

Tunnel Lining – Case Study



Matiere Pre-cast Arch Installed



Waterproofing HDPE liner Installed

The Task

Our customer had constructed a MATIÈRE Pre-cast Arch System to form a cut and cover tunnel, allowing passage of a commercial rail line with the construction of a dual carriageway above. The outer surface of the interlocking pre-cast tunnel sections required a waterproof geomembrane barrier for which FLI was awarded the contract.

The Solution

FLI proposed the use of 2mm thick HDPE [High Density Polyethylene] lining, which was placed in panels across the circumference of the tunnel. At the leading edge of each open end of the tunnel the liner was continuously fixed to the structure using a stainless steel batten, bolted into the concrete. A neoprene gasket strip was used beneath the liner to ensure a watertight joint. Individual liner panels were joined by fusion welding and each fusion seam was subsequently non-destructively tested by air pressure.

To prevent the build up of water at the cover soil / liner interface, a geocomposite drainage material was installed over the liner providing a preferential water flow path to collection drains at the tunnel base.

General

FLI has experience in both exterior and interior tunnel lining and is well placed to provide advice in the selection and technical installation of suitable geosynthetic products for these applications.

Project

Drogheda Bypass, Dublin

Main Contractor

Siac O'Rourke [JV], (ABM Construction – Tunnel Contractor)

Consultants

Roughan O'Donovan