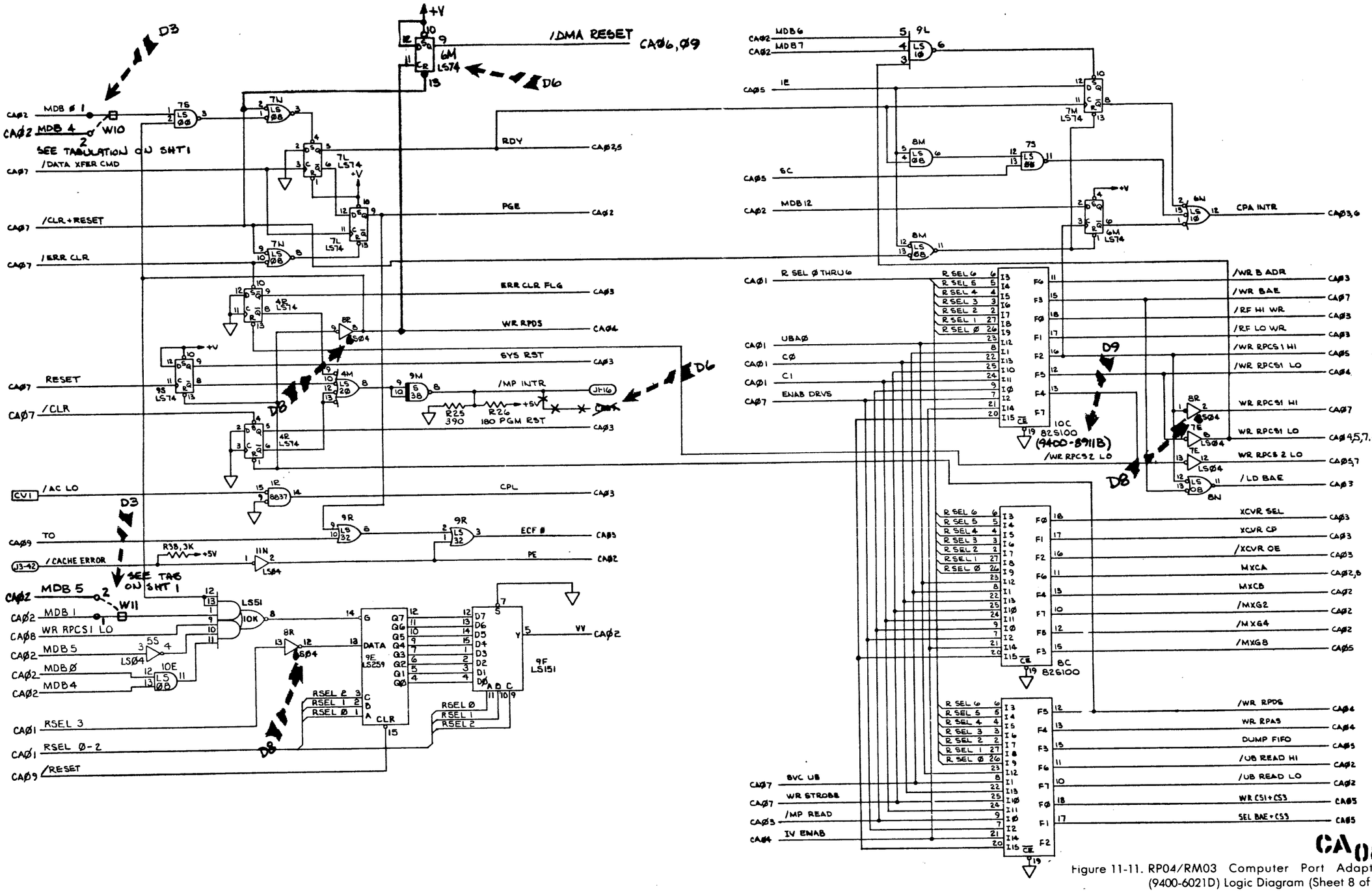
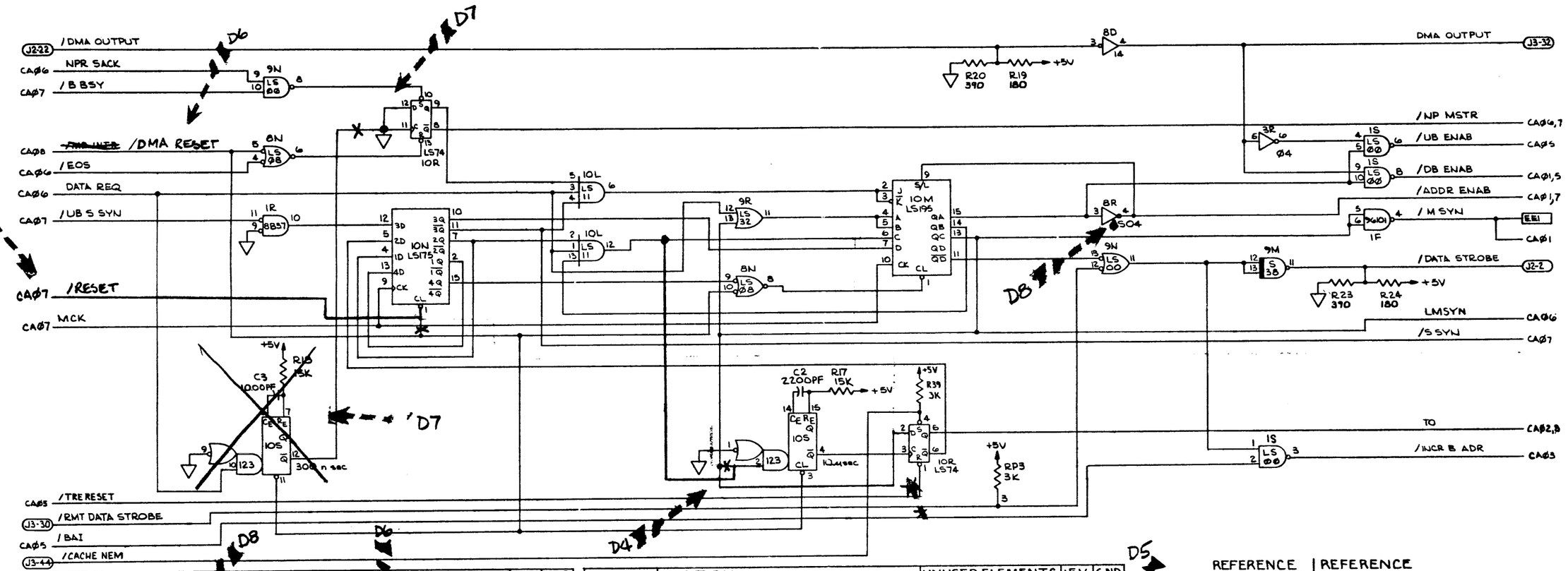


Figure 11-11. RP04/RM03 Computer Port Adapter (9400-6021D) Logic Diagram (Sheet 7 of 9)



CA08

Figure 11-11. RP04/RM03 Computer Port Adapter (9400-6021D) Logic Diagram (Sheet 8 of 9)



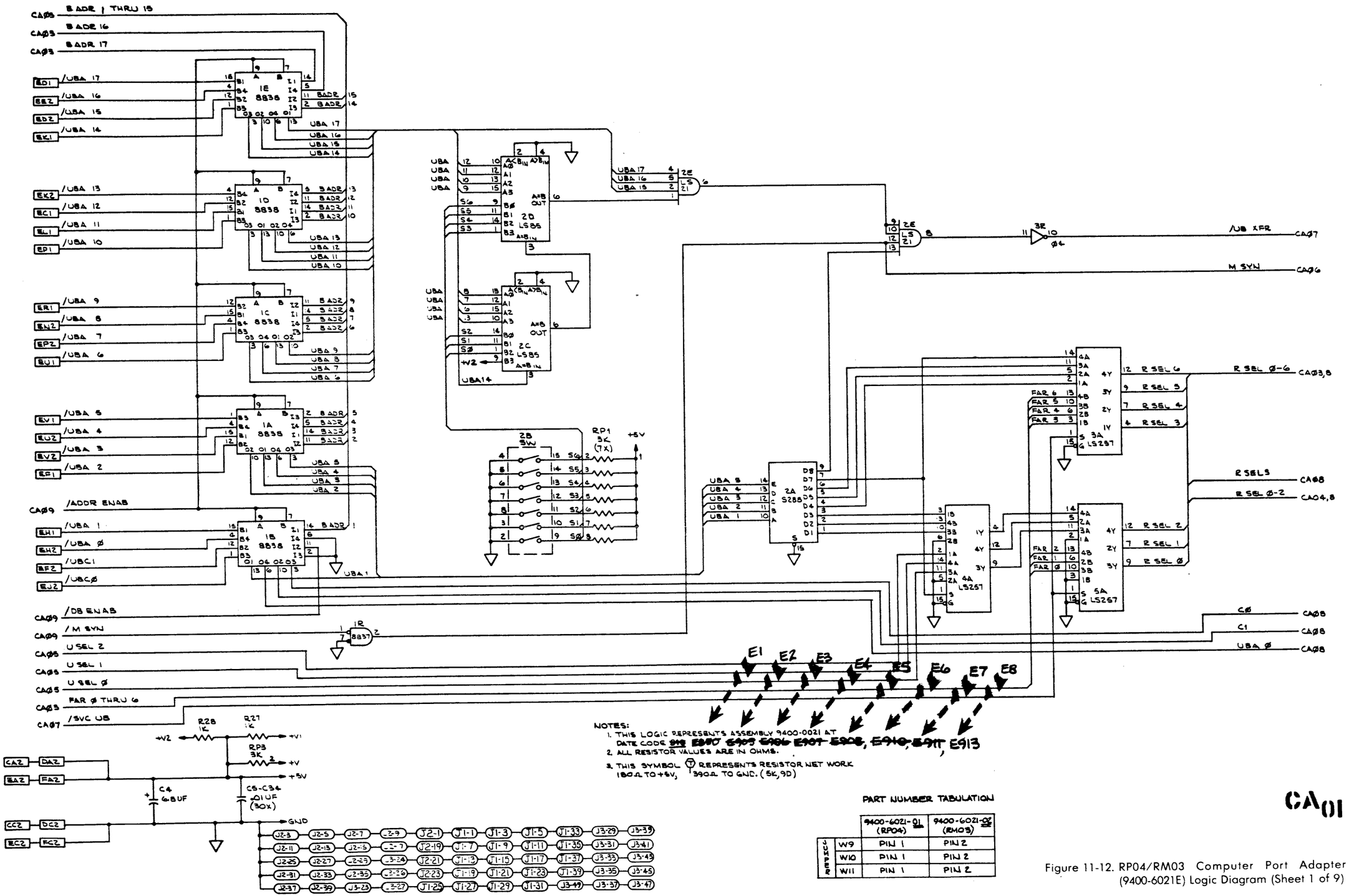
TYPE	POSITION	UNUSED ELEMENTS	+5V	GND
74LS00	1S,3M,6R,7S,8E,8K,9N,10D	7S3	14	7
74LS02	2M,6K,8L		14	7
74LS04	5S,7E,[illegible],11N,		14	7
74LS08	3N,3S,5N,7N,8F,8J,8M,8N,8S,10E	~~8S2~~	14	7
74LS10	6N,9L,4S	4S3,6N3	14	7
74LS11	10L		14	7
7414	7D,8D,11F		14	7
74LS20	4M,7K		14	7
74LS21	2E		14	7
74LS32	6L,9R		14	7
74S38	9M		14	7
74LS51	2R,6S,10K	10K1	14	7
74LS74	4N,4R, 5M,6M,7L,7M,9S,10R	6M2	14	7
74LS85	2C,2D		16	8
74123	10S	10S2	16	8
74LS138	7H,8H		16	8
74LS151	6H,9J,10J,9F,10F		16	8
74LS163	5R,11P		16	8
74LS175	2F,2N,2S,5L,10N		16	8
74LS195	10M		16	8
74LS193	3B,3C,3D,3E,3F		20	10
74S225	4F,5F		20	10
74LS241	5H		16	8
74LS253	4B,4C,4D,4E,5B,5C,5D,5E		16	8
74LS257	3A,4A,4H,4J,4K,4L,5A,6E,6F,6J		16	8

TYPE	POSITION	UNUSED ELEMENTS	+5V	GND
75138	3H,3J,3K,3L		16	8
2905	8A,8B,10A,10B		24	6/18
8838	1A,1B,1C,1D,1E,1H,1J,1K,1L,2H,2J,2K,2L		16	8
8837	1M,1R		16	8
96101	1F,1N		14	7
93L14	7F,7J		16	8
93L422	6A,6B,7A,7B		22	8
74LS259	9E,9H,10H		16	8
7404	3R		14	7
7428	7R		14	7
74LS374	6D		20	10
825100	8C,9C,10C		28	14
745288	2A		16	8
74LS197	9K		14	7
R-PAK				
180/390	5K,9D		16	8
SW.SPST8	2B,5J			
SW.SPST4	11R			
74S04			14	7

REFERENCE DESIGNATOR LAST USED	REFERENCE DESIGNATOR NOT USED
R40	R18
~~C37~~ C38	C3
CR1	
Y1	
RP3	
J3	
W8	

CA09

Figure 11-11. RP04/RM03 Computer Port Adapter (9400-6021D) Logic Diagram (Sheet 9 of 9)

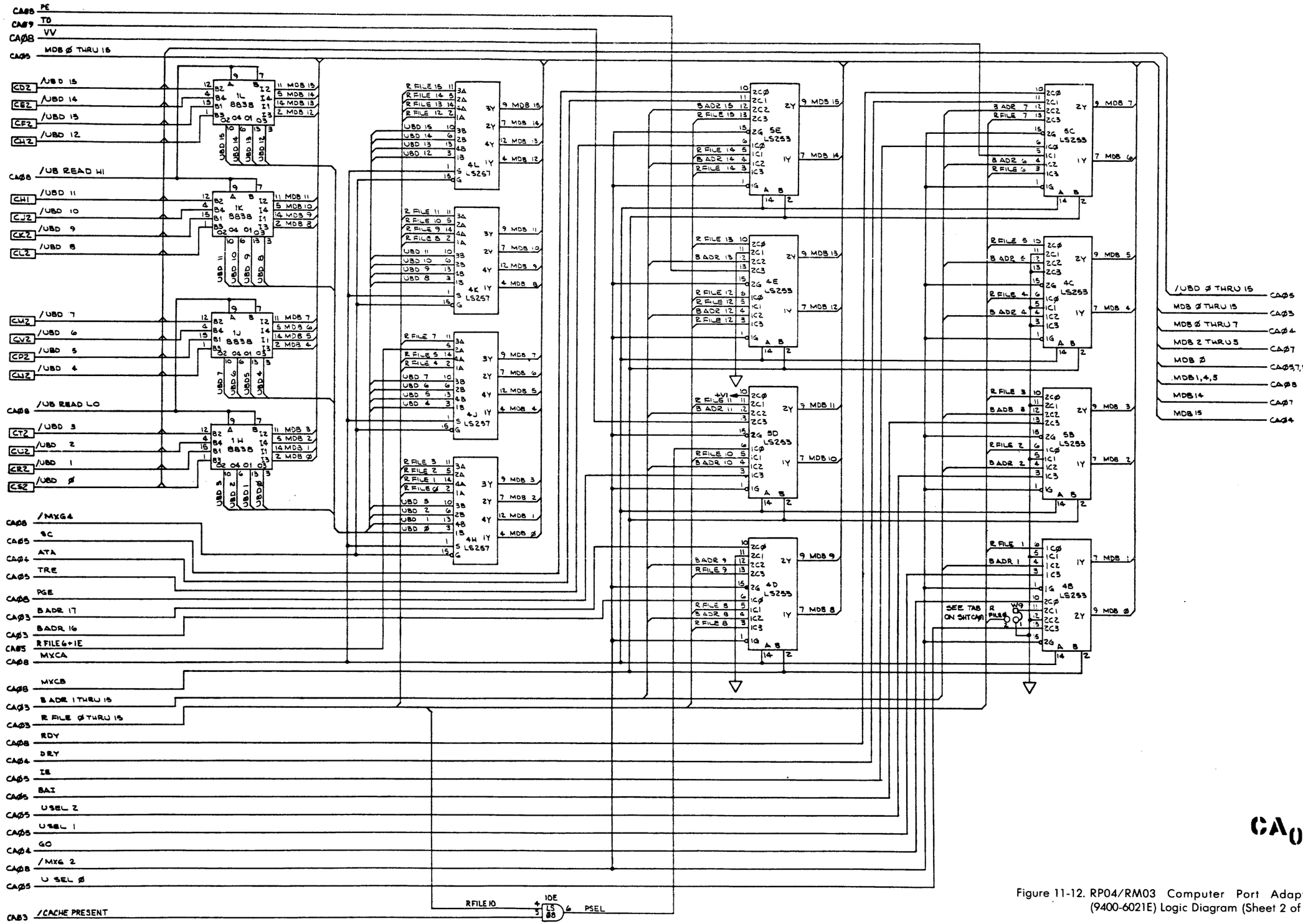


NOTES:
1. THIS LOGIC REPRESENTS ASSEMBLY 9400-0021 AT DATE CODE ~~9XX E800 E900 EA00 EA01 EA02, EA10, EA11~~ E913
2. ALL RESISTOR VALUES ARE IN OHMS.
3. THIS SYMBOL (Y) REPRESENTS RESISTOR NET WORK 180Ω TO +5V, 390Ω TO GND. (5K, 9D)

PART NUMBER TABULATION

		9400-6021-01 (RP04)	9400-6021-02 (RM03)
JUMPER	W9	PIN 1	PIN 2
	W10	PIN 1	PIN 2
	W11	PIN 1	PIN 2

Figure 11-12. RP04/RM03 Computer Port Adapter (9400-6021E) Logic Diagram (Sheet 1 of 9)



CA02

Figure 11-12. RP04/RM03 Computer Port Adapter (9400-6021E) Logic Diagram (Sheet 2 of 9)

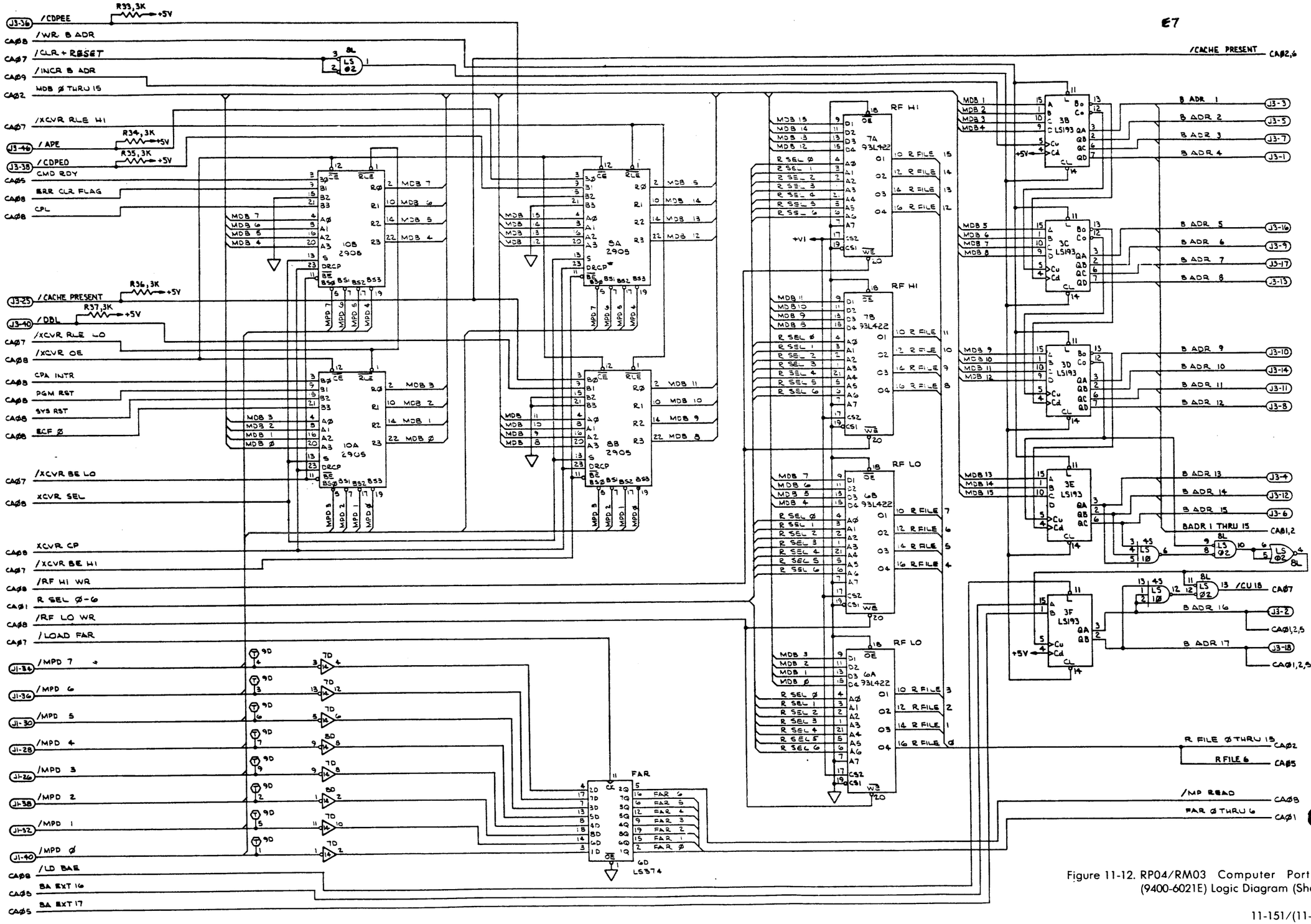
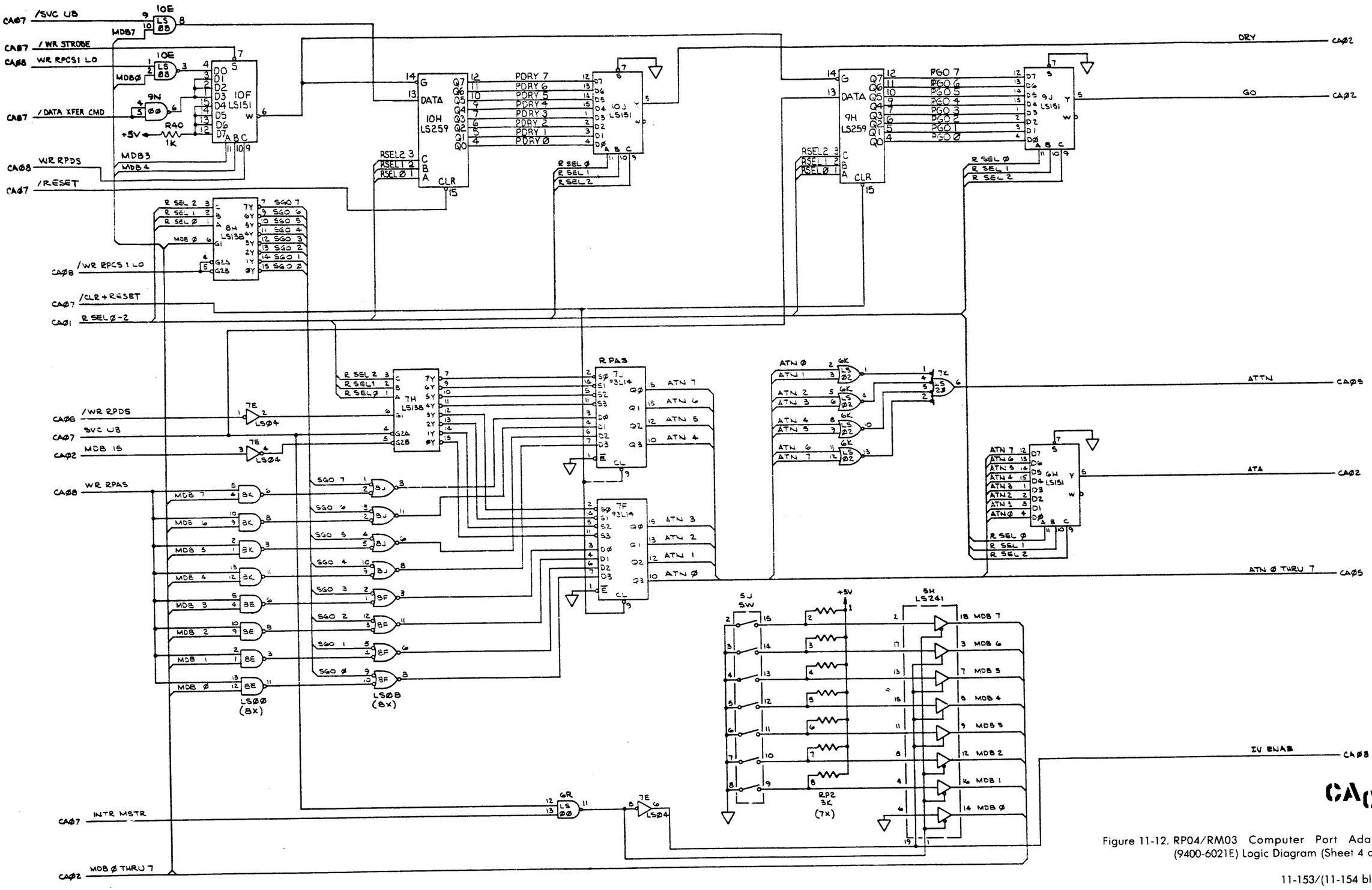


Figure 11-12. RP04/RM03 Computer Port Adapter (9400-6021E) Logic Diagram (Sheet 3 of 9)



CA04

Figure 11-12. RP04/RM03 Computer Port Adapter (9400-6021E) Logic Diagram (Sheet 4 of 9)

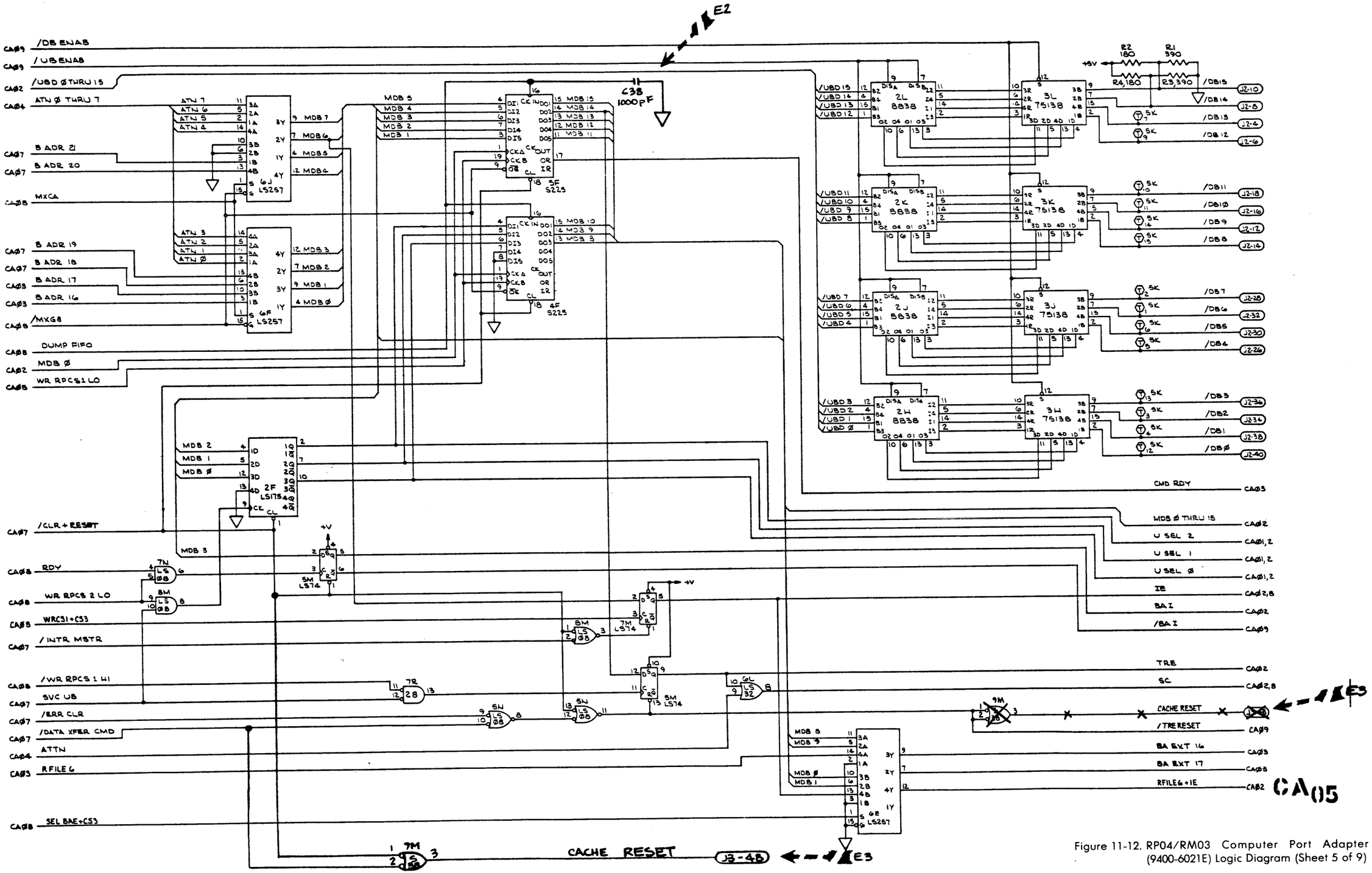


Figure 11-12. RP04/RM03 Computer Port Adapter (9400-6021E) Logic Diagram (Sheet 5 of 9)

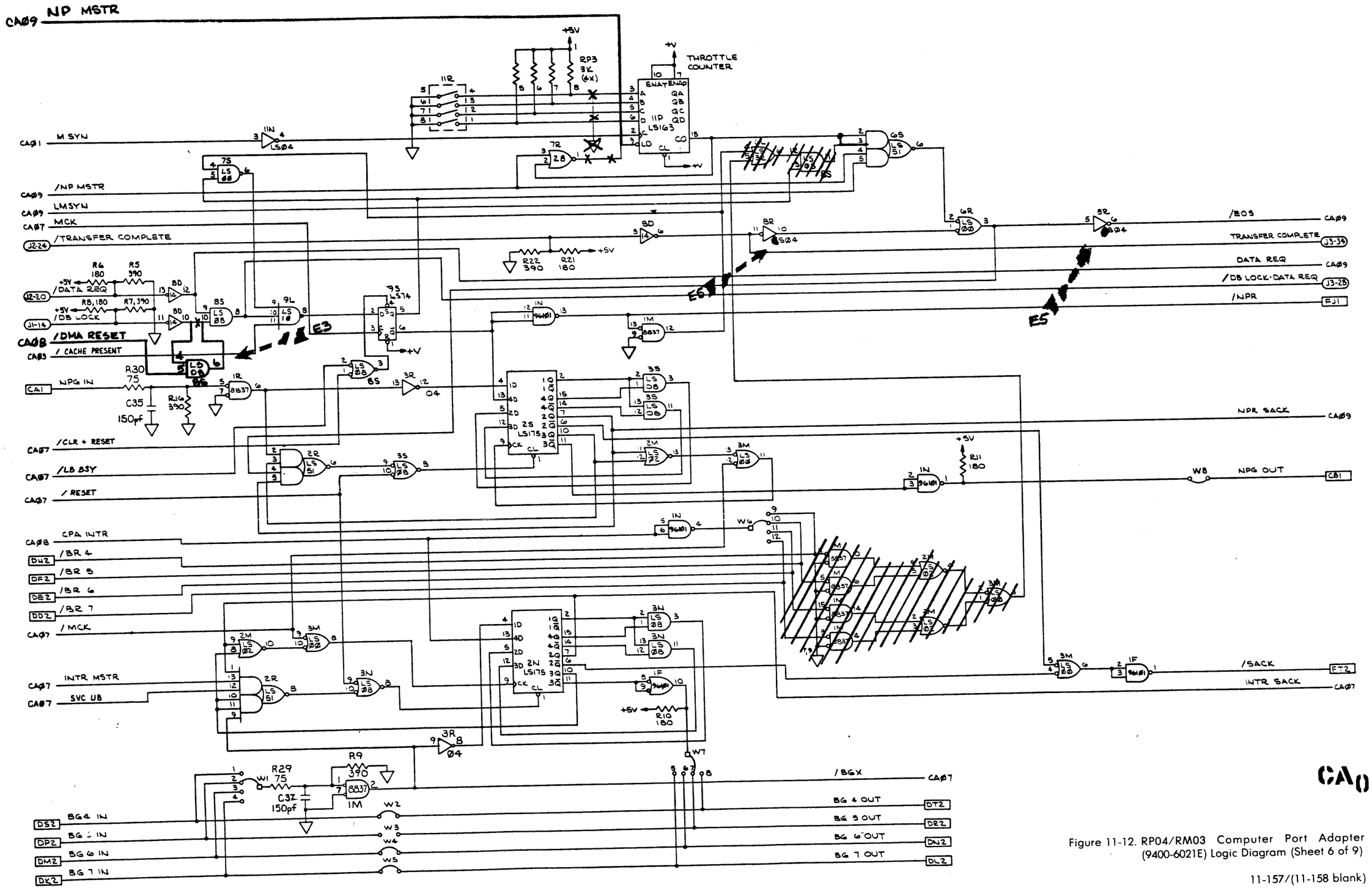


Figure 11-12. RP04/RM03 Computer Port Adapter (9400-6021E) Logic Diagram (Sheet 6 of 9)

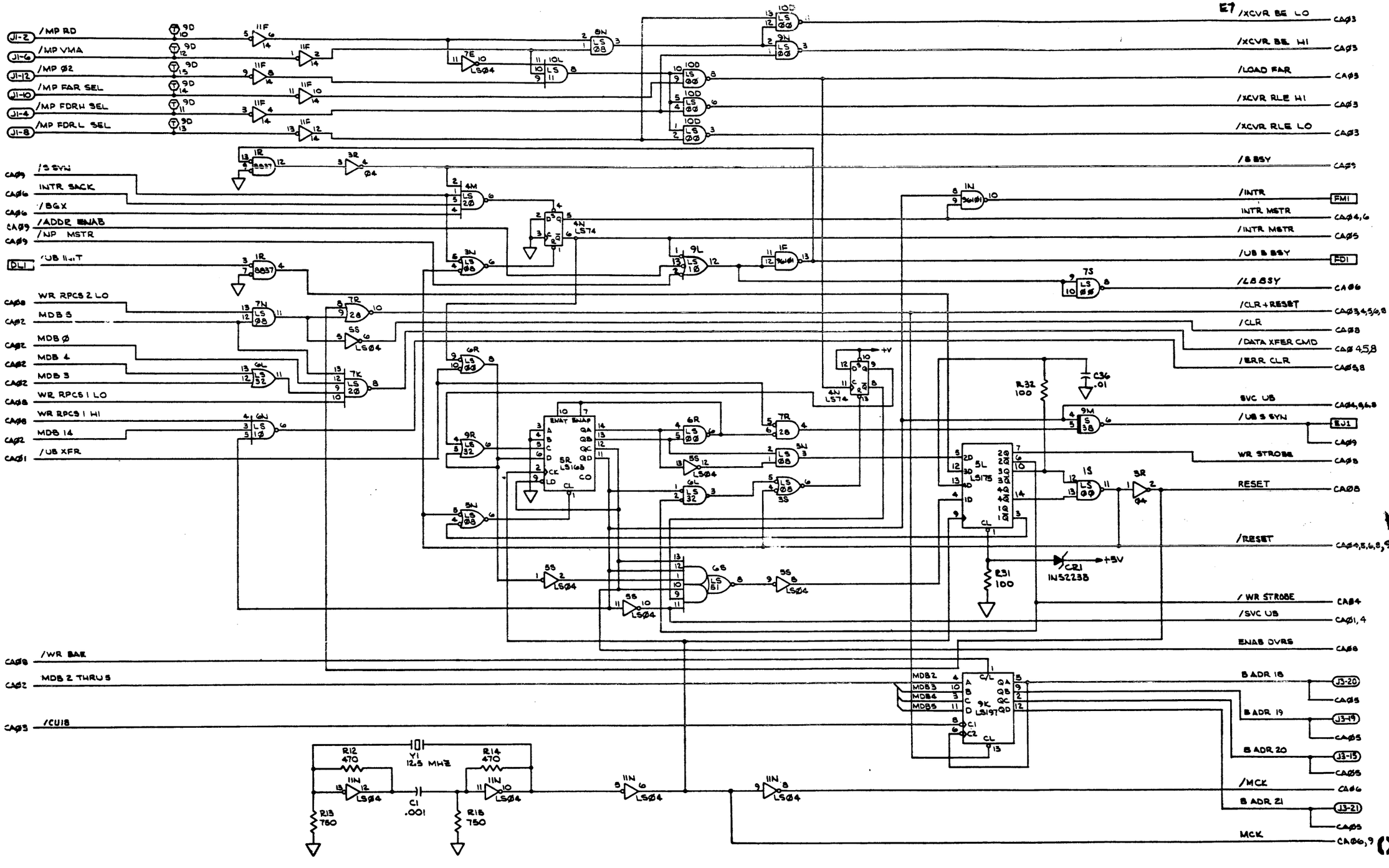


Figure 11-12. RP04/RM03 Computer Port Adapter (9400-6021E) Logic Diagram (Sheet 7 of 9)

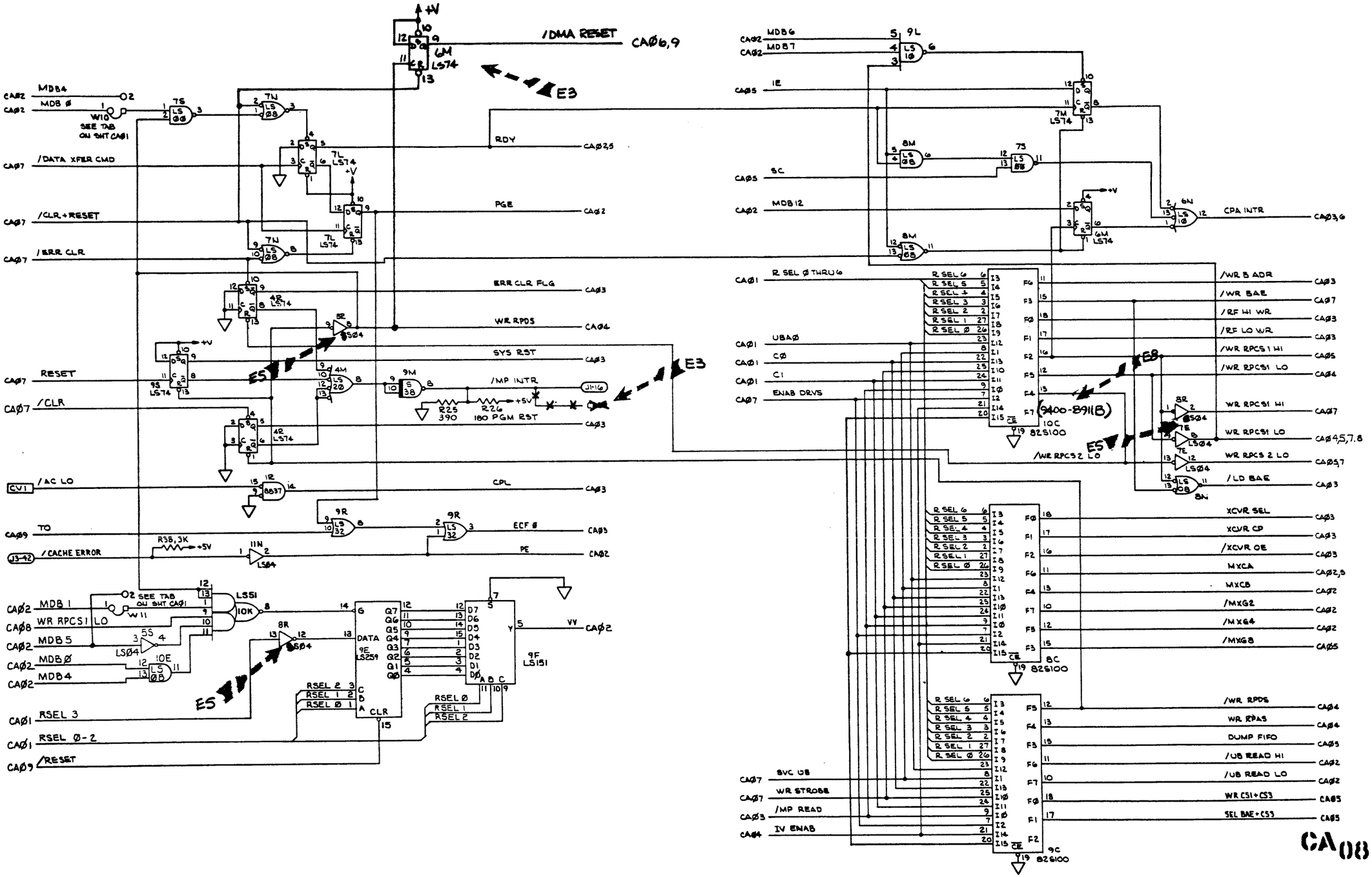
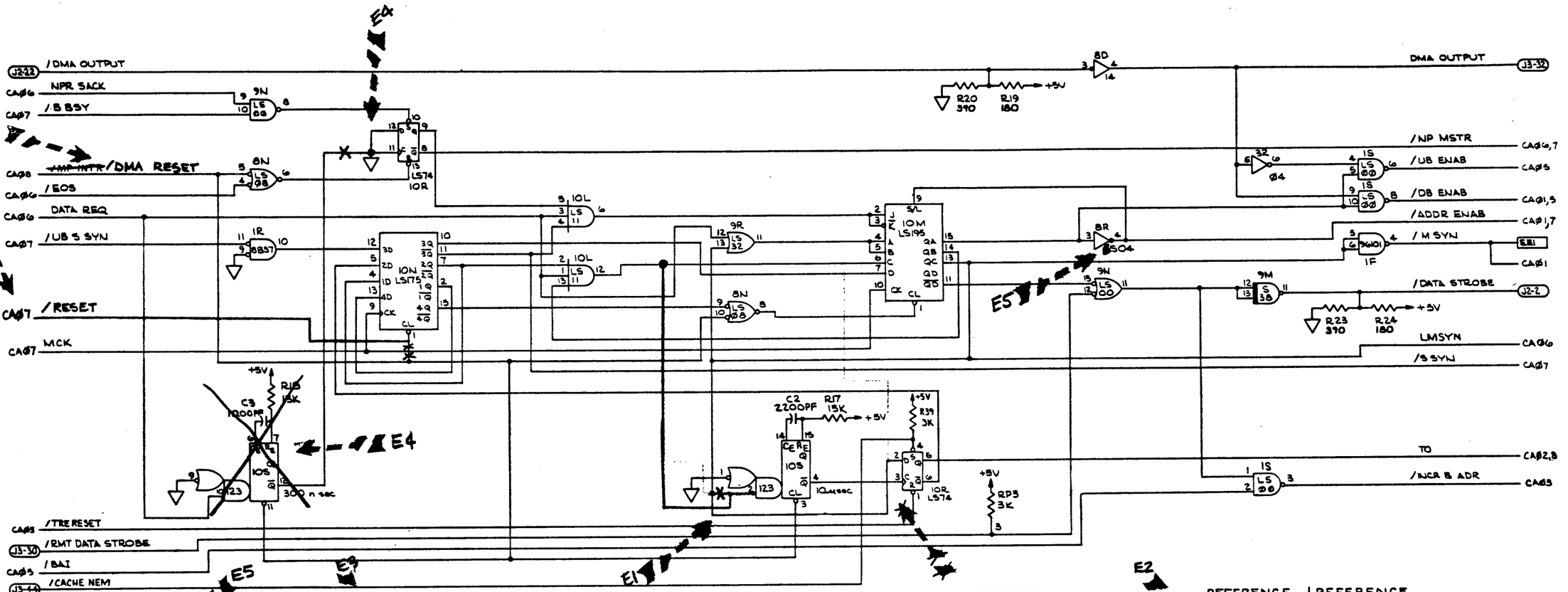


Figure 11-12. RP04/RM03 Computer Port Adapter (9400-6021E) Logic Diagram (Sheet 8 of 9)



TYPE	POSITION	UNUSED ELEMENTS	+5V	GND
74LS00	1S,3M,6R,7B,8E,8K,9N,10D	7S3	14	7
74LS02	2M,6K,8L		14	7
74LS04	5S,7E,8R,11N,		14	7
74LS08	3N,3S,5N,7N,8F,8J,8M,8N,8S,10E	~~8S~~	14	7
74LS10	6N,9L,4S	4S3,6N3	14	7
74LS11	10L		14	7
7414	7D,8D,11F		14	7
74LS20	4M,7K		14	7
74LS21	2E		14	7
74LS32	6L,9R		14	7
74S38	9M		14	7
74LS51	2R,6S,10K	10K1	14	7
74LS74	4N,4R, 5M,6M,7L,7M,9S,10R	6M2	14	7
74LS85	2C,2D		16	8
74123	10S	10S2	16	8
74LS138	7H,8H		16	8
74LS151	6H,9J,10J,9F,10F		16	8
74LS163	5R,11P		16	8
74LS175	2F,2N,2S,5L,10N		16	8
74LS195	10M		16	8
74LS193	3B,3C,3D,3E,3F		16	8
74S225	4F,5F		20	10
74LS241	5H		20	10
74LS253	4B,4C,4D,4E,5B,5C,5D,5E		16	8
74LS257	3A,4A,4H,4J,4K,4L,5A,6E,6F,6J		16	8

TYPE	POSITION	UNUSED ELEMENTS	+5V	GND
75138	3H,3J,3K,3L		16	8
2905	8A,8B,10A,10B		24	6/18
8838	1A,1B,1C,1D,1E,1H,1J,1K,1L,2H,2J,2K,2L		16	8
8837	1M,1R		16	8
96101	1F,1N		14	7
93L14	7F,7J		16	8
93L422	6A,6B,7A,7B		22	8
74LS259	9E,9H,10H		16	8
7404	3R		14	7
7428	7R		14	7
74LS374	6D		20	10
825100	8C,9C,10C		28	14
74S288	2A		16	8
74LS197	9K		14	7
R-PAK				
180/390	5K,9D		16	8
SW.SPST8	2B,5J			
SW.SPST4	11R			
74S04	8R		14	7

REFERENCE DESIGNATOR LAST USED	REFERENCE DESIGNATOR NOT USED
R40	R18
~~C37~~C38	C3
CR1	
Y1	
RP3	
J3	
W11	

CA09

Figure 11-12. RP04/RM03 Computer Port Adapter (9400-6021E) Logic Diagram (Sheet 9 of 9)

TYPE	POSITION	UNUSED ELEMENTS	-5V	GND
74LS00	U12,18,28	U28-1	14	7
74H01	U6,7,8,14,15,16	U6-4	14	7
74LS02	U13,44	U44-4	14	7
74LS08	U11,20,35,36,45	U20-1 U45-1,23	14	7
74LS11	U19		14	7
74LS20	U17,26		14	7
74LS32	U25,33	U25-1,4 U33-3	14	7
74S37	U5		14	7
74LS51	U10		14	7
74S74	U21		14	7
74LS74	U9,29,40,41,34		14	7
74LS175	U42		16	8
74LS221	U1,2,27		16	8
74LS240	U4,37		20	10
74LS244	U3,30,31,32		20	10
74S260	U43		14	7
74LS374	U22,23,24	U22-4,5	20	10

REFERENCE DESIGNATOR LAST USED	REFERENCE DESIGNATOR NOT USED
R21	R12,13,15-20
C52	

NOTES: UNLESS OTHERWISE SPECIFIED -

1. THIS LOGIC REPRESENTS ASSEMBLY 9400-6 01 AT DATE CODE 844
2. ALL RESISTOR VALUES ARE IN 1/4W, 5%, OHMS
3. ALL CAPACITOR VALUES ARE IN MICROFARADS
4. ALL I.C.S ARE 7400 SERIES.

