

EVALUATION OF ACCESSIBILITY OF WHEELCHAIR USERS IN THE SMITH BUILDING, ALAM SUTRA, TANGERANG CITY, INDONESIA

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Submitted: 16-03-2023, Revised: 18-03-2023, Accepted: 19-03-2023

ABSTRACT

The existence of skyscrapers continues to increase in the city of Jakarta and its surroundings. But unfortunately, of the many buildings, only a few are friendly to persons with disabilities. This research will focus on evaluating the accessibility of wheelchair users in observation areas in multi-storey buildings, research on the accessibility of wheelchair users in multi-storey buildings using quantitative methods with a deductive verification approach. In general, the garden area of The Smith building can be accessed from the apartment area and office and soho areas. There are no accessibility problems with the layout of furniture and lighting in the observation areas of the apartments, offices and SOHOs, however, there are several obstacles in the entrance ramp area on the side North, constraints open and close the glass door (swing door type).

Keywords: *accessibility of wheelchair users, wheelchairs, multi-storey buildings*

1. INTRODUCTION

The existence of skyscrapers continues to increase in Jakarta city and its surroundings. But unfortunately, of the many buildings, only a few are friendly to persons with disabilities [1]. Wheelchair users require different treatments. Often people want to assist wheelchair users, but because they don't know how, in the end, unwanted things happen. To avoid these unwanted things, it would be nice if we would assist in understanding how to interact with disabled wheelchair users. Also note that there are several types of wheelchair users, including paraplegia, tetraplegia, polio, and cerebral palsy. Paraplegia and tetraplegia can't move their legs at all; they cannot crawl and cannot be supported, but polio disabilities can crawl and be more agile [2]

Undang-Undang RI Nomor 8 Tahun 2016 explained that people with disabilities need special attention to easily enjoy the facilities in city public spaces like ordinary people [3]

Identification of problems

In its implementation, the provision of building facilities has not met the minimum standards for people with disabilities. This is due to the design of accessibility that is not in accordance with applicable rules and does not pay attention to the behavior of the disabled themselves in their activities.



Figure 1. The provision of park facilities has not paid attention to the behavior of people with disabilities

Source: online media, 2019

In a multi-storey building, attention to safety and security issues is a priority so that the building can guarantee the safety of its occupants and building users. Therefore, the path to the park must be ensured that it meets the accessibility criteria for wheelchair users.

The City of Jakarta and its surroundings require that every developer applying for a Building Permit for the Public Interest must include the design for special facilities for persons with disabilities in the Architectural Planning Drawings.

In this case, the accessibility of wheelchair users to the park in The Smith building, it is necessary to evaluate whether the building's facilities have implemented the law in its design and implementation.

Hipotesis

Undang-Undang RI Nomor 8 Tahun 2016 If implemented in the building planning design, it should have an impact on the ease of movement of wheelchair users to access building facilities, so that the fulfillment of the rights of persons with disabilities in terms of going to, reaching, entering and utilizing public facilities can be achieved.

Research purposes

This research will focus on evaluating the accessibility of disabled wheelchair users in the observation area of a multi-storey building for a measure of comfort or ease of land use so that it can be reached easily through the transportation network system.

Evaluation of the accessibility of wheelchair users in reaching building facilities provides knowledge related to design implementation problems for wheelchair users, so that the resulting findings can be followed up with improvements to make high-rise buildings friendly for people with disabilities.

2. RESEARCH METHOD

This research uses a quantitative method with a deductive verification approach, data obtained through literature study as well as conducting field observations and experiments using wheelchairs in the observation area. Furthermore, field observation data and experiments will be compared to the accessibility standards for wheelchair users in accordance with the study of literature and laws on disabilities that applied in Indonesia, so that conclusions can be obtained

about the actual conditions of accessibility for wheelchair users inside the building as well as access to parks outside the building.

3. RESULTS AND DISCUSSIONS

Case study Overview

The object of study was carried out at The Smith-Alam Sutera building, Tangerang City (Figure 2). The Smith Building is a 33-storey building combining office, SOHO and apartment functions in one building.

