

FINAL YEAR PROJECT REPORT
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TORSIONAL BEHAVIOUR OF AXIALLY DISCONTINUOUS
FRAME STRUCTURE WITH C-SHAPED THIN-WALLED
SECTIONS FOR DIFFERENT LIP SIZES

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SYNOPSIS

The main objective of this project is to study and observe the torsional behaviour of simple axially discontinuous frame structures. For this project, general purpose finite element computer package called "ANALYSIS SYSTEM" (ANSYS Release 5.0) was used to model and analyse the torsional behaviour of frame member having C-shaped thin walled sections of different lip sizes connected via different joint configurations under torsional load.

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CHAPTER ONE

INTRODUCTION

1.1 GENERAL

Recently, the use of thin-walled cellular structure in the various types of civil engineering construction has increased with the economic necessity of providing high strength with low weight and cost. From a structural viewpoint, these types of steel members can be classified as individual structural framing member including decks and panel. In view of the fact that light members of various configuration can be easily cold-formed to structural shapes for carrying light loads, such sections have been used successfully in numerous high-rise steel building to supplement hot-rolled steel shapes (*Wei-Wen Yu, 1993*). It is clear therefore that knowledge of the fundamentals of thin-walled structure analysis would be an advantage for civil engineers at both undergraduate and practising level.

1.2 SCOPE OF STUDY

The finite element modelling and simulation were conducted using general purpose finite element computer package called ANSYS Release 5.0 available in CADEM Centre, MARA Institute of Technology (ITM). The scope of the study was on the torsional behaviour of the structures, where linear-elastic behaviour of finite element model was used for different cross sectional shapes such as: