Residential Plan Checklist

BPC-002

Note: The following is only a partial list of required checklist items.
Full compliance is required by reference to the following:

Sonoma County Ordinances 5754 and 5753 (Building code & Fire code adoptions)

2007 California Building Code (CBC)	2006 International Building Code (IBC)
2007 California Mechanical Code (CMC)	2006 Uniform Mechanical Code
2005 California Energy Code	2006 Uniform Plumbing Code
2007 California Electric Code (CEC)	2005 National Electrical Code
2007 California Plumbing Code (CPC)	2007 California Historical Building Code

Other Local & State Laws

1.0 - GENERAL

Items to be considered at earliest possible stage of project development which could affect project:

1. Land use limitations - County zoning ordinances
2. Earthquake faults - Alquist/Priolo Zones
3. Geological hazards - landslides, geo-soil report
4. Flood zone - (Sonoma County Code 7-B), waterways, creeks, etc.

Submit four sets of all documents as may be required, for example, plans, specifications, structural calculations, energy compliance forms, soil reports, etc.

Preliminary review with staff is encouraged to ensure complete applications. Omission of any items in the following list may result in delay of plan check, requiring resubmission of documents or information.

All documents must be signed by the person responsible for preparing them. Residences which are conventionally wood framed and up to two stories high may be drawn by anyone. Drawing sheets must be large enough to accommodate a minimum drawing scale of 1/4" to the foot. All drawings shall be the same size.

1.1 PLOT PLAN (or Site Plan): Show property lines, easements and new and existing building locations. Dimension front, side and rear distances to property lines and between buildings, and indicate finish and existing ground slope grades. Provide drainage information. Show other relative information such as driveways, well, septic system and source of emergency water supply and access. Provide North Arrow and drawing scale. Print job title or description, address and assessor's parcel on the cover sheet. Show fire safe standards features (water tank, hydrant, etc.).

1.2 FLOOR PLAN: Show all dimensions and label use of each room as well as location and size of windows and doors, show electric outlets, plumbing and heating fixtures. Show location and type of all braced and shear walls. List floor area (itemize garage and porch areas), window area and furnace size on plans. Show north arrow and drawing scale on plan.

1.3 FOUNDATION PLAN: Completely dimension plan including interior footings and fireplace support. Label and locate porches, patios, decks, garage , etc. Locate and note size of anchor bolts, straps and tie downs on plan. Note size, number and position of crawl space vents.

1.4 EXTERIOR ELEVATIONS: Draw minimum of four elevation views showing all openings, wall and roof finish materials, original and finish grade, stepped footing outline, crawl vents and roof pitch.

1.5 FRAMING PLANS: Note framing members and sheathing for floor and roof plans, framing for ceiling plans. Show size and spacing of joists, rafters and beams with grade of lumber to be used. Carry all vertical and lateral loads to footings.

1.6 WALL BRACING: Provide diagram of braced wall lines (interior & exterior) for non-engineered plans.

1.7 CROSS SECTION: Provide true section through building showing structural elements, fireplace section, other sections as needed, with earth to wood clearances, floor to ceiling heights, roof slopes, etc. Note typical finishes, value and position of thermal insulation.

1.8 DETAILS: Submit foundation, floor and roof details, beam connections, support of beams at fireplace, etc., special framing and flashing details as necessary for construction.

1.9 Title 24 energy conservation compliance documentation.

1.10 Provide engineer's design calculations

1.11 The job address must be posted at the job site and at county road, and the building location shall be staked prior to filing your building permit application.

1.12 Specific County of Sonoma design requirements:

A Wind: Basic velocity is 85 miles per hour. Use exposure C for design factors, unless verified otherwise by design engineer.

B Seismic: Seismic Design Category (SDC) E unless SDC D is verified.

C Allowable soil bearing is 1500 pounds per square foot (CBC Table 1804.2, Class 5 material) for stable soils. Provide soils report for unstable soils or if higher bearing values are to be used.

2.0 - LIGHT, VENTILATION AND MINIMUM ROOM DIMENSIONS

2.1 Required window area for light shall be not less than 8 percent of the floor area of the room served. (CBC 1205.2); The minimum openable area to the outdoors shall be 4 percent of the floor area being ventilated (CBC 1203.4.1).

2.2 Every sleeping room and any basement must have at least one openable window or door approved for emergency rescue with a minimum net clear opening of 5.7 square feet, except that windows at the grade floor shall have a minimum net opening of 5 square feet. The minimum net clear opening height dimension shall be 24". The minimum net clear opening width dimension shall be 20". The bottom of the clear opening shall be no more than 44" from the floor (CBC 1026.2 &3).

