



**ADMIR
UGANDA**
GEOTECHNICAL SOLUTIONS

Road Construction Using Neoloy Tough Cells and Geogrid, Hoima-Wanseko Project

Case Study



- Client: Uganda National Roads Authority (UNRA)
- Application: Soft Ground Improvement Using Neoloy Tough Cells and Biaxial Geogrids
- Project title: Hoima-Butiaba-Wanseko Road Project - 111Km
- Location: Uganda
- Main Contractor: Chongqing International Construction Corporation Uganda (CICO)
- Sub contractor: Dynaco Ltd (Uganda)
- Manufacturer of Neoloy Tough Cell: PRS (Israel)



Background:

- The Hoima-Butiaba-Wanseko Road (111km) is situated in the Oil rich Albertine Graben (Bunyoro Region) and is part of the National Roads Network linked to the rest of the network by Hoima - Kiboga road (95Km) and Masindi - Biiso road (51km).
- The road lies in Hoima and Buliisa Districts, connecting Hoima to the shores of Lake Albert at Wanseko.
- The road passes through the sub-counties of Hoima Town council, Kitoba, Kigoroby and Biiso in Hoima district and Buliisa and Wanseko in Buliisa District where oil exploration is underway.
- The road project is currently under construction by Chongqing International Construction Corporation Uganda (CICO) under supervision by UNRA.

Challenge:

The in-situ subgrade of the road from km 44 was generally poor continuously characterised by soils of low CBR (<3%) having a topography of mainly flood plains at selected sections. The conventional construction approach to similar roads in the vicinity of the project have shown early subgrade failures and movements in areas where embankments were built over weak subgrade.

Design Review:

A pavement structure review was undertaken in accordance with International standards (BS8006, EBGEO, EN 14475) and MoWT Road Design Manuals, 2010 to develop an optimized pavement incorporating Geogrids and PRS Neoloy Tough Cells using the mechanistic empirical design approach.

The design considered surface deflection, fatigue, rutting, vertical compressive strain on the subgrade, consolidation and settlement analysis.

- Admir Uganda Ltd; a subsidiary of Admir Africa and Admir Technologies (Israel) provided the Design Review Solution and Material Supply.
- Dynaco Ltd was the nominated subcontractor for the specialist Geogrid and Neoloy Tough Cells material installation.
- PRS Geo-Technologies (Israel) is the manufacturer of PRS Neoloy Tough Cells and aided in the Pavement Design Review and supply of the Neoloy Tough Cells installed.

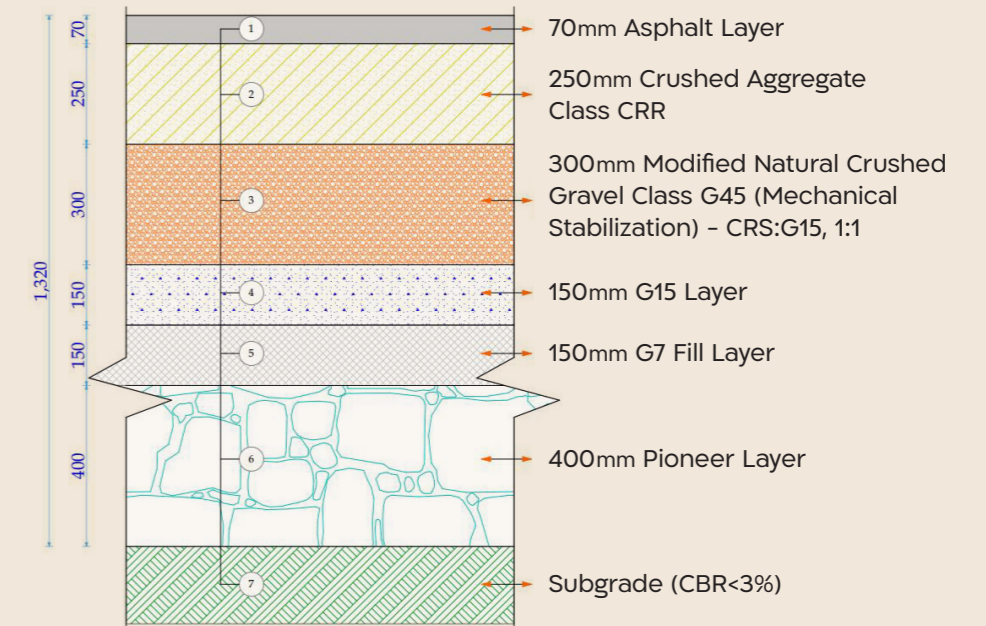
Solution:

The sections characterized by soft grounds were improved through the incorporation of a stiff layer of Geogrids at the subgrade and Neoloy Tough Cells at the subbase to take up the tensile stresses generated in the embankment. This design objective of the review was minimizing total and differential settlement in the pavement.

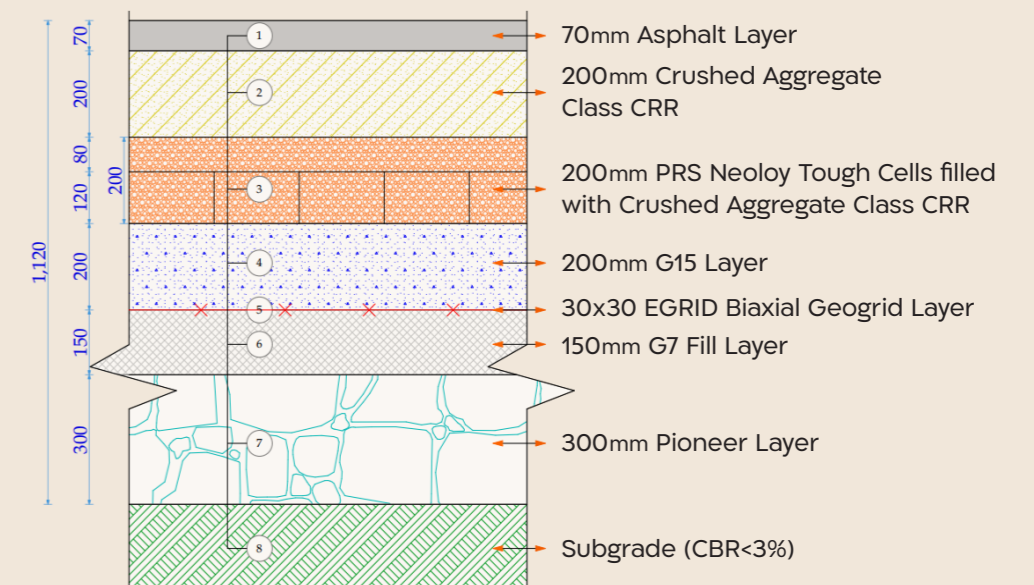
Other intended Benefits:

1. Reduction of total pavement thickness.
2. cost savings from rock fill depth reduction thus faster construction.
3. improvement of native subgrade modulus with an approximate factor of seven.
4. improvement of pavement durability through reduced maintenance cycles.

Original Design Pavement Structure



Admir's Cost Benefit Solution





Construction Steps:

1. Existing Subgrade Condition



2. Pioneer layer Preparation+Installation of Geogrid Upper Subgrade Layer



3. Fill Material and compaction on top of geogrid



4. Installation of PRS Neoloy Tough Cells Sub Base Layer





5. Fill Material Over Neoloy Tough Cells



6. Compaction



7. Finished & Compacted Base Layer



8. Installation of Final Asphalt Layer





Contact Us:

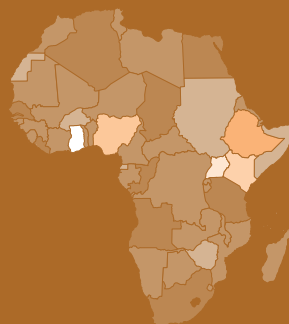
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