



# Link to port city of East London gets upgrade

THE N6-REDDERSBURG rehabilitation project which was awarded in a joint venture by the South African National Roads Agency Limited (Sanral) began its construction phase in January 2006.

The N6 road forms part of the national road network of South Africa and carries regional and national traffic. It is also the main link between the industrial areas of Gauteng, the mines in the central Free State and the port city of East London on the southern coast of South Africa.

The N6 road serves a number of farming communities in the Eastern Cape and southern Free State who travel further north to markets in Bloemfontein. The route between Reddersburg and Onze Rust was originally built in the early 1950s and served as the National Route 1 to the Cape until 1972, when the new alignment of the National Route 1 was built approximately 10 km towards the west. The road was then under the jurisdiction of the Free State Provincial Department of Transport Works until 2003, when it was taken over by

the South African National Roads Agency Limited, and renumbered National Route 6.

'The venture, which went on construction in early January 2006, included the pavement rehabilitation, geometric improvements, drainage improvements and ancillary works of the existing road. The limit of construction started just south of Reddersburg, through the town and up north to Rustfontein, in the Free State on the main route between Bloemfontein and East London, and has a total project length of approximately 39 km,' explains Christa Fourie from SSI Engineers and Environmental Consultants.

Although the project was a fairly straightforward one, it required extensive surveying information on the existing road. Data on the road was analysed so that a recommendation could be made to the client on a design speed according to the required standards. The project designs were detailed with the help of infrastructural design software Civil Designer and AllyCAD, programs

that have been in use for many years throughout SSI's branches. 'The existing road had an initial variable design speed of approximately 90 km/h but various cost estimates for an upgrading to 100 km/h or 120 km/h standard were also provided. In the end the client settled on an upgrade to an 80 km/h design speed towards Reddersburg with the rest of the road designed at 110 km/h.'

Most works on the drainage system was done using labour-intensive construction methods. In addition, material from excavations was used so as to reduce the need for suitable dumping sites, improve the efficiency of operations and provide a relatively cheap source of material. 'We avoided excavation as much as possible on this project as it could lead to problems with unsuitable subsurface conditions. Another danger in excavation was the unforeseen hidden costs associated with the blasting of hard rock. It was therefore recommended that all sections marked for excavation be tested by means of drilling

- 1 Road condition at bridge before construction
- 2 Pavement condition in town before construction
- 3 Severe cracking and pumping
- 4 Final sealing on new road level
- 5 Sealing on completed half-width

to enable a proper assessment to be conducted.'

Existing borrow pits outside the servitude area were opened up on certain positions along the road which presented suitable construction materials for the project. According to Fourie, it was estimated that existing borrow pits along the road could provide material in sufficient quality and quantity so that there would not be a need to open up new borrow pits, except for a new quarry. Tests on the existing pits were therefore performed to confirm this. In addition, an environmental impact assessment was carried out on all the borrow pits and the quarry under consideration.

The project is currently in its final phase of completion and once completed serviceability between the industrial areas of Gauteng, the mines in the central Free State and the port city of East London on the southern coast of South Africa will improve dramatically over this section of road. □



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