

A special automatic pre-timing enters into the control of the gates at 50th street, as shown in Fig. 3. When a westbound freight train or transfer cut makes a movement out of the west end of Uceta yard, the length of time pre-timing circuit RA1 is occupied, as determined by time element relays, will cause the gates to go down when section 7T is occupied (for a fast movement) or not until A7T is occupied (for a slow movement) thereby preventing the gates to be down unnecessarily long. With this arrangement, unnecessary operation of the gates is prevented when a slow reverse switching movement is made from the yard which requires an engine to pull out so that section 7T is occupied.

A 110-volt a.c. power distribution circuit extends through the territory. Normally the lamps in the flashing-light signals as well as the gate lamps are fed from a low-voltage transformer, but if the a.c. power is cut off, a power-off relay operates to switch the lamp feed to a set of nine cells of storage battery which normally is used only to feed control relays. The d.c. motors on the two gates at each crossing are fed from a set of ten cells of storage battery. The storage batteries are of the Edison B6H type rated at 120 a.h. on an 8-hr. discharge rate.

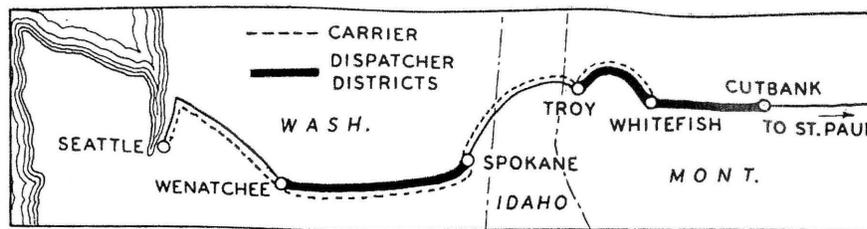
Each track circuit is fed from two cells of 500 a.h. Edison primary battery, across which is connected an automatic rectifier that takes all but about 20 m.a. of the discharge, this 20 m.a. being taken from the battery.

The lamps on the gate arms are rated at 10 volts, 18 watts, those in the flashing-light units are rated at 10 volts, 10 watts.

### Test Controllers

At each crossing a T. Geo. Stiles test controller is mounted on the case. Periodically the maintainer pulls the handle of this controller, which sets the signals in operation and lowers the gates. He then observes that all the lamps are in operation. If he neglects to push the controller to normal position, it will be so pushed when he closes the door of the case.

The project was planned with the cooperation of representatives of the State of Florida, the City of Tampa and the railroad. The engineering and construction were handled by the signal department forces of the ACL under the jurisdiction of J. S. Webb, chief engineer, communication and signaling.



## When Dispatchers Move . . .

# Carrier Saves Wire Pair

IN A RECENT CONSOLIDATION of operating divisions on the Great Northern, the mainline from Spokane east to Cutbank is now known as the Kalispell division with headquarters at Spokane. The mainline west of Spokane is part of the Cascade division with headquarters at Seattle, Wash. As part of this consolidation, dispatchers at Spokane which worked the mainline from there west to Wenatchee were transferred to Seattle. Dispatchers now at Spokane are working the mainline from Whitefish east to Cutbank and Whitefish west to Troy, this dispatching formerly being handled by men at Whitefish.

As a result of these moves, the GN was faced with the problem of providing voice circuits from Seattle to the Spokane-Wenatchee physical dispatcher's circuit, and from Spokane to Whitefish to pick up the physical dispatching circuits there. Voice circuits could be obtained by either of two methods: (1) string a wire pair, or (2) install carrier channels. The latter was chosen because it was more economical than stringing a wire pair.

### Ringling and Selection Unmoved

To connect the Spokane-Wenatchee physical circuit to the dispatcher at Seattle, one channel of a Rycom CFD-5 carrier system was used with terminal equipment at Seattle and Spokane. This carrier was installed on an existing through physical circuit (transposed for 3 kc) which includes five voice repeaters. Terminating the carrier at Spokane, rather than stopping at Wenatchee eliminated the need for moving the dispatcher's selector and ringing equipment from Spokane to Wenatchee.

A feature of this CFD-5 carrier

system is that it has a normally suppressed carrier, to provide ringing, the  $3\frac{1}{2}$  cycle ringing was inserted between existing channels, west to east, using a frequency of 8.8 kc. This carrier equipment was furnished by Railway Communications Inc.

### Two Voice Channels to Whitefish

Because two dispatchers at Spokane work the mainline east and west out of Whitefish, two voice circuits were required to pick up the physical circuits at Whitefish. For this installation, the GN used two channels of the Lenkurt Electric Co. type 32E carrier. The carrier terminal equipment was installed at Spokane and Whitefish, with two carrier repeaters being required for this 273-mile haul. This too, is installed on existing physical circuits transposed for 3 kc. The type 32E has a normally suppressed carrier. However, the GN transmits the carriers on the two dispatchers' channels to provide  $3\frac{1}{2}$  cycle ringing. Also, the dispatchers' selector and ringing equipment was left at Whitefish.

According to C. H. Wesman, assistant superintendent of communications, inside plant, "by using carrier for this installation where dispatchers were moved, we saved a considerable amount of money when required to provide additional voice circuits. In fact, this is an economical and time saving method of providing additional voice circuits." No outside work was done in connection with this project, such as stringing wire or transposing existing line wires.

Mr. Wesman engineered this installation, which was under the jurisdiction of A. H. Fox, superintendent of communications.