Figure 11-13. Address and Control (9400-6101A) Logic Diagram (Sheet 1 of 2)

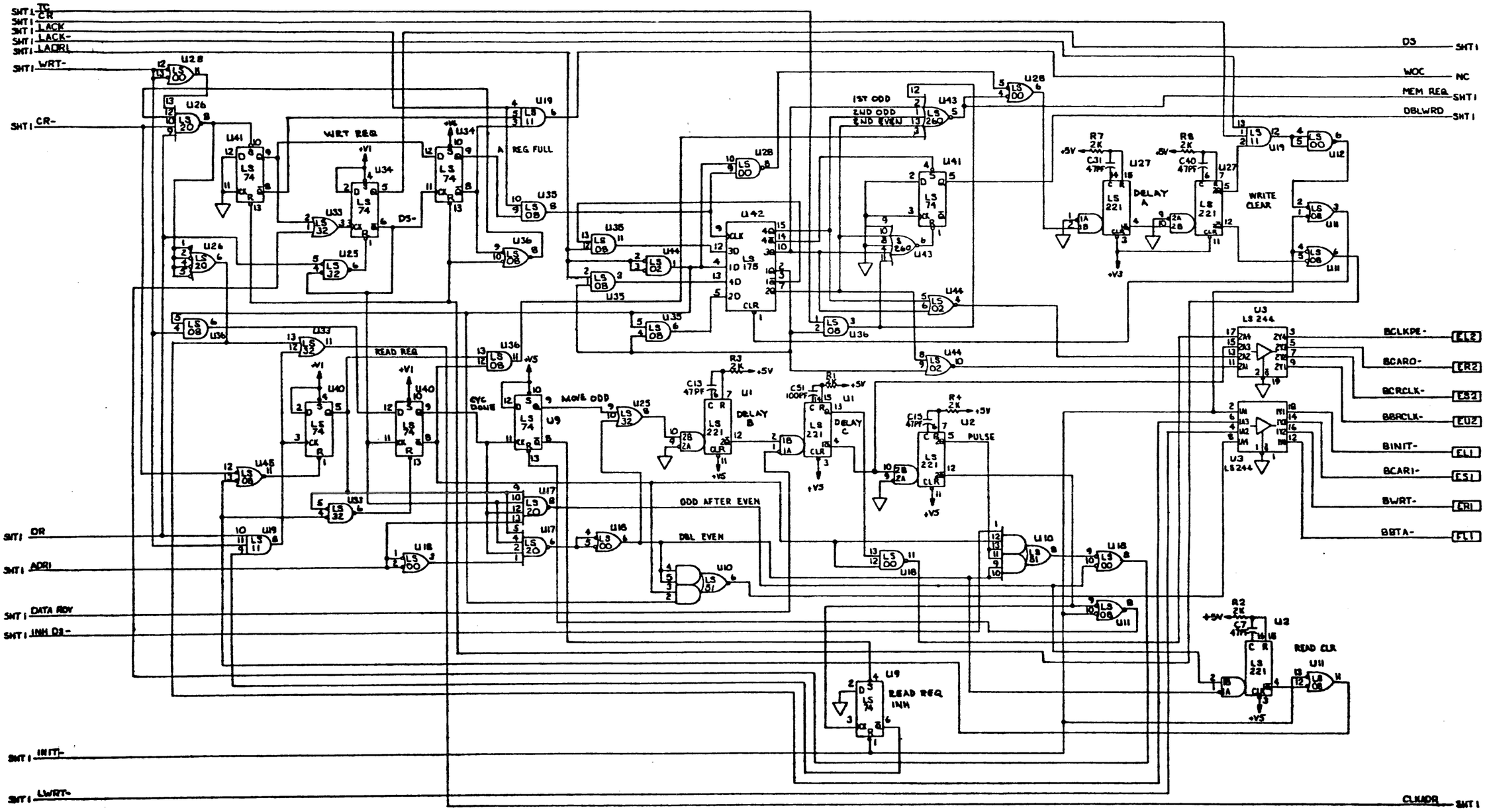
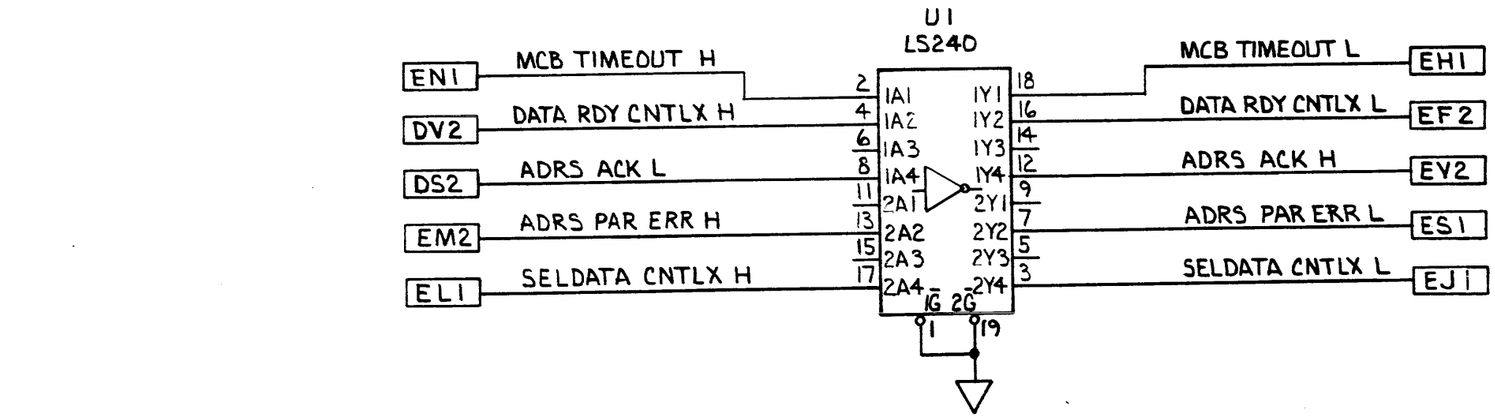


Figure 11-13. Address and Control (9400-6101A) Logic Diagram (Sheet 2 of 2)

NOTES: UNLESS OTHERWISE SPECIFIED:

1. THIS LOGIC REPRESENTS ASSEMBLY 9400-6102 AT DATE CODE 839.
2. ALL CAPACITORS ARE IN MICROFARADS.



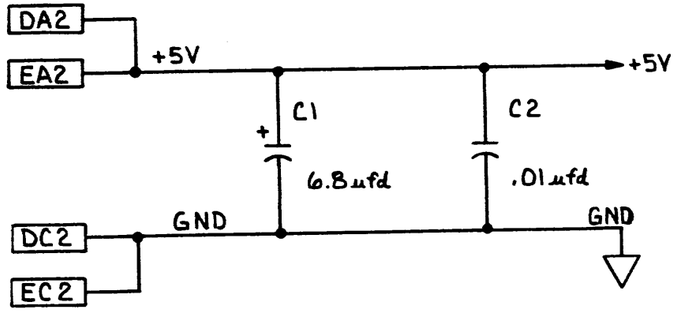
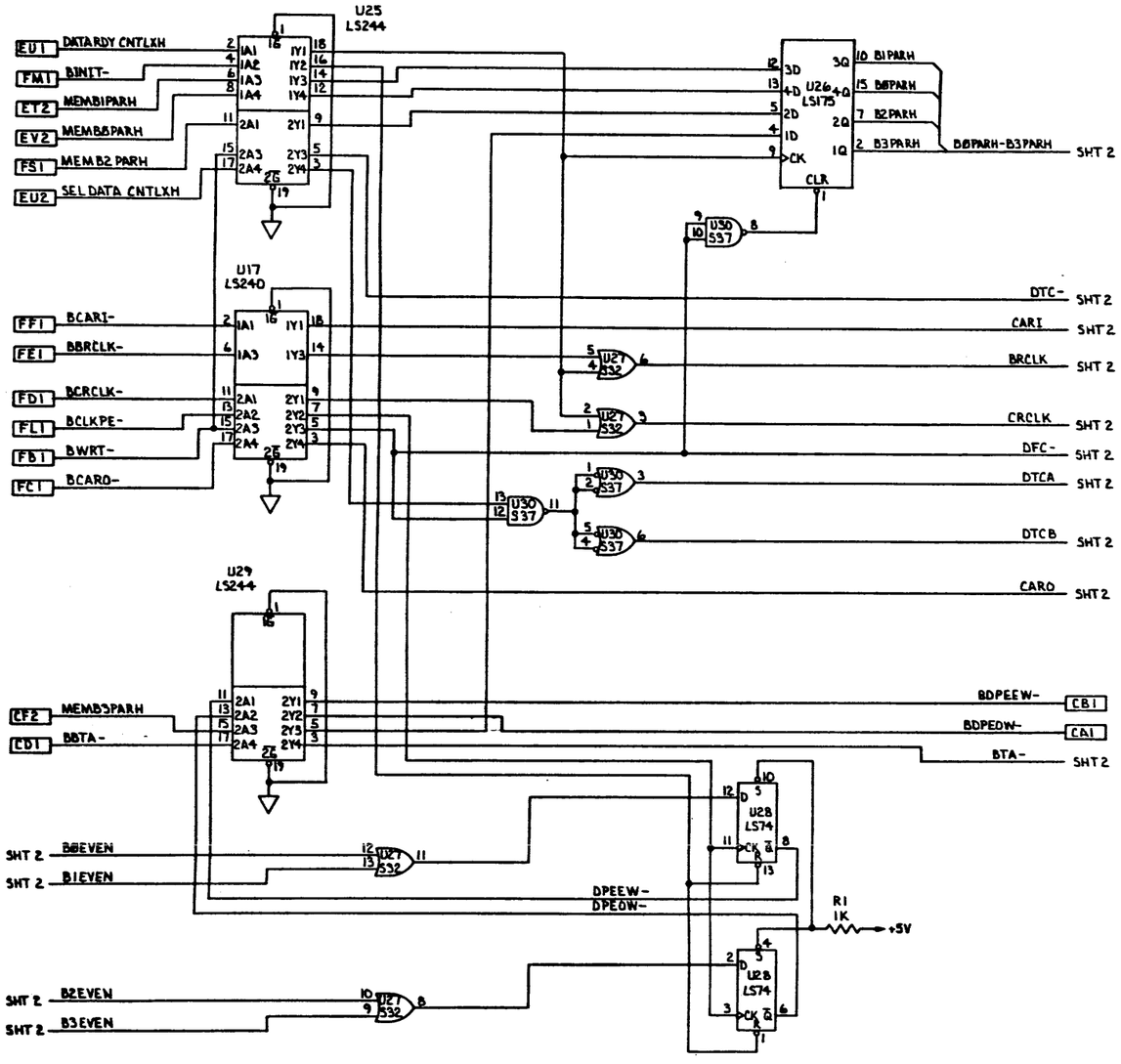
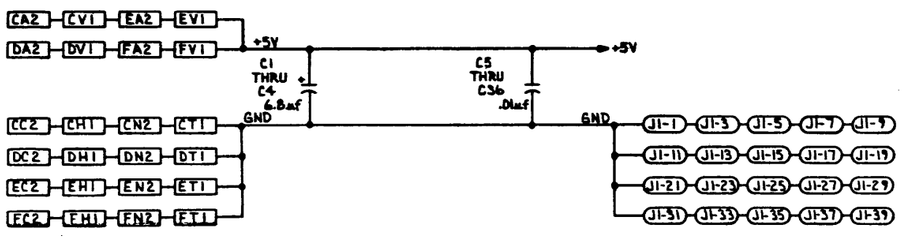


Figure 11-14. Control Buffer (9400-6102A) Logic Diagram (Sheet 1 of 1)



REF DESIGNATION LAST USED	REF DESIGNATION NOT USED
R1	
C36	



NOTES: UNLESS OTHERWISE SPECIFIED
1. ALL RESISTORS ARE IN OHMS, 1/4W, 5%.
2. ALL CAPACITORS ARE IN MICROFARADS.
3. THIS LOGIC REPRESENTS ASSY 9400-6103 AT DATE CODE 839

TYPE	POSITION	UNUSED ELEMENTS	+5V (PIN)	GND (PIN)
74H01	U5,6,7,8,13,14,15,16,19		14	7
74S32	U27		14	7
74S37	U30		14	7
74LS74	U28		14	7
74LS175	U26		16	8
74LS240	U17	U17-2,4	20	10
			20	10
74S280	U21,22,23,24		14	7
74S374	U9,11,18,20		20	10
2905	U33,34,35,36		24	6,18
74LS244	U12,5,4,10,12,25,29	U25-2,2,U29-1-1,1-2,1-3,1-4	20	10

Figure 11-15. Data Board (9400-6103A) Logic Diagram (Sheet 1 of 2)

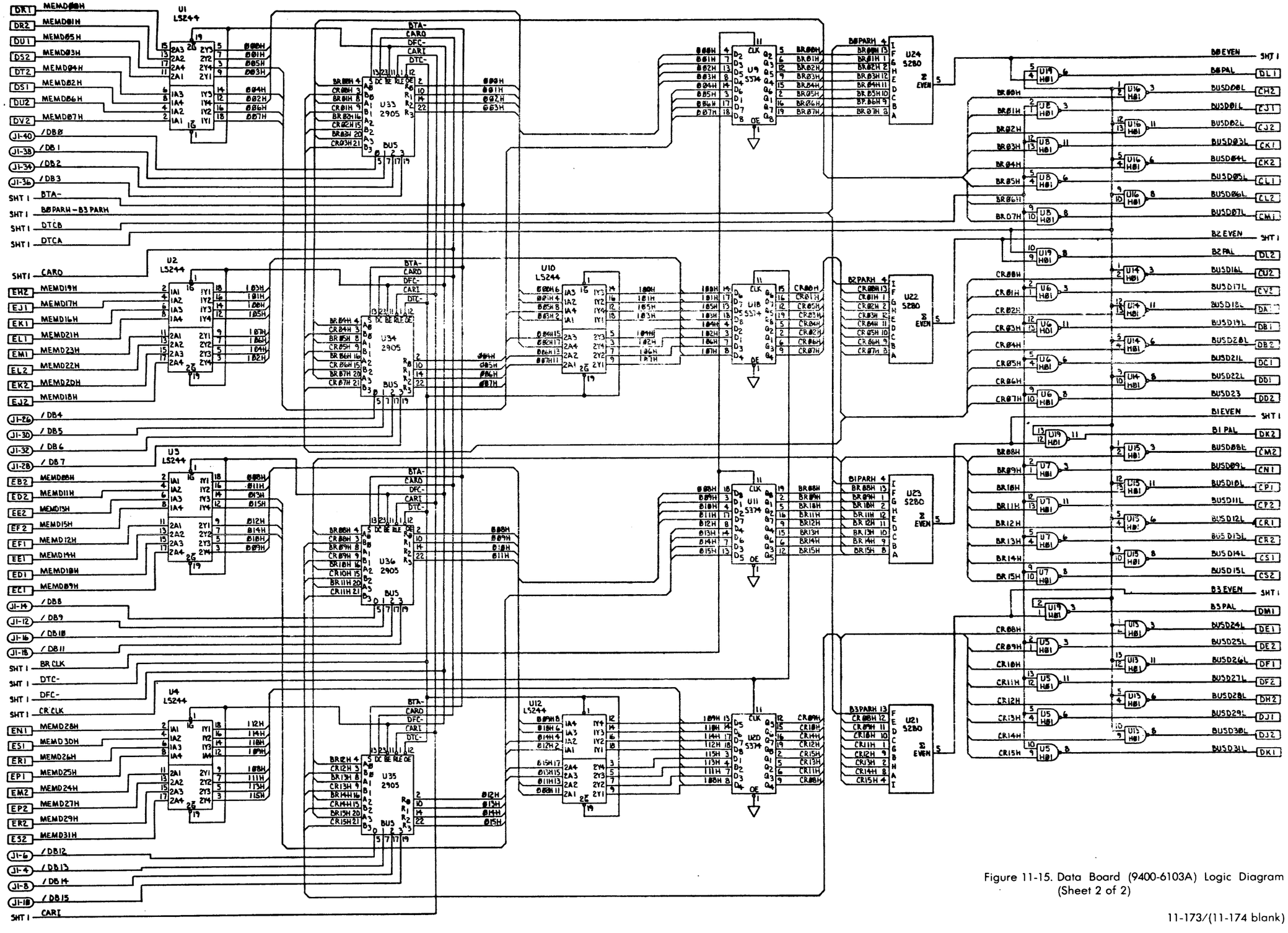
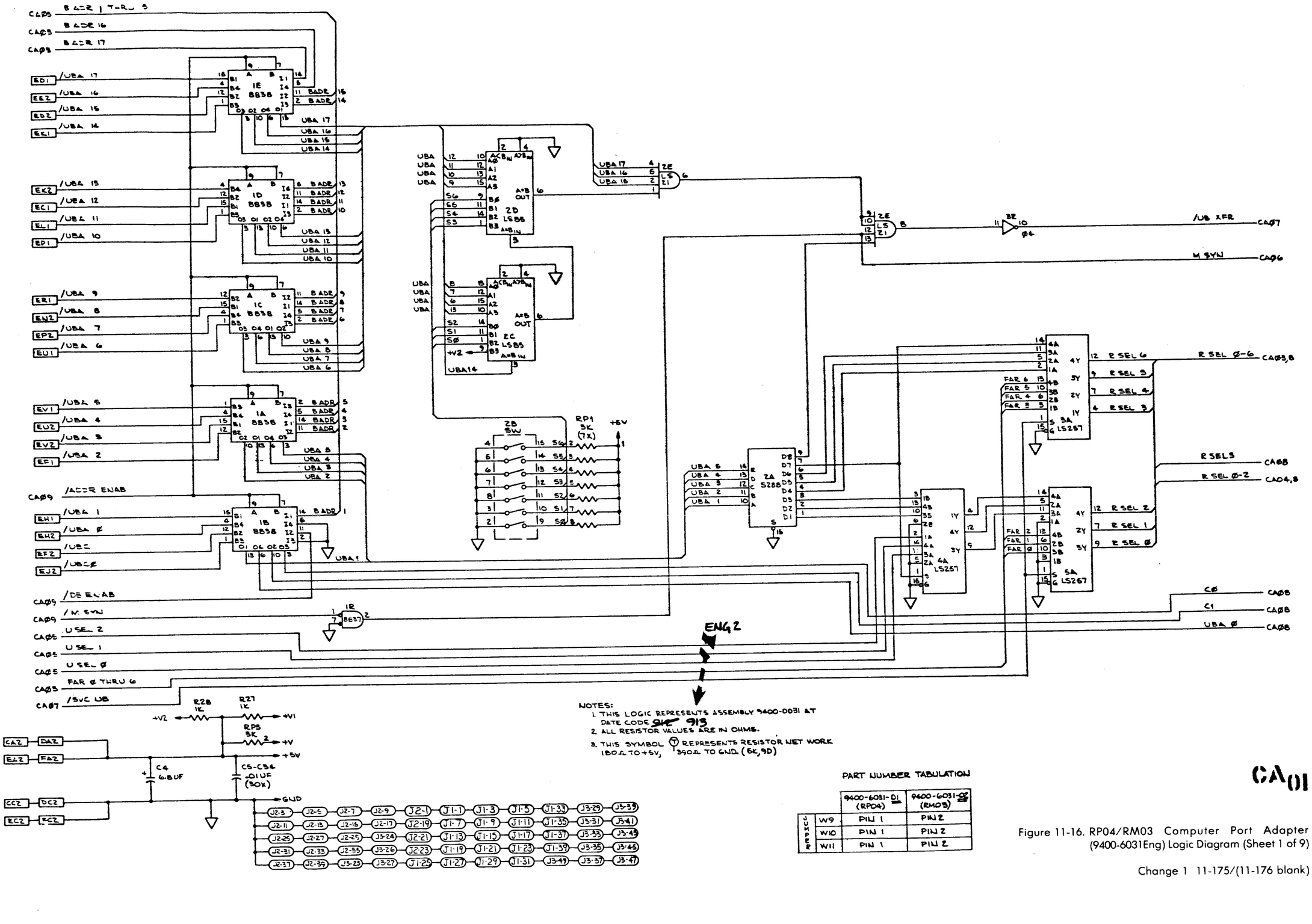


Figure 11-15. Data Board (9400-6103A) Logic Diagram (Sheet 2 of 2)



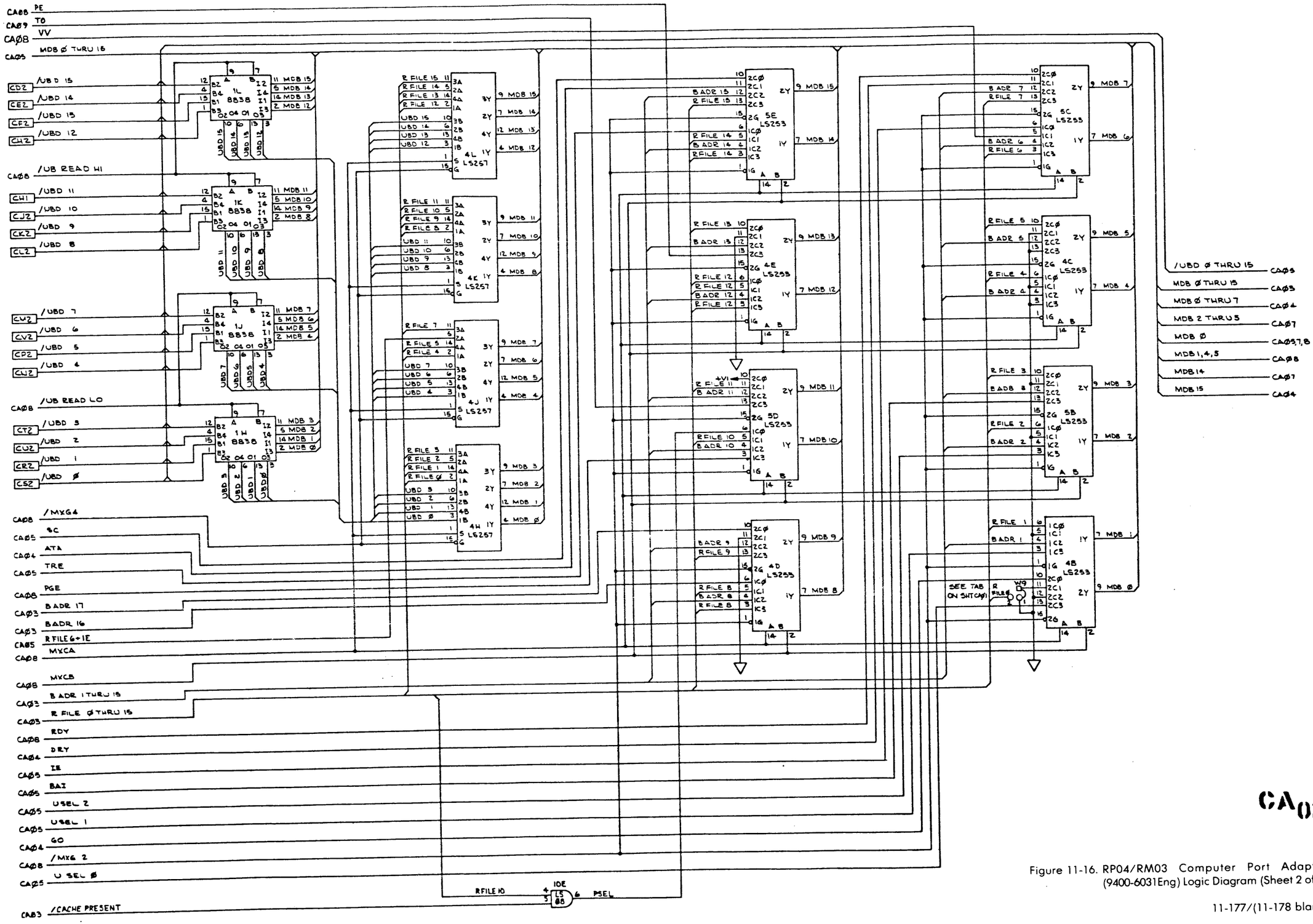
NOTES:
1. THIS LOGIC REPRESENTS ASSEMBLY 9400-0031 AT DATE CODE SHE 913
2. ALL RESISTOR VALUES ARE IN OHMS.
3. THIS SYMBOL (T) REPRESENTS RESISTOR NET WORK 180Ω TO +5V, 390Ω TO GND. (5K, 9D)

PART NUMBER TABULATION

		9400-6031-01 (RP04)	9400-6031-02 (RM03)
JUMPER	W9	PIN 1	PIN 2
	W10	PIN 1	PIN 2
	W11	PIN 1	PIN 2

CA01

Figure 11-16. RP04/RM03 Computer Port Adapter (9400-6031Eng) Logic Diagram (Sheet 1 of 9)



CA02

Figure 11-16. RP04/RM03 Computer Port Adapter (9400-6031Eng) Logic Diagram (Sheet 2 of 9)

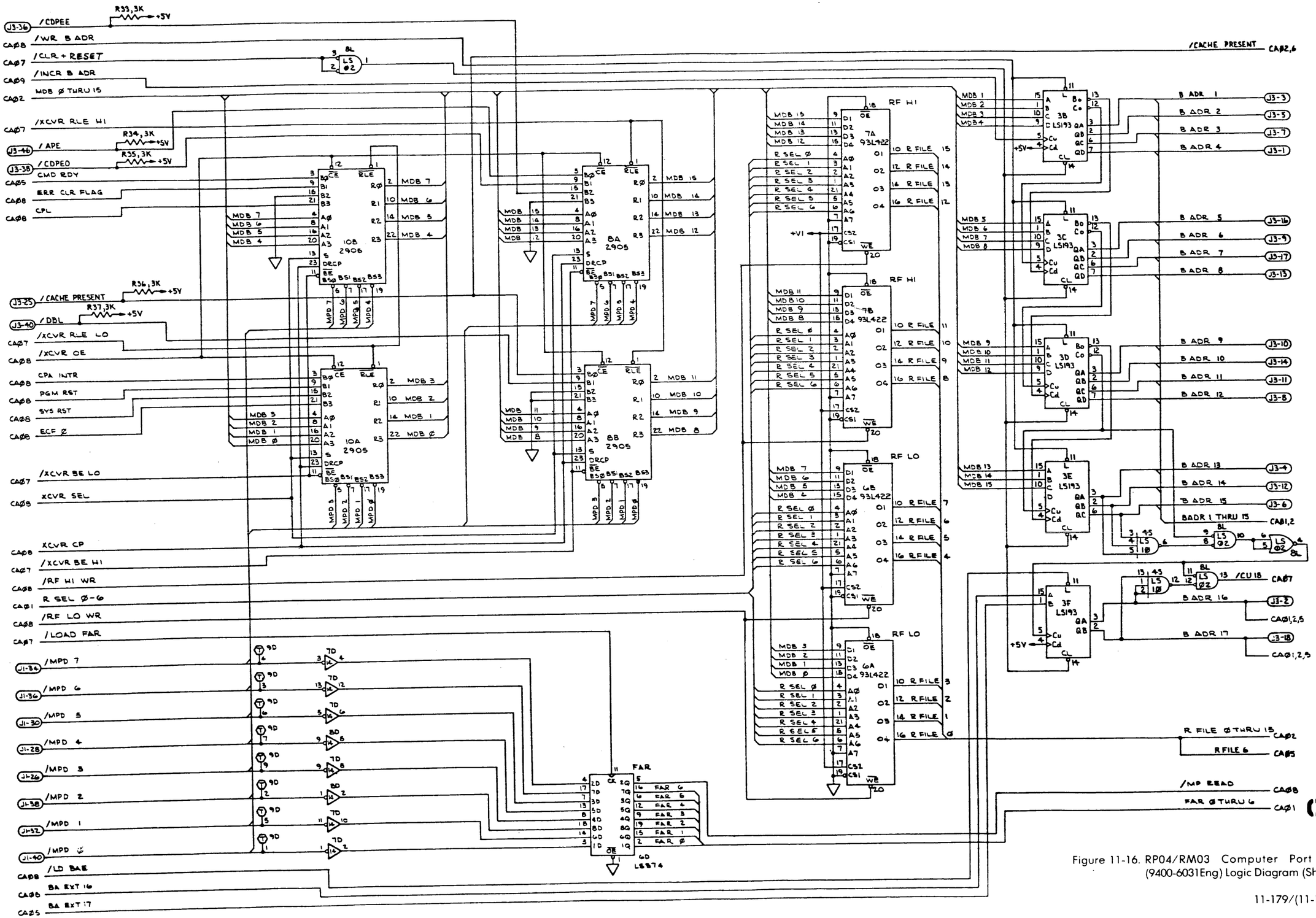


Figure 11-16. RP04/RM03 Computer Port Adapter (9400-6031Eng) Logic Diagram (Sheet 3 of 9)

CA04

Figure 11-16. RP04/RM03 Computer Port Adapter (9400-6031Eng) Logic Diagram (Sheet 4 of 9)

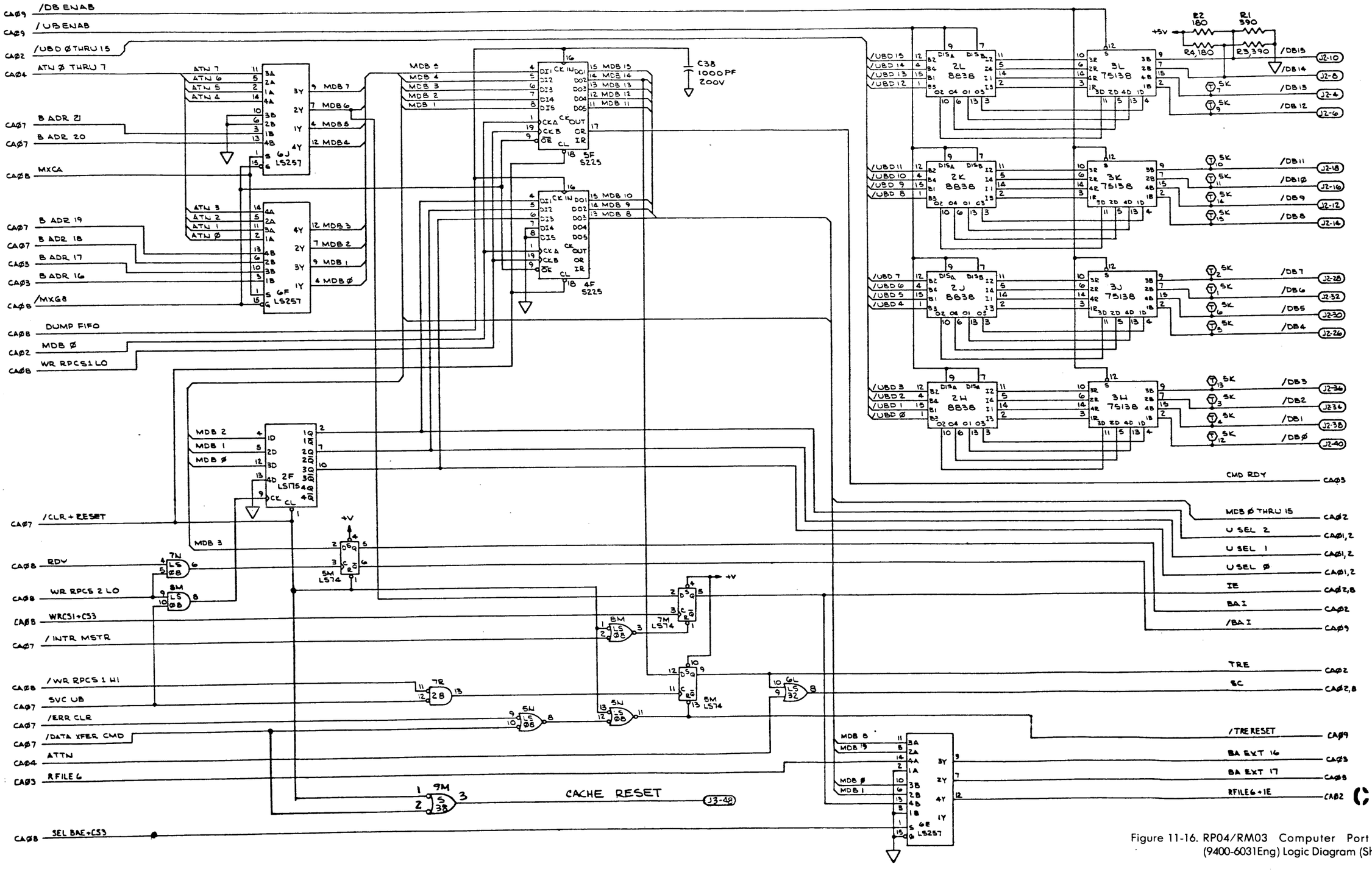
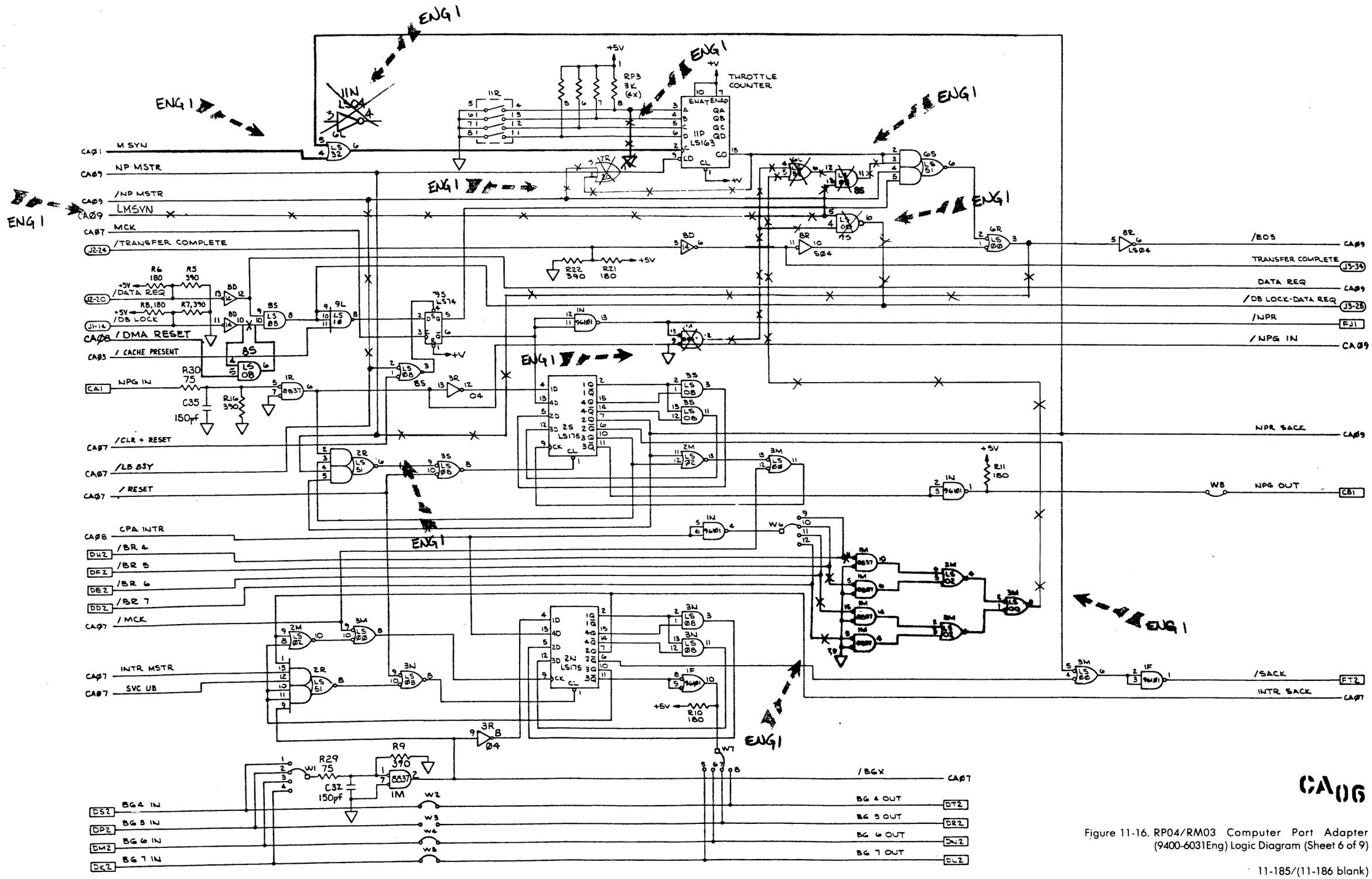


Figure 11-16. RP04/RM03 Computer Port Adapter (9400-6031Eng) Logic Diagram (Sheet 5 of 9)



CA06

Figure 11-16. RP04/RM03 Computer Port Adapter (9400-6031Eng) Logic Diagram (Sheet 6 of 9)

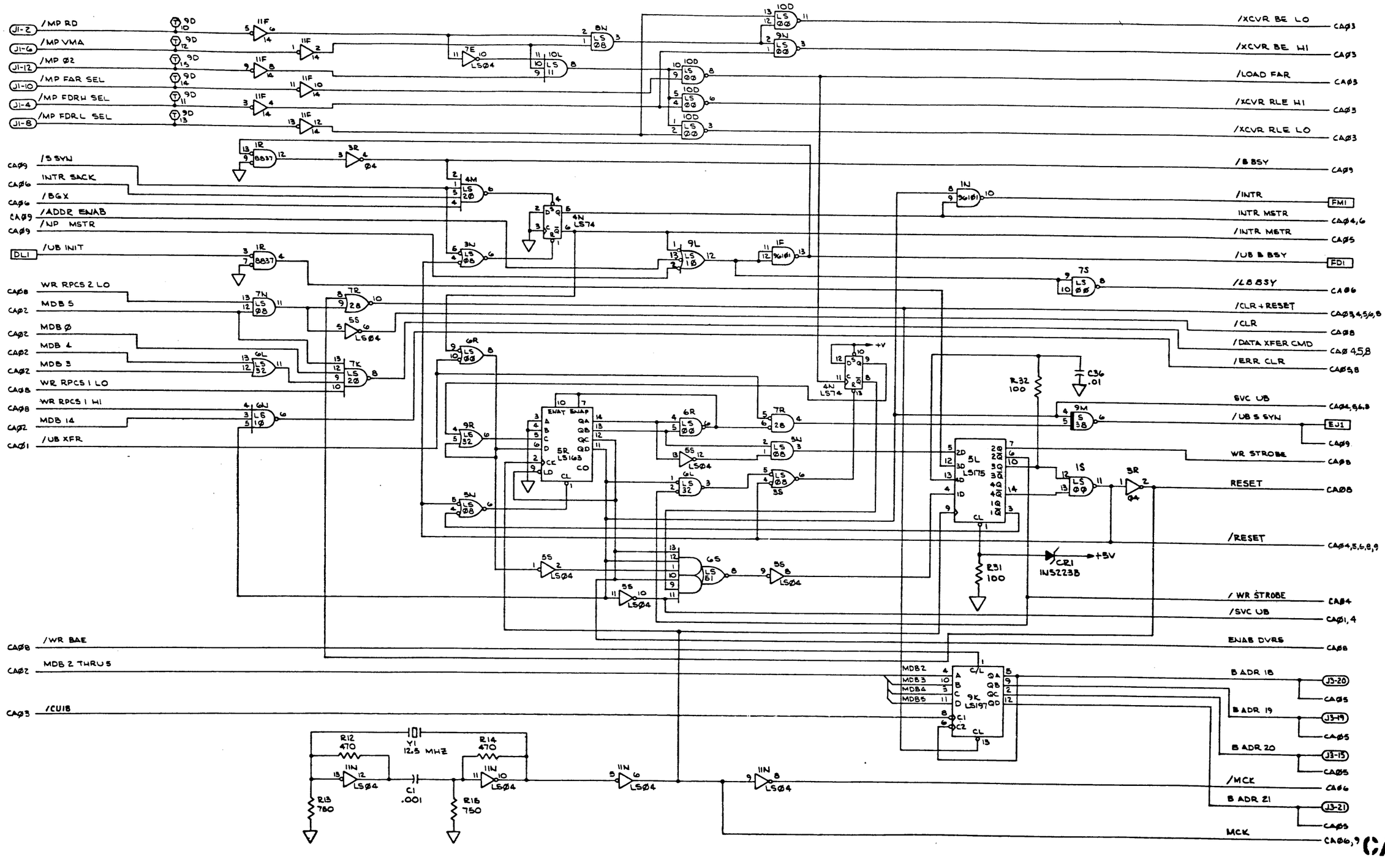


Figure 11-16. RP04/RM03 Computer Port Adapter (9400-6031Eng) Logic Diagram (Sheet 7 of 9)

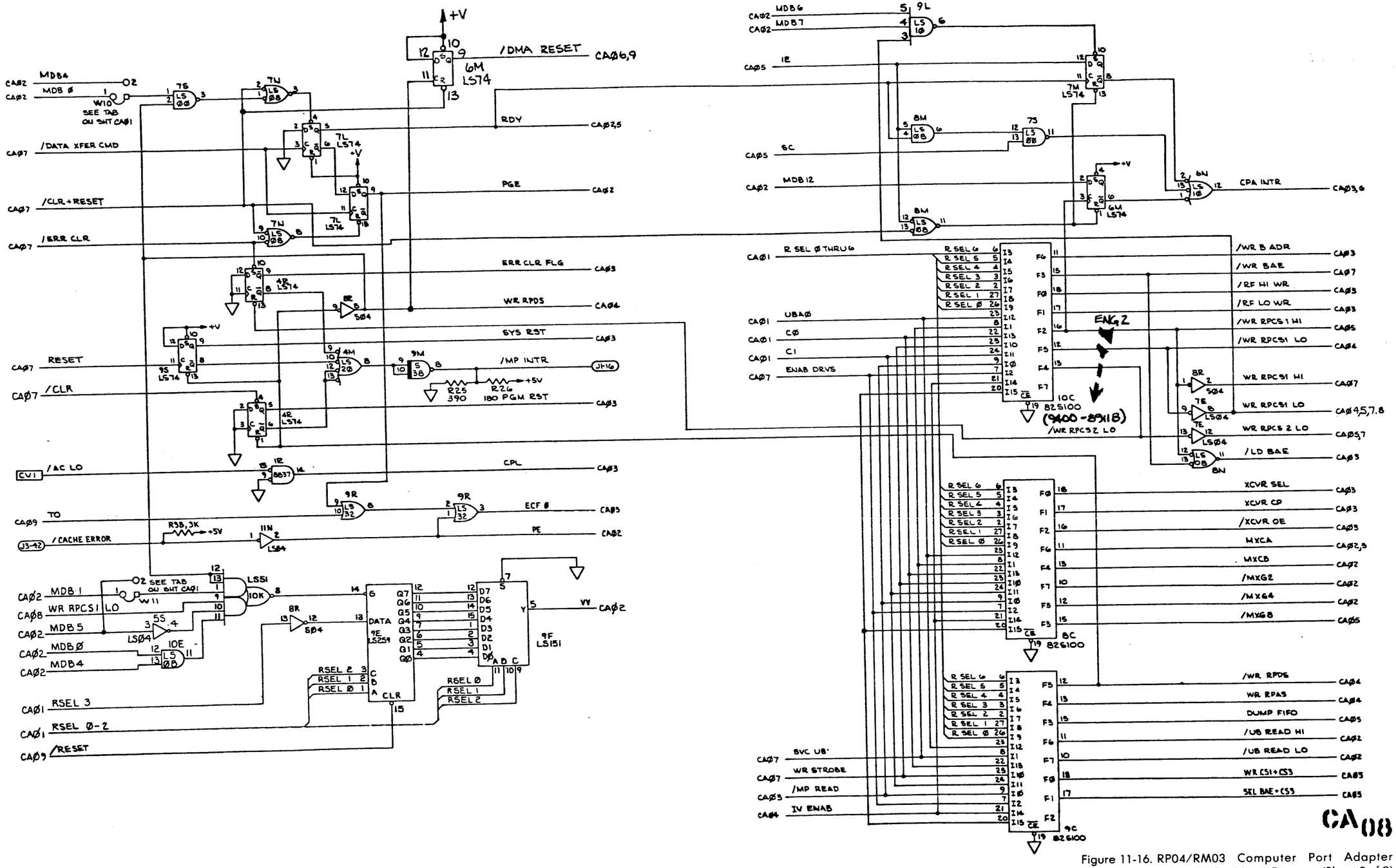
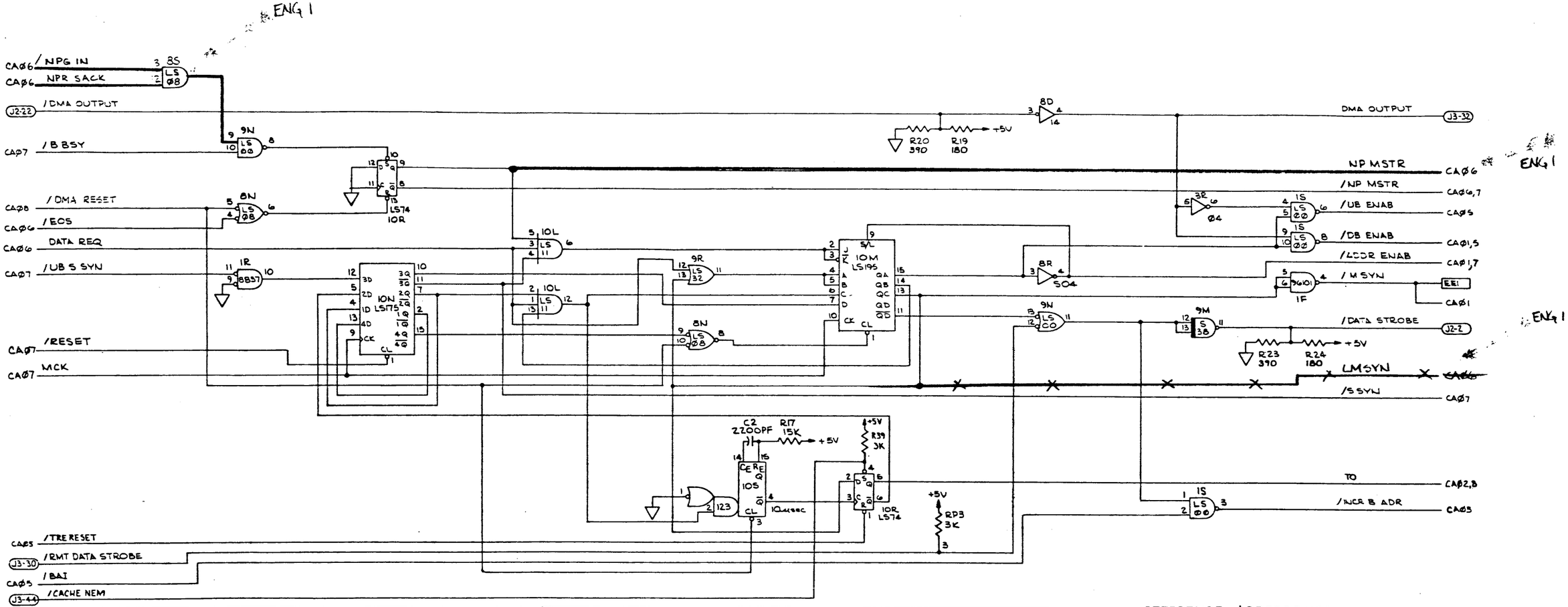


Figure 11-16. RP04/RM03 Computer Port Adapter (9400-6031Eng) Logic Diagram (Sheet 8 of 9)



TYPE	POSITION	UNUSED ELEMENTS	+5V	GND
74LS00	1S,3M,6R,7S,8E,8K,9N,10D	3M1; 7S2,3	14	7
74LS02	2M,6K,8L	2M1,2	14	7
74LS04	5S,7E, ,11N,		14	7
74LS08	3N,3S,5N,7N,8F,8J,8M,8N,8S,10E		14	7
74LS10	6N,9L,4S	4S3;6N3	14	7
74LS11	10L		14	7
7414	7D,8D,11F		14	7
74LS20	4M,7K		14	7
74LS21	2E		14	7
74LS32	6L,9R		14	7
74S38	9M		14	7
74LS51	2R,6S,10K	10K1	14	7
74LS74	4N,4R, 5M,6M,7L,7M,9S ,10R	6M2	14	7
74LS85	2C,2D		16	8
74123	10S	10S2	16	8
74LS138	7H,8H		16	8
74LS151	6H,9J,10J,9F,10F		16	8
74LS163	5R,11P		16	8
74LS175	2F,2N,2S,5L,10N		16	8
74LS195	10M		16	8
74LS193	3B,3C,3D,3E,3F		16	8
74S225	4F,5F		20	10
74LS241	5H		20	10
74LS253	4B,4C,4D,4E,5B,5C,5D,5E		16	8
74LS257	3A,4A,4H,4J,4K,4L,5A,6E,6F,6J		16	8

