

Madrax
Bike Storage Guide

A guide to efficiently storing multiple bikes.



GUIDE

BIKE STORAGE

Madrax
1080 Uniek Drive
Waunakee, WI 53597

Contact
sales@madrax.com
Madrax.com
Phone: 800-448-7931



INNOVATIVE SOLUTIONS
FOR BICYCLE SECURITY

Table of Contents

01

Bike Storage vs. Bike Parking

When planning a dynamic space designed to secure bicycles, you'll either be creating a bike storage or bike parking solution.

02

Bike Storage Site Planning

The surface that the bike racks will be installed on will also play a role in determining the best options for your bike storage area.

03

Bike Storage Layout Recommendations

After factoring the attributes of the bike storage area, weighted against code capacity requirements, you can start evaluating different solutions for the most successful layout.

04

Bike Storage Spacing Recommendations

Each bike storage area will be unique in available space, number of bikes needed to be parked and other requirements. We recommend following the APBP guidelines for bike storage spacing.

05

Bike Storage System/Rack Selection

There are many styles of bike racks. When selecting the specific product to fit the vision and design of your bike storage area, there are a few features any rack used in a bike storage design should have.



BIKE STORAGE VS. BIKE PARKING

When planning a dynamic space designed to secure bicycles, you'll either be creating a bike storage or bike parking solution. Though the two terms are used interchangeably, **bike storage** (also referred to as Class I Bicycle Parking) is considered long-term bike parking and typically provides shelter from weather, thieves/vandals and other elements.

A **bike room** is an application of bike storage and a growing trend in many residential and business facilities.

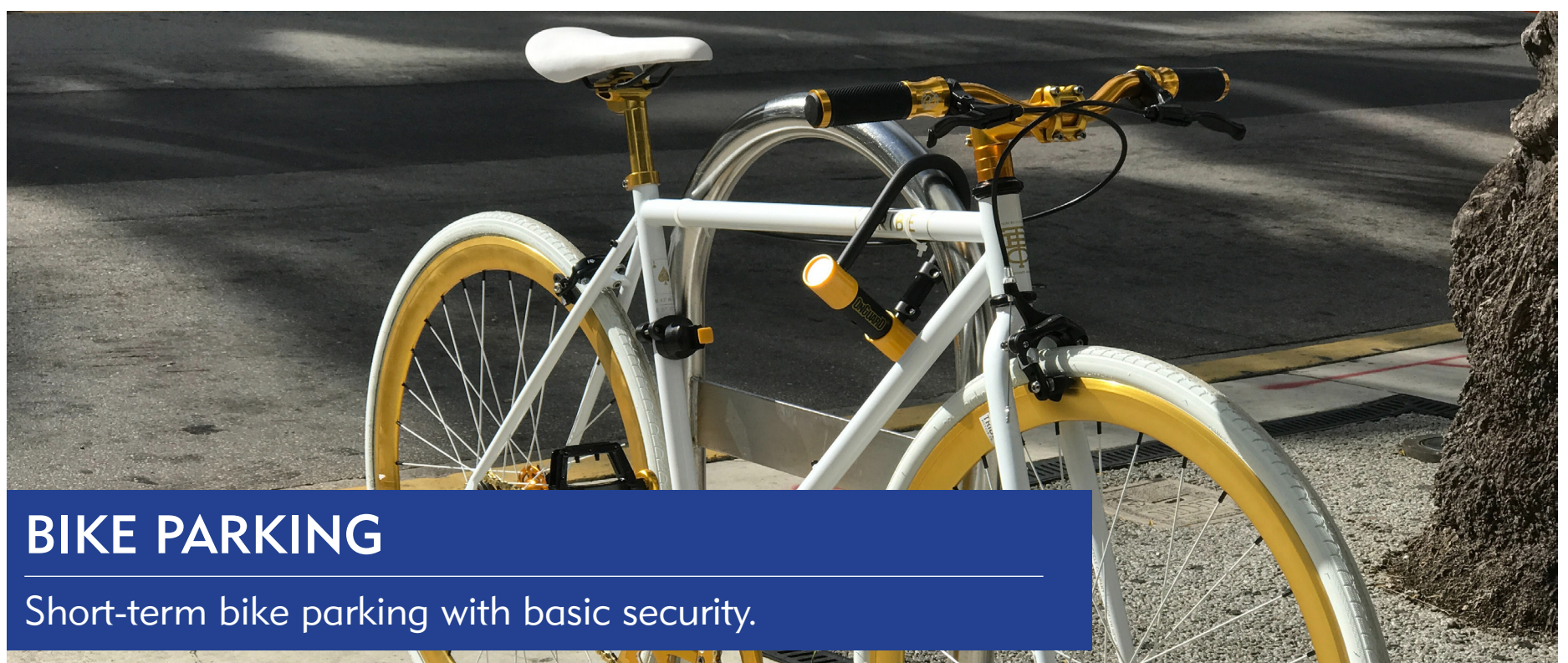


BIKE STORAGE

Long-term bike parking with increased security.

Bike parking (also referred to as Class II Bicycle Parking) is commonly designated for scenarios where parking is only needed for the short term - typically less than 2 hours. Bike parking is usually outside, with more exposure to elements that make the solution less secure.

Common examples of bike parking can be found on sidewalks, in parks and in front of commercial businesses.



BIKE PARKING

Short-term bike parking with basic security.

BIKE STORAGE SITE PLANNING



Know Your Municipal Codes

As with any new building or revision to an existing structure, make sure you are aware of your local ordinances. Many cities have standards in place that regulate how many bike parking spots are required, what types of racks can be used, as well as spacing for and between spots.

Know the Installation Surface

The surface that the bike racks will be installed on will also play a role in determining the best options for your bike storage area.

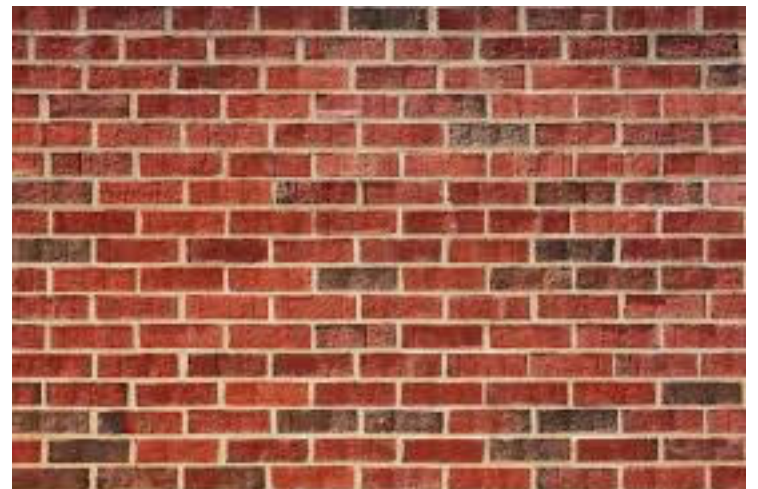
Concrete is ideal for installing bicycle parking racks. The best case would be to install the rack when the concrete is poured.

