

**B L A N K**

**1203.1 General.** Buildings shall be provided with natural ventilation in accordance with Section 1203.4, or mechanical ventilation in accordance with the *International Mechanical Code*.

**1203.3 Under-floor ventilation.** The space between the bottom of the floor joists and the earth under any building except spaces occupied by basements or cellars shall be provided with ventilation openings through foundation walls or *exterior walls*. Such openings shall be placed so as to provide cross ventilation of the underfloor space. A ground cover of six mil (0.006 inch thick) black polyethylene or approved equal shall be laid over the ground within crawl spaces. The ground cover shall be overlapped six inches minimum at the joints and shall extend to the foundation wall.

**Exception:** The ground cover may be omitted in crawl spaces if the crawl space has a concrete slab floor with a minimum thickness of two inches.

**1203.2 Attic spaces.** Enclosed attics and enclosed rafter spaces formed where ceilings are applied directly to the underside of roof framing members shall have cross ventilation for each separate space by ventilation openings protected against the entrance of rain and snow. Blocking and bridging shall be arranged so as not to interfere with the movement of air. An airspace of not less than 1 inch (25 mm) shall be provided between the insulation and the roof sheathing. The net free ventilating area shall not be less than 1/150th of the area of the space ventilated.

**Exceptions:**

1. The net free cross-ventilation area shall be permitted to be reduced to 1/300 provided . not less than 50 percent and not more than 80 percent of the required ventilating area provided by ventilators located in the upper portion of the space to be ventilated at least 3 feet (914 mm) above eave or cornice vents with the balance of the required *ventilation* provided by eave or cornice vents.
2. The net free cross-ventilation area shall be permitted to be reduced to 1/300 where a Class I or II vapor retarder is installed on the warm-in-winter side of the ceiling.
3. *Attic* ventilation shall not be required when determined not necessary by the *building official* due to atmospheric or climatic conditions.

4. Unvented attic assemblies (spaces between the ceiling joists of the top story and the roof rafters) shall be permitted if all the following conditions are met:
  - 4.1 The unvented attic space is completely contained within the building thermal envelope.
  - 4.2 No interior vapor retarders are installed on the ceiling side (attic floor) of the unvented attic assembly.
  - 4.3 Where wood shingles or shakes are used, a minimum 1/4 inch (6 mm) vented air space separates the shingles or shakes and the roofing underlayment above the structural sheathing.
  - 4.4 In Climate Zones 5B and 6B, any air-impermeable insulation shall be a Class II vapor retarder, or shall have a Class II vapor retarder coating or covering in direct contact with the underside of the insulation.
  - 4.5 Either items a, b, or c below shall be met, depending on the air permeability of the insulation directly under the structural roof sheathing.
    - a. Air-impermeable insulation only. Insulation shall be applied in direct contact to the underside of the structural roof sheathing.

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- b. Air-permeable insulation only. In addition to the air-permeable insulation installed directly below the structural sheathing, rigid board or sheet insulation shall be installed directly above the structural roof sheathing as specified in Table 1203.2 for condensation control.
- c. Air-impermeable and air-permeable insulation. The air-impermeable insulation shall be applied in direct contact to the underside of the structural roof sheathing as specified in Table 1203.2.1 for condensation control. The air-permeable insulation shall be installed directly under the air-impermeable insulation.
  - i. Climate Zone #1 - R-10 minimum rigid board or air-impermeable insulation R-value.
  - ii. Climate Zone #2 - R-25 minimum rigid board or air-impermeable insulation R-value.
  - d. Where preformed insulation board is used as the air-impermeable insulation layer, it shall be sealed at the perimeter of each individual sheet interior surface to form a continuous layer.

**TABLE 1203.2  
INSULATION FOR CONDENSATION CONTROL**

CLIMATE ZONE	MINIMUM RIGID BOARD ON AIR-IMPERMEABLE INSULATION R-VALUE <sup>a</sup>
4C	R-15
5B	R-20
6B	R-25

<sup>a</sup> Contributes to but does not supersede the requirements for insulation in the Washington State Energy Code (WAC 51-11).

**1203.4 Natural ventilation.** For other than Group R occupancies, natural ventilation of an occupied space shall be through windows, doors, louvers or other openings to the outdoors. The operating mechanism for such openings shall be provided with ready access so that the openings are readily controllable by the building occupants. Group R occupancies shall comply with the International Mechanical Code.

(NOTE: See pages 296a and 296b for Sections 1203.6 through 1203.6.3.2.9)

**1204.1 Equipment and systems.** Interior spaces intended for human occupancy shall be provided with active or passive space-heating systems capable of maintaining a minimum indoor temperature of 68°F (20°C) at a point 3 feet (914 mm) above the floor on the design heating day.

**Exceptions:**

1. Interior spaces where the primary purpose is not associated with human comfort.
2. Group R-1 occupancies not more than 500 square feet.

**1204.2 Heating.**

**1204.2.1 Definitions.** For the purposes of this section only, the following definitions apply.

**DESIGNATED AREAS** are those areas designated by a county to be an urban growth area in Chapter 36.70A RCW and those areas designated by the US Environmental Protection Agency as being in nonattainment for particulate matter.

**SUBSTANTIALLY REMODELED** means any alteration or restoration of a building exceeding 60 percent of the appraised value of such building within a 12 month period. For the purpose of this section, the appraised value is the estimated cost to replace the building and structure in kind, based on current replacement costs.

