

**RESIDENTIAL CORRECTION LIST  
(2019 California Residential Codes with Supplement effective July 1, 2021)**

<b>Plan Check No:</b>	<b>Review No:</b>	<b>Plan Check Expiration Date: 1 year from submittal</b>	
Site Address:		Area square feet:	Number of Story:
Type of Occupancy:		Wind Speed: $V_{ult} = 110$ mph exposure C (2019 CRC design), $V_{ult} = 95$ mph exposure C (2019 CBC design).	
Type of Construction:	Sprinklered: YES / NO	Seismic Design Category: D <sub>2</sub> (2019 CRC Design), D-Default (2019 CBC design)	
Project Description:		Airport Noise Impact Zone (PART 150): YES / NO.	
Applicant:		Phone:	
Owner:		Phone:	
Architect/Engineer/Draftsman:		Phone:	
Reviewed by:	Date:	Ph: (909)395-	e-mail: @ontarioca.gov

**INSTRUCTIONS:**

- ⇒ Numbers in brackets refer to code sections of 2019 California Residential Code [CRC], 2019 California Building Code [CBC], 2019 California Plumbing Code [CPC], 2019 California Mechanical Code [CMC], 2019 California Electrical Code [CEC], 2019 California Energy Code), and 2019 California Green Buildings Standards Code [CalGreen]
- ⇒ Correct original drawings. Reprint and submit **3 new sets** together with the “marked-up” set. Return this corrections list with corrected plans.
- ⇒ In the Respond column, please indicate the sheet number and detail or note number on the plan where the corrections are made.
- ⇒ Itemize any changes, revisions, or additions made to drawings that are not a direct answer to a correction on a separate sheet.
- ⇒ Additional plan check fee will be required **after 3<sup>rd</sup> review** on hourly rate basis.

Item #	Sheet #	Correction Requested	Respond
<b>A. APPLICATION:</b>			
1		Valuation is too low. Additional Plan check fee is required prior to resubmittal.	
2		Separate permit is required for accessory building, swimming pool, retaining walls, CMU walls, detached patio covers, demolition, etc...	
<b>B. REFERRALS:</b>			
3		Obtain approval from the following departments: -Planning Department -Engineering Department -Fire Department	
4		Submit grading plan for review. Grading permit is required prior to building permit issuance.	
5		Geological report/soil report is required.	
6		Provide site drainage plan. Show site drainage slope and direction.	

7		Indicate on plan that electrical meter location to be approved by Edison.	
		<b>C. PLAN REQUIREMENTS:</b>	
8		Show the correct address of building on plans.	
9		Show the name and address of the owner and person preparing the plan.	
10		Plans and calculations shall be stamped and wet signed by an architect or engineer licensed by the State of California. [BP 5537, 6735]	
11		Indicate on plan the applicable current codes: - 2019 CRC / 2018 IRC - 2019 California Existing Building Code - 2019 CBC / 2018 IBC - 2019 California Historical Building Code - 2019 CPC / 2018 UPC - 2019 California Energy Code - 2019 CMC / 2018 UMC - 2019 CalGreen - 2019 CEC / 2017 NEC	
12		Indicate on plan the following notes: ▪ Airport Noise Impact Zone (PART 150): YES / NO. ▪ Wind Speed: $V_{ult} = 110$ mph, exposure C (2019 CRC design). $V_{ult} = 95$ mph exposure C (2019 CBC design)	
13		Property is located in the Airport Noise Impact Area for the ___ CNL to ___ CNL nose zone: a) Print on plan the attached City Ordinance requirements. b) Incorporate and detail on plan the requirements. c) Complete and return the attached Avigation Easement form.	
14		Add this note on plans: City of Ontario requires all new buildings, and demolition / renovation/tenant improvement permit applicant with project valuation of \$100,000.00 or more to prepare a Construction & Demolition Recycling Plan (CDRP). Fill out “ <b>FORM CDRP</b> ” and submit to Ontario Municipal Utilities Company - Solid Waste Department for approval. Call (909)395-2664 for further information & assistance.	
15		Add this note on plan: All <u>newly constructed</u> residential and commercial buildings shall comply with Structured Wiring Design and Construction Standards (Ontario Municipal Code Title 8 Chapter 16). Go to City of Ontario Building Department website for requirements & details.	
16		The current design codes have changed. Please submit design and plans based on the 2019 CRC, 2019 CBC, 2019 CPC, 2019 CMC, 2019 CEC, 2019 California Energy Code, and 2019 CalGreen.	
17		Provide an index of drawings on the cover sheet of plans.	
18		Every newly constructed building or structure (3 stories or less, or one or two family dwelling or townhouse) must show compliance with 2019 CalGreen. Complete and print on plan the required mandatory measures forms. See additional plan check comments for 2019 CalGreen.	
19		Newly constructed one-and two-family dwellings and townhouses with attached garages shall comply with electric vehicle (EV) charging infrastructure requirements in accordance with 2016 CalGreen Section 4.1. [CRC R309.8]	
20		Newly constructed one-and two-family dwellings and townhouses shall install an automatic residential fire sprinkler system in accordance with Section R313 or NFPA 13D. Submit fire sprinkler plan to Fire Department for review.	
		<b>D. SITE PLAN REQUIREMENTS:</b>	
21		A complete site plan showing property lines, lot dimension, yard setbacks, street name(s), north arrow, existing building to remain/removed, distance between buildings and location of private sewage disposal system is required. [CRC R106.2]	
22		On site plan delineate all projecting elements, and show distance to property line. [CRC R106.2]	
23		Indicate any ascending or descending slopes on the site plan.	
24		Show existing and proposed contours, spot elevations to indicate general site slope and drainage pattern.	
25		a) Lots shall be graded to drain surface water away from the foundation walls. The grade shall fall a minimum of 6” within the first 10 ft (5% slope). Where lot lines, walls, slopes or other physical barrier prohibit 6” of fall within 10 ft, drains or swales shall be constructed to ensure drainage away from the structure. [CRC R401.3]	

		b) Impervious surfaces within 10 ft of the building foundation shall be sloped a minimum of 2% away from the building. [CRC R401.3 exception]	
26		Maintain 5 ft. clearance between septic tank and seepage pits or cesspools, and minimum clearances to buildings and property lines of 5 ft. for septic tank and 8 ft. for the seepage pit. [CPC Table H101-8]	
		<b>E. BUILDING LOCATION:</b>	
27		Exterior walls located < 3ft fire separation distance shall be 1- hour rated construction with exposure from both sides and shall <u>have no opening</u> [for <b>nonsprinklered</b> building per CRC Table R302.1(1)].	
28		Exterior walls located 3ft to < 5 ft fire separation distance shall be 1- hour rated construction with exposure from both sides and shall <u>have 25% max. of wall area openings</u> [for <b>nonsprinklered</b> building per CRC Table R302.1(1)].	
29		a) Projections (e.g. eave overhangs or cornices) with < 2ft fire separation distance is not allowed [for <b>nonsprinklered</b> building per CRC Table R302.1(1)]. b) Projections (e.g. eave overhangs or cornices) with ≥ 2ft to < 5ft fire separation distance shall be 1-hour rated on the underside, or heavy timber, or fire retardant-treated wood, OR for the underside of eave overhang provide fire blocking from the wall top plate to the underside of roof sheathing and for the underside of rake overhang gable vent openings are not installed [for <b>nonsprinklered</b> building per CRC Table R302.1(1)].	
30		Penetrations located < 3ft fire separation distance shall comply with Section R302.4.	
31		<ul style="list-style-type: none"> <li>▪ Exterior walls located &lt; 3ft fire separation distance shall be 1- hour rated construction with exposure from the outside and shall <u>have no opening</u> [for <b>sprinklered</b> building per CRC Table R302.1(2)].</li> <li>▪ For residential subdivisions where all dwellings are equipped with an automatic sprinkler system installed in accordance with Section R313, the fire separation distance for nonrated walls and fire-resistance-rated projections shall be permitted to reduce to 0 feet, and unlimited unprotected openings and penetration shall be permitted, where the adjoining lot provides an open setback yard that is 6 feet or more in width on the opposite side of the property line. [CRC Table R302.1(2) footnote a]</li> </ul>	
32		a) Projections (e.g. eave overhangs or cornices) with < 2ft fire separation distance is not allowed [for <b>sprinklered</b> building per CRC Table R302.1(2)]. b) Projections (e.g. eave overhangs or cornices) with ≥ 2ft to < 3ft fire separation distance shall be 1-hour rated on the underside, or heavy timber, or fire retardant-treated wood, OR for the underside of eave overhang provide fire blocking from the wall top plate to the underside of roof sheathing and for the underside of rake overhang gable vent openings are not installed [for <b>sprinklered</b> building per CRC Table R302.1(2)].	
33		Detached garages accessory to a dwelling located <b>within 2 ft</b> of a lot line are permitted to have roof eave projections not exceeding 4". [CRC R302.1 exceptions 4]	
34		Buildings adjacent to ascending or descending slopes steeper than 33.3% (1 unit vertical in 3 units horizontal) shall be setback according to the requirements of CRC Section R403.1.7 and Figure R403.1.7.1.	
		<b>F. ROOF COVER:</b>	
35		For roof covering specify [CRC R902, R905]: a) Manufacturer and ICC/UL/FM number. b) Roof slope of all areas on the roof plan. c) Note on plan that installation shall be in accordance with manufacturer's installation instruction.	
36		Asphalt shingles shall meet the classification requirements of CRC Table R905.2.4.1 for the appropriate maximum basic wind speed.	
37		Roof slope is not adequate for _____ Type of roof covering specified. [CRC R905. 2 – R905.16]	
38		Show sizes and locations of the roof/deck drains and secondary emergency overflow roof drains or scuppers. [CRC R903.4.1, CPC 1101.12 and CPC 1102.0]	

