

Butte County Department of Development Services

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PLAN CHECK GUIDELINES: RESIDENTIAL CONSTRUCTION

“This document is a work in progress”

These guidelines are not all inclusive. The comments below are not a complete list of requirements in the 2013 California Building Standards Codes. These guidelines are intended to show the most common code items that are reviewed during plan review.

GENERAL:

1. Please reference on the plans the 2013 California Building Code (CBC), 2013 California Mechanical Code (CMC), 2013 California Plumbing Code (CPC), 2013 California Electrical Code (CEC), 2013 California Fire Code (CFC) and 2013 California Energy Code (CEC), and 2013 California Green Building Standards Code.
2. Please provide a Code Analysis for this building on the cover sheet of the plans. Occupancy type, type of construction, square footage. All covered and uncovered areas should be identified: patio covers, slab areas outside exterior doors, etc.
3. Plans shall be drawn to scale with sheets numbered and a sheet index on the cover page.
4. Please provide a Scope of Work on the cover sheet of the plans. Additionally, the address of the building, assessor's parcel number (APN), zoning, the name, address and phone number of the owner(s) and person(s) preparing the plans are required on the first sheet (cover sheet) of the plans (R106.1.1)
5. Please contact the Butte County Fire Department to determine their requirements for the proposed structure. Butte County Fire is located at 176 Nelson Avenue, Oroville, Ca. and their phone number is 530-538-7888.
6. Please provide a complete site plan showing all items specified on the BD Handout DBP-02 *Site Plan Requirements*.
7. Please provide an erosion control plan (The plan shall show what Best Management Practices (BMPs) will be used, when, and where, specific to the project scope, along with the total disturbance area and installation details and notes for the proposed BMPs. Measures include those necessary to delineate areas of work, prevent erosion of unstable or denuded areas, plan for construction staging and storage logistics, construction of stabilized access points, and proper containment measures for construction materials and waste.
8. The nature of work to be completed on this house will require compliance with California Senate Bill 407 for the installation of water-conserving plumbing fixtures.
9. Applications for Sunrooms, pool houses, storage areas and unfinished areas within or attached to dwellings require a deed restriction in accordance with the Building Division's "Building Matrix for Accessory Uses". A Deed Restriction and Limited Use Facility must be recorded to limit the use of, sun room, pool house, storage area, unfinished area. This area may not be used for habitable space until building permits are obtained to change the occupancy. The deed restriction will state the "sun room", shall not be used for living,

sleeping, or eating and may not be heated or cooled. This deed restriction will be prepared by Butte County and shall be signed, notarized, and recorded by the property owner. Please provide a copy of the vesting grant deed for the property so we may prepare the deed restriction.

NON-STRUCTURAL:

10. 2013 CRC Section R313.2 One- and two-family dwellings automatic fire systems. An automatic residential fire sprinkler system shall be installed in one- and two- family *dwellings*. Exception: An automatic residential fire sprinkler system shall not be required for *additions* or *alterations* to existing buildings that are not already provided with an automatic residential sprinkler system. A permit application and plans shall be required to be submitted prior to four building categories (rough frame) inspection.
11. 2013 CRC Section R313.2.1 Design and installation. Automatic residential fire sprinkler systems shall be designed and installed in accordance with Section *R313.3* or NFPA 13D.
12. Please provide natural light and ventilation in accordance with 2013 CRC Section R303.
13. Please specify the location of an attic access opening for attic areas having a clear height over 30" and provide a 22" x 30" minimum size opening in accordance with 2013 CRC Section R807.1 and 2013 CMC Section 904.10. The attic access opening shall be located in a hallway or other readily accessible location.
14. Please identify the water heater location on the plans.
15. Please specify two ventilation openings at the door to the water heater, one within 12 inches of the top and one within 12 inches of the bottom. Alternative method for combustion air may also be provided. CMC Section 701.6
16. Please clearly specify the type of vehicle barrier that will provide protection of the Water Heater, Furnace, Dryer, and Washer per CPC 507.13.1.
17. Please provide and show the garage floor slope. The area of floor used for parking of automotive or other vehicles shall be sloped to facilitate the movement of liquids to a drain or toward the main vehicle entry doorway. 2013 CRC Section R309.1.
18. Please specify the ground immediately adjacent to the foundation shall be sloped away from the building at a slope of not less than 6-inches within the first 10-feet (5% slope). 2013 CRC Section R401.3.
19. Please specify or provide detailing depicting the special venting requirements for island sinks per 2013 CPC Section 909.
20. Please provide electrical plan with electrical code notes complying with the current adapted edition of the California Electrical Code.
21. Please provide and show on the plans the location of the required Carbon Monoxide alarm(s). Locate in the hallway, in the immediate vicinity of the bedrooms. 2013 CRC Section R315.
22. Please provide a bathroom fan complying with the requirements of 2013 CGBC Section 4.506. Please add this note to the plans. The bathroom exhaust fan shall be controlled with humidistat control capable of adjustment between a relative humidity range of 50% to 80%.
23. Please specify environmental air duct exhausts (e.g., dryers, bath fans, domestic range vents, etc.) shall be equipped with back-draft dampers. CMC Section 504.1

