



# PLUMAS COUNTY BUILDING DEPARTMENT

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## CONSTRUCTION DRAWINGS -- MINIMUM REQUIREMENTS

### Group R Occupancies: One and Two Family Residences

#### GENERAL REQUIREMENTS

- Two complete sets of construction drawings, plus one floor plan for the Assessor's Office.
- Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and **show in detail** that it will conform to the provisions of code and relevant laws, ordinances, rules and regulations, as determined by the building official. [CRC R106.1.1](#)
- Each sheet is required to be signed by the person preparing the construction drawings, or the person who is in responsible control of the documents, as evidence of the person's responsibility for those documents. If this person is an architect or engineer, they are required to stamp and sign each sheet. All of the structural sheets of the construction drawings are required to be stamped and signed by a licensed California architect or engineer. [B&P Sec. 5536 - 5538](#)
- All pages of the plans are to be on the same size paper, and each sheet is to be differently numbered. The minimum size is 11" x 17" (24" x 36" is the preferred size).
- All plans and details are to be drawn to scale and fully dimensioned (dimensions trump scale). The preferred minimum scale is 1/4" = 1' (**smaller scales may be rejected as illegible**). Plans must be legible, clear, and drawn on suitable material. Plans shall be firmly bound along the left edge. Electronic media documents are permitted to be submitted with prior approval by the building official.
- Clearly show/detail all engineering requirements – both vertical and lateral - on the appropriate sheets of the construction drawings.
- Show WUI requirements, fully and clearly show all required features of Wildland Urban Interface (WUI) requirements on the appropriate sheets, including CRC Sec. R337.1.5 – Vegetation Management Compliance** (summary brochure available on County website: [www.plumascounty.us](http://www.plumascounty.us) and the CalFire website: [http://www.fire.ca.gov/fire\\_prevention/fire\\_prevention\\_wildland\\_codes](http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland_codes)).
- If the structure is located less than 40 feet horizontally above a 1 unit vertical in 3 units horizontal or steeper slope or less than 15 feet horizontally below a 1 unit vertical in 3 units horizontal or steeper slope, provide profile drawing(s) that clearly show compliance with CRC Section R403.1.7 – Footings on, or Adjacent to, Slopes.
- Clearly show all *Planning Department* zoning, design review, and/or subdivision requirements that affect the construction of the structure, or impose additional requirements, on the appropriate sheet(s) of the construction drawings (e.g., emergency water for fire protection, firesafe driveway, building exclusion areas, site-specific grading requirements/limitations).
- Site Address is viewable from street or road. Address **Numbers** shall be a minimum **4" height by 1/2" wide stroke**, contrasting with their background. [2016 California Residential Code R319](#)

**TITLE/COVER SHEET**

- The first sheet of the construction drawings is to be the Title/Cover Sheet.
- The below Residential Code Analysis Summary table is to be placed on this sheet. The code sections shown are provided only as a reference and are not required to be reproduced in the table. The information shown in the Proposed Project column is only a sample, the project specific information is to be entered in this column.

**2016 California Building Standards Code,**

**2016 California Residential Code, 2016 California Electrical Code, 2016 California Mechanical Code, 2016 California Plumbing Code, 2016 Building Energy Efficiency Standards, Plumas County Code of Ordinances**

<b>Residential Code Analysis Summary</b>		
<b>Item</b>	<b>Code Sec.</b>	<b>Proposed Project</b>
Scope of Work	<i>CRC 105.3</i>	
Uses and Occupancy Classification(s) <i>e.g. R-3 / U</i>	<i>CRC 105.3</i>	
Gross Floor Area(s) in sq.ft.	<i>CBC 202</i>	
Occupancy Factor (s) <i>R-3 = 200 / sq. ft. U = 200 / sq. ft.</i>	<i>Table 1004.1.2</i>	
Occupant Load(s)	<i>2016 C.B.C</i>	
Design snow load in p.s.f	<i>CRC R301.2.3</i>	
Fire Sprinklers required (If not required list exception Code section)	<i>CRC R313</i>	
Wildland-Urban Interface (WUI) required (If not required list exception Code section)	<i>CRC R337</i>	
Firesafe Driveway Required (If not required list exception Code section)	<i>PCC Sec.8-14.02</i>	
Deferred submittal(s) (Requires Building Official <u>prior</u> approval)	<i>CBC 107.3.4.1</i>	
Special inspection(s) required	<i>CBC 1704</i>	
Structural Observation required	<i>CBC 1704.1 &amp; 1704.5</i>	

