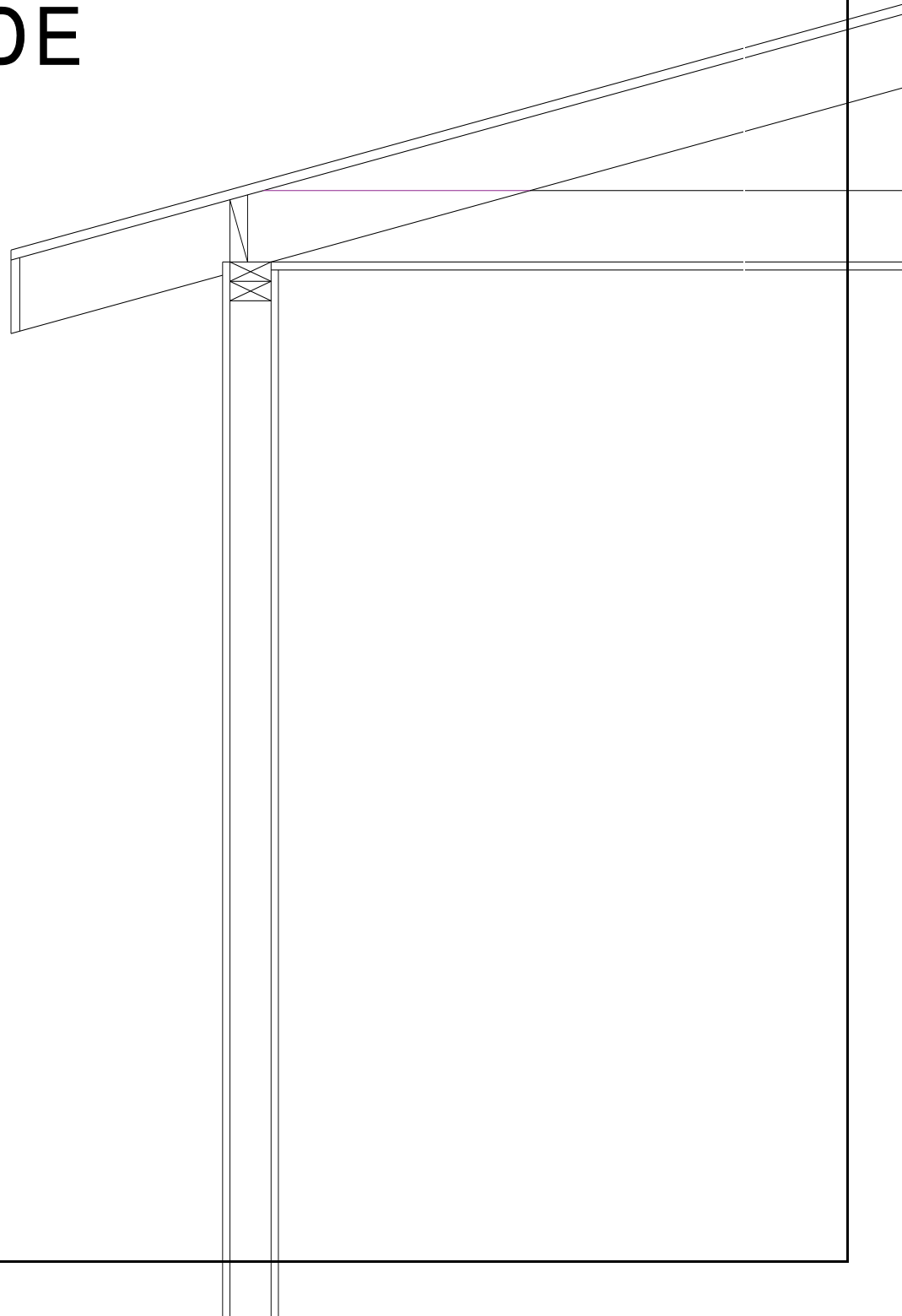


# SINGLE FAMILY RESIDENTIAL CONSTRUCTION GUIDE



7-2020

## **INTRODUCTION**

This document has been prepared to assist you in applying for and receiving a permit from the Palo Alto Development Center. The Development Center is located at 285 Hamilton Avenue, across the street from City Hall. Hours of operation are from 9 AM to 4 PM, Monday through Friday. The Development Center phone number is 650-329-2496.

