BICYCLE PARKING GUIDANCE

This appendix discusses recommended locations for additional or improved bicycle parking and support facilities.

BICYCLE PARKING

Every bicycling trip has two main components: the route selected by the bicyclist and the "end-of-trip" facilities at the destinations, such as safe and secure bicycle parking. This section provides guidance on the provision and placement of bicycle parking facilities.

As the Albany bicycling network grows, so will the population that chooses to ride a bicycle. The availability of secure and convenient parking is as critical to bicyclists as it is for motorists. The availability of short and long-term bicycle parking at key destinations such as parks, schools, community facilities, transit stations, shopping areas and downtown is a vital part of a complete bicycling network.

Parking should be highly visible, accessible and easy to use. Facilities should be located in well-lit areas and covered where possible. Installation is equally important; for example a rack that is too close to a wall or other obstruction will not be effectively utilized. See the figures on the following pages for design specifications.

There are different types of parking facilities just as there are different levels of bikeway facilities. Parking facilities fall into one of three main categories:

In-Street/Sidewalk Parking

This section describes several types of typical in-street and sidewalk parking techniques.

Inverted U-Racks

Bicycle Racks are low-cost devices that provide a location to secure a bicycle. Ideally, bicyclists can

In-Street / Sidewalk Parking		
• Inverted U-Rack • In-Street Bicycle Corral • Covered Bicycle Parking Facilities • Surface Parking Lot Conversion	Appropriate in areas with pedestrian activity and commercial areas. In-street facilities are ideal for areas with constrained sidewalk space.	Ideal for short-term parking needs (2-3 hours)
Lockers		
• Key Lockers • Electronic Lockers	Appropriate for areas with low street activity or isolated areas.	Provides a high level of security, useful for long-term parking needs (>3 hours)
Enclosed Facilities		
• Bicycle Cage • Bicycle Room • Bicycle Station	Ideal for major transit hubs and areas with high bicycle volumes. Enclosed facilities can also be located in residential, commercial or employment centers with indoor space.	Provides the highest level of security, particularly when parking is attended. Ideal for long-term and over-night parking needs.

lock both their frame and wheels. The bicycle rack should be in a highly visible location secured to the ground, preferably within 50 feet of a main entrance to a building or facility. Whenever possible, the racks should be visible from the doorways and/or windows of buildings, and not in an out of the way location, such as an alley. Short-term bicycle parking is commonly used for short trips, when cyclists are planning to leave their bicycles for a few hours.

The most common mistake in installing bicycle racks is placing them too close to a wall or fence, or orienting them the wrong way, rendering the rack unusable; nor should they impede pedestrians. In addition, in order to accommodate a range of bicycle styles and sizes, racks must be installed to allow sufficient space between bicycles and between racks.

If there is space for two or more bikes on a single rack, there must be a minimum of 30 inches center to center between bicycle tires when bicycles are locked side to side; otherwise, the handlebars of one bicycle can prevent another bicycle from parking in the adjacent space.

In addition to optimizing space by situating adjacent bicycles a sufficient distance apart, bicycle racks must be installed to allow sufficient space for bicyclists and their bicycles to move about between racks. In most cases, a standard bicycle footprint is six feet long. Aisles between rows of racks must be a minimum of four feet wide.

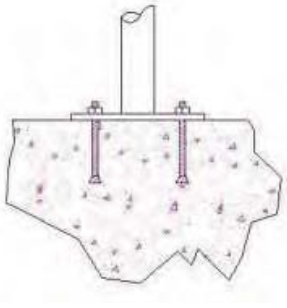
Other Considerations

- There are two primary types of rack installation: surface mount and cast-in place. Surface mount is preferred; however racks are designed for only one or the other installation type. In all cases, racks should be installed in concrete, never in soil and rarely in asphalt. There are issues to consider with each type of installation, detailed below:
- **Surface mount:** for installation after the substrate is in place (e.g. concrete slabs). For many rack types, this is the only option, but care should be taken in choosing the installation hardware. A technique among bicycle thieves is to steal a whole rack and load it into a truck, so only anti-tampering bolts and other hardware should be used. Surface mounted bicycle racks should only be mounted in concrete – asphalt will not securely hold the mounting hardware. If

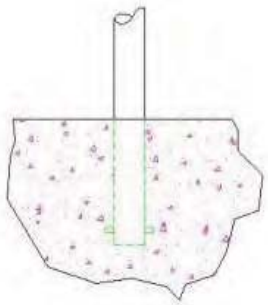
Bicycle Rack Materials & Coatings

There are a variety of materials and coatings available for steel bicycle racks. Individual choices may vary depending on the available budget and aesthetic preferences, but the main options include the following:

- **Stainless Steel** is the recommended choice because it is attractive and relatively maintenance free, but it is also typically the most expensive.
- **Galvanized Coatings** are durable and much cheaper than stainless steel, but galvanized racks are not typically considered as attractive as other options. The low price and easy maintenance makes galvanized racks one of the mostly popular options.
- **Vinyl Coating** is a good option when aesthetics and durability are considered. Vinyl requires minimal maintenance. More importantly, vinyl coatings are the most user-friendly of all the options because they will not scratch bicycles the way harder coatings will.
- **Powder Coating** provides the best color coating option and is highly durable. It is more resistant to wear than regular paint and can easily be touched up if needed. Powder coating is usually the same cost as galvanized.
- **Paint** is not as durable as some of the other options. This is a major issue in an area like Alameda where metal surfaces are subjected to alternating cycles of large amounts of rain in the winter months and searing heat in the summer. Paint chips, wears off quickly and requires regular repainting and maintenance to keep a reasonable appearance.



