



CITY OF CAMBRIDGE
COMMUNITY DEVELOPMENT DEPARTMENT

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To: Planning Board

From: CDD Staff

Date: January 18, 2013

Re: **Bicycle Parking Zoning – Information and Revisions**

This information is provided in response to the questions raised by the Planning Board on January 8. At the meeting on January 22, instead of presenting more information, we will use the time to answer questions and discuss outstanding issues from the Board. We will again request that the Board submit the proposed changes to the City Council as a petition. The Board may suggest modifications or notes to be included, and will have opportunities to further discuss the proposed changes during the subsequent public hearing process.

Proposed Zoning in Context

Cambridge has required bicycle parking through zoning since 1981. The purpose of the proposed new zoning is not to impose new requirements that do not currently exist, but to update the requirements to ensure that new bicycle parking is usable, that the quantity provided in new development is appropriate to support the City's goal of 10% of trips made by bicycle, and to clarify some points of confusion that have complicated the application of bicycle parking requirements in the past.

Many projects in Cambridge, with guidance from CDD and TPT staff, have been successfully implementing these proposed standards already. Codifying these requirements in the Zoning Ordinance will provide better clarity for future developers in meeting the City's standards.

The following topics are addressed in this memo:

1. **Overview of Bicycle Planning:** As was noted at the prior meeting, it is important to consider how bicycle parking fits within the City's broader planning goals.
2. **Applicability of Requirements:** What projects would be required to provide bicycle parking, and how that relates to current zoning requirements.
3. **Location of Short-Term Bicycle Parking:** Explaining the options for where and how required bicycle racks may be provided on private or public land.
4. **Alternative Bicycle Parking Designs:** In response to MIT's comments, discussing the issues with non-standard bicycle parking and the flexibility in the proposed zoning.
5. **Different Sizes and Types of Bicycles:** Discussing the accommodation of different styles of bicycles and accessories such as trailers.
6. **Terminology:** Explaining the "Parking" and "Bicycle Parking" distinction.

1. Overview of Bicycle Planning

Bicycle parking is only one component of a much larger effort around planning for bicycle travel, which is in turn a component of an even larger transportation planning effort to reduce automobile use in the City. This effort is critical to broad planning goals such as reducing negative environmental impacts, promoting community health, and accommodating future economic development.

The 1993 Cambridge Growth Policy, *Toward a Sustainable Future*, supports increased facilities for bicycling as a means to reduce automobile trips, and sets forth specific measures to help accomplish this objective:

The two major facilities needed for the bicycle are a system of protected rights-of-way and secure storage spaces. Presently, there are few bicycle rights-of-way in Cambridge or in the rest of the metropolitan area. The difficulty with allocating separate bicycle paths within existing rights-of-way is the present competition among cars, buses, trucks, taxis, motorcycles, pedestrians and parked vehicles within an already inadequate physical space. In addition, commercial districts, public buildings, most MBTA stations, and most employers in Cambridge offer very little in the way of bicycle parking facilities.

Since that time, the City has made great efforts to develop public bicycling facilities, including new bicycle lanes, tracks and pathways, improved street design, and bicycle racks in public spaces. Consequently, bicycling has increased substantially in recent years. Direct counts show that the number of bicyclists on Cambridge streets has tripled in the past decade. Surveys in several Cambridge neighborhoods show ownership rates ranging from 1.1 to 1.6 bicycles per household. Bicycles are increasingly used not just for recreation but for commuting, shopping, transporting children, deliveries, visiting friends and families, and almost any other kind of trip. Accompanying this increase in bicycling has been a recent decline in automobile use among Cambridge residents and employees.

While Cambridge has improved public spaces for bicycling, the amount of bicycle parking available has not kept pace with the growing demand. As discussed at the Planning Board, this is an issue because bicycling is a system, and at either end of every trip the bicycle must be stored. Efforts to increase public bicycle parking have helped to address the issue, but the amount of public space that can be dedicated to bicycle parking is limited. As with automobile parking, the City cannot be expected to satisfy the full demand with public resources, especially as the demand increases due to new residential, commercial, institutional and other development.