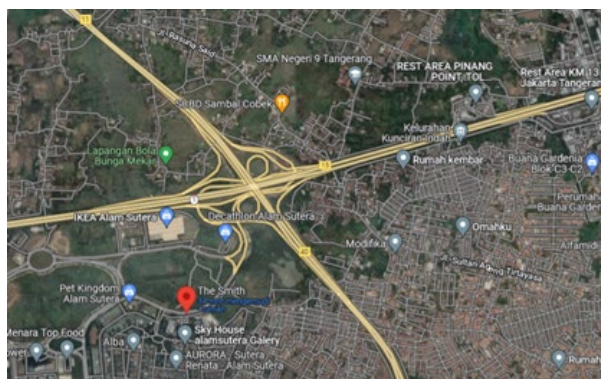


Figure 2. Location of The Smith building; Source: Google Maps 2022

The research will focus on accessibility in three observation areas (office, SOHO and apartments) to the garden area on the ground floor area. In this study, the activity of surveying the accessibility of wheelchair users to the building's garden was carried out by means of an experiment because wheelchair users did not yet exist (the new building was operational for the first time in 2019 period).

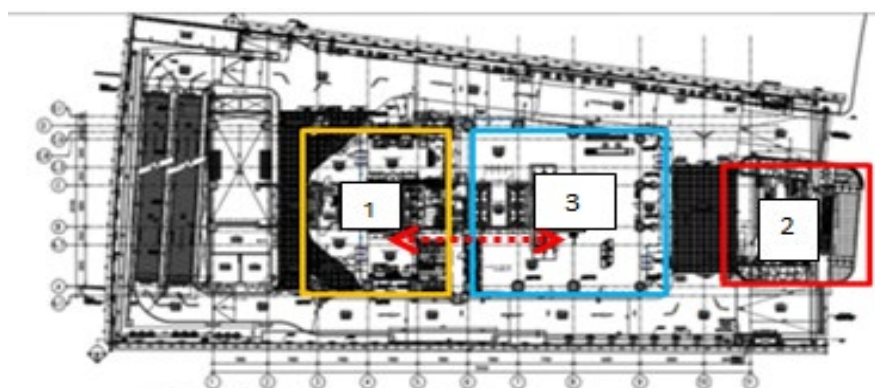


Figure 3. Area 1: Apartments, area 2: Park, Area 3: SoHo;
Source; Processed from building documentation images, 2022

Discussion

The Smith Building combines office, SOHO, and apartment functions in one building (Figure 3). The Smith Building Park is one of the high-rise building facilities located in the Ground Floor

area, which functions as an area of social interaction for residents. The garden area can be accessed from the north side of the building (outer side), the basement area (parking area), and from the tenant area (office, SOHO, and apartments). This new building was firstly operational in the 2019, and until this study was carried out, wheelchair users did not yet exist. Therefore, the activity of surveying the accessibility of wheelchair users to the building's garden was carried out through an experiment.



Figure 3. Observation area 2;
Source: Personal documentation and marketing brochure, 2020

Referring to the Regulation of the Minister of Public Works Number 30 of 2006 concerning technical guidelines for facilities and accessibility in buildings and the environment, chapter 1, article 1, paragraphs 2,3 and 4 require that the complete infrastructure and facilities in buildings and the environment must be accessible and utilized by everyone including people with disabilities and the elderly.

Through the implementation of the Tangerang city regional regulation number 3 of 2021 concerning respect, protection, and fulfillment of the rights of persons with disabilities in terms of going to, reaching, entering, and utilizing public facilities, it regulates safety and security standards for wheelchair users in the park area. So, accessibility must meet the following criteria:

- a. the slope of a ramp (not including the prefix/or ending ramp) outside the building is 1:15 or the standard slope is 10 degrees.
- b. The minimum width of a ramp is 95 cm.
- c. Landing or flat face at the beginning or end of a ramp must be free and flat, at least able to turn a wheelchair with a minimum size of 150 cm.
- d. The ramp floor material uses coarse aggregate material.
- e. Ramps must be equipped with guaranteed strength handrails with a height suitable for ramp users.
- f. Lighting is provided on parts of the ramp that have a height above the ground and around it on dangerous parts.
- g. If it is directly adjacent to public road traffic or intersections, it must be made in such a way as not to interfere with public roads.

