

# ACCESSIBILITY OF DISABLED FACILITIES AT FI-SABILILLAH MOSQUE, CYBERJAYA

Nor Izana Mohd Shobri<sup>1</sup>, Intan Bayani Zakaria<sup>2</sup>, Norazlin Mat Salleh<sup>3</sup>

<sup>1</sup>Landscape Architecture Department, Faculty of Architecture, Planning and Surveying,  
UiTM Perak Branch, Malaysia

<sup>2</sup>Building Surveying Department, Faculty of Architecture, Planning and Surveying, UiTM  
Perak Branch, Malaysia

<sup>3</sup>Quantity Surveying Department, Faculty of Architecture, Planning and Surveying, UiTM  
Perak Branch, Malaysia

Email: izana980@perak.uitm.edu.my

Received: 18 April 2018

Accepted: 29 June 2018

Published: 30 September 2018

## ABSTRACT

*All mosques need to be equipped with facilities for people with disabilities (PWD) in fulfilling with the requirements of the Malaysian Standard Code of Practice (MS) on Access of Disabled Persons. However, most mosques in Malaysia do not fulfil these requirements in terms of providing facilities for the PWDs. This adversely affects the PWDs to engage in the social and economic mainstream. The research aim is to classify the conformity of disabled facilities provided at Fi-Sabilillah Mosque, Cyberjaya in Selangor. The two research objectives were established (1) to identify the spectrum of disabled facilities provided at the Fi-Sabilillah Mosque, Cyberjaya in Selangor and (2) to determine the compliance of the disabled facilities as outlined in the MS. Purely qualitative methods were adopted in terms of visual study, audit survey and a semi-structured interview with the architect. A condition audit checklist was established using document analysis method on three main documents. The findings indicate 58% of the facilities are available and follow the MS, 13 % items were available but not comply with the standard measurement and 29% of the disabled facilities are not available within the mosque. Therefore, it*

*can be stated that there is poor design, weak enforcement and lack of awareness among the stakeholder, local authority and the designer of the mosque regarding the disabled facilities. Therefore, enforcement is a priority to ensure the needs and right of the disabled user are considered in designing a mosque.*

© 2018MySE, FSPU, UiTM Perak, All rights reserved

**Keywords:** *Green, Mosque, Sustainability, Disability*

## **1.0 INTRODUCTION**

Well-designed buildings will meet the needs and functions of a building. Divided spaces need to meet the needs of an activity and thus provide a comfort to the space user. The building involving the use of civilians such as assembly, education, entertainment and worship needs special design as it involves users of different ages and capabilities. Rahim (2014) stated that mosque is not just “places of prayers”, but a place to conduct any activity and programme such as religious talk, seminar, wedding, and solemnization. Besides that, certain mosques offer complementary functions such as nursery/daycare, religious school/madrasah, and bazaar for business purpose and also for accommodation purpose. In modern terminology, mosque serves as a community center. Serving as a community center, a design of a mosque must also cater a design for a place of socialization, a place of da’wah, a place for meetings and deliberation and as a place of education. As a community center, mosques will be visited by different levels of society of different ages and capabilities.

In Malaysia, the mosques are managed by the Department of Islamic Development Malaysia (JAKIM). JAKIM was established with the objective to ensure that Islamic teachings are spread to the entire community, to develop a credible leadership and produce a well-trained, competent, dedicated and wise management team and develop the management system based on Islamic values and ethics. There are 6,311 mosques registered with JAKIM.

According to the Malaysian Department of Social Welfare, year by year there was an increase of numbers of people with disabilities. In 2015, it was 365,677 and increased to 409,269 in 2016. This means that the requirements of PWDs need to be considered especially at a public place like a mosque. Therefore, during the initial design stage, it is compulsory to take into account all user category requirements including the accessibility and facilities for people with disabilities (PWD). As mentioned by Rahim, et. al (2015) having said masjid is for all, able and disabled person, accessibility is a crucial matter that must not be condoned in its design and planning. In accordance with Hussein & Yaacob (2012), removing barriers and delivering access are key needs for disabled persons in Malaysia to

achieve social fairness in all areas including access to public facilities, amenities, services and buildings, public transport facilities, education, employment, information, communication and technology, cultural life, recreation, leisure and sport.

