RESIDENTIAL PLAN REVIEW SUPPLEMENT

THIS SUPPLEMENT IS AN OFFICIAL PART OF THE APPROVED PLANS AND MUST REMAIN ATTACHED TO THE PLANS.

The following is a reference guide used in review of residential plans and inspections. The items listed are based on the current California Building and County Codes. Whenever there is a conflict between this guide and the adopted/mandated Codes, the Codes shall govern.

GENERAL

1. ***Placer County uses the following Codes: 2010 California Building Code, 2010 California Residential Code(Seismic Design C or less), 2010 California Mechanical Code, 2010 California Plumbing Code, 2010 California Electrical Code, 2010 California Green Building Standards. The 2008 California Building Energy Efficiency Standards' (Residential Compliance Manual) is used for energy compliance. Some requirements are specified in Chapter 15 of the Placer County Code (PCC), adopted by ordinance 5629-B, effective January 1, 2011.***

2. SECTION R327 MATERIALS AND CONSTRUCTION METHODS FOR EXTERIOR WILDFIRE EXPOSURE. R327.1.3. New buildings located in any Fire Hazard Severity Zone or any Wildland-Urban Interface Fire Area designated by the enforcing agency constructed after the application date shall comply with the provisions of this chapter.
   Exceptions:
   a. Buildings of an accessory character classified as a Group U occupancy and not exceeding 120 square feet in floor area, when located at least 30 feet from an applicable building.
   b. Buildings of an accessory character classified as Group U occupancy less than 500 sq ft and located at least 50 feet from an applicable building. PCC 15.04.160
   c. Buildings classified as a Group U Agricultural Buildings, as defined by Placer County agricultural building exemption and as defined in Section 202 of this code (see also Appendix C - Group U Agricultural Buildings), when located at least 50 feet from an applicable building. PCC 15.04.160
   d. Additions to and remodels of buildings originally constructed prior to the applicable application date, unless remodel includes the replacement of roofing, siding, and windows as defined in Building Service Division policy manual. PCC 15.04.160
   e. Decks requiring permits, regardless of whether the deck is associated with a building built under these provisions or not, shall meet the construction requirements of CBC 7A and CRC R327, and will be required to meet the defensible space provisions. PCC 15.04.160
3. Approved numbers of addresses shall be placed on all new, remodeled and altered buildings in such a position as to be plainly visible and legible from the street or road fronting the property. Whenever the numbers on the building will not be clearly visible from the access street or road fronting the property, the numbers will be placed at the street or access road in a manner which is clearly visible from both directions of travel on the road/street. Said numbers shall be a minimum 4 inch letter height, 1/2 inch stroke, reflectorized, and contrast with their background, or may be a minimum 5 inches high and contrast with their background. (PCC Art 15.04.160 Section R319.1 Address Numbers

GRADING

1. Fill slopes steeper than 2 horizontal to 1 vertical shall be justified by soils reports or engineering data (CBC Appendix J107.6)
2. R401.3 Drainage. Lots shall be graded to drain surface water away from foundation walls. The grade shall fall a minimum of 6 inches (152 mm) within the first 10 feet. Impervious surfaces within 10 feet (3048 mm) of the building foundation shall be sloped a minimum of 2 percent away from the building.

FOUNDATION

1. All stumps and roots need to be removed to a depth of 12" below the surface in the building area. (CBC 3304.1)
2. SECTION R403 FOOTINGS R403.1 General. All exterior walls shall be supported on continuous solid or fully grouted masonry or concrete footings, crushed stone footings, wood foundations, or other approved structural

systems which shall be of sufficient design to accommodate all loads according to Section R301 and to transmit the resulting loads to the soil within the limitations as determined from the character of the soil. Footings shall be supported on undisturbed natural soils or engineered fill. Concrete footing shall be designed and constructed in accordance with the provisions of Section R403 or in accordance with ACI 332.

TABLE R403.1 MINIMUM WIDTH OF CONCRETE, PRECAST OR MASONRY FOOTINGS (inches)a

	LOAD-BEARING VALUE OF SOIL(psf)	
	1,500	2,000
Conventional light-framed construction		
1-story	12	12
2-story	15	12
8-inch solid or fully grouted masonry		
1-story	16	12
2-story	29	21

3. R403.1.1 Minimum size. Minimum sizes for concrete and masonry footings shall be as set forth in Table R403.1 and Figure R403.1(1). The footing width, W, shall be based on the load-bearing value of the soil in accordance with Table R401.4.1. Spread footings shall be at least 6 inches (152 mm) in thickness, T. Footing projections, P, shall be at least 2 inches (51 mm) and shall not exceed the thickness of the footing. The size of footings supporting piers and columns shall be based on the tributary load and allowable soil pressure in accordance with Table R401.4.1. Footings for wood foundations shall be in accordance with the details set forth in Section R403.2, and Figures R403.1 (2) and R403.1(3).

4. R403.1.4 Minimum depth. All exterior footings shall be placed at least 12 inches (305 mm) below the undisturbed ground surface. Where applicable, the depth of footings shall also conform to Sections R403.1.4.1 through R403.1.4.2.

5. For foundation systems consisting of a plain concrete footing and a plain concrete stem wall, a minimum of one bar shall be provided at the top of the stem wall and at the bottom of the footing. (CBC 1908.1.8 c Excep. #2.)

6. R403.1.5 Slope. The top surface of footings shall be level. The bottom surface of footings shall be permitted to have a slope not exceeding one unit vertical in 10 units horizontal (10-percent slope). Footings shall be stepped where it is necessary to change the elevation of the top surface of the footing or where the surface of the ground slopes more than one unit vertical in 10 units horizontal (10-percent slope). (CBC 1809.3, R403.1.5)

7. R403.1.6 & R403.1.6 Foundation anchorage. Sill plates and walls supported directly on continuous foundations shall be anchored to the foundation in accordance with this section.
Wood sole plates at all exterior walls on monolithic slabs, wood sole plates of braced wall panels at building interiors on monolithic slabs and all wood sill plates shall be anchored to the foundation with anchor bolts spaced a maximum of 6 feet (1829 mm) on center. Bolts shall be at least 1/2 inch (12.7 mm) in diameter and shall extend a minimum of 7 inches (178 mm) into concrete or grouted cells of concrete masonry units. A nut and washer shall be tightened on each anchor bolt. There shall be a minimum of two bolts per plate section with one bolt located not more than 12 inches (305 mm) or less than seven bolt diameters from each end of the plate section. Interior bearing wall sole plates on monolithic slab foundation that are not part of a braced wall panel shall be positively anchored with approved fasteners. Sill plates and sole plates shall be protected against decay and termites where required by Sections R317 and R318.

8. R506.1 General. Concrete slab-on-ground floors shall be a minimum 3.5 inches (89 mm) thick (for expansive soils, see Section R403.1.8). The specified compressive strength of concrete shall be as set forth in Section R402.2. R506.2.2 Base. A 4-inch-thick (102 mm) base course consisting of clean graded sand, gravel, crushed

stone or crushed blast-furnace slag passing a 2-inch (51 mm) sieve shall be placed on the prepared subgrade when the slab is below grade. R506.2.3 Vapor retarder. A 6 mil (0.006 inch; 152 µm) polyethylene or approved vapor retarder with joints lapped not less than 6 inches (152 mm) shall be placed between the concrete floor slab and the base course or the prepared subgrade where no base course exists.

9. R317.1 #2. All wood framing members that rest on concrete or masonry exterior foundation walls and are less than 8 inches (203 mm) from the exposed ground must be naturally durable wood or wood that is preservative-treated in accordance with AWPA U1 for the species, product, preservative and end use.

10. R317.1 #5. Wood siding, sheathing and wall framing on the exterior of a building having a clearance of less than 6 inches (152 mm) from the ground or less than 2 inches (51 mm) measured vertically from concrete steps, porch slabs, patio slabs, and similar horizontal surfaces exposed to the weather must be naturally durable wood or wood that is preservative-treated in accordance with AWPA U1 for the species, product, preservative and end use.

11. R317.1.4. Wood columns shall be approved wood of natural decay resistance or approved pressure-preservative-treated wood. **Exceptions:** #1. Columns exposed to the weather or in basements when supported by concrete piers or metal pedestals projecting 1 inch (25.4 mm) above a concrete floor or 6 inches (152 mm) above exposed earth and the earth is covered by an approved impervious moisture barrier. #2. Columns in enclosed crawl spaces or unexcavated areas located within the periphery of the building when supported by a concrete pier or metal pedestal at a height more than 8 inches (203mm) from exposed earth and the earth is covered by an impervious moisture barrier.

