



## Residential Code Requirements 2019 Adopted Codes

The code requirements in this document are excerpts only, not a comprehensive list of all requirements that may apply to your project.

### Building Code Requirements

**B-1 In dwelling units, smoke alarms shall be installed** on the wall or ceiling of the area immediately outside each separate sleeping area, in each room used for sleeping purposes, and on each story within the dwelling unit. In dwellings with basements, an alarm shall be installed on each story and in the basement. In dwelling units where a story or basement is split into two or more levels and does not have an intervening door between the adjacent levels, a smoke alarm need only be installed on the upper level, except that when the lower level is less than one full story below the upper level, an alarm shall be installed on each level. Where the ceiling height of a room that opens onto a hallway serving a bedroom exceeds the height of the hallway by 24 inches, smoke alarms shall be installed in the hallway and in the adjacent room. In new construction, the required smoke alarms shall receive their primary power from a commercial source and have a battery backup. When more than one smoke alarm is being provided the alarms shall be interconnected. **2019 CRC, Section R314.**

**B-2** When interior alterations, repairs, or additions having a value in excess of \$1,000 are made, provide approved smoke alarms as required for new buildings. The alarm may be battery operated. **2019 CRC, Section R314.6.2.**

**B-3** For new construction, and alteration, repairs and additions, an approved carbon monoxide alarm shall be installed in dwelling units and in sleeping units within which fuel-burning appliances including fireplaces are installed and in dwelling units that have attached garages. **2019 CRC, Section R315.1.**

**B-4 Basements, habitable attics, and every sleeping room in dwelling units** shall have not less than one operable emergency escape and rescue opening approved for emergency escape or rescue that shall open directly into a public way, yard, or court that opens to a public way. Escape or rescue windows shall have a minimum net clear opening area of not less than 5.7 square feet, except that when escape and rescue windows are on the grade-floor they can have a minimum net clear opening area of 5 square feet. All emergency escape and rescue windows shall have the bottom of the clear opening not greater than 44 inches measured from the floor. The minimum net clear opening height shall be 24 inches. The minimum net clear opening width shall be 20 inches. Storm shelters and basements that are less than 200 square feet and are only used to house mechanical equipment are exempt from this requirement. 2019 CRC, Section R310.1. **See Exception 2** Where the dwelling or townhouse is equipped with an automatic sprinkler system installed in accordance with Section P2904, sleeping rooms in basements shall not be required to have emergency escape and rescue openings provided that the basement has one of the following: 2.1 One means of egress complying with **Section R311** and one emergency escape and rescue opening. 2.2 Two means of egress complying with **Section R311.**

**B-5 Private garages shall be separated from a dwelling unit and its attic space** by minimum ½ inch gypsum board applied on the garage side. Private garages located beneath habitable spaces shall be separated from the habitable space by means of minimum 5/8-inch gypsum board. A garage shall not open directly into a room used for sleeping purposes. Door openings between a private garage and a dwelling unit are required to be self-closing and self latching. When not protected by fire sprinklers, the door shall be constructed of solid wood, solid material, or honeycomb core steel and must be 1-3/8-inch-thick or have a 20-minute fire rating. 2019 CRC, Sections R302.5 & R302.6.

**B-6 Ducts may pass through the walls or a ceiling separating a private garage from a dwelling unit provided the ducts within the garage are constructed of steel having a thickness of not less than 26-gauge galvanized sheet steel and the duct has no openings into the garage. 2019 CRC, Section R302.5.2.**

**B-7 Provide readily accessible natural ventilation directly to the outdoors for all habitable rooms within a dwelling unit equal to 4 percent of the floor area ventilated. 2019 CRC, Section R303.1.**

**B-8 Provide natural or artificial light to all habitable rooms within a dwelling unit. Natural light shall be equal to 8 percent of the floor area served. Artificial light shall have an average illumination of 6 foot-candles at a height of 30 inches above the floor level. 2019 CRC, Section R303.1.**

