

MICROPROSE GAMES

SOUND
PRINTED CIRCUIT
BOARD ASSEMBLY

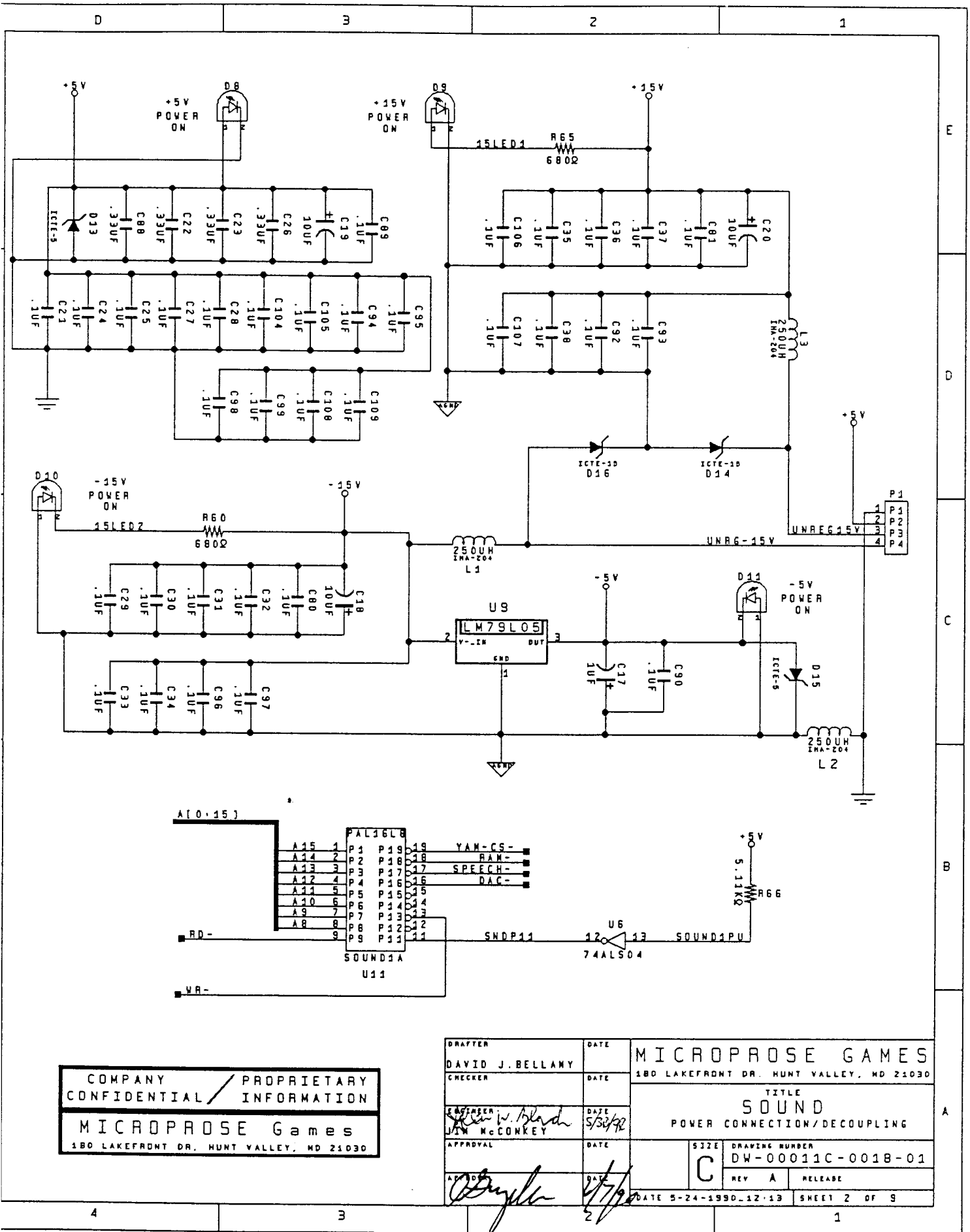
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5-30-90	ECN	A	A	A	A	A	A	A	A	A	A																										

COMPANY / PROPRIETARY
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MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

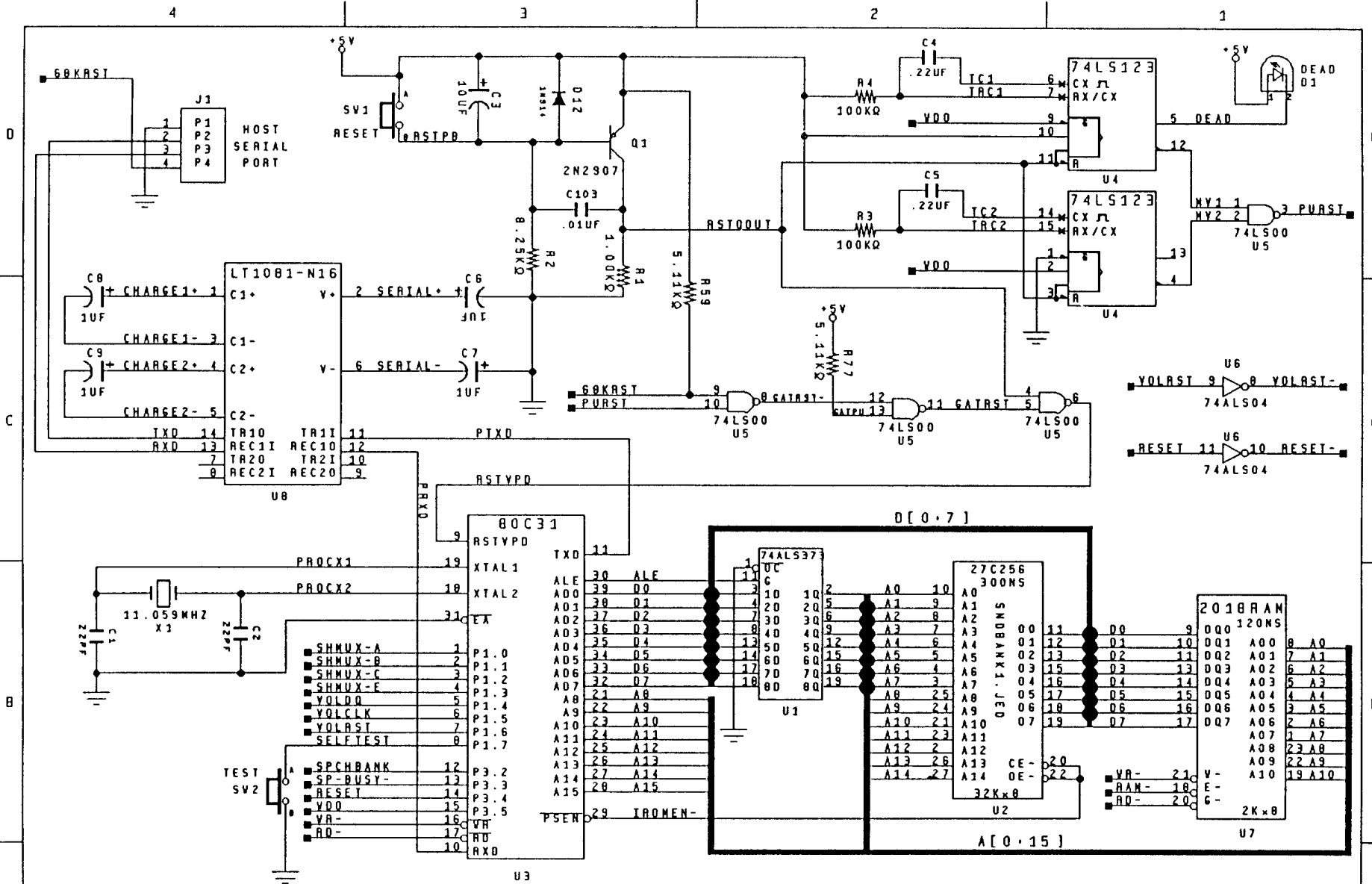
DRAFTER DAVID J. BELLAMY		DATE		MICROPROSE GAMES
CHECKER		DATE		
DRAWN BY <i>Allen Black</i> ALLEN BLACK		DATE 5/31/90		TITLE SOUND
APPROVAL		DATE		PRINT CIRCUIT BOARD ASSEMBLY
DATE		DATE		SIZE C
DATE		DATE		DRAWING NUMBER DW-00011C-0018-01
DATE		DATE		REV A
DATE		DATE		RELEASE
DATE 5-30-1990-10-21				SHEET 1 OF 9

Allen Black
Allen Black 4/7/90



COMPANY PROPRIETARY
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MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER DAVID J. BELLAMY		DATE	MICROPROSE GAMES	
CHECKER		DATE	180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
APPROVAL <i>J. W. McConkey</i>		DATE 5/30/92	TITLE SOUND	
APPROVAL <i>D. J. Bellamy</i>		DATE 5/27/92	POWER CONNECTION/DECOUPLING	
APPROVAL		DATE	SIZE C	DRAWING NUMBER DW-00011C-0018-01
			REV A	RELEASE
			DATE 5-24-1990-12-13 SHEET 2 OF 9	

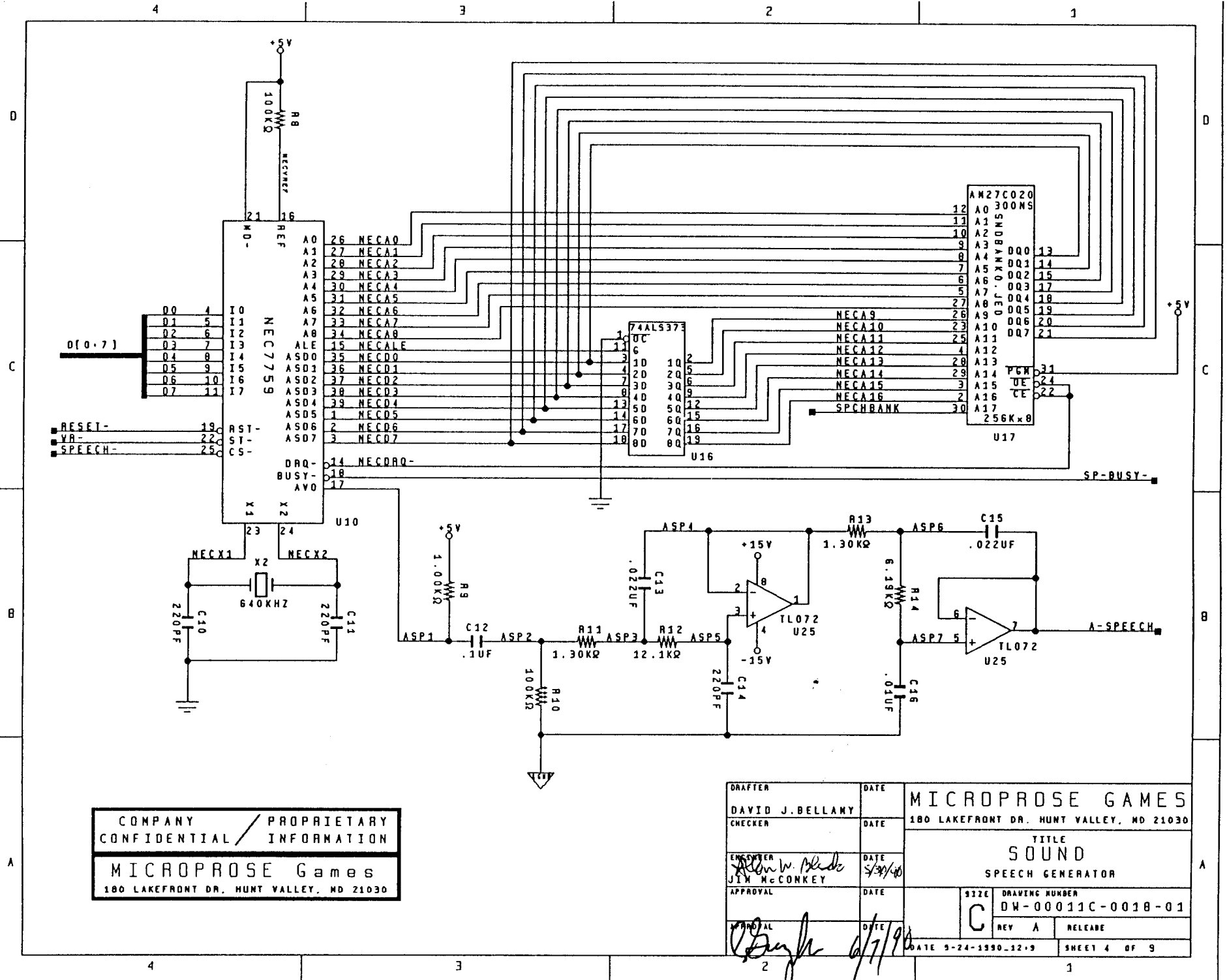


COMPANY PROPRIETARY
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MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER		DATE		MICROPROSE GAMES	
DAVID J. BELLAMY					
CHECKER		DATE		TITLE	
DESIGNER		DATE		CPU, INSTRUCTION MEMORY, RESET AND RS232 COMMUNICATIONS	
W. A. [Signature]		5/29/90			
APPROVAL		DATE		SIZE DRAWING NUMBER	
[Signature]				C DW-00011C-001B-01	
APPROVAL		DATE		REV A	
[Signature]				RELEASE	
DATE 5-30-1990-9-15				SHEET 3 OF 9	

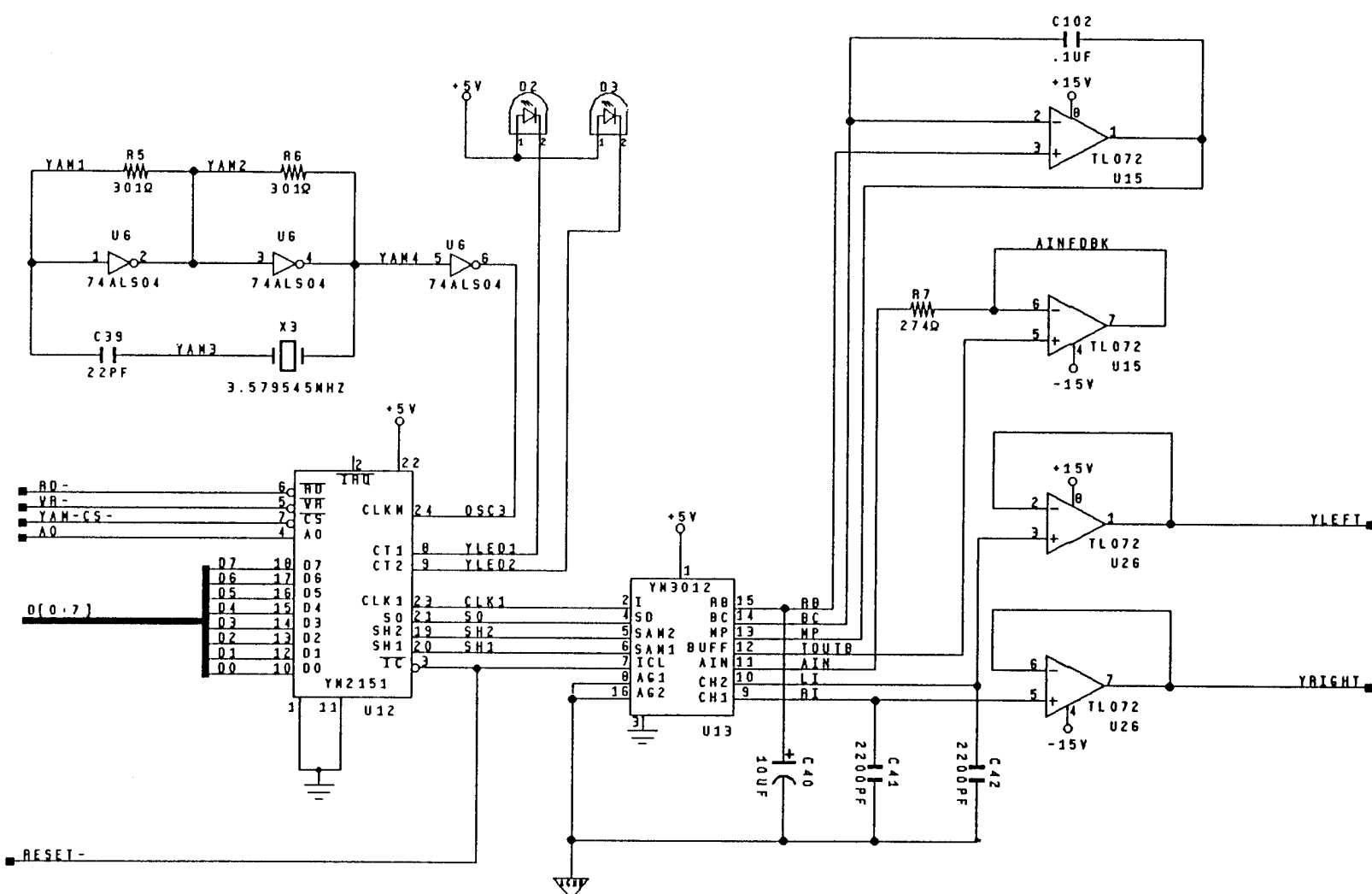
A

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COMPANY / PROPRIETARY
 CONFIDENTIAL / INFORMATION
 MICROPROSE Games
 180 LAKEFRONT DR., HUNT VALLEY, MD 21030

DRAFTER DAVID J. BELLAMY	DATE	MICROPROSE GAMES	
CHECKER	DATE	180 LAKEFRONT DR., HUNT VALLEY, MD 21030	
ENGINEER ALAN W. BLODGETT JIM McCONKEY	DATE 5/30/80	TITLE SOUND SPEECH GENERATOR	
APPROVAL	DATE	SIZE C	DRAWING NUMBER DW-00011C-0018-01
REVISOR	DATE	REV A	RELEASE
DATE 6/7/90	DATE 5-24-1990-12:9	SHEET 4 OF 9	



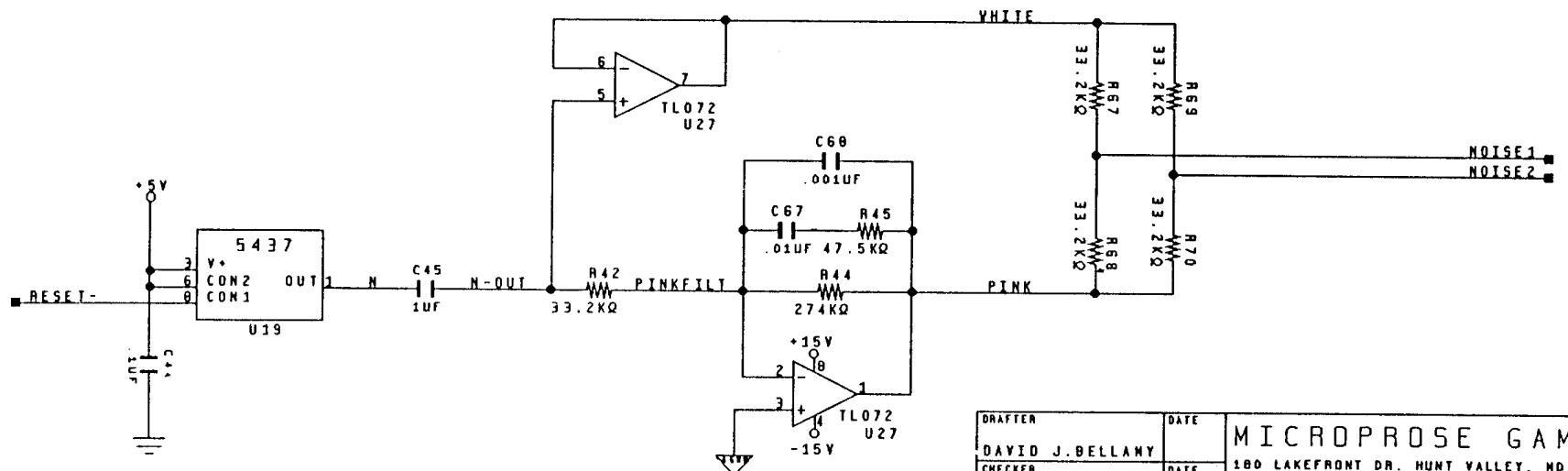
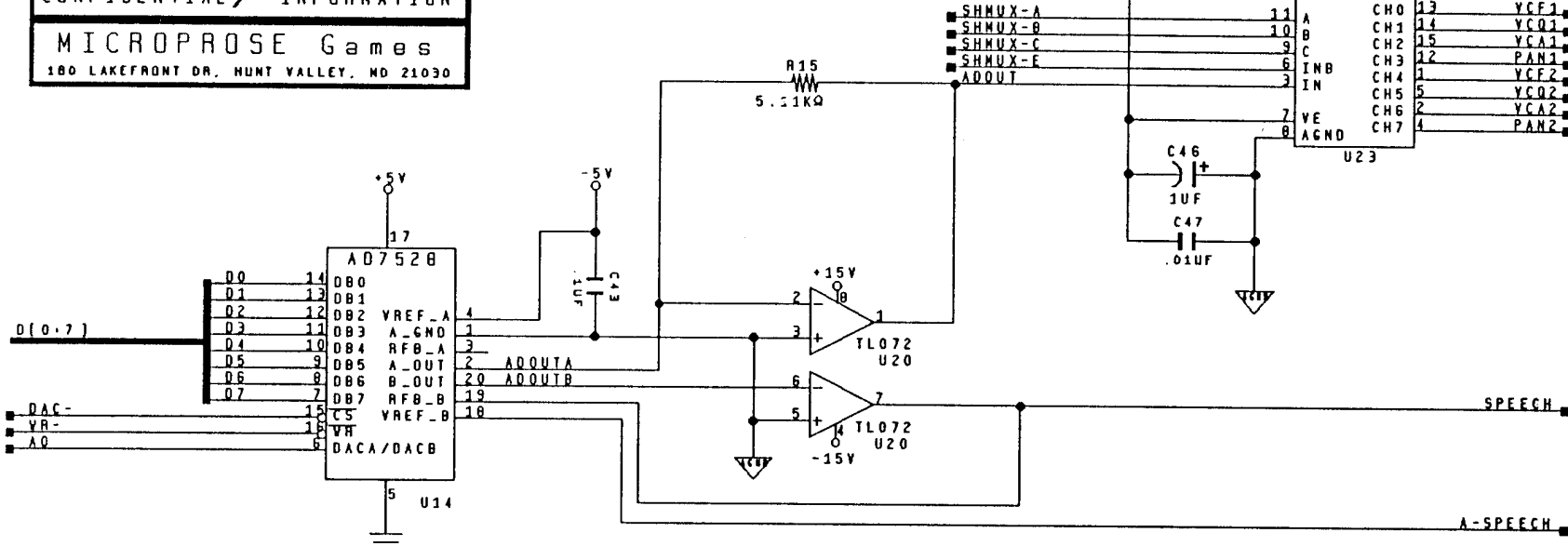
COMPANY / PROPRIETARY
 CONFIDENTIAL / INFORMATION
MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER DAVID J. BELLAMY		DATE		MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER		DATE			
DRAWN BY Allen W. Black ALLEN BLACK		DATE 5/30/90		TITLE SOUND STEREO MUSIC SYNTHESIZER	
APPROVAL		DATE			
APPROVAL		DATE		SIZE C	DRAWING NUMBER DW-00011C-001B-01
APPROVAL		DATE		REV A	RELEASE
		DATE 5-30-1990-9-51		SHEET 5 OF 9	

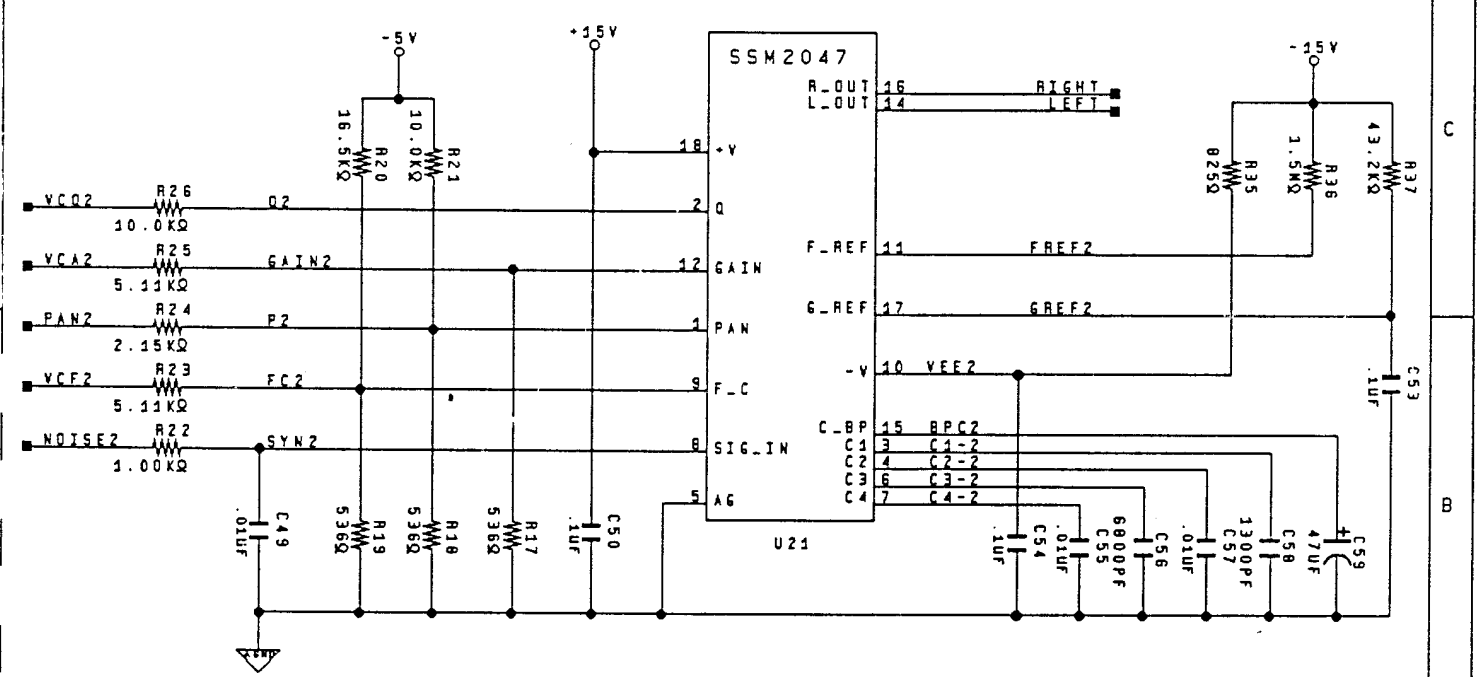
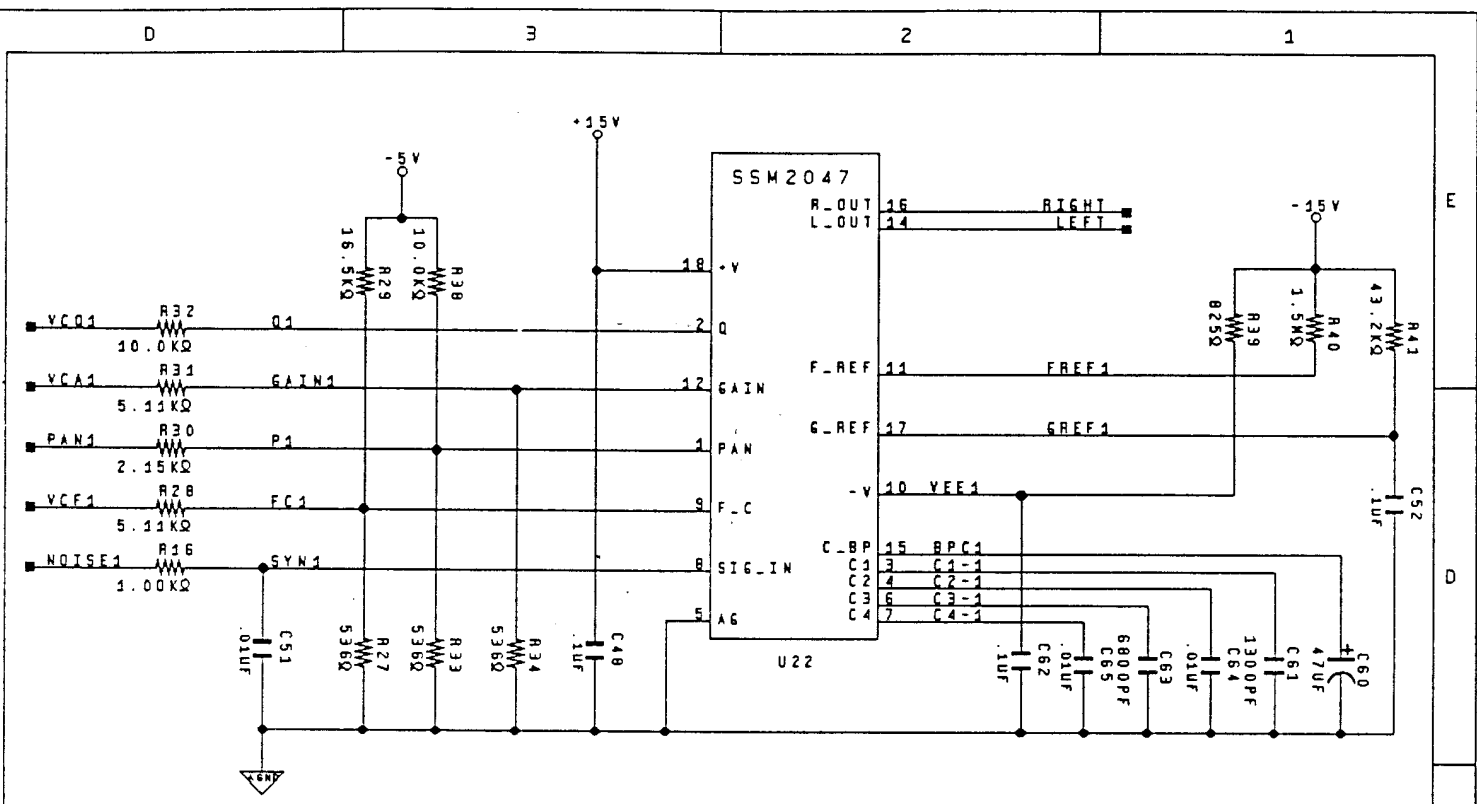
Allen W. Black
David J. Bellamy 6/7/90

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MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030



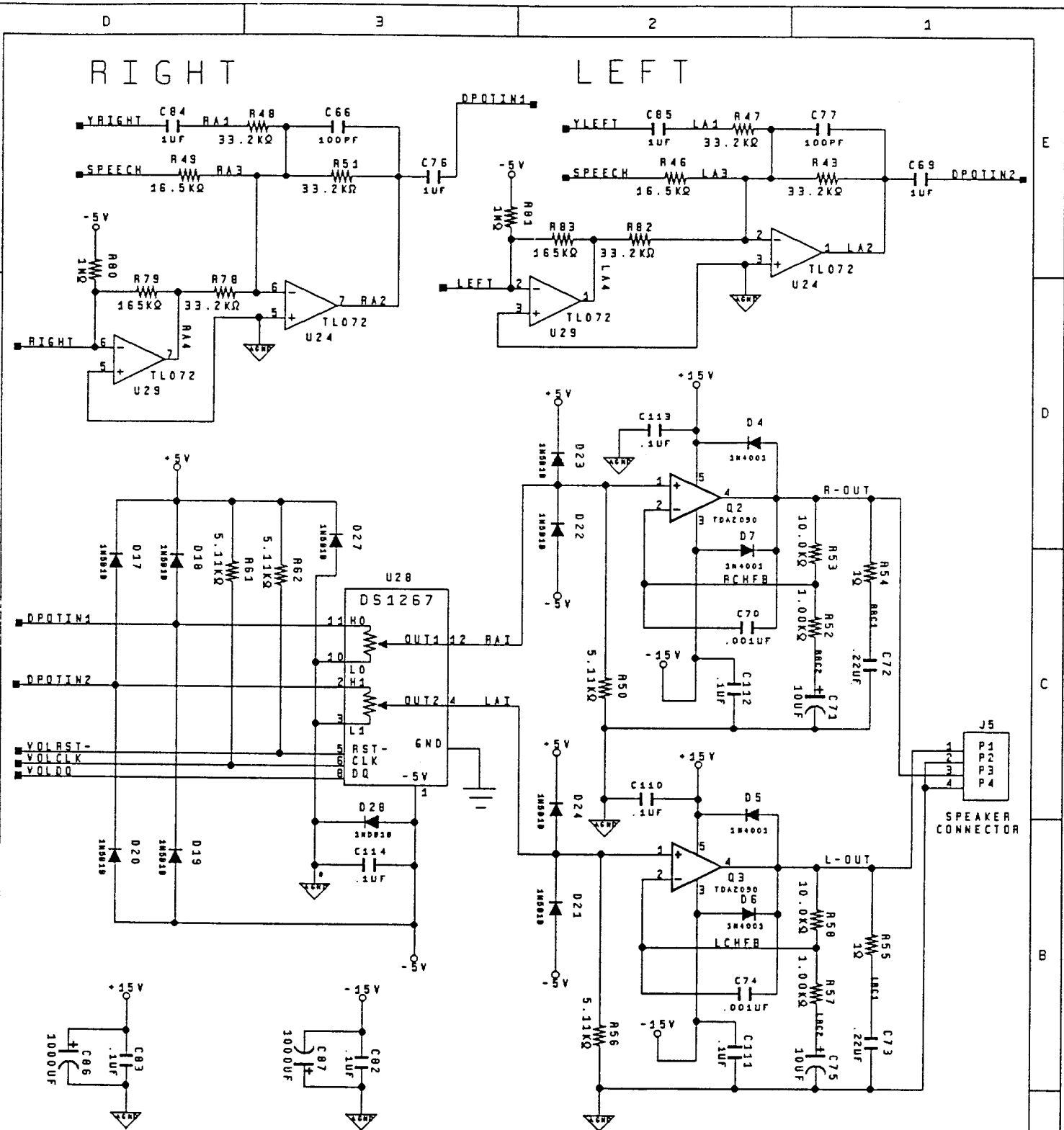
DRAFTER		DATE		MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
DAVID J. BELLAMY					
CHECKER		DATE		TITLE SOUND NOISE GENERATOR, A/D AND SPECIAL EFFECT S & H	
ENGINEER		DATE		DRAWING NUMBER DW-00011C-001B-01	
Allen W. Black ALLEN BLACK		5/30/90			
APPROVAL		DATE		REV A RELEASE	
<i>[Signature]</i>		6/7/90			
DATE		DATE		DATE 5-30-1990-10-15	
				SHEET 6 OF 9	



COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION
MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER DAVID J. BELLAMY		DATE	MICROPROSE GAMES	
CHECKER		DATE	180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CUSTOMER ALLEN BLACK		DATE 5/27/90	TITLE SOUND	
APPROVAL		DATE	MUSIC VOICING SYSTEMS	
DATE		DATE	SIZE C	DRAWING NUMBER DW-00011C-0018-01
DATE		DATE	REV A	RELEASE
DATE		DATE	DATE 5-30-1990_14-46 SHEET 7 OF 9	

David J. Bellamy
 6/7/90



COMPANY PROPRIETARY
 CONFIDENTIAL / INFORMATION
MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER DAVID J. BELLAMY		DATE	MICROPROSE GAMES	
CHECKER		DATE	180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
DRAWN BY ALLEN BLACK		DATE 5/30/90	TITLE SOUND	
APPROVAL		DATE	LEFT AND RIGHT CHANNEL OUTPUT AUDIO AMPLIFIERS	
DATE		DATE	SIZE C	DRAWING NUMBER DW-00011C-0018-01
DATE		DATE	REV A	RELEASE
DATE 5-30-1990 14:50		SHEET 8 OF 9		

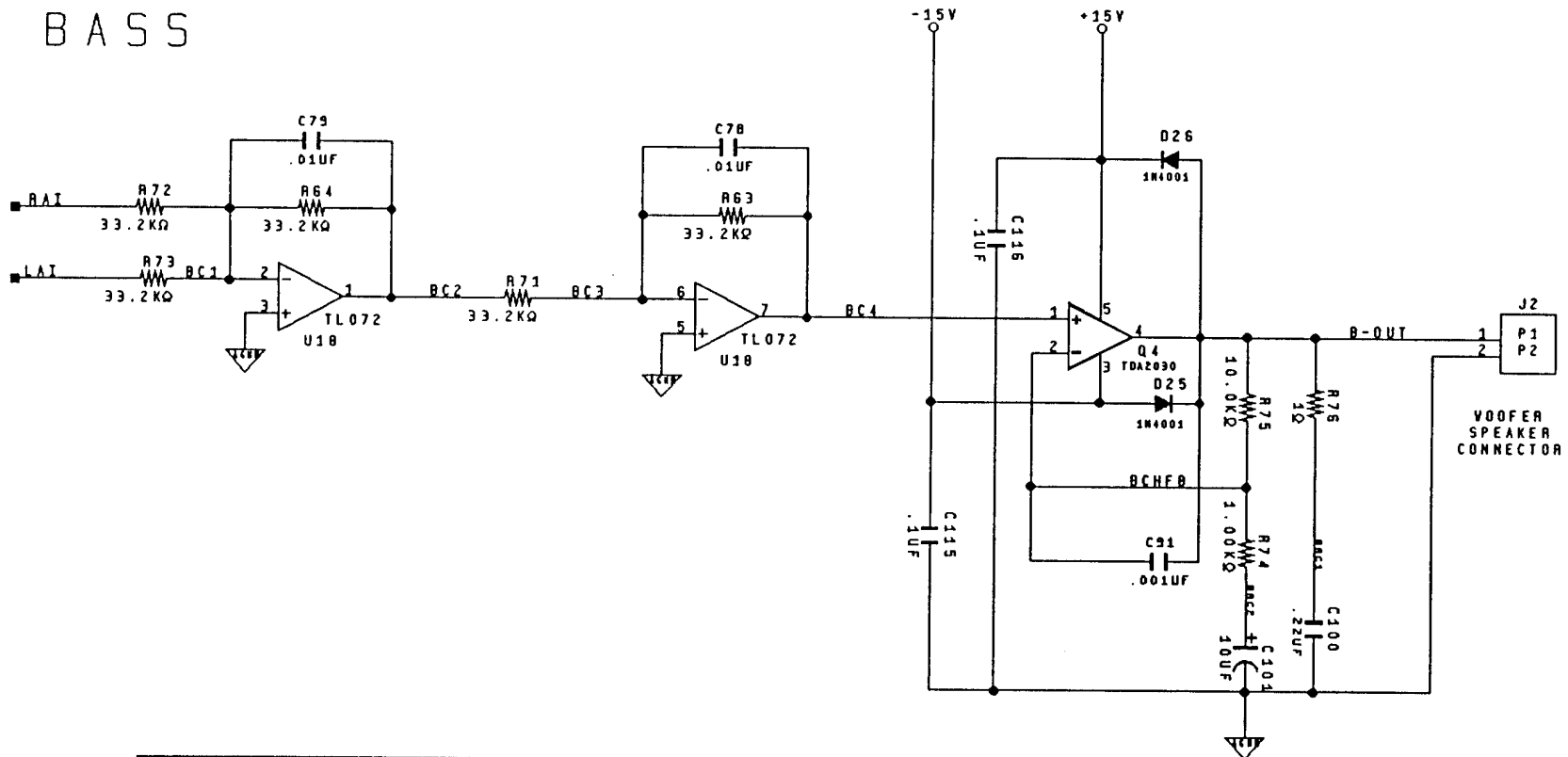
Allen Black
David Bellamy

4

3

1

BASS



COMPANY / PROPRIETARY
 CONFIDENTIAL / INFORMATION

MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER	DATE	MICROPROSE GAMES	
DAVID J. BELLAMY		180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER	DATE	TITLE	
		SOUND	
ENGINEER	DATE	BASS OUTPUT AUDIO AMPLIFIER	
ALLEN BLACK	5/24/90		
APPROVAL	DATE	SIZE	DRAWING NUMBER
		C	DW-00011C-001B-01
REV	DATE	REV	RELEASE
		A	
DATE 5-30-1990-14-52		SHEET 9 OF 9	

David J. Bellamy
 5/24/90

MICROPROSE GAMES, 180 Lakefront Drive, Hunt Valley, Maryland 21030

PROJECT: SOUND BOARD DRWG NO: PL-00011A-00018-01 REV: C

DATE: Wed 1-Aug-1990

ITEM	QTY	VENDOR	PART NUMBER	PART DESC	VALUE	MPG P/N
		REF.	DES.			
1	2	CCF-07	155J R40,R36	5PCMFRES	1.5MOHM	503-00005-155
2	1	CCF-50	2743F R44	1PCMFRES	274KOHM	503-00001-274
3	4	CCF-50	1003F R3,R4,R8,R10	1PCMFRES	100KOHM	503-00001-104
4	1	CCF-50	4752F R45	1PCMFRES	.47.5KOHM	503-00001-473
5	2	CCF-50	4322F R37,R41	1PCMFRES	43.2KOHM	503-00001-433
6	9	CCF-50	3322F [R73,R72,R71,R64,R63],R51,R48,R47,R43,R42,R78,R82,R68,R70	1PCMFRES	33.2KOHM	503-00001-333
7	4	CCF-50	1652F R20,R29,R46,R49	1PCMFRES	16.5KOHM	503-00001-163
8	1	CCF-50	1212F R12	1PCMFRES	12.1KOHM	503-00001-123
9	6	CCF-50	1002F R21,R26,R32,R38,R58,R53,[R75]	1PCMFRES	10.0KOHM	503-00001-103
10	1	CCF-50	8251F R2	1PCMFRES	8.25KOHM	503-00001-822
11	1	CCF-50	6191F R14	1PCMFRES	6.19KOHM	503-00001-612
12	12	CCF-50	5111F R62,R61,R56,R50,R23,R25,R31,R28,R15,R59,R66,R77	1PCMFRES	5.11KOHM	503-00001-512
13	2	CCF-50	2151F R24,R30	1PCMFRES	2.15KOHM	503-00001-212
14	2	CCF-50	1301F R13,R11	1PCMFRES	1.30KOHM	503-00001-132
15	6	CCF-50	1001F R1,R9,R16,R22,R52,R57,[R74]	1PCMFRES	1.00KOHM	503-00001-102
16	2	CCF-07	681G R60,R65	2PCMFRES	680 OHM	503-00002-681
17	6	CCF-50	5360F R34,R19,R18,R17,R33,R27	1PCMFRES	536 OHM	503-00001-541

ITEM	QTY	VENDOR PART NUMBER REF. DES.	PART DESC	VALUE	MPG P/N
18	2	CCF-50 3010F R6,R5	1PCMFRES	301 OHM	503-00001-301
19	1	CCF-50 2740F R7	1PCMFRES	274 OHM	503-00001-001
20	2	5053EM1R00J R55,R54,[R76]	5PCMFRES	1 OHM	503-00005-010
21					
22	2	513D108M016DK4 C87,C86	RADTANTCAP	1000UF	410-00002-108
23	2	TAP476M020CRW C59,C60	RADTANT	47UF	421-00020-476
24	7	173D106X0035X C3,C40,C71,C75,C18,C19,C20,[C101]	AXTANT	10UF	422-00072-106
25	6	173D105X0035V C46,C17,C7,C6,C9,C8	AXTANTCAP	1UF	422-00072-105
26	5	C340C105K5R5CA C85,C76,C69,C84,C45	RADCERCAP	1UF	400-00281-105
27	4	C412C334M5U5CA C23,C22,C26,C88	AXCERCAP	.33UF	402-00382-334
28	36	C410C104M5U5CA C44,C43,C99,C98,C97,C96,C95,C94,C93,C92,C38,C37,C36,C35,C113 C34,C33,C32,C31,C30,C28,C27,C25,C24,C21,C29,C80,C81,C89,C90, C104,C105,C106,C107,C108,C109,[C114,C115,C116,C110,C111,C112]	AXCERCAP	.1UF	402-00382-104
29	4	C430C224J5R5CA C4,C5,C72,C73,[C100]	AXCERCAP	.22UF	402-00285-224
30	10	C412C104J5R5CA C83,C82,C48,C50,C53,C54,C52,C62,C12,C102	AXCERCAP	.1UF	402-00285-104
31	2	C410C223J5R5CA C15,C13	AXCERCAP	.022UF	402-00285-223
32	10	C410C103J5R5CA C51,C49,C55,C57,C64,C65,C67,C47,C16,C103,[C78,C79]	AXCERCAP	.01UF	402-00285-103
33	3	C410C102J1R5CA C68,C70,C74,[C91]	AXCERCAP	.001UF	402-00295-102
34	2	C410C222J1R5CA C42,C41	AXCERCAP	2200PF	402-00295-222
35	3	C410C221J1G5CA C10,C14,C11	AXCERCAP	220PF	402-00195-221

ITEM	QTY	VENDOR PART NUMBER REF. DES.	PART DESC	VALUE	MPG P/N
36	2	C410C101J1G5CA C66, C77	AXCERCAP	100PF	402-00195-101
37	3	C410C220J1G5CA C39, C2, C1	AXCERCAP	22PF	402-00195-220
38	2	SX268J C63, C56	POLYFILMCAP	6800PF	430-00002-682
39	2	SXM213H C61, C58	POLYFILMCAP	1300PF	430-00001-132
40	2	ICTE-15 D14, D16	ZENER	15V	300-00001-005
41	2	ICTE-5 D13, D15	ZENER	5V	300-00001-002
42	10	1N5818 D17, D18, D19, D20, D21, D22, D23, D24, D27, D28	SCHOTDIODE		302-00002-001
43	4	1N4001 D7, D6, D5, D4, [D25, D26]	DIODE, RECT		302-00001-001
44	1	1N914 D12	DIODE, SIGNAL		300-00002-003
45	7	HLMP3600 D8, D3, D2, D1, D9, D10, D11	LED	RED	305-00003-002
46	3	IHA-204 L1, L2, L3	INDUCTOR	250 UH	590-00001-001
47	1	NYP 111-20 X1	OSCILLATOR	11.06MHZ	290-00003-011
48	1	NYP035A-18 X3	SNDXTAL	3.58MHZ	290-00003-003
49	1	CSB640J X2	CERRESONATR	640KHZ	290-00005-640
50	1	15-24-4049 P1	4PINPWRCON	.200"	610-00300-004
51	2	22-23-2041 J1, J5	4PINMOLEX	.100"	610-00102-004
52	[0]	22-23-2021 [J2]	2PINMOLEX	.100"	610-00102-002
53	2	KSA1A211 SW2, SW1	PBSWITCH		625-00002-001

ITEM	QTY	VENDOR PART NUMBER REF. DES.	PART DESC	VALUE	MPG P/N
54	1	2-644018-2 UX17	32PIN SOCKET	.600"	600-00003-632
55	1	ICO-628MTT UX2	28PIN SOCKET	.600"	600-00001-628
56	[0]	ICO-320MTT [UX11]	20PIN SOCKET	.300"	600-00001-320
57	[0]	2-641606-1 [UX3]	40PIN SOCKET	.600"	600-00003-640
58	2	7-0805G-5 TP1,TP2	TEST PIN		710-00001-001
59	2	7023BCLP	HEATSINK		790-00001-001
60	2	CLP201	CLIP, HEATSINK		790-00001-002
61	1	DS1267-50 U28	DUALDIGPOTS	50KOHM	282-01267-200
62	1	P80C31BH U3	MICROPROCESR	12MHZ	135-80C31-212
63	1	UPD7759CADPC U10	SPEECHGEN		282-07759-200
64	1	MM5437 U19	NOISEGENR		282-05437-200
65	1	YM2151 U12	MUSICSYNTH		282-02151-200
66	1	YM3012 U13	STEREODAC		282-03012-200
67	2	TDA2030V Q3,Q2,[Q4]	AUDIOAMP		282-02030-600
68	7	TL072ACP U24,U27,U20,U26,U15,U25,U29,[U18]	DUALOPAMP		282-00072-200
69	1	MC79L05ACZ U9	NEG5VREG		281-07905-001
70	1	TP2907 Q1	PNPTRANS		310-00001-001
71	1	PAL16L8-BCN U11	SOUND1A	15NS	120-00003-001
72	1	AM27C020-305DC U17	256Kx8EPROM SNDBANK0.JED	300NS	110-00003-001

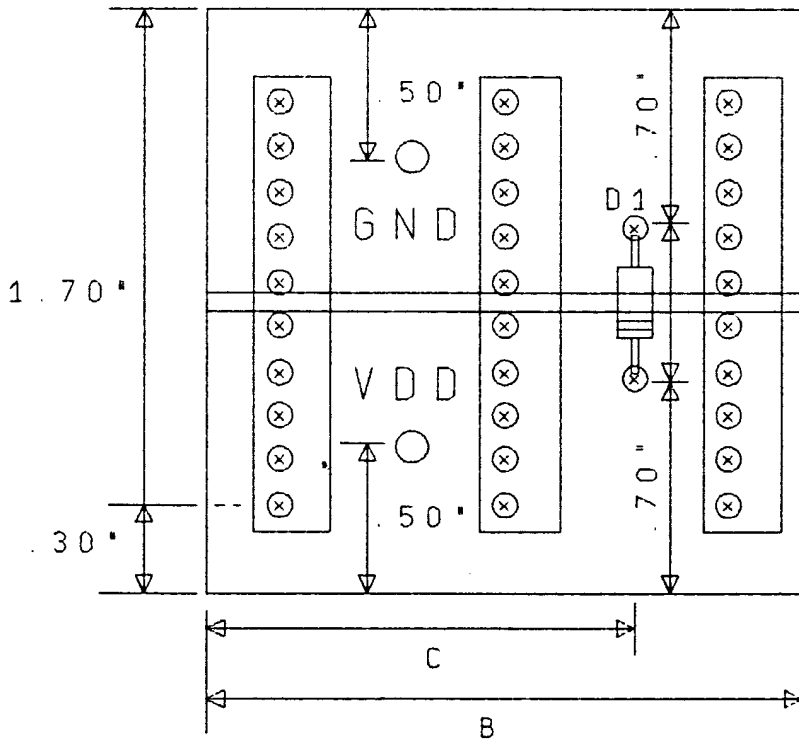
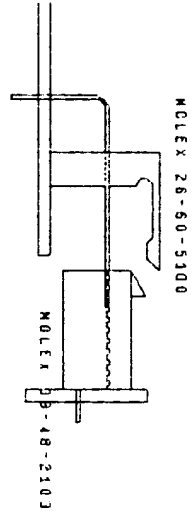
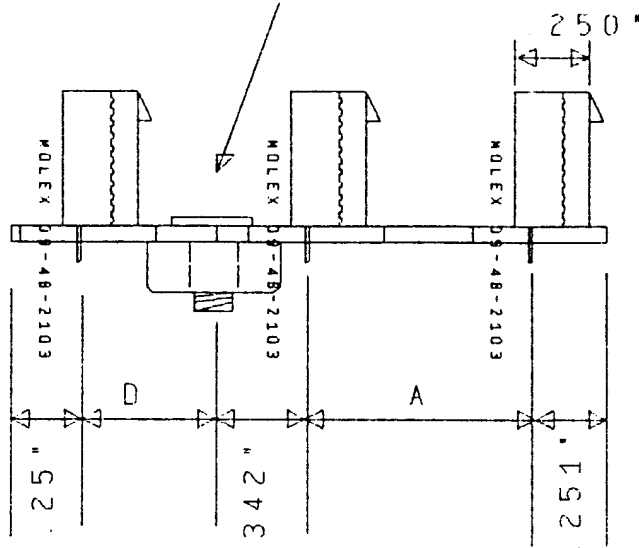
ITEM	QTY	VENDOR PART NUMBER	PART DESC	VALUE	MPG P/N
		REF. DES.			
73	1	MCM2018AN45 U7	2Kx8SRAM	45NS	221-00004-245
74	1	D27C256-3 U2	32Kx8EPROM SNDBANK1.JED	300NS	110-00004-001
75	2	SSM-2047P U22,U21	MUSICVOICE		282-02047-200
76	1	SSM-2300P U23	8CHANS/HOLD		282-02300-200
77	1	AD7528JN U14	D/A CONVRTR		245-00003-200
78	1	LT1081CN U8	RS232DRVR		235-00001-200
79	1	SN74ALS04BN U6	HEXINVERTRS		200-00004-200
80	1	SN74LS00N U5	QUAD2-IN'NAND'		202-00000-200
81	1	SN74LS123N U4	DUALONESHOT		202-00123-200
82	2	SN74ALS373N U16,U1	OCTDFLOPS		200-00373-200
83	2	CCF-07 105G R80,R81	2PCMFRES	1MOHM	503-00002-105
84	2	CCF-50 8250F R39,R35	1PCMFRES	825OHM	503-00001-831
85	2	CCF-50 1653F R79,R83	1PCMFRES	165KOHM	503-00001-174

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NOTES:

1. ITEMS WITH REFERENCE DESIGNATORS IN BRACKETS [] WILL NOT BE POPULATED FOR PRODUCTION.

#10 SCREW P E M
P/N KFH-032-6



DIM.	REV-	REV A
A	812"	750"
B	2125"	2000"
C	145"	1388"
D	47"	408"

DRILL KEY:

- ⊗ .0625"
- .1875"

DRAFTER JG MCKIBBIN	DATE	MICROPROSE GAMES 380 LAKEFRONT DRIVE HUNT VALLEY, MD 21038	
CHECKER	DATE	TITLE	
ENGINEER JG MCKIBBIN	DATE	PWR BACKPLANE	
APPROVAL	DATE	SIZE C	DRAWING NUMBER DW-00013A-0008-0
APPROVAL PWR.5	DATE	DATE	SHEET OF

MICROPROSE GAMES, 180 Lakefront Drive, Hunt Valley, Maryland 21030

PROJECT: POWER BACKPLANE DRWG NO: PL-00011A-0008-01 REV:

DATE: Tue 15-Jan-1991

ITEM	QTY	VENDOR PART NUMBER	PART DESC	VALUE	MPG P/N
		REF. DES.			
1	3	09-48-2103 J1,J2,J3	1x10FEMCON	.156"	610-10301-010
2	2	KFH-032-6 ST1,ST2	PEM STUDS	#10-32	721-00520-410
3	2	N1,N2	HEXNUTS	#10-32	721-00010-010
4	2	W1,W2	LOCKWASHERS	#10	720-00002-010
5	1	ICTE-5 D1	DIODE	5VDC	300-00001-002

10

MICROPROSE Games

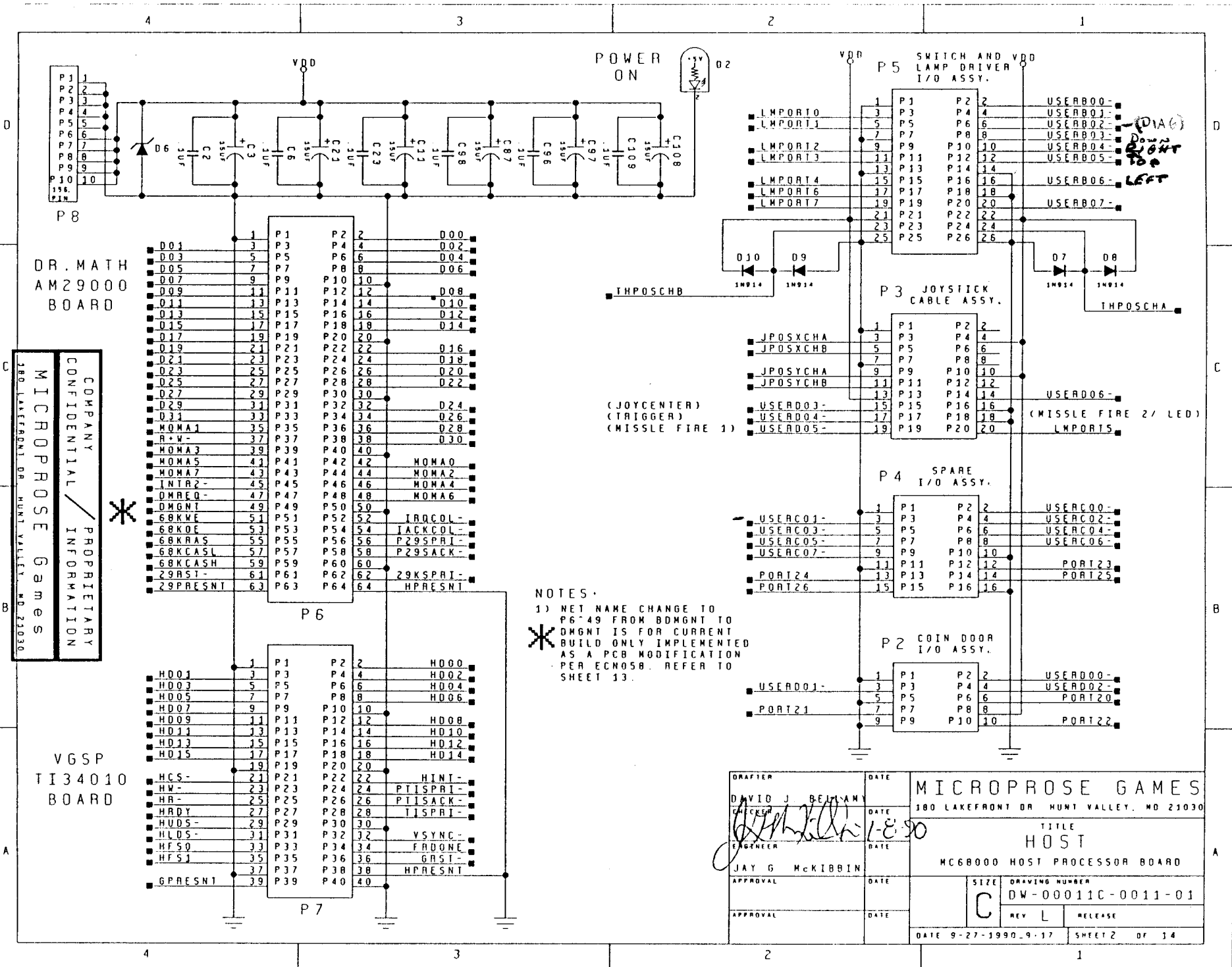
HOST PROCESSOR
PRINTED CIRCUIT BOARD ASSEMBLY

DATE	ECN(6)	REV	SHEET NUMBER																																			
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
11-22-89	ECN003	A	A	A																																		
11-28-89	ECN004	B	B									B																										
11-28-89	ECN005	C	C									C																										
		D	D	D	D	D	D	D	D	D	D	D	D	D	D																							
5-01-90	ECN017	E	E									E																										
5-01-90	ECN018	F	F	F																																		
5-01-90	ECN019	G	G								G																											
5-01-90	ECN020	H	H	H										H																								
5-01-90	ECN021	J	J							J																												
5-07-90	ECN016	K	K					K																														
9-17-90	ECN056	L	L	L										L	L																							
9-17-90	ECN058	M	M		M						M																											
9-17-90	ECN059	N	N		N	N	N		N	N		N																										
10-1-90	ECN089	O	O		O																																	
10-25-90	ECN122	P	P			P																																

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MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER DAVID J. BELLAMY	DATE 1-14-91	MICROPROSE GAMES	
CHECKED <i>[Signature]</i>	DATE	180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
ENGINEER JAY G. McKIBBIN	DATE	TITLE HOST	
APPROVAL	DATE	HOST PROCESSOR PCB SCHEMATIC DRAWING	
APPROVAL	DATE	SIZE C	DRAWING NUMBER DW-00011C-0011-01
		REV P	RELEASE
DATE 1-14-1991 16 05		SHEET 3 OF 14	



DR. MATH
AM29000
BOARD

COMPANY PROPRIETARY INFORMATION
 CONFIDENTIAL
 MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

VGSP
TI34010
BOARD

NOTES -
 1) NET NAME CHANGE TO P6-49 FROM BDMGNT TO DMGNT IS FOR CURRENT BUILD ONLY IMPLEMENTED AS A PCB MODIFICATION PER ECN058. REFER TO SHEET 13.

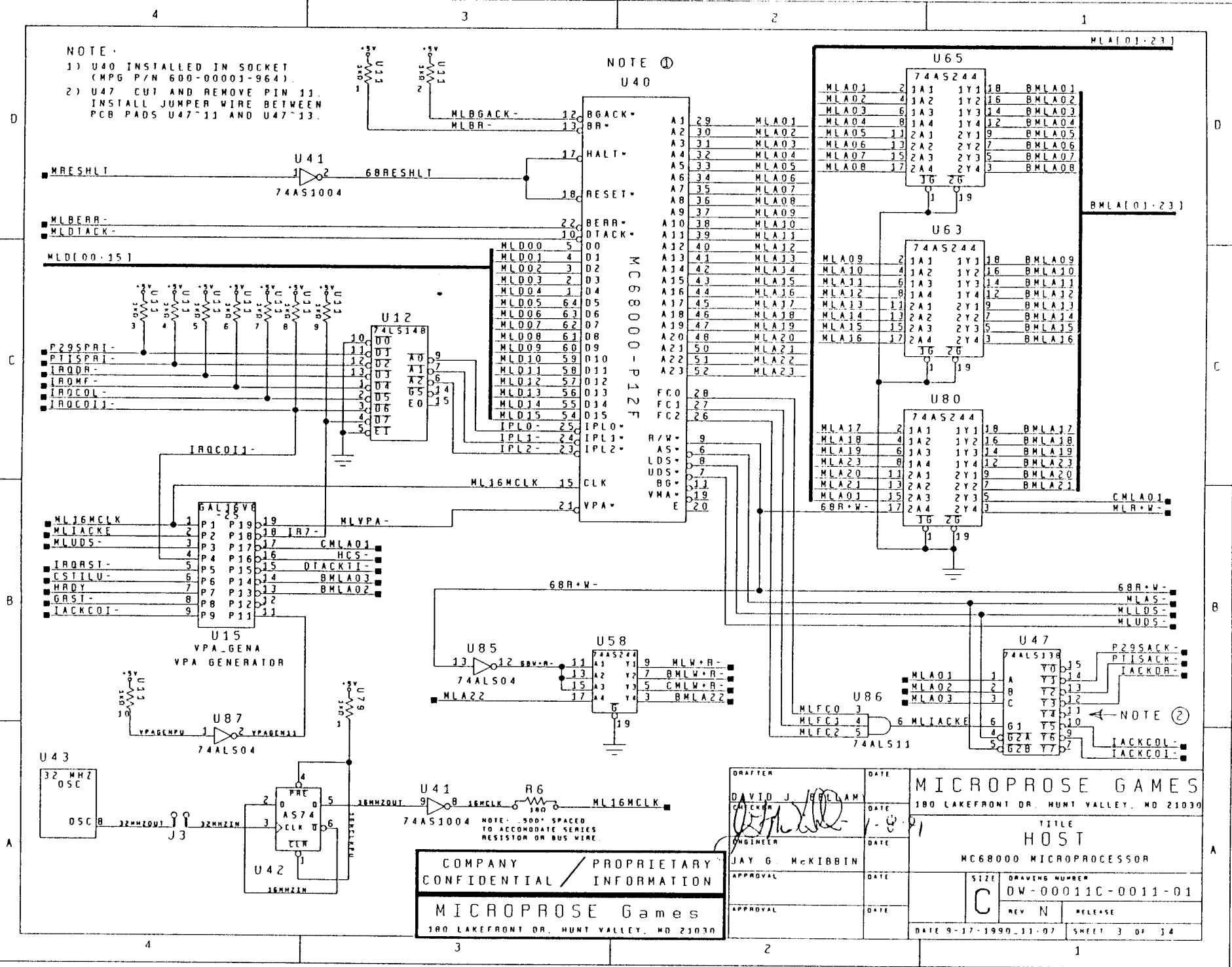
(DIAG)
 DOWN
 RIGHT
 TO
 LEFT

DRAFTER DAVID J. BELLMAN		DATE		MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKED		DATE			
DESIGNED JAY G. McKIBBIN		DATE		TITLE HOST	
APPROVAL		DATE		MC68000 HOST PROCESSOR BOARD	
APPROVAL		DATE		SIZE C	
				DRAWING NUMBER DW-00011C-0011-01	
				REV L	
				RELEASE	
				DATE 9-27-1990 9-17	
				SHEET 2 OF 14	

NOTE

- 1) U40 INSTALLED IN SOCKET (MPG P/N 600-0000J-964)
- 2) U47 CUT AND REMOVE PIN 11. INSTALL JUMPER WIRE BETWEEN PCB PADS U47-11 AND U47-13.

