

**Introduction:**

The purpose of this study is to investigate the effect of different types of reinforcement on the strength and ductility of concrete beams. The study will compare the performance of beams reinforced with steel bars, fiber-reinforced polymer (FRP), and carbon fiber-reinforced polymer (CFRP) against a control beam.

The study will focus on the ultimate load capacity, load-deflection behavior, and energy dissipation capacity of the beams. The results will be compared with the theoretical predictions and the experimental results of the control beam.

The study will also investigate the effect of the type of reinforcement on the crack pattern and the mode of failure of the beams. The results will be compared with the theoretical predictions and the experimental results of the control beam.

The study will be conducted using a series of experiments. The results will be presented in the form of graphs and tables. The study will conclude with a discussion of the findings and recommendations for future research.

**Objectives:**

1. To study the effect of different types of reinforcement on the strength and ductility of concrete beams.
2. To study the effect of the type of reinforcement on the crack pattern and the mode of failure of the beams.
3. To compare the performance of beams reinforced with steel bars, FRP, and CFRP against a control beam.
4. To compare the results of the study with the theoretical predictions and the experimental results of the control beam.

**Scope:**

The study will focus on the ultimate load capacity, load-deflection behavior, and energy dissipation capacity of the beams. The results will be compared with the theoretical predictions and the experimental results of the control beam.

Reinforcement Type	Reinforcement Ratio	Reinforcement Details	Beam ID	Notes
Control & Experimental	3 " 80mm	Reinforcement Details: 50 # 100 # 200 # 400 # 800 # 1500 # 3000 #	Control	Experimental
	4 " 100mm			
	5 " 125mm			
	6 " 150mm			

The study will be conducted using a series of experiments. The results will be presented in the form of graphs and tables.

References: [1] ACI 318M-14, [2] ACI 308R-03, [3] ACI 308R-03