**B-9 Rooms containing bathtubs, showers, spas, and similar bathing fixtures shall be provided with an aggregate glazing area of not less than 3 square feet of which at least one half must be openable or be mechanically ventilated with the exhaust air going directly to the outside. 2019 CRC, Section R303.3.**

**B-10 Provide safety glazing for all glazing in locations specified as hazardous in the 2019 CRC, Section R308.4.**

**B-11 Shower compartments and walls above bathtubs with installed shower heads shall be finished with a smooth, nonabsorbent surface to a height of not less than 6 feet above the floor. 2019 CRC, Section R307.2.**

**B-12 Provide an approved attic access in a readily accessible location sized 22 inches by 30 inches with minimum 30-inch vertical headroom. 2019 CRC, Section R807.1. If mechanical equipment is installed in the attic space the access must be sized so that the largest piece of equipment can be removed, but in no case smaller than 22 inch by 30 inch with 30-inch vertical headroom clearance per 2019 CMC, section 304.4.**

**B-13 Enclosed usable space under interior stairways in dwelling units shall have the walls and soffits protected on the enclosed side with ½ inch gypsum board. 2019 CRC, Section R302.7.**

**B-14 Private stairways shall be constructed with a 7.75-inch maximum rise, a 10-inch minimum run, and a 36-inch minimum width. A nosing not less than ¾ inch but not more than 1-1/4 inch shall be provided on stairways with solid risers where the tread depth is less than 11 inches. The largest tread run and the greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8 inch. Maintain a continuous 6-foot 8-inch headroom clearance above the stairway. 2019 CRC, Section R311.7.**

**B-15 A minimum of one handrail is required on all stairway runs with four or more risers that serve dwelling units. The top of handrails shall be placed not less than 34 inches nor more than 38 inches above the nosing of the treads except for at the lowest riser, landing transitions, and the start of the flight where they may be allowed to be higher. A clear space of 1-1/2 inches is required between the handrail and the wall. The maximum projection of the handrail into the required stairway width shall be 4-1/2 inches. Openings in open guards on stairways shall be sized such that a 4-3/8-inch sphere will not pass through. The triangular openings formed by the riser, tread and bottom rail at the open side of a stairway shall be of a maximum size such that a sphere of 6 inches in diameter cannot pass through the opening. 2019 CRC, Section R311.7.8 and R312.1.3.**

**B-16 Circular handrails shall have a minimum diameter of 1-1/4 inches and a maximum diameter of 2 inches. Noncircular handrails shall have a minimum perimeter dimension of 4 inches, a maximum perimeter dimension of 6-1/4 inches, and a maximum cross-section of 2-1/4 inches. Handrails with a perimeter greater than 6-1/4 inches shall have a graspable finger recess area on both sides of the profile. The finger recess shall begin within 3/4 inch measured vertically from the tallest portion of the profile and achieve a depth of at least 5/16 inch within 7/8 inch below the widest part of the profile. The required depth shall continue for at least 1-3/4 inches below the tallest portion of the profile. The minimum width of the handrail above the recess shall be 1-1/4 inches to a maximum of 2-3/4 inches. 2019 CRC, Section R311.7.8.5.**

**B-17 Guards are required where open-sided walking surfaces including stairs, ramps, and landings are located more than 30 inches above the floor below. These guards shall be a minimum of 42 inches in height. Openings in open guards for these areas shall be sized such that a 4-inch diameter sphere cannot pass through any opening. 2019 CRC, Section R312.1.**



**B-18** On stairways, guards whose top rail also serves as a handrail shall have a height not less than 34 inches and not more than 38 inches measured vertically from a line connecting the leading edge of the treads. **2019 CRC, Section 312.1.2 exception #2.**

**B-19** Interior spaces intended for human occupancy shall be provided with heating facilities capable of maintaining a room temperature of 68 degrees Fahrenheit at a point 3 feet above the floor and 2 feet from exterior walls in all habitable rooms. **2019 CRC, Section R303.10.**

