

Editorial Comment

Secure New Ordinances for Changes in Crossing Protection

IN years gone by, highway crossing protection was provided by the railroads in the form of flagmen or gates, as required by local city authorities or state railroad commissions. With the increase in automobile traffic on the streets and highways during the last few years, the railroads have voluntarily approached the city authorities in many towns and cities for permission to replace these inadequate and antiquated methods of crossing protection with more modern and effective equipment. In many such cases, flagmen and manually-operated gates have been replaced by signals controlled either automatically or manually from a central point. Ordinarily there are included in such a change several additional crossings at which no protection was afforded before. An additional point in favor of the new signals is the fact that protection is afforded during the full 24 hours, instead of only during certain periods, as was customary with the flagmen or manual gates.

During the last few years a number of articles have been published in *Railway Signaling*, describing changes made in crossing protection, as for example at DeKalb, Ill. and Elgin, on the Chicago & North Western; at Cedar Rapids, Iowa, on the Rock Island; at Beaumont, Tex., on the Santa Fe; at Wabash, Ind., on the Wabash; at St. Louis, Mo., on the Manufacturers' Railway; and at Minneapolis, Minn., on the Milwaukee. These installations represent a wide diversity of equipment and local conditions. In each case the railroad took the leading part in explaining to the city or state authorities the desirability of providing more modern and effective crossing protection. After the installations were in service, the general public as users of the streets, the city authorities and the railroad officers have been convinced that the new equipment was not only satisfactory, but actually provided greater safety for the full 24 hours.

All of this evidence should be taken into consideration when reading the item "Flagmen at Memphis Crossings," published in the news pages of this issue. This item abstracts the decision of the Supreme Court of the United States requiring the Nashville, Chattanooga & St. Louis to pay damages for an accident in the city of Memphis, Tenn., where a train struck an automobile, killing the driver and injuring three other occupants of the car. This crossing was protected by an automatic flashing-light signal and while proof was presented that the occupants of the automobile knew that the railway did not maintain a human flagman at this crossing they were awarded damages, the decision being based on the validity of a city ordinance passed in 1880, requiring all railroads in Memphis to maintain a flagman waving a flag in the daytime and a red lighted lantern at night at grade crossings to give warning of approaching trains. This old ordinance had not been enforced and, according to the best information, no flagman had ever been maintained at the crossing in question, while records show that for at least eleven years no flagman had been employed. The railroad had voluntarily installed automatic flashing-light signals, not only at this crossing but at other crossings in the city, and the city authorities had not only acquiesced, but had encouraged the use of these electrical devices, and in a

conference unanimously approved this type of signal as affording better protection than a human flagman.

The railway admitted that the ordinance was valid when passed, because at that time human flagmen constituted the best known method of protection. However, it contended that in view of changed conditions, due to inventive genius, mechanical flagmen furnished the public greater protection, at less cost, than human flagmen. The contention, therefore, was that as the city authorities, which passed the ordinance, had never weighed the comparative worth of the two forms of protection, to require the continuation of a wholly obsolete form of protection lacked due process of law. The Supreme Court of the United States held that the court could not find that the form of protection (human flagman) required by the Memphis ordinance was, in the light of modern inventions, so wholly useless and obsolete as to say with absolute certainty that its enforcement lacked due process of law.

There is nothing in this decision to the effect that flagmen cannot be replaced by automatic signals, and the case need not therefore, retard railroads and local authorities in their efforts to provide better crossing protection, but it should emphasize the fact that before installations of modern signals are started local ordinances should be revised to comply with these new conditions.

Simplification of Interlocking Permits Economical Installations

THERE are many track layouts, junctions and crossings at which interlocking facilities have never been provided because of the excessive cost; and at which the major portion of the expenditure would be required for apparatus to connect and protect switches which are used infrequently. Typical of such a condition is a crossing of one road with a heavy freight and passenger traffic with another road which operates only a few light trains. As the crossing is at the bottom of ruling grades in both directions on the heavy traffic road, the stopping of trains at the crossing was the controlling factor in limiting the tonnage of trains. Regardless of this fact, the second road was unwilling to pay its share of the cost of a complete interlocking on account of the expense of including infrequently used connecting track and industry track switches.

The problem was solved by installing a signal-interlocking, including signals, but without derails or connections to switches. As operators are required at this point for the handling of trains, it was decided to let them control the signals with desk levers, in order to give preference to tonnage trains, which feature could not have been effected if an automatic interlocking arrangement had been used. Switch circuit controllers, connected to the switch points, provide the same protection as is afforded in automatic block signal territory.

