

Houses Design for Marginals in Kendari City Southeast Sulawesi Province Indonesia

Desain Rumah Untuk Kaum Marjinal di Kota Kendari Provinsi Sulawesi Tenggara

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Abstract : *In Kendari City, growing and developing public housing funded by the Bank. However, housing tends to be still difficult to reach by the lower classes of society. The lower classes of society such as herbalists, motorcycle taxi drivers, construction workers, scavengers, street vendors, and so on. In general, the lower class of society resides in rented houses. This research is important as follows: (a) to provide alternative prototypes of simple houses for the lower classes of society; (b) to make prototypes of low-cost homes; (c) to assist the government and private developers in providing alternative solutions to housing for the lower classes of society; (d) to grow and develop the principles of populist architecture in Kendari City. This research is intended to make a simple home prototype for the lower class society with the principles of populist architecture. This research uses research and development methods. Sources of data in this study consisted of primary data sources and secondary data. Data collection techniques are carried out by observation, interviews, and documentation. The data were analyzed by means of the data being reduced, the data presented, and the data being concluded. This research concludes that marginal houses are made with the principles of form follows economics. Economic principles are applied to building materials and building sizes*

Keywords: populist architecture, housing, lower society

abstrak Di Kota Kendari, tumbuh dan berkembang perumahan rakyat yang dibiayai oleh Bank. Tetapi, perumahan tersebut cenderung masih sulit dijangkau oleh masyarakat golongan bawah. Masyarakat golongan bawah seperti tukang jamu, tukang ojek, kuli bangunan, pemulung, pedagang kaki lima, dan sebagainya. Pada umumnya, masyarakat golongan bawah tersebut bertempat tinggal di rumah kontrakan. Penelitian ini penting dilakukan sebagai berikut: (a) Untuk memberikan alternatif prototipe rumah sederhana untuk masyarakat golongan bawah; (b) Untuk membuat prototipe rumah yang berbiaya rendah; (c) Untuk membantu pemerintah dan pengembang swasta dalam memberikan alternatif solusi lain tentang perumahan masyarakat golongan bawah; (d) Untuk menumbuhkan dan mengembangkan prinsip-prinsip arsitektur populis di Kota Kendari. Penelitian ini ditujukan untuk membuat prototipe rumah sederhana untuk masyarakat golongan bawah dengan prinsip-prinsip arsitektur populis. Penelitian ini menggunakan metode riset dan pengembangan. Sumber data dalam penelitian ini terdiri dari sumber data primer dan data sekunder. Teknik pengumpulan data dilaksanakan dengan observasi, wawancara, dan dokumentasi. Teknik analisis data dilakukan dengan cara data direduksi, data disajikan, dan data disimpulkan. Penelitian ini disimpulkan bahwa rumah dibuat dengan prinsip bentuk mengikuti ekonomi. Prinsip-prinsip ekonomi diterapkan pada bahan bangunan dan ukuran bangunan.

Kata Kunci: arsitektur populis, perumahan, masyarakat marjinal

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Introduction

In Kendari City, growing and developing public housing funded by the Bank. However, these housing tend to be still difficult to reach by the lower classes of society. Difficult to reach because the administration process is difficult, the monthly payment system is still considered difficult, and relatively still considered expensive. The lower classes of society such as herbalists, motorcycle taxi drivers, construction workers, scavengers, street vendors, and so on. In general, the lower class of society resides in rented houses. This research is important, as follows: (a) to provide an alternative prototype of a simple house for the lower class community; (b) to make prototypes of low-cost homes; (c) to assist the government and private developers in providing alternative solutions to housing for the lower classes of society; (d) to grow and develop the principles of populist architecture in Kendari City. This study aims to make a simple home for marginal communities with the principles of populist architecture.

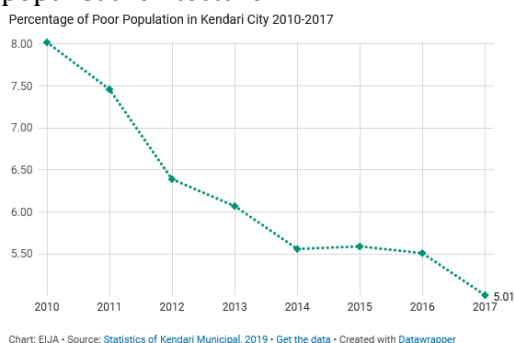


Figure 1. trend of Kendari poor people percentage. Year 2010 to 2017 (source: (The Southeast Sulawesi Central Bureau of Statistics, 2019)

In Kendari City, the percentage of poor people from 2010 - 2017 tends to

decrease (Figure 1). Fluctuations in the number of poor people are strongly influenced by the poverty line. Housing includes commodities in the urban and rural poverty lines ((Statistics of Kendari Municipal, 2018). Housing conditions in Kendari City show fluctuating conditions during the period 2015-2017. This can be seen in the number of houses that have decent roofs, permanent walls, and non-land floors. Percentage of houses with decent roofs decreased from 97.02% in 2016 to 95.61% in 2017. However, the percentage of houses with permanent walls increased from 99.18% in 2016 to 99.21% in 2017. In addition, the percentage of houses with non-land floors decreased from 98.55% to 98.32% in 2017 (The Southeast Sulawesi Central Bureau of Statistics, 2019)

