This highly efficient manner of building does away with the need for scaffolding and formwork

By this stage of the build, a stable construction sequence had been established and the process was repeated all the way to the 4th floor

Corestruc leads the way with innovative pre-cast construction

The Greater Giyani Municipality will soon take ownership of its new modern administration offices, with the second-and final phase of the development in the heart of the Giyani central business district now nearing completion.

The 1 000 tons of pre-cast concrete elements, including 190 columns and beams, as well as 2 900 m² of floor and roof slabs, that make up the new administration block were designed, manufactured and installed by Corestruc – a leader in the field of pre-cast concrete structures. These pre-cast elements play a critical role in helping meet dbm Architects' design requirements for a durable structure that will continue to add value for the Greater Giyani Municipality for many years.

All of the pre-cast concrete items are no less than 60 MPa, and were manufactured to exacting standards under tightly-controlled conditions at the company's state-of-the-art batching plant. The high levels of batching accuracy achieved in a factory setting are also a major contributor towards Corestruc's impressive installation track record on sites.

The pre-cast concrete structures are swiftly assembled by small teams, eliminating the need for scaffolding and formwork and co-ordination of ready-mix concrete deliveries.

"On this heavily-congested site we had just enough space to strategically position our 160 ton crane to efficiently handle the various pre-cast elements," said Corestruc's senior contracts manager Russell Hobbs. "Certainly, our system helped overcome many major logistical complexities that would have hindered conventional in-situ construction techniques."

Hobbs explained that the columns were installed according to a template that is placed on top of the building's foundations, then aligned to achieve the required dimensional accuracy before installing the pre-cast concrete beams and floor slabs.

By this stage of the build, a stable construction sequence had been established, and the process was repeated all the way to the fourth floor, ending with the placement of the roof slabs. The floor and roof slabs were then filled with a specially-designed non-shrinking grout to provide high weather-proofing properties.

Based on its stellar workmanship during the earlier phase of the programme, Corestruc was invited to extend the existing council chambers in line with later amendments made to the original design.

Hobbs said the work scope entailed installing 18 additional pre-cast concrete wall panels to lengthen the existing curved wall consisting of 46 wall panels.

Each 5,4 t panel is 9,7 m high, 1 m wide and 200 mm thick and are joined with quality Bartec Type couplers which were imported from Germany.

Again, Corestruc's teams made light work of this aspect of the programme, completing the installation of the additional panels in four shifts using a team comprising seven people, including a supervisor.

The wall panels were placed and the connections then grouted, ahead of the completion of the second stage in-situ concrete foundations.

"Once the panels were securely supported by propping that was attached to the existing structure, the 320 mm-thick hollow-core roof slabs, with spans of 11,6 m, were installed in just one day. A 100 mm-thick reinforced in-situ structural topping layer was then placed over the pre-cast roof elements to complete the extension," Hobbs said.

Hobbs foresees a buoyant outlook for this method of construction as more developers and their professional teams explore better ways of building. ■