People who have disabilities frequently experience the problem in lifestyle and also are restricted to their own activities and societal involvement. People with disabilities usually need special aid in a variety of parts to help them in adapting into an ordinary lifestyle, for example in education, housing, work, and social benefits (Teng, et al 2013). Regarding this problem, this research was meant to classify the conformity of disabled facilities provided at the Fi-Sabilillah Mosque, Cyberjaya in Selangor that received a Platinum rating in the year 2016. In line with this aim, two objectives were established to operationalize the research which is to identify the spectrum of disabled facilities provided at the mosque and to determine the compliance of the disabled facilities provided as outlined in the MS. Therefore, this study seeks to inform the local authority and designers to improve the design and enforce the user-friendly disable design

## **2.0 LITERATURE REVIEW**

### **Persons with disabilities (PWD)**

According to International Classification of Functioning, Disability, and Health (ICF), World Health Organization (WHO) (2010) defines disability as “the outcome or result of a complex relationship between an individual’s health condition and personal factors, and the external factors that represent the circumstances in which the individual lives”. Disability might be characterized as being an intricate phenomenon that involves both biomedical qualities of somebody’s body or mind and the effects of the physical, social and environmental context of an individual existence. In Malaysia, as indicated in Law of Malaysia Persons with Disabilities Act 2008 (Act 685), the person with disabilities is defined as “those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective

participation in society”.

The Persons with Disabilities Act 2008 (Act 685) (PWDA) pointed out that PWDs should have the equal rights to access and use all facilities and services like a normal person. The rights of the PWDs in the current development cannot be overlooked (Jayasooria, *et al* (1997); Kennedy and Hesla (2008). By referring to Malaysian Standard (MS) under Uniform Building (Amendment) By-Laws (UBBL) 1991, it is compulsory for all public buildings to provide access and facilities for PWDs. According to Kamaruddin (2007) and Hikmah (2012), the implementation of these codes of practice has always been highlighted. Soltani *et al* (2012) contrarily reported that the equal accessibility and facilities for this group are still lacking. PWDs are also meant to use public amenities such as mosque, public transportation, the shopping mall in their daily routine.

### Categories of the person with disabilities

There are many different types of disabilities. According to Guideline and Space Standards for Barrier Free Built Environment for Disabled and Elderly Persons (1998), the target group is composed of four major categories as described in Table 1.

**Table 1: Group of disabled person**

<b>Categories</b>	<b>Description</b>
Non ambulatory	Impairments that, regardless of cause or manifestation, for all practical purposes, confine individuals to wheel & chairs.
Semi-ambulatory	Impairments that cause individuals to walk with difficulty or insecurity. Individual using braces or crutches, amputees, arthritics, spastics & those with pulmonary & cardiac ills may be semi-ambulatory.
Sight	Total blindness or impairments affecting sight to the extent that the individual functioning in public areas is insecure or exposed to danger.

Hearing	Deafness or hearing handicaps that might make an individual insecure in public areas because he is unable to communicate or hear warning signals.
---------	---

According to Harrison (2007) in Code on Accessibility in the Built Environment, a person with disabilities may be categorized to wheelchair-bound, sensory disabled, ambulant disabled, and the temporarily disabled group as described in Table 2.

**Table 2. Categories of Disabled People; Source: Code on Accessibility in the Built Environment. Harrison, (2007)**

Categories	Description
Wheelchair-bound	People who are unable to walk, either with or without assistance and who depend on a wheelchair for mobility.
Sensory Disabled	Those who experience, partially or totally, impaired sight or hearing.
Ambulant Disabled	People who are able, either with or without personal assistance, to walk provided that convenient facilities such as handrails are available.
Temporary Disabled	People who are sick or victims of an accident. Pregnant women are also included in this category.

**Relevant legislation, statutory and guidelines**

Various acts and legislation have been initiated for PWDs rights in developed (Roulstone and Prideaux, 2009), and also for developing countries (Parker and K.J, 2001). In Malaysia, the establishment of act and legislation are also accompanying with MS Code of practice and guidelines as referring to Table 3.

**Table 3: Malaysian Act, Standard, and guideline for Disabled Persons**

Malaysian Act	Descriptions
The Persons with Disabilities Act 2008 (Act 685)	The Persons with Disabilities Act 2008, take place in December 2007 where it is the first representing law regarding PWDs charity and welfare in Malaysia. Provision of persons with disabilities must be given the right to access and use of public facilities, buildings, amenities and services provided to the public on an equal basis with people without disabilities is under Part III of Act 685.
Uniform Building (Amendment) By-Laws (UBBL) 1991	This requirement is stated in the UBBL which is under the Street, Drainage and Building Act 1974. Under the amendment of section 34A in UBBL, it is mandatory for buildings to provide access to enable the PWDs to get into, out of and within the premises. This section is subject to new buildings as well as existing buildings. The period of improvement in the existing building is within 3 years.
Malaysian Standard	Descriptions
Malaysian Standard 1184:2002, Code of Practice on Access for Disabled Persons to Public Buildings (First Revision)	This standard supersedes MS 1184:1991. This Malaysia Standard specifies the necessary requirements for elements of buildings and related facilities so as to permit access by Person with Disabilities (PWD). This requirement applies to all public buildings that may be used by PWD.
Malaysian Standard 1183:1990 Code of Practice for Means of Escape for Disabled Persons	Code of Practice for Fire Precautions in the Design and Construction of Buildings (MS 1183) issued by SIRIM. It offers exceptional standards of planning, action, and requirement to be complied with in providing fire precautions in designing public buildings in order to ensure the safety of disabled persons, especially during the fire.
Malaysian Standard 1331:2003, Code of Practice for Access for Disabled Persons Outside Buildings (First Revision)	This code revised the provisions on designing appropriate facilities at external buildings for disabled people to ensure they can assess and use it as meant for. After the date the Code of Practice is published in the State Gazette, all submission of building plans from each state must meet the requirements. This standard supersedes MS 1331:1993.

