

FLEXURAL BEHAVIOUR OF RC BEAM WITH WELDED MESH AS SHEAR REINFORCEMENT

RAVEENDIRAN.N , I.BARAGATHULLA

Abstract— In the reinforcement system, Welded mesh is proposed to perform the function of transverse steel in Reinforced Concrete Beams. Welded mesh is made from cold drawn steel wires arranged in two orthogonal directions and is prefabricated in a production line. Welded mesh reinforcement eliminates some of the detailing problems inherent in traditional rebar in the Reinforced Concrete Construction resulting in easier and faster construction, and better economy and quality control.

In this present experimental work on the behavior of Rectangular concrete beams with Shear reinforcement by Welded mesh was carried out. One Control beam with conventional reinforcement with other beams with varies welded mesh were cast and tested. The results were used to study the flexural behavior. It is obtained that the beam with continuous weld mesh and longitudinal bar given the maximum load carrying capacity.

Keywords -- Self-Compacting Concrete , reinforced concrete beams.

I. INTRODUCTION

Flexural behaviour of beam under point loading with steel fibre and shear reinforcement with welded mesh. Welded wire mesh generally consists of wires arranged in two orthogonal directions and is prefabricated in a production line. Because of its economy, ease, and faster of construction as well as better quality control, Welded mesh has been widely used in buildings that weld mesh can be a good substitute for the conventional reinforcement and yielded excellent results both in strength and ductility. Steel fibers has leads to the improvement of the concrete mechanical properties such as material toughness in tension and also durability.

This is because of a little is known about the structural behavior of RC beams confined by Weld mesh and steel fibre as Shear reinforcement. A beam specimens to made in this study. The specimens with w'eld mesh at various longitudinal section as transverse reinforcement, while the other specimen is with conventional reinforcement. Tests of reinforced concrete beams indicate that the strength and ductility of concrete are improved not only by longitudinal reinforcement, but also shear reinforcement.

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II. EXISTING SYSTEM

“Strengthening Of RC Beams using SCC jacketing with Wire mesh” This research presents the experimental investigations of the structural behavior of reinforced concrete (RC) beams. The strengthening technique that was used section enlargement using Self-Compacting Concrete (SCC) reinforced with welded wire mesh (WWM).

Different mechanical bonding between old and new concrete techniques was also investigated. An alternative reinforcement system, Welded mesh is proposed to perform the function of transverse steel in Reinforced Concrete Beams. Welded mesh is made from cold drawn steel wires arranged in two orthogonal directions and is prefabricated in a production line. Welded mesh reinforcement eliminates some of the detailing problems inherent in traditional rebar in the Reinforced Concrete Construction resulting in easier and faster construction, and better economy and quality control.

III. PROPOSED WORK

From the above literatures most of them suggest that welded wire mesh and steel fibre, it can be modified to an alternate methods of using welded mesh with stirrups and adding steel fibre used in the reinforced concrete beam and to determine the shear and effective strength of the beam. The result indicates improved strength characteristics using the mesh layer in addition to the stirrups. There were also improvements in maximum deflection and ductility of the beam. A total of six specimens were cast and the volumetric ratios of the stirrups and the welded wire mesh are varied in each specimen. The mesh used was commonly available galvanized welded wire mesh of opening $\frac{1}{2}$ inch x $\frac{1}{2}$ inch. Since the mesh size is very small and to ensure strength and homogeneity self compacting concrete was used. Its wide spread usage was also considered.

IV. OBJECTIVE:

The main objective of the project:

To develop the flexural strength of reinforced concrete beam with steel fibre and shear reinforcement with welded mesh.

Welded wire layers additional reinforcement significantly enhances the flexural strength cracking behaviors and energy absorption capacity.

1) Application Of The Welded Mesh:

- Structural Slabs & Walls

- Roads / Pavements
- Precast Members

2) Specific gravity test for cement

$$\text{Specific gravity } G_c = \frac{(w_2 - w_1) \gamma_d}{(w_2 - w_1) - (w_3 - w_4)}$$

3) Consistency of cement

Consistency test is carried out with Vicat apparatus. 400grams of cement is taken and mixed with different percentage of water.

