

SCROLLING DISPLAY MODULE

ELECTRICAL ENGINEERING PROJECT

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Advisor: Dr. W.R. Kolk
Masters Candidate: Guy A. Simonian

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Electrical Engineering Project
Instructor: Dr. W.R. Kolk

Guy Simonian
9/28/82

PROGRESS REPORT

Title of Project: Scrolling Display Module

Brief Description of Project:

Design and develop a working prototype of a scrolling display module similar to the type used for billboard advertisement. The visual display will be a matrix of Light Emitting Diodes mounted to an aluminum face plate. The driving electronics will consist of digitally encoded latches which will sink the LED through a current limiting resistor. The matrix will consist of 336 LEDs in a 7 X 48 dimensioned array.

The driving electronics will be controlled by a micro-processor based computer which will also be fabricated along with the driving electronics and the display matrix. This computer board will have on board RAM and ROM and must have the ability to generate characters in a column by column fashion in order to facilitate use of the scrolling feature used for the display module. Software in the ROM must have the ability to access the characters column by column and must include all of the driving logic to control the display module. An input port and two output ports will be included in this board. Two output ports will be needed for the display module, one for the data lines, and one for the address lines needed for decoding. An I/O control line must also be included in the computer board to driver electronics board interface. The input port will be useful if a serial communications interface is desired in the future. This would enable the use of down line programming of messages via a computer link through modem and telephone lines.

Another interface will be needed between the driving electronics and the display matrix. 10 ma current will be sunk by the driving electronics latches through this interface to each of the output LEDs.

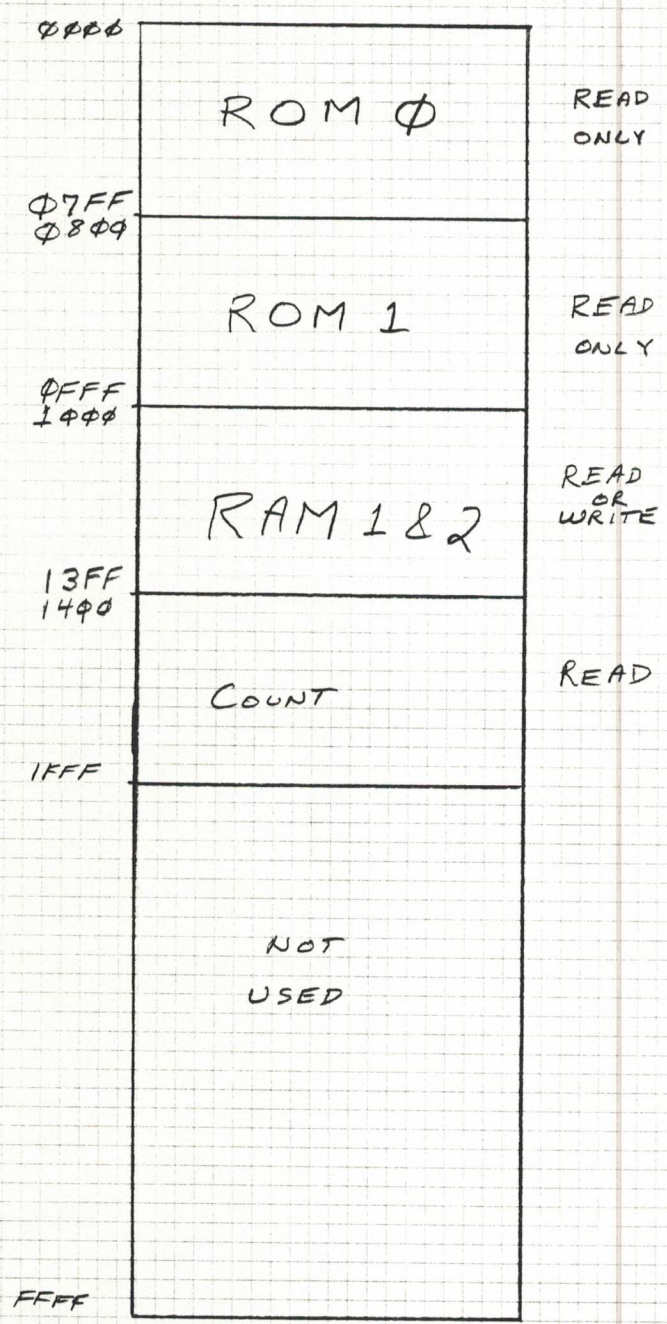
Present level of progress:

The display matrix face plate has been cut from aluminum, painted, and the holes have been punched for the 336 LEDs. All of the LEDs have been mounted and wiring of the positive terminals of each of the LEDs has begun.

The driving electronics has been designed and is ready for assembly. It consists of eight decoding devices and 48 flip flop latches, the outputs of each having a 10 ma current limiting resistor wired in series to it.

The computer board is assembled but needs testing and modifications. Following verification of operation of this board, software development can begin.

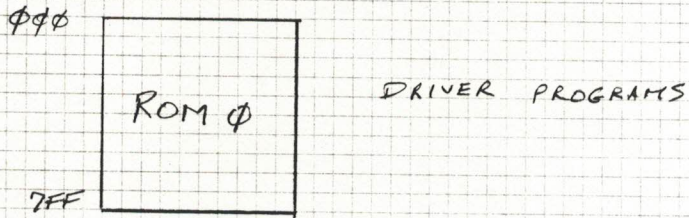
MEMORY MAP



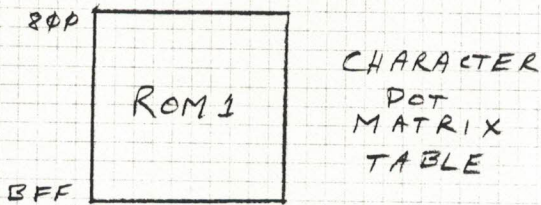
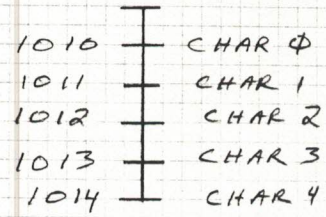
OUTPUT MAP (I/O)

ENABLE	A5	A4	A3	A2	A1	A0	HEX
E ₀	0	0	0	0	0	0	00
E ₁						1	1
E ₂					1	0	2
E ₃					1	1	3
4				1	0	0	4
5				1	0	1	5
6				1	1	0	6
7				1	1	1	7
8			1	0	0	0	8
9			1	0	0	1	9
10			1	0	1	0	A
11			1	0	1	1	B
12			1	1	0	0	C
13			1	1	0	1	D
14			1	1	1	0	E
15			1	1	1	1	F
16		1	0	0	0	0	10

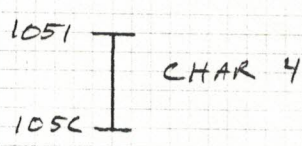
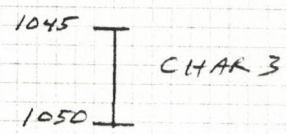
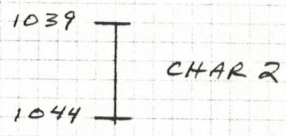
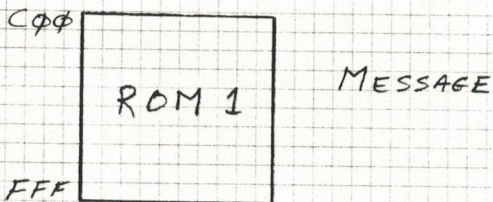
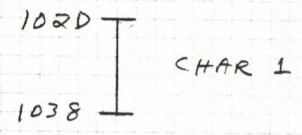
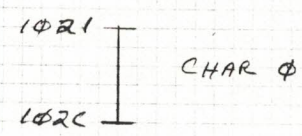
SOFTWARE MEMORY ORGANIZATION



