

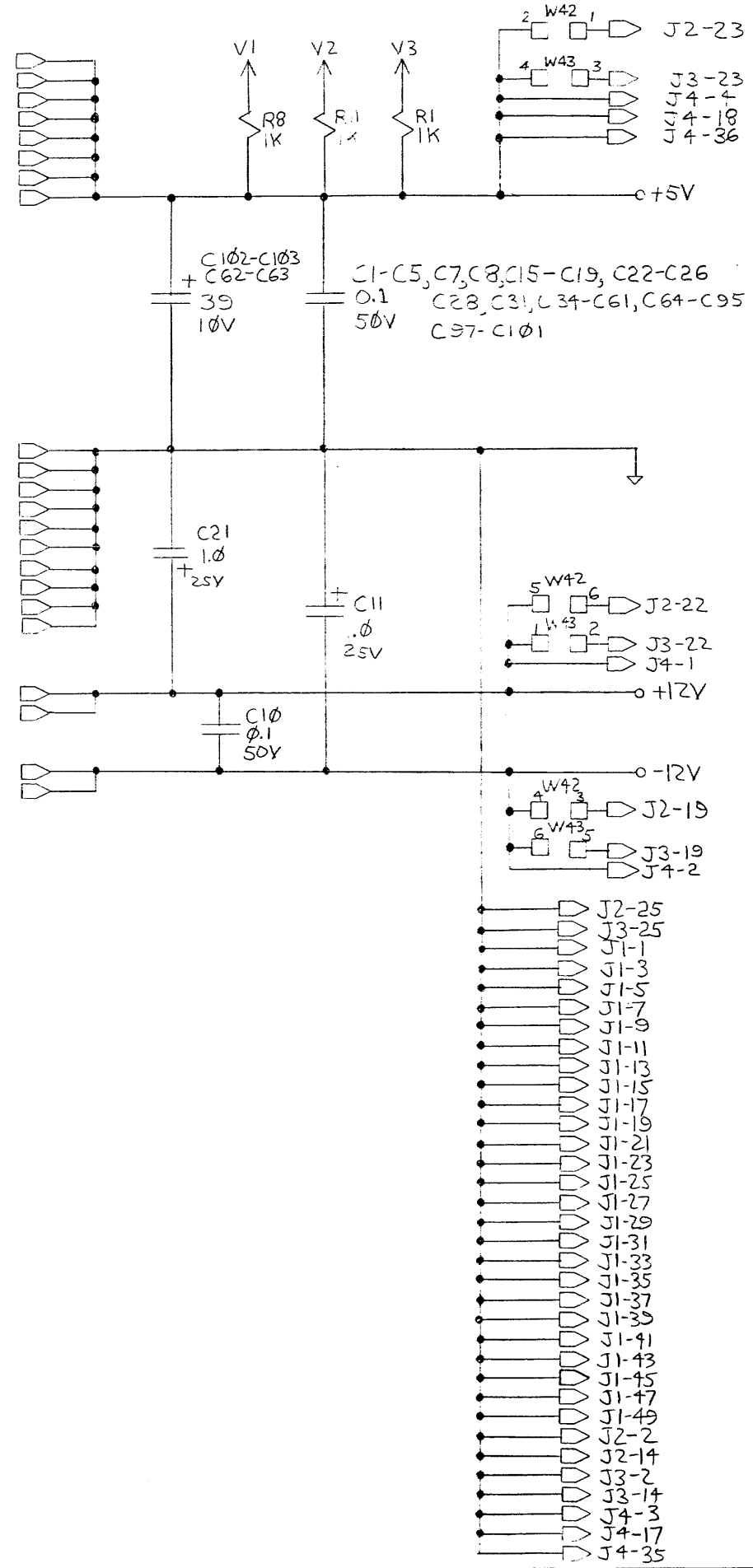
DR	Fox	8/11/83		3/16/84	Pck 3.2418	8
CK		3/16/84	NEXT ASSY	APPVD.	DATE	PR./DCN
AE			REVISIONS			
EE		3/16/84				
FE						
UNLESS OTHERWISE SPECIFIED			NATIONAL SEMICONDUCTOR CORPORATION			
DIMENSIONS ARE IN			2900 SEMICONDUCTOR DRIVE			
FT. IN. CM. MM.			SANTA CLARA, CALIFORNIA 95051			
DIMENSIONS ARE IN			SCHEMATIC,			
FT. IN. CM. MM.			DB 32016			
TOLERANCE			SCALE NONE			
ANG. 2 PL. 3 PL.			SHEET 1 OF 15			
			D 870007735-001 B			

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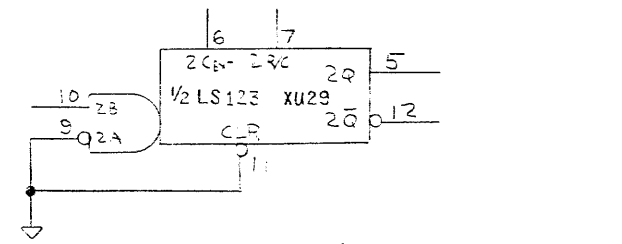
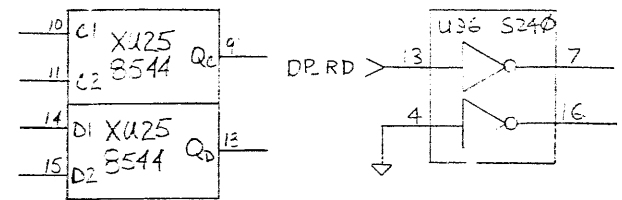
P1-79
P1-80



POWER CONNECTION TABLE

DEVICE	REFERENCE	GND	+5V	+12V	-12V
74F50	XU1, XU2, XU3, XU4, XU5	10	20		
74F7	XU2-XU5	7	14		
MC1488	XU10, XU11	7		14	1
PAL16R4A	XU35, XU45, XU100	10	20		
74S24	U101	10	20		
74F32	U14, U33, U46	7	14		
2712E	XU15-XU18	14	28		
8255A-5	XU19	7	26		
8253-5	XU20	12	24		
NS32202	XU21	20	40		
74LS92	XU22	10	5		
74F11	U23, U24	7	14		
DM8544	XU25	8	16		
74F64	U26	7	14		
74F74	U28, U34, U95	7	14		
74LS123	XU29	8	16		
OSCILLATOR	XU30, U32	7	14		
74LS161	U31	8	16		
74F258	U36, U37, U73	8	16		
8264A	XU38-41, XU54-59				
	XU79-82, XU102-106	16	8		
74LS390	XU42	8	16		
74F138	U43, U61	8	16		
74S246	U44, U78, U96	10	20		
7407	U47	7	14		
74LS259	U49	8	16		
DM81LS95	U50	10	20		
DP8304	U51, U68, XU86, U91, U92	10	20		
NS32001	XU52	12, 13	24		
NS3201	XU53	12	24		
PAL16R8A	XU54	10	20		
74F373	U55, U65, U66, U102	10	20		
8251A	XU16, XU7	4	26		
74LS393	U60	7	14		
74F00	U62	7	14		
74F10	U63	7	14		
NS32016	XU69	24, 25	48		
63S164-1	XU70	10	20		
DM74367	U71, U87	8	16		
74F257	U72, U74, U75	8	16		
NS32002	XU76	24, 25	48		
PAL16LSA	XU77, XU93	10	20		
74LS157	U8, U13	8	16		
74S140	U83	7	14		
74LS85	U84	8	16		
74LS240	U85, U89, U90	10	20		
MC1489	U9, U12	7	14		
DELAY LINE	U94	7	14		
74S573B	XU97	9	18		
74F374	U98, U99	10	20		
74F135	U27	8	16		

