Nevertheless, one of the major problems with this pavement is the concrete blocks’ horizontal movement because of the horizontal resistance caused by moving vehicles. Horizontal forces that occurred due to the moving vehicles and braking action will cause the concrete blocks to experience horizontal displacement. Interlocking characteristic of the blocks will then decrease and subsequently cause the concrete blocks to rupture if they run over each other continuously. As a result, the pavement will no longer be able to bear the traffic load applied. Therefore, Underside Shaped Concrete Block (USCB) was introduced to enhancing interlocking between pavers and bedding sand with improved mechanical properties.

The bedding sand layer is considered an essential component in a concrete block pavement. Bedding sand layer provides uniform support for the blocks and to avoid stress concentrations which could cause damage to the blocks. Bedding sand gives a frictional force between concrete blocks to prevent the block moving towards. Thus, it fills the lower part of the joint space between adjacent blocks in order to develop interlock. Changing in the thickness of the bedding sand will effect to the strength and performance of CBP. The behavior of block pavement depends to a significant degree on the shape of concrete blocks. Different types of block shapes will give different load impact on CBP. Block shapes do contribute larger impact to the structural performance of concrete block pavement (Azman et al., 2013).

Adequate compaction is required to minimize the settlement of CBP. The laying course material and blocks should be compacted using a vibrating plate compactor. Some blocks may require a rubber or neoprene faced sole plate to prevent damage to the block surfaces (Interpave, 2006). The block paved area should be fully compacted right after the full blocks and cut blocks have been laid to achieve finished pavement tolerances from the design level of ± 10 mm under a 3 meter straightedge (ICPI, 2004). Normally two cycles of compaction are applied. The first cycle compacts the bedding sand and causes this material to rise up the joints and the second cycle is applied once the joint sand is brushed into the joints.

CBP may carry dynamic loads generated by a variety of vehicles whose configuration varies over a wide range. Shackel (1980) applied a 40 kN maximum wheel load to simulate the wheel loading on the pavement surface to assess the performance and behavior of pavement construction materials during complete life cycles simulation tests.

The laying course thickness differs from country to country. Most European countries use the 50 mm thick compacted bedding sand (Lilley and Dawson 1988; Panda and Ghosh 2002). However, Australia has specified a compacted thickness of 20 mm to 25 mm. This is a very thin layer and will therefore require the surface of the underlying base to be very smooth (Beaty and Raymond, 1992). According to the European practices (Eisenmann and Leykuf, 1988; Lilley and Dowson, 1988; Huurman, 1997)