IMPROVEMENT OF HIGH-SPEED TRACK DESIGN BY USING A BITUMINOUS SUB-BALLAST LAYER

P.F. TEIXEIRA
Head of Railway Division
CENIT – Centre for Innovation in Transport (UPC)
Barcelona – Spain

ABSTRACT

The design of track infrastructures at lowest life cycle costs is an important priority in order to increase the profitability of this transport mean. The increase of high-speed traffic demand and the rise of maximum speeds to 350 km/h in the close future require the development of new low maintenance structural solutions for high-speed ballasted tracks. From a track structure point of view, it is shown that the use of an optimum track resiliency can reduce the railway system operational costs. From a trackbed design perspective, the use of an alternative to the conventional granular sub-ballast is discussed. The good results obtained in Italian high-speed lines with the use of bituminous sub-ballast form the basis for the development of a study on the viability of this solution. This paper analyzes theoretically what must be the characteristics of the track design with a bituminous layer in order to fulfil current high-speed tracks requirements. Furthermore, this paper discusses in what terms the use of a bituminous sub-ballast solution can contribute to an effective reduction of track life cycle costs.