Summary of Decisions of the Structural Engineering Committee
SEC 11/2009 held on 08.12.2009

(a) Case 11/2009

Issue: Use of mechanical couplers as equivalence of full strength welded splices

Recommendation: To accept mechanical couplers be used to facilitate the fixing of reinforcement bars as per full strength welded splices without being subject to the restrictions for laps and mechanical couplers stipulated in clauses 9.9.1.1(d) and 9.9.2.1(d) of the Code of Practice for Structural Use of Concrete 2004 (the 2004 Code) on the following conditions:

1. The couplers shall be tested in accordance with US standard AC 133 "Acceptance Criteria for Mechanical Connectors for Steel Bar Reinforcement" in local HOKLAS accredited laboratories (or overseas laboratories accredited by other accreditation bodies which have reached mutual recognition agreements with HOKLAS) to establish that the couplers comply with the requirements of Type 2 mechanical splices as specified in US Standard ACI-318 "Building Code Requirements for Structural Concrete";

2. The couplers shall also be tested in local HOKLAS accredited laboratories to establish that the couplers comply with the requirements stated in Clause 3.2.8.2 of the 2004 Code and the criteria that the tensile strength of the coupled bar assembly should exceed 529 N/mm^2 for grade 460;

3. The couplers shall achieve "bar-break" failure, which requires failure occurring in the reinforcing bars away from the couplers, and will render the splices equivalent to or even superior than full strength welded splices; and

4. Full test reports and quality assurance schemes from manufacturer and purchaser shall be submitted for BD's acceptance.

Decision:

1. Members agreed, apart from the high potential plastic regions, the couplers could be applied to all locations, including in beams, subject to the conditions imposed in the previous accepted SEC cases.

2. Members agreed the couplers could be used at pile cap and transfer plate levels subject to RSE's proposed site supervision system and staggering arrangement. Additionally, members considered that RSE should put in place through RSE's TCP stream an independent audit checking system on the splicing assemblies and procedures.

3. Subject to the conditions above, members endorsed the recommendations and agreed in future, reference could be made to this case for the use of this type of couplers for similar applications and SEC's referral is not necessary.