12. All fill material shall be compacted to 90 percent of maximum density as determined by ASTM 1557 Modified Proctor, in lifts not exceeding 12 inches in depth. (CBC Appendix J107.5)

13. R408.4. Access openings through the floor shall be a minimum of 18 inches by 24 inches (457 mm by 610 mm). Openings through a perimeter wall shall be not less than 16 inches by 24 inches (407 mm by 610 mm). When any portion of the through-wall access is below grade, an areaway not less than 16 inches by 24 inches (407 mm by 610 mm) shall be provided. The bottom of the areaway shall be below the threshold of the access opening. See the California Mechanical Code for access requirements where mechanical equipment is located under floors.

14. R406.1 Concrete and masonry foundation dampproofing. Except where required by Section R406.2 to be waterproofed, foundation walls that retain earth and enclose interior spaces and floors below grade shall be dampproofed from the top of the footing to the finished grade.

CONSTRUCTION

1. **General Construction Requirements:**

a. R317.1.2. All wood in contact with the ground, embedded in concrete in direct contact with the ground or embedded in concrete exposed to the weather that supports permanent structures intended for human occupancy shall be approved pressure-preservative-treated wood suitable for ground contact use.

b. R317.1 #1. Wood joists or the bottom of a wood structural floor when closer than 18 inches (457 mm) or wood girders when closer than 12 inches (305 mm) to the exposed ground in crawl spaces or unexcavated area located within the periphery of the building foundation must be naturally durable wood or wood that is preservative-treated in accordance with AWPA U1 for the species, product, preservative and end use.

c. R317.1 #3. Sills and sleepers on a concrete or masonry slab that is in direct contact with the ground unless separated from such slab by an impervious moisture barrier must be naturally durable wood or wood that is preservative-treated in accordance with AWPA U1 for the species, product, preservative and end use.

d. R317.1 #4. The ends of wood girders entering exterior masonry or concrete walls having clearances of less than 1/2 inch (12.7 mm) on tops, sides and ends must be naturally durable wood or wood that is preservative-treated in accordance with AWPA U1 for the species, product, preservative and end use.

e. R408.2 Openings for under-floor ventilation. The minimum net area of ventilation openings shall not be less than 1 square foot (0.0929 m2) for each 150 square feet (14 m2) of under-floor area. One ventilation opening shall be within 3 feet (915 mm) of each corner of the building. Ventilation openings shall be covered for their height and width with any of the following materials provided that the least dimension of the covering shall not exceed 1/4 inch.

f. R317.1.1 Field treatment. Field-cut ends, notches and drilled holes of preservative-treated wood shall be treated in the field in accordance with AWPA M4.
g. R317.1.5 Exposed glued-laminated timbers. The portions of glued-laminated timbers that form the structural supports of a building or other structure and are exposed to weather and not properly protected by a roof, eave or similar covering shall be pressure treated with preservative, or be manufactured from naturally durable or preservative- treated wood.
h. CRC 302.12, CBC 717.3.3 & PCC Art 15.04.136 b. Draftstopping shall be installed in residential occupancies so that concealed horizontal floor areas do not exceed 1,000 square feet (93 m2) and area divide the concealed space into approximately equal areas.
i. R302.11 Fireblocking. In combustible construction, fireblocking shall be provided to cut off all concealed draft openings (both vertical and horizontal) and to form an effective fire barrier between stories, and between a top story and the roof space. Examples: Horizontally at intervals not exceeding 10 feet, At all interconnections between concealed vertical and horizontal spaces such as occur at soffits, drop ceilings and cove ceilings, for the fireblocking of chimneys and fireplaces, see Section R1003.19, etc…
j. R502.9 Fastening. Where posts and beam or girder construction is used to support floor framing, positive connections shall be provided to ensure against uplift and lateral displacement. R407.3 In columns no more than 48" in height on a pier or footing are exempt from bottom end lateral displacement when within the under-floor areas enclosed by continuous foundation.
k. R317.3. Fasteners for preservative-treated wood shall be of hot dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper. **Exceptions:** One-half-inch (12.7 mm) diameter or greater steel bolts.
l. R311.5.1. Exterior landings, decks, balconies, stairs and similar facilities shall be positively anchored to the primary structure to resist both vertical and lateral forces or shall be designed to be self-supporting. Attachment shall not be accomplished by use of toenails or nails subject to withdrawal.

2. **Floor Framing Requirements:**

a. R502.6 Bearing. The ends of each joist, beam or girder shall have not less than 1.5 inches (38 mm) of bearing on wood or metal and not less than 3 inches (76 mm) on masonry or concrete except where supported on a 1-inch-by-4-inch (25.4 mm by 102 mm) ribbon strip and nailed to the adjacent stud or by the use of approved joist hangers.
b. R502.7. Joists shall be supported laterally at the ends by full-depth solid blocking not less than 2 inches (51 mm) nominal in thickness; or by attachment to a full-depth header, band or rim joist, or to an adjoining stud or shall be otherwise provided with lateral support to prevent rotation.
c. R502.10. Openings in floor framing shall be framed with a header and trimmer joists. When the header joist span does not exceed 4 feet (1219 mm), the header joist may be a single member the same size as the floor joist. Single trimmer joists may be used to carry a single header joist that is located within 3 feet (914 mm) of the trimmer joist bearing. When the header joist span exceeds 4 feet (1219 mm), the trimmer joists and the header joist shall be doubled and of sufficient cross section to support the floor joists framing into the header. Approved hangers shall be used for the header joist to trimmer joist connections when the header joist span exceeds 6 feet (1829 mm). Tail joists over 12 feet (3658 mm) long shall be supported at the header by framing anchors or on ledger strips not less than 2 inches by 2 inches (51 mm by 51 mm).
d. R502.4. Joists under parallel bearing partitions shall be of adequate size to support the load. Double joists, sized to adequately support the load, that are separated to permit the installation of piping or vents shall be full depth solid blocked with lumber not less than 2 inches (51 mm) in nominal thickness spaced not more than 4 feet (1219 mm) on center. Bearing partitions perpendicular to joists shall not be offset from supporting girders, walls or partitions more than the joist depth unless such joists are of sufficient size to carry the additional load.

3. **Wall Framing Requirements:**

a. R602.3.1. The size, height and spacing of studs shall be in accordance with Table R602.3. (5). Exceptions: 1. Utility grade studs shall not be spaced more than 16 inches (406 mm) on center, shall not

support more than a roof and ceiling, and shall not exceed 8 feet (2438 mm) in height for exterior walls and load-bearing walls or 10 feet (3048 mm) for interior nonload-bearing walls. 2. Studs more than 10 feet (3048 mm) in height which are in accordance with Table R602.3.1.

b. R602.3.2 Top plate. Wood stud walls shall be capped with a double top plate installed to provide overlapping at corners and intersections with bearing partitions. Plates shall be not less than 2-inches (51 mm) nominal thickness and have a width at least equal to the width of the studs. Double Top plate Nailing see Table R602.3 (1) #12 & 13.
c. R602.7. For header spans see Tables R502.5 (1) and R502.5(2).
d. R602.9. Foundation cripple walls shall be framed of studs not smaller than the studding above. When exceeding 4 feet (1219 mm) in height, such walls shall be framed of studs having the size required for an additional story.
   Cripple walls with a stud height less than 14 inches (356 mm) shall be sheathed on at least one side with a wood structural panel that is fastened to both the top and bottom plates in accordance with Table R602.3(1), or the cripple walls shall be constructed of solid blocking. Cripple walls shall be supported on continuous foundations.

4. **Wall Bracing Requirements:**

a. R602.10 Wall bracing. Buildings shall be braced in accordance with this section. Where a building, or portion thereof, does not comply with one or more of the bracing requirements in this section, those portions shall be designed and constructed in accordance with Section R301.1.
   Exception: Detached one- and two-family dwellings located in Seismic Design Category C are exempt from the seismic bracing requirements of this section. Wind speed provisions for bracing shall be applicable to detached one- and two-family dwellings.

