

## Trolley Wire Renewal

0.126 sq inch Trolley Wire:

Depth of New Wire	0.424 in
Depth When Considered "Worn Out"	0.3 in

0.2 sq inch Trolley Wire:

Depth of New Wire	0.530 in
Depth When Considered "Worn Out"	0.4 in

These measurements are taken as a datum figure only. When the trolley wire reaches these figures it is considered to be nearing the end of its economical as well as its safe life and needs constant attention and careful watching.

In practice when the depth of the wire is down to these figures it has been found that the section has been reduced to approximately 50% of the original wire, more particularly over the last few years. This has been brought about by:

- a) the excessive speed and non-observance of rules by the average present day motorman.
- b) the irregularities in most of the tracks on the system.

The combination of these two factors make it almost impossible to get good even wear on trolley wire, the result being side wear on the wire and hammering at fittings. Excessive side wear greatly reduces the section and hammering at fittings causes crystallisation of the wire thus increasing the danger of "breaks".

Some further points to be considered before deciding to renew trolley wire are as follows:

### Location

The location is a very important factor for a number of reasons:

- a) if the locality carries dense vehicular and pedestrian traffic the danger of a falling 600 V wire is very grave and could easily result in death, serious injuries or both.
- b) in the case of the "City Area" a broken trolley wire could easily mean a long delay to traffic on a number of routes, thus incurring a big lose in revenue and inconvenience to the travelling public.

- c) A congested area would impede a tower waggon getting to the seat of the trouble, as well as delaying the crew in making quick progress in repairing the break.

### **Position of Feeders Relating to Trolley Wire**

If the trolley wire has a feeder running parallel with it, or a number of feeder taps at regular intervals the loss of section in trolley wire is not so vital, but if the trolley wire is a stud end feed resulting in a long trolley wire feed, the loss of section would cause a big voltage drop resulting in power losses as well as unsatisfactory operation of Rolling Stock equipment due to low voltage. It could also cause overheating of the trolley wire which would increase the probability of a broken or burnt down wire. The time this is most likely to happen is at "peak period" and the dense city area where we rely on "trolley wire feed" is the most likely locality.

### **Overall Condition of Wire at Fittings**

The condition of the wire at fittings must be closely examined. If the wire has been subjected to excessive wear at the ears, necessitating long chafer plates, and a number of places where the trolley has been "anchored over", it means that additional danger points have been created on the route.

### **Bad Bays of Trolley Wire**

The number of bad bays of trolley wire must be taken into consideration for the following reasons.

If the wire is not renewed, but a number of bays are so bad that new wire would have to be spliced in, the number of bays must be considered, as the price of two splicing ears are equivalent to approx. four-fifths the price of a new bay of wire. This is for the material only and would not include labour charges which would be considerable for each bay. It would therefore not be economical to put many single or double bays of wire in a section, as the remaining wire would only have a comparatively short life and the presence of extra fittings are potential danger points which need extra maintenance; whereas, if new wire was installed throughout the section, it would only need ordinary maintenance.

It can readily be seen that the renewal of trolley wire cannot be decided by measurements at each span alone, but must be taken on general condition of wire, locality, density of service and accessibility. Thus every route must be considered on its own economical merits, for where wire of a certain size would be quite safe to leave on one route, it would not be wise to leave it on another route.