If installing into existing concrete, there may be limits as to how deep the concrete can be drilled. Many racks require it be fastened to the wall with an anchor bolt.

Concrete block, brick and the type of studs behind drywall - steel or wood - all require certain mounting hardware that may or may not be offered for certain bike racks.

In addition to the materials that make up the surface where your bike storage will be, it will be important to identify any obstacles and clearance requirements.

If the bike storage area will have mechanicals affixed to the wall, it may limit certain types of racks that would be installed. Select vertical bike racks, for example, require a length of smooth wall space for proper installation.



BIKE STORAGE SITE PLANNING

Determine Bike Density

As with any new building or revision to an existing structure, make sure you are aware of your local ordinances. Many cities have standards in place that regulate how many bike parking spots are required, what types of racks can be used, as well as spacing for and between spots.



Multifamily Housing w/o Private Garage for Each Unit

- 0.5 spaces for each bedroom
- Minimum of 2 spaces

Senior Multifamily Housing

- 0.5 spaces for each bedroom
- Minimum of 2 spaces

Colleges & Universities

- 1 space for each 10 employees, plus 1 space for each 10 students of planned capacity;
- **OR** 1 space for each 20,000 sq. ft. of floor area

Whichever is greater

Rail/Bus Terminals

- Spaces for 5% of projected a.m. peak period ridership

Office

- 1 space for each 10,000 sq. ft. of floor area
- Minimum of 2 spaces

Adjusting for increased bicycle ridership

In communities that are densely developed, more urbanized or which have higher bicycle use, a .5 space/measurement should be added for educational, civic and commercial facilities.

BIKE STORAGE LAYOUT RECOMMENDATIONS

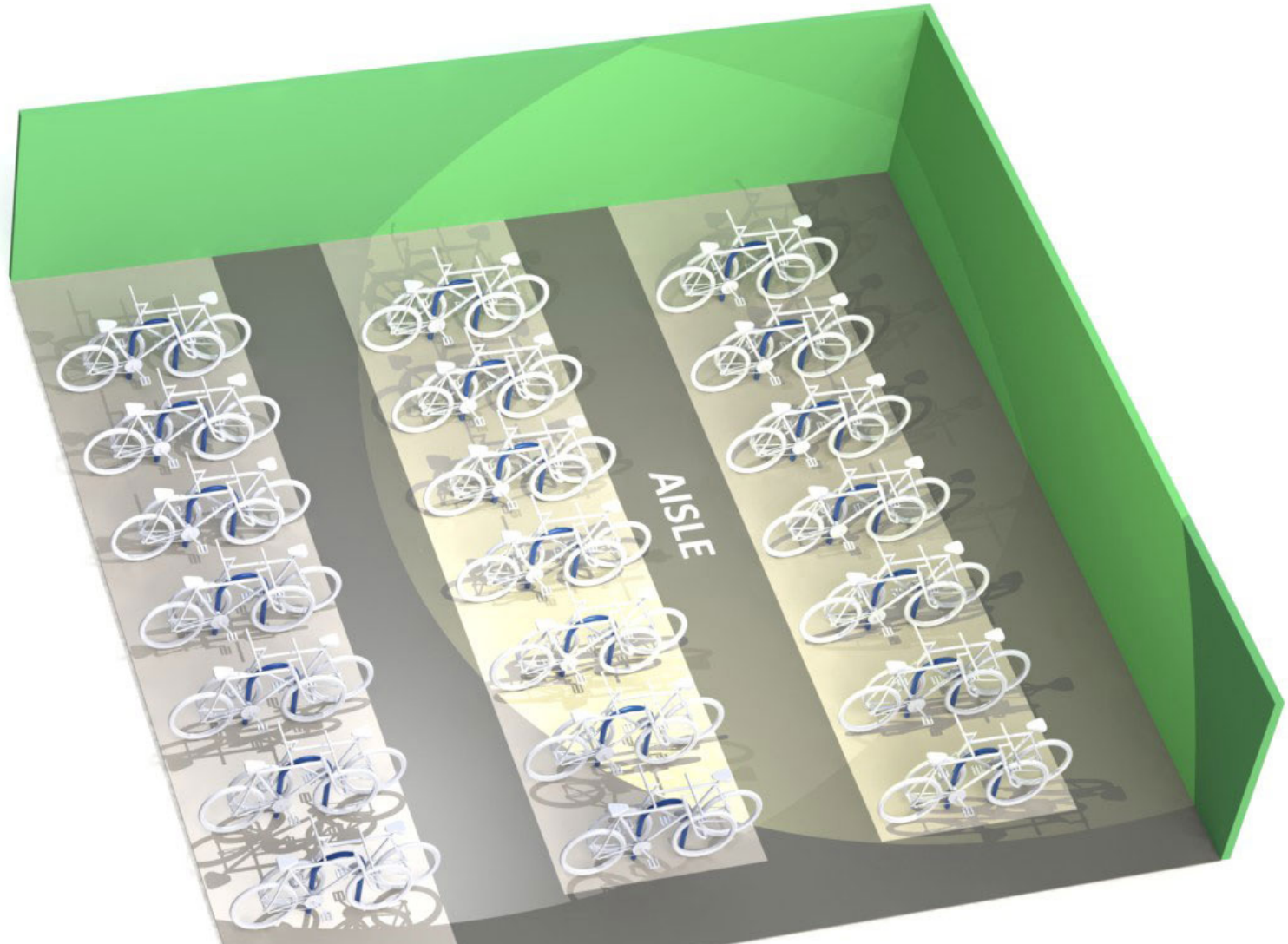
Let Users Guide Bike Storage Layouts

After factoring the attributes of a bike storage area, weighted against code capacity requirements, you can start evaluating different bike storage systems or combinations of systems that will guide you to a successful layout.

To be successful with your layout, it is critical to design an area that will satisfy the people who will be using the bike storage. Use the common objectives for bike storage on the following pages to help build out your design.



