

Spring-Derail for Drawbridge Protection

Simple arrangement installed on light-traffic line involves minimum of materials and permits elimination of two stops for each train

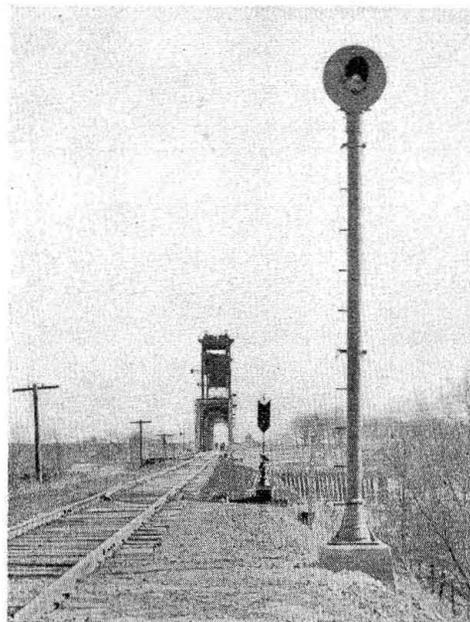
ON a single-track branch line of the Elgin, Joliet & Eastern near Divine, Ill., an unusual application of spring switch equipment has been installed in connection with a lift-type drawbridge over the Illinois waterway. This being a branch line, the usual drawbridge signal equipment, involving a considerable expenditure, was not justified nor desirable. At present only one train of approximately ten cars is operated in each direction daily. However, the lift span is required to permit boats to pass on the waterway and some form of signal protection is, therefore, necessary.

Before the installation of the new derails, a fixed stop sign and hand derails required a train to stop, operate the derails, proceed at the hand signal of the bridge operator, stop again to replace the derail, cross the bridge and repeat the derail operation again on the other side, in-



This derail may be trailed through like a spring switch

volving a total of four train stops. The situation was greatly improved with the new layout which consists of a single-unit fixed color-light signal with a red indication, and a splitpoint derail on both sides of the bridge. The derails are operated by switch stands and arranged for spring operation in the reverse direction. The operation of the trains is now as follows: The train is stopped at the fixed signal, the derail is hand thrown, at the hand signal of the bridge operator the train proceeds, stops to reset the derail, and after crossing the bridge it runs through the other derail without stopping. Thus



One of the fixed signals at Divine

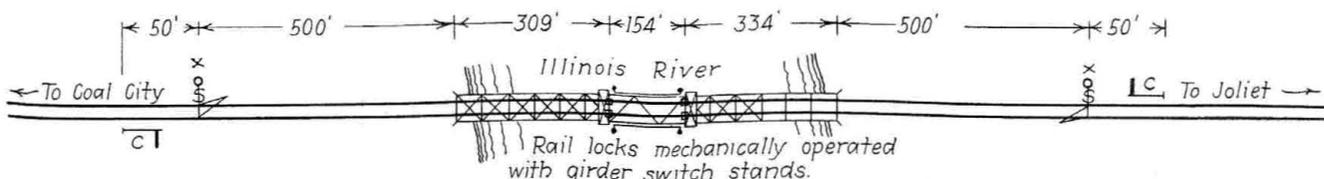
two, that is, half of the train stops at this point are eliminated.

Some additional protection is provided by a locking circuit that includes two switch circuit controllers, which are connected to a rail-end lock mechanism at the ends of the draw and the circuit controllers on the derails. If the rail-ends are locked or a derail is closed, the locking circuit opens the "UV" bridge-controlling relay circuit, preventing movement of the bridge. With the rail-ends locked, the bridge operator may give the "proceed" signal to the trainmen. On account of the small number of train movements, it is more economical to have the bridge normally in the raised position, it being lowered only for the passage of a train.

The two fixed signals are General Railway Signal Company Type-D units, each with a 10-volt, 18-watt lamp normally lighted by a-c. from the bridge-control room. The bridge operator turns the lights on only at night or on dark days. A standby battery circuit is provided at each signal with four Exide KXHS-11 storage cells, a power-off relay, and a copper-oxide rectifier for trickle charging.

A Pettibone-Mulliken spring-switch mechanism with a standard switch stand and a G. R. S. switch circuit controller is used on one derail, and a Ramapo-Ajax three-in-one spring switch unit, also with a circuit controller, is used for the other.

The signaling protection was designed and installed by the signal department forces of the Elgin, Joliet & Eastern.



Track and signal plan showing layout of drawbridge protection