

CALIFORNIA CENTRAL MODEL RAILROAD CLUB

ELECTRICAL SYSTEM SPECIFICATION & FUNCTIONS OUTLINE

March 22, 1974

I-WIRING STANDARDS

A: 110/220V mains

- 1) A central cite will be chosen for all breaker panels .
- 2) Main power to the distribution panel will be controlled by one switch not to be accessible from visitor viewing area.
- 3) Breakouts to service areas shall each have separate breakers.
- 4) All 110/220V feeders shall be run in steel tube or flex conduit and all boxes shall be grounded.

B: Lighting

- 1) Overhead Special Effects lighting shall be incandescent with a SCR dimmer control which can be motor driven to simulate day-night effects. Fixtures will be adjustable so that alignment is convenient. Lamp fixture connection to the distribution buss will be thru a line cord and plug so that relocation is simplified.
- 2) Overhead Fluorescent lighting will be provided to aid maintenance and construction of the layout. Distribution will be from a buss separate from the special effects SCR controlled system. Hooks will be provided at likely locations in the ceiling so that the fixtures may be easily relocated. The connecting cable will be easily unplugged from the distribution strip.
- 3) Outside Lighting will have a separate breaker. Existing lighting is adequate and will remain.
- 4) Convenience Outlets will be 2 wire U-ground. Dual outlets will be located beneath the layout benchwork on a grid approximately 8' square in two parallel rows 4' out from the long walls. There will be a dual outlet at each yard panel and cab panel.
- 5) Calculation of current loads will be made to determine conductor sizes and breaker ratings.

C: Control

1) Track Power

- a) - The common rail system will be used to distribute track power.
- b) - A 12VDC, full wave unfiltered, powersupply will be used as the primary source. It will have a full wave rectifier/grounded center tap.
- c) - Transistor throttles will be used to regulate and control track power.
- d) - Each cab will have access to a block thru a relay. The relay will supply indicators to show occupancy via the direction lights on the display panel. Additional relay contacts

ELECTRICAL SPECS CONT'D

contacts will be used to lock out other cabs when a block is occupied.

- e - Each yard or siding shall have control of the block adjacent to it on each side as well as the passing track around it. These blocks will revert to main-line cab control when the yard engineer is not using them or if priority exists.

2) Switch Machines

- a - Machines will be of the Kemtron/Tenshodo type with extra electrical contacts for display and track power routing.
- b - Electrical plug connections will be used to simplify replacement of switch machines.
- c - Control switches will be the snap action type or equal. Not the Kadee type.
- d - Machines shall operate from an adjustable (tapped) supply that provides a nominal 15VDC filtered.
- e - Lead wire will have more than adequate capacity to minimize voltage drop.

3) Communications

- a - The phone system shall have a means whereby interconnecting may be accomplished between any two cabs that are separated more than 8' and are not in view of each other. The dispatcher will have a head set as will the main yards and division point. Main line cabs will use handsets. See attached sketch.

4) Status Display

The dispatcher and remote display panels will show block occupancy when a cab has control of said block. A numeric display will indicate which cab has control of a block. The display will contain two digits. The second will indicate train number. Train number will be selected by the cab in control. Train location will be sensed by the Tri-Delt or equal method and be indicated with a white light. Train direction will be indicated by either a yellow or blue light. Turnout direction will be indicated by red or green lights.