

Automatics

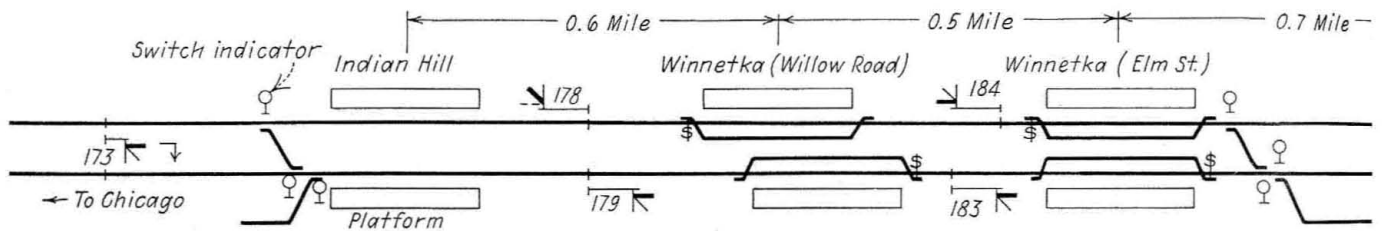
The signals had to be so located with reference to the catenary structures that there was not clearance for backgrounds

THE Chicago, North Shore & Milwaukee has installed automatic block signals on 3.5 miles of double track between Indian Hill, Ill., and Glencoe. This installation was made following the completion of a grade crossing

facilitate and increase the safety of all train movements, because of the increased speeds at which trains are now operating, and increased smoke and fog hazard.

The newly signaled territory in-

the platforms accordingly. The result is that the platforms will not clear freight cars or service cars of the railroad. In order to move such cars past the station platforms, a detour track in the form of a gauntlet was con-



Track and signal plan of

elimination project which involved the depression of 2.52 miles and the elevation of 1 mile of the Shore Line Route to eliminate 11 grade crossings. Previously, trains were operated at restricted speed throughout this territory, because of the numerous street crossings. The new three-indication color-light signaling was installed to

clude six passenger stations, Indian Hill, Willow Road, Elm Street, Eldorado Avenue, Hubbard Woods and Glencoe, all of which are the high-platform type, except for Indian Hill. The passenger cars are of a standard width of 8 ft. 10 in., and the platforms are constructed 4 ft. 8 in. from the center line of track to the edge of

structured on each main track at each station, the rails of the gauntlet being 12 in. farther from the platform than the corresponding main line rails. The switch at the entering end of each gauntlet track is operated by a hand-throw stand, and the leaving end by a spring switch. If the stations were built to permit both passenger and

