APPENDIX F

Bicycle Parking Design Guidelines

Bicycle Parking Design Guidelines

January 2014

1.0 INTRODUCTION

Ajax is known for its extensive cycling network, which will only continue to grow with the Town. A key component to a successful network is the availability of bicycle parking at key locations. In order for a cyclist to be comfortable utilizing a cycling network, they need to be sure that when they arrive at their destination, there will be a safe and secure location for them to leave their bicycle while they shop, eat, study, or work. These guidelines, along with existing Town policy documents support current infrastructure investments and ensure that the bicycle network is attractive and sustainable.

Background

These guidelines will improve the quality of bicycle parking that is requested through the development approval process but can also be used by existing property owners to upgrade their facilities. The intention of these guidelines is to provide planners, developers and property owners with the appropriate information to support the design, installation and management of good bicycle parking facilities.

Cycling is a sustainable mode of transportation that has low environmental externalities, requires less space on Town roads and promotes a healthy and active lifestyle among residents. Cycling can also be combined with other modes of transportation including walking and public transit to get from origin to destination conveniently. Cycling as a means of transportation is becoming more popular in the Town both recreationally and for commuting. These guidelines will ensure that bicycle infrastructure around the community is of high-quality to support the cycling network.

2.0 PARKING REQUIREMENTS

Ensuring that the appropriate number of parking spaces are provided to meet the needs of a development is a key component of a successful development. Demand for bicycle parking varies by development type and use. These parking requirements outline the minimum number of bicycle parking spaces that are required for development within the Town of Ajax.

Use	Requirement
Residential Units	
Long Term	0.6
Short Term	0.07
Total	0.67
Office*	
Long Term	0.1
Short Term	0.1
Total	0.2
Commercial*	
Long Term	0.05
Short Term	0.2
Total	0.25
School*	
Long Term	0.06
Short Term	0.06
Total	0.12

*per 100 square metres of space

3.0 DESIGN GUIDELINES FOR BICYCLE PARKING

These guidelines primarily deal with the placement and type of bike parking that is required. They will assist in the design and development of high quality bicycle parking facilities that meets the needs of Ajax cyclists and encourage more residents to cycling in the Town.

Bicycle Parking Definitions

Bicycle parking is separated into two categories:

Long-term bicycle parking:

Long-term bicycle parking facilities are also known as “Type 1” bicycle parking. These facilities provide a secure parking location where cyclists can leave their bicycle overnight, for a full work day or for several days at a time. Long-term bicycle facilities should also provide protection from the elements.

Examples of appropriate long-term bicycle parking include:

- Bike lockers;
- Enclosed bicycle racks or hooks; and
- Racks in a secured area with controlled access.

Figure 1 – Bike Lockers at a Toronto Transit Station[1]

Figure 2 – Bicycle Cage[2]

[1] http://www.bikingtoronto.com/blogger/labels/infrastructure.html

[2] http://www.cyclehoop.com/product/cycle-shelters-and-canopies/steel-cycle-shelter/

Short-Term Bicycle Parking

Short-term bicycle parking facilities are also known as “Type 2” bicycle parking and are provided for public use. These facilities provide an easily accessible and visible location for a cyclist to secure their bicycle when shopping, eating, attending an appointment or any other activity that requires short term parking.

While it is preferred that these facilities provide some protection from the elements through placement under building canopies, this is not a requirement.

Figure 3 - Covered bicycle parking at Town Hall

Figure 4 – Post and Ring Bicycle Parking

Criteria for Good Quality Bicycle Parking

While the design of bicycle parking is up for some interpretation and creative freedom, there are a number of main criteria that must be satisfied to ensure the bicycle parking meets the needs of cyclists. Good bicycle parking needs to be accessible, convenient, safe and secure.

In order to be accessible bicycle parking should be:

- Close to building entrances;
- Level with the ground or accessible by ramps;
- Unobstructed by stairs or steep slopes; and
- Identified with way-finding signage.

Safe and secure bicycle parking should be:

- Made from high quality, durable materials;
- Firmly secured to the ground, floor or wall;
- Visible to staff and patrons inside the building/business;
- Located in a well-lit area;
- Short-term: located in a busy, public area; and
- Long-term: located in a separate, controlled access.

To ensure the bicycle parking is convenient, it should be:

- Easy to locate and access;
- Easy to use; and
- Situated close to bicycle friendly routes.

4.0 SHORT-TERM BICYCLE PARKING

Short-term parking is designed for visitors who need to park their bicycles for a few minutes or a few hours. There are a number of requirements that need to be met to ensure secure and accessible short term parking.

Design

There are a variety of bicycle parking racks available, but several features make some designs more desirable than others.

