

Plan Review General Requirements

This is a partial list of common code items. These requirements do not imply approval of any construction that does not comply with the 2015 International Residential Code (IRC) and International Building Code (IBC).

Except as noted, all references are to the Washington state amended International Residential Code and International Building Code (IBC).

The approved plans and permit/inspection card shall be on the job site at the time of all inspections.

Footing

- Assumed soil bearing pressure is 1500 PSF. (Table R401.4.1)
- Frost protection is 12 inches for footings. (R403.1.1)
- Spread footings shall be at least 6 inches and footing projections shall be at least 2 inches and shall not exceed the thickness of the footing. (R403.1.1)
- Footing sizes shall be minimum width and depth. (R403 and Table 403.1.)
 - 1 story: 12" wide x 6" thick
 - 2 story: 15" wide x 6" thick
 - 3 story: 23" wide x 6" thick
- Continuous #4 rebar required 3 inches clear from bottom of footing. (R403.1.3)

Foundation

- Stem wall within **Seismic Design Category D1** shall comply with the following:
 1. Minimum reinforcement shall consist of one #4 horizontal bar located in the upper 12 inches of the wall.
 2. Height of unbalanced backfill shall not exceed 4 feet. (R404.1.4)
 3. Foundation walls supporting more than 4 feet of unbalanced backfill shall be constructed in accordance with Table R404.1.(2) (1 through 9).
- Seismic reinforcing in Design Category D1 where a construction joint is created between the footing and stem wall shall be provided one #4 vertical bar four foot on-center extending 14 inches into the stem wall and at least 3 inches clear from the bottom of footing. (R403.1.3.1)
- Anchor bolt shall be $\frac{1}{2}$ x 10" and spaced a maximum of 6 feet on-center and within 12 inches from the end of plates and a minimum of two bolts per plate. Plate washers shall be a 3 x 3 x $\frac{1}{4}$ at braced wall lines and permitted to be slotted $\frac{3}{16}$ " x $1 \frac{3}{4}$ " where cut washers are used between plate and nut. Interior bearing walls shall be anchored to a footing. (R403.1.6.1 and R602.11.2)
- The maximum anchor bolt spacing to be 4 feet on-center for buildings over two stories in height. (R403.1.6.1)
- Foundation ventilation shall be 1 square foot of ventilation per 300 square feet of under floor area. (R408.2)
- Unvented crawl spaces are prohibited. (Appendix F-101.1)

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- Venting in flood plains shall be at least 1 square inch per 1 square foot of enclosed area. (R322.2.2)
- Provisions shall be made for the control and drainage of surface water away from the building. The grade shall slope a minimum of 6 inches in 10 feet away from the building. (R401.3)
- Drains shall be provided around all foundations that retain earth and enclosed habitable or usable spaces located below grade. (R405.1)
- Potential radon routes shall be closed in accordance with Sections AF103.2.1 through AF103.2.8 Reference Standards of the IRC. Minimum requirements include a 3–4 inch “T” fitting inserted beneath the soil-gas-vapor retarder and connected to a vent pipe extending through the conditioned space terminating not less than 12 inches above the roof at least 10 feet from any window or other vent penetration.
- Provide ground cover of 6-mil polyethylene or equivalent in crawl space. (AF103.3)

Floors

- Wood in contact with concrete shall be pressure treated or natural durable wood. (R317.1 #2)
- Fasteners for pressure preservative-treated wood (ACQ) shall be of hot-dipped zinc-coated galvanized steel, silicon bronze or copper. (R317.3.1)
- Minimum clearance of 12 inches under beams and 18 inches under joist is required in crawl spaces or the wood is required to be pressure treated or decay resistant. (R317.1 #1)
- Joists, beams, or girders shall bear 1.5 inches on wood and 3 inches on masonry or concrete. (R502.6)
- Decks shall be positively anchored to structures with lags. (R502.2)
- Joists shall be laterally supported at intermediate bearing with rotation blocking. (R502.7 Exception #2)
- Joists, beams or girders entering into concrete shall be P.T. and a half-inch air space around ends, sides, and tops. (R317.1(4))
- Crawl access shall be provided at a minimum of 18 x 24 inches. (R408.4)
- See details for notching and boring of joists available from Clark County.