The Development Center opened in March of 1999 with the purpose of improving customer service and providing one location for all permitting needs. Staff at the Development Center represents individuals from Building Inspection, Planning, Public Works, Fire, Utilities and other Departments.

Permit applications, fee schedules, customer comment forms and other useful pieces of information are available on the Development Center Web Site. The address is:  
<https://www.cityofpaloalto.org/gov/depts/ds/default.asp>

Good luck and happy building!

## **WHERE DO I START?**

Before you can start designing your dream home you need to do some investigation. Did you know that your use of your land may be subject to specific restrictions as defined in the property deed, by local zoning laws or by other State or Federal restrictions? Most people don't. Learning about these restrictions at an early stage in the design process will save a lot of frustration. No one in construction likes surprises at the last minute.

### **The Deed**

The paperwork that gives you ownership of your property sometimes has restrictions on what you can and cannot do. Does your land have easements from utility companies or other public or private parties? Does your land description contain conditions, covenants and restrictions (CC&R's)? CC&R's may limit your use of the property or may limit your expansion potential. Read your deed carefully for any restrictions that may affect your project.

### **Zoning**

Your city ordinances have a section that divides your community into specific "zoned" areas. These zoning districts limit the use of your property as well and set out specific construction controls. Setbacks (such as minimum front, rear and side yard sizes), allowable building height, maximum floor area, covered parking requirements, etc. are found in the zoning ordinance. Local jurisdictions are not consistent in any of these regulations. It is important that you research your specific property zoning requirements by contacting your local planning department (650-329-2441 or [Planner@CityofPaloAlto.org](mailto:Planner@CityofPaloAlto.org)) early in the design process. You may also [Request a Parcel Report](#) on the Development Center web site.

### **Other Important Areas to be Satisfied**

There are many Federal, State and local laws that may have an impact on your project. It is very important to determine if any of the following apply to your site:

1. Flood Zones - Are you in a flood zone? Can you build in a flood zone? What are the excavation and fill restrictions in this zone? (Public Works/Engineering 650-329-2151)
3. Geological hazard area - Are you located in an area of high seismicity?
4. Hazardous fire area - Properties located west of Highway I-280 require Class A fire retardant roofs.
5. Historic preservation - Is your property located in a historic preservation district, such as Professorville or is your building on the City's Historic Inventory? Regardless, a picture is required of every residence that is being demolished (see Deconstruction Permit Procedures). Further questions can be answered through the Planning Department at 650-329-2441.

6. Architectural Review - Is your design subject to approval by the Architectural Review Board? If so, you should obtain a copy of their published guidelines before you put a lot of work into your design. (Planning 650-329-2441 or [Planner@CityofPaloAlto.org](mailto:Planner@CityofPaloAlto.org))

7. Noise Ordinance - Most of these are common sense, but it never hurts to ask for a copy of the noise ordinance. In Palo Alto, the construction related noise level at the property line may not exceed 110 dBa. No piece of construction equipment can exceed 110 dBa at a distance of 25 feet from the equipment. As a common courtesy, radio volumes should be kept at a level that does not disturb the neighbors. The noise ordinance and construction hours are enforced by the Palo Alto Police Department. Call the non-emergency number 329-2413.

