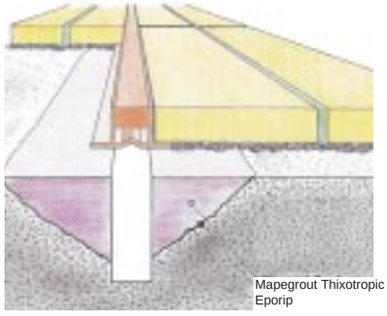
FIUMICINO AIRPORT WESTERN SATELLITE

Operational since 1999, the enlargement of the "Leonardo da Vinci" airport has allowed the Roman airport system to reach a receiving capacity of over 30 million passengers.

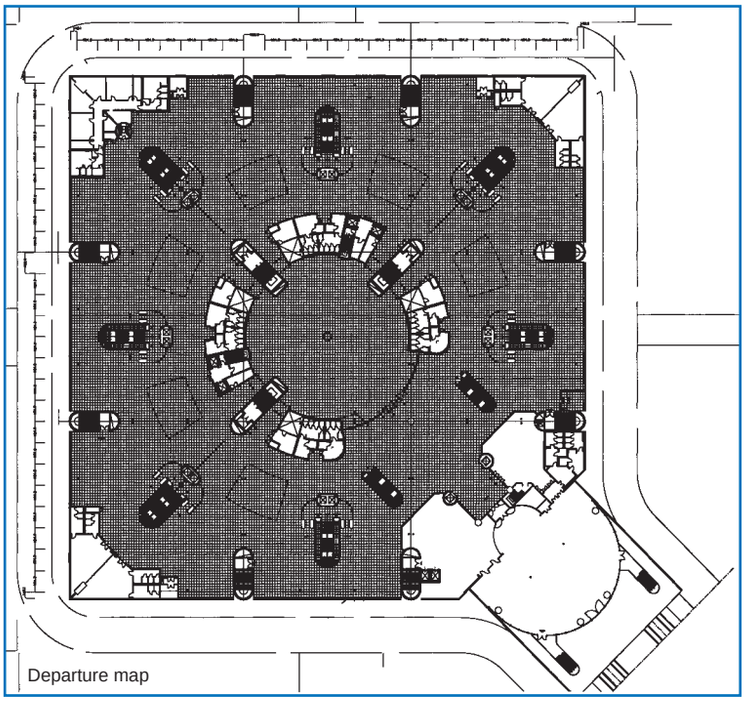
The program agreement signed by the Ministry of Transportation and the Aeroporti di Roma company for the enlargement of the "Leonardo da Vinci" airport dates back to 1996.
A development plan with investments of over 1721 billion lire, of which 1321 were provided by the Italian government and 400 by the airport company. At the end of 1999, the Western Satellite became operational with a new international air-terminal. Objective: allow the Roman airport system to reach a receiving capacity of over 30 million passengers by the end of 2000.
The objective was achieved, further qualifying Fiumicino as a strategic access point between Europe and the world's southern hemisphere. The development plan now requires the completion of the first module of an area destined to freight traffic (Carco City) by the end of 2001, as well as the new pier C.
The tender for the enlargement and restoration of the international Satellite was won by the temporary incorporation between Nesco Entrecanales Cubiertas SA, Gruppo Acciona SA and Lamaro Appalti Spa. For work execution, these companies formed the Ecla Consortium that arranged a tender for floor installation won by the temporary incorporation between Edil Pav and the Cooperativa Ceramica of Imola. The floors in the Satellite and in the station was of polished 60x60 porcelain gres, in the bathrooms of 30x30 porcelain gres, polished for the floors and rough for the walls, in the luggage areas opaque 10x10 porcelain gres, and in the storage areas 7.5x15 red gres.