39		Specify approved weatherproof walking surface material at decks and balconies. Provide ICC/UL number.	
<b>G. SKYLIGHTS:</b>			
40		For prefabricated skylights: a) Specify manufacturer, model and ICC/UL number. [CRC R308.6.9] b) All unit skylights installed in a roof with a pitch flatter than 3:12 shall be mounted on a curb extending at least 4" above the roof unless otherwise specified in the manufacturer's installation instructions. [CRC R308.6.8] c) For fully tempered or heat-strengthened glass, a retaining screen meeting the requirement of Section R308.6.7 shall be installed below the glass, except for fully tempered glass that meets either condition listed in Section R 308.6.5. [CRC R308.6.3]	
<b>H. DESIGN REQUIREMENTS</b>			
41		An automatic residential fire sprinklered system shall be installed in one-and two-family dwellings and in townhouses except for addition or alterations made to existing buildings that do not have an automatic residential fire sprinklered system installed. [CRC R313.1 & R313.2]	
42		Habitable rooms, other than kitchen, shall contain at least 70 square feet of floor area. [CRC R304.1]	
43		Habitable rooms, other than a kitchen, shall not be less than 7 ft. in any horizontal dimension. [CRC 304.2]	
44		Habitable spaces, hallways, and portions of basements containing these spaces shall have a minimum of 7 ft. ceiling height. [CRC R305.1]	
45		Bathrooms, toilet rooms and laundry rooms shall have a minimum of 6'-8" ceiling height. [CRC R305.1]	
46		For rooms with sloped ceilings, the required floor area of the room shall have a ceiling height of not less than 5 ft. and not less than 50% of the required floor area shall have a ceiling of not less than 7 ft. [CRC R305.1 exception 1]	
47		A shower or tub equipped with a showerhead shall have a minimum of 6'-8" ceiling height above a minimum area of 30" x 30" at the showerhead [CRC R305.1 exceptions 2].	
48		Beams, girders, ducts or other obstructions in basements containing habitable spaces shall be permitted to project to within 6'-4" of the finish floor. [CRC R305 exception 3]	
49		Portions of basements that do not contain habitable spaces or hallways shall have a minimum 6'-8" ceiling height. [CRC R305.1.1]	
50		<ul style="list-style-type: none"> <li>▪ Window area of habitable rooms must be at least 8% of the room floor area for natural light, or provide artificial light. [CRC R303.1]</li> <li>▪ Artificial light must be capable producing an average illumination of 6 footcandles over area of the room at height of 30 inches above floor [CRC R303.1 exceptions 2].</li> </ul>	
51		<ul style="list-style-type: none"> <li>▪ Openable window area of habitable rooms must be at least 4% of the room floor area for natural ventilation, or provide a whole-house mechanical ventilation system installed in accordance with CMC. [CRC R 303.1 exceptions 1]</li> </ul>	
52		<ul style="list-style-type: none"> <li>▪ Use of sunrooms and patio covers shall be permitted for <i>natural</i> ventilation if at least 40% of sunroom walls are open or are enclosed only by insect screen, and the ceiling height of sunroom is not less than 7'. [CRC R303.1 exceptions 3]</li> <li>▪ Required glazed openings shall be permitted to open into sunroom additions, or patio covers that abut a street, yard or court if in excess of 40% of the exterior sunroom wall are open, on enclosed only by insect screening, and the ceiling height of the sunroom is not less than 7'. [CRC R303.9.1]</li> <li>▪ Required glazed openings that face into a roofed porch where the porch abuts a street, yard or court and the longer side of the porch is not less than 65% unobstructed and the ceiling height is not less than 7'. [CRC303.9 exceptions 1]</li> <li>▪ Required glazed openings that face into the area under a deck, balcony, bay or floor cantilever where a clear vertical space not less than 36" in height is provided. [CRC R303.9 exceptions 3]</li> </ul>	
53		At least ½ of the common wall between _____ must be open and	

		have an unobstructed opening area of not less than 25 sq ft or 10% of the floor area of the interior room, whichever is greater, if light and ventilation is being supplied from an adjacent room [CRC R303.2].	
54		Each bathroom containing a bathtub, shower or a spa shall be mechanically ventilated with a minimum 50 cfm intermittent or 20 cfm continuous exhaust fan [CRC R303.3 exception, CMC Table 403.7]. The fan must be controlled by a humidity control. [CalGreen 4.506.1 item 2]	
55		Water closet or bidet shall be set no closer than 15" from its center to any side wall or obstruction or no closer than 30" center to center to any similar fixture and the clear space in front of a water closet, lavatory, or a bidet shall be at least 24" [CPC 402.5].	
56		Urinal shall be set no closer than 12" from its center to any side wall or partition or no closer than 24" center to center [CPC 402.5]	
58		Shower floors and walls above bathtubs with installed shower head shall be finished with a nonabsorbent surface to a height not less than 6 ft above the floor. [CRC R307.2]	
59		a) Net area of shower compartments shall be not less than 1,024 sq. in. of floor area, and encompass 30 inch diameter circle. [CPC 408.6] b) Shower doors shall have a minimum of 22" unobstructed opening for egress. [CPC 408.5]	
60		Safety glazing (tempered glazing) is required for the following: a) Where the glazing is within 24" of either side of the door <u>in the plane of the door</u> in a closed position and where the bottom edge of the glazing is less than 60" above the floor. [CRC R308.4.2 item 1] b) Where the glazing is on a wall <u>less than 180"</u> from the plane of the door in a closed position and within 24" of the hinge side of an in-swinging door. [CRC R308.4.2 item 2] c) Glazing less than 60" above a shower or tub floor. [CRC R308.4.5] d) Glazing where the bottom edge is less than 36" above the stairways, landings, and ramps. [CRC R308.4.6] e) Glazing adjacent to the stairway bottom landing where the glazing is less than 36" above the landing and within 60" horizontal arc less than 180 degrees from the bottom tread nosing shall be safety glazing. [CRC R308.4.7]	
61		Provide details and/or notes for 1-hour fire-resistance construction of walls and floor separating dwelling units for nonsprinklered building or 1/2-hour fire-resistance construction for sprinklered building. [CRC R302.3 & exception 1]	
62		At bedrooms, habitable attics, and basements provide one operable emergency escape and rescue window or door meeting all of the following: an openable area of not less than 5.7 sqft (5 sqft at grade level), a minimum clear 24 inch height and 20 inch width, and a maximum 44 inches measured from the floor to the bottom of the clear opening. [CRC R310.1, R310.2.1,2]	
63		Basement with sleeping rooms shall have one means of egress and one emergency escape or rescue opening OR two means of egress. [CRC R310.1 exceptions 2]	
64		<b>Area wells</b> requirements: a) Area wells shall have 36" minimum width. [CRC R310.3.2] b) Area wells with a vertical depth >42" shall be equipped with a permanently affixed ladder or steps useable with doors in the fully open position complies with CRC R310.3.2.1 requirements. c) Area wells shall be designed for proper drainage by connecting to the building's foundation drainage system or by an approved alternative method. [CRC R310.3.2.2]	
65		<b>Window fall protection</b> shall be provided where the top of the sill of an operable window opening is located less than 24" above the finished floor and greater than 72" above the finished grade or other surface below on the exterior of the building. The operable windows with openings such that a 4 inch sphere cannot pass, or provide window fall prevention device or window opening control devices that comply with ASTM F2090. [CRC R312.2.1]	
66		Show location of hard wired <b>smoke alarms</b> [CRC R314.3]: a) In each sleeping room. b) Outside each separate sleeping area in the immediate vicinity of the bedrooms. c) On each story, basement, and habitable attics.	

		<p>d) Minimum 3 ft. from the door or opening of a bathroom that contains a bathtub or shower.</p> <p>e) Note on plan smoke alarms shall comply with specific location requirements per NFPA 72 Section 29.8.3.4. [CRC R314.3.3]</p>	
67		<p>Show location of hard wired <b>carbon monoxide alarms</b> [CRC R315.3]:</p> <p>a) Outside of each separate sleeping area in the immediate vicinity of the bedrooms.</p> <p>b) On every occupiable level of a dwelling unit, including basements.</p> <p>c) Where a fuel-burning appliance is located within a bedroom or its attached bathroom, a carbon monoxide alarm shall be installed within the bedroom.</p>	
68		<p>Note on plan <b>smoke alarm</b> requirements:</p> <p>a) An approved smoke alarm shall be installed for new construction and alteration, repair or additions requiring permit exceeding \$1000. [CRC R314.2.2, R314.8.2.a.1]</p> <p>b) Battery operated smoke alarms permitted in existing buildings where no construction is taking place or in building undergoing alteration or repair that do not result in the removal of interior walls or ceiling finishes, unless there is an attic, crawl space or basement which could provide access for wiring. [CRC R314.6 exceptions 1, 3]</p> <p>c) Smoke alarms shall be interconnected such that the activation of one alarm will activate all alarms in the individual dwelling unit. [CRC R314.4]</p> <p>d) Smoke detectors shall be “hard wired” and shall be equipped with battery backup. [CRC R314.6]</p>	
69		<p>Note on plan <b>carbon monoxide alarm</b> requirements:</p> <p>a) CO alarms shall be “hard wired” and shall be equipped with battery backup. [CRC R315.6]</p> <p>b) CO alarms shall be listed in accordance with UL 2034 [CRC R315.1.1]. CO detector shall be listed in accordance with UL 2075 [CRC R315.7.1].</p> <p>c) CO alarms shall be interconnected such that the activation of one alarm will activate all alarms in the individual dwelling unit. [CRC R315.5]</p> <p>d) In existing dwelling unit a CO alarm is permitted to be battery operated where repair or alteration do not result in the removal of wall or ceiling finishes. [CRC R315.5 exceptions 1]</p>	
70		<p>Provide 22” x 30” <b>attic access</b> for attic areas that have a vertical height of <math>\geq 30</math>” over an area on not less than 30 sqft located in hallway or other readily accessible location. [CRC R807.1]</p>	
71		<p>Provide 22” x 30” minimum access opening and passageway or at least as large as the largest component of the appliance where mechanical equipment located in attic or under-floor space. [CMC 304.4]</p>	
72		<p>Provide full height cross section cross section through _____ showing framing, interior/exterior sheathing, plate height, insulation, foundation, finish grade, etc.</p>	
73		<p>Show how dwelling is provided with heating facility capable of maintaining a minimum room temperature of 68°F at a point 3 ft above the floor and 2 ft from exterior walls of habitable rooms. [CRC R303.10]</p>	
74		<p>When a passive solar energy collector is designed as a conditioned area it shall comply with the 2019 California Energy Code. Nonconditioned passive solar energy collectors are exempt from the 2016 California Energy Code. [CRC 303.9.1.1]</p>	
75		<p>Provide &amp; detail <b>draftstops</b> in concealed space of a floor/ceiling assembly so that the area of the concealed space does not exceed 1000 ft<sup>2</sup> and divide the concealed space into approximately equal areas. [CRC R302.12, R502.12]</p>	
		<b>I. MEANS OF EGRESS:</b>	
76		<p>a) Provide at least one egress door, side-hinged and a minimum clear width of 32” when measured between the face of the door and the stop, with the door open 90 degrees. The minimum clear height is 78” measured from the top of threshold to the bottom of stop [CRC R311.2].</p> <p>b) The landings or finished floors shall not be more than 1½” lower than the top of threshold except the landing or floor on the exterior side shall not be more than 7¼” below the top of threshold provided the door does not swing over the landing or floor [CRCR 311.3.1].</p>	
77		<p>There shall be a landing or floor on each side of each exterior door. Landings at doors shall have a length measured in direction of travel of not less than 36</p>	

