ARCHITECTURE FOR AN INCLUSIVE SOCIETY: CREATING ACCESSIBLE ENVIRONMENTS FOR PEOPLE WITH DISABILITIES, DESIGNING INCLUSIVE SPACES AND BUILDINGS

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Abstract*. This article provides an overview of the principles, methods, and significance of inclusive architecture in the context of creating an accessible environment for people with disabilities. The article discusses two main approaches to inclusive architecture - universal design and reasonable accommodation, their compliance with regulatory documents and standards. It also analyzes the principles of universal design formulated by Ronald Mace and provides practical examples of their application in residential and public spaces. Special attention is paid to significant architects whose work in the field of inclusive architecture makes a significant contribution to creating accessible and comfortable spaces for all. The concluding sections of the article discuss the importance of inclusive architecture for society, as well as its role in improving the quality of life for people with disabilities. Scientific research and practical examples support the importance and relevance of the topic under consideration in today's society.*

Keywords*: inclusive architecture, universal design, accessible environment, people with disabilities, historical examples, architects.*

1.INTRODUCTION

In recent decades, the issue of inclusivity in architecture has become particularly relevant in modern society. Considering the diversity of preferences and needs of people with disabilities, creating an accessible and comfortable environment has become an integral part of architectural practice. Inclusive design aims to create spaces that can be used by anyone, regardless of their physical abilities or characteristics.

This approach to architectural design has deep social significance, reflecting respect for societal values and diversity. Inclusive architecture not only contributes to shaping a more just and inclusive society but also encourages innovation and creativity in architecture. Recognizing the importance of this issue, many modern construction projects and building standards actively incorporate principles of inclusive design. The issue of inclusion in architecture is of immense importance in contemporary society. Considering the diversity of preferences of people with disabilities, creating accessible environments becomes a key element of architectural practice. Inclusive design creates accessible spaces for all, regardless of physical abilities. It takes into account mobility, visual, auditory, and other aspects so that all segments of society can comfortably use buildings.

Inclusivity in architecture also reflects respect for societal values and diversity. It not only contributes to shaping a more egalitarian society but also creates new opportunities for innovation and creativity in architecture. Given the importance of this issue, many construction projects and building standards today actively incorporate principles of inclusive design. Several studies confirm that the issue of inclusivity in architecture remains relevant and important in modern

society. This study examines the prerequisites for creating and using safety-inclusive design when designing public spaces in accordance with the requirements of relevant standards and user needs. The research underscores the importance of inclusivity in architecture as a crucial aspect that helps make public spaces and territories accessible and convenient for use by all groups of people.[1]

Inclusive architecture is an approach to designing buildings and urban environments that takes into account the needs of all people, including those with disabilities. The main idea is to create accessible and comfortable spaces for every person, regardless of their physical abilities or characteristics. This approach is important because it contributes to creating a more equal and inclusive society, where every person can have an equal participation in societal life. Inclusive architecture helps to improve the quality of life for people with disabilities, making the urban environment more welcoming and accessible to all. Inclusive architecture also contributes to increasing convenience and safety not only for people with disabilities but for all citizens. For example, wide sidewalks, ramps, elevators, and other elements of inclusive architecture make the urban environment more comfortable for parents with strollers, elderly individuals, or temporarily or partially mobility-impaired individuals.

Through inclusive architecture, we create spaces that promote social integration, increase mobility and autonomy for all, as well as contribute to understanding and respecting diversity. As a result, we create a more harmonious and favorable society where everyone feels equal and respected. [2]

However, the World Health Organization has estimated that there are over one billion people with disabilities, with 20% of them experiencing serious functional impairments in their daily lives. Some notable disability figures worldwide (according to the WHO report) include:

- 253 million people suffering from some form of blindness or visual impairment, accounting for 3.2% of the world's population.

- 466 million people living with deafness or hearing loss, making up 6% of the world's population.

- Approximately 200 million people have intellectual disabilities (IQ below 75), representing 2.6% of the world's population.

- 75 million people rely on wheelchairs daily, constituting 1% of the world's population. [3]

Research and publications on inclusive architecture are an important aspect of the development of modern architectural practice. Interest in inclusive architecture has grown in recent years. Contemporary research and publications shed light on various aspects of inclusive design and provide detailed information on the principles and methods of inclusive architecture. Works such as "Universal Design Handbook," "Designing for Inclusivity: A Guide to Universal Design," "Designing for Accessibility: A Primer for Global Practitioners," and "Inclusive Design: Universal Need" provide valuable insights into creating accessible and inclusive spaces. These studies are just a small part of extensive research and publications on inclusive architecture, which continues to evolve and contribute to the creation of a more accessible and inclusive environment for all. [9] The practical application of inclusive architecture includes adaptations that ensure accessibility for all users, such as ergonomic handles and switches, special shower cabins, accessible toilets, lifts, ramps, tactile indicators, and contrasting displays. Leading architects, such as Lisa Ito Smith, Karl Frey, Karen Brenner, and Steven Hall, actively apply the principles of universal design to create inclusive spaces that provide convenience and accessibility for everyone. Historical examples,

such as the Lauren House and Ed Roberts' advocacy for an accessible environment, also demonstrate the importance of inclusive architecture. Thus, various studies on inclusive architecture add additional weight to the informativeness and significance of this topic in modern society.

2.METHODS AND MATERIALS

Modern research and publications in the field of inclusive architecture are analyzed with the aim of identifying the fundamental principles and methods for designing an accessible environment for people with disabilities. The UN Convention on the Rights of Persons with Disabilities defines two approaches to creating an accessible environment. The first approach is defined as the "universal design" principle, which states that "objects, media, programs, and services should be designed in a way that is compatible, to the greatest extent possible, with all types of human use." The second principle is "reasonable accommodation." This principle is defined in Article 2 of the UN Convention on the Rights of Persons with Disabilities as "necessary and appropriate modifications and adjustments required in specific circumstances to ensure that persons with disabilities can exercise and enjoy all human rights and fundamental freedoms on an equal basis with others, without creating a disproportionate or unjust burden." The principles of this approach are actively applied in the adaptation of existing facilities for people with disabilities. [8]

There are several regulatory documents and standards that regulate the creation of an accessible environment for all users. Some of them include:

1. UN Convention on the Rights of Persons with Disabilities: This international document sets standards for ensuring equal rights and opportunities for people with disabilities. It calls for the creation of an accessible environment and equal access to services and information.

2. The American ADA (Americans with Disabilities Act) standard: This US legislation establishes accessibility requirements for people with disabilities in public places, workplaces, and other areas of life.

3. ISO 21542:2011 Building construction - Accessibility and usability of the built environment: This international standard provides recommendations for designing and constructing buildings with accessibility and usability for all users, including people with disabilities.

4. Web Content Accessibility Guidelines (WCAG): This set of recommendations, developed by the W3C consortium, establishes standards for website accessibility for people with various needs. WCAG defines requirements for website content, design, and functionality to ensure accessibility.