Walls

- Wood framing subject to water splash shall be protected by approved methods (elevated 2 inches above concrete or 6 inches above grade) or approved materials (P.T. wood or natural decay resistant wood). (R317.1 #5)
- Wood framing that rests on concrete and is less than 8 inches from the exposed ground shall be pressure treated or natural durable wood. (R317.1 #2)
- Interior load bearing walls shall be framed as exterior walls. (R602.4)
- Studs shall have full bearing on a nominal 2-by or larger or sill plate having a width at least equal to the width of the studs. (R602.3.4)
- Spacing between **braced wall lines** in each story shall not exceed 25 feet on center in both the longitudinal and transverse directions. (R602.10.2.2)
- Fire blocking shall be provided to cut off all concealed draft openings and to form an effective fire barrier between stories and between a top story and the roof space.
 1. Vertically at the ceiling and floor level and horizontally at intervals not exceeding 10 feet.
 2. In concealed spaces between stair stringers at the top and bottom of run.

3. At all interconnections between concealed vertical and horizontal spaces such as those that occur at soffits, drop ceilings, and cove ceilings.
4. At openings around vents, pipes, and ducts at ceiling and floor level, with an approved material to resist the free passage of flame and products of combustion. (R302.11)
5. See details for notching and boring of joists available from Clark County or IRC referenced details.

Roof Framing

- Rafters shall be provided full bearing on the ridge board the depth of the cut rafter. (R802.3)
- Hips and valley rafters shall be supported at the ridge by a brace to a bearing partition or designed to carry the specified loads. (R802.3)
- Rafters and ceiling joist exceeding a ratio of 5:1 (2x10) shall be laterally supported (blocked) at bearing points. (R802.8)
- Rafters and trusses shall be provided with approved connectors to resist uplifts. (R802.11)
- A continuous load path shall be provided to transmit the uplift forces from the rafter or truss ties to the foundation. (R802.11.1)

Roofs

- Composition roof shingles must be a minimum of 25-year life shingles manufactured to ASTM 3462 and installed per the manufacturer's installation specifications.
- Attic ventilation must be 1/150th of the attic area or 1/300th of attic area if at least 50 percent but not more than 80 percent of the required ventilation is 3 feet above the eave or cornice vents, or provide a moisture barrier not exceeding one perm on the warm-in-winter side of the ceiling. (R806.2)
- Provide a readily accessible attic opening to all areas with 30 square feet or more and 30 inches or more of vertical height. The rough framed opening shall be not less than 22 x 30 inches with a minimum of 30 inches of headroom provided at some point above the opening. (R807)
- New roof coverings shall not be installed without first removing the existing roof if two layers already exist. (R907.3)

Light / Ventilation

- Natural light shall provide the habitable spaces not less than 8 percent of which half shall be operable for ventilation. (R303.1)
- Mechanical provisions may be provided to substitute the natural ventilation requirements.
- Artificial light can be substituted for glazed area provided it is capable of producing an average illumination of 6 foot candles over the area of the room at a height of 30 inches above the floor level. (R303.1)
- Provide mechanical ventilation in bathrooms, laundry rooms (50 cfm at .25 WG) and kitchens (100 cfm at .25 WG). (M1507.4)
- Outside air is required to be supplied to each habitable room. (M1507.3.3)
- Whole house ventilation system required with a sone rating of 1.0 or integrated force-air ventilation system option. (M1507.3.4.2)
- All exhaust ducts in unconditioned spaces shall be insulated to R-8. (R403.2.1)

Dryer Venting

Maximum length of a vent shall be 25 feet and reduced 2.5 feet for 45 degree fittings and 5 feet for 90 degree fittings. (M1502.4.4.1)

Emergency Egress

- Emergency egress shall be provided from basements and sleeping rooms. The minimum net clear opening shall be 5.7 square feet and the sill shall not be more than 44 inches above the finished floor. (R310.1 and R310.1.1)
- Emergency egress below grade shall be provided with a window well. (R310.2)
- Grade floor openings shall have a minimum net clear opening of 5 square feet. (R310.1.1)

Smoke Alarms

- Smoke alarms shall be installed within each sleeping area, outside each separate sleeping area in the immediate vicinity of the sleeping rooms, and on each story, including the basement. (R314.3)
- Smoke alarms shall be provided with electrical power and be interconnected and be provided with battery back-up. (R314.4)
- When alterations, additions, or repairs require a permit, smoke alarms shall be installed as for new dwellings and where there is attic, crawl, or basement, which provides access to existing alarms, they shall be hard wired and interconnected. (R314.3.1)
- Carbon Monoxide Alarm required outside sleeping rooms. (R3151 and R315.2)

Safety Glazing

Safety glazing shall be required in hazardous locations as listed below.

