Building in Flood Plains		POL.BD.OBC.29	
Approved By:	Chief Building Official	Date Issued:	07/05/2024
Reference:	*9.1.1.8. Div. B, OBC*	Date Revised:	05/01/2026

Purpose

To clarify the design requirements for constructing buildings in the Flood Hazard Overly Zone *("flood plain"*).

Background & Definitions

Zoning By-law Requirements

15.4 FLOOD HAZARD OVERLAY ZONE

No exterior opening to Habitable area within a Building shall be permitted below a minimum opening elevation equal to **220.5 m*** C.G.S. datum (Regulatory Flood Elevation) in the Flood Hazard One (FH1) or Flood Hazard Two (FH2) Overlay Zones as shown on Schedule "B" to this By-law. For lands affected by the Flood Hazard Two (FH2) Overlay – Mill Creek Regional Floodplain as shown on Schedule "B" to this By-law, no exterior opening shall be permitted below a minimum opening elevation of 0.5 m above the highest flood elevation on the affected Lot. Buildings located within a floodplain shall also incorporate flood-proofing provisions in accordance with the Ontario Building Code.

***Interim Policy:**

A comprehensive study was completed in 2025 which identified an expanded Flood Hazard Overly Zone and a new Regulatory Flood Elevation of **221.4m**. This updated elevation will be referenced by the Chief Building Official (CBO) on an interim basis until the Zoning By-law has been updated in 2026**.**

Building Code Requirements

The Ontario Building Code states the following (see Summary of Building Code Requirements):

9.1.1.8. Building in Flood Plains

(1) *Buildings* constructed on flood plains shall,

(a) be designed and constructed in accordance with good engineering practice to withstand anticipated vertical and horizontal hydrostatic pressures acting on the structure, and

(b) incorporate floodproofing measures that will preserve the integrity of *exits* and *means of egress* during times of flooding.

Definitions

"Regulatory Flood Elevation" (RFE) means the elevation of 220.9m Canadian Geodetic Survey (CGS) as described in the City Zoning By-law.

"Freeboard" is defined as a vertical buffer (air gap) of 0.5m between the uppermost water surface and lowest habitable portion of a structure; acts as an additional safety margin.

"Flood Construction Level" (FCL) means the elevation of **221.4m** that governs building siting, floor elevation, and construction standards, where:

FCL = RFE (220.9m) + Freeboard (0.5m) = 221.4m

"Floodproofing" means the use of fill or design modifications to elevate openings in a building or structure above the FCL and/or the use of water-tight doors, seals, berms or floodwalls to prevent water from entering openings below the FCL. The objective of floodproofing is to prevent the entry of flood water into the structure and will be reasonably safe from flooding.

General Requirements

New Buildings

1. Where a proposed building is located within a designated flood plain, the Chief Building Official will require plans and supporting documents to be:
    a. designed by a qualified person (professional engineer) to demonstrate that the elevation and/or design of the building incorporates flood construction level requirements intended to reduce the risk of flood damage; and
    b. designed so that the structure will withstand the anticipated hydrostatic pressures, in accordance with 9.8.1.1., Div. B, Ontario Building Code.

2. Identify maintenance requirements that may be required over the life of the structure and have same registered on title.

Additions to Existing Buildings

1. The Chief Building Official may allow an addition, at the original non-conforming floor elevation, that would not increase the footprint of the building or structure by more than 25% of the existing floor area.

2. The owner provides a report, to the satisfaction of the Chief Building Official, stamped by a professional engineer, certifying that the habitable space in the building will be safe during a flood in accordance with 9.8.1.1., Div. B, OBC.

3. Where basements or structures are being proposed below the FCL, the design of the walls and floor slab shall be completed by a qualified structural engineer or architect to be watertight and reinforced to withstand hydrostatic pressures; basements shall incorporate a sump pump.

4. Structures shall be sealed and made watertight up to the FCL.

Building Services

1. Electrical panels, appliances, mechanical, heating services and other services subject to damage from flooding shall be established above the FCL, unless such services are protected from flood damage and accessible for service during a flood.

2. All sump pumps shall have the capacity to handle total inflowing water. The sump discharge shall be established above the FCL.

3. New and replacement sanitary systems shall be designed to minimize or eliminate infiltration of flood waters into the system and eliminate discharge from the sanitary system.

Private On-Site Sewage Systems

1. For properties served by a private on-site system within the Flood Hazard Overly Zone, the system shall be designed such that the bottom of the gravel layer will be no lower than the FCL. Advanced technologies such as tertiary treatment systems with a higher level of treatment and approved for use under the Ontario Building Code may be required to reduce and limit the amount of fill being placed.

