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CITY OF CAMBRIDGE  
COMMUNITY DEVELOPMENT DEPARTMENT

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To: Planning Board  
From: CDD Staff  
Date: October 11, 2011  
Re: **Bagedenow, et al. Zoning Petition  
(Side Yard Setback Requirements in Residence C-1)**

To assist in the Planning Board's deliberation on this petition, CDD has prepared the material on the following pages:

- Responses to four of the major questions raised at the prior Planning Board and Ordinance Committee hearings, specifically with regard to:
  1. Rationale for 7.5 feet as a minimum setback distance
  2. Treatment of projections from the wall plane of a building
  3. Conflicts with provisions for sustainable design features
  4. Consistency with existing zoning language
- Text of Section 22.43.2 of the Zoning Ordinance, relating to setback exemptions for adding exterior insulation to an existing building
- The proposed Bagedenow, et al. text changes incorporated into the text of Section 5.24 of the Zoning Ordinance
- A suggested alternative zoning change incorporated into the text of Section 5.31 of the Zoning Ordinance (Table of Dimensional Standards – Residential Districts)

Staff will be happy to answer questions at the October 18 meeting.

## **Responses to Issues Raised**

### **1. Rationale for 7.5 feet as a minimum setback distance**

A minimum side yard setback distance of 7.5 feet is consistent with the minimum setback in similar residential zoning districts, such as Residence B and Residence C. It is a relatively modest setback, but it allows for a comfortable and safe distance between buildings, and provides space to accommodate pathways, driveways, or landscaped open space. Other setbacks in the range of 5-10 feet might be considered, but it is sensible to apply a consistent standard where possible.

### **2. Projections**

The current zoning allows certain projecting features to encroach into a setback:

- **Projecting eaves, chimneys, bay windows, balconies, open fire escapes** and like projections which do not project more than three and one half (3 1/2) feet and which are part of a building not more than thirty-five (35) feet in height
- **Unenclosed steps, unroofed porches** and the like which do not project more than ten (10) feet beyond the line of the foundation wall and which are not over four (4) feet above the average level of the adjoining ground

The rationale is that these are features typical to residential buildings which are either necessary for access and/or safety, or substantially beneficial to the overall livability of a home. Because they are usually not seen to create significant adverse impacts on neighbors, they are exempt from setback requirements.

One possible issue for consideration is bay windows. With a 7.5-foot minimum side yard setback and a 3.5-foot projecting bay window, a new building could potentially place a window 4 feet away from a property line. Whether this would result in safety or privacy concerns – in contrast to a window that is 7.5 feet from a property line, or some other distance – is worth consideration.

### **3. Sustainable design features**

The work of the Green Building and Zoning Task Force in 2008-2009 identified ways in which zoning regulations restrict the incorporation of sustainable building design elements. Their recommendations were adopted as Article 22.000 of the Zoning Ordinance in 2010. The following were two identified issues relating to building setbacks:

- **Sun-shading devices:** Projecting eaves or canopies, particularly those above windows, can effectively reduce solar heat gain within a building, thus reducing the need for mechanical cooling. Section 5.24.2 already exempts such projections from setback requirements. Article 22.000 furthermore exempts spaces underneath such overhangs from being counted as Gross Floor Area. The proposed Bagedenow, et al. change may conflict with this provision if projecting eaves are no longer allowed to encroach into a required setback per 5.24.2.
- **Exterior Insulation:** One of the more significant energy-saving improvements that can be made to a home is the encapsulation of the entire exterior with “rigid” insulation. For existing homes whose walls either violate a setback or are built to the setback limitations,

adding such insulation may require a variance. Therefore, Section 22.43.2 allows up to 4 inches of insulation to be added to a wall even if it violates a setback, so long as the resulting wall plane is no closer than 7'-2" from the property line. Because this provision assumes a 7'-6" minimum setback, it should not be affected by the proposed change.

#### **4. Consistency with existing zoning language**

In the current zoning ordinance, provisions that apply generally to setbacks across the city are found in Section 5.24 (see below, with proposed petition changes inline), while the requirements for specific zoning districts are found the Table of Dimensional Requirements.

