

### Marginal Markings

- Solid vertical lines indicate technical changes from 2012 IBC.
- - - Dashed vertical lines indicate technical changes in Seattle amendments.
- ➔ Solid deletion arrow indicates IBC text has been deleted.
- ⇨ Hollow arrow indicates Seattle amendments have been deleted.

### Text Markings

- Underlining indicates Seattle amendments. ADULT FAMILY HOME.
- Italics indicate a defined term. *A dwelling* licensed.
- Strikethrough indicates Seattle deletions. (~~ADULT FAMILY HOME~~)
- A bracketed and underlined W indicates Washington state amendments. [W]

## CHAPTER 4 FOUNDATIONS

**Note: this chapter includes only those sections of the 2015 International Residential Code for which amendments are proposed.**

**R401.5 Protection of adjoining property.** Adjoining public and private property shall be protected from damage during construction, remodeling and demolition work. Protection shall be provided for footings, foundations, party walls, chimneys, skylights and roofs. Provisions shall be made to control water runoff and erosion during construction or demolition activities. When the existing grade of a site is altered by filling, excavating, dredging or moving of earth materials, the owner shall protect all adjoining property during construction from encroachment or collapse by sloping the sides of the temporary grading at a slope that is safe and not more than one horizontal to one vertical. In addition, adjoining property shall be protected from encroachment or collapse by sloping the sides of the permanent grading at a slope not greater than two horizontal to one vertical. The building official is authorized to approve temporary or permanent slopes that are steeper based on a design by an experienced geotechnical engineer. In areas of known unsuitable soils, the building official is authorized to require slopes that are less steep to assure protection of adjoining property.

### SECTION R402 MATERIALS

**R402.2 Concrete.** Concrete shall have a minimum specified compressive strength of  $f'_c$ , as shown in Table R402.2. Concrete subject to moderate or severe weathering as indicated in Table R301.2(1) shall be air entrained as specified in Table R402.2. The maximum weight of fly ash, other pozzolans, silica fume, slag or blended cements that is included in concrete mixtures for garage floor slabs and for exterior porches, carport slabs and steps that will be exposed to deicing chemicals shall not exceed the percentages of the total weight of cementitious materials specified in Section 19.3.3.4 of ACI 318. Materials used to produce concrete and testing thereof shall comply with the applicable standards listed in Chapters 19 and 20 of ACI 318 or ACI 332.

**Code Alternate R402.2:** Five-sack 2000 psi (13 790 kPa) and 5-1/2-sack 2500 psi (17 237 kPa) concrete mixes in accordance with *International Building Code* Section 1904.2 are equivalent to 3000 psi (20 684 kPa) concrete for weathering potential. In addition, air-entrainment is not required to address weathering.

**R402.2.1 Materials for concrete.** Materials for concrete shall comply with the requirements of Section R608.5.1.

### SECTION R408 UNDER-FLOOR SPACE

**[W]R408.1 Ventilation.** The under-floor space between the bottom of the floor joists and the earth under any building (except space occupied by a *basement*) shall have ventilation openings through foundation walls or exterior walls. ~~((The minimum net area of ventilation openings shall be not less than 1 square foot (0.0929 m<sup>2</sup>) for~~

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each 150 square feet (14 m<sup>2</sup>) of under floor space area, unless the ground surface is covered by a Class 1 vapor retarder material. Where a Class 1 vapor retarder material is used, the minimum net area of ventilation openings shall be not less than 1 square foot (0.0929 m<sup>2</sup>) for each 1,500 square feet (140 m<sup>2</sup>) of under floor space area. One such ventilating opening shall be within 3 feet (914 mm) of each corner of the building.)

**[W]R408.2 Openings for under-floor ventilation.** The minimum net area of ventilation openings shall be not less than 1 square foot (0.0929 m<sup>2</sup>) for each ~~((150))~~ 300 square feet ~~((14))~~ 28 m<sup>2</sup> of under-floor area. ~~((One ventilation opening shall be within 3 feet (915 mm) of each corner of the building.))~~ Required openings shall be evenly placed to provide cross ventilation of the space except one side of the building shall be permitted to have no ventilation openings. Ventilation openings shall be covered for their height and width with any of the following materials provided that the least dimension of the covering shall not exceed ¼ inch (6.4 mm):

1. Perforated sheet metal plates not less than 0.070 inch (1.8 mm) thick.
2. Expanded sheet metal plates not less than 0.047 inch (1.2 mm) thick.
3. Cast-iron grill or grating.
4. Extruded load-bearing brick vents.
5. Hardware cloth of 0.035 inch (0.89 mm) wire or heavier.
6. Corrosion-resistant wire mesh, with the least dimension being 1/8 inch (3.2 mm) thick.

