CITY OF OAKLAND
PLANNING & BUILDING DEPARTMENT
250 FRANK H. OGAWA PLAZA. SECOND FLOOR. OAKLAND, CA. 94612

2019 CA RESIDENTIAL CODE SUMMARY OF CHANGES

The following checklist includes significant changes in the 2019 CRC from the previous 2016 CRC.

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SIGNIFICANT CHANGES

(For Building Applications submitted on or after January 1, 2020)

CHANGE	NEW	CRC SECTION/TABLE NUMBER	COMMENTARY
C		1.1.3.1	**Classification Note.** Live/work units complying with the requirements of CBC section 419 shall be classified as group R-2 occupancy and are permitted to be constructed as one-and two-family dwellings or townhouses.
C		R101.2	**Scope.** Three exceptions involving care facilities have been added.
	N	R106.1.5	**Exterior Balconies and Elevated Walking Surfaces.** Balconies or other elevated walking surfaces exposed to water from direct or blowing rain, snow or irrigation shall include details for all elements of the impervious moisture barrier system.
	N	R109.1.5.3	**Weather-Exposed Balcony and Walking Surface Waterproofing.** A balcony or elevated walking surface exposed to water from direct or blowing rain, snow or irrigation shall not be concealed until inspected and approved
	N	R202	**Definitions added.** **Access (to).** **Approved** **Source.** **Building-Integrated Photovoltaic Roof Panel (BIPV Roof Panel) .** **Carbon Monoxide Alarm. Change of Occupancy.** **Collapsible Soils.** **Compressible Soil. Crawl Space.** **Expansive Soils.** **Impact Protective System. Live/Work Unit.** **Ready Access (to). Roof Coating.** **Solar Energy System.**

			Solar Thermal Collector. Solar Thermal System. Vapor Diffusion Port.
C		R301.2.2.1.1	**Alternate Determination of Seismic Design Category.** If soil conditions are determined by the building official to be Site Class A, B, or D, the seismic design category and short-period design spectral response accelerations for a site shall be allowed to be determined in accordance with figure R301.2(3) or Section 1613.2 of CBC.
	N	Table R301.2(1)	**Climatic and Geographic Design Criteria.** Manual J Design Criteria has been added.
C		R301.2.2.4	**Masonry Construction.** In Seismic Design Categories D_0, and D_1, shall comply with the requirements of Section R606.12.1. Seismic Design Category D_2 shall comply with the requirements of Section R606.12.4.
	N	R302.2.1	**Double Walls.** Each townhouse shall now be separated by two 1-hour fire-resistance-rated wall assemblies.
C		Table 302.1(1)	**Exterior Walls.** The minimum distance has been updated to 0, for fire-resistance rated walls.
C		Table R302.1(2)	**Exterior walls-Dwelling and ADU's with Automatic Fire Sprinkler Protection.** The walls and Projections minimum fire-resistance rating in the table has been updated.
C		R302.4.2	**Membrane Penetrations.** Exception 4 has been added for ceiling membrane penetrations.
C		R302.5.1	**Opening Protection.** For the 20-minute fire rated door it shall be equipped with self-closing or automatic-closing and self-latching device.
C		R302.7	**Under-Stair Protection. "**Enclosed space under stairs that is accessed by a door or access panel" has been added for clarification for under stair protection.
	N	R308.4.4.1	**Structural Glass Baluster Panels.** Guards with structural glass baluster panels shall be installed with an attached top rail or handrail. The rail shall be supported by no less than three glass baluster panels or supported to remain in place should one glass baluster panel fail. **Exception.** Top rail is not required where glass baluster panels are laminated glass with two or more plies of equal thickness.
C		R310.1	**Emergency Escape and Rescue Opening Required.** Exception has been added. Where the dwelling or townhouse is equipped with an automatic sprinkler system, sleeping rooms in basements shall not be required to have emergency escape and rescue openings.
	N	R310.3.2- R310.3.2.2	**Area Wells.** Area wells shall have a width of no less than 36 inches. The area well shall be sized to allow the emergency escape and rescue door to be fully opened.
C		R310.7.3	**Vertical Rise.** A flight of stairs shall not have a vertical rise larger than 151 inches between floor levels or landings.