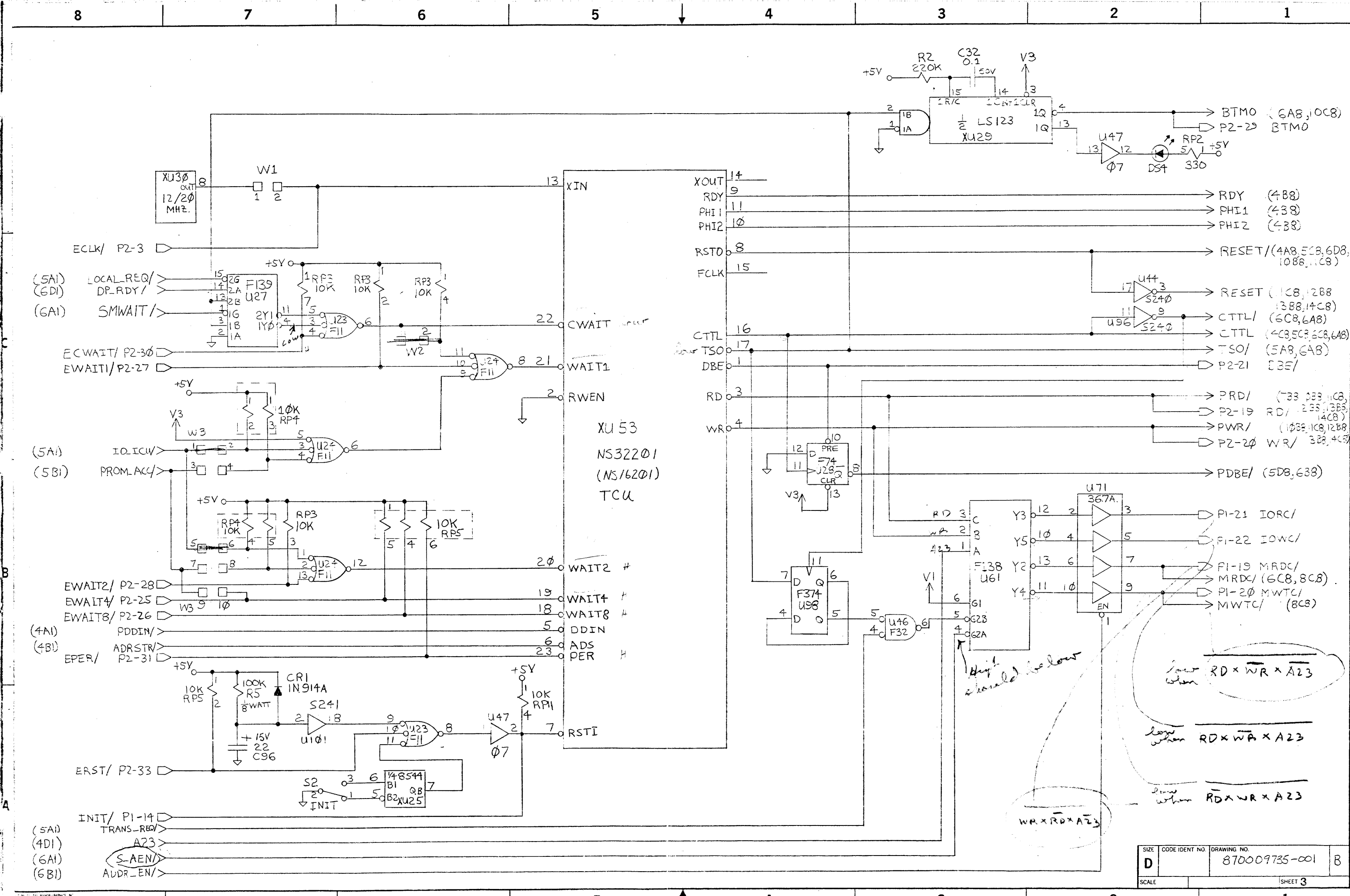
- NOTES: UNLESS OTHERWISE SPECIFIED.
- ALL RESISTOR VALUES ARE IN OHMS, ± 5%, 1/4 WATT.
 - ALL CAPACITOR VALUES ARE IN MICROFARADS, +80%, -20%.
 - ALL INTEGRATED CIRCUITS ARE 74XXX SERIES.
 - WITH NS32016 CPU IN U69, INSTALL U86 & U88, REMOVE U64; WITH NS32202 CPU IN U69, INSTALL U64, REMOVE U86 & U88.
 - U21 & U22 ARE MUTUALLY EXCLUSIVE, ONLY ONE CAN BE INSTALLED.



UNUSED GATES

RESISTOR PACK CHART

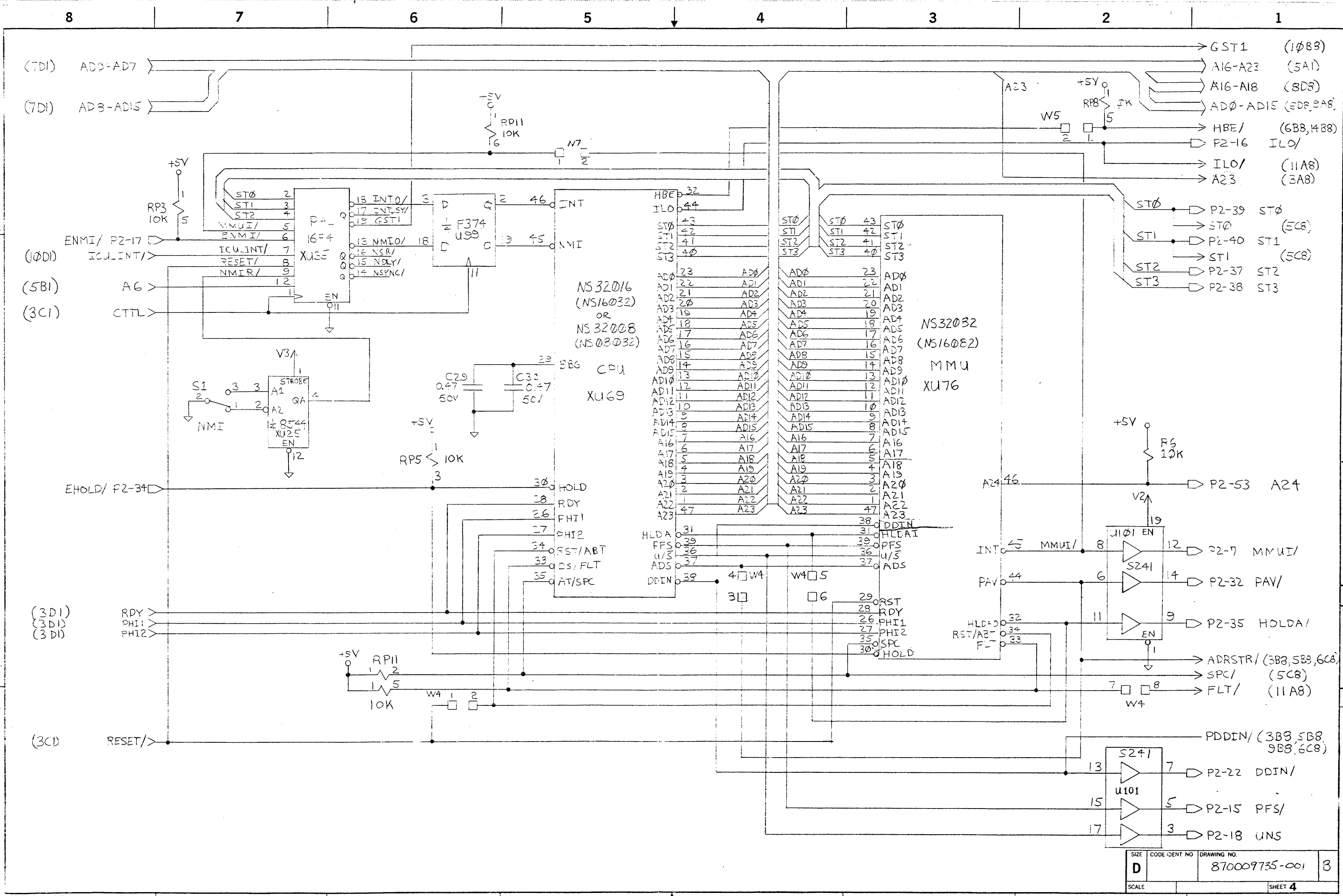
REFERENCE DESIGNATION	RESISTOR VALUE	PACKAGE # PINS/TYPE	UNUSED PIN NUMBERS
RP4,5,9,11	10K	6 / SIP	RP4-6, RP11-3
RP10	1K	6 / SIP	RP10-2,4,5
RP2	330	6 / SIP	RP2-3
RP3,7,8	10K	8 / SIP	RP8-7
RP12	47	16 / DIP	
RP6	10K	10 / SIP	RP6-10
RP1	4.7K	10 / SIP	



