

View along street parallel with the railroad showing "No Right Turn" sign and single flashing yellow unit in operation

# Reading Installs Unique Crossing Protection

*By E. W. Reich*

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Parallel street equipped with special signals to prevent right or left turn across railroad tracks—Standard flashers used on crossing street

WHERE a highway or street parallels a railroad and intersects a second highway which crosses the railroad at grade, particularly in built-up sections, the arranging of flashlight signals in a manner that will insure adequate protection is somewhat difficult. The general practice in the past has been to install conventional horizontal flashlight signals on the two approaches of the street which crosses the railroad, and to provide additional horizontal flashlight signals on the approaches of the parallel street.

The installation of horizontal flashing signals on each of the street approaches provides a warning indication for vehicular traffic on all of the street or highway approaches. Frequently, however, the highway traffic moves from the street paralleling the railroad to the highway which it intersects or vice-versa without crossing over the railroad, and when this move is made the warning signals are, of course, disregarded. This peculiar operating condition is generally known locally, but it invariably results in a loss of signal significance or to put it more forcefully, it breeds contempt of the signal indication. It also contributes to confusion at the street intersection, as drivers unfamiliar with local conditions will

stop, irrespective of the move about to be made, when a red signal is displayed.

The Reading recently had occasion to install automatic flashlight signal protection at Eighth Street crossing in the Borough of Shamokin, Pa., where a narrow street parallels the east side of the double-track railroad and intersects another street which crosses the railroad at grade. The east side of the parallel street has a number of merchandising warehouses—the west side of the street extends to the railroad right-of-way. Traffic on the parallel street is as heavy as that on the street which crosses the railroad and considerable of it moves over the street intersection without actually passing over the rail crossing.

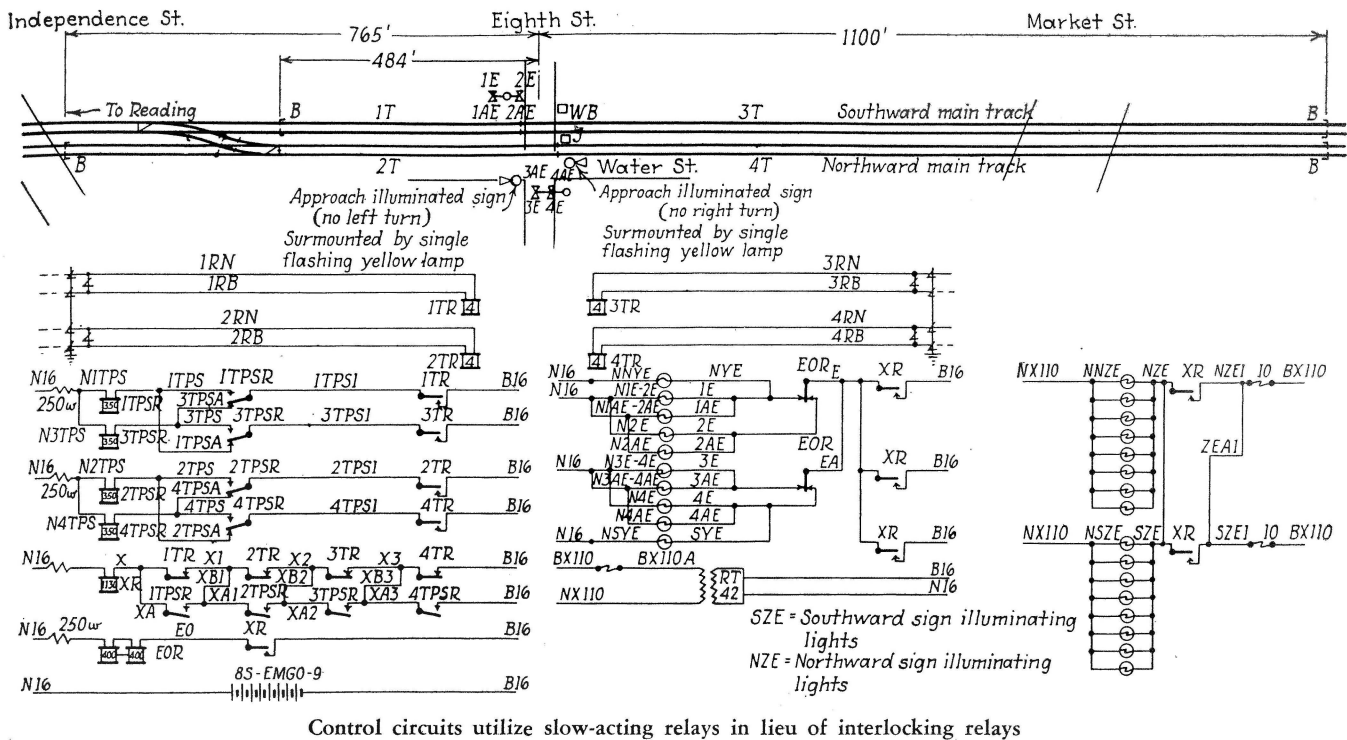
On account of the limited width of the street and the nature of the highway traffic (large trucks) the installation of horizontal flashing-light signals on the paralleling street was impractical, and for the same reason it was necessary to place the signals on the main street at the near corner of the street intersection rather than adjacent to the rail crossing. To meet

