

# ARCHITECTURAL SAFETY FOR PEOPLE WITH SPECIAL NEEDS IN THE CONTEXT OF THE PRINCIPLES OF ACCESSIBILITY

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## Abstract

The issue of safety of people with special needs is a serious challenge to the security system of the Polish population. This is a multi-faceted issue due to the very broad understanding of the issue of special needs. The actions taken to build it require taking into account both the daily functioning of this social group as well as accepted and unacceptable threats. The issues raised in the article concern ensuring the safety of people with special needs by adapting architectural solutions to their comprehensive functioning in the social environment.

**Keywords:** security, people with special needs, threat, universal design

## 1. Introduction

The issue of safety of people with special needs is a relatively new issue, both in theoretical and pragmatic terms. The scientific aspects of this issue, as well as the legal elements guaranteeing this security, as well as practical solutions, despite their rather dynamic evolution in Polish conditions, are still in the phase of imitating foreign models and searching for solutions that optimally match the national realities. It is worth noting that building safety even for citizens who do not declare special needs is a real challenge given its current geography in each of the defined dimensions. What, then, can we say about attempts to create it effectively for those who require special, multi-faceted solutions in this area? First of all, attention should be paid to the fact that it is perceived by this social group in a completely different way. Activities that, to the average person, seem mundane, self-evident

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and merely make everyday life easier, are perceived by people with special needs as serious problems affecting their personal security. This article will address this issue, focusing on the safety and comfort of using the architectural infrastructure by this social group.

## **2. Methodology**

The subject of the considerations is safety in the architectural dimension of people with special needs, which can be divided into everyday safety and emergency situations. Given to the significant thematic scope of the issue, the author focused on the issue of ensuring safety of the indicated social group in their everyday life. The aim of the considerations is an attempt at presenting a concept that guarantees the safety of persons with disabilities in various types of buildings. The subject and purpose of the research developed in such a way allows us to formulate a problem that can be included in the question: To what extent are the existing architectural solutions capable of ensuring the broadly understood safety of everyday functioning for people with special needs?

The answer to this question, which is a certain type of hypothesis, is contained in the statement: Current architectural solutions are capable, to a large extent, of guaranteeing the safety of people with special needs. However, it is necessary to implement them systematically and on a large scale in practice.

The methodological apparatus devised in such a way allowed a relatively comprehensive examination of the issues raised. It was presented from the point of view of the theoretical aspects of special needs, applicable national and European legal regulations regulating the issues of social inclusion of people with special needs, and systemic solutions that allow comprehensive building of safety of these people during their everyday life in the social environment.

## **3. Special needs and accessibility – theoretical aspects**

The issue of the theoretical aspects of special needs should be considered on two main levels. The first one covers people with confirmed disabilities, and the second covers citizens who, despite having various types of disabilities, do not have such a certificate, nevertheless do have certain special needs.

However, before presenting the taxonomy of disability, it is worth presenting its definition. This is not an easy task, given the fact that there are very diverse approaches to this phenomenon based on of historical and social considerations. Attempts at finding the most comprehensive definition of disability and people with disabilities led to finding the definition presented in the Convention on the Rights of Persons with Disabilities, adopted on December 13, 2006, UN General

Assembly Resolution 61/106. It defines the social group of interest to us as “people with long-term reduced physical, mental, intellectual or sensory abilities, which in interaction with various barriers may limit their full and effective participation in social life on an equal basis with other citizens” (Polish Journal of Laws/Dz.U. of October 25, 2012, item 1169, art. 1).

The definition presented in this way does not fully reflect the studied phenomenon. Exploring this topic, it is worth noting that a disability may be diagnosed for the purpose of receiving certain benefits or without them. In the first case, the granting of the benefit is governed by the Act of 17 December 1998 on old-age and disability pensions from the Social Insurance Fund (Polish Journal of Laws/Dz.U. 2004, No. 39, item 353 as amended) and the Regulation of the Minister of Social Policy of 14 December 2004 on adjudicating incapacity to work (Polish Journal of Laws/Dz.U. 2004, No. 273, item 2711).

Certification is carried out by evaluating doctors and medical commissions of the State Social Institution (ZUS). Separate groups are constituted by farmers and their families who are subordinated to medical experts and medical boards of the Agricultural Social Insurance Fund (KRUS) and uniformed services (Police, armed forces, fire brigade, customs service) and their families who are subject to medical boards depending on the affiliation of the service Ministry of National Defence or the Ministry of the Interior and Administration (Association of Friends of Integration, 2017).

Pursuant to the provisions of the Act on old-age and disability pensions cited above, persons applying for this benefit may be classified as fully or partially incapable to work.

In the event that the bodily efficiency is found to be impaired to the extent that it requires permanent or long-term care and assistance of another person in meeting basic life needs, the incapacity for independent existence is declared (Polish Journal of Laws/Dz.U. 2019 item 1696, art. 13, p. 5].

