



CITY OF LAGUNA HILLS BUILDING DEPARTMENT

DWELLING DESIGN

1. **Purpose:** This information is intended to provide general guidance on the non-structural building code requirements relating to the design of one or two story single family residences of less than 3000 square feet. It is not a complete rendering of all of the detail contained in the building, plumbing, mechanical or electrical codes and is not intended to replace them. It does not address structural issues. It is intended to provide a checklist of issues that experience shows should be addressed during the planning stage of dwelling construction or remodel. Where unusual circumstances are encountered or where more detail is needed the codes should be consulted. Building codes can be reviewed in many libraries or on the California Building Standards Commission's website at www.bsc.ca.gov.
2. **Stairs:** Stairs must be at least 36" wide except that the handrails may project into this width as much as 3½" on each side if necessary. They must have headroom clearance of at least 6'-8". Stair riser height shall be 7¾" max. The maximum difference allowed between the highest and the lowest riser is ¾". Stair treads depth shall be 10" minimum. For safety and if space is available, it is best to make stairs as gradual as possible. Rises of 7" and runs of 11" are more typical though not strictly required. If the stairs curve or spiral, consult the *California Residential Code*™ (CRC).
3. **Handrails:** Stairways with 4 or more risers are required to have at least one handrail. Handrails must be continuous and smooth with a hand grip portion between 1¼" and 2" in cross-section. If you intend to fabricate your own rail it is best to show a sample to your building inspector before installation. Place handrails between 34" and 38" above the nose of the treads. They must be at least 1½" from the wall. Stairs that are open on the side must have a guardrail at least as high as the handrail. See below.
4. **Guardrails:** Elevated porches, landings, decks or floors that are 30" or more above grade or floor below must have a guardrail at least 42" high. It is typical to use bolts or metal brackets instead of nails to secure guardrail posts. Open guards shall have balusters or ornamental patterns such that a 4" ball cannot pass through. (This prevents children from falling through.)
5. **Exit Doors:** Provide at least one exit door with a lock or latch that is openable from the inside without using a key (no double key dead bolts) and without any special knowledge (no combination locks) or effort (no heavy cross bars). The lock or latch must be no more than 48" from the floor. Provide a landing, floor or porch that is at least three feet square on each side of the exit door. The outside landing or porch may be no more than 7¾" lower than the inside floor level, but if it is lower than the inside floor at all, the door must not swing out over the lowered landing or porch.
6. **Emergency exits:** Sleeping rooms must be provided with a means to exit directly to the outside in case of fire. Sleeping rooms must have a window or door that is openable from the inside without tools. These windows must be large enough to let occupants escape and firemen to climb in. Such windows must have a net clear opening of at least 5.7 sq. ft. They must have a minimum net clear height of 24" and a minimum net clear width of 20". The finished sill height may not exceed 44". Bars, grills, grates, etc., must be openable from the inside without key or special knowledge or effort and, if they are installed, the building must be equipped with smoke detectors. Note that most manufacturers are aware of these regulations and clearly indicate which of their products are "CBC approved for egress".
7. **Hallways:** Hallways must be at least three feet wide
8. **Safety glass:** Safety glazing is required in doors of all types, shower enclosures, bath enclosures, whirlpool enclosures, etc., window glazing that is within 24 inches of a door unless it is 5 feet above the floor, windows greater than 9 sq. ft. and within 18" of the floor, and glass in guardrails and handrails. Note that the manufacturers of doors and shower enclosures are generally aware of these requirements. Use caution when ordering windows that maybe located near doors because windows are not normally equipped with safety glazing. Also note that the Code allows certain exceptions for decorative leaded glass assemblies etc. Consult the CRC for more information.

