Analysis of Building Defect for Wooden Houses at Flooded area in Kota Bharu, Kelantan

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ABSTRACT

Wooden houses are eco-friendly and healthier to live in. Wood is a biological material made it is easily to be attacked by insect and fungi if moisture content is over 20%. This paper describes about the defect occur for wooden houses at flooded area in Kota Bharu, Kelantan. The location of flooded area is chosen to identify that the defect occur whether it may relates with the water or another factors. A survey was carried out focuses on four wooden houses. The data were analyzed by using Building Assessment Rating System (BARIS). The main objective is to identify the defects occurs for wooden houses at flooded area and to analyses the main defect occur for wooden houses at flooded area. This paper is crucial for building owner to undertake the responsibility to preserve the wooden houses to ensure the building will be maintained.

Kata Kunci: *Defect, wooden houses, flooded area*

INTRODUCTION

Common defects that usually occur for wooden houses such as fungal decay likes dry rot, wet rot and moulds, insects attacks likes common furniture beetle, death watch beetle and wood boring weevil and also termites attack [1][2]. Referred by David S. Watt (1997), 'A defect may be considered to be a failing or shortcoming in the function, performance, statutory or user requirements of a building, and might manifest itself within the structure, fabric, services or other facilities of the affected building. When an inspection or survey is being undertaken, the set of requirements for the particular building type or use will help to set performance benchmarks against which the building can be measured. Where a performance benchmarks is not achieved, this indicates a defect or deficiency, the severity of which is gauged by reference to the benchmark [3]. From previous research, there are five factors were identified to contribute building defect for wooden houses such as climatic condition, insect attack, termites attack, fungus attack and maintenance approach to the building [4]. Usually, wood is conducive to decay and insect damage in moist or warm conditions. The wood humidity above 20% will be easily decayed. Decay within a structure cannot be tolerated because strength is rapidly reduced in even the early stages of decay. It has be been estimated that a 5% weight loss from decay can result in strength losses as high as 50%. If the warm, moist conditions required for decay cannot be controlled, then the use of naturally decay resistant wood species or chemical treatments is required to impede decay (Jerrold, 1994) [5].

RESEARCH METHODOLOGY

The methods use for this research is by observation, visual inspection and dilapidation survey. This method is important to collect the data and to diagnose the defects occur for wooden houses at flooded area. The tools that use for dilapidation survey is such as follow:

1. Camera digital to zoom in and out to focus on the subject properly,
2. Moisture meter for the leading manufacturer assures that their meter are accurate in timber, and TRADA(1991) inform that "in timber above 20 per cent moisture content a meter should give a reading within +/- 2 per cent; in timber below 15 per cent moisture content the reading should be within +/- 1 per cent."
3. Laser Distance use to measure the dimension for horizontal and vertical, also at an angle.
4. Hygrometer use to measure the temperature and humidity of the surrounding.

The data were analyzed by using Building Assessment Rating System (BARIS).

TYPES OF DEFECTS IN WOODEN HOUSES AT FLOODED AREA, KELANTAN

The research was focused on four wooden houses at Kampung Sireh Bawah Lembah, Kelantan which experienced with flood. Based on the research conducted, there are eight (8) types of defects were identified such as peeling and flaking of paintwork, insect attack, mould growth, timber decay, corrosion, defective on window glass and termites attack. From the observation and dilapidation survey were carried out, there are similarity and differences that occur for every case study. All the defect will be describes as follows.

Peeling and flaking of paintwork occurs at external wall caused by the building exposed to the environment. Besides, there is no awning provided and will cause directly contact with rainwater penetration. The location of defect of peeling and flaking of paintwork occurs at in front of the building and at the rear of the building. Refer Photo 1. Insect attack occurs at wood joist at the cellar floor. It occurs caused by the inadequate ventilation. The wood joist is not preserva may cause the insect attacked. The moisture meter reading is about 15% to 25% humidity of wood joisting that insect attack the structure. Refer photo 2.

