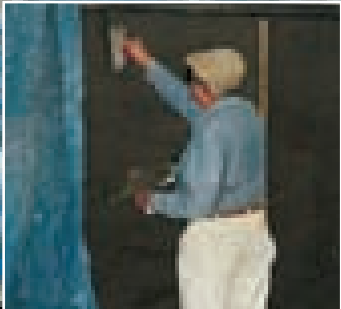
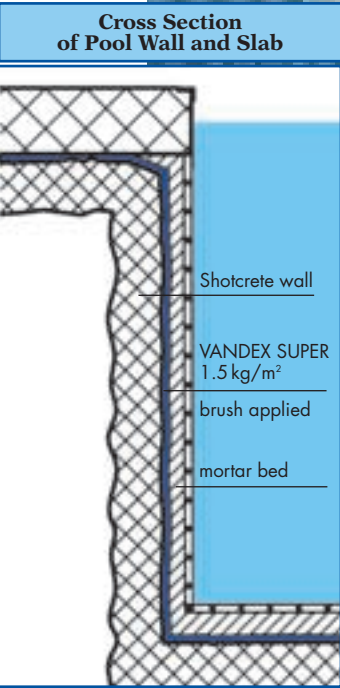


EISENHOWER PARK AQUATIC CENTER, NEW YORK, USA

VANDEX SUPER application



GOODWIL  
GAMES POOL  
WATERPROOFED  
WITH VANDEX  
SUPER



© Peter Mauss/Esto

Athletes from over 60 countries gathered in New York in July, 1998 for the Good Will Games, a politically free athletic competition originated by Ted Turner in 1985. As part of their successful bid, New York State organizers promised to build a world-class facility for swimming and diving events, the new \$30 million Eisenhower Park Aquatic Center. This 7,450 m² (80,000 sq.ft) natatorium contains the largest body of enclosed water in the western hemisphere, a 6 million litres (1.6 million gallon) pool featuring movable bulkheads, a floor that adjusts to different depths, and diving platforms ranging from 1 to 10 meters. It also features permanent and portable seating for more than 3,000 people. In addition to being used for major competitions, the state of the art facility is open to local swimming clubs and the public for recreational and competitive swimming.

Waterproofing was naturally a critical component in the pool construction, and VANDEX SUPER capillary/crystalline waterproofing offered a number of advantages that led to it being chosen over an originally specified elasticized cementitious material.

The pool was constructed with a shotcrete (gunite) shell which

produces a relatively rough surface. A thick set sand cement mortar bed of 4 mm (1 1/2") was therefore required to provide an even surface for the subsequent ceramic tiles. This is a common pool construction method in the United States. VANDEX SUPER was applied between the original gunite shell and the mortar bed, in a "sandwich method", allowing the active Vandex chemicals to penetrate into both the substrate and the mortar. VANDEX SUPER also acted as a bonding agent between the gunite and the mortar bed. One of the biggest advantages of using this approach was that it eliminated any down time between the waterproofing and the mortar bed/tile installation.