Architecture is often quipped about its alignments with certain communities. Most people justify the satire. This has become a strong allusion to architects and architectural actors. If the satire is correct, then we can reflect and discuss this challenge together. Architecture has always been populist for a long time. Architecture meets human needs regarding shade and shelter. Humans, at that time began to settle down, no longer nomadic, folk architecture and then vernacular architecture. Community structure develops and adapts to the times. So is architecture. Populist architecture is architecture for small people. Populist architecture is intended for poor people who do not have decent homes (home-less, lower-lower class). Populist architecture has public facilities for the poor (ordinary people, upper-

lower class). Therefore, populist architecture can be applied in cities and villages.

Populism is a rival ideology and a middle ground ideology. This ideology was born of capitalism and Communism. Populism is a fathom that prioritizes the interests of the small people. Faded communism was marked by the Soviets dissolving, the Berlin wall collapsed, and China opened. Therefore, capitalism became a single winner. Capitalism creates stratification in society. Upper class and lower classes are created for architectural users. Populist architecture has users who are marginalized and not served by architectural service providers. Capitalism is different from communism. Communism is frontally opposed to Capitalism. Therefore, populism moves within capitalism (Soesilo, 2017).

On the other hand, housing development is always faced with housing needs, procurement of houses, purchasing power, and housing quality. Housing development tends to be far from the target and difficult to solve. The National Public Housing Development Company (National Housing) was formed by the government and has not been able to solve the problem. The housing problem is unfair if it is only charged to National Housing. Perum Perumnas has made various efforts and apparently has not been able to overcome various problems regarding housing. It is wise if the government and the private sector reflect back on the nature of housing. Housing is reflected back from the positive and negative sides. This can be passed by inventorying various housing issues and prioritizing the lower classes. Inventory can be done with inward consolidation and involving the community. This needs to be done immediately by Perum Perumnas and the Government on an ongoing basis.

This is intended to produce institutional systems and housing policies that are starting from, by, and for the people. National housing procurement is carried out by the government and private developers. This is done until the end of the five-year development period. According to National Housing and Real Estate Indonesia (REI) data that housing data was obtained at $\pm 1,528,279$ houses and housing needed $\pm 9,388,247$ houses. This means that the government and private developers only provide housing at 16%. The challenge of the government and private developers is to overcome the problem of providing housing without having to reduce the quality of homes and the environment (Tjahyono, 2004). At present, housing policy in Jakarta with 0 (zero) Down Payment (DP) Rupiah can facilitate the lower class people to get a house. But the policy is intended only in Jakarta.

The world is now dominated by capitalism. Capitalism has an economic system of trade, industry and means of production. Capitalism is controlled by private owners. This is intended to make profits in the market economy. The owner of capital can do his business. This business is intended to achieve maximum profits. Capitalism understands the economic sector and the government sector. Public policies and regulations issued tend to boost the economy. Government policies tend to get rid of environmental, cultural and social aspects. It is as if all sectors of life have been dominated by capitalist ideology, the strong who are in power. Money talking. The rich get richer and the poor get poorer. So on. Dissatisfaction and a sense of disappointment that had been buried, finally began to cause movement. Marginals and philanthropists began to want to fight for the interests of the small people compared to the interests of elites

who had benefited so far. The turmoil of understanding populism has begun to endemic to the political sector, the figure of a leader of the people who are close to the people and have life improvement programs for the people is in great demand today. Many professionals also have the heart to raise the rank of the marginal. This is intended to make life more feasible. Decent life in an architectural context is to live in a decent and humanistic environment (Oktaviana, 2017).

The history of the emergence of populist architecture can not be separated from the development of world architecture. The development of world architecture began with prehistoric and primitive architecture, vernacular architecture, religious architecture, priajai architecture, modern architecture, and postmodern architecture. Symptoms of populist architecture arise in the era of modern architecture. The characteristics of postmodern architecture consist of anti rationalism and neo-sculptural. This is different from modern rational and functional architecture. The postmodern architecture has several features (Amiri, 2016), as follows: (a) postmodern architecture contains communicative elements that are local or popular; (b) postmodern architecture resulting from participation; (c) postmodern architecture reflects general aspirations; (d) postmodern architecture is plural, and (e) postmodern architecture is eclectic. Postmodern architecture has dual coding and mixture of meaning. Postmodern architecture represents populists and elites, romantic and modernists. Through the element of communication in postmodern architecture, architects become more geographical and cultured. This is intended so that the community is no stranger to the building itself (Oktaviana, 2017).