8. Construction Hours (Includes materials deliveries)-  
8 AM to 6 PM Monday through Friday  
9 AM to 6 PM Saturdays  
Sundays & Holidays prohibited

9. Tree protection – Applications for deconstruction and building permits must be accompanied by information required by the City of Palo Alto Municipal Code (PAMC. Regulated trees refer to all trees or groups of trees included in the following three categories: 1) Protected trees, 2) Street trees, and 3) Designated trees. The initial submittal for all building permit applications must show specific site plan details about existing trees, including trunk diameter and accurate drip line of oaks and redwoods, all street trees within 30 feet of a site, and any tree overhanging from a neighboring property. In addition, any planned disturbance within a regulated tree drip line requires an arborist's Tree Preservation Report that describes design and protection measures. Further criteria regarding regulated tree removal, conditions for permit approval, forms, potential mitigation options and limits of impacts to regulated trees and Frequently Asked Tree Questions (FAQ's) are provided in the Palo Alto Tree Technical Manual, Addendum 1, also available on line at: <https://www.cityofpaloalto.org/civicax/filebank/documents/51800>.

10. School fees (new floor area) - Funding for local schools sometimes comes via a tax on newly built floor area. **The city is required to verify the payment of the school impact fees prior to issuing a building permit. Residential additions of 500 square feet or less are exempt from the school impact fee. For additional information about the school impact fees, please contact the Palo Alto Unified School District at 650-329-3706.**

11. Fire sprinklers - In Palo Alto, structures, including houses or additions, built to the west of Highway I-280 require a fire sprinkler system. As of January 1, 2008, all new houses or additions greater than 500 s.f., east of Highway I-280, that result in the structure having a gross floor area in excess of 3600 s.f. require a fire sprinkler system.

12. Fireplace – A Palo Alto Ordinance prohibits the installation of new wood burning fireplaces and wood burning stoves. All new fireplaces must be approved gas burning appliances only. Exterior wood burning fireplaces and Bar-B-Q's are exempt from the ordinance.

## **CODE AND MORE CODES**

While zoning deals with your property and the relationship of your building to the neighborhood, building codes deal with the building itself. These codes establish, by law, the minimum acceptable standards for construction, electrical, plumbing, and mechanical systems. They are designed to safeguard health and safety in every building.

Your local, professional building inspection staff will be happy to explain any code item that you may not understand.

2019 California Building Code (CBC)

2019 California Mechanical Code (CMC)

2019 California Plumbing Code (CPC)

2019 California Electric Code (CEC)

## **BUILDING PERMITS - FIRST QUESTIONS**

### Do I Need A Permit?

A building permit is required for any new construction, deconstruction, remodeling, expansion, addition or repair to a structure.

Work requiring a permit includes (but is not limited to) additions, swimming pools, hot tubs, trellises, carports, sheds, skylights, covered patios, bathroom and kitchen remodeling, termite repairs, solar panels and most interior and exterior remodeling work. Additional sub-permits may also be required for plumbing, heating & cooling, re-roofing and electrical work.

Construction undertaken without a permit may be subject to a penalty on all required permits and may involve dismantling or uncovering completed work to provide access for inspection. If you are in doubt as to whether a permit is required for your project, call the building department before starting the work.

### Are Construction Plans Required?

If you asked the question, they probably are. In order to approve your building permit application, the plan checker or building inspector needs to have a clear picture of your project. You must always assume that someone other than yourself is going to do the construction. Very minor work, such as dry rot repair, usually does not require plans. Kitchen and bathroom remodels, removal or addition of walls, exterior changes, additions, will all require plans.

## **PREPARATION OF PLANS**

### **What Kind Of Plans Are Required?**

All plans must include the name, address, stamp and signature of the architect, engineer, designer or other person preparing the plans. No marked-over or altered plans will be accepted. If major revisions are necessary or additional information is required, the original drawings must be corrected and resubmitted.

Completeness and clarity of the drawings is essential. Remember that the plan checker can only review your plans to the level of the information you supply. Your plans would be considered complete if you could give them to a total stranger and he/she could understand how the building will be constructed and what the finished project will look like. Incomplete and unclear plans can delay issuance of your permit.

### **Information Required On Drawings**

Plan size shall be 18 inches by 24 inches minimum and 36 inches by 42 inches maximum. Plot plans must be included in plans for any work which alters the exterior of an existing structure or any new buildings. Plot plans must show all property lines and lot dimensions. Front, rear and side setback distances to buildings shall be noted along with the building's exterior dimensions. Show all covered patios, porches and roof overhangs. Indicate all public and private easements and electric service, gas meter, water service, & sanitary sewer locations. Plot plans should be drawn to a scale of  $1/8'' = 1'-0''$  or  $1/10'' = 1'-0''$ .