Materials: Bicycle racks made from galvanized steel or other industrial grade materials are the most durable and less susceptible to crime or vandalism. Avoid the use of materials such as wood, soft or untreated metals to avoid cracking or rust. For rack designs that have welded joints, avoid stainless steel as it does not weld strongly and can be easily broken.

Finishing: Ensure that the bicycle rack has a smooth outer finish that will not scratch or damage the bicycle frame.

Features: The following features are necessary to provide quality bicycle parking facilities:

Two points of contact between the bicycle and the rack: Maximum security is achieved when both the frame and one wheel can be locked to the rack. This also provides good support for the bike while it is parked.

Upright support for the bicycle: Old style “wheel-bender” racks are built to hold only the front or rear tire and do not provide support for the bicycle to remain upright when stored. Bicycles attached to these racks are also more easily stolen because only one wheel is locked and the frame is not.

Figure 5 – “Wheel-Bender” racks provides no upright support for bikes[3]

Sufficient Space for Parking: Rack design should provide adequate space between bikes and allow for parking and locking, while at the same time be able to hold several bikes in one rack.

Examples of good short-term bicycle parking:

[3] http://www.peml.com/index.php?id=bike-racks-ground-loop

Creating Attractive Bicycle Parking

The installation of short-term bicycle parking provides an excellent opportunity to beautify the community and create bicycle parking that doubles as public art pieces. Bicycle parking racks can be designed to coordinate with and compliment site design, existing street furniture, or other amenities on site. Bicycle racks can be custom built to suit specific needs and can add an eye-catching and creative feature to the exterior of a building. Creativity is encouraged in all developments as long as the function of the bicycle parking remains.

Figure 6 - Examples of creative bike parking in Toronto

Installation

Selecting a location for bicycle parking can impact the effectiveness of the parking facility and the extent to which it is used by cyclists.

Sheltered Parking:

Sheltered racks increase the quality of bicycle parking by protecting the bicycles from the elements. Installing racks under existing building canopies, awnings, or providing a free-standing shelter are ways to ensure that bicycles remain dry through rain or snow.

Fixing the Racks to the Ground

It is important that all bicycle racks are firmly secured to the ground or floor by being bolted to a hard surface or fixing them in concrete. For maximum security, concrete is the preferred surface, but other surfaces may also be appropriate.

Spacing

Appropriate spacing of bicycle parking will ensure that cyclists have sufficient room to lock their bicycles without disturbing other bicycles and the surroundings.

A bicycle rack should have a minimum on **0.6 m** between each bicycle parked in a horizontal position **(see Figure)**.

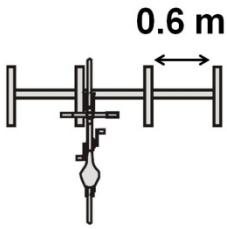


Figure 7

For racks that hold multiple bicycles (>2):

1) Distance between the rack and an obstacle with single sided bike access should be a minimum of **0.6 m (see Figure)**

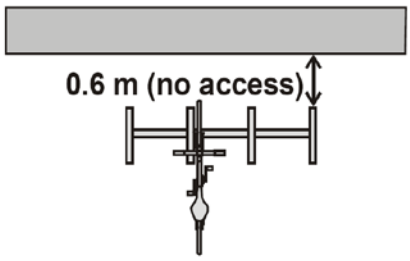


Figure 8

2) The distance between a rack and an obstacle
    a. Parallel to the parked bicycles should be a minimum of **0.45 m (see Figure)**
    b. Perpendicular to the rack with double-sided access should be a minimum of **2.5 m (see Figure)**
3) The distance between bike racks installed parallel to one another should be a minimum of **4.2 m**. This would allow for a minimum walking space on **1.8 m** if one bicycle was parked in each one **(see Figure)**
4) The distance between bicycle racks placed in a row should be a minimum of **0.9 m (see Figure)**

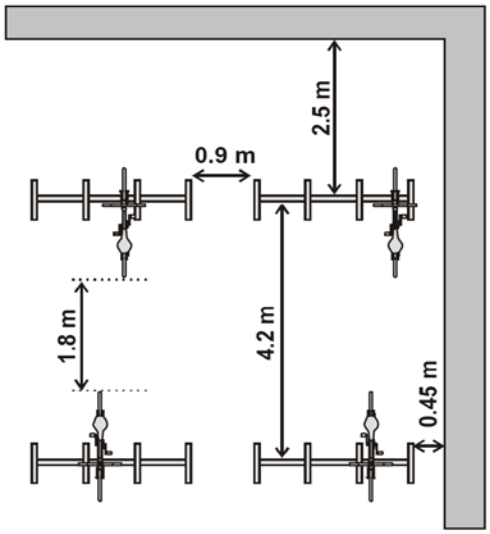


Figure 9

For racks that hold only two bicycles (mostly post-and-ring bike stands):

1) The distance between the rack and a wall, curb or other obstacle should be:
    a. A minimum of **1.5 m** for racks perpendicular to an obstacle
    b. A minimum of **0.7 m** for racks parallel to an obstacle
2) The distance between individual racks placed perpendicular to the wall but parallel to one another is a minimum of **1.0 m**.