For the comfort and safety of wheelchair users, each area where wheelchair users are active must be equipped with signage

Observation Area 1 (Apartment)

Residents who live and do activities in the apartment building area. As for the path of movement of activities to the park, it can be reached from: Parking area to the apartment lobby on the ground floor:

The route of occupant movement from the parking area to the park is shown in Figure 4 below.

Parking Area → Apartment Lobby → Office Lobby → Drop-off Area → Park



Figure 4. Movement from the parking area to the park
Source: personal documentation 2022

The apartment lobby in the Ground floor area is accessed via the apartment lift lobby in the basement area. Meanwhile, to reach the apartment lift lobby in the basement, wheelchair access will pass through a ramp with a slope of 5% and follow the pedestrian path with a width of 2m to the entrance area of the apartment lift lobby in basement area. The light intensity in the basement area is 116 lux. In the basement area, the movement of wheelchair users has no obstacles in accessing ramps and lifts, lighting conditions, track width and ramp slope do not make it difficult for wheelchair users (Figure 5) but in terms of opening and closing the lobby lift door it cannot be done independently.

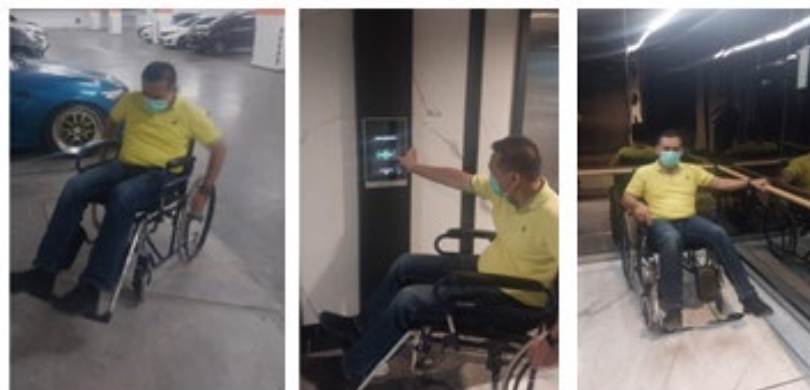


Figure 5. Users access by pushing the lift button
Source: personal documentation, 2022

From the parking area, the movement of wheelchair users to the park will pass through the lobby lift in the Ground floor area and then to the lobby office and drop-off area before accessing the park (Figure 6).

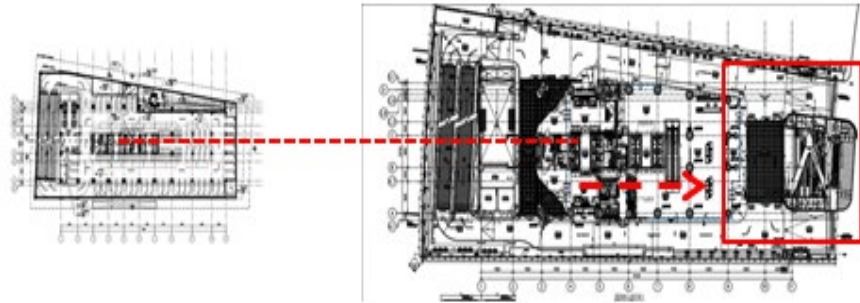


Figure 6. Movement from the basement lobby, GF apartment lobby, office lobby, and towards the park;

Source: personal documentation 2022

From the apartment lobby on the ground floor leading to the lobby office and garden :
The movement of wheelchair users has no problems accessing the reception area, access sensors, lifts, and push buttons, but in terms of opening and closing the lobby lift doors, it cannot be done independently (Figure 7).

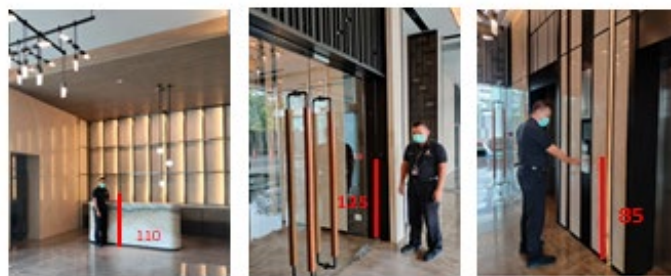


Figure 7. Reception area, push buttons and sensors;

Source: personal documentation, 2022

From the apartment lobby in the Ground Floor area, wheelchair users go to the lobby office area before accessing the park, as shown in Figure 8, the movement of wheelchairs in the apartment lobby area to the lobby office has no problems, the movement of wheelchairs is not hampered by the position of the layout of the furniture or lighting conditions. in the room (light intensity in the room 105 lux), at the entrance lobby office. There is a ramp with a 5% slope before entering the drop-off area.