5. EN 301 549:2018 Accessibility requirements suitable for public procurement of ICT products and services in Europe: This European standard sets accessibility requirements for information and communication technologies (ICT) to ensure equal access to digital products and services. Compliance with these regulatory documents and standards will help create a more accessible environment for all users, taking into account their diverse needs and abilities. [4][5][6][7]

The term "Universal Design" was first defined and used by Ron Mace in 1985. Ronald Mace was an American architect who used a wheelchair. Under his leadership, seven principles of "Universal Design" were formulated, which are especially relevant today. These are the 7 principles of universal design formulated by Ronald Mace:

1. Equitable use: design does not disadvantage or stigmatize any user group.

2. Flexibility in use: design considers a wide range of individual preferences and abilities.

3. Simple, intuitive use, regardless of user experience, knowledge, or language skills.

4. Effective information presentation regardless of environmental conditions or user sensory abilities.

5. Tolerance for error: design minimizes the hazards and adverse consequences of accidental or unintended actions.

6. Low physical effort: design and use do not require significant physical exertion.

7. Adequate size and space for access and use, regardless of a person's anthropometric data and mobility. [10][11]

The requirement for "universal design" can be fully implemented in relation to new construction (reconstruction) and the production of new products and services. However, the obligation to create universal design is not enshrined in legislation. Currently, legislators only regulate one part of universal design, namely the creation of an accessible environment for people with disabilities.[8]

Modern research and publications in the field of inclusive architecture contain a number of valuable resources that help define the basic principles and methods of designing an accessible environment for people with disabilities. Here are some key resources: "Universal Design Handbook": this reference guide presents the basic principles of universal design, describes tools and design methods aimed at creating accessible environments for all users. The authors focus on addressing the diverse needs of users, including people with disabilities. [12]

1. Development of housing plans with accessibility for all in mind: Creating residential areas with wide doorways for wheelchair access. Installing handles and switches at a convenient height for all users. Using special shower cabins for people with limited mobility.

2. Use of prototypes of blocks, plots, and houses with an assessment of their accessibility: Developing standard house plans considering universal design. Assessing the accessibility of each element of the house, such as bathrooms, kitchens, and bedrooms. Implementing universal design solutions such as wide corridors and low thresholds.

3. Providing detailed drawings and descriptions: Providing illustrated instructions for creating accessible living spaces. Describing components that support inclusive design in the house. Offering examples of applying universal design strategies in a home setting.

4. Providing generous spatial clearances for all users: Creating spacious bathrooms and kitchens for easy access and use. Installing furniture and equipment considering the diverse needs of users. Allowing for future upgrades and adaptations of the house to different needs. These examples demonstrate the practical application of recommendations for creating universal and accessible architectural solutions from the book "Designing for Inclusivity: A Guide to Universal Design" by Selwyn Goldsmith, which offers practical recommendations for creating universal and accessible architectural solutions.[13]

The book "Designing for People with Disabilities" by Selwyn Goldsmith discusses several specific design considerations for people with disabilities:

- Independence vs Interdependence: Goldsmith challenges the traditional American emphasis on the independence of people with disabilities and advocates for a model of interdependence. He argues that independence is often impractical and that design for people with

disabilities should focus on social, psychological, and physical well-being rather than strict independence.

- Inclusive Design: Goldsmith advocates for inclusive design that takes into account the diverse needs of people with disabilities in the environment. He emphasizes the importance of careful planning to create accessible spaces that consider various types of disabilities.

- Specifications: This publication presents detailed technical specifications for designing accessible spaces, including ramps, door widths, toilets, and assistive devices. These specifications provide architects and urban planners with practical recommendations for creating an accessible environment that meets the needs of people with disabilities.

- Psychological and Social Factors: Goldsmith considers the psychological and social aspects of disability and emphasizes the importance of design to ensure the social and psychological well-being of people with disabilities. He highlights the need to consider emotional and social aspects of disability, as well as physical accessibility, in design.

- Fair Treatment: Goldsmith advocates for fair treatment that takes into account the special needs of people with disabilities rather than a universal approach. He emphasizes the importance of creating special conditions and carefully planned design elements to ensure inclusivity and accessibility for all people with disabilities.

The considerations outlined in the book "Designing for People with Disabilities" emphasize the importance of creating an environment that is not only physically accessible but also socially and psychologically favorable for people with disabilities. Some examples of products and spaces designed using the principles discussed in Selwyn Goldsmith's book "Designing for People with Disabilities" include:

Universal accessible toilets: Goldsmith's principle of interdependence and consideration for designing all universally accessible toilets lead to disability. This reflects the principle of inclusion and support for people with disabilities.

Accessible ramps: This publication outlines technical requirements for designing ramps to ensure accessibility for people with mobility impairments. Designing ramps with low inclination, bends, and handrails aligns with Goldsmith's approach to barriers that hinder the free access of people with disabilities.

Automatic opening and closing doors: Goldsmiths pay special attention to design that takes into account the psychological, mental, and physical state of people with disabilities, so they include automatic door opening and closing devices in public spaces. Such features enhance the accessibility and independence of people with limited mobility.

Adaptive closures: Goldsmith's principles of thoughtful, high-quality design have led to adaptive closures being installed in retail locations. In line with the philosophy of the independent manufacturer Creating Environments, these shelves are designed to be easily used by people with physical disabilities.

Assistive handrails in bathrooms: Detailed specifications are provided for designing accessible toilets in public buildings, including handrails and raised toilet seats. Implementing elements such as handrails aligns with Goldsmith's concept of creating areas prioritizing well-being and accessibility for people with disabilities.

These products and spatial achievements have been translated into practical design solutions in the form of principles and recommendations in Designing for Disability to enhance accessibility, inclusion, and support for people with disabilities.[13]

"Designing for Accessibility: A Primer for Global Practitioners": This publication is intended for architecture and design professionals and provides an overview of the key principles of accessibility and inclusive design. The authors discuss various strategies and methods that can be used to create accessible environments for all users.

There are numerous scientific journals and publications dedicated to inclusive architecture, where the results of modern research and practical examples of design are published. Some of them include the "Journal of Accessibility and Design for All" and "Universal Access in the Information Society".[14]

And all of the above generally explores the key principles and methods identified in these sources, including:

Universal design: The principle of universal design involves creating objects, services, and environments that are accessible for use by all people, regardless of their age, abilities, or status. This approach includes creating flexible and adaptable spaces that can meet the needs of various users.

User involvement method: Involving users with disabilities in the design process to ensure their needs and preferences are taken into account. This includes collaborating with representatives of the disabled community and consulting with organizations advocating for their interests.

Adaptive technology: Implementing modern technologies and innovations to create a more accessible and convenient environment. This may include using special devices, applications, or automation systems that facilitate access and management in buildings and public spaces.

Multi-level accessibility: An approach that not only ensures basic accessibility for all users but also creates opportunities to meet individual needs. This can include various options for movement paths, diverse communication methods, and access to information.

Researching best practices: Analyzing successful examples of inclusive design, as described earlier in this conversation, to identify key success factors and apply them in new projects.

These principles and methods for designing an accessible environment for people with disabilities form the basis of modern inclusive architecture and are widely discussed and studied in academic and professional circles.

