



Chelan County Requirements for Crawlspace within the Floodplain

Chelan County has specific requirements for crawlspace construction within the 100-year floodplain. These requirements are based on federal flood insurance program regulations that the County is required to enforce.

Types of Crawlspace

According to federal floodplain regulations, there are two types of crawlspaces:

- A **below-grade crawlspace** is one in which the interior of the crawlspace is below the lowest adjacent exterior grade on all sides of the structure (Figure 1).
- An **at-grade crawlspace** is one in which the interior of the crawlspace is the same grade or higher than the exterior adjacent grade on at least one side of the structure (Figure 2). An at-grade crawlspace is the preferred method for constructing a crawlspace.

Crawlspace Construction Requirements

- There must be one square inch of vent for each square foot of enclosed area in order to equalize water pressure. Vents must be on at least two sides of the structure, and the bottom of the vent must be no more than one-foot above adjacent grade.
- The building must be anchored to resist floatation, collapse, and lateral movement.
- Portions of the building below base flood elevation must be constructed with materials resistant to flood damage.

Below-Grade Crawlspace Specific Construction Requirements

- Below-grade crawlspaces have depth and height limitations that are based on engineering analysis of the hydrostatic and hydrodynamic forces of flood waters. Below-grade crawlspaces which exceed these limitations may collapse due to water pressure during a flood.
 - The floor of the crawlspace can be no more than two-feet below the lowest adjacent exterior grade.
 - The height of the crawlspace can be no more than five-feet from the floor of the crawlspace to the top of the finished floor.
- There must be an adequate drainage system to remove floodwaters from the below-grade crawlspace. If standing water is not removed within 72 hours of the flood receding, it can cause significant damage to a structure. Options include porous soils, drainage pipes, or removal by a sump pump.

Construction Drawings

Along with a “construction drawings” elevation certificate prepared by a licensed surveyor, construction drawings shall be provided which show the following elevations: base flood elevation, crawlspace floor, lowest adjacent exterior grade, finished floor, and lowest utility (water heater, furnace, heat pump, etc.).

Which Crawlspace is Best for your Structure?

- Structures with below-grade crawlspaces will have higher flood insurance rates. Call your homeowners insurance agent to discuss different scenarios and determine what your cost savings may be if you construct your home with an at-grade crawlspace. You can also construct your structure on posts/piers or on top of a ground level garage.
- Chelan County Code requires the finished floor of residential structures to be elevated three-feet above the base flood elevation shown on the flood insurance rate maps. In many cases, the required finished floor elevation will exceed the five-foot height limitation, eliminating a below-grade crawlspace as an option.
- Non-residential structures may be floodproofed instead of elevated. Floodproofing requires additional engineering and certification in the building design and construction process.

Resources:

Crawlspace Construction:

- FEMA Technical Bulletin 11 - Crawlspace Construction for Buildings Located in Special Flood Hazard Areas (<https://www.fema.gov/media-library/assets/documents/3527>)

Crawlspace Vents:

- FEMA Technical Bulletin 1 - Openings in Foundation Walls and Walls of Enclosures (<https://www.fema.gov/media-library/assets/documents/2644>)

Flood Resistant Materials:

- FEMA Technical Bulletin 2 - Flood Damage-Resistant Materials Requirements (<https://www.fema.gov/media-library/assets/documents/2655>)

Elevation Certificate:

- FEMA Elevation Certificate (<https://www.fema.gov/media-library/assets/documents/160>)

Chelan County Code Floodplain Regulations:

- Chapter 3.20 Flood Hazard Development (<https://www.codepublishing.com/WA/ChelanCounty/#!/Chelco03/Chelco0320.html#3.20>)

Flood Insurance Rate Maps:

- FEMA's National Flood Hazard Layer for the area along the Wenatchee River from one mile east of Leavenworth to the Old Monitor Road bridge, and Mission Creek from the Wenatchee River to just north of Coates Road. (<https://msc.fema.gov/nfh/>)
- FEMA's Map Service Center for the remaining portions of Chelan County. (<https://msc.fema.gov/>)

Chelan County Maps:

