



Bicycle Parking Strategy



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1.0 Introduction



With a mild climate year-round, relatively gentle topography, and a compact urban area, Victoria is an ideal community for cycling. In fact, cycling trips account for almost 10% of all daily work trips in the City – the highest bicycle mode share of any major City in Canada and among highest rates of bicycle use in North America. As a result, the City of Victoria is renowned across Canada and internationally as a city of cyclists.

The City is committed to making cycling an attractive and safe experience for residents and visitors of the community. In 1995, the City developed a Bicycle Master Plan that proposes policies, engineering standards, and enforcement measures; and defines a bicycle network to actively encourage greater bicycle use and ensure cyclists' safety. More recently, Victoria's Sustainability Framework recognizes the role that cycling can play in achieving the City's commitment towards environmental, economic, and social sustainability as well as community livability.



Today, the City's bicycle infrastructure consists of an extensive network of bicycle facilities, including major regional greenways such as the Galloping Goose Trail, on-street bicycle lanes, and shared bicycle routes on local streets.

In addition to providing a comprehensive, well-connected bicycle network, bicycle support facilities – such as on-street and off-street bicycle parking – are required to ensure that cycling is a safe, convenient, and attractive mode of transportation. To that end, in 1999 the City approved guidelines for the installation of bicycle racks used on City streets. In 2005, the City amended the Zoning Regulation Bylaw to include requirements for both



short-term and long-term off-street bicycle parking for new developments. In addition, the City currently has a 50/50 cost-sharing program with local businesses, primarily in the downtown core and major commercial areas, to provide on-street bicycle parking spaces.

In order for the City to move closer toward being one of North America's leading cycling communities, the City is looking to build on its current initiatives through the development of a Bicycle Parking Strategy. This Bicycle Parking Strategy provides a comprehensive set of guidelines to ensure the provision of appropriately designed bicycle parking facilities throughout the City. The guidelines in this document provide City staff, developers and property managers with information to support the design, construction, and management of appropriately designed bicycle parking facilities. The document is intended to serve as a catalogue of bicycle parking options, both for on-street and off-street situations. City staff, developers and property managers can then use the document to quickly and easily identify which types of bicycle parking installations would be most appropriate to construct, given a defined set of conditions (such as space constraints, adjacent land uses, and level of demand).



The Bicycle Parking Strategy is made up of the following chapters:

- **Chapter 1 – Introduction** provides an overview of the Bicycle Parking Strategy, including purpose and scope of the report.
- **Chapter 2 – Policy Context** summarizes the City's relevant policies, plans, strategies, and bylaws.
- **Chapter 3 – Bicycle Parking Supply & Demand** identifies areas throughout the City that can be expected to have higher demand for bicycle parking facilities and describes approaches to meeting this demand by providing an adequate supply of bicycle parking facilities.



- [Chapter 4 – Bicycle Parking Concepts](#) describes the various types of bicycle parking facilities and summarizes key overarching principles for providing bicycle parking.
- [Chapter 5 – Design Guidelines: On-Street Bicycle Parking](#) outlines recommendations for on-street bicycle parking related to bicycle rack selection, design and location.
- [Chapter 6 – Design Guidelines: Off-Street Bicycle Parking](#) outlines recommendations for off-street bicycle parking related to safety and security, accessibility, convenience, design, stairway and ramp treatments, and signage.
- [Chapter 7 – Design Guidelines: Showers & Clothing Lockers](#) outlines requirements for the provision of showers and clothing lockers at workplaces.
- [Chapter 8 – Maintenance & Management](#) describes maintenance requirements and facility management procedures to ensure that bicycle parking facilities continue to be appropriately designed.
- [Chapter 9 – Advertising & Revenue Potential](#) describes possible inclusion of advertising on bicycle racks and the implications in terms of revenue potential.
- [Chapter 10 – Emerging Technologies & Innovations](#) describes some new and innovative approaches to providing bicycle parking based on best practices.
- [Chapter 11 – Next Steps](#) summarizes key recommendations and considerations for the City.

The recommendations and guidelines in this Bicycle Parking Strategy are based on a comprehensive review of bicycle parking policies and standards in other jurisdictions. [Appendix A](#) provides a list of useful bicycle parking resources.

2.0 Policy Context

The City has a number of relevant policies that support the provision of appropriately designed bicycle parking as a way to increase bicycle use, including:



- Sustainability Framework - The City is creating a comprehensive Sustainability Framework to guide its decision-making and operations over the long-term. The Sustainability Framework recognizes the role that cycling can play in achieving the City's commitment towards environmental, economic, and social sustainability as well as community livability. Specifically, one of the key goals in the Sustainability Framework is that Victorians move freely and efficiently via a safe, integrated and convenient network of public transit, bicycle routes, and a supportive and inviting pedestrian realm in preference to driving alone. The implementation of bicycle facilities – including bicycle parking – can play a key role in promoting bicycle use as a means of achieving broader sustainability goals.
- Official Community Plan - The City's Official Community Plan (OCP) was adopted in 1995 and includes several objectives and policies that support cycling, such as reducing emphasis on private vehicles and parking by encouraging alternative transportation. To that end, two key objectives in the OCP are to fully implement the City's Bicycle Master Plan and to integrate the policies of the Bicycle Master Plan in all neighbourhood plans, traffic management programs and other programs that target the use of alternative modes of transportation.

- Bicycle Master Plan – In 1995, the City developed a Bicycle Master Plan that proposes policies, engineering standards, enforcement measures, cycling networks, and other initiatives to actively encourage greater bicycle use and ensure safety of cyclists. The primary goals of the Bicycle Master Plan are to make cycling in Victoria a safe, convenient and economical by identifying and eliminating obstacles to bicycle use. The Plan establishes the target of increasing cycling's share of total City trips to 12% by the year 2010. One of the objectives of the Bicycle Master Plan is to provide secure bicycle storage and other cycling supportive facilities at major destinations. In support of this objective, the Plan outlines the following five policies:
 - Establish policies, standards, guidelines and regulations for the redevelopment or rezoning of properties to ensure the provision of bicycle parking and other appropriate ancillary facilities;
 - Establish a program to increase the provision of bicycle parking in the City through a cost sharing policy and/or a program that is fully funded by the private sector;
 - Encourage the provision of bicycle facilities at all downtown employment centres;
 - Establish funds to allow for the provision of secure and supervised bicycle parking in City owned parkades; and
 - Develop bicycle parking guidelines for development permits and rezoning applications.
- Zoning Regulation Bylaw - In 2005, the City amended the Zoning Regulation Bylaw to include minimum requirements for the quantity and type of off-street bicycle parking for newly constructed buildings. The Bylaw includes requirements for both



Class 1 (long-term) and Class 2 (short-term) bicycle parking facilities based on the type of land use.

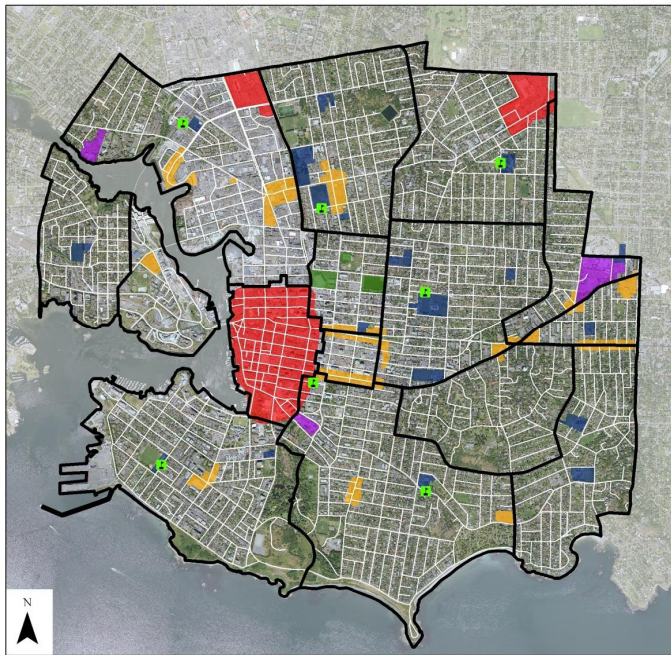
- On-Street Bicycle Parking Guidelines - In 1999, Council approved guidelines for the installation of bicycle racks used on City streets. Rather than restricting design options for people wishing to install bicycle racks different than the City's standard inverted "U" style racks, it was decided that any type of rack would be accepted, provided they met a basic set of criteria, and did not create a pedestrian space issue when installed. To be considered for on-street installation in the City of Victoria, the guidelines recommend that bicycle racks should be: simple, cost-effective, space efficient, have multiple points of contact, have a non-abrasive surface, provide for secure locking, be a safe design for other sidewalk users, not have advertising, be user-friendly, minimize bike-to-bike conflict; and be manufactured locally.
- Bicycle Rack Installation Program - The City currently has a Bicycle Rack Installation Program, which is a 50/50 cost-share program with local businesses, primarily in the downtown core and commercial areas, to provide on-street bicycle parking spaces. The Program was developed to provide locations for bicycles to be locked for short-term parking on downtown sidewalks and to minimize the use of bicycles parking at trees, parking meters and other street furnishings. The cost of installation is shared equally between the City and the applicant.

3.0 Bicycle Parking Supply & Demand

3.1 Bicycle Parking Demand

The City of Victoria has one of the highest bicycle mode shares of all major cities in North America. However, bicycle use, and the corresponding demand for bicycle parking, is not equal throughout the City. Demand for bicycle parking is influenced by the number of key cycling generators in different parts of the City. Bicycle parking should be strategically located in areas where there are a significant number of cycling related destinations. Key cycling generators identified in the City of Victoria include:

- Primary Centres, which include Victoria’s Downtown Core, Mayfair Shopping Centre, and Hillside Shopping Centre, and are home to the highest concentration of employment, shopping, restaurants and services.
- Secondary Centres, which consist of neighbourhood commercial areas throughout the City with a cluster of shopping, jobs, community services and public places.
- Hospitals, which have significant concentrations of employees and includes Royal Jubilee Hospital, Mount St. Mary Hospital, and Gorge Road Hospital.
- Schools, which are major cycling destinations both for staff and students, and include public and private elementary schools, middle schools, secondary schools and colleges.
- Recreation and Community Facilities includes the major recreational facilities, such as the Save-on-Foods Memorial Centre, Royal Athletic Park, and Crystal Pool and Fitness Centre, as well as community centres throughout the City.



- Primary Centre
- Secondary Centre
- Hospital
- School
- Recreation / Community Facility
- Community Centre

Each of these key cycling generators can be anticipated to generate higher than average demand for bicycle parking. These land uses in particular should be designed to ensure

sufficient and appropriately designed bicycle parking. This can be accomplished by ensuring that the amount of bicycle parking meets or exceeds the minimum requirements and reflects the expected usage of the site, and by ensuring that appropriately designed bicycle parking is provided.

3.2 Bicycle Parking Supply

As noted previously, the City's Zoning Regulation Bylaw includes minimum requirements for the quantity and type of off-street short-term and long-term bicycle parking. A review of bicycle parking requirements in other jurisdictions throughout North America was conducted to determine how Victoria's bicycle parking compares with other cities. The review indicated that Victoria's bicycle parking requirements provide for more bicycle parking than most of the comparison cities. The rates of bicycle parking exceed those of Portland, Oregon, which has one of the highest rates of bicycle use in North America. Victoria's existing bicycle parking requirements meet current demand and are appropriate for its high rate of cycling. As a result, no change is recommended to the amount of bicycle parking required in the Zoning Regulation Bylaw.

Although the City's requirements in the Bylaw provide certainty on the number and type of bicycle parking stalls required, the Bylaw does not provide guidance on the overall quality and design of the bicycle parking facilities, nor does the Bylaw require the installation of end-of-trip facilities. Additionally, the current Zoning Regulation Bylaw does not allow for reductions for automobile parking if the number bicycle parking spaces provided exceeds the City's minimum requirements. Such a provision provides an incentive for developers to install bicycle parking and imposes Transportation Demand Management (TDM) measures that help to discourage automobile use due to reduced amount of required vehicle parking spaces. Examples of other bylaws that provide such

incentives and provisions for requiring end-of-trip facilities are included in [Appendix B](#). In addition, the United States Green Building Council's LEED Neighbourhood Design (LEED ND) rating system includes credits for bicycle storage.

In addition, while the City does not have the authority to require that bicycle parking be installed on parcels which have already been through the development process, there are other ways in which commercial, industrial and multi-family residential property owners could be encouraged to install bicycle parking. Design guidelines and guidance for the construction of end-of-trip facilities (as provided in this document) are two such ways. Recommendations for amendments to the bicycle parking requirements in City's Zoning Regulation Bylaw are outlined in [Chapter 11 – Next Steps](#).

4.0 Bicycle Parking Concepts

4.1 Types of Bicycle Parking

There are many different types of bicycle parking, which can be suitable in certain situations but not others. One of the key considerations in providing bicycle parking is to locate the ‘right’ bicycle parking facility in the ‘right’ place. The determination of what is the best facility for a specific location is driven by the needs and motives of the users (such as the purpose of the trip, length of the trip, and length of stay); as well as a variety of other factors at the location in question (such as adjacent land uses, available space, and safety). Bicycle parking is typically categorized as either short-term or long-term. As shown below, short-term generally refers to use of less than two hours, while long-term generally refers to use beyond two hours. The table below summarizes the differences between short-term and long-term bicycle parking.

Criteria for short-term and long-term bicycle parking

Criteria	Short-term	Long-term
Parking duration	Less than two hours	More than two hours
Fixture types	Simple bicycle racks	Lockers, racks in secured area
Weather protection	Unsheltered	Sheltered or enclosed
Security	Unsecured, passive surveillance (eyes on the street)	Secured, active surveillance
		Unsupervised:
		“Individual-secure” such as bicycle lockers
		“Shared-secure” such as bicycle room or cage
		Supervised:
		Valet bicycle parking
		Paid area of transit station
Typical land uses	Commercial or retail, medical/ healthcare, parks and recreation areas, community centers	Residential, workplace, transit








Source: Association of Pedestrian and Bicycle Professionals



For the purposes of this document, bicycle parking facilities are categorized either as on-street or off-street. There are a wide variety of bicycle parking options that can be provided on both on-street and off-street applications.

- On-street bicycle parking is defined as any parking that is provided within the public right-of-way, and can consist of both short-term parking such as bicycle racks, or long-term parking such as bicycle corrals, bicycle shelters, or bicycle lockers. Design guidelines for on-street bicycle parking are provided in [Chapter 5 – Design Guidelines: On-Street Bicycle Parking](#).
- Off-street bicycle parking refers to any bicycle parking facilities that are provided on private property, typically by developers during the development process. Off-street bicycle parking consists of both short-term and long-term bicycle parking. Design guidelines for off-street bicycle parking are provided in [Chapter 6 – Design Guidelines: Off-Street Bicycle Parking](#).

