MICROPROCESSOR CONTROL

Control of the Alto microprocessor is shared among 16 "tasks" arranged in a priority order. The tasks are numbered 0 to 15: 0 is the lowest priority and 15 is the highest. The lowest priority task is the emulator task which fetches instructions and executes them.

BRANCHING

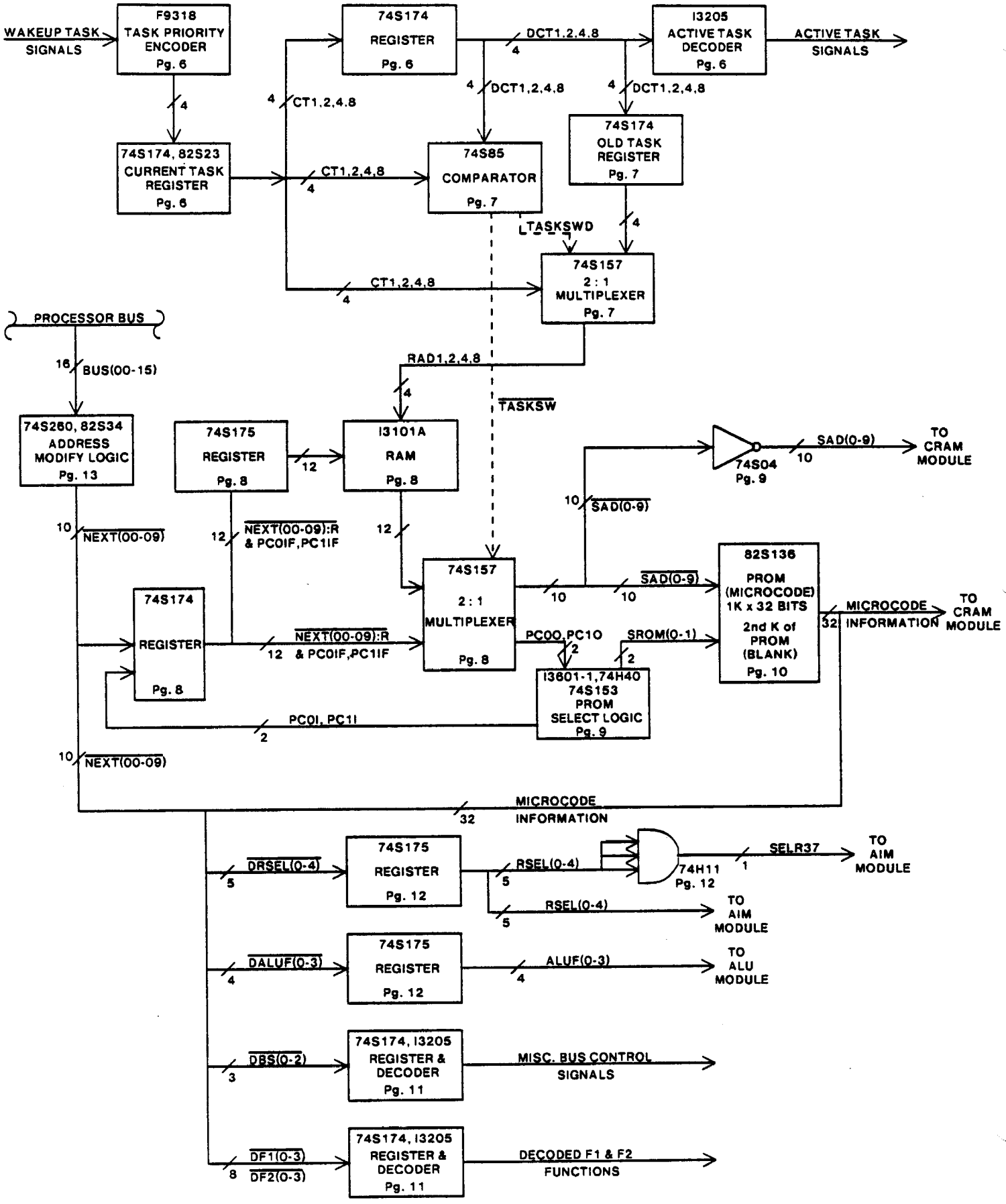
The microprocessor offers a limited branching capability which, although somewhat cumbersome, has proven adeqeuate for chores undertaken by Alto microcode. The basic idea is that special microprocessor functions may modify the NEXT field, and consequently, alter the flow of control. Modification is accomplished by ORing various bits into the NEXT field.

