Universal Design Approach

Barrier-free design required for accessibility is mandated by codes, standards and regulations. This mandate often focuses on people within a narrow range of specific disabilities and is guided and enforced by published accessibility standards. Universal Design goes beyond the notion of barrier-free design. It emphasizes a creative approach to design that is inclusive, aesthetically pleasing and functional to the greatest number of people, including those with disabilities, without any special effort. Universal Design provides a framework for developing creative solutions. The best universal design is often invisible to the users where the design challenge goes unnoticed.

To aid in the thought process for achieving this goal, seven principles of Universal Design were developed by The Center for Universal Design in collaboration with a consortium of universal design researchers and practitioners from across the United States in 1997. Those seven principles of universal design are listed below:

> **Principles of Universal Design***
> 1. **Equitable Use:** The design does not disadvantage or stigmatize any group of users.
> 2. **Flexibility in Use:** The design accommodates a wide range of individual preferences and abilities.
> 3. **Simple, Intuitive Use:** Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.
> 4. **Perceptible Information:** The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.
> 5. **Tolerance for Error:** The design minimizes hazards and the adverse consequences of accidental or unintended actions.
> 6. **Low Physical Effort:** The design can be used efficiently and comfortably, and with a minimum of fatigue.
> 7. **Size and Space for Approach & Use:** Appropriate size and space is provided for approach, reach, manipulation, and use, regardless of the user's body size, posture, or mobility.
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It is the mission of UIC to advance overall accessibility on the Chicago campus. Accessibility and usability should be part of the architecture rather than a regulatory exercise. Addressing the principles of universal design at the start of any project is one way to address that goal. Following are examples of how universal design concepts may be integrated into the fabric at the University of Illinois at Chicago. This list should be thought of as examples that may be expanded throughout the planning and design process.

Parking
- In large parking lots and structures, disperse and located accessible parking in relationship to the buildings and spaces served rather than group in one location.

Exterior Accessible Routes
- Try to use the natural terrain and grade at less than 1:20 slope along accessible routes to avoid the use of ramps and stairs to bridge vertical changes in elevation.

Entrances
- For cane detection, slightly set doors back from the face of the predominant wall.
- To assist with detection, change sidewalk surface texture and/or color at the entrance.
- Investigate the use of full-length entry door sidelights that can be an advantage to all users.
- Specify a minimum of one automatic door at all public campus buildings.

Circulation and way-finding
- If an information or reception desk is provided, position to be conveniently located and if possible on-axis with the main entrance.
- Surface textures and/or color can assist with way-finding throughout the building or facility.
- Try to group different modes of vertical circulation in the same areas so all users enter and exit at the same location. (i.e.: stairs, ramps, escalators, elevators, platform lifts)
- If change in vertical elevation is required, try to design with sloping walkways with less than a 1:20 slope in lieu of ramps at 1:12 slope that also require landings and handrails.
- If ramps or sloping walks are provided, design them to run in the direction of the original destination, thereby integrating them into the circulation system for all users.
- To facility evacuation, investigate the use of the elevators as an approved method of evacuation by the fire department.
- Avoid blind corners along major circulation routes.
- Design the main circulation corridors to be as wide as practical, with a 6' minimum width. This will provide ample room for two wheelchairs to pass.
- Use contrasting colors or dark/light relationships along corridors where floors and walls meet.
- Investigate the use of non-glare floor coverings.
- Investigate the use of "talking" sign systems for unfamiliar places.

Elevators
- Specify "talking" elevators
- Provide elevators that have a footprint that exceeds the minimum sizes specified in the accessibility design guidelines.

Work Areas
- Furniture systems should provide as much flexibility and adjustability as possible.
- Provide adjustable height keyboard trays.
- Work surfaces, storage systems, and files should allow for adjustable heights.
- Specify ergonomically-designed office chairs that can be adjusted in several ways while promoting movement and good working posture.
- Consider wall color and or graphics as ways to orient users.
- Consider the use of task lights to allow individual control.
- Locate fixed wall cabinets 15" vs. the standard 18" above the counter so they are more usable by various height people with limited reach ranges.

Classrooms/Meeting/Conference Rooms
- Size rooms to allow convenient circulation for people with mobility impairments.
- Install state-of-the-art assistive listening systems.
- Provide capacity for special additional lighting to be used for sign language interpreters.
- Provide outlets for real-time text interpretation.

Toilet Rooms
- For multiple occupancy toilet rooms, investigate a design without entrance doors, but that includes modesty walls to screen private use areas.
- If functional for users, use automatic fixture controls.
- If automatic control faucets are not used, specify single-lever controls for hot and cold water.
- Wall mounted dispensers should be mounted with the highest operable control no higher than 42" AFF.
- In addition to the mirror above the sink, in highly used toilet rooms, provide a full length mirror.

Electrical
- Maximize the availability and potential use of natural light.
- Avoid direct lighting when possible to reduce potential glare from surface reflections.
- Specify broad spectrum lights.

- Outlets should be mounted no lower than 18" AFF and no higher than 38" AFF. Avoid outlets below counters. To minimize reach issues at counters, provide above counter/work surface outlets at the end of the surface allowing for a side approach.

Common Elements
- Specify "rocker" switches that are activated with minimal force and manual dexterity.
- Public seating areas – vary the seating heights where multiple seating is provided; keep the clearance below the seating open to allow the user to push up to the standing position with their leg muscles.
- Where public seating is provided, provide ample locations for companion seating.
- Where maximum door openings are required for existing facilities, replace existing hinges with swing-clear hinges thereby adding 1 ½" to the clear opening.
- Provide several modes (pictorial, verbal, tactile) for the presentation of essential information.
- Arrange elements to minimize hazards and errors by users. i.e. make the most used element the most accessible to all, and eliminate, isolate or shield any hazardous elements.
- "D" shaped cabinet door pulls are easier to use by the majority of users, even those with limited finger movement.
- Where toe kicks are provided in public areas, locate 6"-9" AFF to allow space for wheelchair footrests.
- If operable windows are being specified, casement windows with cranks are easier for the majority to use than double-hung windows.
- If cooking surfaces are being specified for lounge areas etc., specify induction cook top burners that remain cool, and only the pan and food become hot. If conventional burners are specified, locate the controls to the front or side of the burners.
- If ovens are being specified for lounge areas etc., specify a wall oven at wheelchair accessible height with a side hinge door.
- If refrigerators are being specified for lounge areas etc., specify side-by-side models that make the refrigerator and freezer accessible to all users.
- Provide wall reinforcement during construction in areas where grab bars may need to be added at a future date.

Special Events
- Make special and/or temporary events such as political rallies, music events, sports tournaments, art fairs etc. accessible to all employing the principles of universal design.