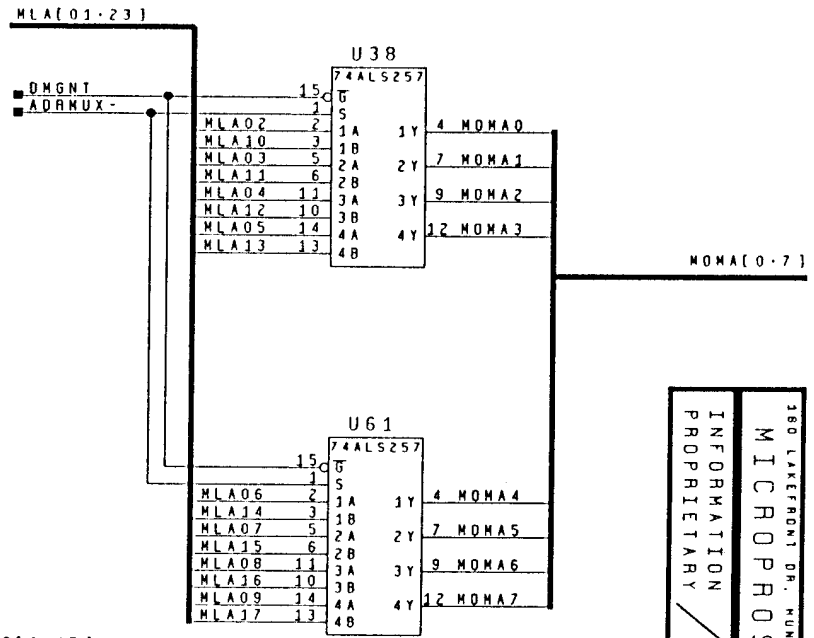
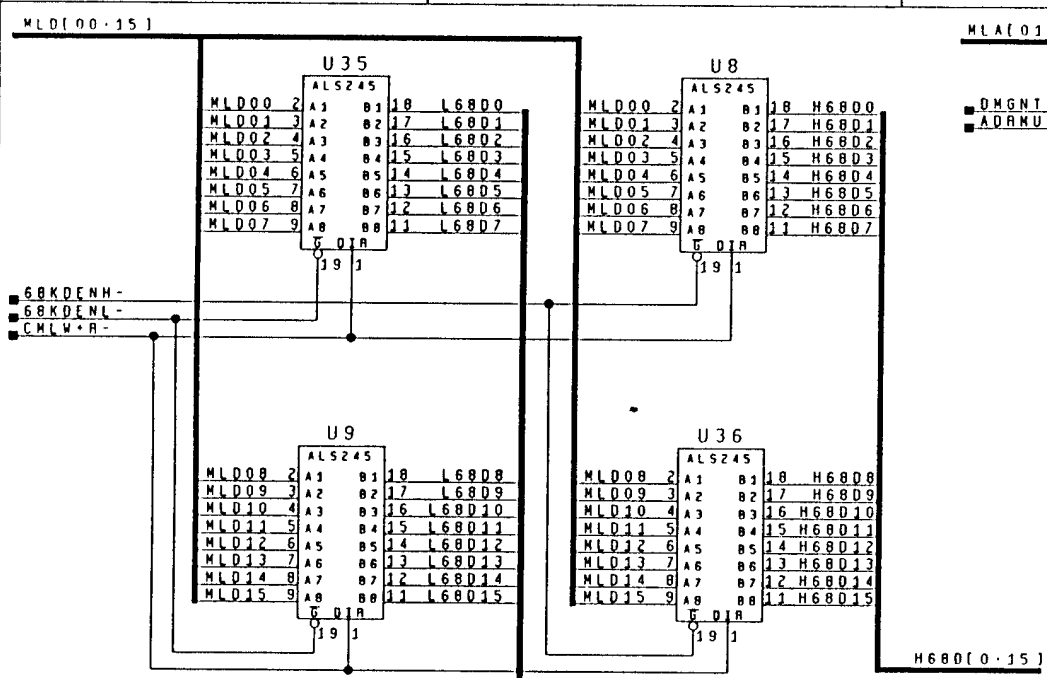
NOTE ①
U40



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MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

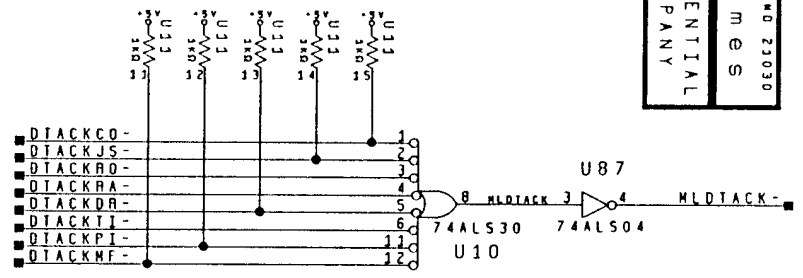
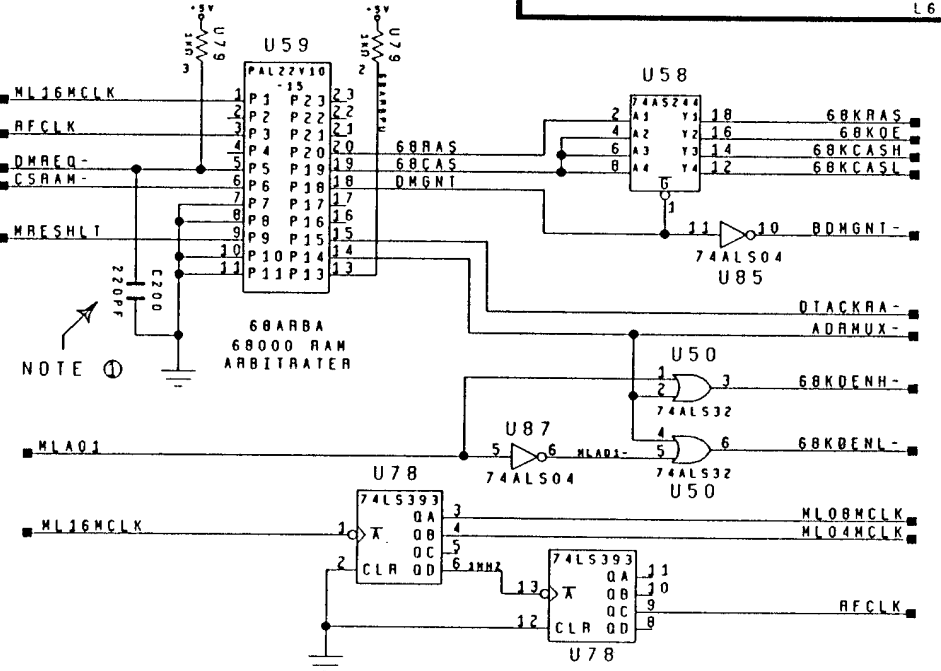
DRAWN	DATE
CHECKED	DATE
ENGINEER	DATE
APPROVAL	DATE
APPROVAL	DATE

MICROPROSE GAMES	
180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
TITLE HOST	
MC68000 MICROPROCESSOR	
SIZE	DRAWING NUMBER
C	DW-00011C-0011-01
REV N	RELEASE
DATE 9-17-1990-11-07	SHEET 3 OF 14



180 LAKEFRONT DR. HUNT VALLEY, MD 21030
MICROPROSE Games
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 PROPRIETARY COMPANY

H68D[0-15]
L68D[0-15]



NOTE:
1) PCB MODIFICATION. ADD C200 BETWEEN U59-5 AND U59-12 ON BOTTOM OF PCB.

DRAFTER		DATE	MICROPROSE GAMES	
DAVID J. BELLWICK		DATE	180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER		DATE	TITLE	
<i>[Signature]</i>		1-10-90	HOST	
ENGINEER		DATE	68000 PROGRAM RAM BUFFERS AND CONTROL LOGIC	
JAY G. MCKIBBIN		DATE	SIZE	DRAWING NUMBER
APPROVAL		DATE	C	DW-00011C-0011-01
APPROVAL		DATE	REV 0	RELEASE
DATE 10-1-1990-10-29			SHEET 4 OF 14	

D

C

B

A

D

C

B

A

4

3

2

1

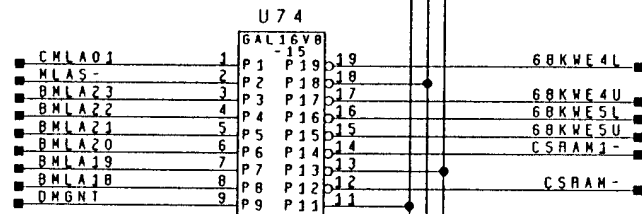
4

3

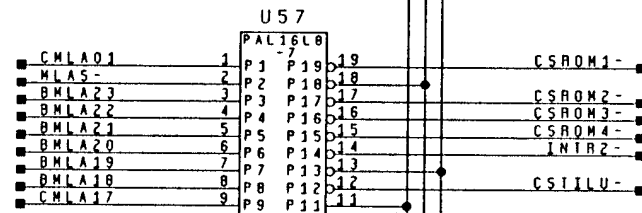
2

1

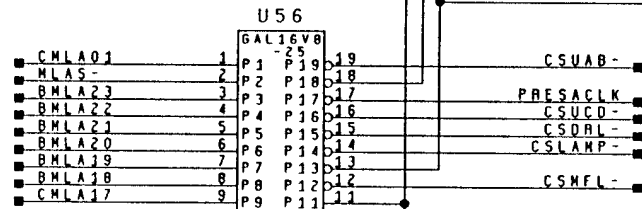
MLLDS-
MLUDS-
CMLW+R-



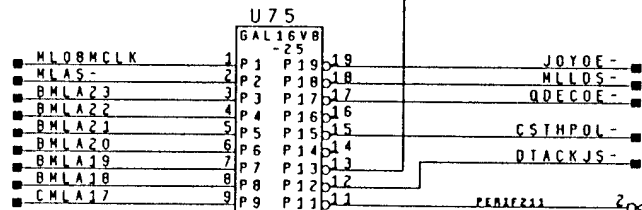
RAMDECA
RAM ADDRESS
DECODER



ROMDECB
ROM ADDRESS
DECODER

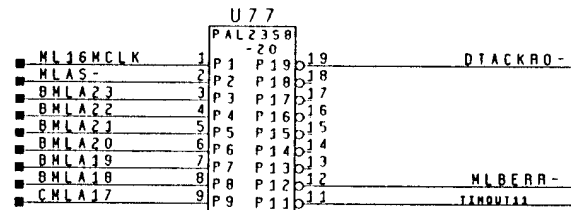


PERIPH1A
PERIPHERAL SET 1
ADDRESS DECODER



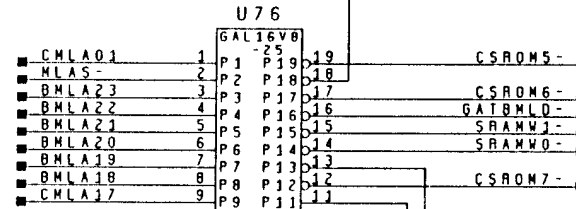
PERIPH2A

PERIPHERAL SET 2 ADDRESS DECODER

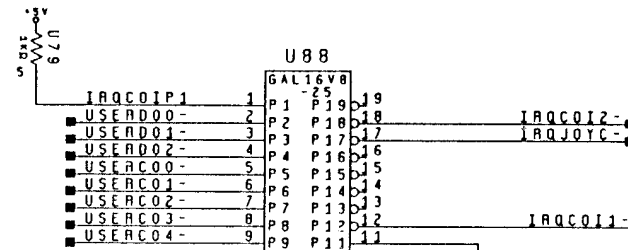


TIMEOUT
ROM DTACK & BERR TIMEOUT GENERATOR

74ALS04
U85



SPARNENA
SPARE ROM AND RAM
ADDRESS GENERATOR



IRQCOINA
COIN
DETECT/INTERRUPT
GENERATOR

U85
74ALS04

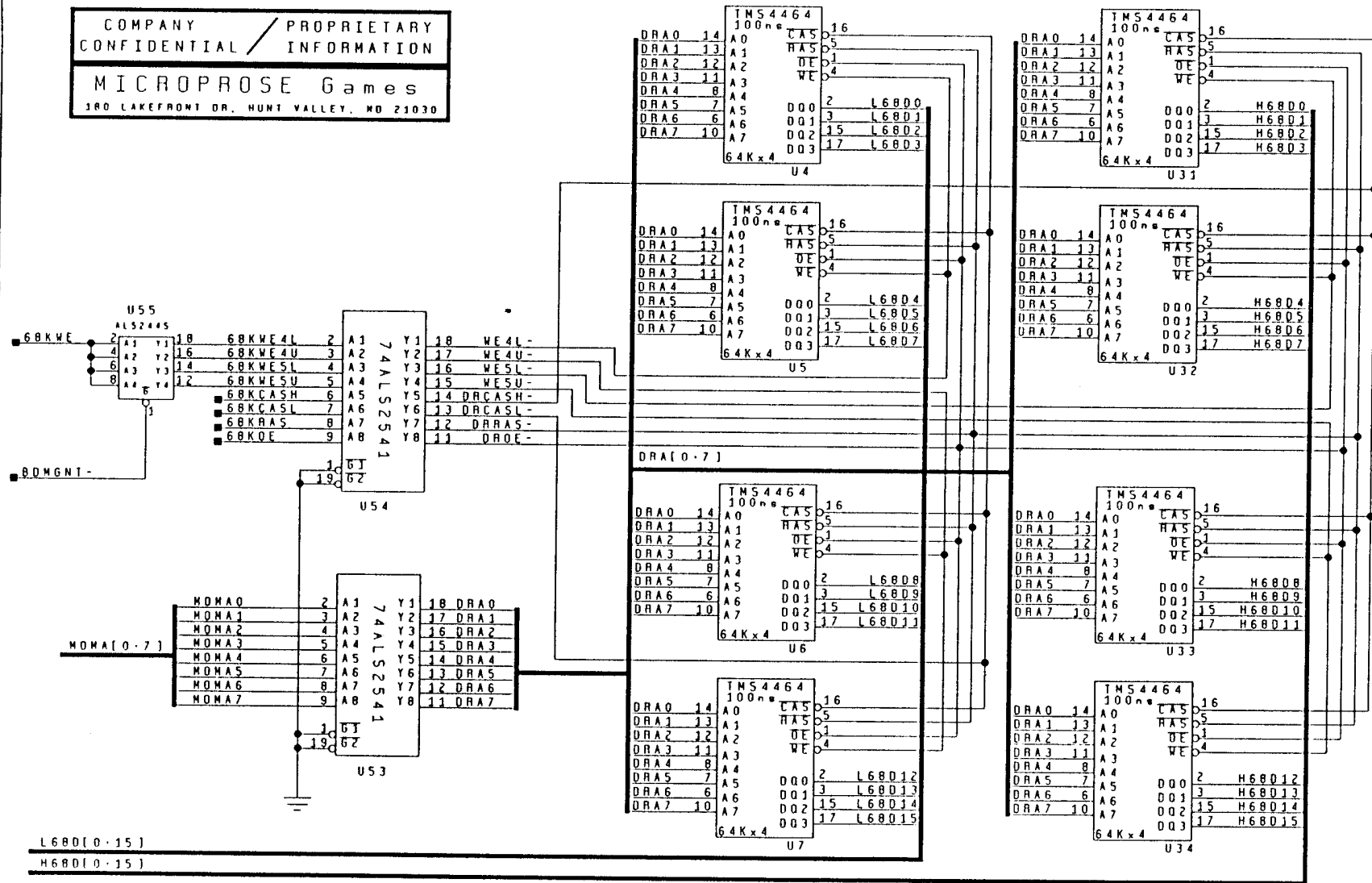
COMPANY
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MICROPROSE Games
PROPRIETARY
INFORMATION
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER DAVID J. BELLAMY		DATE	MICROPROSE GAMES	
CHECKER <i>[Signature]</i>		DATE	180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
ENGINEER JAY G. McKIBBIN		DATE	TITLE HOST	
APPROVAL		DATE	ADDRESS DECODING/ COIN INTERRUPT	
APPROVAL		DATE	SIZE C	DRAWING NUMBER DW-00011C-0011-01
		DATE	REV P	RELEASE
		DATE	DATE 10-25-1990_14-42 SHEET 5 OF 14	

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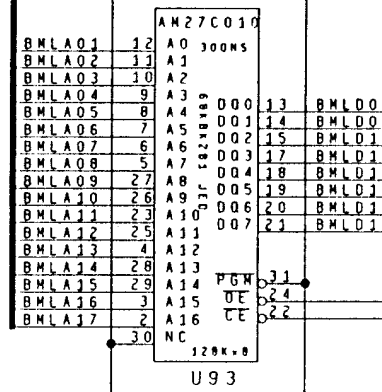
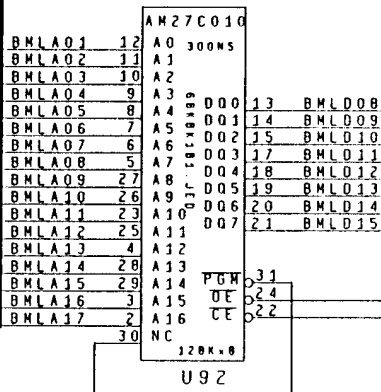
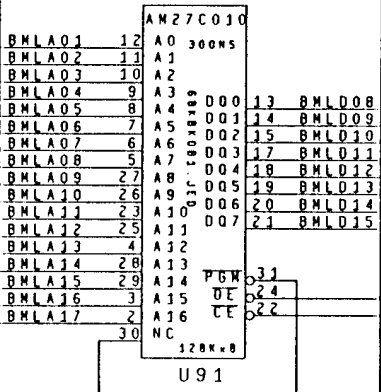
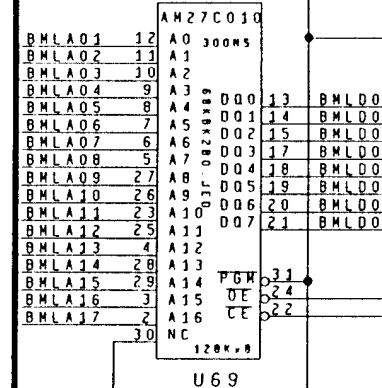
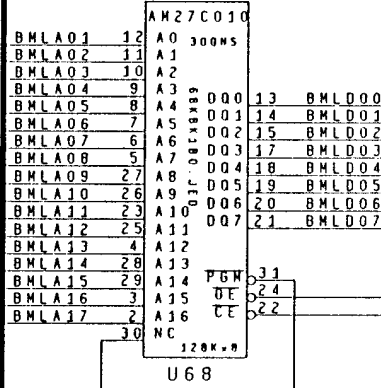
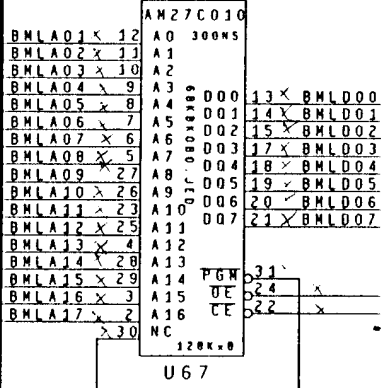
MICROPROSE Games

180 LAKEFRONT DR. HUNT VALLEY, MD 21030



DRAFTER DAVID J. BELLAMY		DATE 9-26-90		MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER <i>[Signature]</i>		DATE		TITLE HOST	
ENGINEER MICHAEL WILLIAMS		DATE		SIZE C	
APPROVAL		DATE		DRAWING NUMBER DW-00011C-0011-01	
APPROVAL		DATE		REV K RELEASE	
DATE 5-7-1990.12-47				SHEET 6 OF 14	

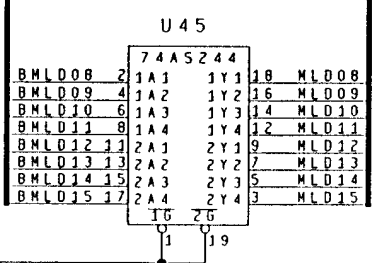
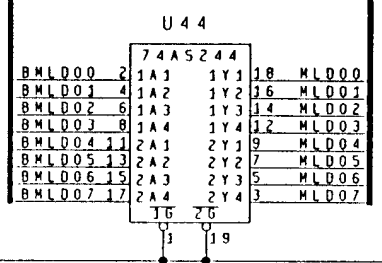
BMLA[01-17]



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180 LAKEFRONT DR. HUNT VALLEY, MD 21030

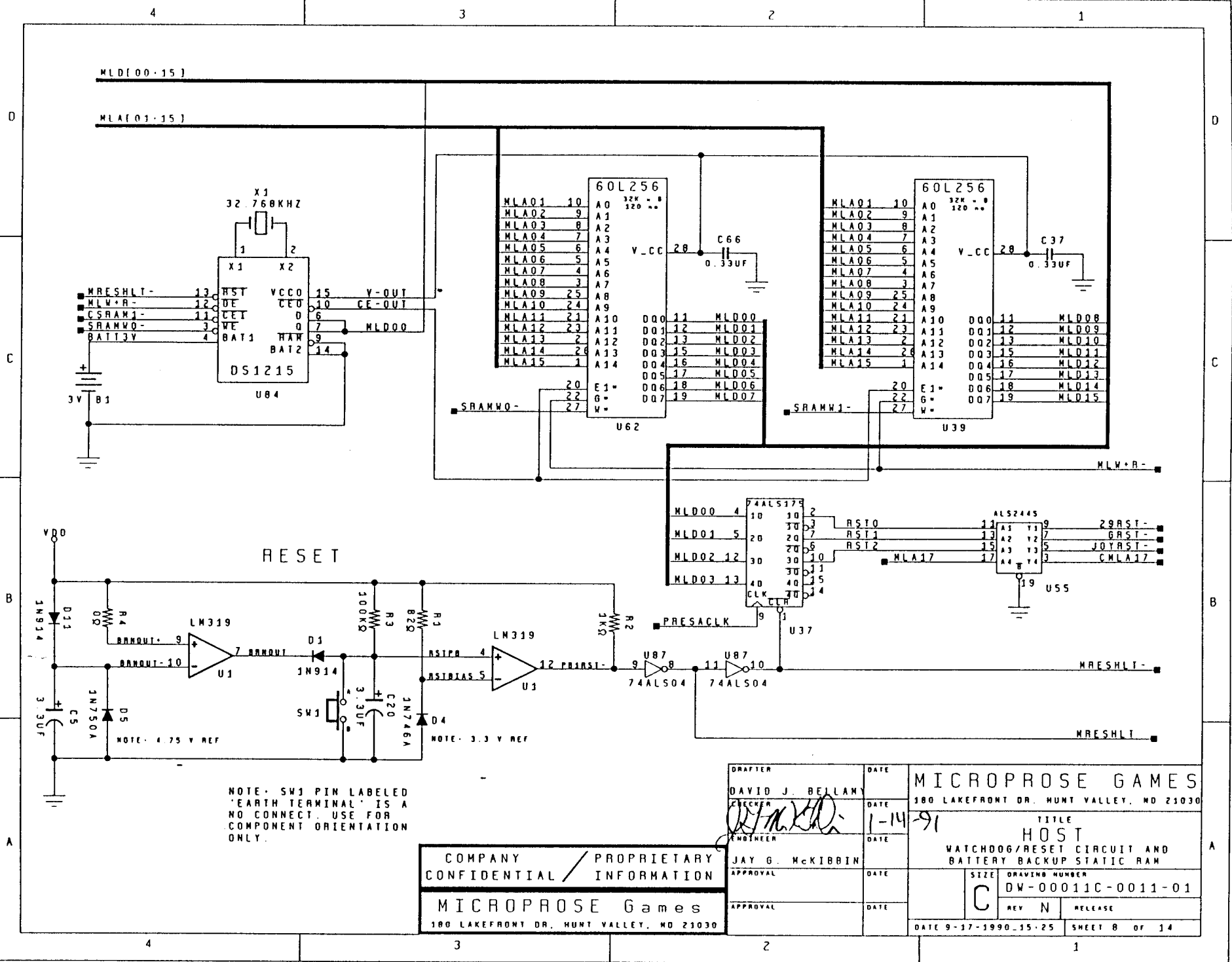
CSROM1-
CSROM2-
CSROM3-

BMLW*R-
BMLD[00-15]
MLD[00-15]



NOTE:
U67, U68, U69, U91, U92, U93 INSTALLED
IN SOCKET (MPG P/N 600-00002-632)

DRAWN	DATE	MICROPROSE GAMES	
DAVID J. BENJAMIN		180 LAKEFRONT DR HUNT VALLEY, MD 21030	
CHECKED	DATE	TITLE	
<i>J. McKibbin</i>	9-26-90	HOST	
DESIGNED	DATE	68K INSTRUCTION EPROM	
JAY G. McKIBBIN		SIZE	DRAWING NUMBER
APPROVAL	DATE	C	DW-00011C-0011-01
APPROVAL	DATE	REV N	RELEASE
			DATE 9-17-1990 17-32 SHEET 7 OF 14



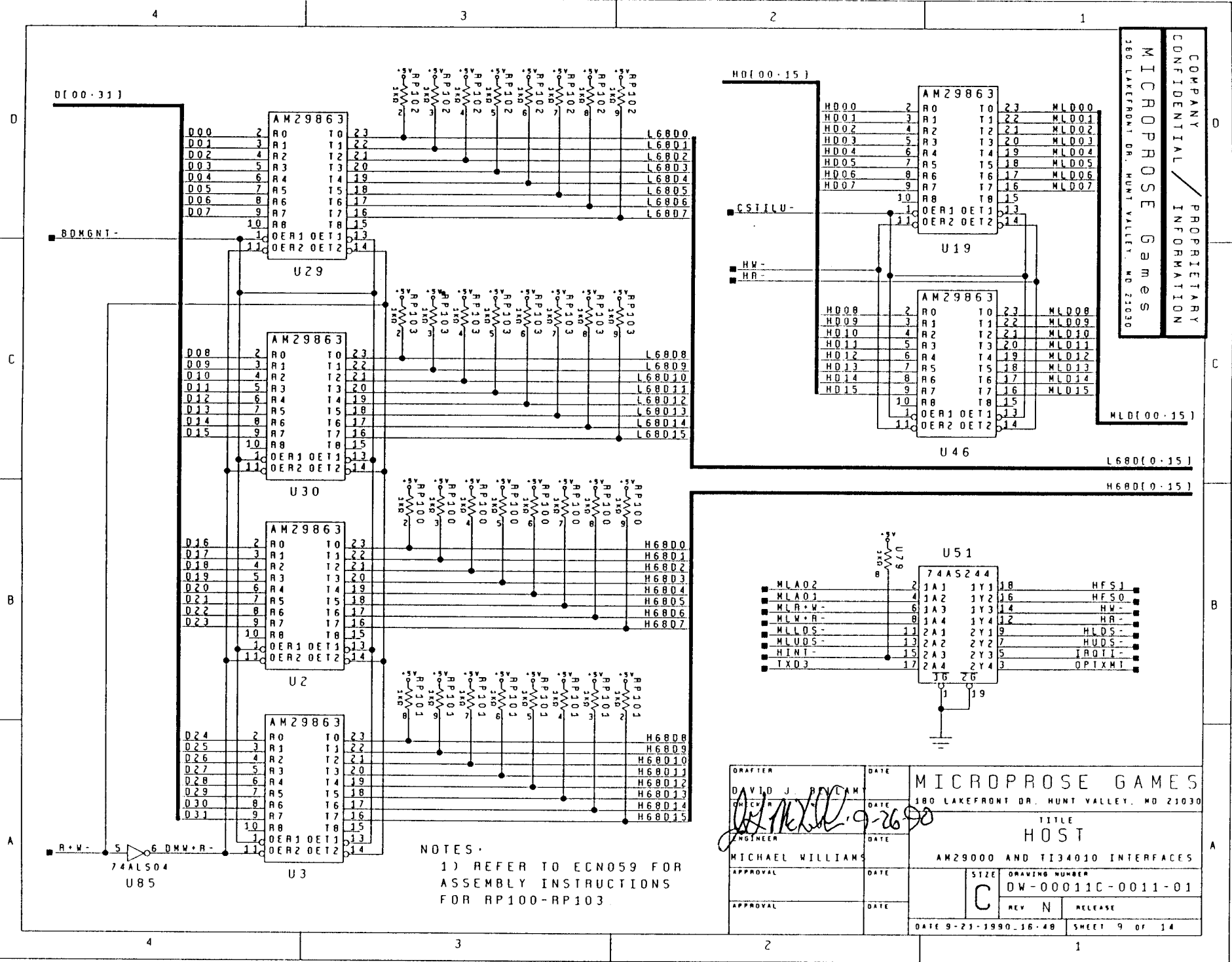
NOTE: SW1 PIN LABELED 'EARTH TERMINAL' IS A NO CONNECT. USE FOR COMPONENT ORIENTATION ONLY.

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 180 LAKEFRONT DR., HUNT VALLEY, MD 21030

DRAFTER DAVID J. BELLAM	DATE
CHECKER <i>[Signature]</i>	DATE 1-14-91
ENGINEER JAY G. McKIBBIN	DATE
APPROVAL	DATE
APPROVAL	DATE

MICROPROSE GAMES	
180 LAKEFRONT DR., HUNT VALLEY, MD 21030	
TITLE HOST	
WATCHDOG/RESET CIRCUIT AND BATTERY BACKUP STATIC RAM	
SIZE C	DRAWING NUMBER DW-00011C-0011-01
REV N	RELEASE
DATE 9-17-1990-15-25	SHEET 8 OF 14

COMPANY PROPRIETARY
 CONFIDENTIAL INFORMATION
 MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

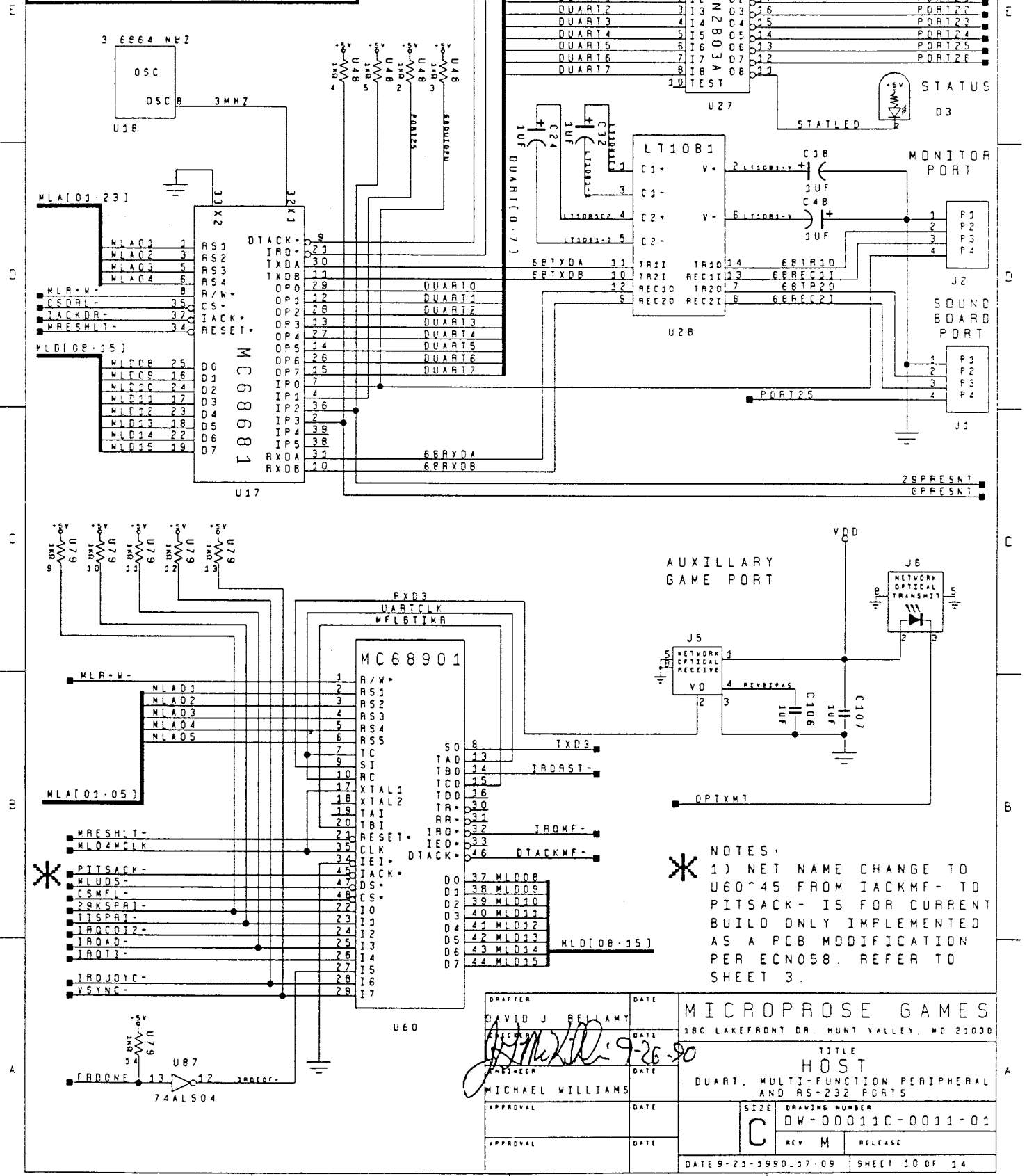


NOTES:
 1) REFER TO ECN059 FOR ASSEMBLY INSTRUCTIONS FOR RP100-RP103.

DRAFTER DAVID J. WILLIAMS		DATE 9-26-90		MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER		DATE		TITLE HOST	
ENGINEER MICHAEL WILLIAMS		DATE		AM29000 AND TI34010 INTERFACES	
APPROVAL		DATE		SIZE C	DRAWING NUMBER DW-00011C-0011-01
APPROVAL		DATE		REV N	RELEASE
DATE 9-23-1990-16-48				SHEET 9 OF 14	

COMPANY PROPRIETARY
CONFIDENTIAL INFORMATION

MICROPROSE Games
380 LAKEFRONT DR. HUNT VALLEY, MD 21030

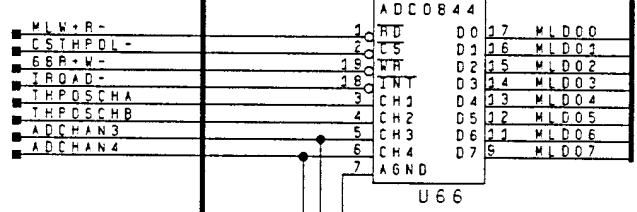
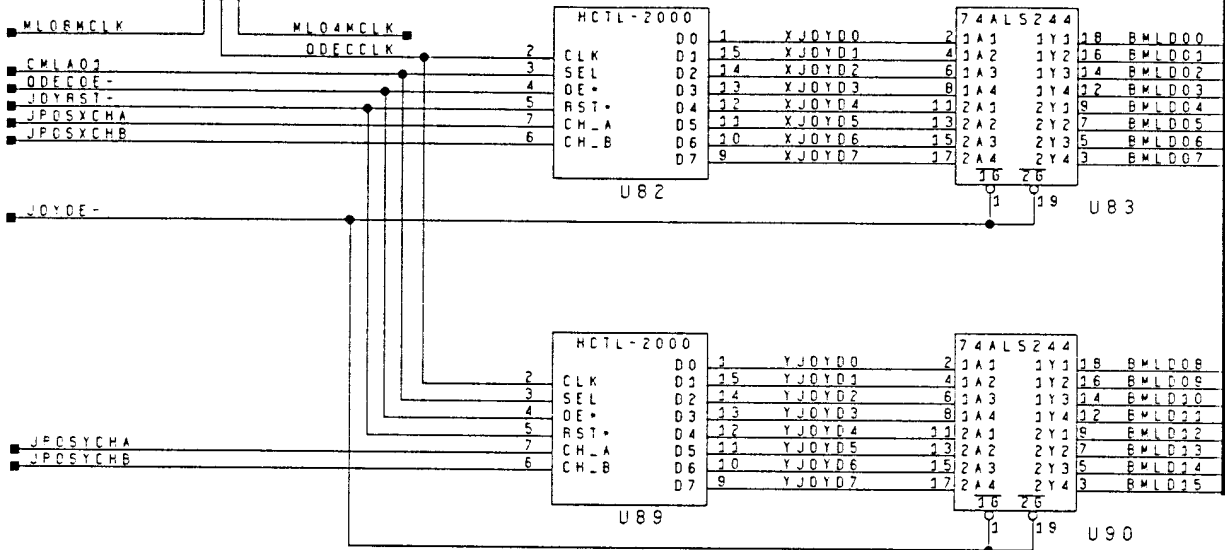


NOTES:
1) NET NAME CHANGE TO U60-45 FROM IACKMF- TO PITSACK- IS FOR CURRENT BUILD ONLY IMPLEMENTED AS A PCB MODIFICATION PER ECN058. REFER TO SHEET 3.

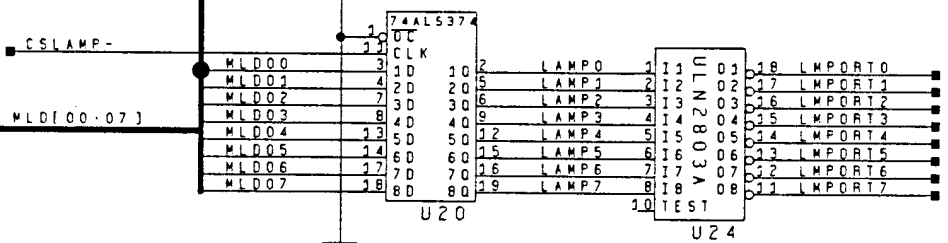
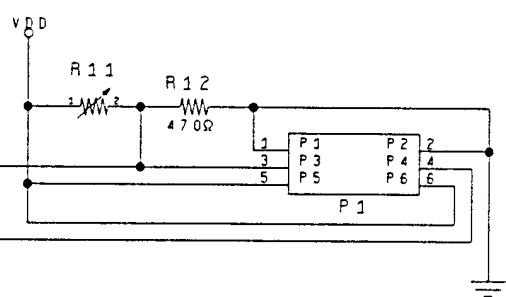
DRAFTER DAVID J. BELLAMY		DATE 9-26-90		MICROPROSE GAMES 380 LAKEFRONT DR. HUNT VALLEY, MD 21030	
DESIGNER MICHAEL WILLIAMS		DATE		TITLE HOST DUART, MULTI-FUNCTION PERIPHERAL AND RS-232 PCRTS	
APPROVAL		DATE		SIZE C	
APPROVAL		DATE		DRAWING NUMBER DW-00011C-0011-01	
				REV M	
				RELEASE	
				DATE 9-23-1990.37-09	
				SHEET 30 OF 14	

BMLD[00-15]

NOTE ①
J4



R11 THERMISTOR
70° F = 595Ω
120° F = 185.1Ω

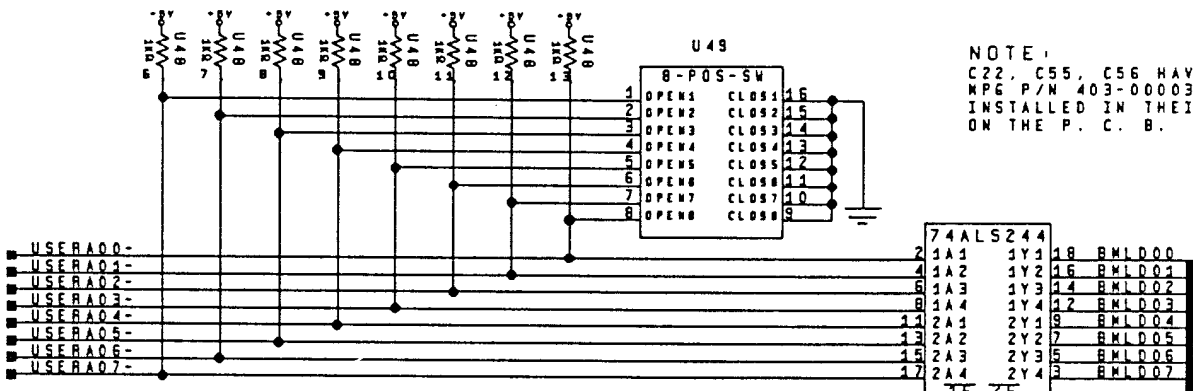


NOTE:
1) REF ECN059. INSTALL WIRE STAPLE BETWEEN J4-2 AND J4-3.

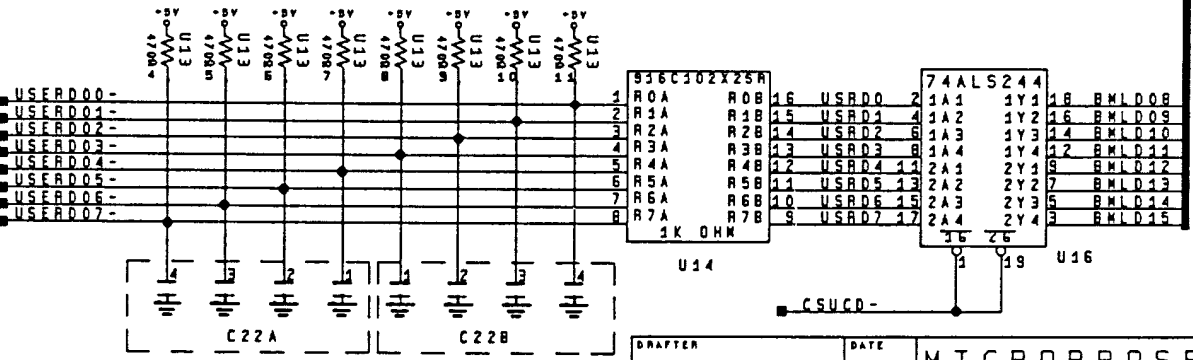
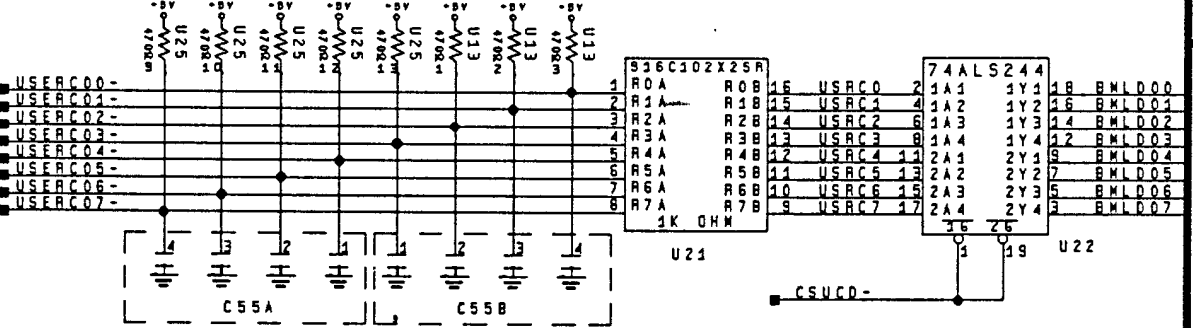
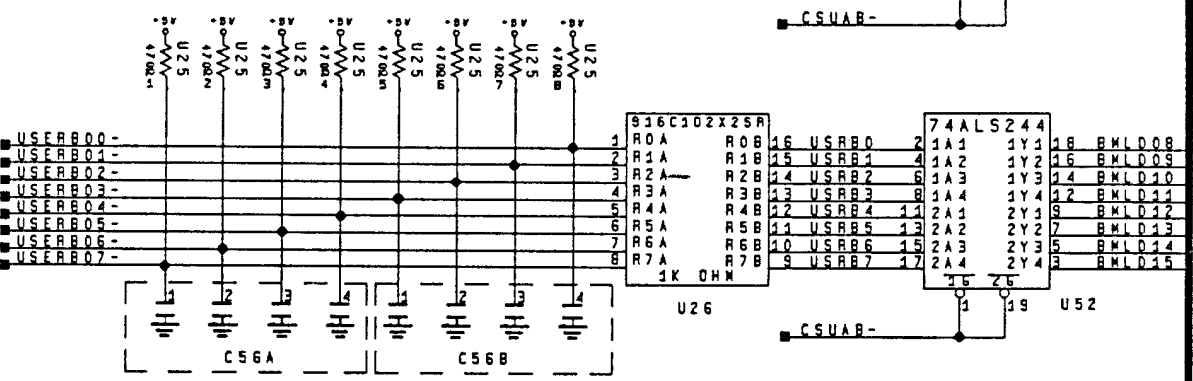
COMPANY PROPRIETARY
CONFIDENTIAL / INFORMATION
MICROPROSE Games
380 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER DAVID J. BELLOAN	DATE
CHECKER <i>[Signature]</i>	DATE 9-26-90
APPROVAL MICHAEL WILLIAMS	DATE
APPROVAL	DATE

MICROPROSE GAMES	
380 LAKEFRONT DR. HUNT VALLEY, MD 21030	
TITLE HOST	
10 INTERFACE AND LAMP DRIVERS	
SIZE C	DRAWING NUMBER DW-00011C-0011-01
REV N	RELEASE
DATE 9-23-1990.17.18	SHEET 13 OF 14

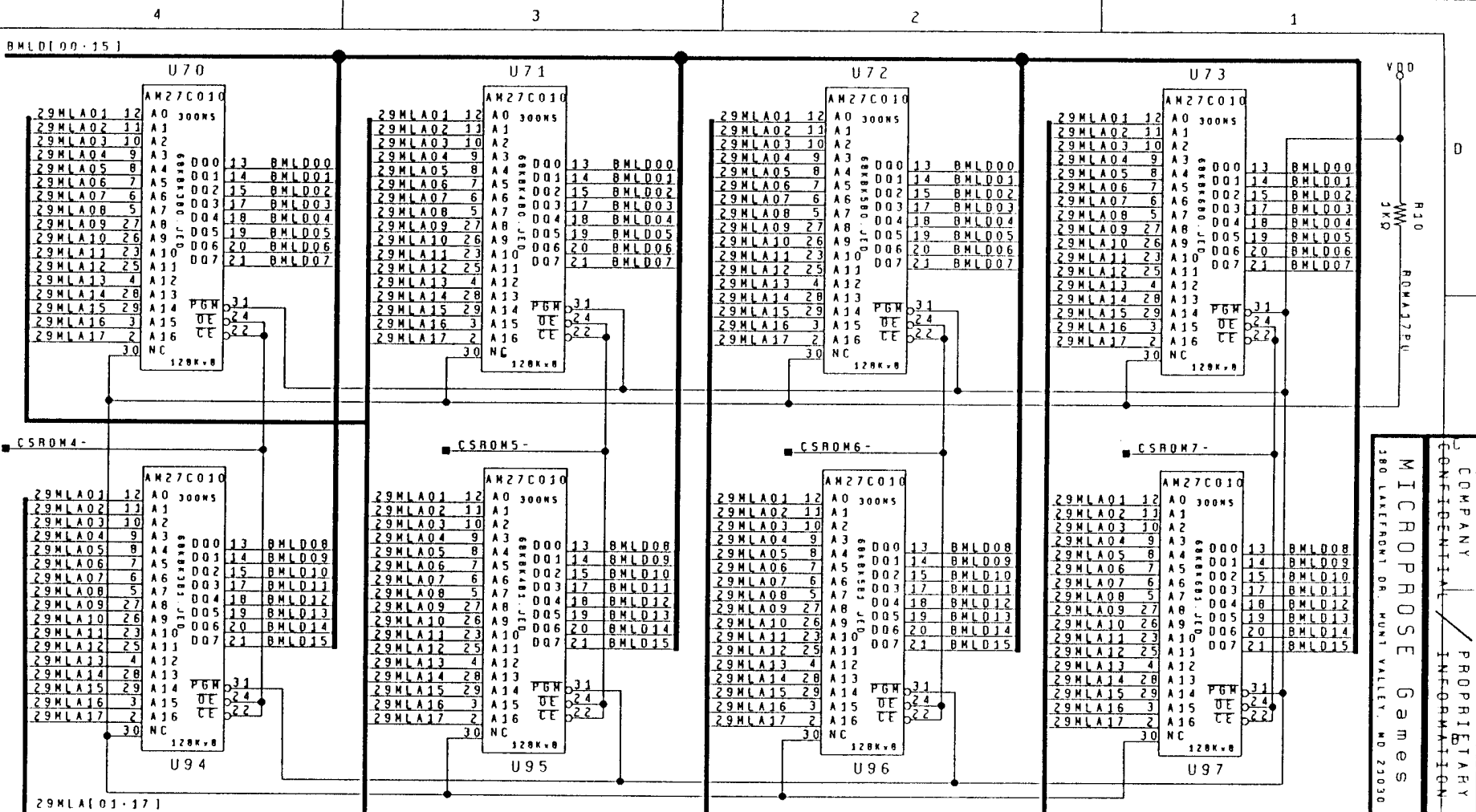


NOTE:
 C22, C55, C56 HAVE TWO PARTS.
 MFG P/N 403-00003-104.
 INSTALLED IN THEIR LOCATION
 ON THE P. C. B.



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 180 LAKEFRONT DR., HUNT VALLEY, MD 21030

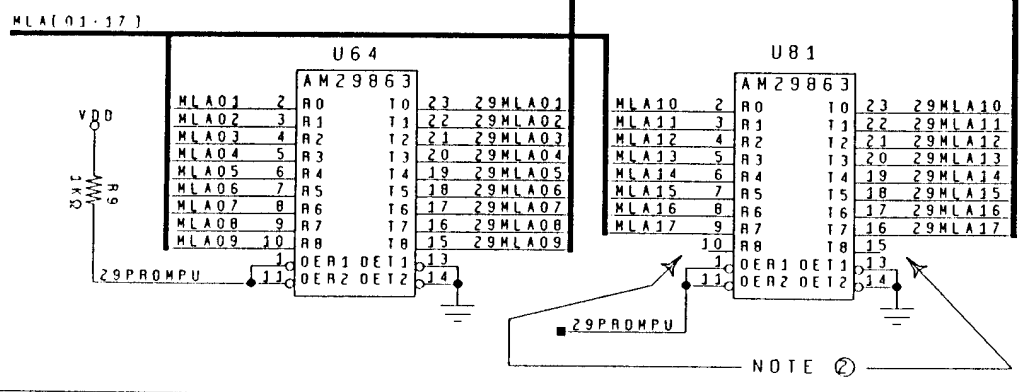
DRAFTER DAVID J. BELLAMY		DATE		MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER <i>[Signature]</i>		DATE 5/1/90			
ENGINEER MICHAEL WILLIAMS		DATE		TITLE HOST USER SWITCH INPUT INTERFACE	
APPROVAL	DATE	SIZE C	DRAWING NUMBER DW-00011C-0011-01		
APPROVAL	DATE	REV H	RELEASE		
		DATE 5-1-1990-13-30		SHEET 12 OF 14	



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 MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

NOTE:

- U70, U71, U72, U73, U94, U95, U96 AND U97 INSTALLED IN SOCKET (MPG P/N 600-00002-632)
- PBC MODIFICATION: CUT AND REMOVE PINS 10 AND 15 OF U81. INSERT JUMPER WIRE IN BETWEEN PCB PADS U81-10 AND U81-15.



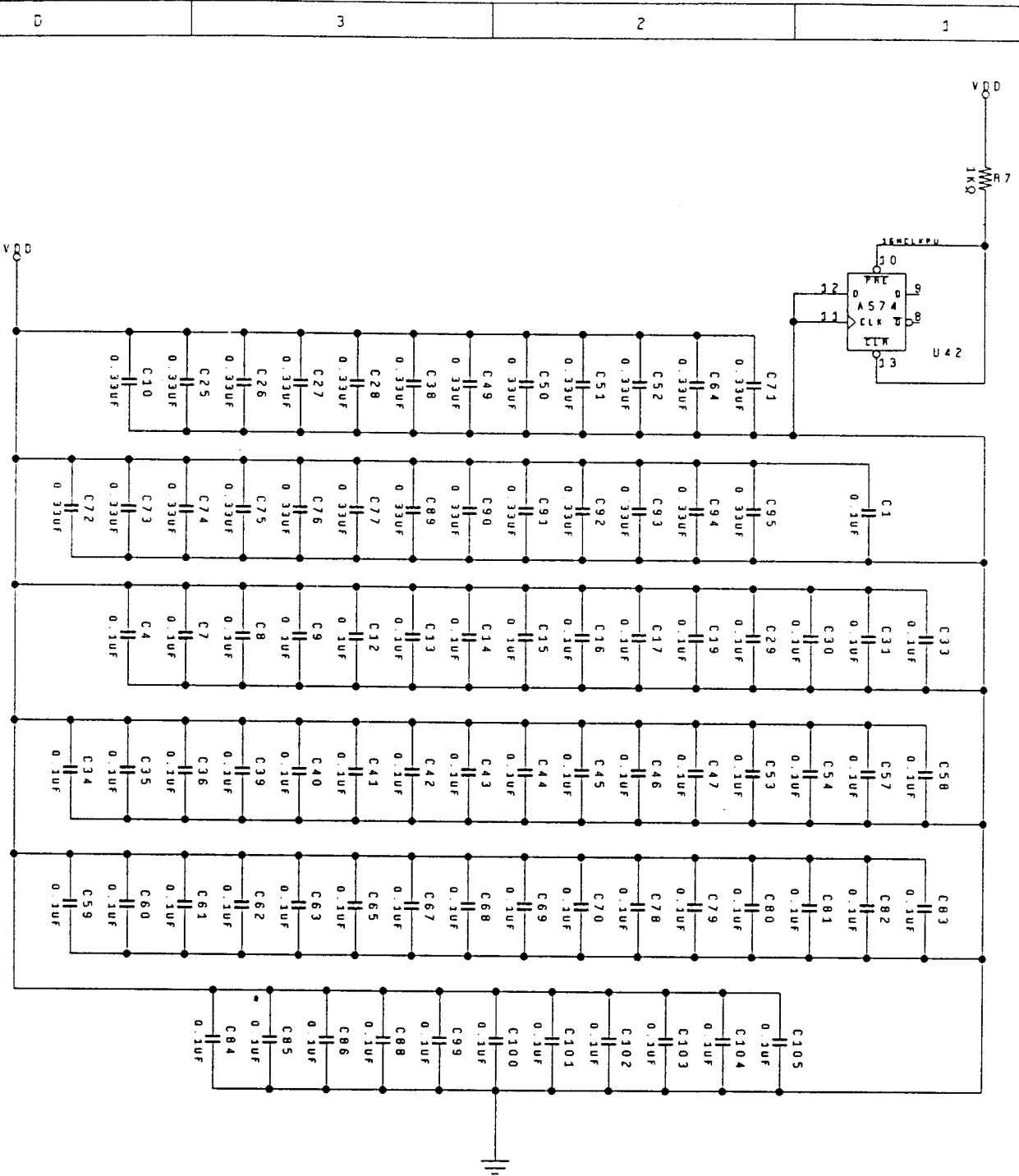
DRAWER		DATE		MICROPROSE GAMES	
DAVID J. BELLAW		9-26-90			
CHECKED		DATE		180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
ENGINEER		DATE		TITLE	
JAY G. McKIBBIN				HOST	
APPROVAL		DATE		DR. MATH INSTRUCTION EPROM	
APPROVAL		DATE		SIZE	
				DW-00011C-0011-01	
				REV L	
				RELEASE	
				DATE 9-24-1990-14-05	
				SHEET 13 OF 14	

D
C
B
A

VDD
3KΩ
R10
R0M422PU
D

4 3 2 1

4 3 2 1



COMPANY PROPRIETARY
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MICROPROSE Games
 180 LAKEFRONT DR., HUNT VALLEY, ND 21030

DRAFTER		DATE	MICROPROSE GAMES	
DAVID J. BELLAMY			380 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER		DATE	TITLE	
<i>[Signature]</i>		1-14-91	HOST	
ENGINEER		DATE	POWER DECOUPLING	
JAY G. McKIBBIN			SIZE	
APPROVAL		DATE	DRAWING NUMBER	
			DW-00011C-0011-01	
APPROVAL		DATE	REV D RELEASE	
			DATE 3-22-1990.37.38 SHEET 14 OF 14	

BILL OF MATERIALS
 HOST PROCESSOR P.C.B.
 ASSEMBLY: A10-00001-001

DATE	ECN	REV	SHEET NUMBER																								
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
	ECN	A	A						A	A																	
	ECN	B	B					B																			
	ECN	C	C							C																	
3-21-90	ECN	D	D	D	D	D	D	D	D																		
5-01-90	ECN017	E	E							E																	
5-01-90	ECN018	F	F		F																						
5-01-90	ECN020	G	G	G																							
5-01-90	ECN021	H	H		H																						
5-07-90	ECN016	K	K			K																					
9-11-90	ECN059	L	L		L	L	L	L	L																		
5-07-90	ECN080	M	M						M																		
9-21-90	ECN089	N	N		N																						
9-21-90	ECN109	O	O							O																	
10-08-90	ECN113	P	P						P																		
10-23-90	ECN122	R	R			R				R																	
10-25-90	ECN123	S	S						S																		
1-08-91	ECN150	T	T					T	T																		

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 MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER DAVID J. BELLAMY	DATE
CHECKED <i>[Signature]</i>	DATE 1-14-91
ENGINEER JAY G. MCKIBBIN	DATE
APPROVAL	DATE
APPROVAL	DATE

MICROPROSE GAMES 180 LAKEFRONT DRIVE, HUNT VALLEY, MD 21030		REV
TITLE BILL OF MATERIALS HOST PROC. P.C.B. A10-00001-001		PL-00011A-0011-01 T
		DATE 1-14-1991-11-29
		SHEET 1 OF 7
		A

MICROPROSE GAMES, 180Lakefront Drive, Hunt Valley, Maryland 21030
 PROJECT NAME: HOST PROCESSOR DRWG. NO.: PL-00011A-0011-01 REV: T
 DATE: Wed 5-Oct-1990

ITEM	QTY	PART NUMBER REF. DES.	PART DESCRIP	VALUE	MPG P/N
1	2	914C471X2PE U13,U25	PULRESPAK	470OHM	501-00022-471
2	1	90B08S U49	8POSDIPSW		625-00001-208
3	3	916C102X2SR U14,U21,U26	ISORESPAK	1K	501-00031-102
4	6	929CZ5U104Z050B C22A,C22B,C55A,C55B,C56A,C56B	DIPCAPx4	.1 UF	403-00003-104
5	1	SN74ALS374N U20	OCTALDFLOPS		200-00374-200
6	7	SN74ALS244AN U16,U22,U23,U52,U55,U83,U90	OCTBUFFR		200-00244-200
7	1	ADC0844CCN U66	A/DCONVERTR		246-00001-200
8	2	HCTL-2000 U82,U89	QUADDECODER		246-00002-200
9	2	ULN2803A U24,U27	LAMPDRIVER		279-00001-200
10	67	C410C104M5U5CA C4,C1,C33,C7,C8,C14,C13,C12,C9,C31,C30,C29,C19,C17,C15, C16,C45,C44,C46,C47,C53,C54,C57,C58,C40,C41,C42,C43,C39, C36,C34,C35,C70,C69,C78,C79,C80,C81,C82,C83,C63,C65,C67, C68,C62,C61,C59,C60,C85,C84,C86,C88,C102,C101,C100,C99, C105,C103,C104,C107,C106,C109,C96,C98,C23,C6,C2	AXCERCAP	0.1UF	402-00382-104
11	[0]	68001-503 [J4]	3PINJUMPR	.100"	610-00002-003
12	0	92915-R-HS-1 J5	FIBROPTRCV		240-00004-001
13	0	92915-T-DD J6	FIBROPTXMT		240-00005-001
14	1	X0-53B-3.6864 U18	DIPOSCILATR	3.6864M	290-00002-003
15	* 1	MC68681-P U17	DUART		240-00003-200
16	1	LT1081CN U28	RS232DRVR		235-00001-200

ITEM	QTY	PART NUMBER REF. DES.	PART DESCRIP	VALUE	MPG P/N
17	4	173D105X0035V C18,C24,C32,C48	AXTANTCAP	1UF	422-00072-105
18	D* 1	MC68901-P U60	MFPERIPHERL		130-68901-204
19	8	AM29C863PC U2,U3,U19,U29,U30,U46,U64,U81	9BIBUSDRVR		235-00005-200
20	2	22-05-7048 J1,J2	MOLEX4PIN	.100"	610-00601-004
21	5	1N914 D1,D7,D8,D9,D10,D11	DIODE		300-00002-003
22	5	CCF-07 102G R2,R7,R8,R9,R10	2%MFRES	1K	503-00002-102
23	2	173D335X0020V C5,C20	AXTANTCAP	3.3UF	422-00062-335
24	1	SA101A221JAA C200	AXCERCAP	220PF	402-00195-221
25	1	CCF-07 104G R3	2%MFRES	100K	503-00002-104
26	1	1N746A D4	ZENER		301-00002-033
27	1	WX-32.768KHZ X1	CRYSTAL	32KHZ	290-00004-32K
28	1	KSA1A211 SW1	PBSWITCH		625-00002-001
29	1	LM319N U1	VOLTCOMPAR	14DIP	280-00003-200
30	1	DS1215 U84	R/TCLK		291-01215-200
31	27	C412C334M5U5CA C52,C51,C50,C49,C38,C28,C27,C26,C25,C10,C91,C90,C72,C73, C74,C75,C89,C77,C76,C95,C94,C93,C92,C64,C71,C37,C66	AXCERCAP	0.33UF	402-00382-334
32	1	15-51-04-410-000 B1	LITHBATT	3VOLT	390-00001-001
33	* 2	MCM60L256AP12 U39,U62	32Kx8SRAM	120NS	221-00003-212
34	1	SN74ALS175N U37	QUADDFLOPS		200-00175-200

2-19-01

ITEM	QTY	PART NUMBER REF. DES.	PART DESCRIP	VALUE	MPG P/N
35					
36	2	SN74ALS2541N U53,U54	OCTINVDRVR		200-02541-200
37	* 8	TMS4464-10NL U4,U5,U6,U7,U31,U32,U33,U34	64Kx4DRAM	100NS	220-00001-210
38	A 1	AMPAL23S8-20PC U77	TIMEOUTC	25NS	<u>120-00001-206</u>
39	A 1	GAL16V8A-25P U75	PERIPH2A	25NS	120-00001-005
40	A 1	GAL16V8A-25P U15	VPA_GENA	25NS	120-00001-000
41	A 1	GAL16V8A-25P U74	RAMDECA	15NS	120-00001-002
42	B 1	GAL22V10-15P U59	68ARBA	15NS	120-00001-001
43	1	1N750A D5	ZENER		301-00002-047
44	1	SN74LS393N U78	QUADCOUNTR		202-00393-200
45	1	SN74ALS30AN U10	8INNAND		200-00030-200
46	1	SN74ALS32N U50	QUAD2INOR		200-00032-200
47	2	SN74ALS257N U38,U61	2:1MUX		200-00257-200
48	4	SN74ALS245AN U8,U9,U35,U36	OCTBIDBUFR		200-00245-200
49	1	SN74LS148N U12	8:3ENCODER		202-00148-200
50	1	SN74ALS138N U47	3:8DEMUX		200-00138-200
51	1	68001-502 J3	2PINJUMP	.100"	610-00002-002
52	1	X0-43D-32 U43	DIPOSCILATR	32MHZ	290-00001-032
53	1	SN74AS74N U42	DUALDFLOPS		201-00074-200

ITEM	QTY	PART NUMBER REF. DES.	PART DESCRIP	VALUE	MPG P/N
54	7	SN74AS244N U44,U45,U51,U58,U63,U65,U80	OCTBUFFR		201-00244-200
55	1	SN74AS1004AN U41	HEXINERTR		201-01004-200
56	1	SN74ALS11AN U86	TRI3INAND		200-00011-200
57	2	SN74ALS04BN U85,U87	HEXINVERTR		200-00004-200
58	1	CCF-07 180G R6	2%MFRES	18OHM	503-00002-180
59	3	916C102X2PE U11,U48,U79	PULLRESPAK	1KOHM	501-00032-102
60 E*	1	MC68000-P12F U40	MICROPROCESR	16MHZ	135-68000-216
61	2	HLMP3600 D2,D3	LEDW/RES	RED	305-00003-002
62	6	173D156X0015W C3,C11,C21,C87,C97,C108	AXTANTCAP	15UF	422-00052-156
63	1	ICTE-5 D6	ZENER	5V	300-00001-002
64	1	71922-016 P4	2x8HEADER	.100"	610-00800-016
65	1	71922-020 P3	2x10HEADER	.100"	610-00800-020
66	1	71922-026 P5	2x13HEADER	.100"	610-00800-026
67	1	26-60-5100 P8	MOLEX10PIN	.156"	610-00601-010
68	1	71922-140 P7	2x20HEADER	.100"	610-00900-040
69	1	533249-1 P6	2x32HEADER	.100"	6 - -064
70					
71 A	1	GAL16V8A-25P U76	SPARMEMA	25NS	120-00001-007

ITEM	QTY	PART NUMBER REF. DES.	PART DESCRIP	VALUE	MPG P/N
72	A 1	GAL16V8A-25P U56	PERIPH1A	25NS	120-00001-004
73	A 1	TIBPAL16L8-7CN U57	ROMDECB	7.5NS	120-00001-103
74	A 1	GAL16V8A-25P U88	IRQCOINA	25NS	120-00001-008
75	1	71922-006 P1	2x3HEADER	.100"	610-00800-006
76	1	71922-010 P2	2x5HEADER	.100"	610-00800-010
77	1	68786-102 J3	SHUNT		715-00001-001
78	[0]	SRS8-12-01	SPACER	.75 "	700-00001-003
79	5	7-0805G-5 TP1,TP2,TP3,TP4,TP5	TEST PIN		710-00001-001
80	1	7-22870-5 TP6	TEST PIN		710-00001-002
81	C* 1	AM27C010-305DC U67	128Kx8EPROM 68KBK0B0.001	300NS	110-00001-100
82	C* 1	AM27C010-305DC U91	128Kx8EPROM 68KBK0B1.001	300NS	110-00001-101
83	C* 1	AM27C010-305DC U68	128Kx8EPROM 68KBK1B0.001	300NS	110-00001-102
84	C* 1	AM27C010-305DC U92	128Kx8EPROM 68KBK1B1.001	300NS	110-00001-103
85	C* 1	AM27C010-305DC U69	128Kx8EPROM 68KBK2B0	300NS	110-00001-004
86	C* 1	AM27C010-305DC U93	128Kx8EPROM 68KBK2B1	300NS	110-00001-005
87	C* 1	AM27C010-305DC U70	128Kx8EPROM 68KBK3B0	300NS	110-00001-006
88	C* 1	AM27C010-305DC U94	128Kx8EPROM 68KBK3B1	300NS	110-00001-007
89	C* 1	AM27C010-305DC U71	128Kx8EPROM 68KBK4B0	300NS	110-00001-008
90	C* 1	AM27C010-305DC U95	128Kx8EPROM 68KBK4B1	300NS	110-00001-009

ITEM	QTY	PART NUMBER REF. DES.	PART DESCRIP	VALUE	MPG P/N
91	C* [0]	AM27C010-305DC [U72]	128Kx8EPROM 68KBK5B0	300NS	110-00001-010
92	C* [0]	AM27C010-305DC [U96]	128Kx8EPROM 68KBK5B1	300NS	110-00001-011
93	C* [0]	AM27C010-305DC [U73]	128Kx8EPROM 68KBK6B0	300NS	110-00001-012
94	C* [0]	AM27C010-305DC [U97]	128Kx8EPROM 68KBK6B1	300NS	110-00001-013
95	A 2	ICO-320MTT UX77,UX88 [UX15,UX56,UX57,UX74,UX75,UX76]	SOCKET		600-00001-320
96	B [0]	ICO-324MTT [UX59]	SOCKET		600-00001-324
97	C 10	2-644018-2 UX67,UX68,UX69,UX70,UX71,UX91,UX92,UX93,UX94,UX95, [UX72,UX73,UX96,UX97]	SOCKET		600-00002-632
98	D [0]	1848-AG111D [UX60]	SOCKET		600-00001-648
99	E 1	110-91-964-41-001 UX40	SOCKET		600-00001-964
100	1	RL2003-289-95-D1 R11	TEMPSENSOR	500OHM	508-00001-501
101	1	CCF-07 471G R12	2PCMFRES	470OHM	503-00002-471
102	1	CCF-07 820G R1	2PCMFRES	82 OHM	503-00002-820
103	1	FRJ-50 R4	JUMPRES	0 OHM	503-00001-000
104	4	CSC09A01102G RP100,RP101,RP102,RP103	8RESSIPPAK	1 KOHM	501-10008-102

270

NOTES:

- (1) PARTS REQUIRING 0.33UF DECOUPLING CAPS ARE MARKED (*) IN BETWEEN ITEM NO. AND QTY. COLUMNS.
- (2) PARTS REQUIRING SOCKETS ARE MARKED WITH A LETTER TO CORRESPOND WITH SOCKETS WITH THE SAME LETTER.
- (3) PARTS WITH REFERENCE DESIGNATORS IN BRACKETS [] ARE WILL NOT BE POPULATED DURING PRODUCTION.