**B-20** Ceiling heights for habitable space, hallways and portions of basements containing these spaces shall have a ceiling height of not less than 7 feet. Bathrooms, toilet rooms and laundry rooms shall have a ceiling height not less than 6 feet 8 inches. **2019 CRC, Section R305.1.**

**B-23** Factory built chimneys and factory-built fireplaces shall be listed and installed in accordance with the terms of their listing and the manufacturer's instructions. **2019 CRC, Sections R1004.1 & R1005.1.**

**B-24** Provide access to all under-floor spaces. Access provided through the floor shall be a minimum size of 18 inches by 24 inches. Access provide through the wall shall be a minimum of 16 inches by 24 inches and shall not be located under a door to the residence. **2019 CRC, Section 408.4.**

**B-25** Provide adequate ventilation at all under-floor spaces. **2019 CRC, Section 408.1.**

**B-26** Wood framing members and wood-based products must be foundation grade redwood or treated and marked by an approved agency when required by **2019 CRC, section R317.**

**B-27** Foundation plates or sills shall be bolted or anchored to the foundation with not less than ½ inch diameter steel bolts or approved anchors spaced a minimum of 6 feet on center for one- and two-story dwellings and a minimum of 4 feet on center for three or more story dwellings. There shall be at least two bolts per plate that start within 12 inches or 7 bolt diameters of the end of the plate. All foundation bolts shall be embedded a minimum of 7 inches into the concrete or masonry. Each bolt shall have a properly sized nut and washer. **2019 CRC, Sections R403.1.6 & R403.1.6.1.** The washers must be a minimum 3 x 3 inches square and .229 inches thick. A diagonal slot is allowed of a width 3/16 inch larger than the bolt diameter and a maximum 1-3/4 in length, provided a standard cut washer is used between the nut and plate washer. **2019 CRC, Section R602.11.1.**

**B-28** Cutting and notching of exterior walls and bearing partitions shall not be greater than 25 percent of the stud width. Cutting or notching of studs to a depth not greater than 40 percent of the width of the stud is permitted in nonbearing partitions supporting no loads other than the weight of the partition. **2019 CRC, Section 602.6 #1.**

**B-29** A drilled or bored hole not greater in diameter than 60 percent of the stud width is permitted in a non-bearing partition or in a wall where the bored stud is doubled provided not more than two such successive studs are bored. A minimum 5/8 inch of wood is required between the bored hole and the edge of the wood. Bored holes cannot be located in the same vicinity as a cut or a notch. **2019 CRC, Section 602.6 #2.**

**B-30** Footings shall have a minimum depth of 12 inches below undisturbed ground. **2019 CRC, Section R403.1.4.**

**B-31** Where post and beam or girder construction is used, a positive connection shall be provided to ensure against uplift and lateral displacement. **2019 CRC, Section R502.9.**

**B-32** The rafter ties shall be a minimum of 2 inch by 4 inches. **2019 CRC, Section R802.5.2.**

**B-33** Provide adequate ventilation to all attic spaces. **2019 CRC, Section R806.1**

**B-34** Provide **fire blocking and draft stopping** in concealed locations of combustible construction in accordance with the **2019 CRC, Sections R302.11 & R302.12.**

**B-35** **All gypsum board, stucco, plaster, and lath** shall be installed as per 2019 CRC, Chapter 7. **Note:** When lath is applied over wood base sheathing, include two layers of grade D paper. **2019 CRC, Section R703.6.3.**

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**E-1 Provide a grounding electrode as per 2019 CEC 250.50**

**E-2 Grounding conductors** to be provided where installing a branch circuit or feeder supplying a separate building or structure. **2019 CEC 250.32(B).**

**E-3 At least one wall switch-controlled lighting outlet** shall be installed in every habitable room, in bathrooms, hallways, stairways, attached garages, detached garages with electrical power, Attics, under floor spaces, utility rooms, basements used for storage or having equipment that requires servicing, and at outdoor entrances or exits. **2019 CEC 210.70.**