Jurisprudence for non-disability purposes is regulated by the Act of 27 August 1997 on vocational and social rehabilitation and employment of people with disabilities (Polish Journal of Laws/Dz.U. 1997, No. 123, item 776), Regulation of the Minister of Economy, Labour and Social Policy of 15 July 2003 on the assessment of disability and the degree of disability (Polish Journal of Laws/Dz.U. 2003, No. 139, item 1328) and the Regulation of the Minister of Labour and Social Policy of February 1, 2002 on the criteria for assessing disability in people aged up to 16 (Polish Journal of Laws/Dz.U. 2002, No. 17, item 162). Pursuant to the provisions of the Act, jurisprudence is carried out by district and province disability adjudication teams. They may declare:

- significant degree of disability,
- moderate degree of disability,
- mild degree of disability (Polish Journal of Laws/Dz.U. 1997, No. 123, item 776 as amended).

As regards adolescents younger than 16 years of age, they are classified as disabled without specifying the degree of disability<sup>1</sup>.

While the definition and taxonomy of disability is quite clear and possible to determine in accordance with the provisions of the applicable law in force in Poland, establishing the type and relative degree of special needs other than those related to disability poses much more serious problems.

The Act of 19 July 2019 on ensuring accessibility to people with special needs helps to some extent (Polish Journal of Laws/Dz.U. 2019 item 1696). According to its provisions, a person with special needs is “a person who, due to his/her external or internal characteristics, or due to the circumstances in which he/she finds himself/herself, needs to take additional actions or apply additional measures in order to overcome a barrier to be able to participate in various spheres of life on an equal basis with the others”. This definition indeed does include people with disabilities, but there is also room for other categories of citizens. Who belongs to them? To put it simply, these are all people who encounter various types of obstacles that hinder their daily functioning in a social environment, which affects their sense of comfort, and consequently security. Such obstacles may include architectural, digital or information and communication barriers. The author will return to this topic of consideration shortly. At this point it is worth specifying, at least in a general way, exactly who people with special needs may be. These can be elderly people, pregnant women, obese people, very short or very tall persons, and even women in high-heeled shoes. This catalogue is constantly expanding as the range of factors causing difficulties in full participation in social life keeps expanding. Consequently, one may ask what seems a reasonable question, are there people in every society who are deprived of special needs to a greater or lesser extent? If not, surely the adaptation of safety assurance systems should be geared towards a broad spectrum of their satisfaction?

Returning to the topic of difficulties causing a significant impairment to the safety level people with special needs, both in everyday life<sup>2</sup> and in extraordinary threats related to the occurrence of various types of natural disasters and catastrophes, we can eliminate them by applying the accessibility rules regarding the three aforementioned areas. Accessibility itself is defined as “the ability to reach, arrive, get to a place, or popularity, comprehensibility, accessibility”

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<sup>1</sup> The basis for recognizing such a person as disabled comprises the following criteria:

- expected duration of health impairment due to medical conditions (specified in the regulation) exceeding 12 months,
- inability to meet basic life needs, such as: self-service, independent movement, communication with the environment resulting in the need to provide constant care or assistance in a way exceeding the scope of care for a healthy child at a given age,
- significant disturbances in the functioning of the body, requiring systematic and frequent medical and rehabilitation treatments at home or outside

These criteria have been specified in: Polish Journal of Laws/Dz.U. 2002 No. 17 item 162.

<sup>2</sup> These include, for example, traffic incidents, fires, criminal incidents, etc.

(Doroszewski, 1969). A more detailed approach to it related to people with special needs defines this phenomenon as “the possibility of free use of products, services and infrastructure, regardless of the level of performance we have at the moment” (Hyjek, Augustyniak, Tota-Stawarczyk, 2022).

Ensuring relatively full accessibility for the entire society to function in the social environment may be possible thanks to the use of three often interpenetrating and complementary ways. They comprise:

- universal design,
- reasonable accommodations,
- alternative access.

Universal Design is defined in the Convention on the Rights of Persons with Disabilities (CRPD) adopted in New York on December 13, 2006. It is defined as “the design of products, environments, programmes and services to be usable by all, to the greatest extent possible, without the need for adaptation or specialized design”<sup>3</sup>.

The Convention also emphasizes that “Universal Design” does not exclude technical aids for specific groups of people with disabilities, if needed” (Polish Journal of Laws/Dz.U. of October 25, 2012, item 1169, art. 2).

In turn, reasonable accommodation, also included in the above-cited Convention, means “necessary and appropriate changes and adaptations, not imposing a disproportionate or undue burden, if needed in a particular case, in order to ensure that persons with disabilities can enjoy all human rights and fundamental freedoms and their exercise on an equal basis with others” (Polish Journal of Laws/Dz.U. of October 25, 2012, item 1169, art. 2).

