

**FINAL YEAR PROJECT REPORT
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**THE STUDY OF CHARACTERISTIC
BEHAVIOR OF PRESTRESSED BEAM
AT ULTIMATE LIMIT STATE**

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ABSTRACT

This project work is concerned with study of the characteristic behavior of bonded Class III post-tensioned rectangular simply supported beam using ultimate limit state design.

Six specimens were prepared. They were reinforced, hyperbolic and straight tendon prestressed concrete beams. A couple of beams were tested under one point load at mid-span and two point load at one-third from supports.

Cracking load, ultimate load, strain and crack propagation were observed and recorded during the testing. The experimental results were compared with the calculated and ANSYS (Analysis System) computer program. ANSYS computer program also was used in determining the actual modulus elasticity of concrete for each beam.

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1.0 INTRODUCTION

Prestressed concrete is the most recent of the major forms of construction to be introduced into structural engineering. Although several patents were taken out in the last century for various prestressing schemes, they were unsuccessful because low-strength steel was used, with the result that long-term effects of creep and shrinkage of the concrete reduced the prestress force so much that any advantage was lost. The technique of prestressing has several different applications within civil engineering, but by far the most common is in prestressed concrete where a prestress force is applied to a concrete member, and this induces an axial compression that counteracts all, or part of, the tensile stresses set up in the member by applied loading.

In the field of bridge engineering, the introduction of prestressed concrete has aided the construction of long-span concrete bridges. For smaller bridges, the use of simply supported precast prestressed concrete beams has proved an economical form of construction, particularly where there is restricted access beneath the bridge for construction.