

Evaluation of Accessibility with Wheelchairs Approach for Educational Buildings

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ABSTRACT

This research evaluated the building accessibility for disabilities people. Gedung Pusat (GP) UPGRIS, as a once of a public building, is required to comply with the availability for all (include for diffabled people). The current condition causes they are unable to access the facilities of the educational building, which means the student with disability not capable of doing their activities on their own. There are many problems: the doors which width too small, the opening doors direction were false, vertical access was not accessible, lavatory not adapted for disabled, and any other. The objective of this research to evaluate and build a concept redesign for diffabled people's facilities. The architectural design analysis use in the process of restructuring the existing facilities. The solution choices, according to a minimalising budget and less of destruction.

Keywords: *accessibility, diffabled, disabled, public services*

1. INTRODUCTION

GP (Gedung Pusat) in Campus 1 UPGRIS as one of the public buildings that serve many students has a public service function, so this building must meet the requirements for space for all, including for disabilities people. The existing buildings have not paid attention to disabled people so that they have not been able to activities independently as mandated in the law. Accessibility to buildings that are mandated by the law in practice still cannot facilitate access to their movements. Some public facilities built by considering disability even in their implementation always make it difficult for them.

The Law on persons with disabilities has guaranteed the availability of accessibility, and regulation has prepared by the Minister of Public Works, but its implementation is still sporadic. Many barriers that are even faced by people with disabilities like the lack of pedestrian and guide block, unavailability of parking spaces for wheelchairs, there is no vertical access, and much more.

GP Building, as the centre of services, has several main problems that can found in the field are:

- Vertical access needs for wheelchair users from the ground floor to floors 1 or 2 that have been served by the elevator.
- Not yet available toilets for wheelchair users
- Provision of parking space for wheelchair users on the ground floor

Based on the background of the problem, the formulation of the problem in this study is "how the building reliability of accessibility for disabled people on 1st Campus UPGRIS?"

2. METHOD

This research is applied research with a quantitative approach, the existing compared with legal standard from Permen. PU

24-2017 and Universal Design standard. Analysing is done with the architectural design approach, especially about universal design. The accessibility study of this building is included in an integrated qualitative and quantitative research, in which researchers aim to describe and analyse various problems of accessibility of persons with disabilities to be able to reach the construction of the building independently, safely and comfortably of Research

The process and stages of implementation for this activity can describe as follows:

- Survey of measurement for data collection and analysis of GP building. Data collection also includes the condition
- Conduct building surveys and visual documentation with an emphasis on the main elements that become the research indicators.
- Compilation of data according to building groups and indicators of disability accessibility.
- Problem analysis and comparative analysis of disability accessibility conditions with existing standards or guidelines
- Review of design concepts to be able to provide solutions to the problems and follow the choices of the best alternative.

2.1. Research Object

The selection of object research is GP (*Gedung Pusat*) UPGRIS locations on Campus 1 UPGRIS according to the attention and policies that have an active program and commitment to fulfilling various accessibility and requirements, including planning that implements disabled accessibility in all buildings. The current condition is that almost all buildings have not designed concerning access accessibility for people with disabilities, so they are challenging to be able to access independently.

The selection of accessibility in some buildings is based on the frequency of the user and has not had difficulty in accessing the main room/floor, related to this the chosen architecture, which has a lobby floor on the 2nd floor, making

it very difficult to reach. With the function of the centre building, the administration, and lectures, there are many public services in this building that must be accessible to all, including disabled people.