5. **Roof and Ceiling Framing Requirements:**

a. R802.3. Framing details. Rafters shall be framed to ridge board or to each other with a gusset plate as a tie. Ridge board shall be at least 1-inch (25 mm) nominal thickness and not less in depth than the cut end of the rafter. At all valleys and hips there shall be a valley or hip rafter not less than 2-inch (51 mm) nominal thickness and not less in depth than the cut end of the rafter. Hip and valley rafters shall be supported at the ridge by a brace to a bearing partition or be designed to carry and distribute the specific load at that point. Where the roof pitch is less than three units vertical in 12 units horizontal (25-percent slope), structural members that support rafters and ceiling joists, such as ridge beams, hips and valleys, shall be designed as beams.
b. R802.3.1. Collar ties or ridge straps to resist wind uplift shall be connected in the upper third of the attic space in accordance with Table R602.3 (1).
   Collar ties shall be a minimum of 1-inch by 4-inch (25 mm by 102 mm) (nominal), spaced not more than 4 feet (1219 mm) on center.
c. R802.4 Allowable ceiling joist spans. Spans for ceiling joists shall be in accordance with Tables R802.4(1) and R802.4(2).
d. R802.5.1. Purlins shall be sized no less than the required size of the rafters that they support. Purlins shall be continuous and shall be supported by 2-inch by 4-inch braces installed to bearing walls at a slope not less than 45 degrees from the horizontal. The braces shall be spaced not more than 4 feet on center and the unbraced length of braces shall not exceed 8 feet.
e. R802.8 Lateral support. Roof framing members and ceiling joists having a depth-to-thickness ratio exceeding 5 to 1 based on nominal dimensions shall be provided with lateral support at points of bearing to prevent rotation.
f. R803.2.3. Wood structural panel used as roof sheathing shall be installed with joints staggered or not staggered in accordance with Table R602.3(1), or APA E30 for wood roof framing.
g. R317.1.4. Wood columns shall be approved wood of natural decay resistance or approved pressure-preservative-treated wood. Exceptions: 1. Columns exposed to the weather or in basements when supported by concrete piers or metal pedestals projecting 1 inch (25.4 mm) above a concrete floor or 6

inches (152 mm) above exposed earth and the earth is covered by an approved impervious moisture barrier.

h. R703.2. One layer of No. 15 asphalt felt, free from holes and breaks, complying with ASTM D 226 for Type 1 felt or other approved water-resistive barrier shall be applied over studs or sheathing of all exterior walls. Such felt or material shall be applied horizontally, with the upper layer lapped over the lower layer not less than 2 inches (51 mm). Where joints occur, felt shall be lapped not less than 6 inches (152 mm). The felt or other approved material shall be continuous to the top of walls and terminated at penetrations and building appendages in a manner to meet the requirements of the exterior wall envelope as described in Section R703.1.

ROOF

1. Class A roofing assembly is required in all areas of Placer County. All new construction, including additions, requires Class A as noted above. All re-roofing requires Class A as noted above. Re-roofing in excess of 50% of an existing structure within any one-year period will require upgrading the entire roof to the required classification. (PCC Art 15.04.175 #2 C & D)

2. R807.1 Attic access. Buildings shall have an attic access opening to attic areas that exceed 30 square feet (2.8 m2) and have a vertical height of 30 inches (762 mm) or greater.
The rough-framed opening shall not be less than 22 inches by 30 inches (559 mm by 762 mm) and shall be located in a hallway or other readily accessible location. See the California Mechanical Code for access requirements where mechanical equipment is located in attics.

3. R806.2. Roof Ventilation. The total net free ventilating area shall not be less than 1/150 of the area of the space ventilated except that reduction of the total area to 1/300 is permitted provided that at least 50 percent and not more than 80 percent of the required ventilating area is provided by ventilators located in the upper portion of the space to be ventilated at least 3 feet (914 mm) above the eave or cornice vents with the balance of the required ventilation provided by eave or cornice vents.

4. R806.3 Vent and insulation clearance. Where eave or cornice vents are installed, insulation shall not block the free flow of air. A minimum of a 1-inch (25 mm) space shall be provided between the insulation and the roof sheathing and at the location of the vent.

5. Openable skylights need to be at least 10' from plumbing vents. (CPC 906.2)

6. Solid sheathing is required in areas of 30# or greater roof snow load, or when specified by the roofing manufacturer, or when required by engineered design. (PCC ART 15.04.175)

7. CBC 717.4.3 & PCC 15.04.175. Residential Draftstopping shall be installed in attics and concealed roof spaces, such that any horizontal area does not exceed 3,000 square feet. Draft stopping shall divide the concealed space into approximately equal areas.

FIRE/LIFE/SAFETY

1. R313.2. An automatic residential fire sprinkler system shall be installed in one- and two- family *dwellings*.
Exception: An automatic residential fire sprinkler system shall not be required for *additions* or *alterations* to existing buildings that are not already provided with an automatic residential sprinkler system.

2. *R313.3.1.1* Required sprinkler locations. Sprinklers shall be installed to protect all areas of a *dwelling unit.*
Exceptions: 1. Attics, crawl spaces and normally unoccupied concealed spaces that do not contain fuel-fired appliances do not require sprinklers. In *attics*, crawl spaces and normally unoccupied concealed spaces that contain fuel-fired equipment, a sprinkler shall be installed above the equipment; however, sprinklers shall not be required in the remainder of the space. 2. Clothes closets, linen closets and pantries not exceeding 24 square feet (2.2 m^2) in area, with the smallest dimension not greater than 3 feet (915 mm) and having wall and ceiling surfaces of gypsum board. 3. Bathrooms not more than 55 square feet (5.1m2) in area. 4. *Detached g*arages; carports *with no habitable space above; open attached* porches; unheated entry areas, such as mud rooms, that are adjacent to an exterior door; and similar areas.

3. *R313.3.2.4.2*. Sprinkler discharge shall not be blocked by obstructions unless additional sprinklers are installed to protect the obstructed area. Sprinkler separation from obstructions shall comply with the minimum distances specified in the sprinkler manufacturer's instructions, *and/or the provisions of NFPA 13D*.
4. *R313.3.2.4.2.1*. Pendent sprinklers within 3 feet (915 mm) of the center of a ceiling fan, surface-mounted ceiling luminaire or similar object shall be considered to be obstructed, and additional sprinklers shall be installed.
5. *R313.3.2.6*. Painting, caulking or modifying of sprinklers shall be prohibited. Sprinklers that have been painted, caulked, modified or damaged shall be replaced with new sprinklers.
6. *R313.3.3.2*. With the exception of shutoff valves for the entire water distribution system, valves shall not be installed in any location where the valve would isolate piping serving one or more sprinklers.
7. *R313.3.3.4*. A means to drain the sprinkler system shall be provided on the system side of the water distribution shutoff valve.
8. *R313.3.7* **Instructions and signs.** An owner's manual for the fire sprinkler system shall be provided to the owner. A sign or valve tag shall be installed at the main shutoff valve to the water distribution system stating the following: "Warning, the water system for this home supplies fire sprinklers that require certain flows and pressures to fight a fire. Devices that restrict the flow or decrease the pressure or automatically shut off the water to the fire sprinkler system, such as water softeners, filtration systems and automatic shutoff valves, shall not be added to this system without a review of the fire sprinkler system by a fire protection specialist. Do not remove this sign."
9. R302.6 Dwelling/garage and/or carport fire separation. The garage and/or carport shall be separated as required by Table R302.6. Openings in garage walls shall comply with Section R302.5. This provision does not apply to garage walls that are perpendicular to the adjacent dwelling unit wall. A separation is not required between the dwelling unit and a carport, provided the carport is entirely open on two or more sides and there are not enclosed areas above. R302.5.1. Openings from a private garage directly into a room used for sleeping purposes shall not be permitted. Other openings between the garage and residence shall be equipped with solid wood doors not less than 1-3/8 inches (35 mm) in thickness, solid or honeycomb core steel doors not less than 1-3/8 inches (35 mm) thick, or 20-minute fire-rated doors. Doors shall be self-closing and self-latching.
   Exception: Where the residence and the private garage are protected by an automatic residential fire sprinkler system in accordance with Sections R309.6 and R313, other door openings between the private garage and the residence need only be self-closing and self-latching.
10. R302.5.2 Duct penetration. 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 (0.48 mm) sheet steel or other approved material and shall have no openings into the garage. R302.5.3 Other penetrations at openings around vents, pipes, ducts, cables and wires at ceiling and floor level, with an approved material to resist the free passage of flame and products of combustion. The material filling this annular space shall not be required to meet the ASTM E 136 requirements.