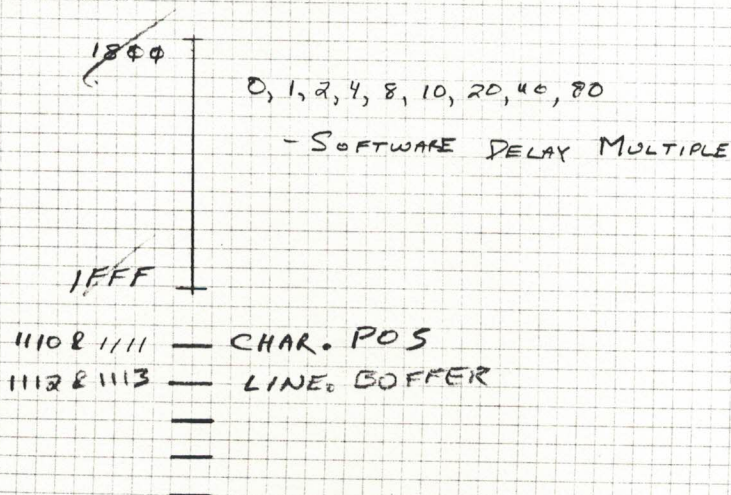
LINE BUFFER - RAM



LINE BUFFER - MATRIX CODES - RAM

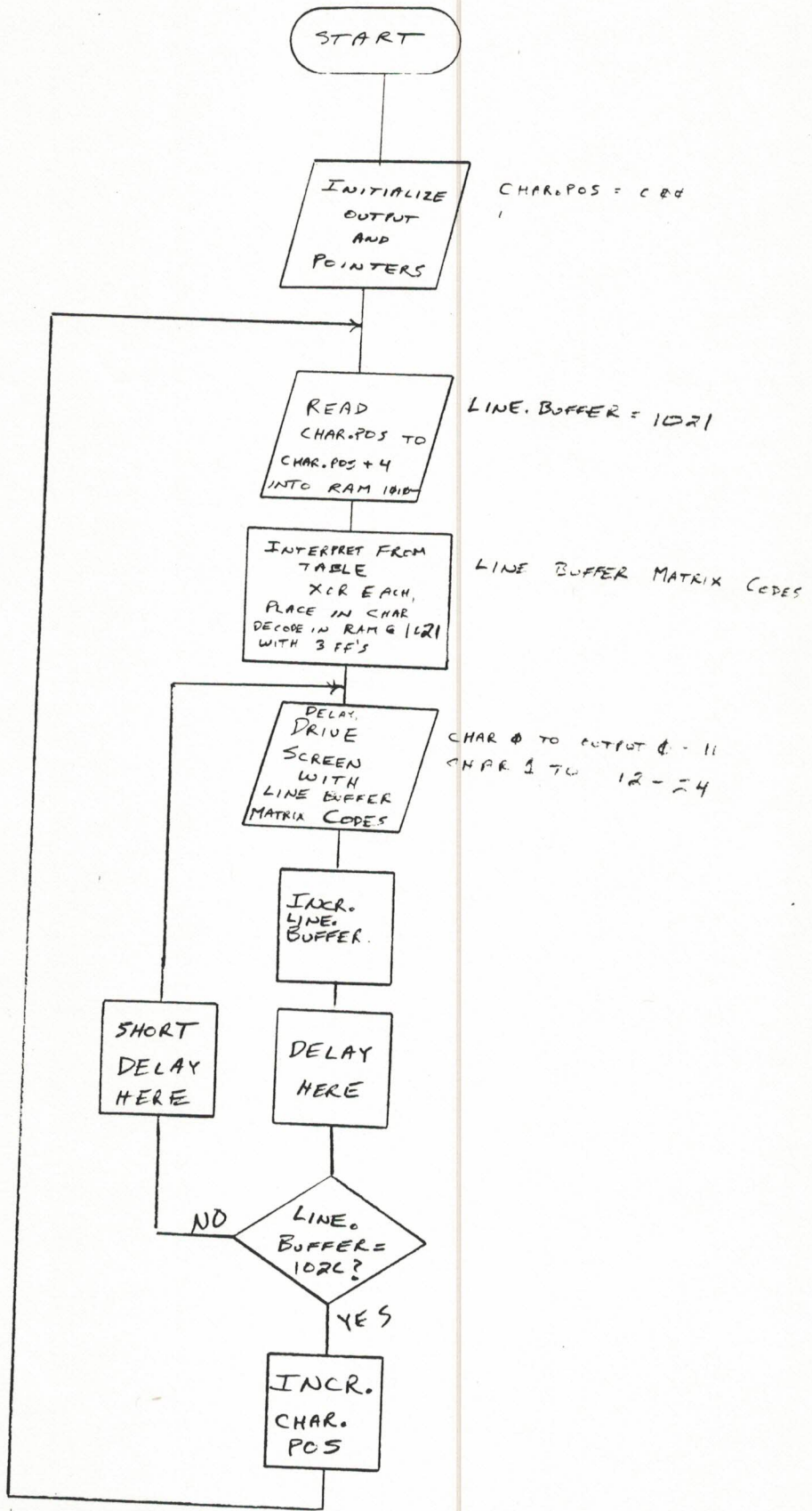