The figure on the following page provides a catalogue of on-street and off-street bicycle parking options and summarizes key characteristics of each type of facility. Each of these types of facilities is discussed in further detail in the following chapters.

							
TYPOLOGY	SHORT TERM		MID-TERM		LONG TERM		
LOCATION	On-Street or Off-Street	On-Street	On-Street	On-Street	Off-Street	On-Street or Off-Street	Off-Street
DESCRIPTION	Single or small group of racks attached to the floor in the proximity of a site entrance	Small-to medium group of short-term bike racks located on-street, barriered and signaled for the protection of bikes and users	Medium capacity sheltered bike racks for mid-term bike parking.	Enclosed building facility for shared bicycle parking use.	Separated room in parking garage for shared bicycle parking use.	Small or large group of individual bike lockers with maximum level of security.	Fully serviced building facility specially designed to serve all cyclist needs including parking, storage, showers, changing rooms, bike repair/store, information centre, coffee shop, etc.
TYPICAL LAND USE	Commercial/retail Medical healthcare Institutional (Libraries, Universities) Recreational centres Low-medium mixed use density	Commercial/retail Medical healthcare Institutional (Libraries, Universities) Recreational centres Medium mixed use density Areas with active business associations	Commercial/retail Medical healthcare Institutional (Libraries, Universities) Recreational centres Medium-high density areas (Urban Village Centres) Areas with active business associations	Shopping malls Multi-family buildings Office buildings Recreational Facilities Multi-modal transit facilities	Multi-family buildings Office buildings Parking garages	Medium-high employment/commercial areas Office buildings Universities Multi-modal transit facilities	High density employment areas and multi-modal transit facilities (Downtown) University Campus
COMPONENTS	* Bike rack * Base plate (if not embedded underground)	* Demarcation * Set of bike racks * Rubber curbs, bollards or planters	* Demarcation * Set of bike racks * Shelter	* Demarcation * Building/Compound * Single or two-tier rack system * Locking/access system * Video Surveillance	* Demarcation * Building/Compound * Single or two-tier rack system * Locking/access system * Video Surveillance	* Demarcation * Bicycle Lockers * Locking/access system * Key management / Payment system	* Lot and building * Small amount of short-term parking facilities * Management & Administration * Lockers/showers/ changing-rooms/shops/ other facilities * Utilities * Passive and active surveillance
CAPACITY	2 - 8 bikes per rack	10 - 25 bikes per corral	10 - 25 bikes per shelter	20-100+ depending on building size, layout demand	20-100+ depending on building size, layout demand	Groups of 5-10 bike lockers depending on available space	20+ indoor bike lockers and end-of-trip facilities for members plus few short-mid term parking stalls for public use
AESTHETICS	significant level of adaptation and customization	Versatile and adaptable to surrounding architecture. Bike rails can be customized to a variety of shapes and colors. Planters and additional features can be integrated into the corral layout design.	Highly adaptable to surrounding architecture and urban design features, including shelter design, colours, information boards, roofing materials, etc.	Not generally considered for architectural enhancement due to location off-public realm and main function as a storage compound.	Not generally considered for architectural enhancement due to location off-public realm and main function as a storage compound.	Adaptation is generally limited to the outside colours only. The boxy shape and size has limited variation as it is dictated by the storage function of the facility.	Provides the highest level of architectural freedom as it is a whole new building in itself.
MAINTENANCE REQUIREMENTS	LOW						HIGH
SECURITY	LOW						HIGH
COST	\$	\$\$	\$\$\$	\$\$\$\$	\$\$\$\$	\$\$\$\$\$	\$\$\$\$\$\$

4.2 Guiding Principles

Bicycle parking is required for all cyclists, regardless of whether they are commuting to work or school, going shopping or running errands, or enjoying a recreational outing. All cyclists need a safe, secure place to park their bicycles at both the origin and destination of their trips.

There are a number of fundamental guiding principles that influence the type and location of both on-street and off-street bicycle parking:



- Safety and Security - Surveillance of bicycle parking facilities helps to prevent theft and vandalism, and also helps cyclists to feel more personally secure. Wherever possible, bicycle parking should be located within view of pedestrians, retail activity or office windows or should include other security measures. Bicycle parking facilities should be designed with theft resistant materials and be firmly anchored in the ground or building.
- Convenience and Accessibility - Bicycle parking should be at least as convenient as automobile parking to ensure cycling is an attractive option. Bicycle parking facilities should be located near building entrances and other attractions. Additionally, facilities should be located along the street or along dedicated bicycle routes, so that bicycle parking is as convenient as possible. Proximity to pedestrian and automobile traffic should also be taken into consideration so as to avoid conflicts with other modes of transportation. Wherever possible, bicycle parking locations that require cyclists to travel over stairs or hills should be avoided. Finally, as the purpose of this study would suggest, bicycle parking also needs to be

plentiful. Cyclists need to be confident that they will have a designated place secure their bicycles once they reach their destination.

- **Visibility and Lighting** - The location selected for short-term bicycle parking should be well-lit and easily identifiable by cyclists as they are riding. A highly visible and well lit location will also help to reduce theft and vandalism, both of which are significant deterrents to bicycle usage.
- **Avoiding Conflicts with both Pedestrians and Vehicles** - It should be ensured that the location of the bicycle parking does not present a conflict with pedestrians, other cyclists, or automobiles. The design of bicycle parking facilities should avoid any protruding bars that could trip or injure cyclists or pedestrians. Very low, bar-type racks should also be avoided for the same reason. Bicycle parking should be separated from automobile parking areas and from roads, by a physical barrier.
- **Quality of Design and Aesthetics** - Where appropriate, the City should ensure that the design and aesthetic quality of the bicycle racks reflect the surrounding neighbourhood and environment, and that they are coordinated with the City's other street furniture. Bicycle parking facilities should receive ongoing maintenance and any graffiti or vandalism should be cleaned or repaired immediately.



5.0 Design Guidelines: On-Street Bicycle Parking

This section provides design guidelines that address the installation, location, and dimensions and spacing for on-street bicycle parking facilities. This includes bicycle parking on sidewalks – such as bicycle racks, bicycle shelters, and bicycle lockers – as well as bicycle parking within the roadway, such as bicycle corrals.

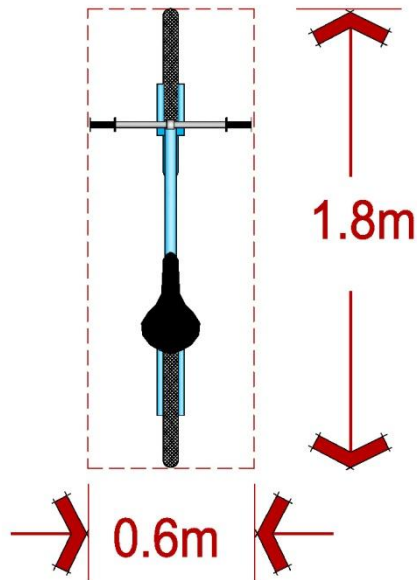
The key feature of on-street bicycle parking is that it generally consists of one or several rack elements provided in a public right-of-way. There are two key considerations in providing on-street bicycle parking – the type of rack that is selected, and the location of the racks within the road right-of-way.

5.1 Rack Selection

As discussed in [Chapter 4](#), there are many types of bicycle racks to choose from, some of which work well in specific situations, and others which may in-fact be highly unsuitable. Key considerations in choosing a bicycle rack include:

- Support – The rack must keep the bicycle upright without damaging the wheels or the frame. To do so, the rack must support the bicycle upright by its frame at two points in a horizontal plane to prevent the bicycle from falling.
- Secure – One of the most commonly reported deterrents to cycling is the fear of theft. To address this concern, the rack must be able to be used with common bicycle locks, including cable locks or U-shaped locks, and should be designed so that the frame and one or both wheels can be secured. The bicycle rack should be

Typical Bicycle Design Envelope



resistant to being cut or detached using bolt cutters, piper cutters, or other devices, and should be securely anchored to the ground or the building structure to prevent it from being removed.

- Flexible – The rack must accommodate a wide range of bicycle sizes, wheel sizes, and types. The typical dimension envelope for most bicycles is 1.8 metres in length, 0.6 metres in width, and 1.2 metres in height. The dimensions of most conventional bicycles fall within this range, and most acceptable bicycle racks and lockers accommodate these dimensions. In addition, site layouts should strive to accommodate other bicycle types such as recumbent, folding bicycles, trail-a-bike child carriers, bicycle trailers and cargo bicycles.
- Materials – The rack should be covered with material that will not chip the paint of a bicycle that leans against it. The rack should also not have hazards, such as sharp edges, that could damage a bicycle, injure the cyclist, or damage clothing. The materials used should also resist rusting and corrosion.
- Attractive – The rack should be compact and attractive. The rack should fit in with the surrounding streetscape and urban environment. Bicycle racks can incorporate unique colours or original designs to match awnings, facades or other street furniture.
- Simple – The rack should be simple and intuitive and as a general rule should avoid having any moving parts.
- Capacity -- The bicycle rack should be able to actually hold the number of bicycles claimed. Unfortunately, though, this is not always the case.

- Space and Cost Effective – The bicycle rack should maximize the use of the bicycle parking envelope and occupy a small footprint in order to not impede other users. The rack should maximize efficiency by allowing more than one bicycle to be secured to the rack. Finally, the rack should not present any potential hazards to pedestrians.

There are several common types of bicycle racks that meet many of these design criteria including:

- U-Racks, which are common in Victoria and are attractive, simple, and designed to effectively support two bicycles while utilizing very little space. U-racks can also be clustered together in areas of high demand and incorporate unique colours or design features to match the surrounding streetscape.
- Post and ring racks, which can support two bicycles, occupy a very small footprint, and can be effectively attached to other infrastructure such as motor vehicle parking meters. Post and ring racks can also incorporate unique colours to match the surrounding streetscape.
- Coathanger or spiral racks, which allow cyclists to lock one wheel and the frame of the bicycle to the rack and can accommodate multiple bicycles. These racks can also incorporate unique colours to match the surrounding streetscape.

Racks that do not meet many of these criteria include:

- Wheelbender racks, which consist of concrete blocks slotted for a bicycle wheel. These racks hold only the bicycle's wheel, do not support the use of a U-shaped lock, and can also cause damage to the bicycle wheels.

- Comb racks or toaster racks, which are designed to roll bicycles into wheel slots. These types of racks also lack stable support and can cause damage to the bicycle wheels.
- Wave racks, which only provide a single point of horizontal contact and lack stability.

5.2 Site Design

Key considerations in determining the location of on-street bicycle parking include:

- Convenience – bicycle racks should be close to the main building entrance (no more than 15 metres from the main building entrance).
- Visibility – racks should be visible from the destination for security and should be located in a high-traffic area with passive surveillance.
- Weather Protection – where possible, protection from the elements should be provided.
- Accessibility – care must be taken in locating the racks so that they do not unnecessarily restrict pedestrian movement along sidewalks or impede the opening of the doors of parked cars.

The following sections outline guidelines for installing, locating, determining dimensions and spacing, and all other relevant considerations for the installation of on-street bicycle racks, bicycle corrals, bicycle shelters, and bicycle lockers.

5.2.1 Bicycle Racks

Coathanger Rack



Inverted 'U' Rack



1. Description

Bicycle Racks are the most versatile and common type of short-term bicycle parking. There are many different types of acceptable bicycle racks, such as 'U' Racks, Post-and-Ring Racks, and Coathanger Racks as described above. Bicycle racks should provide support to both maintain a bicycle in upright position and lock it to the structure. Bicycle racks are easily adaptable to meet almost any aesthetic purpose so long as it meets the two basic functions of upright support and locking of frame and wheels. Bicycle racks also facilitate the use of 'U' type locks and conventional chains or cables. Care must be taken in locating the rails so that they do not unnecessarily restrict pedestrian movement along sidewalks or impede opening of the doors of parked cars. Bicycle racks should be located close to the entrances of key destinations such as shops or shopping centres. They are generally appropriate for commercial and retail areas, office buildings, healthcare and recreational facilities, and institutional developments such as libraries and universities.

2. Application

Bicycle racks are generally appropriate for both on-street and off-street use in commercial and retail areas, office buildings, healthcare and recreational facilities, and institutional developments such as libraries and universities.

3. Installation

Bicycle racks should be securely anchored to the ground or the building structure to prevent the racks from being removed. Racks can be secured by bolting them to a hard surface or solidifying them in concrete. A bicycle rack should not be able to be dislodged by the use of a wrench, screwdriver, crow-bar, bolt cutters, or any other device. Bicycle

Post-and-Ring Rack



Spiral Rack



racks should not be secured to interlocking pavers, stones, or other surfaces that may easily be removed.

4. Location

On-street bicycle racks should be located in convenient and highly visible locations. Key guidelines regarding the location of on-street bicycle racks are as follows:

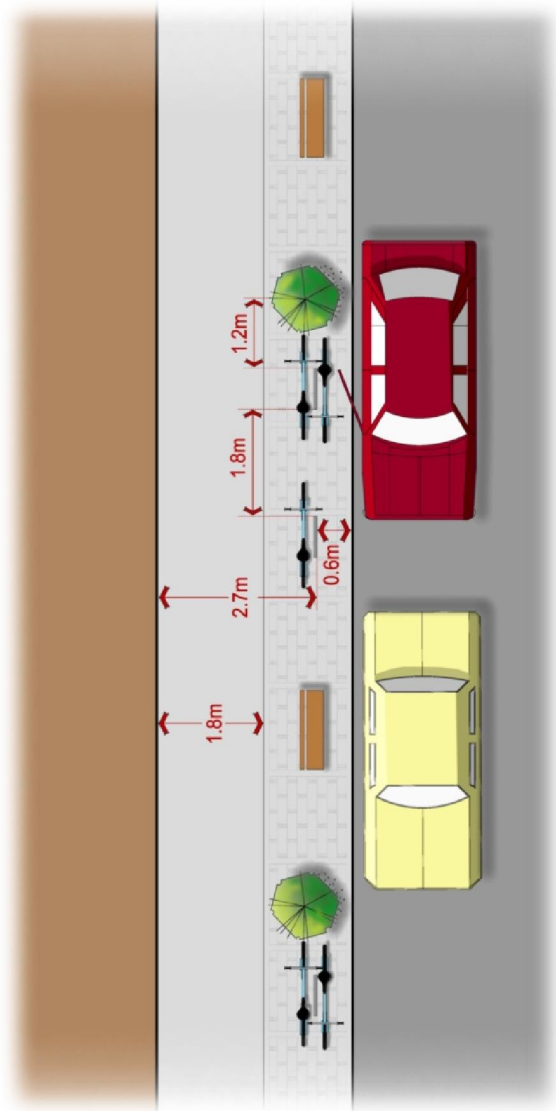
- Racks should be placed adjacent to the curb in the utility strip, where other street furniture, utility poles, and trees are located.
- Racks should be oriented so that bicycles are positioned parallel to the curb.
- Racks should be located no more than 15 metres from the main building entrance.
- Racks should not be placed in fire zones, loading zones, bus zones, taxi zones, etc.
- Racks should not interfere with pedestrian movement.
- Racks should be highly visible from adjacent bicycle routes.
- Racks should be located in a visible areas with significant pedestrian traffic.
- A certain number of bicycle racks should be weather protected. This may be achieved by simply locating the racks under awnings.

