

## Lamp Ratings for Flashing Lights

*"What is the rating of the lamps you use in flashing-light crossing signals, and at what voltage and current are they ordinarily operated? In your opinion should lamps of higher rating be used in order to secure a better daylight indication?"*

### Increased Wattage in Adverse Conditions

R. A. Sheets

Signal and Electrical Engineer, Chicago & North Western, Chicago

The C. & N. W. uses 10-volt, 10-watt lamps in flashing-light crossing signals, with a few exceptions. The state of Michigan requires the use of 10-volt, 18-watt lamps, and where adverse sunlight conditions are encountered in other states, we have used 10-volt, 18-watt lamps to improve the indication. We have also used 10-volt 5-watt lamps on the back lights, when such lights are equipped with a small lens. We endeavor to provide approximately 9.5 volts at the lamps for their operation.

### Ten Watts With Improved Units

I. A. Uhr

Signal Engineer, St. Louis-San Francisco, Springfield, Mo.

In the earlier type of flashing-light signals we use 10-volt 18-watt lamps. In the later improved-type we use 10-volt, 10-watt lamps. We believe the 10-watt lamp in the improved unit provides as good an indication as the 18-watt lamp in the old-type unit.

Where 18-watt lamps are used, the required current is so heavy that it cannot be carried on the two available back contacts of the interlocking relay, without frequent renewal on account of burned contacts. Therefore, an additional relay, energized through the back contacts of the interlocking relay, is used to control the current for lighting the lamps in the flashing units. All four of the front contacts in the second relay are connected in multiple.

Beginning with the use of the 10-volt 10-watt lamp, tests were made by carrying current for the flashing units through two back contacts of the interlocking relay in multiple. After more than a year, these contacts were found to be only slightly discolored. One of the other remaining back contacts is used to control power-off relays; another is used for controlling the flashing relay and the bell, if one is provided. This method gives direct operation of the flashing units from a back contact of the relay, through the flasher relay. Where illuminated stop-units are used, current for the lamps is controlled through an additional relay.

### Auxiliary Filament Advisable

C. H. Morrison

Signal Engineer, New York, New Haven & Hartford, New Haven, Conn.

Notwithstanding the fact that the New Haven provides for duplicate lighting in each direction, in the design of flashing-light crossing signal protection, which is based on the recommended A.R.A. standard, it is considered advisable to use double-filament lamps in such signals. The auxiliary filament of these lamps is of higher resistance than the main filament which supplies normal illumination, and for this reason the expected life is comparatively long. As the high-resistance filament is energized in parallel with the main filament, it is expected to continue burning after the latter has expired. The light provided by the auxiliary filament, of course, is not as intense as that of the normal lamp, but it will give an

indication so that in case an accident occurs after the main filament is burned out, it cannot be charged against the railroad that no light was burning.

For many years the New Haven has followed the practice of testing flashing-light crossing signals daily. With the use of the two-filament lamp, the employee making the daily test not only observes that the signal is functioning, but also that the lamps are giving the proper intensity of light. An inferior indication is good evidence that the normal filament is burned out, and that the bulb should be replaced, the same as though no light were displayed.

The Type-S-11 lamp that we use is rated at 10 volts, the respective filament ratings being 13 and 3.5 watts. Although the lamp is supposed to be operated at 10 volts, the battery used consists of four lead-type cells, which develop 8.8 volts on floating charge. However, this voltage provides for sufficient illumination to give a good indication in bright sunlight, at a distance of 300 ft. or more from the crossing.

### Hood and Background Are Important

H. H. Orr

Superintendent of Signals and Telegraph, Chicago & Eastern Illinois, Danville, Ill.

The C. & E. I. practice is to use a 10-volt, 10-watt lamp, A.A.R., Signal Section specification No. 15447, with 9-volts at the lamp terminals during operation. With this lamp, in a well-designed reflector-unit fitted with a large hood and a black background, we find that the daylight indication is sufficient. In locations where the rays of the low early-morning and late-afternoon sun will practically parallel the direction of the signal indication, special attention should be given to the hood and background assembly. Since the lamp rating has a direct bearing on the control- and flasher-relay contacts, the stand-by energy source, the allowable circuit resistances, etc., it would seem that we should endeavor to improve the efficiency of the reflector, cover glasses, and the hood and background assembly, so far as is practicable, before considering an increase in lamp wattage.



## Automatic Rectifiers on Track Circuits

*"What has been the result of your experience with the new automatic rectifiers for application to track circuits in parallel with primary battery? Please furnish set of readings of current and voltage taken when track circuit was occupied and not occupied."*

### Operation Is Satisfactory

Leroy Wyant

Signal Engineer, Chicago, Rock Island & Pacific, Chicago

We have only recently installed two "automatic" rectifiers for application to track circuits in parallel with primary battery or storage battery but we are not yet in a position to form any definite conclusions. The data taken when we installed them indicates they will perform as intended, namely, restrict the output from the track battery, when the track is occupied, to but little more than the output with the track unoccupied.

Our readings were as follows: *Track circuit "A"*: unoccupied, voltage at battery terminals 0.9, current from  
(Continued on page 616)