

# GENERIC SFD REVIEW COMMENTS

To aid in providing code-complying documents and to give you an insight to information that plan reviewers look for on your documents submitted for plan check

## PROJECT DATA

1. Scope: New Single Family Residence (SFD).
  2. Occupancy Group(s): R-3, U1
  3. Floor Area:
    - Living: \_\_\_\_\_ s.f.
    - Garage: \_\_\_\_\_ s.f.
    - Other: \_\_\_\_\_ s.f.
  4. Stories: \_\_\_\_\_
  5. Energy Method: \_\_\_\_\_?
  6. Sprinkler Sys: \_\_\_\_\_?
  7. Fire Ret. Roofing: Yes?
  8. SDC factor: ? (C, D or E)
  9. Geotechnical report: Required (project is located in SDC C, D or E) or by local?
  10. Engineering Calcs: ? Required, unless conventionally-framed
  11. Code Editions: 2007 CA Building, Mechanical, and Plumbing Codes, 2007 CA Electrical Code, and 2007 CA Energy Code.
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## TYPICAL REVIEW COMMENTS:

### 0. GENERAL:

- a. Reminders/procedures:
- b. Preparation of the Drawings:
  1. Please identify the person that prepared the drawings and add his/her name, address and phone/fax on the drawings.
  2. Designer to sign the drawings prior to recheck submittal.
  3. Architect or Engineer-of-record to (if applicable) to sign the structural drawings prior to recheck submittal.
- c. Site Plan, Appendix Chapter 1, CBC 106.2:
  1. Show and label all property lines.
  2. Note the "North" arrow.
  3. Note the setbacks to all property lines.
  4. Show the driveway leading to the garage.
  5. Show graphically (by arrows) drainage away from the building foundation and, if applicable, conform to the geotechnical report's recommendations for site drainage and roof drainage disposal.
  6. Indicate the location of the APPROVED numbers or address for the property in such a position to be plainly visible and legible from the street or road fronting the property.

- d. Project Information:
  - 1. Note on the cover sheet the address and/or legal description for this project.
  - 2. Note the project's owner information on the cover sheet: Name, address and phone number.
  - 3. Identify on the drawings the project designer responsible for this project.
  - 4. Add the designer's contact information (name, address, phone number, fax number and email).
  
- e. Separate review/permit is required for:
  - 1. Septic Tank and Leach Lines. Please add notes on the drawings.
  - 2. Wells.
  - 3. Site Retaining Walls.
  - 4. Pools/Spas?
  - 5. Other?

## 1. BUILDING:

- a. Location on the Property:
  - 1. Exterior walls that are less than 5 ft. from the property line shall be one-hour fire-resistive rated. CBC, Table 602, footnote "f". Please add notes and details for the construction of the applicable exterior walls.
  - 2. Openings in exterior walls are not allowed closer than 3 ft from the property line. CBC, Table 704.8.
  - 3. Openings (*doors, windows, vents, combustion air openings, etc*) shall not exceed 25% of the area of the exterior walls that are between 3 ft and 5 ft. from the property line. CBC, Table 704.8, footnotes "c" and "g".
  - 4. Projections (*cornices, eave overhangs, exterior balconies and similar projections*) shall be constructed in accordance with Section 704.2 and not extend beyond the distances specified in Section 704.2.
  
- b. Garage-to-house Separation, CBC 406.1.4:
  - 1. Private garages shall be separated from the dwelling unit and its attic by means of a minimum 1/2-inch gypsum board applied on the garage side.
  - 2. If there are habitable room(s) above the garage, 5/8-inch type "X" gypsum board applied on the garage side (ceiling and supporting walls) will be required.
  - 3. Door openings between the private garage and the dwelling unit shall be minimum 1-3/8 inch thick, tight-fitting, self-closing and self-latching, solid-core wood, steel honeycomb door or 20-minute fire rated door (CBC 715.4.3).
  - 4. Ducts in the garage that pass through the living/garage common wall or ceiling shall be minimum No. 26 gage steel (0.019-inch sheet steel) or thicker with no opening into the garage.
  - 5. \*\*\*There shall be NO openings from a private garage directly into a room used for sleeping purposes.