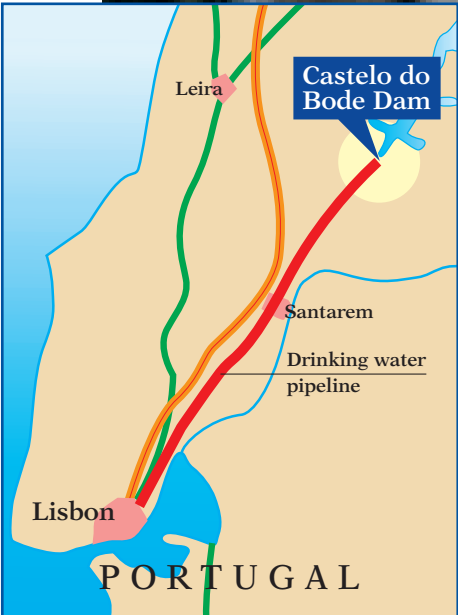
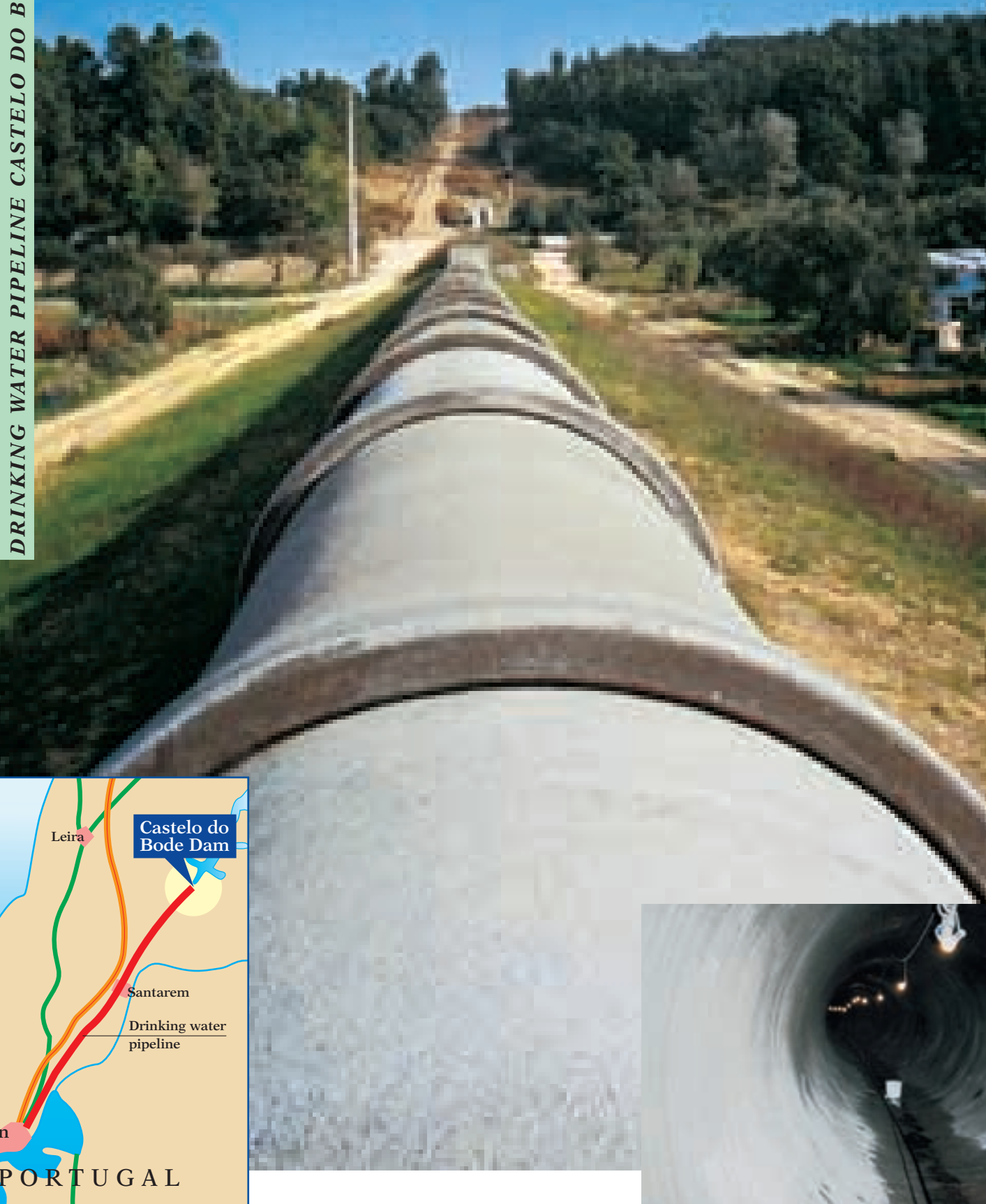
VANDEX SUPER was brush applied to the gunite shell at a rate of 1.5 kg/m², and after reaching initial set (approx. 50 minutes) a first layer of the mortar bed was troweled over the fresh VANDEX SUPER. The remaining mortar layer was applied as soon as the next day, followed by the ceramic tiles. The Vandex applicator, Norberto & Sons, Inc., one of the largest pool contractors on the East Coast, was so convinced of this method that they have since used it on another Olympic sized pool in Staten Island.