An example of rational improvements may include: specialized transport, architectural adaptation of buildings, adaptation of computer infrastructure, acoustic adaptation, an assistant translating into an easy language, an assistant for a person with disabilities, a sign language interpreter, a guide for a person with vision difficulties, alternative forms of preparing information materials or extended time of support or consideration of special nutritional needs (Marciniak-Madejska).

The last of the above mentioned ways, i.e. alternative access, comprises “such activities and organizational solutions that will provide a person with special needs access to the building, but not independently or on an equal basis with other people (help of another person is needed), or which do not provide access to the building of a public entity, but enable the use of public services in a different way (e.g. online)” (Kowalski, Mikołajczyk, Zimny, 2019).

Ways of ensuring accessibility in the context of its areas articulated in this manner imply the adoption of practical solutions that allow the entire population of people with special needs to function in a safe and comfortable way in any social situation.

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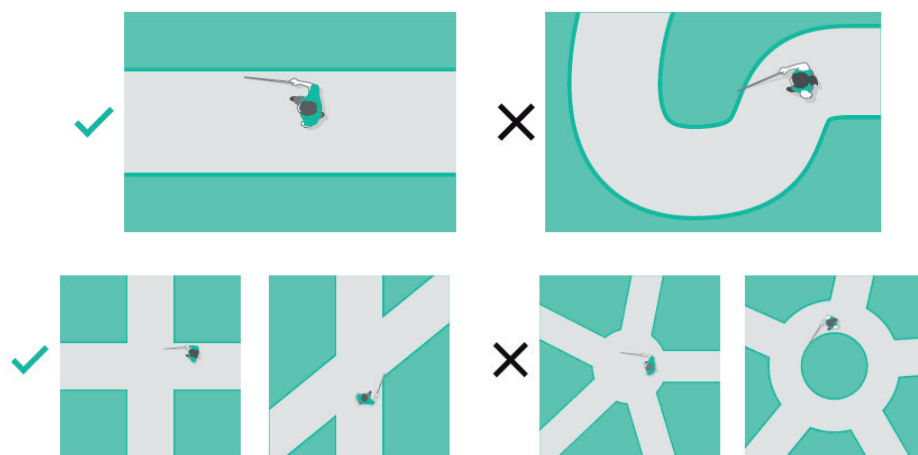
<sup>3</sup> Universal design is based on several main principles, which include: fair use, flexibility of use, simple and intuitive operation, noticeable information, error tolerance, low physical effort, dimensions and space available and usable.

#### 4. Principles of architectural adaptation to needs of accessibility

The guarantee of safety in performing everyday activities as well as in the case of occurrence of events of acceptable or unacceptable<sup>4</sup> threats will be assured, as mentioned above, by the comfort of using the infrastructure, broadly understood electronic media and collision-free communication. It seems that issues of architectural adjustment would be playing a leading role in this respect. It is worth noting at this point that the improvements described above addressed at a person without special needs are often unnoticeable and their use may seem unnecessary. However, for a group of people with special needs, they are often an element of the basic guarantee of safety and relative comfort of everyday existence.

The need to move unconstrained while “taking care of everyday matters” entails comfortable moving about public space. What is a perfectly normal activity for a person who is generally considered to be healthy can prove very challenging for people with disabilities. This involves primarily moving along pedestrian routes, stairs, pedestrian crossings and using ramps and exits.

As regards pedestrian routes, it is worth emphasizing that it is advisable to simplify them as much as possible. The construction of many pavements leading to the same places is not very legible, and thus insufficiently functional. Examples of exceedingly complicated construction of communication systems as well as appropriate ones are presented below.

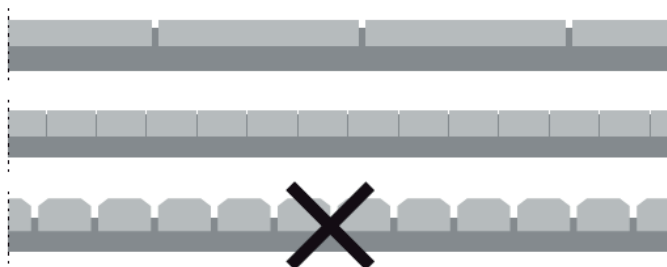


**Figure 1.** Examples of adapted and non-adjusted pedestrian routes

Source: (Kowalski, 2018, p. 75)

<sup>4</sup> Socially unacceptable threats are threats of a typical nature and territorial range, requiring autonomous actions by services, inspections and guards with routine support of other services and authorities, based on joint plans and procedures.

Their surface is also of importance. It should enable collision-free movement with the help of a cane, including with the cane, a walker, or a wheelchair. The figure below shows the recommended and inappropriate types of substrates.