2.3 Rooms containing bathtubs, showers, spas and similar bathing fixtures shall be mechanically ventilated (CBC 1203.4.2.1). Rooms containing a water closet shall have an exhaust fan with a minimum rating of 50 cfm.

2.4 Provide ventilation for products of combustion to outside air (CMC 801.1).

2.5 Provide attic ventilation: 1/150 of attic area, or 1/300 if 50% of vents are 3 ft. above eave and balance are at eave (CBC 1203.2). Baffles are required at vents for insulation.

2.6 Under floor vents: min. 1.0 sq. ft. for each 150 sq. ft. of under floor area. Locate 6" X 14" vents approximately 6' apart around perimeter of building. Cover openings with corrosion resistant wire mesh with an opening size of c to ¼ inches (CBC 1203.3).

2.7 Sliding glass doors shall be safety glass. See CBC 2406 for other hazardous locations. Provide landings at all exterior doors.

2.8 Safety glazing is required in doors and enclosures for hot tubs, saunas, steam rooms, bathtubs and showers (including windows where sill height is less than 5 feet above floor level (CBC 2406.3).

2.9 Minimum room sizes: (CBC 1208)

A. 70 sq. ft. for habitable rooms.

B. minimum of one 120 sq. ft. room in each dwelling.

C. 7'-0" min. width for habitable rooms other than kitchens.

2.10 Habitable space minimum ceiling height is 7'-6" min. (CBC 1208.2).

3.0 - FOUNDATIONS & CONCRETE SLABS

3.1 Concrete: Footings and slabs - 2500 psi min. per CBC Table 1904.2.2 Piers and grade beams shall be design engineered per CBC 1808 for SDC E. Special inspection of piers and grade beams may be required per CBC 1704.9.

3.2 Footing pads up to 30 in. X 30 in. X 12 in. thick may be unreinforced (CBC 1908.1.15(b)).

3.3 Except for bearing wall footings per CBC Table 1805.4.2 all footings require design (CBC 1805.4.2).

3.4 Conventional Residential Foundation Requirements: CBC Table 1805.4.2

Foundations for Stud Bearing Walls - Min. Requirements

No. of floors Supported by Foundation (inches)	Thickness of Foundation Wall (inches) Concrete	Width of Footing (Inches)	Thickness of Footing (inches)	Depth Below Undisturbed Ground Surface
1	7.5	12	6	12
2	7.5	15	6	12

Where unusual conditions or frost conditions are found, footings and foundations shall be as required in CBC 1805.1. The ground under the floor may be excavated to the elevation of the top of the footing. Foundations may support a roof in addition to the stipulated number of floors. Foundations supporting roofs only shall be as required for supporting one floor.

3.5 Continuous reinforced concrete footings are required under exterior walls, at garage door openings and around any exterior roofed over floor area (CBC 2308.6) Individual footing pads may be used when justified by calculations for vertical and lateral loads (CBC 1805.1).

3.6 Stepped footings shall be used when slope of footing bottom is greater than 10:1 (H:V). Step footing detail shall be shown on building elevations and foundation plan (CBC 1805.1).

3.7 Horizontal reinforcing at footing and stem wall: one number 4 rebar 2" below top of stem wall and 3" above bottom of footing (CBC 1908.1.15).

3.8 Retaining walls over 4' in height from bottom of footing to top of wall, or supporting a surcharge, shall be designed by an architect or engineer.

3.9 Concrete slabs: 3½" min. separate from soil with a 6-mil vapor retarder (or other approved method) in living areas (CBC 1910.1)

3.10 The ground adjacent to the foundation shall be sloped 20:1 (5%) for 10 feet or if not physically possible provide 5% slope to an approved alternative method for diverting water. Swales used for this shall be min. 2% when within 10 feet of the building. Minimum slope for paved surfaces shall be 2%.

3.11 Provide setbacks from slopes greater than 33% (CBC 1805.3) and limit cut and fill slopes to 50%, or provide a soils report.

3.12 Site excavation and grading shall comply with CBC Appendix J and Sonoma County Code.

3.13 Provide 18" X 24" foundation access, position within 20 ft. of plumbing cleanout (CBC 1209.1, CPC 707.10).

3.14 Minimum sill bolting: e " X 10" anchor bolts at 6 ft. o.c. max. Embed bolts 7" minimum. Locate end bolts not less than 4", nor more than 12", from ends of sill members. Provide 3" x 3" x 0.229" plate washers on each bolt.

