

Zutari completes R377m Pampoennek Road in Brits

Built at a cost of R377m on behalf of the South African National Roads Agency SOC Limited (Sanral), the R512-PWV3 Pampoennek Road in Brits in the North West Province was recently officially opened. Engineering consultant Zutari was part of the professional team on the project. The road stretches from the R512 to the west of the dam, and connects directly to the N4 to Rustenburg through Pampoennek.



Hendrik Louw, Phil Hendrik and Zutari CFO Joe Ndala with transport minister Fikile Mbalula at the official opening of the project.

Zutari, responsible for the design and construction supervision (project management and quality control), was represented at the official opening by engineer's representative Hendrik Louw, client director for transport Phil Hendrik, and CFO Joe Ndala. Louw has been working on Sanral and Sanral-related projects for the past 12 years.

Project brief

The project brief was construction of National Route 4 Section 12 (PWV3) from 69.985km at the interchange with Road 980 to the interchange between the project road and Road P123-1 and to 76.170km. The road traverses a mountainous terrain in a north-westerly to a south-easterly direction. This resulted in a vertical alignment with a sub-section in deep cut and other sub-sections on high fills. The cut has a maximum depth of about 19m while fills will reach a maximum height of 18m. The project included construction of various on-site culverts, a bridge structure at the interchange with Road P123-1 and a game underpass south of the cutting.

The new construction was 6km of undivided dual carriageway, with interchanges at P123-1 and 980, and resurfacing of Ramp A, De Rust. There were three soil-nailed and titan anchor retaining walls at the Magaliesberg Neck, with a portion of contiguous piled retaining wall. The culverts were installed at the De Rust interchange, along with various gabion structures and erosion protection.

Design scope

Zutari's design scope was the vertical and horizontal alignment of the road and the design of various structures. This included a bridge on the southern end, 75.8m long and 26.6m wide, and the design and optimisation of the geotechnical aspects in the cutting, such as three soil-nailed and titan anchored retaining walls finished in a rockscape finish to mimic

the natural environment. The construction supervision entailed project management and full-time quality control monitoring on-site. As part of the scope, the optimal utilisation of the on-site soils was closely monitored and managed by the site team.

The mountainous terrain and the limited width in the cutting through Pampoennek made the optimal vertical alignment through the cutting quite a challenge, notes Louw. “In an endeavour to supply a superior product while keeping the client’s interests and budget at heart, we optimised the vertical alignment to ensure a balance between the cut and fill materials, while taking the natural topography and on-site soil conditions into account,” he elaborates.

The consulting team and contractor carried out investigations in the cutting in a grid pattern (just over 60 blocks in total per horizon) in 3m-deep horizons to ensure optimal utilisation of the on-site materials. The construction of fills to a maximum of 18m in height was quite a challenge, according to Louw, as settlement can be detrimental to the final product, which required strict quality control.

Project challenges

Due to the poor-quality material, the biggest challenge posed, he noted, was to fit the full width of the roadway the road reserve within the cutting. This had a 33.2m surfaced width, which is six lanes, with 2 x 3.9m wide concrete side drains, for a total width of 41m of roadway in the cutting. Various designs were considered, with the final choice being vertical retaining walls on the left-hand side of the cutting and a contiguous piled wall on the right-hand side.

Environmental compliance

A full-time designated environmental officer and environmental control officer oversaw the rescue and reinstatement of indigenous vegetation. The installation of the corrugated iron game underpass connects the nature reserves on either side of the freeway. Any blasting and associated activities that could potentially have disturbed the breeding processes at the Skeerpoort endangered Krantz vulture breeding colony had to be concluded during the small window between the last nestlings leaving the nests and the next year’s copulation rituals.

During the initial months of the project, a plant search-and-rescue was conducted whereby 3,556 small plants and shrubs were rescued from within the affected road reserve. These plants and shrubs (with some of their seedlings) were re-established next to the road and in the cutting during the final months of the project. In addition to the rescued plants, 1,147 indigenous trees and 561 indigenous shrubs, all from local nurseries, were planted in the cutting and along the road reserve. The project was audited on a monthly basis in terms of its environmental compliance.

Skills development

Local labour and sub-contractors received both on-site and accredited training. The training provided was for NQF levels 3 and 4. Additional contractor development training was also provided to 15 identified local SMME contractors. A total of 209 full-time local labourers were employed on-site. A certain percentage of the expenditure for local SMME contractors was

allocated to women-owned enterprises.

For more, visit: <https://www.bizcommunity.com>