Building Condition Assessment Focusing on Persons with Disabilities' Facilities at Hospital Buildings

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Despite the vast research conducted on Persons with Disabilities' (PWDs) facilities, little is known about the condition of the implemented facilities. Previous studies were more focused on design implementation and maintenance issues started to protrude. The overall image that was gathered from the literature on the maintenance aspect of PWDs' facilities is unsatisfactory, i.e. poor maintenance; operation and management often overlook, and outdated facilities due to inadequate proper maintenance. Maintenance aspect can affect the PWDs' quality of living environment by creating barriers to the PWDs and often, to the extent that it involves safety issues. This study aims to obtain empirical evidence on the theory of PWDs' facilities condition in prior studies. Study was conducted at two selected government hospitals in Selangor. The objective is to investigate the condition and maintenance priority of PWDs' facilities using Building Assessment Rating System (BARS) produced by Public Works Department Malaysia. The condition, maintenance priority, and defects or damages of PWDs' facilities have been identified from the analysis. It was found only PWDs' toilets and lifts were having from average to very critical condition and require high maintenance priority. Findings have provided empirical evidence for prior studies on the importance of maintenance management for PWDs' facilities.

Keywords: *BCA, persons with disabilities' facilities, PWDs, maintenance, BARS*

1. INTRODUCTION

Disability is any limitation or insufficient ability to complete an activity in a way or within the range considered normal for a human being (Wee & Sanmargaraja, 2015). According to the Persons with Disabilities Act 685 (2008), Persons with Disabilities (PWDs) are 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 recognised term in Malaysia, "Orang Kurang Upaya" (OKU) or now known as "Orang Keistimewaan Upaya" refers to people who are disabled either from birth or due to accidents. The number of PWDs is increasing due to population ageing, rapid increase of chronic diseases, and improvement in methodologies used to measure disability (Islam, 2015). PWDs has made up to 1.17 % out of Malaysian population in the year 2015 with total number of 365,677 PWDs. (Department of Social Welfare, 2015; Department of Statistics Malaysia, 2016). Even though PWDs form a small percentage out of the country's population, yet they are a vulnerable group of people who require special care and protection.

Freedom of movement from place to place has been recognised as a basic human right (Chan, Lee, & Chan, 2009). It basically creates continuous connection with whatever is intended without obstruction. It creates connection within society and the environment, which may lead towards positive living. A normal person requires freedom of movement and the reaction towards obstacle is totally unacceptable. In contrast, PWDs face obstacles every day without alternatives provided to them because of society's lack of awareness on PWDs' needs. However, PWDs have started to voice out their concerns and the society is giving attention to their special requirements by providing built-in facilities in buildings to accommodate their special needs. Malaysia has been actively providing accessibility in the built environment since the country signed the Proclamation on the Full Participation and Equality of People with Disabilities in the Asia-Pacific Region in 1994 (Hussein & Yaacob, 2012). Disability may hinder full and effective participation in society but an inclusive built environment is conducive to support full

participation of PWDs to enjoy equal opportunities and it will benefit everyone (Lau, Ho, & Yau, 2014; Yau & Lau, 2016).

2. ACTS AND STANDARDS

Under the Persons with Disabilities Act 685, removing barriers and providing access are fundamental for disabled persons in Malaysia to achieve social equity in all areas including access to public facilities, amenities, services, and buildings; public transport and technology; cultural life; recreation, leisure and sport, health, and rehabilitation. Malaysia has started providing inclusive public buildings for PWDs when State Governments have gazetted the Uniform Building By-Law (UBBL 34A) where it requires new buildings to comply with the requirements of the Malaysian Standards MS 1183 and MS 1184 within 3 years. It was gazetted between 1992 and 1996 (Hussein & Yaacob, 2012). The Malaysian Standards MS 1183 and 1184 are:

i. MS 1183: PART 8:1990 Specification for Fire Precautions in the Design and Construction of Building Part 8: Code of Practice for Means of Escape for Disable People (Department of Standards Malaysia, 1990)

ii. MS 1184:2014 Universal Design and Accessibility in the Built Environment – Code of Practice (Second Revision) (Department of Standards Malaysia, 2014)