- Sheet Index:** A table listing all the separate sheets that make up the construction drawings.
- Site Plan:** Sheet showing to scale the size and location of new construction and existing structures on the site, distances from lot lines, the established street grades and the proposed finished grades and, as applicable, flood hazard areas, floodways, and design flood elevations; and it shall be drawn in accordance with an accurate boundary line survey. In the case of demolition, the site plan shall show construction to be demolished and the location and size of existing structures and construction that are to remain on the site or plot. The building official may waive or modify the requirement for a site plan when the application for permit is for alteration or repair or when otherwise warranted.
- Blank Space:** A minimum 5” wide x 10” high blank area on this sheet for building department approval and notes.

**FLOOR PLAN(S)** (drawn to scale and fully dimensioned)

- A Floor Plan is required for all areas, habitable and non-habitable, and each story.
- Label the use of each room (e.g., Kitchen, Bedroom, Storage, Garage, etc.).
- Show a landing or floor on each side of each exterior door, minimum width not less than the door served. Landing shall have a minimum dimension of 36" in the direction of travel. [CRC R311.3](#)
- Show all exterior and interior walls.
- Materials used as backers for wall tile in tub and shower areas and wall panels in shower areas shall be materials listed in 2016 California Residential Code Table 702.4.2. (No water resistant gypsum board [2016 C.R.C. 702.3.7.1](#))
- Show all windows and doors, with sizes and types clearly labeled.
- Label all locations requiring Safety Glazing. [CRC Sec R308.4](#)
- Label all openings (windows or doors) required to be **Emergency Escape & Rescue Openings (EERO)**. Note: EERO windows shall meet minimum opening area (5.7 sq.ft.-821 sq.in.), height (24"), and width (20"), maximum clear opening height above finished floor (44"). [CRC R310.1 - R310.1.4](#)
- Window Fall Protection:** Where operable window is >72" Above Grade or walking surface and clear opening is <24" Above Finished Floor then operable sections of the window shall not allow passage of a 4" sphere. Exception: Window opening control devices complying with ASTM F 290. [CRC R312.2 – 312.2.2](#)
- Unless exempt from WUI requirements, show/state that all exterior glass is multi-pane with at least one pane tempered glass. [CRC R327.8.2.1](#)
- Show shear walls, shear wall schedule/legend, and holdown location, brand, and type (not required when separate Lateral Design Plan is provided).
- Show size and location of any skylight openings (include manufacturer's snow load Information).
- Show all steps and stairways. See STAIRWAYS AND GUARDS section in this document for required stairway and guardrail details.
- Show Cross Section "cut lines" with labels, for **each** portion of the structure that is differently constructed.
- Show the location and type of all plumbing fixtures. State on construction drawings that all plumbing fixtures and fittings are to comply with California Plumbing Code Sec. 403.0 – Water-Conserving Fixtures and Fittings.
- On Floor Plan and/or Plumbing Sheet (if provided) show and note details of freeze protection (see *Freeze Protection of Plumbing Fixtures* policy statement available on County website: <http://www.countyofplumas.com/DocumentCenter/Home/View/3824>)

- For attached garages, clearly and fully show location and details of required occupancy separation between R and U occupancy (sheetrock type and thickness, doors, duct and/or other penetrations). R302.6 and Table 302.6
- Dwelling-garage opening and penetration protection.
  - Openings from a private garage into a room used for sleeping purposes shall not be permitted. [CRC R302.5](#)
  - Openings between the garage and residence shall be equipped with solid wood doors not than 1-3/8" thickness, solid or honeycomb-core steel doors not less than 1-3/8" thick or 20-minute fire-rated equipped with a self-closing and self-latching device. [CRC R302.5.1](#)
  - Duct penetrations. Ducts in the garage and ducts penetrating the wall or ceiling separating the dwelling from the garage shall be constructed of a minimum No. 26 gage sheet steel or other approved material and shall not have openings into the garage. [R302.5.2](#)
- Show all mechanical equipment (e.g., furnace, water heater, air conditioner, woodstove, etc.). If equipment is located in a garage, and in the likely path of vehicular traffic, show bollards or other approved "protection" from vehicular impact. [CMC 308](#)
- Show all decks and patios.