Surface mount bicycle rack installation



Embedded bicycle rack installation, also known as “cast-in-place” (courtesy of Creative Metalworks)

an asphalt substrate is all that is available, concrete footings should be poured. Multiple loop racks on flanges may in installed in asphalt, which can be useful for in-street bicycle corrals. For a more secure rack installation, perpendicular bars could be installed under the surface to prevent the rack from being pulled directly from the concrete. See illustration, below.

Embedded or cast-in-place: consider whether the location where the rack needs to be installed may already have a slab poured, or the chosen rack type may not provide a cast-in-place option. Also, embedded racks are expensive to relocate in the future if needed. Cast-in-place installation is appropriate for asphalt or concrete. See illustration, left.

"Wheel bender" bicycle rack

- **Bicycle Spacing:** The basic footprint of bicycle parking design, whether parked horizontal or vertical, is 6 feet long, 2 feet wide, and 4 feet high. There are also spatial parameters to consider, and some rack makers do not allow enough space between the racks to allow for handlebar widths. The following specifications for inverted U-racks provide guidance on the minimum space needed. Where possible, provide additional spacing.

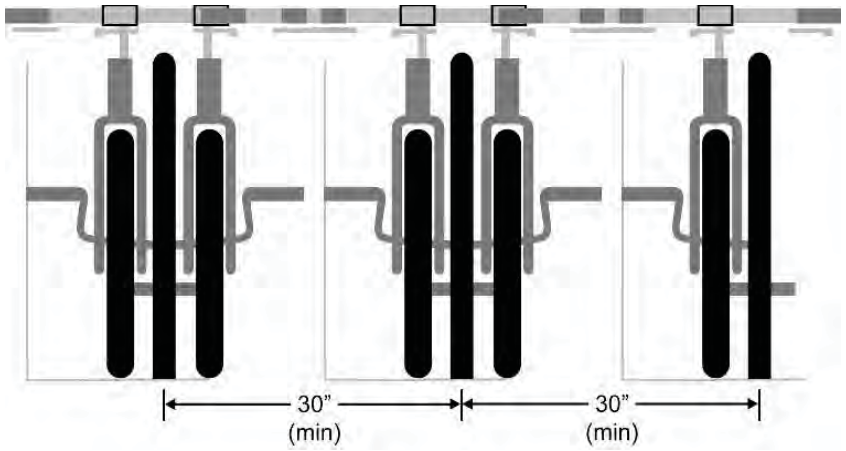
- **Spacing between Bicycles:** If two or more rack spaces are joined together, there must be a minimum of 30 inches center-to-center between bicycle tires when bicycles are locked side to side, and more if space is available. Otherwise, handlebars can get tangled up – a situation that is especially critical when dealing with large volumes of bicycles with relatively high turn-over of parking.

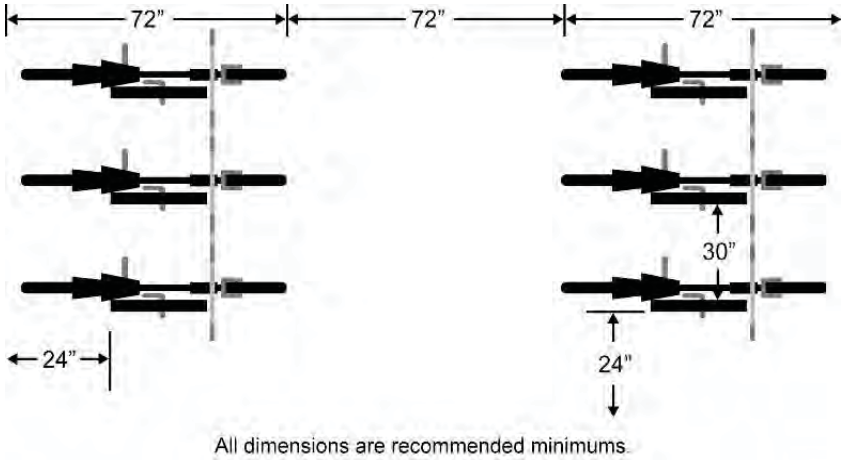
- **Spacing between Racks:** Aside from the physical space requirements between bicycles on the racks, space must be made for bicycles to move about between racks. If an aisle must be made between bicycle racks, a minimum of two feet wide and six feet long with a three foot aisle must be set aside to allow room for bicycles to move in and out of the racks. Spacing between racks or between a rack and other fixed objects can still be an issue. For most types of bicycles, six feet is considered a standard footprint. The graphics on the right show typical dimensions and placement requirements for bicycle parking racks. This type of rack can be installed in multiples to provide additional bicycle parking.

