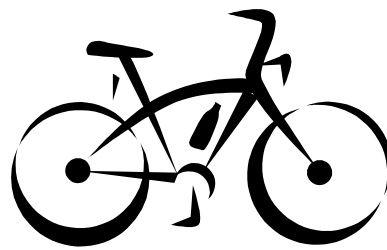


CITY OF CAMBRIDGE



BICYCLE PARKING GUIDE

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Section 1 – Introduction

The provision of bicycle parking facilities is essential for encouraging more bicycle use in the City of Cambridge. The lack of secure bicycle parking at an intended destination can deter many cyclists from using their bicycle as a basic mode of transportation. Leaving a bicycle unattended, even for short periods, can result in damage or theft.

Short-term bicycle parking is designed to be used for a few minutes up to a couple of hours. Sample destination which would benefit from this type of parking include; commercial and recreation centres, shopping centres, restaurants, schools, municipal buildings, residential visitor parking and downtown areas. The parking should be convenient, easily accessible and offer the user security that their bicycle will be there when they return.

The purpose of this guide is to provide guidance on the proper design and implementation of short-term bicycle parking. Three types of short-term bicycle parking are referred to in this guide:

- Single Bicycle Racks (Section 4)
- Multiple Bicycle Racks (Section 5)
- Bicycle Parking Lots (Section 6)

All three types are intended to accommodate conventional, upright, single-rider bicycles (although other types of cycles could also benefit from these facilities). It is assumed the cyclist will use a solid, U-shaped lock, cable lock, or a combination of the two.

In this guide bicycle rack (rack) refers to the physical element that the bicycle is secured to. The bicycle parking area refers to the area surrounding the bicycle rack that is required for the action of parking and locking a bicycle. Long-term bicycle parking is intended for all-day or overnight use and will not be discussed in this guide.

Section 2 – Location

All short-term bicycle parking should be located in a well-lit and highly visible location to ensure security and personal safety. Bicycle parking areas that are visually or physically isolated from public view will be underused and more prone to vandalism and theft.

The best location for short-term bicycle parking is immediately adjacent to the entrance it serves. It should be located as close as or closer than the nearest car parking space and be clearly visible from the entrance it serves. Where multiple entrances or multiple buildings exist it is preferred to have less bicycle parking at each main entrance or building rather than one large bicycle parking lot. An exception to this rule would be where a higher level of bicycle parking can be provided such as sheltered bicycle parking.

Bicycle parking should not be placed so that it blocks the entrance or inhibits pedestrian flow. It is important to understand the transition a cyclist makes from bicycle to pedestrian. The cyclist approaches the building mounted on the bicycle. At some point, the cyclist stops, dismounts, and walks the bike to a rack. The bicycle is attached to the rack and any cargo is removed. The cyclist now walks to the intended destination carrying the cargo. Adequate space must be provided to allow for this transition.

Where possible situating bicycle parking where it can be protected from the weather as shown in Figure 2.1 below is preferred. Covered parking can be in the form of an overhang, an awning, a covered walkway or a freestanding roof. The cover should extend at least 0.6 m beyond the parking area to prevent the wind from blowing rain and snow onto bikes. In addition, parking should be located away from roof drip areas to prevent discomfort and harm to cyclists from dripping rain and falling icicles.



Figure 2.1 – Covered bicycle parking

Section 3 – Bicycle Rack Design

There are many different types of bicycle racks available to install. However, all bicycle rack types should adhere to the same basic design principals as noted below:

Support

- Support the bicycle upright by its frame with at least two points of contact.
- Prevent the front wheel of the bicycle from tipping over.
- Enable the frame and one or both wheels to be secured.
- Support bicycles without a diamond-shaped frame with a horizontal top tube such as a mixte frame Figure 3.1 right.



Figure 3.1 – Mixte bicycle frame

Construction

- Materials used should resist being cut or detached using common hand tools such as bolt cutters, pipe cutters, wrenches, pry bars or small saws.
- Materials to consider are:
 - Galvanized steel.
 - Powder coated steel.
 - Industrial grade materials.
- Materials to avoid are:
 - Wood.
 - Soft metals.
 - Untreated metals that will rust.
 - Cast composites that are brittle and may crack under impact.
- Welds must be strong and bonded. Some metals such as stainless steel do not weld strongly and can be easily broken by vandals.
- Racks should be finished with a smooth surface which will not damage or scratch bicycle frames.

