CHAPTER VI DESIGN APPROACH AND DESIGN FOUNDATION

6.1 DESIGN APPROACH

The design approach on the building is based on the general problems on the building that have been described. The general problems on the building will be situated on the living conditions of refugees in Indonesia. So with that, humanism architecture can be selected as the design approach on the building; Thus, a building where the refugees are the primary users of the building that should have to fulfill their physical and psychological needs.

6.1.1. DESIGN APPROACH BASED ON PROBLEMS

1. DESIGN APPROACH ON BUILDING

Refugees are one of the vulnerable communities in Indonesia. The lack of rights in Indonesia creates one of the vulnerable in Indonesia. A building with humanism architecture hoped to be one of the answers to the rights of the refugees, with four roles of humanism architecture design approach can be applied on giving facilities that need by the refugees such as learning center or medical center.

Besides giving the facilities they need, in humanism architecture also thinking about building image and affect the building to the society. The building facade on the social housing is designed with considering the users. The materials used in the building also came to concerns the material of building also need to consider the users and the environments.

To design based on humanism architecture also reconcile between space and its space quality. For example, a therapy room has to be designed with the proper criteria that are a place to communicate between psychiatrists and patients and give every patient a comfortable place to talk, with using a small window that view to the outdoors giving a painting like illusions. Besides the therapy room, the bedroom also considers being more humane with using a room 3 meters x 3,5 meters;

this is bigger 1,5 square meters from the research conducted by the research institute for housing and human settlement in 2011, where a bedroom for 2 is 9 square meters.

2. DESIGN APPROACH ON BUILDING FORM

The diversity of the refugees cannot be avoided in refugees; with the top three refugees are from three different regions choosing one of them is not an option, So using an international style can be an option. The international style itself is not using any political, cultural, religious, or geographic design. Thus, this building will be formed in a simple one shape building using fabricated materials such as iron, steel, or glass.

3. DESIGN APPROACH ON SECURITY

In creating security based on CPTED, the essential thing is supervision in the building and the determination of clear boundaries. Therefore, a centralized organization with the orientation of the openings towards the center can be an option; in this arrangement, all users can monitor each other, especially in the center area.

A linear circulation pattern with openings on one side or both sides can facilitate supervision for circulation on the building because there are no blind spots in circulation. Access to building using a frontal approach can also be chosen to facilitate supervision from outside the building.

In addition to space planning and circulation, clear boundaries can be made by using solid boundaries with few openings in these boundaries.

6.2 DESIGN FOUNDATION

6.2.1 DESIGN FOUNDATION ON BUILDING LAYOUT

The building layout uses a central or grid layout to separate the building based on the group space, while the grid can easier create module building. The circulation of the building is using linear circulation; this circulation can create more alike space. The building is divided into three areas based on the group space. They are :

1. Main Area

   The main area of the housing is the housing units, kitchen, dining area, laundry; This area is placed in a more private and closed area.

2. Supporting Area

   The supporting area such as communal space, office, clinic, and learning center is in the semi-public area at the site's front. On the contrary, the supporting facility such as playground and field is in the private area and located alongside the central area, allowing the resident to enjoy the facility.

3. Service

   The service area is located in 2 places; the service area for utilities is located at the back of the site, while the service area, such as the security and cleaning, is located inside the building and at the front of the site.

6.2.2 DESIGN FOUNDATION ON BUILDING FORM

The basic shape of the building is a rectangle or square with an orientation that will respond to the site condition and climate. Rectangle and square are chosen because this shape creates maximum effectiveness rather than triangle which has dead space in the shaped angle or circle that shrinks to the center.

6.2.3 DESIGN FOUNDATION ON BUILDING STRUCTURE

A. Sub Structure

   The building uses a bored pile foundation due to the depth of the hard stratum located 10 meters below the surface and the high of the building that is expected to be a five-story building.

B. Middle Structure

The middle structure of the building uses a frame structure; this frame structure is chosen because this structure is rigid and also a fireproof structure. Besides that, choosing a frame structure, it more accessible to arrange a linear space because of its modular column.

The wall in the building is separated into two categories permanent wall and temporary wall; permanent walls are walls made from a light brick or prefabricated concrete, while a temporary wall is a partition to separated two rooms.

The platform for the building is made from concrete with a minimum thickness of 12 cm.

C. Upper Structure

The roof structure of the building is made from concrete; the choice of concrete instead of a conventional roof because a concrete roof is fireproof, durable, and stable. This roof concrete is made with a minimum thickness of 7 cm.