MICROPROSE Games

DR. MATH P.C.B. ASSEMBLY

DATE	ECN(S)	REV	SHEET NUMBER																																				
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35		
1-16-90	ECN006	A	A													A			A																				
1-22-90	ECN007	B	B							B	B												B	B							B								
		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
5-07-90	ECN015	D	D		D																																		
6-13-90	ECN038	E	E		E																																		
7-06-90	ECN051	F	F		F	F	F			F						F																							
7-25-90	ECN055	G	G		G																																		
9-13-90	ECN064	H	H																																				
10-9-90	ECN081	K	K			K																																	
10-9-90	ECN090	L	L			L																																	
11-8-90	ECN137	M	M			M																																	

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 CONFIDENTIAL / INFORMATION
MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER <i>Paul T. Kuhn</i>	DATE 11-8-90	
ENGINEER PAUL T. KUHN	DATE	TITLE DR. MATH DR. MATH PCB ASSEMBLY
APPROVAL	DATE	SIZE C
APPROVAL	DATE	DRAWING NUMBER DW-00011C-0012-01
		REV M
		RELEASE
		DATE 11-9-1990-10-54
		SHEET 3 OF 28

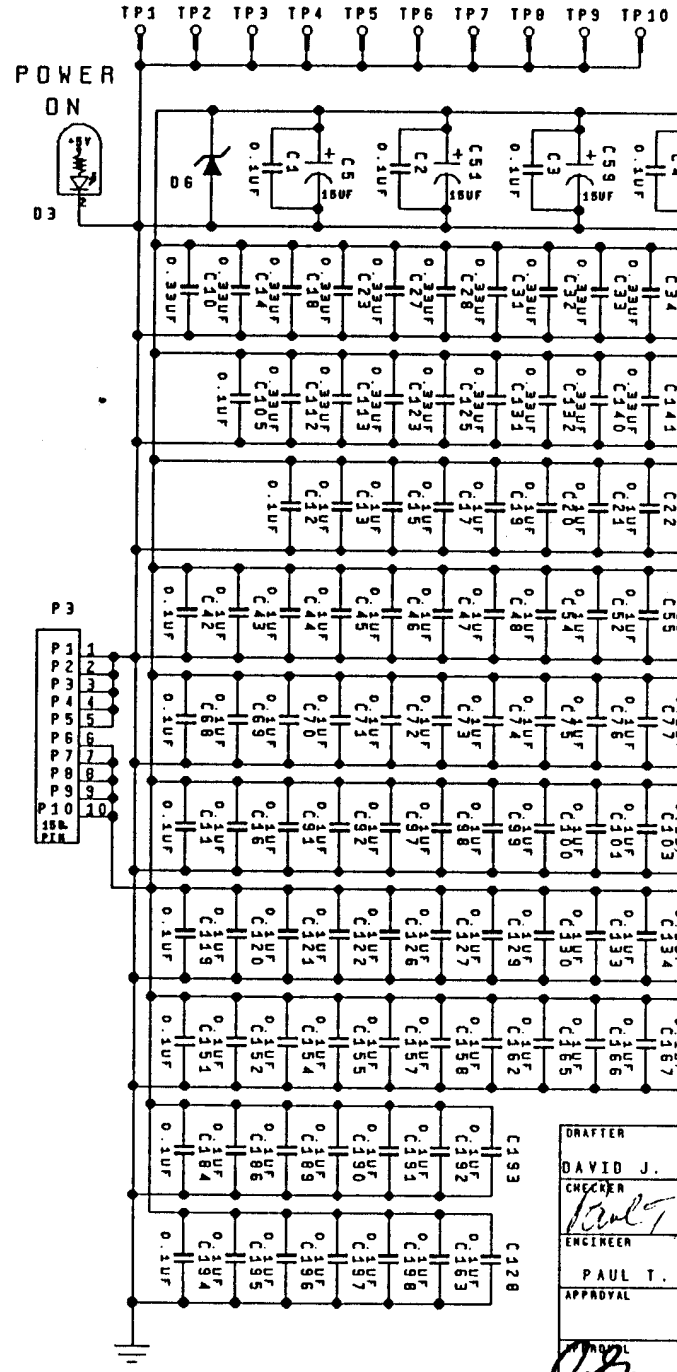
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 CONFIDENTIAL INFORMATION
MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

M68000 BOARD

CSD01	1	P1	2	CSD00
CSD03	3	P3	4	CSD02
CSD05	5	P5	6	CSD04
CSD07	7	P7	8	CSD06
CSD09	9	P9	10	CSD08
CSD11	11	P11	12	CSD10
CSD13	13	P13	14	CSD12
CSD15	15	P15	16	CSD14
CSD17	17	P17	18	CSD16
CSD19	19	P19	20	CSD18
CSD21	21	P21	22	CSD20
CSD23	23	P23	24	CSD22
CSD25	25	P25	26	CSD24
CSD27	27	P27	28	CSD26
CSD29	29	P29	30	CSD28
CSD31	31	P31	32	CSD30
MONA1	33	P33	34	MONA2
MONA3	35	P35	36	MONA4
MONA5	37	P37	38	MONA6
MONA7	39	P39	40	IRQC01
INTR2	41	P41	42	TACK01
DMREQ	43	P43	44	P29SPRI
RDGNT	45	P45	46	P29SACK
BRKVE	47	P47	48	P29SACK
BRKOE	49	P49	50	Z9KSPRI
BRKAS	51	P51	52	Z9KSPRI
BRKCSL	53	P53	54	Z9KSPRI
BRKCASH	55	P55	56	Z9KSPRI
HPZDMAS	57	P57	58	Z9KSPRI
Z9PRESNT	59	P59	60	Z9KSPRI
	61	P61	62	Z9KSPRI
	63	P63	64	Z9KSPRI

T134010 BOARD

CSD01	1	P1	2	CSD00
CSD03	3	P3	4	CSD02
CSD05	5	P5	6	CSD04
CSD07	7	P7	8	CSD06
CSD09	9	P9	10	CSD08
CSD11	11	P11	12	CSD10
CSD13	13	P13	14	CSD12
CSD15	15	P15	16	CSD14
CSD17	17	P17	18	CSD16
CSD19	19	P19	20	CSD18
CSD21	21	P21	22	CSD20
CSD23	23	P23	24	CSD22
CSD25	25	P25	26	CSD24
CSD27	27	P27	28	CSD26
CSD29	29	P29	30	CSD28
CSD31	31	P31	32	CSD30
FFOVR	33	P33	34	CIDEN
FFULL	35	P35	36	CIDEN
	37	P37	38	CIDEN
	39	P39	40	CIDEN



DRAFTER		DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
DAVID J. BELLAMY		DATE		
CHECKER		DATE	TITLE	
<i>Paul T. Kuhn</i>		DATE	DR. MATH	
ENGINEER		DATE	AM29000 MATH PROCESSOR BOARD	
APPROVAL		DATE	SIZE	DRAWING NUMBER
<i>Paul T. Kuhn</i>		DATE	C	DW-00011C-0012-01
		DATE	REV C	RELEASE
		DATE	3-21-1990-20:40	SHEET 2 OF 28

D

C

B

A

D

C

B

A

4

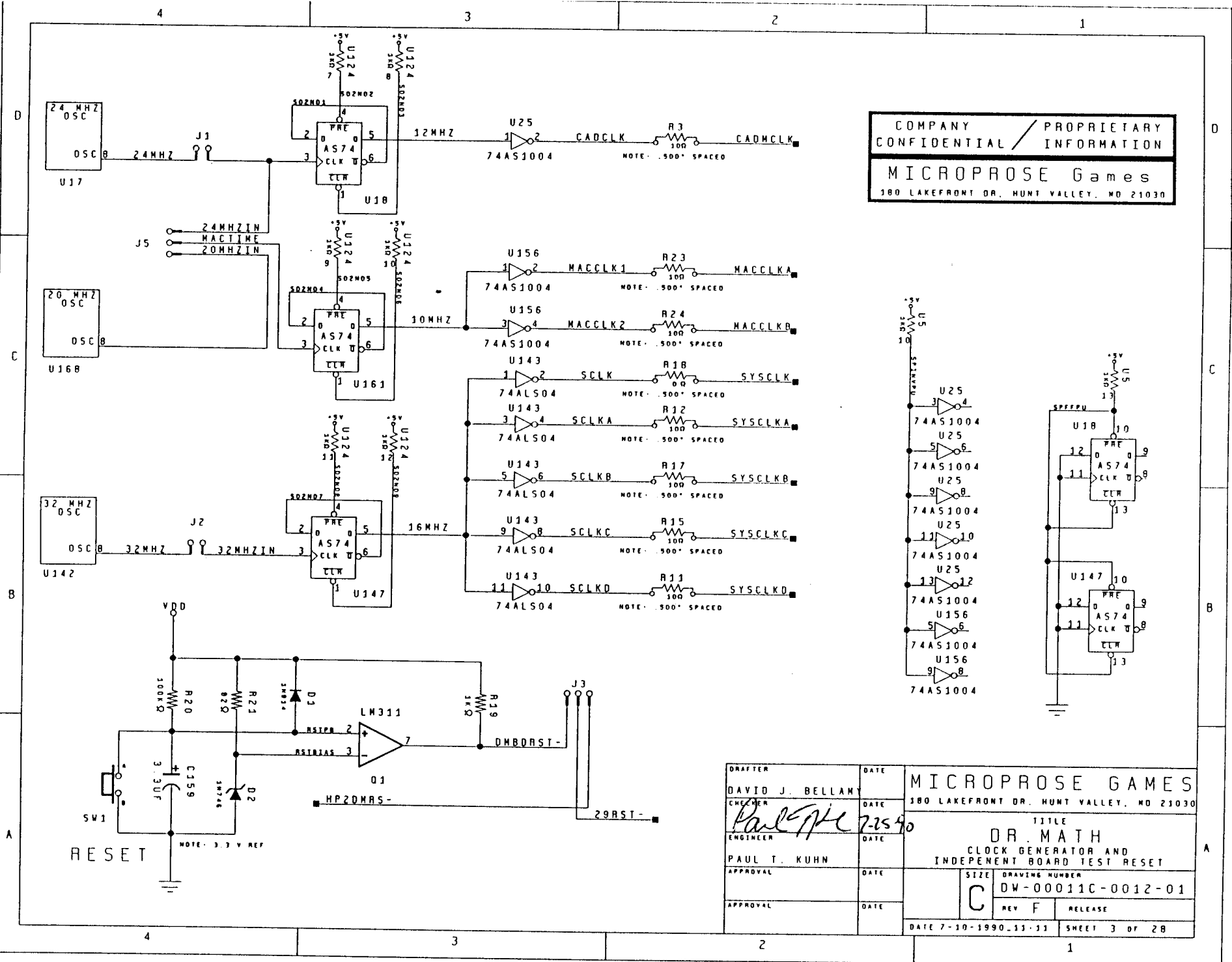
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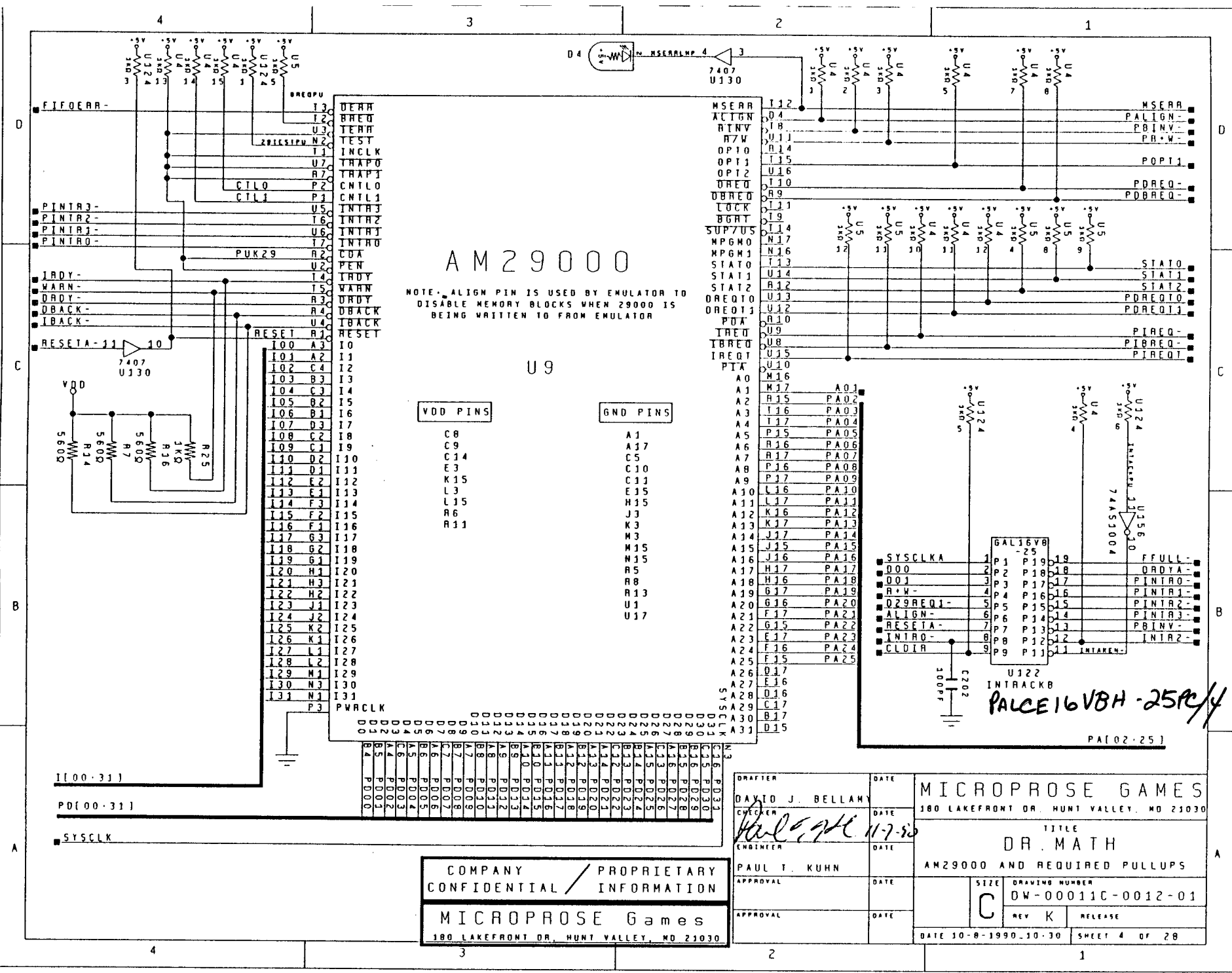
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MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030



DRAFTER		DATE	MICROPROSE GAMES	
DAVID J. BELLAMY			180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER		DATE	TITLE	
<i>Paul T. Kuhn</i>		7-25-90	DR. MATH	
ENGINEER		DATE	CLOCK GENERATOR AND	
PAUL T. KUHN			INDEPENDENT BOARD TEST RESET	
APPROVAL		DATE	SIZE	DRAWING NUMBER
			C	DW-00011C-0012-01
APPROVAL		DATE	REV	RELEASE
			F	
		DATE 7-10-1990-11-11	SHEET 3 OF 28	



AM29000

NOTE: ALIGN PIN IS USED BY EMULATOR TO
DISABLE MEMORY BLOCKS WHEN 29000 IS
BEING WRITTEN TO FROM EMULATOR

VDD PINS

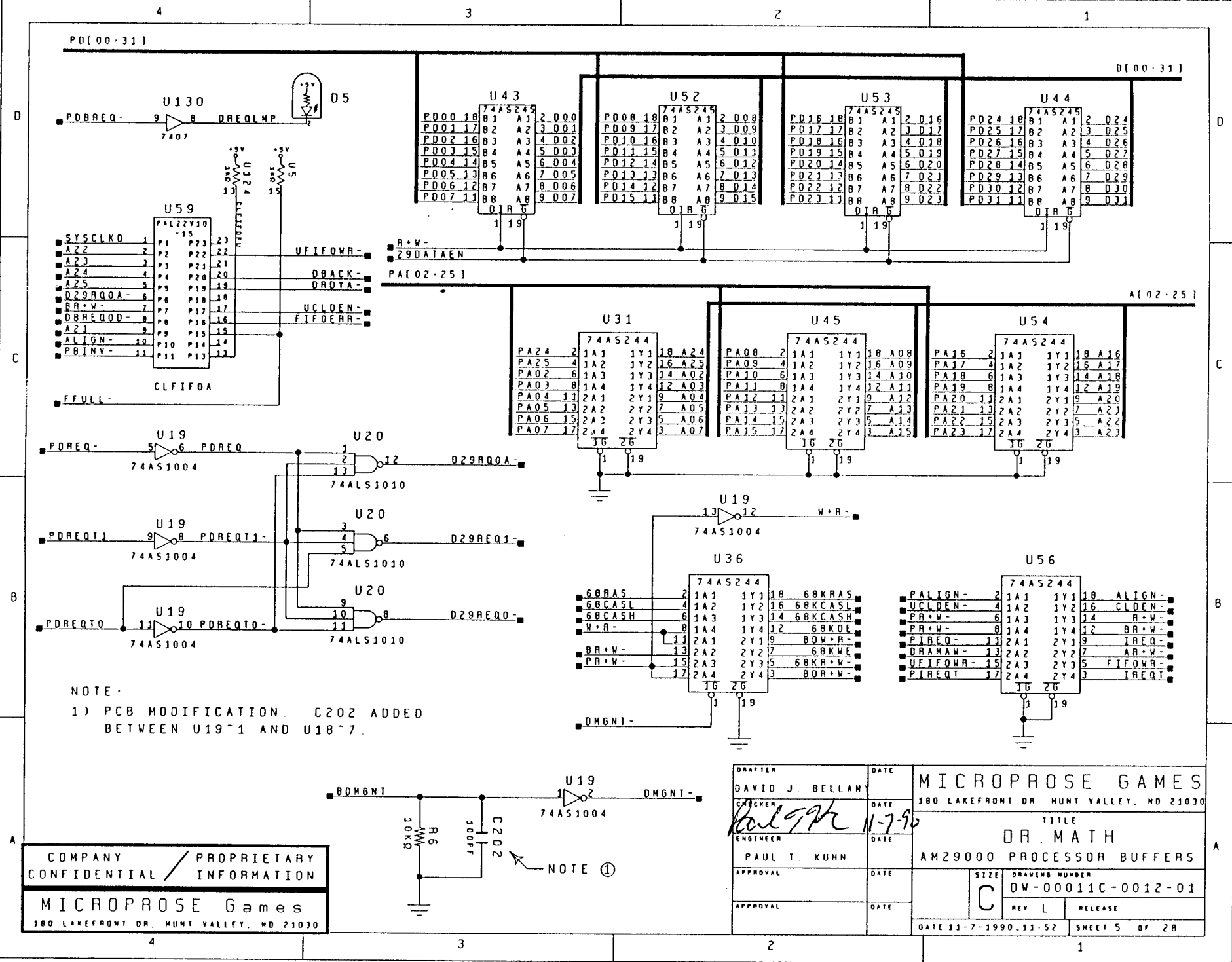
- C8
- C9
- C14
- E3
- K15
- L3
- L15
- R6
- R11

GND PINS

- A1
- A17
- C5
- C10
- C11
- E15
- H15
- J
- K3
- M3
- M15
- M15
- R5
- R8
- R13
- U1
- U17

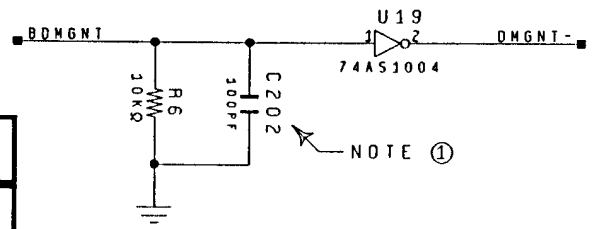
DRAFTER DAVID J. BELLAMY		DATE	MICROPROSE GAMES	
CHECKER <i>Paul I. Kuhn</i>		DATE 11-7-90	180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
ENGINEER PAUL I. KUHN		DATE	TITLE DR. MATH	
APPROVAL		DATE	AM29000 AND DRAWING PULLUPS	
APPROVAL		DATE	SIZE C	DRAWING NUMBER DW-00011C-0012-01
		DATE 10-8-1990-10-30	REV K	RELEASE
			SHEET 4 OF 28	

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MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030



NOTE:

1) PCB MODIFICATION. C202 ADDED BETWEEN U19-1 AND U18-7.

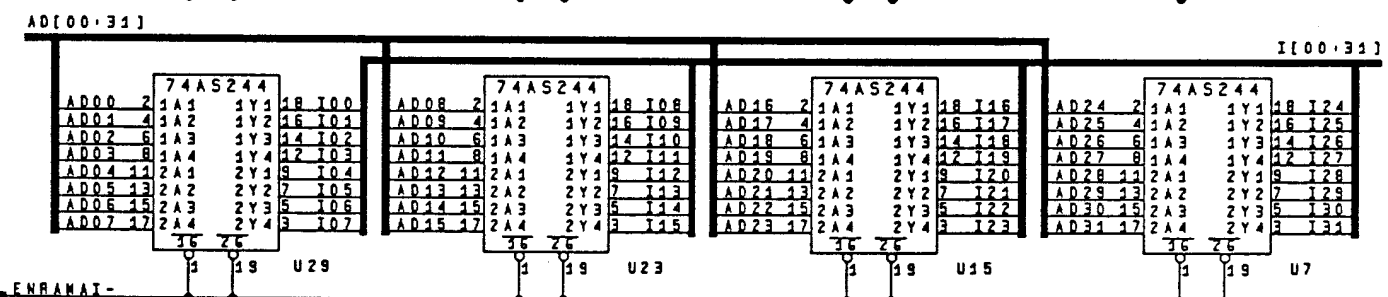
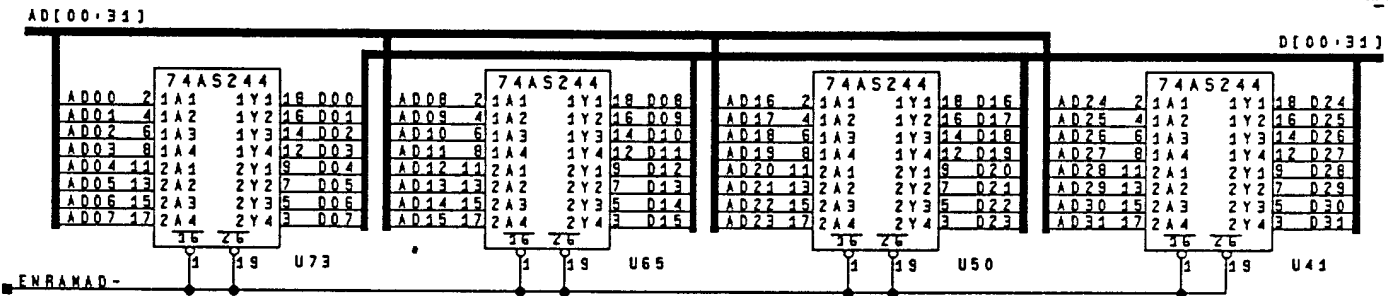
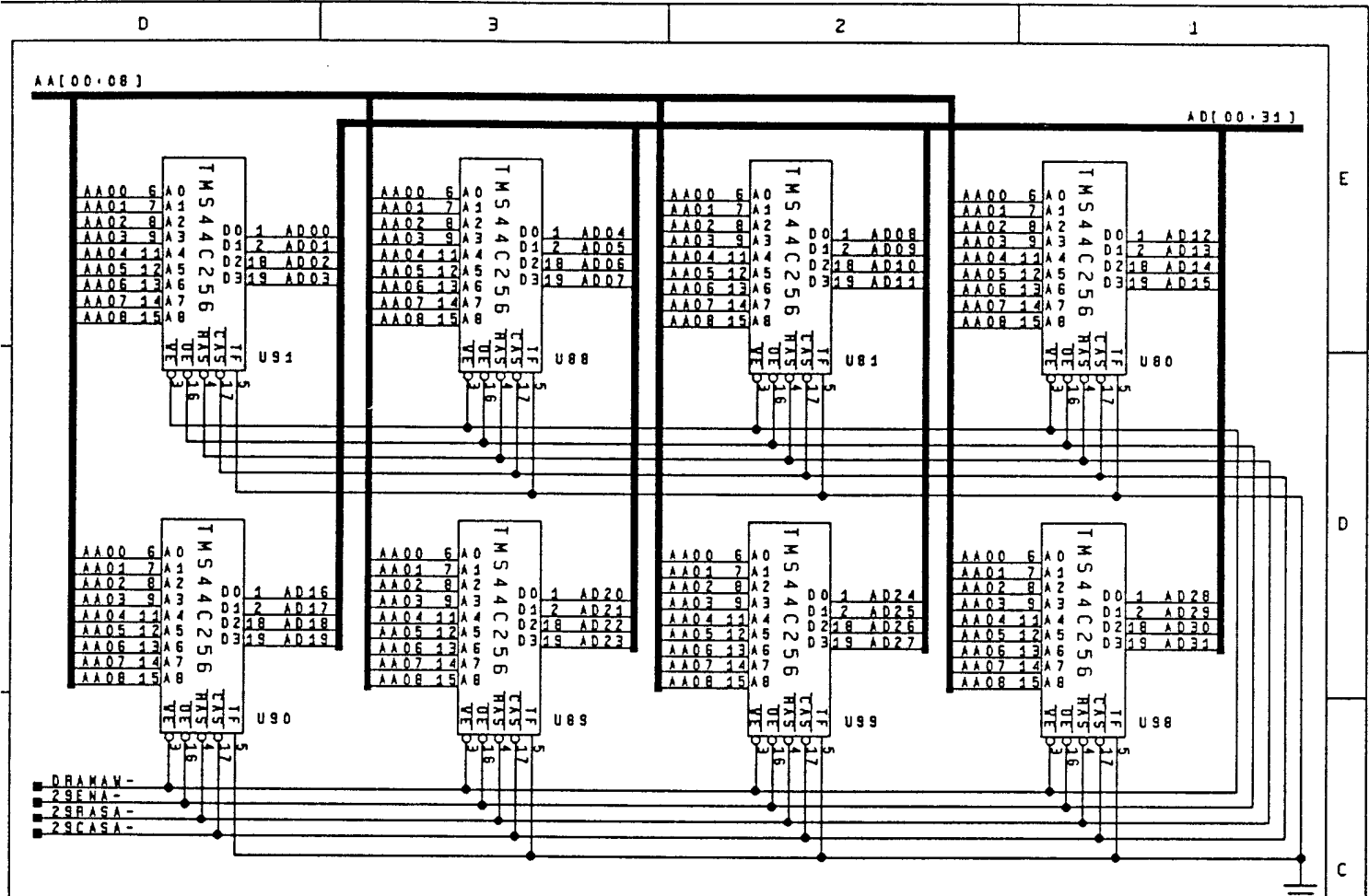


NOTE ①

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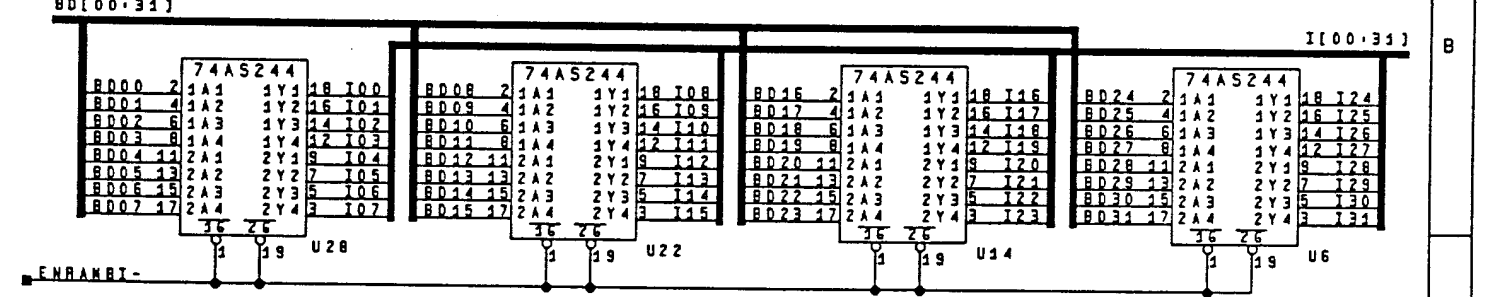
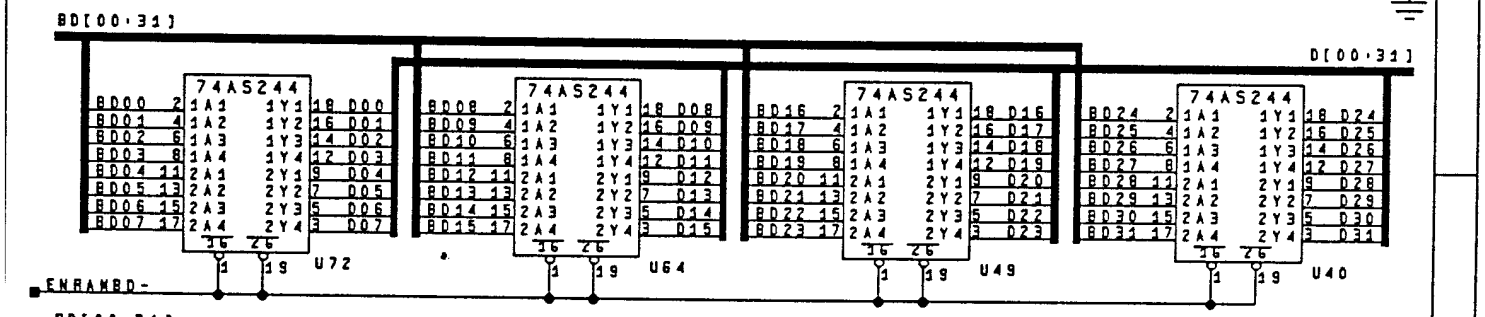
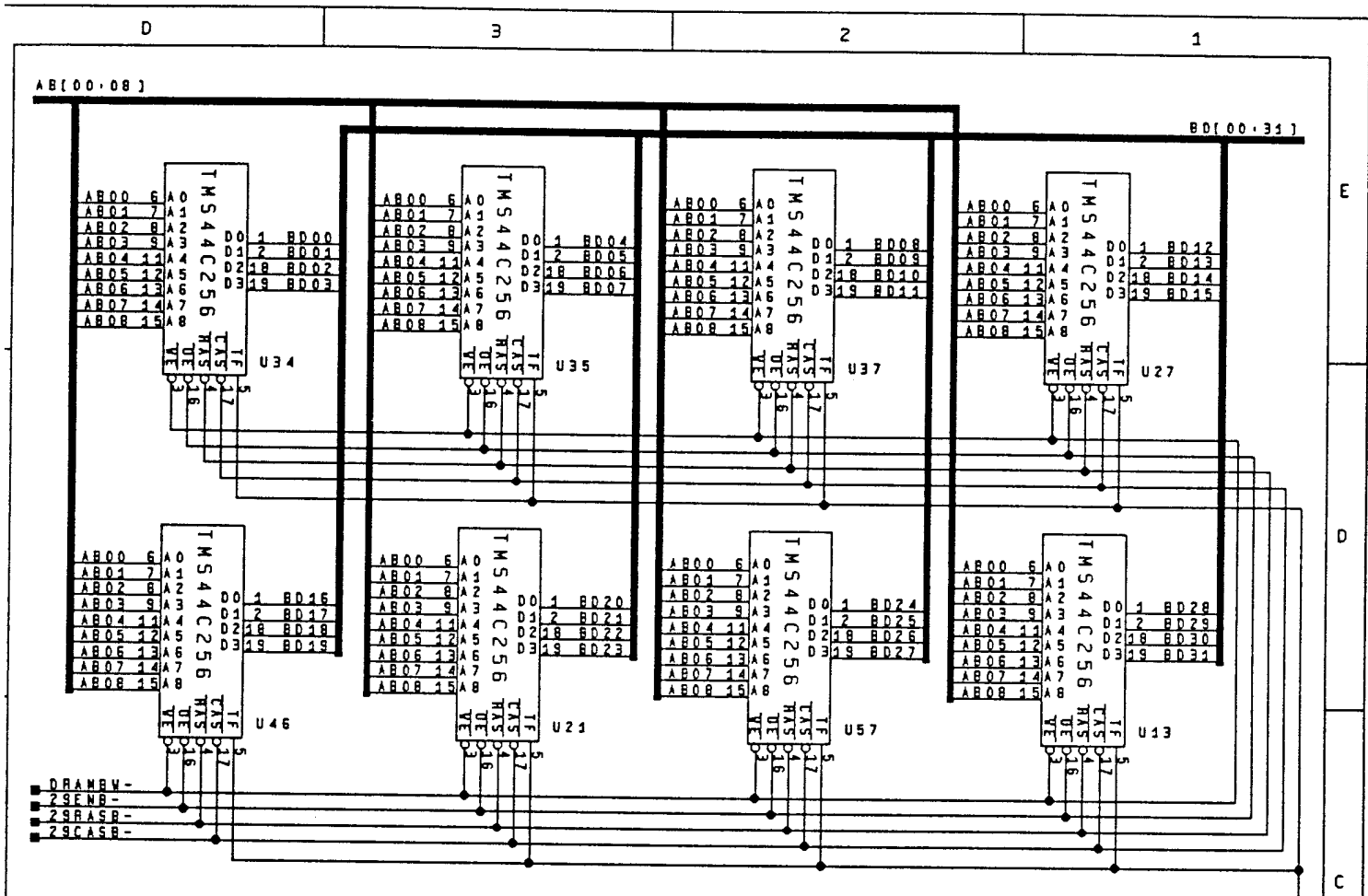
MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER DAVID J. BELLAMY	DATE	MICROPROSE GAMES	
CHECKER <i>Karl G. Kuhn</i>	DATE 11-7-90	180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
ENGINEER PAUL T. KUHN	DATE	TITLE DR. MATH	
APPROVAL	DATE	AM29000 PROCESSOR BUFFERS	
APPROVAL	DATE	SIZE C	DRAWING NUMBER DW-00011C-0012-01
		REV L	RELEASE
		DATE 11-7-1990-11-52	SHEET 5 OF 28



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MICROPROSE Games
180 LAKEFRONT DR., HUNT VALLEY, MD 21030

DRAFTER DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR., HUNT VALLEY, MD 21030	
ENGINEER <i>Paul T. Kuhn</i>	DATE 3-23-90	TITLE DR. MATH	
APPROVAL <i>[Signature]</i>	DATE	SIZE C	DRAWING NUMBER DW-00011C-0012-01
		REV C	RELEASE
		DATE 3-21-1990.0.45	SHEET 6 OF 28



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MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

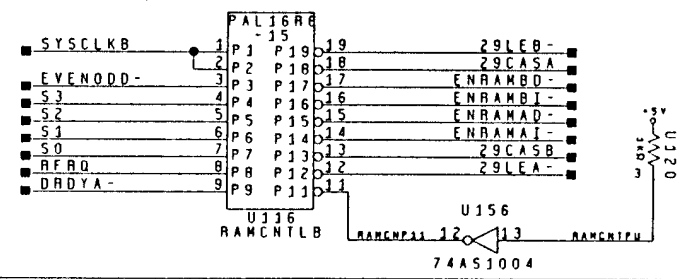
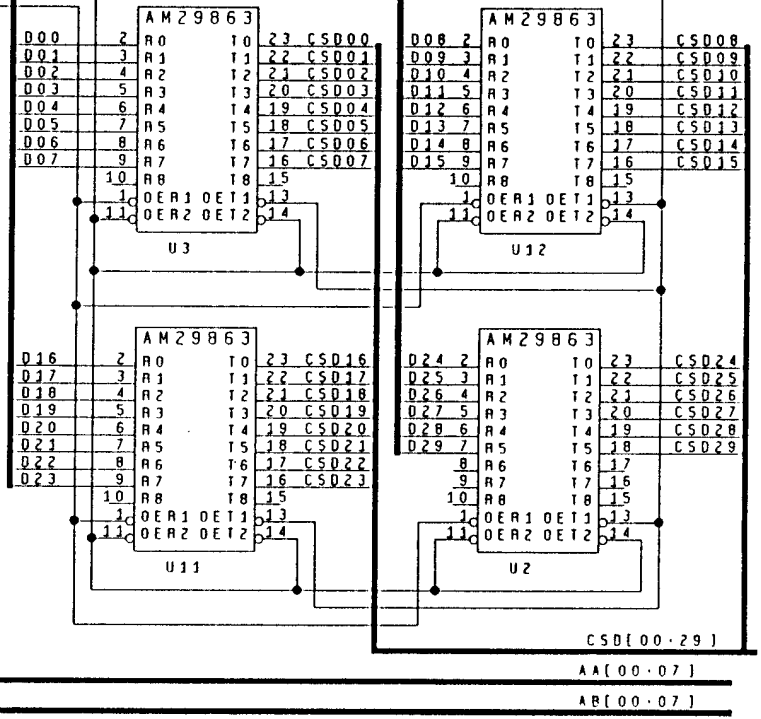
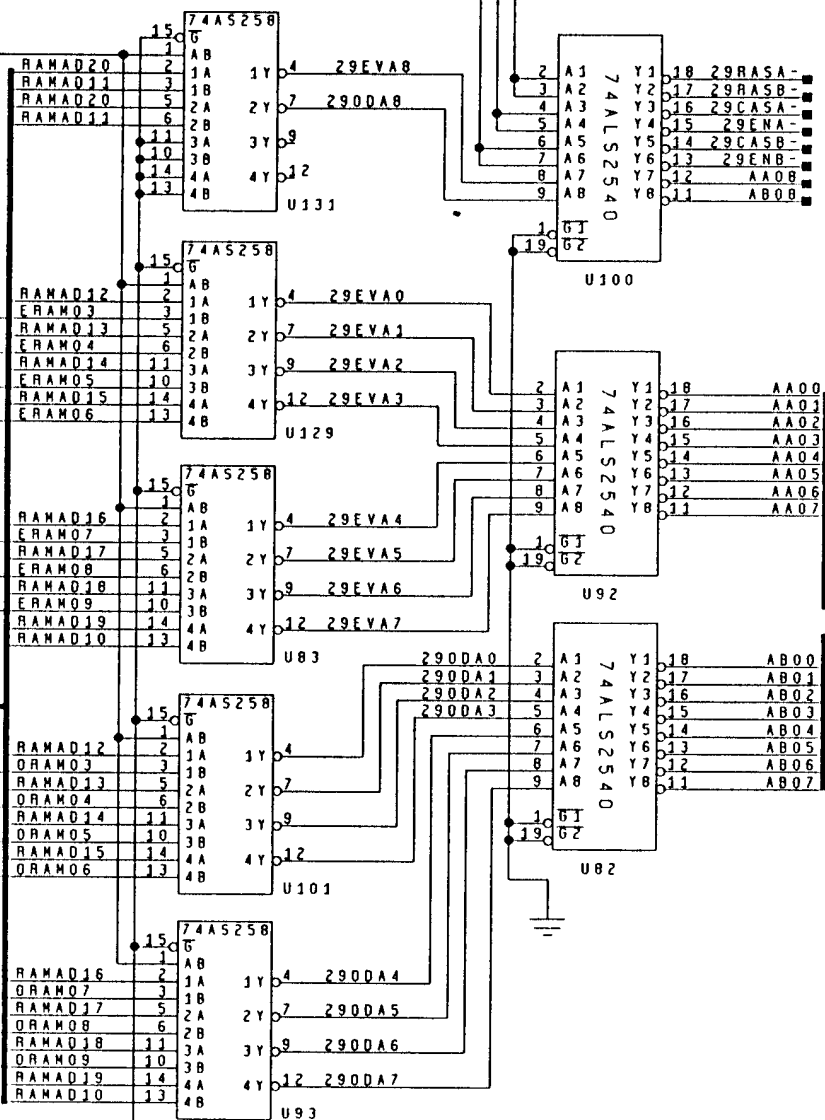
DRAFTER DAVID J. BELLANY		DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER <i>Paul T. Kuhn</i>		DATE 3-23-90		
ENGINEER PAUL T. KUHN		DATE	TITLE DR. MATH	
APPROVAL <i>[Signature]</i>		DATE	'B' BANK - 256K X 32 DRAM ARRAY	
		DATE	532E DRAWING NUMBER DW-00011C-0012-01	
		DATE	REV C RELEASE	
		DATE	DATE 3-21-1990-0-47 SHEET 7 OF 28	

D[00-31]

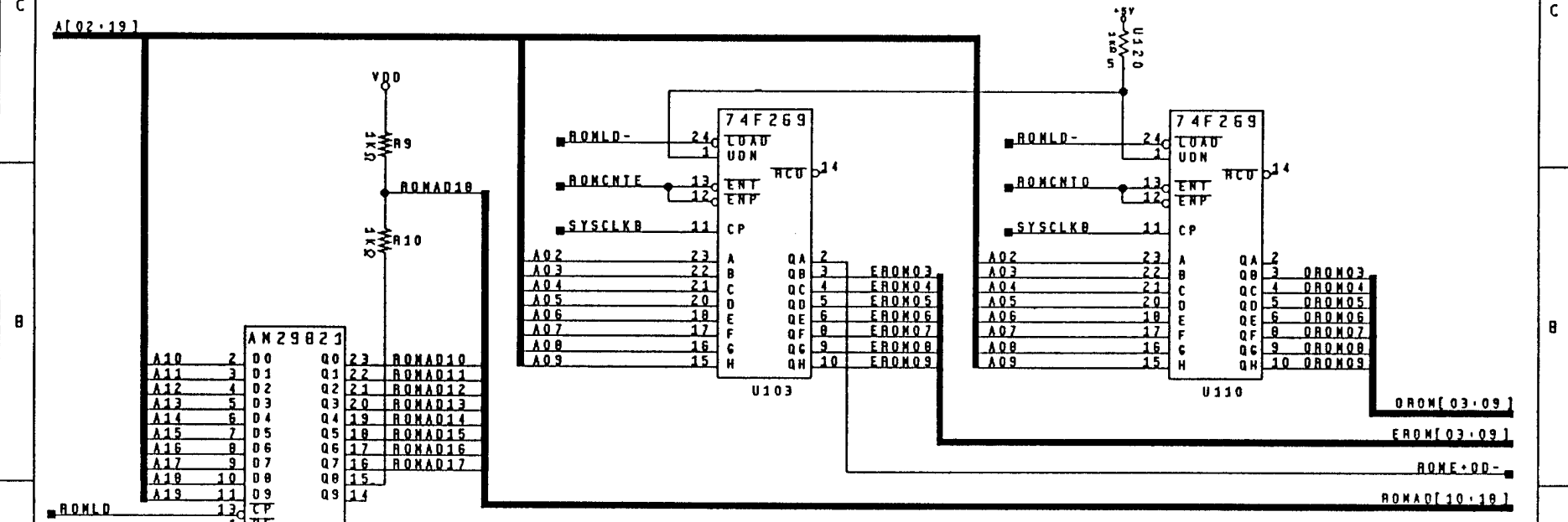
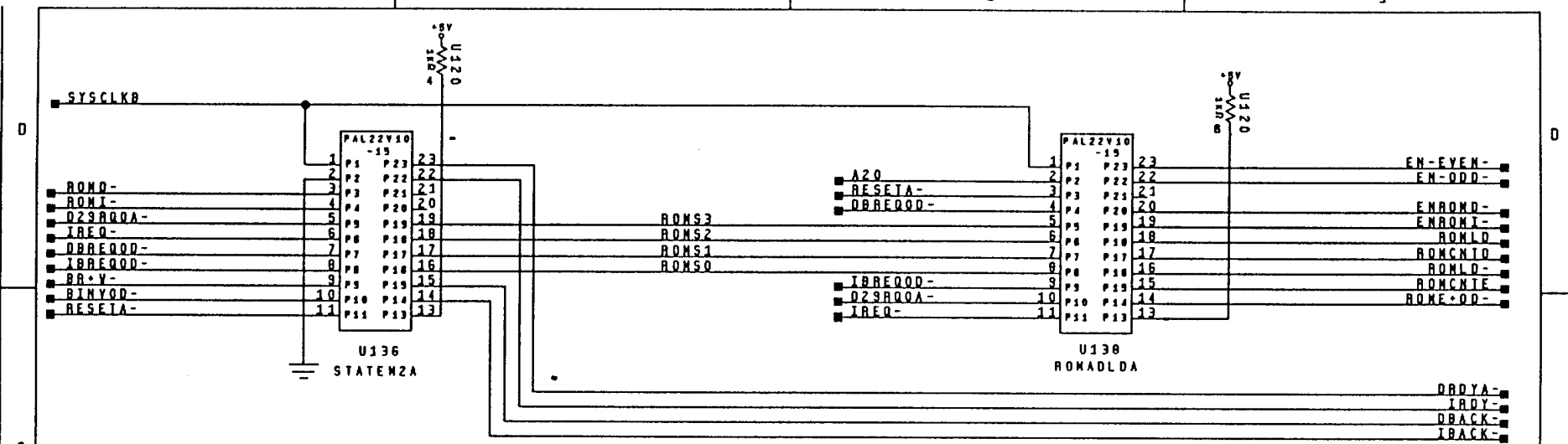
- BDR+W-
- BOEN-
- BQW+R-
- Z9RAS
- Z9CASA
- Z9CASB

ADRMUX

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 MICROPROSE Games
 180 LAKEFRONT DR. MOUNT VALLEY, MD 21030



DRAFTER		DATE		MICROPROSE GAMES 180 LAKEFRONT DR. MOUNT VALLEY, MD 21030	
DAVID J. BELLAMY					
CHECKER		DATE		TITLE DR. MATH ADDR MUX & WRITE LATCHES AND DATA BUFFERS	
<i>Paul I. Kuhn</i>		8-15-90			
ENGINEER		DATE		DRAWING NUMBER DW-00011C-0012-01	
PAUL I. KUHN					
APPROVAL		DATE		REV H RELEASE	
APPROVAL		DATE		DATE 8-15-1990.11-21 SHEET 9 OF 28	



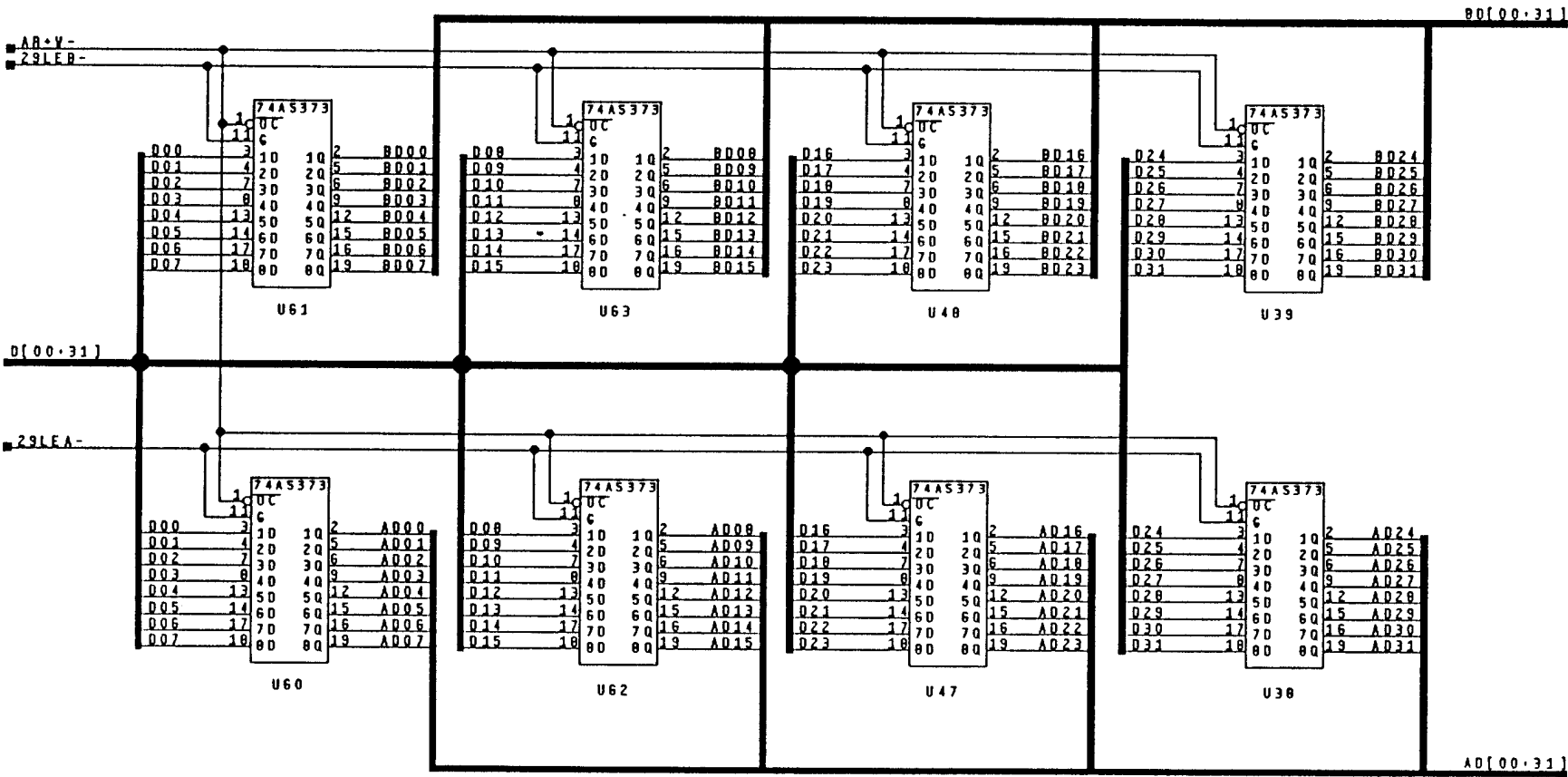
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A11	3	01	Q1	22	ROMAD11
A12	4	02	Q2	21	ROMAD12
A13	5	03	Q3	20	ROMAD13
A14	6	04	Q4	19	ROMAD14
A15	7	05	Q5	18	ROMAD15
A16	8	06	Q6	17	ROMAD16
A17	9	07	Q7	16	ROMAD17
A18	10	08	Q8	15	
A19	11	09	Q9	14	
			CP		
			OE		

A02	23	A	QA	2	EROMQ3
A03	22	B	QB	3	EROMQ4
A04	21	C	QC	4	EROMQ5
A05	20	D	QD	5	EROMQ6
A06	18	E	QE	6	EROMQ7
A07	17	F	QF	7	EROMQ8
A08	16	G	QG	8	EROMQ9
A09	15	H	QH	9	
				10	

A02	23	A	QA	2	QROMQ3
A03	22	B	QB	3	QROMQ4
A04	21	C	QC	4	QROMQ5
A05	20	D	QD	5	QROMQ6
A06	18	E	QE	6	QROMQ7
A07	17	F	QF	7	QROMQ8
A08	16	G	QG	8	QROMQ9
A09	15	H	QH	9	
				10	

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MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER		DATE		MICROPROSE GAMES	
DAVID J. BELLAMY		3-23-90		180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER		DATE		TITLE	
PAUL T. KUHN				DR. MATH	
ENGINEER		DATE		ROM MEMORY CONTROLLER	
APPROVAL		DATE		SIZE	
				C	
DRAWN		DATE		DRAWING NUMBER	
				DW-0011C-0012-01	
				REV C	
				RELEASE	
				DATE 3-21-1990.1.38	
				SHEET 10 OF 28	



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MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER	DATE	MICROPROSE GAMES	
DAVID J. BELLAMY		180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER	DATE	TITLE	
<i>Paul T. Kuhn</i>	3-23-90	DR. MATH	
ENGINEER	DATE	RAM BANK DATA WRITE LATCHES	
PAUL T. KUHN			
APPROVAL	DATE	SIZE	DRAWING NUMBER
		C	DW-00011C-0012-01
	DATE	REV	RELEASE
		C	
DATE 3-21-1990-1-37		SHEET 11 OF 28	

ROMD[00-31]

U30

74AS244				
ROMD00	2	1A1	1Y1	1R 100
ROMD01	4	1A2	1Y2	16 101
ROMD02	6	1A3	1Y3	14 102
ROMD03	8	1A4	1Y4	12 103
ROMD04	11	2A1	2Y1	9 104
ROMD05	13	2A2	2Y2	7 105
ROMD06	15	2A3	2Y3	5 106
ROMD07	17	2A4	2Y4	3 107
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U16

74AS244				
ROMD16	2	1A1	1Y1	10 I16
ROMD17	4	1A2	1Y2	16 I17
ROMD18	6	1A3	1Y3	14 I18
ROMD19	8	1A4	1Y4	12 I19
ROMD20	11	2A1	2Y1	9 I20
ROMD21	13	2A2	2Y2	7 I21
ROMD22	15	2A3	2Y3	5 I22
ROMD23	17	2A4	2Y4	3 I23
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U74

74AS244				
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ROMD02	6	1A3	1Y3	14 002
ROMD03	8	1A4	1Y4	12 003
ROMD04	11	2A1	2Y1	9 004
ROMD05	13	2A2	2Y2	7 005
ROMD06	15	2A3	2Y3	5 006
ROMD07	17	2A4	2Y4	3 007
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U51

74AS244				
ROMD16	2	1A1	1Y1	10 016
ROMD17	4	1A2	1Y2	16 017
ROMD18	6	1A3	1Y3	14 018
ROMD19	8	1A4	1Y4	12 019
ROMD20	11	2A1	2Y1	9 020
ROMD21	13	2A2	2Y2	7 021
ROMD22	15	2A3	2Y3	5 022
ROMD23	17	2A4	2Y4	3 023
		16	26	

U24

74AS244				
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ROMD09	4	1A2	1Y2	16 I09
ROMD10	6	1A3	1Y3	14 I10
ROMD11	8	1A4	1Y4	12 I11
ROMD12	11	2A1	2Y1	9 I12
ROMD13	13	2A2	2Y2	7 I13
ROMD14	15	2A3	2Y3	5 I14
ROMD15	17	2A4	2Y4	3 I15
		16	26	

U8

74AS244				
ROMD24	2	1A1	1Y1	10 I24
ROMD25	4	1A2	1Y2	16 I25
ROMD26	6	1A3	1Y3	14 I26
ROMD27	8	1A4	1Y4	12 I27
ROMD28	11	2A1	2Y1	9 I28
ROMD29	13	2A2	2Y2	7 I29
ROMD30	15	2A3	2Y3	5 I30
ROMD31	17	2A4	2Y4	3 I31
		16	26	

U66

74AS244				
ROMD08	2	1A1	1Y1	10 008
ROMD09	4	1A2	1Y2	16 009
ROMD10	6	1A3	1Y3	14 010
ROMD11	8	1A4	1Y4	12 011
ROMD12	11	2A1	2Y1	9 012
ROMD13	13	2A2	2Y2	7 013
ROMD14	15	2A3	2Y3	5 014
ROMD15	17	2A4	2Y4	3 015
		16	26	

U42

74AS244				
ROMD24	2	1A1	1Y1	10 024
ROMD25	4	1A2	1Y2	16 025
ROMD26	6	1A3	1Y3	14 026
ROMD27	8	1A4	1Y4	12 027
ROMD28	11	2A1	2Y1	9 028
ROMD29	13	2A2	2Y2	7 029
ROMD30	15	2A3	2Y3	5 030
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ENROMI-

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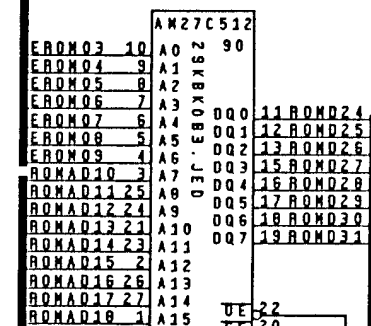
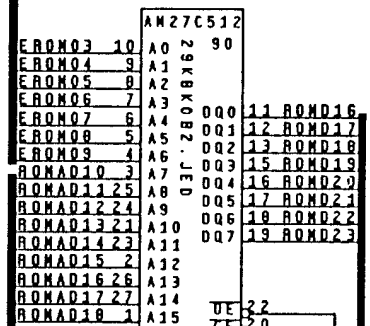
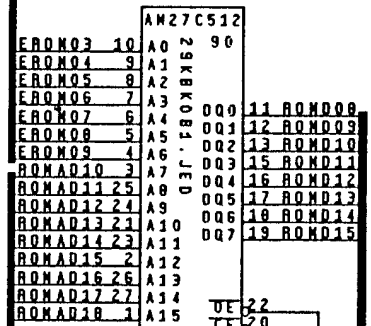
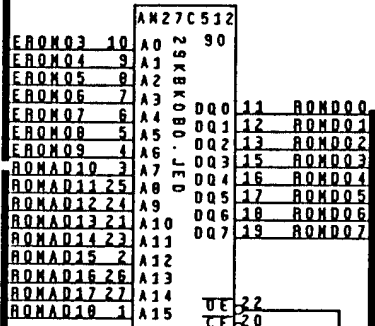
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COMPANY PROPRIETARY
CONFIDENTIAL / INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER DAVID J. BELLAMY	DATE	MICROPROSE GAMES	
CHECKER <i>Paul T. Kuhn</i>	DATE 3-23-90	180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
ENGINEER PAUL T. KUHN	DATE	TITLE 29K	
APPROVAL	DATE	29K INSTRUCTION ODD ARRAY	
DATE	DATE	SIZE C	DRAWING NUMBER DW-00011C-0012-01
		REV C	RELEASE
		DATE 3-21-1990_1.37	SHEET 12 OF 28

EROM[03-09]



EN-EVEN-

ROMAD[10-18]

ROMD[00-31]

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CONFIDENTIAL / INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER
DAVID J. BELLAMY