2.1 UNIVERSAL DESIGN AND ACCESSIBILITY

Guidelines and requirements in UBBL has made inclusive built environment for PWDs based on implementation of standards (Shahrom & Zainol, 2015). This study will be focusing on the Universal Design and Accessibility in the Built Environment. The current standard MS 1184:2014 supersedes the MS 1184:2002 and the MS 1331:2003. The purpose of MS 1184:2014 is to define how the built environment should be designed, constructed, and managed with the intention to meet the majority of the people's needs (Department of Standards Malaysia, 2014). Table 1 provides the summary of the PWDs' facilities and related components that are important to be taken into consideration for the building condition assessment and Table 2 provides the summary of other facilities with PWDs' components.

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Table 1**:** Persons with Disabilities' (PWDs) Facilities and Components

Facilities	Components
PWDs' Toilets	1. Drop down support rail at seat 2. Wall mounted horizontal grab rail 3. Wall mounted vertical grab rail 4. Mirror 5. Soap dispenser 6. Towels or dryer 7. Waste bin 8. Toilet paper dispenser 9. Independent water supply 10. Washbasin 11. Floor trap
PWDs' Car Parks	1. Symbol of access 2. Kerb ramp 3. Signage, including symbol of access 4. Firm ground 5. Signage at the entrance directed to the PWDs' car parks 6. Warnings at the entrance if the indoor parking is not accessible 7. Telephone number of building management or relevant authority
Ramps	1. TWSI at top and bottom of ramps where required 2. Handrails on both side 3. Horizontal landing
Tactile walking surface	No component.
Vertical lifting platforms	No component.
PWDs' signage	No component.

Source: (Department of Standards Malaysia, 2014) (Table is developed based on author's analysis)

Table 2: PWDs' Components in Other Facilities

Facilities	Components	
Path to the buildings	1. Tactile walking surface indicator (TWSI) 2. Visual information 3. Audible information 4. Handrails on stepped paths 5. Handrail with braille 6. Drainage of access route 7. Guard along slope paths	
Lifts	1. Handrail 2. Fold up seat 3. Mirrored wall 4. Emergency text number (hearing impaired) 5. Voice indicator announcing the floor level	6. Car control button with raised tactile letter 7. Lighting 8. Alarm and intercom
Stairs	1. Guard against impact (head clearance) 2. Visual warning line 3. Tactile walking surface indicator 4. Handrails	
Escalators and moving walks	1. Braille at fixed handrails 2. Coloured comb plate 3. Warning (TWSI) at start and finish 4. Contrast escalators' surface 5. Audible signal that indicates start and finish of the escalator	

Source: (Department of Standards Malaysia, 2014) (Table is developed based on author's analysis)

2.2 PERCEPTION ON PWDs' FACILITIES

In local context, prior studies highlighted the issues on the PWDs' facilities condition at various case studies including government buildings, hotels, university campus, national parks, shopping malls, and public hospitals (Bashiti & Rahim, 2016; Hussein & Yaacob, 2012; Kadir & Jamaludin, 2012; Osman, Radzi, Bakri, & Ibrahim, 2015; Shalini & Seow Ta, 2015; Talib, Ghani, & Ismail, 2016) Studies have started to highlight on the maintenance aspect of PWDs' facilities. World-class service facilities are becoming outdated after a few years due to inadequate proper maintenance (Shalini & Seow Ta, 2015). The platform lift is poorly maintained, the emergency alarm in the elevator has no light broken emergency buttons, intercom in the elevator does not communicate, emergency alarms in the elevators need warning light, and elevator doors close too quickly (Bashiti & Rahim, 2016; Hussein & Yaacob, 2012; Kadir & Jamaludin, 2012).

