



ORDINANCE COMMITTEE

COMMITTEE MEETING

~ MINUTES ~

Thursday, January 26, 2023

12:00 PM

Sullivan Chamber
795 Massachusetts Avenue
Cambridge, MA 02139

The Ordinance Committee will conduct a public hearing on Thursday, January 26, 2023 at 12:00 PM on a Zoning Petition by the Planning Board to amend the Zoning Ordinance of the City of Cambridge by creating two new Sections 22.80 “Flood Resilience Standards” and 22.90 “Green Factor Standard,” and by amending Articles 2.000, 5.000, 19.000, and 22.000 to adjust development standards and urban design objectives with the goal of promoting resilience to the projected impacts of climate change.

Attendee Name	Present	Absent	Late	Arrived
Burhan Azeem	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Dennis J. Carlone	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Alanna Mallon	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Marc C. McGovern	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Patricia Nolan	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
E. Denise Simmons	<input type="checkbox"/> Remote	<input type="checkbox"/>	<input type="checkbox"/>	
Paul F. Toner	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Quinton Zondervan	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Sumbul Siddiqui	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

A public meeting of the Cambridge City Council’s Ordinance Committee was held on Thursday, January 26, 2023. The meeting was called to order at 12:00 p.m. by the Chair, Councillor Zondervan. Pursuant to Chapter 20 of the Acts of 2022 adopted by Massachusetts General Assembly and approved by the Governor, this public meeting was hybrid, allowing participation in person, in the Sullivan Chamber, 2nd Floor, City Hall, 795 Massachusetts Avenue, Cambridge, MA and by remote participation via Zoom.

City Clerk LeBlanc called the roll.

- Councillor Azeem – Present
- Councillor Carlone – Present
- Vice Mayor Mallon – Present
- Councillor McGovern – Present
- Councillor Nolan – Present
- Councillor Simmons – Present/Remote
- Councillor Toner – Absent
- Councillor Zondervan – Present
- Mayor Siddiqui – Absent

Present – 7, Absent – 2. Quorum established.

Minutes Acceptance: Minutes of Jan 26, 2023 12:00 PM (Committee Reports)

The Chair, Councillor Zondervan shared that the call of the meeting was on a Zoning Petition by the Planning Board to amend the Zoning Ordinance of the City of Cambridge by creating two new Sections 22.80 “Flood Resilience Standards” and 22.90 “Green Factor Standard,” and by amending Articles 2.000, 5.000, 19.000, and 22.000 to adjust development standards and urban design objectives with the goal of promoting resilience to the projected impacts of climate change. Councillor Zondervan introduced Jeff Roberts, Zoning and Development Director for the Community Development Department who was joined by Iram Farooq, Assistant City Manager for Community Development Department (CDD). Also present at the meeting was Megan Bayer, Deputy City Solicitor for the Law Department. Jeff Roberts also noted that other CDD team member Susan Rasmussen, Director of Environmental and Transportation Planning was joined remotely, as well as Kathy Watkins, Commissioner of the Department of Public Works (DPW).

Jeff Roberts did an overview of their presentation titled “Climate Resilience Zoning Petition”, (Attachment A). Topics in the presentation included information on the background of the petition, Climate Resilience planning in Cambridge and the Climate Resilience Zoning Task Force. He also reviewed updates within the petition which included a new citywide flood and heat resilience standards (22.80 and 22.90) and adjustments to the current citywide zoning standards (2.000,5.000, and 22.000), incorporating Resilience into development review (19.000). He concluded the presentation by sharing what the process of moving forward with the Planning Boards recommendation would look like and what the next steps would be.

The Chair, Councillor Zondervan opened public comment.

Helen Walker, 43 Linnaean Street, Cambridge, MA spoke on section 2293.1 high SRI roofs, commenting on light colored roofs verses dark colored roofs and why they may not be a good idea as a requirement in our northern climate where most of our energy consumption in buildings is for heating, and high SRI roofs introduce a heating penalty.

The Chair, Councillor Zondervan recognized Councillor Azeem who had a clarifying question regarding the cost and shared their frustrations regarding not having cost estimates available. Jeff Roberts and Iram Farooq both offered responses, commenting that the cost factor would be different in every project and noting that there would be cost savings in the future because of the reduced climate impact in the projects.

The Chair, Councillor Zondervan recognized Councillor Nolan who offered comments and questions about sea level rise and precipitation, and if basement units fall under the ADU zoning. Kathy Watkins responded by noting that sea level rise and precipitation numbers are viewed differently and the City uses the highest flood elevation number between the two for any given location as the requirement. Jeff Roberts offered answers on basement units and ADU’s, sharing that ADU zoning is different than having a finished basement, and developers and homeowners have to follow the new standards in zoning if they wanted to add bedrooms into a basement level, regardless of whether the basement is an ADU or not.

The Chair, Councillor Zondervan recognized Councillor Carlone who thanked the presenters for their very detailed presentation. Councillor Carlone offered comments about a family member’s personal experience with recent flooding and the financial burden it has caused to repair. He shared that meeting these zoning standards would be beneficial in the long run. Councillor Carlone also shared that he agreed with Helen Walker from public comment regarding white (high SRI) roofs.

The Chair, Councillor Zondervan had a clarifying question regarding the proposed Green Factor and the original Green Factor. Jeff Roberts noted that in the proposed green factor the focus

would be to try and have permeable paving align with other standards the City has in place, since permeability of the pavement did not directly impact it's contribution to the heat island effect. The Chair, Councillor Zondervan recognized Vice Mayor Mallon who had clarifying questions regarding pavement and what type of community outreach will be done to make residents and developers aware of the new zoning in place. Jeff Roberts responded by offering a more detailed answer on the Green Factor and paving and the types of interventions that would reduce heat. Members from CDD shared that DPW had sent out an informational flier a few years ago, and would be looking to do something similar to that again. They also shared the idea of putting a task force together for community outreach was also mentioned. Vice Mayor Mallon stressed the importance of reaching out to smaller property owners.

The Chair, Councillor Zondervan recognized Councillor McGovern who echoed the Vice Mayors thoughts and concerns about community outreach and making sure the City reaches out to everyone, not just large developers.

The Chair, Councillor Zondervan shared that he agrees with the comments made by other Committee members today, and hopes that the Committee will forward this petition to the full Council with a favorable recommendation.

The Chair, Councillor Zondervan recognized Councillor Nolan who had follow up comments and questions regarding Cool Factor and roofs. She also shared a communication from Patrick Barrett, who had questions regarding zoning and the impact of ADA accessibility requirements and planting trees on property sites. Susanne Rasmussen, Kathy Watkins, and Jeff Roberts were all able to provide answers.

The Chair, Councillor Zondervan recognized Councillor Azeem who had clarifying questions regarding business districts and retail. Jeff Roberts responded by noting that there will be different ways to approach business districts and retail going forward because it will be site specific.

The Chair, Councillor Zondervan recognized Councillor Nolan who made a motion to forward the petition to the full Council with a favorable recommendation to pass to a second reading. See Attachment B.

City Clerk LeBlanc called the roll.

Councillor Azeem – No

Councillor Carlone – Yes

Vice Mayor Mallon – Yes

Councillor McGovern – Absent*

Councillor Nolan – Yes

Councillor Simmons – Absent

Councillor Toner – Absent

Councillor Zondervan – Yes

Mayor Siddiqui – Absent

Yes-4, No-1, 4-Absent. Motion Passed. **

*The Clerk, in error voiced a vote of “no” after calling Councillor McGovern, when in fact Councillor McGovern was absent. The final vote of 4-Yes, 1-No, and 4-Absent was properly voiced and recorded.

**The Deputy City Solicitor commented that with only 4 favorable votes, the motion did not pass, and the City Clerk concurred with this. At the request of the City Clerk, the City Solicitor

has since opined on this matter noting that in Committee, it is a majority of those present and voting, not a majority of the membership, that is needed to pass a matter.

The Chair, Councillor Zondervan made a motion to adjourn.

City Clerk LeBlanc called the roll.

Councillor Azeem – Yes

Councillor Carlone – Yes

Vice Mayor Mallon – Yes

Councillor McGovern – Absent

Councillor Nolan – Yes

Councillor Simmons – Absent

Councillor Toner – Absent

Councillor Zondervan – Yes

Mayor Siddiqui – Absent

Yes – 5, No – 0, Absent – 4. Meeting adjourned.

Attachment A – Presentation Titled, “Climate Resilience Zoning Petition”.

Attachment B - Proposed Ordinance #2022-9, Language Approved in Committee

Clerk’s Note: The City of Cambridge/22 City View records every City Council meeting and every City Council Committee meeting. This is a permanent record. The video for this meeting can be viewed at:

https://cambridgema.granicus.com/player/clip/426?view_id=1&redirect=true&h=0894e9c4527cf44b43045d1fcc440436

A communication transmitted from Louis A. DePasquale, City Manager, relative to the Climate Resilience Zoning Task Force Report. (Ordinance #2022-9)

A communication was received from Community Development, transmitting the full amendment of the considered adoption of the Climate Resilience Zoning, after referral to the Planning Board and Ordinance Committee for public hearing and report.

A communication was received from Director of Zoning and Development, Community Development Jeffrey Roberts, transmitting Climate Resilience Zoning Petition The Planning Board recommends ADOPTION.

Attachment A

Minutes Acceptance: Minutes of Jan 26, 2023 12:00 PM (Committee Reports)

City of Cambridge
Community Development Department

Climate Resilience Zoning Petition

Ordinance Committee Hearing
January 26, 2023



January 26, 2023

Cambridge Community Development Department

Background

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Climate Resilience Zoning Task Force Purpose

Recommend **development standards** for climate resilience to incorporate into the Cambridge Zoning Ordinance

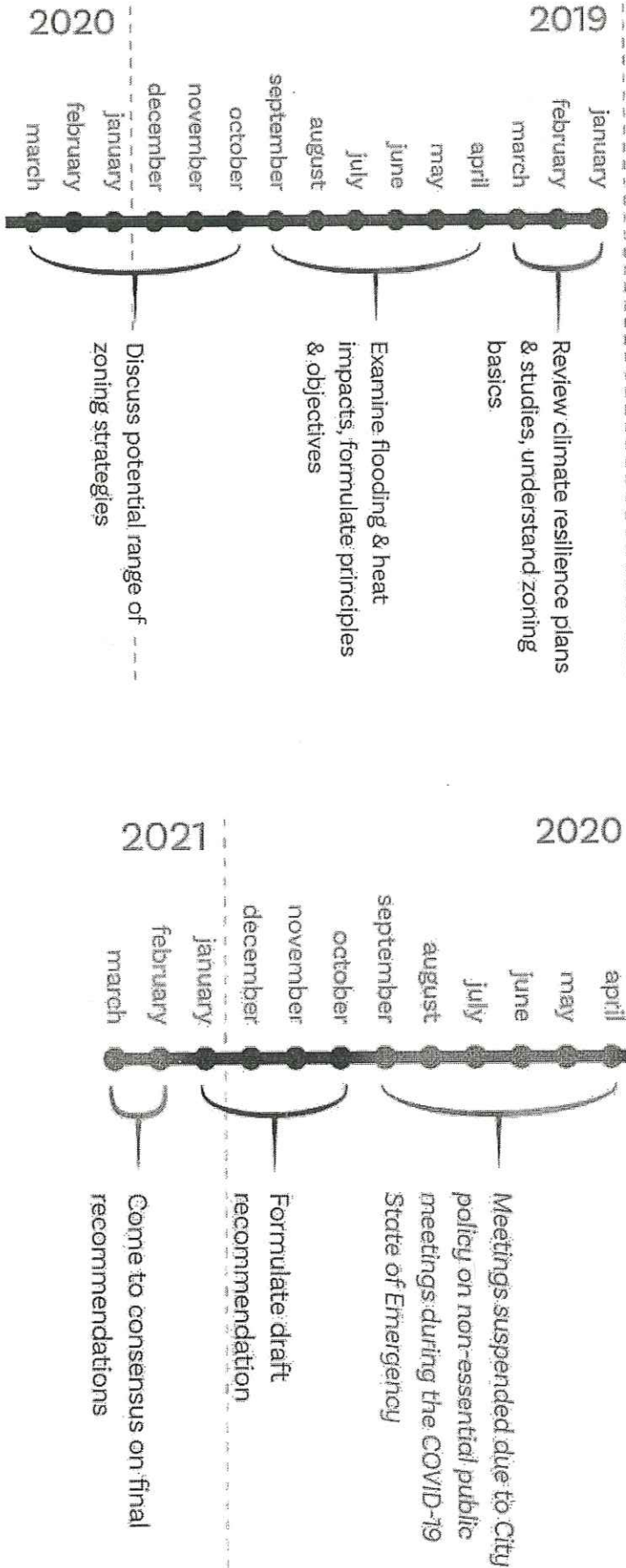
Specific Climate Change Impacts to Discuss:

- Impacts of flooding from sea level rise, storm surge, and precipitation
- Rise in temperatures exacerbated by the urban heat island effect

Scope of Zoning Recommendations:

- Major new development subject to project review procedures
- Smaller-scale new development subject to as-of-right zoning
- Additions/alterations to existing buildings and uses

CRZTF PROCESS



Land Use & Development Objectives

1. Elevate & floodproof
2. Design to recover
3. Use green infrastructure
4. Preserve vegetation
5. Create vegetation
6. Limit paved areas
7. Provide shading
8. Use reflective surfaces
9. Promote passive resilience
10. Shelter in emergencies
11. Create emergency plans
12. Implement area-wide strategies
13. Produce co-benefits

Climate Resilience Zoning Petition

Four main parts:

- New Flood Resilience Standards (22.80)
- New Heat Resilience Standards (22.90)
- Remove Impediments in Current Zoning (Articles 2.000, 5.000, 22.000)
- Incorporate Resilience into Development Review (Article 19.000)

January 25, 2023

Cambridge Community Development Department

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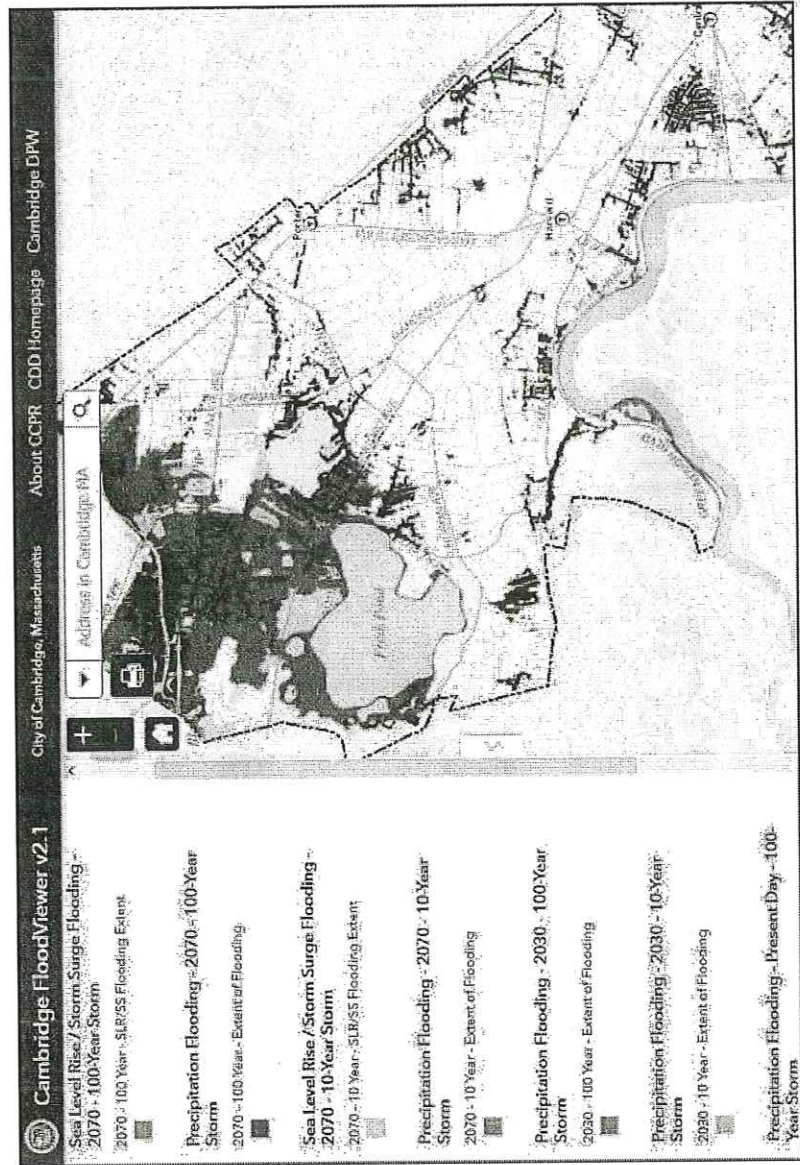
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7.7

b

22.80 Flood Resilience Standards



Flood Elevations:

- DPW promulgates Long-Term Flood Elevations (LTFEs)
- 50-year horizon
- 10% and 1% flood probability levels
- FloodViewer shows LTFEs by site
- Revised based on climate projections

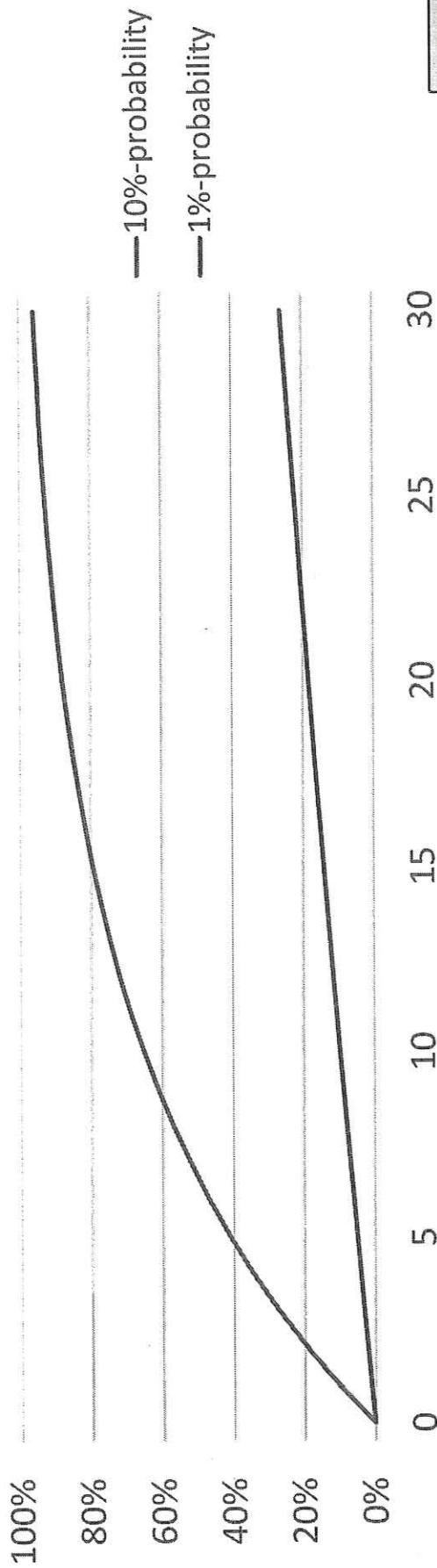
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22.80 Flood Resilience Standards

What is the difference between using the 10%-probability and 1%-probability flood level?

Cumulative Risk of Experiencing Flooding Over 30 Years



Cambridge Community Development Department


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b

22.80 Flood Resilience Standards

Address: 197 Vassal Ln
Map-Lot: 260-80

Flood Viewer
City of Cambridge, MA



The Flood Viewer has been developed as an informational tool for the Cambridge community to assess climate change threats from flooding and to prepare for it by implementing specific strategies.

Use this tool to help understand the risk of flooding to your property and how to protect against it.

