



Bikeable Design

DESIGN TOOLKIT



City of Los Angeles
Department of City Planning

Chapter Three:

Design Toolkit

This chapter details the key tools and strategies for creating a bike-friendly development, and discusses the recommended locations, typical dimensions, and key considerations for designing and installing bicycle infrastructure and amenities.

The recommendations in this Chapter are developed through research on bicycle parking guidelines and ordinances in the U.S. and through interviews with professionals in real estate development, planning, and the bicycle advocacy community in Los Angeles.

Parking: Short-Term

Short-term parking is typically intended for a stay of less than two hours. Short-term parking also can refer to a trip that is not made on a regular basis.

Short-term parking facilities should be located close to the building or shop entrance for safety and convenience. If short-term bicycle parking is located too far from the entrance, often bicyclists will lock their bike to a piece of street furniture or fence.

Typical Users:

- Customers of retail, food and drink and personal services.
- Clients of medical, financial and other professional services.
- Guests of multi-family residential buildings.

Location:

- Locate parking no more than 50 feet from the main entrance. If there are multiple entrances, short-term parking should be split evenly among all main pedestrian entrances.
- Install parking at sidewalk grade (preferred). If located in a parking garage, install parking on the ground floor or level closest to the primary pedestrian entrance.
- Locate parking to maintain accessible routes free and clear per ADA requirements.

Recommended Equipment:

- Inverted U-rack on sidewalk.
- Multiple racks parallel to each other to accommodate more bicycles. (See Figure 1 & 2)
- Bicycle Corrals in parking lots. (See Figure 3)
- Specialty Art Racks. (See Figure 4)

Security:

Note: High visibility is the best security.

- Place racks where easily visible, with a clear line of sight from building entrance, near busy areas, and from street. When placed in highly visible places with “eyes on the street,” bike are policed informally by passersby.

Reference Tools:

- Adequate Lighting. See Lighting Section.
- Appropriate and applicable wayfinding signage. See Wayfinding Signs Section.
- See Network Connections Section.
- See Resources Chapter.

Other Important Features:

- If more than 20 short-term parking spaces are provided, at least 50% of the spaces should be covered by a roof or overhang.
- Parking fixtures should be securely anchored to the ground.
- Parking fixtures should have two points of contact (i.e. one wheel and the frame) to prevent it from falling over.
- A bike rack should allow one wheel and frame to be securely locked to it. (See Figure 5)
- Parking should meet all ADA requirements for Accessible Sites and Exterior Facilities: New Construction.

Parking: Short-Term (cont'd)

Figure 1: City Bicycle Parking Ordinance Minimum Requirements and Preferred Spacing.

Recommended Bike Rack: Minimum 36 inches tall and 24 inches wide. Racks installed parallel to walls shall be a minimum of 30 inches from the wall.

Bike Space: Minimum 6 feet long and 2 feet wide.

Bike Rack: Minimum 5 feet between rack and curb, walls, fence, automobile parking space, building or street furniture for maneuvering. Racks installed parallel from walls shall be a minimum of 30 inches from the wall.

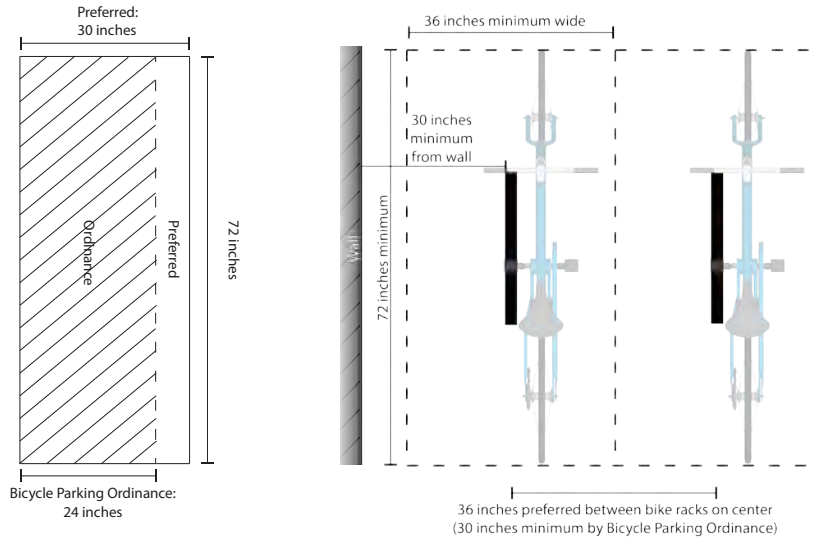


Figure 1a: Plan view bike parking space.

