Playground Facilities for Lower Class Vertical Housing
Case Study: ‘Rusunawa’ Menteng Asri Bogor, West Java

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Abstract. An increasing population causes the problem of limited land for urban dwellings. This problem encourages the government to start building lower class vertical housing as a solution to providing shelter for low middle-income people. One of the most important things that need to be considered in the design of vertical housing is the problem of availability of playground facilities. Playground facilities are often overlooked, even though it was regulated in the Indonesian Government Regulations (No). 4 act 27 of 1988 on vertical housing. This study focuses on whether the playground facilities provided in ‘Rusunawa’ Menteng Asri has aligned with SNI (Indonesian National Standard) guidelines and public playground safety handbook. The study employs an analysis method in which includes location assessment, selecting equipment, surfacing material, and equipment material. The study also conducts interviews on children and parents of ‘Rusunawa’ Menteng Asri. Even though the Rusunawa’ Menteng Asri already has playground facilities, the study found that it has not fully met the requirements.

1. Introduction
The fact that more and more population in urban areas is increasing has caused various problems, one of which is the problem of limited land for urban dwellings. Vertical housing is one of the efforts offered by the government as a solution for providing shelter for the low-middle income people who live in slums area [1]-[2].

According to Happy Farida Djarot Hidayat’s speech at Rusun Pulo Gebang, she said that “playground facilities in vertical housing are the most important elements that must be fulfilled because children are potential successor of the great dreams of the Indonesian people”. Nevertheless, many vertical housing designs are not accompanied with an adequate playground facility. The need of playground facilities is regulated in the Indonesian Government Regulations (No). 4 act 27 of 1988 on vertical housing [3] that said about “In the vertical housing and their environment must be provided for gathering places, conducting community activities, playgrounds for children, and other social contacts, in accordance with applicable standards”.

Therefore, researchers want to study about playground facilities for lower class vertical housing with the case study ‘Rusunawa’ Menteng Asri to find out the quality of the playground facilities that provided in that vertical housing.
2. Material and Methods

2.1. Theoretical Review

| No. | Theory                              | Description                                                                                                                                 |
|-----|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Children Playing                    | Playing is an important part of a child's life because by playing, they can foster creativity, imagination, social connections, and learn new things. Playing can also be considered as an exercise before the child faces the world [4]. |
| 2   | Stages of Children’s Growth         | 1. Aged 0-2 years old  
At this stage, the child has the urge to explore his world. The scheme is initially formed through congenital reflex differentiation.  
2. Aged 3-7 years old  
At this stage, the child has the ability to think about things, events, or other people starting to develop. Children have begun to recognize symbols (words, numbers, gestures, or pictures) to represent the surrounding objects. Children will tend to play alone and experiment with what they see, touch, and hear.  
3. Aged 7-12 years old  
Children have started to be able to think abstractly. Children also begin to think logically in understanding and solving problems and recognizing symbols. Children's activities tend to lead to activities that include movements and actions such as activities that build organizational and physical abilities that can test dexterity such as climbing nets or other things that can stimulate the child's response motor. [5]-[6] |
| 3   | Playground Facilities in Lower Class Vertical Housing | The semi-public area in the outer space is given to children with ages ranging from 1 to 5 years and 6 to 12 years. [7] |

2.2. Methods

Researchers will compare the existing conditions of playground facilities in ‘Rusunawa’ Menteng Asri with SNI (Indonesian National Standard) guidelines on playground specifications in open space of lower class vertical housing [7] and public playground safety handbook [8], accordingly the researcher will use the following analytic indicators:

| Location | Selecting Equipment | Surfacing Material | Equipment Material                                                                 |
|----------|---------------------|--------------------|-------------------------------------------------------------------------------------|
| An integral part of elementary school. | Important to know the age range of the children who will be using the playground. | Pavement can be used for sports but it is safe enough to play. | Use equipment that is manufactured and constructed only of materials that have a demonstrated record of durability in a playground or similar setting. |
| Easy to reach from residential units served. | More complex and various types. | Provide warnings that equipment and surfacing exposed to intense sun can burn. | Avoid using bare metal for platforms, slides, or steps. When exposed to direct sunlight they may reach temperatures high enough to cause serious contact burn injuries in a matter of seconds. |
| There is a shaded activity area. | - | - | - |
| Away from Hazards that can be accessed around like roads. | - | - | - |
| The play area should be organized into different sections to prevent injuries caused by conflicting activities and children running between activities. | - | - | - |
Researchers also interview children and parents who live in ‘Rusunawa’ Menteng Asri as a complement and verification of data beside from the observations. Then to evaluate playground facilities in ‘Rusunawa’ Menteng Asri, the researcher will summarize the flow of the research in the method chart of reading the case studies as follows:

![Method Chart](image)

2.3. Case Study
The study was conducted at ‘Rusunawa’ Menteng Asri, one of the most crowded low-middle class vertical housing in Bogor, which many of the residents have children aged between 1 and 12 years. ‘Rusunawa’ Menteng Asri located at Balitro Street No. 24-36, Menteng, Bogor, West Java. This vertical housing is divided into four unit blocks, each of which consists of 5 floors. Unit A and B were built in 2007 and then construction continued in 2009 for unit C and D. The construction is aimed at low-middle income society with income below three million rupiah. On the first floor of this vertical housing, there are facilities for motorbike and bicycle parking, open space, commercial area and two playground areas. On the second to fourth floors are used as residential areas.

3. Results and Discussion
To assess the condition of playground facilities in ‘Rusunawa’ Menteng Asri, the researchers will compare the existing conditions of playground facilities with the analysis indicators that the researchers have explained in the research method above. The assessment will be explained in four assessment tables, which include a location assessment table, an equipment selection assessment table, a surfacing material assessment table, and an equipment material assessment table. Then after the assessment table, the researcher will analyse the problem more detail in narrative form.

| No. | Criteria                                                                 | Analysis                                                                 | Information   |
|-----|--------------------------------------------------------------------------|--------------------------------------------------------------------------|---------------|
| 1   | An integral part of elementary school                                    | Playground facilities in ‘Rusunawa’ Menteng Asri are stand-alone facilities. | ✓             |
| 2   | Easy to reach from residential units served.                             | Having 2 playground zones located near to the residential area, zone A is near to units C and D, while zone B is near to units A and B. | ✓             |
| 3   | There is a shaded activity area.                                         | The play area is not shaded by buildings, trees or canopies.              | ✗             |
| 4   | Away from Hazards that can be accessed around like roads.                | Playground facilities in ‘Rusunawa’ Menteng Asri are located in the environment of ‘Rusunawa’, so it does not allow other people (other than residents) to enter that area. | ✓             |
| 5   | The play area should be organized into different sections to prevent injuries caused by conflicting activities and children running between activities. | There is a zoning of playground area that does not allow any conflicting activities. | ✓             |
Table 4. Selecting Equipment Assessment

| No. | Criteria Analysis Information |
|-----|--------------------------------|
| 1   | Important to know the age range of the children who will be using the playground. 'Rusunawa’ Menteng Asri has several playground facilities for 1-5 year olds such as slides, swivel bowls, as well as climbing equipment (monkey bar) and for ages 6-12 years such as volleyball courts and soccer fields. |
| 2   | More complex and various types. 'Rusunawa’ Menteng Asri has enough playing equipment |

![Figure 2. Playground Zoning in ‘Rusunawa’ Menteng Asri (Source: processed from google maps, 2018)](image)

Table 5. Surfacing Material Assessment

| No. | Criteria Analysis Information |
|-----|--------------------------------|
| 1   | Pavement can be used for sports but it is safe enough to play. The field in ‘Rusunawa’ Menteng Asri uses pavement from cement, actually this pavement is safe enough to carry out sports activities, but due to unfavourable surface conditions (already peeling), the field conditions in ‘Rusunawa’ Menteng Asri become unsafe. |
| 2   | Provide warnings that equipment and surfacing exposed to intense sun can burn. Because the field does not have shade, the surface of the field that has cement material becomes very hot during the day because it is exposed directly to sunlight and has a risk of burns to children. |