		inches with 2% max slope. [CRC R311.3]	
78		Doors other than the required egress door shall be provided with landing or floors not more than 7¼" below the top of threshold except a top landing is not required where 2 or fewer risers stairway located on the exterior side of door and the door does not swing over the stairway [CRC R311.3.2].	
79		Exterior balconies less than 60 sqft accessible from a door are permitted to have a landing less than 36" in the direction of travel. [CRC R311.3 exception]	
80		For habitable levels or basements located more than one story above or more than one story below an egress door, the maximum travel distance from any occupied point to a stairway or ramp that provide egress from such habitable level or basement shall not exceed 50 ft. [CRC R311.4]	
81		The minimum width of a hallway shall be not less than 3 ft. [CRC R311.6]	
		<b>J. STAIRWAYS:</b>	
82		Provide section and details of interior/exterior stairway showing: a) Minimum clear width of 36". [CRC R311.7.1] b) Maximum riser height of 7¾" and minimum tread depth of 10". [CRC R311.7.5.1, CRC R311.7.5.2] c) Nosing projection shall be provided on stairway except where the tread depth is 11" minimum. Nosing projection shall be ¾" minimum and 1¼" maximum with 9/16" maximum nosing radius or ½" max bevel. [CRC R311.7.5.3] d) Open risers are permitted provided that the opening located more than 30" vertically to floor or grade below do not permit the passage of a 4" diameter sphere. [CRC R311.7.5.1] e) Minimum head room of 6'-8". [CRC R311.7.2] f) A flight of stairs shall not have a vertical rise larger than 151" between floor levels or landings. [CRC R311.7.3] g) Framing (stringer) size, bracing, connections, footings. h) Enclosed accessible space under stair requires 1 layer of ½" gypsum board on enclosed side. [CRC R302.7]	
83		Winder tread shall have a minimum tread depth of 10 inches measured between the vertical planes of the foremost projection of adjacent treads at the intersections of the walkline. Winder treads shall have a minimum tread depth of 6" at any point within the clear width of the stair. [CRC R311.7.5.2.1]	
84		For spiral stairways: a) Submit shop drawings for spiral stairway showing compliance with CRC R311.7.10.1. b) Provide spiral stairway column base connection/footing detail and structural connection to building.	
85		<b>Handrail</b> shall satisfy the following: a) Handrails shall be provided on at least one side of each continuous run of treads of flight with 4 or more risers. [CRC R311.7.8.] b) Handrails shall be continuous for the full length of flight except at a newel post at the turn. [CRC R311.7.8.4] c) Handrail shall be 34" to 38" above the nosing of treads. [CRC R311.7.8.1] d) Handrails adjacent to a wall shall have a space of not less than 1½" between the wall and the handrails. [CRC R311.7.8.3] e) Handrails shall not project more than 4½" on either side of the stairway. [CRC 311.7.8.2] f) The handgrip portion of handrail shall not be less than 1¼" nor more than 2" in cross-sectional dimension. If the handrail is not circular, it shall have a perimeter dimension of at least 4" and not greater than 6¼" with a maximum cross-section dimension of 2¼". Edges shall have a minimum radius of 0.01". [CRC R311.7.8.5 Type I]	
86		Provide connection details of guards and handrails on open side of balconies, decks, landings, and stairs adequate to support a single concentrated 200 lbs. load applied in any direction at any point along the top. [CRC Table R301.5]	
87		Provide detail of <b>Guards</b> : a) Provide 42" min. high guards for open-sided walking surfaces, porches, balconies, including stairs, ramps and landings that are located more than 30" above grade or floor below within 36" to the edge of the open side. Openings between rails shall be less than 4" in diameter. [CRC R312.1.1, 2, 3]	

		<ul style="list-style-type: none"> <li>b) Guards on the open sides of stairs shall have a height 34" min. [CRC R312.1.2 exceptions 1]</li> <li>c) Where the top of guard serves as a handrail on the open side of stairs, the top of guard shall be 34" min. and 38" max. [CRC R312.1.2. exceptions 2]</li> <li>d) The triangular openings formed by riser, tread and bottom of guardrail shall be sized so that a 6" sphere cannot pass through. [CRC R312.3 exceptions 1]</li> <li>e) Guards on the open side of stairs shall not have openings which allow passage of a sphere 4 3/8" in diameter. [CRC R312.3 exceptions 2]</li> </ul>	
		<b>K. VENTILATION:</b>	
88		<ul style="list-style-type: none"> <li>▪ Show on plan the required attic ventilation area, type, size and location. Ventilation openings shall be 1/16" min. and 1/4" max. and open directly to the outside air [CRC 806.1]. The minimum net free ventilating area shall be 1/150 of attic area. [CRC R806.2]</li> <li>▪ The exception for net free ventilating area of 1/300 is for climate zones 14 and 16 only with class I or II vapor retarder installed and at least 40% and not more than 50% of the required ventilating area is provided with ventilator located in the upper portion of the attic or rafter space 3 ft max. below the ridge or the highest point. The balance located in the bottom one-third of the attic space.</li> </ul>	
89		A minimum of 1" of space shall be provided between the insulation and the roof sheathing and at the location of vents [CRC R806.3]. At vaulted ceiling or flat roofs, detail ventilation for space between individual roof joists.	
90		<ul style="list-style-type: none"> <li>a) Show under-floor ventilation opening size and locations equal to 1/150 of under-floor area OR 1/1500 of under-floor area if ground surface is covered with Class I vapor retarder material. One ventilation opening shall be within 3 ft of each corner of the building. Openings shall have 1/4" max. corrosion resistant metal mesh covering. [CRC R408.1, R408.2]</li> <li>b) Unvented under floor space shall comply with CRC R408.3.</li> </ul>	
		<b>L. GARAGE AND CARPORT:</b>	
91		Garage shall be separated from the dwelling unit and its attic area with a minimum 1/2" gypsum board applied to the garage side. [CRC Table R302.6]	
92		Garage beneath habitable rooms shall be separated from all habitable rooms above by not less than a 5/8" Type X gypsum board or equivalent. [CRC Table R302.6]	
93		Structures supporting floor/ceiling assemblies used for the required dwelling/garage separation shall be covered by not less than 1/2" gypsum board or equivalent. [CRC Table R302.6]	
94		Garages located less than 3 ft from a dwelling unit on the same lot shall be separated by not less than 1/2" gypsum board or equivalent applied to the interior side of exterior walls that are within the area. [CRC Table R302.6]	
95		Door openings between a private garage and the dwelling unit shall be equipped with either solid wood doors or solid or honeycomb core steel doors not less than 1 3/8" thick, or 20 minute fire-rated doors, equipped with self-closing or automatic-closing and self-latching device except for sprinklered building the other doors (for nonsleeping rooms) need only self-closing and self-latching. [CRC R302.5.1]	
96		Openings from private garage directly into a room used for sleeping purposes shall not be permitted. [CRC R302.5.1]	
97		Ducts in a private garage and ducts penetrating the walls or ceilings separating the dwelling unit from the garage shall be constructed of a minimum No. 26 gage sheet steel or other approved material and shall have no openings into the garage. [CRC R302.5.2]	
98		Carports shall be open on at least two sides and there are no enclosed areas above. Carports not open on at least two sides shall be considered as a garage and shall comply with the provisions for garages. [CRC R302.6, R309.2]	
99		The area of floor used for parking of automobile or other vehicles (garages, carports) shall be sloped to facilitate the movement of liquids to a drain or toward the main vehicle entry doorway. [CRC R309.1, CRC R309.2]	
100		Garage/carport floor surfaces shall be of approved noncombustible material. [CRC R309.1, CRC R309.2]	



101		Automatic garage door openers, if provided, shall be listed and labeled in accordance with UL325. [CRC 309.4]	
102		Newly constructed one-and two-family dwellings and townhouses with attached private garages shall comply with electric vehicle (EV) charging infrastructure requirements per 2019 CalGreen Section 4.1. [CRC R309.8]	
		<b>M. VENEER, FIREPLACE:</b>	
103		Specify/detail stone and masonry veneer material, thickness, backing, anchorage, footings and support over openings. Maximum height is limited by Table R703.8(2). [CRC R703.8, Figure R703.8, Table R703.3.1]	
104		Masonry veneer tie attachment and air space requirements must comply with CRC Table R703.8.4(1). The veneer shall be separated from the sheathing by an air space of a minimum of a nominal 1" but not more than 4½". [CRC Table R703.8.4(1)]	
105		The method of support for masonry veneer on wood construction shall be constructed in accordance with CRC Figure R703.8.2.1 and Figure R703.8.2.2. The allowable lintel span shall be per Table R703.8.3.1.	
106		For <b>fireplace/chimney</b> specify the following: a) Chimney shall extend at least 2 ft higher than any portion of the building within 10 ft, but shall not be less than 3 ft above the highest point where the chimney passes through the roof. [CRC R1003.9] b) Masonry chimney shall have a chimney cap (concrete, metal, or stone) sloped to shed water, a drip edge and a caulked bond break around any flue liners. [CRC R1003.9.1] c) Rain cap when installed must have a minimum clearance above the flue termination to provide a net clear area of four times the free area of the flue outlet. [CRC R1003.9.3] d) Reinforce masonry or concrete chimney per CRC R1003.3 and anchor chimney to floor and roof/ceiling line per CRC R1003.4. e) Wood burning fire place is not allowed (per SCAQMD rule).	
107		For factory-built metal fireplace specify [CRC R1004]: a) Manufacturer, model and ICBO/UL number. b) Installation and use shall be in accordance with their listing. c) Non-vented fireplaces or gas fired appliances are not permitted. d) Factory-built chimney maximum offset is 30 degrees vertically and shall not have more than 4 elbows. [CRC R1005.7]	
108		Fireplace gas valves must be located not more than 6 ft unless listed for installation in the fireplace. [CPC 1212.5]	
109		Provide complete details and specifications for installation of glass unit masonry. [CRC R607]	
		<b>N. WATER HEATER:</b>	
110		Show location water heater on floor plan.	
111		The minimum capacity for water heaters shall be in accordance with the first hour rating listed in CPC Table 501.1(2). Print on plan CPC Table 501.1(2).	
112		Show how heat producing appliances (water heater/dryer/furnace) in garage will be protected from automobile damage (wheel blocks are not sufficient). Elements of appliances which create a glow, spark, or flame shall be located a minimum of 18" above garage floor unless listed as flammable vapor ignition resistance. [CMC 305.1, 305.1.1]	
113		Water heaters shall be anchored or strapped to the structure. [CPC 507.2]. Show size and location of straps, connector, etc.	
114		When a water heater is located in the attic, attic-ceiling assembly, floor-ceiling assembly, or floor-subfloor assembly where damage may result from a leaking water heater, a watertight pan of corrosion-resistant materials shall be installed beneath the water heater with a minimum three-quarter (¾) inch (20 mm) diameter drain to an approved location. Such pan shall not be less than 1½" in depth. [CPC 507.5]	
115		Show source of combustion air for water heater. [CMC 701.0, CPC 506.0]	
116		Add the following note on plan: Effective Jan 1, 2020 new installation gas or propane water heater shall have <u>all</u> the following as per 2019 Energy Standards 150.0(n):	