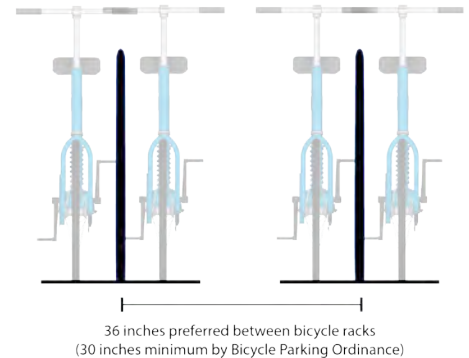


Figure 1c: Elevation view surface bike parking

Figure 1b: Plan view bike rack.



Photo by CTS Brazil

Figure 2: Bike Rack Placement Highly visible bicycle racks that are close to the entrance will encourage more people to bicycle to and from the site.



Photo courtesy of Press-Telegram

Figure 3: Bike Corrals Bicycle corrals can be a good way to accommodate up to 10 bikes in one automobile parking space. They are especially useful in places like shopping centers.



Photo courtesy of David Byrne

Figure 4: Art Racks These decorative racks can add a personal touch and help with neighborhood identification. Art racks are acceptable as long as they contain all the important features listed on the previous page.



Photo by Shelma Jun

Figure 5: Important Features When the bicycle can touch the rack in two places, it prevents bicycles from being knocked over. In order to safely lock a bicycle, one wheel and frame should be able to be u-locked to the rack.

Parking: Long-Term

Long-term parking is often defined as parking that accommodates bicycles for longer than two hours or for people who travel regularly to the same destination, such as work or home.

When bicyclists are staying for a longer period of time, their needs and expectations of security increase. Security and weather protection become more important than convenience and proximity.

Typical Users:

- Tenants of all ages in multi-family residential buildings.
- Employees at commercial/office buildings.
- Employees at retail, food and drink, and personal services.

Location:

Long-term parking can be located farther away from the primary building entrance than short-term parking as long as it is secure and there are signs directing users to the location. Typical long-term bicycle parking locations include:

- Parking lockers or cages inside a building on the ground floor or primary building entrance level
- Designated area on ground floor of parking garage.
- Designated space within owner's work or living space (See Figure 7).
- Locate parking to maintain accessible routes free and clear, per ADA requirements.

Recommended Equipment:

Some standard examples are:

- Bicycle cages or rooms. (See Figure 8)
- Single or two-tiered bicycle parking systems. (See Figure 9)
- Vertical bicycle racks. (See Figure 10)
- Bicycle Lockers. (See Figure 11)
- Station with attendant. (See Figure 12)

Security:

Note: Long-term parking facilities should have a higher degree of security and protection than short-term parking.

- Facilities should have key or keycard access to cages, rooms or lockers.
- If facilities are not secure, then bike parking should be located in plain view of a parking attendant/security guard, near busy areas close to public amenities, or in plain view of bicycle owner.

Other Important Features:

- Parking fixtures should have two points of contact (i.e. one wheel and the frame) to prevent it from falling over. (See Figure 6)
- Parking areas should be covered and enclosed on all sides to protect from the elements. (See Figure 6)
- In mixed-use developments, parking for residents and commercial users should be separated.
- Parking should meet all ADA requirements for Accessible Sites and Exterior Facilities: New Construction.

Reference Tools:

- Adequate Lighting. See Lighting Section.
- Appropriate and applicable wayfinding signage. See Wayfinding Signs Section.
- See Network Connections Section.
- See Resources Chapter.

Parking: Long-Term (cont'd)

Figure 6: City Bicycle Parking Ordinance Minimum Requirements and Preferred Spacing.