**Owner:** Nassau County Department of Recreation and Parks, Nassau County, NY, **Architect:** Richard Dattner Architect P.C., New York, NY, **Pool Consultant:** Counsilman/Hunsaker & Associates, St. Louis, MO, **Vandex Applicator:** Norberto & Sons, Inc., Medford, NY, **General Contractor:** Tishman Construction Corp. of New York, New York, NY

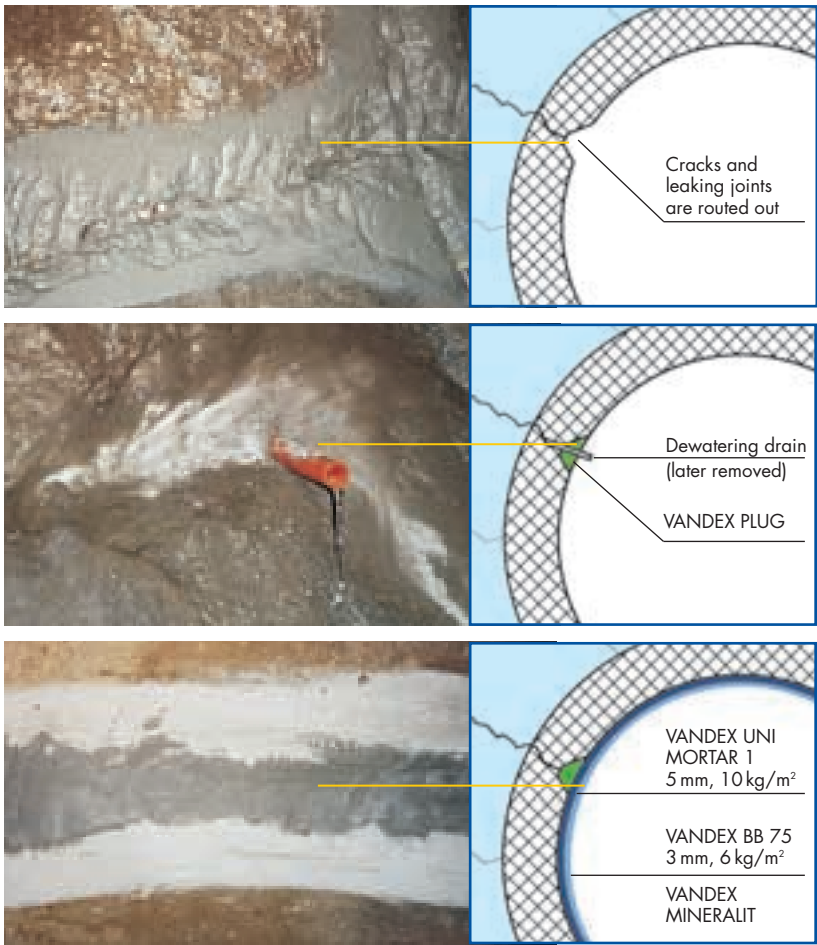
VANDEX SUPER application on walls and base slab.



# RENOVATION OF MAIN DRINKING WATER PIPELINE FOR LISBON, PORTUGAL



## OPERATIONAL STEPS OF PIPELINE RENOVATION



**C**astelo do Bode **Subsystem** Plans dating back to the 1930' were drawn up to build the Castelo do Bode Dam, to boost Lisbon's water supply and to generate electric power.

About 500,000 m<sup>3</sup> of water per day are currently drawn from the intake located at the Castelo do Bode Dam. This is about 2/3 of the total quantity supplied to the city of Lisbon by EPAL- Empresa Portuguesa das Águas Livres, S.A., the largest by far of Portugal's producers and distributors of potable water.