It is also noted in the Growth Policy that the bicycling system must co-exist with other transportation modes including pedestrian, auto and transit facilities, and must share space with other land uses. An adequate amount of dedicated, well-designed, usable bicycle parking not only benefits cyclists, but mitigates conflicts between cyclists and other users. When bicycle parking is not provided, or is filled to capacity, or is located in an inconvenient or unsafe place, or is not secure, or requires excessive physical effort to use, or could be damaging to the bicycle, then bicyclists will park in other, unintended locations. In residential buildings, this could mean bicycles stored in lobbies or hallways, in

storage areas that are inconvenient to access on a daily basis, in open spaces, or in living spaces that may have limited space already. In commercial areas, this could mean bicycles chained to fences, trees, parking meters, light posts, signs or furniture, cluttering the public realm. The result is negative impacts on pedestrian travel, automobile parking, the use and enjoyment of open space, the operation of other land uses, and the aesthetics of buildings and streetscapes. Through appropriate design, bicycle parking can be usable and convenient to bicyclists while minimizing those negative impacts.

Many other cities have incorporated bicycles into their transportation planning, also leading to increases in cycling and increased attention to their bicycle parking requirements. Seattle, Oakland, Washington, Philadelphia and New York City, among other cities, have adopted new or amended bicycle parking ordinances in the past 6 years. Portland, Oregon, which has cycling rates that are similar to Cambridge, adopted a revised set of bicycle parking requirements into its zoning in 2010. Portland now requires 1.5 bicycle parking spaces per unit for multifamily housing in the Center City and 1.1 spaces per unit elsewhere, and requirements for non-residential uses are intended to accommodate 10% of all transportation trips by bicycle, similar to Cambridge's goal.

A valuable tool in developing new bicycle parking requirements in Cambridge and elsewhere is the *Bicycle Parking Guide* by the Association of Pedestrian and Bicycle Professionals (APBP), a collection mostly of municipal and regional planning officials from around the country (including Cambridge) who have worked on bicycle and pedestrian programs. The document draws on the collective wisdom and experience of these professionals to explain what makes bicycle parking usable, effective and convenient, and suggests simple, easy-to-follow standards for communities to use when creating new bicycle parking. Some excerpts from the *Guide* are attached and referred to further below.

2. Applicability of Requirements

Under current zoning, bicycle parking requirements apply under the same circumstances as auto parking. The proposed zoning changes are meant to maintain this same principle, but to establish bicycle parking as a separate requirement. The reason is that there tends to be uncertainty around how to apply bicycle parking requirements in instances where auto parking requirements are altered or waived.

Auto and bicycle parking requirements apply generally to new construction and to projects that increase the size or intensity of a use by at least 15%, measured by dwelling units, Gross Floor Area, seating area or whatever unit determines the amount of parking that is required. (Note that for a residential project, an increase in floor area that does not affect the number of units is not applicable, since it does not affect the number of parking spaces required).

Under current requirements for auto parking, when that 15% threshold is exceeded, parking spaces must be provided for the difference between the proposed and existing intensities of use (except in the case of a conversion of non-residential space to residential use, when one auto parking space per new unit is required). Under the proposed bicycle parking requirements, when the threshold is exceeded, the full amount of bicycle parking for the entire use would be required. The reason for this

approach is to ensure that the amount of bicycle parking provided is adequate to satisfy the full anticipated demand, and to support the larger goal of encouraging a shift in travel from automobiles to bicycles.

In order to mitigate potential impacts on smaller properties, the proposed zoning exempts expansions or conversions that would increase the requirement by less than two bicycle parking spaces. Therefore, a conversion to a small building that might increase the requirement from two spaces to three spaces or three spaces to four spaces would not be required to add bicycle parking. In addition, at the Planning Board’s suggestion, the requirements are waived for residential lots with up to three units.

The attached zoning language is revised in an attempt to provide a simpler and clearer explanation of these applicability requirements. A synopsis is provided below.

