

Southern Region Resignalling for Ten-Car Trains

INCREASING traffic on many routes in the London area of the Southern Region, especially on the Eastern Section, has necessitated the addition of two vehicles to the electric trains on certain services to provide ten-car sets in the rush hours. Not only has this required much new rolling stock, but also modified power supply arrangements, renewal of cabling, and other items of equipment. A certain amount of this work was necessary in any case, as part of a modernisation plan, which aimed not merely at replacing equipment due for renewal but also at introducing the most modern designs and obtaining much more efficient working than was possible with the apparatus available when electrification was carried out. The replacement of rotary converter substations by rectifier equipment is an instance of this.

A ten-car electric train measures 661 ft., and station platforms had to be lengthened to 675 ft. This, in turn, often necessitated moving crossovers and other connections, with their protecting signals, to new positions. Sidings also had in many cases to be made longer to take the new trains, and additional ones provided at certain places, again calling for new connections and revised signalling. Much civil engineering work in connection with bridges, retaining walls, and other structures had to be carried out at the same time.

The work was divided into four stages, as shown on the accompanying map of the Eastern Section suburban area. Two of them have been completed, the third is due to be completed during this summer, and the fourth in the summer of 1957. It has not always been possible, however, to do quite as much as could be wished in this connection, because of local conditions and obstacles at a few places.

Although no new power signalling installation has been found necessary, the work has involved many additions and modifications, and has necessitated very careful planning and attention to details. Much track circuiting and accompanying improved controls have been provided.

The opportunity also has been taken to effect certain alterations not in them-

selves necessitated by the running of ten-car trains, but which would have been carried out before long in any case as modernisation proceeded. These have included the replacement of the old Walker one-wire block telegraph on the Dartford Loop by the new British Railways standard three-position interlocking block. This line was the only one of the former S.E.C.R. routes to Dartford not fitted with Sykes's block.

Some colour-light signalling was applied on the Dartford Loop line between Mottingham and Sidcup, as shown on the accompanying diagram, enabling New Eltham Signalbox to be closed and replaced by a ground frame, electrically released from Sidcup and controlling a siding connection from the up line only. This naturally necessitated continuous track circuiting between Mottingham and Sidcup. In a few cases where the position of a signal has had to be altered it has been necessary to provide a banner repeater in rear.

At Charing Cross terminus, several connections had to be repositioned, a siding lengthened, and another abolished. At Metropolitan Junction Box, east of Waterloo, which still has a mechanical-type frame, additional facing crossovers were laid in between the up through and local lines, and between the down local and through lines. The existing crossover leading from the down through to the down local was repositioned.

Alterations to signals to control these connections also were needed, and a new one was introduced to allow trains going to Waterloo along the up through to draw further forward when the line ahead was obstructed. This was done to avoid holding other trains back unnecessarily at Borough Market Junction, where, because of the great frequency of the service and very close clearances between diverging and converging movements it is imperative to save seconds.

One line and certain connections were abolished at London Bridge. A new connection was put in and others re-aligned, with corresponding signal alterations. At New Cross, and stations to Lewisham and Blackheath, and along

the Bexleyheath line to Slade Green, there was a certain amount of repositioning of signals, crossovers, and connections, including an automatic signal forming part of the existing colour-light signalling on this route. The signalbox at Barnehurst had to be moved to allow the platform to be lengthened, and crossovers, trap points and various signals also had to be resited. Very similar work was carried out at Hither Green and Grove Park, and on the Bromley North branch; at the last-named place the signalbox is of very old design, and eventually is to be renewed.

Along the main line to Orpington, certain connections were either taken away or moved, and at Orpington itself the up bay line had to be altered, because the down one could not, for local reasons, be adopted to take the longer trains without very great expenditure. A new facing connection and corresponding signals were provided between the local and through lines to enable trains to run direct to the lengthened up bay, while alterations to sidings and their connections also were called for.

Additional signals and a new ground frame were required at Crayford Creek Junction, and between there and Slade Green, with access at both ends, some new sidings were laid and the necessary signalling provided. A pole line had to be removed and the circuits transferred to cabling laid in concrete troughing. A footbridge for the staff connecting the new sidings with the existing depot necessitated new banner repeaters, and other signalling alterations had to be effected.

Hitherto, Dartford Station had been controlled by a signalbox at each end, but the opportunity was taken to abolish No. 1 box at the London end, and concentrate the whole of the working in No. 2. This involved a considerable number of new track circuits, and motor operation of the points and signals at the west end of the layout from the existing mechanical type frame. New facing points were provided to enable down trains to run to No. 1 up platform, with others leading from the down line to the up carriage sidings and some reception sidings. At this and other places, existing track circuiting was divided or rearranged to give quicker train clearances and enable facing point locking bars to be dispensed with. The arrangements generally follow principles already established on the Southern Region, such as signal aspects, and controls, found to give every satisfaction in dealing with the intensive and varied electrified services, with which other types of traffic must be worked as necessary.

Although the amount of work required at any one location has not been very extensive, compared with recent signalling improvements in other parts of the Southern Region, nearly every one has presented some problem of its own. Moreover, changes of this kind frequently are less easy to carry out than a complete replacement of mechanical equipment by power signalling. In any case, they call for the observance of equally important safety requirements. The whole of the work has been planned, and is being carried out, by the staff of the Signal Engineer of the Southern Region.