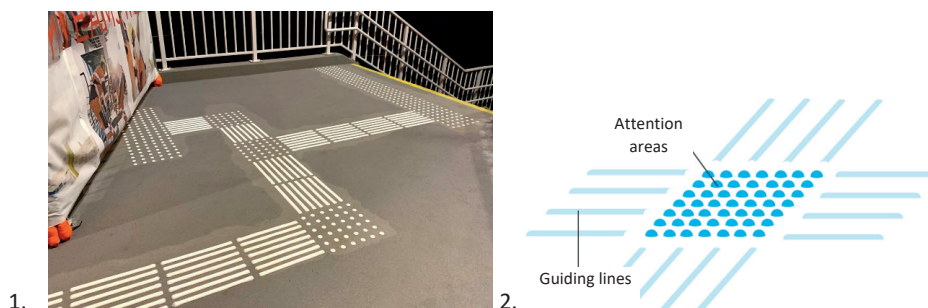


**Figure 2.** Examples of adapted and non-adapted pavement

Source: (Kowalski, 2018, p. 86)

It should be noted that exceedingly broad spacing between the surface elements may cause discomfort related to the possibility of tripping, catching or even getting the tip of a cane stuck, or unstable wheelchair driving. Uniform surfaces are naturally preferable, but they are becoming less and less common in favour of pedestrian routes made of different types of paving stones.

In the case of the blind, pedestrian routes should additionally be equipped with tactile paths made of guiding lines in the form of strips enabling movement using a cane for the blind, and at points of their branching also areas of attention in the form of panels equipped with paving studs.



**Figure 3.** Examples of the touch track

Source: (Alexander, Sagramola, 2014; Niemira-Jurek, 2020, p. 58)

If it is necessary to overcome a difference in levels during movement, the most comfortable solution would be the use of ramps and vertical and step lifts, and, as a last resort, properly prepared stairs.



**Figure 4 and 5.** Ramp and vertical lift

For many people with special needs, navigating open spaces is quite challenging, and often breakneck, all the more so because they happen to be ill-prepared for use by this population group.



**Figure 5 and 6.** Examples of inappropriate adaptation of infrastructure to the needs of people with special needs

Everyday activities, not to mention threats such as a fire, pose even greater difficulties in all kinds of buildings, especially public facilities. This gives rise to the need of adapting them to the requirements of a wide range of people with special needs. They include in the first place people moving in wheelchairs, with walkers and with the help of other devices that facilitate movement, but also blind and visually impaired people, obese ones, very short persons and many other groups having problems with fast movement. Buildings should comply with the provisions of the Regulation of the Minister of Infrastructure of 12 April 2002 on the technical conditions to be met by buildings and their location (Polish Journal of Laws/Dz.U. 2002 No. 75 item 690, § 61, p. 2) and the Regulation of the Minister of Interior and Administration of 7 June 2010 on fire protection of buildings, other structures and areas (Polish Journal of Laws/Dz.U. 2004, No. 273, item 2711). It is necessary to



apply several good practices when building or possibly modernizing such facilities. The first one is the adjustment of parking spaces. They should be as close to the building as possible and located in places where you can get to a given facility using a ramp. They must additionally be marked with horizontal and vertical signs<sup>5</sup>.



**Figure 7.** An example of a properly prepared parking space for people with disabilities

Source: <https://www.matech.com.pl/pl/blog/place-parkingowe-dla-niepełnosprawnych-przepisy>

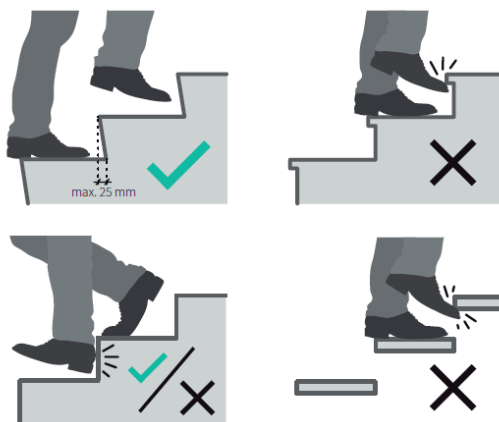


**Figure 8.** An example of an inappropriately located parking space for people with disabilities

Source: <https://joemonster.org/mg/show/244508>

<sup>5</sup> Parking spaces for cars used by people with disabilities should be 3.6 m wide and 5 m long, if located along the roadway – length  $\geq 6$  m and width  $\geq 3.6$  m, with the possibility of limitation to 2.3 m, where it is possible to use the adjacent access or pedestrian/vehicular route. Source: (Polish Journal of Laws/Dz.U. 2002 No. 75 item 690, § 21 sec. 1).

A further important issue is adaptation of the entrance to the building. It should be lined with a surface that does not pose a risk of slipping, and the stairs should be equipped with noses or undercuts, but without risers that increase the risk of tripping. It is also necessary to adopt technical or visual solutions to signal differences in levels (Maćkiewicz, Halicki, 2019, p. 13).



**Figure 9.** Different ways of shaping the step profile

Source: (Kowalski, 2018, p. 163).