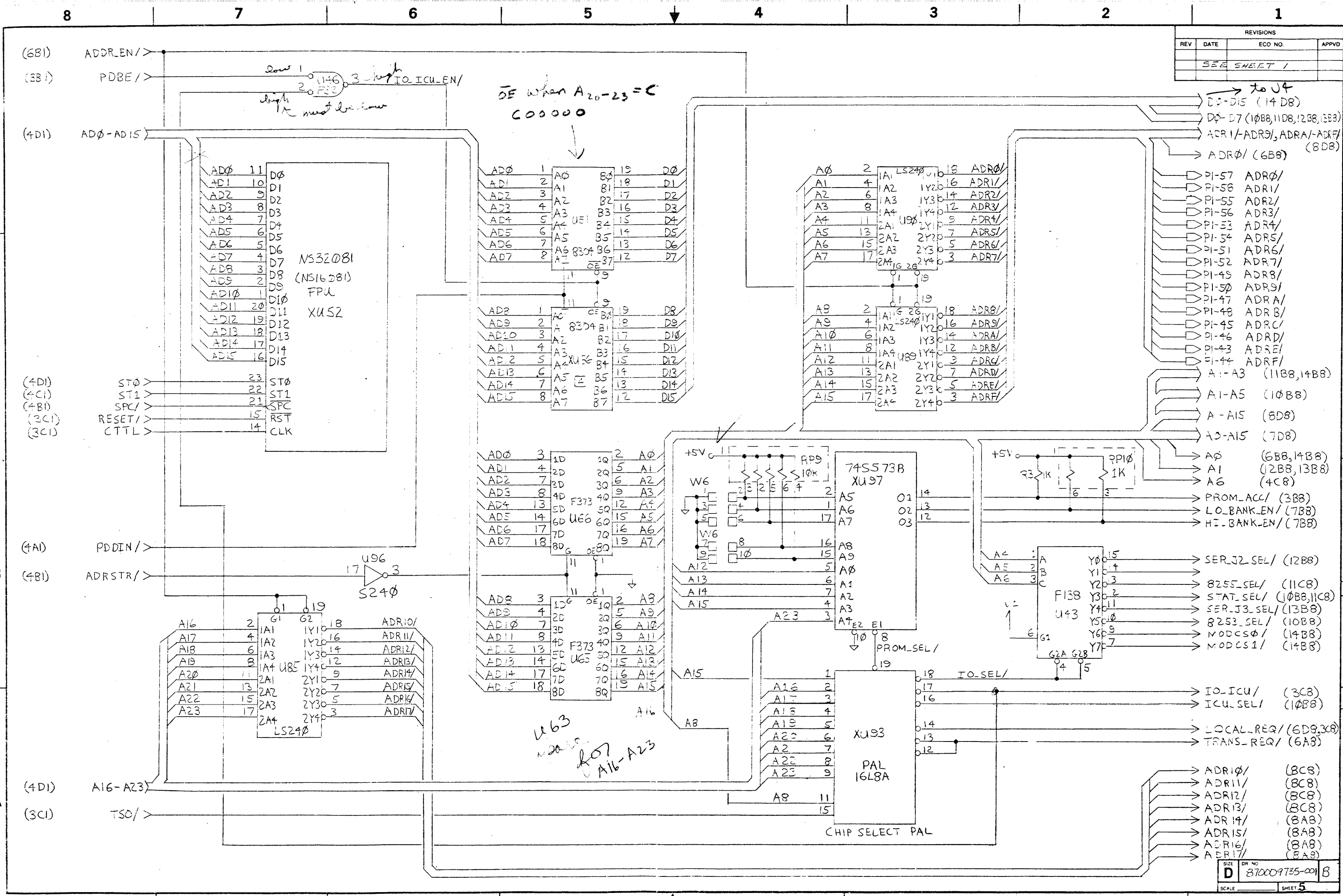
(5A) LOCAL_REQ/
 (6D) DR_RDY/
 (6A) SMWAIT/
 ECLK/ P2-3
 ECWAIT/ P2-30
 EWAIT1/ P2-27
 (5A) IO_ICW/
 (5B) PROM_ACQ/
 (4A) PDDIN/
 (4B) ADRSTR/
 EPER/ P2-31
 (5A) TRANS_REQ/
 (4D) A23
 (6A) S-AEN/
 (6B) ADDR_EN/

SIZE	CODE IDENT NO.	DRAWING NO.
D		870009735-001
SCALE		SHEET 3

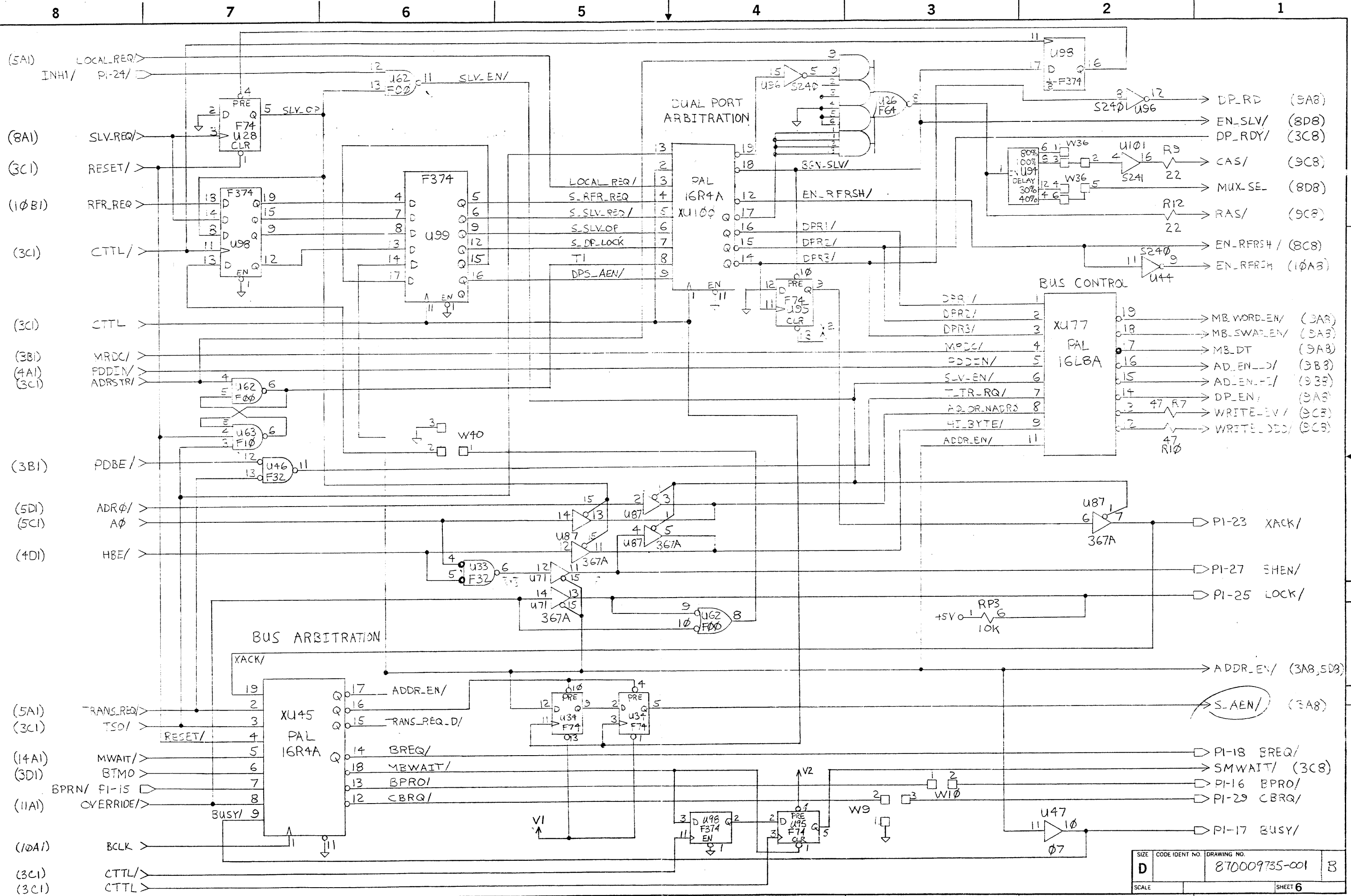
High should be low
 low when $\overline{RD} \times \overline{WR} \times A23$
 low when $\overline{RD} \times \overline{WA} \times A23$
 low when $\overline{RD} \times \overline{WR} \times A23$
 $\overline{WR} \times \overline{RD} \times A23$