CHECKER
Paul T. Kuhn

ENGINEER
PAUL T. KUHN

APPROVAL
Paul T. Kuhn

DATE
3-23-90

MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

TITLE
DR. MATH
EVEN INSTRUCTION EPROM

SIZE
C

DRAWING NUMBER
DW-00011C-0012-01

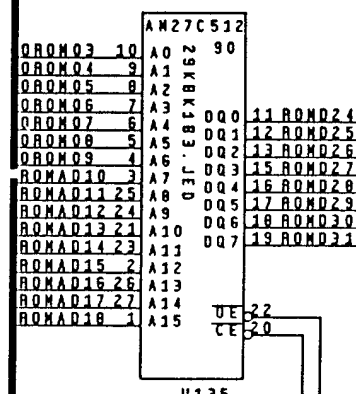
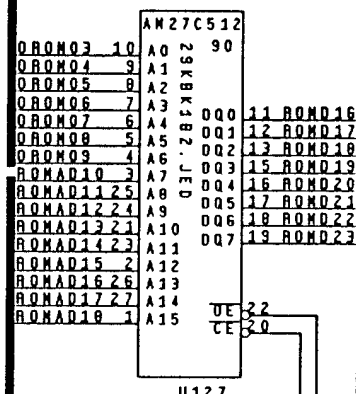
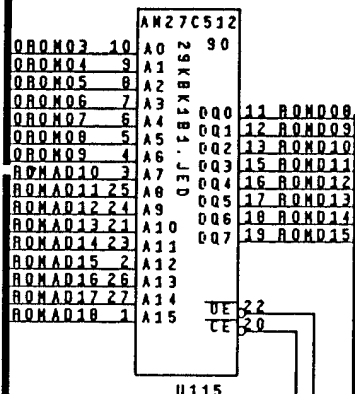
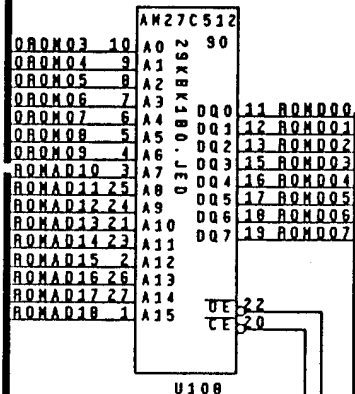
REV C

RELEASE

DATE 3-21-1990-1-39

SHEET 13 OF 28

OROM[03-09]



EN-000-

ROMAD[10-18]

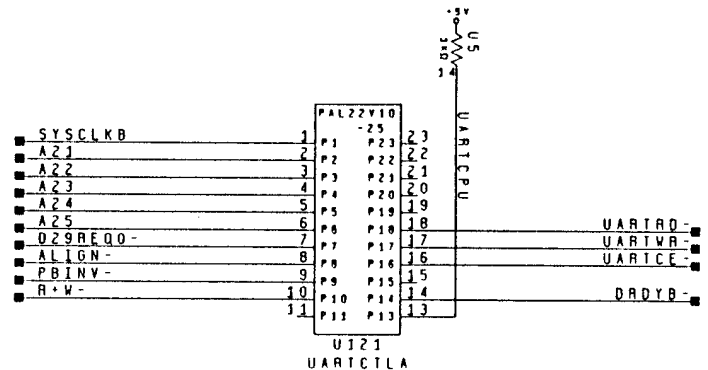
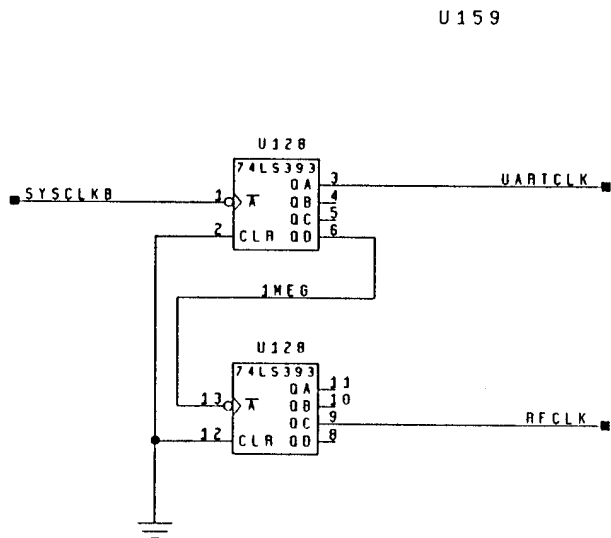
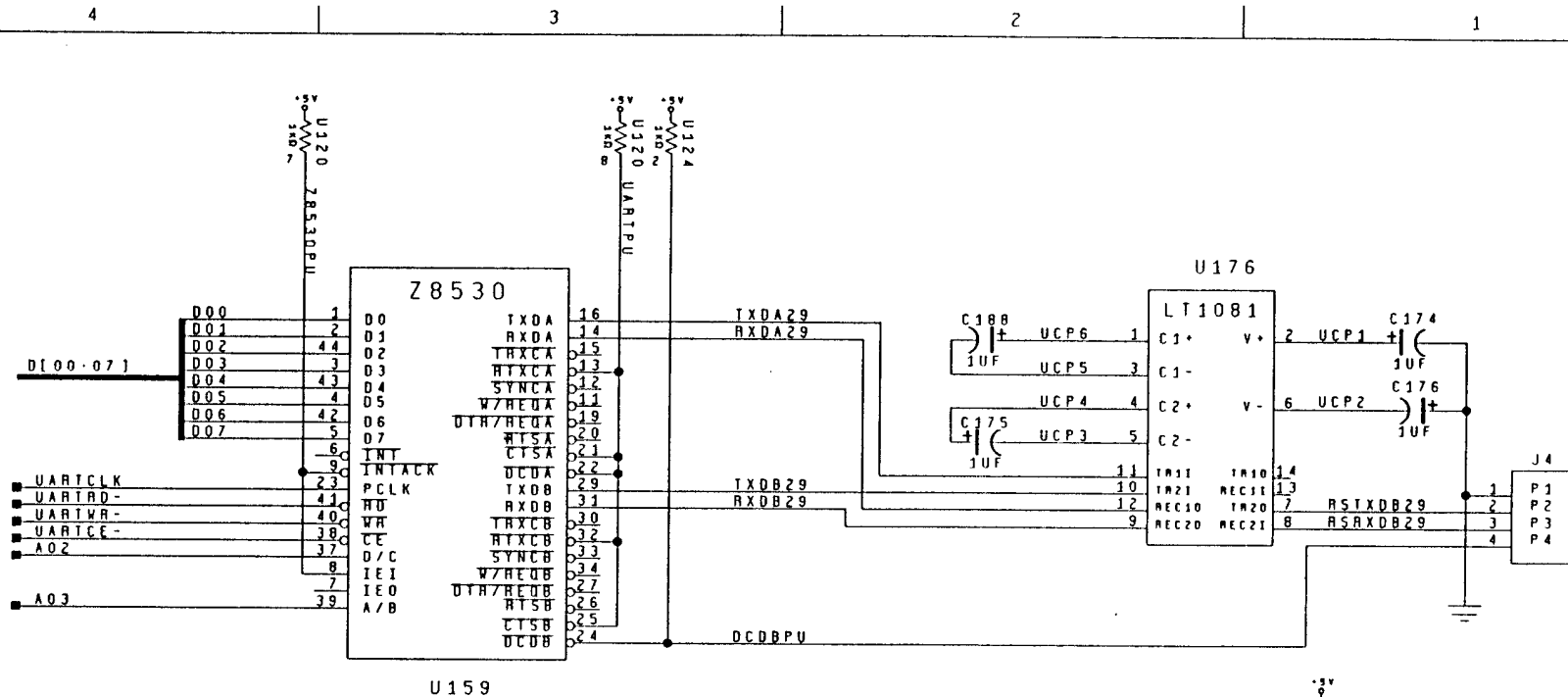
ROMD[00-31]

COMPANY / PROPRIETARY
CONFIDENTIAL / INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER DAVID J. BELLAMY	DATE	MICROPROSE GAMES	
CHECKER <i>Paul T. Kuhn</i>	DATE 3-23-90	180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
ENGINEER PAUL T. KUHN	DATE	TITLE DR. MATH	
APPROVAL	DATE	ODD INSTRUCTION EPROM	
DATE	DATE	SIZE C	DRAWING NUMBER DW-00011C-0012-01
DATE	DATE	REV C	RELEASE
DATE 3-21-1990-1-39		SHEET 14 OF 28	

Paul T. Kuhn



COMPANY / PROPRIETARY
 CONFIDENTIAL / INFORMATION
MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER DAVID J. BELLAMY	DATE	MICROPROSE GAMES	
CHECKER <i>Paul T. Kuhn</i>	DATE 7-25-90	180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
ENGINEER PAUL T. KUHN	DATE	TITLE DR. MATH	
APPROVAL	DATE	SIZE C	DRAWING NUMBER DW-00011C-0012-01
APPROVAL	DATE	REV F	RELEASE
		DATE 7-6-1990-9-53	SHEET 15 OF 28

RNY[00.31]

X[00.31]

X00	U15	X0
X01	I15	X1
X02	R14	X2
X03	I14	X3
X04	U14	X4
X05	I13	X5
X06	U13	X6
X07	R13	X7
X08	I12	X8
X09	R12	X9
X10	I11	X10
X11	U10	X11
X12	U11	X12
X13	I10	X13
X14	R10	X14
X15	R9	X15
X16	I9	X16
X17	I9	X17
X18	R8	X18
X19	I7	X19
X20	U8	X20
X21	U7	X21
X22	U6	X22
X23	I6	X23
X24	I5	X24
X25	U5	X25
X26	R5	X26
X27	U4	X27
X28	I4	X28
X29	R4	X29
X30	I3	X30
X31	U2	X31

AM29C32.3

U149

VDD PINS: A4, A8, A13, B9, E17, G3, L15, L16, L17, M17, R7

GND PINS: A2, A6, A10, C7, C17, C15, C16, C17, J17, L3, R1, R11, U3

NC PINS: A3, A9, A14, B2, B9, C3, C4, C14, D4, D17

PY0	M2
PY1	J2
PY2	E2
PY3	A1
Y0	R2
Y1	P2
Y2	P2
Y3	P1
Y4	M2
Y5	M1
Y6	M3
Y7	M1
Y8	M3
Y9	L2
Y10	K1
Y11	L1
Y12	K2
Y13	K3
Y14	J3
Y15	J1
Y16	H2
Y17	H3
Y18	G2
Y19	H1
Y20	G1
Y21	F2
Y22	F3
Y23	F1
Y24	E1
Y25	E3
Y26	D1
Y27	D2
Y28	D3
Y29	C2
Y30	C1
Y31	B1

ENYA-
ENYB-
YSEL
TCY
FTY

U120
180
180
61

ENYA-
ENYB-
YSEL
HXAC

ENXA-
ENXB-
XSEL
HXAC

MACCLKA
ENPI-
NRXL-
ACTL

U119
74AS1004

COMPANY PROPRIETARY
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MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER		DATE		MICROPROSE GAMES	
DAVID J. BELLAMY				180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER		DATE		TITLE	
<i>Paul T. Kuhn</i>		3-23-90		DR. MATH	
ENGINEER		DATE		MULTIPLY ACCUMULATOR	
PAUL T. KUHN				SIZE	
APPROVAL		DATE		DRAWING NUMBER	
<i>Paul T. Kuhn</i>				DW-00011C-0012-01	
APPROVAL		DATE		REV C	
				RELEASE	
DATE 3-21-1990 1:40				SHEET 16 OF 28	

P[00.31]

MACCLKB
RESETC-
MACCLKA

RNY[00.31]

RNY00	2	00	00	23	X00
RNY01	3	01	01	22	X01
RNY02	4	02	02	21	X02
RNY03	5	03	03	20	X03
RNY04	6	04	04	19	X04
RNY05	7	05	05	18	X05
RNY06	8	06	06	17	X06
RNY07	9	07	07	16	X07
	10	08	08	15	

AM29823
2 00 00 23 X00
3 01 01 22 X01
4 02 02 21 X02
5 03 03 20 X03
6 04 04 19 X04
7 05 05 18 X05
8 06 06 17 X06
9 07 07 16 X07
10 08 08 15
13 CP
14 EN
15 CLH
16 UE

U169

74AS1004
U119

RNY08	2	00	00	23	X08
RNY09	3	01	01	22	X09
RNY10	4	02	02	21	X10
RNY11	5	03	03	20	X11
RNY12	6	04	04	19	X12
RNY13	7	05	05	18	X13
	8	06	06	17	
	9	07	07	16	
	10	08	08	15	

AM29823
2 00 00 23 X08
3 01 01 22 X09
4 02 02 21 X10
5 03 03 20 X11
6 04 04 19 X12
7 05 05 18 X13
8 06 06 17
9 07 07 16
10 08 08 15
13 CP
14 EN
15 CLH
16 UE

U162

RNY14	2	00	00	23	X14
RNY15	3	01	01	22	X15
RNY16	4	02	02	21	X16
RNY17	5	03	03	20	X17
RNY18	6	04	04	19	X18
RNY19	7	05	05	18	X19
RNY20	8	06	06	17	X20
RNY21	9	07	07	16	X21
RNY22	10	08	08	15	X22

AM29823
2 00 00 23 X14
3 01 01 22 X15
4 02 02 21 X16
5 03 03 20 X17
6 04 04 19 X18
7 05 05 18 X19
8 06 06 17 X20
9 07 07 16 X21
10 08 08 15 X22
13 CP
14 EN
15 CLH
16 UE

U172

RNY23	2	00	00	23	X23
RNY24	3	01	01	22	X24
RNY25	4	02	02	21	X25
RNY26	5	03	03	20	X26
RNY27	6	04	04	19	X27
RNY28	7	05	05	18	X28
RNY29	8	06	06	17	X29
RNY30	9	07	07	16	X30
RNY31	10	08	08	15	X31

AM29823
2 00 00 23 X23
3 01 01 22 X24
4 02 02 21 X25
5 03 03 20 X26
6 04 04 19 X27
7 05 05 18 X28
8 06 06 17 X29
9 07 07 16 X30
10 08 08 15 X31
13 CP
14 EN
15 CLH
16 UE

U165

U151

P00	2	1A1	1Y1	18	RNY00
P01	4	1A2	1Y2	16	RNY01
P02	6	1A3	1Y3	14	RNY02
P03	8	1A4	1Y4	12	RNY03
P04	10	2A1	2Y1	9	RNY04
P05	12	2A2	2Y2	7	RNY05
P06	14	2A3	2Y3	5	RNY06
P07	16	2A4	2Y4	3	RNY07

74AS244
1A1 1Y1 18 RNY00
1A2 1Y2 16 RNY01
1A3 1Y3 14 RNY02
1A4 1Y4 12 RNY03
2A1 2Y1 9 RNY04
2A2 2Y2 7 RNY05
2A3 2Y3 5 RNY06
2A4 2Y4 3 RNY07
16 Z6
19

U145

P08	2	1A1	1Y1	18	RNY08
P09	4	1A2	1Y2	16	RNY09
P10	6	1A3	1Y3	14	RNY10
P11	8	1A4	1Y4	12	RNY11
P12	10	2A1	2Y1	9	RNY12
P13	12	2A2	2Y2	7	RNY13
P14	14	2A3	2Y3	5	RNY14
P15	16	2A4	2Y4	3	RNY15

74AS244
1A1 1Y1 18 RNY08
1A2 1Y2 16 RNY09
1A3 1Y3 14 RNY10
1A4 1Y4 12 RNY11
2A1 2Y1 9 RNY12
2A2 2Y2 7 RNY13
2A3 2Y3 5 RNY14
2A4 2Y4 3 RNY15
16 Z6
19

U150

P16	2	1A1	1Y1	18	RNY16
P17	4	1A2	1Y2	16	RNY17
P18	6	1A3	1Y3	14	RNY18
P19	8	1A4	1Y4	12	RNY19
P20	10	2A1	2Y1	9	RNY20
P21	12	2A2	2Y2	7	RNY21
P22	14	2A3	2Y3	5	RNY22
P23	16	2A4	2Y4	3	RNY23

74AS244
1A1 1Y1 18 RNY16
1A2 1Y2 16 RNY17
1A3 1Y3 14 RNY18
1A4 1Y4 12 RNY19
2A1 2Y1 9 RNY20
2A2 2Y2 7 RNY21
2A3 2Y3 5 RNY22
2A4 2Y4 3 RNY23
16 Z6
19

U144

P24	2	1A1	1Y1	18	RNY24
P25	4	1A2	1Y2	16	RNY25
P26	6	1A3	1Y3	14	RNY26
P27	8	1A4	1Y4	12	RNY27
P28	10	2A1	2Y1	9	RNY28
P29	12	2A2	2Y2	7	RNY29
P30	14	2A3	2Y3	5	RNY30
P31	16	2A4	2Y4	3	RNY31

74AS244
1A1 1Y1 18 RNY24
1A2 1Y2 16 RNY25
1A3 1Y3 14 RNY26
1A4 1Y4 12 RNY27
2A1 2Y1 9 RNY28
2A2 2Y2 7 RNY29
2A3 2Y3 5 RNY30
2A4 2Y4 3 RNY31
16 Z6
19

X[00.31]

RNY[00.31]

COMPANY / PROPRIETARY
CONFIDENTIAL / INFORMATION

MICROPROSE Games
180 LAKEFRONT DR., HUNT VALLEY, MD 21030

DRAFTER
DAVID J. BELLAMY
DATE

CHECKER
Paul T. Kuhn
ENGINEER
DATE 3-23-80

APPROVAL
David J. Bellamy
DATE

MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

TITLE
DR. MATH
MAC AND SRAM BUFFERS

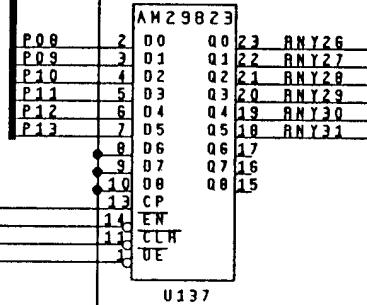
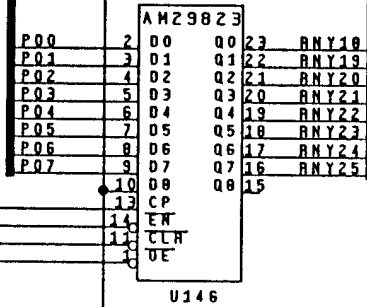
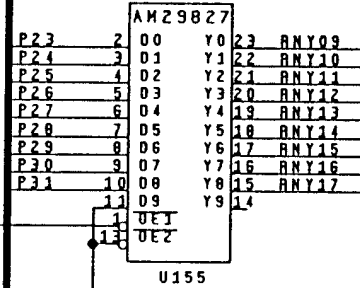
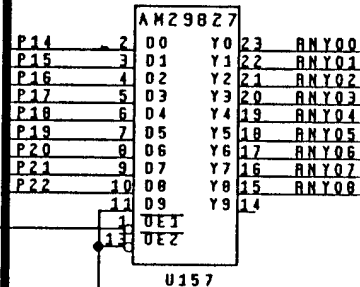
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DW-00011C-0012-01

REV C RELEASE

DATE 3-21-1990.1-41 SHEET 17 OF 20

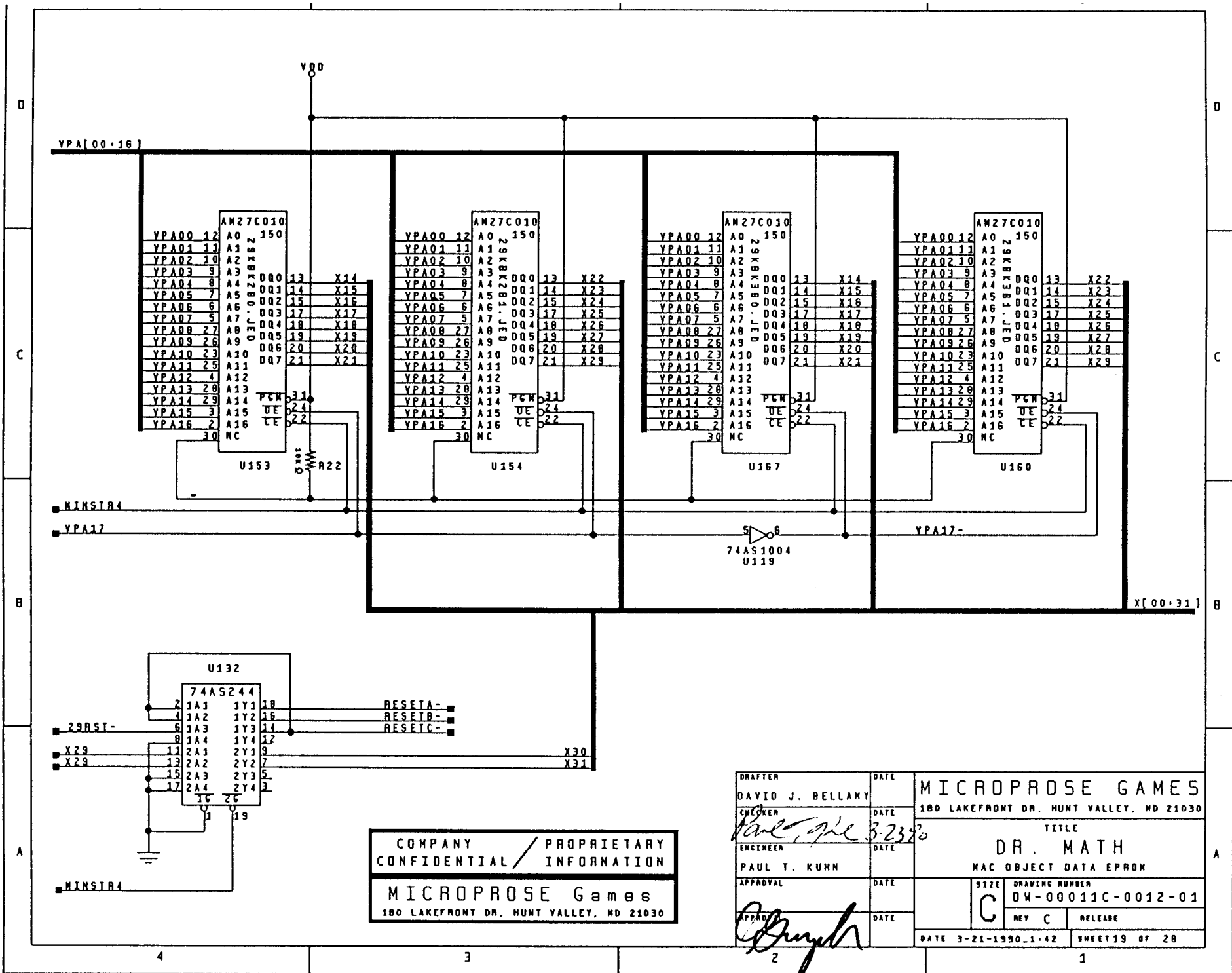
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 MACCLKA
 NRMI-
 RESETC-
 MULOEN-
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ANY[00:31]



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 CONFIDENTIAL / INFORMATION
 MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER <i>Paul T. Kuhn</i>	DATE 3-23-90	
ENGINEER PAUL T. KUHN	DATE	TITLE DR. MATH DOT PRODUCT NORMALIZATION
APPROVAL <i>[Signature]</i>	DATE	SIZE C
		DRAWING NUMBER DW-00011C-0012-01
		REV C
		RELEASE
		DATE 3-21-1990_20:37
		SHEET 18 OF 28

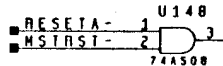
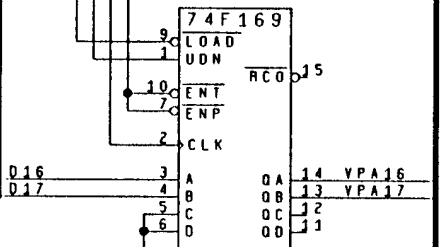
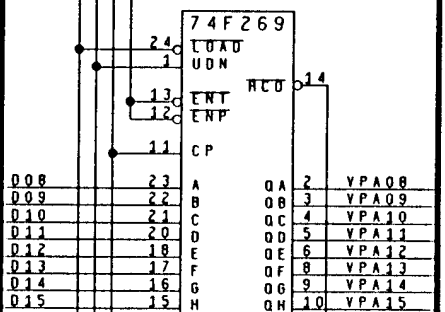
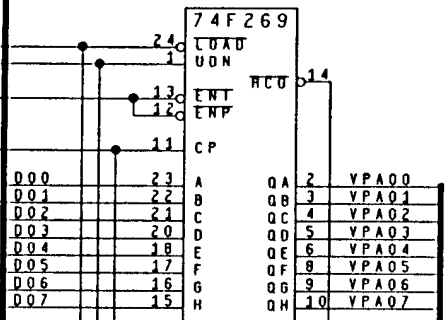


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MICROPROSE Games
 180 LAKEFRONT DR., HUNT VALLEY, MD 21030

DRAFTER DAVID J. BELLAMY	DATE	MICROPROSE GAMES	
CHECKER <i>Paul T. Kuhn</i>	DATE 3-23-90	180 LAKEFRONT DR., HUNT VALLEY, MD 21030	
ENGINEER PAUL T. KUHN	DATE	TITLE DR. MATH MAC OBJECT DATA EPROM	
APPROVAL	DATE	SIZE C	DRAWING NUMBER DW-00011C-0012-01
DATE	DATE	REV C	RELEASE
DATE 3-21-1990-1-42		SHEET 19 OF 28	

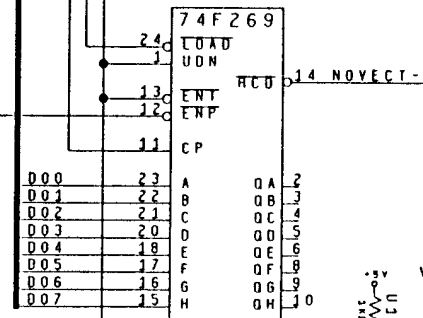
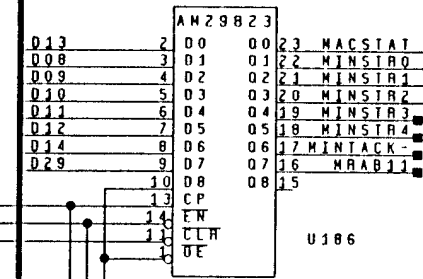
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MACCWR0-
VPAUDN
VPACEN-
MACCLKA

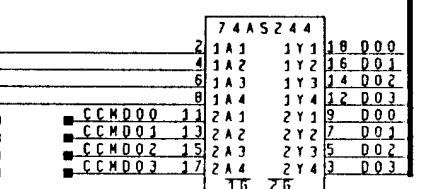
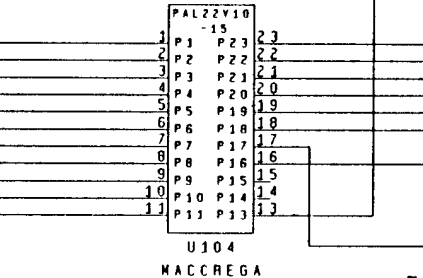


MACCLKA
MACCWR1-

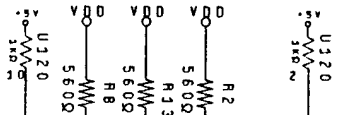
DECVEC-



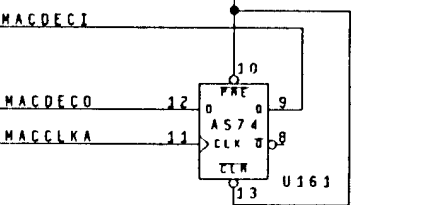
SYSCLKC
A02
A21
A22
A23
A24
A25
D29REQ-
ALIGN-
R+W-
PBINV-



MACCRD-
CADMRD-



MACCRD-
MACCWR1-
MACCWR0-
DROYB-
DROYA-
DRDY-



VPA[00.17]

COMPANY / PROPRIETARY
CONFIDENTIAL / INFORMATION
MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER DAVID J BELLAMY		DATE	MICROPROSE GAMES	
CHECKER <i>Paul T. Kuhn</i>		DATE 7-25-90	180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
ENGINEER PAUL T. KUHN		DATE	TITLE DR. MATH	
APPROVAL		DATE	VERTEX POOL ADDRESS AND CONTROL REG	
APPROVAL		DATE	SIZE C	DRAWING NUMBER DW-00011C-0012-01
		DATE 7-6-1990.10.31	REV F	RELEASE
				SHEET 20 OF 28

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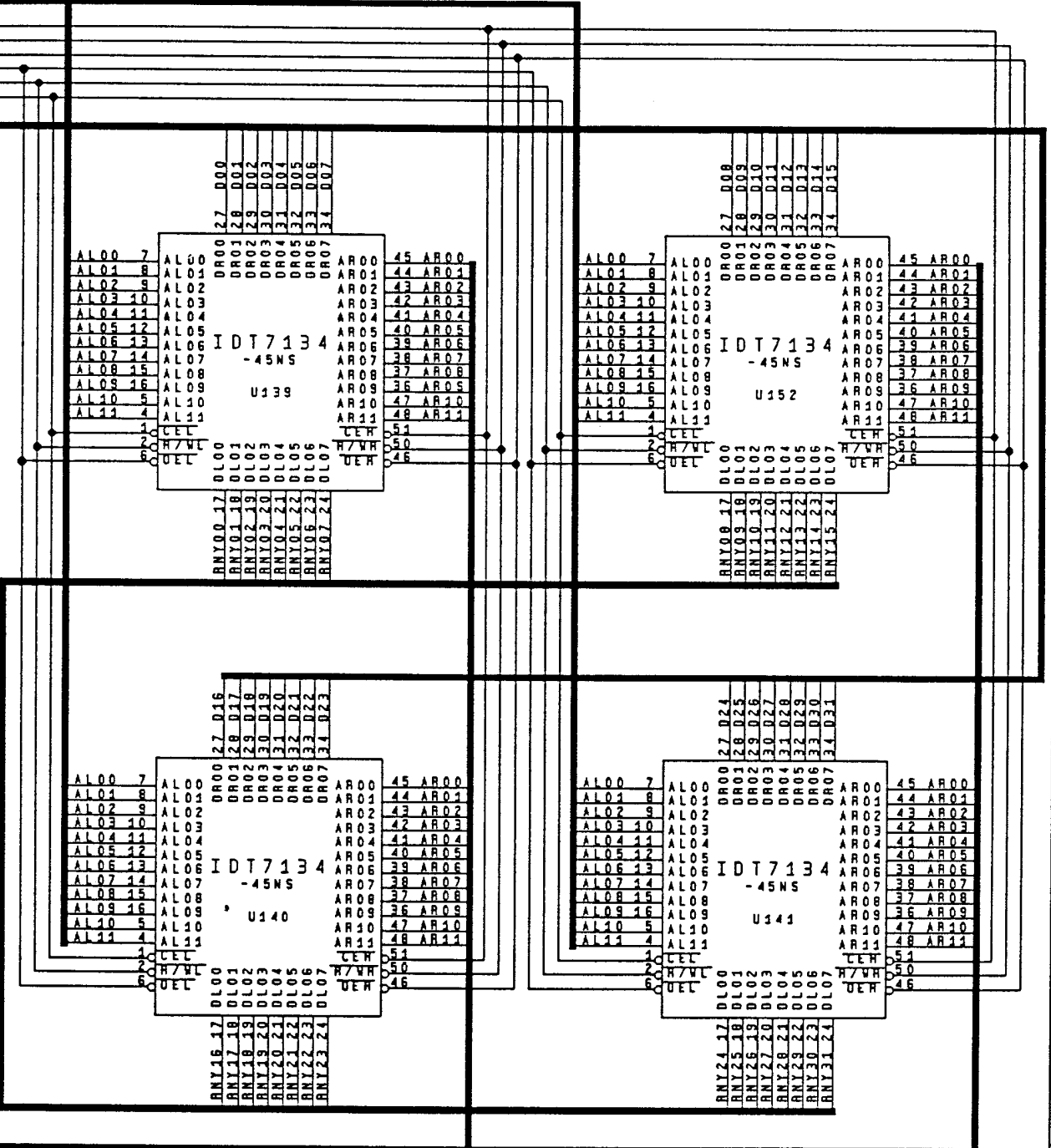
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AL[00.11]

CEP-
R-WR-
V-R-
DEL-
R-WL-
CEL-

DI[00.31]



RNY[00.31]

AR[00.11]

COMPANY / PROPRIETARY
CONFIDENTIAL / INFORMATION

MICROPROSE Games
180 LAKEFRONT DR. MUNT VALLEY, MD 21030

DRAFTER
DAVID J. BELLAMY
CHECKER
Paul T. Kuhn 3-23-90
ENGINEER
PAUL T. KUHN
APPROVAL
Paul T. Kuhn

DATE
MICROPROSE GAMES
180 LAKEFRONT DR. MUNT VALLEY, MD 21030
TITLE
DR. MATH
MAC DUAL PORT SRAM ARRAY
SIZE C
DRAWING NUMBER
DW-00011C-0012-01
REV C
RELEASE
DATE 3-21-1990.1.45
SHEET 21 OF 28

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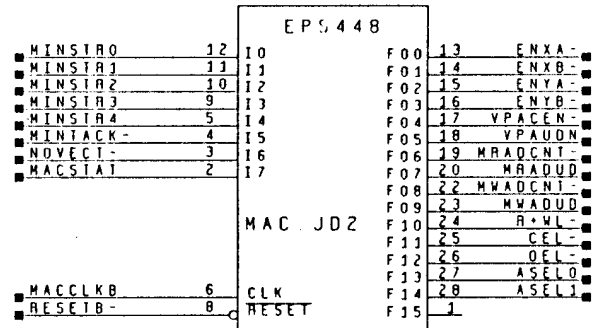
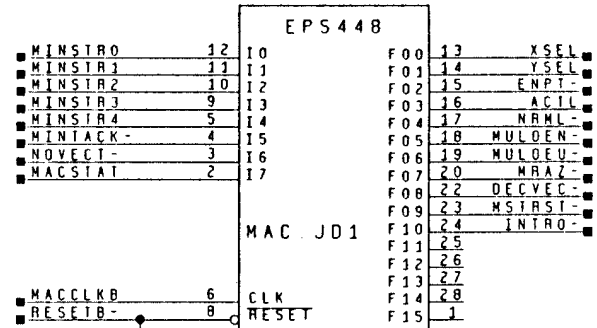
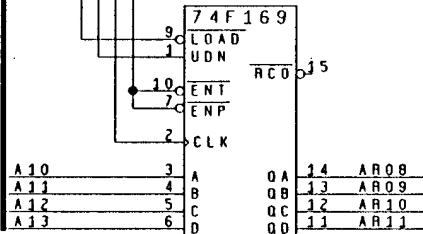
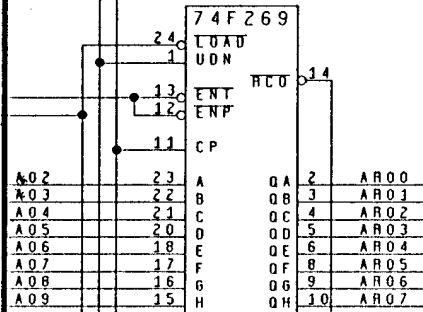
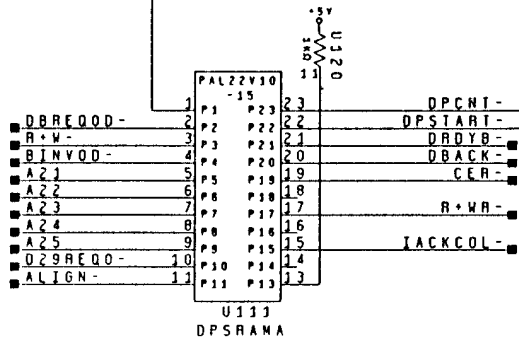
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2

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A[00:31]

SYSCLOCK
HIMAC



AR[00:11]

COMPANY PROPRIETARY
CONFIDENTIAL / INFORMATION

MICROPROSE Games

180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER	DATE	MICROPROSE GAMES	
DAVID J. BELLAMY		180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER	DATE	TITLE	
<i>Paul T. Kuhn</i>	11-8-90	DR. MATH	
ENGINEER	DATE	DUAL PORT SRAM AND MAC CONTROL	
PAUL T. KUHN		SIZE	DRAWING NUMBER
APPROVAL	DATE	C	DW-00011C-0012-01
APPROVAL	DATE	REV M	RELEASE
DATE 11-8-1990_10-48		SHEET 22 OF 28	

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2

1

MRAA[00:11]

MVA[00:11]

YPA[00:11]

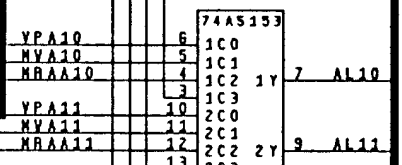
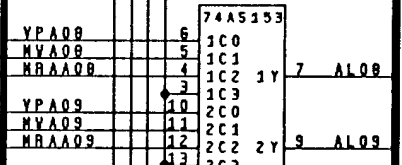
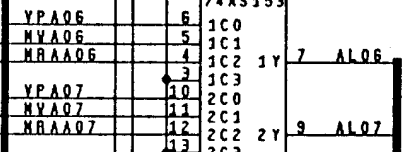
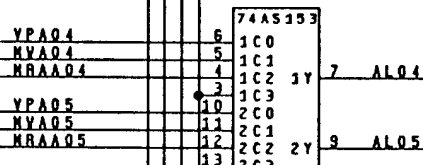
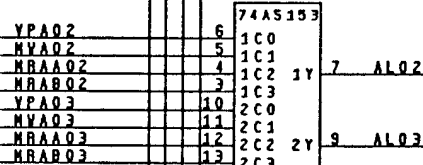
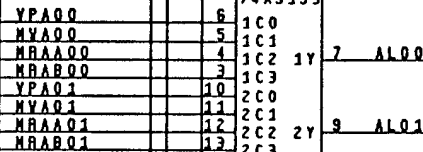
ASEL1

ASEL0

MRAB[00:03]

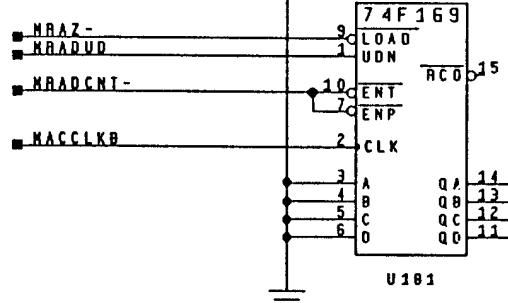
MARPU

U4
3.3V
158



AL[00:11]

MRAB[00:03]



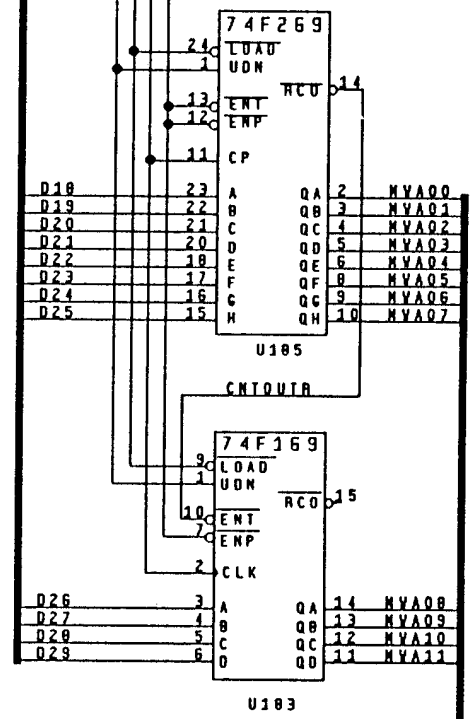
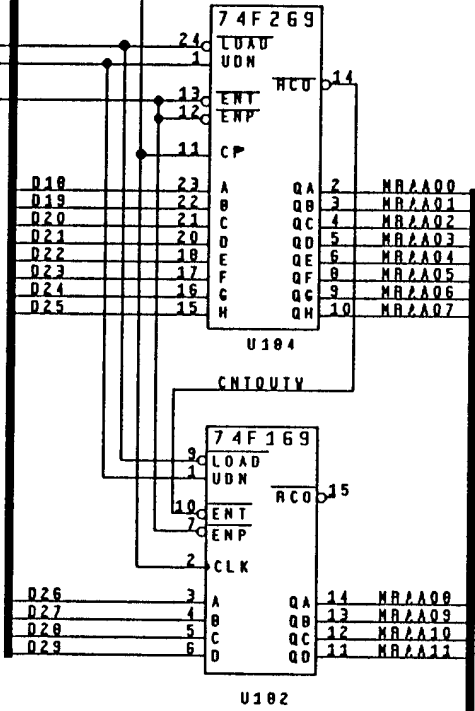
COMPANY PROPRIETARY INFORMATION
 MICROPROSE Games
 180 LAKEFRONT DR., HUNT VALLEY, MO 21030

DRAFTER		DATE		MICROPROSE GAMES 180 LAKEFRONT DR., HUNT VALLEY, MO 21030	
DAVID J. BELLAMY					
CHECKER		DATE		TITLE DR. MATH	
<i>Paul T. Kuhn</i>		3-23-90			
ENGINEER		DATE		MAC SRAM ADDRESS MUXES	
PAUL T. KUHN					
APPROVAL		DATE		SIZE C	DRAWING NUMBER DW-00011C-0012-01
<i>Paul T. Kuhn</i>					
DATE		DATE		REV C	RELEASE
				DATE 3-21-1990-1-47	
				SHEET 23 OF 28	

MYADCNT-
 MACCLKB
 MACCVRO-
 MYADVD

D[00.31]

MACCVB1-
 MRARVD
 MRADCNT-



MVA[00.11]
 MRAA[00.11]

COMPANY / PROPRIETARY
 CONFIDENTIAL / INFORMATION

MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER DAVID J. BELLAMY	DATE	MICROPROSE GAMES	
CHECKER <i>Paul T. Kuhn</i>	DATE 3-23-90	180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
ENGINEER PAUL T. KUHN	DATE	TITLE DR. MATH	
APPROVAL	DATE	MAC SRAM ADDRESS COUNTERS	
APPROVAL <i>[Signature]</i>	DATE	SIZE C	DRAWING NUMBER DW-00011C-0012-01
		REV C	RELEASE
		DATE 3-21-1990-1-48	SHEET 24 OF 28

COMPANY PROPRIETARY
CONFIDENTIAL / INFORMATION

MICROPROSE Games

180 LAKEFRONT DR, HUNT VALLEY, MD 21030

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C

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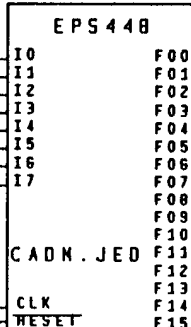
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A

CCMD[00.04]



CCMD00	12	I0
CCMD01	11	I1
CCMD02	10	I2
CCMD03	9	I3
CCMD04	5	I4
CCMD05	4	I5
CCMD06	3	I6
CCMD07	2	I7



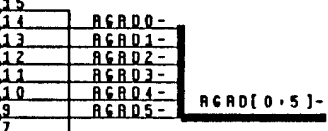
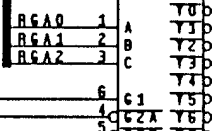
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U55

SAM[00.07]

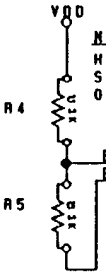
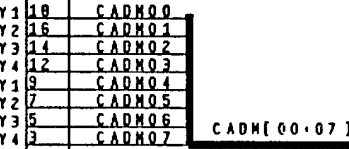
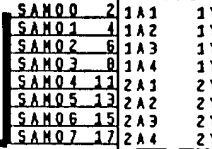
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U77

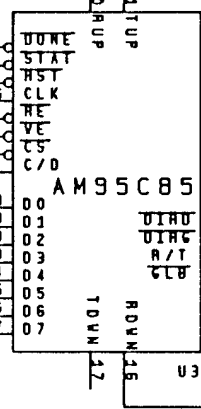
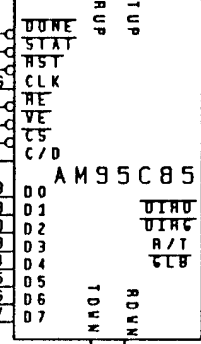
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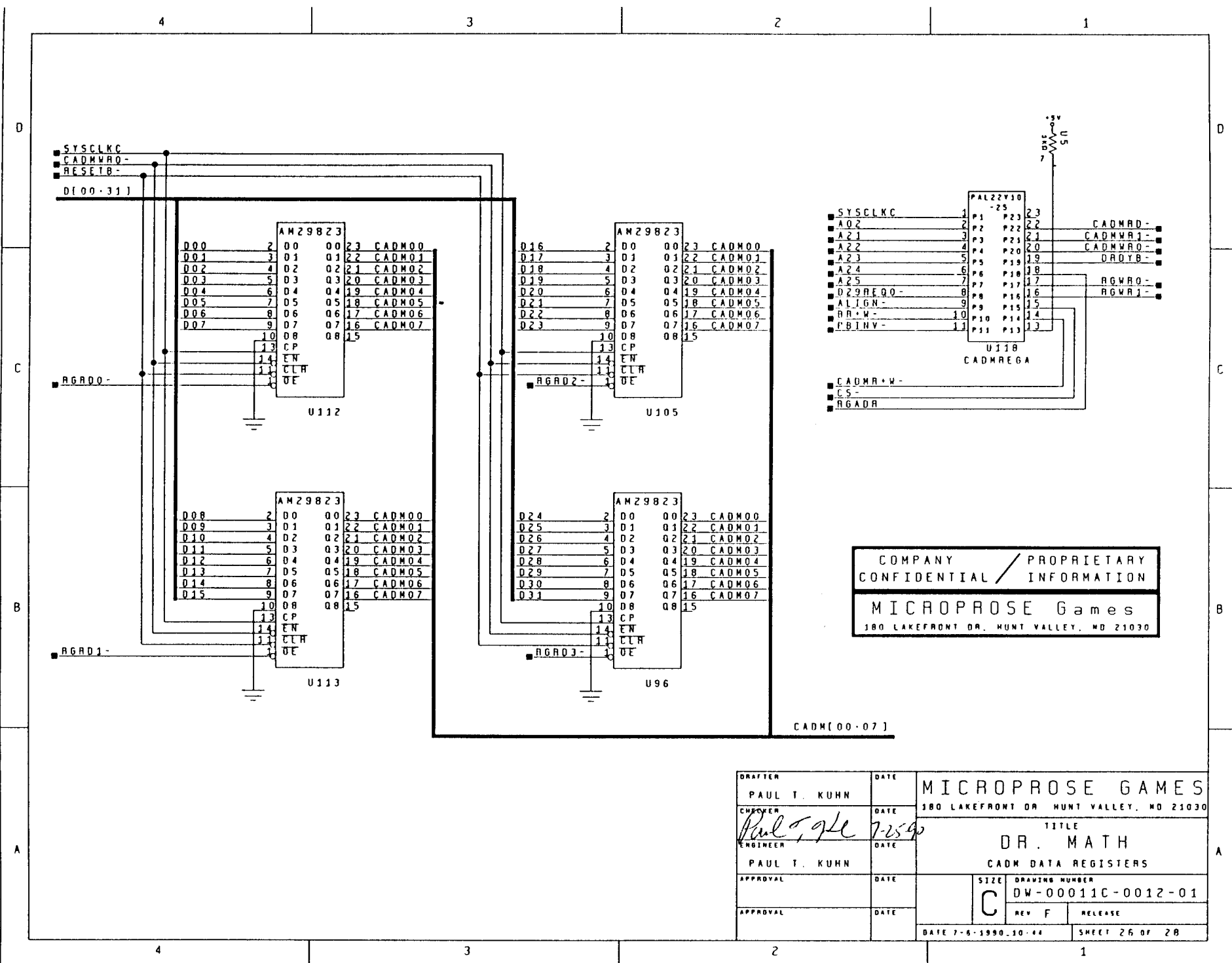
EXPAND0
EXPAND1

CADM00	18
CADM01	19
CADM02	20
CADM03	23
CADM04	24
CADM05	25
CADM06	26
CADM07	27

CADM00	18
CADM01	19
CADM02	20
CADM03	23
CADM04	24
CADM05	25
CADM06	26
CADM07	27



DRAFTER DAVID J. BELLAMY	DATE	MICROPROSE GAMES	
CHECKER <i>Paul T. Kuhn</i>	DATE 3-23-90	180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
ENGINEER PAUL T. KUHN	DATE	TITLE DR. MATH	
APPROVAL	DATE	CADM AND CADM CONTROL	
APPROVED BY <i>Paul T. Kuhn</i>	DATE	SIZE C	DRAWING NUMBER DW-00011C-0012-01
		REV C	RELEASE
		DATE 3-21-1990	SHEET 25 OF 20



COMPANY / PROPRIETARY
 CONFIDENTIAL / INFORMATION
MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

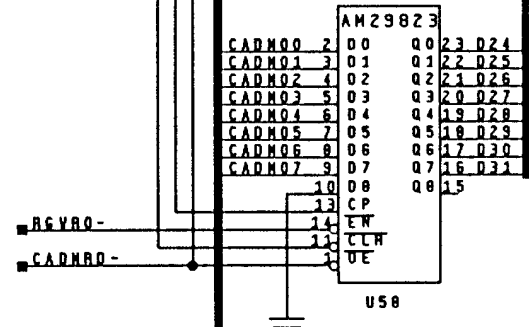
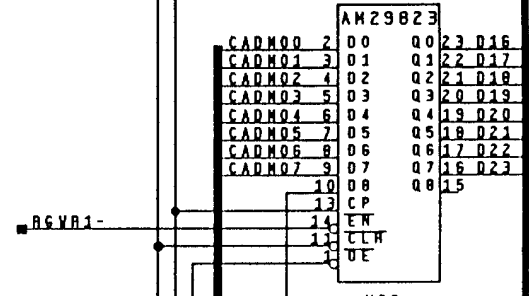
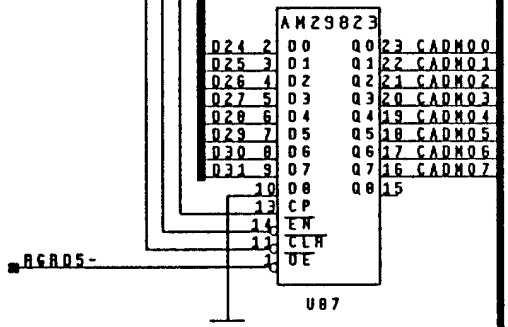
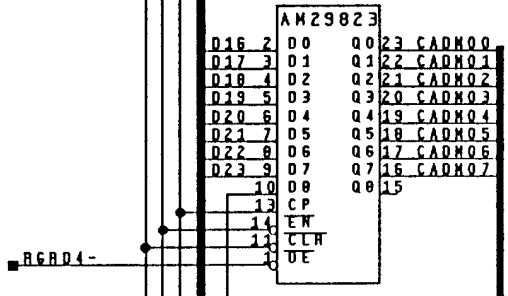
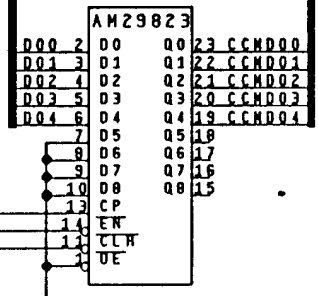
DRAFTER PAUL T. KUHN		DATE		MICROPROSE GAMES	
CHECKER <i>Paul T. Kuhn</i>		DATE 7-25-90		180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
ENGINEER PAUL T. KUHN		DATE		TITLE DR. MATH	
APPROVAL		DATE		CADM DATA REGISTERS	
APPROVAL		DATE		SIZE C	DRAWING NUMBER DW-00011C-0012-01
				REV F	RELEASE
				DATE 7-6-1990-10-44	SHEET 26 OF 28

CADM[00-07]

CADNCLK
 SYSCCLK
 CADMYR1-
 RESETC-

D(00.31)

RESETA-
 STRST-

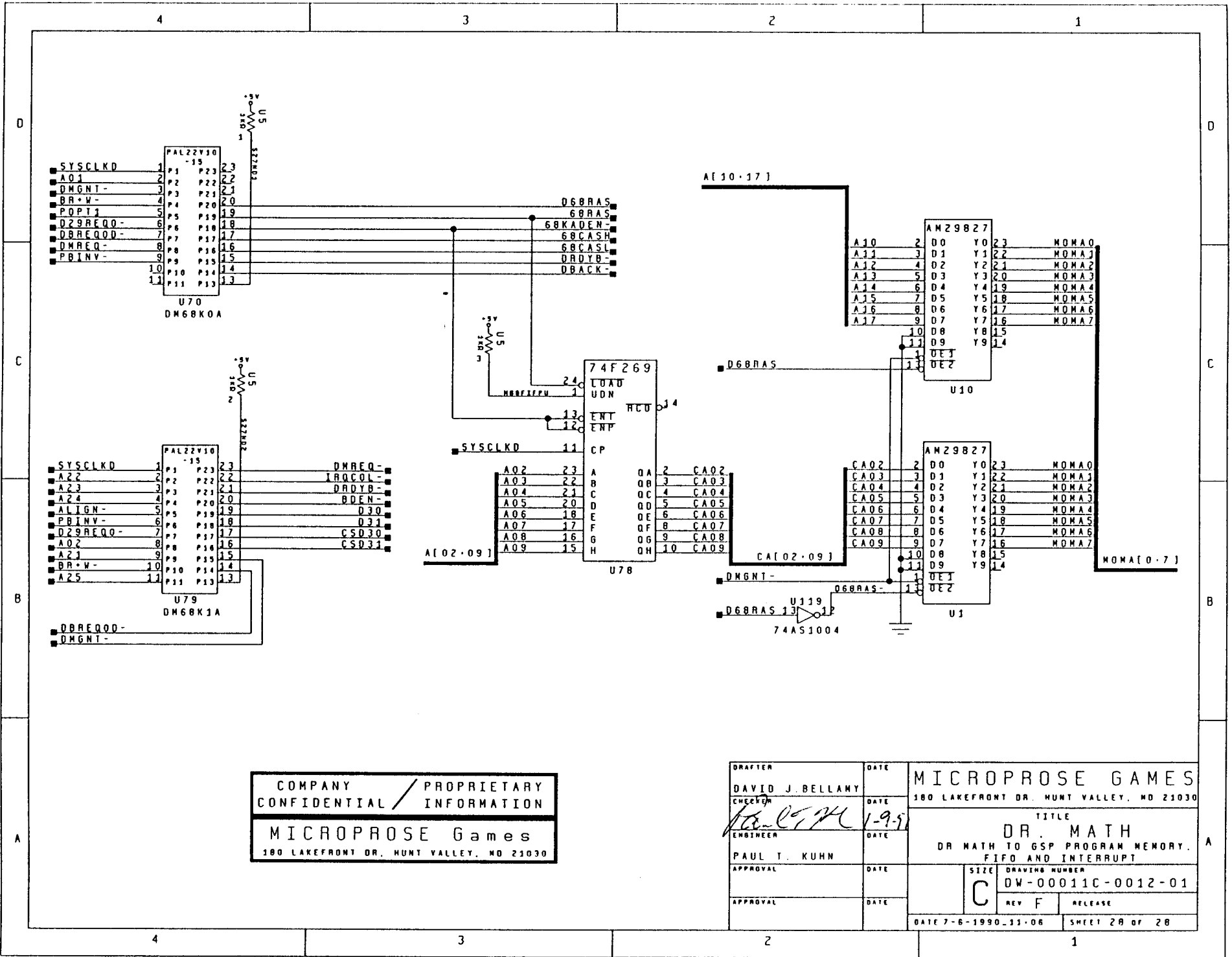


CCND[00.04]

CADN[00.07]

COMPANY PROPRIETARY
 CONFIDENTIAL / INFORMATION
MICROPROSE Games
 180 LAKEFRONT DR, HUNT VALLEY, MD 21030

DRAFTER DAVID J. BELLAMY	DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER <i>Paul T. Kuhn</i>	DATE 3-23-90		
ENGINEER PAUL T. KUHN	DATE	TITLE DR. MATH	
APPROVAL	DATE	CADM DATA REGISTERS	
APPROVAL	DATE	SIZE C	DRAWING NUMBER DW-00011C-0012-01
APPROVAL	DATE	REV C	RELEASE
DATE 3-23-1990 1:50		SHEET 27 OF 28	



COMPANY / PROPRIETARY
 CONFIDENTIAL / INFORMATION
MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER DAVID J. BELLAMY	DATE	MICROPROSE GAMES	
CHECKER <i>[Signature]</i>	DATE 1-9-91	180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
ENGINEER PAUL T. KUHN	DATE	TITLE DR. MATH DR. MATH TO GSP PROGRAM MEMORY. FIFO AND INTERRUPT	
APPROVAL	DATE	SIZE C	DRAWING NUMBER DW-00011C-0012-01
APPROVAL	DATE	REV F	RELEASE
DATE 7-6-1990-11-06		SHEET 28 OF 28	

BILL OF MATERIALS
 DR. MATH P.C.B.
 ASSEMBLY : A10-00002-001

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DATE	ECN	REV	SHEET NUMBER																								
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
	ECN	A	A					A	A																		
	ECN	B	B				B																				
3-21-90	ECN	C	C	C	C	C	C	C	C																		
5-07-90	ECN014	D	D		D			D																			
5-07-90	ECN015	E	E						E																		
6-18-90	ECN038	F	F						F																		
7-16-90	ECN051	G	G	G			G		G																		
7-27-90	ECN055	H	H				H																				
8-01-90	ECN060	K	K	K	K	K	K	K	K																		
8-15-90	ECN064	L	L			L																					
9-04-90	ECN069	M	M	M					M																		
10-8-90	ECN081	N	N						N																		
10-8-90	ECN090	O	O			O			O																		
11-8-90	ECN137	P	P			P																					
1-14-91	ECN125	R	R		R																						

COMPANY CONFIDENTIAL /
 PROPRIETARY INFORMATION
 MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER DAVID J. BELLAMY	DATE
CHECKER <i>Paul T. Kuhn</i>	DATE 1-14-91
ENGINEER PAUL T. KUHN	DATE
APPROVAL	DATE
APPROVAL	DATE

MICROPROSE GAMES 180 LAKEFRONT DRIVE, HUNT VALLEY, MD 21030	
TITLE BILL OF MATERIALS DR. MATH P.C.B. A10-00002-001	DWG NO PL-00011A-0012-01 DATE 1-14-1991-9-45 SHEET 1 OF 7
	REV R A

A

B

MICROPROSE games, 180 Lakefront Drive, Hunt Valley, Maryland, 21030
 PROJECT: DR. MATH PCB DRWG NO: PL-0011A-0012-01 REV: R
 DATE: Mon 14-Jan-1991

ITEM	QTY	VENDOR PART NUMBER	PART DESCRIP	VALUE	MPG P/N
		REF. DES.			
1 B	1	GAL22V10-15P U79	DM68K1A	15NS	120-00001-009
2 B	1	GAL22V10-15P U70	DM68K0A	15NS	120-00001-010
3 B	[0]	GAL22V10-25P [U118]	CADMREGA	25NS	120-00001-011
4	[0]	SN74ALS138N [U97]	3:8DEMUX		200-00138-200
5	1	68001-502 [J1],J2	2PINJUMPER	.100"	610-00002-002
6 *	[0]	AM95C85-12JC [U32,U33]	SMT CADM		130-95C85-412
7	6	SN74AS153N U175,U174,U163,U164,U171,U170	4:1DATAMUX		201-00153-200
8 B	1	GAL22V10-15P U111	DPSRAMA	15NS	120-00001-014
9 C*	[0]	EPS448-3P [U55]	CADM SAM	20MHZ	115-00001-003
10 *	4	IDT7134-S45J U139,U140,U141,U152	4Kx8DPRAM SMT	45NS	222-00003-445
11	5	F74F169PC U125,U177,U181,U182,U183	4BITU/DCNTR		203-00169-200
12	1	SN74ALS04BN U143	HEXINVERTR		200-00004-200
13	1	SN74AS08N U148	QUAD2INAND		201-00008-200
14 B	1	GAL22V10-15P U104	MACCREGA	15NS	120-00001-015
15 E*	1	AM27C010-155DC U153	128Kx8EPROM 29KBK2B0	150NS	110-00001-014
16 E*	1	AM27C010-155DC U154	128Kx8EPROM 29KBK2B1	150NS	110-00001-015
17 E*	1	AM27C010-155DC U167	128Kx8EPROM 29KBK3B0	150NS	110-00001-016
18 E*	1	AM27C010-155DC U160	128Kx8EPROM 29KBK3B1	150NS	110-00001-017

ITEM	QTY	PART NUMBER REF. DES.	PART DESCRIP	VALUE	MPG P/N
19	4	AM29C827APC U1,U10,U155,U157	10BITBUFFER		235-00006-200
20	7	AM29C823ASC [U58,U69,U86,U87,U96,U105,U106,U112,U113],U137,U162, U165,U169,U172,U186,U146	SMT9BITBUSREG		235-00004-100
21 F*	1	AM29C323GC U149	MAC IC	10MHZ	130-00323-510
22	4	173D105X0035V C174,C175,C176,C188	AXTANTCAP	1UF	422-00072-105
23	1	LT1081-CN U176	RS232DRVR		235-00001-200
24	1	SN74LS393N U128	DUAL4BITCNTR		202-00393-200
25	1	22-05-7048 J4	4PINMOLEX	.100"	610-00601-004
26 B	1	GAL22V10-25P U121	UARTCTLA	25NS	120-00001-021
27	1	Z85C30-10JC U159	SMT UART		240-00001-400
28 D*	1	AM27C256-95DC U135	32Kx8EPROM 29KBK1B3.001	90NS	110-00001-118
29 D*	1	AM27C256-95DC U115	32Kx8EPROM 29KBK1B1.001	90NS	110-00001-119
30 D*	1	AM27C256-95DC U108	32Kx8EPROM 29KBK1B0.001	90NS	110-00001-120
31 D*	1	AM27C256-95DC U127	32Kx8EPROM 29KBK1B2.001	90NS	110-00001-121
32 D*	1	AM27C256-95DC U134	32Kx8EPROM 29KBK0B3.001	90NS	110-00001-122
33 D*	1	AM27C256-95DC U114	32Kx8EPROM 29KBK0B1.001	90NS	110-00001-123
34 D*	1	AM27C256-95DC U107	32Kx8EPROM 29KBK0B0.001	90NS	110-00001-124
35 D*	1	AM27C256-95DC U126	32Kx8EPROM 29KBK0B2.001	90NS	110-00001-125
36	8	SN74AS373DW U38,U39,U47,U48,U60,U61,U62,U63	SMT OCTD-LATCHES		201-00373-100

ITEM	QTY	PART NUMBER REF. DES.	PART DESCRIP	VALUE	MPG P/N
37	B 1	GAL22V10-15P U138	ROMADLDA	15NS	120-00001-016
38	B 1	GAL22V10-15P U136	STATEM2A	15NS	120-00001-017
39	4	AM29C863APC U2,U3,U11,U12	9BIBUSDRVR		235-00005-200
40	3	SN74ALS2540N U82,U92,U100	OCTINVDRVR		200-02540-200
41	A 1	GAL16V8A-15P U116	RAMCNTLB	15NS	120-00001-123
42	5	SN74AS258N U83,U93,U101,U129,U131	QUAD2:1MUX		201-00258-200
43	2	AM29C821APC U75,U76	10BITREGISTER		235-00003-200
44	1	SN74AS175N U84	QUADDFLOPS		201-00175-200
45	11	74F269SC U68,U78,U85,U103,U110,U133,U178,U179,U180,U184,U185	SMTDECADEU/DCNTR		203-00269-100
46	B 1	GAL22V10-15P U109	RAMADLDA	15NS	120-00001-018
47	B 1	GAL22V10-15P U102	STATEMB	15NS	120-00001-119
48	A 1	GAL16V8A-15P U67	29DECODA	15NS	120-00001-024
49	* 16	TMS44C256-12NL U13,U21,U27,U34,U35,U37,U46,U57,U80,U81,U88,U89,U90,U91,U98,U99	256Kx4DRAM	120NS	220-00002-212
50	4	SN74AS245DW U43,U44,U52,U53	SMT OCTBIBUFFER		201-00245-100
51	1	SA101A221JAA C203	AXCERCAP	220PF	402-00195-221
52	1	SN74ALS1010N U20	TRI3INNAND		200-01010-200
53	35	SN74AS244DW U6,U7,U8,U14,U15,U16,U22,U23,U24,U28,U29,U30,U31,U36, U40,U41,U42,U45,U49,U50,U51,U54,U56,U64,U65,U66,U72,U73, U74,U95,U132,U144,U145,U150,U151,[U77]	SMT OCTBUFFERS		201-00244-100

