



*Sam Shahrouri*  
*Deputy Director of TLMA*  
*Building Official*

# COUNTY OF RIVERSIDE BUILDING AND SAFETY DEPARTMENT

## GENERAL RESIDENTIAL PLAN SUBMITTAL REQUIREMENTS

### Residential Projects

Welcome to the Riverside County Building and Safety Department. We are providing this handout to assist you in preparing your submittal for plan check. "Section A" below lists the minimum information required for most plan submittals. Additional plan information that may be needed is listed in Section B. More specific requirements can be found on the detailed Residential Plan Review Guidelines (on page 3).

To initiate the plan review process, a building permit application must be submitted. A permit fee will be collected at the time of submittal. Please be advised this is a guideline only, additional information may be required depending on the scope of your project.

Note: If the property is in a Fire Hazard Severity Zone, Fire Department approval may be required before submittal of a building permit.

### Section A

**THREE (3) COMPLETE SETS OF PLANS ARE REQUIRED TO BE SUBMITTED WITH ALL APPLICATIONS FOR BUILDING PERMITS.** STANDARD PLAN SIZE IS 24" x 36", the minimum paper size is 18" x 24", and maximum size is 30" X 42". All plan sheets must be uniform in size, printed on substantial paper, and be of sufficient clarity to indicate the location, nature, and extent of work proposed.

Standard architectural symbols must be used. Provide two (2) copies of soils reports, structural calculations, Title 24 Energy calculations, and other supporting documentation.

#### ALL PLAN SETS SHALL INCLUDE THE FOLLOWING:

- 1. TITLE BLOCK:** This should include such information as Owner's name, Architect's name, project address, type of construction, occupancy group, applicable code editions, sheet index, and any other relevant information.
- 2. A SITE PLAN:** Fully dimensioned, showing property lines, streets, driveways, setbacks and locations of all structures and easements and any off-street parking. A survey may be required if proposed work is close to setbacks, or existing property lines are not apparent.
- 3. A FLOOR PLAN:** Show the size and intended use of all rooms, show type, sizes and locations of all doors and windows, furnace, water heater, kitchen details, bathroom fixtures, electrical outlets, switches and lighting; and smoke detectors. For additions and alterations show an existing floor plan. All rooms adjoining the addition shall be fully dimensioned.

4080 Lemon Street • 9<sup>th</sup> Floor • Riverside • CA • 92502-1629  
Telephone: 951-955-1800 • Fax: 951-955-1806 [www.rctlma.org](http://www.rctlma.org)  
General residential plan submittal requirements.

4. **EXTERIOR ELEVATIONS:** Indicate general appearance, windows, doors, finishes, roof covering, finish grade, etc.
5. **FOUNDATION PLAN:** Provide a fully dimensioned plan view of foundations and/or piers showing existing conditions if they apply, and connections from new to existing. Also include details regarding width, depth, reinforcement, etc. For slabs on grade show minimum 3 ½" thickness, gravel or sand base, and vapor barrier.
6. **FLOOR FRAMING:** Show minimum 18" clearance from grade to the bottom of floor joists (minimum 12" for girders). Show the type, size, and spacing of girders and floor joists
7. **ROOF & CEILING PLAN:** Show roof pitch, roofing materials, equipment and skylights if applicable.
8. **STRUCTURAL DETAILS AND SECTIONS:** Clearly showing construction materials, sizes and attachments. If a standard plan is used (ICC, SPA, etc), include copies of that plan or report. A standard plan may not be modified.
8. **ELECTRICAL AND MECHANICAL PLANS.** The electrical plan may be included on the floor plan if sufficient clarity is retained. Show the location of HVAC equipments (FAU, A/C, Water heater, Heat pump, Air handler, Exhaust fan,.. etc.). The equipment shall not be placed within the required side/ rear set backs
9. **CROSS SECTIONAL DRAWINGS:** Show the foundation, underpinning, floor joists, studs, ceiling joists, rafters, roof pitch and location of intermediate roof supports. The cross section shall specify ceiling, floor and wall insulation values.
10. **IN GENERAL:** Detail any special features, such as; stairway construction, attic ventilation, guardrails, fireplaces, balconies, bay windows, post and beams, trusses, etc. Provide notes for any specification which cannot be detailed (include "General Notes").

