

CALABASAS STANDARD NOTES
FOR
R-3 RESIDENTIAL CONSTRUCTION

2022 CRC, CPC, CMC, CEC, CAL & City Green & CEnC

THE FOLLOWING STANDARD NOTES AND PRESCRIPTIVE CONSTRUCTION REQUIREMENTS ARE APPLICABLE TO MOST STANDARD (PRESCRIPTIVE) RESIDENTIAL CONSTRUCTION METHODS AND ARE NOT INTENDED TO REPLACE ANY MORE RESTRICTIVE MINIMUM LIFE-SAFETY OR STRUCTURAL CODE REQUIREMENTS OR CONDITIONS. REFERENCES IN BRACKETS [XX, XX.X] ARE CODE SECTIONS.

THE FOLLOWING STANDARD NOTES ARE INTENDED TO BE ADDED (COPIED ON THE FINAL APPROVED PLANS) TO A SET OF PLANS TO ELIMINATE THE NEED TO MAKE THESE CORRECTIONS DURING THE PLAN CHECK PROCESS. THESE NOTES SUPPLEMENT THE PLAN CHECK PROCESS AND THE ADDITIONAL REQUIREMENTS ON THE PLANS. THESE NOTES ARE NOT INTENDED TO CREATE A CONFLICT BETWEEN THE DESIGN AND MINIMUM CODE REQUIREMENTS. WHERE A CONFLICT EXISTS BETWEEN THESE NOTES AND THE PLANS, THESE NOTES TAKE PRECEDENCE ONLY FOR MINIMUM CODE COMPLYING CONSTRUCTION PURPOSES.

BUILDING PLANNING: [Ch 3]

FIRE RESISTANT CONSTRUCTION [R302]

1. **Penetrations:** [R302.4.1,.2]
 - a. The annular space of through or membrane penetrations shall be filled.
 - b. Steel electrical boxes are limited to 16 square inches. The maximum annular space is 1/8 inch.
 - c. Listed electrical boxes shall be installed in accordance with their listing.
2. **Garage Opening Protection:** [R302.5]
 - a. Openings from a garage directly into a sleeping room are not permitted.
 - b. Other openings shall be solid wood doors not less than 1-3/8 inch; solid or honeycomb core steel doors not less than 1-3/8 inch or 20-minute fire-rated.
3. **Duct Penetration:** [R302.5.2]
 - a. Ducts in the garage and ducts penetrating the walls or ceiling separating the dwelling from the garage shall be constructed of a minimum No. 26 gage sheet steel and have no opening into the garage.
4. **Dwelling/Garage (or carport) Fire Separation:** [R302.6]
 - a. Separation walls (residence and attic) – 1/2” gypsum board.
 - b. Habitable rooms above – 5/8” type X gypsum board.
5. **Fireblocking:** [R302.11]
 - a. In combustible construction, **fireblocking** shall be installed to cut off concealed draft openings (both vertical and horizontal) and shall form an effective barrier between floors, between a top story and a roof or attic space in accordance with the following:
 - b. In concealed spaces of stud walls and partitions, including furred spaces, and parallel rows of studs or staggered studs vertically at the ceiling and floor levels and horizontally at intervals not exceeding 10 feet.
 - c. At interconnections between concealed vertical stud wall or partitions spaces and concealed horizontal

spaces created by an assembly of floor joist or trusses and concealed spaces such as occur at soffits, drop ceilings, cove ceiling and similar locations.

- d. Concealed space between stair stringers at the top and bottom of the run.
- e. Openings around vents, pipes, ducts, chimneys and fireplace at ceiling and floor levels.

LIGHT, VENTILATION AND HEATING [R303]

6. All habitable rooms shall have an aggregate glazing area of not less than 8% of the floor areas. Natural ventilation shall be through approved opening to the outdoor air. The minimum openable areas to the outdoors shall be 4% of the floor area being ventilated. The following exceptions may be applicable: [R303.1]
 - a. The glazed areas need not be openable where the opening is not required for emergency escape and an approved mechanical ventilation system capable of producing 0.35 air changes per hour.
 - b. The glazed areas need not be installed in rooms where the above exception is satisfied and artificial light is provided capable of producing an average illumination of 6 foot-candles over the area.
7. Interior and exterior stairways shall have artificial lighting. [R303.7, R303.8, R311.7.9]
8. Where the interior stair has six or more risers, there shall be a wall switch at each floor.
9. **Bathrooms, showers,** spas and similar bathing fixtures shall be mechanically ventilated. Bathrooms not containing a bathtub, shower or tub/shower combination may be naturally or mechanically vented. [R303.3]
10. **Bathrooms** shall be provided mechanical ventilation of 50-CFM. Unless functioning as a component of a whole house ventilation system, fans must be controlled by humidity control. R303.3/CGBC 4.501.6. (CMC 405.3) (CGBC 4.506.1)
 - a. Humidity controls shall be capable of adjustment between a relative humidity range of ≤ 50 percent to a

maximum of 80 percent. A humidity control may utilize manual or automatic means of adjustment.

- b. A humidity control may be a separate component to the exhaust fan and is not required to be integral (i.e., built-in).