Foundation plans which include a typical footing section must be drawn for all new construction or first floor additions. Indicate the location and size of under-floor access (except for slab-on-grade type construction).

Floor plans must show all walls, plumbing fixtures, door, windows, skylights, major appliances, kitchen counters, furnace and water heater locations. Door and window sizes must be indicated, and room dimensions must be shown. Ceiling heights can be noted in the plans or in detail sections. Electrical receptacles, switches, fans, smoke detectors and light fixtures may be shown on the floor plan if sufficient clarity is maintained or may be shown on a separate electrical plan. Attic access location and size, stairway width, landing size and the rise and run of stairs must be noted. Fireplace location and hearth sizes must be noted.

Framing plans must indicate the sizes of floor joists and girders, ceiling joists and roof rafters or beams, lumber grade, direction and spacing. If you are using main beams, trusses or any unconventional framing, structural calculations and details must be submitted. These calculations and details must be stamped and signed by a licensed architect or engineer.

Floor plans, wall elevations, foundation and framing plans must be drawn to a minimum scale of  $1/4'' = 1'-0''$ .

Four exterior elevations are required which show windows, doors, skylights and architectural finish features, along with chimney extensions, under-floor and attic venting location and sizes. Height of buildings must be indicated and the daylight plane lines indicated to show compliance with zoning regulations.

Each plan set submitted for building permit review must include a completed full size Sheet T-1, "[Tree Protection—it's Part of the Plan!](#)" For an application to be considered complete, the tree disclosure statement (TDS) must be completed on this sheet in addition to any others needed for other reviews. Site and grading plans must show the correct type of tree protection fencing according to the Tree Protection Detail #605 and delineated on the plans as a bold dashed line enclosing the tree protection zone for each regulated tree.

Duct work and piping plans will be required to indicate water supply and drainage piping sizes, gas supply line locations and sizes, flue locations and sizes and piping materials. This information may be shown on the basic floor plan if sufficient clarity can be maintained.

#### Do I Need An Architect Or Engineer?

There are instances when you must have a professional's help on your project. Some examples:

- When you are constructing a new building or addition in the foothills area (west of highway 280) where engineered foundations are required along with Soils and Geology Reports to substantiate all design assumptions.
- When the design of your structure requires engineering calculations, i.e. when you are using prefabricated trusses or glued-laminated beams or unconventional framing.
- When the foundation system of your home includes piers and grade beams or caissons.
- When you are building a retaining wall over 48 inches in height; measured from the bottom of footing to the top of the wall.

There are instances when you are not required to but should seriously consider retaining a professional to help you with your project. Some examples:

- When the size or the complexity of the project exceeds the time you can devote to it. A rushed job on the drawings or a lack of experience can lead to errors which may be costly to fix during construction.
- When the cost of the project justifies the expense. Professionals can assist you in accomplishing the design goals using the most efficient methods/materials at a cost within your budget.

### How Many Copies Of The Plans Do I Need?

The number of plan sets required is based on the number of agencies that must review your project. One set will be returned to the permit applicant as the "JOB COPY", one duplicate set will be retained by the city, and if the project involves the addition of square footage, one set, by law, must be retained for the County Assessor.

### **APPLYING FOR A BUILDING PERMIT**

#### Who May Apply For A Permit?

Property owners or licensed contractors may apply for a building permit or sub-permit. Contractors must provide a Certificate of Workers' Compensation Insurance. Property owners doing their own work will be required to sign an "Owner-Builder Declaration" stating that they are actually doing their own work and are exempt from the requirement of having Workers' Compensation Insurance, or they will be required to declare they will hire licensed contractors.

#### How Do I Apply For A Permit?

The Development Center Counter is open Monday through Friday 8:00 a.m. to 4:00 p.m.

