

**FINITE ELEMENT ANALYSIS
OF
FINGER JOINT**

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A C K N O W L E D G E M E N T

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 follows his path.

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A B S T R A C T

This study determined the quality of the glued finger joint by evaluating its strength, durability and efficiency. In furnishing this study, tested data were taken from the work of other researcher. Since the previous study concentrated on the experimental work, therefore this study will concentrate mainly on Finite Element Analysis in generating the data. Thereon, the main objective for this study is to achieve acceptable estimate on the performance of finger joint by using the same physical laws and principles. Considering that Finite Element Analysis needs a vast and complicated computation, a computer software, namely ANSYS (Analysis System), is being used in this study. For further clarification, this report will also cover sub-topics on Finite Element Analysis Method and ANSYS Software. Hypothetically, this study will produce a similar qualitative result, compared to the one done by previous researcher. However, precise values of related quantities are expected. It is hoped that this study will help further understanding and development in this field.

1.0 INTRODUCTION

1.1 GENERAL

Wood has long been dominating construction sector even after technology has found steel and concrete. In accordance to the rapid growth and development of human civilization and its diminishing sources, wood has found new forms to stay survive and available in fulfilling the ever increasing demand. It happens that finger joint, one of many, has helped wood achieves this status.

Incessantly, finger joint, with the help of glue, has been a widely used technique in connecting two or more parcels of wood, hence, optimizing its usage. However, this form of assemblage will surely not be at par with its original form especially in the term of quality. Thus, a set of tests and analysis has to be carried out to justify the strength, durability and efficiency of this kind of joint. Otherwise, the full potential or, more importantly, the limit of ability of this entity will not be confirmed.

The analysis will surely not be simple. Several physical laws and principles are involved and a type of mathematical model has to be employed. In order to turn up with certainty, a tool with great accuracy is preferred. At the same time, a huge number of figures will appear and a reliable, errors free system is needed to assist the whole process. Then, this study comes up as a continuity to the existing learning atmosphere.