

# Railway Signaling

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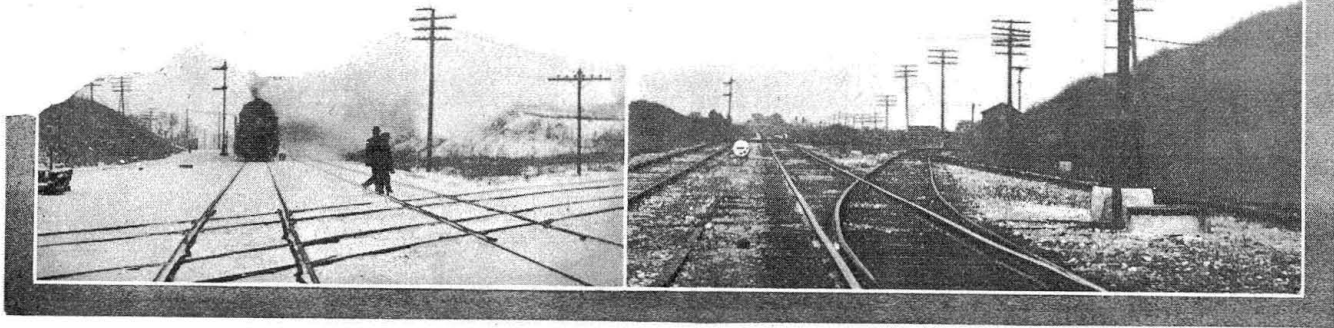
Number 3

## Automatic Interlockers Are Profitable Investments

*Twenty-two plants now in service on the Chicago, Milwaukee, St. Paul & Pacific—Annual savings effected range from 70 to over 100 per cent on the investment*

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*Two views looking west on C. M. St. P. & P. double track, at Delmar Junction, Ia.*

SINCE 1921, and particularly within the last three years, a number of installations of automatically-controlled signals for governing train movements over railroad grade crossings have been made. This new facility is now found at crossings not previously protected and at others in replacement of manually-controlled interlocking plants. Protection of this nature, which is now generally termed "automatic interlocking," was first described in an article in the April, 1921, issue of *Railway Signal Engineer*.

Probably a hundred or more automatic interlockings are now in operation in the United States. Inquiry develops that four western roads alone have 55 such installations in service, 24 of which have replaced manually-operated plants. Twenty-two automatic interlockings are now in service on the Chicago, Milwaukee, St. Paul & Pacific; five have been authorized or are under construction, and several additional installations are contemplated. Eight mechanical plants have been replaced by the new type, making it possible to take off a number of levermen, thereby effecting marked economies.

### Advantages of Automatic Interlocking

The use of automatic interlocking provides an economical means of eliminating the statutory stops for non-interlocked grade-crossings. This results in