24. Please specify Arc-Fault Circuit-Interrupter Protection to all 120-volt, single phase, 15 and 20-amp branch circuits supplying outlets installed in dwellings. (Throughout) 2013 CEC Art. 210.12 (A).
25. Please specify Tamper-Resistant Receptacles in the dwelling. All 125-volt, single phase, 15 and 20-amp receptacles shall be listed tamper-resistant receptacles. (Throughout) 2013 CEC Art. 406.12.
26. Please provide and show outdoor receptacles outlet front and rear of the Dwelling. Exterior receptacles must be WP/GFCI protected. 2013 CEC Art. 210.52 (E)(1) & 210.8.
27. All receptacles within the garages shall be GFCI protected. 2013 CEC Art. 210.8 (A)(2).
28. All exterior outdoor lights shall be High Efficacy luminaires or Low Efficacy (incandescent) luminaires controlled by a manual-on/off switch with a photocell and motion sensor. Refer to the Mandatory Measures for Residential Lighting Measures attached to the California Energy Commission, Mandatory Measures , form MF-1R.
29. Please specify the following on the plans in regards to the new water heater located in the garage:
 - a. Specify seismic anchorage of water heater to include anchors or straps at points within the upper and lower one-third of its vertical dimension, the lower anchor/strap located to maintain a minimum distance of 4 inches above the controls. CPC 507.2
 - b. Specify that the water heater shall have a pressure relief valve with drain to the exterior (or floor drain, etc.), terminate toward the ground maintaining between 6" and 24" of clearance from the ground, and point downward. CPC 608.5
 - c. Specify the water heater (i.e., that generate a glow, spark or are capable of igniting flammable vapors) must be installed at least 18" above the floor and be protected from vehicle impact (i.e. bollard). CMC 308
30. Please provide and show the mechanical electrical disconnect and a service receptacle within 25 feet of the Mechanical unit. As per 2013 CEC Art. 210.63 & 2013 CMC Section 310.
31. Provide an additional watertight corrosion resistant metal pan below condensate producing equipment (i.e. cooling unit/ furnace) installed in the attic. CMC 312.2.
32. Please specify that the automatic garage door opener shall be listed in accordance with UL 325. CRC R309.4 and Health and Safety Code Sections 19890 and 19891.
33. Provide note that the gas fireplace shall be a direct-vent sealed-combustion type. All factory-built fireplaces shall be listed and labeled and shall be installed in accordance with conditions of the listing. Fireplace shall be tested in accordance with UL 127. Installation manual shall be available for review by the building inspector upon request. CGBSC 4.503.1, CRC R1005, CMC 908.2.
34. Please specify light fixtures in tub or shower enclosures to be labeled "suitable for damp location" per 2013 CEC Art. 410.10 (A) & (D).
35. Receptacles shall be installed so that no point measured horizontally along the floor line in any wall space is more than 6-feet from a receptacle. Any wall space 2-feet or more in width and unbroken along the floor line by doorways and similar openings shall have a receptacle. 2013 CEC Art. 210.52 (A). Please review all wall receptacle locations.

36. Countertop receptacles in the kitchen and dining rooms shall be installed at each wall counter space that is 12" or wider. Receptacle outlets shall be installed so that no point along the wall line is more than 24" measured horizontally from a receptacle outlet space. 2013 CEC Art. 210.52 (C) (1).
37. Please provide electrical receptacles for Island in kitchen. If a receptacle is located within 6 feet of a sink, then provide GFIC protection to these receptacles. 2013 CEC Art. 210.52 (C) (2) and Art. 210.8.
38. Please provide a GFCI Countertop Receptacle at the end of the peninsular counter. 2013 CEC Art. 210.52 (C) (3) and Art. 210.8.
39. Please provide two or more 20-ampere small appliance branch circuits evenly proportioned in the kitchen, pantry, breakfast room, dining room or similar area to serve all wall and floor receptacle outlets. Such circuits shall have no other outlets per 2013 CEC Art. 210.52 (B).
40. Please specify bathroom receptacle outlets shall be supplied by at least one 20-ampere branch circuit. Such circuits shall have no other outlets per 2013 CEC Art. 210.11 (C) (3).
41. Please specify laundry room receptacle outlets shall be supplied by at least one 20-ampere branch circuit. Such circuits shall have no other outlets per 2013 CEC Art. 210.11 (C) (2).
42. Fixtures, lamp holders and receptacles outlets shall be securely supported. A fixture that weighs more than 6 pounds or exceeds 16 inches in any dimension shall not be supported by the screw shell of a lamp holder per 2013 CEC Art. 410.30 (a). Outlet boxes shall not be used as the sole support for ceiling (paddle) fans per 2013 CEC Art. 314.27 (A) & (D).
43. Electrical panel and sub-panels grounding shall comply 2013 CEC Article 250-32. Provide separate grounding wire to each panel from main electrical service entrance panel.
44. 2013 CGBC 4.106.4.1 effective July 1, 2015. For new constructed dwelling unit, install a listed raceway to accommodate a dedicated 208/240-volt branch circuit. The raceway shall not be less than trade size 1 (nominal 1-inch inside diameter). The raceway shall originate at the main service or subpanel and shall terminate into a listed cabinet, box or other enclosure in close proximity to the proposed location of an EV charger. Raceways are required to be continuous at enclosed, inaccessible or concealed areas and spaces. The service panel and/or subpanel shall provide capacity to install a 40-ampere minimum dedicated branch circuit and space(s) reserved to permit installation of a branch circuit overcurrent protective device. The service panel or subpanel circuit directory shall identify the overcurrent protective device space(s) reserved for future EV charging as "EV CAPABLE". The raceway termination location shall be permanently and visibly marked as "EV CAPABLE".
45. Please specify a 4" drain for buildings providing more than three water closets per 2013 CPC Table 703.2 footnote 4.
46. Please list on the cover sheet all Energy requirements for the "Special Feature" (Radiant Barrier) and HERS Verification (Duct Testing). California Energy Commission, Certificate of Compliance, form CF-1R.
47. Please clearly note and show that the required "Radiant Barrier" is also to be installed on all vertical surfaces and gable end walls in the attic. California Energy Commission Certificate of Compliance, form CF-1R.
48. Please clearly show the luminary fixture type or control type complying with the mandatory energy lighting requirements throughout. Refer to the Mandatory Measures for Residential Lighting Measures attached to the California Energy Commission, Mandatory Measures , form MF-1R.

