2
MASONRY INTERLOCKING BRICKS

INTRODUCTION

Interlocking bricks is an easy and fast construction method as it eliminates the use of mortar in the construction process. The interlocking brick features grooves and protrusions that act like puzzle or Lego, making it easier for assembly and hence reducing the construction time.

The introduction of interlocking mortarless masonry has led to a large increase in productivity and efficiency, as well as a reduction in the requirements for highly specialized labourers. Interlocking bricks are different from conventional bricks since they do not require mortar to be laid during bricklaying work. Because of this characteristic, the process of building walls is faster and requires less skilled labour as the bricks are laid dry and lock into place. However, generally, there are problems associated with bricks which are low strength, higher water absorption, low fire resistance and high porosity

Tang et al. [22] have evaluated the residual compressive and shear strengths of novel coconut-fibre-reinforced-concrete (CFRC) interlocking blocks under dynamic loading. They have concluded that the CFRC interlocking bricks have sufficient residual capacity after subjection to dynamic loads and 15 months of storage. Therefore, the structures of CFRC interlocking bricks have the capability to sustain and be utilized continually after any seismic events if the destruction and harm in blocks are invisible.

Ali et al. [23] have investigated the in-plane behaviour of the mortar-free coconut fibre reinforced concrete interlocking blocks

structures undergone different dynamic loadings. The contents of coconut fibre were 1% of the concrete mass. Four structures elements were prepared (two columns and two walls both with and without coconut fibre rope) and tested under push over, snap back, impact, harmonic and earthquake loadings. It was demonstrated that the bending stiffness and top displacement of the structures with fibre coconut rope were higher than those without rope. At the same time, damping, energy dissipation, and base shear of the structures with rope were smaller than those structures without rope. Therefore, the results confirmed that CFRC interlocking blocks have the potential to be used in regions exposed to any seismic loadings.

A variety of interlocking blocks have been developed during the past years, differing in material composition, shape and size, depending on the required strengths and uses. These include Sparlock system, Meccano system, Sparfil system, Haener system, and the Solid Interlocking blocks (SIB) or Hydraform blocks, which are an improvement over the traditional adobe bricks or unfired laterite blocks

As reported by Khan and Deshmukh [24] that the various interlocking blocks based on materials are soil-cement blocks, rice hush ash cement blocks, and concrete blocks. The soil-cement blocks depend on the soil and cement qualities, the cement-to-soil ratio usually lies between 1:6 and 1:10, by volume, while the rice husk ash (RHA) cement blocks, the cement to RHA ratio is 1:4 by volume. Also, for the concrete blocks, the typical mix proportion of cement: sand: gravel is 1:5: 3.

Fay et al. [25] developed a mortarless interlocking soil-cement block for masonry construction. With the fitting block designed, the mould for pressing was developed and prototypes were conformed in three soil-cement mixtures showing production feasibility. The prototypes were tested for the resistance of compression, water absorption and sizing according to the related standards. The results showed that only the water absorption parameter did not comply with the standards.