Installation

- Racks should be easily detected by partially sighted or blind people. For example adding a tapping rail to span the bottom of an inverted U style rack will make it easy for visually impaired people to detect.
- Racks should be securely anchored to the ground so that they cannot be stolen with the bikes attached. An exception would be a rack that is so large and heavy that it cannot be easily moved with the bicycles attached.
- Racks can be anchored to the ground using bolts (Figure 3.2) or via direct buried post (Figure 3.3).
- Racks bolted to the ground should be done so in concrete. Racks bolted to interlock pavers can be lifted out with the paver attached.



Figure 3.2 – Ring & Post rack bolted to concrete



Figure 3.3 – Ring & Post rack directly buried in the ground

Section 4 – Single Bicycle Rack

A single bicycle rack is one which can accommodate one or two bicycles and is not physically connected to any other racks. A single bicycle rack is useful along City sidewalks, boulevards or anywhere where space is limited and additional capacity is not required.

There are many different single bicycle rack designs available. The Ring & Post (Figure 4.1) and Inverted 'U' (Figure 4.2) are the most common types. Most other single bicycle racks incorporate the basic elements of one of these two types of racks into their own designs.

Single bicycle racks do not have to only serve a function of security. Artistic expression can be incorporated into the rack design to enhance the bicycle rack and its surrounding environment as long as the basic design principals noted in Section 3 are maintained. Figures 4.3 and 4.4 below show examples of artistic bike racks.



Figure 4.1 – Ring & Post bicycle rack



Figure 4.2 – Inverted U bicycle rack



Figure 4.3 – Artistic bicycle rack



Figure 4.4 – Artistic bicycle rack

As noted above, single bicycle racks are commonly located on City sidewalks in downtown areas. The main objective for site selection for single bicycle racks on the City sidewalk is to allow sufficient room for the parking and locking of bicycles while maintaining a minimum clearance for pedestrian traffic.

Figures 4.5 and 4.6 below show the minimum dimensions required for single bicycle rack installations on the City sidewalk. These minimum dimensions are also applicable to single bicycle rack installations in other locations as well.