**Exception:** The total area of ventilation openings shall be permitted to be reduced to 1/1,500 of the under-floor area where the ground surface is covered with an approved Class I vapor retarder material and the required openings are placed to provide cross ventilation of the space. The installation of operable louvers shall not be prohibited. If the installed ventilation is less than 1/300, or if operable louvers are installed, a radon vent shall be installed in accordance with the requirements of Appendix F.

**[W]R408.3 Unvented crawl space.** Ventilation openings in under-floor spaces specified in Sections R408.1 and R408.2 shall not be required where the following items are provided:

1. Exposed earth is covered with a continuous Class I vapor retarder. Joints of the vapor retarder shall overlap by 6 inches (152 mm) and shall be sealed or taped. The edges of the vapor retarder shall extend not less than 6 inches (152 mm) up the stem wall and shall be attached and sealed to the stem wall and a radon system shall be installed that meets the requirements of Appendix F; ((or insulation)).
2. Continuously operated mechanical exhaust ventilation is provided at a rate equal to 1 cubic foot per minute (0.47 L/s) for each 50 square feet (4.7 m<sup>2</sup>) of crawlspace floor area. Exhaust ventilation shall terminate to the exterior.

**Exception:** Plenums in existing structures complying with Section M1601.5, if under-floor space is used as a plenum.

~~((2. One of the following is provided for the under floor space:~~

- ~~2.1 Continuously operated mechanical exhaust ventilation at a rate equal to 1 cubic foot per minute (0.47 L/s) for each 50 square feet (4.7 m<sup>2</sup>) of crawl space floor area, including an air pathway to the common area (such as a duct or transfer grille), and perimeter walls insulated in accordance with Section N1102.2.11 of this code.~~
- ~~2.2 Conditioned air supply sized to deliver at a rate equal to 1 cubic foot per minute (0.47 L/s) for each 50 square feet (4.7 m<sup>2</sup>) of under floor area, including a return air pathway to the common area (such as a duct or transfer grille), and perimeter walls insulated in accordance with Section N1102.2.11 of this code.~~
- ~~2.3 Plenum in existing structures complying with Section M1601.5, if under floor space is used as a plenum.))~~

**R408.4 Access.** Access shall be provided to all under-floor spaces. Access openings through the floor shall be a minimum of 18 inches by 24 inches (457 mm by 610 mm). Openings through a perimeter wall shall be not less than 16 inches by 24 inches (407 mm by 610 mm) Where any portion of the through-wall access is below grade, an

areaway not less than 16 inches by 24 inches (407 mm by 610 mm) shall be provided. The bottom of the areaway shall be below the threshold of the access opening. Through wall access openings shall not be located under a door to the residence. See Seattle M1305.1.4 for access requirements where mechanical equipment is located under floors.

**R408.5 Removal of debris.** The under-floor grade shall be cleaned of all vegetation and organic material. All wood forms used for placing concrete shall be removed before a building is occupied or used for any purpose. All construction materials shall be removed before a building is occupied or used for any purpose.

**R408.6 Finished grade.** The finished grade of under-floor surface shall be permitted to be located at the bottom of the footings; however, where there is evidence that the ground water table can rise to within 6 inches (152 mm) of the finished floor at the building perimeter or where there is evidence that the surface water does not readily drain from the building site, the grade in the under-floor space shall be as high as the outside finished grade, unless an approved drainage system is provided.

**R408.7 Flood resistance.** For buildings located in flood hazard areas as established in Table R301.2(1):

1. Walls enclosing the under-floor space shall be provided with flood openings in accordance with Section R322.2.2.
2. The finished ground level of the under-floor space shall be equal to or higher than the outside finished ground level on at least one side.

**Exception:** Under-floor spaces that meet the requirements of FEMA/FIA TB 11-1.