Recommended Bike Rack: Minimum 36 inches tall and 24 inches wide. Racks installed parallel to walls shall be a minimum of 30 inches from the wall.

Bike Space: Minimum 6 feet long and 18 inches wide.

Bike Rack: Minimum 5 feet between rack and curb, walls, fence, automobile parking space, building or street furniture for maneuvering. Racks installed parallel from walls shall be a minimum of 30 inches from the wall.

Bike Lockers Clearance: Minimum 48 inches on the side and 72 inches in front of the lockers is recommended.

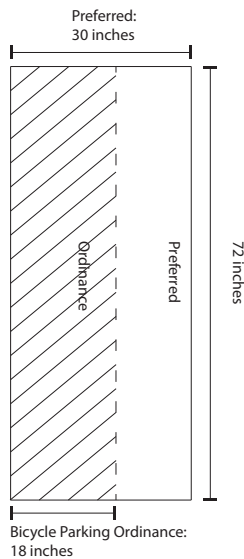


Figure 6a: Plan view bike parking space.

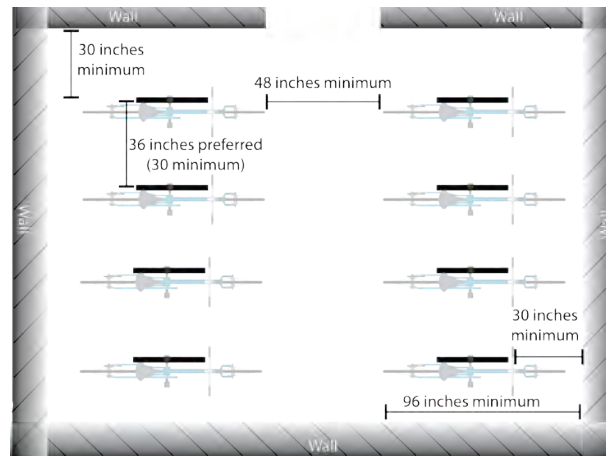


Figure 6b: Plan view bike cage

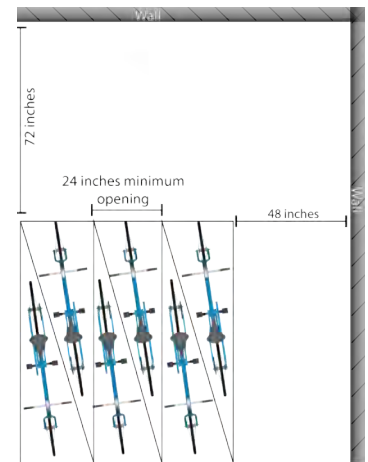


Figure 6c: Plan view bike lockers



Photo courtesy of Studio O+A

Figure 7: Parking on Office Floor
Some companies, such as Yelp, provides bike parking within their office. This can often maximize the perception of security.



Photo courtesy of icporches.com

Figure 8: Bicycle Room/Cage
A limited-access room or cage that is surrounded on all sides provides a safe place to leave bicycles for long periods of time.



Photo courtesy of APBP

Figure 9: Two-tiered Parking
Each bike should have a space 2' wide and 6' long. Each tier needs a vertical clearance of 48" (a single-tiered rack needs 96" of clearance).



Photo courtesy of APBP

Figure 10: Vertical Bike Rack Dimensions
are 2' wide and 6'4" tall. Racks should be distanced 24" from each other.



Photo courtesy of Sirgious

Figure 11: Bike Lockers
Triangle-shaped bike lockers can vary in length but must have a mouth a minimum of 24" for clearance.



Photo by Jonathan Maus

Figure 12: Bike Parking Attendant
Another form of security is having an attendant (such as Bike Station) or having bicycles in plain sight of a security guard.

Facilities: Showers

The lack of proper shower facilities on-site can be a major deterrent to employees who may be considering bicycling to work. Bicycle commuters need a place to clean up before starting their work day.

Location:

Showers should be located a convenient distance from the long-term bicycle parking.