## **ELEVATIONS**

- Show all sides of proposed structure.
- Show all exterior grades, floor, and roof heights (measured from final grade).
- Show surface graded to slope way from foundation with a minimum of 6 inches within the first 10'. If prevented by a barrier or property line, then show a minimum 5% slope to approved drainage swale. [C.R.C. R401.3](#)

## **Wildland Urban Interface requirements (WUI):**

- Show and label all exterior materials such as siding, roofing material, etc. [CRC R337.3.7](#)
  - Exterior Walls: [Specify Listing number of proposed siding.](#) Noncombustible, Ignition Resistant or an SFM Std.12-7A-1 assembly [§R337.7](#)
  - Eaves & Soffits: Eaves (Open or Closed-Soffited) Noncombustible or Ignition Resistant Detail compliance with [CRC R337.7.4](#) [Specify proposed materials](#)
  - Eave and Soffit Vents: Shall resist the intrusion of flames and embers and shall be Office of the State Fire Marshall approved. [Specify proposed materials](#) [2016 C.R.C. 337.6.3 Except 1.1 -1.3](#)
  - Exterior Porch Ceilings Shall be non-combustible or ignition resistant. [Specify proposed materials](#) [2016 C.R.C. 337.7.6](#)
  - Roofing: Shall be Non-combustible or Class A. Provide ASTM-72 cap sheet, valley flashing. [CRC R902.1.1 2016 California Residential Code R337.5.1- 4](#)
  - Windows: Minimum one (1) pane tempered Interior or exterior pane [2016 C.R.C. 337.8.2.1](#)
- Show all windows and doors. Show fully tempered windows required by [R308.4.1->Stairways R308.4.4](#)
- Show and label all posts, decks, overhangs, stairways, etc.

**FOUNDATION PLAN** (drawn to scale and fully dimensioned)

- Show size and location of all footings, stem walls, piers, slab-on-grade, and reinforcing steel.
- Show type, dimension, and location of all mudsills.
- Show size, spacing, and washer requirements of all anchor bolts. Minimum ½" o x 10", 6'-0" o.c. maximum, Plate washer: 3' x 3" x .229" thick
- Show holdown bolt and strap locations, callout specific brand, types, and provide note stating, "Holdowns bolts and straps to be securely held in-place at time of inspection".
- Show and label all post, beam sizes, and callout connectors. (Post bases, column caps, Straps)
- Foundation walls supporting more than 48" backfill or walls subject to hydrostatic pressure shall be designed as a retaining wall. Show retaining wall details, specifications, cleanouts, and drainage.
- For grouted masonry, callout maximum grout lifts of 8'. When a total grout pour exceeds 8' in height, the grout shall be placed in lifts not exceeding 5' and *special inspecting* during grouting is required.
- Show stepped footings, basement walls, and stem wall footings.
- Show deck and porch footings/piers.
- Show Cross Section "cut lines" with labels for each portion of the structure that is differently constructed.
- For concrete slab-on-ground construction, show a *vapor retarder* complying with the requirements of [CRC Sec. R506.2.3](#) – Concrete Floors. (A minimum 6-mil visqueen OR approved vapor retarder).
- Show grounding electrode location and type.

**1<sup>st</sup> FLOOR FRAMING PLAN** (drawn to scale and fully dimensioned)

- Show and label all joists, joist lap, rim joists, girders, posts, blocking, bearing blocking, squash-blocking, joist hangers, connectors, etc. Show location of any double joists or double rims.
  - Show underfloor ventilation details required by [CRC Sec. R408.1 – 408.3](#)
  - Show underfloor access opening(s). [CRC Sec. R408.4](#)
  - Show Cross Section "cut lines" with labels for each portion of the structure that is differently constructed.
  - Show in detail how decks supported by attachment to an exterior wall will comply with **CRC Sec R507. CRC R 305.2.3 (DTT2Z or =) at least two places (DTT1Z or =) at least four places** See [R301.2.3 for engineering requirements for ≥ 70 p.s.f. ground snow load](#)
  - Deck ledgers shall be 2 x 8 minimum - *pressure treated* - per 2016 California Residential Code [R507.2.1](#)
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**2<sup>nd</sup> and/or 3<sup>rd</sup> FLOOR FRAMING PLAN** - if applicable (drawn to scale and fully dimensioned)

- Show and label all joists, joist lap, rim joists, beams, girders, posts, blocking, bearing blocking, squash-blocking, joist hangers, connectors, etc. Show location of any double joists or double rims.
- Show headers for all the exterior doors and windows in the below story.
- Show all interior bearing walls, beams, posts, etc. in the story below.
- Show complete stairway framing details.
- Show Cross Section “cut lines” with labels for each portion of the structure that is differently constructed.
- Show in detail how decks supported by attachment to an exterior wall will comply with [CRC Sec R507](#).

