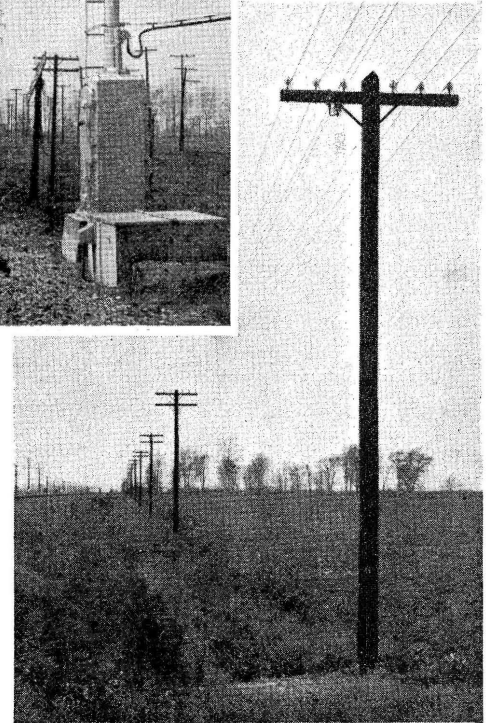


Left—Head block at north end at Stallings. Below—A new pole line was constructed for the signal circuits



Automatic Signals on Litchfield & Madison

THE Litchfield & Madison has installed color-light automatic block signals on 8.4 miles of single-track line between Glen Carbon, Ill., and A. & S. Crossing, the last mentioned point being about 8.2 miles from St. Louis, Mo. The Litchfield & Madison main line extends from Litchfield, Ill., to East St. Louis, 47.5 miles, being operated exclusively as a freight line serving the coal fields and making connections with various railroads in this territory, an important connection being that with the Chicago & North Western at Benld, Ill., thus completing a through freight route between St. Louis and Chicago.

The Chicago-St. Louis line of the

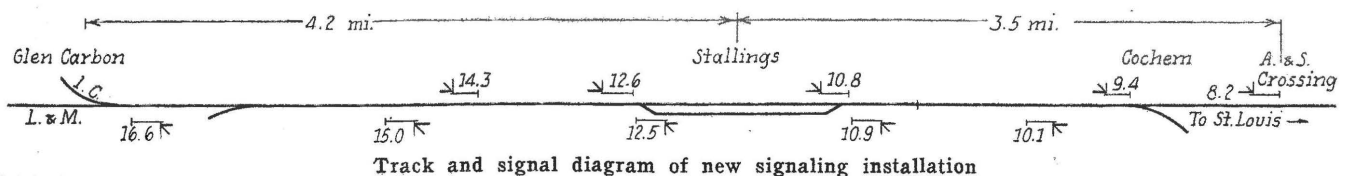
Illinois Central connects with the L. & M. main line at Glen Carbon and operates jointly over 8.4 miles of track between Glen Carbon and A. & S. Crossing, where the I. C. enters on other lines extending into St. Louis.

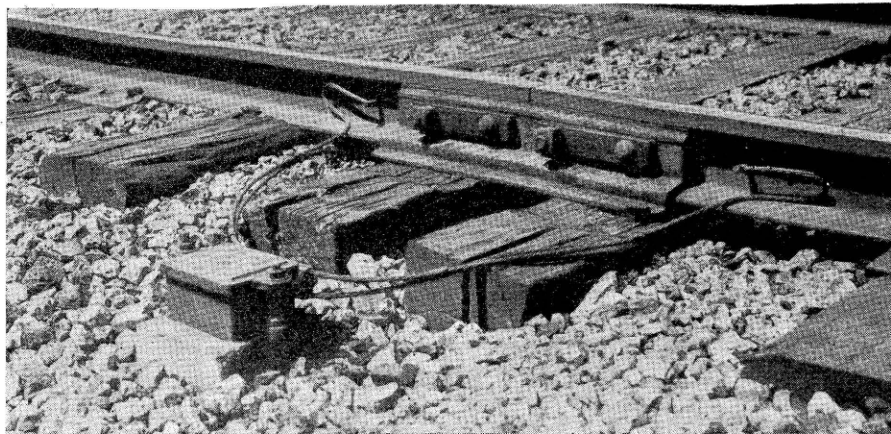
On this Glen Carbon to A. & S. Crossing section the L. & M. operates about 8 freight trains daily, and the I. C. operates 10 freight trains, 6 passenger trains and 2 local freight trains, making a total of 26 trains daily. As this territory lies in the Mississippi River bottoms, heavy fogs prevail for extended periods. Therefore, in view of the number of trains being handled, it was decided

that automatic block signaling should be provided, primarily as a safety measure.

The line between Glen Carbon and A. & S. Crossing is practically at level grade and the line is comparatively straight, with no curves which affect speed limits. A passing track 8,500 ft. long is located at Stallings, about four miles south of Glen Carbon. Operators are on duty each trick at the interlocking at Glen Carbon as well as at A. & S. Crossing. Trains are operated by time table and train orders.