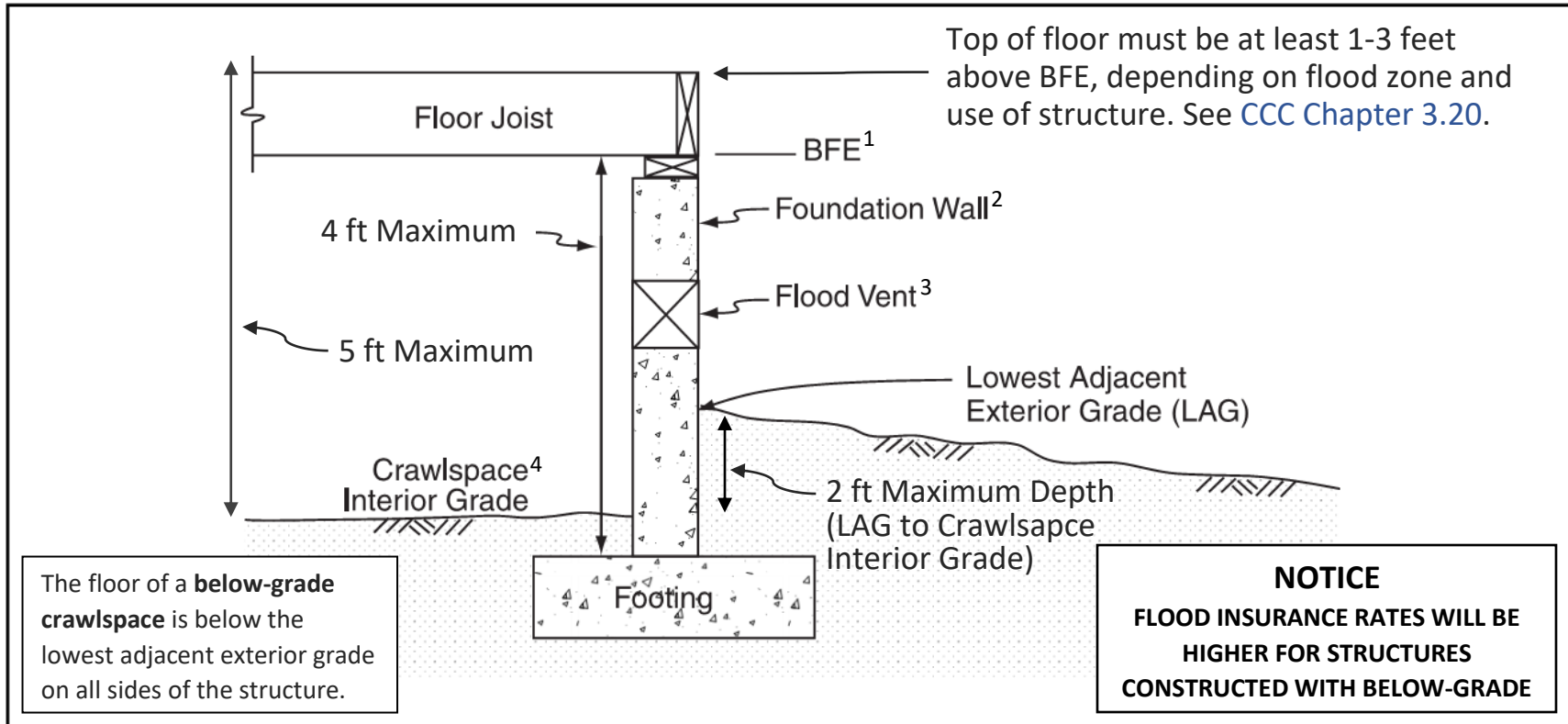
- Community Development GIS Map (<https://maps.co.chelan.wa.us/CDGIS/>)