**ROOF FRAMING PLAN** (drawn to scale and fully dimensioned)

- Show size, span, and spacing of all framing members.
- Show locations of all ridges, hips, and valleys and pitch changes.
- Each individual truss shall bear the same designation as the truss calculations.
- Show headers for all the exterior doors and windows in the below story.
- Show all interior bearing walls, beams, posts, etc. in the story below.
- Show size and type of all framing hardware such as hangers, clips, straps, etc.
- Indicate roof sheathing type, thickness, and nailing.
- Show any drag-strut details.
- Show location of any skylights, chimney chase, etc. with head-out framing detail.
- Dimension eave and gable end overhangs, show how gable overhangs are to be structurally supported (i.e. outrigger and / or corbel detail(s)).
- Enclosed attics and enclosed rafter spaces formed where ceilings are applied directly to the underside of roof rafters shall have **cross ventilation for each separate space** by ventilating openings protected against the entrance of rain or snow. Garages with a ceiling finish that creates an attic or concealed rafter cavities require ventilation – show extent and details of required ventilation, minimum 1” airspace required between top of insulation and bottom of roof sheathing. See [CRC Sec. R806](#). **Where WUI standards apply, eaves, eave and/or soffit vents must be SFM approved.**
- State “Ice Dam Flashing” shall extend from eave fascia to a point 24 inches interior of building line and 24 inches each side of valleys and pitch changes. [CBC 1507.2.8.2 and C.R.C. 905.2.8.1](#)
- Metal Drip edge required on eaves and gables for shingle roofs [2016 C.R.C. R905.2.8.5](#)
- Show snow-splitters in 80 p.s.f and greater snow load areas for fireplace, wood heater flues, pellet stoves, and other roof vent terminations.

## **CROSS SECTIONS** (drawn to scale and fully dimensioned)

- Show complete detailed building construction cross sections through **each** differently framed area of the structure.
- Size, span, and spacing of all framing members.
- Show all insulation types, R-values, vapor barriers, and locations.
- Piers, girders, posts, and hangers.
- Sheathing thickness, span rating, and nailing (floor/roof/wall).
- Interior wall and ceiling finish (type and thickness).
- If attached garage, clearly and fully show location and details of required occupancy separation between R and U occupancy (sheetrock - type and thickness, duct and/or other penetrations).
- Landings, decks, and deck framing.
- Rafters / trusses, roof framing.
- Show **Roof overhangs and Porch Ceilings** with **ignition resistant materials (WUI R337.7.6)**, ceiling joists show sizes and details).
- Top plates, studs, and sole plates (show sizes and details).

## **DETAIL DRAWINGS**

- Minimum scale 3/8" = 1'-0"
- Show all engineering details and schedules shown or referenced in structural calculations.
- Foundation Wall Footings: Bottom of footing extends **both** a minimum of 12" into undisturbed native soil (or approved engineered fill) *and* a minimum 18" below finished grade.
- Note 6-mil minimum thickness vapor barrier below habitable slabs.
- Detail **slab on grade perimeter edge insulation** - non-heated and heated slab on grade perimeter insulation require a **minimum R-7 and R-10 edge insulation** respectively. [2016 Building Energy Efficiency Standards § 150.1 \(c\) \(D\) and Table 150.1-A](#)
- Piers: bottom of pier minimum 12" into undisturbed native soil (or approved engineered fill). Exterior piers minimum 18" below finished grade.
- Post to girder connections. Post Cap or plywood gussets both sides [2016 C.R.C. 502.9](#)
- Pier to post connections – must provide a positive connection against uplift. Post Base or embedded straps – (**NO Toenails** into 2x P.T. or Redwood blocks allowed). [2016 C.R.C. 502.9](#)
- Roof eaves detailing freeze blocking with connector hardware. When open eaves are proposed, show non-combustible or ignition-resistant roof sheathing.
- Detail soffits and porch ceilings as ignition-resistant, non-combustible, gypsum sheathing board under soffit material. WUI listed eave and / or soffit vents. [CRC R327.7.4 - R327.6](#)
- Deck lateral load connection shown per [CRC R507.2.3](#)
- ½" Air gap between concrete and untreated wood. [2016 C.R.C. R317.1 #5](#)
- Pony walls, drag strap connections.
- Show Interior footing depths and width along with reinforcing steel size and spacing.