Supported by Osman et al. (2015) emphasise that maintenance can affect the PWDs' quality of living environment as poor maintenance of the existing facilities creates obstruction to the PWDs users. On the other hand, Zajadacz (2015) has identified technical issues such as lifts, vehicles, accessible means of transportation, and accessible toilets as the most important type of facilities or support required by PWDs with the highest percentage of respondents (83.8%) compared to openness of society and staff, clear information, and financial support.

2.3 MAINTENANCE MANAGEMENT

Implementing and sustaining the provision of the PWDs' facilities are two different issues but both will create barriers for them when nothing is being done. Sustaining the provision is administered through maintenance activity. From the perspective of building management, Lau et al. (2014) stated that most existing inclusiveness built environment assessment models only address accessibility issues at design and construction stages, whereas building management and operation are often overlooked. This is supported by one recent study done by Talib et al. (2016) at Perak public hospitals that highlighted maintenance as the factor that can enhance the PWDs' facilities in public hospitals. Maintenance is the effort in connection with different technical and administrative actions to keep a physical asset in, or restore it to, a condition where it can perform a required function (British Standard

Institution, 1993) as cited in (Chan, Lee, & Burnett, 2001).

Equipment that is not well maintained and fails periodically tends to produce defects (Ben-Daya & Duffuaa, 1995). Poorly maintained equipment may lead to more frequent failures, scrap or questionable quality (Swanson, 2001). However, there is still lack of study to date that has investigated the severity of the condition of the PWDs' facilities for it to be addressed for further investigation. Therefore, this study aims to obtain empirical evidence on the theory of the condition of PWDs' facilities in prior studies. This study was conducted at two selected government hospitals in Selangor. The objective is to investigate the condition and maintenance priority of PWDs' facilities using the Building Assessment Rating System (BARS) produced by the Public Works Department Malaysia.

3. METHODOLOGY

3.1 Study Area

Healthcare buildings generally represent one of the most complex building types in terms of maintenance, owing to their high performance requirements and the complexity of the engineering services needed to sustain a proper level of patients' care (Chanter & Swallow, 2007). This study has selected government hospital buildings due to the significantly high usage compared to private hospital buildings. Government hospitals recorded 2,465,727 admissions and 20,260,479 outpatient attendances in 2016, which are significantly higher than private hospitals, which recorded 1,064,718 admissions and 3,932,361 outpatient attendances (Ministry of Health Malaysia, 2016). This research focused on the hospitals in Selangor because Selangor has the highest number of PWDs compared to other states in Malaysia. PWDs form 1.17% of the total Malaysian population and Selangor contributes the highest number of PWDs at 55,594 (Department of Social Welfare, 2015). Two government hospitals were selected based on two factors, which are the year of completion and the number of beds.

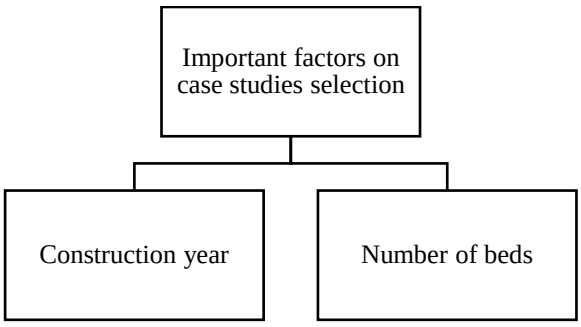

Figure 1: Important Factors for Case Studies Selection

Figure 1 illustrates the important factors to be considered for selection of case studies. Construction year is important to predict the existence of PWDs' facilities in the built environment. As previously discussed on the related acts and standards for PWDs and built environment, the current standard MS 1184: 2014 supersedes MS 1184: 2002 and MS 1331:2003 and from this information, it is interpreted that buildings that were constructed before 2002 do not have PWDs' facilities. If there were refurbishments conducted to implement the PWDs' facilities, there are high chances that the facilities have not been completed or/and encounter design issues compared to maintenance issues. Secondly, new buildings and new facilities implemented do not give maintenance information as these buildings and facilities seldom require maintenance during the first three years of operation. Therefore, the construction years selected are between 2002 and 2014. Another important factor considered is the number of beds as it signifies the size of the hospital and usage frequency, where higher usage will require higher maintenance. Three hospitals in Selangor met the selection criteria but only two hospitals granted the permission to conduct this study. The first hospital (Case 1) completed construction in 2005 and has 644 beds, whereas the second hospital (Case 2) completed construction in 2006 and has 562 beds (Ministry of Health Malaysia, 2017). This study covered all the PWDs' facilities provided in the hospitals' public areas not including the wards.