5. Dimensions and Spacing

a. *Spacing between obstructions*

- To prevent impacts from car dooring from motor vehicles, bicycle racks should be located at least 0.6 metres from the curb face.
- To allow ample pedestrian movement, a minimum clear distance of 1.8 metres should be provided between the bicycle rack and the property line. A clear distance of 1.5 metres is the minimum standard.

Sample On-Street Layout



- Bicycle racks should be located at a minimum of 1.2 m from obstructions such as street trees, utilities and street furniture, such as street lights, garbage cans, newspaper racks, sign poles, or street benches. A clear distance of 0.9 m is the minimum standard.
- Bicycle racks should be located at least 1.2 metres away from any potential points of conflict with other users, such as curb ramps, driveways, crosswalks, or loading zones.
- Bicycle racks should be located at least 1.5 metres from fire hydrants or bus stops.
- Bicycle racks should be located in curb extensions, where a clear right-of-way for pedestrians cannot be maintained by installing the rack on the sidewalk.

b. Spacing between bicycle racks

- If two bicycle racks are to be installed parallel to each other, a minimum of 0.7 metres should be provided between the racks.
- If bicycle racks are to be installed in a parallel series, at least 1.8 metres should be provided between the racks.



6. Aesthetics

Custom racks using creative designs can serve not only as effective bicycle parking, but can also be used to provide public artwork or advertising space for local businesses. The “post and ring” style rack is an attractive alternative to the standard inverted-U, which requires only a single mounting point and can be customized to have the City’s name or emblem stamped into the rings. These racks can also be easily retrofitted onto existing street posts, such as parking meter posts. While custom racks can add a decorative element and provide consistency with an existing neighbourhood theme, the rack function should not be overlooked: All racks should adhere to the basic functional requirements for bicycle parking as described above.

7. Signage

Bicycle parking signs should be used where bicycle parking is not viewable from the street or building entrance.

5.2.2 Bicycle `Corrals`



1. Description

Bicycle Corrals (also known as “in-street” bicycle parking) consist of bicycle racks grouped together in a common area within the public right-of-way traditionally used for automobile parking. Bicycle corrals are reserved exclusively for bicycle parking and provide a relatively inexpensive solution to providing high-volume bicycle parking. Bicycle corrals can be implemented by converting one or two on-street motor vehicle parking spaces into on-street bicycle parking. Each motor vehicle parking space can be replaced with approximately 6-10 bicycle parking spaces. Bicycle racks are installed in the street can be protected from motor vehicles with physical barriers such as curbs, bollards, or fences or by applying other unique surface treatments. Bicycle corrals move bicycles off the sidewalks, leaving more space for pedestrians, sidewalk café tables, etc. Because bicycle parking does not block sightlines (as large motor vehicles would do), it may be possible to locate bicycle parking in ‘no-parking’ zones near intersections and crosswalks.



2. Application

Bicycle corrals can be considered instead of other on-street bicycle parking facilities, such as multiple bicycle racks or bicycle shelters, under the following circumstances:

- Major commercial and retail areas, particularly in the Downtown core or other major commercial nodes;
- Areas with high pedestrian activity and where there may be limited space for providing bicycle racks on sidewalks;
- Areas with moderate to high demand for short-term bicycle parking;
- Areas where there is plenty of on-street vehicular parking; and

- Areas where there is interest in providing the bicycle corral from the business community.



Bicycle corrals are an effective way of utilizing public space, meeting parking demand, improving bicycle security and improving overall cycling awareness in the area. Some municipalities have managed to implement schemes in which the City provides the facility and business associations take responsibility for the maintenance of the facility. In many communities, including the City of Portland, the installation of bicycle corrals is driven by requests from adjacent businesses, and is not a city-driven initiative. In such cases, the City does not remove motor vehicle parking unless it is explicitly requested (see the City of Portland's application for bicycle corrals in [Appendix C](#)). A significant consideration for bicycle corrals is maintenance, particularly for factors such as street sweeping and snow removal. Many communities, including the City of Portland, establish maintenance agreements with the requesting business.

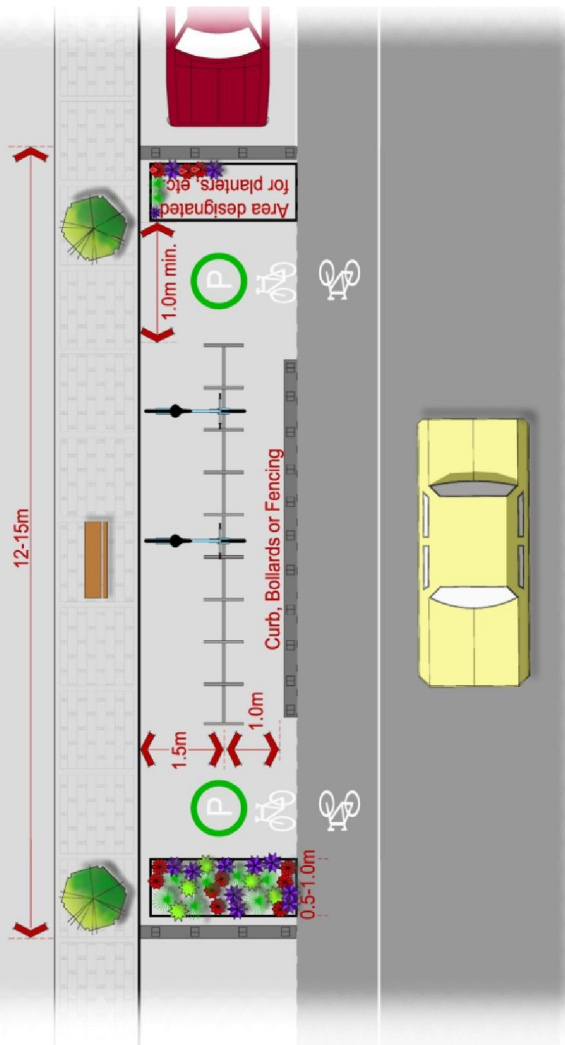
3. Installation

- The main components to be installed are:
 - a. Delimitation elements (bollard, rubber/concrete curbs, planter, etc)
 - b. Bicycle racks
 - c. Signage and pavement markings
- Colour surface for the parking area is optional.

4. Location

- Generally appropriate for areas with either parallel or angle parking as they provide an additional buffer from travel lanes.
- Useful where bicycle parking can be shared by shoppers and staff alike.

Sample Bicycle Corral Layout



- 2-3 motor vehicle parking spaces is approximately equal to 20 - 24 bicycle parking spaces.
- Parking stalls adjacent to curb extensions are good candidates for bicycle corrals since the concrete extension serves as delimitation on one side.
- Cyclists should be able to access the corral from both the sidewalk and the roadway.
- Specific location may be identified in consultation with business owners in the area.

5. Dimensions and Spacing

- Cyclists should have an entrance width from roadway of 1.5 – 1.8 m.
- Aisle width between sidewalk and bicycle rack is 1.0 – 1.5 m.
- Aisle width between outside delimitation and bicycle rack is 1.0 m.

6. Aesthetics

The bicycle corral can be visually enhanced through the use of attractive planters and vegetation to act as buffers from the motor vehicle parking area as well as the use of creative demarcation elements to separate the corral for motor vehicle traffic. Aesthetics can also be enhanced through the use of creative bicycle rack designs as discussed previously.

7. Signage

Bicycle parking area signage should be provide to indicate to cyclists, pedestrians, and motor vehicle drivers that the bicycle corral is intended exclusively for bicycle use and to alert pedestrians and motorists that they can expect higher bicycle volumes in the area.

5.2.3 Bicycle Shelters



1. Description

Bicycle Shelters consist of bicycle racks grouped together within structures with a roof that provides weather protection. Bicycle shelters provide convenient short-term and long-term bicycle parking. They also offer extra protection against accidental damages by providing greater separation between the bicycles and the sidewalk or parking lane. Information boards and advertising space can also be incorporated onto the bicycle shelter which is often used to post cycling or bicycle related information. Bicycle shelters provide a high level of aesthetic adaptation as each of its components (shelter, racks, roof) may be enhanced with different shapes, colours and materials.

2. Application

Bicycle shelters are warranted anywhere that bicycle racks may be located, but are most appropriate under the following circumstances:

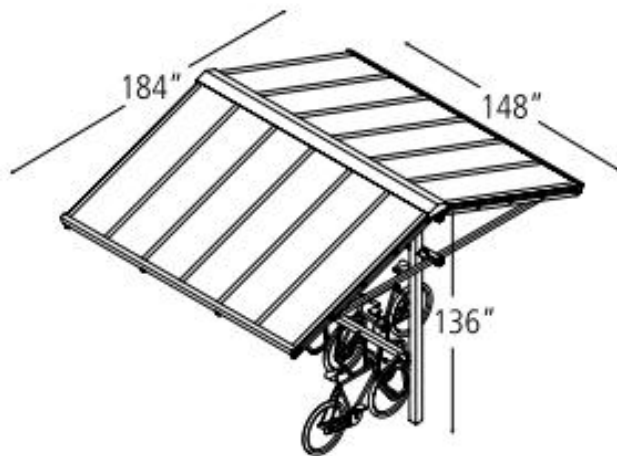
- Major commercial and retail areas, particularly in the Downtown core or other major commercial nodes;
- Areas with sufficient space on sidewalks, promenades or public plazas, or curb extensions, so that adequate sidewalk width can be maintained.
- Demand for bicycle parking is oriented more towards long-term parking;



The location chosen for the bicycle shelter should be central to all surrounding activities so cyclists can park and walk conveniently to their final destination. Bicycle shelters are particularly useful where the parking can be shared by shoppers and staff alike.



Sample Bicycle Shelter Layout



3. Installation

- Installation requirements for bicycle racks (as previously noted).
- Include columns or supports for roof structure which may include exterior walls.
- Installation of bicycle parking underneath awnings, overhangs or stairways can provide shelter and may help to avoid extra construction costs.
- There is wide variety of different types of shelter designs depending on the manufacturer.

4. Location

- To be located on-street or off-street, in areas of high potential demand, such as areas in close proximity to major employment areas, schools, or community and recreational facilities.

5. Dimensions and Spacing

- Recommended height: 2.5 – 3.5 metres.
- Roof area: 3.5 – 4.5 metres.

a. Spacing between obstructions

- If the bicycle racks are located perpendicular to a wall, at least 0.6 metres clearance should be provided if the rack has single-side access, and 2.5 metres clearance should be provided if the rack has double-sided access.
- If the bicycle rack is located parallel to a wall, at least 0.45 metres clearance should be provided.



b. Spacing between bicycle racks

- If two bicycle racks are provided parallel to each other, a minimum of 0.7 metres should be provided between racks.
- A clear aisle width of at least 1.8 metres should be provided between bicycle racks that hold more than 2 bicycles. For typical bicycle racks, this results in approximately 4.2 metres between bicycle racks.
- If bicycle racks are provided in a parallel series, at least 1.8 metres should be provided between the racks.

c. Spacing between rack ends

- A clear width of 0.9 metres should be provided between rack ends to balance the maximization of bicycle parking capacity with the need for adequate bicycle manoeuvrability.

6. Aesthetics

The bicycle shelter can be visually enhanced through the use of attractive materials. Aesthetics can also be enhanced through the use of creative bicycle rack designs as previously discussed.

7. Signage

Bicycle parking area signage should be provide to indicate to cyclists and pedestrians that the bicycle shelter is intended exclusively for bicycle use and to alert pedestrians and motorists that they can expect higher bicycle volumes in the area.



5.2.4 Bicycle Lockers

1. Description

Bicycle Lockers are essentially large metal or plastic stand-alone boxes and offer the highest level of bicycle parking security available. They are appropriate for daily and overnight parking. They have the additional advantage that cyclists' gear and other accessories can be securely stored along with the bicycle, thus giving cyclists more flexibility in their travel arrangements. A responsible management and administrative body is critical for the success of the bicycle lockers. Aesthetic adaptation is somewhat limited due to the required 'boxy' shape for functional storage.

Cyclists are often more comfortable storing bicycles in lockers for long periods of time because they offer increased security and protection from the natural elements. Although bicycle lockers may be more expensive to install, they can make the difference for commuters who are deciding whether or not to cycle. Bicycle lockers provide space to store a few accessories such as rain gear, in addition to housing the bicycle. Some lockers provide storage space for two users - a partition separating the two bicycles can help ensure that users feel their bicycle is secure. Lockers can also be stacked, reducing the footprint required, although it makes the lockers slightly more difficult to use.

Traditionally, bicycle lockers have been available on a sign-up basis, whereby cyclists are given a key or a code to access a particular locker. Newer computerized on-demand systems offer increased flexibility by allowing subscribers to check for available lockers or sign up online. Models from eLocker and CycleSafe allow keyless access to the locker with the use of a SmartCard or cell phone. With an internet connection, centralized computerized administration allows the transit agency to monitor and respond to demand



for one-time use as well as reserved lockers. These programs typically have fewer administrative costs because they simplify or eliminate key management and locker assignment. Lockers that are available for one-time use have the advantage of serving multiple users a week. Monthly rentals, by contrast provide assurance to renters that their own personal locker will always be available.