Shower facilities should be:

- Located adjacent to locker facilities in parking garages.
- Integrated into the building bathroom facilities. (See Figure 13)
- Located near long-term bicycle parking. (See Figure 14)

Applicability:

Showers are especially important in places of employment where employees commute by bicycle such as

- Office buildings
- Medical centers/hospitals
- Retail/restaurant
- Schools
- Civic buildings

Building Standards:

- Showers should be built in accordance with the Los Angeles Building Code and Plumbing Code requirements. See the Los Angeles Municipal Code.
- Existing restrooms can be retrofitted to include bike shower facilities.

Reference Tools:

- Adequate Lighting, See Lighting Section.
- Appropriate and applicable wayfinding signage. See Wayfinding Signs Section.
- See Resources Chapter.

Figure 13:
Bathroom Showers
Showers can be located within the bathroom facilities of the office. This allows everyone to utilize the showers.



Photos courtesy of homedesignsites.com

Figure 14:
Parking showers.
Showers may be located at the site of the bicycle parking.

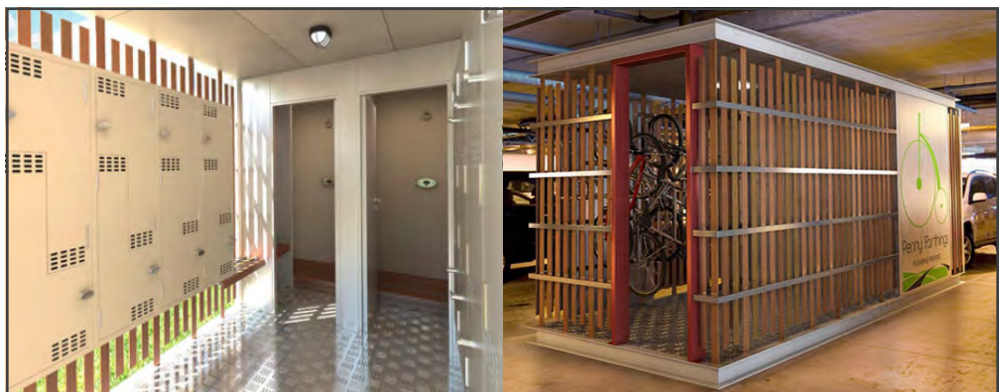


Photo courtesy of Penny Farthings

Facilities: Lockers

Clothing lockers provide commuters with a safe and secure place to store clothing, helmets and other bicycle accessories while working. This is especially helpful where employees, such as kitchen workers, do not have desks or a permanent workstation to store items during the workday.

Location:

Clothing lockers should always be located within close proximity of:

- Shower facilities. If there are separate showers for each gender, there should also be separate clothing lockers. (See Figure 15)
- Bathroom or changing area.

Applicability:

Like showers, clothing lockers should be provided in places of employment where employees commute by bike.

- Even if showers are infeasible due to space or plumbing, clothing lockers can be a welcomed amenity to store bicycle accessories and clothing. (See Figure 17)

Recommended Locker Size:

The recommended clothing locker size is 12 inches wide, 18 inches deep and 30 inches high. (See Figure 16)

- At this depth, a jacket can comfortably be hung on a hanger from a hook on top of the locker.
- Helmets and other accessories can easily be stored in a locker of this width.
- This height accommodates a two-tiered locker setup that maximizes space.

Reference Tools:

- Adequate Lighting, See Lighting Section.
- Appropriate and applicable wayfinding signage. See Wayfinding Signs Section.
- See Resources Chapter.



Photo courtesy of League of American Bicyclists

Figure 15: Proximity to Showers Lockers placed adjacent to showers make it convenient to change after showering and to store shower items.



Photo courtesy of League of American Bicyclists

Figure 16: Recommended Locker Size This two-tier locker setup maximizes space and allows for the storage of all necessary items.



Photo courtesy of SABA

Figure 17: Lockers at parking site. If there is no feasible way to add showers to your site, lockers should be placed near the long-term parking to make it most convenient.

Facilities: Workshop Area

Having a designated place with tools to make quick fixes such as a flat tire or a brake adjustment is an amenity that can encourage more people to bike to their destination.

Location and Dimensions:

A workshop or maintenance area should be located close to the long-term bicycle parking for easy access.

