TECHNICAL ORDER

NSP SYSTEM OPERATION AND MAINTENANCE MANUAL

VOLUME 2 OF 3

NSP TEKTRONIX 4010 DATA DISPLAY TERMINAL USER'S MANUAL

Volume 2 Part Number: 901181-116NC

Prepared by

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SAFETY SUMMARY

The following are general safety precautions that are not related to any specific procedures and therefore do not appear elsewhere in this publication. These are recommended precautions that personnel must understand and apply during many phases of operation and maintenance.

KEEP AWAY FROM LIVE CIRCUITS

Operating personnel must at all times observe all safety regulations. Do not replace components or make adjustments inside the equipment with the high voltage supply turned on. Under certain conditions, dangerous potentials may exist when the power control is in the off position, due to charges retained by capacitors. To avoid casualties, always remove power and discharge and ground a circuit before touching it.

DO NOT SERVICE OR ADJUST ALONE

Under no circumstances should any person reach into the enclosure for the purpose of servicing or adjusting the equipment except in the presence of someone who is capable of rendering aid.

RESUSCITATION

Personnel working with or near high voltages should be familiar with methods of cardio pulmonary resuscitation (CPR).

WARNING

High voltages capable of causing death are used in this equipment. Use extreme caution when servicing either the power supplies or their load components.

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ILLUSTRATIONS

TABLES

SECTION 1

INTRODUCTION

1.1 MANUAL SCOPE

This manual (to be used in conjunction with the NSP Operation and Maintenance Manual P/N 901181-100) describes the optional Tektronix 4010 computer display terminal. It is divided into seven sections, with each section containing the particular information described below.

Section 1 — INTRODUCTION--This section contains a brief description of the data display terminal and its application to the NSP system.

Section 2 — INSTALLATION--This section describes the installation procedures.

Section 3 — OPERATION--This section describes the NSP system dependent operation of the data display terminal.

Section 4 — THEORY OF OPERATION--This section contains the theory of operation of the data interface circuit card.

Section 5 — MAINTENANCE--This section contains the performance check procedure used to evaluate the overall operation of the data display terminal with the NSP system and a basic troubleshooting guide.

Section 6 — PARTS LIST--This section contains a parts list of the E&S items used with the data display terminal.

Section 7 DRAWINGS--This section contains the engineering drawings of the E&S items used with the data display terminal.

1.2 BASIC DESCRIPTION

The Tektronix 4010 data display terminal consists of a pedestal mounted unit that contains a standard ASCII keyboard and a display storage CRT and related circuits. The pedestal contains the power supply, control and optional circuits. The data interface card (P/N 200109-100) is located in the pedestal.

The data display terminal interfaces between man and the TI 980B computer by presenting inputs through the standard ASCII keyboard, and providing a display (alphanumeric or graphic) of computer output data. The data interface card performs the buffer/interface functions required between the data display terminal and the data module in the computer.

Operationally the data display terminal is used primarily as a display device for light and surface module data bases during modeling (NSPBLD). It presents an X and Y axis display (no vertical information) of the module data base and facilitates building, editing and changing. Its display is controlled by commands within the NSPBLD program software.

SECTION 2

INSTALLATION

2.1 UNPACKING

Carefully unpack all of the equipment and, before discarding the packing material, determine that the data display terminal is complete. Remove all materials used to secure parts during shipment. Although the equipment has been carefully packaged at the factory prior to shipment to avoid possible damage, all parts should be thoroughly inspected upon receipt for scratches, dents, broken connectors and damaged cables.

If damage to the equipment is discovered, notify the carrier of the damage and arrange to have the shipment inspected by the carrier's agent. Inform the carrier of your intent to file a claim, and then immediately notify your Evans & Sutherland representative.

2.2 INSTALLATION

Basic installation requirements for the data display terminal are covered in the appropriate section of the maintenance manual for the unit. This information includes desk-top operation of the keyboard/display section.

2.3 CONNECTIONS

Figure 2-1 shows the location of the data interface card P/N 200109-100 and identifies the cables used to connect the data display terminal to input AC power, the TI 980B computer data module (DM), and an additional optional hard copy unit.

2.3.1 AC INPUT POWER

The AC input power cable of the data display terminal connects to the DISPLAY TERMINAL connector on the rear panel of the primary power control in cabinet 1 of the NSP system.

2.3.2 DATA CABLE

The data cable P/N 101373-030 shown on figure 2-2 connects the data interface card in the data display terminal pedestal to the DM in the TI 980B computer. Figure 2-3 is a wiring diagram for the data cable. Figure 2-4 shows the normal location of the DM in the TI 980B computer.

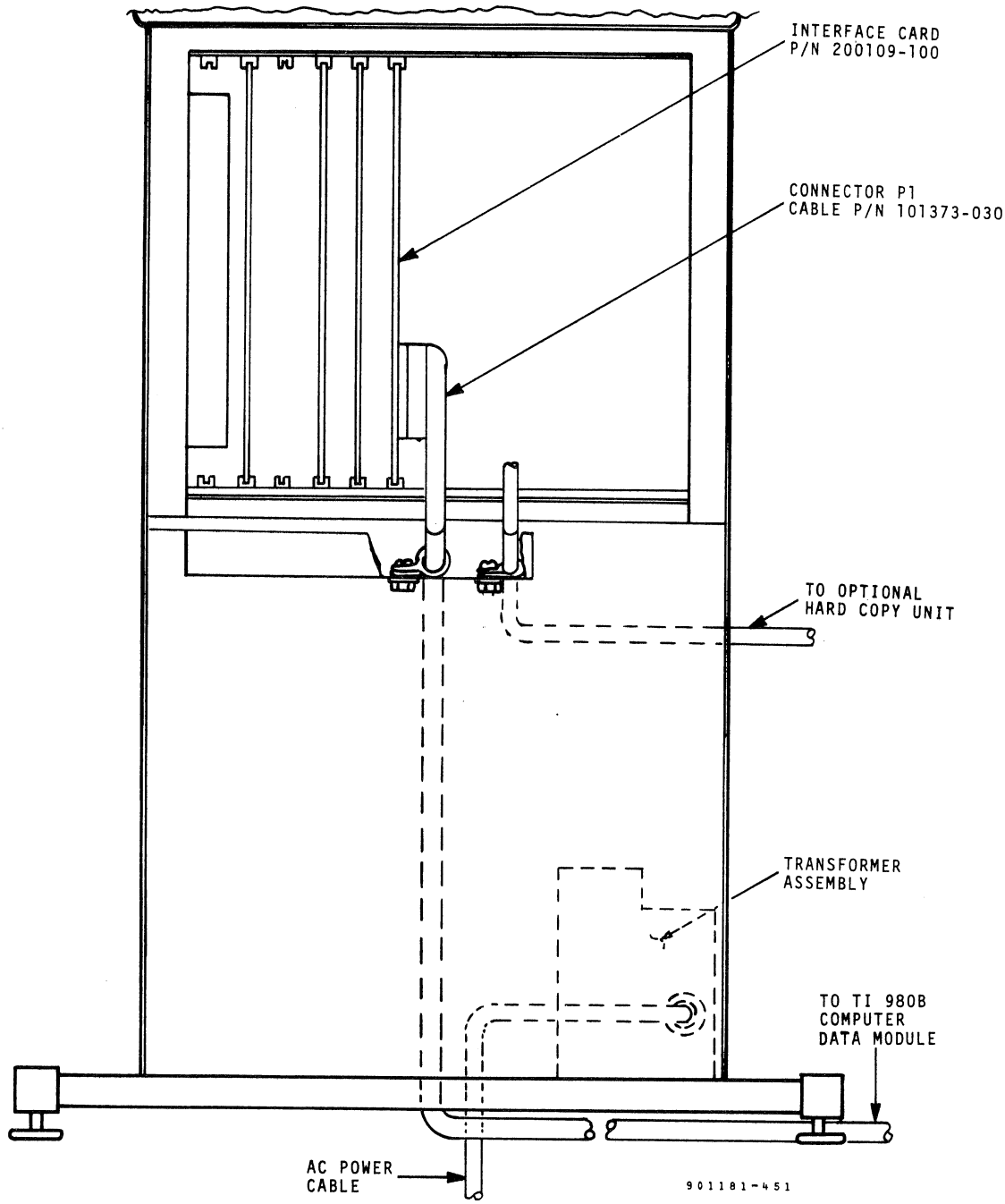


FIGURE 2-1
DATA DISPLAY TERMINAL PEDESTAL

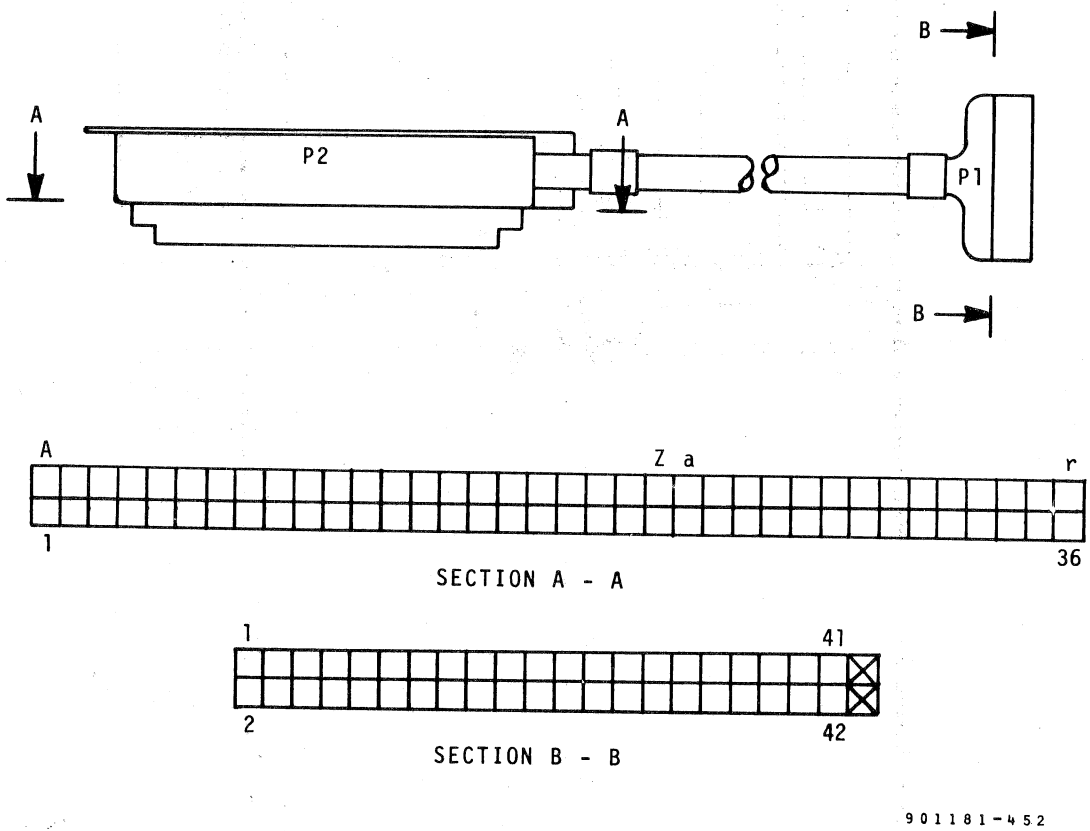


FIGURE 2-2
DATA CABLE P/N 101373-030

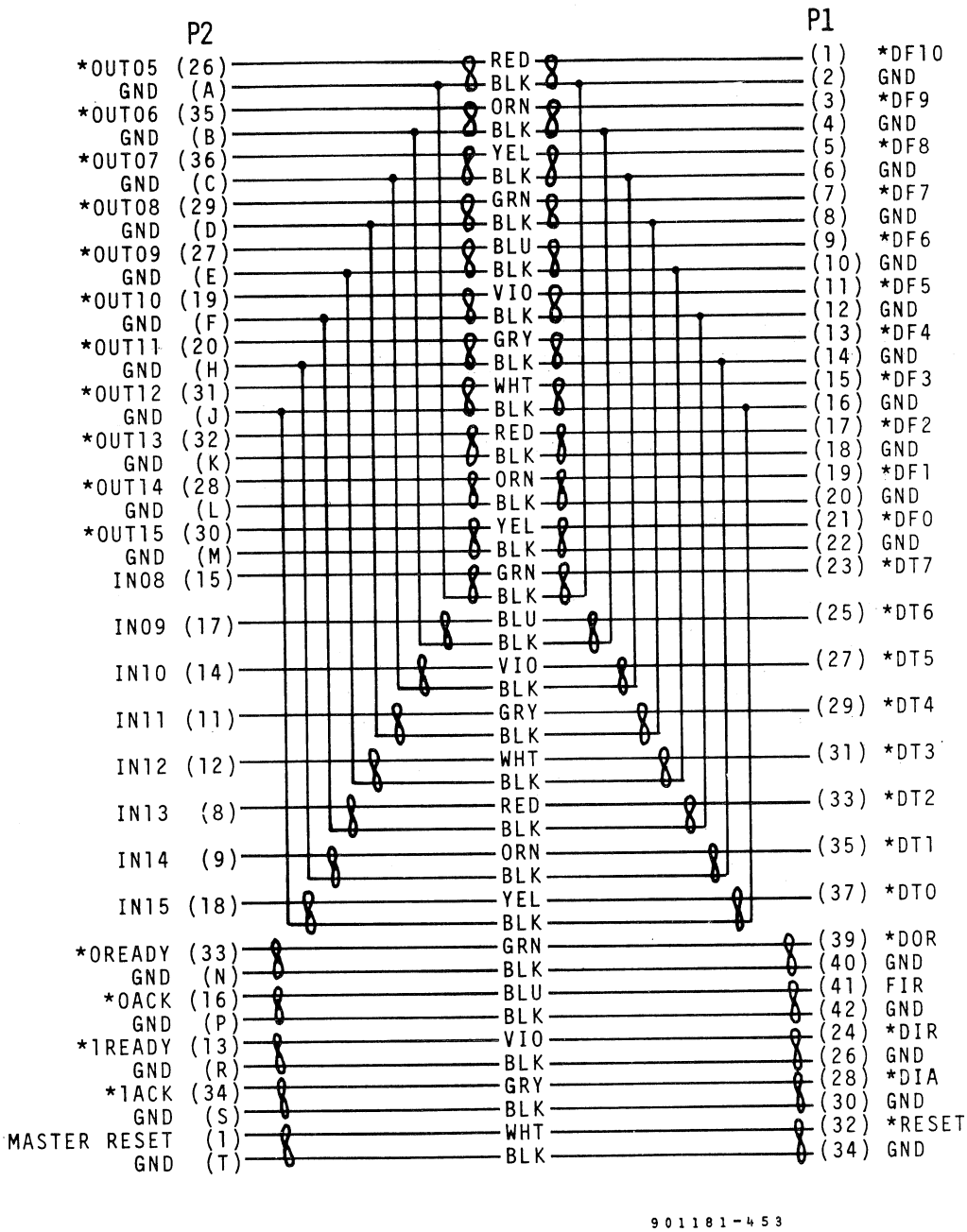


FIGURE 2-3
DATA CABLE P/N 101373-030
WIRING DIAGRAM

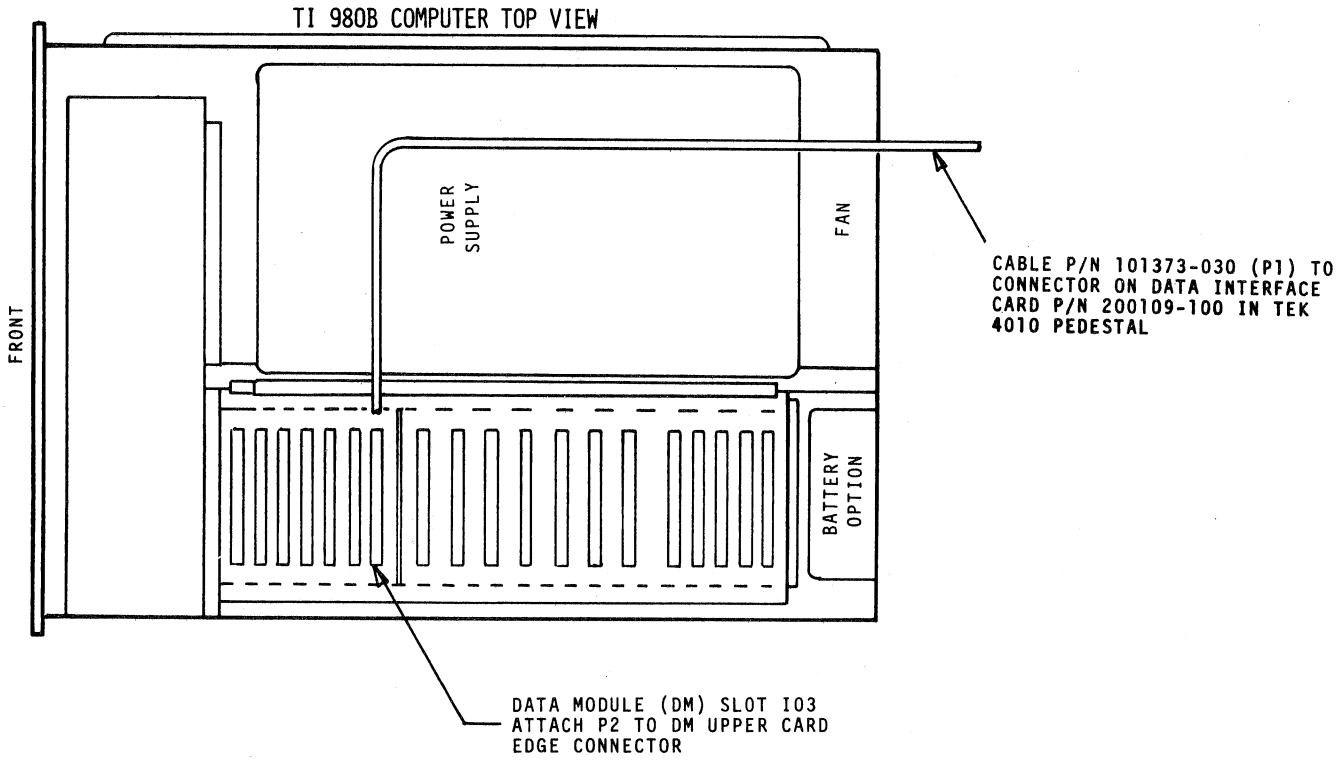


FIGURE 2-4
DATA CABLE ROUTING (TI 980B)

SECTION 3

OPERATION

3.1 STARTUP PROCEDURE

The general procedures for turn-on and warm-up of the data display terminal are covered in the appropriate Tektronix instruction manual.

3.2 NORMAL OPERATION

All controls, their function and all operating modes of the data display terminal are identified and described in the appropriate Tektronix instruction manual.

3.3 NSP SYSTEM OPERATION

The data display terminal interfaces with the NSP system to perform the following functions during modeling.

1) Graphic display of selected modeling results.

2) Crosshair cursor for selection modeling scene content for parameter dump to the ASR 733 data terminal.

Figure 3-1 represents a partial flowchart for the NSP modeling program NSPBLD showing those dispatch points that apply to the data display terminal. As indicated on figure 3-1, four software commands in the light and surface modules of NSPBLD affect the data display terminal. Figure 3-2 shows the field of view (FOV) ground span with respect to the model coordinate system within the gaming area. Nadir is determined by the response to the X and Y prompts under the set observer position (V) command. The FOV ground span area is determined by the response to the SPAN prompt under the V command.

3.3.1 LIGHT MODULE PROMPTS

The following are examples of the data display terminal applicable light module prompts with annotation.

DISPLAY LIGHTS (LIT>>D; 4010 OPTION)

STR #1=	R1 thru G110
STR #2=	R1 thru G110

SET OBSERVER POSITION (LIT>>V; 4010 OPTION)

X=	X position for observer
Y=	Y position for observer
SPAN=	ground span covered by display

FIND LIGHT STRING (LIT>>F; 4010 OPTION)

POS CROSS	X = return to command selection. Any other printing character = search for light string.

BLANK SCREEN (LIT>>B; 4010 OPTION)

Selecting B at light module prompt will blank the 4010 screen.

Operator responses to the display lights and set observer position prompts are in the same format as in modeling, refer to Software User's Document P/N 901181-118.

3.3.2 SURFACE MODULE PROMPTS

The following are examples of the data display terminal applicable surface module prompts with annotation.

DISPLAY FACES (SUR>>D; 4010 OPTION)

```
ITEM #1=        F1      F64
ITEM #2=        F1      F64
```

SET OBSERVER POSITION (SUR>>V; 4010 OPTION)

Same as Set Observer position in light module.

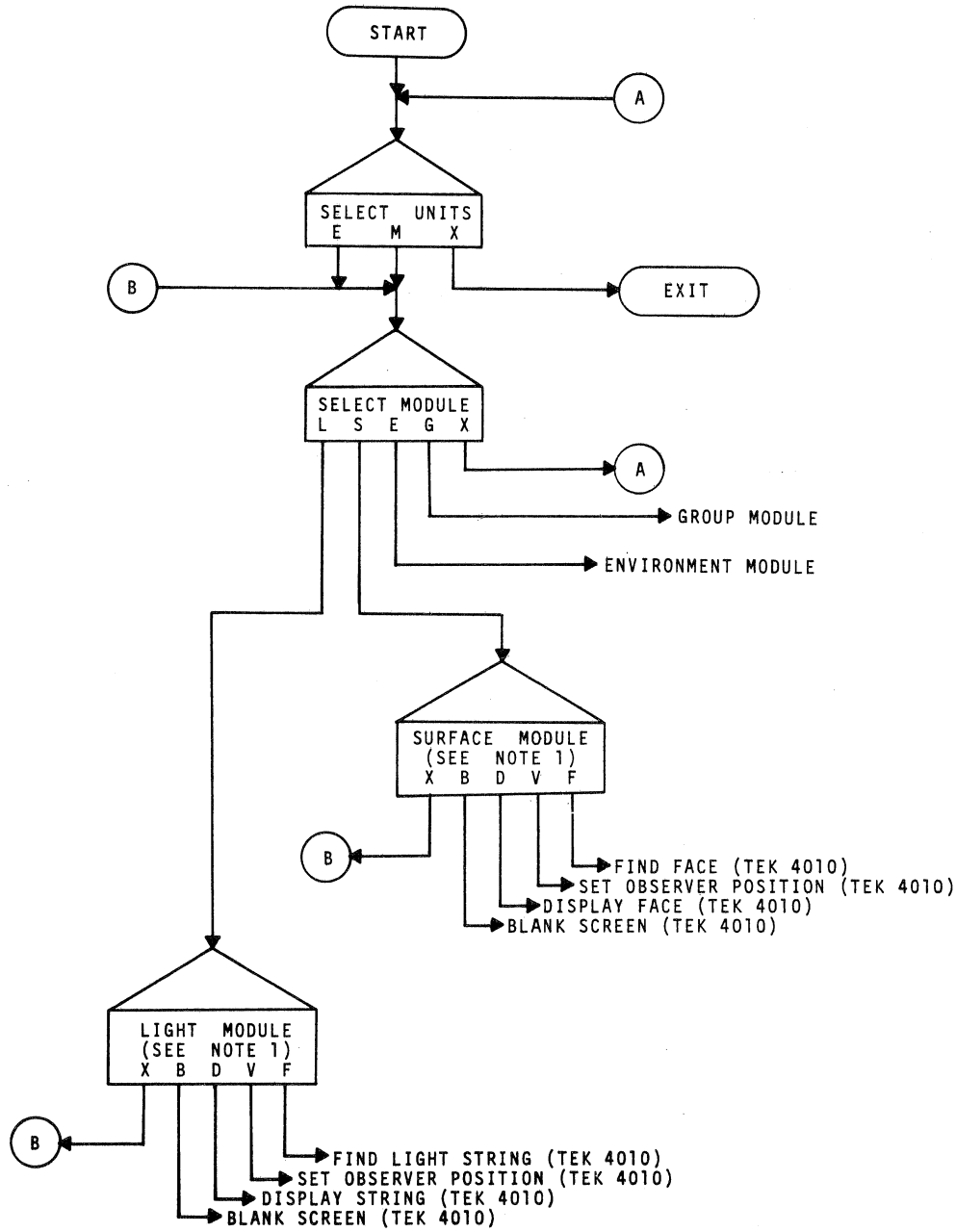
FIND FACE (SUR>>F; 4010 OPTION)

Same as Find Light String in light module.

BLANK SCREEN (LIT>>B; 4010 OPTION)

Selecting B at surface module prompt will blank 4010 screen.

Operator responses to the display faces and set observer position prompts are in the same format as in modeling, refer to Software User's Document P/N 901181-118.



NOTE 1: ONLY APPLICABLE TEK 4010 DISPATCH POINTS ARE SHOWN

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FIGURE 3-1
NSPBLD PARTIAL FLOWCHART

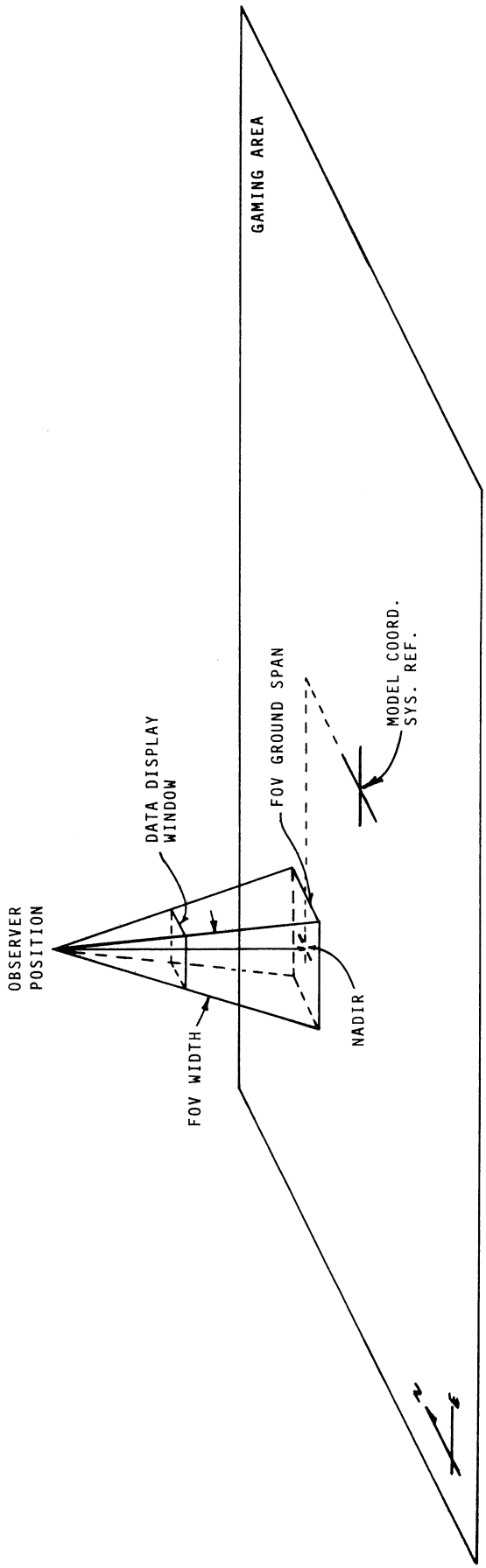


FIGURE 3-2
OBSERVER POSITIONING

SECTION 4

THEORY OF OPERATION

4.1 INTRODUCTION

The data display terminal is a part of the computer group of the NSP system. Its relationship to the other units of the computer group is shown on figure 4-1. The following tabulation is a list of I/O data and control signals used by the data display terminal in its application with the NSP system.

SIGNAL	FUNCTION
*BIT 1-8	Data to and from the terminal/computer.
*CPUNT	Data is about to be to the minibus by the computer interface.
*TSTROBE	Strobes data into the terminal to be displayed on the screen.
*TBUSY	Terminal is busy writing a character or vector, etc.
*CBUSY	Computer (interface) is busy accepting a character.
*HOME	Master reset for all logic (originates from keyboard).
*LOCAL	Directs input source to assert *TSTROBE.
614kHz & 4.9MHz	Clock signals.

*These data and control signal sources must pull the signal line low where active.

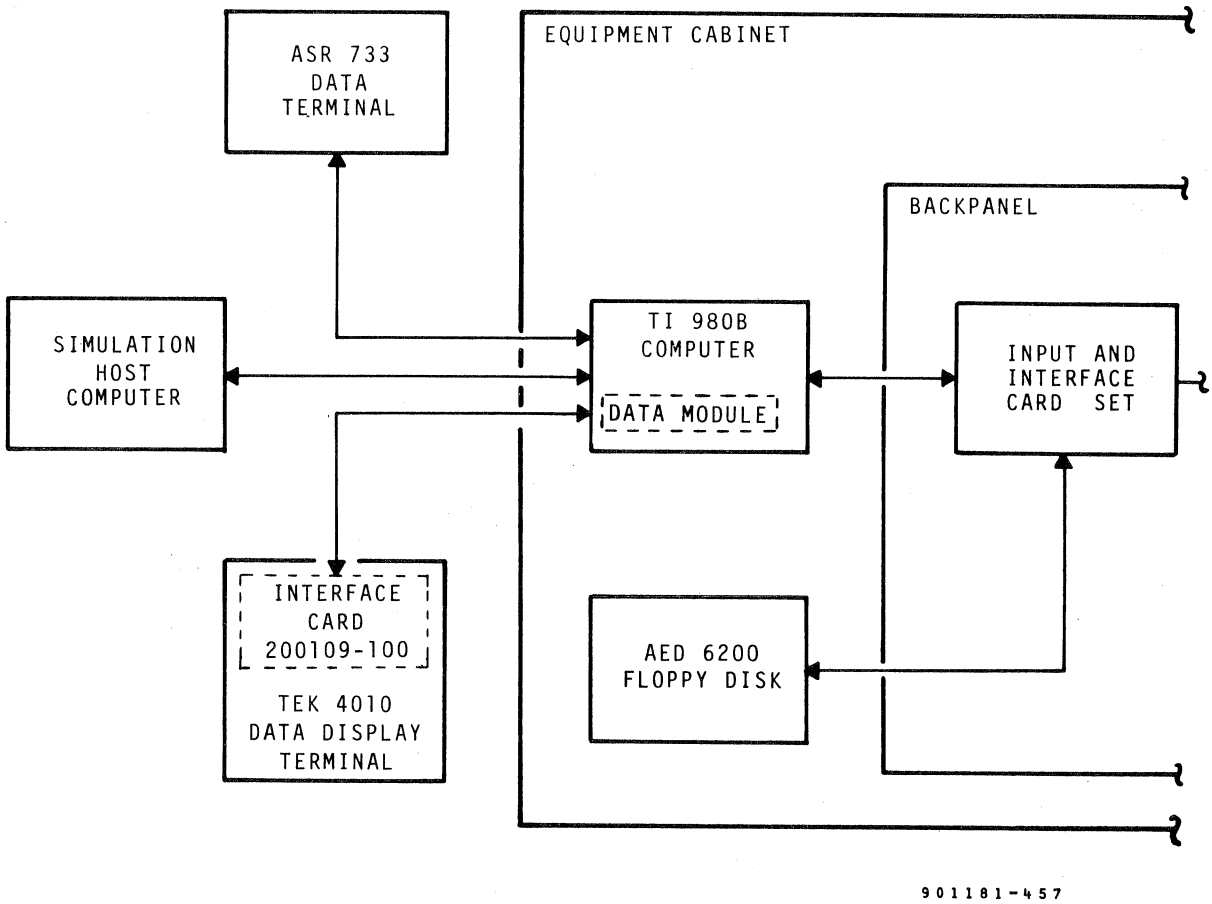


FIGURE 4-1
DATA DISPLAY TERMINAL-TO-NSP SYSTEM
INTERFACE BLOCK DIAGRAM

4.2 TERMINAL INTERFACE CARD (P/N 200109-100)

The terminal interface is a specialized device incorporating three main features. First, it allows bidirectional communication between the TI 980B computer (via the data module) and the Tektronix 4010 Computer Display Terminal. Second, it buffers data flowing into the interface from the computer to compensate for the difference in processing times of the extremely fast computer and the very slow terminal. Third, it transforms the data received from the computer (airport model data base numbers) into a data format which is acceptable to the terminal.

Three general points of information are necessary to consider: (1) terminology, (2) interface resets, and (3) buffering. In order to simplify discussion, the Tektronix 4010 Computer Display Terminal is always referred to as "terminal." The TI 980B computer and the integral data module are referred to collectively as "computer." The terminal interface will be referred to as "interface."

A power-up reset has been incorporated to ensure that the interface is initialized to a known state when power is turned on. Two other resets, the computer reset and the terminal reset (RESET key on terminal keyboard), will also reset the interface.

The terminal can receive data from the computer at a rate from 3 to 5 microseconds per data word, but the terminal can only accept data at a rate from 0.8 to 2.6 milliseconds. For this reason the interface can buffer up to 64 eleven-bit words of data received from the computer.

4.2.1 OPERATING MODES

Eleven modes of operation are available. The first mode, or initial mode, of operation is entered when the interface receives a reset signal. In this mode the interface performs two functions: (1) it receives data from the terminal and sends it to the computer as described under the "data flow" section, (2) it waits for a command word to be received from the computer.

One of the remaining 10 operating modes is entered when the interface receives one of the ten eleven-bit command words. The remaining six invalid commands, with LSBs ranging in value from hex A through hex F, are essentially ignored and the interface waits for a valid command.

The ten operating modes and the corresponding hex commands are as follows:

Operating Mode	Command (hex)
1) Maintenance-alpha (MA)	400
2) Alpha (A)	401
3) Maintenance-dot (MD)	402
4) Dot (D)	403
5) Maintenance-line (ML)	404
6) Line (L)	405
7) Maintenance-crosshair (MX)	406
8) Crosshair (X)	407
9) Maintenance-read-position (MR)	408
10) Read position (R)	409

In some cases ASCII characters or Cartesian coordinate data are sent after the commands are sent. The coordinate data are ten bits wide and the ASCII data are only eight bits wide. The eleventh bit in both cases must be a "zero" since it is the distinguishing feature between a command and a data word. If a data word is sent when the interface is expecting a command word, the data will be ignored and no action is taken until a command is received.

In the following paragraphs the five nonmaintenance modes of operation are first discussed, followed by an explanation of the maintenance mode.

The alpha command is issued for the purpose of printing alphanumeric characters on the terminal screen. The command is sent, followed by as many alphanumeric ASCII characters as desired. These characters are sent to the terminal preceded by the ASCII terminal control character "US." The interface responds to a new mode when a new command word is sent.

A dot command is issued for the purpose of printing dots at specific coordinates on the terminal screen. The command is sent, followed by as many ten-bit YX data pairs (a YX data pair is a ten-bit "Y" coordinate data word followed by a ten-bit "X" coordinate data word) as desired. If the pair is not complete (only the Y coordinate data word is sent) before another command is sent, then the Y data word is ignored and the command is processed normally.

A dot command causes the ASCII terminal control character "GS" to be sent to the terminal. For each complete YX data pair sent, a set of five special ASCII characters plus a terminating "GS" is sent. The five special characters and the order in which they occur in the data stream are designated as two-letter acronyms: YH, YL, XH, XL, XL. The first letter indicates whether the data word is an "X" or a "Y" coordinate data point. The second letter indicates whether the data word contains the H (High), or most significant, five bits or the L (Low), or least significant, five bits of the coordinate data word. The seven-bit ASCII data character that corresponds to each of these special words is generated by appending a two-bit prefix to the five-bits of data as follows:

2-letter Acronym		Prefix (2 bits)	Data (5 bits)
XH or YH	=	Ø1	X MSBs or Y MSBs
XL	=	1Ø	X LSB's
YL	=	11	Y LSB's

A line command is issued for the purpose of drawing lines on the terminal screen. The command is sent followed by as many YX pairs as desired. The first YX pair is the starting point and connected lines will be drawn to points designated by succeeding YX pairs. The terminal data are formed the same as for the dot command, except that the terminating ASCII "GS" is not sent.

When a crosshair command is sent, the terminal displays a movable crosshair, and the interface waits for another command. The command causes two ASCII characters, "ESC" and "SUB," to be generated by the interface and transmitted to the terminal.

A read-position command is issued, normally following a crosshair command, for the purpose of querying the position of the terminal crossnair. The command causes the ASCII characters, "ESC" and "ENQ," to be sent to the terminal. Immediately following the transmission of the two ASCII characters, the interface receives the crosshair position and transmits it to the computer, one word at a time, as it is ready to receive it.

The five maintenance modes operate in the same fashion as the corresponding five nonmaintenance modes in that the same data are generated by the interface. The only difference is that the data, rather than being routed to the terminal, are routed back to the computer. This allows for cross-checking of interface-generated data. After one of the maintenance commands is issued, the data thus generated must be read by the computer.

Data Flow

For the interface to receive data from the computer, a number of signal interactions take place. The computer must place data on the data lines (*DFØ through *DF1Ø) and issue a *DOR signal, indicating to the interface that a word is ready. When the interface has accepted the data, an acknowledge signal, *DOA, is issued by the interface and *DOR is deactivated.

For the interface to send data to the terminal, a certain sequence of events takes place. First, the signal *CPUNT is lowered for at least 5 microseconds in order to seize the terminal bus. A data word is then placed on the bus lines (*TIOØ through *TIO7) for the latter two clock pulses (clock = 1.6ms) of *CPUNT. Another signal, *TSTROBE, is then activated for two clock pulses along with *CPUNT and the data. The signal *TSTROBE is then released. The data word remains for another two clock pulses. The signal *CPUNT remains for only four more clocks if there is not another data word, or is held active if another data word is to be presented at the outputs.

For the interface to receive data from the terminal, the interface first receives a *CSTROBE signal indicating a data word is waiting on the bus. The interface latches the data and activates a *CBUSY signal to the terminal, indicating the interface is processing data and is not ready to receive more data.

For the interface to transmit data to the computer, a data word is placed on the computer input lines (*DTØ through *DT7) and a ready signal, *DIR, is brought low. As soon as the computer has taken the data, an acknowledge signal, *DIA, is generated by the computer, thus deactivating *DIR and allowing the interface to output more data.

4.2.2 BLOCK DIAGRAM COMPONENT FUNCTIONAL DESCRIPTION

Computer/FIFO Ready/ACK SYNC

This device is a four-state synchronous logic machine that synchronizes the ready and acknowledge signals (*DOR, *DOA) between the computer and the FIFO. Looping on the "busy-bit" with the TI assembly language write direct single (WDS) instruction is allowed.

FIFO

The FIFO is 12 bits wide (only 11 bits are used) and 64 words long. It buffers the input from the computer to the interface.

FOR Sync

Consisting of a flip-flop, this device synchronizes the FOR signal from the FIFO to the clock, producing the FORH signal for use as a condition input to the condition select. (Asynchronous signals are not acceptable as inputs to the condition select. Only a combinational logic pathway exists from the condition select input to microprogram sequence input, and an asynchronous test input to the sequence causes it to cycle improperly.)

Start Address Decoder

This device is a 32-word by 8-bit PROM, but only 16 locations are used. It decodes the command words and sends indirect microcode starting addresses of the function to the microprogram. The function is found in the four LSBs of the control word. The eleventh bit must be a "1," indicating that a command word, as opposed to a data word, is being sent.

TBUSY Sync

This device synchronizes the asynchronous TBUSY signal to the system clock.

Condition Select

This device allows selection of a conditional input on which a test can be performed by the microcode.

Next Address Control

This device determines the source of the microprogram next-address from one of the following: (1) pipeline register, (2) stack, (3) program counter, (4) internal register.

Microprogram Sequencer

This device maintains three next-address sources: (1) internal register, (2) stack, (3) program counter.

Microinstruction PROM

This PROM is 256 words by 8 bits and contains the microprogram.

Pipeline Register

This register latches the particular microinstruction being executed during a particular clock cycle.

Constants PROM

This PROM contains two kinds of data: (1) special control characters used to communicate with the terminal and (2) constants used during transformation of data received from the computer to be sent to the terminal.

Power-Up Reset

This device sends a reset pulse to the reset collector when power is turned on.

Reset Collector

This logic collects resets from three different sources: (1) power-up reset from interface, (2) reset from computer (*MASTER RESET Signal), (3) reset from terminal (*HOME Signal).

Microprocessor

Transformation of coordinate positions to corresponding ASCII characters is performed in the microprocessor section. Data necessary to define one command, one character, or one point are buffered until all are collected before being sent to the terminal.

Data Director

This device routes data from the proper source to the proper destination, depending on the mode in which the interface is operating. Data are routed in one of the following three pathways: (1) computer to terminal, (2) computer to computer, and (3) terminal to computer. A data word that is flowing to the computer is buffered until it is read by the computer.

Computer Input Driver

This device is used to invert and drive the data down the cable connecting the interface to the computer.

Terminal/Computer Ready/Ack Sync

In order to transfer data from the terminal to the computer, this device does the following:

1) Accepts a data strobe (*CSTROBE) from the terminal when it has data on the bus

2) Sends an input-ready signal (*DIR) to the computer

3) Sends a busy signal (*CBUSY) to the terminal

4) Sends a signal (LATCH) to the data director in order to latch the data from the terminal

5) Accepts an acknowledge signal (*DIA) from the computer after it has read the data latched at the data director outputs

Bus Seizure Generator

A signal to the terminal (*CPUNT) is generated in order to seize the bus for two purposes:

1) To keep the bus in a terminal-input mode before and while sending data to terminal

2) To keep the bus from affecting data flow through the data director during a maintenance mode of operation.

TSTROBE Sync

This synchronizes the interface-generated TSTROBE signal to the terminal clock.

Clock Generator

Accepts a clock signal from the terminal and dispenses it to the interface components.

SECTION 5

MAINTENANCE

5.1 INTRODUCTION

The basic periodic maintenance requirements and troubleshooting of the data display terminal is covered in the appropriate Tektronix instruction manual. The procedures listed in this section are designed to evaluate the overall performance of the unit as part of the NSP system.

5.2 DATA DISPLAY TERMINAL TROUBLESHOOTING

When a picture can not be drawn on the Tektronix 4010 data display terminal, any one of four devices can be the cause of the problem. These devices are: 1) Interface card (P/N 200109-100), 2) connecting cable (P/N 101373-030), 3) Tektronix 4010 data display terminal, and 4) the data module cards in the TI 980B computer. In order to isolate the problem area, four separate tests are required and should be run in the following sequence:

1) Interface initialization

2) TI data module card test

3) Tektronix 4010 stand-alone test

4) Interface card (200109-100) performance assurance test.

Testing can be terminated as soon as the inoperative device is isolated. A flow diagram of the recommended troubleshooting procedure is shown on figure 5-1, and will be helpful in determining the proper course of action.

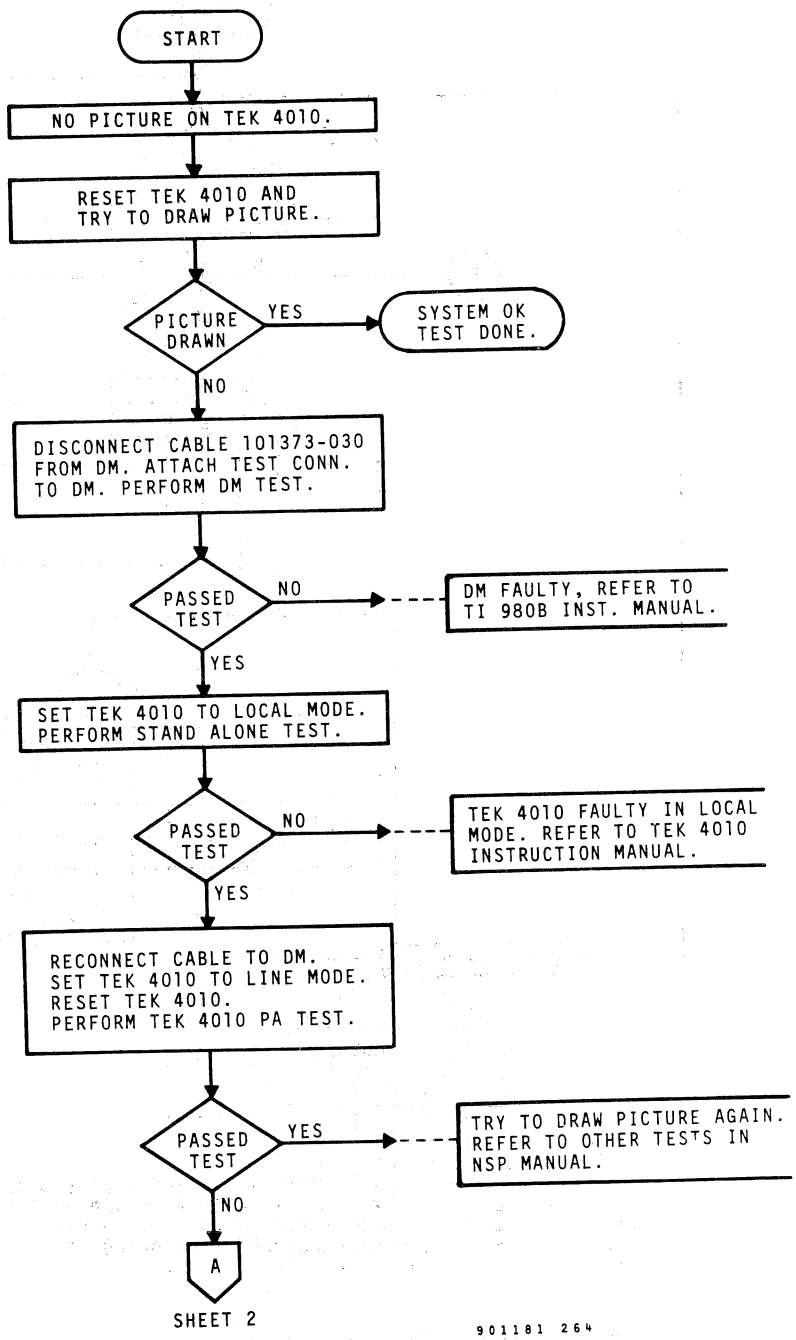
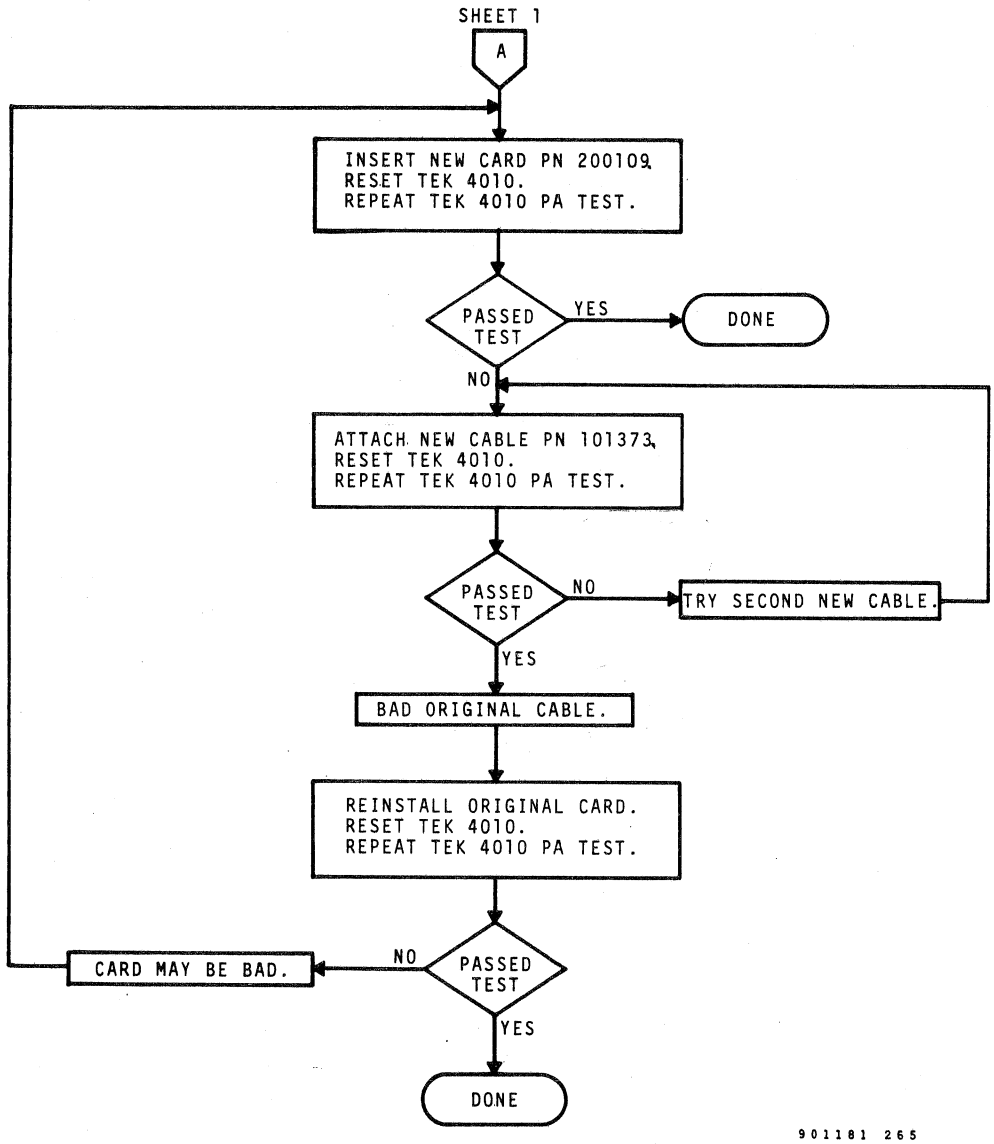


FIGURE 5-1, SHEET 1
TEKTRONIX 4010 DATA DISPLAY TERMINAL
TROUBLESHOOTING FLOW DIAGRAM



DM = TI 980B DATA MODULE.
PA TEST = PERFORMANCE ASSURANCE TEST (SEE TEK 4010 INST. MAN.).
RESET = DEPRESS RESET KEY ON TEK 4010 KEYBOARD.
TEK 4010 = TEKTRONIX 4010 DATA DISPLAY TERMINAL.
CARD = INTERFACE CIRCUIT CARD PART NO, 200109-100.
CABLE = INTERFACE CABLE PART NO. 101373-030.

FIGURE 5-1, SHEET 2
TEKTRONIX 4010 DATA DISPLAY TERMINAL
TROUBLESHOOTING FLOW DIAGRAM

5.2.1 INITIALIZE INTERFACE CARD TEST

When the display fails for some reason, depress the RESET key of the display keyboard. Try normal data entry from the keyboard to see if command words are accepted. If not, continue to the data module card test.

5.2.2 TI DATA MODULE CARD TEST

The data module is tested by a diagnostic test on the TI diagnostic cassette tape. The test of the data module assigned to the data display terminal (device address 14) is the same as the test for the data module assigned to the host computer (device address 5C) shown on figure 5-19 in the NSP Operation and Maintenance Manual. To run the test for the data module assigned to the data display terminal, complete the following steps.

1) Disconnect data cable P/N 101373-030 from the data module upper card edge connector and install the DM test connector (refer to paragraph 5.3.2.1.3 in the NSP manual.

2) Load the TI diagnostic cassette tape according to the procedure listed in subsection 3.2.3.1 of the NSP manual.

3) Advance the tape to the data module test and execute the program.

4) Monitor the printout on the ASR 733 for any required operator responses.

5) When required, enter device address 14.

6) When the test is complete, remove the DM test connector and reconnect data cable P/N 101373-030.

5.2.3 TEKTRONIX 4010 STAND-ALONE TEST

To determine if the Tektronix 4010 data display terminal is operating correctly in the local mode, complete the procedure listed in the maintenance manual for the unit. (This test does not verify the correct operation in the line mode). IF the unit fails the local mode test, proceed with fault isolation as outlined in the unit's troubleshooting procedure. If the unit passes the local mode test, continue to the performance assurance test listed in the following subsection.

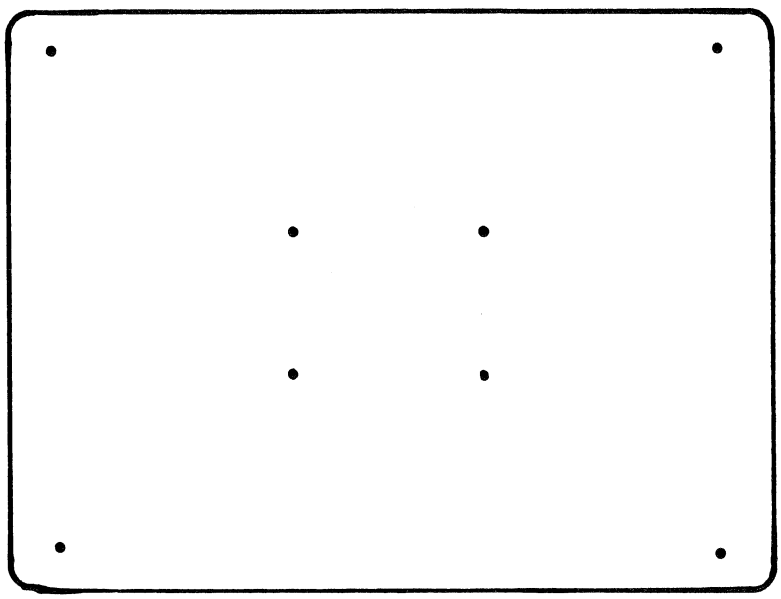
5.2.4 TEKTRONIX 4010 PERFORMANCE ASSURANCE TEST

The following procedure will test the Tektronix 4010 data display terminal (in the LINE mode), interface card (200109-100), and cable (101373-030) as one unit. Isolation of the individual units is accomplished by substitution, one unit at a time. The following test is actually comprised of subtests. If any of the subtests fail, the whole test is considered to have failed. The test can be halted at any point.

STEP	INSTRUCTION	RESPONSE
1.	Verify that power is on for the AED 6200, TI 980B and ASR 733 is on.	The correcponding power indicators will will be on.
2.	Complete diskette program loading procedure using the diskette containing the Tektronix 4010 diagnostic test. Complete the following steps in the sequence listed.	Responses will be displayed on the 4010 CRT or printed on the ASR 733 printout. When ready the program prints *READY* on the ASR 733 printout.
3.	Type at the ASR 733: //ASSIGN.4.KEY	
4.	Press the RETURN key.	The ASR 733 will beep when it is ready for another entry.
5.	Type on the ASR 733 //ASSIGN,E,KEYO.	
6.	Press the RETURN key	
7.	Type on the ASR 733 //EXECUTE,FDO,TEKTST. Refer to figure 5-5.	
8.	Press the RETURN key	TEKTRONIX 4010 DIAGNOSTIC V01-34A TYPE THE ALPHABET ON THE 4010 KEYBOARD LETTERS A-Z SHOULD APPEAR ON 4010 CRT ARE CHARACTERS CORRECT? TYPE "Y" OR "N"

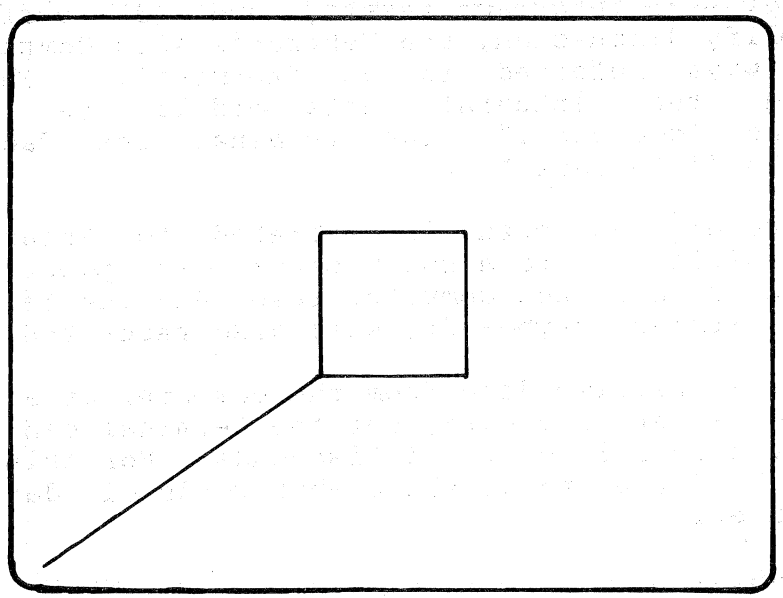
9.	Type on the 4010: ABCDEFGHIJKLMNOPQRSTUVWXYZ The alphabet must be typed in less than 30 seconds or an error message will be printed. If a failure occurs at this point.	When the last character of the alphabet has been typed all the alphabet will be displayed on the CRT screen in the upper left corner.
10.	Type on the ASR 733: Y	
11.	Press the RETURN key	TEST MAINTENANCE DOT PATH TEST MAINTENANCE LINE MODE VISUAL DOT TEST DISPLAY CORRECT? TYPE "Y" OR "N"
12.	Check that the image on the screen matches the dot pattern shown in figure 5-2.	The CRT displays the image shown in figure 5-2.
13.	Type on the ASR 733: Y	
14.	Press the RETURN key	VISUAL LINE TEST DISPLAY CORRECT? TYPE "Y" OR "N"
15.	Check that the image on the screen matches the line pattern shown in figure 5-3.	The CRT displays the image shown in figure 5-3.
16.	Type on the ASR 733: Y	
17.	Press the RETURN key	CROSSHAIR AND READ POSITION TEST MOVE CROSSHAIR INTO UPPER LEFT QUADRANT TYPE "CR" ON CONSOLE WHEN POSITIONED. Refer to figure 5-4.
18.	Using the thumb wheels to the right of the keyboard on the Tektronix 4010 display, move the crosshairs until the intersections of the crosshairs is in the upper left quadrant.	
19.	Press the RETURN key	MOVE CROSSHAIR INTO UPPER RIGHT QUADRANT

		TYPE "CR" ON CONSOLE WHEN POSITIONED.
20.	Do as instructed using the thumb wheels	
21.	Press the RETURN key	MOVE THE CROSSHAIR INTO LOWER LEFT QUADRANT TYPE "CR" ON CONSOLE WHEN POSITIONED.
22.	Do as instructed	
23.	Press the RETURN key	MOVE CROSSHAIR INTO LOWER RIGHT QUADRANT TYPE "CR" ON CONSOLE WHEN POSITIONED.
24.	Do as instructed	
25.	Press the RETURN key	DONE



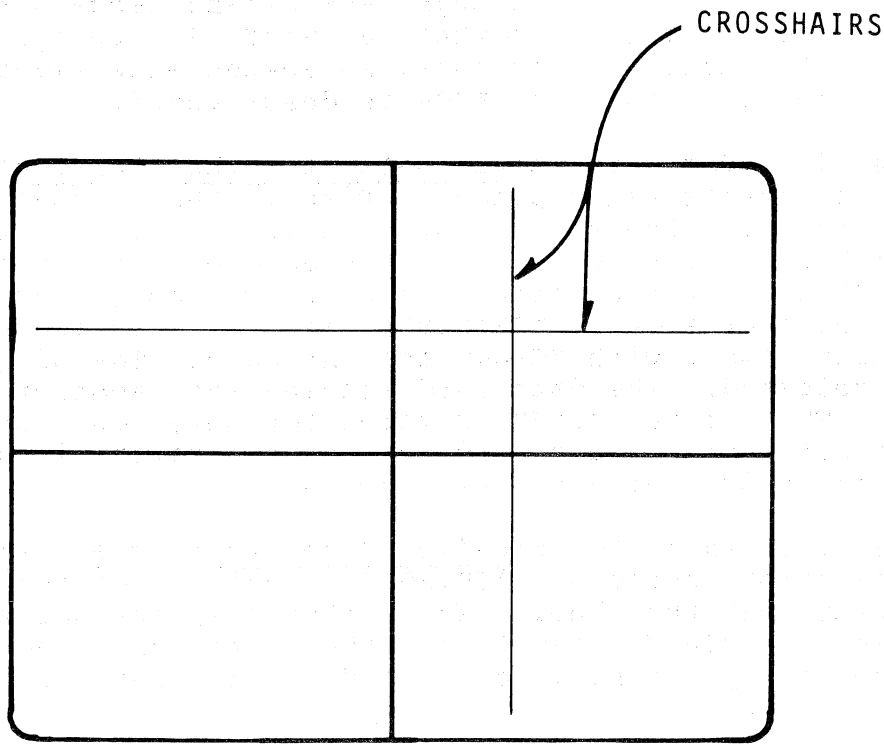
901181-238

FIGURE 5-2
TEKTRONIX 4010 DIAGNOSTIC TEST
VISUAL DOT TEST



901181-239

FIGURE 5-3
TEKTRONIX 4010 DIAGNOSTIC TEST
VISUAL LINE TEST



The position of the crosshairs is determined by the setting of the thumbwheels on the keyboard.

FIGURE 5-4
TEKTRONIX 4010 DIAGNOSTIC TEST
CROSSHAIR AND READ POSITION TEST

```
NSPMON  V01-04

◆READY◆
//ASSIGN,E,KEY0.
//ASSIGN,4,KEY.
//EXECUTE,FDO,TEKTST.
TEKTST   V02-01
TEKTRONIX 4010 SUBSYSTEM DIAGNOSTIC
TYPE THE ALPHABET ON THE 4010 KEYBAORD
LETTERS A-Z SHOULD APPEAR ON 4010 CRT
ARE CHARACTERS CORRECT? TYPE "Y" OR "N"
Y
TEST MAINTENANCE DOT PATH
TEST MAINTENANCE LINE PATH
VISUAL DOT TEST
DISPLAY CORRECT? TYPE "Y" OR "N"
Y
VISUAL LINE TEST
DISPLAY CORRECT? TYPE "Y" OR "N"
Y
CROSSHAIR AND READ POSITION TEST
MOVE CROSSHAIR INTO UPPER LEFT QUADRANT
TYPE "CR" ON CONSOLE WHEN POSITIONED.

MOVE CROSSHAIR INTO UPPER RIGHT QUADRANT
TYPE "CR" ON CONSOLE WHEN POSITIONED.

MOVE CROSSHAIR INTO LOWER LEFT QUADRANT
TYPE "CR" ON CONSOLE WHEN POSITIONED.

MOVE CROSSHAIR INTO LOWER RIGHT QUADRANT
TYPE "CR" ON CONSOLE WHEN POSITIONED.

DONE

◆READY◆
```

Operator-typed responses are underlined.

