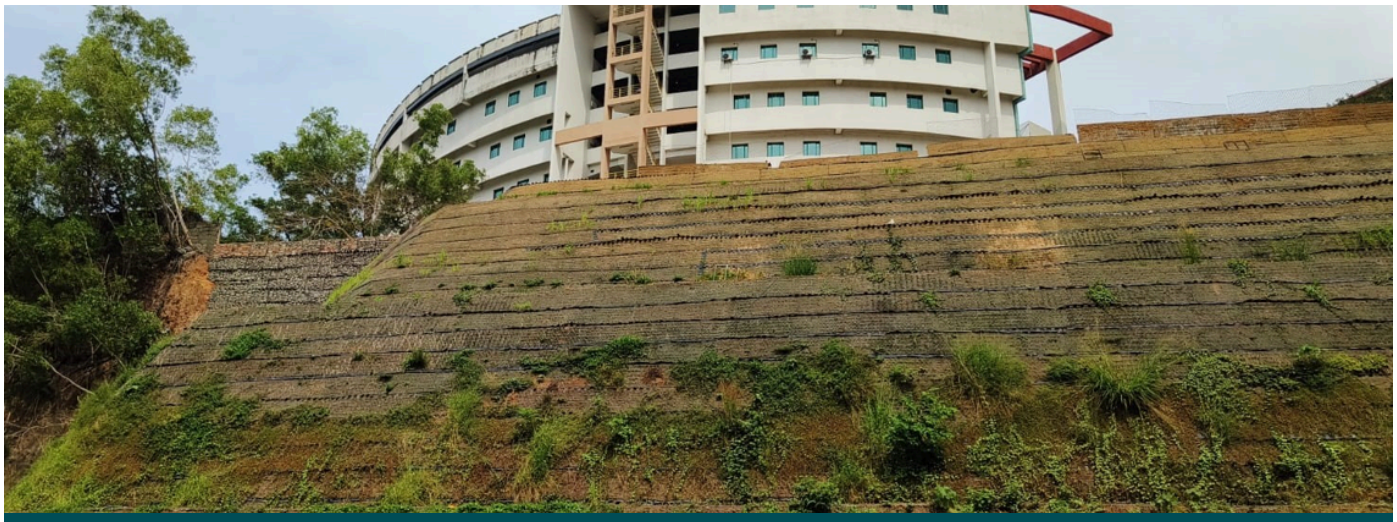
Soil Retention Measures for Techno Park Project- Trivandrum

Trivandrum



After Completion

TYPE OF PROJECT	YEAR OF CONSTRUCTION	CLIENT	CONTRACTOR	DESIGNER
Longitudinal Protection	**2021**	**Technopark, Trivandrum**	**Kerala State Infrastructure Ltd.**	

PROD. RELATED

TerraMesh (Null), MonoAxial GeoGrids (Null), Nonwoven Geotextiles (Null), RenoMesh (Null)

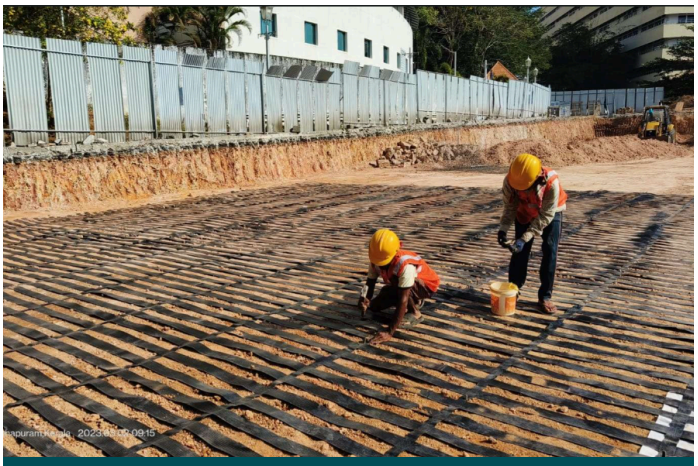
Challenge

A landslide occurred in August 2020 near the Thejaswini Building, below the existing roadway and in front of the CDAC Building within the Technopark Phase I campus, Thiruvananthapuram, Kerala. The affected slope has an average height of approximately 25 m. Site investigations indicated that the failed slope predominantly comprised lateritic soil interbedded with rock layers. The lateritic soil is relatively soft and can be easily cut when wet, although it hardens upon drying and with time. Its plasticity decreases with depth as it transitions towards the parent rock, while the presence of iron oxides contributes to its relatively high specific gravity.

The landslide was primarily triggered by a sudden increase in pore water pressure during heavy rainfall, which significantly reduced the shear strength of the lateritic soil. The lateritic soil layers sandwiched between the rock strata experienced a loss of cohesion upon saturation, resulting in the combined movement of both the soil and overlying rock mass. The considerable slope height, together with the weakened soil conditions and groundwater effects, posed a significant geotechnical challenge requiring a robust and long-term slope retention solution.



After Landslide



During Installation

Solution

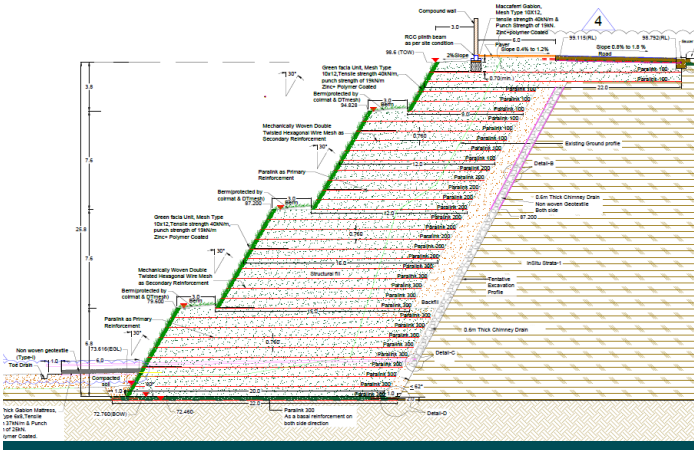
Based on the slope retention requirements, a Green Terramesh reinforced soil wall was implemented as the retaining solution. The system was designed to withstand the anticipated static and seismic loading conditions while ensuring the long-term stability of the slope. The reinforced soil structure was designed to accommodate differential settlements and adapt to the varying ground conditions, making it well suited to the lateritic soil profile.

MacFlex and MacGanics were adopted as the hydroseeding solution to provide erosion control and establish a vegetative finish over the Green Terramesh fascia and reinforced slope. The system is environmentally sustainable and blends seamlessly with the surrounding landscape.

The solution also offered enhanced drainage performance, faster construction compared to conventional rigid retaining structures, and a durable, long-term stabilization system. The maximum height of the reinforced soil structure was 26.80 m, with a total stretch length of 65 m. Additionally, Reno Mattresses were provided at the slope toe to protect against erosion.



Completed Structure



Schematic Section

MACCAFERRI ENVIRONMENTAL SOLUTIONS PVT. LTD. 5th Floor, DLF Building No. 9, Tower A, DLF Cyber City, DLF Phase 3, Sector 24, Gurugram 122002, Haryana, India
Ph: +91 1244 360824 E-mail: info.in@maccaferri.com

OPEN GOOGLE MAPS

OPEN GOOGLE EARTH

MACCAFERRI ENVIRONMENTAL SOLUTIONS PVT. LTD. 5th Floor, DLF Building No. 9, Tower A, DLF Cyber City, DLF Phase 3, Sector 24, Gurugram 122002, Haryana, India
Ph: +91 1244 360824 E-mail: info.in@maccaferri.com