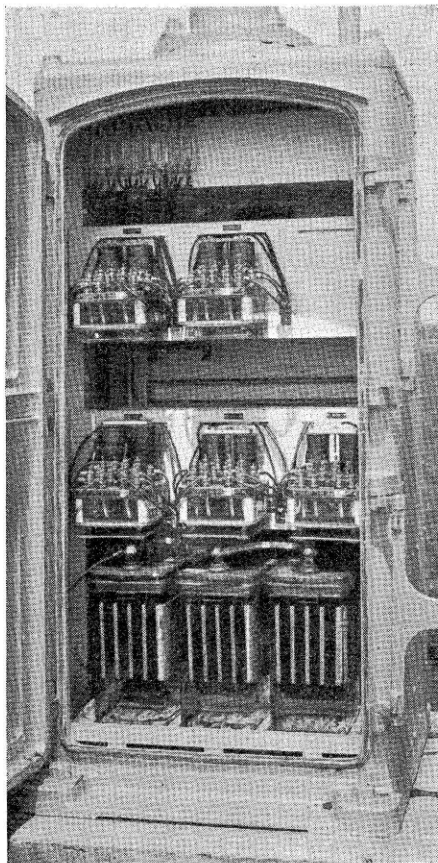
In addition to the improved safety accomplished by the automatic block signals, increased track capacity is





One parkway bootleg outlet located beyond the end of the ties serves for the two rail end connections

effected because, under the previous method of operation, an absolute block was maintained ahead and behind all passenger train movements for the 8.4 mile block, whereas with the auto-



At the signal locations the relays and batteries are housed in one large case

matic blocks, controlled on the absolute-permissive system, following train movements can be made safely.

Searchlight Signals Used

The automatic block signals are of the d-c. searchlight type, mounted on masts at the right of the track governed. The relays and rectifiers at each location are housed in sheet-

metal cases forming the base for the signal mast, on the pole line side. At single locations the battery also is housed in the case, however, at head-block locations the battery is housed in concrete boxes. The cases have a door on the track as well as on the field side, the relays being located on the track side and the transformers and rectifiers on the field side.

The incoming parkway cables are brought up through a hole in the concrete foundation and into the case, where the wires are terminated on porcelain based terminals on the top board. Flexible No. 14 wires extend from these terminals through slots to the relays. A special feature of these jumpers is the use of Thomas & Betts wedge-on terminals. The relays are of the shelf type, set on individual shelves with spring supports for the relays.

The a-c. floating system of power supply is used, including a 110-volt, single-phase power distribution line. At each signal or pair of signals a set of five cells of Exide DMGO-9 storage battery, charged by an RX-11 rectifier, is used to feed the line circuits and act as a stand-by for the signal lamps. Each track circuit is fed from one cell of DMGO-5 storage battery, charged by an RT-10 rectifier.

The track connections are made with single-conductor No. 9 Okosheath cable, using I. C. standard bolted-type bootleg outlets with stranded Copperweld cables extending to plugs in the rail, as shown in one of the illustrations. Two such cables connect to each rail end, one on the gage side and one on the field side. The same type of cables and bolted connections are used between the rails and switch circuit controllers, one U-5 controller being connected independently to each of the two switch points at each switch. These controllers are connected to shunt the track but not to break line circuits.

The circuits extending under the track between signals are in underground cable consisting of seven No. 14 AWG SD solid copper conductors with 5/64 in. wall Okonite insulation and single braid, taped into cable form, then served with one layer of jute, two steel tapes and one layer of saturated jute overall.

Although existing pole lines parallel this section of track, it was determined that it would be cheaper and more satisfactory to construct a new pole line for the signal power and line control circuits. This new line was built using 25-ft. creosoted pine poles, measuring not less than 6 in. at the top, the poles being set 132 ft. apart with slight variations to bring a pole opposite each signal, so as to make the line cable as short as possible. The line wires have weatherproof covering, No. 8 solid copper being used for the 110-volt power circuit and No. 12 copper alloy 30 per cent conductivity for the signal control circuits. Power is purchased at three points on the territory.

The major items of signaling material for this installation were furnished by the Union Switch & Signal Company. The pole line was constructed and the concrete foundations were made at a central point and set by forces of the Litchfield & Madison. The remainder of the construction was handled by signal department forces of the Illinois Central.

Alton Spring Switches

(Continued from page 394)

has a double filament, one rated at 5 watts and the emergency filament at 3.5 watts.

As will be noted in the track diagram, automatic block signals are so located as to serve also as distant signals, and in addition signals 251 and 256, provide switch protection for the industry spur track at Macoupin. All of the controlled signals, as well as the automatic signals, are equipped with electric lights.

The line control circuits originating at the office at Plainview, as well as the lamps in the illuminated track diagram, are energized by a set of 16 cells of Edison 1,000-a.h. primary battery. The signals and track circuits throughout the installation are likewise operated by primary battery.

The signals, relays, etc., on this installation were furnished by the General Railway Signal Company, and the spring switch, stand and locking arrangement by the Union Switch & Signal Company. The project was planned and installed by the signal department forces of the Alton.