BIKE STORAGE LAYOUT RECOMMENDATIONS

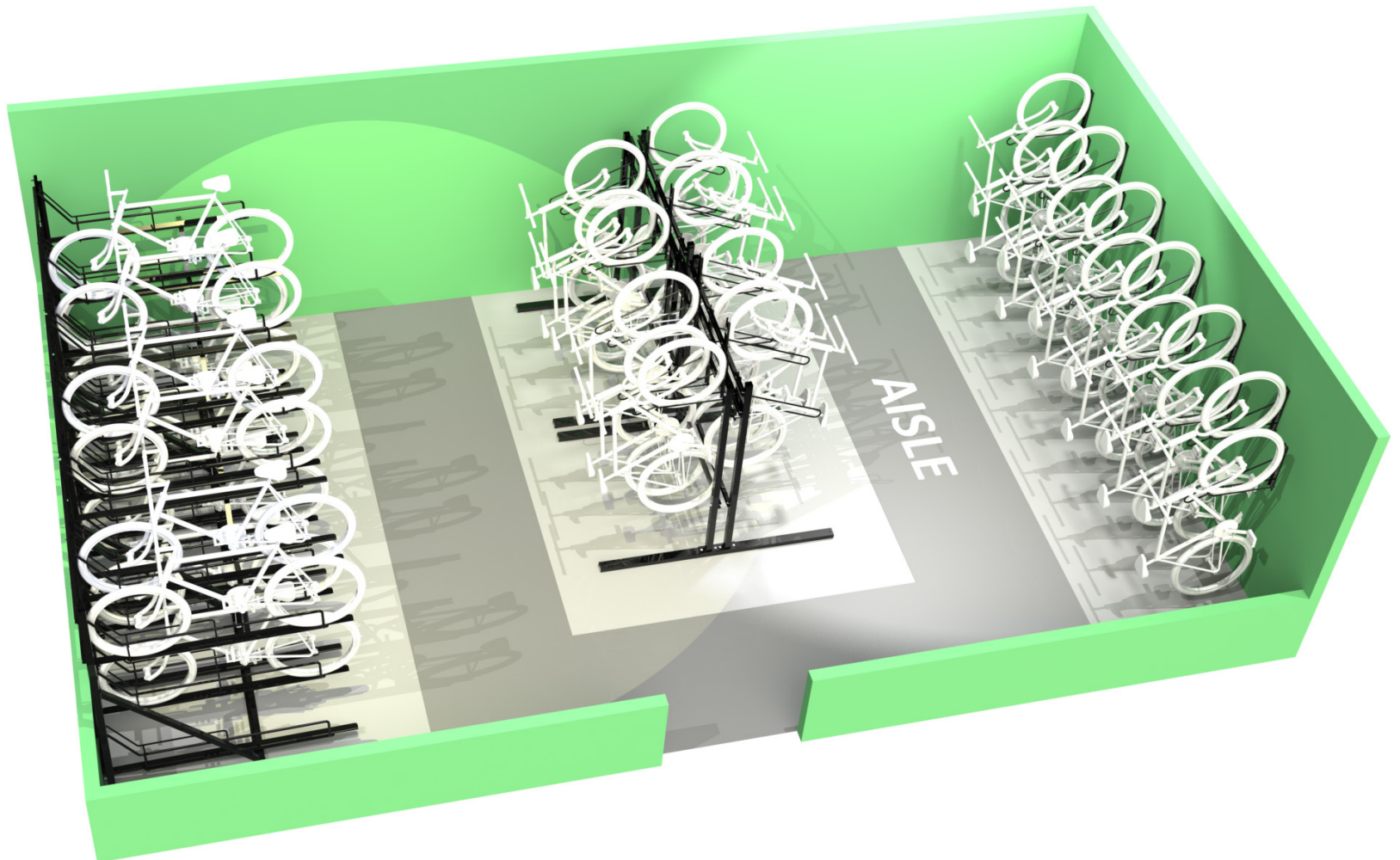


Biker-friendly

Provides ease in accessing and returning bikes to storage.

- Floor-mounted bike rack systems
- 24" of clearance around the rack
 - Allows users to easily lock bike from the side
 - Avoids handlebar/rack/basket conflicts
- Adequate clearance on the end and side for the user to easily maneuver their bike into and around parking areas
- Adequate clearance from walls and other fixed objects that would obstruct the rack from being used
- Aisle(s) allowing for:
 - Simultaneous users
 - Bikes to be lifted where two-tiered racks are used

BIKE STORAGE LAYOUT RECOMMENDATIONS



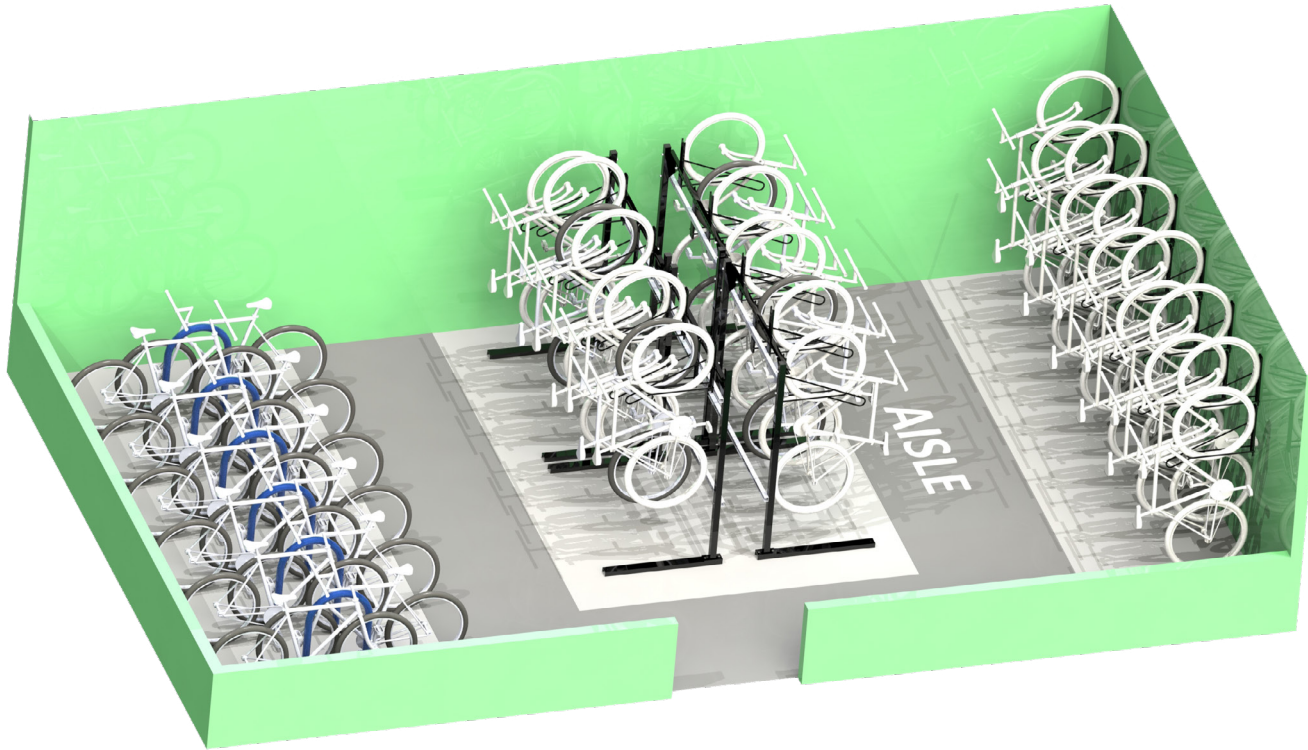
Max Density

Provides the maximum amount of spaces to store bikes in the allotted area.