4.0 - WOOD FRAMING

4.1 Wood framing shall comply with CBC chapters 16 and 23 .

5.0 - CLEARANCES AND TREATMENT FOR WOOD FRAMING

5.1 Preservative-treated wood or naturally durable wood shall be used for (CBC 2304.11):

A. wood placed against concrete or masonry which is in contact with soil.

B. wood in contact with soil or water

C. wood subfloor and framing with clearances less than 18" under joist or 12" under girders.

D. wood with less than ½" airspace on top, sides & end of members entering concrete or masonry.

E. isolated posts surrounded by soil with base less than 8" above soil.

F. posts over concrete subject to moisture with base less than 1" above slab or 6" above exposed soil.

G. framing adjacent to concrete entries (must also have 20 gauge galvanized flashing).

5.2 Weather exposed glulam beams shall be pressure treated or shall be of a durable species (CBC 2304.11.3).

6.0 - FLOORS

6.1 Floor joist size, spacing and grades for conventional construction must conform to CBC Table 2308.8(2). Others shall be designed by structural calculations.

6.2 Girders for single-story construction or supporting one floor shall be 4" by 6" for spans 6' or less, with girders spaced at 8' o.c. (CBC 2308.7).

6.3 Joists under and parallel to bearing partitions shall be doubled (CBC 2308.8.4).

6.4 Bearing partitions perpendicular to joists shall not be offset from supporting girders, walls or partitions more than the joist depth or provide calculations for joist size (CBC 2308.8.4).

6.5 Nail spacing for floor plywood sheathing: 6" o.c. at edges, 12" o.c. in field (unless closer nailing is specified) CBC Table 2304.9.1.

6.6 Provide detail of connection of floor girder at foundation wall.

6.7 At floor openings, show double trimmer joist with hanger if over 4' span. For spans over 6' support with framing anchors or joist hangers if not bearing on beam or wall (CBC 2308.8.3)

6.8 Solid block all joists at ends and supports or use other approved connection. Joists framing from opposite sides of a beam shall be lapped at least 3" (CBC 2308.8.2).

6.9 1-1/8" plywood floor system requires girders below partitions and walls. When girders and wall are parallel and wall is offset, provide cross joists at 2 ft. o.c. max., supported by joist hangers. For bearing walls perpendicular to framing, use full depth solid blocking between supporting members under wall. Provide minimum 18" clearance under the girders (floor joists, by definition).

7.0 - STAIRWAYS

7.1 Rise shall be 4" min. & 7.75" max.; Run shall be 10" min.; headroom 6'-8" min.; width 36" min. Variation between riser heights d" max. (CBC 1009). Handrails shall be 34" to 38" above tread nosing, with openings less than 4d" clear (CBC 1012.2). Guards shall be 42" min height, with openings less than 4" clear (CBC 1013.2).

7.2 Fireblocking is required in concealed spaces between stair stringers at the top and bottom of the run (CBC 717.2.4).

7.3 Enclosed usable space under interior stairs shall be finished with ½" gypsum board (CBC 1009.5.3).

7.4 There shall be a floor or landing at the top and bottom of each stairway. Width and length of landings shall be not less than the width of the stairway. Interior stairs from house to garage need not have a landing provided door does not swing over stairs (CBC 1009.4).

8.0 - DECKS

8.1 Guards are required if deck or floor is over 30" above grade, minimum 42" high, with openings less than 4" (CBC 1013.2). Guards shall be adequate in strength and attachment (CBC 1607.7).

8.2 Provide detail at junction of exterior decking, wall and interior floor framing. Show elevations, flashing and anchorage. Deck framing shall be anchored to building at 8' maximum spacing with connectors not using nails in withdrawal (CBC 1604.8.3). Cantilever decks shall be designed for 60 psf live load or 100 psf live load if over 100 sq ft CBC Table 1602.1 Item 5.

8.3 For posts over 30" in height provide mechanical connection at post base.

8.4 Exterior deck support posts shall be cross braced in two directions for lateral stability.

8.5 Framing and support posts to be of preservative-treated or naturally durable lumber (CBC 2304.11.5). Hardware and fasteners to be hot-dipped galvanized, stainless steel, silicon bronze or copper (CBC 2304.9.5).

9.0 - WALLS

9.1 Show stud size, height, grade and spacing (CBC 2308.9 & Table 2308.9.1). Exterior and interior studs shall be continuous floor to roof unless braced at ceiling.

