

HOBAS® at the Station

Jacking Pipes beneath the Railway, UK

It is not unusual that sewers crossing under railway lines need to be replaced. However, choosing the right material and installation considerations can be hard when a tight schedule set by a line closure event needs to be respected and requirements may be rigid. One of these projects in the UK posed an extra challenge due to the limited cover from the top of the replacement pipe to the running tracks – 60 cm in places. As part of the sewer replacement scheme there was a 48 hour line closure.

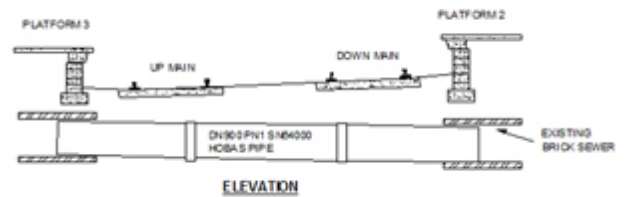


The initial proposal was to use concrete pipes to replace the existing 980 x 920 mm brick sewer but the additional wall thickness of the concrete pipe and socket, plus the weight of the pipes raised difficulties concerning design and construction: A large and expensive crane would have been required outside the station due to the large lifting radius necessary for the pipes' weight and size.

An alternative using HDPE was considered and could have been sleeved inside the existing sewer each side to make a connection that was quick to establish. However, calculations showed that the fastest solutions are not always the best: the deflections under the rail load would exceed the 3 mm limit set by the railway operator.

HOBAS CC-GRP Jacking Pipes are designed to take the high axial loads applied during installation. Their wall structure also makes the pipes very stiff and act more like rigid than the flexible pipes they are designed as. Calculations undertaken by Professor Falter of the University of Applied Science in Münster, Germany, showed that the deflection of the utilized HOBAS Pipes OD 924, SN 64000

with a wall thickness of only 77 mm under railway loads of 140 kN (= 14.3 tons per m²) and at the shallow cover of partly 60 cm was less than 2 mm.



In the given 48 hour time slot the sewer between platforms 2 and 3 was replaced with HOBAS Jacking Pipes crossing the main up and down lines. For this, the railway tracks first had to be removed, the sewer excavated, the new sewer laid, backfilled and finally the tracks were reinstated ready for running trains at the end of the 48 hour period.

Thanks to the products' light weight, installation costs could be kept to a minimum. The HOBAS Pipes satisfied not only the required 3 mm deflection limit, but are furthermore also a structurally better solution than the original concrete pipe.

Overview	
Year of Construction	2007
Construction Time	48 hours
Total Length of Pipe	12 m
Diameter	DE 924
Pressure Class	PN 1
Stiffness Class	SN 64000 (Wall thickness 77 mm)
Installation Method	Open cut
Application	SewerLine®
Advantages	Jacking Pipes withstand heavy loads, fast installation, comparably thin pipe walls make the use of smaller outer diameters possible, light weight