TOASTING SUCCESS AT STATE-OF-THE-ART BREWERY

Work forged ahead as planned on a fast-track reservoir-construction project for a sophisticated brewery in Sedibeng, Gauteng.

Heineken owns more than 70% of the brewery and Diageo the balance of the facility, where millions of hectolitres of premium beers are brewed and bottled for the South African market.

M&D Construction Group, a leading South African civil-engineering contractor, was tasked with constructing the new structure that is able to store five mega-litres of water, a primary ingredient for beer production.

Moreover, the company's scope of work included the inlet and outlet of the reservoir, in addition to relocating all existing services to accommodate the new structure.

While a straight-forward project for a contractor that is known for its stellar workmanship on much larger water infrastructure projects, Peppler Stander, a M&D Construction Group site agent, says that his team had to work under immense pressure to complete the work scope in a very short timeframe.

"This brought a level of complexity to this construction site," Stander says. "Sound upfront planning and team effort from all participants on this project was essential to complete the infrastructure by July. Bear in mind that we mobilised to site in November just before the annual builders' shutdown period in 2017, while also having to contend with heavy rains earlier this year," says Stander.

He says that M&D Construction Group's extensive skills and capabilities were complemented by those of its sub-contractor, Corestruc, which also has a long and impressive track-record working on reservoir-construction projects of varying sizes.

The company is known for its unique precast-concrete reservoir roof system, comprising columns and beams which, in turn, support the hollow-core slabs that make up the roof of the structure.

On this project, however, the hollow-core slabs were directly supported by the reservoir's cast in-situ concrete walls, including an internal structure that divides the reservoir into two equally-sized separate water-retaining compartments to facilitate its ease of maintenance.

The initial reservoir design specified a pre-cast concrete roof structure with internal columns; however, M&D Construction Group suggested that the alternative solution to further assist in fast-tracking the construction programme.

"M&D Construction Group has worked with Corestruc on other projects before and we are very familiar with the quality of its system and workmanship. We, therefore, approached Willie de Jager, managing director of the company, to assist us in designing a suitable alternative, and the proposal was very favourably received by our client and representatives of Esaba Consulting, the project engineer," he says.

Cobus Augustyn, Corestruc's site manager, says the roof structure comprises more than 50 pre-stressed 320-mm deep hollow-core slabs of between 70 MPa and 80 MPa that span the top of the structure.

"They are stitched together with a 35 MPa concrete to form a durable monolithic slab structure. The two centre concrete 'planks' are more than 16 m-long and weigh as much as eight tonnes, and are among some of the largest precast concrete hollow-core slabs that have been manufactured, as well as handled by us on a project thus far," Augustyn says.

The slabs were manufactured and cut at the precast-concrete factory, which is owned and operated by CoreSlab, the manufacturing arm of Corestruc.

Meanwhile, CoreFleet, another subsidiary of the group, was tasked with the timely delivery of the precast-concrete elements to site. He says that close co-ordination had to be maintained between the three entities at all times to ensure the timely arrival of the elements to the site.

As many as 14 hollow-core slabs were installed in a day, and they were lifted directly from the company's trailers using a 130 t all-terrain mobile crane with 10 t slings.

Augustyn says one of the complexities on this project was the extremely congested site, and the crane had to, therefore, be positioned as close as possible to the structure to allow just enough space for the truck-and-trailer configurations to access the site.

Despite the onerous site conditions, the seasoned Corestruc site manager and his team of five people safely and accurately placed the hollow-core slabs in only four days. This allowed an additional two days in which to install the tie steel and to complete the stitching.

Stander says that he was extremely impressed with the production rate that the Corestruc team achieved on site, as well as the willingness of senior management of the company to visit the site to ensure that expectations were met at all times.

"The real value that the company brought to the project is its ability to provide a comprehensive precast-concrete solution that begins by sharing important insights on the optimal use and layout of the hollow-core slabs, and ending with the safe and efficient construction of the precast-concrete structure," he says.

Rukesh Raghubir, chief-executive officer of M&D Construction Group, says that the company's working relationship with Corestruc is a sound example of its *Khula Nathi* policy, which means to grow with us.

Augustyn and his team are now working on another reservoir construction project, but this one is being built using Corestruc's unique precast-concrete wall and roof system to further significantly accelerate construction times. He looks forward to sharing more details on this pilot project very shortly. ■