- Girder truss-to-truss connection required hangers and / or strapping.
- Joist to beam connections.
- Retaining wall details showing footing widths, depth, reinforcing steel, wall thickness with reinforcing steel, etc.

### **STAIRWAYS AND GUARDS:**

- Stair details:** 36" minimum width, 4" min., 7¾" max. rise, 10" min. tread depth, with minimum ¾" – maximum 1¼" nosing if tread is < 11" in depth. [CRC R311.7.1 - R311.7.5.1 - 2](#). Stairway headroom shall not be less than 80 inches clear measured vertically from sloped line adjoining tread nosing, landing or platform on the stairway. [CRC R311.7.2](#)
- Landings:** There shall be a floor or landing at both top and bottom of each stairway. Minimum width is width of stair by 36" minimum length in direction of travel. [R311.7.6](#)
- Winder Treads:** Not less than 10 inches... at walkline (12" in from narrowest point). Winder treads shall have tread depth **not less than 6 inches** at any point with the clear width of the [stair](#). [R311.7.5.2.1](#)
- [Handrails: 34" - 38" above tread nosing. CRC R3117.8.1](#)
- Grip-size:** (1¼" - 2" dia. – minimum perimeter 4" – maximum perimeter 6¼", maximum cross section – 2¼" - Type I) [CRC R311.7.8.3](#)
- Guards:** Top of Guards - minimum 42" above walking surface when ≥ 30" above grade. [CRC R312.1.2](#)  
Openings not to allow passage of a 4" sphere. [CRC R312.1.3](#)
- Guard serves as Handrail:** 34" – 38" above tread measured vertically from leading edge of treads. Guard on the open side(s) of stairs shall not allow passage of a 4 ⅜" sphere. [CRC R312.1.3](#)
- Glazing adjacent to stairs and ramps where glazing is <36" above walking surface of stairway, landings between flights of stairs is considered a hazardous location -- **Requires Safety Glazing** (Tempered - Typically) [2016 C.R.C. R308.4.6](#)
- Glazing adjacent to the bottom stair landing where glazing is <36" above the landing and within a 60" horizontal arc less than 180 degrees for the bottom tread nosing shall be a considered a hazardous location -- **Requires Safety Glazing** (Tempered - Typically) [2016 C.R.C. R308.4.7](#)

### **PLUMBING**

- Show and label all plumbing fixtures.
- Show underfloor access opening(s) within 5'-0" of required plumbing underfloor cleanout. C.P.C. 708.9
- Please specify a 4" drain for buildings providing more than three water closets per 2016 CPC Table 703.2, footnote 4.
- No plumbing (water or waste) shall be installed in exterior walls unless provision is made to protect such pipe from freezing. [CPC 312.6](#)  
See Freeze Protection of Plumbing Systems & Non-Antifreeze Fire Sprinkler Piping Systems Policy online at: <http://www.countyofplumas.com/DocumentCenter/Home/View/3824>
- Sizing of water meters is now required, based on fixture units and fire sprinkler demands, verified by CSD.



- Show or callout a water heater expansion tank for water supply systems, which have a check valve installed. [CPC 608.3](#)
- Detail special venting, e.g. island venting, floor sinks and receptors [2016 C.M.C. 305.1](#)
- Note all spark producing appliances are a minimum 18" A.F.F. in garages.
- Show the location of water heaters and boilers, callout temperature and pressure-relief required, and with piping extending to the exterior. [CPC 608.4 – 608-5](#)
- Provide watertight, corrosion-resistant "Smitty Pan", with ¾" drain to an approved location, for water heaters located on floor subject to damage from water. [CPC 507.4](#)
- Callout water heater strapping requirements [CPC 507.2](#)
- Water closets shall be located in a space not less than 30" in width and provide minimum 24" clear space in front of the water closet. [CPC 402.5](#)
- Shower compartments shall have minimum finished interior of 1024 sq. in., encompass a 30" diameter circle from top of threshold to minimum 70" above the shower drain, min. 22" wide outward swinging door. [CPC 408.6](#)
- ALL hose bibs shall be listed - Self-draining Frost-proof with integral backflow preventer. [CPC 603.4.7](#)

### **AUTOMATIC FIRE SPRINKLERS** (Plans drawn to scale and fully dimensioned)

See Residential Auto Fire Sprinkler information online at: <http://plumascounty.us/index.aspx?NID=1944>

