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ON THE NECESSITY AND POSSIBILITIES OF PROVIDING THE DISABLED WITH ACCESS TO HISTORICAL PUBLIC UTILITY BUILDINGS

RYMSZA Barbara [1] KAPERCZAK Krzysztof [2] KILIAN-WALERZAK Justyna [3]

[1] prof. IBDiM dr hab. inż. Barbara Rymsza, Road and Bridge Research Institute, Warsaw
https://orcid.org/0000-0002-0504-2360
[2] dr inż. Krzysztof Kaperczak, Road and Bridge Research Institute, Warsaw
https://orcid.org/0000–0001–9316–7712
[3] mgr Justyna Małgorzata Kiljan-Walerzak, Road and Bridge Research Institute, Warsaw
https://orcid.org/0000-0002-8290-3005

ABSTRACT: This publication is dedicated to the problem of providing access to historic public utility buildings for people with disabilities, with simultaneous adaptation of this access to the needs and abilities of disabled persons. It shows examples which show how to provide access to historic buildings to people with disabilities. It also presents the possibility of using the results of a doctoral dissertation concerning the new type of ramp (an LPZ light substitute ramp) characterized by greater "flexibility" of application.

KEY WORDS: Historic object, accessibility, disabled persons

1. Introduction

Due to the binding legal provisions of the general legislation[1,2,3], the shaping of public space requires universal design. It makes this space accessible to everyone, including people with limited mobility (e.g. the disabled, the elderly), in such a way that it can be used by all people, to the greatest extent possible, without the need for adaptation or special adjustment[4].

While it is easy to apply the above rules in the design of new buildings, it is much more difficult to apply them to existing ones. A particularly difficult problem arises when trying to adapt historic public buildings to the contemporary requirements of visitors. It is necessary to reconcile the principles of universal design with the conservation requirements, e.g. with regard to the materials used or with regard to alterations that may change the body of the object.

The experience gained so far in ensuring the accessibility of historic buildings shows that the adaptations are not always carried out and are often insufficient and do not satisfy disabled users. These are a significant number of people, which is constantly growing as a result of unfavorable demographic processes. Especially so since, according to the European Commission[5], the category of disabled people (often referred to as People with Reduced Mobility (PRM)) includes persons:

- in wheelchairs,
- blind and partly sighted
- with children, with heavy or cumbersome luggage, elderly, pregnant,
- with impaired communication (including e.g. foreigners who do not speak Polish).

The number of DPs (Disabled Persons or Persons with Disabilities) in Poland during the census[6] in 2011 was estimated at 12.2% of the population, i.e. 4.7 million citizens. However, the scientific work of K. Jaranowska[7] shows that the total estimated number of disabled people should at least double to as much as approx. 32%. It should also be mentioned that for people with disabilities, within the framework of various activating projects, trips to places of special educational and touristic value are organized, and these include various types of historic buildings. Adjusting the access to them can significantly increase the number of people visiting historic buildings.

Providing disabled people with access to historic public buildings is a very important issue from the point of view of the number of potential visitors and requires specialist knowledge, different from the typical issues of monument care.

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1 Constitution of the Republic of Poland of 2 April 1997.

2 Charter of Rights of Persons with Disabilities - Resolution of the Parliament of the Republic of Poland of 1 August 1997.

3 UN Convention of 13 December 2006.

4 https://pl.wikipedia.org/wiki/Projektowanie_uniwersalne.

5 *People with Reduced Mobility*. Decision No 2008/164/EC of 2007.

6 National Census of Population and Housing of 2011.

7 People with disabilities in urban environment. COBO-PROFIL, Warsaw, 1996.

The scope of the addressees of the 'hints' contained in this work is huge and the specificity of the subject makes it possible to bring the issue of access to historical public buildings to the attention of specialists in conservation and presentation of cultural heritage.

2. The problem of accessibility of public space for people with reduced mobility

Individuals with disabilities may have a range of disabilities of varying degree and, importantly, the ability of individuals to overcome them may also vary.

The outcome of an attempt to overcome difficulties depends on the individual's psycho-physical abilities, including appropriate rehabilitation to create the ability to adapt and compensate for the deficits.

In order to ensure efficient and, what is important, safe movement of people in public spaces, designers should know the types of obstacles and risks faced by people with disabilities who want to move around independently. These obstacles are not the same for everyone, they depend on the type of disability. These are as follows:

- for disabled people with limited mobility:

• differences in levels, single steps, stairs, steep ramps or no ramps, the wrong height of the handrail or the lack of it - thus generating an inability to move around or a risk of falling,

• narrow passages - no possibility to move through;

- for deaf people and people with impaired hearing:

• messages given only verbally or in writing, but in a complicated Polish language - lack of understanding of the meaning of the message,

• lack of induction loop - problem with sound reception by the hearing aid;

- for blind and visually impaired people:

• lack of marking (indication) with contrasting colors or different surface texture of differences in levels, edges of: steps, thresholds, ramps - risk of falling,

• elements of technical infrastructure suspended within the road/passage gauge - possibility of head injury,

• polished surfaces - risk of being dazzled,

• transparent windows, walls, mirrors - possibility of head injury, loss of orientation,

• information which is only displayed (not announced by voice message), in small letters and not Braille - risk of confusion.