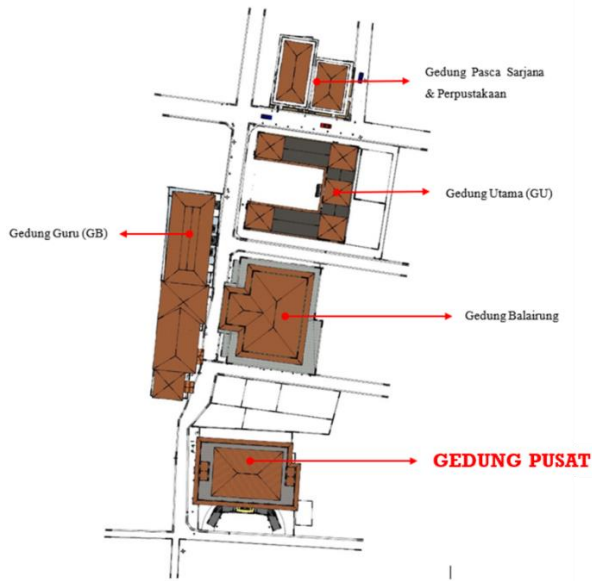


Figure 1 Building as a research object

2.2. Research Indicator

The first research used all indicators from Permen PU 24, 2017, and followed with three signs that have the main problem faced by GP Building.

- Vertical access
- Provide of toilets
- Space for wheelchair parking

2.3. Data Analysis Methods

From the results of the data compilation that has structured, will be analysed in each indicator in each building with comparative techniques on standards or guidance. The results will provide an analysis of the existing conditions of each building for each sign by comparing the applicable rules or guidelines.

3. RESEARCH RESULTS

From the results of the field survey and the analysis that has been carried out on building as the object of research, then in the study and evaluated of the building accessibility with compare to Permen PU 14/2017 and universal design standard.

3.1. Vertical Access

Each story building must meet the requirements for the ease of vertical linkage between floors. Lift is once of an electrical, mechanical device to assist vertical movement inside the building. The provision of elevators used to access vertical transportation facilities quickly and effectively. Problems regarding these lifts are found in the GP building because the lift only works from floors 2-7, so to access the building from the 1st floor must go up need facilities to access.

There are four concepts to fix the problems (see):

1. Change in one of the existing lifts to be able and to service up to the ground floor. The application of this concept requires a study related to the initial design of whether changes to the pit lift and core lift can be made possible.
2. The provision of RAM with a standard for wheelchairs will require land $\pm 3 \times 40$ meters, and this alternative is difficult to do because of the lack of available land.
3. The only location that can apply to the application of this concept is at the back of the building which has used for bus parking.
4. The addition of a new home lift to services from the ground floor to the 1st floor so that the next story can be through an elevator lift existing.
5. The stairlift adds to the western stairs, allowing wheelchair users to reach the 2nd floor from the ground floor.

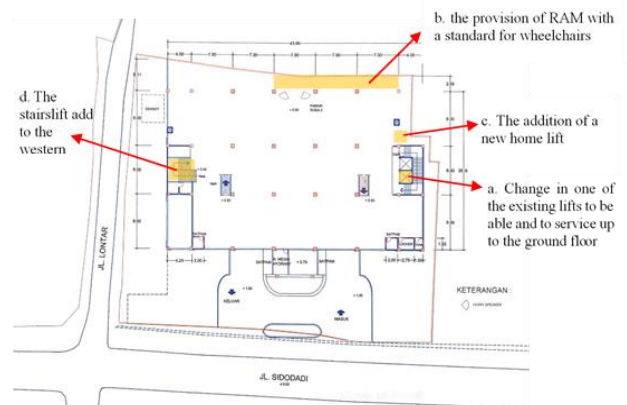
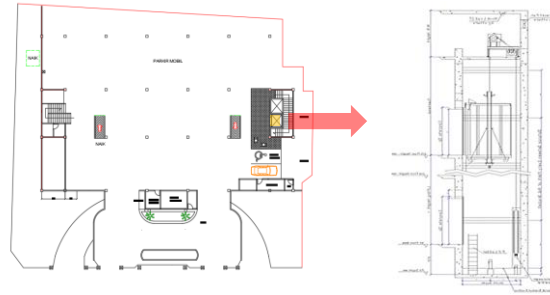
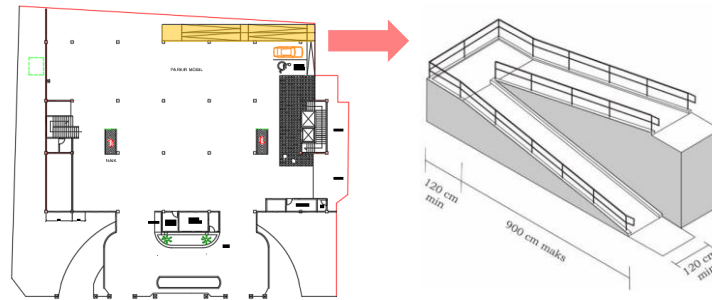