Learn more at:
CambridgeMA.gov/FloodViewer

Flood Elevation Data	
(Elevations in ft-CCB)	
Minimum Ground Elevation:	16.9
Maximum Ground Elevation:	28.6
2070 100-Year SLR/SS Flooding:	22.5
2070 100-Year Precipitation Flooding:	24.1
2070 10-Year SLR/SS Flooding:	22.1
2070 10-Year Precipitation Flooding:	22.6

Procedures:

- Submit LTFEs, plans and elevator
- DPW reviews plan at first review stage (special permit, advisory, building permit)
- Updated submissions at building permit, certificate of occupancy

January 26, 2023

Cambridge Community Development Department

Factor Comparison

STRATEGIES	Somerville Green Score	Seattle Green Factor	Brown, et al. Green Factor	Proposed Green Factor
Landscaped area	✓	✓	✓	✓
Vegetation	✓	✓	✓	✓
New trees	✓	✓	✓	✓
Preserved trees	✓	✓	✓	✓
Green roofs	✓	✓	✓	✓
Rain gardens & bioswales	✓	✗	✓	✓
Bioretention facilities	✗	✓	✓	✓
Water features	✗	✓	✗	✗
Vegetated walls	✓	✓	✓	✓
Turfgrass & mulch	✓	✓	✓	✓
Pervious paving	✓	✓	✓	✗
Structural soil systems	✓	✓	✓	✓
High-SRI paving	✗	✗	✗	✓
High-SRI shade structure	✗	✗	✗	✓

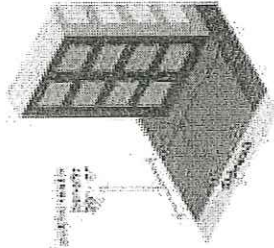
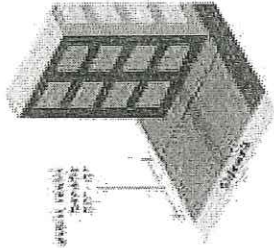
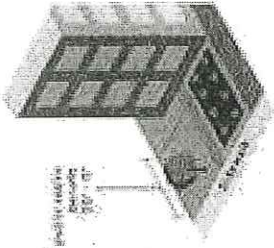
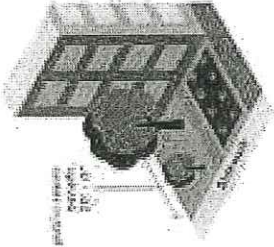
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Cambridge Community Development Department

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22.90 Green Factor (Heat Resilience)

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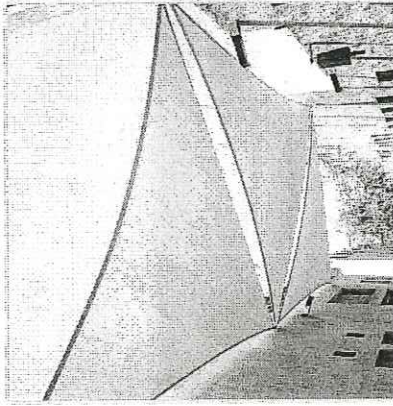
			
High-SRI paving	High-SRI paving + Turf	High-SRI paving + Turf + Planting area + Medium tree	High-SRI paving + Turf + Planting area + Medium tree + Large tree
0.15	0.28	0.57	1.02
Cool Factor Score			

Applicability:

- Development subject to Green Building Review (25,000+ SF)
For preservation/rehab, Cool Score not less than existing
- All other new, stand-alone buildings
- All additions on a new foundation, if the footprint is more than 50% of existing

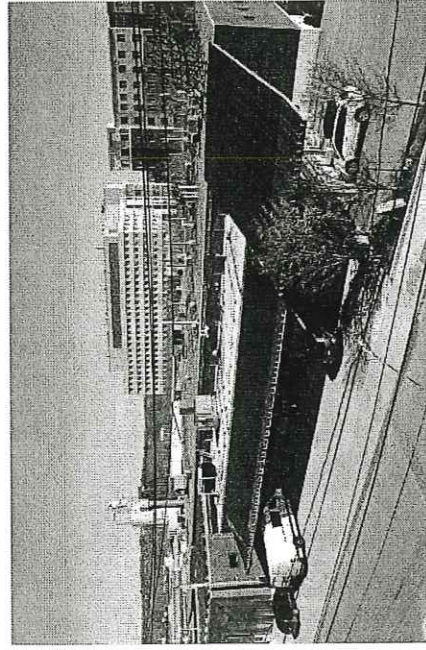
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Removing Impediments in Current Zoning



Shade Canopies:

- Defined as coverings with a **high-SRI or solar top surface**
- Exempt from setbacks and height
- Area underneath exempt from GFA
- Allowed to cover no more than 50% of required open space



Iggy's Bread (photo: energysage.com)

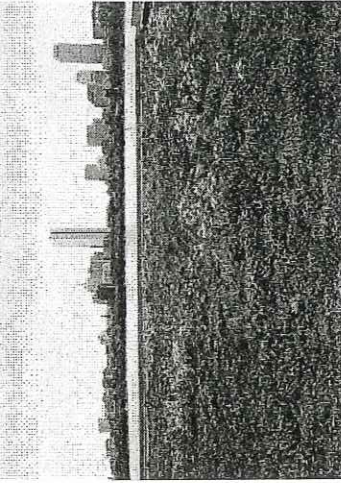
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Cambridge Community Development Department

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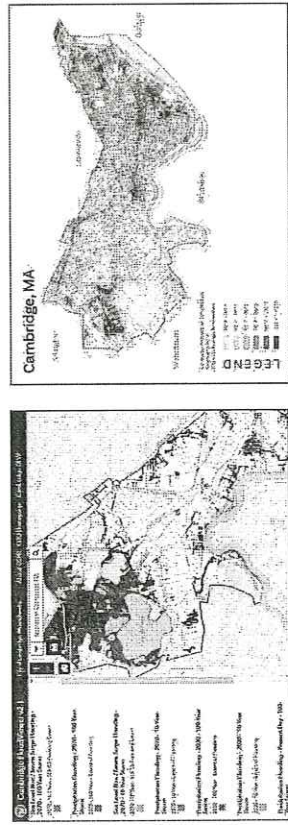
Removing Impediments in Current Zoning



Green Roofs:

- Exempt from GFA, including surrounding deck area equal to Green Roof Area
- Access headhouses exempt from GFA and height
- *Currently:* Usable green roof requires special permit for exemption
- *Proposed:* No special permit; maintenance plan required

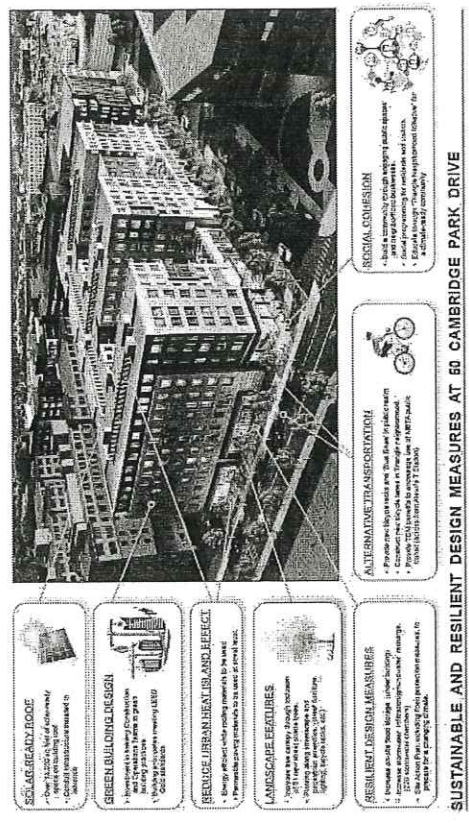
Article 19.000 Project Review



- **19.20 Project Review Special Permit:** Require “Resilience Narrative” assessing future flood and heat impacts and describing mitigation

- **19.30 Urban Design Objectives:** Include resilience objective and indicators with other objectives

- **19.40 Advisory Review Procedure:** Provide Flood Resilience and Green Factor information for staff review



SUSTAINABLE AND RESILIENT DESIGN MEASURES AT 60 CAMBRIDGE PARK DRIVE

January 26, 2023

IB&C Group CUBEL
Cambridge Community Development Department

b

Process

Text Revisions from November, 2022

Clarifying changes:

- “Protection” definition for stories above/below grade
- Meaning of occupiable/habitable space
- LTFEs relative to site survey
- “Cool Roof” applicability to roof replacement
- Historic designations
- Applicability across PUD Development Parcels
- Applicability of Cool Score to preservation/rehab
- Applicability of Flood/Green Standards to enlargements of building footprint
- Porches relative to shade canopies
- Green Roof operations/maintenance in regulations

January 26, 2023

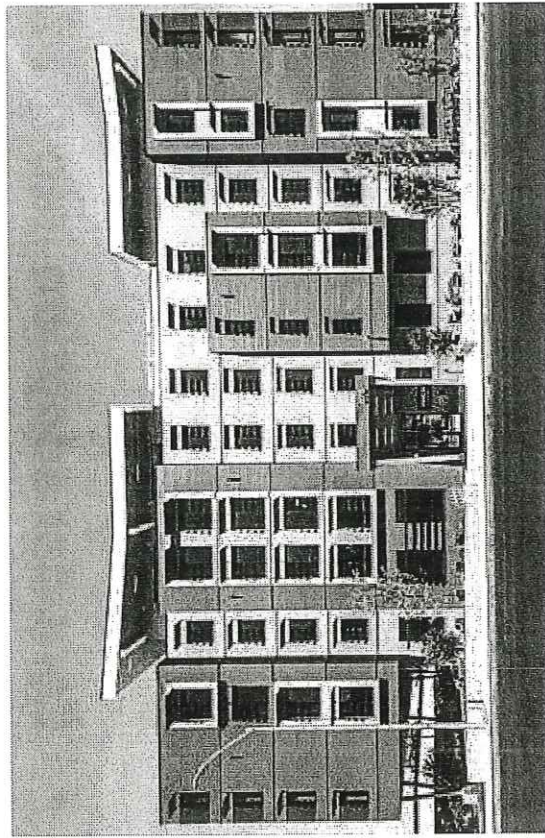
Cambridge Community Development Department

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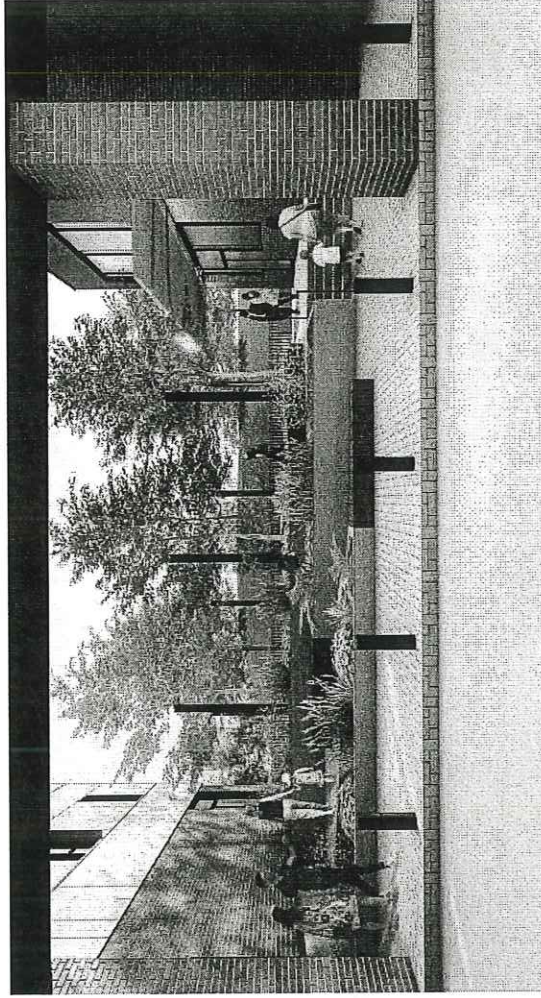
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Discussion Points from November, 2022

How will changes affect Affordable Housing Overlay?



Finch Cambridge (HRI)



52 New Street (JAS)

January 25, 2023

Cambridge Community Development Department

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Implementation After Adoption

- **Promulgation** of flood elevations and regulations
- **Guidance** for developers and property owners
- **Regular updates** to flood and heat projections based on climate models
- **Periodic evaluation** of the effectiveness of these zoning standards and **recommended revisions** where they can be improved

January 26, 2023

Cambridge Community Development Department

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deployable barriers in place at the height of the LTFE standard adequate to fully prevent the entry of floodwater into the interior of the Story Below Grade. The following standards shall apply:

- (a) All occupiable spaces within the building, as defined in the State Building Code, shall be protected to the 10%-LTFE standard, except that small entryways, vestibules, or lobbies with a finished floor below the 10%-LTFE standard are allowed to not be protected if they contain stairs, ramps, or lifts that allow occupants to travel to portions of the building that are protected, and if they meet the standards for "Recovery" set forth in Section 22.84.2 below.
- (b) Habitable spaces for residential use, as defined in the State Building Code, shall be protected to the 10%-LTFE standard.
- (c) The following critical building equipment within the building or on the site shall be protected to the 1%-LTFE standard: mechanical heating and cooling systems including fuel storage tanks, supply meters, shut-off switches and building management system controls; electrical power supply, transformers, panels, switchgear, and safety equipment including electrical shut-off equipment, backup generators and their fuel sources; water heaters and water supply related equipment; telecommunications equipment; elevator and lift equipment.
- 22.84.2 Flood Recovery.** A portion of a building shall be considered recoverable from the impact of flooding if floodwater is able to enter and leave the space without causing damage that cannot be readily repaired. This can be achieved through various strategies, including using permanent or contingent measures that prevent or provide resistance to flood damage, or that can be easily repaired or replaced if damaged. Portions of a building located at or below the 10%-LTFE standard that are not required to be protected in Section 22.84.1 above shall be designed to be recoverable.
- 22.84.3 Modifications.** Upon granting a special permit, the Planning Board may approve modifications to the development standards set forth in Section 22.84.1 and 22.84.2 above after finding that a proposed development is designed to meet the intent of the standards in a manner that is more suitable to the unique conditions of the development or the site. No such modification may be approved under this section unless it has been reviewed and approved in writing by the City Engineer.
- 22.85 Administrative Review Procedures.** Before applying for any special permit from the Planning Board, any development review procedure under Article 19.000 of the Zoning Ordinance, or a Building Permit, whichever occurs sooner, the documentation listed below shall be submitted to the Department of Public Works (DPW) for review. Within forty-five (45) days after receiving a complete set of documentation, DPW shall provide written notice that the documentation sufficiently demonstrates compliance with the requirements of this Section or shall provide a written explanation of deficiencies to be corrected in a revised submission. To verify continued compliance, revised documentation incorporating any design modifications shall be reviewed and approved by DPW in accordance with the aforementioned procedures before application for any Building Permit or Certificate of Occupancy sought after the initial submission is accepted.

- (a) Identification of the LTFE standards employed in the development proposal and their date of promulgation. The applicant's initial submission shall employ the LTFE standards that have been promulgated most recently prior to the applicant's submission of the required documentation. If new LTFE standards have been made available to the public for possible promulgation, such LTFE standards shall be identified in the applicant's submission and shall be applicable to the application if new LTFE standards are promulgated before DPW completes its review of the application. For a specific lot or Development Parcel for which the owner has provided a topographical survey, the City Engineer may approve LTFEs that are adjusted for the unique topography of the lot or Development Parcel.
- (b) Elevations and vertical cross-sections of the building and site indicating the 1%-LTFE standard and 10%-LTFE standard, the elevation of the Grade, and the elevation of all finished floors of the building, as well as the uses of all interior sections of the building and the locations of all openings in the building envelope that are below the 1%-LTFE standard and 10%-LTFE standard including pedestrian and vehicular entrances/exits and windows. All drawings shall be drawn to scale and shall include a graphic scale symbol on each drawing sheet.
- (c) A written summary of the technical approaches to meeting the "Protection" and "Recovery" development standards set forth in this Section for any portions of the building located at or below the 1%-LTFE standard or 10%-LTFE standard, including but not limited to the types of flood barriers to be employed and the types of construction materials to be used within such portions of the building.
- (d) A narrative describing any proposed alternative approaches to meeting the intent of the development standards set forth in this Section, if the proposal is seeking approval of any modifications to such standards.

22.86 Implementation.

- (a) The DPW Commissioner shall have the authority to promulgate regulations for the implementation of the provisions of this Section. There shall be a ninety (90) day review period to receive public comments on draft regulations before final promulgation.
- (b) The Department of Public Works may develop standards and procedures appropriate to and consistent with the provisions of this Section.

Climate Resilience Zoning – Planning Board Zoning Petition

Create a new Section 22.90 to read as follows:

22.90 GREEN FACTOR STANDARD

22.91 Purpose and Intent. The purpose of this Section is to promote the inclusion of features that have a demonstrable cooling effect on buildings and sites to mitigate urban heat island effect. The performance-based "Green Factor," as defined in Article 2.000, approach is intended to be flexible and provide options that can be tailored to different building and site conditions. It is also intended to work in tandem with other regulations, including existing zoning requirements for open space and permeable area, Green Building Requirements (Section 22.20 of this Zoning Ordinance), stormwater control regulations promulgated by the Department of Public Works (DPW), and other standards.

22.92 Applicability. This Section shall apply to development subject to Section 22.20 Green Building Requirements, and as set forth elsewhere in this Zoning Ordinance.

22.93 Prerequisites. The following requirements shall be met for any development that is required to achieve a minimum Cool Score, as defined in Article 2.000:

22.93.1 High Solar Reflectance Index (SRI) Roof. Where the development involves the construction of a new building roof or replacement of more than 50% of an existing roof, the surface of such roof shall have a minimum initial SRI of 82, with the following exceptions:

- (a) Roofs with a slope of 2:12 or steeper shall not be subject to a minimum SRI requirement.
- (b) Components of a Solar Energy System or Green Roof Area, as defined in this Zoning Ordinance, shall not be subject to a minimum SRI requirement.
- (c) In the case of a locally-designated historic structure, the minimum SRI may be reduced or waived to the extent necessary to comply with the conditions of any Certificate of Appropriateness issued by the Cambridge Historical Commission or by a Neighborhood Conservation District Commission. In the case of a state-designated or federally-designated historic structure, the minimum SRI may be reduced or waived to the extent necessary to comply with a determination of adverse effect by the Executive Director of the Cambridge Historical Commission.

22.94 Calculation.

22.94.1 Cool Target. The Cool Target shall be determined by multiplying the total lot area of the lot or Development Parcel by the total Open Space requirement applicable in the zoning district, or by 20%, whichever is greater (see formula below). The Cool Target shall be expressed in square feet.

Total Lot Area x Open Space Requirement (min. 20%) = Cool Target

22.94.2 Cool Area. The Cool Area shall be determined by multiplying the building and site design features listed in the table below (as defined in Article 2.000 of this Zoning Ordinance) by the corresponding weighted values in the table. Features that are located within 20 feet of a street shall use

Climate Resilience Zoning – Planning Board Zoning Petition

the weighted values in the rightmost column; all other areas shall use the weighted values in the column to the left. The Cool Area for a lot or Development Parcel shall be the sum of the weighted values for all such features located on the lot or Development Parcel, expressed in square feet.

Category	Cooling Design Feature	Weighted Value Not Within 20' of Street	Weighted Value Within 20' of Street
Preserved Existing Trees	Understory Tree currently <10' canopy spread	0.80 x 150 square feet per tree	1.60 x 150 square feet per tree
	Canopy Tree currently <15' canopy spread	0.80 x 700 square feet per tree	1.60 x 700 square feet per tree
	Understory Tree currently >10' canopy spread	1.00 x 150 square feet per tree	2.00 x 150 square feet per tree
	Canopy Tree currently between 15' and 25' canopy spread	1.00 x 700 square feet per tree	2.00 x 700 square feet per tree
	Canopy Tree currently >25' canopy spread	1.20 x 700 square feet per tree	2.40 x 700 square feet per tree
New or Transplanted Trees	Understory Tree	0.60 x 150 square feet per tree	1.20 x 150 square feet per tree
	Canopy Tree	0.70 x 700 square feet per tree	1.40 x 700 square feet per tree
Planting Areas	Lawn Area	0.30 x area in square feet	0.60 x area in square feet
	Low Planting Area	0.40 x area in square feet	0.80 x area in square feet
	High Planting Area	0.50 x area in square feet	1.00 x area in square feet
	Green Façade	0.10 x area in square feet	0.20 x area in square feet
	Living Wall	0.30 x area in square feet	0.60 x area in square feet
	Non-Intensive Green Roof Area	0.30 x area in square feet	0.60 x area in square feet
	Short Intensive Green Roof Area	0.50 x area in square feet	1.00 x area in square feet
Green Roofs & Façades	Intensive Green Roof Area	0.60 x area in square feet	1.20 x area in square feet

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Paving & Structures	Paved Area with a Minimum Solar Reflective Index (SRI) of 33	0.10 x area in square feet	Not Applicable
	Shaded Area	0.20 x area in square feet	0.40 x area in square feet

22.94.3 Cool Score. The Cool Score shall be the Cool Area divided by the Cool Target. It shall be expressed as a numerical value that is less than, equal to, or greater than 1.0.

(a) A Cool Score of 1.0 or greater shall be considered to meet the Green Factor standard, except as set forth elsewhere in this Zoning Ordinance.

(b) Where a development proposal involves the preservation and/or rehabilitation of a pre-existing building on the site, but does not result in an enlargement of the building footprint or expansion of the existing building on the site, then a Cool Score of less than 1.0 shall be considered to meet the Green Factor standard if it is equal to or greater than the Cool Score attributable to the existing conditions on the site.

22.95 Modifications. Upon granting a special permit, the Planning Board may approve modifications to the development standards set forth above after finding that a proposed development is designed to meet the intent of the standards in a manner that is more appropriate to the unique conditions of the development or the site.

22.96 Administrative Review Procedures. Before applying for any special permit from the Planning Board, any development review procedure under Article 19.000 of the Zoning Ordinance, or a Building Permit, whichever occurs sooner, the documentation listed below shall be submitted to the Community Development Department (CDD) for review. Within thirty (30) days after receiving a complete set of documentation, CDD shall provide written notice that the documentation sufficiently demonstrates compliance with the requirements of this Section or shall provide a written explanation of deficiencies to be corrected in a revised submission. To verify continued compliance, revised documentation incorporating any design modifications shall be submitted to CDD and reviewed in accordance with the aforementioned procedures before applying for any Building Permit or Certificate of Occupancy that is sought after the initial submission.

(a) Green Factor Score Sheet. A tabulation of the Cool Score of a lot, to be submitted on a form provided by CDD and updated by CDD from time to time.

(b) Site and Roof Plans. A set of plans that depict the location and extent of all building and site features identified as contributing to the Cool Score, and also delineate which portions of the lot are within 20 feet of a street.

22.97 Implementation of Green Factor Standard. The Assistant City Manager for Community Development in consultation with the City Engineer may develop standards and procedures appropriate to and consistent with the provisions of this Section. All features used in calculation of the Cool Score shall be designed, installed, and maintained in accordance with such guidelines promulgated by the City.

Create or amend the following Definitions in Article 2.000:

Cool Area. The weighted area of features on a site that contribute to its Cool Score according to the Green Factor standards set forth in Section 22.90 of this Zoning Ordinance.

Cool Score. The metric used to determine if a project meets the Green Factor standard set forth in Section 22.90 of this Zoning Ordinance.

Cool Target. The metric used in determining the amount of Cool Area necessary to meet the Green Factor standard set forth in Section 22.90 of this Zoning Ordinance.

Double-Skin Façade. A multilayer exterior wall system comprising a solid outer wall, a solid inner wall, and a ventilated intermediate air space, intended to improve insulation and manage solar heat gain as an element of a building-wide mechanical system for heating and cooling a building.

Floor Area, Gross. The sum, in square feet, of the gross horizontal areas of all floors of a building, as measured from the exterior walls of a building or the centerline of party walls between buildings, calculated in accordance with the detailed standards in Section 5.25 of this Zoning Ordinance.

Green Façade. A vertical system, attached to existing walls or built as freestanding structures, designed to support the growth of plants on a lattice, cable, mesh, or similar wall surface. The growing medium for Green Façades may be at grade or elevated in planters at the base of the structure or at intermediate levels.

Green Factor. A specific performance-based design standard to assess the overall cooling performance of buildings and sites, set forth in Section 22.90 of this Zoning Ordinance.

Green Roof Area. Area atop a roof surface on a building that is covered by a layer of living vegetation planted in a minimum of four (4) inches of growth medium over a waterproofing system in accordance with the provisions of Section 22.30 of this Zoning Ordinance. (Also known as a vegetated roof.)

Green Roof Area, Biosolar. Green Roof Area integrated with a Solar Energy System.

