



Highway Crossing Protection in Theory and Practice

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A NUMBER of investigations have recently been made to ascertain the care used by travelers in passing over railroad crossings. One made in St. Louis for a period of 48 hr. showed that of 1286 pedestrians, only one stopped and looked in both directions before proceeding over the crossing; two persons looked in both directions but did not stop; 9 per cent looked in one direction only, while 88 per cent did not stop or look to the right or to the left; also 91 per cent of the drivers of 2931 autos failed to stop or look in either direction. Tests made on crossings in other parts of the country have showed similar results. These conditions may account for the numerous highway crossing accidents and information from the National Safety Council shows that one person has been killed and three people injured for every two accidents. Because of the numerous accidents the problem of protecting highway grade crossings is one of first importance.

The ideal method of eliminating the danger of two objects coming in contact with each other is to provide paths which do not conflict. This means separation of grades. However, a recent estimate made for one state indicated that the average cost of separating grades would be \$50,000 and the cost thereafter for maintenance, depreciation, interest on investment, etc., \$4,000 a year. If applied to all crossings in the one state in question this would involve an expense of \$170,000,000 which would more than double the investment in those railroads.

In recommending other protection, people forget that they are building up a cost which in some cases may approximate that of grade separation in the way of operating expense. In comparing the costs of different types of protection we find that a crossing sign approximates \$20 expense and practically nothing for maintenance; a crossing bell, \$1,050 for installation and \$200 for maintenance and operation; an automatic flagman and bell, \$1,200 for installation and \$250 for maintenance and operation; an eight-hour flagman costs an average of \$1,070 per year, chargeable to operating expense, while 24 hr. flagman service costs \$3,170. At this point the cost of grade separation is being approached rapidly.

Crossing gates with flagmen, at an annual cost of \$3,315, may be compared with \$4,000 for the average cost

of grade separation. The public has no compunctions at all about requiring a railroad to put on flagman service, but it feels no obligation whatever towards paying a portion of that expense. It is becoming educated to a certain extent to the fact that grade separation is a joint benefit to the public and to the railroad and in some instances is willing to pay a portion of the expense. New York and some of the New England states for some years have had laws requiring the railroad to pay one-half the expense of grade separation, the municipality or township one-quarter and the state one-quarter. Under those circumstances, the cost to the railroad would be considerable less on an average for grade separation than it would be to put in a 24 hr. service flagman or gate protection.

A Preliminary Study of Each Crossing Necessary

The question of how best to protect a crossing is a problem. I was given charge of that line of work about 2 years ago and found no uniformity in making reports and as a result I had great difficulty in convincing my superior officers of the necessity for the protection recommended. Therefore some data was outlined which I insisted should be obtained.

The railroad data should show all of the tracks and indicate whether they are main, passing, house, yard or industrial. The alignment of the main tracks, right of way lines, width of crossings, planking, the nearby buildings and any obstructions to the view should also be shown.

The highway data should include the alignment and width of the highway, width of traveled way, sidewalks, street car or interurban tracks, surface material, fences, and signs with their location and kind including crossing, approach warnings, advertising and other signs between the approach warning signs and crossing signs. There should also be an approximate profile of the roadway on each approach to the crossing for at least 300 ft. and the obstructions to view within 300 ft. of the crossing along the traveled way.

Where railroad cars are customarily left on the tracks so as to obscure the view from the highway, these should be indicated in their usual location. The lines of the maximum vision to the tracks from the street or highway