2. Application

Bicycle lockers are most appropriate under the following circumstances:

- Where demand is generally oriented towards long-term parking;
- At transit exchanges and park-and-rides to help encourage multi-modal travel;
- Medium-high density employment and commercial areas and universities;
- where additional security is required and other forms of covered storage are not possible



3. Location

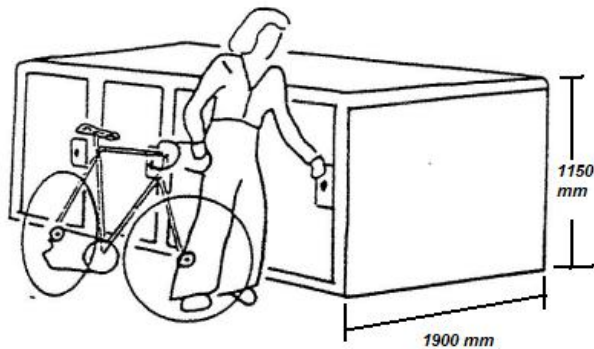
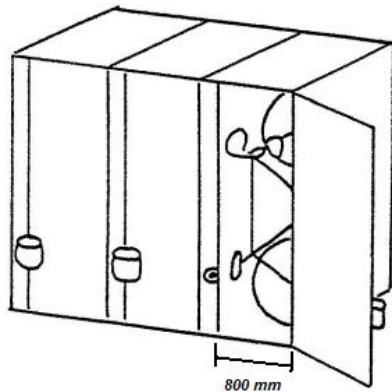
- Lockers should be located in close proximity to building entrances, or on the first level of a parking garage.



4. Installation

- Door locking mechanisms and systems are needed.
- A flat, level site is needed. Concrete surfaces are preferred.
- Enclosure rigidity must be ensured, as well as the quality of construction and a trouble-free door operation
- Transparent panels are available on some models to allow surveillance of locker contents.

Sample Bicycle Locker Dimensions



- Integrated solar panels have been added to certain models for recharging electric bicycles.

5. Dimensions and Spacing

Dimensions for a typical bicycle locker are as follows:

- Minimum width (opening) 800 millimetres.
- Minimum height 1900 millimetres.
- Minimum depth 1150 millimetres.
- Stackable models can double bicycle parking capacity on-site.

6. Safety and Security

- Options for customer access can vary from a simple key system to the utilization at a smart card or electronic key pad technology.

6.0 Design Guidelines: Off-Street Bicycle Parking



Off-street bicycle parking facilities are typically provided in private developments and are generally intended for long-term bicycle parking. As noted previously, the City's Zoning Regulation Bylaw includes requirements for the quantity of both short-term and long-term off-street bicycle parking spaces to be provided for new developments. However, there is also a need to ensure that the off-street bicycle facilities provided are appropriately designed in order to ensure they meet the needs of cyclists and that they support increased bicycle use.

This section outlines key design guidelines that help to ensure the provision of appropriately designed off-street bicycle parking facilities in the City of Victoria. The design guidelines in this section are primarily related to two types of long-term off-street bicycle parking – bicycle compounds and bicycle rooms, as described below:

- Bicycle Compounds are fully enclosed, stand-alone bicycle parking structures. Bicycle compounds offer a medium level of security in that while the owner can lock the bicycle within the enclosure, other users also have access to the enclosure. For this reason a level of surveillance should be provided to ensure satisfactory operation. Public lighting is desirable when the compound is located in a public place and used after dark. Bicycle compounds should not only have a locked gate but should also allow for the frame and both wheels to be locked to a rail within the enclosure. Bicycle compounds are recommended for employment or residential bicycle parking areas, ideally equipped with additional security and lighting if the facilities are to be used at night. Bicycle compounds are also suitable for all-day parking at locations such as transit exchanges, workplaces and schools



and can be located at street level or in parking garages, including City-owned parkades. Typical surrounding land uses include shopping malls, multi-family buildings, office buildings, recreational facilities and multi-modal transit stations.

- Bicycle Rooms are locked rooms or cages which are accessible only to cyclists, and which may contain bicycle racks to provide extra security against theft. Bicycle rooms are best used in areas where there is a moderate to high demand for parking, and where cyclist who would use the bicycle parking are from a defined group, such as a group of employees. Bicycle rooms are also popular for apartment buildings, particularly smaller ones in which residents are familiar with one another.

Off-street bicycle parking also includes short-term bicycle parking. The guidelines regarding bicycle racks in [Chapter 4](#) should be referenced for the provision for short-term bicycle parking. In addition, short-term bicycle parking for developments with minimal or zero setbacks may be accommodated within the public right-of-way.

The design guidelines provided in this section address: safety and security, accessibility, convenience, stall and aisle dimensions, stairway and ramp treatments and signage.

In order to ensure that off-street bicycle parking facilities are provided to a high standard of quality, the City should amend its Zoning Regulation Bylaw to be more prescriptive on the requirements for Class 1 and Class 2 bicycle parking based on the guidelines in this section (see [Appendix D](#) for an example of prescriptive requirements for bicycle parking by the City of Vancouver). Developers will be required to be in compliance with the guidelines described in this section, and should indicate on their development applications how they meet the requirements included in this section. The City should follow up to



ensure that bicycle parking facilities are ultimately constructed to a high standard of quality by inspecting them through the City's standard development review and building inspection process. This can be done by City staff as part of post-occupancy inspections to ensure that bicycle facilities have been implemented as shown on the development plans. This inspection should include a checklist which specifies the correct provision and installation of required bicycle parking.

6.1 Safety and Security

Off-street bicycle parking is typically used by cyclists who need to park their bicycle for longer periods of time. Bicycle theft is one of the most significant deterrents to bicycle use, particularly for bicycles that are parked for an extended period of time. Long-term use of bicycle parking facilities requires a high level of safety and security both for the cyclists themselves and their bicycles as well. There are a number of ways to ensure the safety and security of a bicycle parking facility, including:

Exterior

Bicycle rooms shall have solid opaque exterior walls from floor to ceiling. Bicycle compounds shall have an exterior structure consisting of expanded metal mesh from floor to ceiling.

Doors

Entry doors to the bicycle room must be at least 75 centimetres in width. The door and the frame shall be constructed of steel and have "tamper proof" hinges that cannot be dislodged by the use of a wrench, screwdriver, crowbar or boltcutter. A window may be provided in the door to provide permanent visual access.



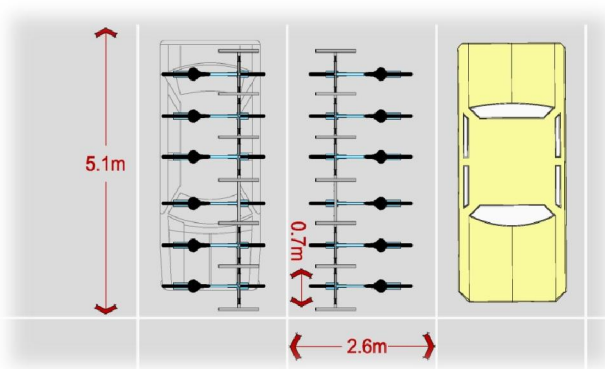
Access

Dedicated bicycle-only secure access points shall be provided through the use of security cards, non-duplicable keys, or passcode access. Where there is a high demand for bicycle parking, several small compounds or rooms provide more security than one larger room, as the number of people who have access to each compound or room is reduced. The provision of bicycle parking inside an enclosed room is most secure, but also more expensive than compounds. The downside of both is that cyclists must have a key or a code in order to access the bicycle parking facilities, which is a barrier to incidental use.

Lighting

The bicycle room or bicycle cage must be well-lit. Lighting of not less than one foot-candle illumination at ground level shall be provided in all bicycle parking areas. The lighting shall be “tamper-proof” to make it difficult for someone to incapacitate the light through protective methods such as recessed lighting, shielding the lighting with unbreakable or reinforced glass or plexiglass, or providing a locked steel mesh cage. The wiring must be easily severable. In addition, convex mirrors shall be provided to minimize blind spots and dark corners.

Comparison of Motor Vehicle and Bicycle Parking Capacity



Monitoring

Bicycle parking facilities shall be located in a monitored area. If the bicycle parking is located in an attended parking facility such as a parking garage, the facilities shall be located within 30 metres of an attendant, or a security guard, or alternatively, must be visible by other users of the parking facility.

Emergency

A panic button shall be installed in bicycle parking areas so as to provide a direct line of security in the event of an emergency.

Size

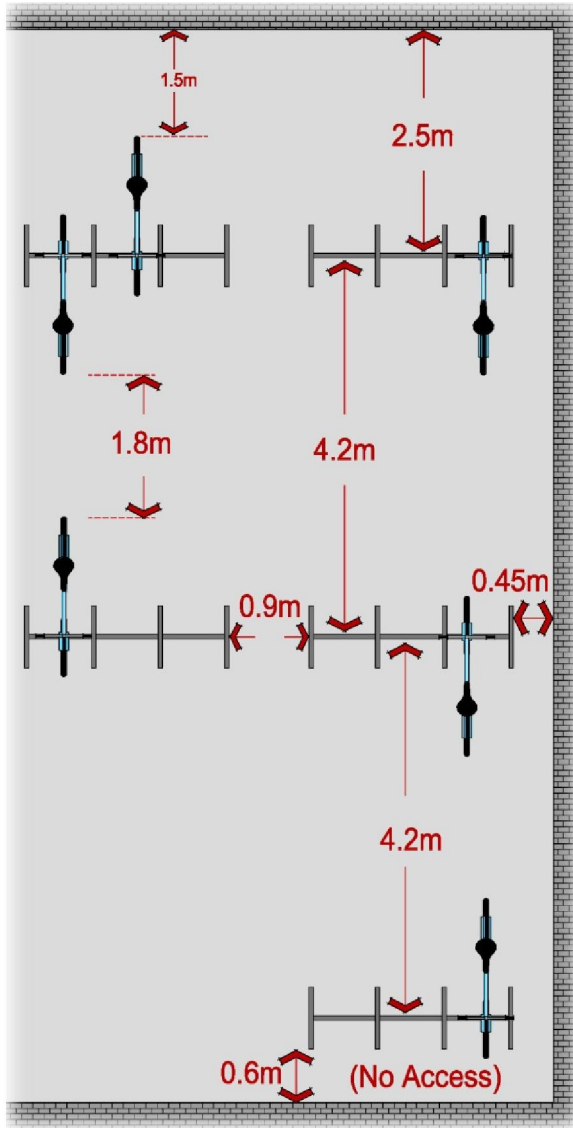
The bicycle room shall be designed to accommodate a maximum of 40 bicycles, although this number can be increased to 120 if the room is compartmentalized using expanded metal mesh with lockable industrial-grade doors into enclosures containing a maximum of 40 bicycles.

6.2 Accessibility

Off-street bicycle parking must have at-grade access. The bicycle parking shall be located no lower than the first level below grade to ensure that the facility is easily accessible, convenient, and that it minimizes potential conflicts between bicycles and motor vehicles. Access to the bicycle parking facilities shall either be directly from the street or via an approach that cyclists can access without having to dismount. If the bicycle parking is located on a separate level, access must be provided by installing a ramp, elevator or stairway with wheel ramps (as described in subsequent sections).

In addition, a minimum of 50 percent of the required long-term bicycle parking spaces shall provide for the bicycles to be placed horizontally on the floor or ground. Vertical bicycle racks shall support the bicycle without the bicycle being suspended on the wheels. Not more than 30 percent of the required long-term bicycle parking spaces may be vertical.

Bicycle Room Dimensions



6.3 Convenience

In order to encourage bicycle use, bicycle parking must be as convenient, if not more so, than motor vehicle parking. The facilities must be located in close proximity to building entrances and elevators. The bicycle parking facilities shall be no further from the elevators or entrances than the closest motor vehicle parking space, and no more than 50 metres from an elevator or building entrance. Buildings with more than one entrance should consider providing bicycle parking close to each entrance, and particularly near entrances that are accessible through the City's bicycle network. Whenever possible, bicycle parking facilities should allow 24-hour secure access.

6.4 Stall and aisle dimensions

Spacing between obstructions

- If the bicycle racks are located perpendicular to a wall, at least 0.6 metres clearance shall be provided if the rack has single-side access. 2.5 metres clearance shall be provided if the rack has double-sided access.
- If the bicycle rack is located parallel to a wall, at least 0.45 metres clearance shall be provided.

Spacing between bicycle racks

- If two separate bicycle racks are provided parallel to each other, a minimum of 0.7 metres must be provided between the racks.
- A clear aisle width of at least 1.8 metres must be provided between bicycle racks that hold more than two bicycles. For typical bicycle racks, this results in approximately 4.2 metres between bicycle racks.

- If bicycle racks are provided in a parallel series, a minimum of 1.8 metres shall be provided between the racks.



Spacing between rack ends

- A clear width of 0.9 metres shall be provided between rack ends to balance maximum bicycle parking capacity with adequate bicycle manoeuvrability.

6.5 Stairway/Ramp treatments

If bicycle parking is provided on a level other than the ground floor, cyclists must be able to access it via a ramp or elevator which must be able to accommodate several bicycles. If a ramp or elevator cannot be provided, or if the ramp exceeds a slope of 5%, then a stairway with a ramp or small channel for bicycle wheels must be installed. Providing a bicycle ramp allows cyclists to easily roll their bicycles up and down an otherwise inconveniently steep incline. Handrails shall be provided and located so as to avoid obstructing cyclists rolling their bicycles up and down the ramp.

6.6 Signage

Bicycle parking signage shall be provided to indicate the availability and location of an off-street bicycle parking area. Bicycle parking signage shall direct cyclists towards the entrance of the bicycle parking facility and should also indicate to pedestrians and motorists that they should expect bicycle traffic on site. The signage shall convey a simple and clear message using symbols, directional arrows, and contrasting colours.



Bicycle parking signage shall be installed on bicycle routes in advance of and at a turn-off to a road, bicycle route, or driveway leading to a bicycle parking area. The Transportation Association of Canada recommends the use of the "IC-19" Bicycle Parking Sign, although the specific sign used may be altered to match local conditions.



Transportation Association of Canada Recommended Bicycle Parking Sign



US Manual on Uniform Traffic Control Devices Recommended Bicycle Parking Area Sign

7.0 Design Guidelines: Showers & Clothing Lockers

Providing showers and clothing lockers at workplaces is a critical component to encouraging bicycle use, particularly among bicycle commuters who have a long commute or who require professional clothing attire. The City should amend its Zoning Regulation Bylaw to be require showers and clothing lockers. Developers will be required to meet the guidelines described in this section.

Relevant development guidelines for showers and clothing lockers are as follows:

- Showers and clothing lockers shall be provided at all non-residential developments which have requirements for long-term bicycle parking in the City's Zoning Regulation Bylaw, including commercial, industrial, institutional, and cultural and recreational developments. Showers and clothing lockers are intended to be used primarily by employees who may be commuting long-distances.
- The number of showers shall reflect the amount of long-term bicycle parking required on site. For smaller bicycle parking facilities with four or fewer long-term bicycle parking spaces, a minimum of one shower must be provided. For larger developments, one shower must be provided for each gender for every 30 bicycle parking spaces that are installed.
- To ensure the security of personal belongings, the number of clothing lockers must be at least equal the number of required long-term bicycle parking spaces. Clothing lockers shall be distributed equally for men and women.
- Wash basins shall be provided equalling the number of showers provided.