In the field of inclusive architecture, there are many modern architects whose work and contributions to it are noticeable and important. Here are a few examples of such architects:

Flexible House ***https://www.dwell.com/article/iwamoscott-architecture-goto-house-17ba7f6b***

Lisa Iwamoto Smith (Lisa Iwamoto): a professor of architecture at the University of California, Berkeley, and the founder of Iwamoto Scott Architects. Her work in the field of inclusive architecture focuses on innovative approaches that use modern technologies and materials to create spaces that are accessible and convenient for all. Lisa Iwamoto Smith, a professor of architecture at the University of California, Berkeley, and the founder of Iwamoto Scott Architects, has made a significant contribution to the development of inclusive architecture through her work, research, and projects. Although it is not always easy to find direct references to specific standards and developments in the field of inclusive architecture associated with Lisa Iwamoto Smith, her approach to design and attention to the theme of inclusion in her projects deserve attention. Important aspects of her work related to inclusive architecture include:

Innovative materials and technologies: Lisa Iwamoto Smith often experiments with modern materials and technologies in her projects. This may involve using materials that provide better accessibility and convenience for people with various abilities. For example: The "Flexible House" project - a house created using innovative materials such as flexible polymers and smart touch surfaces (Fig 1). These materials allow the house to adapt to the needs of its residents, providing better accessibility and convenience for people with different abilities. [15]

Functional adaptability: Her works may include spaces designed to be flexible and adaptable to various users' needs. This may involve changeable forms or multifunctional spaces that can easily adapt to different situations and needs. The "Park of Flexible Forms" project is a public space designed taking into account diverse user needs (Fig.2). The space features numerous flexible elements, such as seating and tables, that can be moved and transformed according to the situation and preferences of visitors.

User Needs Research: Lisa Iwamoto Smith, as an academic and professional architect, likely conducts research to better understand the needs and preferences of people with different abilities. This allows her to develop spaces that take into account the diversity of user needs. The research project "Design for All" is a series of studies aimed at examining the needs and preferences of users with limited abilities. The results of these studies help define specific strategies and recommendations for the development of more inclusive spaces and features.[16]

Karen Braitmayer: Architect-designer and founder of the Karen Braitmayer studio, specializing in accessibility and inclusion. Her works include designing buildings, public spaces, and infrastructure objects that provide equal access for all.

Development of accessibility standards:

Fig.2 Park of Flexible Forms ***https://www.iwamotoscott.com/projects/chengdu-pavilion***

Karen Braitmayer worked with the American Institute of Architects (AIA) on updating its accessibility and universal design guidelines. Her involvement in such projects indicates her

expertise in this area and recognition by her colleagues as a key contributor to the development of accessibility standards in architecture. Karen Braitmayer participated in the update of the American Institute of Architects (AIA) guidelines on accessibility and universal design. As part of this work, norms and recommendations for creating accessible buildings and public spaces were clarified and enhanced.

Design of accessible buildings and spaces:

In addition, she was involved in the reconstruction project of a city public library, where the needs of all user groups, including people with disabilities, were taken into account. The project included special ramps, lifts, and furniture elements adapted for wheelchairs. Karen Braitmayer consulted with clients and stakeholders on accessibility and inclusivity issues in a medical center project. During these consultations, the specific characteristics and needs of users with different types of disabilities were identified, and recommendations were developed for incorporating these needs in the building design.

And all of this includes criteria such as conducting accessibility audits of existing buildings, consulting with accessibility specialists and representatives of user groups with disabilities, as well as using universal design principles to create spaces suitable for all user groups.

Steven Holl: An American architect whose works are known for their attention to human scales and the use of light and materials to create emotionally charged spaces. His projects also typically take into account the needs of users with different abilities.

Therefore, when considering developments in the field of inclusive architecture by architect Steven Holl, attention should be paid to his contribution to creating spaces that accommodate diverse user needs. Holl is known for his innovative design approaches, which take into account not only aesthetic perception but also functional suitability for different user groups.

Some of his developments include:

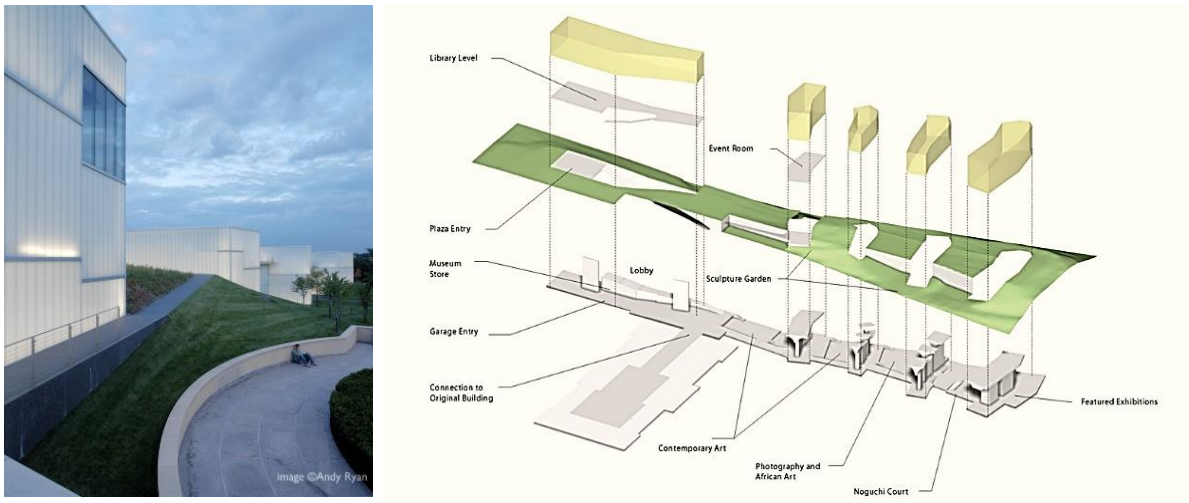

Fig.3 Nelson-Atkins Museum in Kansas City*https://www.archdaily.com/4369/the-nelson-atkins-museum-of-art-steven-holl-architects*

Nelson-Atkins Museum in Kansas City: In this project, Holl used light and spatial effects to create a unique museum visiting experience. These solutions, such as the use of natural light and curved room forms, can contribute to improving accessibility and comfort for visitors with different needs (Fig.3).[17] Seattle Public Library, Washington: Holl's design of the library is characterized by boldness and an innovative approach to form and function. It has allowed for the creation of a space that encourages interactivity and diverse activities, which are particularly

beneficial for a wide range of users, including people with disabilities (Fig.4). Saint Louis Center for Architecture and Design: This project is a prime example of an inclusive approach to designing public spaces. Holl created a space that promotes interaction and idea exchange while ensuring accessibility for all users. Holl often incorporates universal design principles into his work, aiming to create spaces that are accessible to all, regardless of abilities. His projects include elements that provide accessibility, comfort, and safety for all users. These and many other architects have made significant contributions to the development of inclusive architecture through projects, research, and active participation in public initiatives. Their work helps create more equal and inclusive spaces for all user groups.

Successful projects in the field of inclusive architecture and public spaces have been studied to identify best practices and innovative approaches used in this area.