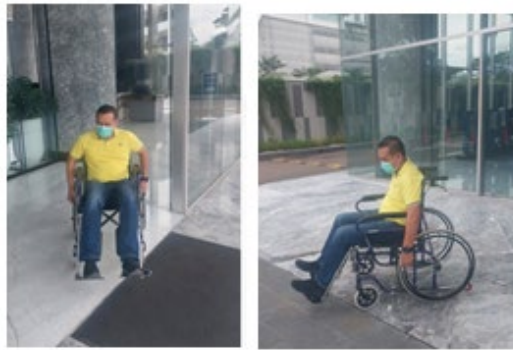


Figure 8. Movement of wheelchair users in the entrance lobby office area;
Source: personal documentation 2022

Observation Area 2 (Garden)

Users from the north and south sides can access the parking area through the following routes:

a. South Side

On the south side, the entrance ramp is less sloping, so it becomes a stumbling block to the wheelchair's footrest and hinders movement (Figure 9).



Figure 9. The ramp is less sloping, thus hindering the movement of wheelchairs
Source: personal documentation, 2022

The limited width of the landing at the ending ramp makes it difficult for wheelchair users to maneuver around, especially for novice wheelchair users. The wheelchair movement in the southern ramp area must be assisted so users can access the park. Synthetic grass decorations on the park floor make wheelchairs mired so that it disturbs wheelchair movement when accessing the park.

b. In the garden

In the area within the park, movement does not experience problems in crossing or rotating the chairs. In the ramp area, the slope of the ramp is relatively flat so it is not equipped with railings that are accessible by hand. Still, handrails are provided on the side so that the movement of chairs stays on the path (Figure 10).



Figure 10. Movement of wheelchairs within the park
Source: personal documentation: 2022

c. North Side

On the park's north side, it is not yet accessible for wheelchair users (only accessible without wheelchairs). The existing condition of the north side, Figure 11 for the proposed area to replace the stairs with ramps is not constrained by the basement construction.

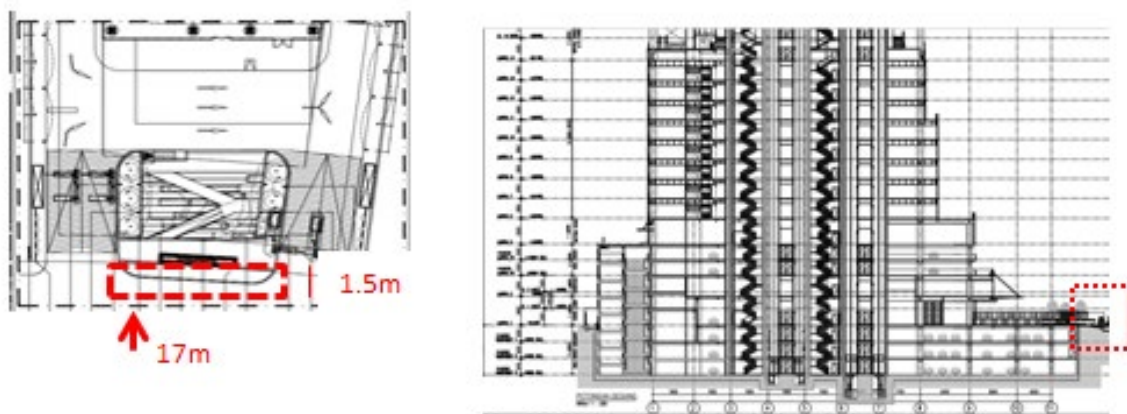


Figure 11. The existing condition of the north side;
Source: building document image, 2022



Figure 12. Park situation on the north side
Source: personal documentation, 2022

Proposed access design development on the north side:

1. With the limited width on the north side of the park, only elongated ramps (with landings) with a slope of 1% can only be made.
2. The north side of the entrance ramp is proposed to be on the entrance side (east side), assuming the speed of incoming vehicles is lower than that of exiting vehicles.
3. The ramp material uses andesite stone with a stone arrangement pattern that matches the existing conditions. The use of andesite stone in new buildings gives the impression of oneness between the new building and the existing conditions.
4. Parapets are provided on the north side of the ramp to prevent wheelchairs from slipping off the track.