TYPE	POSITION	UNUSED ELEMENTS	+5V	GND
75138	3H,3J,3K,3L		16	8
2905	8A,8B,10A,10B		24	6/18
8838	1A,1B,1C,1D,1E,1H,1J,1K,1L,2H,2J,2K,2L		16	8
8837	1M,1R	1M2,3,4,5,6	16	8
96101	1F, 1N		14	7
93L14	7F,7J		16	8
93L422	6A,6B,7A,7B		22	8
74LS259	9E,9H,10H		16	8
7404	3R		14	7
7428	7R	7R1	14	7
74LS374	6D		20	10
825100	8C,9C,10C		28	14
745288	2A		16	8
74LS197	9K		14	7
R-PAK				
180/390	5K,9D		16	8
SW.SPST8	2B, 5J			
SW.SPST4	11R			
74SC4	8R			

REFERENCE DESIGNATOR LAST USED	REFERENCE DESIGNATOR NOT USED
R40	R18
C38	C3
CR1	
Y1	
RP3	
J3	
W11	

CA09

Figure 11-16. RP04/RM03 Computer Port Adapter (9400-6031Eng) Logic Diagram (Sheet 9 of 9)

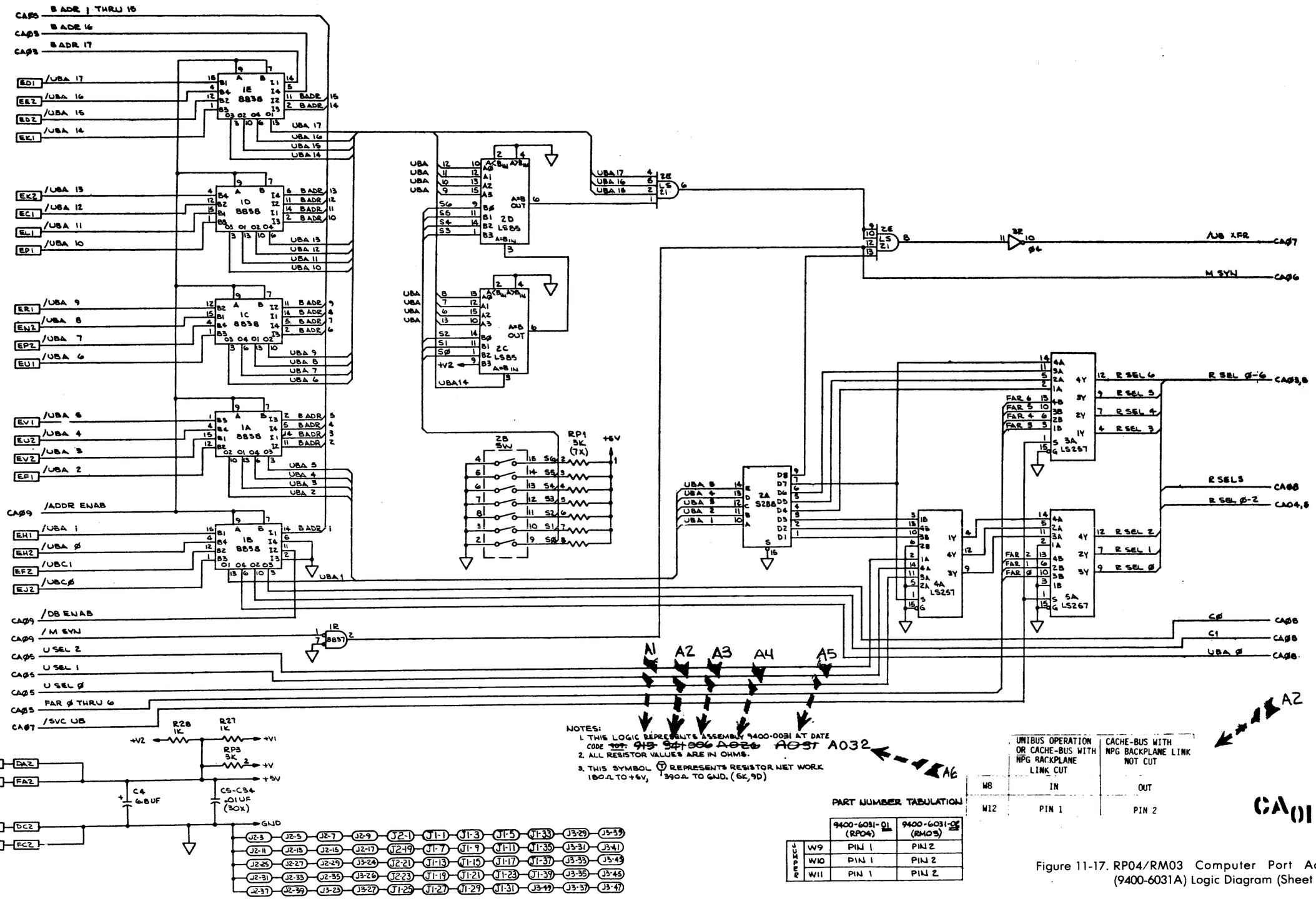
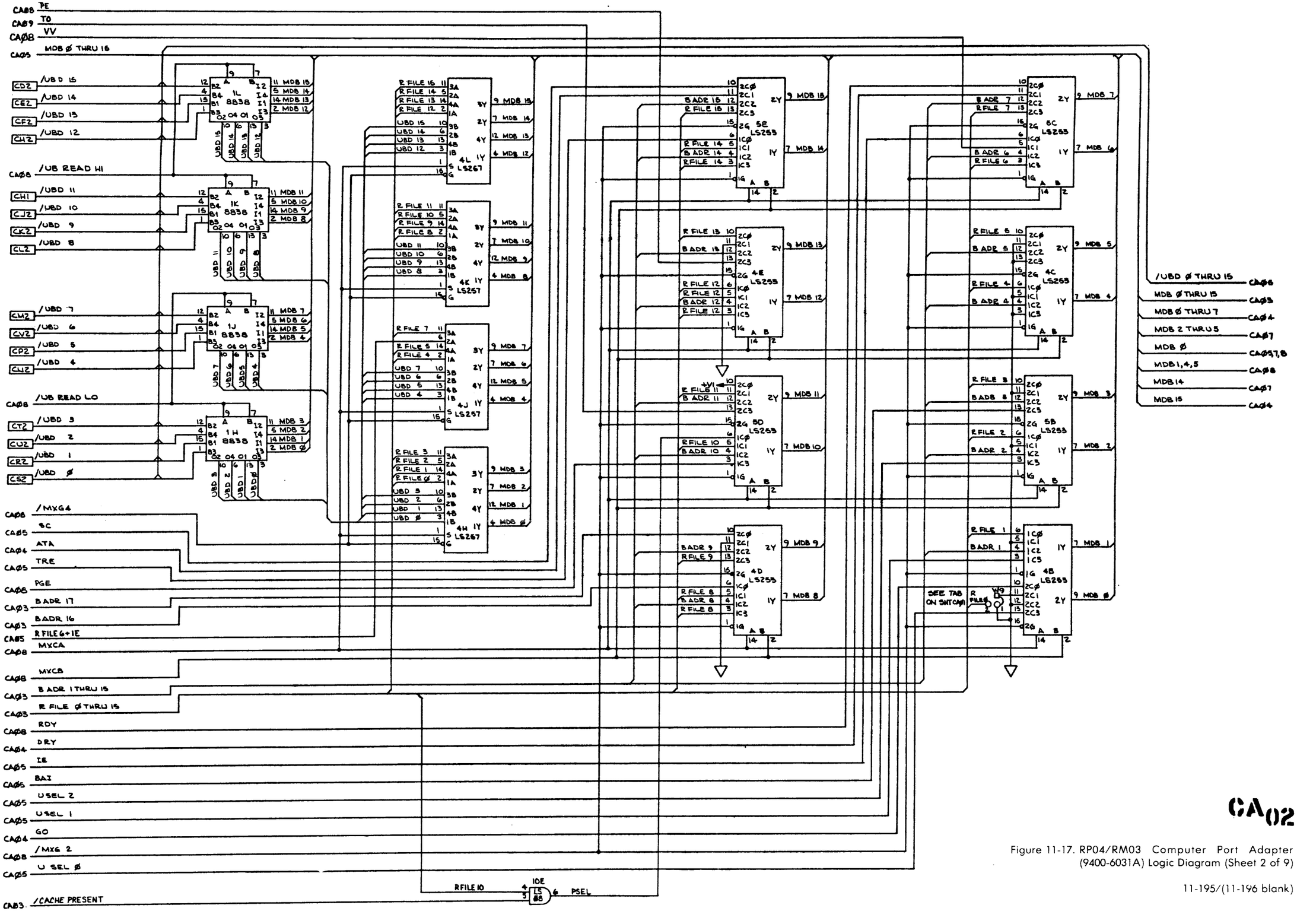


Figure 11-17. RP04/RM03 Computer Port Adapter (9400-6031A) Logic Diagram (Sheet 1 of 9)



CA02

Figure 11-17. RP04/RM03 Computer Port Adapter (9400-6031A) Logic Diagram (Sheet 2 of 9)

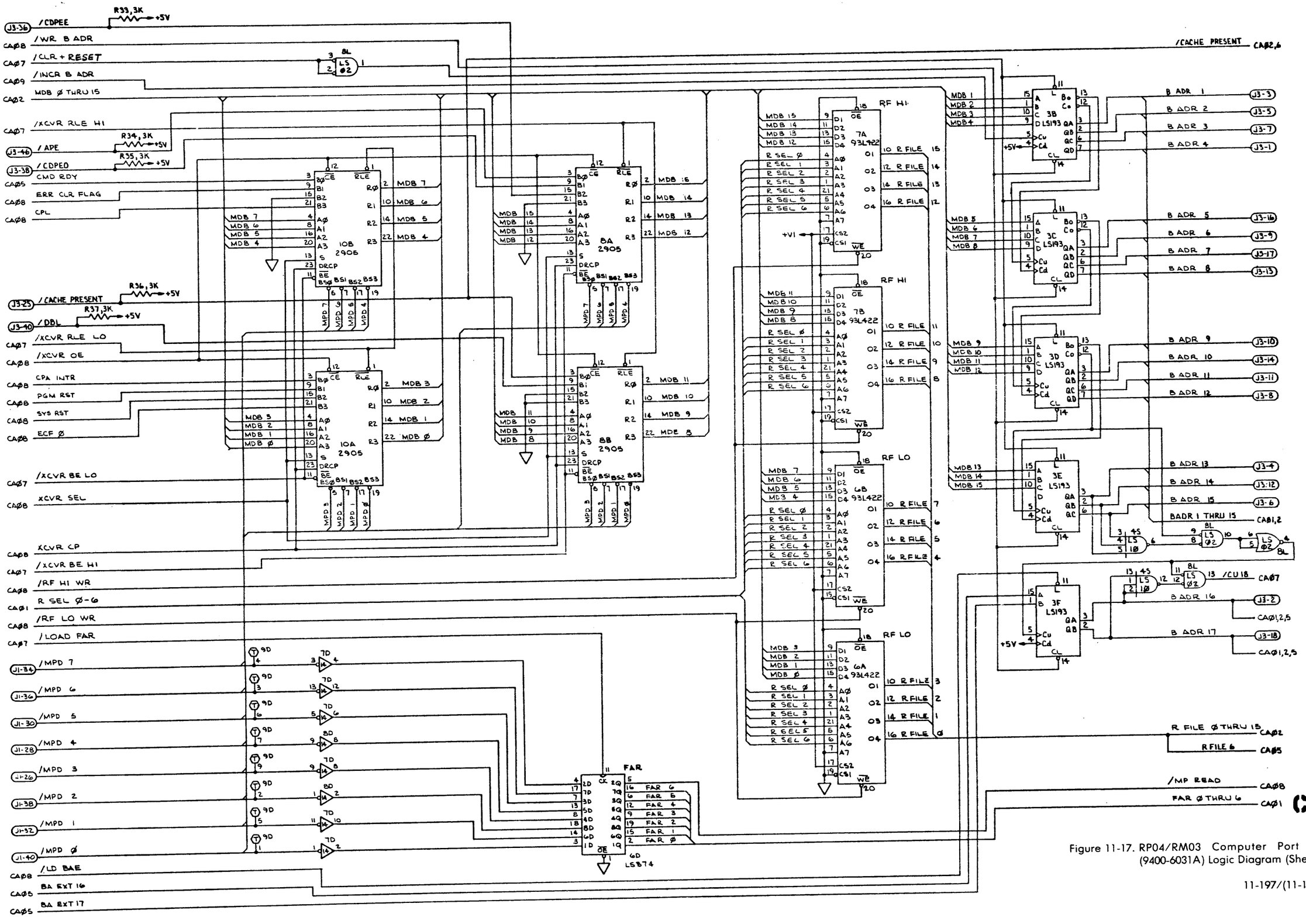


Figure 11-17. RP04/RM03 Computer Port Adapter (9400-6031A) Logic Diagram (Sheet 3 of 9)

CA07 /SVC UB
CA07 / WR STROBE
CA08 WR RPCS1 LO
CA07 /DATA XFER CMD
+5V
CA08 WR RPDS
CA07 /RESET.
CA08 /WR RPCS 1 LO
CA07 /CLR + RESET
CA01 R SEL Ø-2
CA08 /WR RPDS
CA07 SVC UB
CA02 MDB 15
CA08 WR RPAS
CA07 INTR MSTR
CA02 MDB Ø THRU 7
CA02 DRY
CA02 GO
CA08 ATTN
CA02 ATA
CA05 ATN Ø THRU 7
CA08 IV ENAB

CA04

Figure 11-17. RP04/RM03 Computer Port Adapter (9400-6031A) Logic Diagram (Sheet 4 of 9)

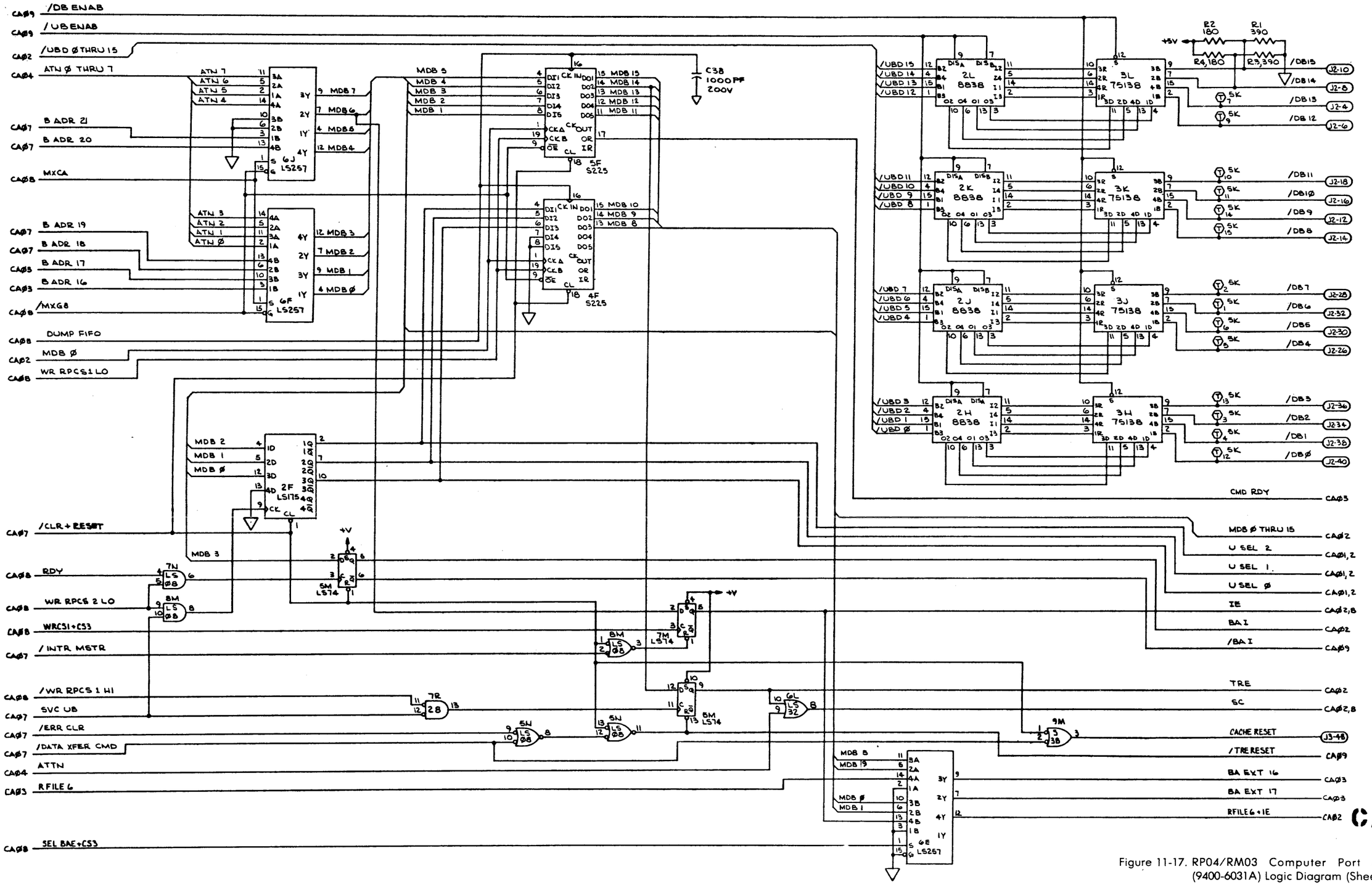


Figure 11-17. RP04/RM03 Computer Port Adapter (9400-6031A) Logic Diagram (Sheet 5 of 9)

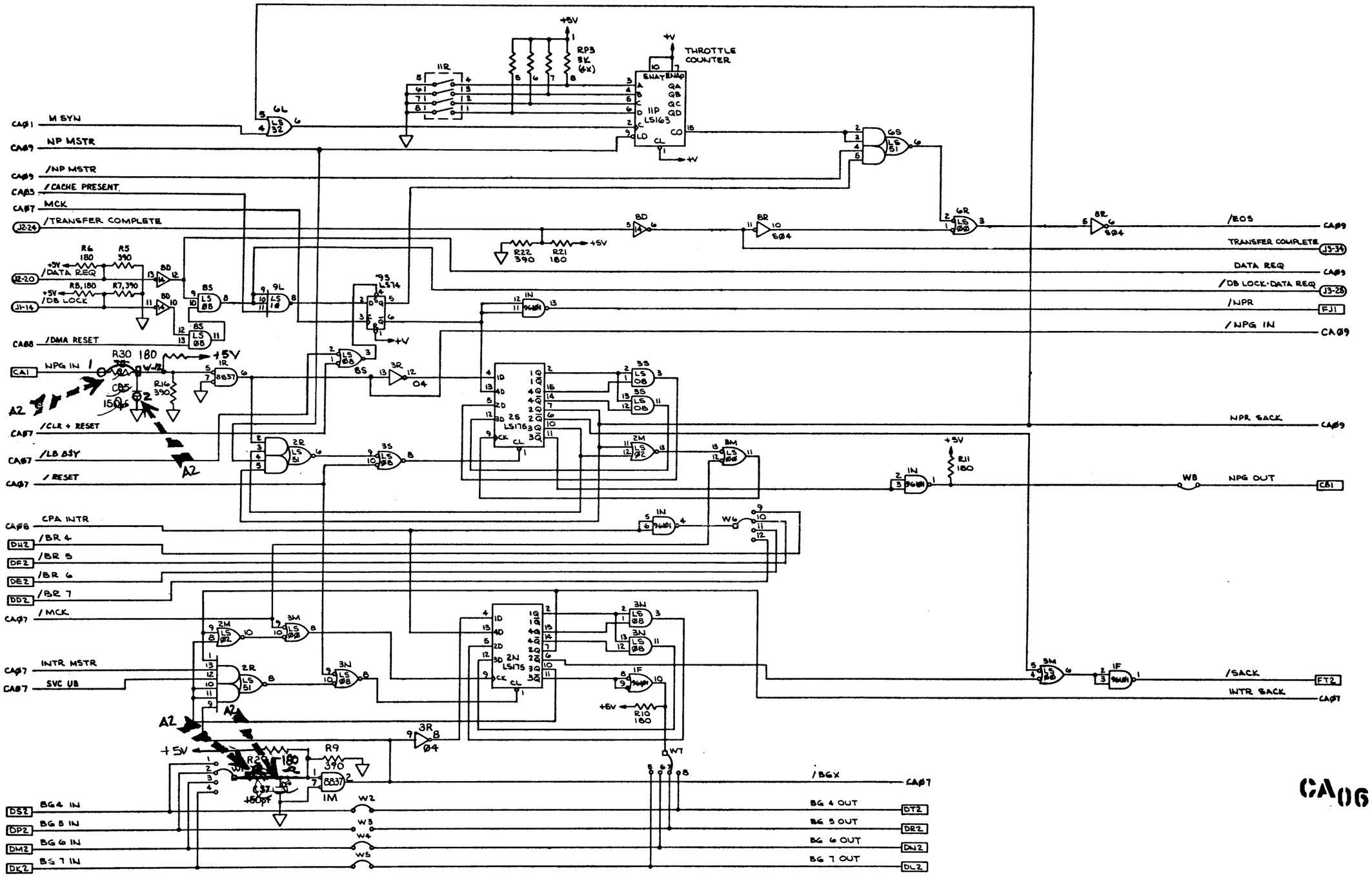


Figure 11-17. RP04/RM03 Computer Port Adapter (9400-6031A) Logic Diagram (Sheet 6 of 9)

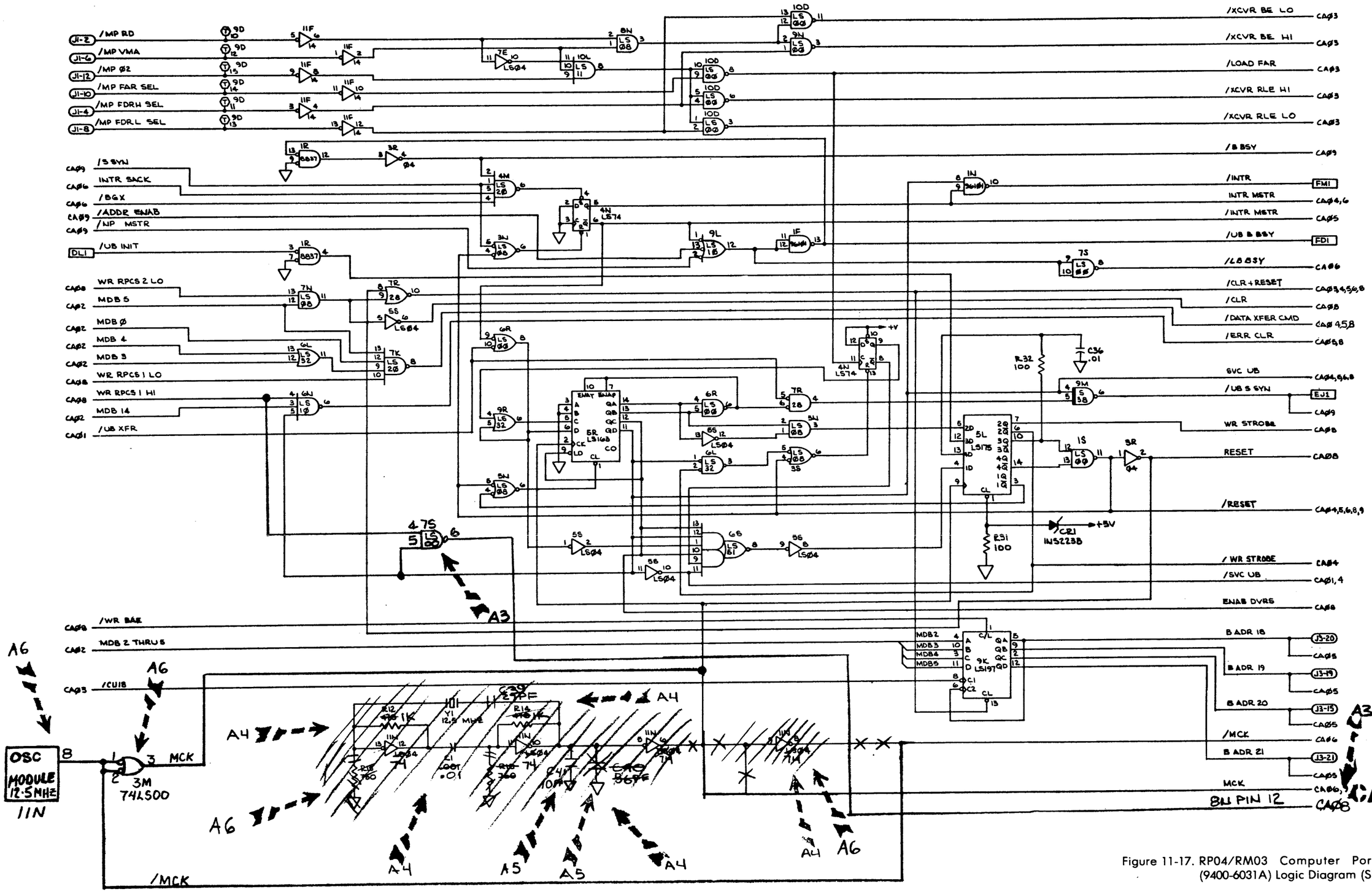


Figure 11-17. RP04/RM03 Computer Port Adapter (9400-6031A) Logic Diagram (Sheet 7 of 9)

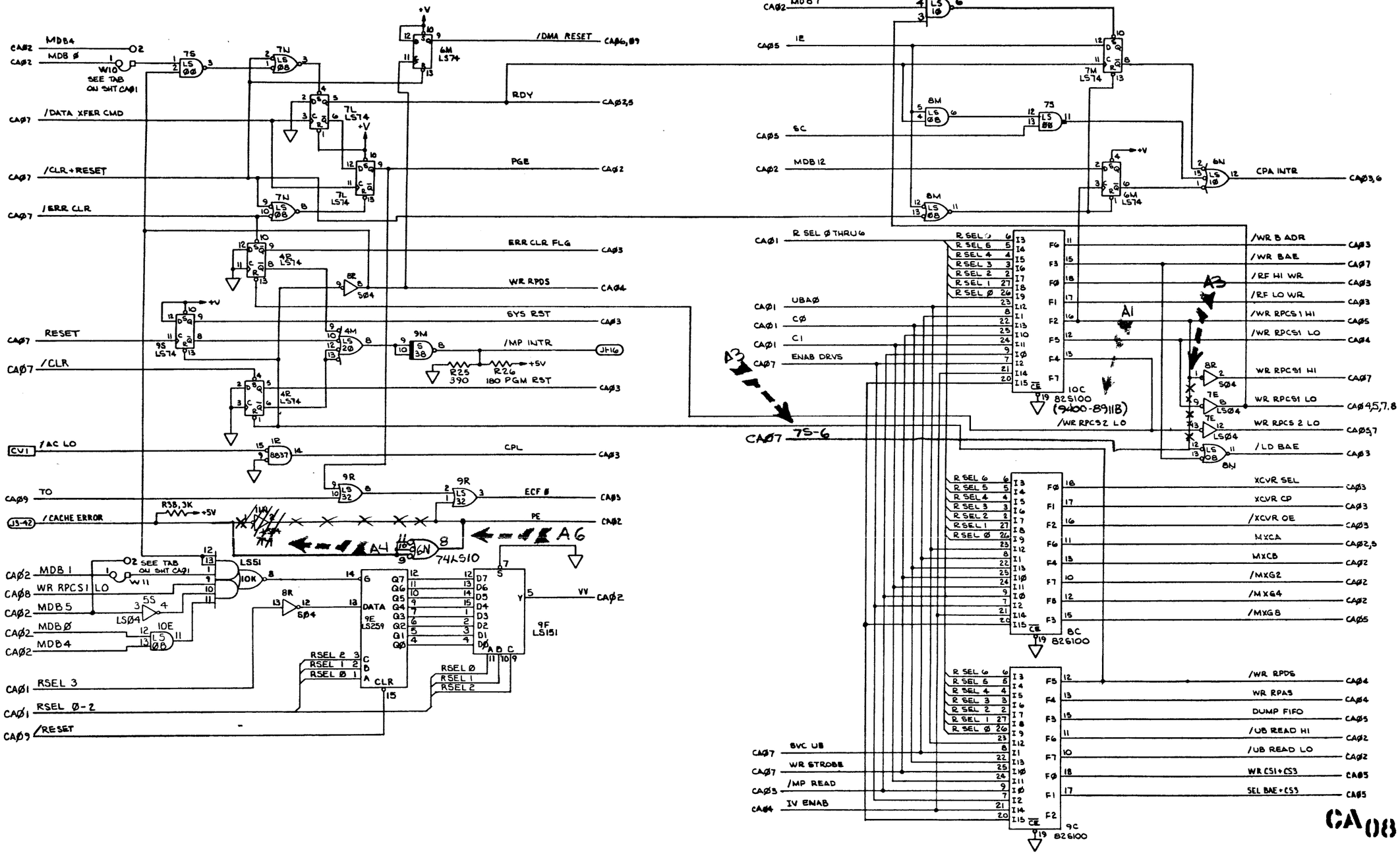
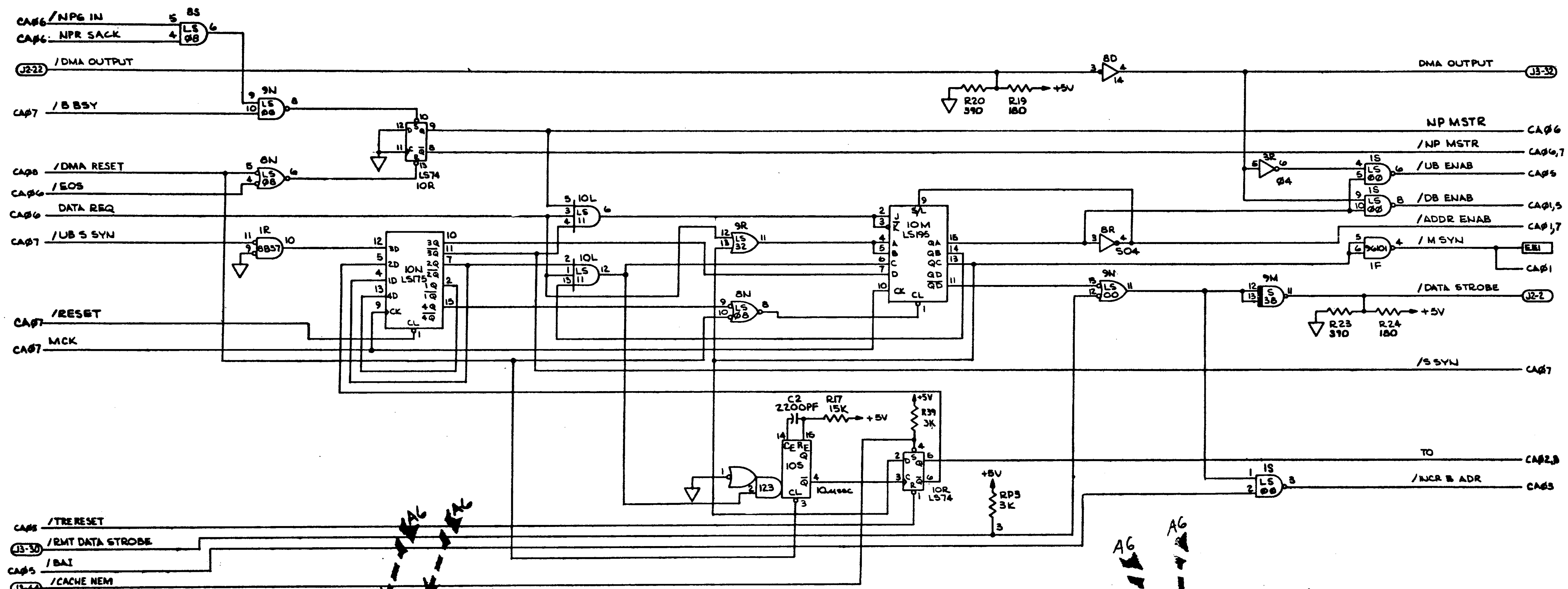


Figure 11-17. RP04/RM03 Computer Port Adapter (9400-6031A) Logic Diagram (Sheet 8 of 9)



TYPE	POSITION	UNUSED ELEMENTS	+5V	GND
74LS00	1S,3M,6R,7S,8E,8K,9N,10D	~~3M1~~; 7S~~2~~,3	14	7
74LS02	2M,6K,8L	2M1,2	14	7
74LS04	5S,7E,~~4N~~ ← A4		14	7
74LS08	3N,3S,5N,7N,8F,8J,8M,8N,8S,10E		14	7
74LS10	6N,9L,4S	4S3;~~6N3~~	14	7
74LS11	10L		14	7
7414	7D,8D,11F		14	7
74LS20	4M,7K		14	7
74LS21	2E		14	7
74LS32	6L,9R		14	7
74S38	9M	A6	14	7
74LS51	2R,6S,10K	10K1	14	7
74LS74	4N,4R, 5M,6M,7L,7M,9S,10R	6M2	14	7
74LS85	2C,2D		16	8
74123	10S	10S2	16	8
74LS138	7H,8H		16	8
74LS151	6H,9J,10J,9F,10F		16	8
74LS163	5R,11P		16	8
74LS175	2F,2N,2S,5L,10N		16	8
74LS195	10M		16	8
74LS193	3B,3C,3D,3E,3F		16	8
74S225	4F,5F		20	10
74LS241	5H		20	10
74LS253	4B,4C,4D,4E,5B,5C,5D,5E		16	8
74LS257	3A,4A,4H,4J,4K,4L,5A,6E,6F,6J		16	8

TYPE	POSITION	UNUSED ELEMENTS	+5V	GND
75138	3H,3J,3K,5L		16	8
2905	8A,8B,10A,10B		24	6/18
8838	1A,1B,1C,1D,1E,1H,1J,1K,1L,2H,2J,2K,2L		16	8
8837	1M,1R	1M2,3,4,5,6	16	8
96101	1F,1N		14	7
93L14	7F,7J		16	8
93L422	6A,6B,7A,7B		22	8
74LS259	9E,9H,10H		16	8
7404	3R, ~~4N~~ ← A4	~~4N1-2~~	14	7
7428	7R	7R1	14	7
74LS374	6D		20	10
82S100	8C,9C,10C		28	14
74S288	2A		16	8
74LS197	9K		14	7
R-PAK				
180/390	5K,9D		16	8
SW.SPST8	2B,5J			
SW.SPST4	11R			
74S04	8R		14	7

REFERENCE DESIGNATOR LAST USED	REFERENCE DESIGNATOR NOT USED
R40	R18,R12,R13,R14,R15,R29,R30
~~C38~~ C40	C3,C1,C35,C37
CR1	
Y1	
RP3	
J3	
W11	

C38 ~~C41~~ A5 A6 A4

CA09

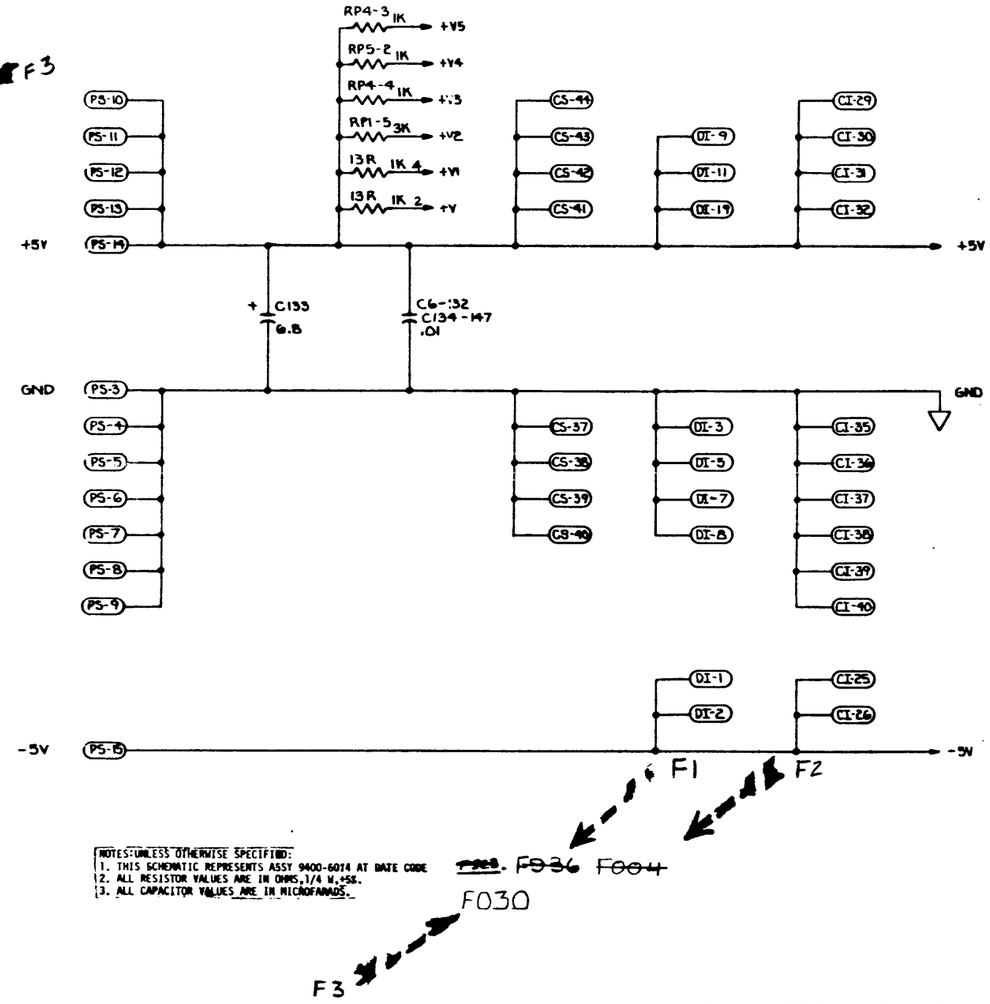
Figure 11-17. RP04/RM03 Computer Port Adapter (9400-6031A) Logic Diagram (Sheet 9 of 9)

TYPE	POSITION	UNUSED ELEMENTS	+5V	GND	-5V
74S00	B2K,5R,5S,7T,11H,11F,8T		14	7	
74LS00	B7E,8K,11T,12A,12U,15B,18K,19B,18N,3K	B3K1,4;2K2;12A1,2	14	7	
74S02	B7U,11A,10D	B10D 2,4	14	7	
74LS02	B7J,11U,17C	B11A1,2	14	7	
74S04	B2N,1P	B1P4,5,1	14	7	
7405	B8U	B8U 2,6	14	7	
74LS04	B6L,6U,7D,7P,7R,8F,10C,10U,12E,14S,18A,18B,18J,18M	B18A5,6;6L4,5,6;10U2	14	7	
74S08	B1M,2J,3E,10A,7L,7F,20T	20T B,3,4	14	7	
74LS08	B6D,7R,9R,11R,12D,12F,14A,14B,16B,16N,20S	9R2,4	14	7	
74S10	B3N	B3N1,2	14	7	
74LS10	B8D,8E,10B,16C,19S,9D.11B	B9D3;8D3	14	7	
7437	B7A	B7A			
74S11	B2L,13C		14	7	
74LS11	B3M,8M,11C,13B,15C	B15B5	14	7	
74LS20	B13S,14U,6N		14	7	
74LS21	B11H		14	7	
74LS27	B9C,14T		14	7	
7432	B8C	8C2,3,4	14	7	
74S32	B2E,8J,9S,13D	B9S1,2,4	14	7	
74LS32	B10R,11D,14C,11E	B11E2,3,4	14	7	
74S38	B3J	B3J1,4	14	7	
74LS38	B6F,12C	B12C1,4;6F4	14	7	
74LS74	B1K,1L,6E,6K,6T,8H,8L,8R,9E,9F,9A,9T,10F,10T,11B,12B,17B,19A,19R,19T,20A,1D, 7M	7M-1	14	7	
74123	B8A		16	8	
74LS85	B11L,13P,14L,14P,15E,16F		16	8	
74S86	B2M,3D	B3D3	14	7	
74S112	B1F,7H		16	8	
74121	B16A,17A		14	7	
74LS123	B9U		16	8	
74132	B8B	B8B1,2	14	7	
74LS138	B18C,18E,16L		16	8	
74LS139	B6M,13T	B6M2	16	8	
74S151	B8S		16	8	
74LS153	B11K,12K,14K,15K,16E,16H,16M,17E,17F,17H,18F,18H,18L		16	8	
74S157	B2D,3L,10K,10L,13E,17D		16	8	
7427	B10E		14	7	
74LS157	B14N		16	8	
74S163	B1R,2H,2P,2R,3P		16	8	
74S174	B3R,4R		16	8	
74S175	B4S		16	8	
74LS175	B12N,12P,16P,12S,12T,15L		16	8	
74S189	B12M,13F,14F,14M		16	8	
74LS193	B13N,19D,19E,19J,19R,19N,19P,20B,20C,20D,20J,20K,20N,20P		16	8	
74S195	B10H,10J,10M,11M,14D,14E,15D,16D		16	8	
74LS215	B11J,12J		16	8	
74LS221	B9B,15A		16	8	
74LS240	B13M,14H		20	10	
74LS241	B13L,15H,15S,15T,16U		20	10	
74LS243	B17S,17T		14	7	
74LS251	B3H,4H,4N,4P,5H,5N,5P,6H,8N,8P,9N,9P,10N,10P,11N,11P,19F,19H,19L,19M,20F,20H,20L,20M		16	8	
74S257	B6P,6R,18S,18T		16	8	
74S260	B13U,18D		14	7	
74273	B11G R		20	10	
74279	B3U,5U	B3U3,4 ; 5U4	16	8	
74LS280	B12L,14J,15F,15U		14	7	
74S374	B16J,16K,17J,17K		20	10	
8504	B4D,4E,4F,4J,4K,4L,4M,5D,5E,5F,5J,5K,5L,5M,6J		16	8	
9401	B7S		14	7	
68800	B11G S		8	1,21	
6875	B11U		16	8	
74S472	B1T,2T,3T,4T		20	10	
74S287	B10S,18F,19C		16	8	
74S288	B1N		16	8	
2114-2	B12H,13H,13J,13K				
RPAK 1K	B4U,13R				

F3

REF DESIGNATION LAST USED	REF DESIGNATION NOT USED
R26	R5
C149	
RP5	RP3-2,3,4;RP4-5;RP5-3,4,5
CR5	
Y1	
S5	
CP10	
TP29	
L1	
W12	

JUMPER	9400-6014-01 (RP04)	9400-6014-02 (RM03)
W12	PIN 2	PIN 1
W11A	PIN 5	PIN 1
W10	PIN 2	PIN 3



NOTES: UNLESS OTHERWISE SPECIFIED:
1. THIS SCHEMATIC REPRESENTS ASSY 9400-6014 AT DATE CODE ~~7928~~ F936 ~~F004~~
2. ALL RESISTOR VALUES ARE IN OHMS, 1/4 W, +5%.
3. ALL CAPACITOR VALUES ARE IN MICROFARADS.

