

Structural Behavior of Prefabricated Pad Footing System Designed using Cold Formed Steel Lipped Channel Section

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Conventional methods for constructing the pad footings required the used of plywood as formwork and reinforcement bar, thus both materials required the used of skilled workmanship in construction site. The main concern in conventional pad footing is wastage, this is because some of the materials such that plywood can no longer be used and will contribute to the additional construction cost. The purpose of this research is to investigate the structural behavior of prefabricated pad footing system using cold formed steel (CFS) lipped channel section where CFS were used as reinforcement bar and permanent formwork, by carrying out experimental tests. In addition, the experimental test results were validate with theoretical calculation and the economical aspect of CFS in pad footing system were compared with conventional pad footing throughout the steel area required. There were nine 3 full scale specimens for square pad footing with internal CFS is arranged parallel to the support have been tested. All samples are tested until failure using uniform axial compression tests. During the testing, all samples were put under increment of loads; maximum failure load, failure modes and displacement were observed and recorded. Experimental results were then compared to theoretical prediction using MSEN 1992(2010) Eurocode 2 part 1-1. The comparison shows good result between experimental and theoretical calculation. The use of CFS in ad footing seems more economic compared of using conventional methods of constructing the pad footing.

Keywords: Pad Footing; Cold Formed Steel Lipped Channel Section; Compression Resistance; Axial Compression Test