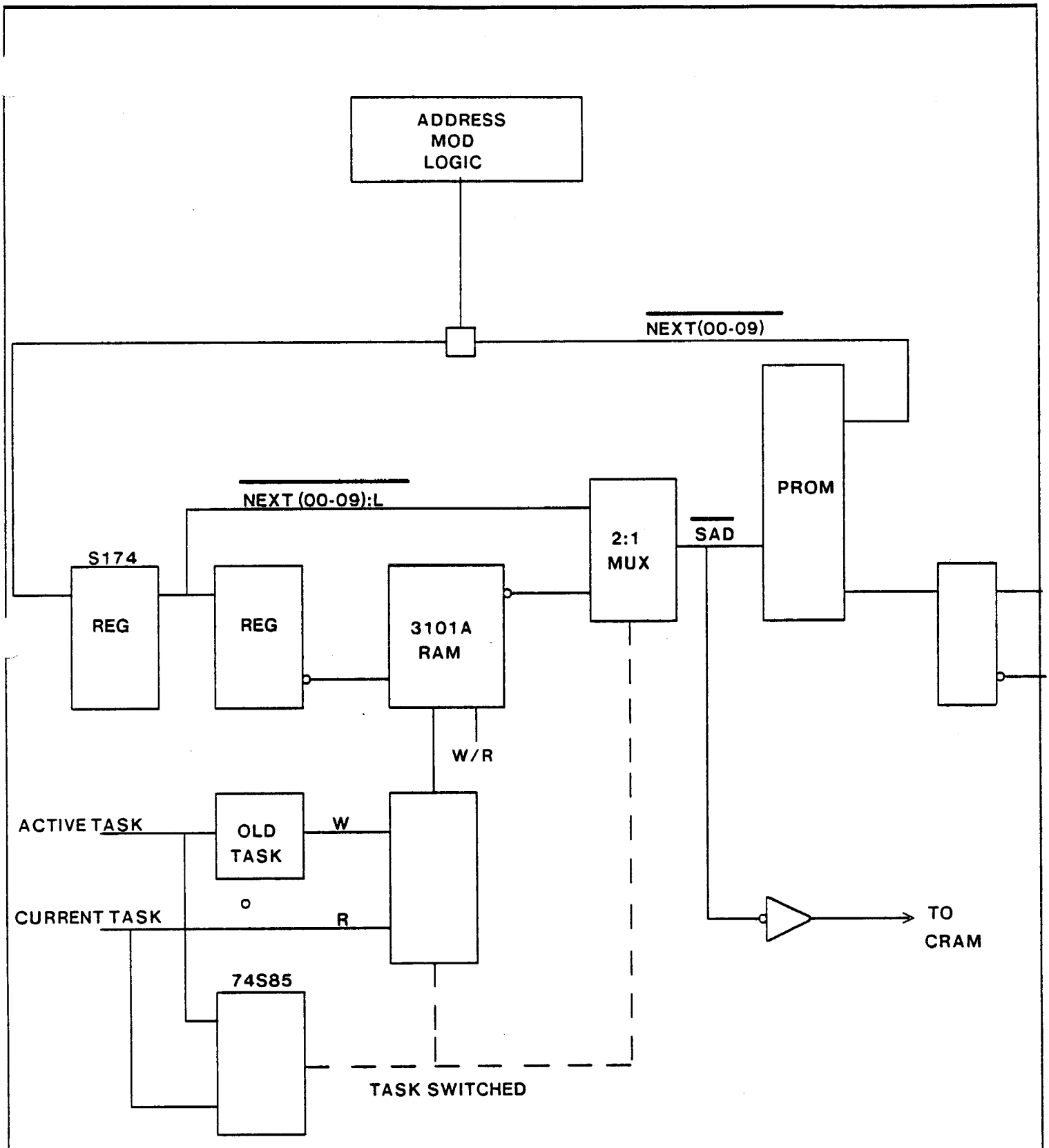
TASK SWITCHING

Only one of the 16 tasks is executing microinstructions at any one time. Once a task begins execution, it continues to execute until it invokes a task switch function that enables switching to another task.

A task is considered eligible for execution if its hardware-generated "wakeup signal" is asserted (these signals are not accesible to the microprogram). The wakeup signals enter a priority encoder that calculated the number of the highest-priority eligible task. When a running task invokes a task switch, control will switch to another task only if a higher priority task has a wakeup signal held true, or if the current task no longer has a wakeup signal true. In the latter case, control goes to a lower priority task. The lowest priority task is the CPU emulator, which is always requesting wakeup.

EXTENDED MEMORY 2K CONTROL MODULE





PROPRIETARY NOTE ON SHEET 1 APPLIES TO ALL SHEETS		FILE: 2KCONTR.SIL-1	
TITLE: ASSEMBLY, P.W. 2K CONTROL MODULE (EXTNM)	DWG. SIZE: A4	DWG. NO. 218147 SHEET 2 OF 15	SHEET REV. A

NOTE: UNLESS OTHERWISE SPECFIED.

1. ASSEMBLE PER ALTO II MODULE ASSY. SPEC. DWG NO. 216207

2 PROGRAMMING THE PROMS:

A. PROGRAM THE PROMS BEFORE IT IS INSERTED INTO THE MODULE.

B. LABEL EACH PROM AS DEFINED AS SHOWN BELOW USING AVERY SELF-ADHESIVE (1/16X1/2)LAVEL. STICK THE LABEL ON THE TOP OF THE PROM(IC).

C. PROGRAM THE FOLLOWING PROMS:

PROM LABEL	LOCATION	FILE NAME	FILE LOCATION
0/S	U55	DOALTOIIM.CMS	[ISIS}<SPGDOCS>PROMS>3KCONTR.DM
4/S	U64	DOALTOIIM.CMS	[ISIS}<SPGDOCS>PROMS>3KCONTR.DM
8/S	U65	DOALTOIIM.CMS	[ISIS}<SPGDOCS>PROMS>3KCONTR.DM
12/S	U63	DOALTOIIM.CMS	[ISIS}<SPGDOCS>PROMS>3KCONTR.DM
16/S	U53	DOALTOIIM.CMS	[ISIS}<SPGDOCS>PROMS>3KCONTR.DM
20/S	U60	DOALTOIIM.CMS	[ISIS}<SPGDOCS>PROMS>3KCONTR.DM
24/S	U61	DOALTOIIM.CMS	[ISIS}<SPGDOCS>PROMS>3KCONTR.DM
28/S	U62	DOALTOIIM.CMS	[ISIS}<SPGDOCS>PROMS>3KCONTR.DM
CTR	U51	CTR.MB	[ISIS}<SPGDOCS>PROMS>3KCONTR.DM
C03	U3	C03A.MB	[ISIS}<SPGDOCS>PROMS>3KCONTR.DM
2KSW	U38	SWMODE2KSW	[ISIS]<SPGDOCS>PROMS>2KCONTR.DM

@DOALTOIIM.CMS A COMMAND FILE WHICH IS USED WITH THE PNEW.RUN AND ALTOIICODE3XM.MB PROGRAM. IT IDENTIFIES THE PROM TYPE AUTOMATICALLY AND LOADS THE PROMS 0/S THRU 28/S SEQUENTIALLY. THE PROGRAM WILL LOAD 0/S FIRST THAN 4/S,8/S ..... AND 28/S.