In addition, stair landing surfaces should be distinguished in shade or texture from the starting and ending edges of the stair or ramp. It is also advisable to distinguish the steps of the stairs with a colour that contrasts with the steps of the floor.

The next important element of finishing the infrastructure are balustrades and handrails, which should be combined with stairs used to overcome heights exceeding 50 cm. When the stairs are wider than 4 m, it is necessary to use additional intermediate railings. On the balustrades, Braille signs can be provided with basic information about the location.



**Figure 10.** Information plates in Braille placed on the balustrades

A very important element of movement are ramps and vertical and step lifts, the parameters of which are specified in separate regulations<sup>6</sup>.

A further obstacle that must be overcome before entering the building is the door. They should be openable with little force. If equipped with brakes, they must be set to a low braking force. Swinging or sliding doors are best for people with special needs<sup>7</sup>. They can be equipped with a drive and technical means to facilitate opening, such as buttons, as well as presence sensors protecting against sudden closing. If the door has handles, it is worthwhile that they should be constructed in such a way that they can be easily found and opened easily.



**Figure 11.** The mechanism of opening a door with a button using an electromagnetic lock

Source: (Hospital Emergency Department of the Mazowiecki Provincial Hospital in Siedlce)



**Figure 12.** Correct and poorly constructed handles

Source: (Kowalski, 2018, p. 38)

<sup>6</sup> Ramps should have handrails on both sides corresponding to conditions specified in § 298, with the distance between them being between 1 and 1.1 m. Source: (Polish Journal of Laws/Dz.U. 2002 No. 75 item 690, § 71 sec. 1).

The minimum dimensions of the lift cabin are 1.1 m x 1.4 m. In places where it is not possible to provide a lift of such dimensions, lifts with dimensions of e.g. 0.9 m, 1.4 m, 0.8 m x 1.25 m. Source: (ISO 21542:2011, point 16.2]. The lifting capacity of the device should be between 230 and 250 kg.

<sup>7</sup> With a width of at least 90 cm and a height of 2 m, they must have thresholds not higher than 2 cm. Source: (Polish Journal of Laws/Dz.U. 2002 No. 75 item 690, § 240 sec. 1 and sec. 3].

Another good solution is also the so-called panic bar which can be pressed anywhere to open the door.



**Figure 13.** Panic bar

Source: (Infrastructure of the Siedlce University of Natural Sciences and Humanities)

When moving inside a building, it is important to adjust colours to the architectural primers so that there is a visible visual contrast that facilitates the movement of people with colour vision disorders and people with low vision<sup>8</sup>. This applies in particular to stairs and glazing, which can be an obstacle that is difficult to recognize. It is also necessary to prepare tactile paths in a manner analogous to the one presented in the previous considerations.



**Figure 14.** Contrasting marking of glass doors

Source: (Polish Association of the Blind, 2009, p. 21)

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<sup>8</sup>The point here is the contrast of the handle-door leaf, railing-wall, visual information – wall, first and last step of the stairs – flight of stairs, floor – walls (Maćkiewicz, Halicki, 2019, p. 26).



**Figure 15.** An example of marking stairs inside the building for the visually impaired

Source: <https://www.innovare.waw.pl/oznaczenia-dla-niewidomych>

All navigational information located in the building should be legible and transparent for people with lower physical and cognitive abilities. It is necessary to use markings that contain both inscriptions and pictograms to facilitate the understanding of the notation. They should be convex and contain information in Braille. They can assume the form of signs supporting orientation in space (drawings, floor plans, models); traffic direction signs; signs informing about the function (written and pictorial) or signs indicating the directions of evacuation (Maćkiewicz, Halicki, 2019, p. 26).



**Figure 16.** Examples of signs in public buildings that are legible for people with special needs

Source: (Kowalski, 2018, p. 49)



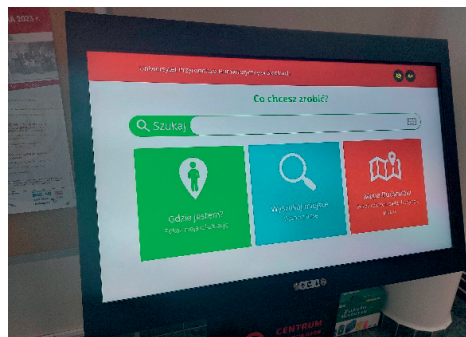
**Figure 17 and 18.** Information board with a colour code, raised markings and classic and Braille captions. Next to it, there is an inscription in Braille next to the toilet door  
Source: (Infrastructure of the Siedlce University of Natural Sciences and Humanities)

It is important that the font used in them is sans-serif<sup>9</sup>, which greatly facilitates reading for people with low vision.

- a) WEJŚCIE  
b) WEJŚCIE

**Figure 19.** Inscriptions made a) with serif font, b) with sans-serif font

It is also possible to use intuitively controlled information screens that will facilitate, for example, navigation around the building.