- High-density bike rack systems:
 - Ground mounted
 - Vertical
 - Two-tiered
- Reduced spacing between bike parking spots

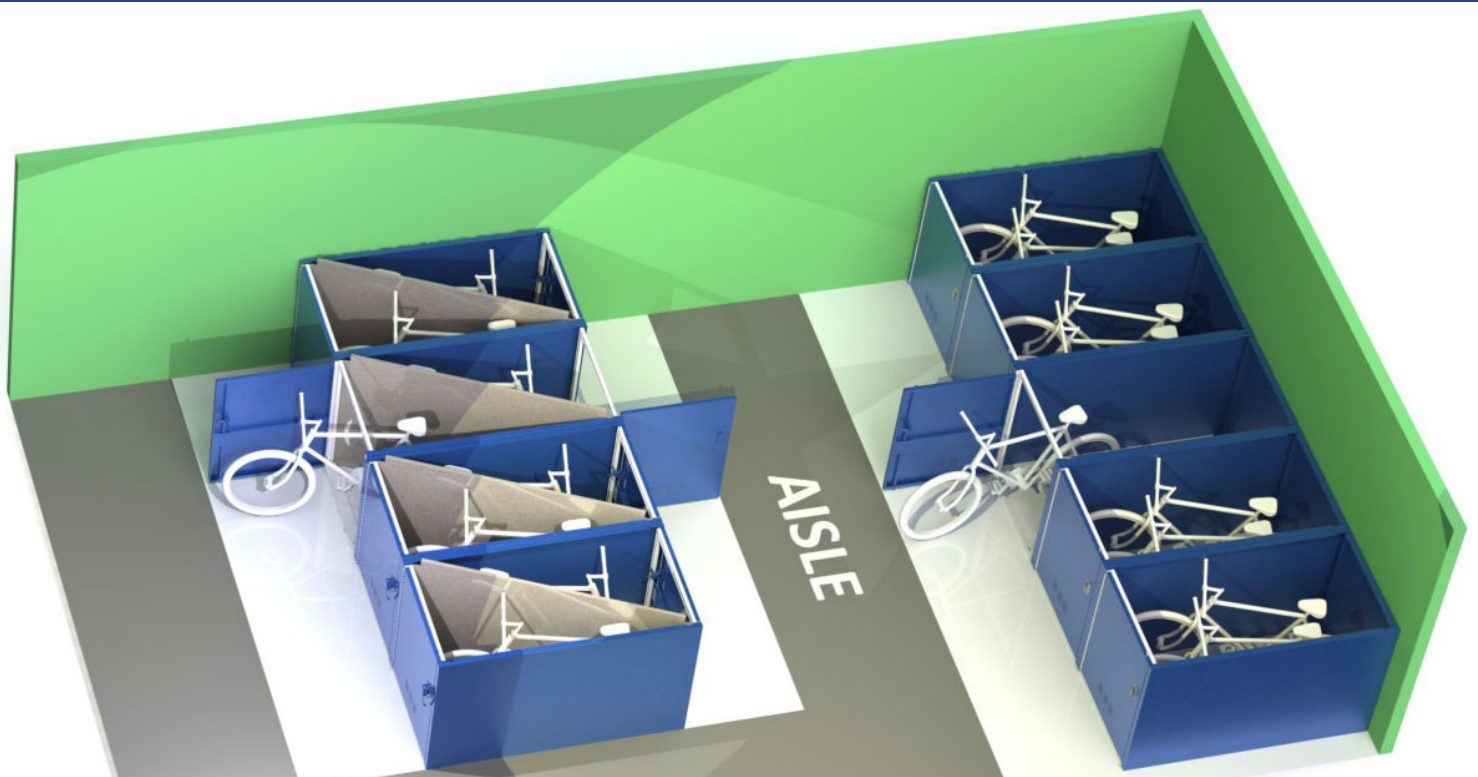
This layout would offer the highest density of bike storage per square foot and provide the highest value, of any layout, to the facility owner. It would offer sufficient bike parking for those would want to use it would also satisfy a greater number of people. The main drawback is this design might not be functional if users would have certain physical limitations that would not allow them to lift their bike off the ground in order to park it.

BIKE STORAGE LAYOUT RECOMMENDATIONS



Balanced

Combination of bike storage solutions that serve heavy bike users and those more concerned with having a space to store their bike



Most Secure

Bike lockers that fully enclose the bicycle to protect from weather, tampering and vandals provide the most security for bike storage.

