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IMPLEMENTATION GREEN BUILDING'S FUNCTIONS AS AN ALTERNATIVE WOOD COMPONENTS

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Abstract: Construction waste becomes a major problem in a construction project, an attempt to reduce the volume of wood waste by reusing wood waste into other material objectives and benefits of writing this article are: 1. Knowing how to realize green building by utilizing wood construction waste 2. Knowing How to recommend ways to reduce wood building waste at the time of implementation of building construction. The method used in this article is the study of literature related to wood construction waste. The data analyzed is obtained from various sources of literary research, including journals, writings from the Internet, and secondary datasets related to the topic of the article. Construction waste is a major problem in a construction project because it affects the environment around the project. To do this it is necessary to do management of construction waste so as not to cause environmental problems using wood construction waste How to realize green building by utilizing wooden construction waste is by using or reusing the remainder of wood construction produced by building construction in the form of used wood the remains of the project collected then recycled as pieces of wooden boards that are assembled and polished then will be made as a frame of roof, bucket, doors and new windows.

Keywords: Wood Construction Waste, Study of literature, Green Buillding

INTRODUCTION

Man and environment are two words that cannot be separated. Both influence each other. The influence of nature on man is quite passive, whereas the influences of man on nature are more active. Human activity against nature always destroys the environment itself to meet its needs. The Law on the Protection and Management of the Habitat of the Republic of Indonesia No. 32 of 2009, defines habitat damage as a direct and/or indirect change in the physical, chemical, or biological nature of the habitat that exceeds the criteria of habitat destruction.

Environmental issues have been one of the most important issues in various countries since the middle of the 20th century. The holding of the World Conference on Environment in Stockholm in 1972 is a real proof that environmental issues are beginning to gain attention from countries around the world, including Indonesia. (Departemen Pekerjaan Umum, 2007). The construction industry is an important industry as an engine of economic growth. In almost every country, economic activity is closely linked to construction. On the other hand, construction is one of the biggest causes of negative environmental impacts due to the amount of waste generated during construction, whether it's repair

work, demolition work or construction-related activities. (HH Lau & A.Whyte 2007).

Yahya, K. & Boussabaine, AH (2004) stated that construction and demolition waste has a significant environmental impact. They also stated that construction is one of the biggest polluters. Construction is very urgent. A lot of construction waste is generated during construction, which can have a negative impact on the environment. In many parts of the world where there is a lot of construction, there are problems related to construction waste. At the time of implementation of the construction project, residues or waste of construction materials are inevitable. Building material is defined as anything that exceeds what is required, either in terms of the efficiency of work or building material remains / scattered / destroyed so that it can not be used for its use. As construction is going on, there will be a lot of environmental pollution, both air, water, and soil. Waste generally consists of round wood, pollen, vinyl garbage and pieces of wood. The quantities are likely to increase significantly and cause environmental problems. This requires an effort, to reduce the volume of wood waste by reusing wood waste into other material. If such pollution is ignored and environmental management efforts are not undertaken, from the pre-construction phase, the execution of the construction, and to the post-constructing stage, then the sustainability of the environment and the harmonization between the living environment and living creatures living in it will be disrupted

PROBLEM FORMULAS AND LIMITS

Based on the background description above this article is limited to the use of wood construction waste as an alternative component to the realization of green buildings, but the issues that will be focused in this article are as follows:

1. How do we clean up green buildings using wood construction waste?
2. How do you recommend ways to reduce wood construction waste at the time of implementation of building construction?

PURPOSE AND BENEFITS OF WRITING

As for the purpose and benefits of writing this article are as follows:

1. Learn how to create a green building using wood construction waste
2. Know how to recommend ways to reduce wood construction waste at the time of implementation of building construction

LIBRARY REVIEW

In construction projects, each process has its own characteristics, dynamic and non-repetitive, with many factors affecting the uniqueness of a construction project. (Ervianto, 2004). A construction project is a series of activities that are carried out only once and usually have a limited time. The Project Management Knowledge Agency (PMBOK, 5th Edition, 2013) states that a project is a product, service, or temporary effort to produce a unique and specific result.Construction projects are defined as activities involving design, implementation, and supervisory activities that involve complex civil, architectural, mechanical, and environmental management work. The material resources of the project have a major impact on the environment, both positive and negative. In each implementation of a construction project it is inevitable that construction waste will appear, whether it is still recyclable or unrecyclable, so it can be said that the construction project is very closely related to the construction waste produced.

CONSTRUCTION WASTE

Construction waste is a material that is no longer used in construction activities. The material in the debris can be material from a construction project or demolition. The composition of construction waste includes concrete, bricks, plasters, wood, walls, pipes and electrical components.Waste is an integral part of the construction process and this is stated in various studies in many countries.

