

Climate Change Affects Historic Gardens: Slope Stabilisation in Tiefurt Mansion Park

Soil nailing and slope stabilisation using TITAN micropiles



'Given the challenging conditions in the Mansion Park, the TITAN micropile system has proved to be a highly effective solution. The drilling work was carried out using compact equipment, ensuring that the requirements relating to the listed surroundings could be met.'

Mr Alder and Mr Swiderek, Managing Directors of SaFeG Sanierung, Fels- und Grundbau GmbH

Tiefurt Park, once known as the 'place of the Muses' for Weimar's court society, served as the summer residence of Duchess Anna Amalia of Saxe-Weimar and Eisenach from 1781 onwards. Together with its mansion, the extensive grounds are now part of a UNESCO World Heritage Site and are considered as a significant example of an early 'sentimental' landscape garden.

In recent years, however, damage became apparent on the area known as the 'Lohholz slope'. Cracks in the pathways indicated decreasing stability along the steep incline. Ground investigations and test drilling commissioned by the Klassik Stiftung Weimar (KSW) confirmed that the soil's shear strength – particularly its cohesion – had been significantly reduced due to prolonged and severe desiccation. To ensure visitor safety, the slope required permanent stabilisation.

The challenge

The key objective was to minimise any impact on the park's sensitive topography, as well as on its listed paths, steps, trees, and shrubs. Various stabilisation methods were considered; however, large-scale structural interventions or the construction

of new retaining walls would have caused substantial alterations to the protected site.

The solution

A minimally invasive approach was therefore selected: soil nailing combined with plantable wire mesh. This method reduced the risk of landslides while avoiding unpredictable consequences and excessive costs.

In total, 380 TITAN micropiles, each approximately seven metres long, were installed, stabilising an area of around 1,300 m². These micropiles increase the slope's shear strength and prevent further ground movement. Additionally, a heavy-duty wire mesh reinforces the subsurface while allowing for natural landscaping that blends seamlessly into the surroundings.

The use of TITAN micropiles successfully restored stability to the undercut bank of the River Ilm and secured the long-term integrity of the historic park. As a result, the pathways, steps, and significant tree groves have been preserved.

Project:

Slope stabilisation in Tiefurt Mansion Park, Weimar, Germany

Construction period:

March – September 2024

Client:

Klassik Stiftung Weimar

Contractor:

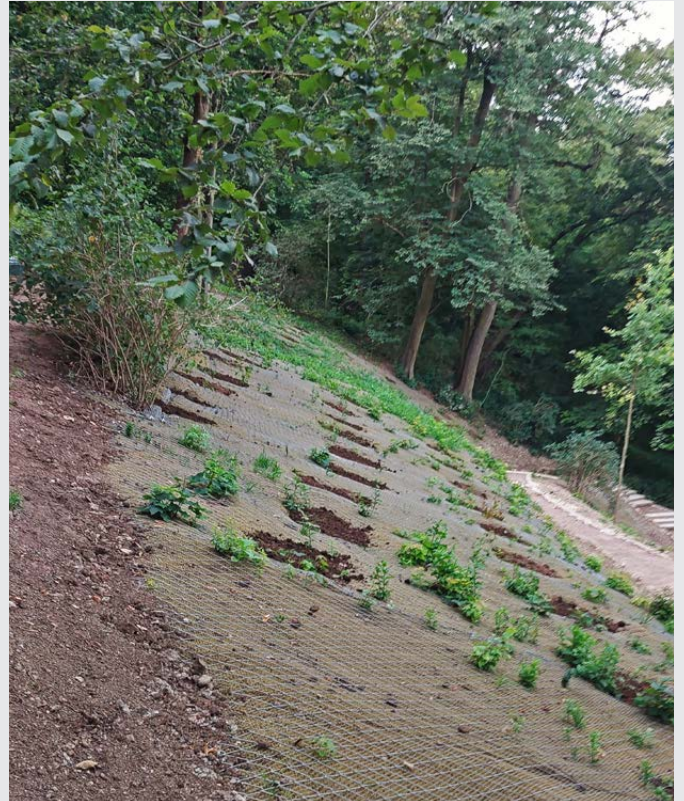
SaFeG Sanierung, Fels- und Grundbau GmbH, Plauen, Germany

Products used:

- 380 x TITAN 40/20 micropiles 7 m long, top 3 m galvanised, as soil nails
- Carbide-Y-cross drill bit, Ø 115 mm



The TITAN micropiles were installed with small equipment near preserved vegetation.



The heads of the soil nails were set into recesses, which were then filled with topsoil.



Completed slope stabilisation with vegetation already beginning to grow back (May 2025).



Update September 2025: There is hardly any trace left of the completed building work; the overall appearance is in keeping with the site's heritage status.

Would you like to find out more about TITAN micropiles?

We would be happy to advise you about your project. Simply get in touch with us. We look forward to hearing from you.