Poor rack design

- **Artistic Bike Racks:** These bike racks may be considered at some locations, such as schools, public buildings, and parks. San Francisco, Spokane, and New York have been using artistic bike racks to give a different character to a specific area. The design of these bike racks should comply with the recommended guidelines for bicycle separation provided in this Appendix.

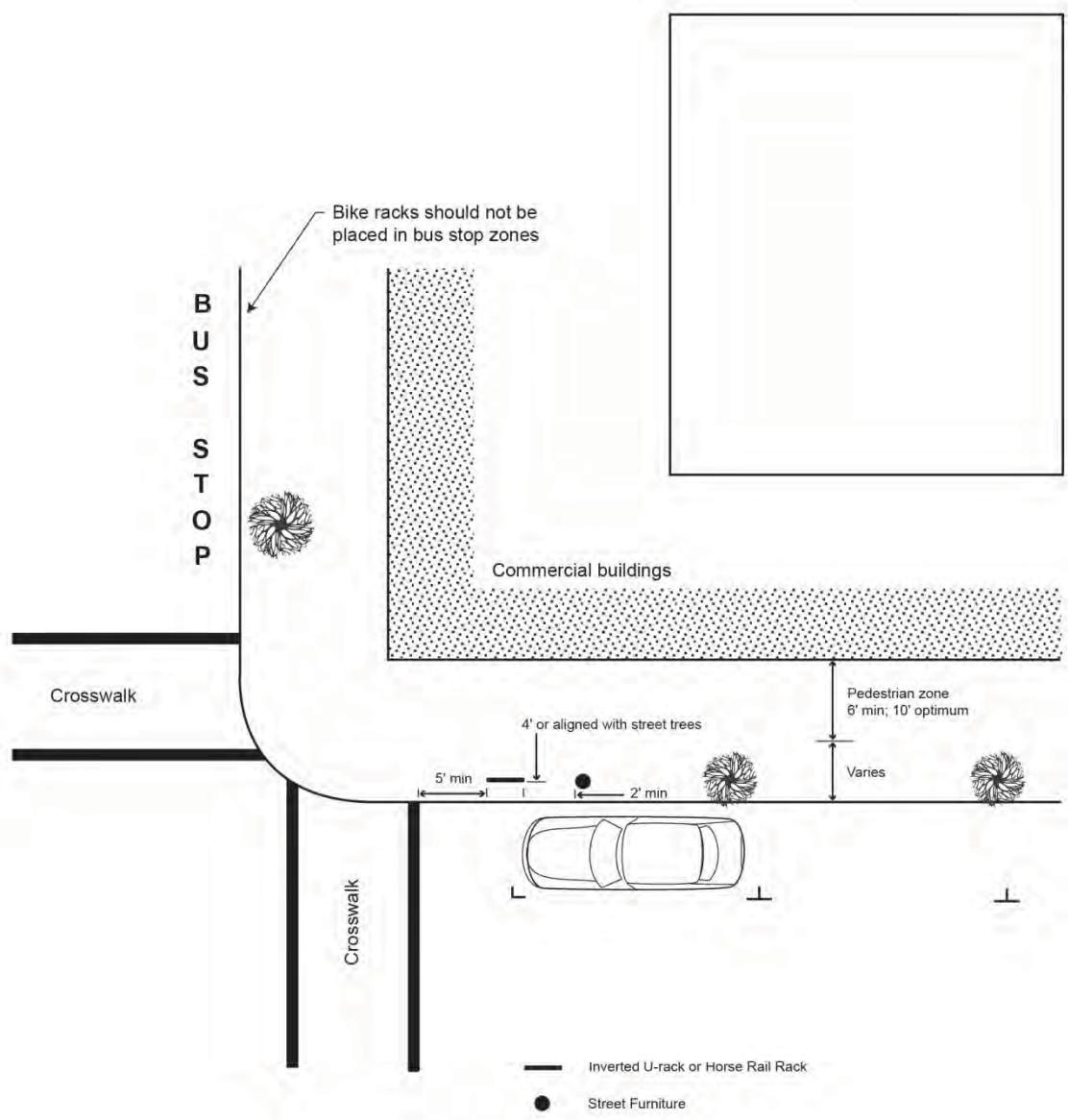
Figure | **Recommended Bicycle Rack Spacing** (Association of Pedestrian and Bicycle Professionals)





All dimensions are recommended minimums

Figure | **Bicycle Parking on Sidewalks**



In-Street Bicycle Corral

This option is ideal for locations with a high parking demand and insufficient sidewalk space. Bicycle corrals have been used in Portland, San Francisco and Berkeley and involve replacement of parking spaces with inverted U-racks. Bollard installation is recommended to protect cyclists and bicycles from adjacent vehicles. Two vehicle parking spaces can accommodate a corral with 10-12 racks for 20-24 bikes. Costs vary depending on the choice of materials, but can range from $3,000 for a multiple loop rack and flexible bollards, to $45,000 for a poured concrete pad, stainless steel bollards and custom racks. Corrals are a relatively low-cost option that reduce sidewalk clutter and do not obstruct the public right-of-way. Corrals can be placed in red zones, but frequently vehicle parking may be removed. If parking is a priority in a given area, local jurisdictions should decide whether bicycle corrals are appropriate.