A populist architectural work that has a concentration in meeting design needs for marginalized people, should also have a touch of human design. Populist architecture is able to provide space and a place for noble and basic human life. One of the weaknesses of populist architecture is the notion of suspicion of the values of populist architecture that is increasingly fading and no longer becoming spirit in a process of building planning designed to accommodate human life. The typology of architecture in developing countries like Indonesia (Speak, 2004) as follows: (a) elite architecture; (b) middle architect; (c) populist architecture. Populist architecture is for small people. Populist architecture prioritizes shelter principles. Populist architecture sometimes ignores the element of firmity, especially beauty (venustas). Populist architecture has emerged in urban developing countries, where social inequalities/gaps occur (Moniaga, 2017; Soesilo, 2017).

Populist architecture is also called architecture for humanity or compassion architecture. A Good building designed with the spirit of humanizing humans (Fannon et al., 2021). Where the meaning of humanizing humans here is an architectural work should have a natural urge to be rewarded on the basis of love, not appreciated because of other aspects such as material benefits, awards, or even attract the attention of the general public. A populist architectural design should move from a spirit to give attention and affection. Not a design process that only prioritizes material aspects (Moniaga, 2017; Pangarsa, 2008). An architectural building should be designed with an intimate outside environment. This is so that an architectural work has a soul. Architecture is not only an automatic object, but also has emotional ties and social relations with its environment. How can a building not only be selfish and close

to the outside environment, but also have communication, relationships and harmony with what is in its surrounding (Mangunwijaya, 2009; Moniaga, 2017; Pangarsa, 2008).

Populist architecture is an architecture that can restore humans to their nature (Tzonis & Lefaivre, 2005). The main idea is that humans are basically cheap creatures, with compassion among others. As with architecture with a soul, an awakening architecture also holds that humans as the main actors in architectural design must be able to provide a simple design, with the intention of the fundamental requirements of a building function can be optimally accommodated. Besides being simple, compassion is also a value that is considered. Affection between fellow human beings here is intended to nurture caring among fellow humans and their environment. Availability of a container that can accommodate among fellow humans to pay attention to each other, love one another (Moniaga, 2017; Pangarsa, 2008).

Hedonism and prestige in the world of property are often very related to the process of imagination transactions. Making a multi-storey residence with a western concept but located in Indonesia is one example. Selling imagination is a measure of progress and direction of life's goals, selling prestige and hedonism to seek attention. Every time changing the concept of life is a way taken by developers to get consumers by putting aside the value of populist architecture (Kelbaugh, 2004; Moniaga, 2017).

(Eko Prawoto, 2014) also questioned the partiality of an architect in their process of work. Is an architect in the work oriented only to the benchmarks of achievement and material, or still have special attention in maintaining human values. Indeed, it cannot be denied that achievement is one of the provisions of the

sustainability of the work and existence of an architect. But is this the main concern? Unbalanced attention will bring a pattern of view of an architect to be inhuman and less concerned with the whisper of conscience (Moniaga, 2017; Pangarsa, 2008). A good architectural design should not only prioritize shapes rather than buildings. But also paid attention to the reasons for a design borned in such a way. Pay attention to the reason for designing, in order to provide spirit in a building design design (Moniaga, 2017).

Populist architecture is a feeling that you want to be. This is because so far the marginal people have always been like an insignificant part of society. Not only in the matter of social life, economic life to the problem of the place of residence of marginalized people, it is still difficult to have access (Oktaviana, 2017). In supporting the construction of an ideal building requires careful planning and in accordance with the times. This is intended to guarantee the strength, rigidity, efficiency and flexibility of implementation. Building construction also does not forget the economic aspects of construction (Honggo et al., 2016). Especially regarding the settlement sector, so far there have been planning and development practices that are not community oriented (Santoso, 2006; Sariffuddin & Susanti, 2011).

Housing needs for the poor have been sought by the government. This is stated in Indonesian Presidential Regulation No. 7 of 2005. This regulation is about the national medium-term development plan. This regulation reveals that the fulfillment of the rights of the poor to decent and healthy housing is as follows: (a) housing is developed with a system of community participation; (b) the rights of the poor to housing guarantees need to be improved; (c) the knowledge and capabilities of the community of decent and healthy homes

need to be improved; (d) affordability of the poor to decent and healthy housing needs to be improved; (e) improvement of decent and healthy homes for the poor is always available. Cheap and healthy home strategies can be carried out by careful planning, involving prospective residents, building material engineering, standardization systems, and modular coordination systems (Putra et al., 2007).

In order to support efforts to accelerate housing development in Indonesia, the Ministry of Public Works has carried out research. The research produced innovative home design technology. The design of this house is made simple and healthy. This house can be produced quickly. The innovations are as follows: (1) technology for the construction of simple house buildings; (2) compact and modular-sized building components; (3) buildings using knock down systems; (4) manufacturing houses available. This innovative construction technology is known as the Simple Healthy Instant House (Risha). This house was released on December 20, 2004. RISHA is a knock down engineering technology. This house is in accordance with Ministerial Decree Kimpraswil No. 403 / KPTS / M / 2003. This decision concerning the Simple Healthy Home Technical Guidelines. Risha technology uses reinforced concrete materials and does not consume much material from nature. This house is very feasible to develop because it is environmentally friendly and meets the standards (Sabaruddin & Sukmana, 2015).