**Figure 20.** Navigation screen

Source: (Infrastructure of the Siedlce University of Natural Sciences and Humanities)

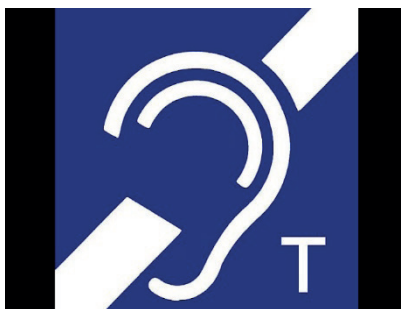
<sup>9</sup>The sans-serif notation is devoid of ornaments in the form of the so-called sheriffs. The character endings are simple.

If there is a reception counter in the building, it should be located at the main communication routes and have two levels of the countertop for people in a wheelchair or of short stature and for those using it in normal standing position. The lighting used should not dazzle the petitioner while illuminating the face of the person serving, which in the case of deaf and hard of hearing people will enable them to better lip-read. It is good practice to also use an induction loop for people using hearing aids.



**Figure 21.** Zachęta – National Gallery of Art in Warsaw: cash register with an induction loop, photo: Zachęta documentation

Source: (Kowalski, 2022, p. 32)



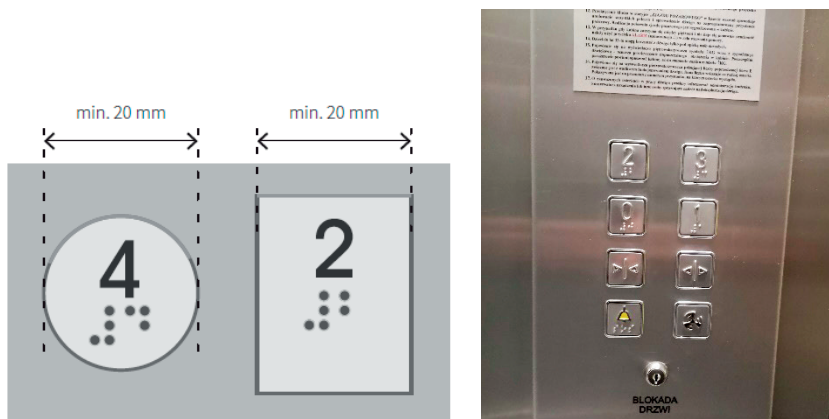
**Figure 22.** Marking of the induction loop

Source: <http://www.niepelnospraw.pl/ledge/x/1865291;jsessionid=5E02CB22C007AD5357C6B14B1C3F5DB6>

Movement around the building will be facilitated by passenger lifts (elevators). In the case of elevators, it is very important to be able to gain access to them in such a way that a person, e.g. in a wheelchair, can safely manoeuvre before entering the door<sup>10</sup>. In addition to the appropriate dimensions of the cabin and mounting of

<sup>10</sup> It is preferable to provide a maneuvering area in front of the lift car that allows the wheelchair to rotate 180°, i.e.  $\geq 2.0$  m in the direction of movement and  $\geq 1.5$  m in width. Source: (ISO 21542:2011, point 15.3).

control panels (call boards)<sup>11</sup>, it is also advisable to mark them appropriately so that they can be used by the blind and by visually impaired people. For this purpose, they should have, in addition to the classic ones, inscriptions in Braille. It is also advisable to use voice messages (Maćkiewicz, Halicki, 2019, p. 36). An indispensable element of each passenger lift should also be a mirror, which makes it easier for a person in a wheelchair to leave the lift when it is not possible to turn the wheelchair.



**Figure 23 and 24.** Designation of buttons in a passenger lift (elevator)

Source: 23. (Kowalski, 2018), 24. (Infrastructure of the Siedlce University of Natural Sciences and Humanities)

When using the elevator, however, it should be remembered that it is permissible only in the absence of danger. In the event of various types of dangers that may be associated with the loss of the lift's power supply or the possibility of its blocking, in each building, for safety reasons, they are blocked by making the so-called "fire descent" consisting in the elevator going down to the lowest floor and opening its door.

As regards using various types of architectural facilities, it is extremely important to prepare the sanitary facility and catering facilities in the appropriate way. In the case of toilets, they should allow people with special needs to use them on their own. On each floor of the building there must be at least one such toilet, in which a single toilet will not be separated by a vestibule from the general communication. Both the door and the interior of the toilet must be wheelchair accessible<sup>12</sup>. The toilet should be accessible from the right and left

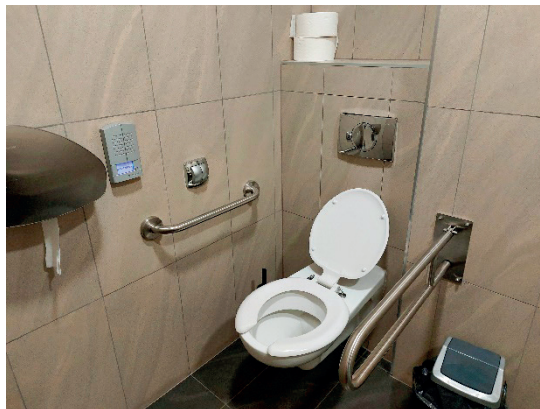
<sup>11</sup> The passenger lift cabin should be  $\geq 1.1$  m wide and  $\geq 1.4$  m long. The cabin door should have a clear width of  $\geq 90$  cm. Source: (ISO 21542:2011, point 15.3). The call board in the lift cabin should be located at a height of 80 to 120 cm, at a distance of not less than 50 cm from the corner of the cabin. Source: (Maćkiewicz, Halicki, 2019, p. 36).