**E-4 Dwellings with direct grade level access shall have at least one receptacle outlet at grade level at the front and back of the dwelling.** All 125 volt, 15 and 20 amp, receptacles installed outdoors with direct grade level access shall be GFCI protected. All receptacles installed outdoors in wet or damp locations shall be in a weatherproof enclosure as per **2019 CEC 210.52(E), 210.8(A)(3), & 406.9.**

**E-5 At least one receptacle outlet, in addition to any provided for specific equipment, shall be installed in each basement, in each attached garage, and in each detached garage or accessory building with electric power.** These outlets are to be GFCI protected. **2019 CEC 210.52(G).**

**E-6 Provide GFCI protection to all 125 volt, 15 amp and 20 amp receptacles installed in bathrooms, garages, outdoors, crawlspaces at or below grade, unfinished basements, receptacles to serve counter top surfaces installed in kitchens, and receptacles within 6 feet of a sink, or shower/tub and laundry areas.** 2019 CEC 210.8(A).

**E-7 ARC –fault circuit interrupter** protection is required in dwellings for all 120-volt single phase 15- and 20-amp branch circuits specified in **2019 CEC 210.12.**

**E-8 Receptacle outlets shall be spaced not more than 12 feet apart and a maximum of 6 feet from the ends of walls or openings.** Receptacle outlets are also required in walls 2 feet or greater. **2019 CEC 210.52(A).**

**E-9 Provide two or more 20-amp small appliance branch circuits** evenly proportioned in the kitchen, pantry, breakfast room, dining room, or similar area. Such circuits shall have no other outlets. 2019 CEC 210.52(B).

**Note:** One additional 20-amp branch circuit shall be provided to supply the laundry receptacle outlet(s). This circuit shall have no other outlets. **2019 CEC 210.11(C)(2).**

**E-10 Provide fuses or approved circuit breakers** at air conditioning units and heat pumps as per **2019 CEC 440.** (Do not exceed maximum fuse requirements or minimum on equipment specification plate).

**E-11 An equipment grounding conductor** is required with all branch circuits and feeders supplying a separate building or structure. **2019 CEC 250.32(B).**

**E-12 Provide an intersystem bonding termination means** that includes provisions for connecting three grounding or bonding conductors for communications systems using a #6 copper conductor. **2019 CEC 250.94,**

**E-13 Equipment grounding conductors** to be provided for grounding means and effective ground-fault path by performing both grounding and bonding functions. **2019 CEC 250.118**

**E-14 Equipment bonding jumpers** that connect grounding terminals of receptacles to a grounded metal box must be sized according to Table 250.122 using the rating of the overcurrent device, fuse, or circuit breaker for the circuit. **2019 CEC 250.146.**

**E-15 Device or equipment fill in a junction box** to be calculated using twice the wire size volume if the device is wider than 2 inches. **2019 CEC 314.16(B)(4).**

**E-16 Lighting junction boxes** to be designed for the purpose and listed with the capacity of holding 50 pounds. It must be marked for the purpose of holding luminaires. **2019 CEC 314.27(A).**

**E-17 Armored clad cable (AC)** is acceptable for branch circuits and feeders. 2019 CEC 320.10(1).

**E-18 Flexible metal conduit** isn't permitted for use in wet locations, regardless of any conditions. **2019 CEC 348.12(1).**

**E-19 Flexible metal conduit and liquid tight flexible metal conduit** may be fished within walls or concealed spaces without the need for support. 2019 CEC 348.30(A).

