The measurements were made on bedding sand to obtain the desired thickness and the level of blocks before compaction, $h_1$, first cycle of compaction, $h_2$, and second cycle of compaction, $h_3$, throughout hundreds of measurement points.

A hydraulic jack fitted to the reaction frame was used to apply a central load in the middle of the entire block pavement in vertically for push-in loading test (with 10 channels as shown in Figure 4-a) and horizontally for horizontal loading test (with 11 channels as shown in Figure 4-b). While the loading was increased up to 25 kN, the displacements were measured to an accuracy of 0.01 mm using Linear Variable Differential Transducer (LVDT) connected to a data logger.

![Figure 3: (a) Push-in loading test and (b) Horizontal loading test](image)

3.0 Results and Discussions

3.1 Effects of USCB Shell-R15 on Bedding Sand

Figure 4 shows the settlement and compacted bedding sand layer thickness of the control blocks and USCB Shell-R15 after compaction. Settlement of bedding sand for control block was 15 mm (30 %) in the range of 15 mm to 20 mm studied by Azman (2004) and 20 % to 35 % by Shackel (1990). Meanwhile, settlement of loose bedding sand layer of 50 mm, 70 mm and 90 mm for USCB Shell-R15 were 18 mm (36 %), 25 mm (35 %) and 30 mm (34 %), respectively. Thickness of loose bedding sand observably influences the percentage of bedding sand settlement. It showed that the bedding sand has ability filled the groove with sufficient compaction during the laying process. All the blocks (control block and Shell-R15) showed the compacted thickness of bedding sand between 35 mm to 46 mm except 60 mm for 90 mm loose bedding sand was in the range of 25 mm to 50 mm bedding sand thickness commonly used.