	N	R311.7.8.2	**Handrail Projection.** Handrails shall not project more than 4 ½ inches on either side of the stairway. **Exception.** Where nosing of landings, floors or passing flights project into the stairway reducing the clearance at passing handrails, handrails shall project not more than 6 ½ inches into the stairway, provided the stair width and handrail clearance are not reduced to less than required.
C		R311.7.11	**Alternating Tread Devices.** Exception has been added. Alternating tread devices are allowed to be used as an element of a means of egress for lofts, mezzanines and similar areas of 200 gross square feet or less where such devices do not provide exclusive access to a kitchen or bathroom
C		R311.7.12	**Ship ladders.** Exception has been added. Ship ladders are allowed as an element of a means of egress for lofts, mezzanines and similar areas of 200 gross square feet or less that does not provide exclusive access to a kitchen or bathroom.
C		R315.2.2	**Alterations, Repairs and Additions.** Exceptions have been added.
C		R315.5	**Interconnectivity.** Physical interconnection of alarms shall not be required where listed wireless alarms are installed and all alarms sound upon activation of one alarm.
	N	R316.2.1	**Labeling of Polystyrene Foam Insulation Without Flame Retardants.** In addition of requirements of 2603.2 of the CBC, polystyrene foam insulation boards manufactured with no flame retardants added shall be labeled in accordance with this section.
C		R316.3	**Surface Burning Characteristics.** Exception added. Polystyrene foam insulation boards with a maximum thickness of 2 inches where installed below a minimum 3.5-inch-thick concrete slab on grade.
C		R317.1	**Location Required.** Location number 6 has the following addition. The impervious moisture barrier system protecting the structure supporting floors shall provide positive drainage of water that infiltrates the moisture-permeable floor topping.
	N	R317.1.6	**Ventilation Required Beneath Balcony or Elevated Walking Surfaces.** Enclosed framing in exterior balconies and elevated walking surfaces that are exposed to rain, slow or drainage from irrigation shall be provided with openings that provide a net-free cross-ventilation area not less than 1/150 of the area of each separate space.
	N	R322.3.4	**Concrete Slabs.** Concrete slabs used for parking, floors of enclosures, landings, decks, walkways, patios and similar that are located beneath structures, or slabs that are located such that if undermined or displaced during base

			flood conditions could cause structural damage to the building foundation, shall be designed and constructed in accordance with this section.
	N	R322.3.7	**Stairways and Ramps.** Criteria for stairway and ramps provided in this section.
	N	R322.3.8	**Decks and Porches.** Attached decks and porches shall meet the elevation requirements and shall either meet the foundation requirements of this section or shall be cantilevered from the knee braced to the building structure.
C		R324.4.1.1	**Roof Load.** Portions of roof structures not covered with PV panel systems shall be designed for dead loads and roof loads in accordance with Section R301.4 and R301.6. Portions of roof structures covered with pv panel systems shall be designed for the cases listed in this section.
	N	R324.4.2	**Fire Classification.** Rooftop-mounted pv panel systems shall have the same fire classification as roof assembly required in R902.
	N	R324.4.3	**Roof Penetrations.** Roof penetrations shall be flashed and sealed in accordance with Chapter 9.
C		R324.6- R324.6.2.2	**Roof Access and Pathways.** Location of the panels on the roof has been updated for pathways, setback and emergency escape and rescues.
C		R325.3	**Area Limitation.** Exceptions have been added. The aggregate area within a dwelling unit equipped with a fire sprinkler system shall not be greater than one-half of the floor area of the room, provided that the mezzanine meets the requirements listed.
	N	R325.6	**Habitable Attic.** A habitable attic shall not be considered a story where complying with the four requirements listed in this section.
	N	R327 R327.2 R327.3 R327.4 R327.5 R327.6	**Stationary Storage Battery Systems.** Stationary storage battery systems shall comply with the provisions in this section. **Equipment Listings.** Stationary storage battery systems shall be listed and labeled for residential use in accordance with UL 9540. **Installation.** Stationary battery systems shall be installed in accordance with the manufacturer's instructions and their listing. They shall not be installed within habitable space. **Electrical Installation.** Stationary storage battery systems shall be installed in accordance with the CEC. Inverters shall be listed and labeled in accordance with UL 01741 or provided as part of the UL 9540 listing. **Ventilation.** Indoor installations that produce hydrogen or other flammable gases, shall be provided with ventilation in accordance with CMC. **Protection from Impact.** Systems that are installed in a