- c. SMOKE ALARMS, CBC 907.2.10.1.2: Smoke alarms shall be provided at 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. On each story within a dwelling unit, including basements.
  4. Smoke alarms shall sound an alarm clearly audible in all bedrooms (*when more than one smoke alarm is required, the smoke alarms shall be interconnected*).
  5. Smoke alarms shall receive their power from the building wiring (where such wiring is served from a commercial source) and shall be equipped with a battery backup.
- d. Emergency Escape and Rescue, CBC 1026:
1. Basements and sleeping rooms below the 4<sup>th</sup> story above grade plane shall have at least one exterior emergency escape and rescue opening per CBC 1026.1.
  2. Where basements contain one or more sleeping rooms, emergency egress and rescue openings shall be required in each sleeping room, but shall not be required in adjoining areas of the basement.
  3. Emergency escape and rescue openings (doors and windows) shall open directly into a public way or to a yard or court that opens to a public way.
  4. Basements with a ceiling height less than 80-inches shall not be required to have an emergency escape and rescue window.
  5. Basements without habitable spaces and having no more than 200 sq. feet in floor area shall not be required to have emergency escape windows.
  6. EMERGENCY ESCAPE AND RESCUE openings TO EXTERIOR to be provided for SLEEPING ROOMS CBC 1026. Clarify the following clearances on the plans:
    - i. Minimum net clear opening of 5.7 square feet.
    - ii. For grade-floor openings, the minimum net clear opening shall be 5.0 square feet.
    - iii. Minimum net clear opening height of 24 inches
    - iv. Minimum net clear opening width of 20 inches
    - v. The bottom of the emergency escape and rescue clear opening shall not be greater than 44 inches measured from the floor. CBC 1026.3.
- e. Window Wells: When the finished sill height of the emergency escape and rescue window is below the adjacent ground level the window is to have a window well per CBC 1026.5.
- f. Where the opening of the sill portion of an operable window is located more than 72 inches above finished grade or other surface below, the lowest part of the clear opening of the window shall be 24 inches above the finished floor surface of the room. CBC 1405.12.2.

- g. Exits through intervening rooms, CBC 1014.2(5): For one and two family dwellings, the means of egress is allowed to pass through intervening rooms/spaces except garages.
- h. Temperature Control, CBC 1204.1: In habitable spaces, means of providing for heating to maintain (68 deg. F) at +3 ft above floor is required.
- i. GUARDS (Guardrails): Guards to be a minimum of 42 inches in height and have intermediate railings spaced so that a sphere 4-inches in diameter cannot pass through per CBC 1013. Please add details and cuts on the drawings where applicable.  
  
*If the guard whose top rail also serves as a handrail, it shall have a height not less than 34 inches and not more than 38 inches above the treads (the railings to be spaced so that a 4.375 inch sphere can not pass through). CBC 1013.2, exception.*
- j. Fire Protection:
  - 1. The opening around gas vents, ducts, pipes, chimneys, and fireplaces at the ceiling and floor levels are to have fire blocking.
  - 2. FIREBLOCKING is required at the opening between the attic space and the chimney chase for the factory-built chimney.
  - 3. Fire stops are to be provided around the chimney and fireplace openings at ceiling and floor levels with noncombustible materials.
- k. Showers to be finished with a smooth, hard nonabsorbent surface to a height of not less than 70 inches above the drain inlet. When gypsum board is used as a base for tile or wall panels at showers, water-resistant gypsum backing board is to be used. CBC 2509.
- l. Landings at doors: Landings are to have a length in the direction of travel of at least 36 inches on each side of the door. CBC 1008.1.5; exception.
- m. Maximum for landings under door thresholds, CBC 1008.1.4 Exception 3: In group R-3 (Single Family Dwelling) the landing at an exterior door shall not be more than 7.75 inches below the top of the threshold, provided the door does not swing over the landing.
- n. In a single family dwelling, doors may have landings that are not more than 7.75 inches lower than the floor level. CBC 1008.1.4 (exception #3).
- o. Corridors shall have a ceiling height of 7 feet 6 inches. (No hallway exception). CBC 1208.2.

