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# Satisfaction Level of the Blind on Urban Transportation System in Greater Jakarta

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**Abstract:** The availability of transportation infrastructure and facilities accessible for people with disability is required to provide convenience for people with disability in conducting daily activities independently. Data collection was conducted on a Focus Group Discussion (FGD) with of 13 blind people as subjects of research. They are members of Indonesian Visually Impaired Union (PERTUNI). Other sources of data were field observation and secondary data of design and service standards. Transportation related to blind people on this research consisted of Urban Railway System and Transjakarta Bus Rapid Transit System. Observation, FGD, and the study of design and service standards of the railway station include type of information service, ticket counter, tap card equipment, priority seats, and toilets. Observation, FGD, and the study of design and service standards of Transjakarta line includes pedestrian facilities, stairs, guiding block, type of service information, officers, convenience of Transjakarta boarding/ alighting, and TJ card. In general blind people in Greater Jakarta have not been provided with easiness and accessible urban public transport mode since universal design principle have not been totally adopted, e.g. in terms of gap between train and station platform, auditory information in the bus, gender identification of toilets, condition of guiding blocks etc

**Keywords:** Satisfaction level, blind, urban transportation system, Greater Jakarta

## 1. Introduction

The availability of transportation infrastructure and facilities accessible for persons with disability is required to provide convenience for people with disability in conducting daily activities independently. Therefore, they have the same opportunity to obtain education, employment and other opportunities as citizens as stated in the Chapter 6 of Law No. 43 Year 1998 on Effort on Welfare Improvement for People with Disability [1] Chapter 8 of the same Law stated that every public facilities and infrastructures should be accessible for people with disability.

According to the Regulation of Minister of Public Work No. 30 Year 2006 on Technical Guidance of Facilities and Accessibility on Building and Environment [2], accessibility includes safety, easiness, functionality and self-reliance. The regulation includes building and environment components such as room basic measurement, pedestrian lane, guided lane, parking area, door, ramp, stair, lift, stairway lift, toilet, shower, wash basin, public phone, control equipment, furniture, sign and marking. One important principle of providing accessibility is universal design, i.e. designing facilities and infrastructures accessible for all genders, all ages and all people (both normal and the one with disability). Therefore, according to Center for Universal Design at North Carolina State University [3], universal design

follows certain principles such as equitable use, flexibility in use, simple & intuitive, perceptible information, tolerance for error, low physical effort and size & space for approach and use.

Blind people only requires additional element on existing facilities and infrastructure. To compensate their visual disability, they mainly use two other senses, i.e. hearing and tactile. For example, written information should be presented either in verbal notification or tactile writing such as Braille. Another tactile ability of the blind people is to use guiding block to get information regarding the walking direction etc. Very few references can be found regarding satisfaction level of people with disability on urban transportation system in Greater Jakarta. It was reported comprehensively by Australia Indonesia Partnership for Economic Governance (AIPEG) [4] but concentrated more on people using wheel chairs. This paper is intended to understand the satisfaction level of the blind on urban transportation system in Greater Jakarta gained from the FGD. The authors conducted some field observation to check the compliance of the transportation system to the standards.

## 2. Literature Review

The content of most of the regulations which related to the blind was very few. For example Chapter 4 of Regulation of Minister of Transportation No. 71 Year

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1999 on Accessibility for People with Disability and for Ill People on Transportation Facilities and Infrastructures [5] only mention regarding:

1. Entrance and exit of railway station should be flatter.
2. Toilet can be used with minimum assistance from others.
3. Platform should facilitate the blind for boarding/ alighting easiness.
4. There should be a person who assist the blind.
5. There should be information board regarding train schedule both in Braille and verbal notification.
6. There should be privilege for the blind to get the ticket

According to Chapter 6 Verse 2g of the same regulation public transport stop should be equiped with public transport routes list both in recorded voice or written in Braille. Verse 2h of the same Chapter stated that on pedestrian crossing managed by traffic light can be equiped with sound notification to differentiate green or red signal.