OUTPUT DELAY COUNTER



STACK POINTER





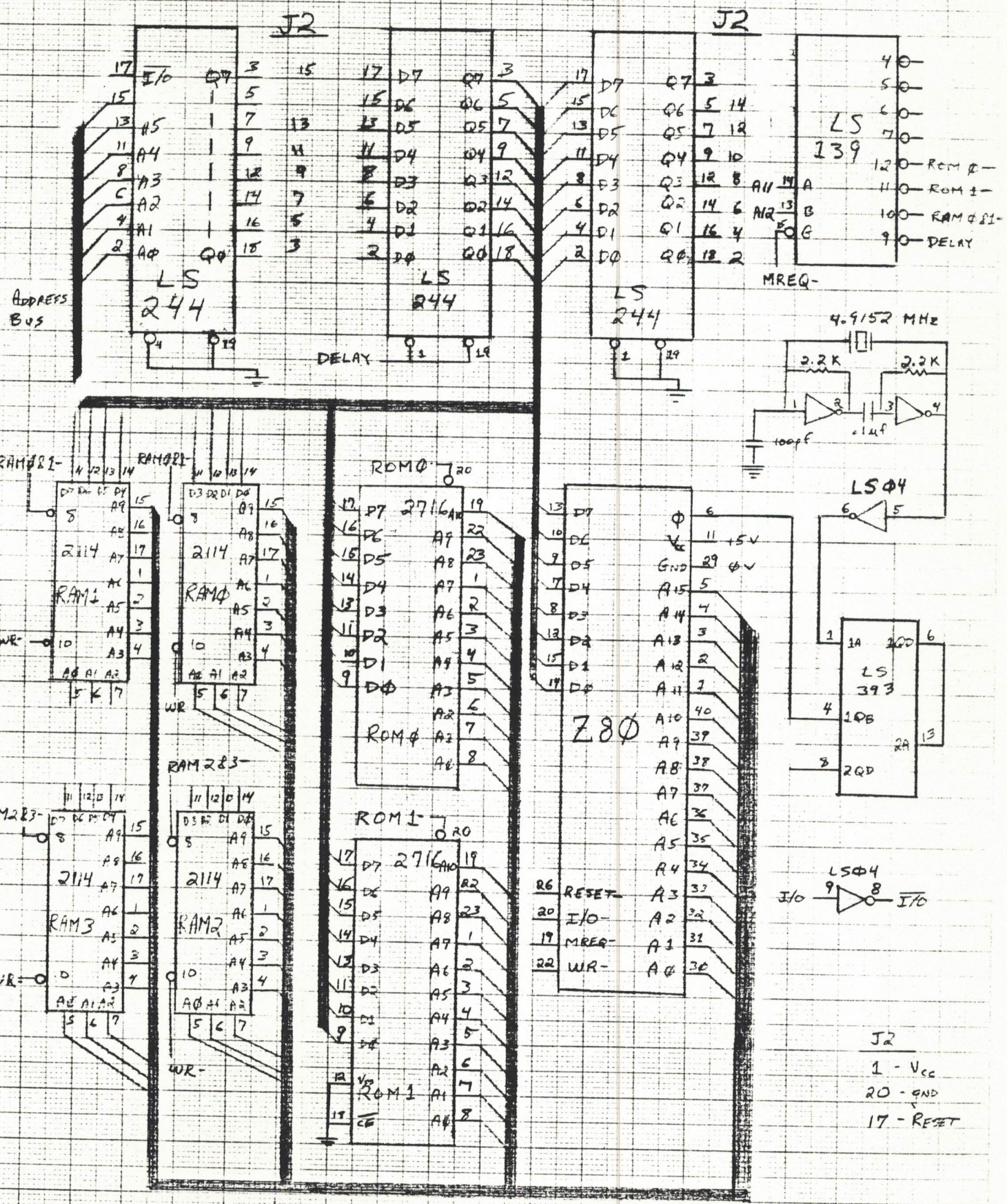
CHAR.POS = C 04
1

