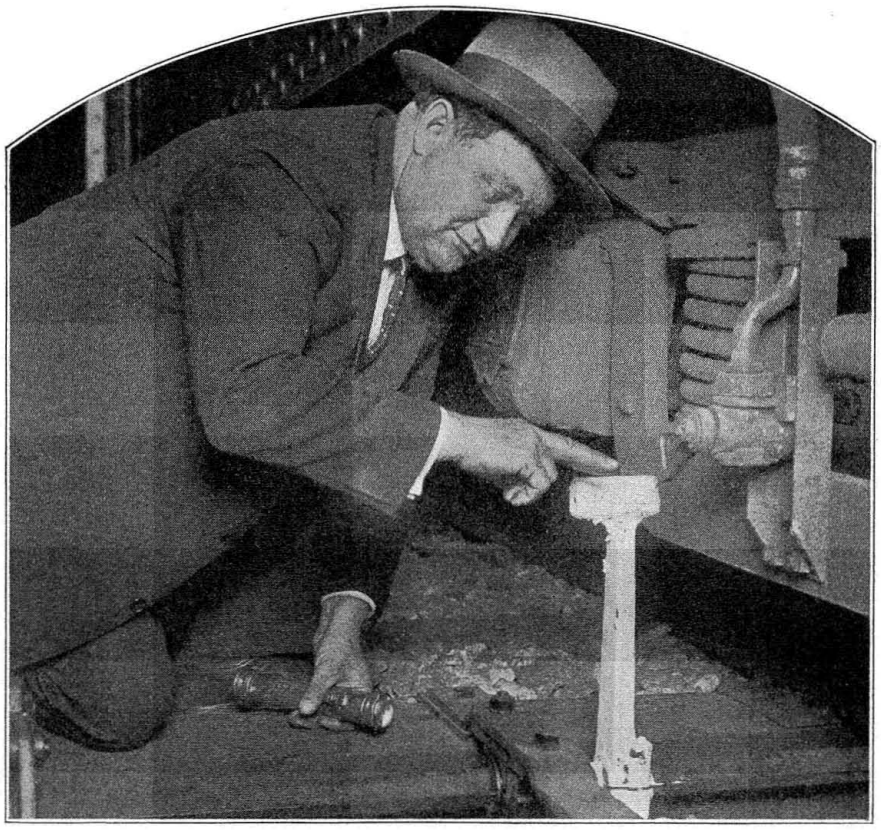
Railway Signaling

Vol. 21 December, 1928 Number 12

Pacific Electric Protects Subway Traffic With Signals and Train Stops

Solenoid-operated train stops are worked direct from copper oxide rectifiers—Speed restrictions enforced with the aid of train stops



Sam Florence, signal engineer, pointing out the trip cock lever which has just been deflected by the roadside stop arm

A UNIQUE installation of automatic signaling and train stops has been installed in the Pacific Electric, Hollywood-Glendale subway, which adjoins the new Hill street terminal in Los Angeles, Cal. Two noteworthy features of this installation are, the enforced speed restrictions maintained by the automatic train stop installations at a number of the signals, and variations in signal overlaps to obtain safe braking distances. This double-track subway, which is a little more than a mile long handles, a very dense traffic during the morning and evening rush hours, a recent survey showing a total of 47 trains inbound and outbound in a period of one hour.

In order to make the description of these facilities as clear as possible, the automatic block signaling will first be described. When the Hollywood-Glendale subway was completed on December 1, 1925, the Pacific Electric installed color-light automatic block signals to protect trains on the double-track line. Fourteen signals were installed, seven for each direction of traffic, and spaced a maximum distance of 800 ft. The signal controls were originally arranged in such a way that a red light was displayed as long as a train was in the first block; a yellow light displayed with the first block unoccupied, and a train in either the second or third block; and a green light, with three blocks unoccupied. It will be noted that the blocks at either end of the subway are considerably shorter than those further in the tunnel. Train speeds are much slower in these end blocks.

Because of the 600-volt d-c. propulsion current, all of the signaling, including the track circuits, is alternating current type. The track circuits are double-rail return with impedance bonds to allow the return propulsion current to pass through the rails of the adjoining track sections. These impedance bonds prevent the alternating current, employed for signal controls, from passing from one track section to the next track section and improperly energizing the track relays. The latter are of the double-element, two-position vane type. The line control relays, necessary for the green and yellow signal lights, are of the single-element vane type. A three-phase 2,200-volt, 50-cycle power line is carried in lead-covered cable through a duct line in the subway wall. The same power line furnishes energy for all electrical equipment in the Hill street station and subway. Another lead-covered cable is employed for the 110-volt line relay control circuits, and this cable is also carried in a duct line in the wall. At three different points in the subway, 5-kw. G.E. transformers