Covered Facilities

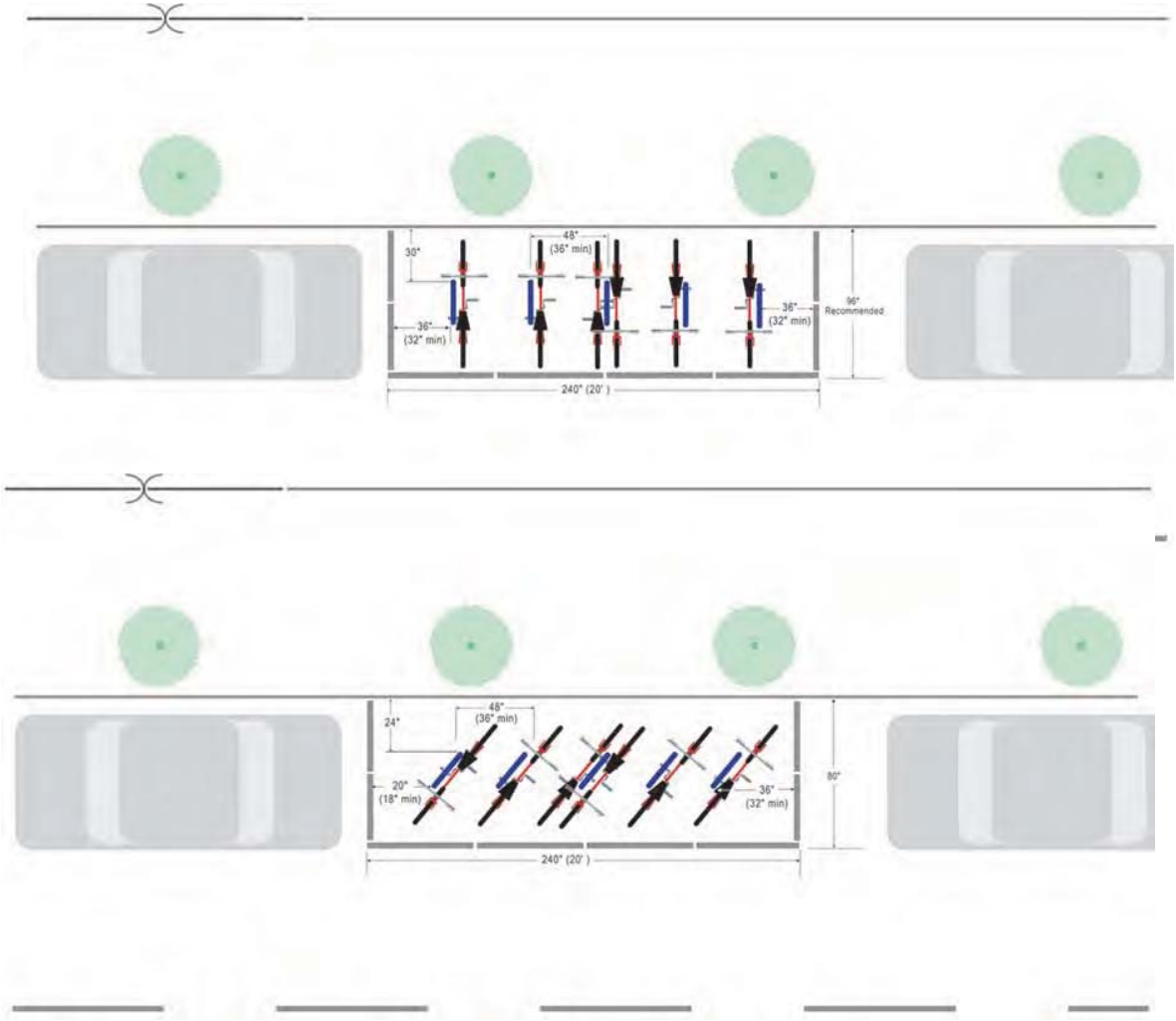
Covered bicycle racks, also referred to as a "bicycle oasis" provide shelter from weather conditions, constant rain in the winter takes its toll on bicycles causing a bicycle's metal frames to rust, but constant sunlight all summer can be worse with ultraviolet rays deteriorating seats and tires. Covered bicycle parking has also been proven to increase cyclists' willingness to park their bicycles for longer periods of time. In order to provide secure coverage from rainfall and clearance for cyclists, the cover should be at least seven feet above the ground. Existing covers such as overhangs or awnings are a low cost way of incorporating covered parking.

New York City and Portland have begun to implement covered bicycle parking. These designs provide shelter, map and advertisement capabilities (see photo, right). Covered racks do not necessarily deter theft any more than uncovered racks, and partial cover or cover that is too high does not protect against weather conditions and thus defeats the purpose.