Living Wall. A vertical system comprised of pre-vegetated panels affixed to an exterior structural wall or free-standing frame. The surface of Living Walls is designed to be continuously covered with vegetation and the growing medium is distributed throughout the surface of the system.

Long-Term Flood Elevations (“LTFEs”). Projected elevations of future flood risk due to certain types and probabilities of flood events, promulgated by the City Engineer in accordance with the provisions of Section 22.80 of this Zoning Ordinance.

Open Space, Green Area. A landscaped area of land associated with and located on the same tract of land as a major building or group of buildings in relation to which it serves to provide light and air, or scenic, recreational, or similar purposes. **Open Space, Permeable.** A kind of Green Area Open Space in which the surface material must be permeable but which surface material is not limited or restricted as to type.

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Open Space, Public. An area owned or controlled by the City of Cambridge or other public entity that is intended for public use and is designed for either environmental, scenic, or recreation purposes.

Open Space, Publicly Beneficial. A portion of a structure, a lot or other area of land associated with and adjacent to a building or group of buildings in relation to which it serves to provide light and air, or scenic, recreation, pedestrian amenity or similar purposes. **Open Space, Private.** The part or parts of a lot or structure which are reserved for the use of occupants of a building which is used wholly, or in part, for residential purposes. This space shall have minimum dimensions as prescribed in the Ordinance, shall exclude parking areas, driveways, and walkways, and shall be open and unobstructed to the sky.

Planting Area. A landscaped area of land capable of supporting the growth of trees, grass, ground cover, shrubs, and similar vegetation.

Lawn Area. A type of Planting Area that supports sod or seeded tall grasses and has a minimum soil depth of eight (8) inches.

Low Planting Area. A type of Planting Area that supports short herbaceous or woody plants, such as shrubs, and has a minimum soil depth of twelve (12) inches.

High Planting Area. A type of Planting Area that supports tall herbaceous or woody plants, such as shrubs, and has a minimum soil depth of eighteen (18) inches.

Shade Canopy. An unenclosed structure that is freestanding or attached to a building, such as a pergola, arbor, porch cover, or awning, which is intended to protect outdoor areas from solar heat gain, and whose upper surface (which may be porous or nonporous) has a minimum Solar Reflectance Index (SRI) of 0.82 except in the case of a Solar Canopy.

Solar Canopy. A Shade Canopy that is covered in whole or in part by a Solar Energy System; the portion covered by a Solar Energy System shall not have a minimum Solar Reflectance Index (SRI).

Shaded Area. An outdoor area of a building or lot that is directly beneath a Shade Canopy as defined in this Zoning Ordinance, and that is horizontally open to the air on at least fifty percent (50%) of its perimeter.

SRI or Solar Reflectance Index. The measure of a constructed surface's ability to stay cool in the sun by reflecting solar radiation and emitting thermal radiation, as defined by ASTM International. It is expressed as a unitless value ranging from 0 to 100, with 0 representing the lowest possible solar reflectance and 100 representing the highest possible solar reflectance.

Tree. A woody perennial plant, typically having a single thick stem or trunk, that grows to a considerable height and has lateral branches at some distance from the ground, planted and maintained in accordance with guidelines promulgated by the Department of Public Works.

Tree, Understory. A type of tree that is small enough and sufficiently shade tolerant to thrive under the canopies of taller trees. Understory trees form a vegetative layer between low-lying ground cover and tall canopy trees. Understory trees typically reach a canopy spread of eight (8) to fifteen (15) feet at maturity.

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Tree, Canopy. A large, tall tree that has a well-defined trunk and a distinct and definite formed crown. Canopy trees are intended to provide shade and typically reach a canopy spread of twenty-five (25) feet or larger at maturity.

Amend Section 5.10 to read as follows:**5.10 GENERAL REGULATIONS**

5.11No building or structure shall be built nor shall any existing building or structure be enlarged which does not conform to the regulations as to maximum ratio of floor area and lot areas, minimum lot sizes, minimum lot area for each dwelling unit or equivalent, minimum lot width, minimum dimensions of front, side, and rear yards and maximum height of structures, in the several districts as set forth in Article 5.000, Section 5.30 except as hereinafter provided and except in the Cambridge Center MXD District, which shall be governed by the requirements of Section 14.30.

5.12The lot or yard areas required for any new building or use may not include any part of a lot that is required by any other building or used to comply with any requirements of this Ordinance, nor may these areas include any property of which the ownership has been transferred subsequent to the effective date of this Ordinance if such property was a part of the area required for compliance with the dimensional requirements applicable to the lot from which such transfer was made.

5.13In the case of multiple buildings on a lot, the minimum distance between such buildings shall not be less than the sum of the heights of the buildings divided by six or ten feet, whichever is greater. In determining compliance with this section, portions of buildings exempted by Section 5.23 shall not be counted in computing building height.

5.14For residential uses permitted in Residence A, B, C, and Office districts which are not divided into dwelling units, each one thousand square feet of gross floor area of the building shall be considered equivalent to one dwelling unit for purposes of computing minimum lot area.

5.15No lot or development parcel shall be changed in size, shape, or ownership so that the dimensional requirements or off-street parking and loading requirements prescribed in this Ordinance are no longer satisfied. This paragraph shall not apply where a portion of the lot or development parcel is acquired for a public purpose. This paragraph shall not apply to townhouse development, as governed by Section 11.10.

5.16Any new building or new addition to a building that receives a building permit or, where applicable, a special permit after the enactment of this Section shall require certification from DPW that it conforms to the Flood Resilience standards set forth in Section 22.80 of this Zoning Ordinance before issuance of a building or special permit if it meets the following criteria:

- (a) The new building or addition involves the construction of a new foundation, and
- (b) In the case of an addition to an existing building, the footprint area of the building, measured in plan view, is increased by at least 50%.

Amend Sections 5.22, 5.23, 5.24 and 5.25 to read as follows:

5.22 Open Space. There are four types of Open Space: Private, Public, Publicly Beneficial, and Green Area. There is also Permeable Open Space, which is a specific type of Green Area Open Space. All five terms are defined in Article 2.000.

5.22.1 Private Open Space. Private Open Space shall be open and unobstructed to the sky, except that up to fifty (50) percent of the total Private Open Space may be Shaded Area. Trees, plantings, arbors, fences, flagpoles, sculpture, fountains and recreational and drying apparatus and similar objects shall not be considered obstructions when located within a private open space. Objects or structures intended exclusively for bicycle parking, designed and located in accordance with Section 6.100, which may be uncovered, partially covered or fully enclosed, shall not be considered obstructions provided that such objects or structures are not used for motor vehicle parking, general storage or any other use, and further provided that any such structure exceeding six feet (6') in height conforms to the requirements for an accessory building in Section 4.21. Beehives and apiaries conforming to the Standards for Urban Agriculture in Article 23.000 of this Zoning Ordinance shall not be considered obstructions provided that they are no more than six (6) feet in height. Structures or features that are necessary for a building to comply with the Flood Resilience Standards in Section 22.80, such as stairs, ramps, or window wells, shall not be considered obstructions. To the extent permitted in this Ordinance, balconies and roof areas may also be considered as Private Open Space.

5.22.1(a) Private Open Space shall be provided on every lot used for residential purposes except for those in the Cambridge Center MXD District, and shall be a percentage of the lot area as set forth in Section 5.31. An area designated as Private Open Space may not have a slope greater than ten percent (10%). With the exception of balconies, Private Open Space must have both a width and a length of at least fifteen (15) feet and shall be accessible to all occupants of a building. At least fifty percent (50%) of the required private open space shall be provided at ground level, within ten (10) feet of the level of the lowest floor used for residential purposes, or elevated to the 1%-Probability Long-Term Flood Elevation as determined by the Flood Resilience Standards set forth in Section 22.80 of this Zoning Ordinance. Areas at other levels, such as balconies, decks, and roofs of garages and buildings, may be calculated as Private Open Space if they are accessible to all occupants of buildings, are not used as walkways or corridors, have both a width and a length of at least six (6) feet, and have a minimum area of seventy-two (72) square feet. Any other Private Open Space, such as balconies and decks accessible only to some building occupants, shall count for no more than twenty-five percent (25%) of the required Private Open Space.

5.22.1(b) Where nonresidential and residential uses are mixed in a building, the required minimum Private Open Space for residential use shall be calculated in relation to the portion of the lot which the residential floor area is to the total floor area in the building.

5.22.1(c) Special Requirements in Residence A-1, A-2, B, C, and C-1. At least fifty percent (50%) of the required Private Open Space in these districts shall meet all of the requirements of Section 5.22.1 above.

At least fifty percent (50%) of the required Private Open Space shall meet the definition of Permeable Open Space and shall not be subject to the dimensional limitations of Section 5.22.1 as applied to Private Open Space.

5.22.2 Public Open Space. Public Open Space shall be open and unobstructed to the sky, except that up to fifty (50) percent of the total Public Open Space may be Shaded Area. Public Open Space may include but is not limited to lawns, decorative plantings, interior walkways, abutting sidewalks, active and passive recreation areas, playgrounds, fountains, and public performance areas. Public Open Space shall not include rooftop areas, patios, balconies, parking lots, or driveways. Limited paved surfaces may be designed to accommodate occasional use by motor vehicles servicing the park facility. If the facility is not held in fee simple by the City of Cambridge or other public entity, the Public Open Space may be land remaining in private ownership but protected for public use by means of a permanent easement, conservation restriction, or other similar legal device acceptable to the City.

5.22.3 Publicly Beneficial Open Space. Such space shall be customarily available or shall be readily visible to such occupants and visitors, though physically inaccessible, by being located and treated to enhance the amenity of the development through a general appearance of openness. Publicly beneficial open space shall include parks, plazas, lawns, landscaped areas, decorative plantings, and active and passive recreational areas. Publicly beneficial open space shall also include loggias, atriums, arcades and pedestrian ways listed and defined in Section 14.45. Streets, parking lots, driveways, service roads, loading areas, and areas normally inaccessible to pedestrian circulation beneath pedestrian bridges, decks, or shopping bridges shall not be counted in determining required publicly beneficial open space.

5.22.4 Green Area Open Space. Green Area Open Space shall be open and unobstructed to the sky except that up to fifty (50) percent of the total required Green Area Open Space may be Shaded Area. Green Area Open Space shall be land at grade and shall consist of friable, permeable materials (including but not limited to loam, gravel, sand, crushed stone, and including naturally occurring soil, bedrock, and incidental pipes and other underground utilities) having a minimum depth of three (3) feet. Said land shall be capable of supporting the growth of trees, grass, ground cover, shrubs, and similar vegetation. Such area may not include any portion of the lot used for parking areas and access drives or other hard surface areas, except walks and terraces designed and intended for non-motor vehicle use.

Green Area Open Space shall consist entirely of living trees, grass, ground cover, bushes, shrubs, and/or similar vegetation, as well as water and other natural features of the site. However, in no case shall hard surfaced walks and terraces, or pervious ground covers like gravel, stone, and wood chips not being used as mulch beneath vegetation, exceed twenty-five (25) percent of the total required Green Area Open Space.

5.22.4(a) Permeable Open Space. Permeable Open Space shall consist of a surface material that may include vegetation; rocks, pebbles, wood chips and similar landscaping materials; or unit pavers. All other materials (for example, continuously poured asphalt or concrete) are not allowed except that any material may be used for pedestrian walkways not exceeding forty-eight (48) inches in width or half the width of the area in which they are located, whichever amount is less.

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5.22.5 Green Factor. Any new building, new addition to a building that seeks to increase the footprint of a building by at least 50% in area, or new surface parking area on or after the enactment of this Section, the lot or Development Parcel shall be designed to conform to the Green Factor Standard set forth in Section 22.90 of this Zoning Ordinance before issuance of a building permit or special permit if applicable.

5.23 Height Exceptions. The provisions of this Ordinance governing the height of buildings and structures in all districts shall generally not apply to the following:

- (a) chimneys, water towers, air conditioning equipment, elevator bulkheads, skylights, ventilators and other necessary features appurtenant to buildings which are usually carried above roofs and are not used for human occupancy
 - (b) domes, towers, or spires above buildings if such features are not used for human occupancy and occupy less than ten percent (10%) of the lot area
 - (c) wireless or broadcasting towers and other like unenclosed structures which occupy less than ten percent (10%) of the lot area
 - (d) Wind Turbines, subject to the requirements and limitations set forth in Section 22.70;
 - (e) elements of a Solar Energy System, as defined in Section 22.60 of this Zoning Ordinance, that would ordinarily be located on a rooftop where they would have direct exposure to sunlight;
 - (f) beehives and apiaries extending no more than six (6) feet above a rooftop, in accordance with the Standards for Urban Agriculture in Article 23.000 of this Zoning Ordinance; and
 - (g) structures appurtenant to Green Roof Area or usable outdoor space adjacent to a Green Roof Area, including but not limited to elevator and stair access headhouses and Shade Canopies located above the roof, provided that the area of such features is less than the total adjacent Green Roof Area.
- 5.23.1 Building elements enumerated in (a) and (g) above shall be limited in height where they are placed on a building located in a non-residential district, which district abuts a Residence A-1, A-2, B, C, C-1, C-1A, C-2, C-2A, C-2B district. In these instances, the following height limitations shall apply to those building elements:**
- (a) The elements must be below one or more forty-five (45) degree bulk control planes. Each bulk control plane shall begin, in the vertical dimension, at the maximum height limit permitted in the non-residential zoning district. In the horizontal dimension, the plane shall begin at the residential/non-residential zoning district line; however, where that line lies within a street, the plane shall begin at the front lot line, located nearest the zoning district line, of the lots on which the building is sited. Thereafter the bulk control plane shall rise from its beginning over the non-residential zoning district. (See illustrative figure 5.23)

(b) The limitations in Paragraph 1 above may be waived by special permit from the Planning Board upon a finding by the Board that the additional height is necessary. In making that determination the Planning Board shall consider the special and unique requirements of the use that the elements are serving, any special constraints imposed by the site upon which the building is located, the nature and character of development in the adjacent residential district, and the extent to which successful efforts are made to minimize the visual and acoustical impact of the elements on neighbors.

5.23.2 If the Ground Story of a building is elevated to meet the Flood Resilience Standards in Section 22.80 of this Zoning Ordinance, then the allowed height of buildings and structures as set forth in this Zoning Ordinance may be increased as-of-right to compensate for the difference between the Ground Story finished floor elevation and the Grade elevation. However, the allowed increase in height shall be no greater than the difference in elevation between the 1%-Probability Long-Term Flood Elevation as described in Section 22.80 and the Grade, or four (4) feet, whichever is less. The City Engineer shall certify that the Flood Resilience Standards in Section 22.80 are met prior to issuance of a building permit for a building or structure utilizing the provisions of this Section 5.23.2.

5.24 Yards:

5.24.1 Every part of a required yard shall be open to the sky and unobstructed, except that the following features may be located within a required yard:

- (a) Awnings, arbors, fences, flagpoles, recreational, and laundry drying equipment and similar objects;
- (b) Objects or structures intended exclusively for bicycle parking meeting the requirements of Article 6.000, which may be uncovered, partially covered or fully enclosed, provided that such objects or structures are not used for motor vehicle parking, general storage or any other use, and further provided that any such structure exceeding six feet (6') in height conforms to the requirements for an accessory building in Section 4.21;
- (c) Beehives and apiaries no more than six (6') feet in height, in accordance with the Standards for Urban Agriculture in Article 23.000 of this Zoning Ordinance;
- (d) Objects or equipment located in a required yard that are necessary for or appurtenant to a Public Bicycle-Sharing Station;
- (e) Open or lattice-enclosed fire escapes for emergency use only;
- (f) Projecting eaves, chimneys, bay windows, balconies, open fire escapes and like projections which do not project more than three and one-half (3½) feet and which are part of a building not more than thirty-five (35') feet in height;
- (g) Shade Canopies as defined in this Zoning Ordinance, provided that any Shade Canopy exceeding seven feet (7') in height shall be set back at least five feet (5') from a side or rear lot line in a residential district; and

(h) Elevated features that provide protection or resilience from flooding on the lot, including but not limited to steps, ramps, elevated walkways, porches, window wells, and flood barriers, provided such features do not project more than twelve (12') feet beyond the line of the foundation wall of a building, are open to the air and are either unroofed or covered only by a Shade Canopy, and are not elevated higher than four (4') feet above Grade or the 1%-Probability Long Term Flood Elevation as determined by the Flood Resilience Standards in Section 22.80 of this Zoning Ordinance, whichever is higher.

5.24.2 Existing conforming or pre-existing non-conforming buildings in existence prior to August 2, 2010, may encroach or further encroach into a required yard solely in order to install exterior insulation to an existing exterior wall, provided that such existing exterior wall is not moved or demolished except to remove and replace its exterior wall covering and that the requirements of either Paragraph (a) or Paragraph (b) below are met:

(a) The yard is not decreased by more than eight (8") inches from the pre-existing condition, the wall itself does not intrude more than eight (8") inches further into the existing yard, and the outer plane of the exterior wall after the installation of exterior insulation and exterior wall covering is not closer than three (3') feet to the nearest property line; or

(b) The Board of Zoning Appeal (BZA) has granted a special permit to exceed the limitations of Paragraph (a) above upon finding that, given the unique physical constraints of the building or the site, such relief is necessary to install exterior insulation that will substantively improve the thermal performance of the exterior wall envelope, that potential impacts to the safety or privacy of abutting uses will be mitigated, and that the general criteria set forth in Section 10.43 of this Zoning Ordinance are met.

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, (H1, H2, etc.) times the length of each roof level (L1, L2, etc.) and dividing the sum by the sum of the length of the levels (L1, L2, etc.) (see formula below)

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

- (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 (setback1 x facing area1) + (setback2 x facing area2) MUST EQUAL OR EXCEED the product of (single plane setback) x (single plane facing area).

5.25 Gross Floor Area (GFA) and Floor Area Ratio (FAR)**5.25.1** Gross Floor Area shall include:

- (a)Roofed porches and balconies that are enclosed on more than fifty percent (50%) of their perimeter and do not meet the definition of Shaded Area;
- (b)Unroofed porches and balconies above the third floor except as provided in Section 5.25.2(j);
- (c)Elevator shafts and stairwells on each floor, not excluded in Section 5.25.2(c) or (f) ;
- (d)Attic space, whether finished or unfinished, within the area of a horizontal plane that is five (5) feet above the attic floor and which touches the side walls and/or the underside of the roof rafters and which is not excluded in Section 5.25.2(f);
- (e)Interior balconies, mezzanines, and penthouses, and the area of each floor level of any interior courtyard in a building with more than two floors, whether or not covered by a roof, which has a minimum dimension of less than forty (40) feet in any direction unless twenty (20) percent or more of the perimeter of such courtyard at each floor level measured consecutively is not enclosed;
- (f)Area of parking facilities in structures except as excluded in 5.25.2(b); and
- (g)Any accessory parking spaces not in above ground structures if in excess of the maximum number permitted on the premises as set forth in Section 5.25.3 and 6.30.

5.25.2 Gross Floor Area shall not include:

- (a)Areas used for off street loading purposes;

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- (b) Area of parking facilities in structures located underground and the area of on grade open parking spaces outside the building footprint at or below the maximum number permitted on the premises as set forth in Sections 5.25.3 and 6.30;
- (c) Area in Stories Below Grade that meets at least one of the following criteria:
- (i) The area has less than seven feet (7') of ceiling height measured from the floor to the line of the bottom of the floor joists above, or to any subfloor or finished surface above any floor joists that are spaced not less than four (4) feet on center; or
 - (iii) The area is designed in accordance with the Flood Resilience Standards set forth in Section 22.80 of this Zoning Ordinance.
- (d) Open and lattice-work fire escapes;
- (e) Unroofed porches and balconies no higher than the third floor;
- (f) Areas located in any part of a building or site devoted to elevator machinery or mechanical equipment necessary for the operation and maintenance of the building, including heating and cooling equipment, electrical and telephone facilities, fuel storage, and sustainable mechanical systems and related equipment and chases for systems including, but not limited to, solar energy systems, geothermal systems and heat pumps, solar hot water systems and related tubes and tanks, equipment related to radiant heating, hydronic cooling, heat recovery ventilators, and energy recovery ventilators;
- (g) Elevator shafts and stairwells on floors where there is no other area which qualifies to be included in Green Roof Area, including headhouses that provide access to Green Roof Area;
- (h) Attic space not included in Section 5.25.1(d);
- (i) Bicycle parking meeting or exceeding the requirements of Article 6.000, which shall include all areas occupied by Bicycle Parking Spaces and access routes intended exclusively for use by bicycles, which shall be clearly indicated in the bicycle parking plan requirements set forth in Section 6.52.1 whether located in a principal use structure, any parking facility for motor vehicles, or in an accessory structure;
- (j) Green Roof Area as defined in this Zoning Ordinance and constructed in accordance with the standards in Section 22.30 of this Zoning Ordinance, whether or not it meets the minimum Green Roofs Requirement in Section 22.35, as well as the area of adjacent impervious walkways, decks, and access headhouses intended for maintenance or enjoyment of the Green Roof Area, provided that such area is not greater than the Green Roof Area;
- (k) Interior air spaces within a Double-Skin Façade as defined in Article 2.000 of this Zoning Ordinance, up to a maximum depth of one (1) foot, provided the space is not to be accessed except for maintenance purposes;

- (j) Insulating material attached to the exterior of the structural elements of an external building wall.
- (m) Shaded Area as defined in this Zoning Ordinance;
- (n) Public Bicycle-Sharing Stations.

5.25.3 FAR Exceptions for Parking and Loading Facilities.

5.25.3.1 Loading Facilities. Areas used for off-street loading purposes shall be exempt from the requirements as to Floor Area Ratio but shall conform to all other requirements of the district in which it is located.

5.25.3.2 Parking Facilities in Structures. The floor area of an underground parking garage and the floor area of the underground portion of a structure devoted in whole or in part to parking automobiles, shall not be counted as Gross Floor Area and shall be exempt from the requirements as to floor area but shall conform to all other requirements of the district in which it is located. All other parking in structures shall be subject to the requirements as to Floor Area Ratio.

5.25.3.21 Area of Parking Facility. For the purposes of this Section 5.25.3 the area of parking in a structure shall include all parking spaces, access drives, aisles and other elements of the parking facility and shall include any portion of a parking facility located at grade beneath a building but not otherwise enclosed.