ITEM	QTY	PART NUMBER	PART DESCRIP	VALUE	MPG P/N
		REF. DES.			
54	B 1	GAL22V10-15P U59	CLFIFOA	15NS	120-00001-020
55	F* 1	AM29000-16GC U9	MICROPROCESSOR	16MHZ	135-29000-516
56					
57	1	SN7407N U130	HEXOCDRIVERS		206-00007-200
58	A 1	GAL16V8A-25P U122	INTRACKB	25NS	120-00001-026
59					
60					
61	6	CCF-07 561G R2,R7,R8,R13,R14,R16	2%MFRES	560OHM	503-00002-561
62	2	SN74AS74N [U18],U147,U161	DUALDFLOPS		201-00074-200
63	[0]	X0-43D-24 [U17]	OSCILLATOR	24MHZ	290-00001-024
64	4	836C102X2PE U4,U5,U120,U124	SMT PULRESPAK	1KOHM	502-00001-102
65	6	CCF-07 100G [R3],R11,R12,R15,R17,R23,R24	2%MFRES	100OHM	503-00002-100
66	1	68001-503 [J3],J5	3PINJUMPER	.100"	610-00002-003
67	4	CCF-07 102G [R1,R4,R5],R9,R10,R19,R25	2%MFRES	1KOHM	503-00002-102
68	2	CCF-07 103G R6,R22	2%MFRES	10KOHM	503-00002-103
69	1	CCF-07 104G R20	2%MFRES	100KOHM	503-00002-104
70	1	1N914 D1	DIODE		300-00002-003
71	1	1N746A D2	ZENER	3.3V	301-00002-033
72	1	LM311N Q1	VOLTCOMPAR		280-00002-200

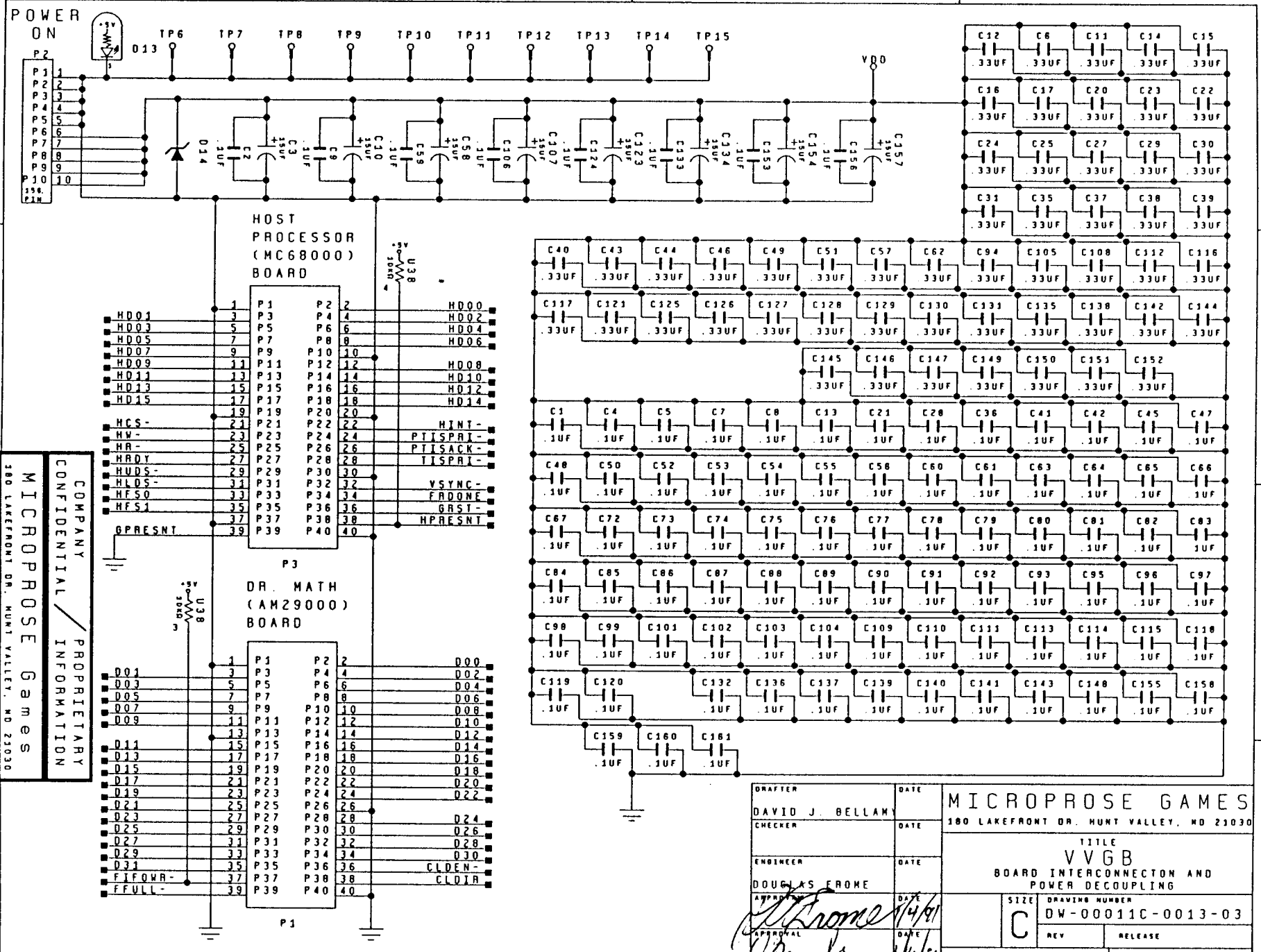
ITEM	QTY	PART NUMBER REF. DES.	PART DESCRIP	VALUE	MPG P/N
73	1	KSA1A211 SW1	PBSWITCH		625-00002-001
74	1	173D335X0020V C159	AXTANTCAP	3.3UF	422-00062-335
75	1	X0-43D-20 U168	OSCILLATOR	20MHZ	290-00001-020
76	1	X0-43D-32 U142	OSCILLATOR	32MHZ	290-00001-032
77	3	SN74AS1004AN [U25],U19,U119,U156	HEXINVDRIVRS		201-01004-200
78	3	HLMP3600 D3,D4,D5	LED	RED	305-00003-002
79	1	ICTE-5 D6	ZENER		300-00001-002
80	10	7-0805G-5 TP5,TP4,TP3,TP2,TP1,TP6,TP7,TP8,TP9,TP10	TESTPIN		710-00001-001
81	1	26-64-5100	MOLEX10PIN	.156"	610-00601-010
	0	09-52-3101 P3	MOLEX10PIN	.156"	610-10600-010
82	8	TAJ156M010R C5,C51,C59,C102,C124,C187,C199,C200	SMTTANTCAP	15UF	420-00002-156
83	41	11C1210Z5U334M050NT C112,C113,C185,C104,C177,C173,C164,C161,C160,C156,C153, C146,C145,C144,C141,C140,C132,C131,C125,C123,C96,C95, C94,C93,C86,C85,C53,C49,C39,C34,C33,C31,C27, C23,C18,C14,C10,C105,C28,C32,C50	SMTCERCAP	0.33UF	401-02000-334
84	146	11C1206Z5U104M050NT C11,C16,C193,C128,C183,C150,C118,C90,C67,C9,C8,C7,C6,C4, C3,C2,C1,C41,C12,C13,C15,C194,C195,C196,C197,C198, C163,C184,C186,C189,C190,C191,C192,C99,C89,C88,C87,C84, C83,C82,C81,C80,C182,C181,C180,C179,C178,C172,C171,C170, C169,C168,C167,C166,C165,C162,C158,C157,C155,C154,C152, C151,C149,C148,C147,C143,C142,C138,C137,C136,C135,C134, C133,C130,C129,C127,C126,C122,C121,C120,C119,C117,C116, C115,C114,C111,C110,C109,C108,C107,C106,C103,C101,C98, C97,C92,C91,C79,C78,C77,C76,C75,C74,C72,C71,C70,C69,C68, C66,C65,C64,C63,C62,C61,C60,C58,C57,C56,C55,C52,C54,C48, C47,C46,C45,C44,C43,C42,C40,C38,C37,C36,C35,C30,C29,C26, C25,C24,C22,C21,C20,C19,C17,C73,C139,C100	SMTCERCAP	0.1UF	401-01000-104
85	1	92984-2-01-20-30 P2	2x20HEADER	.100"	610-10100-040

ITEM	QTY	PART NUMBER REF. DES.	PART DESCRIP	VALUE	MPG P/N
86	1	92984-2-01-32-30 P1	2x32HEADER	.100"	610-10100-064
87	A [0]	ICO-320-MTT [UX67,UX116,UX117,UX122]	.3x20PIN SOCKET		600-00001-320
88	B [0]	ICO-324-MTT [UX59,UX70,UX79,UX102,UX104,UX109,UX111,UX118,UX121, UX136,UX138]	.3x24PIN SOCKET		600-00001-324
89	C [0]	110-13-328-41-001 [UX55,UX166,UX173]	.3x28PIN SOCKET		600-00001-328
90	D 8	ICO-628-MTT UX107,UX108,UX114,UX115,UX126,UX127,UX134,UX135	.6x28PIN SOCKET		600-00001-628
91	E 4	2-644018-2 UX153,UX154,UX160,UX167	.6x32PIN SOCKET		600-00003-632
92	F 1	CPAS-169-ZSTT UX9, [UX149]	169PIN GAS SOCKET		601-00002-169
93	[0]	SRS8-12-01	SPACER	.750"	700-00001-003
94	2	68786-102	SHUNT		715-00001-001
95	1	CCF-07 820G R21	2PCMFRES	82OHM	503-00002-820
96	1	FRJ-50 R18	JUMPRES	0OHM	503-00001-000
96	1	C410C104M5U5CA C201	AXCERCAP	.1UF	402-00382-104
97	C* 1	EPS448-3P U166	MAC.2 SAM	20MHZ	115-00001-002
98	C* 1	EPS448-3P U173	MAC.1 SAM	20MHZ	115-00001-001
99	1	C410C101J1R5CA C202	AXCERCAP	100PF	402-00195-101

425

NOTES:

1. PARTS REQUIRING 0.33UF DECOUPLING CAPACITORS ARE DESIGNATED WITH AN ASTERISK (*) BETWEEN ITEM AND QTY COLUMNS.
2. PARTS REQUIRING SOCKETS ARE MARKED WITH A LETTER CORRESPONDING TO THE SOCKETS (SOCKETS ARE ITEMS 87 - 92).
3. PARTS WITH REFERENCE DESIGNATORS IN BRACKETS [] WILL NOT BE POPULATED DURING PRODUCTION.



COMPANY PROPRIETARY
 CONFIDENTIAL INFORMATION
 MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER		DATE		MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
DAVID J. BELLAMY					
CHECKER		DATE		TITLE VVGB BOARD INTERCONNECTION AND POWER DECOUPLING	
ENGINEER		DATE		DRAWING NUMBER DW-00011C-0013-03	
DOUGLAS FROME					
APPROVAL		DATE		SIZE C	
<i>Douglas Frome</i>		1/4/91			
APPROVAL		DATE		REV	
<i>Douglas</i>		1/4/91		RELEASE	
DATE 11-13-1990-13-52				SHEET 2 OF 27	

4

3

2

1

D

D

C

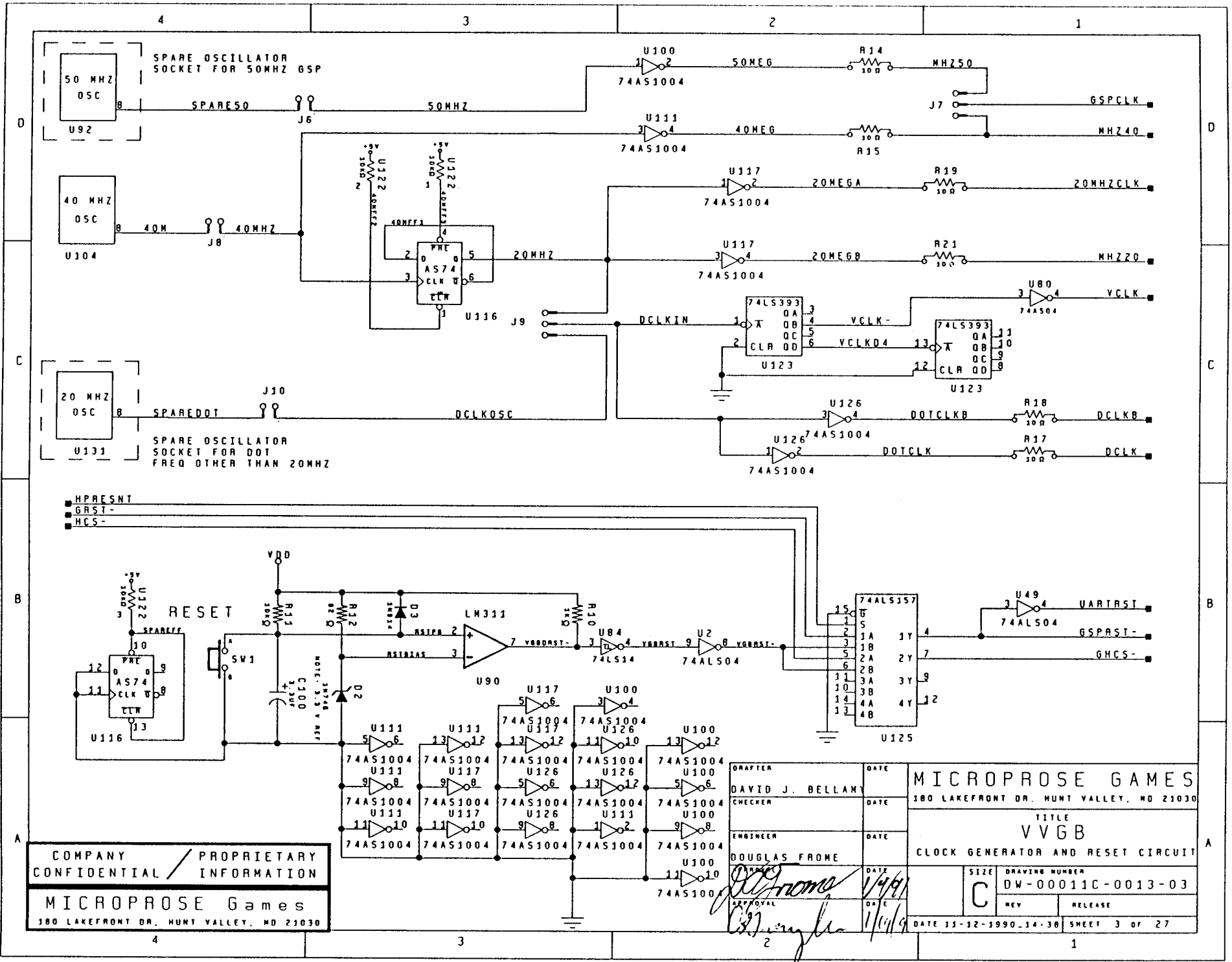
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B

B

A

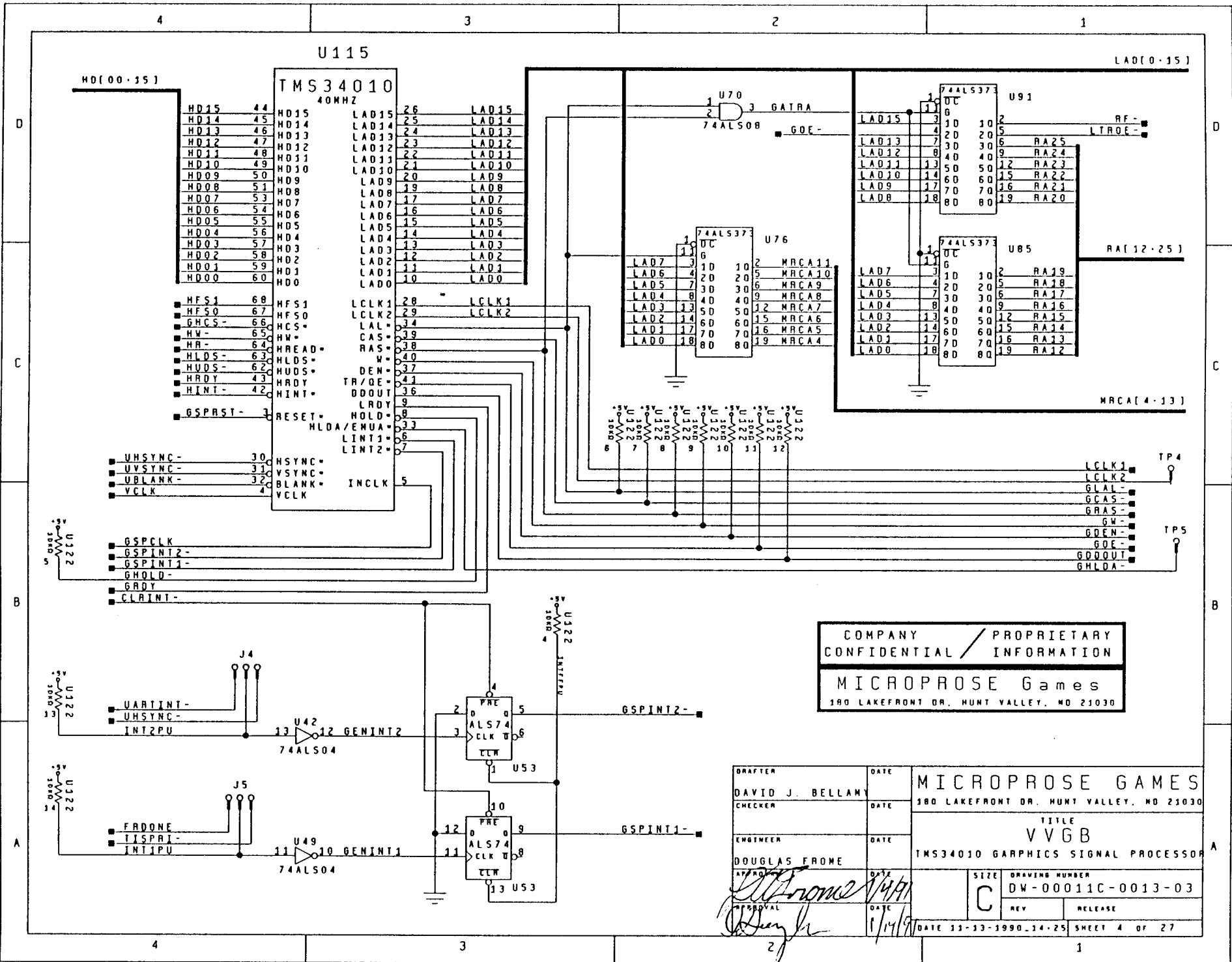
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MICROPROSE Games
 180 LAKEFRONT DR., HUNT VALLEY, MD 21030

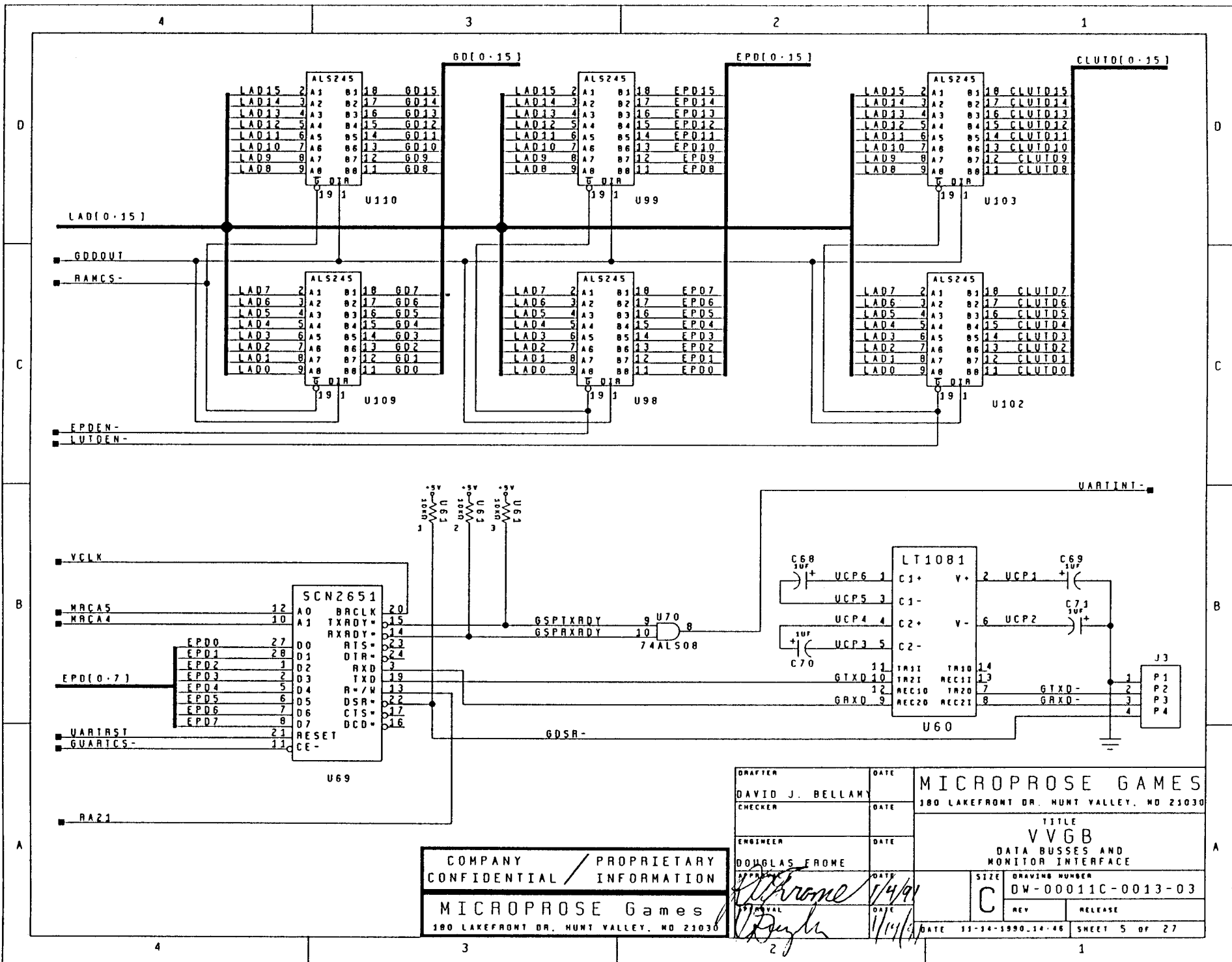
DRAFTER
 DAVID J. BELLAMY
 CHECKER
 ENGINEER
 DOUGLAS FROME
 APPROVAL
 DATE 1/4/91
 DATE 1/14/91

MICROPROSE GAMES
 180 LAKEFRONT DR., HUNT VALLEY, MD 21030
 TITLE
VVGB
 CLOCK GENERATOR AND RESET CIRCUIT
 SIZE C
 DRAWING NUMBER
 DW-00011C-0013-03
 DATE 11-12-1990-14-38 SHEET 3 OF 27



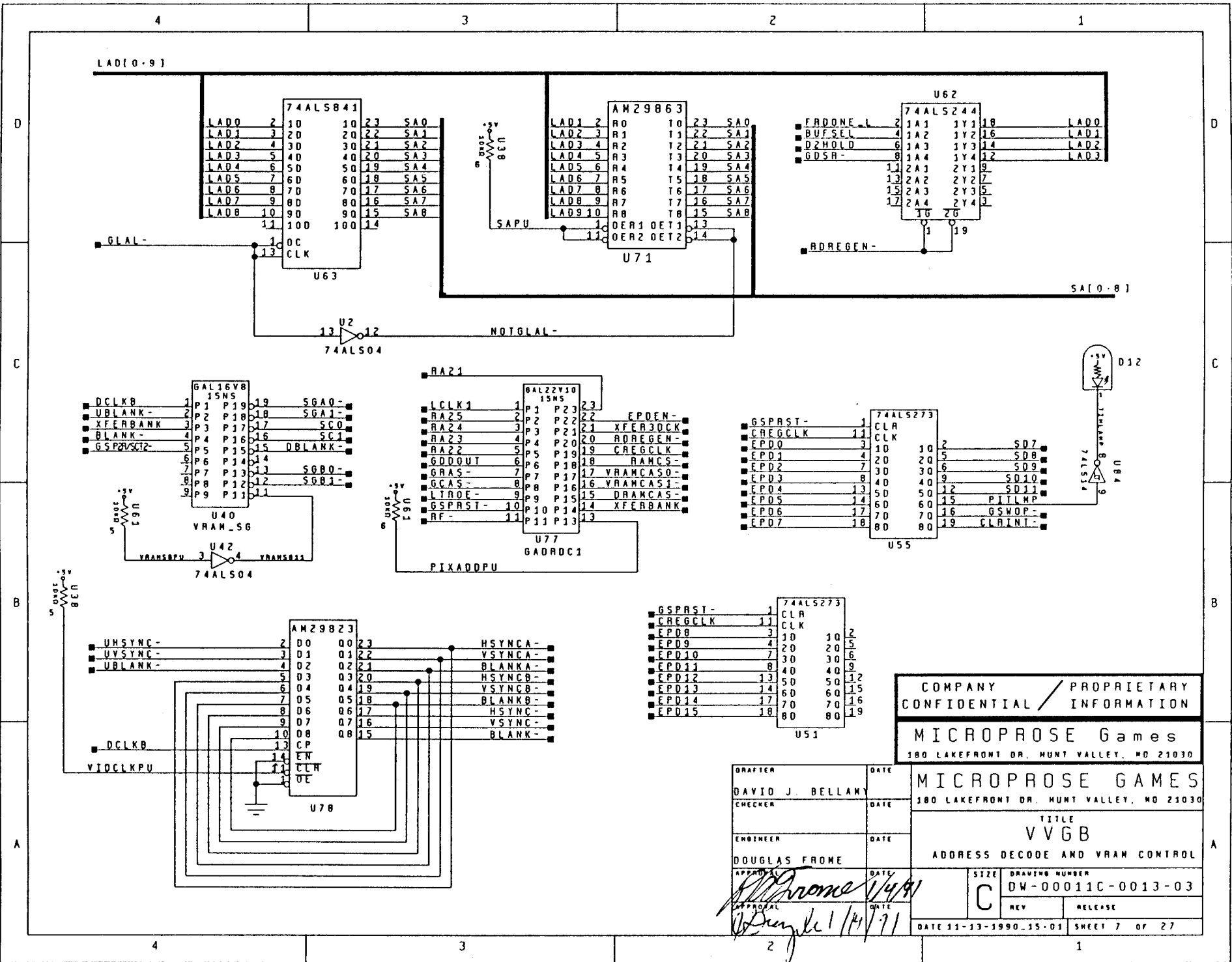
COMPANY PROPRIETARY
 CONFIDENTIAL / INFORMATION
MICROPROSE Games
 180 LAKEFRONT DR. MOUNT VALLEY, MD 21030

DRAFTER		DATE	MICROPROSE GAMES	
DAVID J. BELLAMY			180 LAKEFRONT DR. MOUNT VALLEY, MD 21030	
CHECKER		DATE	TITLE	
			V V G B	
ENGINEER		DATE	TMS34010 GRAPHICS SIGNAL PROCESSOR	
DOUGLAS FRONE			SIZE	
APPROVAL		DATE	DRAWING NUMBER	
<i>[Signature]</i>		1/14/91	DW-00011C-0013-03	
APPROVAL		DATE	REV	
<i>[Signature]</i>		1/14/91	RELEASE	
			DATE 11-13-1990.14.25 SHEET 4 OF 27	



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 MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

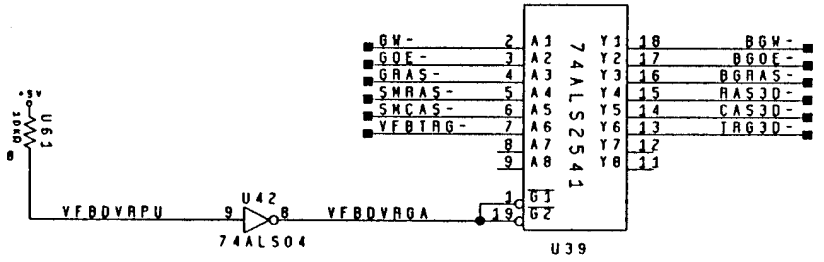
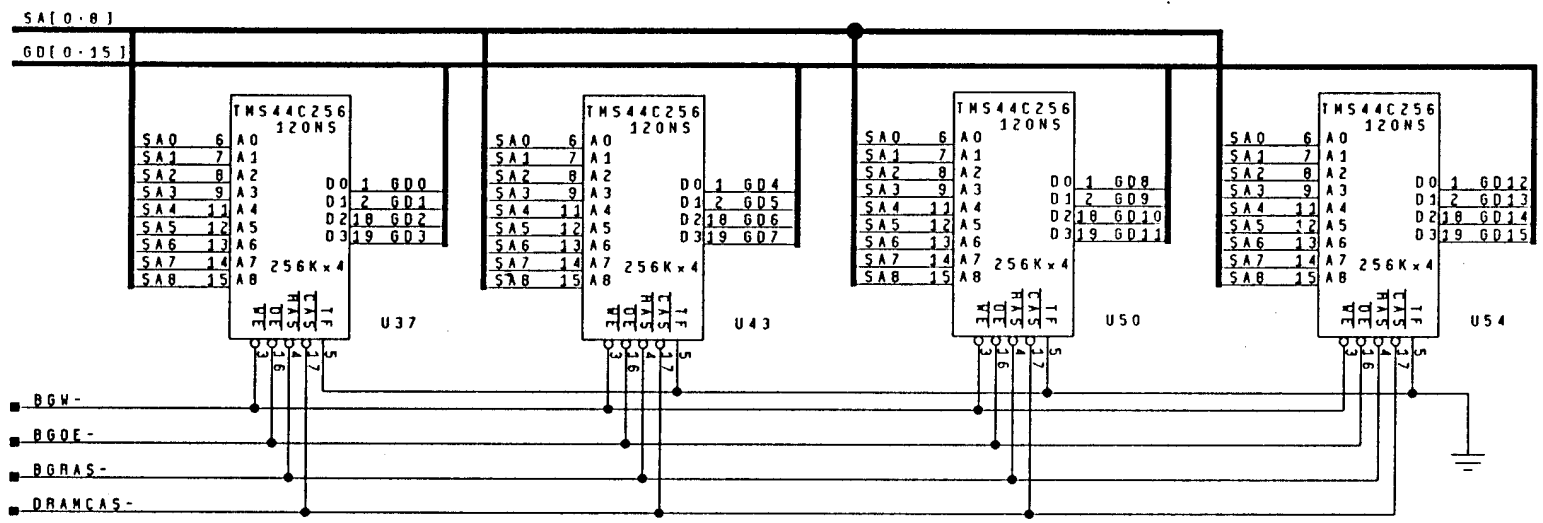
DRAFTER		DATE		MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
DAVID J. BELLAMY					
CHECKER		DATE		TITLE V VGB DATA BUSES AND MONITOR INTERFACE	
ENGINEER		DATE		DRAWING NUMBER DW-00011C-0013-03	
DOUGLAS FROME					
APPROVAL		DATE		SIZE C	
<i>[Signature]</i>		1/4/91			
REVISION		DATE		REV	
<i>[Signature]</i>		1/14/91			
DATE		11-24-1990-14-06		RELEASE	
				SHEET 5 OF 27	



COMPANY / PROPRIETARY
 CONFIDENTIAL / INFORMATION
MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER	DATE
DAVID J. BELLAMY	
CHECKER	DATE
ENGINEER	DATE
DOUGLAS FROME	
APPROVAL	DATE
<i>[Signature]</i>	1/4/91
APPROVAL	DATE
<i>[Signature]</i>	1/4/91

MICROPROSE GAMES	
180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
TITLE	
V VGB	
ADDRESS DECODE AND VRAM CONTROL	
SIZE	DRAWING NUMBER
C	DW-00011C-0013-03
REV	RELEASE
DATE 11-13-1990_15-01	SHEET 7 OF 27

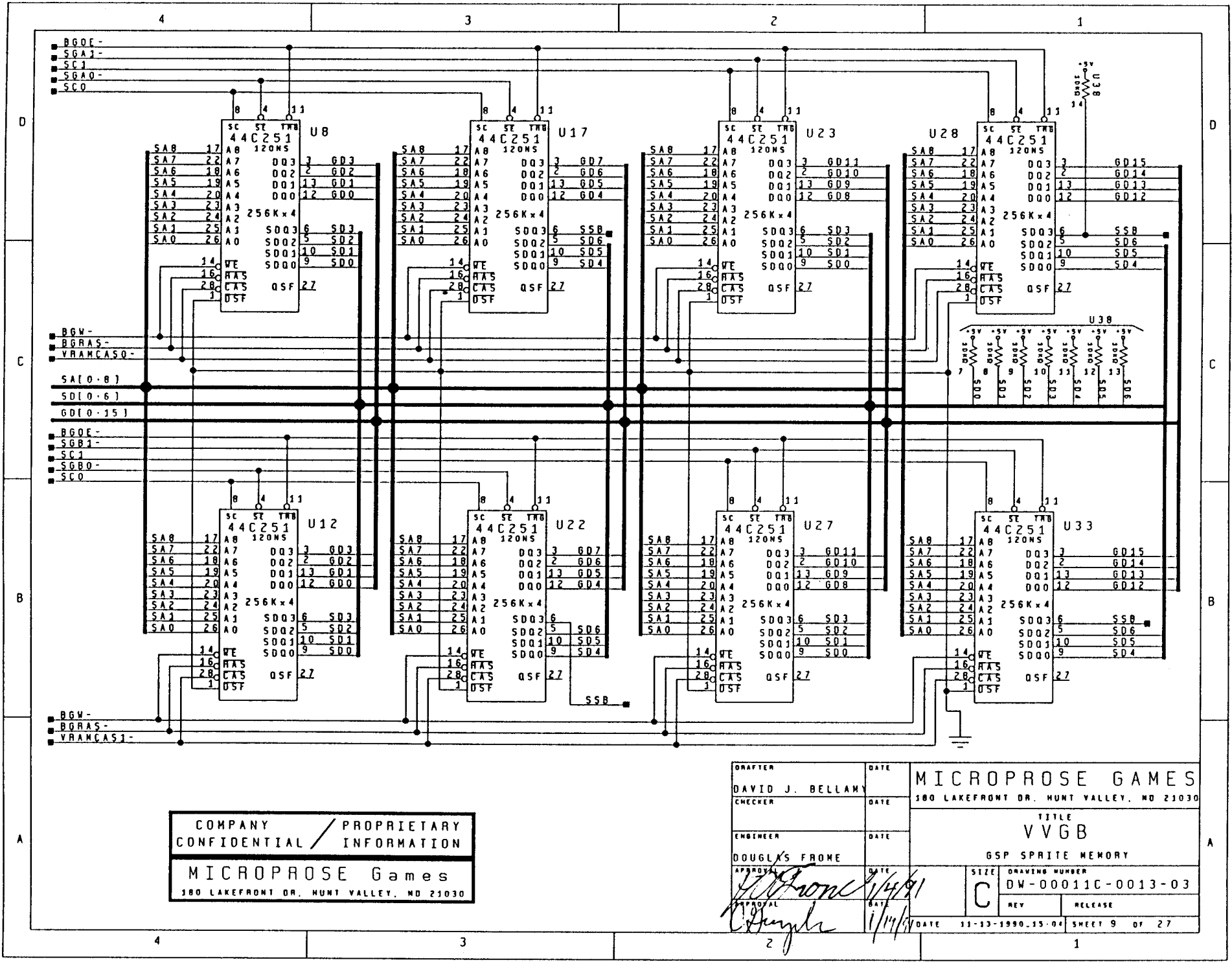


COMPANY / PROPRIETARY
CONFIDENTIAL / INFORMATION

MICROPROSE Games

180 LAKEFRONT DR. HUNT VALLEY, MO 21030

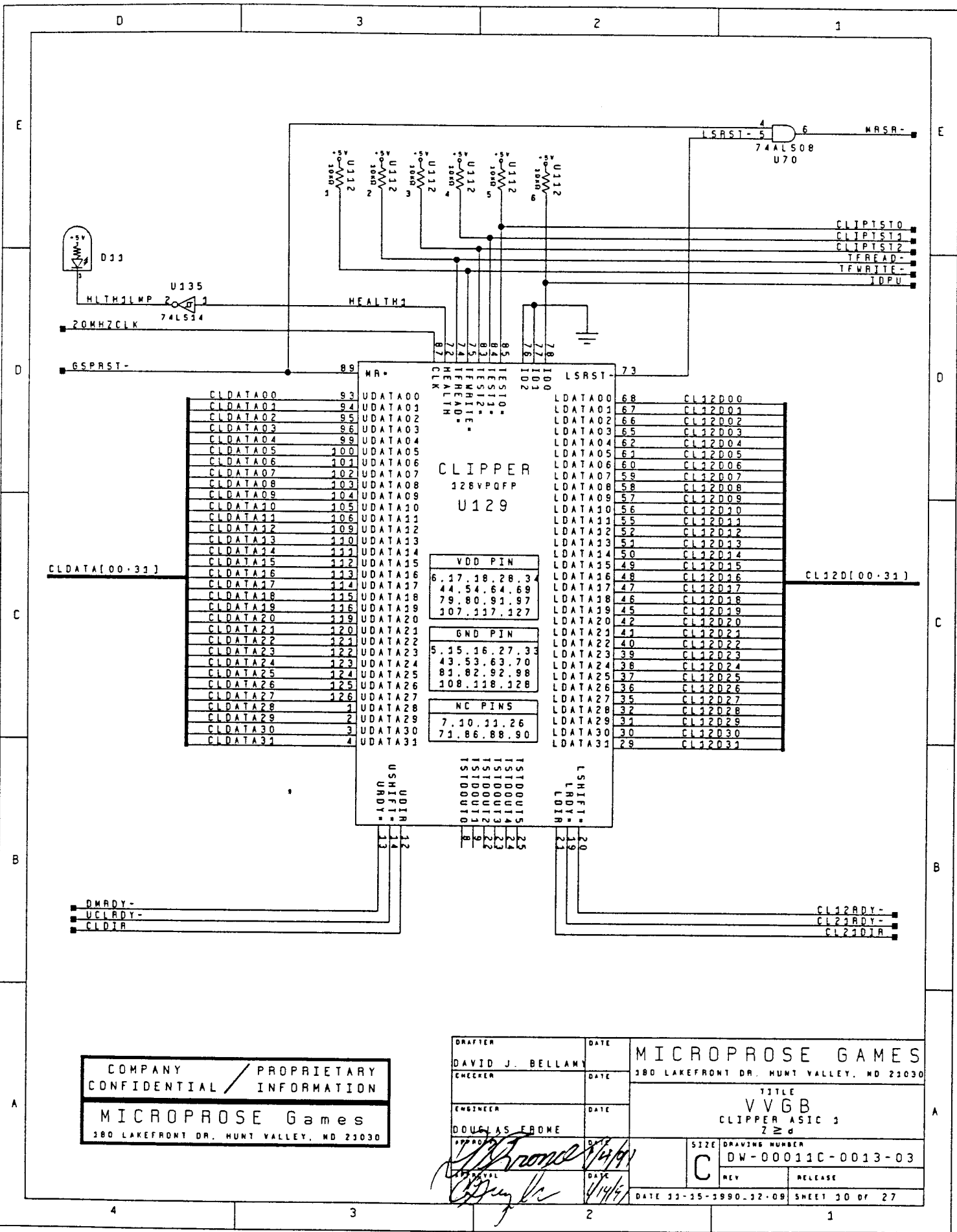
DRAFTER		DATE		MICROPROSE GAMES	
DAVID J. BELLAMY				180 LAKEFRONT DR. HUNT VALLEY, MO 21030	
CHECKER		DATE		TITLE	
				V V G B	
ENGINEER		DATE		GSP DRAM BANK	
DOUGLAS FROME				SIZE	
				DRAWING NUMBER	
				DW-00011C-0013-03	
APPROVAL		DATE		REV	
<i>D. Frome</i>		11/1/91		C	
APPROVAL		DATE		RELEASE	
<i>D. Frome</i>		11/1/91			
DATE 11-13-1990.15-03				SHEET 8 OF 27	



COMPANY / PROPRIETARY
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MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER		DATE		MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
DAVID J. BELLAM					
CHECKER		DATE		TITLE V VGB GSP SPRITE MEMORY	
ENGINEER		DATE		DRAWING NUMBER DW-00011C-0013-03	
DOUGLAS FROME					
APPROVAL		DATE		REV	
<i>[Signature]</i>		1/4/91			
APPROVAL		DATE		RELEASE	
<i>[Signature]</i>		1/11/91		DATE 11-13-1990.15-04 SHEET 9 OF 27	

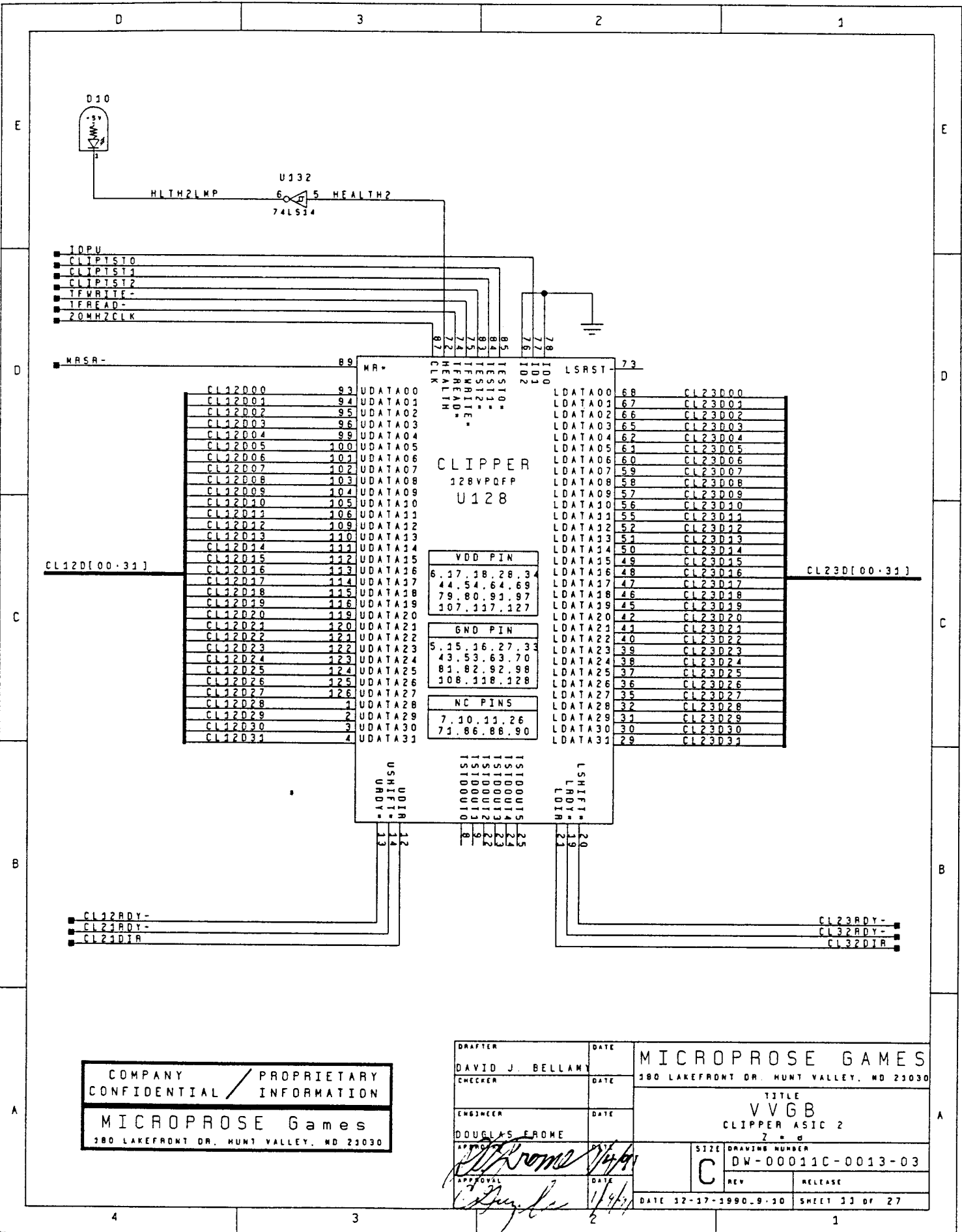


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CLDATA01	94	UDATA01	94	LDATA01	67	CL12D01
CLDATA02	95	UDATA02	95	LDATA02	66	CL12D02
CLDATA03	96	UDATA03	96	LDATA03	65	CL12D03
CLDATA04	98	UDATA04	98	LDATA04	62	CL12D04
CLDATA05	100	UDATA05	100	LDATA05	61	CL12D05
CLDATA06	101	UDATA06	101	LDATA06	60	CL12D06
CLDATA07	102	UDATA07	102	LDATA07	59	CL12D07
CLDATA08	103	UDATA08	103	LDATA08	58	CL12D08
CLDATA09	104	UDATA09	104	LDATA09	57	CL12D09
CLDATA10	105	UDATA10	105	LDATA10	56	CL12D10
CLDATA11	106	UDATA11	106	LDATA11	55	CL12D11
CLDATA12	109	UDATA12	109	LDATA12	52	CL12D12
CLDATA13	110	UDATA13	110	LDATA13	51	CL12D13
CLDATA14	111	UDATA14	111	LDATA14	50	CL12D14
CLDATA15	112	UDATA15	112	LDATA15	49	CL12D15
CLDATA16	113	UDATA16	113	LDATA16	48	CL12D16
CLDATA17	114	UDATA17	114	LDATA17	47	CL12D17
CLDATA18	115	UDATA18	115	LDATA18	46	CL12D18
CLDATA19	116	UDATA19	116	LDATA19	45	CL12D19
CLDATA20	119	UDATA20	119	LDATA20	42	CL12D20
CLDATA21	120	UDATA21	120	LDATA21	41	CL12D21
CLDATA22	121	UDATA22	121	LDATA22	40	CL12D22
CLDATA23	122	UDATA23	122	LDATA23	39	CL12D23
CLDATA24	123	UDATA24	123	LDATA24	38	CL12D24
CLDATA25	124	UDATA25	124	LDATA25	37	CL12D25
CLDATA26	125	UDATA26	125	LDATA26	36	CL12D26
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CLDATA28	1	UDATA28	1	LDATA28	32	CL12D28
CLDATA29	2	UDATA29	2	LDATA29	31	CL12D29
CLDATA30	3	UDATA30	3	LDATA30	30	CL12D30
CLDATA31	4	UDATA31	4	LDATA31	29	CL12D31

VDD PIN				
6	17	18	28	34
44	54	64	69	
79	80	91	97	
107	117	127		
GND PIN				
5	15	16	27	33
43	53	63	70	
81	82	92	98	
108	118	128		
NC PINS				
7	10	11	26	
71	86	88	90	

COMPANY PROPRIETARY
CONFIDENTIAL / INFORMATION
MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

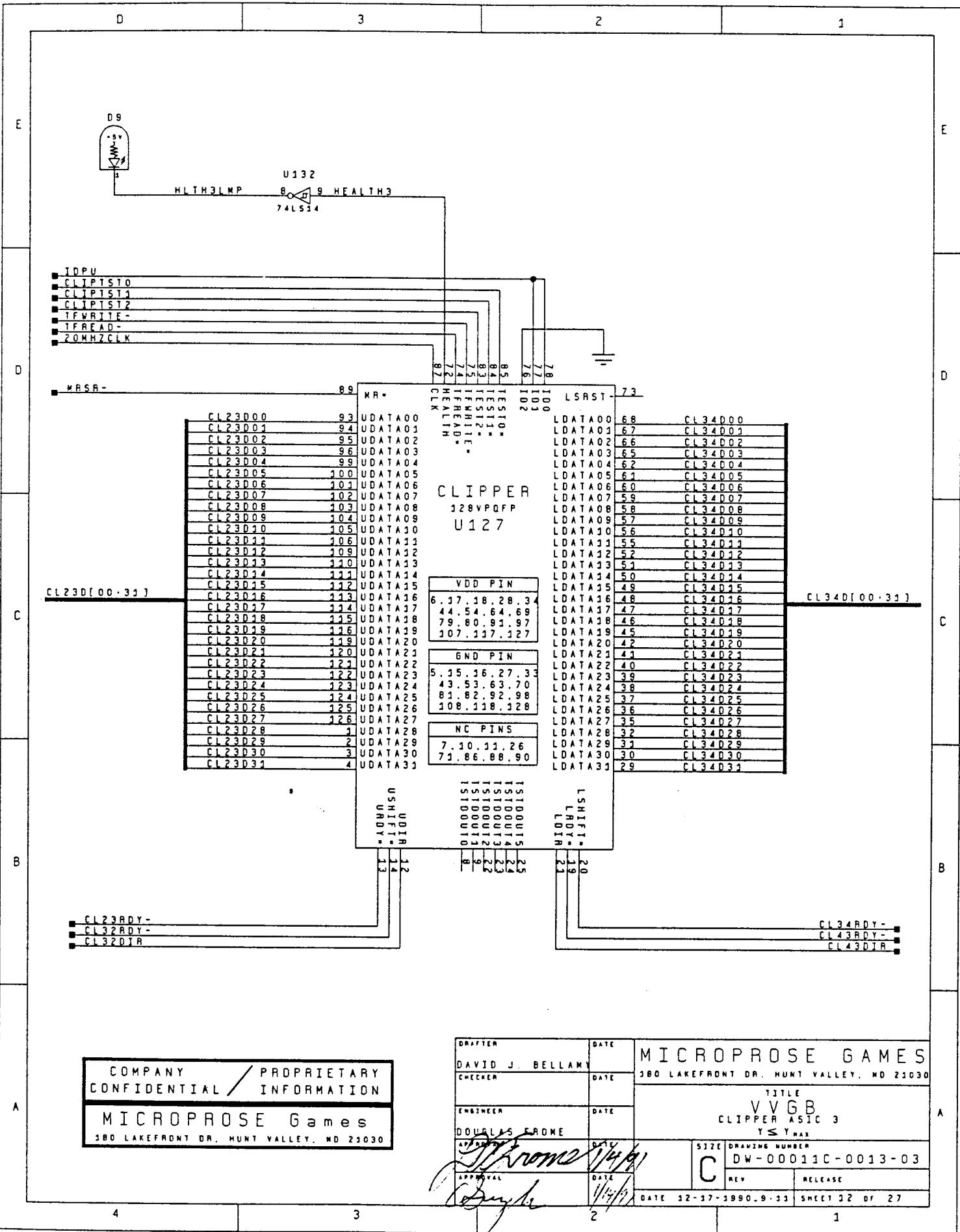
DRAFTER	DATE	MICROPROSE GAMES	
DAVID J. BELLAMY		180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER	DATE	TITLE	
		V VGB	
ENGINEER	DATE	CLIPPER ASIC 3	
DOUGLAS EDOME		Z ≥ d	
APPROV	DATE	SIZE	DRAWING NUMBER
<i>[Signature]</i>	4/14/94	C	DW-00011C-0013-03
APPROV	DATE	REV	RELEASE
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DATE 11-15-1990.32-09		SHEET 30 OF 27	



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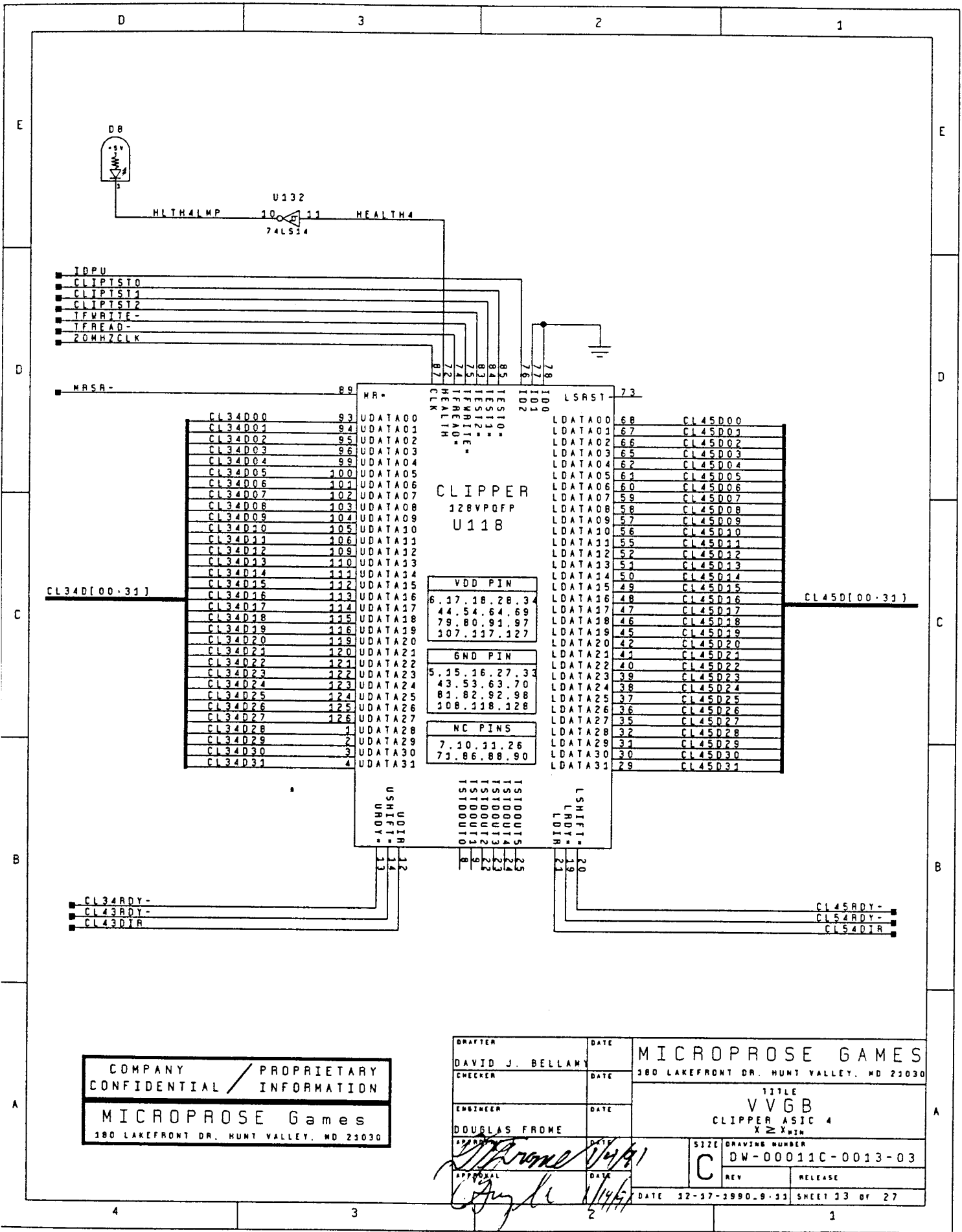
MICROPROSE Games
380 LAKEFRONT DR. HUNT VALLEY, MD 23030

DRAFTER DAVID J. BELLAMY	DATE	MICROPROSE GAMES 380 LAKEFRONT DR. HUNT VALLEY, MD 23030	
CHECKER	DATE	TITLE V VGB CLIPPER ASIC 2	
ENGINEER DOUGLAS FROME	DATE	SIZE C	DRAWING NUMBER DW-00011C-0013-03
APPROVAL <i>[Signature]</i>	DATE 1/24/91	REV	RELEASE
DATE 12-17-1990.9.30		SHEET 13 OF 27	



COMPANY PROPRIETARY
 CONFIDENTIAL / INFORMATION
MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER	DATE	MICROPROSE GAMES	
DAVID J. BELLAMY		180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER	DATE	TITLE	
		V V G B CLIPPER ASIC 3 Y ≤ Y MAX	
ENGINEER	DATE	SIZE	DRAWING NUMBER
DOUGLAS FROME		C	DW-00011C-0013-03
APPROVAL	DATE	REV	RELEASE
<i>[Signature]</i>	1/4/91		
APPROVAL	DATE	DATE 12-17-1990.9.33 SHEET 02 OF 27	
<i>[Signature]</i>	1/4/91		



COMPANY PROPRIETARY
 CONFIDENTIAL / INFORMATION
MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER DAVID J. BELLAM	DATE	MICROPROSE GAMES 380 LAKEFRONT DR. HUNT VALLEY, MD 21030
CHECKER	DATE	
ENGINEER DOUGLAS FROME	DATE	TITLE V V G B CLIPPER ASIC 4 X Z X MIN
APPROVED <i>[Signature]</i>	DATE 1/14/91	SIZE C
DATE 1/14/91	DATE 1/14/91	DRAWING NUMBER DW-00011C-0013-03
		REV RELEASE
		DATE 12-17-1990.8-33 SHEET 13 OF 27



U132
HLTH5LMP 12 HEALTH5 13
74LS14

- TOPU
- CLIP1S10
- CLIP1S11
- CLIP1S12
- TFWRITE-
- TFREAD-
- ZOMH7CLK

MRSR-

CL45D00	93	UDATA00
CL45D01	94	UDATA01
CL45D02	95	UDATA02
CL45D03	96	UDATA03
CL45D04	99	UDATA04
CL45D05	100	UDATA05
CL45D06	101	UDATA06
CL45D07	102	UDATA07
CL45D08	103	UDATA08
CL45D09	104	UDATA09
CL45D10	105	UDATA10
CL45D11	106	UDATA11
CL45D12	109	UDATA12
CL45D13	110	UDATA13
CL45D14	111	UDATA14
CL45D15	112	UDATA15
CL45D16	113	UDATA16
CL45D17	114	UDATA17
CL45D18	115	UDATA18
CL45D19	116	UDATA19
CL45D20	119	UDATA20
CL45D21	120	UDATA21
CL45D22	121	UDATA22
CL45D23	122	UDATA23
CL45D24	123	UDATA24
CL45D25	124	UDATA25
CL45D26	125	UDATA26
CL45D27	126	UDATA27
CL45D28	1	UDATA28
CL45D29	2	UDATA29
CL45D30	3	UDATA30
CL45D31	4	UDATA31

CLIPPER
328VPQFP
U119

VDD PIN	
6	17
18	28
34	
44	54
64	69
79	80
91	97
107	117
127	

GND PIN	
5	15
16	27
33	
43	53
63	70
81	82
92	98
108	118
128	

NC PINS	
7	10
11	26
71	86
88	90

LDATA00	68	CL56D00
LDATA01	67	CL56D01
LDATA02	66	CL56D02
LDATA03	65	CL56D03
LDATA04	62	CL56D04
LDATA05	61	CL56D05
LDATA06	60	CL56D06
LDATA07	59	CL56D07
LDATA08	58	CL56D08
LDATA09	57	CL56D09
LDATA10	56	CL56D10
LDATA11	55	CL56D11
LDATA12	52	CL56D12
LDATA13	51	CL56D13
LDATA14	50	CL56D14
LDATA15	49	CL56D15
LDATA16	48	CL56D16
LDATA17	47	CL56D17
LDATA18	46	CL56D18
LDATA19	45	CL56D19
LDATA20	42	CL56D20
LDATA21	41	CL56D21
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LDATA23	39	CL56D23
LDATA24	38	CL56D24
LDATA25	37	CL56D25
LDATA26	36	CL56D26
LDATA27	35	CL56D27
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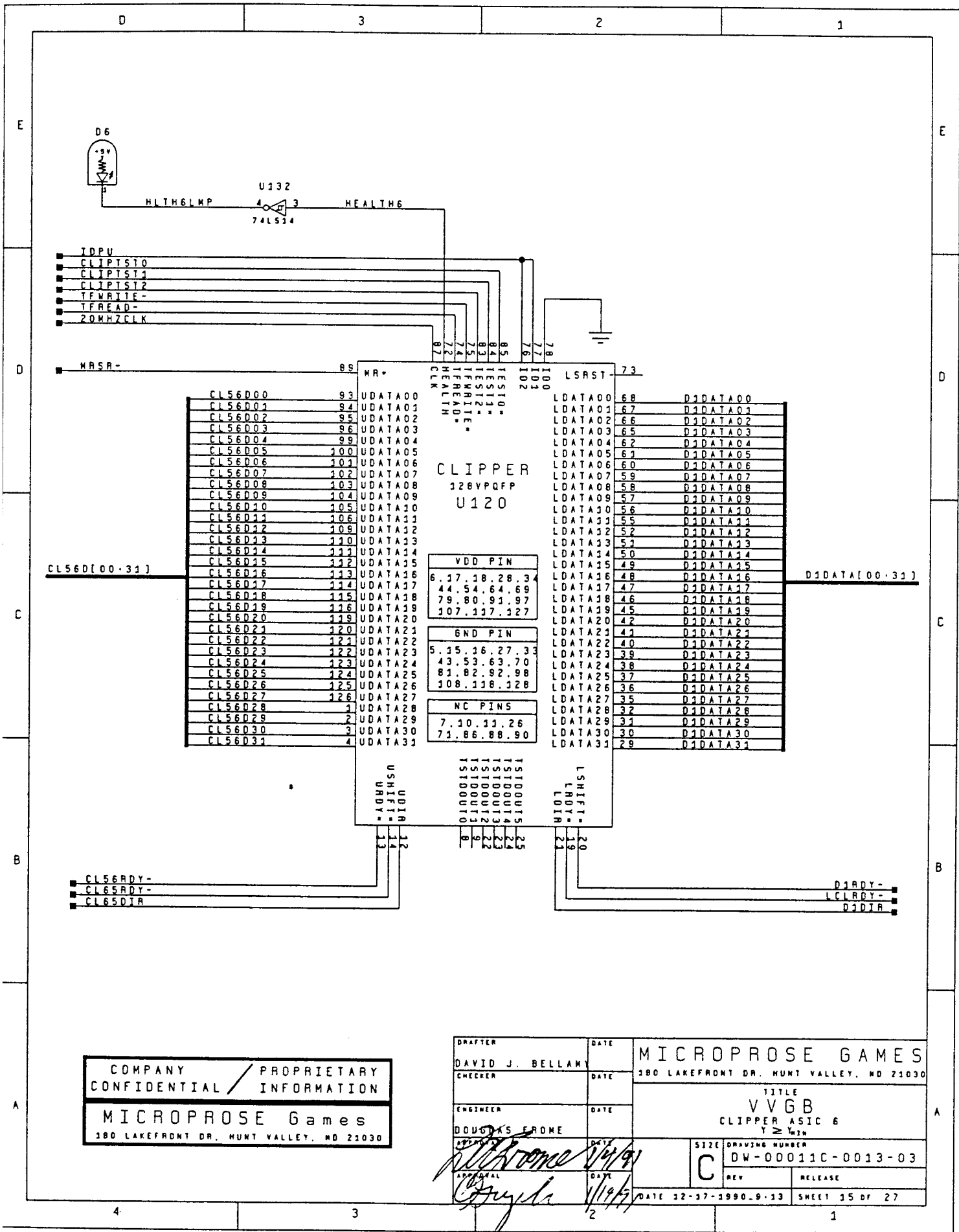
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- CL54RDY-
- CL54DIR