Surface Parking Lot Conversion

Parking lots near key destinations are ideal places for converting a few parking spaces into short term or long-term bicycle parking. Six racks can fit into the space occupied by one car. Adding U-racks with bollards and a covered or fenced area designates bicycle parking from vehicle parking. Bicycle cages can also be used in parking lots and provide security access through electric pass key systems. Simpler, less expensive modifications of surface lot parking spaces, such as a bicycle corral may be considered.

Figure | **Bicycle Parking Lay-out for an In-street Parking Space**



(image source: The Association of Pedestrian and Bicycle Professionals)

Bicycle Lockers

Bicycle Lockers are covered storage units that can be locked individually, providing secure parking for one bicycle. Bicycle cages are secure areas with limited-access doors. Occasionally, they are attended. Each of these means is designed to provide bicyclists with a high level of security so that they feel comfortable leaving their bicycles for long periods of time. They are appropriate for employees of large buildings and at transit stations. Lockers provide a secure place for bicyclists to store their helmets or other riding gear. Showers are important for bicycling commuters with a rigorous commute and/or formal office attire.

Electronic Lockers

Electronic bicycle lockers provide secure individualized parking that can be accessed with an electronic card. Unlike standard key lockers, which provide one key for one renter, a single e-locker can be rented by multiple cyclists each week by using smart card technology. The improved efficiency translates into greater availability, and is a popular option at transit stations throughout the Bay Area.

Bicycle lockers come in a variety of shapes and sizes depending on the need and the amount of space available. The most common bicycle locker size is approximately 40" wide by 48" high by 72" long. These typically have a diagonal divider inside the locker so that they will accommodate two bikes. Lockers with diagonal dividers are designed to open from two sides, so there should be adequate room on both sides of the locker to comfortably open the door and slide the bicycle in and out, which equates to six feet of clearance from both doors (see graphic below.)

Wedge-shaped locker units accommodate one bicycle, and are a useful design for corner areas. They can also be placed against walls in areas with a constrained public right-of-way.

19th Street & Broadway Downtown Oakland BART (Photo by Jason Patton, City of Oakland)

Bicycle Locker Materials

- **Stainless Steel** is the best material because it is the strongest and most durable, it reflects sunlight well, and requires the least amount of maintenance because stainless steel never needs painting. Increasingly, perforated panels are being used for security purposes to make the contents of the locker visible. Perforated panels reduce the weather protection of the locker, and the top of the locker should always be solid. Also, consider placing perforated lockers in areas less exposed to the elements.
- **Powder Coated Steel** is the second best option. Although not as durable as stainless steel, powder coat will last many years and gives the purchaser a broad range of color options (note: dark colors should be avoided due to heat absorption in the summer.)
- **Composite Materials** such as resin based materials, chip-board, and particle board should be avoided. These materials photo-oxidize and break down quickly, and are easier to break into than steel lockers. However, lockers made of non-metallic sheet molding composites, such as the Cycle-Safe brand, are achieving new levels of quality, performance and cost-effectiveness.

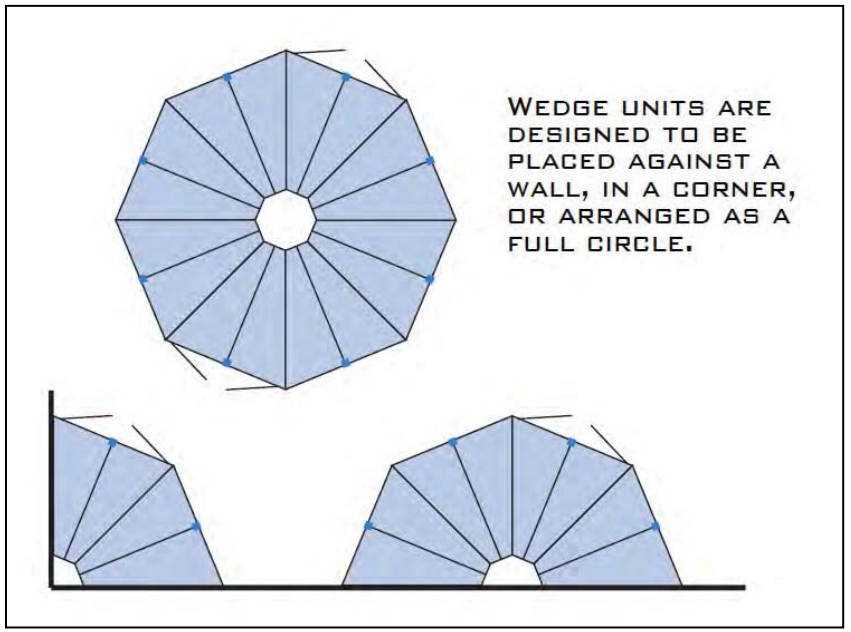
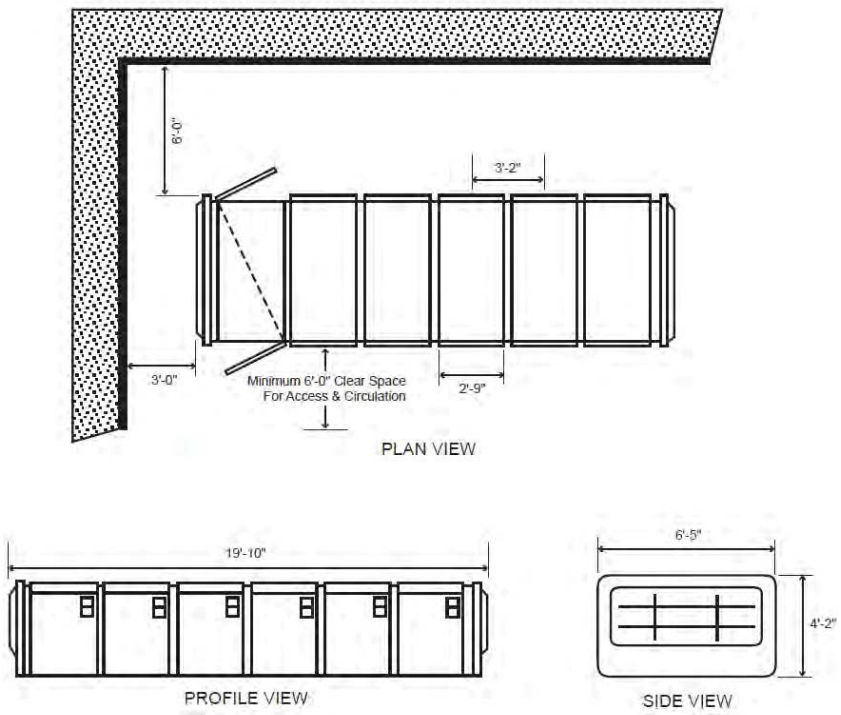