Standardized low-cost housing designs can be made as follows: (a) the structure is made at a minimum site. The structure is built minimal, then the use of outer space is optimal. This is intended so that the minimum structure supports the existence of inner space; (b) the concept of space and mass. Cheap houses can be made made with an unbroken circulation

system. This is intended to produce good air circulation; (c) cheap houses can be made with the concept of a healthy home. The concept of a healthy home is made with lots of open space. Open space allows optimal incoming light. Open space can also be applied to the wall. Making a hollow wall, for example a hollow brick arrangement. Healthy homes can also be done with green open spaces. This is intended to produce clean air; (d) cheap houses can also be made with a system of flexibility. Flexibility can be applied to structural fill material, building costs, available materials, and building developments in stages (Usop, 2013).

Economical home design can be viewed from building technology factors. Building technology consists of structures, building components, and building materials. The structure consists of, as follows: (a) the foundation is required to be waterproof and can be concrete. The foundation is used to avoid seepage of ground water upwards; (b) building frame. Wooden house material does not use wood; (c) wooden house material using a gable. Wooden frame material using 2nd class wood. The building framework can be considered the quality of space such as the amount of space and furniture. This is because the Indonesian people adhere to the principles of kinred and takeiniel. The building components consist of, as follows: (a) the roof cover should be a flat plane. The slope of the roof is adjusted to the roof covering material; (b) the ceiling affects the temperature in the room. The ceiling should be easy to clean and not prone to accidents; (c) wall material made of brick, concrete brick, bamboo, and board wood. Walls are equipped with ventilation. Bathroom wall material must be waterproof and easy to clean; (d) windows and doors function as air and sunlight circulation; (e) the floor should be dry and not moist. Floor material should be

waterproof and easy to clean. Building materials should come from their own area, so that they are in accordance with climate conditions local materials also affect the maintenance and maintenance costs of building materials. Building materials should be safe for occupant's health (Fitriani, 2008).

Thus, the nation of populism is motivated by capitalism. Capitalism is focused on the owner of capital (economy) and tends to be inhuman. Capitalism is opposed by marginal communities, philanthropists, politicians, and professionals in their respective fields. Populist architecture moves in postmodern architecture. Populist architecture is intended for marginal communities. Populist architecture ignores aesthetic aspects and focuses on shelter aspects. Populist architecture is, as follows: (a) populist architecture is an architecture of compassion; (b) populist architecture in harmony with the environment; (c) populist architecture returns humans to their nature; (d) populist architecture tends to not be contaminated with western concepts; (e) unpopular populist architecture; (f) populist architecture is a spirit of humanity; (g) the houses of the marginal are contained in the Presidential Regulation No. 7 of 2005 Marginalized homes can be made with alternatives such as Simple Healthy Instant Houses (Risha); Standardized low-cost housing designs, and economical home designs.

Method

This study uses a research and development method with a qualitative approach. The research and development method is a systematic study of how to design a product that can be used in learning or non-learning (Richey & Klein, 2014; Sugiyono, 2019). The choice of this method is based on the background that the public housing problem is not only a

problem of the government and the private sector. This must be considered by all parties, including academics. On the other hand, marginalized people in Kendari City tend to live in rented houses. Thus the authors want to design an affordable and better house than before. The qualitative approach was chosen partly because this study was not to prove the theory and the author was not confined by previous theories and opinions so that in a natural environment the writer would describe what it is.

The data source is the subject from which the data is obtained. Data sources consist of primary data sources and secondary data sources. Primary data sources are data sources that are directly taken by the researcher. Meanwhile, secondary data sources are sources of data obtained from other people (Silalahi, 2012; Sugiyono, 2012; Suharsimi & Arikunto, 2010). The primary data sources in this study were the floor plan, structure, and appearance of the building. The secondary data sources in this study were the floor plan module, the size of the plank wood material, the size of the pole wood material, the size of the plan, and the rooms.

Data collection technique is a process of procuring data for research purposes (Safori & Komariah, 2010). Data collection techniques consisted of observation, interviews, and documentation/literature review (Sarwono, 2006). Primary data sources collected by means of observation techniques are recording, measuring, reviewing, and taking pictures. Sources of primary and secondary data collected by interviewing techniques are interviewing residents, interviewing local community leaders, recording, taking notes, and taking pictures. Sources of secondary data collected by means of documentation techniques are accessing the internet and getting from relationships.

Data analysis techniques are processing and analyzing the collected data into systematic, orderly, structured, and meaningful data (Sarwono, 2006). The data analysis technique in this study was carried out by means of data being reduced, data being compared, data being presented, and data being concluded.