D. ADDITINAL PROGRAM REQUIREMENT:

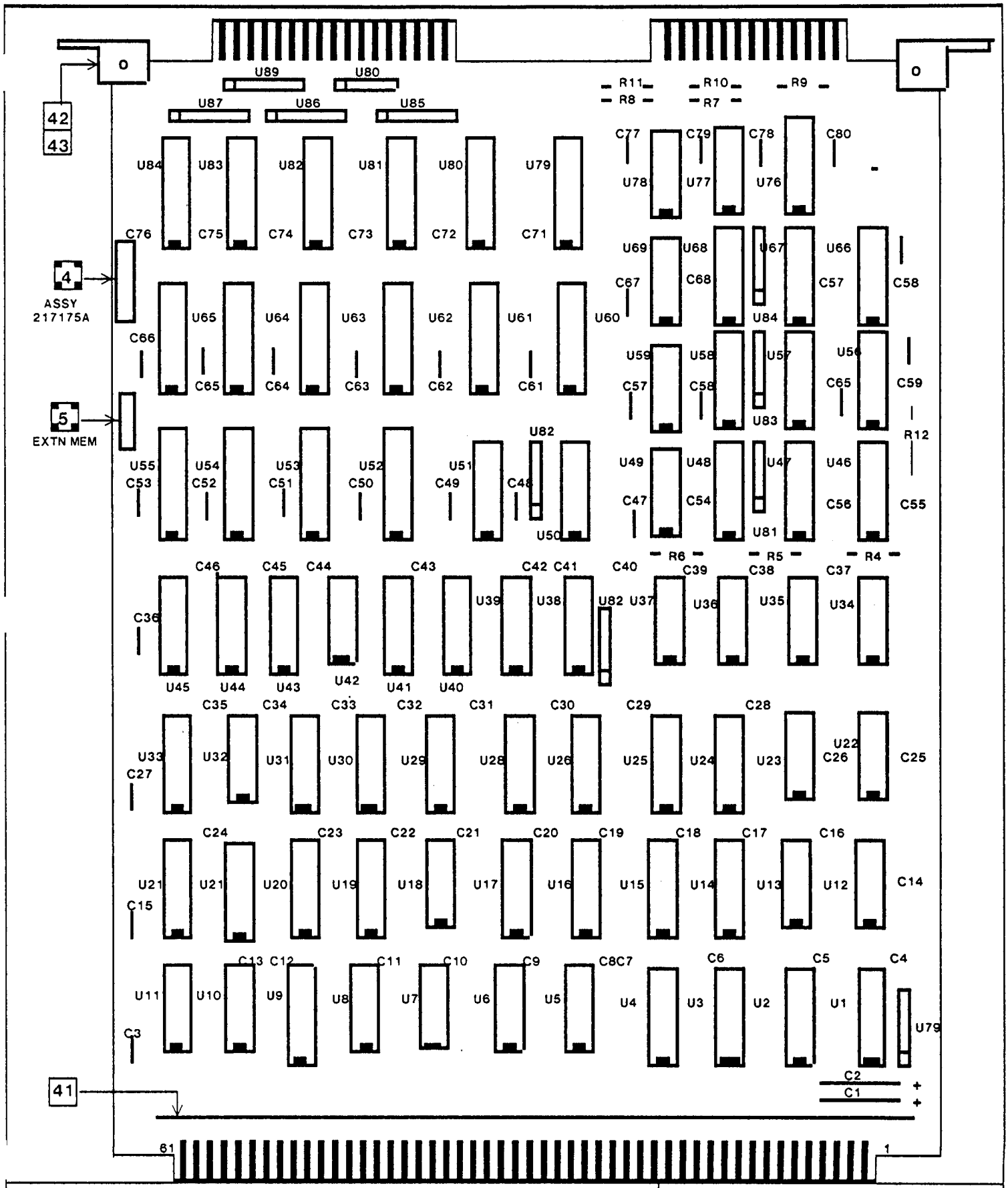
a. PNEW.RUN.....<ISIS>SPGDOCS>PNEW.RUN

b. ALTOIICODE3XM.MB.....FILE LOCATION [ISIS]<ALTO>ALTOIICODE3XM.MB

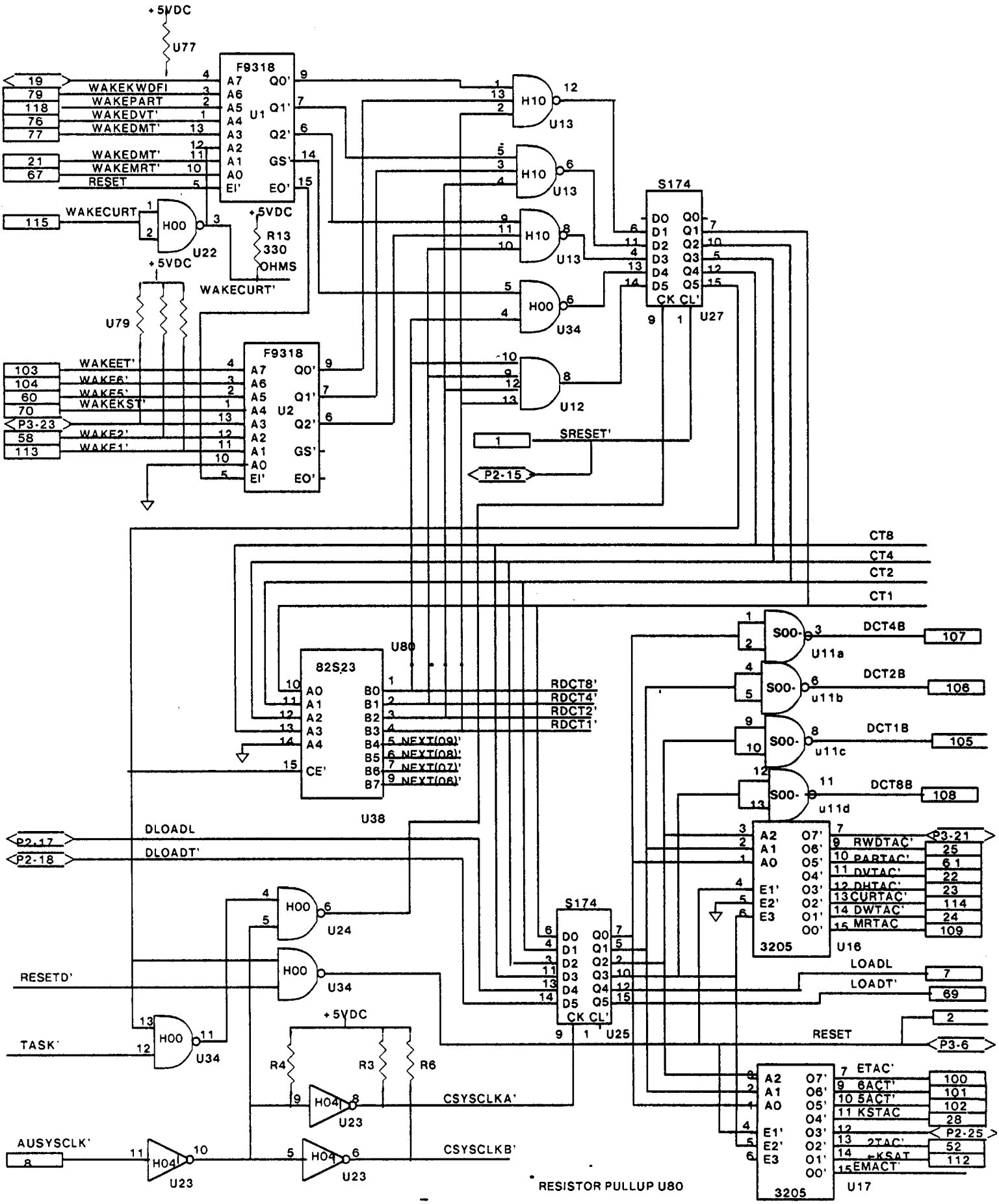
E. HARD WARE REQUIREMENTS:

a. PROLOG PROGRAMMER.....<ISIS>SPGDOCS>PROLOG.PRESS

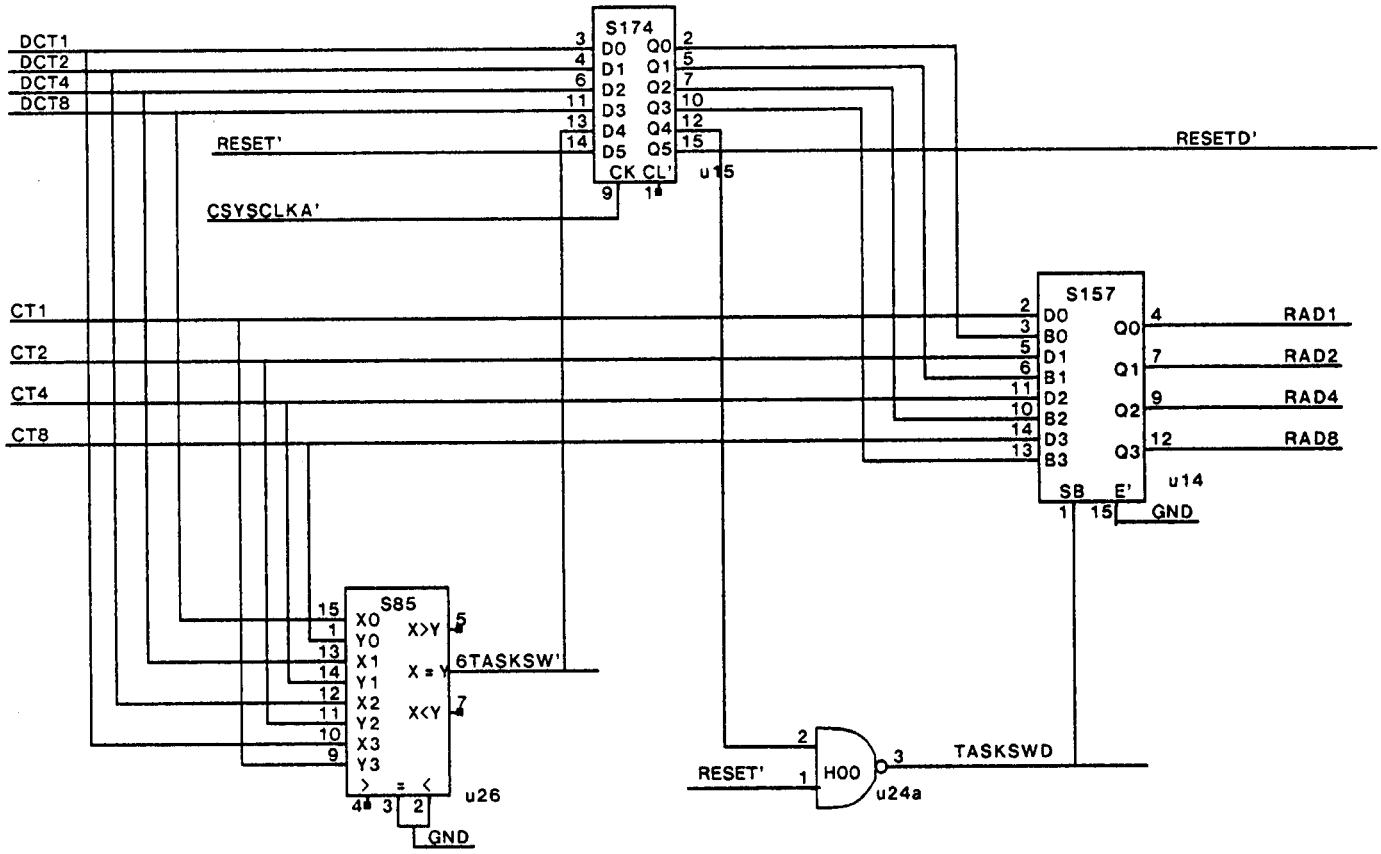
b. 82S23, 82126, AND 82S136 PERSONALITY CARD.



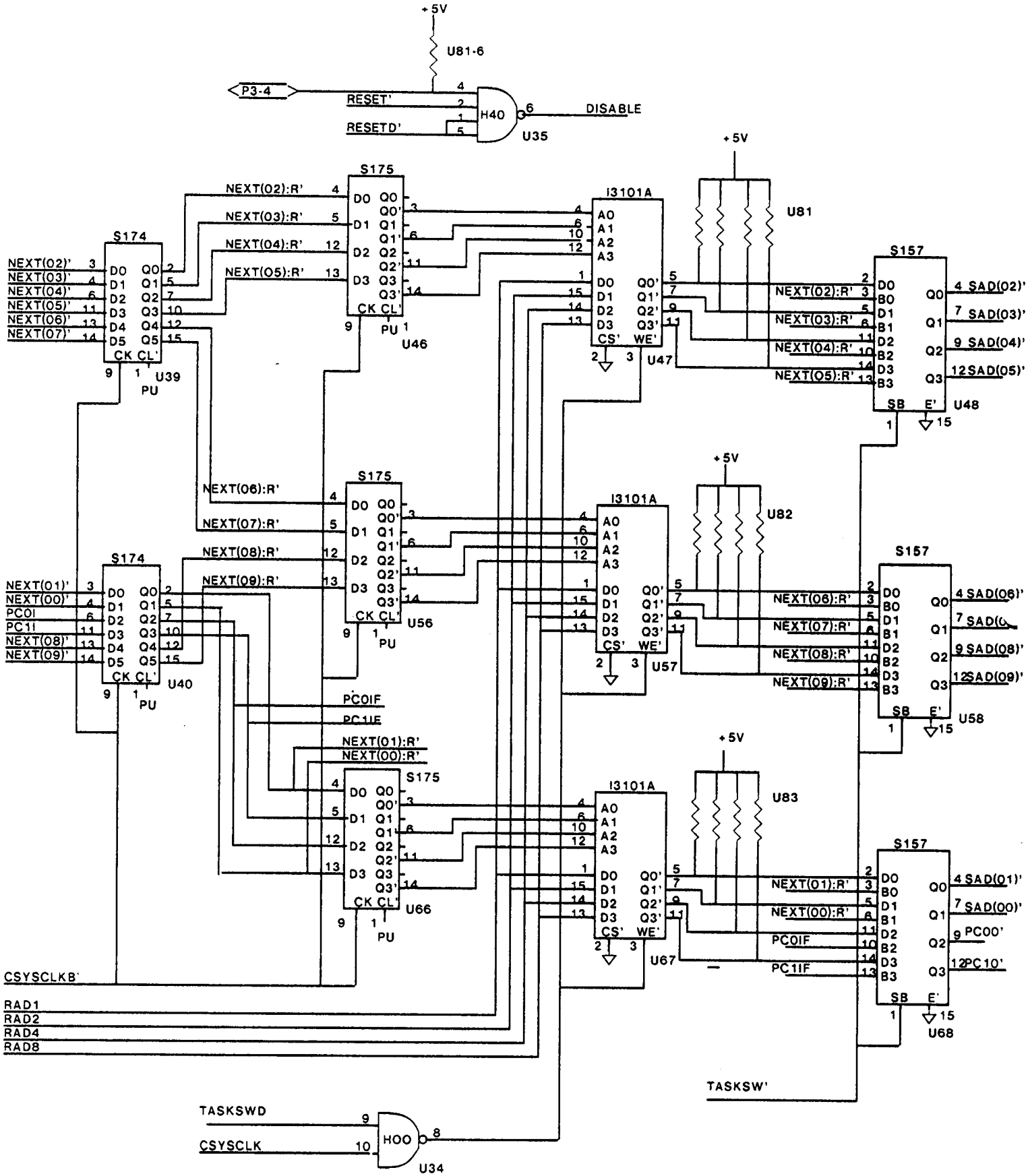
PROPRIETARY NOTE ON SHEET 1 APPLIES TO ALL SHEETS		FILE: 2KFCONTR.SIL-11	
TITLE ASSEMBLY, P.W. 2K CONTROL MODULE	DWG. SIZE A4	DWG. NO. 218094 SHEET 4 OF 15	SHEET REV. A