IBC 01

Figure 11-18. Basic Control (9400-6014F) Logic Diagram (Sheet 1 of 16)

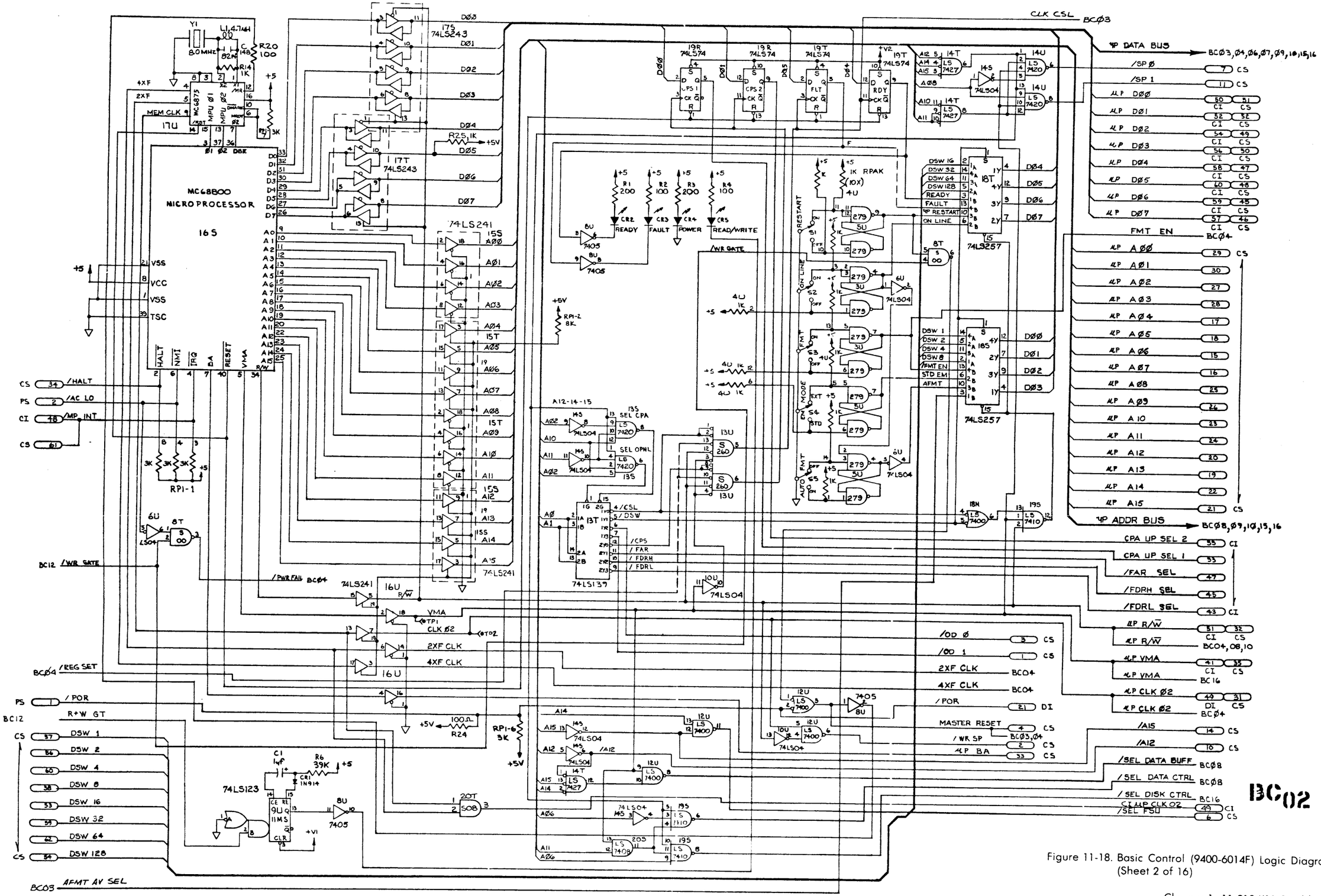


Figure 11-18. Basic Control (9400-6014F) Logic Diagram (Sheet 2 of 16)

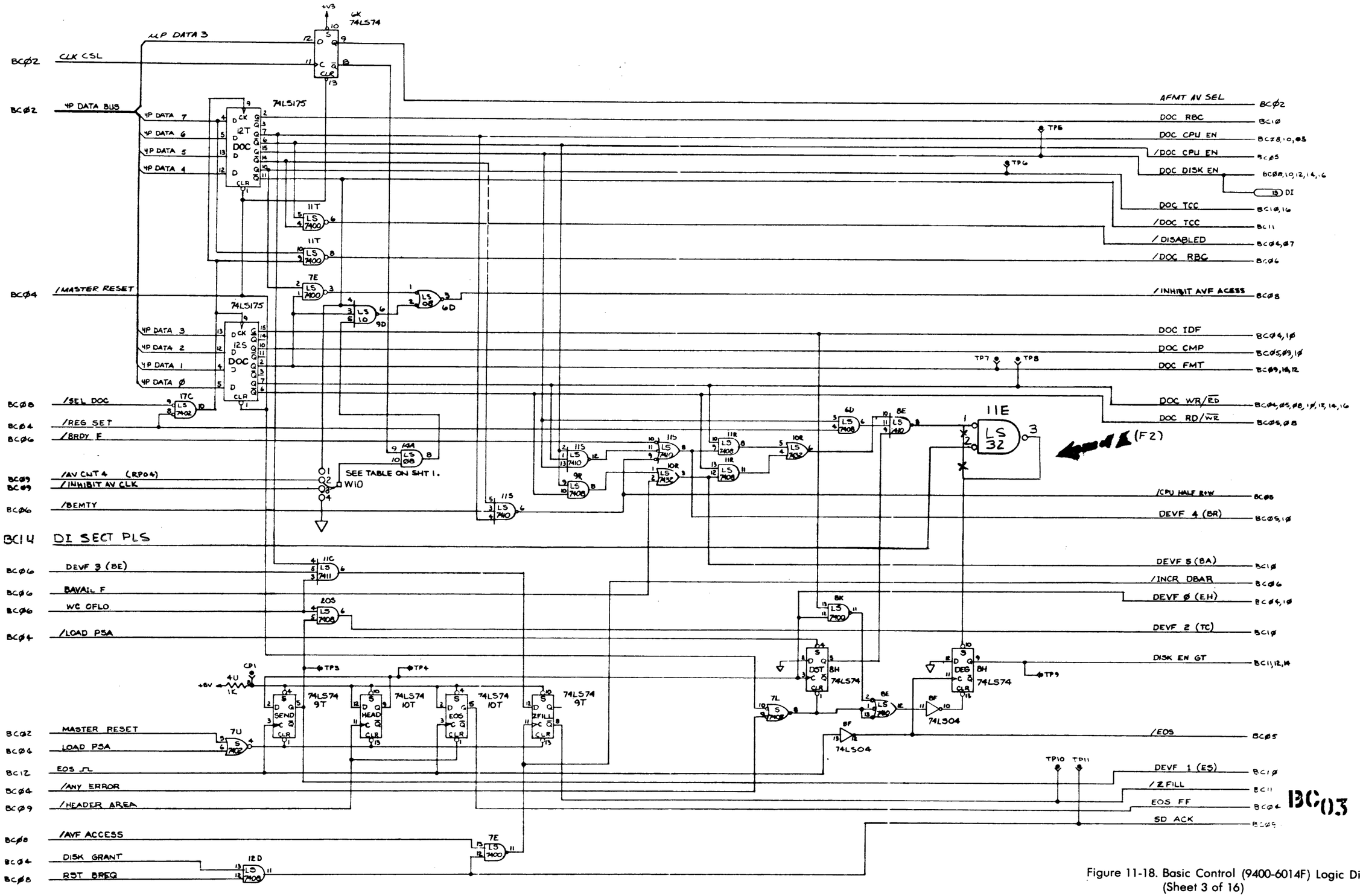


Figure 11-18. Basic Control (9400-6014F) Logic Diagram (Sheet 3 of 16)

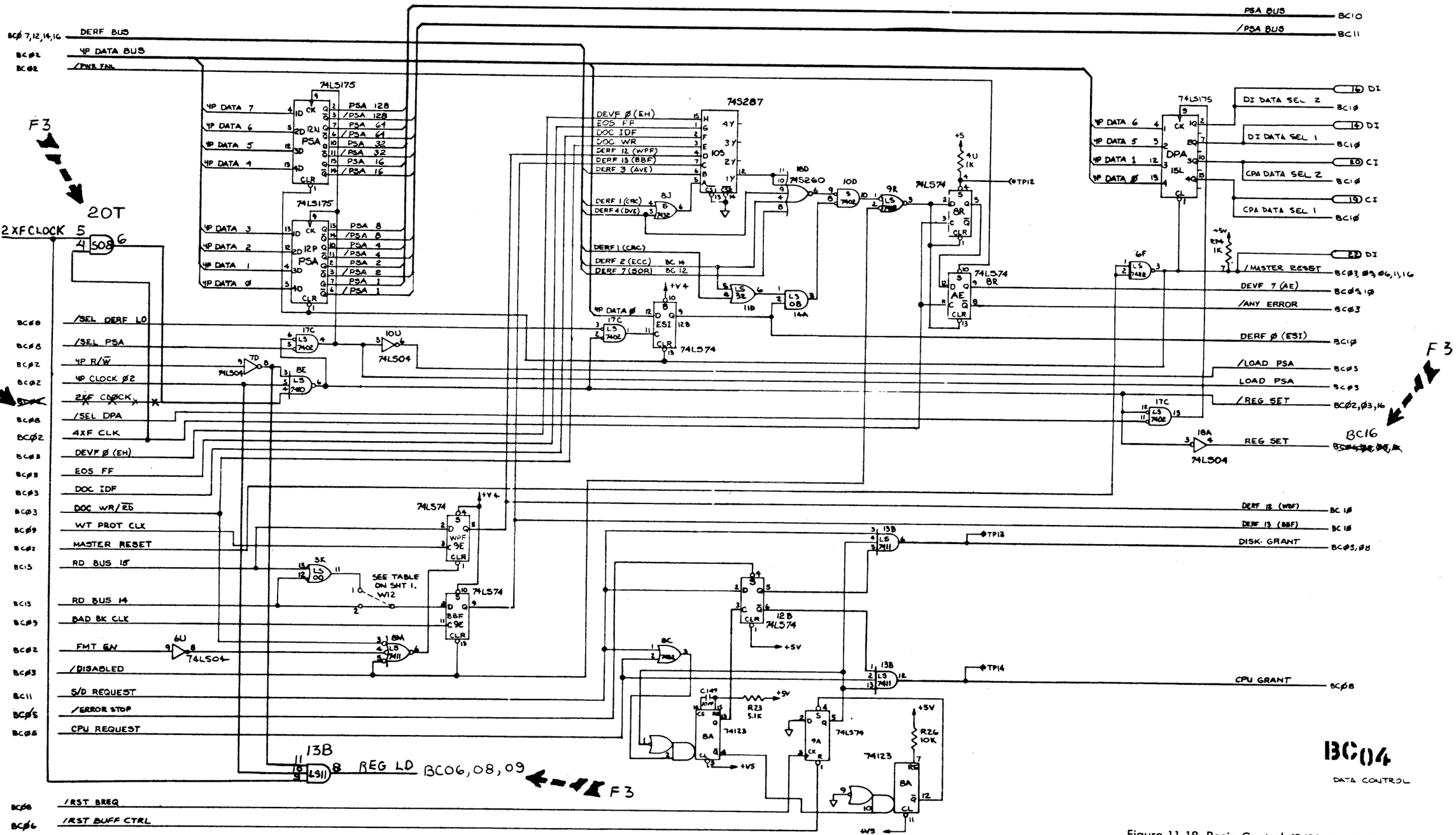
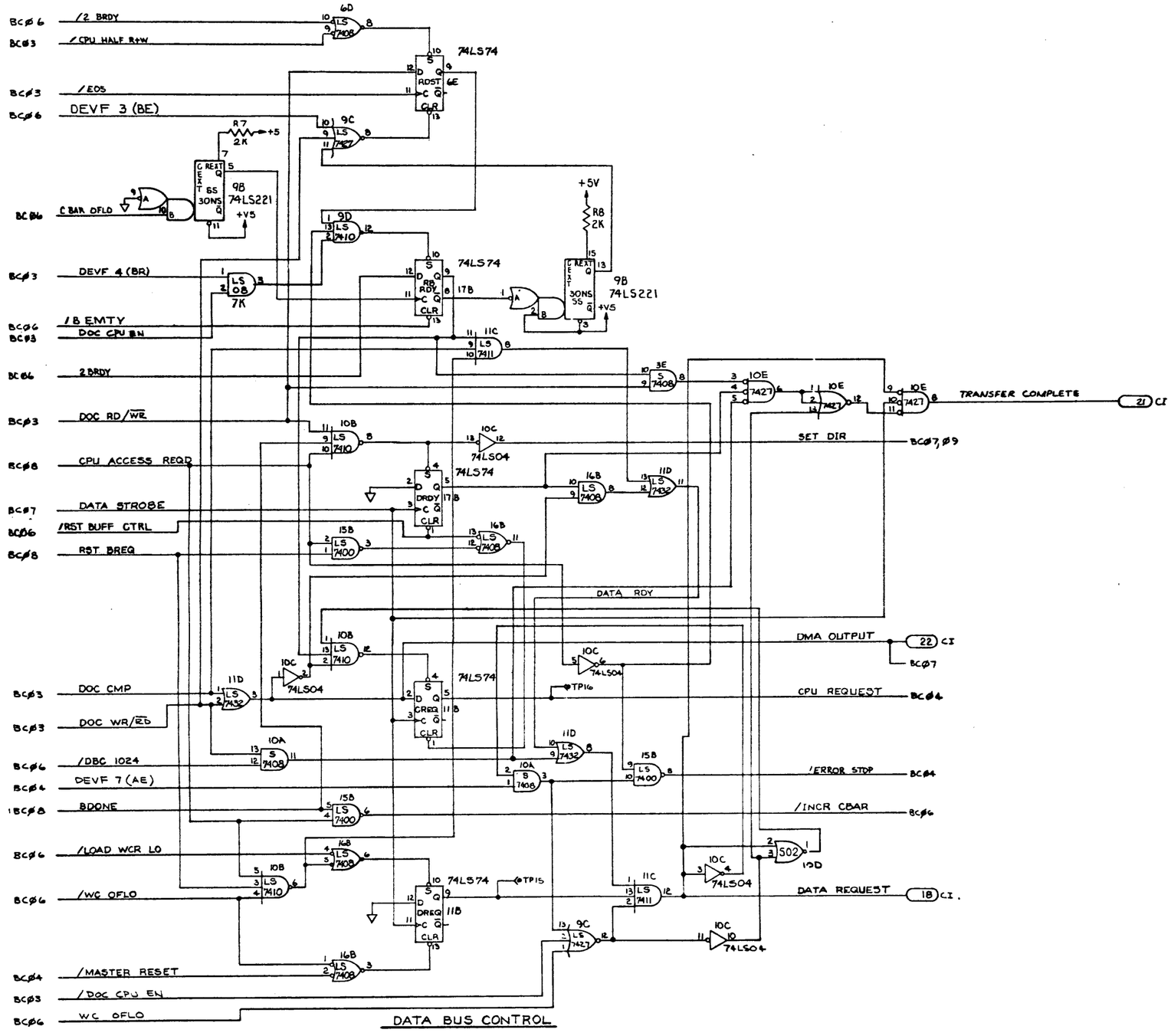


Figure 11-18. Basic Control (9400-6014F) Logic Diagram (Sheet 4 of 16)



BC05

Figure 11-18. Basic Control (9400-6014F) Logic Diagram (Sheet 5 of 16)

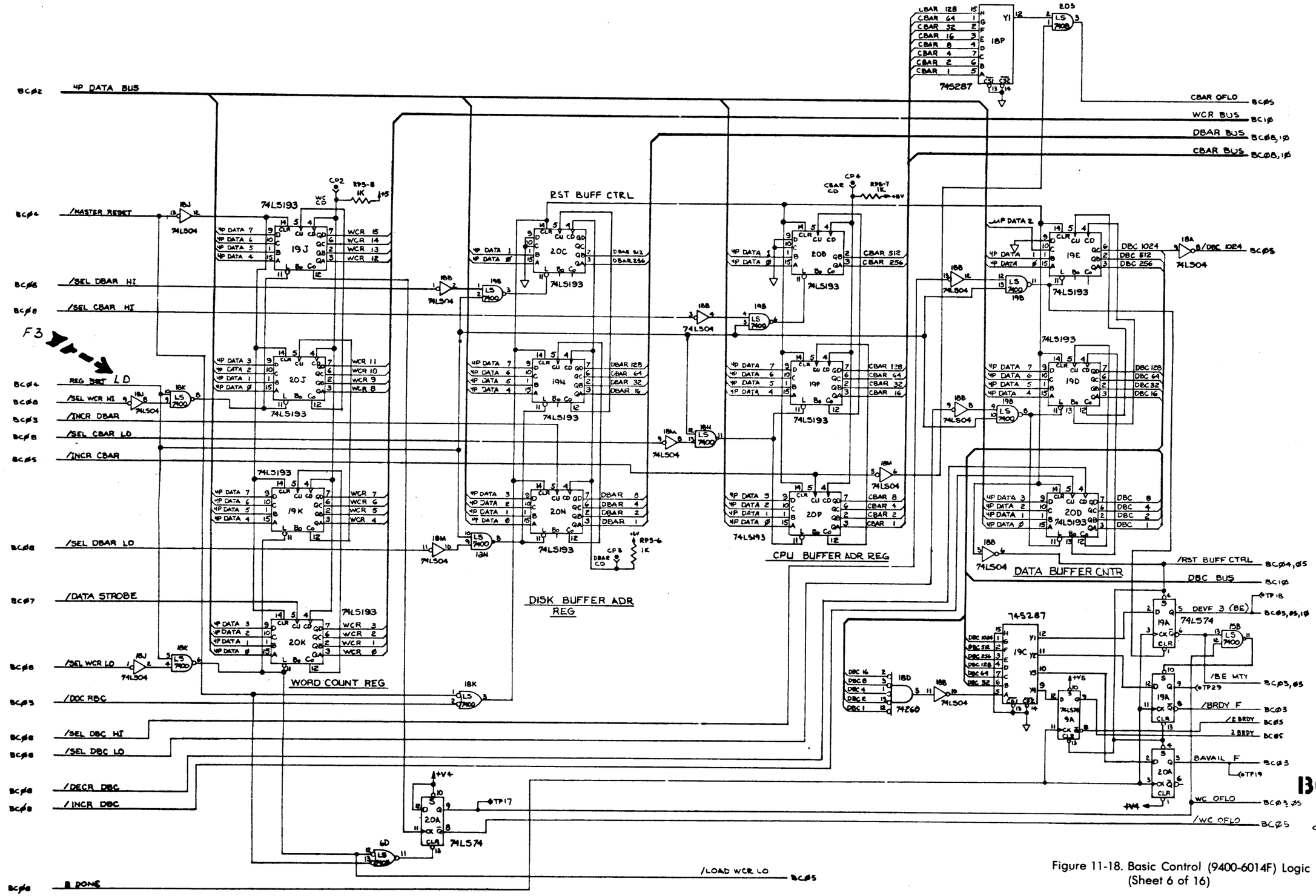


Figure 11-18. Basic Control (9400-6014F) Logic Diagram (Sheet 6 of 16)

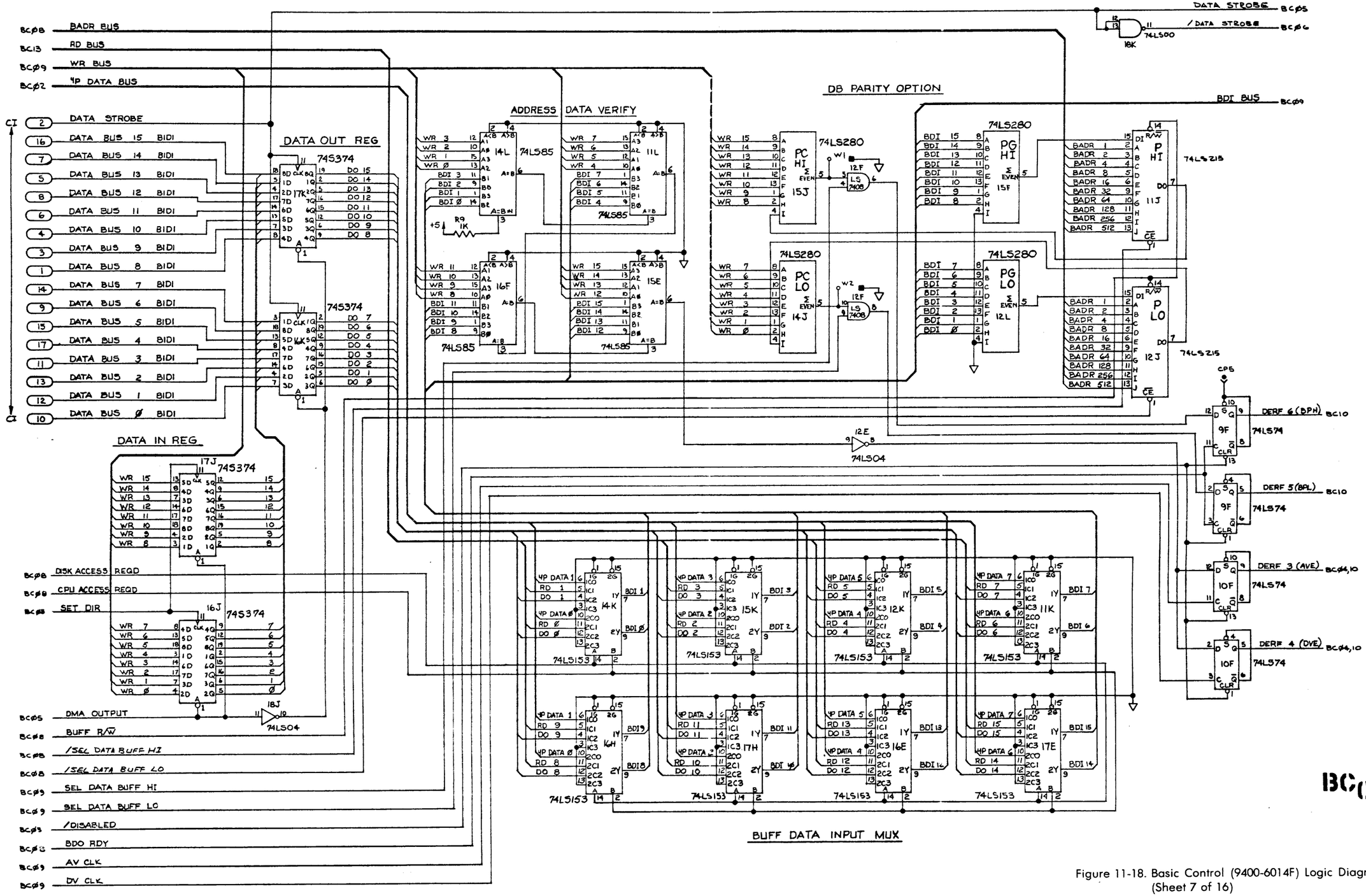


Figure 11-18. Basic Control (9400-6014F) Logic Diagram (Sheet 7 of 16)

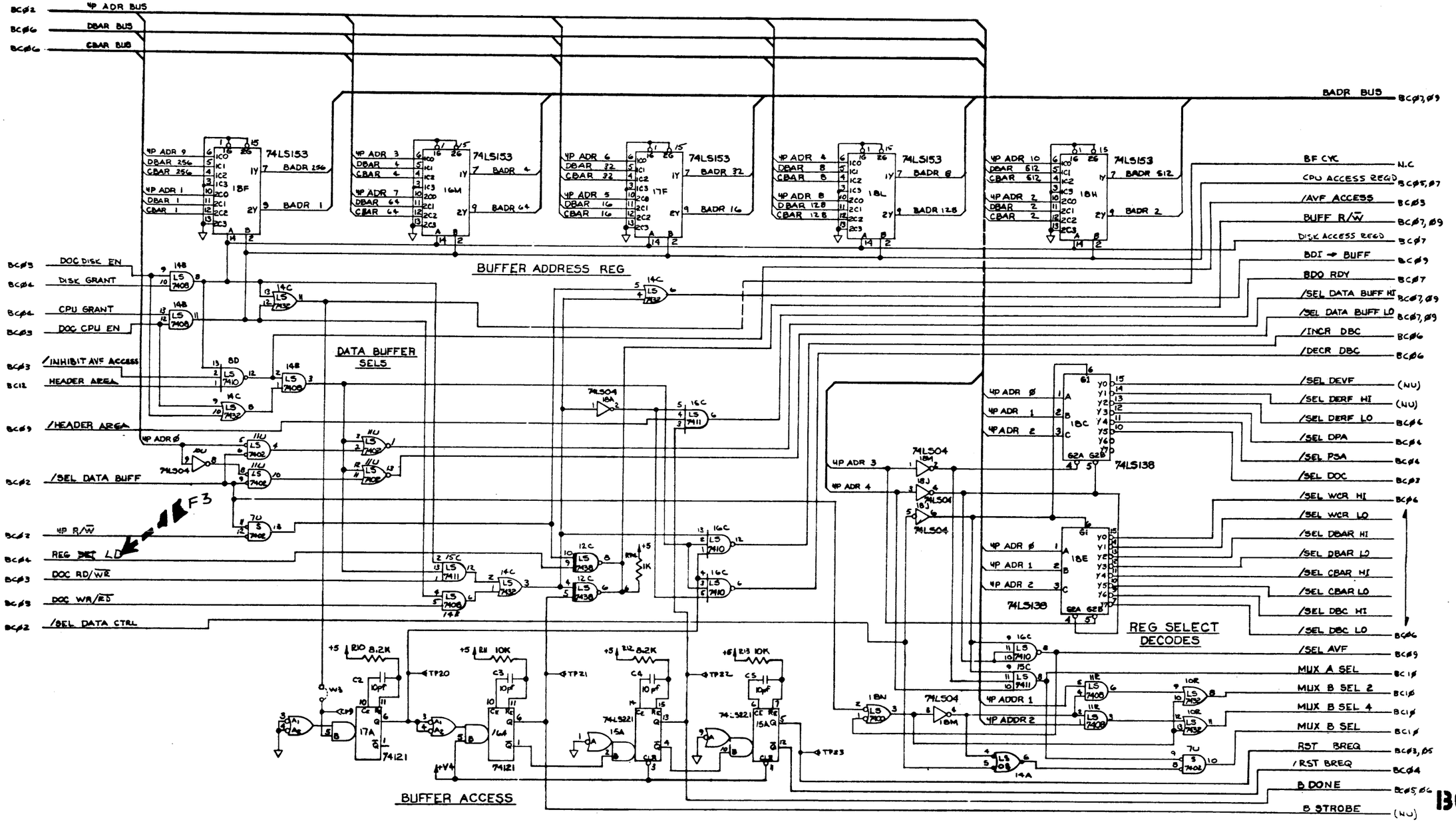


Figure 11-18. Basic Control (9400-6014F) Logic Diagram (Sheet 8 of 16)

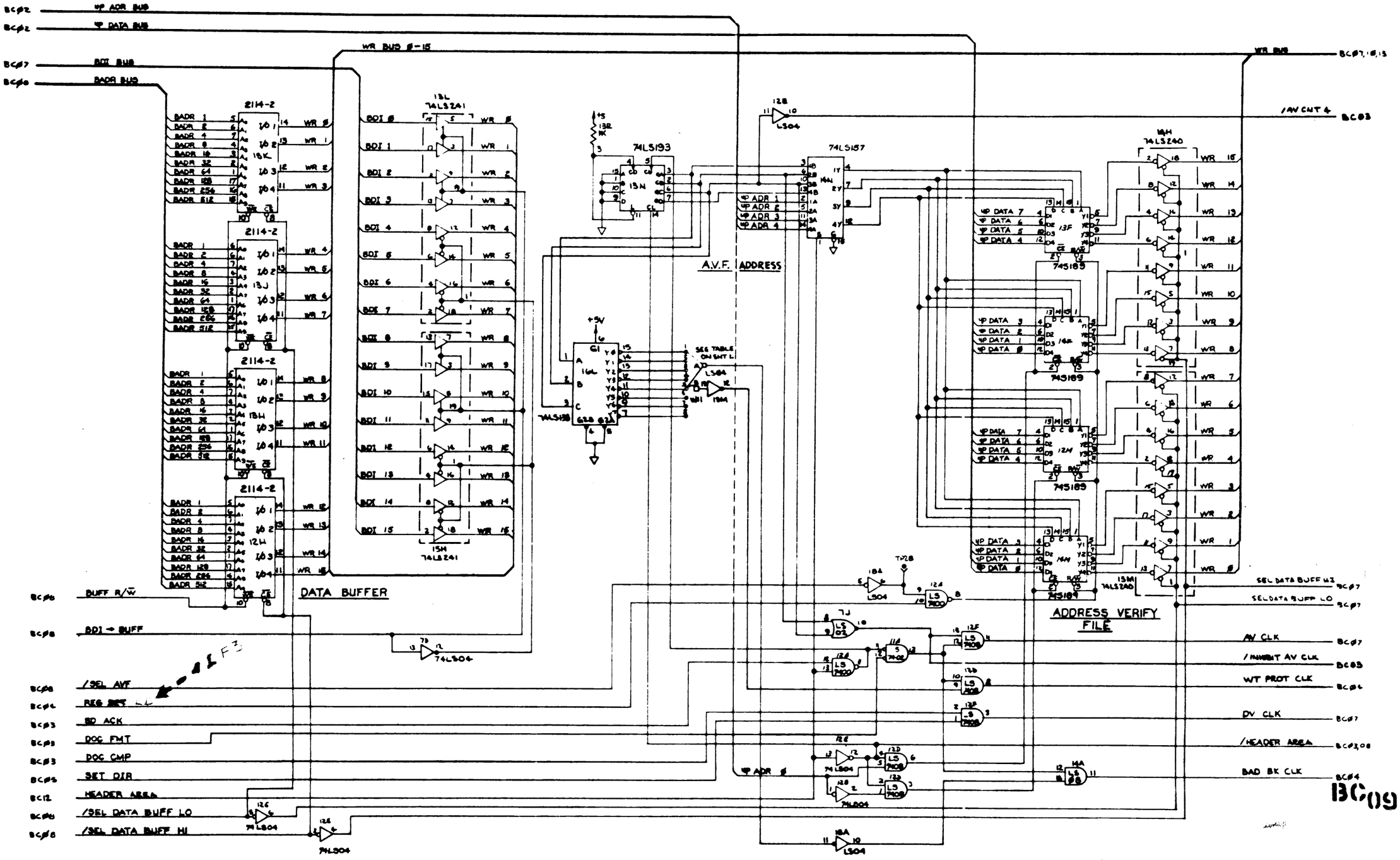
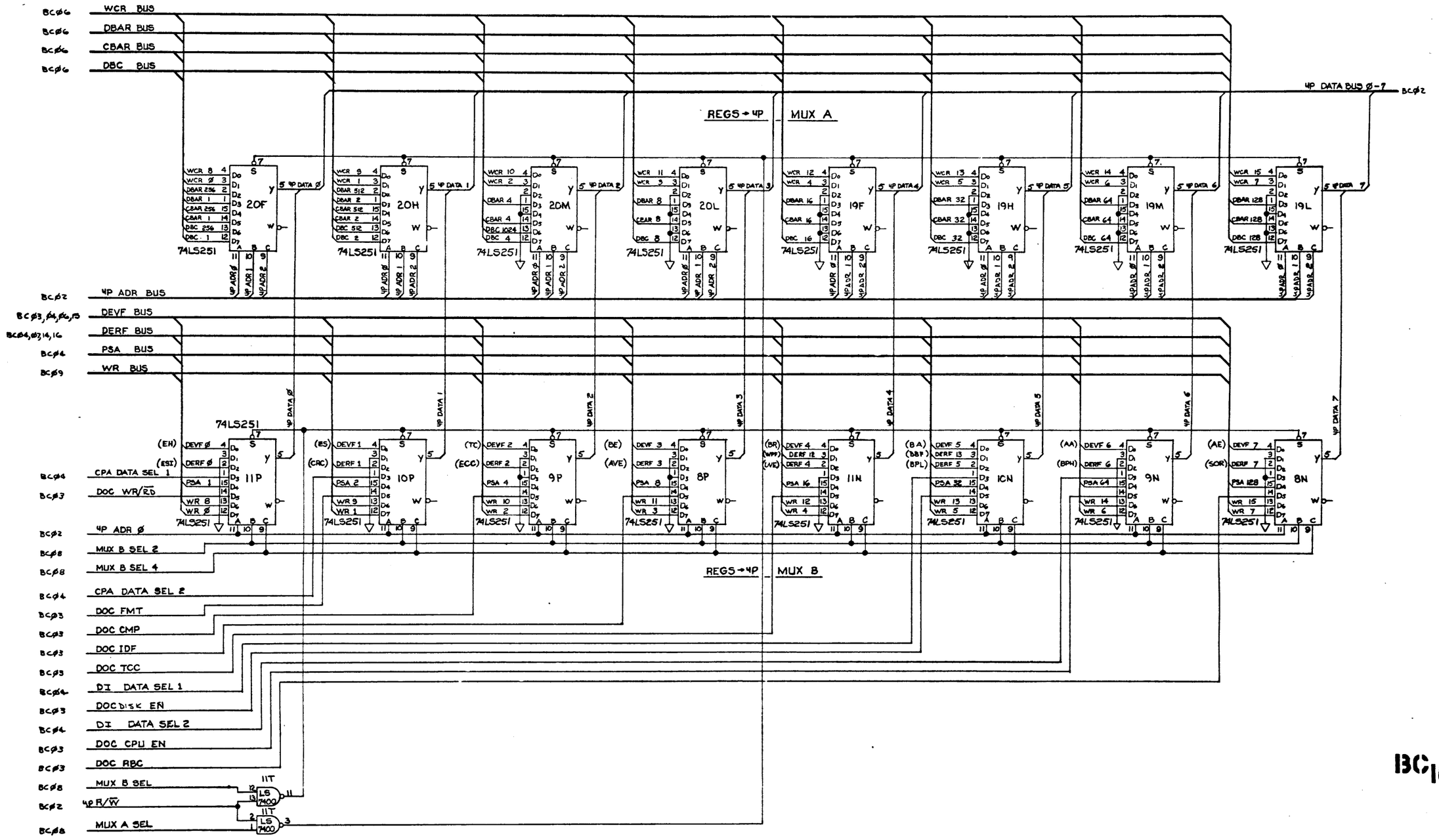
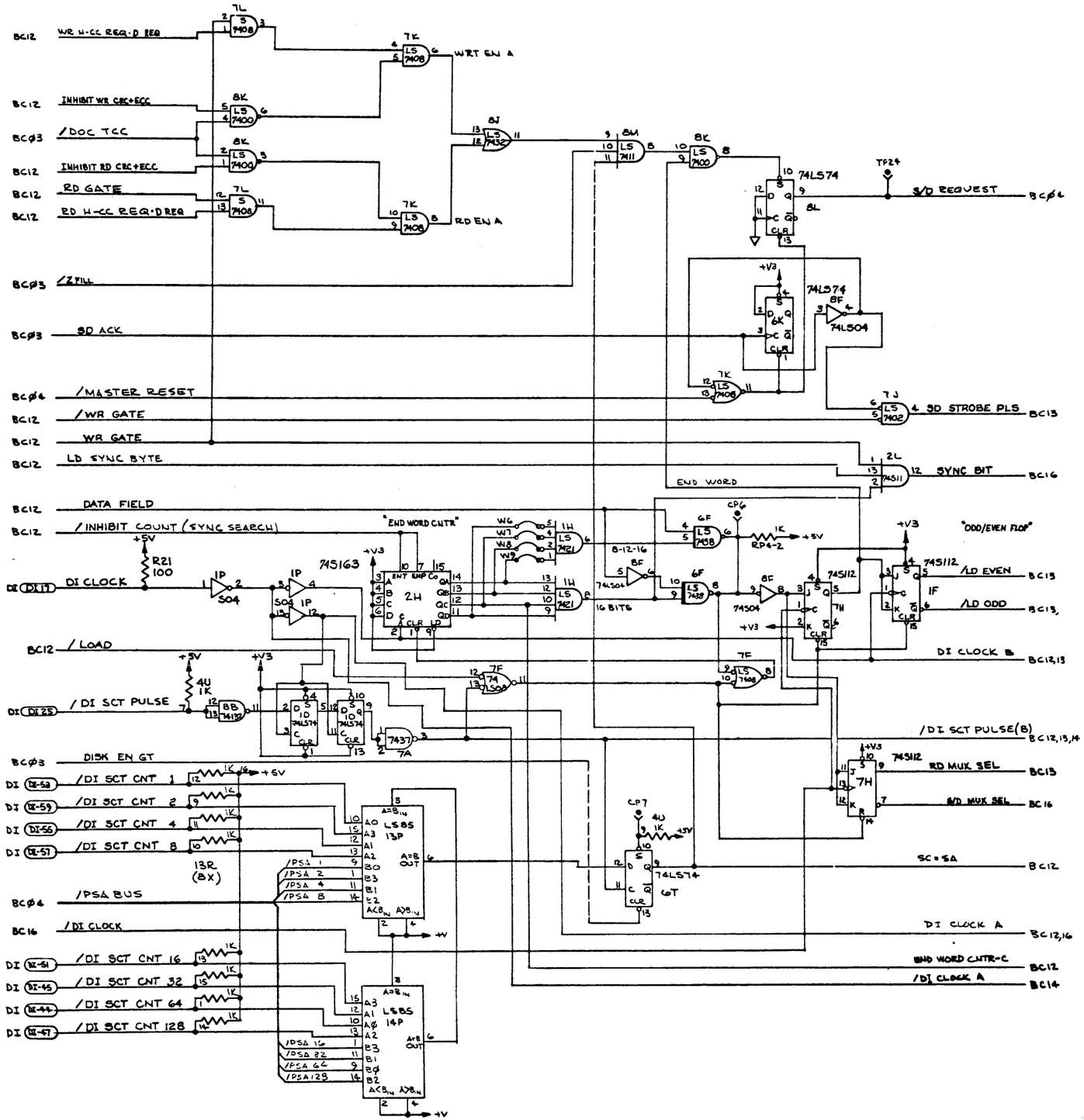


Figure 11-18. Basic Control (9400-6014F) Logic Diagram (Sheet 9 of 16)



BC10

Figure 11-18. Basic Control (9400-6014F) Logic Diagram (Sheet 10 of 16)



BC11

Figure 11-18. Basic Control (9400-6014F) Logic Diagram (Sheet 11 of 16)

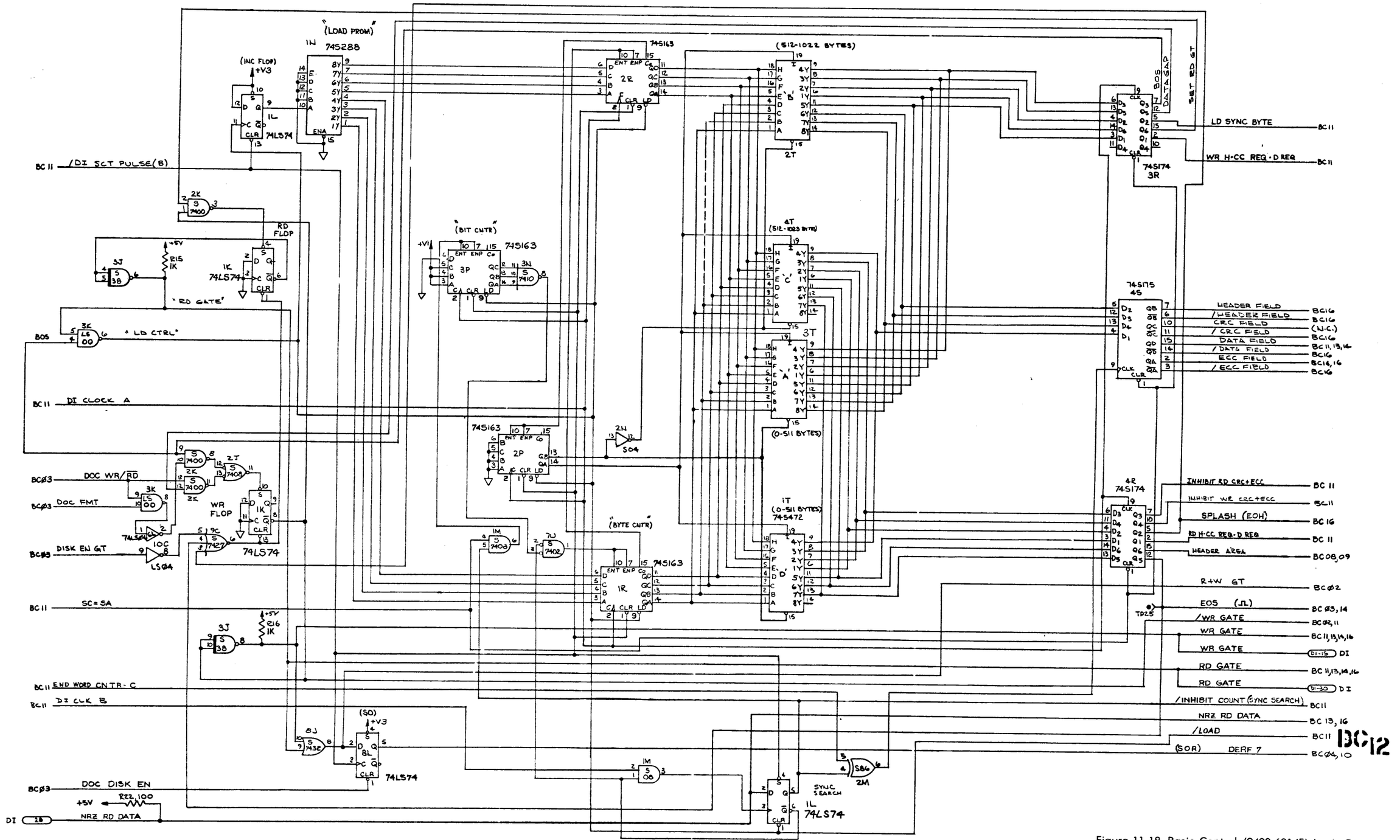


Figure 11-18. Basic Control (9400-6014F) Logic Diagram (Sheet 12 of 16)

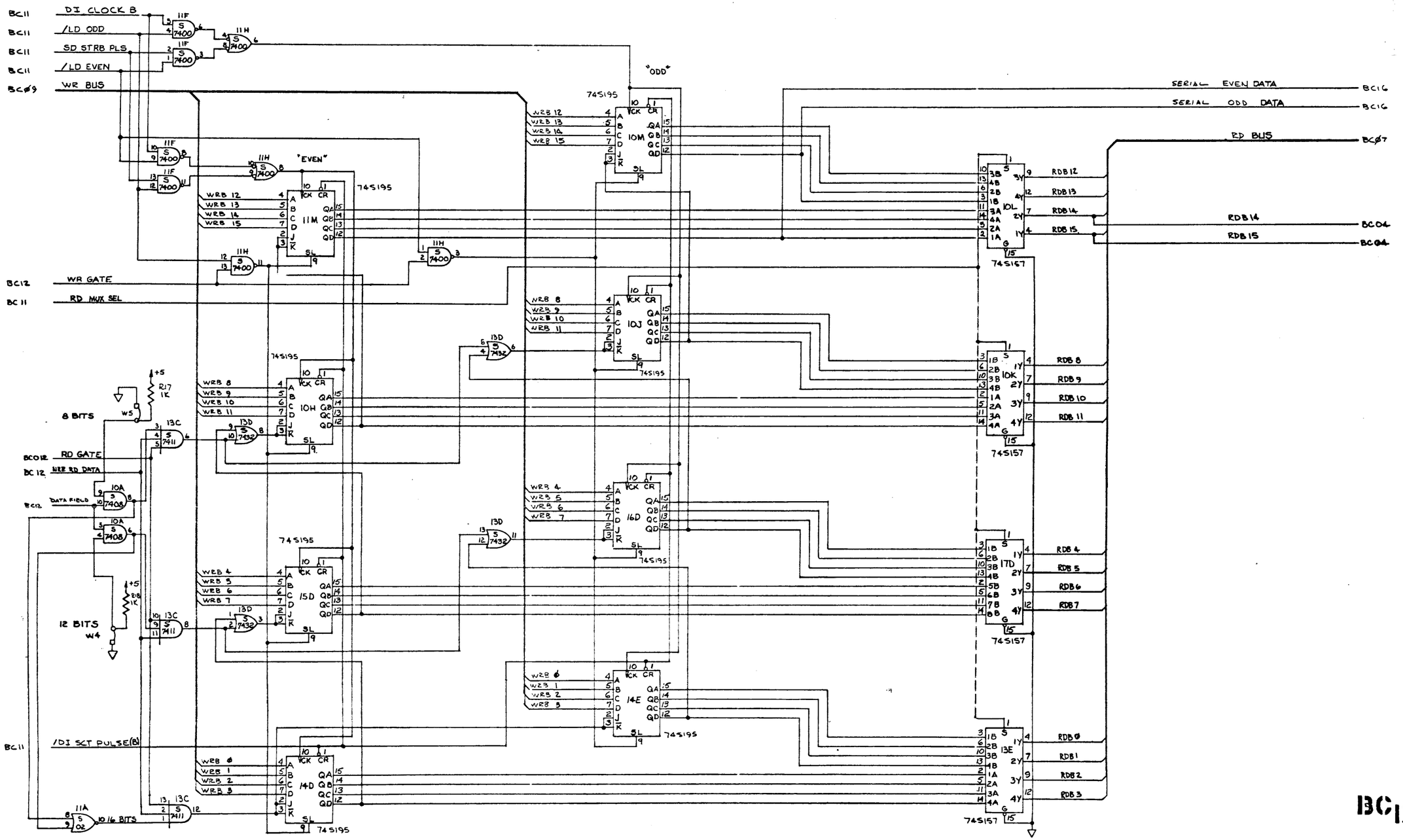


Figure 11-18. Basic Control (9400-6014F) Logic Diagram (Sheet 13 of 16)

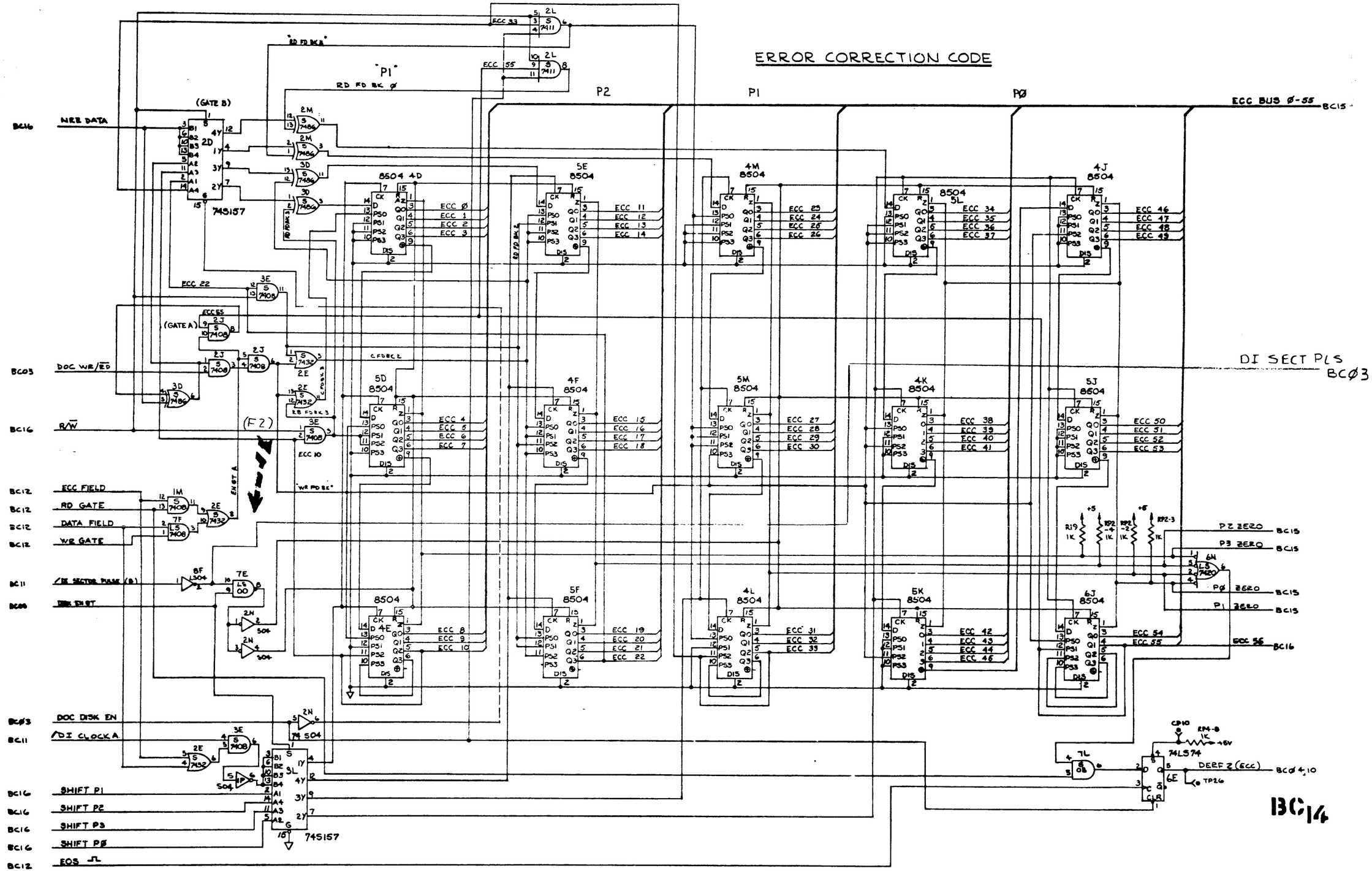


Figure 11-18. Basic Control (9400-6014F) Logic Diagram (Sheet 14 of 16)

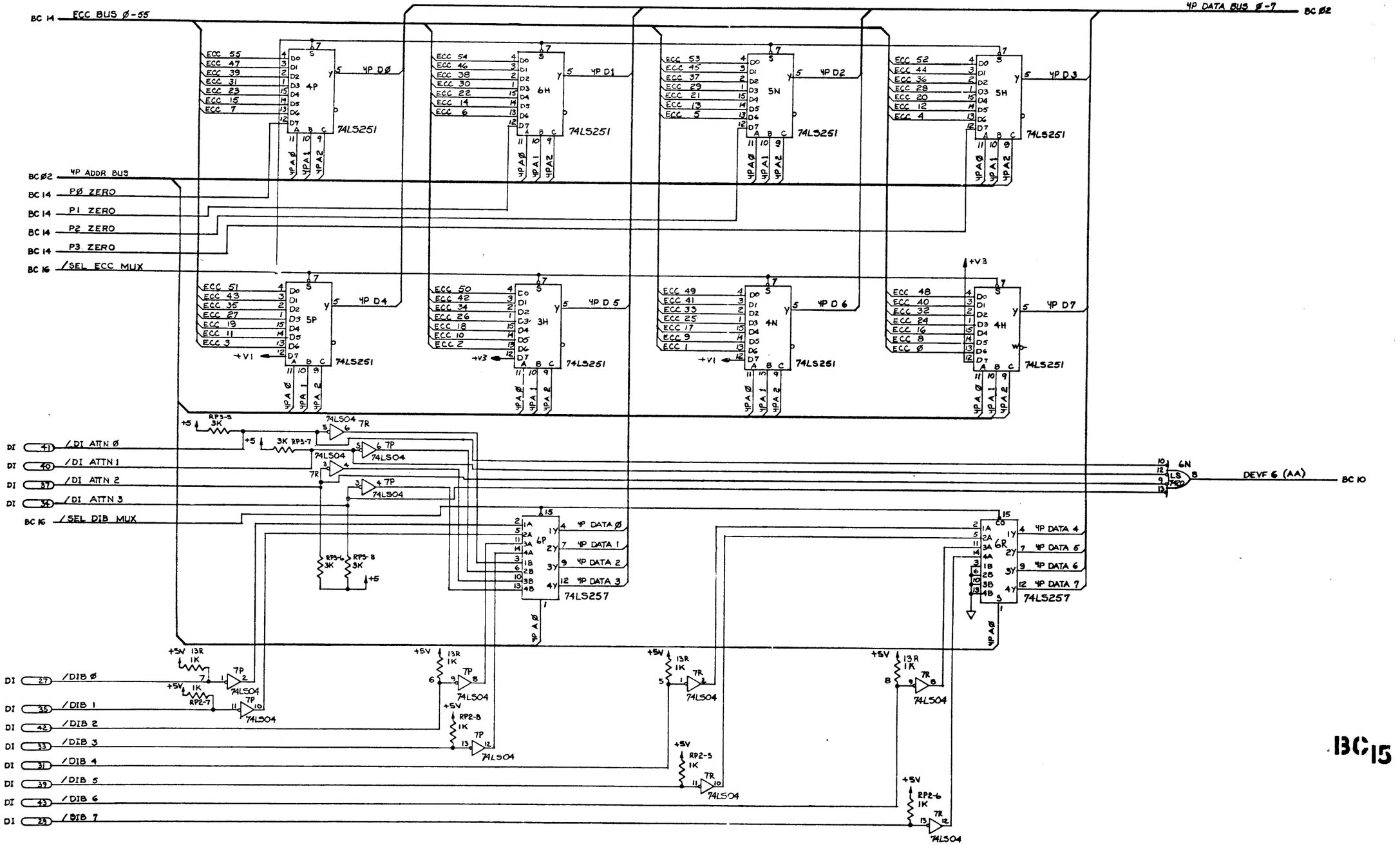


Figure 11-18. Basic Control (9400-6014F) Logic Diagram (Sheet 15 of 16)

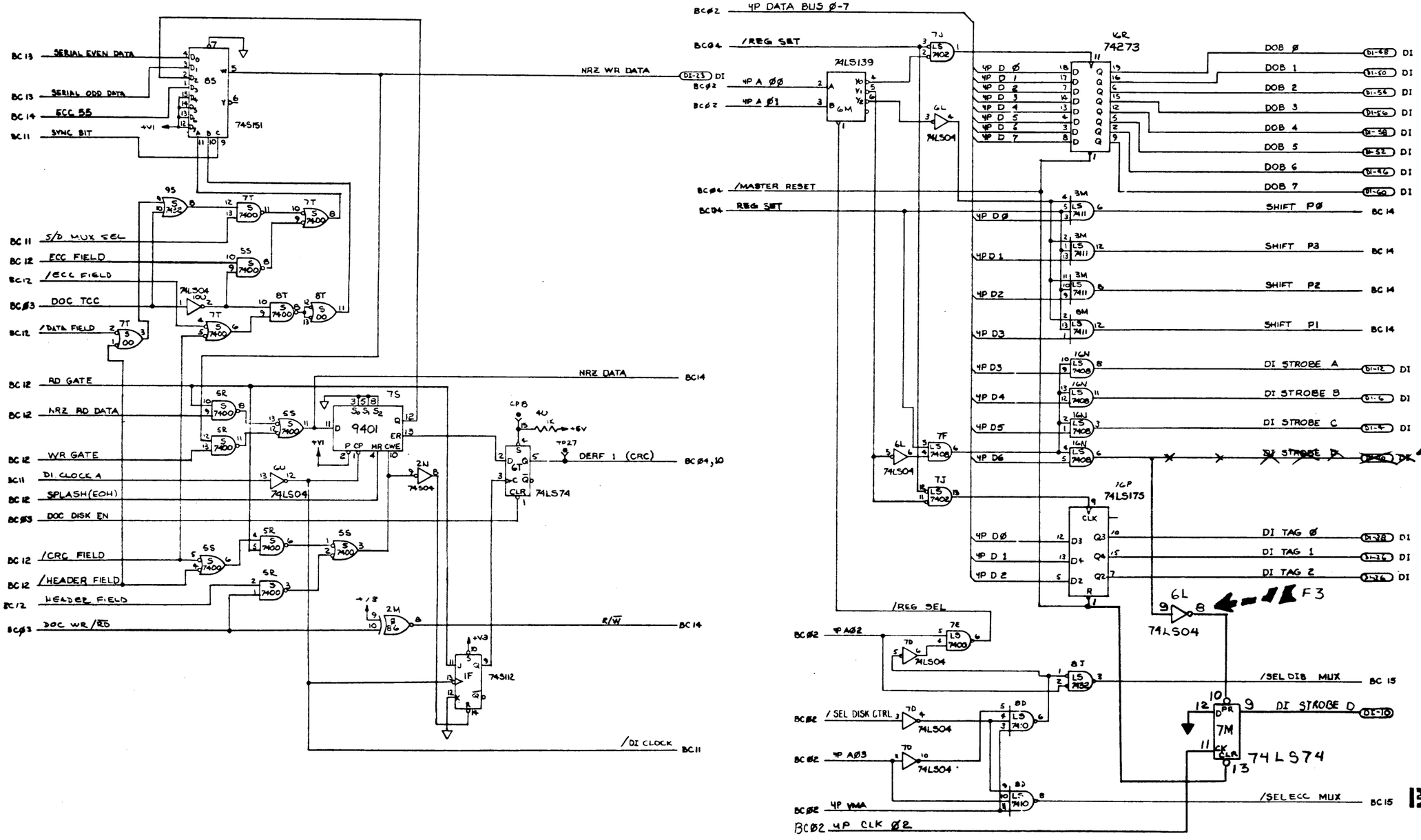


Figure 11-18. Basic Control (9400-6014F) Logic Diagram (Sheet 16 of 16)

REF DES LAST USED	REF DES NOT USED
R37 C49 P3 D1	R7 - R12 R19 - R29

NOTES: UNLESS OTHERWISE SPECIFIED:
1. THIS SCHEMATIC REPRESENTS ASSY 9400-6009 AT DATE CODE A930
2. ALL RESISTORS ARE IN OHMS, 1/4 W, ±5%.
3. ALL CAPACITORS ARE IN MICROFARADS.