Figure | **Bicycle Locker Placement Guidance**



Enclosed Facilities

This section describes several types of typical off-street and enclosed parking facilities.

Bicycle Cage

Bicycle cages are shared access storage areas in which cyclists lock their own bikes. Bicycle cages are often used by transit centers and large employers or universities to provide an extra layer of security for long-term bicycle parking. Cages are a popular option for bicycle commuters because they provide a high degree of security and they protect bikes. Bicycle cages can be accessed by registered users at any time, and with unlimited ins and outs.

While cages provide additional security over U-racks or other on-street parking facilities, many people may have access to the facility. Small cages are preferred to limit the number of people with access to any single cage. Security may be bolstered by surveillance cameras and monitoring. A single cage of 18' by 20' occupies the same footprint as two standard parking stalls (or 9' by 20' each.)

Cyclists gain access to the bicycle cage by signing up in advance for a key or a key code. Historically, bicycle cages have used conventional lock-and-key systems, but these have proved cumbersome from an administrative standpoint. Magnetic pass keys also allow parking managers to monitor who goes in and out of the bicycle cages. Local jurisdictions or local non-profit organizations are typically responsible for implementing and maintaining this type of facility.

High security bicycle cages

Bicycle Rooms

Bicycle rooms provide enclosed and sheltered parking and protection from theft. A bicycle room is an excellent option for a transit terminal, but any available building floor space can be converted into a bicycle room. Bicycle rooms may have wall racks or floor racks, and should allow easy access by elevator or ramp to the ground level. Adding self-serve features such as bicycle pumps, bicycle stand and basic tools creates extra amenities to cyclists. They also require little maintenance and an attendant is not needed because users are provided with an access code to enter facility.

Bicycle rooms are ideal in business parks or apartment or condominium complexes. Individual businesses or apartment complexes would be responsible for providing bicycle room facilities.

Bicycle Station

The ultimate safety and security option for bicycle commuters and their bikes is the bicycle station, which combines all the safety features of good racks, the security of a bicycle cage, and attended parking; typically only the staff person may check bikes in and out. Users may or may not have to pre-register. In addition to high security bicycle parking, most bicycle stations

also sell basic bicycle accessories, some sell bikes, and the majority provide basic bicycle repair while the cyclist is at work. These extra repair and retail services generate revenue to offset staffing costs and provide additional services for users. All of these options provide further incentives for cyclists to leave their bikes at the station. However, the hours of operation can be limited by funding constraints. Cyclists who want to retrieve their parked bicycle after hours can only do so by prior arrangement with the staff operator. There is usually no charge for regular day or overnight parking in the first few years of operation, since there are usually grant subsidies for operations. Bicycle stations would be appropriate at major transit hubs such as a ferry terminal.

Bicycle stations have high capital and operating costs and may not be feasible unless co-located with other attractors such as major transit hubs, high-density housing and retail. A short- to medium-range improvement for bicycle parking would be an unstaffed high capacity bicycle cage(s). Major bus stops and park and ride areas in Albany may be candidate locations for a bicycle station.