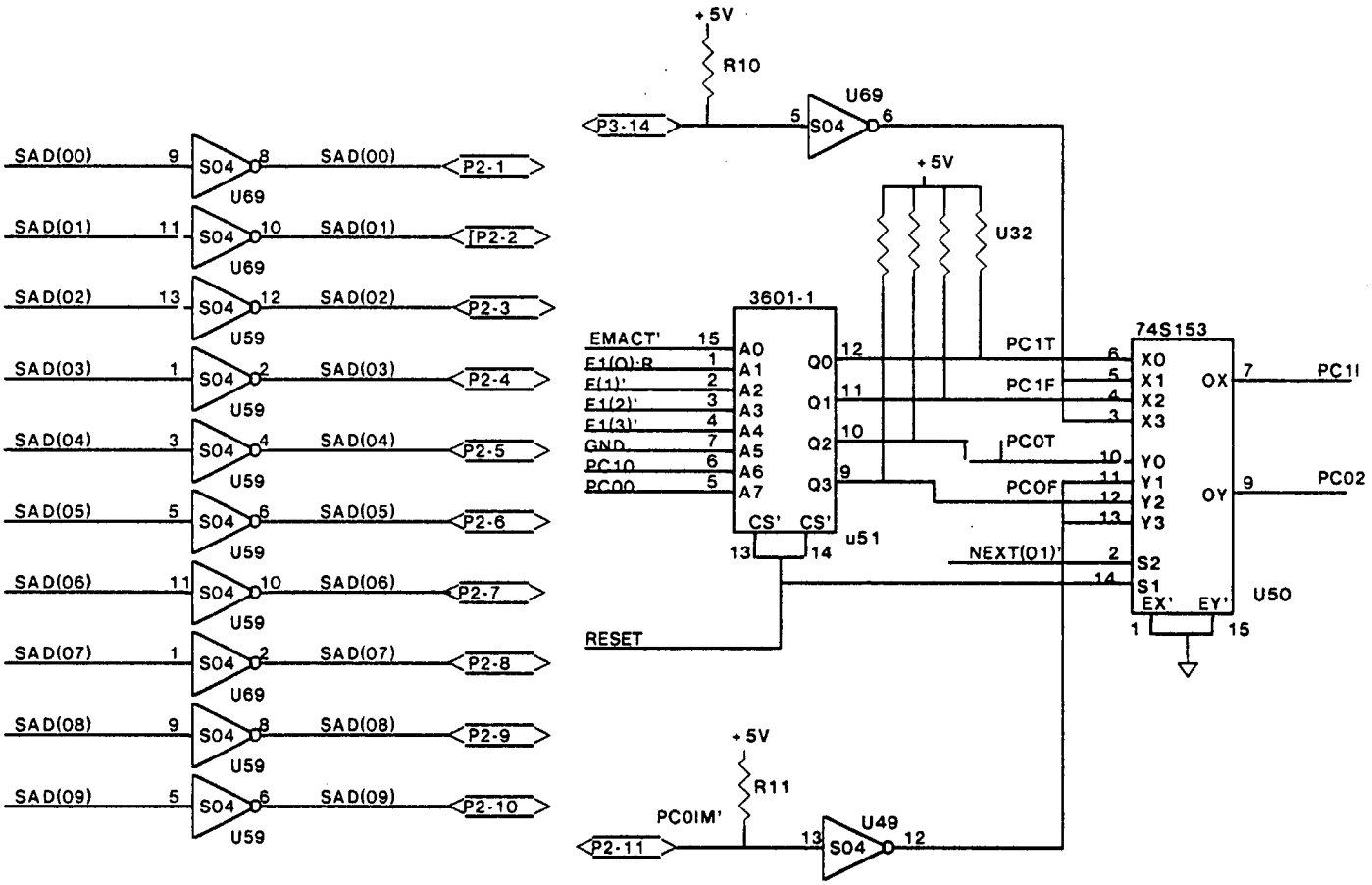
XEROX	Project		File	Designer	Rev	Date	Page
ED	ALTOII	ASSEMBLY, P.W. 2K CONTROL MODULE	2KCONTR.SIL-9	FREEMAN	A	12/10/80	7

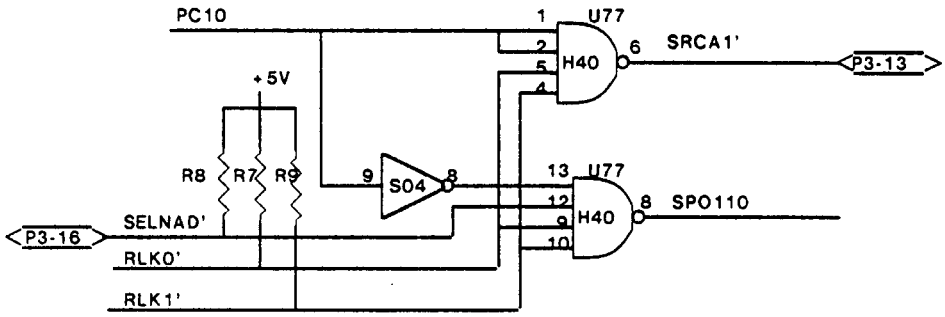


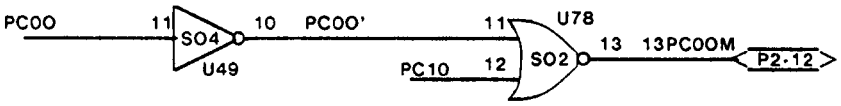
XEROX ED	*Project* ALTOII	ASSEMBLY P.W. 2K CONTROL MODULE	*File* 2KCONTR .SIL-16	*Designer* FREEMAN	*Rev* A	*Date* 12/12/80	*Page* 8



