

Flood Resilience Compliance Guidance Document

This document is intended to provide guidance for projects that are subject to the Flood Resilience Standards, Section 22.80, of the Cambridge Zoning Ordinance, which promotes building designs that are resilient to flood events associated with the effects of Climate Change.

General Steps:

1. Confirm if the project is subject to the Flood Resilience Zoning Standards.

Flood Resilience Zoning Standards are applicable to projects that fall under one of the 4 specific conditions as outlined in the Zoning **AND** have Long Term Flood Elevations (LTFE's) associated with the projects Parcel.

- Review Zoning Sections noted below to confirm if any one of the conditions apply to your project. Excerpts from specific Zoning Sections are found below under the Applicability discussion for the Application Process. Full Zoning Text can be found Here: <https://www.cambridgema.gov/CDD/zoninganddevelopment/Zoning/Ordinance>.

Is this project subject to Green Building Requirements? (Zoning Section 22.20)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Does this project involve the construction of a new building? (Zoning Section 5.16)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Does this project enlarge an existing building's footprint by at least 50%? (Zoning Section 5.16)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Does Any development in Stories Below Grades seeking exemption under Zoning Section 5.25.2?	<input type="checkbox"/> Yes <input type="checkbox"/> No

- If any of the above conditions apply, next confirm if there are LTFE's associated with the development parcel by checking the Cambridge FloodViewer Maps¹, Located Here: <https://www.cambridgema.gov/Services/floodmap>

If the project meets one of the above criteria **AND** has LTFE's associated with the Parcel, then the Flood Resilience Standards are applicable, and a Flood Resilience Compliance Confirmation from the Department of Public Works (DPW) will be required.

If the project meets one of the above criteria and **DOES NOT** have LTFE's associated with the parcel, no further action is required. City departments may ask for confirmation of this condition as part of any permit application.

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2. Apply for Flood Resilience Compliance Confirmation from DPW

Before applying for any special permit from the Planning Board, any development review procedure under Article 19.0 of the Zoning Ordinance or a Building Permit, whichever is sooner, the project will need to obtain a Flood Resilience Compliance Confirmation (herein referred to as Compliance Confirmation) from the DPW.

Application for Compliance Confirmation shall be submitted in ADVANCE of either the Special Permit or Building Permit application, as the DPW has **45 days** from the application submission to complete its review.

Application for a Compliance Confirmation shall be completed online in the City's Online Permitting System (<https://cambridgema.viewpointcloud.com/>).

Specific information related to the Compliance Confirmation Application Process can be found below.

3. Reconfirm Compliance with Flood Resilience Zoning Standards

If a project is subject to the Flood Resilience Zoning Standards up to 3 separate Compliance Confirmations may need to be obtained from the DPW. As noted in the Zoning, Compliance Confirmation will be required at time of:

- i. Special Permit or any Article 19.0 review with Planning Board (as needed)
- ii. Building Permit
- iii. Certificate of Occupancy

First Compliance Confirmation (either at Special Permit or Building Permit) shall be submitted as a new application in the permitting system. All subsequent applications shall be submitted as a modification to an existing Compliance Confirmation.

Flood Resilience Compliance Confirmation Application Process

In addition to general information on the project, the Application for Flood Resilience Compliance Confirmation will require information on the Parcels LTFE's and documentation related to how the project will meet the Specific Zoning Requirements. Guidance on the requirements and expectations for the Application are provided below.

Application will be filed electronically in the City's Online Permitting System (<https://cambridgema.viewpointcloud.com/>). You will find the Permit under the DPW Section of the system. New users may need to create an account to start the Application Process.

Once in the Application, notes below will assist in completing the Application.

Applicant: Provide Contact Information for Compliance Confirmation

- Applicant can be any party associated with the development project. Keep in mind that as additional Compliance Confirmations may be required in future phases of the project, it may be best to have an Applicant that will remain associated with the project through completion.

Location: Select project development Parcel.

- Parcels can be searched by address or parcel Id.
- If projects are on Multiple Parcels, choose one for the application.

General Information: Provide information related to the status of the development project.