Malaysian Standard MS 1184:2014 Universal design and accessibility in the built environment - Code of practice (Second revision)	This Malaysian Standard replaces MS 1184:2002 and MS 1331:2003. This MS provides a spectrum of requirements and guidance for elements of construction, assemblies, components, and fittings which the standards relate to the constructional aspects of access to buildings, in term of standard circulation and in case of emergency evacuation.
Other Guidelines	Description
Universal design and barrier-free environment	The existence of barrier-free guidelines and technical standards mainly focus on wheelchair users only (JICA 2009).

Furthermore, referring to design guidelines for Green Building Index (GBI) in Malaysia, there are no requirement criteria for universal design. It would be advantageous for the building itself if the criteria of social design are implemented parallel with the environmental design.

### Universal design in public building

Universal design is referring to the term of ‘design for all’ that includes the disability people with temporary physical injury or illness, pregnant woman, children and elderly (Australian Government, 2013). Universal design also refers to the design with a barrier-free environment that enables people with disabilities to move safely and freely, while at the same time to use the facilities independently within the built environment (Ministry of Urban Affairs and Employment India, 1998).

In order to create the barrier-free environment, most of the countries provide their own guideline for designing the public space or building that would be applicable and facilitate for all users. The public building includes office buildings, commercial buildings, residential, recreational, assembly halls, hospitals and health facilities, public transportation area, libraries, sports buildings, public transit buildings, religious buildings, government administrative buildings, educational buildings, religious buildings, banks, shopping complex. (Mohd Isa, *et al* 2016; Bashiti and Rahim, 2016; Bodaghi and Zainab, 2013; Ministry of Urban Affairs and Employment India, 1998).



For the extension, several studies revealed that disabled people express their frustration with public building design. Previous research findings found the facilities in a few public buildings are in a poor state, provide minimum access of equipment, existing facilities are not designed and in compliance with the required design, and the absence of space for a disabled person. This scenario was based on evidence of a study at a university library, shopping complex and also Muslim mosque (Kportufe, 2015; Soyngbe, *et al* 1998; Bodaghi, *et al* 2013).

Mosques refer to the place for ritual prostration and is also a religious activity centre where seminars, teaching and learning of Al-Quran, Hadith and Sunnah are held for Muslims. (Mansoor and N. F. A. 2016; Abdul and R.A, 2014) the universal design in public building is essential not only for disabled people but also for the elderly, children and pregnant women. However, a considerable amount of literature has been published on universal design in public masjid. Studies by Asiah Abdul Rahim (2014) and Utaberta, *et al* (2017) revealed the same result as most of the person with the disability in Malaysia express their frustration in masjid design. Furthermore, having a universal design is important because the masjid is the most visited place at any time by people (Asiah Abdul Rahim, 2014). Therefore, providing the accessibility for all Muslims either able-bodied or disabled is important for their comfort and safety to perform the prayer at Masjid (Asiah Abdul Rahim, 2014) especially in the most visited mosque.

Even so previous studies mostly reported on the general public buildings, there is still a lack of studies on awarded buildings such as Green Building Index (GBI). Therefore, this study evaluated the GBI building by limitation to the masjid as Muslims are the majority in Malaysia according to Utaberta, *et al* (2018).

### **3.0 METHODOLOGY**

In general, this study commenced with three main steps which included audit checklist, observation study, and a semi-structured interview. This study required two days to complete the data collection. The study commences with observation and checklist auditing for the first half of the

day. Next, the semi-structured group interview was done after the lunch hour on the first day. The interview session was attended by the architects, project manager and director in a semi-formal meeting at their consultant firm. The observation and checklist auditing was conducted the next day.