LINE BUFFER = 1021

LINE BUFFER MATRIX CODES

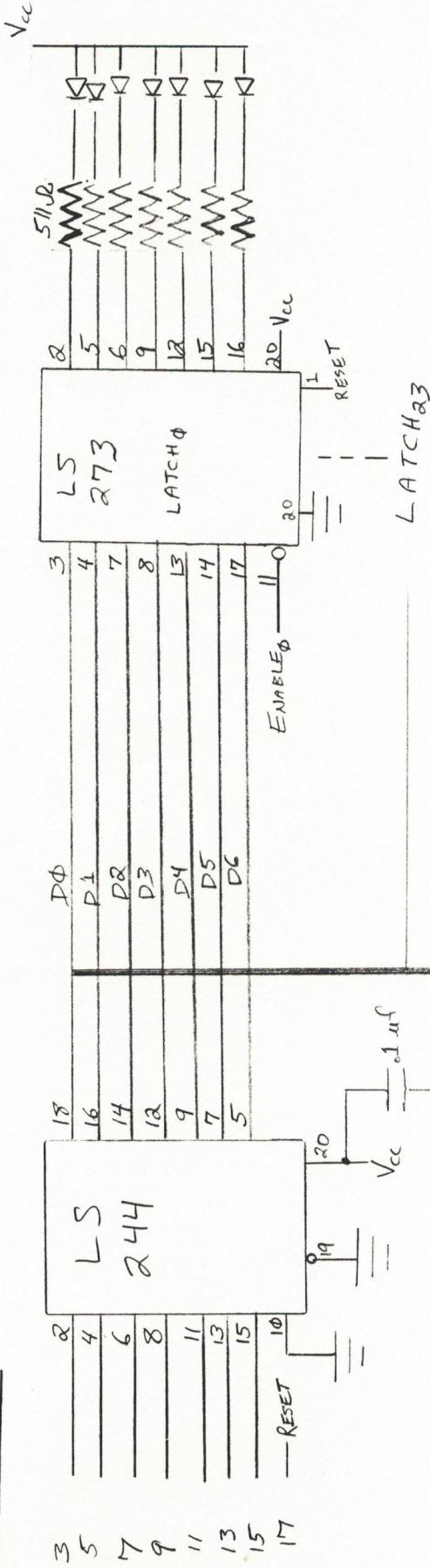
CHAR 0 TO OUTPUT 0 - 11
CHAR 1 TO 12 - 24