Detailed information on recommendations regarding the preparation of lifts for the needs of people with disabilities can also be found in the study (Kowalski, 2022).

<sup>12</sup> The width of the frame should be at least 90 cm. The maneuvering space should be 150 x 150 cm in front of the sink and toilet. Source: (Polish Journal of Laws/Dz.U. 2002 No. 75 item 690, § 85 sec. 2 point 2 and § 86 sec. 1 point 1].



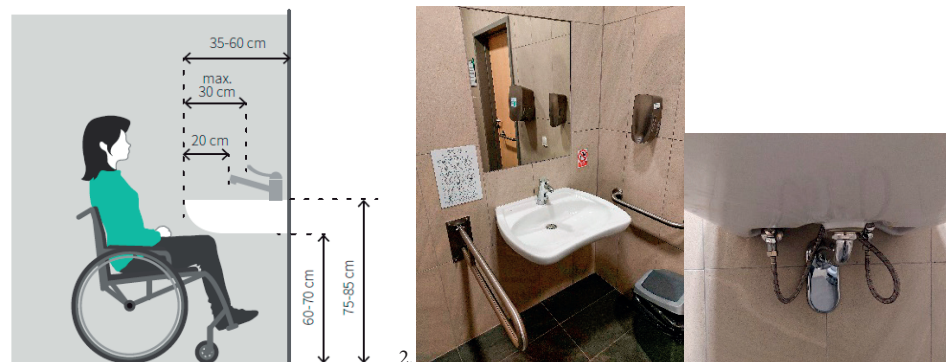
side<sup>13</sup> and the toilet bowl should be of appropriate depth<sup>14</sup>. Support brackets must be fitted on both sides of the toilet.



**Figure 25.** Toilet parameters

Source: (Infrastructure of the Siedlce University of Natural Sciences and Humanities)

As regards a washbasin, it must be shallow, allow the person using it to lean on it and drive the wheelchair under it. Therefore, the space under the sink should be 67 cm high from the edge of the floor and 30 cm deep. It is also necessary to install a flush-mounted or surface-mounted flat siphon so that people with no feeling in their legs can avoid burns (Maćkiewicz, Halicki, 2019, p. 32). The spout should be long enough to be operated by a person sitting in a wheelchair. An alternative solution is to use a photocell that opens the water flow.



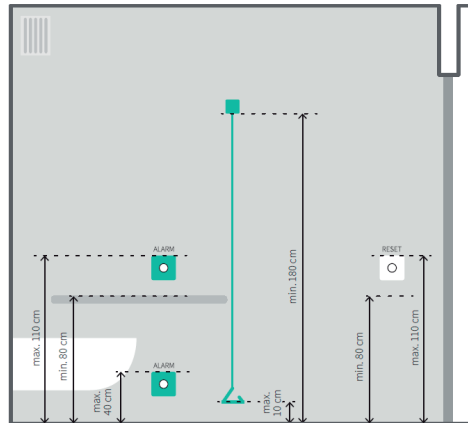
**Figure 26 and 27.** Washbasin parameters

Source: 26. (Kowalski, 2018, p. 211). 27. (Infrastructure of the Siedlce University of Natural Sciences and Humanities)

<sup>13</sup> Width 90 cm and depth 70 cm.

<sup>14</sup> It should be 46–48 cm including the seat.

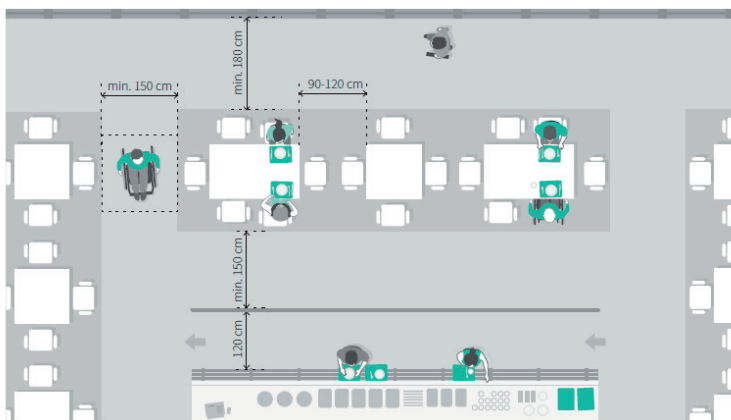
An essential element of the equipping of a sanitary facility is the button/buttons to call for help. It is important that they are at heights that allow them to be used in a sitting and lying position.



