

Universal Design for Recreational Open Spaces

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Abstract: Problem Statement – The paper explores the issue of inaccessibility of recreational and other public open spaces for younger and older age groups and differently abled due to the design and infrastructure being insensitive towards their needs.

Approach - This includes the study of various disabilities due to age or various physical impairments and the issues in the existing recreational and open spaces for the younger and older age groups and the differently abled due to insensitive design. These problems can be addressed using the universal design principles and by suggesting the improvements over the existing spaces / facilities or providing new facilities. This is an effort to explain how a built environment can cater to the widest spectrum of users in the community regardless of age and ability and can facilitate user participation in the amenities that a community has to offer.

Conclusion – The result shows a demonstration of various design guidelines and methods to a built environment with universal accessibility and there by contributing to the needs and aspirations of growing population of the differently abled.

Keywords: accessibility, inclusive design, open spaces, recreational spaces, universal design principles, user participation

1. INTRODUCTION

Architects design spaces based on certain guidelines and standards. These are often ‘one size fits all’ strategies and all the designs are made for the mythical ‘average’ group of people who do not exist. There are many end users of a design who are hindered by their physical disabilities caused due to their age and other physical deformities and injuries. They fail to use the amenities that a community offers to them due to insensitive design.

The life spans of people have increased since the beginning of 20th century. The new technological inventions in the fields of medicine and surgery improved the survival of people post spinal and several fatal injuries, resulting in longer life spans of people in general, increasing the population of older and physically disabled and this trend will continue. This physical barrier creates significant hindrance in the society as a major part of the population finds the amenities provided by the community inaccessible. As a matter of fact, the needs of the disabled coincide with the needs of the majority, and all people are at ease with them. As such, planning for the majority implies planning for people with varying abilities and disabilities.

2. UNIVERSAL ACCESSIBILITY

Universal accessibility is a design approach that is inclusive and allows for diversity and flexibility. It takes in the notions of “Inclusive Design” and “Architecture for All”, that is, giving equal access to the elderly, the average person, pregnant women, youngsters and people with disabilities and facilitate them to actively participate in all the amenities

offered by the community. This approach conforms to a universal accessibility standard that can accommodate the needs of diverse user groups. The consideration is shifted from the average user to a larger part of the community.

2.1 Human disabilities:

Visual and hearing impairments are due to age, environment or a particular situation.

Visual impairment is caused by:

- “busy” visual environment
- fatigues and older age problems
- adverse weather conditions

Design should cater to the end users who face difficulty in:

- perceiving visual detail clearly, close and far, dark and light.
- tracking moving objects and judging distances.

Hearing impairment is caused by:

- divided attention and use of headphones
- older age and other disabilities

Design should cater to the end users who face difficulty in:

- localizing the source and separating the information
- perceiving both high- and low-pitched sounds

Body function disabilities are the problems caused due to physical exertion, achieving, maintaining and changing posture etc.

Arm impairment hinders:

- older and younger people with limited physical development or diminished strength or chronic limitations
- individuals with only one free arm due to carrying things or performing another task

Design should cater to the difficulty in:

- reaching up, down, forward, or behind
- pushing & pulling
- lifting & Lowering
- carrying (everything including tickets)

Mobility impairment hinders:

- older and younger people with limited physical development or diminished strength or extreme body types
- individuals with pain or limited range of motion due to temporary or minor injuries or illness or fatigue.

Design should cater to the difficulty in:

- rising from a seated & standing upright and operating foot controls
- walking & running
- jumping & climbing
- kneeling and balancing on one foot

3. THE SEVEN PRINCIPLES OF UNIVERSAL DESIGN

Universal Design, a term coined by Ron Mace in 1997, has gained widespread acceptance among design professionals. At its creation, Mace, along with a team of specialized design individuals, created the Seven Principals of Universal Design.” They are as follows:

I. Equitable Use: The design is useful and marketable to people with diverse abilities.

Guidelines:

- Provide the same means of use for all users: identical whenever possible; equivalent when not.

- Make provisions for privacy, security, and safety equally available to all users.

Pavements on the street turnings with special demarcations that are accessible by the visually impaired, ramp into swimming pool that appeal to children learning to swim as well as to mobility impaired swimmers, powered door with sensors that are convenient to all people especially whose hands are occupied.

