Summary of Decisions of the Structural Engineering Committee
SEC 2/2007 held on 07.06.2007

(a) Case 2/2007

Issue :	Use of 63.5mm diameter high strength thread bars in mini-piles socketted into rock.
Recommendation :	The use of 63.5mm diameter high strength (grade 555/700) hot rolled thread bars without bends in the mini-piles socketted into rock at this site be accepted.
Decision :	Noting that the background information provided, the endorsement of a similar case (SEC Case 6/2005), and having due regard to the transient nature of the tensile load acting on the mini-piles, members endorsed the recommendation for the use of the proposed thread bar at this site subject to the following conditions:

(i) The design of mini-piles shall be in accordance with Building (Construction) Regulations and Code of Practice for Foundations.
(ii) Three numbers of trial piles (i.e. one for compression load test and two for tension load tests) to verify the design assumption and performance of the proposed mini-piles system. The requirements of test will be carried out in accordance with Code of Practice for Foundations.
(iii) The nominal diameter of the bar shall be 63.5 mm, the yield strength shall be 520 MPa, the tensile strength shall be 700 MPa and the minimum elongation shall be 10%.
(iv) The maximum number of couplers in each steel bar of the mini-piles shall be 6.
(v) The couplers shall be staggered so that not more than half of the total number of the steel bars shall be spliced at any cross section.
(vi) No coupler connection shall be made within the rock socket zone.
(vii) No welding shall be carried out to the bar.
(viii) Slip tests shall be carried out to demonstrate the load carrying capacity of the Straight Round Coupler with Lock Nut Big and pile head Anchor Nut system.

(ix) The sampling, testing and reporting system, other than checking the chemical composition, performing the bend and rebend tests and testing by HOKLAS accredited testing laboratories, will follow the recommendations of CS2:1995. The tensile tests will be witnessed by a RSE's representative who is versatile with the HOKLAS requirements.

(x) The tensile capacity of the coupler with lock nut and pile head anchor nut system shall be not less than 125% of the capacity of the DBS bar (i.e. 1.25 x 520 MPa = 650 MPa).

(xi) Mill certificates and test reports of the bar, the coupler with lock nut and pile head anchor nut system shall be submitted to the Building Authority for record.

(xii) Full time qualified supervision on bar fixing and splicing of the bars shall be provided.

(xiii) Material tests on the bar shall satisfy the following requirements :

(a) Rate of testing for the bars upon material delivery as stipulated in Table 9 of CS 2 : 1995.

(b) Tension test shall be carried out in accordance with Cl. 6.2 of CS 2 : 1995.

(xiv) Material tests on the coupler with lock nut and pile head anchor nut system shall satisfy the following requirements :

(a) Rate of testing for mechanical couplers and anchor nut system upon material delivery as stipulated in clause 15.30 of the General Specification for Civil Engineering Works.

(b) Tension test shall be carried out in accordance with Cl. 6.2 of CS 2 : 1995.

(c) Slip test for thread bars with mechanical couplers and anchor nut shall be conducted in accordance with ISO/DIS 15835-2 "Steel for the Reinforcement of Concrete – Mechanical Splices for Bars – Part 2: Test Methods".

(d) Maximum permanent elongation of the mechanical couplers and anchor nut when loaded to $0.42f_y$ (i.e. 220 MPa) shall not exceed 0.1 mm.