**E-20 An equipment disconnecting means that isn't within sight of the equipment** it serves is required to be capable of being locked open (off position) and have a means for adding a lock that must remain with the equipment whether the lock is installed or not. This is a special device that connects to the breaker. **2019 CEC 110.25.**

**E-21 Receptacles in wet locations.** 120 volt and 250 volts are required to be listed weather-resistant type. **2019 CEC 406.9(A) & (B).**

**E-22 Tamper-resistant receptacles** in dwelling to be installed in areas specified by 210.52 shall be listed tamper resistant type. **2019 CEC 406.12.**

**E-23** All luminaires and lamp holders shall be listed. **2019 CEC 410.6.**

**E-24 Those luminaires allowed in clothes closets** by 2019 CEC 410.16(A) shall be installed per the requirements of **2019 CEC 410.16(C)**

**E-25 The disconnecting means for pool and spa or hot tub** shall simultaneously open all ungrounded conductors. It shall be further than 5 feet from the water's edge. **2019 CEC 680.12.**

**E-26 Receptacles shall be greater than 6 feet from the water edge of the pool,** fountain, spa or similar installation. It shall be GFCI protected. **2019 CEC 680.22, 680.34, and 680.43.**

**E-27 GFCI protection is required for all pool pump motors** for either 125 volt or 240 volts. **2019 CEC 680.21(C).**

**E-28 Equipotential bonding** will be required around pool areas. A conductor sized at a minimum of #8 copper shall be used. **2019 CEC 680.26.**

**E-29 Pumps for portable pools** shall have an integral GFCI protected cord within 12 inches of the attachment plug. All 125 volt, 15- and 20-amp receptacles within 20 feet of a pool shall be GFCI protected. **2019 CEC 680.31 & 680.32.**

**E-30 Hydro massage bathtubs** and their associated equipment must be supplied by at least one separate individual circuit. **2019 CEC 680.71.**



**P-1** Provide an **approved dishwasher air gap fitting** as per **2019 CPC, Section 807.3.**

**P-2** Potable water outlets with hose attachments, other than water heater drains, boiler drains, and clothes washer connectors, shall be protected by a listed non-removable hose bib type backflow preventor or a listed atmospheric vacuum breaker as per **2019 CPC, Section 603.5.7.**

**P-3 Joints.** Where a fixture comes in contact with the wall or floor, the joint between the fixture and the wall or floor shall be made watertight. **2019 CPC, Section 402.2**

**P-4 No underfloor cleanout** shall be located more than 5 feet from an access door, trap door, or crawl hole. **2019 CPC, Section 707.9.**

**P-5 Gas Water heaters located in residential garages or adjacent spaces** open to the garage that are not part of the living space shall be installed so that the pilots, burners, and burner-igniter devices are at least 18 inches above the floor unless listed as flammable vapor ignition resistant. **2019 CPC, Section 507.13.**

**P-6 Fuel burning water heaters** shall be installed per **2019 CPC, Section 506.0**, for combustion air.

**P-7 Water heaters that depend on the combustion** of fuel for heat shall not be installed in bedrooms or bathrooms unless installed in an approved closet or direct vent type per **2019 CPC, Section 504.1.**

**P-8 Listed water heaters shall be installed in** accordance with their listing and the manufactures' instructions. Unlisted water heaters shall be installed with a clearance of 12" on all sides and rear. **2019 CPC, Section 504.3.1 & 504.3.2.**

**P-9** Any water system containing **storage water heating equipment** shall be provided with an approved, listed, and adequately sized combination pressure and temperature relief valve. **2019 CPC, Section 608.3.**

**P-10 Relief valves located inside a building** shall be provided with a drain of galvanized steel, hard drawn copper piping and fittings, CPVC, or listed valve drain. The drain shall extend from the valve to the outside of the building with the end of the pipe not more than 2 feet nor less than 6 inches above the ground and pointing downward. **2019 CPC, Section 608.5.**

**Note:** No part of such drainpipe shall be trapped, and the terminal end of the drainpipe shall not be threaded.

**P-11 Water heaters shall be anchored or strapped** to resist horizontal displacement due to earthquake motion. Strapping shall be at points within the upper one-third and lower one-third of its vertical dimensions. At the lower point, a minimum distance of 4 inches shall be maintained above the controls with the strapping. **2019 CPC, Section 507.2.**

