

**STRESS ANALYSIS OF FINGER JOINT  
SUBJECTED TO TENSILE LOADING**

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**BY**

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In the name of Allah, The Most Gracious and The Most Merciful. All praise be to Allah, The Lord of this universe. Greet and glory be upon Prophet Muhammad S.A.W., his relatives, his comrades and the people who follow his path.

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## **ABSTRACT**

The project covers the Finite Element Analysis of glued wood joint under tensile loads with different tip thickness and lap length. The analysis of the wood joints will cover the mini finger joint. The sample sizes analysed in the study are varied from tips thickness (t) 0.6mm, 0.1mm, 0.8mm, 1.7mm, 1.75mm, 2.0mm, 0.6mm, 0.8mm, 1.0mm 0.1mm. The specimens of tensioned glued finger joint are modelled using element type of Plane42 and Beam3 as stated in the ANSYS program. The computer output are analysed to determine the strength at  $t/P$  and  $L/P$  ratios. The maximum displacement are analysed and the plot of Load – Displacement are tabulated. It is find out that the lower  $t/P$  and the higher  $L/P$  ratio given better result.

## **1.0 INTRODUCTION**

### **1.1 GENERAL**

At present, timber structure is mostly used in the form of solid member in temporary or permanent structure. To encourage greater usage of timber for permanent structural applications, built-up timber structures with large cross-section such as in the case of glued laminated timber structures must be promoted. Glue laminated timber is structural timber glued up from smaller pieces of wood either in straight or curved. The abbreviation of glue laminated timber structure is glulam.

### **1.2 OBJECTIVE OF STUDY**

The main objective of the study is to obtain the stresses in and around the joint with different length, pitch and tip.

This study also carries other objectives, which are:

- i. Determining the Strength Characteristics of the Finger Joint.
- ii. To obtain the efficiency of the joint.

### **1.3 SCOPE OF STUDY**

In conducting this study, several measures and guidelines are taken into account. It is quite impossible to include all kind of relating fields and every information in this report but certain aspects have to be stressed. Something might have