Results and Discussion

Floor plan

The floor plan is square and symmetrical. This is intended to divide the burden equally. Balanced load distribution is expected to be a stable and sturdy building structure. A structure module is created. Floor plan is made of box structure. The box structure is made of wooden frames. The box structure is on a wooden block on a foundation and a wooden block on a pole. Wooden beams on the foundation surround the entire building. Wooden beams on poles surround also throughout the building. This house consists of eight pillars. These eight pillars are located on the beam under the pillars and beams on top of the pillars, so that the floor planes form a box structure. The size of the beam, the beam on the foundation, and the beam on the pole is 8/12 cm. The module size is the structure of the plan based on the size of the wood material. Wood materials used such as wood boards and wood beams. Wood beams and wooden boards are available in Kendari City. Planks and beams are obtained in length 3.86 - 3.90 M. Wood boards and wood beams are not cut. The length of the wood is installed intact without cutting.

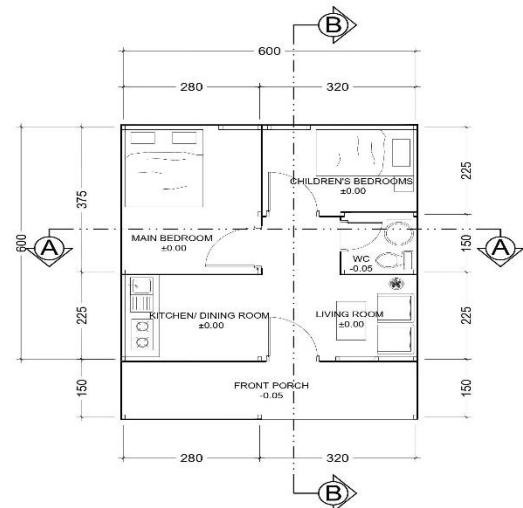


Figure 2. Floor plan

The wooden board material is installed intact and installed in the middle of the log beam (covering the beam). Wooden board material is mounted horizontally. Therefore, each room has a length of 3.86 M and a width of 3.86 M. The bathroom has an area of 3.00 M². The building area is 59.6 M². The building area is obtained from the length of 7.72 M and width of 7.72 M. The rooms in the plan follow the structure. This means that the structure takes precedence over the placement of rooms. In the floor plan there is a front room pattern, a middle room pattern, and a back room pattern. The pattern of the front room and the pattern of the middle room in the floor are fused. Inside the plan is a guest room, a kitchen room, a bathroom, and two sleeping rooms. The window consists of two holes. Windows are in rooms, as follows: (a) front bedroom; (b) rear sleeping room; (c) guest room, and; (d) bathroom. The window in the bathroom is ventilated. Ventilation is made of concrete ventilation. All building materials are made of wood, except the foundation, floor and bathroom walls. The bathroom wall material is made of concrete brick (figure 2)

Structure

Bottom structure

The bottom structure consists of foundations, heaps, and floors. The foundation is made like a lower perimeter (sloof). The size of the foundation is 20 cm x 20 cm. Sloof is made of mortar. Mortar material is used by Nambo sand. Nambo sand material is quite available in Kendari City. The price of Nambo sand material is quite economical. Nambo sand material is purchased at a price of Rp. 200,000, - up to Rp. 400,000, - per ret. Roving beam material is made with a composition of 1: 4 (1 cement: 4 sand) and without split stone (gravel). The foundation is made 10 cm deep hole. Before the foundation is installed, the foundation hole should be given sand. The sand of the embankment is spread out in a minimum. This is intended so that the foundation mortar blends well at the base of the foundation. The foundation should be made throughout the building. Hoarding in the building should be flat with the foundation. Beam pole 8/12 cm planted on foundation. Poles are planted as deep as 10 Cm (1/2 foundation). The pillar is given anchor in the form of a nail. The nail is placed under the pole. The nail is used size 12 cm. This is intended so that the pole is not easily separated from the foundation. Hoarding in the bathroom is not flat with the foundation. Hoarding fell 5 cm from the floor of the main building. This is done so that the water does not look outside the bathroom (figure 3).

Middle structure

The middle structure consists of floors, frame structures of buildings, windows, and walls. The floor consists of landfill, sand embankment, floor rebates and floors. On top of the heap is given sand. Urinal sand is made with 2 cm thickness. On the sand, a floor rebate is made. Floor rebates made with 5 cm thickness. Floor rebates made with a composition of 1: 4 (1 cement: 4 sand). Sand material used by

Nambo sand. This building does not use tiled floors, but is only given a tile. Nat grout is made with water and cement (enough water: 4 cement). The structure of the building is made of box structure. The box structure is made simple. Frame material made of wood. The skeletal structure of the building is made consistent from the beam under the pillar and beam on the pole. Each beam is consistently installed along the building. This is intended to make the building stable and sturdy.