- "Will Serve" letter from the Community Services District (CSD) listing the following: *water pressure, water meter size, and supply pipe size* to the dwelling. For dwellings served by wells, provide the verified well log with tested GPM output and tested pump pressure. **(Generally, storage tank and a fire pumps is required for private well fire sprinkler systems) See [R313.3.5.2.1](#) below:**
- Full Piping Layout Floor Plan heads and nodes labeled, dimensioned pipe distances between heads and nodes for each story. Provide cross section(s).
- Sprinklers shall be installed to protect all areas of a dwelling unit. [R313.3.1.2](#)
  - Exceptions:
    1. Attics, crawl spaces, unoccupied spaces not containing fuel fired appliances (sprinkler shall be installed over the equipment)
    2. Clothes closet, linen closets, pantries ≤ 24 sq. ft., with smallest dimension ≤ 3 ft. with walls & ceilings covered with gyp.bd.
    3. Bathrooms not more than 55 sq. ft.
    4. Detached garages, carports with no habitable space above, open porches, unheated entry areas (e.g. mudrooms adjacent to entry doors)
- Riser detail labeling each valve or device
- Manufacturer's materials information sheets (cut sheets) for: sprinkler heads, piping, hangers, valves, gauges, and flow switch.

- Provide Hydraulic calculations.
- Provide clear details showing how **protection from freezing** is proposed. Submittals with a note stating, "Freeze Protection by Others", or similar, will be judged incomplete. See *Freeze Protection of Plumbing Systems & Non-Antifreeze Fire Sprinkler Piping Systems Policy* online at <http://www.countyofplumas.com/DocumentCenter/Home/View/3824>
- R313.3.5.2.1.** Where a well system, a **water supply tank system**, a pump, or a combination thereof, is used, *the configuration for the system shall be one of the following:*
  1. The water supply shall serve both domestic and fire sprinkler systems. Any combination of well capacity and tank storage shall be permitted to meet the capacity requirement.
  2. A stand-alone tank is permitted if the following conditions are met:
    - 2.1. The pump shall be connected to a 220- volt circuit breaker shared with a common household appliance (e.g., range, oven, dryer),
    - 2.2. The pump shall be a **stainless 240-volt pump**,
    - 2.3. A valve shall be provided to exercise the pump. The discharge of the exercise valve shall be piped to the tank, and
    - 2.4. A sign shall be provided stating "Valve must be opened monthly for 5 minutes,"**
    - 2.5. A means for automatically refilling the tank level so that the tank capacity will meet the required water supply duration in minutes shall be provided.

## **ELECTRICAL**

- Note the size, location, and amperage of all electrical panels (main service electrical panel and, if installed, all subpanels) on the electrical plan.
- Provide electrical symbol legend.
- Show and call out the type, size, and location of grounding electrical conductor. *NEC/CEC 250.32*
- Provide and show an **intersystem bonding termination** for connecting intersystem bonding conductors required for other systems and shall be provided external to the enclosure at the service equipment or metering equipment. Refer to *NEC/CEC 250.94*
- Provide working clearance for all electrical panels (30" w x 36" d x 6'6" h). *NEC/CEC 110.26(A) 1, 2, 3 Do not locate in clothes closets and bathrooms. NEC/CEC 240.24(D) (E)*
- AFCI protection: Required for all 15 and 20--ampere branch circuits with *outlets* in **kitchens**, family rooms, dining rooms, living rooms ... dens, bedrooms, sunrooms, recreation rooms, closets, hallways, **laundry areas**, or similar rooms or areas. "Outlets" = receptacle, lighting, or smoke alarm outlet. *NEC/CEC - 210.12(A),1-6 (New in 2016 CEC / 2014 NEC)*
- Show location of all electrical receptacles, light fixtures, switches, GFCI outlets. *NEC/CEC 210.52*
- Fixtures, lamp holders and receptacles outlets shall be securely supported. Fixtures weighing more than 6 pounds or exceeding 16 inches in any dimension shall not be supported by the screw shell of a lamp holder. *2016 CEC Art. 410.30 (a)* Outlet boxes shall not be used as the sole support for ceiling (paddle) fans. *2016 CEC Art. 314.27 (C)*
- Show the location of all Smoke Alarms per *CRC R314.1- R314.6.1.*
- Show on the plans the location of all Carbon Monoxide Detectors per *CRC R315.1- R315.3.1.*
- Note on the plans kitchens shall have a minimum of 2 - 20-amp above counter, small appliance branch circuit, GFCI protected **and** AFCI protected. *NEC/CEC 210.52(B) (3)*