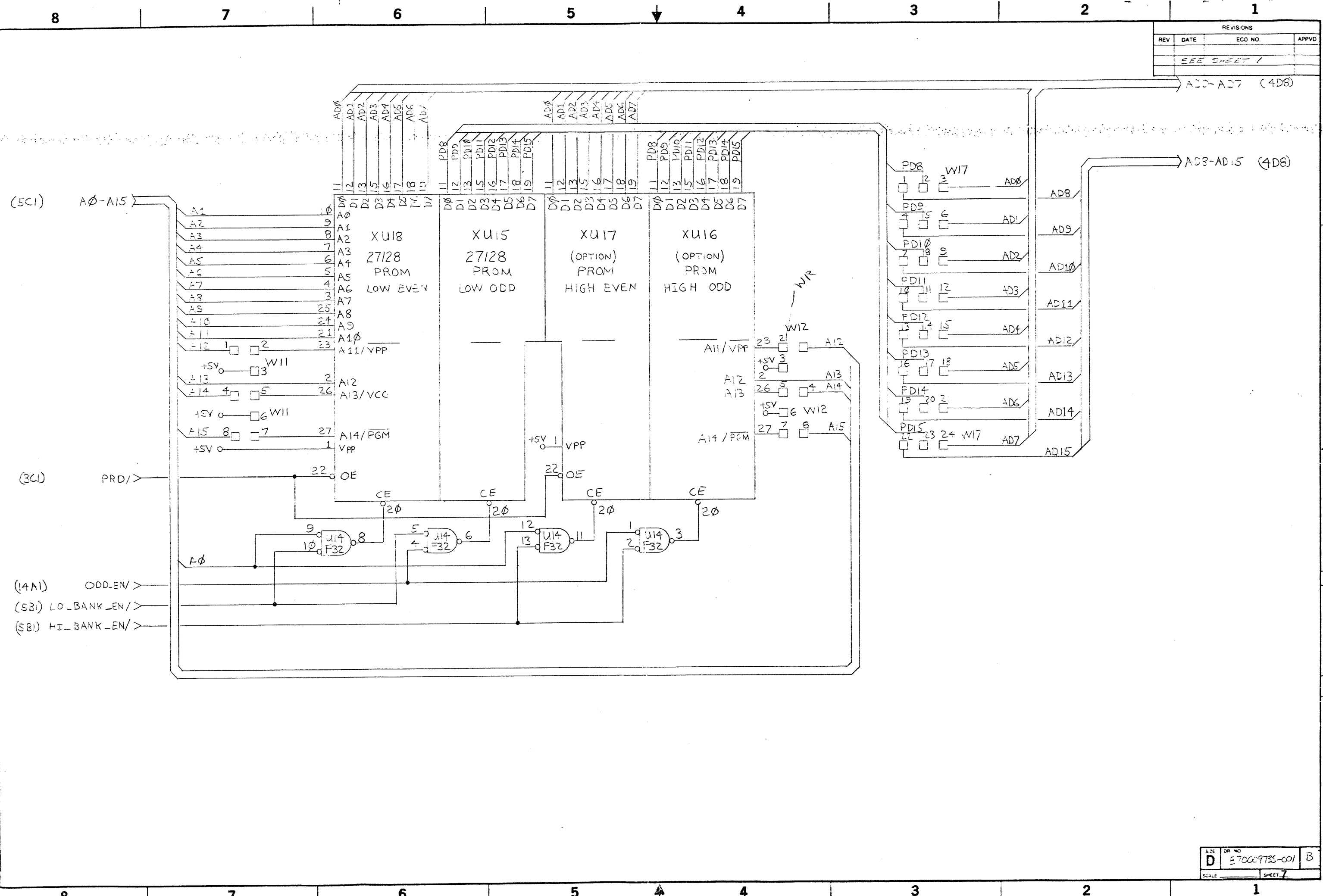
REVISIONS			
REV	DATE	ECO NO.	APPVD
SEE SHEET 1			



