

MK 111b OVERHEAD LINE EQUIPMENT OPTIMISATION OF PARAMETERS

Following a request from CM & EE (BRB) to advise on the design parameters for the proposed Mk IIIb Overhead Line Equipment, Electrification Section requested the computer simulation work described in this note. The most significant change proposed by CM & EE for the equipment is the increase in tension of the contact wire to 11kN.

The aim of the exercise was to obtain optimum values for contact wire pre-sag and dropper spacing for the new equipment and to determine, if possible, the effect of a future substitution of spring droppers for the first and last dropper in each span. In order to make the required comparisons, simulations were carried out for different span lengths, the total system length being taken between 4 and 7 spans depending on span length. A finite difference step length of about 1.5m was used in all cases. A single pantograph was assumed with standard parameters and a range of up to 4 selected train speeds was considered.

A number of conclusions relating to contact wire pre-sag, dropper spacing and contact wire uplift are drawn, along with recommendations for the design of Mk IIIb equipment based on operation of trains with single pantographs at speeds of up to 200km/h.