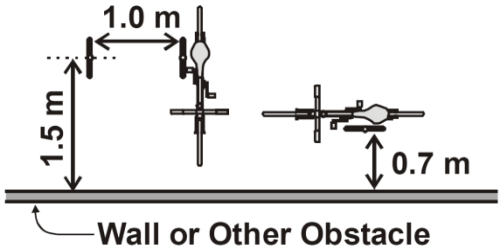
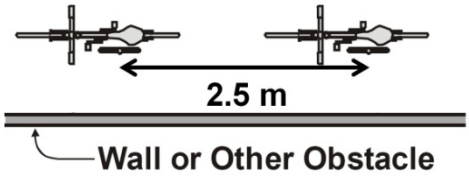


Figure 10

3) The distance between individual racks parallel to an obstacle should be a minimum of **2.5m** (3.5 m is preferred when high bicycle turnover is anticipated)



[4]

Figure 11

Pedestrian movements should always be considered in the decision making process for bicycle parking locations. Bicycle racks should never impede the flow of pedestrians or limit their access to their destination.

[4] Images courtesy of the City of Toronto Guidelines for the Design and Management of Bicycle Parking Facilities Draft – May 2008

5.0 LONG-TERM BICYCLE PARKING

Long-term parking is designed for a period of several hours or overnight. As a result, this form of parking must be designed to protect the bicycles.

Bicycle Lockers

Bicycle lockers are individual storage units that are weather-protected, enclosed and operated by a controlled access system. Some systems are set up for multiple users (coin operated or the use of an individual lock) and others are accessed using keys, swipe cards or access codes.

Design options:

There are several designs available but costs and quality may vary. The highest priority for bicycle lockers should be security and durability because of the low turnover and extended length of time bicycles will be parked. Lockers should be fixed in places using anchor bolts and should be located close to building entrances for convenience and security.

Bicycle Cages

Bicycle cages are another form of secure bike parking with restricted right of entry. Cages can be accessed using keys, access codes, cards or locks. Bicycle racks are placed inside a fenced off and covered area. These cages can be less expensive than traditional bicycle lockers, have increased capacity while providing an enhanced level of security.

Design Options:

Smaller cages provide better bicycle security as fewer people are entering and exiting the cage throughout the day. For large developments with high demand for bicycle parking, it is preferred to have several smaller cages with separate accesses. The materials used for the walls need to be made from strong metal or mesh to prevent attempts to cut through. These cages can be installed inside or outside a building, or within a parking garage depending on space accommodations. It is important to consider providing sufficient space for cyclists to maneuver their bicycle in and out of the racks and the cage when designing and constructing.

Indoor Bicycle Parking

If underground parking facilities have controlled access, they are an excellent option for protected, long-term bicycle parking. If the entrance is uncontrolled, bicycles need to be secured in some other way, whether by bicycle cage or separated bicycle room within the building.

Indoor bicycle parking should be provided on the first level of underground parking to ensure ease of accessibility and limit the interactions between cyclists and automobiles within the garage.

Showers / Change Facilities

Changing facilities that are equipped with shower stalls at non-residential developments can be a strong incentive to encourage bicycle use for commuters. Students or employees that may face long commutes on

their bike and have to comply with a professional dress code would be more likely to cycle if they knew these facilities were available.

The number of shower stalls should reflect the amount of long term bike parking provided.

6.0 BICYCLE PARKING ISSUES BY DEVELOPMENT TYPE

Different styles of development will result in different requirements for bicycle parking. Bicycle storage at high-rise or low-rise residential buildings requires different circumstances compared to commercial or institutional uses. This section will provide some detail on what the needs are for different land uses.

High-Rise and Low-Rise Residential Uses

Multi-unit residential buildings require long-term, secure locations for bicycle parking for residents but there is also a requirement for additional short term visitor parking. The long term parking should be easily accessible to encourage bicycle use but needs to be secure enough to provide protection to the residents' property, from both visitors and other residents.

Commercial, Industrial, or Institutional Uses

Compared to residential land uses, commercial, industrial or institutional developments require a higher number of short-term parking spaces for both visitors and employees. Covered, outdoor parking close to building entrances offer customers, clients and employees an important service and raises the profile of active transportation. Bicycle parking can also reduce the number of surface parking spaces that need to be provided.

Uses with High Bicycle Parking Demand

Some land uses have the potential to generate a higher than average demand for bicycle parking spaces. Examples of those uses include:

Schools – all levels of educational facilities (elementary, high school, colleges and universities) generate a large number of active transportation trips. Also, the addition of sufficient bicycle parking can encourage students to choose active modes.