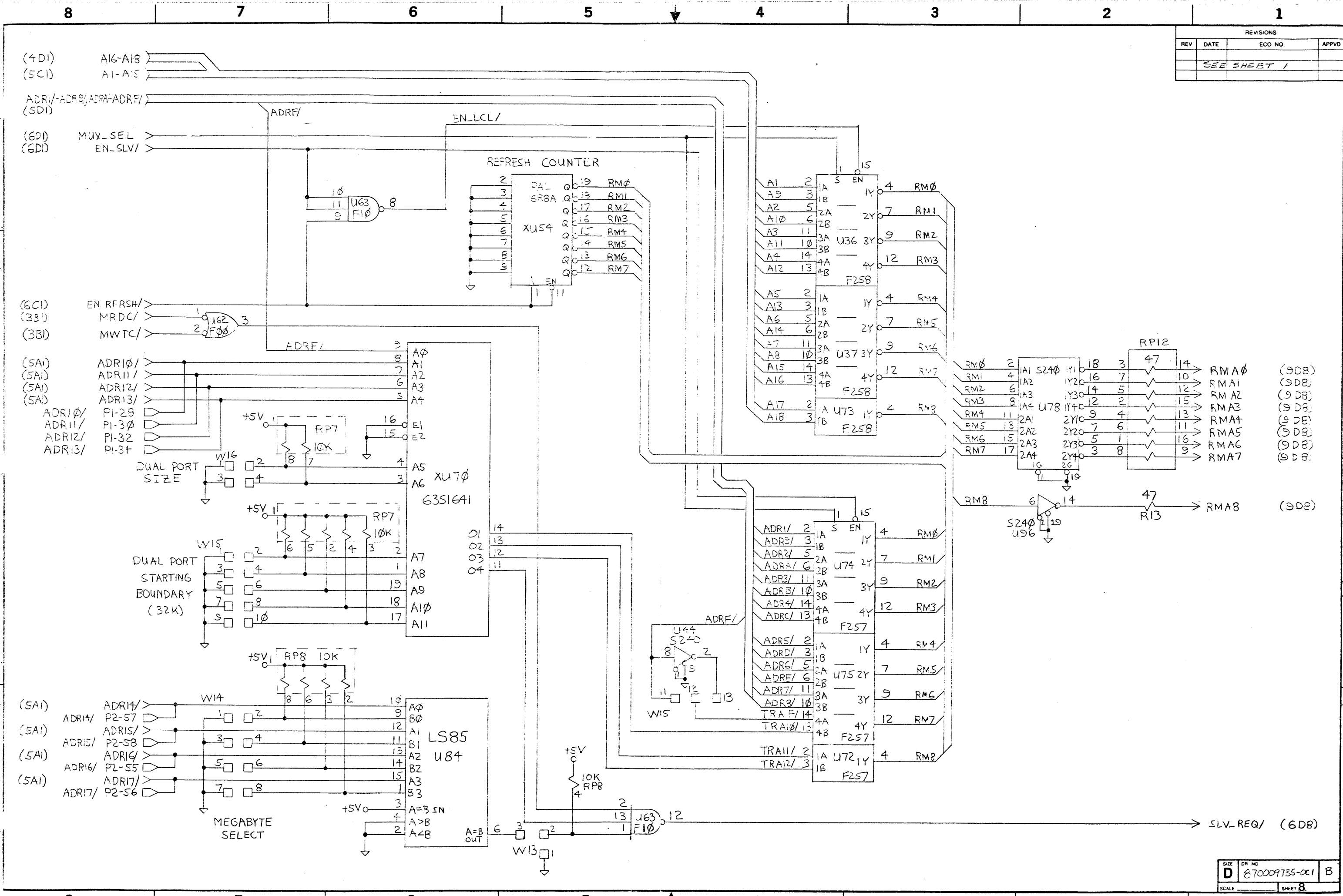
- to J4
- D0-D15 (14DB)
- D0-D7 (10B8, 11DB, 12B8, 13B8)
- ACR1-ADR9, ADRA-ADR7 (8DB)
- ADR0/ (6B8)
- PI-57 ADR0/
- PI-58 ADR1/
- PI-55 ADR2/
- PI-56 ADR3/
- PI-53 ADR4/
- PI-54 ADR5/
- PI-51 ADR6/
- PI-52 ADR7/
- PI-49 ADR8/
- PI-50 ADR9/
- PI-47 ADRA/
- PI-48 ADRB/
- PI-45 ADRC/
- PI-46 ADRD/
- PI-43 ADR E/
- PI-44 ADRF/
- A1-A3 (11B8, 14B8)
- A1-A5 (10B8)
- A-A15 (8DB)
- A3-A15 (7DB)
- A0 (6B8, 14B8)
- A1 (2B8, 13B8)
- A6 (4C8)
- PROM_SEL/ (3B8)
- LO_BANK_EN/ (7B8)
- HI_BANK_EN/ (7B8)
- SER_J2_SEL/ (12B8)
- 8255_SEL/ (11C8)
- STAT_SEL/ (10B8, 11C8)
- SER_J3_SEL/ (13B8)
- 8253_SEL/ (10B8)
- MODCS0/ (14B8)
- MODCS1/ (14B8)
- IO-SEL/ (3C8)
- ICU_SEL/ (10B8)
- LOCAL_REQ/ (6DB, 3C8)
- TRANS_REQ/ (6A8)
- ADR10/ (8C8)
- ADR11/ (8C8)
- ADR12/ (8C8)
- ADR13/ (8C8)
- ADR14/ (8A8)
- ADR15/ (8A8)
- ADR16/ (8A8)
- ADR17/ (8A8)



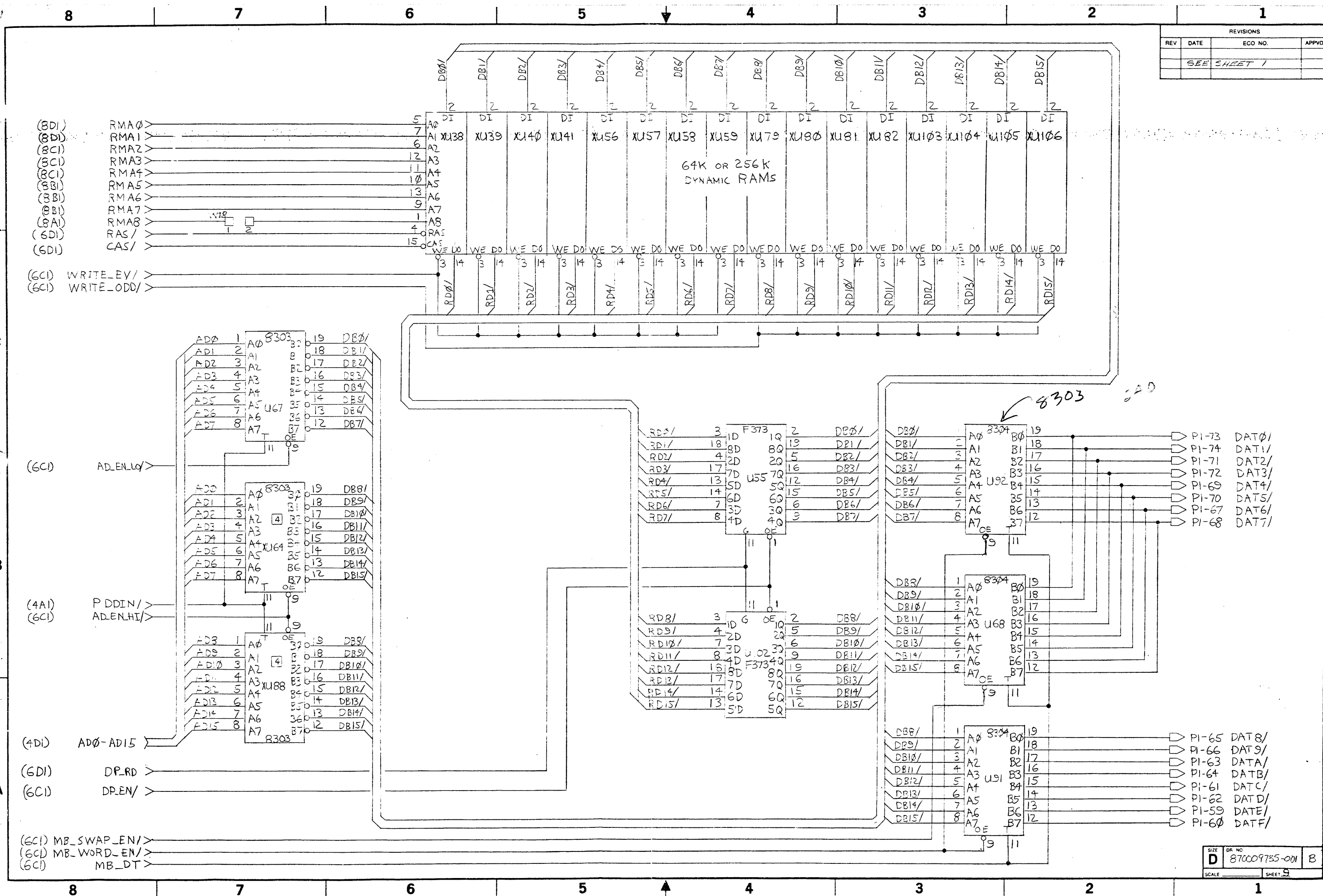
REVISIONS			
REV	DATE	ECO NO.	APPVD
SEE SHEET 1			