3.2 Building Condition Assessment (BCA)

Building performance and BCA could not be separated as the condition of the building is the typical way to measure building performance (Abbott, McDuling, Parsons, & Schoeman, 2007). Building performance involves the requirement and fitness of building purpose including asset, facility or services (Wahida, Milton, Hamadan, Lah, & Mohammed, 2012). It involves process of evaluating assets to determine the best type of maintenance required for that particular asset to support activities and service (Rugless, 1993; Wahida et al., 2012). BCA is reliable with the objective to obtain the knowledge on the physical state of building, which enable the owners to develop the appropriate strategies and action for maintenance, repair, major replacement, refurbishment and investments (Dejaco, Re Cecconi, & Maltese, 2017). In overall, BCA evaluates the building asset to gain knowledge on current state of the asset to identify the appropriate maintenance strategy. In context of study. PWDs' facilities have become part of building asset that contribute towards the building performance and BCA can be used to evaluate specifically on PWDs facilities that contribute towards overall PWDs facilities performance. This study employs BCA as a preliminary investigation to obtain empirical evidence on the current condition of PWDs' facilities and maintenance priority. Two BCA rating systems are applied in Malaysia (Salim & Zahari, 2011), as listed below:

1. CP BS101 Code of Practice for Building Inspection Report with Building Assessment Rating System (BARIS) (Royal Institution of Surveyors Malaysia, 2010).
2. JKR 21602 - 0004 – 13 Building Examination and Evaluation Guideline for BCA using Building Assessment Rating System (BARS) (Public Works Department, 2013).

Both BCA rating systems are applicable as it measures the same parameter (condition and priority). However, BARS is selected for this study because the description of rating provided is detail which comprises of defect, condition and function; and the difference between rating is clearly indicated and defined which ease the rating process compare to BARIS. The introduction of BARS by the Public Works Department for all government buildings in Malaysia give a positive impact in contributing to building performance assessment (Shan, Yaacob, Sudirman, & Bahardin, 2014). BARS is produced from continuous joint efforts by various disciplines namely building surveyors in particular civil, mechanical and electrical (Public Works Department, 2013). Two main components in BARS are condition assessment rating and priority assessment rating. Both of these ratings involve 5-point rating as presented in Table 3 and Table 4. Every facility and its components were assessed based on the list of facilities and components provided in Table 1 and Table 2.

Table 3: Condition Assessment Rating

Grade	Assessment Scale	Summary	Description
1	Very good	SB	• No defect • In a good condition • Can function very well
2	Good	B	• Minor defect or damage • In a good condition • Can function very well
3	Average	S	• Major defect or damage • Average condition • Can still function but needs monitoring
4	Critical	K	• No defect or minor or major defect • Critical condition • Cannot function as per agreed level of service
5	Very critical	SK	• In a very critical condition • Cannot function • High risk of accident or fatality

Source: (Public Works Department, 2013))

Table 4: Priority Assessment Rating

Priority	Assessment Scale	Summary	Description
1	Normal	N	• Normal, no defect or damage • Component or element is well maintained and repair is not necessary
2	Routine	R	• Minor defect or damage • Need to be monitored, repaired and replaced to avoid more serious defect or damage
3	Repair	PB	• Major defect or damage • Major repair, need to repair or replace
4	Reinstatement	PM	• Serious defect or damage • Urgent repair
5	Replacement	PG	• Very serious defect or damage • Urgent repair or replace • Requires expert for detail checking