In Australia, approximately 20-30% of construction waste is generated from construction activities (Craven, 1994). The United States reports that up to 29% of solid waste comes from construction waste

(Rogoff and Williams, 1994); construction waste in the UK is now about 50% (Ferguson, 1995). The key factor for success in reducing the negative environmental impact of construction activities is the proper management of the construction activities themselves. (Christini, 2004). Waste in the construction project is actually undesirable, but every activity carried out will generate waste, in small or large quantities, even if all the activities are well planned.

CONSTRUCTION WASTE MANAGEMENT

Construction waste has many negative impacts on the environment. Therefore, construction waste management is imperative. Regarding the hierarchy of waste management according to Chun-li Peng (1994) in Suprapto and Wulandari (2009), there are four main things to do in construction waste management.

1. Reduction means minimizing the use of materials that will produce waste or can also use material efficiently, thereby directly reducing the waste generated. Examples are spatial and building dimensional planning that takes into account the dimensions of the materials to be used, for example, in floor work, ceilings, and other building structures.
2. Reuse means that in the implementation of the construction project materials that can still be used to reuse as long as their condition is still possible. For example, the use of a box that was used more than once.
3. Recycling is the reuse of existing residues by transforming them into reusable items, such as the use of wood and triple residue as a material for making cisterns.
4. Landfilling is the last option in waste management, i.e. the waste is disposed of at the final disposal.

PREVIOUS RESEACH STUDY

Previous research related to the use of wood construction waste is as follows:

1. Research carried out by (Nurmaidah, R.Exaudi Simon Purba., 2017) with the title "Use of Wastes of Wood Grass Powder As Subtitulation of Lightweight Soundproof Brass Mixture" This research was conducted with the aim of discussing the characteristics of soundproofing with the use of waste wood grass powder, PC cement, and sand as its forming material. The experimental noise absorption coefficient is performed in the Noise & Vibration Control Laboratory, Engineering of the University of North Sumatra (USU) with composition variations of 0%, 20%, and 30% (mass), while the composition of other materials is made fixed. With the size of wood powder used 0.25 mm - 2.0 mm. For the test of concrete sound absorber will be made a cylinder-shaped test object with a diameter of 11 cm and a thickness of 6 cm of 6 test items. The results of this study showed on a 30% mixture of wood powder that in the third variation showed the value of the greatest noise absorption coefficient is 0.6832 at a frequency of 1000 Hz with a absorbtion cofficient of 0.50% and at a speed of sound wave reduction showed
   683.2 m/sec. From this study it can be concluded that the greater the percentage of the mixture wood powders then the ability to suppress noise is greater.
2. The research carried out by (Loryanti Elsandi Paranggai,Junus Mara, Lisa Febriani., 2022) with the title "Use of Wood Powder Waste as Fine Aggregate Subtitulation on Concrete" has the purpose of this research to find out how the influence of wood powder wastes into concrete mixture with specified variations. The method of implementation used the SNI 7656 - 2012 method by making a test object in the form of cylinders and beams at the Paul Christian University of Indonesia Laboratory. The results of the research obtained that the influence of wood powder waste mixed into the concrete molding showed strong values of pressure, strong pulling and strong sliding concrete experienced an increase of 3% then decreased at variations of 6% and 9% but on the additive 3% strong pressure values, strong dragging and strong concrete sliding continuously decreases compared to normal concrete.

3. The research carried out by (Bakhtiar Siregar, Susy Srihandayani, and Nuryasin Abdillah., 2022) with the title "Use of Wood Harvesting Industry Waste as Subtitling Material for Paving Block Manufacturing" has the purpose of this research to find out the composition of wood powder that can be used in paving block manufacture. The method used in this research is the Paving Block Press Hydraulic and Vibration Machine by adding wood powder to the mixture of cement and sand. The composition that can be used is on a composition of 10% with a strong flat pressure of 140,33 kg/cm2 and goes into quality C where it can be applied to pedestrians according to SNI 03-0691-1996 with a low limit of a strong pressure of 127.46 kg/ cm2. As for the results of the research on the use of woodworking industry waste as a substituting material for paving block manufacturing, it can be concluded that from the test results strong pressure of normal paving blocks and wood powder mixtures then, the more the addition of powder wood the binding power of concrete will cause to be weak due to the concrete becoming porous or the influence of the fiber mixture which causes the bonding strength of concretion to be reduced.

METHOLOGY

The method used in this article is the study of literature related to wood construction waste. The data analyzed is obtained from various sources of literary research, including journals (three previous studies relevant), writings from the Internet, and secondary datasets related to the topic of the article.