REVISIONS			
REV	DATE	ECO NO.	APPROV
SEE SHEET 1			



REVISIONS			
REV	DATE	ECO NO.	APPVD
SEE SHEET 1			



- (8D) RMA0
- (8D) RMA1
- (8C) RMA2
- (8C) RMA3
- (8C) RMA4
- (8B) RMA5
- (8B) RMA6
- (8B) RMA7
- (8A) RMA8
- (6D) RAS
- (6D) CAS

- (6C) WRITE_EVEN
- (6C) WRITE_ODD

- (6C) ADEN_LO

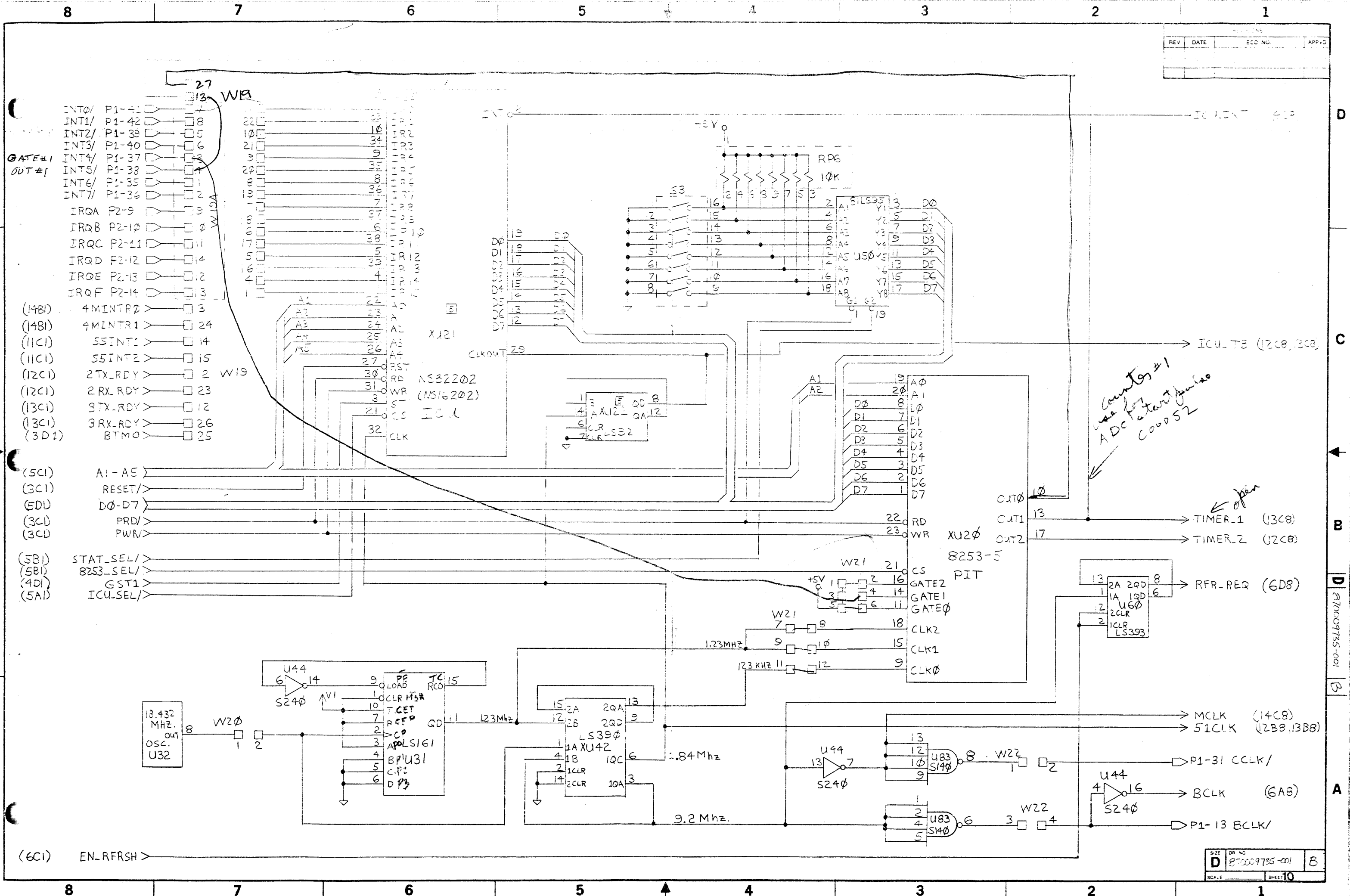
- (4A) PDDIN
- (6C) ADEN_HI

- (4D) AD0-AD15

- (6D) DR_RD
- (6C) DR_EN

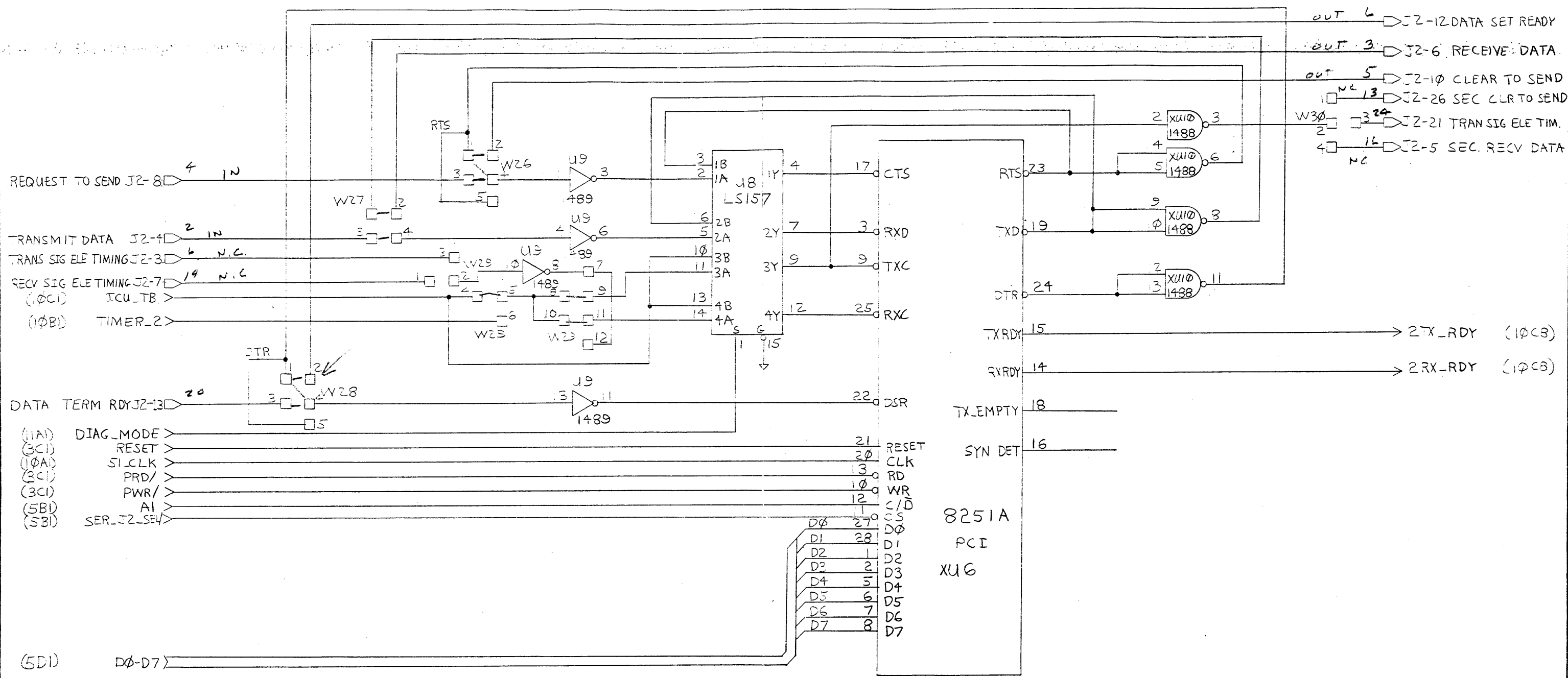
- (6C) MB_SWAP_EN
- (6C) MB_WORD_EN
- (6C) MB_DT

