

PRECAST AT THE CORE of university accommodation upgrade

The shortage of student accommodation in South Africa became apparent in 2011. This is when a Ministerial Review of student housing revealed that 5% of first year students were housed in university residences and it projected that the overall bed shortage on campuses would reach 216 000 in 2017.

The report also noted that an extra 400 000 beds would be needed by 2030 to meet the enrolment targets established by the Post School Education and Training policy and the National Development Plan. It recommended that student housing should accommodate between 50 and 80 percent of students in the country.

Another survey conducted by the South African government in 2016 revealed that there were only 10 120 beds for the 710 000 college students for the 50 public Technical and Vocational Education and Training colleges in the country.

This has translated into an immense opportunity for built-environment practitioners with the necessary skills and capabilities to help attend to the backlog.

Early consultation

Known for the high quality and rapid installation of their precast concrete structures, Corestruc, and its sister company, Coreslab, were consulted right in the early design phases of the proposed expansion of both male and female residences on the University of Venda's campus.

Their experts advised on the optimal use of hollow-core slabs to optimise the overall design of the residences and acceleration of the works programme in time for the new student intake at the start of the 2018 academic year.

This extensive upfront work was undertaken together with Lemeg Architects, and structural engineer, Thiko Consulting, ahead of the arrival of main contractor, Base Major, in 2016 to commence construction of the eight female and eight male residence blocks.

Located behind the main faculty, all of these structures comprise three-storeys with each level accommodating about 14 rooms.

They will significantly augment the existing residences on the campus and the Thohoyandou-based institution of higher learning's

capacity to provide affordable, safe and quality accommodation for its many learners during the academic year.

Base Major has made steady progress on the project, despite the complexities that come with most university-related builds, counting time pressures, space constraints and working safely and efficiently in an operational area. Some of the female residence blocks had already been plastered, while the various trades had commenced 'fitting-out' the new rooms as the structures climbed from ground level.

Willie de Jager, managing director of Corestruc, attributes this achievement to the extensive preparations already undertaken during the design phases, as well as the accurate surveying of the site using a total station ahead of the installation processes.

This upfront work also ensured utmost accuracy in the manufacture of the pre-cast concrete items. In addition, close attention was paid to the interface between the installation teams and the "just-in-time" dispatch and delivery of the quality items from Coreslab's operations to site.

Challenges

"We had to ensure that the project stays on track, considering the extremely unpredictable weather conditions in the area. When it rains, activities come to a grinding halt. The area is overlain with clay soil – commonly referred to as 'Venda Rooi' – which, when wet, makes it impossible to operate heavy equipment, such as our mobile crane, as well as 'horse-and-trailers' that deliver the items to site. This project relied heavily upon our known project management capabilities that ensure swift installation of precast concrete items on site," he says.

However, it is not only the quick installation rate of the hollow-core slabs and precast concrete beams that have played such a prominent role in the efficiencies achieved on site.

The structures' foundations also comprise hollow-core slabs that accelerated the construction programme by up to six months. This was a proposal made by Coreslab managing director, Jaco de Bruin, to overcome the delays experienced during the piling operations that commenced early in 2016.

Changes to the original design

Other changes to the original design that have also helped ensure a swift production rate is maintained on site is a decision to use precast concrete internal stairs and fire escapes, as opposed to the initial recommendation that relied on steel post-fixed items.

They have also proved to be a more cost-effective proposal for the client. These pre-cast concrete items that have been batched with a special self-compacting concrete mix are also aesthetically-pleasing and complement the residence's striking clay-brick façade.

Just under 10 000 tons of precast items, covering a surface area of about 34 000 m², have been supplied and are being installed on campus. There are at least two blocks on site at any given time, allowing Quintus Kruger, site manager of Corestruc, and his small and efficient teams to continue placing the hollow-core slabs. Kruger is part of the small and efficient team deployed on campus, and is joined by six other Corestruc personnel, which includes the skilled operator of the mobile crane that is used to lift and place the items directly from the trailers to avoid unnecessary movement. ●

Corestruc and its sister company, Coreslab, are helping the University of Venda increase its student accommodation.