The first step is to fill out a building permit application form. This form must be submitted for all construction and must be completely filled out and signed. If the applicant is lacking any information asked for on the form, this should be brought to the attention of the staff member accepting the application so that he or she can assist the applicant in completing the form. The form is available on the Development Center page of the City's web site.

Be sure to consult with the Palo Alto Green Building Guide for permit application requirements for all project types. The guide is available at the City's Development Center or online at [https://www.cityofpaloalto.org/gov/depts/ds/green\\_building/default.asp](https://www.cityofpaloalto.org/gov/depts/ds/green_building/default.asp).

For an interior remodeling project, the applicant must submit two copies of complete floor plans with details indicating the proposed changes. Be sure to indicate clearly what is new work and what is existing, what is to remain and what is to be removed.

For additions or new construction, the applicant must submit two sets of utility load sheets and Title 24 State Energy calculations along with a CF-1R form. CF-1R form with signature shall appear on the plans.

Construction work must start within 180 days of the issuance of the permit. If work has not been started and no inspections have been called for in this period, the permit will be declared null and void. The permit may be renewed for one-half the original permit fee if no changes in the plans are made, but the renewal process may only be used up to one year after issuance. Beyond that time a new application and full fee will be required.



The Building Official may grant a one time only extension for an unexpired permit for a period not exceeding 180 days upon written request stating reason(s) for not commencing the construction.

#### How Much Will It Cost?

Building permit fees are based on a proportion of the total construction cost, including all materials and labor involved in the proposed work. A Building Division plan checking fee is assessed at 75 percent of the building permit fee. A Zoning plan check fee (where applicable) is assessed at 30 percent of the building permit fee. These plan check fees must be paid upon submittal.

Plumbing, mechanical and electrical permit fees are based on the actual work done (such as how many receptacles, sinks, fans, etc) or in the case of new floor area, on the square footage. Re-roofing permit fees are based on the value of the entire job, including materials and labor.

Fee tables are available on the Development Center page of the City web site.

### **ADDITIONAL DOCUMENTS TO BE SUBMITTED WHEN APPLYING FOR A BUILDING PERMIT**

#### Residential Utility Service Information (Load Sheets)

Utility demand load sheet forms are available at the Development Center and on the web and must be submitted with the building permit application and plans when required. This information is used by the City's Utilities Engineering Division (650-329-2161) to determine the adequacy of existing services lines and meters.

The entire form must be completed for water, gas and electrical demand when applying for a permit for a new home.

Additions which involve a relocation of electric or gas service, a change in the main electric panel size, or any change in natural gas demand will require the appropriate sections of the form completed.

Load sheets are also required for swimming pools, hot tubs and spa permits.

#### Engineering Documents

Structural calculations as discussed under "Engineered Plans", will be required at the time of permit application.

## Soils Report

Three copies of a stamped and signed soils report are required to be submitted at the time of permit application for all new or residential additions in the foothills area (west of Foothill Expressway), all projects that include a basement and all pile or pier and grade beam type foundation. The soils report shall be prepared by a registered soil or geotechnical engineer.

The soils report shall include, but not limited to the following information:

- a. A plot plan or description showing the location of all test borings and/or excavations.
- b. Descriptions and classifications of the materials encountered.
- c. Recommendation for foundation type and design criteria including allowable bearing capacity, active and passive soil pressure, pier friction (where necessary), etc.
- d. Provision to minimize the effects of expansive soils and the effects of adjacent loads.

## Planning Entitlements

If a Planning Entitlement is required to construct any portion of the work included in the permit application, a copy of the approved Planning Entitlement must be printed on the front page of the plans.

## Regulated Trees

At the time of submitting an application for review, the plan set must include the full size Sheet T-1, "[Tree Protection—it's Part of the Plan!](#)" with the completed and signed tree disclosure statement. A tree preservation report must be included in the application package when any activity may be within the dripline of a regulated tree.

## **REQUIRED INSPECTIONS**

It is the responsibility of the permit holder to notify the Inspection Services Division prior to covering any work that needs inspection. Obviously not all of the following inspections will apply to every job. If you are uncertain as to which inspections pertain to the project you are undertaking, we urge you to check with the Inspection Services Division before covering up any work. Failure to call for a required inspection may result in your having to dismantle completed work to expose the area in question for inspection.