Figure 11-19. CDC Daisychain Interface (9400-6009A) Logic Diagram (Sheet 1 of 2)

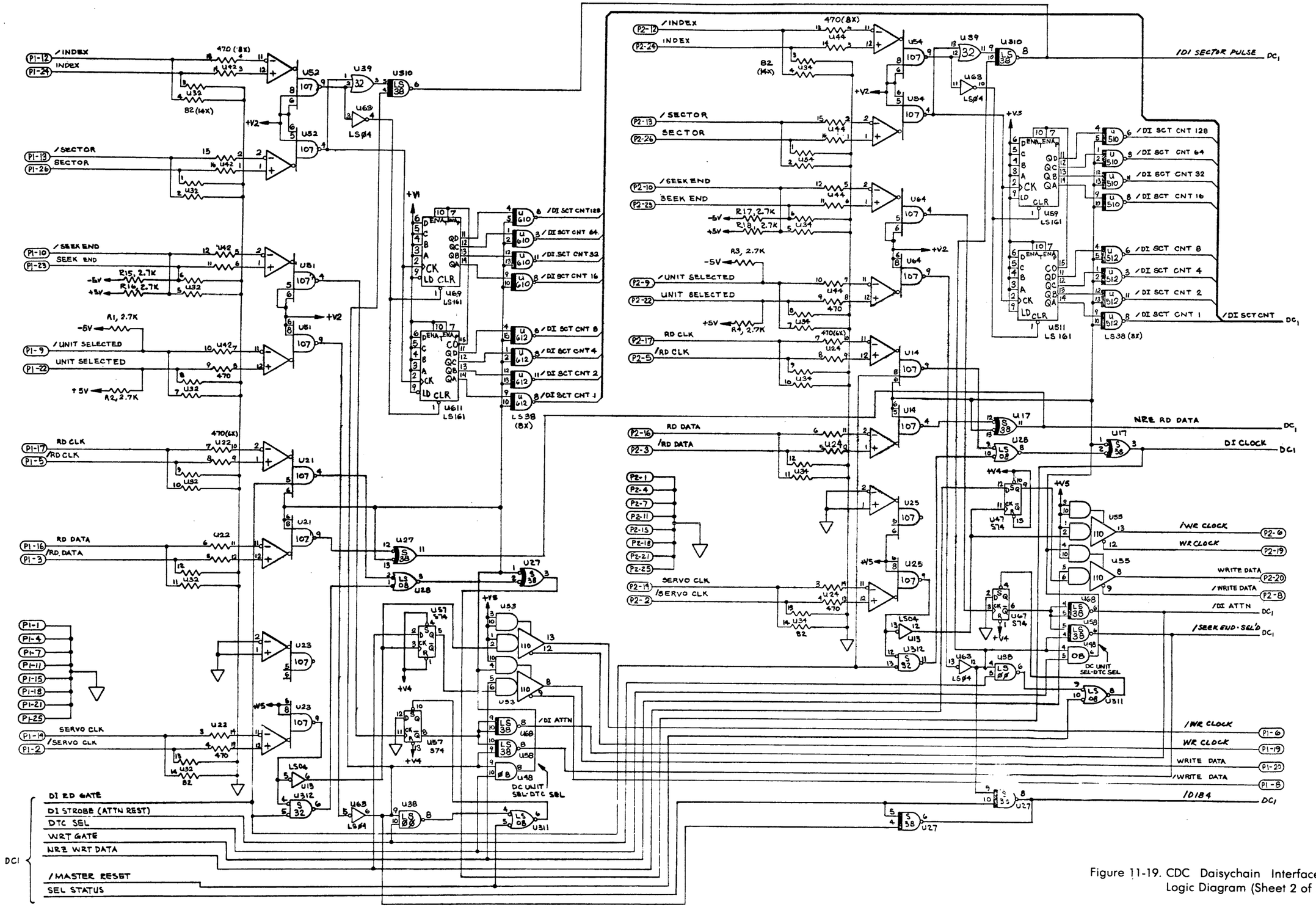
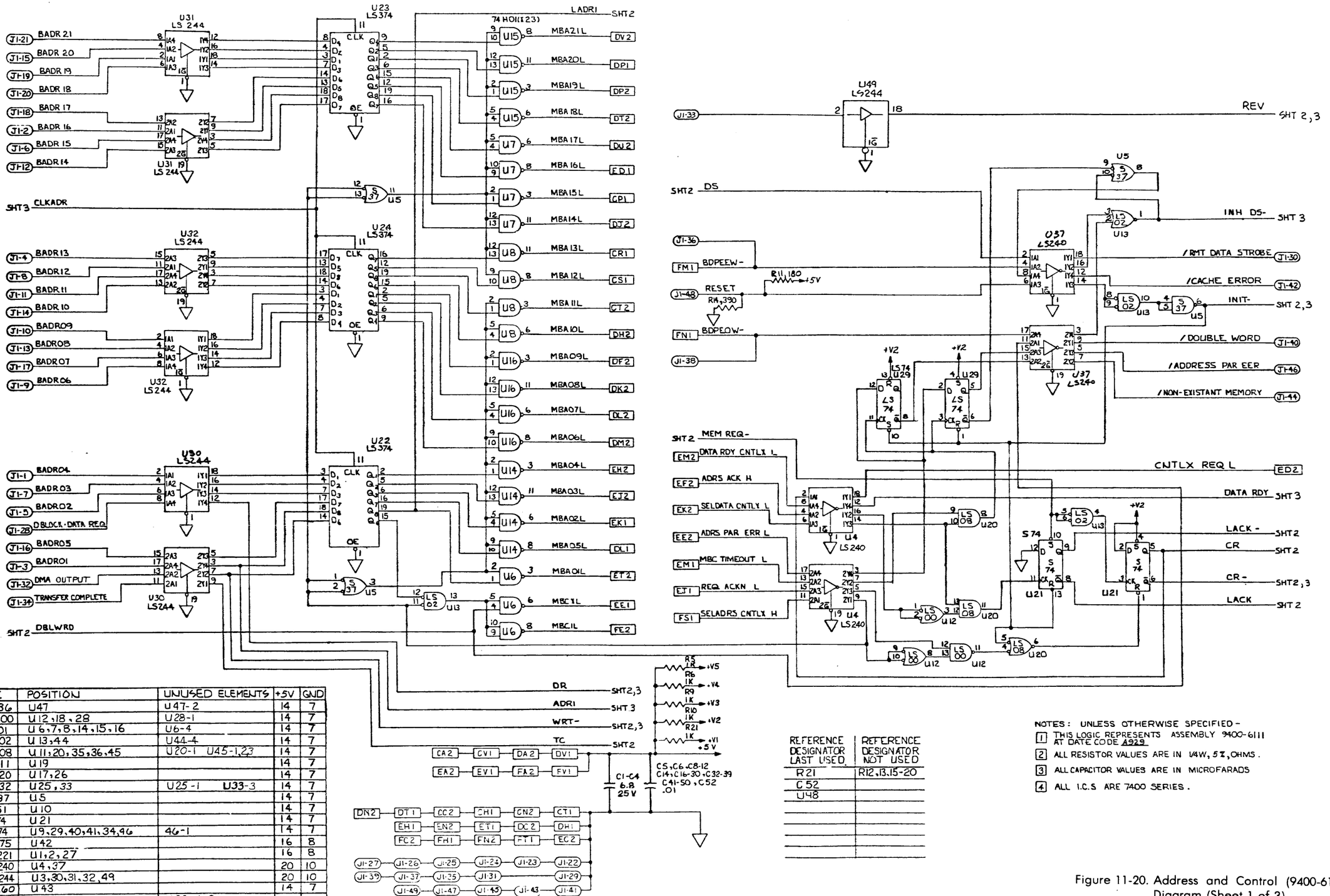


Figure 11-19. CDC Daisychain Interface (9400-6009A) Logic Diagram (Sheet 2 of 2)



TYPE	POSITION	UNUSED ELEMENTS	+5V	GND
74LS86	U47	U47-2	14	7
74LS00	U12,18,28	U28-1	14	7
74H01	U6,7,8,14,15,16	U6-4	14	7
74LS02	U13,44	U44-4	14	7
74LS08	U11,20,35,36,45	U20-1 U45-1,23	14	7
74LS11	U19		14	7
74LS20	U17,26		14	7
74LS32	U25,33	U25-1 U33-3	14	7
74S37	U5		14	7
74LS51	U10		14	7
74S74	U21		14	7
74LS74	U9,29,40,41,34,46	46-1	14	7
74LS175	U42		16	8
74LS221	U1,2,27		16	8
74LS240	U4,37		20	10
74LS244	U3,30,31,32,49		20	10
74S260	U43		14	7
74LS374	U22,23,24	U22-4,5	20	10
74LS157	U48		16	8

REFERENCE DESIGNATOR LAST USED	REFERENCE DESIGNATOR NOT USED
R21	R12,13,15-20
C52	
U48	

NOTES: UNLESS OTHERWISE SPECIFIED -

1. THIS LOGIC REPRESENTS ASSEMBLY 9400-6111 AT DATE CODE A929
2. ALL RESISTOR VALUES ARE IN 1/4W, 5%, OHMS.
3. ALL CAPACITOR VALUES ARE IN MICROFARADS
4. ALL I.C.S ARE 7400 SERIES.

Figure 11-20. Address and Control (9400-6111A) Logic Diagram (Sheet 1 of 3)

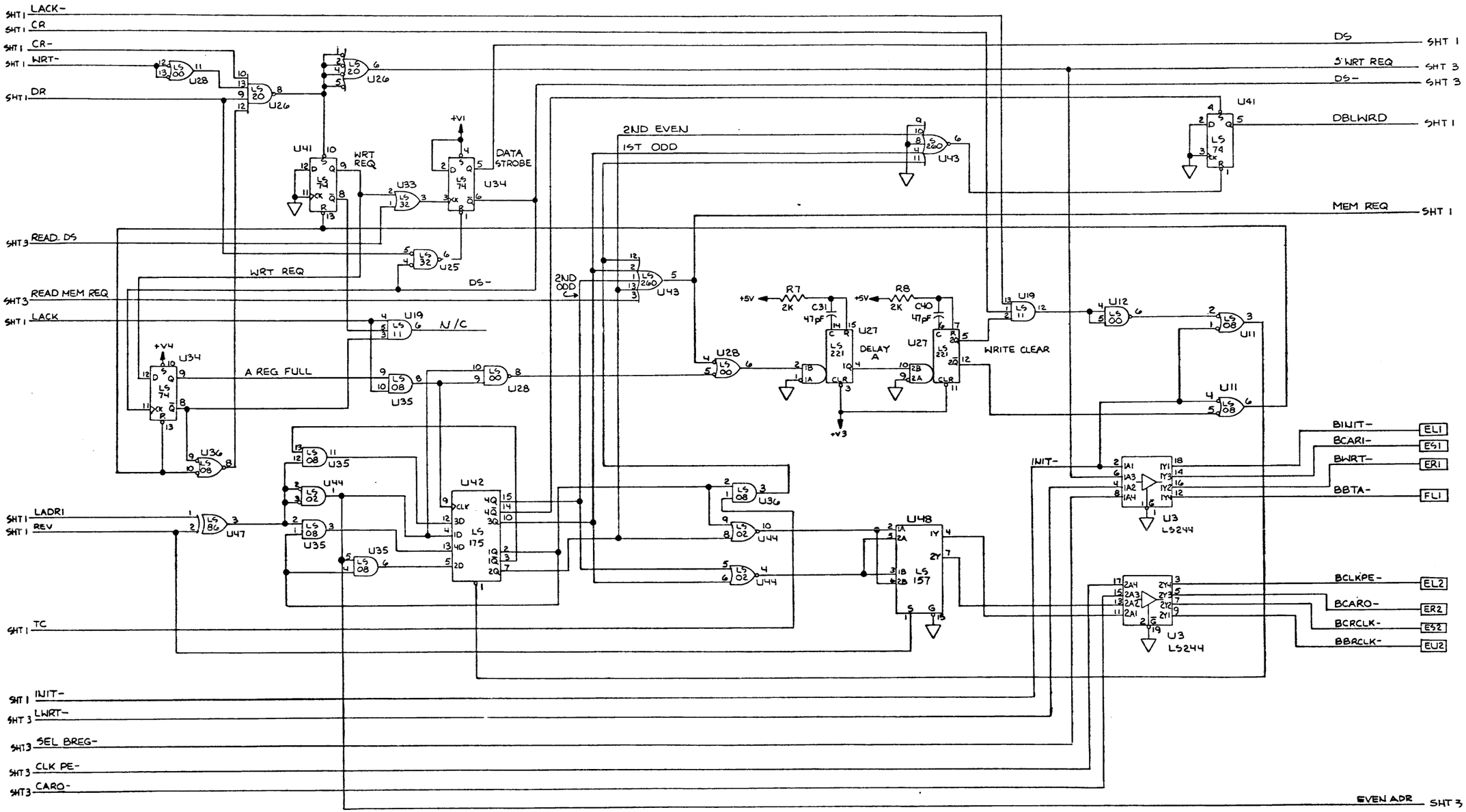
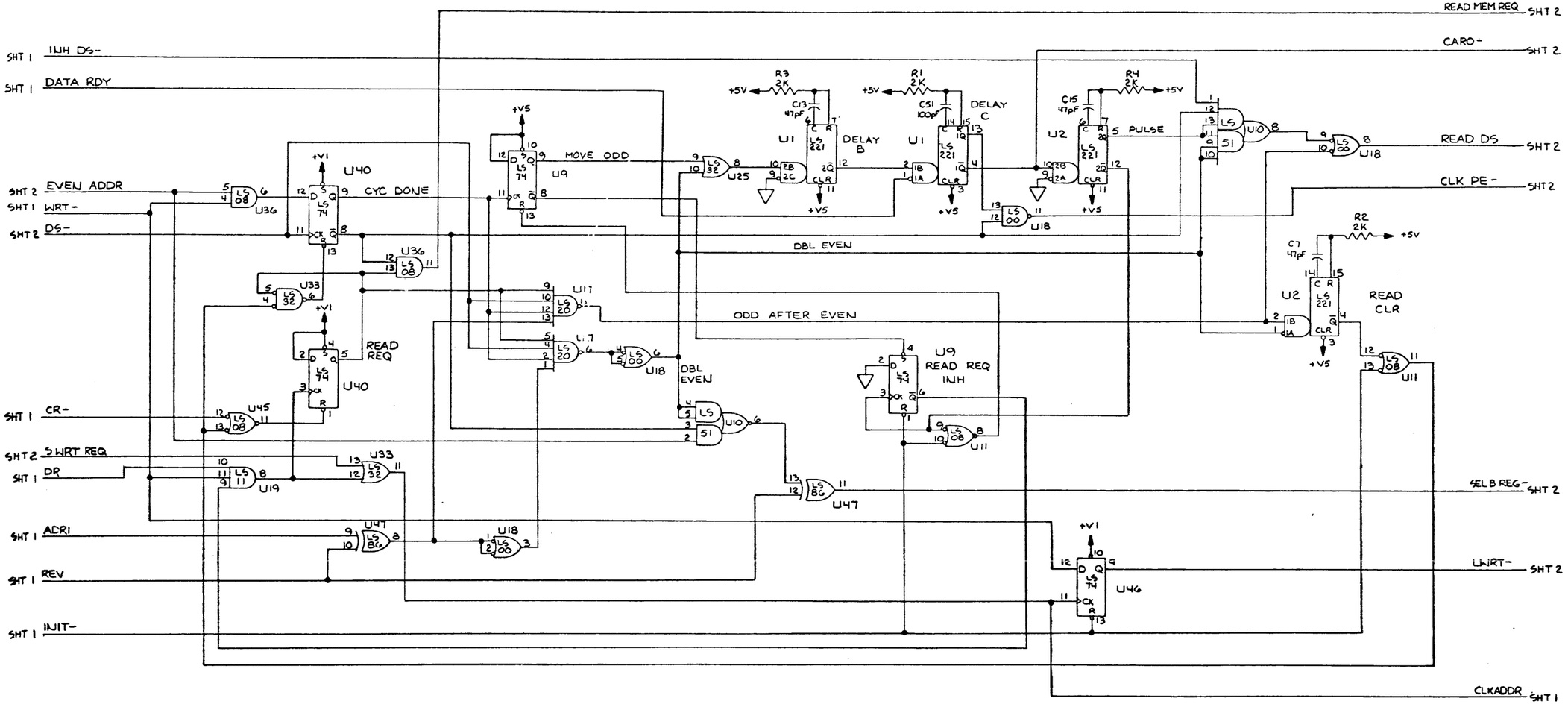
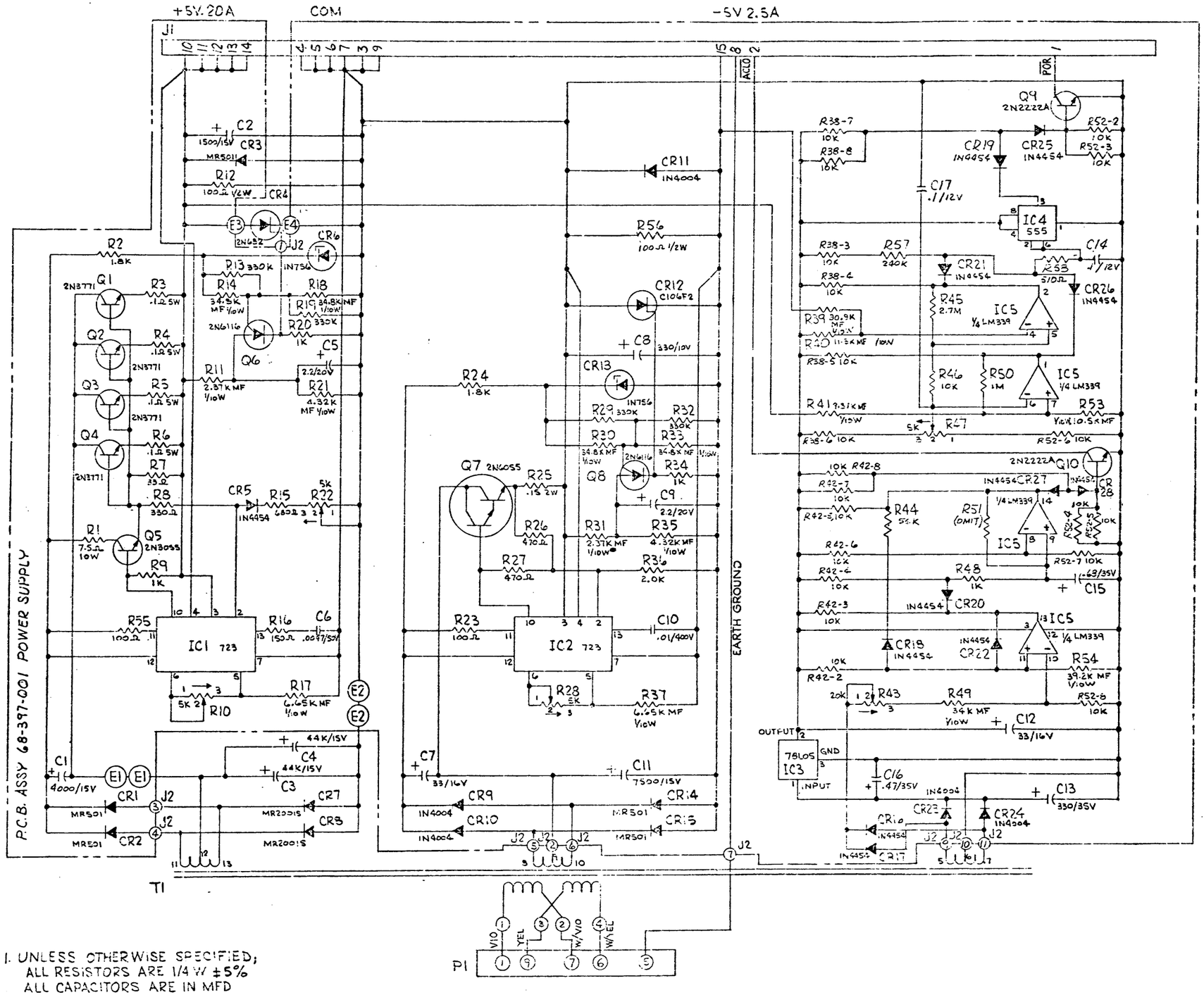


Figure 11-20. Address and Control (9400-6111A) Logic Diagram (Sheet 2 of 3)



READ FROM MEMORY

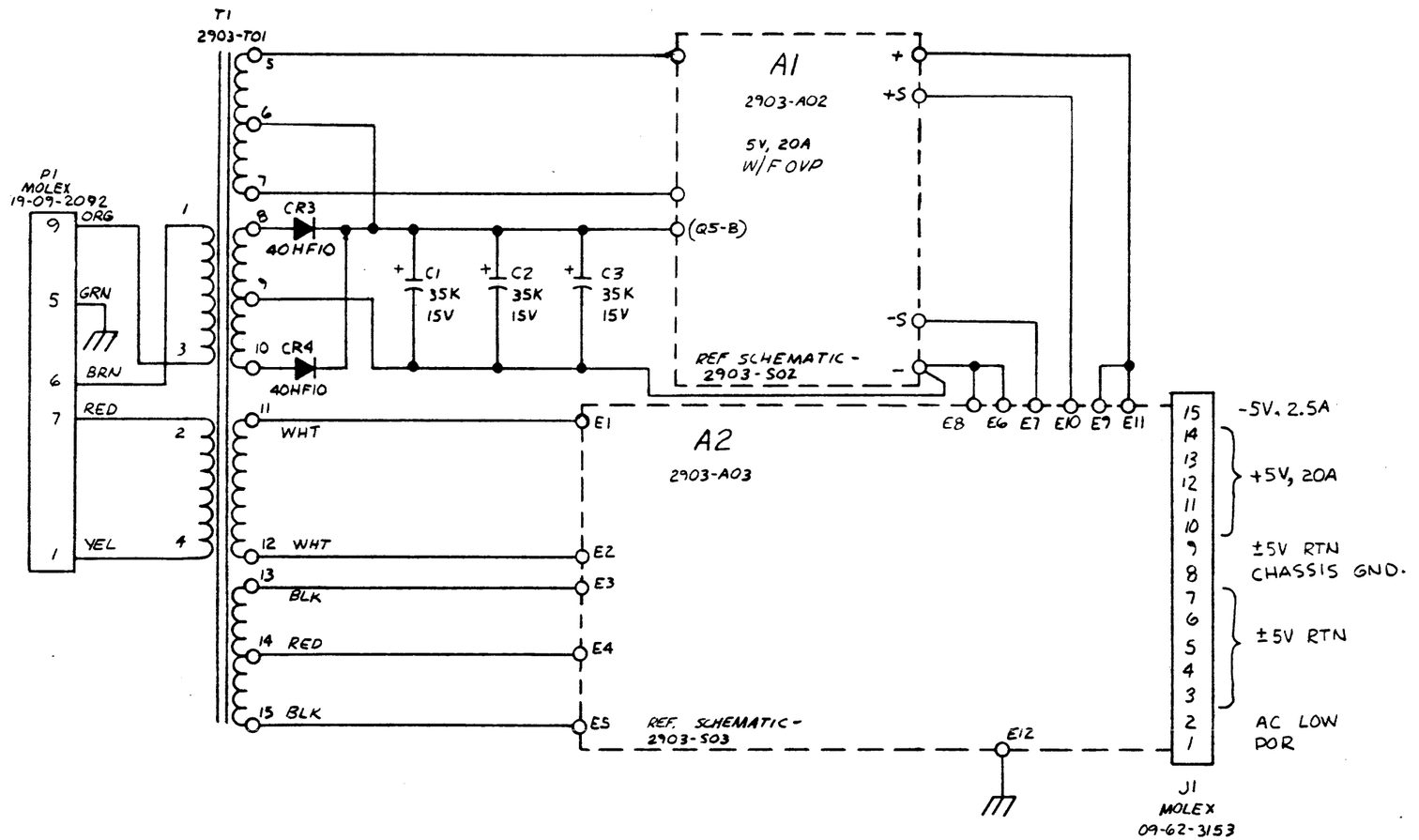
Figure 11-20. Address and Control (9400-6111A) Logic Diagram (Sheet 3 of 3)



1. UNLESS OTHERWISE SPECIFIED;
   ALL RESISTORS ARE 1/4 W ±5%
   ALL CAPACITORS ARE IN MFD

NOTES:

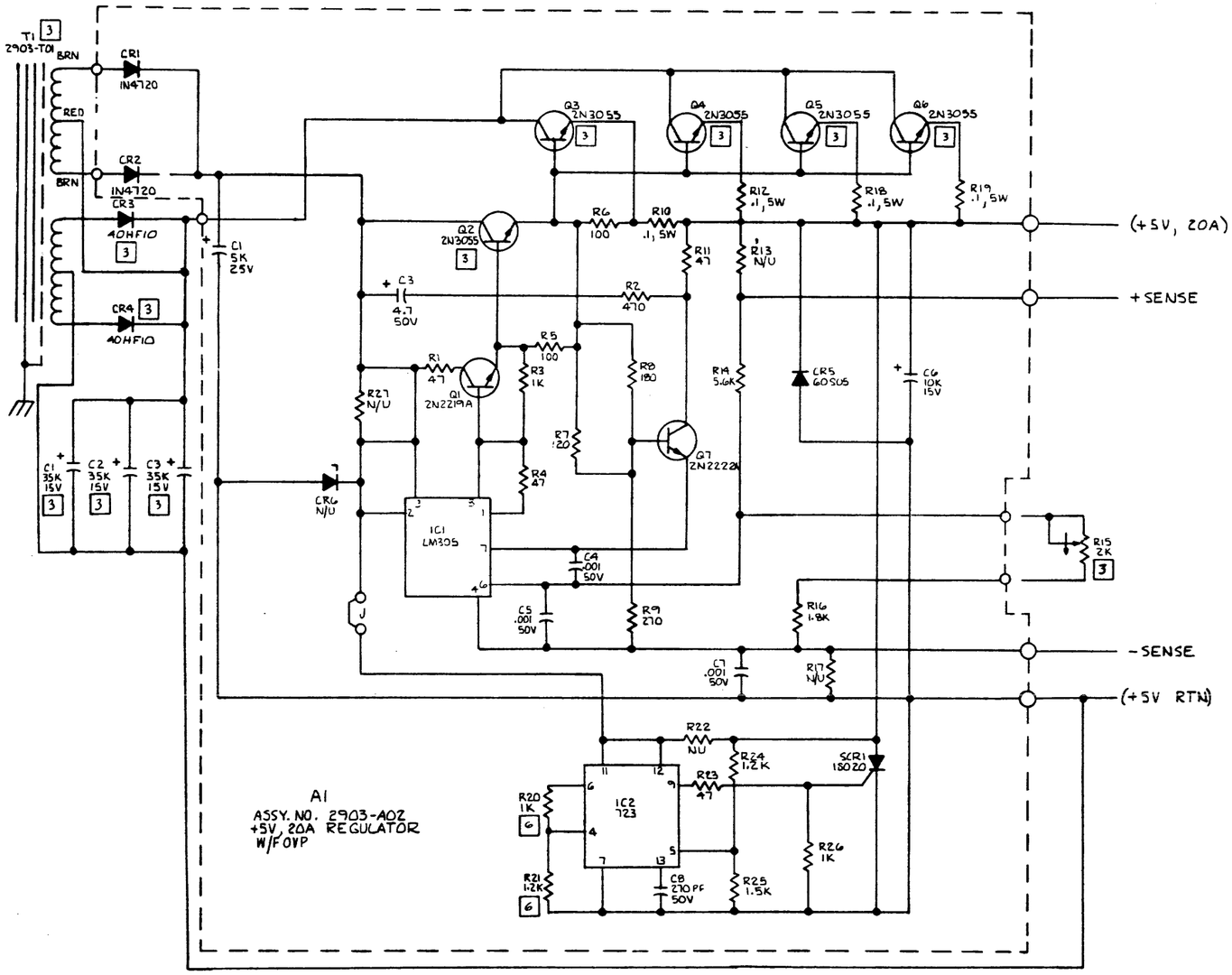
Figure 11-21. acdc Power Supply (68-397-709) Schematic (Sheet 1 of 1)



3. CR3 & CR4 ARE PART OF A1 ASSY
2. REF DOCUMENTS: 2903-B01. 2903-W01
1. ALL CAPACITANCE VALUES IN MICROFARADS.

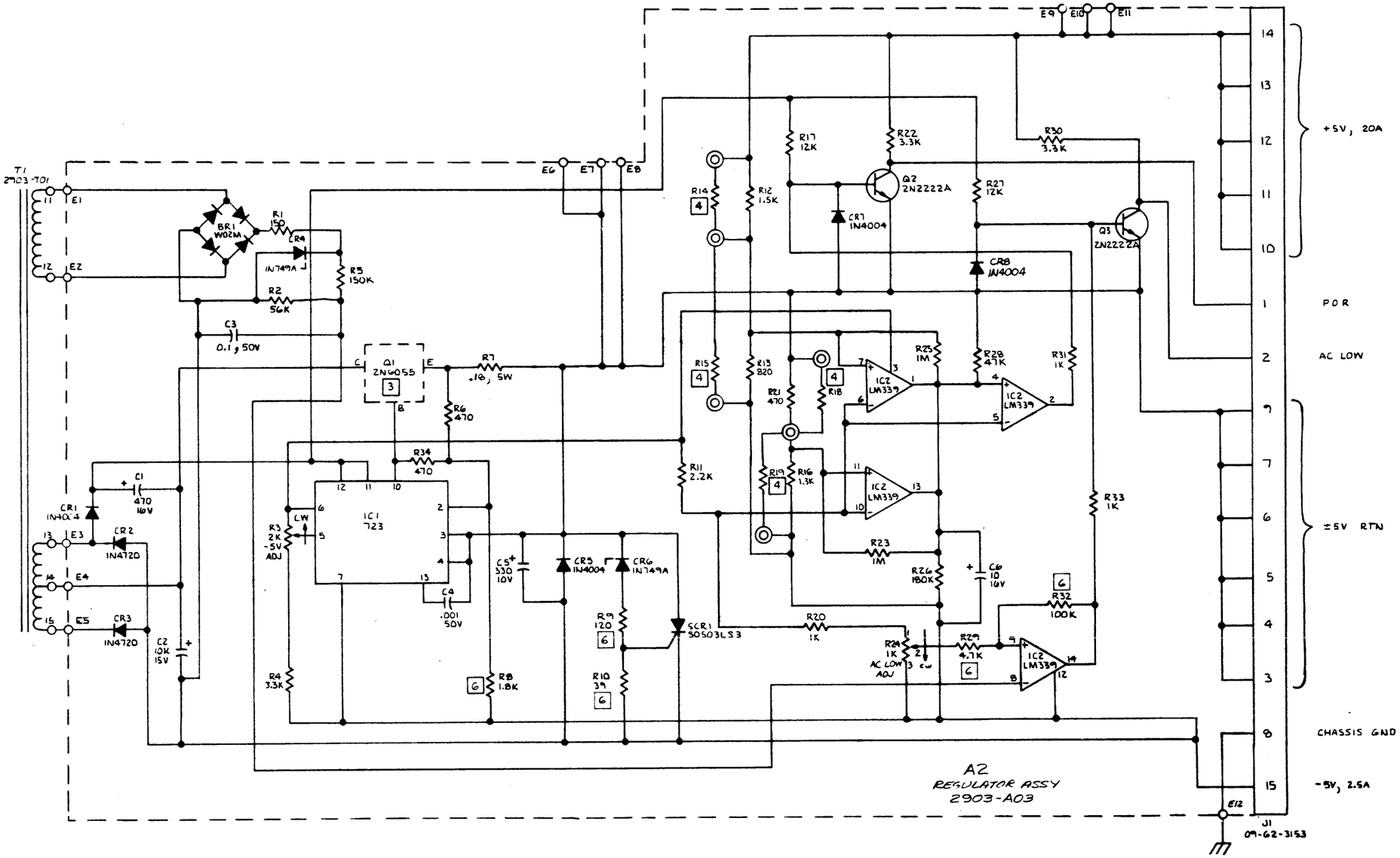
NOTES: UNLESS OTHERWISE SPECIFIED.

Figure 11-22. Xentek Power Supply (2903-S01) Schematic (Sheet 1 of 3)



6 TEST SELECT COMPONENT.
5. THIS UNIT SIMILAR TO XE120-5 W/OVP.
4. REF DOCUMENTS: 2903-S01, 2903-B02.
3 COMPONENT MOUNTED ON HEATSINK OR CHASSIS.
2. ALL RESISTANCE VALUES IN OHMS ±5% 1/2 W.
1. ALL CAPACITANCE VALUES IN MICROFARADS.
NOTES: UNLESS OTHERWISE SPECIFIED.

Figure 11-22. Xentek Power Supply (2903-S02) Schematic (Sheet 2 of 3)



◎ SYMBOL DESIGNATES TERMINAL ON PC BOARD.

[6] TEST SELECT COMPONENT

5. REF DOCUMENTS: 2903-S01, 2903-B03.

[4] R19, R15, R18, R19 ARE TEST SELECT COMPONENTS.

[3] COMPONENT MOUNTED ON HEATSINK.

2. ALL RESISTANCE VALUES IN OHMS ±5%, 1/2 W.

1. ALL CAPACITANCE VALUES IN MICROFARADS.

NOTES: UNLESS OTHERWISE SPECIFIED.

Figure 11-22. Xentek Power Supply (2903-S03) Schematic (Sheet 3 of 3)

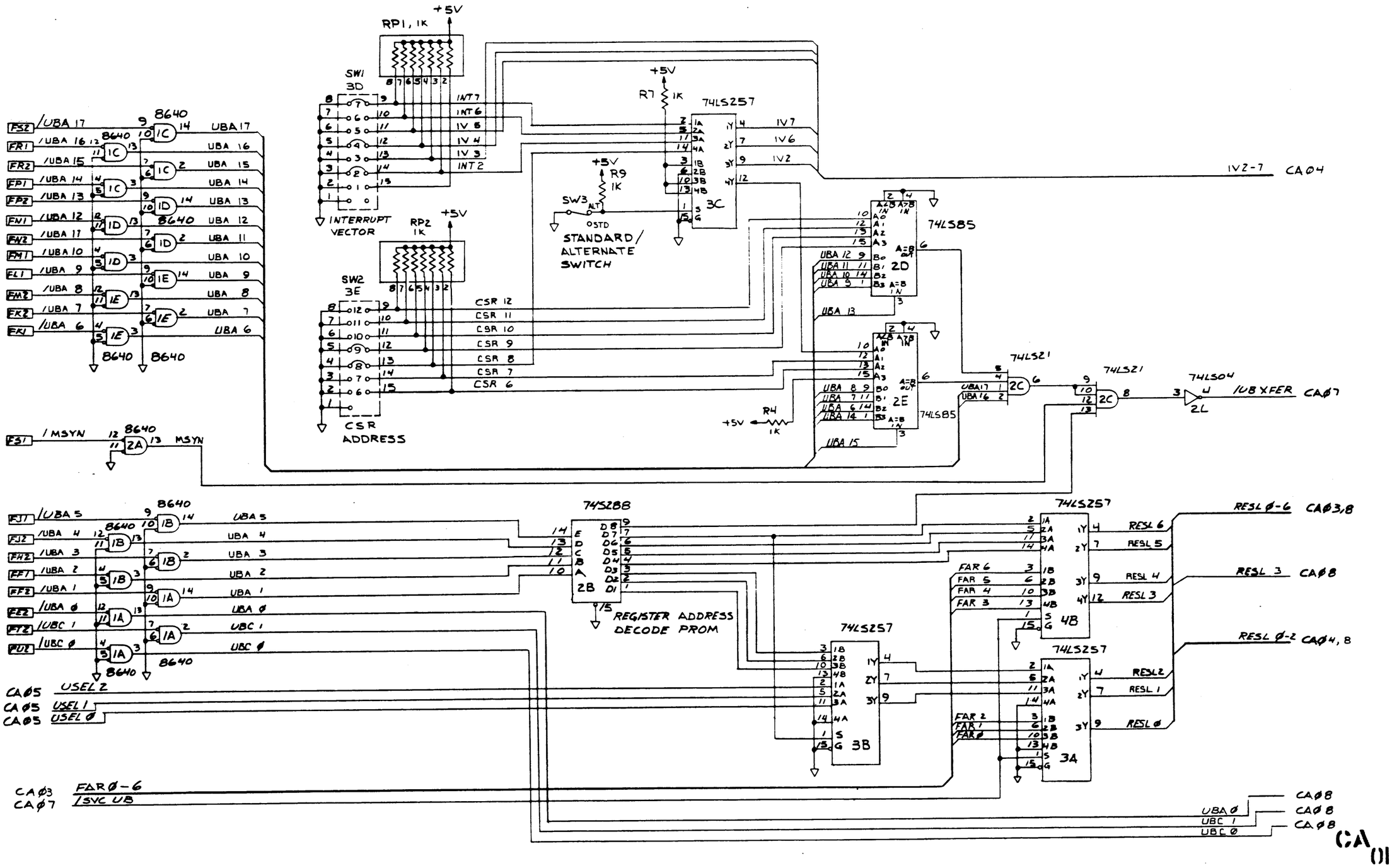


Figure 11-23. 9400 11/70 CPA (9400-6104A) Logic Diagram (Sheet 1 of 9)

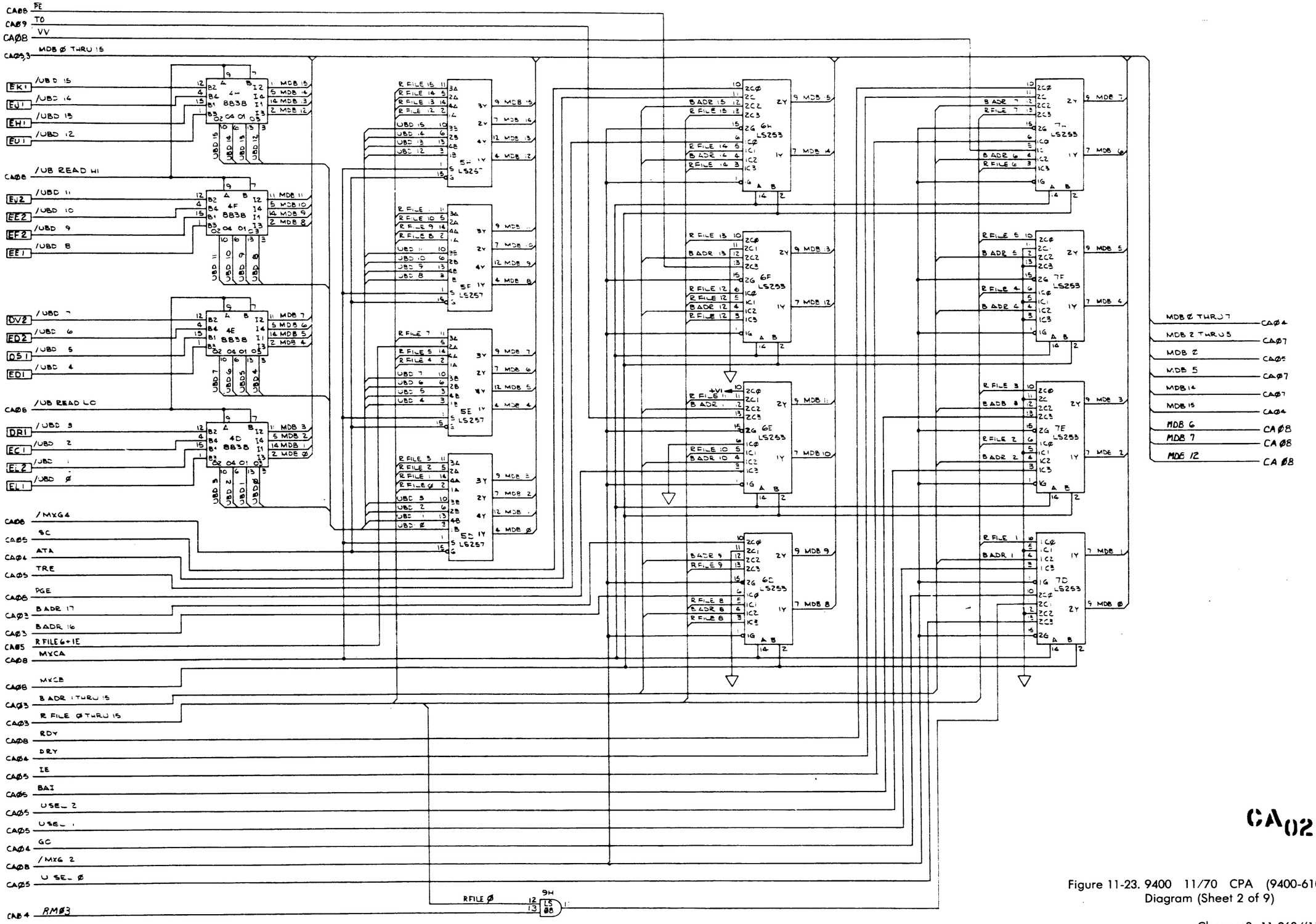


Figure 11-23. 9400 11/70 CPA (9400-6104A) Logic Diagram (Sheet 2 of 9)