- p. Stairs construction, CBC 1009:
1. Please furnish construction details/sections for the (interior and/or exterior) stairs. Provide details showing how the stairs are attached to the second and first floor framing.
  2. Widths of stairs are not to be less than 36 inches.
  3. The stair treads shall have a run of at least 10" and the risers shall have maximum rise of 7.75 inches.
  4. Handrails are to be installed per CBC 1009.10 & 1012:
    - i. Handrails are not required for stairs with 3 or less risers.
    - ii. Between 34 and 38 inches above the nosing of the tread and landings.
    - iii. Handrails are to be continuous for the length of the stair.
    - iv. Clearly show how the handrail will terminate (in a newel post or into wall).
    - v. Stairways shall be handrails on each side...Exception: Stairways WITHIN units may have one handrail (Stairways on the EXTERIOR of Single Family Dwellings require handrails on both sides). CBC 1009.10.
    - vi. Detail the handgrip portion of the handrail and clearance from the wall. The handgrip shall be between 1-1/4 to 2" round or equivalent grip. If not round, then 2.25" max cross section and a diameter of 4 inch min. to 6.25" max. CBC 1012.3.
  5. ENCLOSED USABLE SPACES under the stairs to have the walls and soffits protected on the enclosed side by ½ inch gypsum board. CBC 1009.5.3, exception.
  6. Every stairway is to have a headroom clearance of at least 6 feet 8 inches
  7. Winders are to be at least 6 inches wide where the tread is most narrow.
  8. Stairway illumination: Stairways within dwelling units and exterior stairways serving a dwelling unit shall have an illumination level on tread runs of not less than 1 foot-candle (11 lux). CBC 1205.4.
- q. Light and Ventilation: Provide natural light or artificial light for rooms intended for human occupancy per CBC 1205.1.
- r. Light and Ventilation in Habitable Rooms, CBC 1205, 1203.4.1:1. Natural light in Habitable Rooms:
1. Minimum of 8% of the floor area. Artificial light allowed. See Section 1205.3.
  2. Ventilation: Minimum 4% of the room floor area.
- s. Bathroom Mechanical ventilation: Exhaust fan with capacity of 50 CFM intermittent or 25 CFM continuous at private toilet rooms. CMC T4-4.
- t. Every kitchen shall have not less than 50 square feet of gross floor area. CBC 1208.2.1.

- u. *Exterior openings for natural light or ventilation are to open directly onto a public way or a yard or court located on the same lot as the building per CBC 1205.1.*
  - 1. All rooms intended for human occupancy are to have natural or mechanical ventilation per CBC 1203.1 and 1203.4.
    - i. Natural ventilation is to be from operable exterior openings with an area of at least 4% of the floor area.
    - ii. Mechanical ventilation to be sized to comply with CMC.
- v. Decks & balconies that are sealed underneath are to be waterproofed and have a minimum 2% slope for drainage.
- w. "Green board" can no longer be used in tub or shower areas: Cement, fiber-cement or glass mat gypsum backers shall be used as a base for wall tiles in tub and shower areas. CBC 2509.2.
- x. Anchored veneers are to be supported on footings, foundations, or other noncombustible support.
- y. Attic access is to be provided for areas where there is an attic space with at least 30 inch headroom clearance. The opening is to be at least 20"X30" with a minimum headroom of 30 inches. Locate in corridor, hallway or readily accessible location per CBC 1209.2.
- z. Draftstopping requirement, attic draftstopping in single family dwellings is now required, CBC 717.4.3: Draftstopping shall be installed in attics and concealed roof spaces, such that any horizontal area does not exceed 3000 square feet.
- aa. Furnish on the drawings calculations for attic ventilation. The opening area to be at least 1/150 of the attic area per CBC 1203.2. The openings area can be 1/300 of the attic area provided a vapor barrier, not exceeding 1 perm, is installed on the warm side of the attic insulation or provide at least 50% of the opening area with vents that are at least 3 feet above the eave vents and at least 50% of the opening area with eave vents. Specify the size, number, and location of the individual attic vents.
- bb. Ridge and eave vents (hi and low) are required for vaulted ceilings. There is to be a 1" clear above the insulation at cathedral ceiling with hi and low attic vents. Please detail.
- cc. Note Type 15 felt underlayment for composition roof covering.
- dd. Note Type 30 felt underlayment for tile roofs.