Project Type	Current Zoning Requirements		Proposed Zoning Requirements	
	Auto Parking	Bicycle Parking	Auto Parking	Bicycle Parking
New residential construction	Required for all development	Required for 1-family, 2-family, multifamily	Required for all development	<i>Required, except on lots with ≤ 3 units</i>
New non-residential construction	Required for all development	Required based on auto parking requirements	Required for all development	<i>Required for all development</i>
Increase in dwelling units of existing residential building	Required for additional units if increase is ≥ 15%	Required based on auto parking requirements	Required for additional units if increase is ≥ 15%	<i>Required for entire use if increase is ≥ 15% (waived if < 2 sp or if lot has ≤ 3 units)</i>
Increase in size or intensity of existing non-residential building	Required for additional GFA if increase is ≥ 15%	Required based on auto parking requirements	Required for additional GFA if increase is ≥ 15%	<i>Required for entire use if increase is ≥ 15% (waived if < 2 sp)</i>
Conversion of non-residential building to residential use	Required for all new units	Required for 1-family, 2-family, multifamily	Required for all new units	<i>Required, except for lots with ≤ 3 units</i>
Conversion of existing building (res or non) to new non-residential use	Required to provide increase in spaces	Required based on auto parking requirements	Required to provide increase in spaces	<i>Required for entire use if increase is ≥ 15% (waived if < 2 sp)</i>

Also, under current zoning, auto parking requirements may be reduced by special permit. This is specifically not the case for bicycle parking under current zoning. However, the proposed zoning allows a general waiver of any requirement (design or quantity) by special permit from the Planning Board.

As a hypothetical example of how the regulations would apply to an existing building, consider the conversion of a 10,000 square-foot office building to a retail store. For perspective, this space would be roughly the size of the CVS in Central Square. The conversion would be considered an increase in the intensity of use because retail has higher auto and bicycle parking requirements than office uses. The following chart compares the auto and bicycle parking requirements for such a conversion.

Project Type	Current and Proposed Zoning	Current Zoning	Proposed Zoning	
	Auto Parking *	Bicycle Parking	Long-Term Bicycle Parking	Short-Term Bicycle Parking
Rate for existing office use	1 sp /800 SF	10% of auto pkg	0.30 sp /1,000 SF	0.06 sp /1,000 SF
Rate for proposed retail use	1 sp /500 SF	10% of auto pkg	0.10 sp /1,000 SF	0.60 sp /1,000 SF
Spaces required for existing office use	13 spaces	2 spaces	3 spaces	1 space
Spaces required for proposed retail use	20 spaces	2 spaces	1 space	6 spaces
Total new spaces required for conversion	7 new spaces	1 new space	1 new space (may be shifted to short-term)	6 new spaces (7 total if long-term is included)

** Assumes general office, non-food retail store, and a Business A zoning district. All figures approximate.*

The result is that under the proposed zoning, 1 new long-term bicycle parking space and 6 new short-term bicycle parking spaces would be required. Because of the allowed flexibility in shifting long-term spaces to short-term spaces, this requirement could be satisfied by 7 short-term spaces, or four outdoor bicycle racks. The owner could install bicycle racks on the lot or fund the installation of four racks on public property by the City (as discussed further below).

These are some examples of projects that would not require new bicycle parking:

- Expansion in the size of a residential unit (without increasing the number of units).
- Conversion of a single-family home to a 2-unit home.
- Replacement of an existing retail space with a new retail use, except where the intensity of the use is increased, such as from a retail store to a grocery store or restaurant. (Even in these cases, the size of the conversion would need to be 3,000 square feet or more to trigger new requirements.)
- Minor alterations to a commercial building that do not increase the Gross Floor Area by 15%.

3. Location of Short-Term Bicycle Parking

The current zoning requirement for bicycle parking location states: “Bicycle parking spaces shall be located near the entrance of the use being served and within view of pedestrian traffic if possible, and shall be sufficiently secure to reasonably reduce the likelihood of theft.” The proposed standards aim to be more specific, in order to provide clearer standards for compliance and enforcement, and to avoid the need to interpret subjective terms such as “near the entrance,” “within view,” and “if possible.”