CPU BOARD

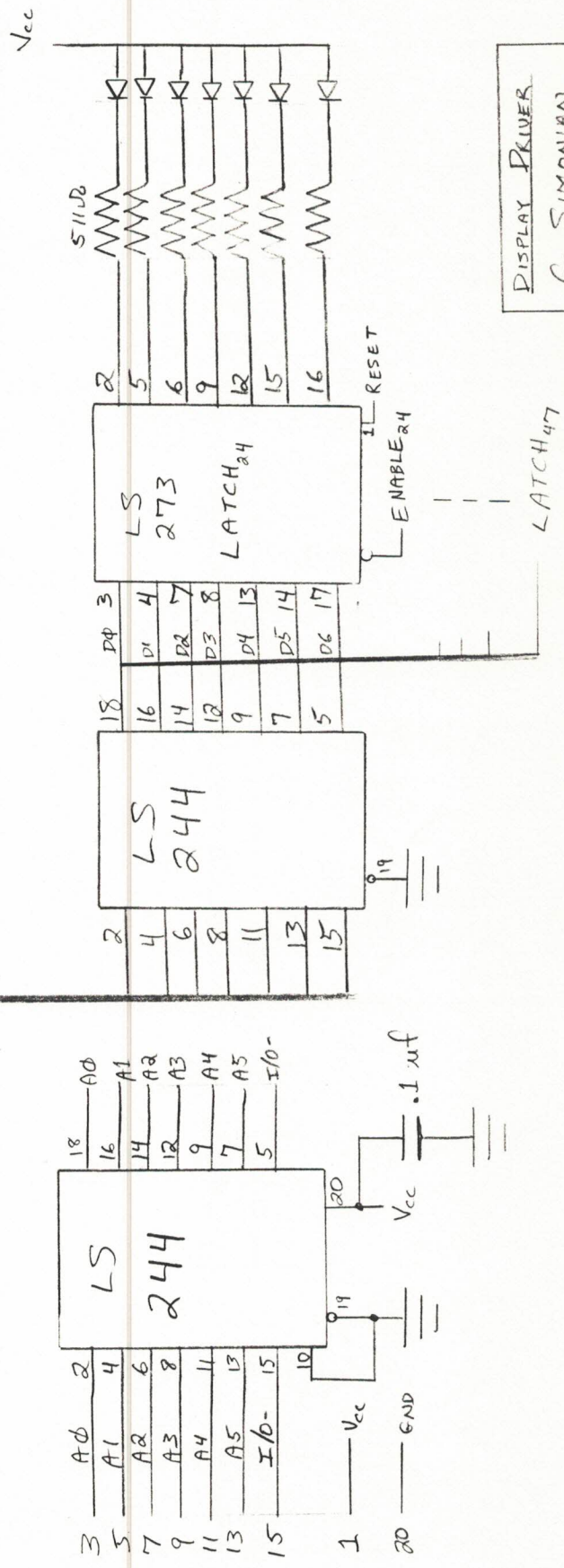


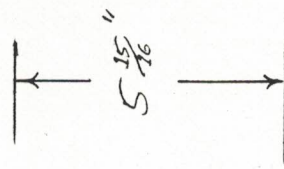