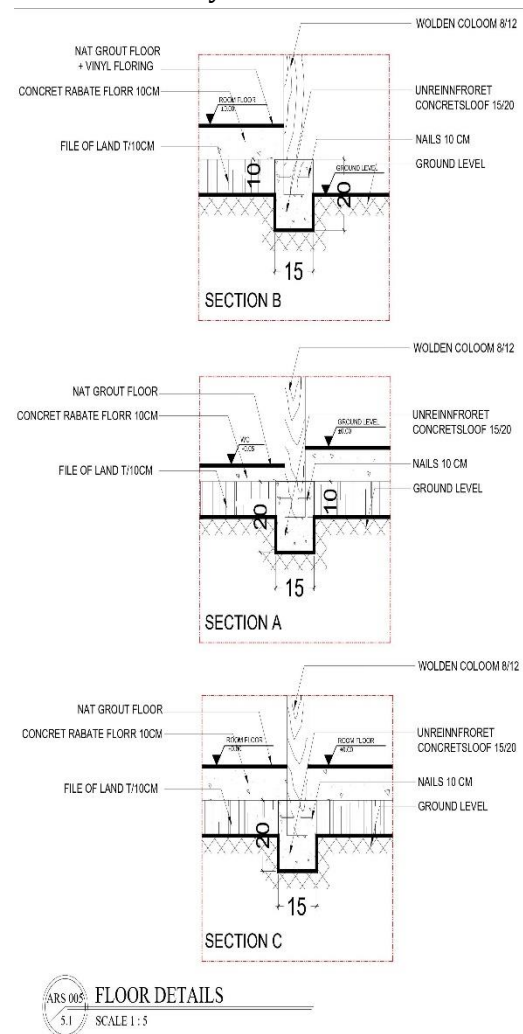


Figure 3. Bottom structure

The height of the house's pole is 3.90 M. The height of the house's pillar is based on the size of the wood material. Size of wood material sold in the market. The use of poles is not cut. So that the height of the pole is adjusted to the size of the wood.

Each pole is given an elbow beam. Elbow beams are mounted on the upper pole and beam (ring beam). Elbow beam mounted 45 degrees. Elbow beams use a wooden block size of 8/12 cm. Elbow beams function as pole stiffeners. We recommend that the size of wood blocks consistently use 8/12 cm. This is intended to be economical in purchasing wood materials. The window is made with two holes. Each window frame is made with a size of 0.60 M x 1.60 M. Frame beams are made with three beam bars. Frame beams use wooden blocks with a size of 8/12 cm. Frame beams are mounted vertically. Frame beams can add to the stable and sturdy building. This is because the frame jamb is connected with the lower perimeter beam and the upper perimeter beam. Shutters do not use glass material, but wood material. Shutters are made like door leaf. Shutters are made of board wood material. Shutters opened with the direction to the outside of the building.

Window frames are in the front bedroom, back bedroom, and guest room. The door frame is in the guest room, back room, and sleeping room. The bathroom door frame uses aluminum door frame material. This frame is available at building shops. The door frame is made with wooden blocks 8/12 cm. The wooden beams are mounted on the sides of the door leaf. The door frame beams are connected with the upper perimeter beam. Under the door frame beams are made of sills. Frame shoes made of mortar. Mortar was made with a composition of 1: 4. Above the shoes frame, sills were placed sills. Door Frame leaves were made of wood material (figure 3). Wood boards material is used for walls. Wooden board material is horizontal installed. Wooden board materials are overlapping installed each other. This is intended so that there is no gap founded. Wooden planks were installed around the building and given

nails. The wooden board material is mounted on the wall frames. Wall frames are used to frame the window frame and frame of the door frame.