There are two main options for satisfying short-term bicycle parking requirements. The primary way is to install outdoor bicycle racks on the lot within 50 feet of the pedestrian-accessible entrance to the building. Alternatively, the requirements can be satisfied by entering into an agreement with the City to fund the installation of an equivalent number of bicycle racks on public property. The City would have discretion to determine the appropriate location and design of that bicycle parking, which may include locations more than 50 feet from a building entrance.



The 50-foot standard is recommended in the Association of Pedestrian and Bicycle Professionals *Bicycle Parking Guide*. The rationale is that if bicycle parking is further than 50 feet away, cyclists will be more likely to park in unintended locations by locking bikes to other objects. Other cities, including Portland, Oregon, have adopted this standard into their zoning.

Allowing 50 feet on either side of a building entrance provides 100 total linear feet within which to locate the required spaces on the lot. As shown in the illustration, 100 feet is about the length of the Broadway façade of the City Hall Annex at 344 Broadway. For projects requiring a large quantity of short-

term bicycle parking, as long as 8 spaces (4 racks) are provided within 50 feet of the entrance, the remaining spaces can be provided elsewhere on the lot. Four properly spaced bicycle racks, arranged side-by-side, should occupy no more than 15 linear feet.

The alternative compliance method of funding bicycle parking installation by the City is also included in the ordinance of Portland and other cities. Portland’s experience has revealed that this method works most effectively when the owner is required only to provide the funding, and the City has full discretion to design and locate the bicycle parking spaces wherever it is most appropriate. This provides greater opportunity to implement some of the solutions discussed at the previous Planning Board meeting, such as shared public bicycle parking lots, seasonal on-street bicycle corrals, or new bicycle parking that may require more extensive infrastructure improvements.

4. Alternative Bicycle Parking Designs

The comments expressed in the October 22, 2012 letter from MIT cover several different points, including the applicability requirements that are discussed earlier in this memo. Most of the points fall under the broader topic of alternative standards for the design and layout of bicycle parking.

The standards applied in the proposed zoning, including the vertical frame with two points of contact and the 36" minimum side-by-side spacing, are based on nationwide standards recommended by the Association of Pedestrian and Bicycle Professionals in its *Bicycle Parking Guide*. Some diagrams from the *Guide* that serve as the basis for the proposed requirements are attached.

Cambridge staff also have extensive experience with reviewing and testing different bicycle parking designs and layouts, and know firsthand which designs are most effective. The standards in the proposed zoning are selected to meet the following main performance goals:

- Bicycles remain in a stable upright position, without falling over and without requiring a kickstand.
- Users may quickly and conveniently access, store and remove a bicycle (especially important for people who bicycle on a daily basis).
- A variety of bicycle sizes and styles can be accommodated (discussed further below).
- Use does not require excessive physical effort (important to ensure that bicycle parking is convenient and can be used by people of differing physical abilities).
- A wide range of products are available that meet the required standards.
- Installation is relatively simple, requiring only the anchoring of fixed frames within the proper spacing.
- Properly designed facilities do not require specialized maintenance.

It is true that the standards in the proposed zoning are not the only possible way to design bicycle parking. As bicycling has increased in popularity, there has been a burgeoning industry of new products and innovative designs for bicycle parking. Tiered stacking devices and mechanisms that allow for vertical bicycle storage, as mentioned by MIT, are some of the products that have become available in recent years.

However, there are some major issues with alternative bicycle parking designs. First, many of the designs mentioned by MIT rely on specific mechanical products made by particular companies, and not all such products perform equally well. Many products are new (especially within the US) and do not have a reliable "track record," and therefore their usefulness and maintainability over time is uncertain. For instance, some tiered systems have been known to fail over time, causing bikes to fall, which could result in damage or safety concerns. Also, while these new systems may appear to work well under some circumstances, many of them have difficulty fitting different sizes of bicycles, bicycles with different tire gauges, or bicycles with baskets or child seats.