- 11. **Kitchen local exhaust** ventilation requires a minimum exhaust per CEnC T-150.0-G. This includes a maximum sound rating of 3 sone @ 100cfm ASHRAE 62.2 Section 7.1. Exhaust must outlet outside the dwelling. [CMC 405.4] [CEnC 150.0(O)]

TABLE 150.0-G

DWELLING UNIT FLOOR AREA (ft ²)	ELECTRIC RANGE	NATURAL GAS RANGE
>1500	110 CFM	180 CFM
>1000-1500	110 CFM	250 CFM
750-1000	130 CFM	280 CFM
<750	160 CFM	280 CFM

ROOM AREAS [R304]

- 12. Except for kitchens, habitable rooms shall have a floor area of not less than 70 square feet.
- 13. Except for kitchens, habitable rooms shall not be less than 7 feet in any horizontal dimension.

CEILING HEIGHT [R305]

- 14. Habitable space, hallways and portions of basements containing these spaces shall have a ceiling height of not less than 7 feet.
- 15. Bathrooms, toilet rooms, and laundry rooms shall have a ceiling height of not less than 6 feet 8 inches

TOILET, BATH AND SHOWER SPACES [R307]

- 16. Bathtub and shower floors and walls above bathtubs with installed shower heads and in shower compartments shall be finished with nonabsorbent surface. Such wall surfaces shall extend to a height of not less than 6 feet.

SAFETY GLAZING [R308]

- 17. Permanently identified safety glazing shall be provided in the following locations:
 - a. Glazing in all doors.
 - b. Enclosures for hot tubs, whirlpools, saunas, steam rooms, bathtubs and showers. Glazing in any portion of a building wall enclosing these compartments where the bottom exposed edge of the glazing is less than 60 inches above a standing surface.
 - c. Glazing within 24 inches of either side of the door in the plane of the door in a closed position
 - d. Panels over 9 square feet having the bottom edge less than 18 inches above the floor and top edge greater than 36 inches above the floor and a walking surface within 36 inches.

- e. Glazing in guards and railing including structural baluster panels and all nonstructural in-fill panels.
- f. Glazing in walls and fences enclosing indoor and outdoor swimming pools, hot tubs and spas.
- g. Glazing adjacent to stairways, landing and ramps within 36 inches horizontally of a walking surface.

EMERGENCY ESCAPE AND RESCUE [R310]

- 18. Basements, habitable attics and every sleeping room shall have at least one operable emergency escape and rescue opening meeting the following conditions:
 - a. Maximum **sill height** 44 inches.
 - b. The opening shall open directly into a public way or to a yard or court that opens to a public way.
 - c. Openings shall have a minimum net clear opening of 5.7 square feet.
 - d. Minimum **opening height** shall be 24 inches.
 - e. Minimum **opening width** shall be 20 inches.
 - f. Opening shall be operational from the inside without the use of keys, tools or special knowledge.
- 19. Openings installed under decks, porches, and cantilevers:
 - a. Provide a path not less than 36 inches in height and 36 inches in width to a yard or court. (R310.2.4)
- 20. Area wells shall:
 - a. Have a minimum horizontal area of 9 square feet.
 - b. Have a minimum horizontal projection and width of 36 inches.
 - c. Allow the escape opening to be fully opened.
- 21. Area wells with a vertical depth greater than 44 inches shall:
 - a. Be equipped with a permanently affixed ladder or steps.
 - b. Ladders:
 - i. Shall have an inside width of at least 12 inches.
 - ii. Project at least 3 inches from the wall.
 - iii. Spaced not more than 18 inches on center vertically.
 - c. Steps:
 - i. Shall have an inside width of at least 12 inches.
 - ii. Minimum tread depth of 5 inches.
 - iii. Maximum riser height of 18 inches.

SMOKE ALARMS [R314]

- 22. Smoke alarms shall be listed per UL 217, installed per NFPA 72 and shall be California State Fire Marshal listed.
- 23. **Smoke alarms in new construction** shall be installed, maintained and connected in the following locations/manner: [R314.3, .4, .6]
 - a. In each sleeping room.
 - b. Outside each separate sleeping area in the immediate vicinity of the bedrooms.
 - c. On each additional story of the dwelling, including basement and split levels.
 - d. A minimum of 3 feet horizontally from the door or opening of a bathroom that contains a bathroom or shower.
 - e. When more than one smoke alarm is installed, the alarm devices shall be interconnected such that the actuation of one alarm will activate all the alarms.

- f. In hallways and in the room open to the hallway in dwelling units where the ceiling height of a room open to a hallway serving bedrooms exceeds that of the hallway by 24 inches or more. (R314.3 (5))
 - g. Smoke alarms shall receive their primary power from the building wiring and shall be equipped with a battery backup.
24. In **existing dwellings** where a permit for alterations, repairs or additions exceed \$1000 smoke alarms shall be installed, maintained and connected in the following locations/manner: [R314.2.2, .6, .8]
- a. The dwelling shall be equipped with smoke alarms located as require for new construction.
 - b. Smoke alarms are permitted to be solely battery operated where no construction is taking place.

CARBON MONOXIDE (CO) ALARMS [R315]

25. For **new dwelling** unit construction having an attached garage, fuel-burning appliances or a fireplace, an approved **carbon monoxide alarm** shall be installed, maintained and connected in the following locations/manner:
- a. Outside of each sleeping area in the immediate vicinity of the bedroom(s).
 - b. On every occupiable level of a dwelling unit including basements.
 - c. In the bedroom where a fuel burning appliance is located within the bedroom or its attached bathroom
 - d. Where more than one CO alarm is installed, the alarm shall be interconnected in a manner that activation of one alarm shall activate all of the alarms.
26. In **existing dwelling** units where an addition is made, or a fuel burning heater, appliance, or fireplace is added CO alarms shall be installed, maintained and connected in the following locations/manner: [R315.2.2]
- a. The dwelling shall be equipped with CO alarms located as require for new construction.
 - b. CO alarms are permitted to be solely battery operated where no construction is taking place.