The direct observation on existing facilities referred to the developed audit checklist (refer to Table 4). The checklist was established using document analysis method on three main documents which include The Persons with Disabilities Act 2008 (Act 685), UBBL 1991 and MS. Moreover, the checklist was divided into four sections: key standards; key measurement; availability and remarks.

For key standards, the checklist complies with 10 division element of disabilities facilities which are PWD parking with 8 key measurement standard, walkway 3 key measurement standard, ramp and kerb 6 key measurement standard, doorway/main entrance 2 key measurement standard, guiding block/ tactile 4 key measurement standard, handrail 4 key measurement standard, staircase 5 key measurement standard, prayer area 4 key measurement standard, disable toilet 6 key measurement standard and signage 4 key measurement standard.

The key measurement of existing disable facilities was measured using the measuring tape provided by the faculty. This method was conducted to compare the existing measurement of facilities with the key measurement standard in the case study. Therefore, the result of this study will also discuss the compliance of the key measurement standard of the case study.

**Table 4: Observation Checklist at Masjid Fi-Sabilillah, Cyberjaya**

Key Standards	Key Measurement standard	Availability	Existing dimension evaluation
PWD Parking	Located at the main entrance		
	The route should be less than 50m		
	Parking space 5400mm x 3600mm		
	Transfer area beside the car(1200mm)		

	With adequate width (2400mm)		
	There is a vertical signage indicating the parking		
	Located on the flat surface		
	Enough space for the wheelchair user to manoeuvre		
Walkway	surface with non-slip		
	Clear width (min 1200mm-enable wheelchair)		
	Properly connected		
Ramp and kerb	Ramp consists of landing (min-width 1200mm) at the interval of not more than 600mm length of a ramp)		
	Space of non-slip		
	Enable wheelchair user (1200mm min-width)		
	Proper gradient (max 1:12-min 1:20)		
	Provided with handrails at the both sides		
	Upstand is provided at both sides(min height of 150mm)		
Doorway/ main entrance	Doorway width is adequate for the wheelchair user (min 900mm width)		
	The threshold is levelled with step ramp (if any)		
Guiding block/ Tactile	Installed at a proper location		
	Each block is installed adjacent to one another		
	Contrast in colour		
	Detectable underfoot		
Handrail	Fixed with proper height at ramp (min 840-900mm in height)		
	At ramp/stairway- extended 300mm in length at both sides		
	Contrast in colour		

	Surface with non-slip grip		
Staircase	Tread with the non-slip surface		
	Tread width (260-300mm)		
	Riser height (max 180mm)		
	Handrails provided at both sides		
	Landing and floor contrast in colour/brightness/texture to the stairs		
Prayer area	Ablution area accessible to the wheelchair user		
	Door width accessible to the wheelchair user		
	Step ramp at the door		
	Floor with the non-slip surface		
Disable toilet	Have adequate space for the wheelchair user (min 2000 x 3400mm and for ambulant disable min 1200 x 2400mm)		
	Handrail is provided		
	Water closet –pedestal (450mm460mm height)		
	Wash hand basin (800-830mm height)		
	Accessible tap with flexible hose		
	Adequate door width (1200mm for the wheelchair user or 900mm for ambulant disable)		
Signage	Clearly shows the direction/information		
	Signage		
	Signage is equipped with braille instruction		
	Signage is installed at the proper location; Parking area, Walkway, Main entrance/doorway, Toilet/ washroom		

An interview was done as “a meeting where a reporter obtains

information from a person, as a meeting with another person to achieve a specific goal, and more generally, as a conversation with a purpose” (Kvale, 2006). According to Edwards and Holland (2013), a semi-structured interview is where the researcher has a list of questions they want to cover in the interview, an interview guide. Therefore, the purpose of conducting the interview with the designer and project manager of Masjid Fi-Sabilillah was to gather information on the background of the project and to explore the reasons of not complying with the key standard measurement in their design. The interview was digitally voice recorded.

The result from the observation and audit checklist was then analysed by using descriptive analysis to determine types of facilities provided and the compliance of each of the facilities provided at the mosque as to compare with the Malaysian Standard measurement.

### Case study

Firstly, the case study referred to GBI certified masjid as shown in Table 5. From the list, Masjid Fi-Sabilillah, Cyberjaya was selected as a case study. This was due to the first masjid being awarded for GBI and holds the platinum GBI rating.

**Table 5: Provisional Certified Masjid**

GBI Masjid	GBI Rating	Validity Date
Masjid Cyberjaya	Platinum	18th December 2014 - 17th December 2017
Masjid Ara Damansara	Gold	10th April 2015 - 9th April 2018

Fi-Sabilillah Mosque is the first contemporary and sustainable (green) design mosque in Malaysia. The work on design began in early 2012 was inspired by the National Mosque and completed in 2015 to cater to 8,300 persons.