5.25.3.22 Definition of Underground. For the purposes of this Section 5.25.3 only, "underground" shall mean either of the following:

- (1) The location of the entire parking facility below the finished grade of the ground abutting the structure, or the underground portion thereof, which grade is maintained naturally without any structural support. No more than two access drives, which in combination total no more than 30 feet in width, shall be permitted to be above the finished grade and still be considered to be located underground.
- (2) The location of a portion of the facility above finished grade to the following extent: (1) the mean height of that portion of the parking facility above finished grade around the entire perimeter of the facility does not exceed four (4) feet, which grade is maintained naturally without any structural support (in no case, however, shall the height above mean grade for that portion of the facility facing a public street exceed four feet), and (2) the roof or top of the facility shall be either set beneath other, non-parking facility portions of the structure, landscaped or otherwise finished to serve as a pedestrian plaza, open space amenity, recreation area or pedestrian circulation. The height above mean grade shall be measured to the roof of the facility, or to the ceiling should the facility be set entirely below other non-parking elements of a building.

5.25.3.3 Exemption for Existing Parking Facilities: Structured parking facilities in existence on or before September 15, 2000, or constructed and occupied at a later date pursuant to a building or special permit in conformance with all provisions of Chapter 40A issued prior to the effective date of the provisions of this Section 5.25, shall not be subject to the requirements as to Floor Area Ratio.

5.25.3.4 Exceptions to the Provisions of this Section 5.25.3

5.25.3.41 Exemption for Residential Parking Spaces. Notwithstanding the provisions of Section 5.25.3.2 above, the following structured parking located above ground, accessory to a residential use, shall not be calculated as part of the Gross Floor Area on the lot:

- (1) One parking space located within a townhouse unit or a one, two or three family dwelling.
- (2) A freestanding parking structure containing no more than one parking space per dwelling unit up to a maximum of three parking spaces on a lot containing a one, two or three family dwelling.
- (3) One parking space per dwelling unit, up to a maximum of fifteen (15) spaces, for multifamily dwellings.

5.25.3.42 Where an above ground parking facility in a structure is proposed to be constructed (a) in the 100-year flood plain, identified as the Zone A flood hazard area (See Section 11.70), or as determined by credible evidence and calculations from a registered professional engineer or (b) on a contaminated site that is listed by the Massachusetts Department of Environmental Protection under the Massachusetts Contingency Plan (310 CMR 40.00) with a Release Tracking Number and has been tier classified, the Planning Board may grant a special permit to waive the limitations of this Section 5.25.3 so that the parking facility is not subject to the requirements in this Ordinance as to Floor Area Ratio provided only the minimum number of parking spaces required for the uses on the site are provided. In granting such a special permit, the Planning Board shall find the following:

- (1) Where in a flood hazard area, the construction of a parking facility underground is (a) not technically feasible due to the requirements of the Massachusetts Wetlands Protection Act (M.G.L. ch. 131, s.40, (b) would require construction that would violate requirements or limitations of the Massachusetts Wetlands Protection Act, (c) would, in the view of the Cambridge Conservation Commission, seriously compromise the wetlands protection objectives of the Massachusetts Wetlands Protection Act, and (d) would result in costs of construction that are significantly greater than would otherwise be typical for the location were it not in a flood hazard area; or
- (2) Where the site is contaminated, the construction of a parking facility underground (a) would, in the opinion of a Licensed Site Professional, pose significant risks to public health or the environment through disturbance of hazardous materials and could not be reasonably mitigated in accordance

with state and federal regulations, (b) require construction that is prohibited by state or federal regulations related to hazardous wastes, and (c) would result in costs of construction that would render the project financially unfeasible; and

- (3) The above ground facility is designed so as to reduce its actual or perceived bulk through, among other possible techniques, limiting the number of parking spaces it contains, placement of portions of the facility below grade where feasible, or its location relative to actively occupied portions of the construction. Construction above grade is discouraged that would increase the amount of impervious area on the lot.

Amend Section 19.24 (Application Procedures for a Project Review Special Permit) to read as follows:

19.24 Application Procedures. An application for the Project Review Special Permit shall be made to the Planning Board. The Application shall consist of the following materials:

(1) Planning Board Special Permit Application Form. The application shall include all required plans and narrative statements. The site plan and other plans, elevations and drawings shall clearly show: (1) the access and egress points for all forms of travel to the site, (2) the location of adjacent bus and transit stops, (3) the schematic design of proposed mechanical equipment, and (4) the architectural screening treatment proposed for that mechanical equipment. The proponent shall provide perspectives of the proposed development, including mechanical equipment, from all critical viewpoints.

(2) Traffic Study. Where the use thresholds established in Table 1 are met or exceeded, the application shall include a traffic study with a geographic and functional scope determined by the Traffic, Parking, and Transportation Department (TPTD) to be appropriate to the location of the project. In general, the study shall review intersections where the project will have significant and measurable impact. The TPTD shall issue a certification to the applicant within twenty-one (21) days of its submission that the traffic study has been done in a complete and reliable manner. Where that certification is denied, the applicant may revise the information in the traffic study and resubmit it; a certification of the revised study shall be issued or denied by the TPTD within fourteen (14) days of the resubmission of material.

Based on guidelines established by TPTD, the traffic study shall include a narrative discussion of (a) the nature and quantity of vehicles traveling to the site including, in addition to passenger cars, service, delivery and other commercial vehicles, (b) the likely impact of such vehicular traffic on abutters, abutting streets and nearby residential streets, including on-street parking behavior, (c) the physical nature of pedestrian and bicycle access to the site and the quantity of movements anticipated for each, and (d) an analysis of the crash history at intersections within the study area. The study shall identify parking and transportation demand management measures and other mitigation measures proposed to ameliorate any adverse traffic impacts identified in the study.

(3) Tree Study. A Tree Study, certified complete by the City Arborist, as required by the Tree Protection Ordinance of the City of Cambridge, Chapter 8.66.

(4) Urban Design Objectives Narrative. The application shall include a narrative description of how the proposal addresses each of the seven Urban Design Objectives set forth in Section 19.30. In addition the applicant shall comment specifically on the following: (a) the design and location of proposed mechanical equipment, including HVAC equipment, as well as a strategy for possible future expansion, if relevant, (b) location and operation of trash storage and removal systems, (c) location and operation of loading facilities, (d) measures taken to minimize the negative visual and noise impacts of such facilities on abutters, and (e) the provision in the building and site design to accommodate pedestrian, bicycle and transit access.

- (5) Sewer Service Infrastructure Narrative. The application shall include a report by the applicant detailing the anticipated impact of the project on the city's sanitary, stormwater, and combined sewer infrastructure. It shall indicate the adequacy of the preliminary site plan in meeting city, state, and federal requirements or established standards for implementation of best management practices for stormwater management and the likely improvements to infrastructure necessary to accommodate the impacts of the proposed project. Where such determinations cannot be made at the time of application, the report shall indicate what investigations must be undertaken by the applicant to make such determination, their anticipated costs, and the schedule for their completion. The applicant shall provide certification that this report has been submitted to the Department of Public Works.
- (6) Water Service Infrastructure Narrative. The application shall include a report by the applicant detailing the anticipated impact of the project on the city's water delivery infrastructure and supply. It shall indicate the likely improvements to infrastructure necessary to accommodate the identified impacts. Where such determinations cannot be made at the time of application, the report shall indicate what investigations must be undertaken by the applicant to make such determination, their anticipated costs, and the schedule for their completion. The applicant shall provide certification that this report has been submitted to the Water Department.
- (7) Noise Mitigation Narrative. The application shall include a report detailing how the project shall conform to the requirements of the Cambridge Noise Ordinance. The report shall indicate the approaches to be adopted by the applicant in minimizing the impact of noise from the project on neighbors. When a project consists entirely or in part of residential uses located in a mixed-use or commercial or industrial area, the narrative shall describe how building materials, building design, building orientation, and site layout are being used to reduce the transmission of noise to the residences from the surrounding environment.
- (8) Resilience Narrative. The application shall include a report by the applicant describing how the project will mitigate and adapt to anticipated climate change impacts over the lifetime of the building, to include the following information at a minimum:
- (i) The Flood Resilience Standards documentation required in Section 22.80 of this Zoning Ordinance, and a description of specific design approaches used to respond to anticipated flood impacts, referencing plans, elevations, and other submitted drawings. Examples may include but are not limited to the following:
- raising of the finished floors of occupied spaces;
 - use of fixed or movable flood barriers at exterior access/egress points;
 - raising and/or protection of critical building equipment that is vulnerable to flooding;
 - use of flood-resistant building materials in areas of the building that are at risk of flooding, or materials that are readily replaceable if damaged by floodwater;
 - passive design approaches that maintain interior comfort in the event of a power outage or other extreme event;
 - and/or other design strategies.

(ii) The Green Factor documentation required in Section 22.90 of this Zoning Ordinance and a description of specific design approaches used to mitigate the anticipated impacts of heat on the building and site, referencing plans, elevations, and other submitted drawings. Examples may include but are not limited to the following:

- site landscaping and building design features that provide direct cooling to occupants of the site and any abutting public streets, reduce heat gain on the building, and mitigate urban heat island effect;
- passive design approaches that increase a building's ability to withstand heat gain and maintain interior comfort in the event of a power outage or other extreme event;
- interior cooling centers where occupants and/or other community members can seek shelter during extreme heat events;
- and/or other design strategies.

(iii) A description of any mitigation strategies that the owner will agree to implement for operational preparedness that will supplement design-based resilience strategies. Examples may include but are not limited to the following:

- information provided to building occupants about flood risk at initial occupancy;
- protocols for alerting occupants when an extreme flood or heat event is likely;
- response plans for maintaining occupant safety if occupants need to shelter in place temporarily, which may include measures to maintain emergency access/egress and to help occupants maintain access to water, food, medications, and means of communication;
- recovery plans for restoring habitability of spaces that may be damaged during an extreme weather event;
- participation in coordinated area-wide programs and resources to promote social resilience;
- and/or other strategies.

(iv) Other strategies that the owner proposes to implement in order to promote climate change resilience not described above.

Amend Section 19.30 to read as follows:**19.30 CITYWIDE URBAN DESIGN OBJECTIVES**

The following urban design objectives are intended to provide guidance to property owners and the general public as to the city's policies with regard to the form and character desirable for new development in the city. It is understood that application of these principles can vary with the context of specific building proposals in ways that, nevertheless, fully respect the policies' intent. It is intended that proponents of projects, city staff, the Planning Board, and the general public, where public review or approval is required, should be open to creative variations from the detailed provisions presented in this Section as long as the core values expressed are being served. A project need not meet all the objectives of this Section 19.30 where this Section serves as the basis for issuance of a special permit. Rather, the permit granting authority shall find that, on balance, the objectives of the city are being served. Nor shall a project subject to special permit review be required to conform to the Required Building and Site Plan Requirements set forth in Section 19.50.

Further indicators of conformance with these policy objectives shall be found in planning documents and plans developed for specific areas of the City or the City as a whole, to the extent that they are not inconsistent with the objectives set forth in this Section 19.30. These documents include the Harvard Square Development Guidelines, the Central Square Action Plan, the Central Square Development Guidelines, the North Massachusetts Avenue Urban Design Guidelines Handbook, the University Park at MIT Urban Design Guidelines, the North Point Policy Plan and Design Guidelines, the Cambridge Institutional Growth Management Plan, the East Cambridge Riverfront Plan, the Eastern Cambridge Plan, the Eastern Cambridge Design Guidelines, the Alewife Revitalization, Alewife Urban Design Study Phase II and its Draft update of 1991, and Toward a Sustainable Future: Cambridge Growth Policy Document.

19.31 New projects should be responsive to the existing or anticipated pattern of development. Indicators include:

- (1) Heights and setbacks provide suitable transition to abutting or nearby residential zoning districts that are generally developed to low scale residential uses.
- (2) New buildings are designed and oriented on the lot so as to be consistent with the established streetscape on those streets on which the project lot abuts. Streetscape is meant to refer to the pattern of building setbacks and heights in relationship to public streets.
- (3) In mixed-use projects, uses are to be located carefully to respect the context, e.g. retail should front onto a street, new housing should relate to any adjacent existing residential use, etc.
- (4) Where relevant, historical context is respected, e.g. special consideration should be given to buildings on the site or neighboring buildings that are preferably preserved.

19.32 Development should be pedestrian and bicycle-friendly, with a positive relationship to its surroundings. Indicators include:

(1) Ground floors, particularly where they face public streets, public parks, and publicly accessible pathways, consist of spaces that are actively inhabited by people, such as retail stores, consumer service businesses and restaurants where they are allowed, or general office, educational or residential uses and building lobbies. Windows and doors that normally serve such inhabited spaces are encouraged to be a prominent aspect of the relevant building facades. Where a mix of activities are accommodated in a building, the more active uses are encouraged facing public streets, parks, and pathways.

In commercial districts, such active space consists of retail and consumer service stores and building lobbies that are oriented toward the street and encourage pedestrian activity on the sidewalk. However, in all cases such ground floor spaces should be occupied by uses (a) permitted in the zoning district within which the building is located, (b) consistent with the general character of the environment within which the structure is located, and (c) compatible with the principal use for which the building is designed.

(2) Covered parking on the lower floors of a building and on-grade open parking, particularly where located in front of a building, is discouraged where a building faces a public street or public park, and publicly accessible pathways.

(3) Ground floors should be generally 25-50% transparent. The greatest amounts of glass would be expected for retail uses with lesser amounts for office, institutional or residential use.

(4) Entries to buildings are located so as to ensure safe pedestrian movement across streets, encourage walking as a preferred mode of travel within the city and to encourage the use of public transit for employment and other trips. Relating building entries as directly as possible to crosswalks and to pathways that lead to bus stops and transit stations is encouraged; siting buildings on a lot and developing site plans that reinforce expected pedestrian pathways over the lot and through the district is also encouraged.

(5) Pedestrians and bicyclists are able to access the site safely and conveniently; bicyclists should have secure weatherproof storage facilities conveniently located on-site. If bicycle parking is provided in a garage, special attention must be paid to providing safe access to the facilities from the outside.

(6) Alternate means of serving policy objective 19.32 through special building design, siting, or site design can be anticipated where the building form or use is distinctive such as freestanding parking structures, large institutional buildings such as churches and auditoriums, freestanding service buildings, power plants, athletic facilities, manufacturing plants, etc.

19.33 The building and site design should mitigate adverse environmental impacts of a development upon its neighbors. Indicators include:

(1) Mechanical equipment that is carefully designed, well organized or visually screened from its surroundings and is acoustically buffered from neighbors. Consideration is given to the size, complexity and appearance of the equipment, its proximity to residential areas, and its impact on the existing streetscape and skyline. The extent to which screening can bring order, lessen negative visual impacts, and enhance the overall appearance of the equipment should be taken into account. More specifically:

- (a) Reasonable attempts have been made to avoid exposing rooftop mechanical equipment to public view from city streets. Among the techniques that might be considered are the inclusion of screens or a parapet around the roof of the building to shield low ducts and other equipment on the roof from view.
- (b) Treatment of the mechanical equipment (including design and massing of screening devices as well as exposed mechanical elements) that relates well to the overall design, massing, scale and character of the building.
- (c) Placement of mechanical equipment in enclosed locations within the building (if it does not violate the Flood Resilience Standards in Section 22.80), which reduces the bulk of elements located on the roof; however, at-grade locations external to the building should not be viewed as desirable alternatives and should be visually and acoustically screened with fencing and/or landscape features wherever they are necessary.
- (d) Tall elements, such as chimneys and air exhaust stacks, which are typically carried above screening devices for functioning reasons, are carefully designed as features of the building, thus creating interest on the skyline.
- (e) All aspects of the mechanical equipment have been designed with attention to their visual impact on adjacent areas, particularly with regard to residential neighborhoods and views and vistas.
- (2) Trash that is handled to avoid impacts (noise, odor, and visual quality) on neighbors, e.g. the use of trash compactors or containment of all trash storage and handling within a building is encouraged.
- (3) Loading docks that are located and designed to minimize impacts (visual and operational) on neighbors.
- (4) Stormwater Best Management Practices and other measures to minimize runoff and improve water quality are implemented.
- (5) Landscaped areas and required Green Area Open Space, in addition to serving as visual amenities, are employed to reduce the rate and volume of stormwater runoff compared to pre-development conditions.
- (6) The structure is designed and sited to minimize shadow impacts on neighboring lots, especially shadows that would have a significant impact on the use and enjoyment of adjacent open space and shadows that might impact the operation of a Registered Solar Energy System as defined in Section 22.80 of this Zoning Ordinance.
- (7) Changes in grade across the lot are designed in ways that minimize the need for structural retaining walls close to property lines.

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(8) Building scale and wall treatment, including the provision of windows, are sensitive to existing residential uses on adjacent lots.

(9) Outdoor lighting is designed to provide minimum lighting and necessary to ensure adequate safety, night vision, and comfort, while minimizing light pollution.

(10) The creation of a Tree Protection Plan that identifies important trees on the site, encourages their protection, or provides for adequate replacement of trees lost to development on the site.

19.34 Projects should not overburden the City infrastructure services, including neighborhood roads, city water supply system, and sewer system. Indicators include:

(1) The building and site design are designed to make use of water-conserving plumbing and minimize the amount of stormwater run-off through the use of best management practices for stormwater management.

(2) The capacity and condition of drinking water and wastewater infrastructure systems are shown to be adequate, or the steps necessary to bring them up to an acceptable level are identified.

(3) Buildings are designed to use natural resources and energy resources efficiently in construction, maintenance, and long-term operation of the building, including supporting mechanical systems that reduce the need for mechanical equipment generally and its location on the roof of a building specifically. The buildings are sited on the lot to allow construction on adjacent lots to do the same. Exceeding the Green Building Requirements set forth in Section 22.20 of this Zoning Ordinance and other evolving environmentally sustainable standards is encouraged.

19.35 New construction should reinforce and enhance the complex urban aspects of Cambridge as it has developed historically. Indicators include:

(1) New educational institutional construction that is focused within the existing campuses.

(2) Where institutional construction occurs in commercial areas, retail, consumer service enterprises, and other uses that are accessible to the general public are provided at the ground (or lower) floors of buildings. Where such uses are not suitable for programmatic reasons, institutional uses that encourage active pedestrian traffic to and from the site.

(3) In large, multiple-building non-institutional developments, a mix of uses, including publicly accessible retail activity, is provided where such uses are permitted and where the mix of uses extends the period of time the area remains active throughout the day.

(4) Historic structures and environments are preserved.

(5) Preservation or provision of facilities for start-up companies and appropriately scaled manufacturing activities that provide a wide diversity of employment paths for Cambridge residents as a component of the development; however, activities heavily dependent on trucking for supply and distribution are not encouraged.

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19.36 Expansion of the inventory of housing in the city is encouraged. Indicators include:

(1) Housing is a component of any large, multiple building commercial development. Where such development abuts residential zoning districts substantially developed to low-scale residential uses, placement of housing within the development such that it acts as a transition/buffer between uses within and without the development.

(2) Where housing is constructed, providing affordable units exceeding that mandated by the Ordinance. Targeting larger family-sized middle-income units is encouraged.

19.37 Enhancement and expansion of open space amenities in the city should be incorporated into new development in the city. Indicators include:

(1) On large-parcel commercial developments, publicly beneficial open space is provided.

(2) Open space facilities are designed to enhance or expand existing facilities or to expand networks of pedestrian and bicycle movement within the vicinity of the development.

(3) A wider range of open space activities than presently found in the abutting area is provided.

19.38 Development should be resilient to the effects of climate change as anticipated in the *Resilient Cambridge* plan published by the City. Indicators include:

(1) The design has incorporated the most up-to-date projections of climate change impacts over the project's anticipated lifespan, including increases in temperature and precipitation and risk of future flooding.

(2) The project is designed to meet or exceed the Flood Resilience Standard in Section 22.80 of this Zoning Ordinance and the Green Factor Standard in Section 22.90 of this Zoning Ordinance. Design strategies may be supplemented by mitigation strategies to manage the effects of flooding and heat where appropriate.

(3) The design uses resilience strategies that have environmental co-benefits. An example is passive building envelope design, which promotes occupant comfort during extreme heat and resilience from power outages due to storms while also reducing energy use and greenhouse gas emissions. Another example is intensive vegetation at grade and on roofs, which provides cooling benefits while improving stormwater management.

(4) The design takes an integrative approach to climate change resilience that accounts for the existing context and promotes the other design objectives of the area and the City.

19.40 CITYWIDE ADVISORY DEVELOPMENT CONSULTATION PROCEDURES

19.42 Small Project Review Procedure.

19.42.1 Applicability of Small Project Review Procedure. For those zoning districts identified in Section 19.46 as Areas of Special Planning Concern, the following types of development proposals shall be subject to the Small Project Development Consultation Procedure (unless the regulations for an Individual Area of Special Planning Concern provide for specific exceptions or additional types):

- (1) Construction of any new building having a gross floor area of less than two thousand (2,000) square feet;
- (2) Construction of any other new structure having a floor area of less than two thousand (2,000) square feet;
- (3) Any exterior building alteration increasing gross floor area by one hundred (100) square feet or more;
- (4) Construction of five or more parking spaces, whether on grade or in a structure;
- (5) Erection of a sign;
- (6) Any other exterior building alteration facing a street but not including painting, brick repointing or masonry repairs, building cleaning, gutter replacement or similar routine repair, replacement, or maintenance.

19.42.2 Application for a Small Project Review. Prior to application for a building permit, the applicant shall contact the Community Development Department and request a development consultation session. Upon making such a request, the applicant shall present for review such written or graphic materials necessary to give a reasonably complete, though not necessarily detailed, indication of the nature and scope of the development proposal. For projects that involve the construction of a new building or an addition to a building on a new foundation, for advisory purposes only, the materials should include those required by the Flood Resilience standards set forth in Section 22.80 and the Green Factor standards set forth in Section 22.90. For projects that involve an increase in the amount or area of surface parking, or a decrease in the amount of open space provided, the materials should include those required by the Green Factor standards set forth in Section 22.90. The consultation session shall occur no later than five working days after the request for such a consultation.