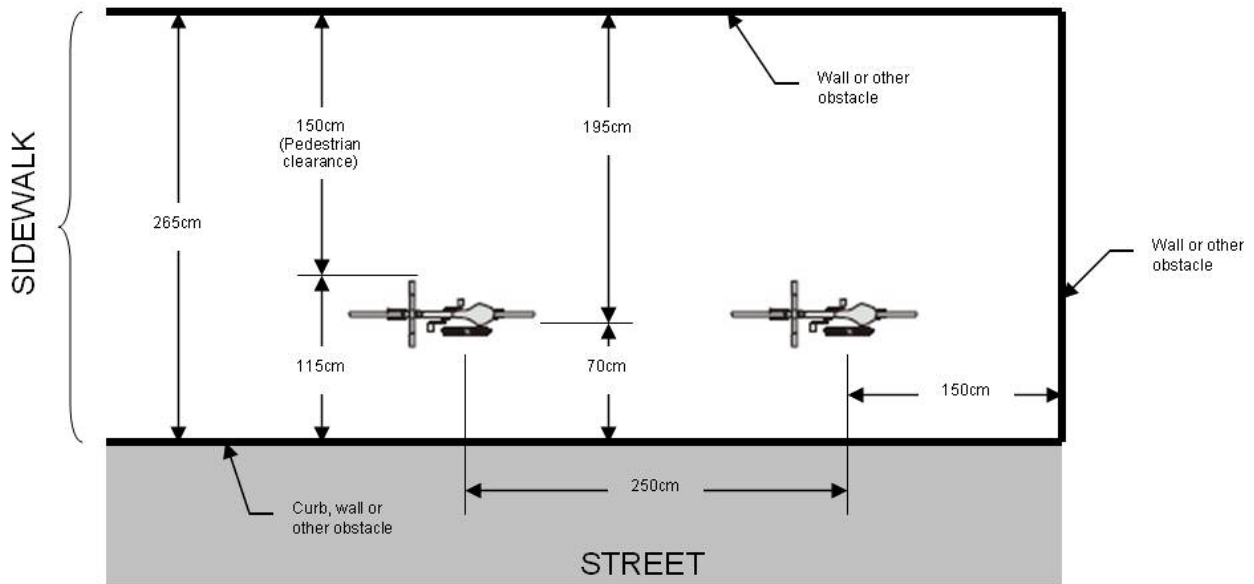


Figure 4.5 – Single bicycle racks installed parallel to the sidewalk

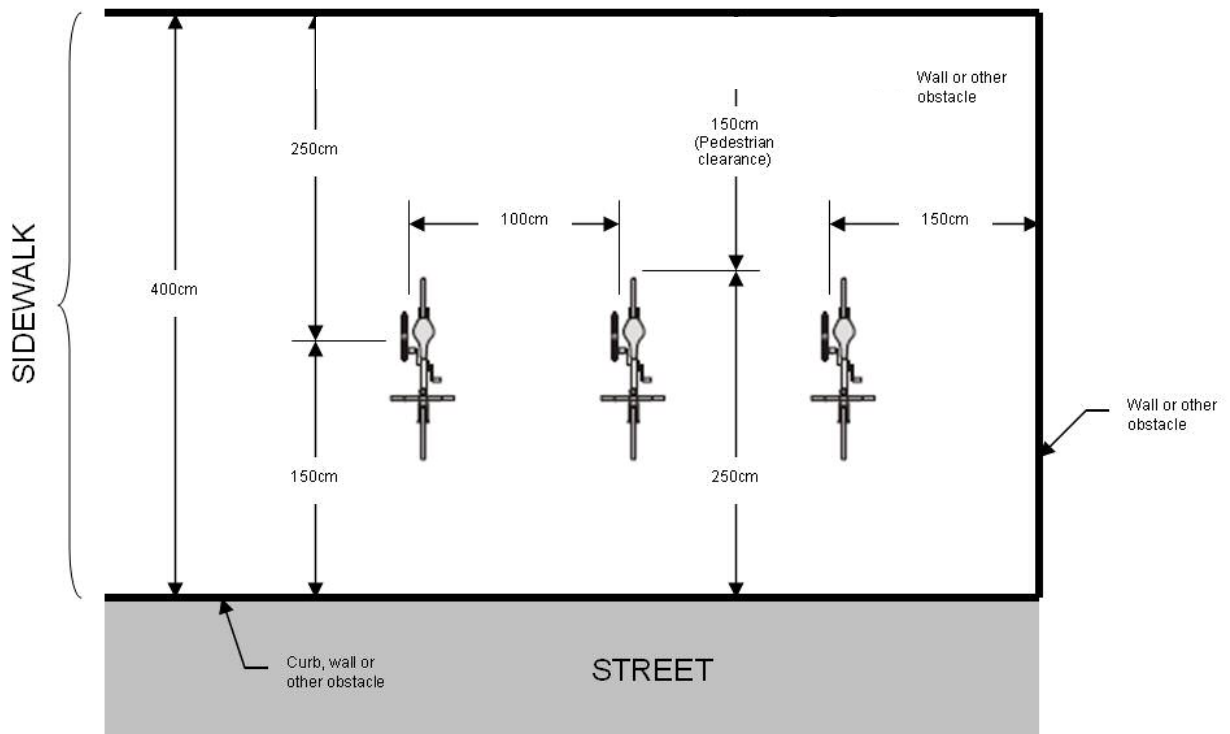


Figure 4.6 – Single bicycle racks installed perpendicular to the sidewalk

Section 5 – Multiple Bicycle Rack

A multiple bicycle rack is one which can accommodate multiple bicycles (typically 3 to 20 bicycles). It is a linear line of bicycle racks which are usually joined in a regular array and fastened to a common mounting surface as shown in Figures 5.1 and 5.2.



Figure 5.1 – Multiple bicycle rack



Figure 5.2 – Multiple bicycle rack

In some cases a series of closely installed single bicycle racks can also act as a multiple bicycle rack as shown in Figure 5.3.



Figure 5.3 – Series of single bicycle racks

A multiple bicycle rack is useful for accommodating a number of bicycles in a relatively small area. The design principals noted in Section 3 are also applicable to multiple bicycle racks. Therefore, toaster racks (Figure 5.4), schoolyard racks (Figure 5.5) and other wheel bending racks that provide no support for the bicycle frame are NOT recommended.

These types of racks can cause significant damage to a wheel and are not secure as a bicycle can easily be stolen by just releasing the bicycle from the locked wheel as shown in Figure 5.6.



Figure 5.4 – Toaster style bicycle rack



Figure 5.5 – Schoolyard bicycle rack



Figure 5.6. – What is left of a bike locked to a toaster style bicycle rack

Wave style bicycle racks (Figure 5.7) are also NOT recommended. Bicycles parked perpendicular to a wave style rack (as intended by the manufacturer) are not supported in two places and are more likely to fall over in the rack.