49. Please clearly show the luminary fixture type or control type complying with the mandatory energy lighting requirements throughout. Refer to the Mandatory Measures for Residential Lighting Measures attached to the California Energy Commission, Mandatory Measures, form MF-1R.. Provide either High Efficacy lights, or if low efficacy such as incandescent lights are installed they must have Dimmers controls and/or Manual-on vacancy sensors. Photocell with motion sensor on incandescent exterior lights. This mandatory requirement also includes the "U" occupancy.
50. If heating and air conditioning components will be installed in the attic area please provide and show minimum required clearances (Not less than 30" in depth, width, and height) for the attic mounted furnace or air handler within the manufactured truss system per 2013 CMC Section 904.10. Refer to the truss calculations for the truss web design, lateral bracing requirements, and truss chord loading acceptable for an air-handler/furnace unit. The mechanical unit loading and clearance requirements must be accounted for in the design of the trusses.
51. If installation of any of heating and air conditioning components are in the attic area, please provide and show an unobstructed passageway to the attic furnace. The passageway shall have a solid floor not less than 24" wide from the attic access opening to the appliance (2013 CMC Section 904.11.3). The distance to the attic furnace shall not exceed 20' from the attic access opening if the clearance height is less than 6' in height. (2013 CMC Section 904.11.2). Refer to the truss calculations for the truss design and lateral bracing requirements.
52. The area of the proposed residential addition exceeds 1000 square feet. Please show compliance with the California Energy Commission Standards Section 150(o) requirements for indoor air quality ventilation. Refer to the Residential Mandatory Measures form MF-1R and see Table 4-7 of the Residential Energy Compliance Manual for the required "Continuous Whole-building Ventilation Rate". If "Intermittent Whole-building Ventilation" is specified you must also provide the calculated cfm rating.)
- If a whole house fan is installed and intended for compliance with the required indoor air quality whole-building ventilation requirement it must comply with the following:
1. The whole house fan shall be rated at a maximum of 1.0 sone.
 2. The whole house fan shall have insulated louvers or a cover which closes when the fan is off. Covers or louvers shall have a minimum insulation value of R-4.2.
 3. The control switch must be labeled as the whole-building ventilation and indicate that the fan should be in operation when the home is occupied.
- An easy way to meet this requirement is to identify one of the bathroom exhaust fans as the whole-building ventilation fan and provide the following:
1. The bathroom exhaust fan must have a minimum CFM rating of 75-cfm.
 2. The bathroom exhaust fan is rated at a maximum of 1.0 sone.
 3. The control switch must be labeled as the whole-building ventilation and fan should operate whenever the home is occupied.
53. Please provide attic ventilation calculations on the plans (2013 CRC Section R806).
54. Please provide attic ventilation calculations and under floor ventilation calculations on the plans. 2013 CRC Section R806.2 and R408.1. Each specific ventilation product has a listed net free ventilating area "NFVA". Please refer to this NFVA when calculating the attic and under floor ventilation. (FYI: Attic Ventilation for Wildfire Exposure: Eave vents shall be approved for use and in compliance with 2013 CRC Section R327.6.3. Gable attic vents shall be fully covered with metal wire mesh or noncombustible materials with minimum of 1/16" and shall not exceed 1/8" openings in compliance with 2013 CRC Section R327.6.2.)
55. Please provide the number, type, size and location of attic vents at not less than 1/150 of the area of the space to be ventilated. The net free ventilating area may be reduced to 1/300 if the area of the space ventilated

provided that at least 50% and not more than 80% of the required ventilating area is provided by ventilators located in the upper portion of the space to be ventilated at least 3-feet above the eave or cornice vents with the balance of the required ventilation provided by eave or cornice vents and installing a Class I or II vapor barrier on the warm-in-winter side of the ceiling. 2013 CRC R806.1 and R806.2.

