

Universal Design Recommendations for Accessible University Settings

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The features listed here are called universal design or lifetime design features. Universal design accommodates varying needs throughout a person's life. These features are safe and easy for all persons to operate and maintain.

Listed features include important factors that must be considered at the design stage and other recommendations which do not need to be addressed until the occupancy stage. However, we include all (structural and non-structural) recommendations in order to provide a clear view of the desired goal: **accessibility and usability** for all.

General Features throughout the Campus

- Doorways should be at least 32 inches wide (have a 32-inch clear passage), preferably 36 inches wide.
- Clear floor space (18" minimum) beside door on pull side at latch jamb provides space to move out of the way of the door swing when pulling it open.
- 5 lbs maximum pull or push weight for opening doors.
- Hallways at least 42" inches wide (preferably 48 inches wide).
- Turning space in all rooms (at least 60" diameter).
- An open plan design, minimizing hallways and doorways and maximizing sight lines.
- Telephones accessible to a person who is unable to stand.
- Text telephones accessible for the deaf.
- There should be good, even lighting throughout the building. Light fixtures, lamps, and window treatments should be selected and placed to avoid glare on smooth surfaces.
- Smoke detectors with light and sound located throughout the building.
- Flooring materials should be hard (anti-slip), even surfaces or tightly woven, low pile carpeting over a thin pad.
- Color contrast between floor surfaces and trim allows easy recognition of the junction of floor surfaces and walls. Avoid glossy surfaces.
- Appropriate alternate access routes at reasonable distance from regular entrance area.
- Accessible emergency call systems.
- Elevators/lifters requiring key access must have clear signage indicating where such key is available or a call button to the place where the keys are held
 - Access to needed keys should be easy, fast and close-by.

- Small garden or synthetic grass “bathroom” area for assistant dogs.

Switches, Outlets and Controls

- Light switches should be located within easy reach at the entrance of each room and should be reachable from a seated position (42 to 48 inches from the floor).
- 54” maximum side reach, 48” maximum front reach.
- Electrical outlets at 18” minimum height, allows for easy reach from a sitting position as well as for those who have trouble bending over. Install outlets in enough locations to eliminate the need for extension cords (which may interfere with wheelchair use and become a danger to blind persons).
- Easy-touch rocker or motion activated switches.
- Install one electric outlet over each entrance door (on the inside part of the room) for future installation of automatic door opener.
- Provide an electrical outlet beside each sliding door for future installation of automatic door opener.
- Provide electrical outlet adjacent to each toilet (preferably below water tank level) for future installation of motion sensing auto-flush or automatic toileting system.
- Install lighted rocker switches outside each closet in which lighting is required or use door activated switches.
- Electrical panel with top no more than 54” above floor located with a minimum 30” x 40” clear floor space in front.

Entrances

- Most entrances should be usable without going up or down steps. In many cases a ramp may be needed with a pitch of no greater than 1 to 12 (for every 1 foot in rise, 12 feet in length) and preferably 1 to 20.
- Entryways should be protected from rain. The entrance between the garage/parking and the building should not require going up steps.
- Drop-off areas protected from rain (to load/unload a wheelchair ramp)
- Thresholds should be level or beveled and no more than 1/2 inch higher than the floor.
- The doorway should have a clear, unobstructed opening at least 32 inches in width and preferably 36 inches wide.
- Doors should have a handle that can be reached by a seated person. If a lock is required, it should also be reached by a seated person.
- Space at entry doors should be a minimum 5’ x 5’ level clear space inside and outside of entry door for maneuvering while opening or closing door. (Can be smaller if automatic power door is provided.)
- Good lighting at entry doors: focused light on lockset and/or motion detector controls that turn on lights when someone approaches the door.
- Room numbers and office signs should be large, high contrast, well lit located in a prominent place, easy to locate. Signs should also be available in Braille and/or raised texture.

Windows/Sliding Doors

- Sills of windows should be no higher than 30 inches so that a person seated can see outside.
- Windows should be easy to open (crank operated windows are desirable).
- Escape windows that could be easily opened during an emergency.
- Sliding doors: drop frame and threshold into sub floor to reduce upstanding threshold track.
- Interior pocket doors: When fully open, door should extend 2" minimum outside door jamb and be equipped with open-loop handles for easy gripping.