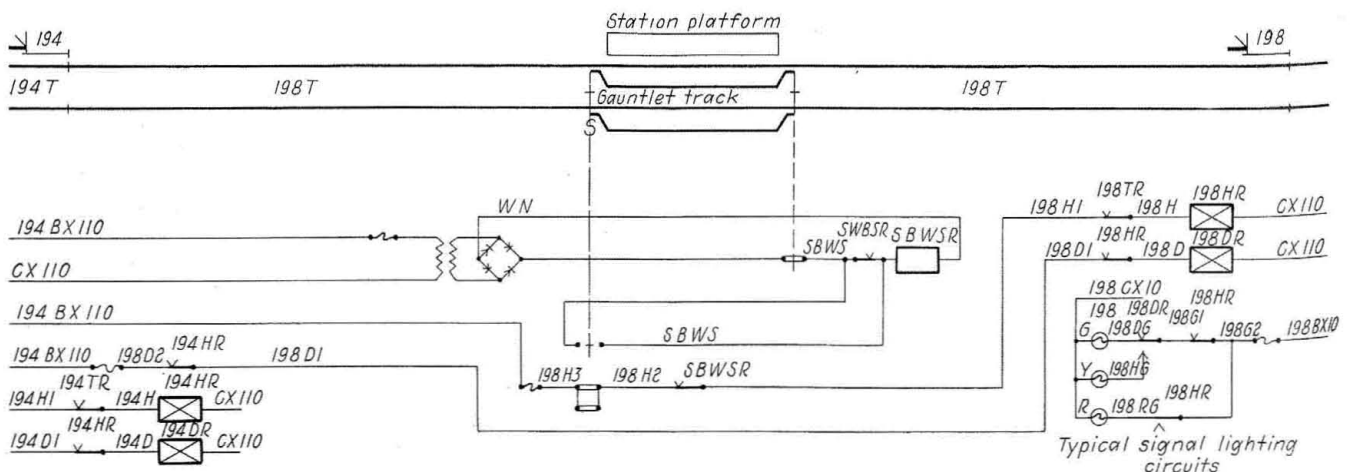


Diagram of special circuits

Typical signal lighting circuits

Installed on North Shore

Special gauntlet track signal control circuits are a feature of recent installation on new double-track electrified line

freight trains to clear the platforms, the gap over which passengers would have to step to board trains would be a hazard to public safety.

Color-Light Signals

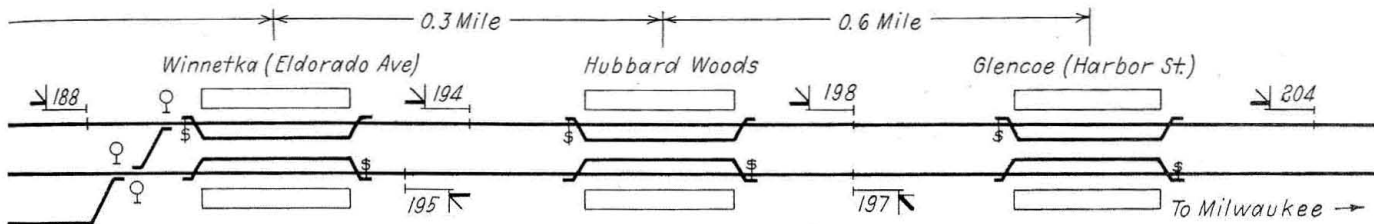
The signals display three aspects, with two exceptions, that of the last northbound and southbound signals, No. 197 and 178 respectively, which only display two indications, red and yellow. The latter aspect serves as an indication that unsignaled territory is being entered. The tracks are electrified with an overhead catenary system, mounted on horizontal suspension trusses. The vertical catenary

a slow time-release feature are installed at the siding switch and crossover at Indian Hill, to set signals in advance and give the same measure of protection afforded by other block signals, since the signal control circuits do not extend far enough to allow the normal Approach indication.

Signal Controls

The new signals are controlled by 110-volt, a-c. neutral line circuits on the normal-clear and normally-lighted scheme. A special stick relay circuit, at each of the ten gauntlet track locations, is provided to assure the proper functioning of the signals. Because

5-amp. fuse, on wire 198H3, through two normal position contacts, in multiple, of the spring switch circuit controller, at the trailing end of the gauntlet, on wire 198H2, through a front contact of the southbound switch stick relay SBWSR, energized, on wire 198H1, through a front contact of the track relay 198TR and wire 198H. Similarly, the distant relay 198DR is energized by negative power CX110 at signal 198, and by positive power 194BX110, through a 5-amp. fuse, on wire 198D2, through a front contact of the home relay 194HR, energized, on wire 198D1, through a front contact of the home relay 198HR, and on wire 198D. There-



the new signaling territory

columns which support the suspension trusses are located 9 ft. from the center line of the nearest track. The signals are mounted on masts 8 ft. 6 in. from the center line of the nearest track. Unlike former color-light signal installations on the North Shore, no backgrounds are provided on these signals. If the signals were further to the side to permit the use of backgrounds, the columns and bridge piers would obstruct the view of the signals.