56. Please specify that the under floor crawl spaces shall be provided with a minimum of one access opening. If access is through the floor it shall not be less than 18" by 24". If through a perimeter wall it shall not be less than 16" by 24". 2013 CRC Section R408.4.
57. Please provide under floor ventilation calculations on the plans at 1/150. (2013 CRC Section R408.1) (Each specific ventilation product has a listed net free ventilating area "NFVA". Please refer to this NFVA when calculating the under floor ventilation.) Vents shall be located within 3-feet of each corner of the building. (Foundation vent for Wildfire Exposure shall be fully covered with metal wire mesh or noncombustible materials with minimum of 1/16" and shall not exceed 1/8" openings in compliance with 2013 CRC Section R327.6.2.)
58. Please specify safety glazing (i.e. all panes tempered) at hazardous locations such as windows adjacent to and within 24" of either edge of a door in the closed position per 2030 CRC Section R308.4. Safety glazing is also required for windows adjacent and within 60" of stairways and landings or within 36" horizontally of walking surfaces; when the exposed surface of the glass is less than 60" above the plane of the adjacent walking surface. 2013 CRC Section R308.4.7.
59. Please provide section cuts thru the building that show construction methods and materials. Include ceiling heights, insulation sizes, framing size and spacing, wall coverings, roof covering, etc.
60. Please specify a 6-mil polyethylene vapor retarder with joints lapped not less than 6 inches between the base course or sub grade and the concrete floor slab per 2013 CRC Section R506.2.3.
61. Please specify air retarding wrap on the plans as noted on the Title 24 Energy Calculations.
62. The plans indicate stucco will be installed on the exterior walls. Please specify on the plans the approved agency listing number for the stucco system. Please also specify a water-resistive vapor-permeable barrier with a performance at least equivalent to (2) layers of Grade D paper per CRC R703.6.3.
63. Please submit a (2013 CalGreen Code) Residential Mandatory Measures Check list. Please identify mandatory compliance. (A copy can be obtained at the building counter.)
64. Please provide a Construction Waste Management form. (Obtain from Building Department Counter) 2013 CalGreen Section 4.408.
65. Please provide a plan that is implemented to manage storm water drainage during construction. 2013 CalGreen Section 4.106.2. (Show on the Site plan the proposed design.)
66. For Interior Moisture Control, please specify a 6-mil polyethylene vapor retarder with joints lapped not less than 6 inches between the base course or sub grade and the concrete floor slab per 2013 CRC Section R506.2.3 (Dwelling and garage slabs.) and a "Capillary Break".

2013 CalGreen Section 4.505.2.1. Capillary Break: A capillary break shall be installed in compliance with at least one of the following:

1. A 4-inch thick base of 1/2 inch or larger clean aggregate shall be provided with a vapor barrier in direct contact with concrete and a concrete mix design, which will address bleeding, shrinkage,

and curling, shall be used. For additional information, see American Concrete Institute, ACI 302.2R-06.

2. Other equivalent methods approved by the enforcing agency.
3. A slab design specified by a licensed design professional.
67. Please comply with the requirements of 2013 CRC Section R327, *Materials and Construction Methods for Exterior Wildfire Exposure*. See <http://osfm.fire.ca.gov/bml.html> for updated information.
68. Please specify non-combustible or ignition resistant exterior wall coverings in accordance with 2013 CRC Section R327.7.
69. Please specify exterior glazing in accordance with 2013 CRC Section R327.8. One pane of window shall also be tempered.
70. Please specify decking material in accordance with 2013 CRC Section R327.9.
71. Please specify ignition resistant or non-combustible eaves and soffits in accordance with 2013 CRC Section R327.7.5. (Open Roof Eaves require noncombustible or ignition-resistant materials. Such as fire-resistant plywood or OSB. Refer to SFM web site above for approved materials.)
72. Please specify fire resistive exterior doors in accordance with 2013 CRC Section R327.8. (The door exterior surface shall be of noncombustible or ignition-resistant materials or be constructed of solid core wood 1-3/8" thick or have a fire-resistive rating of not less than 20-minutes.)
73. Please specify ignition resistant or non-combustible exterior porch ceilings in accordance with 2013 CRC Section R327.7.6.
74. Please specify that gable attic vents and foundation vents shall be fully covered with metal wire mesh or noncombustible materials with minimum of 1/16" and shall not exceed 1/8" openings in compliance with 2013 CRC Section R327.6.2.
75. Please specify the approved eave vents that resist the intrusion of flame and burning embers. Per 2013 CBC Section R327.6.3 Exception #1. (E.g. Vulcan Vents or tested equivalent)

STRUCTURAL:

1. This structure does not comply with the Conventional Light Frame Construction (bracing) requirements of California Building Code (CBC) Section 2308 or California Residential Code (CRC) Section R602.10. Please revise or provide a lateral analysis of wind and seismic forces prepared by a registered design professional (i.e. Engineer or Architect).
2. The story height of the proposed construction exceeds the limitations of CRC R301.3. Provide a lateral design analysis by a registered design professional in accordance with the California Building Code (CBC). (CRC R301.3)
3. Please provide the minimum amount of wall bracing as prescribed by CRC Section R602.10.