• Technical and construction regulations[8, 9, 10, 11, 12, 13] define, to varying degrees and ranges, the construction requirements that guarantee the adaptation of the human environment to the needs of disabled people.

At the same time, it should be noted that e.g. in the Act on protection and care of monuments[14] there is no mention of accessibility. These regulations do not include any examples of accessibility schemes. A considerable margin of freedom was left for designers to choose the optimal solutions for a given case, depending on the specificity of the object and place. The intention is to support, rather than limit, their invention and creativity and the skills and knowledge supported by scientific and technical achievements. Thanks to this, a natural process of searching and creating a wide range of solutions depending on the needs and possibilities of a given place and object has been created. In this way, many properly adapted objects have been created, but also many bad solutions - not ensuring the required accessibility. The reasons for these failures can be found in the lack of experience and ignorance of designers, managers, conservation supervision, as well as in excessive haste, financial savings, sometimes in mistakes and negligence, but also in the interpretation of legal provisions.

Many principles related to solving the problem of accessibility of public space are contained in documents, which are acts of local law[15, 16, 17] It was decided that the requirements or recommendations contained in them be applied in the execution of all urban (public) investment projects, as "accessibility standards". A good example are the "Accessibility Standards for the Capital City of Warsaw", the preliminary version of which was developed by the Road and Bridge Research Institute (IBDiM)[18] on behalf of the Warsaw City Hall Office of Social Assistance and Projects.

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[8] Act of 7 July 1994. - Building Law, Official Journal of Laws. 1994 No. 89 item 414 as amended.

[9] Act of 27 March 2003 on spatial planning and development Journal of Laws 2003 No. 80 item 717 as amended.

[10] Regulation of the Minister of Infrastructure of 12 April 2002 on technical conditions which should be met by buildings and their location Journal of Laws 2002 no. 75 item 690 as amended.

[11] Regulation of the Minister of Transport and Maritime Economy of May 30, 2000 on technical conditions which should be met by road engineering objects and their location Journal of Laws 2000 no. 63 item 735 as amended.

[12] Regulation of the Minister of Transport and Maritime Economy of 2 March 1999 Journal of Laws 1999 no. 43 item 430 as amended.

[13] Lift standards PN-EN 81-70:2005 and PN-EN 81-40:2008.

[14] Act of 23 July 2003 on protection and care of monuments Journal of Laws 2003 no 162 item 1568.

[15] Ordinance No. 10740/13/VI/U of the Mayor of the City of Gdynia concerning the introduction of accessibility standards for the city of Gdynia.

[16] Ordinance No. 247/2008/P of the Mayor of Poznań on the requirements to be met by pedestrian crossings, underground passages, overground passages, public transport stops and sidewalks.

[17] Ordinance No. 1539/2016 of the Mayor of the Capital City of Warsaw of 12.10.2016 on creating favourable conditions for pedestrian traffic within the area of the Capital City of Warsaw.

[18] Rymsza B., Kaperczak K., *Accessibility standards for the Capital City of Warsaw*, typescript prepared at the request of the Social Assistance and Social Projects Office of the Capital City of Warsaw. Warsaw, 2015, p. 98.

3. Difficulties and ways of providing access to historic buildings

For people with limited mobility it is particularly important to have a close (as close as possible) access to the facility. Usually, these people move either by car, driving up and parking the car in the immediate vicinity of the facility, or by bus, which stops for a while on the road near the facility to allow them to get off first and then to get on after the sightseeing tour.

Places specially designed for parking such people's vehicles - reserved spaces - should have special parameters (larger width, smooth surface - Fig. 1.), usually located as close as possible to the entrances to the facilities. Additionally, the access from such reserved parking spaces to the object should be properly adjusted (using a smooth and hardened surface, lowered curbs).

Fig. 1 An example of a parking lot with a split stone surface, where a smooth surface has been laid on the part intended for parking of a disabled person (author's photo)

Often the problem in covering the distance from vehicle to object is the space surrounding historic buildings - road and sidewalk surfaces and elements of small architecture that can obstruct movement. These surfaces are often made of split stone, cut stone or cobblestones, they are uneven and slippery, especially in damp weather, causing many problems for people in wheelchairs and walking with crutches. The solution is to give make the entire surface, or at least part of it, smooth. Figure 2 shows how a small difference in surface may or may not be an accessibility condition.

Fig. 2 An example of a surface of an access road leading to a historic object. Part of the surface is smooth or the smooth surface runs parallel to the rough surface (photo by the author)

The access to the overwhelming majority of historic buildings is by stairs, consisting of at least one, two or even more steps.

The best solution is to adjust the whole space to the level of the entrance - to gently lift most of the adjacent sidewalk, or to build a ramp to level the difference in height of several dozen centimeters.