		<ol style="list-style-type: none"> <li>1) A dedicated 125V, 20-amp electrical receptacle connected to the electrical panel with a 120/240-volt 3 conductor, 10 AWG copper branch circuit, within 3 feet from the water heater and accessible with no obstructions.</li> <li>2) Both ends of the unused conductor shall be labeled "SPARE" and be electrically isolated.</li> <li>3) A reserved single pole circuit breaker space in the electrical panel adjacent to the circuit breaker for the branch circuit above and labeled "FUTURE 240V USE".</li> <li>4) A Category III or IV vent, or a Type B vent with straight pipe between outside and water heater.</li> <li>5) A condensate drain no more than 2 inches higher than the base on water heater for natural draining.</li> <li>6) A gas supply line with capacity of at least 200,000 Btu/hr.</li> </ol>	
		<b>O. ROOF/CEILING FRAMING:</b>	
117		Specify the size, spacing and direction of rafters.	
118		The ___ x ___ rafters at ___ o.c. over ___ exceed the allowable span for ___ grade. [CRC R802.4.1, CRC Tables R802.4.1(1), (2)]	
119		<ol style="list-style-type: none"> <li>a) A ridge board, valley and hip members not less in depth than the cut end of the rafter is required [CRC R802.3].</li> <li>b) Ridge beams, valleys, and hips shall be designed as beams when roof slope is less than 3:12 [CRC R802.4.4].</li> <li>c) Rafters shall be framed not more than 1½" offset from each other to ridge board or directly opposite from each other with a collar tie, gusset plate or ridge strap. [CRC R802.4.2]</li> </ol>	
120		Roof purlins shall not be smaller than the rafters they support. Purlins shall be continuous and supported by 2x4 braces at 4 ft oc. with an unbraced length not over 8 feet, and not flatter than 45 degrees from the horizontal, to bearing walls. [CRC R802.4.5]	
121		Provide designed ridge beams for open beam vaulted ceilings or where ceiling joists or rafter ties do not provide continuous ties across the structure [CRC R802.3]	
122		Provide manufactured roof truss profiles, layout plan and calculations from truss manufacturer to comply with CRC R802.10.	
123		<p>For <u>roof tie-down</u> requirements:</p> <ol style="list-style-type: none"> <li>1) Truss and rafter connection with toe nailing per prescriptive connection requirements of Table R602.3(1) is only allowed under either of the following conditions [CRC R802.11.1]: <ol style="list-style-type: none"> <li>1) Uplift force ≤ 200 lbs, <b>or</b></li> <li>2) Roof pitch &gt; 5:12 and meet all the criteria: 115 mph max. wind speed, exposure B, 32' max. roof span, 24" max. spacing for trusses or rafters.</li> </ol> </li> <li>2) Truss and rafter connector is required for uplift forces greater than 200 lbs. [CRC R802.11.1, Table R802.11]</li> <li>3) Trusses or rafters shall be attached to supporting wall by connection capable of resisting uplift forces per Table R802.11. [CRC R802.11.1.1, 2]</li> </ol>	
124		Show ceiling joists size, spacing, direction and span on plans.	
125		The ___ x ___ ceiling joists at ___ o.c. over ___ exceed the allowable span for ___ grade. [CRC R802.5, CRC Tables R802.5.1(1),(2)]	
126		<ol style="list-style-type: none"> <li>a) Ceiling joist and rafter shall be nailed to each other in accordance with CRC Table R802.5.2. [CRC R802.5.2]</li> <li>b) Where ceiling joists are not parallel to rafters, a minimum of 2x4 rafter ties shall be installed in accordance with the connection requirements in CRC Table R802.5.2. [CRC R802.5.2, Figure R802.4.5]</li> </ol>	
127		Provide collar ties (1x4 min. @ 48" oc.) or ridge straps (1¼" x 20 gage) to resist wind uplift connected in the upper third of the attic space. [CRC R802.4.6, CRC Table R602.3(1)]	
128		Show blocking at ends of rafters and trusses at exterior walls, at supports of floor joists and at the ridge line of truss roofs.	
		<b>P. WALL FRAMING:</b>	
129		Specify the header size at door, window and other openings for exterior bearing walls CRC Table R602.7(1) and for interior bearing wall CRC Table R602.7(2).	

130		The ____ x ____ header at _____ exceeds the allowable span for _____ grade. [CRC Table R602.7(1)]	
131		Studs in bearing walls are limited to 10 ft in height unless an approved design is submitted. [CRC Table R602.3(5)]	
132		Detail connection of the top of interior non-bearing walls to manufactured trusses. Provide a 1/2" min deflection space or the deflection specified by the truss design engineer.	
133		Note the use of full length studs (balloon frame) on exterior walls of rooms with vaulted ceiling.	
134		<u>Cripple walls</u> with a stud height less than 14" shall be continuously sheathed on at least one side with a wood structural panel, or the cripple walls shall be constructed of solid blocking. All cripple walls shall be supported on continuous foundations. [CRC R602.9]	
135		Columns shall be restrained to prevent lateral displacement at the bottom end. [CRC R407.3]	
<b>Q. WALL BRACING:</b>			
136		Provide wall bracing as specified in CRC R602.10 in conformance with braced wall panels construction methods [CRC R602.10.4], required bracing length [CRC R602.10.3], and locations [CRC R602.10.2.2.1] in buildings assigned to Seismic Design Category D2: a) Braced wall line spacing shall be 25' o.c. max. except in one and two-story buildings 35' o.c. max. spacing for a single room 900 sqft max. with 3:1 max. length-to-width diaphragm ratio, with the top plate lap splice of 8-16d common nails on each side of splice. [CRC Table 602.10.1.3, Table R602.10.3(4) footnote c] b) Braced wall panels maximum offset out of plane is 4' each side. [CRC R602.10.1.2] c) Braced wall panels shall be fastened to the required foundation in accordance with CRC R602.11.1. [CRC R602.10.8.1]	
137		<b>Braced wall panel connection to roof framing</b> [CRC R602.10.8.2]: 1) <i>For SDC D2:</i> Top plate lap splices shall be face-nailed with 8 – 16d minimum nails on each side of splice. [CRC R602.10.8.1] 2) <i>For SDC A,B, &amp; C:</i> a) Distance top of <u>rafters or roof trusses</u> to top plates $\leq 9\frac{1}{4}$ " blocking need not be installed. b) Distance top of <u>rafters or roof trusses</u> to top plates $9\frac{1}{4}$ " - $15\frac{1}{4}$ " shall be with blocking per Figure R602.10.8.2(1). 3) <i>For SDC D2:</i> Distance top of <u>rafters or roof trusses</u> to top plates $\leq 15\frac{1}{4}$ " shall be with blocking per Figure R602.10.8.2(1). 4) <i>For all SDC:</i> Distance top of <u>rafters or roof trusses</u> to top plates $> 15\frac{1}{4}$ " shall be with blocking per Figure R602.10.8.2(2) or Figure R602.10.8.2(3) or full height engineered blocking panel or designed by an engineer.	
138		<b>Braced wall panel support</b> [CRR R602.10.9]: 1) Cantilevered floor joists in compliance with section R502.3.3 permitted to support braced wall panels. 2) Raised floor system or pier foundations supporting braced wall panels shall be designed by an engineer. 3) Masonry stem walls with length $\leq 48$ " supporting braced wall panels shall be reinforced per Figure R602.10.9. 4) Masonry stem walls with length $> 48$ " supporting braced wall panels shall be constructed per Section R403.1. 5) Method ABW & PFH brace wall panels shall not be attached to masonry stem walls. 6) Concrete stem walls with length $\leq 48$ ", $>12$ " tall, and $< 6$ " thick supporting braced wall panels shall be reinforced per Figure R602.10.9. 7) Exterior walls of buildings located in SDC D2 shall be supported by a continuous solid or fully grouted masonry or concrete footing. [CRC R403.1.2]	