Fig. 4 Seattle Public Library ***https://archinect.com/news/article/150350391/new-york-city-sues-steven-holl-architects-over-inaccessible-hunters-point-library-design***

In the USA, inclusive design is considered a civil rights concept. The first known building designed to meet the needs of people with limited mobility was the Laurent House, built by Frank Lloyd Wright for Kenneth Laurent, a World War II veteran confined to a wheelchair (he was 1952 years old at the time). Wright saw the commission as a challenge to his architectural talents (Fig.5). He designed a single-story flat house with an open layout, gentle slopes, wide doorways, ergonomic furnishings, and a special arrangement of furniture in the living room so that the homeowners were always on equal footing. Electrical outlets, door handles, and the shower in the bathroom were positioned at a height that allowed Kenneth to use them independently. Today, the Laurent House is a museum, a tangible proof that adaptive design and aesthetics are not opposites. John Gro, one of the founders of the Laurent House Foundation, says: "Looking at the house, you may not even realize that it was designed for people sitting in wheelchairs." Projects of private residences created for "special" clients are not uncommon among the works of American architects. However, creating an accessible urban environment remains a challenge.[19]

Fig.5 Drawing of the Laurent House, built by Frank Lloyd Wright for Kenneth Doren, who was traveling in a wheelchair. Photo: Nels Akerlund. ***laurenthouse.com***

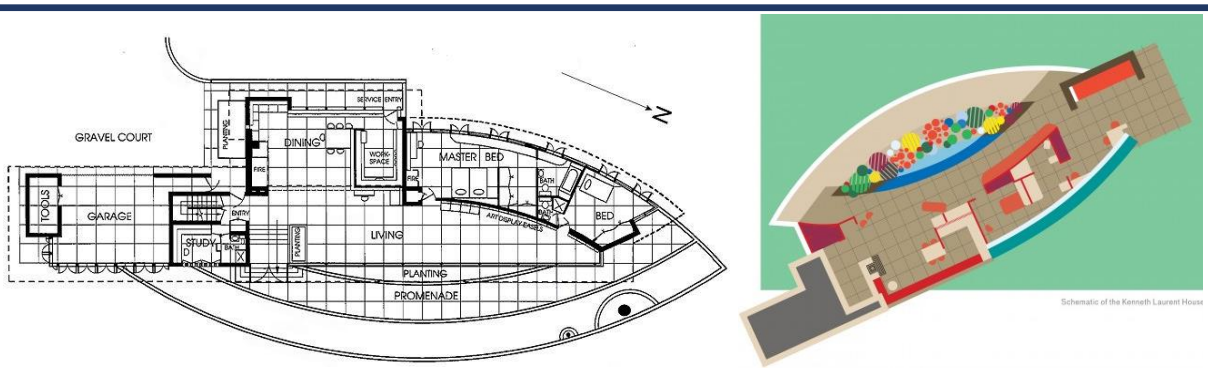

Fig.5 Laurent House, built by Frank Lloyd Wright for Kenneth Doren, who used a wheelchair. Photo: Nels Akerlund. ***laurenthouse.com***

A fierce advocate for inclusivity, a provocateur, and an activist was Ed Roberts. Having survived polio in his childhood, Roberts was later left completely paralyzed, spending most of his time on a ventilator. In school, Ed Roberts faced incredible difficulties, but his siblings and mother taught him lessons. After graduating from university, he applied to the University of California, Berkeley but initially was denied. However, he argued that the university administration was violating his constitutional rights. As a result, a room in the campus hospital was converted into a living space for Roberts.

Ronald Mace and his seven principles. "Architecture can be inclusive only if the architect shows empathy," said Raymond Lifchez, an architect and the author of the book Design for Independent Living. An architect and industrial designer, Ronald Lawrence Mace, a pioneer in accessible architecture and adaptable housing, did not lack empathy. Like Ed Roberts, who was confined to a wheelchair in childhood due to polio, Mace had to overcome physical and social barriers throughout his life. In 1973, he participated in the development of the first code for accessible housing in the USA and legislation aimed at overcoming discrimination against people with special needs. He founded the Center for Accessible Housing at the School of Design at the University of North Carolina. This organization, later renamed the Center for Universal Design, is now a leading national and international resource for research and information on transforming housing and living environments. It was Ronald Mace who introduced the term "universal design," which goes beyond minimal access requirements and promotes a wide range of solutions that can be effectively used by all. Mace's concept is that all built objects should be aesthetically appealing and maximally convenient for everyone, regardless of age, abilities, or status.

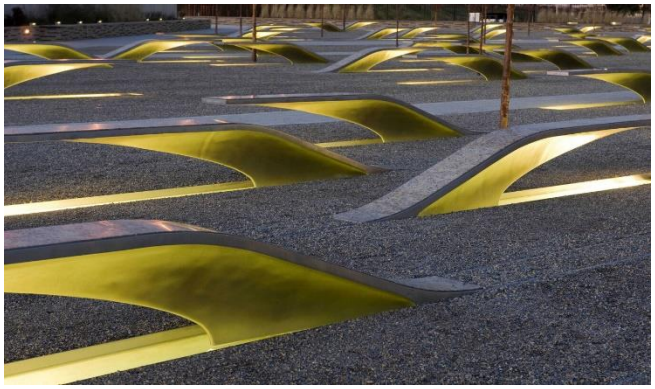

Fig. 2 Pentagon 9/11 Memorial in Arlington, USA. The project is a Joint Venture. ***arbancarosi.com***

He was also the president of Barrier Free Environments Inc., a consulting company offering assistance in construction using universal design principles. Thanks to Mace, major buildings in Washington, such as the Capitol and the Kennedy Center, became accessible to people with disabilities.

Universal design can be considered an architectural philosophy that unites people striving to make urban spaces as accessible, efficient, sustainable, aesthetic, and economic as possible. This is primarily achieved through objects, blocks, districts, and cities that are built from scratch or undergo thorough reconstruction.

For example, universal design principles were utilized in the reconfiguration of the World Trade Center site and the construction of the 9/11 Memorial. Large steps were compensated for by smooth ramps instead of stairs, allowing the majority of pedestrians to pass (Fig 6). The names of those who perished are placed on the parapet of the cenotaph at a height visible to children, adults, and individuals in wheelchairs. People with limited mobility can freely enter and exit the museum, café, and lecture hall. Universal design goes beyond minimal accessibility requirements.

A beacon and global model of accessibility and universality is the Ed Roberts Campus in Berkeley, designed by Leddy Stacy Architects (LMS Architects) and named in honor of activist Ed Roberts, who fought for the rights of the disabled.

Within the Ed Roberts Campus is the headquarters of the Center for Independent Living, which offers professional, educational, medical, and legal services to people with mobility and sensory impairments. The campus's architecture and interior, covering approximately 7,000 square meters, were developed in accordance with ADA accessibility standards and the application of seven principles of universal design. Acoustic cues, high-contrast wall finishes, and textured floors were used to help visually impaired individuals find their way. The elevator can be remotely controlled via smartphone, and doors can be opened automatically (Fig.7). There are no stairs, but a bright scarlet spiral ramp leads to the first floor, serving as the centerpiece of the central atrium. Developers used natural materials in the architecture and interior, and installed innovative filters to purify and humidify the air, providing comfort to individuals with allergies, asthma, and chemical sensitivities. During the construction of the campus, the Ashby BART metro station was improved, and now hundreds of people with limited mobility visit this inclusive hub in Berkeley. [20]

