ROAD PAVEMENTS - base reinforcement

**Product:** Macgrid® WG 5S

**Problem**
The construction of a new highway from Bagamoyo (70km north of Dar es Salaam) to Msata started in September 2010, providing a surfaced road for 64 km. The road is expected to advance road transport between Tanzania and Kenya coastlines. This venture will also guarantee easier cargo movement from Mombassa and the Tanga port to the landlocked countries of Uganda, Rwanda, Burundi and South Sudan. Tanzania is known to have the presence of highly expensive black cotton soil, the initial design embankment was as per Tanzanian road manual 2000, 150mm G7, 150 mm G15, 200mm Cement stabilized sub base C1 (UCS min 1.0 MPa), 150mm CRR and 50mm asphalt. After the first rainy season, longitudinal cracks developed on the shoulder due to the swelling of the black cotton soil with cracking through the whole pavement.

**Solution**
The most cost effective remediation was found using a geogrid to absorb the tensile strain developed by the movement of the black cotton soil with the variation of moisture content. The asphalt surface was removed and a geogrid type MacGrid® WG 5S was then placed over the recompacted CRR layer and another 150mm CRR layer was placed, finished by 50mm asphalt.

**Construction**
Maccaferri engineers visited the site prior commencement of the installation of the geogrid to ensure the installation of the material was done in accordance with the installation guideline. The MacGrid® WG 5S was unrolled over the entire width of the road, ensuring 100mm overlap between the rolls. Trucks backtipped the CRR over the geogrid ensuring no direct contact between the tyres and the geogrid. This was to avoid damage of the geogrid given the sharpness of the gravel. A dozer spread the gravel layer which was then shaped and compacted as per standard construction practice.

This project is the first project in Tanzania where ground stabilization techniques were used, drawing the attention of TanRoads, Ministry of Works, Transport and Communications.

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**Client:**
- TANROADS

**Main contractor:**
- ESTIM CONSTRUCTION

**Designer:**
- M-KONSULT

**Products used:**
- MACGRID® WG 5S - 70,000M²

**Date of construction:**
- Nov 2016 - Mar 2017
Placement of the MacGrid® WG 5S over the recompacted CRR

Backtipping of the material and spreading

Dozer spreading the CRR over the Macgrid® WG 5S ensuring a spread from the center to the outside to prevent wrinkles