TRAMWAY OVERHEAD

Presenter: John Beckett
Session Chair: Peter Hyde

Session Secretary: Tony Cody

I understand that the talk is limited to 30 minutes which gives the opportunity for an extremely superficial account of the subject and little possibility of exchange of information.

The subjects to be treated (at about three minutes per subject!) include:

1. Safety. Disconnecting supply and grounding overhead at substation. Grounding overhead at work point. Verifying safety and conditions of tower wagon. High visibility clothing of workers, safety gloves, safety helmets. Traffic diversion/warning signs and markers. Safe practices when working on tower wagon. Effects of fatigue and stress.

2. Display of vintage and modern fittings. Remanufacturing vintage fittings in the interests of cost saving and authenticity. Problems with using/reusing brown porcelain insulators. Display of "preferred" span wire construction.

3. Display of HO gauge demonstration unit showing general construction methods which are applicable to full size.

4. Video showing tensioning, crimping, height adjustment, use of fan grips, setting of frogs, setting offsets, centring wire etc., etc.

5. Sources of supply of materials, fittings, tools.

6. Problems with reconciling technical versus historical interests.

7. Bibliography and sources of useful information.

8. Brief open forum for contribution of information and ideas.

After the talk (or preferably "exchange") the presenter is willing to take interested parties out on the tower wagon, demonstrate the 7 1/4 gauge tramway (which has all the problems of full size plus a few of its own), and engage in discourse on overhead, all outside the formal Conference sessions of course.

Additional Notes By The Session Secretary, Tony Cody.

Tramway Museums should have access to a qualified electrical engineer overseeing work and also, a licensed electrician on site can be helpful for other electrical work.

No standards exist for wiring tramcars, but useful information can be gleaned from SAA wiring rules.

The Bendigo Trust inherited a very run-down system from the SEC. The system had been rehabilitated in the 1930s, but little further was then done until closure. The SEC retained responsibility for maintaining the overhead for some time after 1972 but, with the increasing burden of repair to a worn-out infrastructure, it was later glad to hand over this responsibility.

The Bendigo Trust commenced an upgrade of the overhead. A stock of about 1km of unused trolley wire was available and the Council also commenced installation of new concrete poles along part of the tram line. The new wire was strung from these new poles at an increased height. A height increase was desirable as problems with high and over-height vehicles had taken place. During this replacement work an SEC worker suffered bad burns from contact with a live span wire. No intermediate insulators were in this span wire and the insulation in the old-style ear was found to be defective. A replacement of similar span wires commenced but has still to be completed.

When new trolley wire was sought, it was found that the original 0.126 section wire was no longer available. A supply of 0.2 section trolley wire was located and 1km was acquired. This heavier wire was erected with fewer than expected problems in the area near the depot wye. Over a period of around three years the Trust hopes to replace all the trolley wire as there has been a continuing problem with collapse of the overhead on the southern portion of the line.

Various authorities have advised on the safety of the wiring replacement procedures (most especially the Department of Labour and Industry) and some aspects have since been tightened up.

Live-wire working is not now used in Bendigo. Overhead grounded at two locations including one at the point of work whilst the operation is in progress. Wire is still treated as if it were live despite these precautions. Section insulators have been found to be untrustworthy due to leakage in damp and humid weather. Additional precautions include bonding across primary insulators during work and grounding of the tower wagon.

Some other points of safety include the wearing of the appropriate clothing, fixing things properly rather than adopting a quick fix, not allowing the use of boxes or other items to achieve a higher level on the tower and always be mindful of the effects of fatigue on the workers.

A selection and brief discussion of overhead hardware followed. This included an example of the many defective insulators that have been replaced with the preferred types of new insulator. The traditional cap and cone type of hanger was found to be too expensive to acquire new. However the standard Melbourne hangers have been adapted as these are cheaper and quite effective. Standard Melbourne frogs have been adopted for similar reasons. It has been found possible to re-manufacture ears from the scrapped ears removed from the old overhead.

Equipment for handling the wire and fittings included specialised tools already in stock or purchased as required. For smaller wire jobs, cheaper commercially available wire tensioners and cutters have been found useful.

Editor's Note: At the end of the Speakers address, the time available for the session had expired. Therefore it was not possible for any discussion or questions/answers on the subject.