Source: (Public Works Department, 2013)

Matrix analysis was calculated based on the following formula and the result is interpreted by referring to Table 5.

$$\text{Matrix analysis, } \mathbf{c} = \mathbf{a} \times \mathbf{b} \qquad (1)$$

where,
a is Condition Assessment Rating
b is Priority Assessment Rating

Table 5: Matrix Analysis on Level of Physical Condition for Building Components and Level of Maintenance Priority

Scale		Level of Maintenance Priority				
		5	4	3	2	1
Level of physical condition for building components	5	25	20	15	10	5
	4	20	16	12	8	4
	3	15	12	9	6	3
	2	10	8	6	4	2
	1	5	4	3	2	1

Source: (Public Works Department, 2013)

Overall building condition rating was calculated based on the following formula and the result is interpreted using Table 6:

$$\text{Building classification rating} = d/e$$
$$\text{Total marks (d)} = \sum \text{of c}$$
$$\text{Number of defect or damage (e)}$$

where,
c is Defect Rating
e is Number of Defects

Table 6: Building Classification Rating

Rating	Condition	Action Matric	Score
A	Very good	Scheduled maintenance	1 to 5
B	Good	Condition based	6 to 10
C	Average	Repair	11 to 15
D	Critical	Reinstatement	16 to 20
E	Very critical	Replacement	21 to 25

Source: (Public Works Department, 2013)

4. FINDINGS AND DISCUSSION

Table 7 shows PWDs' facilities and other facilities with PWDs' components that have been provided in the cases selected. For Case 1, all PWDs' facilities were provided except for vertical lifting platforms. Escalators are not provided in this building. Stairs were provided without PWDs' components. Lifts and pathways to the building were provided with PWDs' components. For Case 2, all PWDs' facilities were provided except for vertical lifting platforms and tactile walking surface (TWSI). Stairs, escalators, and pathways to the building were provided without PWDs' components. Lifts with PWDs' components were provided.

Table 7: PWDs' Facilities and Other Facilities with PWDs' Components for Two Different Cases

Case/PWDs' Facilities	Case 1 Quantity/location	Case 2 Quantity/location
PWDs' toilets	9/public area	13/public area
PWDs' car parks	6/specialist clinics lobby	3/specialist clinics lobby2/multi-storey carpark
Ramps	3/main lobby, specialist clinics lobby, emergency lobby	3/main lobby, specialist clinics lobby, emergency lobby
Tactile walking surface	Specialist clinics lobby	-
Vertical and lifting platforms	-	-
PWDs' signage	Public area in entire building	Public area in entire building
Other Facilities with PWDs' Component		
Lifts	5/main lobby 3/west wing 3/east wing	3/main lobby
Pathways to the building	Connection between public carpark and building entrance (main lobby) using ramp	-
Stairs	-	-
Escalators and moving walks	-	-

Table 8 shows the condition rating for both cases. For Case 1, out of 192 items (facilities and components), 143 (74.5%) were in very good condition, 10 (5.2%) were in average condition, 25 (13.0) were in critical condition, and 14 (7.3%) were in very critical condition. For Case 2, out of 175 items, 153 (87.4%) were in very good condition, 3 (1.7%) were in good condition, 12 (6.9%) were in critical condition, and 5 (2.9%) were in very critical condition. Two (1.1%) facilities/components did not have the information due to access limitation. Overall, most of the PWDs' facilities and components were in either very good or good condition. However, insignificant percentage of average, critical, and very critical condition still contributes to unsatisfactory condition.