- Where facilities are provided on-site as part of an employee fitness centre, meet or exceed the requirements for showers and clothing lockers, and are accessible to cyclists before and after their work shifts, additional shower and change facilities for cyclists are not required.

Design guidelines for showers and clothing lockers are as follows:

- Showers and clothing locker facilities shall be located directly adjacent to secure bicycle parking facilities, and ideally at a distance of no more than 60 metres away. The locker room shall be located within the building in which the employee works.
- Clothing lockers shall be a minimum of 45 cm deep, 30 cm wide and 90 cm high. Ideally, clothing lockers should be 50 to 55 cm in depth in order to accommodate business clothes stored on hangers, and should be 180 cm in height so that pants and dresses can be stored without wrinkling.
- Showers shall be located in separate men's and women's locker rooms.
- Change rooms shall also include at least one grooming station for each shower provided. Each grooming station requires the following components:
 - A mirror;
 - A wash basin;
 - Countertop with minimum width of 60 cm and minimum depth of 25 cm; and
 - Electrical outlet.
- All lockers rooms must be secure and accessible only to appropriate personnel.
- Where possible, lockers may be vented with forced air or heat-traced to dry cycle clothing for return trips home.



8.0 Maintenance & Management

Proper maintenance of bicycle parking facilities is critical to ensuring the safety, convenience, and attractiveness of cycling. Maintenance requirements differ based on the type of bicycle parking provided, as described below:

8.1 Recommended Practices: On-Street Bicycle Parking

- Locate bicycle racks in a highly visible area to allow for regular monitoring to discourage theft and vandalism.
- Ensure the area around the bicycle parking facility is free of garbage, dirt, and other debris.
- Clear the bicycle parking area from snow.
- Manually inspect bicycle racks regularly to ensure that bolts and anchors remain secure and to identify any damage.
- Repaint, repair or replace damaged parts in a timely fashion.
- Monitor use of bicycle lockers, including signs of misuse, through master keys or other systems that allow access to the lockers.
- Encourage cyclists to report any vandalism or security concerns. Contact information should be clearly visible so that problems may be reported.
- Some bicycle lockers, particularly those provided outdoors, may suffer corrosion of locking mechanisms, which will need to be regularly serviced or replaced.
- Remove abandoned and derelict bicycles.

8.2 Recommended Practices: Off-Street Bicycle Parking

- Develop a registration system to aid in the regulation and monitoring of users. This could include a security pass card system or employee access cards that can be programmed to allow access to a bicycle cage or bicycle room. Key and/or card lock systems should be periodically changed to prevent “leakage” of access or security.
- Ensure regular security surveillance.
- Reserve the facility for the exclusive use of bicycles. Regular monitoring is required to prevent misuse, such as storing items other than bicycles.
- Encourage cyclists to report any vandalism or security concerns. Contact information should be clearly indicated to report problems.
- Ensure the facility is well-lit and that lighting is resistant to tampering and damage. The facility should be checked regularly for burnt-out bulbs.
- Develop a system of tagging bicycles one week before their removal in order to warn cyclists and help distinguish abandoned bicycles from ones that are in use.

9.0 Advertising and Revenue Potential

As discussed in Chapter 2, in 1999 Council approved a set of guidelines for the installation of bicycle racks on City streets. One of the guidelines states that bicycle racks on City streets must not have advertising on them, although it should be noted that the City does permit advertising on bus shelters. This section summarizes advertising options for various types of on-street bicycle parking and provides recommendations for the City. This section also includes a discussion of revenue potential from advertising and other sources such as parking reserve funds.



Source: www.peakracks.com



9.1 Advertising

In many cities, advertising is provided with on-street bicycle parking facilities. The discussion below summarizes advertising options used in other jurisdictions for various types of on-street bicycle parking facilities.

- **Bicycle Racks.** Peak Racks, a bicycle rack vendor in San Luis Obispo, California has developed a “Racks with Plaques” program that can help municipalities and others to provide bicycle parking at little or no cost. Individuals or companies can sponsor a bicycle rack as a form of recognition, donation or advertising in exchange for a plaque on the rack commemorating the contribution. Advertising space can also be provided on certain types of bicycle racks. For example, Dero, an established bicycle rack vendor, has developed a product called the “Ad Rack”, which allows for advertising to be placed above the bicycle rack.



- **Bicycle Shelters.** In New York City, bicycle shelters are installed as part of the City's Coordinated Street Furniture Program. The advertising space on the bicycle shelters are used to display bicycle maps and public service campaigns. However, the bicycle shelters are not revenue producing. Bicycle shelters, bus shelters and public toilets are installed and paid for by the vendor in exchange for the right to sell advertising space on the structures (within certain limitations).
- **Bicycle Lockers.** Bicycle lockers may also have available space that can be utilized for advertising. Advertising on bicycle lockers is best provided on the end panels of the bicycle locker.



Source: www.cyclesafe.com

It is recommended that the City of Victoria contract the installation and maintenance of at least a portion of its public bicycle racks to a private firm. This could potentially generate revenues for the City and may reduce the resources required to install and maintain the racks. As noted above, some vendors in other communities provide and install bicycle racks that are equipped with advertising space. The advertising space is then leased out, generally to local businesses, and the City receives a fee from the vendor. Contracts typically range from 5-10 years and the vendor takes responsibility for all of the maintenance and any liability issues that may arise regarding the bicycle racks. The benefit for the City is that this is a cost-free initiative, maintenance and liability is assumed, and local businesses are provided with a financially viable medium of advertising. However, advertising should only be provided in suitable locations that do not compromise the aesthetics of the bicycle rack or the character of the surrounding environment.

9.2 Parking Reserve Funds

In 2008, the Provincial Government enacted Bill 27, which gives local governments tools to help them reduce greenhouse gas emissions, conserve energy, and work towards creating more compact and sustainable communities. The Bill includes a number of amendments to relevant legislation, including requirements regarding the use of parking reserve funds under the Community Charter. Previously, parking reserve funds could only be used for the purpose of providing off-street motor vehicle parking spaces. It is recommended that the City of Victoria establish an Alternative Transportation Fund. Bill 27 allows the collection of cash-in-lieu of off-street parking to be put towards alternative transportation initiatives, such as bicycle parking.

Public Bicycle Systems



Bike Oasis



10.0 Emerging Technologies & Innovations

As bicycle use continues to increase throughout North America and elsewhere in the world, a number of bicycle parking technologies and innovations have emerged. As Victoria is one of North America's leading cycling cities, there may be opportunities to further explore some of these emerging technologies and innovations, as described below:

10.1 Public Bicycle Systems (PBS)

Public Bicycle Systems are a unique form of public transportation that are gaining momentum globally to help cities become greener, quieter and healthier places to live. Public Bicycle Systems offer a large fleet of high-quality, public-use bicycles that are rented from self-service docking stations located every few blocks on street corners. Users typically have low-cost or free access to the bicycles and can pick them up and return them to any docking station within the system. Since one-way trips are possible, the bicycles can be used for daily travel needs. As a result, once the network has become extensive enough, public bicycles become an integral component of the wider public transportation system.

10.2 Bike Oasis

In 2008, the City of Portland, Oregon began the installation of several "Bike Oasis" in commercial districts. These signature bicycle parking facilities are installed on curb extensions and consist of an attractive covered bicycle parking space and an information panel. Portland's Bike Oasis provide parking space for ten bicycles. Bicycle and walking maps are installed on the information panel.

Bike Tree



Source: www.biketree.com

Biciberg



Source: www.flickr.com/photos/fernand0/20488316

10.3 Automated Bicycle Parking

Some European and Asian cities have constructed underground, automatic parking systems. These facilities can receive and return bicycles on street level or at a platform in less than 30 seconds. The facility utilizes a chip card access system and allows the user to keep additional items such as a helmet and back pack with their bicycle. An alternative to lockers, automated bicycle parking provides secure, unmonitored outdoor parking. There are several different types of automated parking in use around the world. Most of them have a hook, slot, or other mechanism, on which the user places the bicycle, and which removes the bicycle from street level. These units can be accessible at all hours of the day for users to retrieve their bicycles. Automated parking is a good option for a location that requires bicycle parking to have a small footprint or in cases where surveillance may be difficult. Some examples of automated bicycle parking include:

- Bike Trees use smart card technology and move bicycles up into an umbrella-shaped cover, to reduce theft and vandalism. They can be a symbol of the organization's commitment to high-quality facilities for cyclists. They do not however, provide space to store accessories.
- Bicibergs, are multi-level automated bicycle parking facilities. Spain and Japan have developed Bicibergs to store a large number of bicycles. Bicibergs are automated systems that store the bicycle locker underground. The advantage is that users can store bags and raingear in the locker without fear of theft. In Japan, the bicycle is rolled onto a platform, which descends into the parking facility and is rolled into an underground storage unit. Usage fees are often minimal.

BikeDispenser



Source: www.bikedispenser.com

Bike Depots / Bike Stations



- Bikedispenser has been recently developed in Europe and is in use in the Netherlands. Bikedispenser is a fully automatic, weather-protected, and secure intake- and issue- station that can hold 30 to 100 bicycles. A Bikedispenser can be implemented at-grade or underground.

10.4 Bike Depot (Bike Stations)

Bike Depots or Bike Stations are fully enclosed, secure, attended bicycle parking facilities which typically provide space for between 1,000 and 4,000 bicycles. These facilities are very popular in Europe, particularly in the Netherlands and Germany and are increasingly being implemented throughout North America, including Seattle, Chicago and several communities in California. Bike Stations are the ultimate end-of-trip bicycle parking facility offering the highest level of security, comfort and convenience. Bike Stations are fully serviced buildings specifically designed to serve the needs of all cyclists and often include attended bicycle parking, storage, showers, changing rooms, bicycle repair facilities, retail opportunities, bicycle rentals, information centres, coffee shops, etc. Not surprisingly, Bike Stations are the most expensive facilities in the spectrum of bicycle parking solutions. Minimum components include the building, permanent staff for services, management and administration, end of trip facilities (lockers, showers, changing rooms, shops, etc) and passive and active surveillance. Bike Stations provide the highest level of architectural freedom as it is an independent building structure. Bike Stations are suitable in high demand cyclist areas and high density employment centres where bicycle parking demand and end-of-trip facilities can be shared and centrally located to serve multiple destinations area-wide. They are generally located at a central location in downtown areas and ideally connected to multi-modal transit facilities.

Bicycle Secure Parking Area



Source: Alta Planning + Design

10.5 Bicycle Secure Parking Areas (SPAs)

Bicycle SPAs are a new concept implemented for TriMet (Portland, Oregon’s transit agency). They provide high capacity, Secure Parking Areas (SPAs) for 80-100 bicycles at light rail and bus transit centres. The Bicycle SPAs are semi-enclosed covered areas that are accessed by key cards and monitored by security cameras. The increased security measures provide an additional transportation option for those who may not be comfortable leaving their bicycle in an outdoor transit station exposed to weather and the threats of vandalism. They also include amenities that make the Bicycle SPA more attractive and inviting for users such as benches, bicycle repair stations, bicycle tube and maintenance item vending machines, as well as hitching posts which allow people to leave their locks at the SPA.

10.6 Electric Bicycles

There is a growing use of electric bicycles throughout North America. Most electric bicycles are electric ‘assist’ which means that the batteries are not in use full-time and that users can charge the batteries at home. As a result, electric bicycles would typically have a small electrical need and it is important in planning into the future that buildings have a provision built in. Although very few cities in North America have begun to require electrical outlets for electric bicycles, the City of Vancouver recently amended its bicycle parking requirements such that electric outlets must be provided for at least 50 percent of off-street long-term bicycle parking spaces. It is recommended that the City of Victoria also recommend that electric outlets be provided for 50% of long-term bicycle parking spaces. As electrical outlets are intended for long-term parking, it is not necessary for electrical outlets to be provided for short-term bicycle parking.

11.0 Next Steps

While actions and implementation details for improving and increasing cycling in the City of Victoria are identified throughout this document, there are several important next steps for the City to ensure that the recommendations in this document are successfully implemented:

1. Amend the Zoning Regulation Bylaw to:
 - Require the installation of end-of-trip facilities in commercial, industrial, institutional, and cultural and recreational developments which require Class 1 bicycle parking;
 - Require bicycle parking and end-of-trip facilities in both newly constructed buildings subject to Building Permit, and developments subject to rezoning;
 - Make automatic provision for retroactive provision of bicycle facilities in existing buildings by allowing existing buildings to convert vehicle parking spaces to long-term bicycle parking spaces up to the current bicycle requirement with a reduction in the motor vehicle parking requirement of one parking space for every five long-term bicycle spaces;
 - Allow for a reduction in the amount of motor vehicle parking required when developers choose to provide a greater amount of bicycle parking than is required;
 - Require the provision of one electrical outlet for every two long-term bicycle parking spaces; and
 - Indicate that the requirements for off-street bicycle parking, showers, and clothing lockers must be consistent with the City's Bicycle Parking Design Supplement (see below).

2. Create and adopt a Bicycle Parking Design Guideline including the design guidelines for on-street bicycle parking, off-street bicycle parking and showers and clothing lockers outlined in this document. These design guidelines should be accessible to developers in order to ensure a design of both on and off-street bicycle parking facilities.
3. As part of the larger general question of advertising on public space, consider the provision of on-street bicycle parking in select circumstances, with attention given to urban design, heritage precincts, and barrier-free principles.
4. Establish a checklist for bicycle parking as part of the City's standard development review and building permit review to ensure the ultimate construction of off-street bicycle parking as well as showers and clothing lockers.
5. Consider Bicycle Corrals as a possible design solution when processing business requests for public bicycle racks. .
6. Establish a Parking Reserve Fund to be used for the provision of bicycle parking in high priority areas and where the funds are not required for other transportation initiatives.

By accomplishing these next steps, the City of Victoria will continue to lead other North American cities in the establishment of cycling related best practices and will continue to increase the City's transportation mode share for cycling.