1. Glazing in swinging doors. (R308.4.1)
2. Glazing in fixed and sliding panels of sliding door assemblies and panels in sliding and bi-fold closet door assemblies. (R308.4.1)
3. Glazing in walls and enclosures for hot tubs, whirlpools, saunas, steam rooms, bathtubs, and showers. Glazing in any part of a building wall enclosing these compartments and the bottom exposed edge of the glazing is less than 60 inches measured vertically above any standing or walking surface. (R308.4.5) Where more than 60 inches horizontally from water's edge. (Exception)
4. Glazing, in an individual fixed or operable panel adjacent to a door where the nearest vertical edge is within a 24 inch arc of the door in a closed position and whose bottom edge is less than 60 inches above the floor walking surface. (R308.4.2)
Glazing in walls perpendicular to the door in a closed position, other than the wall toward which the door swings when opened, or which access through the door is to a closet or storage area 3 feet or less in depth. (Exception)
5. Glazing in an individual fixed or operable panel, other than those locations described in Item 3 and 4 above, that meets all of the following conditions:
 - a) Exposed area of an individual pane greater than 9 square feet.
 - b) Bottom edge less than 18 inches above the floor.
 - c) Top edge greater than 36 inches above the floor.
 - d) One or more walking surfaces with 36 inches horizontally of the glazing. (R308.4.3)
6. All glazing in railings regardless of area or height above a walking surface, including structural baluster panels and nonstructural in-fill panels. (R308.4.4)

7. Glazing adjacent to stairways, landings, and ramps within 36 inches horizontally of a walking surface when the exposed surface of the glass is less than 60 inches above the plane of the adjacent walking surface. (R308.4.6)
8. Glazing adjacent to stairways within 60 inches horizontally of the bottom tread of a stairway in any direction when the exposed surface of the glass is less than 60 inches above the nose of the tread. (R308.4.7)

Stairways

- Minimum stair width shall be 36 inches in clear width above and below the permitted handrail height. (R311.7.1)
- Headroom shall be 6 feet 8 inches minimum measured from the plane of the nose of the tread or from the landing surface. (R311.7.2)
- Risers shall not exceed 7¾ inches and the run shall not be less than 10 inches with a ¾ to 1¼ inch nose or an 11 inch tread. (R311.7.5.1 and R311.7.5.2)
- The riser height or tread depth shall not exceed the smallest by more than 3/8 inch. (R311.7.5.1 and R311.7.5.2)
- Winder treads shall have a minimum tread depth of 10 inches measured at 12 inches from the narrowest depth at the 12 inch walk line and shall not exceed the smallest by more than 3/8 inch. (R311.7.5.2.1)
- Enclosed accessible space under stairs shall be protected by ½ inch gypsum board installed on the enclosed side of walls and soffits. (R302.7)
- All stairs shall be provided with illumination. (R302.7)

Handrails

- Handrails are required on one side of every stairway with four or more risers. (R311.7.8)
- Handrails shall be continuous and return at the ends. (R311.7.8.2)
- Handrail grip size shall not be less than 1¼ inches no more than 2 inches. If the handrail is not circular, it shall have a perimeter of not less than 4 inches nor more than 6 ¼ inches with a maximum cross section of 2 ¼ inches. (R311.7.8.3)
- Handrails shall not project more than 4 ½ inches on either side. (R311.7.1)
- When a handrail is installed on **one side**, the stairway clear width shall not be less than 31 ½ inches at and below the handrail. (R311.7.1)
- When the handrails are installed on **both sides**, the stairway clear width shall not be less than 27 inches at and below the handrails. (R311.7.1)
- Handrail height shall not be less than 34 inches, and not more than 38 inches, measured vertically from top of rail to the nosing of the stair treads. (R311.7.8.1)
- Openings for required guards on the sides of stair treads shall not allow a sphere 4 3/8 inches to pass through. (R312.1.3 Exception #2)

Guards

- Guards are required at every stairway, floor, landing, or decks greater than 30 inches above the grade or floor. (R312.1.1)
- Guards on elevated floors, balconies, decks, and porches shall have intermediate rails which do not allow passage of a 4 inch sphere. (R312.1.3)
- The minimum height of guards on elevated floors shall be 36 inches and not less than 34 inches on sides of stairs. (R312.1.2)

- Where the opening of an operable window is more than 72 inches above the finished grade below, the lowest part of the clear opening of the window shall be a minimum of 24 inches above the finished floor of the room in which the window is located. Glazing between the floor and 24 inches shall be fixed or have openings which do not allow passage of a 4 inch sphere (R312.2.1)

