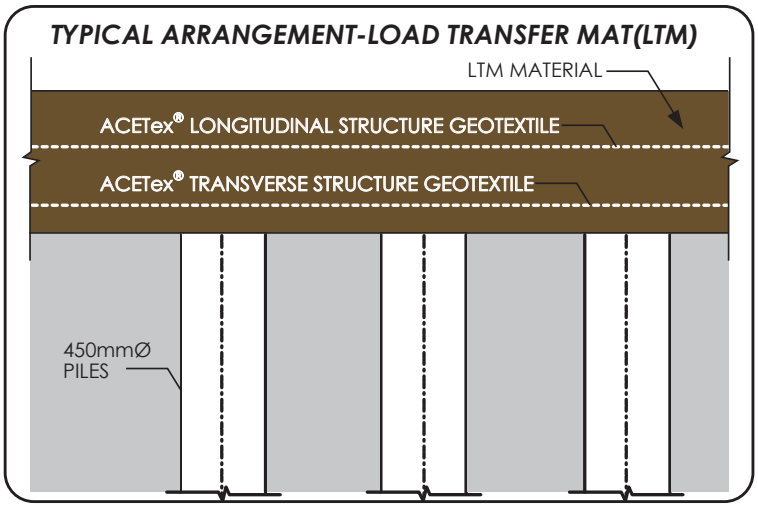
ACETex® Structural Reinforcement Geotextiles for the Load Transfer Mats (LTM)

Location: Australia

Application: Pile Cap Reinforcement

Problem :

In 2008, the Queensland Government appointed Brisconnections to commence Australia's largest infrastructure project, worth $4.8 billion. The works comprise three main sections, the Northern Busway, Airport Link and the Airport Roundabout Upgrade. The Airport Link is a 6.7km toll road. Much of the road was to be constructed through low lying relatively soft ground requiring ground improvement to accommodate the works. Many of the road sections parallel with the existing East West Arterial Road required elevated embankments and flyovers to cross existing roadways. The rigid abutments around flyovers and elevated roadways were founded on Controlled Modulus Columns (CMC). Where the piled sections of roadways transitioned to traditional, more flexible earth filled embankments, the design called for a Load Transfer Mats (LTM) to more evenly distribute imposed loads, reduce lateral loads on outer piles, eliminate the need for pile caps and to minimise differential settlements.



Solution :

The LTM sits over the CMC piles and consists of a granular blanket reinforced in two directions (longitudinal and transverse in relation to the roadway alignment) by a high strength structural ACETex® reinforcement geotextile. Each layer of geotextile is separated by a 300mm granular layer. The specification for the reinforcement geotextile within the LTM was for a working strength of 180kN/m @ 5% total strain, limited to 2% creep strain at a 120 year design life. ACETex® woven polyester reinforcement geotextile was proposed and selected for use as it satisfied all of the technical requirements of the specification and provided a commercially attractive solution. The use of an LTM reinforced with ACETex® reinforcement structural geotextile over CMC piles is a relatively new ground improvement technique in construction over soft ground conditions and has been successfully applied in the Airport Link Project.

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