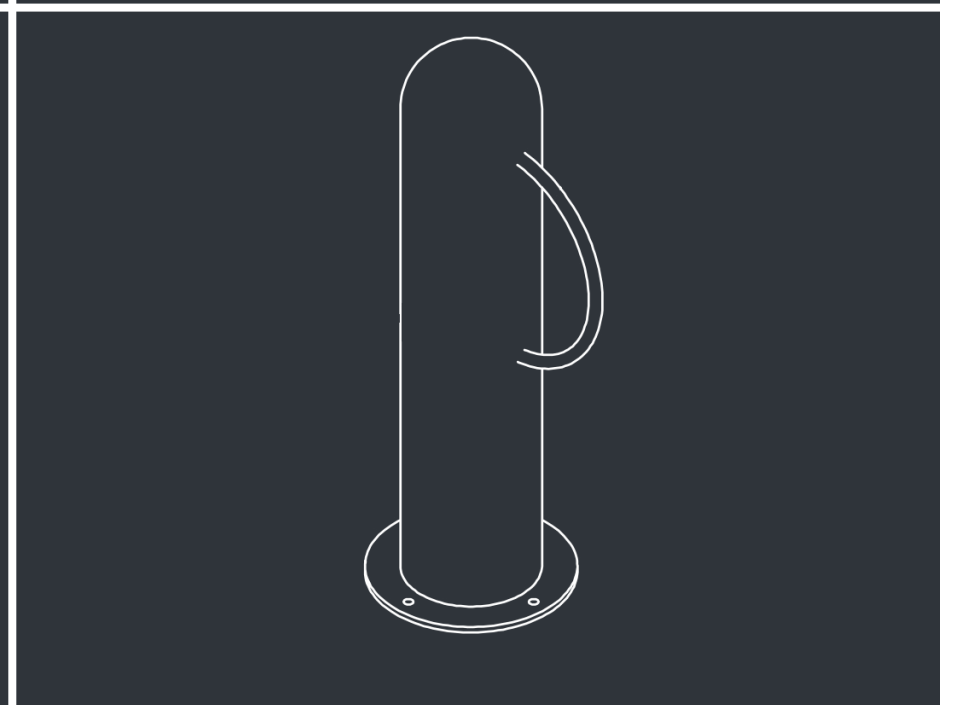
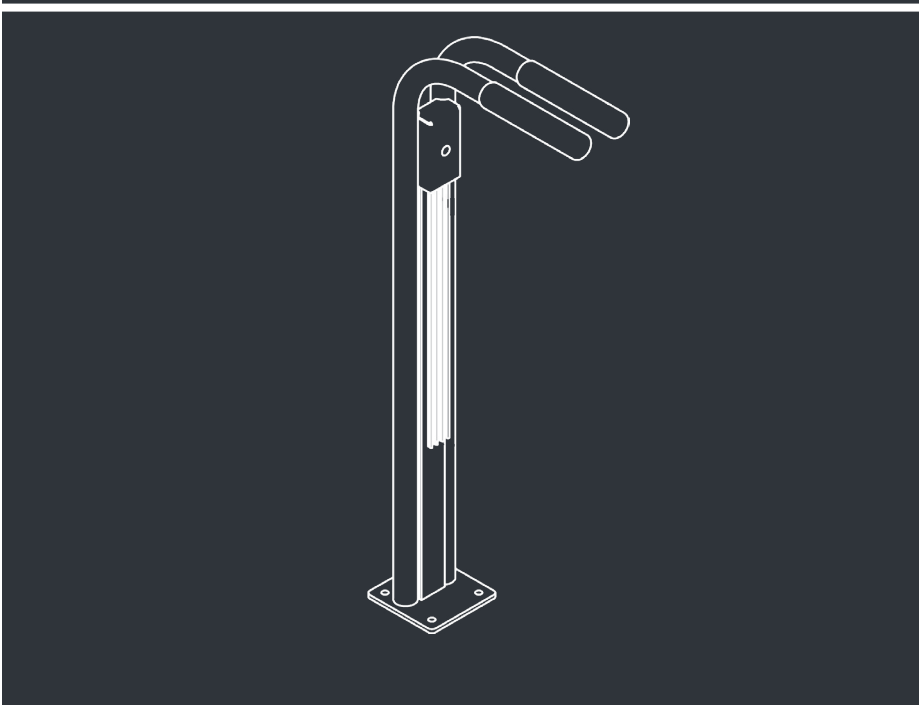
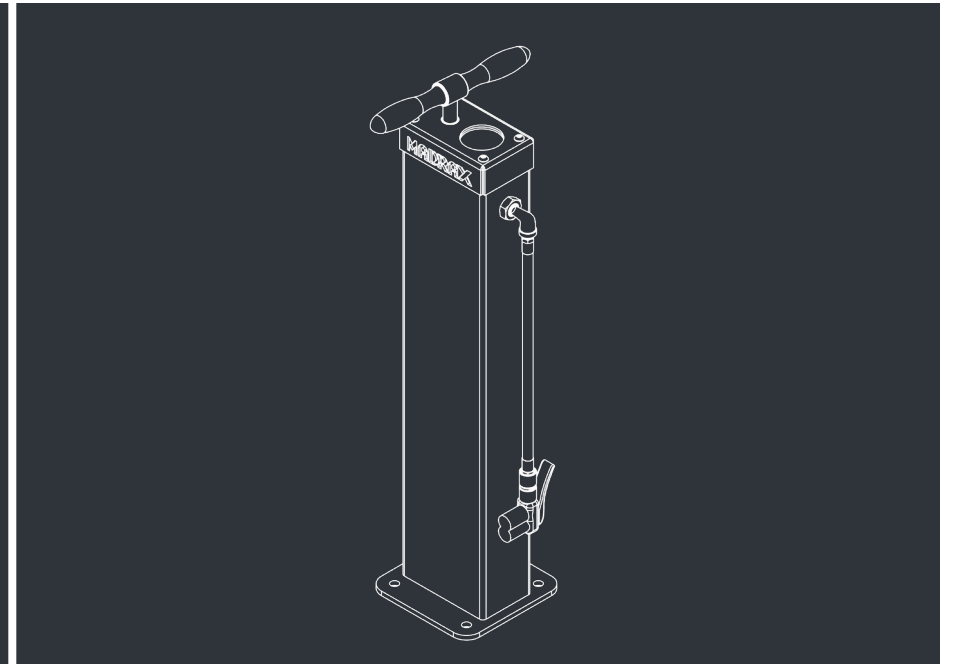
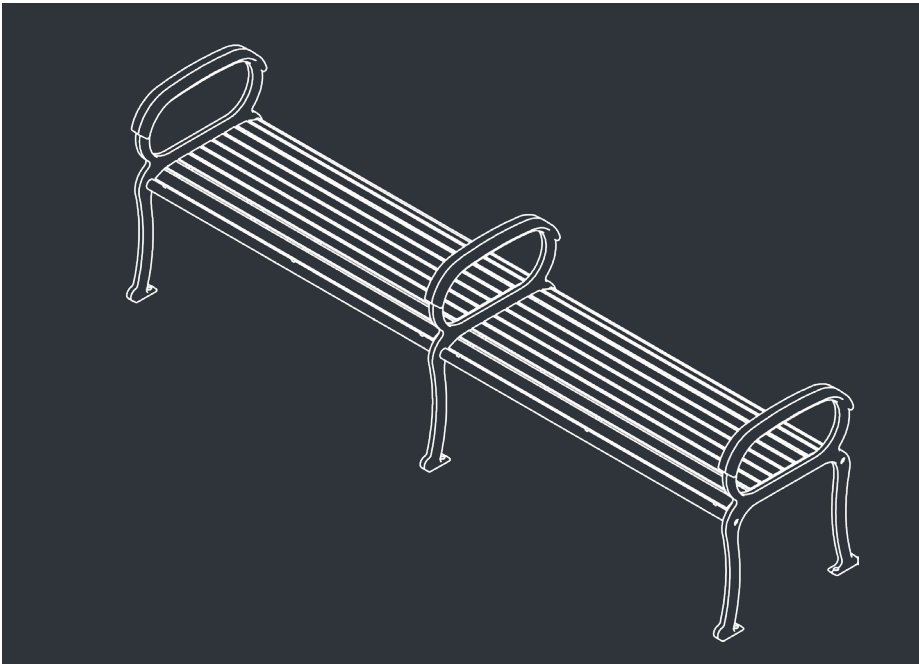
BIKE STORAGE LAYOUT RECOMMENDATIONS

Other Bike Storage Amenities

In addition to bike racks, it's worth considering adding other amenities and including them in your layout.

