

Case Study

SoilTech – Sustainable and Efficient Soil Stabilization

LOCATION

Anápolis, Goiás, Brazil

APPLICATION DATE

July 2023

CHALLENGE

The project involved the improvement and stabilization of roads in a residential neighborhood in Anápolis, GO. The engineering team's main concern was how to achieve the necessary soil compaction and strength without the machinery's vibration interfering with the surrounding homes.

Traditional stabilization methods require many passes of a compactor roller and high vibration energy, which could cause discomfort or even compromise the structural integrity of nearby houses.

Therefore, a solution was needed that could provide the structural strength (CBR) required by the project while ensuring a faster, smoother compaction process that demanded minimal mechanical effort during execution.



KEY RESULTS

- ✓ **Resistance Jump (CBR):** A massive increase in the soil's bearing capacity, going from 65.2% (natural) to 133.9% (final).
- ✓ **Durability without asphalt:** The road did not receive an asphalt coating and, even exposed directly to the weather and traffic, maintains excellent drivability after 3 years.
- ✓ **Surrounding Protection:** Drastic reduction in compaction energy and vibration, avoiding any structural interference with neighboring houses.
- ✓ **Optimized Inputs:** Project executed with a very low dosage of stabilizer (0.02% SoilTech) and reduced cement consumption (only 2% CP II cement).



SOLUTION

The innovation chosen for the project was SoilTech, an advanced MetaFLO biopolymer derived from seaweed.

The major advantage of SoilTech in this scenario was its high lubrication power. When incorporated into the yellow lateritic gravel, the biopolymer improves the soil's mechanical behavior. This allowed the particles to settle more easily, reaching ideal density with a significantly lower number of equipment passes and without the need for excessive scarification or heavy vibration.

RESULTS

The technology's efficiency was proven in practice. The treated base reached a final CBR of 133.9%, more than doubling the natural soil's strength (65.2%), using a minimal cement dosage (2%).

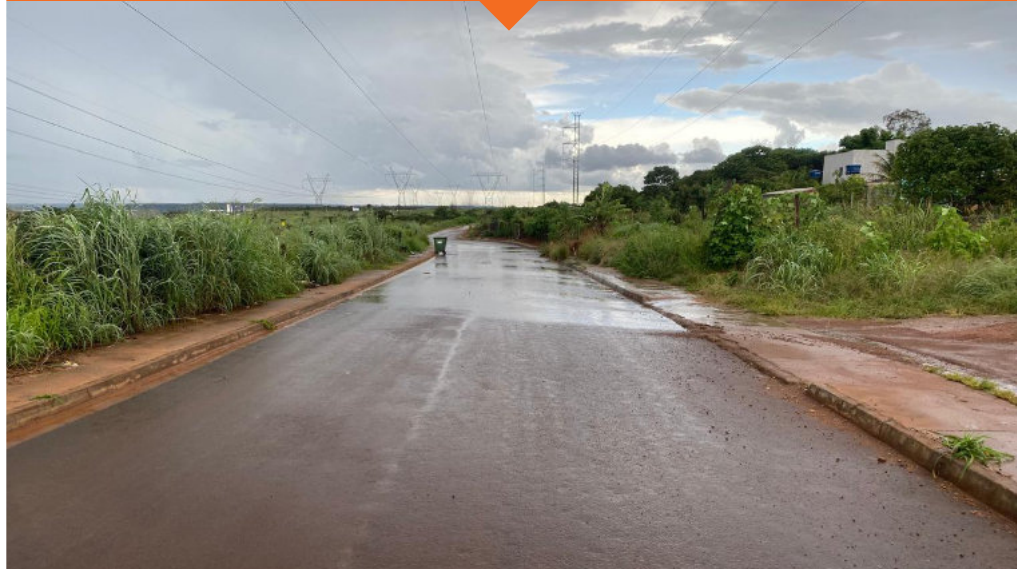
Thanks to SoilTech's action, the team executed the compaction swiftly and with low energy, ensuring the total safety and peace of mind of the neighborhood.

But the benefits of SoilTech extend beyond the construction phase and are reflected in the road's long-term performance. Even without an asphalt layer, the road remains in excellent condition after three years of continuous use, with no need for additional applications, maintenance, or rework.

2023



2026

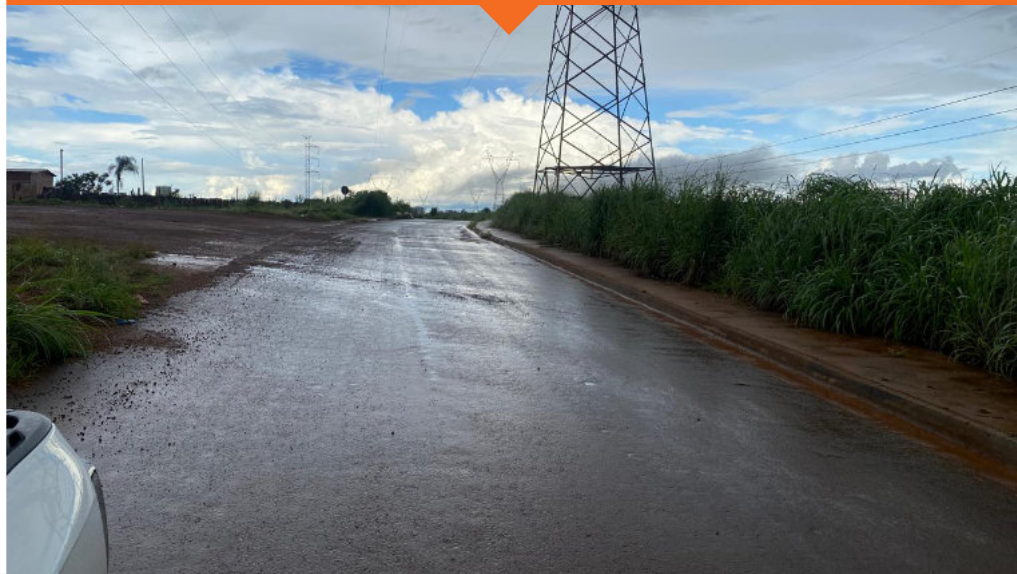


High strength with low impact: **CBR leaps to 133.9%** and an unpaved road remains intact after 3 years of traffic.

2023



2026



SOLUTION IMPACTS

Operational & Technical

Less mechanical effort:

Faster compaction due to the biopolymer's lubricating effect, facilitating soil settlement.

Reduced machine hours:

Fewer passes required from the compactor roller and scarification equipment on the road.

Long-term strength:

A stabilized dirt road that withstands daily traffic without degradation, even without an asphalt surface.

Economic

Cement reduction:

The synergy of SoilTech with the soil made it possible to achieve the required results using only 2% CP II cement.

Rework Reduction:

Elimination of recurring maintenance costs typically associated with unpaved roads over the years.

Socio-Environmental

Community Safety:

Protection of neighboring residential structures due to the lower energy and vibration needed during compaction.

Sustainability:

Use of a naturally derived biopolymer, minimizing the project's environmental footprint.



TECHNICAL SPECIFICATION

Soil Characteristic

- Yellow lateritic gravel

SoilTech Dosage

- 0.02%

Cement Dosage

- 2% CP II Cement

Natural CBR

- 65.2%

Final CBR (Post-treatment)

- 133.9%

Equipment Used

- Motor grader, Water truck, Tractor with disc harrow, Compactor roller



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