Classroom/Science labs

- Wheelchair accessible desks with 29" minimum clear knee space.
- Preferred seating (usually at the front) for low vision and hard of hearing students.
- Counter heights of 30, 32, and 34 inches are accessible for a seated person. The usual height for a wheelchair armrest is 29 inches. Adequate knee space requires at least 24 inches. Adjustable height work surfaces (28" - 42") allow functionality for people of all heights, those with back trouble and people who are seated.
 - **Dual Height Counter:** Includes lowered counter segments to provide work areas for seated people. Each lowered segment must have clear knee space below. Clear vertical space of 30 inches at the front of the counter will provide enough clearance for most wheelchairs.
 - **Manually Adjustable Segments:** Mechanically adjustable counter segments adjustable in 2" increments (28" - 42"). A design of this type allows counter height to be adjusted with minimal work. An "adaptable design" approach such as this is ideal for a lab where users may change relatively frequently. This can be accomplished in a couple of ways:
 - *Wall mounted brackets:* Counters may be mounted with heavy duty commercial shelf brackets and standards. Shelving of this type is found in many retail store shelving units.
 - *Movable wood support:* A wooden support strip can be attached to the sides of base cabinets and the countertop to allow for some adjustability.
 - **Electrically Adjustable Height:** Electrically powered, continuously adjustable counter segments. This option provides a uniquely flexible, highly accessible solution.
 - **Pull-out work surfaces:** Provide a variety of work heights for different jobs. They work best when at a height of 27", and at least 30" wide by 24" deep.
- Space between face of cabinets and opposite walls should be 48" minimum.
- Clear knee space under counter (29" high minimum). May be open knee space or achieved by means of removable base cabinets or fold-back, bi-fold, or self-storing doors. Pipe protection panels must be provided to prevent contact with hot or sharp surfaces
- Color contrasts at the front and back edges of counter tops serve as visual cues to persons with impaired vision. Use contrasting colors on counter edges to increase visibility for those with visual impairments. Light-colored counter tops reflect available light and are desirable for persons with limited vision.

- Round corners on all countertops, especially for visually impaired persons
- Stretches of continuous counter tops for easy sliding of items to different areas (facilitate task flow)
- Full-extension, pull-out drawers, shelves and racks for easy access to all storage space.
- Adjustable height shelves in wall cabinets.
- Whenever possible, use front or side mounted controls on equipment to facilitate easy reach.
- Equipment dials 1½ inches or greater in diameter are easier to turn. Controls should have readable settings and directions with large print and good contrast.
- If possible, mount controls and faucets on the side of the sink rather than the back. They are easier for seated persons to reach. Use sprayer with a flexible hose.
- Cabinet doors and drawers should be easy to open. D-shaped handles or magnetic closures are easier to use.
- Storage that includes pullout shelves, baskets, and lazy susans makes items more accessible.
- Below a counter, base cabinets with no shelves can be used by a seated person when the cabinet doors are open.
- Adequate glare-free task lighting is needed throughout the lab.
- Ensure fire extinguisher is within easy reach and is usable by persons with impaired mobility and dexterity.

Bathrooms

- Bathroom doors should be at least 32 inches wide and open out (or both ways) so that if a person falls in the bathroom, they do not block the door.
- Adequate maneuvering space: 60" diameter turning space in the room and 30" x 48" clear floor spaces at each fixture. Spaces may overlap.
- Clear space (36") in front and to one side of toilet allows for easy maneuvering at toilet. Toilet centered 18" from any side wall, cabinet or tub.
- Lavatory counter height (32" minimum, 34" maximum).
- Knee space under lavatory (29" high) allows someone to use lavatory from a seated position. Pipe protection must be provided to prevent contact with hot or sharp surfaces.
- Countertop lavatories preferred with 6½" deep bowl mounted as close to front edge as possible. Wall hung lavatories acceptable with appropriate pipe protection. Pedestal lavatories are not acceptable.
- Long mirrors should be placed with bottom no more than 36" above finished floor and top at least 72" high. Full-length mirrors are good choices. Tilted mirrors may be used.
- Provide adequate space and anchoring surface for installation of grab bars. Grab bars should be considered a safety feature to prevent falls. Grab bars should be able to support 250 pounds. Towel bars are not safe to be used as grab bars.
- Non-slip surfaces and flooring in the bathroom helps prevent falls.
- Single-lever water controls at all plumbing fixtures and faucets.
- Handles on faucets should have levers rather than knobs for easier use.

Showers (e.g. sports complex)

- Hand-held showers in all tubs and showers, in addition to fixed heads, if provided. Single lever diverter valves are preferred.
- Adjustable height, movable hand-held shower head or 60" flexible hose allows easy use by people of all heights.
- Mixer valve with pressure balancing and hot water limiter prevents scalding people who cannot move out of the way if water temperature and/or pressure changes suddenly.
- Curb less shower (minimum 5' x 3', 5' x 4' preferred), waterproof floor, and a floor drain.
- Integral transfer seat in shower stall allows people to sit in the shower without needing additional equipment.
- Water controls and faucets are sometimes easier to reach if they are located off center, near the entry side of the shower. Offset controls with adjacent clear floor space allows for easy access from outside the shower with no inconvenience when inside.

Stairs

- Step height (risers) should be no greater than 7 inches high (preferably 6 inches, minimum of 4 inches)
- Steps should be 11 inches deep to fit most shoe sizes.
- All stairs should have appropriate width and space at the bottom for later installation of a platform lift, if needed.
- Stair handrails to extend horizontally beyond top and bottom risers.
- Light switches should be located at both the top and bottom of the stairs, and the stairway should be adequately lit.
- Color contrast difference between treads and risers on stairs.

Other

- Easy to use hardware, requiring little or no strength or flexibility:
 - lever door handles
 - push plates
 - loop handle pulls on drawers and cabinet doors
 - touch latches
 - magnetic latches in lieu of mechanical, keyless locks
- Clear policies to handle special or emergency situations such as heavy rain, flooded areas, strong wind, electric failure, fire, etc.
- Map of accessible campus routes, including slopes (if appropriate).