

## Case Study

# SoilTech Boosts Performance and Cuts Costs in Airport Runway Stabilization

### LOCATION

Maricá - RJ - Brasil

### PROJECT SUMMARY

In an airport paving project, the need to ensure structural layer stability while respecting tight budget and logistical constraints called for an efficient technical solution. MetaFLO's SoilTech enabled the use of a lower-cost material (Coarse Crushed Stone) without compromising technical performance.

### THE RESULT

Stabilized layers that met project specifications and **overall savings exceeding**

**R\$ 160.000,00**

### CONTEXT AND CHALLENGES

The project involved construction of the runway's sub-base and base layers, requiring:

**Effective layer stabilization to ensure long-term durability.**

**Cost optimization within the contracted budget.**

**Strict adherence to the project timeline.**

The technical scenario offered two alternatives:

**Fine Crushed Stone:** Higher quality but costly and logistically impractical.

**Coarse Crushed Stone:** More affordable and logistically viable, but inadequate alone to meet performance requirements.

Given these challenges, a technology was needed to enhance the performance of Coarse Crushed Stone, ensuring both quality and cost-efficiency.

### IMPLEMENTED SOLUTION

The team selected MetaFLO's SoilTech, recognized for its effectiveness in stabilizing sub-base and base layers.

### Technical Details:

- ✓ **Product applied:**  
SoilTech
- ✓ **Dosage:**  
0.01%
- ✓ **Material used:**  
Coarse Crushed Stone (lower-grade, cost-efficient)
- ✓ **Application method:**  
Earthmoving with conventional grading fleet
- ✓ **Equipment used:**  
Tractor with harrow, motor grader, 10,000L water truck, 2 sheepsfoot rollers, 2 smooth-drum rollers
- ✓ **Executed dimensions:**  
Sub-base: 550 m × 30 m × 0.15 m  
Base: 550 m × 30 m × 0.20 m

### Reasons for Product Choice:

Increased California Bearing Ratio (CBR).

Improved final density of treated material.

Stabilized layers using lower-quality material.

Technically and financially viable solution.

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## Results

### Technical Performance:

- ✓ **Final density:**  
2.16 g/cm<sup>3</sup>
- ✓ **Compaction rate:**  
101% (in-situ sand cone method)
- ✓ **Reduced compaction passes:**  
37.5% reduction on the base  
50% reduction on the sub-base

### Productivity and Efficiency:

- ✓ **Time savings:**  
51 hours on the base  
67.8 hours on the sub-base
- ✓ **Material logistics aligned with budget and schedule.**

### Financial Savings:

**Material savings:**  
**R\$ 123.957,00 (17,5%)**

**Operational savings:**  
**R\$ 36.230,02**  
*(equipment, labor, fuel)*

**Total project savings:**  
**R\$ 160.187,02**



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## CONCLUSION

MetaFLO's SoilTech proved to be a technically sound and cost-effective alternative for layer stabilization in demanding infrastructure projects.

The technology enabled the use of more accessible materials while meeting performance standards, streamlining operations, and helping the project stay on time and within budget.

**Innovation that drives your success!**



## MetaFLO's Industrial Solutions

**MetaFLO develops solutions that combine technical efficiency, process optimization, and operational gains for a variety of projects.**

Our technologies are applied to projects seeking greater performance, cost-effectiveness, and reliability, always focusing on concrete and sustainable results.

Our team is available to present you our solutions and explain how we can contribute to the success of your project.



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