- CL56RDY-
- CL65RDY-
- CL65DIR

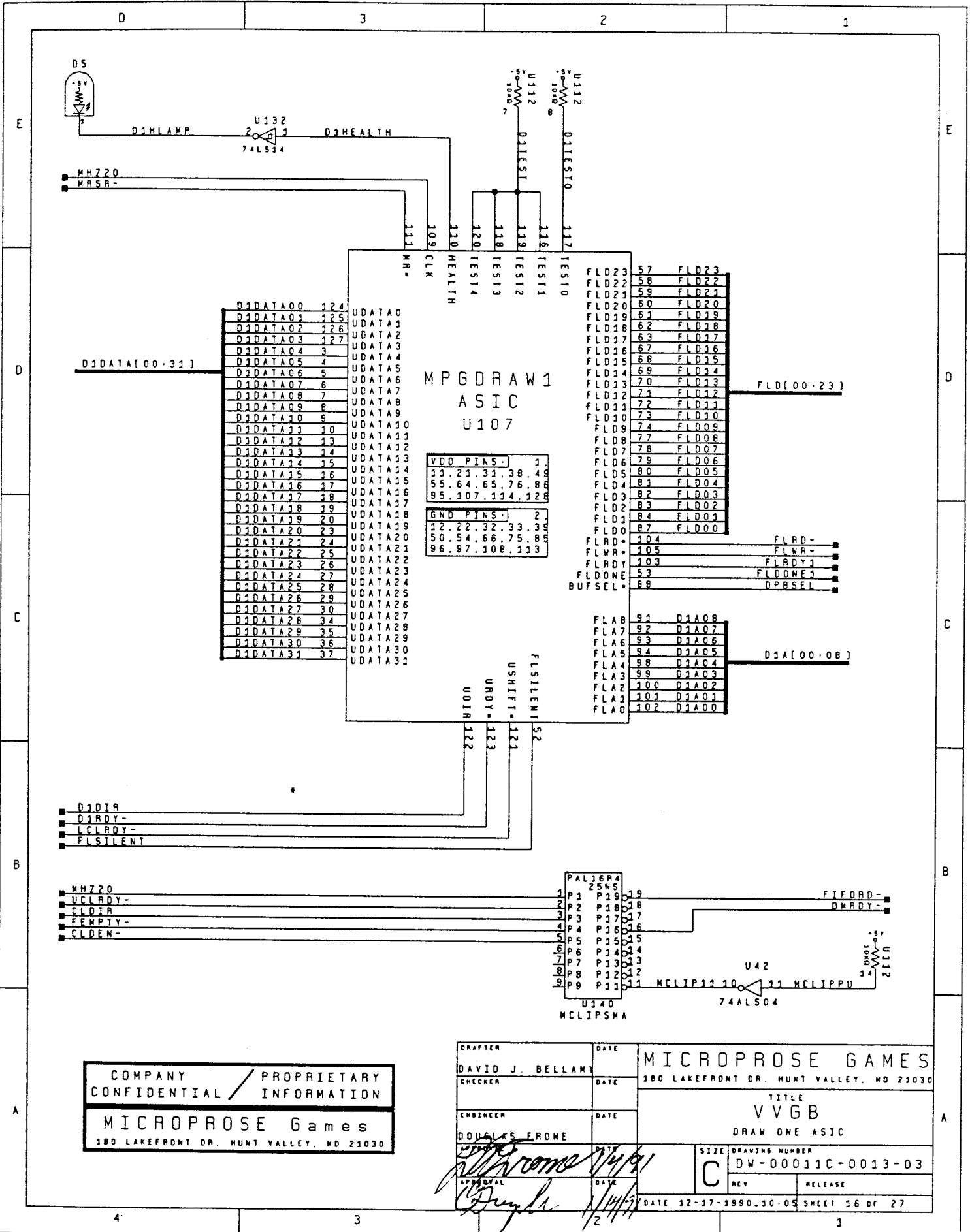
COMPANY PROPRIETARY
CONFIDENTIAL / INFORMATION
MICROPROSE Games
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAWER	DATE	MICROPROSE GAMES	
DAVID J. BELLAMY		180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER	DATE	TITLE	
		V V G B	
ENGINEER	DATE	CLIPPER ASIC 5	
DOUGLAS FROME		X ≤ X _{MAX}	
APPROVAL	DATE	SIZE	DRAWING NUMBER
<i>[Signature]</i>	1/4/91	C	DW-00011C-0013-03
REVISION	DATE	REV	RELEASE
<i>[Signature]</i>	1/4/91		
DATE 12-17-1990.9-32		SHEET 14 OF 27	



COMPANY PROPRIETARY
 CONFIDENTIAL / INFORMATION
MICROPROSE Games
 180 LAKEFRONT DR., HUNT VALLEY, MD 21030

DRAFTER	DATE	MICROPROSE GAMES	
DAVID J. BELLAMY		180 LAKEFRONT DR., HUNT VALLEY, MD 21030	
CHECKER	DATE	TITLE	
		V VGB	
ENGINEER	DATE	CLIPPER ASIC 6	
DOUGLAS FRONE		Y ≥ 10µm	
DATE	DATE	SIZE	DRAWING NUMBER
11/91	11/91	C	DW-00011C-0013-03
APPROVAL	DATE	REV	RELEASE
<i>[Signature]</i>	11/91		
DATE 12-17-1990.9-13		SHEET 15 OF 27	

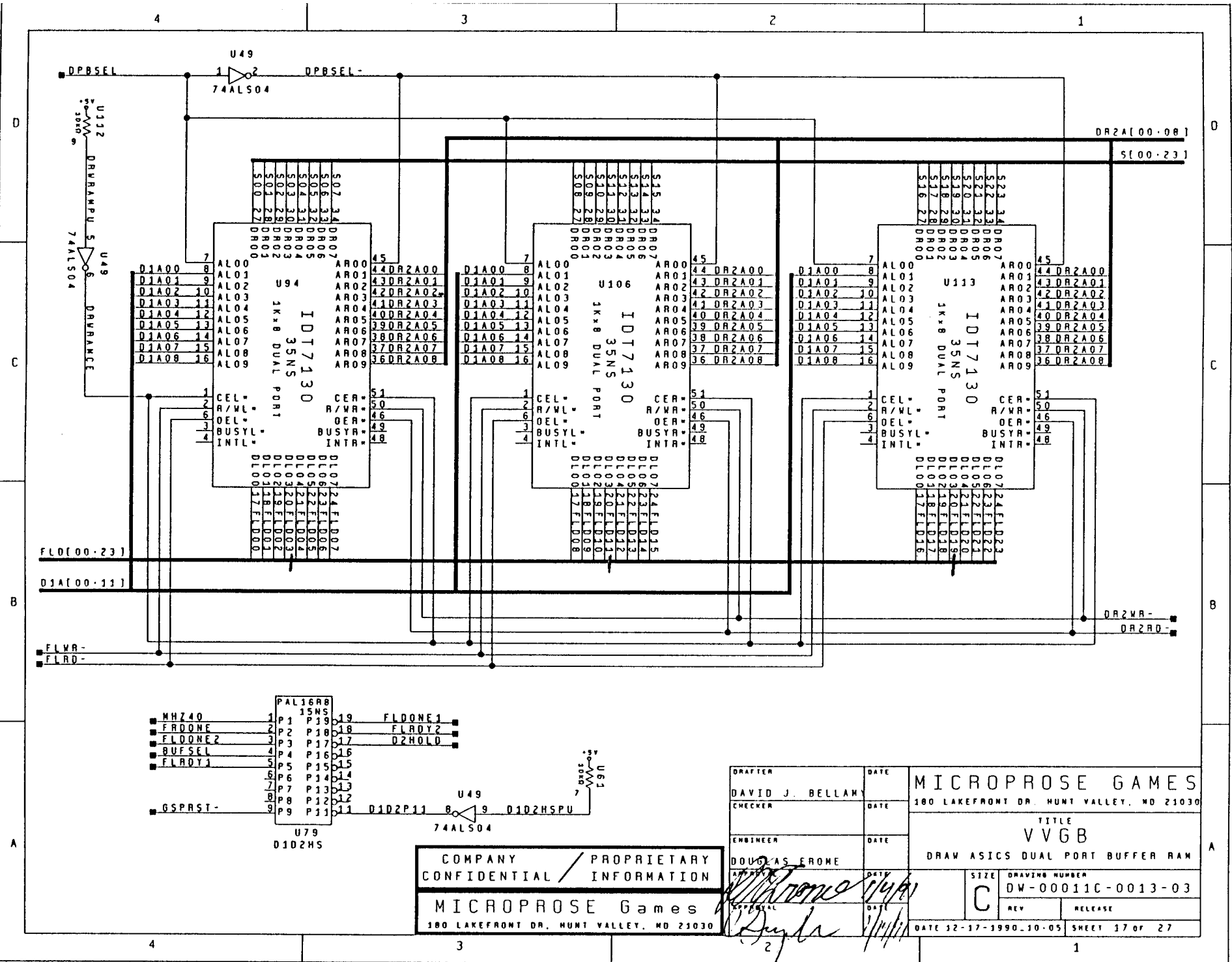


COMPANY / PROPRIETARY
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MICROPROSE Games
380 LAKEFRONT DR. HUNT VALLEY, MD 21030

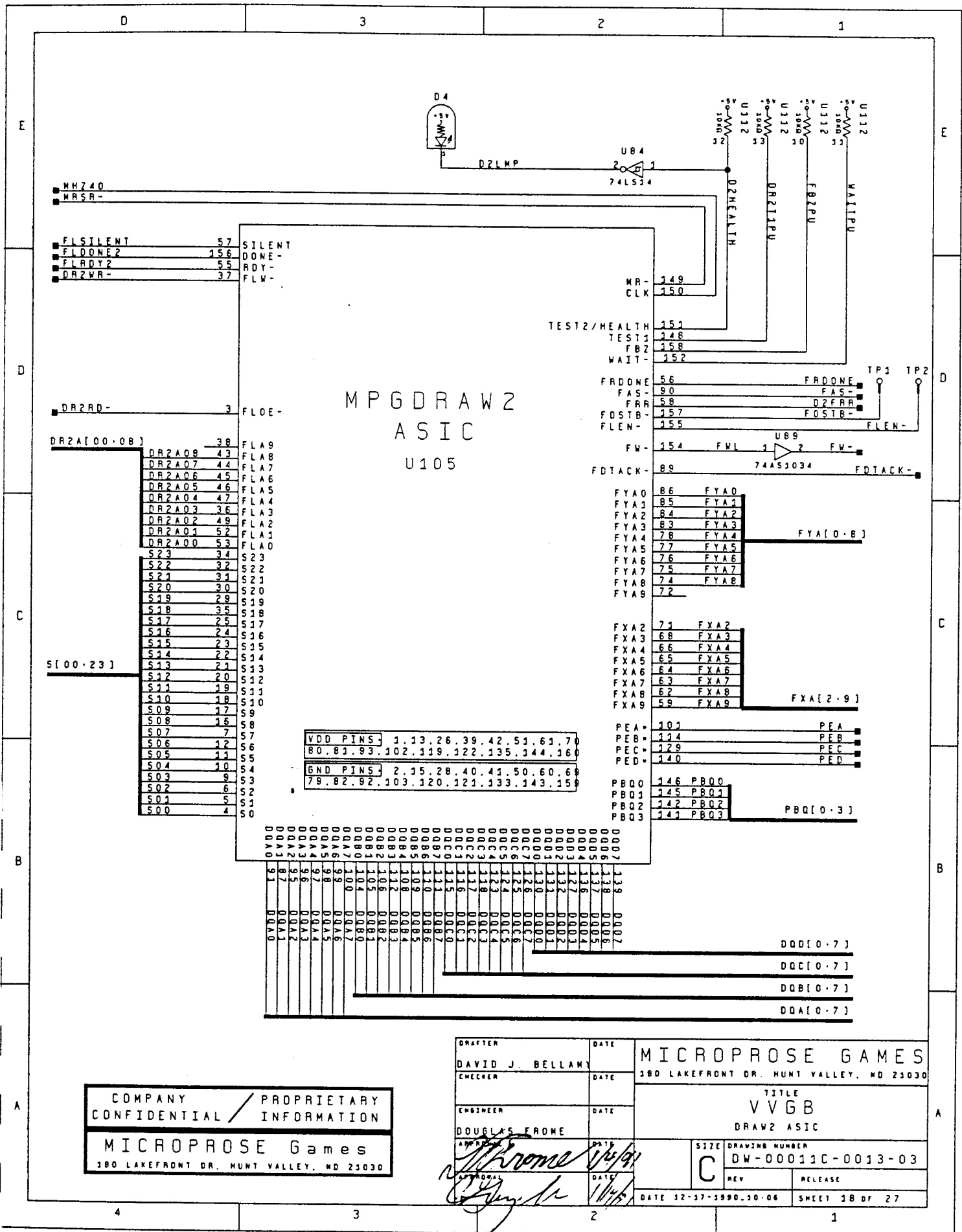
DRAFTER DAVID J. BELLAM	DATE	MICROPROSE GAMES 380 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER	DATE	TITLE V VGB DRAW ONE ASIC	
ENGINEER DOUGLAS EROME	DATE	SIZE C	DRAWING NUMBER DW-00011C-0013-03
APPROVAL <i>[Signature]</i>	DATE 1/4/91	REV	RELEASE

DATE 12-17-1990.10.05 SHEET 16 OF 27



COMPANY / PROPRIETARY
 CONFIDENTIAL / INFORMATION
MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER DAVID J. BELLAM		DATE	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER		DATE		
ENGINEER DOUGLAS EROME		DATE	TITLE VVGB	
DRAWN		DATE	DRAW ASICS DUAL PORT BUFFER RAM	
APPROVAL		DATE	SIZE C	DRAWING NUMBER DW-00011C-0013-03
DATE		DATE	REV	RELEASE
DATE 12-17-1990-10-05		SHEET 17 OF 27		



**MP6DRAW2
ASIC
U105**

MHZ40	
MRSR-	
FLSILENT	57
FLDONE2	156
FLRDY2	55
DR2WR-	37

DR2RD-	3	FLOE-
DR2A[00..0B]	38	FLA9
DR2A0B	43	FLA8
DR2A07	44	FLA7
DR2A06	45	FLA6
DR2A05	46	FLA5
DR2A04	47	FLA4
DR2A03	36	FLA3
DR2A02	49	FLA2
DR2A01	52	FLA1
DR2A00	53	FLA0
S23	34	S23
S22	32	S22
S21	31	S21
S20	30	S20
S19	29	S19
S18	35	S18
S17	25	S17
S16	24	S16
S15	23	S15
S14	22	S14
S13	21	S13
S12	20	S12
S11	19	S11
S10	18	S10
S09	17	S09
S08	16	S08
S07	7	S07
S06	12	S06
S05	11	S05
S04	10	S04
S03	9	S03
S02	6	S02
S01	5	S01
S00	4	S00

S[00..23]

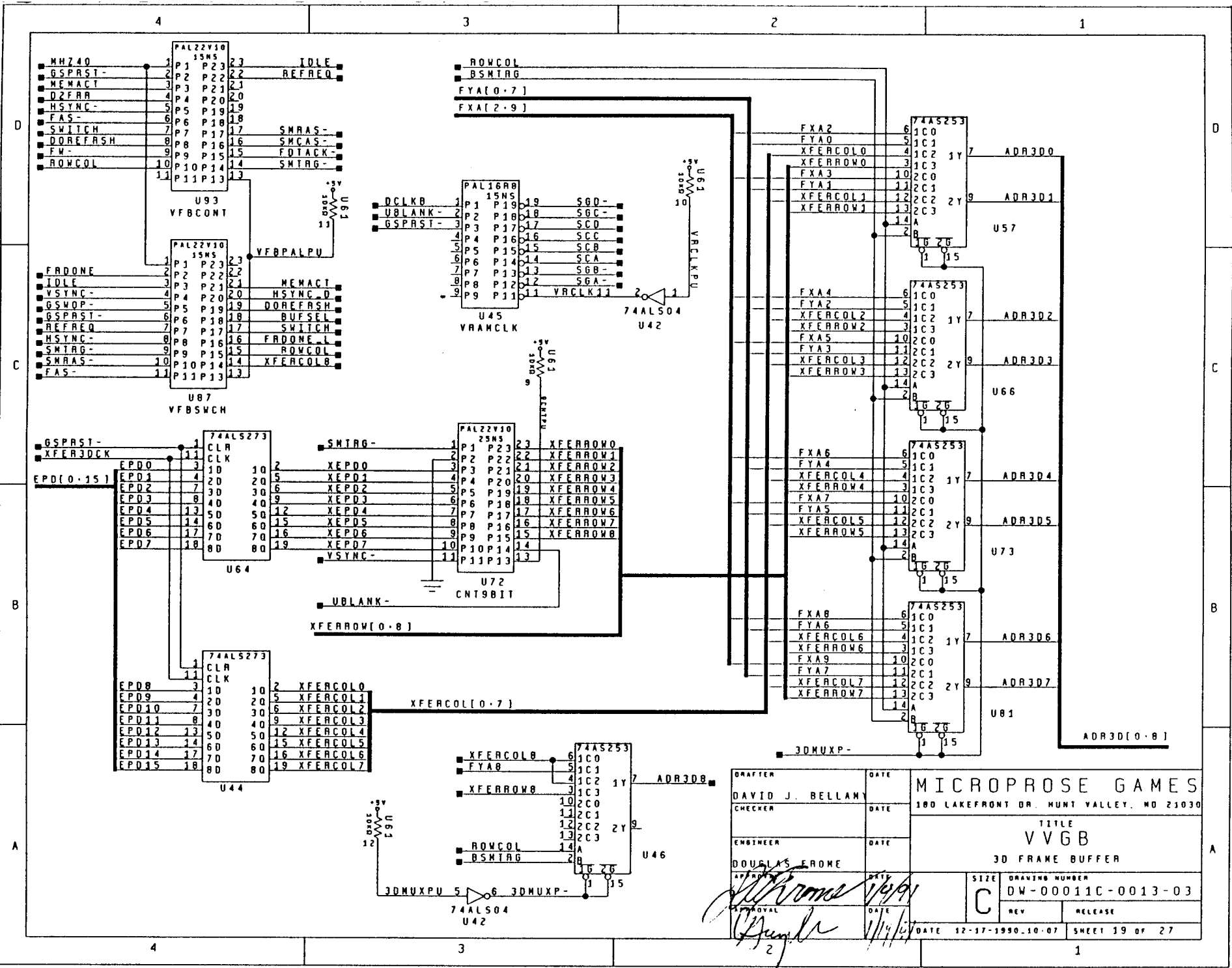
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	80, 81, 93, 102, 119, 122, 135, 144, 160
GND PINS	2, 15, 28, 40, 41, 50, 60, 69
	79, 82, 92, 103, 120, 121, 133, 143, 159

DR2A00	53	FLA0
DR2A01	52	FLA1
DR2A02	49	FLA2
DR2A03	36	FLA3
DR2A04	47	FLA4
DR2A05	46	FLA5
DR2A06	45	FLA6
DR2A07	44	FLA7
DR2A0B	43	FLA8
DR2A0B	38	FLA9
S00	4	S00
S01	5	S01
S02	6	S02
S03	9	S03
S04	10	S04
S05	11	S05
S06	12	S06
S07	7	S07
S08	16	S08
S09	17	S09
S10	18	S10
S11	19	S11
S12	20	S12
S13	21	S13
S14	22	S14
S15	23	S15
S16	24	S16
S17	25	S17
S18	35	S18
S19	29	S19
S20	30	S20
S21	31	S21
S22	32	S22
S23	34	S23
FLA0	53	FLA0
FLA1	52	FLA1
FLA2	49	FLA2
FLA3	36	FLA3
FLA4	47	FLA4
FLA5	46	FLA5
FLA6	45	FLA6
FLA7	44	FLA7
FLA8	43	FLA8
FLA9	38	FLA9

MR-	149
CLK	150
TEST2/HEALTH	151
TEST1	148
FBZ	158
WAIT-	152
FDDONE	56
FAS-	90
FRR	58
FSTB-	157
FLEN-	155
FW-	154
FDTACK-	89
FYA0	86
FYA1	85
FYA2	84
FYA3	83
FYA4	78
FYA5	77
FYA6	76
FYA7	75
FYA8	74
FYA9	72
FXA2	71
FXA3	68
FXA4	66
FXA5	65
FXA6	64
FXA7	63
FXA8	62
FXA9	59
PEA	101
PEB	114
PEC	129
PED	140
PBQ0	146
PBQ1	145
PBQ2	142
PBQ3	141

COMPANY CONFIDENTIAL / PROPRIETARY INFORMATION
MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER	DAVID J. BELLAMY	DATE		MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER		DATE			
ENGINEER	DOUGLAS FROHE	DATE		TITLE VVGB DRAW2 ASIC	
APPROVAL	<i>[Signature]</i>	DATE	1/14/91		
APPROVAL	<i>[Signature]</i>	DATE	1/14/91	SIZE	C
				DRAWING NUMBER	DW-00011C-0013-03
				REV	
				RELEASE	
				DATE	12-17-1990.10-06
				SHEET	18 OF 27



MICROPROSE GAMES		180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
TITLE VVGB 3D FRAME BUFFER			
SIZE	DRAWING NUMBER		DATE
C	DW-00011C-0013-03		12-17-1990.10-07
REV	RELEASE		SHEET 19 OF 27

DRAFTER: DAVID J. BELLAMY
 CHECKER: [Signature]
 ENGINEER: DOUGLAS ERDME
 APPROVAL: [Signature]
 DATE: 11/1/91

4

3

2

1

D

D

C

C

B

B

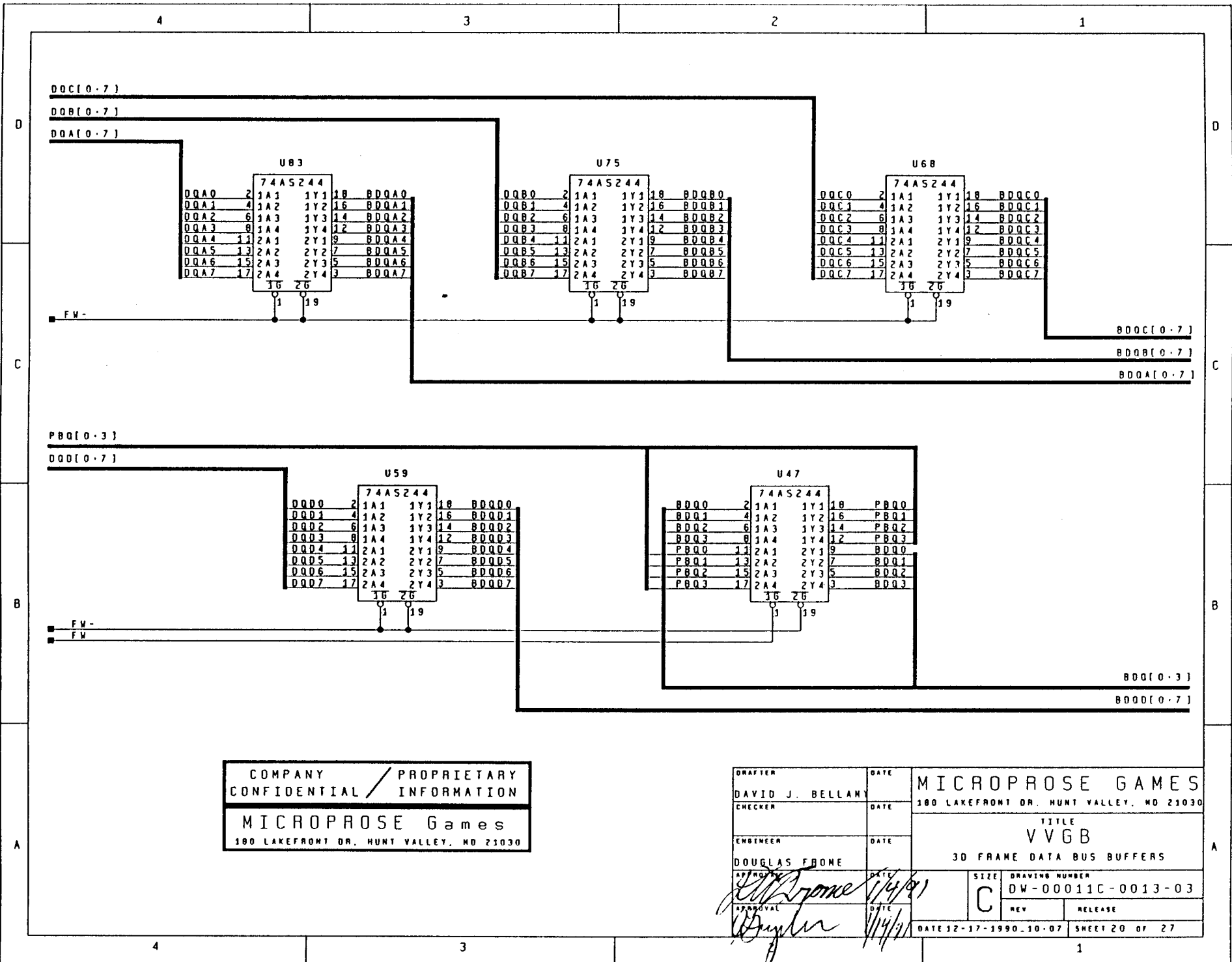
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A

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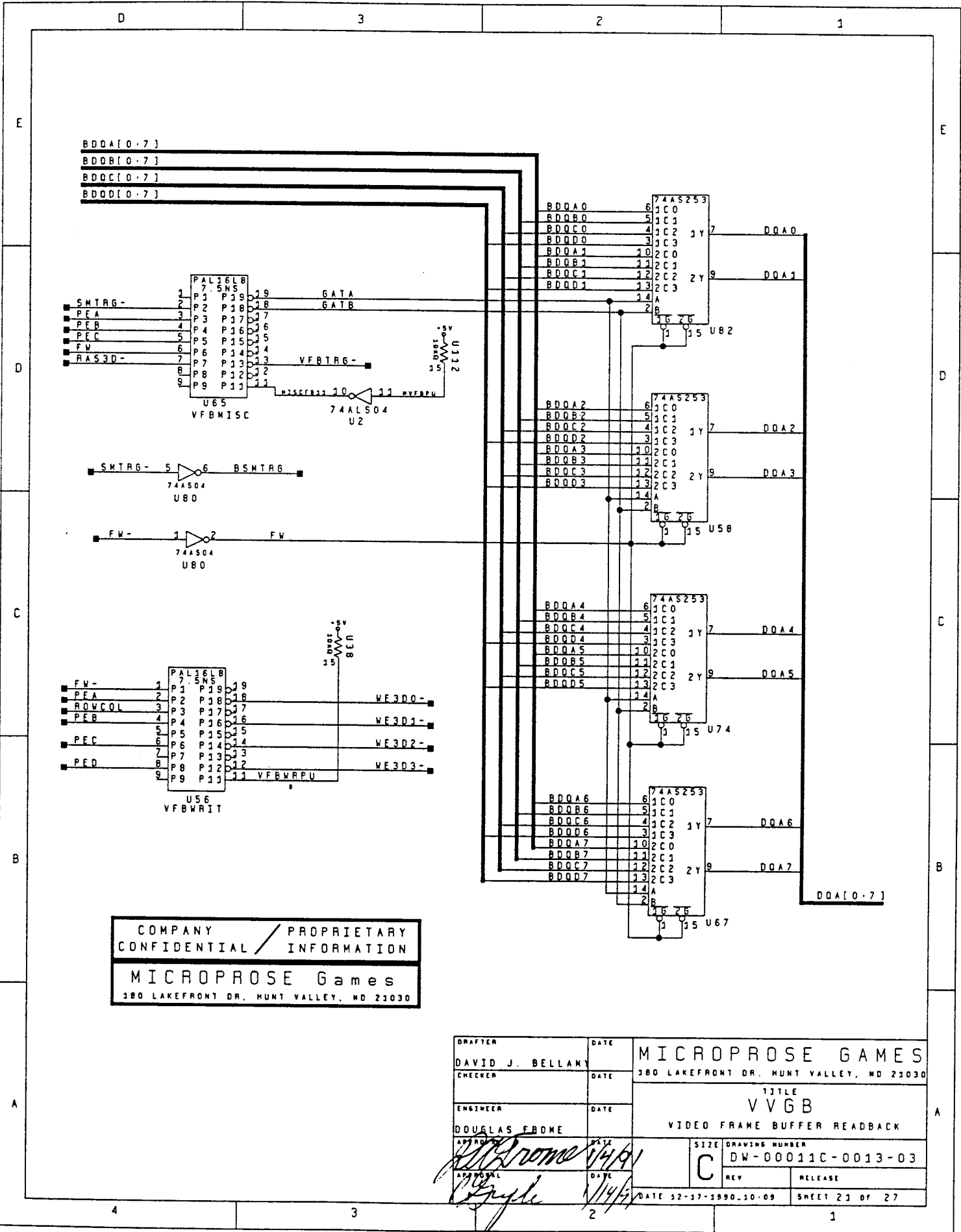
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1



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 CONFIDENTIAL / INFORMATION
MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

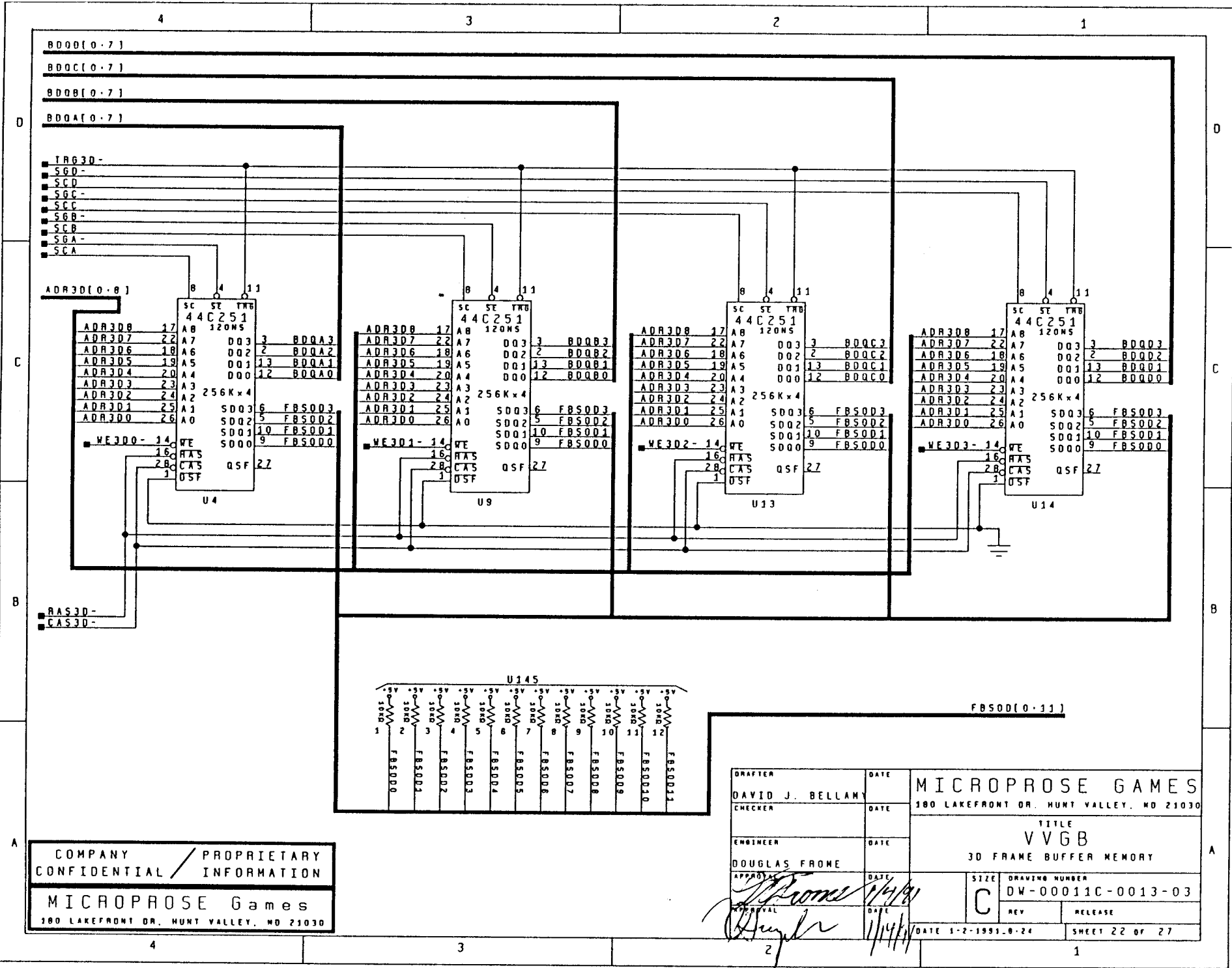
DRAFTER DAVID J. BELLAMY	DATE	MICROPROSE GAMES	
CHECKER	DATE	180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
ENGINEER DOUGLAS FROME	DATE	TITLE V V G B	
APPROVAL <i>[Signature]</i>	DATE 1/14/91	30 FRAME DATA BUS BUFFERS	
APPROVAL <i>[Signature]</i>	DATE 1/14/91	SIZE C	DRAWING NUMBER DW-00011C-0013-03
		REV	RELEASE
		DATE 12-17-1990-10-07 SHEET 20 OF 27	



COMPANY PROPRIETARY
 CONFIDENTIAL / INFORMATION

MICROPROSE Games
 380 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER		DATE		MICROPROSE GAMES	
DAVID J. BELLAMY				380 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER		DATE		TITLE	
				V V G B	
ENGINEER		DATE		VIDEO FRAME BUFFER READBACK	
DOUGLAS EBONE				SIZE	
APPROVAL		DATE		DRAWING NUMBER	
<i>[Signature]</i>		1/14/91		C DW-00011C-0013-03	
APPROVAL		DATE		REV	
<i>[Signature]</i>		1/14/91		RELEASE	
DATE 12-17-1990.10.09				SHEET 21 OF 27	

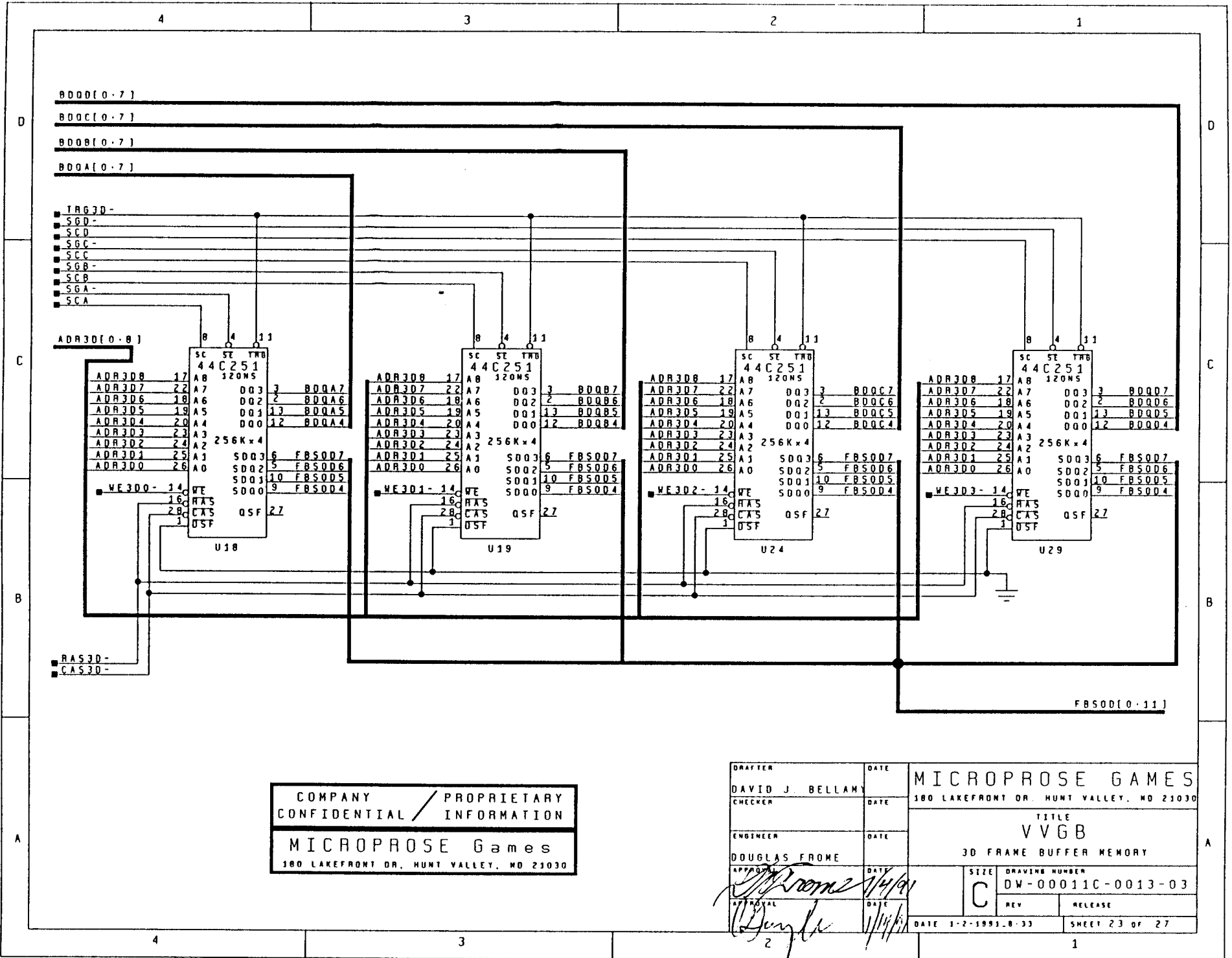


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 CONFIDENTIAL / INFORMATION

MICROPROSE Games
 180 LAKEFRONT DR., HUNT VALLEY, MD 21030

FBS00(0-11)

DRAFTER	DATE	MICROPROSE GAMES
DAVID J. BELLAMY		
CHECKER	DATE	180 LAKEFRONT DR., HUNT VALLEY, MD 21030
ENGINEER	DATE	TITLE
DOUGLAS FROME		VVGB
APPROVAL	DATE	3D FRAME BUFFER MEMORY
<i>[Signature]</i>	1/4/91	SIZE
REVISION	DATE	DRAWING NUMBER
<i>[Signature]</i>	1/4/91	C
		REV
		RELEASE
		DATE 1-2-1991-0-24
		SHEET 22 OF 27



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 CONFIDENTIAL / INFORMATION
MICROPROSE Games
 180 LAKEFRONT DR., HUNT VALLEY, MD 21030

DRAFTER		DATE	MICROPROSE GAMES	
DAVID J. BELLAMY			180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER		DATE	TITLE	
			VVGB	
ENGINEER		DATE	3D FRAME BUFFER MEMORY	
DOUGLAS FROME				
APPROVAL		DATE	SIZE	DRAWING NUMBER
<i>[Signature]</i>		1/14/91	C	DW-00011C-0013-03
APPROVAL		DATE	REV	RELEASE
<i>[Signature]</i>		1/14/91		
DATE 1-2-1991-8-33			SHEET 23 OF 27	

COMPANY / PROPRIETARY
CONFIDENTIAL / INFORMATION

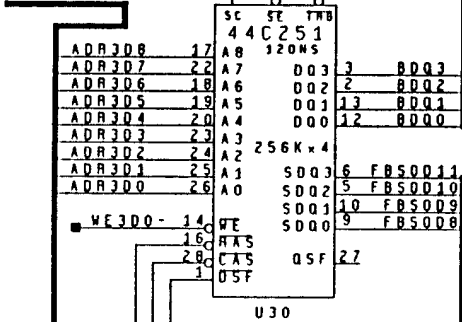
MICROPROSE Games

180 LAKEFRONT DR. HUNT VALLEY, MO 21030

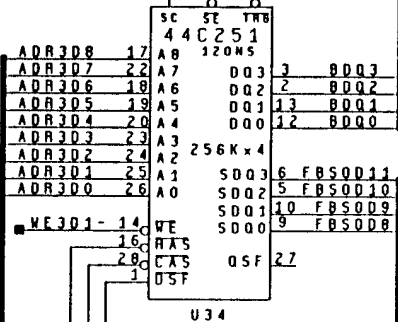
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SGD-
SCD-
SGC-
SCC-
SGB-
SCB-
SGA-
SCA

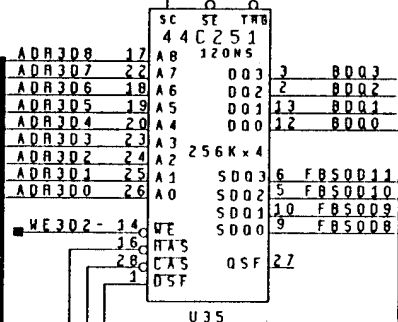
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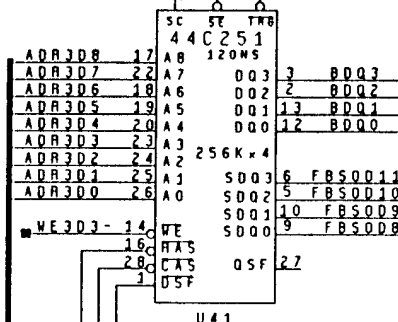
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ADR3D[0.8]

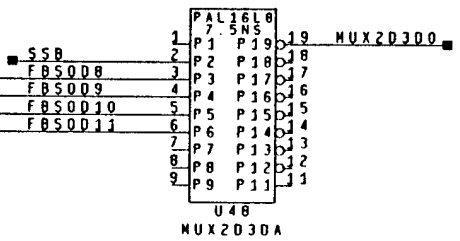


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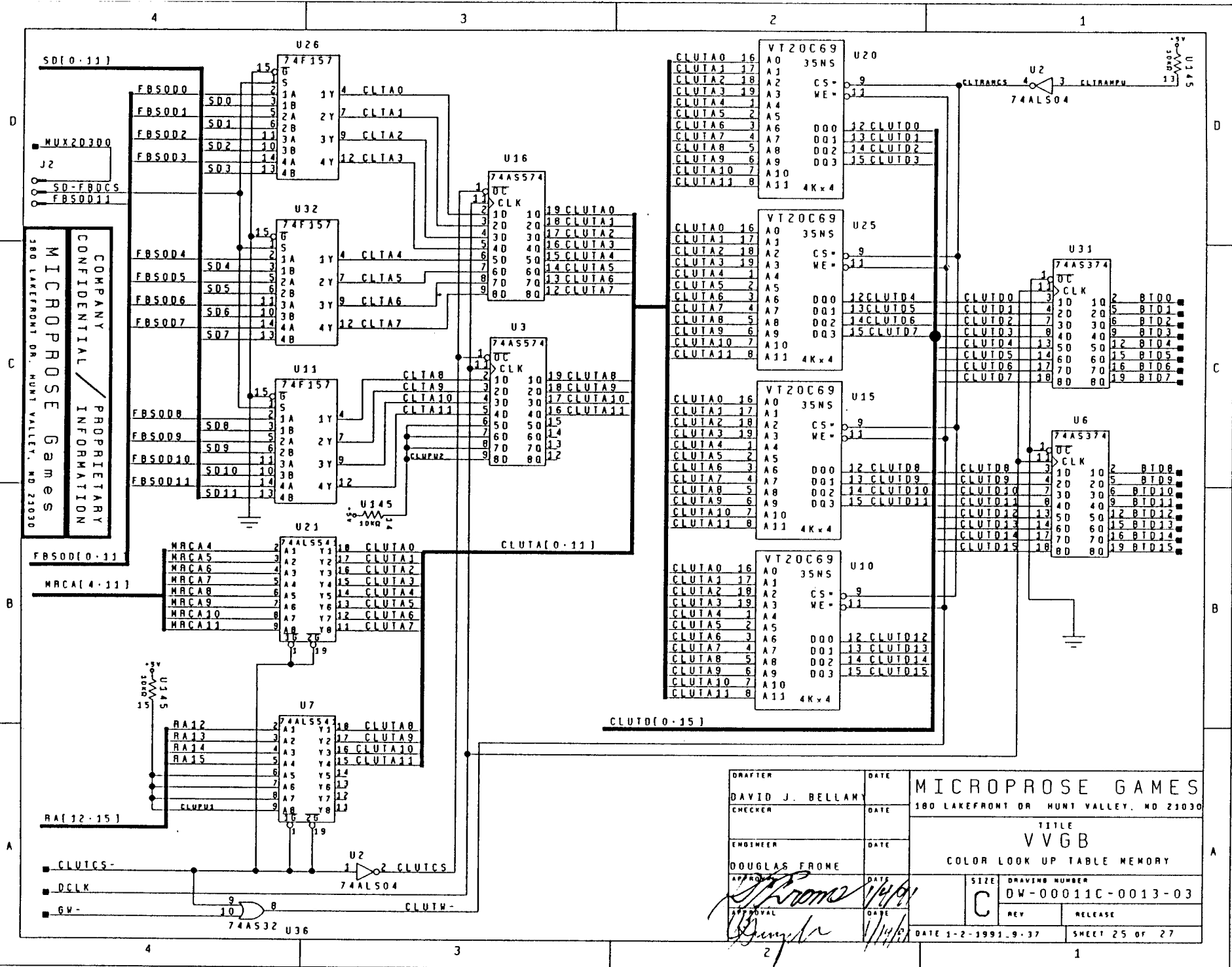
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CAS3D-

FBS0D[0.11]



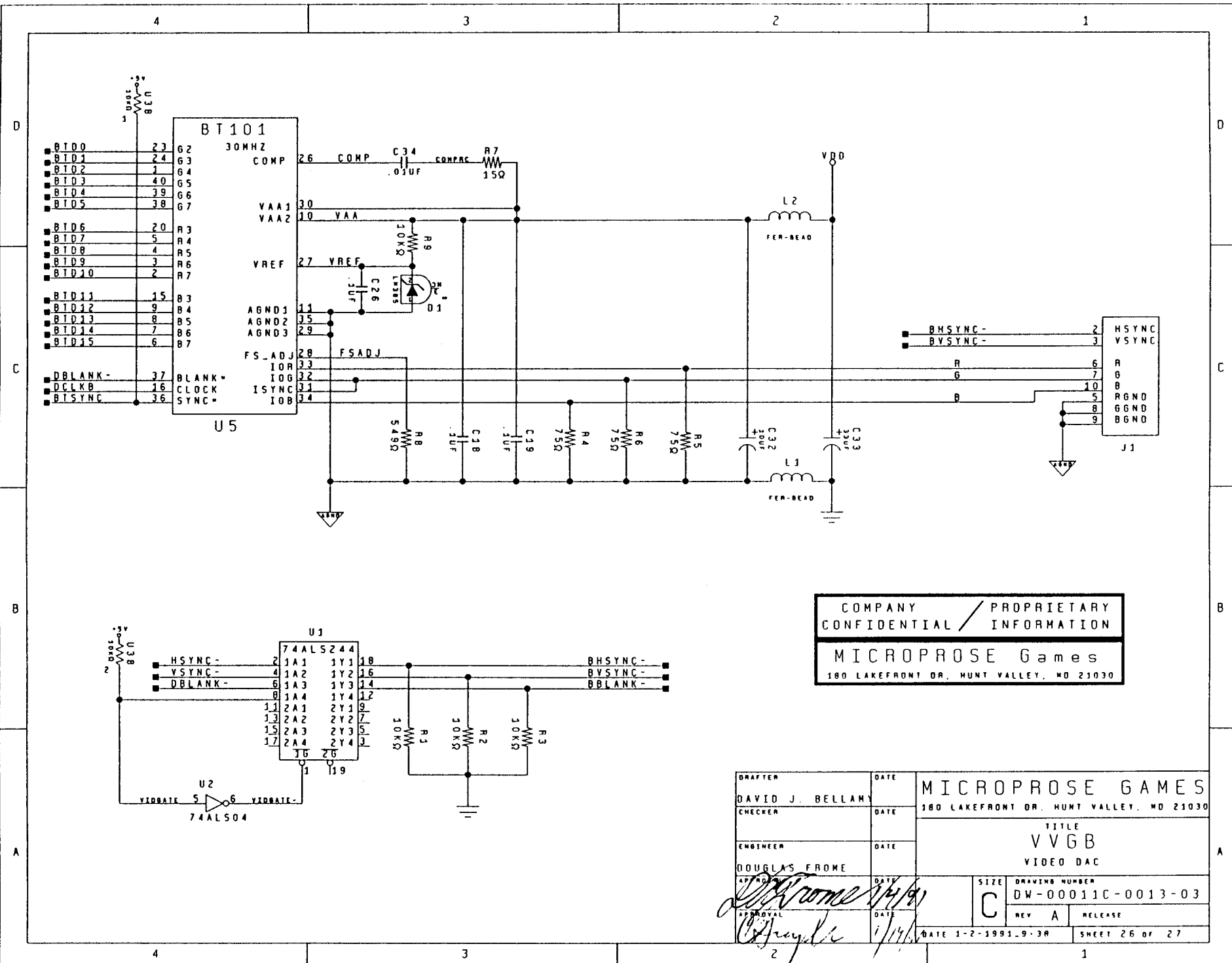
DRAFTER DAVID J. BELLAMY CHECKER ENGINEER DOUGLAS FROME APPROVAL APPROVAL	DATE DATE DATE DATE DATE DATE	MICROPROSE GAMES 180 LAKEFRONT DR HUNT VALLEY, MO 21030 TITLE VVGB 3D FRAME BUFFER MEMORY DRAWING NUMBER DW-00011C-0013-03 REV RELEASE DATE 11-13-1990.17-48	SIZE C SHEET 24 OF 27
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2



COMPANY PROPRIETARY
 CONFIDENTIAL INFORMATION
MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER		DATE		MICROPROSE GAMES 180 LAKEFRONT DR HUNT VALLEY, MD 21030	
DAVID J. BELLAMY					
CHECKER		DATE		TITLE VVGB COLOR LOOK UP TABLE MEMORY	
ENGINEER		DATE		DRAWING NUMBER DW-00011C-0013-03	
DOUGLAS FROME					
APPROVAL		DATE		REV C	
<i>D. Frome</i>		1/14/91			
APPROVAL		DATE		DATE 1-2-1991.9-37	
<i>D. Bellamy</i>		2		SHEET 25 OF 27	



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 CONFIDENTIAL / INFORMATION
MICROPROSE Games
 180 LAKEFRONT DR, HUNT VALLEY, MD 21030

DRAFTER		DATE		MICROPROSE GAMES	
DAVID J. BELLAMY					
CHECKER		DATE		TITLE VVGB VIDEO DAC	
ENGINEER		DATE		DRAWING NUMBER DW-00011C-0013-03	
DOUGLAS FROME					
APPROVAL		DATE		SIZE C REV A RELEASE	
<i>[Signature]</i>		1/14/91			
APPROVAL		DATE		DATE 1-2-1991-9-3R SHEET 26 OF 27	
<i>[Signature]</i>		1/14/91			

CLDATA[00-31]

U141

CLDATA04	2	1A1	1Y1	18	D04
CLDATA05	4	1A2	1Y2	16	D05
CLDATA06	6	1A3	1Y3	14	D06
CLDATA07	8	1A4	1Y4	12	D07
CLDATA00	11	2A1	2Y1	9	D00
CLDATA01	13	2A2	2Y2	7	D01
CLDATA02	15	2A3	2Y3	5	D02
CLDATA03	17	2A4	2Y4	3	D03

U142

CLDATA12	2	1A1	1Y1	18	D12
CLDATA13	4	1A2	1Y2	16	D13
CLDATA14	6	1A3	1Y3	14	D14
CLDATA15	8	1A4	1Y4	12	D15
CLDATA08	11	2A1	2Y1	9	D08
CLDATA09	13	2A2	2Y2	7	D09
CLDATA10	15	2A3	2Y3	5	D10
CLDATA11	17	2A4	2Y4	3	D11

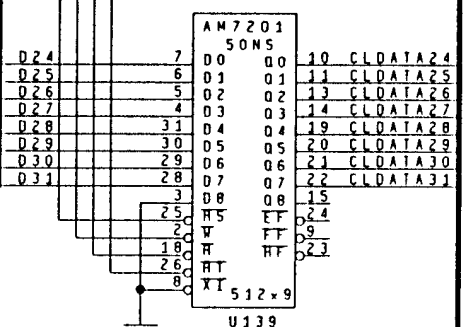
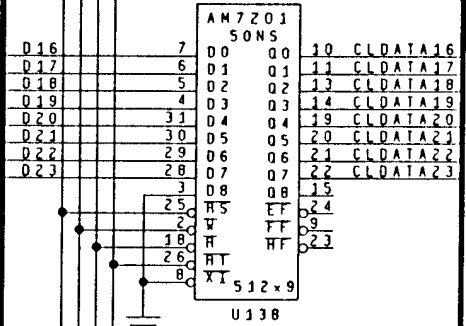
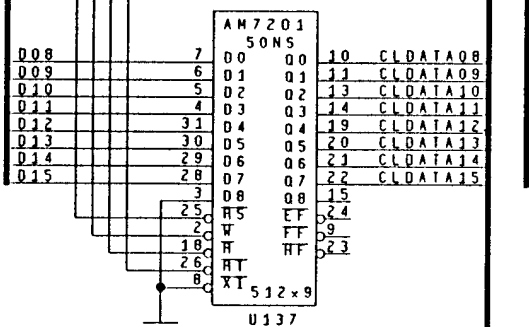
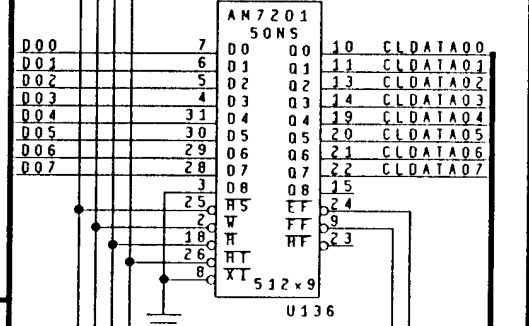
U143

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CLDATA18	6	1A3	1Y3	14	D18
CLDATA19	8	1A4	1Y4	12	D19
CLDATA20	11	2A1	2Y1	9	D20
CLDATA21	13	2A2	2Y2	7	D21
CLDATA22	15	2A3	2Y3	5	D22
CLDATA23	17	2A4	2Y4	3	D23

U144

CLDATA24	2	1A1	1Y1	18	D24
CLDATA25	4	1A2	1Y2	16	D25
CLDATA26	6	1A3	1Y3	14	D26
CLDATA27	8	1A4	1Y4	12	D27
CLDATA28	11	2A1	2Y1	9	D28
CLDATA29	13	2A2	2Y2	7	D29
CLDATA30	15	2A3	2Y3	5	D30
CLDATA31	17	2A4	2Y4	3	D31

FIFOWR- R22 FIFOWRL
 FIFORD-
 GSPRST-
 D[00-31]



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 CONFIDENTIAL / INFORMATION
 MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

DRAFTER DAVID J. BELLAM	DATE	MICROPROSE GAMES	
CHECKER	DATE	180 LAKEFRONT DR HUNT VALLEY, MD 21030	
ENGINEER DOUGLAS FROME	DATE	TITLE VVGB	
APPROVAL <i>[Signature]</i>	DATE 1/14/91	DR MATH TO CLIPPER FIFO MEMORY	
APPROVAL <i>[Signature]</i>	DATE 1/14/91	SIZE C	DRAWING NUMBER DW-00011C-0013-03
		REV	RELEASE
		DATE 1-2-1991.9-53	SHEET 27 OF 27

MICROPROSE GAMES, 180 Lakefront Drive, Hunt Valley, Maryland 21030

PROJECT: Video Graphics PCB DRWG NO: PL-00011A-0013-003 REV:B

DATE: Wed 19-Dec-1990

ITEM	QTY	VENDOR PART NUMBER	PART DESC	VALUE	MPG P/N
		REF. DES.			
1	* 4	AM7201-50JC U136,U137,U138,U139	512x9FIFO	50NS	222-00004-450
2	1	71922-010 J1	2X5HEADER	.100"	610-00800-010
3	3	11C1210X7R104K050NT C18,C19,C26	SMTCERCAP	0.1UF	401-02002-104
4	1	LM385BZ-1.2 D1	ZENER	1.2V	301-00001-012
5	1	11C1210X7R103K050NT C34	SMTCERCAP	0.01UF	401-02002-103
6	1	293D336X9016D2T C33	SMTTANTCAP	33UF	420-00163-336
7	1	BT101KC30 U5	VIDEODAC	30MHZ	245-00001-230
8	2	2743019446 L2,L1	FERRITEBD	75 OHM	595-00001-100
9	1	293D106X9016C2T C32	SMTTANTCAP	10UF	420-00162-106
10	1	CCF-50 15R0F R7	1%MFRES	15 OHM	503-00001-150
11	1	CCF-50 5490F R8	1%MFRES	549 OHM	503-00001-551
12	3	CCF-50 75R0F R6,R5,R4	1%MFRES	75 OHM	503-00001-750
13	4	CCF-50 1002F R9,R3,R2,R1	1%MFRES	10KOHM	503-00001-103
14	2	SN74ALS541N U7,U21	OCTDRVRS		200-00541-200
15	3	MC74F157AN U11,U26,U32	QUAD2:1MUX		203-00157-200
16	1	GAL16V8-15LP U65	VFBMISCA	15 NS	120-00002-010
17	2	SN74AS374N U6,U31	OCTREGISTER		201-00374-200

ITEM	QTY	VENDOR PART NUMBER	PART DESC	VALUE	MPG P/N
		REF. DES.			
18	2	SN74AS574N U3,U16	OCTREGISTER		201-00574-200
19	* 4	VT20C69-35PC U10,U15,U20,U25	4Kx4SRAM	35NS	221-00002-235
20					
21	1	AmPAL16L8-7CN U56	VFBWRITC	7.5 NS	120-00002-211
22	1	SN74AS32N U36	HEX2-IN'OR'		201-00032-200
23	9	SN74AS244DW U47,U59,U68,U75,U83,U141,U143,U144,U142	SMT OCTBUFFERS		201-00244-100
24	1	GAL16V8-15LP U45	VRAMCLKA	15NS	120-00002-001
25	1	GAL22V10-15LP U93	VFBCONTA	15NS	120-00002-002
26	1	GAL22V10-15LP U87	VFBSWCHA	15NS	120-00002-003
27	9	SN74AS253DW U46,U57,U58,U67,U66,U73,U74,U81,U82	SMTDUAL4:1MUX		201-00253-100
28	1	GAL22V10-25LP U72	CNT9BITA	25NS	120-00002-004
29	* 1	MPGDRAW2 U105	DRAW2ASIC	40MHZ	100-TB001-340
30	1	SN74AS1034AN U89	HEXDRIVER		201-01034-200
31	* 3	IDT7130SA-35J U94,U106,U113	1Kx8DPSRAM	35NS	222-00002-435
32	1	GAL16V8-15LP U79	D1D2HSA	15NS	120-00002-005
33	1	GAL16V8-25LP U140	MCLIPSMA	25NS	120-00002-006
34	* 1	MPGDRAW1 U107	DRAW1ASIC	20MHZ	100-PK001-320
35	* 6	MPGCLIPPER U118,U119,U120,U127,U128,U129	CLIPPERASIC	20MHZ	100-MW001-320

ITEM	QTY	VENDOR PART NUMBER	PART DESC	VALUE	MPG P/N
		REF. DES.			
36	* 20	HM534251ZP-12	256Kx4VRAM	120NS	222-00006-612
		U4,U8,U9,U12,U13,U14,U17,U18,U19,U22,U23,U25,U27, U28,U29,U30,U33,U34,U35,U41			
37	1	SN74ALS2541N	OCTDRVRW/SERRES		200-02541-200
		U39			
38	* 4	TMS44C256-12N	256Kx4DRAM	120NS	220-00002-212
		U37,U43,U50,U54			
39	1	AM29C863PC	9BITXCVR		235-00005-200
		U71			
40	2	SN74ALS244ADW	SMTOCTBUFFERS		200-00244-100
		U1,U62			
41	1	AM29C823ASC	SMT9BITLATCH		235-00004-100
		U78			
42	1	GAL16V8-15LP	VRAM_SGA	15NS	120-00002-007
		U40			
43	4	SN74ALS273N	OCTREGISTERS		200-00273-200
		U44,U51,U55,U64			
44	1	GAL22V10-15LP	GADRDC1A	15NS	120-00002-008
		U77			
45	1	AM29841APC	10BITLATCHES		235-00008-100
		U63			
46	1	GAL22V10-25LP	GADRDC0A	25NS	120-00002-009
		U86			
47					
48	1	LT1081-CN	RS232DRVR		235-00001-200
		U60			
49	1	22-05-7048	MOLEX4PIN	.100"	610-00601-004
		J3			
50	4	293D105X0016A2T	SMTTANTCAP	1UF	420-00060-105
		C68,C69,C70,C71			
51					
52	* 1	SCN2651CC1N28	UART		240-00002-200
		U69			
53	6	SN74ALS245ADW	SMTOCTXCVR		200-00245-100
		U98,U99,U102,U103,U109,U110			

ITEM	QTY	VENDOR PART NUMBER	PART DESC	VALUE	MPG P/N
		REF. DES.			
54 D*	1	TMS34010FNL-40 U115	68PLCCGSP	40MHZ	135-34010-440
55	1	SN74ALS74N U53	DUAL DFLOPS		200-00074-200
56	1	SN74ALS08N U70	HEX2-IN'AND'		200-00008-200
57	3	SN74ALS373N U76,U85,U91	OCTLATCHES		200-00373-200
58	1	68001-502 J8, [J6,J10]	2PINJUMPER	.100"	610-00002-002
59	0	68001-503 [J2,J4,J5,J7,J9]	3PINJUMPER	.100"	610-00002-003
60	1	SN74AS04N U80	HEXINVERTER		201-00004-200
61	1	SN74LS393N U123	DUAL4BITBICNTR		202-00393-200
62	1	SN74AS74N U116	DUALDFLOPS		201-00074-200
63	6	CCF-07 100G R14,R15,R17,R18,R19,R21	2%MFRESISTOR	10 OHM	503-00002-100
64	1	X0-43D-40 U104	OSCILLATOR	40MHZ	290-00001-040
65	1	1N746A D2	ZENER	3.3V	301-00002-033
66	1	KSA1A211 SW1	PBSWITCH		625-00002-001
67	1	CCF-07 102G R10	2%MFRESISTOR	1KOHM	503-00002-102
68	1	CCF-07 820G R12	2%MFRESISTOR	82 OHM	503-00002-820
69	4	CCF-07 103G R11,R13,R16,R20	2%MFRESISTOR	10KOHM	503-00002-103
70	1	1N914 D3	DIODE		300-00002-003
71	1	LM311N U90	VOLTCOMP		280-00002-200

ITEM	QTY	VENDOR PART NUMBER	PART DESC	VALUE	MPG P/N
		REF. DES.			
72	1	173D335X0020V C100	AXTANTCAP	3.3UF	422-00062-335
73	3	SN74LS14N U84,U132,U135	HEXSTINVERT		202-00014-200
74	3	SN74ALS04BN U2,U42,U49	HEXINVERTERS		200-00004-200
75	1	SN74ALS157N U125	QUAD2:1MUX		200-00157-200
76	0	XO-43D-50 U92	OSCILLATOR	50MHZ	290-00001-050
77	0	XO-43B-20 U131	OSCILLATOR	20MHZ	290-00001-020
78	4	SN74AS1004AN U100,U111,U117,U126	HEXINVDRVRS		201-01004-200
79	14	7-0805G-5 TP2, TP1, TP5, TP4, TP15, TP14, TP13, TP12, TP11, TP10, TP9, TP8, TP7, TP6	TESTPIN		710-00001-001
80	5	836C103X2PE U38,U61,U112,U122,U145	SMT PULRESPAK	10KOHM	502-00001-103
81	1	ICTE-5 D14	ZENER	5.0V	300-00001-002
82	1 0	26-60-5100 09-52-3102 P2	MOLEX10PIN	.156"	610-00601-010 610-10600-010
83	8	TAJ156M010CR C3,C10,C58,C107,C123,C134,C154,C157	SMT TANTCAP	15UF	420-00002-156
84	88	11C1206Z5U104M050NT C1,C2,C4,C5,C7,C9,C13,C21,C28,C36,C41,C42,C45,C47,C48,C50,C52, C53,C54,C55,C56,C59,C60,C61,C63,C64,C65,C66,C67,C72,C73,C74, C75,C76,C77,C78,C79,C80,C81,C82,C83,C84,C85,C86,C87,C88,C89, C90,C91,C92,C93,C95,C96,C97,C98,C99,C101,C102,C103,C104,C106, C109,C110,C111,C113,C114,C115,C118,C119,C120,C124,C132,C133, C136,C137,C139,C140,C141,C143,C148,C153,C155,C156,C158,C159, C160,C161	SMT CERCAP	0.1UF	401-01000-104
85	10	HLMP3600 D4,D5,D6,D7,D8,D9,D10,D11,D12,D13	LED	RED	305-00003-002
86	1	71922-140 P3	2x20RACONNECTR	.100"	610-00900-040

ITEM	QTY	VENDOR PART NUMBER	PART DESC	VALUE	MPG P/N
		REF. DES.			
87	53	11C1206Z5U334M050NT	SMTCERCAP	0.33UF	401-02000-334
		C6, C11, C12, C14, C15, C16, C17, C20, C22, C23, C24, C25, C27, C29, C30, C31, C35, C37, C38, C39, C40, C43, C44, C46, C49, C51, C57, C62, C94, C105, C108, C112, C116, C117, C121, C125, C126, C127, C128, C129, C130, C131, C135, C138, C142, C144, C145, C146, C147, C149, C150, C151, C152			
88	A*	1	AM27C010-155DC U101	128Kx8EPROM VGBK0BY0.001	150NS 110-00002-101
89	A*	1	AM27C010-155DC U108	128Kx8EPROM VGBK0BY1.001	150NS 110-00002-102
90	A*	1	AM27C010-155DC U114	128Kx8EPROM VGBK1BY0.001	150NS 110-00002-103
91	A*	1	AM27C010-155DC U97	128Kx8EPROM VGBK1BY1.001	150NS 110-00002-104
92	A*	1	AM27C010-305DC U124	128Kx8EPROM VGBK2BY0.001	300NS 110-00002-105
93	A*	1	AM27C010-305DC U121	128Kx8EPROM VGBK2BY1.001	300NS 110-00002-106
94	A*	1	AM27C010-305DC U130	128Kx8EPROM VGBK3BY0.001	300NS 110-00002-107
95	A*	1	AM27C010-305DC U133	128Kx8EPROM VGBK3BY1.001	300NS 110-00002-108
96	A	0	2-644018-2	32PIN SOCKET	.600" 600-00003-632
		[UX97, UX101, UX108, UX114, UX121, UX124, UX130, UX133]			
97	B	0	ICO-324MTT	24PIN SOCKET	.300" 600-00001-324
		[UX72, UX77, UX86, UX87, UX93]			
98	C	5	ICO-320MTT	20PIN SOCKET	.300" 600-00001-320
		UX40, UX45, UX65, UX79, UX140			
99	D	1	PLCC-68-P-T UX115	68PLCC SOCKET	602-00001-068
100		1	68686-102 FOR J8	SHUNT	715-00001-001
101		0	SRS8-12-01	SPACER	.750" 700-00001-031

ITEM	QTY	VENDOR PART NUMBER	PART DESC	VALUE	MPG P/N
		REF. DES.			
102	1	ZS5-120-02-L-D-615 P1	2x20CONNECTOR	.100"	610-00004-040
103	1	CCF-07 330G R22	2%MFRESISTOR	33 OHM	503-00002-330
104	** 0	AmPAL16L8-7CN U49	MUX2D3DA	7.5NS	120-00002-012

		398			

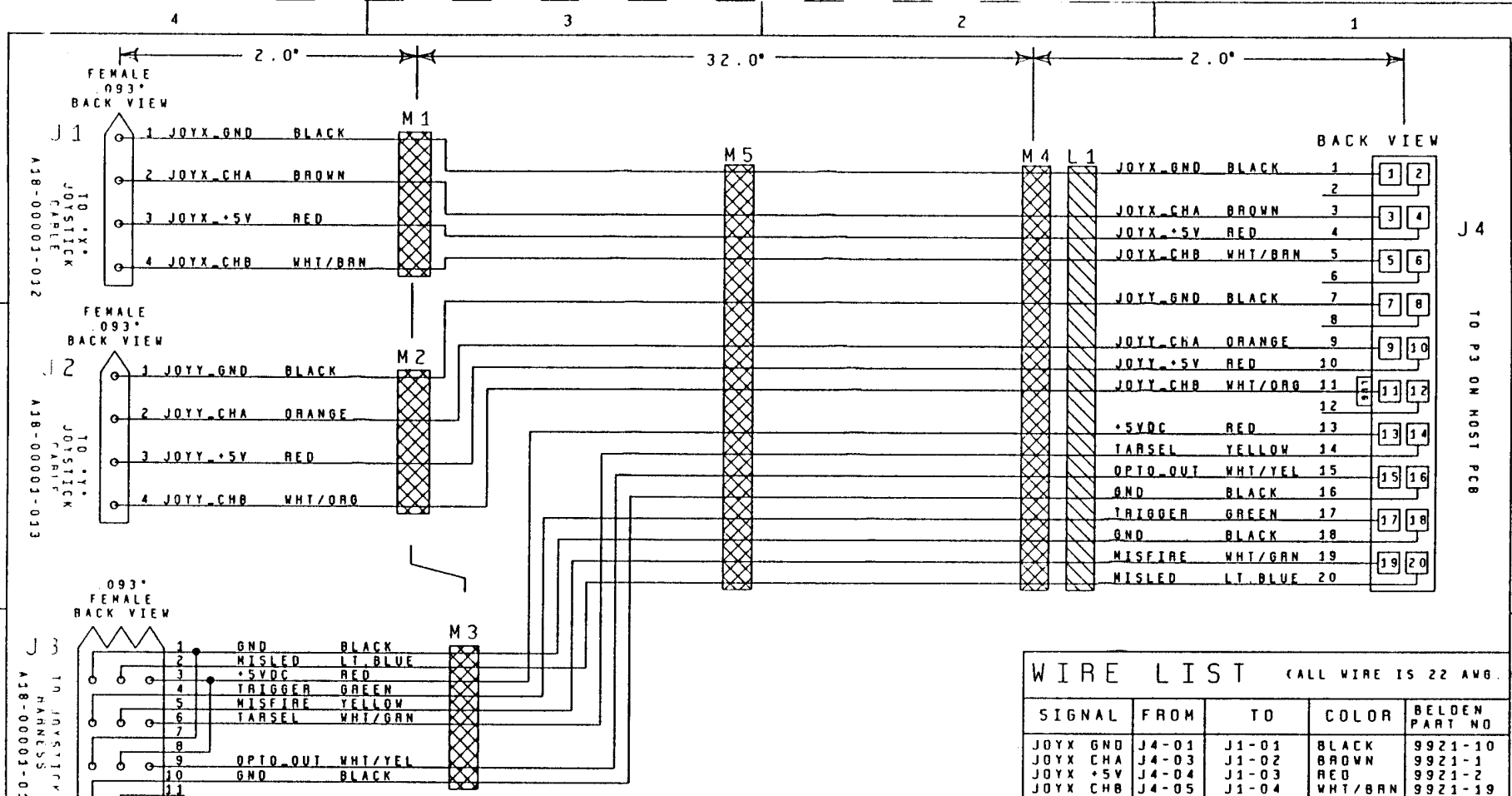
NOTES:

1. PARTS REQUIRING 0.33UF DECOUPLING CAPACITORS ARE DESIGNATED WITH AN ASTERISK (*) BETWEEN THE ITEM AND QTY COLUMNS.
2. PARTS REQUIRING SOCKETS ARE MARKED WITH A LETTER CORRESPONDING TO THE SOCKETS (SOCKETS ARE ITEMS 96 - 99).
3. ALL PARTS WITH A DOUBL ASTERISK (**) NEXT TO ITEM NUMBER ARE NOT POPULATED FOR THE CURRENT BUILD.