6.2.4 DESIGN FOUNDATION ON BUILDING MATERIAL

The chosen material of the building must be considering the ability of the refugees to maintain the building, especially to their units. Low cost and easy maintenance materials and durability can be an option.

A. Floor

Ceramic with various dimensions is used in the building for most rooms; a communal space or management office uses a broader dimension, while a housing unit uses smaller dimensions.

B. Walls

The walls are made from brick and covered with paint for most of the part, but the area that acts as a supporting area is covered with paint and natural stone or woods.

C. Ceiling

The ceiling is covered with PVC, so the plumbing and ME system can be hidden inside it. The choosing of PVC also because of its advantages like fire resistance, waterproof, and termite resistance.

6.2.5 DESIGN FOUNDATION ON BUILDING FACADE

The building facade is the first thing people see when they enter the building, so to design the facade, according to Rachmawati (Rachmawati, 2010), building facade should be adapted to the needs, who the users are, where it is and in what conditions it was built. Thus, the facade of the building is made to be simple, not opulent, and using easy maintenance locals' materials.

6.2.6 DESIGN FOUNDATION ON SITE PLANNING

The outdoor planning of the site for safety and security reasons one way circulation is chosen; this circulation can make easier monitoring of the users. The outdoor planning is also divided into two groups; the first is public, this area includes a parking area, front lawn, and circulation for the guard to oversee the site, so this area can only access by the management and staff. The second is a backyard that includes a field and playground; this area is a private area that only can be accessed by the residents and located inside the private area of the building.

6.2.7 BUILDING UTILITY DESIGN FOUNDATION

A. Electricity

Electricity for the building is from PLN and channeled to the MDB and distributed to the panel, and for the sudden power shortage, the generator is prepared.

B. Water

- Clean water

The source of the water is from 2 sources; first is from PDAM this water use as a primary source of the building, using a down-feed system is more effective, this is due to the use of gravity to distribute the water to the rooms, and the second is from rainfall that is harvest and can be used as a secondary water source for the building.

- Wastewater

Wastewater in buildings uses an anaerop-aerop biofilter system; this system allows all waste in buildings to be treated on-site, so the waste when it comes out to sewage contains 10% pollutant load this is more effective than using the old system, which contains 22.5% pollutant load.

C. Lighting

Lighting on the building is from both natural and artificial lighting. Natural lighting is from the sunshine that passes through the window. A canopy is necessary to deal with sun exposure on the window so the sun heat cannot enter the building, but the shine can. The artificial lighting is using an LED lamp that can adjust the brightness.

D. Air Conditioning

Air conditioning in the building primarily uses natural air conditioning; this air conditioning can obtain from the wind that passes through ventilation or void that can be a wind circulation. Although most of the buildings use natural air conditioning, artificial air conditioning can be used for management offices.

E. Lightning

The lightning rod system will use the Faraday lightning rod system. The principle of this lightning rod is based on the performance of a pole mounted on the top of the roof and connected using a wire to the ground. The use of

this system is based on the consideration of the ability to protect buildings from lightning strikes and building aesthetics.

F. Disaster

The disaster system in the building are detectors, automatic sprinklers, fire extinguishers, and assembly points.

- Heat Detector

  A Heat detector works when the indoor temperature increases; If the room temperature reaches 50℃ to 60℃, then this detector will give a warning of a fire, the heat detector is usually placed in the kitchen

- Smoke Detector

  A smoke detector is a sensor or device that detects early and quickly if a plume of smoke originates from engine damage or fire to minimize the risk of an enormous fire. Smoke detectors can be placed in any room.

- Automatic Sprinkler

  because the building is included in the category of buildings with a light fire hazard which is given a distance of 4.6 meters between sprinklers and between walls and sprinklers having a distance of 2.3 meters.

- Fire Extinguisher

  The fire extinguisher usually contains water, halon, CO2, foam, and flour extinguisher has a range of 25 meters.

- Assembly Point

  The assembly point in the building is an open area like the parking area of the building. The Assembly point is usually located ±20 meters from the building and does not block the fire extinguisher path.

G. Security

Security of the building includes active and passive security. Active security provides security posts and security personnel in the building, alongside security, Crime Prevention through Environmental Design or CPTED can be applied; this system creates safety and security through

design. In contrast, passive security is given with installing wire at the fence and installing CCTV in the building.

H. Transportation

Vertical transportation uses a ramp and stairs, while horizontal transportation is users walking in a path or pavement.