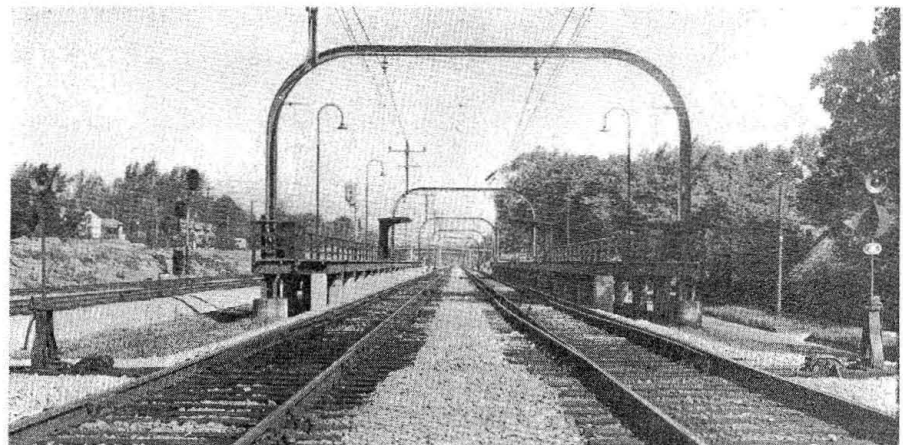
Each main line hand-throw switch is equipped with a push button, light-type indicator. Switch indicators with

of the possibility of the accumulation of rust on the running surface of the rails of these gauntlet tracks, due to infrequent use, this provision was made in the event of the loss of shunt during the passage of equipment over the gauntlet rails. Referring to the typical circuit diagram, the home relay 198HR is energized by negative power CX110 at signal 198, and by positive power 194BX110, through a

fore, under these conditions, all signals involved are now displaying the Clear or green aspect.

Let it be assumed that a freight train passes signal 198 and enters the track section 198T. This causes the track relay 198TR to drop, thus dropping the home relay 198HR, which in turn drops the distant relay 198DR, causing signal 198 to display red and the next signal behind to display yellow.

Gauntlet tracks extend through the limits of the station platforms to provide full clearance for freight cars



low when the entire train has passed signal 198. The freight train will have to stop a short distance in approach to the station, and a trainman will operate the hand switch to permit the train to enter the gauntlet track. The stick relay SBWSR is energized by negative power on wire WN and positive power through a normal position contact of the hand-throw switch circuit controller, on wire SBWS1, and through a front contact of the same relay. When the hand-throw switch is reversed, the normal position contact is opened, thus releasing the stick relay, which keeps the positive power feed of the home relay 198HR open. Therefore, whether or not the track circuit on the gauntlet track is shunted, signal 198 is sure to remain at the most restrictive indication. The stick relay will not pick up again until the hand switch at the entering end

to the SBWSR relay, thus picking it up again and causing the positive control line to be closed again at that point through a front contact. However, signal 198 does not go to yellow until the train has cleared section 198T, picking up the 198TR and 198HR relays. When the train enters section 194T, passes signal 194, and clears section 198T, the distant relay 198DR does not pick up, despite the fact that the 198HR relay has picked up, because with the train in section 194T, the track relay 194TR and home relay 194HR are down, the positive line control circuit for the 198DR relay being broken through a front contact of the 194HR relay. Therefore, signal 194 is displaying red, 198 yellow, and the next signal in approach thereto, green. If no provisions were made in the control circuits at the gauntlet track locations,

lar North Shore signal forces under the direction of J. S. Hyatt, chief engineer; F. J. Kramer, engineer maintenance of way; W. G. Fitzgerald, signal supervisor; and H. G. Mason, assistant engineer.