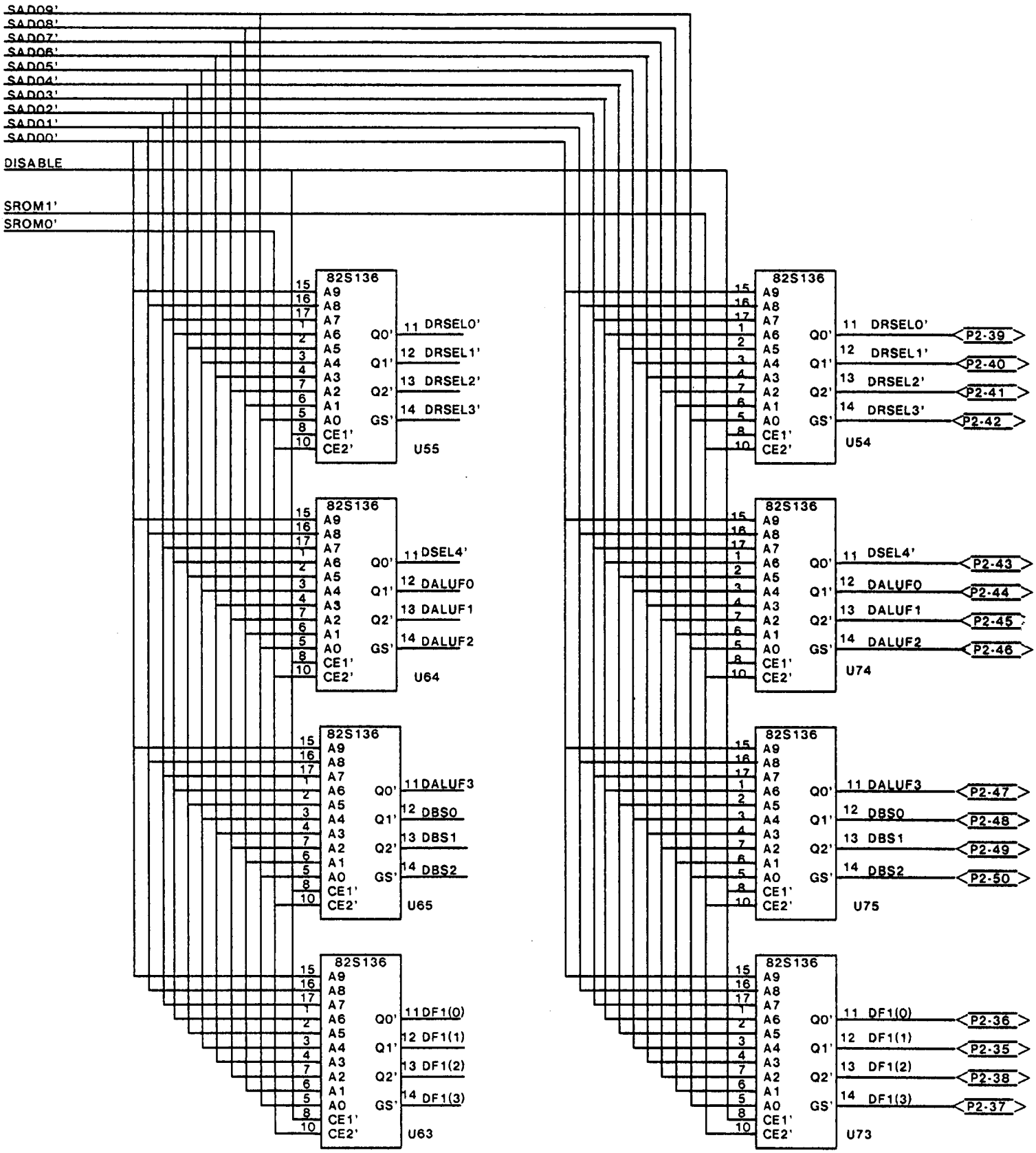
XEROX	Project		File	Designer	Rev	Date	Page
ED	ALTOII	ASSEMBLY,P.W. 2K CONTROL MODULE	2KCONTR.SIL-2	FREEMAN	A	12/10/80	9