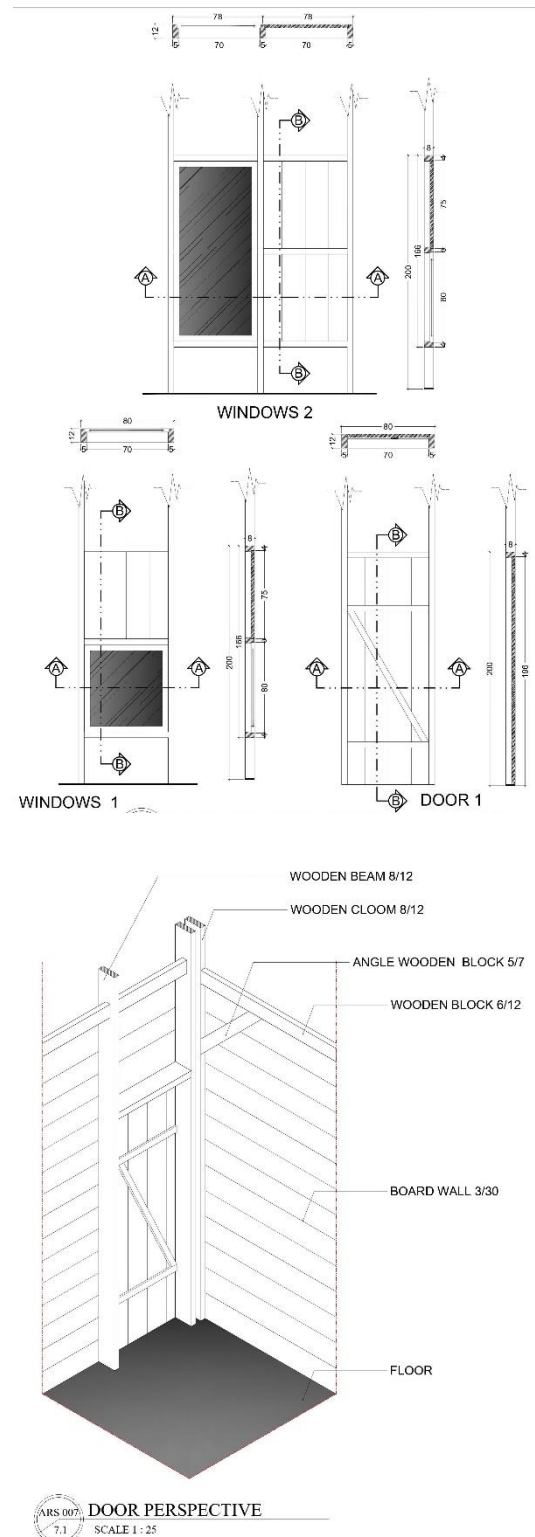


Figure 4. Windows an door frame
The wooden board material is used with a size of 3.86 M x 0.20 M x 0.02 M. Material

of board wood is sufficiently available in Kendari City. One cubic board of wood is sold for 1,200,000 rupias (ca. 83 USD) Wood material used by teak. Bathroom wall material does not use wood. Instead it using concrete bricks. Concrete bricks is installed throughout the bathroom wall. Concrete brick measuring 3.90 CM x 20 CM x 20 CM. The wall material from concrete blocks is used in the bathroom because the brick is quite resistant to water. Concrete brick material is quite available in Kendari City. Concrete brick materials are sold at a price of Rp. 3,000 - up to Rp. 5,000, -. Wood pole material The bathroom is covered by concrete brick. The bathroom wall is made of ventilation holes. Ventilation holes are paired with a roster. This is intended in order to gain good and adequate air circulation in the bathroom

Upper structure

The upper structure consists of roof frame construction. The construction of the roof frame consists of upper perimeter beam, pinchers beam, upper easel beam, gording beam, and zinc roof cover material (figure 4). All roof construction uses wood material with a size of 8/12 cm. The construction of the roof frame is made of a roof anchor model. The construction of the roof truss is made simple and easy. The slope of the roof is not made steep, but can be made with a slope of 15-20 degrees. The construction of the roof frame blends directly with the pillars of the building, so that the work is fast. Making the roof truss can directly coincide with the middle structure of the building, making it more effective. Construction of anchor roof truss can be made with 3-5 pieces. The tap frame construction in this building is made of five pieces. The distance between roof truss construction is 1.95 M. The construction of the roof frame is placed on the outermost sides of the building and the center of the building. Constructing the roof frame with

one upper beam. Upper beam can also be categorized as a stretch beam / pull beam.

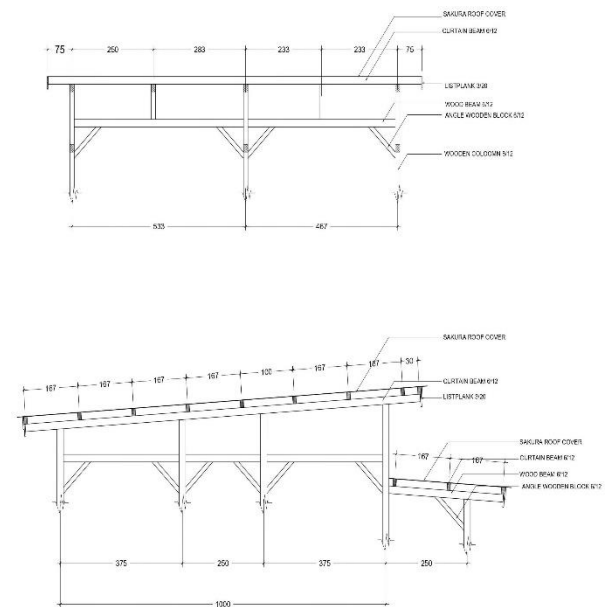


Figure 4. Upper structure

Above the pull beam there is a pinchers beam. There are 6 pieces of pinchers in each roof construction. The height of the pinchers beam varies. This is because it adjusts the slope of the roof. The maximum pinchers beam height is one meter. One meter tall pinchers are placed on the facade of the building. Beam pinchers function as stiffeners of roof construction. With the beam pinchers, the construction is expected to be stiff and stable. The pinchers beam is connected with the upper perimeter beam and the upper stance beam. The roof truss construction beams form the slope of the roof. Beams of upper constructions are made with a length of more than 10 meters. Beams of top constructions are placed on pinchers. Above the pinchers beams are gording. Rosewood can use a size of 6/12 cm or 8/12 cm. The gording beams are installed at a distance of 1.00 M. The construction of roofing construction also needs to be taken into account with the roof of the truss. The roof top can be made with a distance of 0.80 M to 1.00 M. The lower beam and pole can be connected to an iron

plate or simply given nails. The iron plate is bolted. The size of the nail can be used 10-12 cm. On top of the board, a zinc roof covering material is attached. Zinc roof material can be used size of 6 feet or 7 feet. The roof of the terrace of the building can also be paired with a roof model. If possible, each window frame is given a roof truss. This is intended so that rainwater does not enter the building.