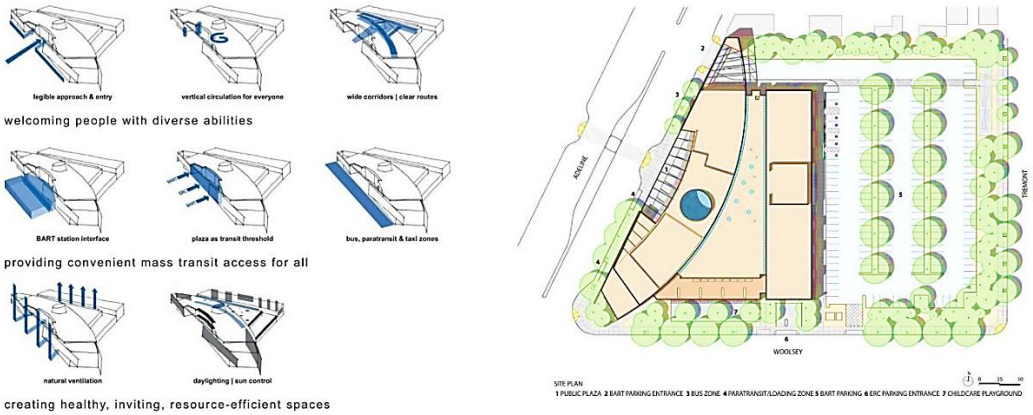

Fig.7 Campus is the headquarters of the Center for Independent Living, which offers professional, educational, medical, and legal services to people with mobility and sensory impairments

To help understand the scope of universal design application, architects have divided it into six categories: 1. physical environment (how people approach a building, reach it, and move within it, how they grasp its layout and safety features); 2. visual environment (including daylight, electrical lighting, visual contrast, and navigation); 3. acoustic environment; 4. thermal environment (including natural ventilation and filtered outdoor air); and 5. electronic environment (including security, communications, and digital technologies). Much of what LMSA has done to assist people with limited abilities at ERC is beneficial for everyone, for example, using daylight to aid visually impaired individuals in moving around. For instance, architects allowed daylight to enter the indoor courtyard through round skylights and used tall skylights and lantern windows along the first-floor corridors. Similarly, the use of operable windows and non-toxic materials, when possible, ensures healthier indoor air quality that benefits everyone, not just those sensitive to chemicals. Reddy and his team even considered elements that may seem explicitly designed for disabled individuals at first glance (such as a 56-foot ADA ramp adjacent to the vestibule) as an opportunity for design rather than a compliance issue. Therefore, instead of hiding the ramp out of sight, architects highlighted it as a signature building element and placed it front and center. Composed of translucent red plastic panels, the spiral ramp is suspended on cables attached to the inner radius, making it appear suspended when viewed from the rest of the vestibule and the inner courtyard. Above the ramp is a large skylight with warm bamboo panels that illuminate the source of light. By making the ramp 7 feet wide, designers created enough space for two individuals in wheelchairs or one in a wheelchair and one walking to descend together without interrupting their conversation.

Fig.7*archdaily.com*

Restrooms have always been an important issue for individuals with limited abilities. To meet various needs in buildings, there are different options for restrooms, including separate rooms with left-side grab bars, separate rooms with right-side grab bars, and separate rooms spacious enough for a caregiver to assist. Most offices are equipped with presence sensors that automatically turn lights on and off. These sensors, along with ample daylight, operable windows, and other eco-friendly components, allow the building to exceed the strict California Title 24 energy consumption standard by 15 percent. Reddy's goal in creating the ERC was not just to compile a detailed list of strategies and features in one building. "It's a question of social justice," says the architect. "How can we make architecture open to all? It's about celebrating diversity, not just adapting for individuals with limited abilities." [21]

RESULTS

Universal design is an approach to design aimed at making spaces and products accessible to people of all ages and abilities. (Table 1)

Table 1.

BASIC PRINCIPLES.

Principle	Description	Application example
Flexibility	Spaces should be adapted to individual preferences and different abilities.	Modular furniture, adjustable height of tables and chairs
Simplicity and intuitiveness	The design should be easy to understand and use.	Clear navigation, clear symbols, contrasting colors
Durability	The equipment and products must be strong and durable.	Wear-resistant materials, easy to clean surfaces
Perceived information	Information should be easily perceived regardless of environmental conditions and the sensory abilities of users.	Sound and visual signals, tactile elements
Comfort	Objects and products should be easy to use.	Ergonomic furniture
Tolerance for mistakes	Projects should minimize accidental hazards and negative impacts.	Protective elements, non-slip surfaces
Low physical effort	Projects should minimize the physical effort required to use the space.	Automatic doors, ramps, elevators
Size and space	Sufficient size and space for approach, access, manipulation and use.	Wide aisles, adapted bathrooms
Availability	The design should be accessible to as many people as possible without requiring adaptation.	Unified controls, no barriers
Fair use	The design should be useful and accessible to people with different abilities.	Equal access to functions and information
Inclusive design	The design process should take into account the needs of all people, including people with disabilities.	Consultations with experts, consideration of various use cases
Sustainable development	The design should be eco-friendly, energy efficient and sustainable.	The use of energy-saving technologies, eco-friendly materials
Cultural sensitivity	Spaces and products must take into account the characteristics of different cultures and user groups.	Respect for cultural norms and traditions, accessibility of information in different languages

Methods of application:

- Floor covering: non-slip, obstacle-free, contrasting colors to indicate steps.
- Lighting: sufficient lighting, adjustable brightness, color temperature.
- Color contrast: contrasting colors for walls, floors, doors, furniture.
- Doorways and corridors: sufficient width for wheelchairs.

- Furniture: adjustable height, armrests, back support.
- Bathrooms: grab bars, barrier-free shower, space for wheelchair maneuvering.
- Elevators and ramps: Braille buttons, voice announcements, space for wheelchairs.
- Acoustics: sound-absorbing materials, absence of echo.
- Navigation: contrasting colors, clear signage, use of natural lighting.
- Power and data access: outlets at different heights, wireless internet access.
- Open spaces: ramps, level paths, seating at different heights, lighting.
- Technologies: speech-to-text software, assistive listening devices, sensors for light and temperature control.
- Maintenance: regular checks, technical maintenance schedules, staff training.

Taking into account the needs of individuals with cognitive or sensory impairments:

- Simplification of layout.
- Clear and consistent markings.
- Use of sensory signals.
- Providing quiet spaces.
- Use of natural materials.
- Offering different seating options.

Depending on the estimated number of individuals with disabilities, the client's financial capabilities, and the functional structure of the building or structure, one of two accessibility options is advisable to be proposed (home services are not considered).

Option "A" - accessibility for individuals with disabilities in each residential unit, in all service areas in public buildings, and in all workplaces (with permission from social authorities). This should include general universal movement routes accessible to all population groups, including individuals with disabilities; specially adapted workspaces tailored to the needs of individuals with disabilities or specifically designated from the total number of residential units and service areas.

Option "B" - designating blocks specifically adapted and equipped for individuals with disabilities, specially designated spaces, zones, or levels at entry platforms. Special entrances, specifically organized parallel movement corridors, and service areas should be provided for individuals with disabilities. It is recommended to use the features presented in parts 2 and 3 of the table for any option for organizing building accessibility for groups with limited mobility.

Improving the quality of the architectural environment is achieved by ensuring accessibility, safety, convenience, and informativeness of buildings for the needs of individuals with disabilities and other groups with limited mobility without infringing on the corresponding rights and opportunities of other individuals in these buildings.

In terms of importance, these criteria have the following priority order:

1. Accessibility
2. Safety
3. Informativeness
4. Comfort

Accessibility standards include requirements for:

- Unobstructed movement on contact corridors, platforms, and areas;
- achieving the intended goal or service area and using the provided facilities; and
- Availability of rest areas, waiting zones, and accompanying services.