APPENDIX A

Bicycle Parking Resources



Association of Pedestrian and Bicycle Professionals: Bicycle Parking Guidelines (2nd Edition)
May be purchased at: <http://www.apbp.org/>

Bicycle Victoria (AU): Bike Parking
<http://www.bv.com.au/bike-parking/>

Capital Bike and Walk Society: Bicycles at Rest Best Practices Guide
<http://www.bicycleparkingonline.org/>

City of Calgary: Bicycle Parking Handbook – A Developer’s Guide
http://www.calgary.ca/DocGallery/Bu/trans_planning/cycling/bike_parking_2008_order.pdf

City of Cambridge: Bicycle Parking Guidelines
http://www.cambridgema.gov/CityOfCambridge_Content/documents/tpat_BikeParkingBrochure.pdf

City of Madison: Bike Parking
<http://www.cityofmadison.com/trafficEngineering/bicyclingParking.cfm>

City of Portland: Bicycle Parking Facilities Guidelines
<http://www.portlandonline.com/transportation/index.cfm?&a=58409&c=34813>

City of Toronto: Guidelines for the Design and Management of Bicycle Parking Facilities
http://www.toronto.ca/planning/pdf/bicycle_parking_guidelines_final_may08.pdf

City of Vancouver BC: Bicycle Parking Design Guidelines
<http://vancouver.ca/engsvcs/parking/enf/pdf/bpds.pdf>

City of Vancouver WA: Bicycle Parking Standards and Guidelines
<http://www.cityofvancouver.us/bike.asp?menuid=10466&submenuID=23027&itemID=23513>

Donlon, Jennifer. Recommended Bicycle Parking Policies for Oakland, California. Department of Urban and Regional Planning, San Jose State University.

International Bicycle Fund: Bicycle Parking Planning Criteria – Bicycle Racks, Bicycle Lockers, Cycle Stands & Bicycle Storage Systems
<http://www.ibike.org/engineering/parking.htm>

Transportation Alternatives: Bicycle Parking Solutions
<http://www.transalt.org/files/campaigns/bike/bikeparking.pdf>

United States Department of Transportation Federal Highway Administration: Bicycle Parking and Storage
<http://www.tfhrc.gov/safety/pedbike/pubs/05085/chapt17.htm>

United States Green Building Council: LEED 2009 for Neighbourhood Development Rating System (Credit 4 – Bicycle Network and Storage)
<http://www.usgbc.org/DisplayPage.aspx?CMSPageID=148>

VeloQuebec: Technical Handbook of Bikeway Design

Victoria Transport Policy Institute: Bicycle Parking, Storage and Changing Facilities
<http://www.vtpi.org/tdm/tdm85.htm>



APPENDIX B

Bicycle Parking Requirements in Other Jurisdictions



Bicycle Parking Bylaws

A Snapshot of Bylaws throughout North America that Require Bicycle Parking Through the Development Process

	Multi-Family	Office	Shopping Centre	Industrial	Schools	Further land use categories?	Design Standards or Guidelines in Bylaw?	End of trip facilities required?
Victoria								
Bicycle Parking Requirements:	1 per unit plus a 6 space rack at each apartment entrance	1 per 250m ² of gross floor area (GFA) for the 1 st 5000 m ² , plus 1 per 500m ² of additional GFA	1 per 250m ² of gross floor area (GFA) for the 1 st 5000 m ² , plus 1 per 500m ² of additional GFA	1 per 950 m ² of GFA	1 per 5-10 students ¹ and 1 per 10 employees	Yes – other institutional uses as well as cultural and recreational	No	NO
Class 1	1 per unit	50%	30%	80% of total required	Employee parking	n/a	n/a	n/a
Class 2	6 space rack	50%	70%	20% of total required	Student parking	n/a	n/a	n/a
Edmonton								
Bicycle Parking Requirements:	5% of the number of vehicular parking spaces to a maximum of 50 spaces with a minimum of 5.	5% of the number of vehicular parking spaces to a maximum of 50 spaces with a minimum of 5.	5% of the number of vehicular parking spaces to a maximum of 50 spaces with a minimum of 5.	5% of the number of vehicular parking spaces to a maximum of 50 spaces with a minimum of 5.	Bicycle parking equivalent to 10% of vehicular parking requirements	No – only residential vs non-residential	Yes	No
Class 1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Class 2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Richmond								
Bicycle Parking Requirements:	1.25 spaces per unit of class 1 and 0.2 spaces per dwelling unit of class 2	- 0.27 Class 1 spaces per each 100m ² of gross leasable floor area (GLFA) greater than 100m ² - 0.4 Class 2 spaces per each 100m ² of GLFA greater than 100m ² .	- 0.27 Class 1 spaces per each 100m ² of gross leasable floor area (GLFA) greater than 100m ² - 0.4 Class 2 spaces per each 100m ² of GLFA greater than 100m ² .	- 0.27 Class 1 spaces per each 100m ² of GLFA greater than 100m ² . - 0.27 Class 2 spaces per each 100m ² of GLFA greater than 100m ² .	Elementary: - 1 space/3 staff (Class 1) - 2 spaces for each 10 students (Class 2) Secondary: - 1 space/3 staff (Class 1) - 3 spaces for each 10 students (Class 2) University - 1 space/4 staff (Class 1) plus 1 space per 10 students - 1 spaces for each 10 students (Class 2)	Yes	Yes	No
Class 1	1.25 per unit	0.27 per 100m ²	0.27 per 100m ²	0.27 per 100m ²	Elem: 1/3staff Sec: 1/3 staff Uni: 1 per 4 staff and 1 per 10 students	n/a	n/a	n/a

¹ Depending on school type (elementary, middle, secondary, college and university)

Bicycle Parking Bylaws

A Snapshot of Bylaws throughout North America that Require Bicycle Parking Through the Development Process

	Multi-Family	Office	Shopping Centre	Industrial	Schools	Further land use categories?	Design Standards or Guidelines in Bylaw?	End of trip facilities required?
Class 2	0.2 per unit	0.4 per 100m ²	0.4 per 100m ²	0.27 per 100m ²	Elem:2 per 10 students Sec: 3/10 students Uni: 1 per 10 students	n/a	n/a	n/a
Saanich								
Bicycle Parking Requirements:	1 per unit plus six space rack at each apartment entrance	One per 250m ² GFA for the first 5000m ² and 1 per 500m ² for any additional area	1 per 250m ² of gross leasable area for the 1 st 5000 m ² , plus 1 per 500m ² of additional GFA	1 per 950 m ² of GFA	1 per 5-10 students ² and 1 per 10 employees	Yes	Yes	No
Class 1	1 per unit	50%	30%	80%	All employee bicycle parking	n/a	n/a	n/a
Class 2	6 space rack	50%	70%	20%	All student bicycle parking	n/a	n/a	n/a
London, Ontario (draft)								
Bicycle Parking Requirements:	Apartment buildings with 5 or more units are required to provide 1 class 1 bicycle parking space per unit.	7% of the required number of vehicle parking spaces – except where fewer than 9 vehicle spaces is required.	7% of the required number of automobile parking spaces – except where fewer than 9 vehicle spaces is required.	7% of the required number of automobile parking spaces – except where fewer than 9 vehicle spaces is required.	7% of the required number of automobile parking spaces – except where fewer than 9 vehicle spaces is required.	No	No	Yes – bylaw encourages but does not require change room and shower facilities
Class 1	All residential as Class 1	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Class 2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

² Depending on school type (elementary, middle, secondary, college and university)

Bicycle Parking Bylaws

A Snapshot of Bylaws throughout North America that Require Bicycle Parking Through the Development Process

	Multi-Family	Office	Shopping Centre	Industrial	Schools	Further land use categories?	Design Standards or Guidelines in Bylaw?	End of trip facilities required?
Toronto (proposed)								
Bicycle Parking Requirements: *The City of Toronto has separate bicycle parking requirements for Policy Area 1 and the rest of the City. The requirements presented in this table are for the City excluding Policy Area 1.	0.6 long term bicycle parking spaces are required for each dwelling unit, along with 0.15 short term bicycle parking spaces for each dwelling unit.	0.13 spaces (Class 1) for each 100m ² of GFA and the greater of the following for class 2: a) 0.15 for each 100m ² of GFA or b) 6.0 if a building has more than 1000m ² of office.	0.13 long term bicycle parking spaces for each 100m ² of GFA and for short term bicycle parking spaces, the greater of: a) 0.25 for each 100m ² of GFA and b) 6.0 if a building has more than 1000m ² of retail store	n/a	n/a		Yes	Yes – if a building contains uses other than dwelling units, for which a bicycle parking spaces is required, shower and change facilities shall be provided for each gender at the following rate: ³ 1 for 5-29 required spaces 2 for 30-59 spaces 3 for 60-89 spaces 4 for 90-110 spaces 5 for 120-149 spaces 6 for 150-179 spaces 7 for more than 179 spaces
Class 1	0.6 for each unit	0.13 spaces for each 100m ² of GFA	0.13 long term bicycle parking spaces for each 100m ² of GFA	n/a	n/a	n/a	n/a	n/a
Class 2	0.15 for each unit	Whichever is greater: a) 0.15 for each 100m ² of GFA or b) 6.0 if a building has more than 1000m ² of office.	The greater of: a) 0.25 for each 100m ² of GFA and b) 6.0 if a building has more than 1000m ² of retail store	n/a	n/a	n/a	n/a	n/a
Ottawa								
Bicycle Parking Requirements:	0.5 per dwelling	1 space per 500m ² of gross floor area	1 space per 500m ² of gross floor area	1 space per 1000m ² of gross floor area	1 per 250m ² of gross floor area	Yes	Yes	Provision No. 13 in the Bylaw is as follows: The motor vehicle parking
Class 1	Where the number of bicycle parking spaces	n/a	n/a	n/a	n/a	n/a	n/a	

³ None if less than 5 required bicycle parking spaces

Bicycle Parking Bylaws

A Snapshot of Bylaws throughout North America that Require Bicycle Parking Through the Development Process

	Multi-Family	Office	Shopping Centre	Industrial	Schools	Further land use categories?	Design Standards or Guidelines in Bylaw?	End of trip facilities required?
Class 2	required for a single office or residential building exceeds fifty spaces, a minimum of 25% of that required total must be located within: <ul style="list-style-type: none"> a. A building or structure; b. A secure area such as a supervised parking lot or enclosure with secure entrance; or c. Bicycle lockers. 	n/a	n/a	n/a	n/a	n/a	n/a	required for any use maybe reduced by one motor vehicle parking space for every 13m ² of gross floor area provided as shower rooms, change rooms, locker rooms and other similar facilities intended for the use of the bicyclist in conjunction with required or provided bicycle parking.
Oakland, California								
Bicycle Parking Requirements:	Class 1: 1.0 per 4 dwelling units, minimum of 2 spaces Class 2: 1.0 per 20 dwelling units, minimum of 2 spaces	Class 1: 1 per 12,000 s.f. of floor area, minimum of 2 spaces Class 2: 1 per 20,000 s.f. of floor area, minimum of 2 spaces	Class 1: 1 per 12,000 s.f. of floor area, minimum of 2 spaces Class 2: 1 per 5,000 s.f. of floor area, minimum of 2 spaces	Class 1: 1 per 15,000 s.f. of floor area, minimum of 2 spaces Class 2: n/a	See below, class 1 and 2	Yes Civic Activities, Medical, Automotive, Rail and Bus Terminals, Religious Institutions, Daycare	Yes	Commercial developments 150,000 s.f. or greater: A minimum of 2 showers per gender plus one shower per gender for each 150,000 s.f. above 150,000 s.f. and 4 lockers per shower.
Class 1	1.0 per 4 dwelling units, minimum of 2 spaces	1 per 12,000 s.f. of floor area, minimum of 2 spaces	1 per 12,000 s.f. of floor area, minimum of 2 spaces	1 per 15,000 s.f. of floor area, minimum of 2 spaces	Nursery schools: 1.0 per 10 employees, minimum 2 spaces Elementary, Junior High, and High Schools: 1.0 per 10 employees plus 1 per 20 students, minimum 2 spaces Colleges and Universities: 1.0 per 10 employees plus 1.0 per 10 students of planned capacity; or 1 space for each 20,000 s.f. of floor area, whichever is greater	n/a	n/a	n/a

Bicycle Parking Bylaws

A Snapshot of Bylaws throughout North America that Require Bicycle Parking Through the Development Process

	Multi-Family	Office	Shopping Centre	Industrial	Schools	Further land use categories?	Design Standards or Guidelines in Bylaw?	End of trip facilities required?
Class 2	1.0 per 20 dwelling units, minimum of 2 spaces	1 per 20,000 s.f. of floor area, minimum of 2 spaces	1 per 5,000 s.f. of floor area, minimum of 2 spaces	n/a	Nursery schools: 1.0 per 20 students of planned capacity, minimum 2 spaces Elementary, Junior High, and High Schools: 1.0 per 20 students of planned capacity, minimum 2 spaces Colleges and Universities: 1.0 per 10 students of planned capacity	n/a	n/a	n/a
Portland, Oregon								
Bicycle Parking Requirements:	Class 1: 1.0 per 4 dwelling units Class 2: 1.0 per 20 dwelling units	Class 1: 1 per 10,000 s.f. of net building area Class 2: 1 per 40,000 s.f. of net building area	Class 1: 1 per 12,000 s.f. of net building area Class 2: 1 per 5,000 s.f. of net building area	Class 1: 1 per 15,000 s.f. of net building area Class 2: n/a	See below, class 1 and 2	Yes Commercial Parking, Commercial Outdoor Recreation, Major Event Entertainment, Religious Institutions, Daycare, Light Rail Stations and Transit Centers	Yes	Central City buildings: For each s.f. of locker and shower facilities in major buildings, a bonus of 40 s.f. of additional floor space is earned.
Class 1	1.0 per 4 dwelling units	1 per 10,000 s.f. of net building area	1 per 12,000 s.f. of net building area	1 per 15,000 s.f. of net building area	Grades 2-5: 2.0 per classroom Grades 6-12: 4 per classroom Colleges: 1.0 per 20,000 s.f. of net building area	n/a	n/a	n/a
Class 2	1.0 per 20 dwelling units	1 per 40,000 s.f. of net building area	1 per 5,000 s.f. of net building area	n/a	Colleges: 1.0 per 10,000 s.f. of net building area	n/a	n/a	n/a

Bicycle Parking Bylaws

A Snapshot of Bylaws throughout North America that Require Bicycle Parking Through the Development Process