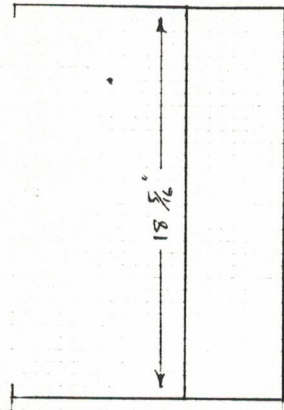
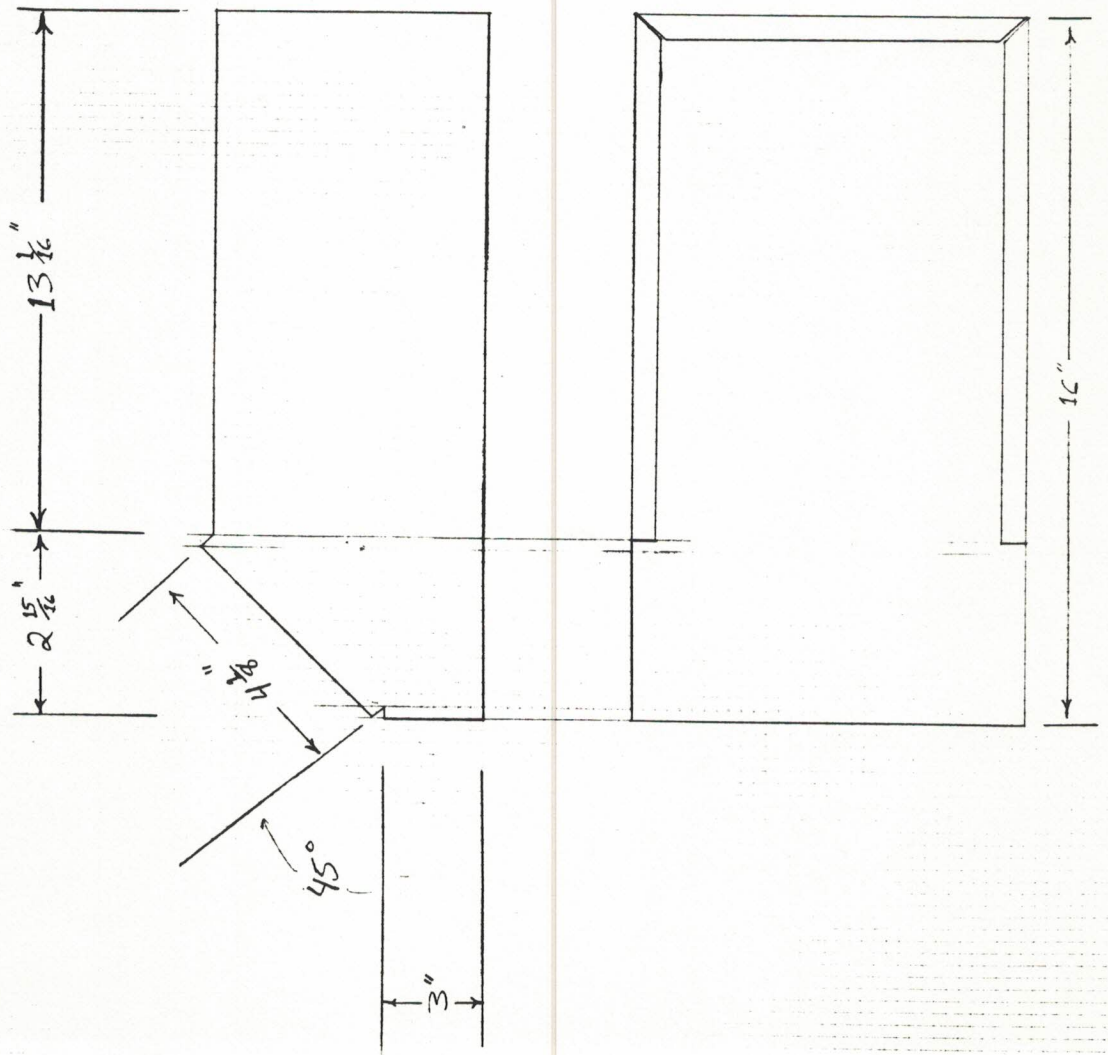
GUY SIMONIAN