Table 8: Descriptive statistics on the condition of PWDs' facilities and components [number (%)]

Case	Total items (facilities and components)	Condition					No information
		Very good	Good	Average	Critical	Very critical	
1	192	143 (74.5)	0	10 (5.2)	25 (13.0)	14 (7.3)	-
2	175	153 (87.4)	3 (1.7)	0	12 (6.9)	5 (2.9)	2 (1.1)

Table 9 shows the priority of facilities and components for maintenance activity. For Case 1, out of 192 items, 7 (3.6%) have the highest priority, 18 (9.4%) require reinstatement, 21(10.9%) require repair, 3 (1.6%) require routine maintenance, and the rest 143 (74.5%) are normal. The items that require maintenance action form 25.5% of the total facilities and components. For Case 2, out of 175 items, 1 (0.6%) requires replacement that is has the highest priority, 11 (6.3%) require reinstatement, 5 (2.9%) require repair, 3 (1.7%) require routine maintenance, 153 (87.4%) are normal, whereas 2 (1.1%) have no information due access limitation. A total of 11.5% require maintenance action.

Table 9: Descriptive statistics on the priority of PWDs' facilities and components [number (%)]

Case	Total items (facilities and components)	Priority					No information
		Normal	Routine	Repair	Reinstatement	Replace	
1	192	143 (74.5)	3 (1.6)	21 (10.9)	18 (9.4)	7 (3.6)	-
2	175	153 (87.4)	3 (1.7)	5 (2.9)	11 (6.3)	1 (0.6)	2(1.1)

Table 10 shows the details of defects or damage and the matrix analysis of facilities and components for Case 1. Forty-one defects were recorded. It was found that three lifts were completely shut down due to obsolete spare parts and waiting for new replacements. This resulted in long waiting time at the lifts as the number of users exceeded the capacity. Users without disability have staircases as an alternative to access the different floor levels whereas PWDs users need to get to the other side of the building to access other available lifts. In addition, it was found that two lift intercoms were not functioning out of 11 lifts available. This involves safety of the lift users. A majority of the defects were found in the PWDs' toilets. The overall building rating falls in a critical category with a score of 16.63.

Table 10: Summary of Defects or Damage Recorded for Case 1

Num.	Facility [component]	Defect/damage	Score		
			Condition assessment (a)	Priority assessment (b)	Matrix analysis (c) (a x b)
1	PWDs' toilet [general]	Cleanliness	4	4	16
2	PWDs' toilet [wall panel]	Dislocated	4	3	12
3	PWDs' toilet [floor trap]	Broken	3	4	12
4	PWDs' toilet [wall panel]	Dislocated and rusty	4	3	12
5	PWDs' toilet [door]	Door knob not functioning	5	4	20
6	PWDs' toilet [independent water supply]	Pipe holder missing	5	4	20
7	PWDs' toilet [independent water supply]	Pipe holder broken	5	4	20
8	PWDs' toilet [lighting]	Worn out light tube	5	4	20
9	PWDs' toilet [independent water supply]	Pipe holder broken	5	4	20
10	PWDs' toilet [wall panel]	Rusty	4	3	12
11	PWDs' toilet [wall panel]	Rusty	4	3	12
12	PWDs' toilet [towel or dryer]	Broken and cannot be closed	4	4	16
13	PWDs' toilet [door]	Door closer dislocated from original position	4	4	16
14	PWDs' toilet [general]	Cleanliness	4	3	12
15	PWDs' Toilet	Broken	4	3	12

	[Toilet paper dispenser]				
16	PWDs' toilet [towel or dryer]	Broken and cannot be closed	4	3	12
17	PWDs' toilet [door]	Door handle dysfunctional	5	4	20
18	PWDs' toilet [Ceiling]	Mould forming at the ceiling panel	5	5	25
19	PWDs' toilet [independent water supply]	Pipe holder broken	5	4	20
20	PWDs' Toilet [Toilet paper dispenser]	Broken	4	3	12
21	PWDs' toilet [general]	Cleanliness	4	3	12
22	PWDs' toilet [door]	Dysfunctional	5	4	20
23	PWDs' toilet [general]	Cleanliness	4	3	12
24	PWDs' toilet [wall panel]	Dislocated	4	3	12
25	PWDs' toilet [washbasin]	Sink trap missing	4	4	16
26	PWDs' toilet [floor trap]	Broken	4	4	16
27	PWDs' toilet [general]	Cleanliness	4	3	12
28	PWDs' toilet [floor trap]	Broken	4	4	16
29	PWDs' toilet [wall panel]	Dislocated	4	4	16
30	PWDs' toilet [washbasin]	Water tap loose	4	3	12
31	Lift [Car control button with raised tactile]	Number faded	4	5	20
32	PWDs' toilet [general]	Cleanliness	4	3	12
33	Lift [Intercom]	Not functioning	5	5	25
34	Lift [Intercom]	Not functioning	5	5	25
35	Lift C3	Lift not functioning	5	5	25
36	Lift C2	Lift not functioning	5	5	25
37	Lift C5	Lift not functioning	5	5	25