	Multi-Family	Office	Shopping Centre	Industrial	Schools	Further land use categories?	Design Standards or Guidelines in Bylaw?	End of trip facilities required?
Arlington, Virginia								
Bicycle Parking Requirements:	Class 1: 1.0 per 3 dwelling units Class 2: 1.0 per 50 dwelling units	Class 1: 1.0 per 7,500 s.f. Class 2: 1.0 per 20,000 s.f.	Class 1: 1.0 per 25,000 s.f. Class 2: 2.0 per 10,000 s.f. for the first 50,000 s.f and 1.0 per 12,500 s.f	n/a	n/a	No	Yes	Assume Office only but code is unclear: One (1) shower per gender per 50,000 s.f. or fraction thereof up to a maximum of three (3) showers per gender. A minimum of one (1) clothes storage locker per gender shall be installed for every required employee bicycle parking space.
Class 1	1.0 per 3 dwelling units	1.0 per 7,500 s.f.	1.0 per 25,000 s.f.	n/a	n/a	n/a	n/a	n/a
Class 2	1.0 per 50 dwelling units	1.0 per 20,000 s.f.	2.0 per 10,000 s.f. for the first 50,000 s.f and 1.0 per 12,500 s.f.	n/a	n/a	No	Yes	n/a
San Francisco, California								
Bicycle Parking Requirements:	Class 1: 1-50 unit project: 1.0 per 2 dwelling units 50+ unit project: 25 spaces plus 1.0 for every unit over 50 Class 2: n/a	Can be Class 1 or Class 2 10,000-20,000 s.f., 3 spaces; 20,001-50,000 s.f. 6 spaces; exceeds 50,000 s.f. 12 spaces	Can be class 1 or Class 2 25,000-50,000 s.f., 3 spaces; 50,001-100,000 s.f. 6 spaces; exceeds 100,000 s.f. 12 spaces	n/a	n/a	Yes Parking Garages	Yes	Office use: 10,000-20,000 s.f., 1 shower, 2 lockers; 20,001-50,000 s.f. 2 showers, 4 lockers; exceeds 50,000 s.f. 4 showers, 8 lockers Retail: 25,000-50,000 s.f., 1 shower, 2 lockers; 50,001-100,000 000 s.f. 2 showers, 4 lockers; exceeds 100,000 s.f. 4 showers, 8 lockers

Bicycle Parking Bylaws

A Snapshot of Bylaws throughout North America that Require Bicycle Parking Through the Development Process

	Multi-Family	Office	Shopping Centre	Industrial	Schools	Further land use categories?	Design Standards or Guidelines in Bylaw?	End of trip facilities required?
Class 1	1-50 unit project: 1.0 per 2 dwelling units 50+ unit project: 25 spaces plus 1.0 for every unit over 50.	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Class 2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
New York, New York								
Bicycle Parking Requirements:	Class 1: 10+ units: 1.0 per 2 units Class 2: n/a	Class 1: 1.0 per 7,500 s.f. floor area Class 2: n/a	Class 1: 1.0 per 10,000 s.f. floor area Class 2: n/a	n/a	See below, class 1 and 2	Yes, Hotels, Large Entertainment Facilities, Public Parking Garages, Hospitals, Dormitories, Houses of Worship	No	No
Class 1	10+ units: 1.0 per 2 units	1.0 per 7,500 s.f. floor area	1.0 per 10,000 s.f. floor area	n/a	Universities and colleges: 1.0 per 5,000 s.f. (half can be outdoor)		Yes, limited	n/a
Class 2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Seattle, Washington								
Bicycle Parking Requirements:	Class 1: 1.0 per 4 dwelling units Class 2: n/a	Class 1: 1.0 per 4,000 s.f. Class 2: 1.0 per 40,000 s.f.	Class 1: 1.0 per 12,000 s.f. Class 2: 1.0 per 4,000 s.f.	Class 1: 1.0 per 4,000 s.f. Class 2: n/a	See below, class 1 and 2	Yes, Hotels	Yes	Buildings 250,000+ s.f. gross office floor area: 1.0 shower per gender per 250,000 s.f. of office use.
Class 1	1.0 per 4 dwelling units	1.0 per 4,000 s.f.	1.0 per 12,000 s.f.	1.0 per 4,000 s.f.	Elementary: 1.0 per classroom Secondary: 2.0 per classroom Colleges: Bicycle parking equal to 10% of the maximum students at peak hour plus 5% of employees	n/a	n/a	n/a
Class 2	n/a	1.0 per 40,000 s.f.	1.0 per 4,000 s.f.	n/a	n/a	n/a	n/a	n/a

APPENDIX C

City of Portland Application for Bicycle Corral





APPLICATION FOR ON-STREET BICYCLE PARKING CORRAL

Bicycle corrals are grouped bike parking installations placed in the parking lane. The City of Portland prefers locating on-street bike parking corrals at block corners in order to add additional benefits, such as creating defacto curb extensions to shorten pedestrian's crossing of the street and improving visibility for cars turning into traffic from side streets.

Bicycle corrals are established in partnership with the adjacent property owner/business through a Maintenance Agreement requiring minor, regular maintenance of the facility by the adjacent property owner/business. The bicycle corral is permitted through the Portland Bureau of Transportation (PBOT); the permit can be revoked if the terms of the agreement are not upheld.

What is the intersection where the bike corral is requested? _____

Name and address of requesting business _____

Name of contact person _____

Phone # and/or Email _____

Name of property owner _____

Phone # and/or Email _____

What time of day is the peak demand for bike parking? _____

How many bicycles are typically parked? _____

Application is hereby made to the Bureau of Transportation for a revocable permit to install an ON-STREET BICYCLE PARKING CORRAL.

Business owner _____ {Signature*}
{Print Name} _____ {Date} _____

Property owner _____ {Signature*}
{Print Name} _____ {Date} _____

After submission of the application, PBOT staff will contact the applicant to discuss location feasibility and bike parking demand. Note that bicycle corral facilities are generally designed and installed in coordination with a commercial corridor bicycle parking review.

Submit to:

City of Portland, Bureau of Transportation, Attn: Sarah Figliozzi
1120 SW 5th Ave, Suite 800
Portland, OR 97204

Or by Fax: (503) 823-7609 or Email: sarah.figliozzi@portlandoregon.gov

* Note: Alternatively written approval in the form of an email or letter can be attached to form.

Appendix D

City of Vancouver Bicycle Parking Requirements



Section 6

Off-street Bicycle Space Regulations

- 6.1 Number of Bicycle Spaces**
- 6.1.1 General Requirements**
- In all districts, the number of spaces required for the off-street parking of bicycles shall be calculated according to section 6.2.
- 6.1.2 Bicycle Space Requirement Exemptions**
- The required number of off-street bicycle spaces need not be provided where any additions, alterations or changes of use to a building existing on October 17, 1995 would, in total, result in an increase of less than 10 percent of the number of spaces required before the additions, alterations or change in use.
- 6.1.3 Uses Not Listed**
- If a use is not listed in the tables, the number of bicycle spaces shall be calculated on the basis of a similar use as determined by the Director of Planning.
- 6.1.4 Multiple-Use Developments**
- For the purposes of this section uses with the same formula for determining required bicycle spaces shall be considered to be of the same class. If a development contains parking for more than one use as listed in section 6.2, the total number of bicycle spaces shall be the sum of the bicycle spaces required for the various classes of uses calculated separately and, unless otherwise permitted by the Director of Planning, in consultation with the City Engineer, taking into account the time-varying demand of uses, a bicycle space required for one use shall be deemed not to meet the requirement for any other use in that development.
- 6.1.5 Floor Area Calculation**
- Where gross floor area is used to calculate the number of required bicycle spaces, it shall be calculated in the same manner as the floor space ratio of the applicable district schedule or official development plan.
- 6.1.6 Rounding of Fractional Numbers**
- Where the calculation of total required bicycle spaces results in a fractional number, the nearest whole number shall be taken, unless specified otherwise in section 6.2. A fraction of one-half shall be rounded up to the next whole number.
- 6.2 Table or Number of Required Off-Street Bicycle Spaces**
- Bicycle spaces shall be required for any buildings classified in column 1 in accordance with the corresponding standards listed in column 2.

	Column 1 Building Classification	Column 2 Required Bicycle Spaces	
		Class A	Class B
6.2.1	Dwelling		
6.2.1.1	Dwelling Uses, except as provided for in sections 6.2.1.2, 6.2.1.3, 6.2.1.4, and 6.2.1.6.	No Requirement.	No Requirement.
6.2.1.2	Multiple Dwelling, Infill Multiple Dwelling, or three or more dwelling units in conjunction with another use, except as provided for in sections 6.2.1.3 and 6.2.1.4.	A minimum of 1.25 spaces for every dwelling unit.	A minimum of 6 spaces for any development containing a minimum of 20 dwelling units.
6.2.1.3	Multiple Dwelling or three or more dwelling units in conjunction with another use located within the area bounded by Cypress Street, W. 49th Avenue, Larch Street and W. 37th Avenue, except as provided for in section 6.2.1.4; Dwelling Units with a gross floor area less than 37 square metres, except as provided for in section 6.2.1.4; Residential Unit associated with and forming an integral part of any artist studio.	A minimum of 0.75 space for every dwelling unit.	A minimum of 6 spaces for any development containing a minimum of 20 dwelling units.
6.2.1.4	Three or more dwelling units designated solely for senior citizens' housing under the provisions of the National Housing Act or the Housing Construction (Elderly Citizens) Act, or similar use.	A minimum of 0.25 space for every dwelling unit.	A minimum of 6 spaces for any development containing a minimum of 20 dwelling units.
6.2.1.5	Seniors Supportive or Assisted Housing For residential units less than 50 square metres in size. For residential units 50 square metres in size or greater.	A minimum of 0.10 space for every residential unit. A minimum of 0.25 spaces for every residential unit.	No requirement. No requirement.
6.2.1.6	Principal Dwelling Unit combined with a Secondary Dwelling Unit in the C-2, C-2B, C-2C, C-2C1, and C-3A Districts.	For a principal dwelling unit combined with a secondary dwelling unit, a minimum of 1.25 spaces for each principal dwelling unit and a minimum of 0.75 spaces for each secondary dwelling unit.	No requirement for a secondary dwelling unit.
6.2.2	Institutional		
6.2.2.1	Community Care Facility – Class B; Group Residence; Detoxification Centre.	A minimum of 1 space for every 100 beds.	No requirement.

	Column 1 Building Classification	Column 2 Required Bicycle Spaces	
		Class A	Class B
6.2.2.2	Hospital or other similar use.	A minimum of 1 space for every 17 employees on a maximum work shift.	A minimum of 6 spaces at each public entrance.
6.2.2.3	School - Elementary or Secondary; School - University or College	A minimum of 1 space for every 17 employees and for secondary schools, universities or colleges, 0.4 space for every 10 students on a maximum attendance period.	A minimum of 0.6 space for every 10 students on a maximum attendance period except that elementary schools shall provide a minimum of 1 space for every 20 students.
6.2.2.4	Church, chapel, place of worship, or similar place of assembly	No requirement.	A minimum of 6 spaces.
6.2.2.5	Ambulance Station; Child Day Care Facility; Social Service Centre; Community Care Facility – Class A; Seniors Supportive and Assisted Housing.	No requirement.	No requirement.
6.2.3	Cultural & Recreational		
6.2.3.1	Community centre, hall, club, bingo hall, activity centre or similar place of assembly; Casino - Class 1; Library, gallery, museum or aquarium.	A minimum of 1 space for each 500 square metres of floor area used for assembly purposes.	A minimum of 6 spaces for any portion of each 1,500 square metres of floor area used for assembly purposes.
6.2.3.2	Theatre, auditorium, stadium, arena, or similar place with spectator facilities.	No requirement.	A minimum of 6 spaces for any portion of each 300 person seating capacity.
6.2.3.3	Fitness centre.	A minimum of 1 space for each 250 square metres of gross floor area.	A minimum of 6 spaces for any portion of each 500 square metres of gross floor area.
6.2.3.4	Billiard hall; Arcade; Bowling Alley; Curling Rink.	No requirement.	A minimum of 6 spaces for any portion of each 40 tables, games, alleys or ice sheets.

Section 6

Column 1 Building Classification		Column 2 Required Bicycle Spaces	
		Class A	Class B
6.2.3.5	Artist Studio, without residential component (See section 6.2.1.3 for requirement for Residential Unit associated with and forming an integral part of an artist studio).	No requirement.	No requirement.
6.2.4	Office		
6.2.4.1	Office Uses	A minimum of 1 space for each 500 square metres of gross floor area.	A minimum of 6 spaces for any development containing a minimum of 2,000 square metres of gross floor area.
6.2.5	Retail & Service		
6.2.5.1	Retail and Service Uses, except as provided for in sections 6.2.5.2 and 6.2.5.3.	A minimum of 1 space for each 500 square metres of gross floor area.	A minimum of 6 spaces for any development containing a minimum of 1,000 square metres of gross floor area.
6.2.5.2	Hotel.	A minimum of 1 space for every 30 dwelling, housekeeping or sleeping units, or any combination thereof.	A minimum of 6 spaces for any development containing a minimum of 75 dwelling, housekeeping or sleeping units, or any combination thereof.
6.2.5.3	Bed & Breakfast Accommodation; Funeral Home; Wedding Chapel.	No requirement.	No requirement.
6.2.6	Manufacturing, Transportation & Storage, Utility & Communication Uses, Wholesale		
6.2.6.1	Manufacturing Uses; Transportation and Storage uses; Utility and Communication Uses; Wholesale Uses.	A minimum of 1 space for each 1,000 square metres of gross floor area in the building or 1 space for every 17 employees on a maximum work shift, whichever is the greater.	No requirement.
6.2.7	Parking		
6.2.7.1	Parking Uses.	As determined by the Director of Planning in consultation with the City Engineer.	As determined by the Director of Planning in consultation with the City Engineer.

	Column 1 Building Classification	Column 2 Required Bicycle Spaces	
		Class A	Class B
6.2.8	Agricultural		
6.2.8.1	Agricultural Uses.	No requirement.	No requirement.
6.2.9	Live-Work Use	At least 1.25 spaces for every live-work unit.	At least 6 spaces for any development containing 20 or more live-work units.

6.2A Despite section 6.2., for each five Class A bicycle spaces provided on a site in addition to the required number of bicycle spaces for:

- (a) an office use under section 6.2.4.1. or a retail and service use under section 6.2.5.1., there is to be a reduction of 1 in the number of motor vehicle spaces required on the site, except that the maximum number of bicycle spaces on the site which may count toward calculation of the motor vehicle spaces is not to exceed 1 space for each 300 m² of gross floor area, and is to be the difference between the required number of bicycle spaces and the number of bicycle parking spaces provided on the site; and
- (b) a hospital or other similar use under section 6.2.2.2., a school – elementary or secondary or university or college under section 6.2.2.3., or a manufacturing use, transportation and storage use, utility and communication use or wholesale use under section 6.2.6.1., there is to be a reduction of 1 in the number of motor vehicle spaces required on the site, except that the maximum number of bicycle spaces on the site which may count toward calculation of the motor vehicle spaces is not to exceed one space for each 10 employees, and is to be the difference between the required number of bicycle spaces and the number of bicycle parking spaces provided on the site.

6.3 Class A Bicycle Spaces

6.3.1 Application

The requirements of this section 6.3 apply where Class A bicycle spaces are required, and Class A bicycle spaces shall be in compliance with section 6.3.