**P-12 Gas utilization equipment** connected to a piping system shall have an accessible approved manual shut off valve with a non-displaceable valve member, or a listed gas convenience outlet installed within 6' of the equipment it serves. Shut off valves serving decorative gas appliances shall be permitted to be installed in fireplaces if listed for such use. **2019 CPC, Section 1212.6.**

**P-13 Showers and tub-shower combinations** in all buildings shall be provided with individual control valves of the pressure balance or the thermostatic mixing valve type. **2019 CPC, Section 408.3.**

## Mechanical Code Requirements

**M-1 Domestic clothes dryer moisture exhaust ducts** shall terminate on the outside of the building and shall be equipped with a back-draft damper. Sheet metal screws or other fasteners that will obstruct the flow shall not be used. Unless otherwise permitted or required by the dryer manufacturer's installation instructions and by the building official, domestic dryer moisture exhaust ducts shall not exceed a total combined horizontal and vertical length of 14 feet including two 90° elbows. Two feet shall be deducted for each 90° elbow in excess of two. **2019 CMC, Section 504.4.**

**M-2 Make up air.** When a closet is designed for the installation of a clothes dryer, a minimum opening of 100 square inches for makeup air shall be provided in the door or by other approved means. **2019 CMC, Section 504.4.1.**

**M-3 Installation of a Listed Cooking Appliance or Microwave Oven above a Listed Cooking Appliance.** The installation of a listed cooking appliance or microwave oven over a listed cooking appliance shall conform to the conditions of the upper appliance's listing and the manufacturers' installation instructions. **2019 CMC, Section 921.4**

**M-4 Domestic range vents.** Ducts for domestic kitchen downdraft grill-range ventilation shall be installed as per **2019 CMC, Section 504.2.**

**M-5 Fuel burning equipment** shall be assured a sufficient supply of combustion air as per **Chapter 7, 2019 CMC.**

**M-6 Warm air furnaces shall not be installed** in a room used or designed to be used as a bedroom or bathroom unless direct vent type or installed in an approved closet enclosure per **2019 CMC, Section 904.1.**

**M-7 Attic furnace.** The distance from the passageway access to the furnace shall not exceed 20 feet measured along the center line of the passageway. The passageway shall be unobstructed and shall have continuous solid flooring not less than 24 inches wide from the entrance opening to the furnace. A level working platform not less than 30 inches in depth and width shall be provided in front of the entire fire box side of the warm air furnace. If the furnace temperature limit control, air filter, fuel control valve, vent collar, or air handling unit is not serviceable from the fire box side of the furnace, a continuous floor not less than 24 inches in width shall be provided from the platform in front of the fire box side of the furnace to and in front of this equipment. A permanent electric outlet and lighting fixture controlled by a switch located at the required passageway opening shall be provided at or near the furnace. **2019 CMC, Section 304.4.**

**M-8 Vent termination.** Gas vents with listed vent caps 12 inches in size or smaller shall be permitted to be terminated in accordance with Table 802.6.2, provided they are located at least 8 feet from the vertical wall or similar obstruction. All other gas vents shall terminate not less than 2 feet above the highest point where they pass through the roof and at least 2 feet higher than any portion of a building within 10 feet. **2019 CMC, Section 802.6.2.**

**Note:** Single wall metal pipe shall not originate in an unoccupied attic or concealed space and shall not pass through any attic, inside wall, concealed space or floor. **2019 CMC, Section 802.7.3.2.**

**M-9 Approval of Equipment.** Listed and unlisted equipment shall comply with the **2019 CMC, Section 301.2.**

**M-10 Ignition source.** Heating and cooling equipment located in a garage that generates a glow, spark, or flame capable of igniting flammable vapors shall be installed with sources of ignition at least 18 inches above the floor level. **2019 CMC, Section 305.**