As a result, cyclists commonly use wave style racks as if it were a single inverted U as shown in Figure 5.8 below. This limits the actual capacity of the rack to two bicycles regardless of the manufactures stated capacity.



Figure 5.7 – Wave style bicycle rack



Figure 5.8 – Wave style bicycle rack in use

Multiple bicycle racks have the advantage of accommodating several bicycles in a relatively small area. They can be located in a variety of areas including the City right-of-way where space permits. Similar to the other style of bicycle racks sufficient space is required for the parking and locking of bicycles as well as for pedestrian traffic around the bicycle rack.

Figure 5.9 below shows the minimum dimensions and area required for a multiple bicycle rack. Pedestrian travel zones outside of the multiple bicycle rack area must be a minimum of 1.5 metres wide.

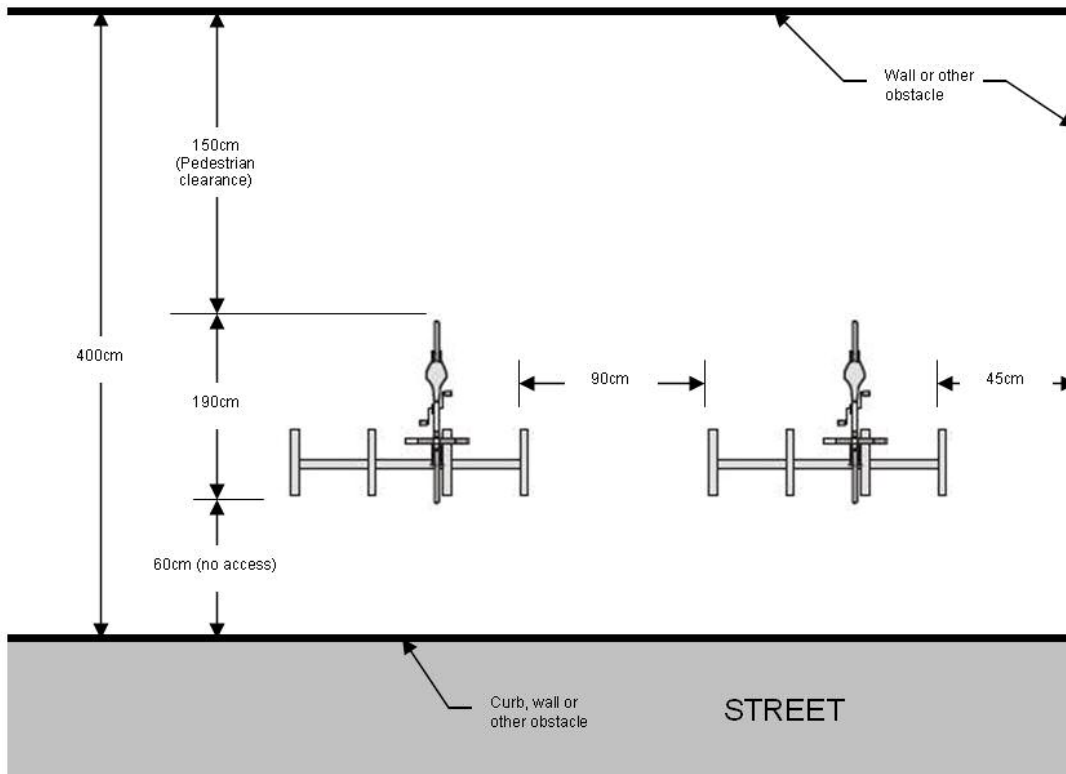


Figure 5.9 – One side entry multiple bicycle racks

Section 6 – Bicycle Parking Lot

A bicycle parking lot is a series of single and/or multiple bicycle racks in a common area intended to accommodate a large number of bicycles (typically 10 or more). The difference between a bicycle parking lot and a multiple bicycle rack is that bicycle parking lots are separated by aisles, much like a typical motor vehicle parking lot.

Large bicycle parking lots with a high turnover rate should have more than one entrance. This will help facilitate the arriving and departing of cyclists and pedestrians. If possible, the rack area should be protected from the elements.

Sheltered bicycle parking lots like the one shown in Figure 6.1 provide an even higher quality of short-term parking. Shelters offer weather protection and can help protect bicycles from accidental damage by providing greater separation from a sidewalk or parking area. Installing parking underneath awnings, overhangs or stairways can also provide good shelter and may avoid extra construction costs. An enclosed structure provides the best shelter however a simple covering will still help to protect bicycles and cyclists from rain and snow.