- Place at grade near long-term bicycle parking.
- A minimum area of 4 feet by 8 feet should be designated and marked as the workshop area. (See Figure 18)

Applicability:

- Like showers and clothing lockers, the workshop area should be provided in places of employment where employees may commute by bike.
- In addition, a workshop area is also an amenity for residents at multi-family residential sites.

Recommended Equipment:

The following tools are strongly recommended for the workshop area:

- Bicycle pump, patch kits and a bicycle stand.
- Small, locked box supplied with the basic bicycle maintenance tools. (See Figure 19)

Reference Tools:

- Adequate Lighting, See Lighting Section.
- Appropriate and applicable wayfinding signage. See Wayfinding Signs Section.
- See Resources Chapter.



Figure 18: Small Workshop Area

A bicycle maintenance stand and floor area to work on bikes are essential to creating a usable workstation.



Figure 19: Bicycle Repair Tools

In order to facilitate repairs, a small worktable and key tools are necessary. Refer to a bicycle repair manual of bicycle store for the necessary tools.

Photo courtesy of American League of Bicyclists

Photos by Graham McCall and Geoff Cisler

Wayfinding Signs

Wayfinding signs not only direct users to bicycle parking and the entrances, but it also informs users of the existence of bicycle parking. This is important as bicycle parking and other amenities are not always visible as bicyclists approach a site.



Photo by Richard Drdul

Location:

Wayfinding signs should be easy to read, highly reflective and located where users will see them without having to search.

- Locate just above eye-level so as to be visible from a distance.
- Ensure that both symbols and text are large enough to be seen from a distance.
- Visible from both pedestrian and vehicle entrances.
- Locate within 100 feet of primary building entrances and bicycle parking.



Photo courtesy of McClellan Park TMA

Applicability:

Wayfinding signs should be placed everywhere users will be during their time at the site:

- Clearly mark vehicle and pedestrian main entrances with signs directing users to the location of short-term and long-term bicycle parking.
- Place wayfinding signs at bicycle parking stations that directs users to building entrances, showers and lockers and workshop areas.



Photo courtesy of Radoslaw Orszewski

Recommended Dimensions:

The recommended sign dimensions vary by type of sign.

- Signs directing users to bicycle parking should be at least 18 inches high by 12 inches wide.
- Bicycle parking signs should be at least 18 inches wide and 16 inches high.



Photo courtesy of The Bulletin

Reference Tools:

- Adequate Lighting. See Lighting Section.
- Use with Short-Term Parking, Long-Term Parking, Shower and Locker Facilities and Network Connection Sections.
- See Resources Chapter.

Lighting

Good lighting is imperative at bicycle amenities and along pathways to bicycle facilities to make people feel safe and secure.

Location:

Lights should be placed directly above and along the following locations:

- Short-Term and Long-Term Bicycle Parking.
- Bicycle wayfinding parking signs.
- Pedestrian pathways between bicycle parking and building entrances.
- Bicycle pathways on private property.
- Bicycle rooms, shower and locker facilities (Motion-sensor lights are recommended here).
- Bicycle workstation facilities.

Applicability:

Lights should be placed at all bicycle facility locations, as well as along pathways to bicycle facilities.

Recommended Features:

- Lighting should be glare-free and consistent to provide even light distribution. (See Figure 20)
- Lighting should be direct “dark sky” compliant lighting. (See Figure 21)