According to the Regulation of Minister of Public Work No. 30 Year 2006 on Technical Guidance of Facilities and Accessibility on Building and Environment [2], the minnum basic room dimension for the blind can be seen in Fig. 1 and Fig. 2. Normally the blind will feel more comfortable to move in limited space with reachable borders with hand (Fig. 1) or with stick (Fig. 2).

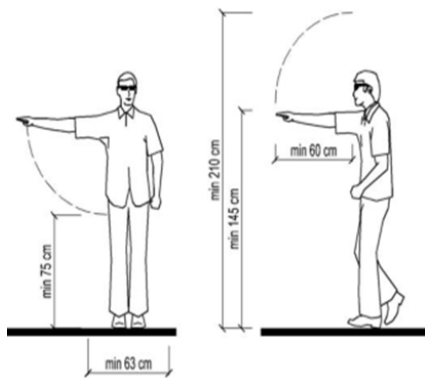


Fig. 1. Forward and lateral arm outreach. Source: Regulation of Minister of Public Work No. 30 Year 2006 on Technical Guidance of Facilities and Accessibility on Building and Environment [2].

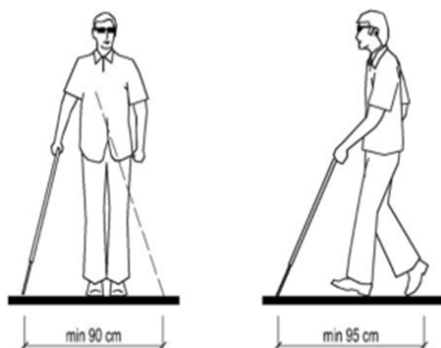


Fig. 2 Forward and lateral stick outreach. Source: Regulation of Minister of Public Work No. 30 Year 2006 on Technical Guidance of Facilities and Accessibility on Building and Environment [2].

The same regulation stated that pedestrian lane for people with disability who walks or using wheel chair independently should be designed according the need to move safely, easily, conveniently and barrier-free. The design requirement includes:

1. *Surface.* Lane surface should be stable, strong, weather resistant, smooth but not slippery texture. Any joint or mound should be avoided or limited to 1.25 cm of height. If covered by carpet, the edge part should be constructed permanently.
2. *Slope.* Maximum ratio between lane height and length is 1:8. Every 900cm there should be a flat part of 120cm.
3. *Rest Area.* To provide bench to rest for people with disability on pedestrian lane sides.
4. *Lighting.* Ranged between 50-150 lux depending on usage intensity, hazard level and security needs.
5. *Maintenance.* To minimize the likelihood of accident.
6. *Drainage.* Constructed perpendicular against lane direction with maximum depth of 1.5cm. Should be easy to clean and far from the edge of ramp.
7. *Measurement.* Minimum width of pedestrian lane is 120cm for one-way lane and 160cm for two-ways lane. Pedestrian lane should be free from trees, poles of signs, drainage hole/sewerage and other hindering objects.
8. *Safety Edge.* It is important to stop wheels of wheelchair and stick of the blind travelling to dangerous area. Safety Edge minimum height is 10cm, minimum width of 15cm along pedestrian lane..

The same regulation stated that a lane that guide people with disability to walk using the texture of guiding blocks and warning blocks is called guiding lane. Guiding lane is a part of pedestrian lane. For blind people guiding lane is used to understand the condition of the surrounding. The requirements for guiding lane are:

1. The lines of guiding blocks (Figure 3) show direction of travel.
2. The dots of warning blocks (Figure 3) warn any surrounding situation change.
3. Areas requiring installation of guiding blocks are area in front of vehicular traffic, in front of entrance/ exit from/ to the stairs or crossing facilities with different floor height, in entrance/ exit of public transport terminal or passenger area, at pedestrian lanes connecting the roads and buildings and at direction guide from public facilities to nearest public transport station/ terminal.
4. Installation of guiding/ warning blocks at pedestrian lane should consider the texture of existing tiles to avoid confusion in differentiating them with guiding/ warning blocks texture.
5. The colour of guiding blocks are yellow or orange. These colour can be seen by people with low vision.