Even though cyclists are exposed to sun, rain, and snow while en route, covering the rack area keeps the cyclist more comfortable while parking, locking the bike, and loading or unloading cargo. An awning will also help keep the bicycle dry, especially the saddle.



Figure 6.1 – Sheltered bicycle parking lot

Bicycle parking lots need to provide sufficient space to accommodate the volume of bicycles and the actions involved with parking and locking bicycles. This includes cyclists walking their bikes to the rack, locking their bicycle and exiting the area with their cargo.

One of the key considerations is the aisle width and spacing between obstructions. Figure 6.2 below outlines the minimum dimensions required when laying out a bicycle parking lot using one side entry multiple bicycles racks. Figure 6.3 shows the minimum dimensions required when creating a bicycle parking lot using a series of single bicycle racks.

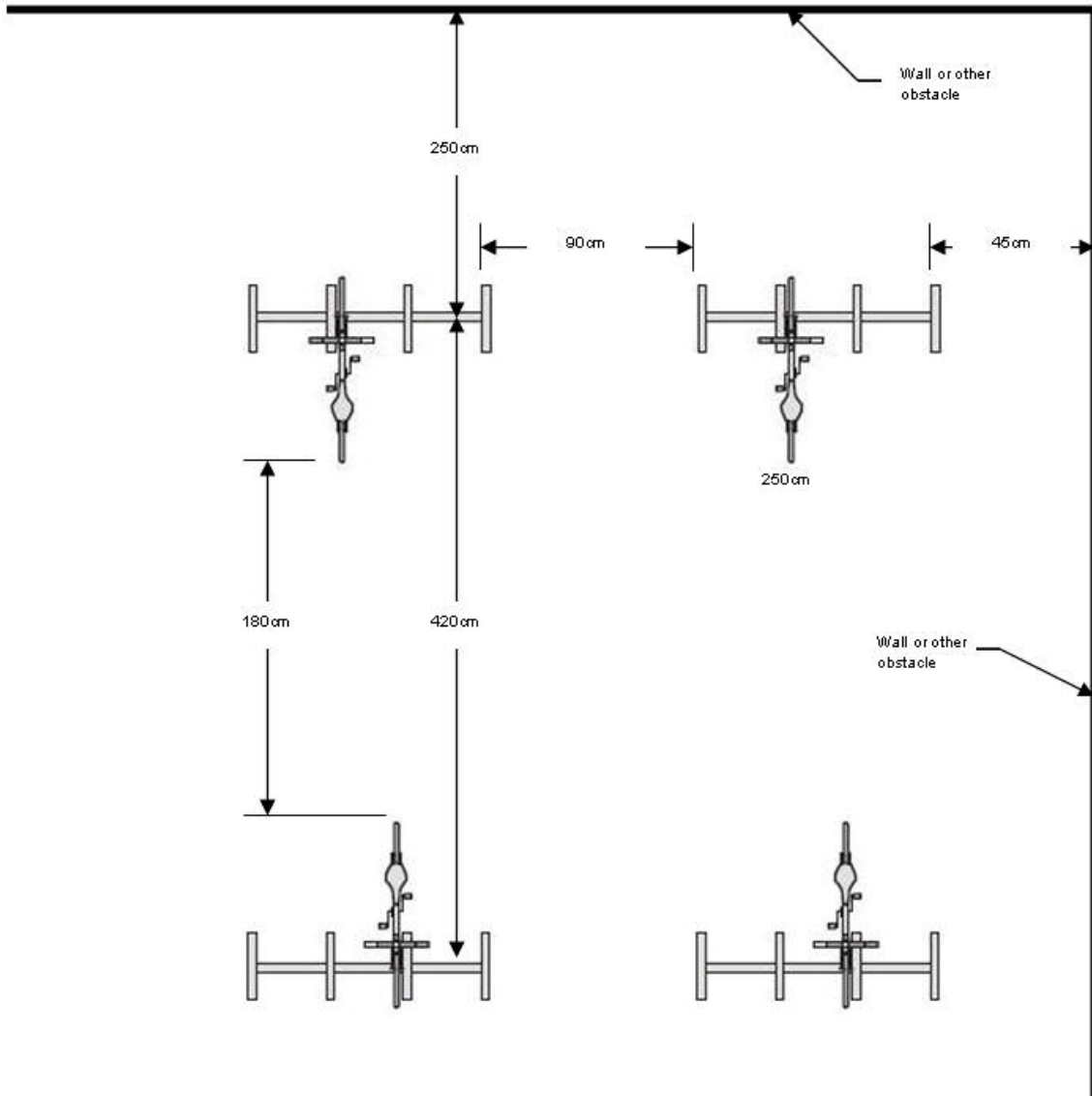


Figure 6.2 – Bicycle parking lot using one side entry multiple bicycle racks

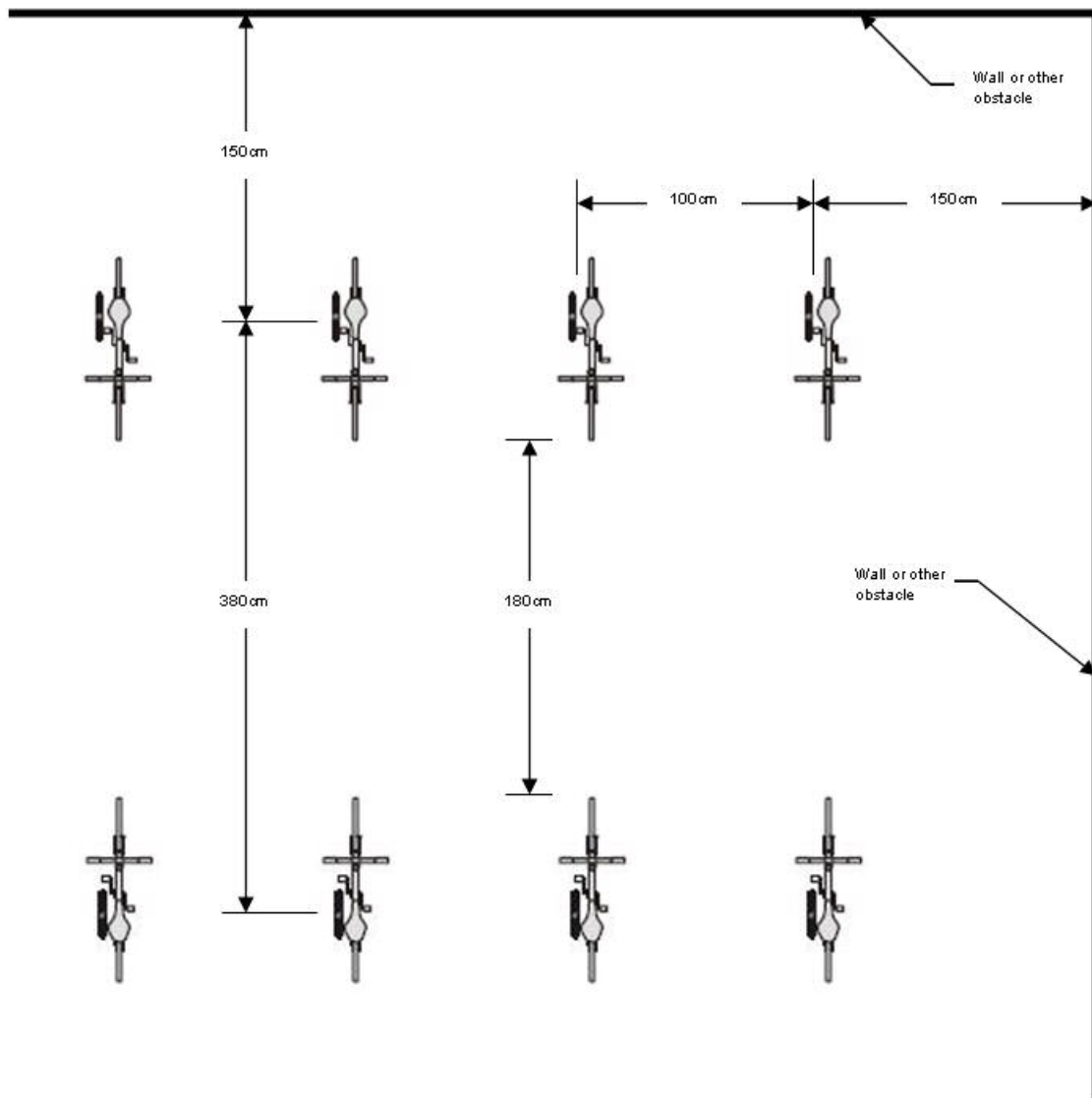


Figure 6.3 – Bicycle parking lot using a series of single bicycle racks