The accommodation consists of classrooms, zakat payment counter, dining area, funeral room and office. The green criteria in the mosques are the low E glass panel used to minimize the heat from the sun entering the

mosque. Natural cooling is also provided from an elevated water feature that can be seen from the inside of the main prayer hall. Moreover, the rooftop area will be covered with solar panels to generate renewable energy and to shade the area from the hot sun. It will be one of the first mosque in Malaysia to have a covered rooftop prayer area. Other than that, the water harvesting system has been integrated for comprehensive landscape irrigation system and for grey water usage (ATSA Architect Sdn Bhd, 2016). Ergo, in the excitement of achieving a complete mission of sustainable building, facilities for PWD were unintentionally ignored.

### Limitation of the research

In the beginning, it is quite challenging to get the reliable data for this study. Due to time and cost constraints, the data was collected by the researcher. Meanwhile, the observations took place in the morning, therefore the users were mostly ordinary able-bodied people who used the masjid. On the contrary, using the real disabled person as stated by (Bashiti & Rahim, 2016) would have made the study more reliable. This study only covers 10 key standards for disabilities facilities as listed in the audit checklist. Therefore, the remaining facilities were not covered in this study.

## 4.0 RESULTS AND DISCUSSIONS

The results on existing disable facilities provided at Fi-Sabilillah Mosque, Cyberjaya are in Table 6. The findings revealed that from 10 key standards, only 8 key standards were available, meanwhile, another 2 were unavailable which include signage and guiding block/tactile.

**Table 6: Available Disabled Facilities at Fi-Sabilillah Mosque, Cyberjaya**

Key Standards	Availability
PWD Parking	/
Walkway	/
Ramp and kerb	/
Doorway/ main entrance	/
Guiding block/ Tactile	x
Handrail	/

Staircase	/
Prayer area	/
Disable toilet	/
Signage	x

Notes : / Available X Not available

## PWD parking

Focusing on PWD parking, from 8 key measurement standards, only 5 elements were available (refer to Table 7). From these 5 key measurements, only 1 was not in standard dimension. From the observation at PWD parking (refer to Figure 1), the existing parking space is inadequate for the wheelchair user to manoeuvre off from the car. This situation also happened in the previous study by Mohd Isa *et al* (2016) at public transport station. Moreover, there is also no transfer area beside the car that will make it difficult to the user if two cars are parked closed to each other. Signage for parking is provided and in good condition. However, the connection from the parking area to the main entrance is inadequate as the existing route dimension is 3000 mm compared to the standards dimension which refers to less than 50 000 meters (refer Figure 2).

**Table 7: Analysis of Disabled Parking**

Key Measurement standard	Compliance	Remarks
Located at the main entrance	/	
The route should be less than 50m	/	Existing 3000 mm from the parking to the main entrance
Parking space 5400mm x 3600mm	x	Existing 2500 mm x 4800mm
Transfer area beside the car(1200mm)	x	Not provided
With adequate width (2400mm)	x	Not provided
There is a vertical signage indicating the parking	/	
Located on the flat surface	/	
Enough space for the wheelchair user to manoeuvre	x	Not provided

Notes : / Comply X Not Comply



Figure 1: Disable parking  
(Source: author)



Figure 2: Disable parking route to the main entrance  
(Source: author)

**Walkway**

The existing walkway is within the standard dimension and connected from the parking to the main entrance (refer to Table 8). However, the existing walkway was not designed with guiding block or tactile. Both situations will cause harm and make it difficult to the blind user.

**Table 8: Analysis of Walkway**

Key Measurement standard	Compliance	Remarks
surface with non-slip	x	Not provided
Clear width (min 1200mm-enable wheelchair)	/	Existing 1300 mm
Properly connected	/	

Notes : / Comply X Not Comply



### Ramp and kerb

Design of the ramp is within the standard (refer to Table 9 and Figure 3). However, it was observed that the handrails are provided only at one side of the ramp and the dimension of the handrail also did not meet the standard (refer to Table 10). A study by (Mohd Isa, *et al* 2016) also found handrails were only provided on one side at public transport station. The existing measurement was only 390 mm height compared to the standard which 890-900 mm. Thus, with this height, it might cause difficulties to the disable user to stand. The threshold was also levelled with the step ramp which makes it easy for the wheelchair user (refer to Figure 4) but was only found at one location within the masjid. This application was supposed to be provided for the whole area of the masjid for the easy movement of the wheelchair user.