the peculiar conditions at this crossing, the railroad engineers proposed a combination of conventional flashing-light signals with approach illuminated "No Right Turn" and "No Left Turn" signs, each surmounted by a single yellow flashing light.

This proposal was agreed to by representatives of the engineering department of the Public Service Commission of Pennsylvania and the matter was then referred to the local Shamokin authorities for approval. Consent of municipal authorities was necessary as the special signaling in many respects concerns street traffic rather than the usual railroad crossing type.

## Sign Developed for This Purpose

For use at this crossing it was necessary to develop a sign that would be illegible when unlighted and legible at a distance of 150 ft. in bright daylight when lighted. The Western Railroad Supply Company co-operated with Reading engineers in the development of this sign. These traffic control signs are rectangular in shape, as shown on sketch, and are made of



Control circuits utilize slow-acting relays in lieu of interlocking relays

light-weight metal 14¼ in. square and 3 in. deep.

In the opinion of the designers of the sign, a sign of this size was necessary in order to obtain letters of sufficient height and proper spacing between words to provide a legible indication. Eight lamps were used to illuminate the sign, the lamps being rated at 110-volts, 25-watts. Commercial power at the crossing is reliable so that interruptions are infrequent. Consequently it was felt that 110-volt a-c. lighting would be satisfactory for an experimental installation. Originally the plan was to illuminate the sign with eight 10-volt 25-watt signal

lamps, and to provide storage battery in reserve for sign lighting in the event of a failure of the commercial supply. This is standard practice at protected crossings and will be the arrangement installed when further installations of this type of signal are made.

The front of the sign is cut in the form of a stencil employing a red glass back of the front plate. Red was considered the most satisfactory as it is visible for the greatest distance. Tests made under varying light intensity have shown that the signs are entirely illegible either in daylight or dark when not lighted, and display a bright red indication or warning when lighted. The signs are mounted on a 4-in. pipe mast using A.A.R. No. 16471 mounting clamps complete with U-bolts. The signal assembly on the special masts signaling the parallel street consists of the special "No Right Turn" and "No Left Turn" signs and a single yellow crossing signal of the conventional type. The 14¼-in. width sign permits sufficient clearance as the mast is located just inside the curb line. The entire assembly is neat in appearance, and the signals are very effective when the yellow lamp is flashing and sign illuminated.

### Neutral Relay Controls Utilized

The circuit arrangement as shown on the sketch is the Reading standard arrangement providing slow-acting relays in lieu of interlocking relays to take care of train movements in both directions on each main track, except

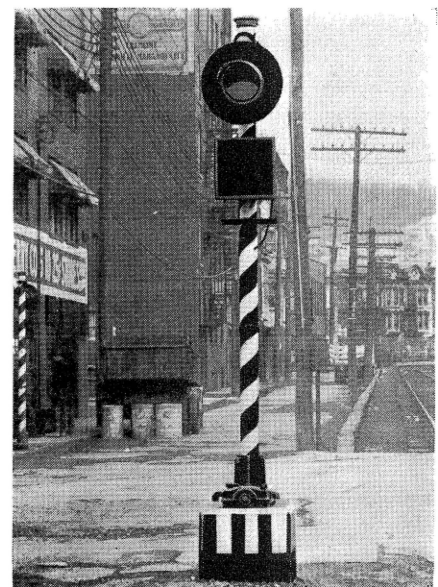
that a special circuit, which in the interest of reducing the number of contacts in the signal lighting circuit and consequently the voltage drop, employs a special relay designated as XR on the sketch. It will be noted that the circuit is designed so that the XR relay is normally energized, thereby insuring signal operation in the event of failure of this circuit.

It was possible with this arrangement to control the signal lighting circuit over but two contacts, one on the XR and the other on the flasher relay. Both of these contacts are of special type designed to carry the high light-

*(Continued on page 37)*



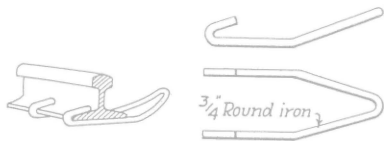
View with sign and signal illuminated

View with sign and signal lamps  
extinguished

required, so that every minute counts.