**Figure 28.** Principle of designing the emergency call system

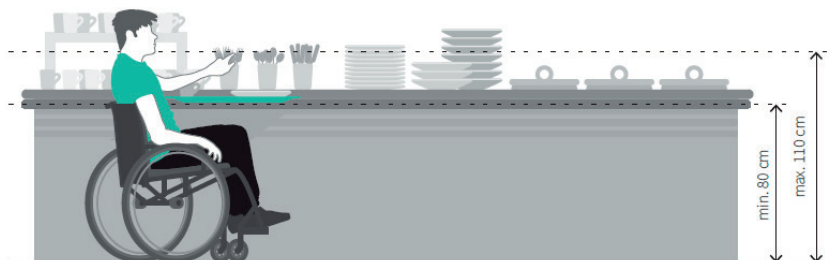
Source: (Kowalski, 2018, p. 214)

In addition to the sanitary facility, catering outlets are another important element of public utility places. They should be equipped with counters enabling the use of catering services by people in wheelchairs and short people. Also, tables used for having meals should be placed in such a way that it is possible to move between them on wheelchairs and using devices that facilitate movement (e.g. a walker).



**Figure 29.** Minimum parameters of the communication space in the canteen

Source: (Kowalski, 2018, p. 194)



**Figure 30.** The principle of arrangement of dishes, cutlery and other essential products

Source: (Kowalski, 2018, p. 195)



**Figure 31 and 32.** An example of adapting a catering unit

Source: (Infrastructure of the Siedlce University of Natural Sciences and Humanities)

The architectural infrastructure set up in the above manner should ensure safe and comfortable use by people with special needs during their everyday activities. This is a guarantee of their safe functioning in society.

## 5. Summary

Summarising considerations concerning the adaptation of architectural infrastructure to ensure the safety of people with special needs, it can be stated that the very bad situation in this respect is systematically being improved as of the beginning of the 21st century. This state of affairs is influenced by a number of factors, which include, above all, the adoption of an appropriate legal basis, and namely the Act of 19 July 2019 on ensuring accessibility to persons with special needs, corresponding to the international law that has been in force for a long time. It imposes the need, in a way, for the protection of this social group, which is an integral part of the nation and has the right to provide it with maximum security guarantees in every situation. The second positive step is undoubtedly an attempt at unambiguous definition of the concept of people with special

needs, although this category, due to its enormous semantic capacity, is very difficult to define unambiguously. In this way, the hitherto existing category of persons with disabilities was extended. It will, of course, be subject to systematic changes, but the first major step forward has been made. Finally, a very important element of building the broadly understood security of people with special needs is constituted by the extensive attempts at adapting the architectural, electronic and information and communication environment of their functioning over the past two years. Naturally, in the beginning, most activities are based on alternative access or possibly rational improvements. However, it should be assumed that over the longer term the adjustments will reach the level of universal design.

Based on the above conclusions, it is possible to positively verify the hypothesis put forward at the beginning of the considerations assuming that the current architectural solutions are able to, to a large extent, guarantee the safety of people with special needs. However, it is necessary to keep implementing them systematically and on a large scale in practice. This is tantamount to achieving the research objective.

Any improvements in these areas will be of a multifaceted nature. Apart from ensuring safety during everyday functioning, they will significantly contribute to the possibility of faster and more effective protection and rescue of people with special needs in emergency situations that bear the hallmarks of natural disasters and catastrophes. This is a milestone towards ensuring comprehensive safety for this constantly expanding social group.

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## BEZPIECZEŃSTWO W WYMIARZE ARCHITEKTONICZNYM OSÓB ZE SZCZEGÓLNYMI POTRZEBAMI W KONTEKŚCIE ZASAD DOSTĘPNOŚCI

### Abstrakt

Kwestia bezpieczeństwa osób ze szczególnymi potrzebami stanowi poważne wyznawanie dla systemu bezpieczeństwa ludności Polski. Jest to zagadnienie wieloaspektowe ze względu na bardzo szerokie rozumienie zagadnienia szczególnych potrzeb. Podjęte działania mające na celu jego budowanie wymagają wzięcia pod uwagę zarówno codziennego funkcjonowania tej grupy społecznej jak również zagrożeń o charakterze akceptowanym oraz nieakceptowanym. Podjęta w artykule problematyka dotyczy zapewnienia bezpieczeństwa osobom ze szczególnymi potrzebami poprzez dostosowanie architektury do ich kompleksowego funkcjonowania w środowisku społecznym.

**Słowa kluczowe:** bezpieczeństwo, osoby ze szczególnymi potrzebami, zagrożenie, projektowanie uniwersalne