CDD staff have prepared suggested alternative zoning language that provides for a minimum 7.5-foot setback in the C-1 District by a footnote to the Table of Dimensional Requirements. This is consistent with the way in which setback requirements are otherwise defined in the ordinance.

The suggested alternative language also removes the restriction of projecting elements from the required 7.5-foot setback. However, such additional provisions may be added to the footnote if they are deemed to be appropriate. Careful consideration should be given to whether it is appropriate to treat the general setback regulations differently in C-1 than in other zoning districts, and what would be the rationale for doing so.

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#### ***Existing Zoning Language in Article 22.000 (Sustainable Design and Development)***

**22.43.2** *Yard Exceptions for Added Exterior Insulation.* Existing conforming or pre-existing nonconforming buildings or buildings that received a building permit prior to August 2, 2010 that cannot add insulation exterior to the exterior structural wall of the building without intruding into a required setback may encroach or further encroach into the required yard setback through the addition of insulation external to the exterior structural wall of the building, provided that the additional insulation does not increase the thickness of the exterior wall by more than four (4) inches and that the resulting outermost plane of each exterior wall is no closer than seven feet, two inches (7'-2") to the nearest property line.

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#### ***Zoning Ordinance Provisions for Required Yards (Setbacks) Including Proposed Changes in Bagedenow, et al. Petition***

*Text changes from petition are at the end of the section. Proposed new text is **bold and underlined**.*

#### **5.24** *Yards*

**5.24.1** Every part of a required yard shall be open to the sky and unobstructed. Awnings, arbors, fences, flagpoles, recreational and laundry drying equipment and similar objects shall not be considered obstructions when located within a required yard. In addition, objects or equipment located in a required yard that are necessary for or appurtenant to a Public Bicycle-Sharing Station shall not be considered obstructions. Open or lattice enclosed fire escapes for emergency use only are permitted to encroach on yard areas.

**5.24.2** Projecting eaves, chimneys, bay windows, balconies, open fire escapes and like projections which do not project more than three and one half (3 1/2) feet and which are part of a building not more than thirty-five (35) feet in height, and unenclosed steps, unroofed porches and the like which do not project more than ten (10) feet beyond the line of the foundation wall and which are not over four (4) feet above the average level of the adjoining ground, may extend beyond the minimum yard regulations otherwise provided for the district in which the structure is built.

**5.24.3** On lots abutting streets on more than one side, the front yard requirements of each of the abutting streets shall apply regardless of designated front lot lines. Any remaining sides shall be subject to side yard requirements.

**5.24.4** Measurements for minimum yards which are determined by formula shall be made in the following manner:

(1) "H" is the height of the building. "L" is the length of the wall measured parallel to the corresponding lot or street line. The front yard is measured from the street line, or building line where such has been established, except where otherwise indicated herein. For buildings of forty (40) feet or less in height the denominator in the yard formulas in the Tables in Section 5.30 may be increased by two subject to the minimum yard requirements set forth in footnotes a, b and c of Tables 5-1 and 5-2.

(2) Where a building consists of various roof levels an average height, or "H", may be used in the required yard formula. Average height is determined by adding the products of the height of each roof level facing the given lot line, (H<sub>1</sub>, H<sub>2</sub>, etc.) times the length of each roof level (L<sub>1</sub>, L<sub>2</sub>, etc.) and dividing the sum by the sum of the length of the levels (L<sub>1</sub>, L<sub>2</sub>, etc.) (see formula below)

$$\text{AVERAGE HEIGHT} = \frac{(H_1 \times L_1) + (H_2 \times L_2)}{L_1 + L_2}$$

(3) Where a building presents a variety of vertical planes to any given lot or street line, no plane shall be closer to the street or building line or lot line than permitted by the application to such plane of the appropriate formula in the tables of dimensional requirements in Section 5.30. For all planes set forward of the setback line required by said tables for the building if it were constructed in a single vertical plane, other planes must be set behind the setback line so calculated. The result shall be that the sum of the products of the setback required for each plane times the facing area of each plane respectively shall be at least as great as the product of the setback required by the appropriate table for the building if it were constructed in a single vertical plane times the facing area of the building if viewed as a single plane. (see illustration below):