19.43 Large Project Review Procedure.

19.43.1 Applicability of Large Project Review Procedure. For those zoning districts identified in Section 19.46 as Areas of Special Planning Concern, any development proposal involving the construction of a new building or new structure or an alteration of an existing building or structure that increase the gross floor by two thousand (2,000) square feet but less than twenty-five thousand (25,000) square feet.

19.43.2 Application for a Large Project Review. Prior to application for a building permit, the applicant shall submit the following materials to the Community Development Department for its review. The written and graphic materials listed below shall give a reasonably complete indication of the nature and scope of the development proposal. Each of the following shall be submitted as appropriate to the proposal:

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- (1) A site plan indicating the general location and boundaries of the lot, major anticipated changes in natural features, existing and proposed buildings, publicly beneficial open space and/or useable beneficial open space and/or private open space, existing and proposed curb cuts, off street parking areas, loading and service facilities, and generalized landscaping scheme or other anticipated treatment of open spaces.
- (2) Cross section(s), generalized floor plans and other diagram(s) indicating the anticipated locations of various land uses within the building and on the site and major pedestrian pathways.
- (3) Architectural elevations or sketches indicating anticipated facade treatment along public ways including the proposed entrances, fenestration, and signage.
- (4) A summary indicating compliance with applicable zoning requirements.
- (5) For projects that involve the construction of a new building or an addition to a building on a new foundation, materials identified in the Flood Resilience standards set forth in Section 22.80 shall be submitted to CDD for review and approval. If Section 22.80 is not applicable to the project, the materials shall nonetheless be provided for advisory purposes.
- (6) For projects that involve the construction of a new building, enlargement of an existing building footprint, increase in the amount or area of surface parking, or decrease in the amount of open space provided, materials identified in the Green Factor standards set forth in Section 22.90 shall be submitted to CDD for review and approval. If Section 22.90 is not applicable to the project, the materials shall nonetheless be provided for advisory purposes.

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Amend Section 22.20, “Green Building Requirements,” by adding new Subsections 22.24.5 and 22.24.6 to read as follows:

22.24.5 Flood Resilience. A Green Building Project shall meet the Flood Resilience standards set forth in Section 22.80.

22.24.6 Green Factor. A Green Building Project shall meet the Green Factor standards set forth in Section 22.90.

Amend Section 22.30 to read as follows:

22.30 GREEN ROOFS

22.31 Purpose. The purpose of this Section is to establish standards for the development of green roof systems on new and existing buildings for the purpose of stormwater management, heat mitigation, and access and enjoyment by occupants of a building, and to require new buildings of substantial size to include vegetation and/or solar energy roofing systems on much or most of the available roof area.

22.32 Access. Green Roof Area as defined in Article 2.000 of this Zoning Ordinance may be accessible by means of a roof entrance either for maintenance or for recreational use by building occupants or the general public. If Green Roof Area is intended for recreational use, it shall be designed and maintained to ensure that the vegetation will endure the anticipated use throughout the Green Roof Area's lifetime.

22.33 Types. Green Roof Area shall be classified as one of the three following types:

- (a) Non-Intensive Green Roof Area shall have a minimum 4-inch layer of growing substrate that requires minimal maintenance, using small, low-growing plant species, particularly succulents.
- (b) Short Intensive Green Roof Area shall have a minimum 18-inch layer of growing substrate that supports a wider variety of plant types, such as herbaceous and woody plants that are less than two (2) feet tall at maturity.
- (c) Intensive Green Roof Area shall have a minimum 24-inch layer of growing substrate that supports a wider variety of plant types, such as herbaceous and woody plants that are greater than two (2) feet tall at maturity, and requiring more structural support, irrigation, and maintenance than Short Intensive Green Roof Area.

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22.34 Operation and Maintenance Plan.

Wherever Green Roof Area is proposed, a long-term operation and maintenance plan shall be created and implemented to ensure that the Green Roof Area functions as designed. The level of detail in these plans should reflect the type of Green Roof Area being proposed, the complexity of the project, and the nature and extent of the impacts that may arise both during and after construction. The owner shall submit the operation and maintenance plan to the Department of Public Works (DPW) for approval before applying for a building permit for any building containing Green Roof Area. DPW shall certify to the Superintendent of Buildings that the operation and maintenance plan has been provided to DPW and approved prior to issuance of a building permit for any Green Roof Area. The Commissioner of Public Works shall have the authority to promulgate regulations for the implementation of this Section.

22.35 Green Roofs Requirement.

22.35.1 Applicability. This Section 22.35, *et. seq.*, shall apply to any new building or structure of twenty-five thousand (25,000) gross square feet or more, except it shall not apply to affordable housing buildings that either are developed under the Affordable Housing Overlay (AHO) as defined in Section 11.207 or have a majority of their units permanently reserved for households at or below 100% of AMI.

22.35.2 Requirement.

- (a) At least 80% of the roof area of the building as measured in plan view, excluding those portions of the roof listed below, shall be devoted to Green Roof Area, Biosolar Green Roof Area, or Solar Energy Systems.
1. Areas having a slope greater than 3 in 12 or twenty-five percent (25%).
 2. Areas designed and managed for use by building occupants or the general public.
 3. Vehicular parking decks.
 4. Chimneys, water towers, air conditioning equipment, elevator bulkheads, skylights, ventilators and other necessary features appurtenant to buildings which are usually carried above roofs and are not used for human occupancy, in addition to conduit, visual and acoustical screening, access routes for maintenance and service, and other areas that must be clear of obstruction to comply with applicable building and safety codes.
- (b) In the case of non-residential or mixed-use buildings in which at least half of the Gross Floor Area is devoted to one or more of the non-residential uses listed below (with reference to the Table of Use

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Regulations, Section 4.30 of this Zoning Ordinance), excluding any municipal buildings, at least 80% of the roof area of the building as measured in plan view, excluding those portions of the roof listed above at 22.35.2(a)(1)-(4), shall be devoted to Green Roof Area or Biosolar Green Roof Area:

1. Transportation, Communication & Utility Uses (Section 4.32);
2. Educational Purposes (Section 4.33-b.);
3. Noncommercial Research Facilities (Section 4.33-c.);
4. Other Institutional Uses (Section 4.33-h.);
5. Office and Laboratory Use (Section 4.34);
6. Retail Business and Consumer Service Establishments (Section 4.35);
7. Open Air or Drive In Retail & Service (Section 4.36);
8. Light Industry, Wholesale Business and Storage (Section 4.37); or
9. Heavy Industry (Section 4.38).

22.35.3 Exemption. The Planning Board may grant a special permit to reduce the required Green Roof Area, Biosolar Green Roof Area, or Solar Energy System below the area required by Section 22.35.2, provided that each square foot so reduced be compensated by a unit price contribution to the Cambridge Affordable Housing Trust. This unit price shall be determined based on the average costs to design, install, and maintain green roofs and rooftop solar energy systems in Cambridge using actual cost figures to the extent possible, shall be subject to annual adjustment based on standard construction cost indices, and shall be calculated, and recalculated approximately every three years, by the Cambridge Community Development Department. All such funds contributed to the Trust shall be dedicated to the design and incorporation of Green Roof Area, Biosolar Green Roof Area, or Solar Energy Systems into new or existing affordable housing developments.

22.35.4 Effective Date. The provisions of this Section 22.35, as adopted on June 1, 2021, shall not apply to structures lawfully in existence or lawfully begun before June 1, 2021, or to a building or special permit issued before June 1, 2021, and shall take effect on June 1, 2021.

Delete Section 22.40:

22.40 EXTERIOR WALLS AND INSULATION

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22.41 Purpose. The purpose of this Section is to remove potential impediments to the construction of exterior walls with additional insulation or wall-based mechanical systems that can improve the energy-efficiency of a building, by exempting the additional gross floor area created by such features from the calculation of a building's total Gross Floor Area.

22.42 Double-Skin Facades.

22.42.1 A Double-Skin Facade shall be defined as a multilayer exterior wall system comprising a solid outer wall, a solid inner wall, and a ventilated intermediate air space, intended to improve insulation and manage solar heat gain as an element of a building-wide mechanical system for heating and cooling a building.

22.42.2 Floor Area Exemption for Double-Skin Facades. Within an exterior wall system that meets the definition of a Double-Skin Facade as defined in Section 22.42.1 above, the area occupied by the intermediate air space shall be excluded from the calculation of Gross Floor Area on a lot, up to a depth of one (1) foot, provided the space is not to be accessed except for maintenance purposes.

22.43 Exterior Insulation.

22.43.1 Floor Area Exemption for Added Exterior Insulation. Where the thickness of a solid, non-removable exterior wall of a building is greater than six (6) inches, such wall being comprised entirely of structural material, insulating material and interior and exterior finishes, any Gross Floor Area that is further than six (6) inches from the innermost solid plane of the exterior wall may be excluded from the calculation of Gross Floor Area of a building.

Delete Section 22.50:**22.50 OVERHANGS AND SUN-SHADING DEVICES**

22.51 Purpose. The purpose of this section is to remove potential impediments to the addition of passive solar shading devices intended to reduce the impact of solar heat gain on a building or lot, by exempting areas underneath such devices from the calculation of Gross Floor Area under certain circumstances.

22.52 Floor Area Exemption for Sun-Shading Devices. Areas directly underneath a building overhang, eave, awning or other sun-shading device shall be excluded from the calculation of Gross Floor Area for a lot, provided that the overhang, eave, awning or other sun-shading device extends no more than three (3) feet from the exterior wall plane of the section of the building beneath it, and provided that the ground surface directly beneath the overhang, eave, awning or other sun-shading device meets the definition of Permeable Open Space as defined in Article 2 of this Zoning Ordinance.

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22.53 Floor Area Exemption for Pergolas, Arbors and Trellises. Ground space directly underneath an outdoor pergola, arbor or trellis structure shall be excluded from the calculation of Gross Floor Area of a lot, provided that the structure is at least 80% open to the air across all horizontal or vertical surfaces, and that any parallel structural support members with a cross-section of greater than one (1) inch by two (2) inches are separated from each other by at least three (3) feet on center. These features may be freestanding or attached to a building.

Amend Sections 13.95.6, 13.104.1, 17.42.11, 20.97.3 to read as follows:**13.95.6 Surface Parking.** All parking within the PUD-7 District shall be provided underground, as defined in

Section 5.25.3.22 of this Zoning Ordinance, with the following exceptions that may be approved by the Planning Board in a Final Development Plan:

- (a) Surface Parking on Private Roadways. On-grade parking shall be allowed along private ways to be constructed within the PUD-7 District, provided that the location and amount of said on-grade parking shall be depicted in the Final Development Plan.
- (b) Interim Use of Surface Parking. On an interim basis, in anticipation of later construction of structured parking sufficient to meet all parking requirements, on grade open parking shall be allowed in a Development Parcel subject to the following conditions:

- (1) The future parking structure will be constructed within the Development Parcel or on an adjacent Development Parcel or outside of the PUD-7 District in a location that complies with the provisions of Section 13.95.1, but it may be located either on or off of the lot which it will serve;
 - (2) Construction of the replacement parking structure will commence within five years of the date of certificate of occupancy for the building initially served by on grade parking;
 - (3) The future parking structure will contain sufficient spaces for users of the building initially served by on grade open parking so as to meet the parking requirements for such building; and
 - (4) Binding commitments exist to establish, to the reasonable satisfaction of the Planning Board, that requirements (1) through (3) above shall be satisfied. Such commitments shall be made by negotiated lease agreement, deed restriction, covenant, license, occupancy agreement or comparable legal instrument.
- (c) Where required, parking spaces for persons with disabilities may be located on-grade.
 - (d) Nothing in this Section 13.95 shall prohibit the use of the surface parking spaces on Government Owned Lots.

13.104.1 Permitted Gross Floor Area (GFA). The following GFA shall be permitted within the PUD-8 District:

- (a) Existing GFA. The GFA that exists on a lot(s) to be covered by a PUD-8 Special Permit on the date of application for such PUD-8 Special Permit, which shall be calculated in accordance with the definition of Gross Floor Area under the Zoning Ordinance in effect at the time of adoption of this Section 13.100, except that the GFA of above-ground structured parking facilities in existence on or before September 15, 2000 shall be included in the calculation of Existing GFA (notwithstanding the exemptions under Section 5.25.3.3).

17.42.11 Special District 4. Other than as may be temporarily allowed in Section 17.46.1, the Gross Floor Area (GFA) permitted in Special District 4 shall be nine hundred thousand (900,000) square feet, exclusive of GFA occupied by structured parking not otherwise exempt as set forth in Section 5.25. An additional four hundred

thousand (400,000) square feet of GFA shall be permitted for the exclusive use of structured parking not otherwise exempt from the calculations as to GFA, as set forth in Section 5.25. The permitted GFA shall be further limited by the requirements of Section 17.45 below. There shall be no maximum FAR limit imposed on any lot within the Special District 4. The provisions of Section 5.25.3.42 shall not apply in this Special District 4.

20.97.3 Waiver of Gross Floor Area Provisions for Parking Facilities - Section 5.25. Because of the unique factors related to flooding and groundwater management in Alewife, the importance of maintaining a high level of permeability, and the difficulty of constructing large areas of building below grade, the Planning Board may by special permit exempt the Gross Floor Area contained in any above ground structured parking facility from the FAR limitations established in this Section 20.90 and any applicable base zoning (such special permit shall supercede the provisions of Section 5.25.3.42 for any lot within the Alewife Overlay Districts). In granting such a special permit the Planning Board shall consider the following:

1. The facility advances the objective of the Concord-Alewife Plan.
2. A shared facility is established that aids in implementation of effective Transportation Demand Management measures to reduce dependence on the single occupancy automobile.
3. The facility is well designed, does not diminish the pedestrian-friendly quality the area around it, and is otherwise consistent with the urban design objective of the Concord-Alewife Plan.
4. The additional bulk of building above grade is well designed and does not have an unreasonably negative impact on its abutters or the public realm.
5. The extent to which the construction of an above grade parking structure facilitates the creation of at grade soil permeability.

22.80 FLOOD RESILIENCE STANDARDS

22.81 *Statement of Purpose.* The purpose of this Section is to promote building designs that are resilient to the impacts of flood events that are likely to become more frequent and intense due to the effects of climate change. These standards are informed by future projections, based on up-to-date scientific research, rather than historical occurrences of flooding. These standards are intended to account for the differing needs of buildings and sites and provide flexibility to use different measures to promote resilience. They are also intended to work in tandem with environmental standards promulgated by the Department of Public Works (DPW).

22.82 *Applicability.* This Section shall apply to development subject to Section 22.20 Green Building Requirements, and to other development as set forth elsewhere in this Zoning Ordinance.

22.83 *Flood Elevation Standards.*

22.83.1 Promulgation.

- (a) The City Engineer shall promulgate, and shall revise from time to time, the projected elevations of future flood risk due to certain types and probabilities of flood events for every lot in the City of Cambridge. The resulting projected elevations are referred to herein as Long-Term Flood Elevations (“LTFEs”).
- (b) LTFEs shall be determined for flood risk due to precipitation based on piped infrastructure using the City’s hydraulic model, and for flood risk due to sea level rise and storm surge based on climate modeling performed by or endorsed by the Commonwealth of Massachusetts’s agencies and determined by the City Engineer to represent the most reliable and up-to-date scientific analysis of future climate conditions. Whenever promulgating new LTFEs, the City Engineer shall document the source data used to determine the LTFEs and shall provide an explanation of why such data was selected.
- (c) LTFEs shall be based on an approximately 50-year projection from the time of promulgation. For example, LTFEs promulgated in or around the year 2020 shall anticipate flood risks in or around the year 2070. The City Engineer shall identify the projected timeframe when promulgating LTFEs.
- (d) LTFEs shall be represented in vertical feet relative to the Cambridge City Base (CCB) datum.
- (e) LTFEs shall be presented in the form of data tables that provide the numerical LTFEs for each parcel identified on the Cambridge Assessing Map and may also be presented in the form of a physical or digital map (for example, the Cambridge “FloodViewer” or any successor map) illustrating the LTFEs for different probabilities of flood risk for different types of flooding (i.e., precipitation, sea level rise, and storm surge) across the City. Such a map may be presented and/or illustrated in relation to ground elevation data collected by the City of Cambridge through light detection and ranging (LIDAR) or other technology; however, if a property owner provides a property survey performed by a licensed surveyor, such survey shall be considered more accurate than ground elevation data collected by the

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City of Cambridge. Property surveys shall not alter the LTFEs but may affect the relative difference between the LTFE and the Grade on a given parcel.

- (f) New or revised LTFEs shall be made available to the public for comment no less than 90 days prior to final promulgation.

22.83.2 Application in Zoning.

- (a) For the purpose of this Section, the following LTFE standards promulgated by the City Engineer as set forth above shall be applicable to development on a lot or development parcel:
- (1) The 1%-Probability Long-Term Flood Elevation standard, or “1%-LTFE standard,” shall refer to the projected elevation of floodwater that has a one percent annual chance of occurrence due to either sea level rise and storm surge or due to precipitation, whichever is higher.
 - (2) The 10%-Probability Long-Term Flood Elevation standard, or “10%-LTFE standard,” shall refer to the projected elevation of floodwater that has a ten percent annual chance of occurrence due to either sea level rise and storm surge or due to precipitation, whichever is higher.
- (b) For the purpose of this Section, then current LTFE standards shall be applicable to a lot or development parcel beginning on the date of final promulgation. However, a development proposal that has already submitted a LTFE plan that has been approved in writing by DPW, in accordance with Section 22.85 below, shall not be subject to LTFE standards promulgated after the date of such written approval, provided that the proposal receives all necessary permits including but not limited to a building or special permit and proceeds thereafter continuously and expeditiously to completion.

22.84 *Development Standards.*

22.84.1 Protection. A Story Above Grade or portion thereof shall be considered protected from flooding to a specified LTFE standard if its finished floor is higher in elevation than the LTFE standard, or if its finished floor is lower than the LTFE standard, there are permanent or passively deployable barriers in place at the height of the LTFE standard adequate to fully prevent the entry of floodwater into the building’s interior. A Story Below Grade or any portion thereof shall be considered a finished floor protected from flooding to a specified LTFE standard if the LTFE standard is below the Grade adjoining the building, or if the LTFE standard is above the Grade adjoining the building, there are permanent or passively deployable barriers in place at the height of the LTFE standard adequate to fully prevent the entry of floodwater into the interior of the Story Below Grade. The following standards shall apply:

- (a) All occupiable spaces within the building, as defined in the State Building Code, shall be protected to the 10%-LTFE standard, except that small entryways, vestibules, or lobbies with a finished floor below the 10%-LTFE standard are allowed to not be protected if they contain stairs, ramps, or lifts that allow occupants to travel to portions of the building that are protected, and if they meet the standards for “Recovery” set forth in Section 22.84.2 below.

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- (b) Habitable spaces for residential use, as defined in the State Building Code, shall be protected to the 1%-LTFE standard.
- (c) The following critical building equipment within the building or on the site shall be protected to the 1%-LTFE standard: mechanical heating and cooling systems including fuel storage tanks, supply meters, shut-off switches and building management system controls; electrical power supply, transformers, panels, switchgear, and safety equipment including electrical shut-off equipment, backup generators and their fuel sources; water heaters and water supply related equipment; telecommunications equipment; elevator and lift equipment.

22.84.2 Flood Recovery. A portion of a building shall be considered recoverable from the impact of flooding if floodwater is able to enter and leave the space without causing damage that cannot be readily repaired. This can be achieved through various strategies, including using permanent or contingent measures that prevent or provide resistance to flood damage, or that can be easily repaired or replaced if damaged. Portions of a building located at or below the 10%-LTFE standard that are not required to be protected in Section 22.84.1 above shall be designed to be recoverable.

22.84.3 Modifications. Upon granting a special permit, the Planning Board may approve modifications to the development standards set forth in Section 22.84.1 and 22.84.2 above after finding that a proposed development is designed to meet the intent of the standards in a manner that is more suitable to the unique conditions of the development or the site. No such modification may be approved under this section unless it has been reviewed and approved in writing by the City Engineer.

22.85 Administrative Review Procedures. Before applying for any special permit from the Planning Board, any development review procedure under Article 19.000 of the Zoning Ordinance, or a Building Permit, whichever occurs sooner, the documentation listed below shall be submitted to the Department of Public Works (DPW) for review. Within forty-five (45) days after receiving a complete set of documentation, DPW shall provide written notice that the documentation sufficiently demonstrates compliance with the requirements of this Section or shall provide a written explanation of deficiencies to be corrected in a revised submission. To verify continued compliance, revised documentation incorporating any design modifications shall be reviewed and approved by DPW in accordance with the aforementioned procedures before application for any Building Permit or Certificate of Occupancy sought after the initial submission is accepted.

- (a) Identification of the LTFE standards employed in the development proposal and their date of promulgation. The applicant's initial submission shall employ the LTFE standards that have been promulgated most recently prior to the applicant's submission of the required documentation. If new LTFE standards have been made available to the public for possible promulgation, such LTFE standards shall be identified in the applicant's submission and shall be applicable to the application if new LTFE standards are promulgated before DPW completes its review of the application. For a specific lot or Development Parcel for which the owner has provided a topographical survey, the City Engineer may approve LTFEs that are adjusted for the unique topography of the lot or Development Parcel.

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- (b) Elevations and vertical cross-sections of the building and site indicating the 1%-LTFE standard and 10%-LTFE standard, the elevation of the Grade, and the elevation of all finished floors of the building, as well as the uses of all interior sections of the building and the locations of all openings in the building envelope that are below the 1%-LTFE standard and 10%-LTFE standard including pedestrian and vehicular entrances/exits and windows. All drawings shall be drawn to scale and shall include a graphic scale symbol on each drawing sheet.
- (c) A written summary of the technical approaches to meeting the “Protection” and “Recovery” development standards set forth in this Section for any portions of the building located at or below the 1%-LTFE standard or 10%-LTFE standard, including but not limited to the types of flood barriers to be employed and the types of construction materials to be used within such portions of the building.
- (d) A narrative describing any proposed alternative approaches to meeting the intent of the development standards set forth in this Section, if the proposal is seeking approval of any modifications to such standards.

22.86 Implementation.

- (a) The DPW Commissioner shall have the authority to promulgate regulations for the implementation of the provisions of this Section. There shall be a ninety (90) day review period to receive public comments on draft regulations before final promulgation.
- (b) The Department of Public Works may develop standards and procedures appropriate to and consistent with the provisions of this Section.

