

# EXPERIMENTAL ANALYSIS AND COMPARISON OF LATTICE REINFORCED BEAM AND CONVENTIONAL REINFORCED BEAM

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## ABSTRACT

The experimental investigation focused on the various types of shear reinforcement in the reinforced concrete beams. Conventional RCC beam and latticed RCC. These two types of shear reinforcement are studied thoroughly; conventional stirrups, welded latticed bars, Beam strength as well as beam deflection are the main parameters in the project that was considered in this study.

Shear failure in reinforced concrete beams is one of the most unwanted modes of failure. This type of failure mode of beam made it essential to explore more effective ways to design these beams for shear. It is observed in the reinforced concrete beams that failure due to shear is more dangerous than the failure due to bending. The diagonal cracks that developed due to over shear forces in beam are wider as compared to the flexural cracks. The economy, durability, serviceability and safety of shear reinforcement in reinforced concrete beams led to the study of other alternatives. Lattice reinforcement is a new type of shear reinforcement. It is welded bar.

In this project, an experimental study of the conventional reinforced concrete beam and latticed reinforced concrete beam have been studied. Several numbers of both types of the beam were analyzed by experimental work and deflection is measured by applying concentrated load applied at the center of the beam surface. The analysis was done for the simply supported condition. Experimental analysis is carried out in lab and results were compared in terms of strength and deflection.

**Keywords:** *latticed reinforced beam, conventional reinforced beam, lab testing and comparison*

## 1. INTRODUCTION

A beam is a most important structural member in whole structure that primarily resists loads. Beam resist the load applied on it up to certain limit after the limit exceeds the deflection occurs in the beam which may lead to dangerous and wider crack. The total effect of all the forces acting on the beam concludes to generation of forces and bending moments within the beam. These forces will cause internal stresses, strains, and deflections within the beam.

### 1.1 Need of Reinforcement

Shear reinforcement are provided in the beam to resist the shear force induced in beam. Generally the shear reinforcement are in the form of stirrups. The main role of stirrups is to grip the main reinforcement provided in beam and also to resist the shear force. There are various shapes of shear reinforcement in beam such as triangular, square, circular, welded and bolted. Here we focused on square shaped shear reinforcement. And welded reinforcement.