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The Innovation Breakthrough in Digital and Disruptive Era

Development of Wall Material Usage in Merauke

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Abstract. Some forms of buildings in Indonesia, especially in the Papua region, South Papua Province, Merauke Regency slowly began to change even not a few were lost and replaced by new settlements or new industrial buildings. These changes generally begin with changes in the form and function of buildings to changes in the mass order of settlements. Changes in form are easily recognized by changes in building elements, both at the foot, body and head of the building. This condition is certainly not a problem if the changes that occur are intended to create better residential housing. The use of materials in Merauke Regency has changed along with technological developments, especially in the field of architecture. In the beginning, indigenous people used natural materials to make dwellings and until now use red brick material to glass as a building wall. This study on changes in the use of building materials uses a qualitative approach with a case study as its strategy. The data collection method is carried out by observation, survey and other secondary data collection.

Keywords: Development of Architecture, Materials, Walls

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1 Introduction

Some forms of buildings in Indonesia, especially in the Papua Island region, South Papua Province, Merauke Regency are slowly starting to change and some have even been replaced by new settlements or new industrial buildings. These changes generally begin with changes in the form and function of buildings to changes in the mass order of settlements. Changes in form are easily recognized by changes in building elements, both at the foot, body and head of the building. This condition is certainly not a problem if the changes that occur are intended to create better residential housing

The use of materials in Merauke Regency has changed along with technological developments, especially in the field of architecture. In the beginning, indigenous people used natural materials to make dwellings and until now use red brick and glass as building walls. This study on changes in the use of building materials uses a qualitative approach with a case study as its strategy. Data collection methods were carried out by observation, survey and other secondary data collection A4 paper size (210 x 297 mm) and adjust the margins to those shown in Table 1. The final printed area will be 172 x 252 mm.

2 Literature Review

Material is something that is composed or made by materials (Callister & William, 2004). The definition of material is the raw material that industrial companies process can be obtained from local purchases, imports or processing carried out by themselves (Mulyadi, 2000). From some of these definitions, it can be concluded that material is some material that is used to make a product or finished goods that are more useful. The wall is a vertical element of space, merupakan part of the structure that



becomes an insulator between the inside of the building. many materials that can be made as wall materials such as bricks, natural stones, bricks, wood / boards, booths, asbestos, concrete, iron, zinc, concrete, and other materials. asbestos, concrete, iron, zinc, etc. Wall material is a fairly important part of a construction project. Wall materials continue to develop along with the demands of the need to achieve the most effective and efficient cost, time, quality.

Local natural conditions have a lot of influence in the selection of building wall materials. in traditional settlements usually use natural materials that are easily found in the surrounding environment. Wall materials that use sago fronds can provide circulation in the

room through the gaps in the wall. So that the circulation in the room occurs very well.

3 Methodology

The method used in this research is descriptive qualitative research method which the researcher intends to understand the phenomenon of what is experienced by the research subject, then analyzed by means of description in the form of words and language, in a special natural context. things that are described in this study are about the development of wall materials caused by technological developments.

4 Result and Discussion

In general, traditional buildings provide considerable comfort in the building and the environment. Based on human needs for temperature, air and climate comfort, humans strongly consider the use of materials in buildings. In general, traditional buildings there are non-permanent made of natural materials. They still use sago fronds (blades of sago fronds arranged and joined together by piercing between the blades), atapp made of dry alang alang and wet (green) sago leaves arranged in such a way and clamped with bamboo slats at each end, and a floor that is left (the ground is leveled by compacting). But in recent times, people in Merauke Regency have been building their houses. Changes in the use of materials in each building are different. Some have changed the wall material used. Starting from traditional to modern materials. The following is the development of wall materials.

4.1 Sago Frond Material

The gaba gaba house is a building whose wall material is made of sago fronds. When the local community smokes sago from the trunk of the sago tree, the sago fronds are partly used in filtering/extracting sago starch and partly unused (wasted). But in the Gaba-Gaba House, unused sago fronds can be utilized as the walls of the house. Gaba-Gaba houses are not only located in urban Merauke but also in other district areas that are not city areas, namely in villages such as Kweel Village, also in the Okaba area, Kimaam area, Kumbe area.

Fig. 1. Residential House



Fig. 2 Gaba-Gaba material

4.2 Wood Material (Wooden Board)

Wood is a raw material obtained from processing trees in the forest. Wood can be the main material for making furniture, it can even be the main material in the construction of a building. Wood is a versatile material that can be used in almost all areas of construction. Dumanauw (1990) explains that wood is a forest product from natural resources, a raw material that is easily processed to make goods according to technological advances. Wooden blocks are wood that has been cut to a certain size resembling an elongated rectangular shape. Cutting wood to form blocks is done in a wood cutting place. Wood from trees is distributed to the wood cutting place and then processed into wooden blocks that can be used for various purposes. Wooden planks are rectangles of wood that are cut according to a predetermined size. Usually the board has a thin thickness. The wooden boards can be arranged as desired using connections such as nails, glue, and bolts.



Fig. 3. Residential House

Fig. 4. Wood plank material

4.3 Red Brick Material

At present, red bricks are the most widely used wall construction material both in cities and in rural areas. The acknowledgements should be typed in 9-point Times, without title. by rural communities.

Characteristics of good bricks:

- The surface should be rough, not cracked and the ribs should be angled and sharp.
- Not easily destroyed.
- The dark red color is uniform and evenly distributed over the entire surface, which means that the red bricks are evenly burnt.
- The sound is loud when tapped, indicating that the brick is dry.

However, red brick material is water-absorbent and can store it for a long time. Red bricks are also susceptible to corrosion.

Fig. 5. Red Brick House Building Material



Fig. 6. Red brick material

4.4 Lightweight Brick Material

Lightweight bricks / lightweight concrete blocks are lightweight concrete made from high quality raw materials, produced with the latest technology. This material can be used as a wall or building structure, or

as a floor panel, depending on the type and size of the lightweight brick.

The advantages of using lightweight bricks are:

- Accurate size, making it easier to cut, reduce the volume of plaster or acian and other finishing needs.
- High compressive strength and light weight.
- Good heat insulation and good soundproofing.
- Easy to mold and work with.
- Non-toxic.

The installation of lightweight bricks cannot use ordinary cement because lightweight bricks do not combine well with cement. Some special mortar types that support lightweight bricklaying include prime mortar, drymix, main mortar and others.



Fig. 9. Building Glass Wall Material



Fig. 10. Glass Material

Fig. 7. Lightweight Brick House Building



Fig. 8. Lightweight Brick Material

4.5 Glass Wall Material

Along with the increasing production and technology of glass materials, the use of glass as a home construction material has also increased over the years. In the past, we may have only used glass in our homes for windows or doors. But now glass is part of the exterior and interior design of the house. Glass walls can make the house look wider than it actually is. The green and beautiful yard can also be seen from inside the house which causes the atmosphere to be more natural and cool. However, it should also be considered if the glass wall is directly exposed to sunlight which will make the air in the house hot.

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function and needs, as well as considering the process of workmanship that is easy and efficient and can save time and processing costs.

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