**PRESS RELEASE**

Many challenges overcome at successful Ballito Interchange upgrade

***18 May, 2015:*** *A successful project to upgrade the Ballito Interchange in Durban, KwaZulu-Natal involved extensive input from SMEC South Africa right from the design stage to overseeing the actual construction. Additional challenges included accommodating existing traffic and even pedestrian use.*

The South African National Roads Agency SOC Limited (SANRAL) initiated the project originally to improve the capacity of the Ballito Interchange, which became highly congested at peak times. The initial plan was to add a single loop ramp to accommodate east-to-north turning movement.

However, a detailed traffic study carried out by SMEC South Africa indicated that this solution would at best be a stopgap measure. In addition, construction of a new loop ramp would necessitate lengthening the existing bridge, an undertaking that would make it extremely difficult to accommodate existing traffic.

“Taking future growth into account, we also found that a single loop ramp would not suffice,” comments **Dawie Erasmus**, Functional Head: Roads and Highways at SMEC South Africa. “There were other capacity considerations in keeping the traffic flowing,” he adds.

“That led us to consider the possibility of a new bridge that could accommodate double loop ramps underneath it, as well as the additional lanes on the cross road on top. This could be constructed with the traffic utilising the existing bridge,” points out Erasmus. Certain deficiencies in the existing bridge deck were also identified. These supported the building of a new bridge.

Such detailed analysis of the existing infrastructure, in tandem with the client’s specific requirements, resulted in SMEC South Africa coming up with the most practical and cost-effective solution possible.

“We proposed building a partial clover leaf interchange with two loop ramps, but shifted slightly south so that these loops could be fitted in,” highlights Erasmus. This was necessitated by the fact that quite severe land topography constraints and development in the eastern quadrant limited what could be done.

SMEC South Africa then embarked on extensive opinion discussions with the client, with the end result being almost a total redesign and rebuild of the Ballito Interchange. The construction phase of the project lasted 18 months, with Stefanutti & Stocks Civils KZN appointed as the main contractor.

“We were not only responsible for the design, but also monitored the construction period,” adds Erasmus. SMEC South Africa had a Resident Engineer and an Assistant Resident Engineer on-site, in addition to a Contracts Manager overseeing the project.

A pavement specification was used that could accommodate traffic during construction. The asphalt base course was applied in sections depending on traffic accommodation requirements. Therefore the final asphalt wearing course was only applied once the base course was completed on the entire interchange.

“This was done so we could switch traffic during the various construction stages and have temporary line markings on the asphalt base, which would later be overlaid with the final asphalt wearing course,” elaborates Erasmus.

There were a number of traffic accommodation phases during the construction period. The old bridge was kept open until nearly the end of the project, when the new structure was ready to take traffic. At this point the old bridge was demolished.

The foundations for the new bridge involved a detailed geotechnical investigation as the typical Berea sand type formations in the area are not ideal for bridge founding. The harder rock was more than 25 m deep. Spread footings were still opted for, but at a founding level of about 5 m below ground level, with pre-treated foundation platforms to limit the settlement of the bridge piers.

Erasmus points to all these different elements adding to the overall complexity of the project. “In addition to all the components of a typical road project, we also had to contend with quite intricate structures and geotechnical investigations. The road design and asphalt technology we applied was the latest available,” he adds.

Retaining walls were necessary due to the fact that where two road elements were immediately adjacent to each other, they were nevertheless separated by quite a high level difference. This called for retainment between the upper and lower levels using a contiguously piled type retaining wall. Upon completion, these were clad with precast concrete to enhance the aesthetic appearance.

A unique feature of the project was that it had to accommodate pedestrian movement. “That was an important safety consideration during the design phase,” Erasmus comments. Safe pedestrian drop-off zones were provided for on the N2, with pedestrian walkways behind protected barriers where these were adjacent to the roadway itself.

Traffic signals were also provided at the two ramp terminals to create safe opportunities for pedestrians to cross over. In order to increase visibility and safety at night, SMEC South Africa was also asked to provide street-lighting for the project.

“We also had to look at some changes to the onramp configuration on the N2, which in this section consisted of a concrete pavement. We had to ensure that the new concrete pavement was an exact match with the existing one,” Erasmus stresses. The project has been completed successfully, with SANRAL reportedly very happy with the end result. “We are certainly pleased with delivering a high-quality project,” he says.

***Ends***

**Notes to the editor**
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