**SECTION B: (OTHER ITEMS WHICH MAY BE REQUIRED):**

**SOILS REPORT**

**TRUSS CALCULATIONS:** Must be from the truss manufacturer.

**STAIRWAYS, HANDRAILS, AND GUARD DETAILS.**

**STRUCTURAL CALCULATIONS: Wet/digital stamp by the engineer.**

**SPECIAL INSPECTION REPORTS AS REQUIRED.**

**ENERGY DOCUMENTATION**

**FIRE SPRINKLER PLANS:** To include hydraulic calculations and fire alarms when required.

**RESEARCH REPORTS:** On materials, equipment, or installation requirements.



# COUNTY OF RIVERSIDE

## BUILDING AND SAFETY DEPARTMENT

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### Detailed Residential Plan Review Guidelines

- **Collecting information.**
- **What Should the Plans Look Like?**
- **What Does the Plan Reviewer Look For?**
- **Glossary**
- **Footnotes**

The following guidelines, **while not all-inclusive**, are intended to help you prepare residential plans that are essentially "complete". A complete set of plans allows us to (hopefully) approve them, but even if corrections are needed, a complete plans usually only requires a single set of revisions.

Comments or questions regarding this document are welcome and will be used to expand and improve the next version.

To initiate the plan review process, a building permit application must be submitted and a permit fee will be collected at the time of submittal. Please be advised this is a guideline only, additional information may be required depending on the scope of your project.

#### Collecting information

Research your parcel! Many plan review issues center around planning considerations such as building setbacks, building height, drainage easements, **fire hazard severity zones** or flood zones. Obtain a copy of the **Subdivision Map, Parcel Map, or Record of Survey**, as well as the **Grant Deed**. Contact or visit the Planning Dept. and give them your Assessor's Parcel Number (APN) to learn the **zoning** of the parcel, and the **setback requirements** from property lines and road easements (you can find your APN on your property tax bill). Note that these restrictions generally apply to buildings of all types: dwellings, garages, barns, etc.

**Note: If the property is on a fire hazard severity zone, Fire Department approval may be required prior to submittal of a building permit.**

Consider the physical characteristics of the land and the (above) restrictions prior to finalizing the design and placement of your structure. Even if your parcel is forty acres far from town, or a lot in an established subdivision, proper research **in advance** can save a significant amount of time and money down the road. It is easier to design a building to fit the land than it is to modify the building, move large amounts of earth, or build expensive retaining walls to accommodate a "stock" plan - the finished product is usually more desirable as well.

Collect the **design criteria** needed for your building. Depending on the type of structure you are planning, you will need some or all of the following [building criteria](#) information: seismic (earthquake) zone, wind speed and exposure, soil bearing capacity; snow load, flood zone, and climate zone.