Dec 19. 1990

F15 CABLE AND HARNESS LIST

Drawing No.	Assembly No.	Name
DW-00014C-0002	A18-00001-002	JOYSTICK CABLE
DW-00014C-0003	A18-00001-003	PANEL CONTROL HARNESS
DW-00014C-0004	A18-00001-004	COIN DOOR
DW-00014C-0005	A18-00001-005	THROTTLE/PANEL
DW-00014C-0006	A18-00001-006	RS-232 CABLE
DW-00014C-0007	A18-00001-007	HOST TO VGB
DW-00014C-0008	A18-00001-008	LEFT SPEAKER CABLE
DW-00014C-0009	A18-00001-009	THROTTLE HARNESS
DW-00014C-0010	A18-00001-010	JOYSTICK HARNESS
DW-00014C-0011	A18-00001-011	RIGHT SPEAKER CABLE
DW-00014C-0012	A18-00002-001	DC POWER HARNESS
DW-00014C-0013		NOT USED
DW-00014C-0014	A18-00003-002	INPUT A.C. HARNESS
DW-00014C-0015	A18-00003-003	A.C. TRAY TO CABINET TOP
DW-00014C-0016	A18-00003-004	100 VOLT TRANSFORMER CABLE
DW-00014C-0017	A18-00003-005	120 VOLT TRANSFORMER CABLE
DW-00014C-0018	A18-00003-006	240 VOLT TRANSFORMER CABLE
DW-00014C-0019	A18-00003-007	TRANSFORMER ASSEMBLY
DW-00014C-0020	A18-00003-008	BILL ACCEPTOR CABLE
DW-00014C-0021		NOT USED
DW-00014C-0022		NOT USED
DW-00014C-0023	A18-00001-013	X JOYSTICK
DW-00014C-0024	A18-00001-012	Y JOYSTICK
DW-00014C-0025	A18-00003-010	DISPLAY CABLE
DW-00014C-0026	A18-00003-013	LOWER SHROUD HARNESS
DW-00014C-0027	A18-00002-002	D.C. FAN EXTENSION CABLE
DW-00014C-0028	A18-00003-014	MARQUEE A.C. LIGHT CONNECTOR
DW-00014C-0029	A18-00003-015	FLORESCENT LIGHT 'Y' CABLE
DW-00014C-0030	A18-00003-016	UPPER SHROUD HARNESS



WIRE LIST (ALL WIRE IS 22 AWG)

SIGNAL	FROM	TO	COLOR	BELDEN PART NO
JOYX GND	J4-01	J1-01	BLACK	9921-10
JOYX CHA	J4-03	J1-02	BROWN	9921-1
JOYX +5V	J4-04	J1-03	RED	9921-2
JOYX CHB	J4-05	J1-04	WHT/BRN	9921-19
JOYX GND	J4-07	J2-01	BLACK	9921-10
JOYX CHA	J4-09	J2-02	ORANGE	9921-3
JOYX +5V	J4-10	J2-03	RED	9921-2
JOYX CHB	J4-11	J2-04	WHT/ORG	9921-20
+5V	J4-13	J3-03, 08	RED	9921-2
TARG_SEL	J4-14	J3-06	YELLOW	9921-4
OPTO_OUT	J4-15	J3-09	WHT/YEL	9921-17
GND	J4-16	J3-10	BLACK	9921-10
TRIGGER	J4-17	J3-04	GREEN	9921-5
GND	J4-18	J3-01, 07	BLACK	9921-10
MISSILE	J4-19	J3-05	WHT/GRN	9921-16
MISL_LED	J4-20	J3-02	LT_BLUE	9921-6

- NOTES:**
- 1) ALL 22 AWG SHALL MEET OR EXCEED UL1061.
 - 2) SECURE FERRITE BEAD L1 TO CABLE WITH A TIE WRAP.
 - 3) TWO WIRES ARE CRIMPED IN PIN J3-7.
 - 4) TWO WIRES ARE CRIMPED IN PIN J3-8.
 - 5) TIE WRAP AT 2" INTERVALS.
 - 6) ASSEMBLED CABLE IS MPG P/N A18-00001-002.

PART LIST

REF ID	MFG	PART NO.	PIN NO.
J1	MOLEX	03-09-1042	02-09-5142
J2	MOLEX	03-09-1042	02-09-5142
J3	MOLEX	03-09-1126	02-09-5142
J4	MOLEX	14-57-1201	
L1	FAIR-RITE	2643665702	

MARKERS

REF	ES	MFG.	PART NO.	LINE 1	TEXT	LINE 2	TEXT SIZE
M		BRADY	HCPS 9-5008W	X	JOY		125*
M		BRADY	HCPS 9-5008W	Y	JOY		125*
M		BRADY	HCPS 9-8336W		JOYSTICK		125*
M		BRADY	HCPS 9-1008W		HOST PCB	SWITCHES	125*
M		BRADY	HCPS 9-1008W		HOST TO JOYSTICK	DW-00014C-0002-02	125*

MICROPROSE GAMES
180 LAKEFRONT DR. HUNT VALLEY, MD 21030

TITLE
JOYSTICK CABLE
HOST TO JOYSTICK

DRAWING NUMBER
DW-00014C-0002

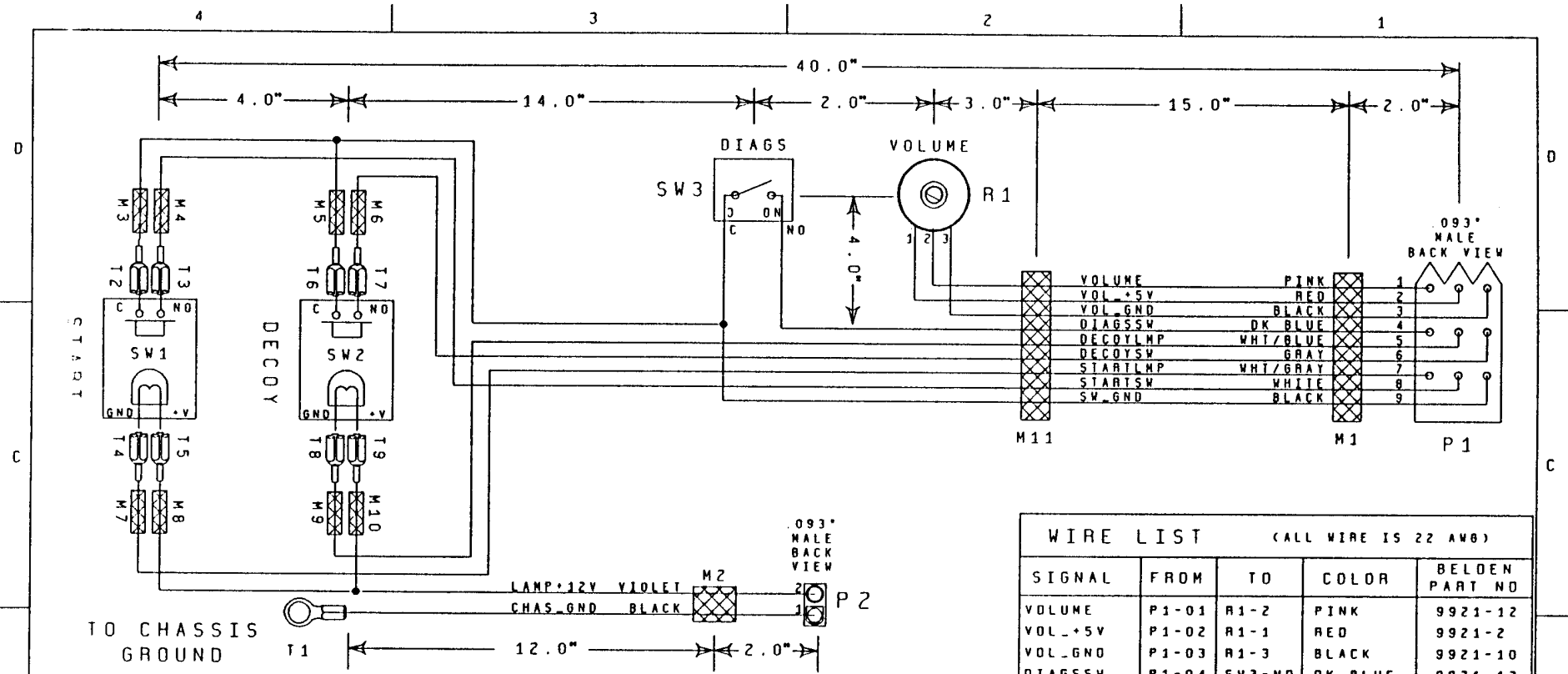
REV - 02 **RELEASE CABLE 2**

DATE 12-17-1990.11-21 **SHEET 1 OF 1**

DRAFTER DAVID J. DELOACH **DATE** 12-17-90
CHECKED [Signature] **DATE** 12-17-90
APPROVED JAY G. McKIBBIN **DATE** 12/18/90

A18-00001-012
A18-00001-013
A18-00001-010

TO P3 ON HOST PCB



WIRE LIST (ALL WIRE IS 22 AWG)

SIGNAL	FROM	TO	COLOR	BELDEN PART NO
VOLUME	P1-01	R1-2	PINK	9921-12
VOL_+5V	P1-02	R1-1	RED	9921-2
VOL_GND	P1-03	R1-3	BLACK	9921-10
DIAGSSW	P1-04	SW3-NO	DK BLUE	9921-13
DECOYLAMP	P1-05	SW2-4	WHT/BLUE	9921-18
DECOYSW	P1-06	SW2-2	GRAY	9921-8
STARTLAMP	P1-07	T4	WHT/GRAY	9921-21
STARTSW	P1-08	T3	WHITE	9921-9
SW_GND	P1-09	SW3-C	BLACK	9921-10
		T6	BLACK	9921-10
LAMP+12V	T5	T9	VIOLET	9921-7
		T9	P2-2	9921-7
CHAS_GND	P2-1	T1	VIOLET	9921-10

- NOTES**
- 1) ALL 22 AWG WIRE SHALL MEET OR EXCEED UL1061.
 - 2) SW1 & SW2 ARE SHOWN FOR REFERENCE ONLY.
 - 3) PLACE MARKERS M3 - M10 1" FROM PUSH-ON TERMINALS (T2 - T9).
 - 4) TIE WRAP AT 4" INTERVALS.
 - 5) MARKER M11 HAS TWO LINES OF TEXT.
 - 6) BREAKOUT DISTANCE FOR SW3 & R1 ARE THE SAME.
 - 7) ASSEMBLED HARNESS IS MPG P/N A18-00001-003.

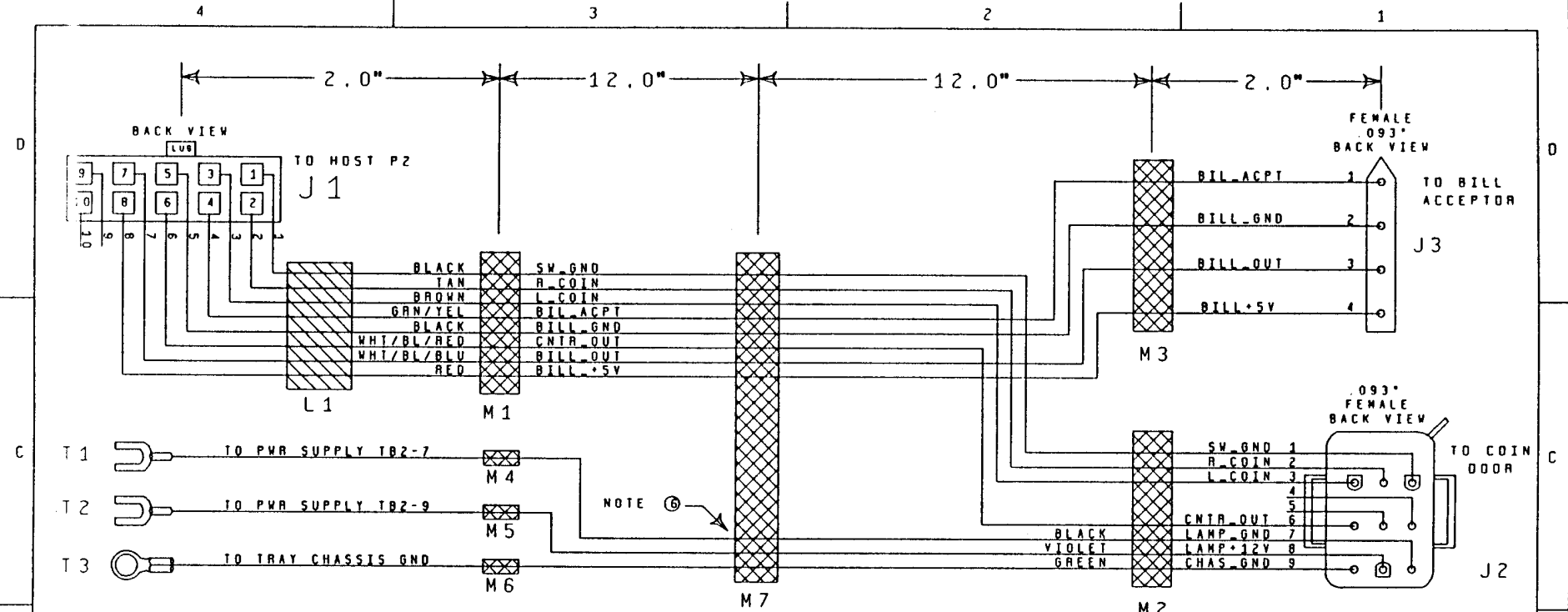
PARTS LIST

RE	DES	MFG	PART NO	PIN NO
P1		MOLEX	03-09-2092	02-09-6123
P2		MOLEX	19-09-2026	02-09-2118
T2 - T9		AMP	2-520184-4	
T1		AMP	2-520571-2	
R1		CLAROSTAT	RV4NAYS0502A	
SW1		SWITCHRAFT	46202LR	

MARKER LIST

RE	DES	MFG	PART NO	TEXT SIZE	TEXT
M1		BRADY	HCPS.9-8336W	.125"	PANEL CONTROLS
M2		BRADY	HCPS.9-2508W	.125"	PWR SUPPLY
M3	M5	BRADY	HCPS.9-2508W	.125"	C
M4	M6	BRADY	HCPS.9-2508W	.125"	NO
M8	M10	BRADY	HCPS.9-2508W	.125"	12V
M7	M9	BRADY	HCPS.9-2508W	.125"	GND
M11		BRADY	HCPS.9-8336W	.125"	(LINE 1) PANEL CONTROL HARNESS (LINE 2) DW-00014C-0003-02

DRAFTER DAVID J. BERRYAMY	DATE 12-22-90	MICROPROSE GAMES	
ENGINEER JAY G. MCKIBBIN	DATE 12/14/90	180 LAKEFRONT DR. HUNY VALLEY, MO 21030	
APPROVAL	DATE	TITLE PANEL CONTROL HARNESS	
APPROVAL	DATE	SIZE C	DRAWING NUMBER DW-00014C-0003
		REV -02	RELEASE CABLE 3
		DATE 12-13-1990.14.44 SHEET 3 OF 3	



NOTES

- 1) ALL 22 AWG WIRE SHALL MEET OR EXCEED UL1061.
- 2) PLACE MARKERS M4 - M6 ONE INCH FROM RING TERMINALS (T1 - T3).
- 3) TIE WRAP AT INTERVALS OF FOUR INCHES.
- 4) MARKER M7 HAS TWO LINES OF TEXT.
- 5) SECURE FERRITE BEAD (L1) TO CABLE WITH WIRE TIE.
- 6) BREAKOUT WIRES TO T1 - T3 AND TIE WRAP SEPERATELY FROM M7 TO POWER SUPPLY TERMINALS.
- 7) ASSEMBLED CABLE IS MPG P/N A18-00001-004.

WIRE LIST (ALL WIRE IS 22 AWG)				
SIGNAL	FROM	TO	COLOR	BELDEN PART NO
SW_GND	J1-01	J2-1	BLACK	9921-10
R_COIN	J1-02	J2-2	TAN	9921-11
L_COIN	J1-03	J2-3	BROWN	9921-1
BIL_ACPT	J1-04	J3-1	GRN/YEL	9921-189
BILL_GND	J1-05	J3-1	BLACK	9921-10
BILL_OUT	J1-06	J2-6	WHT/BL/RED	9921-23
BILL_OUT	J1-07	J3-3	WHT/BL/BLU	9921-26
BILL_5V	J1-08	J3-4	RED	9921-02
LAMP_GND	T1	J2-7	BLACK	9921-10
LAMP_12V	T2	J2-8	VIOLET	9921-7
CHAS_GND	T3	J2-9	GREEN	9921-5

PARTS LIST				
REF	DES	MFG	PART NO	PIN NO
J1		MOLEX	14-57-1101	
J2		AMP	1-480706-0	350851-1
J3		MOLEX	19-09-1046	02-09-1117
T1 - T3		MOLEX	AA-234-08X	
L1		FAIR-RITE	2643540002	

MARKER LIST				
REF	DES	MFG	PART NO	TEXT
41		BRADY	HCPS.9-1008W	.125" HOST P2
42		BRADY	HCPS.9-8336W	.125" COIN DOOR
43		BRADY	HCPS.9-5008W	.125" BILL ACCEPTOR
44		BRADY	HCPS.9-2508W	.125" T82-7
45		BRADY	HCPS.9-2508W	.125" T82-9
46		BRADY	HCPS.9-2508W	.125" CHASSIS GND
47		BRADY	HCPS1.9-1008W	.125" (LINE 1) COIN DOOR CABLE
				(LINE 2) DW-00014C-0004-02

DRAFTER DAVID J. BELLEAU		DATE 12-12-90		MICROPROSE GAMES	
CHECKER <i>[Signature]</i>		DATE		180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
DRAWN BY JAY G. McKIBBIN		DATE		TITLE COIN DOOR CABLE	
APPROVAL <i>[Signature]</i>		DATE 12/14/90		SIZE C	
DRAWING NUMBER DW-00014C-0004		REV - 02		RELEASE CABLE 4	
DATE 12-13-1990.14-98				SHEET 4 OF 1	

4 3 2 1

2.0" 12.0" 12.0" 2.0"

D

C

B

A

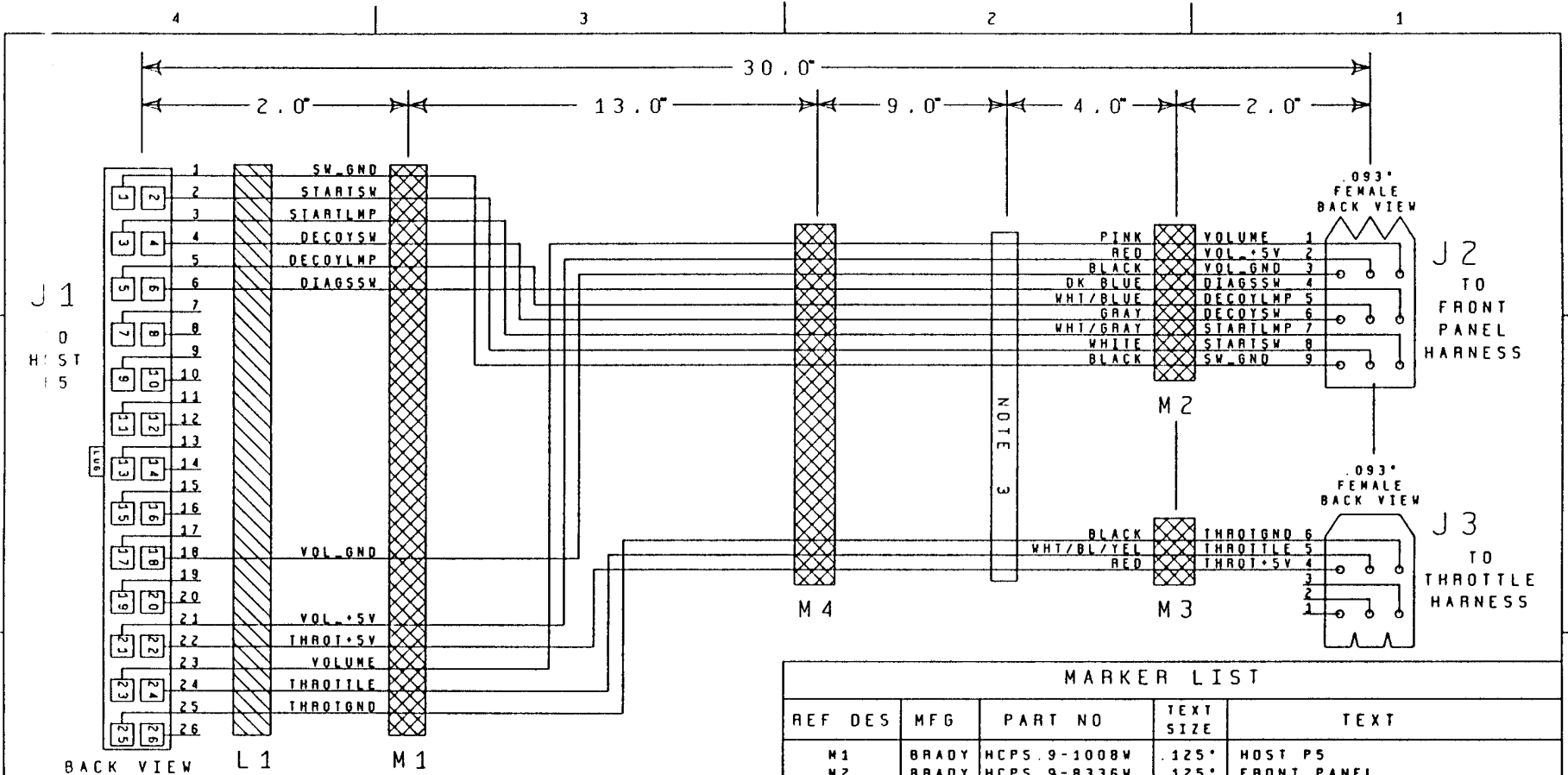
D

C

B

A

4 3 2 1



REF DES	MFG	PART NO	TEXT SIZE	TEXT
M1	BRADY	HCPS.9-1008W	.125"	HOST P5
M2	BRADY	HCPS.9-8336W	.125"	FRONT PANEL
M3	BRADY	HCPS.9-5008W	.125"	THROTTLE
M4	BRADY	HCPS1.9-1008W	.125"	(LINE 1) THROTTLE/PANEL CABLE (LINE 2) DW-00014C-0005-02

WIRE LIST (CALL WIRE IS 22 AWG)				
SIGNAL	FROM	TO	COLOR	BELDEN PART NO
SW_GND	J1-01	J2-09	BLACK	9921-10
STARTSW	J1-02	J2-08	WHITE	9921-9
STARTLMP	J1-03	J2-07	WHT/GRAY	9921-21
DECOYSW	J1-04	J2-06	GRAY	9921-8
DECOYLMP	J1-05	J2-05	WHT/BLUE	9921-18
DIAGSSW	J1-06	J2-04	DK BLUE	9921-13
VOL_GND	J1-18	J2-03	BLACK	9921-10
VOL_5V	J1-21	J2-02	RED	9921-2
THROT_5V	J1-22	J3-04	RED	9921-2
VOLUME	J1-23	J2-01	PINK	9921-12
THROTTLE	J1-24	J3-05	WHT/BL/YEL	9921-25
THROTGND	J1-25	J3-06	BLACK	9921-10

- NOTES:**
- 1) ALL 22 AWG WIRE SHALL MEET OR EXCEED UL1061.
 - 2) SECURE FERRITE BEAD L1 TO CABLE WITH WIRE TIE.
 - 3) BREAKOUT WIRES TO J3 AS POSITION SHOWN.
 - 4) TIE WRAP AT INTERVALS OF TWO INCHES.
 - 5) MARKER M4 HAS TWO LINES OF TEXT.
 - 6) ASSEMBLED HARNESS IS MPG P/N A18-00001-005.

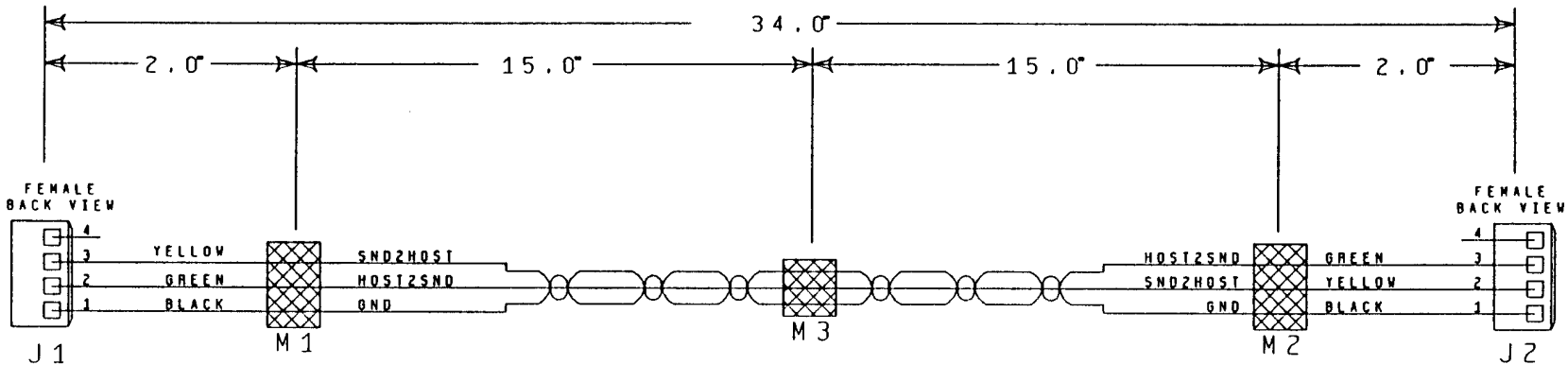
PARTS LIST			
REF DES	MFG	PART NO	PIN NO
J1	MOLEX	14-57-3260	02-09-5142
J2	MOLEX	03-09-1094	02-09-5142
J3	MOLEX	03-09-1064	
L1	FAIR-RITE	2643665702	

MICROPROSE GAMES
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
 TITLE: THROTTLE/PANEL CABLE

DRAFTER: DAVID J. BELLMY DATE: 12-12-90
 CHECKER: [Signature] DATE: [Blank]
 ENGINEER: JAY G. MCKIBBIN DATE: [Blank]

APPROVAL: [Signature] DATE: 12/14/90
 APPROVAL: [Signature] DATE: [Blank]

SIZE: C DRAWING NUMBER: DW-00014C-0005
 REV: -02 RELEASE: CABLE 5
 DATE: 12-13-1990-15-40 SHEET 1 OF 1



WIRE LIST (ALL WIRE IS 22 AWG)				
SIGNAL	FROM	TO	COLOR	BELDEN PART NO
GND	J1-01	J2-01	BLACK	9921-10
HOST2SND	J1-02	J2-03	GREEN	9921-5
SND2HOST	J1-03	J2-02	YELLOW	9921-4

NOTES:

- 1) ALL 22 AWG WIRE SHALL MEET OR EXCEED UL1061.
- 2) TIE WRAP AT INTERVALS OF TWO INCHES.
- 3) MARKER M3 HAS TWO LINES OF TEXT.
- 4) WIRES ARE TWISTED BETWEEN MARKERS M1 AND M2.
- 5) ASSEMBLED CABLE IS MPG P/N A18-00001-006.

PARTS LIST			
REF DES	MFG	PART NO	PIN NO
J1	MOLEX	22-01-2041	08-50-0114
J2	MOLEX	22-01-2041	08-50-0114

MARKER LIST				
REF DES	MFG	PART NO	TEXT SIZE	TEXT
M1	BRADY	HCPS.9-5008W	.125"	HOST J1
M2	BRADY	HCPS.9-5008W	.125"	SND BRD J1
M3	BRADY	HCPS1.9-5008W	.125"	(LINE 1) RS-232 CABLE #1 (LINE 2) DW-00014C-0006-02

DRAFTER DAVID J. BERNAMY	DATE 12-10-80	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
RECEIVER <i>[Signature]</i>	DATE 12-10-80	TITLE RS-232 CABLE #1	
ENGINEER JAY G. MCKIBBIN	DATE 12/14/80	SIZE C	DRAWING NUMBER DW-00014C-0006
APPROVAL <i>[Signature]</i>	DATE	REV - 02	RELEASE CABLE.6
APPROVAL	DATE	DATE 12-11-1990.10.36	SHEET 1 OF 1

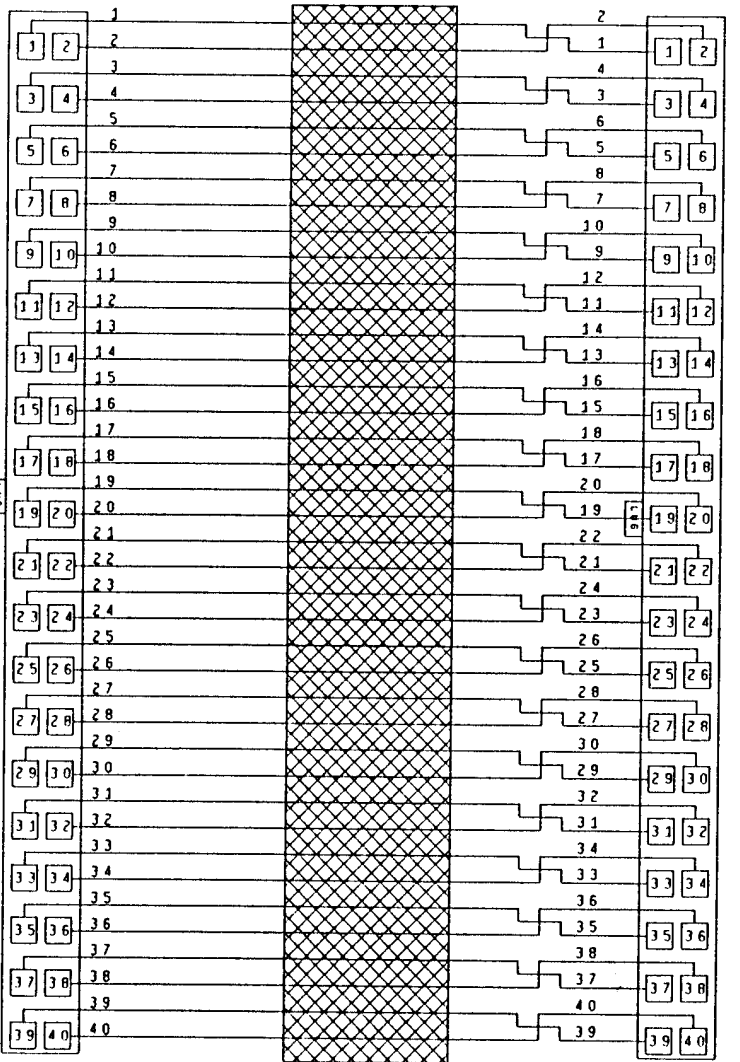
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3

2

1

1.5"



BACK VIEW

M1

BACK VIEW

MARKER LIST				
REF DES	MFG	PART NO	TEXT SIZE	TEXT
M1	BRADY	DAT-9-292	.125"	(LINE 3) HOST TO VGB (LINE 2) DW-00014C-0007-02

PARTS LIST			
REF DES	MFG	PART NO	PIN NO
J1	DUPONT	71602-040	
J2	DUPONT	71602-040	
CABLE	3-M	3365/40	

NOTES:

- 1) ALL 28 AWG RIBBON CABLE SHALL MEET OR EXCEED UL2651.
- 2) MARKER M1 HAS TWO LINES OF TEXT.
- 3) DISTANCE SPECIFIED BETWEEN J1 AND J2 IS MEASURED BETWEEN THE INSIDE EDGES OF J1 AND J2 AFTER ASSEMBLY.
- 4) ASSEMBLED CABLE IS MPG P/N A18-00001-007.

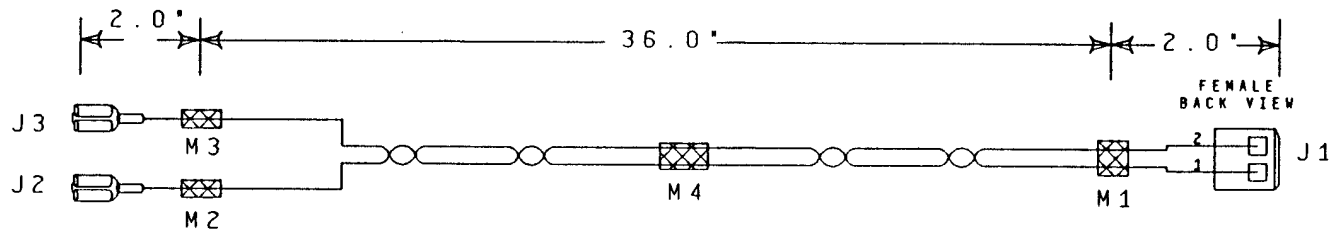
DRAFTER DAVID J. BELLAMY	DATE 12-10-90	MICROPROSE GAMES	
CHECKER <i>[Signature]</i>	DATE 12-10-90	180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
DATE 12-10-90	DATE 12-10-90	TITLE HOST TO VGB RIBBON CABLE	
APPROVAL <i>[Signature]</i>	DATE 2/13/90	SIZE C	DRAWING NUMBER DW-00014C-0007
DATE 2/13/90	DATE 2/13/90	REV - 02	RELEASE CABLE 7
DATE 11-27-1990-17-29		SHEET 7 OF 1	

4

3

2

1



WIRE LIST (ALL WIRE IS 22 AWG)				
SIGNAL	FROM	TO	COLOR	BELDEN PART NO
L AUDIO	J1-01	J2	WHT/RED	9921-15
GND	J1-02	J3	BLACK	9921-10

NOTES:

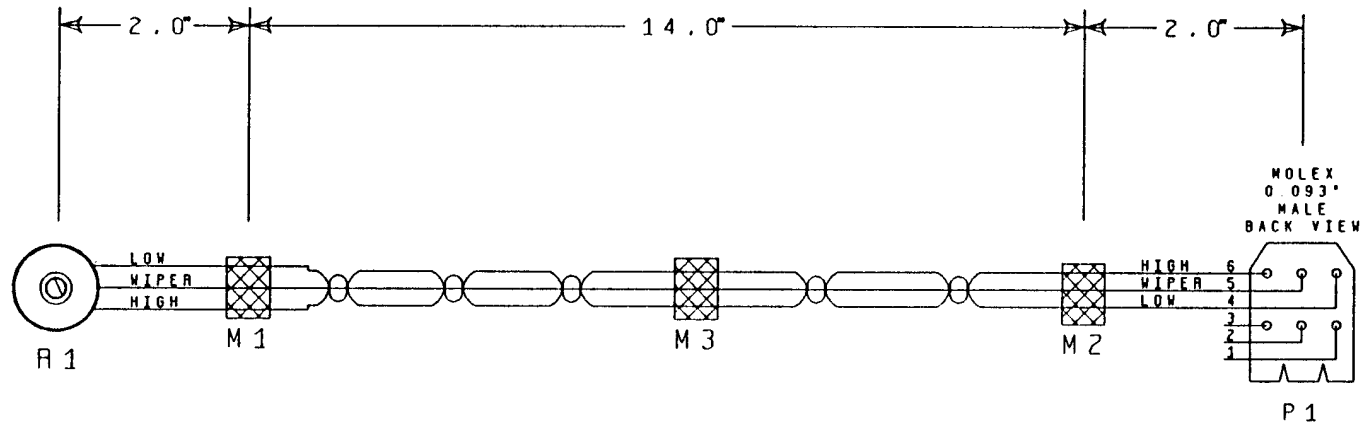
- 1) ALL 22 AWG WIRE SHALL MEET OR EXCEED UL1061.
- 2) TIE WRAP AT INTERVALS OF TWO INCHES.
- 3) MARKER M4 HAS TWO LINES OF TEXT.
- 4) TWIST WIRE PAIR AND TIE WRAP AT 4" INTERVALS.
- 5) ASSEMBLED CABLE IS MPG P/N A18-00001-0008

PARTS LIST			
REF DES	MFG	PART NO	PIN NO
J1	MOLEX	22-01-2021	08-50-0114
J2, J3	AMP	2-520181-4	

MARKER LIST				
REF DES	MFG	PART NO	TEXT SIZE	TEXT
M1	BRADY	HCPS 9-3758W	.125"	SOUND BD J5
M2	BRADY	HCPS 9-2508W	.125"	L SPKR +
M3	BRADY	HCPS 9-2508W	.125"	L SPKR -
M4	BRADY	HCPS 1 9-3758W	.125"	(LINE 1) LEFT SPEAKER CABLE (LINE 2) DW-00014C-0008-02

DRAFTED DAVID J. BELLAMY	DATE 12-10-90	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKED <i>[Signature]</i>	DATE 12-10-90	TITLE LEFT SPEAKER CABLE	
ENGINEER JAY G. MCKIBBIN	DATE 12-13-90	SIZE C	DRAWING NUMBER DW-00014C-0008
APPROVAL <i>[Signature]</i>	DATE	REV - 02	RELEASE CABLE 8
DATE 12-11-1990.10-07		SHEET 1 OF 1	

4 3 2 1



WIRE LIST		(ALL WIRE IS 22 AWG)		
SIGNAL	FROM	TO	COLOR	BELDEN PART NO
LOW	R1-01	P1-04	BLACK	9921-10
WIPER	R1-02	P1-05	WHITE	9921-9
HIGH	R1-03	P1-06	RED	9921-2

NOTES :

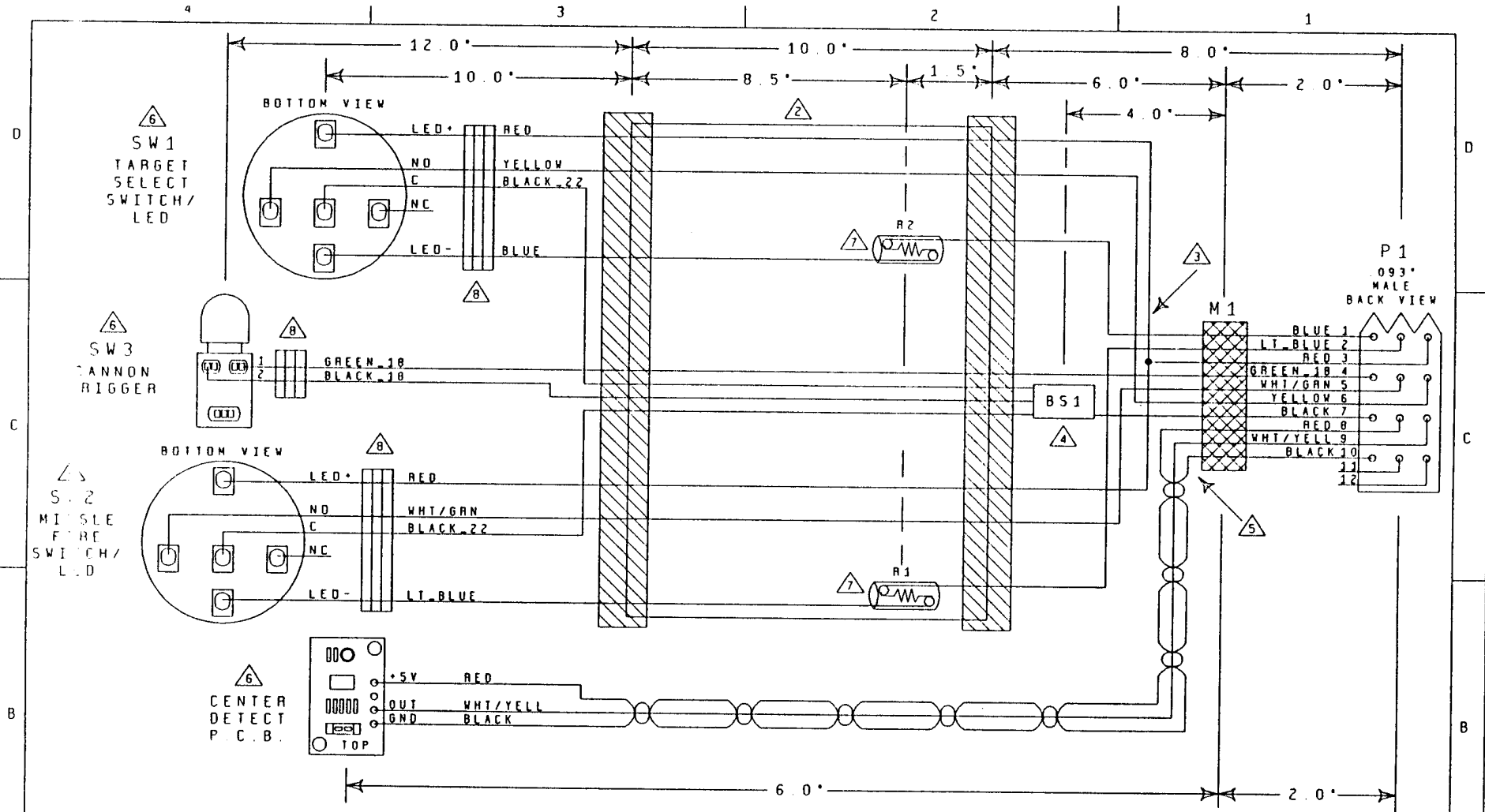
- 1) ALL 22 AWG WIRE SHALL MEET OR EXCEED UL1061.
- 2) TIE WRAP AT INTERVALS OF TWO INCHES.
- 3) MARKER M3 HAS TWO LINES OF TEXT.
- 4) WIRES ARE TWISTED BETWEEN MARKERS M1 AND M2.
- 5) ASSEMBLED HARNESS IS MPG P/N A18-00001-009.

PARTS LIST			
REFDES	MFG	PART NO	PIN NO
P1	MOLEX	03-09-2064	02-09-2116
R1	CLAROSTAT	RV4NAYS0502A	

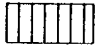
MARKER LIST				
REFDES	MFG	PART NO	TEXT SIZE	TEXT
M1	BRADY	HCPS 9-5008W	.125"	THROTTLE
M2	BRADY	HCPS 9-5008W	.125"	THROTTLE 2 HOST
M3	BRADY	HCPS1 9-3758W	.125"	(LINE 1) THROTTLE HARNESS (LINE 2) DW-00014C-0009-02

DRAWN DAVID J. BELMONT	DATE 12-12-80	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKED <i>[Signature]</i>	DATE 12-12-80	TITLE THROTTLE HARNESS	
ENGINEER JAY G. McKIBBIN	DATE 12/13/80	SIZE C	DRAWING NUMBER DW-00014C-0009
APPROVAL <i>[Signature]</i>	DATE 12/13/80	REV - 02	RELEASE CABLE 13
APPROVAL	DATE	DATE 12-22-1990-15-21	SHEET 1 OF 1

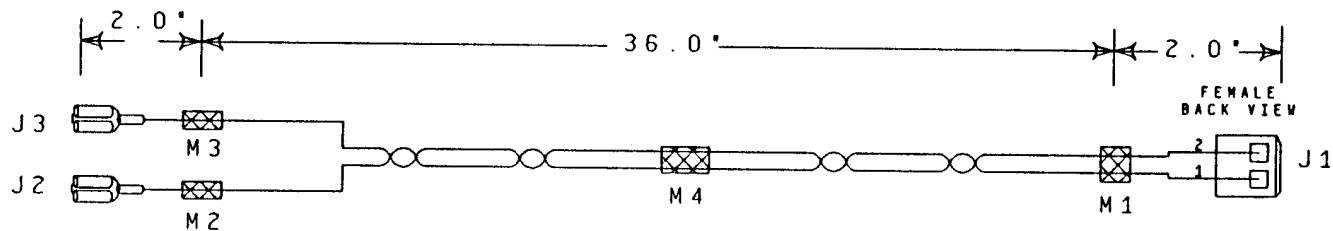
4 3 2 1



NOTES:

- ① ALL 18 AND 22 AWG WIRE SHALL MEET OR EXCEED UL1061.
- ② COVER THIS 30 INCH SECTION WITH 3/8 INCH I.D. BENTLEY/HARRIS EXPANDED P1 TUBING. SECURE BOTH ENDS OF MESH WITH 1 INCH LONG PIECES OF HEAT SHRINK TUBING.
- ③ TWO WIRES INSERTED INTO P1 PIN 3 AND CRIMPED.
- ④ SPLICE TO ACCOMMODATE .3541" C.M.A. SOLDER AND HEAT SHRINK INSULATE. NOTE BLACK 18 AWG TEFLON WIRE.
- ⑤ BREAKOUT WIRES TO CENTER DETECT AT M1. TWIST WIRES. TIE WRAP AT TWO INCH INTERVALS.
- ⑥ SW1, SW2, SW3 AND CENTER DETECT PCB SHOWN FOR REFERENCE ONLY. ALL LEADS ARE STRIPPED AND SOLDER TINNED 1/4 IN LONG.
- ⑦ R1 & R2 SOLDERED/CRIMPED IN-LINE AS SHOWN AND HEAT SHRINK INSULATED.
- ⑧ SECURE WIRE ENDS HERE WITH ELECTRICAL TAPE FOR SHIPPING. (THREE SEPARATE TAPED BUNDLES) TAPE: 
- ⑨ MARKER M1 HAS TWO LINES OF TEXT.
- ⑩ ASSEMBLED HARNESS IS MPG P/N A18-0001-010.

DRAFTER DAVID J. BELLAMY		DATE 2-10-90	MICROPROSE GAMES	
CHECKER <i>[Signature]</i>		DATE 2-10-90	180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
DESIGNER JAY G. MCKIBBIN		DATE 2/17/90	TITLE JOYSTICK HARNESS	
APPROVAL <i>[Signature]</i>	DATE 2/17/90	DATE 12-10-1990	SIZE C	DRAWING NUMBER DW-00014C-0010
APPROVAL	DATE	DATE	REV - 02	RELEASE JOYS-2
DATE 12-10-1990.17-55			SHEET 2 OF 2	



WIRE LIST (CALL WIRE IS 22 AWG)				
SIGNAL	FROM	TO	COLOR	BELDEN PART NO
R AUDIO	J1-01	J2	WHT/BLK	9921-14
GND	J1-02	J3	BLACK	9921-10

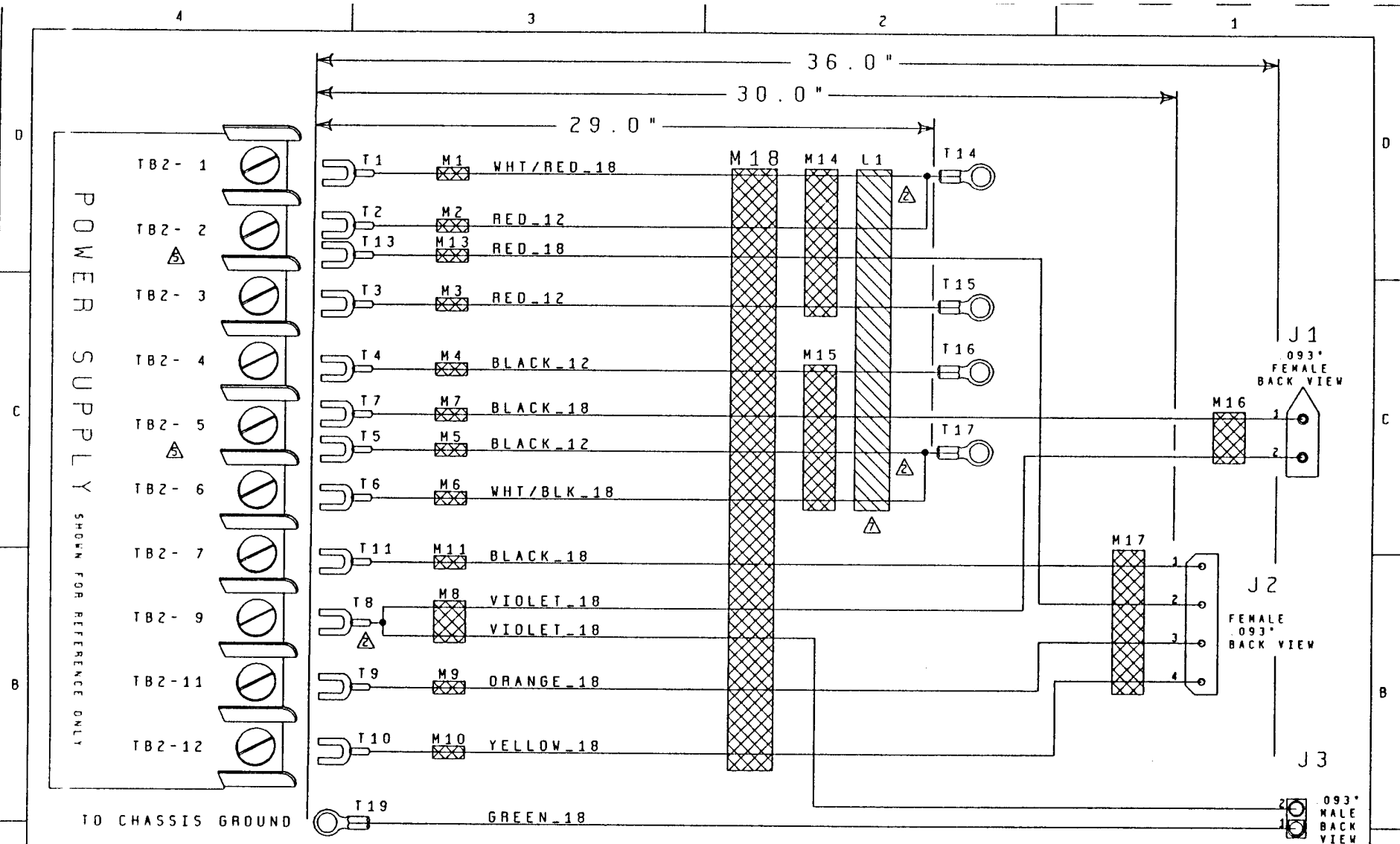
NOTES:

- 1) ALL 22 AWG WIRE SHALL MEET OR EXCEED UL1061.
- 2) TIE WRAP AT INTERVALS OF TWO INCHES.
- 3) MARKER M4 HAS TWO LINES OF TEXT.
- 4) TWIST WIRE PAIR AND TIE WRAP AT 4' INTERVALS.
- 5) ASSEMBLED CABLE IS MPG P/N A18-00001-0011

PARTS LIST			
REF DES	MFG	PART NO	PIN NO
J1	MOLEX	22-01-2021	08-50-0114
J2, J3	AMP	2-520181-4	

MARKER LIST				
REF DES	MFG	PART NO	TEXT SIZE	TEXT
M1	BRADY	HCPS.9-3758W	.125"	SOUND 80 J5
M2	BRADY	HCPS.9-2508W	.125"	R SPKR +
M3	BRADY	HCPS.9-2508W	.125"	R SPKR -
M4	BRADY	HCPS1.9-3758W	.125"	(LINE 1) RIGHT SPEAKER CABLE (LINE 2) DW-00014C-0011-02

DRAFTER DAVID J. BELLAMY	DATE 12-10-90	MICROPROSE GAMES	
CHECKER <i>[Signature]</i>	DATE 12-10-90	180 LAKEFRONT DR. HUNT VALLEY, MO 24030	
DESIGNER JAY G. McKIBBIN	DATE 12/14/90	TITLE RIGHT SPEAKER CABLE	
APPROVAL <i>[Signature]</i>	DATE 12/14/90	SIZE C	DRAWING NUMBER DW-00014C-0011
		REV - 02	RELEASE CABLE 9
		DATE 12-11-1990-10-12	SHEET 1 OF 1



- NOTES:
- ⚠ ALL WIRE SHALL MEET OR EXCEED UL1015.
 - ⚠ TWO WIRES ARE INSERTED INTO THIS CONNECTION.
 - ⚠ MARKERS ARE PLACED 1" FROM TERMINALS/CONNECTORS EXCEPT M18 WHICH IS APPROXIMATELY CENTERED.
 - ⚠ T14 - T17 CONNECT TO THE DC POWER DISTRIBUTION PCB.
 - ⚠ T2 & T13 CONNECT TO TB2-2. T3 & T7 CONNECT TO TB2-5.
 - ⚠ T1E WRAP EVERY FOUR INCHES.
 - ⚠ SECURE FERRITE BEAD L1 TO CABLE WITH WIRE TIE.
 - ⚠ ASSEMBLED HARNESS IS MPG P/N A18-00002-001.