ee. Windows, Doors, Skylights:

1. Glazing subject to human impact to be TEMPERED per CBC 2406.
2. Glazing to be TEMPERED where the nearest exposed edge of the glass is within a 24" arc of either vertical edge of the door in a closed position and the bottom edge of the glazing is less than 60" above walking surface.
3. Glazing to be TEMPERED in walls enclosing stairway landings or within 5 feet of the bottom or top of stairways and the bottom edge of the glass is less than 60 inches above the walking surface.

ff. Exterior Walls:

1. Note on the plans that the stucco to be applied with three coat application. CBC 2512.1.
2. Specify manufacturer & ICC Report number for the ONE-COAT stucco system. Provide a vapor barrier behind all ONE-COAT stucco systems in conformance with the ICC report & CBC requirements.
3. Provide weep screed details at all locations including porch, patio, garage, & built up stucco columns. The screed is to be of a type that will allow trapped water to drain to the exterior of the building. The screed is to be placed a minimum of 4" above the earth or 2" above paved areas.
4. Specify 2-layers of Grade "D" paper under the cement plaster covering when applied over wood sheathing.

gg. Fireplace and Chimney:

1. Note on the elevations that the top of the chimney is to be a minimum of two feet above the roof located within ten feet measured horizontally.
2. Provide SPARK ARRESTERS at chimneys.
3. Provide details for masonry chimneys for thickness, seismic anchorage to roof/floor framing, reinforcement and foundation.
4. Specify the manufacture, model & ICC report number of zero clearance fireplace. Provide manufacture's instruction at job site for inspection.
5. Hearth extensions for factory-built fireplaces to be according to the manufacture's installation instruction.
6. Hearths for masonry fireplaces are to extend at least 16 inches in front and at least 8 inches beyond each side of the fireplace opening.
7. Vented gas fireplaces shall not be installed in bathrooms or bedrooms unless the appliance is listed and the bedroom or bathroom has the required volume in accordance with CMC Section 701.2 installed per 908.2 and 908.3.
8. Where masonry fireplace openings are 6 feet or greater, the hearth extension is to extend at least 20 inches in front and at least 12 inches beyond each side of the fireplace opening.
9. Make, model, listing information, ICC Research Report #, etc, of the fireplace, to be noted on the drawings.
10. Wood framing shall not support a masonry chimney!