## What Should the Plans Look Like? Plan submittal requirements

- **Sets of plans required**
  - Three complete sets of plans must be submitted (Including plot plan and floor plans) All plans prepared by licensed engineers or architect shall bear the seal and signature of same in original ink. No reproductions will be accepted.
  - Standard plan size is 24" x 36". The minimum paper size is 18" x 24"; maximum size is 30" X 42". All plan sheets must be uniform in size, printed on substantial paper, and be of sufficient clarity to indicate the location, nature, and extent of work proposed.
  - Standard architectural symbols must be used. You need provide two (2) copies of soils reports, structural calculations, title 24 Energy calculations, and other supporting documentation.
- **The Site Plan**
  - Minimum scale is 1"=20 feet.
  - Show the entire parcel - if you have a very large parcel, you may use a reduced scale such as 1:50 or 1:100 as long as the grading portion of the site plan is no smaller than 1:20 scale (this method would require two drawings).
- **The Building Plan**
  - Minimum scale is 1/4" per foot. Use ink only (no pencil).
  - Provide the follow information on each page: owners name and mailing address, job site address, APN (Assessor's Parcel Number), name and (wet/digital) signature of the person preparing the plans [plans requiring design by a California-registered Architect or Engineer must bear the (wet/digital) stamp and license number with current expiration date and signature].
  - The first page of the plans must include a summary of the square footage for each occupancy type (for example: dwelling/1850 square foot.; garage/480 square foot.; deck/240 square foot.; covered porch/48 square foot.)
  - The first page of the plans must contain a statement that the construction will comply with the codes in effect at the time your application is accepted, currently the following: California Building Code; California Plumbing Code; California Mechanical Code; California Electrical Code; California Energy Standards; Fire code Standards Ordinance No. 787; Riverside County Ordinance No. 457. Note that the codes change (generally) every three years.
  - A California registered Architect or Engineer is required to prepare, stamp and sign structural calculations and drawings that pertain to the engineered design of a structure.

## What Does the Plan Reviewer Look For?

### The Site Plan

- **Show all recorded easements** located on the parcel. Show distances from the proposed structure(s) to all property lines (or nearest edge of road easements). Show to scale all existing or proposed structures on the property (such as: garage, well, shed, swimming pool, or HVAC equipment).
- **Show existing site topography** (prior to grading) using contour lines at 1', or 2' vertical increments. The contour lines must extend a minimum of 20 feet beyond the building site, driveway, or other disturbed area.

- **Show the proposed grading.** This is generally done by using one of two methods: darker, thicker contour lines that overlay the (lighter) existing contour lines; or darker, thicker lines that show cut and fill slopes to scale (the slopes are plotted using a scale). Due to the technical nature of this aspect of the building plans, we recommend that you have a professional (i.e.: civil engineer, architect, or landscape architect) assist with this portion of your plan preparation. **(If more than 50 cubic yards of cut or fill was or will be moved, or more than one foot of fill was or will be placed on the building area, a separate permit for grading is required.)**
- **Show how storm run-off will be controlled** around the proposed structure. If the building site is relatively level, provide control elevations along drainage swales, showing that a minimum 2% slope will exist. Note that drainage swales should be located a minimum of five feet from the foundation where practicable, and be rock-lined where the slope exceeds a 1:10 slope (10%).
- **Provide a fully-dimensioned driveway profile** that includes the following: elevations at road edge or top of curb, garage floor, and at each grade break; percentage of slope between grade breaks; and distance between grade breaks.
- **Show how the Fire Department Safety Regulations will be met.** (The following items will be reviewed and approved by Fire Department) Basically, these rules require that driveways be a minimum of 12 to 20 feet wide depending of the length; maximum slopes shall not exceed 15%; have turnouts and turnarounds at certain locations for fire trucks and other vehicles in the event of a fire if driveways exceed 150'.
- If the building **IS LOCATED IN FIRE HAZARD SEVERITY ZONE**, building shall comply with the requirements of Chapter 7A of the California Building Code.
- If the building exceeds 3600 square feet, **fire sprinklers MAY be required.**
- **Show septic system** or indicate sewer lines on property.

## Energy Package

- **Determine the climate zone for the parcel**
- **Provide information showing compliance with the Title 24 Energy Regulations.** Include Form CF-1R and the Mandatory Measures Checklist. Additions may qualify for a prescriptive package. The author of the energy documents must sign the package as well as the designer/owner.
- **Window orientation** and area on the energy analysis must match the floor plan (a common error).
- **Square footage of the conditioned area** must match the energy analysis.
- **Show all required energy conservation features** on the plans, and reproduce the CF-1R forms and "Mandatory Energy Conservation Requirement" list on the plans
- **Show the R-value of the floor, walls and ceilings.**