**Table 9: Analysis of Ramp and Kerb**

Key Measurement standard	Compliance	Remarks
Ramp consists of landing (min-width 1200mm) at the interval of not more than 600mm length of the ramp) Space of non-slip	/	Existing landing length 1700 mm x width 1600 mm, interval length 4800 mm and next interval 3600 mm
Enable wheelchair user (1200mm min-width)	/	Existing 1600 mm
Proper gradient (max 1:12- min 1:20)	/	Existing 1: 13
Provided with handrails at the both sides	x	Existing only at one side
Upstand is provided at both sides(min height of 150mm)	/	

Notes : / Comply X Not Comply

**Table 10: Analysis of Handrails**

Key Measurement standard	Compliance	Remarks
Fixed with proper height at ramp (min 840-900mm in height)	/	Existing height 390 mm
At ramp/stairway- extended 300mm in length at both sides	x	Not provided
Contrast in colour	/	
Surface with non-slip grip	/	

Notes : / Comply X Not Comply



Figure 3: Ramp with one side handrail with existing height is 390 mm  
(Source: author)



Figure 4: Threshold is levelled with step ramp  
(Source: author)

**Doorway/ main entrance**

Doorway and the main entrance met the standard requirement (refer to Table 11). However, at the main entrance, the tiling was designed with the slip surface (refer to Figure 5). There was also no proper signage for the users at the main entrance which makes it difficult to find their way. The previous study by Asiah Abdul Rahim, *et al* (2015) also commented on no significant signage at Masjid Sultan Idris Shah, Ipoh. There is also a lack of threshold at the doorway and main entrance which made it difficult for the wheelchair user to move within the mosque.

**Table 11: Analysis of Doorway/Main Entrance**

Key Measurement standard	Compliance	Remarks
Doorway width is adequate for the wheelchair user (min 900mm width)	/	Existing width 2900 mm
The threshold is levelled with step ramp (if any)	/	Existing not apply for the whole door

Notes : / Comply X Not Comply



Figure 5: main entrance with slippery tiles  
(Source: author)

## Staircase

Staircase at the main entrance has no handrail (refer to Figure 6) and tactile signage. This situation is also present at Ikea Damansara according to Bashiti & Rahim, (2016). For handrails, the minimum height standard measurement is 840 mm to 900 mm compared to the existing height which is 390mm. The measurement is totally unsuitable to the disabled user and also to the normal user because it is dangerous, especially to children. This danger is present especially at the staircase uplift to the first level (refer to Figure 7). There is also poor design at the staircase (refer to Table 12) as the height of the handrails is below standard and can cause children to easily fall down from the second floor. The tiles chosen by the designer also had a slippery surface that can cause harm to the users.

**Table 12: Analysis of Staircase**

Key Measurement standard	Compliance	Remarks
Tread with the non-slip surface	/	
Tread width (260-300mm)	/	Existing 270 mm

Riser height (max 180mm)	/	Existing 150 mm
Handrails provided at both sides	/	However, at the main entrance's stairs, there is no handrail
Landing and floor contrast in colour/brightness/texture to the stairs	/	

Notes : / Comply X Not Comply



Figure 6: Stairs with no tack tiles and handrail  
(Source: author)

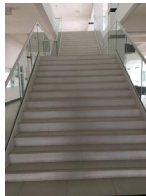


Figure 7: Stairs to the lecture hall with no tack tiles and handrail with existing height is 390 mm  
(Source: author)

### Prayer area

One innovation which is the ablution item was installed at the main entrance (refer to Figure 8). However, the item was not installed in the women's area. Moreover, the ablution room also did not provide the special space for the disabled user to take the ablution. The floor at the praying area was also not installed with the non-slip area. This can harm the blind user (refer to Table 13 and Figure 9). Furthermore, the floor was also slippery especially during the rain and during the maintenance service.

**Table 13: Analysis of Prayer area**

Key Measurement standard	Compliance	Remarks
Ablution area accessible to the wheelchair user	/	Only one item installed, ablution area not provided at women area
Door width accessible to the wheelchair user	x	Existing ablution area installed at the main entrance
Step ramp at the door	x	Not provided
Floor with the non-slip surface	x	Not provided

Notes : / Comply X Not Comply



Figure 8: Ablution installation  
(Source: author)



Figure 9: slippery floor tiles at the prayer hall  
(Source: author)

### Toilet for the disabled

At the toilet for the disabled, it was observed that the water tap is installed with the standard fix hose where it will be difficult for the wheelchair user (refer to Table 14 and Figure 10). There is also inadequate signage for direction to the toilet, which might affect not only for the disabled user but also to the typical visitor. Besides, during the day of the data collection, the door was locked and was only opened during the Friday prayer. This situation might cause difficulty to the disabled user who visits the masjid during the day.