## 2. ENERGY CONSERVATION:

- a. Current energy forms/calcs provided? (Micropas v7.10, EnergyPro 4.0 or newer, perspective package, etc.).
- b. Lamps used for general lighting in the kitchen and bathrooms shall be "fluorescent" to comply with CCR Title 24, section 150(k).
  1. The general lighting (one controlled by first switch as one enters the room) in the Bathroom shall be fluorescent.
  2. The fluorescent lights of the kitchen shall be on the most accessible switch at each entrance to the kitchen.
  3. For the under-cabinet fluorescent lights in the kitchen to qualify as "general lighting", they must be arranged to provide a uniform light distribution in the kitchen.
  4. Please specify at least half of the installed wattage of the kitchen lights to be high efficiency lighting. For lighting that is not high efficiency (i.e. fluorescent), it must be specified on the plans as switched separately.
- c. HERS verification is required to be provided to the Building Department prior to final inspection. Please add a note to this effect on the plans.
- d. Per the 2005 California Energy Code 116(a)4 all glazing shall have a temporary label that shall not be removed until approved inspection. All labels are to show the SHGC, U-Factor, Air Leakage, and Visible Transmittance. Please note this on the plans.
- e. Show wall, ceiling, raised floor, and/or slab perimeter insulations per the energy documentation.
- f. Specify all lighting in bathrooms, garages, laundry rooms, and utility rooms to be high efficiency (fluorescent) controlled by a standard switch or incandescent controlled by a manual-on occupant sensor. Show the selected lighting/switches on the plans (i.e. the electrical legend, all switches in each room, and each light fixture).
- g. Specify lighting in all other rooms as high efficiency (fluorescent) controlled by a standard switch or incandescent controlled by a dimmer or incandescent controlled by a manual-on occupant sensor. Show the selected lighting/switches on the plans (i.e. the electrical legend, all switches in each room, and each light fixture).
- h. All outdoor lighting that is mounted to the building is to be specified as high efficiency lighting controlled by a standard switch or incandescent controlled by a motion sensor with integrated photocell. Show the selected lighting/switches on the plans (i.e. the electrical legend, all switches in each room, and each light fixture).

### 3. M/P/E:

- a. Combustion-Air: Show on plans the location of the COMBUSTION AIR openings for all gas utilization equipment per CMC 701.2 through 701.8.3 & CPC 507.0. The openings are to be within 12" from the top and 12" from the bottom of the enclosure.
- b. Please provide equipment specifications and schedules, including make, model, and Btu outputs, as well as clearances required. Combustion air duct calculations also to be provided/checked.
- c. Garage Installation:
  1. The furnace and water heater to be installed so that the source of ignition is at least 18 inches above the garage floor per CMC 308.
  2. Appliances installed in garages where they may be subjected to mechanical damage are to be suitably guarded against such damage by being installed behind protective barriers or by being elevated or located out of the normal path of vehicles per CMC 308.
- d. Furnaces location:
  1. The furnaces located in closets in bedrooms or bathrooms need to comply with one of the following:
    - i. Equipped with listed gasketed door assembly and a listed self-closing door. Shall meet the requirements of CMC section 904.1.1, 904.1.2
    - ii. All combustions air for such installations shall be obtained from outside (see CMC 701.2 through 701.8.3) *OR*
    - iii. Central heating furnaces and shall be of the "direct-vent type".
  2. Appliances and attic furnaces installed in an attic shall comply with the following per CMC 904.11.1 & 931.0:
    - i. An access opening, large enough to remove the LARGEST piece of equipment (minimum 22-inch by 30-inch opening)
    - ii. A continuous, solid flooring at least 24-inch wide to extend from the access to the equipment.
    - iii. The furnace located not greater than 20 feet from the attic access.
    - iv. A level-working platform 30 X 30 inches in front of the entire firebox side.
    - v. A permanent electric outlet and lighting fixture controlled by a switch located at the attic access is to be provided at or near the furnace.
    - vi. Cooling units located in the attic are to be provided with a second watertight pan installed beneath. The additional pan is to be provided with a drain pipe, minimum ¾ inch nominal pipe size, discharging at a point which can be readily observed. CMC 310.0
    - vii. Provide cross-section of the attic area at the location of the attic-mounted furnace showing all working areas, catwalks, and headroom.