Figure 2 Alternated for vertical access

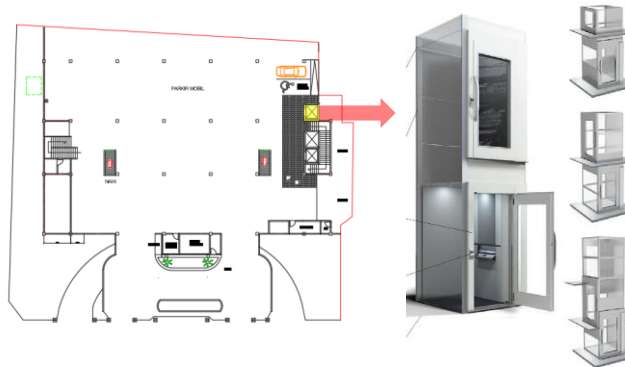
1. Change in one of the existing lift



2. The provision of RAM



3. Addition new home lift



4. Add Stairlift

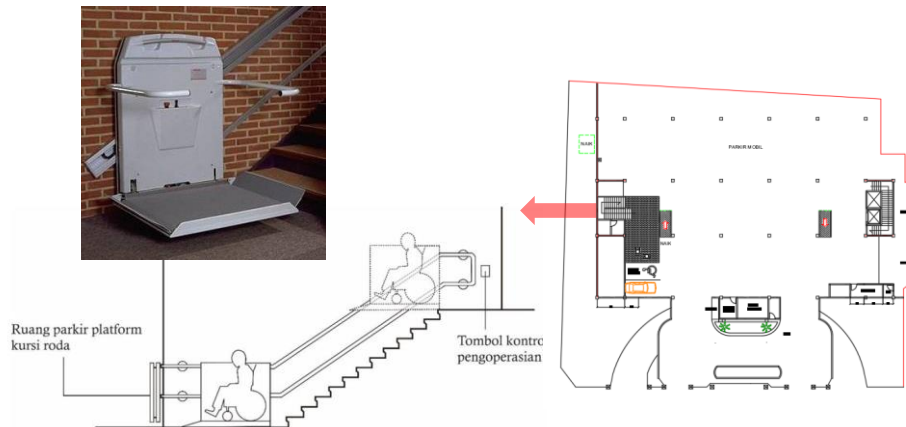


Figure 3 Concept for fixed of vertical accesibility

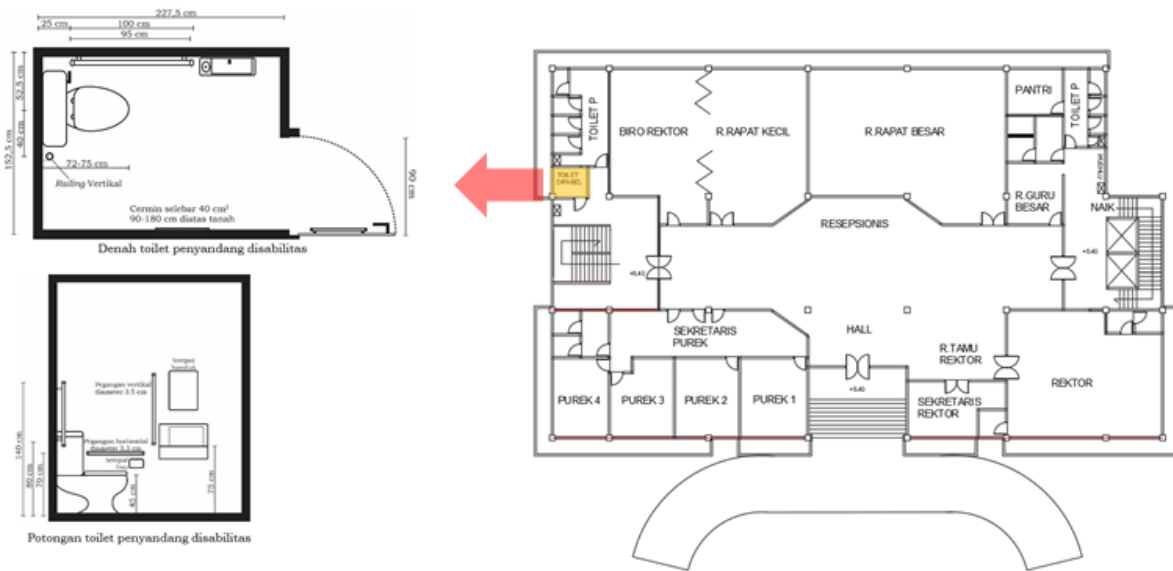


Figure 4 Concept to prepare toilets for disabilities people

3.2. Provided of Toilets

Toilets are a sanitation facility in the form of a specially designed room and equipped with a bathroom, water supply, and other equipment for building users and building visitors as a place for urination and defecation and or sanitation needs. This facility must meet the requirements for each building.

GP building can add a toilet on the second floor beside of western stairs. This facility must prepare according to universal standards for wheelchair users (see **Error! Reference source not found.**). This toilets must accord with:

1. The space in the bathroom with a disability of at least has a size of 152.5 cm x 227.5 cm by considering the wheelchair user space.
2. The area of the room in the toilet for children has a size of at least 75 cm x 100 cm.
3. The net width of the toilet door is at least 70 cm, except for the toilet with a disability of 90 cm.
4. Accessible toilet door opens to the outside of the toilet and has a free space of at least 152,5 cm between the door and the outer surface of the bathroom;
5. If an open toilet door opens in the direction of the bathroom, it must provide sufficient free space for the wheelchair user to maneuver around 1800 and open /close the door.
6. The toilet door for persons with disabilities needs to be equipped with a kick plate at the bottom of the door for wheelchair users and people with visual impairments.
7. Equipped door with hinges to close by selves.

3.3. Space Parking for Wheelchair Parking

Space parking is a place in the building that is determined for the termination of vehicles within a specified period in the form of a parking lot, parking in a building, and a parking building. This parking must spare and service for people with wheelchairs. In GP, construction does not provide unique facilities for persons with disabilities, and it will make it difficult for visitors to have the facilities that bring the car to go down or ride comfortably.

The placed of disabilities parking depended on choices of accessibilities access (see).

