GFRP BOX COLUMNS WITH DIFFERENT SUPPORTS SUBJECTED \TO AXIAL COMPRESSION

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Abstract

This paper presents the experimental results of the axially loaded GFRP box columns with pinned-pined and pinned-fixed support and comparing the obtained results with column design equations. The test specimens were made of glass fiber reinforced with vinylester resin and manufactured by pultrusion process. The experimental data consists of 8 compression tests. For the long GFRP column, the axial load-deflection curves have a linear elastic response in the range of 60-80% of the buckling load. For the short GFRP column, the linear elastic response was about 80-90% of the failure crushing load. The averaged ultimate load for the 4,880 mm pinned-fixed column increase by 55% compared to those with the pinned-pinned support. By matching the test data with the theoretical prediction, the value of K for the fixed support should be approximately equal to 0.80. By comparing the test results with the design equations, it was found that the design equations fit practically well with the test results.

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