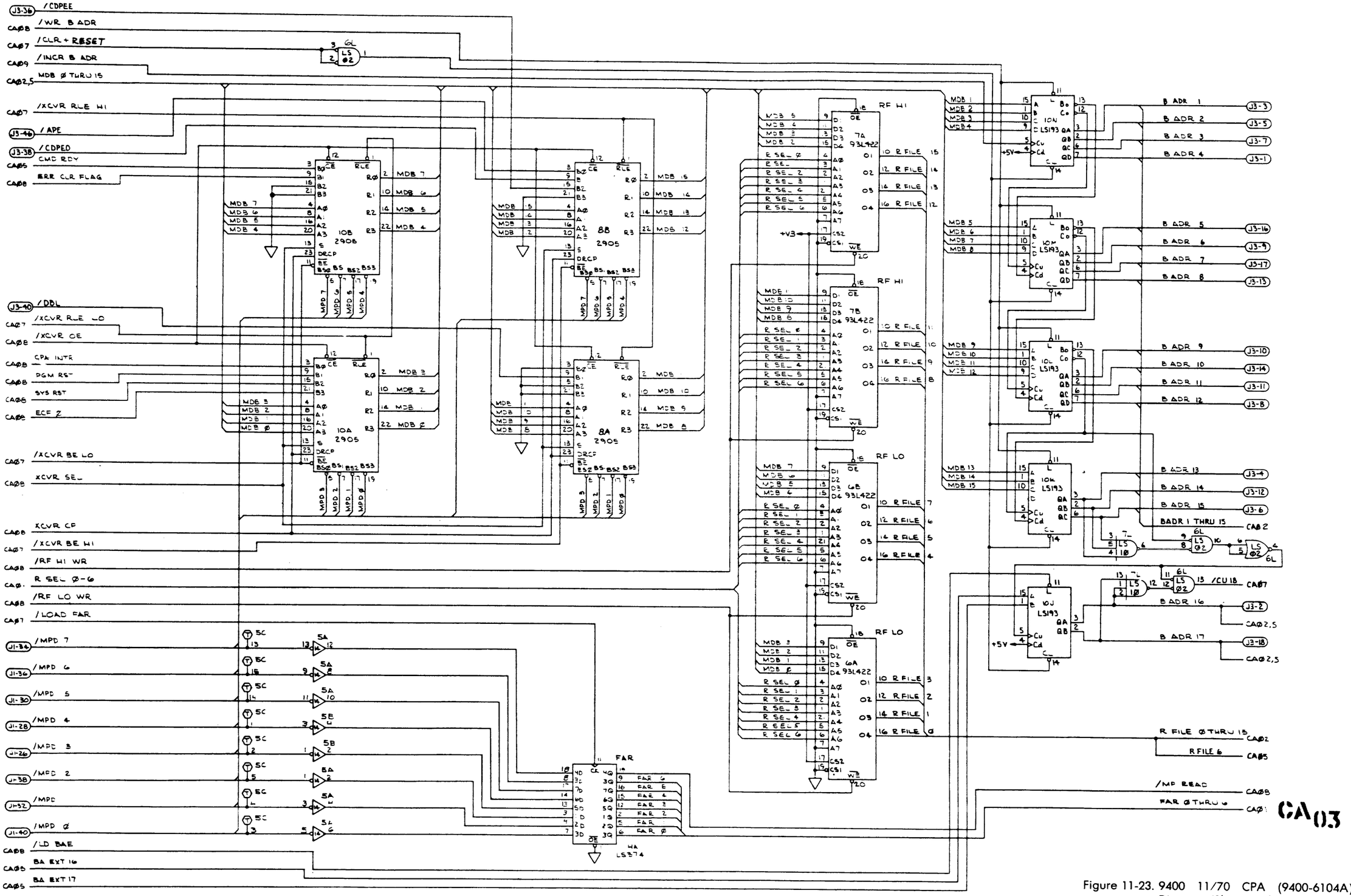


Figure 11-23. 9400 11/70 CPA (9400-6104A) Logic Diagram (Sheet 3 of 9)

CA07 /SVC UB
CA08 WR RPCS1 LO
CA08 WR RPDS
CA07 /RESET
CA08 /WR RPCS1 LO
CA07 /CLR+RESET
CA01 R SEL Ø-2
CA08 /WR RPDS
CA07 SVC UB
CA02 MDB 15
CA08 WR RPAS
CA01 IV2-7
CA07 INTR MSTR
CA02 MDB Ø THRU 7
/DATA XFER CMD CA05,8
DRY CA02
GO CA02
RM03 SET RDY CA02 CA08
RESET VV CA08
SET VV CA08
ATTN CA05
ATA CA02
ATN Ø THRU 7 CA05
IV ENAB CA08
CA04

Figure 11-23. 9400 11/70 CPA (9400-6104A) Logic Diagram (Sheet 4 of 9)

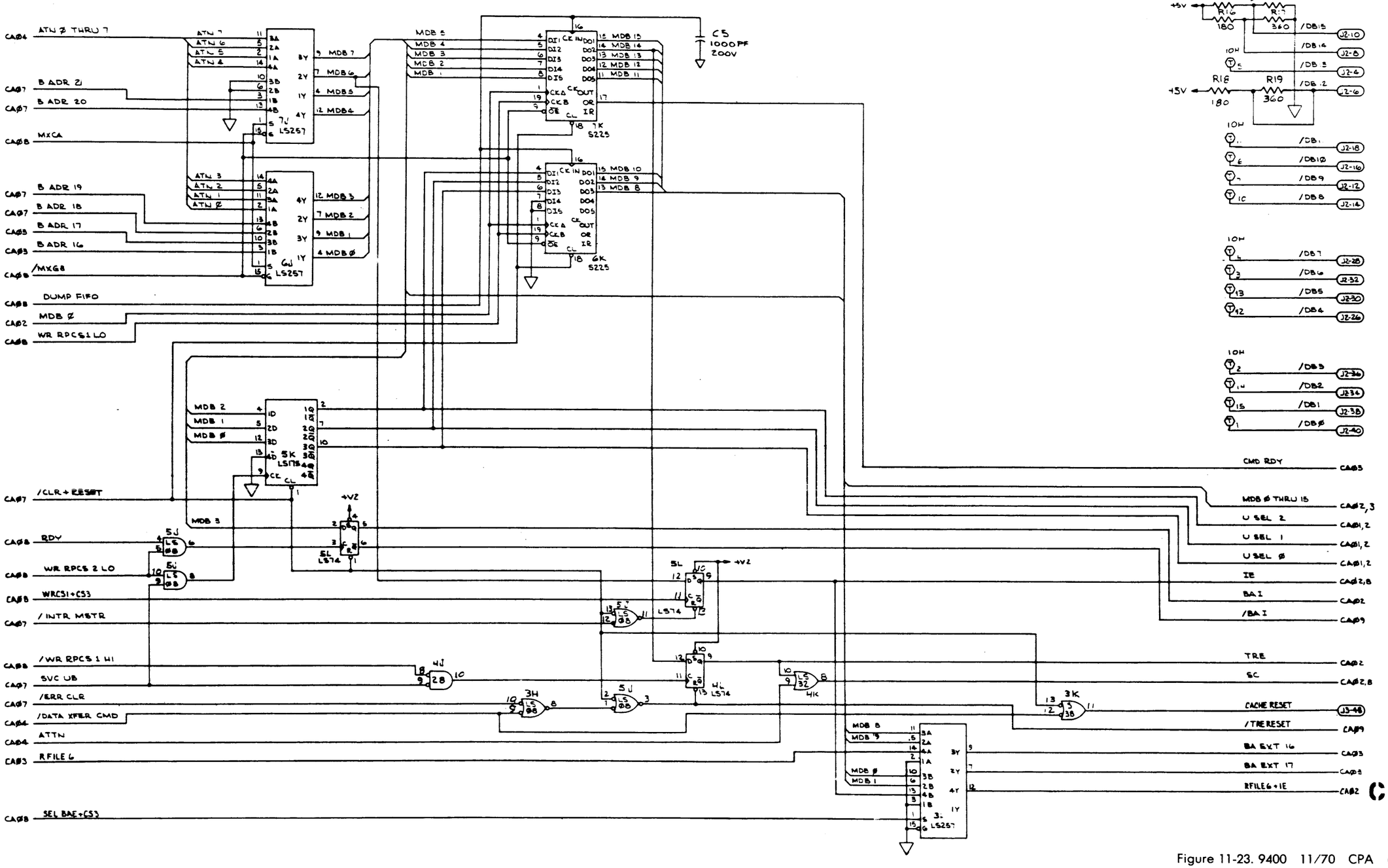


Figure 11-23. 9400 11/70 CPA (9400-6104A) Logic Diagram (Sheet 5 of 9)

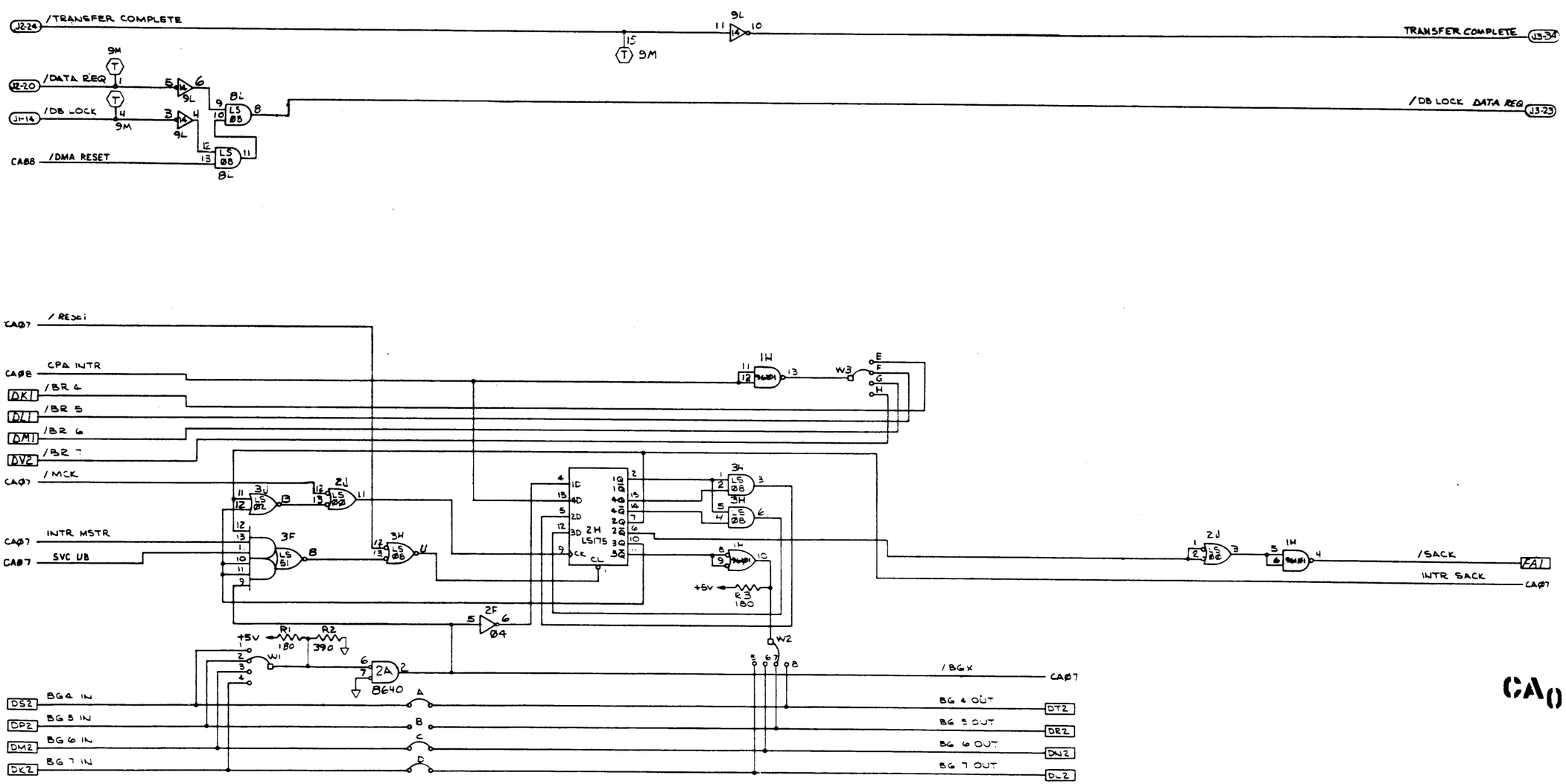
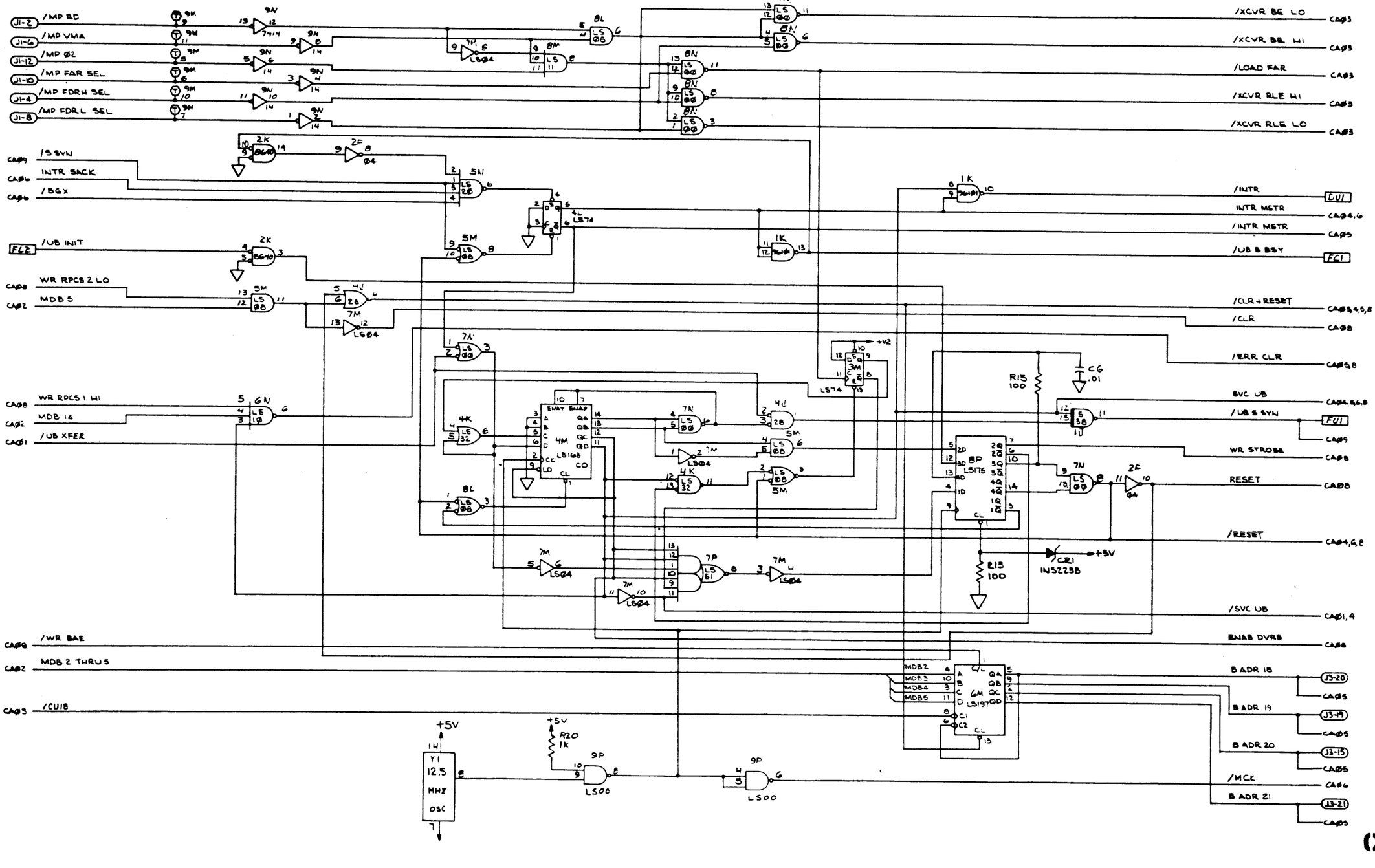


Figure 11-23. 9400 11/70 CPA (9400-6104A) Logic Diagram (Sheet 6 of 9)



CA07

Figure 11-23. 9400 11/70 CPA (9400-6104A) Logic Diagram (Sheet 7 of 9)

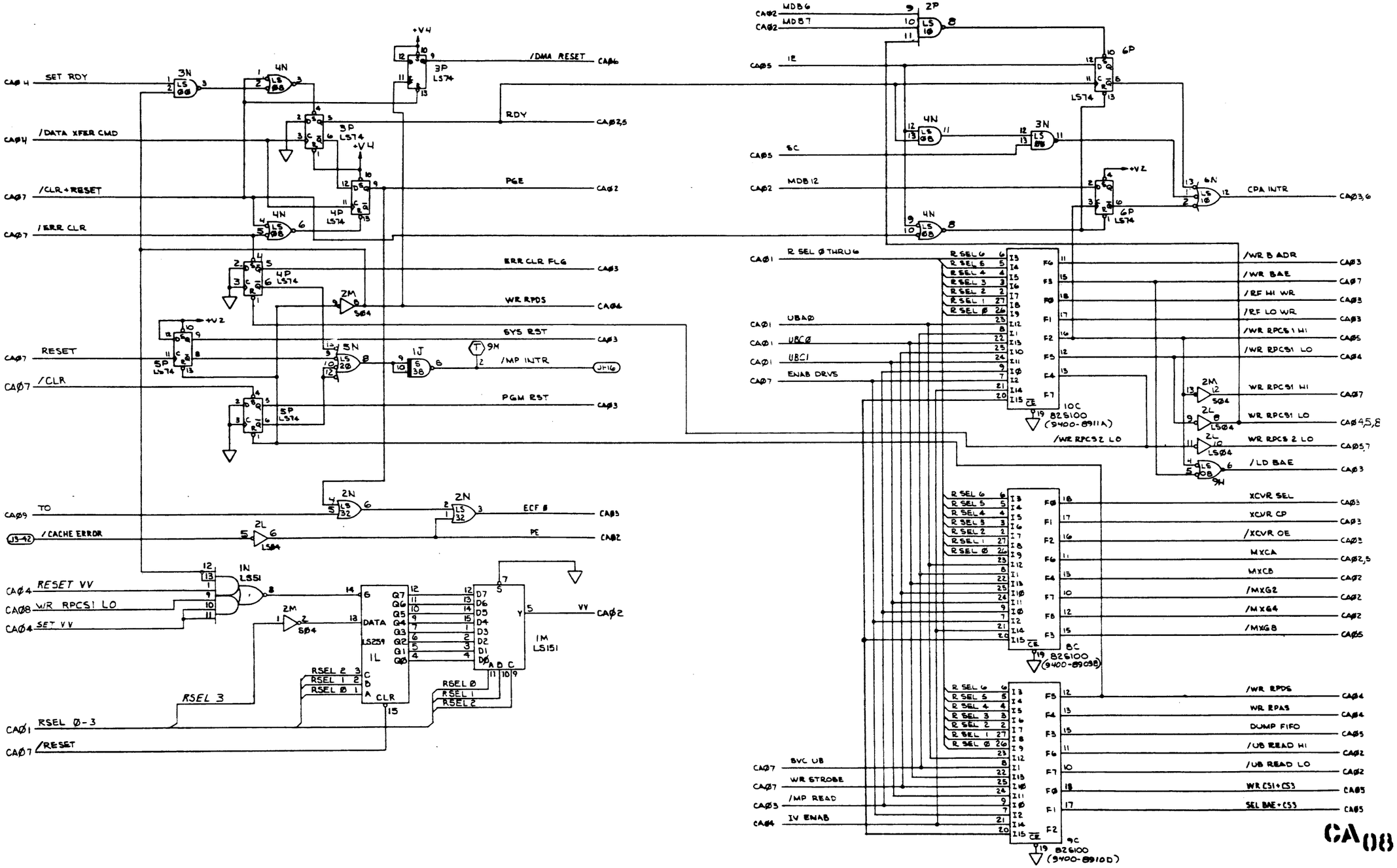
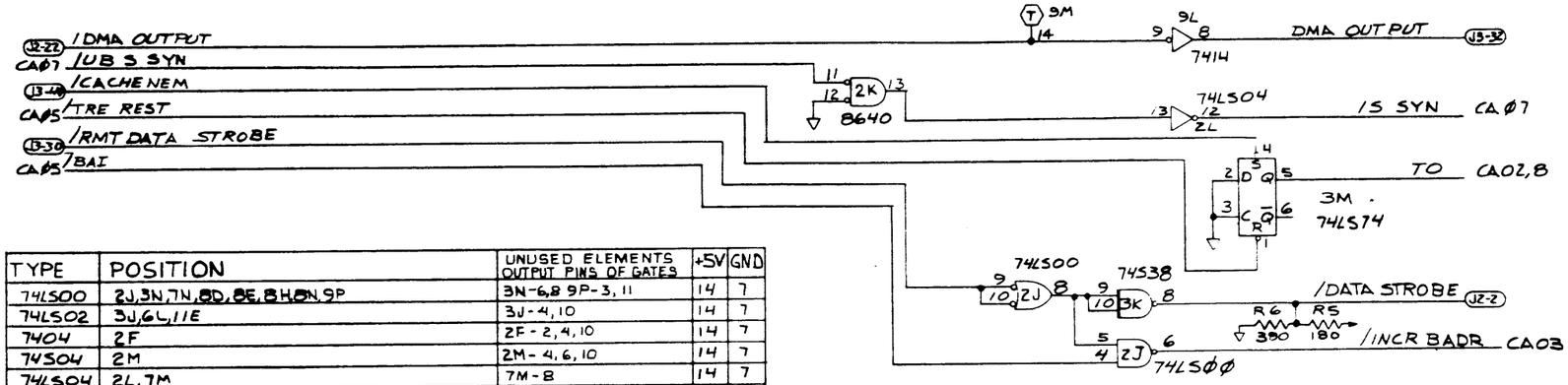
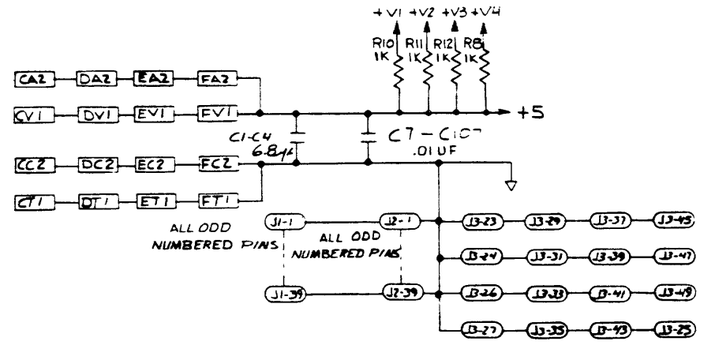


Figure 11-23. 9400 11/70 CPA (9400-6104A) Logic Diagram (Sheet 8 of 9)



TYPE	POSITION	UNUSED ELEMENTS OUTPUT PINS OF GATES	+5V	GND
74LS00	2J,3N,7N,8D,8E,8H,8N,9P	3N-6,8 9P-3, 11	14	7
74LS02	3J,6L,11E	3J-4,10	14	7
7404	2F	2F-2,4,10	14	7
74S04	2M	2M-4,6,10	14	7
74LS04	2L,7M	7M-8	14	7
74LS08	3H,4N,5J,5M,8L,9H,9E,9D		14	7
74LS10	2P,6N,7L	6N-8 2P-6,12 7L-8	14	7
74LS11	8M	8M- 6,12	14	7
7414	5A,5B,9L,9N	5B-6,8,10,12 9L-2,12	14	7
74LS20	5N,11F	11F-8	14	7
74LS21	2C		14	7
7428	4J	4J-12	14	7
74LS32	2N,4K	2N-8,11 4K-3	14	7
74S38	1J,3K	1J-3,6 3K-3,6	14	7
74LS51	1N,7P,3F		14	7
74LS74	3P,3M,4L,4P,5L,5P,6P		14	7
74LS85	2D,2E,		16	8
74LS138	9F,11D		16	8
74LS151	1M, 8K,9K,10F		16	8
74LS175	2H,5K,8P		16	8
74LS163	4M		16	8
74LS193	10N,10M,10L,10K,10J		16	8
74LS197	6M		14	7
74LS241	4C		20	10
74LS257	3C,3L,5D,5E,5F,5H,6J,7J,4B,3A,3B		16	8
74LS253	6D,6E,6F,6H,7F,7H,7E,7D		16	8
74LS259	1L,8J,9J		16	8
74LS374	4A		20	10
74S471	8F		20	10
2905	8A,8B,10A,10B		24	6/18
8640	1A,1B,1C,1D,1E,2A*,2K	2A-1,3 2K-2	8	1
8838	4E,4D,4F,4H		16	8
93L14	10E,10D		16	8
93L422	6A,6B,7A,7B		22	8
96101	1H,1K		14	7
745225	7K,6K		20	10
745288	2B		16	8
825100	8C 9C 10C		28	14
XTAL-OSC	Y1		14	7
R/N 390/180	5C, 9M, 10H		16	8



REFERENCE DESIGNATOR LAST USED	REFERENCE DESIGNATOR NOT USED
C107	
R20	
RP2	

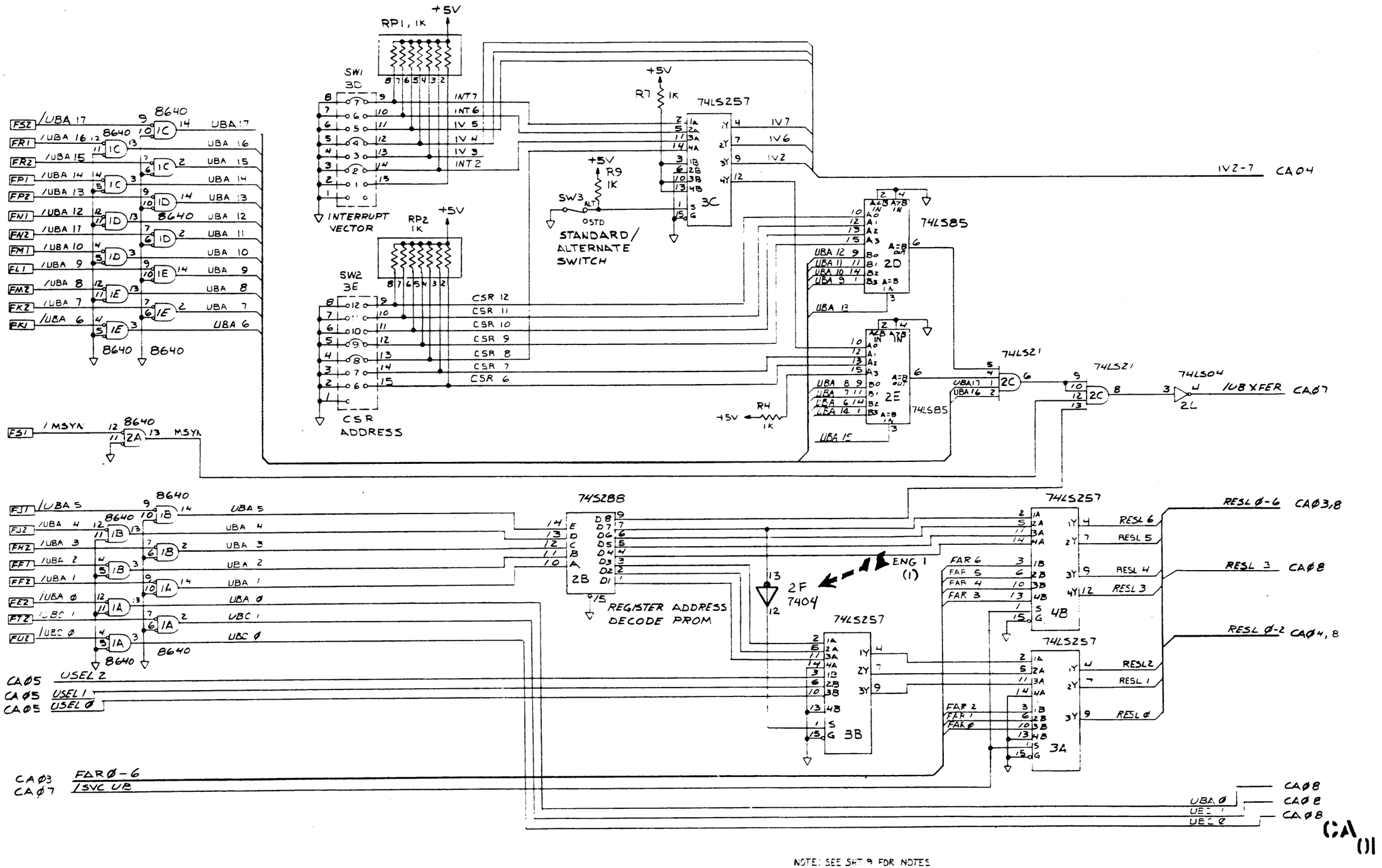
A1

A027

NOTES: UNLESS OTHERWISE SPECIFIED
1. THIS SCHEMATIC REPRESENTS ASSY 9400-6104 AT DATE CODE ~~A025~~. A027
2. ALL RESISTOR VALUES ARE IN OHMS, 1/4W. ±5%
3. ALL CAPACITOR VALUES ARE IN MICROFARADS
4. THIS SYMBOL (T) REPRESENTS RESITOR NETWORK 390/180 OHM.

CA 09

Figure 11-23. 9400 11/70 CPA (9400-6104A) Logic Diagram (Sheet 9 of 9)



NOTE: SEE SHT 9 FOR NOTES

Figure 11-24. CPA PCB (9400-6104Eng) Logic Diagram, PDP-11/70 (Sheet 1 of 9)

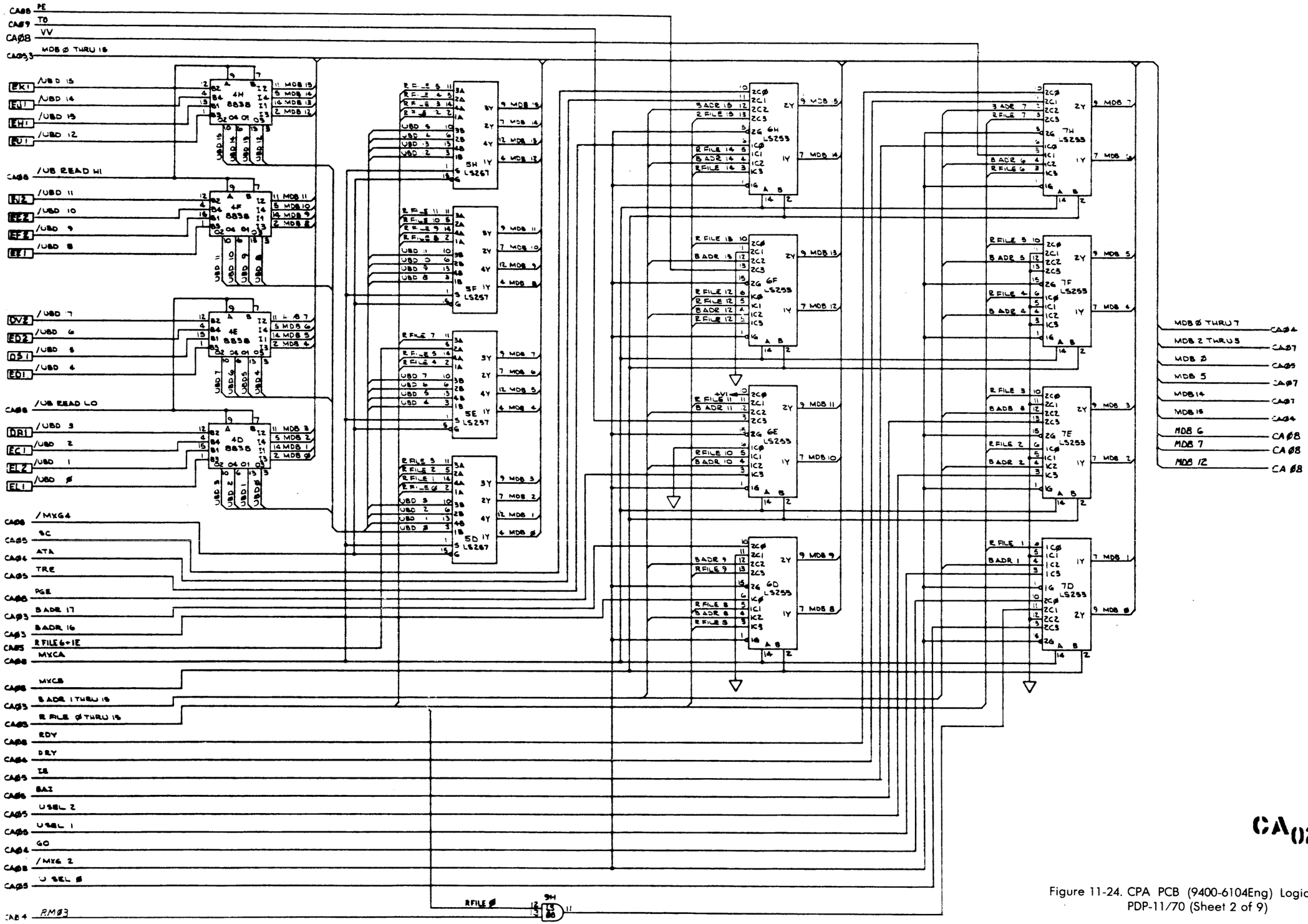


Figure 11-24. CPA PCB (9400-6104Eng) Logic Diagram, PDP-11/70 (Sheet 2 of 9)

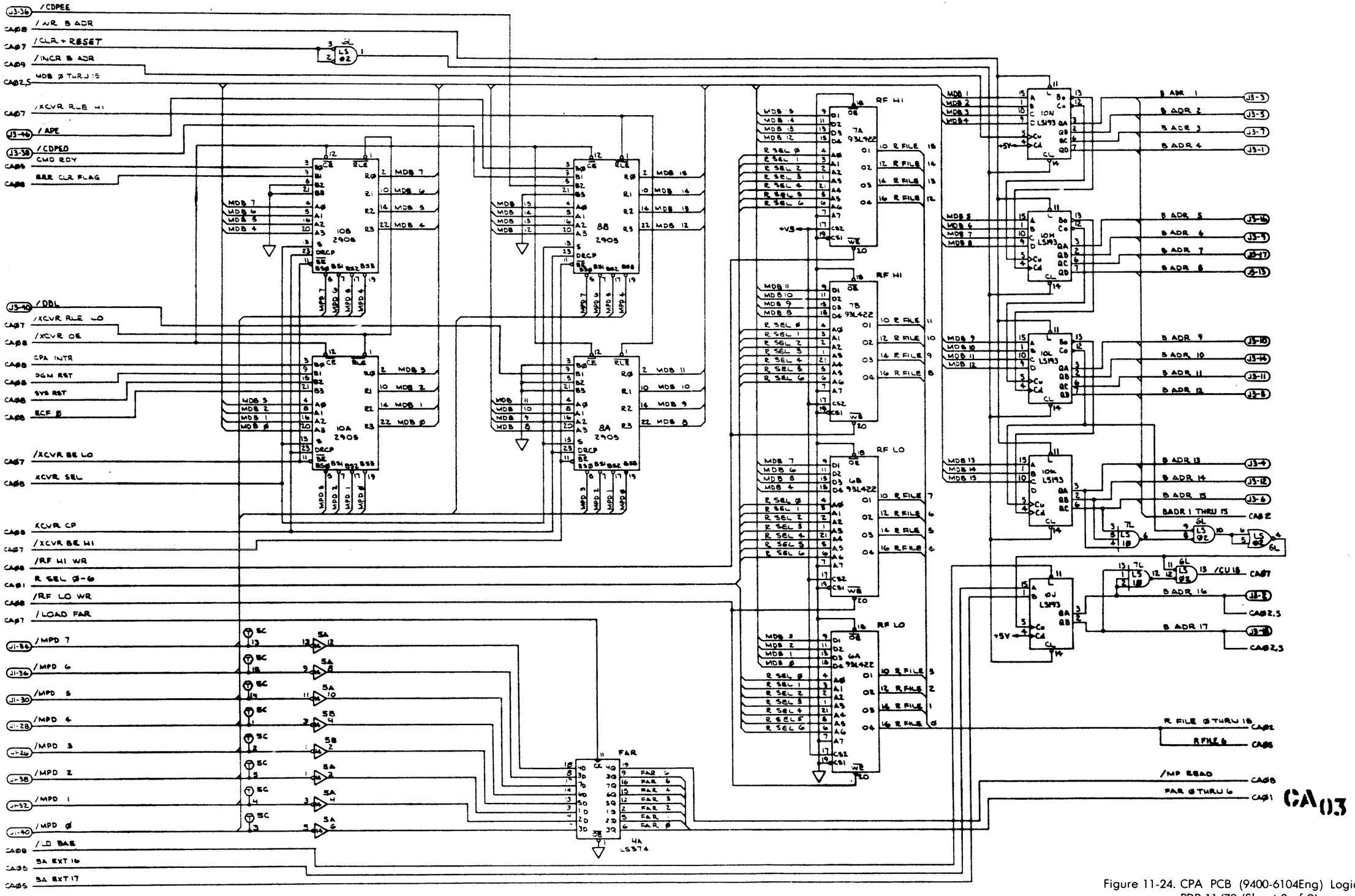


Figure 11-24. CPA PCB (9400-6104Eng) Logic Diagram, PDP-11/70 (Sheet 3 of 9)

CA07 /SVC UB
CA08 WR RPCS1 LO
CA08 W.R RPDS
CA07 /RESET
CA08 /WR RPCS 1 LO
CA07 /CLR + RGSET
CA01 R SEL Ø-2
CA08 /WR RPDS
CA07 SVC UB
CA02 MDB 15
CA08 WR RPAS
CA01 IV2-7
CA07 INTR MSTR
CA02 MDB Ø THRU 7

74LS08 9H
74LS08 9H
74LS02 3J
74LS00 8H
74LS00 8H
8H
8H

+5V R14 1K
LINK OUT = RMO3
W4

MDBØ MDB 1 MDB2 MDB3 MDB4 MDB5
9F 74S471
CS1 CS2

3J LS259
RSEL2 RSEL1 RSELØ
PDRY 7 PDRY 6 PDRY 5 PDRY 4 PDRY 3 PDRY 2 PDRY 1 PDRYØ
9K LS151
R SELØ R SEL 1 R SEL 2

8J LS259
PGO 7 PGO 6 PGO 5 PGO 4 PGO 3 PGO 2 PGO 1 PGOØ
8K LS151

9F LS138
R SEL 2 R SEL 1 R SELØ
MDB Ø
SGO 7 SGO 6 SGO 5 SGO 4 SGO 3 SGO 2 SGO 1 SGO Ø

11D LS138
R SEL 2 R SEL 1 R SELØ
SGO 7 SGO 6 SGO 5 SGO 4 SGO 3 SGO 2 SGO 1 SGO Ø

2L LS04

8E 8E 8E 8E 8D 8D 8D 8D
MDB 7 MDB 6 MDB 5 MDB 4 MDB 3 MDB 2 MDB 1 MDB Ø
LSØØ (8x)

9E 9E 9E 9E 9D 9D 9D 9D
SGO 7 SGO 6 SGO 5 SGO 4 SGO 3 SGO 2 SGO 1 SGO Ø
LSØØ (8x)

R PAS
10E 93L14
SØ S1 S2 S3 D Ø D1 D2 D3 E CL
Q Ø Q1 Q2 Q3
ATN 7 ATN 6 ATN 5 ATN 4

10D 93L14
ATN 3 ATN 2 ATN 1 ATN Ø

11E LSØ2
ATN Ø ATN 1 ATN 2 ATN 3 ATN 4 ATN 5 ATN 6 ATN 7

11F LS2Ø

10F LS151
ATN 7 ATN 6 ATN 5 ATN 4 ATN 3 ATN 2 ATN 1 ATNØ
R SELØ R SEL 1 R SEL 2

4C LS241
IV1 IV6 IV5 IV4 IV3 IV2
MDB 7 MDB 6 MDB 5 MDB 4 MDB 3 MDB 2 MDB 1 MDB Ø

8H LSØØ
8H LSØØ

ENG1 (2) /DATA XFER CMD CA05,8
DRY CA02
GO CA02
RMO3 CA02
SET RDY CA08
RESET VV CA08
SET VV CA08
ATTN CA05
ATA CA02
ATN Ø THRU 7 CA05
IV ENAB CA08

CA04

Figure 11-24. CPA PCB (9400-6104Eng) Logic Diagram, PDP-11/70 (Sheet 4 of 9)

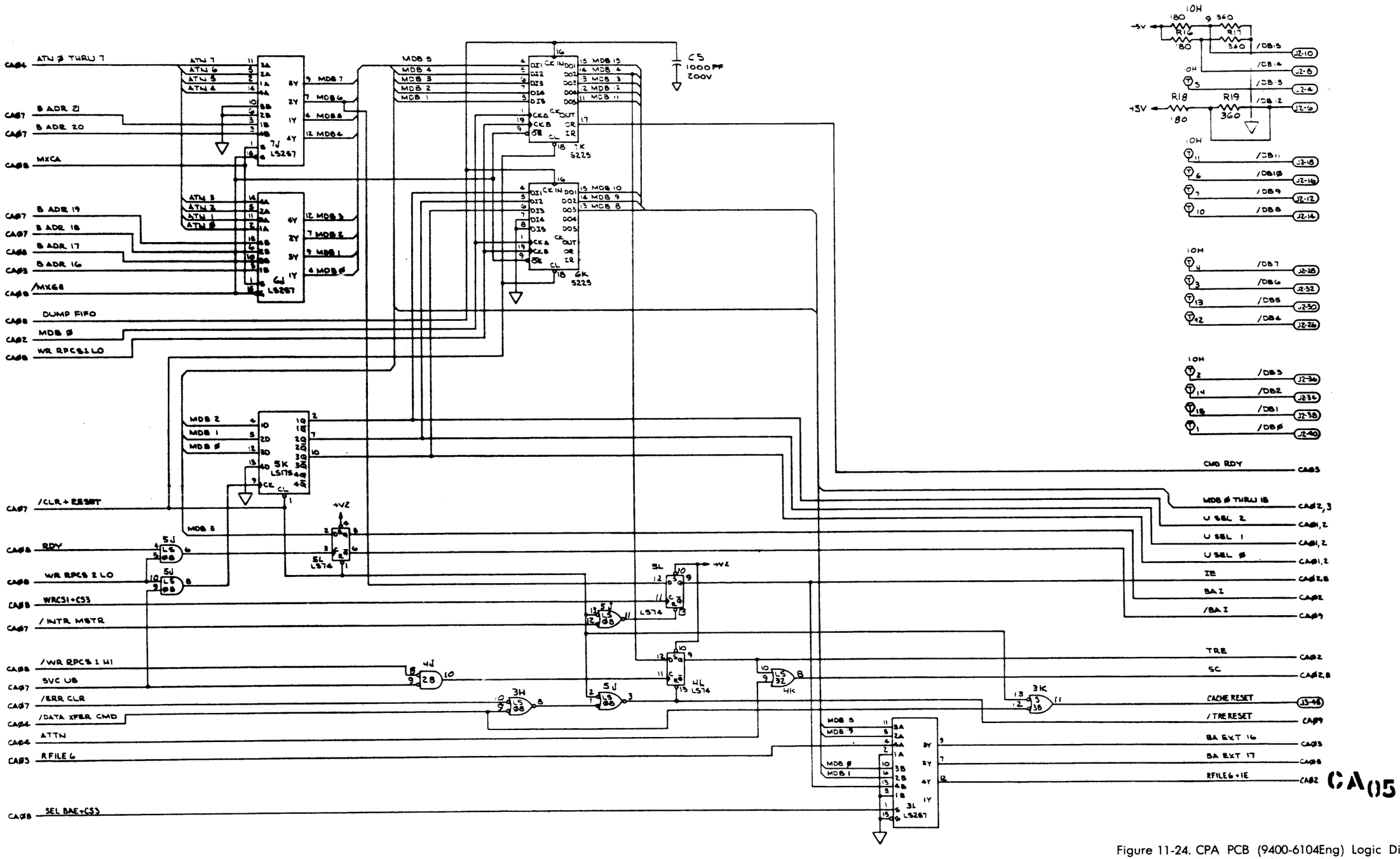


Figure 11-24. CPA PCB (9400-6104Eng) Logic Diagram, PDP-11/70 (Sheet 5 of 9)

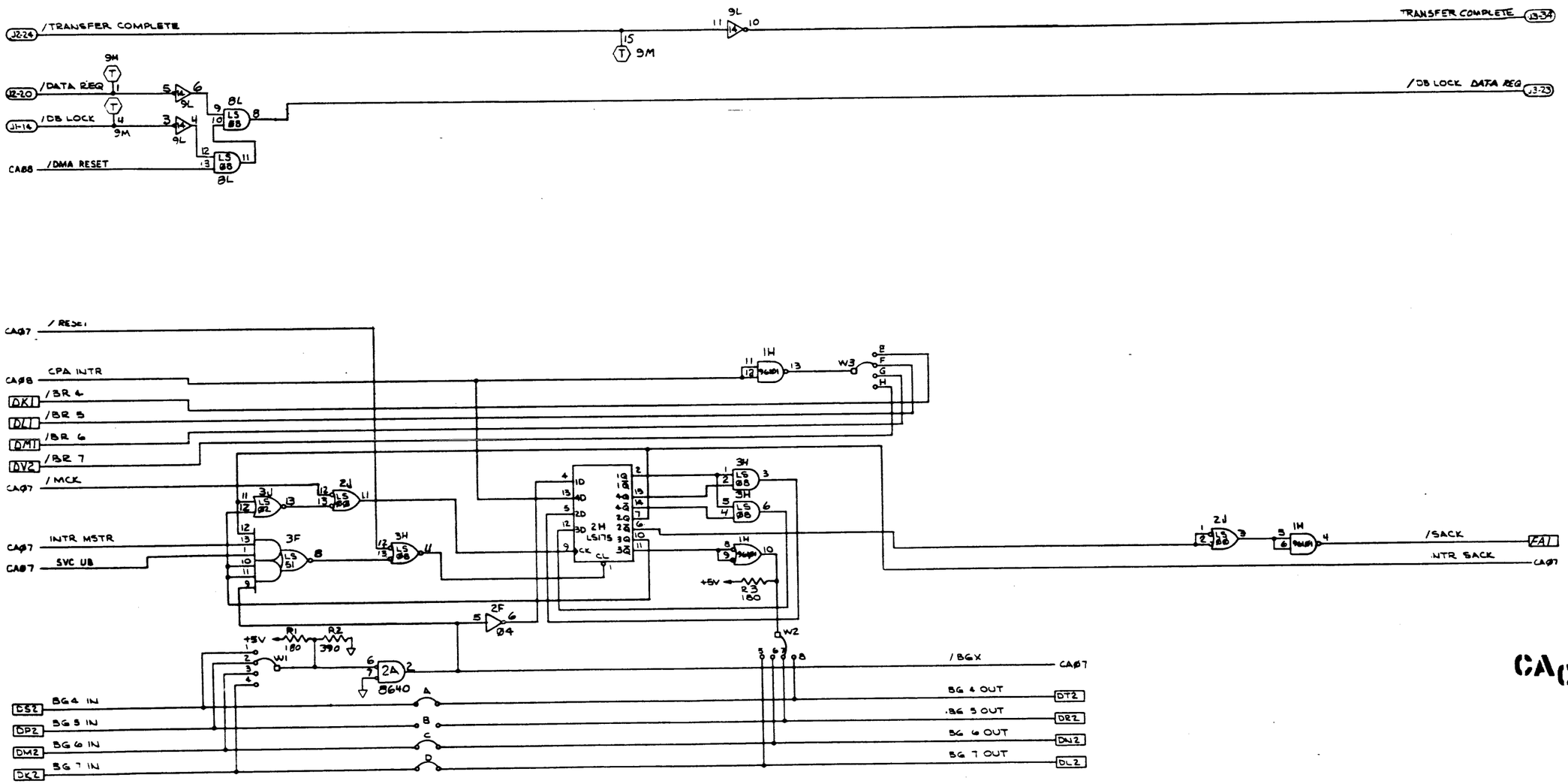


Figure 11-24. CPA PCB (9400-6104Eng) Logic Diagram, PDP-11/70 (Sheet 6 of 9)