Bicycle Station at 4th & King Caltrain Station, San Francisco

Public Bicycle Parking

Albany's schools, parks, public buildings and private developments use a variety of rack types, some acceptable and some obsolete:

- Albany High School: Wave (ribbon)
- MacGregor High School: Comb (ladder) [obsolete] and wheel-holder [obsolete]
- Albany Middle School: Wave (ribbon) in fenced area
- Cornell Elementary: Inverted U
- Ocean View Elementary: 2-sided "hanging-triangle" (Urban Accessories Model E)
- Marin Elementary: Comb (ladder) and wheel-holder
- Ocean View Park: Comb (ladder)
- City Hall complex: Wave (ribbon)
- Library / Community Center: Wave (ribbon)
- Target: Post and ring
- PetSmart: Wave (ribbon)
- USDA: Hanging-triangle and wheel-holder

The wave racks at the schools, Library, and City Hall are usable. However, the inverted Us or a series of inverted Us racks are preferred. In some locations, such as at Albany High School and the Library, reorienting or rotating wave racks to facilitate two-sided access would improve usability. Many racks on Solano and San Pablo are oriented incorrectly, so bikes parked correctly extend over curb and onto street and/or too far onto sidewalk. Many rack locations were also chosen randomly (i.e. not in front of businesses needing them, in empty areas). Rack locations should be chosen based upon where they will be used, not solely upon distance from other racks. Where possible, racks should be installed under overhang or roof, to protect bicycles from rain.

There are bike racks that could be considered public art like the ones used in some museums in San Francisco and other cities like New York, and Spokane. The City of Albany may consider the use of artistic bike racks as long as the design complies with the specifications presented in the Design Guidelines section of this document.

Bike rack in Spokane, Washington. Photo courtesy of Amy Smolens

Bike racks outside of the American Steel Building. Photo courtesy of BikeParking.com

Albany should consider upgrading existing deficient racks and installing new racks as requested and as development occurs. Large employers (with over 50 employees) should be required to provide adequate bicycle parking, preferably indoor for their employees. **As an action item, the City should adopt an ordinance that states that bicycle racks be installed as a condition of approval for certain land uses.**

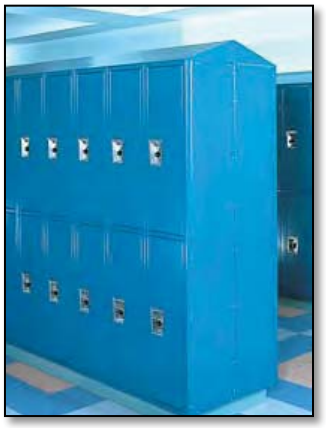
Proposed facilities for changing and storing clothes and equipment

Especially in Albany's mild weather, bicyclists who commute short distances typically ride in street clothes and do not need to change clothes at work. Because bicycling is approximately four times more efficient than walking, trips of up to four miles (20 minutes) can easily be made in street clothes, depending on temperature and effort.

Bicyclists who ride a longer distance or who commute during hot weather may prefer to change clothes upon arrival. Some may also use a shower if one is available, but not all who change clothes need to shower. For this reason, a secure – ideally, individual -- place to store clothing is a more important commuter amenity than showers, though showers also serve non-bike-commuting employees who exercise at lunchtime or after work.

Commuter clothing storage can take several forms:

- A hanger or garment bag behind a door, if the employee has a closed-door office
- A full-height or half-height clothing storage locker located in a changing area or restroom, assignable long-term to the commuter.
- A locked wardrobe cabinet shared by a small, mutually-trustworthy group of commuters



Half-height (36”) lockers

Wardrobe cabinet

Clothing lockers should comfortably accommodate clothes on hangers:

- Depth: 18” to accommodate jackets and shirts on hangers.
- Width: 12” minimum, 15” suggested
- Height: at least 36” for half-height units, to accommodate folded slacks on hangers.
  In larger installations, provide several full-height units for dresses

Albany has few major employers, including the USDA research center, Target, PetSmart, City Hall, and the school district; only the Fire Department has showers and clothing storage for employees.

Recommendation for shower and clothing storage requirement

Albany should consider a Municipal Code requires employee shower facilities in new buildings and additions based on square footage, with no shower required below a certain area based on building use. For example,

18.16.060 Development Standards
….
(j) Employee Showers

Employee shower facilities shall be provided for any new building constructed or for any addition to or enlargement of any existing building as specified in Table 6.

TABLE I-1: EMPLOYEE SHOWERS REQUIRED

Uses	Gross Floor Area of New Construction (ft^2)	Showers Required
Medical, Professional, and General Business Offices, Financial Services, Business and Trade Schools, General Business Services	0-9,999	No requirement
	10,000-19,999	1
	20,000-49,999	2
	50,000 and up	4
Retail Services, Personal Services, and Eating and Drinking Services	0-24,999	No requirement
	25,000-49,999	1
	50,000-99,999	2
	100,000 and up	4

Commuter clothing storage should be provided within any employee changing area. If an employee restroom is the only available changing "facility", one or more clothing storage lockers – possibly half-height -- can often be accommodated while meeting ADA access requirements.