REV	DATE	ECO NO.	APP'D



SIZE	DR NO.	DR NO.
D	870009735-001	B

REVISIONS			
REV	DATE	ECO NO.	APPV
SEE SHEET 1			



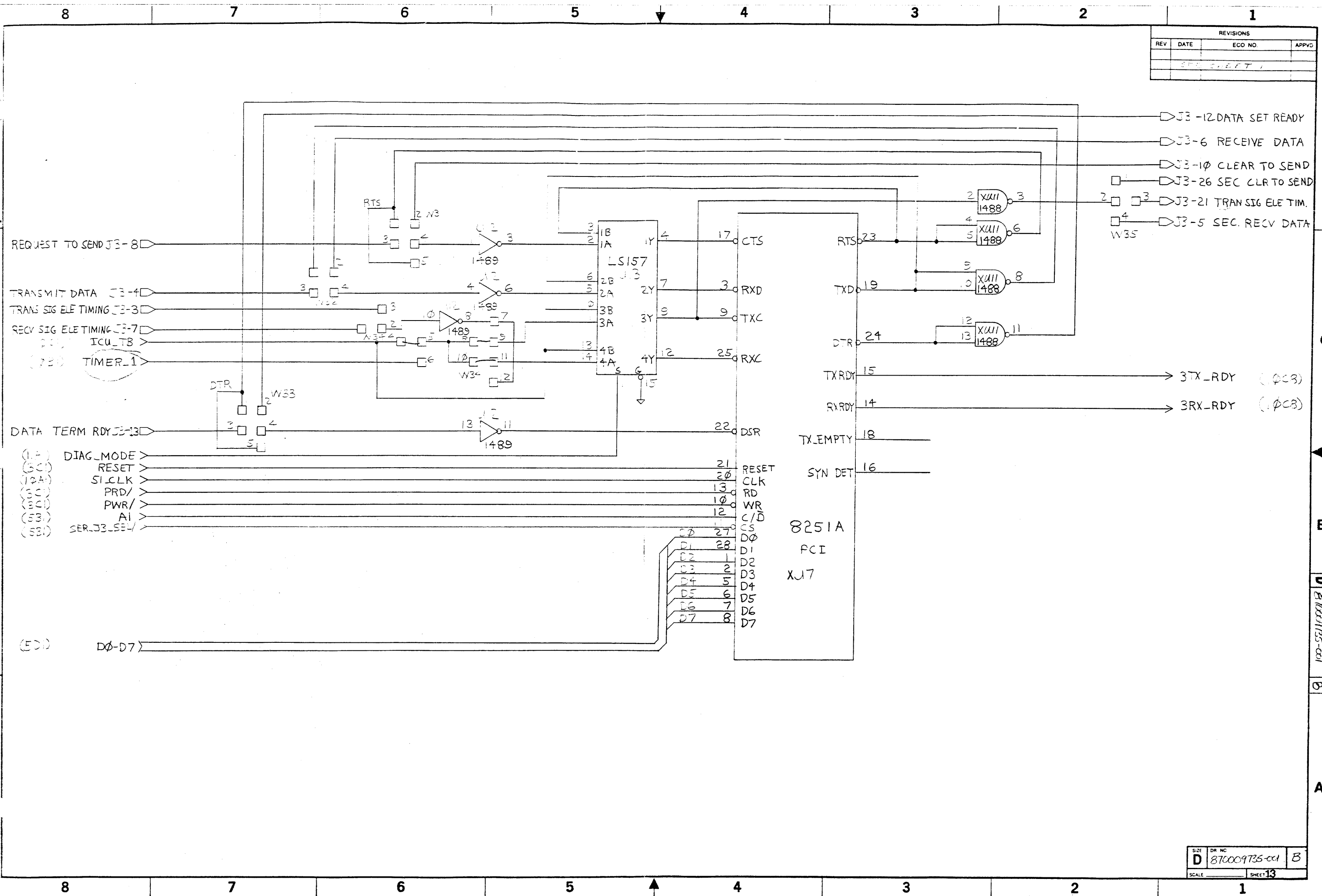
- OUT 6 → J2-12 DATA SET READY
- OUT 3 → J2-6 RECEIVE DATA
- OUT 5 → J2-10 CLEAR TO SEND
- W2 13 → J2-26 SEC CLR TO SEND
- W30 3 24 → J2-21 TRAN SIG ELE TIM.
- 4 16 → J2-5 SEC. RECV DATA

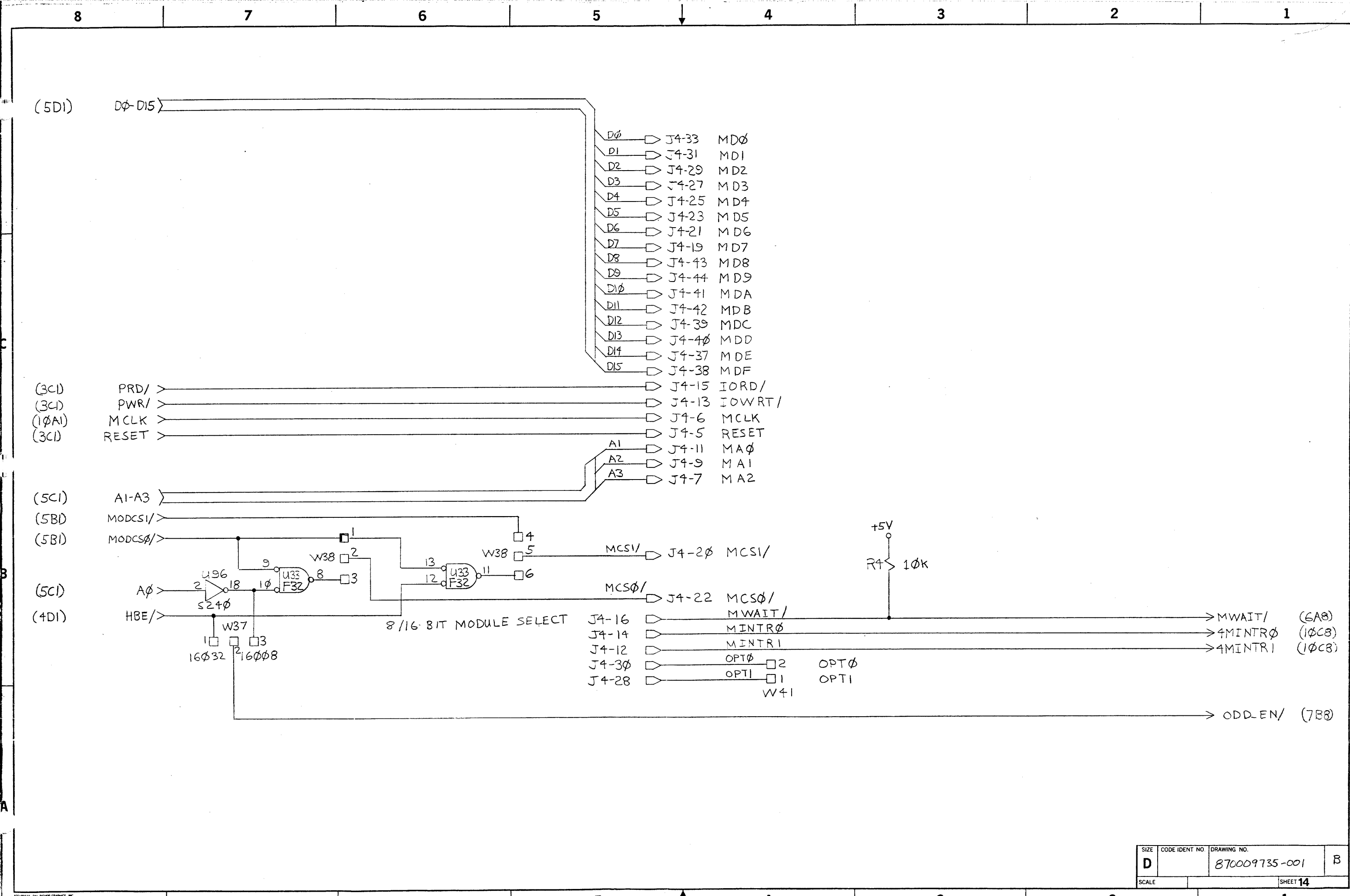
- (11A) DIAG_MODE >
- (3C1) RESET >
- (10A) SI_CLK >
- (3C1) PRD/ >
- (3C1) PWR/ >
- (5B1) AI >
- (5B1) SER_J2_SEV >