**Table 14: Analysis of Disabled Toilet**

Key Measurement standard	Compliance	Remarks
Have adequate space for the wheelchair user (min 2000 x 3400mm and for ambulant disable min 1200 x 2400mm)	/	Existing 2000 mm x 2500 mm
Handrail is provided	/	
Water closet –pedestal (450mm460mm height)	/	Existing height 450 mm
Wash hand basin (800-830mm height)	/	Existing height 900 mm
Accessible tap with flexible hose	x	Tab not flexible
Adequate door width (1200mm for the wheelchair user or 900mm for ambulant disable)	/	Existing 900 mm

Notes : / Comply X Not Comply



Figure 10: Disable toilet  
(Source: author)

## Signage

It was clear that signage was not provided within this masjid (refer to Table 15). There is no way of finding the direction to the toilet (refer to Figure 11), parking area, walkway, washroom, disable toilet and main entrance. Moreover, the masjid was also not equipped with tack tile and braille instruction (refer Table 16). This condition will make it hard for the disabled person as well as the abled-bodied user. According to Mohd Isa (2012), these difficulties will especially affect the visually or hearing impaired user when they are traveling alone. Poor signage design also is

proven by the previous study (Mohd Isa *et al* 2016; Asiah Abdul Rahim, *et al* 2014; Bashiti and Rahim, 2016; Asiah Abdul Rahim *et al* 2015; Soyngbe *et al* 1998) in public building.

**Table 15: Analysis of Signage**

Key Measurement standard	Compliance	Remarks
Clearly shows the direction/ information	x	Not provided
Signage	x	Not provided
Signage is equipped with braille instruction	x	Not provided
Signage is installed at the proper location; Parking area, Walkway, Main entrance/doorway, Toilet/ washroom	x	Only available at disable parking

Notes : / Comply X Not Comply

**Table 16: Analysis of Tactile**

Key Measurement standard	Compliance	Remarks
Installed at the proper location	x	Not provided
Each block is installed adjacent to one another	x	Not provided
Contrast in colour	x	Not provided
Detectable underfoot	x	Not provided

Notes : / Comply X Not Comply

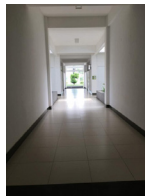


Figure 11: No signage to interlink space within the mosque  
(Source: author)

## **Interview session**

An interview was conducted with the architect and project manager about the facilities for the disabled and standard measurement for the masjid. From the interview, the architects explained the item that was unavailable in the mosque. It was mentioned that the item was suggested during the preliminary design. However, as requested by the client, the item was omitted due to the restriction budget for this development. Regarding the disabilities facilities item that was available but not comply with the Malaysian standard, the architect mentioned that the measurement is referred to as standard by the local authority itself. This can be concluded that the guideline established by the local authority might not refer to the MS.

## **5.0 CONCLUSION AND RECOMMENDATIONS**

To conclude, the findings from the study indicate that the disabled facilities in this study still lack user-friendly facilities for the disabled user. These situations might be due to the poor design, lack of awareness and less enforcement from the local authority and the designer. The most critical part is the signage and braille signage is not installed causing difficulty for all users. It is recommended that the design for the public not only focuses on normal people but also for the elderly, children, pregnant women, and parents with a baby stroller. Even though there are design guidelines specified for the PWDs but finally it is the client's decision to provide the requirements in the building based on their budget. It shows that the owner has the option of not providing the PWDs requirements in the building. In the future, the designer, policymakers, and local authorities need to enforce the policy regarding the design for PWD to serve the person with disability according to their rights and needs. Furthermore, it is beneficial if the PWD's criteria become one part of the GBI. Future research might be useful for developing PWD'S criteria in GBI assessment. This will make the user satisfied when the building design considers both the environment and social design. Next, future research also can be done to assess the understanding and knowledge of PWDs among the local authorities and designer.