The product of (setback<sub>1</sub> x facing area<sub>1</sub>) + (setback<sub>2</sub> x facing area<sub>2</sub>) MUST EQUAL OR EXCEED the product of (single plane setback) x (single plane facing area)

**(4) For Residence Zoning District C-1, in no case shall side yards be less than 7'-6". This shall apply to any plane or projection from the plane of the building.**

**Alternative CDD Suggestion: Add a footnote to the Table of Dimensional Requirements**

Proposed new text is **bold and underlined**.

**Table 5-1. Table of Dimensional Requirements - Residential Districts**

District	(1) Max. Ratio of Floor Area to Lot Area	(2) Minimum Lot Size in Sq. Ft.	(3) Min. Lot Area for Each D.U. in Sq. Ft.	(4) Minimum Lot Width in Feet	(5) Minimum Yard in Feet			(6) Maximum Height in Feet	(7) Min. Ratio of Private Op. Sp. to Lot Area
					Front	Side	Rear		
Res. A-1	0.5	8,000	6,000	80	25	15(sum of 35)	25 <sup>(c)</sup>	35	50%
Res. A-2	0.5	6,000	4,500	65	20	10 (sum of 25)	25 <sup>(c)</sup>	35	50%
Res. B	0.5 <sup>(j)</sup>	5,000	2,500 <sup>(j)</sup>	50	15	7'6" (sum of 20)	25 <sup>(c)</sup>	35	40%
Res C. <sup>(i)</sup>	0.6	5,000	1,800	50	$\frac{H+L}{4}$ <sup>(a)</sup>	$\frac{H+L}{5}$	$\frac{H+L}{4}$ <sup>(c)</sup>	35	36%
						(min. 7'6" sum of 20)			
Res. C-1	0.75	5,000	1,500	50	$\frac{H+L}{4}$ <sup>(a)</sup>	$\frac{H+L}{5}$ <b><u>(n)</u></b>	$\frac{H+L}{4}$ <sup>(c)</sup>	35	30%
Res. C-1A	1.25	5,000	1,000	50	10	$\frac{H+L}{7}$ <sup>(l)</sup>	$\frac{H+L}{5}$ <sup>(l)</sup>	45	15%
Res. C-2	1.75	5,000	600	50	$\frac{H+L}{4}$ <sup>(a)</sup>	$\frac{H+L}{5}$	$\frac{H+L}{4}$ <sup>(c)</sup>	85	15%
Res. C-2B	1.75	5,000	600	50	$\frac{H+L}{4}$ <sup>(a)(k)</sup>	$\frac{H+L}{5}$ <sup>(k)</sup>	$\frac{H+L}{4}$ <sup>(c)(k)</sup>	45	15%
Res. C-2A	2.5	5,000	300	50	$\frac{H+L}{5}$ <sup>(b)(g)</sup>	$\frac{H+L}{6}$ <sup>(g)</sup>	$\frac{H+L}{5}$ <sup>(c)</sup>	60	10% <sup>(h)</sup>
Res. C-3	3.0	5,000	300	50	$\frac{H+L}{5}$ <sup>(b)</sup>	$\frac{H+L}{6}$	$\frac{H+L}{5}$ <sup>(c)</sup>	120	10%
Res. C-3A	3.0 <sup>(d)</sup>	5,000	300	50	$\frac{H+L}{5}$ <sup>(b)(e)</sup>	$\frac{H+L}{6}$ <sup>(f)</sup>	$\frac{H+L}{5}$ <sup>(c)</sup>	120	10%
Res. C-3B	3.0/4.0	5,000 <sup>(m)</sup>	300	50	10	none	none	120	10%

2. Footnotes

- (a) Measured from the centerline of the street, but in no case may a building be nearer the street than ten (10) feet.
- (b) Measured from the centerline of the street, but in no case may a building be nearer the street line than five (5) feet

[...]

**(n) In no case may a building be nearer a side lot line than seven feet, six inches (7'-6") in a Residence C-1 District.**