

## Case Study: Micropiles as Integral Part of an Alternative Slope Stabilization System

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### Abstract

The road widening project that connects Magelang and Selo - Boyolali in central Java Indonesia was foreseen to cut travel time and help to spur economic growth. In the past, the operation got massively constraint by the occurrence of a large slope failure, in which one road lane slipped down to the creek. The site required a cost-effective protection system, one that actively and permanently stabilizes the problematic embankment. The applied protection system must further take the troublesome site conditions into account: almost vertical unstable slope with very limited accessibility, challenging geological condition, intense rainfalls, frequent occurrence of earth quakes and several installation time constraints. The decision fell on a new technology, one that respects the challenging site conditions and on the same time blends with nature: the nailed flexible facing. An integral part of this system is the piled capping beam at the top of the slope. Micro piles with a length of 8 meters are installed every two meters along the beam. The capping beam absorbs the traffic load and stiffens the slope stabilization system. The high tensile steel wire mesh is attached at the capping beam, rolled down the slope and pre-tensioned via the spike plates and the soil nails onto the slope. Numerous implemented cases worldwide in soil as well as in rock conform that this effective concept is suitable for practical applications. This case study gives an overview over the design and installation of this alternative slope stabilization method flexible facing in combination with a piled capping beam.