		<p>8) All required interior braced wall panels located in SDC D<sub>2</sub> with plan dimensions &gt; 50' shall be supported by a continuous solid or fully grouted masonry or concrete footing. [CRC R403.1.2]</p> <p>9) <u>For 2-story building</u> located in SDC D<sub>2</sub> with plan dimension ≤ 50' interior braced wall panels shall be on continuous foundation except [CRC R403.1.2 exception]:</p> <ol style="list-style-type: none"> <li>Cripple wall height not exceeds 4'.</li> <li>First floor braced wall panels are supported on doubled floor joists, continuous blocking or floor beam.</li> <li>The distance between bracing line does not exceed twice the building width.</li> </ol>	
139		<p><b>Brace wall panel joints</b> shall have horizontal joints occurs over and fastened to 1½" min. thickness common blocking except [CRC R602.10.4.4]:</p> <ol style="list-style-type: none"> <li>For methods WSP and CS-WSP, blocking is permitted to be omitted when adjustment factor No. 8 of Table R602.10.3(2) or No. 10 of Table R602.10.3(4) is applied.</li> <li>When method GB panels are installed horizontally, horizontal joint blocking is not required.</li> </ol>	
140		<p><b>Cripple wall bracing for SDC D<sub>2</sub></b> [CRC R602.10.10 &amp; R602.10.10.2]:</p> <ol style="list-style-type: none"> <li>Cripple walls shall be braced per Tables R602.10.3(1) and (3), and the applicable adjustment factors in Tables R602.10.3(2) and (4).</li> <li>The bracing length shall be multiplied by a factor 1.15 where gypsum wall board is not used on the inside of the cripple wall bracing.</li> <li>Wall bracings with stone and masonry veneer are not permitted with cripple walls and require interior braced wall lines be supported on continuous foundation. [CRC R602.10.6.5]</li> </ol>	
141		<p><b>Wall bracing for dwellings with stone and masonry veneer in SDC D<sub>2</sub></b>[CRC R602.10.6.5]:</p> <ol style="list-style-type: none"> <li><b>The veneer ≤ 1-story high:</b> <ol style="list-style-type: none"> <li>Wall bracing shall be in accordance with Section R602.10.3.</li> <li>The length of bracing shall be the greater of Table R602.10.3(1) with wind adjustment factor or Table R605.10.3(3) with seismic adjustment factor.</li> </ol> </li> <li><b>The veneer &gt; 1-story high:</b> <ol style="list-style-type: none"> <li>Wall bracing shall be using method BV-WSP for one or two dwellings only. For townhouses shall be designed by a licensed engineer.</li> <li>Wall bracing using method WSP or CS-WSP shall comply with CRC R602.10.6.5 requirements.</li> <li>Wall bracings with stone and masonry veneer are not permitted with cripple walls and require interior braced wall lines be supported on continuous foundation. [CRC R602.10.6.5]</li> <li>The length of bracing shall be the greater of Table R602.10.3(1) with wind adjustment factor or Table R605.10.6.5 without seismic adjustment factor.</li> <li>Braced wall panels shall begin within 10' from each end of a braced wall line and placed 25' o.c. max. spacing. [CRC R602.10.6.5.1, R602.10.2.2.1, CRC Table R602.10.1.3]</li> <li>Braced wall panels shall be sheathed with 7/16" min. wood structural panel with 8d common nails @ 4", 4", 12". The end of each brace wall panel shall have hold down device per Table R602.10.4 and Figure R602.10.6.5.</li> <li>The minimum total length of bracing in a braced wall line shall be 48" total. [CRC R602.10.6.5.1]</li> </ol> </li> </ol>	
142		<p><b>Intermittent and continuously sheathed braced wall panels</b> construction shall be in accordance with one of the methods listed Table R602.10.4. [CRC R602.10.4.1]</p> <ol style="list-style-type: none"> <li>Mixing intermittent bracing and continuous sheathing methods from story to story is permitted.</li> <li>Mixing of continuous sheathing methods CS-WSP, CS-G, and CS-PF along a braced wall line is permitted.</li> </ol>	
143		<p><b>Continuous sheathing methods</b> [CRC R602.10.7]:</p>	

		<ul style="list-style-type: none"> <li>a) Construction shall be with one of the methods listed in Table R602.10.4.</li> <li>b) Continuous sheathing methods requires structural panel sheathing to be used on all sheathable surfaces including areas above and below openings and gable end walls. [CRC R602.10.4.2].</li> <li>c) Each end of a braced wall line shall have end conditions shown in Figure R602.10.7.</li> <li>d) Minimum panel length shall be per Table R602.10.5 and constructed per Figure R602.10.5.</li> <li>e) The length of bracing shall be the greater of Table R602.10.3(1) with wind adjustment factor or Table R602.10.3(3) with seismic adjustment factor.</li> <li>f) Braced wall panels shall be placed within 10' of each end of the braced wall line provided with a min. 24" wide return panel is applied to each side of the building corner attached per Figures R602.10.7, <b>or</b> the end of each braced wall panel closest to the corner shall have a hold-down device (800 lbs capacity) per Figure R602.10.7.</li> </ul>	
144		<b>Method WSP</b> for SDC D <sub>2</sub> [CRC R602.10.2.2.1 exception]: Braced wall panels shall be placed within 10' of each end of the braced wall line provided with a min. 24" wide return panel is applied to each side of the building corner attached per Figure R602.10.7, <b>or</b> the end of each braced wall panel closest to the corner shall have a hold-down device (1,800 lbs capacity). Minimum length of panel is 48" for 10' or less high panel, 53" for 11' high panel, or 58" for 12' high panel. Minimum thickness is 3/8" wood structural panel w/ 8d nails @ 6", 6", 12" o.c. [CRC Tables R602.10.5]	
145		<b>Method ABW</b> [CRC R602.10.6.1]: Shall be installed per Figure R602.10.6.1. Minimum length of panel is 32" for 9' or less high panel, or 34" for 10' high panel with 1,800 lbs capacity holddown for 1 story building or 3,000 lbs capacity holddown for first story of two-story buildings. Braced wall panels ≥ 11' is not permitted. [CRC Table R602.10.5, Table R602.10.6.1]	
146		<b>Method PFH</b> [CRC R602.10.6.2]: Shall be installed per Figure R602.10.6.2 & Table R602.10.6.4. Minimum length of panel shall be per Table R602.10.5. The header (min. 3" x 11.25") shall extend between the inside faces of the first full-length outer studs of each panel. One 5/8" Ø anchor bolt shall be installed in the center of each sill plate. The holddowns shall be an embedded-strap type with 3,500 lbs min. capacity.	
147		<b>Method CS-PF</b> [CRC R602.10.6.4]: Shall be installed per Figure R602.10.6.4 & Table R602.10.6.4. Minimum length of panel shall be per Table R602.10.5. The maximum number of continuous portal frame panels is 4 in a single braced wall line. Maximum opening height is 10', but wall height may be increased to 12' with pony wall. [CRC Table R602.10.5 footnote e]	
		<b>R. FLOOR FRAMING:</b>	
148		Show size, spacing, support points and direction of floor joists.	
149		Double joists that are separated to permit the installation of piping or vents shall be full depth solid blocked with 2x blocking spaced at 48" o.c. [CRC R502.4]	
150		The ____ x ____ floor joists at ____ o.c. over _____ exceeds the allowable span for ____ grade. [CRC Tables R502.3.1(1), (2)]	
151		The ____ x ____ floor girder/beam under _____ exceeds the allowable span for ____ grade. [CRC Table R602.7(1), (2), (3)]	
152		For plywood roof and floor diaphragm specify thickness, grade, T&G edges, panel span rating, nailing schedule and required blocking and panel layout pattern.	
153		Bearing partitions perpendicular to joists shall not be offset from supporting girders, beams, wall or partitions, more than the depth of the joist. [CRC R502.4]	
		<b>S. EXTERIOR DECKS:</b>	
154		<p><b>Exterior deck</b> framing requirements [CRC R507]:</p> <ul style="list-style-type: none"> <li>a) Decks shall be <u>positively anchored</u> to the primary structure. Such attachment shall not be accomplished by the use of toenails or nails subject to withdrawal. [CRC R507.1]</li> <li>b) Decks with <u>cantilevered framing</u> members, connections to exterior walls shall be designed to resist uplift resulting from the full live load acting on the cantilevered portion of the deck. [CRC R507.1]</li> </ul>	

		<ul style="list-style-type: none"> <li>c) Deck <u>ledger</u> shall be 2x8 minimum pressure-preservative-treated southern pine, incised pressure-preservative-treated hem-fir, or approved naturally durable, No. 2 grade or better. [CRC R507.9.1.1].</li> <li>d) Deck <u>ledger</u> shall not support concentrated loads from beams or girders [CRC R507.9.1.1].</li> <li>e) <u>Ledger fasteners</u> shall be hot-dipped galvanized or stainless steel [CRC R507.9.1.3].</li> <li>f) Deck <u>ledger connection to band joist</u> shall be per CRC Table R507.9.1.3(1).</li> <li>g) Placement of <u>lag screws and bolts</u> in deck ledgers and band joist must comply CRC Table R507.9.1.3(2) and Figures R507.9.1.3(1) &amp; (2).</li> <li>h) <u>Band joist</u> supporting a ledger shall be 2x min. solid-sawn, spruce-pine-fir or better lumber or a minimum 1" x 9½" dimensional, Douglas Fir or better, laminated veneer lumber. [CRC507.9.1.2]</li> <li>i) Maximum <u>allowable spans</u> for wood deck <u>joist</u> shall be per CRC Table R507.6. Maximum deck joist spacing shall be per CRC Table R507.7 for perpendicular or diagonal to joist.</li> <li>j) Maximum <u>cantilever</u> deck <u>joist</u> shall be limited to ¼ of the joist span or the maximum cantilever length specified in CRC Table R507.6 whichever is less. [CRC R507.6].</li> <li>k) Maximum <u>cantilever</u> deck <u>beam</u> at each ends shall be ¼ of the allowable beam span. (CRC R507.5)</li> <li>l) Wood <u>decking</u> shall be attached to each supporting member with minimum of (2) 8d threaded nails or (2) No. 8 wood screws. [CRC R507.7]</li> <li>m) <u>Splices</u> of multispan beams shall be located at interior posts locations. [CRC R507.5.1]</li> <li>n) Provide <u>hold-down</u> tension devices installed in not less than 2 locations within 24" of each end of deck, with design capacity of 1500 lbs minimum each [CRC R507.9.2, Figure R507.9.2(1)], OR Provide hold-down tension devices installed in not less than 4 locations per deck, with design capacity of 750 lbs minimum each. [CRC R507.9.2, Figure R507.9.2(2)].</li> <li>o) Minimum concrete <u>footing size</u> shall be in accordance with CRC Table R507.3.1.</li> <li>p) <u>Beam size</u> for single-level wood-framed decks shall be in accordance with CRC Table R507.5.</li> <li>q) <u>Post size</u> shall be in accordance with CRC Table R507.4.</li> <li>r) Deck posts supported by concrete piers or metal pedestal shall projecting not less than 1" above concrete floor or 6" above exposed earth, otherwise use natural decay resistance or pressure treated wood. [CRC R317.1.4 exception 3]</li> </ul>	
		<b>T. FOUNDATION:</b>	
155		A geological report/soil report prepared by a civil engineer is required where a tentative and final map is required. [CRC R401.4.1.1.1].	
156		Submit a review letter by soils engineer and incorporate any requirements and recommendations into the plans [CRC R401.4.1.1.3].	
157		The soils report requires foundation excavations to be reviewed by soils engineer. Note on the foundation plan " <i>Prior to requesting a Building Department foundation inspection, the soils engineer shall inspect and approve the foundation excavations</i> ".	
158		Soil bearing pressure is limited to 1500 lbs/sqft or a soils report recommends otherwise. [CRC R401.4.1, Table R401.4.1 ]	
159		<p><i>Note on plan:</i></p> <ul style="list-style-type: none"> <li>a) The minimum compressive strength of concrete <math>f'_c = 2,500</math> psi. [CRC Table R402.2]</li> <li>b) The minimum yield strength of reinforcing steel shall be 40,000 psi (grade 40). [CRC R403.1.3.5.1]</li> </ul>	
160		<ul style="list-style-type: none"> <li>▪ Call out on foundation plan minimum thickness of 3½" concrete slab-on-ground floor, reinforcement and 6 mil polyethylene vapor retarder with joint lapped not less than 6" placed between the concrete floor slab and the base course or the prepared subgrade where no base course exists. [CRC R506.1, CRC R506.2.3].</li> </ul>	