This water, after treatment at the Asseiceira water treatment plant, is carried the 65 km to Lisbon by the Castelo do Bode pipeline. Made of pre-stressed concrete and reinforced concrete mixed on site, the pipeline has an inside diameter ranging from 1,500 to 2,500 mm.

One 12 km long segment of this pipeline, located between Várzea das Chaminés and the Vila Franca de Xira pumping station, is buried 3 to 6 metres deep and was built "in situ" in 1988. When this segment showed concrete deterioration and damaged joints, EPAL invited REDECOR, who represent VANDEX International Ltd in Portugal, to consider a concept for repairing those defects and providing future protection of the pipeline.

Redecor began by carrying out tests with VANDEX PLUG, VANDEX UNI MORTAR 1, VANDEX BB 75 and VANDEX MINERALIT on the inner surface of the pipe, which then carried water as usual for a period of six months. At that point, the tests were deemed successful and repair measures were started in accordance with the renovation concept (see box).



VANDEX BB 75 spray application

During the rainy season the pipe, showed sizeable rainwater leaks. These ceased after installing drains and plugging with VANDEX PLUG (see drawings).

After the leaks were plugged, coating took place on the inner surface of a 2 km long section of pipe, with an inside diameter of 2,500 mm.

## REPAIR AND RENOVATION CONCEPT

- High-pressure water- and sandblasting of the corroded concrete surface, steel reinforcement.
- Plugging of leaks in pipe joints and cracks (necessary before coating inner surface).
- Coating reinforcement with VANDEX CRS CORROSION PROTECTION EP.
- Levelling and protection of concrete surface with 5 mm thick overall coat of VANDEX UNI MORTAR 1.
- Protection of bottom of pipe (approx. 1/4 of inner surface) with 10 mm thick layer of VANDEX UNI MORTAR 1.
- Final coating with a 3 mm thick coat of VANDEX BB 75 for waterproofing, concrete protection and smooth surface to cut down on flow loss due to hydraulic friction.
- Surface hardening of final coat with VANDEX MINERALIT.

### The VANDEX products used in this project:

VANDEX UNI MORTAR 1	170 tons
VANDEX BB 75	82 tons
VANDEX SUPER	1 ton
VANDEX PLUG	3 tons
VANDEX MINERALIT	1 ton

Owner: EPAL Empresa Portuguesa das Águas Livres, S.A.;  
Engineer: EPAL; Main contractor and VANDEX  
Applicator: REDECOR, P-1100 Lisbon



SEWAGE TREATMENT PLANT BIEL, SWITZERLAND

SEWAGE PLANT BIEL,  
UPGRADING PROJECTS  
1997 - 2000



The sewage treatment plant for the region of Biel, Switzerland, was commissioned in 1971. It was perceived as a modern facility and represented the state of the art at the time. Since then there has been no major investment, and the facility is consequently showing signs of wear and tear. To ensure that the facility will continue to operate reliably, and to enable the current guidelines for water conservation to be met, upgrading and redevelopment has become imperative.

The upgrading project

The project aim, in addition to maintaining the condition of the plant, is to achieve the following:

- To increase the purification performance and operational safety
- To reduce the levels of water pollution
- To upgrade the plant to reflect the state of the art from the engineering and ecological aspects
- To avoid odour and noise emissions

Following extensive project planning work in collaboration with the federal and state authorities, the 50 million

swiss franc project was awarded to a general contractor.

The entire plant is being fundamentally upgraded. All the mechanical equipment is new or has been completely reconditioned.

The pre-treatment tanks, aerating tanks and post-treatment tanks have been renewed in such a way as to give them the same life expectancy as new tanks. The engineers in the contracting companies responsible for planning chose the tried and tested VANDEX System products for the concrete repair and protection work.

To ensure the plant continues to operate at a minimum of 75 % of full treatment capacity throughout the entire construction phase, the work will be carried out in four stages, each taking one year.

