**PRESS RELEASE**

Innovative engineering solution at Franschhoek Pass

***16 October, 2015:*** *A major project to effect road repairs and slope stabilisation at the Franschhoek Pass in the Western Cape has resulted in an innovative solution being developed by engineering consultancy SMEC South Africa. This not only ensures the safety of motorists on the scenic route, but also preserves the natural heritage of the area.*

The Western Cape Department of Transportation and Public Works originally called upon the expertise of SMEC to assist with its emergency planning in the event of flood or fire damage to any of the province’s road network. “Our initial scope of work was quite general in terms of the specific project terms and conditions,” geotechnical engineer **Charles Warren-Codrington** explains.

However, major rockfalls and slip failures at the Franschhoek Pass from June to November 2013 resulted in the Department tasking SMEC South Africa to devise emergency remedial measures for the vital link between the towns of Franschhoek and Villiersdorp on the R45.

“We were requested to propose immediate remedial measures to reinstate the road and its drainage infrastructure. Our initial investigation found that one of the slopes was undergoing a progressive failure. It could not be repaired immediately without more extensive work being undertaken,” Warren-Codrington explains. The slope was in the area known as Akkerdraai, the first hairpin bend from the direction of Franschhoek.

Penny Farthing was appointed as the main civil engineering contractor. It commenced work on SMEC’s preliminary solution in February 2014. The plan was to drain the slope by inserting 20-m-long drains, in conjunction with grouted steel nails, finished with a shotcreted or sprayed concrete top layer to create some adhesion with the soil at the surface.

A considerable area had to be shotcreted, measuring 80 m by 20 m. About 10 percent of this part of the project was completed initially, with SMEC even including a pigment in the concrete mix to mimic the sandstone colour of the area. However, this is a highly visible section of Franschhoek Pass, and SMEC felt that shotcreting would detract from its natural heritage.

“We entered into discussions with the department and contractor, and proposed an amended solution based on the aesthetics of the area,” Warren-Codrington says. This meant replacing the shotcreting with a high tensile strength steel mesh with a diamond-shaped aperture of about 80 mm. The mesh was positioned between the soil nails, with both effectively tensioned at the same time. “The mesh served the same purpose as the shotcreting in terms of local soil support,” Warren-Codrington adds.

SMEC was able to draw on the experience of its multi-disciplinary team, ranging from geotechnical to construction and structural engineering expertise, in order to come up with this amended solution. The project commenced in April 2014 and was completed in April 2015.

Improving the drainage system along the route preceded the slope-stabilisation work. A lot of the culverts and stormwater drains were blocked, which had resulted in severe erosion and the road being washed away in places. “It was a case of unblocking the culverts passing under the road and lining the side drains with concrete so that the run-off could be directed towards the culverts,” Warren-Codrington continues.

The section of the pass affected by the remedial measures was 3.5 km long. The slope that required stabilisation was effectively at the bottom of the western flank of the pass. The pass itself had to remain open during the entire construction period, particularly as January to February is harvest season in the Western Cape.

“Shutting the pass during that time of year would have posed a major problem for the local community. At times there was a contraflow, but mostly we allowed for free-flowing traffic. We monitored the pass continuously to ensure that it remained safe for road users at all times,” Warren-Codrington notes.

The main challenge posed by the project was the environmental considerations. Bush had to be cleared from the construction area, whereafter the vegetation had to be reinstated. A biodegradable geo-membrane was placed between the subsoil and steel mesh to counter any soil erosion.

This layer also assisted with the revegetation process by facilitating seed germination and the development of root systems. “These were some of the measures we put in place to ensure that the slope was reinstated as close as possible to its natural condition,” Warren-Codrington observes.

Six months upon its completion, the project has been declared a success. “The drains are working and there is an indication that water is coming through the slope, which is a good sign. In addition, we have grass growing on the slope. There have been no excessive soil movements or problems encountered thus far.”

Warren-Codrington pays tribute to the efforts of the entire professional team, including Penny Farthing, in addition to the foresight of the client in accepting the amended plan. “The end result is a practical and cost-effective solution that showcases the natural heritage of the Franschhoek Pass, as well as ensuring the safety of all road users,” he concludes.

***Ends***

**Notes to the editor**To download hi-res images for this release, please visit <http://media.ngage.co.za> and click the SMEC link to view the company’s press office.

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