4. Please comply with the conventional light frame construction (bracing) requirements of the California Residential Code (CRC) Section R602.10 and identify wall bracing on the plans **or** provide a lateral analysis of wind and seismic forces prepared by a registered design professional (i.e. Engineer or Architect).
5. Specify roof diaphragm connections to the eave walls in accordance with CRC R602.10.8.2. Note vertical blocking panels may be required where the distance from the top of the wall to the top of the trusses exceeds 15.25" per CRC R602.10.8.2.
6. Alterations that increase the seismic force in any existing structural element by more than 10 percent cumulative since the original construction or decrease the seismic or wind design strength of any existing structural element by more than 10 percent cumulative since the original construction shall be addressed by the applicable provisions of the California Residential Code or shall be addressed in accordance with accepted engineering practice under the provisions of the California Building Code. Provide wall bracing under the prescriptive requirements as necessary or provide a lateral analysis for the structure by a registered design professional. Show required upgrades to the lateral force resisting system on the plans. (CRC R301.1)
7. Floor, wall and roof-ceiling structural elements in dwellings designed of cold-formed steel, concrete, masonry or structural insulated panels are to be approved and stamped by a California licensed architect or engineer. (CRC R301.1.3)
8. Please specify (8) 16d nails minimum at each side of top plate lap splices per 2013 CRC R602.10.8.1.
9. Specify uplift and shear connection at the roof eave connections. (for example you could specify Simpson H2A or TSP clips from the rafters to the top plates)
10. Please specify the wall height on the plans. Note braced wall panels must be ½ the wall height in length or alternate braced wall panels installed.
11. Please provide two copies of gravity and lateral force (wind and seismic) design calculations signed and stamped by the engineer of record.
12. The lateral force analysis provided is incomplete. Please specify the seismic and wind design methods used and provide complete calculations for wind and seismic forces. Indicate how lateral forces are distributed through the structure (vertically and horizontally) to the load resisting elements. Please provide calculations for roof diaphragms, chords, collectors, shear walls, etc. and provide connection details and shear transfer details showing how expected gravity and lateral forces are transferred from their point of origin to the load resisting elements. Be sure to reference details to the applicable locations on the plans.
13. Please design the structure to resist wind forces in accordance with the 2013 CBC and ASCE/SEI 7-10. The required wind speed for risk category II structures is 110 mph, not 85 mph as indicated in the structural calculations. Please revise the calculations to comply with the 2013 CBC and ASCE/SEI 7-10 and specify the wind design method used.
14. Please specify the seismic design category and risk category for this structure.
15. Please justify use of redundancy factor $\rho = 1.0$. In seismic Design Category D, ρ shall equal 1.3 unless one of the conditions of ASCE 7-10 Section 12.3.4.2 is met.
16. Please clarify how seismic design category C was determined. Seismic design category D is required for risk category II buildings with S_D s values greater than or equal to 0.50 and S_1 values greater than or equal to 0.20 per ASCE/SEI 7-10 Tables 11.6-1 and 11.6-2.

17. The proposed structure has one or more structural irregularities as defined in ASCE/SEI 7-10 Sec. 12.3.2. Design forces shall be increased 25% for connections of diaphragms to vertical elements and to collectors and for connections of collectors to the vertical elements in accordance with ASCE/SEI 7-10 Section 12.3.3.4 or diaphragm connections and connections to vertical elements and collectors shall be designed using the load combinations with overstrength factor in ASCE/SEI 7-10 Section 12.4.3.
18. Conventional roof-ceiling framing provisions of the California Residential Code are applicable for roofs having a minimum slope of three units vertical in 12 units horizontal. Where the roof pitch is less than three units vertical in 12 units horizontal, structural members such as ridge beams, hips and valleys are to be designed as beams by a registered design professional in accordance with the California Building Code (CBC). (CRC R802.2; R802.3)
19. Calculate the vertical distribution of shear forces in accordance with ASCE/SEI 7-10 for the specific seismic design method used.
20. Provide a complete breakdown of gravity (dead) loads, roof live loads, floor live loads, and deck/balcony live loads used for the design of the structure.
21. Please provide a soils investigation report to justify the foundation design values used or provide design based on class 5 soils (1500 psf soil bearing pressure, 100 psf/ft below grade lateral bearing pressure) in accordance with 2013 CBC Table 1806.2.
22. Please specify 3000 psi compressive strength concrete on the plans in accordance with 2013 CRC Section R404.1.2.3.1. Note the structure may be designed for 2500 psi concrete (to avoid special inspection of the concrete) but 3000 psi concrete shall be installed in Seismic Design Categories D_o, D₁, and D₂ per 2013 CRC Section R404.1.2.3.1.
23. Please specify 3"x3"x0.229" thick anchor bolt plate washers. The hole in the plate washer is permitted to be diagonally slotted with a width of up to 3/16 inch larger than the bolt diameter and a slot length not to exceed 1 3/4 inches, provided a standard cut washer is placed between the plate washer and the nut. 2013 CRC 602.11.1.
24. The foundation details indicate a construction joint will be created between the concrete footings and the stemwalls. Please specify No. 4 vertical bars at no more than 48" o.c. in accordance with 2013 CRC Section R403.1.3.
25. The foundation details indicate the slab will not be cast monolithically with the footing. Please provide No. 3 or larger vertical dowels with standard hooks at 48" o.c. in accordance with 2013 CRC Section R403.1.3.2.
26. Please limit the spacing of horizontal and vertical reinforcing in the concrete stemwall to 18" or less in accordance with ACI 318-11 section 14.3.5.
27. Please specify the minimum depth of footings shall be 12 inches below undisturbed soil per 2013 CRC R403.1.4.
28. Provide 2" minimum concrete side cover for the PBS44 post bases as required by the manufacturer.
29. Provide details (including members & connections) showing how stairs, landings/decks, and guard rails are to be constructed. Address both gravity and lateral loads. (CRC R106, CBC 107, 1604, 1607.8.1)