(5D1) D0-D7 >

8251A
PCI
XU6

REVISIONS			
REV	DATE	ECO NO.	APPV





CONNECTOR P1 PIN ASSIGNMENTS			
COMPONENT SIDE		SOLDER SIDE	
PIN	SIGNAL	PIN	SIGNAL
1	GND	2	GND
3	+5V	4	+5V
5	+5V	6	+5V
7	+12V	8	+12V
9		10	
11	GND	12	GND
13	BCLK/	14	INIT/
15	BPRN/	16	BPRO/
17	BUSY/	18	BREQ/
19	MRDC/	20	MATC/
21	IORC/	22	IOHC/
23	XACK/	24	INH1/
25	LOCK/	26	
27	BHEV/	28	AD10/
29	CBRQ/	30	AD11/
31	CCLK/	32	AD12/
33		34	AD13/
35	INT6/	36	INT7/
37	INT4/	38	INT5/
39	INT2/	40	INT3/
41	INT0/	42	INT1/
43	ADRE/	44	ADRF/
45	ADRC/	46	ADRD/
47	ADRA/	48	ADRB/
49	ADR8/	50	ADR9/
51	ADR6/	52	ADR7/
53	ADR4/	54	ADR5/
55	ADR2/	56	ADR3/
57	ADR0/	58	ADR1/
59	DATE/	60	DATF/
61	DATC/	62	DATD/
63	DATA/	64	DATB/
65	DAT8/	66	DAT9/
67	DAT6/	68	DAT7/
69	DAT4/	70	DAT5/
71	DAT2/	72	DAT3/
73	DAT0/	74	DAT1/
75	GND	76	GND
77		78	
79	-12V	80	-12V
81	+5V	82	+5V
83	+5V	84	+5V
85	GND	86	GND

CONNECTOR P2 PIN ASSIGNMENTS			
COMPONENT SIDE		SOLDER SIDE	
PIN	SIGNAL	PIN	SIGNAL
1	GND	2	GND
3	ECLK	4	
5		6	
7	MMU1/	8	
9	IRQA	10	IRQB
11	IRQC	12	IRQD
13	IRQE	14	IRQF
15	PFS/	16	ILO/
17	ENMI/	18	UNS
19	RD/	20	WR/
21	DBE/	22	DDIV/
23		24	
25	EWAIT4/	26	EWAIT8/
27	EWAIT1/	28	EWAIT2/
29	BTMO	30	EWAIT/
31	EPER/	32	PAV/
33	ERST/	34	EHOLD/
35	HOLDA/	36	
37	ST2	38	ST3
39	ST0	40	ST1
41		42	
43		44	
45		46	
47		48	
49		50	
51		52	
53	A24	54	
55	ADR16/	56	ADR17/
57	ADR14/	58	ADR15/

CONNECTOR J1 PIN ASSIGNMENTS			
COMPONENT SIDE		SOLDER SIDE	
PIN	SIGNAL	PIN	SIGNAL
1	GND	2	PORT B, BIT 7
3	GND	4	PORT B, BIT 6
5	GND	6	PORT B, BIT 5
7	GND	8	PORT B, BIT 4
9	GND	10	PORT B, BIT 3
11	GND	12	PORT B, BIT 2
13	GND	14	PORT B, BIT 1
15	GND	16	PORT B, BIT 0
17	GND	18	PORT C, BIT 3
19	GND	20	PORT C, BIT 2
21	GND	22	PORT C, BIT 1
23	GND	24	PORT C, BIT 0
25	GND	26	PORT C, BIT 4
27	GND	28	PORT C, BIT 5
29	GND	30	PORT C, BIT 6
31	GND	32	PORT C, BIT 7
33	GND	34	PORT A, BIT 7
35	GND	36	PORT A, BIT 6
37	GND	38	PORT A, BIT 5
39	GND	40	PORT A, BIT 4
41	GND	42	PORT A, BIT 3
43	GND	44	PORT A, BIT 2
45	GND	46	PORT A, BIT 1
47	GND	48	PORT A, BIT 0
49	GND	50	NO CONNECT

CONNECTOR J2 PIN ASSIGNMENTS			
COMPONENT SIDE		SOLDER SIDE	
PIN	SIGNAL	PIN	SIGNAL
1	-	2	GROUND
3	TRAN SIG ELE TIMING	4	TRANSMIT DATA
5	SEC RECEIVE	6	RECEIVE DATA
7	EXTERNAL CLOCK	8	REQUEST TO SEND
9	-	10	CLEAR TO SEND
11	-	12	DATA SET READY
13	DATA TERMINAL READY	14	GROUND
15	-	16	-
17	-	18	-
19	-12 VOLTS DC*	20	-
21	TRAN SIG ELE TIMING	22	+12 VOLTS DC*
23	+5 VOLTS DC*	24	-
25	GROUND	26	SECONDARY CTS

* REQUIRES JUMPER TO ENABLE

CONNECTOR J3 PIN ASSIGNMENTS			
COMPONENT SIDE		SOLDER SIDE	
PIN	SIGNAL	PIN	SIGNAL
1	-	2	GROUND
3	TRAN SIG ELE TIMING	4	TRANSMIT DATA
5	SEC RECEIVE	6	RECEIVE DATA
7	EXTERNAL CLOCK	8	REQUEST TO SEND
9	-	10	CLEAR TO SEND
11	-	12	DATA SET READY
13	DATA TERMINAL READY	14	GROUND
15	-	16	-
17	-	18	-
19	-12 VOLTS DC*	20	-
21	TRAN SIG ELE TIMING	22	+12 VOLTS DC*
23	+5 VOLTS DC*	24	-
25	GROUND	26	SECONDARY CTS

CONNECTOR J4 PIN ASSIGNMENTS			
PIN	SIGNAL	PIN	SIGNAL
1	+12V	2	-12V
3	GND	4	+5V
5	RESET	6	MCLK
7	MA2	8	
9	MA1	10	
11	MA0	12	MINTR1
13	IOVRT/	14	MINTRO
15	IOVD/	16	MWAIT/
17	GND	18	+5V
19	MD7	20	MCS1/
21	MD6	22	MCS0/
23	MD5	24	
25	MD4	26	
27	MD3	28	OPT1
29	MD2	30	OPT0
31	MD1	32	
33	MD0	34	
35	GND	36	+5V
37	MDE	38	MDF
39	MDC	40	MDD
41	MDA	42	MDB
43	MD8	44	MD9

SIZE	CODE IDENT NO.	DRAWING NO.	
D		870009735-001	3
SCALE			SHEET 15