Doors

- One exit door is required for each dwelling unit per section. (R311.2)
- The exit door shall provide direct access from the habitable portions of the dwelling to the exterior without requiring travel through the garage. (R311.1)
- The exit door shall be side-hinged, not less than 3 feet wide and 6 feet 8 inches high. (R311.2)

Landings

- Interior landings at the required exit door shall be not more than 1 ½ inches lower than the top of the threshold. (R311.3.1)
- Landings at exterior doorways shall not be more than 7 ¾ inches below the top of the threshold provided the door, other than storm doors and screens, does not swing over the landing. (R311.3.1 Exception)
- Where a stairway of two or fewer risers is located on the exterior side of a door, other than the required exit door, a landing is not required for the exterior side of the door, provided the door does not swing over the stairs. (R311.3.2)

Hallways

Hallways shall have a minimum clear width of 36 inches. (R311.6)

Garages

- Opening from garage into sleeping rooms shall not be permitted. (R302.5.1)
- Openings between the garage and the residence shall be equipped with solid wood doors not less than 1 3/8 inch, in thickness, solid or honeycomb core steel doors or a 20 minute fire door, self-closing. (R302.5.1)
- The garage shall be separated from the dwelling by ½ inch gypsum applied to the garage side. When a habitable space is above the garage, then 5/8 inch type X gypsum shall be installed on the ceiling and ½" gypsum board on the supporting structure. (R302.6)
- Ducts in the garage and ducts penetrating the walls or ceilings separating the dwelling from the garage shall be constructed of a minimum No. 26 gage sheet steel or other approved material and shall have no openings into the garage. (R302.5.2)

Miscellaneous

- Appliances located within garages shall be protected from impact. (M1307.3.1)
- Appliances having ignition sources shall be elevated 18 inches above garage floors. (M1307.3)
- Water heaters, fixed appliances, and stands shall be anchored or strapped. (M1307.2)
- Water closets shall have a minimum of 30 inches of net clearance, sidewall to sidewall, and at least 21 inches of clearance in front. (UPC 407.5 and R307.1)
- Separate plumbing permit is required for lawn sprinklers.
- Separate mechanical permit is required for woodstoves.

Radon Mitigation

▪ **Subfloor preparation - Appendix F103.2**

A layer of gas-permeable material shall be placed under all concrete slabs and other floor systems that directly contact the ground and are within the walls of the living spaces of the building to facilitate future installation of a sub-slab depressurization system as needed.

The gas-permeable layer shall consist of one of the following:

1. A uniform layer of clean aggregate, a minimum of 4 inches thick. The aggregate shall consist of material that will pass through a 2 inch sieve and be retained by a ¼ inch sieve .
2. A uniform layer of sand, a minimum of 4 inches thick, overlain by a layer or strips of geotextile drainage matting designed to allow the lateral flow of soil gases.
3. Other materials, systems, or floor designs with demonstrated capability to permit depressurization across the entire subfloor area.

▪ **Soil Gas Retarder- Appendix F103.3**

Minimum 6-mil polyethylene or equivalent or equivalent shall be placed on top of gas-permeable layer prior to casting the slab or placing the floor assembly. Sheathing shall cover entire floor area with separate sections of sheathing lapped at least 12 inches. Sheathing shall fit closely around any pipe, wire, or other penetrations. All punctures or tears in the material shall be sealed or covered with additional sheathing.

▪ **Floor Openings - Appendix F103.4.1**

Openings around bathtubs, showers, water closets, pipe, wires, or other objects that penetrate concrete slabs or other floor assemblies shall be filled with a polyurethane caulk or equivalent sealant.

▪ **Vent Pipes / Crawl Space - Appendix F103.5.3**

Minimum 3 inch diameter ABS, PVC, or equivalent gas tight pipe with a plumbing tee or other approved connection shall be insulated horizontally beneath the sheathing. Vent pipes shall terminate at least 12 inches above the roof.

▪ **Vent Pipes- Accessibility - Appendix F103.8**

Radon vent pipes shall be accessible for future fan installation through attic or other area outside the habitable space.

▪ **Vent Pipe Identification - Appendix F103.9**

All exposed and visible interior radon vent pipes shall be identified with at least one label on each floor and in accessible attic. The label shall read "Radon Reduction System".

▪ **Power Source - Appendix F103.12** Electrical circuit terminated in an approved box shall be installed during construction in the attic or other anticipated location or vent pipe fans. An electric supply shall also be accessible in anticipated location of system alarm failure.

▪ **Swimming pools - Appendix G** Barrier requirements per AG 105.