			location subject to vehicle damage shall be protect by approved barriers.
	N	R337.8.4	**Garage Door Perimeter Gap.** Exterior garage doors shall resist the intrusion of embers from entering by preventing gaps between doors and openings at the bottom, sides and tops of doors, from exceeding 1/8 inch. Gaps between doors and door openings shall be controlled by the methods listed in this section.
C		R408.3	**Unvented Crawl Space.** Number 2.4 has been added. Dehumidification sized to provide 70 pints of moisture removal per day for every 1,000 square feet of crawl space floor area.
C		R505.2.6.2	**Web Hole Reinforcing.** Part of this code has been reworded for clarification. The steel reinforcing shall not be thinner than the thickness of the receiving member and shall extend not less than 1 inch beyond all edges of the hole.
C		R507	**Decks.** Sections have been moved and added for clarification in this section. Materials used for decks shall comply with this section. Details are now provided for materials and engineered wood products, Fasteners and Connectors, Flashing, Footings with minimum size and depth, and Deck beams.
	N	Table R507.2.3	**Fastener and Connectors Specifications for Decks.** New table with footnotes.
C		Figure R507.7.1	**Deck Beam to Deck Post.** This figure has been separated into two figures and updated to show Beam over Post Cap and Beam over Post.
	N	Figure R507.5.1(2)	**Notched Post-to Beam-Connection.** This figure was part of Deck Beam to Deck Post. It now provides more examples.
C		Figure R507.6	**Typical Deck Joist Spans.** This figure has been updated to provide more examples. There are images for Cantilevered Joists with Dropped Beam, Joists with Flush Beam, Joists on Free-Standing Deck with Dropped Beam, and joists on Free-Standing Deck with Flush Beam.
C		Figure R507.5	**Deck Joist Spans for Common Lumber.** This table has been updated.
	N	R602.11	**Structural Insulated Panels.** Structural insulated panels shall be manufactured and identified in accordance with ANSI/APA PRS 610.1.
C		Table R602.3(1)	**Fastening Schedule.** This table has been updated.
	N	Table 602.3(6)	**Alternate Wood Bearing Wall Stud Size, Height and Spacing.** New Table provided with 11 foot and 12 foot stud heights.
C		Table 602.7	**Girder Spans and header Spans for Bearing Walls.** The two tables have been updated and now provide images in girders and headers supporting column.
C		Table R602.10.3(1)	**Bracing Requirements Based on Wind Speed.** Foot note, c has been updated. Where three or more parallel braced wall lines are present and the distance between adjacent braced wall lines are different, the average dimension shall be permitted to be used for braced wall line spacing.

