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Reinforced Masonry Steel Splices

Electronic Blueprint and ENVIROSPEC provide building specifications and training, on safe and sustainable buildings, for architects, engineers and builders. The use of high strength steel reinforcement requires relatively long lap lengths to effectively splice tensile reinforcement. Two papers at the 14th International Brick & Block Masonry dealt with this issue:

Mjelde, J.Z., Mclean, D.I., Thompson, J.J., Mcginley, W.M., "Performance of lap splices in concrete masonry shear wall under in-plane loading", 14th International Brick & Block Masonry Conference, Sydney, Australia, 2008.

Thompson, J.J., Lang, N., "Effects of confinement reinforcement on the performance of lap splices in concrete masonry", 14th International Brick & Block Masonry Conference, Sydney, Australia, 2008.

The first paper described a series of tests on reinforced concrete masonry in flexure and shear. It concluded that laps lengths of 48 bar diameters give satisfactory performance, provided the reinforcement is placed in the centres of the hollow concrete block cells, and is accompanied by horizontal reinforcement. Where reinforcement is offset in the cells, the reduced cover leads to reduced transfer of stress, with resulting drop in performance.

The second paper described the beneficial effect of introducing transverse confining reinforcement into reinforced masonry walls to reduce this lap length. It reports benefits up to a particular limit, beyond which there is little further increase. The paper gives an equation, which may be incorporated into design standards to enable reduced lap lengths, provided the design area of transverse reinforcement is limited to 225 mm², and the lap length is not reduced below 914 mm.

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