At a crossing of single-track lines of two other roads, a mechanical plant, which had been in service for years, included passing track and connecting track switches, as well as main-line derails. One road handled main-line traffic, while the second had

a heavy branch line traffic. It was decided here that an automatic interlocking, including the control of the signals but leaving the switches to be thrown by hand, would not only be adequate, but would reduce the cost of operation about \$5,000 annually by eliminating the levermen.

This idea of adapting interlocking installations to the requirements of train operation in each individual case opens up a great field for the construction of plants at crossings, where the expense for more extensive plants might not be justified. A new study of the operating conditions at many points might well be made with this idea in mind.

The Purchasing and Stores Departments Can Be an Aid or a Hinderance

DURING an official inspection of a signal installation placed in service recently, the chief engineer of the road stated that "one of the factors that contributed to the completion of the construction program on schedule was the co-operation of the purchasing and stores department." On further questioning, he explained that the engineering department specified what they wanted, the purchasing agent proceeded to secure the materials without delay, and the storekeeper saw to it that the equipment was delivered on time, according to a schedule outlined by the construction forces.

This sounds very simple, but in far too many cases the signal construction forces receive the paint before the concrete materials. Loss of time caused by delayed delivery of materials increases the cost of construction needlessly, but the greatest exasperation is caused by receiving an entirely different class of equipment than was specified on the requisition.

Where such troubles are prevalent, the first move for the signal department is to check up on its own part of the work to see that plans are complete, and requisitions for all materials have been properly made and forwarded to the purchasing department in plenty of time. The second idea, brought out by the chief engineer mentioned previously, can then be given consideration i. e., "the purchasing agent secured it without delay." A signal engineer should be in a position to know what is needed for each job, and on the majority of roads he enjoys the confidence of his superior officers to the end that there will be no haggling or brow-beating on the part of the purchasing department to force him to take any equipment or material other than what he specifies.

On a certain road where a new signal engineer was appointed a few years ago, the purchasing agent and stores officers had long held sway on account of a record which they maintain showing that each year they have purchased certain equipment cheaper, and the total saving is held forth as their personal accomplishment. In the regular procedure, every requisition for materials ordered is eventually, in the course of the argument, signed by the head of the using department. Therefore, in years to come, if any criticism of the material arises, or any accident occurs as a result of using an inferior device, the ranking officer of that department, and not the purchasing officer, will be held responsible.

This is, of course, a classic example of where the purchasing officer is anything but a "great help" to the signal department, and the same condition, to a certain extent, exists on other roads. This attitude may be the result of circumstances that have influ-

enced the purchasing officer in his training, and the situation may in some cases be clarified by the signal engineer explaining his side of the problem. If results are not obtained by co-operation, the signal officer should not calmly sidestep his duty, but should carry his side of the case to the proper executive.

Signal and interlocking apparatus is provided to promote safety and facilitate train movement. Any concession in the way of inferior quality of materials or equipment may result in hazards and an increase in the number of unnecessary train delays as well as an increase in the cost of maintenance and operation. The signal engineer's responsibility, therefore, does not end with specifying what he knows to be best fitted for a certain requirement, but he must also see that his specifications are fulfilled in spite of the desires of over enthusiastic purchasing officers. In the majority of cases, the signal engineer who puts up a stiff fight not only gets the equipment needed, but also gains the respect and confidence of his executives, including the purchasing officer.

Letters to the Editor

Simplification of Apparatus Will Expand Usefulness of Signaling

Cleveland, Ohio.

TO THE EDITOR:

Reference is made in your editorial on page 69 of the February, 1929, issue to the viewpoint of "more conservative men" in connection with new developments. In my opinion this subject is important enough to warrant considerable discussion. As a general proposition, the purpose behind all simplification is progress without sacrificing safety. By progress we mean the widening of the scope and utility of signal apparatus. Under present circumstances, interlocking has grown into such complications that it is limiting its own usefulness, particularly from the standpoint of cost and engineering involved. The matter of safety has probably been overdone. For years we talked about nothing but safety in connection with signals, and made little progress, but we made plenty of progress when we began to talk about the utility of signals. Safety can be taken for granted as a general proposition as it is inherent with signaling systems.

It is the utility and economy, through the saving of train time, and the expedition of train movement which give us the greatest opportunity of selling signals to our railroads. We are only beginning to find it out. One excellent way to widen the application of signaling and signal apparatus is to reduce the cost. This is sure to do it. About the only way to reduce the cost and still have wages go up is to increase production. In order to increase production we must widen the demand for such equipment. When it is considered that the price of one electric switch machine is greater than the price of one Ford automobile an example is presented of what production can do to reduce the cost.

A fair sample of complication to the "nth degree" is the present day modern electric interlocking machine. Of necessity the cost is in proportion to the complication. The manufacturer is confronted with the problem of having scarcely two machines alike. This is everything but a production proposition, and necessarily the cost is in conformity therewith. Is there any real reason