3. Furnaces installed in under-floor spaces are to comply with the following per CMC 932.0:
  - i. Clearance from combustibles per CMC 932.1 to 932.5.
  - ii. An access opening large enough to remove the LARGEST piece of equipment, but not less than 30-inch by 30-inch.
  - iii. Furnace located a maximum of 20 feet from the access opening.
  - iv. Furnace supported on the ground is to rest on a concrete slab extending a minimum of 3 inches above grade.
  - v. A furnace suspended is to have a clearance of at least 6 inches above grade. If excavated provide 6 inches below and 12 inches to the sides of the furnace.
  - vi. Provide a permanent electric outlet and lighting fixture controlled by a switch located at the access opening is to be provided at or near the furnace.
4. Gas utilization equipment installed on roofs are to have the following per CMC 904.10:
  - i. Gas utilization equipment on roofs shall be designed or enclosed so as to withstand climatic conditions.
  - ii. Each enclosure shall permit easy entry and movements shall have at least 30-inch clearance between the entire service access panels.
- e. Dryers:
  1. Dryer vent termination to be shown on the drawings.
  2. Dryer moisture exhaust duct is not to exceed a total combined horizontal and vertical length of 14 feet, including two 90-degree elbows per CMC 504.3.2.1.
  3. A minimum of a 4-inch diameter moisture exhaust duct of approved material shall be installed in accordance with Section 504.0
  4. Closet installation of a clothes dryer a minimum opening of 100-square inches for make up air.
- f. Bathroom Mechanical ventilation: 50 CFM intermittent or 25 CFM continuous Private toilet room CMC T4-4.
- g. Strap the water heaters at points within the upper 1/3 and lower 1/3 of its vertical dimension. Lower point is to be minimum 4" above controls per CPC 508.2.
- h. Water heaters may open into a sleeping room if:
  1. Direct vent
  2. Closet has listed gasketed door assembly and a listed self-closing device meeting section 501.1 and 501.5. All combustion air is obtained from the outside and the closet is exclusively for the water heater. CPC, Section 505.1.
- i. Specify non-removable type backflow prevention device at all hose bibs per CPC 603.2.3.

- j. Specify water closets that do not use more than 1.6 gallons per flush per CPC 402.2.
- k. Specify "Individual control valves of the pressure balance or the thermostatic mixing valve type" at the showers and tub-shower combination. CPC 418.
- l. Shower doors minimum 22" CLEAR. CPC 411.6.
- m. Showers are not to spray directly at the entrance. CPC 411.10.
- n. Bathtubs/spa in a home must have access to remove the pump and if under floor a maximum of 20 feet from the under floor access. CPC 414.
- o. Please clarify tub type and if it is a circulating-type tub. Please show the location of the tub equipment access panel (12" x 12" min. required). CPC 414.1.
- p. Main Electrical Panels:
  - 1. Show size, location, and grounding method for the main electric service. UFER grounding, (concrete-encased-electrode) is required per CEC 250.50(3).
  - 2. Bond water pipes and above ground metal gas piping to the service ground per CEC 250.104(A) (2).
- q. Receptacle outlets:
  - 1. Convenience outlets should be spaced per CEC 210.52(A).
  - 2. Hallways 10' or longer shall have at least one outlet per CEC 210.52(H).
  - 3. Electrical receptacles are not permitted within a bathtub or shower space per CEC 406.8(C).
- r. Kitchen Electrical Outlets:
  - 1. All counters wider than 12 inches shall have an outlet per CEC 210.52(C)(1).
  - 2. At least one GFCI protected receptacle outlet is to be installed at each island countertop with a long dimension of 2 feet or greater and a short dimension of 12 inches or greater per CEC 210.52(C)(2).
  - 3. At least one GFCI protected receptacle outlet is to be installed at each peninsular countertop with a long dimension of 2 feet or greater and a short dimension of 12 inches or greater per CEC 210.52(C)(3).
  - 4. The outlets for the kitchen counters shall be spaced so that no point along the wall line of the counter is more than 2 feet from an electrical outlet per CEC 210.52(C)(1).
  - 5. Electrical outlets that serve the counter tops in the Kitchen shall have GFCI protection per CEC 210.8(A)(6).

- s. Ground-Fault Circuit-Interrupter Protection:
1. Bathroom outlets shall have approved ground fault circuit protection per CEC 210.8(A)(1).
  2. Outdoor, basement, garage, and accessory building receptacles shall have GFCI protection per CEC 210.8(A).
  3. Exterior outlets shall have a GFCI weatherproof enclosure per CEC 406.8(B)(1).
  4. Outdoor outlets shall be installed at the front and rear of the house per CEC 210.52(E).
  5. GFCI protected outlets are required in the unfinished portion of basement. CEC 210.52(G).
  6. Hydromassage tubs and their associated electrical component are to be protected by a ground-fault circuit interrupter (GFCI). All 125-volt, single-phase receptacle not exceeding 30 amperes and located within 5 feet measured horizontally of the inside walls of a hydromassage tub are to be protected by GFCI. CEC 680.72
  7. GFCI Protection is required with 6' of the outside edge of wet bar sink, laundry or utility sink in a dwelling. CEC 210.8(a)(7).
- t. Arc-Fault Circuit Interrupter Protection, CEC 210.12(B): All branch circuits that supply 125-volt, single-phase, 15- and 20-ampere outlets (i.e. receptacles, lights, smoke alarms, etc.) installed in dwelling unit bedrooms shall be protected by a listed Arc-Fault Circuit Interrupter (AFCI), combination type, to provide protection of the entire branch circuit. The breaker will state "combination" AFCI. Please add notes on the drawings accordingly.
- u. Receptacles in Bathrooms, CEC 210.52(D): In dwelling units, at least one GFCI protected wall receptacle outlet shall be installed in bathroom, within 36" of the outside edge of each basin. Outlets shall be located on the wall or partition adjacent to the basin.
- v. Receptacles shall not be installed within or directly over a bathtub or shower stall. CEC 408 (b)(c).
- w. Lighting:
1. At least one wall-switch-controlled lighting outlet should be installed (CEC, 210.70): In every habitable room; Bathroom; Hallways; Stairways; Attached and Detached (with electric power) garages; exterior sides or exits at grade-level access.
  2. Lighting fixtures in clothes closets shall comply with CEC 410.8.

- x. Laundry Branch Circuits: In addition to other branch circuit requirements, at least one 20-amp branch circuit shall be provided to supply laundry receptacle outlets required by CEC 210.52(F) and 210.11(C)(2).
- y. Bathroom Branch Circuits: In addition to other branch circuit requirements, at least one 20-amp branch circuit shall be provided to supply bathroom receptacle outlets. CEC 210.11(C)(3). Other equipment (lighting, exhaust fans), within the same bathroom, may be supplied by the same branch circuit where the branch circuit supplies a single bathroom only.
- z. Where a range top or sink is installed in an island counter and the width of the counter behind the range top or sink is less than 12 inches, the range top or sink is considered to divide the island into two separate counter top spaces (requiring two receptacles). Per CEC 210.52 (C)(2).
- aa. Clothes dryers and electric ranges shall have a 4-wire grounded electrical outlet per CEC 250.140.

#### 4. STRUCTURAL:

- a. We could not find structural material specifications. As such, please specify on the plans the following material specification:
  - 1. Concrete strength (Min. f'c of 2500 psi).
  - 2. Wood lumber grades.
  - 3. Plywood grade.
  - 4. Grade of steel reinforcing bar.
  - 5. Glulam beam grade.
  - 6. Reference to 2007 CBC.
- b. Construction Documents, CBC 1603.1, exception: Construction documents (drawings and/or calculations) shall indicate the following structural design information:
  - 1. Floor and roof live load;
  - 2. Ground snow load, Pg (if applicable);
  - 3. Basic wind speed in mph (3-second gust) and wind exposure;
  - 4. Seismic Design Category (SDC). Include for review substantiating supporting calcs showing how the SDC factor was determined.
  - 5. Site class;
  - 6. Flood design data, if located in flood hazard areas as established in CBC Section 1612.3.
- c. Deferred Submittals: All requested deferred submittals shall be listed on the cover sheet of the drawings.