Table R302.6 Dwelling/Garage &/or Carport Separation

SEPARATION	MATERIAL
From residence and attics	Not less than 1/2-inch gypsum board or equivalent applied to the garage side
From all habitable rooms above the garage or carport	Not less than 5/8-inch Type X gypsum board or equivalent
Structure(s) supporting floor/ceiling assemblies used for separation required by this section	Not less than 1/2-inch gypsum board or equivalent
Garages located less than 3 feet from a dwelling unit on the same lot	Not less than 1/2-inch gypsum board or equivalent applied to the interior side of exterior walls that are within this area

11. R302.7 Under-stair protection. Enclosed accessible space under stairs shall have walls, under-stair surface and any soffits protected on the enclosed side with 1/2-inch (12.7 mm) gypsum board.

12. R302.11 Fireblocking. In combustible construction, fireblocking shall be provided to cut off all concealed draft openings (both vertical and horizontal) and to form an effective fire barrier between stories, and between a top story and the roof space. Fireblocking shall be provided in wood-frame construction in the following locations:

a. In concealed spaces of stud walls and partitions, including furred spaces and parallel rows of studs or staggered studs, as follows:
    i. Vertically at the ceiling and floor levels.
    ii. Horizontally at intervals not exceeding 10 feet.
b. At all interconnections between concealed vertical and horizontal spaces such as occur at soffits, drop ceilings and cove ceilings.
c. In concealed spaces between stair stringers at the top and bottom of the run. Enclosed spaces under stairs shall comply with Section R302.7.
d. At openings around vents, pipes, ducts, cables and wires at ceiling and floor level, with an approved material to resist the free passage of flame and products of combustion. The material filling this annular space shall not be required to meet the ASTM E 136 requirements.
e. For the fireblocking of chimneys and fireplaces, see Section R1003.19.
f. Fireblocking of cornices of a two-family dwelling is required at the line of dwelling unit separation.

13. Fuel burning furnaces and water heaters located in bedrooms or bathrooms shall comply with one of the following:

a. Fuel-burning furnaces and water heaters, may be installed in the bedroom or bathroom, provided the closet is equipped with a listed, gasketed door assembly with threshold and a listed self-closing device. The self-closing door assembly shall meet the requirements of Section CPC 505.1.1 and/or CMC 904.1.1. All combustion air for such installations shall be obtained from the outdoors in accordance with Section CPC 507.4. The closet shall be for the exclusive use of the fuel-burning water heaters and central heating.
b. Fuel-burning furnaces and water heaters shall be of the direct vent type. (CPC 505.1 & CMC 904.1)

14. R314.3 Location. Smoke alarms shall be installed in the following locations: In each sleeping room, outside each separate sleeping area in the immediate vicinity of the bedrooms, on each additional story of the dwelling, including basements and habitable attics but not including crawl spaces and uninhabitable attics. In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level. When more than one smoke alarm is required to be installed within an individual dwelling unit the alarm devices shall be interconnected in such a manner that the actuation of one alarm will activate all of the alarms in the individual unit. R314.5. The alarm shall be clearly audible in all bedrooms over background noise levels with all intervening doors closed.

15. R314.4 Power source. Smoke alarms shall receive their primary power from the building wiring provided that such wiring is served from a commercial source and shall be equipped with a battery backup. Smoke alarms with integral strobes that are not equipped with battery backup shall be connected to an emergency electrical system. Smoke alarms shall emit a signal when the batteries are low. Wiring shall be permanent and without a disconnecting switch other than as required for overcurrent protection.

Exceptions: 1. Smoke alarms are permitted to be solely battery operated in existing buildings where no construction is taking place. 2. Smoke alarms are permitted to be solely battery operated in buildings that are not served from a commercial power source. 3. Smoke alarms are permitted to be solely battery operated in existing areas of buildings undergoing alterations or repairs that do not result in the removal of interior walls or ceiling finishes exposing the structure, unless there is an attic, crawl space or basement available which could provide access for building wiring without the removal of interior finishes.

16. R315.1 Carbon monoxide alarms. For new construction, an approved carbon monoxide alarm shall be installed in *dwelling units and in sleeping units* within which fuel-*burning appliances* are installed and in dwelling units that have attached garages.

17. *R315.1.1 Power supply. For new construction required carbon monoxide alarms shall receive their primary power from the building wiring where such wiring is served from a commercial source and shall be equipped with a battery back-up. Alarm wiring shall be directly connected to the permanent building wiring without a disconnecting switch other than as required for overcurrent protection.*

Exceptions: *1. In dwelling units where there is no commercial power supply the carbon monoxide alarm may be solely battery operated. 2. In existing dwelling units a carbon monoxide alarm is permitted to be solely battery operated where repairs or alterations do not result in the removal of wall and ceiling finishes or there is no access by means of attic, basement or crawl space.*

18. *R315.1.2 Interconnection. Where more than one carbon monoxide alarm is required to be installed within the dwelling unit or within a sleeping unit the alarm shall be interconnected in a manner that activation of one alarm shall activate all of the alarms in the individual unit.*

Exception: *1. Interconnection is not required in existing dwelling units where repairs do not result in the removal of wall and ceiling finishes, there is no access by means of attic, basement or crawl space, and no previous method for interconnection existed.*

19. **R315.2.** Where a permit *is required for alterations, repairs or additions exceeding one thousand dollars ($1,000)*, existing dwellings *or sleeping units* that have attached garages or fuel-*burning* appliances shall be provided *with a carbon monoxide alarm* in accordance with Section R315.1. *Carbon monoxide alarms shall only be required in the specific dwelling unit or sleeping unit for which the permit was obtained.*

20. R315.3 Alarm requirements. *Carbon monoxide alarms and carbon monoxide detectors* shall be installed in accordance with this code, *the current edition of NFPA 720 "Standard for the Installation of Carbon Monoxide (CO) Detection and Warning Equipment"* and the manufacturer's installation instructions. *Other carbon monoxide alarm and detection devices as recognized in NFPA 720 are also acceptable. Carbon monoxide alarms required by Sections R315.1 and R315.2 shall be installed in the following locations: 1. Outside of each separate dwelling unit sleeping area in the immediate vicinity of the bedroom(s). 2. On every level of a dwelling unit including basements.*

21. R305.1 Minimum ceiling height. Habitable space, hallways, bathrooms, toilet rooms, laundry rooms and portions of basements containing these spaces shall have a ceiling height of not less than 7 feet (2134 mm).

Exceptions: 1. For rooms with sloped ceilings, at least 50 percent of the required floor area of the room must have a ceiling height of at least 7 feet (2134 mm) and no portion of the required floor area may have a ceiling height of less than 5 feet (1524 mm). 2. Bathrooms shall have a minimum ceiling height of 6 feet 8 inches (2032 mm) at the center of the front clearance area for fixtures. A shower or tub equipped with a showerhead shall have a minimum ceiling height of 6 feet 8 inches (2032 mm) above a minimum area 30 inches (762 mm) by 30 inches (762 mm) at the showerhead.

22. R308.4 Glazing in Hazardous Locations.

a. 2. Glazing in an individual fixed or operable panel adjacent to a door where the nearest vertical edge is within a 24-inch (610 mm) arc of the door in a closed position and whose bottom edge is less than 60 inches (1524 mm) above the floor or walking surface. Exception 5. Glazing that is adjacent to the fixed panel of patio doors.
b. 3. Glazing in an individual fixed or operable panel that meets all of the following conditions: 3.1. The exposed area of an individual pane is larger than 9 square feet (0.836 m2); and 3.2. The bottom edge of the glazing is less than 18 inches (457 mm) above the floor; and 3.3. The top edge of the glazing is more than 36 inches (914 mm) above the floor; and 3.4. One or more walking surfaces are within 36 inches (914 mm), measured horizontally and in a straight line, of the glazing.
c. 5. Glazing in enclosures for or walls facing hot tubs, whirlpools, saunas, steam rooms, bathtubs and showers where the bottom exposed edge of the glazing is less than 60 inches (1524 mm) measured vertically above any standing or walking surface. **Exception:** Glazing that is more than 60 inches (1524 mm), measured horizontally and in a straight line, from the water's edge of a hot tub, whirlpool or bathtub.
d. 6. Glazing in walls and fences adjacent to indoor and outdoor swimming pools, hot tubs and spas where the bottom edge of the glazing is less than 60 inches (1524 mm) above a walking surface and within 60 inches (1524 mm), measured horizontally and in a straight line, of the water's edge. This shall apply to single glazing and all panes in multiple glazing.
e. 7. Glazing adjacent to stairways, landings and ramps within 36 inches (914 mm) horizontally of a walking surface when the exposed surface of the glazing is less than 60 inches (1524 mm) above the plane of the adjacent walking surface.

f. 8. Glazing adjacent to stairways within 60 inches (1524 mm) horizontally of the bottom tread of a stairway in any direction when the exposed surface of the glazing is less than 60 inches (1524 mm) above the nose of the tread.

