

Utilization of Water Purification Sludge in Compressive Stabilized Earth Blocks (CSEB)

L. W. K. U. Dharmadasa, W. K. D. Madhumekhala, and S. P. Guluwita*

Department of Materials Science and Engineering, University of Moratuwa

**Email: sguluwita@uom.lk*

Annually, water treatment plants in Sri Lanka generate a substantial volume of sludge, primarily managed through landfill disposal. The utilization of sludge in the construction sector emerges as a financially viable and environmentally prudent alternative to traditional masonry units. This study investigates the potential of reusing water treatment sludge in the production of compressive stabilized earth blocks (CSEB), motivated by the analogous mineralogical composition shared between clay and water treatment plant sludge. Simultaneously, quarry dust is employed as a substitute for sand in the CSEB production process. Anticipated research outcomes encompass a comprehensive understanding of the applicability of water purification sludge in CSEB production, a comparative analysis of diverse sludges, and the formulation of an optimized mix design. The prepared blocks exhibit augmented strength over a 28-day period; however, a concomitant reduction in strength occurs with increasing the sludge proportions. This investigation contributes valuable insights to the sustainable reuse of water treatment sludge in construction practices.

Keywords: *Compressive stabilized earth blocks, Quarry dust, Water treatment plant sludge*