		<ul style="list-style-type: none"> <li>Capillary break shall be installed when a vapor retarder is required. [CRC R506.2.3.1]</li> </ul>																						
161		<ul style="list-style-type: none"> <li>Call out anchor bolt size and spacing on foundation plan. Provide ½" Ø anchor bolt embedded 7" minimum at 6' o.c. maximum spacing with 3" x 3" x 0.229" steel plate washer. [CRC R403.1.6, R602.11.1]</li> <li>Anchor bolts shall be located in the middle third of the width of the sill plate. [CRC R403.1.6]</li> <li>Provide a minimum of 2 bolts per plate section with one bolt located not more than 12" or less than 7 bolt diameters from each end of the plate section. [CRC R403.1.6]</li> <li>The hole in the plate washer is permitted to be diagonally slotted with a width of up to 3/16" larger than the bolt diameter and a slot length not to exceed 1¾", provided a standard cut washer is placed between the plate washer and the nut. [CRC R602.11.1]</li> <li>Fasteners for preservative treated wood and exterior application fire treated wood shall be of hot dipped zinc coated galvanized steel, stainless steel, silicon bronze or copper except ½" Ø or greater steel bolt and fasteners other than nails and timber rivets shall be permitted to be mechanically deposited zinc coated steel ASTM B695 class 55 minimum [CRC R317.3.1, 3].</li> </ul>																						
162		Specify size, embedment, spacing, ICC number and manufacturer of power driven pins. (Not permitted on perimeter footings.)																						
163		If required by structural calculations, show size, location and embedment length of hold down anchors on foundation plan.																						
164		Note on plan that holddown hardware must be secured in place prior to foundation inspection.																						
165		Detail (and reference location on foundation plan) typical foundation sections for: perimeter walls, interior bearing walls, depressed slabs, foundation common to dwelling and garage, garage entrance, spread and/or post pads.																						
166		<p>a) Minimum footing size for conventional light-frame construction shall be per CRC Table R403.1 (based on 1500 psf soil bearing capacity and 20 psf live load):</p> <table border="1" data-bbox="467 1035 1182 1297"> <thead> <tr> <th>Story and type of structure</th> <th>Width x Thickness of concrete footing</th> <th>Width x Thickness of concrete footing with brick veneer</th> </tr> </thead> <tbody> <tr> <td>1 story – slab on grade</td> <td>12" x 6"</td> <td>12" x 6"</td> </tr> <tr> <td>1 story – with crawl space</td> <td>12" x 6"</td> <td>15" x 6"</td> </tr> <tr> <td>2 story – slab on grade</td> <td>12" x 6"</td> <td>15" x 6"</td> </tr> <tr> <td>2 story – with crawl space</td> <td>16" x 6"</td> <td>20" x 6"</td> </tr> <tr> <td>3 story – slab on grade</td> <td>14" x 6"</td> <td>20" x 6"</td> </tr> <tr> <td>3 story – with crawl space</td> <td>19" x 6"</td> <td>26" x 8"</td> </tr> </tbody> </table> <p><i>Note:</i> Based on 32' wide house with load-bearing center wall that carries half of the tributary attic, and floor framing. For every 2' of adjustment to the width of the house, add or subtract 2" of footing width and 1" of footing thickness (but not less than 6" thick).</p> <p>b) Exterior footings shall be placed 12" minimum below the undisturbed ground surface. [CRC R403.1.4]</p>	Story and type of structure	Width x Thickness of concrete footing	Width x Thickness of concrete footing with brick veneer	1 story – slab on grade	12" x 6"	12" x 6"	1 story – with crawl space	12" x 6"	15" x 6"	2 story – slab on grade	12" x 6"	15" x 6"	2 story – with crawl space	16" x 6"	20" x 6"	3 story – slab on grade	14" x 6"	20" x 6"	3 story – with crawl space	19" x 6"	26" x 8"	
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167		<p><b>Continuous footings</b> in Seismic Design Category D2:</p> <p>a) <b>Concrete stem walls with concrete footings.</b> Where a construction joint is created between a concrete footing and a concrete stem wall, a minimum 1 - #4 vertical bar shall be installed at 4' o.c. max. The vertical bar shall extend to 3" clear of the bottom of the footing, have a standard hook and extend a minimum of 14" into the stem wall. A minimum of 1 - #4 horizontal bar shall be installed within 12" of the top of the stem wall and 1 - #4 horizontal bar shall be located 3" to 4" from the bottom of footing. [CRC R403.1.3.1]</p> <p>b) <b>Masonry stem walls with concrete footings.</b> Where a masonry stem wall is supported on a concrete footing, a minimum of 1 - #4 vertical bar shall be installed at 4' o.c. max. The vertical bar shall extend to 3" clear of the bottom of the footing and have a standard hook. A minimum of 1 - #4</p>																						

		<p>horizontal bar shall be installed within 12" of the top of the stem wall and 1- #4 horizontal bar shall be located 3" to 4" from the bottom of footing. Masonry stem walls shall be <u>solid grouted</u>. [CRC R403.1.3.2]</p> <p>c) <b>Slab-on-ground with turn-down footings cast monolithically</b> shall have a minimum 1-#4 at top &amp; bottom of the footing OR 1 - #5 bar OR 2 - #4 bars in the middle third of the footing depth. [CRC R403.1.3.3, Figure R403.1.3 detail 1]</p> <p>d) <b>Slab-on-ground with turn-down footings not cast monolithically</b> shall have minimum #3 vertical dowels at 4' oc. with standard hooks on each end. [CRC R403.1.3.3, Figure R403.1.3 detail 2]</p> <p>e) <b>Interior bearing and braced wall panel footings cast monolithically with a slab on grade</b> shall extend to a depth of not less than 12" below the top of the slab. [CRC R403.1.3.4]</p> <p>f) Vertical and horizontal reinforcement <b>lap splice length</b> shall be per CRC Table R608.5.4(1) and Figure R608.5.4(1).</p>	
168		For detached one-and two-family dwellings which are 3 stories or less and constructed with stud bearing wall, isolated plain concrete footing supporting columns and pedestal are permitted. [CRC 403.1.3.6].	
169		The top surface of footings shall be level. Provide detail for <b>stepped footings</b> when slope of the bottom surface of footing exceeds one in ten. [CRC R403.1.5, R602.11.2, Figure R602.11.2]	
170		Show minimum 18 inch clearance from grade to bottom of floor joists and minimum 12 inch clearance to bottom of girders. [CRC R317.1 item 1]	
171		All wood framing members that rest on concrete or masonry exterior foundation walls shall be 8" min. from exposed ground. [CRC R317.1 item 2]	
172		Specify that foundation sills shall be pressure treated, or foundation grade redwood. [CRC R317.1 item 3]	
173		The end of wood girders entering exterior masonry or concrete walls shall be provided with a minimum of 1/2" air space on tops, sides and ends or provide pressure treated lumber. [CRC R317.1 item 4]	
174		Wood siding, sheathing and wall framing having clearance < 6" from the ground or < 2" from concrete steps, porch slabs, patio slabs shall be pressure treated wood. [CRC R317.1 item 5]	
175		Wood columns that are exposed to the weather or in basements, supported by concrete piers or metal pedestals shall project at least 1" above a concrete floor or 6" above exposed earth and the earth is covered by an impervious moisture barrier. [CRC R317.1.4 exception 1]	
176		Columns in enclosed crawl spaces or unexcavated areas located within the periphery of the building, supported by a concrete pier or metal pedestal shall be greater than 8" from exposed earth and the earth is covered by an impervious moisture barrier. [CRC R317.1.4 exception 2]	
177		Provide a <b>weep screed</b> for stucco at or below the foundation plate line a minimum of 4" above the earth or 2" above paved areas. [CRC R703.7.2.1]	
178		<p><b>Under floor access openings</b> [CRC R408.4]:</p> <p>a) Provide access openings to all under-floor spaces, 18" x 24" min. access opening through the floor or 16" x 24" min. access opening through a perimeter wall.</p> <p>b) Through wall access openings shall not be located under a door.</p> <p>c) No under-floor cleanout shall be located exceeding 5' from an access door, trap door, or crawl hole plumbing clean-outs. [CPC 707.9]</p>	
		<b>U. STRUCTURAL</b>	
179		Specify grade and species of framing lumber, treated mudsills, type and grade of plywood, glued-laminated timber, design strength of concrete, rebar grade, ASTM designation of structural steel shapes, and masonry units, mortar and grout strength.	
180		Cross reference all calculations for joists, beams, shear walls, etc... to <u>framing/floor plans</u> .	
181		Detail the shear transfer connections which transfer lateral forces from horizontal diaphragms through intermediate elements and shear walls to the foundation. [CRC R301.1]	
182		Specify on the framing plans the shear wall material, thickness, size and spacing of fasteners and sole plate nailing. Call out anchor bolt spacing and hold down hardware on foundation plan.	