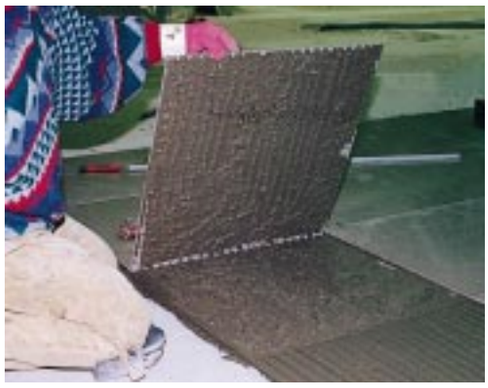
The contract specifications required fresh on fresh tile installation on cementitious grout, but considering the significant surface dimensions, the load and the heavy traffic of the floors, Mapei proposed an executive variant: the screed was made of sand and cement with 300 kg/m^3 dosage added with MAPEFLUID PZ500*, reinforced with an electro-welded 20x20 Ø 6 grid; previously, a slipping layer composed of a nylon sheet was installed, and the split joint openings were designed.
The solution was accepted. Installation surface was a total of

18,000 m²; for the 60x60 cm porcelain gres the KERAFLOOR+ISOLASTIC* system was used, while the KERABOND+ISOLASTIC* system was used for the 30x30 cm format. Both adhesive systems are based on cement and flexible latex, and allow to obtain exceptional bonding strength and deformability. What's more, KERAFLOOR* is indicated for large formats and permits the recovery of levelness in the installation phase up to a thickness of 15 mm. Installation was done using the buttering method. The 5 mm joints were sealed with cement-grey ULTRACOLOR*. Screed cuts for expansion joint execution were done in squares of about 20 m², with a depth equal to about 2/3 of the thickness,



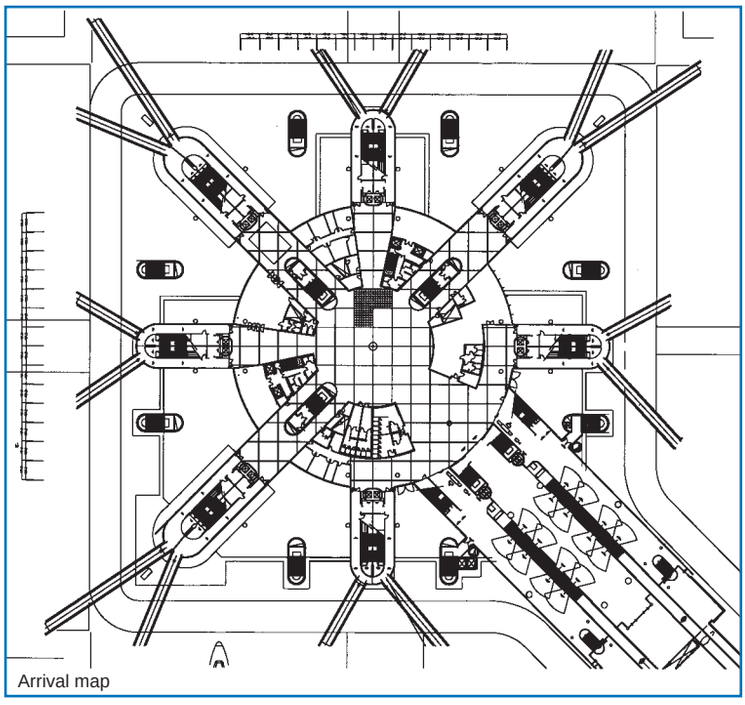
The drawing shows the placement of the Joint structural joint.





without notching the reinforcement grid. Expansion joints were made using pre-finished joints installed with MAPEGROUT THIXOTROPIC* and EPORIP*. During installation, in order to respect timing and to anticipate the delivery of some areas, TOPCEM*, a special rapid-drying normal-setting hydraulic binder, was chosen for the screeds instead of cement. This system allowed floor installation 3-4 days after casting the screed itself. To allow the other companies (electric systems, conditioning, counter-ceilings) to work in these areas, GRANIRAPID Grey* was used to bond the porcelain; this two-component quick-setting and hydrating adhesive system is set to light foot traffic after only three hours.

In spite of the difficulties caused by the dimensions of the areas covered and the selection of large polished materials, the final result is without a doubt excellent thanks to the careful design of the installation pattern, and the prefect installation carried out by a team of highly specialized workers who used the products recommended by Mapei's technical assistance at their best.



Arrival map

The photos published on these pages, except for the ones regarding the work phases, are courtesy of the Cooperativa Ceramica of Imola, who we thank for their kind collaboration.