Fig. 4 shows the arrangement of guiding blocks and warning blocks in intersections, Fig. 5 shows the arrangement of guiding blocks and warning blocks in a stairway. Other elements of building that should be specially designed and installed for the blind i.e. the doors, the ramps, the stairways, the elevator and the toilets, the public phones, etc. In general, for the blind, we should optimize the hearing sense and the tactile sense of the blind and provide any facilities and infrastructures that fulfil the principles of universal design.

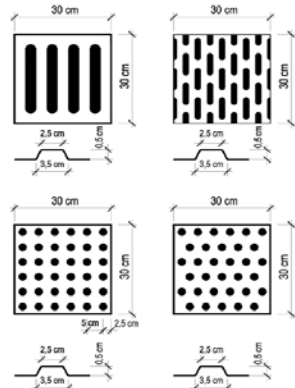


Fig. 3. Guiding blocks (lines) and warning blocks (dots)  
 Source: Regulation of Minister of Public Work No. 30 Year 2006 on Technical Guidance of Facilities and Accessibility on Building and Environment [2].

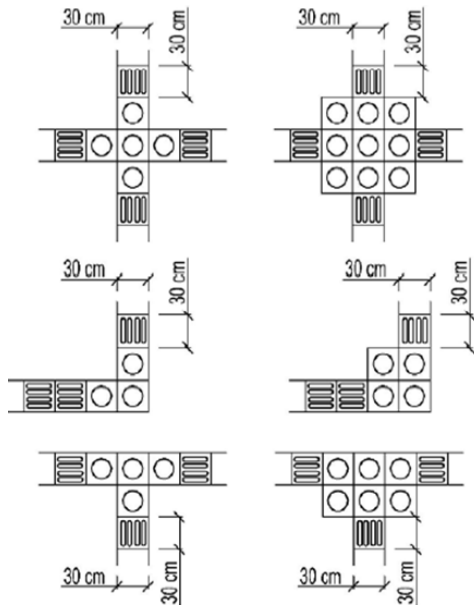


Fig. 4. Guiding and warning blocks in intersections  
 Source: Regulation of Minister of Public Work No. 30 Year 2006 on Technical Guidance of Facilities and Accessibility on Building and Environment [2]

### 3. Data Collection and Analysis Method

There were three data collection activities conducted, i.e. secondary data collection of standards, focus group discussion with the blind and field observation by the authors. Some of the standards have been presented in Chapter 2. Other important standards were Regulation of Minister of Transportation No. 9 Year 2011 on Minimum Service Standard for Railway Passenger Transportation [6] and Regulation of Governor of Jakarta Special Capital Province No. 33 Year 2017 on Minimum Service for Transjakarta Public Transport [7].

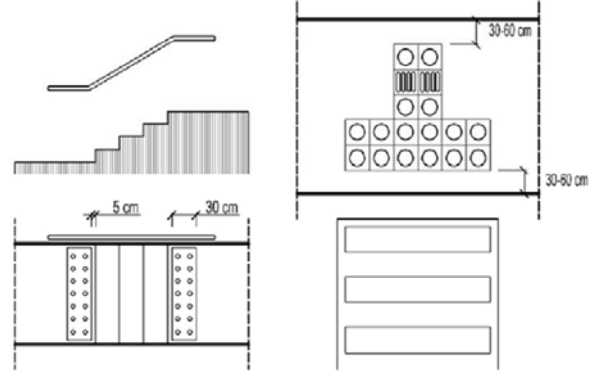


Fig. 5. Guiding and warning blocks in stairway.  
 Source: Regulation of Minister of Public Work No. 30 Year 2006 on Technical Guidance of Facilities and Accessibility on Building and Environment [2]

