

CHAPTER I



INTRODUCTION

Many solutions on the bending of thin triangular plate were solved in closed-form. Galerkin [1] and Nadai [2] gave different treatments for the right isocetes triangular plates simply supported on all sides and subjected to arbitray transversed loads.

Woinowsky-Krieger [3] obtained a closed form solution for simply supported triangular plates under uniform lateral loads.

Timoshenko and Woinowsky-Krieger [4] solved the problem of bending due to moment uniformly distributed along the boundary of simply supported equilateral triangular plate.

Lee and Ballesteros [5] obtained an approximate closed form solution of a uniformly loaded isotropic rectangular plate supported by columns at the corners.

Lee and Vijakkhana [6] derived the expression of the deflection and bending moment of a uniformly loaded equilateral triangular plate supported on columns at the corners. They assumed the deflection function in the form of polynomials as

first suggested by Girkmann (7)

In this study the problem of an equilateral triangular plate simply supported at the three corners, acted by a concentrated or partially uniformly distributed triangular load at the centroid, was solved in a closed form for the deflection, moment resultants and shear forces. The procedure was to assume a polynomial deflection function which satisfied the proposed boundary conditions. After this had been found, then the energy method was employed to get the final results. The theoretical results were then compared with the experimental investigation in which an equilateral triangular steel plate model loaded by concentrated forces was tested.