## Floor Plan

- **Provide a fully-dimensioned floor plan** for each building level. Label each room or area with its proposed use and dimensions. Show all doors and windows with nominal sizes.
- **Show the fire separation wall** between a garage and adjacent living space. Show a minimum
- 1-3/8" solid-core, self-closing door between the two areas. Show 1/2" gypsum board on the garage side of the fire wall, and 5/8" type X gypsum board on the ceiling of the garage if there is living space above, or if the attic is continuous between the garage and adjacent living space.
- **In habitable rooms**, the window area must be at least 8% of the floor area (one-half, operable for ventilation). Kitchens may use artificial light.
- **In bathrooms and toilet rooms**, show mechanical ventilation that provides a minimum of 50 cubic feet per minute, fan to outside.

- **Sleeping rooms** shall have a window or exterior door for emergency escape. Window opening height shall not exceed 44 inches above floor level. The window shall have a minimum net openable area of 5.7 feet, with a minimum net openable width of 20 inches and a minimum net openable height of 24 inches. (minimum standard size window is 4'x4' sliding type)
- **Show safety glazing in hazardous locations**, such as (generally): any door if the glazing is within 60 inches of the floor; within 24 inches of a door if the bottom of the glass is less than 60 inches above the floor; within 60 inches of the standing surface or drain in a tub or shower enclosure (includes walls); in window panels that are larger than nine square feet and within 18 inches of the floor; any window within five feet of a stairway or landing. [Note that this information has been simplified - the actual hazardous location section of the code is complex and requires careful consideration during the design of the building. See the current California Building Code Hazardous Locations section for detailed information].
- **For additions**, show the existing rooms adjacent to the addition, including door and window sizes. The plan examiner must determine if the existing room will have sufficient egress, light and ventilation.
- **Show a minimum 36" x 36" landing** on each side of an exterior doorway. Landings must be within 7 3/4" of the opposing floor surface. Any door (interior or exterior) must always swing over a floor or landing (the bottom of the door must be within one inch of the landing). Exception: a door may open at the top of an interior stairway, provided the door does not swing over the top step.
- **Show a minimum 22" x 30" access** to attic areas that have 30" of headroom.
- **Show a minimum 34" to 38" handrails** for stairs and a **minimum of 42" high guards for other walking surfaces** than are more than 30" above the adjacent floor level or grade. Openings in the guardrail cannot allow the passage of a 4" sphere.
- **Show a handrail installed at least at one side of each flight of stairs.** A stairway is defined as four or more risers (three treads plus an upper floor level equals four risers).
- **Show Stair Details**, and if there is usable space under stairs walls and soffits shall be protected on the enclosed side with half inch gypsum board.

## Elevations

- **Provide four exterior elevations** (side views) of the proposed structure (North, South, East and West). Show the proposed grade as it will be after final grading. For example, if the building foundation will be stepped to match an existing slope, this must be shown on each elevation. Discrepancies between the site plan topography and plan elevations will result in a correction comment (a common error).
- **For additions**, you may show elevations affected by the addition only.

## Foundation Plan

- **Attach a Soils Engineering Report** by a California registered Engineer to the approved plans.
- **Provide a North arrow** that matches the building orientation on the site plan.
- **Be certain that (properly-sized) piers** are located under concentrated loads such as posts or trimmers supporting load bearing members such as beams or girder trusses. If the posts are located at an exterior footing, the footing should be widened to the same dimension as the required pier. Note: the omission of piers is the most common structural error found on plans and during framing inspections, and is a serious oversight.
- **If there are hold-downs (seismic anchors)**, provide a hold-down schedule on foundation plan.
- **Note on plan** that all hold-downs are to be fastened in place prior to foundation inspection.
- **For building sites** steeper than a 1:10 slope (10%), provide a stepped footing detail (cross section).
- **Show all foundation elements** (details), including interior footings and piers, on plan.
- **Provide a cross-section** showing typical footing/stem wall or footing/slab dimensions, including placement and size of reinforcement.
- **Specify foundation bolt size and spacing.**



- **Indicate height and location of retaining walls.** Note that walls exceeding 48 inches from the bottom of the footing to the top of the wall must be engineered, and designed or approved by a California registered Engineer or Architect, if applicable. In the case retaining walls are part of the foundation system the wall must be engineered, and designed or approved by a California registered Engineer or Architect.
- **For slab-on-grade construction,** show type of slab reinforcement. Also show vapor barrier if it is a habitable area. Be sure that the reinforcement type installed matches the plan engineering (a common error).