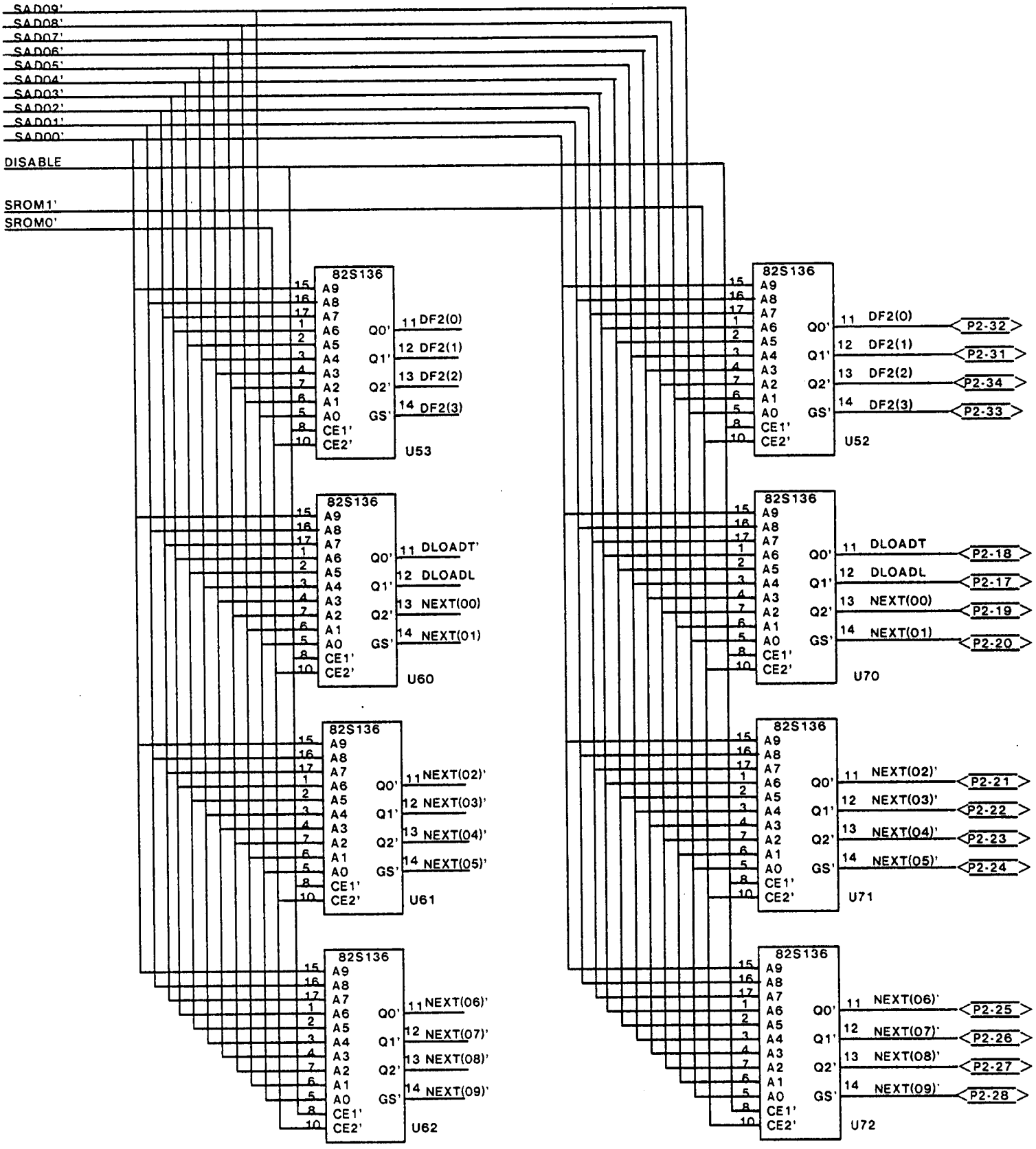




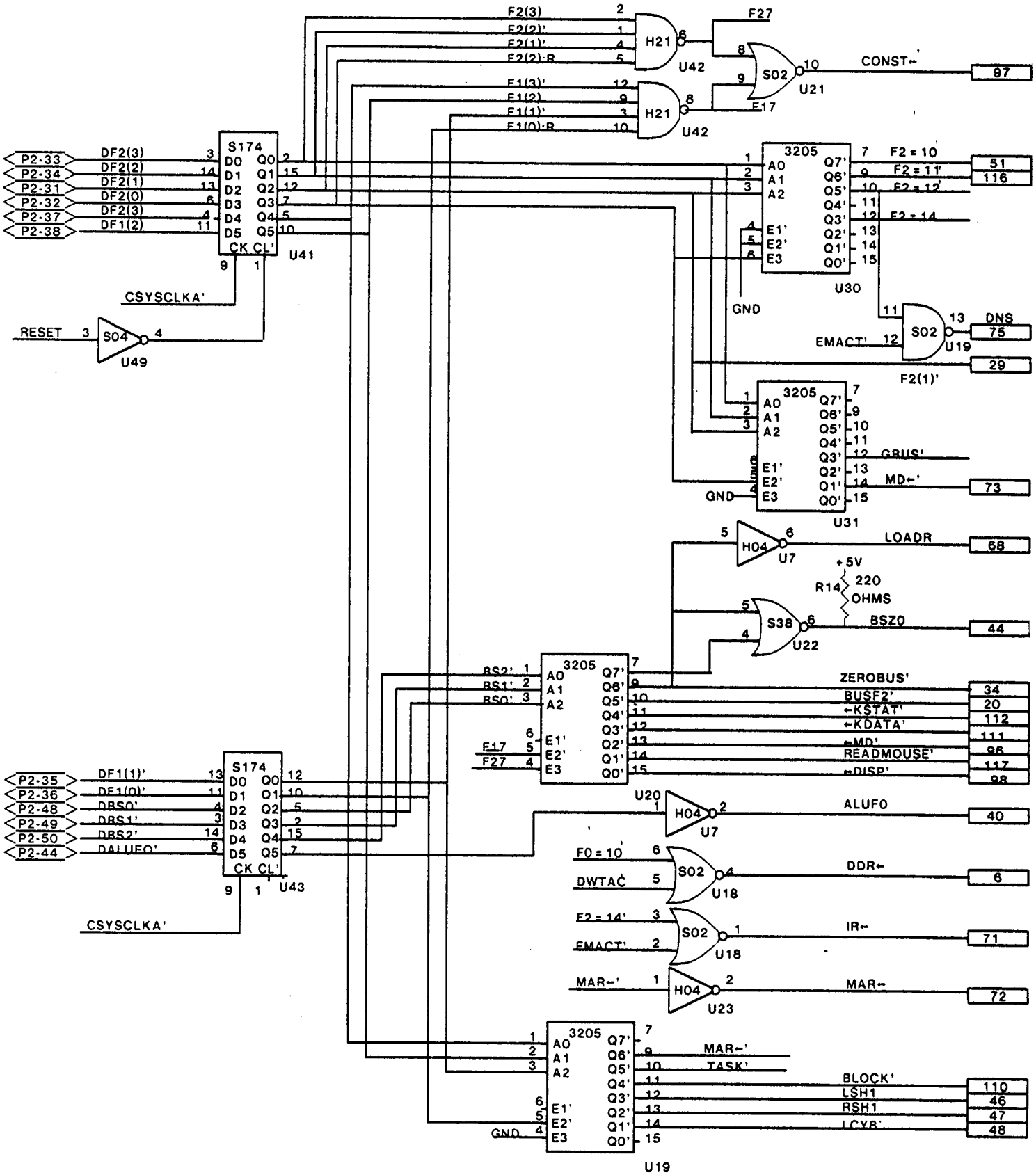
XEROX ED	Project ALTOII	ASSEMBLY, P.W. 2K CONTROL MODULE	File 2KCONTR.SIL-3	Designer FREEMAN	Rev B	Date 12/12/80	Page 10