Focus group discussion (FGD) was conducted on 13 members of PERTUNI. They were consist of 11 males 2 females aged between 38 years old to 53 years old who used urban public transport for their daily activities. Nine of them were totally blind whilst four of them were low vision. Only three of the totally blind were blind since infant and their responses were not significantly different with the other participants of the FGD. There were two groups of questions in the FGD. The first one was the general questions (name, age, gender, degree/ history of visual impairment, home address, daily destinations, main mode of daily transport, frequently used railway line, frequently used Transjakarta BRT (Bus Rapid Transit) line, frequently used terminal/ stations/ bus stops, etc. The second one was 19 questions regarding three groups of questions, i.e. mainly on their satisfaction level on urban railway services (8 items), Transjakarta BRT services (9 items) and road traffic (2 items). Those 19 questions can be listed in brief as follow:

1. Home to railway station mode of transport.
2. Method to find ticket counter and automatic ticket scanner.
3. Easiness to get priority seat in the train.
4. Availability on in-train auditory travel information.
5. Accessibility provided by the guiding blocks in railway station.
6. Accessibility to toilet in the railway station (including to identify male/ female toilets).
7. Required additional facilities in railway station.
8. Required improvement on existing railway station facilities.

9. Home to Transjakarta terminal/ bus stop mode of transport.
10. Accessibility of Transjakarta bus stop stairways.
11. Courtesy of Transjakarta Crew services.
12. Gap between bus platform and terminal/ bus stop platform.
13. Availability on in-bus auditory travel information.
14. Accessibility provided by the guiding blocks in the terminal/ bus stop.
15. Easiness to get TJ Card to travel free within Transjakarta network.
16. Required additional facilities in Transjakarta terminal/ bus stop.
17. Required improvement on existing Transjakarta terminal/ bus stop facilities.
18. Method to cross the road if Pelican push button signal was not available.
19. Required improvement on sidewalks quality.

During the FGD, these prepared basic questions were developed into more comprehensive discussions on the perspective of the blind regarding Greater Jakarta urban transportation system. Fig. 6 shows the room setting of the FGD



Fig. 6 Room setting of the Focus Group Discussion

From the FGD the authors got the list of frequently used:

1. Railway lines
2. Transjakarta BRT lines
3. Stations/ terminas/ bus stops

Based on this list, the authors made schedule of observation on those facilities and infrastructures to evaluate them and compare with the results of FGD. Last comparison was made to the standards, i.e. whether the existing Greater Jakarta urban transportation system had already met the standards.

Field observation on railway stations was conducted in Manggarai, Bogor, Depok Baru, Tangerang and Kranji. Field observation on railway stations was consisted of:

1. Visual and audio information regarding train name and number, schedule of train arrival and departure, train ticket price, origin/ intermediate/ destination stations, class of train ticket and railway network.
2. Ticket counter with maximum length of queue per counter 4 persons at once.
3. Availability of toilets.
4. Facilities to ease train boarding and alighting.

5. Facilities for people with disability (for stations consisted of more than 1 level, elevator is compulsory).

Field observation on Transjakarta BRT bus terminal/ stops was conducted in Grogol 1, Masjid Agung, Blok M, Harmoni Central and Cempaka Timur. Field observation of BRT system consisted of:

1. Field observation on Transjakarta bus stop was consisted of: Bus stop and bus stop supporting facilities (accessibility of boarding and alighting the bus, practically defined as maximum difference between bus platform and bus stop platform not more than 10cm.
2. Service information (bus stop name, location map, queueing line, BRT system map).
3. Information of bus arrival and delay (electronic display information of bus arrival/ bus delay and accuracy of bus arrival and departure)
4. Ticketing system (practical ticket purchasing system).

The views gathered from the participants of the FGD were then summarized and presented in Section Three (3). There were no significant difference between the views of the respondents and therefore no statistical tabulations and analyses were required. The compliance levels of the standards gathered on the field observations were then summarized and presented in Section Four.