**Participating parties:** **Developer:** ARA Region Biel AG, CH-2501 Biel-Bienne/Switzerland; **General contractor:** Ratio Bau AG, CH-2501 Biel-Bienne/Switzerland; **Engineer:** Mathys Dr. & Wyssseier, E. Schüler-Str. 5, CH-2502 Biel-Bienne/Switzerland; **General contractor/Vandex operator:** Bau-technik AG, Wylstrasse 62, CH-3014 Biel-Bienne/Switzerland; **Subcontractor surface preparation:** Granjet Granelle AG, High pressure water jet blasting, Stumpfenweg 6 - 8, CH-5303 Würenlingen/Switzerland

CONCRETE REPAIR/  
PROTECTION

The concrete repair and protection work was carried out in stages, all in accordance with the following concept:

- Preparation of the base using high pressure water jetting.
- Removal of all the noxious epoxy resin layers in the upper region of the tanks.
- Repair of cracks and concrete spillings with VANDEX CRS CORROSION PROTECTION AC and VANDEX CRS REPAIR MORTAR 05.
- Coating of the entire tank walls with VANDEX UNI MORTAR 1 Z, average thickness: 3 mm.
- Coating of the entire tank walls with VANDEX BB 75 Z, to a thickness of 2 mm, as surface protection in the easy-clean spray finish.

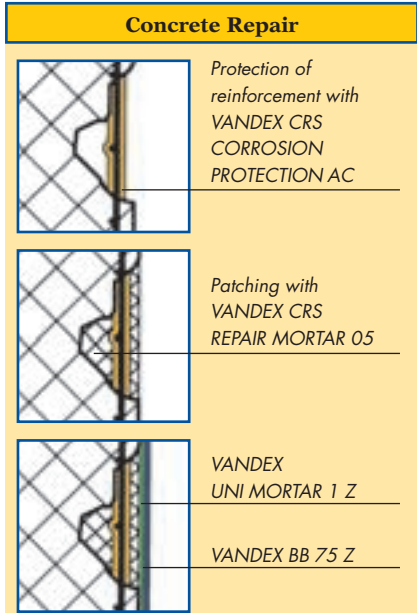
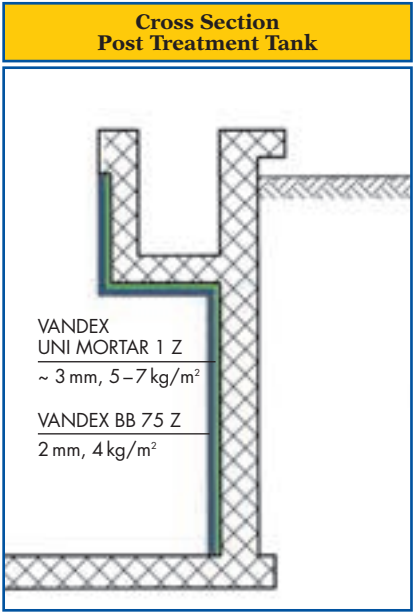
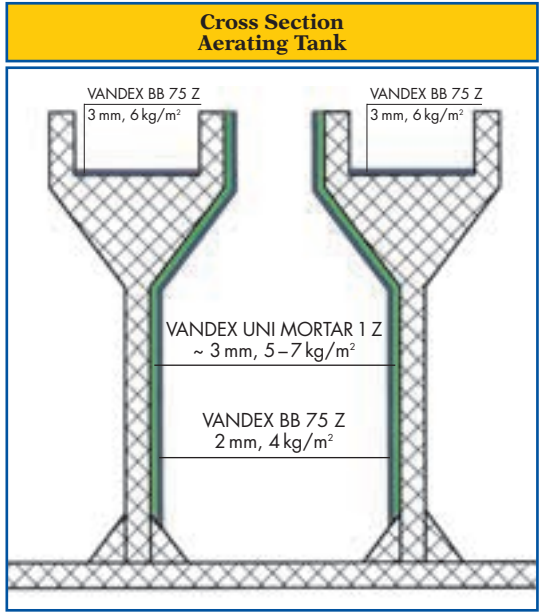
Total areas treated: 30,000 m<sup>2</sup>

SEWAGE PLANT BIEL

Connected: 10 districts (Biel conurbation)  
Population: 72,800  
Waste water volume per day: 40 – 50,000 m<sup>3</sup>  
Treatment stages: Mechanical, biological and chemical, as well as sludge treatment.

