INTERACTION BETWEEN BEDDING SAND THICKNESS AND SHELL GROOVE-UNDERSIDE SHAPED CONCRETE BLOCK PAVEMENT

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Abstract: Underside Shaped Concrete Block (USCB) has groove shaped at the underside block surface to produce resistance in horizontal plane and to grip onto the bedding sand layer. However, the horizontal movement of block units is the major problem in pavement due to vehicle braking and accelerated action. This paper presents the laboratory evaluation on vertical and horizontal displacement of shell groove-USCB pavement laid onto different bedding sand layer thickness. A pavement laboratory test was conducted to investigate the interaction between USCB type of the Shell-Rectangular 15 mm (Shell-R15) and bedding sand on three different loose bedding sand layer thicknesses of 50 mm, 70 mm and 90 mm respectively. Then, push-in loading test and horizontal loading test were performed. The results showed that interaction between USCB Shell-R15 and bedding sand layer thickness had significant influence to the vertical and horizontal displacement compared to control of 50 mm loose bedding sand layer thickness. The loose bedding sand layer thickness of 70 mm performed better compared to others.

Keywords: Underside shaped concrete block, concrete block pavement, bedding sand thickness

1.0 Introduction

In Concrete Block Pavement (CBP) the load spreading capacity of concrete block layer depends on the interaction of individual blocks with jointing sand, which is aimed to build up resistance against applied load. The shape, size, thickness, laying patterns, and etc. are some important block parameters that can influence the overall performance of the pavement. The same applies to the shape of the block. It is postulated that the effectiveness of load transfer depends on the vertical surface area of the blocks (Panda and Ghosh, 2001).

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