DRAFTER DAVID J. BELLAMY		DATE 12-12-90		MICROPROSE GAMES	
CHECKED <i>[Signature]</i>		DATE 12-12-90		180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
ENGINEER JAY G. MCKIBBIN		DATE 12/14/96		TITLE DC POWER HARNESS	
APPROVAL <i>[Signature]</i>		DATE 12/14/96		SIZE C	DRAWING NUMBER DW-00014C-0012
APPROVAL		DATE		REV - 02	RELEASE DCWH 1
DATE 12-13-1990.13.47 SHEET 1 OF 2					

D

3

2

1

WIRE LIST

SIGNAL	FROM	TO	COLOR	AWG	BELDEN PART NO
+SENSE	T1	T14	WHT/RED	18	8918-15
BKPLN_V1	T2	T14	RED	12	9912-2
BKPLN_V1	T3	T15	RED	12	9912-2
BKPLNRTN	T4	T16	BLACK	12	9912-10
BKPLNRTN	T5	T17	BLACK	12	9912-10
-SENSE	T6	T17	WHT/BLK	18	8918-14
FAN_RTN	T7	J1-1	BLACK	18	8918-10
FAN_V2	T8	J1-2	VIOLET	18	8918-7
PANEL_V2	T8	J3-2	VIOLET	18	8918-7
SND_V3	T9	J2-3	ORANGE	18	8918-3
SND_V4	T10	J2-4	YELLOW	18	8918-4
SND_RTN	T11	J2-1	BLACK	18	8918-10
SND_V1	T13	J2-2	RED	18	8918-2
CHAS_GND	T19	J3-1	GREEN	18	8918-5

PARTS LIST

REFDES	MFG	PART NO	PIN NO
T1, T6, T7, T9, T10, T11, T13	MOLEX	AA-234-08X	
T2 - T5, T8	MOLEX	C-236-08X	
T14 - T17	MOLEX	D-656-10X	
T19	MOLEX	C-236-08X	
J1	MOLEX	03-06-1023	02-06-1101
J2	MOLEX	15-24-4048	02-08-1201
J3	MOLEX	19-09-1026	02-09-1117
L1	FAIR-RITE	2643164151	

MARKER LIST

REF DES	MFG	PART NO	TEXT SIZE	TEXT	
				LINE 1	LINE 2
M1	BRADY	HCPS 9-2508W	.125"	+SENSE	TB2-1
M2	BRADY	HCPS 9-3336W	.125"	V1	TB2-2
M3	BRADY	HCPS 9-3336W	.125"	V1	TB2-3
M4	BRADY	HCPS 9-3336W	.125"	RETURN	TB2-4
M5	BRADY	HCPS 9-2508W	.125"	RETURN	TB2-5
M6	BRADY	HCPS 9-3336W	.125"	-SENSE	TB2-6
M7	BRADY	HCPS 9-3336W	.125"	RETURN	TB2-5
M8	BRADY	HCPS 9-3336W	.125"	V2	TB2-9
M9	BRADY	HCPS 9-2508W	.125"	V3	TB2-11
M10	BRADY	HCPS 9-2508W	.125"	V4	TB2-12
M11	BRADY	HCPS 9-2508W	.125"	RETURN	TB2-7
M13	BRADY	HCPS 9-2508W	.125"	V1	TB2-2
M14	BRADY	HCPS 9-5008W	.125"	VDD	
M15	BRADY	HCPS 9-5008W	.125"	GND	
M16	BRADY	HCPS 9-3758W	.125"	FAN	
M17	BRADY	HCPS 9-5008W	.125"	SOUND BOARD	
M18	BRADY	HCPS 1.9-1008W	.125"	DC POWER HARNESS	DW-00014C-0012-02

DRAWN DAVID J. BELMAY	DATE	MICROPROSE GAMES	
12-12-90	DATE	180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
ENGINEER JAY B. McKIBBIN	DATE	TITLE	
12/14/90	DATE	DC POWER HARNESS	
APPROVAL <i>[Signature]</i>	DATE	SIZE	DRAWING NUMBER
12/14/90	DATE	C	DW-00014C-0012
		REV - 02	RELEASE DLWH1 Z
		DATE 12-13-1990-33 53	SHEET 2 OF 2

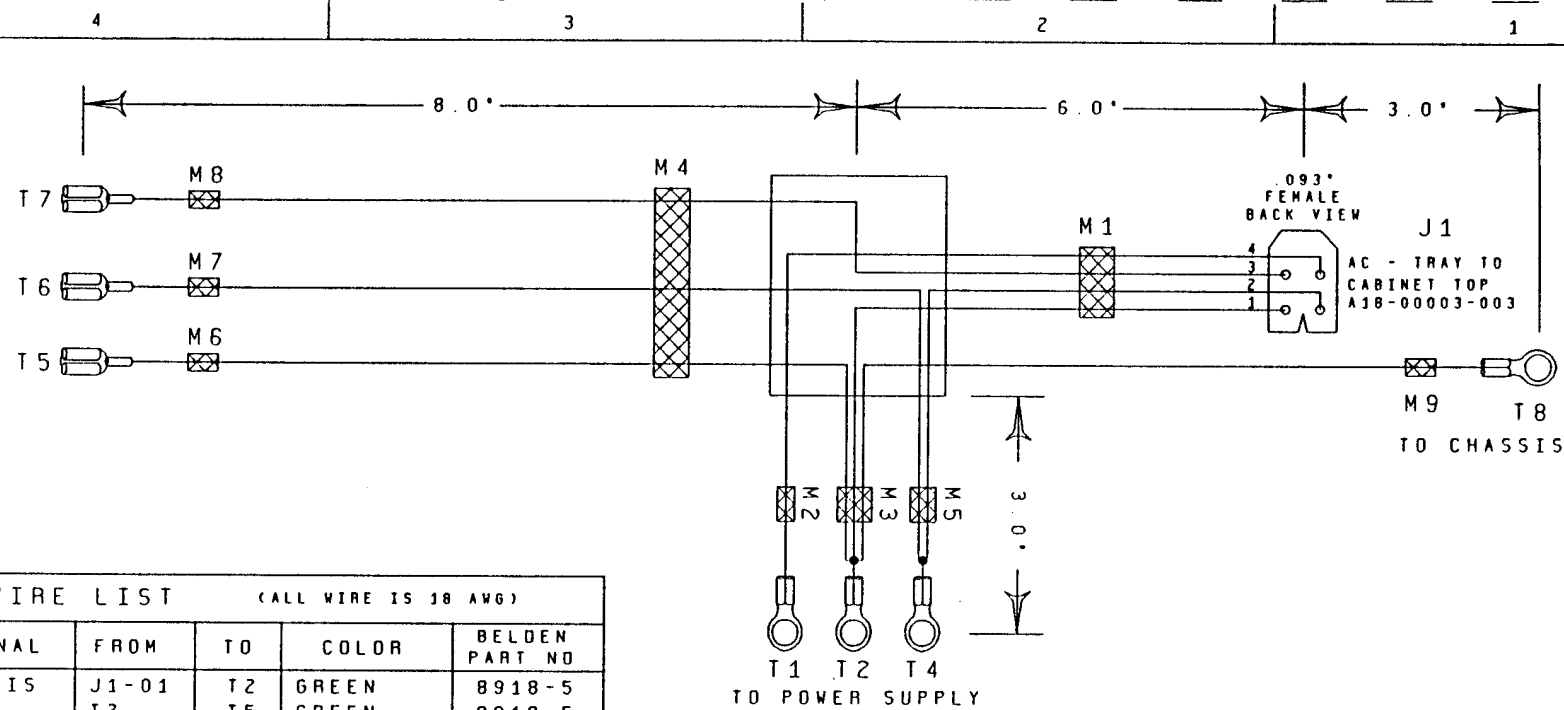
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2

1

TO LINE EMI FILTER



WIRE LIST (ALL WIRE IS 18 AWG)				
SIGNAL	FROM	TO	COLOR	BELDEN PART NO
CHASSIS	J1-01	T2	GREEN	8918-5
	T2	T5	GREEN	8918-5
	T2	T8	GREEN	8918-5
COMMON	J1-02	T4	WHITE	8918-9
	T4	T6	WHITE	8918-9
UPS WLINE	J1-03	T7	WHT/BLK	8918-14
S WLINE	J1-04	T1	BLACK	8918-10

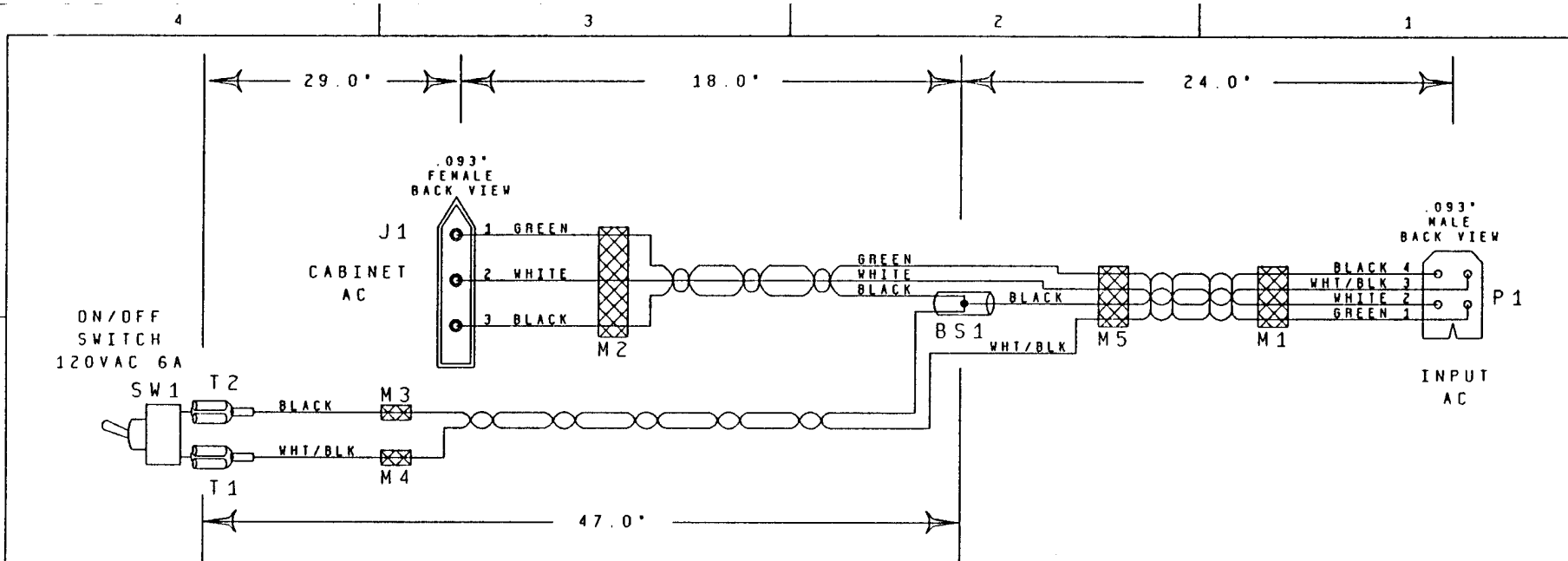
PARTS LIST			
REF DES	MFG	PART NO	PIN NO
J1	MOLEX	03-09-1049	02-09-1117
1	MOLEX	AA-232-08X	RING TERM
2	MOLEX	C-236-08X	RING TERM
T4, T8	MOLEX	BB-223-08X	RING TERM
T5 - T7	MOLEX	AA-2201C	PUSH-ON

MARKER LIST				
REF DES	MFG	PART NO	TEXT SIZE	TEXT
1	BRADY	HCPS.9-6258W	.125"	INPUT AC
2	BRADY	HCPS.9-2508W	.125"	TB1-1
3	BRADY	HCPS.9-5008W	.125"	TB1-3
4	BRADY	HCPS1.9-6258W	.125"	(LINE 1) INPUT AC HARNESS (LINE 2) DW-00014C-0014-02
5	BRADY	HCPS.9-3758W	.125"	TB1-2
6	BRADY	HCPS.9-2508W	.125"	GND
7	BRADY	HCPS.9-2508W	.125"	COMM
8	BRADY	HCPS.9-2508W	.125"	LINE
9	BRADY	HCPS.9-2508W	.125"	GND

NOTES:

- 1) ALL 18 AWG WIRE SHALL MEET OR EXCEED UL1015.
- 2) TIE WRAP AT INTERVALS OF TWO INCHES.
- 3) MARKER M4 HAS TWO LINES OF TEXT.
- 4) TERMINAL T2 HAS 3 WIRES IN CRIMP.
- 5) TERMINAL T4 HAS 2 WIRES IN CRIMP.
- 6) BREAKOUT WIRES TO T1, T2 & T4. SECURE WITH TIE WRAP.
- 7) PLACE MARKERS M2 - M3 & M5 - M9 1" FROM TERMINALS.
- 8) ASSEMBLED HARNESS IS MP6 P/N A18-00003-002.

DRAFTER DAVID J. BELLMY		DATE 12-12-90	MICROPROSE GAMES	
CHECKED <i>[Signature]</i>		DATE 12-12-90	300 LAKEFRONT DR. HUNT VALLEY, MD 21030	
APPROVAL <i>[Signature]</i>		DATE 12/13/90	TITLE INPUT AC HARNESS	
JAY G. MCKIBBIN		DATE 12/13/90	SIZE C	DRAWING NUMBER DW-00014A-0014
APPROVAL <i>[Signature]</i>		DATE 12/13/90	REV - 02	RELEASE ACW1.1
			DATE 12-12-1990-13	SHEET 1 OF 1



WIRE LIST (ALL WIRE IS 18 AWG)

SIGNAL	FROM	TO	COLOR	BELODEN PART NO
CH SSIS	P1-01	J1-01	GREEN	8918-5
COMMON	P1-02	J1-02	WHITE	8918-9
UNSW LINE	P1-03	T1	WHT/BLK	8918-14
SW LINE	P1-04	T2	BLACK	8918-10
	J1-03	T2	BLACK	8918-10

PARTS LIST

REF DES	MFG	PART NO	PIN NO
J1	MOLEX	03-09-1032	02-09-1117
P1	MOLEX	03-09-2049	02-09-2116
T1	MOLEX	AA-2201C	PUSH-ON
T2	MOLEX	BB-2206C	PUSH-ON
BS1	T. B. D.	T. B. D.	

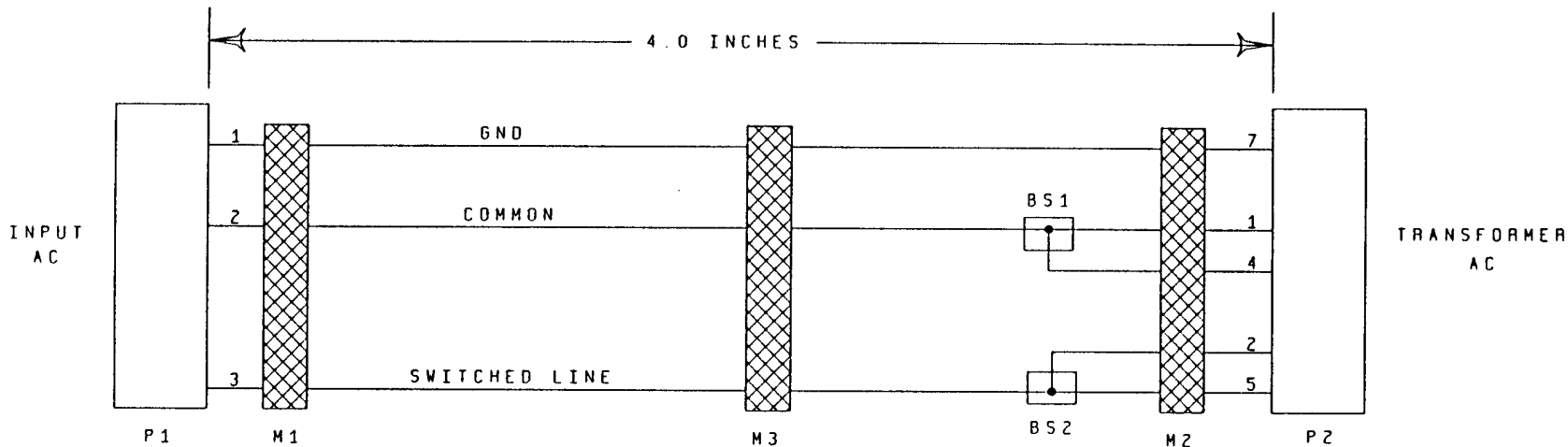
MARKER LIST

REF DES	MFG	PART NO	TEXT SIZE	TEXT
M1	BRADY	HCPS.9-6258W	.125"	INPUT AC
M2	BRADY	HCPS.9-5008W	.125"	CABINET AC
M3	BRADY	HCPS.9-3758W	.125"	SW LINE
M5	BRADY	HCPS1.9-6258W	.125"	(LINE 1) AC-TRAY TO TOP HARN (LINE 2) DW-00014C-0015-02
M4	BRADY	HCPS.9-2508W	.125"	UNSW LINE

NOTES

- 1) ALL 18 AWG WIRE SHALL MEET OR EXCEED UL1015.
- 2) TIE WRAP AT INTERVALS OF TWO INCHES.
- 3) MARKER M5 HAS TWO LINES OF TEXT.
- 4) BUTT SPLICE BS1 HAS 3 WIRES IN CRIMP.
- 5) TWIST WIRES FROM P1 TO J1 AND FROM BS1 TO TERMINALS.
- 6) BREAKOUT WIRES AT BS1. SECURE WITH TIE WRAP.
- 7) SW1 IS SHOWN FOR REFERENCE ONLY.
- 8) ASSEMBLED HARNESS IS MPG P/N A18-00003-003.

DRAFTER DAVID J. BELLAMY	DATE 12-13-90	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER <i>[Signature]</i>	DATE 12-14-90	TITLE AC - TRAY TO CABINET TOP	
APPROVAL JAY G. McKIBBIN	DATE 12/14/90	SIZE C	DRAWING NUMBER DW-00014A-0015
APPROVAL <i>[Signature]</i>	DATE	REV - 02	RELEASE ACWH2.1
DATE 12-13-1990.13-26		SHEET 1 OF 1	



PARTS LIST

REFDES	DESCRIPTION	PART NO	PIN NO
P1	CONNECTOR, PLUG	MOLEX 03-09-2032	02-09-2116
P2	CONNECTOR, RECEPTICAL	MOLEX 03-09-1094	02-09-1117
BS1	16 AWG BUTT SPLICE	MOLEX C-246X	
BS2			

WIRE LIST

SIGNAL	FROM	TO	COLOR	BELDEN PART NO
GROUND	P1-1	P2-7	GREEN	9918-5
COMMON	P1-2	BS1	WHITE/ORANGE	9918-20
COMMON	BS1	P2-1	WHITE/ORANGE	
COMMON	BS1	P2-4	WHITE/ORANGE	
SWITCHED LINE	P1-3	BS2	VIOLET	9918-7
SWITCHED LINE	BS2	P2-2	VIOLET	
SWITCHED LINE	BS2	P2-5	VIOLET	

MARKER LIST

REFDES	TYPE SIZE	MFG	PART NO	TEXT	
				LINE 1	LINE 2
M1	.125"	BRADY	HCPS 9-8336W	100VAC	INPUT AC
M2	.125"	BRADY	HCPS 9-8336W	100VAC	XFORMER AC
M3	.125"	BRADY	HCPS 9-8336W	DW-00014A-0016-02	100VAC SELECT

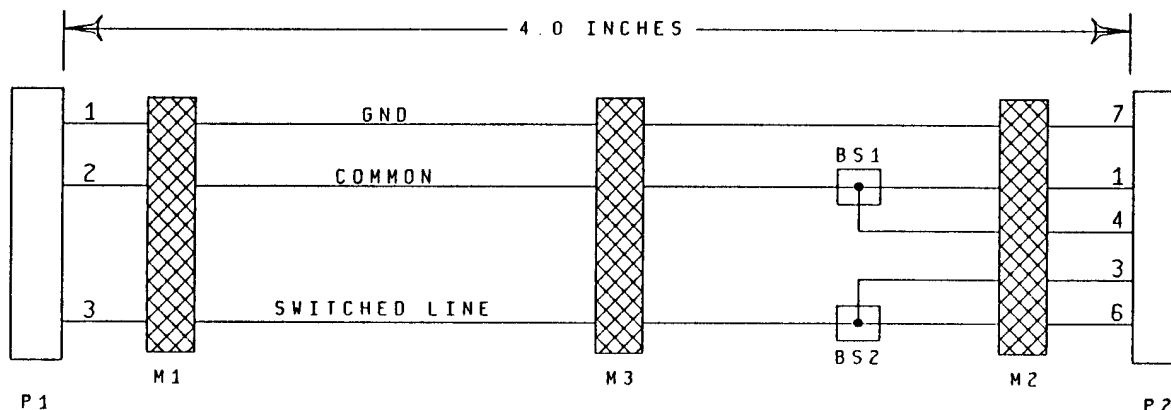
COMPANY / PROPRIETARY
 CONFIDENTIAL / INFORMATION
MICROPROSE Games
 180 LAKEFRONT DR. HUNT VALLEY, MD 21030

NOTES: 1). ALL WIRE MUST MEET OR EXCEED UL1015.
 2). LABEL MARKERS:

DRAFTER DAVID J. BELLAMY	DATE 12-10-90	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER <i>[Signature]</i>	DATE 12-10-90	TITLE 100V AC VOLTAGE SELECTION HARNESS	
ENGINEER JAY G. McKIBBIN	DATE 12/13/90	SIZE C	DRAWING NUMBER DW-00014A-0016
APPROVAL <i>[Signature]</i>	DATE 12/13/90	REV - 02	RELEASE ACWHS.1
APPROVAL	DATE	DATE 12-11-1990-10-31	SHEET 1 OF 1

INPUT AC

TRANSFORMER AC



PARTS LIST

REFDES	DESCRIPTION	PART NO	PIN NO
P1	CONNECTOR, PLUG	MOLEX 03-09-2032	02-09-2116
P2	CONNECTOR, RECEPTICAL	MOLEX 03-09-1094	02-09-1117
BS1	16 AWG BUTT SPLICE	MOLEX C-246X	
BS2			

WIRE LIST

SIGNAL	FROM	TO	COLOR	BELDEN PART NO
GROUND	P1-1	P2-7	GREEN	8918-5
COMMON	P1-2	BS1	WHITE	8918-9
COMMON	BS1	P2-1	WHITE	
COMMON	BS1	P2-4	WHITE	
SWITCHED LINE	P1-3	BS2	BLACK	8918-10
SWITCHED LINE	BS2	P2-3	BLACK	
SWITCHED LINE	BS2	P2-6	BLACK	

MARKER LIST

REFDES	TYPE SIZE	MFG	PART NO	TEXT	
				LINE 1	LINE 2
M1	.125"	BRADY	HCPS 9-8336W	120VAC	INPUT AC
M2	.125"	BRADY	HCPS 9-8336W	120VAC	XFORMER AC
M3	.125"	BRADY	HCPS 9-8336W	DW-00014A-0016-02	120VAC SELECT

COMPANY / PROPRIETARY
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MICROPROSE Games

180 LAKEFRONT DR. HUNT VALLEY, MD 21030

NOTES: 1) ALL WIRE MUST MEET OR EXCEED UL1015.

DRAFTER DAVID J. BELVARY DATE 12-12-90	DATE 12-12-90	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030
ENGINEER JAY G. McKIBBIN DATE 12/13/90	DATE 12/13/90	TITLE 120VAC VOLTAGE SELECTION HARNESS
APPROVAL DATE	DATE	SIZE C
APPROVAL DATE	DATE	DRAWING NUMBER DW-00014A-0017
		REV - 02 RELEASE ACWH3.1
		DATE 12-12-1990-13-35 SHEET 1 OF 1

4

3

2

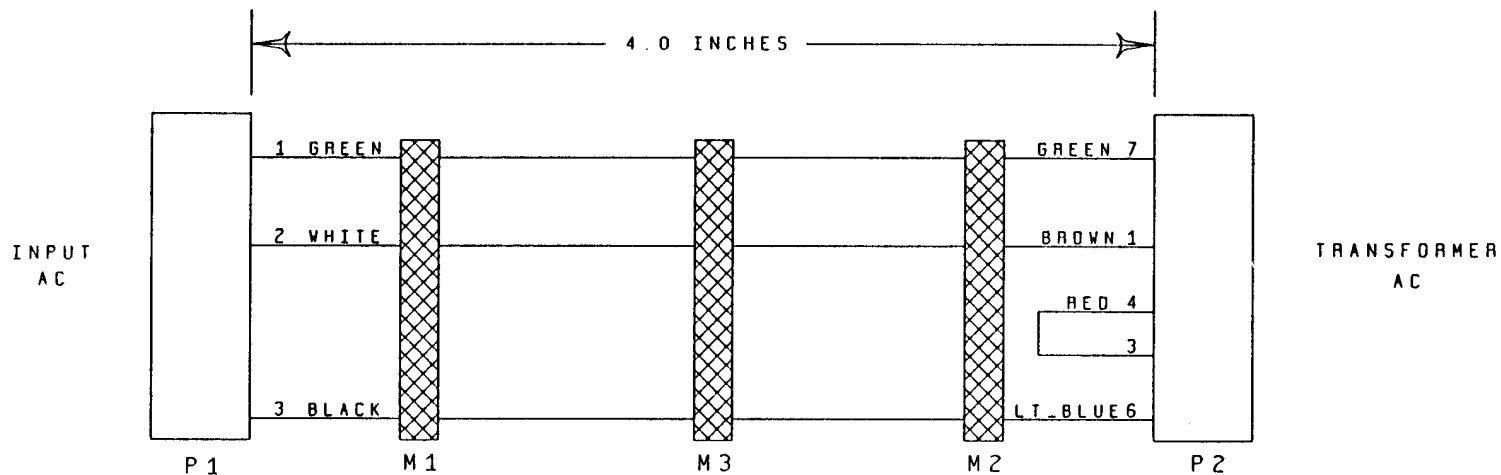
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D

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C

C



PARTS LIST

FEFDES	DESCRIPTION	PART NO	PIN NO
P1	CONNECTOR, PLUG	MOLEX 03-09-2032	02-09-2116
P2	CONNECTOR, RECEPTICAL	MOLEX 03-09-1094	02-09-1117

WIRE LIST

SIGNAL	FROM	TO	COLOR	BELDEN PART NO
GROUND	P1-1	P2-7	GREEN	8918-5
COMMON	P1-2	P2-1	BROWN	8918-1
SWITCHED LINE	P1-3	P2-6	LT. BLUE	8918-6
SWITCHED LINE	P2-3	P2-4	RED	8918-2

MARKER LIST

FEFDES	TYPE SIZE	MFG	PART NO	TEXT	
				LINE 1	LINE 2
M1	.125"	BRADY	HCPS 9-8336W	240VAC	INPUT AC
M2	.125"	BRADY	HCPS 9-8336W	240VAC	XFORMER AC
M3	.125"	BRADY	HCPS 9-8336W	DW-00014A-0016-02	240VAC SELECT

COMPANY / PROPRIETARY
CONFIDENTIAL / INFORMATION

MICROPROSE Games

180 LAKEFRONT DR. HUNT VALLEY, MO 21030

DRAFTER DAVID J. BELLAMY	DATE 12-12-90	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MO 21030	
ENGINEER JAY G. McKIBBIN	DATE 12/18/90	TITLE 240 VAC VOLTAGE SELECTOR HARNESS	
APPROVAL <i>[Signature]</i>	DATE 12/18/90	SIZE C	DRAWING NUMBER DW-00014A-0018
APPROVAL <i>[Signature]</i>	DATE	REV - 02	RELEASE ACWH 1
DATE 12-13-1990.14-12		SHEET 1 OF 1	

NOTES: 1). ALL WIRE MUST MEET OR EXCEED OF UL1015

2). LABEL MARKERS:



4

3

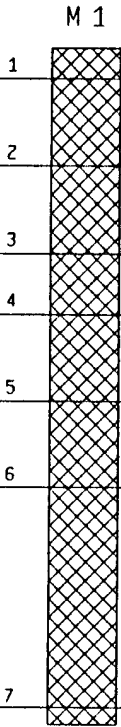
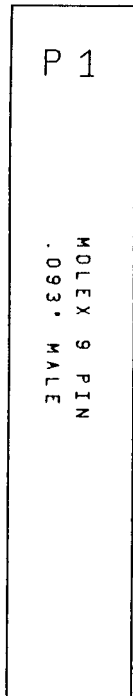
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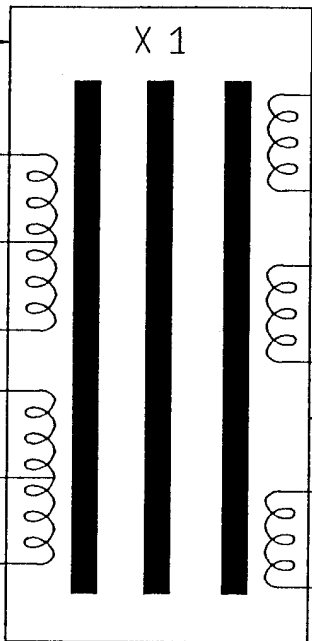
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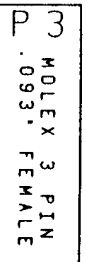
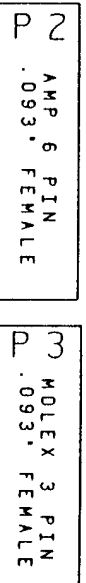
AC VOLTAGE SELECTOR
HARNES



1 BLACK
2 BLACK/YELLOW
3 BLACK/RED
4 BROWN
5 BROWN/YELLOW
6 BROWN/RED
7 GREEN 22AWG 9921-5



120VAC YELLOW 1
120VAC YELLOW 2
24VAC RED 4
24VAC RED 5
120VAC ORANGE 1
120VAC ORANGE 3



MONITOR
FLORESCENT LIGHT

GREEN TO MONITOR

NOTE ③

NOTES:

- 1) ALL WIRE SHALL MEET OR EXCEED UL1015.
- 2) ALL 22AWG WIRE SHALL MEET OR EXCEED UL1061.
- 3) STRIP 1/4 INCH OF INSULATION AND TIN LEAD WITH SOLDER.
- 4) ATTACH T1 TO LOWER TRANSFORMER LAMINATE BOLT. USE A STAR LOCKWASHER TO MAINTAIN ELECTRICAL CONTACT.
- 5) MARKER M1 HAS TWO LINES OF TEXT.
- 6) ASSEMBLED TRANSFORMER IS MPG P/N A18-00003-007.

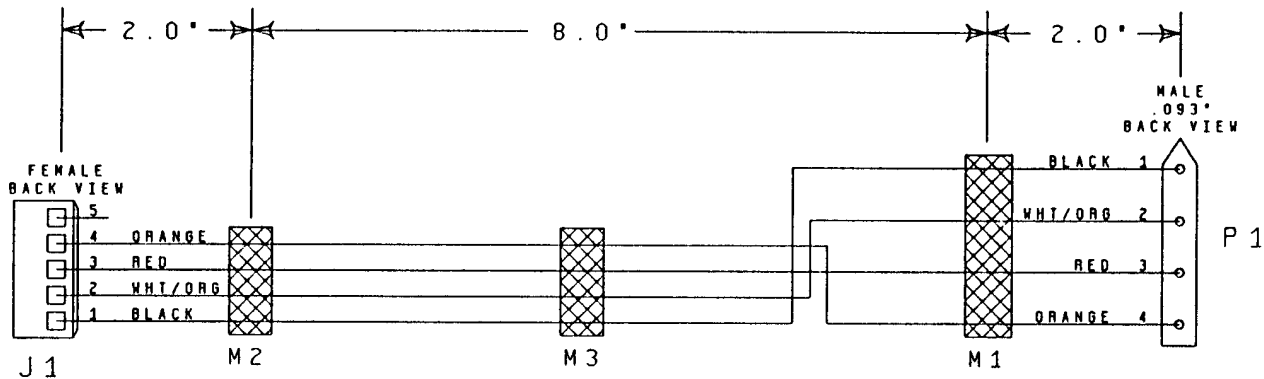
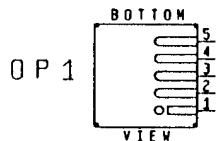
PARTS LIST

REF DES	MFG	PART NO	PIN NO
1	MOLEX	03-09-2091	02-09-2116
2	AMP	350715-1	350536-1
3	MOLEX	03-09-1032	02-09-1117
1	MIDWESTCO	#U53P218A	
1	MOLEX	C-236-08X	

MARKER LIST

REF DES	MFG	PART NO	TEXT SIZE	TEXT
M1	BRADY	HCPS1.9-1008W	.125"	(LINE 1) TRANSFORMER ASSEMBLY (LINE 2) DW-00014C-0019-02

DRAFTER DAVID J. BELAMY	DATE 12-10-90	MICROPROSE GAMES	
CHECKER <i>J. McNeill</i>	DATE 12-10-90	380 LAKEFRONT DR. HUNT VALLEY, MD 21030	
ENGINEER JAY G. McKIBBIN	DATE 12/13/90	TITLE TRANSFORMER ASSEMBLY	
APPROVAL <i>J. McNeill</i>	DATE 12/13/90	SIZE C	DRAWING NUMBER DW-00014A-0019
APPROVAL <i>J. McNeill</i>	DATE 12/13/90	REV - 02	RELEASE XFORM 1
DATE 12-11-1990, 16:31		SHEET 1 OF 1	



WIRE LIST (ALL WIRE IS 22 AWG)				
SIGNAL	FROM	TO	COLOR	BELOEN PART NO
XJOY_GND	P1-01	J1-01	BLACK	9921-10
XJOY_CHA	P1-02	J1-02	ORANGE	9921-3
XJOY_+5V	P1-03	J1-03	RED	9921-2
XJOY_CHB	P1-04	J1-04	WHT/ORG	9921-20

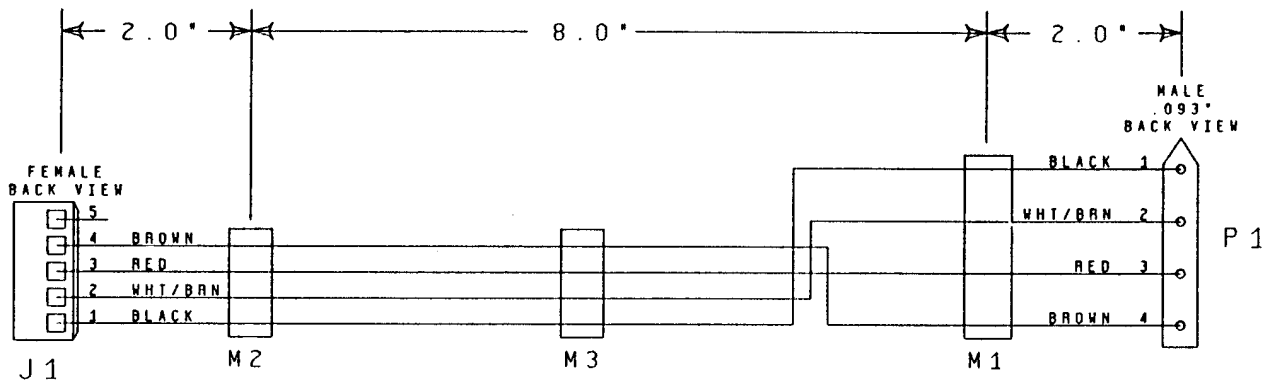
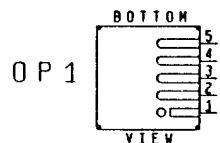
PARTS LIST			
REFDES	MFG	PART NO	PIN NO
P1	MOLEX	03-09-2042	02-09-2118
J1	BERG	65039-032	
J1	MOLEX		02-09-2116
J1	BERG	KEY PLUG	65307-001

MARKER LIST				
REFDES	MFG	PART NO	TEXT SIZE	TEXT
M1	BRADY	HCPS.9-3758W	.125"	JOYSTICK
M2	BRADY	HCPS.9-3758W	.125"	XPOT
M3	BRADY	HCPS1.9-3758W	.125"	(LINE 1) X JOYSTICK CABLE (LINE 2) DW-00014C-0023-02

NOTES:

- 1) ALL 22 AWG WIRE SHALL MEET OR EXCEED UL1061.
- 2) TIE WRAP AT INTERVALS OF TWO INCHES.
- 3) MARKER M3 HAS TWO LINES OF TEXT.
- 4) WIRES ARE TWISTED BETWEEN MARKERS M1 AND M2.
- 5) INSTALL KEY PLUG IN PIN 5 OF J1.
- 6) CLIP PIN5 FROM OPTICAL ENCODER OP1.
- 7) OPTICAL ENCODER OP1 IS SHOWN FOR REFERENCE ONLY.
- 8) ASSEMBLED CABLE IS MPG P/N A18-00001-013.

DRAFTER DAVID J. BENJAMIN	DATE 12-12-90	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
REVISION <i>[Signature]</i>	DATE	TITLE X JOYSTICK CABLE	
ENGINEER JAY G. MCKIBBIN	DATE 12/14/90	SIZE C	DRAWING NUMBER DW-00014C-0023
APPROVAL <i>[Signature]</i>	DATE	REV - 02	RELEASE CABLE 11
APPROVAL	DATE	DATE 12-13-1990-16-09	SHEET 1 OF 1



WIRE LIST (ALL WIRE IS 22 AWG)				
SIGNAL	FROM	TO	COLOR	BELDEN PART NO
YJOY_GND	P1-01	J1-01	BLACK	9921-10
YJOY_CHA	P1-02	J1-02	BROWN	9921-1
YJOY_+5V	P1-03	J1-03	RED	9921-2
YJOY_CHB	P1-04	J1-04	WHT/BRN	9921-19

PARTS LIST			
REFDES	MFG	PART NO	PIN NO
P1	MOLEX	03-09-2042	02-09-2118
J2	BERG	65039-032	
J1	MOLEX		02-09-2116
J1	BERG	KEY PLUG	65307-001

MARKER LIST				
REFDES	MFG	PART NO	TEXT SIZE	TEXT
M1	BRADY	HCPS.9-3758W	.125"	JOYSTICK
M2	BRADY	HCPS.9-3758W	.125"	YPOT
M3	BRADY	HCPS1.9-3758W	.125"	(LINE 1) Y JOYSTICK CABLE (LINE 2) DW-00014C-0024-02

NOTES :

- 1) ALL 22 AWG WIRE SHALL MEET OR EXCEED UL1061.
- 2) TIE WRAP AT INTERVALS OF TWO INCHES.
- 3) MARKER M3 HAS TWO LINES OF TEXT.
- 4) WIRES ARE TWISTED BETWEEN MARKERS M1 AND M2.
- 5) INSTALL KEY PLUG IN PIN 5 OF J1.
- 6) CLIP PIN5 FROM OPTICAL ENCODER OP1.
- 7) OPTICAL ENCODER OP1 SHOWN FOR REFERENCE ONLY.
- 8) ASSEMBLED CABLE IS MPG P/N A18-00001-012.

DRAFTER DAVID J. BELLAMY	DATE 12/12/90	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKED <i>[Signature]</i>	DATE	TITLE Y JOYSTICK CABLE	
ENGINEER JAY G. McKIBBIN	DATE 10/1/90	SIZE C	DRAWING NUMBER DW-00014C-0024
APPROVAL <i>[Signature]</i>	DATE	REV - 02	RELEASE CABLE .10
APPROVAL	DATE	DATE 12-13-1990-16-02	SHEET 1 OF 1

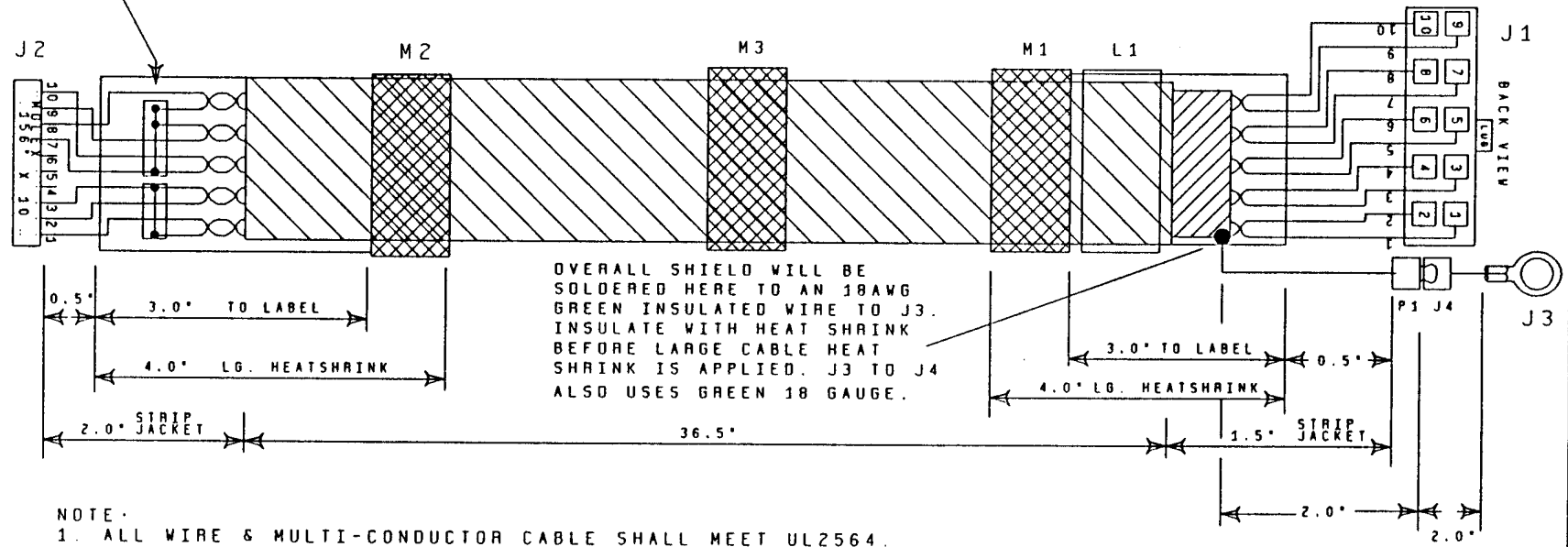
WIRE LIST				
SIGNAL	FROM	COLOR	TO	COLOR
DGND	J1-01	BLACK	J2-3	BLACK
HSYNC	J1-02	YELLOW	J2-1	YELLOW
VSYNC	J1-03	WHT/BLK	J2-2	WHT/BLK
DGND	J1-04	BLK/WHT	J2-3	WHT/BLK
AGND	J1-05	VIOLET	J2-7	
RED	J1-06	RED	J2-10	RED
GREEN	J1-07	GREEN	J2-9	GREEN
AGND	J1-08	ORANGE	J2-7	
AGND	J1-09	BROWN	J2-7	BROWN
BLUE	J1-10	BLUE	J2-8	BLUE

USE BELDEN CABLE. TRADE NO. 9505

PART LISTS			
REFDES	MFG.	PART NO.	PIN NO.
J1	DUPONT	65846-010	47389-000
J2	MOLEX	09-50-7101	08-55-0106
J3	MOLEX	C-236-08X	
J4	AMP	2-520183-2	
P1	AMP	2-520102-2	
L1	FAIR-RITE	2643802702	

MARKERS				TEXT
REFDES	MFG.	PART NO.	SIZE	
M1	BRADY	LAT-4-619-10	.125"	Y6B J1
M2	BRADY	LAT-4-619-10	.125"	W-6 MONITOR P200
M3	BRADY	LAT-6-619-10	.125"	(LINE 2) DISPLAY CABLE (LINE 2) DW-00014C-0025-02

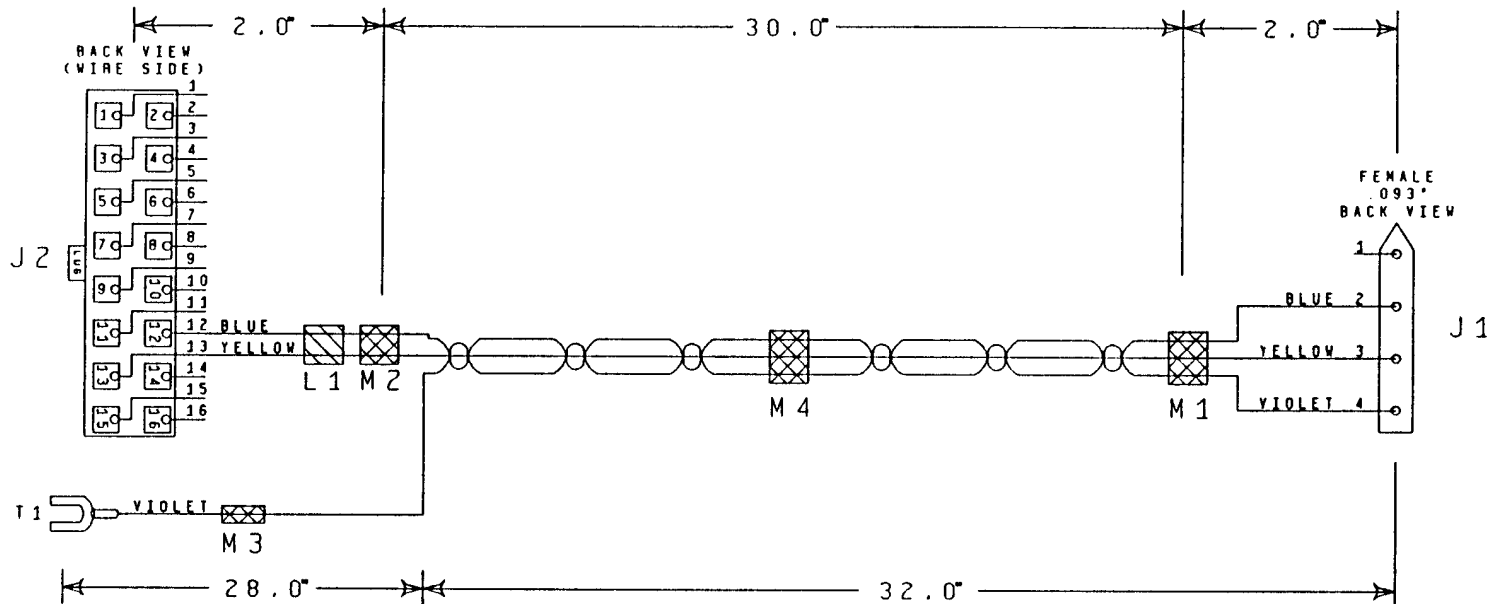
SOLDER BLACK WIRES FROM ASSOCIATED TWISTED PAIR AS INDICATED. COVER WITH HEAT SHRINK AS SHOWN BEFORE LARGE CABLE HEAT SHRINK IS APPLIED.



OVERALL SHIELD WILL BE SOLDERED HERE TO AN 18AWG GREEN INSULATED WIRE TO J3. INSULATE WITH HEAT SHRINK BEFORE LARGE CABLE HEAT SHRINK IS APPLIED. J3 TO J4 ALSO USES GREEN 18 GAUGE.

- NOTE:
- ALL WIRE & MULTI-CONDUCTOR CABLE SHALL MEET UL2564.
 - CABLE WILL LOOP AROUND AND THRU L1.
 - WIRES SOLDERED AND INSULATED WITH HEAT SHRINK.
 - LABEL MARKERS.
 - CABLE JACKET.
 - OVERALL SHIELD.
 - ASSEMBLED CABLE IS MP6 P/N A18-00003-010.

DRAFTER DAVID J. BELYAMY	DATE 12-12-80	MICROPROSE GAMES 380 LAKEFRONT DR. HUNT VALLEY, MD 21030	
CHECKER <i>[Signature]</i>	DATE	TITLE DISPLAY CABLE MONOCABLE	
DESIGNER JAY G. MCKIBBIN	DATE 12/13/80	SIZE C	DRAWING NUMBER DW-00014C-0025
APPROVAL <i>[Signature]</i>	DATE	REV - 02	RELEASE
APPROVAL <i>[Signature]</i>	DATE	DATE SHEET 1 OF 1	



WIRE LIST (ALL WIRE IS 22 AWG)				
SIGNAL	FROM	TO	COLOR	BELDEN PART NO
SH_YEL	J1-02	J2-12	DK BLUE	9921-13
SH_RED	J1-03	J2-13	YELLOW	9921-4
SH_12V	J1-04	T1	VIOLET	9921-7

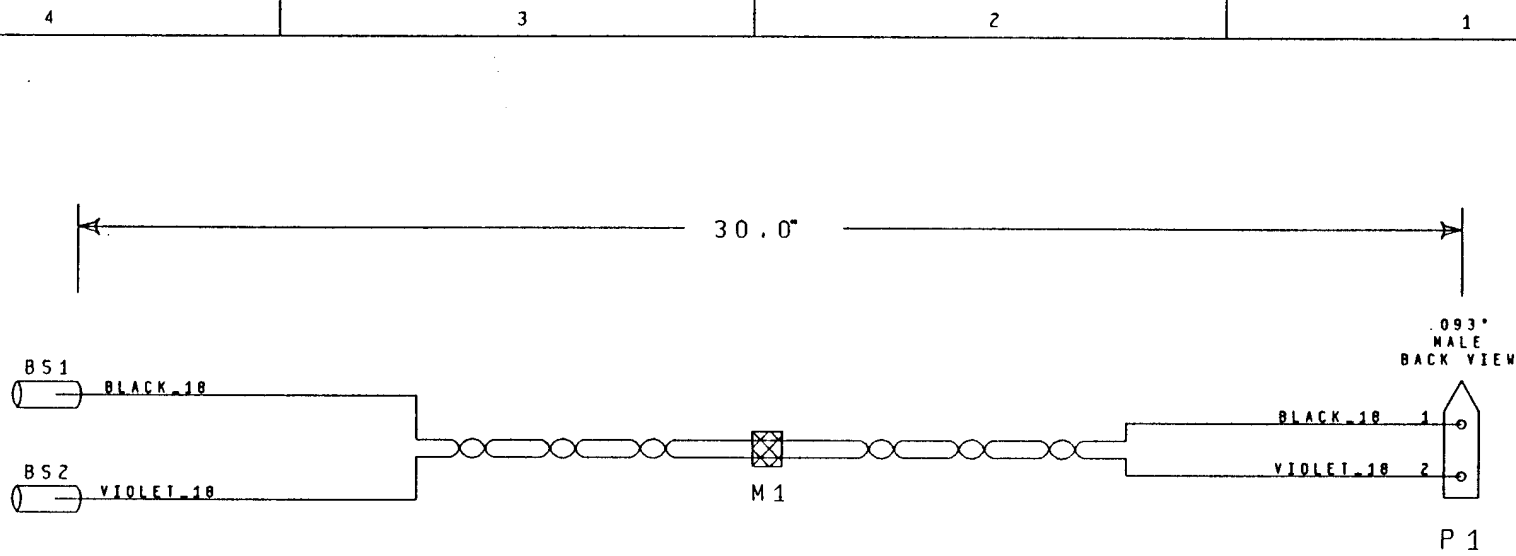
PARTS LIST			
REFDES	MFG	PART NO	PIN NO
J1	MOLEX	03-09-1042	02-09-5142
J2	MOLEX	14-57-1161	
L1	FAIR-RITE	2643164251	
T1	MOLEX	AA-234-08X	

MARKER LIST				
REFDES	MFG	PART NO	TEXT SIZE	TEXT
M1	BRADY	HCPS.9-3758W	.125"	HOST TO SHROUD
M2	BRADY	HCPS.9-3336W	.125"	HOST P4
M2	BRADY	HCPS.9-2508W	.125"	PWR SUP TB2-9
M4	BRADY	HCPS1.9-3758W	.125"	(LINE 1) LOWER SHROUD HARNESS (LINE 2) DW-00014C-0026-02

NOTES:

- 1) ALL 22 AWG WIRE SHALL MEET OR EXCEED UL1061.
- 2) TIE WRAP AT INTERVALS OF FOUR INCHES.
- 3) MARKER M4 HAS TWO LINES OF TEXT.
- 4) WIRES ARE TWISTED BETWEEN MARKERS M1 AND M2.
- 5) PINS 1, 2, 15 & 16 OF J2 MUST BE POPULATED.
- 6) SECURE L1 WITH ELECTRICAL TAPE.
- 7) ASSEMBLED HARNESS IS MPG P/N A18-00003-013.

DRAFTER DAVID J. BELLAMY		DATE 12-17-90	MICROPROSE GAMES	
CHECKER <i>[Signature]</i>		DATE 12-17-90	180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
ENGINEER JAY G. McKIBBIN		DATE 12/18/90	TITLE LOWER SHROUD HARNESS	
APPROVAL <i>[Signature]</i>	DATE 12/18/90	SIZE C	DRAWING NUMBER DW-00014C-0026	
APPROVAL	DATE	REV - 02	RELEASE CABLE. 12	
		DATE 12-13-1990, 16:33	SHEET 3 OF 3	



WIRE LIST (ALL WIRE IS 18 AWG)				
SIGNAL	FROM	TO	COLOR	BELDEN PART NO
ANGND	P1-01	BS1	BLACK	8918-10
AN12V	P1-02	BS2	VIOLET	8918-7

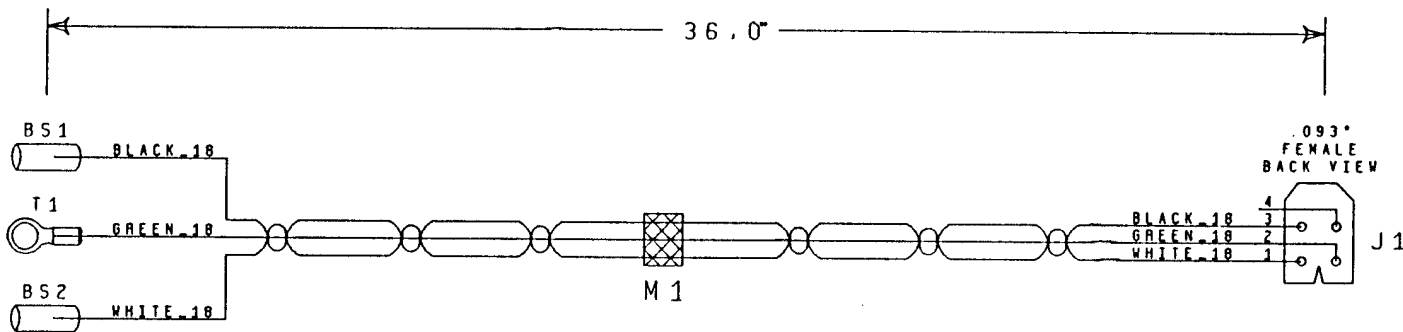
NOTES:

- 1) ALL 18 AWG WIRE SHALL MEET OR EXCEED UL1015.
- 2) TIE WRAP AT INTERVALS OF FOUR INCHES.
- 3) MARKER M1 HAS TWO LINES OF TEXT.
- 4) WIRES ARE TWISTED.
- 5) CRIMP ONE END ONLY OF BUTT SPLICES BS1 & BS2.

PARTS LIST			
REFDES	MFG	PART NO	PIN NO
P1	MOLEX	03-06-2023	02-06-2101
BS1	T.B.D.		
BS2	T.B.D.		

MARKER LIST				
REFDES	MFG	PART NO	TEXT SIZE	TEXT
M1	BRADY	HCPS1.9-3758W	.125"	(LINE 1) FAN EXTEND HARNESS (LINE 2) DW-00014C-0027-02

DRAFTER DAVID J. BELMONT <i>[Signature]</i>	DATE 12-12-50	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MO 21030	
ENGINEER JAY G. MCKIBBIN <i>[Signature]</i>	DATE 12/19/50	TITLE DC FAN EXTENSION CABLE	
APPROVAL <i>[Signature]</i>	DATE	SIZE C	DRAWING NUMBER DW-00014A-0027
APPROVAL	DATE	REV - 02	RELEASE CABLE 17
DATE 12-12-1950, 14-30		SHEET 1 OF 1	



WIRE LIST (CALL WIRE IS 18 AWG)				
SIGNAL	FROM	TO	COLOR	BELDEN PART NO
FEUTL	J1-01	BS2	WHITE	8918-10
CHASSIS	J1-02	T1	GREEN	8918-5
POT	J1-03	BS1	BLACK	8918-9

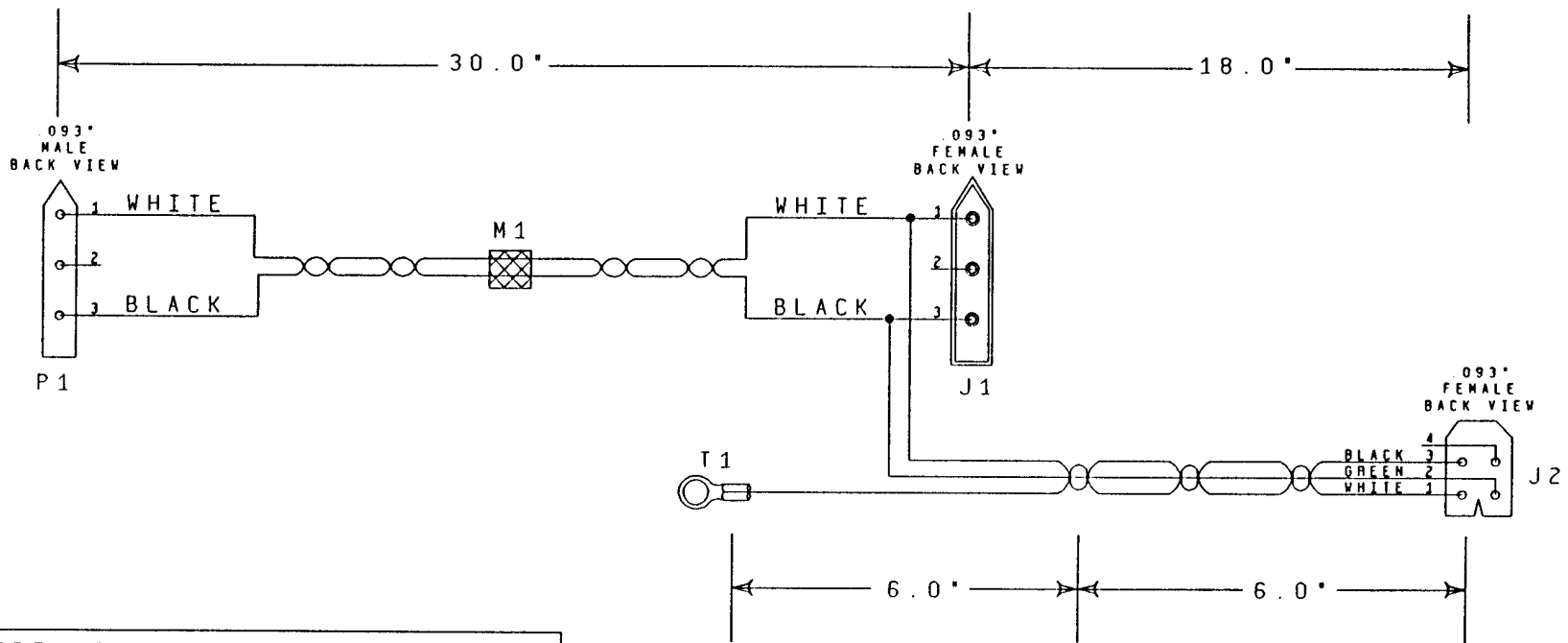
NOTES

- 1) ALL 18 AWG WIRE SHALL MEET OR EXCEED UL1015.
- 2) TIE WRAP AT INTERVALS OF FOUR INCHES.
- 3) MARKER M1 HAS TWO LINES OF TEXT.
- 4) WIRES ARE TWISTED.
- 5) CRIMP ONLY ONE END OF BUTT SPLICES BS1 & BS2.
- 6) ASSEMBLED HARNESS IS MPG P/N A18-00003-014.

PARTS LIST			
REFDES	MFG	PART NO	PIN NO
P1	MOLEX	03-09-2049	02-09-2116
T1	MOLEX	C-236-08X	

MARKER LIST				
REFDES	MFG	PART NO	TEXT SIZE	TEXT
M1	BRADY	HCPS1.9-3758W	.125"	(LINE 1) AC-MARQUEE HARNESS (LINE 2) DW-00014C-0028-02

DRAFTER DAVID J. BELLAMY	DATE 12/12/80	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MO 23030	
CHECKED <i>[Signature]</i>	DATE	TITLE AC - MARQUEE HARNESS	
DESIGNED JAY G. McKIBBIN	DATE	SIZE C	DRAWING NUMBER DW-00014A-0028
APPROVAL <i>[Signature]</i>	DATE 12/14/80	REV - 02	RELEASE CABLE 15
APPROVAL	DATE	DATE 12-13-1990, 14-25 SHEET 1 OF 1	



WIRE LIST (ALL WIRE IS 18 AWG)				
SIGNAL	FROM	TO	COLOR	BELODEN PART NO
X2PANCOM	P1-01	J1-01	WHITE	8918-9
X2PANHOT	P1-03	J1-03	BLACK	8918-10
P2MARCOM	J1-01	J2-01	WHITE	8918-9
P2MARHOT	J1-03	J2-03	BLACK	8918-10
CHASSIS	J2-02	T1	GREEN	8918-5

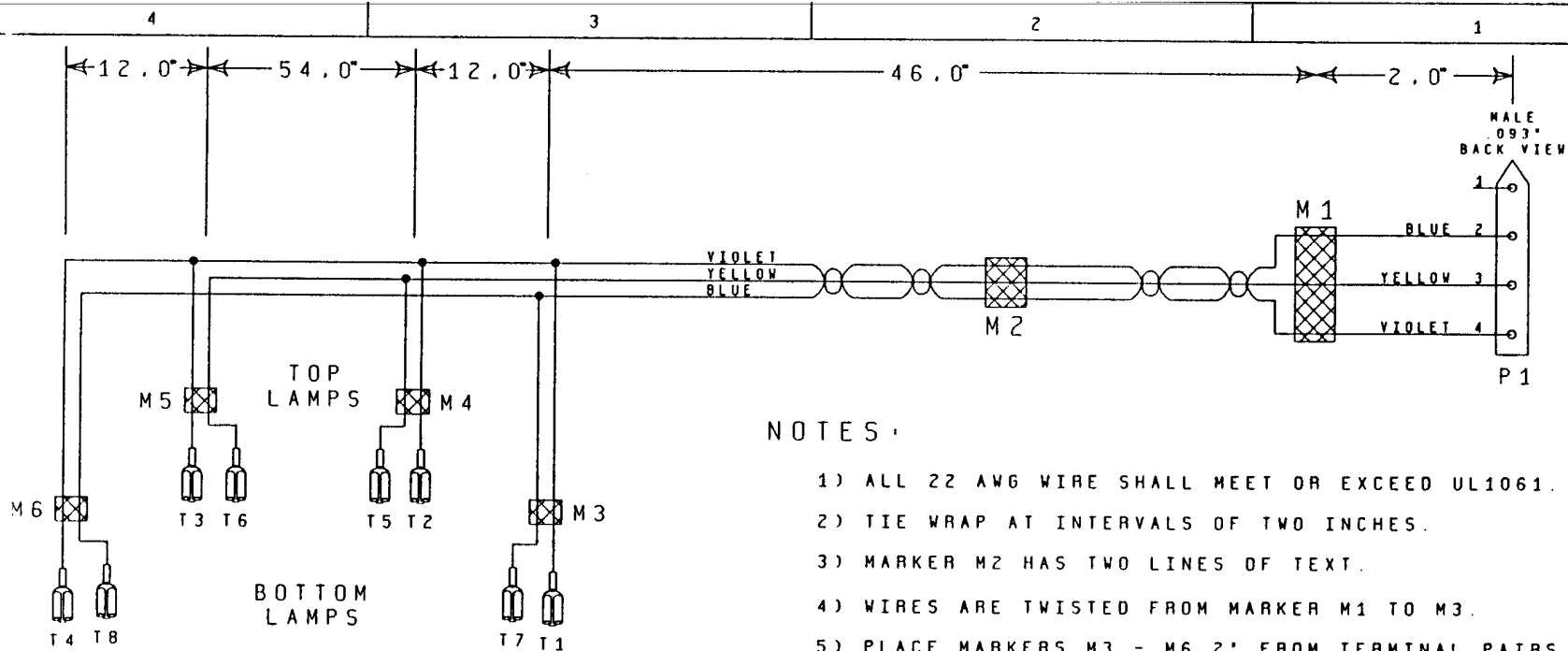
PARTS LIST			
REF DES	MFG	PART NO	PIN NO
P1	MOLEX	03-09-2032	02-09-2116
J1	MOLEX	03-09-1032	02-09-1117
J2	MOLEX	03-09-1049	02-09-1117
T1	MOLEX	C-236-08X	RING TERM

MARKER LIST				
REF DES	MFG	PART NO	TEXT SIZE	TEXT
M1	BRADY	HCPS1.9-3758W	.125"	(LINE 1) FLUOR LITE Y CABLE (LINE 2) DW-00014C-0029-02

NOTES:

- 1) ALL 18 AWG WIRE SHALL MEET OR EXCEED UL1015.
- 2) TIE WRAP AT INTERVALS OF TWO INCHES.
- 3) MARKER M1 HAS TWO LINES OF TEXT.
- 4) ASSEMBLED HARNESS IS MPG P/N A18-00003-015.

DRAFTER DAVID J. BEMANY	DATE 12-12-90	MICROPROSE GAMES	
RECHECKER <i>[Signature]</i>	DATE 12-12-90	180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
ENGINEER JAY G. MCKIBBIN	DATE 12/13/90	TITLE FLORESCENT LIGHT 'Y' CABLE	
APPROVAL <i>[Signature]</i>	DATE 12/13/90	SIZE C	DRAWING NUMBER DW-00014A-0029
APPROVAL <i>[Signature]</i>	DATE 12/13/90	REV - 02	RELEASE
DATE 12-12-1990.16-58		SHEET 1 OF 1	



NOTES:

- 1) ALL 22 AWG WIRE SHALL MEET OR EXCEED UL1061.
- 2) TIE WRAP AT INTERVALS OF TWO INCHES.
- 3) MARKER M2 HAS TWO LINES OF TEXT.
- 4) WIRES ARE TWISTED FROM MARKER M1 TO M3.
- 5) PLACE MARKERS M3 - M6 2" FROM TERMINAL PAIRS.
- 6) TWO WIRES ARE CRIMPPED IN T1 - T5 & T7.
- 7) ASSEMBLED HARNESS IS MPG P/N A18-00003-016.

WIRE LIST (CALL WIRE IS 22 AWG)				
SIGNAL	FROM	TO	COLOR	BELDEN PART NO
SH_RED	P1-02	T7	DK BLUE	9921-13
	T7	T8	DK BLUE	9921-13
SH_YEL	P1-03	T5	YELLOW	9921-4
	T5	T6	YELLOW	9921-4
SH_12V	P1-04	T1	VIOLET	9921-7
	T1	T2	VIOLET	9921-7
	T2	T3	VIOLET	9921-7
	T3	T4	VIOLET	9921-7

PARTS LIST			
REFDES	MFG	PART NO	PIN NO
P1	MOLEX	03-09-2042	02-09-2118
1 - T8	AMP	2-520184-4	

MARKER LIST				
REFDES	MFG	PART NO	TEXT SIZE	TEXT
M1	BRADY	HCPS.9-3758W	.125"	SHROUD LAMPS
M3	BRADY	HCPS.9-3758W	.125"	BOTTOM LAMP 1
M4	BRADY	HCPS.9-3758W	.125"	TOP LAMP 1
M5	BRADY	HCPS.9-3758W	.125"	TOP LAMP 2
M6	BRADY	HCPS.9-3758W	.125"	BOTTOM LAMP 2
M2	BRADY	HCPS1.9-3758W	.125"	(LINE 1) UPPER SHROUD HARNESS (LINE 2) DW-00014C-0030-02

DRAFTER DAVID J. BEVANNY	DATE 12-10-90	MICROPROSE GAMES 180 LAKEFRONT DR. HUNT VALLEY, MD 21030	
ENGINEER JAY G. MCKIBBIN	DATE 12/13/90	TITLE UPPER SHROUD HARNESS	
APPROVAL <i>[Signature]</i>	DATE 12/13/90	SIZE C	DRAWING NUMBER DW-00014C-0030
DATE 12-11-1990_18-36		REV - 02	RELEASE CABLE 18
		SHEET 1 OF 1	