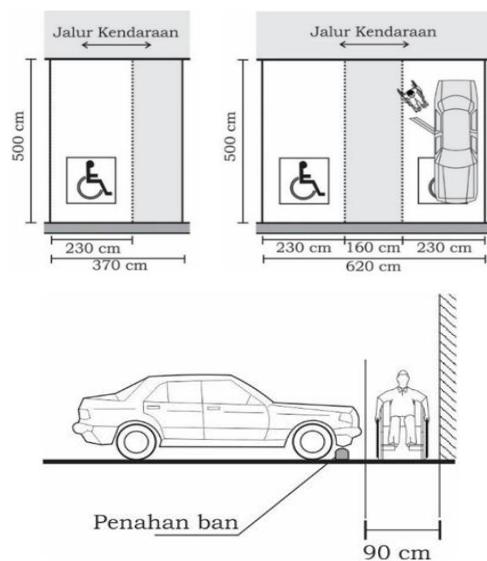
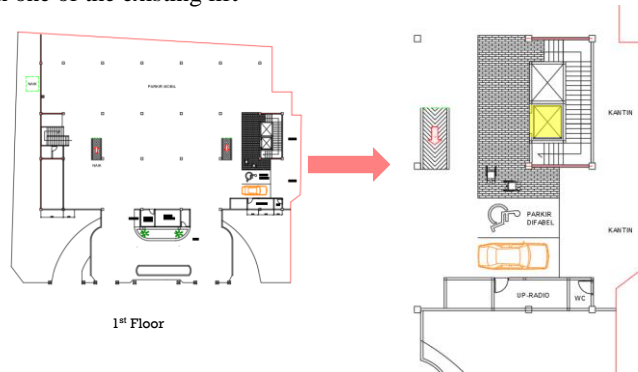
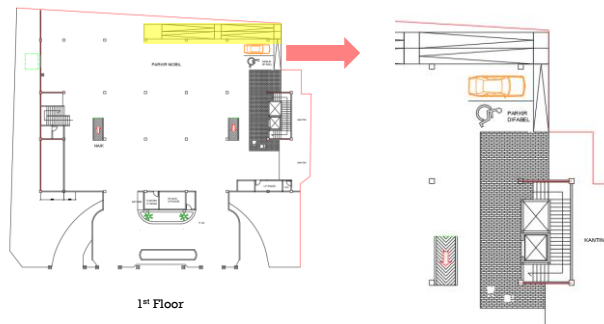


Figure 5 Parking standard for wheelchairs

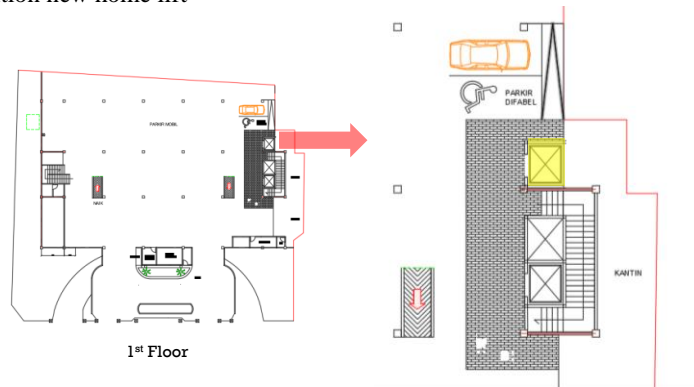
1. Parkir space with change in one of the existing lift



2. Parking space with the provision of RAM



3. Parking space with addition new home lift



4. Parking space with add Stairlift

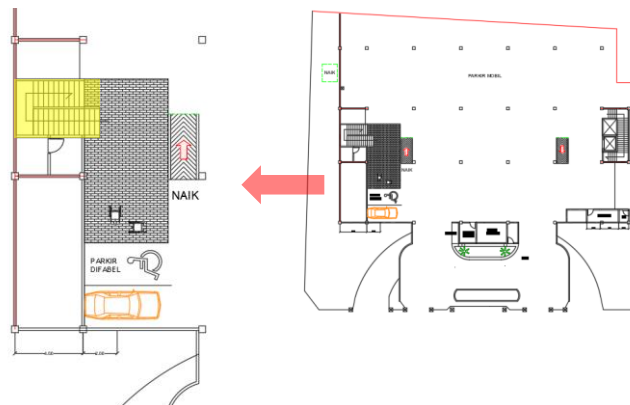


Figure 6 Concept to prepare car parking for wheelchairs

4. CONCLUSION

From the results of the research that has done, there are several conclusions and recommended that can describe as follows:

- Vertical access needs for wheelchair users from the ground floor to floors 1 or 2 that have been served by the elevator. We suggested using stairlift on the western stairs according to with deconstruction approach.
- Not yet available toilets for wheelchair users, we supposed to build new bathrooms individual for disabled people on second floor beside the western stairs.
- Provision of parking space for wheelchair users on the ground floor with dimension and location according to vertical access

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