TECHNICAL DATA

International Air-terminal Western Satellite of the "Leonardo da Vinci" airport – Fiumicino, Rome (Italy)
Intervention scope: installation of floors (about 16,000 m^2) and wall coverings
Year of construction: beginning of construction July 1998, end of construction February 1999
Customer: Aeroporti di Roma
Director of Works: architect Tommaso Bianco
AutoCAD Abacus: Imola Engineering with the collaboration of Lamaro Costruzioni
Material Installed:
• Satellite and Station - floors: 60x60 TOP615 L finely polished porcelain gres supplied by the Cooperativa Ceramica of Imola
• Bathrooms and facilities - floors: 30x30 polished porcelain gres, 30x30 rough porcelain gres supplied by the Cooperativa Ceramica of Imola
• Luggage area - floors: 10x10 opaque porcelain gres supplied by Cercom
• Structural joints: Joint
Installation Contractor: Ecla Scarl Consortium (NESCO Entrecanales Cubiertas SA, Gruppo Acciona SA and Lamaro Appalti Spa)
Ecla Consortium Construction Site Director: Engineer Paolo Conteduca
Installation Company: Ati (temporary incorporation between Edil Pav of Sigismondi Sandro - Monte San Giovanni Campano, Frosinone - and the Cooperativa Ceramica of Imola)
Satellite and Station work summary:

Screed composed of sand and TOPCEM	m^2 10,000
Screed composed of sand - cement and MAPEFLUID PZ 500	m^2 10,000
Anchoring slurry composed of PLANICRETE and TOPCEM	m^2 14,500
60x60 porcelain gres installed with KERABOND+ISOLASTIC, KERAFLOOR+ISOLASTIC and GRANIRAPID	m^2 20,000
Porcelain gres coverings installed with KERABOND+ISOLASTIC	m^2 4,500
Grouting done with cement-grey ULTRACOLOR	m^2 20,000
Split joint welding on the screed, on fields of about m^2 35 with EPORIP	m^2 20,000
MAPEGROUT THIXOTROPIC and EPORIP for structural joint installation	m 300

Mapei coordinators: Renato Soffi and Pino Mancini

The pictures of the work phases on the page aside show the installation of polished porcelain gres with installation following a pattern. Imola Engineering, in collaboration with Lamaro Costruzioni, created the installation abacus taking into account both the structural and installation joints. Bonding was done using the buttering method, with KERAFLOOR+ ISOLASTIC. The problems encountered during installation were caused by the weight of the tiles, which caused "crushing" of the adhesive (solved thanks to the suggestions of Mapei technicians), and by the difficulty of keeping the squares orthogonal in every direction considering that installation followed a pattern and regarded an extremely vast surface.

**The products mentioned in this article belong to the lines "Products for ceramic tiles and stone materials" and "Building specialty line". The technical data sheets are contained in the Mapei Global Infonet CD and in its Internet site www.mapei.com.*
Mapei adhesives and sealants are compliant with EN 12004 and prEN 13888 standards.
Topcem: *normal setting special hydraulic binder with rapid drying (7 days)*
Planicrete: *synthetic rubber latex for improving the adhesion and mechanical resistance of cement mortars*
Mapefluid PZ 500: *superplasticising pozzolanic admixture for concrete*
Kerabond (C1): *cement based powder adhesive for ceramic tiles (thickness of adhesive up to 5 mm)*
Kerafloor (C1): *cement based powder adhesive for ceramic tiles (thickness of adhesive up to 15 mm)*
Isolastic: *flexible latex additive to be mixed with Kerabond or Kerafloor*
Granirapid (C2F): *two-component adhesive system with rapid setting and hydration for ceramic tiles, natural and artificial stones (thickness of adhesive up to 10 mm)*
Ultracolor (CG2): *fast setting and drying grout for 2 to 20 mm joints, available in 26 colors; does not produce efflorescence*
Mapegrout Thixotropic: *controlled-shrinkage fiber-reinforced grout for the repairing of concrete*
Eporip: *two-component epoxy based adhesive for bonding new to old concrete and for the monolithic sealing of cracks in screed.*