Mould growth occurs at the wall near the window. The black spots or patches are seen at external wall caused by mould growth. The affected areas are likely to be damp. There is no awning provided and it is exposed to the direct sunlight. Refer photo 3. Timber decay occurs at the balcony and at the wall in toilet. The possible cause of timber decay at balcony is caused by the exposed to the rain water. Timber decay also occur at the wall in toilet due to direct exposure to rainwater. Refer photo 4. Defective on window glazed is caused by lack of maintenance approach by the building owner. There are about six numbers of glazed windows are loss and one glass of window is broken. Refer photo 5.

Corrosion occurs at the staircase handrail at side of the building. Corrosion on handrail steel occured due to direct exposure to the environment. The painting use must apply with a protective coating such as paint with weather protection paint to protect steel from exposed to environment. Refer photo 6. Termites attack the columns, external wall, internal wall and roof structure. There are subterranean termites. A subterranean termite is attack the whole structure of building and will see

their nest appeared. If there is no action to be taken to solve this problem, it will cause the serious defects to the building. Refer photo 7.

No	Photo		Description
1			Peeling and flaking paintwork at in front of building.
2			Insect attacks the wood joist.
3			Mould growth at external wall.
4			Timber decay at balcony (fence).
5			Defective on window glazed

6			Corrosion on handrail steel
7			Termite attacks the column
8			Algae growth at staircase

ANALYSIS AND FINDING TOWARD CASE STUDIES AT KAMPUNG SIREH, KELANTAN

Based on data collection from observation, visual inspection and dilapidation survey on site, and all the information was updated into the defect sheets and has been analyzed by using Building Assessment Rating System (BARIS) to know the number of defects and at the same time to identify the condition of building whether it is good, fair, poor, very poor or dilapidated. The most affected building elements are wall, floor and column. The result from the analysis shows that there are two main defects were recognized which were insect attack and peeling of paint. Insect attacks become a major defect because it collects the higher number of defect that occurs for every case study. Refer Figure 1.

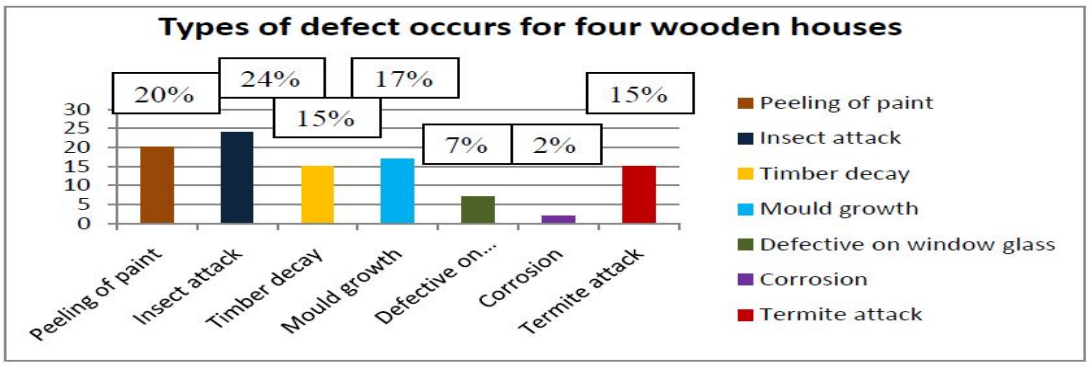

Figure 1: Types of defect occurs for four wooden houses.

CONCLUSION

In conclusion, defects exist for wooden houses at flooded area at Kota Bahru, Kelantan (Kampung Sireh) is totally being the same pattern like a common defects that attack normal wooden houses that caused by the climatic condition, insect attack, termites attack, fungi and also lack of maintenance approach from occupant. All defect exist in wooden houses at Kampung Sireh has related with water present due to high misture content. Therefore, the water present to the wood structure influenced the defects exist to the wooden houses at Kampung Sireh. Wood is one of the most durable building material, but at the same times it prone to attacks from beetles and fungi when it exposed to the moisture. Therefore, the occupant must have awareness and takes an effective step to solve the defect problem in early stage before it becomes serious. Wooden houses must be cared and maintained to ensure it will prolong it's lifetime.

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