Summary of Decisions of the Structural Engineer
SEC 6/2014 held on 3.7.2014

(a) Case 6/2014

Issue: Proposed Shaft Grouted 1.2m Large Diameter Bored Piles

Recommendation:

1. To accept the rational design method of 1.2m large diameter bored piles founded on soil sustained by shaft grouted friction in Completely Decomposed Granite (CDG) only in conjunction with a full-scale in-situ proof load test on trial piles to verify the design capacity of the bored piles.

2. To accept the design principle in determining the load capacity of the 1.2m diameter shaft grouted bored piles based on the following design assumptions:

   (a) The design ultimate friction resistance between the grouted shaft and CDG is taken as 2.1 x SPT-N kPa but capped at a maximum of 140kPa.

   (b) A factor of Safety of 2.0 is adopted in the pile design.

   (c) The design capacity of the 1.2m diameter shaft grouted bored piles founded on level at -77.1mPD is capable of sustaining the working load of 17,300kN as derived from items (a) and (b) above which will be verified by two trial piles on site.

   (d) The proposed trial piles will be tested up to two times the design working load of the pile, i.e. the test load is up to 34,600kN (2 x 17,300 = 34,600) to verify the design pile capacity.

3. To accept the proposed acceptance criteria of the proof load test on the trial piles shown below:

   (a) Maximum settlement at the head of the pile during the test does not exceed PL/AE + D/50, where

   P = 2 x design working load of the pile in kN
   L = length of the pile in mm
   A = cross sectional area of the pile in mm^2
   E = Young's modulus of the pile in kN/mm^2
   D = diameter of the pile in mm

   (b) Residual settlement at the head of the pile does not exceed D/50 mm.

   (c) Under working load condition, maximum settlement should not exceed 20mm.

Decision:	Having reviewed the arguments and making reference to the precedent cases, members endorsed the recommendations.