FIGURE 5-5
TEKTRONIX 4010 DATA DISPLAY TERMINAL SUBSYSTEM
DIAGNOSTIC TEST SAMPLE PRINTOUT

SECTION 6

PARTS LIST

6.1 INTRODUCTION

Table 6-1 is a parts list for the E&S manufactured data cable, and the interface card and its components. Information provided includes, reference designation where applicable, nomenclature, the E&S part number, and the figure number of the illustration depicting the location of the item.

Ref. Desig.	Nomenclature	E&S Part Number	Fig. No.
	Data Cable	101373-030	2-3/4
	Data Interface Circuit Card.	200109-100	2-3
C1	Capacitor	804102-475	6-1
C2	Capacitor	804102-475	6-1
C3	Capacitor	804115-333	6-1
C9	Capacitor	804115-333	6-1
C10	Capacitor	804128-107	6-1
C11	Capacitor	804115-333	6-1
C38	Capacitor	804115-333	6-1
R1	Resistor	803201-102	6-1
R2	Resistor	803201-302	6-1
R3	Resistor	803201-471	6-1
U12	Integrated Circuit	807816-653	6-1
U13	Integrated Circuit	807400-646	6-1
U14	Integrated Circuit	807474-646	6-1
U15	Integrated Circuit	807493-646	6-1
U16	Integrated Circuit	807657-646	6-1
U18	Integrated Circuit	807301-726	6-1
U22	Integrated Circuit	807791-055	6-1
U23	Integrated Circuit	807791-055	6-1
U24	Integrated Circuit	807791-055	6-1
U25	Integrated Circuit	807441-646	6-1
U26	Integrated Circuit	807657-646	6-1
U30	Integrated Circuit	807441-646	6-1
U31	Integrated Circuit	807411-055	6-1
U32	Integrated Circuit	807791-055	6-1
U33	Integrated Circuit	807791-055	6-1
U34	Integrated Circuit	807791-055	6-1
U35	Integrated Circuit	807657-646	6-1
U36	Integrated Circuit	807657-646	6-1
U38	Integrated Circuit	807301-726	6-1
U40	Integrated Circuit	807408-646	6-1
U41	Integrated Circuit	807416-646	6-1
U42	Integrated Circuit	807808-016	6-1
U43	Integrated Circuit	807808-016	6-1
U44	Integrated Circuit	807808-016	6-1
U45	Integrated Circuit	807416-055	6-1
U46	Integrated Circuit	807400-646	6-1
U51	Integrated Circuit	807699-331	6-1
U52	Integrated Circuit	807808-016	6-1
U53	Integrated Circuit	807808-016	6-1
U54	Integrated Circuit	807808-016	6-1
U55	Integrated Circuit	807739-055	6-1
U56	Integrated Circuit	807400-646	6-1
U58	Integrated Circuit	807301-726	6-1

	Alternate Number		
U60	Integrated Circuit	807651-055	6-1
U61	Integrated Circuit	807400-646	6-1
U62	Integrated Circuit	807807-716	6-1
U63	Integrated Circuit	807806-727	6-1
U64	Integrated Circuit	807806-727	6-1
U65	Integrated Circuit	807739-055	6-1
U66	Integrated Circuit	807305-612	6-1
U68	Integrated Circuit	807305-612	6-1
U70	Integrated Circuit	807416-646	6-1
U71	Integrated Circuit	807474-646	6-1
U72	Integrated Circuit	807411-055	6-1
U73	Integrated Circuit	807765-038	6-1
U74	Integrated Circuit	807765-038	6-1
U75	Integrated Circuit	807765-038	6-1

TABLE 6-1
PARTS LIST

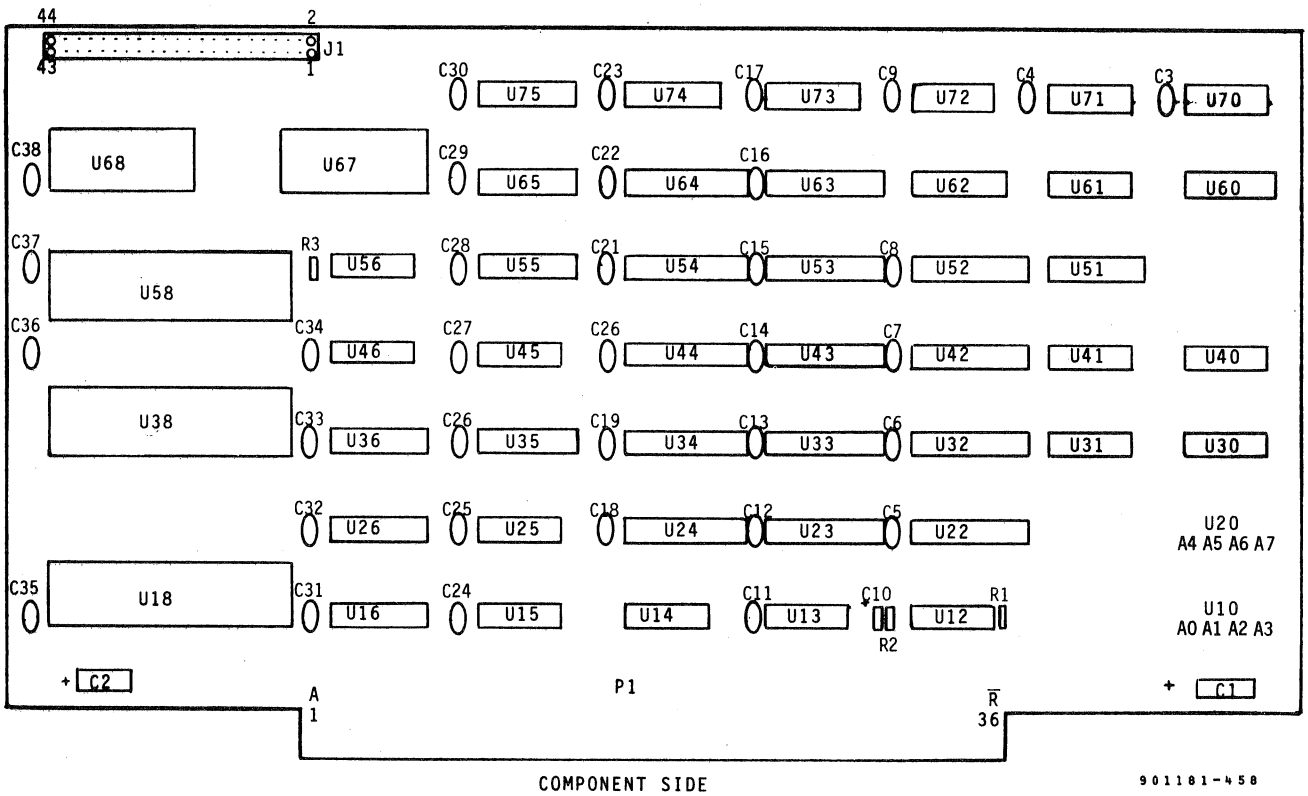


FIGURE 6-1
DATA INTERFACE CIRCUIT CARD

SECTION 7

DRAWINGS

7.1 INTRODUCTION

This section contains the eight sheets of the logic diagram for the interface circuit board P/N 200109-100. The location of the electronic components shown on the logic diagram is shown on figure 6-1.

REV ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A-1	DRAWING CHANGES	22NOV77	R Spain
	A-2	DRAWING CHANGES © CHYTRAUS 9.15.77	15SEP78	R Spain

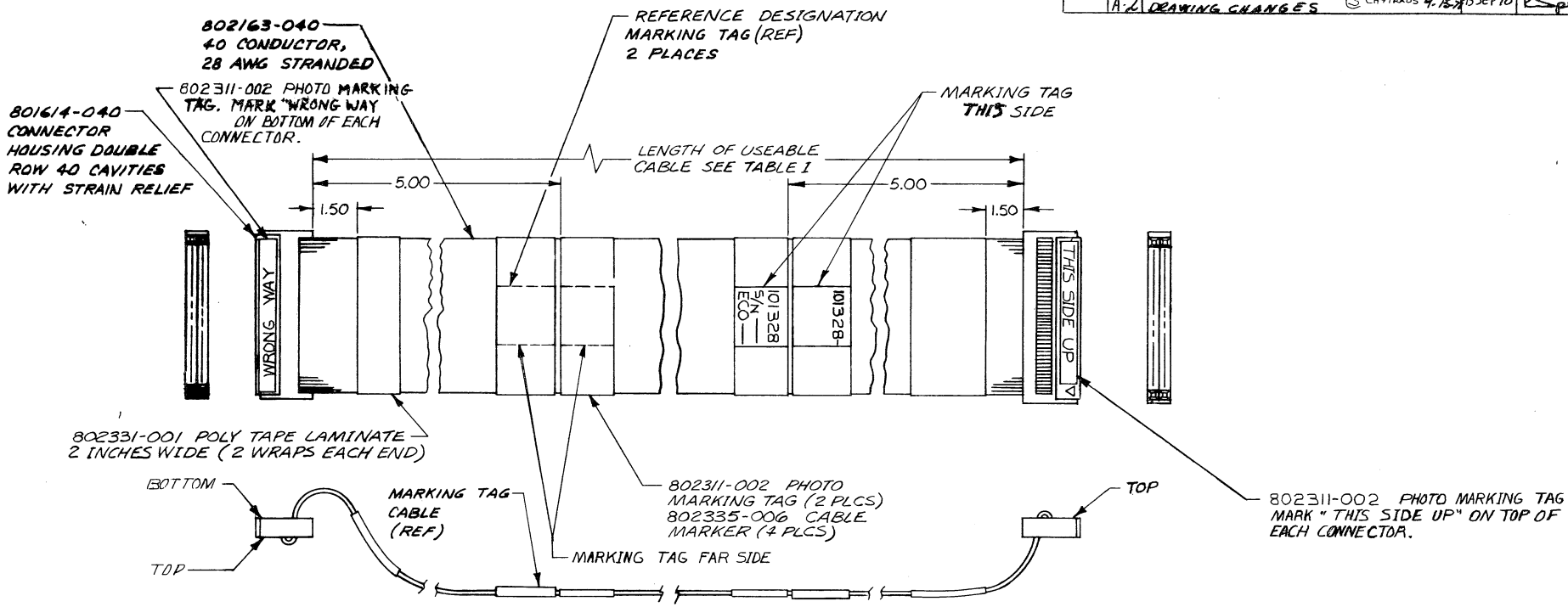


TABLE I

ECO	E & S PART NO.	CABLE LENGTH	APPROVED
A2	101328-002	2 FEET	RSpain 22NOV77
A2	101328-003	3 FEET	RSpain 22NOV77
A2	101328-004	4 FEET	RSpain 22NOV77
A2	101328-007	7 FEET	RSpain 22NOV77

	MULTI-USE
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.XX ± ——
.XXX ± ——
ANGLES ± ——
✓

MATERIAL SEE PARTS LIST
FINISH

CONTRACT NO.
DRAWN Lee Whitlock 3-23-77
CHECKED R Cragun 12APR77
MECH
ELEC R Spain 12APR77
PROJ. ENG
APPROVED

SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND
COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

CABLE ASSEMBLY,
FLAT RIBBON, 40 COND.

SIZE	CODE IDENT NO		REV
C	53938	101328-TAB	TABLE I
SCALE NONE			SHEET / OF /

101328-TAB

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A2	DELETE NOTE 1. CHANGE MARKING (HESS)	10-5 78.	R Spore 05 OCT 78

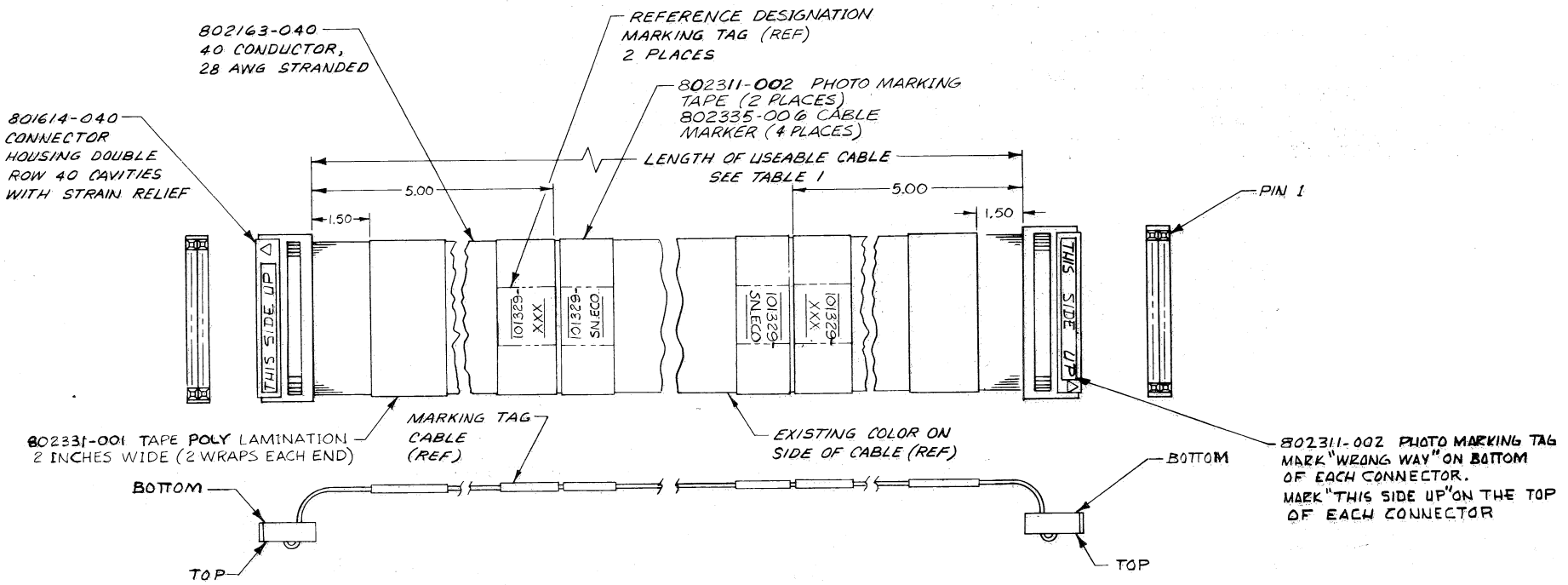


TABLE I

ECO	E & S PART NO.	CABLE LENGTH
A2	101329-002	2 FEET

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON .xx ± —— .xxx ± —— ANGLES ± —— ✓	CONTRACT NO.
			DRAWN Lee Whitlock 3-28-77
			CHECKED Ted Cooper 12 APR 77
			MECH
			ELEC Ron Spears 12 APR 77
			PROJ. ENG
			APPROVED
		MATERIAL SEE PARTS LIST	
	MULTI-USE		
NEXT ASSY	USED ON		
APPLICATION			

SEE SEPARATE PARTS LIST

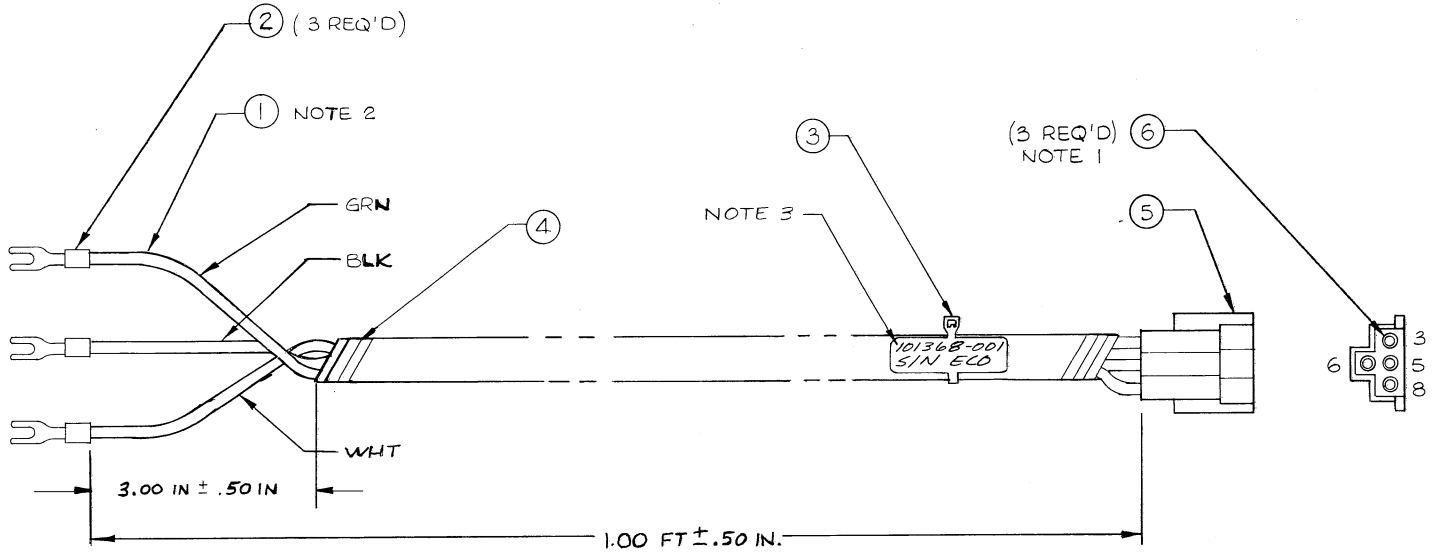
EVANS & SUTHERLAND
COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

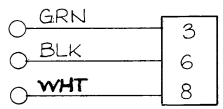
CABLE ASSEMBLY,
FLAT RIBBON, 40 COND., REVERSE

SIZE	CODE IDENT NO		REV
C	53938	101329-TAB	TABLE I
SCALE NONE			SH 1 OF 1

101329-TAB

ZONE	LTR	DESCR		APPROVED
—	NC	ADDED ITEM 3 & 4 ADDED MARKING INFO. THIS DWG FORMALLY RELEASED TO NC STATUS.	8-13-77	15 AUG 77





SCHEMATIC

3. MARK ASSY NO. S/N, ECC NO., USING BLACK OPAQUE INDUSTRIAL INK, PHILLIPS PROCESS CO. NO. 35A OR EQUIVALENT.
2. LOOSELY TWIST ALL WIRES TOGETHER.
1. DO NOT INSTALL ITEM (6) INTO ITEM (5) AT POSITION 5.

UNLESS OTHERWISE SPECIFIED:

NOTES:

200154-100	NOVOVIEW
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.XX ± ——
.XXX ± ——
ANGLES ± ——
✓

MATERIAL SEE PARTS LIST

FINISH

CONTRACT NO.

DRAWN ADS	8-10-77
CHECKED Jim Pino	8-15-77
MECH	
ELEC Ron Spain	15 AUG 77
PROJ. ENG	
APPROVED J Pino	8-15-77

SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

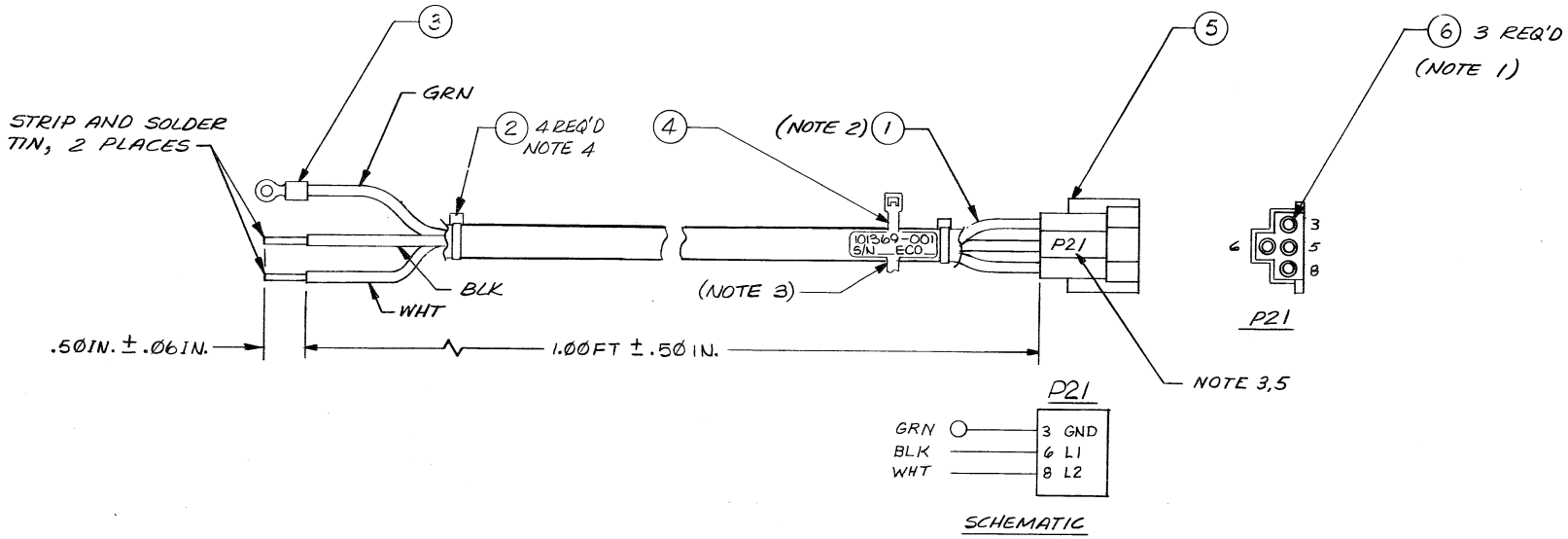
ASSY. CABLE POWER, 230V (+5V POWER SUPPLY)

SIZE	CODE IDENT NO		REV
C	53938	101368-001	NC

SCALE NONE | SHEET 1 OF 1

101368-001

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
—	A1	ITEM 3 WAS 802133-006, ADDED REF DES P21 & NOTE 5 MW	2-7-78	



5 MARK P21 ON BOTH SIDES OF CONNECTOR.

4. PLACE ITEM (2) APPROX. EVERY 3 INCHES.

3. MARK ASSY NO., S/N, ECO NO. & CONNECTOR "P21" USING BLACK OPAQUE INDUSTRIAL INK, PHILLIPS PROCCESS CO. NO. 35A OR EQUIVALENT. .09 INCH HIGH CHARACTERS.

2. LOOSELY TWIST ALL WIRES TOGETHER.

1. DO NOT INSTALL ITEM (6) INTO ITEM (5) AT POSITION 5.

UNLESS OTHERWISE SPECIFIED:

NOTES

200152-100	NOVOVIEW
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.XX ± ——
.XXX ± ——
ANGLES ± ——
✓

MATERIAL SEE PARTS LIST

CONTRACT NO.

DRAWN: D. CARROLL 8-3-77
CHECKED Art Cragun 5 AUG 77
MECH
ELEC Ron Speirs 15 AUG 77
PROJ. ENG
APPROVED Dino 15 AUG 77

SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

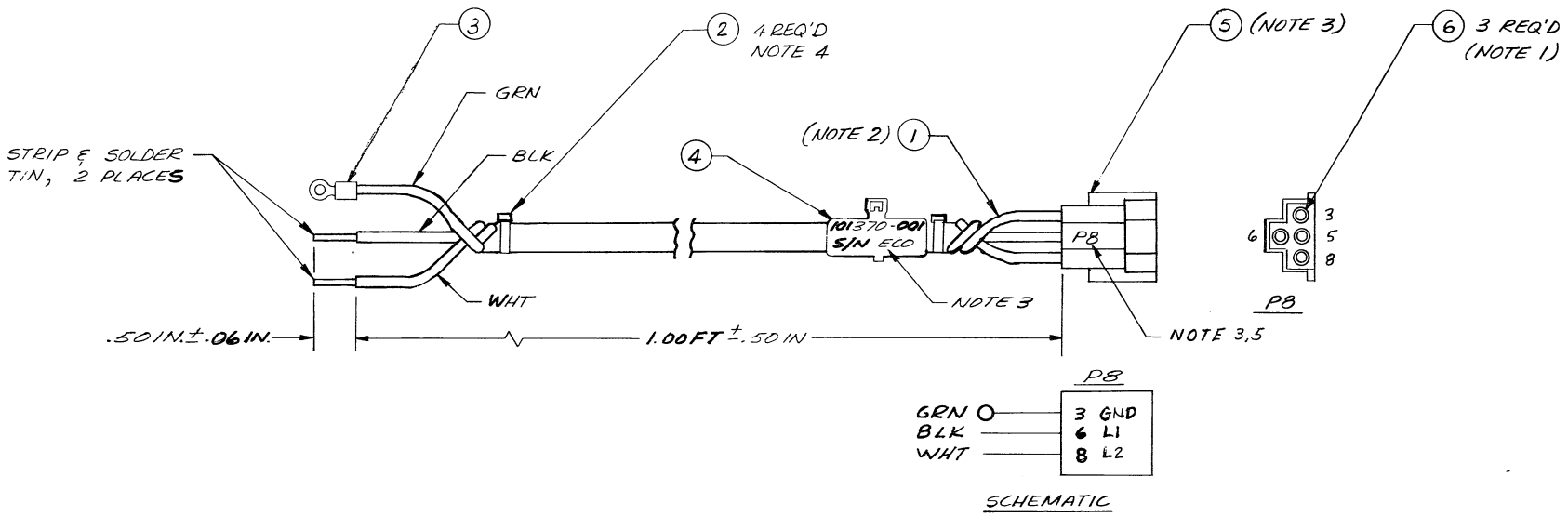
ASSY, CABLE, POWER, 280V (+12V POWER SUPPLY)

SIZE	CODE IDENT NO		REV
C	53938	1013669-001	A1

SCALE NONE SHEET 1 OF 1

1013669-001 B

ZONE	LTR	DESC	DATE	APPROVED
	A1	ADDED P8 REF DES & NOTE 5 MW	2-7-78	R Spein



5. MARK P8 ON BOTH SIDES OF CONNECTOR.
4. PLACE ITEM (2) APPROX. EVERY 3 INCHES.
3. MARK ASSY NO., S/N, ECO NO., & CONNECTOR "P8" USING BLACK OPAQUE INDUSTRIAL INK, PHILLIPS PROCESS CO. NO. 35A OR EQUIVALENT.
2. LOOSELY TWIST ALL WIRES TOGETHER.
1. DO NOT INSTALL ITEM (6) INTO ITEM (5) AT POSITION 5.

UNLESS OTHERWISE SPECIFIED:
NOTES:

200153-100	NOVOVIEW
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.xx ± ____
.xxx ± ____
ANGLES ± ____
✓

MATERIAL SEE PARTS LIST
FINISH

CONTRACT NO.
DRAWN: D. CARROLL 8-3-77
CHECKED A.F. Bergen 5 AUG 77
MECH J. Pino 8-15-77
ELEC R Spein 15 AUG 77
PROJ. ENG
APPROVED J Pino 8-15-77

SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

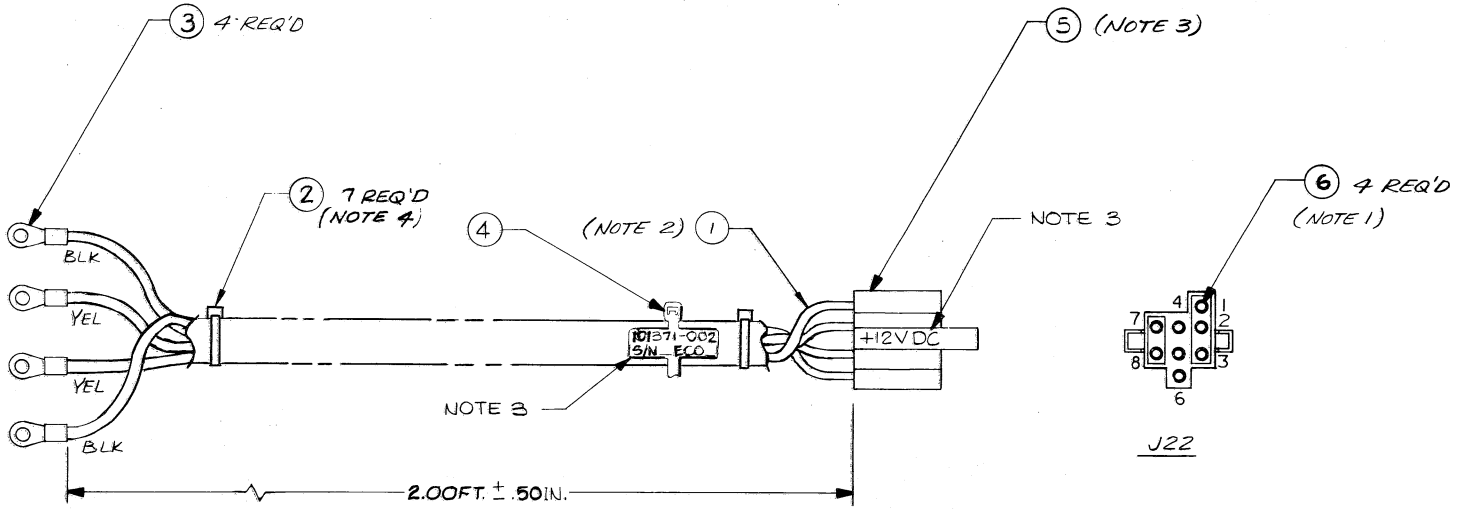
ASSY, CABLE, POWER, 230 VAC (±15V POWER SUPPLY)

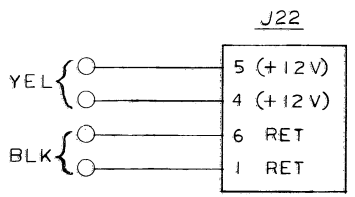
SIZE	CODE IDENT NO		REV
C	53938	101370-001	A1

SCALE NONE | SHEET 1 OF 1

101370-001

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED





SCHEMATIC

4. PLACE ITEM (2) APPROX. EVERY 3 INCHES
3. MARK "+12VDC ON CONN. AS SHOWN, ALSO MARK ASSY NO., S/N, ECO NO., & CONNECTOR "J22," USING BLACK OPAQUE INDUSTRIAL INK, PHILLIPS PROCESS CO. NO. 35A OR EQUIVELENT.
2. LOOSELY TWIST ALL WIRES TOGETHER.
1. DO NOT INSTALL ITEM (6) INTO ITEM (5) AT POSITIONS 2, 3, 7 & 8.

UNLESS OTHERWISE SPECIFIED

NOTES:

200152-100	NOVOVIEW
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.xx ± ____
.xxx ± ____
ANGLES ± ____
✓

MATERIAL SEE PARTS LIST

CONTRACT NO.

DRAWN	R. Barley 8-2-77
CHECKED	5 AUG 77
MECH	J. Pino 8-15-77
ELEC	Ron Speirs 15AUG77
PROJ. ENG	
APPROVED	J Pino 8-15-77

SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND
COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

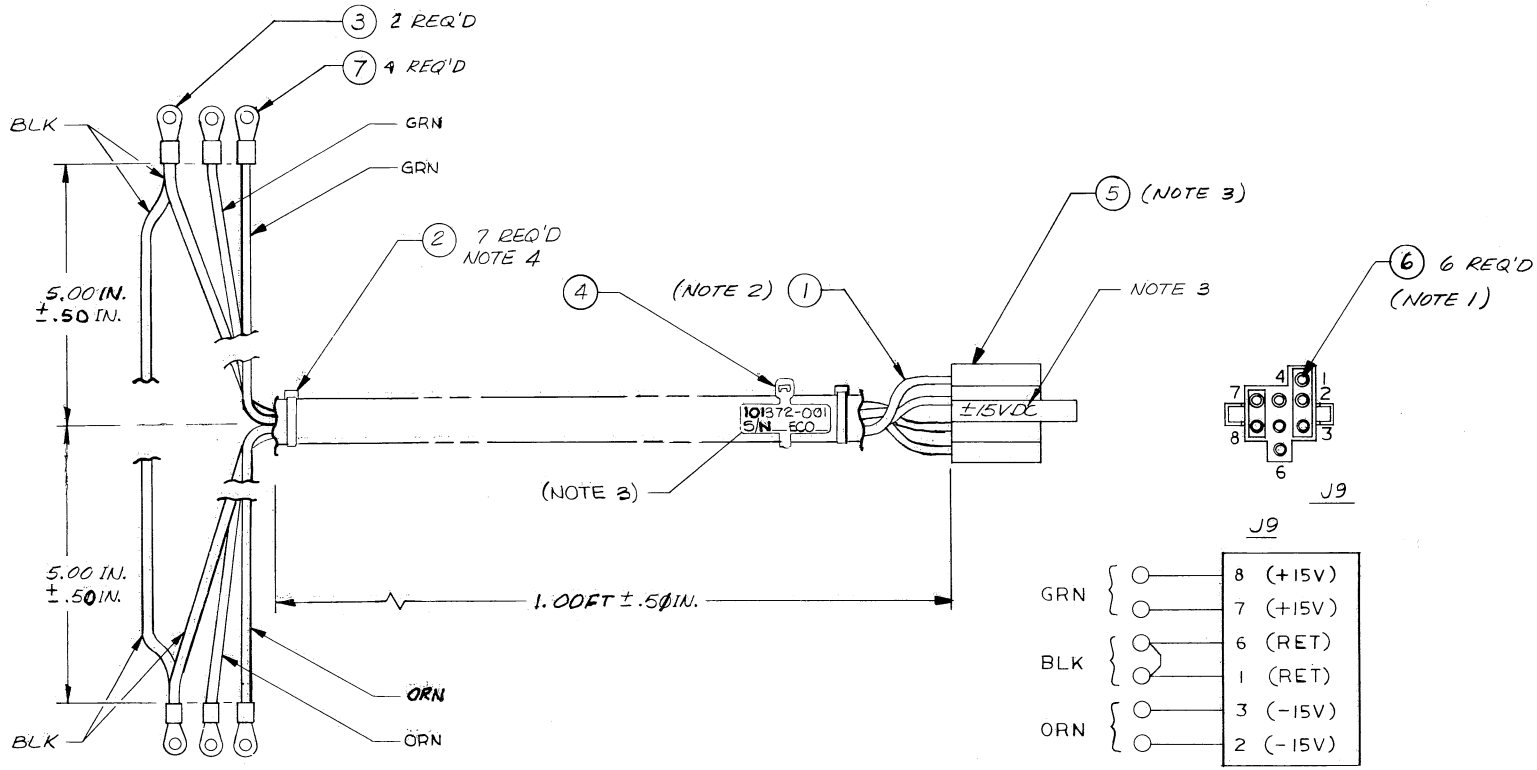
ASSY, CABLE, POWER, +12V

SIZE	CODE IDENT NO		REV
C	53938	101371-002	NC

SCALE NONE SHEET 1 OF 1

101371-002

ZONE	LTR	DESCRIPTION	DATE	APPROVED
—	NC	ADDED ITEMS 2 & 4. ADDED WIRE COLORS. ADDED MARKING INFO. THIS DWG FORMALLY RELEASED TO NC REV STATUS.	8-14-77	15 AUG 77 RSpein
	A1	ADDED ITEM 7.	8-31-77	J Pino 9/9/77



4. PLACE ITEM (2) APPROX EVERY 3 INCHES.
3. MARK ±15VDC ON CONN APPROX AS SHOWN MARK ASSY NO., S/N, ECO NO., CONNECTOR "J9" USING BLACK OPAQUE INDUSTRIAL INK, PHILLIPS PROCESS CO. NO. 35A OR EQUIVALENT.
2. LOOSELY TWIST ALL WIRES TOGETHER.
1. DO NOT INSTALL ITEM (6) INTO ITEM (5) AT POSITIONS 4 & 5.

UNLESS OTHERWISE SPECIFIED:
NOTES:

200153-100	NOVOVIEW
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.xx ± ____
.xxx ± ____
ANGLES ± ____
✓

MATERIAL SEE PARTS LIST
FINISH

CONTRACT NO.
DRAWN R. Bailey 8-3-77
CHECKED [illegible] 5 AUG 77
MECH J. Pino 8-15-77
ELEC RSpein 15AUG77
PROJ. ENG
APPROVED J Pino 8-15-77

SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND
COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

ASSY, CABLE, POWER, ± 15V

SIZE	CODE IDENT NO		REV
C	53938	101372-001	A1
SCALE NONE			SHEET 1 OF 1

101372-001

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

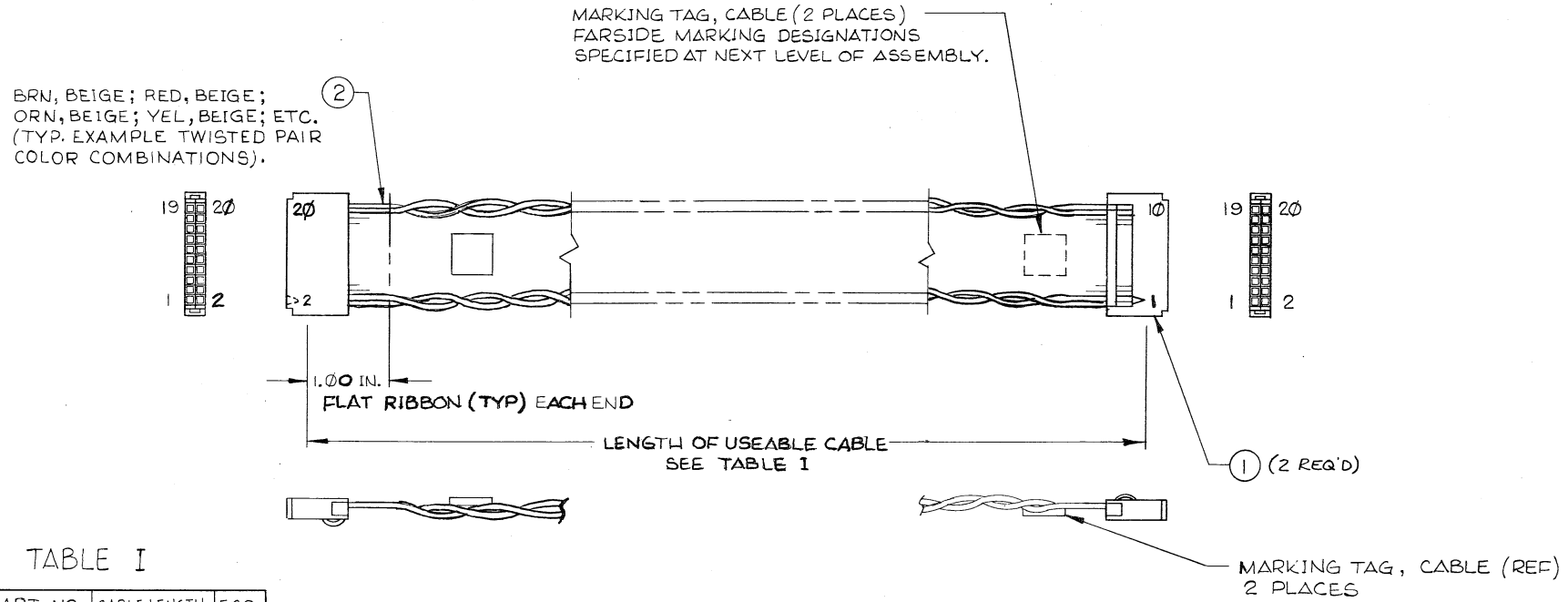


TABLE I

E&S PART NO.	CABLE LENGTH	ECO
101374 - 002	3FT 4IN	NC
101374 - 004	5 FT	NC

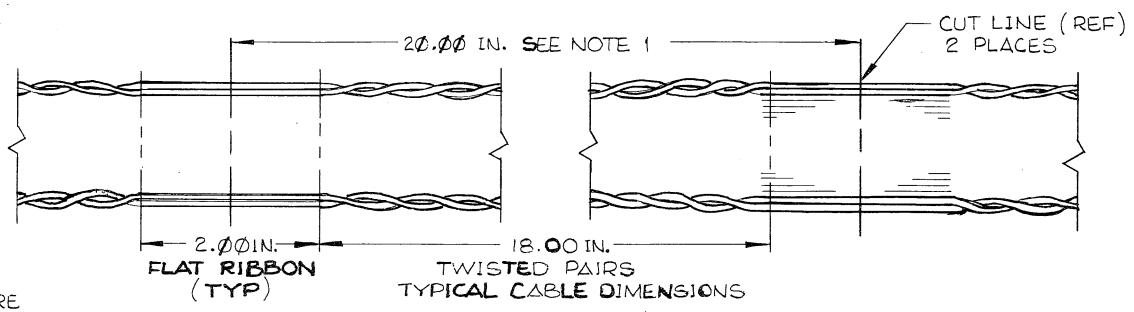


FIG. A

NOTES:
1. WHEN CUTTING CABLE, CUT LINES ARE IN 20 INCH INCREMENTS. CUT TO BE CENTERED IN 2.0 INCH FLAT RIBBON AREA. (SEE FIG. A).
SEE TABLE I FOR EXACT CABLE LENGTHS.

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON .XX ± .5Ø .XXX ± —— ANGLES ± —— ✓	CONTRACT NO.
			DRAWN ADSHUMWAY 8-9-77
			CHECKED Jim Pino 8-15-77
			MECH
			ELEC R Speirs 154677
			PROJ. ENG
			APPROVED Jim Pino 8-15-77
200158-100	NOVOVIEW	MATERIAL SEE PARTS LIST	
NEXT ASSY	USED ON	FINISH	
APPLICATION			

SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND
COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

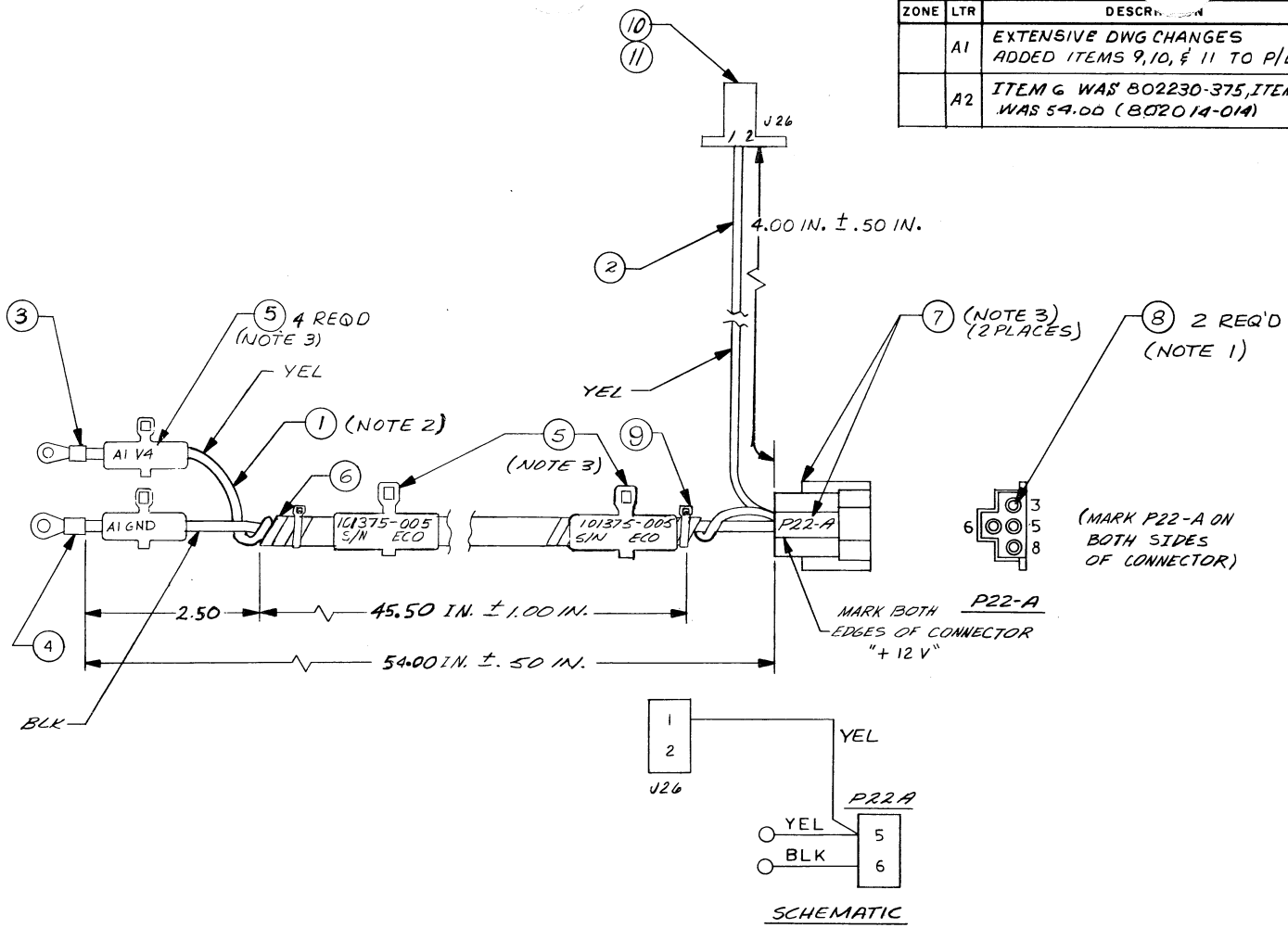
ASSY, CABLE FLAT TWISTED (SCOPE DRIVER)

SIZE	CODE IDENT NO		REV
C	53938	101374-TAB	NC

SCALE NONE SHEET 1 OF 1

101374-TAB

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A1	EXTENSIVE DWG CHANGES ADDED ITEMS 9,10, & 11 TO P/L.	9-1-77	JPino 9/9/77
	A2	ITEM 6 WAS 802230-375, ITEM 1 WAS 54.00 (802014-014)	2-7-78	RSpeirs 9 Feb 78



3. ALL MARKING ON CONNECTOR AND TAGS TO BE DONE USING BLACK OPAQUE INDUSTRIAL INK, PHILLIPS PROCESS CO., NO. 35A OR EQUIVALENT.
2. LOOSELY TWIST ALL WIRES TOGETHER.
1. DO NOT INSTALL ITEM (8) INTO ITEM (7) AT POSITIONS 3 AND 8.

UNLESS OTHERWISE SPECIFIED:

NOTES:

200152-100	NOVOVIEW
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.XX ± .50
.XXX ± ____
ANGLES ± ____
✓

MATERIAL SEE PARTS LIST

FINISH

CONTRACT NO.

DRAWN	R.E. Bailey 8-3-77
CHECKED	A. Langston 5 AUG 77
MECH	J. Pino 8-15-77
ELEC	R. Speirs 15 AUG 77
PROJ. ENG	
APPROVED	J. Pino 8-15-77

SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

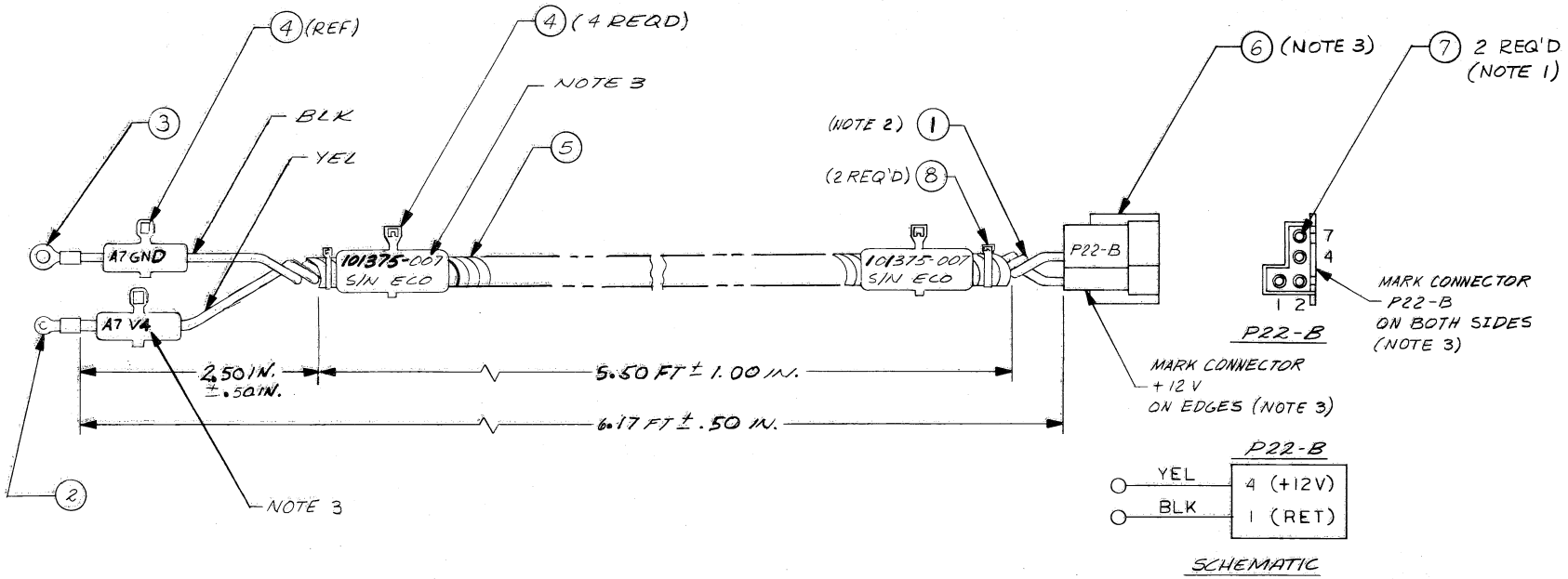
ASSY, CABLE POWER, +12V

SIZE	CODE IDENT NO		REV
C	53938	101375-005	A2

SCALE NONE | SHEET 1 OF 1

101375-005

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A1	ADDED ITEM 8 ITEM 4 QTY WAS 2. CHANGED CABLE LENGTH 2 PLACES.	9-1-77	JPino 9/9/77
	A2	ITEM 5 WAS 802230-375 MW	2-7-78	RSpeirs 9 Feb 78



3. ALL MARKING ON CONNECTOR AND TAGS, TO BE DONE USING BLACK OPAQUE INDUSTRIAL INK; PHILLIPS PROCESS CO. NO. 35A OR EQUIVALENT.
2. LOOSELY TWIST ALL WIRES TOGETHER.
1. DO NOT INSTALL ITEM (7) INTO ITEM (6) AT POSITIONS 2 AND 7.

UNLESS OTHERWISE SPECIFIED:
NOTES:

	NOVOVIEW
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.XX ± ____
.XXX ± ____
ANGLES ± ____
✓

MATERIAL SEE PARTS LIST
FINISH

CONTRACT NO.
DRAWN R. Earley 8-3-77
CHECKED Art Lough 5 AUG 77
MECH J. Pino 8-15-77
ELEC Ron Speirs 15 AUG 77
PROJ. ENG
APPROVED J. Pino 8-15-77

SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

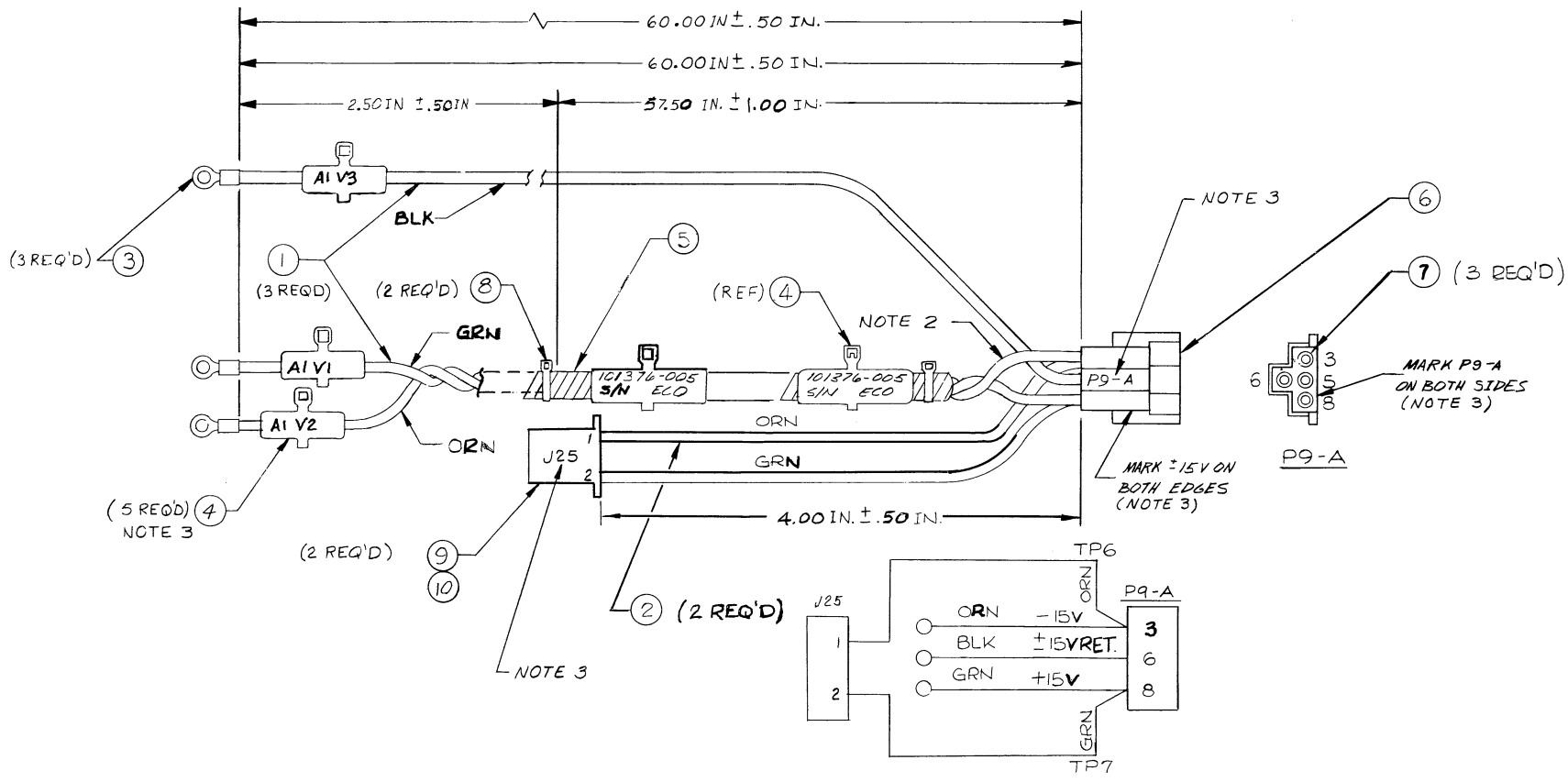
ASSY, CABLE POWER, +12V

SIZE	CODE IDENT NO		REV
C	53938	101375-007	A2

SCALE NONE SHEET 1 OF 1

101375-007

REV.				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A1	EXTENSIVE PARTS LIST & DWG CHANGES DC.	9/9/77	J Pino 9/9/77
3C	A2	ADD NOTE 4. CHANGE WIRE COLOR	9-27	R Spain 4 OCT 77
	A3	ITEM 5 WAS 802230-375 MW	2-7-78	R Spain 9 Feb 78



SCHEMATIC

4. GRN WIRE MARKED A1V1.
ORN WIRE MARKED A1V2.

3 ALL MARKING ON CONNECTORS & TAGS TO BE DONE USING BLACK OPAQUE INDUSTRIAL INK, PHILLIPS PROCESS CO. NO. 35A OR EQUIVALENT.

2. LOOSELY TWIST GRN & ORN WIRES AS SHOWN.

1. DO NOT INSTALL ITEM (7) INTO ITEM (6) AT POSITION 5.
UNLESS OTHERWISE SPECIFIED:

NOTES:

200153-100	NOVOVIEW
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.XX ± .50
.XXX ± ——
ANGLES ± ——
✓

MATERIAL SEE PARTS LIST
FINISH

CONTRACT NO.
DRAWN ADShumway 8-9-77
CHECKED JPino 8-15-77
MECH
ELEC RSpain 15AUG77
PROJ. ENG
APPROVED JPino 8-15-77

SEE SEPARATE PARTS LIST

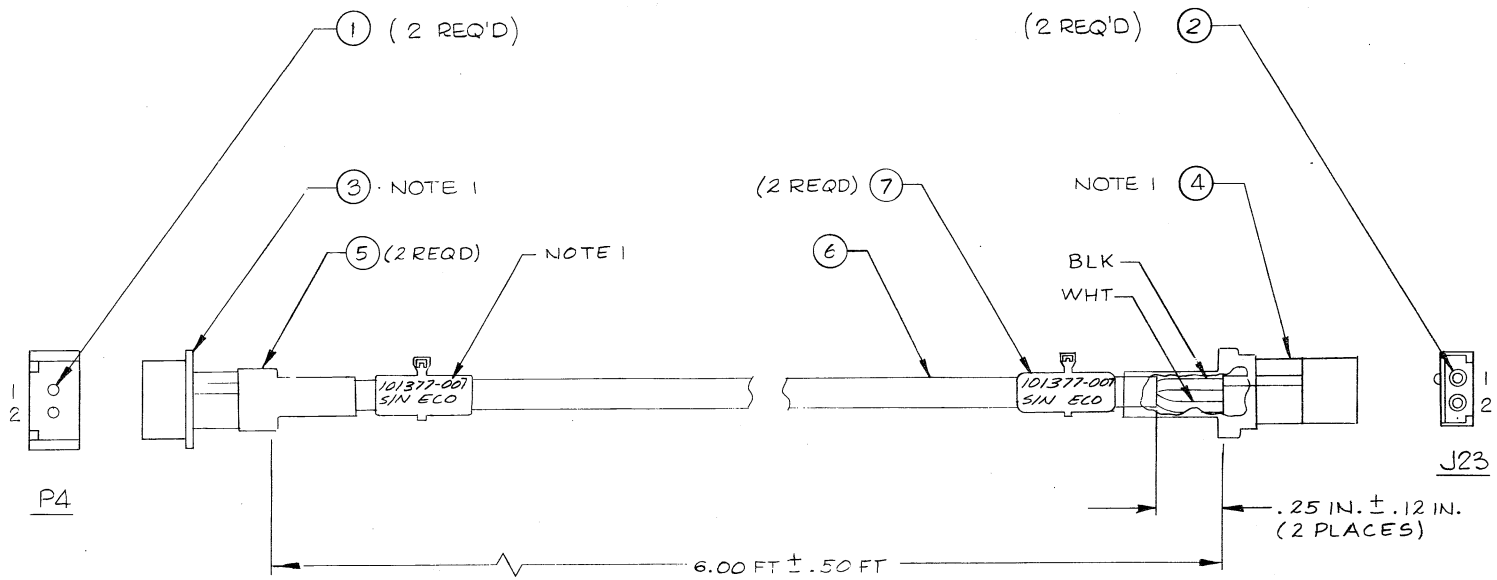
EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

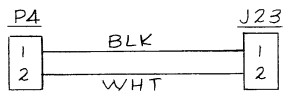
ASSY, CABLE, POWER (±15V POWER SUPPLY)

SIZE	CODE IDENT NO		REV
C	53938	101376-005	A3
SCALE NONE			SHEET 1 OF 1

101376-005

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
B-2	A1	CHANGED DIMENSION FROM 7.00 TO 6.00	9/9/77	J Pino 9/9/77





SCHEMATIC

1. MARK ASSY NO., S/N, ECO NO., CONNECTORS "P4" & "J23", USING BLACK OPAQUE INDUSTRIAL INK, PHILLIPS PROCESS CO. NO. 35A OR EQUIVALENT.

UNLESS OTHERWISE SPECIFIED:

NOTES

200104-100	NOVOVIEW
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.xx ± ——
.xxx ± ——
ANGLES ± ——
✓

MATERIAL SEE PARTS LIST

FINISH

CONTRACT NO.

DRAWN ADE HUMWAY 8-10-77

CHECKED J Pino 8-15-77

MECH

ELEC RSpein 15AUG77

PROJ. ENG

APPROVED J Pino 8-15-77

SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

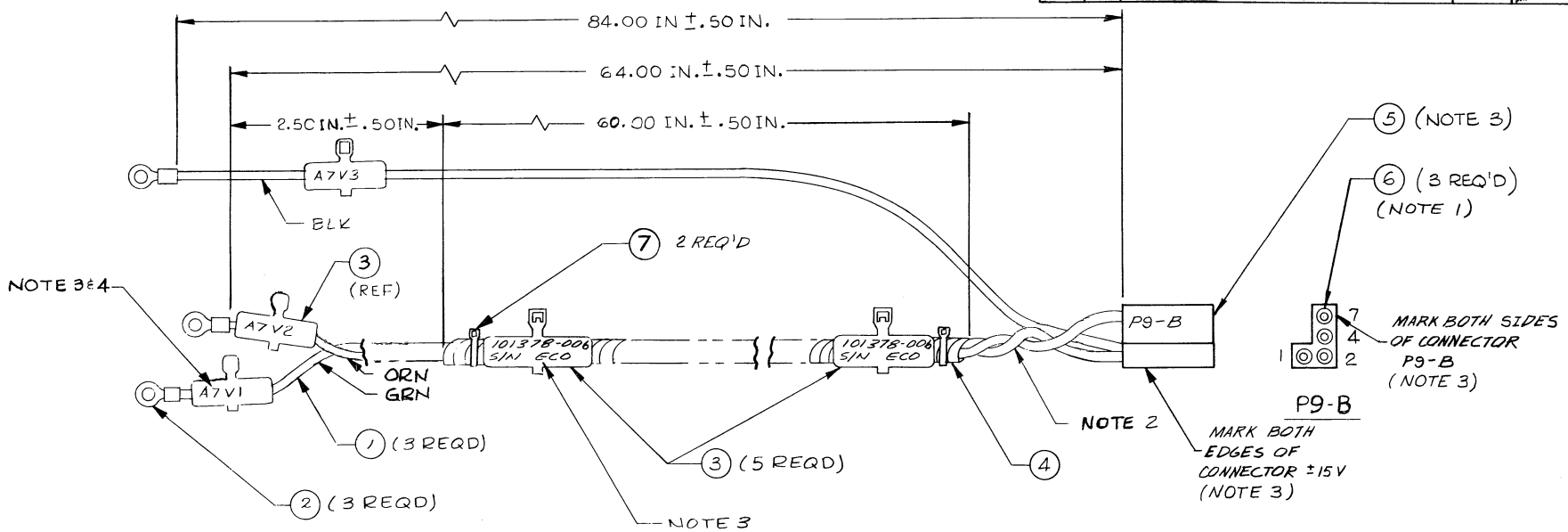
ASSY, CABLE THERMAL SENSOR

SIZE	CODE IDENT NO		REV
C	53938	101377-007	A1

SCALE NONE SHEET 1 OF 1

101377-007

REVIS.				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A1	EXTENSIVE PARTS LIST AND DRAWING CHANGES	9-1-77	JPino 9/9/77.
3C	A2	ADD NOTE 4. CHANGE WIRE COLORS	9-27-77	RSpeirs 4 OCT 77
	A3	ITEM 4 WAS 802230-375 64.00 WAS 48.00, 60.00 WAS 45.50 MW	2-7-78	RSpeirs per 7 Feb 78



SCHEMATIC

4. GRN WIRE MARKED A7V1
   ORN WIRE MARKED A7V2
3. MARKING ON CONNECTOR AND TAGS TO BE DONE USING BLACK OPAQUE INDUSTRIAL INK, PHILLIPS PROCESS CO. NO. 35A OR EQUIVALENT. .09 HIGH CHARACTERS.
2. LOOSELY TWIST GRN AND ORN WIRE TOGETHER.
1. DO NOT INSTALL ITEM (6) INTO ITEM (5) AT POSITION 4.