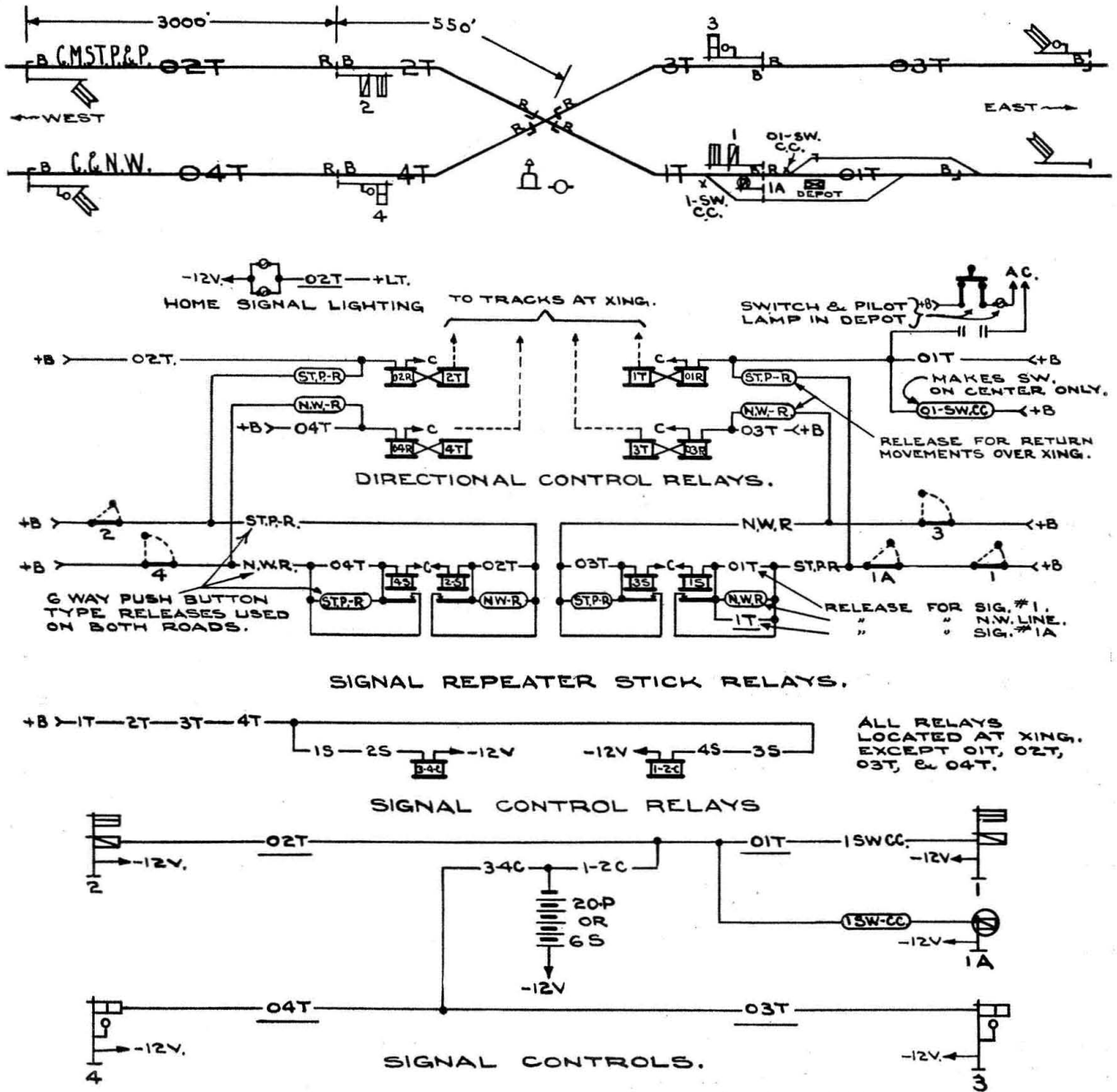
faster schedules and in substantial savings in train hours, fuel consumption, and wear and tear to equipment. In many cases where crossings are located on or near grades or at points where train starting conditions are unfavorable, the elimination of the stops may permit the handling of additional tonnage. Frequently the avoidance of crossing delays may mean that freight trains can make longer runs without stopping for coal or water. Also it is possible for dispatchers to make closer meets on single track, and it is easier for trains to make up lost time. Train operation generally is improved.

The automatic type of plant is much more flexible than the old standard interlocking at points where there are switches in close proximity to the crossing. With the automatic plant these switches are arranged for hand operation, whereas with the latter, they would have to be connected up and handled from the tower. In many cases, the interlocked switch retards the setting out or picking up of cars and creates an awkward switching arrangement. It, of course, is an advantage to have certain switches interlocked and this can in some cases be taken care of by remote control for those individual units, with automatic operation for the balance of the layout. The Great Northern has some electrically-operated switches that are lined up automatically by the approach of a train, or by trainmen operating a simple control device

located at some convenient point where a station stop is made.

At points where crossings are located near stations where operators are on duty all or a part of the time, it is often desirable to introduce an element of manual control into the automatic scheme. In this way it is possible to select train movements in accordance with their importance; to release the cross-

appeals to enginemen. It takes very little time to clear a route and this is particularly noticeable when two trains are approaching the crossing simultaneously. As soon as the rear end of the train which has obtained the route has passed out of the home signal limits, the other train receives its signal without any delay for the throwing of levers, as in the manually-operated plant. The elimination of the



Typical circuits for automatic interlocking for crossing of two single track lines

ing when switching movements are made; and to avoid unnecessary delay when trains have station work. By the use of call-on signals where there is a joint depot at the crossing, the transferring of passengers and baggage from connecting trains can be facilitated and a great deal of delay avoided. Under an arrangement of this kind, two trains can be moved up to the station at the same time, whereas, under the old type of plant equipped with derails, this would be impossible without involving considerable complication. The quickness of operation of the automatic plant

derail removes a hazard from the track as well as a piece of apparatus that is expensive to maintain. The installation of automatic interlocking at "stop" crossings promotes safety, as it is safer to govern trains by positive signal indications, which give information as to actual track conditions, than to depend on the observance of rule only, as is the case at the non-protected crossings.

### New System Has Limitations

Automatic interlocking has limitations, and, of course, can not be used where operators are required







