

BEHAVIOUR OF REINFORCED CONCRETE BEAM  
WITH SILICA FUME UNDER DYNAMIC LOADING

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Declaration:

I hereby declare that this report has not been submitted, either in the same or different form, to this or any other university for a degree, and except where reference is made to the work of others, it is believed to be original.



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(RUDY TAWIE)

## ABSTRACT

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### Behaviour of Reinforced Concrete Beam with Silica Fume under Dynamic Loading

Rudy Tawie J. S.

Concrete mixes design to produce  $42 \text{ N/mm}^2$  –  $84 \text{ N/mm}^2$  in compressive strength are easily obtainable today with silica fume replacing a portion of the cement content. Such concretes with a design compressive strength exceeds  $42 \text{ N/mm}^2$  may be defined as “High Strength Concrete”. For several reasons, there has recently been a marked interest in the determination of the dynamic characteristics of structures and their response under dynamic loads and effect. Subjected to dynamic loading under sinusoidal wave pattern, a study has been carried out to make an experimental investigation on reinforced concrete beam (Grade  $60 \text{ N/mm}^2$ ) incorporating silica fume replacing cement by weight of w/c ratio of 0.30, with respect to the serviceability and ultimate limits. A total of three specimens each with different silica fume proportion (8%, 12% and 16%) by weight of cement were cast and tested under the dynamic load. Parameters investigated include deflections, crack widths and crack lengths.

**Keywords:** High strength concrete, reinforced concrete beam, silica fume, dynamic loading, deflection, cracking.

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