In order to expedite preparation for the work, as well as to clear the track quickly when a train is due, a special U-shaped clamp has been designed which fits under and clamps to the base of a rail. This clamp can be applied or removed from a rail much more quickly than ropes or chains.

The clamp can be made for each



This guy anchor can be quickly removed to allow trains to pass—It need not be removed for a motor car

different size of rail and should fit snugly. Enough clearance should be left so that the clamp will not have to be forced on too tightly. The clamp can be made of 1/2-in. round iron rod for light duty or of 3/8-in. to 1-in. for heavier work.

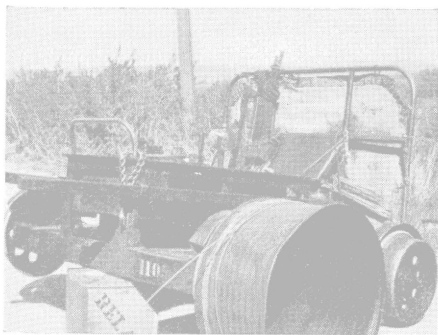
## Improvised Line Reel

By A. G. Turner

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SOME time ago a small amount of line wire in my territory was to be taken down off the line for shipment to another point. As no reel was readily available for the job, about one-third of an old metal oil drum was cut off with a cold chisel to serve as a reel.

A hole was then cut in the bottom drum large enough to admit the axle of my motor car. The nut retaining the wheel was removed, the drum was placed in position as shown in the illustration, and the nut replaced. The



The wheel is turned by hand

rear end of the car was then set up on a box. This arrangement permitted the drum to be turned by hand and the wire reeled in. A few holes were punched in the drum and the wire tied in place before shipment was made.

## Reading Crossing Signals

(Continued from page 33)

ing loads. The special approach signs are designated as "NZE" and "SZE" on the sketch and these signs, as before stated, are energized at 110 volts, being controlled over back contacts on the XR relay. The single yellow flashing signal, which surmounts each of the special signs, is tied in with the horizontal flashlight signal control and there is, therefore, both a normal and reserve lighting supply for the yellow signal.

It will be noted that the approach sections are not uniform. This is necessary to avoid signal operation for long periods when trains are being shifted on the southward track just south of Independence street. The northward reverse moves are necessarily slow, which insures that adequate warning will be provided. The signals designated as 3E, 4E, 3AE, 4AE, and 1E, 2E, 1AE and 2AE are standard horizontal red flashers, the signals being mounted back to back.



Standard A.A.R. flashing-light crossing signals are used

The installation was put in service August 1, 1935, and has rendered very satisfactory service since that time. Railroad and state engineers, as well as Shamokin local authorities, all believe that the signaling as provided is a decided improvement over methods previously used and offers about the best solution developed up to this time for the protection of crossings of that character.

By referring to the sketch, it will be noted that the horizontal signals protecting Eighth street on the east side of the crossing are located at the corner of the street intersection rather than adjacent to the railroad. This was necessary on account of the limited width of Water Street. A more ideal

arrangement would result if it were practical to install these signals adjacent to the crossing, approximately 15 ft. from the center of gage.

The theory of using an approach illuminated sign in connection with conventional signals is that highway traffic operating between the intersecting streets but not crossing the railroad will not have occasion to disregard a flashing red light. On the other hand, the flashing yellow light with the illuminated red sign and back lights on the opposite side of the crossing will provide all the protection necessary for traffic moving from the parallel street over the rail crossing.

This installation was made by the division signal construction forces, plans having been developed by the Reading signal department.

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## A Letter to the Editor

(Continued from page 34)

remote from the likelihood of trains stopping on the operating circuit.

There is argument, however, in cases where there are frequent or periodic times that the operating circuit is occupied by standing trains, that proper steps be taken to eliminate operation of the signal when the train has no immediate possibility of using the crossing. The greater the ingenuity that can be used in overcoming this kind of false warnings the greater will be the number of crossings admissible of automatic protection.

The principal reason for trains standing on operating circuits is that the crossing happens to be near a station, water or fuel supply point, or a switch. Some of the methods used to reduce the operating time of signals—on the railroad which employs the writer—have already been described by *Railway Signaling* (September 1933). Other schemes, however, have been used wherever the conditions to be met require them.

In several instances use has been made of a stick relay picked up by some person pressing a button, the passing of the train for which the normal operation of the signal has been altered, automatically restoring the system to normal. In no case have we left a condition whereby a train can use the crossing without some warning having been given the highway user. Care must be exercised to prevent a track circuit failure automatically setting up a condition of shortened warning time on a track which may be used by a high-speed train.

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