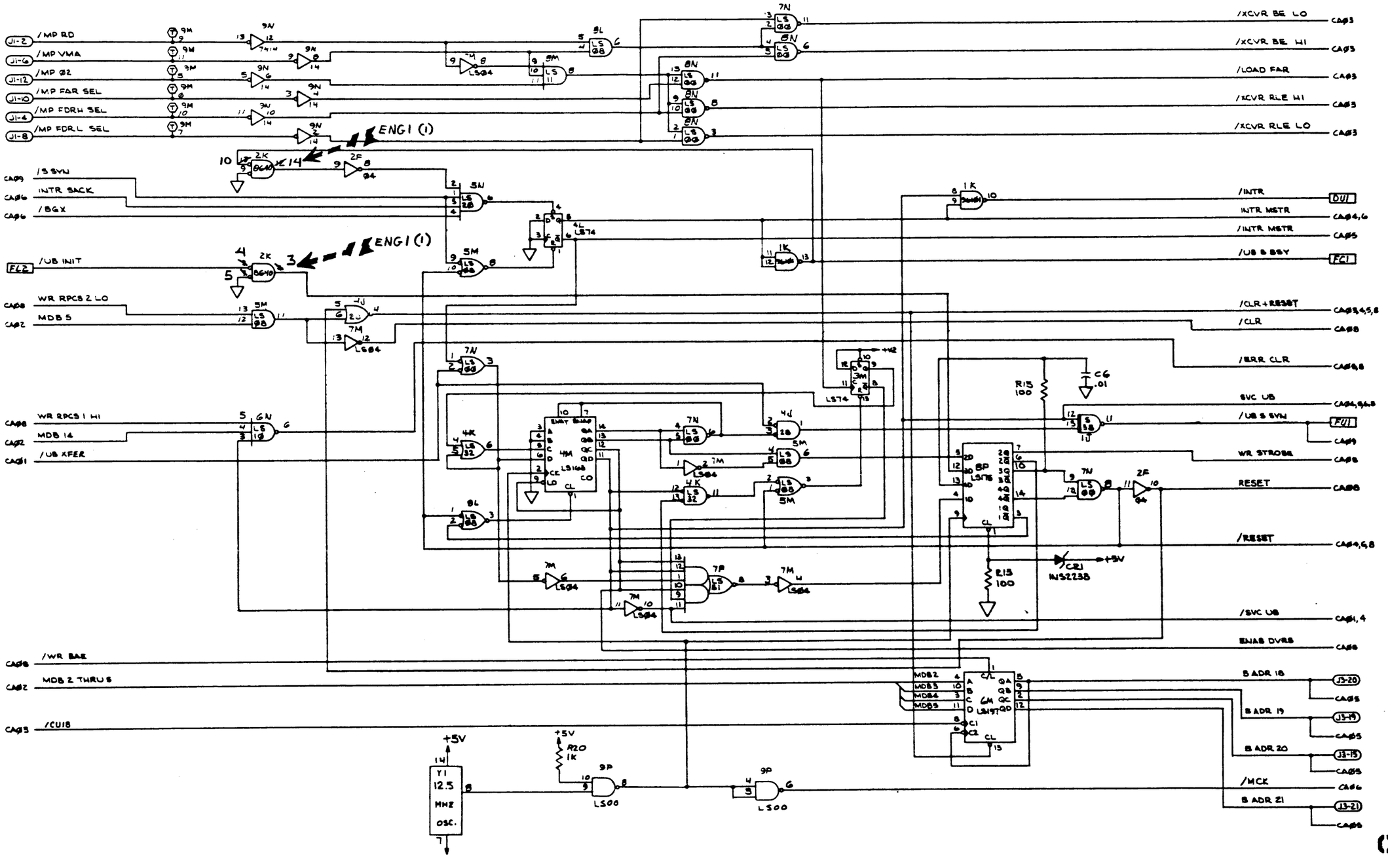


Figure 11-24. CPA PCB (9400-6104Eng) Logic Diagram, PDP-11/70 (Sheet 7 of 9)

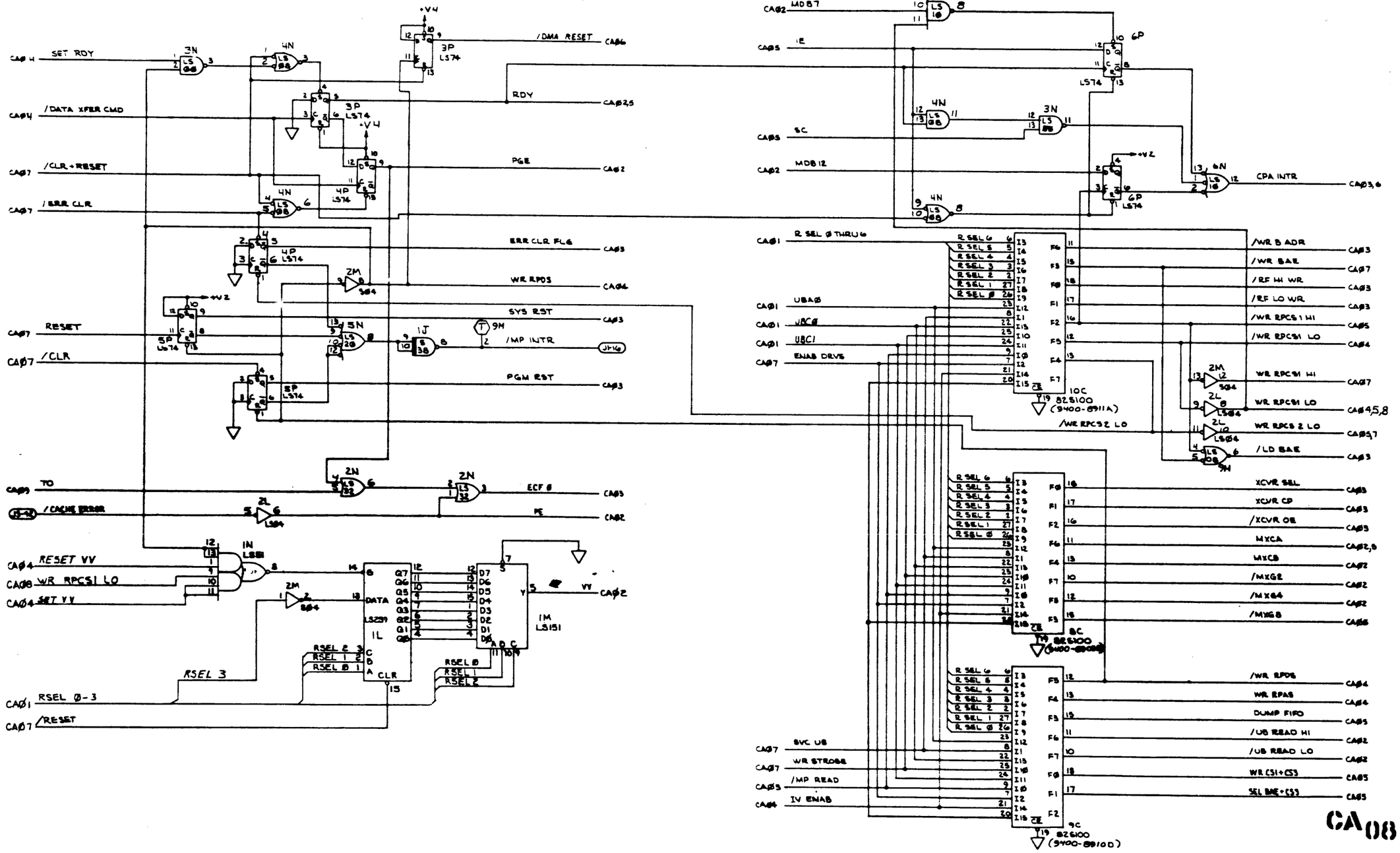
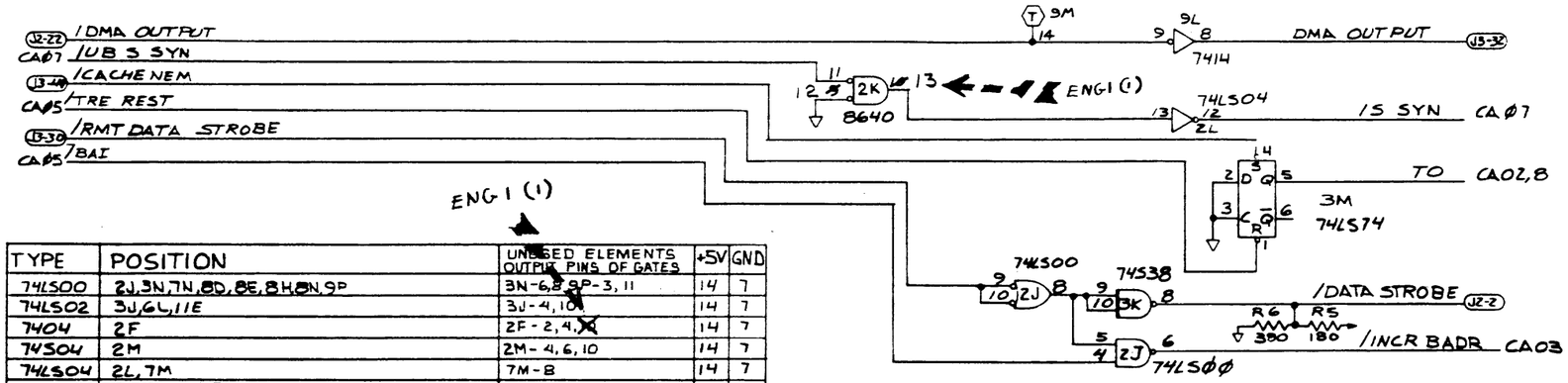
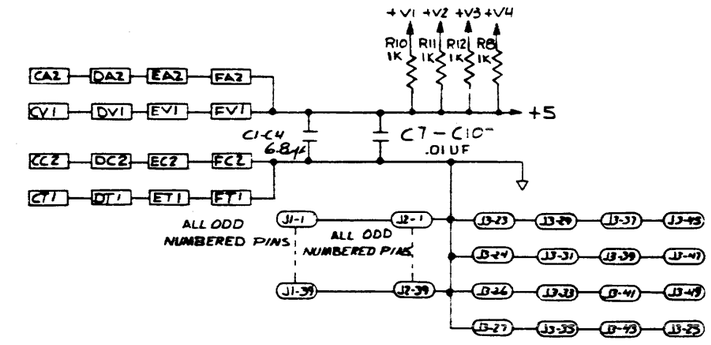
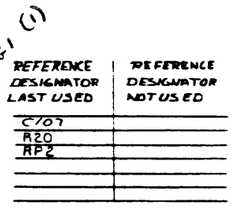


Figure 11-24. CPA PCB (9400-6104Eng) Logic Diagram, PDP-11/70 (Sheet 8 of 9)

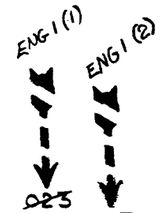


TYPE	POSITION	UNUSED ELEMENTS OUTPUT PINS OF GATES	+5V	GND
74LS00	2J,3N,7N,8D,8E,8H,8N,9P	3N-6,8 8P-3,11	14	7
74LS02	3J,6L,11E	3J-4,10	14	7
7404	2F	2F-2,4,6	14	7
74S04	2M	2M-4,6,10	14	7
74LS04	2L,7M	7M-8	14	7
74LS08	3H,4N,5J,5M,8L,9H,9E,9D		14	7
74LS10	2P,6N,7L	6N-8 2P-6,12 7L-8	14	7
74LS11	8M	8M- 6,12	14	7
7414	5A,5B,9L,9N	5B-6,8,10,12 9L-2,12	14	7
74LS20	5N,11F	11F-8	14	7
74LS21	2C		14	7
7428	4J	4J-12	14	7
74LS32	2N,4K	2N-8,11 4K-3	14	7
74S38	1J,3K	1J-3,6 3K-3,6	14	7
74LS51	1N,7P,3F		14	7
74LS74	3P,3M,4L,4P,5L,5P,6P		14	7
74LS85	2D,2E,		16	8
74LS138	9F,11D		16	8
74LS151	1M, 8K,9K,10F		16	8
74LS175	2N,5K,8P		16	8
74LS163	4M		16	8
74LS193	10N,10M,10L,10K,10J		16	8
74LS197	6M		14	7
74LS241	4C		20	10
74LS257	3C,3L,5D,5E,5F,5H,6J,7J,4B,3A,3B		16	8
74LS253	6D,6E,6F,6H,7F,7N,7E,7D		16	8
74LS259	1L,8J,9J		16	8
74LS374	4A		20	10
74S471	8F		20	10
2905	8A,8B,10A,10B		24	6/18
8640	1A,1B,1C,1D,1E,2A,2K	2A-1,3 2K-2	8	1
8838	4E,4D,4F,4H		16	8
93L14	10E,10D		16	8
93L422	6A,6B,7A,7B		22	8
96101	1H,1K		14	7
74S225	7K,6K		20	10
74S288	2B		16	8
B25100	8C 9C 10C		28	14
XTAL-OSC	Y1		14	7
RM 330/180	5C, 9M, 10H		16	8





REFERENCE DESIGNATOR LAST USED	REFERENCE DESIGNATOR NOT USED
C107	
R20	
RP2	



NOTES: UNLESS OTHERWISE SPECIFIED
1. THIS SCHEMATIC REPRESENTS ASSY 9400-6104 AT DATE CODE ENG 04
2. ALL RESISTOR VALUES ARE IN OHMS, 1/4W, ±5%
3. ALL CAPACITOR VALUES ARE IN MICROFARADS
4. THIS SYMBOL (T) REPRESENTS RESITOR NETWORK 390/180 OHM.

CA 09

Figure 11-24. CPA PCB (9400-6104Eng) Logic Diagram, PDP-11/70 (Sheet 9 of 9)

A2	A1	U210 SW	DRIVE
0	0	ON ON	3
0	1	ON OFF	2
1	0	OFF ON	1
1	1	OFF OFF	0

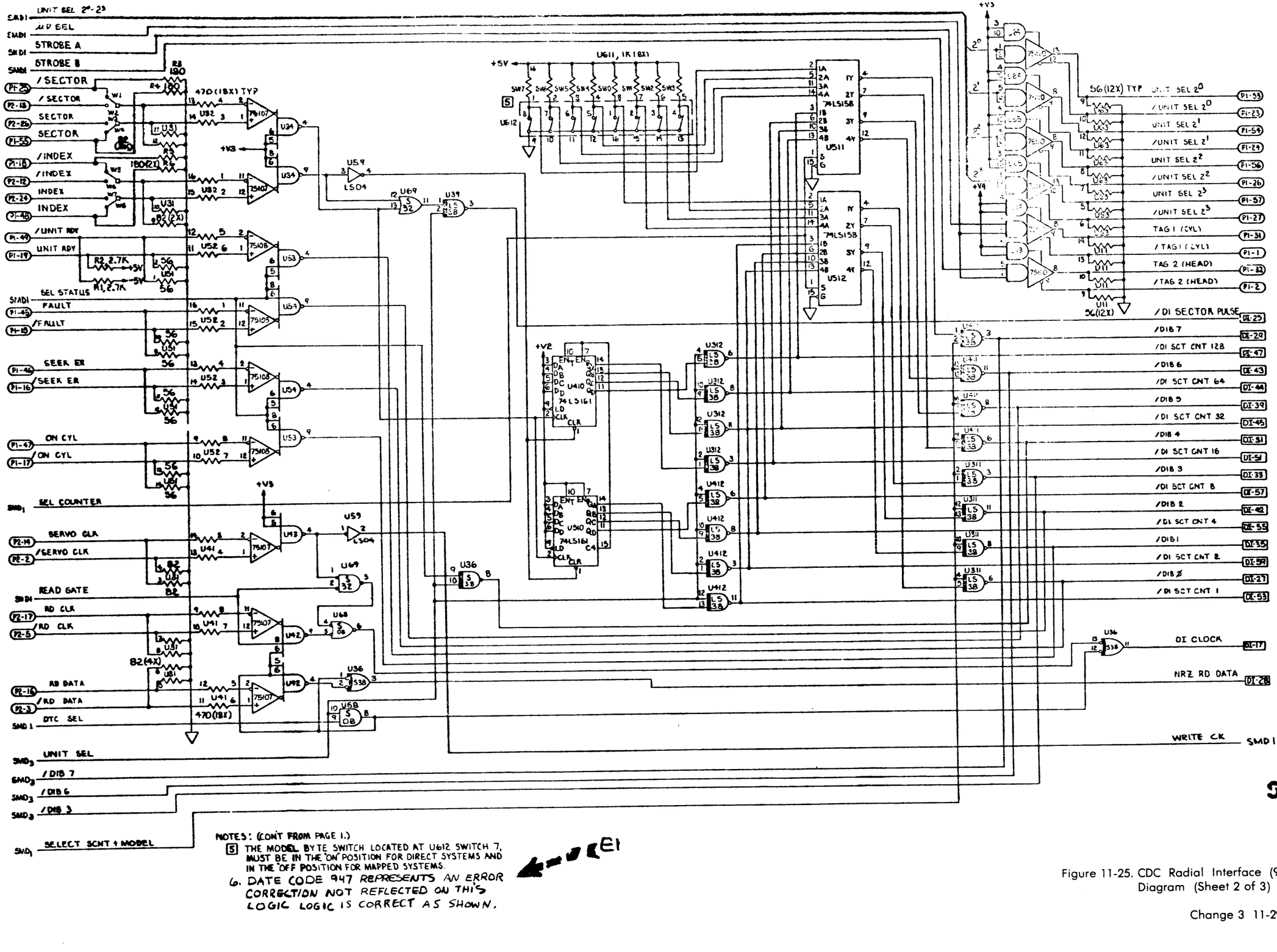
DI DATA SEL 1
DI DATA SEL 2
DI TAG 0
DI TAG 1
DOC DISK EN
DI TAG 2
DI STROBE A
DI-STROBE B
DI-STROBE C
DI-STROBE D
DOB Ø
DOB 1
DOB 2
DOB 3
DOB 4
DOB 5
DOB 6
DOB 7
/POR
/MASTER RESET
READ GATE
WRITE GATE
NRZ W/P DATA
WRITE CK
UNIT SEL
/DTC SEL
DTC SEL · W GATE
DC WRITE DATA
(CONTROL)
(SMD B)
CYL 512
CYL 256

U571 SEL COUNTER SMD 2
U57 4 SEL STATUS SMD 2,3
SELECT SCNT + MODEL SMD2
DTC SEL SMD2
DI STROBE C (ATTN RST) SMD2
μP SEL SMD2
/SEL STATUS
BUS BIT Ø
/ BUS BIT Ø
BUS BIT 1
/ BUS BIT 1
BUS BIT 2
/ BUS BIT 2
BUS BIT 3
/ BUS BIT 3
BUS BIT 4
/ BUS BIT 4
BUS BIT 5
/ BUS BIT 5
BUS BIT 6
/ BUS BIT 6
BUS BIT 7
/ BUS BIT 7
BUS BIT 8
/ BUS BIT 8
BUS BIT 9
/ BUS BIT 9
STROBE SMD 2
STROBE B SMD 2
/MASTER RESET SMD 3
READ GATE SMD 2
OPEN CABLE DETECT
/ OPEN CABLE DETECT
UNIT SEL 2^0-2^3 SMD 2
TAG 3
/ TAG 3
WR DATA
/WR DATA
UNIT SEL TAG
/UNIT SEL TAG
/WR CLOCK
WR CLOCK

NOTES UNLESS OTHERWISE SPECIFIED:
1. THIS SCHEMATIC REPRESENTS ASSY 9400-6038 AT DATE CODE E947
2. ALL RESISTORS ARE IN OHMS 1/4W ±2%
3. ALL CAPACITORS ARE IN MICROFARADS
4. SEE PAGE 2 FOR CONTINUATION OF NOTES.

SMD1 EI

Figure 11-25. CDC Radial Interface (9400-6038E) Logic Diagram (Sheet 1 of 3)

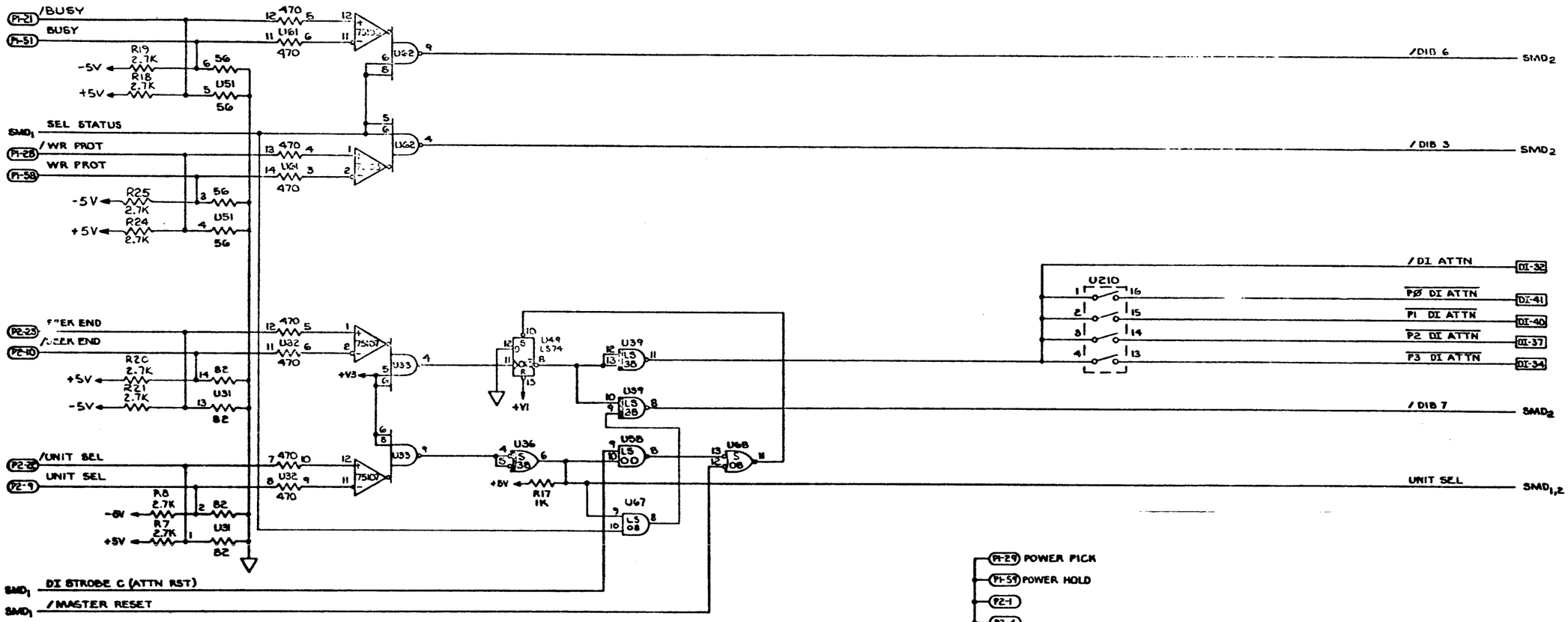


NOTES: (CONT FROM PAGE 1.)

[5] THE MODEL BYTE SWITCH LOCATED AT U612 SWITCH 7, MUST BE IN THE 'ON' POSITION FOR DIRECT SYSTEMS AND IN THE 'OFF' POSITION FOR MAPPED SYSTEMS.

6. DATE CODE 947 REPRESENTS AN ERROR CORRECTION NOT REFLECTED ON THIS LOGIC LOGIC IS CORRECT AS SHOWN.

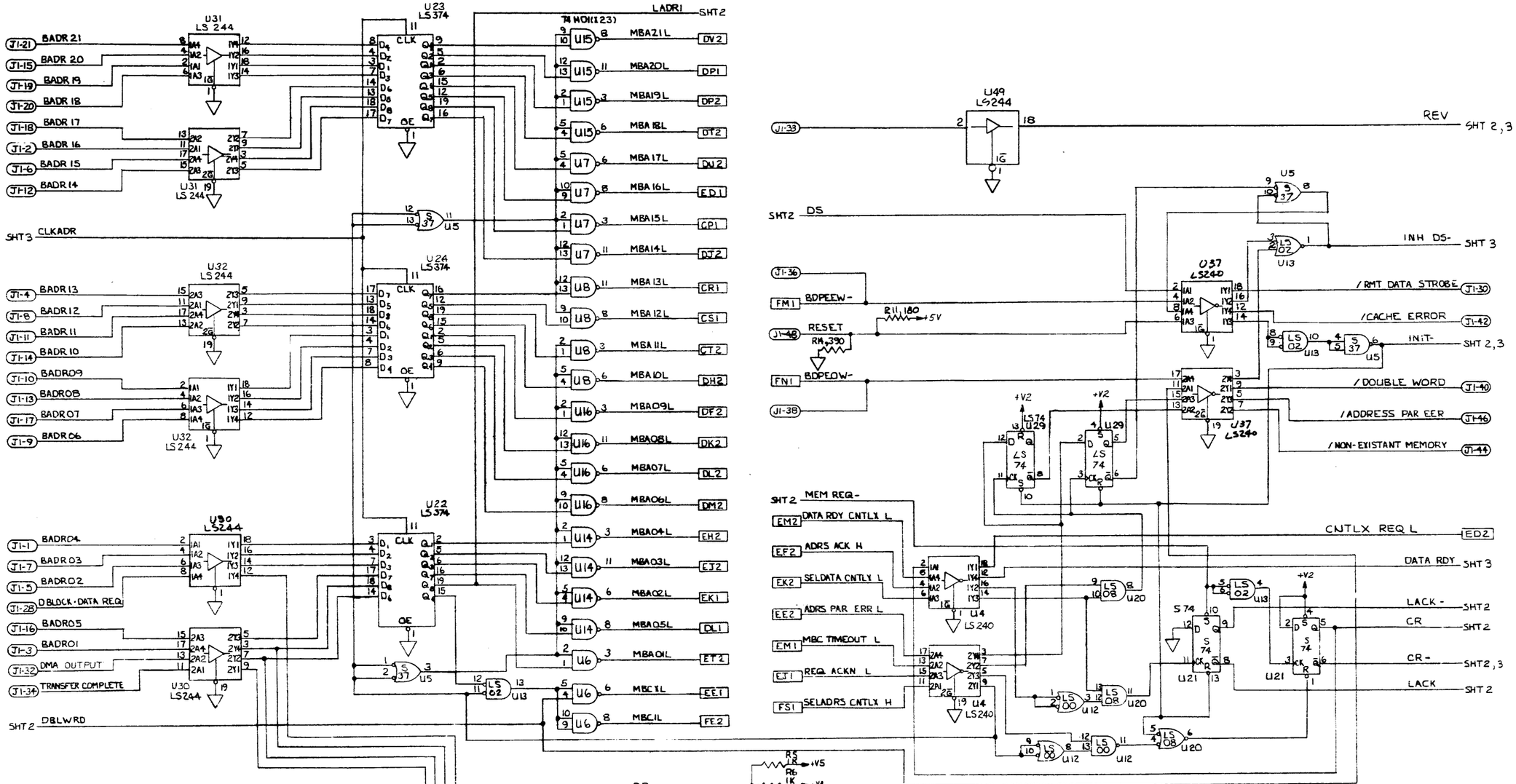
Figure 11-25. CDC Radial Interface (9400-6038E) Logic Diagram (Sheet 2 of 3)



TYPE	POSITION	UNUSED ELEMENTS	+5V	GND	-5V
74LS00	U58,26	U58-4,26-3	14	7	
74LS04	U57,59	U59-3, 6; 57-3, 5,6	14	7	
74LS08	U37,67	U67-11,4	14	7	
74S32	U39	U39-1, 2,3	14	7	
74S38	U36		14	7	
74LS38	U39,311,312,47,411,412,610	U39-6-11,4	14	7	
74S74	U33	U33-2	14	7	
74LS74	U48,49		14	7	
74LS136	U310		14	7	
74LS139	U29	U29-2	16	8	
74LS157	U16		16	8	
74LS158	U511,512		16	8	
74LS161	U410,510		16	8	
74LS174	U17		16	8	
74LS221	U27		16	8	
75107	U33,34,42,43	U43-2	14	7	13
75108	U53,54,62		14	7	13
75110	U12,13,14,15,22,23,24,44,64,65,66		14	7	11
R-PAK 82	U31	U31-15			
R-PAK 56	U11,21,51,65	U11-15, U21-3 4 15, U51-7,			
		8,15; U65-1,2,3,4,15			
R-PAK 470	U32,41,52,61	U41-1,2			
		61-1,2,7,8			
R-PAK 1K	U611				
SW SPST 8	U210,612	U210-7,8			
74S08	U68		14	7	

REF DESIGNATOR LAST USED	REF DESIGNATOR NOT USED
R25	
C 47	
D1	
P2	
W8	
Q2	

Figure 11-25. CDC Radial Interface (9400-6038E) Logic Diagram (Sheet 3 of 3)



TYPE	POSITION	UNUSED ELEMENTS	+5V	GND
74LS86	U47	U47-2	14	7
74LS00	U12,18,28	U28-1	14	7
74H01	U6,7,8,14,15,16	U6-4	14	7
74LS02	U13,44	U44-4	14	7
74LS08	U11,20,35,36,45	U20-1 U45-1,2,3	14	7
74LS11	U19		14	7
74LS20	U17,26		14	7
74LS32	U25,33	U25-1 U33-3	14	7
74S37	U5		14	7
74LS51	U10		14	7
74S74	U21		14	7
74LS74	U9,29,40,41,34,96	46-1	14	7
74LS175	U42		16	8
74LS221	U1,2,27		16	8
74LS240	U4,37		20	10
74LS244	U3,30,31,32,49		20	10
74S260	U43		14	7
74LS374	U22,23,24	U22-4,5	20	10
74LS157	U48		16	8

REFERENCE DESIGNATOR LAST USED	REFERENCE DESIGNATOR NOT USED
R21	R12,13,15-20
C52	
U48	

NOTES: UNLESS OTHERWISE SPECIFIED -

1. THIS LOGIC REPRESENTS ASSEMBLY 9400-6111 AT DATE CODE B223
2. ALL RESISTOR VALUES ARE IN 1/4W, 5%, OHMS.
3. ALL CAPACITOR VALUES ARE IN MICROFARADS
4. ALL I.C.S ARE 7400 SERIES.

Figure 11-26. Address and Control (9400-6111B) Logic Diagram (Sheet 1 of 3)

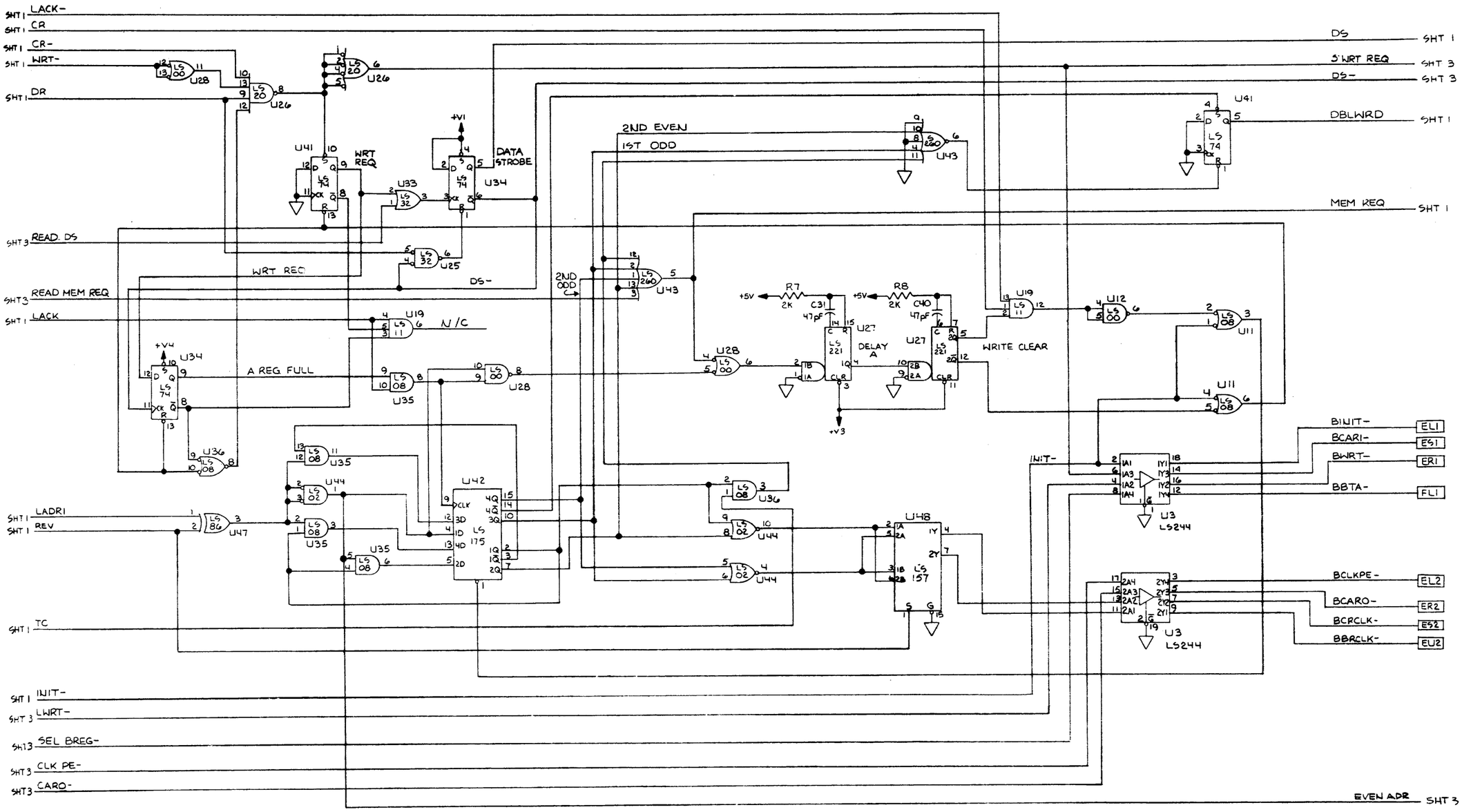
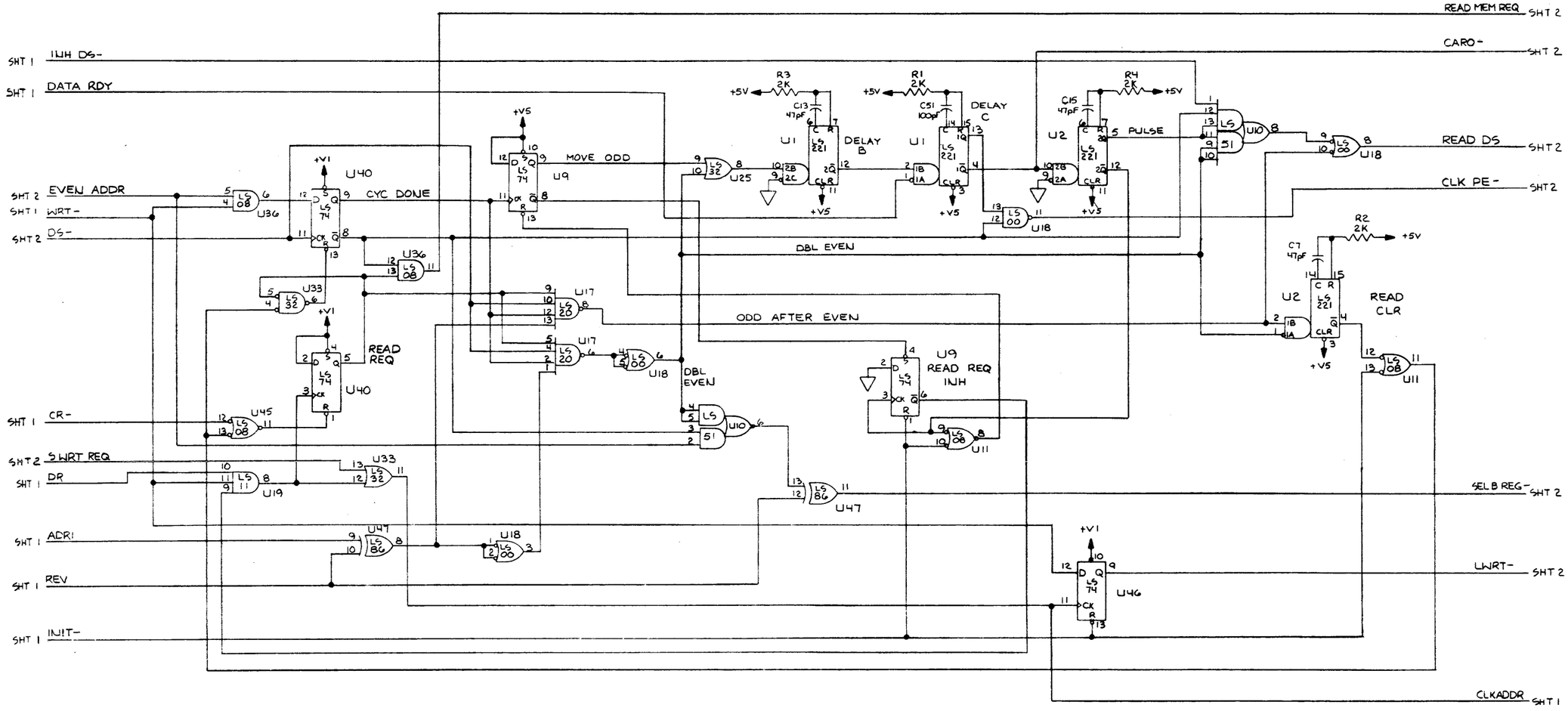
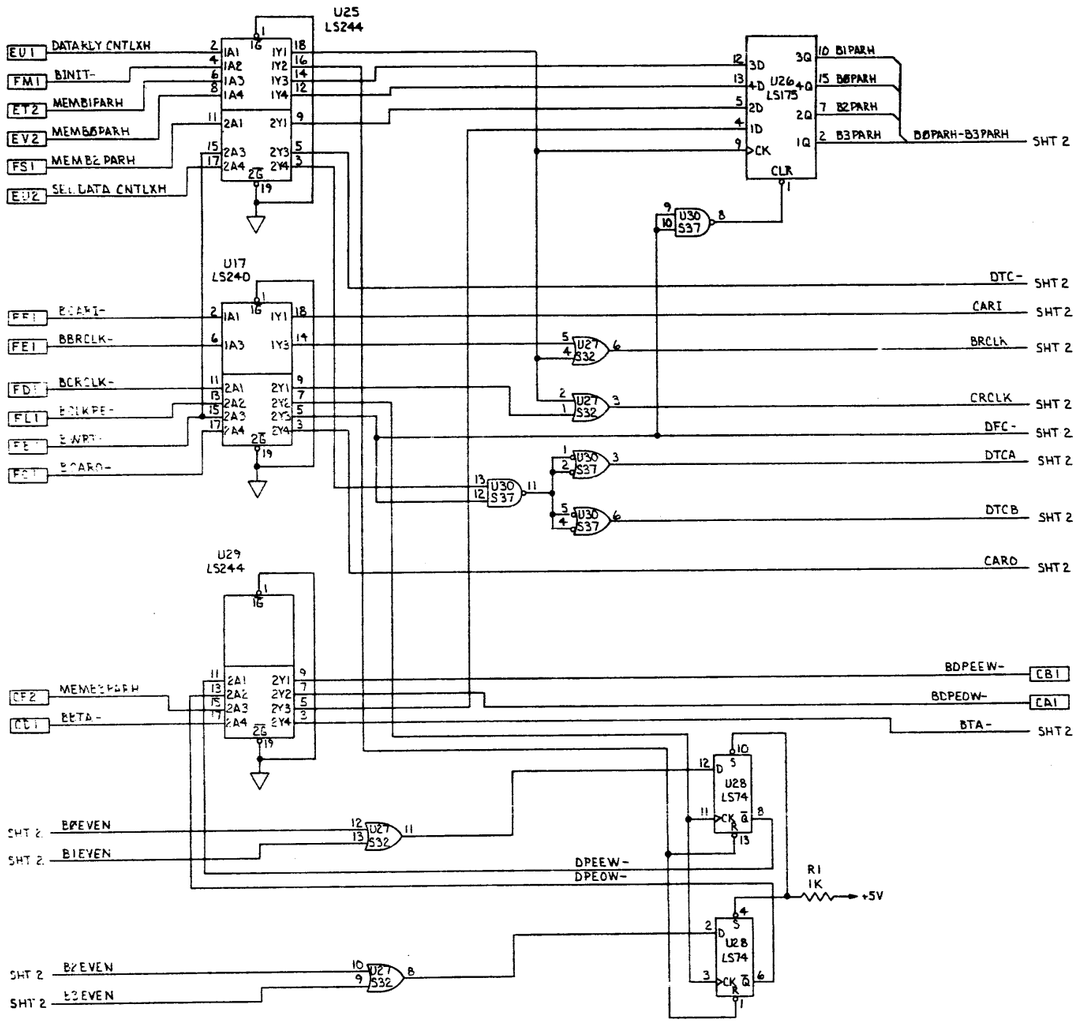


Figure 11-26. Address and Control (9400-6111B) Logic Diagram (Sheet 2 of 3)



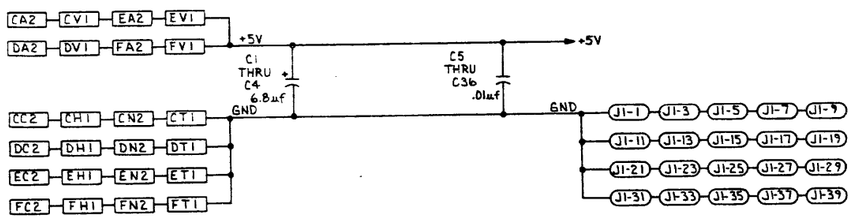
READ FROM MEMORY

Figure 11-26. Address and Control (9400-6111B) Logic Diagram (Sheet 3 of 3)



REF DESIGNATION LAST USED	REF DESIGNATION NOT USED
R1	
C36	

TYPE	POSITION	UNUSED ELEMENTS	+5V (PIN)	GND (PIN)
74H01	U5,6,7,8,13,14,15,16,19		14	7
74S32	U27		14	7
74S37	U30		14	7
74LS74	U28		14	7
74LS175	U26		16	8
74LS240	U17	U17-2,4	20	10
			20	10
74S280	U21,22,23,24		14	7
74S374	U9,11,18,20		20	10
2905	U33,34,35,36		24	6,18
74LS244	U12,54,1012,25,29	U25-2,1129-1-1,-2,-3,1-4	20	10



NOTES: UNLESS OTHERWISE SPECIFIED;
1. ALL RESISTORS ARE IN OHMS, 1/4W, 5%.
2. ALL CAPACITORS ARE IN MICROFARADS.
3. THIS LOGIC REPRESENTS ASSY 9400-6103 AT DATE CODE 8839.

Figure 11-27. Data Board (9400-6103B) Logic Diagram (Sheet 1 of 2)

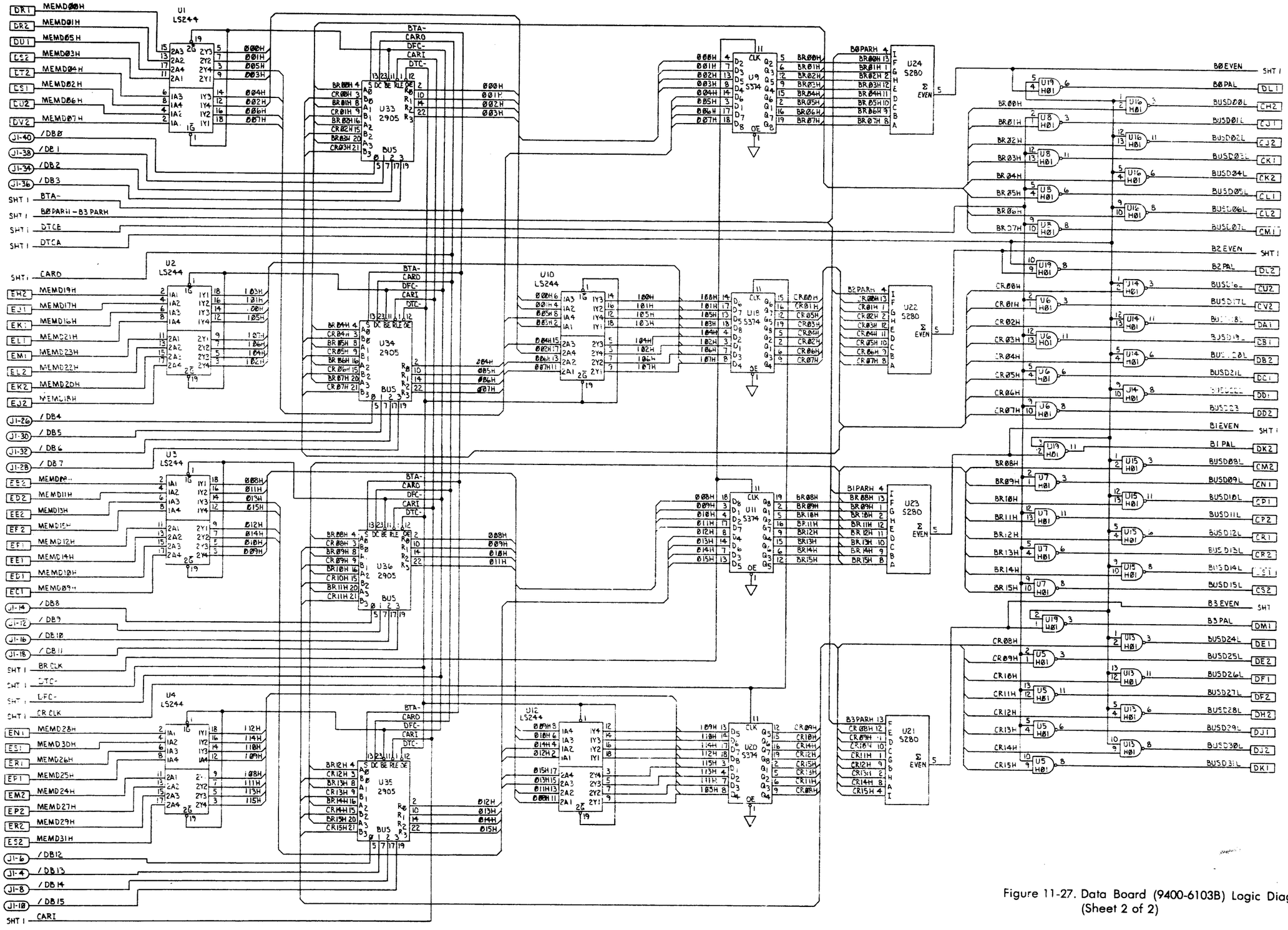
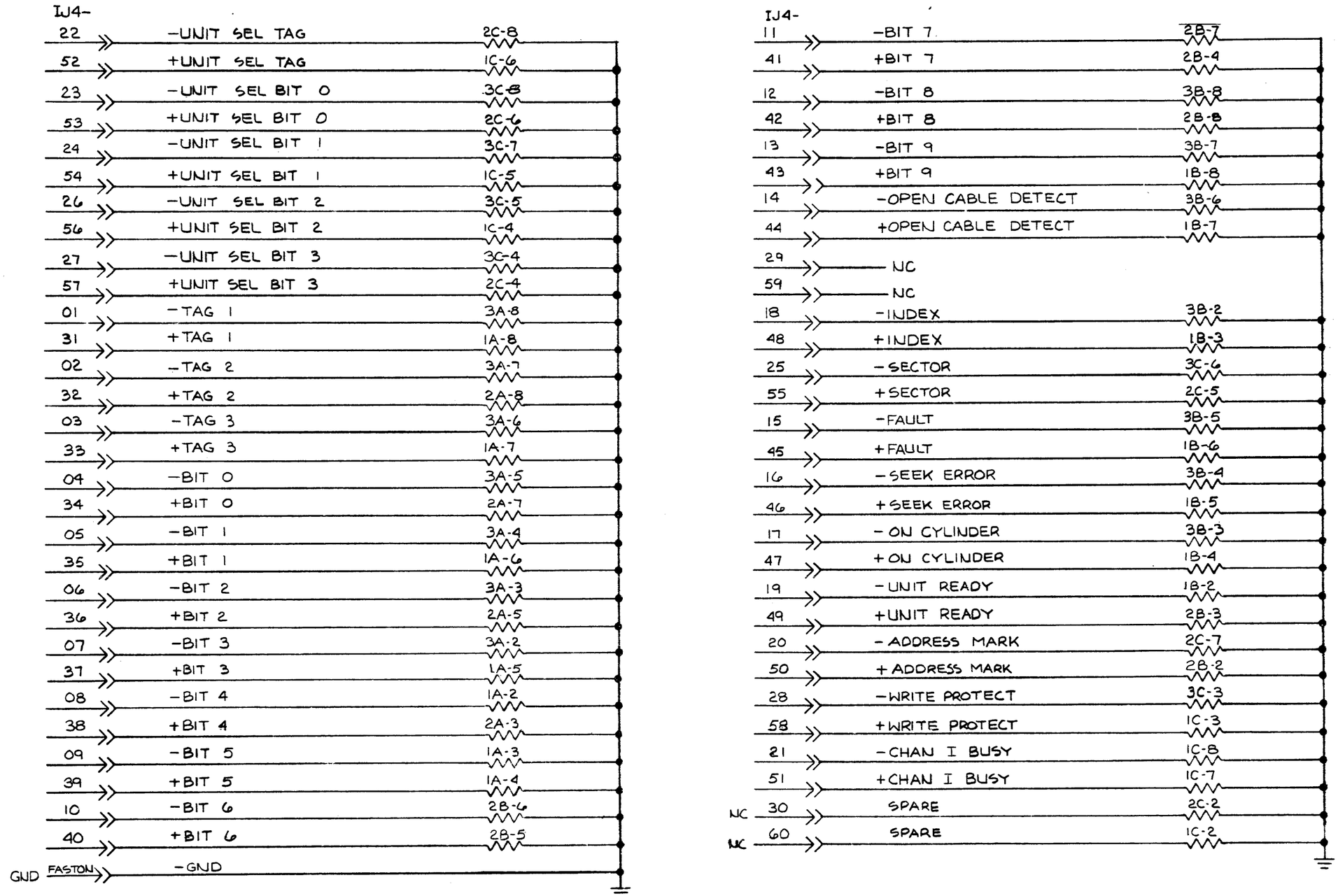
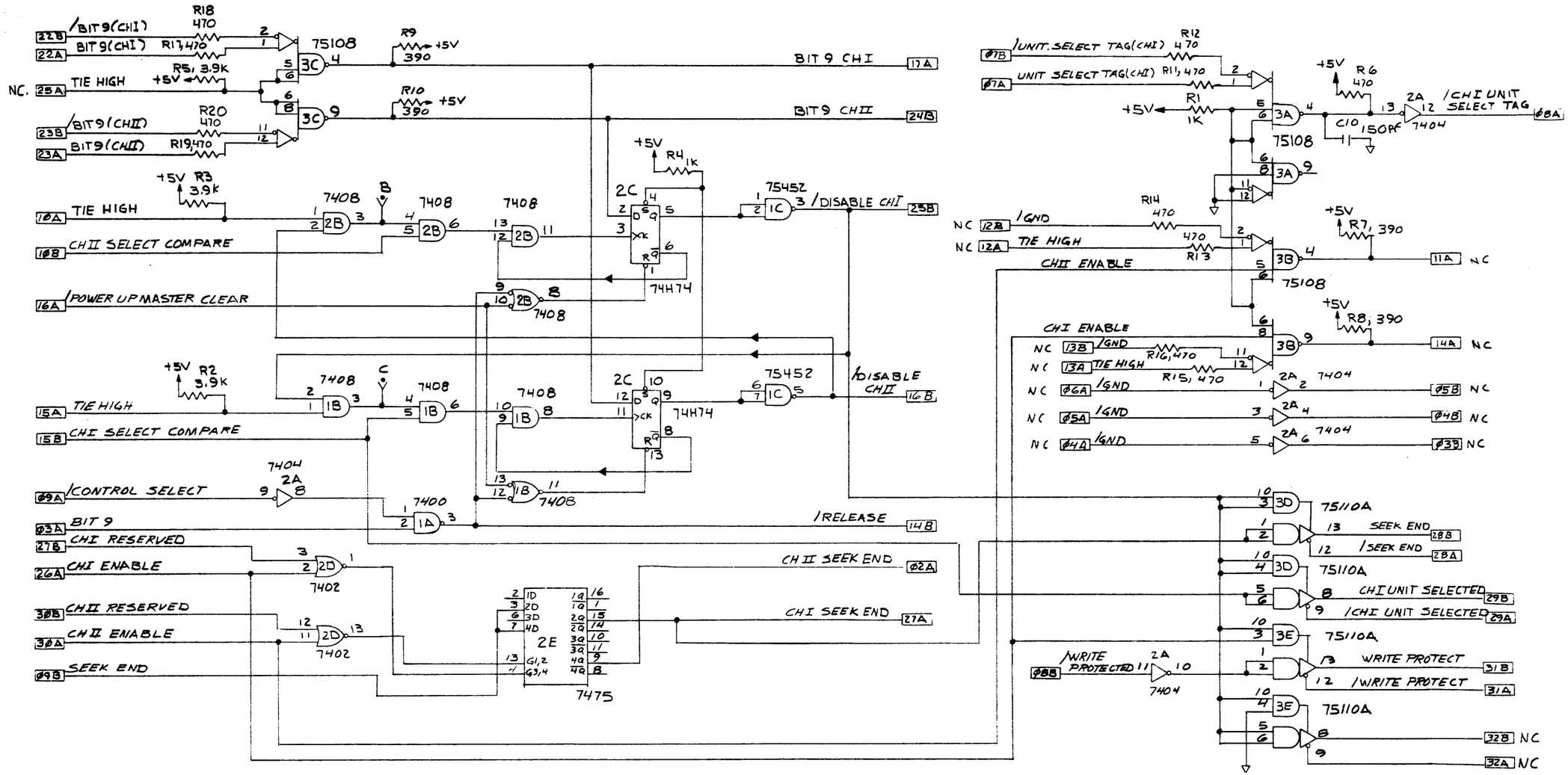


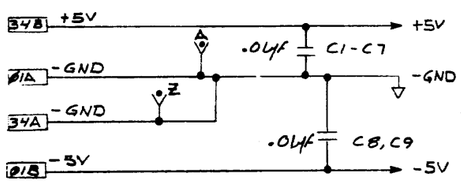
Figure 11-27. Data Board (9400-6103B) Logic Diagram (Sheet 2 of 2)



NOTE : 1. ALL RESISTORS ARE 56Ω RES. PACKS WITH PIN # 1 TO GND.
2. THIS SCHEMATIC REPRESENTS ASSY 9400-6001 AT DATE CODE B019.