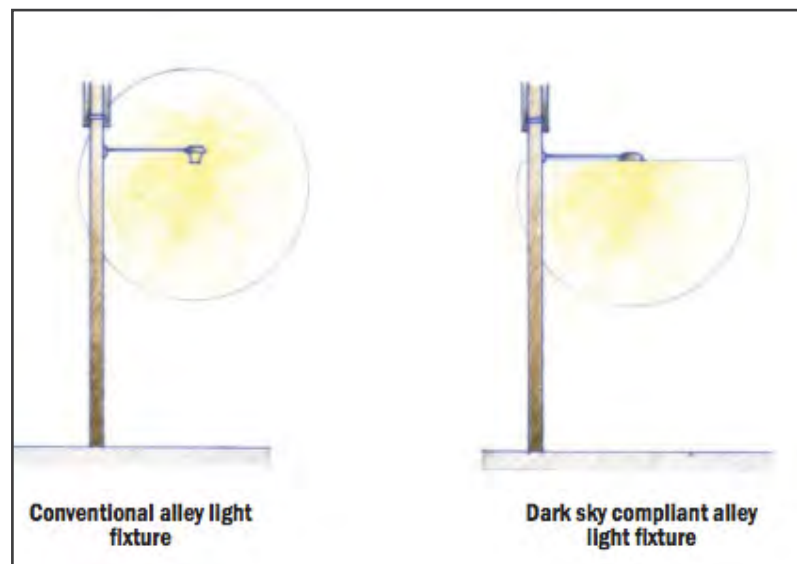
Reference Tools:

- Use with Short-Term Parking, Long-Term Parking, Shower and Locker Facilities, Wayfinding Signs and Network Connection Sections.
- See Resources Chapter.



Photos courtesy of Metro Taipei

Figure 20: Lighting in Taipei, Taiwan
Consistent and glare-free lights creates even light distribution that conveys a safe environment.



Drawings courtesy of Re-Nest.com

Figure 21: Dark Sky Compliant Lighting
These fixtures focus light downward and direct it to where light is needed. This creates better lighting below and less light pollution above.

Network Connections

Clear and safe connections between bicycle facilities and the existing and proposed transportation network (i.e. bicycles routes, trails, paths, transit stops, streets, etc.) are essential to creating a bike-friendly city.

See both the Bicycle Master Plans for City and County of Los Angeles for more information on existing and proposed bicycle networks (2011 and 2012, respectively).



Photo courtesy of David Baker + Partners



Photo courtesy of League of American Bicyclists



Photo by Cathy Cole



Photo by Patrick Lydon

Connection to Right of Way:

- Consider how bicyclists will access transit and bike routes from the building development.
- Design safe and convenient pathways from bicycle facilities to bicycle routes, pathways, and transit stations or stops along the street.

Important Considerations:

- Install easy to read, well marked wayfinding signs that direct bicyclists from the travel lane to parking and vice versa.
- Locate parking strategically as to not create dangerous maneuvering situations (e.g. unsafe left turns)

Reference Tools:

- Adequate Lighting, See Lighting Section.
- Use with Short-Term Parking, Long-Term Parking, Shower and Locker Facilities and Network Connection Sections.
- See Resources Chapter.

Connections within Site:

- Mark bike lanes, sharrows, and/or bicycle wayfinding signs to create more visibility to automobiles.
- Design direct and safe paths to bicycle facilities through the property.
- Consider where bicycle pathways and auto pathways intersect to avoid conflicts and increase safety with safe crossings and signage to increase visibility.
- Where possible, a site plan that includes stairways should also include an alternative, level access route for bicycles. If it is not possible to provide an alternative access, a ramp or a small channel for bicycle wheels on the edge of a stairway should be provided. This will prevent cyclists from having to carry bicycles up and down stairs. Stairs are not accessible for bicycles and stairway ramps should be used as a last resort.

Innovative Designs

Non-conventional innovative designs meeting ADA requirements are encouraged in order to create a bicycle-friendly development and city. This section highlights three examples.



Photo and rendering courtesy of Giken Seisakusho Co

1) Automated Bicycle Parking - EcoCycle:

Automated bicycle parking is an efficient and economical method of accommodating a large number of bicycles.

- Cylindrical parking storage area is underground.
- Computer retrieves bicycles in approximately 10 seconds.
- Small footprint (23 foot diameter), stores 144 bicycles.
- Construction takes only 50 days. Low construction and maintenance costs.



Renderings by Yinnon Lehrer

2) On-site Bicycle Hubs - Yinnon Lehrer:

A self-contained bicycle station provides bicycle parking, showers and lockers.

- Vertical bicycle racks work on a counter-weight system.
- Hubs can be assembled into a variety of configurations.
- Solar water heaters help minimize the station's carbon footprint.
- Hub acts as a good option at a site where it is infeasible to place long-term parking and showers inside the building.