Items like benches, repair stations and pumps would increase the overall value and utilization of a bike storage area.

Rooms, cages or other barriers that restrict access to the bikes are also additional elements that will make bike storage areas more secure.



BIKE STORAGE SPACING RECOMMENDATIONS

Ground Bike Parking

Space for bicycle: 72" for standard bicycle

Distance between racks: 48" recommended | 36" minimum

Distance from walls/obstructions:

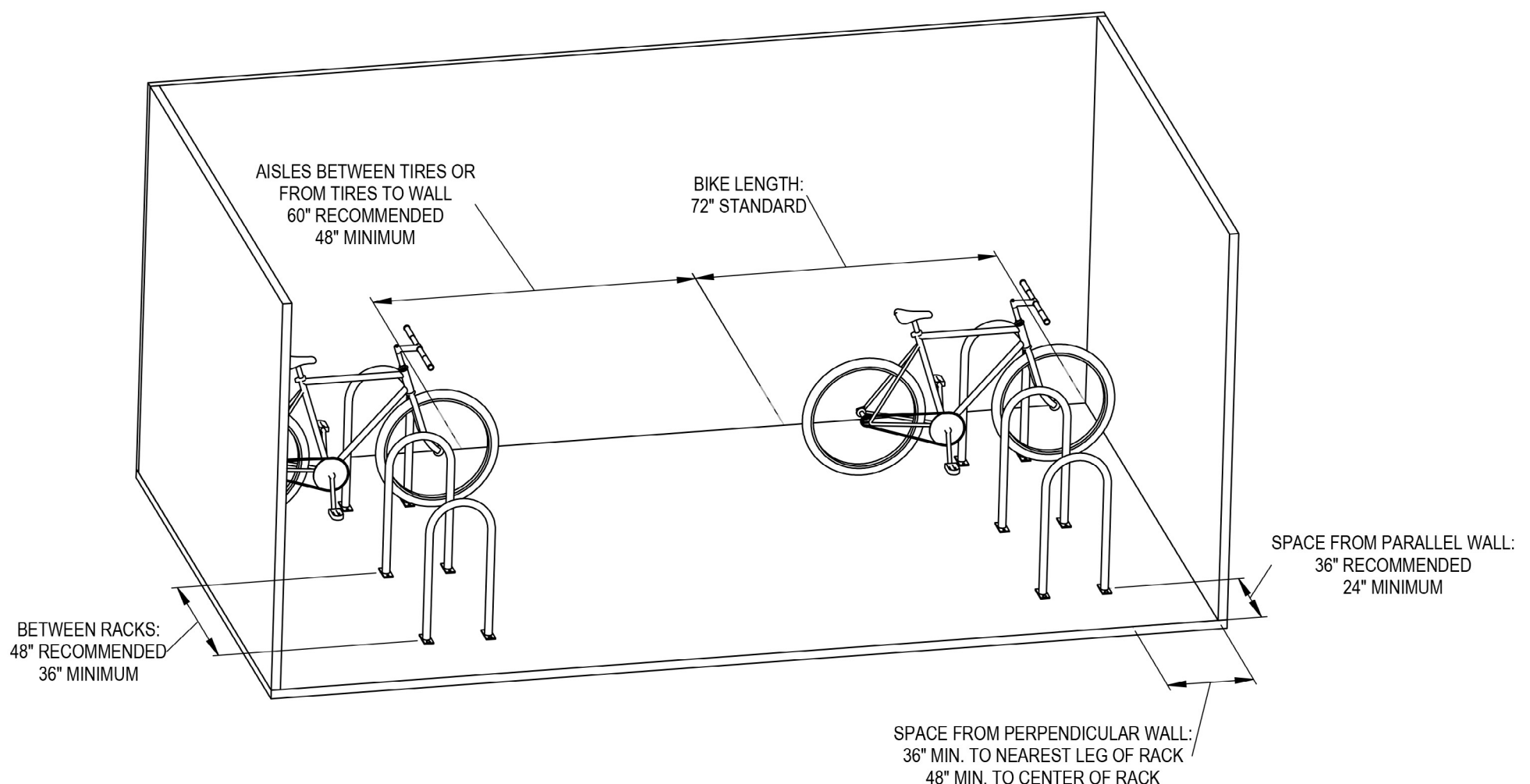
Perpendicular:

- 36" minimum to nearest leg of rack
- 48" minimum to center of rack

Parallel: 36" recommended | 24" minimum

Aisles: 60" recommended | 48" minimum

- Between tires of parked bikes
- Between tire of parked bike and wall/obstruction
- Area extended from tire of parked bike designated for loading/unloading bike if room will continue without a wall or other obstruction



