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FLEXURAL BEHAVIOUR OF GLUE

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Abstract

In the construction of glue laminated structure glue forms as an interface material between the timber. The flexural strength and the mechanical properties of the glue are needed in order to understand the flexural behaviour of the glue laminated structure. The study is aimed to determine the flexural strength, modulus of elasticity and shear strength of the glue.

The objective of the experimental project is to investigate flexural behaviour of glue laminated timber beams with different breadth of beam and variable lenghts of glue . The scope of the study is however restricted to only one type of timber that is Light Red Meranti (LRM).

The testings were carried out to find the maximum bending stress at the mid span and shear stress at the end distance of glueline. The beam samples prepared were tested in accordance to four points bending test.

CHAPTER ONE

1.0 INTRODUCTION

1.1 General

Glue-laminated timber in this study refers to two layers of wood glued together with the grain of all layers or laminations approximately parallel. The laminations vary as to breadth and length of glue line.

Glulam is the abbreviation of glue-laminated structure. It is a structural member which is formed by smaller pieces of wood called laminate. It can also be manufactured into structural members of complicated shapes, either straight or curves. In the construction of the glue-laminated structure formed as an interface material between the timber. In this study *Light red meranti* (LRM) was used. The structural timber beamwas glued up longitudinally.

Phenol-resorcinol formaldehyde (PRF) was use as an adhesive.This study is concentrated in determination of the mechanical properties of the glue. The lamination of wood was glued together approximately in parallel section.

The models were used to study the sensivity of the beam deflection with variable glue length within the beam. The flexural strength and shear strength of the glue are needed in order to understand the flexural behaviour of the glue laminated structure.