### Building Inspections

Foundation (forms) - After grading, forming and steel placement is completed; trenches are cleaned out; and before pouring any concrete.

Slab - After grading, forming and steel placement is completed; trenches are cleaned out; after all piping, conduit, etc., has been placed and inspected; and before pouring any concrete.

Joist or Girder - After all joists, girders, blocking, plumbing, heat ducts (with required insulation),

electrical conduits and wiring have been installed and before any underfloor insulation has been installed.

Floor Insulation - After all underfloor insulation is in place and before any subflooring has been laid.

Roof Sheathing - After all roof sheathing and flashings have been installed and prior to putting on any roofing materials. Rafters, trusses, blocking, strapping, etc. will also be checked during this inspection

Exterior Sheathing - Per approved drawing or per UBC, **Chapter 2326.11.3 and Table 23-I-W** - Wood Shear Walls and Diaphragms in Seismic Zones 3 and 4.

Exterior Lath (stucco wire) - After all lathing and backing and weep screed is in place.

Frame - After the roof is on and the exterior has been enclosed; framing, fire blocking and bracing is in place; and all pipes, chimneys, plumbing and heating vents and electrical wiring are complete and have been approved.

Insulation - After framing has been approved and insulation is installed.

Sheetrock - After all sheetrock has been installed and corner materials have been affixed, and prior to any taping. Any gaps or cracks exceeding 1/4 inch must be filled before calling for this inspection.

Tile Lath - After paper and wire have been attached and before mortar or tile is installed.

Plumbing Inspections - All plumbing must be tested by filling with water, inspected and approved before it is covered with finish materials. Waste piping shall be filled with water with a ten (10) foot head. Water piping shall be connected and holding at the operating pressure.

Radiant Heat - Radiant heat piping must be subjected to a pressure test of 200 pounds for 24 hours. After the test is ready it is checked by the Building Inspector and then re-checked by the Inspector in 24 hours.

Shower Pan - The inspection is made after the pan is framed in and hot-mopped or other approved shower pan lining material has been installed. Pan must hold water for 24 hours prior to inspection.

Gas Test - Gas line extensions must be subjected to a pressure test and approved before the test gauge is removed. All gas appliances installed on a gas system must be inspected and approved.

Electrical - All electrical wiring must be inspected and approved before any wiring is covered up. All fixtures must be inspected and approved after installation is completed.

Sheet Metal - All flues, vents, heating ducts and chimneys must be inspected and approved after installation and before they are covered up.

Roofing - Call on the day the re-roofing job starts. If job involves a tear-off of old roofing materials, call before installing any new materials.

The telephone number to request the above inspections is (650) 329-2496.

Green Building Special Inspector – New residential construction and residential alterations and/or additions over 1,000 s.f. in size will require a Green Building Special Inspector (GBSI) to review and CALGreen Green Building GB-1 checklist sheets and to provide green building inspections per the Palo Alto Green Building Program requirements. Please refer to the Palo Alto Green Building Compliance webpage for a list of pre-approved Residential Green Building Special Inspectors at <https://www.cityofpaloalto.org/civicax/filebank/documents/75534>.

The Green Building Compliance webpage is available at [https://www.cityofpaloalto.org/gov/depts/ds/green\\_building/compliance.asp](https://www.cityofpaloalto.org/gov/depts/ds/green_building/compliance.asp).

Regulated Tree Protection – For *street trees*, issuance of a permit first requires a Public Works Operations inspection of Type II fencing and signed approval on the Street Tree Verification (STV) form. The STV form is available at the Development Center and on the required Sheet T-1. For protected and designated trees, issuance of a permit requires site inspections by the applicant's project arborist and written verification that Type I fencing is installed correctly according to the plans and tree preservation report generated for the project.