Building appearances

The gap between the roof construction and the additional roof was covered with wooden board material. Facade of the building is given an additional roof. Additional roof mounted along the facade. Additional roofs made down from the construction of the roof of the main building and given a distance of one meter. The additional roof also houses the terrace. Every window and door is ventilated. Air vents are placed above windows and doors. Two vents are made. The construction of roof and beam horses on the facade of the building is covered with a listplank board. Listplank is made of wooden board material.

Pipes are installed along the bottom of the roof. The rear view of the building is symmetrical. The zinc roof material at the rear looks full. This is due to the leaning roof getting tilted backwards. The wall material in the rear view looks dominant in wood material, except the bathroom wall material. Bathroom wall material uses one hundred percent concrete brick. Bathroom ventilation holes are made. Two vents are made. The back bedroom has a window. The kitchen is made a back door. Each door and window is ventilated. Ventilation is made above windows and doors. The left side of the building looks simple and there is no window. This is due to the construction of the roof truss. The construction of the roof truss has a simple form, easy workmanship, and effective work materials. The left side view of the

truss roof on the facade of the building protrudes out. The right side view of the building also does not use windows. The bathroom wall is visible on the right side of the screen. The wooden board material is installed one hundred percent on the wall. the building appearances/view from all directions as shown in Figure 5

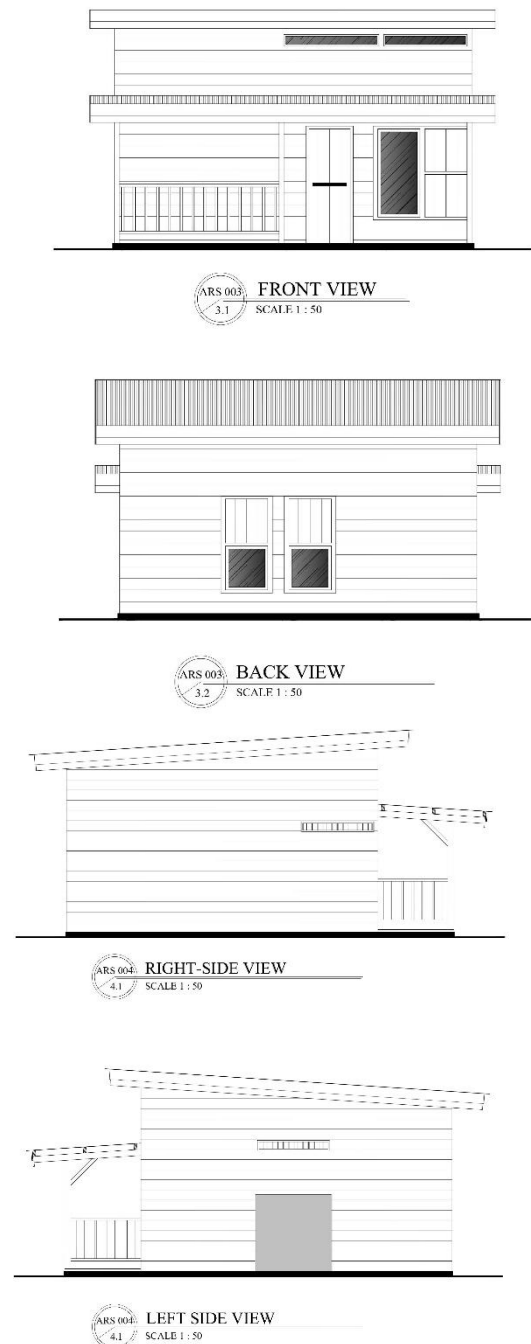


Figure 5. Building 2D appereance

Budget plan

Based on the results of interviews with residential property developers in Kendari City, the average cost of producing type 36 houses per unit is Rp. 50,000,000 (fifty million rupiah) or Ca. 3500 USD . This fee includes the cost of construction workers of Rp. 14,000,000 (ca. 975 USD) and construction costs of Rp. 36,000,000 (ca. 25.400 USD). Once calculated, the budget plan for the prototype of the marginal houses is Rp. 20,927,850, - (ca.1.458 USD). The difference in production costs between type 36 housing and home prototypes for marginal people is Rp. 15,072,150 (ca. 1050 USD). Thus, home prototypes for marginal people are more economical compared to type 36 housing.

Conclusion

This research concludes that marginal houses are made with the principles of form follows economics. Economic principles are applied to building materials and building sizes.

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Author Contributionship

Muhammad Zakaria Umar contributed to conceptualization, data collection and analysis as well as drafting articles, editing and visualizing data.