Figure 11-28. CDC Drive Terminator Board (9400-6001A) Schematic Diagram (Sheet 1 of 1)





TYPE	POSITION	UNUSED ELEMENTS	+5V	GND	-5V
7400	1A	1A-2,3,4	14	7	
7402	2D	2D-2,3	14	7	
7404	2A		14	7	
7408	1B, 2B		14	7	
74H74	2C		14	7	
7475	2E		5	12	
75108	3C, 3B, 3A		14	7	13
75110A	3E, 3D		14	7	11
75452	1C		8	4	

REFERENCE DESIGNATOR LAST USED	REFERENCE DESIGNATOR NOT USED
C10	1D, 1E
R20	

NOTES: UNLESS OTHERWISE SPECIFIED:
1. ALL RESISTORS ARE IN OHMS, 1/4W, ± 5%.
2. ALL CAPACITORS ARE IN MICROFARADS
3. THIS SCHEMATIC REPRESENTS ASSY 9400-6003 AT DATE CODE A007.

Figure 11-29. Dual Channel (SMV) Interrupts PCB Assembly (9400-6003A) Logic Diagram (Sheet 1 of 1)

TYPE	POSITION	UNUSED ELEMENTS	+5V	GND
74LS00	2S,4F,6F,9R,11R,8S	8S-3,8,11	14	7
7400	7E,9E		14	7
74LS02	5B,2N,8L,9L	2N-1,4	14	7
7404	1N		14	7
74LS04	10R,6M,11M,7H	6M-4,12; 7H-2;	14	7
		10R-10,12; 11M-10,8,6		
74S04	4S		14	7
74LS08	1S,3S,10S,11N,8M,9M,10M,	1S-11	14	7
	7L,4E,6E			
74S08	8E	8E-3,8	14	7
74LS10	10L,4L		14	7
74LS11	7R		14	7
74S11	7F	7F-8	14	7
7414	10D,11D,10E		14	7
74LS20	5S,4B	4B-6	14	7
74LS21	3C		14	7
74LS27	11J	11J-8	14	7
7428	4M	4M-13	14	7
74LS32	5M,6R	6R-8,11	14	7
74S38	2D		14	7
74LS51	5R,7M		14	7
74LS74	7S,9S,1R,2R,3R,4R,8R,		14	7
	7K,11K,7J	7K-9		
74LS85	2B,3B		16	8
74LS123	3N	3N-13	16	8
74LS138	4D,5E		16	8
74LS151	8K,9K,10K,5A		16	8
74LS163	5N,6N		16	8
74LS175	7N,8N,9N,10N,8H		16	8
74LS193	5F,4H,4J,4K,3M		16	8
74LS195	4N		16	8
74S225	10F,11F,10H,11H		20	10
74LS241	4A		20	10
74LS253	2F,3F,1M,2M,3H,3J,3K,3L		16	8
74LS257	1H,2H,1L,2L,6D,7D,8D,8F,		16	8
	9F			
74LS259	8J,9J,10J		16	8
74LS374	9D		20	10
74S471	5D,9H		20	10
2905	8A,10A,8B,10B		24	18
75138	5H,6H,5L,6L		16	8
82S100	8C,10C,11C		28	14
8837	1A,1D		16	8
8838	1C,2C,2E,3E,1J,2J,5J,6J,		16	8
	1K,2K,5K,6K,3D			
93L14	4C,5C		16	8
93L422	6A,7A,6B,7B		22	19
96101	1B,1E		14	7
RP 3K	RP1,2,8	RP8-6,7,8	1	—
RP 180/390	RP 3,4,5,6,7	RP6-6,7,8,9	10	1

SWITCH SETTING INFORMATION

CSR ADDRESS SWITCH - OFF = 1 (LOCATION 2A)

UBA BIT	13	12	11	10	9	8	7	6
SW # 1	(1)	2	3	4	5	6	7	8
776700	(NC)	OFF	OFF	OFF	ON	OFF	OFF	OFF
776300	(NC)	OFF	OFF	OFF	ON	ON	OFF	OFF

INTERRUPT VECTOR SWITCH - OFF = 1 (LOCATION 3A)

MDB BIT	13	12	11	10	9	8	7	6
SW # 2	(1)	2	3	4	5	6	7	8
254	(NC)	OFF	ON	OFF	ON	OFF	OFF	ON
150	(NC)	ON	OFF	OFF	ON	OFF	ON	ON

THIS BOARD HAS A VARIABLE THROTTLE COUNT TO AVOID DATA LATES. IT MONITORS BUS USAGE AND WILL TRANSFER THE AMOUNT OF WORDS SET BY THE THROTTLE COUNT SWITCH OR LESS.

THROTTLE COUNT SWITCH (LOCATION 6S)

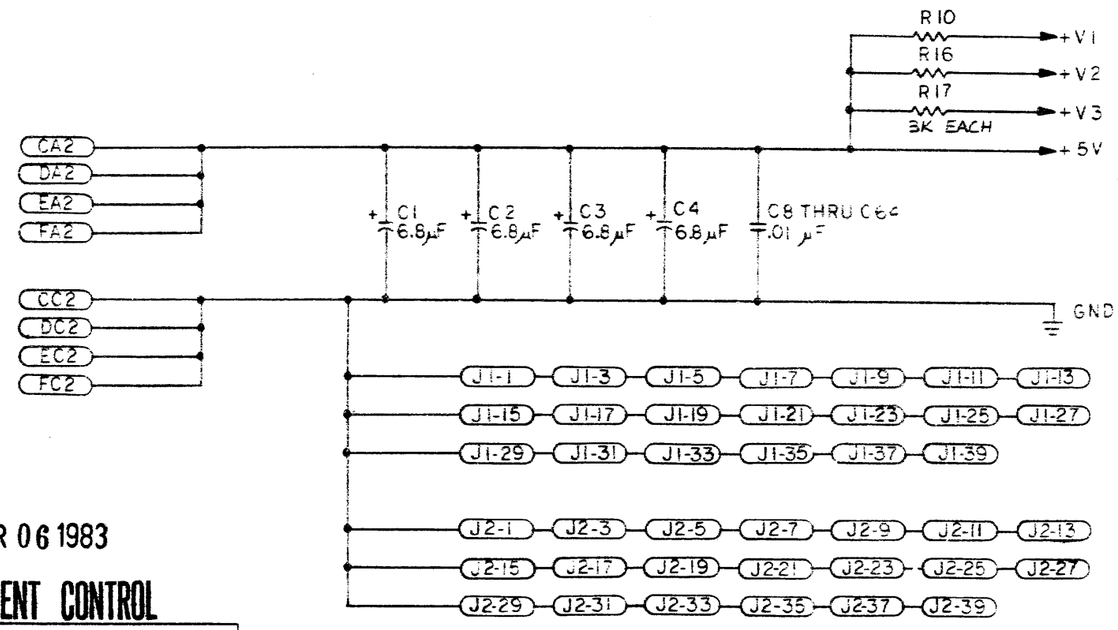
SW # 3	1	2	3	4
COUNT VALUE	1	2	4	8

JUMPER INFORMATION

1. FOR RPØX W4 IS IN POSITION 1.
   FOR RMØX W4 IS IN POSITION 2.
2. FOR MULTIPLE DRIVE TYPE AND ERROR REGISTER OPTION W5 IN POSITION 2 REQUIRES RMØ3 VERSION 3.Ø OR LATER FIRMWARE. REQUIRES RPØ4 VERSION 3.1 OR LATER FIRMWARE.

NOTES: UNLESS OTHERWISE SPECIFIED;
1. MATERIAL SHALL NOT BE ORDERED FROM THIS DRAWING.
2. ALL CAPACITOR VALUES ARE IN MICROFARADS.
3. ALL RESISTOR VALUES ARE IN OHMS, ± 5%, 1/4 W.
4. THIS SCHEMATIC REPRESENTS ASSEMBLY 9400-6051 AT REVISION LEVEL B AND DATE CODE 237.
5. THE SYMBOL Ⓣ REPRESENTS RESISTOR NETWORK, 180 TO +5V, 390 TO GND.

THIS DRAWING IS FOR REFERENCE ONLY



APR 06 1983

DOCUMENT CONTROL

REFERENCE DESIGNATIONS	
LAST USED	NOT USED
C64	
J2	
R17	
RP8	
SW3	
W7	W2.3

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
ENG/A	ENG. CONTROL		
A	REL PER ECO 1165		
A2	PER ECO 1204		
B	REV. PER E.O. 1307		

DRWG NO 9400-6051-3 | SH 1 | REV B

PARTS LIST

System Industries SUNNYVALE CALIFORNIA

SCHEMATIC DIAGRAM
UNIBUS CPA II

SIZE D | FSCM NO | DRWG NO 9400-6051-3 | REV B

SCALE — | SHEET 1 OF 11

DO NOT SCALE DRAWING

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	SEE SHEET 1		

SHT 4 BADR 17
SHT 4 BADR 16
SHT 10 /MSYN
SHT 4 BADR 1-15

BADR 15
BADR 14
ED 1 /UBA 17
EE 2 /UBA 16
ED 2 /UBA 15
EK 1 /UBA 14
2E 8838 — A B — 9 7
13 12 11 14 — B4 B1 B2 B3 — 04 01 02 03 — 6 13 10 3 — UBA 17 UBA 16 UBA 15 UBA 14

BADR 13
BADR 12
BADR 11
BADR 10
EK 2 /UBA 13
EC 1 /UBA 12
EL 1 /UBA 11
EP 1 /UBA 10
3D 8838 — A B — 9 7
13 14 11 12 — B2 B1 B4 B3 — 02 01 04 03 — 10 13 6 3 — UBA 13 UBA 12 UBA 11 UBA 10

BADR 9
BADR 8
BADR 7
BADR 6
ER 1 /UBA 9
EN 2 /UBA 8
EP 2 /UBA 7
EU 1 /UBA 6
2C 8838 — A B — 9 7
13 12 14 11 — B1 B4 B2 B3 — 01 04 02 03 — 13 6 10 3 — UBA 9 UBA 8 UBA 7 UBA 6

BADR 5
BADR 4
BADR 3
BADR 2
EV 1 /UBA 5
EU 2 /UBA 4
EV 2 /UBA 3
EF 1 /UBA 2
1C 8838 — A B — 9 7
12 11 14 13 — B3 B4 B1 B2 — 03 04 01 01 — 3 6 13 10 — UBA 5 UBA 4 UBA 3 UBA 2

BADR 1
/DB ENAB
EH 1 /UBA 1
EH 2 /UBA 0
EF 2 /UBC 1
EJ 2 /UBC 0
3E 8838 — A B — 9 7
12 11 14 13 — B3 B4 B1 B2 — 03 04 01 02 — 3 6 13 10 — UBA 1

SHT 10 /ADDR ENAB
SHT 6 USEL 0-2
SHT 4 FAR 0-6
SHT 8 /SVC UB

+5V
RP1 3K 7 PLCS — 1 8 7 6 5 4 3 2
SW1 — 1 2 3 4 5 6 7 8 — 16 15 14 13 12 11 10 9
2A
CSR ADDRESS

UBA 12 13 — A2
UBA 11 12 — A1
UBA 10 15 — A3
UBA 9 10 — A0
14 — B2
11 — B1
1 — B3
9 — B0
3B — A<B A>B — 2 4 — A=B OUT 6 — A=B IN 3
74LS85

UBA 8 13 — A2
UBA 7 12 — A1
UBA 6 15 — A3
UBA 13 10 — A0
14 — B2
11 — B1
1 — B3
9 — B0
+V1
2B — A<B A>B — 2 4 — A=B OUT 6 — A=B IN 3
74LS85
UBA 14

8837 — 11 9 — 1D — 10
MSYN — SHT 7

UBA 17 5
UBA 16 2
UBA 15 4
74LS21 — 3C — 6 — 1
12 9 10 13
74LS21 — 3C — 8
IN — 13 — 12 — 7404
/UB XFER — SHT 8

R8 3K
2
W5
1
+5V

745471 — 5D
UBA 5 5 — E
UBA 4 4 — D
UBA 3 3 — C
UBA 2 2 — B
UBA 1 1 — A
19 H — 18 G — 17 F — 15 16
D8 14 — D7 13 — D6 12 — D5 11 — D4 9 — D3 8 — D2 7 — D1 6

74LS08 — 7L — 1 2 — 3
6M — 1 2 — 74LS04
74LS02 — 8L — 3 2 — 1

74LS257 — 6D
10 — 3B
6 — 2B
13 — 4B
2 — 1A
11 — 3A
5 — 2A
14 — 4A
3 — 1B
1 — 5
15 — G
6
9 — 3Y
7 — 2Y
12 — 4Y
4 — 1Y
USEL 2
USEL 1
USEL 0

74LS257 — 8D
FAR 6 3 — 1A
FAR 5 6 — 2A
FAR 4 10 — 3A
FAR 3 13 — 4A
1B
2B
3B
4B
1 — 5
15 — G
4 — 1Y — RSEL 6
7 — 2Y — RSEL 5
9 — 3Y — RSEL 4
12 — 4Y — RSEL 3

RSEL 0-6 — SHT 4,9
RSEL 0-2 — SHT 5,9
RSEL 3 — SHT 9

74LS257 — 7D
14 — 4A
11 — 3A
2 — 1A
5 — 2A
13 — 4B
10 — 3B
3 — 1B
6 — 2B
1 — 5
15 — G
12 — 4Y — RSEL 2
9 — 3Y — RSEL 1
4 — 1Y — RSEL 0
7 — 2Y
FAR 2
FAR 1
FAR 0

UBA 0 — SHT 9
C1 — SHT 9
C0 — SHT 9

PARTS LIST
System Industries SUNNYVALE CALIFORNIA
LOGIC DIAGRAM
UNIBUS CPA II
SIZE D — PWB NO — DRWG NO 9400-6051-3 — REV B
SCALE — SHEET 2 OF 11
DO NOT SCALE DRAWING

9400-6051-3 | 3 | B

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
B	SEE SHEET 1		

SHT 9 /MXG2
SHT 10 TO

CD2 /UBD 15
CE2 /UBD 14
CF2 /UBD 13
CH2 /UBD 12
SHT 9 /UB READ HI
2K 8838

MDB 15
MDB 14
MDB 13
MDB 12
RFILE 15
RFILE 14
RFILE 13
RFILE 12
UBD 15
UBD 14
UBD 13
UBD 12
74LS257 2L

MDB 11
MDB 10
MDB 9
MDB 8
RFILE 11
RFILE 10
RFILE 9
RFILE 8
UBD 11
UBD 10
UBD 9
UBD 8
74LS257 1L

CH1 /UBD 11
CJ2 /UBD 10
CK2 /UBD 9
CL2 /UBD 8
1K 8838

MDB 7
MDB 6
MDB 5
MDB 4
RFILE 7
RFILE 6
RFILE 5
RFILE 4
UBD 7
UBD 6
UBD 5
UBD 4
74LS257 2H

CM2 /UBD 7
CV2 /UBD 6
CP2 /UBD 5
CN2 /UBD 4
SHT 9 /UB READ LO
2J 8838

MDB 3
MDB 2
MDB 1
MDB 0
RFILE 3
RFILE 2
RFILE 1
RFILE 0
UBD 3
UBD 2
UBD 1
UBD 0
74LS257 1H

CT2 /UBD 3
CU2 /UBD 2
CR2 /UBD 1
CS2 /UBD 0
1J 8838

SHT 9 /MXG4
SHT 11 UPE
SHT 4 RFILE 0-15
SHT 4 BADR 0-15
SHT 9 MXCA
SHT 9 MXCB
SHT 6 SC
SHT 5 ATA
SHT 6 TRE
SHT 11 PGE
SHT 4 BADR17
SHT 4 BADR16
SHT 5 RM03
SHT 11 RDY
SHT 5 DRY
SHT 6 IE
SHT 9 VV
SHT 6 BAI
SHT 5 GO
SHT 6 USEL 0-2

SC
ATA
BADR 15
RFILE 15
TRE
RFILE 14
BADR 14
RFILE 14
3K 74LS253 → MDB 15, MDB 14

RFILE 13
BADR 13
RFILE 12
RFILE 12
BADR 12
RFILE 12
3L 74LS253 → MDB 13, MDB 12

+V2
RFILE 11
BADR 11
TO
RFILE 10
RFILE 10
BADR 10
PGE
1M 74LS253 → MDB 11, MDB 10

BADR 9
RFILE 9
RFILE 8
BADR 8
RFILE 8
2M 74LS253 → MDB 9, MDB 8

RDY
DRY
BADR 7
RFILE 7
IE
VV
BADR 6
RFILE 6
3H 74LS253 → MDB 7, MDB 6

RFILE 5
BADR 5
RFILE 4
BADR 4
3J 74LS253 → MDB 5, MDB 4

RFILE 3
BADR 3
BAI
RFILE 2
BADR 2
USEL 2
3F 74LS253 → MDB 3, MDB 2

RFILE 1
BADR 1
USEL 1
GO
USEL 0
2F 74LS253 → MDB 1, MDB 0

RFILE 0 4
RM 03 5
LS08 6

/UBD 0-15 SHT 6
MDB 6 SHT 9
MDB 7 SHT 9
MDB 12 SHT 9
MDB 14 SHT 8
MDB 5 SHT 11
MDB 0-15 SHT 4,5,6

APPLICATION	DO NOT SCALE DRAWING	System Industries SUNNYVALE CALIFORNIA	
		LOGIC DIAGRAM UNIBUS CPA II	
		SIZE D	DRWG NO 9400-6051-3 REV B
		SCALE	SHEET 3 OF 11

9400-6051-3 | SH 4 | REV B

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	SEE SHEET 1		

SHT 10 /INCR BADR
SHT 8 /UB BAE

SHT 9 /WR B ADR
SHT 11 /CLR + RESET
SHT 2 RSEL Ø-6
SHT 3 MDB Ø-15
SHT 8 / XCVR RLE HI
SHT 8 / XCVR RLE LO
SHT 9 / XCVR OE

SHT 6 CMD RDY
SHT 11 ERR CLR FLAG
SHT 11 ACL

SHT 9 CPA INTR
SHT 11 PSM RST
SHT 11 SYS RST
SHT 11 ECF Ø

SHT 8 / XCVR BE LOW

SHT 9 XCVR SEL
SHT 9 XCVR CP
SHT 8 /XCVR BE HI
SHT 9 /RF HI WR

SHT 8 /LOAD FAR

SHT 9 /RF LO WR

8A, 8B, 10A, 10B: 2905

/MPD 7
/MPD 6
/MPD 5
/MPD 4
/MPD 3
/MPD 2
/MPD 1
/MPD Ø

RP7

7414 8 PLCS

J1-34 /MPD 7
J1-36 /MPD 6
J1-30 /MPD 5
J1-28 /MPD 4
J1-26 /MPD 3
J1-38 /MPD 2
J1-32 /MPD 1
J1-40 /MPD Ø

9D

74LS374

/MP READ
FAR 6
FAR 5
FAR 4
FAR 3
FAR 2
FAR 1
FAR Ø

93L422 (4x)

6B, 7B, 6A, 7A

RFILE 15
RFILE 14
RFILE 13
RFILE 12
RFILE 11
RFILE 10
RFILE 9
RFILE 8
RFILE 7
RFILE 6
RFILE 5
RFILE 4
RFILE 3
RFILE 2
RFILE 1
RFILE Ø

7H 74LSØ4

74LS193 (4x)

5F, 4H, 3M, 4K, 4J

BADR 1
BADR 2
BADR 3
BADR 4
BADR 5
BADR 6
BADR 7
BADR 8
BADR 9
BADR 10
BADR 11
BADR 12
BADR 13
BADR 14
BADR 15
BADR 16
BADR 17

BADR 1-15 SHT 2,3

74LS10 4L
74LS02 2N
74S04 4S

BADR 16 SHT 2,3,6
BADR 17 SHT 2,3,6

RFILE Ø-15 SHT 3
/MP READ SHT 9
FAR Ø-6 SHT 2

PARTS LIST

System Industries SUNNYVALE CALIFORNIA

LOGIC DIAGRAM
UNIBUS CPA II

SIZE D | PROJ NO. | DRWG NO. 9400-6051-3 | REV B

SCALE | SHEET 4 OF 11

APPLICATION | DO NOT SCALE DRAWING

DWG NO 9400-6051-3 SH 5 REV B

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	SEE SHEET 1		

SHT 11 /DCL
SHT 8 /SVC UB
SHT 11 WR RPDS
SHT 9 WP RPCS 1LO

W4	RPØX	RMØX
	POS 1	POS 2

+5V R6 3K W4

9400-8917 B 9H 74S471
MDBØ MDB1 MDB2 MDB3 MDB4 MDB5
CS1 CS2

10M 74LSØ8
7L 74LSØ8
9L 74LSØ2
9R 74LSØØ

74LS259 8J
74LS151 8K
74LS259 9J
74LS151 9K

RSEL 2 RSEL 1 RSEL Ø
PDRY7 PDRY6 PDRY5 PDRY4 PDRY3 PDRY2 PDRY1 PDRYØ
PGO7 PGO6 PGO5 PGO4 PGO3 PGO2 PGO1 PGOØ

GO SHT 3
DRY SHT 3
/DATA XFER CMD SHT 6, 11
SET RDY SHT 11
RESET VV SHT 9
SET VV SHT 9
RMØ3 SHT 3

SHT 3 MDB Ø-15
SHT 2 RSEL Ø-2
SHT 11 /CLR+RESET
SHT 8 SVC UB

MDB 15

74LS138 5E
74LS138 4D
11M 74LSØ4
SHT 9 /WR RPCS 1LO

SHT 9 WR RPAS
MDB7 MDB6 MDB5 MDB4 MDB3 MDB2 MDB1 MDBØ
6F 4F
SG7 SG6 SG5 SG4 SG3 SG2 SG1 SGØ
6E 4E
74LSØØ 8 PLCS
74LSØ8 8 PLCS

93L14 5C
93L14 4C
ATN 7 ATN 6 ATN 5 ATN 4 ATN 3 ATN 2 ATN 1 ATN Ø

74LSØ2 4 PLCS
ATNØ ATN1 ATN2 ATN3 ATN4 ATN5 ATN6 ATN7
74LS2Ø

ATTN SHT 6
ATN Ø-7 SHT 6

74LS151 5A
ATA SHT 3
RSEL Ø RSEL 1 RSEL 2

+5V RP2 3K
3A SW2
INTERRUPT VECTOR

4A 74LS241
MDB 7 MDB 6 MDB 5 MDB 4 MDB 3 MDB 2 MDB 1 MDB Ø

9E 74SØØ 7H 74LS04
IV ENAB SHT 9

SHT 8 INTR MSTR

PARTS LIST

Systems Industries SUNNYVALE CALIFORNIA

LOGIC DIAGRAM
UNIBUS CPA II

SIZE	FSCM NO	DWG NO	REV
D		9400-6051-3	B

SCALE SHEET 5 OF 11

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	SEE SHEET 1		

SHT 3 /UBE Ø-15
SHT 10 /DB ENAB
SHT 10 /UB ENAB

SHT 5 ATN Ø-7

SHT 9 MXCA

SHT 4 BADR 17
SHT 4 BADR 16

SHT 9 WR RPCS 1LO
SHT 11 /CLR +RESET
SHT 9 DUMP FIFO
SHT 9 /MXGB
SHT 3 MDB Ø-15

SHT 11 RDY
SHT 9 WR RPCS 2 1Ø
SHT 9 WRCS1
SHT 8 /INTR MSTR
SHT 8 /ERR CLR
SHT 5 /DATA XFER CMD

SHT 8 SYC 1ØØ
SHT 9 /WR RPCS 1 H1

SHT 5 ATTN

74LS257 9F: ATN 7 → 3A, ATN 6 → 2A, ATN 5 → 1A, ATN4 → 4A; 3B, 2B, 1B, 4B tied; S, G → GND; 3Y → 9 MDB 7, 2Y → 7 MDB 6, 1Y → 4 MDB 5, 4Y → 12 MDB 4

74LS257 8F: ATN3 → 4A, ATN2 → 2A, ATN1 → 3A, ATN Ø → 1A; 4B, 2B, 3B, 1B tied; S, G → GND; 4Y → 12 MDB3, 2Y → 7 MDB 2, 3Y → 9 MDB 1, 1Y → 4 MDB Ø

74LS225 10F: MDB 5 → DI1, MDB 4 → DI2, MDB 3 → DI3, MDB 2 → DI4, MDB 1 → DI5, MDB Ø → CKA; CKB ØR → GND; DO1 → MDB 15, DO2 → MDB 14, DO3 → MDB 13, DO4 → MDB 12, DO5 → MDB 11

74LS225 11F: FIFO 8 → DI1, FIFO 7 → DI2, FIFO 6 → DI3, FIFO 5 → DI4, FIFO 4 → DI5; CKA → GND; CKB ØR → GND; DO1 → MDB 15, DO2 → MDB 14, DO3 → MDB 13, DO4 → MDB 12, DO5 → MDB 11

C7 1000 PF

74LS225 10H: USEL 2 → DI1, USEL 1 → DI2, USEL Ø → DI3; DI4, DI5 → GND; CKA → GND; CKB ØR → GND; DO1 → MDB 1Ø, DO2 → MDB 9, DO3 → MDB 8

74LS225 11H: FIFO 3 → DI1, FIFO 2 → DI2, FIFO 1 → DI3; DI4, DI5 → GND; CKA → GND; CKB ØR → GND; DO1 → MDB 1Ø, DO2 → MDB 9, DO3 → MDB 8

74LS08 10M

74LS175 8H: MDB 2 → 1D, MDB 1 → 2D, MDB Ø → 3D, 4D → GND; CK → SHT 11 RDY; CL → +5V; 1Q → 2 USEL 2, 2Q → 7 USEL 1, 3Q → 1Ø USEL Ø

74LS74 7K: MDB 3 → D; S → +V2; CK → 74LS08 8M; R → +V2; Q → 74LS08 7L

74LS74 7J: MDB 6 2 → D; S → +V2; CK → 74LS08 8M; R → +V2; Q → 74LS08 8M

74LS74 7J: MDB 14 12 → D; S → +V2; CK → 74LS08 8M; R → +V2; Q → 74LS32 5M

74LS08 7L: SHT 11 RDY, SHT 9 WR RPCS 2 1Ø → SHT 9 WRCS1

74LS08 8M: SHT 9 WRCS1, SHT 8 /INTR MSTR → SHT 8 /ERR CLR

74LS08 8M: SHT 8 /ERR CLR, SHT 5 /DATA XFER CMD → SHT 9 /WR RPCS 1 H1

74LS08 8M: 74LS74 7K Q, 74LS74 7J Q → 74LS32 5M

74LS32 5M: → SHT 5 ATTN

7428 4M: SHT 8 SYC 1ØØ, SHT 9 /WR RPCS 1 H1 → SHT 5 ATTN

+5V → RP3 R180, R390, R180, R390

8838 5K: /UBD 15 → B2, /UBD 14 → B4, /UBD 13 → B1, /UBD 12 → B3; 02 04 01 03 → 10 6 13 3

75138 5L: 3D 2D 4D 1D → 11 5 13 4; 3R → 3B → /DB 15 → J2-10; 2R → 2B → /DB 14 → J2-8; 4R → 4B → /DB 13 → J2-4; 1R → 1B → /DB 12 → J2-6

8838 6K: /UBD 11 → B2, /UBD 10 → B4, /UBD 9 → B1, /UBD 8 → B3; 02 04 01 03 → 10 6 13 3

75138 6L: 3D 2D 4D 1D → 11 5 13 4; 3R → 3B → /DB 11 → J2-18; 2R → 2B → /DB 10 → J2-16; 4R → 4B → /DB 9 → J2-12; 1R → 1B → /DB 8 → J2-14

RP3: 9 → /DB 11 → J2-18; 8 → /DB 10 → J2-16; 5 → /DB 9 → J2-12; 4 → /DB 8 → J2-14

8838 5J: /UBD 7 → B2, /UBD 6 → B4, /UBD 5 → B1, /UBD 4 → B3; 02 04 01 03 → 10 6 13 3

75138 5H: 3D 2D 4D 1D → 11 5 13 4; 3R → 3B → /DB 7 → J2-28; 2R → 2B → /DB 6 → J2-32; 4R → 4B → /DB 5 → J2-30; 1R → 1B → /DB 4 → J2-26

RP4: 9 → /DB 7 → J2-28; 8 → /DB 6 → J2-32; 4 → /DB 5 → J2-30; 5 → /DB 4 → J2-26

8838 6J: /UBD 3 → B2, /UBD 2 → B4, /UBD 1 → B1, /UBD Ø → B3; 02 04 01 03 → 10 6 13 3

75138 6H: 3D 2D 4D 1D → 11 5 13 4; 3R → 3B → /DB 3 → J2-36; 2R → 2B → /DB 2 → J2-34; 4R → 4B → /DB 1 → J2-38; 1R → 1B → /DB Ø → J2-40

RP4: 7 → /DB 3 → J2-36; 6 → /DB 2 → J2-34; 3 → /DB 1 → J2-38; 2 → /DB Ø → J2-40

CMD RDY → SHT 4
USEL-Ø-2 → SHT 2,3
IE → SHT 3,9
TRE → SHT 3
SC → SHT 3,9
/TRE RESET → SHT 10, 11
BAI → SHT 3
/BAI → SHT 10

System Industries	SUNNYVALE, CALIFORNIA
LOGIC DIAGRAM UNIBUS CPA II	
SIZE D	DWG NO 9400-6051-3 REV B
SHEET 6 OF 11	

APPLICATION — DO NOT SCALE DRAWING

DWG NO 9400-6051-3 | SH 7 | REV B

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	SEE SHEET 1		

DS2 BG4 IN
DP2 BG5 IN
DM2 BG6 IN
DK2 BG7 IN

A
B
C
D

BG4 OUT DT2
BG5 OUT DR2
BG6 OUT DN2
BG7 OUT DL2
/BGX SHT 8

+5V R2 180 R3 390 W1 1D 8837
IN 7404
+5V R4 180 1E 96101 W7
W6 1E 96101
/BR4 DH2
/BR5 DF2
/BR6 DE2
/BR7 DD2

SHT 9 CPA INTR
SHT 8 /INTR MSTR
5 4 9M 6 74LS08

74LS175 9N
74LS08 9R 74LS00 1B 96101 /SACK FT2

SHT 8 INTR MSTR
SHT 8 SVC UB
7M 74LS51 11N 74LS08
9L 74LS02 11R 74LS00

INTR SACK SHT 8
/NPG IN SHT 10

SHT 8 /MCK
SHT 8 /RESET

+5V R13 180 R14 390 CAI NPG IN 1D 8837

RP8, 3K
+5V 5W3 6S
+V3 10F ENAT ENAP 74LS163 6N
5 4 3 2 1 6
A QA B QB C QC D QD CK LD CO CL +V3
11J 74LS27 /EOS SHT 10
9 10 5M 74LS32 NPR SACK SHT 10

IN 7404
SHT 10 NP MSTR
7M 74LS51 11N 74LS08
9L 74LS02 11R 74LS00
74LS175 10N
10K 74LS08 10M 74LS08 1E 96101
+5V R15 180

RP6 +5V 180 390 10D 7414 J2-20 /DATA REQ
+V3 8837 1A 8R 74LS74 6M 74LS04
DATA REQ SHT 10

RP5 +5V 180 390 10D 7414 J1-14 /DB LOCK
74LS08 10S 3S 74LS08 10L 74LS10 2N 74LS02 1B 96101
NPG OUT CB1
/NPR FJ1

SHT 11 /DMA RESET
SHT 10 /NP MSTR
SHT 8 LBBSY
SHT 2 MSYN
SHT 10 LMSYN
/TRANSFER COMPLETE
J2-24

LBBSY • (/UBERR • NPRSACK • [DATAREQ • (/DMA RESET • /DB LOCK)])

10D 7414

+5V 180 390 RP6
SHT 10 /UB ERR

PARTS LIST
System Industries SUNNYVALE CALIFORNIA
LOGIC DIAGRAM
UNIBUS CPA II
SIZE D | FSCM NO | 9400-6051-3 | REV B
SCALE | SHEET 7 OF 11
APPLICATION | DO NOT SCALE DRAWING

9400-6051-3 | SH 8 | REV B

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL
B	SEE SHEET 1		

DL1 /UB INIT → 8837 1D

/MP VM/A (JI-6) /MP RD (JI-2) /MP Ø2 (JI-12) /MP FAR SEL (JI-10) /MP FDRH SEL (JI-4) /MP FDRL SEL (JI-8) — RP5 — 10E 7414 — 7H 74LS04 — 74S08 8E — 74S11 7F — 74S00 7E, 9E

/XCVR BE HI — SHT 4
/XCVR BE LO — SHT 4
/LOAD FAR — SHT 4
/XCVR RLE HI — SHT 4
/XCVR RLE LO — SHT 4

8837 1A — 1N 7404

/UB B BSY — FD1
/B BSY — SHT 10
/INTR MSTR — SHT 6,7
INTR MSTR — SHT 5,7
/INTR — FM1

SHT 7 INTR SACK
SHT 7 /BGX
SHT 10 /S SYN
74LS20 5S — 74LS08 9M — 74LS74 9S — 74LS10 4L — 96101 1B

/NP MSTR = /ADDR ENAB + (/S SYN · /BGX · INTR SACK · /UB BSY)
→ LBBSY — SHT 7

SHT 10 /NP MSTR
+V3 — 74LS74 4R — SHT 10 /ADDR ENAB

+V2 — 74LS74 11K

R9 100, C6 — SVC UB — SHT 5,6,7,9

LS163 5N (ENAT ENAP, CK, LD, CL)

SHT 2 /UB XFR
74LS20 8S — 74LS32 5M — 74LS08 11N

74LS00 2S — 7428 4M — 74LS08 3S — 74LS04 4S — 74LS32 5M — 74LS08 11N

74LS175 8N — 74LS00 9R — 1N 7404 — RESET — SHT 11

74S38 2D — /UB S SYN → EJ1 — /UB S SYN — SHT 10

WR STROBE — SHT 9

/RESET — SHT 7,10
ENAB DRVS — SHT 9

6M 74LS04 — 74LS551 5R — 10R LS24

SHT 9 WR RPCS 1 HI
SHT 3 MDB 14

4S 74LS04 — 2S 74LS00 — 4L 74LS10

/SVC UB — SHT 2,5
/UB BAE — SHT 4
/ERR CLR — SHT 6,11
MCK — SHT 10
/MCK — SHT 7

+5V — R11 3K — R12 3K — 74LS00 11R — 74LS04 10R

11S OSC MODULE 12.5 MHZ

SHT 11 /DCL

QTY REQD	PIECE NO	PART OR IDENTIFYING NO	DESCRIPTION	MATERIAL SPECIFICATION
			PARTS LIST	

System Industries SUNNYVALE CALIFORNIA

LOGIC DIAGRAM
UNIBUS CPA II

SIZE D | FSCM NO | DWG NO 9400-6051-3 | REV B

SCALE | SHEET 8 OF 11

APPLICATION | DO NOT SCALE DRAWING

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	SEE SHEET 1		

SHT 3 MDB 6
SHT 3 MDB 7
SHT 6 IE
SHT 11 RDY
SHT 11 /CLR + RESET
SHT 6 SC
SHT 3 MDB 12
SHT 2 UBA0
SHT 8 SVCUB
SHT 2 C0
SHT 8 WR STROBE
SHT 2 C1
SHT 4 /MP READ
SHT 8 ENAB DRV5
SHT 5 IV ENAB
SHT 2 RSEL 0-6

74LS10 10L
74LS08 10S
74LS08 3S
74LS00 2S
74LS74 2R
74LS74 8R
+V3
74LS11 7F
74LS04 7H
CPA INTR SHT 4,7

82S100 11C
82S100 10C
82S100 8C
9400-8911
9400-8909
9400-8910

RSEL 6 RSEL 5 RSEL 4 RSEL 3 RSEL 2 RSEL 1 RSEL 0

F6 F3 F0 F1 F2 F5 F4 F7

/WR B ADR SHT 4
/RF HI WR SHT 4
/RF LO WR SHT 4
/WR RPCS1 HI SHT 6
/WR RPCS1 LO SHT 5
/WR RPCS2 LO SHT 11
WR RPCS1 HI SHT 8
WR RPCS1 LO SHT 5,6
WR RPCS2 LO SHT 6,11

74LS04 4S
74LS04 11M
74LS04 11M

XCVR SEL SHT 4
XCVR CD SHT 4
/XCVR OE SHT 4
MXCA SHT 3,6
MXCB SHT 3
/MXG2 SHT 3
/MXG4 SHT 3
/MXG8 SHT 6
VV SHT 3

/WR RPDS SHT 11
WR RPAS SHT 5
DUMP FIFO SHT 6
/UB READ HI SHT 3
/UB READ LO SHT 3
WR CS1 SHT 6

SHT 11 WR RPDS
SHT 5 RESET VV
SHT 5 SET VV
SHT 2 RSEL 3
74LS51 5R
74LS04 7H
74LS259 10J
74LS151 10K
RSEL 2 RSEL 1 RSEL 0
SHT 2 RSEL 0-2
SHT 11 /DCL

PARTS LIST			
APPLICATION	DO NOT SCALE DRAWING	System Industries SUNNYVALE CALIFORNIA	
		LOGIC DIAGRAM UNIBUS CPA II	
		SIZE D	9400-6051-3 REV B
		SCALE	SHEET 9 OF 11

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	SEE SHEET 1		

J2-22 /DMA OUTPUT

+V3

SHT 7 NPR SACK

SHT 8 /B BSY

SHT 7 /NPG IN

74LS11 (7R)

74LS74 (95)

SHT 7 /EOS

74LS08 (10S)

SHT 7 DATA REQ

SHT 8 /UBSSYN

8837 (1D)

74LS175 (7N)

74LS11 (7R)

74LS32 (6R)

74LS195 (4N)

74LS08 (10S)

SHT 8 /RESET

SHT 8 MCK

SHT 11 /DMA RESET

SHT 6 /TRE RESET

SHT 6 /BAI

C5 2200PF

R7 15K +5V

R5 3K +5V

74123 (3N)

74LS74 (1R)

74LS74 (3R)

LS08 (15)

LS10 (10L)

LS04 (10R)

CC1 IPA 8837 (1A)

CS1 IPB 8837 (1A)

RP6 390 180 +5V

+5V

/S SYN SHT 8

NP MSTR SHT 7

/NP MSTR SHT 7,8

/UB ENAB SHT 6

/DB ENAB SHT 2,6

/ADDR ENAB SHT 2,8

74S04 (4S)

7414 (10D)

7404 (1N)

74S00 (9E)

74S00 (2S)

+V2

74LS74 (11K)

96101 (1E)

EE1

/MSYN SHT 2

LMSYN SHT 7

DATA STROBE SHT 11

RP6 390 180 +5V

74S38 (2D)

/DATA STROBE J2-2

74S00 (9E)

/INCR B ADR SHT 4

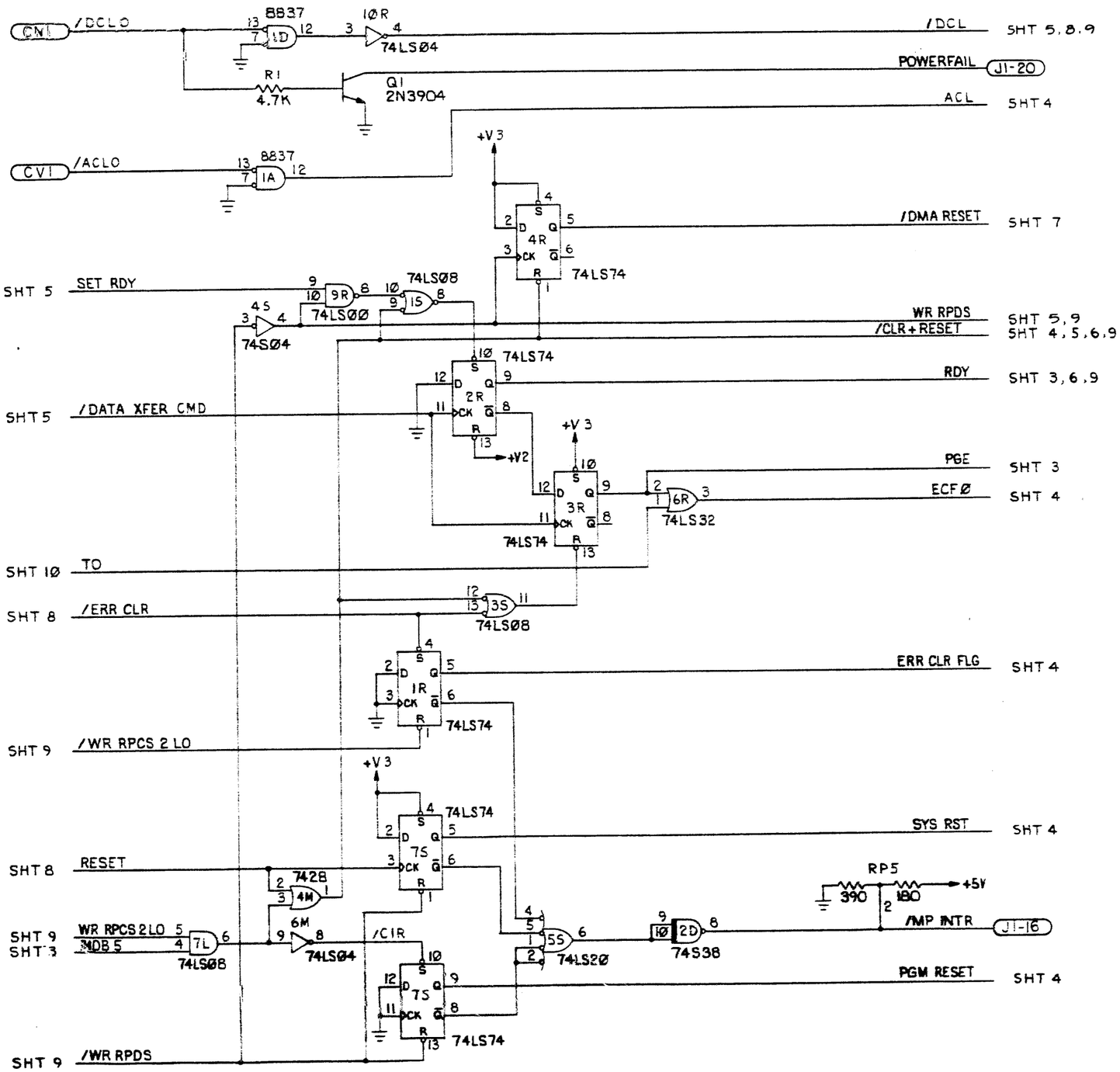
TO SHT 3,11

/UB ERR SHT 7

UPE SHT 3

System Industries	SUNNYVALE CALIFORNIA
LOGIC DIAGRAM UNIBUS CPA II	
SIZE D	9400-6051-3 REV B
SCALE	SHEET 10 OF 11

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
B	SEE SHEET 1		



APPLICATION	DO NOT SCALE DRAWING	System Industries SUNNYVALE CALIFORNIA	
		LOGIC DIAGRAM UNIBUS CPA II	
		SIZE D	DRWG. NO. 9400-6051-3 REV. B
		SCALE	SHEET 11 OF 11