## Floor-framing Plan

- **Show minimum under floor ventilation** of 1 sq. ft. per 150 sq. ft. of floor area with cross-ventilation.
- Crawl spaces shall be provided with a minimum of one access opening not less than 18"x24".
- **Show minimum 18" clearance** from grade to the bottom of floor joists (minimum 12" for girders).
- **Show the type, size, and spacing of girders and floor joists.** If manufactured joists are used, show the joist series and live-load deflection used. Note that floor joists must be spaced no further apart than 16" O.C. when the underside forms part of a fire separation, such as between a garage and a living space above, otherwise an approved listing assembly will be required.
- **Show the thickness and span rating** of the floor sheathing (for example: 3/4", 20/40 plywood).
- **Provide additional support** under concentrated loads such as brick hearths, rock work, wood stoves, gas stoves, and so forth.

## Framing Plan

- **Show all header/beam locations and sizes.** Note that beam sizes must match the project engineering (a common error).
- **Show method of bracing the structure.** Provide fastener size and spacing for shear walls or braced wall panels.
- **Provide one or more typical cross-sections** to clearly showing how the structure will be constructed. Provide close-up details to clarify specific connections or other special framing.
- If a deck is to be built, provide a deck framing plan with a typical cross-section.
- **Provide a cross-section** showing typical high wall, beams trusses or rafters as applicable.

## Roof and Ceiling Framing Plan

- **If the roof consists of engineered trusses,** provide two sets of wet/digital-stamped and signed truss drawings. If there is a California licensed Engineer or Architect, that individual must review the truss drawings and stamp and sign the lay-out sheet of the trusses indicating that the truss drawings are compatible with the building design (a common error).
- **For engineered trusses,** show hardware used to fasten truss to top plate (toe-nailing not permitted).
- **Show the thickness and span rating of the roof sheathing** (for example: 5/8" 24/16 plywood).
- **Show minimum attic ventilation** of 1 sq. ft. per 150 sq. ft. (1/150) of attic area... ventilation shall be evenly-divided between high and low (eaves). If the roof is provided with a vapor retarder having a transmission rate not exceeding 1 perm in accordance with ASTM E 96 installed on the warm side of the attic insulation and ventilation is evenly-divided between high and low (eaves), the area may be reduced to 1/300. High ventilation shall be located at least 3' above eaves.
- **For conventional (non-engineered) site-built roofs,** show rafter size and ceiling joists, grade, and spacing. Show wall ties (not collar ties) a minimum of 48" on center.

## Electrical Plan

- **The electrical plan may be included** on the floor plan if sufficient clarity is retained.
- **The electrical plan must include the location of the service panel** and its rated ampacities (i.e. - 125 amps, 200 amps, etc.). Show all outlets, switches, light fixtures and smoke detectors. Label any 220-volt outlets. Label all required GFCI (ground fault interrupter circuit) outlets. Low-voltage wiring and components such as phone jacks, TV, and security systems may be omitted.
- **Show the locations of all required smoke detectors.** A summary of **California Building code Sec. 907.10.1.2** can be found in the footnotes at the end of this document.
- **Note on the plans** that smoke detectors shall be audible in all sleeping areas (for large or multi-story structures, this normally requires inter-connection of the detectors so that all detectors activate during a fire). Smoke detectors shall receive their primary power from the building wiring and shall be equipped with battery back-up.
- **Outlets must be located** in such a manner that no point along a wall is more than six feet from an outlet (each doorway starts a new wall area). A wall is defined as an area two feet wide.
- **All kitchen counter top outlets** must be GFCI-protected and be spaced no more than four feet apart. Counter top spaces 12 inches wide must have an outlet.
- **On Dwelling units bedrooms** All branch circuits that supply 120 volts, single phase, 15 and 20 amp outlets installed on dwelling units bedrooms shall be protected by an arc fault circuit interrupter.
- **Outlets located** in the following locations must be GFCI-protected: garages, carports, under floor areas, bathrooms, exterior locations, and at wet bar counter tops.
- **Three-way light switches** must be located at the top and bottom of each stairway.
- **All lighting shall comply with current Title 24 energy/lighting requirements.**

