

PALERMO FAST-TRAM NETWORK

NUMEROUS MAPEI SOLUTIONS FOR A GREAT PIECE OF INFRASTRUCTURE: FROM ADMIXTURES FOR CONCRETE TO ADHESIVES, FROM WATERPROOFING PRODUCTS TO COATINGS

After seventy years the tram system is finally running again in Palermo. The Palermo fast-tram network, inaugurated in 2015, was a great technical challenge that led to the creation of a public transport system worthy of any modern European city: three lines, new bridges, footbridges and workshops are all part of the Palermo City Tram System.

The Palermo tram network connects some of the outlying suburbs of the city to the city's two main rail hubs: Central Station and Notarbartolo Station.

The biggest challenge was to work right in the city itself, that is, to integrate such an important project so that it could coexist with the normal road network and the presence of numerous auxiliary services. A situation that required the highest stand-

ards in quality and safety during every phase of the work.

Right from the very first stages of the design work Mapei was involved in the project, providing proactive support and collaborating with the designers to calibrate the right solutions to meet the requirements of the project.

To make the concrete, for example, the contractors used DYNAMON SX 32 and DYNAMON SX 34 super-plasticising, acrylic polymer-based admixtures for ready-mixed concrete, which allow the amount of mixing water required to be considerably reduced. For the poured concrete used to make the platforms, on the other hand, MAPEFIBRE ST 42 structural polymer fibres were added to the mix to increase its tensile strength and ductility, which from a logistics point of view proved to be a particularly advantageous alternative to traditional steel reinforcement.

Mapei technology was also adopted for the construction of the three footbridges. Once the concrete structures had been cured, they were smoothed with PLANITOP SMOOTH & REPAIR thixotropic cementitious mortar and finished off with QUARZOLITE BASE COAT coloured acrylic undercoat and ELASTOCOLOR PAINT protective, crack-bridging, elastomeric paint.

PHOTO 1. The foundation slab for the tram platforms was cast at night. The concrete was formulated with DYNAMON SX 32 and DYNAMON SX34 admixtures for concrete.

PHOTOS 2 and 3. The stone slabs were bonded onto the platforms with ADESILEX P4 cementitious adhesive.

The marble floorings were installed using KERALASTIC T, a two-component polyurethane adhesive suitable for installing ceramic and stone wall and floor coverings, including on metal substrates and steel sheets. The stone floor coverings for the platforms were installed using ADESILEX P4 high performance, rapid-setting, full-contact cementitious adhesive.

The barriers that separate the actual track from the adjacent roads were anchored in place using MAPEFIX VE SF chemical styrene-free, vinylester anchor, which is used





THE FIGURES

3 LINES

18 KM OF TRACK

17 TRAMS

**45,000 M² OF STORAGE-
WORKSHOP SPACE**

**322,000,000 EUROS
TOTAL INVESTMENT**



PHOTOS 4 and 5. The surfaces of the footbridges were finished off with ELASTOCOLOR PAINT protective paint.

to anchor elements exposed to structural loads and construction bars in concrete.

MAPEFLEX PU 70 SL polyurethane sealant was used to fill part of the joints formed between the boundary lines in contact with the wheeltracks and the road.

Numerous other Mapei systems were used for a wide range of activities. There are also plans to extend the Palermo transport system even further in the future, including a Palermo city underground railway line.

IN THE SPOTLIGHT

DYNAMON SX 32

It is a liquid superplasticizing admixture for quality concrete with high retention of workability.

DYNAMON SX 32 is mainly used for waterproof and durable concrete with high and very high compressive strength with exposure class in compliance with

EN 206-1; for pumped concrete; for ready-mixed concrete with high mechanical performance and high retention of workability in hot weather and/or over long transit time.

TECHNICAL DATA

Palermo city tram service,
Palermo (Italy)

Period of construction:
2008-on-going

Period of the Mapei intervention: 2009-2015

Intervention by Mapei: supplying admixtures for concrete and products for waterproofing, installing ceramic tiles, finishing walls and other building works

Client: Palermo City Council
Original design: V. Mosco & Associati Srl, Hyder Consulting GmbH

Intervention design: Lucio Maria Perilli, Gaspare Mantione, Salvatore di Salvo

Works direction: Fabio Sgarrella (Italconsult)

Main contractor: SIS S.c.p.a. and partners (Bombardier Transportation Italy SpA, EDS Infrastrutture Spa, V. Mosco & Associati Srl)

Mapei coordinators: Alessandro Addia, Salvatore Costa, Ignazio Vallone, Ric. co snc, Rocco Briglia, Achille Carcagni, Mapei SpA (Italy)

MAPEI PRODUCTS

Admixtures for concrete:

DMA 2000, Dynamon SX 32, Dynamon SX 34, Mapetard, Mapefibre ST42, Mapeplast NS 20

Installing ceramic tiles:

Adesilex P4, Keraflex Maxi S1, Keralastic T, Ultralite S1,

Sealing joints: Mapeflex PU70 SL, Mapeflex PU 45 (now superseded by MAPEFLEX PU 45 FT)

Coatings: Antipluviol S, Elastocolor Paint, Elastocolor Primer, Quarzolite Base Coat

Waterproofing substrates:

Mapelastic
Chemical anchoring: Mapefix VE SF

Products for building: Mape-net 150, Lampocem, Eporip, Eco Prim Grip, Planitop 530, Planitop 510, Planicrete, Mapefloor Binder 930, Planitop 580, Planitop Smooth & Repair, Intomap R1.

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