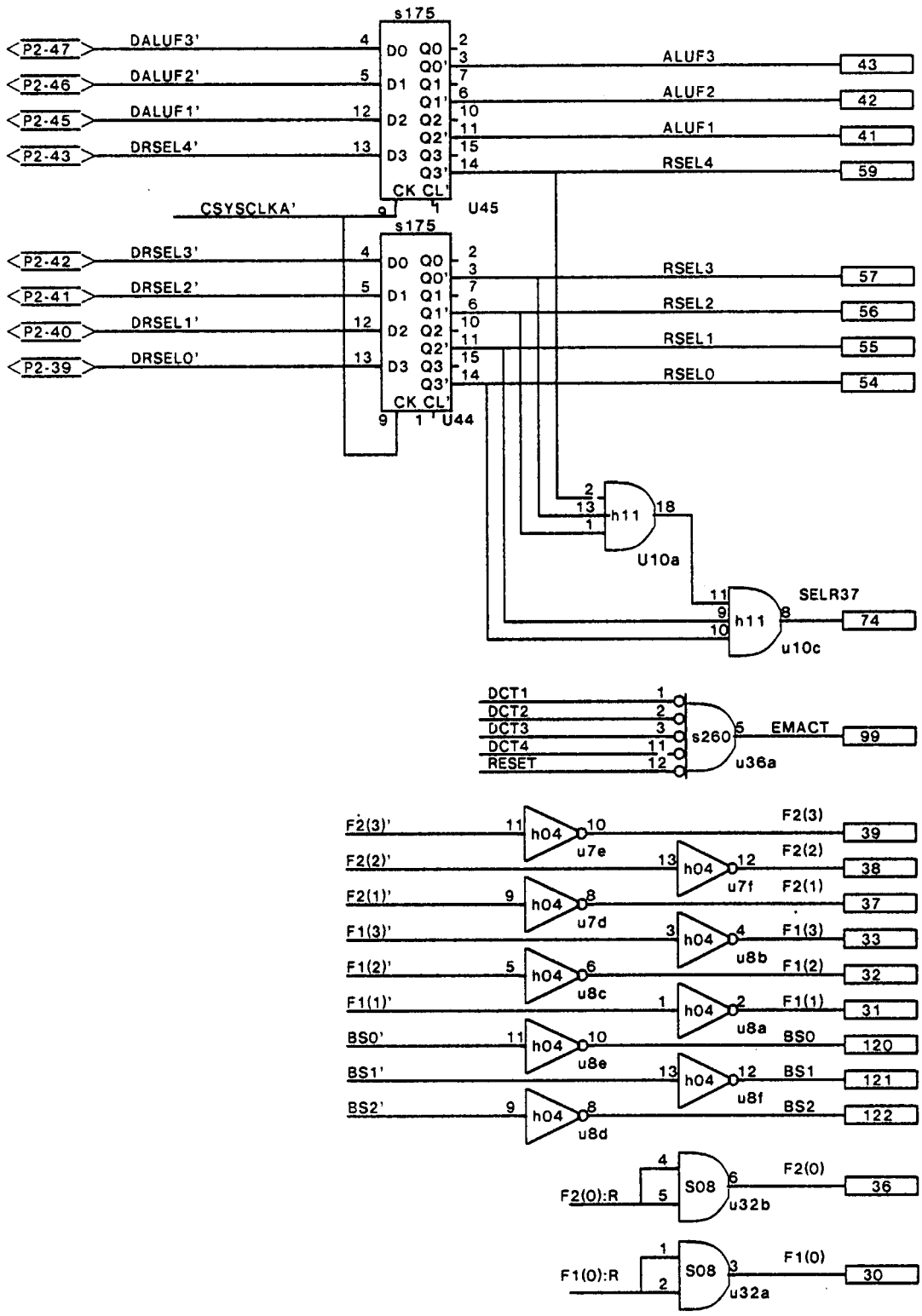
XEROX ED	Project ALTOII	ASSEMBLY P.W. 2K CONTROL	File 2KCONTR .SIL-12	Designer FREEMAN	Rev A	Date 10/10/80	Page 11



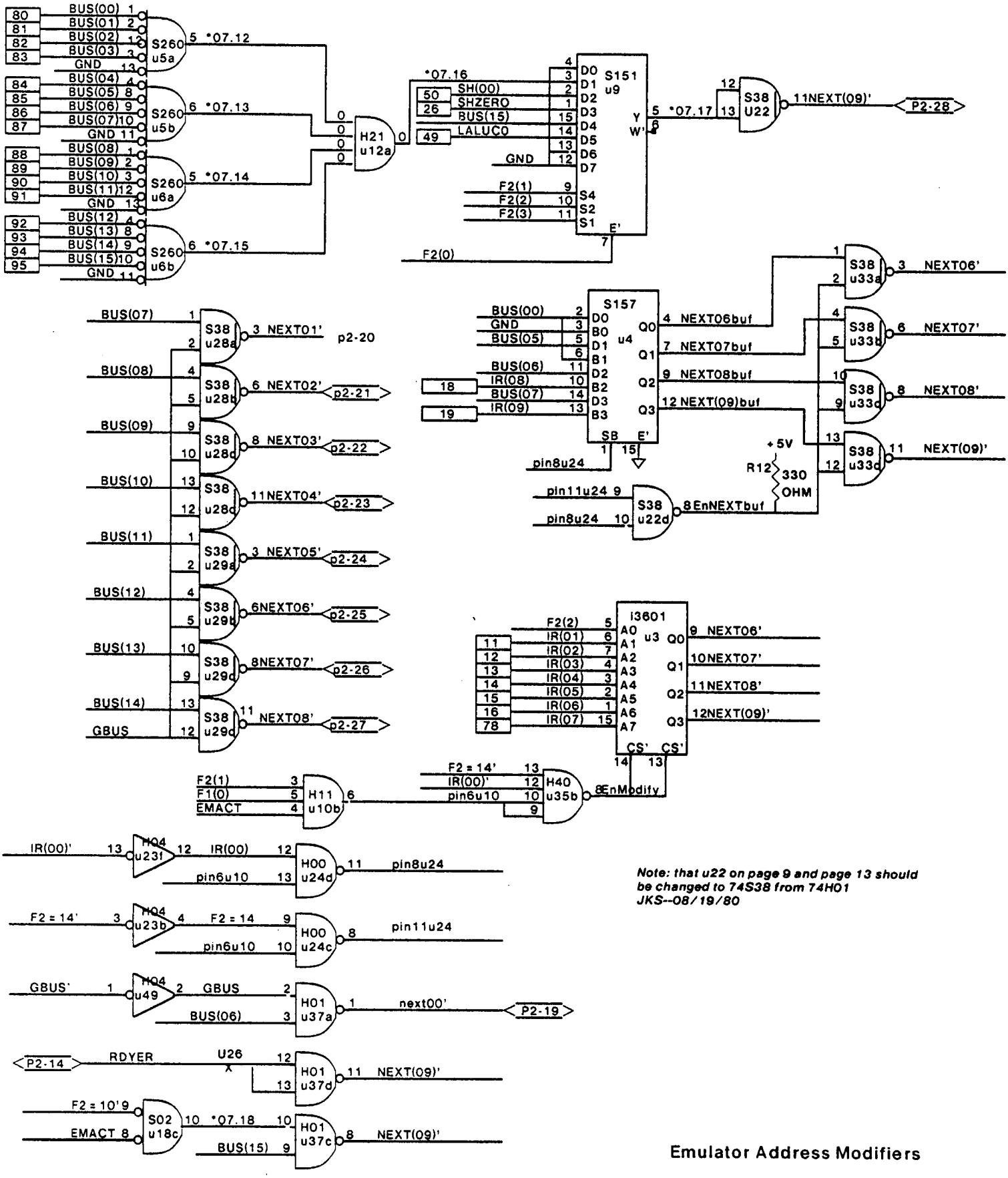
XEROX ED	Project ALTOII	ASSEMBLY P.W. 2K CONTROL MODULE	File 2KCONTR SII-13	Designer FREEMAN	Rev A	Date 12/12/80	Page 12



XEROX	Project		File	Designer	Rev	Date	Page
ED	ALTO II	ASSEMBLY, P.W. 2K CONTROL MODULE	2K CONTROL	FREEMAN	A	12/12/80	13



XEROX	Project		File	Designer	Rev	Date	Page
ED	ALTOII	ASSEMBLY P.W. 2K CONTROL MODULE	2KCONTR.SIL-15	FREEMAN	A	12/12/80	14



Note: that u22 on page 9 and page 13 should be changed to 74S38 from 74H01 JKS--08/19/80

Emulator Address Modifiers

XEROX	Project	ASEMBLY P.W.	File	Designer	Rev	Date	Page
SDC	ALTOII	3K CONTROL MODULE	3KCONTR				