BELOW-GRADE CRAWLSPACE CONSTRUCTION REQUIREMENTS

Figure 1

For structures within the 100-year floodplain



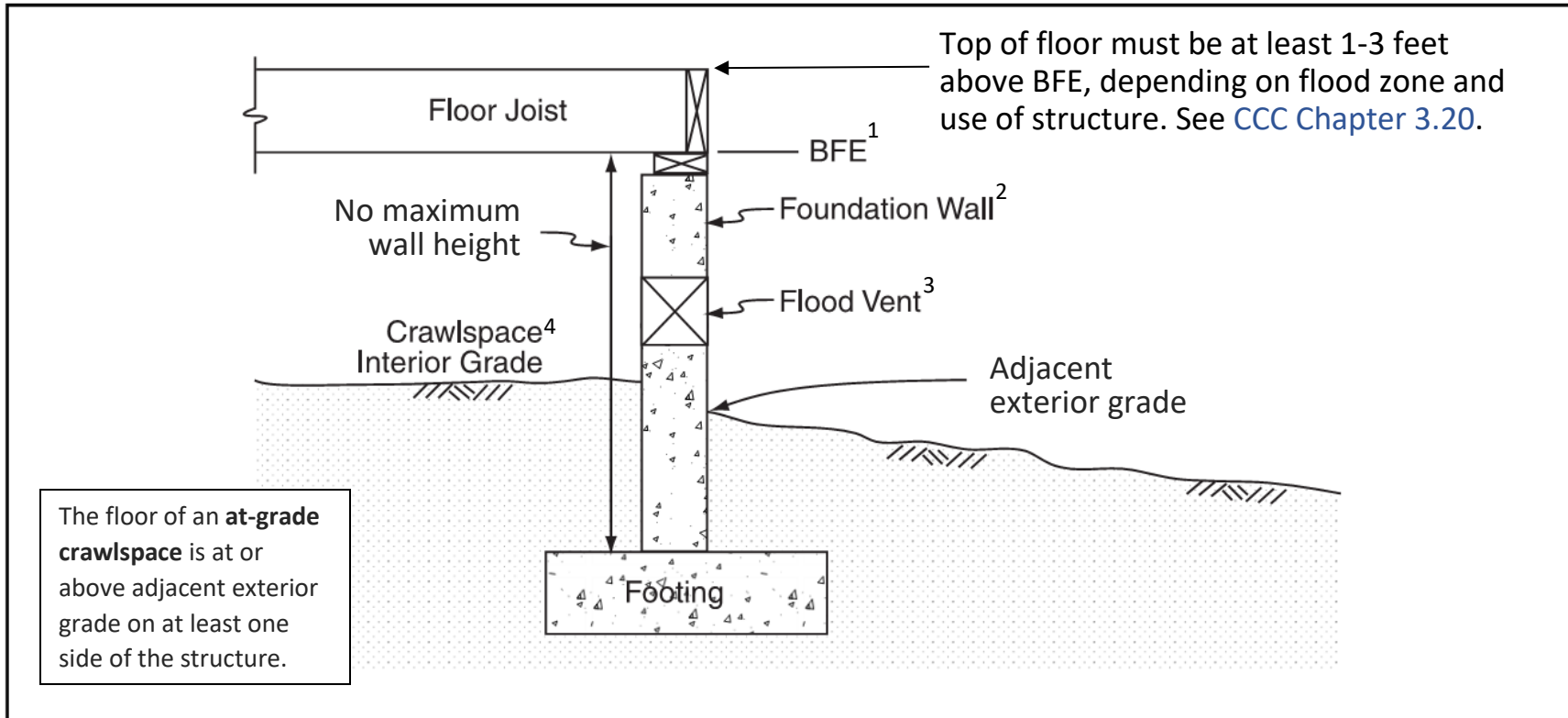
1. Base Flood Elevation. The elevation to which water is expected to rise during a 100-year flood as shown on Flood Insurance Rate Maps.
2. Foundation wall and all other portions of the building below the BFE must be constructed with materials resistant to flooding. See [FEMA Technical Bulletin 2 - Flood Damage-Resistant Materials Requirements](#) for more information.
3. The bottom of vents can be no more than one foot above grade. There must be one square inch of vent for every square foot of enclosed area. See [FEMA Technical Bulletin 1 - Openings in Foundation Walls and Walls of Enclosures](#) for more information.
4. There must be an adequate drainage system that removes floodwaters from the crawlspace. See [FEMA Technical Bulletin 11 - Crawlspace Construction for Buildings Located in Special Flood Hazard Areas](#) for more information.



AT-GRADE CRAWLSPACE CONSTRUCTION REQUIREMENTS

Figure 2

For structures within the 100-year floodplain



1. Base Flood Elevation. The elevation to which water is expected to rise during a 100-year flood as shown on Flood Insurance Rate Maps.
2. Foundation wall and all other portions of the building below the BFE must be constructed with materials resistant to flooding. See [FEMA Technical Bulletin 2 - Flood Damage-Resistant Materials Requirements](#) for more information.
3. The bottom of vents can be no more than one foot above grade. There must be one square inch of vent for every square foot of enclosed area. See [FEMA Technical Bulletin 1 - Openings in Foundation Walls and Walls of Enclosures](#) for more information.
4. See [FEMA Technical Bulletin 11 - Crawlspace Construction for Buildings Located in Special Flood Hazard Areas](#) for more information.