Transit Hubs, Hospitals and Large Factories - these are destinations for a large number of visitors, customers and employees who may require access to parking facilities at all hours due to shift work or late night travel schedules.

Places of Assembly – community centres, sports stadiums and facilities, and concert halls receive a large number of visitors during special events. The demand for parking is often high at designated times but can be lower at other periods.

Places of Worship – similar to places of assembly, they receive a large number of visitors at one time and increase the demand for bicycle parking.

7.0 SITE DESIGN STRATEGIES

There are additional factors that need to be considered to ensure that the site design of a development is bicycle friendly and also remains accessible to all.

Accessibility

While it is important for bicycle parking to be accessible to cyclists, consideration also needs to be given to the impact bicycle parking will have on accessibility for pedestrians with impairments. Pedestrian access must not be hindered by bicycle racks including those who may be visually impaired or use mobility aids such as walkers, scooters, or wheelchairs. Bicycle racks should also be located in areas that will help to minimize interactions between automobiles and bicycles on the site. More permanent bicycle parking, including bicycle lockers and cages can create blind spots and block sightlines. These impacts should be considered and mitigated as best as possible.

Stairways

Stairways can be an impediment to cyclists as they are often required to carry their bicycles up or down. A ramp or small channel that fits a bicycle wheel can be installed on the edge of a stairway to eliminate this issue.

Signage

Clear signage can help cyclist easily locate parking on site and also indicates to pedestrians and motorists that they should expect bicycle traffic on the site. These visual indications of parking should be strategically placed and provide directional arrows to be most effective.

Safety and Security

Bicycle parking facilities should maximize safety and security to both cyclists and their property. There are a number of strategies that can be used to accomplish this however some may be more suitable than others depending on the situation and site.

Safety and security measures include:

- Installing security cameras in bicycle parking areas;
- Locating bicycle parking close to building entrances;
- Installing bright lights and/or convex mirrors to minimize blind spots and dark corners;
- Locating bicycle parking within view of parking lot attendants, building security, or in a busy area close to other public amenities;
- Dedicated (cyclist-only) entrances with limited access to indoor parking facilities and outdoor bike cages (security card access or keys); and
- Installing a “panic button” in bicycle parking areas that would provide a direct line to security in the event of an emergency.

8.0 POLICY CONTEXT

The Town of Ajax policy documents support the development of a connected and convenient cycling network. This section will provide a brief overview of the Town's policy documents as they pertain to cycling.

Town of Ajax Official Plan

The Town's Official Plan supports the evolution towards a more active and sustainable community through a number of policies. Included in those policies are provisions for bicycle parking to be included in the urban design and landscape of the Town to assist in Green Building and Environmental Design.

Walkable + Bikeable Ajax – Pedestrians and Bicycle Master Plan

The Town of Ajax's Walkable + Bikeable Ajax Pedestrian and Bicycle Master Plan establishes a vision for cycling in the Town that is also reflected in the policies of the Official Plan. The Plan provides objectives and recommendations with relation to bicycle infrastructure and programming.

The Plan recommends an increase in bicycle parking facilities to ensure that developments are supportive of active transportation. To ensure that the bicycle parking that is implemented at developments is up to a specific standard, these guidelines have been created to support to Pedestrian and Bicycle Master Plan. Increasing bicycle parking also increases the overall visibility of cycling in the Town and when residents are aware of the bicycle parking options at their destination, they will be more likely to choose active modes for their trips.

Town of Ajax Transportation Master Plan Update

The Town of Ajax Transportation Master Plan was updated in 2013. This document establishes a need to decrease the number of vehicle kilometers travelled (VKT) but Ajax residents. One of the ways this goal can be achieved is through increased use of active transportation and public transit. This document speaks to the need to provide a convenient network for residents which includes accessible and safe bicycle parking locations. These guidelines help to supplement these recommendations by ensuring that the quality and quantity of bicycle parking that is provided in the Town meets the needs of Ajax cyclists.

Provincial Policies

In August 2013, the Province of Ontario released #CycleON, a Provincial Strategy aimed at making Ontario the most cycling friendly in Canada. This strategy states that end-of-trip facilities, including bicycle parking, are critically important aspects to improving the quality of a cycling trip. The second phase of this cycling strategy will be released in the Spring of 2014.

9.0 CONCLUSION

The Town of Ajax is committed to building a community that is conducive to cycling with a sufficient amount of bicycle parking to help increase the number of trips, whether for recreation or utilitarian. Many cyclists are deterred from riding because of the concern that there will not be a safe place to store their bike when they arrive at their destination. While these guidelines are aimed at new development within the Town, they can also be used by existing property owners to improve their sites to accommodate bicycle parking.