

Slab on grade Tenax - Italia



Post-tensioned Slab on grade without joints and low maintenance-cost



▲ Warehouse just after construction

As a part of its investment plan in 2004, the Italian company Tenax SpA needed to restore one of its warehouses, placed in Vigano, near Monza, northwest of Italy.

The aim set out by the company was to transform its old warehouse into a new one equipped with the most advanced technology in order to store big coils of plastic materials.

The system of coils storage is based on metallic shelves, type “back to back”, which transmit to the slab on grade a point load of 8 ton/leg.

The system for moving materials within the warehouse would be

carried out by a 5 x 1 m robot, led by magnetic sensors. The robot load is around 3 ton/ wheel.

Little magnetic sensors are placed within the slab on grade and used to lead the robot. Any diversion in the position of these elements would cause a fault at the real position of the robot and also a damage both materials and equipment.

Besides, the exigency of the slab on grade planimetry was determinant for the correct robot operation and the same for joints, due to heavy loads of the robot and its semi-led bearing system.

Considering customer needs, VSL launched as a proposal the execution of a post-tensioned slab on grade without joints. VSL was able to positively contribute to the success of this project with sound engineering and pavement construction knowledge based on extensive experience in the design and post-tensioning of slab on grade and pavements. Client

satisfaction and builder's construction advantages resulted in VSL being the preferred designer and subcontractor for this high performance application.

This proposal allowed the client to satisfy their needs as well as obtaining a safe slab on grade, with a low maintenance cost and versatile.

Scope of works performed

- Project engineering
- Supply of post-tensioning materials (wedges, anchorages, etc.).
- Supply of stressing equipment.
- Coordination and supervision of all works.



▲ Perimetral formwork with anchorages

The slab on grade with dimensions around 120 x 50 m was concreted in 8 casts of approximately 750 m² each one.

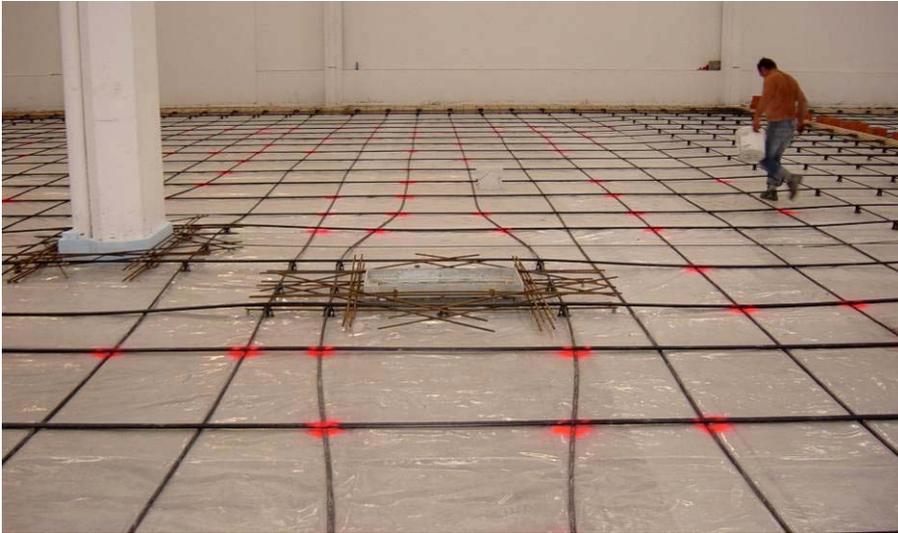
Under the slab on grade a 3 cm sand layer and two polyethylene layer were spread to ensure a minimum friction coefficient between the slab on grade and the existing lab.

The flexibility of the post-tensioning system has allowed to solve particular situations generated by existing columns. Casts were carried out continuously in only 8 days.



▲ Sand layer

▼ Layout of cables and ordinary reinforcement



▼ Area watered and covered with geotextil



PROJECT

Tenax, Vinago

OWNER

Tenax SpA

ENGINEER

Tenax SpA

CONTRACTOR

TeknaChem

VSL ENTITY

CTT-Stronghold SA

The work equipment was divided into 3 groups, one for the concrete, one for the stressing and other for the preparation of cables and reinforcements.

Works were performed in summer, being the inside normal temperature 30°C at 8 AM and higher during the course of the day with maximum values of 45°C. These continued temperatures favoured an acceleration of the concrete strengthening, which was perfectly controlled by partial stressing always carried out 24 hours after finishing the cast.

After concreting, the area was watered and covered with geotextil, which allowed to maintain the humidity.

Post-tensioning works for obtaining this slab on grade without joints, were performed successfully and with total satisfaction of the client.

▼ Concreting



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