Create a new Section 22.90 to read as follows:

22.90 GREEN FACTOR STANDARD

22.91 Purpose and Intent. The purpose of this Section is to promote the inclusion of features that have a demonstrable cooling effect on buildings and sites to mitigate urban heat island effect. The performance-based “Green Factor,” as defined in Article 2.000, approach is intended to be flexible and provide options that can be tailored to different building and site conditions. It is also intended to work in tandem with other regulations, including existing zoning requirements for open space and permeable area, Green Building Requirements (Section 22.20 of this Zoning Ordinance), stormwater control regulations promulgated by the Department of Public Works (DPW), and other standards.

22.92 Applicability. This Section shall apply to development subject to Section 22.20 Green Building Requirements, and as set forth elsewhere in this Zoning Ordinance.

22.93 Prerequisites. The following requirements shall be met for any development that is required to achieve a minimum Cool Score, as defined in Article 2.000:

22.93.1 High Solar Reflectance Index (SRI) Roof. Where the development involves the construction of a new building roof or replacement of more than 50% of an existing roof, the surface of such roof shall have a minimum initial SRI of 82, with the following exceptions:

- (a) Roofs with a slope of 2:12 or steeper shall not be subject to a minimum SRI requirement.
- (b) Components of a Solar Energy System or Green Roof Area, as defined in this Zoning Ordinance, shall not be subject to a minimum SRI requirement.
- (c) In the case of a locally-designated historic structure, the minimum SRI may be reduced or waived to the extent necessary to comply with the conditions of any Certificate of Appropriateness issued by the Cambridge Historical Commission or by a Neighborhood Conservation District Commission. In the case of a state-designated or federally-designated historic structure, the minimum SRI may be reduced or waived to the extent necessary to comply with a determination of adverse effect by the Executive Director of the Cambridge Historical Commission.

22.94 Calculation.

22.94.1 Cool Target. The Cool Target shall be determined by multiplying the total lot area of the lot or Development Parcel by the total Open Space requirement applicable in the zoning district, or by 20%, whichever is greater (see formula below). The Cool Target shall be expressed in square feet.

$$\text{Total Lot Area} \times \text{Open Space Requirement (min. 20\%)} = \text{Cool Target}$$

22.94.2 Cool Area. The Cool Area shall be determined by multiplying the building and site design features listed in the table below (as defined in Article 2.000 of this Zoning Ordinance) by the corresponding weighted values in the table. Features that are located within 20 feet of a street shall use

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the weighted values in the rightmost column; all other areas shall use the weighted values in the column to the left. The Cool Area for a lot or Development Parcel shall be the sum of the weighted values for all such features located on the lot or Development Parcel, expressed in square feet.

Category	Cooling Design Feature	Weighted Value Not Within 20' of Street	Weighted Value Within 20' of Street
Preserved Existing Trees	Understory Tree currently <10' canopy spread	0.80 x 150 square feet per tree	1.60 x 150 square feet per tree
	Canopy Tree currently <15' canopy spread	0.80 x 700 square feet per tree	1.60 x 700 square feet per tree
	Understory Tree currently >10' canopy spread	1.00 x 150 square feet per tree	2.00 x 150 square feet per tree
	Canopy Tree currently between 15' and 25' canopy spread	1.00 x 700 square feet per tree	2.00 x 700 square feet per tree
	Canopy Tree currently >25' canopy spread	1.20 x 700 square feet per tree	2.40 x 700 square feet per tree
New or Transplanted Trees	Understory Tree	0.60 x 150 square feet per tree	1.20 x 150 square feet per tree
	Canopy Tree	0.70 x 700 square feet per tree	1.40 x 700 square feet per tree
Planting Areas	Lawn Area	0.30 x area in square feet	0.60 x area in square feet
	Low Planting Area	0.40 x area in square feet	0.80 x area in square feet
	High Planting Area	0.50 x area in square feet	1.00 x area in square feet
Green Roofs & Façades	Green Façade	0.10 x area in square feet	0.20 x area in square feet
	Living Wall	0.30 x area in square feet	0.60 x area in square feet
	Non-Intensive Green Roof Area	0.30 x area in square feet	0.60 x area in square feet
	Short Intensive Green Roof Area	0.50 x area in square feet	1.00 x area in square feet
	Intensive Green Roof Area	0.60 x area in square feet	1.20 x area in square feet

Attachment: Proposed Ordinance (ORD 2022 # 9 : 2022-9 create a new Section 22.80 Flood Resilience

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Paving & Structures	Paved Area with a Minimum Solar Reflective Index (SRI) of 33	0.10 x area in square feet	Not Applicable
	Shaded Area	0.20 x area in square feet	0.40 x area in square feet

22.94.3 Cool Score. The Cool Score shall be the Cool Area divided by the Cool Target. It shall be expressed as a numerical value that is less than, equal to, or greater than 1.0.

(a) A Cool Score of 1.0 or greater shall be considered to meet the Green Factor standard, except as set forth elsewhere in this Zoning Ordinance.

(b) Where a development proposal involves the preservation and/or rehabilitation of a pre-existing building on the site, but does not result in an enlargement of the building footprint or expansion of the existing building on the site, then a Cool Score of less than 1.0 shall be considered to meet the Green Factor standard if it is equal to or greater than the Cool Score attributable to the existing conditions on the site.

22.95 Modifications. Upon granting a special permit, the Planning Board may approve modifications to the development standards set forth above after finding that a proposed development is designed to meet the intent of the standards in a manner that is more appropriate to the unique conditions of the development or the site.

22.96 Administrative Review Procedures. Before applying for any special permit from the Planning Board, any development review procedure under Article 19.000 of the Zoning Ordinance, or a Building Permit, whichever occurs sooner, the documentation listed below shall be submitted to the Community Development Department (CDD) for review. Within thirty (30) days after receiving a complete set of documentation, CDD shall provide written notice that the documentation sufficiently demonstrates compliance with the requirements of this Section or shall provide a written explanation of deficiencies to be corrected in a revised submission. To verify continued compliance, revised documentation incorporating any design modifications shall be submitted to CDD and reviewed in accordance with the aforementioned procedures before applying for any Building Permit or Certificate of Occupancy that is sought after the initial submission.

(a) Green Factor Score Sheet. A tabulation of the Cool Score of a lot, to be submitted on a form provided by CDD and updated by CDD from time to time.

(b) Site and Roof Plans. A set of plans that depict the location and extent of all building and site features identified as contributing to the Cool Score, and also delineate which portions of the lot are within 20 feet of a street.

22.97 Implementation of Green Factor Standard. The Assistant City Manager for Community Development in consultation with the City Engineer may develop standards and procedures appropriate to and consistent with the provisions of this Section. All features used in calculation of the Cool Score shall be designed, installed, and maintained in accordance with such guidelines promulgated by the City.

Create or amend the following Definitions in Article 2.000:

Cool Area. The weighted area of features on a site that contribute to its Cool Score according to the Green Factor standards set forth in Section 22.90 of this Zoning Ordinance.

Cool Score. The metric used to determine if a project meets the Green Factor standard set forth in Section 22.90 of this Zoning Ordinance.

Cool Target. The metric used in determining the amount of Cool Area necessary to meet the Green Factor standard set forth in Section 22.90 of this Zoning Ordinance.

Double-Skin Façade. A multilayer exterior wall system comprising a solid outer wall, a solid inner wall, and a ventilated intermediate air space, intended to improve insulation and manage solar heat gain as an element of a building-wide mechanical system for heating and cooling a building.

Floor Area, Gross. The sum, in square feet, of the gross horizontal areas of all floors of a building, as measured from the exterior walls of a building or the centerline of party walls between buildings, calculated in accordance with the detailed standards in Section 5.25 of this Zoning Ordinance.

Green Façade. A vertical system, attached to existing walls or built as freestanding structures, designed to support the growth of plants on a lattice, cable, mesh, or similar wall surface. The growing medium for Green Façades may be at grade or elevated in planters at the base of the structure or at intermediate levels.

Green Factor. A specific performance-based design standard to assess the overall cooling performance of buildings and sites, set forth in Section 22.90 of this Zoning Ordinance.

Green Roof Area. Area atop a roof surface on a building that is covered by a layer of living vegetation planted in a minimum of four (4) inches of growth medium over a waterproofing system in accordance with the provisions of Section 22.30 of this Zoning Ordinance. (Also known as a vegetated roof.)

Green Roof Area, Biosolar. Green Roof Area integrated with a Solar Energy System.

Living Wall. A vertical system comprised of pre-vegetated panels affixed to an exterior structural wall or free-standing frame. The surface of Living Walls is designed to be continuously covered with vegetation and the growing medium is distributed throughout the surface of the system.

Long-Term Flood Elevations (“LTFEs”). Projected elevations of future flood risk due to certain types and probabilities of flood events, promulgated by the City Engineer in accordance with the provisions of Section 22.80 of this Zoning Ordinance.

Open Space, Green Area. A landscaped area of land associated with and located on the same tract of land as a major building or group of buildings in relation to which it serves to provide light and air, or scenic, recreational, or similar purposes. **Open Space, Permeable.** A kind of Green Area Open Space in which the surface material must be permeable but which surface material is not limited or restricted as to type.

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Open Space, Public. An area owned or controlled by the City of Cambridge or other public entity that is intended for public use and is designed for either environmental, scenic, or recreation purposes.

Open Space, Publicly Beneficial. A portion of a structure, a lot or other area of land associated with and adjacent to a building or group of buildings in relation to which it serves to provide light and air, or scenic, recreation, pedestrian amenity or similar purposes. **Open Space, Private.** The part or parts of a lot or structure which are reserved for the use of occupants of a building which is used wholly, or in part, for residential purposes. This space shall have minimum dimensions as prescribed in the Ordinance, shall exclude parking areas, driveways, and walkways, and shall be open and unobstructed to the sky.

Planting Area. A landscaped area of land capable of supporting the growth of trees, grass, ground cover, shrubs, and similar vegetation.

Lawn Area. A type of Planting Area that supports sod or seeded tall grasses and has a minimum soil depth of eight (8) inches.

Low Planting Area. A type of Planting Area that supports short herbaceous or woody plants, such as shrubs, and has a minimum soil depth of twelve (12) inches.

High Planting Area. A type of Planting Area that supports tall herbaceous or woody plants, such as shrubs, and has a minimum soil depth of eighteen (18) inches.

Shade Canopy. An unenclosed structure that is freestanding or attached to a building, such as a pergola, arbor, porch cover, or awning, which is intended to protect outdoor areas from solar heat gain, and whose upper surface (which may be porous or nonporous) has a minimum Solar Reflectance Index (SRI) of 0.82 except in the case of a Solar Canopy.

Solar Canopy. A Shade Canopy that is covered in whole or in part by a Solar Energy System; the portion covered by a Solar Energy System shall not have a minimum Solar Reflectance Index (SRI).

Shaded Area. An outdoor area of a building or lot that is directly beneath a Shade Canopy as defined in this Zoning Ordinance, and that is horizontally open to the air on at least fifty percent (50%) of its perimeter.

SRI or Solar Reflectance Index. The measure of a constructed surface's ability to stay cool in the sun by reflecting solar radiation and emitting thermal radiation, as defined by ASTM International. It is expressed as a unitless value ranging from 0 to 100, with 0 representing the lowest possible solar reflectance and 100 representing the highest possible solar reflectance.

Tree. A woody perennial plant, typically having a single thick stem or trunk, that grows to a considerable height and has lateral branches at some distance from the ground, planted and maintained in accordance with guidelines promulgated by the Department of Public Works.

Tree, Understory. A type of tree that is small enough and sufficiently shade tolerant to thrive under the canopies of taller trees. Understory trees form a vegetative layer between low-lying ground cover and tall canopy trees. Understory trees typically reach a canopy spread of eight (8) to fifteen (15) feet at maturity.

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Tree, Canopy. A large, tall tree that has a well-defined trunk and a distinct and definite formed crown. Canopy trees are intended to provide shade and typically reach a canopy spread of twenty-five (25) feet or larger at maturity.

Amend Section 5.10 to read as follows:**5.10 GENERAL REGULATIONS**

- 5.11**No building or structure shall be built nor shall any existing building or structure be enlarged which does not conform to the regulations as to maximum ratio of floor area and lot areas, minimum lot sizes, minimum lot area for each dwelling unit or equivalent, minimum lot width, minimum dimensions of front, side, and rear yards and maximum height of structures, in the several districts as set forth in Article 5.000, Section 5.30 except as hereinafter provided and except in the Cambridge Center MXD District, which shall be governed by the requirements of Section 14.30.
- 5.12**The lot or yard areas required for any new building or use may not include any part of a lot that is required by any other building or used to comply with any requirements of this Ordinance, nor may these areas include any property of which the ownership has been transferred subsequent to the effective date of this Ordinance if such property was a part of the area required for compliance with the dimensional requirements applicable to the lot from which such transfer was made.
- 5.13**In the case of multiple buildings on a lot, the minimum distance between such buildings shall not be less than the sum of the heights of the buildings divided by six or ten feet, whichever is greater. In determining compliance with this section, portions of buildings exempted by Section 5.23 shall not be counted in computing building height.
- 5.14**For residential uses permitted in Residence A, B, C, and Office districts which are not divided into dwelling units, each one thousand square feet of gross floor area of the building shall be considered equivalent to one dwelling unit for purposes of computing minimum lot area.
- 5.15**No lot or development parcel shall be changed in size, shape, or ownership so that the dimensional requirements or off-street parking and loading requirements prescribed in this Ordinance are no longer satisfied. This paragraph shall not apply where a portion of the lot or development parcel is acquired for a public purpose. This paragraph shall not apply to townhouse development, as governed by Section 11.10.
- 5.16**Any new building or new addition to a building that receives a building permit or, where applicable, a special permit after the enactment of this Section shall require certification from DPW that it conforms to the Flood Resilience standards set forth in Section 22.80 of this Zoning Ordinance before issuance of a building or special permit if it meets the following criteria:
- (a)The new building or addition involves the construction of a new foundation, and
 - (b)In the case of an addition to an existing building, the footprint area of the building, measured in plan view, is increased by at least 50%.

Amend Sections 5.22, 5.23, 5.24 and 5.25 to read as follows:

5.22 *Open Space.* There are four types of Open Space: Private, Public, Publicly Beneficial, and Green Area. There is also Permeable Open Space, which is a specific type of Green Area Open Space. All five terms are defined in Article 2.000.

5.22.1 Private Open Space. Private Open Space shall be open and unobstructed to the sky, except that up to fifty (50) percent of the total Private Open Space may be Shaded Area. Trees, plantings, arbors, fences, flagpoles, sculpture, fountains and recreational and drying apparatus and similar objects shall not be considered obstructions when located within a private open space. Objects or structures intended exclusively for bicycle parking, designed and located in accordance with Section 6.100, which may be uncovered, partially covered or fully enclosed, shall not be considered obstructions provided that such objects or structures are not used for motor vehicle parking, general storage or any other use, and further provided that any such structure exceeding six feet (6') in height conforms to the requirements for an accessory building in Section 4.21. Beehives and apiaries conforming to the Standards for Urban Agriculture in Article 23.000 of this Zoning Ordinance shall not be considered obstructions provided that they are no more than six (6) feet in height. Structures or features that are necessary for a building to comply with the Flood Resilience Standards in Section 22.80, such as stairs, ramps, or window wells, shall not be considered obstructions. To the extent permitted in this Ordinance, balconies and roof areas may also be considered as Private Open Space.

5.22.1(a) Private Open Space shall be provided on every lot used for residential purposes except for those in the Cambridge Center MXD District, and shall be a percentage of the lot area as set forth in Section 5.31. An area designated as Private Open Space may not have a slope greater than ten percent (10%). With the exception of balconies, Private Open Space must have both a width and a length of at least fifteen (15) feet and shall be accessible to all occupants of a building. At least fifty percent (50%) of the required private open space shall be provided at ground level, within ten (10) feet of the level of the lowest floor used for residential purposes, or elevated to the 1%-Probability Long-Term Flood Elevation as determined by the Flood Resilience Standards set forth in Section 22.80 of this Zoning Ordinance. Areas at other levels, such as balconies, decks, and roofs of garages and buildings, may be calculated as Private Open Space if they are accessible to all occupants of buildings, are not used as walkways or corridors, have both a width and a length of at least six (6) feet, and have a minimum area of seventy-two (72) square feet. Any other Private Open Space, such as balconies and decks accessible only to some building occupants, shall count for no more than twenty-five percent (25%) of the required Private Open Space.

5.22.1(b) Where nonresidential and residential uses are mixed in a building, the required minimum Private Open Space for residential use shall be calculated in relation to the portion of the lot which the residential floor area is to the total floor area in the building.

5.22.1(c) Special Requirements in Residence A-1, A-2, B, C, and C-1. At least fifty percent (50%) of the required Private Open Space in these districts shall meet all of the requirements of Section 5.22.1 above.

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At least fifty percent (50%) of the required Private Open Space shall meet the definition of Permeable Open Space and shall not be subject to the dimensional limitations of Section 5.22.1 as applied to Private Open Space.

5.22.2 Public Open Space. Public Open Space shall be open and unobstructed to the sky, except that up to fifty (50) percent of the total Public Open Space may be Shaded Area. Public Open Space may include but is not limited to lawns, decorative plantings, interior walkways, abutting sidewalks, active and passive recreation areas, playgrounds, fountains, and public performance areas. Public Open Space shall not include rooftop areas, patios, balconies, parking lots, or driveways. Limited paved surfaces may be designed to accommodate occasional use by motor vehicles servicing the park facility. If the facility is not held in fee simple by the City of Cambridge or other public entity, the Public Open Space may be land remaining in private ownership but protected for public use by means of a permanent easement, conservation restriction, or other similar legal device acceptable to the City.

5.22.3 Publicly Beneficial Open Space. Such space shall be customarily available or shall be readily visible to such occupants and visitors, though physically inaccessible, by being located and treated to enhance the amenity of the development through a general appearance of openness. Publicly beneficial open space shall include parks, plazas, lawns, landscaped areas, decorative plantings, and active and passive recreational areas. Publicly beneficial open space shall also include loggias, atriums, arcades and pedestrian ways listed and defined in Section 14.45. Streets, parking lots, driveways, service roads, loading areas, and areas normally inaccessible to pedestrian circulation beneath pedestrian bridges, decks, or shopping bridges shall not be counted in determining required publicly beneficial open space.

5.22.4 Green Area Open Space. Green Area Open Space shall be open and unobstructed to the sky except that up to fifty (50) percent of the total required Green Area Open Space may be Shaded Area. Green Area Open Space shall be land at grade and shall consist of friable, permeable materials (including but not limited to loam, gravel, sand, crushed stone, and including naturally occurring soil, bedrock, and incidental pipes and other underground utilities) having a minimum depth of three (3) feet. Said land shall be capable of supporting the growth of trees, grass, ground cover, shrubs, and similar vegetation. Such area may not include any portion of the lot used for parking areas and access drives or other hard surface areas, except walks and terraces designed and intended for non-motor vehicle use.

Green Area Open Space shall consist entirely of living trees, grass, ground cover, bushes, shrubs, and/or similar vegetation, as well as water and other natural features of the site. However, in no case shall hard surfaced walks and terraces, or pervious ground covers like gravel, stone, and wood chips not being used as mulch beneath vegetation, exceed twenty-five (25) percent of the total required Green Area Open Space.

5.22.4(a) Permeable Open Space. Permeable Open Space shall consist of a surface material that may include vegetation; rocks, pebbles, wood chips and similar landscaping materials; or unit pavers. All other materials (for example, continuously poured asphalt or concrete) are not allowed except that any material may be used for pedestrian walkways not exceeding forty-eight (48) inches in width or half the width of the area in which they are located, whichever amount is less.

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5.22.5 Green Factor. Any new building, new addition to a building that seeks to increase the footprint of a building by at least 50% in area, or new surface parking area on or after the enactment of this Section, the lot or Development Parcel shall be designed to conform to the Green Factor Standard set forth in Section 22.90 of this Zoning Ordinance before issuance of a building permit or special permit if applicable.

5.23 Height Exceptions. The provisions of this Ordinance governing the height of buildings and structures in all districts shall generally not apply to the following:

- (a) chimneys, water towers, air conditioning equipment, elevator bulkheads, skylights, ventilators and other necessary features appurtenant to buildings which are usually carried above roofs and are not used for human occupancy
- (b) domes, towers, or spires above buildings if such features are not used for human occupancy and occupy less than ten percent (10%) of the lot area
- (c) wireless or broadcasting towers and other like unenclosed structures which occupy less than ten percent (10%) of the lot area
- (d) Wind Turbines, subject to the requirements and limitations set forth in Section 22.70;
- (e) elements of a Solar Energy System, as defined in Section 22.60 of this Zoning Ordinance, that would ordinarily be located on a rooftop where they would have direct exposure to sunlight;
- (f) beehives and apiaries extending no more than six (6) feet above a rooftop, in accordance with the Standards for Urban Agriculture in Article 23.000 of this Zoning Ordinance; and
- (g) structures appurtenant to Green Roof Area or usable outdoor space adjacent to a Green Roof Area, including but not limited to elevator and stair access headhouses and Shade Canopies located above the roof, provided that the area of such features is less than the total adjacent Green Roof Area.

5.23.1 Building elements enumerated in (a) and (g) above shall be limited in height where they are placed on a building located in a non-residential district, which district abuts a Residence A-1, A-2, B, C, C-1, C-1A, C-2, C-2A, C-2B district. In these instances, the following height limitations shall apply to those building elements:

- (a) The elements must be below one or more forty-five (45) degree bulk control planes. Each bulk control plane shall begin, in the vertical dimension, at the maximum height limit permitted in the non-residential zoning district. In the horizontal dimension, the plane shall begin at the residential/non-residential zoning district line: however, where that line lies within a street, the plane shall begin at the front lot line, located nearest the zoning district line, of the lots on which the building is sited. Thereafter the bulk control plane shall rise from its beginning over the non-residential zoning district. (See illustrative figure 5.23)

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- (b) The limitations in Paragraph 1 above may be waived by special permit from the Planning Board upon a finding by the Board that the additional height is necessary. In making that determination the Planning Board shall consider the special and unique requirements of the use that the elements are serving, any special constraints imposed by the site upon which the building is located, the nature and character of development in the adjacent residential district, and the extent to which successful efforts are made to minimize the visual and acoustical impact of the elements on neighbors.