23. R310.1. Basements, habitable attics and every sleeping room shall have at least one operable emergency escape and rescue opening. Where basements contain one or more sleeping rooms, emergency egress and rescue openings shall be required in each sleeping room. Where emergency escape and rescue openings are provided they shall have a sill height of not more than 44 inches (1118 mm) above the floor. Where a door opening having a threshold below the adjacent ground elevation serves as an emergency escape and rescue opening and is provided with a bulkhead enclosure, the bulkhead enclosure shall comply with Section R310.3. The net clear opening dimensions required by this section shall be obtained by the normal operation of the emergency escape and rescue opening from the inside. Emergency escape and rescue openings with a finished sill height below the adjacent ground elevation shall be provided with a window well in accordance with Section R310.2. Emergency escape and rescue openings shall open directly into a public way, or to a yard or court that opens to a public way.

24. R310.1.1. All emergency escape and rescue openings shall have a minimum net clear opening of 5.7 square feet. Exception: Grade floor openings shall have a minimum net clear opening of 5 square feet.R310.1.2. The minimum net clear opening height shall be 24 inches (610 mm). R310.1.3. The minimum net clear opening width shall be 20 inches (508 mm). R310.1.4. Emergency escape and rescue openings shall be maintained free of any obstructions other than those allowed by this section and shall be operational from the inside of the room without the use of keys, tools or special knowledge.

25. R311.1 Means of egress. All dwellings shall be provided with a means of egress as provided in this section. The means of egress shall provide a continuous and unobstructed path of vertical and horizontal egress travel from all portions of the dwelling to the exterior of the dwelling at the required egress door without requiring travel through a garage.

26. R311.2. At least one egress door shall be provided for each dwelling unit. The egress door shall be side-hinged, and shall provide a minimum clear width of 32 inches (813 mm) when measured between the face of the door and the stop, with the door open 90 degrees (1.57 rad). Egress doors shall be readily openable from inside the dwelling without the use of a key or special knowledge or effort.

27. R311.3. There shall be a landing or floor on each side of each exterior door. The width of each landing shall not be less than the door served. Every landing shall have a minimum dimension of 36 inches measured in the direction of travel. Exterior landings shall be permitted to have a slope not to exceed 1/4 unit vertical in 12 units horizontal (2-percent).

28. R311.3.1 Floor elevations at the required egress doors. Landings or floors at the required egress door shall not be more than 1-1/2 inches lower than the top of the threshold.
Exception: The exterior landing or floor shall not be more than 7-3/4 inches below the top of the threshold provided the door does not swing over the landing or floor.
When exterior landings or floors serving the required egress door are not at grade, they shall be provided with access to grade by means of a ramp in accordance with Section R311.8 or a stairway in accordance with Section R311.7.

29. R311.3.2. Doors other than the required egress door shall be provided with landings or floors not more than 7-3/4 inches below the top of the threshold.
Exception: 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.

30. R311.3.3. Storm and screen doors shall be permitted to swing over all exterior stairs and landings.

STAIRS/DECK

1. R311.7.4 Stair treads and risers. Stair treads and risers shall meet the requirements of this section. For the purposes of this section all dimensions and dimensioned surfaces shall be exclusive of carpets, rugs or runners.

2. R311.7.4.1 Riser height. The maximum riser height shall be 7-3/4 inches (196 mm). The riser shall be measured vertically between leading edges of the adjacent treads. The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm).

3. R311.7.4.2 Tread depth. The minimum tread depth shall be 10 inches (254 mm). The tread depth shall be measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right

angle to the tread's leading edge. The greatest tread depth within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm). Consistently shaped winders at the walk-line shall be allowed within the same flight of stairs as rectangular treads and do not have to be within 3/8 inch (9.5 mm) of the rectangular tread depth. Winder treads shall have a minimum tread depth of 10 inches (254 mm) measured between the vertical planes of the foremost projection of adjacent treads at the intersections with the walk-line. Winder treads shall have a minimum tread depth of 6 inches (152 mm) at any point within the clear width of the stair. Within any flight of stairs, the largest winder tread depth at the walk-line shall not exceed the smallest winder tread by more than 3/8 inch.

4. R311.7.4.3 Profile. The radius of curvature at the nosing shall be no greater than 9/16 inch (14 mm). A nosing not less than 3/4 inch (19 mm) but not more than 1-1/4 inches (32 mm) shall be provided on stairways with solid risers. The greatest nosing projection shall not exceed the smallest nosing projection by more than 3/8 inch (9.5 mm) between two stories, including the nosing at the level of floors and landings. Beveling of nosings shall not exceed 1/2 inch (12.7 mm). Risers shall be vertical or sloped under the tread above from the underside of the nosing above at an angle not more than 30 degrees (0.51 rad) from the vertical. Open risers are permitted, provided that the opening between treads does not permit the passage of a 4-inch diameter (102 mm) sphere.
Exceptions: 1. A nosing is not required where the tread depth is a minimum of 11 inches (279 mm). 2. The opening between adjacent treads is not limited on stairs with a total rise of 30 inches (762 mm) or less.

5. R311.7.1 Width. Stairways shall not be less than 36 inches (914 mm) in clear width at all points above the permitted handrail height and below the required headroom height. Handrails shall not project more than 4.5 inches (114 mm) on either side of the stairway and the minimum clear width of the stairway at and below the handrail height, including treads and landings, shall not be less than 311/2 inches (787 mm) where a handrail is installed on one side and 27 inches (698 mm) where handrails are provided on both sides.

6. R311.7.2 Headroom. The minimum headroom in all parts of the stairway shall not be less than 6 feet 8 inches (2032 mm) measured vertically from the sloped line adjoining the tread nosing or from the floor surface of the landing or platform on that portion of the stairway.
Exception: Where the nosings of treads at the side of a flight extend under the edge of a floor opening through which the stair passes, the floor opening shall be allowed to project horizontally into the required headroom a maximum of 4-3/4 inches (121 mm).

7. R311.7.5 Landings for stairways. There shall be a floor or landing at the top and bottom of each stairway.
Exception: A floor or landing is not required at the top of an interior flight of stairs, including stairs in an enclosed garage, provided a door does not swing over the stairs. A flight of stairs shall not have a vertical rise larger than 12 feet (3658 mm) between floor levels or landings. The width of each landing shall not be less than the width of the stairway served. Every landing shall have a minimum dimension of 36 inches (914 mm) measured in the direction of travel.

8. R311.7.7 Handrails. Handrails shall be provided on at least one side of each continuous run of treads or flight with four or more risers.

9. Handrail assemblies and guards shall be able to resist a single concentrated load of 200 pounds. (CBC 1607.7.1.1)

10. R312.1. Guards shall be located along open-sided walking surfaces, including stairs, ramps and landings, that are located more than 30 inches measured vertically to the floor or grade below at any point within 36 inches horizontally to the edge of the open side. Insect screening shall not be considered as a guard.

11. R312.2. Required guards at open-sided walking surfaces, including stairs, porches, balconies or landings, shall be not less than 42 inches high measured vertically above the adjacent walking surface, adjacent fixed seating or the line connecting the leading edges of the treads.
Exceptions: 1. Guards on the open sides of stairs shall have a height not less than 34 inches measured vertically from a line connecting the leading edges of the treads. 2. Where the top of the guard also serves as a handrail on the open sides of stairs, the top of the guard shall not be not less than 34 inches and not more than 38 inches measured vertically from a line connecting the leading edges of the treads.