II. Flexibility in Use: The design accommodates a wide range of individual preferences and abilities.

Guidelines:

- Provide choice in methods of use.
- Accommodate right- or left-handed access and adaptability to pace.

A museum that allows a visitor to choose to read or listen to the description of the contents of a display case.

III. Simple and Intuitive Use: Use of the design is easy to understand, regardless of the user’s experience, knowledge, language skills, or current concentration level.

Guidelines:

- Eliminate unnecessary complexity and be consistent.
- Accommodate a wide range of literacy and language skills.
- Provide effective prompting and feedback during and after task completion.

Signage’s on the streets using clear and intuitive pictures and ideograms that can be read even by illiterates.

IV. Perceptible Information: The design communicates necessary information effectively to the user, regardless of ambient conditions or the user’s sensory abilities.

Guidelines:

- Use different modes (pictorial, verbal, tactile) to provide information.
- Differentiate elements in ways that can be described (i.e., make it easy to give instructions or directions).

Fountains and other auditory sources in paths and walkways that direct visitors with visual limitations.

V. Tolerance for Error: The design minimizes hazards and the adverse consequences of accidental or unintended actions.

Guidelines:

- Arrange elements to minimize hazards and errors: most used elements, most accessible;
- Provide fail safe features and warning signs.

Lip of a curb at the sides of a ramp that reduces the risk of slipping.

VI. Low Physical Effort: The design can be used efficiently and comfortably with minimum fatigue.

Guidelines:

- Allow user to maintain a neutral body position and minimise repeated action
- Use reasonable operating forces.
- Minimize sustained physical effort.

Doors that open automatically for people, open spaces and parks with sufficient seating area.

VII. Size and Space for Approach and Use: Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

Guidelines:

- Provide a clear line of sight to important elements for any seated or standing user with assistive devices.
- All components reachable for any seated or standing user with variable grip size.

A flexible work area designed for use by employees with a variety of physical characteristics and abilities is an example of applying this principle.

4. OPEN SPACES – IMPORTANCE IN CITIES:

All types of urban open spaces are recognized for their importance in providing structure to urban design,

In his book *Open Spaces*, August Heckscher states:

“Each city [urban area] is a place of its own, its uniqueness determined in large measure by patterns created by the alternation of structure and void, of buildings and spaces between. The larger green spaces, parks and parkways, riverbanks and waterfronts, give to a city the coherence that allows the urban dweller to have a feeling for the whole.”

“Such green spaces may be viewed as the city's skeleton. They are the underlying structure from which depend neighbourhoods, institutional complexes, and business

centres. A person who knows his parks can tell where he lives...and because parks are so often the product of basic topography, he should not be ignorant of how his city is related to land, to river, to sea.”

The parks, playgrounds, riverfronts and beaches and other open green spaces purify the polluted environment of the city thereby forming one of the most important working organs of the city. Accessibility design to the open spaces thereby is an important step in addressing the public health issues and facilitating user participation in the amenities that a community has to offer.

5. UNIVERSAL ACCESSIBILITY IN EXTERNAL AREAS, OPEN SPACES AND GREEN SPACES

Universal accessibility is derived from understanding the needs and lifestyles of people from all sectors of the community.

In recent years older people are less home bound and they can be a strong market force. These improvements strengthen their self-esteem and independence.

The following major issues are discussed as the design considerations, practises and guidelines:

5.1 Access route

Dimension: An access route should be wide enough to allow at least two wheelchair users to pass through.

Layout: The entire access route should be kept unobstructed without encroachments and well lit. Street furniture should be setback and kept outside the travel path.

Travel Path: In large open spaces, where there may be many travel path options, signage, tactile guide paths and/or other detectable cues that are detectable by canes should be provided.

Surface Treatments and drainage: The floor surface must be firm and slip-resistant in both dry and wet weather conditions with rain water drains. Expansion joints and gaps should be minimum to avoid trapping wheelchairs and canes.

5.2. Sensory and psychological elements:

They can serve as useful reference points and help users in way finding and orientation.

Visual: Use rich combinations of colours and forms, together with carefully selected soft landscaping. Path should be well lit and inviting to all users, in the nights.

Auditory: Provide sound-generating elements such as water features and wind chimes to help users find their way and identify points of reference.