5.23.2 If the Ground Story of a building is elevated to meet the Flood Resilience Standards in Section 22.80 of this Zoning Ordinance, then the allowed height of buildings and structures as set forth in this Zoning Ordinance may be increased as-of-right to compensate for the difference between the Ground Story finished floor elevation and the Grade elevation. However, the allowed increase in height shall be no greater than the difference in elevation between the 1%-Probability Long-Term Flood Elevation as described in Section 22.80 and the Grade, or four (4) feet, whichever is less. The City Engineer shall certify that the Flood Resilience Standards in Section 22.80 are met prior to issuance of a building permit for a building or structure utilizing the provisions of this Section 5.23.2.

5.24 Yards.

5.24.1 Every part of a required yard shall be open to the sky and unobstructed, except that the following features may be located within a required yard:

- (a) Awnings, arbors, fences, flagpoles, recreational, and laundry drying equipment and similar objects;
- (b) Objects or structures intended exclusively for bicycle parking meeting the requirements of Article 6.000, which may be uncovered, partially covered or fully enclosed, provided that such objects or structures are not used for motor vehicle parking, general storage or any other use, and further provided that any such structure exceeding six feet (6') in height conforms to the requirements for an accessory building in Section 4.21;
- (c) Beehives and apiaries no more than six (6') feet in height, in accordance with the Standards for Urban Agriculture in Article 23.000 of this Zoning Ordinance;
- (d) Objects or equipment located in a required yard that are necessary for or appurtenant to a Public Bicycle-Sharing Station;
- (e) Open or lattice-enclosed fire escapes for emergency use only;
- (f) Projecting eaves, chimneys, bay windows, balconies, open fire escapes and like projections which do not project more than three and one-half (3½') feet and which are part of a building not more than thirty-five (35') feet in height;
- (g) Shade Canopies as defined in this Zoning Ordinance, provided that any Shade Canopy exceeding seven feet (7') in height shall be set back at least five feet (5') from a side or rear lot line in a residential district; and

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- (h) Elevated features that provide protection or resilience from flooding on the lot, including but not limited to steps, ramps, elevated walkways, porches, window wells, and flood barriers, provided such features do not project more than twelve (12') feet beyond the line of the foundation wall of a building, are open to the air and are either unroofed or covered only by a Shade Canopy, and are not elevated higher than four (4') feet above Grade or the 1%-Probability Long Term Flood Elevation as determined by the Flood Resilience Standards in Section 22.80 of this Zoning Ordinance, whichever is higher.
- 5.24.2** Existing conforming or pre-existing non-conforming buildings in existence prior to August 2, 2010, may encroach or further encroach into a required yard solely in order to install exterior insulation to an existing exterior wall, provided that such existing exterior wall is not moved or demolished except to remove and replace its exterior wall covering and that the requirements of either Paragraph (a) or Paragraph (b) below are met:
- (a) The yard is not decreased by more than eight (8") inches from the pre-existing condition, the wall itself does not intrude more than eight (8") inches further into the existing yard, and the outer plane of the exterior wall after the installation of exterior insulation and exterior wall covering is not closer than three (3') feet to the nearest property line; or
- (b) The Board of Zoning Appeal (BZA) has granted a special permit to exceed the limitations of Paragraph (a) above upon finding that, given the unique physical constraints of the building or the site, such relief is necessary to install exterior insulation that will substantively improve the thermal performance of the exterior wall envelope, that potential impacts to the safety or privacy of abutting uses will be mitigated, and that the general criteria set forth in Section 10.43 of this Zoning Ordinance are met.
- 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, (H1, H2, etc.) times the length of each roof level (L1, L2, etc.) and dividing the sum by the sum of the length of the levels (L1, L2, 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 (setback1 x facing area1) + (setback2 x facing area2) MUST EQUAL OR EXCEED the product of (single plane setback) x (single plane facing area).

5.25 Gross Floor Area (GFA) and Floor Area Ratio (FAR)

5.25.1 Gross Floor Area shall include:

- (a)Roofed porches and balconies that are enclosed on more than fifty percent (50%) of their perimeter and do not meet the definition of Shaded Area;
- (b)Unroofed porches and balconies above the third floor except as provided in Section 5.25.2(j);
- (c)Elevator shafts and stairwells on each floor, not excluded in Section 5.25.2(c) or (f) ;
- (d)Attic space, whether finished or unfinished, within the area of a horizontal plane that is five (5) feet above the attic floor and which touches the side walls and/or the underside of the roof rafters and which is not excluded in Section 5.25.2(f);
- (e)Interior balconies, mezzanines, and penthouses, and the area of each floor level of any interior courtyard in a building with more than two floors, whether or not covered by a roof, which has a minimum dimension of less than forty (40) feet in any direction unless twenty (20) percent or more of the perimeter of such courtyard at each floor level measured consecutively is not enclosed;
- (f)Area of parking facilities in structures except as excluded in 5.25.2(b); and
- (g)Any accessory parking spaces not in above ground structures if in excess of the maximum number permitted on the premises as set forth in Section 5.25.3 and 6.30.

5.25.2 Gross Floor Area shall not include:

- (a)Areas used for off street loading purposes;

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- (b) Area of parking facilities in structures located underground and the area of on grade open parking spaces outside the building footprint at or below the maximum number permitted on the premises as set forth in Sections 5.25.3 and 6.30;
- (c) Area in Stories Below Grade that meets at least one of the following criteria:
 - (i) The area has less than seven feet (7') of ceiling height measured from the floor to the line of the bottom of the floor joists above, or to any subfloor or finished surface above any floor joists that are spaced not less than four (4) feet on center; or
 - (iii) The area is designed in accordance with the Flood Resilience Standards set forth in Section 22.80 of this Zoning Ordinance.
- (d) Open and lattice-work fire escapes;
- (e) Unroofed porches and balconies no higher than the third floor;
- (f) Areas located in any part of a building or site devoted to elevator machinery or mechanical equipment necessary for the operation and maintenance of the building, including heating and cooling equipment, electrical and telephone facilities, fuel storage, and sustainable mechanical systems and related equipment and chases for systems including, but not limited to, solar energy systems, geothermal systems and heat pumps, solar hot water systems and related tubes and tanks, equipment related to radiant heating, hydronic cooling, heat recovery ventilators, and energy recovery ventilators;
- (g) Elevator shafts and stairwells on floors where there is no other area which qualifies to be included in Gross Floor Area, including headhouses that provide access to Green Roof Area;
- (h) Attic space not included in Section 5.25.1(d);
- (i) Bicycle parking meeting or exceeding the requirements of Article 6.000, which shall include all areas occupied by Bicycle Parking Spaces and access routes intended exclusively for use by bicycles, which shall be clearly indicated in the bicycle parking plan requirements set forth in Section 6.52.1 whether located in a principal use structure, any parking facility for motor vehicles, or in an accessory structure;
- (j) Green Roof Area as defined in this Zoning Ordinance and constructed in accordance with the standards in Section 22.30 of this Zoning Ordinance, whether or not it meets the minimum Green Roofs Requirement in Section 22.35, as well as the area of adjacent impervious walkways, decks, and access headhouses intended for maintenance or enjoyment of the Green Roof Area, provided that such area is not greater than the Green Roof Area;
- (k) Interior air spaces within a Double-Skin Façade as defined in Article 2.000 of this Zoning Ordinance, up to a maximum depth of one (1) foot, provided the space is not to be accessed except for maintenance purposes;

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- (l) Insulating material attached to the exterior of the structural elements of an external building wall.
- (m) Shaded Area as defined in this Zoning Ordinance;
- (n) Public Bicycle-Sharing Stations.

5.25.3 FAR Exceptions for Parking and Loading Facilities.

- 5.25.3.1 Loading Facilities.** Areas used for off-street loading purposes shall be exempt from the requirements as to Floor Area Ratio but shall conform to all other requirements of the district in which it is located.
- 5.25.3.2 Parking Facilities in Structures.** The floor area of an underground parking garage and the floor area of the underground portion of a structure devoted in whole or in part to parking automobiles, shall not be counted as Gross Floor Area and shall be exempt from the requirements as to floor area but shall conform to all other requirements of the district in which it is located. All other parking in structures shall be subject to the requirements as to Floor Area Ratio.
- 5.25.3.21 Area of Parking Facility.** For the purposes of this Section 5.25.3 the area of parking in a structure shall include all parking spaces, access drives, aisles and other elements of the parking facility and shall include any portion of a parking facility located at grade beneath a building but not otherwise enclosed.
- 5.25.3.22 Definition of Underground.** For the purposes of this Section 5.25.3 only, “underground “ shall mean either of the following:
- (1) The location of the entire parking facility below the finished grade of the ground abutting the structure, or the underground portion thereof, which grade is maintained naturally without any structural support. No more than two access drives, which in combination total no more than 30 feet in width, shall be permitted to be above the finished grade and still be considered to be located underground.
 - (2) The location of a portion of the facility above finished grade to the following extent: (1) the mean height of that portion of the parking facility above finished grade around the entire perimeter of the facility does not exceed four (4) feet, which grade is maintained naturally without any structural support (in no case, however, shall the height above mean grade for that portion of the facility facing a public street exceed four feet), and (2) the roof or top of the facility shall be either set beneath other, non-parking facility portions of the structure, landscaped or otherwise finished to serve as a pedestrian plaza, open space amenity, recreation area or pedestrian circulation. The height above mean grade shall be measured to the roof of the facility, or to the ceiling should the facility be set entirely below other non-parking elements of a building.

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5.25.3.3 Exemption for Existing Parking Facilities. Structured parking facilities in existence on or before September 15, 2000, or constructed and occupied at a later date pursuant to a building or special permit in conformance with all provisions of Chapter 40A issued prior to the effective date of the provisions of this Section 5.25, shall not be subject to the requirements as to Floor Area Ratio.

5.25.3.4 Exceptions to the Provisions of this Section 5.25.3

5.25.3.41 Exemption for Residential Parking Spaces. Notwithstanding the provisions of Section 5.25.3.2 above, the following structured parking located above ground, accessory to a residential use, shall not be calculated as part of the Gross Floor Area on the lot:

- (1) One parking space located within a townhouse unit or a one, two or three family dwelling.
- (2) A freestanding parking structure containing no more than one parking space per dwelling unit up to a maximum of three parking spaces on a lot containing a one, two or three family dwelling.
- (3) One parking space per dwelling unit, up to a maximum of fifteen (15) spaces, for multifamily dwellings.

5.25.3.42 Where an above ground parking facility in a structure is proposed to be constructed (a) in the 100-year flood plain, identified as the Zone A flood hazard area (See Section 11.70), or as determined by credible evidence and calculations from a registered professional engineer or (b) on a contaminated site that is listed by the Massachusetts Department of Environmental Protection under the Massachusetts Contingency Plan (310 CMR 40.00) with a Release Tracking Number and has been tier classified, the Planning Board may grant a special permit to waive the limitations of this Section 5.25.3 so that the parking facility is not subject to the requirements in this Ordinance as to Floor Area Ratio provided only the minimum number of parking spaces required for the uses on the site are provided. In granting such a special permit, the Planning Board shall find the following:

- (1) Where in a flood hazard area, the construction of a parking facility underground is (a) not technically feasible due to the requirements of the Massachusetts Wetlands Protection Act (M.G.L. ch. 131, s.40), (b) would require construction that would violate requirements or limitations of the Massachusetts Wetlands Protection Act, (c) would, in the view of the Cambridge Conservation Commission, seriously compromise the wetlands protection objectives of the Massachusetts Wetlands Protection Act), and (d) would result in costs of construction that are significantly greater than would otherwise be typical for the location were it not in a flood hazard area; or
- (2) Where the site is contaminated, the construction of a parking facility underground (a) would, in the opinion of a Licensed Site Professional, pose significant risks to public health or the environment through disturbance of hazardous materials and could not be reasonably mitigated in accordance

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with state and federal regulations, (b) require construction that is prohibited by state or federal regulations related to hazardous wastes, and (c) would result in costs of construction that would render the project financially unfeasible; and

- (3) The above ground facility is designed so as to reduce its actual or perceived bulk through, among other possible techniques, limiting the number of parking spaces it contains, placement of portions of the facility below grade where feasible, or its location relative to actively occupied portions of the construction. Construction above grade is discouraged that would increase the amount of impervious area on the lot.

Amend Section 19.24 (Application Procedures for a Project Review Special Permit) to read as follows:

19.24 Application Procedures. An application for the Project Review Special Permit shall be made to the Planning Board. The Application shall consist of the following materials:

- (1) Planning Board Special Permit Application Form. The application shall include all required plans and narrative statements. The site plan and other plans, elevations and drawings shall clearly show: (1) the access and egress points for all forms of travel to the site, (2) the location of adjacent bus and transit stops, (3) the schematic design of proposed mechanical equipment, and (4) the architectural screening treatment proposed for that mechanical equipment. The proponent shall provide perspectives of the proposed development, including mechanical equipment, from all critical viewpoints.
- (2) Traffic Study. Where the use thresholds established in Table 1 are met or exceeded, the application shall include a traffic study with a geographic and functional scope determined by the Traffic, Parking, and Transportation Department (TPTD) to be appropriate to the location of the project. In general, the study shall review intersections where the project will have significant and measurable impact. The TPTD shall issue a certification to the applicant within twenty-one (21) days of its submission that the traffic study has been done in a complete and reliable manner. Where that certification is denied, the applicant may revise the information in the traffic study and resubmit it; a certification of the revised study shall be issued or denied by the TPTD within fourteen (14) days of the resubmission of material.

Based on guidelines established by TPTD, the traffic study shall include a narrative discussion of (a) the nature and quantity of vehicles traveling to the site including, in addition to passenger cars, service, delivery and other commercial vehicles, (b) the likely impact of such vehicular traffic on abutters, abutting streets and nearby residential streets, including on-street parking behavior, (c) the physical nature of pedestrian and bicycle access to the site and the quantity of movements anticipated for each, and (d) an analysis of the crash history at intersections within the study area. The study shall identify parking and transportation demand management measures and other mitigation measures proposed to ameliorate any adverse traffic impacts identified in the study.

- (3) Tree Study. A Tree Study, certified complete by the City Arborist, as required by the Tree Protection Ordinance of the City of Cambridge, Chapter 8.66.
- (4) Urban Design Objectives Narrative. The application shall include a narrative description of how the proposal addresses each of the seven Urban Design Objectives set forth in Section 19.30. In addition the applicant shall comment specifically on the following: (a) the design and location of proposed mechanical equipment, including HVAC equipment, as well as a strategy for possible future expansion, if relevant, (b) location and operation of trash storage and removal systems, (c) location and operation of loading facilities, (d) measures taken to minimize the negative visual and noise impacts of such facilities on abutters, and (e) the provision in the building and site design to accommodate pedestrian, bicycle and transit access.

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- (5) Sewer Service Infrastructure Narrative. The application shall include a report by the applicant detailing the anticipated impact of the project on the city's sanitary, stormwater, and combined sewer infrastructure. It shall indicate the adequacy of the preliminary site plan in meeting city, state, and federal requirements or established standards for implementation of best management practices for stormwater management and the likely improvements to infrastructure necessary to accommodate the impacts of the proposed project. Where such determinations cannot be made at the time of application, the report shall indicate what investigations must be undertaken by the applicant to make such determination, their anticipated costs, and the schedule for their completion. The applicant shall provide certification that this report has been submitted to the Department of Public Works.
- (6) Water Service Infrastructure Narrative. The application shall include a report by the applicant detailing the anticipated impact of the project on the city's water delivery infrastructure and supply. It shall indicate the likely improvements to infrastructure necessary to accommodate the identified impacts. Where such determinations cannot be made at the time of application, the report shall indicate what investigations must be undertaken by the applicant to make such determination, their anticipated costs, and the schedule for their completion. The applicant shall provide certification that this report has been submitted to the Water Department.
- (7) Noise Mitigation Narrative. The application shall include a report detailing how the project shall conform to the requirements of the Cambridge Noise Ordinance. The report shall indicate the approaches to be adopted by the applicant in minimizing the impact of noise from the project on neighbors. When a project consists entirely or in part of residential uses located in a mixed-use or commercial or industrial area, the narrative shall describe how building materials, building design, building orientation, and site layout are being used to reduce the transmission of noise to the residences from the surrounding environment.
- (8) Resilience Narrative. The application shall include a report by the applicant describing how the project will mitigate and adapt to anticipated climate change impacts over the lifetime of the building, to include the following information at a minimum:
- (i) The Flood Resilience Standards documentation required in Section 22.80 of this Zoning Ordinance, and a description of specific design approaches used to respond to anticipated flood impacts, referencing plans, elevations, and other submitted drawings. Examples may include but are not limited to the following:
- raising of the finished floors of occupied spaces;
 - use of fixed or movable flood barriers at exterior access/egress points;
 - raising and/or protection of critical building equipment that is vulnerable to flooding;
 - use of flood-resistant building materials in areas of the building that are at risk of flooding, or materials that are readily replaceable if damaged by floodwater;
 - passive design approaches that maintain interior comfort in the event of a power outage or other extreme event;
 - and/or other design strategies.

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- (ii) The Green Factor documentation required in Section 22.90 of this Zoning Ordinance and a description of specific design approaches used to mitigate the anticipated impacts of heat on the building and site, referencing plans, elevations, and other submitted drawings. Examples may include but are not limited to the following:
- site landscaping and building design features that provide direct cooling to occupants of the site and any abutting public streets, reduce heat gain on the building, and mitigate urban heat island effect;
 - passive design approaches that increase a building's ability to withstand heat gain and maintain interior comfort in the event of a power outage or other extreme event;
 - interior cooling centers where occupants and/or other community members can seek shelter during extreme heat events;
 - and/or other design strategies.
- (iii) A description of any mitigation strategies that the owner will agree to implement for operational preparedness that will supplement design-based resilience strategies. Examples may include but are not limited to the following:
- information provided to building occupants about flood risk at initial occupancy;
 - protocols for alerting occupants when an extreme flood or heat event is likely;
 - response plans for maintaining occupant safety if occupants need to shelter in place temporarily, which may include measures to maintain emergency access/egress and to help occupants maintain access to water, food, medications, and means of communication;
 - recovery plans for restoring habitability of spaces that may be damaged during an extreme weather event;
 - participation in coordinated areawide programs and resources to promote social resilience;
 - and/or other strategies.
- (iv) Other strategies that the owner proposes to implement in order to promote climate change resilience not described above.

Amend Section 19.30 to read as follows:**19.30 CITYWIDE URBAN DESIGN OBJECTIVES**

The following urban design objectives are intended to provide guidance to property owners and the general public as to the city's policies with regard to the form and character desirable for new development in the city. It is understood that application of these principles can vary with the context of specific building proposals in ways that, nevertheless, fully respect the policies' intent. It is intended that proponents of projects, city staff, the Planning Board, and the general public, where public review or approval is required, should be open to creative variations from the detailed provisions presented in this Section as long as the core values expressed are being served. A project need not meet all the objectives of this Section 19.30 where this Section serves as the basis for issuance of a special permit. Rather, the permit granting authority shall find that, on balance, the objectives of the city are being served. Nor shall a project subject to special permit review be required to conform to the Required Building and Site Plan Requirements set forth in Section 19.50.

Further indicators of conformance with these policy objectives shall be found in planning documents and plans developed for specific areas of the City or the City as a whole, to the extent that they are not inconsistent with the objectives set forth in this Section 19.30. These documents include the Harvard Square Development Guidelines, the Central Square Action Plan, the Central Square Development Guidelines, the North Massachusetts Avenue Urban Design Guidelines Handbook, the University Park at MIT Urban Design Guidelines, the North Point Policy Plan and Design Guidelines, the Cambridge Institutional Growth Management Plan, the East Cambridge Riverfront Plan, the Eastern Cambridge Plan, the Eastern Cambridge Design Guidelines, the Alewife Revitalization, Alewife Urban Design Study Phase II and its Draft update of 1991, and Toward a Sustainable Future: Cambridge Growth Policy Document.

19.31 New projects should be responsive to the existing or anticipated pattern of development. Indicators include:

- (1) Heights and setbacks provide suitable transition to abutting or nearby residential zoning districts that are generally developed to low scale residential uses.
- (2) New buildings are designed and oriented on the lot so as to be consistent with the established streetscape on those streets on which the project lot abuts. Streetscape is meant to refer to the pattern of building setbacks and heights in relationship to public streets.
- (3) In mixed-use projects, uses are to be located carefully to respect the context, e.g. retail should front onto a street, new housing should relate to any adjacent existing residential use, etc.
- (4) Where relevant, historical context is respected, e.g. special consideration should be given to buildings on the site or neighboring buildings that are preferably preserved.

19.32 Development should be pedestrian and bicycle-friendly, with a positive relationship to its surroundings. Indicators include:

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(1) Ground floors, particularly where they face public streets, public parks, and publicly accessible pathways, consist of spaces that are actively inhabited by people, such as retail stores, consumer service businesses and restaurants where they are allowed, or general office, educational or residential uses and building lobbies. Windows and doors that normally serve such inhabited spaces are encouraged to be a prominent aspect of the relevant building facades. Where a mix of activities are accommodated in a building, the more active uses are encouraged facing public streets, parks, and pathways.

In commercial districts, such active space consists of retail and consumer service stores and building lobbies that are oriented toward the street and encourage pedestrian activity on the sidewalk. However, in all cases such ground floor spaces should be occupied by uses (a) permitted in the zoning district within which the building is located, (b) consistent with the general character of the environment within which the structure is located, and (c) compatible with the principal use for which the building is designed.

(2) Covered parking on the lower floors of a building and on-grade open parking, particularly where located in front of a building, is discouraged where a building faces a public street or public park, and publicly accessible pathways.

(3) Ground floors should be generally 25-50% transparent. The greatest amounts of glass would be expected for retail uses with lesser amounts for office, institutional or residential use.

(4) Entries to buildings are located so as to ensure safe pedestrian movement across streets, encourage walking as a preferred mode of travel within the city and to encourage the use of public transit for employment and other trips. Relating building entries as directly as possible to crosswalks and to pathways that lead to bus stops and transit stations is encouraged; siting buildings on a lot and developing site plans that reinforce expected pedestrian pathways over the lot and through the district is also encouraged.