12. R312.3. Required guards shall not have openings from the walking surface to the required guard height which allow passage of a sphere 4 inches in diameter.
Exceptions: 1. The triangular openings at the open side of a stair, formed by the riser, tread and bottom rail of a

guard, shall not allow passage of a sphere 6 inches in diameter. 2. Guards on the open sides of stairs shall not have openings which allow passage of a sphere 4-3/8 inches in diameter.

13. R312.4 Exterior woodplastic composite guards. Woodplastic composite guards shall comply with the provisions of Section R317.4.

PLUMBING/MECHANICAL

1. Each plumbing system may use the materials listed:

a. The building sewer from the house to the street or septic tank may be cast iron, lead, copper, Stainless Steel 316L, Schedule 40 ABS DWV, or Schedule 40 PVC DWV. The minimum depth of the building sewer is 12" to the top of the pipe. (CPC 701.0, Table 7-1 & 313.3) Note: Some sewer districts may have more restrictive requirements.

b. Waste drains inside the building may be cast iron, lead, copper, brass, Schedule 40 ABS DWV or Schedule 40 PVC DWV. Support spacing for the waste piping shall be 4' for plastic, 5' for cast iron, 12' for pipes with screw fittings, 6' for up to 1½" copper and 10' for 2" or larger copper. (CPC Table 3-2)

c. Water piping inside the building may be brass, copper, CPVC, malleable iron or galvanized steel supported at 10' for pipes with screw fittings, 6' for up to 1½" copper and 10' for 2" or larger copper. CPVC 1” and smaller 3’, 1-1/4” and larger 4’ (CPC Table 3-2 & 604.0)

d. Water piping outside the building may be PVC/P.E. and all other materials listed in Table 6-4. The minimum depth of water pipes outside the building is 12" to the top of the pipe, or 36" when above 5000' elevation. (CPC 609.1 & PCC 15.04.420)

e. Gas piping inside the building may be wrought iron, steel (black or galvanized), yellow brass or internally tinned copper. Gas piping must be new or previously used for gas only. Supports need to be every 10' for up to ¾" pipe and every 12' for 1" pipe or larger. (CPC 1209.5 & 314)

f. Gas piping outside the building (underground) may be plastic rated for use with gas, or factory coated steel pipe. Joints in the steel pipe need to be wrapped with PVC tape to a total thickness of 40 mils and extend 6" beyond the ends of the joint. Low pressure steel piping needs to have a minimum coverage of 12" and plastic pipe needs 18" of cover. (CPC 1209.5 & 1211.1.2) Plastic piping installed below grade needs to have a 14 gauge tracer wire or tape attached to the pipe for its full length and must terminate above ground at one end. (CPC 1211.1.7 C)

2. Each plumbing system needs to be tested as follows:

a. The building sewer from the house to the street or septic tank; Provide a standing water test filled to the top of the cleanout. Plastic DWV piping systems shall not be tested by the air test method. (CPC 723.0)

b. Waste drains inside the building; Provide a standing water test filled to 10' above the highest drainage fitting or a 5 psi air test. Either test is to hold for a minimum of 15 minutes before inspection. (CPC 712.2 & 712.3)

c. Gas piping inside and outside the building must be tested. The test pressure to be used shall be no less than 1.5 times the proposed maximum working pressure, but not less than 3psi. of design pressure. Test gauge is not to exceed 5-times the test pressure. (CPC 1214.3).

d. Test duration shall be a minimum of 10 minutes for single-family dwellings. CPC 1214.3.3)

3. Where the service water pressure exceeds 80 psi, a pressure regulator needs to be installed to limit the water pressure in the building to 80 psi. An approved expansion tank shall be installed in the cold water piping down stream from the pressure regulator. (CPC 608.2)

4. Water heaters and furnaces installed in a garage which have a glow, spark or ignition source need to be mounted 18" above the floor and protected from auto impact. (CPC 508.14 & CMC 307.1)

5. An attic or underfloor space in which an appliance is installed shall be accessible through an opening and passageway at least as large as the largest component of the appliance, and not less than 22”x30”. Where the height of the passageway is less than 6’ the distance from the passageway access to the appliance shall not exceed 20’ measured along the centerline of the passageway. A 30"x30” working shall be provided in front of the service side of the appliance. A 24" wide catwalk is required from the access to the platform. A permanent 120-volt receptacle outlet and a lighting fixture shall be installed near the appliance. The switch controlling the lighting fixture shall be located at the entrance to the passageway. (CPC 509.4 & CMC 904.11)

6. Water heaters located in the attic or on a subfloor need a water-tight drip pan with a ¾" drain to the exterior of the building. (CPC 508.4)
7. All water heaters need to be strapped to the building with at least two straps to prevent seismic movement. One strap within the top third and the other within the bottom third of the water heater. The lower strap shall not be within 4" of the controls. (CPC 508.2)
8. All storage type water heaters need a temperature/pressure relief valve with a ¾" hard pipe drain which terminates 6" to 24" above grade and pointing downward. The drain pipe shall maintain a downward slope to the exterior. (CPC 505.4, 505.5 & 608.5)
9. Any water system provided with a check valve, backflow preventer, or any other normally closed device that prevents dissipation of building pressure back into the water main shall be provided with an approved, listed expansion tank or other device sized and installed to control intermittent thermal expansion. (CPC 608.3)
10. Anti-siphon devices are required at all hose bibbs, both interior and exterior, except the clothes washer connection. This is to prevent the possible backflow of contaminated water into the potable water system. (CPC 603.4.7)
11. Water piping installed above 5000' elevation needs to be protected from freezing. The piping shall not be installed in uninsulated areas or in exterior walls unless installed on the heated side of R-19 insulation. Underground piping is to be 36" deep. (PCC Art 15.04.420)
12. Shower walls shall be finished with a hard, non-absorbent surface to a height not less than 70" above the drain inlet. The floor area of a shower needs to be at least 1024 in² with a minimum dimension of 30". (CBC 1210.3 & CPC 411.7)
13. No water closet shall be set closer than 15” from its center to any side wall or obstruction nor closer than 30” center to center to any similar fixture. The clear space in front of any water closet shall not be less than 24”. (CPC 407.5)
14. Mechanical ventilation shall be provided in bathrooms containing bathtubs, showers, spas and similar bathing fixtures. The exhaust rate shall be per CMC Table 4-4. (CBC 1203.4.2.1 & CMC Table 4-4)
15. R303.8 Required heating. When the winter design temperature in Table R301.2(1) is below 60°F (16°C), every dwelling unit shall be provided with heating facilities capable of maintaining a minimum room temperature of 68°F (20°C) at a point 3 feet (914 mm) above the floor and 2 feet (610 mm) from exterior walls in all habitable rooms at the design temperature. The installation of one or more portable space heaters shall not be used to achieve compliance with this section.
16. Appliances designed to be fixed in position shall be securely fastened in place. Supports for appliances shall be designed and constructed to sustain vertical and horizontal loads within the stress limitations specified in the Building Code. (CMC 303.4)
17. A ¾" condensate drain and overflow drain are required for any air conditioning system located within the building. The main drain is to terminate in an approved location, but not on a walking surface. The overflow drain must discharge at a point that can be readily observed. The minimum slope of these drains is ⅛" per foot. (CMC 309)
18. Combustion air vents are required within 12" of the top and bottom of enclosures with fuel burning appliances. Vents shall have ¼" mesh screens. (CMC 701.4.1) Combustion vents open to the attic need to be provided with a non-combustible sleeve which extends 6" above the ceiling joists and insulation and are not to be equipped with screens. (CMC 701.10)
19. Type ‘B’ vent for gas burning appliances 12” or smaller in size, needs to extend at least 1' above the roof penetration for roofs up to a **6**/12 pitch and be at least 8' from a vertical wall. See Figure 8-2 for other roof pitches. The vent shall terminate at least 5’ in vertical height above the highest connected appliances draft hood or flue collar. (CMC 802.6.2 & Figure 8-2)
20. LPG appliances and water heaters are not to be installed in a pit, basement or similar location where heavier-than-air gas might collect. LPG appliances and water heaters shall not be installed in an above-grade-under-floor space or basement unless such location is provided with an approved means for removal of unburned gas. (CMC 303.7.1)
21. Early gas may be approved once all the gas piping system has been installed and tested, and at least one gas burning appliance has been completely installed and inspected, and all gas piping is covered or concealed within the building. (CMC 1308 & CPC1208.0)

22. A 30" clearance is required from a cooking appliance top to combustible materials (cabinets). Side clearances shall be as specified by a permanent marking on the cooking appliance. (CMC 916.1B)

23. Unless otherwise permitted or required by the dryer manufactures installation instructions and approved by the Authority Having Jurisdiction, domestic dryer moisture exhaust ducts shall not exceed a total combined horizontal and vertical length of 14', including 2-90 degree elbows. 2 feet shall be deducted for each 90 degree elbow in excess of 2. (CMC 504.3.2.2) Consult the Placer County Building Department handout.

