# Flexural Behaviour Of Reinforced Concrete Beam Containing

Confining existing concrete and masonry columns by Fibre Reinforced Polymers (FRP) is a beneficial method for enhancing the column capacity and ductility. The popularity of using FRP for strengthening and upgrading columns is mainly attributed to the high strength and lightweight characteristics of the FRP materials. Using FRP composites reduces additional dead load associated with traditional strengthening solutions and simplify the application in areas with limited access. The goal of this research is to experimentally quantify the enhancement in strength and strain capacity of Carbon FRP (CFRP) confined concrete masonry columns under concentric and eccentric loading. Research on FRP-strengthened concrete masonry columns under eccentric loads is essential to understand the effect of this retrofitting technique on the performance of columns. The experimental data was then used to propose a simplified methodology that predicts the axial force-moment interaction diagram of fully grouted reinforced concrete masonry column strengthened with FRP jackets. The methodology considers short prismatic reinforced concrete masonry columns failing in a compression controlled manner and complies with equilibrium and strain compatibility principles. To achieve the research goals, 47 scaled fully grouted concrete block masonry columns were tested under concentric, eccentric, and bending loading up to failure. Parameters investigated in this research include the thickness of CFRP jacket, corner radius of cross section and the magnitude of eccentricity. The proposed analytical methodology showed a good correlation with the experimental data. Parametric study was carried out to determine the effect of design variables on the axial-flexural interaction of fully grouted reinforced concrete masonry column strengthened by FRP jackets.

Fatigue Flexural Behaviour of Corroded Reinforced Concrete Beams Repaired with CFRP Sheets

Flexural Behaviour of Reinforced Concrete Beams Strengthened by External Unbonded Reinforcement

Flexural Behaviour of Reinforced Concrete Beams with Opening

The Flexural Behavior of Fiber Reinforced Concrete Beams

The moments at gauged sections were evaluated by means of a digital computer program. Strains measured on the surface of the concrete and the tensile reinforcement were related to parameters determined from compressive tests on concrete cylinders. The resistance moment, force and other

quantities appertaining to the section were calculated for all states of loading over the entire range of behaviour up to collapse. Unlike methods utilising moment-curvature relationships subsidiary tests to determine these characteristics were not required. The data used were obtained from tests on control samples of reinforcement and concrete. A least squares curve fitting routine was used to produce a second order best fit strain profile for the strains measured across a given section. The second order profile being preferred to the more usual straight line assumption as it enabled the position of the neutral axis to be related to both tensile and compressive strains measured on the section. A mathematical model for the concrete was set up in the computer based on the data from the control tests on the concrete cylinders. This model and the strain profile were then combined on the basis of the extreme fibre strain and the depth of the neutral axis to calculate the moment of resistance, force and curvature for the section. The value of the strain on the tensile reinforcement was compared with the strain in the concrete at that level to enable the moment of resistance in tension to be calculated and compared with the moment of resistance in compression. Tests were carried out on a series of simply supported beams to prove the approach. For the beams tested the proportion of mild steel tensile reinforcement varied from 0.4% to 5.0% of the cross-sectional area.....

Modelling the Flexural Behavior of Reinforced Fiber Reinforced Concrete Members

Flexural Behavior of Reinforced Concrete Beams at Working Loads

Flexural Behavior of Sisal Fiber Reinforced Concrete Beams

Flexural Behaviour of Reinforced Concrete Beams at Working Loads

**A vast development in the construction industries indicate the highly demand for the use of concrete. This also effect the depletion problem of natural coarse aggregate such as granite, crushed rock , and stone from the quarries. Thus, as an alternative to replace the natural coarse aggregate, synthetic coarse aggregate is produced to overcome the problem. This research involves the investigation of the flexural behavior of reinforced lightweight concrete beam made from synthetic lightweight coarse aggregate (SYLCAG). The SYLCAG is used to replace partially function of natural coarse aggregate. A reinforced concrete beam was tested in the flexural beam test using the four-point loads test. The compressive strength and the flexural behavior of the lightweight beam were two important parameters examined during the beam tests. The paper compares flexural performance of the lightweight beam and the normal beam in the term of failure modes, load deflection response, and ultimate load with those of the theoretical analysis. The theoretical results for ultimate load and deflection was predicted using equation provided by the ACI 318-05 building code and EC2. From the result, it shows that the SYLCAG concrete has slightly lower compressive strength and lower density than the normal concrete. The strength of SYLCAG concrete that was developed was about 93% from strength of control concrete. However the ultimate load of SYCLAG beam was 116% of the ultimate load of control beam. SYLCAG beam**

**also has achieved 98% deflection of control beam and 79% deflection of the theoretical value. It can be conclude that the SYLCAG beam exhibit similar flexural behavior as that of normal concrete.**

**Flexural Behaviour of Corroded Reinforced Concrete Beams**

**Flexural Behaviour of Reinforced Concrete Beams with Recycled Aggregates and Steel Fibres**

**Tests to Determine the Flexural Behaviour of Reinforced Concrete Blockwork**

**Tensile and Flexural Behaviour of Steel Fibre Reinforced Concrete**

*Basalt fibers have recently been introduced as a promising alternative to the existing fiber reinforced polymer (FRP) family. The mechanical properties of basalt FRP (BFRP) bars are, generally, better than those of glass FRP (GFRP) bars. However, they are still lower than those of carbon FRP (CFRP) bars. Also BFRP bars have now been developed that have a higher modulus of elasticity than typical GRFP bars. Only a limited amount of research is available on BFRP bars in structural concrete applications and there is no information on the performance of prestressed basalt bars in reinforced concrete elements subjected to fatigue loading. Most studies that are available deal only with the flexural behaviour of concrete beams reinforced with non- prestressed and prestressed GFRP and CFRP bars under monotonic and fatigue loading. This thesis presents an experimental study of the flexural behaviour of concrete beams reinforced with non-prestressed and prestressed basalt bars under monotonic and fatigue loading and compares these beam fatigue results with the fatigue behaviour of similar machined basalt rebars tested under fatigue loading in air. Sixteen beams with dimensions of (2400x 300x150mm) and thirteen BFRP bare rebars were tested. The parameters that varied were the level of prestress of the bars (0%, 20% and 40% of their static tension capacity) and the fatigue load ranges. The experimental findings showed a difference in the long life fatigue strength between the beams prestressed to 40% 20% and 0% of the bar strength with the beams with the bars prestressed to 40% of the bar strength showing a higher fatigue strength than of those prestressed to 0% and 20%. For 40% and 20 % prestressed beams, there is no benefit in fatigue performance above 20% and 13% of the ultimate capacity of the beams a level at which calculations showed that the remaining prestress did not close cracks at the minimum load in the fatigue load cycle. When compared on the basis of load range versus cycles to failure, the data for the three beam types fell onto a single curve at load levels where the*

*remaining prestress after fatigue creep relaxation no longer closed the crack at the minimum load.*

*An Experimental Investigation Into the Effects of Shear and Tension on the Flexural Behaviour of Reinforced Concrete Beams*

*Flexural Behaviour of Reinforced Concrete Flat Slabs Supported on Non-rectangular Column Grid*

*Axial-Flexural Behaviour of Reinforced Concrete Masonry Columns Confined by FRP Jackets*

*Flexural Behavior of Reinforced Concrete Beams Externally Bonded with CFRP Sheets*