Table 6. Equipment Material Assessment

| No. | Criteria Analysis Information |
|-----|--------------------------------|
| 1   | Use equipment that is manufactured and constructed only of materials that have a demonstrated record of durability in a playground or similar setting. The basic material of the equipment in the ‘Rusunawa’ Menteng Asri majority uses iron and fiber material, basically iron material has good resistance, but the coating paint that does not have good resistance and makes the ‘Rusunawa’ Menteng Asri equipment rusty because the paint is peeling off. |
| 2   | Avoid using bare metal for platforms, slides, or steps. When exposed to direct sunlight they may reach temperatures high enough to cause serious contact burn injuries in a matter of seconds. The facilities at ‘Rusunawa’ Menteng Asri are not shaded and the majority use iron and fiber materials, this problems will make equipment in ‘Rusunawa’ Menteng Asri become very hot due to direct exposure from sunlight and the risk of burns to children. |

From the results of the survey conducted, it is known that ‘Rusunawa’ Menteng Asri already has playground facilities but the facility does not meet the overall requirements. In this study, researchers categorized playground facilities in ‘Rusunawa’ Menteng Asri into two zones (see figure 2), which are as follows:

1. Zone A
   Zone A is a playground area located in the northwest of the ‘rasunawa’ area. Zone A is located near to ‘rasunawa’ buildings unit C and D. There is a volleyball court in zone A.
2. Zone B

Zone B is a playground area located in the southeast of the ‘rusunawa’ area. Zone B is located near to ‘rusunawa’ buildings unit A and B. In zone B there is a soccer field and other equipment such as slides, swivel bowls and monkey bars.

Every single field in that two zones is covered by cement pavement and grass in the surrounding area. The conditions of the surface of the field are not in a good condition because some parts of the cement layer have been peeled off so that the surface of the field becomes rough. This is of course very risky for playing activities for the children. Moreover, the designer does not provide road access from the unit to the field so the children must step on the grass around the field when they want to walk to the field.

Fields in these two zones do not have cover / shade (like tree, canopy, or building shading) that can protect the field from sun exposure during the day (see figure 3 & 4). In addition to the field, other playground equipment such as slides, swivel bowls and monkey bars do not have a cover too. The iron and fiber materials used in the play equipment also becomes very hot due to direct exposure to sunlight during the daytime and has a risk of burns to its users.
From the results of interviews conducted by researchers on the children of the ‘Rusunawa’, it is known that they prefer to play on the first floor of the ‘Rusunawa’ (see figure 6) because they think that playing on the first floor was cooler than playing in the field. Some children also said that their parents forbid them to play in the field during the day because they are concern about their children health. Children usually start playing in the field when the morning is around 07.00–11.00 in the morning (when holiday) and about 4.00 – 6.00 in the afternoon. Activities during these hours are considered safe by parents of ‘Rusunawa’ because the field is free from direct sunlight exposure and is relatively cooler so during these hours, researchers also found many children who played various activities, such as playing soccer, badminton, cycling, running around the field, playing slides, and so on during these hours.

4. Conclusion

Based on the analysis, it can be concluded that ‘Rusunawa’ Menteng Asri has been provided with playground facilities. The facilities are located in two zones, zone A which is provided with a volleyball court and also zone B which is provided with soccer fields and playground equipment. The fields in this ‘Rusunawa’ are covered by cement pavement material. The surface on the fields in ‘Rusunawa’ Menteng Asri are not in a good condition because in some parts it has peeling and become rough. This is very risky for children who use the fields. In addition, the facilities to play in ‘Rusunawa’ Menteng Asri are not equipped with shade, this causes the surface of the field that covered by cement pavement material and playground equipment that made of iron and fiber become very hot during the day because it is exposed directly to sunlight. This condition can of course cause the risk of burns to children who use the facility. Therefore, during the day the children of the ‘Rusunawa’ Menteng Asri prefer to play in the first floor of the ‘Rusunawa’ because they think that playing in that area is more comfortable and shady. Whereas this behaviour disrupts the activities of other flats and also causes noise for those who live on the second floor. Children usually start playing in the field when the morning is around 07.00–11.00 in the morning (when holiday) and about 4.00 – 6.00 in the afternoon.

5. References

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