38	PWDs' Toilet [Toilet paper dispenser]	Broken	4	4	16
39	PWDs toilet [towel or dryer]	Broken	4	4	16
40	PWDs toilet [Mirror]	Broken or missing	4	4	16
41	PWDs' toilet [Waste bin]	Missing	4	3	12
Total marks (d) (∑ of c)				682	
Number of defects/damage (e)				41	
Total score (d/e)				16.63	
Overall building rating				CRITICAL	

Table 11 shows the details of the defects or damage and the matrix analysis of facilities and components for Case 2. A total of 17 defects were detected and a majority was found in the PWDs' toilets. The overall building rating falls in a critical category with a score of 16.24.

Table 11: Summary of Defects or Damage Recorded for Case 2

Num.	**Facility [component]**	**Defect/damage**	**Score** Condition assessment (a)	Priority assessment (b)	Matrix analysis (c) (a x b)
1.	PWDs' Toilet [Independent water supply]	Broken pipe holder	5	4	20
2.	PWDs' Toilet [Washbasin]	Broken water tap	4	4	16
3.	PWDs' Toilet [Dropdown support rail at seat]	Broken	5	4	20
4.	PWDs' Toilet [Door]	Door inclined and cannot close	4	5	20
5.	PWDs' Toilet [Toilet paper dispenser]	Broken	4	4	16
6.	PWDs' Toilet [General condition]	Not clean and smelly	4	3	12
7.	PWDs' Toilet [Toilet seat]	Broken	5	4	20
8.	PWDs' Toilet [Washbasin]	Broken water tap	4	4	16
9.	PWDs' Toilet [General condition]	Not clean and smelly	4	3	12
10.	PWDs' Toilet [Flush button]	Broken	4	4	16
11.	PWDs' Toilet [Washbasin]	Broken water tap	4	4	16
12.	PWDs' Toilet [Light]	No light	5	4	20
13.	PWDs' Toilet [General condition]	Not clean and smelly	4	3	12
14.	PWDs' Toilet [Flush button]	Broken	4	4	16
15.	PWDs' Toilet [General condition]	Not clean and smelly	4	3	12

16.	PWDs' Toilet [Light]	No light	5	4	20
17.	Lift [Car control button with raised tactile]	Raised tactile missing	4	3	12
Total marks (d) (∑ of c)				276	
Number of defects/damage (e)				17	
Total score (d/e)				16.24	
Overall building rating				CRITICAL	

From the overall findings, it was found that both cases fall in a critical category for overall building rating with score in between 16-20. Critical category requires reinstatement. Out of all the implemented PWDs facilities or other facilities with PWDs component, only PWDs' toilets and lifts were having from average to very critical condition and require high maintenance priority. Findings were parallel with issues highlighted on prior studies where lift and its component were poorly maintained. It provides evidence on significant of maintenance management for PWDs facilities.

5. CONCLUSION

In conclusion, this study has achieved its aims to obtain empirical evidence on the theory of PWDs facilities condition in prior studies and its objective to investigate the condition and maintenance priority of PWDs' facilities using the Building Assessment Rating System (BARS) produced by the Public Works Department Malaysia. From the analysis conducted in this study, the condition, maintenance priority, and defects or damages of PWDs' facilities have been identified. This research will serve as a base for future studies on maintenance management of PWDs' facilities, which will contribute towards better quality of PWDs' living environment.

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