The construction of a ramp may be difficult due to the interference with the body of the building. The answer can be the construction of a ramp, which refers to the historic character of the building and its surroundings (Fig. 3). If it is not possible, the ramps are made as portable elements - not permanently connected with the object, which do not change the body of the building although they change their aesthetics. They are usually made of steel, aluminum, sometimes wood.

Fig. 3 A ramp incorporated into the surroundings of the historic building and a temporary ramp made of steel. (photo by the author)

Sometimes the only solution is to install a lift device (e.g. a vertical platform lift or a cabin elevator). The advantage of lift devices is their aesthetic design and the materials used - usually glass and steel (Fig. 4).

Fig. 4 Examples of a common platform lift mounted next to historic objects and an underground cabin lift. (photo by the author)

Lifting devices, as mechanical-electronic devices, are very sensitive to temperature changes, precipitation, acts of vandalism (mechanical shocks, pouring liquids, arson) and incorrect operation. For this reason they are often faulty. A ramp is almost always reliable, but what to do if in public space and historical area:

- The construction of a "classic" ramp in conditions of strongly urbanized urban space is not always possible (e.g. there is no free land, the presence of underground technical infrastructure hinders the foundation of the ramp, the aesthetics of the object and its surroundings will deteriorate);
- the use of a lifting device due to its potential malfunction is not accepted by disabled persons.

Such a situation leads to an attempt to use a temporary ramp with changed ("sharper") parameters, which could be used in many places. A sufficient justification for the application would be the temporary character of the ramp - its functioning until the target solution is, i.e. the construction of a "classic" ramp or the assembly of a reliable lift device, has been completed.

4. Light Substitute Ramp (LPZ)

The idea of searching for a new type of ramp with changed technical parameters, which will allow for its use in difficult terrain conditions, is the result of many years of scientific and research work carried out at the IBDiM, initially by the late Michał Czerniak, Eng. In this work you can also find many hints concerning various types of engineering objects, such as: "A proposal to improve the existing solutions in the field of accessibility of engineering objects for the disabled"[19]. In this work you can also find a lot of hints on the type of solutions to be applied when adapting public spaces to the needs of disabled people.

[19] Kaperczak K., PhD thesis entitled *"Proposed improvement of existing solutions in the field of accessibility of engineering facilities for the disabled"* by the Jan and Jędrzej Śniadecki University of Technology and Life Sciences in Bydgoszcz. 2017, p. 202. The thesis was promoted by Prof. B. Rymsza.

The search of professional literature and domestic and foreign regulations allowed to formulate proposals for innovative parameters of ramps. A prototype of the LPZ ramp was built and test tests were conducted with the participation of a selected group of people (with different degrees of disability) in wheelchairs (Fig. 5).

The acceptance by these people of the idea of the LPZ ramp and its parameters was confirmed. Therefore, such a temporary ramp can be used with the reservation that it should be installed only in exceptional situations (as a substitute solution), hence its Polish name LPZ which translates as Light Substitute Ramp.

The parameters of LPZ ramp are given below, with reference to parameters of a classic ramp (given in brackets):

- The slope is increased to p = 13% (from 8 or 10%),
- one pair of railings at an intermediate height of h = 0.85 m (instead of two at 0.75 and 0.90 m) was used,
- The clearance between the railings b = 0.90 m (instead of 1.00 m) was narrowed,
- A single handrail with a diameter reduced to d = 35 mm (instead of 60 mm) was used,
- openwork surface made of perforated metal sheet or platform gratings was used (instead of solid surface without holes),
- The necessity of marking the ramp with a symbol recommending the need for the support of the disabled person by a walking person was introduced (no need for marking).

Fig.5 Tests of the Light Substitute Ramp (LPZ) (photo by the author)

The LPZ ramp, thanks to its greater slope, lighter weight and temporary character, can be used to provide access to historic space and historic buildings.

The extended variant of the ramp is the Staircase Light Substitute Ramp (KLPZ), i.e. a staircase system of the ramp with resting landings, which enables overcoming greater height differences.

5. Summary

Enabling disabled people to access historic buildings, either by a vehicle or on foot, is the first step on the way to a full presentation of the value of these facilities. Examples of solutions improving accessibility to public buildings have also been presented in the publication[20] concerning e.g. castle viewing towers and in the article[21] concerning the so called "intra-staircase ramps" (ramps blended and integrated into stairs).

A separate problem is adjusting the interiors of the objects to the needs and capabilities of disabled people, but this is a wide topic for another article.

It is important to see and understand the barriers that people with special needs have to overcome, and there are more and more of them around us.

[20] Kaperczak K., Rymsza B., *Wieże widokowe - podwójny problem z integracją*; [in:] Integracja sztuki i techniki w architekturze i urbanistyce; [in:], Wydawnictwa Uczelniane Uniwersytetu Technologiczno-Przyrodniczego w Bydgoszczy, vol. IV/I pp. 101-108 (p. 150), no. ISBN 978-83-65603-15-9.

[21] Kaperczak K., Rymsza B., *Pochylnia wewnątrzschodowa*. Materiały Budowlane, issue. 7/2018 p. 48, ISSN 0137-2971, e-ISSN 2449-951X.

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