30. Please provide ceiling joist and rafter connections in accordance with CRC 802.3.1 or provide analysis of these connections by a registered design professional (i.e. Engineer or Architect).
31. Please provide a truss layout sheet showing each truss location and truss bracing details.
32. Please provide detail from the truss manufacturer showing how “piggyback” trusses or “hat” trusses will be connected to the base trusses.
33. Please specify how the multi-ply trusses will be connected together.
34. Please specify roof framing for the field framed portions of the roof.
35. Please provide adequate support for trusses bearing on top plates with truss reactions over 2300#. Studs may be required directly under the trusses at these locations.
36. Please provide calculations for roof diaphragm chords and collectors. It appears that collector elements (straps, etc.) may be necessary in some locations.
37. Provide roof diaphragm fastening/nailing specifications on the plans. CRC R106, CBC 107
38. A blocked diaphragm is required in accordance with Table 4.3.4 of AWC SDPWS-2008 (Special Design Provision for Wind and Seismic) where the diaphragm aspect ratio exceeds 3.5. Please specify the blocked diaphragm requirements on the plans.
39. Please provide drag trusses as referenced in the structural calculations and on the plans.
40. Specify hangers required at girder truss connections.
41. Please indicate how the drag straps on the roof (shown on detail 1/SD3) are installed across the hips and valleys. To function properly these straps must remain continuous without kinks or bends. Please clarify.
42. The proposed truss configuration creates a hinge point in the exterior wall where the bottom chord of the gable end truss is not laterally supported. Please provide a method of bracing the hinge point to resist out-of-plane (wind) loads. The hinge can be prevented with a vaulted gable end fill truss and balloon framed wall studs.
43. Specify balloon-framed wall studs continuous to the bottom chord of the vaulted gable end fill truss. This will prevent a hinge point from occurring in the exterior wall and provide resistance to out-of-plane (wind) loads.
44. Specify locations of the mechanical units. If supported by the roof, please provide verification from the truss manufacturer that the trusses intended to support the mechanical units have been designed to support the additional loading and provide required access and clearances to the mechanical units.
45. Please provide verification from the truss manufacturer that the trusses intended to support the mechanical unit have been designed to support the additional load.
46. Specify rafter or truss uplift connections adequate to resist the required minimum uplift forces listed in CRC Table R802.11.
47. Please provide documentation from the Registered Design Professional verifying that he/she has reviewed the truss calculations and found them to be in conformance with his/her design of the structure.

