

Case Study

The Right Solution for Every Soil: How MetaFLO Helped Optimize Road Soil Stabilization

LOCATION

Paraná, Brazil

APPLICATION

Soil stabilization for road infrastructure

CHALLENGE

The native soil had a CBR of 28%, while the project required a minimum CBR of 60%. The challenge was to achieve the required performance while contributing to a longer-lasting structure with less need for intervention over time.

At the same time, the solution needed to align with the project's site conditions and budget.

FINDING THE RIGHT SOLUTION

Every soil behaves differently. That's why our technical team works alongside each client to determine the right approach for every project.

In this case, MetaFLO supported the client in evaluating the test results and determining the appropriate SoilTech and cement dosages, taking into account both the performance target and the specific project conditions.

MIX DESIGN

CBR SWELL

Native soil	28%	0.2%
Soil + 0.5% cement + 0.02% SoilTech	70%	0.00%
Soil + 1% cement + 0.02% SoilTech	81%	0.00%
Soil + 2% cement + 0.02% SoilTech	170%	0.7%

Selected project dosage:

0.02% SoilTech + 0.5% cement.

The results demonstrate that the best strategy is to prioritize technical efficiency rather than simply pursue the highest possible CBR. With a minimum requirement of 60%, the selected application not only exceeded the target, reaching a CBR of 70%, but did so using just 0.5% cement. This approach reflects a commitment to finding the right balance between required mechanical performance and efficient material use, while accounting for actual site conditions.



FIELD APPLICATION

SoilTech is a high-performance liquid biopolymer developed for soil stabilization. During mixing and compaction, its lubricating action helps soil particles rearrange more effectively, promoting a denser, more cohesive structure. Following stabilization, SoilTech helps bind the particles together, increasing the cohesion, resilience, and strength of the stabilized layer.

RESULTS

✓ **28% → 70%**

✓ **CBR +150%**

The solution increased the native soil CBR from 28% to 70%, representing a 150% improvement in bearing capacity as measured by the CBR test, using 0.02% SoilTech + 0.5% cement.



TECHNICAL SUPPORT TO FIND THE RIGHT SOLUTION

MetaFLO's role went beyond supplying the product. Our technical team supported the client in determining the appropriate SoilTech dosage, based on the test results and the performance requirements of the project.

TECHNICAL DETAILS

Material

- Native soil (clayey sand, A-2-4)

Applied Dosage

- 0.02% SoilTech + 0.5% cement

Native Soil CBR

- 28%

Compaction Effort

- Intermediate

CBR After Stabilization

- 70%

CBR Improvement

- +150%

Swell

- 0.00%

Tests Performed

- CBR and swell

CONCLUSION

This project demonstrates how SoilTech, combined with MetaFLO's specialized technical support, can optimize the balance between performance and material consumption. In this case study, the combined application of 0.02% SoilTech and 0.5% cement increased the California Bearing Ratio (CBR) from 28% to 70%. The results demonstrate the technology's potential to maximize soil strength through dosages tailored to the specific requirements of each project.

More than a product supplier, MetaFLO takes a consultative approach, working alongside clients to develop the most appropriate application strategy for each soil type and project.

Looking for the right soil stabilization strategy for your project? Talk to our technical team to discuss your soil conditions, performance requirements, and project goals.

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