



Oil & Gas Access Road

Permeable Soil Stabilization

Orito - Putumayo, Colombia



Case Study



Background:

Ecopetrol, one of the principal petroleum companies in latin america, has been expanding its reach deeper into the forests of Colombia. Drilling exploratory wells in remote locations such as the Putumayo basin concurs with a very aggressive growth strategy. The area around Orito is an extremely dense, undulating forest with poor soils and wet subgrades, nearly impossible to drive through without proper access.



Technical Information:

Materials Used: EnviroGrid EGA206 and EGA208

Application: Soil Stabilization

Project Length: August-September 2010
(43 days)
8-man crew, 1 vibrocompactor,
10 dump trucks, 2 bull-dozers



Putumayo Basin
(Pre-Envirogrid Soil Stabilization System)

Problem and Objective:

Ecopetrol sought to build a 2.6 kilometer access road to a new well site in the middle of the jungle. The road would allow heavy machinery and drilling equipment to access the exploratory well site for production. The problems they ran into were fully saturated soils with CBRs of 0.5% that swallowed vehicles whole. Men sunk to above their knees. On top of the difficult operating conditions, the project was only given a 90 day deadline for completion.

Design Solutions:

The Envirogrid cellular confinement system was chosen by Ecopetrol engineers as a pilot project with a goal of reducing long-term costs. After analyzing several other products including geogrids, geotextiles, and rocks, they decided upon a cellular confinement system. Local river soils were utilized as an infill material, further reducing the cost of bring in outside material for fill.



Construction Overview:

A 150mm or 200mm EGA20 material was utilized depending upon the depth of foundation needed for different sections of the road. A geotextile was placed directly on top of the soils and stakes were set up to anchor the Envirogrid panels. The panels were extended and filled with a mix of granular soils and river rock. The filling of the material was followed directly by grading and vibrocompaction. Once the road itself was installed, channels were created on the sides to allow for lateral drainage.



Results:

The project was completed in a record time, 47 days ahead of schedule. Improving the timeline allowed Ecopetrol to begin exploratory drilling almost two months earlier than projected.

With a permeable surface access road that was infilled with local materials, environmental impact was kept to a minimum while reducing the dirtwork required. Time and costs for maintenance were decreased and road safety was improved through better surface water control. The pilot project was a resounding success.



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Geo Products, LLC

8615 Golden Spike Lane
Houston, TX 77086 U.S.A.

Tel (281) 820-5493 / Fax (281) 820-5499

www.geoproducts.org

Syntex Geosynthetics

Autopista Medellín, Km 1.7 - Entrada al Parque la Florida
Parque Empresarial Terrapuerto 2, Bodega 53
Cota/Cundinamarca - Colombia, Sur America

PBX +57 (1) 877 6010

Email: info@syntexcol.com

www.syntex.com.co