Another issue is that despite the increasing popularity of bicycling, bicycle parking is still not viewed as a priority to some developers. As a result, a designer may be motivated not by the performance criteria mentioned above but by pressure to minimize space or cut costs, which may result in awkward or unusable facilities. Whatever the intentions, when an alternative bicycle parking design turns out to be unusable or unattractive to bicyclists, it results in a compounded problem: the designated space is underutilized, and bicyclists use other, unintended spaces to store their bicycles.

Those issues notwithstanding, the exploration of innovative design strategies is encouraged in the proposed zoning through the special permit provision by which the Planning Board can review and approve any variations in the required standards for bicycle parking. With review from staff and conditions to ensure adequate performance over time, this approach could lead to a better understanding of alternative bicycle parking concepts. With experience, these innovations could result in new standards incorporated into future zoning regulations. Moreover, the special permit provision is included partly with large institutions like MIT in mind, because they are in a unique position to plan for their bicycle parking from a long-range, campus-wide perspective. As long as a developer can present a clear, reasonable plan, the Planning Board has wide latitude in approving variations.

However, a set of citywide zoning regulations must consider not just large property owners but the general case of development that may happen anywhere in the City, and therefore we feel that the best approach is to adopt design standards that are simple and prescriptive, which can accommodate a range of products by different manufacturers, and which have a proven record of reliability over time. That way, a designer can know for sure that if the bicycle parking is designed to the exact standards, it will be approved.

5. Different Sizes and Types of Bicycles

It is true that there are many different types of bicycles available to meet different needs. Bicycles with storage trailers, baby cars, and other appurtenances are being seen more frequently as people use bicycles for a larger variety of everyday trips in place of automobiles. Hand cycles, tricycles and other bicycle designs are useful to people with disabilities or who simply prefer them to standard bicycles. In the future, there may be new styles as well. Unfortunately, there is no reasonable set of standards that can perfectly accommodate every style of bicycle.

Although the proposed standards are ideally suited to conventional bicycles, they allow enough flexibility that other styles of bicycle may be reasonably accommodated. In addition, the proposed regulations include a requirement that for bicycle parking areas with 20 spaces or more, at least 5% of spaces must accommodate a bicycle with an additional two-foot trailer without impeding access to other spaces. This should not be a difficult standard to meet, given that for a standard bicycle room layout, longer bicycles could be parked at the end of a row without impacting access to other spaces, or in larger bicycle parking areas an entire row could have an extra two feet of space. In addition, according to ADA requirements (which are applied separately from the zoning, but do not conflict with the proposed requirements), bicycle parking areas would need to accommodate a certain number of hand cycles.

6. Terminology

The current zoning includes bicycle parking within the general definition of “parking,” which has caused confusion over time because the term “parking” more conventionally refers to motor vehicle parking. The proposed zoning separates the term “bicycle parking” from the definition of “parking,” which would thenceforth apply only to motor vehicle parking. Although this may not seem to be an ideal solution, we still feel that this is the most effective approach for a couple of reasons.

“Bicycle parking” is a term that is currently used in the zoning ordinance (although it does not have its own stand-alone definition, which is remedied in the proposed zoning), as well as a term that has been applied in most other American cities to refer to the concept of spaces where bicycles can be quickly and conveniently stored, secured and removed. Applying a different term to refer to this established concept would likely result in additional confusion.

Additionally, the word “parking” is used about 949 times throughout the zoning ordinance, and in the vast majority of instances, it refers specifically to motor vehicle parking. Therefore, an attempt to disambiguate the terms by defining “motor vehicle parking” and changing all instances of the usage of “parking” where it refers to that particular use would be impractical and may cause further complications with zoning language that has been adopted elsewhere in the ordinance.

While it is not ideal to create separate definitions for the two terms “parking” and “bicycle parking,” since both use the word “parking,” we believe that this approach would most effectively achieve the purpose of the amendment, would meet the appropriate legal standards, and would cause the least amount of confusion when applied.