- Ideally, Flood Resiliency Compliance Confirmation are completed in advance of permit for which it will be required as DPW has 45 days to complete a review. For example, if a project was seeking a building permit, the project should seek Flood Resiliency Compliance 45 days in advance of applying for a Building Permit. "Building Permit" should be selected for the Status of the project, in the Compliance Confirmation Application.
- If any permits have been obtained and applied for, provide permit numbers as applicable.

Applicability: Select "yes" or "no" from each applicability drop down menu to confirm what sections apply to the development project. Relevant Zoning text is included below for assistance in determining which applicability triggers apply to a development. Please select "yes" for all that apply.

- **Green Building:**
 - Zoning Section 22.82 makes all development subject to Green Building Requirements subject to the Flood Resilience Standards.

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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.

- Green Building applicability is outlined in Zoning Section 22.20. Green Building Projects, are defined by Zoning as:

Green Building Project. Any new construction, or any substantial rehabilitation of an existing building for an existing or new use, that totals 25,000 square feet of Gross Floor Area or more and that (1) requires the issuance of a special permit by the Planning Board under any provision of this Zoning Ordinance (including but not limited to special permits required in [Article 13.000 - Planned Unit Development Districts](#), [Section 19.20 - Project Review Special Permit](#), and [Section 5.28.2 - Conversion of Non-Residential Structures to Residential Use](#)) or (2) is subject to the provisions of [Section 19.50 - Building and Site Plan Requirements](#), shall be considered a Green Building Project subject to the requirements of [Sections 22.20](#) through 22.25.

- **New Construction and Building Additions:**

- Zoning Section 5.16 required DPW certification of conformance with Flood Resilience Standards for new construction and building additions of certain sizes.

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%

- **Below Grade GFA**

- Zoning Section 2.25.2 (c) allows for basement GFA to be excluded from the development calculation if the development meets the Flood Resiliency Standards.

5.25.2 Gross Floor Area shall not include:

(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

(ii) The area is designed in accordance with the Flood Resilience Standards set forth in Section 22.80 of this Zoning Ordinance

LTFE Establishment: Provide projected flood elevations from promulgated Maps. Map and Elevations are available on the Cambridge FloodViewer 2022 at Link below. A hard copy of the map elevations, in tabular form, is also available in hard copy at the DPW office at 147 Hampshire Street.

- Using Floodviewer Map:
 - Map can be found here: <https://www.cambridgema.gov/Services/floodmap>
 - After reviewing front page text of website for information on the flooding projections, click on “Go to Full Screen Map” for most user-friendly map interface.
 - Once in full screen map, search for parcel by address or by scrolling and zooming to parcel level.
 - Click on development parcel to pop up Flood Elevation Table, specific to site. Table will include 2070, 2030, Present Day and FEMA Flood Elevations ². As defined in the Zoning, the current LTFE are based on the 2070 Projections for Sea Level Rise / Storm Surge (SLL/SS) and Precipitation (Precip). The LTFE for the 1% probability and the 10% probability is the higher of the two events and are also listed, in gray, in the bottom two rows of the Flood Elevation Table. See example Below:

Address: 147 Hampshire St	
Ground Elevation Min:	21.8 ft-CCB
Ground Elevation Max:	25.0 ft-CCB
2070 - 1% - SLR/SS	N/A
2070 - 1% - Precip	23.5
2070 - 10% - SLR/SS	N/A
2070 - 10% - Precip	22.9
2030 - 1% - Precip	23.3
2030 - 10% - Precip	N/A
Present Day - 1% - Precip	23.2
Present Day - 10% - Precip	N/A
FEMA 500-Year	N/A
FEMA 100-Year	N/A
1% - LTFE	23.5
10% - LTFE	22.9

Selected Map-Lot: 85-1
Selected Address: 147 Hampshire St

[Zoom to](#) ...

Representative Flood Elevation Table

- Application will ask for all 2070 events to be entered along with the LTFE’s. LTFE’s are elevations that are referenced in Zoning and shall be used for determination of

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the development meeting the Standards. All other elevations are provided for information only and for consideration and understanding of a parcels risk of Flooding.

- All elevations are in Cambridge City Base.

Meeting of Development Standards: Provide narrative related to how the development will meet each of the Flooding Resilience Standards. Narratives shall be supported with required attachments as outlined in Zoning. Narratives within application form shall be concise and summarize the resiliency measures, additional narrative and supporting information can be uploaded as an attachment to the application.