#### 4. Results of the FGD

Regarding mode of transport from home to railway station/ bus terminal/ bus stop, there were some variations. For those who live nearby they walked either independently with the help of the stick or accompanied by member of the household. For those who live far away, they used either *ojek* (motorcycle taxi) or other public transports such as *angkot* (abbreviation of *angkutan kota* or city transport, a minibus size public transport with 8-10 passengers), public buses, or other Transjakarta BRT lines. Transjakarta also offer a service for people with special needs called Transjakarta Care.

To get a railway ticket, station crew usually provide help. However low vision people might not be taken care very well because the crew can not identify their needs.

Priority seats were usually available during off peak hour in the train as it was notified to general passengers. During peak hours, it was difficult to reach the priority seats.

In train and railway station, the auditory travel information was available. In the BRT it was only available on bus but not in the bus stop.

Only in certain railway station, guiding blocks were installed and among those with guiding blocks, they were not perfectly installed. In general there was no guiding blocks in Transjarta bus stops.

In the railway station, it was impossible to differentiate between males and female toilets independently. The assistance of railway crew was required.

In railway station some improvements were proposed. Among others were additional capacity of benches, allocation of priority lane for people with disability to buy daily ticket, reduction of gap between train platform and railway platform, distance reduction between entrance and platform and accessibility of some stairways.

Stairways in Transjakarta need some improvements. Among others were the steepness of some of the stairs, condition of surface and the unevenness of width of the stairs. Number of Transjakarta crews were too limited (it was difficult to get information from them) and they were not knowledgeable regarding the needs of the blind (e.g. how to assist the blind to board and to alight the bus). They complained that the time required to get TJ Card was too long.

The distance to reach Transjakarta bus stop was too long. If ramp is not applicable, elevator should be provided. In designing the Transjakarta facilities, it is required to discuss with people with disability in order to fulfil universal design.

Pelican crossings with push button facilitated with auditory information for the blind were very few. Not all the sidewalks installed with guiding and warning blocks. Some of the installed one were not following the design guidelines or not well maintained (Fig. 7).



Fig 7. Poorly maintained guiding blocks in the side walks

## 5. Results of field observation

All five observed railway stations fulfilled points number 1 to 4 (see section 4). Regarding point number 5 (see section 5), only Manggarai and Depok Baru stations consisted of 2 levels with no elevator. In three other stations the need of elevator was not justified. All five observed bus stops fulfilled points number 1 to 4 (see section 4) except Masjid Agung bus stop in which one of facilities within point number 3, i.e. electronic display information of bus arrival/ bus delay was not available.

## 6. Conclusions and recommendations

From this study, the following conclusions can be made:

1. In train and railway station, the auditory travel information was available, whilst in the BRT it was only available on bus but not in the bus stop.

Therefore the blind should ask for assistance from Transjakarta crew.

2. The gap between train platform and railway platform should be reduced. Similar things can be found between bus platform and bus stop platform.
3. In the railway station, it was impossible to differentiate between males and female toilets without assistance of railway crew.
4. Priority seats were usually available during off peak hour in the train as it was notified to general passengers. During peak hours, it was difficult to reach the priority seats.
5. Not all the sidewalks installed with guiding and warning blocks. Some of the installed one were not following the design guidelines or not well maintained. Some sidewalks covered by illegal vendors and illegal parkings.
6. Pelican crossings with push button facilitated with auditory information for the blind were very few

From this study, the followings are recommended:

1. The installation of guiding blocks in the railway station should be started from the entrance, directing to ticket counters, following to direct the blind to the gate (with clear sound notification for successfully opened gate) and finally directing the blind to station platform.
2. There should be priority queuing for people with disability in the ticket counter.
3. The railway station and the Transjakarta crews should be trained to understand the need of blind people to be able to travel with the train and the BRT.
4. Transjakarta stairways should be flatter and the surface of the stairs should be flat and well maintained.

## References

- [1] Law No. 43 Year 1998 on Effort on Welfare Improvement for People with Disability.
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