PROTECTION OF WOOD AGAINST DECAY [R317]

27. **Protection against decay** shall be provided by the use of naturally durable or preservative-treated wood for:
- a. **Wood joists** or the bottom of a wood structural floor without joists are closer than 18 inches; wood **girders** closer than 12 inches to the exposed ground. [2304.12.1].
 - b. **Wood framing members**, including wood sheathing that rest on exterior foundation walls and are less than 8 inches from exposed earth. [2304.12.1.2]
 - c. **Sills and Sleepers** on a concrete or masonry slab that is in direct contact with earth. [2304.12.1.4]
 - d. The ends of **wood girders** entering exterior masonry or concrete walls having clearances of less than ½-inch air space. [2304.12.2.1]
 - e. **Wood structural members** that form the structural supports of buildings, balconies, porches or similar permanent building appurtenances where those members are exposed to the weather without adequate protection from a roof, eave, overhang or other covering that would prevent moisture or water accumulation on the surface or at joints between members. (R317.1 (8))

- 28. Clearance between **wood siding** and earth on the exterior of a building shall not be less than 6 inches. [2304.12.1.5]
- 29. **Fasteners and connectors** in contact with preservative-treated and fire-retardant-treated wood shall be hot dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper. [R317.3]:

PROTECTION AGAINST TERMITES [R318]

30. Wood construction shall be protected from termites by:
- a. Pressure-preservative-treated wood with a quality mark of an approved testing agency. Field-cut ends, notches and drilled holes shall be retreated.
 - b. Naturally durable termite-resistant wood.

EXTERIOR WILDFIRE EXPOSURE (VHFHSZ) (MALIBU AND CALABASAS) [R337]

31. For projects in the State identified Very High Fire Hazard Severity Zone, see the separate VHFHSZ Notes.

DOORS AND LANDINGS [R311.2-.3]

32. The egress door from individual dwelling units:
- a. Shall provide a minimum **clear width** of 32 inches
 - b. Shall be readily openable from the inside without the use of a key or special knowledge or effort.
 - c. There shall be a **floor or landing** on each side of each exterior door with a minimum dimension of 36 inches in the direction of travel.
33. The exterior landing shall not be more than 7-3/4 inches below the top of the threshold provided the door does not swing over the landing.
34. A landing is not required where a stairway of two or fewer risers is located on the exterior side of the door, provided the door does not swing over the stairway.

STAIRWAYS [R311.7]

35. Stairways shall not be less than 36 inches in **clear width**.
36. The maximum **riser height** shall be 7-3/4 inches and the minimum **tread depth** shall be 10 inches.
37. Dimensional uniformity: The greatest riser height and/or the greatest tread depth within any flight of stairs shall not exceed the smallest by more than 3/8 inch. [R311.7.5]
38. A flight of stairs shall not have a vertical rise larger than 147 inches. [R311.7.3]
39. **Enclosures** Under Stairways: [R302.7]
- a. The enclosed accessible spaces under stairways shall be protected on the enclosed side with 1/2-inch gypsum board.
40. **Handrails:** [R311.7.8]
- a. Stairways with 4 or more risers require a handrail on one side.
 - b. Handrail **height** above the stair tread nosing shall be uniform, not less than 34 inches and not more than 38 inches.
 - c. Handrails shall be continuous, shall be returned or terminate in newel posts and have a space of not less than 1-1/2 inch between the wall and the handrail.
41. **Grip-size:** [R311.7.8.5]
- a. Handrails with a circular cross-section shall have an outside diameter of at least 1.25 inches and not greater than 2 inches.
 - b. If not circular, the handrail shall have a perimeter dimension of at least 4 inches and not greater than

- 6.25 inches with a maximum cross-section dimension of 2.25 inches.
 - c. Handrails with a perimeter greater than 6-1/4 inches shall have a graspable finger recess on both sides of the profile.
42. **Landings: [R311.7.6]**
- a. There shall be a floor or landing at the top and bottom of each stairway.
 - b. A floor or landing is not required at the top of an interior flight of stairs provided a door does not swing over the stairs.
 - c. Landing minimum dimension shall be 36 inches in the direction of travel and not less than the width of the stair.

GUARDS (GUARDRAILS) [R312.1]

43. Where Required: [R312.1.1]
- a. Guards shall be located along open-sided walking surfaces, stairways and landings located more than 30 inches above the adjacent floor or grade below.
44. Height: [R312.1.2]
- a. Guards shall form a protective barrier not less than 42 inches height.
 - b. Guards whose top rail also serves as a stair handrail shall have a height not less than 34 inches and not more than 38 inches.
45. Opening Limitations: [R312.1.3]
- a. Open guards shall have a balusters or ornamental pattern such that 4 inch diameter sphere cannot pass through any opening.
 - b. The triangular openings formed by the riser, tread and bottom rail at the open side of a stairway shall be a maximum size such that a 6 inch sphere cannot pass.
 - c. Opening for required guard on the sides of stair treads shall not allow a sphere of 4.325 inches to pass.

WINDOW FALL PROTECTION [R312.2]

46. Window Sills [R312.2.1]:
- a. Where the opening of an operable window is located more than 72 inches above the finished grade/surface below, the lowest part of the clear opening of the window shall be a minimum of 24 inches above the finished floor.
 - b. Where less than 24 inches the operable sections shall not permit opening that allow passage of a 4 inch sphere.