183		Detail how the interior shear walls are connected to the roof diaphragm. [CRC R301.1]	
184		Check the shear wall overturning reactions on the beams/columns per ASCE 7-10 section 12.4.3 for the special seismic load combinations.	
185		<b>Irregular structures</b> , or irregular portion of structures which do not comply with prescriptive construction provisions shall be designed by a licensed design professional. [CRC R301.2.2.6]	
186		Provide drag strut at _____. Detail the strut and top plate connection.	
187		Design and details are required by a registered design professional for <b>retaining walls</b> that are not laterally supported at the top and that retain in excess of 48" of unbalanced fill, OR retaining walls exceeding 24" in height that resist lateral loads in addition to soil. Retaining walls shall be designed for a safety factor of 1.5 against lateral sliding & overturning. [CRC R404.4]	
<b>T. MECHANICAL/ELECTRICAL/PLUMBING:</b>			
188		Submit PME (Plumbing, Mechanical, Electrical) plans for review.	
189		a) Show location of wall heater or FAU, AC, water heater, whole house fan (if required) on floor plan. b) Appliances on roof shall be located at least 6 feet from the edge of the roof or provide 42" min. high barrier (rigidly fixed rails, guards, or parapet). [CMC 303.8.4]	
190		a) Access to attic furnace must be within 20 feet of unit and shall have a continuous solid walkway at least 24 inches wide. A 120-volt receptacle outlet and a switch-controlled light is also required. [CMC 304.4.1, 2, 4] b) Show a level working platform not less than 30" x 30" in front of the service side of furnace. [CMC 304.4.3]	
191		Show source of combustion air to furnace and water heater. [CMC 701.1, CPC 506.0]	
192		Provide type 1 clothes dryer exhaust duct (min. 4 inch dia. And 0.016" thick rigid metal) to the outside of the building and equipped with a back-draft damper. Exhaust duct length is limited to 14 ft. with 2 elbows. [CMC 504.4, 504.4.2, 504.4.2.1]	
193		a) Provide 100 square inches of makeup air for clothes dryer closet. [CMC 504.4.1 item (1)] b) Type 1 clothes dryer exhaust duct shall be provided with makeup air in accordance with the manufacturer instructions. [CMC 504.4.1 item (1)] c) Type 2 clothes dryers shall be provided with makeup air openings of 1 square inch for each 1,000 Btu/h total input rating of dryer installed. [CMC 504.4.1 item (2)]	
194		All hose bibs must have an approved anti-siphon device. [CPC 603.5.7]	
195		Show elevations of finish floor and nearest upstream manhole. Show that finish floor is above upstream manhole cover or provide backwater valve per CPC 710. 1. Note that fixtures above such elevation shall not discharge through the backwater valve.	
196		Under-floor cleanout shall be located not exceeding 5' from an access door, door trap, or crawl hole. [CPC 707.9]	
197		a) Show size and location of electrical service and panels. Provide panel schedules and single line diagrams for services of 400 amp and greater. b) Note on plan that location of electrical service panel must be approved by Edison.	
198		Provide UFER or other approved ground. [CEC 250.50]	
199		One switched light fixture or switch lighting outlet shall be installed in every habitable room, kitchen, bathroom, stairway, hallways, attached garage, detached garage with electric power, at outdoor entrances or exits, interior stairways, attics, underfloor spaces, utility rooms, and basements. [CEC 210.70(A)]	
200		<b>Interior &amp; exterior stairway illumination:</b> a) Interior stairways shall be provided with artificial light source to illuminate the landings and treads, capable of illuminating treads and landings at least 1 foot candle measured at the center of treads and landings. [CRC R303.7]. b) Exterior stairways shall be provided with artificial light source located at the top landing of the stairway [CRC R303.8].	

		c) Provide a wall switch at each floor level to control lighting for stairway with six or more risers. [CRC R303.7]	
201		<ul style="list-style-type: none"> <li>▪ Provide at least one outdoor weatherproof GFCI receptacle at front and back of dwelling unit, not more than 6½ ft above grade. [CEC 210.52(E)(1) and 210.8(A)(3)]</li> <li>▪ Receptacles in wet locations must have a listed “extra duty” cover. [CEC 406.9(B)(1)]</li> </ul>	
202		Provide at least one weatherproof GFCI receptacle for balconies, decks, and porches that are attached to the dwelling unit and are accessible from inside the dwelling unit. The receptacle shall not be located more than 6½’ above the balcony, deck, or porch walking surface. [CEC 210.52(E)(3), 210.8(A)(3)]	
203		<ol style="list-style-type: none"> <li>a) Provide at least one receptacle (in addition to any receptacle provided for specific equipment) in attached garage or in each detached garage with electric power, installed in each vehicle bay and not more than 5½ ft above the floor. [CEC 210.52 (G)(1)]</li> <li>b) Provide at least one receptacle in accessory building with electric power and in each separate unfinished portion of basement. [CEC 210.52 (G)(2), (3)]</li> <li>c) The branch circuit supplying the garage receptacles shall not supply outlets outside of the garage. [CEC 210.52(G)(1)]</li> </ol>	
204		<ul style="list-style-type: none"> <li>▪ Provide GFCI protection to all 125 volt, 15 and 20 amp receptacles installed in bathrooms, outdoors, in unfinished basements, at kitchen counter top surfaces, within 6’ of sink, within 6’ of bath tubs or shower stall, laundry areas, and garages. [CEC 210.8(A)]</li> <li>▪ Provide GFCI protection for outlets that supply dishwashers. [CEC 210.8(D)]</li> </ul>	
205		Walls 2 feet wide or greater shall have an outlet. Outlets shall be spaced no more than 12 feet apart, and a maximum of 6 feet from end of walls or opening. [CEC 210.52(A)]	
206		Provide at least one receptacle outlet for hallways over 10 ft in length. [CEC 210.52(H)]	
207		Foyers that are not part of a hallway having an area > 60 ft <sup>2</sup> are required to have receptacle(s) located in each wall space 3 ft or more in width. [CEC 210.52(I)]	
208		In the kitchen, pantries, breakfast rooms, and dining rooms, a receptacle shall be provided for each wall countertop and work surfaces wider than 12 inches so that no point is more than 24” from an outlet. [CEC 210.52(C)(1)]	
209		Note on plan: The minimum clearance between luminaries installed in clothes closets and the nearest point of a closet storage space shall be per CEC 410.16 & Figure 410.2: <ol style="list-style-type: none"> <li>a) 12” for surface-mounted incandescent or LED luminaries with a completely enclosed light source installed on the wall above the door or on the ceiling.</li> <li>b) 6” for surface-mounted fluorescent luminaries installed on the wall above the door or on the ceiling.</li> <li>c) 6” for recessed incandescent or LED luminaries with a completely enclosed light source installed in the wall or the ceiling.</li> <li>d) 6” for recessed fluorescent luminaries installed in the wall or ceiling.</li> <li>e) Surface-mounted fluorescent or LED luminaries shall be permitted to be installed within the closet storage space where identified for such use.</li> </ol>	
210		Where the electrical service is located in/on the attached garage and a furred garage wall is the method used to run the non-metallic sheathed cables to the residence through the fire wall, provide a detail showing how the penetration will be fire stopped. [CEC 300.21]	
211		All branch circuits that supply 120 volt, single phase, 15 and 20 ampere outlets installed in dwelling unit family rooms, kitchens, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways, laundry areas, or similar rooms or areas shall be protected by a listed arc-fault circuit interrupter combination type [CEC 210.12(A)].	
212		All nonlocking type 125/250-volt, 15- and 20-Amp receptacles in a dwelling unit shall be listed tamper-resistant receptacle except for receptacles located more than 5½’ above the floor. [CEC 406.12]	
213		Refrigerant service ports located outdoors shall be fitted with locking-type tamper-resistant caps. [CMC 1105.11]	

214		<p>Plumbing fixtures (water closets and urinals) and fittings (showerheads, faucets and pre-rinse spray valves) installed in residential buildings shall comply with requirements of <i>CalGreen</i> Sections 4.303.1.1 through 4.303.1.4.5 and CPC 411.2, 412.1, 417.1, 420.2:</p> <table border="1"> <thead> <tr> <th>Plumbing fixtures &amp; fittings</th> <th>Maximum</th> </tr> </thead> <tbody> <tr> <td>Water closets</td> <td>1.28 gallons/flush</td> </tr> <tr> <td>Showerheads</td> <td>1.8 gpm @ 80 psi</td> </tr> <tr> <td>Kitchen faucets</td> <td>1.8 gpm @ 60 psi</td> </tr> <tr> <td>Residential lavatory faucets</td> <td>1.2 gpm @ 60 psi max. 0.8 gpm @ 20 psi min.</td> </tr> <tr> <td>Lavatory faucets in common &amp; public use areas</td> <td>0.5 gpm @ 60 psi</td> </tr> <tr> <td>Metering faucets</td> <td>0.20 gallons/cycle</td> </tr> <tr> <td>Urinals</td> <td>0.125 gallons/flush for wall-mounted type and 0.5 gallons/flush for floor-mounted type or other type</td> </tr> <tr> <td>Pre-rinse spray valves (with an integral automatic shutoff)</td> <td>1.0 gpm for Product Class 1 (<math>\leq 5.0</math> ozf) 1.20 gpm for Product Class 2 (<math>&gt; 5.0</math> ozf and <math>\leq 8.0</math> ozf) 1.28 gpm for Product Class 3 (<math>&gt; 8.0</math> ozf)</td> </tr> </tbody> </table>	Plumbing fixtures & fittings	Maximum	Water closets	1.28 gallons/flush	Showerheads	1.8 gpm @ 80 psi	Kitchen faucets	1.8 gpm @ 60 psi	Residential lavatory faucets	1.2 gpm @ 60 psi max. 0.8 gpm @ 20 psi min.	Lavatory faucets in common & public use areas	0.5 gpm @ 60 psi	Metering faucets	0.20 gallons/cycle	Urinals	0.125 gallons/flush for wall-mounted type and 0.5 gallons/flush for floor-mounted type or other type	Pre-rinse spray valves (with an integral automatic shutoff)	1.0 gpm for Product Class 1 ( $\leq 5.0$ ozf) 1.20 gpm for Product Class 2 ( $> 5.0$ ozf and $\leq 8.0$ ozf) 1.28 gpm for Product Class 3 ( $> 8.0$ ozf)	
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215		<p>a) Building <b>water</b> supply yard piping shall have 12" min. cover below finish grade. [CPC 609.1]</p> <p>b) Building <b>sewer piping</b> shall be not less than 1 foot below the surface of ground. [CPC 718.3]</p> <p>c) <b>Underground gas piping</b> systems shall be installed with a minimum of 12" of cover. The minimum cover shall be increased to 18" if external damage to the pipe or tubing from external forces is likely to result. Where a minimum of 12" of cover cannot be provided, the pipe shall be installed in a conduit or bridged (shielded). [CPC 1210.1.1]</p>																			
216		<b>ABS and PVC DWV piping</b> installations are limited to not more than 2-stories of areas of residential accommodation. [CPC 701.2(2)(a), 903.1(2)(a), 1101.4]																			
217		Plastics materials for building supply piping outside underground shall have an electrically continuous-corrosion resistant blue insulated 14 AWG min. <b>copper tracer wire</b> . Access shall be provided to the tracer wire, or the tracer wire shall terminate above ground at each end of the nonmetallic piping. [CPC 604.10.1]																			
218		<b>PVC piping</b> shall not be exposed to direct sunlight unless the piping does not exceed 24" and is wrapped with not less than 0.04" thick tape or otherwise protected from UV degradation. [CPC 605.12]																			
		<b>V. ACCESSORY DWELLING UNITS (ADU):</b>																			
219		<p>a) Detached <b>Accessory Dwelling Unit (ADU)</b> with area does not exceed 1,200 sqft located in the same lot as the primary residence and the existing primary residence without automatic fire sprinklers does not require automatic fire sprinklered system to be installed. [CRC R313.2 exception 2]</p> <p>b) Detached <b>Accessory Dwelling Unit (ADU)</b> with area exceeds 1,200 sqft shall install an automatic residential fire sprinkler system. [CRC R313.2 exception 2]</p>																			
220		<p>a) Indicate the address of ADU and identify the unit # (e.g. Unit B for ADU and Unit A for the existing main house).</p> <p>b) Clearly show on site plan if ADU will have its own utility meters (electric, gas, water) or will be connected to existing house meters. Show location of existing electric, gas, and water meter and point of connection for ADU.</p> <p>c) Show electrical subpanel location for ADU when connected to the house main service panel. Indicate ampere rating for (E) house main service panel &amp; subpanel. If (E) house main service panel rating is 100 amp, provide load panel schedule calculation for new ADU load.</p>																			
		<b>W. TOWNHOUSES:</b>																			
221		a) Each townhouse shall be separated by two 1-hour fire-resistance-rated wall OR by fire-resistance-rated common walls. [CRC R302.2, R302.2.1]																			