9. Smoke and Carbon Monoxide detectors: Provide smoke detectors inside each sleeping room. Provide smoke detectors and carbon monoxide detectors centrally located in the corridor or area giving access to each sleeping area. Provide at least one smoke detector and carbon monoxide detector on each story and in the basement. If stories or basements are divided into levels, provide the smoke detector and carbon monoxide detector in the upper level (smoke rises) except that sleeping areas on lower levels must still be covered. Place one of each type above the top of the stairs leading to upper level sleeping areas. If a hallway enters a room with a vaulted ceiling, place one of each type in the hall and one in the high room. Provide smoke detectors and carbon monoxide detectors with power from the house wiring where possible and in all new construction. Use 10 year battery type elsewhere. Detectors are required to be installed throughout the house whenever you remodel. They are one of the most important things that you can do to your house to safeguard your family.
10. Room sizes: Habitable spaces are areas used for living, sleeping, eating or cooking and must have a ceiling height of at least 7'-6" but halls, bathrooms, etc., may be 7'-0". See the CBC for sloped ceilings, furred ceilings and ceilings with exposed structural members. Habitable rooms may not be less than 7' in any dimension. Kitchens, baths, halls, laundry spaces, utility rooms etc., may be smaller.
11. Light and ventilation: Equip habitable rooms with glazed windows for natural light with a minimum area of $\frac{1}{10}$ th of the floor area of the room or 10 sq. ft., whichever is larger. Equip habitable rooms with openable windows with a minimum area of $\frac{1}{20}$ th of the floor area or 5 sq. ft., whichever is larger. Equip bathrooms with openable windows with a minimum area of $\frac{1}{20}$ th of the floor area or $1\frac{1}{2}$ sq. ft. whichever is larger. If openable windows are not provided then mechanical ventilation must be provided as detailed in the CMC.
12. Laundry chutes: Laundry chutes represent a severe fire-spread problem. Consult the CBC for detailed requirements.
13. Fire wall: Where the garage is attached to the house, or where it is less than three feet away from the house, provide a fire wall between the two that extends to the roof sheathing. The most common fire wall consists of a 2 x 4 wall with $\frac{5}{8}$ " type "X" drywall applied to the garage side. A door between the house and such a garage must be a minimum of $1\frac{3}{8}$ " solid wood, tight fitting, self-closing and self-latching. Avoid any other openings in this fire wall. Avoid electrical panels in these walls. The installation of a furnace in a garage presents problems with this fire wall. Consult the CMC if a furnace is to be located in a garage.
14. Circuit breaker panels: Typical panels must be installed with a dedicated working space 30" wide and 36" deep. Electrical panels may not be installed in clothes closets. Avoid installing them in the fire wall between dwelling and garage because it presents special problems with the fire barrier. The main power disconnect must be very close to the point where the lines enter the house. Consult Article 230-70 of the *National Electrical Code*® (N.E.C.) and your electric utility representative.
15. Lights and receptacles: Plan on one switchable receptacle or light in every room and hall. Plan on a light outside exit doors. If lights are planned in closets consult Article 410-8 of the N.E.C. Plan to install an electrical receptacle within 6 feet of all points along the wall in all habitable rooms. Plan on one GFCI protected receptacle at the bathroom sink. Receptacles must be placed every two feet above kitchen counters, be GFCI protected and tamper proof.
16. Toilets: Plan a space at least 30" wide for the toilet. The space must be deep enough to allow 24" of clear space in front of the fixture.
17. Tubs: Most bathtubs and whirlpool baths require some sort of access panel to trap, overflow, or pump.
18. Forced Air Units: Consult installation directions for appropriate clearances. The return air inlet for blower type furnaces must be at least ten feet from the draft hood of your water heater or other fuel burning appliance and must not be where it will pick up objectionable odors or moisture. Forced air units require bulky ducts and plenums. Where will they be routed?
19. Fuel Burning Appliances: Fuel burning appliances such as water heaters and furnaces require combustion air ducts and exhaust vents that must extend to the outside. Thought must be given to routing. It is advisable to locate fuel burning appliances adjacent to an outside wall for ease in providing combustion air.
20. Roof Decks: Plumbing vents must be 10' from a roof deck.
21. Clothes Dryers: the length of ducts is limited. Place these appliances near an outside wall and consult the installation directions. If you cannot place them at an outside wall then consult the *California Mechanical Code*™ (C.M.C.).
22. Fuel Burning Appliance Vents: Vent system offsets are limited. Consult the C.M.C. where the vent cannot be routed straight up through the roof.