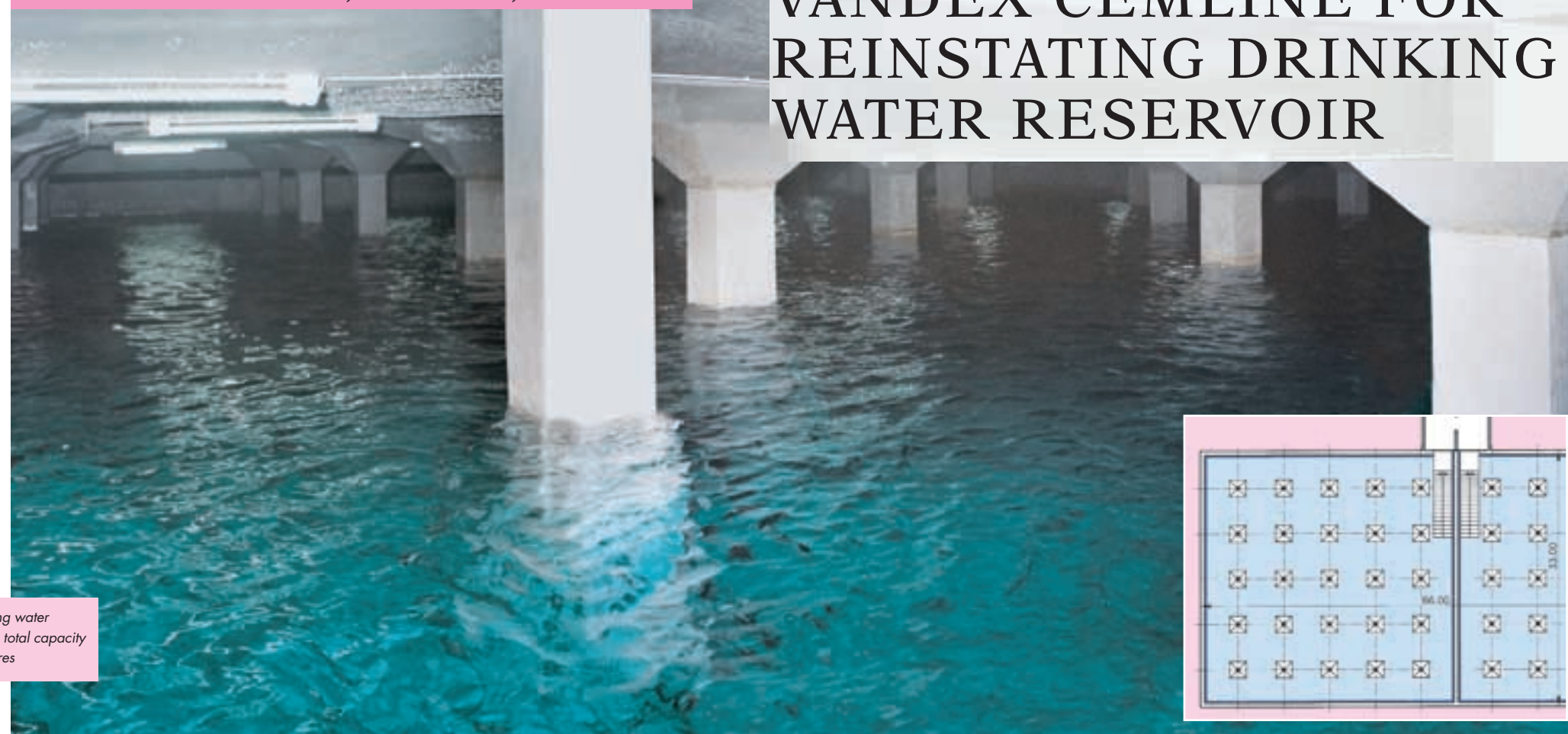


Application pictures.  
Left: Spray application of VANDEX UNI MORTAR 1 Z  
Right: Spray application of VANDEX BB 75 Z in "orange peel" surface finish