48. Provide tall stud/post calculations for studs or posts over 10' in height.
49. Please provide anchor bolt calculations in accordance with the 2013 California Building Code (CBC) and ACI 318-11, Appendix D. Please specify required anchor bolt size, type, edge distance and embedment depth on the foundation details.
50. Anchor bolts must be designed in accordance with the 2013 California Building Code (CBC) and ACI 318-11. The design tension loads, V_{ua} used in the anchor bolt calculations provided appear to be incorrect. Please calculate V_{ua} using the LRFD load combinations (Equations 9-1 thru 9-7) in Section 9.2 of ACI 318-11. Please revise the foundation details to specify adequate steel and embedment depth of the anchor bolts to resist uplift.
51. Please specify the load combinations used for design of the foundations and anchorage. The metal building foundations and anchorage must be designed to resist the most critical effects resulting from the load combinations in CBC Chapter 16.
52. The concrete slab transfers horizontal forces from the metal building via hairpins to the soil. Please specify the minimum steel required in the slab ($.002 \times$ the slab depth).
53. Please specify 3000 psi minimum concrete compressive strength on the foundation plans in accordance with 2013 CRC Section R404.1.2.3.1. Revise reference to 2500 psi concrete in the General Notes. The structure may be designed for 2500 psi but Section R404.1.2.3.1 requires 3000 psi minimum concrete to be installed.
54. Special Inspection is required in accordance with 2013 CBC for the (high strength (A325) bolts, anchors installed in hardened concrete, etc.). The Special Inspector must be employed by the owner and approved by the Butte County Building Division. Please provide the name of the special inspector that will be employed to provide the service.
55. Please provide a Statement of Special Inspections on the plans and list the special inspections required in accordance with 2013 CBC. The Special Inspector must be employed by the owner and approved by the Butte County Building Division. Please provide the name of the approved special inspectors that will be employed to provide each special inspection. Special inspectors not already approved by the Butte County Building Division must submit a Statement of Qualifications and verification of current ICC (or equivalent) certification for the particular item they will be inspecting.
56. Structural observation per CBC Section 1710, Item 5, is required by the building official / engineer of record for this project. Please indicate this requirement on the plans and list the stages at which the architect or engineer of record is to perform structural observation, what is to be observed, and when structural observation reports are to be submitted to the building official.
57. Expansive soils are known to occur in the vicinity of the proposed building site. Please provide documentation from a registered design professional verifying the soils have been investigated and foundations have been designed appropriately. Please show any requirements for mitigation of expansive soils on the plans.
58. Please reference the Soils Investigation Report on the plans. Please provide a note on the foundation plan stating "see Soils Investigation Report prepared by XXXXXX for additional requirements and recommendations".
59. A geotechnical investigation shall be conducted for construction of shallow foundations on fills exceeding 12" in depth per CBC 1803.5.8. Please note on the plans that "Building pad certification and a compaction

test report prepared by a registered design professional or approved testing agency shall be submitted to the Building Division for approval prior to the foundation inspection for shallow foundations bearing on compacted fills exceeding 12" in depth".

60. Please provide design calculations for the perforated shear walls or design for force transfer around openings.
61. Design for uplift at perforated shear walls ends and design uplift anchorage between perforated shear walls ends.
62. The long period transition period T_L is 16 for Butte County. Please revise.
63. Please specify locations of all embedded hardware on the foundation plan.
64. Please provide shear transfer details of offset top plates showing how lateral forces are transferred across changes in top plate heights.
65. Provide shear transfer details of new roof diaphragm connections to the walls and reference details on the roof framing plan. Include connections at the gable ends, eaves, porches, and interior shear walls.
66. All portions of the structure shall be designed and constructed to act as an integral unit in resisting seismic forces (unless separated structurally by a distance sufficient to avoid damaging contact under total deflection as determined in ASCE 7-10 Section 12.14.8.5). Please design and detail connections between sub-diaphragms, discontinuities, and areas of varying plate heights.
67. Allowable shear values for shear walls resisting seismic forces with height-to-width ratios greater than 2:1 and less than 3.5:1 must be reduced by $2b_s/h$ in accordance with ANSI/AF&PA SDPWS-2008 Table 4.3.4. Please revise calculations and shear walls as necessary.
68. Shear walls with 2" edge nail spacing require 3" nominal or wider framing at adjoining panel edges and nails shall be staggered per 2013 CBC Table 2306.3 footnote e. Please revise the shear wall schedule to indicate these requirements.
69. Please revise the shear wall schedule to eliminate "Hem-Fir" framing. Otherwise shear wall capacities shall be multiplied by the Specific Gravity Adjustment Factor per 2008 AF&PA-SDPWS Table 4.3A footnote #3.
70. Provide a lateral tie and collector member at all reentrant corners of the building in accordance with ASCE 7-10 12.14.7.2. For example, at the corner of
71. Please provide section cuts details through the house specifying methods and materials of construction.
72. Please reference all details on the plans to indicate where they apply and remove details that do not apply to this project.
73. Please provide connection details including shear transfer details showing how expected gravity and lateral forces (wind and seismic) are transferred from their point of origin to the load resisting elements.
74. Please verify adequate setbacks from ascending and descending slopes in accordance with 2013 CRC Section R403.1.7.
75. Review of the proposed structure will be based on Article VI of the Butte County Code which provides adopted Standards for Limited Density Owner-Built Rural Dwellings in Butte County. Please provide

adequate detail on the plans to insure the structure is in “sound structural condition” and constructed in “substantial conformance with accepted construction principles, technical codes, or performance criteria”.

76. Approval from the California Department of Housing and Urban Development (HUD) is required for attachment to the manufactured home. Please provide verification of permit application from HUD.
77. Please provide a foundation detail showing the cripple wall condition and specify nailing required of cripple wall sheathing to resist lateral forces.
78. Specify requirements for stepped footings as necessary. Please provide a stepped footing detail.
79. The plans specify A35 clips used to transfer shear from the TJI-110 floor joists to the cripple wall top plates but A35 clips are 1 7/16” and the TJI flange is only 1 1/4”. Please revise.
80. Please specify length and number of nails required for the CS14 and CMSTC16 straps specified on the roof framing plan and the CS14 and CS16 floor-to-floor holdown straps.
81. Please specify SSTBL holdown anchor bolts to accommodate the 3x minimum sills required in the type 3 and 4 shear walls.
82. Please provide drainage away from foundation walls in accordance with R401.3.
83. Please provide positive connection of the deck ledger to the primary structure designed for both vertical and lateral loads in accordance with 2013 CRC R507.2. Attachment may not be accomplished by the use of toenails or nails subject to withdrawal. See suggested deck attachment for lateral loads detail (2013 CRC Fig. 507.2.3) attached.
84. Handrails and guards must be designed to resist a single concentrate load of 200 pounds applied in any direction at any point along the top per 2013 CBC 1607.A.8.1.1. Please specify connections and spacing of handrail and guard posts.
85. The proposed structure is located at approximately 3000’ elevation and must be designed to resist 65 psf ground snow load. Please provide revised plans and structural calculations.

