Rail

Bridge Bearings and Shock Transmission Units

London Bridge Station

Client
Network Rail

Principal Contractor
Costain

Works Commenced
January 2014

Works Completed
January 2015

In a £1billion transformation by Network Rail, the London Bridge Station redevelopment aimed to improve infrastructure of Europe's busiest stretches of railway, nearly doubling its passenger capacity and providing faster connections for passengers.

The Thameslink route, created in partnership between the Department for Transport, Network Rail, Govia Thameslink Railway, Southeastern and Siemens, runs north - south through London between Bedford and Brighton connecting 138 stations and serving both Gatwick and Luton airports.

Freyssinet supplied the bearings and Shock Transmission Units (STUs) 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.

As much of the station is elevated on bridge structures, bearings were required to support the force and movement of each structure. Freyssinet supplied 428 bridge bearings in total, including uplift bearing. The CE marked products were designed and manufactured to BS EN 1337, and able to resist vertical forces of between 1000 and 5000kN.

As trains exert high breaking forces, and many of the bridge structures were separated by movement joints, it was decided at design stage to install STUs across some of the joints to share the horizontal reaction between adjacent structures. An STU allows normal thermal expansion and contraction across a joint, but if an overload occurs from braking, the piston inside the device locks up so that the unit transmits the horizontal force across the joint, sharing the reaction.Freyssinet supplied 16 STUs on the scheme, which were designed to BS EN 15129 and CE marked.

The redevelopment started in 2013 and was completed in nine phases over five years to ensure the station remained operational throughout. London Bridge Station was opened in May 2018 by Duke of Cambridge, Prince William.

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