Olfactory: Provide soft landscaping along the travel path that give off various scents to enrich the journey

Tactile: Provide signs, tactile models, sculptures, and interactive displays. These are particularly useful to visually impaired users.

5.3. Elements along the travel path:

Walkways, stairs, steps and ramps:

- railing of the required diameter on both sides with braille directions
- 300mm horizontal extension at ends of handrail
- tactile warning at the top and bottom nosing's with color contrast

Lifts, platforms, escalators and travelators:

- audible signals at arrival and inside lift car
- tactile and color contrast top and bottom

Railings and handrails:

- height of handrail between 850mm to 950mm
- international symbol in white on blue background for accessible facilities

Connectivity and Interfacing Elements:

- These, in an external urban context include the following:
- Bridges and elevated walkways
- Tunnels, subways, stairs, escalators, lifts and platforms
- Ramps and dropped kerbs
- Transport drop-off areas

5.4. Horizontal and Vertical Movements:

Access from Transport Facilities: Accessible car parking space should be located near an accessible pedestrian route that leads directly to one of the main entrances of a facility with clear indications. Where accessible car parking space is not provided, there should be an area for drop-off, dropped kerb or ramp provided near an accessible entrance.

Urban Squares, Plazas and Other Open Spaces: Visual, audio and tactile information should be provided which can

direct the users. Eye-catching sculpture in an open space can serve as a reference point and also invite user interaction.

5.5. Landscaping

Soft landscaping: By early planning and concerted effort of designers and all stakeholders, soft landscaping creates a sense of a place, indicating the flow of circulation or orientation, and meeting the therapeutic needs. The various steps involved are:

- Selection of planting materials
- Positioning of planting materials
- Practicality and sustainability
- Safety aspect and public hygiene
- Horticultural operations

Hard landscaping: Hard landscaping elements offer vast sensory experiences. The design of such elements should be carefully considered so that they can be utilized to help enhance accessibility and maximize users' enjoyment of the open space. The various elements of hard landscaping are:

- Fountains and water features
- Rockery works
- Mounds and raised planters
- Sculptures and sensory features
- Landscaping furniture

5.6. Way Finding, Orientation and Signage

Interactive tactile directory led by tactile guide path. People with disabilities and the elderly are probably most in need of having clear and concise direction when they are in large open spaces. The physical layout of an open space itself can also help to facilitate way finding and orientation

5.7. Furniture, equipment and fittings:

Besides the above mentioned, proper emphasis is to be laid on the furniture equipment and fittings which include the following examples.

- common outdoor furniture, equipment and fittings
- boundary walls and fences, gates, guardrails, turnstiles and bollards
- lamp poles, bollard lights and lanterns
- seating bench, litter Bins, recycle bins and drop-in Boxes
- drinking fountains and telephone booths, vending machines

- portable toilets
- fixed telescopes, binoculars, recorded sound playback, maps, information plaques, etc.
- play areas and play and recreational equipment

6. CONCLUSION

Sustainability:

If universal accessibility concepts are considered and implemented in the early stages of design, there can be cost savings and the facility may be more marketable as it will suit a wider range of users. On the contrary, if accessibility is not considered, alteration may not be possible after the building work has been completed, as there may be physical constraints that render alteration impractical. Abortive work and wastage may occur if substantial alteration work is required later on to adapt to people with special needs.

Finally and most importantly, the elements that make the building or facility accessible must be maintained in good working order such that people can continue to enjoy the accessible environment.

Way ahead:

It is vital that we keep pace with the changing needs of the society and make every effort to continuously improve our built environment. Achieving universal accessibility and providing equal access for people from all sectors of the community to facilities and information is an important step forward.

Accessibility is becoming more important in a modern society. Advanced technology can help people to overcome

physical disabilities and facilitate the expression of intellectual ability. This is evident as talented people such as Mr. Stephen Hawking and many others make significant contributions to the society.

The essence is to provide accessibility by inclusion. Design professionals can play a significant role in implementing, educating and promoting the concept of universal accessibility. With the inclusive design approach, a more accessible and sustainable built environment can be attained for the maximum benefit of the community. The provision of a comfortable, accessible and safe built environment will enable everyone to make a positive contribution to the society.

7. REFERENCES

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