UNLESS OTHERWISE SPECIFIED:

NOTES:

200153-100	NOVOVIEW
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.xx ± ——
.xxx ± ——
ANGLES ± ——
✓

MATERIAL SEE PARTS LIST
FINISH

CONTRACT NO.
DRAWN ADSHUMWAY 8-9-77
CHECKED JPino 8-15-77
MECH
ELEC Ron Speirs 15AUG77
PROJ. ENG
APPROVED JPino 8-15-77

SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

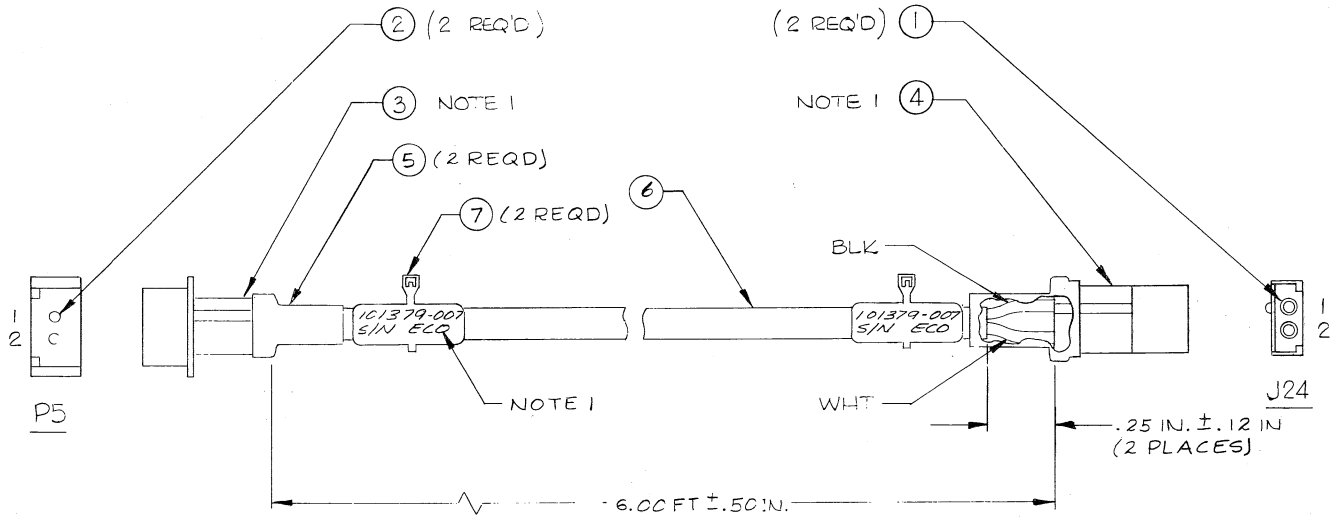
ASSY, CABLE, POWER (± 15V POWER SUPPLY)

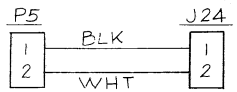
SIZE	CODE IDENT NO		REV
C	53938	101378-006	A3

SCALE NONE SHEET 1 OF 1

101378-006

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
B-2	A1	CHANGED DIMENSION FROM 7.00 TO 6.00 JB	01DEC77	R Spain





SCHEMATIC

101379-007

1. MARK ASSY NO., S/N, ECO NO., CONNECTORS P5 & J24 USING BLACK OPAQUE INDUSTRIAL INK, PHILLIPS PROCESS CO. NO. 35A OR EQUIVALENT.

UNLESS OTHERWISE SPECIFIED:

NOTES

200104-100	NOVOVIEW
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.xx ± ——
.xxx ± ——
ANGLES ± ——
✓

MATERIAL SEE PARTS LIST

FINISH

CONTRACT NO.

DRAWN ADSHUMWAY 8-10-77
CHECKED J Pino 8-15-77
MECH
ELEC 15AUG77 RSpain
PROJ. ENG
APPROVED J Pino 8-15-77

SEE SEPARATE PARTS LIST

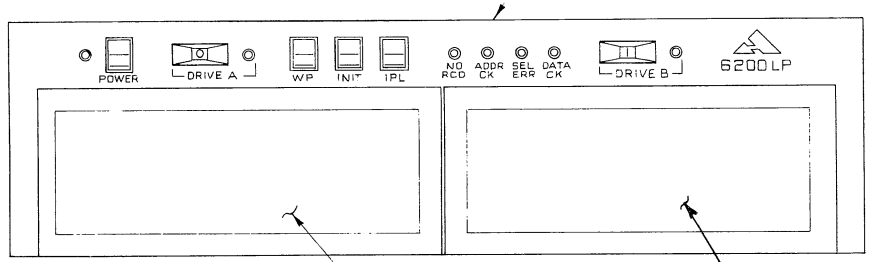
EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

ASSY, CABLE
THERMAL SENSOR

SIZE	CODE IDENT NO		REV
C	53938	101379-007	A1

SCALE NONE SHEET 1 OF 1

RE	LETTR & DWG DASH NO.			R				
-103	-102	-101	-100	ZONE	LTR	DESCRIPTION	DATE	APPROVED
		A2	A2		—	REDESIGN & REDRAW	5-4-78	RSpein



3 SEE NOTE 2

DRIVE ASSY. SEE TABLE 1

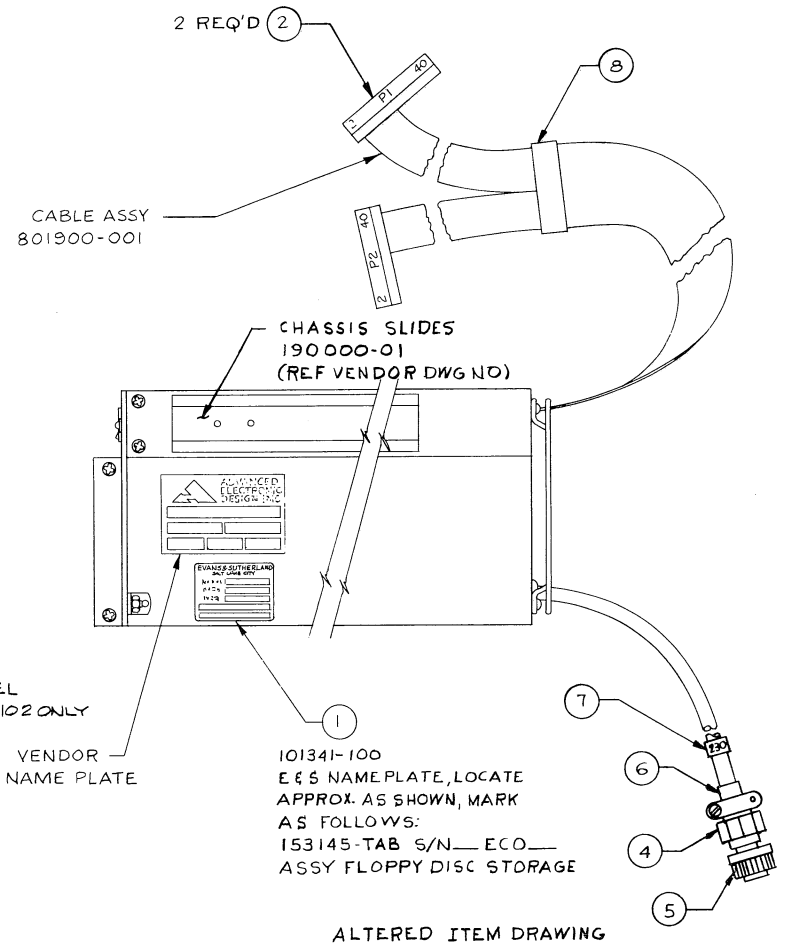
CLOSE OUT PANEL FOR 153145-100 & 102 ONLY 107642-01 (REF VENDOR DRAWING NO)

TABLE 1 (REF. VENDOR DWG. NO.)

DWG NO.	DESCRIPTION	DRIVE ASSY. & QTY
153145-100	SINGLE DRIVE 60HZ	105481-03 (1)
153145-101	DUAL DRIVE 60HZ	105481-03 (2)
153145-102	SINGLE DRIVE 50HZ	105481-04 (1)
153145-103	DUAL DRIVE 50HZ	105481-04 (2)

2. FOR UNALTERED ITEM (E&S PROCUREMENT ONLY) REFER TO E&S PRODUCT STRUCTURE, FOR ALTERED ITEM REFER TO ASSEMBLY DRAWING 801901-001 FLOPPY DISK ASSY.
1. ITEMS 2 AND 4 THRU 8 ARE SHOWN FOR ASSEMBLY INFORMATION ONLY. REFER TO ASSEMBLY DRAWINGS 801900-001 & 801901-001 FOR ACTUAL MODIFICATION DETAILS.

NOTES:



ALTERED ITEM DRAWING

200101-XXX	NOVOVIEW
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.XX ± ——
.XXX ± ——
ANGLES ± ——
✓

MATERIAL SEE NOTE 2.

FINISH

CONTRACT NO.

DRAWN J. BAHLMANN 3-2378

CHECKED Art Cooper 4 APR 78

MECH

ELEC R Spein 2 MAY 78

PROJ. ENG R Spein 2 MAY 78

APPROVED

EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

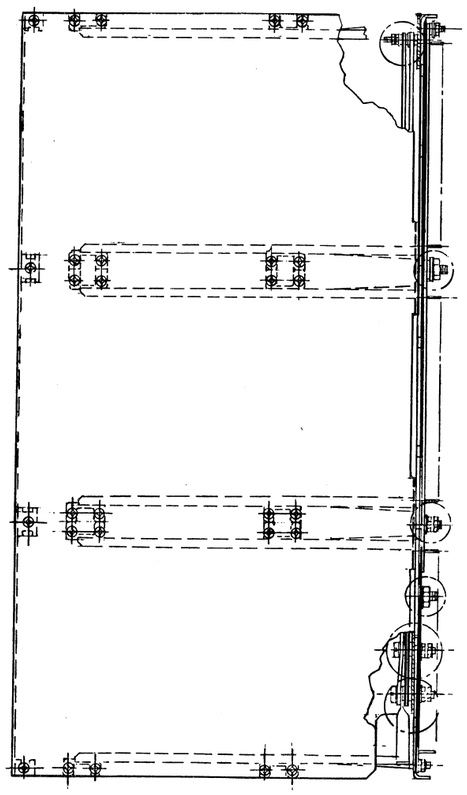
ASSY, FLOPPY DISC STORAGE 6200P, W/ SLIDE RAILS

SIZE	CODE IDENT NO		REV
C	53938	153145-TAB	SEE TABLE

SCALE NONE SHEET 1 OF 1

153145-TAB

REV TABLE			REVISIONS				
-102	-101	-100	ZONE	LTR	DESCRIPTION	DATE	APPROVED
		A2	A5		CHANGED RESISTOR 803300-181 FROM 91.6 96.2 TO 81.72 81.80. RSM	9-12-77	R Spears 12 SEP 77
		A3	—		WIRE CHANGE ONLY. RSM	9-12-77	R Spears 12 SEP 77
		A4	A5		CHANGED RESISTOR 803300-221 FROM 87.72 87.80 TO 74.03 74.02. RSM	9-12-77	R Spears 12 SEP 77
		A5	—		WIRE CHANGE ONLY RSM	9-27-77	R Spears 28 SEP 77
		A6	—		WIRE CHANGES ONLY SP	11-1-77	J Dino 1 NOV 77
		A7	—		WIRE CHNG, INCORPORATED ECOA2 TO SUBASSY 101400-103 JHB	11-28-77	Ron Spears 13 DEC 77
		A8			REMARKED VCC & GND ZONE 2C, 2B MW	2-15-78	Ron Spears 16 FEB 78
		A9			REV UPDATE W/NO DWG CHNG GS	3-15-78	Ron Spears 16 MAR 78
A2	A1	B1			REV UPDATE W/NO DWG CHNG CAD	6 DEC 78	Ron Spears
A3					REV UPDATE W/NO DWG CHNG JRW	1-22-79	Ron Spears



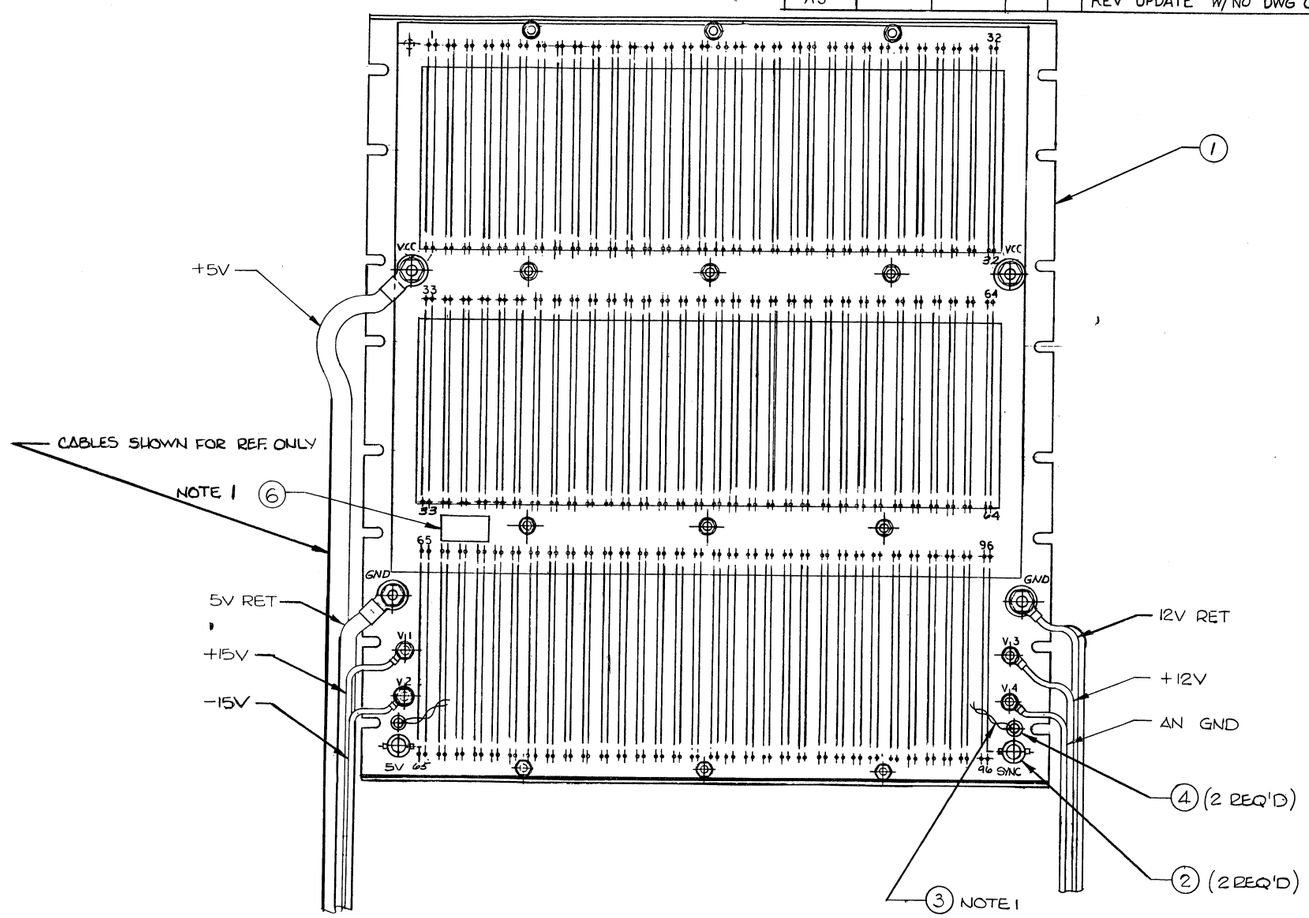


TABLE II
SEE NOTE 1

RESISTOR NO.	VALUE	LOCATION	
803300-181	180Ω	81.72	81.80
803300-221	220Ω	74.03	74.02
80300-101	100Ω	75.2 76.2 77.2	75.3 76.3 77.3
		69.2	69.3

TABLE I

	SIG	GND
SYNC	83.9	83.11
5 V	65.2	65.1

WIRE	LOCATION
802068-009	23.33 32.72

NOTES:
1. INSTALL (6) AFTER WIRE WRAPPING

SEE SEPARATE PARTS LIST

200102-100	NOVOVIEW	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES ON .XX± —— .XXX± —— ANGLES± ✓ MATERIAL FINISH	CONTRACT NO.
200101-100	NOVOVIEW		DRAWN ADS 7-21-77
NEXT ASSY	USED ON		CHECKED 11 AUG 77
APPLICATION			MECH
			ELEC Ron Spears 11 AUG 77
			PROJ. ENG
			DESIG. AUTO
			APPROVED 11 AUG 77

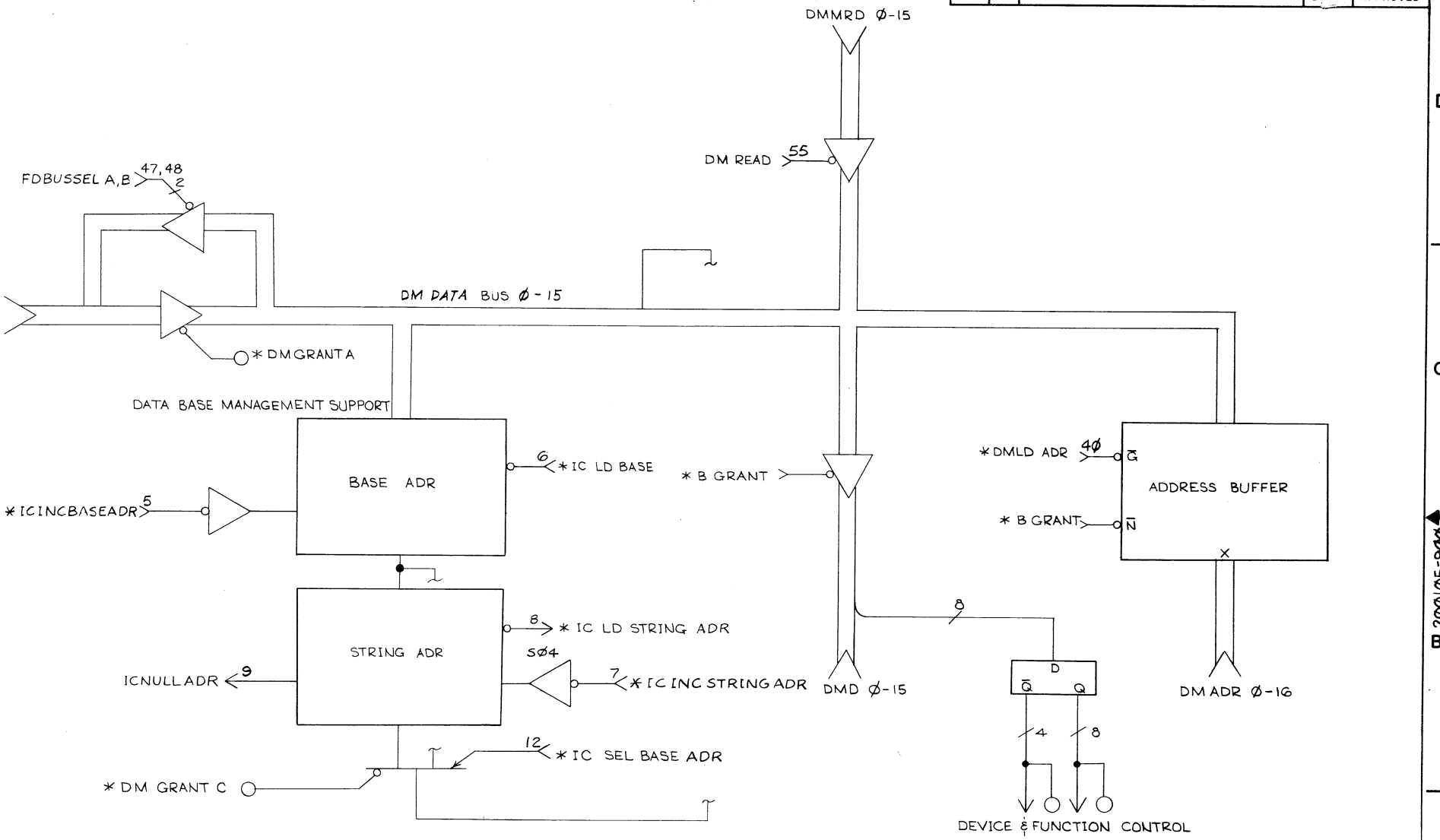
EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

TITLE: ASSY, BACKPANEL 1, NOVOVIEW SP

D | DWG 200100-TAB | REV SEE REV TABLE

SCALE 1/2 | DO NOT SCALE | SHEET 1 OF 1

200100-TAB



ZONE	LTR	DESCRIPTION	DATE	APPROVED
		RE		

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.XX ± ——
.XXX ± ——
ANGLES ± ——
✓

MATERIAL

FINISH

NEXT ASSY | USED ON

APPLICATION

CONTRACT NO.

DRAWN Susan Child Aug 6, 1977

CHECKED Art Cooper 5 OCT 77

MECH

ELEC

PROJ. ENG Gus Liapis Oct 5, 77

APPROVED

SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND
COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

DMA INTERFACE BLOCK DIAGRAM

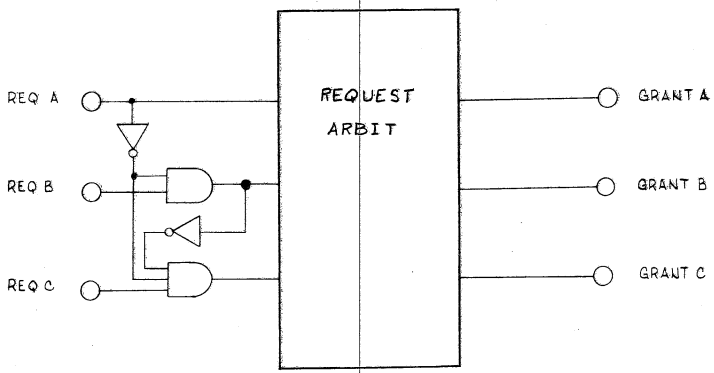
SIZE	CODE IDENT NO		REV
C	53938	200105-900	NC

SCALE NONE | SHEET 1 OF 2

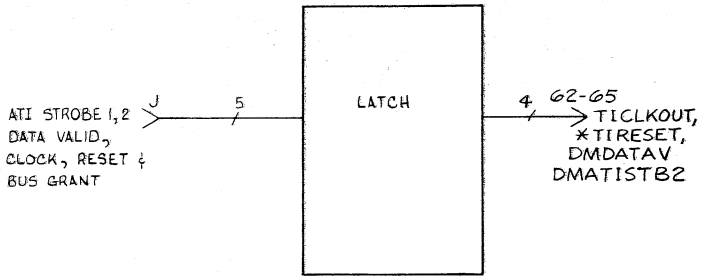
200105-900 B

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

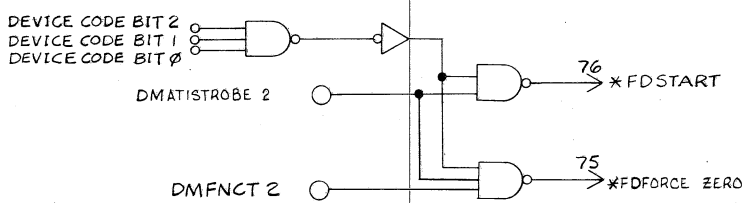
MULTI-PORT ACCESS CONTROLLER



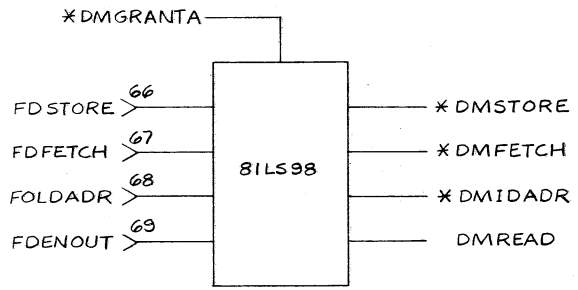
INTERFACE CONTROL SIGNAL BUFFERING



DISK INTER FACE SUPPORT



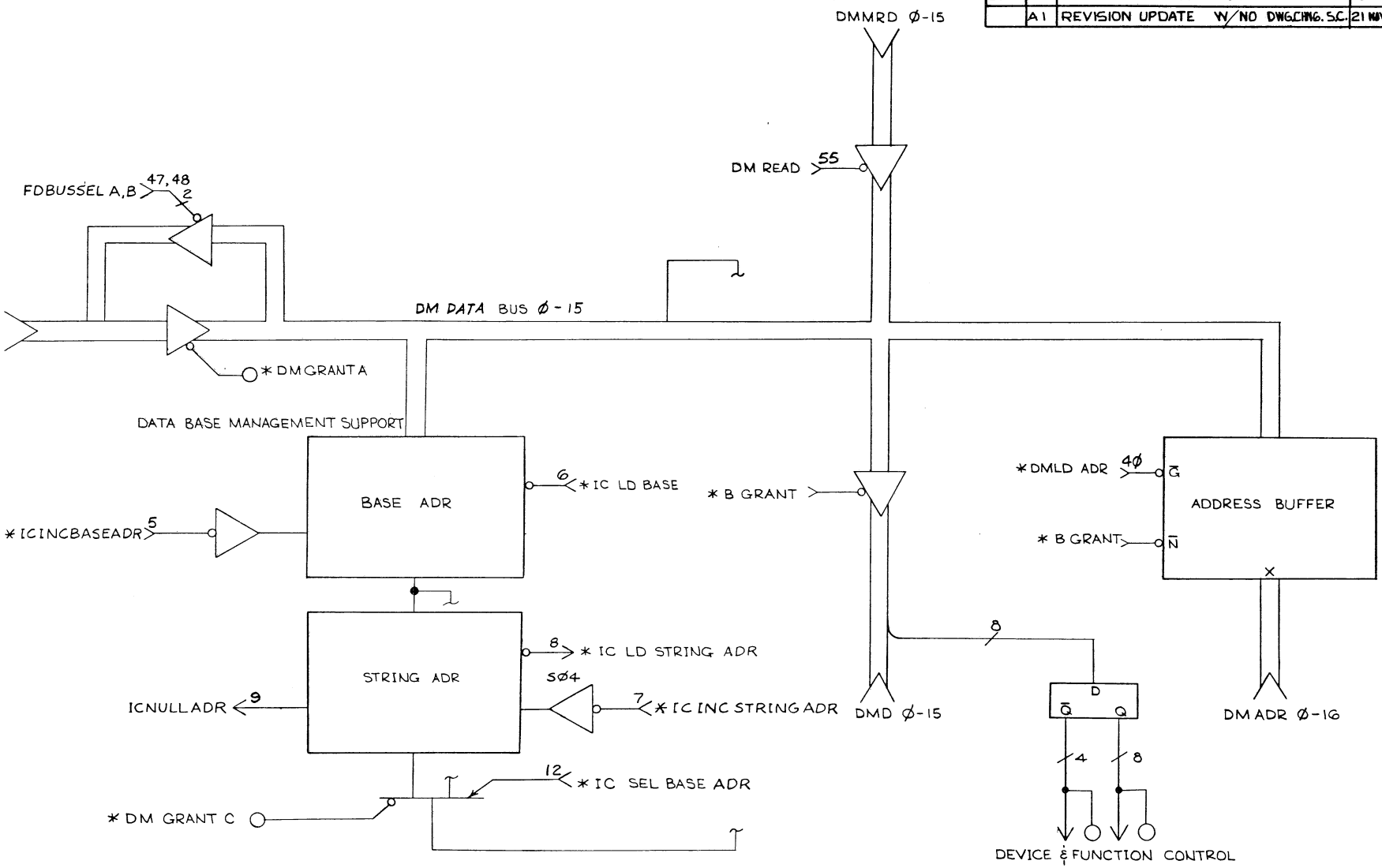
DIO TO DMA BUFFERED SIGNALS



200105-900 2 B

SIZE	CODE IDENT NO		REV
C	53938	200105-900	NC
SCALE NONE		SHEET 2 OF 2	

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A1	REVISION UPDATE W/NO DWG CHNG. S.C.	21 NOV 78	RSpeirs



NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.XX ±
.XXX ±
ANGLES ±
✓

MATERIAL

FINISH

CONTRACT NO.

DRAWN M. WING 5-5-78
CHECKED A. Coogan 6 JUN 78
MECH
ELEC R. Speirs 10 JUL
PROJ. ENG
APPROVED Hess Manning 7-16-78

SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

DMA INTERFACE BLOCK DIAGRAM

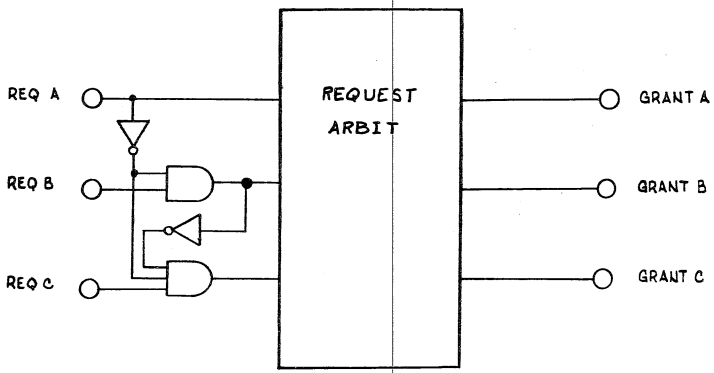
SIZE	CODE IDENT NO		REV
C	53938	200105-901	A1

SCALE NONE | SHEET 1 OF 2

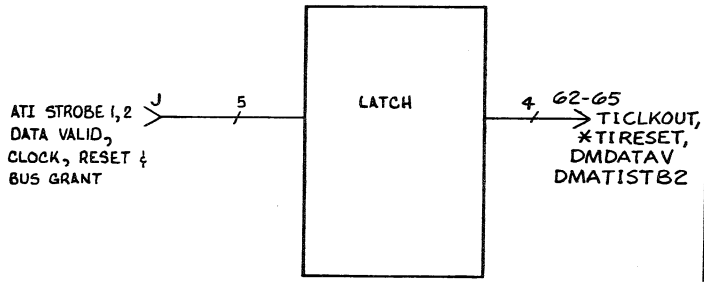
200105-901

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

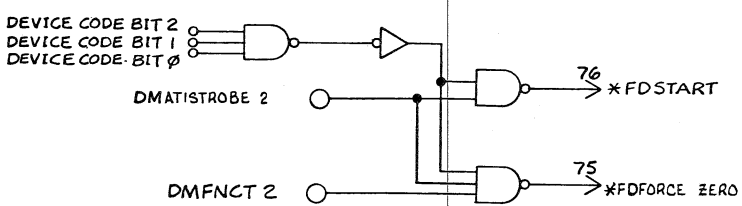
MULTI-PORT ACCESS CONTROLLER



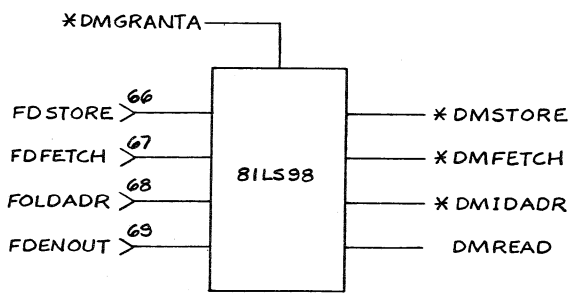
INTERFACE CONTROL SIGNAL BUFFERING



DISK INTER FACE SUPPORT



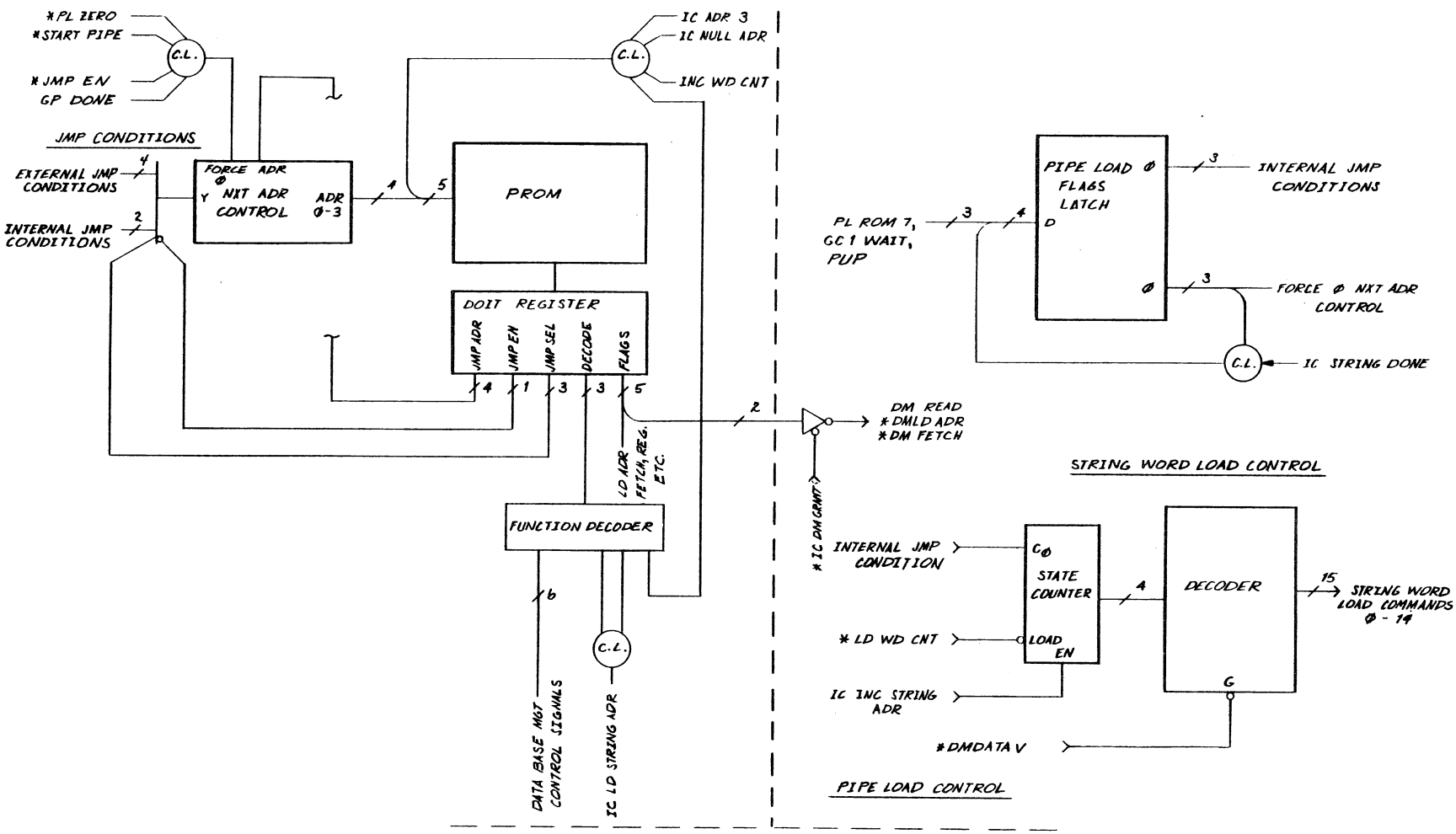
DIO TO DMA BUFFERED SIGNALS



B 200105-901

SIZE	CODE IDENT NO		REV
C	53938	200105-901	A1
SCALE NONE		SHEET 2 OF 2	

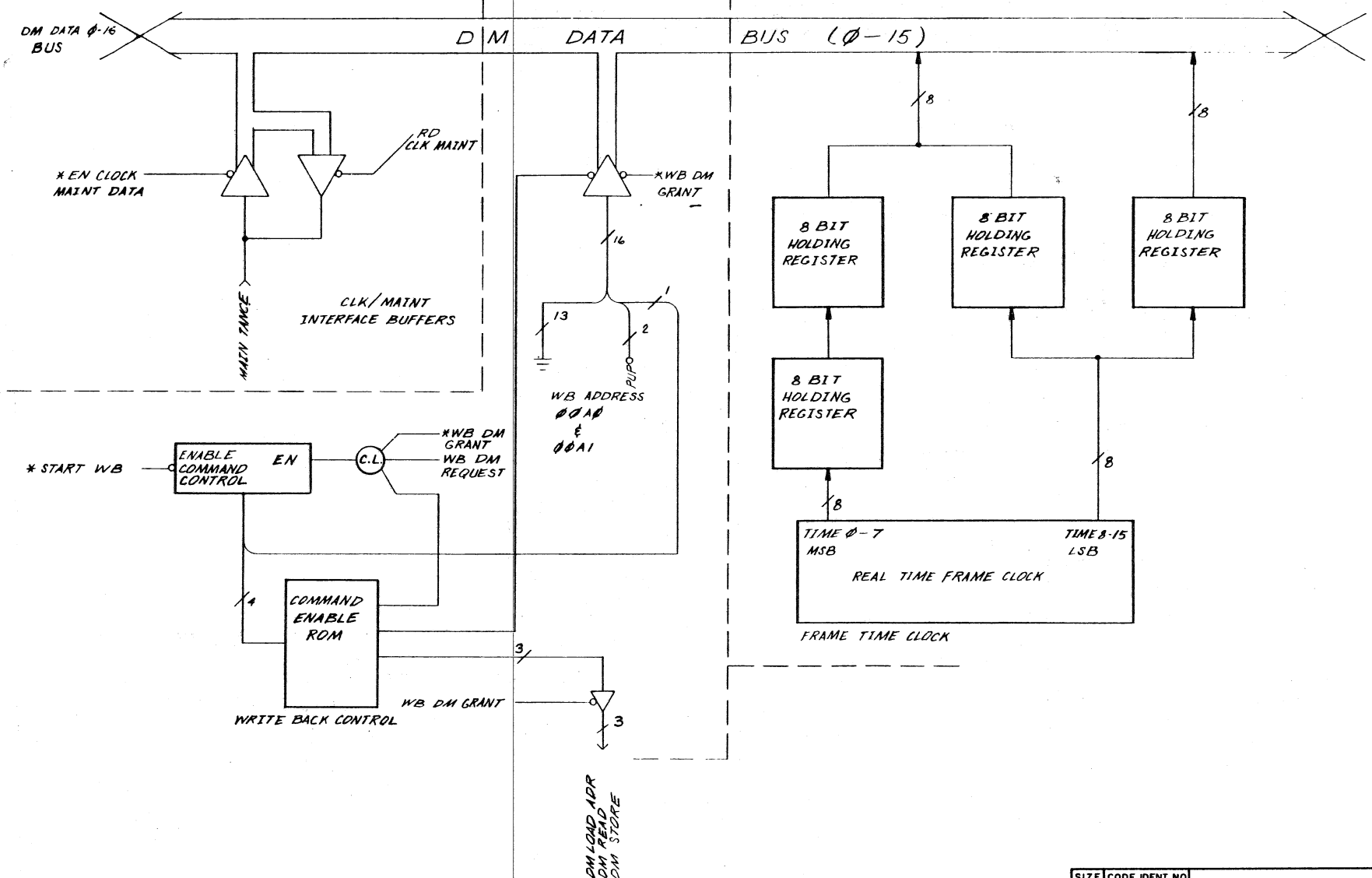
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
—	A1	UPDATED REV. LEVEL, NO DWG. CHANGE JB	10-14-77	



		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON .XX ± .XXX ± ANGLES ± ✓	CONTRACT NO.	SEE SEPARATE PARTS LIST
			DRAWN D. CARROLL 8-31-77	EVANS & SUTHERLAND COMPUTER CORPORATION SALT LAKE CITY, UTAH 84112
			CHECKED Carl Ramos 8-31-77	INPUT CONTROL, CABLE W/W (BLOCK DIAGRAM)
			MECH	
			ELEC	
			PROJ. ENG Dave Dugan 8-31-77	
			APPROVED	
200130-100	NOVOVIEW	MATERIAL		SIZE C | CODE IDENT NO 53938 | 200106-900 | REV A1
NEXT ASSY	USED ON	FINISH		SCALE NONE | SHEET 1 OF 3
APPLICATION				

200106-900

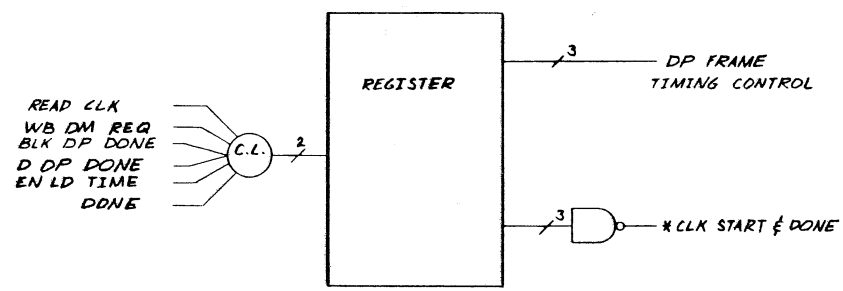
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



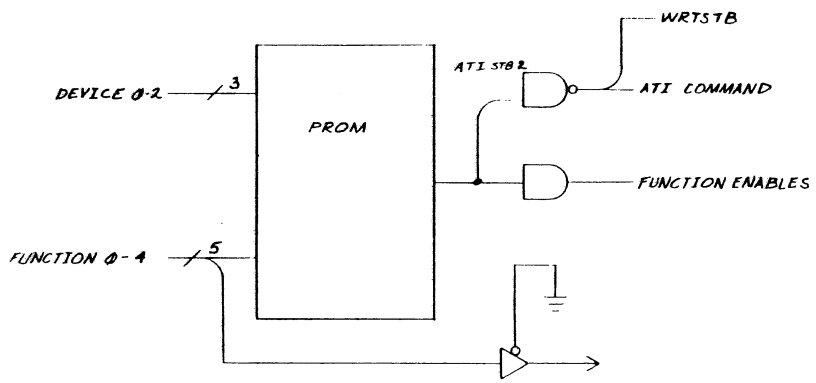
SIZE	CODE IDENT NO		REV
C	53938	200106-900	A1
SCALE NONE		SHEET	OF 3

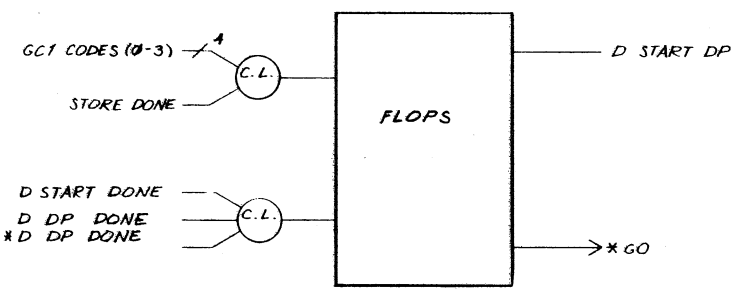
200106-900

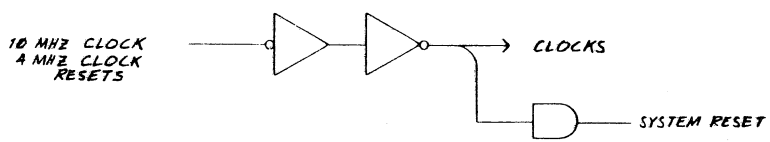
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



DP FRAME TIMING CONTROL





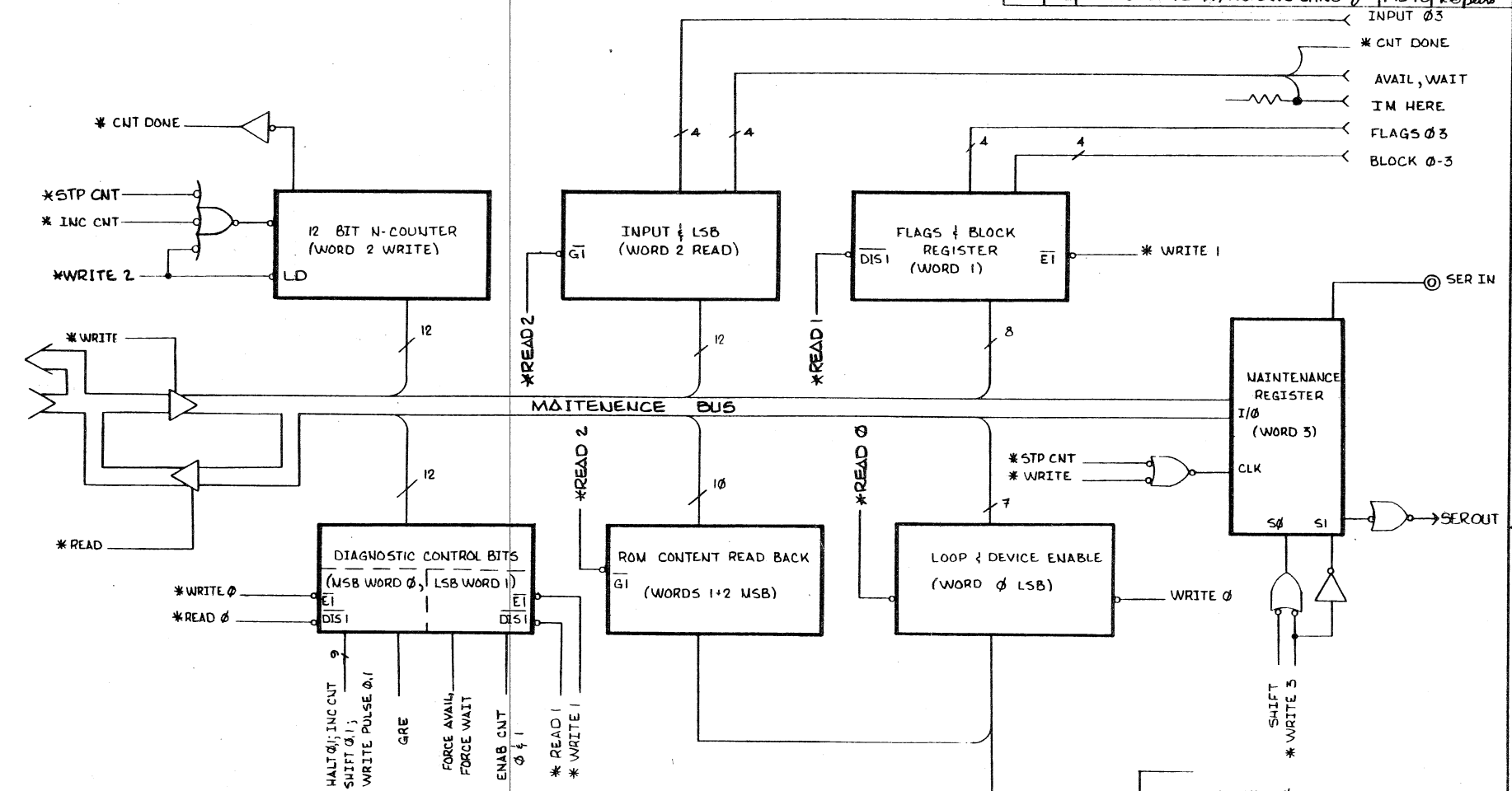


DMA I/F & FUNCTION DECODE

200106-900

SIZE	CODE IDENT NO		REV
C	53938	200106-900	A1
SCALE NONE		SHEET 3	OF 3

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A2	REV UPDATE W/NO DWG CHNG JB	1-12-78	RB pcns



NEXT ASSY	USED ON
APPLICATION	NOVOVIEW

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.XX ±
.XXX ±
ANGLES ± ✓

MATERIAL
FINISH

CONTRACT NO.	
DRAWN	Susan Child 17 Aug 1977
CHECKED	17 OCT 77
MECH	
ELEC	
PROJ. ENG	20 OCT 77
APPROVED	

SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

CLOCK/MAINT BLOCK DIAGRAM

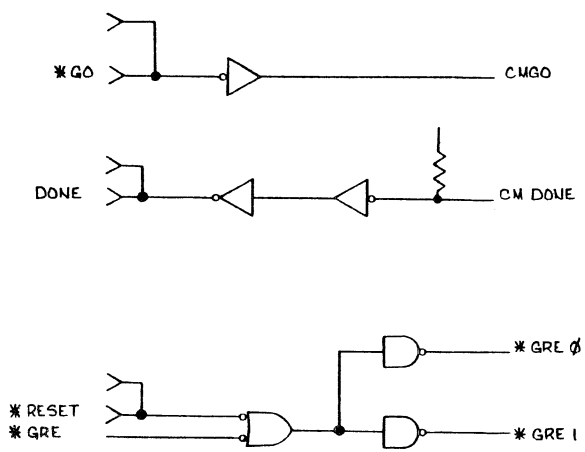
SIZE	CODE IDENT NO		REV
C	53938	200107-900	A3

SCALE NONE | SHEET 1 OF 2

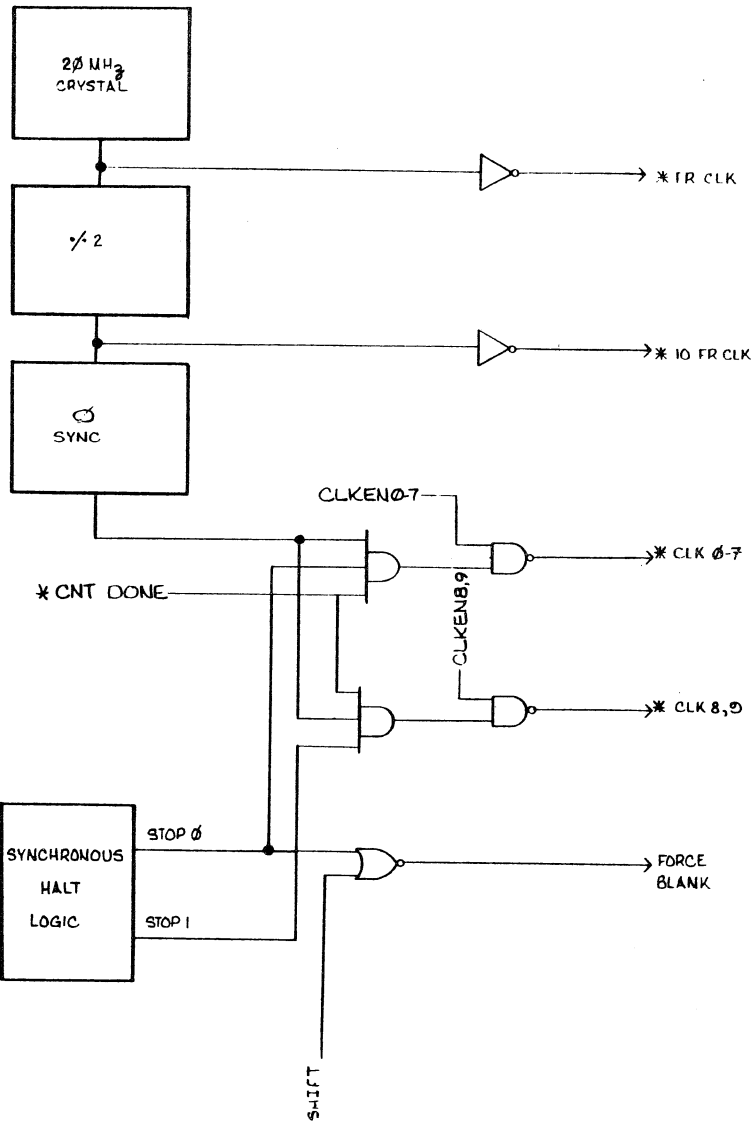
200107-900

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

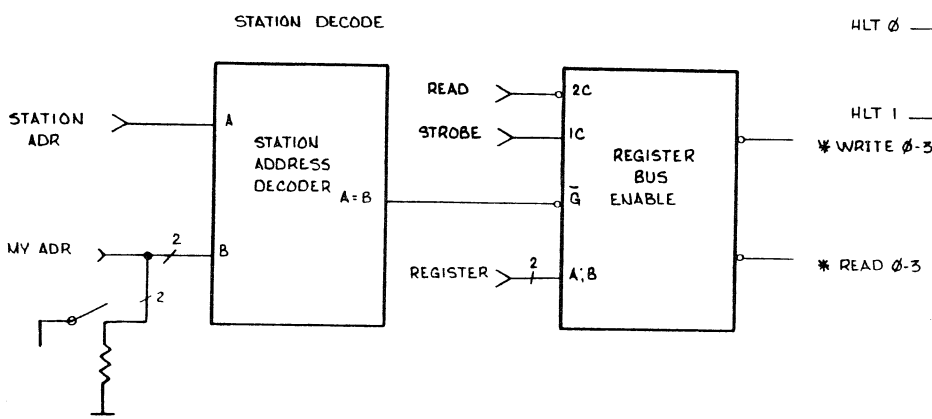
FEED THROUGH SIGNALS



CLOCK GENERATION & DRIVERS



STATION DECODE

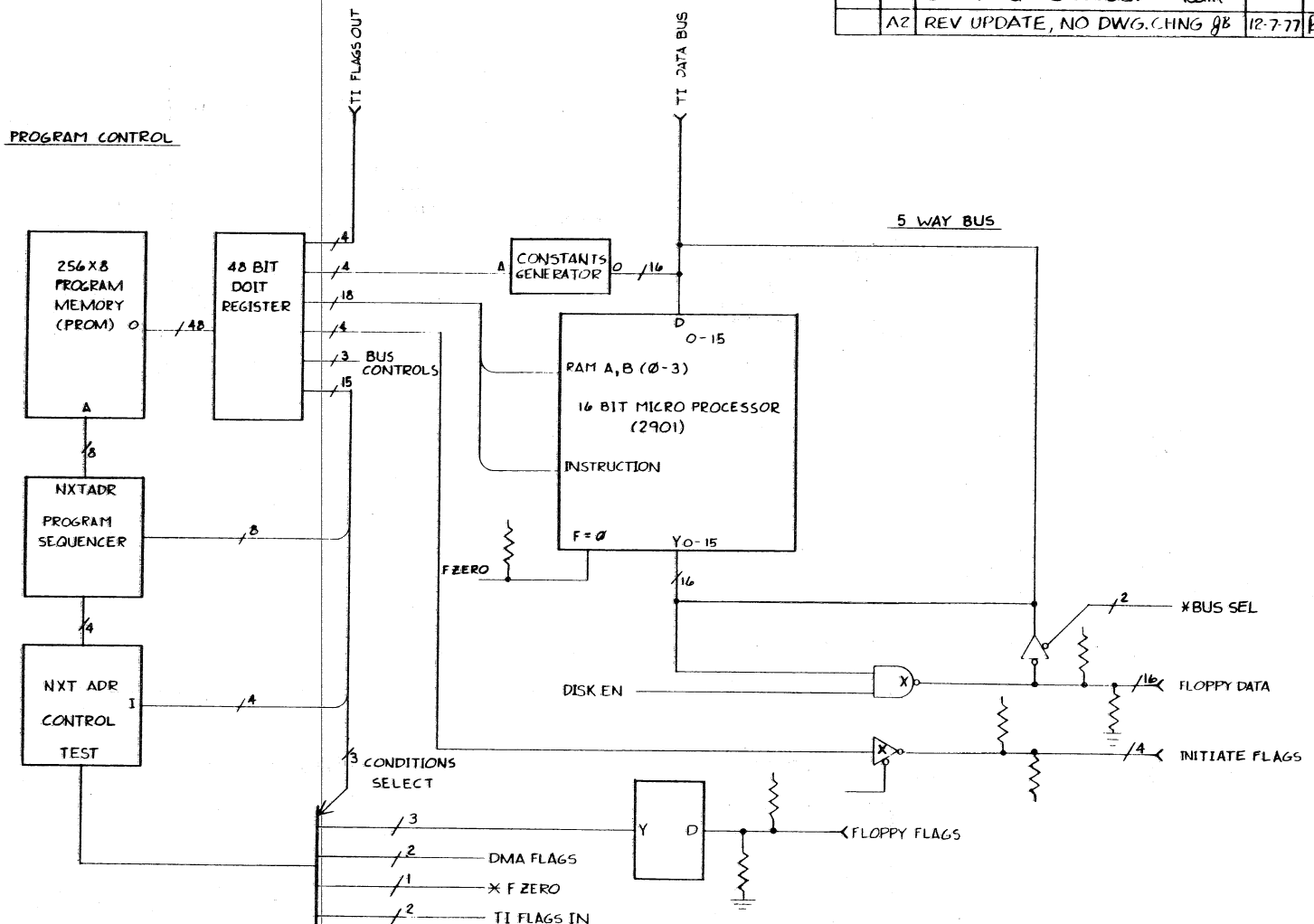


200107-900

SIZE	CODE IDENT NO		REV
C	53938	200107-900	A3
SCALE NONE			SHEET 2 OF 2

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
–	A1	REVISION UPDATE W/NO DRAWING CHANGE. RBM	9-28-77	Lisa Lingua 20 OCT 77
	A2	REV UPDATE, NO DWG. CHNG JB	12-7-77	Ron Speiss

PROGRAM CONTROL



		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON .xx ± —— .xxx ± —— ANGLES ± —— ✓	CONTRACT NO.
			DRAWN: D. CARROLL 7-27-77
			CHECKED Art Evans 30 SEP 77
			MECH
			ELEC
			PROJ. ENG Lisa Lingua 18 Oct 77
			APPROVED
200130-100	NOVOVIEW	MATERIAL	
NEXT ASSY	USED ON	FINISH	
APPLICATION			

SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

DISK INTERFACE, FLOPPY, AED, CABLE, W/W

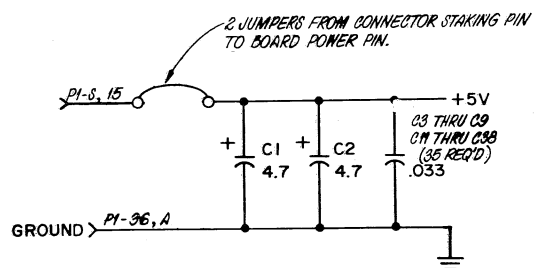
SIZE	CODE IDENT NO		REV
C	53938	200108-900	A2
SCALE NONE		SHEET 1 OF 2	

200108-900 B

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
—	A1	CHANGED VALUES OF R2, R3, AND C10. ADDED I.C.'S U12, U30, U31 AND U41. DELETED U50.	24OCT77	D. Howard

4. NEXT MICROINSTRUCTION PROM ADDRESSES A0 THRU A7 ARE TEST POINTS IN LOCATIONS U10.1, 3, 5, 7 AND U20.1, 3, 5, 7 RESPECTIVELY.
3. ON I.C.'S U63 & U64, PIN 8 IS GROUND AND PIN 2 IS POWER (+5V).
   ON ALL 42 PIN I.C.'S (LOCATIONS U18, U38, U58), PIN 30 IS GROUND AND PIN 10 IS POWER (+5V).
   ON ALL 24 PIN I.C.'S (LOCATIONS U66, U68), PIN 6 IS GND_1, PIN 18 IS GND_2 AND PIN 24 IS POWER (+5V).
   ON I.C. U15, PIN 5 IS POWER & PIN 10 IS GROUND.
2. NUMBERS SHOWN REFER TO CONNECTOR P1 & J1.
   ALL CAPACITANCE VALUES ARE EXPRESSED IN MICROFARADS.
   RESISTANCE VALUES ARE EXPRESSED IN OHMS, K DENOTES 1000.
   RESISTORS ARE 1/4 WATT, ±5% TOLERANCE.
   ON ALL 20 PIN I.C.'S, PIN 10 IS GROUND AND PIN 20 IS POWER (+5V).
   ON ALL 16 PIN I.C.'S, PIN 8 IS GROUND AND PIN 16 IS POWER (+5V).
1. ON ALL 14 PIN I.C.'S, PIN 7 IS GROUND AND PIN 14 IS POWER (+5V).
   UNLESS OTHERWISE SPECIFIED;

NOTES:



200150-100	NOVOVIEW
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.xx ± ——
.xxx ± ——
ANGLES ± ——
✓

MATERIAL

FINISH

CONTRACT NO.	
DRAWN R. HOLLEY	9-21-77
CHECKED	30 SEP 77
MECH	
ELEC	D. Howard 24 OCT 77
PROJ. ENG	D. Howard 24 OCT 77
APPROVED	

SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

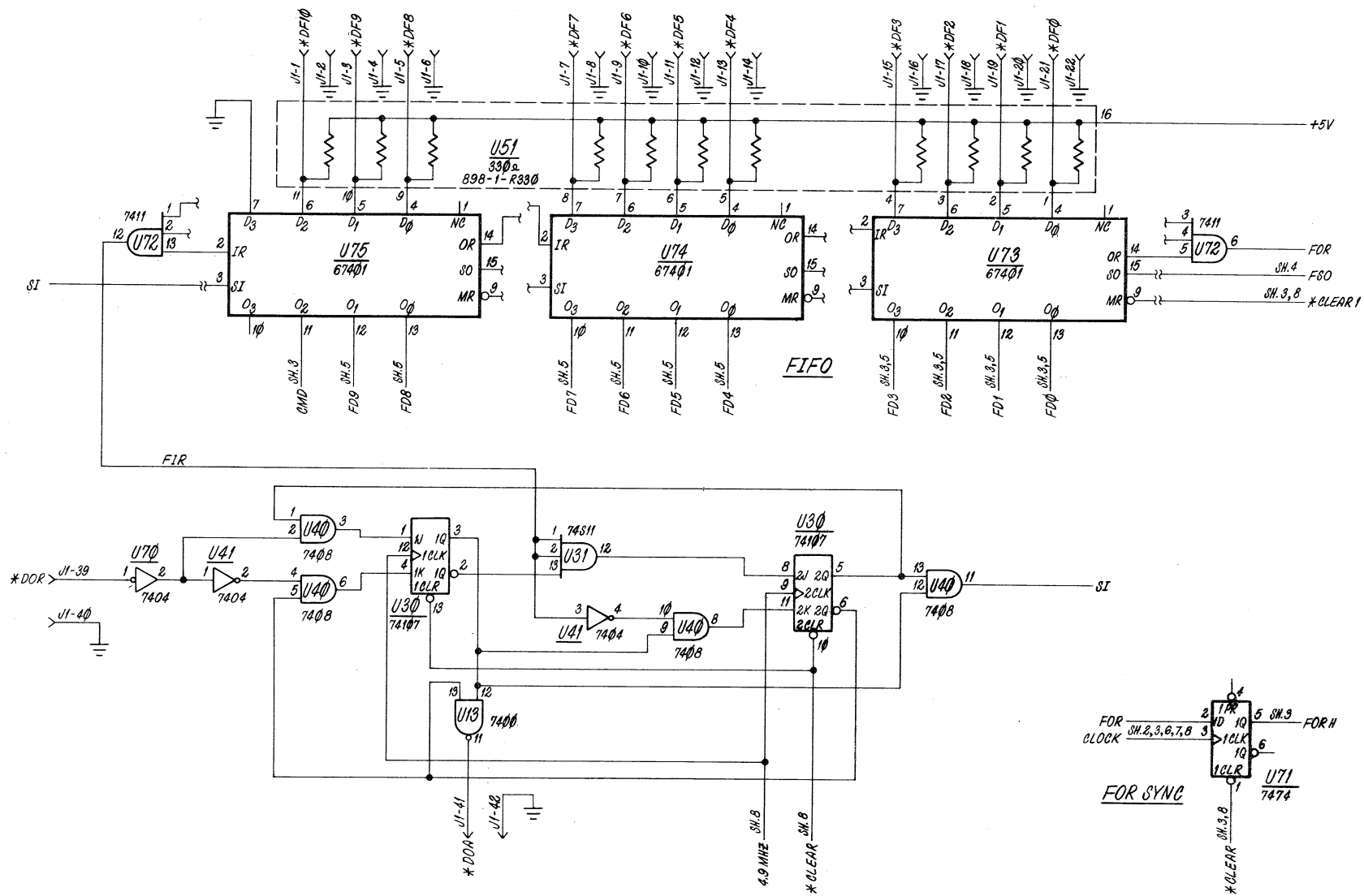
TERMINAL INTERFACE W/W

SIZE	CODE IDENT NO		REV
C	53938	200109-600	A1

SCALE NONE | SHEET 1 OF 8

200109-600

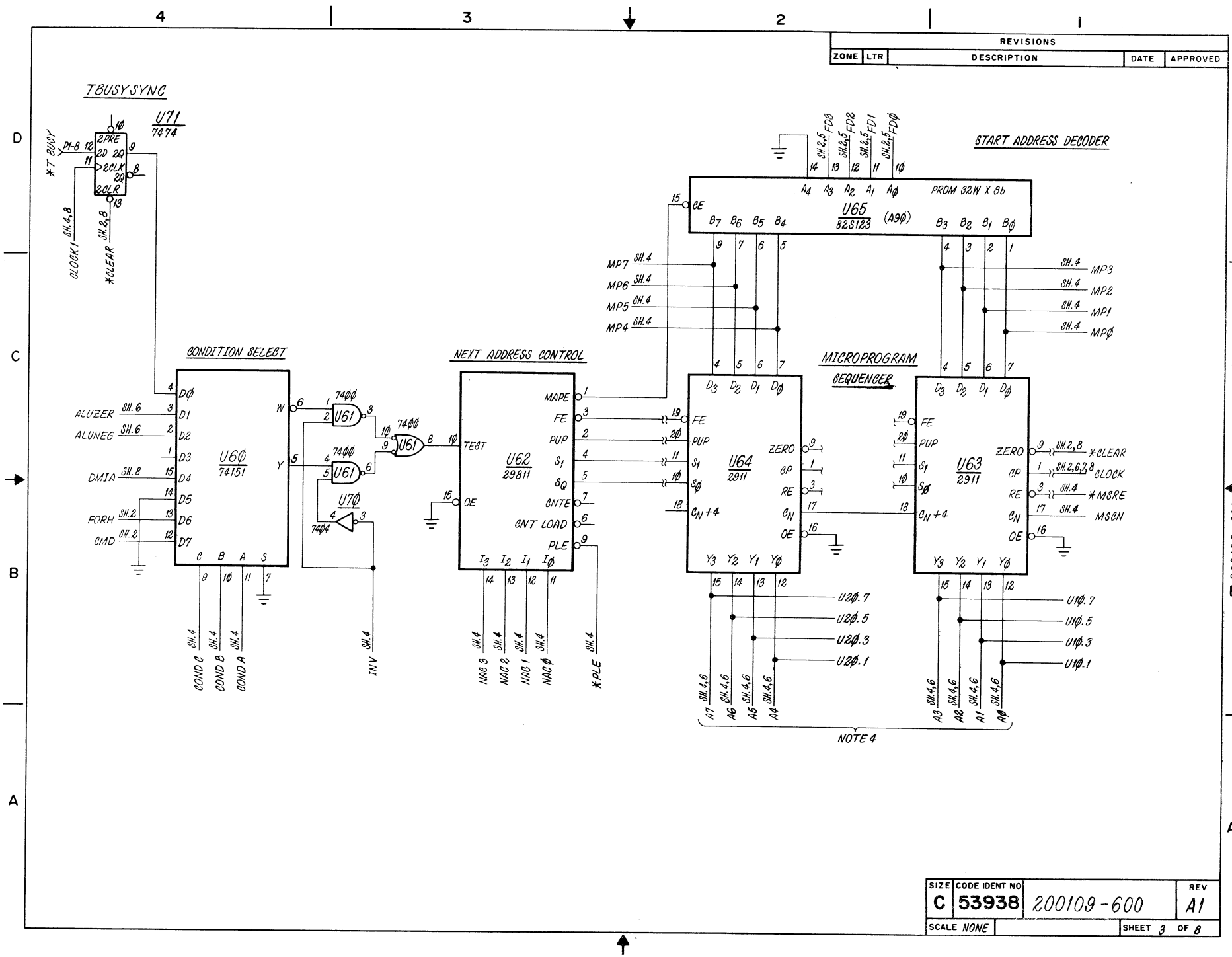
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



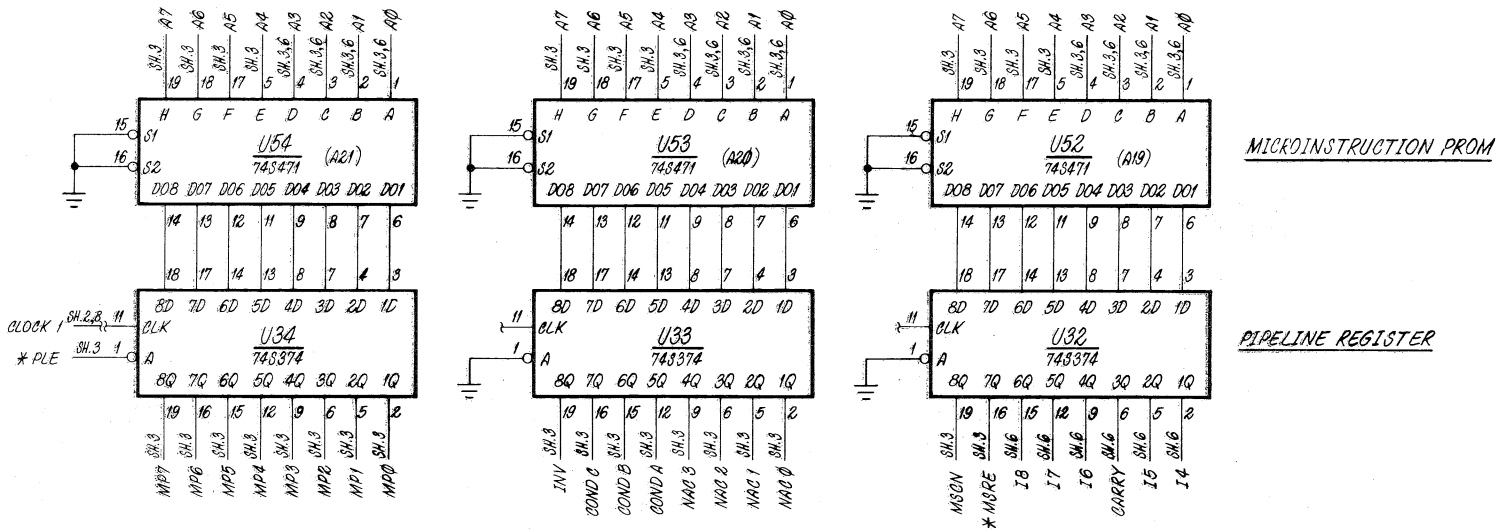
COMPUTER / FIFO
READY / ACK
SYNC

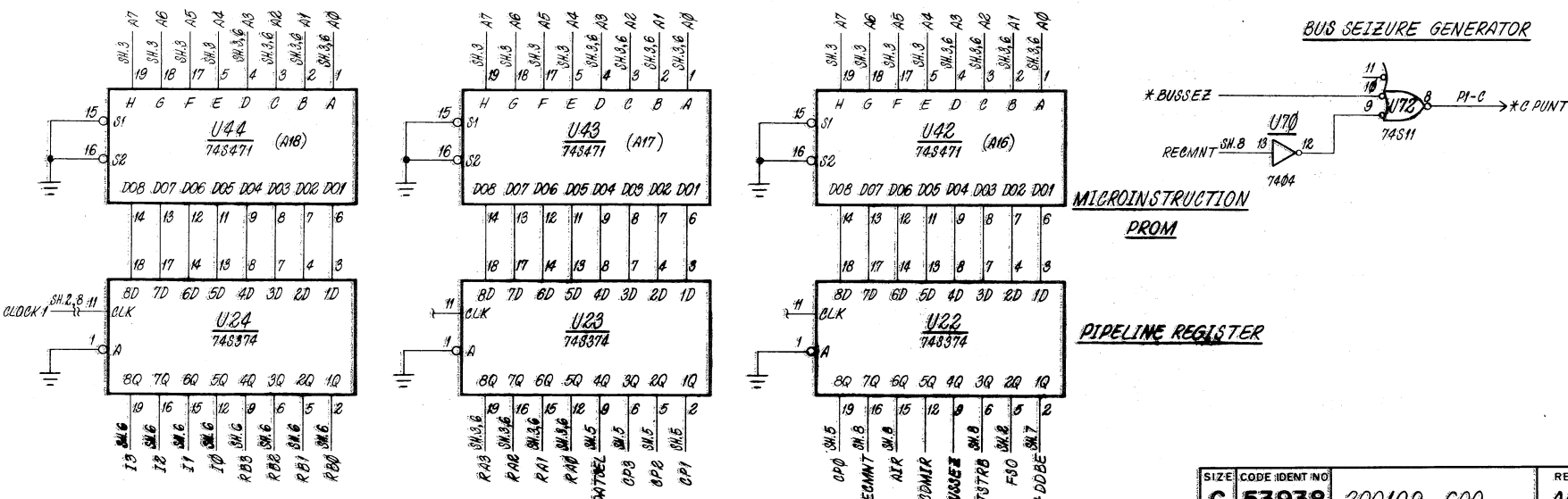
SIZE	CODE IDENT NO		REV
C	53938	200109-600	A1
SCALE NONE			SHEET 2 OF 8

200109-600


REVISIONS
ZONE | LTR | DESCRIPTION | DATE | APPROVED
TBUSYSYNC
U71
7474
*T BUSY
CLOCK 1
*CLEAR
START ADDRESS DECODER
U65
82S123
(A9Ø)
PROM 32W X 8b
MP7
MP6
MP5
MP4
MP3
MP2
MP1
MPØ
CONDITION SELECT
U6Ø
74151
ALUZER
ALUNEG
DMIA
FORH
CMD
COND C
COND B
COND A
INV
NEXT ADDRESS CONTROL
U62
29811
TEST
OE
MAPE
FE
PUP
S1
SQ
ONTE
CNT LOAD
PLE
*PLE
NA0 3
NA0 2
NA0 1
NA0Ø
MICROPROGRAM SEQUENCER
U64
2911
U63
2911
ZERO
OP
RE
CN
OE
CN+4
U2Ø.7
U2Ø.5
U2Ø.3
U2Ø.1
U1Ø.7
U1Ø.5
U1Ø.3
U1Ø.1
NOTE 4
*CLEAR
CLOCK
*MSRE
MSCN
200109-600
SIZE C
CODE IDENT NO 53938
200109-600
REV A1
SCALE NONE
SHEET 3 OF 8

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

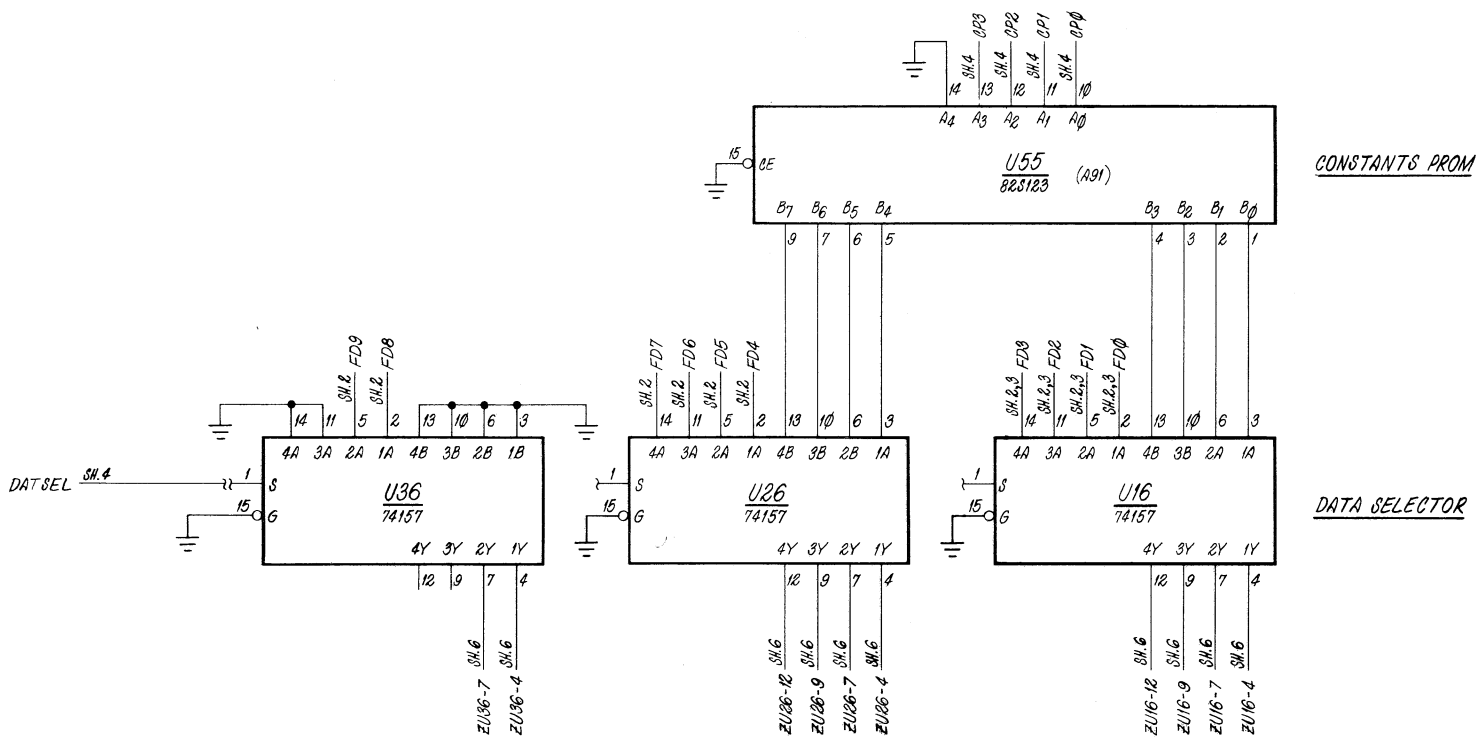




SIZE	CODE IDENT NO		REV
C	53938	200109-600	A1
SCALE NONE			SHEET 4 OF 8

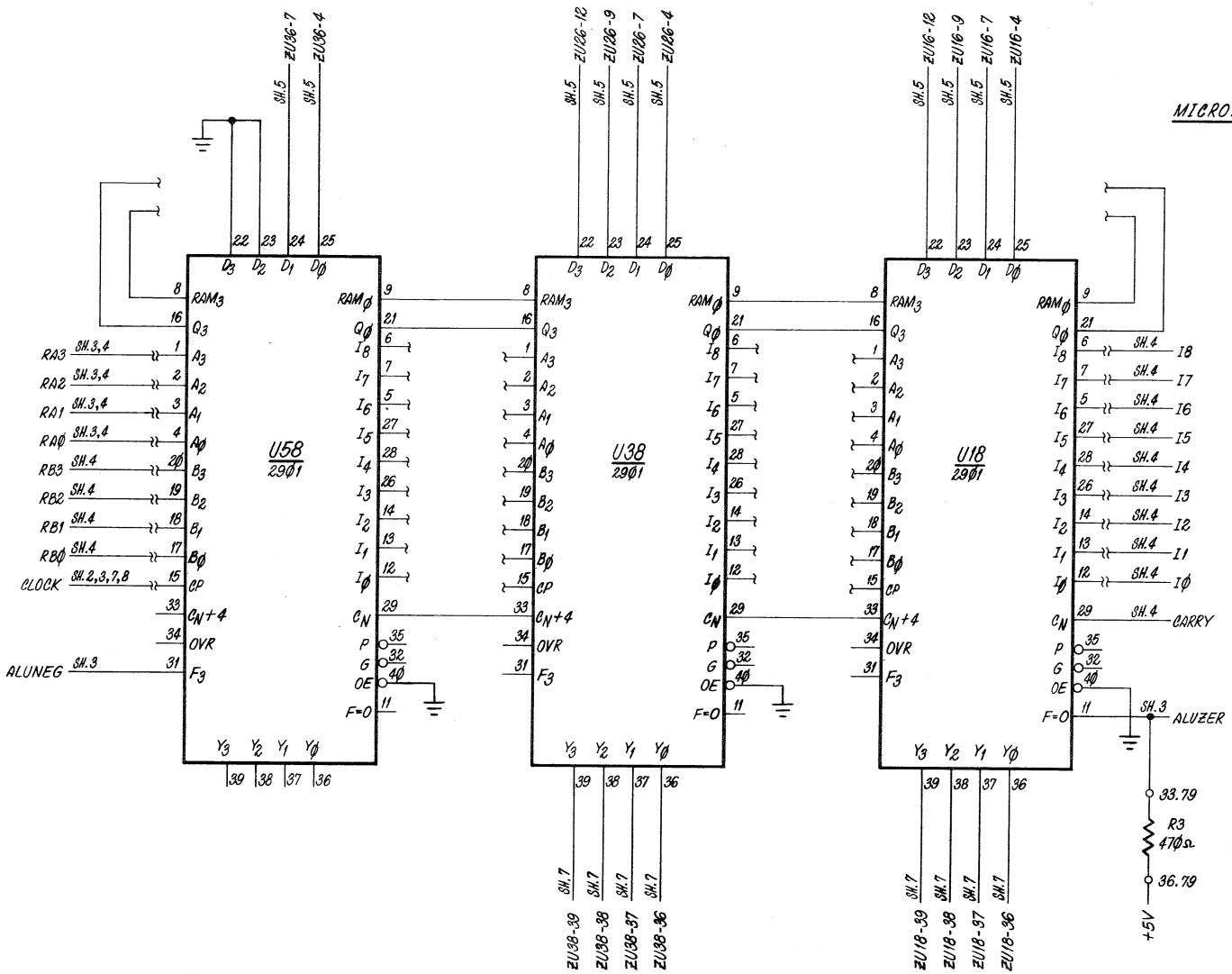
200109-600

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



200109-600

SIZE	CODE IDENT NO		REV
C	53938	200109-600	A1
SCALE NONE			SHEET 5 OF 8

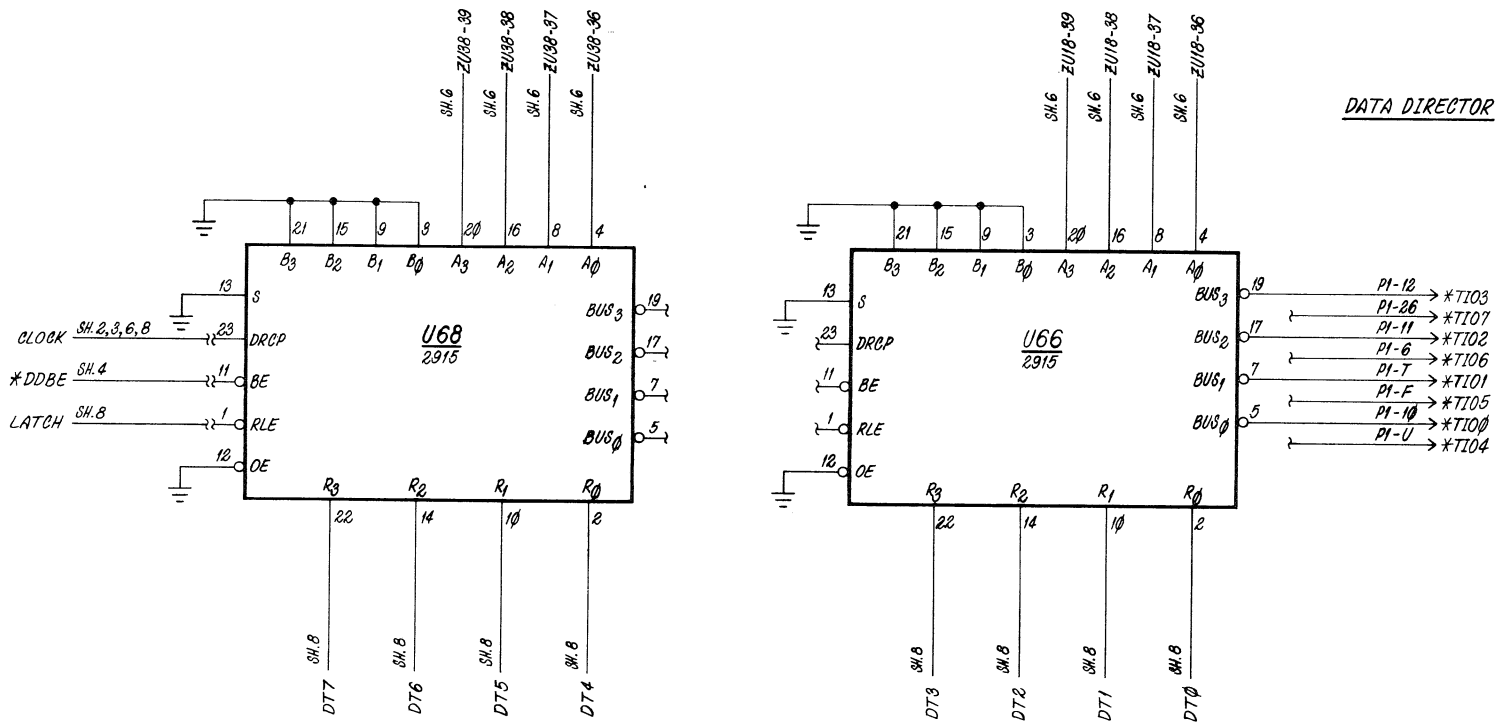


REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

SIZE	CODE IDENT NO		REV
C	53938	200109-600	A1
SCALE NONE			SHEET 6 OF 8

200109-600

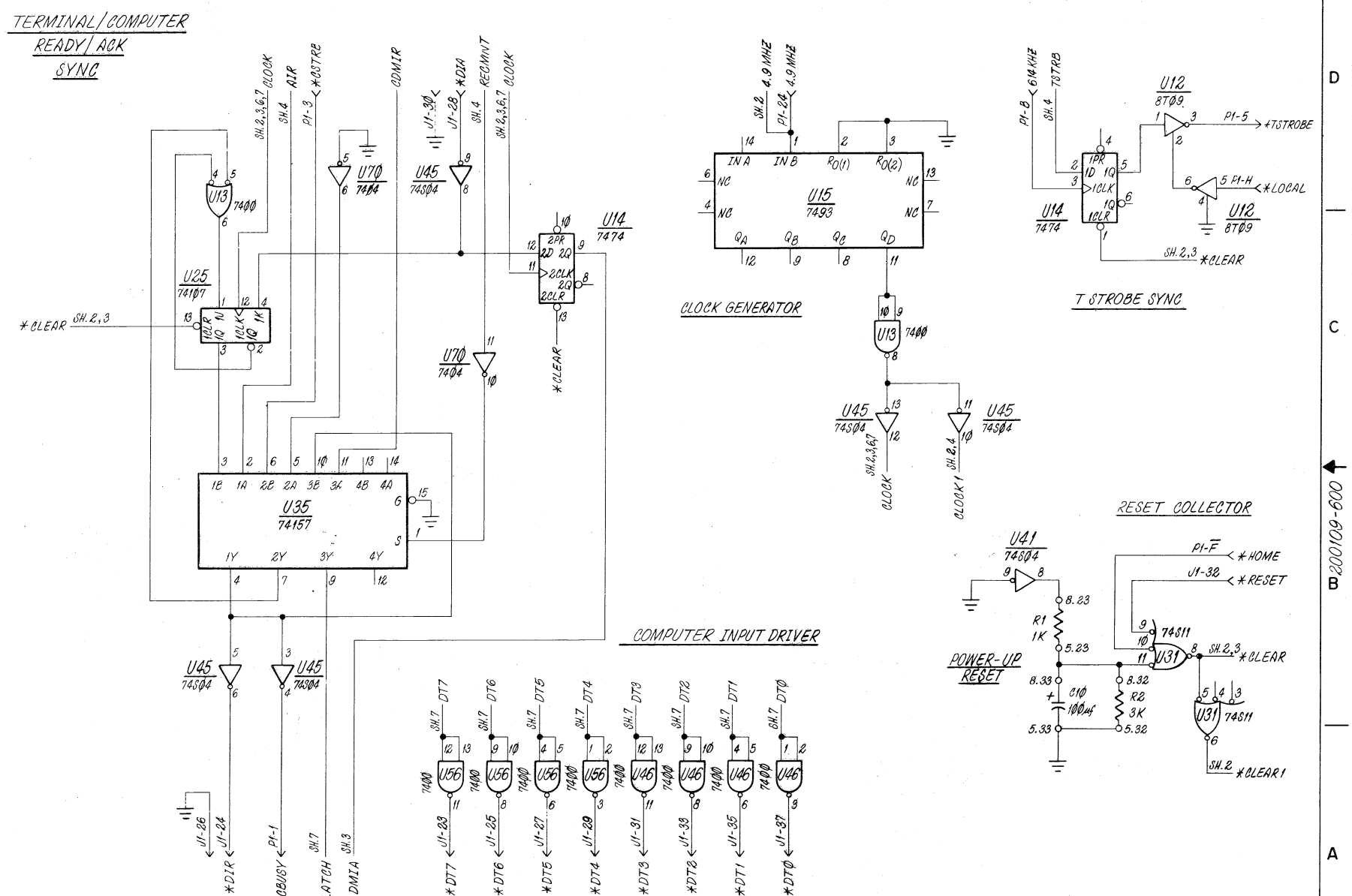
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



SIZE	CODE IDENT NO		REV
C	53938	200109-600	A1
SCALE NONE		SHEET 7 OF 8	

200109-600

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

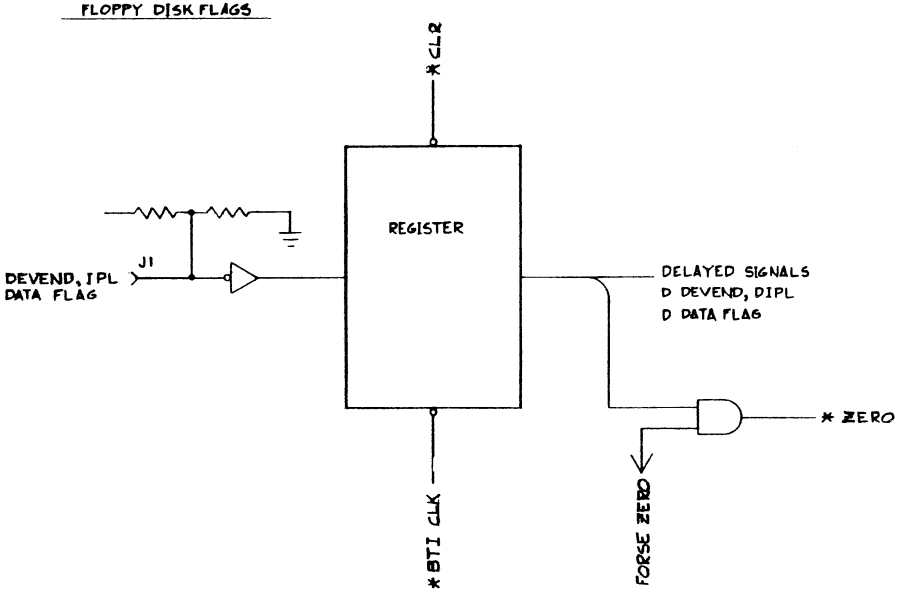


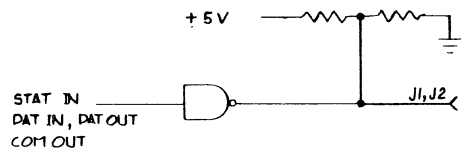
SIZE	CODE IDENT NO		REV
C	53938	200109-600	A1
SCALE NONE			SHEET 8 OF 8

200109-600

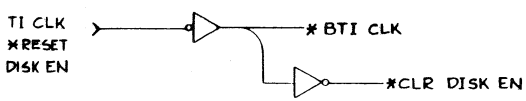
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

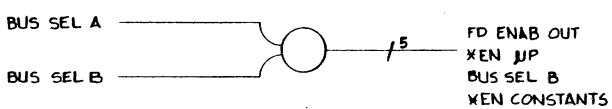
FLOPPY DISK FLAGS

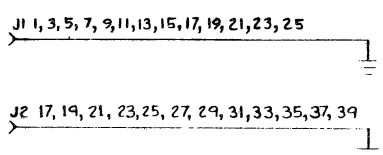




BUS BUFFERING & CONTROL

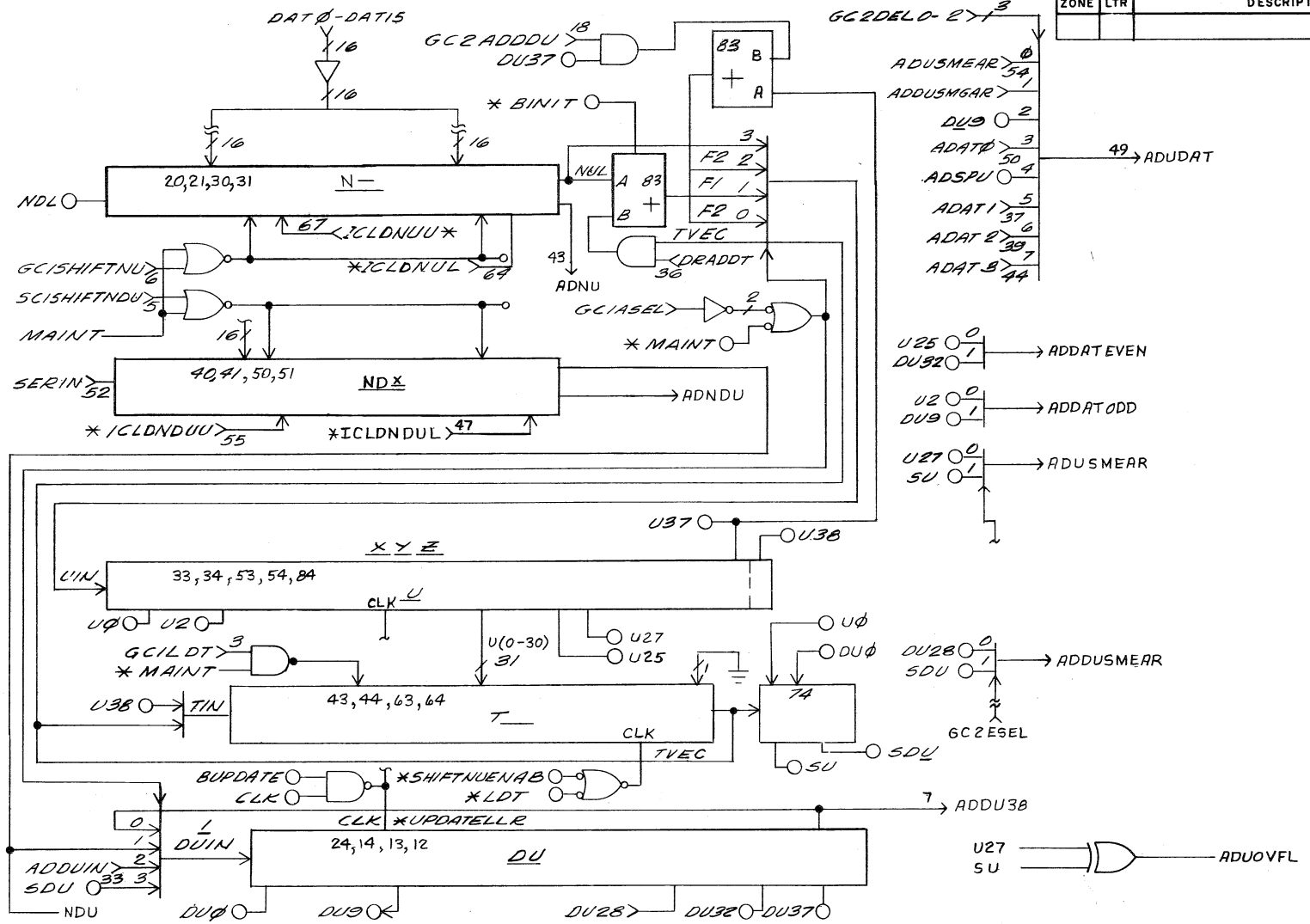






SIZE	CODE IDENT NO		REV
C	53938	200108-900	A2
SCALE NONE			SHEET 2 OF 2

200108-900 B



A SEL
0 = NORMAL
1 = SERIAL LOAD
2 = CURVE STRING
3 = MAINTENANCE

OSEL

ESEL
0 = STRING 1
1 = FACE 1
2 = FACE 1
3 = FACE 1
4 = EDGE 1
5 = DBMLOAD Q/1
6 = DBMLOAD Q/1
7 = DBMLOAD Q/1

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.XX ± ——
.XXX ± ——
ANGLES ± ——
✓

MATERIAL
FINISH
NEXT ASSY | USED ON
APPLICATION

CONTRACT NO.
DRAWN W.K.D. 5/27/77
CHECKED 15 JUN 77
MECH
ELEC W.F. allen 10/10/77
PROJ. ENG
APPROVED

SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND
COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

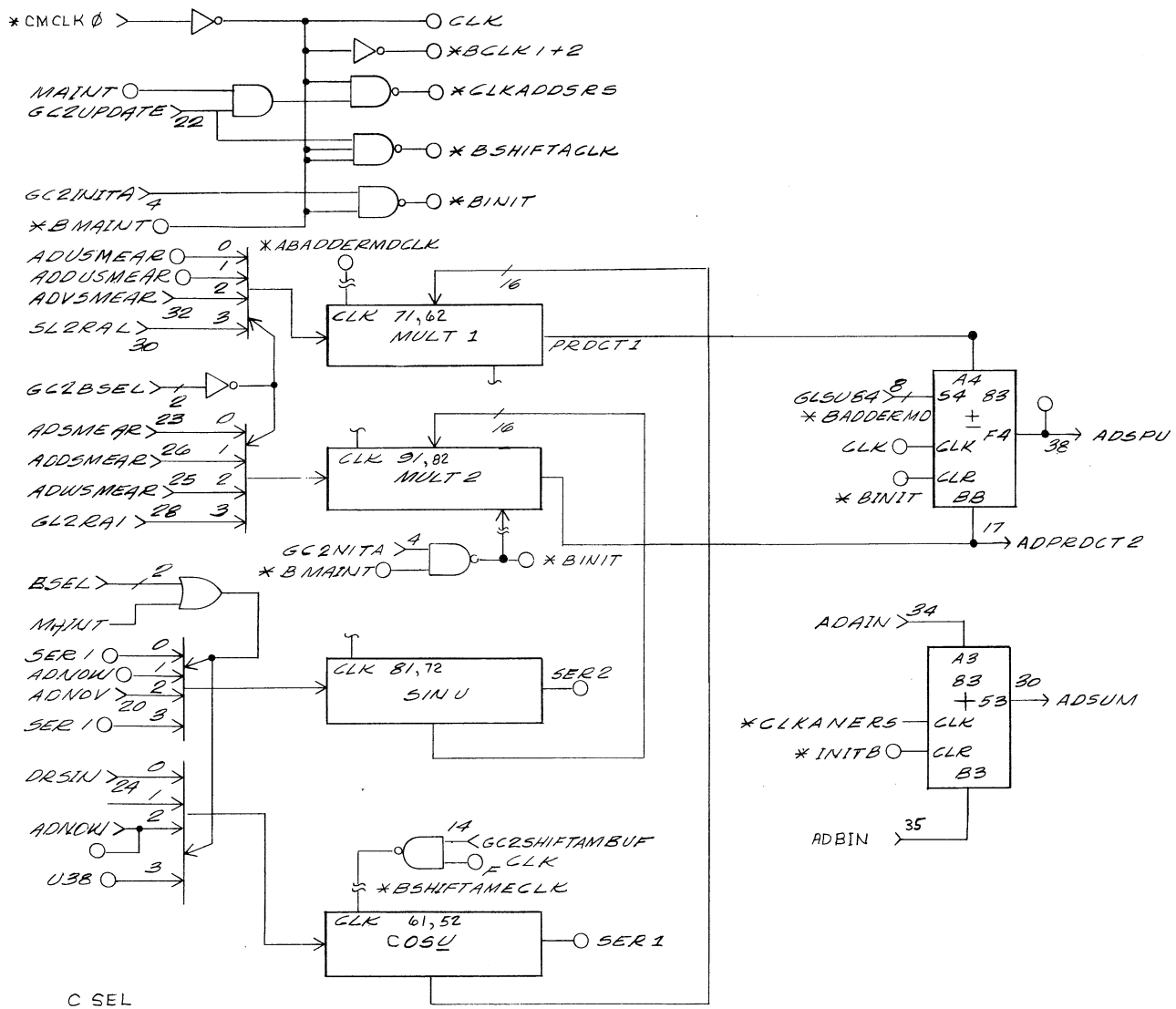
ADDER
(BLOCK DIAGRAM)

SIZE	CODE IDENT NO		REV
C	53938	200110-900	NC

SCALE None SHT 1 OF 2

200110900

REV				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



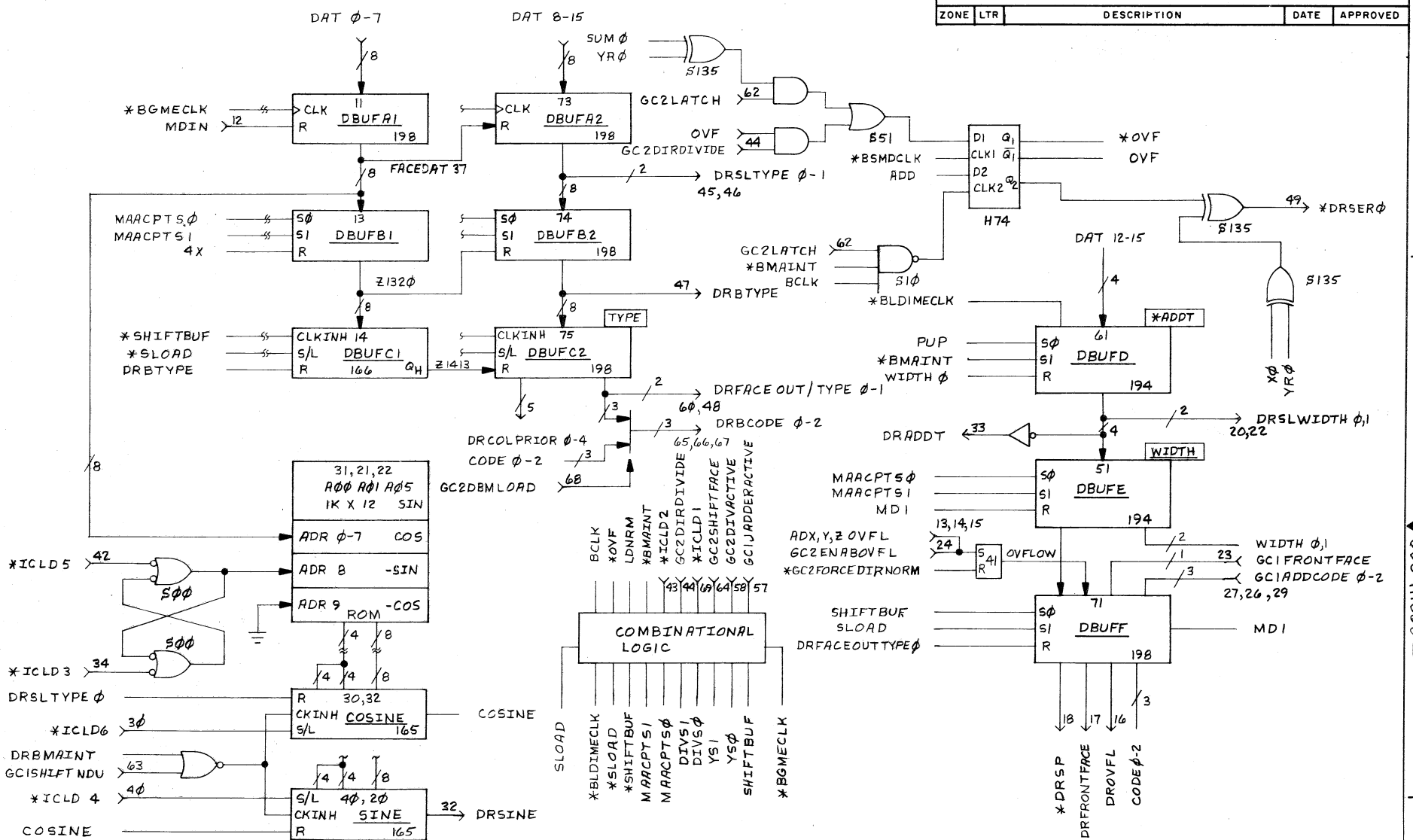
C SEL

0 = DIR + CURVE
1 = FACES OR XFM1
2 = EDGES
3 = MAINT OR XFM2

B SEL

0 — DIR
1 — CURVE
2 — EDGES OR FACE
3 — XFM

SIZE	CODE IDENT NO		REV
C	53938	200110-900	NC
SCALE NONE		SHEET 2 OF 2	



REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.XX ± ____
.XXX ± ____
ANGLES ± ____
✓

MATERIAL

FINISH

NEXT ASSY | USED ON

APPLICATION

CONTRACT NO.

DRAWN R Earley 5-2-77

CHECKED J Cougan 27 MAY 77

MECH

ELEC D Mason 6 JUN 77

PROJ. ENG W.F. Allen 6/9/77

APPROVED

SEE SEPARATE PARTS LIST

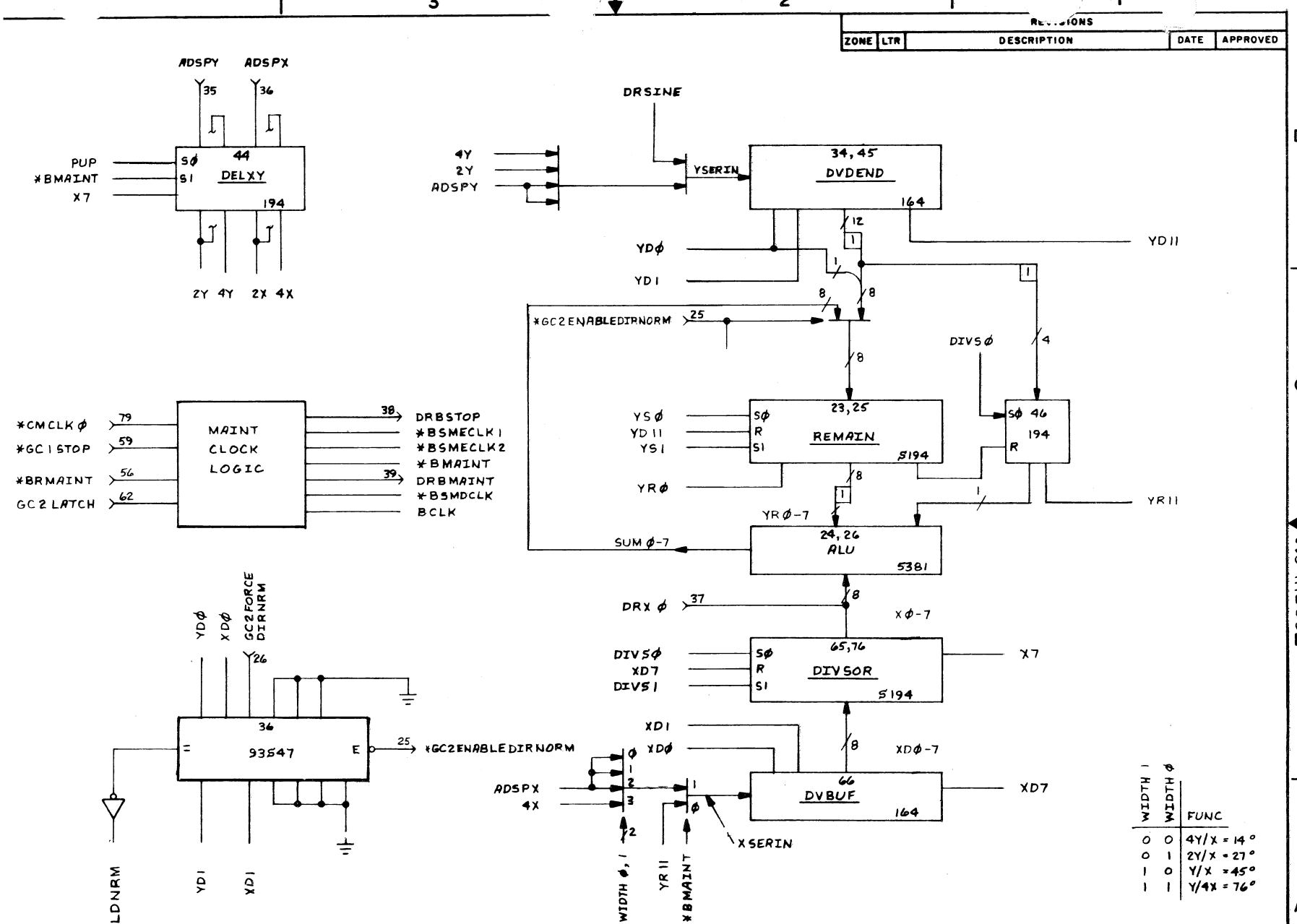
EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

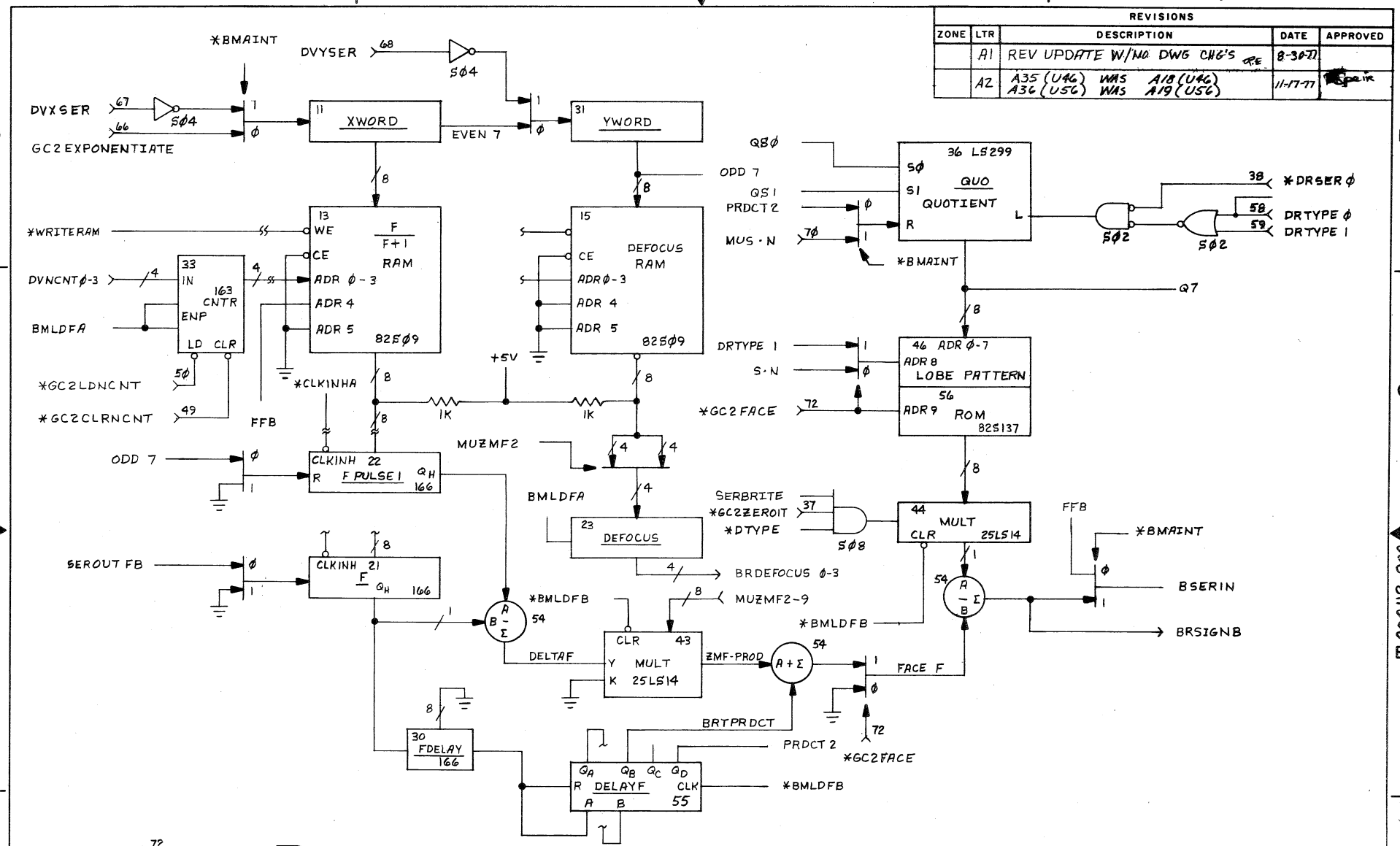
DIRECTIONALITY BLOCK DIAGRAM

SIZE	CODE IDENT NO		REV
C	53938	200111-900	NC

SCALE NONE | SHEET 1 OF 2

200111-900


REVISIONS
ZONE LTR DESCRIPTION DATE APPROVED
ADSPY ADSPX
35 36
PUP
*BMAINT
X7
SØ SI 44 DELXY 194
2Y 4Y 2X 4X
4Y
2Y
ADSPY
DRSINE
YSERIN
34,45 DVDEND 164
YDØ
YD1
YD11
12
*GC2ENABLEDIRNORM 25
DIVSØ
4
8
YSØ
YD11
YS1
SØ R SI 23,25 REMAIN 5194
SØ 46 194 R
YRØ
YR11
YRØ-7
SUMØ-7
24,26 ALU 5381
DRXØ 37
XØ-7
DIVSØ
XD7
DIVS1
SØ R SI 65,76 DIVSOR 5194
X7
XD1
XDØ
XDØ-7
ADSPX
4X
66 DVBUF 164
XD7
XSERIN
WIDTH Ø, 1
YR11
*BMAINT
*CMCLKØ 79
*GC1STOP 59
*BRMAINT 56
GC2LATCH 62
MAINT CLOCK LOGIC
38 DRBSTOP
*BSMECLK1
*BSMECLK2
*BMAINT
39 DRBMAINT
*BSMDCLK
BCLK
YDØ
XDØ
GC2FORCEDIRNRM
26
36
= 93547 E
25 *GC2ENABLEDIRNORM
LDNRM
YD1
XD1
WIDTH 1 WIDTH Ø FUNC
0 0 4Y/X = 14°
0 1 2Y/X = 27°
1 0 Y/X = 45°
1 1 Y/4X = 76°
200111-900
SIZE C CODE IDENT NO 53938 200111-900 REV NC
SCALE NONE SHEET 2 OF 2



REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A1	REV UPDATE W/NO DWG CHG'S RE	8-30-77	
	A2	A35 (U4G) WAS A18 (U4G) A36 (U5G) WAS A19 (U5G)	11-17-77	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.xx ± ____
.xxx ± ____
ANGLES ± ____

MATERIAL
FINISH
NEXT ASSY | USED ON
APPLICATION

CONTRACT NO.
DRAWN R. Earley 4-25-77
CHECKED Art Cooper 9 JUN 77
MECH
ELEC D. Mason 6 June 77
PROJ. ENG W. F. Allen 6/9/77
APPROVED

SEE SEPARATE PARTS LIST

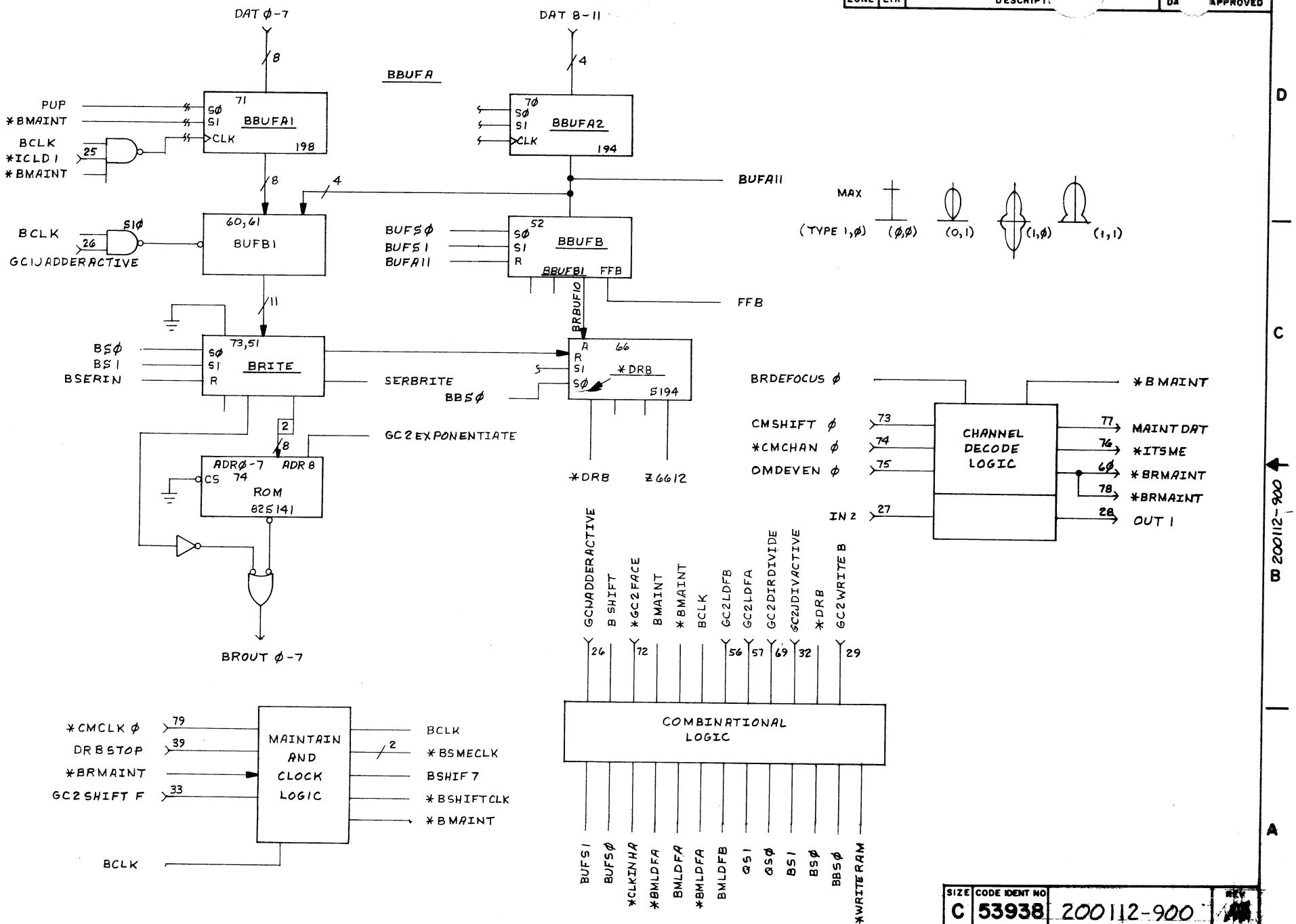
EVANS & SUTHERLAND
COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

BRIGHTNESS BLOCK DIAGRAM

SIZE	CODE IDENT NO		REV
C	53938	200112-900	A2

SCALE NONE SHEET OF 2

200112-900 B

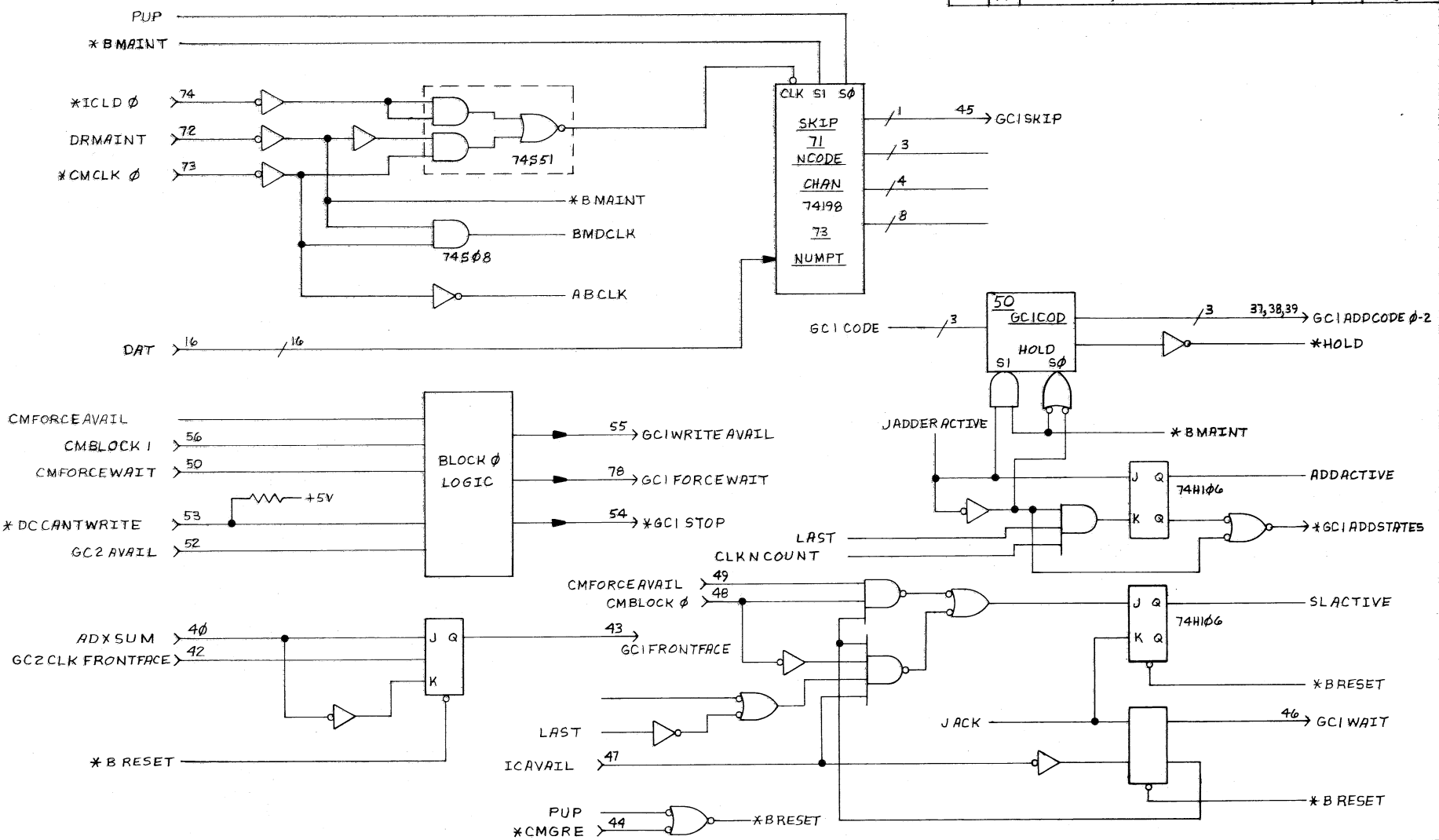


ZONE	LTR	REV DESCRIPT	DA	APPROVED

SIZE	CODE IDENT NO		REV
C	53938	200112-900	
SCALE NONE		SHEET 2 OF 3	

200112-900 B

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A1	UPDATE W/NO DWG CHANGE	2-2-78	RS



NEXT ASSY	USED ON	MATERIAL	
APPLICATION		FINISH	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.XX ± ——
.XXX ± ——
ANGLES ± ——
✓

CONTRACT NO.	
DRAWN	S Perley 5-27-77
CHECKED	9 SEP 77
MECH	
ELEC	W.L. Allen 8-Jan-78
PROJ. ENG	W.L. Allen
APPROVED	