Photos courtesy of Downtown DC Business Improvement District

3) Downtown DC Business Improvement District (BID) - Washington, D.C.

The Downtown DC BID works with public and private sector partners to make the neighborhood bike-friendly. The BID:

- Pledges to match the number of city bicycle racks installed.
- Provides building and business owners information and encourages installation of long-term bicycle spaces or cages.
- Sponsors two annual events: Bike to Work Day and Bike DC.

ADA Design Guidelines

Building bicycle development that follows ADA guidelines creates a safe and accessible city for persons with disabilities.

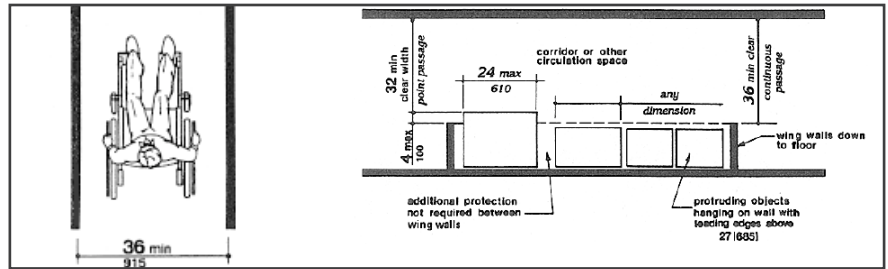


Figure 22

Rendering courtesy of Department of Justice

Accessible Route:

Bike racks, cages and lockers must be placed to allow a minimum accessible route of 36 inches.

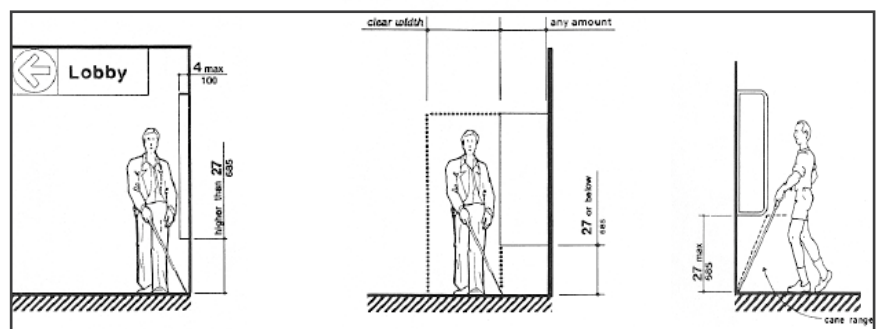


Figure 23

Rendering courtesy of Department of Justice

Protruding Objects Along an Accessible Route:

Vertical racks installed on a wall that have a leading edge between 27 and 80 inches should not protrude more than 4 inches into an accessible route (See figure 22). This can be resolved by placing the bike racks in an alcove or behind wing walls so that they do not restrict the accessible route.

Vertical racks with their leading edges at or below 27 inches may protrude any amount (See Figure 23).

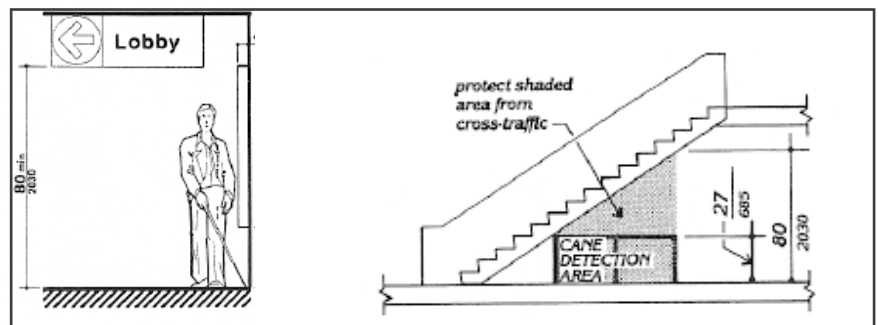


Figure 24

Rendering courtesy of Department of Justice

Head Room Along an Accessible Route:

Vertical bike parking adjoining an accessible route that reduces the overhead clearance space to less than 80 inches must have a barrier to warn blind or visually impaired persons.