6.3.2 Bicycle Room Requirement

All required Class A bicycle spaces shall be provided in a separate bicycle room located within a building, except that

- (a) the spaces can be in a building which provides parking for motor vehicles for one particular residential unit only, instead of in a bicycle room, or
- (b) the spaces can be provided in a building in an expanded metal mesh compound which complies with sections 6.3.14, 6.3.15, and 6.3.16 instead of in a bicycle room, or
- (c) the spaces can be provided in a building or private parking area in numbered bicycle lockers which comply with sections 6.3.17, 6.3.18 and 6.3.19 instead of in a bicycle room.

6.3.3 Bicycle Room Security

The bicycle room shall have solid opaque walls, and all solid interior walls shall be painted. All of the interior of the bicycle room shall be visible from the entry door. A motion-activated security light enclosed in a tamper-proof housing shall be provided in each room.

6.3.4 Bicycle Room Doors

Entry doors to the bicycle room shall be a minimum of 75 centimetres in width. Both door and frame shall be constructed of steel. The door shall be hinged on the inside unless hinges are tamper-proof, and shall have a security window constructed of a laminate of tempered glass and polycarbonate in a steel frame for permanent visual access, except that residential developments do not require such security windows. The entry door shall have a separate lock and key or programmed entry system, and the locks shall be high security in nature.

6.3.5 Bicycle Room Size

The bicycle room shall be designed to accommodate a maximum of 40 bicycles, except that:

- (a) this number can be increased to 120 if the room is compartmentalized using expanded metal mesh (see 6.3.14.) with lockable industrial-grade doors into enclosures containing a maximum of 40 bicycles; and
- (b) this number does not include bicycle lockers.

6.3.6 Bicycle Room, Compound, or Locker Access

The bicycle room, compound, or lockers shall be located no lower than the first complete parking level below grade and shall have direct access to outside, except that a location more than one level below grade may be permitted where an elevator is supplied offering direct access to outside. There shall be no stairs on the access route, except that the Director of Planning may allow stairs provided a wheel ramp of a minimum width of 150 millimetres is provided without cutting into the stair tread.

6.3.7 Bicycle Room, Compound, or Locker Lighting

Lighting in the bicycle room, compound, or locker area shall provide vertical illumination at floor level of a minimum level of 160 lux, with true colour and a uniformity ratio of at most 3:1.

6.3.8 Bicycle Room, Compound, or Locker Supervision

The entry door to a bicycle room or bicycle compound, or bicycle lockers, shall be within sight of building or parking security, where such exists, an elevator, or an entrance.

6.3.9 Bicycle Space Size

All required Class A bicycle spaces shall have a minimum vertical clearance of 1.9 metres, shall be a minimum of 0.6 metre in width and shall be

- (a) a minimum of 1.8 metre in length if the bicycles are to be placed horizontally; or
- (b) a minimum of 1.0 metre in length if the bicycles are to be placed vertically.

6.3.10 Bicycle Space Access

All required Class A bicycle spaces shall be independently accessible by means of an aisle of a minimum width of 1.2 metres, except that the Director of Planning, in consultation with the City Engineer, may permit a lesser width, to an absolute minimum of 0.9 metre, where the bicycle spaces served are provided more than the minimum required width. All access shall have a minimum vertical clearance of 1.9 metres.

6.3.11 Bicycle Rack and Bicycle Locker Requirement

All required Class A bicycle spaces shall require a bicycle rack with individually numbered spaces or a numbered bicycle locker.

- 6.3.12 Bicycle Rack Design and Security**
Class A bicycle space racks shall be constructed of sturdy theft-resistant material and shall have secure theft-resistant anchoring to the floor or ground. The bicycle rack shall support the bicycle frame above the centre of gravity and shall enable the bicycle frame and front wheel to be locked with a U-style lock.
- 6.3.13 Horizontal and Vertical Bicycle Spaces**
A minimum of 50 percent of the required Class A bicycle spaces shall provide for the bicycles to be placed horizontally on the floor or ground. Vertical bicycle space racks shall support the bicycle without the bicycle being suspended on the wheels. No more than 30% of the required Class A bicycle spaces may be vertical.
- 6.3.13A Minimum Number of bicycle lockers**
At least 20% of the Class A bicycle spaces must be bicycle lockers.
- 6.3.14 Bicycle Compound Security**
The bicycle compound shall extend from floor to ceiling, and have expanded metal mesh and door with a non-reflective coating. The walls and door shall be reinforced by full-height solid steel bars 13 millimetres minimum diameter or square section, spaced no more than 150 millimetres apart, and welded one to another by at least two crossbars no more than 1,200 millimetres apart, or constructed to provide equivalent or greater security. Supports shall be attached to floor and ceiling with tamper-proof or concealed bolts or nuts. Industrial grade chain-link shall be No. 7 gauge or heavier.
- 6.3.15 Bicycle Compound Doors**
Entry doors to the bicycle compound shall comply with section 6.3.4., except that no window is required, and the door may be constructed of expanded metal mesh. The lockset or programmable entry shall be placed in a steel plate box welded to the door structure. The supporting post shall be detailed to receive the striker plate. The doorway shall be detailed to prevent access to the latch from lockside with boltcutters.
- 6.3.16 Bicycle Compound Size**
The bicycle compound shall be designed to accommodate a maximum of 40 bicycles.
- 6.3.17 Bicycle Locker Location**
Bicycle lockers shall be located in a private parking area, parking garage, bicycle room, bicycle compound, or as provided for in section 6.3.2.(a).
- 6.3.18 Bicycle Locker Design and Security**
Bicycle lockers shall be constructed of solid, opaque, and theft-resistant material with a lockable door which opens to the full width and height of the locker. Bicycle locker edges shall be secured with no exposed fittings or connectors. Bicycle lockers shall be weather-proof if located where exposed to the elements.
- 6.3.19 Bicycle Locker Size**
The minimum inside dimensions of a bicycle locker shall be
- (a) 0.6 metre in width at the door end,
 - (b) 0.2 metre in width at the end opposite to the door,
 - (c) 1.8 metres in length, and
 - (d) 1.2 metres in height.

- 6.3.20 Conversions in existing buildings
- Owners of existing buildings may convert motor vehicle parking spaces to Class A bicycle spaces, at the ratio of 1 motor vehicle parking space to 5 bicycle spaces, to the extent necessary to provide the number of bicycle spaces required under this By-law.
- 6.3.21 Electrical outlets
- Each two Class A bicycle spaces must have an electrical outlet.
- 6.4 Class B Bicycle Spaces**
- 6.4.1 Application
- The regulations of this section 6.4 apply where Class B bicycle spaces are required, and Class B bicycle spaces shall be in compliance with section 6.4.
- 6.4.2 Bicycle Rack Requirement and Space Size
- All required Class B bicycle spaces shall be provided in racks which provide a minimum width of 0.3 metre for each bicycle, except as provided for in section 6.4.6.
- 6.4.3 Bicycle Space Access
- All required Class B bicycle spaces shall be independently accessible by means of an aisle with a minimum width of 1.2 metres which is separate from pedestrian access. There shall be unrestricted access behind the space of a minimum length of 0.5 metre.
- 6.4.4 Bicycle Rack Design and Security
- Class B bicycle space racks shall be constructed of sturdy theft-resistant material and shall have secure theft-resistant anchoring to the floor or ground. The bicycle rack shall support the bicycle frame above the centre of gravity and shall enable the bicycle frame and front wheel to be locked to the rack with a U-style lock.
- 6.4.5 Bicycle Rack Location
- Class B bicycle space racks shall be provided in a convenient, well-lit location that provides visual surveillance by occupants of the building the racks are intended to serve. If the racks are not readily visible to visitors to a site, directional signage to the racks shall be provided.
- 6.4.6 Bicycle Lockers
- Bicycle lockers can be provided for required Class B bicycle spaces instead of bicycle racks, provided the lockers are numbered and are in compliance with sections 6.3.18 and 6.3.19.
- 6.5 Clothing Lockers**
- 6.5.1 Where Class A bicycle spaces are required for a non-dwelling use, a minimum number of clothing lockers equal to 0.7 times the minimum number of required Class A spaces shall be provided for each sex, and shall be a minimum of 45 centimetres in depth, 30 centimetres in width and 90 centimetres in height with respect to no more than 50% of the lockers and 180 cm in height with respect to at least 50% of the lockers.
- [See Section 3.7.4.10 of the Building By-law for shower and other change facilities required when the number of required Class A bicycle spaces exceeds 3.]



CITY OF VANCOUVER

ENGINEERING SERVICES

General Manager, D.H. Rudberg, P. Eng.

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February 8, 2001

BICYCLE PARKING DESIGN SUPPLEMENT

As part of the City's review of Development Applications, effective October 17, 1995, bicycle parking provisions must be in compliance with regulations contained within the Parking By-law and within the Building By-law. The Parking By-law includes requirements relating to the amount, location, and design of bicycle parking, including specifications governing enclosures, racks, security, and clothing lockers. The Building By-law includes corresponding requirements for showers and change rooms. This publication is provided to clarify the intent and provide examples of solutions in compliance with the by-law regulations. In conjunction with these guidelines, good engineering practices are to be followed in all circumstances to ensure public safety.

Facilities provided in response to bicycle parking and associated requirements, including bicycle spaces, bicycle lockers, rooms and/or enclosures, doors, windows, security lights, wheel ramps, lockers, and access aisles shall be detailed on the Development Application drawings. That these and other required features comply with all of the specifications of the By-laws, either demonstrated in detailing or attested to in statements of specifications from suppliers, contractors, or outfitters with compliance noted on the drawing(s) forms part of the Development Application.

The following explanations describe how the various regulations will be interpreted and applied.

PARKING BY-LAW

Section 6.1 - Number of Bicycle Spaces

6.1.2 Bicycle Space Requirement Exemptions

How applied: For any building existing on October 17, 1995, and for which there are subsequent additions, alterations, or changes of use, bicycle parking provisions would be required only if the by-law standards calculation including the additions, alterations, or changes of use represented an increase of at least 10 percent over the by-law calculation for the building as of October 17, 1995. Otherwise, the additions, alterations, or changes in use would be exempted from the bicycle space provision.

Section 6.3 - Class A Bicycle Spaces

These are normally 0.6m x 1.8m and primarily designed to serve employees and residents.

6.3.2 Bicycle Room Requirement

This section outlines that there are four acceptable formats for providing bicycle spaces:

- In a bicycle room;
- In an individual garage;
- In a bicycle compound; or
- In bicycle lockers.

6.3.3 Bicycle Room Security

The motion-activated light's "tamper-proof" housing shall make it difficult for someone to incapacitate the light. Protective methods could include recessing the light, shielding it with unbreakable or reinforced glass or plexiglass (or other similarly protective material), or providing a locked steel mesh cage. Wiring must not be easily severable. The unit, if not recessed, must be mounted in an upper corner or on the ceiling so it cannot be simply pried off the wall.

Also, the requirement for "solid opaque walls" shall not preclude provision of security windows (comparable to those required in the Building By-law for stairwells and elevator vestibules) in the walls.

6.3.4 Bicycle Room Doors

The "tamper-proof" hinges would not be dislodged by the use of a wrench, screwdriver, crowbar, or boltcutter; rather, it should require either extreme force (e.g. sledgehammer or acetylene torch) or a custom design tool to dislodge.

6.3.6 Bicycle Room, Compound, or Locker Access

The location of bicycle parking "no lower than the first complete parking level" below grade means that it shall be above or within the first level of automobile parking, where the automobile parking occupies an entire floor plate, or above or within the first two levels of automobile parking where the automobile parking steps down in levels occupying roughly half of the floor plate, below grade. The bicycle parking may be located further below grade if an elevator provides a direct link to the outside. By "direct" it is meant that the elevator is conveniently located to the bicycle parking below grade and, at the surface, either opens directly to the outside or is located such that the bicyclist can gain access to the outside without traversing either significant distances or any gathering place such as a lobby.

6.3.10 Bicycle Space Access

The discretionary trade-off between the widths of the bicycle space and the access aisle used for manoeuvring will be applied as follows:

BICYCLE SPACE WIDTH (m)	ACCESS AISLE WIDTH (m)
0.60	1.2

0.65	1.1
0.70	1.0
0.75	0.9

No manoeuvring access aisle less than 0.9m wide will be approvable.

6.3.12 Bicycle Rack Design and Security

Bicycle racks shall be approved by the CSA, (or similar approving agency) and/or approved for use on City streets (subject to modification to satisfy space width requirements). “Secure theft-resistant anchoring” means that the rack cannot be dislodged by the use of a wrench, screwdriver, crow-bar, or boltcutter; rather, it should require either extreme force (e.g. sledgehammer or acetylene torch) or custom-designed tool to dislodge. Methods which incorporate recessed boltheads and/or grouted-in anchoring are appropriate. Bicycles shall be supported above the centre of gravity (approximately 0.5m above the floor for horizontal parking) so that they cannot be knocked down easily when secured.

6.3.13 Horizontal and Vertical Bicycle Spaces

Standard vertical spaces are 0.6m x 1.0m, typically with one tire on the floor and with the frame and one wheel secured to a wall-mounted rack or brackets. Floor-mounted or ceiling-mounted brackets and systems designed to store bicycles above the floor are considered among the “vertical” 50 percent of spaces and may not be positioned above horizontal, on-the-floor spaces (and be counted toward the number of spaces required). The same access aisle requirements are effective for horizontal and vertical spaces.

6.3.14 Bicycle Compound Security

“Equivalent or greater security” may include expanded metal (diamond mesh), or similar material, with maximum short way opening 19mm (3/4 in.) and nine gauge minimum strand size requirement, used to enclose the compound. No reinforcement would be required, but the expanded metal should be securely welded to a steel frame. “Tamper-proof” here should be interpreted as in section 6.3.4 (see above).

6.3.15 Bicycle Compound Doors

Horseshoe-type door latches, commonly used for chain-link gates, are not acceptable.

Section 6.4 - Class B Bicycle Spaces

These are 0.3m x 1.8m and primarily designed to serve customers and visitors.

6.4.3 Bicycle Space Access

The requirement of a minimum of 0.5m clearance behind the bicycles means that racks must be set back from walls, planters, etc.

6.4.4 Bicycle Rack Design and Security.

See comments under section 6.3.12 above.

Section 6.5 - Clothing Lockers

6.5.1 Clothing Lockers

The clothing lockers should be located within shower and change rooms, where provided.

BUILDING BY-LAW

Article 3.6.4.4 (2) - It is noted that while shower and change requirements associated with bicycle parking requirements may be satisfied within the provisions of an employee fitness centre, there is no requirement that such facilities be available free of charge.

If you have any questions on the above information, or require any other information concerning bicycle parking and associated facility design standards, please contact the Parking Branch at 873-7217 or 873-7917.

<SIGNED>

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