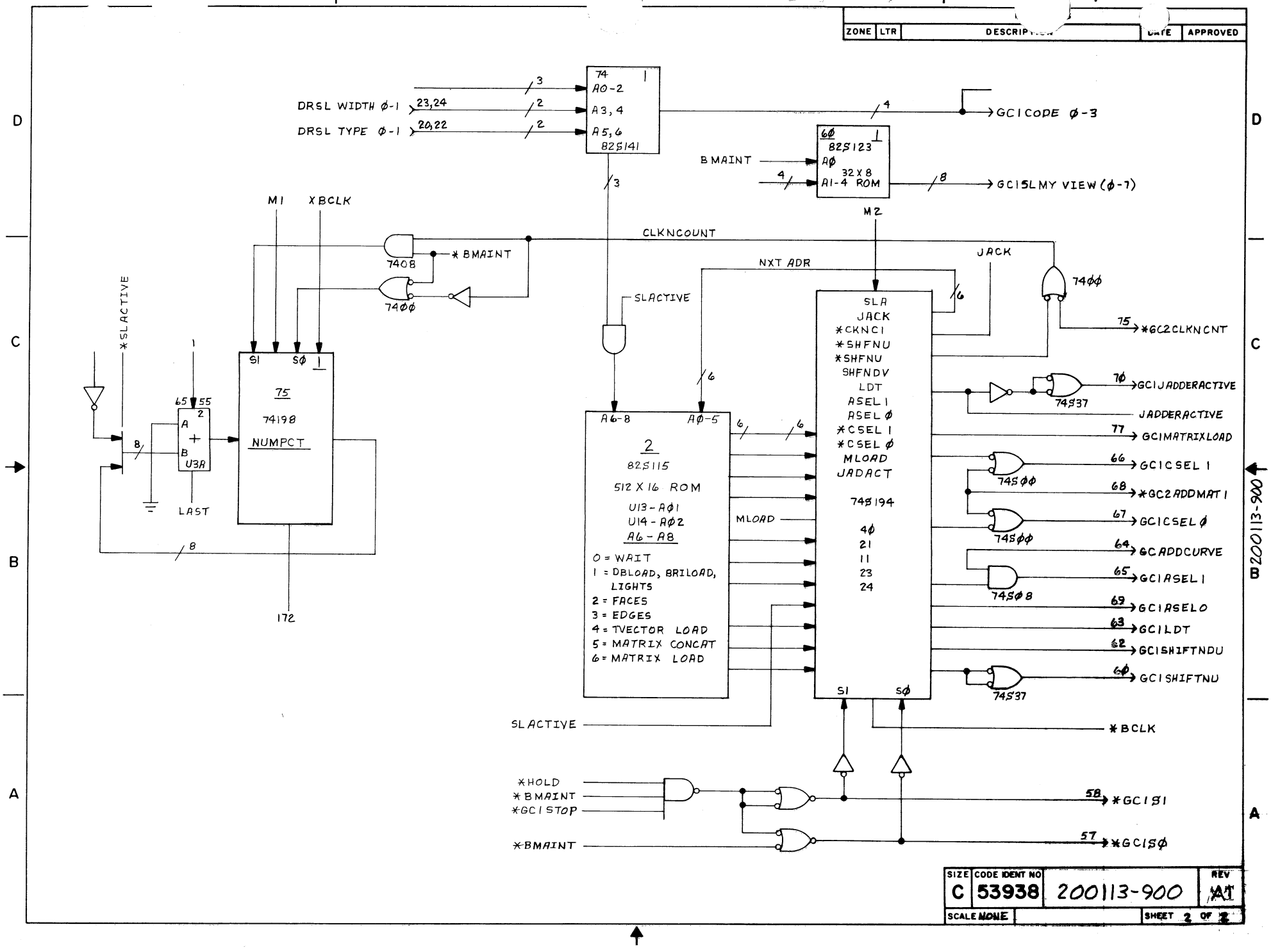
SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND
COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

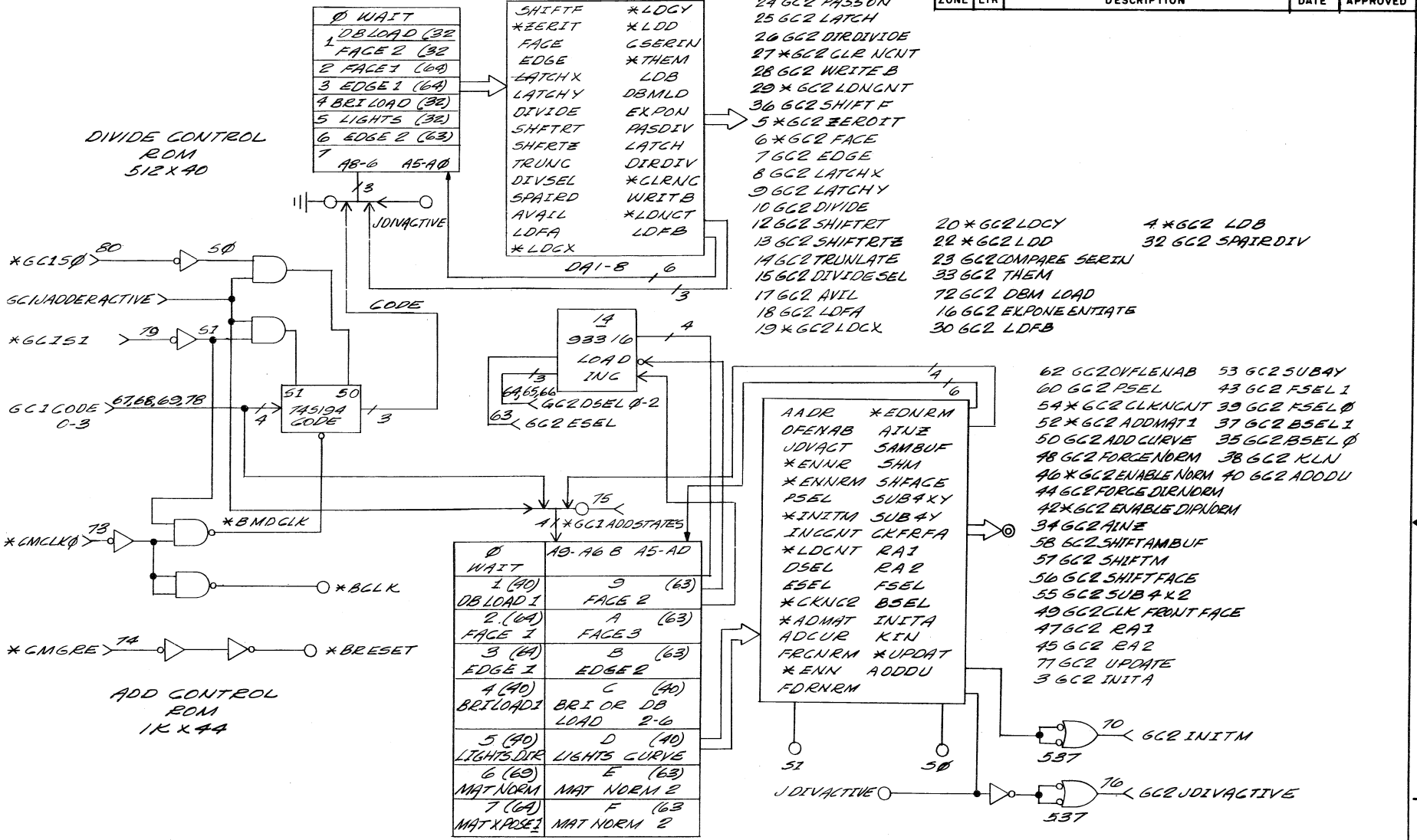
GP CONTROL 1

SIZE	CODE IDENT NO		REV
C	53938	200113-900	A1
SCALE NONE			1 OF 2

200113-900


ZONE | LTR | DESCRIPTION | DATE | APPROVED
DRSL WIDTH Ø-1
DRSL TYPE Ø-1
74 82S141
A0-2
A3, 4
A5, 6
GCICODE Ø-3
BMAINT
6Ø 82S123
AØ
A1-4 32X8 ROM
GCISLMY VIEW (Ø-7)
M1
XBCLK
M2
CLKNCOUNT
7408
*BMAINT
74ØØ
NXT ADR
JACK
SLACTIVE
*SLACTIVE
SLA
JACK
*CKNCI
*SHFNU
*SHFNU
SHFNDV
LDT
ASEL 1
ASEL Ø
*CSEL 1
*CSEL Ø
MLOAD
JADACT
74S194
4Ø
21
11
23
24
74ØØ
75 *GC2CLKNCNT
7Ø GCIJADDERACTIVE
74S37
JADDERACTIVE
77 GCIMATRIXLOAD
66 GCICSEL 1
74SØØ
68 *GC2ADDMAT 1
67 GCICSEL Ø
74SØØ
64 GCADDCURVE
65 GCIASEL 1
74SØ8
69 GCIASELO
63 GCILDT
62 GCISHIFTNDU
6Ø GCISHIFTNU
74S37
SI
SØ
75
74198
NUMPCT
U3A
LAST
172
A6-8
AØ-5
2
82S115
512 X 16 ROM
U13 - AØ1
U14 - AØ2
A6 - A8
0 = WAIT
1 = DBLOAD, BRILOAD, LIGHTS
2 = FACES
3 = EDGES
4 = TVECTOR LOAD
5 = MATRIX CONCAT
6 = MATRIX LOAD
MLOAD
SLACTIVE
*BCLK
*HOLD
*BMAINT
*GCISTOP
*BMAINT
58 *GCISI
57 *GCISØ
SIZE C
CODE IDENT NO 53938
200113-900
REV A1
SCALE NONE
SHEET 2 OF 2
200113-900

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



NEXT ASSY	USED ON		
APPLICATION			

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.XX ± ____
.XXX ± ____
ANGLES ± ____
✓

MATERIAL
FINISH

CONTRACT NO.

DRAWN	6/31/77
CHECKED	24 AUG 77
MECH	
ELEC	W. T. Allen 1/18/78
PROJ. ENG	W. T. Allen 1/19/78
APPROVED	

SEE SEPARATE PARTS LIST

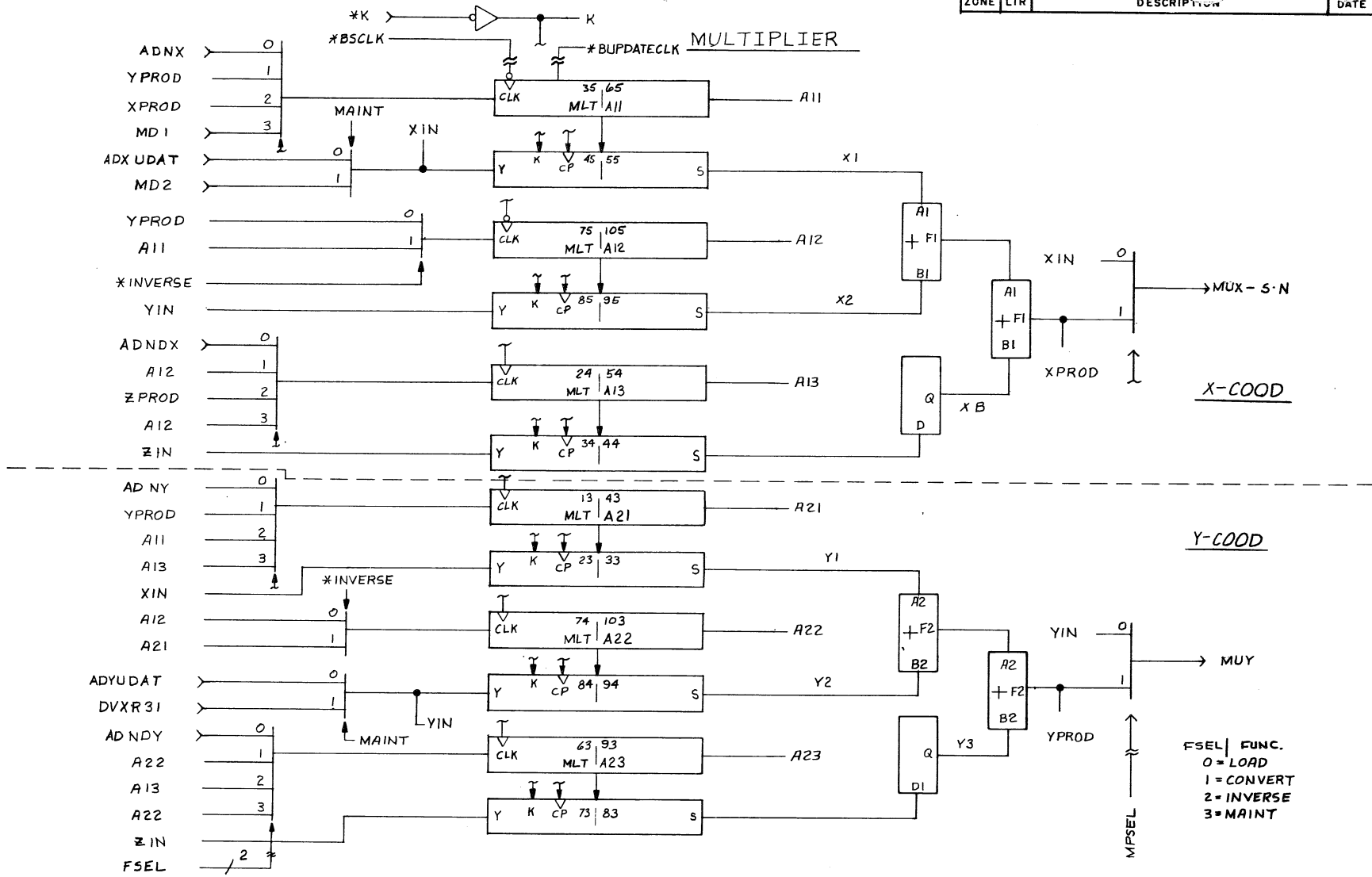
EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

GP CONTROL 2 BLOCK DIAGRAM W/W

SIZE	CODE IDENT NO		REV
C	53938	200114-901	NC

SCALE NONE SH OF 1

200114-901 B



ZONE	LTR	DESCRIPTION	DATE	APPROVED

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.XX ± ____
.XXX ± ____
ANGLES ± ____
✓

MATERIAL

FINISH

CONTRACT NO.	
DRAWN	R. Earley 2-3-77
CHECKED	12 MAR 77
MECH	
ELEC	W. L. Allen 9/27/77
PROJ. ENG	WKA
APPROVED	

SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

MULTIPLIER CARD
(BLOCK DIAGRAM)

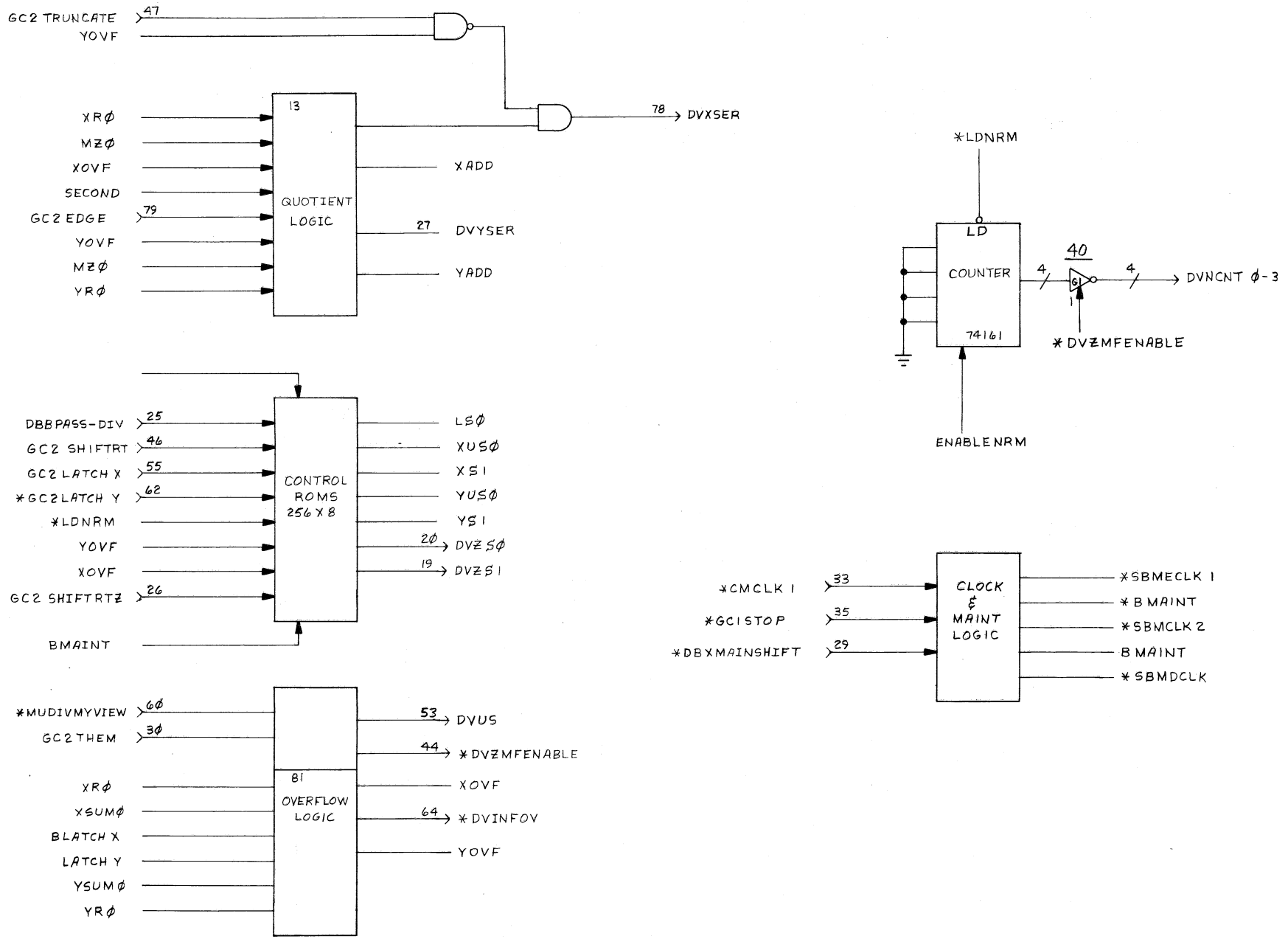
SIZE	CODE IDENT NO		REV
C	53938	200120-900	NC

SCALE NONE

SHEET 1 OF 2

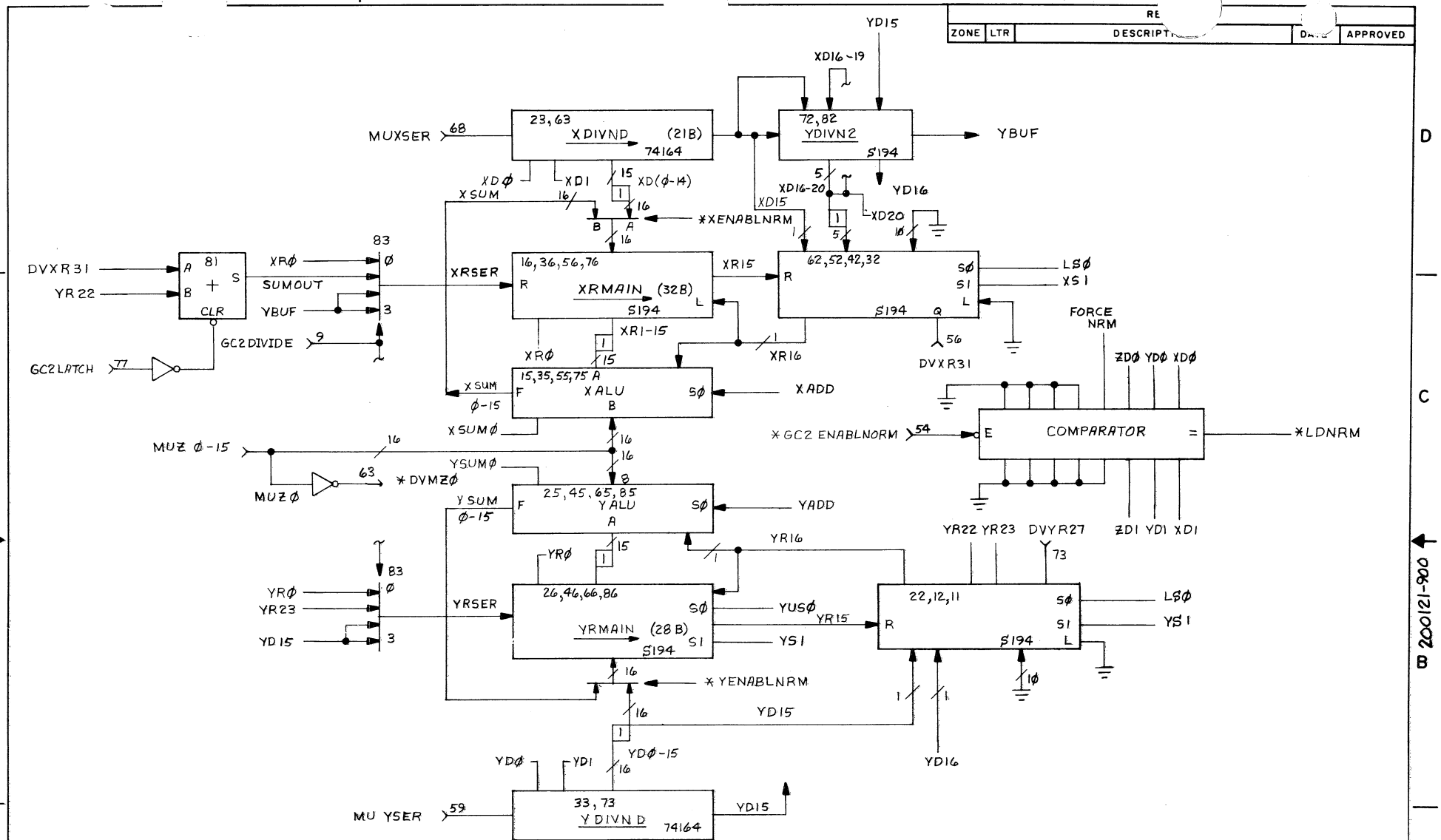
200120-900 B

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



SIZE	CODE IDENT NO		REV
C	53938	200121-900	NC
SCALE NONE		SHE	OF 2

200121-900



		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON .xx ± ____ .xxx ± ____ ANGLES ± ____ ✓	CONTRACT NO.
			DRAWN R. Earley 4-21-77
			CHECKED Art Langin 16 MAY 77
			MECH
			ELEC H.D. Mason 6 June 77
			PROJ. ENG W.T. Allen 6/9/77
			APPROVED
200130-100	NOVOVIEW	MATERIAL	
NEXT ASSY	USED ON	FINISH	
APPLICATION			

SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

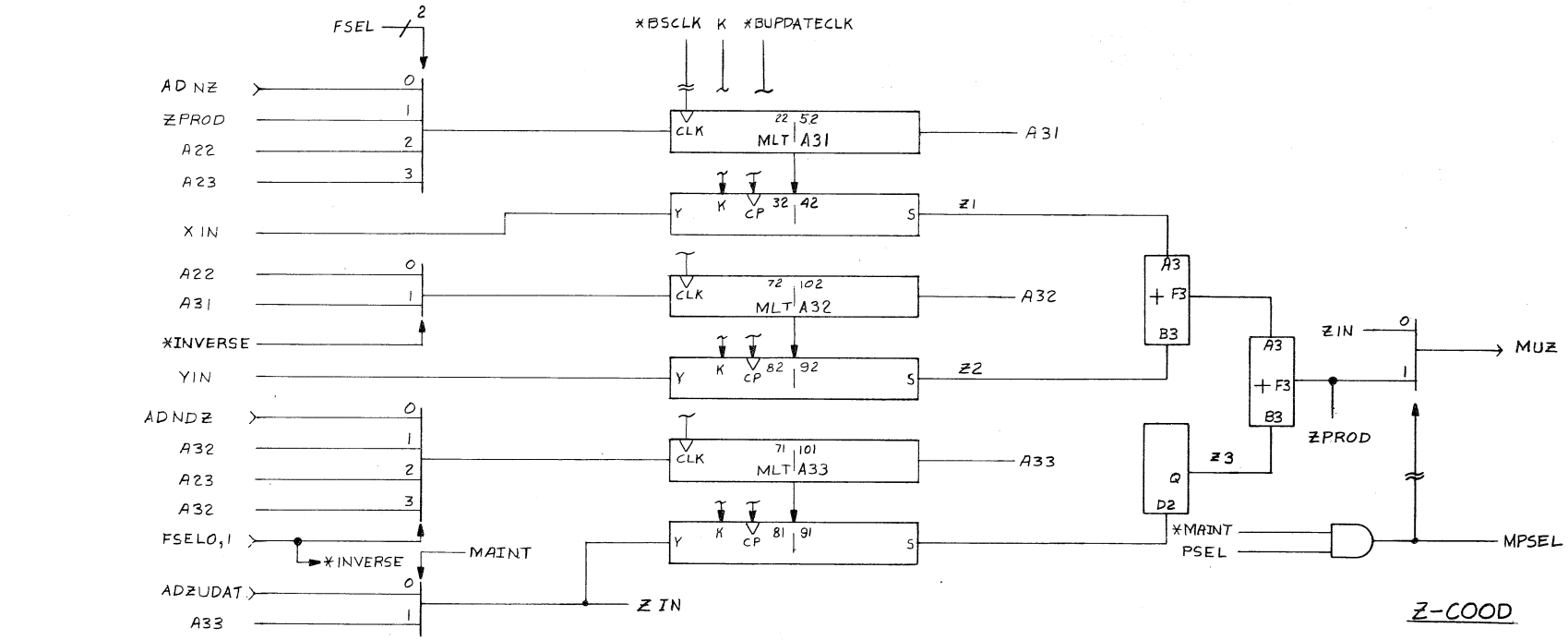
DIVIDER BLOCK DIAGRAM

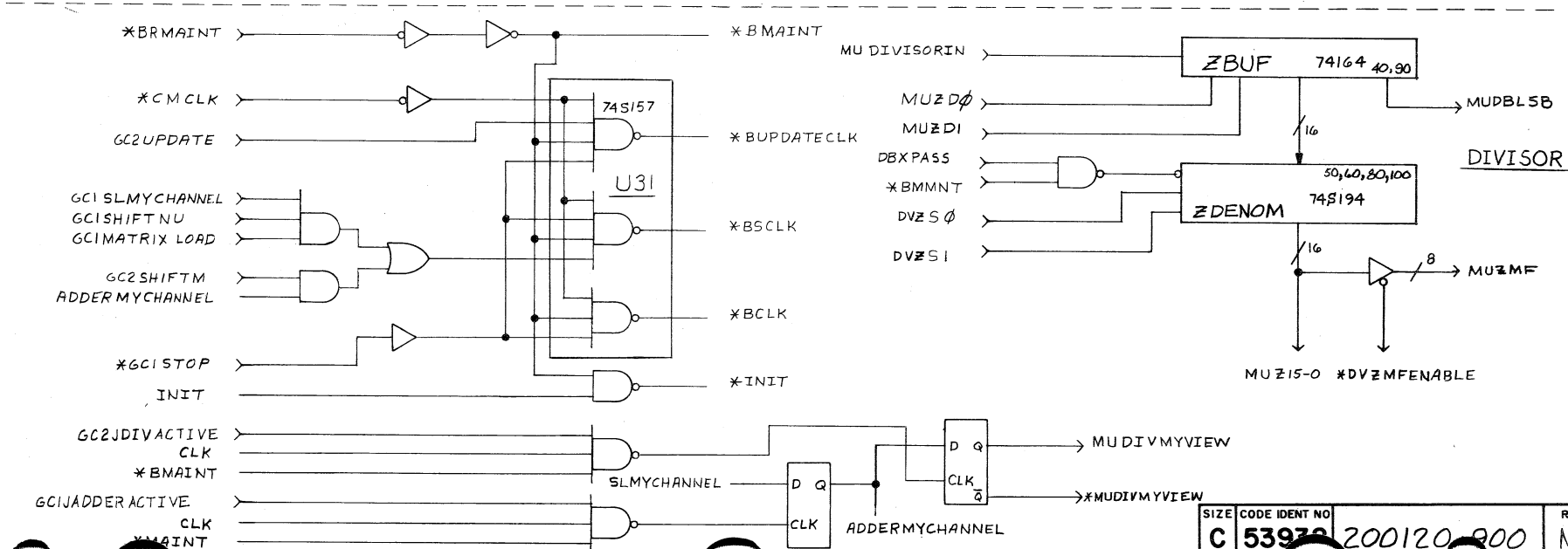
SIZE	CODE IDENT NO		REV
C	53938	200121-900	NC

SCALE NONE | SHEET 1 OF 2

200121-900 B

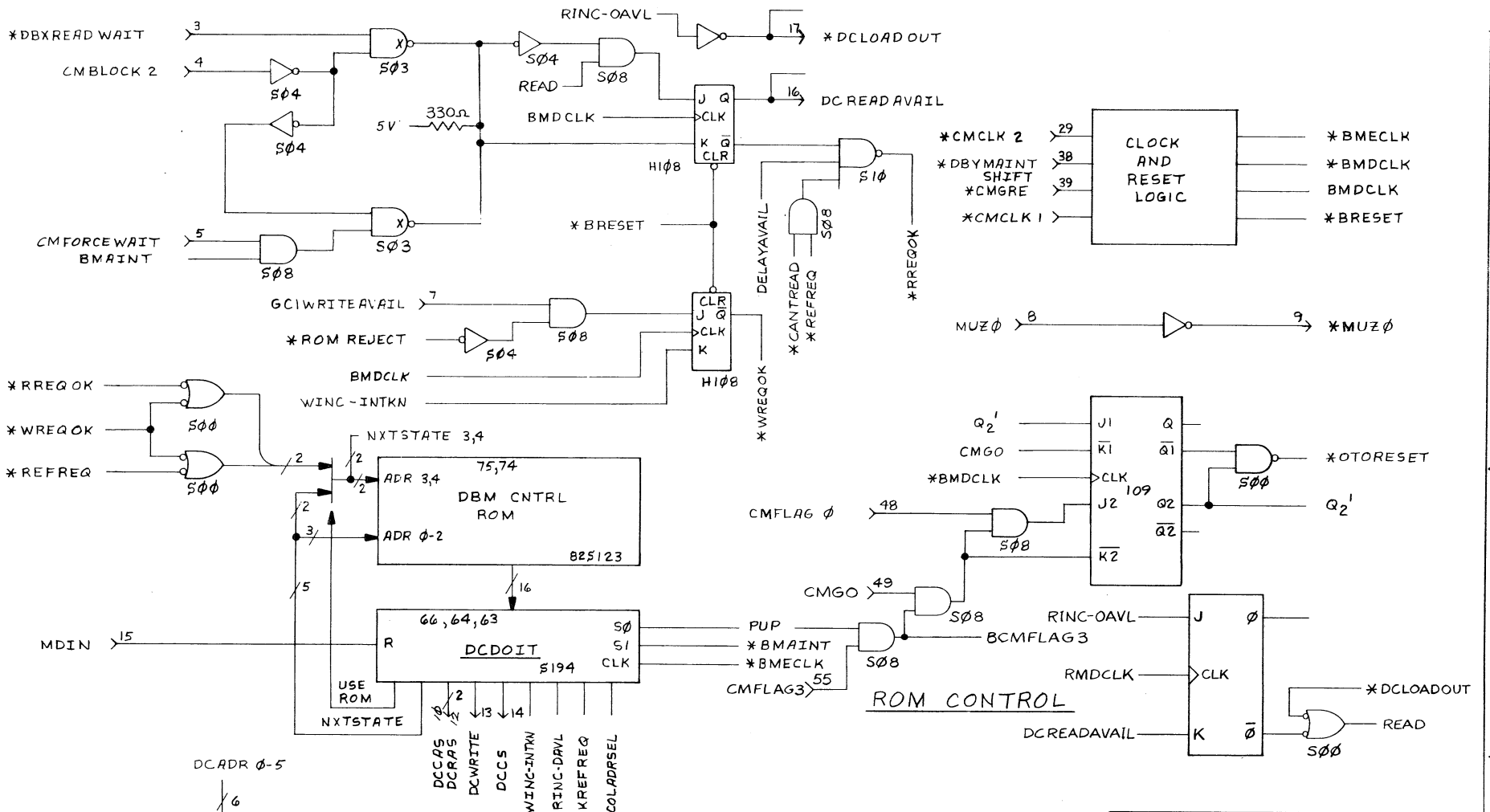
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED





SIZE	CODE IDENT NO		REV
C	53936	200120-900	NC
SCALE NON		SHEET 2 OF 2	

200120-900



ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A1	REV UPDATE W/ NO DWG CHNG JB	1-12-77	RSpeirs

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.xx ± ____
.xxx ± ____
ANGLES ± ____
✓

MATERIAL
FINISH
NEXT ASSY | USED ON
APPLICATION

CONTRACT NO.
DRAWN R. Earley 4-26-77
CHECKED Art Congrn 27 MAY77
MECH
ELEC Dennis Mason 6 jun77
PROJ. ENG W.F. Allen 6/9/77
APPROVED

SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

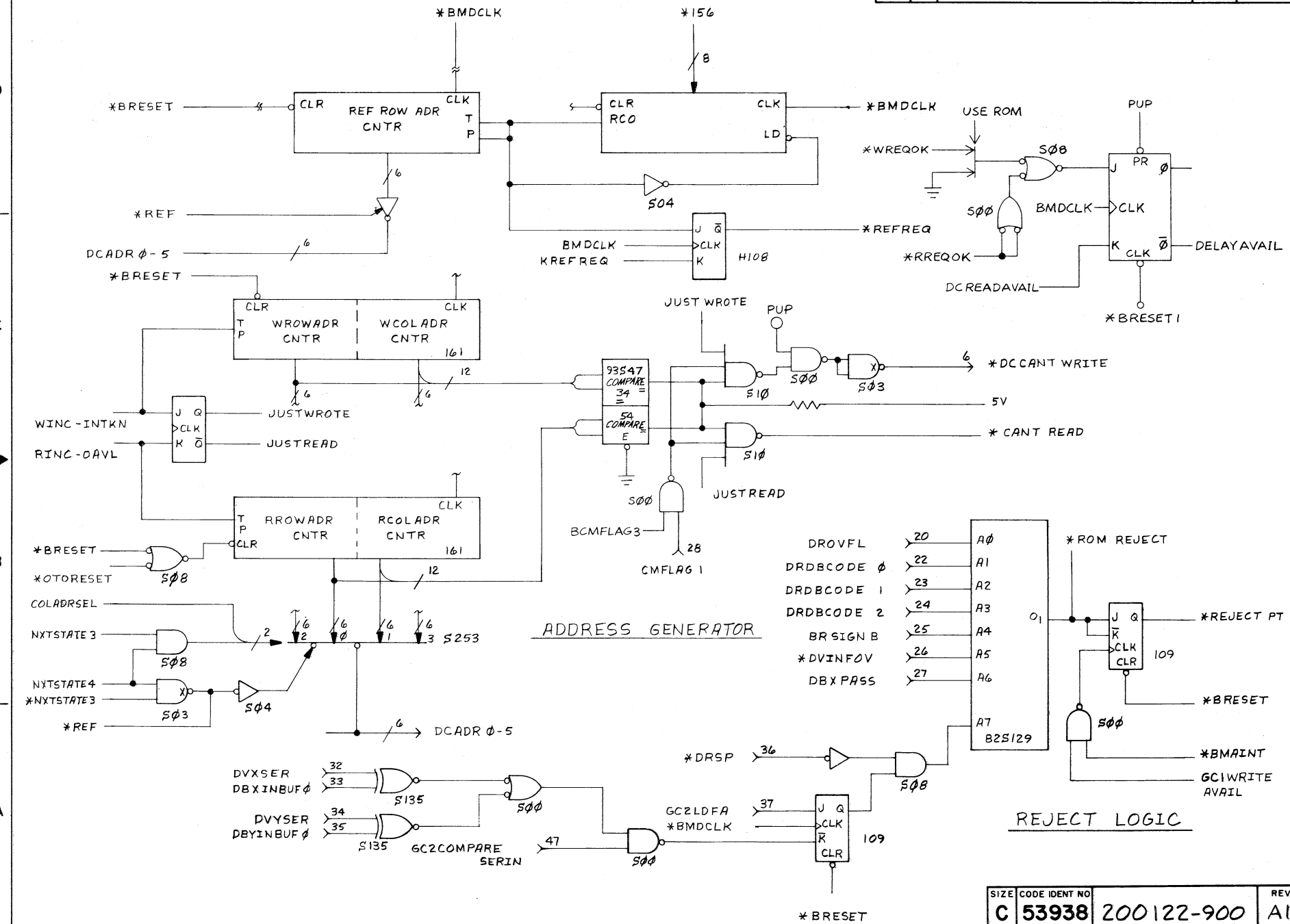
DBM CONTROL BLOCK DIAGRAM

SIZE	CODE IDENT NO		REV
C	53938	200122-900	A1

SCALE NONE | SHEET 1 OF 2

200122-900

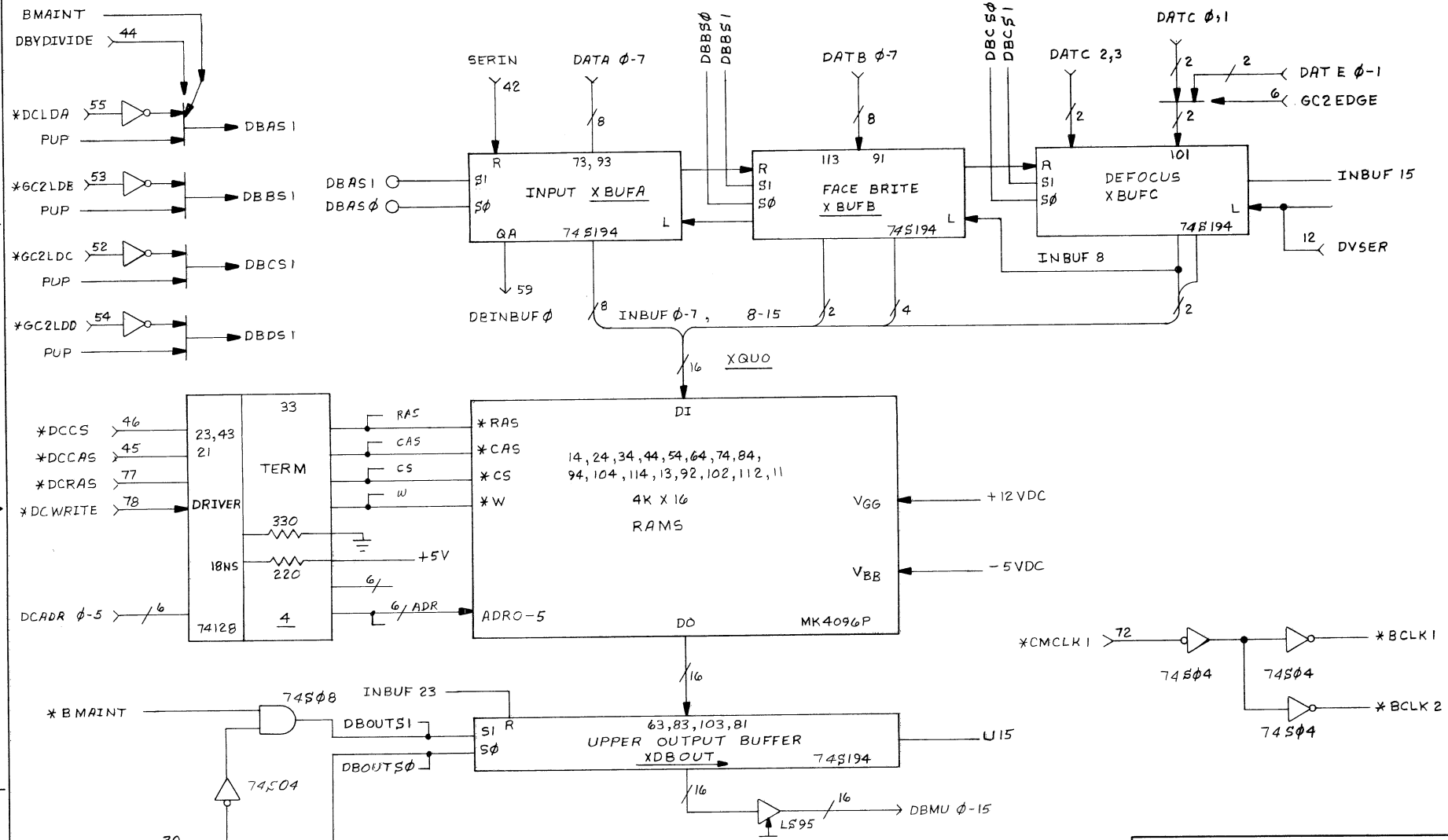
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



SIZE	CODE IDENT NO		REV
C	53938	200122-900	A1
SCALE NONE			SHEET 2 OF 2

200122-900 B

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A1	REV UPDATE W/NO DWG CHNG JB	1-12-78	RSpeirs



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.XX ± ____
.XXX ± ____
ANGLES ± ____
✓

MATERIAL
FINISH
NEXT ASSY | USED ON
APPLICATION

CONTRACT NO.
DRAWN R. Early 4-22-77
CHECKED Art Langon 27 MAY 77
MECH
ELEC Dennis Mason 6 Jun 77
PROJ. ENG W.T. Allen 6/9/77
APPROVED

SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

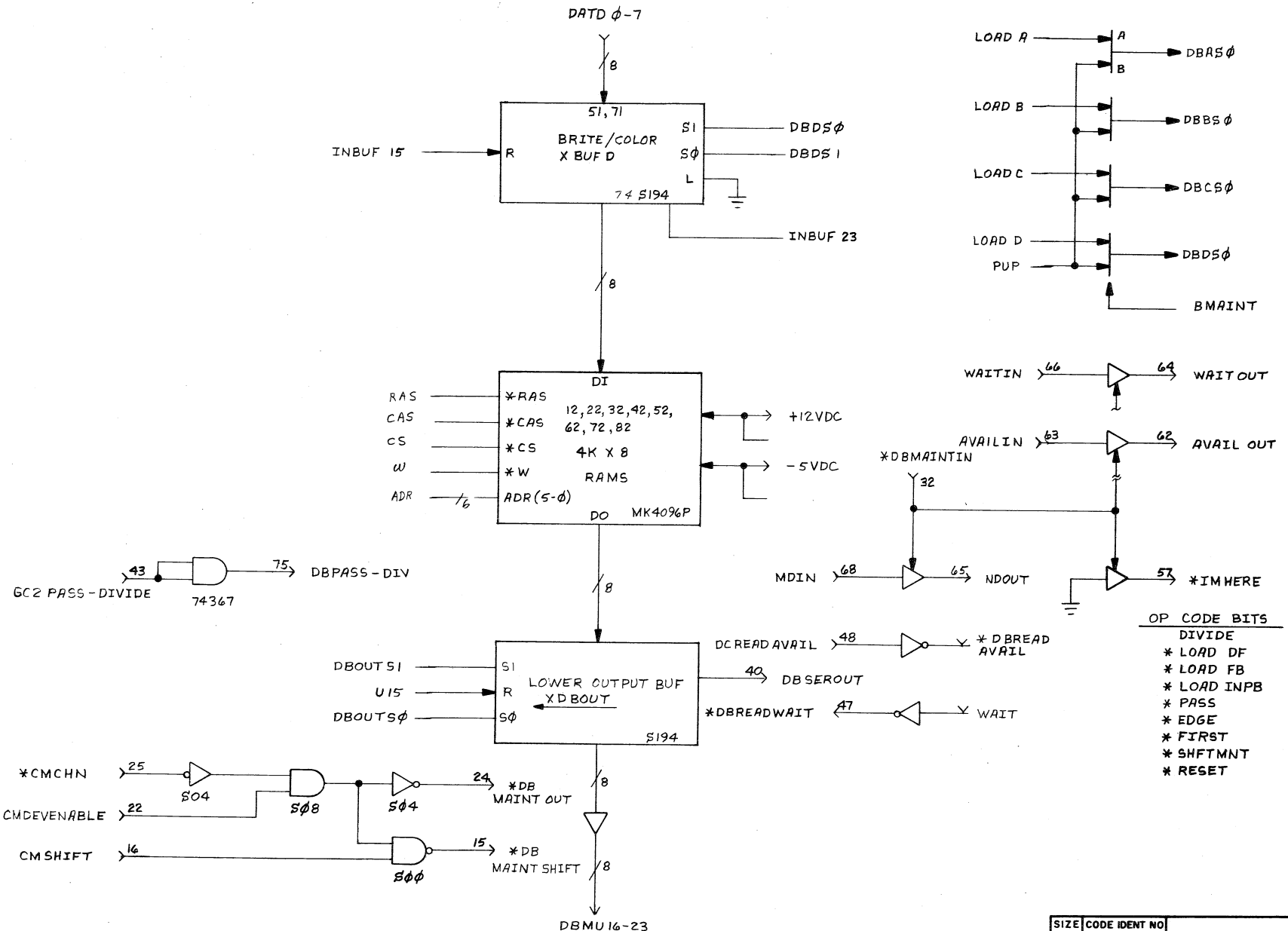
DISPLAY BUFFER MEMORY BLOCK DIAGRAM

SIZE	CODE IDENT NO		REV
C	53938	200123-900	A1

SCALE NONE | SHEET 1 OF 2

200123-900

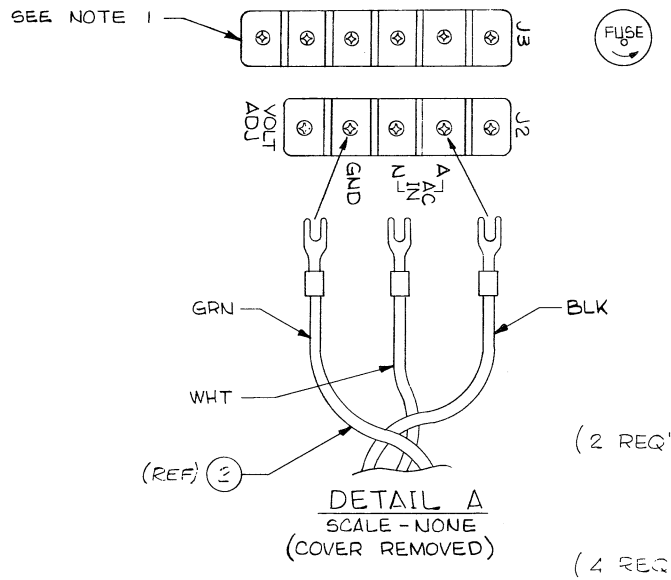
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



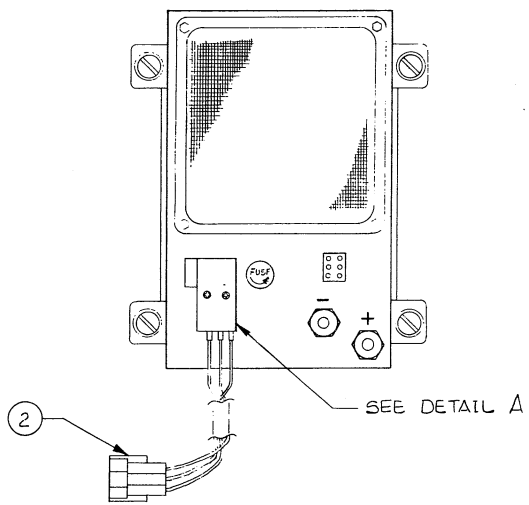
SIZE	CODE IDENT NO		REV
C	53938	200123-900	A1
SCALE NONE			2 OF 2

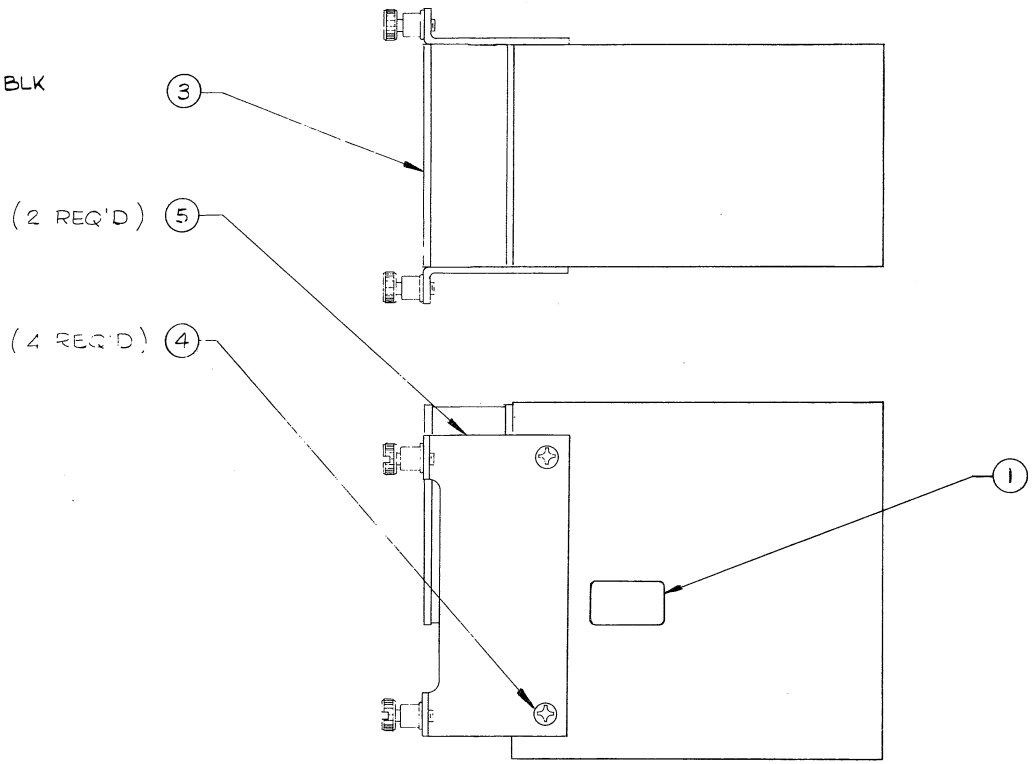
200123-900

REV.				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
-	NC	ADDED DETAIL "A" INFORMATION, THIS DRAWING FORMALLY ~~NOA~~ RELEASED TO NC REV. STATUS.	8-15-77	15 AUG 77 RSpeir



DETAIL A
SCALE - NONE
(COVER REMOVED)





NOTES:
1. REMOVE TWO JUMPERS FROM J3

200154-100	NOVOVIEW
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.XX ± ——
.XXX ± ——
ANGLES ± ——
✓

MATERIAL SEE PARTS LIST
FINISH

CONTRACT NO.
DRAWN ΔDS 6-15-77
CHECKED Jim Pino 8-15-77
MECH
ELEC R Speir 15 AUG 77
PROJ. ENG
APPROVED J Pino 8-15-77

SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND
COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

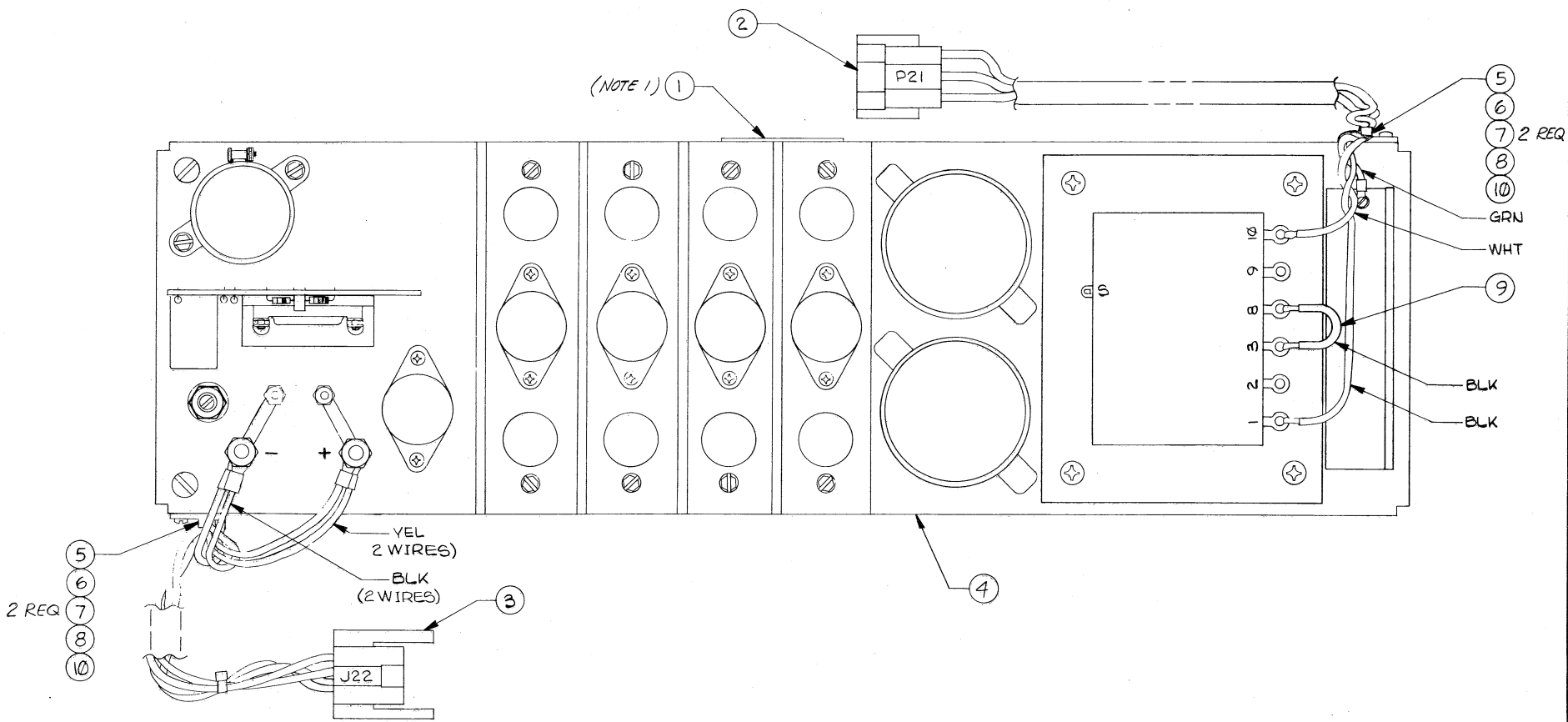
ASSY,
POWER SUPPLY, 5V, 150A
(NOVOVIEW SP)

SIZE	CODE IDENT NO		REV
C	53938	200151-100	NC

SCALE 1/2 SHEET 1 OF 1

200151-100

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	NC	FORMALLY RELEASED TO NC	8/17/77	DRR



NOTES:

. MARK ASSY NO., S/N, & ECO NO. USING BLACK OPAQUE INDUSTRIAL INK, PHILLIPS PROCESS CO. NO. 35A OR EQUIVALENT.

200154-100	NOVOVIEW
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.xx ± ——
.xxx ± ——
ANGLES ± ——
✓

MATERIAL SEE PARTS LIST

FINISH

CONTRACT NO.

DRAWN R.G. Mellen 8-16-77
CHECKED D. Reynolds 8/17/77
MECH
ELEC
PROJ. ENG S.K. Black 8/17/77
APPROVED

SEE SEPARATE PARTS LIST

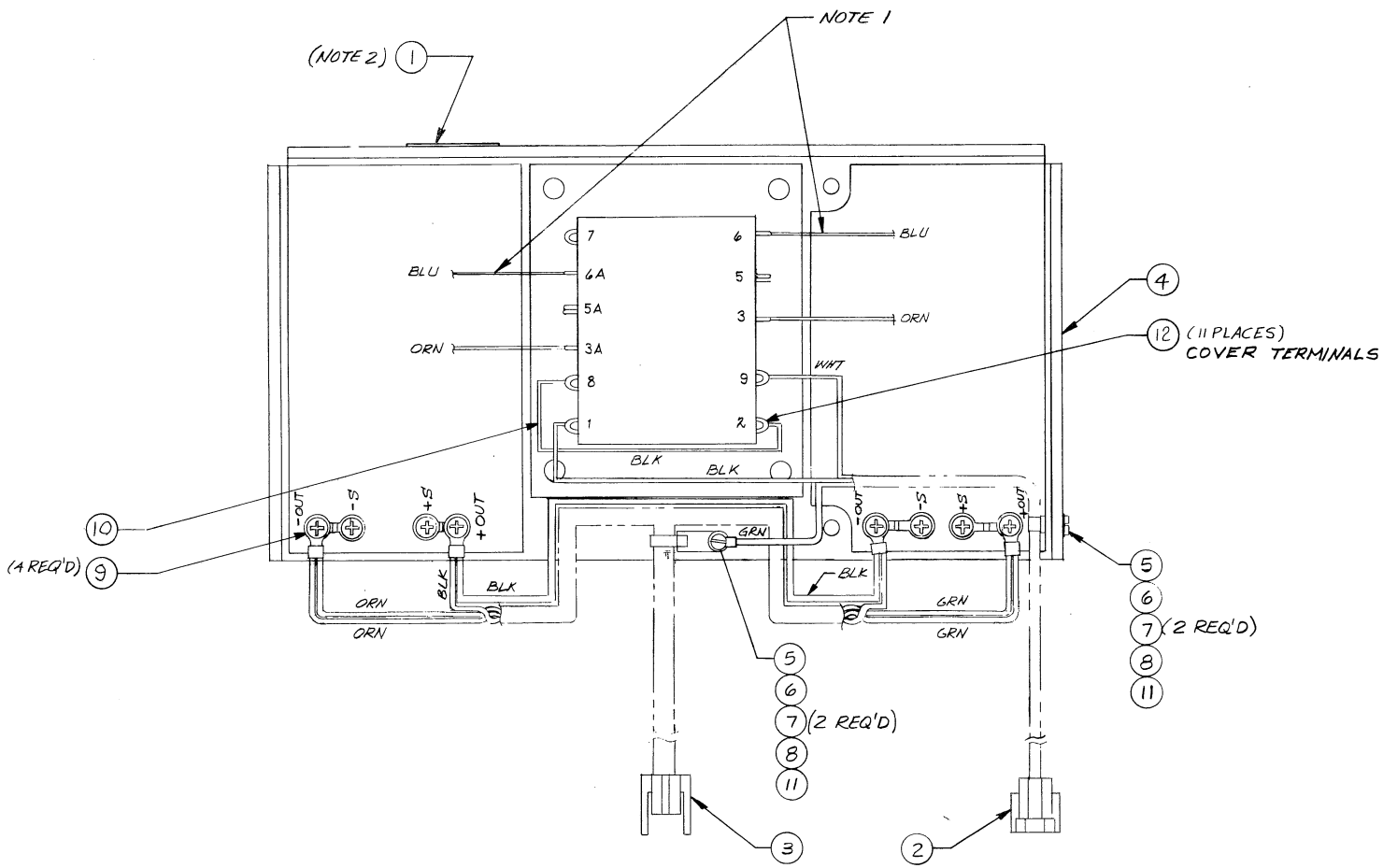
EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

ASSY, POWER SUPPLY, 12V, 15A (NOVOVIEW SP)

SIZE	CODE IDENT NO		REV
C	53938	200152-100	NC

SCALE NONE SHEET 1 OF 1

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A1	ADDED ITEM 12.	9/13/77	RSpeirs 9 OCT 77



2. MARK ASSY NO., S/N & ECO NO. USING BLACK OPAQUE INDUSTRIAL INK, PHILLIPS PROCESS CO. NO. 35A OR EQUIV.
1. CONNECT EXISTING BLUE WIRES (2) AS SHOWN.