FLOOD ZONE:

1. This project is located within the Sacramento River Designated Floodway Special Permit Zone B, Sacramento River Designated Floodway Special Permit Zone E, Feather River Designated Floodway. Approval from the Central Valley Flood Protection Board and certification by a registered professional engineer demonstrating that the encroachment will not result in any increase in flood levels during the occurrence of the base flood discharge is required prior to issuance of building permits and prior to commencement of any construction activities including grading, excavation, or placement of fill.
2. The parcel is located in FEMA flood zone A. Please provide two completed FEMA Flood Elevation Certificates prepared by a California Registered Professional Engineer or Architect.
3. Please reference the flood elevation certificate on the plans and show all requirements including floor elevations, elevation of machinery or equipment, stem wall heights, flood resistant materials, flood venting, etc. on the plans.
4. Please revise the FEMA flood elevation certificate to show elevations based on the NAVD 1988 datum in accordance with FEMA’s flood elevation certificate instructions.

5. Please clearly show Flood Resistant Construction. 2013 CRC Section R322.
6. Please indicate the bottom of flood vents shall be no higher than 1 foot above grade.
7. Please show the flood vent locations required for the attached garage on the plans. See section A9 of the flood elevation certificate for the number and size of flood vents required. If flood vents will be installed in concrete stemwalls, please detail reinforcement required around these openings.
8. Materials installed below the base flood elevation (BFE) must be flood resistant materials. Please revise the garage foundation detail(s) to show the required stemwall height and installation of the flood vents.
9. The proposed addition is located in FEMA flood zone A per FEMA's current Flood Insurance Rate Map number 06007Cxxxxx dated 1/6/2011. If an addition does not constitute a FEMA Substantial Improvement then it may be constructed at the same level as the existing house (or higher) and a flood elevation certificate is not required. A Substantial Improvement is defined as 50% or more of the market value of the existing structure with depreciation of the existing structure taken into account. Please have the owner complete and sign the attached Flood Plain Declaration form and Substantial Improvement Worksheet certifying the proposed construction will not constitute a FEMA substantial improvement.
10. Please indicate in a prominent location on the plans that a *building under construction* flood elevation certificate is required prior to the frame inspection and a *finished construction* flood elevation certificate is required prior to final approval of the structure. (Butte County Code Chapter 26, Ordinance # 4041)
11. The proposed construction is within FEMA flood zone A per FEMA Flood Insurance Rate Map (FIRM) number 06007C0550E. The value of the proposed addition appears to exceed 50% of the market value of the existing structure and therefore constitutes a FEMA "substantial improvement". Please provide either:
 - a) a FEMA Flood Elevation Certificate (2 copies) verifying the lowest floor of the finished structure (existing plus addition) is at least 1'-0" above the level of the 100-year flood elevation and complies with FEMA regulations and Butte County's Flood Hazard Prevention Ordinance (Butte County Code Chapter 26, Ordinance # 4041). The FEMA Flood Elevation Certificates must be prepared by a California Registered Professional Engineer or Architect.
 - b) or provide a certified appraisal verifying the value of the proposed improvements is less than 50% of the market value of the existing structure and complete and return the enclosed Substantial Improvement Worksheet.
12. The site is located in FEMA flood zone AO per FEMA Flood Insurance Rate Map (FIRM) number 06007C0502E. Please complete the enclosed *Substantial Improvement Worksheet*. If the value of the proposed improvements will exceed 50% of the market value of the existing structure then FEMA considers the work to be a substantial improvement. If the value of the proposed improvements exceeds 40% but less than 50% of the market value of the existing structure then a certified appraisal is required to verify the work is not a substantial improvement.

If the work is determined to be a substantial improvement please provide the following:

Submit a FEMA Flood Elevation Certificate (2 copies) verifying the lowest floor of the finished structure is above the level of the 100-year flood elevation and complies with FEMA regulations and Butte County's Flood Hazard Prevention Ordinance (Butte County Code Chapter 26, Ordinance # 4041). The

FEMA Flood Elevation Certificates must be prepared by a California Registered Professional Engineer or Architect.

If the work is determined not to be a substantial improvement please provide the following:

Submit a completed and signed *Flood Plain Declaration* form and *Substantial Improvement Worksheet* certifying the proposed work will not be a substantial improvement. Provide a certified appraisal as indicated above if the value of the proposed improvements will exceed 40% but less than 50% of the market value of the existing structure.