2. Septic tank openings, tiles and trenches for effluent disposal beds shall be established above the FCL.

3. The replacement of sewage disposal systems with existing lots of record may be permitted within the Flood Hazard Overly Zone provided it has been demonstrated to the satisfaction of the Chief Building Official that locating the system outside the flood plain is not possible.

4. The elevation of the leaching bed will be the minimum of the highest elevation as determined by the bottom of the gravel layer to the FCL or the vertical separation distance from the bottom of the gravel layer to the high ground water table.

5. All treatment and holding tanks must be securely anchored when located in an area subject to flooding. If any part of a tank is located below the elevation of the regulatory flood plain, it must be securely anchored to prevent floatation.

Final Grade & Floor Elevations

Prior to the issuance of an Occupancy Permit or a Final Inspection being completed, the as-built foundation elevations shall be certified by an Ontario Land Surveyor or a professional engineer to confirm with the FCL elevations and conditions of the Permit issued by the Chief Building Official.

Exemptions

Requirements for flood proofing using elevation may be exempt from this policy, at the discretion of the Chief Building Official, for:

a) renovations to an existing building or structure that does not involve an addition, or increases the number of dwelling units;
b) the portion of a building or structure that is to be used as a carport, garage or entryway; or
c) other minor buildings such as storage buildings, porches, and domestic greenhouses.

Attachments

A.1 Summary of Building Code Requirements

A.1 Summary of Building Code Requirements

9.1.1.8. Building in Flood Plains

(1) *Buildings* constructed on flood plains shall,

(a) be designed and constructed in accordance with good engineering practice to withstand anticipated vertical and horizontal hydrostatic pressures acting on the structure, and

(b) incorporate floodproofing measures that will preserve the integrity of *exits* and *means of egress* during times of flooding.

Good Engineering Practice

Designs must follow established engineering principles to resist both vertical and horizontal hydrostatic pressures expected during flooding events.

Floodproofing Measures for Egress Protection

Buildings must incorporate flood-resistant features (e.g., sealed apertures, elevated thresholds) to ensure exits and means of egress remain operable in flood conditions. The specifics (materials, elevations, sealing systems) are determined through engineering assessment rather than prescribed by the Building Code.

Prescriptive Floodproofing Measures

Prescriptive floodproofing measures include but are not limited to the following:

Elevation of Building Components

- Raise the finished floor level above the regulatory flood elevation.
- Use fill or piers to elevate the structure while maintaining stability.

Dry Floodproofing

- Seal walls, floors, and openings to prevent water entry.
- Apply waterproof coatings or membranes on foundations and walls.
- Install watertight doors and windows for vulnerable openings.

Wet Floodproofing

- Allow controlled water entry but use flood-resistant materials (e.g., concrete, pressure-treated wood).
- Elevate electrical and mechanical systems above flood level.

Reinforced Structural Design

- Design foundations and walls to resist hydrostatic and hydrodynamic forces.
- Include anchoring systems to prevent flotation or lateral movement.

Protected Egress Routes

- Elevate exit doors or provide raised walkways.
- Use flood shields or barriers at exit points to maintain usability during flooding.

Backflow Prevention

- Install backflow valves in sanitary and storm sewer connections to prevent water intrusion.

Site Drainage and Physical Barriers

- Grade site to direct water away from the building.
- Use berms, levees, or temporary flood barriers for additional protection.

Performance Based Floodproofing Measures

The Chief Building Official may consider an Alternative Solution incorporating a performance-based design. Performance-based designs shall be submitted by a professional engineer demonstrating that the underlying objectives and functional statements defined in the Building Code have been satisfied (summarized below), including but limited to:

- Providing a site-specific Flood Impact Assessment Report.
- Engineering analysis, modeling, or innovative materials to meet or exceed the performance criteria.
- Through calculations, simulations, or testing, show that the design satisfies the objectives and functional statements.
- Using advanced flood barriers and structural anchoring instead of traditional elevation.
- Providing engineering reports proving resistance to anticipated water loads.
- Documenting on how egress routes remain operable under flood conditions.

Objectives

1. **Structural Safety under Water Loads**
   Ensure the building can safely resist hydrostatic pressures (both vertical and horizontal) expected in flood conditions.

2. **Continuous Egress Protection**
   Maintain functional and unobstructed exits/egress routes even during flooding events.

Functional Statements

1. **Withstand Hydrostatic Forces**

   The structure must be engineered, using recognized best practices, to remain stable and intact under anticipated floodwater pressures.

2. **Implement Floodproofing for Egress**

   Incorporate measures such as elevated door sills, waterproof materials, or sealed apertures to safeguard exit paths and keep them functional when floods occur.