

IMPROVEMENT OF GEOMETRY THROUGH S&C - A REVIEW OF THE EXISTING SITUATION

At the time this report was written, switch and crossing (S&C) layouts were identified as one of the main causes of poor track geometrical quality and passenger ride on BR. Ideally the geometrical quality of S&C should match the standards set for plain line tracks. However this is likely to be an unrealistic expectation, as the vehicles have to negotiate the sudden change in direction at the switch tips and the discontinuity of the track at crossings. These irregularities also cause high dynamic forces that accelerate the deterioration of the track geometry and vehicle ride as well as causing damage to the track and vehicle components. These all lead to increased maintenance costs and may ultimately prejudice safety. The presence of the point driving and detection equipment also hinders the effective maintenance of the track support near the switch toe and in particular around switch diamonds.

Developments over the years in S&C designs and materials (e.g. curved-planed switches and cast crossings with specifically shaped wing rail profiles) have produced significant improvements in reducing the dynamic forces. However, it is believed that there should still be room for further improvement in the design, manufacturing, installation and maintenance of S&C. This report is aimed at reviewing the existing situation to identify any potential areas for improvements. Major areas for further consideration have been identified as:

- Geometry of rail joints
- Vertical rails in S&Cs
- The use of low speed swing nose crossings
- Wing rail profiles in fixed cast crossings
- Instructions for the handling of S&C
- Design overlift in the maintenance of the track support
- The existing design of point operating machinery