V. METHODOLOGY:

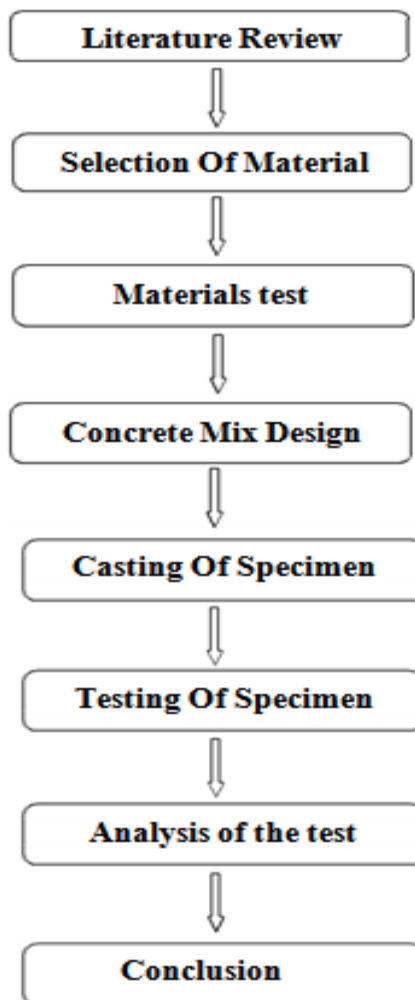


Figure 1 : Flowchart of Methodology

OAD And Deflection For RC Beam With Steel Fibre And Shear Reinforcement With Welded Mesh

The deflection was measured at mid points using the dial gauge, one at the mid span.

The deflection increased according to the load increases.

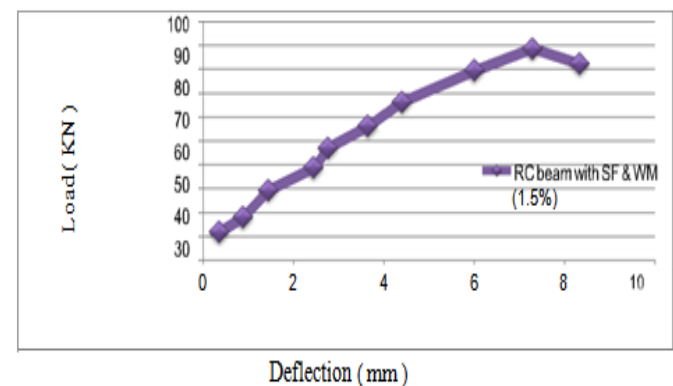
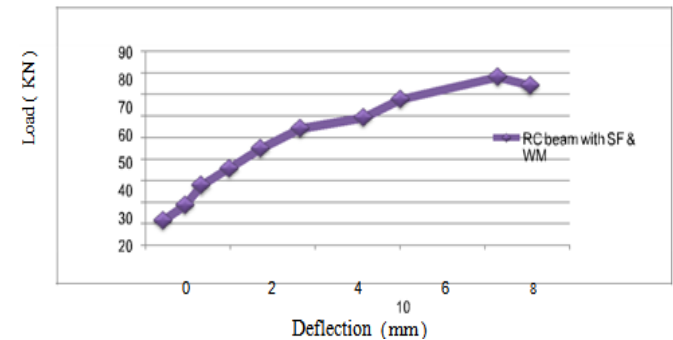
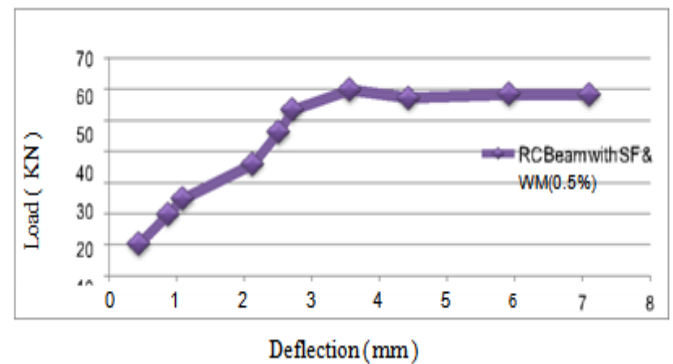


Figure 2 : Load Deflection Plot for RC beam with steel fiber and shear reinforcement with welded mesh (1.5%)

VI. CONCLUSION

The following conclusions were drawn with in the limitations of experimental investigation.

Compressive Strength, Splitting Tensile strength and Flexural Strength test increases the strength of concrete of 1.5% steel fiber added for 28 days result.

When the shear stirrups with welded wire, distribute throughout the span, behavior of beam is better than other beam. Load Vs deflection behavior of this beam also better than other beams.

Welded wire layers additional reinforcement significantly enhances the flexural strength cracking behaviors and energy absorption capacity.

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