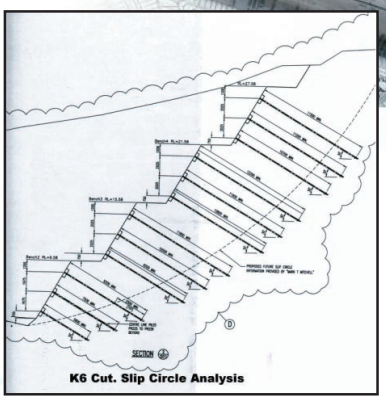
CASE STUDY No 1:
SUPPORT K6 CUT EARTHQUARKE ZONE

Client: Fulton Hogan Ltd. – Smithbridge Joint Venture

Location: Mt Manunganui - Route PJK Expressway (K6 Cutting) NZ

Situation: The steep K6 cut had potential for landslip, and was in an earthquake zone, and an engineering design for slope retention was required,



(Above) Design for the installation of screw piles beyond the slip zone.

Ground

Hamilton Ash overlying Pahoia Tephra (thinly interbedded airfall ash tuffs), with underlying undifferentiated tuffs overlying Te Ranga Ignimbrite (non-welded textured lapilli ash tuff) with clay interbeds.

Perched seepage zones were expected in the slopes.

A slip circle was identified behind the cut.

Solution

Instant Screw Piling was contracted for design services only. The screw pile anchors had to hold the face of the excavation beyond the slip circle.

A technique was devised using four 6-metre benches, excavating from the top down and anchoring, before proceeding with the next bench.

The anchors were installed at right angles to the bench slope, with three rows of anchors installed per bench.

The anchors (up to 12.2 metres long) were installed through concrete plates set into the embankment, and tensioned against these plates, to their required load. Grout was injected behind the plates to fill any voids.

(Above) Screw pile installation, showing benching

(left) screw piles were tensioned against concrete plates set into the embankment