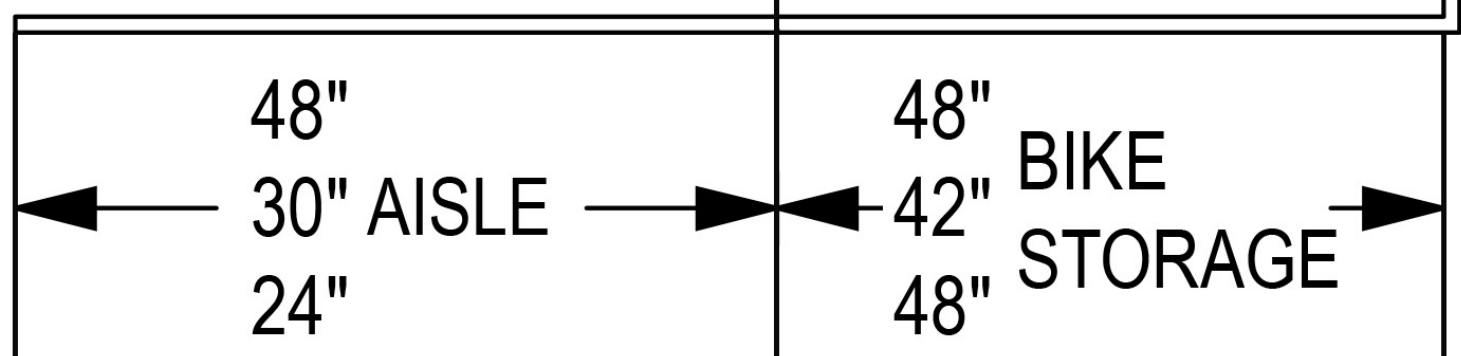
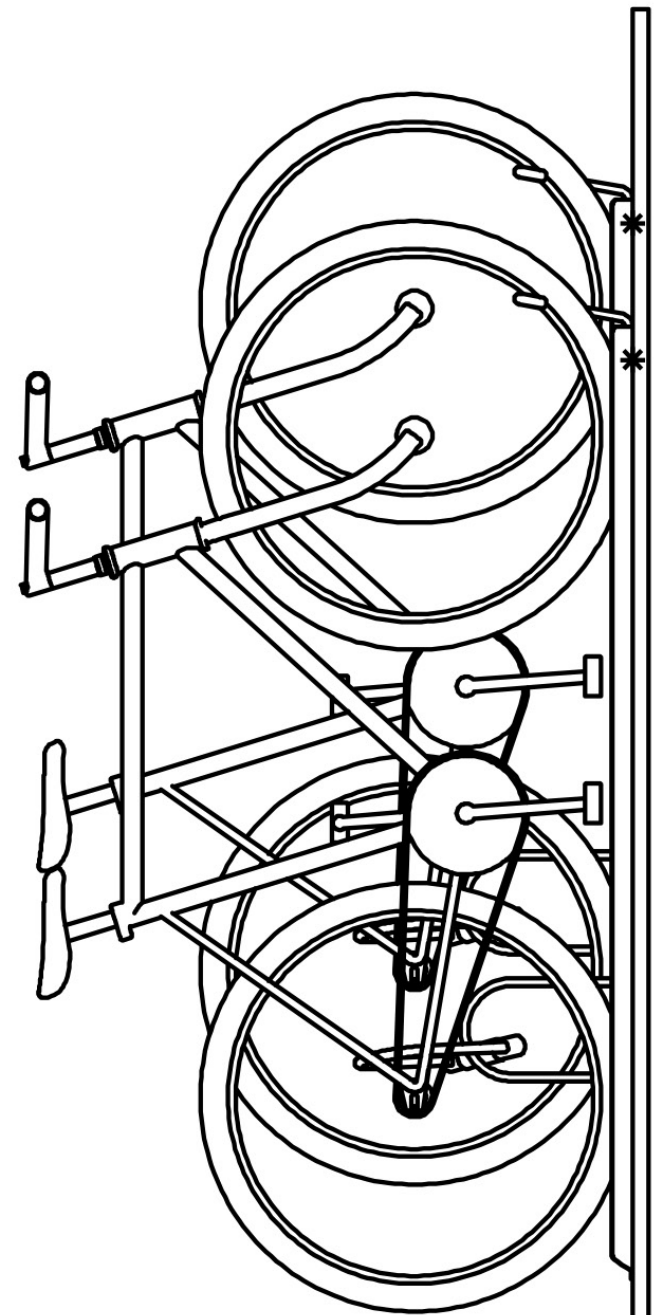
BIKE STORAGE SPACING RECOMMENDATIONS

Vertical/Wall-mounted Bike Parking

Space for bicycle:

- 96" total floor space, recommended
 - 48" bike storage space | 48" aisle space
- 72" total floor space, minimum
 - 48" bike storage space, recommended | 24" aisle space
 - 42" bike storage space, minimum | 30" aisle space

Vertical bike racks are primarily designed and used to maximize bike storage density. This is achieved by vertically staggering the racks where there will be some overlap of the common 24-in handlebars.



BIKE STORAGE SPACING RECOMMENDATIONS

Vertical/Wall-mounted Bike Parking

Horizontal Spacing Between Staggered Racks

- 16" recommended
- 14" minimum

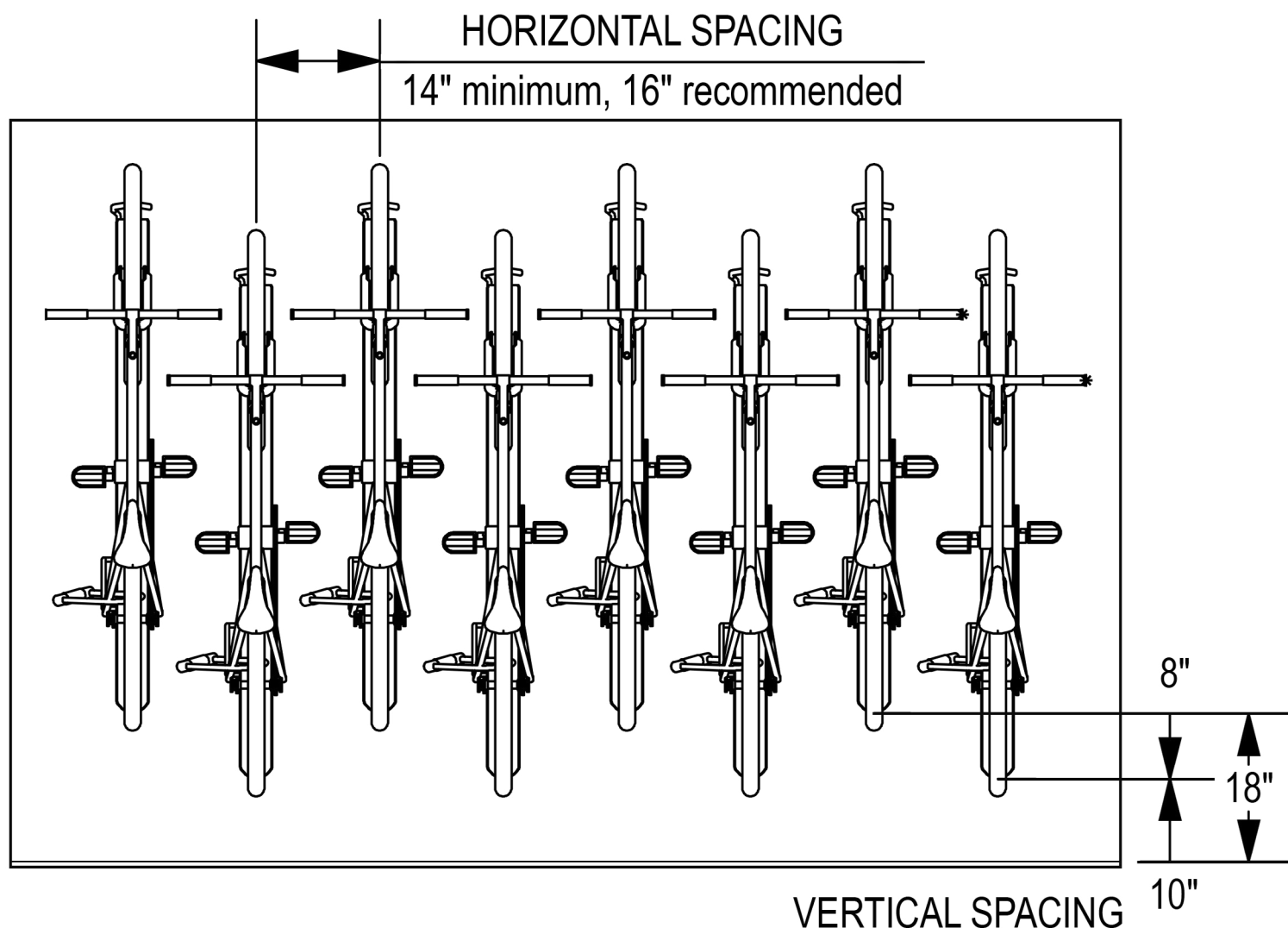
Vertical Spacing Between Staggered Racks