AUTOMATIC FIRE SPRINKLER SYSTEMS [R313]

47. **New Construction Only:** An automatic residential fire sprinkler system shall be installed in new one- and two-family dwellings.
48. The fire sprinkler systems shall be designed and installed in accordance with R313.3 or NFPA 13D.

Ventilation Required Beneath Balcony or Elevated Walking Surfaces. [R317.1.3]

49. Enclosed framing in exterior balconies and elevated walking surface that exposed to rain, snow or drainage from irrigation shall be provided with opening that provide a new-free- cross ventilation. (R317.1.3)
- a. Show ventilation type, size, and location.

- b. The net free ventilating area shall not be less than 1/150 of the enclosed space.
- c. Ventilation openings shall be fully covered with Wildland Flame and Ember Resistant (WUI) vents approved and listed by the California State Fire Marshal, or WUI vents listed to ASTM E2886. (R337.6.2)
- d. A minimum of 1-in. airspace shall be provided between insulation and roof sheathing. (R806.3)

AGING-IN-PLACE DESIGN/FALL PROTECTION. [R327]

50. Newly constructed dwellings shall comply with R327 Aging-in-Place Design/Fall Prevention and shall be designed in accordance with R327.1.1 through R327.1.4.
- a. Provide blocking for grab bars at least one for first floor bathroom.
 - b. Outlets, switches, and doorbells shall be no more than 48-in. above the finish floor.

FOUNDATIONS: [Ch 4]

UNDERFLOOR VENTILATION AND ACCESS [R408]

51. The space between the bottom of the floor joists and the earth under any building shall be provided with **ventilation openings** through foundation or exterior walls.
52. The minimum net area of ventilation openings shall not be less than 1 square foot for each 150 square feet of crawl-space area. [R408.1 and .2]
53. Ventilation openings shall be covered with perforations not exceeding 1/4 inch.
54. Access to Under-floor Spaces: [R408.4]
- a. **Access** shall be provided with a minimum of one access opening not less than 18 inches by 24 inches through the floor or 16 inches by 24 inches if located in a wall.

FLOORS: [Ch 5]

55. **Drilling and Notching:** [502.8]
- a. Notches in solid lumber joists, rafters and beams:
 - i. Shall not exceed one-sixth of the depth.
 - ii. Shall not be longer than one-third of the depth.
 - iii. Shall not be located in the middle one-third of the span.
 - b. Holes bored or cut into members:
 - i. Shall not exceed one-third the depth.
 - ii. Shall not be closer than 2 inches to the top or bottom.
 - iii. Shall not be closer than 2 inches to a notch or other hole.
 - c. Cuts, notches and holes in trusses, composite or glue-laminated members or I-joists are prohibited except where permitted by the manufacturer.
56. **Post and beam or girder** construction shall be positively connected against uplift and displacement. [502.9]
57. **Wood trusses** shall be designed by an engineer and shall be submitted for review prior to installation. [502.11]

WALL CONSTRUCTION: [Ch 6]

58. **Top Plates:** [R602.3.2]

- a. Wood stud walls shall be capped with a double top plate to provide overlapping at corners and intersections with bearing partitions.
 - b. End joints shall be offset at least 24 inches.
59. **Bottom/Sole Plates** shall have full bearing on nominal 2X or larger plates/sills having a width at least equal to the stud. [R602.3.4]
60. **Drilling and Notching Studs:** [R602.6]
- a. Exterior wall or bearing studs may be cut or notched to a depth not exceeding 25% of its width.
 - b. Any stud may be bored/drilled not more than 60% of the width.
61. **Top plates cut, drilled or notched** more than 50% of its width, shall have a galvanized metal ties not less than 0.054 inch thick and 1-1/2 inches wide. The plates shall extend a minimum of 6 inches past the opening. [R602.6.1]

WALL COVERING: [Ch 7]

62. Water-resistant Gypsum Backing Board: [R702.3.7]
- a. May be used on ceilings
 - b. Shall not be installed over Class I or II vapor retarder in a shower or tub compartment.
 - c. Cut or exposed edges, including those at wall intersections shall be sealed.
 - d. Shall not be used where there will be direct exposure to water or continuous humidity.
63. **Weep Screed:** The weep screed shall be placed a minimum of 4 inches above the earth or 2 inches above paved areas and shall allow trapped water to drain. [R703.7.2.1]

ROOF-CEILING CONSTRUCTION: [Ch 8]

64. **Roof Drainage:** In areas where expansive or collapsible soils are known to exist, a controlled method of water disposal from roofs shall be provided that will collect and discharge roof drainage to the ground surface at a point at least 5 feet from the foundation. [R801.3]

ROOF/ATTIC VENTILATION [R806]

65. Enclosed Attic Spaces:
- a. **Enclosed attics and enclosed rafter spaces** formed where ceiling are applied directly to the underside of roof framing members (cathedral ceilings) shall have cross ventilation for each separate space by ventilating openings.
 - b. Ventilation openings shall be fully covered with Wildland Flame and Ember Resistant (WUI) vents approved and listed by the California State Fire Marshal, or WUI vents listed to ASTM E2886.
66. Minimum Area: [R806.2]
- a. The net free ventilating area shall not be less than 1/150 of the area of the space ventilated.
 - b. 1/300 may be used if 40 to 50 percent of the required ventilating area is provided by ventilators located in the upper portion of the attic or rafter space and are located within 3 feet below the ridge or highest point of the space, with the balance of ventilation provided by eave or cornice vents.
67. Unvented Attic Assemblies may be used if a design is submitted for review. [R806.5]

ATTIC ACCESS [R807]

68. An **opening** not less than 22 inches by 30 inches with a clear headroom of 30 inches, shall be provided to any combustible ceiling or roof construction **attic area** having a clear height 30 inches or greater and an area exceeding 30 square feet.
69. The **opening** shall be located in a hallway or other readily accessible location.
70. If located in a wall, the opening shall be a minimum of 22 inches wide by 30 inches high.
71. See CPC Sec. 508.4, CMC 304.4 and CEC 210.70 in these notes for access to mechanical equipment in the attic.

