

Durable solution for high pressure Lee Tunnel



The 6.9 km (4.3 mi) long Lee Tunnel in East London connects the Beckton Sewage Treatment Works and the Abbey Mills Pumping Station. The three main elements of this sewer tunnel project - the precast segmental lining, permanent lining to the shafts and the secondary lining to the main tunnel - are all reinforced with Dramix® steel fibers.

The construction was awarded in 2010 to the MVB JV consortium, comprising Morgan Sindall, VINCI Construction Grands Projets and Bachy Soletanche JV. The tunnel was completed in 2016.

The challenge

The Lee Tunnel is a sewer overflow tunnel whose biggest challenge it is to deal with high groundwater pressures. As the deepest tunnel ever built in London, the Lee tunnel has five shafts that run as deep as 95 m (312 ft) and handle groundwater pressures as high as 6 bar and internal water pressures of 6 to 8 bar.

The solution

The concrete of the precast segmental lining contains 30 kg/m³ Dramix® 3D 80/60 BG steel fibers. The permanent lining in the five shafts contains 40 kg/m³ Dramix® 3D 65/35 BG. For the tunnel's inner permanent lining, the customer opted for 40 kg/m³ Dramix® 5D 6560 BG, because of the product's excellent bending hardening

properties, which make the concrete very ductile and durable. In total, Dramix® steel fibers replaced over 17,000 tons of traditional rebar reinforcement in the secondary lining alone.

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Project specifications

Project type: Utility tunnels
Application: Segmental lining

Partners:

Owner: Thames Water
Contractor: MVB JV = Morgan Sindall, Vinci Construction Grands Projets, Bachy Soletanche JV
Engineer: Morgan Sindall Underground Professional Services CH2M Hill, Mott MacDonald