C		Table R602.10.3(1)	**Wind Adjustment Factors to the Required Length of Wall Bracing.** Item number 8 has been added for Horizontal Blocking. Foot note, d has also been added. The same adjustment factor shall be applied to all braced wall lines on all floors of the structure, based on the worst- case exposure category.
C		Table R602.10.3(4)	**Seismic Adjustment Factors to the Required Length of Wall Bracing.** Item numbers 8 and 10 have been added for Walls with stone or masonry veneer, detached one- and two-family dwellings in SDC D_0-D ^{df}, and 2 Horizontal Blocking.
C		Table R602.10.4	**Bracing Methods.** This table has been updated.
C		Table R602.10.5	**Minimum Length of Braced Wall Panels.** Table has been updated.
C		Table R603.3.1.1(1)	**Gable Endwall to Floor Connection Requirements.** Table has been updated with new Exposure Category numbers.
C		Table R603.3.1.1(2)	**Gable Endwall Bottom Track to Foundation Connection Requirements.** Table has been updated with new Exposure Category numbers.
C		Table R603.3.2 (2)-(16)	**24-Foot-Wide Building Supporting Roof and Ceiling only.** Table has been updated with new Exposure Category numbers.
C		Table R603.8	**Head and Sill Track Span.** Table has been updated with new Exposure Category numbers.
C		R603.9.4.1	**Ultimate design wind speeds greater than 130mph.** Where ultimate design wind speed exceeds 130 miles per hour, Exposure Category C walls shall be provided.
C		Table R603.9.2(1)	**Minimum Percentage of Full-Height Structural Sheathing on Exterior Walls.** Table has been updated with new Exposure Category numbers.
C		R609.2	**Performance.** For exterior windows and doors tested in accordance with Sections R609.3 and R609.5, required design wind pressures determined from ASCE 7 using the ultimate strength design (USD) are permitted to be multiplied by 0.6.
	N	R609.6.2	**Impact protective systems- testing and labeling.** Requirements for Impact protective system testing and labeling are provided in this new section.
C		Figure R610.5 (1)- Figure R610.5.2	All of the figures have been updated with new details.
C		Figure R610.8	**Typical Sip Wall Panel-to Panel connection Details.** Figure has been updated. Continuous sealant has been added to detail.
C		Table R702.1(3)	**Cement Plaster Proportions, Part by Volume.** Hydraulic Cement Type GU, HE, MS, HS or MH has been added to materials in table.
	N	R702.3.1.1	**Adhesives.** This code has been added under Materials for Gypsum Board and Gypsum panel products. Expandable foam adhesives for the installation of gypsum board and gypsum panel products shall conform to ASTM C6464.

			Other adhesives for the installation of gypsum board and gypsum panel products shall conform to ASTM C557. Supports and fasteners used to attach gypsum board and gypsum panel products shall comply with Table R702.3.5 or other approved method.
	N	R703.3.1	**Soffit Installation.** Soffits shall comply with Section R703.3.1.1, Section R703.3.1.2 or the manufacturer's installation instructions.
	N	R703.3.1.1	**Wood Structural Panel Soffit.** The minimum nominal thickness for wood structural panel soffits shall be 3/8 inch and shall be fastened to framing or nailing strips with 2 inch by 0.099-inch nails. Fasteners shall be in spaced not less than 6 inches on center at panel edges and 12 inches on center at intermediate supports.
	N	R703.3.1.2	**Vinyl Soffit Panels.** Soffit panels shall be fastened at fascia and wall needs and to intermediate nailing strips as necessary to ensure that there is no unsupported span greater than 16 inches or as specified by the manufacturer's instructions.
C		R703.7.1	**Lath.** The following exception has been added. Lath is not required over masonry, cast-in-place concrete, precast concrete or stone substrates prepared in accordance with ASTM C1063.
C		R703.7.2	**Plaster.** The following has been added to this code. Plastering with cement plaster shall be in accordance with ASTM C926. Cement materials shall be accordance with one of the following: 1. Masonry cement conforming to ASTM C91 Type M, S or N. 2. Portland cement conforming to ASTM C150 Type I, II, or III. 3. Blended hydraulic cement conforming to AASTM C595 Type IP, IS, IL, or IT. 4. Hydraulic cement conforming to ASTM C1157 Type GU, HE, MS, HS, or MH. 5. Plastic (stucco) cement conforming to ASTM C1328.
C		R703.11.2	**Installation Over Foam Plastic Sheathing.** Where Vinyl siding or insulated vinyl siding is installed over foam plastic sheathing, the vinyl siding shall comply with R703.11 and shall have a design wind pressure resistance in accordance with Table R703.11.2. Exceptions 2 and 3 have been added to this section.
C		R802.1.5.4	**Labeling.** In addition to the labels required by Section 802.1.1 for sawn lumber and Section 803.2.1 for wood structural panels, each piece of fire-retardant treated lumber and wood structural panel shall be labeled.
	N	R802.1.8	**Prefabricated wood I-Joists.** The following has been added to Chapter 8. Structural capacities and design provisions for prefabricated wood I-joists shall be established and monitored in accordance with ASTM D5055.
C		R802.4.3	**Hips and Valleys.** A new section for hip and valleys has been added for clarification. Hip and valley rafters shall