J1 CONNECTOR

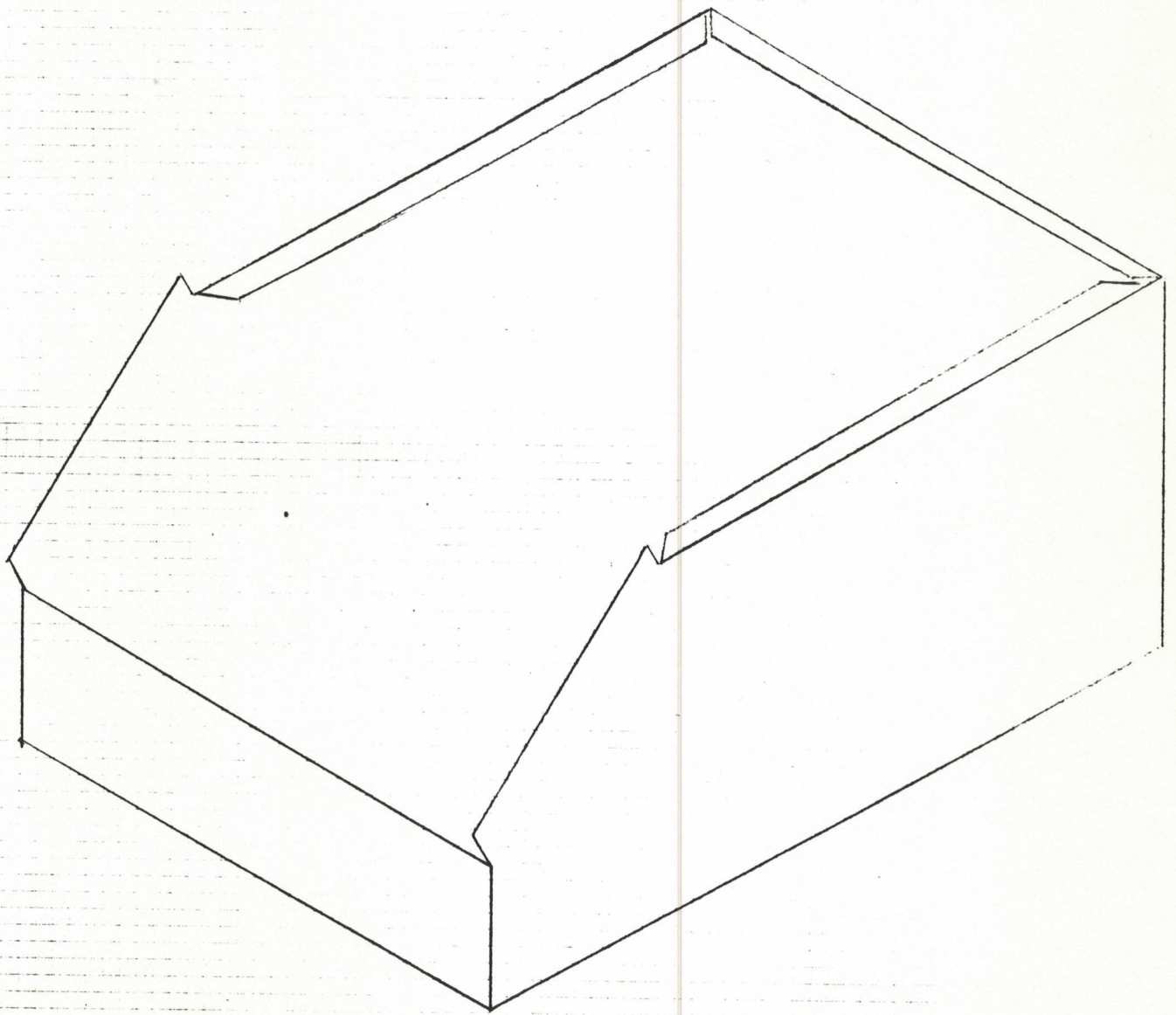


J2 CONNECTOR





G. SIMONIAN
 12/1/82



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