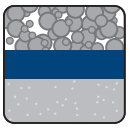
TENCATE Mirafi®



Case Study

application | **Reinforced Piled Embankments**

location | **Wat Nakorn-In, Bangkok, Thailand**

product | **Mirafi® PET1000 & Miragrid® 5XT**

TenCate™ develops and produces materials that function to increase performance, reduce costs and deliver measurable results by working with our customers to provide advanced solutions.

THE CHALLENGE

The Wat Nakorn-In Bridge Project in Thailand is a major infrastructure project and part of a larger master plan to ease traffic congestion on the West bank of the Chao Phraya River in the Greater Bangkok area. The bridge crosses the Chao Phraya River midway between Rama VII Bridge and Nonthaburi Bridge. Because of the overall project size, the project was awarded in five contracts, each involving the construction of bridges and embankments to handle up to 10 traffic lanes.

The area is well known for deep deposits of soft clay. Further, the area has been undergoing subsidence as a result of groundwater extraction over time. Consolidation of the soft clay in addition to subsidence gives rise to large differential settlements between embankments constructed directly on the soft clay foundation and piled bridge structures. One technique to prevent differential settlements from occurring is to also pile the foundations of the bridge-approach embankments.

Mirafi® PET1000 was installed across the pile caps. Embankment fill was placed on top.

THE DESIGN

For the Wat Nakorn-In project all of the bridge-approach embankments were founded on piles. To enable the embankments to arch efficiently across the pile caps a layer of Geolon® PET1000 high strength woven polyester geotextile, of tensile strength 1,000 kN/m, was placed across the top of the pile caps prior to placement of the embankment fill.

THE CONSTRUCTION

The embankments approaching the bridge abutments were constructed to steep side slopes of 2:1 (vertical:horizontal) due to lack of right of way. Here layers of Miragrid® 5XT geogrid were used as reinforcement in vertical spacings of 0.5 m to provide the required level of stability for the steep slopes. At the face of the steep slopes the Miragrid® 5XT was wrapped around soil bags in order to control the slope surface alignment. Upon completion of the earthworks, the slope surface was covered with an erosion control mat and hydroseeded to establish a permanent vegetation cover.

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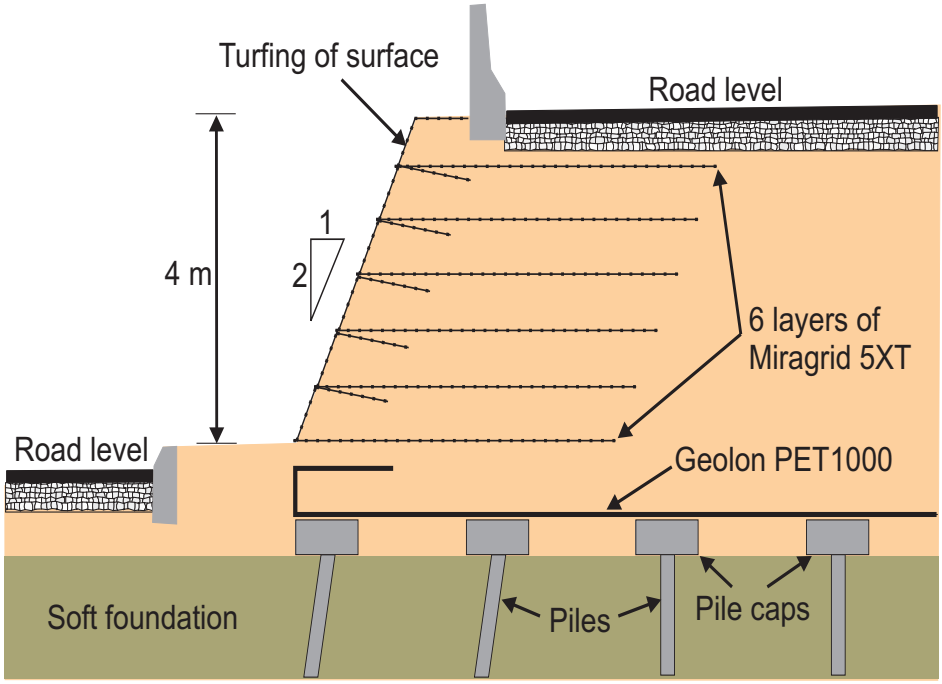

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