

# Interlocking . . .



SEARCHLIGHT DWARFS used entirely for interlocking home signals. Looking west, signal R3 (left), R5 (right)

## Expedites Terminal Moves

THE CHESAPEAKE & OHIO has installed a remote control interlocking at 15th street in Detroit, Mich., at the entrance to the viaduct leading to the Fort Street Union Depot. This 15th street interlocking is controlled from the 6th street interlocking tower at the entrance of the passenger terminal. In this general area, the C&O, Wabash and Pennsylvania operate over trackage known as the Union Belt, which is owned by these three railroads. The line through 15th street consists of two main tracks and one other track. At 15th street, the tracks start on an elevation. Just east of the interlocking, the tracks run over a viaduct and then over a fill into the passenger terminal. The new interlocking is approximately 4,000 ft. west of the 6th street interlocking, which also controls the switches and signals at the passenger terminal.

Automatic block signals and hand-thrown switches were previously in service at 15th street. Power-operated switch machines are now used. Two hand-thrown switches have been electrically locked, the unlock being

**Remote plant extends control of operator to provide better coordination of movements of 14 daily trains, light engines and switch engines into a station served by three railroads**

controlled from the 6th street tower. The new interlocking consists of one power crossover, two power switches, two hand-thrown switches electrically locked, and eight searchlight dwarf signals.

### Passenger Traffic of Three Railroads

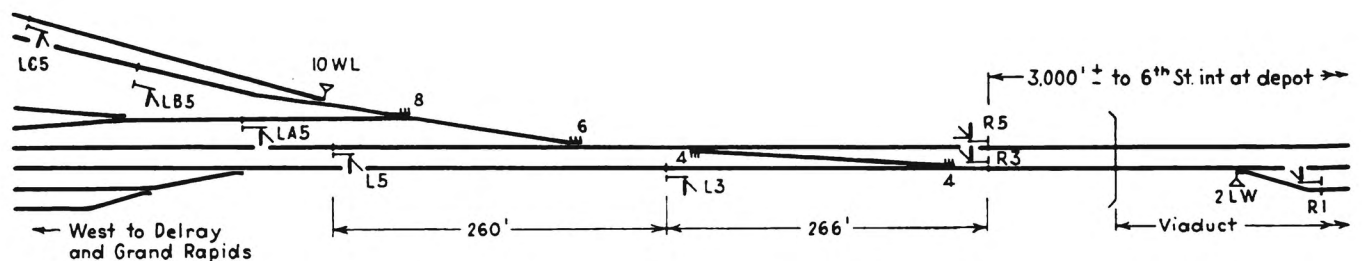
Traffic through the interlocking consists of passenger trains of the C&O, the Wabash, and the Pennsylvania, which serve Detroit. The PRR and the Wabash each have four scheduled passenger trains daily and the C&O has six. Also, numerous switching moves are made in and out of the depot, and occasionally mail and extra trains are run. Thus, total train movements, excluding switching movements, will run to 14 or more a day.

Servicing facilities for passenger locomotives are located at the west

end of the 15th street interlocking. The new interlocking in effect "extends the vision" of the operator so that he is able to line up routes more efficiently and quickly for passenger trains entering the terminal. The track diagram on the remote control interlocking machine shows the location of trains in and approaching the interlocking. The operator thus knows immediately when a train is approaching the elevation, and he can line up the route into the station so that the train can arrive without delay. The operator can line up a route so that the train, once it departs from the terminal, will not be unnecessarily delayed en route down the elevation.

### Control Machine

The control machine is the desk-panel type with tracks represented





**CABLE AT END OF VIADUCT** is terminated in junction box, and run underground to switches signals and instrument house



**SIGNAL CABLE** from control machine at depot runs aerially alongside viaduct to field locations

by white lines  $\frac{1}{4}$  in. wide. Below the track diagram are three-position signal levers, which normally stand in the center (vertical) position to control the signals to Stop. To clear a signal for traffic movement to the right the signal lever is turned 90 deg. to the right, and to clear the signal for traffic to the left, the signal lever is turned 90 deg. to the left. Green lights located in the center of the signal levers light when signals have been cleared. Two-position switch levers are located on the panel, below the signal levers. For switch normal, or crossover normal, the lever stands vertical and is turned 90 deg. to the right to reverse the switch. The control machine is equipped with approach section indication lamps and an annunciator bell to inform the operator when a train is in the approach to the interlocking.

### Signals and Switches

The signals in the interlocking are type SA searchlight dwarfs, which, with one exception, can display only two aspects, yellow or red. Signal R5 can display three aspects. Signals are mounted on precast concrete bases, with the exception of signal L5. This signal is mounted atop a 6-in. pipe mast 6 ft. high. The track over which this signal governs curves south and west of the signal. The field station bungalow is near the signal, so that by elevating the signal, the engineer of an approaching train is better able to view it.

The switches are equipped with roller bearings and are operated by Model 5C, 110-volt d.c. switch machines. The machines have self-contained master controllers and outboard shoe-type brakes. All switches are equipped with swivel-type front rods. The switch machines are mounted on dapped No. 1 and No. 2 ties, which obviates the necessity of providing offsets in the throw rod, lock rod and point detector rod.



**TIES** are dapped for switch machines. Turnouts are No. 12 with 22 ft points

Adjustable rail braces are used on seven ties: No. 0, No. 1, No. 2, No. 4, No. 6, No. 9 and No. 12. Rail used in the area is 115 lb. with No. 12 turnouts with 22 ft. points.

The unlock for the hand-throw switches is initiated by the interlocking control machine operator. After he gives permission for a train crew to use the switch, he turns the switch lever from the vertical to the right. Then a switch crewman removes the padlock and opens the door of the electric lock, which starts the time release mechanism which, after three minutes, releases the lock on the switch. After the switching crew is through using the switch, they relock it and notify the operator, who returns the switch lever on the control machine to the normal position.

Two field station bungalows were used, one at 6th street and the other at 15th street. The bungalow at 6th street houses the control relays and battery for the control machine. The bungalow at 15th street houses field relays and batteries for switch machines. Edison B6H storage battery supplies 110 volts d.c. for the switch machines. Exide Manchex 80 a.h. storage battery supplies 12 volts d.c. for controls.

Kerite multiple-conductor cable was used throughout. All cable is underground, except the cable running from 6th street to 15th street along the viaduct. The underground

cables on either end of the viaduct are terminated in Western Railroad Supply Co. junction boxes. These junction boxes on the ends of the viaduct are connected by two 19-conductor No. 14 wire cables, hung on steel cable hangers suspended from a stranded steel messenger wire, which is anchored at each end of the viaduct by an upended rail sunk 5 ft. into the ground in a concrete base.

All wiring in the bungalows is ended on solderless terminals made by Aircraft Marine Products Inc. At each switch machine, the underground cable is terminated in a Western Railroad Supply Co. junction box on the end of a 2 in. riser pipe. Wiring from the junction box runs through a 2 in. rubber hose into the switch machine. The flexible hose reduces the chances of breakage to the wiring due to vibration. Style DN-11 d.c. neutral relays were supplied by the Union Switch and Signal Division of Westinghouse Air Brake Company. Type K relays, as well as the control machine, signals, and other items of signal equipment were furnished by the General Railway Signal Company.

The project was planned and installed under the direction of M. F. Anderson, engineer communications and signals, Pere Marquette district, Chesapeake & Ohio. Railroad forces did the work.