		<p>b) Common walls separating townhouses with fire sprinkler system shall be not less than a 1-hour fire-resistance-rated wall assembly. [CRC R302.2.2 item 1]</p> <p>c) Common walls separating townhouses for non-sprinklered building shall be not less than a 2-hour fire-resistance-rated wall assembly. [CRC R302.2.2 item 2]</p>	
222		<p><b>Common walls [CRC R302.2]:</b></p> <p>a) The common wall shared by two townhouses shall be constructed without plumbing or mechanical equipment, ducts or vents in the cavity of the common wall.</p> <p>b) The common wall shall be rated for fire exposure from both sides. Provide UL listed detail of common walls assembly.</p> <p>c) The common wall shall be continuous from the foundation to the underside of the roof sheathing, deck, or slab.</p>	
223		The fire-resistance-rated wall shall extend the full length of the wall or assembly, including wall extensions through and separating attached enclosed accessory structures. [CRC R 302.2.3]	
224		<p><b>Parapet for townhouses shall extend 30" above the roof surfaces except [CRC R302.2.4]:</b></p> <p>a) When the roof is covered with a minimum class C roof covering and the roof decking is noncombustible or fire-retardant-treated wood for a distance of 4 feet on each side of the wall; OR</p> <p>b) One layer of 5/8" type X gypsum board installed directly beneath the roof decking or sheathing, supported by a min. of 2x ledgers attached to the sides of the roof framing members for a min. distance 4 ft on each side of the wall and no openings or penetrations in the roof within 4 feet of common wall.</p>	
225		<b>Parapet construction</b> shall have same fire rating as that required for the supporting wall. The upper 18" of parapet shall have noncombustible faces [CRC R302.2.5]	
226		Each individual townhouses shall be <b>structurally independent</b> [CRC R302.2.6] except:	
		<p>a) Foundations supporting exterior or common walls.</p> <p>b) Structural roof &amp; wall sheathing.</p> <p>c) Nonstructural wall &amp; roof coverings.</p> <p>d) Flashing.</p> <p>e) Townhouses separated by a common 1-hour wall or 2-hour wall.</p>	
227		Penetrations of the common wall membrane for electrical boxes shall be per Section R302.4 [CRC R 302.2.2]. Provide UL listed detail on the plan.	
		<b>X. TWO-FAMILY DWELLINGS:</b>	
228		<p>Two-family dwellings shall be separated by 1-hour fire-resistance-rated wall and/or floor assembly. Wall assemblies shall extend from foundation to the underside of roof sheathing [CRC R302.3] except:</p> <p>a) ½-hour fire-resistance-rated wall permitted if both sides are equipped with automatic sprinkler NFPA 13 system.</p> <p>b) Wall assemblies need not extend through attic spaces where ceiling is protected by not less than 5/8" type X gypsum board and an attic draft stop provided above and along the wall assembly separating the dwellings. The structural framing supporting the ceiling shall also be protected by not less than ½" gypsum board.</p>	
229		Penetrations of fire rated wall or floor/ceiling assemblies shall be per Section R302.4. Provide UL listed detail on the plan.	
		<b>Y. SOUND TRANSMISSION:</b>	
230		<p>Detail walls and floor/ceiling assemblies separating dwelling units and sleeping units from each other or from public or service areas to show the following [CBC 1206.2]:</p> <ul style="list-style-type: none"> <li>- STC rating of 50 minimum (45 if field tested).</li> <li>- Penetrations or openings shall be sealed, lined, or insulated to maintain the required rating.</li> </ul>	
231		Detail floor/ceiling assemblies between dwelling units and sleeping units or between a dwelling unit or sleeping unit and a public or service area within a	

		structure shall have an impact insulation class (IIC) rating of 50 minimum (45 if field tested). [CBC 1206.3]	
		<b>Z. SOLAR PHOTOVOLTAIC:</b>	
232		Solar PV system required by energy calculation must be submitted for review to be part of this plan set and comply with California Electrical Code, California Fire Code, and CRC R324.	
233		Rooftop installed building integrated photovoltaic systems that serve as the roof covering shall be tested, listed and labeled for fire classification. [CRC R902.3, R324.5]	
234		Rooftop-mounted photovoltaic panels systems shall be tested, listed and identified with a fire classification in accordance with UL 1703 and UL 2703. [CRC R902.4]	
235		Roof access, pathways, and setbacks requirements shall be provided in accordance with Sections R324.6.1 through R324.6.2.1. [CRC R324.6]	
236		Photovoltaic shingles installation shall comply with the following [CRC R905.16]: a) Photovoltaic shingles shall be listed and labeled in accordance with UL 1703. [CRC R905.16.4] b) Photovoltaic shingles shall be attached in accordance with the manufacturer's installation instructions. [CRC R905.16.5] c) Photovoltaic shingles shall be tested and labeled for wind resistance in accordance with ASTM D 3161 and shall meet the classification requirements of Table R905.2.4.1 for the appropriate maximum basic wind speed. [CRC R905.16.6] d) Photovoltaic shingles shall be used only on roof slope of 2:12 or greater. [CRC R905.16.2] e) Underlayment for photovoltaic shingles shall conform to ASTM D4869 Type I, II, III or IV, or ASTM D6757. [CRC R905.16.3, Table R905.1.1(1)]. f) For roof slope 2:12 up to 4:12, underlayment shall be 2 layers. For roof slope 4:12 or greater, underlayment shall be 1 layer. [Table R905.1.1(2)].	
237		Provide a clear, brush-free area of 10 feet minimum for ground-mounted photovoltaic arrays. [CRC 324.7.2]	
		<b>A1. ENERGY STORAGE SYSTEMS (ESS):</b>	
238		Energy Storage Systems (ESS) shall be listed and labeled for residential use in accordance with UL 9540 except repurposed unlisted battery system less than 1 kWh from electric vehicle are allowed installed outdoors or in detached sheds located a minimum 5 feet from exterior walls, property lines, and public ways. The installation shall comply with 2019 CEC Section 625.48. [CRC R327.2]	
		Energy Storage Systems (ESS) shall not be installed in sleeping rooms, closets, spaces opening directly into sleeping rooms or inhabitable spaces of dwelling units. [CRC R327.4]	
		Energy Storage Systems (ESS) shall be installed only in the following locations [CRC R327.4]: 1. Detached garage and detached accessory structures. 2. Attached garages separated from the dwelling unit living space per CRC R302.6. 3. Outdoors or on the exterior side of exterior walls located 3 ft min. from doors and windows. 4. Enclosed utility closets, basements, storage or utility spaces within dwelling units with finished or noncombustible walls and ceilings. Walls and ceilings of unfinished wood-framed construction shall be provided with not less than 3/8" type X gypsum wallboard.	
239		Indoor installations of Energy Storage Systems (ESS) that include batteries that produce hydrogen or other flammable gases during charging shall be provided with ventilation in accordance with CMC. [CRC R327.9]	
241		Energy Storage Systems (ESS) that have the potential to release toxic or highly toxic gas during charging, discharging and normal use conditions shall not be installed within Group R-3 or R-4 occupancies. [CRC R327.10]	
242		Energy Storage Systems (ESS) subject to vehicle damage shall be protected by approved barrier. [CRC R327.6, CMC 304.8]	

		Individual ESS units shall be separated each other 3 ft min. otherwise provide large-scale fire testing documentation to comply with CFC 1206.1.5. [CRC R327.3.1]	
243		<ul style="list-style-type: none"> <li>a) Individual ESS units shall have a maximum rating of 20 kWh. [CRC R327.5]</li> <li>b) The aggregate rating of ESS shall not exceed [CRC R327.5] : <ul style="list-style-type: none"> <li>1. 40 kWh within utility closets, basements, and storage or utility spaces.</li> <li>2. 80 kWh in attached or detached garages and detached accessory structures.</li> <li>3. 80 kWh on exterior walls.</li> <li>4. 80 kWh outdoors on the ground.</li> </ul> </li> <li>c) ESS installation exceeding the permitted individual or aggregate ratings shall be installed in accordance with CFC Sections 1206.1 – 1206.9. [CRC R327.5]</li> </ul>	
244		<ul style="list-style-type: none"> <li>a) Inverters shall be listed and labeled in accordance with UL 1741 or provided as part of the UL 9540 listing. [CRC R327.6]</li> <li>b) Systems connected to the utility grid shall use inverters listed for utility interaction. [CRC R327.6]</li> </ul>	
245		<ul style="list-style-type: none"> <li>a) Rooms and areas within dwelling units, basement, and attached garages in which Energy Storage Systems (ESS) are installed shall be protected by smoke alarms. [CRC R327.7]</li> <li>b) A listed heat detector shall be installed in locations within dwelling units and attached garages where smoke alarms cannot be installed based on their listing. [CRC R327.7]</li> </ul>	
		<b>ADDITIONAL CORRECTIONS:</b>	