## Mechanical Plan

- **The mechanical plan** may be included on the floor plan if sufficient clarity is maintained.
- **Show the location** of HVAC equipments (FAU, A/C, Water heater, Heat pump, Air handler, Exhaust fan, etc.). The equipment shall not be placed within the required side/ rear set backs.
- **Show all gas appliance locations** with the rated BTU (input) of each device.
- **Show where the gas piping** enters the building and specify the type of gas to be used (propane or natural gas). If any show the location of LPG tanks
- **Show how gas appliances** in confined spaces will receive combustion air. Note the size and location of the openings. Again, under sizing combustion air openings can create an unsafe condition.
- **For fireplaces** the ICC/ICBO number/UL listing shall be shown, and a copy of the manufacturer installation instruction submitted in order to verify specific requirements.
- **If a water heater is located in the garage**, show the burner assembly located a minimum of 18" above the floor. Appliances installed on garages shall be located behind protective barriers or located out of the normal path of vehicles. Show approved seismic bracing for all water heaters. Note that gas water heaters cannot be located in a bedroom or bathroom, or gain access through that room.



## Glossary

- **Conditioned Space:** An area, room or space normally occupied and being heated and cooled by equipment for human habitation.
- **Easement:** An interest granted by deed, or created by will, deed or prescription that is held by one person in land owned by another person. An easement entitles its holder to a specific, limited use or enjoyment - such as the right to cross the land.
- **Flood Zone:** An area of special flood hazard as shown on the Flood Insurance Rate Map (FIRM) and subsequent maps modified by the Federal Emergency Management Agency (FEMA). Building projects located on parcels within or partially within a flood zone must comply with special requirements that are administered by Planning Services.
- **Habitable Space:** An area used for living, sleeping, eating or cooking. Bathrooms, toilet compartments, closets, hallways, storage spaces, and similar areas are not considered habitable space.
- **R-Value:** The resistance of a material or building component to heat flow - the higher the number, the more slowly heat travels through the material. Also known as thermal resistance.
- **Setback:** The open space required between a structure and a property line or road easement, as required by the county zoning plan. The distances vary depending on several factors, including: the zone district; the orientation to the road serving the parcel (i.e.: front, side or rear); and adjacent property zoning.
- **Topography:** A graphic, detailed representation of the physical features (both natural and man-made) of the surface of the land.
- **Window Orientation:** The direction the window faces. This is an important factor in calculating building heat gain during the summer months.
- **Zoning:** Refers to the county's zoning plan, which consists of various districts within the unincorporated area of the county. This plan (basically) regulates the following: the type, height and size of buildings that may be erected, altered or maintained; the types of trades or occupations that may be carried on; certain uses of the land or buildings; and the creation and maintenance of certain open spaces around buildings.

## Footnotes

**\*\* Summary of California Building Code Sec. 907.2.10.1.2:** Single or multiple –station smoke alarms shall be installed and maintained regardless of occupant load at all of the following locations:

1. On the ceiling or wall outside of each separate sleeping area in the immediate vicinity of bedrooms;
2. In each room used for sleeping purposes;
3. In each story within a dwelling unit, including basements but not including crawl spaces and uninhabitable attics. In dwellings or dwelling units with split levels and without an intervening door between then adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provide that the lower level is less than a full story below the upper level.

**Every detector located within a dwelling shall sound an alarm audible in all sleeping areas.**