9.2 Balloon frame gable end walls or provide softwall bracing detail.

9.3 Minimum header sizes for one-story house, supporting a roof only, with standard light framing using No. 2 DF or better: 4 x 6 up to 4‘ span; 4 x 10 for up to 6' span; 4 x 12 for up to 8‘ span. For support of second story and roof: 4 x 8 for 4‘ span; 4 x 12 for 6‘ span (Longer spans will require structural calculations) CBC Table 2308.9.5.

9.4 Double top plates shall have a minimum lap of 48 inches. Nail with eight 16d nails on each side of the joint. Lap plates at intersections and corners (CBC 2308.9.2.1 & Table 2304.9.1).

9.5 Spacing of braced wall lines (interior and exterior) shall not exceed 25 feet in either direction (CBC 2308.12.3).

9.6 Sole plate to joist or blocking shall be 16d at 16" o.c and 3-16d at 16" at braced wall panels.

9.7 Foundation cripple walls shall be framed of studs not less in size than the studs above. Cripple walls exceeding 14" shall be braced according to CBC Table 2308.12.4. Solid blocking is required for cripple walls less than 14" in height (CBC 2308.9.4.1)

9.8 Provide wall bracing per CBC Table 2312.4 or provide an engineering lateral analysis (See Section 20 of the Residential Construction Manual for further information regarding bracing table).

9.9 Minimum wood structural panel sheathing nailing: 6" o.c. and 12" o.c. field (CBC Table 2304.9.1). Nailing shall be inspected prior to covering.

9.10 All fasteners used for attachment of siding shall be corrosion-resistant (CBC Table 2304.9.1).

9.11 Fireblocking shall be provided in concealed spaces of stud walls and partitions, including furred spaces, and parallel rows of studs or staggered studs: vertically at the ceiling and floor levels, and horizontally at intervals not exceeding 10 feet (CBC 717.2.2).

9.12 Provide approved building paper under lapped siding and approved flashing at exterior openings (CBC 1403.2). Provide 2 layers Grade D paper between stucco lath and wood sheathing (CBC 2510.6).

10.0 - ROOF

10.1 Show roof rafters and ceiling joists. Spans per CBC Tables 2308.10.3(2) and 2308.10.2(2) List size, spacing and grade.

10.2 Nail rafters to adjacent parallel ceiling joists. Where not parallel, use rafter cross ties at 4 ft. o.c. max. Locate cross tie just above ceiling joist (Ties elevated above the ceiling joist require design by engineer or architect) (CBC 2308.10.4.1). Connect ties per CBC Table 2308.10.4.1.

10.3 Where ceilings joists or rafter ties are not provided the ridge beam must be engineered (CBC 2308.10.4.1).

10.4 Solid block all rafters for shear at exterior walls. Solid block at ends and supports (CBC 2308.10.6). Nail blocking to top plate with 3 each 8d toe nails per block (CBC Table 2304.9.1).

10.5 For less than 3:12 roof pitch: ridge, hips and valleys require design as beams (CBC 2308.10).

10.6 Show min. 20" X 30" access opening to attic (CBC 1209.2). For mechanical attic access, use 30" X 30" opening min. (larger, if equipment requires it) (CMC 931).

10.7 Wood structural panel roof sheathing shall be bonded by exterior glue (CBC 2304.7.2). Minimum nailing per CBC Table 2304.9.1 is 6" edge, 12" field, 8d common, box or casing. Nail panels to blocking between rafters.

10.8 Provide adequate roof slope (minimum 1/4 in. per foot) for drainage or submit deflection and ponding calculations (CBC 1611.2). Provide roof drains per CPC 1101.11.

10.9 Enclosed rafter spaces shall have cross ventilation (min. 1 inch clear) (CBC 1203.2).

10.10 Provide special rafter or truss design for tile roofs. Provide Class M mineral-surfaced roll roofing on solid sheathed roofs for all tile (CBC 1507.3). Specify weight of tile in pounds per square foot.

10.11 Roof construction and covering shall comply with CBC Chapter 15, CBC and local ordinance. All roofing shall be of Class A fire resistive material, supported by solid sheathing (Chapter 7, Sonoma County Code).

11.0 - GARAGE AND CARPORT

11.1 Common wall between garage and dwelling (from floor to roof sheathing) shall have ½" sheet rock on the garage side, with 1-d " solid core, self-closing & self-latching door to house (CBC 406.1.4).

11.2 Firewall separation between a carport (with no enclosed uses above) and dwelling is not required, provided that the carport is entirely open on two or more sides (CBC 406.1.4).

