



Figures 5 and 6: Secondary breaking of material. Hydraulic cutters and pulverisers break concrete and reinforcement bar in one step.

- rock and dust from penetrating the lower part of the breaker
- an automatic lubrication system, mounted on the breaker
- an arrangement of elastic damping elements that isolate the percussion mechanism acoustically and prevents damaging vibrations

- an automatic stroke-switching system that optimises the ratio of impact energy to impact rate
- a system that allows the start-up and shut-off behaviour of the breaker to be set in line with conditions.

“With these attachments we will be able

to cope with the 25,000m³” says Florian Ruppert, junior manager of the company. “We expect to have completed the job within four months.

“On the other side of the Main a railway track intersects with the old bridge,” Ruppert continues.

“This part of the bridge cannot be blown up. For this particular demolition job we have purchased Atlas Copco CombiCutters CC 2500 U and CC 3300 U. We will attach them to Liebherr type 954 and 974 excavators and demolish this bridge section from below.”

The B 13 was cleared after only 36 hours, so that the Federal road could be opened to traffic much earlier than scheduled.

“Everything went smoothly. The ContiLube II automatic lubrication system in particular makes work easier for us,” explains Klaus Wissmann, excavator operator of Ruppert.

The rubble will be a 100% recycled in Ruppert’s own recycling plants. The seven recycling plants include one crusher plant on a crawler, three mobile crushing plants, two wood crushers and one stationary crusher. Four mobile screening units complete the equipment, which ensures a maximum amount of recycling and the availability of high-quality construction material. ■

Southgate Industrial Park, Moscow

Having previously worked with Moscow-based Giffels Management Russia on a 400,000m² logistics floor in Kazan and with Russian main contractor Megastroy on a 1.5 million m² distribution centre near Moscow, Permaban was appointed by Giffels as floor designer, specifier and supervisor for the 600,000m² Southgate Industrial Park near Moscow, again working with Megastroy as main contractor and Russian flooring contractor Romex.

Rodney Arnold, Permaban, Ivybridge, UK

Giffels is focused on the warehousing and logistics sector within Russia and is developing an industrial real estate portfolio. The company required the finished floor to provide high durability and a professional floor appearance with minimum maintenance.

Permaban produced the floor design and specification with a flatness tolerance of FM2 Special as described in Concrete Society Technical Report 34⁽¹⁾. Assistance was provided by Professor John Knapton on ground improvement. Permaban worked closely with the main contractor, Megastroy and the flooring contractor Romex to achieve the high standard of finished floor required by Giffels Management Russia.

Permaban supplied 3500m of its

AlphaJoint formwork system complete with joint intersections, 305 tonnes of FibreTop Natural Grey Floor Hardener and 6200 litres of Permaseal cure/seal product for the first area of 65,000m².

The Permaban/Romex team decided that by using large-area casting techniques, the Somero SXP Laser Screed and Somero Topping Spreader they would try to achieve FM1 on bay sizes of 24m wide between columns and 48m long. Each pour was contained inside AlphaJoint leave-in-place formwork system fixed using AlphaFix, which Romex first used on its first concrete floor project back in 2004.

Permaban designed the floor as a 200mm-thick nominally reinforced floor with locally produced square panelled mesh reinforce-

ment, incorporating 6mm wire at 150mm centres in both directions to provide the equivalent of a BS A193 mesh. Three millimetre-wide sawn joints were cut at 6m centres in both directions.

Close attention was given to access for the concrete as it was considered very important that consistent concrete was obtained to aid the tolerance achievement, so it was decided to place the concrete from the back of the truck rather than pump it, which would have required a modified, more complex mix design. The mesh was initially laid onto the slip membrane, which allowed the trucks to reverse into position to place their load. Just prior to the concrete being placed the mesh was set up on spacers to provide 50mm bottom cover.



Figure 1: Installation of AlphaJoint GD8 at Southgate Industrial Park, near Moscow, Russia.



Figure 2: The completed first floor area at Southgate Industrial Park.

Photos: Permaban.)



Figure 3: The Romex/Permaban team reflecting in their pristine floor, a testament to their capability.



Figure 4: Check and recheck of the floor levels.

One of the features of using the AlphaJoint with the AlphaFix is that the bay closing formwork does not need to be placed until the laser screed is on its penultimate pour for the bay. The speed that the AlphaJoint can be installed and micro-adjusted for line and level permits the installation to follow behind the laser screed. This allows the concrete truck to back down directly to the position of placement without having to turn on the reinforcement and slip membrane thus preventing rucking of the membrane and rutting of the sub-base.

As the concrete was being placed, consistent level checks were taken of the levelled concrete and the formwork at the edges. The surface was skip floated and straight edged following the levelling by the laser screed. Prior to and during the power floating and the power trowelling operations, further straight edging and level checking was carried out constantly, both within the general floor area and across the joints to ensure achievement of both Property II along the joints and Property IV in the general floor area.

Initially there were considerable problems with the concrete slump consistency and delays between concrete trucks arriving on-



Figure 5: Checking the level of the AlphaJoint.



Figure 6: Application of DryShake Floor Hardener.

site, which resulted in the first day's pour taking some 15 hours. However, it was very pleasing to inspect the first day's measurement readings, which demonstrated that Category FM1 Properties II and IV had been achieved with only 2% of the measurement falling outside the 95% requirement, thus delivering an excellent floor to the client that more than achieved his requirement to provide a high durability floor with a professional floor appearance.

During the placement of the first pour,

Permaban arranged for its flat floor supervisor to be on-site to advise and review methods for flatness achievement. The floor was well inside the FM1 measurement for both Property II and IV without any grinding. ■

Reference:

1. CONCRETE SOCIETY. *Concrete industrial ground floors – A guide to design and construction*. Technical Report 34, Third Edition, The Concrete Society, Camberley, UK, 2003, 147pp.