## REFERENCES

- Asiah Abdul Rahim, N. A. A. S. (2014). Universal Design From Islamic Perspective: Malaysian Masjid. *Journal of Architecture, Planning and Construction Management*.
- Asiah Abdul Rahim, et al (2015). Masjid for All : Access Audit on Masjid Sultan Idris Shah , Ipoh , Masjid Negeri , Seremban and Masjid Tunku Mizan , Putrajaya. 4th International Conference on Universal Design in Built Environment 2015, (November 2015), 12.
- Asiah Abdul Rahim, et al (2014). Providing Accessibility For Persons With Disabilities ( Pwds ) In Malaysian Existing Mosques. UD 2014, Campus LTH at Lund University,Sweden, 15-18 June 2014.
- ATSA Architect Sdn Bhd (2016). Masjid Raja Haji Fi Sabilillah Cyberjaya, Selangor Darul Ehsan, ATSA Architect Sdn Bhd
- Bashiti, A., and Rahim, A. A. (2016). Physical Barriers Faced by People with Disabilities (PwDs) in Shopping Malls. *Procedia - Social and Behavioral Sciences*, 222, 414–422.
- Bodaghi, N. B., and Zainab, A. N. (2013). Accessibility and facilities for the disabled in public and university library buildings in Iran. *Information Development*, 29(3), 241–250.
- Central Public Work Department (1998). Guidelines and Space Standards for Barrier Free Built Environment for Disabled and Elderly Persons. Ministry of Urban Affairs and Employment, India.
- Department of Statistic Malaysia. (2016). United Nations Regional Meeting on Disability Measurement and Statistics in support of the 2030 Agenda for Sustainable Development and the 2020 World Population and Housing Census Programme Bangkok, Thailand 26-28 July 2016
- Edwards, R. and Holland, J. (2013). *What is qualitative interviewing?* Bloomsbury Publishing Plc, Great Britain.

Harrison, J. (2007). Code on Accessibility in the Built Environment. B.C. Authority

Hikmah, K., et al (2012). The implementation of the Malaysian Standard Code of Practice on Access for Disabled Persons by Local Authority. *Procedia-Social and Behavioral Sciences*, 50(2),442-451

Japan International Cooperation Agency (JICA), (2009). Barrier-Free Planning in Malaysia - Collection of Information and Verification

Jayasooria, D, Krishnan, B, and Ooi, G. (1997). Disabled people in a newly industrializing economy: Opportunities and challenges in Malaysia. *Disability and Society*, 12(3),455- 463

Kamaruddin, H. (2007). The implementation of the SIRIM Codes of Practice for Disabled Persons by DBKL. University Technology MARA Malaysia. Unpublished dissertation

Kennedy, M.K, and B. Hesla. (2008). We have human rights, Harvard Project on Disability, Harvard  
Kamaruddin, H. (2007). The implementation of the SIRIM Codes of Practice for Disabled Persons by DBKL. University Technology MARA Malaysia. Unpublished dissertation

Kportufe, G. S. (2015). Assessment on the Accessibility of Public Buildings and its Facilities to the Disabled in Ghana, 7(10), 76–83.

Kvale, S. (2006). Dominance through interviews and dialogues. *Qualitative Inquiry*, 12(3), 480–500.

Malaysian Standard 1183:1990, Code of Practice for Means of Escape for Disabled Persons. Department of Standard Malaysia

Malaysian Standard 1184:2002, Code of Practice on Access for Disabled Persons to Public Buildings (First Revision). Department of Standard Malaysia

Malaysian Standard 1331:2003, Code of Practice for Access for

Disabled Persons Outside Buildings (First Revision). Department of Standard Malaysia

Malaysian Standard MS 1184:2014 Universal design and accessibility in the built environment - Code of practice (Second revision). Department of Standard Malaysia

Mansoor, N. F. A. (2016). *Universal Mosque/Masjid Design 2016: Learning from the Past, Designing for the Future*. IOS Press

Mohd Isa, H., et al (2016). Provisions of Disabled Facilities at The Malaysian Public Transport Stations. *MATEC Web of Conferences*, 66, 16.

Parker, J.K. (2001). Changing Attitudes Towards Persons with Disabilities in Asia. *Disability Studies Quarterly*, Fall 2001, Volume 21, No. 4, pages 105-113

Roulstone, A. and Prideaux, S. (2009). Constructing Reasonables: Environmental Access Policy for Disabled Wheelchair Users in Four European Union Countries. *ALTER, European Journal of Disability Research* 3, 360-377

Soltani, S.H.K., et al. (2012). Accessibility for disabled in public transportation terminal. *Procedia-Social and Behavioral Sciences*, 35(2), 78-86

Soyingbe, A., Ogundairo, A. M., & Adenuga, O. A. (1998). a Study of Facilities for Physically Disabled People in Public Buildings in Nigeria

Teng, S. W., et al (2013). Evolution of system for disability assessment based on the International Classification of Functioning, Disability, and Health: A Taiwanese study. *Journal of the Formosan Medical Association*, 112(11), 691–698

Utaberta, N., et al (2018). The Evaluation Of Universal Design And Accessibility For People With Disabilities In Masjid Putra By

Using Malaysian Standard Of Ms 1184:2014, “Universal Design And Accessibility In The Built Environment - Code Of Practice.” *International Journal for Studies on Children, Women, Elderly And Disabled*, 4(June), 185–190.

Utaberta, N., Niya, M. D., and Sabil, A. Bin. (2017). Universal Design And Accessibility For People With Disabilities In Masjid Negara, Malaysia. *Journal of Islamic Architecture*, 4(4), 134.