Rail

FREYSSINET
SUSTAINABLE TECHNOLOGY

Bearings and Shock Transmission Units

London Bridge Station

Client
Network Rail

Principal Contractor
Costain

Works Commenced
January 2014

Works Completed
January 2015

The Thameslink route is a railway running north-south through London between Bedford and Brighton, serving both Gatwick and Luton airports. It is transforming north-south travel through London with improved infrastructure and new trains on one of Europe's busiest stretches of railway.

Freyssinet supplied the bearings and shock transmission units to London Bridge Station. The products were made to exacting specifications due to the forces and movements required, and also due to the extremely limited space available in some locations. Delivery timescales were also challenging due to possessions having been booked for the craning in of certain structures.

The scope of works at London Bridge Station included the removal of the roof and existing brick arches and platforms, construction of new elevated platforms and the formation of a new spacious concourse, the size of the pitch at Wembley. Outside the station the tracks were realigned to reduce delays from train pathways crossing.

Much of the station is elevated on bridge structures and it is these that needed to be supported on bridge bearings. To date Freyssinet have supplied over 190 bearings to the project including 27 uplift bearings. The CE marked bearings have been designed and manufactured to BS EN 1337 to resist vertical forces of between 1000 and 5000kN or, in the case of the uplift bearings, -520kN.

The many bridge structures are separated by movement joints. Because trains can exert high braking forces, the designers decided to share the horizontal reaction between adjacent structures by specifying Shock Transmission Units (STUs) across some of the movement joints. An STU will allow normal thermal expansion and contraction to occur across the joint but if an overload occurs from braking (or from an earthquake seismic zones) the piston inside the device locks up so that the unit transmits the horizontal force across the joint, thus sharing the reaction over more piers. Freyssinet suppload 16 STUs, which are designed to BS EN 15129 and were CE marked.

The £400M contract to rebuild the station started in 2013 and is being done in nine phases over five years so the station can remain open throughout construction. By 2018 the improved facilities will be able to handle 75 million passengers each year, up from the current 50 million.

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