			be no less than 2 inches nominal in thickness and not less in depth and 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.
C		R802.4.4	**Rafter Supports.** Where roof pitch is less than 3:12 (25 percent slope), structural members that support rafters, such as ridges, hips and valleys, shall be designed as beams, and bearing shall be provided for rafters in accordance with Section R802.6.
C		R802.4.6	**Collar Ties.** A section for collar ties has been added for clarification. Where collar ties are used to connect opposing rafters, they shall be located in the upper third of the attic space and fastened in accordance with Table R602.3 (1). Collar ties shall not be less than 1 inch by 4 inches nominal, spaced not more than 4 feet on center. Ridge straps in accordance with Table R602.3 (1) shall be permitted to replace collar ties.
C		R802.5.2.2	**Rafter Ties.** A section for rafter ties has been added for clarification. Wood rafter ties shall be not less than 2 inches by 4 inches installed in accordance with Table R802.5.2 at each rafter. Other approved rafter tie methods shall be permitted.
C		R802.2.3	**Installation.** Wood structural panel roof sheathing in accordance with Table R503.2.1.1(1) shall not cantilever more than 9 inches beyond the gable end wall unless supported by gable overhang framing.
C		Table R804.3.1.1 (1)&(2)	**Ceiling Joist Spans.** Both tables have been updated.
C		Table R804.3.2.1 (1)	**Roof Rafter Spans.** The table has been updated with new allowable spans measured horizontally.
C		Table R804.3.2.1(2)	**Ultimate Design Wind Speed to Equivalent Snow Load.** The wind speed and exposure column has been updated.
C		Table R804.3.7.1	**Required Lengths for Ceiling Diaphragms at Gable Endwalls Gypsum Board Sheathed, Ceiling Height = 8 feet.** Ultimate design wind speed has been updated
C		R806.1	**Ventilation.** Required ventilation openings shall open directly to the outside air and shall be protected to prevent the entry of birds, rodents, snakes and other similar creatures.
C		R806.5 5.2	**Unvented attic and unvented enclosed rafter assemblies.** A new section has been added at 5.2 for Climate Zones 3-15, air-permeable insulation installed in unvented attics. 5.2.1 – 5.2.10 list the requirements.
C		R905.1.1	**Underlayment.** One exception has been added. As an alternative, two layers of underlayment complying with ASTM D226 Type II or ASTM D4869 Type III or Type IV shall be permitted to be installed as stated in 3.1-3.4 listed under this exception.
C		Table R905.1.1(1)	**Underlayment Types.** Table has been updated. Photovoltaic shingles has been added.

