

**FINAL YEAR PROJECT**  
**BACHELOR OF ENGINEERING (HONS) (CIVIL)**  
**SCHOOL OF CIVIL ENGINEERING**  
**MARA INSTITUTE OF TECHNOLOGY**  
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**FINITE ELEMENT ANALYSIS OF GLULAMINATED**  
**TIMBER BEAM AND COLUMN**

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**MAY 1997**

## ACKNOWLEDGMENTS

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Alhamdulillah and praise to Allah who has given me the time and ability to complete this project. I wish to express my special gratitude to my beloved parents Hj Md Isa bin and Hjh bt , brothers and sisters for giving the inspirations and strength towards the completion of this study. I wish to convey my heartiest thank to my project advisor Assoc. Prof. Ir. Hj Mohd Salleh Mohd Noh, an associate professor in the School of Civil Engineering, Mara Institute of Technology for his guidance, constructive and keen interest in supervising this project.

Finally I wish to express my gratitude to my classmates and also each individual who has given ideas, encouragement, understanding , support and cooperation either directly or indirectly during my period of study in ITM.

**“May Allah Bless Them All”**

Norhayati bt Hj Md Isa

Mei 1997

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## **ABSTRACT**

The works cover in this project is to determine the flexural strength of glulamined timber beam and column by using finite element analysis. The analysis consist of determining the maximum displacement of each model, the stress and strain value of the beam , lateral and vertical displacement of column. All the output values from the analysis are compared with the results obtained from experimental work carried out by the others researches. The solid structure Plane 42 and Beam 3 are used in the finite element analysis of ANSYS software. In this analysis both the timber and glue are specify as layers. Combination from both of this material strength will give the result of displacement when the load are applied to the beam and column. The displacements of the beam found in this analysis are higher relative to the experimental result obtained.

# CHAPTER ONE

## INTRODUCTION

### 1.0 GENERAL

Glue laminated timbers refer to two or more layers of smaller pieces of wood glued together with the grain of all layers or lamination approximately parallel. It is therefore possible to manufacture structural timber into complicated shapes, either in straight or curved form. In the most of the industrialized world nowadays, the demand for larger size structural wood members are growing. The glulam timber can be formed as beam or column.

Glue laminated timber is quite a new concept on the use of timber as far as Malaysia is concerned and it is a very good looking. Nowadays the demand of glue laminated for construction has increased steadily and it forms an importance segment of the woodworking.

#### Problem statements :-

- a. In glue laminated timber, there is a mixed properties of material ( i.e. mixed modulus of elasticity ), so we need some good or suitable analysis to predict bending behaviour of this structure.
- b. In glue laminated timber structure, there is a problem in interface element, so this research we will determined the location of the failure area.