ROOF ASSEMBLIES: [Ch 9]

72. Weather Protection: [R903]
- a. **Flashing** shall be installed in a manner to prevent moisture entering the wall and roof.
 - b. Where **flashing** is of metal, the metal shall be corrosion resistant with a thickness of not less than 0.019 inch (No. 26 galvanized sheet metal).
73. Performance Requirements: [R902.1]
- a. Class A, B or C **roof coverings shall be listed** (UL 790 or ASTM E108) and identified and verified in the field prior to installation.

REQUIREMENTS FOR ROOF COVERINGS [R905]

74. All roof materials shall be installed per the manufacturer's installation instructions.
75. **Asphalt Shingles:** [R905.2]
- a. Asphalt shingles shall be fastened to solidly sheathed decks.
 - b. Deck slope shall be 2:12 or greater.
 - c. Asphalt shingles shall be secured to the roof with not less than four fasteners per strip shingle or two fasteners per individual shingle.
76. **Clay and Concrete Tile:** [R905.3]
- a. Concrete and clay tile shall be installed only over solid sheathing or spaced structural sheathing boards.
- Minimum Slope to Tile:
- b. Roof slope less than 2 ½ :12: One fastener per tile.
 - c. Roof slope 2 ½ :12 and over: Two fasteners per tile.
77. **Metal Roof Shingles:** [R905.4]
- a. Metal roof shingles shall be applied to solid or closely fitted deck.
 - b. Deck slope shall not be less than 3:12.
78. Mineral-surfaced Roll Roofing [R905.5]
- a. Shall be fastened to solidly sheathed roofs.
 - b. Deck slope shall be a minimum of 1:12.
79. Wood Shingles [R905.7]
- a. Wood shingles shall be installed on solid or spaced sheathing.
 - b. Deck slope shall be 3:12 or greater.
80. Wood Shakes [R905.8]
- a. Wood shakes shall be installed on solid or spaced sheathing.
 - b. Deck slope shall be 3:12 or greater.
81. Metal Roof Panels [R905.10]
- a. Metal roof panel coverings shall be applied to solid or spaced sheathing.
 - b. Slopes:

- i. Lapped, non-soldered seam without sealant: 3:12.
- ii. Lapped, non-soldered seam with sealant: ½:12.
- iii. Standing-seam: ¼:12.

CHIMNEYS AND FIREPLACES: [Ch 10]

CHIMNEY TERMINATION [R1003.9]

- 82. Chimneys shall extend at least 2 feet higher than any portion of a building within 10 feet, but shall not be less than 3 feet above the surrounding roof.
- 83. Wood burning fireplaces are generally not permitted by Air Quality Management District Rule 445.
- 84. All chimneys attached to any appliance or fireplace that burns solid fuel, where permitted, shall be equipped with an approved **spark arrester** meeting the following:
 - a. The net free area of the spark arrester shall not be less than four times the area of the outlet.
 - b. The spark arrester screen shall have heat and corrosion resistance equivalent to 12 gage wire, 19 gage galvanized wire or 24 gage stainless steel.
 - c. Opening shall not permit the passage of spheres having a diameter larger than ½ inch and shall not block the passage of spheres having a diameter of less than 3/8 inch.

PLUMBING SYSTEMS [2022 CPC]

GENERAL REGULATIONS [Ch 3]

- 85. All pipe, pipe fittings, traps, fixtures, material and devices used in a plumbing system shall be listed or labeled by a listing agency and shall conform to approved applicable recognized standards. [301.2]
- 86. Piping subject to corrosion, erosion, or mechanical damage shall be protected in an approved manner. [312.4]
- 87. Plastic and copper piping penetrating a framing members to within one inch of the exposed framing shall be protected by **steel nail plate/striker barrier** not less than 0.0478 inches in thickness. The steel nail plate shall extend along the framing member a minimum of 1-1/2 inches beyond the outside diameter of the piping or tubing. [312.9]
- 88. **Solder** and fluxes with a lead content that exceeds 0.20 of 1% shall be prohibited in piping systems used to convey potable water. [605.1.4]

PLUMBING FIXTURES AND FIXTURE FITTINGS [Ch 4]

- 89. Water-Conserving Fixtures and Fittings: [406.0]
 - a. **Shower Heads** shall not exceed 2.0 gallons per minute at 80 psi. [408.2]
 - b. **Faucets:**
 - i. Kitchens: shall not exceed 1.8 gallons per minute at 60 psi, with a temporary increase not exceeding 2.2 gallons per minute at 60 psi.
 - ii. Lavatories: shall not exceed 1.2 gallons per minute at 60 psi and shall not be less than 0.8 gallons per minute at 20 psi. In common and public use areas, shall not exceed 0.5 gallons per minute at 60 psi.
 - c. **Water closets** shall have an average consumption of not more than 1.28 gallons of water per flush.
 - d. More restrictive measure may be required by the CalGreen Code.

