

Faster, More Precise Rail Embedment for Minimal Tram Network Downtime

London Trams Track Renewal, South London, United Kingdom

Rail Fixing

Sika@Work



BUILDING TRUST



Project description

A busy section of the **London tram network in South London (Croydon)** required track renewal after the existing rails and embedment system had reached the end of their service life. The route operates for approximately **19 hours every day**, making short construction closures essential to minimize disruption for passengers and the wider transport network.

As part of a broader program to improve reliability and passenger comfort, **VolkerRail** replaced the existing track applying Embedded Rail System using Sika® Icosit® KC 350/45. The project marked the **first use of the machine-applied Sika® Icosit® KC 350/45 system on a UK tram network**, combining faster-curing material technology with a more efficient installation method.

Project requirements

Track renewal had to be completed within a tightly controlled closure period while working in restricted conditions alongside public areas and roads. The selected rail embedment system therefore needed to allow **rapid installation and an early return to service** without compromising long-term track performance.

The system also needed to absorb dynamic loads and vibration, maintain accurate rail alignment, provide electrical insulation against stray currents, and improve passenger ride quality while reducing noise.

VolkerRail additionally wanted to improve the conventional application process, which relied on manually mixing and pouring material from small 12-liter containers. Reducing material waste, packaging waste, manual handling, and installation time were therefore important requirements.

Sika solutions

The rails were continuously and elastically embedded using Sika® Icosit® KC 350/45, a flexible polyurethane rail embedment material designed to absorb movement and vibration while providing uniform load distribution and stable track geometry. Its electrical isolation properties also protect against stray current corrosion.

Compared with more traditional systems, Sika® Icosit® KC 350/45 **cures up to twelve times faster**, supporting shorter closure periods and an earlier return to tram operation. Sika® Primer-115 was used for substrate priming, while Sika® Icosit® KC 330 FK NEW complemented the ERS as an adhesive for concrete filler blocks.

A key innovation was the machine application process of the newest, rapidly trafficable (2 hours at +20 °C) product – Sika® Icosit® KC 350/45. Instead of hand-pouring material from 12-liter containers, Sika® Icosit® KC 350/45 was supplied in **200-liter lined drums**, mixed mechanically, and pumped directly into the rail channel using specialist equipment supplied by **NTB Systems**. This provided more accurate and consistent placement while reducing physical handling for the installation team.

The controlled application process reduced material losses and spillage from as much as **20% to below 5%**. After use, the removable drum liner can be disposed of separately, leaving the steel drum clean for conventional recycling and significantly reducing packaging waste.



Sika products

Rail Fixing

Embedded Rail System using:

- Sika® Icosit® KC 350/45
- Sika® Primer-115
- Sika® Icosit® KC 330 FK NEW

Technical support and service

Sika worked closely with VolkerRail throughout the project, providing technical expertise and on-site support to implement the new rail embedment system and machine application method.

The collaboration included resolving installation challenges under restricted site conditions and integrating the specialist machine technology into the track renewal process. The combination of Sika material technology, technical expertise, and controlled machine application enabled efficient installation within the limited closure period.

Project participants

Transport / Network operator	xxxxxx
Track contractor	VolkerRail
Machine application technology	NTB Systems / Grupa ZUE
Sika Organization	Sika Limited, UK



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