NOTES:

200159-100	NOVOVIEW
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.XX ± ____
.XXX ± ____
ANGLES ± ____
√ ____

MATERIAL SEE PARTS LIST
FINISH

CONTRACT NO.
DRAWN D. CARROLL 8-16 77
CHECKED D. Haynes GR 8/17/77
MECH
ELEC
PROJ. ENG 8/10/77
APPROVED

SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

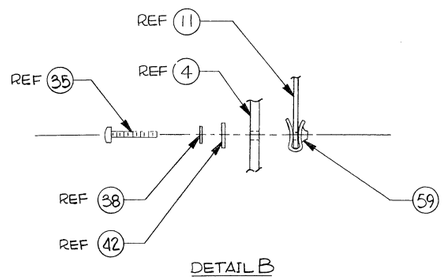
ASSY, POWER SUPPLY, ± 15 V, 2.8 A

SIZE	CODE IDENT NO		REV
C	53938	200153-100	A1

SCALE 1/2 SHEET 1 OF 1

200153-100

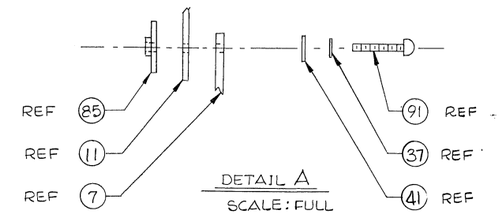
DASH NO	REVISIONS				
	ZONE	LTR	DESCRIPTION	DATE	APPROVED
	–	A1	EXTENSIVE PARTS LIST & DRAWING CHANGES RGM	9-7-77	JPino 9/14/77
	–	Δ2	EXTENSIVE CHANGES DC	11-3-77	RSpeir 17NOV
	P2, C7 P3 B8	A3	ITEM 55 WAS 38 FT. ADDED ITEM 56, 43 FT.	5-18-78	RSpeir
-104		A1	ITEM 55 WAS 38 FT ADDED ITEM 56, 43 FT MW	6-5-78	RSpeir



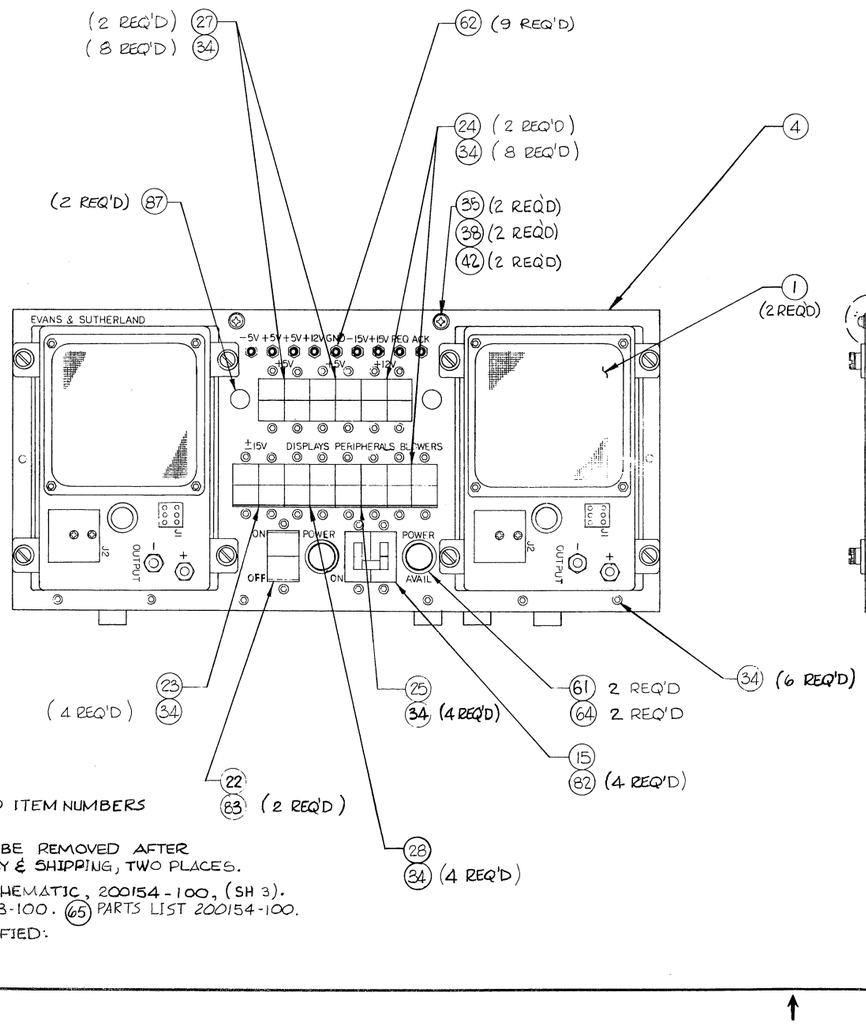
DETAIL B
2 PLACES
SCALE/NONE

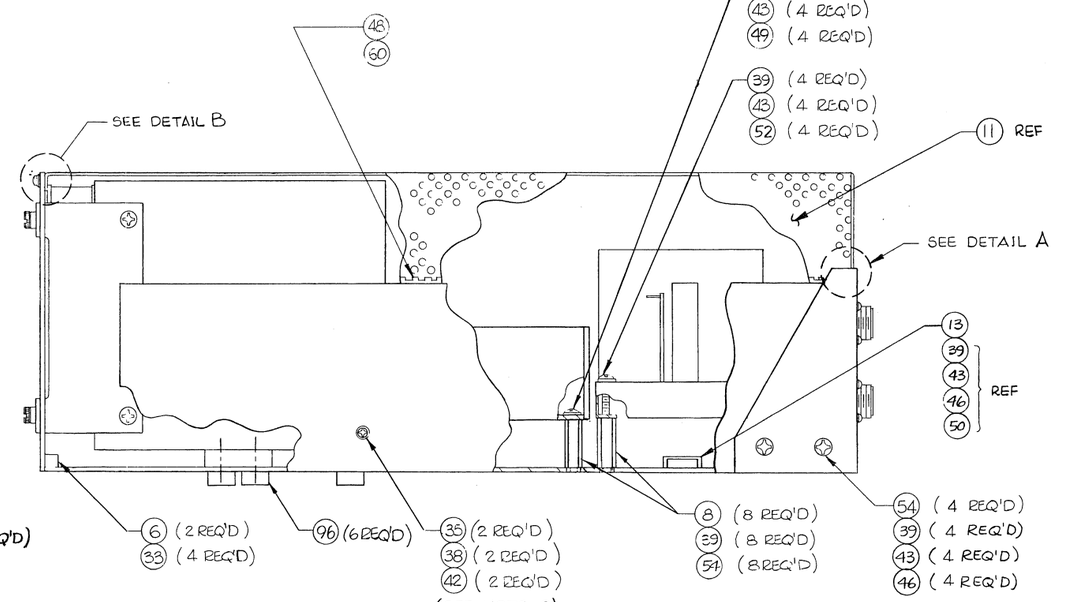
TABULATION TABLE

DRAWING NO.	ELAPSED TIME METER PART NO.	ITEM NO.	ECO
200154-100	801275-003	17	A3
200154-104	801275-002	17	A1



DETAIL A
SCALE: FULL





200154-100, -104
SEE SEPARATE PARTS LIST

3. BALLOON CALL OUTS REFER TO ITEM NUMBERS ON THE PARTS LIST.
2. TEMPORARY HARDWARE TO BE REMOVED AFTER TESTING & BEFORE FINAL ASSY & SHIPPING, TWO PLACES.
1. REFERENCE DRAWINGS: SCHEMATIC, 200154-100, (SH 3). WIRING HARNESS, 200183-100. (65) PARTS LIST 200154-100.

UNLESS OTHERWISE SPECIFIED:

NOTES:

NEXT ASSY	USED ON
APPLICATION	
200101-100	NOISE VIEW

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES ON
.XX±
.XXX±
ANGLES±
✓
MATERIAL SEE PARTS LIST
FINISH

CONTRACT NO.
DRAWN JOE ULLMAN 6-10-77
CHECKED J.M. PINO 31AUG77
MECH Jim Pino 31AUG77
ELEC Ron Speir 31AUG77
PROJ. ENG. Stephen R Black 9/1/77
DESIG. AUTO.
APPROVED Jpino 12-6-77

EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

TITLE
ASSY, PRIMARY POWER CONTROL (NOISE VIEW SP)

D | DWG 200154-100/104 | REV SEE TABLE

SCALE 1/2 | SHEET 1 OF 3

200154-TAB

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

GRN
WHT
BLK
16
88
12
(4 REQ'D) 39
(8 REQ'D) 43
(4 REQ'D) 46
(4 REQ'D) 50
(3 REQ'D) 37
41
(3 REQ'D) 91
13
39 (4 REQ'D)
43 (8 REQ'D)
46 (4 REQ'D)
50 (4 REQ'D)
89
55
REF 90
85
58
2
5
86 (3 REQ'D)
3
60
63
TB1 1 2
TB2 1 2 3 4
TB5 1 2 3 4
TB3 1 2 3 4 5 6 7 8
TB4 1 2 3 4 5 6 7 8
CR1
CR2
(2 REQ'D) 20
SEE DETAIL C
19
(4 REQ'D) 39
(8 REQ'D) 43
(4 REQ'D) 46
(4 REQ'D) 49
14
(4 REQ'D) 39
(8 REQ'D) 45
(4 REQ'D) 46
(4 REQ'D) 50
(14 REQ'D) 89
21
37 (2 REQ'D)
41 (4 REQ'D)
45 (2 REQ'D)
84
91 (2 REQ'D)
11
LINE SENSOR
(2 PLCS) 60
63
(2 REQ'D) 9
(4 REQ'D) 33
LOCATE APPROX. AS SHOWN.
(2 REQ'D) 78
10
(4 REQ'D) 39
(4 REQ'D) 42
(4 REQ'D) 49
90 (2 REQ'D)
LOCATE APPROXIMATELY AS SHOWN ON ITEM 11
29
39 (2 REQ'D)
43 (4 REQ'D)
46 (2 REQ'D)
53 (2 REQ'D)

20 (REF)
CR1
CR2
94 (2 REQ'D)
47 (2 PLCS)
93 (2 PLCS)
92 (2 REQ'D)

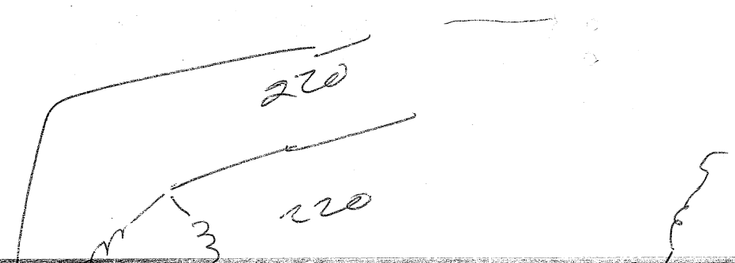
DETAIL C
2 PLACES
SCALE / NONE

61
64
85 (REF)
26
32 (4 REQ'D)
37 (4 REQ'D)
41 (4 REQ'D)
30 (2 REQ'D)
DISPLAY 1
DISPLAY 2
DISPLAY 3
DISPLAY 4
POWER
ON
OFF
115 VAC
ELAPSED TIME
DISK
TELETYPE
COMPUTER
HARD COPY UNIT
DISPLAY TERMINAL
95
LOCATE APPROX. AS SHOWN
7
39 (4 REQ'D)
43 (8 REQ'D)
46 (4 REQ'D)
49 (4 REQ'D)
18 (9 REQ'D)
31 (36 REQ'D)
36 (36 REQ'D)
40 (72 REQ'D)
44 (36 REQ'D)
17
37 (4 REQ'D)
41 (8 REQ'D)
45 (4 REQ'D)
91 (4 REQ'D)
22
37 (2 REQ'D)
41 (2 REQ'D)
99 (2 REQD)

200154-TAB

200154-100, -104

D	DWG 200154-100/104	REV SEE TABLE
SCALE 1/2		SHEET 2 OF 3


220
220
3

REVISIONS			
ZONE	LTR	DESCRIPTION	DATE	APPROVED

115 VAC INPUT 16 AWG 3 CONDUCTOR 43 FT. OVERALL 38 FT. USEABLE

115 VAC AUXILLIARY OUTLETS

MAIN POWER SOURCE 200/250 VAC 50/60 HZ 6 AWG 3 CONDUCTOR 43 FT. OVERALL 38 FT. USEABLE

200/260V INPUT CABLE

CHASSIS GROUND

SECONDARY POWER CONTROL OUTPUT

BOOST-BUCK ASSEMBLY

DISPLAYS

PERIPHERALS

(3 REQ'D)

(2 REQ'D)

(6 REQ'D)

(8 REQ'D)

6. INLINE SPLICE/TAP - RUN 10-12 AWG, TAP 18-14. E & S P/N 802172-103. (69)
5. INLINE SPLICE/TAP - RUN 18-14 AWG, TAP 16-14. E & S P/N 802172-002. (81)
4. TB1 (BOOST-BUCK ASSY) TO BE CONNECTED IN THE FIELD TO PROVIDE 230V SYSTEM POWER ACCORDING TO TABLE I.
3. ALL CHASSIS GROUNDS MUST ASSURE ELECTRICAL CONTACT.
2. CR1, CR2, M1, DS1, DS2, DS3 PIGTAIL LEADS TO BE 18 AWG. WIRE.
1. WIRE SIZE TO BE 14 AWG.
UNLESS OTHERWISE SPECIFIED:

NOTES:

7. WIRE, 12 AWG. ITEM 97 BLK ITEM 98 WHT
WIRE 14 AWG. ITEM 71 WHT. ITEM 72 BLK.

WIRE, 16 AWG. ITEM 73 GRN. ITEM 74 WHT ITEM 75 BLK

BOOST-BUCK TRANSFORMER CONNECTIONS TB-1

MAIN POWER LINE (V AC)	200-213	213-227	227-243	243-259	259-276
LINE BLU	4	4	4	4	4
LINE WHT	5	5	5	5	5
LOAD BLU	1	3	4	3	1
LOAD WHT	5	5	5	5	5
H4	5	5	5	4	4
H1	4	4	4	5	5
X4	4	4	4	4	4
X3	3	3	3	3	3
X2	2	2	2	2	2
X1	1	1	1	1	1

SCHEMATIC DIAGRAM

D	DWG 200154-100/104	REV SEE TABLE
SCALE NONE	SHEET 3 OF 3	

200154-TAB

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A1	EXTENSIVE CHANGES. D.C.	11/11/77	R Spears

(6 REQ'D) 11
(24 REQ'D) 15
(24 REQ'D) 19
(48 REQ'D) 23
(24 REQ'D) 28

3 (1 REQ'D)

(3 REQ'D) 20
(3 REQ'D) 24
65
(3 REQ'D) 66

22 (3 REQ'D)
26 (6 REQ'D)
30 (3 REQ'D)
41 (3 REQ'D)

22
26
30
44 (4 REQ'D)

REF 71

REF 31

39
61
1 (1 REQ'D)

18
21 (2 REQ'D)
25 (2 REQ'D)
29 (2 REQ'D)

12
22 (4 REQ'D)
26 (8 REQ'D)
30 (4 REQ'D)
41 (4 REQ'D)

53 (4 REQ'D)
13 (2 REQ'D)
59
DETAIL A

14

10

4 REF

REF 53
REF CR1, CR2 13
32 (2 PLCS)
38 (4 PLCS)
59 (2 REQ'D)
57 (2 PLCS)
DETAIL A
2 PLACES
SCALE/NONE

71
LOCATE APPROX AS SHOWN ON ITEM 4
(2 PLACES)

REF 24
REF 20
22 (4 REQ'D)
26 (8 REQ'D)
30 (4 REQ'D)
41 (4 REQ'D)
REF 66
2 (1 REQ'D)
3 REF
4 REF
66 REF
DETAIL B
SCALE/NONE

21 (2 REQ'D)
25 (2 REQ'D)
69 (2 REQ'D)
SEE DETAIL D

9
17 (4 REQ'D)
74 (3 REQ'D)

POWER AVAILABLE

46
61
45 (6 REQ'D)
47
DETAIL C
SCALE/NONE

REF 2
REF 4
(2 REQ'D) 58
69 REF
21 REF
25 REF
DETAIL D
SCALE/NONE

16
LOCATE APPROX AS SHOWN

DISPLAY 1 DISPLAY 2 DISPLAY 3 DISPLAY 4 DISPLAY 5 DISPLAY 6

(4 REQ'D) 22
(8 REQ'D) 26
(4 REQ'D) 30
(4 REQ'D) 41

DETAIL E

TB3
TB2
CR1
CR2

NOTE 1

SEE DETAIL C

55

P3

(2 REQ'D) 5
(8 REQ'D) 22
(16 REQ'D) 26
(8 REQ'D) 30
(12 REQ'D) 31
(8 REQ'D) 43

(2 REQ'D) 7
8

56

DETAIL B

SEE DETAIL D

63
6

REF 14
1 REF
22 (2 REQ'D)
26 (4 REQ'D)
30 (2 REQ'D)
43
DETAIL E
SCALE/NONE

(2 REQ'D) 72
REF 7
REF 8
P3

10.00 IN ± .50 IN

4
1
39 (2 PLCS)
61
(4 REQ'D)

SEE SEPARATE PARTS LIST

NOTES:
1. TWIST WIRE LOOSELY TOGETHER FROM ITEM 12 TO CHASSIS, ITEM 1.

200102-100	NOVOVIEW	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES; TOLERANCES ON .XX± —— .XXX± —— ANGLES± —— ✓	CONTRACT NO.
NEXT ASSY	USED ON	MATERIAL	DRAWN W. J. Rapp 6/Nov 77
APPLICATION		FINISH	CHECKED 3 NOV 77
			MECH 3 NOV 77
			ELEC
			PROJ. ENG. 15 Nov 77
			DESIG. AUTO.
			APPROVED

EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

TITLE: ASSY SECONDARY POWER CONTROL (NOVOVIEW SP)

D | DWG 200154-101 | REV A1

SCALE 1/2 | SHEET 1 OF 3

200154-101

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

WIRE NO.	COMPONENT FROM	COMPONENT TO	WIRE PART NO.	AWG	COLOR	WIRE LENGTH OVERALL (REF)	WIRE LENGTH FROM START	WIRE LENGTH TO FINISH	WIRE END STRIP LENGTH START	WIRE END STRIP LENGTH FINISH	TERMINAL LUGS START	TERMINAL LUGS FINISH	
1	J1-A	TB2-1	802046-012	12	BLK	22.25			.375	.25	TINNED	802136-008	(51)
2	J3-A	TB2-2				20.375							
3	J5-A	TB2-3				16.75							
4	J2-A	SPLICE	802046-014	14		3.00						802172-103	(54)
5	J4-A												
6	J6-A												
7	J1-B	GND	802046-016	16	GRN	3.75				.25		802132-004	(49)
8	J2-B												
9	J3-B												
10	J4-B												
11	J5-B												
12	J6-B												
13	J1-C	TB3-1	802046-012	12	WHT	21.125						802136-008	(51)
14	J3-C	TB3-2				19.125							
15	J5-C	TB3-3				16.125							
16	J2-C	SPLICE	802046-014	14		3.00						802172-103	(54)
17	J4-C												
18	J6-C												
19	K1-L2	TB2-1	802046-010	10	BLK	14.00				.25		802133-008	(50)
20	K1-L2	TB2-3				13.00							
21	K1-L1	TB3-1			WHT	13.50							
22	K1-L1	TB3-3				11.75							
23	K1-T2	TB1-2	802046-608	8	BLU	11.75				.50		TINNED	(64)
24	K1-T1	TB1-5	-908		WHT	12.50							(68)
25	TB1-3	CB1-2	-608		BLU	15.375			.625	.25		802137-110	(64) (52)
26	TB1-5	CB1-4	-908		WHT	14.25							(68)
27	DS1-1	CB1-2	802046-018	18	BLK	9.00			.25		802093-001	802131-010	
28	DS1-2	CB1-4			WHT	9.00							
29	K1-1	P3-2	TWISTED			19.00				.188	802235-001	801087-002	(7)
30	K1-2	P3-1	PAIR		BLK	19.00							(38)
31	K1-L2	CR1											
32	K1-T2	CR1											
33	K1-L1	CR2			WHT								
34	K1-T1	CR2											
35	INPUT	CB1-1	PART OF CABLE	6	BLK					.25		802265-110	(60)
36	INPUT	CB1-3	802085-006		WHT								
37	INPUT	GND			GRN								

WIRE NO.	COMPONENT FROM	COMPONENT TO	WIRE PART NO.	AWG	COLOR	WIRE LENGTH OVERALL (REF)	WIRE LENGTH FROM START	WIRE LENGTH TO FINISH	WIRE END STRIP LENGTH START	WIRE END STRIP LENGTH FINISH	TERMINAL LUGS START	TERMINAL LUGS FINISH

(64) 802046-608 8 AWG BLUE
(68) " -908 8 AWG WHT
(34) " -010 10 AWG
(35) " -012 12 AWG
(36) " -014 14 AWG
(37) " -016 16 AWG
(38) " -018 18 AWG

(7) 801087-002
(49) 802132-004
(50) 802133-008
(51) 802136-008
(52) 802137-110
(54) 802172-103
(57) 802235-001
(60) 802265-110
(62) 802293-001
(73) 802131-010

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.xx ± ——
.xxx ± ——
ANGLES ± ——
✓

MATERIAL
FINISH

CONTRACT NO.
DRAWN RG Mellus 9-2-77
CHECKED Art Berger 3 NOV 77
MECH
ELEC
PROJ. ENG Stephen R Black 15 Nov 77
APPROVED

SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84108

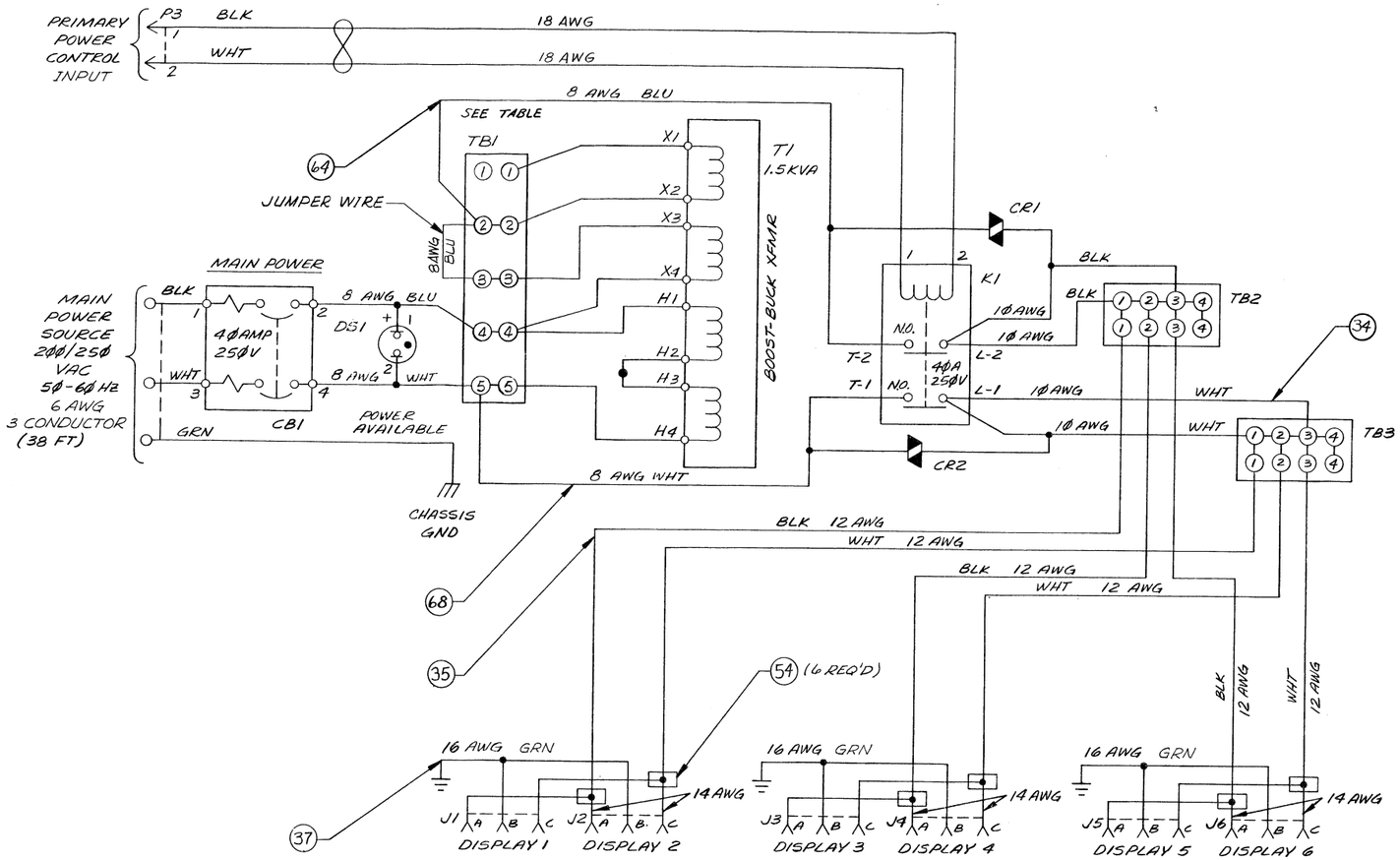
ASSY, SECONDARY POWER CONTROL (NOVOVIEW SP)

SIZE	CODE IDENT NO		REV
D	53938	200154-101	A1

SCALE NONE | DO NOT SCALE DWG | SHEET 2 OF 3

200154-101

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



BOOST BUCK TRANSFORMER CONNECTIONS
TB1

MAIN POWER LINE (VOLTS AC)	200-213	213-227	227-243	243-259	259-276
LINE BLU	4	4	4	4	4
LINE WHT	5	5	5	5	5
LOAD BLU	1	3	4	3	1
LOAD WHT	5	5	5	5	5
H4	5	5	5	4	4
H1	4	4	4	5	5
X4	4	4	4	4	4
X3	3	3	3	3	3
X2	2	2	2	2	2
X1	1	1	1	1	1

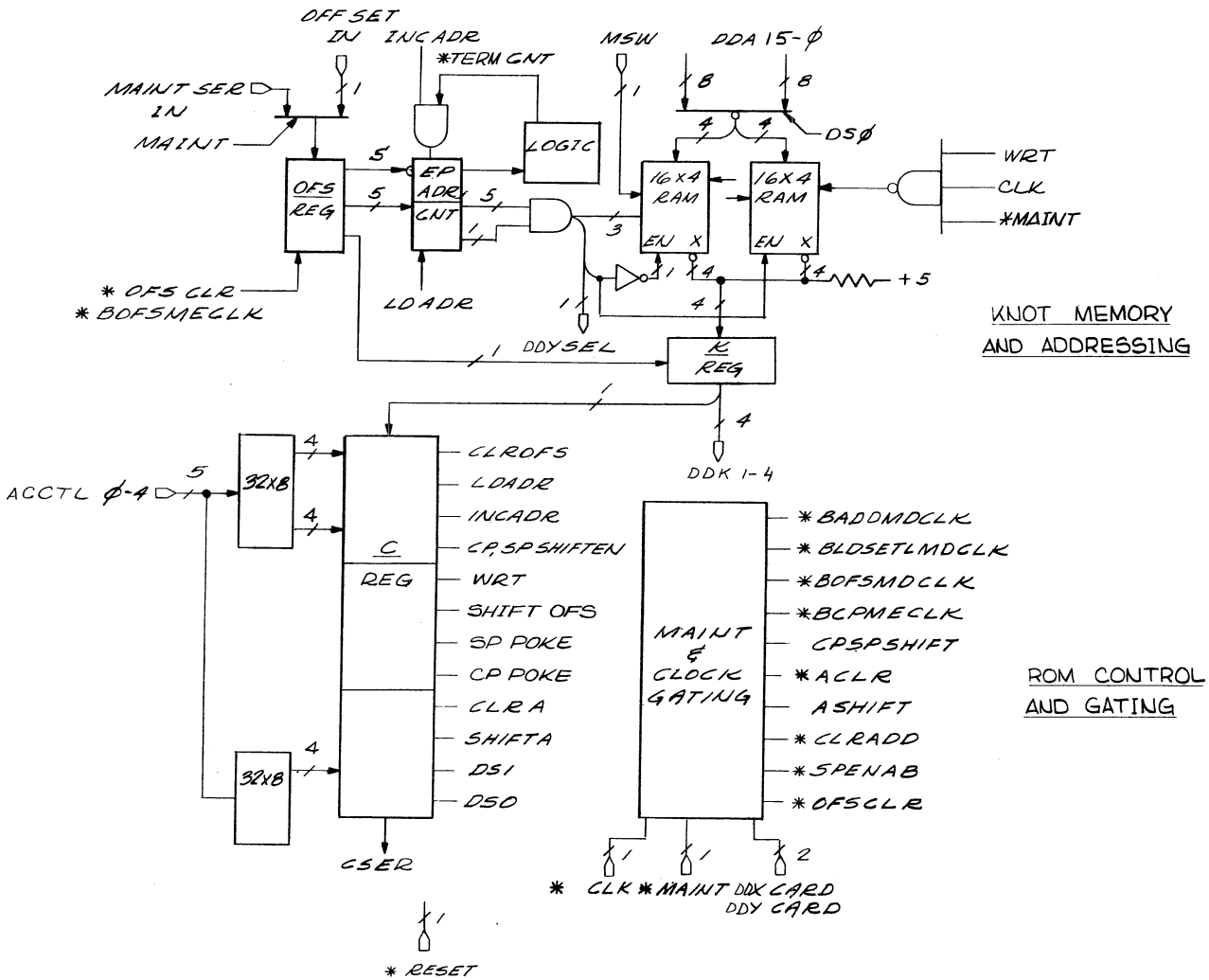
NOTES:
1. WIRE SIZE TO BE 14 AWG. UNLESS OTHERWISE SPECIFIED:
2. CR1, CR2, DS1 PIGTAIL LEADS TO BE 18 AWG WIRE.
3. ALL CHASSIS GROUNDS MUST ASSURE ELECT. CONTACT.
4. TB1 TO BE CONNECTED IN THE FIELD TO PROVIDE 280V SYSTEM POWER.
5. ⊕ INLINE SPLICE/TAP-RUN 10-12 AWG, TAP 14-18 AWG. E&S P/N 802172-103.

SCHEMATIC

SIZE	CODE IDENT NO		REV
D	53938	200154-101	A1
SCALE NONE	DO NOT SCALE DWG	SHEET 3 OF 3	

200154-301

ZONE	LTR	DESCR	ATE	APPROVED
	A1 A2	REV UPDATE W/ NO DWG CHNG JB	1-4-78	PSpeir



NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.XX ±
.XXX ±
ANGLES ±

MATERIAL

FINISH

CONTRACT NO.

DRAWN Wm D. RAPP 4/18/77
CHECKED WDR 5-4-77
MECH
ELEC 2 - - 77
PROJ. ENG 12 JULY 77
APPROVED

SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

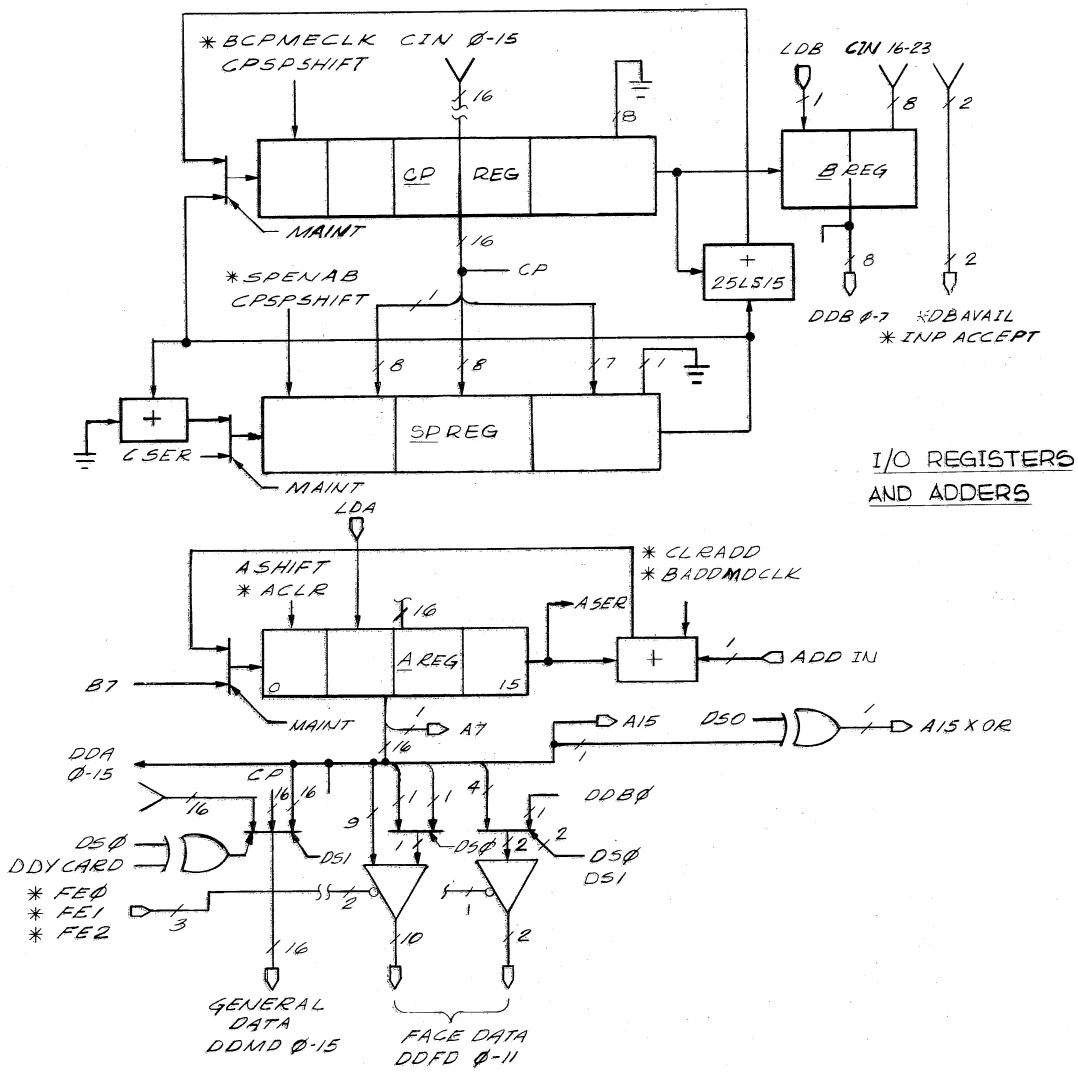
DISPLAY DATA (BLOCK DIAGRAM)

SIZE	CODE IDENT NO		REV
C	53938	200155-900	A2

SCALE NONE SHEET 1 OF 2

200155-900

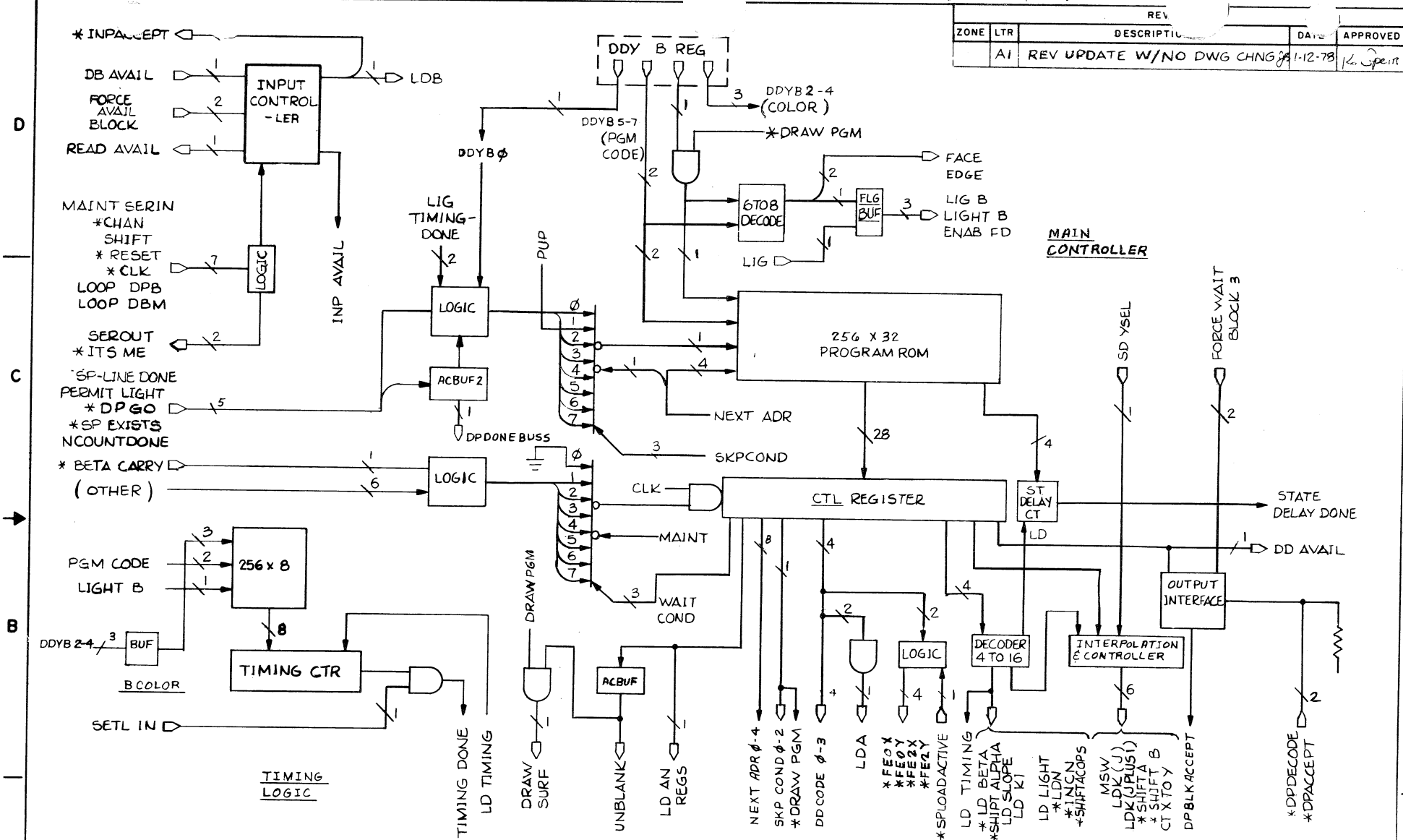
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



I/O REGISTERS AND ADDERS

200155-900

SIZE	CODE IDENT NO		REV
C	53938	200155-900	A2
SCALE NONE		SHEET 2 OF 2	



ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A1	REV UPDATE W/NO DWG CHNG	1-12-78	K. Speirs

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.XX ± ——
.XXX ± ——
ANGLES ± ——
✓

MATERIAL
FINISH

NEXT ASSY | USED ON
APPLICATION

CONTRACT NO.
DRAWN ADS 7-20-77
CHECKED Art Langen 30 AUG 77
MECH
ELEC
PROJ. ENG
APPROVED

SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

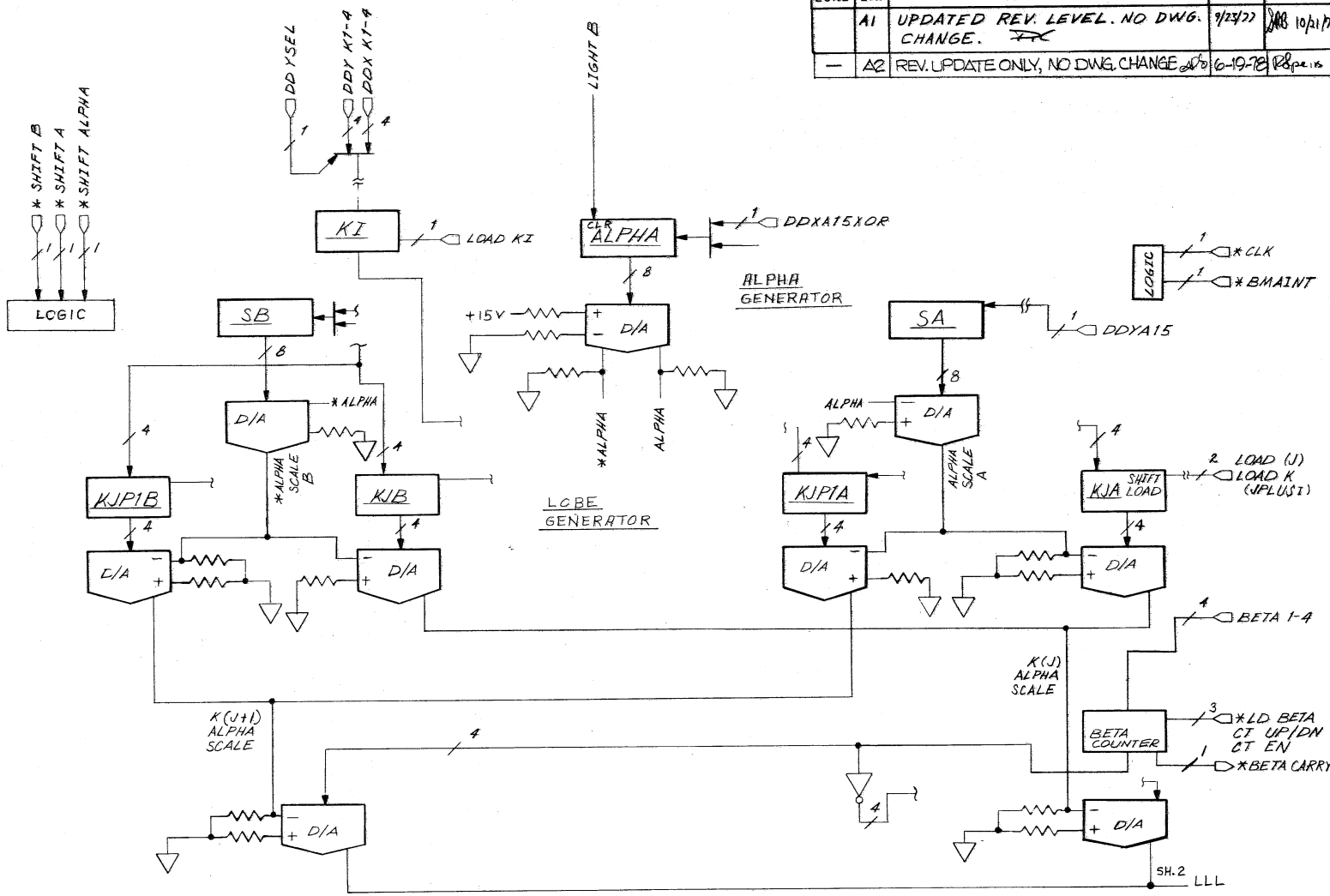
ANALOG CONTROL BLOCK DIAGRAM

SIZE	CODE IDENT NO		REV
C	53938	200156-900	A1

SCALE NONE | SHEET 1 OF 1

200156-900 B

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A1	UPDATED REV. LEVEL. NO DWG. CHANGE.	9/23/77	10/21/77
—	A2	REV. UPDATE ONLY, NO DWG. CHANGE	6-19-78	



200130-100	NOVOVIEW
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.XX ± ____
.XXX ± ____
ANGLES ± ____
✓

MATERIAL
FINISH

CONTRACT NO.
DRAWN D. CARROLL 8-4-77
CHECKED A. Longon 14 SEP 77
MECH
ELEC
PROJ. ENG
APPROVED

SEE SEPARATE PARTS LIST

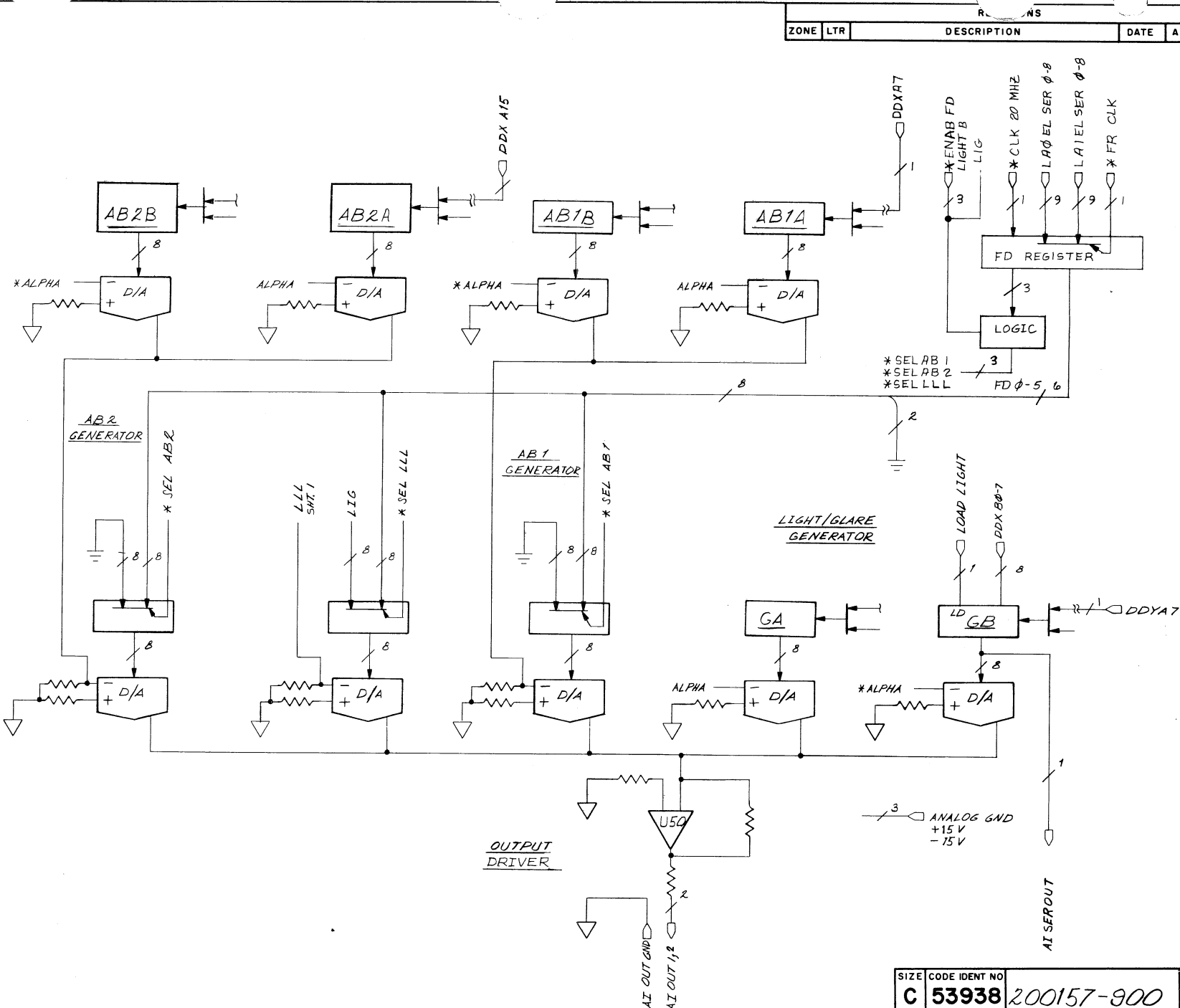
EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

ANALOG INTENSITY P.C.

SIZE	CODE IDENT NO		REV
C	53938	200157-900	A2

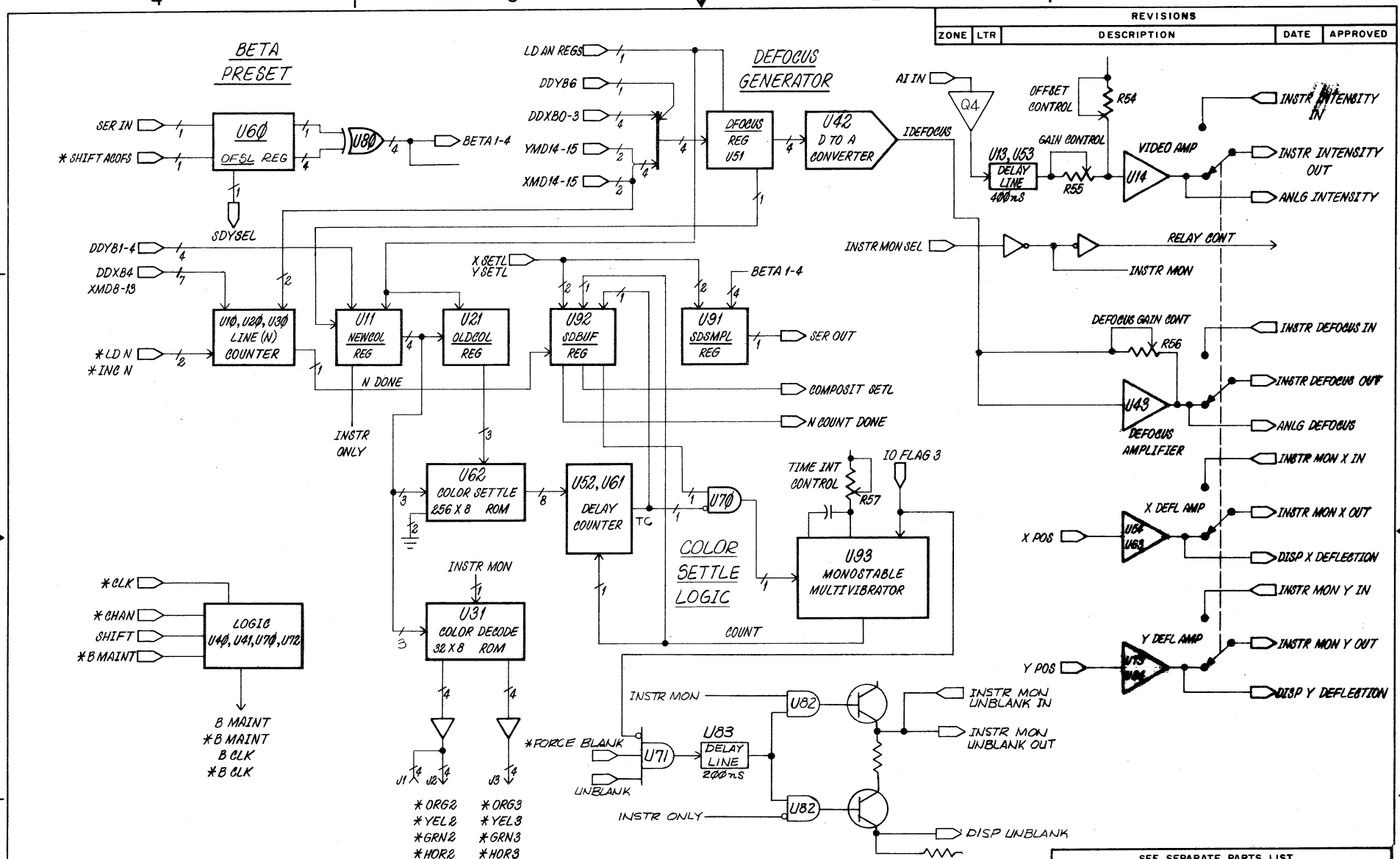
SCALE NONE — SHEET 1 OF 2

200157-900

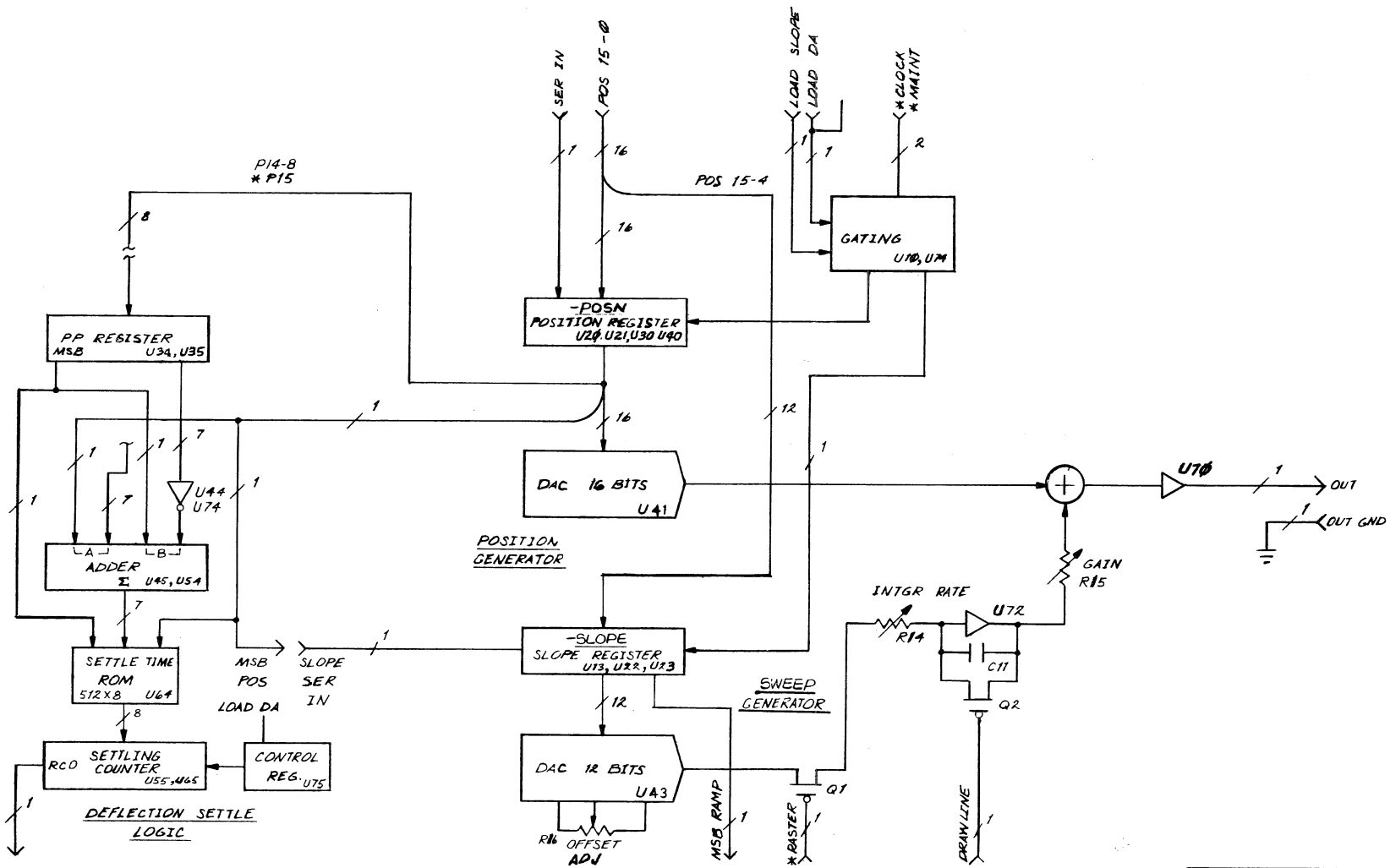


ZONE	LTR	DESCRIPTION	DATE	APPROVED

SIZE	CODE IDENT NO		REV
C	53938	200157-900	A2
SCALE NONE			SHEET 2 OF 2


BETA PRESET
U60 OFSL REG
SER IN
*SHIFT ACOFS
U80
BETA 1-4
SDYSEL
DDYB1-4
DDXB4
XMD8-19
*LD N
*INC N
U10, U20, U30 LINE (N) COUNTER
U11 NEWCOL REG
U21 OLDCOL REG
N DONE
INSTR ONLY
LD AN REGS
DDYB6
DDXB0-3
YMD14-15
XMD14-15
DEFOCUS GENERATOR
DFOCUS REG U51
U42 D TO A CONVERTER
IDEFOCUS
X SETL
Y SETL
U92 SDBUF REG
U91 SDSMPL REG
SER OUT
COMPOSIT SETL
N COUNT DONE
BETA 1-4
AI IN
Q4
OFFSET CONTROL
R54
GAIN CONTROL
U13, U53 DELAY LINE 400nS
R55
VIDEO AMP U14
INSTR INTENSITY IN
INSTR INTENSITY OUT
ANLG INTENSITY
INSTR MON SEL
RELAY CONT
INSTR MON
DEFOCUS GAIN CONT
R56
U43 DEFOCUS AMPLIFIER
INSTR DEFOCUS IN
INSTR DEFOCUS OUT
ANLG DEFOCUS
U62 COLOR SETTLE 256 X 8 ROM
U52, U61 DELAY COUNTER
TC
U70
TIME INT CONTROL
R57
IO FLAG 3
U93 MONOSTABLE MULTIVIBRATOR
COLOR SETTLE LOGIC
COUNT
INSTR MON
U31 COLOR DECODE 32 X 8 ROM
*CLK
*CHAN
SHIFT
*B MAINT
LOGIC U40, U41, U70, U72
B MAINT
*B MAINT
B CLK
*B CLK
J1
J2
J3
*ORG2
*YEL2
*GRN2
*HOR2
*ORG3
*YEL3
*GRN3
*HOR3
INSTR MON
*FORCE BLANK
U71
UNBLANK
U83 DELAY LINE 200nS
U82
INSTR ONLY
INSTR MON UNBLANK IN
INSTR MON UNBLANK OUT
DISP UNBLANK
X DEFL AMP
X POS
INSTR MON X IN
INSTR MON X OUT
DISP X DEFLECTION
INSTR MON Y IN
Y DEFL AMP
Y POS
INSTR MON Y OUT
DISP Y DEFLECTION
REVISIONS
ZONE | LTR | DESCRIPTION | DATE | APPROVED
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.xx ±
.xxx ±
ANGLES ±
MATERIAL
FINISH
NEXT ASSY | USED ON
APPLICATION
CONTRACT NO.
DRAWN
CHECKED
MECH
ELEC
PROJ. ENG
APPROVED
SEE SEPARATE PARTS LIST
EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112
SIZE C
CODE IDENT NO 53938
200158-900
REV A4
SCALE NONE
SHEET 1 OF 1
200158-900 B

ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A2	REV UPDATE, NO DWG CHNG JB	12-27-77	RSpeirs
	A3	REV UPDATE, NO DWG CHNG LA	6-28-78	RSpeirs



200159-100	NOVOVIEW
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.XX ± ____
.XXX ± ____
ANGLES ± ____
✓

MATERIAL

FINISH

CONTRACT NO.

DRAWN: D. CARROLL	8-3-77
CHECKED J Pino	8-12-77
MECH	
ELEC	8-12-77
PROJ. ENG	8-12-77
APPROVED J Pino	8/12/77

SEE SEPARATE PARTS LIST

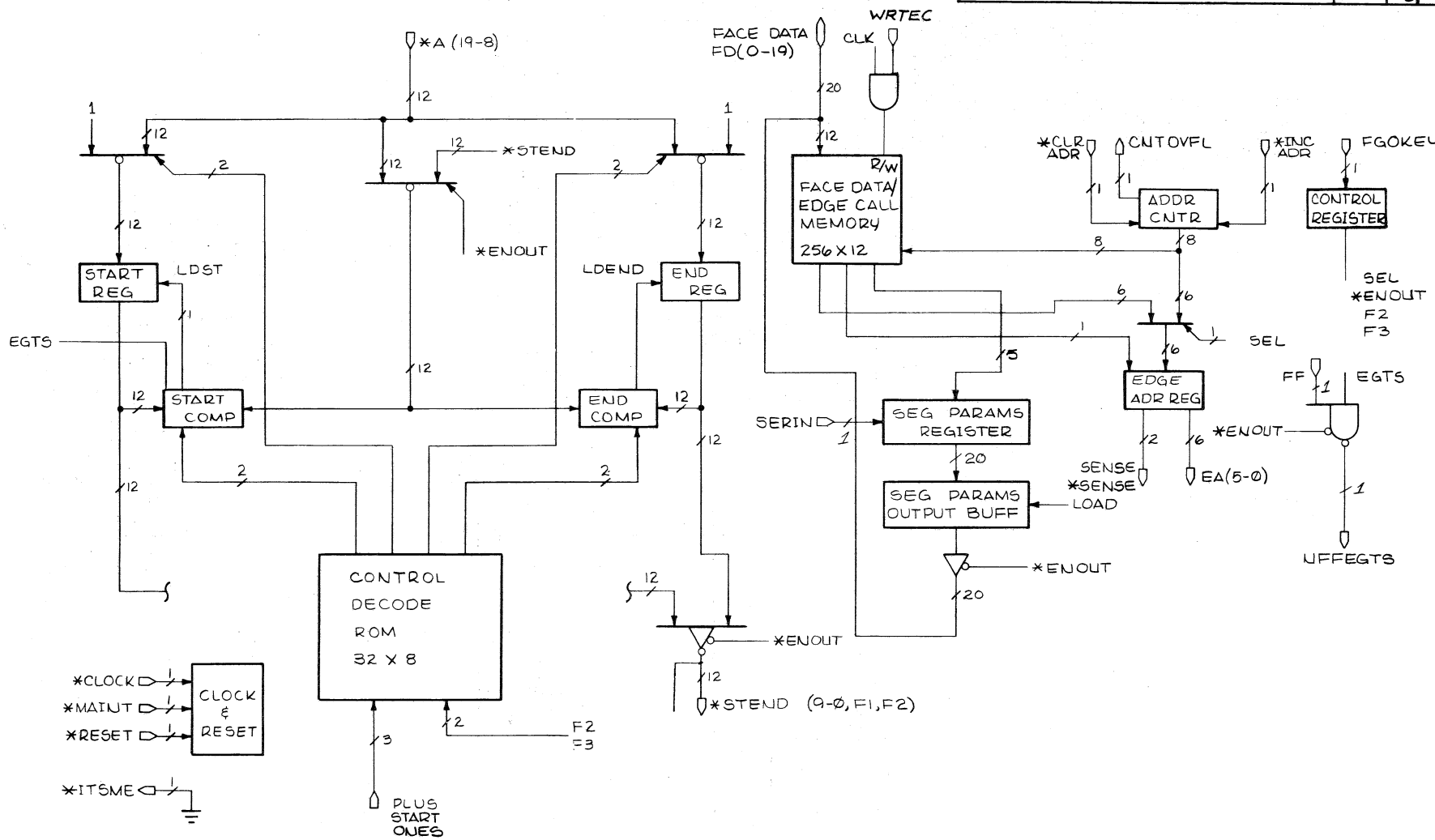
EVANS & SUTHERLAND
COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

X-Y D/A CONVERTER BLOCK DIAGRAM

SIZE	CODE IDENT NO		REV
C	53938	200159-900	A3
SCALE		SHEET 1 OF 1	

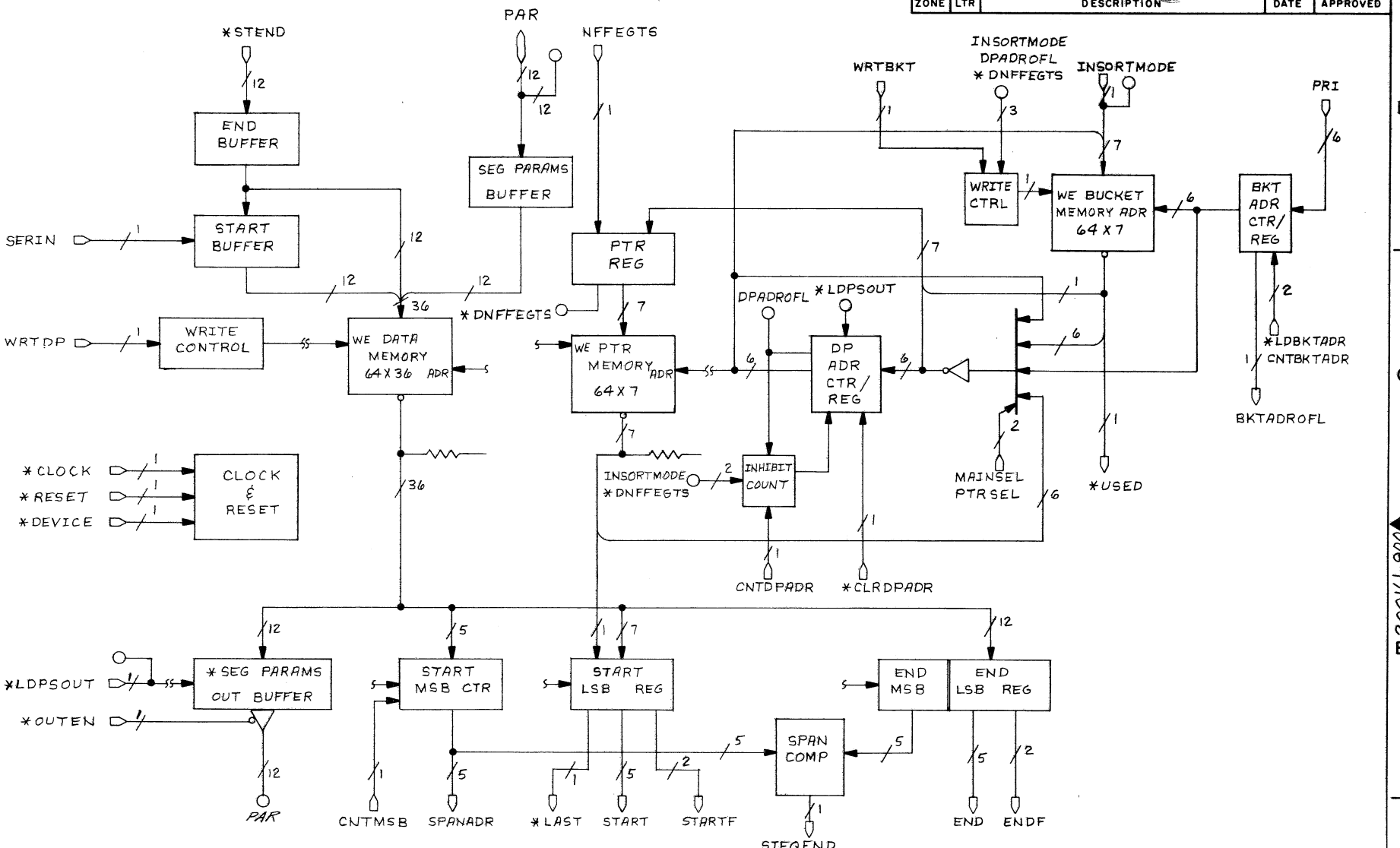
200159-900

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A1	REVISON UPDATE W/NO DWG CHNG ADS	9-29-77	RSpeib



		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON .xx ± ___ .xxx ± ___ ANGLES ± ___ ✓	CONTRACT NO.	SEE SEPARATE PARTS LIST
			DRAWN R MELLUS 2-2-77	EVANS & SUTHERLAND COMPUTER CORPORATION SALT LAKE CITY, UTAH 84112
			CHECKED [signature] 12 APR 77	FACE GENERATOR (BLOCK DIAGRAM)
			MECH	
			ELEC	
			PROJ. ENG [signature] 12 Apr. 77	
		MATERIAL	APPROVED	SIZE C | CODE IDENT NO 53938 | 200160-900 | REV A1
NEXT ASSY	USED ON	FINISH		SCALE NONE | SHEET OF 1
APPLICATION				

200160-900



ZONE	LTR	DESCRIPTION	DATE	APPROVED
		REV		

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.XX ± ____
.XXX ± ____
ANGLES ± ____
✓

MATERIAL

FINISH

NEXT ASSY | USED ON

APPLICATION

CONTRACT NO.