11.3 Carport floor surfaces shall be non-combustible or asphaltic pavement (CBC 406.1.3).

11.4 For no ceiling joist condition or ceiling joists not parallel to rafters provide rafter ties at 48" o.c. minimum. Fasten rafter ties with 16d commons or sinkers, minimum number required per CBC Table 2308.10.4.1

11.5 Balloon frame gable end walls or provide softwall bracing detail.

11.6 Standard 16 ft. garage door header is 4" X 12" nominal for garage without enclosed uses above. However, if roof is tiled or tributary roof framing span is over 24 feet then engineering is required.

11.7 No openings are allowed between garage and sleeping areas (CBC 406.1.4).

11.8 Appliances and receptacles installed in garage generating a glow, spark or flame shall be located 18" above floor. Provide protective post or other impact barrier from cars (CMC 308.1).

11.9 A garage wall with a car opening and a second story above shall have calculations for lateral stability and header size.

12.0 - ELECTRICAL

12.1 Do not install electrical panels larger than 100 sq. in. in fire walls. Never install electrical panels in closets. Maintain a clearance of 36 in. in front of the panels (CEC 110.26).

12.2 Provide a minimum of one 20A receptacle to be used as a laundry receptacle (CEC 210.52(F)).

12.3 Kitchens and dining areas must have a minimum of two 20A circuits. Kitchen counter outlets must be installed in every counter space 12" or wider, not greater than 4' o.c. and within 24" of the end of any counter space (CEC 210.52).

12.4 GFCI outlets are required: for all kitchen receptacles that are designed to serve countertop surfaces, in bathrooms, in underfloor spaces or below grade level, in exterior outlets, and in all garage outlets not dedicated to a single device or appliance (CEC 210.8). All dwellings must have one exterior outlet at the front and the back of the dwelling (CEC 210.52(E)).

12.5 Listed baseboard heaters may have instructions prohibiting their installation below receptacles.

12.6 Receptacles must be installed at 12' o.c. maximum in walls. Walls longer than two feet and halls longer than 10' must have a receptacle (CEC 210.52).

12.7 Bond all metal gas and water pipes to ground. All ground clamps must be accessible and of an approved type (CEC 250.104).

12.8 Furnaces installed in attics and crawl spaces must have an access platform (catwalk in attics), light, switch and receptacle in the space. Provide a receptacle with fusible link for furnace.

12.9 New dwellings must have a 120V powered smoke detector (CBC 907.2.10.2) at every level audible in bedrooms. Older dwellings with $1,000 min. of improvements require a smoke detector which may be battery operated.

12.10 All bedroom outlets shall have Arc Fault Circuit Interrupter protection (CEC 210.12).

13.0 - MISCELLANEOUS

13.1 Provide pressure relief valve with drain to outside for water heater (CPC 608.5). Provide “earthquake” strapping (CPC 508.2).

13.2 Liquified petroleum gas (LPG) appliances shall not be installed in a pit, basement or similar location. LPG appliances shall not be installed in an above grade underfloor space or basement unless such location is provided with an approved means for removal of unburned gas (CMC 304.7).

13.3 Water closet shall be located in a space not less than 30" in width, with 24" min. clearance in front (CPC 407.6).

13.4 Showers and tubs with showers require a non-absorbent surface up to 70" above the drain outlet (CBC 1210.3). Provide curtain rod or approved enclosure material.

13.5 Provide anti-siphon valves on all hose bibs (CPC 603.4.7).

13.6 Provide combustion air for all gas fired appliances per CMC Chapter 7.

13.7 Fuel burning water heater is not allowed in bedroom or bathroom unless direct vent type or complying with CPC 505.1(1).

13.8 Vent dryer to outside of building (not to underfloor area). Vent length shall be 14' maximum or increase vent size (CMC 504.3.2.2).

13.9 Heating system is required to maintain 68 degrees at 3 ft. above floor level in all habitable rooms (CBC 1204.1).

13.10 Dwellings are to meet California Energy Commission (CEC) standards. Provide compliance documentation and mandatory features.

13.11 Air infiltration, insulation, space heating, space cooling, water heating, orientation, windows, etc., shall meet CEC standards.

13.12 Weatherproofing of exterior surfaces above and below grade is required (CBC 1405.2).

13.13 Tempered glazing is required when less that 60 inches from floor and within a 24 inch radius of any door edge, at stair landings, or within 5 feet of the top or bottom of a stair (CBC 2406.3).