Safety involves creating conditions for living, visiting service areas or working without the risk of injury or damage to property, as well as harm to other individuals, buildings, and equipment. The main requirements of safety standards include the following:

- Avoiding injuries, scratches, amputations, and excessive fatigue caused by the characteristics of the building environment (including finishing materials used);
- ability to timely recognize hazardous areas or zones and react to them; and
- Difficulties in recognizing road junctions;
- Warning consumers of potential danger areas;
- Fire safety.

Informativeness is the ability to receive, recognize, and respond to information in a timely manner. The requirements of the informativeness standard include:

- Use of information dissemination means relevant to the characteristics of different consumer groups;
- Timely recognition of signs in the surrounding environment of public buildings; and
- precise knowledge of where you are and where you need to go;
- effective navigation both in daylight and in darkness; and
- Continuous informational support should be available throughout the building perimeter.

The level of comfort of the created environment in the project is assessed both physically and psychologically.[7]

To ensure accessibility to service areas in buildings and structures, it is recommended to adhere to the following priorities in the design process:

- Architectural design of the building, its volume, silhouette, and external appearance, facade decor details, including entrance elements;
- Functional zones, room groups, premises;
- Service areas;
- Communication, recreational spaces and premises, including rest and waiting areas, sanitary facilities;
- Elements of engineering equipment, including specialized equipment for individuals with health impairments;
- Information systems, including outdoor advertising;
- Interior design and furniture solutions;
- Lighting and color design of the area, facade, interiors.

The architectural design of the object should assist visitors with limited mobility in:

- Identifying building zones, structures, premises;
- Finding and using communication spaces, determining their path, including during evacuation;
- Quickly identifying and confidently avoiding risk zones.

When designing a building site or complex, it is important to ensure the continuity of pedestrian and transport routes, providing access for individuals with disabilities and those with limited mobility to the buildings. These pathways should intersect with external communications and public transport stops in relation to the site.

Barriers within the premises should allow for support movement through passages and along them. When positioning buildings, structures, and complexes within the site, efforts should

be made to reduce the distance from the most likely entrance to the building or structure accessible to visitors with limited mobility. [19]

The requirements for elements of building sections accessible to people with disabilities are given in the table

Table 2

An object	Criteria requirements			
	Availability	Safety	information content	comfort
1	2	3	4	5
1 Fencing of the site		Do not build protruding fences at dangerous heights.	Ensuring the possibility of passage through fences.	Built-in or attached recreation areas.
		Use non-traumatic trees and shrubs for fences.	Inclusion of identification and advance warning elements in fences (barriers).	Installation of railings along fences.
2 Entrances and entrances to the site			Marking roads with building structures and lighting (at night).	Markings and signs on the paths.
3 Walking paths	The construction of turning and U-turn areas, including in dead-end elements of pedestrian traffic paths.	Access roads should not overhang the roadway.	Ensuring the safety of pedestrian routes with the help of signs, signs, warning signs with a height of at least 0.5 m, digging trenches and changing the texture of the road surface.	Installation of recreation areas at the intersections of paths before entering the building and before exiting it.
		Fences, railings and roadsides (including foliage) should be used to determine safe driving routes on the site.	Providing information about the location and distance to entrances and exits, services and recreation areas.	Installation of orientation aids for people with disabilities.
		Make sure that the route is visible when crossing the road.		

4 Parking lots for disabled people's personal vehicles		Approach pedestrian objects without crossing the roadway.	Set up a local communication channel between the parking lot and the Public Services Management department to call the maintenance staff.	Creation of a warehouse in the parking lot for the rental of various mobility aids and technical rehabilitation equipment for disabled people and people with limited mobility.
		Fencing of dangerous areas and advance notification.		Arrangement of covered access roads for people with disabilities.
5 Landscaping	The border of the landscaped operated sites adjacent to the pedestrian traffic paths should not have a height difference, curbs, side stones with a height of more than 4 cm.	Lack of landscaping that prevents the visibility of crossings and dangerous areas.		Landscaping of recreational areas with health-improving tree species.
	The construction of dirt tracks (trails) with properties and parameters of pedestrian traffic paths.	The absence of design elements that create the illusion of fallen vegetation, obscuring roads and footpaths, protruding canopies, trunks and roots.		Using flowering carpets to duplicate information signs.
		The use of non-traumatic trees and shrubs for	The use of landscaping methods to determine	

		landscaping the territory.	pedestrian routes, recreation areas and service areas.	
6 Elements of landscaping, small forms, advertising	The use of landscaping elements that allow them to be used from the height of a wheelchair.	Information for people with disabilities should not contain text or symbols that can be ambiguously interpreted and pose a threat of stress.	Linear planting of trees and shrubs along the edges of pedestrian corridors.	Installation of landscape elements next to pedestrian crossings.
	Advertising elements and signs should not completely cover entrances and platforms on the roads.	The absence of obstacles, such as blindfolds from advertising, which interfere with the perception of information.	Avoid blocking traffic lights, way signs and fences of dangerous areas with green spaces. Lighting or illumination at night to indicate the location of landscaping elements, entrances to pavilions, gazebos and parking structures.	The location of the landscape elements, taking into account the possibility of using them with a minimum number of turns.
				Providing supports (for example, fences) for interruptions in the use of landscaping elements.
7 Specialized sites (with service points)			Asynchronous (simultaneous) provision of information in various ways to avoid confusion.	Connecting the approaches to the site by the shortest paths of movement.
				If there is an area for guide dogs, the minimum size of the enclosure should be 1.5 m2.
8 Playgrounds and recreation areas An object	The accommodation is adjacent outside the dimensions of the paths of rest and waiting areas.	Safety		The use of sun visors or canopies to protect against overheating and rain.
				Protect quiet recreation areas from extraneous noise.
				To provide visual enjoyment of

				panoramic views from recreation areas and decorative elements of landscape architecture.

When organizing vehicle access on the site directly to the entrance on entry platforms and in porticos, it is recommended to provide the following:

a) in institutions with service format "A":

- the ability for pedestrians and passengers to embark or disembark simultaneously;
- spaces on the horizontal part of the entry platform or portico sufficient for a vehicle to stop while allowing pedestrian traffic;
- marking pedestrian and vehicle paths on ramps and the platform;

b) in institutions with service format "B" (in addition to those specified for format "A"):

- Spaces accessible to visitors with limited mobility, interconnected with the functional process, are recommended to be compactly located on a minimum number of levels.

When designing, it is advisable to consider the requirements presented in Table 3.