General bike parking code by land use

The following code is based on the "Sample Bicycle Parking Requirements" section in Bicycle Parking Guidelines, 2nd Edition, published in 2010 by the Association of Pedestrian and Bicycle Professionals (APBP / www.apbp.org). In that publication, Chapter 3: Policies, Requirements and Codes contains details for establishing bicycle parking and storage requirements tied to land use, with samples for ordinary and urbanized / high mode share areas. Albany is both urbanized and on its way to a relatively high bicycle mode share. The city's current 4% is four times the state average and twice the Alameda County rate, and this plan envisions a tripling to 12% by 2020. For these reasons the ratios and numbers in Table H-2 are drawn from the "Urbanized or High Mode Share Areas" sample code.

TABLE H-2: BICYCLE PARKING REQUIREMENTS

Residential

Type of Activity	Long-term Bicycle Parking Requirement	Short-term Bicycle Parking Requirement
Single Family Dwelling	No spaces required.	No spaces required.
Multifamily Dwelling		
a) With private garage for each unit*	No spaces required	0.10 spaces for each bedroom. Minimum is 2 spaces.
b) Without private garage for each unit	0.5 spaces for each bedroom. Minimum is 2 spaces.	0.10 spaces for each bedroom. Minimum is 2 spaces.
c) Senior Housing	0.5 spaces for each bedroom. Minimum is 2 spaces.	0.10 spaces for each bedroom. Minimum is 2 spaces.

*A private locked storage unit may be considered as a private garage if a bicycle can fit into it.

TABLE J-2: BICYCLE PARKING REQUIREMENTS, CONTINUED

Civic: Cultural/Recreational

Type of Activity	**Long-term Bicycle Parking Requirement**	**Short-term Bicycle Parking Requirement**
Non-assembly cultural (library, government buildings, etc.)	1.5 spaces for each 10 employees. Minimum requirement is 2 spaces.	1 space for each 8,000 s.f. of floor area. Minimum requirement is 2 spaces.
Assembly (churches, theaters, stadiums, parks, beaches, etc.)	1.5 spaces for each 20 employees. Minimum requirement is 2 spaces.	Spaces for 5% of maximum expected daily attendance.
Health care/hospitals	1.5 spaces for each 20 employees or 1 space for each 50,000 s.f. of floor area, whichever is greater. Minimum requirement is 2 spaces.	1 space for each 20,000 s.f. of floor area. Minimum is 2 spaces.
Education		
a) Public, parochial, and private nursery schools, kindergartens, and elementary schools (1-3)	1.5 spaces for each 20 employees. Minimum requirement is 2 spaces.	1 space for each 20 students of planned capacity. Minimum requirement is 2 spaces.
b) Public, parochial, and private nursery schools, kindergartens, and elementary schools (1-3)	1.5 spaces for each 10 employees. Minimum requirement is 2 spaces.	1.5 spaces for each 20 students of planned capacity. Minimum requirement is 2 spaces.
c) Public and, parochial elementary schools (4-6), junior high and high schools	1.5 spaces for each 10 employees plus 1.5 spaces for each 20 students of planned capacity. Minimum requirement is 2 spaces.	1.5 spaces for each 20 students of planned capacity. Minimum requirement is 2 spaces.
d) Colleges and universities	1.5 spaces for each 10 employees plus 1 space for each 10 students of planned capacity; or 1 space for each 20,000 s.f. of floor area, whichever is greater.	1 space for each 10 students of planned capacity. Minimum requirement is 2 spaces.
Rail/bus terminals and stations/airports	Spaces for 7% of projected a.m. peak period daily ridership	Spaces for 2% of projected a.m. peak period daily ridership

TABLE J-2: BICYCLE PARKING REQUIREMENTS, CONTINUED

Commercial

Type of Activity	Long-term Bicycle Parking Requirement	Short-term Bicycle Parking Requirement
Retail		
General food sales or groceries	1 space for each 10,000 s.f. of floor area. Minimum requirement is 2 spaces.	1 space for each 2,000 s.f. of floor area. Minimum requirement is 2 spaces.
General retail	1 space for each 10,000 s.f. of floor area. Minimum requirement is 2 spaces.	1 space for each 5,000 s.f. of floor area. Minimum requirement is 2 spaces.
Office	1 space for each 10,000 s.f. of floor area. Minimum requirement is 2 spaces.	1 space for each 20,000 s.f. of floor area. Minimum requirement is 2 spaces.
Auto Related		
Automotive sales, rental, and delivery Automotive servicing Automotive repair and cleaning	1 space for each 10,000 s.f. of floor area. Minimum requirement is 2 spaces.	1 space for each 20,000 s.f. of floor area. Minimum requirement is 2 spaces.
Off-street parking lots and garages available to the general public either without charge or on a fee basis	1 space for each 20 automobile spaces. Minimum requirement is 2 spaces. Unattended surface parking lots excepted.	Minimum of 6 spaces or 1 per 10 auto spaces. Unattended surface parking lots excepted.

Industrial / Manufacturing

Type of Activity	Long-term Bicycle Parking Requirement	Short-term Bicycle Parking Requirement
Manufacturing and production	1 space for each 12,000 s.f. of floor area. Minimum requirement is 2 spaces.	Number of spaces to be prescribed by the Director of City Planning. Consider minimum of 2 spaces at each public building entrance.