**1204.2.2 Primary Heating Source.** Primary heating sources in all new and substantially remodeled buildings in designated areas shall not be dependent upon wood stoves.

**1204.2.3 Solid Fuel Burning Devices.** No new or used solid fuel burning device shall be installed in new or existing buildings unless such device is United States Environmental Protection Agency certified or exempt from certification by the United States Environmental Protection Agency and conforms with RCW 70.94.011, 70.94.450, 70.94.453 and 70.94.457.

**Exceptions:**

1. Wood cook stoves.
2. Antique wood heaters manufactured prior to 1940.

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**1203.6 Radon resistive construction standards.** The criteria of this section establishes minimum radon resistive construction requirements for Group R Occupancies.

**1203.6.1 Application.** The requirements of Section 1203.6 shall be adopted and enforced by all jurisdictions of the state according to the following subsections.

**1203.6.1.1** All jurisdictions of the state shall comply with Section 1203.6.2.

**1203.6.1.2** Clark, Ferry, Okanogan, Pend Oreille, Skamania, Spokane, and Stevens counties shall also comply with Section 1203.6.3.

**1203.6.2 State wide radon requirements.**

**1203.6.2.1 Crawlspace.** All crawlspaces shall comply with the requirements of this section.

**1203.6.2.2 Ventilation.** All crawlspaces shall be ventilated as specified in Section 1203.3.

If the installed ventilation in a crawlspace is less than one square foot for each 300 square feet of crawlspace area, or if the crawlspace vents are equipped with operable louvers, a radon vent shall be installed to originate from a point between the ground cover and soil. The radon vent shall be installed in accordance with Sections 1203.6.3.2.6 and 1203.6.3.2.7.

**1203.6.2.3 Crawlspace plenum systems.** In crawlspace plenum systems used for providing supply air for an HVAC system, aggregate, a permanently sealed soil gas retarder membrane and a radon vent pipe shall be installed in accordance with Section 1203.6.3.2. Crawlspace shall not be used for return air plenums.

In addition, an operable radon vent fan shall be installed and activated. The fan shall be located as specified in Section 1203.6.3.2.7. The fan shall be capable of providing at least 100 cfm at 1-inch water column static pressure. The fan shall be controlled by a readily accessible manual switch. The switch shall be labeled "RADON VENT FAN."

**1203.6.3 Radon prescriptive requirements.**

**1203.6.3.1 Scope.** This section applies to those counties specified in Section 1203.6.1.2. This section establishes prescriptive construction requirements for reducing the potential for radon entry into all Group R Occupancies, and for preparing the building for future mitigation if desired.

In all crawlspaces, except crawlspace plenums used for providing supply air for an HVAC system, a continuous air barrier shall be installed between the crawlspace area and the occupied area to limit air transport between the areas. If a wood sheet subfloor or other material is utilized as an air barrier, in addition to the requirements of Section 502.1.6.2 of the Washington State Energy Code, all joints between sheets shall be sealed.

**1203.6.3.2 Floors in contact with the earth.**

**1203.6.3.2.1 General.** Concrete slabs that are in direct contact with the building envelope shall comply with the requirements of this section.

**Exception:** Concrete slabs located under garages or other than Group R Occupancies need not comply with this chapter.

**1203.6.3.2.2 Aggregate.** A layer of aggregate of 4-inch minimum thickness shall be placed beneath concrete slabs. The aggregate shall be continuous to the extent practical.

**1203.6.3.2.3 Gradation.** Aggregate shall:

1. Comply with ASTM Standard C-33 Standard Specification for Concrete Aggregate and shall be size No. 8 or larger size aggregate as listed in Table 2, Grading Requirements for Course Aggregate; or
2. Meet the 1988 Washington State Department of Transportation Specification 9-03.1 (3) "Coarse Aggregate for Portland Cement Concrete," or any equivalent successor standards. Aggregate size shall be of Grade 8 or larger as listed in Section 9-03.1 (3) C, "Grading"; or
3. Be screened, washed pea gravel free of deleterious substances in a manner consistent with ASTM Standard C-33 with 100 percent passing a 1/2-inch sieve and less than 5 percent passing a No. 16 sieve. Sieve characteristics shall conform to those acceptable under ASTM Standard C-33.

**Exception:** Aggregate shall not be required if a substitute material or system, with sufficient load bearing characteristics, and having approved capability to provide equal or superior air flow, is installed.

**1203.6.3.2.4 Soil-gas retarder membrane.** A soil-gas retarder membrane, consisting of at least one layer of virgin polyethylene with a thickness of at least 6 mil, or equivalent flexible sheet material, shall be either placed directly under all concrete slabs so that the slab is in direct contact with the membrane, or on top of the aggregate with 2 inches minimum of fine sand or pea gravel installed between the concrete slab and membrane. The flexible sheet shall extend to the foundation wall or to the outside edge of the monolithic slab. Seams shall overlap at least 12 inches. The membrane shall also be fitted tightly to all pipes, wires, and other penetrations of the membrane and sealed with an approved sealant or tape. All punctures or tears shall be repaired with the same or approved material and similarly lapped and sealed.

**1203.6.3.2.5 Sealing of penetrations and joints.** All penetrations and joints in concrete slabs or other floor systems and walls below grade shall be sealed