- 90. **Water closet** or bidet shall: [402.5]
 - a. Not be set closer than 15 inches from its center to any side wall or obstruction nor closer than 30 inches center to center to any fixture.
 - b. Have a clear space in front of not less than 24 inches.
- 91. **Shower compartments** shall have a minimum finished interior of 1,024 square inches and shall also be capable of encompassing a 30-inch circle to a height of 70 inches above the drain. [408.6]
- 92. **Shower control valves and showerheads** shall be located on the sidewall of shower or other approved arrangement. [408.9]
- 93. **Limitation of Hot Water in Bathtubs and Whirlpool Bathtubs.** The maximum hot water temperature discharging from the bathtub and whirlpool bathtub filler shall be limited to 120 degrees F. The water heater thermostat shall not be considered a control for meeting this provision. [409.4]
- 94. Installation of **Fixture Fittings:** [417.5]
 - a. Where two separate handles control the hot and cold water, the left-hand control shall control the hot water.
 - b. Single-handle mixing valves shall have the flow of hot water correspond to the marking on the fitting.
 - c. **Shower and tub-shower combinations** shall be provided with individual control valves of the pressure balance, thermostatic, or combination pressure balance/thermostatic mixing valve that provides scald and thermal shock protection conforming to ASSE 1016 or ASME A112.18.1. Handle positions shall be adjusted to deliver a maximum mixed water setting of 120 degrees F. [408.3]

WATER HEATERS [Ch 5]

- 95. Water heaters shall be provided with approved overpressure and over temperature protection. [504.4 and .5]
- 96. A minimum of 100 square inches of indoor **Combustion Air** shall be provided within 12 inches of the top and within 12 inches of the bottom. [506.3]
- 97. All new and replacement 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. At the lower point, a minimum distance of 4 inches shall be maintained above the controls. [507.2]
- 98. A water heater supported from the **ground** shall rest on level concrete not less than 3 inches above the adjoining ground level. [507.4]
- 99. When a water heater is located in an area where damage may result from a **leaking water** heater, a watertight pan of corrosion-resistant materials shall be installed beneath the water heater with a minimum three-quarter inch drain to an approved location. [507.5]
- 100. Installation in **Residential Garages:** [507.13]
 - a. Shall be installed so that all burners and burner-ignition devices are located not less than 18 inches above the floor.
 - b. Shall be protected so it is not subject to **physical damage** by a moving vehicle. Protection may require

the installation of a 3 inch steel pipe, 4 inch curb or wheel stop.

WATER SUPPLY AND DISTRIBUTION [Ch 6]

101. Faucets and diverters shall be connected to the water system so that **hot water** corresponds to the left side of the fittings. [417.5]
102. Backflow Prevention: [602.3]
 - a. Potable water outlets with hose attachments (other than water heater drains, boiler drains and clothes washer connections) shall be protected by a non-removable hose-bib-type backflow preventer. [603.5.7]

SANITARY DRAINAGE [Ch 7]

103. Horizontal drainage piping shall be run in practical alignment and a uniform slope of not less than ¼ inch per foot (2%). [708.1, 718.1]

VENTS [Ch 9]

104. Venting for Island Fixtures: [909.1]
 - a. Traps for island sinks shall be roughed in above the floor and may be vented by extending the vent as high as possible, but not less than the drain board height and then returning it downward and connecting it to the horizontal sink drain immediately downstream from the vertical fixture drain.

STORM DRAINAGE [Ch 11]

105. Where provided, **Secondary Roof Drains** shall be not less than two inches above the roof surface and shall have a separate piping system. [1101.12.2.2 and 1101.12.2.2.1]

FUEL PIPING [Ch 12]

106. Underground piping systems shall be installed with a minimum of 18 inches of cover; or 12 inches if damage is not likely to occur. [1210.1.1]
107. Concealed Piping: A steel striker barrier not less than 0.0508 inches thick shall be installed between the tubing and the finished wall and extends at least 4 inches beyond concealed penetrations of plates, fire stops and studs. [1210.4.3]
108. An accessible **gas shutoff valve** shall be provided upstream of each gas pressure regulator. [1210.9]
109. **Gas appliances** shall have an accessible manual shutoff valve within six feet of the appliance. [1212.6]

MECHANICAL SYSTEMS: [2022 CMC]

110. Protection Against Damage: [305.1]
 - a. Equipment generating a glow, spark or flame shall be installed with pilots and burners or heating elements and switches at least 18 inches above the floor level.
 - b. Appliances installed in garages subject to mechanical damage shall be guarded against damage. Protection may require the installation of a 3 inch steel pipe, 4 inch curb or wheel stop.
111. Electrical Connections: [301.4]
 - a. Equipment shall have a positive means of disconnect adjacent to and in sight from the equipment served.
 - b. A 120 V receptacle shall be located within 25 feet of the equipment for service and maintenance purposes.

112. Clothes Dryers: [504.4]
 - a. Moisture exhaust ducts shall terminate outside the building and shall be equipped with a back draft damper.
 - b. A minimum 4 inch metal duct with smooth interior surfaces shall be provided.
 - c. When installed in a closet, a minimum opening of 100 square inches for makeup air shall be provided in the door or other location.
 - d. Ducts shall not exceed a total combined horizontal and vertical length of 14 feet, including two 90 degree elbows unless permitted by the manufacturer.

