Abstract

Shear failures in concrete structures are very hazardous. These failures can rarely be predicted and often happen suddenly. For years tests have been carried out on this property.

This study involved testing plain concrete beams of variable cross-section size and three concrete grades. Compressive strength tests were carried out as control for the shear tests. For each grade 7 day and 28 day compressive tests were carried out. The beams were tested for shear using a properly designed setup and these values recorded. Six beams were tested for each grade and the results compared against the compressive test values.

The study showed an increase in the shear strength with increase in compressive strength and also showed an increase in shear strength with increase in effective depth. Assuming a value of 1 for A_s in the formulae for design shear stress calculation in BS 8110-1:1997, design shear stress v_c values were calculated and compared with the shear strength values. A relationship was established whereby there was an increase in design shear stress with increase in shear strength. Another parameter was the angle of shear failure which was steeper than expected.

Dedication

To my beloved mum and dad

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Compound	Formula
Calcium oxide (lime)	Ca0
Silicon dioxide (silica)	SiO_2
Water	H_2O
Calcium hydroxide	$Ca(OH)_2$
Tri-calcium aluminate	C_3A
Alite or tricalcium silicate	C_3S
Sulphate	SO_4