

IMPROVEMENTS OF GEOMETRY THROUGH S&C - RECOMMENDATIONS AND COST BENEFIT STUDIES

Switch and crossing (S&C) layouts are one of the main causes of poor track geometrical quality and passenger ride on BR. Previous research investigated existing practices in the design, manufacture, handling and maintenance of S&C and their effect on track geometry. This study considers their practicality, potential benefits and likely costs of implementing the previous findings. It is recommended that:

- The tangential switch design should be used for high speed passenger lines with relatively little freight traffic.
- Consideration should be given to re-designing and/or re-locating the point operating machinery to minimise obstruction of the tamping tines.
- Bainitic steel should be used to replace AMS/LCAMS in cast crossings to eliminate the need for bolted rail joints.
- Modifications to the wing rail profiles of fixed cast crossings should be introduced to reduce the wheel impact at the crossing. Suitable procedures should be adopted to repair switch diamonds with grooved wing rails by grinding.
- More swing nose crossings for lower speed turnouts should be installed so that the operating experience can be gained to benefit future designs and installations. A review of the operational reliability of the existing design of swing nose driving equipment should be carried out to identify and improve on any potential weaknesses.
- The adoption of an adjustable check rail design (eg UIC33) in S&C layouts should be accelerated to provide the necessary means of adjustment of the check rail gap.
- Glued insulated joints should be used wherever possible instead of non-glued insulated joints in new S&C installations. Appropriate procedures should be developed so that tight joints in new S&C installations may be glued in situ.
- Conventional rail joints in S&C layouts should be treated by shimming and measured shovel packing (MSP). Appropriate procedures should be developed to rectify rail end batter in bolted joints by grinding in order to maximise the effectiveness of shimming and MSP.
- Design overlift should be used with the automatic track and top alignment (ATTA) system and Kango packing. Until the procedures for design overlift have been established, MSP should be used to treat locations such as the switch toe, crossing nose and bolted rail joints within S&C layouts.