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**A cost effective foundation for hand moulded chip concrete block walls in weak soils**

The need to search for alternative building materials is quite important in today's context with serious problems associated with clay and sand mining. An alternative building material that can reduce the demand on bricks and sand is hand moulded chip concrete (HMCC) blocks. The mix recommended is 1:8:14 cement, fine aggregate (sand or quarry dust) and chips of 6-8 mm. the blocks of thickness of 125 mm and 100 mm can be used for external and internal walls, respectively. Since these blocks could be used to construct houses at various areas in Sri Lanka, it is useful to develop a cost effective foundation system that can be used at sites with weak soils.

One such foundation is a composite system consisting of block wall constructed on rubble work where two tie beams are provided at the plinth level and the window sill level. Such foundations can be designed based on the deflection ratio method. For the structural design purposes, it is necessary to find the shear strength and the elastic modulus of HMCC block walls. It is found experimentally that a shear strength of 0.15 N/ $mm^2$ can be recommended for HMCC block walls of thickness 100 mm or 125 mm. the elastic modulus of HMCC block walls in axial direction is 0.3 kN/$mm^2$.

A case study carried out with an appropriate foundation with tie beams has indicated that only nominal reinforcement is required in the tie beams. Those will be either 2 or 3 numbers of 10 mm diameter high yield steel. Therefore, this foundation can be quite cost effective than other alternatives such as inverted T-beam or Vierendeel types since it uses much less steel and concrete. Thus this foundation system can be used to fulfill one of the primary requirements in introducing alternative building materials; it should have either a comparable or a superior behaviour than the traditional building materials.