24. Kitchen hoods, bathroom fans and other exhaust fans shall have a back draft damper. (CMC 504.1)

25. Propane tanks are to be installed per the Uniform Fire Code. Consult the Placer County Building Department LPG Tanks-Plumbing handout.

26. Vents for fuel burning appliances shall terminate not less than 4' below, 4' horizontally from or 1' above any door, window or other opening into the structure. (CMC 802.8.2)

ELECTRICAL

1. A ground fault circuit interrupter (GFCI) is required for all 120 volt receptacles installed in bathrooms, garages, outdoors, in unfinished basements, under-floor areas, kitchen counter tops and within 6' of a Laundry, utility, and wet bar sinks. (CEC 210-8)

2. Luminaire lights in a clothes closet need 12" minimum clearance from combustibles, such as walls or edge of the shelf, measured horizontally. 6" horizontal clearance is allowed for recessed incandescent lights with covers or fluorescent fixtures. (CEC 410.16)

3. Recessed luminaire incandescent light fixtures in insulated ceilings shall be approved, listed, zero-clearance insulation cover (IC) type. (California Energy Commission 130b 4)

4. A 120 volt weather-proof receptacle is required within 25' of the mechanical equipment when located on the roof or ground. (CEC 210.63)

5. Electrical disconnects for equipment such as well pumps, HVAC units, septic pumps, etc. shall be within sight of or be capable of being locked in the open position from the equipment. (CEC 440.14)

6. A temporary construction power panel needs to be installed on a treated post, have a driven ground rod and a 20 amp GFCI weather-proof receptacle. If the structure is not weather-tight the receptacle, box, panel and conductors need to be weather-proof. (CEC 250.52 & 590.6)

7. Tamper-Resistant Receptacles in Dwelling Units. In all areas specified in CEC 210.52 all 125-volt, 15- and 20-ampere receptacles shall be tamper-resistant receptacles. (CEC 406.11)

8. Receptacle outlets shall be spaced such that any point along the wall at the floor level is not more than 6' from a receptacle without crossing a doorway. Wall spaces greater than 2' in width shall be provided with a receptacle. These receptacles shall be provided in kitchens, family rooms, dining rooms, living rooms, dens, bedrooms, or similar rooms. (CEC 210-52A)

9. Counter top receptacles in the kitchen or dining room shall be spaced such that any point along the wall at the counter level is not more than 2' from a receptacle. Any counter space more than 12" wide shall be provided with a receptacle. Peninsular or island counters are to be provided with at least one receptacle. These receptacles are to be located within 12" of the counter top and are not to be face up in the counter. Counter tops interrupted by ranges, sinks, or other appliances shall be considered separate counters. (CEC 210.52C)

10. Kitchens counters shall be equipped with two or more 20 amp circuits for small appliances. (CEC 210-52B)

11. Electrical meter panels, sub-panels and disconnects, such as at the air conditioner, require a minimum clear working space of not less than 30" wide by 36" deep and 6'-7" to the highest circuit breaker or switching device. (CEC 110.26 & 404.8)

12. Bathroom receptacles are to be supplied by at least one 20 amp branch circuit. This circuit shall have no other outlets. (CEC 210.11C.3)

13. Dwelling Units. All 120-volt, single phase, 15 and 20 ampere branch circuits supplying outlets installed in dwelling unit family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways, or similar rooms or areas shall be protected by a listed arc-fault circuit interrupter, combination-type installed to provide protection of the branch circuit. (CEC 210.12)

FIREPLACE/WOODSTOVE

1. Factory-built chimneys for residential-type appliances and masonry chimneys must terminate at least 3' above the roof penetration and must also be at least 2' above any roof within 10' of the chimney or in accordance with the manufacturer's listing, whichever is greater. (CMC 802.5.2 & R1003.9)
2. R1006.1 Exterior air. Factory-built or masonry fireplaces covered in this chapter shall be equipped with an exterior air supply to assure proper fuel combustion unless the room is mechanically ventilated and controlled so that the indoor pressure is neutral or positive.
3. R1006.1.1. Exterior combustion air ducts for factory-built fireplaces shall be a listed component of the fireplace and shall be installed according to the fireplace manufacturer's instructions.
4. R1006.1.2. Listed combustion air ducts for masonry fireplaces shall be installed according to the terms of their listing and the manufacturer's instructions.
5. R302.11 Fireblocking. In combustible construction, fireblocking shall be provided to cut off all concealed draft openings (both vertical and horizontal) and to form an effective fire barrier between stories, and between a top story and the roof space.
6. R1001.10. The hearth extension for a masonry fireplace needs to extend at least 16" in front of and at least 8" beyond the sides of the firebox when the opening is less than 6 ft^2 and at least 20" in front of and at least 12" beyond the sides when larger than 6ft. The hearth needs to be of non-combustible material.
7. R1004.2. Hearth extensions of approved factory-built fireplaces shall be installed in accordance with the listing of the fireplace. The hearth extension shall be readily distinguishable from the surrounding floor area.
8. R1003.9.1 Spark arrestors. All chimneys attached to any appliance or fireplace that burns solid fuel shall be equipped with an approved spark arrester. The spark arrestor shall meet all of the following requirements:
    1. The net free area of the arrestor shall not be less than four times the net free area of the outlet of the chimney flue it serves.
    2. The arrestor screen shall have heat and corrosion resistance equivalent to 12 gage wire, 19-gage galvanized steel or 24-gage stainless steel.
    3. Openings shall not permit the passage of spheres having a diameter greater than 1/2 inch (13 mm) nor block the passage of spheres having a diameter less than 3/8 inch (10 mm).
    4. The spark arrestor shall be accessible for cleaning and the screen or chimney cap shall be removable to allow for cleaning of the chimney flue.

VENEER/STUCCO

1. R703.2 Water-resistive barrier. One layer of No. 15 asphalt felt, free from holes and breaks, complying with ASTM D 226 for Type 1 felt or other approved water-resistive barrier shall be applied over studs or sheathing of all exterior walls. Such felt or material shall be applied horizontally, with the upper layer lapped over the lower layer not less than 2 inches (51 mm). Where joints occur, felt shall be lapped not less than 6 inches (152 mm).
2. R703.6.2.1 Weep screeds. A minimum 0.019-inch (0.5 mm) (No. 26 galvanized sheet gage), corrosion-resistant weep screed or plastic weep screed, with a minimum vertical attachment flange of 31/2 inches (89 mm) shall be provided at or below the foundation plate line on exterior stud walls in accordance with ASTM C 926. The weep screed shall be placed a minimum of 4 inches (102 mm) above the earth or 2 inches (51 mm) above paved areas and shall be of a type that will allow trapped water to drain to the exterior of the building. The weather-resistant barrier shall lap the attachment flange. The exterior lath shall cover and terminate on the attachment flange of the weep screed.
3. R703.6.1. All lath and lath attachments shall be of corrosion-resistant materials. Expanded metal or woven wire lath shall be attached with 11/2-inch-long (38 mm), 11 gage nails having a 7/16-inch (11.1 mm) head, or 7/8-inch-long (22.2 mm), 16 gage staples, spaced at no more than 6 inches (152 mm),