C		Table R905.1.1(2)	**Underlayment Application.** Table has been updated. Underlayment for photovoltaic shingles has been added.
	N	R905.11.2.1	**Base Sheet.** A base sheet that complies with the requirements of Section 1507.11.2 of the California Building Code, ASTM D1970, or AST MD4601 shall be permitted to be used with a modified bitumen cap sheet.
	N	R905.17	**Building-integrated Photovoltaic (BIPV) roof panels applied directly to the roof deck.** The installation of BIPV roof panels shall comply with the provisions of this section, Section R324 and NFPA 70.
	N	R905.17.1	**Deck Requirements.** BIPV roof panels shall be applied to a solid or closely fitted deck, except where the roof covering is specifically designed to be applied over spaced sheathing.
	N	R905.17.2	**Deck slope.** BIPV roof panels shall be used only on roof slopes of two units vertical in12 units horizontal (17-percent slope) or greater.
	N	R905.17.3	**Underlayment.** Underlayment shall comply with Section 905.1.1
	N	R905.17.3.1	**Ice Barrier.** Where required, an ice barrier shall comply with section R905.12.
	N	R905.17.4	**Ice Barrier.** In areas where there has been a history of ice forming along the eaves causing a backup of water, as designated in Table R301.2 (1), an ice barrier that consists of not less than two layers of underlayment cemented together or of a self-adhering polymer-modified bitumen sheet shall be used in lieu of normal underlayment and extend from the lowest edges of all roof surfaces to a point not less than 24 inches inside the exterior wall line of the building. **Exception:** Detached accessory structures that do not contain conditioned floor area.
	N	R905.17.5	**Material standards.** BIPV roof panels shall be listed and labeled in accordance with UL 1703.
	N	R905.17.6	**Attachment.** BIPV roof panels shall be attached in accordance with the manufacturer's installation instructions.
	N	R905.17.7	**Wind resistance.** BIPV roof panels shall be tested in accordance with UL 1897. BIPV roof panel packaging shall bear a label to indicate compliance with UL 1897.
	N	R1005.8	**Insulation shield.** Where factory-build chimneys pass through insulated assemblies, an insulation shield constructed of steel having a thickness of not less than 0.0187 inch (26 gage) shall be installed to provide clearance between the chimney and the insulation material. The clearance shall be not less than the clearance to the combustibles specified by the chimney

			manufacturer's installation instructions. Where chimneys pass through attic space, the shield shall terminate not less than 2 inches above the insulation materials and shall be secured in place to prevent displacement. Insulation shields provided as part of a listed chimney system shall be installed in accordance with the manufacturer's installation instructions.
	N	Appendix Q	**Tiny Houses.** Appendix Q has been added on tiny house requirements. Below are some basic requirements that are listed in this section. **AQ101. General.** Appendix Q shall be applicable to tiny houses used as single dwelling units. **AQ103.1 Minimum ceiling height.** Habitable space and hallways in tiny houses shall have a ceiling height of not less than 6 feet 8 inches. Bathrooms, toilet rooms, and kitchens shall have a ceiling height of not less than 6 feet 4 inches. Obstructions shall not extend below these minimum ceiling heights. **AQ104 Lofts.** Minimum loft areas used as sleeping or living space shall be not less than 35 square feet, and not less than 5 feet in any horizontal direction.
C		Appendix R	**Light Straw-Clay Construction.** Figures of walls and tables for mixtures have been added to clarify the requirements of the light straw-clay construction.
C		Appendix S	**Strawbale Construction.** There are many new figures provided that show details on the different components of the wall and connections. **Figures provided** - Typical strawbale wall systems - Bale orientations - Typical base of plastered strawbale wall on concrete slab and footing - Typical base of plastered strawbale wall over raised floor - Typical top of loadbearing strawbale wall - Typical top of post-and beam wall with plastered strawbale infill
	N	Appendix T T103.5	**Shading.** The solar-ready zone shall be set back from any existing or new, permanently affixed object on the building or site that is located south, east or west of the solar zone a distance not less than two times the object's height above the nearest point on the roof surface. Such objects include by are not limited to, taller portions of the building itself, parapets, chimneys, antennas, signage, rooftop equipment, trees and roof planting.
	N	Appendix T T103.6	**Capped roof penetration sleeve.** A capped roof penetration sleeve shall be provided adjacent to

			a solar-ready zone located on a roof slope of not greater than 1:12, or 8 percent slope. The capped roof penetration sleeve shall be sized to accommodate the future photovoltaic system conduit but shall have an inside diameter of not less than 1 ¼ inches.