COMBUSTION AIR [Ch 7]

113. The minimum indoor **combustion air volume** for gas utilization equipment shall be 50 cubic feet per 1000 Btu/hour. [701.4.1]

CHIMNEY AND VENTS [Ch 8]

114. Masonry, Metal and Factory-built Chimneys: [802.5]
 - a. **Factory-built Chimneys** shall be installed per their listing and manufacturer's instructions. Their listing shall be in accordance with UL 103, UL 959, or UL 2561.
 - b. **Masonry and Metal chimneys** shall be built and installed in accordance with **NFPA 211**.
 - c. A chimney shall extend at least 3 feet above the highest point where it passes through a roof and at least 2 feet higher than any portion of a building within 10 feet. [802.5.4]
 - d. **Decorative shrouds** shall not be installed at the termination of factory-built chimneys except where such shrouds are listed and labeled for use with the specific factory-built chimney system and are installed in accordance with manufacturers' installation instructions. [802.5.4.3]

INSTALLATION OF SPECIFIC APPLIANCES [Ch 9]

115. **Decorative appliances or vented gas fireplaces** shall not be installed in bathrooms or bedrooms unless the appliance is listed and the bedroom or bathroom has the required volume. [911, 912]
116. **Household Cooking Appliances:** [921]
 - a. Cooking appliances shall have a vertical clearance above the cooking top of not less than 30 inches to combustible material or metal cabinets.
 - b. Horizontal clearances shall be that specified by the permanent marking on the appliance.
117. **Wall Furnaces:** [907]
 - a. Listed wall furnaces shall be installed in accordance with their listing and the manufacturer's instructions.

PLUMBING AND MECHANICAL EQUIPMENT ON ROOFS OR IN ATTICS [CPC/CMC]

118. **Equipment on Roofs, Installation:** [CPC508.2.1/CMC303.8.4]
 - a. Equipment shall be installed on a well-drained surface of the roof.
 - b. At least 6 feet of clearance shall be available between any part of the equipment and the roof edge; or rigidly fixed rails, guards, parapets or other structure at least

- 42 inches in height shall be provided on the exposed side.
119. All equipment requiring an external source of electrical power shall be provided with: [CPC508.2.2/CMC303.8.5]
 - a. A readily accessible electrical disconnecting means within sight of the equipment that will completely de-energize the equipment.
 - b. A 120-V ac grounding-type receptacle outlet on the roof adjacent to the equipment and on the supply side of the disconnect switch.
 120. Access to Equipment on Roofs: [CPC508.3/CMC304.3]
 - a. Gas utilization equipment located on roofs/elevated locations shall be accessible.
 - b. Buildings more than 15 feet in height shall have an inside means of access, unless other means acceptable to the Authority Having Jurisdiction are used.
 121. Appliances in **Attics** shall: [CMC304.4/CMC904.10]
 - a. Be listed for attic installation and installed per manufacturer's instructions.
 - b. Be provided with access not less than **22 inches x 30 inches**.
 - c. Have a maximum distance to the appliance shall not exceed **20 feet**.
 - d. Have continuous **solid flooring** not less than 24 inches wide.
 - e. Have a level **working platform** not less than 30 inches x 30 inches in front of the service side.
 - f. Have a permanent 120-volt **receptacle outlet** and a **lighting fixture** with a switch located at the entrance to the passageway.

ELECTRICAL SYSTEMS: [2022 CEC]

122. **Ground-Fault Circuit-Interrupter Protection (GFCI):** [210.8]
 - a. All 125-volt, single-phase, 15- and 20-ampere receptacles installed in bathrooms, garages, accessory buildings, outdoors, crawl spaces (at or below grade), unfinished basements, kitchen countertop surfaces, and sinks (located in areas other than kitchens) where receptacles are installed within 6 feet of the sink edge shall have a ground-fault circuit-interrupter protection.
123. **Arc-Fault Circuit-Interrupter Protection (AFCI):** [210.12(A)(B)&(C)]
 - a. All 120-volt, single-phase 15- and 20-ampere branch circuits supplying outlets installed in dwelling or dormitory unit kitchen, family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways, laundry areas, or similar rooms or areas shall be protected by any of the means described in 210.12 (A) including
 - i. A listed combination-type Arc-Fault Circuit-Interrupter Protection (AFCI) installed to provide protection of the branch circuit.
 - ii. A listed branch/feeder-type AFCI in combination with a listed outlet branch-circuit type AFCI
 - iii. A listed supplemental arc protection circuit breaker in combination with a listed outlet branch-circuit type AFCI