# DRINKING WATER TANK, FELLBACH, GERMANY



Fellbach drinking water reservoir with a total capacity of 10 million litres

In the last quarter of the 19th century, there was hardly ever any shortage of water for either drinking or industrial use in the vineyard village of Fellbach. In 1896, the Fellbach local council decided to examine the “Dreibrunnenquellen” (source of the three springs) on the northern slopes of Kappelberg for its yield and its hygienic suitability. It was also here that, following a resolution of the newly founded FELLBACHER WASSERVERSORGUNGSGRUPPE, a high-level tank with a capacity of 800 m<sup>3</sup> was constructed in 1902.

In 1957, the Fellbacher Group had the high-elevation tank enlarged for a second time, by 9,000 m<sup>3</sup> (to a volume of 11,400 m<sup>3</sup>).

## Description of the structure

The structure to be renovated is a rectangular water tank, covered with earth on the Kappelberg in the semi-elevated location of Fellbach. There are two water

chambers, each with a water capacity of 5,000 m<sup>3</sup>. The complete construction is of steel-reinforced concrete.

Access to the water chambers takes place via the valve house. The two water chambers have a height of approx. 5.30 m. In each chamber there are 36 mushroom-head columns, in a support grid of 5.00 by 5.00 m.

The coatings on the wall, floor and support surfaces are all extensively damaged. The roof has a plaster coating that is approx. 5 mm thick, and appears to be hollow over large areas.

## Remedial Specification.

### Mushroom head with visible planking

On the ridges of the mushroom heads there are traces of reinforcement corrosion, and it is suspected that the concrete cover is extremely thin in this area. Spalled areas of the structure should be exposed, the steel should be sandblasted and

protected with mineral VANDEX CORROSION PROTECTION M. After the chiseled out areas have been reprofiled, VANDEX UNI MORTAR 1 will be applied to the sprayed mortar layer to increase the concrete cover. The final coating will be carried out by applying of VANDEX CEMENTLINE SG (3 mm) in “orange peel” surface finish.

### Roof/Ceiling

All spalled and loose material must be removed either in their entirety or locally. The ceiling area is then reinforced with the VANDEX UNI MORTAR 1 sprayed mortar layer. The 3 mm thick final coating is carried out using VANDEX CEMENTLINE SG to form a stalactite-type spray structure.

### Walls and columns

After careful water and sand blasting of the wall surfaces, concrete repair will be carried out. Here also, for repair spots VANDEX UNI MORTAR 1 will be applied. A 5 mm intermediate

layer of VANDEX CEMENTLINE MG then follows. The final coating will again be a multiple application of VANDEX CEMENTLINE SG (3 mm). The surface should be trowelled smooth.

### Slabs

After thorough cleaning, the floor surface will be coated in the same way as the walls. Here also, the surfaces will be trowelled smooth.

The specification is completed by the application of VANDEX MINERALIT for walls, columns and slabs.

The high water flow rate and/or the strong turbulence, necessitated the use of a material having a high resistance to this form of cyclical stress. The new VANDEX CEMENTLINE system has been selected, as it promises an extended service life.

Total areas treated: 5,700 m<sup>2</sup>.

**Planning:** Ingenieurbüro Jürgen Schumacher, D-70736 Fellbach; **Special Building Materials:** Vandex Isoliermittel-Gesellschaft mbH, D-22525 Hamburg; **Contractor:** Schmutz GmbH, D-76189 Karlsruhe, **Operator:** Stadtwerke Fellbach, D-70736 Fellbach

