

Slump Test as an Indirect Indicator of the Characteristic Strength of Laterised Concrete

F. Falade and G.L. Oyekan

Abstract

This paper presents the possibility of using workability test (slump test) to predict the 28-day characteristic strength of laterised concrete. Three mix proportions: 1:1 1/2:3 (cement: laterite: granite chips), 1:2:4 and 1:3:6 were considered. The water cement ratios varied with each mix. For 1:1 1/2 :3 from 0.52 – 1.12, 1:2:4 from 0.65 – 1.35 and for 1:3:6 from 0.90 – 1.80. Regression equations were used to fit the curve of the slump versus water/cement ratio and characteristic strength versus water/cement ratio. The equations were formulated for the descending portion of the characteristic strength curve where slump test is sensitive to change in workability taking the optimum water/cement ratio as the starting point. The ascending portion of the characteristic strength curve has initial zero slump and increases to optimum water/cement ratio. Generally, the results show good agreement between the experimentally observed quantities and the predicted values. The results further indicated that workability increases as water/cement ratios increase. At water/cement ratio lower than optimum, increase in water/cement ratios causes increase in strength but further increase after optimum water/cement ratio results in decreased strength values in all the mix proportions.