(5) Pedestrians and bicyclists are able to access the site safely and conveniently; bicyclists should have secure weatherproof storage facilities conveniently located on-site. If bicycle parking is provided in a garage, special attention must be paid to providing safe access to the facilities from the outside.

(6) Alternate means of serving policy objective 19.32 through special building design, siting, or site design can be anticipated where the building form or use is distinctive such as freestanding parking structures, large institutional buildings such as churches and auditoriums, freestanding service buildings, power plants, athletic facilities, manufacturing plants, etc.

19.33 The building and site design should mitigate adverse environmental impacts of a development upon its neighbors. Indicators include:

(1) Mechanical equipment that is carefully designed, well organized or visually screened from its surroundings and is acoustically buffered from neighbors. Consideration is given to the size, complexity and appearance of the equipment, its proximity to residential areas, and its impact on the existing streetscape and skyline. The extent to which screening can bring order, lessen negative visual impacts, and enhance the overall appearance of the equipment should be taken into account. More specifically:

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(a) Reasonable attempts have been made to avoid exposing rooftop mechanical equipment to public view from city streets. Among the techniques that might be considered are the inclusion of screens or a parapet around the roof of the building to shield low ducts and other equipment on the roof from view.

(b) Treatment of the mechanical equipment (including design and massing of screening devices as well as exposed mechanical elements) that relates well to the overall design, massing, scale and character of the building.

(c) Placement of mechanical equipment in enclosed locations within the building (if it does not violate the Flood Resilience Standards in Section 22.80), which reduces the bulk of elements located on the roof; however, at-grade locations external to the building should not be viewed as desirable alternatives and should be visually and acoustically screened with fencing and/or landscape features wherever they are necessary.

(d) Tall elements, such as chimneys and air exhaust stacks, which are typically carried above screening devices for functioning reasons, are carefully designed as features of the building, thus creating interest on the skyline.

(e) All aspects of the mechanical equipment have been designed with attention to their visual impact on adjacent areas, particularly with regard to residential neighborhoods and views and vistas.

(2) Trash that is handled to avoid impacts (noise, odor, and visual quality) on neighbors, e.g. the use of trash compactors or containment of all trash storage and handling within a building is encouraged.

(3) Loading docks that are located and designed to minimize impacts (visual and operational) on neighbors.

(4) Stormwater Best Management Practices and other measures to minimize runoff and improve water quality are implemented.

(5) Landscaped areas and required Green Area Open Space, in addition to serving as visual amenities, are employed to reduce the rate and volume of stormwater runoff compared to pre-development conditions.

(6) The structure is designed and sited to minimize shadow impacts on neighboring lots, especially shadows that would have a significant impact on the use and enjoyment of adjacent open space and shadows that might impact the operation of a Registered Solar Energy System as defined in Section 22.80 of this Zoning Ordinance.

(7) Changes in grade across the lot are designed in ways that minimize the need for structural retaining walls close to property lines.

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(8) Building scale and wall treatment, including the provision of windows, are sensitive to existing residential uses on adjacent lots.

(9) Outdoor lighting is designed to provide minimum lighting and necessary to ensure adequate safety, night vision, and comfort, while minimizing light pollution.

(10) The creation of a Tree Protection Plan that identifies important trees on the site, encourages their protection, or provides for adequate replacement of trees lost to development on the site.

19.34 Projects should not overburden the City infrastructure services, including neighborhood roads, city water supply system, and sewer system. Indicators include:

(1) The building and site design are designed to make use of water-conserving plumbing and minimize the amount of stormwater run-off through the use of best management practices for stormwater management.

(2) The capacity and condition of drinking water and wastewater infrastructure systems are shown to be adequate, or the steps necessary to bring them up to an acceptable level are identified.

(3) Buildings are designed to use natural resources and energy resources efficiently in construction, maintenance, and long-term operation of the building, including supporting mechanical systems that reduce the need for mechanical equipment generally and its location on the roof of a building specifically. The buildings are sited on the lot to allow construction on adjacent lots to do the same. Exceeding the Green Building Requirements set forth in Section 22.20 of this Zoning Ordinance and other evolving environmentally sustainable standards is encouraged.

19.35 New construction should reinforce and enhance the complex urban aspects of Cambridge as it has developed historically. Indicators include:

(1) New educational institutional construction that is focused within the existing campuses.

(2) Where institutional construction occurs in commercial areas, retail, consumer service enterprises, and other uses that are accessible to the general public are provided at the ground (or lower) floors of buildings. Where such uses are not suitable for programmatic reasons, institutional uses that encourage active pedestrian traffic to and from the site.

(3) In large, multiple-building non-institutional developments, a mix of uses, including publicly accessible retail activity, is provided where such uses are permitted and where the mix of uses extends the period of time the area remains active throughout the day.

(4) Historic structures and environments are preserved.

(5) Preservation or provision of facilities for start-up companies and appropriately scaled manufacturing activities that provide a wide diversity of employment paths for Cambridge residents as a component of the development; however, activities heavily dependent on trucking for supply and distribution are not encouraged.

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19.36 Expansion of the inventory of housing in the city is encouraged. Indicators include:

- (1) Housing is a component of any large, multiple building commercial development. Where such development abuts residential zoning districts substantially developed to low-scale residential uses, placement of housing within the development such that it acts as a transition/buffer between uses within and without the development.
- (2) Where housing is constructed, providing affordable units exceeding that mandated by the Ordinance. Targeting larger family-sized middle-income units is encouraged.

19.37 Enhancement and expansion of open space amenities in the city should be incorporated into new development in the city. Indicators include:

- (1) On large-parcel commercial developments, publicly beneficial open space is provided.
- (2) Open space facilities are designed to enhance or expand existing facilities or to expand networks of pedestrian and bicycle movement within the vicinity of the development.
- (3) A wider range of open space activities than presently found in the abutting area is provided.

19.38 Development should be resilient to the effects of climate change as anticipated in the *Resilient Cambridge* plan published by the City. Indicators include:

- (1) The design has incorporated the most up-to-date projections of climate change impacts over the project's anticipated lifespan, including increases in temperature and precipitation and risk of future flooding.
- (2) The project is designed to meet or exceed the Flood Resilience Standard in Section 22.80 of this Zoning Ordinance and the Green Factor Standard in Section 22.90 of this Zoning Ordinance. Design strategies may be supplemented by mitigation strategies to manage the effects of flooding and heat where appropriate.
- (3) The design uses resilience strategies that have environmental co-benefits. An example is passive building envelope design, which promotes occupant comfort during extreme heat and resilience from power outages due to storms while also reducing energy use and greenhouse gas emissions. Another example is intensive vegetation at grade and on roofs, which provides cooling benefits while improving stormwater management.
- (4) The design takes an integrative approach to climate change resilience that accounts for the existing context and promotes the other design objectives of the area and the City.

19.40 CITYWIDE ADVISORY DEVELOPMENT CONSULTATION PROCEDURES

19.42 *Small Project Review Procedure.*

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19.42.1 Applicability of Small Project Review Procedure. For those zoning districts identified in Section 19.46 as Areas of Special Planning Concern, the following types of development proposals shall be subject to the Small Project Development Consultation Procedure (unless the regulations for an individual Area of Special Planning Concern provide for specific exceptions or additional types):

- (1) Construction of any new building having a gross floor area of less than two thousand (2,000) square feet;
- (2) Construction of any other new structure having a floor area of less than two thousand (2,000) square feet;
- (3) Any exterior building alteration increasing gross floor area by one hundred (100) square feet or more;
- (4) Construction of five or more parking spaces, whether on grade or in a structure;
- (5) Erection of a sign;
- (6) Any other exterior building alteration facing a street but not including painting, brick repointing or masonry repairs, building cleaning, gutter replacement or similar routine repair, replacement, or maintenance.

19.42.2 Application for a Small Project Review. Prior to application for a building permit, the applicant shall contact the Community Development Department and request a development consultation session. Upon making such a request, the applicant shall present for review such written or graphic materials necessary to give a reasonably complete, though not necessarily detailed, indication of the nature and scope of the development proposal. For projects that involve the construction of a new building or an addition to a building on a new foundation, for advisory purposes only, the materials should include those required by the Flood Resilience standards set forth in Section 22.80 and the Green Factor standards set forth in Section 22.90. For projects that involve an increase in the amount or area of surface parking, or a decrease in the amount of open space provided, the materials should include those required by the Green Factor standards set forth in Section 22.90. The consultation session shall occur no later than five working days after the request for such a consultation.

19.43 Large Project Review Procedure.

19.43.1 Applicability of Large Project Review Procedure. For those zoning districts identified in Section 19.46 as Areas of Special Planning Concern, any development proposal involving the construction of a new building or new structure or an alteration of an existing building or structure that increase the gross floor by two thousand (2,000) square feet but less than twenty-five thousand (25,000) square feet.

19.43.2 Application for a Large Project Review. Prior to application for a building permit, the applicant shall submit the following materials to the Community Development Department for its review. The written and graphic materials listed below shall give a reasonably complete indication of the nature and scope of the development proposal. Each of the following shall be submitted as appropriate to the proposal:

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- (1) A site plan indicating the general location and boundaries of the lot, major anticipated changes in natural features, existing and proposed buildings, publicly beneficial open space and/or useable beneficial open space and/or private open space, existing and proposed curb cuts, off street parking areas, loading and service facilities, and generalized landscaping scheme or other anticipated treatment of open spaces.
- (2) Cross section(s), generalized floor plans and other diagram(s) indicating the anticipated locations of various land uses within the building and on the site and major pedestrian pathways.
- (3) Architectural elevations or sketches indicating anticipated facade treatment along public ways including the proposed entrances, fenestration, and signage.
- (4) A summary indicating compliance with applicable zoning requirements.
- (5) For projects that involve the construction of a new building or an addition to a building on a new foundation, materials identified in the Flood Resilience standards set forth in Section 22.80 shall be submitted to CDD for review and approval. If Section 22.80 is not applicable to the project, the materials shall nonetheless be provided for advisory purposes.
- (6) For projects that involve the construction of a new building, enlargement of an existing building footprint, increase in the amount or area of surface parking, or decrease in the amount of open space provided, materials identified in the Green Factor standards set forth in Section 22.90 shall be submitted to CDD for review and approval. If Section 22.90 is not applicable to the project, the materials shall nonetheless be provided for advisory purposes.

Amend Section 22.20, “Green Building Requirements,” by adding new Subsections 22.24.5 and 22.24.6 to read as follows:

22.24.5 Flood Resilience. A Green Building Project shall meet the Flood Resilience standards set forth in Section 22.80.

22.24.6 Green Factor. A Green Building Project shall meet the Green Factor standards set forth in Section 22.90.

Amend Section 22.30 to read as follows:

22.30 GREEN ROOFS

22.31 Purpose. The purpose of this Section is to establish standards for the development of green roof systems on new and existing buildings for the purpose of stormwater management, heat mitigation, and access and enjoyment by occupants of a building, and to require new buildings of substantial size to include vegetation and/or solar energy roofing systems on much or most of the available roof area.

22.32 Access. Green Roof Area as defined in Article 2.000 of this Zoning Ordinance may be accessible by means of a roof entrance either for maintenance or for recreational use by building occupants or the general public. If Green Roof Area is intended for recreational use, it shall be designed and maintained to ensure that the vegetation will endure the anticipated use throughout the Green Roof Area’s lifetime.

22.33 Types. Green Roof Area shall be classified as one of the three following types:

- (a) Non-Intensive Green Roof Area shall have a minimum 4-inch layer of growing substrate that requires minimal maintenance, using small, low-growing plant species, particularly succulents.
- (b) Short Intensive Green Roof Area shall have a minimum 18-inch layer of growing substrate that supports a wider variety of plant types, such as herbaceous and woody plants that are less than two (2) feet tall at maturity.
- (c) Intensive Green Roof Area shall have a minimum 24-inch layer of growing substrate that supports a wider variety of plant types, such as herbaceous and woody plants that are greater than two (2) feet tall at maturity, and requiring more structural support, irrigation, and maintenance than Short Intensive Green Roof Area.

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22.34 Operation and Maintenance Plan.

Wherever Green Roof Area is proposed, a long-term operation and maintenance plan shall be created and implemented to ensure that the Green Roof Area functions as designed. The level of detail in these plans should reflect the type of Green Roof Area being proposed, the complexity of the project, and the nature and extent of the impacts that may arise both during and after construction. The owner shall submit the operation and maintenance plan to the Department of Public Works (DPW) for approval before applying for a building permit for any building containing Green Roof Area. DPW shall certify to the Superintendent of Buildings that the operation and maintenance plan has been provided to DPW and approved prior to issuance of a building permit for any Green Roof Area. The Commissioner of Public Works shall have the authority to promulgate regulations for the implementation of this Section.

22.35 Green Roofs Requirement.

22.35.1 Applicability. This Section 22.35, *et. seq.*, shall apply to any new building or structure of twenty-five thousand (25,000) gross square feet or more, except it shall not apply to affordable housing buildings that either are developed under the Affordable Housing Overlay (AHO) as defined in Section 11.207 or have a majority of their units permanently reserved for households at or below 100% of AMI.

22.35.2 Requirement.

- (a) At least 80% of the roof area of the building as measured in plan view, excluding those portions of the roof listed below, shall be devoted to Green Roof Area, Biosolar Green Roof Area, or Solar Energy Systems.
1. Areas having a slope greater than 3 in 12 or twenty-five percent (25%).
 2. Areas designed and managed for use by building occupants or the general public.
 3. Vehicular parking decks.
 4. Chimneys, water towers, air conditioning equipment, elevator bulkheads, skylights, ventilators and other necessary features appurtenant to buildings which are usually carried above roofs and are not used for human occupancy, in addition to conduit, visual and acoustical screening, access routes for maintenance and service, and other areas that must be clear of obstruction to comply with applicable building and safety codes.
- (b) In the case of non-residential or mixed-use buildings in which at least half of the Gross Floor Area is devoted to one or more of the non-residential uses listed below (with reference to the Table of Use

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Regulations, Section 4.30 of this Zoning Ordinance), excluding any municipal buildings, at least 80% of the roof area of the building as measured in plan view, excluding those portions of the roof listed above at 22.35.2(a)(1)-(4), shall be devoted to Green Roof Area or Biosolar Green Roof Area:

1. Transportation, Communication & Utility Uses (Section 4.32);
2. Educational Purposes (Section 4.33-b.);
3. Noncommercial Research Facilities (Section 4.33-c.);
4. Other Institutional Uses (Section 4.33-h.);
5. Office and Laboratory Use (Section 4.34);
6. Retail Business and Consumer Service Establishments (Section 4.35);
7. Open Air or Drive In Retail & Service (Section 4.36);
8. Light Industry, Wholesale Business and Storage (Section 4.37); or
9. Heavy Industry (Section 4.38).

22.35.3 Exemption. The Planning Board may grant a special permit to reduce the required Green Roof Area, Biosolar Green Roof Area, or Solar Energy System below the area required by Section 22.35.2, provided that each square foot so reduced be compensated by a unit price contribution to the Cambridge Affordable Housing Trust. This unit price shall be determined based on the average costs to design, install, and maintain green roofs and rooftop solar energy systems in Cambridge using actual cost figures to the extent possible, shall be subject to annual adjustment based on standard construction cost indices, and shall be calculated, and recalculated approximately every three years, by the Cambridge Community Development Department. All such funds contributed to the Trust shall be dedicated to the design and incorporation of Green Roof Area, Biosolar Green Roof Area, or Solar Energy Systems into new or existing affordable housing developments.

22.35.4 Effective Date. The provisions of this Section 22.35, as adopted on June 1, 2021, shall not apply to structures lawfully in existence or lawfully begun before June 1, 2021, or to a building or special permit issued before June 1, 2021, and shall take effect on June 1, 2021.

Delete Section 22.40:

22.40 EXTERIOR WALLS AND INSULATION

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22.41 Purpose. The purpose of this Section is to remove potential impediments to the construction of exterior walls with additional insulation or wall-based mechanical systems that can improve the energy-efficiency of a building, by exempting the additional gross floor area created by such features from the calculation of a building's total Gross Floor Area.

22.42 Double-Skin Facades.

22.42.1 A Double-Skin Façade shall be defined as a multilayer exterior wall system comprising a solid outer wall, a solid inner wall, and a ventilated intermediate air space, intended to improve insulation and manage solar heat gain as an element of a building-wide mechanical system for heating and cooling a building.

22.42.2 Floor Area Exemption for Double-Skin Façades. Within an exterior wall system that meets the definition of a Double-Skin Façade as defined in Section 22.42.1 above, the area occupied by the intermediate air space shall be excluded from the calculation of Gross Floor Area on a lot, up to a depth of one (1) foot, provided the space is not to be accessed except for maintenance purposes.

22.43 Exterior Insulation.

22.43.1 Floor Area Exemption for Added Exterior Insulation. Where the thickness of a solid, non-removable exterior wall of a building is greater than six (6) inches, such wall being comprised entirely of structural material, insulating material and interior and exterior finishes, any Gross Floor Area that is further than six (6) inches from the innermost solid plane of the exterior wall may be excluded from the calculation of Gross Floor Area of a building.

Delete Section 22.50:

22.50 OVERHANGS AND SUN-SHADING DEVICES

22.51 Purpose. The purpose of this section is to remove potential impediments to the addition of passive solar shading devices intended to reduce the impact of solar heat gain on a building or lot, by exempting areas underneath such devices from the calculation of Gross Floor Area under certain circumstances.

22.52 Floor Area Exemption for Sun-Shading Devices. Areas directly underneath a building overhang, eave, awning or other sun-shading device shall be excluded from the calculation of Gross Floor Area for a lot, provided that the overhang, eave, awning or other sun-shading device extends no more than three (3) feet from the exterior wall plane of the section of the building beneath it, and provided that the ground surface directly beneath the overhang, eave, awning or other sun-shading device meets the definition of Permeable Open Space as defined in Article 2 of this Zoning Ordinance.

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22.53 *Floor Area Exemption for Pergolas, Arbors and Trellises.* Ground space directly underneath an outdoor pergola, arbor or trellis structure shall be excluded from the calculation of Gross Floor Area of a lot, provided that the structure is at least 80% open to the air across all horizontal or vertical surfaces, and that any parallel structural support members with a cross-section of greater than one (1) inch by two (2) inches are separated from each other by at least three (3) feet on center. These features may be freestanding or attached to a building.

Attachment: Proposed Ordinance (ORD 2022 # 9 : 2022-9 create a new Section 22.80 Flood Resilience

Amend Sections 13.95.6, 13.104.1, 17.42.11, 20.97.3 to read as follows:

13.95.6 Surface Parking. All parking within the PUD-7 District shall be provided underground, as defined in Section 5.25.3.22 of this Zoning Ordinance, with the following exceptions that may be approved by the Planning Board in a Final Development Plan:

- (a) Surface Parking on Private Roadways. On-grade parking shall be allowed along private ways to be constructed within the PUD-7 District, provided that the location and amount of said on-grade parking shall be depicted in the Final Development Plan.
- (b) Interim Use of Surface Parking. On an interim basis, in anticipation of later construction of structured parking sufficient to meet all parking requirements, on grade open parking shall be allowed in a Development Parcel subject to the following conditions:
 - (1) The future parking structure will be constructed within the Development Parcel or on an adjacent Development Parcel or outside of the PUD-7 District in a location that complies with the provisions of Section 13.95.1, but it may be located either on or off of the lot which it will serve;
 - (2) Construction of the replacement parking structure will commence within five years of the date of certificate of occupancy for the building initially served by on grade parking;
 - (3) The future parking structure will contain sufficient spaces for users of the building initially served by on grade open parking so as to meet the parking requirements for such building; and
 - (4) Binding commitments exist to establish, to the reasonable satisfaction of the Planning Board, that requirements (1) through (3) above shall be satisfied. Such commitments shall be made by negotiated lease agreement, deed restriction, covenant, license, occupancy agreement or comparable legal instrument.
- (c) Where required, parking spaces for persons with disabilities may be located on-grade.
- (d) Nothing in this Section 13.95 shall prohibit the use of the surface parking spaces on Government Owned Lots.

13.104.1 Permitted Gross Floor Area (GFA). The following GFA shall be permitted within the PUD-8 District:

- (a) Existing GFA. The GFA that exists on a lot(s) to be covered by a PUD-8 Special Permit on the date of application for such PUD-8 Special Permit, which shall be calculated in accordance with the definition of Gross Floor Area under the Zoning Ordinance in effect at the time of adoption of this Section 13.100, except that the GFA of above-ground structured parking facilities in existence on or before September 15, 2000 shall be included in the calculation of Existing GFA (notwithstanding the exemptions under Section 5.25.3.3).

17.42.11 Special District 4. Other than as may be temporarily allowed in Section 17.46.1, the Gross Floor Area (GFA) permitted in Special District 4 shall be nine hundred thousand (900,000) square feet, exclusive of GFA occupied by structured parking not otherwise exempt as set forth in Section 5.25. An additional four hundred

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thousand (400,000) square feet of GFA shall be permitted for the exclusive use of structured parking not otherwise exempt from the calculations as to GFA, as set forth in Section 5.25. The permitted GFA shall be further limited by the requirements of Section 17.45 below. There shall be no maximum FAR limit imposed on any lot within the Special District 4. The provisions of Section 5.25.3.42 shall not apply in this Special District 4.

20.97.3 Waiver of Gross Floor Area Provisions for Parking Facilities - Section 5.25. Because of the unique factors related to flooding and groundwater management in Alewife, the importance of maintaining a high level of permeability, and the difficulty of constructing large areas of building below grade, the Planning Board may by special permit exempt the Gross Floor Area contained in any above ground structured parking facility from the FAR limitations established in this Section 20.90 and any applicable base zoning (such special permit shall supercede the provisions of Section 5.25.3.42 for any lot within the Alewife Overlay Districts). In granting such a special permit the Planning Board shall consider the following:

1. The facility advances the objective of the Concord-Alewife Plan.
2. A shared facility is established that aids in implementation of effective Transportation Demand Management measures to reduce dependence on the single occupancy automobile.
3. The facility is well designed, does not diminish the pedestrian-friendly quality the area around it, and is otherwise consistent with the urban design objective of the Concord-Alewife Plan.
4. The additional bulk of building above grade is well designed and does not have an unreasonably negative impact on its abutters or the public realm.
5. The extent to which the construction of an above grade parking structure facilitates the creation of at grade soil permeability.