DRAWN R. Early 8-8-77

CHECKED Art Cooper 9 SEP 77

MECH

ELEC John Mason 23 NOV 77

PROJ. ENG John Mason 23 NOV 77

APPROVED

SEE SEPARATE PARTS LIST

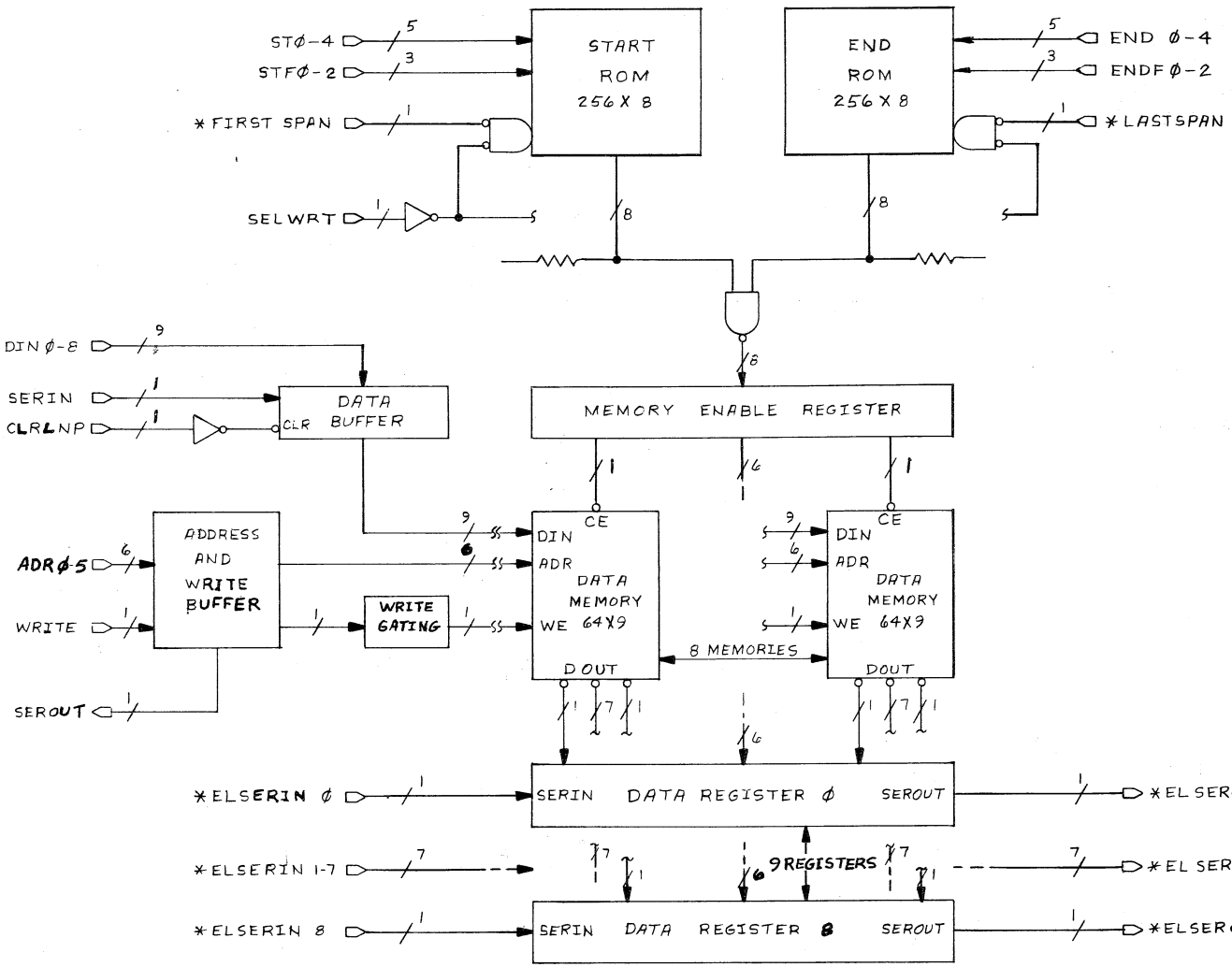
EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

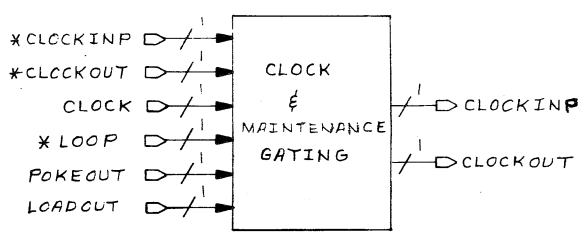
PRIORITY SORTER BLOCK DIAGRAM

SIZE	CODE IDENT NO		REV
C	53938	200161-900	NC

SCALE NONE | SHEET 1 OF 1

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A1	REV UPDATE W/NO DWG CHNG MW	4-6-78	





NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.XX ± ____
.XXX ± ____
ANGLES ± ____
✓

MATERIAL
FINISH

CONTRACT NO.
DRAWN R.Barley 8-5-77
CHECKED 7 SEP 77
MECH
ELEC JohnM 20SEP77
PROJ. ENG
APPROVED

SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

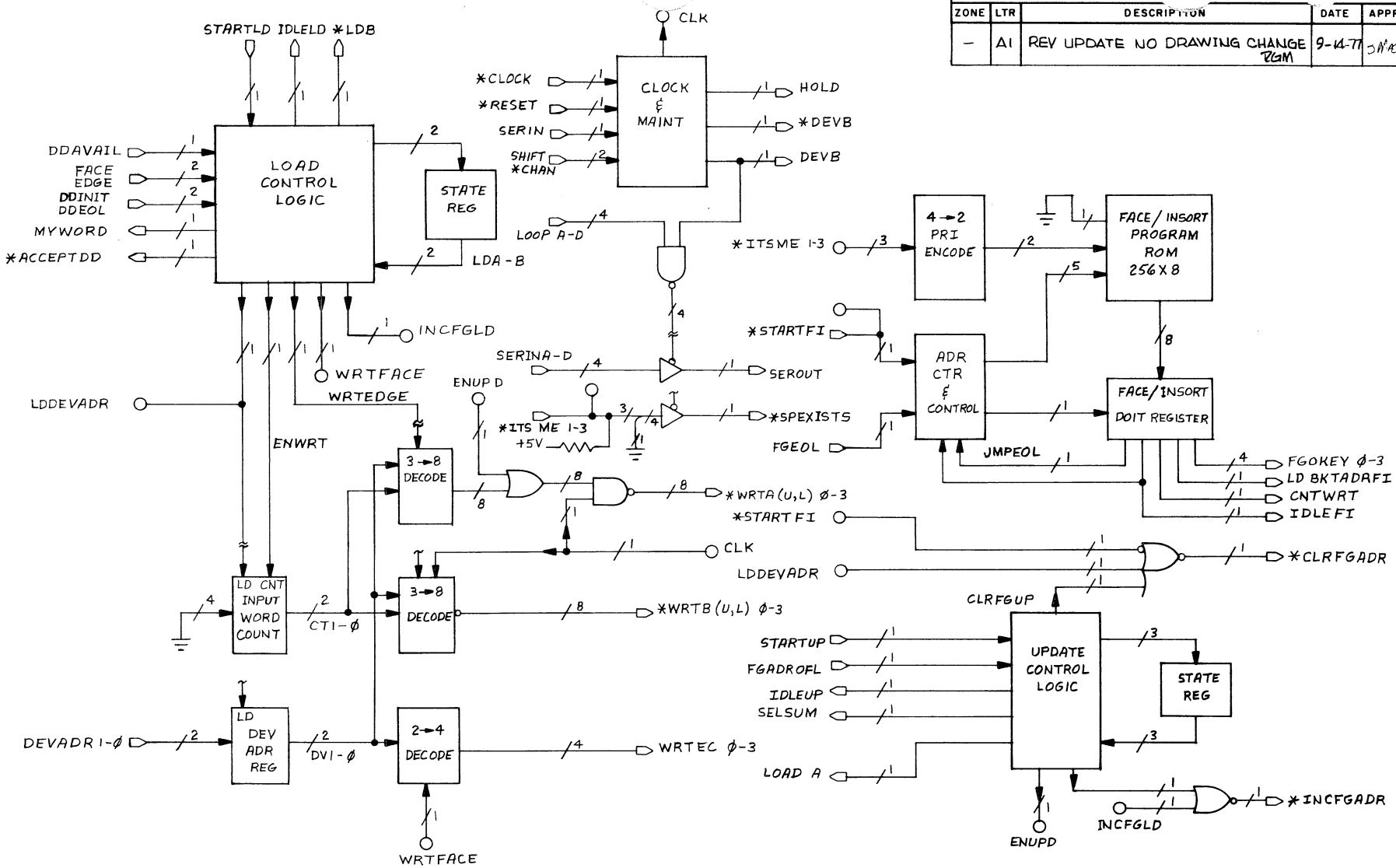
LINE ASSEMBLER BLOCK DIAGRAM

SIZE	CODE IDENT NO		REV
C	53938	200162-900	A1

SCALE NONE SHEET 1 OF 1

200162-900

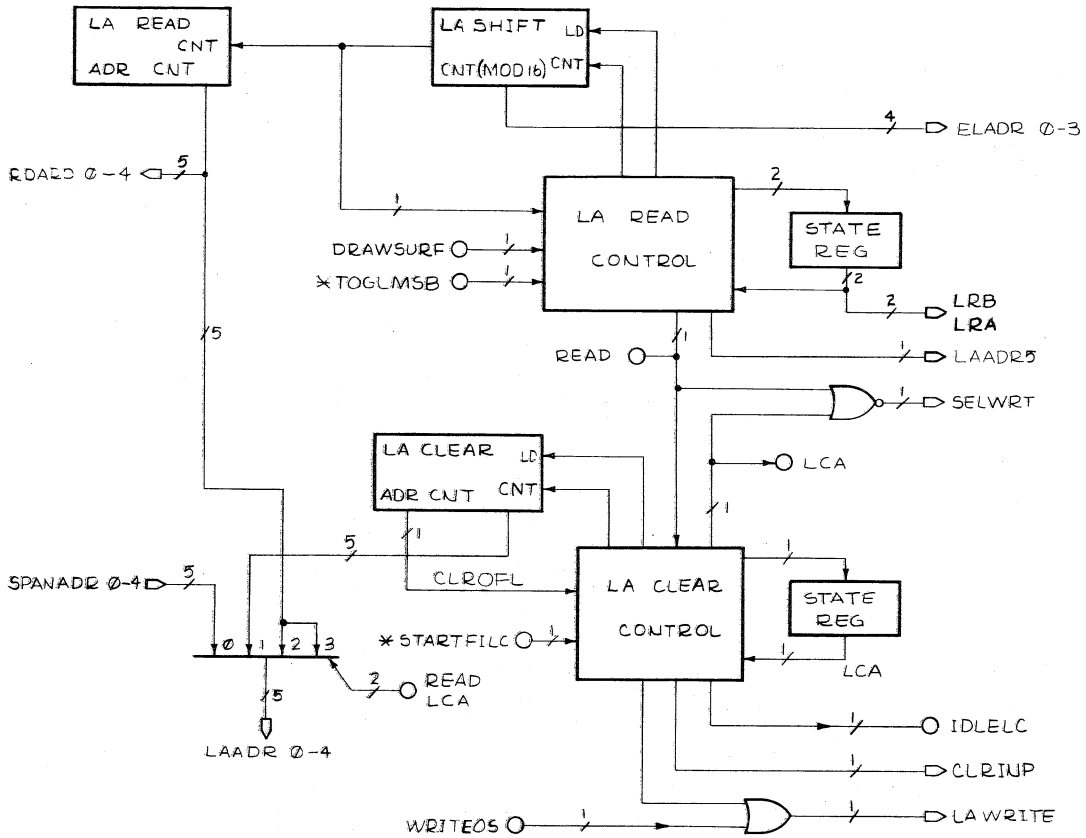
ZONE	LTR	DESCRIPTION	DATE	APPROVED
–	A1	REV UPDATE NO DRAWING CHANGE RGM	9-14-77	

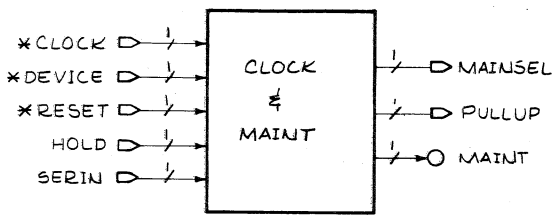


200163-900 B

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON .xx ± ____ .xxx ± ____ ANGLES ± ____ ✓	CONTRACT NO.	SEE SEPARATE PARTS LIST
			DRAWN R. EARLEY 1-31-77	EVANS & SUTHERLAND COMPUTER CORPORATION SALT LAKE CITY, UTAH 84112
			CHECKED 3 FEB 77	
			MECH	E/F CONTROL
			ELEC 17 MAR 77	(BLOCK DIAGRAM)
			PROJ. ENG 17 MAR 77	
	NOVOVIEW II	MATERIAL	APPROVED	SIZE C · CODE IDENT NO 53938 · 200163-900 · REV A1
NEXT ASSY	USED ON	FINISH		SCALE NONE · SHEET 1 OF 1
APPLICATION				

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED





200164-900 B

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.xx ± ____
.xxx ± ____
ANGLES ± ____
✓

MATERIAL

FINISH

CONTRACT NO.	
DRAWN R MELLUS	1-19-77
CHECKED Art Cooper	3 FEB 77
MECH	
ELEC John Mason	14 MAR 77
PROJ. ENG John Mason	14 MAR 77
APPROVED	

SEE SEPARATE PARTS LIST

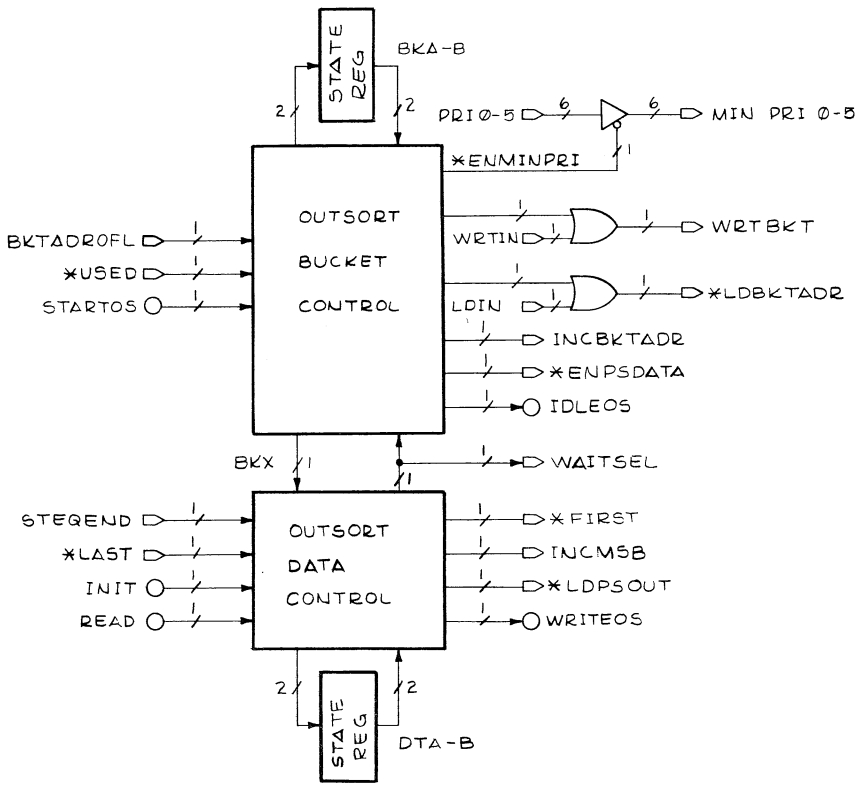
EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

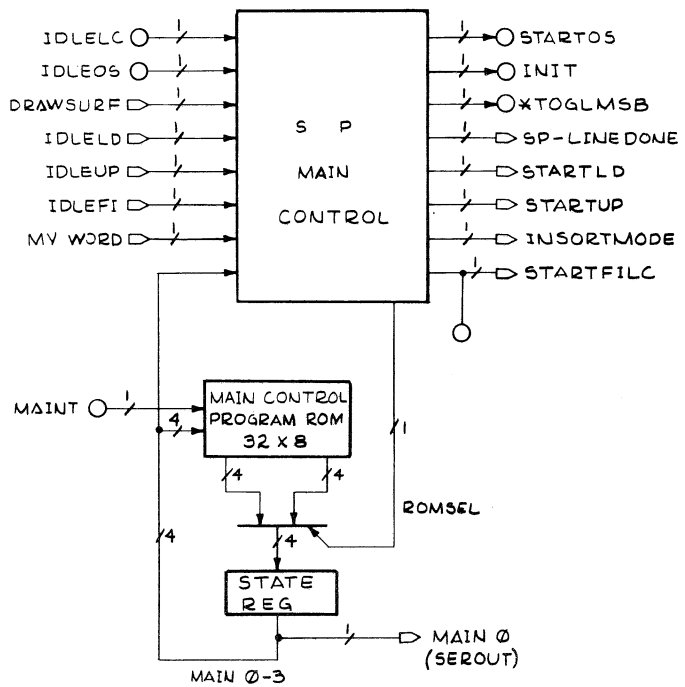
S/L CONTROL BLOCK DIAGRAM

SIZE	CODE IDENT NO		REV
C	53938	200164-900	NC

SCALE NONE SHEET OF 2

ZONE	LTR	DESCRIPTION	DATE	APPROVED
		REV		

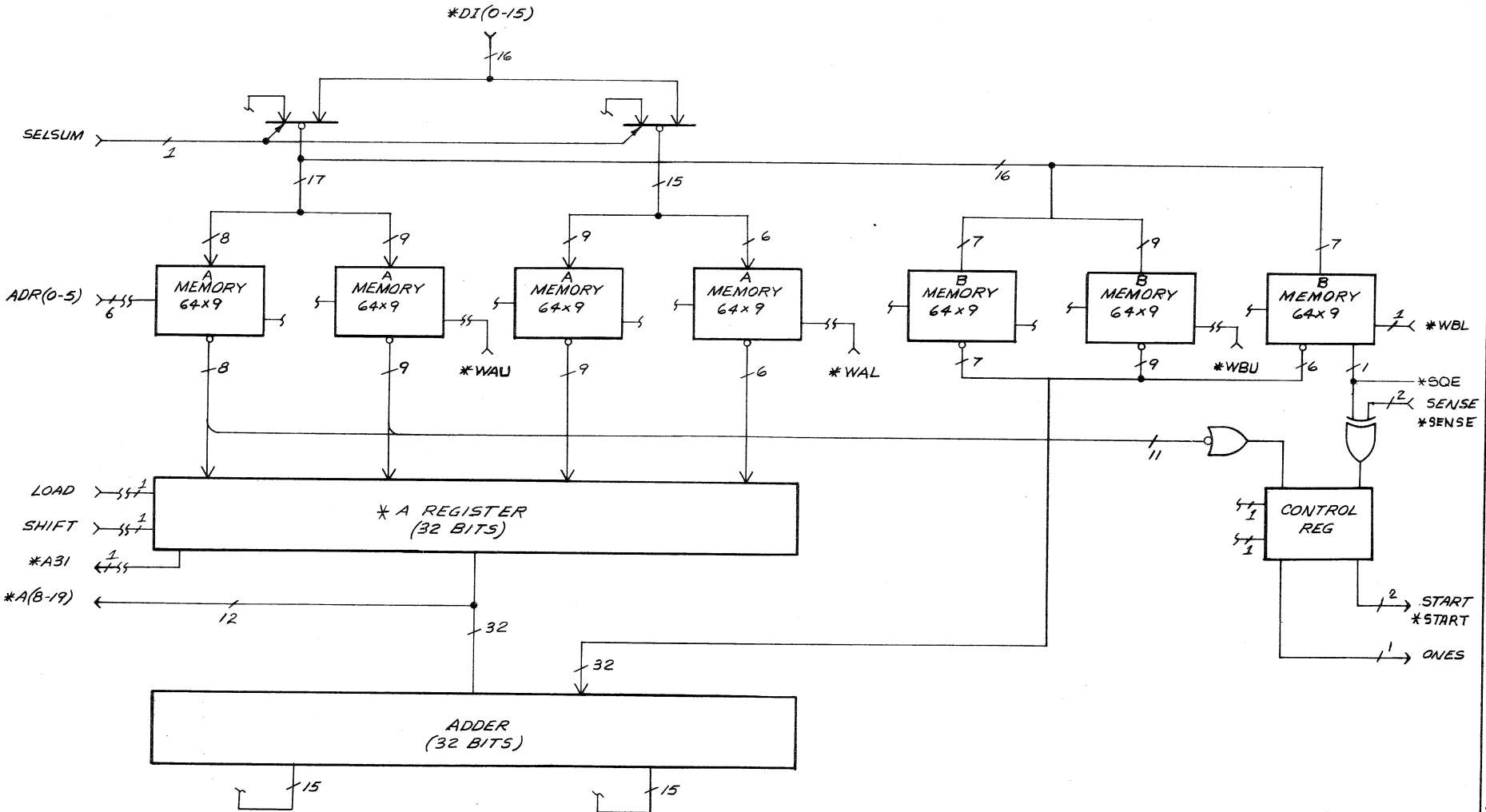


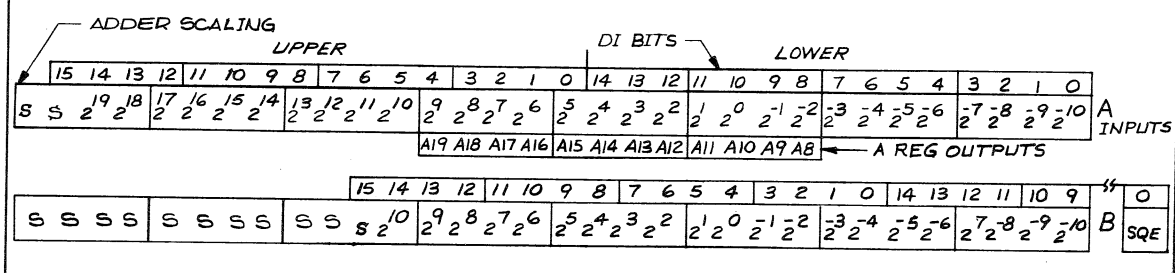


200164-900

SIZE	CODE IDENT NO		REV
C	53938	200164-900	NC
SCALE NONE		SHEET 2 OF 2	

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED





CONTRACT NO.	
DRAWN	Lee Whitlock 3-26-77
CHECKED	29 MAR 77
MECH	
ELEC	
PROJ. ENG	27 JUL 77
APPROVED	

SEE SEPARATE PARTS LIST

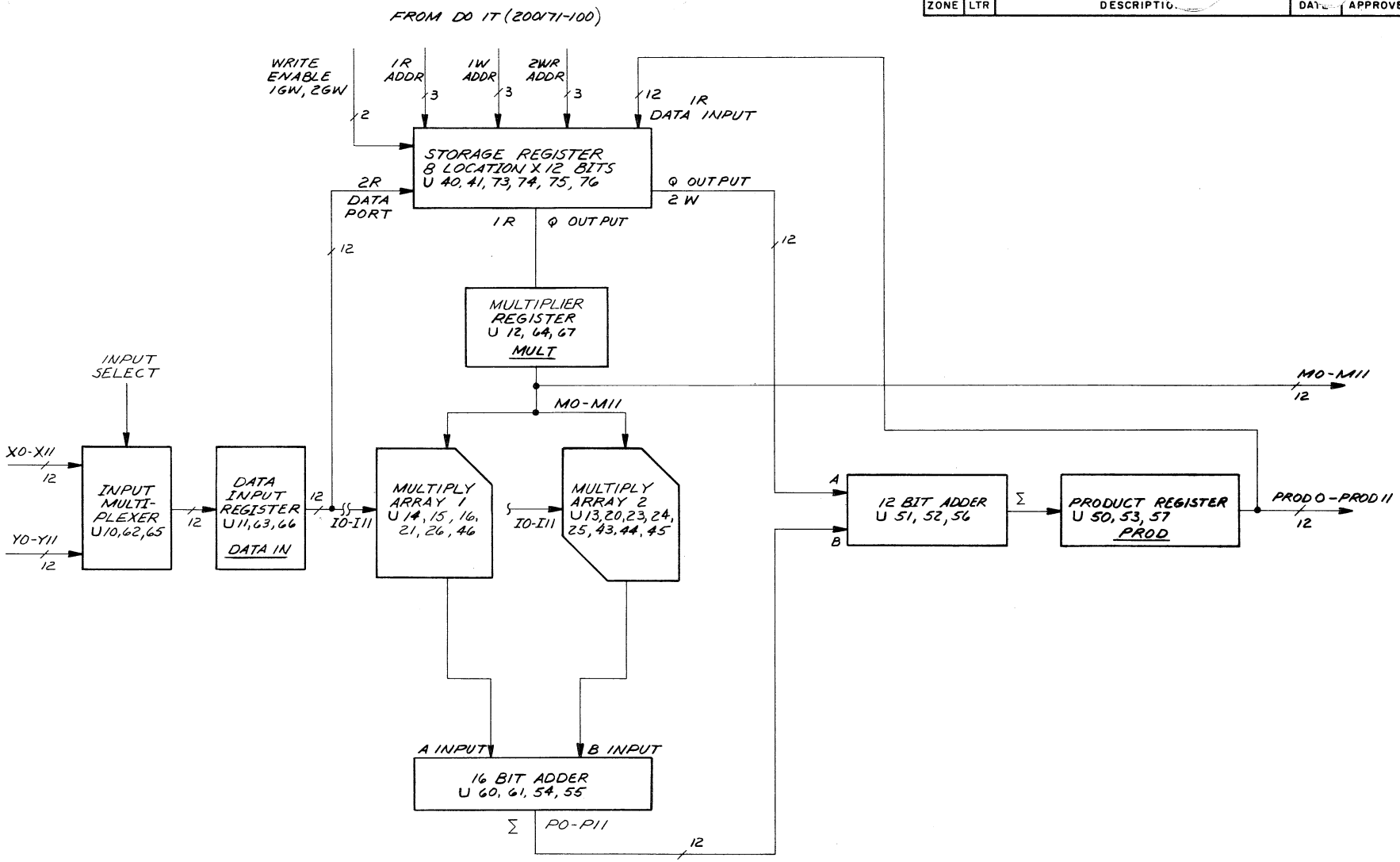
EVANS & SUTHERLAND
COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

EDGE GENERATOR
BLOCK DIAGRAM

SIZE	CODE IDENT NO		REV
C	53938	200165-900	NRC

SCALE None

REV				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



200193-100	NOVOVIEW SP
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.XX ± ——
.XXX ± ——
ANGLES ± ——
✓

MATERIAL

FINISH

CONTRACT NO.

DRAWN C. WARDROP 10/25/77
CHECKED 11 NOV 77
MECH
ELEC 11/23/77
PROJ. ENG 1/16/78
APPROVED

SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

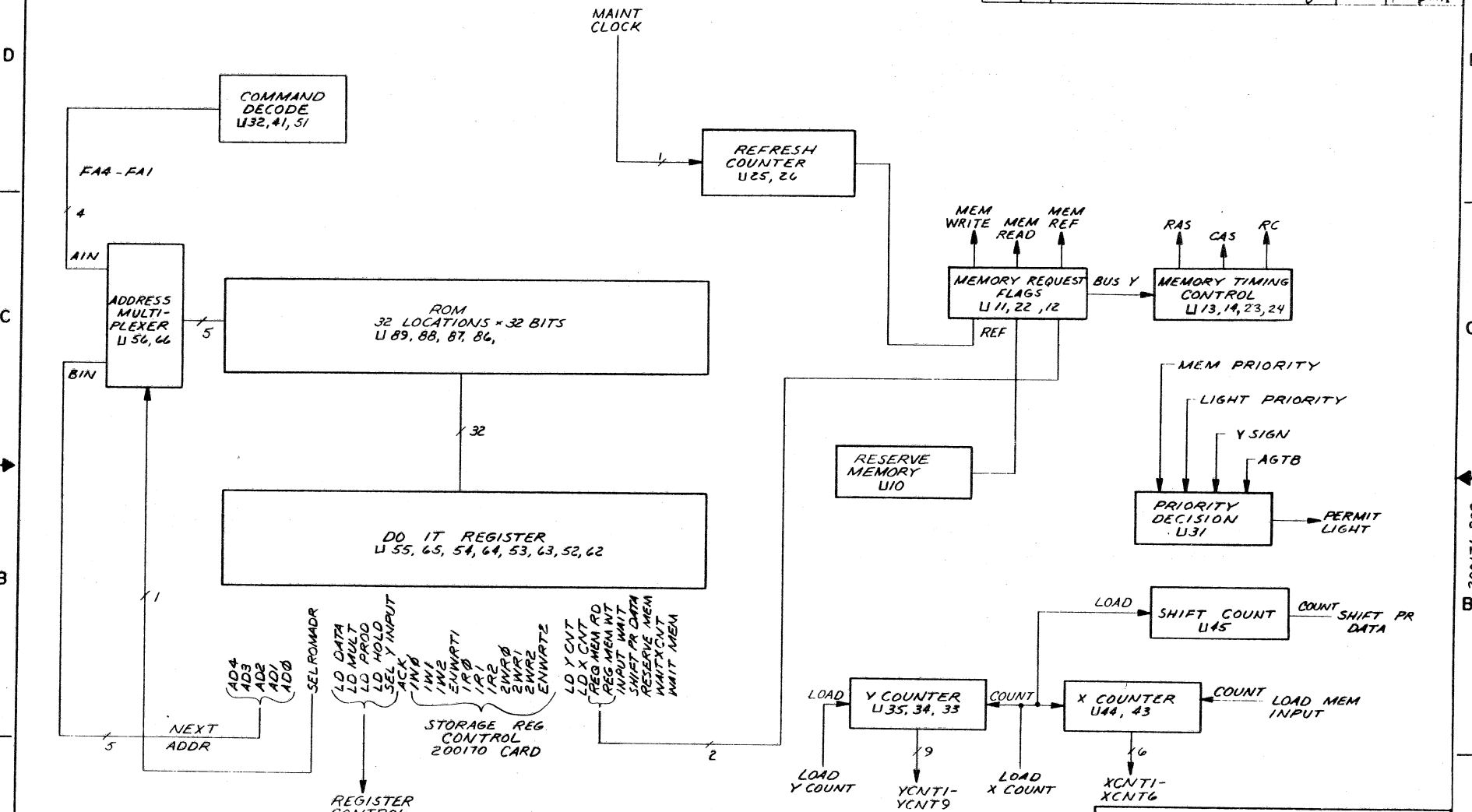
LIGHT OCCULTATION TRANSFORM CARD BLOCK DIAGRAM

SIZE	CODE IDENT NO		REV
C	53938	200170-900	NC

SCALE NONE SHEET 1 OF 1

200170-002-B

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A2	REV UPDATE W/NO DWG CHG CW	11/6/78	R Spain
	A3	REV UPDATE W/NO DWG CHNG JB	3-14-78	L Spain



200193-100	NOVOVIEW SP
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.xx ± ——
.xxx ± ——
ANGLES ± ——
✓

MATERIAL
FINISH

CONTRACT NO.
DRAWN CW
CHECKED [illegible] 22 NOV 77
MECH
ELEC [illegible]
PROJ. ENG [illegible]
APPROVED [illegible] 2 FEB 78

SEE SEPARATE PARTS LIST

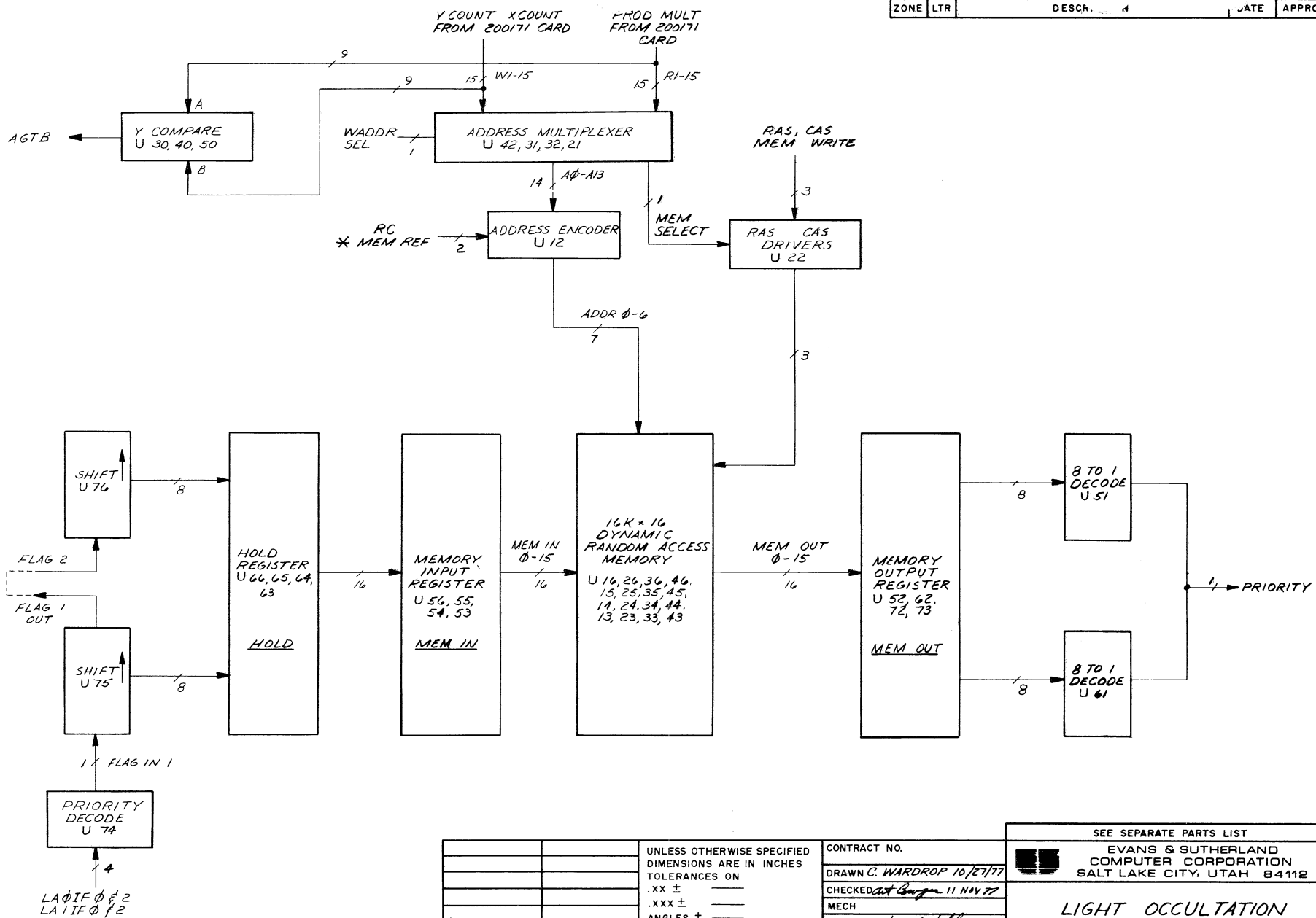
EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

LIGHT OCCULTATION CONTROL
BLOCK DIAGRAM

SIZE	CODE IDENT NO		REV
C	53938	200171-900	A3

SCALE NONE — SHEET 1 OF 1

200171-900



ZONE	LTR	DESCR.	DATE	APPROVED

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.XX ±
.XXX ±
ANGLES ±
✓

200193-100	NOVOVIEW SP
NEXT ASSY	USED ON
APPLICATION	

MATERIAL
FINISH

CONTRACT NO.
DRAWN C. WARDROP 10/27/77
CHECKED 11 NOV 77
MECH
ELEC 11/27/77
PROJ. ENG 1/16/78
APPROVED

SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

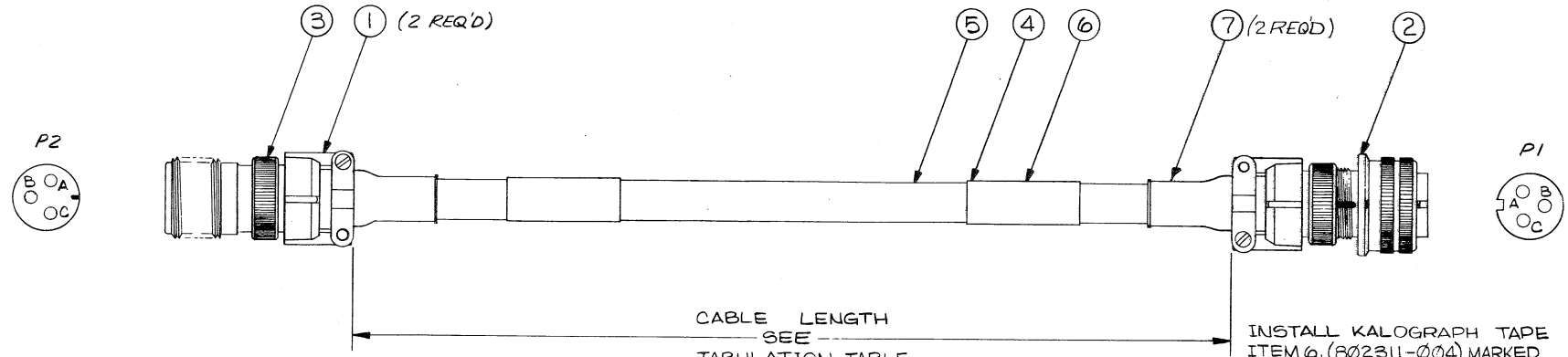
LIGHT OCCULTATION MAP CARD BLOCK DIAGRAM

SIZE	CODE IDENT NO		REV
C	53938	200172-900	NC

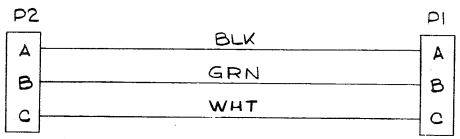
SCALE NONE SHEET 1 OF 1

200172-900

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
-	NC	ITEM 5 WAS 802081-016. THIS DRAWING IS FORMALLY RELEASED TO NC REV. STATUS.	8-12-77	15 AUG 77 RSpeir
	A1	ADDED ITEM 7 802124-008 2 REQ CHANGE SCHEMATIC Hess 10-5-78	10-2-78	5 OCT 78 RSpeir



INSTALL KALOGRAPH TAPE ITEM 6, (802311-004) MARKED WITH PART NUMBER, REV. LEVEL AND SERIAL NUMBER. COVER WITH ITEM 4 CLEAR SHRINK TUBING (802033-375). INSTALL PERMANETLY.



SCHEMATIC

TABULATION TABLE

CABLE ASSY	CABLE LENGTH
200178-024	24FT. ±.50 IN.

200104-100	NOVOVIEW
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.XX ± ____
.XXX ± ____
ANGLES ± ____
✓

MATERIAL SEE PARTS LIST
FINISH

CONTRACT NO.

DRAWN	8-1-77
CHECKED	2 AUG 77
MECH	8/15/77
ELEC	15 AUG 77
PROJ. ENG	
APPROVED	8-15-77

SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND
COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

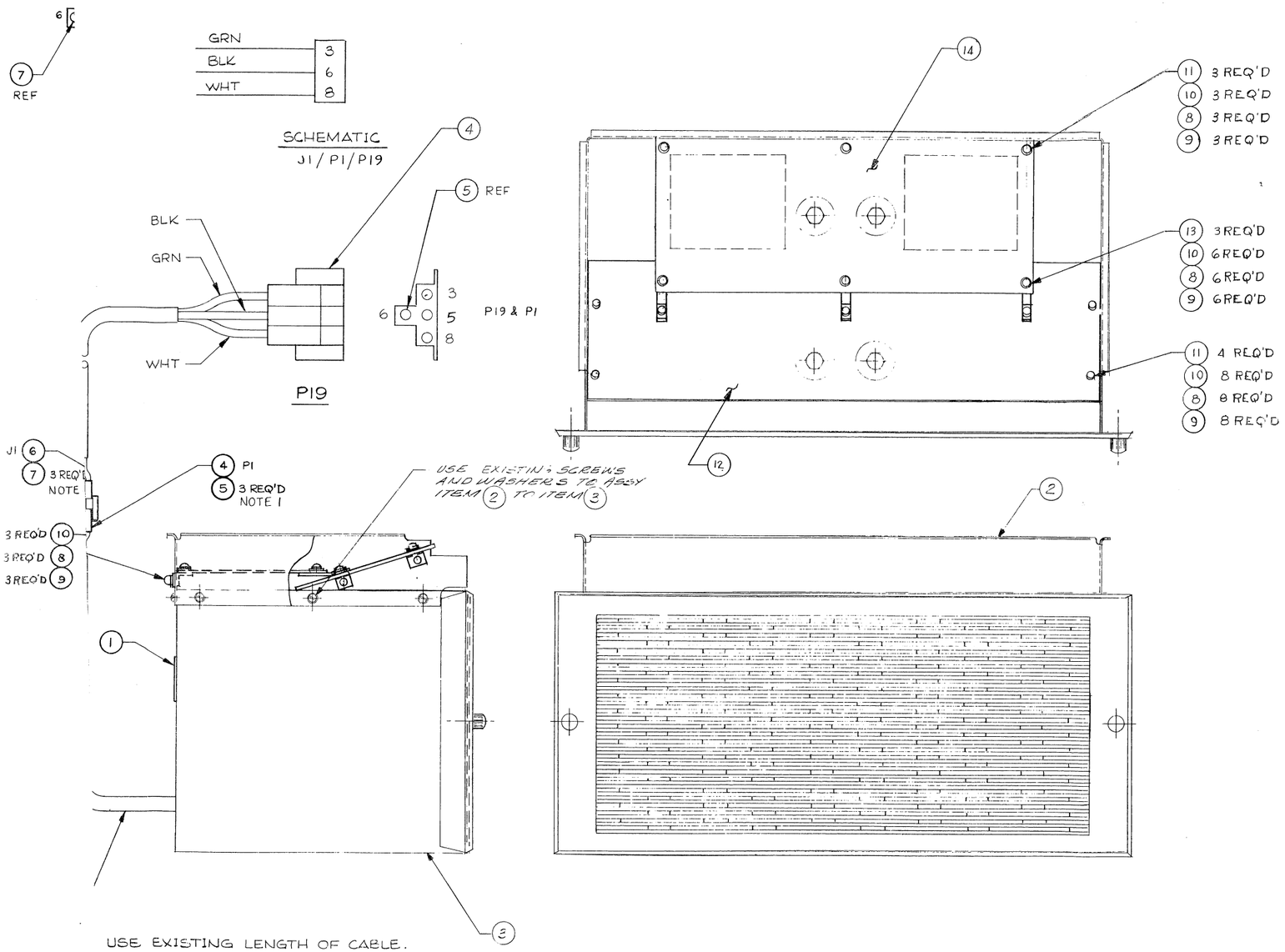
CABLE ASSY, POWER EXTENTION

SIZE	CODE IDENT NO		REV
C	53938	200178-TAB	A1

SCALE NONE SHEET OF 1

200178-TAB

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
—	A2	ITEM NO. & NOTE CHANGES	9/11/77	JPino 9/11/77
	A3	ADDED AIR BAFFLES MW	10-26-77	1 Nov 77



2. CUT E:ORD 6 IN. FROM BLOWER. INSTALL CONNECTORS ACCO SCHEMATICS FOR P1 AND J1.
1. DO STALL ITEM (5) & (7) INTO ITEM (4) & (6) AT ION 5.

UNLESS OTHERWISE SPECIFIED:

NOTES:

SEE SEPARATE PARTS LIST

200101-100	NOVOVIEW
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES ON
.xx± .50 IN.
.xxx± ——
ANGLES± ——
✓
MATERIAL SEE PARTS LIST
FINISH

CONTRACT NO.
DRAWN J. Pino 6/7/77
CHECKED J. Pino 8/15/77
MECH J. Pino 8/15/77
ELEC Ron Spaeth 15 AUG 77
PROJ. ENG.
DESIG. AUTO.
APPROVED J. Pino 8-15-77

EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

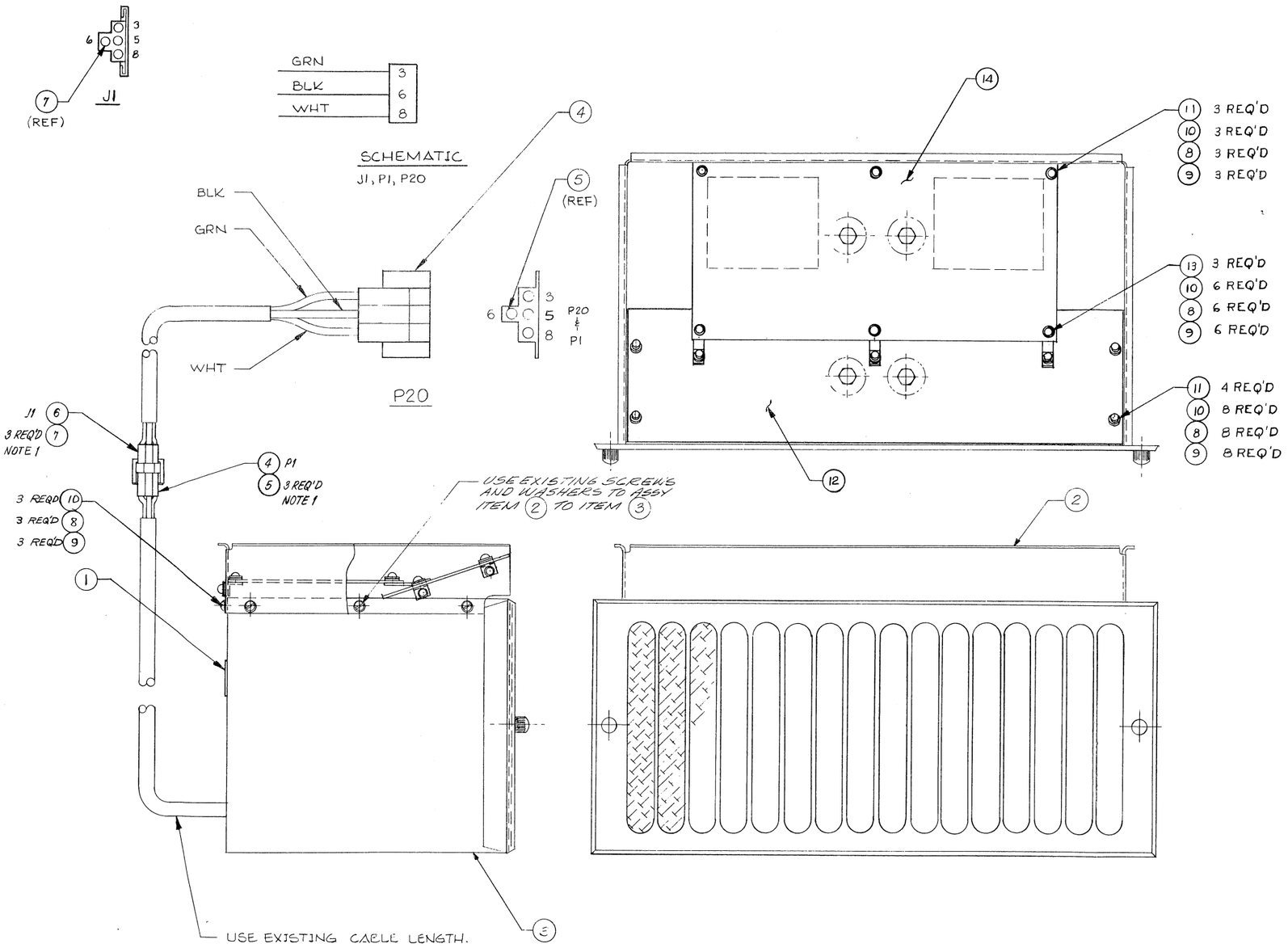
TITLE
ASSY, BLOWER & SHROUD (NOVOVIEW SP)

D | DWG 200181-100 | REV A3

SCALE 1/2 | SHEET 1 OF 1

200181-100

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A1	ITEM NO. AND DRAWING CHANGES	9-9-77	JPino 9/11/77
	A2	ADDED AIR BAFFLES MW	10-26-77	Al Allred 11/4/77



2. CUT EXISTING CORD 6 IN. FROM BLOWER. INSTALL CONNECTORS ACCORDING TO SCHEMATICS FOR P1 AND J1.

1. DO NOT INSTALL ITEM (5) & (7) INTO ITEM (4) & (6) AT LOCATION 5.

UNLESS OTHERWISE SPECIFIED:

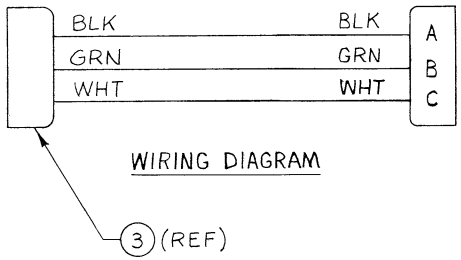
NOTES:

SEE SEPARATE PARTS LIST

		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES ON .XX± .50 IN. .XXX± ANGLES ± ✓	CONTRACT NO.	EVANS & SUTHERLAND COMPUTER CORPORATION SALT LAKE CITY, UTAH 84112
		MATERIAL SEE PARTS LIST	DRAWN Joe D. Fagan 6/6/77	TITLE ASSY, BLOWER & SHROUD (NOVOVIEW 5P)
200102-100	NOVO VIEW	FINISH	CHECKED Jim Pino 8/15/77	
NEXT ASSY	USED ON		MECH	D DWG 200181-101 REV A2
APPLICATION			ELEC Ron Speir 15 NOV 77	
			PROJ. ENG. Al Allred 1 NOV 77	SCALE 1/2 SHEET 1 OF 1
			DESIG. AUTO.	
			APPROVED JPino 8-15-77	

200181-101

CONFIGURATION LEVEL FOR DASH NO.:							ZONE	~~LTR~~	DESCR.	DATE	APPROVED
-010	-025	-050	-075	-100	-125	-150					
				NC					DWG. RELEASE MT.		RSpeirs
				A1					DELETED BELL HOUSING MT.	9-9-77	RSpeirs
				A2					REDRAWN, ADDED ITEM 6, NOTE 1 & ITEM NOS MT	2-17-78	RSpeirs
NC	NC	NC	NC		NC	NC			DWG. RELEASE MT.	7-6-79	RSpeirs
RC1	RC1	RC1	RC1	RC1	RC1	RC1			NOTE 1 WAS MARK INFO ON ITEM 7 (ETC). COVER WITH ITEM 6 & REMOVED BALOON ⑦ MT.	7-6-79	RSpeirs



WIRING DIAGRAM

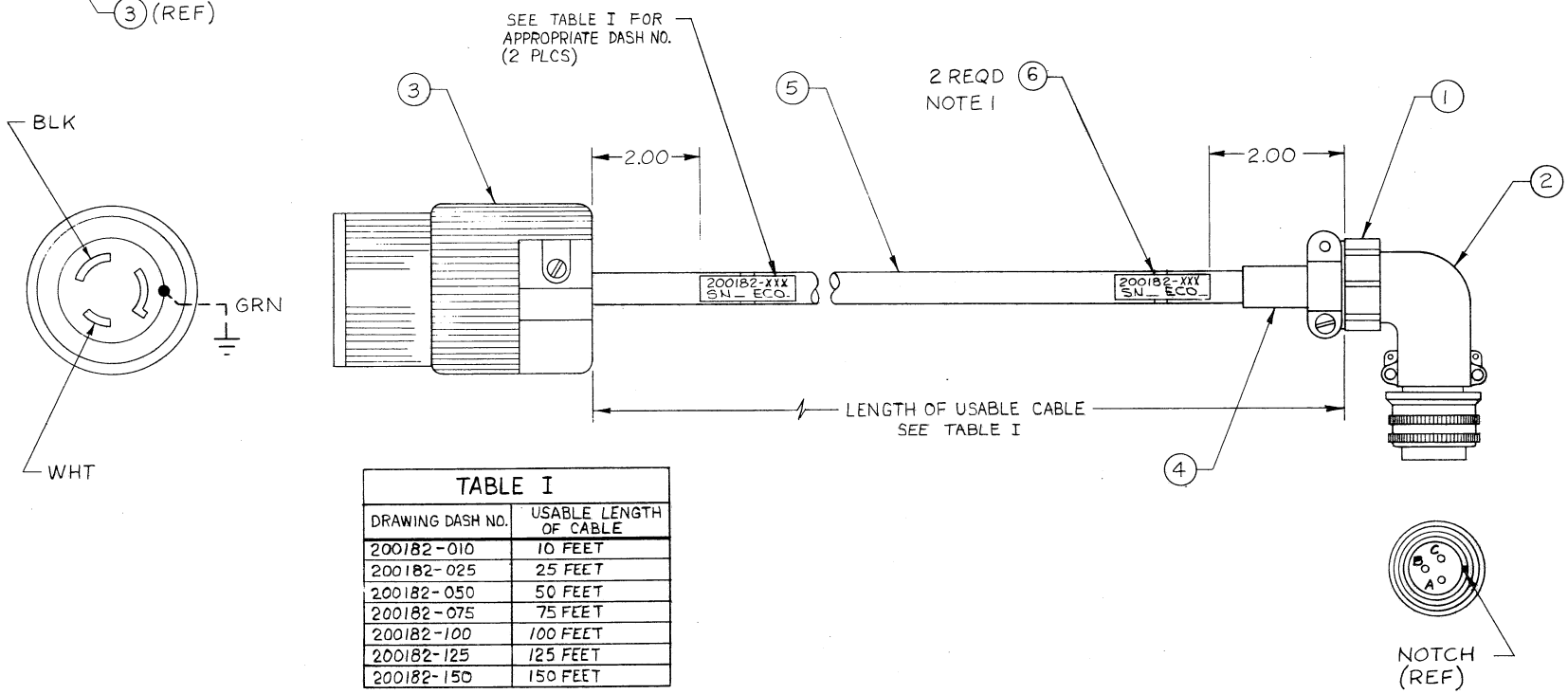


TABLE I	
DRAWING DASH NO.	USABLE LENGTH OF CABLE
200182-010	10 FEET
200182-025	25 FEET
200182-050	50 FEET
200182-075	75 FEET
200182-100	100 FEET
200182-125	125 FEET
200182-150	150 FEET

1. MARK APPROPRIATE PART NO., ECO LEVEL & S/N ON ITEM 6 USING OPAQUE INDUSTRIAL INK, PHILLIPS PROCESS CO. NO. 35A OR EQUIV.

NOTES:

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.xx ± .05
.xxx ± ——
ANGLES ± ——
✓

MATERIAL SEE PARTS LIST

FINISH

CONTRACT NO.

DRAWN J. BAHLMANN 2-17-78
CHECKED Art Cooper 15 MAR 78
MECH
ELEC RSpeirs 3 MAY 78
PROJ. ENG RSpeirs 3-16-78
APPROVED [signature] 18 JUL 79

~~SEE SEPARATE PARTS LIST~~

EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

CABLE ASSEMBLY, POWER, FOR DSI-1910 DISPLAY

SIZE	CODE IDENT NO		REV
C	53938	200182-TAB	SEE REV BLOCK

SCALE NONE DO NOT SCALE SHEET 1 OF 1

200182-TAB

LTR					REVISIONS				
-150	-125	-100	-075	-050	ZONE	LTR	DESCRIPTION	DATE	APPROVED
		A1			-		ADD CLAMPS & HARDWARE DT	11-9-77	J Pino
		A2			-		REVERSED CONNECTOR PINS P3-5, P3-6	12-15-77	R Speirs
A1	A1	A3	A1	A1	-		ADDED ITEMS 18, 19, + 20 S.C.	12-5-78	R Speirs

WIRE TABLE				
SIGNAL NAME	NO.1 CONNECTOR PIN NUMBER	WIRE COLOR OR CODE	P3 CONNECTOR PIN NUMBER SIGNAL	P3 CONNECTOR PIN NUMBER GROUND
SPARE	V	COAX		
UNBLANK	S	COAX	11	12
VIDEO	N	COAX	8	7
ANA DEFOCUS	T	COAX	5	6
XDEFL	P	COAX	4	3
YDEFL	R	COAX	2	1
DIGITAL DEFOCUS	a	RED	9	
GND	b	BLK		10
ORN	C	ORN	13	
GND	D	BLK		14
YEL	E	YEL	15	
GND	F	BLK		16
GRN	Y	GRN	17	
GND	Z	BLK		18
HORIZON	X	BLU	19	
GND	W	BLK		20

4. DO NOT TIGHTEN CLAMP AROUND THE CABLE AT THIS LEVEL OF ASSEMBLY. INSTALL HARDWARE AND ATTACH LOOSELY AROUND CABLE. CLAMP SHOULD BE FIRMLY ATTACHED TO 200158-100 CARD ONLY AT FINAL SYSTEM ASSEMBLY.
3. FOLD BACK UNUSED COAX & WIRES, ADD SHRINK TUBING ITEM NO. 10.
2. INSTALL TWO PIECES OF HEAT SHRINK TUBING ON CABLE AS SHOWN, BUT DO NOT SHRINK AT TIME OF CABLE ASSEMBLY. AFTER FINAL FACTORY ACCEPTANCE OF SYSTEM, LABELS WITH PART NO. AND SERIAL NO. OF MATING ASSEMBLY SHALL BE INSERTED UNDER TUBING AND THE TUBING SHALL BE SHRUNK AT THAT TIME. USE 802311-004 TAPE PHOTO MARKING AND LABEL AS SHOWN.
1. MARK PIN NO.'S 2 AND 20 ON TOP OF THE CONNECTOR AS SHOWN, USING WHITE EPOXY INK.