Requirements for the main functional rooms

Table 3

An object	**Criteria requirements**			
	Availability	safety	informativeness	comfort
1	2	3	4	5
1 Inputs		Marking of "potential danger" zones, taking into account protrusions when moving the door leaf.	The presence of warning information about the placement of the entrance to the desired room on the approach to it.	Automatic door opening and closing devices.
			The allocation of the doorway due to plastic, graphic and light media.	
			Warning light and (or) sound information about the possibility of entering the room (with individual service in turn).	
2.Traffic areas in functional areas			Identification of information means, including architectural ones,	

			of landmarks of movement to the place of service in the communal areas.	
3. Service areas and locations	The size of the circular access area is not more than 2 m in diameter when using fixed swivel chairs (armchairs).		Availability of functional marking of service areas and places.	Automatic switching on, off and automatic adjustment of lighting equipment to ensure sufficient lighting.
		The location of the handrails in the cabin for ease of use (the handrails themselves, other devices and accessories), as well as handrails with fixed elements (built-in).	Contrast marking of contact parts of functional equipment.	Intercom devices in adapted functional cabins, loudspeaker payphones and synchronized visual information (scoreboard).
		Warning and contrast signs that exclude placement and accidental contact with cantilevered handles, levers, hooks, horizontal panels, etc.	Information about the availability and placement of adaptation devices and devices.	Visitors should be able to use slide-out consoles and portable writing materials that are resistant to slipping and tipping at the staff table.
		Resistance of stationary equipment and furniture to shearing and overturning.	Placement of tactile information in an area of optimal reach from the work surfaces of service areas.	"B" - the use of tables for personal work with special devices (including for grabbing and holding objects).
		The absence of elements in	Installation of information on	Providing a place next to a

4 Lobbies and atriums		furniture and stationary equipment that can cause injury (fittings, protrusions, texture of contact surfaces).	the layout of traffic paths through a building, structure or complex and on the location of service and recreation areas.	wheelchair user for the person accompanying him.
	Location at the entrance level. Separation of the production lines of the reception, information desk and kiosks from the waiting area and allocation of sufficient space for the expected maximum number of users.	When configuring interchanges, signs and way signs should be positioned counterclockwise around the perimeter.	Placement of hanging and wall signs, placards, signs, taking into account the optimal angle of view.	Placement of television monitors, kettles and vending machines in recreation areas (waiting areas). Where the doors open outwards, the entrances and exits should be deeply recessed into the surrounding area.
		B - Placement of facilities for people with disabilities and limited mobility.	Allocation of lanes for wheelchair users.	
5 Reception rooms, information rooms, pass offices,		Turnstiles, barriers, seats and movable supports must be secured and prevented from tipping over or moving. Similar to the requirements for lobbies.	Similar to the requirements for lobbies.	
			The device of a special line for the entrance to the building of disabled and low-income persons with the necessary equipment, markings, information devices.	
6 Wardrobes	If the entrances are located on different levels, it may be acceptable to place the access	The protrusions and corners of the racks must be rounded to a	Additional illumination of the signs and hangers of the wardrobe	Equip the waiting areas with seating for people with disabilities or limited mobility.

	bureau on a lower level.	radius of at least 0.05 m.	accessible to the disabled.	
				Organization of wheelchair exchange points for visiting office buildings through checkpoints.
				In buildings where access is limited, provide for the possibility of changing shoes and wheelchairs and arrange storage facilities for this (museums, medical institutions, children's institutions).
7 Latrines, washrooms and hygienic cabins	The distance between the hangers or walls and the hangers should be at least 1.5 m, and the height of the hooks should not exceed 1.6 m.		Installation of alarm devices at the cabin (occupied/-free).	Benches with a width of at least 0.6 m and a corridor between the benches of at least 1.2 m for changing clothes for the disabled.
	Handrails for the disabled should be provided on the shelves of dressing rooms.		The use of contrasting color solutions in the interior of the cabin and the wash area for visually impaired people.	To ensure the free access of wheelchair users to the dressing rooms, it is recommended to use hangers with an automatic belt hook transfer system.
				Visual separation of zones for people with

				significant physical disabilities (screens, curtains, curtains).
8 Showers and bathrooms		The toilet doors should open outwards.	The same as for the restrooms.	Installation of vending machines for the sale of personal hygiene products. Arrangement of hangers and places for temporary storage of wheelchairs, crutches, prosthetic legs, etc. Shower cabins should have horizontal (0.6 and 0.9 m high) and vertical auxiliary handrails (0.75 m high at the bottom) and a bench 0.5 x 0.5 m at a height of 0.5 m from the floor. Folding benches are preferred.
	Mirrored bottom edges, electric towel and toilet paper holders should be installed at a height of no more than 0.8 m from the floor, and hooks or hangers at a height of no more than 1.3 m from the floor.	It is necessary to use non-slip materials for the floor, even if it is wet. Sewer pipes and drains must be located outside the traffic area.		
	Toilets and washbasins with handrails (lifting straps) for use by people with disabilities.			
9 Saunas and baths		As in the case of toilets. Heaters in the sauna should be protected by removable grilles.		
	If there is a bidet and a toilet, the dimensions of the special room must be at least 2.1 x 1.8 m.			
10 Rooms (cabins) for mother and child	Shower rooms for the disabled (including front showers) must		The same as for the restrooms	Special places for wheelchairs or other mobility devices should be

An object	have an area of at least 5 m2.			provided in changing rooms and toilet aisles.

The distance from the service points to the restrooms in the areas of sports, entertainment, memorial, religious complexes and burial sites should not exceed 200 m, while the placement of sanitary and hygienic premises (buildings) is recommended in close proximity to the main entrances, entrances, communication nodes. Table 4

Table of standards for the design of sanitary and hygienic premises for people with disabilities

Table 4

Room	Standard
Children's institutions	5% of the total number of toilets for girls
	2% of the total number of toilets and urinals for boys
	1 hygiene room for girls with limited mobility for 360 girls from 12 years old
Service buildings (institutions), educational and administrative buildings	5% of the total number of toilets for women
	2% of the total number of toilets and urinals for men
	1 of the 4 hygiene rooms or cabins should be adapted for the disabled
Train stations	1 room or cabin for mother and child, adapted for people with limited mobility
The maximum number of devices/cabins in one room	16
Universal cabin	1, if 1 place is required by calculation
Airlock vestibule	The distance between the open doors is not more than 1.5 m
Shower cabin for people with visual impairments	Closed, with a door opening inwards. The size is 2x0.9 m.
The distance between the axes of the devices	Washbasins - not less than 0.65 m, urinals - not less than 0.7 m
Urinal for children	Height - no more than 0.4 m from the floor. The distance between the axes is at least 0.8 m.
A sink for the disabled	Height - no more than 0.8 m from the floor. The distance from the side wall is at least 0.2 m.
Mirror and hand dryer	Height - no more than 0.8 m from the floor.
Placement	Women's rooms, mother's and child's rooms - adjacent to the women's restrooms and washrooms.
Toilet bowl for disabled visitors	Height - from 450 mm to 600 mm from the floor.
Semi cabins for children	As part of restrooms in institutions designed for visiting disabled visitors with children.

Engineering devices and equipment for the categories of occupants using buildings and premises include:

- elevators;

- lifts, hoists, traverses, and conveyors for individuals with disabilities;
- water supply and sanitation systems;
- heating and ventilation systems;
- power supply systems;
- fire alarm systems;
- communication and signaling devices;
- elements and devices for waste collection;
- devices for sound amplification and audiovisual entertainment, as well as television, video, and cinema viewing;
- standard rehabilitation devices for visitors.

Standard rehabilitation devices include: stationary supports for movement, standing, and sitting; specially equipped spaces for individuals with health impairments; special communication devices; fold-down furniture (seats, loungers, specialized furniture); inventory (portable) ramps..[21]

People with disabilities may encounter various types of barriers in the architectural environment, which can hinder or restrict their accessibility and participation in public life. The main types of such barriers are as follows:

- Architectural barriers: These barriers are related to physical obstacles in the environment, such as the absence or inaccessibility of ramps or lifts for people with limited mobility, narrow doorways or passages that do not meet accessibility standards.
- Communication barriers: These barriers may arise from the lack of adequate communication support for people with limited audio or visual capabilities, such as the absence of signaling for the deaf or text interpretation for the visually impaired.
- Information barriers: These barriers may include the lack of accessible information about the location of objects or services for people with limited mobility or visual impairments, as well as the inaccessibility of information in different languages or alternative formats.
- Sociocultural barriers: These barriers may arise from insufficient awareness and understanding of the needs and rights of people with disabilities in society, which can lead to social isolation, discrimination, or stigma.
- Psychological barriers: These barriers are related to the attitudes and expectations of others, which can create feelings of rejection or inadequacy in people with disabilities and hinder their active participation in public life.