- No point along kitchen countertops shall be more than 24" from a receptacle. Kitchen countertops  $\geq 12"$  require a receptacle. Receptacles max. 20" above countertop. *2016 NEC/CEC 210.52(c) (1)*
- At least one (1) receptacle outlet shall be installed in each Peninsula and Island counter space 24" or greater and 12"  $\geq$  in short dimension. *NEC/CEC. 210.52(C) (2) - (3)*
- Additional GFCI protected circuits required for kitchen hood fans, garbage disposers, dishwashers, built-in microwaves. *NEC/CEC. 252 (B) (1)*
- Note on the plans **bathrooms** shall have at least one GFCI protected 20-amp branch circuit and shall serve no other outlets. *NEC/CEC. 210.11(C) (3)*
- Note that a 20-amp GFCI branch circuit dedicated to laundry equipment is required and shall serve no other outlets. *NEC/CEC 210.11(C) (2)*
- ALL 15 and 20 - ampere 125V receptacles installed in laundry areas must be GFCI protected. 210.8(A)
- All forced air unit equipment requires a dedicated 20-amp branch circuit. *NEC/CEC 422.12*
- A 125-volt 15- or 20-amp receptacle outlet shall be installed in an accessible location servicing HVAC equipment on the same level and within 25 ft. of the HVAC equipment. *NEC/CEC 210.63*
- Note on the plans **all** 15 and 20 amp branch circuits in garages and accessory buildings shall be GFCI protected. This includes door openers and refrigerator/freezer receptacles. *NEC/CEC 210.8(A)*
- Note receptacles and gas utilization appliances in garages shall be installed so that burners and burner-ignition devices are located not less than 18" A.F.F. *CMC 308.1*
- Detail locations of all exterior fixtures and outlets. Exterior outlets shall be GFCI with weatherproof cover ("Bubble" type) type in wet locations. *NEC/CEC 406.9(B) (1)*
- On the exterior of the structure, one GFIC protected 15A or 20A 120-volt receptacle is required at the front and rear, located not more than 6'-6" above grade or walking surface. *NEC/CEC 210.52(E) (1)*
- Show and call out the type, size, and location of grounding electrical conductor. *NEC/CEC 250.32*
- Show exterior switch-operated light fixture at all exterior doors. *NEC/CEC 210.70(A) (2) (b)*
- Kitchens and bathrooms shall have local exhaust systems to outside. (100 CFM kitchens, 50 CFM bathrooms) *2016 Energy Efficiency Standards §150*
- Hydro massage Tubs: Served by individual GFCI protected circuit. Metal piping bonded to motor. *NEC/CEC 680.71 -74*
- See Energy Compliance section of this document (below) for energy efficiency lighting requirements.
- Hot tub/spas, show requirements of *NEC/CEC 680.42 – 680.43(D)*

## **MECHANICAL**

- Show the location of all mechanical equipment, furnace, air-conditioning compressors, water heaters, heat pumps, and boilers, working clearances, and access.
- If appliances are located in attics and/or underfloor spaces, show in detail how compliance with *CMC Sec. 904.10* is provided.
- LPG appliances are **prohibited** in basements, pits, and underfloor. *2016 C.M.C. 303.8.1* See Plumas County Building Department LPG underfloor policy at:  
<http://www.countyofplumas.com/DocumentView.aspx?DID=3825>  
<http://plumascounty.us/index.aspx?NID=118>

- Show snow-splitters in 80 p.s.f and greater snow load areas for fireplace, wood heater flues, pellet stoves, and other roof vent terminations.
- Callout to provide manufacturers installation manual for all appliances and factory-built fireplaces.
- 2016 Energy Efficiency Standards § 150 – MANDATORY FEATURES AND DEVICES**  
Installation of fireplaces, decorative gas appliances, and gas logs.
- Wood fired heaters** shall meet the 2015 EPA “New Source Performance Standards” (NSPS). Installation shall be per manufacturers listing. *PCC 8-13.1*
- Wood fired heater **flues cannot be combined into one flue** per manufacturers listing
- Air distribution systems shall be installed to meet *CMC 600.1 – 605.0*. Forced Air Duct system shall be sealed and tested. (*HERS verified*)
- When appliances are installed in garages or other areas subject to mechanical damage, show protection from vehicular impact by barriers or elevated out of normal path of vehicles. *CMC 308.1.1*
- Spark producing appliances are a minimum 18” A.F.F. in garages/shops. *CMC 308.1*
- Installation of masonry or factory-built fireplace requires the following:
  1. Closeable metal or glass doors covering the entire opening of the firebox;
  2. A combustion air intake to draw air from the outside of the building directly into the firebox, which is at least six square inches in area and is equipped with a readily accessible, operable, and tight-fitting damper or combustion-air control device (Exception, an outside combustion-air intake is not required if the fireplace will be installed over concrete slab flooring and the fireplace will not be located on an exterior wall).; and
  3. A flue damper with a readily accessible control. *CEC 150.0(e)*