NOTES:

TABLE	
CABLE NO.	CABLE LENGTH
200183-050	50 FT 0 IN
200183-100	100 FT 0 IN
200183-125	125 FT 0 IN
200183-150	150 FT 0 IN
200183-075	75 FT 0 IN

200158-100	NOVO SP
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.xx ± .02
.xxx ± ——
ANGLES ± ——
✓

MATERIAL SEE PARTS LIST
FINISH

CONTRACT NO.
DRAWN R. Earley 7-1-77
CHECKED Art Cougin 7-7-77
MECH J Pino 7/20/77
ELEC
PROJ. ENG 7-12-77
APPROVED J Pino 7/20/77

SEE SEPARATE PARTS LIST

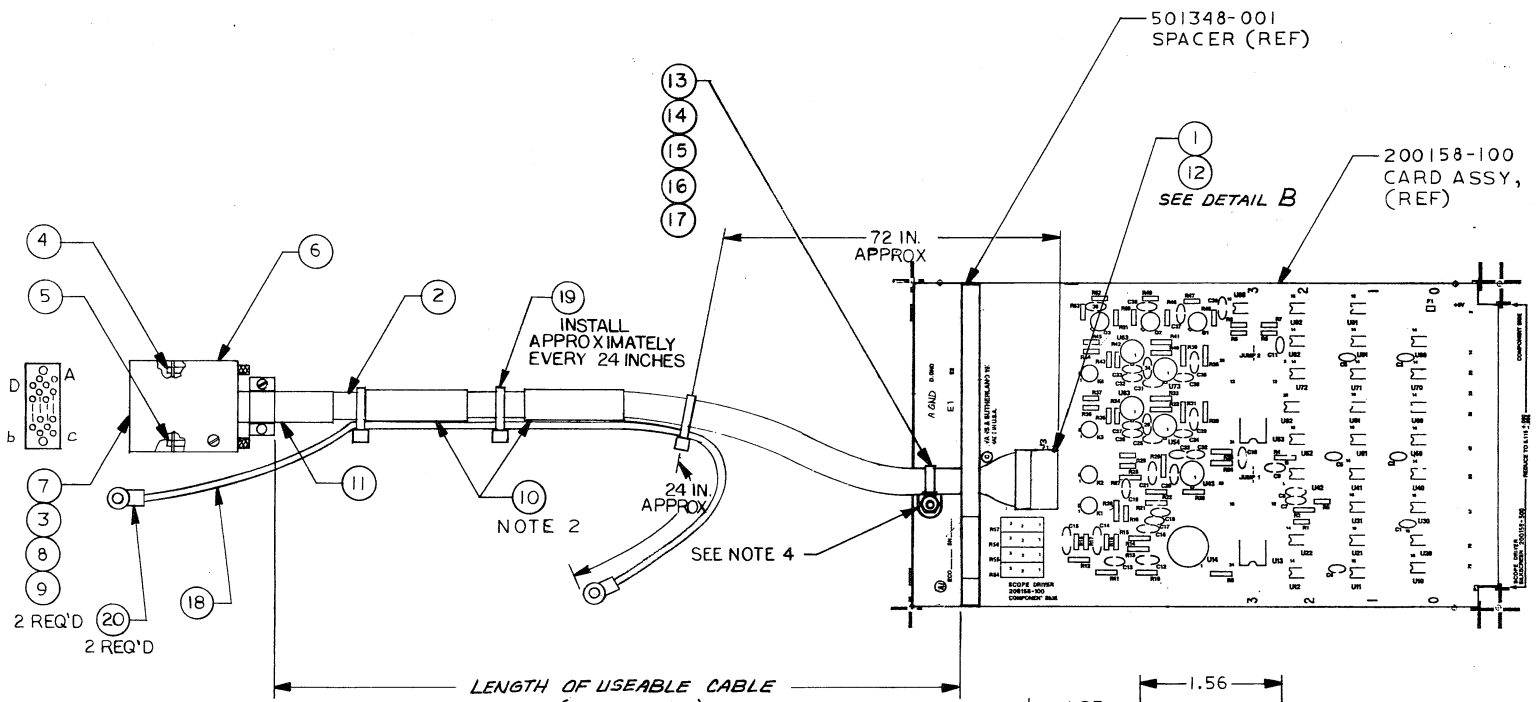
EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

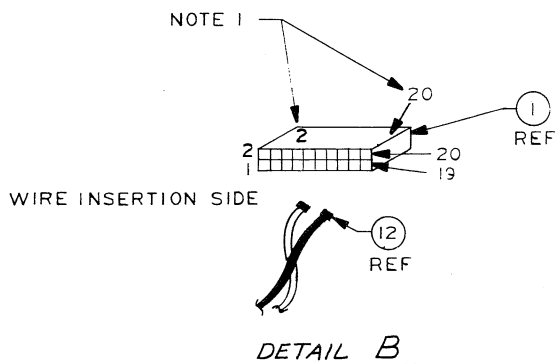
CABLE ASSY, SIGNAL, FOR DSI-1910 DISPLAY,

SIZE	CODE IDENT NO		REV
C	53938	200183 -TAB	SEE REV. BLOCK
SCALE NONE		SHEET 1 OF 2	

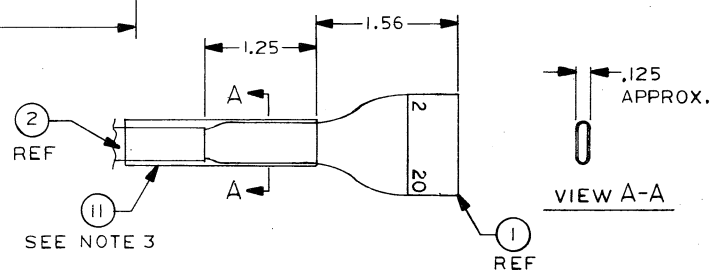
200183-TAB

ZONE	LTR	DESCRIPTION	DATE	APPROVED
		REV		





DETAIL B



RECOMMENDED CABLE PREPARATION
FOR CABLE CLAMP 500194-001
AND CARD SPACER 501348-001.
(REF)

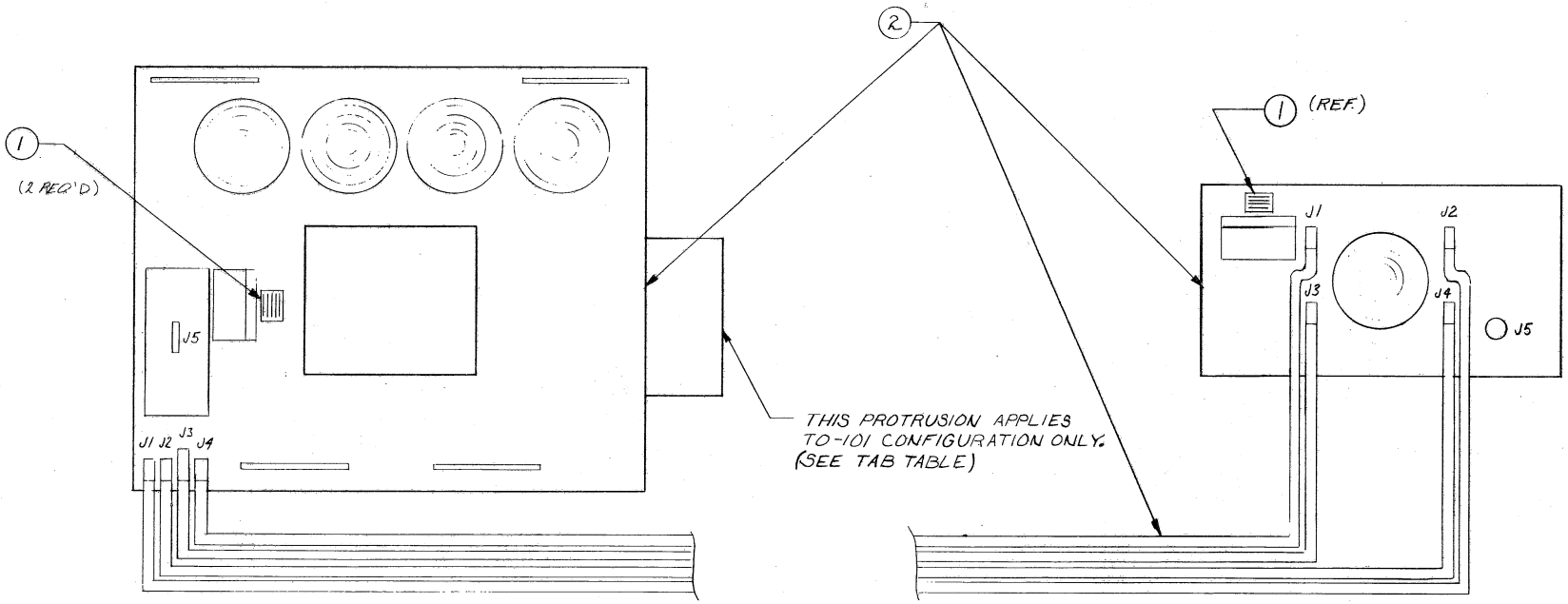
SIZE	CODE IDENT NO		REV
C	53938	200183-TAB	SEE REV. BLOCK
SCALE NONE		SHEET 2 OF 2	

200183-TAB

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

TABULATION TABLE

ASSY. NO.	ITEM 2	REV. LEVEL	INTERCONNECT CABLE LENGTH (FT)	VENDOR MODEL NO.	APPROVED	
200184-012	801786-001	A1	12	DSI-1910	R Speis	30 MAY 79
200184-030	801786-002	A1	30	DSI-1910	R Speis	30 MAY 79
200184-060	801786-003	A1	60	DSI-1910	R Speis	30 MAY 79
200184-100	801786-004	A1	100	DSI-1910	R Speis	30 MAY 79
200184-101	801786-007	NC	100	DSI-1990	R Speis	30 MAY 79
200184-150	801786-005	NC	150	DSI-1910	R Speis	30 MAY 79



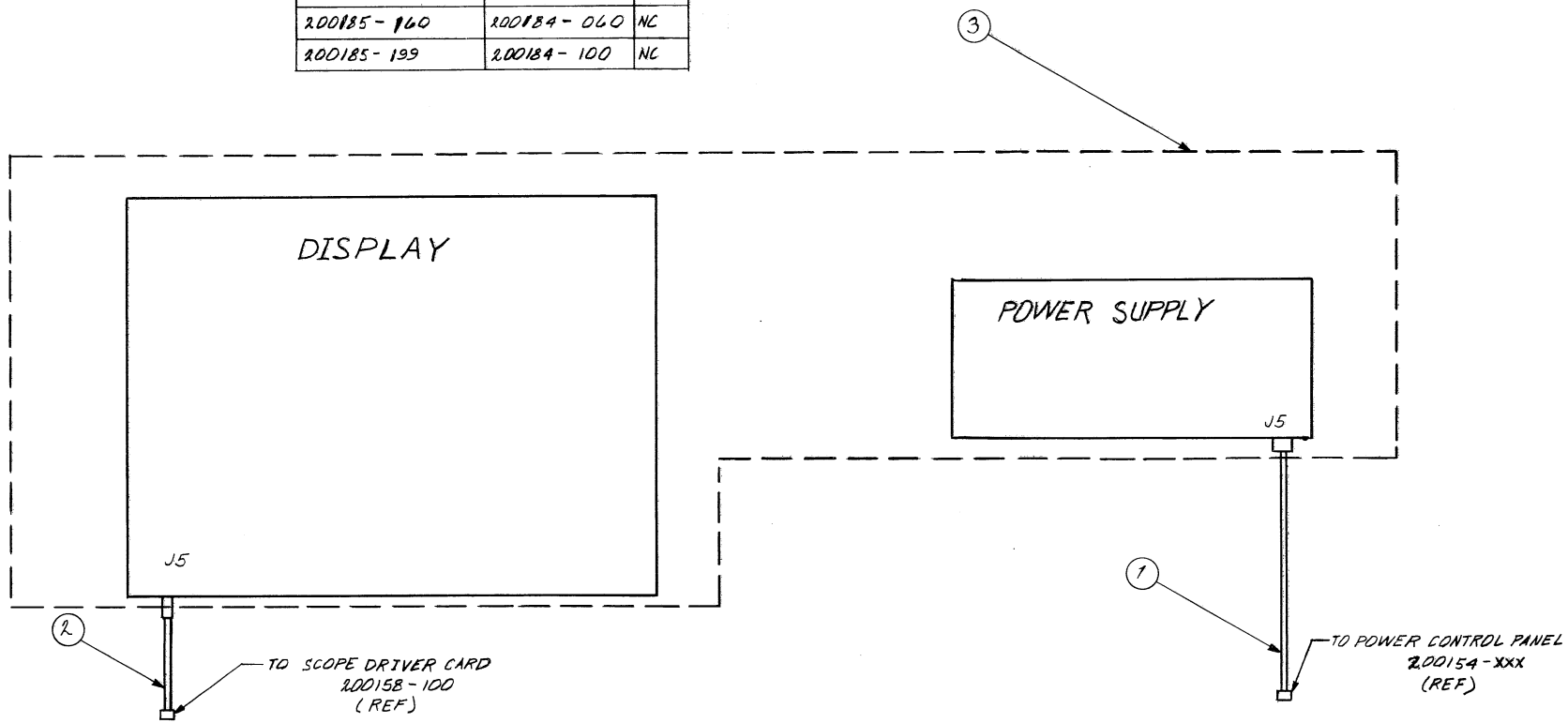
		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON XX ± ——— .XXX ± ——— ANGLES ± ——— ✓	CONTRACT NO.	EVANS & SUTHERLAND COMPUTER CORPORATION SALT LAKE CITY, UTAH 84112
			DRAWN CARROLL 8-18-77	
			CHECKED Art Bergen 23 AUG 77	ASSY, DISPLAY, WITH INTERCONNECT CABLES
			MECH	
			ELEC Ron Speis 01 SEP 77	
			PROJ. ENG [illegible] 16 JAN 78	
			APPROVED [illegible] 16 JAN 78	
	NOVOVIEW	MATERIAL SEE PARTS LIST		SIZE C | CODE IDENT NO 53938 | 200184-TAB | REV SEE TABLE
NEXT ASSY	USED ON	FINISH		SCALE — | SHEET 1 OF 1
APPLICATION				

200184-TAB

ZONE	LTR	DESCR.	E	APPROVED

TABULATION TABLE

ASSY. NO.	ITEM 3	REV. LEVEL
200185-112	200184-012	NC
200185-130	200184-030	NC
200185-160	200184-060	NC
200185-199	200184-100	NC



200185-TAB

	NOVOVIEW
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.XX ± ——
.XXX ± ——
ANGLES ± ——
✓

MATERIAL
SEE PARTS LIST

FINISH

CONTRACT NO.

DRAWN D CARROLL 8-18-77
CHECKED [illegible] 23 AUG 77
MECH
ELEC Ron Speir 23 AUG 77
PROJ. ENG
APPROVED

SEE SEPARATE PARTS LIST

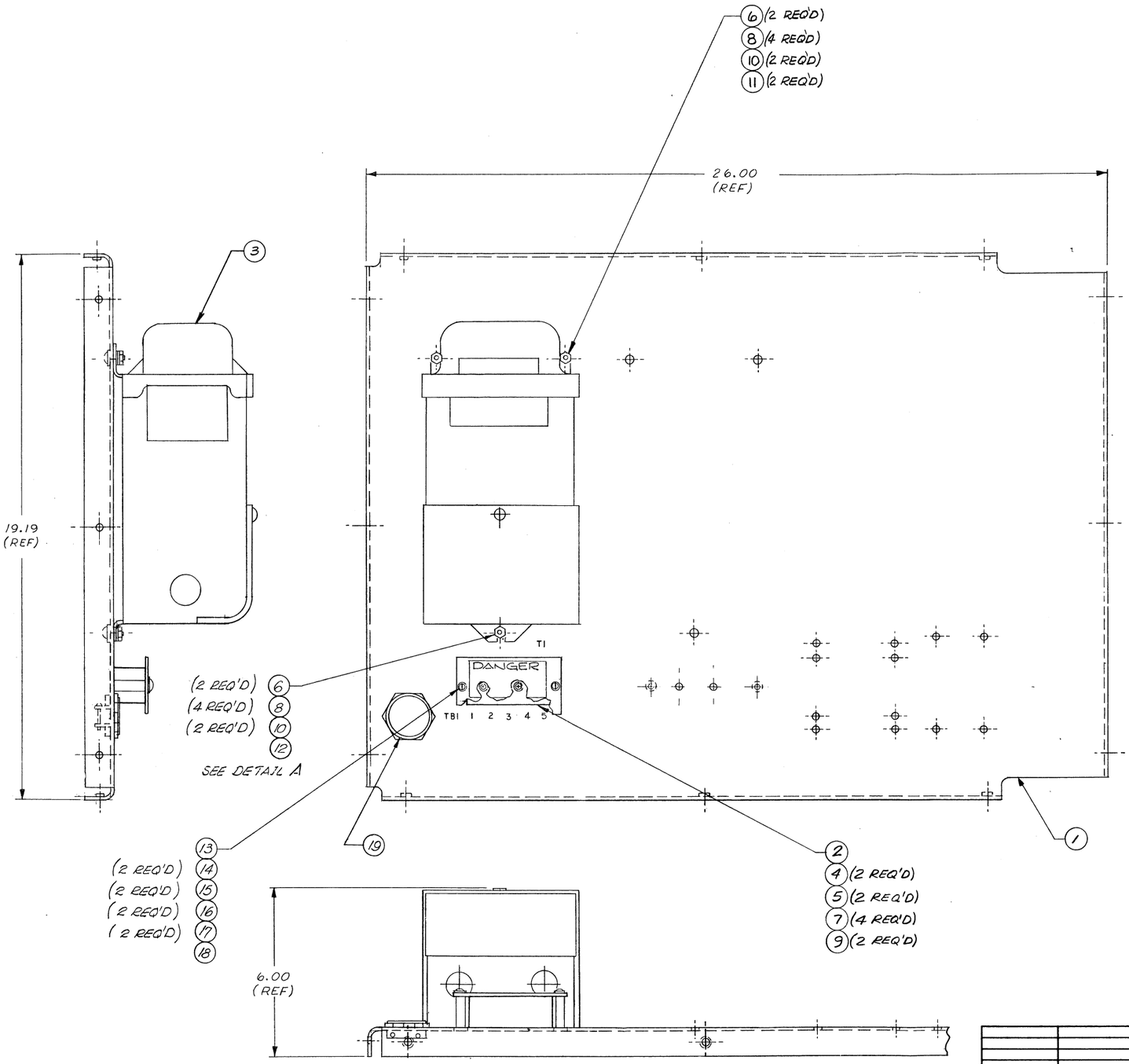
EVANS & SUTHERLAND
COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

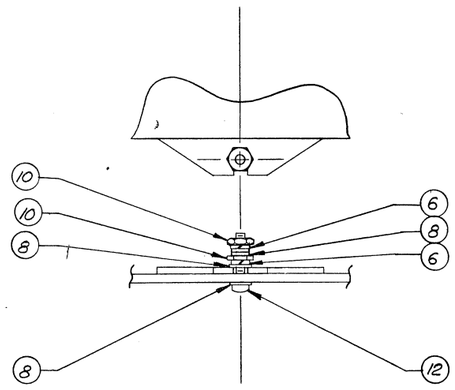
ASSY, DISPLAY & INTCT CABLES, WITH SIG & PWR CBLS.

SIZE	CODE IDENT NO		REV
C	53938	200185-TAB	SEE TABLE

SCALE 1/2 SHEET 1 OF 1

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
B-2	A1	ADDED DETAIL A PER ECO A1	9-7-77	[illegible] 9/11
A-6	A2	ADD PROTECTIVE COVER. CHG. TB1 TO 5 Terminals ADL	9-16-77	[illegible]





DETAIL A
SCALE / NONE

SEE SEPARATE PARTS LIST

1. SEE 200154-100 SHEET 3 FOR WIRING DIAGRAM.

NOTES:

200101-100	NOVOVIEW	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES ON .XX± —— .XXX± —— ANGLES± —— ✓ MATERIAL FINISH	CONTRACT NO. DRAWN [illegible] 6/9/77 CHECKED [illegible] 7/11/77 MECH [illegible] 7/11/77 ELEC PROJ. ENG. DESIG. AUTO. APPROVED
NEXT ASSY	USED ON		
APPLICATION			

EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

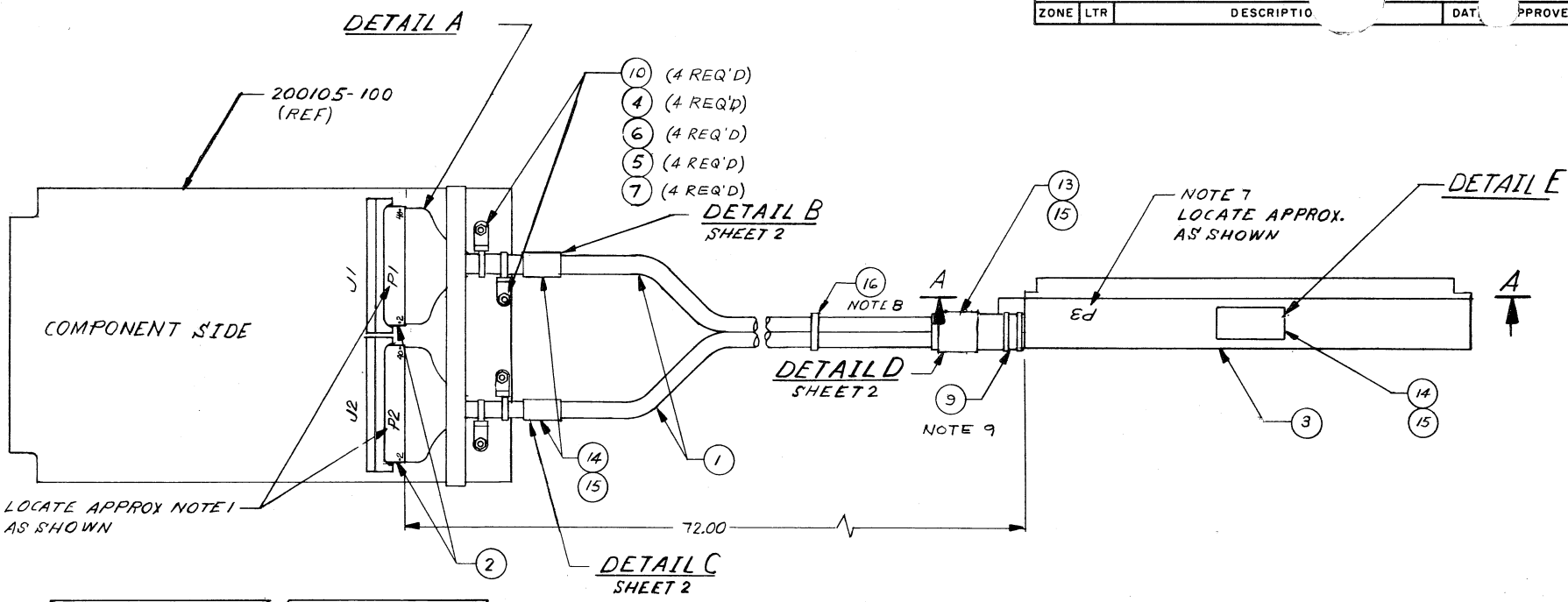
TITLE: ASSY, BOOST-BUCK (NOVOVIEW SP)

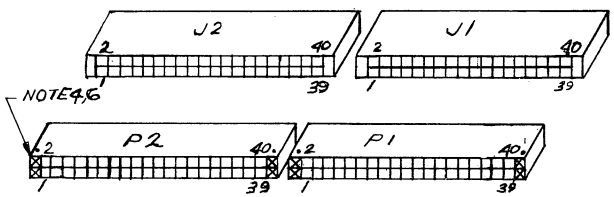
CODE IDENT NO		REV
D	53938	200200-100 A2

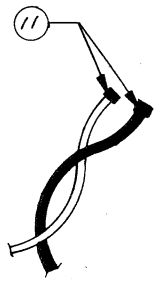
SCALE 1/2 SHEET / OF /

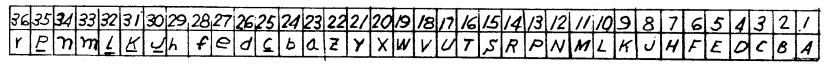
200200-100

ZONE	LTR	REVISIONS DESCRIPTION	DATE	APPROVED

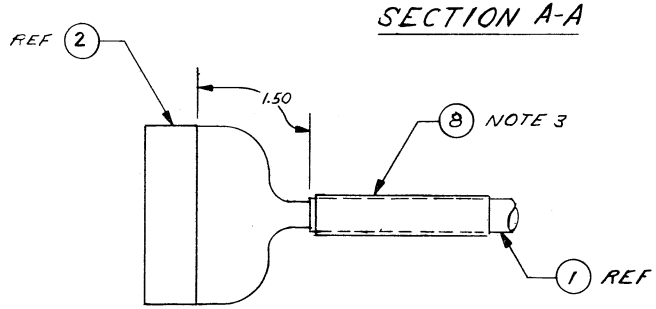








SECTION A-A



DETAIL A
CABLE PREPARATION

9. FOLD BACK UNUSED WIRES, ADD SHRINK TUBING ITEM 9
8. INSTALL ITEM 16 EVERY 12.00.
7. MARK P3 ON TOP OF THE CONNECTOR USING ITEM 13.
6. INSTALL DUMMY PINS ITEM 11 IN P1-39, 40 & P2-1, 2
5. ATTACH ITEM 10 LOOSELY AROUND CABLE BUT DO NOT TIGHTEN OR CUT OFF. FINAL ALIGNMENT WILL BE DONE AT NEXT HIGHER ASSY.
4. END CAVITIES ON P1 & P2 ARE NOT USED WHEN MATED WITH J1 OR J2 CONNECTOR.
3. CUT OFF UNUSED WIRES, ADD SHRINKABLE TUBING, ITEM 8.
2. ON THE 4 WIRES TERMINATING AT P3-36, USE ITEM 12 TO CONNECT THE WIRES TOGETHER, INCLUDING ONE ADDITIONAL WIRE WHICH IS SOLDERED TO P3-36.
1. MARK P1, & P2 ON TOP OF THE CONNECTOR USING A WHITE EPOXY INK.

NOTES:

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.xx ±.03
.xxx ±
ANGLES ±
✓

MATERIAL
FINISH

CONTRACT NO.
DRAWN M WING 9-19-77
CHECKED [illegible] MANNING 9-27-77
MECH
ELEC Ron Speirs 27 SEP 77
PROJ. ENG [illegible] 4 Oct 77
APPROVED

SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

ASSY, CABLE, T.I. DMA CONTROLLER

SIZE	CODE IDENT NO		REV
C	53938	200203-006	NC

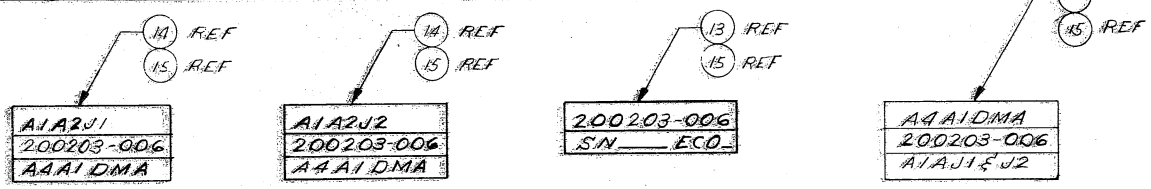
SCALE NONE SHEET 1 OF 2

200203-006

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED

CABLE				
TWISTED PAIR INDICATION	SIGNAL NAME	WIRE	P1	CONNECTOR (P3)
		RED	NOT USED	
	DMADR 7	BLACK	P1-1	P3-19
	DMADR 6	ORN	2	W
	DMADR 5	BLACK	3	20
	DMADR 4	YEL	4	X
	DMADR 3	BLACK	5	21
	DMADR 2	GRN	6	Y
	DMADR 1	BLACK	7	22
	DMADR 0	BLUE	P1-8	Z
		BLACK	NOT USED	
	*DMRESET	GRAY	P1-9	23
NOTE 2		BLACK	35	36
	*CKSD1	VIO	10	a
	*DATAV	WHT	11	24
NOTE 2	SGROUND A	BLACK	12	36
	SGROUND A	BLACK	16	36
	*ATISTB2	ORN	13	25
		BLACK	34	r
	*ATISTB1	RED	14	c
		BLACK	33	r
	*ACCGRANT	YEL	15	26
	DMMRD 15	BLACK	17	27
	DMMRD 14	GRN	18	e
	DMMRD 13	BLACK	19	28
	DMMRD 12	BLUE	20	f
	DMMRD 11	BLACK	21	29
	DMMRD 10	VIO	22	h
	DMMRD 9	BLACK	23	30
	DMMRD 8	GRY	24	J
	DMMRD 7	BLACK	25	31
	DMMRD 6	WHT	26	K
	DMMRD 5	BLACK	27	32
	DMMRD 4	BLUE	28	L
	DMMRD 3	BLACK	29	33
	DMMRD 2	ORN	30	m
	DMMRD 1	BLACK	31	34
	DMMRD 0	YEL	32	n
NOTE 2	SGROUND 1	BLACK	P1-36	P3-36

CABLE				
SIGNAL NAME	WIRE	P2	CONNECTOR (P3)	TWISTED PAIR INDICATION
SGROUND 12	BLACK	P2-5	P3-1	
SGROUND 12	YEL	6	A	
SGROUND 12	BLACK	7	1	
SGROUND 12	BLACK	8	A	
*DMFCH	RED	12	D	
*DMSTR	ORN	13	5	
*DMACCR	GRN	15	C	
DMD 15	BLACK	17	7	
DMD 14	BLUE	18	H	
DMD 13	BLACK	19	8	
DMD 12	VIO	20	J	
DMD 11	BLACK	21	9	
DMD 10	GRY	22	K	
DMD 9	BLACK	23	10	
DMD 8	WHT	24	L	
DMD 7	BLACK	25	11	
DMD 6	RED	26	M	
DMD 5	BLACK	27	12	
DMD 4	ORN	28	N	
DMD 3	BLACK	29	13	
DMD 2	YEL	30	P	
DMD 1	BLACK	31	14	
DMD 0	GRN	32	R	
DMADR 15	BLACK	33	15	
DMADR 14	BLU	34	S	
DMADR 13	BLACK	35	16	
DMADR 12	VIO	36	T	
DMADR 10	WHT	37	17	
DMADR 11	BLACK	38	U	
DMADR 9	RED	39	18	
DMADR 8	BLACK	P2-40	P3-V	
	BLACK	NOT USED	NOT USED	



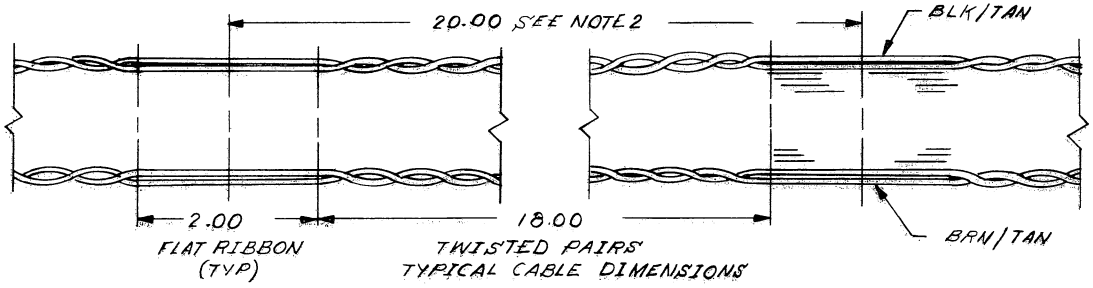
DETAIL B DETAIL C DETAIL D DETAIL E

NOMENCLATURE TO BE ADDED TO TAGS

SIZE	CODE IDENT NO		REV
C	53938	200203-006	NC
SCALE NONE		SHT 2 OF 2	

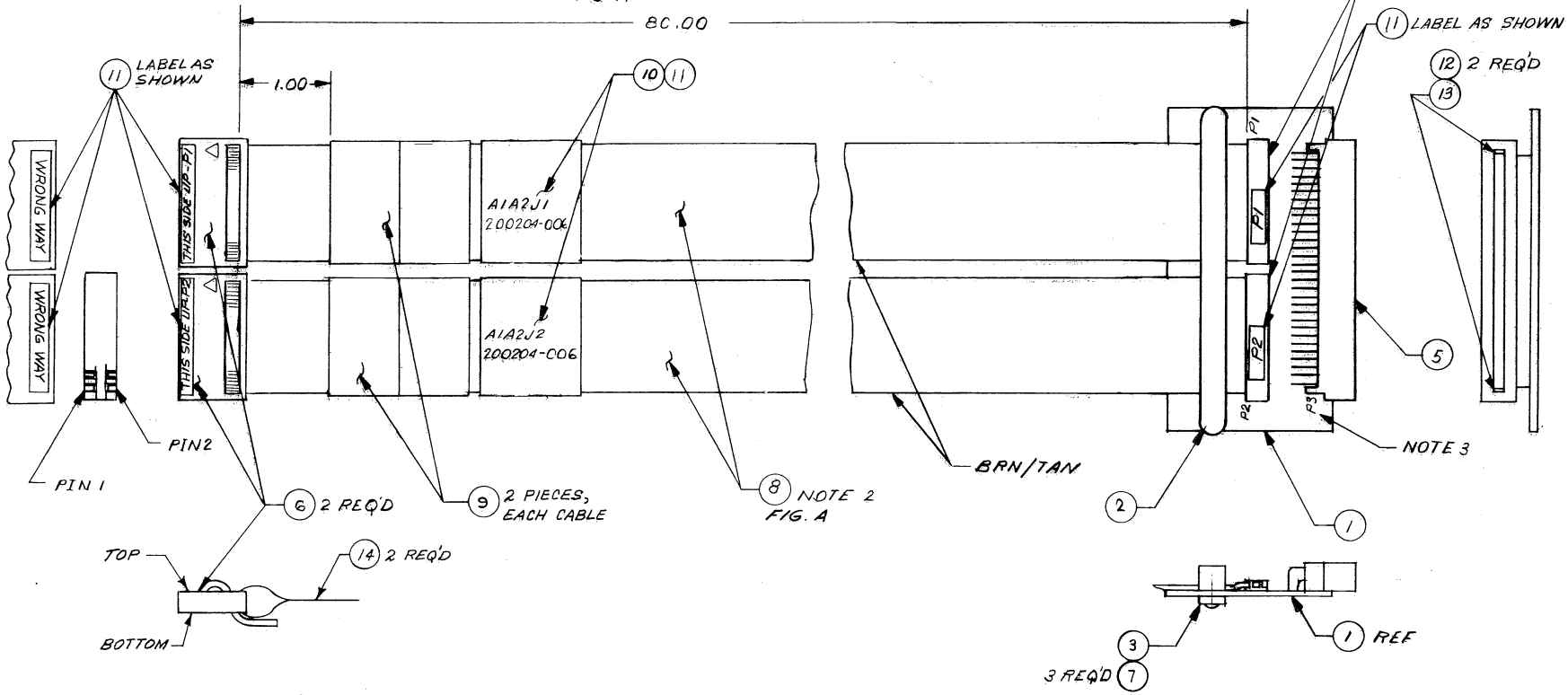
200203-006

ZONE	LTR	DESCR	E	APPROVED
	A1	MADE SEVERAL DWG. CHANGES. IN-	11-26-78	RSpain



TYPICAL CABLE DIMENSIONS

FIG-A



3. CUT OFF PINS OF P3 (ITEM 5) PER E&C STANDARDS E-5.1.
2. P3 PINS ARE TO BE INTERPRETED AS ETCHED ON THE P.C. BOARD, IGNORE MARKING ON THE CONNECTOR.
1. WHEN CUTTING CABLE CUT LINES ARE IN 20 INCH INCREMENTS. CUT TO BE CENTERED IN 2.0 INCH FLAT RIBBON AREA (SEE FIG A).

~~4. MARK CHARACTERS USING OPAQUE INDUSTRIAL INK, PHILLIPS PROCESS 35A OR EQUIV.~~

NOTES:

101000-249	NOVOVIEW
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ON
.xx ± .50
.xxx ±
ANGLES ±
✓

MATERIAL SEE PARTS LIST
FINISH

CONTRACT NO.

DRAWN M WING 3-14-78
CHECKED ART COWGUR 21 MAR 78
MECH
ELEC RSpain 2 MAY 78
PROJ. ENG RSpain 2 MAY 78
APPROVED

SEE SEPARATE PARTS LIST

EVANS & SUTHERLAND COMPUTER CORPORATION
SALT LAKE CITY, UTAH 84112

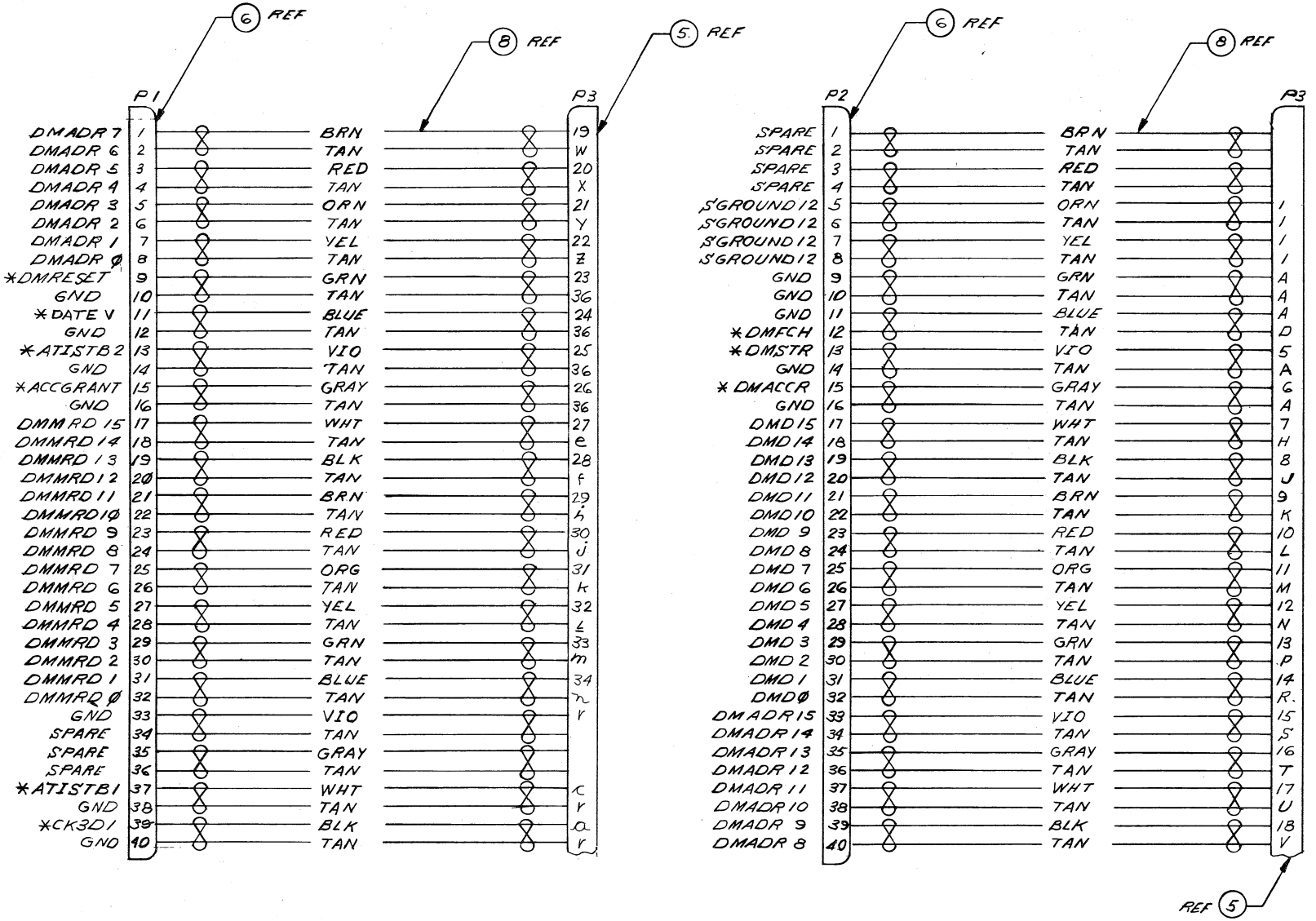
CABLE ASSY, COMPUTER-DMA

SIZE	CODE IDENT NO		REV
C	53938	200204-006	A1

SCALE NONE DO NOT SCALE SHEET 1 OF 2

200204-006

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED



SIZE	CODE IDENT NO		REV
C	53938	200204-006	A1
SCALE NONE		SH	OF 2

200204-006

APPENDIX A

NSP SYSTEM CONFIGURATIONS

A.1 PURPOSE OF APPENDIX

The purpose of this appendix is to define the various configurations of the NSP system.

A.2 OVERALL SYSTEM CONFIGURATION

Table A-1 lists the overall configuration of NSP systems by system part number for the systems 101000-168 through 101000-260. The overall configuration of systems delivered subsequent to system part number 101000-260 are provided on a fill-in sheet at the end of this appendix. Table A-1 includes the following information:

CHANNELS	Lists the number of channels in the system.
DISPLAYS	Lists the number of displays in the system.

CABINET 1	Lists the E&S part number of cabinet 1.
CABINET 2	Lists the E&S part number of cabinet 2.
TI COMPUTER	Lists the E&S part number for the TI 980B computer in the system.
AED FLOPPY DISK	Lists the E&S part number for the AED 6200 floppy disk in the system.
PRI. PWR. CONT.	Lists the E&S part number for the primary power control in the system.
CABLE SET	Lists the E&S part number for the data and power cables in the system that are not part of another assembly.
OPTIONS	Lists the number of optional peripheral units and raster mask option in the system.

Table A-2 provides a break down of the TAB numbers for the TI 980B computer listed in table A-1.

Table A-3 provides a break down of the TAB numbers for the AED 6200 floppy disk listed in table A-1.

Table A-4 provides a break down for the TAB numbers for the primary power control listed in table A-1.

Table A-5 provides a break down of the card sets for the back panel in cabinet 1 by the TAB number for cabinet 1 listed in table A-1.

Table A-6 provides a break down of the card sets for the back panel in cabinet 2 by the TAB number for cabinet 2 listed in table A-1.

Table A-7 provides a break down for the TAB numbers for the cable set listed in table A-1.

Table A-8 lists the quantity and TAB number of the display assembly cables for the system.

Table A-9 provides the E&S part number for the display assembly as it relates to the interconnect cable between the display and the display power supply.

Tables A-10 through A-15 provide a break down for the card set TAB numbers listed in tables A-5 and A-6. Note that various card sets include cables.

Table A-16 lists the quantity and card slot location of the cards of the input and interface, and viewpoint processor card sets. Note that all of these cards are located in the back panel of cabinet 1. Only a clock maintenance card of these groups is required in the back panel of cabinet 2 for systems with three or four channels.

Table A-17 lists the quantity and card slot location for the cards of the channel processor group for systems with up to four channels. Note that all channel processor cards are located in the back panel in cabinet 1.

Table A-18 lists the quantity and card slot locations for the card sets of the display processor; the basic display processor, the surface processor, and the light occulation card set. Note that the cards for channels 0 and 1 are located in the back panel of cabinet 1, and the cards for channels 2 and 3 are located in the back panel of cabinet 2.

In the following tables, a single digit column entry indicates quantity, a three digit column entry indicates the TAB number, and the entries using x/xxx indicate the quantity and the TAB number.

SYSTEM PART NUMBER 101000-TAB	CHANNELS	DISPLAYS	CABINET 1 200101-TAB	CABINET 2 200102-TAB	TI COMPUTER 150125-TAB	AED FLOPPY DISK 153145-TAB	PRI. PWR. CONT. 200154-TAB	CABLE SET 200104-TAB	OPTIONS			
									TEK 4010 TERMINAL	HAZELTINE TERMINAL	LINE PRINTER	RASTER MASK
168	3	4	101	101	107	100	100	101				
169	1	2	102		109	102	103	102				1
170	4	6	100	100	118	101	100	100	1			
171	4	6	100	100	118	101	100	100	1			
172	4	6	100	100	118	101	100	100	1			
173	4	6	100	100	118	101	100	100	1			
174	4	6	100	100	118	101	100	100	1			
175	4	6	100	100	118	101	100	100	1			
176	4	6	100	100	118	101	100	100	1			
177	4	6	100	100	118	101	100	100	1			
186	3	4	101	101	107	100	100	101				
189	1	2	104		110	100	102	104		1	1	
190	1	2	104		110	100	102	104		1	1	
191	1	2	104		110	100	102	104		1	1	
192	1	2	104		110	100	102	104		1	1	
193	1	2	104		110	100	102	104		1	1	
198	1	3	105		111	100	102	105				
199	3	4	106	106	108	102	100	106				
200	1	2	107		108	102	103	107				
201	3	4	108	108	107	100	100	108				
206	1	2	109		111	100	102	109				
207	1	2	109		111	100	102	109				
208	1	2	110		111	100	103	110				
209	3	4	113	113	108	102	104	113				
210	2	4	111		108	102	102	111				
211	1	2	105		111	100	102	105				
212	3	4	108	108	107	100	100	108				
213	3	4	117	113	108	102	104	113				
228	1	3	112		108	100	102	112				
229	1	3	112		108	100	102	112				
232	3	4	117	113	108	102	104	113				
233	3	4	117	113	108	102	104	113				
234	1	2	118		111	103	102	118				
235	3	4	115	115	111	102	104	115				
237	1	2	114		108	103	103	114				
238	1	2	103		111	100	102	103				
239	2	4	116		108	102	104	116				
258	1	2	103		111	100	102	103				
259	1	2	103		111	100	102	103				
260	1	2	103		111	100	102	103				

TABLE A-1
OVERALL SYSTEM CONFIGURATION

TI 908B COMP. 150125 -TAB Note 1	COMP. MEMORY TOTAL	ASR 733 801392 -105 Note 2	INTERVAL TIMER 801852 -001	DATA MODULE		COMM. MODULE 801909 -101
				801894 -101	801894 -102	
-107	24K	1		1		
-108	40K	1		1		
-109	48K	1	1	1		
-110	32K			1		1
-111	32K	1		1		
-118	48K	1	1	1	1	

Note 1: All P/N 150125-TABs include the DMAC Interface Module P/N 801396-101.

Note 2: The COMM. Module for the ASR 733 is included in the P/N 801392-105.

TABLE A-2
TI 980B COMPUTER CONFIGURATION

FLOPPY DISK 153145- TAB	DRIVES/POWER REQ'D
100	Single disk drive - 60Hz
101	Dual disk drive - 60HZ
102	Single disk drive - 50HZ
103	Dual disk drive - 50HZ

TABLE A-3
AED 6200 FLOPPY DISK CONFIGURATION

PRIMARY POWER CONTROL 200154-TAB	+5V @150A 200151-100	+12V @15A 200152-100	±15V @2.8A 200153-100	CABLES REQUIRED						
				CABLE ASSY. 101368-001	CABLE ASSY. 101369-001	CABLE ASSY. 101370-001	CABLE ASSY. 101371-001	CABLE ASSY. 101372-001	00 +5V	00 GND
100	2	1	1	2	1	1	1	1	2	2
102	1	1	1	1	1	1	1	1	1	1
103	1	1	1	1	1	1	1	1	1	1
104	2	1	1	2	1	1	1	1	2	2

TABLE A-4
PRIMARY POWER CONTROL CONFIGURATION

CABINET 1 200101-TAB	CARD SETS					
	INPUT & INTERFACE CARD SET 200141-TAB	VIEWPOINT PROC. CARD SET 200142-TAB	CHANNEL PROC. CARD SET 200143-100	DISP. PROC. CARD SET 200191-TAB	SURFACE PROC. CARD SET 200192-TAB	EIGHT OCCULT. CARD SET 200193-TAB
100	100	100	4	1/100 1/101	2/101	
101	100	100	3	2/100	2/100	2/100
102	100	100	1	1/100	1/103	1/100
103	101	100	1	1/100	1/102	1/101
104	100	100	1	1/100	1/101	1/100
105	101	100	1	1/100	1/102	1/101
106	100	100	3	2/100	1/103	2/100
107	100	100	1	1/100	1/103	1/100
108	100	100	3	2/100	2/100	
109	100	100	1	1/100	1/101	1/100
110	100	100	1	1/100	1/101	1/100
111	100	100	2	1/100 1/101	2/103	2/100
112	101	100	1	1/101	1/101	1/101
113	101	100	3	2/100	2/103	2/101
114	101	100	1	1/100	1/103	1/101
115	101	100	3	2/100	2/101	2/101
116	101	100	2	2/100	2/103	2/101
117	101	100	3	2/100	2/103	2/101
118	101	100	1	1/100	1/101	1/101

TABLE A-5
CARD SETS CABINET 1 BACK PANEL

CABINET 2 200102-TAB	CARD SETS			
	CLOCK MAINTENANCE CARD 200107-100 (WITH CABLE)	DISP. PROC. CARD SET 200191-TAB	SURFACE PROC. CARD SET 200192-TAB	EIGHT OCCULT. CARD SET 200193-TAB
100	1	2/100	1/101	
101	1	1/100	1/100	1/100
106	1	1/100	1/103	1/100
108	1	1/100	1/100	
113	1	1/100	1/103	1/101
115	1	1/100	1/101	1/101

TABLE A-6
CARD SETS CABINET 2 BACK PANEL

CABLE SET 200104-TAB	DATA/POWER CABLE ASSEMBLIES										
	101328-003	101328-004	101374-002	101374-004	101375-005	101375-007	101376-005	101377-007	101378-006	101379-007	200178-024
100	4	5	2	1	1	1	1	1	1	1	2
101	4	3			1	1	1	1	1	1	1
102	2				1		1	1			1
103	2				1		1	1			1
104	2				1		1	1			1
105	2				1		1	1			1
106	4	3			1	1	1	1	1	1	1
107	2				1		1	1			1
108	4	3			1	1	1	1	1	1	1
109	2				1		1	1			1
110	2				1		1	1			1
111	4		1		1		1	1			1
112	2				1		1	1			1
113	7				1	1	1	1	1	1	1
114	2				1		1	1			1
115	7				1	1	1	1	1	1	1
116	4				1		1	1			1
118	2				1		1	1			1

TABLE A-7
DATA/POWER CABLE ASSEMBLIES

SYSTEM PART NUMBER 101000-TAB	DISPLAY CABLES		
	DISPLAY POWER CABLE ASSY. 200182-TAB	DISPLAY SIGNAL CABLE ASSY. 200183-TAB	DISPLAY INTERCON. CABLE ASSY. 200184-TAB
168	3/100	3/100	3/100
169	2/100	2/100	1/060
170	6/100	6/100	1/012,2/030,3-060
ς	ς	ς	ς ς ς
177	6/100	6/100	1/012,2/030,3-060
186	4/100	4/100	4/100
189	2/100	2/100	2/060
ς	ς	ς	ς
193	2/100	2/100	2/060
198	2/100	2/100	2/060
199	4/100	4/100	4/060
200	2/100	2/100	2/060
201	4/100	4/100	4/060
206	2/100	2/100	2/060
207	2/100	2/100	2/060
208	2/100	2/100	2/060
209	4/100	4/150	4/100
210	4/100	4/100	1/012,3/100
211	2/100	2/100	2/060
212	4/150	4/150	4/060
213	4/100	4/100	4/060
228	1/075	1/075	1/012
	2/100	2/125	2/060
229	1/075	1/075	1/012
	2/100	2/125	2/060
232	4/100	4/100	4/060
233	4/100	4/100	4/060
234	2/150	2/150	2/060
235	4/150	4/150	4/060
237	2/100	2/150	2/060
238	2/100	2/100	2/060
239	4/100	4/150	4/060
258	2/100	2/100	2/060
259	2/100	2/100	2/060
260	2/100	2/100	2/060

TABLE A-8
DISPLAY CABLE ASSEMBLIES

DISPLAY ASSY. PART NUMBER	INTERCONNECT CABLE PART NUMBER
200185-112	200184-012
200185-130	200184-030
200185-160	200184-060
200185-199	200184-100

TABLE A-9
DISPLAY ASSEMBLY PART NUMBERS

INPUT & INTERFACE CARD SET 200141- TAB	CABLE ASSY. 40 CONDUCTOR 101328-002	CABLE ASSY. TI DMA CONTROLLER 200202-006	CABLE ASSY. TI DMA CONTROLLER 200204-006	CARD ASSY. WW DMA INTERFACE 200105-100	CARD ASSY. WW DMA INTERFACE 200105-101	CARD ASSY. WW INPUT CONTROL 200106-100	CARD ASSY. WW CLOCK MAINTENANCE 200107-100	CARD ASSY. WW DISK INTERFACE 200108-100
100	1	1		1		1	1	1
101	1		1		1	1	1	1

TABLE A-10
INPUT AND INTERFACE CARD SETS
CONFIGURATIONS

VIEWPOINT PROCESSOR CARD SET 200142- TAB	CARD ASSY. PC ADDER 200110-100	CARD ASSY. WW DIRECTIONALITY 200111-100	CARD ASSY. WW BRIGHTNESS 200112-100	CARD ASSY. WW GP CONTROL 1 200113-100	CARD ASSY. WW GP CONTROL 2 200114-100	CARD ASSY. WW GP CONTROL 2 200114-101
100	3	1	1	1	1	
101	3	1	1	1		1

TABLE A-11
VIEWPOINT PROCESSOR CARD SET
CONFIGURATIONS

CHANNEL PROCESSOR CARD SET 200143-TAB	CARD ASSY. PC MULTIPLIER 200120-100	CARD ASSY. PC DIVIDER 200121-100	CARD ASSY. WW DB CONTROL 200122-100	CARD ASSY. WW DB MEMORY 200123-100
100	1	1	1	2

TABLE A-12
CHANNEL PROCESSOR CARD SETS
CONFIGURATIONS

BASIC DISPLAY PROCESSOR CARD SET 200191-TAB	CABLE ASSY. 40 CONDUCTOR 101329-002	CARD ASSY. PC DISPLAY DATA 200155-100	CARD ASSY. WW ANALOG CONTROL 200156-100	CARD ASSY. PC ANALOG INTENSITY 200157-100	CARD ASSY. PC SCOPE DRIVER 200158-100	CARD ASSY. PC X-Y D/A CONVERTER 200159-100
100	1	2	1	1	1	2
101	1	2	1	1	2	2
102	1	2	1	1	3	2

TABLE A-13
BASIC DISPLAY PROCESSOR CARD SETS
CONFIGURATIONS

SURFACE PROCESSOR CARD SET 200192-TAB	CARD ASSY. PC FACE GENERATOR 200160-100	CARD ASSY. PC PRIORITY SORTER 200161-100	CARD ASSY. PC LINE ASSEMBLER 200162-100	CARD ASSY. WW E/F CONTROL 200163-100	CARD ASSY. WW S/L CONTROL 200164-100	CARD ASSY. PC EDGE GENERATOR 200165-100
100	1	1	4	1	1	1
101	2	1	4	1	1	2
102	3	1	4	1	1	3
103	4	1	4	1	1	4

TABLE A-14
SURFACE PROCESSOR CARD SETS
CONFIGURATIONS

LIGHT OCCULTATION CARD SET 200193-TAB	CARD ASSY. WW L.O. TRANSFORM 200170-100	CARD ASSY. WW L.O. CONTROL 200171-100	CARD ASSY. WW L.O. MAP 200172-100	CARD ASSY. PC L.O. MAP 200172-101
100	1	1	1	
101	1	1		1

TABLE A-15
LIGHT OCCULTATION CARD SETS
CONFIGURATIONS

CARD NAME/ PART NUMBER	CABINET 1 BACK PANEL CARD SLOT	CABINET 2 BACK PANEL CARD SLOT
DMAC (Note 1) 200105-	2	
INPUT CONTROL (Note 1) 200106-100	3	
CLOCK MAINTENANCE (Note 2) 200107-100	12	12
DISK INTERFACE (Note 1) 200108-100	1	
ADDER (Note 3) 200110-100 (X axis) (Y axis) (Z axis)	4 5 6	
DIRECTIONALITY (Note 1) 200111-100	7	
BRIGHTNESS (Note 1) 200112-100	8	
GP CONTROL 1 (Note 1) 200113-100	9	
GP CONTROL 2 (Note 1) 200114-	10	

Note 1: Only one card of this type is required for each system.

Note 2: One card of this type is required for each back panel in the system. The clock maintenance card requires unique switch settings determined by the back panel in which it is to be used; refer to subsection 5.2.3.

Note 3: Three cards of this type are required for each system, one for each axis as indicated.

TABLE A-16
INPUT AND INTERFACE, AND VIEWPOINT
PROCESSOR CARD SETS LOCATION

CARD NAME/ PART NUMBER	CABINET 1 BACK PANEL CARD SLOT / CHANNEL			
	CH#0	CH#1	CH#2	CH#3
MULTIPLIER (Note 1) 200120-100	13	16	19	22
DIVIDER (Note 1) 200121-100	14	17	20	23
DISPLAY BUFFER CONTROL (Note 1) 200122-100	15	18	21	24
DISPLAY BUFFER MEMORY (Note 2) 200123-100 (X axis)	25	27	29	31
(Y axis)	26	28	30	32

Note 1: Only one card of this type is required for each channel.

Note 2: Two cards of this type are required for each channel, one for each axis as indicated.

TABLE A-17
CHANNEL PROCESSOR
CARD SETS LOCATIONS

CARD NAME/ PART NUMBER	CARD SLOT / CHANNEL			
	CABINET 1 BACK PANEL		CABINET 2 BACK PANEL	
	CH#0	CH#1	CH#2	CH#3
DISPLAY DATA (Note 1)				
200155-100 X axis	49	81	49	81
Y axis	50	82	50	82
ANALOG CONTROL (Note 2)				
200156-100	51	83	51	83
ANALOG INTENSITY (Note 2)				
200157-100	56	88	56	88
SCOPE DRIVER (Note 3)				
200158-100 (Main display)	62	94	62	94
(Optional display)	64	96	64	96
X-Y D/A CONVERTER (Note 1)				
200159-100 (X axis)	58	90	58	90
(Y axis)	60	92	60	92
FACE GENERATOR (Note 4)				
200160-100 (Option 0)	42	74	42	74
(Option 1)	43	75	43	75
(Option 2)	44	76	44	76
(Option 3)	45	77	45	77
PRIORITY SORTER (Note 2)				
200161-100	46	78	46	78
LINE ASSEMBLER (Note 5)				
200162-100 (#0)	55	87	55	87
(#1)	54	86	54	86
(#2)	53	85	53	85
(#3)	52	84	52	84
E/F CONTROL (Note 2)				
200163-100	47	79	47	79
S/L CONTROL (Note 2)				
200164-100	48	80	48	80
EDGE GENERATOR (Note 4)				
200165-100 (Option 0)	38	70	38	70
(Option 1)	39	71	39	71
(Option 2)	40	72	40	72
(Option 3)	41	73	41	73
LO TRANSFORM (Note 6)				
200170-100	36	68	36	68
LO CONTROL (Note 6)				
200171-100 /102	37	69	37	69
LO MAP (Note 6)				
200172- /101	35	67	35	67

TABLE A-18 (Sheet 1)
DISPLAY PROCESSOR CARD SETS LOCATIONS

Note 1: Two cards of this type are required for each channel, one for each axis as indicated.

Note 2: One card of this type is required for each channel.

Note 3: The optional display scope driver card may be assigned to only one channel.

Note 4: The number of the E/F option determines the number of the edges and faces, and the number of cards for the channel.

Option 0 - One card of each type: 64 edges and 64 faces.
Option 1 - Two cards of each type: 128 edges and 128 faces.
Option 2 - Three cards of each type: 192 edges and 192 faces.
Option 3 - Four cards of each type: 256 edges and 256 faces.

Note 5: Four cards of this type are required for each channel.

Note 6: The Light Occultation cards are optional and may be omitted from the system, or when used may not be assigned to all channels in the system.

TABLE A-18 (Sheet 2)
DISPLAY PROCESSOR CARD SETS LOCATIONS

NSP SYSTEM CONFIGURATION
FOR SYSTEM PART NUMBER

101000-_____

CHANNELS	DISPLAYS	CABINET 1 200101-TAB	CABINET 2 200102-TAB	TI CONMUTER 150125-TAB	AED FLOPPY DISK 153145-TAB	PRI. PWR. CONT. 200154-TAB	CABLE SET 200204-TAB	OPTIONS			
								TEK 4010 TERMINAL	HAZELTINE TERMINAL	LINE PRINTER	RASTER MASK

OVERALL CONFIGURATION

	INPUT & INTERFACE CARD SET 200141-TAB	VIEWPOINT PROC. CARD SET 200142-TAB	CHANNEL PROC. CARD SET 200143-100	BASIC DISP. PROC. CARD SET 200191-TAB	SURFACE PROC. CARD SET 200192-TAB	LIGHT OCCULT. CARD SET 200193-TAB	CLOCK MAINTENANCE CARD 200107-100 (WITH CABLE)
CABINET 1							
CABINET 2							

CARD SET CONFIGURATIONS

DISPLAY CABLES			DATA AND POWER CABLES									
DISPLAY POWER CABLE ASSY. 200182-TAB	DISPLAY SIGNAL CABLE ASSY. 200183-TAB	DISPLAY INTCON CABLE ASSY. 200184-TAB	101328-003	101328-004	101374-002	101374-004	101375-005	101375-007	101376-005	101377-007	101378-006	101379-007	200178-024

CABLE CONFIGURATION

APPENDIX B

ROM TABLES

B.1 INTRODUCTION

This appendix consists of tables of ROMs in the 101000-170 system, listed numerically by the part number of the ROM. The circuit card number and ROM position on the card is listed following the ROM part number for each occurrence of that ROM.

CARD P/N 200106-100	
POS	PROM P/N
U42	807739-055 A75
U52	807739-055 A76
U70	807808-016 A14
U72	807739-055 A77

CARD P/N 200107-100	
POS	PROM P/N
U10	807739-055 A58
U12	807739-055 A59
U13	807739-055 A58
U22	807808-016 A22

CARD P/N 200108-100	
POS	PROM P/N
U21	807808-016 A03
U31	807808-016 A04
U33	807739-055 A71
U41	807808-016 A05
U50	807739-055 A96
U51	807808-016 A06
U53	807739-055 A72
U61	807808-016 A07
U71	807808-016 A08

CARD P/N 200111-100	
POS	PROM P/N
U21	807802-055 A01
U22	807802-055 A05
U31	807802-055 A00

CARD P/N 200112-100	
POS	PROM P/N
U46	807802-055 A35
U56	807802-055 A36
U74	807220-018 A09

CARD P/N 200113-100	
POS	PROM P/N
U13	807220-018 A01
U14	807220-018 A02
U60	807739-055 A73
U74	807220-018 A03

CARD P/N 200114-100	
POS	PROM P/N
U16	807802-055 A06
U25	807802-055 A07
U32	807802-055 A08
U33	807802-055 A09
U35	807802-055 A10
U42	807802-055 A11
U43	807802-055 A12
U45	807802-055 A13
U46	807802-055 A14
U52	807802-055 A15
U53	807802-055 A16
U71	807220-018 A04
U73	807220-018 A05
U74	807220-018 A06
U75	807220-018 A07
U76	807220-018 A08

CARD P/N 200114-101	
POS	PROM P/N
U16 THRU U43	SAME AS 200114-100
U45	807802-055 A41
U46 THRU U76	SAME AS 200114-100

CARD P/N 200121-100	
POS	PROM P/N
U60	807629-055 B02
U70	807629-055 B03

CARD P/N 200122-100	
POS	PROM P/N
U62	807629-055 A96
U74	807739-055 A61
U75	807739-055 A62

CARD P/N 200155-100	
POS	PROM P/N
U61	807739-055 A47
U71	807739-055 A69

CARD P/N 200156-100	
POS	PROM P/N
U35	807808-016 A09
U45	807808-016 A10
U55	807808-016 A11
U65	807808-016 A12
U75	807808-016 A13

CARD P/N 200158-100	
POS	PROM P/N
U31	807739-055 A95
U62	807808-016 A23

CARD P/N 200159-100	
POS	PROM P/N
U64	807820-016 A01

CARD P/N 200160-100	
POS	PROM P/N
U93	807739-055 A56

CARD P/N 200162-100	
POS	PROM P/N
U13	807626-055 A77
U16	807626-055 A32
U20	807626-055 A73
U23	807626-055 A80

CARD P/N 200163-100	
POS	PROM P/N
U22	807629-055 A85
U23	807629-055 A86

CARD P/N 200164-100	
POS	PROM P/N
U55	807739-055 A57

TABLE B-1
ROM TABLES FOR THE NSP SYSTEM