

PROJECT REFERENCE

PISTA NUEVA MALAGA

1.1 Project Details

History & brief description	A Joint Venture of Acciona Infraestructuras and Sando Construcciones were awarded the construction of the suburban rail line by ADIF/AENA. The extension to Malaga airport required an investment of €280 million. The Los Prados Airport section runs almost entirely below the surface, crossing the Guadalhorce River and Malaga Airport's new runway. The name of the tunnel is "Túnel Guadalhorce-Aeropuerto". It is an electrified double track tunnel and is part of "La línea C-1 de Cercanías Málaga", between Málaga and Fuengirola.
Client and Location	ADIF (Administrador de Infraestructuras Ferroviarias); Spain
Type of tunnel	Railway
Ground conditions	Alternating gravel, sand and clay layer
Alignment length	2900m; Depth=15-28m
TBM type	Operating thrust=8500-36600kN; Maximum theoretical thrust=83643kN

1.2 Design Approach Adopted

Design method & standard used	Spanish code EH-91
Specified strengths of concrete – compressive and residual tensile	50 N/mm ² , Flexural tensile strength= 5 N/mm ² , Residual Strength= 2.9 N/mm ²
Inner and outer diameter	ID 8.43 m, OD 9.07 m
Ring segmentation	6 segments + 1 trapezoidal key
Dimensions of segments	Segment Width: 1.5 m, Thickness: 0.320m

Type of segment reinforcement

Hybrid; Macro-Synthetic Fibre EPC BarChip Shogun

Quantity of reinforcement per m³ of concrete

5 kg/m³

1.3 Project Benefits

Use of macro-synthetic fibres as non-corrosive reinforcement for:-

- Crack control
- Reduced concrete cover
- Minimising spalling in handling and installation
- Bursting resistance under jacking loads

Picture Reference



Fig. 1 Portal of the TBM tunnel



Fig. 2 Stacked segments