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Case Studies on Timber Defects of Selected Traditional Houses in Malacca

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Abstract

The effect of adverse environmental conditions on building materials and the extent of damage caused depends on both the materials used and the environmental conditions. Although timber is a diminishing resource, it is still widely used in today’s construction. In Malaysia, timber is one of the main components of many historic buildings. Appropriate maintenance of such buildings requires an understanding of timber defects and its related problems.

Timber defects are classified into two major groups: non-biological and biological deteriorations. Non-biological deterioration consists of physical decay, excessive moisture content, dimensional instability and chemical deterioration. These defects are mainly caused by the timber in service being subjected to environmental exposure. The most common and destructive timber biological deteriorations are those due to dry rot, wet rot as well as insect attacks.

A study based on seven selected houses was conducted to identify the most common building defects, specifically on timber components amongst traditional Malay houses in Malacca, Malaysia. A building condition survey was carried out to determine the effect of the environment towards timber buildings and their main components. Data collected were based on the investigation and visual observation of the selected case studies. Findings of this research will serve as an indicator towards maintaining the buildings’ timber components in good condition in order that the buildings’ life span could be extended and primarily to conserve the valuable traditional timber houses in a historical city.

Keywords: Building Defect; Timber Deterioration; Environmental Effect; Building Component and Building Condition Survey.

Introduction

Timber is still in demand as a building material in both the sub-urban and rural areas of Malaysia (Lim, 1987). Statistics on occupied living accommodations for Peninsular Malaysia in 1970 showed the importance of timber as a building material for houses with approximately two-thirds of homes built with timber walls, 7.8% used a combination of planks with bricks, and 9.9% used bricks, while 6.8% were constructed of concrete. These statistics also indicated the increasing use of bricks and concrete as building materials.

According to Taylor (2000), the popularity of timber as a construction material has not diminished and it continues to be widely used in the construction industry primarily for houses and furniture. In larger public, commercial and industrial buildings the use of timber as trussed rafters and glued laminated sections are also gradually increasing.

According to Taylor (2000), timber is a durable material and would last indefinitely as it does not deteriorate spontaneously. Atmospheric conditions