Abstract

Porous concrete have limited application. Normally it is defined that it cannot bear higher loads as the bearing capacity of the porous concrete is believed as poor. In the construction industry this material is basically used due to the higher permeability. But the evaluation of optimum water to cement ratio will lead to acquire both strength and permeability. Thus porous concrete will be able to apply for places where need a higher strength and permeability such as high weight vehicle parking etc.

In this thesis investigated prior studies on the compressive strength on porous concrete as it relates to water-cement ratio. This is to obtaining the water to cement ratio for porous concrete which contains coarse aggregate size 10mm passing and 5mm retaining. Compressive strength was checked with a water to cement ratio 0.25, 0.275, 0.3, 0.325, 0.35, 0.375 and 0.4, 0425 and 0.45. For experiment 8 cubes were prepared with each one of water to cement ratio value and 4 control cubes were prepared to maintain the quality assurance. 4 test cubes were cured for 7 days and 21 days. Slump test also carried out for water to cement ratio 0.3 to 0.425. To check the aggregate properties aggregate impact test, aggregate crushing test, angularity test, specific gravity and water absorption, flakiness and elongation test were carries out.

From the experiment carried out to check the aggregate properties it was possible to state their properties achieved values in recommended range. From the both curing period testing results the highest compressive strength could obtained for cubes with water to cement ratio 0.425. But slump value was 148cm. due to the lower slump value it was not possible to take the water to cement ratio 0.425 as the optimum water to cement ratio for porous concrete. Considering the both compressive strength and slump test values water to cement ratio 0.35 was taken as the optimum water to cement ratio for porous concrete which contains aggregate to cement ratio 2.5, aggregate size 5mm retain.