See specific zoning text and guidance on meeting the Standards below.

- Zoning Section 22.84.1 (a) Occupiable Spaces shall be protected from the 10% LTFE:
 - Zoning Text:

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

- Notes on Standard:
 - Occupiable space is defined by the International Building Code (<https://codes.iccsafe.org/content/IBC2021P2/chapter-2-definitions>): A room or enclosed space designed for human occupancy in which individuals

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congregate for amusement, educational or similar purposes or in which occupants are engaged at labor, and which is equipped with means of egress and ventilation facilities meeting the requirements of this code.

- Passively Deployable barriers shall not require manpower or manual activation for deployment.

- Zoning Section 22.81.1 (b) and (c): Habitable Spaces and Critical Equipment shall be protected from the 1 % LTFE
 - Zoning Text:
 - (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.*

 - Notes on Standard:
 - Habitable space is defined by the International Building Code (<https://codes.iccsafe.org/content/IBC2021P2/chapter-2-definitions>): A space in building for living, sleeping, eating or cooking. Bathrooms, toilet rooms, closets, halls, storage or utility spaces and similar areas are not considered habitable spaces.

- Zoning Section 22.84.2, how spaces below the 10% LTFE will recover from flood event.
 - Zoning Text:
 - 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.*

 - Notes on Standard:

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Attestation: Sign application to certify that everything reported is true and accurate.

Attachments: Upload all documents required and necessary to support the narrative discussion provided in Application. Table below summarizes required and anticipated submittals at each filing.

Project Stage	Minimum Required Attachments
Special Permit (if applicable)	Site Plan Building Elevations
Building Permit	Site Plan Building Elevations
Certificate of Occupancy	As-Built Site Plan As-Built Elevations Long Term Operation and Maintenance Plan FEMA Elevation Certificate (For Buildings Subject to Green Building Standards)

Applicant can also add any additional attachments that support the projects Resiliently measures.

- Site Plan shall include, but not be limited to the following:
 - Existing and proposed Site Topography, including spot elevations at all potential vulnerable building locations.
 - Adequate level of detail to support resiliency and elevation claims.
 - Finished Floor Elevations
- Elevations, per Zoning Section 22.85 (b) shall include: 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 on Cambridge City Base Datum (CCB), drawn to scale and shall include a graphic scale symbol on each drawing sheet.
- Long Term Operation and Maintenance Plan shall provide all relevant instructions for operation, maintenance and use of ANY proposed resiliency measures. Plan shall include requirements for periodic testing of resiliency measures.
- A completed FEMA Elevation Certificate (<https://www.fema.gov/flood-insurance/find-form/underwriting>) shall be submitted for any Building that is subject to the Green Building Standards, Zoning Section 22.20.

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Modifications to previous Submission: Any Application for Flood Resilience Compliance Confirmation after the initial Confirmation has been received, shall file for a “Modification to a Flood Resilience Compliance Confirmation”. The initial Confirmation number will be required, and Application will reflect the initial application and will be able to be edited to address changes in the plan from the previous Confirmation.

Flood Resilience Compliance Confirmation: Upon receipt of a complete Application, DPW will review materials. All review comments will be conveyed to Applicant via the On-line permitting system. Upon approval of the Application DPW will issue a Flood Resilience Compliance Confirmation. This document will be available for Download and will need to be uploaded to the applicable Permit Application as was indicated in the “Project Status” field of the Application. Please note that a separate Compliance Confirmation will be needed for each of the project Permit Status.

Compliance Confirmation can be printed using the Print Function in the permitting system. Document can be printed in hard copy or to PDF for uploading to relevant permit applications.

Notes:

1. Currents Flood Maps, promulgated September 1, 2023, are Floodviewer 2022 V. 3.0. Maps current at time of first permit submission will be applicable for duration of the project. Zoning Ordinance allows for maps to be reissued as better information because available. Maps changes will include a minimum of a 90-day public comment review and comment period before becoming current.
2. Cambridge Flood Resilience Standards, procedures and reviews are independent and not specifically related to FEMA Flooding Requirements. If a development parcel has FEMA flood elevations noted, please review the FEMA requirements.
3. Zoning allows for approval of modified plan under Zoning Section 22.84.3 Modifications that states:

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.