- iv. A listed outlet branch-circuit type AFCI in combination with a listed branch-circuit overcurrent protectant device
- b. In any of the areas specified in 210.12(A) where branch-circuit wiring is modified, replaced, or extended, the branch-circuit shall be protected by one of the following:
 - i. A listed combination type AFCI located at the origin of the branch circuit.
 - ii. A listed outlet branch circuit type AFCI located at the first receptacle outlet.
124. **Receptacle Outlets:** Every kitchen, family room, dining room, living room, parlor, library, den, sunroom, bedroom, recreation room, or similar room or area shall have receptacle outlets installed in accordance with: [210.52(A)]
 - a. Receptacles shall be installed so that no point measured horizontally along the floor line in any wall space is more than 6 feet from a receptacle outlet.
 - b. **Wall Space** shall include: 1) Any space 2 feet or more in width (including space measure around corners) and unbroken along the floor line by doorways, fireplaces and similar openings. 2) The space occupied by fixed panels in exterior walls, excluding sliding panels. 3) The space afforded by fixed room dividers such as freestanding bar-type counters or railings
 - c. Receptacle outlets in or on **floors** shall not be counted as part of the required number of receptacle outlets unless located within 18 in. of the wall
 - d. Receptacles installed for countertop surfaces shall not be considered as the receptacles required.
125. Receptacle outlets in **kitchen and dining room counter spaces** shall be installed in accordance with: [210.52(C) through (C)(3)]
 - a. **Wall counter space outlets** shall be installed at each wall counter space that is 12 in. or wider and installed so that no point along the wall line is more than 24 in. from a receptacle outlet.
 - b. At least one receptacle shall be installed at each **island countertop** space with a long dimension of 24 in. or greater and a short dimension of 12 in. or greater.
 - c. At least one receptacle outlet shall be installed at each **peninsular countertop** space with along dimension of 24 in. or greater and a short dimension of 12 in. or greater.
 - d. **Counter outlets** shall be located on or above, but not more than 20 in. above the countertop.
126. At least one outlet shall be installed in **bathrooms** within 3 feet of the outside edge of each basin. [210.52(D)]
127. At least one outlet accessible at grade level and not more than 6-1/2 feet above grade shall be installed at the **front and back** of the dwelling. [210.52(E)(1)]
128. **Balconies, decks and porches** that are accessible from inside the dwelling shall have at least one receptacle outlet installed within the perimeter of the balcony, deck or porch. The receptacle outlet shall not be located more than 6-1/2 feet above the walking surface. [210.52(E)(3)]
129. At least one outlet shall be installed for the **laundry**. [210.52(F)]

130. At least one receptacle outlet, in addition to any provided for laundry equipment, shall be installed in each **basement** and in each **garage**. [210.52(G)]
131. **Hallways** 10 feet or more in length shall have at least one receptacle outlet. [210.52(H)]
132. **Foyers** that are not part of a hallway in accordance with 210.52(H) and that have an area that is greater than 60 ft² shall have a receptacle(s) located in each wall space 3 ft or more in width. Doorways, door-side windows that extend to the floor, and similar openings shall not be considered wall space. [210.52(I)]
133. A 125-volt, 15- or 20-ampere-rated receptacle outlet shall be installed at an accessible location for the servicing of **heating, air conditioning and refrigeration equipment**. The outlet shall be installed at the same level and within 25 feet of the equipment. [210.63]
134. **Lighting Outlets** shall be installed in and in accordance with: [210.70]
- At least one wall switch-controlled lighting outlet shall be installed in every **habitable room and bathroom**.
 - At least one wall switch-controlled lighting outlet shall be installed in hallways, stairways, and garages.
 - At least one wall switch-controlled lighting outlet shall be installed to provide illumination on the **exterior side of outdoor entrances or exits with grade level access**.
 - Where one or more lighting outlet(s) are installed for **interior stairways**, there shall be a wall switch at each floor level, and landing level that includes an entryway, to control the lighting outlet(s) where the stairway between floor levels has six risers or more.
 - For **attics, underfloor spaces, utility rooms and basements**, at least one lighting outlet containing a switch or controlled by a wall switch shall be installed where these spaces are used for storage or contain equipment requiring servicing. The lighting outlet shall be provided at or near the equipment requiring servicing.
135. Where NM Cable (**Romex**) is run across the top of accessible ceiling joists, protection within 6 feet of the nearest edge of the scuttle hole or attic entrance is required. [334.23, 320.23(A)]
136. **Receptacles**, Cord Connectors and Attachment Plugs [406]
- Receptacle faceplates shall be installed so as to completely cover the opening and seat against the mounting surface. [406.6]
 - Damp or Wet Locations:** [406.9]
 - All 15- and 20-ampere, 125- and 250-volt receptacles shall be listed weather-resistant type.
 - Receptacles shall not be installed within or directly over a bathtub or shower stall.
 - All 125-volt, 15- and 20-ampere receptacles in dwellings shall be listed **tamper-resistant**. [406.12]

CALIFORNIA ENERGY CODE

138. All applicable installation certificates and field verifications and diagnostic testing forms shall be completed and posted at the project site to be verified by the building inspector.
139. Per **High Efficacy Lighting** requirements of the Energy Code, show compliance to the following: [EnC 150(k)]
- All installed lighting shall be high efficacy
 - Electrical boxes that are more than 5 feet above the finished floor and do not contain a luminaire or other device shall be no greater than the number of bedrooms. Electrical boxes must be served by a dimmer, vacancy sensor control, or fan speed control.
 - All forward phase cut dimmers used with LED light sources shall comply with NEMA SSL 7A
 - Bathroom, garage, laundry, and utility room shall have at least one light controlled by a vacancy sensor in each space.
 - Exhaust fans with integral lighting system shall be switched separately from lighting system **OR** have a lighting system that can be manually turned on and off while allowing the fan to continue to operate for an extended period of time.
140. Newly constructed dwellings units (including detached ADU's) shall meet all requirements within CEnC 150.0(t)-(v) for electric ready measures for heat pump spaces heaters, cooktops, and clothes dryers.
141. See "mandatory measures form" for additional mandatory measures:
https://www.energy.ca.gov/sites/default/files/2022-08/2022_Residential_Mandatory_Measures_Summary_AD_A.pdf
142. Refer to Energy Code Ace for additional information:
<https://energycodeace.com/>

CAL AND CITY GREEN STANDARDS: [2022 CALGREEN CODE]

137. All applicable Residential Mandatory and selected Voluntary measures and City Green Code requirements as indicated in the project documents shall be completed per the approved plans.