The approved "Job Copy" of the plans and the "Job Card" (the actual permit) must be on-site and available to the inspector at the time of the inspection. If the approved plans and job card are not on-site, or if the job is not ready for inspection, a re-inspection fee will be charged.





DEVELOPMENT SERVICES – BUILDING DIVISION

## SUBMITTAL GUIDELINES:

# NEW SINGLE-FAMILY RESIDENCE SUBMITTAL CHECKLIST

EFFECTIVE: Jan 1, 2020

SCOPE: RESIDENTIAL

**APPLICABLE CODES:** 2019 CBC, CRC, CPC, CMC, CEC, CALGreen, CEnC, and PAMC

*The information provided in this document is general and intended as a guide only. Each project is unique and additional requirements may be enforced as deemed appropriate*

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This handout describes the minimum submittal requirements for an addition to a single-family residential structure. In certain situations, additional material may be required. All work must meet the minimum requirements of the City of Palo Alto's Municipal Code, PAMC.

Plans shall be drawn to a scale of ¼ inch per foot or larger. All copies shall be “wet signed” or electronic signature by the appropriate architect, designer and/ or engineer.

Applicants are encouraged to have plans drawn by a professional architect or designer familiar with Palo Alto's building permit process. This will facilitate a timely review of the project plans. It is to the applicant's advantage to submit legible and clear plans. Plan that cannot be read or understood will not be accepted. This may result in a delay of plan review process and may cause additional costs to the applicant.

In order to process and expedite your request for a Building Permit, please submit the applicable items listed below.

- Complete sets of drawings to include the following applicable sheets:
  - Architectural Drawings including:
    - Site plan
    - [Pollution Prevention – It's Part of the Plan](https://www.cityofpaloalto.org/civicax/filebank/documents/2732) sheet shall be included in submittal package. This document is available online at <https://www.cityofpaloalto.org/civicax/filebank/documents/2732>
    - Floor plan
    - Ceiling plan
    - Roof plan
    - Exterior elevations
    - Cross sections
    - Details & notes
  - Structural Drawings including:
    - Foundation plan
    - Floor and ceiling framing plans
    - Roof framing plan
    - Pre-fabricated roof truss shop drawings (may be deferred)

- Wind and seismic lateral bracing
- Details and notes
- Special Inspection Agreement form (if applicable)

- Mechanical plan with required Title 24 Energy Compliance forms reproduced on full size sheets
- Electrical plan with required Title 24 Energy Compliance forms reproduced on full size sheets
- Plumbing plan
- GB-1 sheet: CALGreen Mandatory plus Tier 2
- Green Building Special Inspection Agreement form
- Demolition plan (if applicable)
- On-site Grading and Drainage plan
- Site Improvement/ Landscape plans

- Structural Calculations
- Soils Report (if applicable)
- T-24 Energy Calculations
- Planning Entitlement Approval letter reproduced on full size plan sheets

1. All drawings and calculations must be signed by person who prepared them as required by the California Business & Professions Code.
2. If one or more required items are not submitted, the application will be considered incomplete and will not be accepted.
3. If adding 500 sq. ft. or more, prior to permit issuance, a Certificate of Compliance must be presented from the Palo Alto Unified School District. See "*School Impact Fee*" handout or call 650-329-3700 for additional information.
4. Plan Check and Fire Department fees must be paid at time of submittal.
5. Fire alarm and fire sprinkler drawings shall be submitted by the contractor directly to the Fire Department and are not to be included with the building permit submittals.
6. **Revisions:** Once the permit has been issued, any changes in the design must be approved by the City. Submittal documents shall be reviewed by the Architect or Engineer of record with a notation indicating that the changes have been reviewed and are in general conformance with the design of the building prior to being submitted to the City for approval. Additional fees will be due for each revision at time of submittal. Projects with more than one revision may require the submittal of a "record set" (as-built) drawings prior to final inspection.
7. A Permit may be issued only to a State of California Licensed Contractor with the proper license classification or the Homeowner.
8. If the Homeowner hires workers, State Law requires the Homeowner to obtain Worker's Compensation Insurance. Proof of this insurance is required prior to inspection.