RESULTS AND DISCOURSE

Construction waste has become a major problem in a construction project because it can affect the circles around the project. Therefore, it is necessary to manage construction waste so as not to cause environmental problems.

How to Create a Green Building Using Wood Construction Waste

The way to create a green building using wood construction waste is by using or recycling the remains of wood construction produced by building construction as waste wood. The project remains are collected and then re-processed as pieces of wooden boards that are assembled and polished and then used as framework for new roofs, coffins, doors and windows. The use of old building or other building residue materials to reduce the use of new raw materials, thereby reducing waste at final disposal as well as extending the life of a material.

The use of recycled materials is very beneficial to the environment, i.e. it can minimize pollution and damage to nature. The social benefits, by using recyclable materials can provide information to the public about recycling of garbage in a unique and interesting way. From an economic point of view, recycled materials can reduce construction costs to improve resource utilization. The use of recyclable materials plays an important role in extending the life of materials and reducing construction waste, so this role is an important aspect of achieving green building.

Recommendations Ways To Reduce Wood Construction Waste During Implementation of Construction of Buildings

Recommendations to reduce construction wood waste during building construction, in particular to avoid disposal of construction material waste, can be started from the planning stage. In this case, a building or building scheme is required in detail, effectively and efficiently. A detailed, effective and efficient design can minimize a little or a lot of trouble. So in addition to streamlining the production process, it also supports the optimization of the use of building materials. Any mistake that happens will increase the risk of the material disposal process. And this could have happened, because the design design lacks attention to some of the obstacles that will be faced during the construction process.

In addition to minimizing errors, proper calculation processes will make the material cost coverage process more efficient. In addition to materials, a good design process can also take into account how much resources are needed. Some ways to optimize building materials in construction operations are as follows:

1. Using Back MaterialsThe reuse of residues such as debris or pieces of wood, remains of bricks, cement, and so on is often wasted. Because the material is considered incomplete and cannot be reused. This habit often affects the accumulation of waste construction materials. Because no matter how little material remains, it can be used to build one of the other building structures in some creative way. The cement and brick fragments and the like can in principle be mixed as part of the binding material. The mixture of cement, brick fragment and so on makes the structure stronger and very good. While a material that has a larger size can still be used to cover other parts with a suitable size. Waste is often produced not only during the construction process, but also when dismantling or reconstructing a house or building. Compared to construction waste, the amount of waste produced from deconstruction work is usually larger in quantity and potentially makes a full trashy place around. In this case, reusing decommissioning material residues is a wise way to reduce pollution. And even if it can be reused, this way also helps in cost savings.
2. Consider the sizeSometimes expectations are often too high compared to needs. When building a house or building, some parts are sometimes unnecessary and may be the first consideration to reduce or shrink. One is optimizing space or other supporting structures.
3. Planning processThe concept of building, changing, or completely renovating a building requires careful consideration. In addition to cost consideration, this method can also minimize the amount of construction waste wasted after construction activities. In this case, if there is a material that is still worth it, it is better to reuse it. Or if there are some structures that can still be used then it is best not to demolish and rebuild it, just add a new decoration as needed. In addition, careful calculation will make the use of materials efficient and effective. In addition, this practice can reduce the decomposition process by minimizing the waste generated.
4. The right choice of materialsProper material selection is a way to avoid the dumping of construction waste, including carbon dioxide. In addition to material waste, air pollution is often also the result of these activities. One is the production of concrete, which according to research accounts for at least 5% of carbon dioxide emissions. Therefore, using other environmentally friendly building materials is a more environmentally-friendly option. For example, glass tiles, eternit, aggregate concrete and so on. Some of these materials have environmentally friendly properties and do not potentially produce hazardous gas emissions like carbon dioxide and so on.
5. Waste for manufacturing activitiesThe last way is to sort some different kinds of garbage so that they can eventually be reused as raw materials for products or other needs. For example, wastewater treatment to improve safety, wood waste on processed products and so on. This type of waste disposal process is huge in quantities and can be a bad source of pollution. Changing some habits has tremendous effects, including more efficient financial processes, and of course environmentally friendly.

CONCLUSION

Based on the results of previous research studies, the conclusion can be obtained that to create a green building using wood construction waste can be done by using or reusing the remains of wood construction produced by the construction of buildings in the form of used wood.

ADVICE

With regard to the advice that can be taken in this article as follows is to reduce wood construction waste at the time of implementation of the construction structure of the building can be done by reducing the waste wood construction at the moment of construction of building construction i.e. specifically, to avoid the process of disposal of garbage construction material which can be started from the planning.

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