

# Editorial Comment

## Special Controls for Crossing Signals

ON ACCOUNT of the increase in the volume of highway traffic, the planning for construction or reconstruction of highway-railroad crossing protection may well include consideration of special circuits to minimize unnecessary delays to vehicle drivers, owing to the signals indicating the approach of a train which has stopped or is being operated at slow speed after entering a long approach section, which is based on very high train speeds. Granting that such special controls are not justified economically, nevertheless, certain intangible benefits should be considered. Good will of the public is one item. Most automobile drivers get as "mad as a wet hen," if they are stopped at a railroad crossing for several minutes waiting for a train that does not approach within their range of vision. Having waited about so long, some of these drivers may disregard the warning and take chances in getting over the crossing. If they are killed, the railroad should not be held liable, but nevertheless, such occurrences point to the need for special circuits that may aid in protecting such persons from their own foolish impatience.

The worst offenders, so far as unnecessary operation of signals is concerned, are those installations where trains stop within the approach control limits at water columns, coal chutes or at passenger stations. Under such circumstances, some roads have installed automatic cut-outs and re-starts, which stop the operation of the signals after an approaching train occupies a track circuit for a certain time, and then re-starts the operation when the train again proceeds toward the crossing.

Other offenders are those installations where some tracks are used by high-speed through passenger trains as well as by slower speed suburban passenger trains that stop regularly at certain suburban stations. Here, if the automatic control sections are arranged so that the signals at certain crossings will operate at least 20 seconds before arrival of a fast train, the same signals may operate several minutes for a suburban train which makes a station stop in the overall approach. Under such circumstances, the controls can be arranged so that the trains which are approaching at reduced speed preparing to stop at a station will not start the operation of the crossing protection. This result is accomplished by a speed-measuring section in the approach to the overall approach control section so that a longer control section is effective for a high-speed train than for one at a slower speed.

Consideration of a somewhat different nature applies at locations out in the country. For example, if the approach section is lengthened to provide at least 25 seconds warn-

ing operation of crossing signals before the arrival of a train operating at 100 m.p.h., then the warning time for a train at 50 m.p.h. on that same approach section is 50 seconds, and trains at slower speeds would increase the time in proportion. In general, if the time does not exceed a minute, and the drivers who have stopped can see the train approaching, they do not object to waiting the extra seconds. However, if the differences in train speeds are too great, so that the delays to highway traffic are objectionable, a scheme can be installed to provide the same warning time for trains operating at any speeds between certain limits, as, for example, between 30 m.p.h. and 90 m.p.h. Such a scheme, while entirely feasible, requires several extra track circuits as well as timing devices which increase the installation cost and maintenance expense beyond the limits that can be justified except to meet, unusual circumstances.

In some highway crossing projects the switches leading to passing sidings are so located that trains pulling in or out of these sidings cause the signals to operate unnecessarily, and in some cases falsely if the train is headed away from the crossing or will not move to the crossing. Special circuits through controllers on the switches can be used to eliminate or at least minimize the unnecessary operation of the signals.

### For Special Switching

In towns where the local freight trains leave cars standing for some time on the main track within control limits, some form of auxiliary manual control, operated by a member of the train crew, may be required to eliminate unnecessary operation of the signals for extended periods when no train movement over the crossing is imminent.

A matter of importance at some locations is to provide for automatic operation of the protection while a train on a siding is occupying a special short track circuit on the siding extending over the crossing and perhaps a rail length beyond in each direction. This operation of the signals may prevent accidents caused by automobiles being driven into the side of a train at night when thoughtless persons are driving at a speed which is faster than permits stopping within range of vision, or perhaps the automobile lamps are directed low so that they shine under the freight cars.

Where crossings are located in the home signal limits of interlockings, some railroads have arranged the controls so that the crossing protection will not start operation by track circuit control unless an interlocking signal has been cleared for a route to permit a train to pass over the highway crossing. This allows trains to make switching moves or to be brought up to the home signal and stopped without causing unnecessary operation of the crossing protection.

Explanation of some of the above mentioned schemes, as well as many others, have been published from time to time during the last 26 years in *Railway Signaling*. The point of importance for consideration at this time is that special cutouts and re-starts may well be considered, where needed, when planning new projects or reconstructing existing installations. The need is determined by whether highway traffic will be delayed to the extent that the protection may be disregarded or may create demands for grade separation.