## **ENERGY COMPLIANCE REQUIREMENTS SHOWN ON THE PLANS**

Approved 2016 energy compliance software:

[http://www.energy.ca.gov/title24/2016standards/2016\\_computer\\_prog\\_list.html](http://www.energy.ca.gov/title24/2016standards/2016_computer_prog_list.html)

- Energy Efficiency Standards calculations shall use Climate zone 16. *2016 Energy Efficiency Standards §150(g) 1*
- Climate zone 16 requires the installation of a **Class I or II vapor retarder** on *conditioned space side of all insulation* in **all exterior walls, vented attics** and unvented attics with air-permeable insulation. *2016 Energy Efficiency Standards §150(g) 1*(Minimum 4 mil visqueen or similar)
- Show on plans a **Radiant Barrier** installed per RA4.2.1 over rafters/trusses and gable walls and other vertical surfaces. **Required by submitted Title 24 Energy Calculations.** *2016 Referenced standards RA4.2.1*
- QII (Quality Insulation Installation) requires blow-in ceiling insulation to pass inspection. (**Batts will not pass inspection**)
- Note on plans that **slab on grade perimeter insulation** and **heated slabs** on grade perimeter insulation require a minimum R-7 and R-10 edge insulation respectively.
- Note; **Insulate ALL domestic hot water piping** per submitted Energy Calculations *CEC 150.0 (j)2.A*
- Note on plans that forced air duct systems shall be sealed, tested, and HERS verified (unless ducting meets an exception). Provide HERS documentation prior to final inspection. *CEC 150.0 (m) (1) – (11)*

### Note The Following Title 24 Lighting Requirements On The Electrical Plans:

- ALL** permanently installed lighting must be *High-Efficacy*
- Kitchens:** High-efficacy lighting with - Manual ON/OFF switch or Manual on/Auto -Off, Recessed Downlights must have JA8-E 2016 lamps. Under cabinet luminaires must be switched separately. *CEC 150.0(K) 1 & 3*
- Bathrooms:** All luminaires shall be *high-efficacy*. A vacancy sensor with auto-off must control at least one luminaire. Exhaust fans must be switched separately *CEC 150.0(k) 2*
- Fans are required in each bathroom.**
  1. Fans shall be ENERGY STAR compliant and be ducted to terminate outside the building.
  2. Unless functioning as a component of a whole house ventilation system, fans must be controlled by a humidistat or humidity control device. Humidistat or humidity controls shall be capable of adjustment between a relative humidity range of 50% or less to a maximum of 80%. The humidity control does not have to be integral (i.e. built in). *2016 California Green Building Code 506.1*
- ALL other rooms - Living Room, Dining Rooms, and Bedrooms:** All installed luminaires shall be High-efficacy. Install a Manual ON switch with auto-OFF, or Dimmer switch
- Garages, laundry rooms & utility rooms:** All installed luminaires shall be High-efficacy. A vacancy sensor shall control at least one luminaire in each of these spaces. (Ultrasonic versus infrared type vacancy sensors reduce unintended switching off lights). *CEC 150.0(k) 2 J*
- Hallways and closets** Vacancy sensor or dimmer NOT required. *Section 150.0(k) 2K:*
- Outdoor Lighting:** All lighting attached to the exterior of a residential building High-efficacy lighting controlled by Manual ON/OFF switch - and controlled by a motion sensor and a photo control, astronomical time clock or Energy Management Control System that automatically reduces lighting energy use when sufficient daylight is available. : *CEC 150.0(K) 3.9*

### **Electric Vehicle Charging Requirements**

- Install a separate branch circuit to provide charging of electric vehicles. Circuit shall have no other outlets. *Article 217.17 See also Article 625.2, 2016 California Electrical Code*
- New one and two family dwelling units & townhouses shall install a raceway to accommodate a dedicated 240-volt branch circuit. Raceway shall not be less than trade size 1 (nominal 1-inch inside diameter). Main service panel &/or subpanel shall have the capacity to install a 40 - ampere circuit and overcurrent protective device. Panel(s) shall be marked "EV" capable. *Green Building Standards Code, Section 4.106.4*