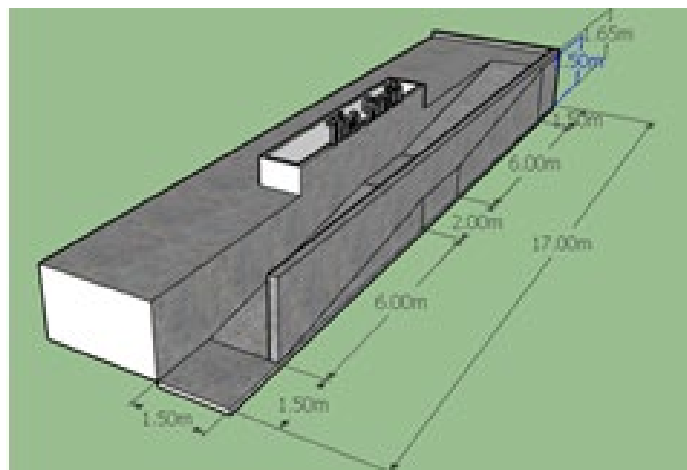


Figure 13. Proposed ramp access concept on the north side
Source: personal sketch image, 2022

Observation Area 3 (Office & SOHO)

The movement of office and SOHO area users from the side of the parking section to the lobby office area in the Ground Floor area is the same as the apartment area, but on the entrance lobby side of the Ground Floor, the movement of wheelchairs must go through a special door (Figure 14)



Figure 14. A special door for wheelchair users at the entrance to the lobby office
Source: personal documentation, 2022

Discussion based on the Theory from References

a. lobby area

The position of the push button lift is in the basement area and H is at an elevation of 85 cm so that the placement is still in accordance with the standard space for wheelchair users.

b. Door Handles

The door to the lobby room uses a hinge system, wheelchair users can still handle the position of the handle, but the position of opening and closing the door cannot be done independently.

c. The path to the garden in the ground floor area

- i. In the apartment lobby area leading to the park, the wheelchair travel path is not hampered by the layout of furniture, and the light intensity in the 105 lux room does not cause glare effects (SNI: lobby light intensity is 100 lux)
- ii. In the lobby office ground floor area, the distance between the pillars of the turnstile is 80 cm (not including the position of the hinges), with the height of the pillars of the turnstile 85 cm does not allow wheelchairs to cross in, but there is a special door for wheelchair users (standard minimum space for movement without wheelchair obstructions) 80cm)

d. Park Area

On the north side of the park, it is not yet accessible for wheelchair users (only accessible without wheelchairs):

1. Limited width on the north side of the park, so only elongated ram paths (with landings) with a slope of 1% can be made
2. The north side of the entrance ramp is proposed to be on the entrance side (east side) assuming the speed of incoming vehicles is lower than that of exiting vehicles

3. The ramp material uses andesite stone with a stone arrangement pattern that matches the existing conditions. The use of andesite stone in new buildings gives the impression of oneness between the new building and the current conditions.
4. Parapets are provided on the north side of the ramp to prevent wheelchairs from slipping off the track.

4. CONCLUSIONS AND SUGGESTIONS

In general, the garden area of The Smith building can be accessed from the apartment area and office and Soho areas. There are no accessibility problems with the layout of furniture and lighting in the observation areas of the apartments, offices and SOHOs. However, there are several obstacles in the entrance ramp area on the North side, constraints open and close the glass door (swing door type).

5. ACKNOWLEDGEMENT

Thank you to the occupants and building managers who have assisted in the data collection and survey process so that research reports can be compiled. We hope this research can continue to be developed so that the feasibility of accessibility for wheelchair users and other disabled people in multi-storey buildings can improve.

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