TABLE R602.3(1) FASTENER SCHEDULE FOR STRUCTURAL MEMBERS

ITEM	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER[a, b, c]	SPACING OF FASTENERS
	Roof		
1	Blocking between joists or rafters to top plate, toe nail	3-8d ($2^1/_2$″ × 0.113″)	-
2	Ceiling joists to plate, toe nail	3-8d ($2^1/_2$″ × 0.113″)	-
3	Ceiling joists not attached to parallel rafter, laps over partitions, face nail	3-10d	-
4	Collar tie rafter, face nail or $1^1/_4$″ × 20 gage ridge strap	3-10d (3″ × 0.128″)	-
5	Rafter to plate, toe nail	2-16d ($3^1/_2$″ × 0.135″)	-
6	Roof rafters to ridge, valley or hip rafters: toe nail face nail	 4-16d ($3^1/_2$″ × 0.135″) 3-16d ($3^1/_2$″ × 0.135″)	 - -
	Wall		
7	Built-up corner studs	10d (3″ × 0.128″)	24″ o.c.
8	Built-up header, two pieces with $^1/_2$″ spacer	16d ($3^1/_2$″ × 0.135″)	16″ o.c. along each edge
9	Continued header, two pieces	16d ($3^1/_2$″ × 0.135″)	16″ o.c. along each edge
10	Continuous header to stud, toe nail	4-8d ($2^1/_2$″ × 0.113″)	-
11	Double studs, face nail	10d (3″ × 0.128″)	24″ o.c.
12	Double top plates, face nail	10d (3″ × 0.128″)	24″ o.c.
13	Double top plates, minimum 48-inch offset of end joints, face nail in lapped area	8-16d ($3^1/_2$″ × 0.135″)	-
14	Sole plate to joist or blocking, face nail	16d ($3^1/_2$″ × 0.135″)	16″ o.c.
15	Sole plate to joist or blocking at braced wall panels	3-16d ($3^1/_2$″ × 0.135″)	16″ o.c.
16	Stud to sole plate, toe nail	3-8d ($2^1/_2$″ × 0.113″) or 2-16d $3^1/_2$″ × 0.135″)	- -
17	Top or sole plate to stud, end nail	2-16d ($3^1/_2$″ × 0.135″)	-
18	Top plates, laps at corners and intersections, face nail	2-10d (3″ × 0.128″)	-
19	1″ brace to each stud and plate, face nail	2-8d ($2^1/_2$″ × 0.113″) 2 staples $1^3/_4$″	- -
20	1″ × 6″ sheathing to each bearing, face nail	2-8d ($2^1/_2$″ × 0.113″) 2 staples $1^3/_4$″	- -
21	1″ × 8″ sheathing to each bearing, face nail	2-8d ($2^1/_2$″ × 0.113″) 3 staples $1^3/_4$″	- -
22	Wider than 1″ × 8″ sheathing to each bearing, face nail	3-8d ($2^1/_2$″ × 0.113″) 4 staples $1^3/_4$″	- -
	Floor		
23	Joist to sill or girder, toe nail	3-8d ($2^1/_2$″ × 0.113″)	-
24	1″ × 6″ subfloor or less to each joist, face nail	2-8d ($2^1/_2$″ × 0.113″) 2 staples $1^3/_4$″	- -
25	2″ subfloor to joist or girder, blind and face nail	2-16d ($3^1/_2$″ × 0.135″)	-
26	Rim joist to top plate, toe nail (roof applications also)	8d ($2^1/_2$″ × 0.113″)	6″ o.c.
27	2″ planks (plank & beam - floor & roof)	2-16d ($3^1/_2$″ × 0.135″)	at each bearing
28	Built-up girders and beams, 2-inch lumber layers	10d (3″ × 0.128″)	Nail each layer as follows: 32″ o.c. at top and bottom and staggered. Two nails at ends and at each splice.
29	Ledger strip supporting joists or rafters	3-16d ($3^1/_2$"× 0.135″)	At each joist or rafter

(continued)

TABLE R602.3(1)-continued FASTENER SCHEDULE FOR STRUCTURAL MEMBERS

ITEM	DESCRIPTION OF BUILDING MATERIALS	DESCRIPTION OF FASTENER[b, c, e]	SPACING OF FASTENERS	
			Edges (inches)[i]	Intermediate supports[c, e] (inches)
Wood structural panels, subfloor, roof and interior wall sheathing to framing and particleboard wall sheathing to framing				
30	$^{3}/_{8}$″-$^{1}/_{2}$″	6d common (2″ × 0.113″) nail (subfloor wall)[j] 8d common (2$^{1}/_{2}$″ × 0.131″) nail (roof)	6	12[g]
31	$^{5}/_{16}$″-$^{1}/_{2}$″	6d common (2″ × 0.113″) nail (subfloor, wall) 8d common (2$^{1}/_{2}$″ × 0.131″) nail (roof)[f]	6	12[g]
32	$^{19}/_{32}$″- 1″	8d common nail (2$^{1}/_{2}$″ × 0.131″)	6	12[g]
33	1$^{1}/_{8}$″- 1$^{1}/_{4}$″	10d common (3″ × 0.148″) nail or 8d (2$^{1}/_{2}$″ × 0.131″) deformed nail	6	12
Other wall sheathing[h]				
34	$^{1}/_{2}$″ structural cellulosic fiberboard sheathing	$^{1}/_{2}$″ galvanized roofing nail, $^{7}/_{16}$″ crown or 1″ crown staple 16 ga., 1$^{1}/_{4}$″ long	3	6
35	$^{25}/_{32}$″ structural cellulosic fiberboard sheathing	1$^{3}/_{4}$″ galvanized roofing nail, $^{7}/_{16}$″ crown or 1″ crown staple 16 ga., 1$^{1}/_{2}$″ long	3	6
36	$^{1}/_{2}$″ gypsum sheathing[d]	1$^{1}/_{2}$″ galvanized roofing nail; staple galvanized, 1$^{1}/_{2}$″ long; 1$^{1}/_{4}$ screws, Type W or S	7	7
37	$^{5}/_{8}$″ gypsum sheathing[d]	1$^{3}/_{4}$″ glavanized roofing nail; staple galvanized, 1$^{5}/_{8}$″ long; 1$^{5}/_{8}$″ screws, Type W or S	7	7
	Wood structural panels, combination subfloor underlayment to framing			
38	$^{3}/_{4}$″ and less	6d deformed (2″ × 0.120″) nail or 8d common (2$^{1}/_{2}$″ × 0.131″) nail	6	12
39	$^{7}/_{8}$″- 1″	8d common (2$^{1}/_{2}$″ × 0.131″) nail or 8d deformed (2$^{1}/_{2}$″ × 0.120″) nail	6	12
40	1$^{1}/_{8}$″- 1$^{1}/_{4}$″	10d common (3″ × 0.148″) nail or 8d deformed (2$^{1}/_{2}$″ × 0.120″) nail	6	12

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s; 1ksi = 6.895 MPa.

a. All nails are smooth-common, box or deformed shanks except where otherwise stated. Nails used for framing and sheathing connections shall have minimum average bending yield strengths as shown: 80 ksi for shank diameter of 0.192 inch (20d common nail), 90 ksi for shank diameters larger than 0.142 inch but not larger than 0.177 inch, and 100 ksi for shank diameters of 0.142 inch or less.

b. Staples are 16 gage wire and have a minimum $^{7}/_{16}$-inch on diameter crown width.

c. Nails shall be spaced at not more than 6 inches on center at all supports where spans are 48 inches or greater.

d. Four-foot-by-8-foot or 4-foot-by-9-foot panels shall be applied vertically.

e. Spacing of fasteners not included in this table shall be based on Table R602.3(2).

f. For regions having basic wind speed of 110 mph or greater, 8d deformed (2$^{1}/_{2}$″ × 0.120) nails shall be used for attaching plywood and wood structural panel roof sheathing to framing within minimum 48-inch distance from gable end walls, if mean roof height is more than 25 feet, up to 35 feet maximum.

g. For regions having basic wind speed of 100 mph or less, nails for attaching wood structural panel roof sheathing to gable end wall framing shall be spaced 6 inches on center. When basic wind speed is greater than 100 mph, nails for attaching panel roof sheathing to intermediate supports shall be spaced 6 inches on center for minimum 48-inch distance from ridges, eaves and gable end walls; and 4 inches on center to gable end wall framing.

h. Gypsum sheathing shall conform to ASTM C 1396 and shall be installed in accordance with GA 253. Fiberboard sheathing shall conform to ASTM C 208.

i. Spacing of fasteners on floor sheathing panel edges applies to panel edges supported by framing members and required blocking and at all floor perimeters only. Spacing of fasteners on roof sheathing panel edges applies to panel edges supported by framing members and required blocking. Blocking of roof or floor sheathing panel edges perpendicular to the framing members need not be provided except as required by other provisions of this code. Floor perimeter shall be supported by framing members or solid blocking.