Head-On Collision Due to Train-Order Operation

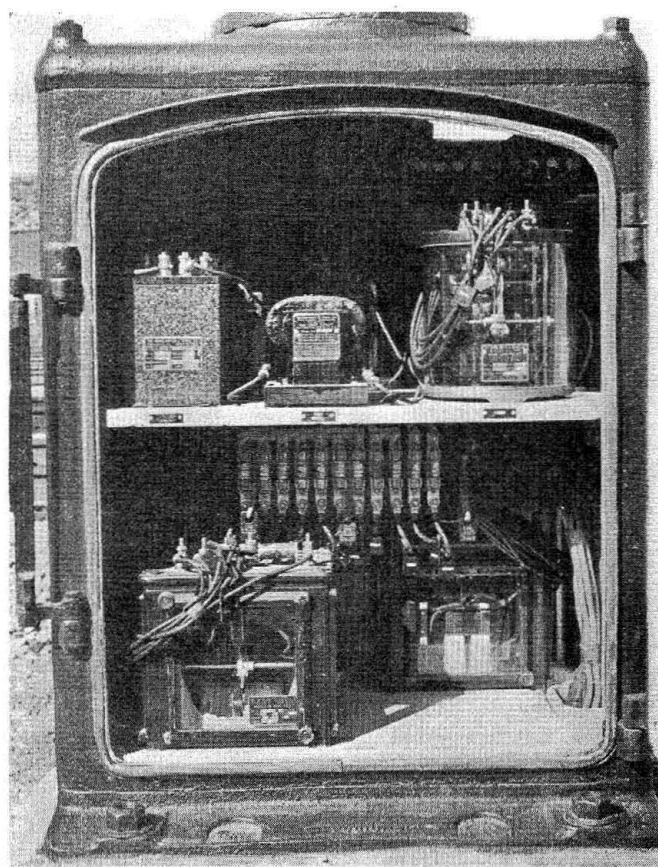
ON MARCH 10, a head-on collision occurred between two freight trains near Delaware, Iowa, on the Dubuque District of the Illinois Central. The following information concerning this accident was abstracted from a report of the Interstate Commerce Commission, Bureau of Safety.

In the vicinity of the point of accident, this is a single-track line over which trains are operated by timetable and train orders, no block system being in use. A train order, which had been delivered to the members of the crews of both trains, read as follows: "Third 72 Eng 2929 meet No. 73 Eng 2982 at Delaware."

According to the evidence, the crew of No. 73 understood that their train was required to enter the east switch of the siding at Delaware for Third 72. When No. 73 was about 4,000 ft. east of this switch and while it was moving about 30 m.p.h., the engineer observed an eastbound train approaching at a point east of the east siding switch. The engineer applied the brakes in emergency, and the train stopped at a point 3,076 ft. east of the switch, and immediately afterward it was struck by Third 72.

The crews of both trains held copies of a train order which provided that these trains would meet at Delaware and that No. 73 would enter the siding. According to the statements of the engineer and the fireman of Third 72, the order was clear and legible; however, the fireman, who read the order first, because the engineer was occupied with the operation of the engine when they received the orders, read the meeting point aloud as Dyersville instead of Delaware, and then repeated the meeting point as Dyersville. The fireman could not explain the reason for his failure to read the order correctly. Later, when the engineer was reading the meet order, he observed that "D" was the first letter in the name of the meeting point and assumed that the word was Dyersville, because that name had been impressed upon his mind when the fireman read the order aloud. The engineer did not give the name of the meeting point

(Continued on page 372)



The relays, transformers and other apparatus in case

of the gauntlet has been restored to the normal position, and the train has passed through the spring switch at the opposite end and onto the main line again. When the spring switch is sprung to the reverse position, positive power is taken through a normal position controller contact of the hand switch circuit controller, providing this switch has been restored, on wire SBWS1, through a circuit controller contact which is only closed when the spring switch is between the normal and reverse positions, on wire SBWS,

and a train lost a shunt while on the rusty gauntlet rails, the signals would not be properly controlled.

The signal line control circuits throughout this installation are in Kerite mummy finish underground cable, which was laid in a ditch, on the west side of the right of way.

The circuits for this installation were designed by the Union Switch & Signal Company, the majority of material being supplied by this company. The work was planned and the equipment was installed by the regu-