- Specific to rack being used
- Typically between 8" and 12"

Vertical Clearance

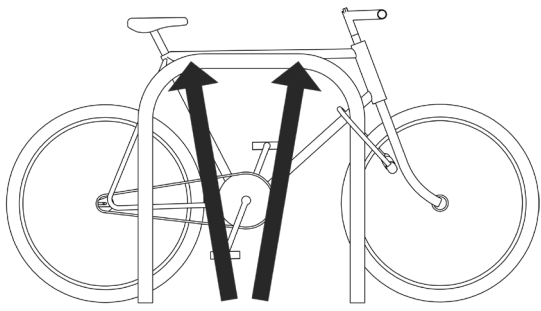
Varies depending on rack used. Can be determined by finding the sum of three dimensions.

- Ground clearance (Typically 8" minimum)
- Bicycle length (72" minimum)
- Lifting clearance (Depth of hook that supports bicycle)

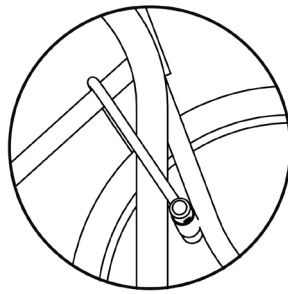


BIKE STORAGE SYSTEM/RACK SELECTION

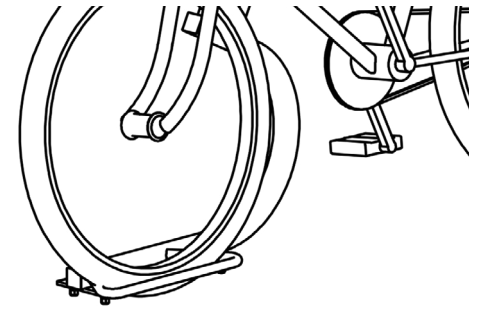
There are many styles of bike racks. When selecting the specific product to fit the vision and design of your bike storage area, there are a few key features for any rack used in a bike storage design.



**Support the bike by its
frame in two places**



**Lock the frame and at least one
wheel to rack with U-lock**



**Prevent wheel from
tipping or flopping over**

Ground Mounted, Standard Density Bike Racks



WHEEL WELL SECURED

- Features an element that holds at least one wheel
- Supports bicycle with two points of contact
- Can lock frame and wheel to rack
- Individual racks can be mounted at desired spacing or multiple racks spaced at set intervals on rails
- One bike per wheel well

INVERTED U | STAPLES

- Available in many designs and shapes
- Supports bicycle with two points of contact
- Can lock frame and wheel to rack
- Individual racks can be mounted at desired spacing or multiple racks spaced at set intervals on rails
- Two bikes per inverted U



BIKE STORAGE SYSTEM/RACK SELECTION

Ground Mounted, Standard Density Bike Racks

POST & RING

- Available in many designs and shapes
- Supports bicycle with two points of contact
- Can lock frame and wheel to rack
- Individual racks can be mounted at desired spacing
- Two bikes per Post & Ring



Ground Mounted, High Density Bike Racks



2-SIDED, WHEEL WELL SECURED

- Features an element that holds at least one wheel
- Supports bicycle with two points of contact
- Can lock frame and wheel to rack
- One bike per wheel well
- Requires a wider footprint as bikes would be parked on each side of rack

STAGGERED HEIGHT

- Features an element that holds at least one wheel
- Staggered height of parked bike reduces handlebar conflict in tighter spacing
- Supports bicycle with two points of contact
- Can lock frame and wheel to rack
- One bike per wheel well



BIKE STORAGE SYSTEM/RACK SELECTION

Vertical Storage

DIRECT WALL MOUNT

- Most cost effective type of vertical bike storage
- Locking loop or other mechanism allows for tire and frame to be locked to rack
- Requires unobstructed wall
- Requires putting holes in walls



STRUT WALL MOUNT

- Installs with fewer holes in the walls compared to direct wall mount
- Locking loop or other mechanism allows for tire and frame to be locked to rack
- Adjustable spacing and staggering after install
- Requires unobstructed wall

FREE STANDING

- Locking loop or other mechanism allows for tire and frame to be locked to rack
- Self contained and does not require wall space
- More expensive than other vertical bike storage options



BIKE STORAGE SYSTEM/RACK SELECTION

Double-tier Horizontal

MANUAL LIFT

- Supports both wheels in wheel well
- Locking loop allows for tire and frame to be locked to rack
- Multiple mounting options
- Not suitable for users with lifting restrictions
- Ceiling height requirements



LIFT-ASSISTING

- Supports both wheels
- Locking loop or other mechanism allows for tire and frame to be locked to rack
- Provides assisted operation to lift bicycle
- Moving parts that will need to be maintained/replaced

Bike Lockers

BIKE LOCKERS

- Additional level of privacy and security
- Horizontal or vertical storage of bike depending on locker
- Various shapes and configurations
- Certain lockers can be stacked
- Different locking options offered





Madrax

Madrax.com

Madrax

1080 Uniek Drive
Waunakee, WI 53597

Contact

sales@madrax.com
Phone: 800-448-7931



INNOVATIVE SOLUTIONS
FOR BICYCLE SECURITY