Eliminating these barriers and creating an accessible and inclusive architectural environment is an important step in ensuring equal opportunities for all members of society.

The main types of barriers that people with disabilities may encounter in the architectural environment are:

Physical barriers:

- Steps: stairs without ramps or lifts.
- Narrow passageways: insufficient width of doorways, corridors, elevators.
- Lack of handrails: on stairs, ramps, in restrooms.
- High thresholds: obstacles at building and room entrances.
- Non-slip surfaces: lack of special coverings on slippery floors.
- Inaccessible resting areas: absence of benches, seats, ramps to them.
- Unsuitable height: for switches, outlets, door handles, control elements.

Information barriers:

- Lack of information: absence of tactile signs, audio signals, information in accessible languages.
- Complex symbols: unclear pictograms, unreadable fonts, lack of contrast.
- Inaccessible information kiosks: lack of touch screens, information in accessible languages.
- Inaccessible websites and apps: absence of alternative text, videos with subtitles.

Communication barriers:

- Lack of sign language interpreters: in public places, at events.
- Inaccessible phones: lack of Braille buttons, voice dialing.
- Inaccessible alert systems: lack of visual signals, information in accessible languages.

Social barriers:

- Negative attitudes: discrimination, bias, lack of understanding.
- Inaccessible infrastructure: lack of ramps, lifts, special toilets.
- Lack of accessible services: absence of interpreter services, escorts, deafblind interpreters.

It is important to note that these barriers can have a cumulative effect, significantly impacting the ability of people with disabilities to fully participate in society.

Recommendations for creating an accessible environment:

- Compliance with standards and regulations: designing and constructing in accordance with accessibility requirements.
- Universal design: creating spaces accessible to people with different abilities.
- Involvement of people with disabilities: engaging in the design and testing of the environment.
- Information and education: raising society's awareness of accessibility issues.
- Creating an accessible environment is an important step towards an inclusive society where every person can feel comfortable and safe.

Examples of successful solutions for creating an accessible environment for people with various disabilities:

Flexible House Project:

- Description: The "Flexible House" project focuses on using innovative materials, such as flexible polymers and intelligent touch surfaces, to adapt residential spaces to the needs of the residents.
- Advantages: These materials allow for changes in the home according to the residents' requirements, providing better accessibility and convenience for people with different abilities.
- Relevance: This project illustrates a successful approach to creating an inclusive environment by including adaptable design elements that take into account various disabilities.

Flexible Forms Park:

- Description: Flexible Forms Park is a public space designed to be adaptable and multifunctional, considering the diverse needs of users.
- Advantages: This space provides flexibility and versatility, meeting various requirements and increasing accessibility for people with disabilities.
- Importance: The design of this park demonstrates a thoughtful and inclusive approach to urban planning, providing a welcoming environment for people with different disabilities.

- These examples showcase innovative solutions that prioritize inclusivity and accessibility, meeting the diverse needs of people with different disabilities.

Recommendations for creating inclusive spaces:

- Include universal design principles: use universal design principles in the design process to create spaces that are accessible and convenient for everyone, regardless of abilities.

- Consult with users: involve representatives from different user groups, including people with disabilities, in the design process to gather feedback and understand their needs and preferences.

- Consider the diversity of needs: remember that people with disabilities have various limitations, acknowledge these differences, and strive to design spaces that provide accessibility for all.

- Ensure barrier-free access: consider the accessibility of all elements of the space, including entrances, corridors, lifts, toilets, and other amenities, to provide barrier-free access for all users.

- Use various sensory means: provide information and orientation in space through various sensory means, including visual, auditory, and tactile, to meet the needs of different user groups.

- Create flexible spaces: design flexible spaces to meet the needs and activities of different user groups.

- Ensure social integration: create spaces that promote interaction and social integration among different groups of people, encouraging interaction and shared experiences.[22]

- Comply with accessibility standards: consider accessibility standards and norms in the design process and create safe and comfortable spaces for all users.

- These recommendations help architects and designers create inclusive spaces that are not only functional but also contribute to creating a more equal and welcoming society.

Discussion

Inclusive architecture offers numerous benefits for people with disabilities, promoting accessibility, equality, and ease of use. By using universal design principles, spaces can be made more convenient and functional for diverse users. However, there are certain challenges in creating inclusive architecture, such as raising awareness, meeting regulatory requirements, and overcoming traditional biases in design that can hinder the full realization of an inclusive environment.

Creating an inclusive environment has a significant impact on the quality of life for people with disabilities. Accessible spaces promote independence, social integration, and overall well-being, providing equal opportunities for participation in various activities. Inclusive architecture contributes to improving the overall quality of life for people with disabilities by fostering a sense of belonging and expanding rights and opportunities.

The future of inclusive architecture opens promising perspectives for further progress in creating an accessible and inclusive environment. Through ongoing research, innovation, and increased attention to inclusion, this field can develop towards more complex design solutions that consider a wider range of disabilities. Collaboration between architects, designers, stakeholders, and people with disabilities is crucial in shaping the future landscape of inclusive architecture. Discussing these issues in the document's discussion section ensures a comprehensive analysis of the advantages, challenges, impacts, and future directions of inclusive architecture. The discussion

will contribute to a better understanding of the importance and potential of inclusive design in shaping a more equitable and accessible environment for all.

Conclusion

Research focusing on the use of technology in the built environment, service provision, and the consideration of the needs of individuals with cognitive and sensory impairments shows that these aspects play a crucial role in creating an accessible, safe, useful, and comfortable environment for all users. The use of speech reading programs, hearing aids, and sensors for controlling lighting and temperature offers opportunities to enhance accessibility and comfort for individuals with disabilities within the built environment.

It should be noted that maintenance plays a vital role in maintaining the functionality and safety of buildings and structures. Regular inspections, maintenance schedules, and staff training contribute to the efficient operation of buildings and structures, ensuring convenience and safety for users. To meet the needs of people with cognitive and sensory impairments, it is recommended to simplify layout, install clear and consistent signage, use sensory cues, provide tranquility, use natural materials, and offer various seating options. These measures contribute to the creation of a friendly and favorable environment that meets the needs of all users.

An analysis presents two options for the accessibility of buildings and structures for individuals with mobility impairments. Option "A" provides disabled individuals with access to all residential areas, service locations, and workplaces to ensure their full participation in public life. Option "B" involves allocating special facilities and zones for individuals with disabilities, further enhancing their convenience and accessibility. Based on the results obtained, it is worth noting that adherence to the principles of accessibility, safety, informativeness, and comfort in the built environment contributes to enhancing the quality of life for all users. These principles not only consider the needs of individuals with disabilities but also contribute to creating a more friendly and inclusive environment for everyone.

In summary, the use of modern technologies, the provision of quality services, and the consideration of the needs of various user groups are essential aspects for the successful implementation of the accessibility concept in the built environment. Further development and implementation of these approaches will lead to the creation of more equitable and comfortable spaces for all.

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