- d. Foundation and Soils Investigation Report, CBC 1802.2 and 1802.2.7: A foundation and soils report is required for projects located in Seismic Design Category (SDC) C through F. *Contact the local jurisdiction for any local ordinances or policies regarding the soils investigation report requirements.*
- e. Determination of Seismic Design Category (SDC): CBC 1613.5.6. The SDC factor depends on the seismicity at the site, occupancy and soil. The previous (1997 UBC) seismic zones 3 and 4 are now Seismic Design Category C through E. Most of the residential projects in California fall into Seismic Design Category C through E. Please include for review substantiating supporting calcs showing how the SDC factor for this project was determined (*use the specific address of the property to determine the SDC factor*).

For additional information regarding determining the SDC factor, you may use this the information from this link:

<http://bcodes.infopop.cc/eve/forums/a/tpc/f/414093073/m/88410504241>

- f. Remark: Conventional Construction, Section 2308, is primarily based on the NEHRP provisions. As an alternate, AF&PA “2001 Wood Frame Construction Manual” may be used.
- g. Design calculations:
  - 1. Required for this project since design does not conform to conventional framing/bracing requirements. Engineering design (for vertical and lateral elements) is required by a licensed architect or engineer.
  - 2. Design calcs to have an index page listing all elements designed.
  - 3. Design and loading criteria, along with assumptions, to be clearly listed on the design calcs.
- h. Fastening (nailing) Schedule shall meet the requirements of CBC Table 2304.9.1. Please add notes on the structural drawings.
- i. Structural Observations are required for this project based on the proposed design and/or what was discovered as we reviewed the structural drawings and/or design. Please add notes on the cover sheet.

- j. Note on the cover sheet of the drawings that "Special Inspection per CBC 1704" is required for:
1. Cast-in-place concrete and drilled piers, when the structural design is based on an  $f'_c$  greater than 2,500 psi;
  2. Field Welding;
  3. Epoxy-set anchor bolts.
  4. Special Inspections for Seismic resistance: SDC: C, D, E (some exceptions). CBC 1707:
  5. All components of wood shear walls and diaphragms where the nailing is 4" o.c. or less.

*Project applicant to coordinate forms and procedures with the Building Department.*

Engineer or architect of record to confirm the needed special inspections requested above.

- k. Conventional Light-Frame Construction, CBC 2308
1. Limitations for using Conventional Light-Frame Construction under the CBC, Section 2308.2 and 2308.12 (*If the limitations are exceeded, engineering design will be required*):
    - i. Max. two stories for structures in Seismic Design Category (SDC) D or E. Max. three stories in Seismic Design Category C.
    - ii. In Seismic Design Category D or E, cripple stud walls shall be considered a story (solid blocked cripple walls not exceeding 14 inches are not considered a story).
    - iii. Bearing walls floor-to-floor height shall not exceed 10 feet and a height of floor framing not to exceed 16 inches.
    - iv. Wind speeds shall not exceed 100 mph (110 mph (3-second gust) for building in Exposure Category B).
    - v. Roof trusses and rafters shall not span more than 40 ft. between bearing points.
    - vi. Ground snow loads shall not exceed 50 psf.
    - vii. Concrete and masonry walls shall not extend above the basement. There are some exceptions for Masonry Veneer per Section 2308.12.2.

- I. Buildings in Seismic Design Category D, E or F:
1. Building in Seismic Category D or E shall comply with Section 2308.12. Irregular structures in Seismic Category D or E shall not use conventional light-frame construction (i.e. they must be engineered). CBC 2308.12.6.
  2. Steel plate washers (3 inch x 3 inch x 0.229 inch square) at sill plate anchor bolts are required per Section 2308.12.8.Gh.
- m. Braced wall lines spacing:  
Buildings shall be provided with exterior and interior braced wall lines per Sections 2308.9.3 and 2308.12.3. The spacing of the braced wall lines shall not exceed **25** ft for structures in Seismic Category (SDC) D or E in both longitudinal and transverse direction in each story. For SDC C, the spacing shall not exceed 35 ft.
- n. CBC Section 2308.9.3 Bracing  
All exterior walls and main cross-stud partitions must be effectively and thoroughly braced to resist wind and seismic forces by one of the following methods:
1. Wood boards of 5/8-inch net minimum thickness applied diagonally on studs spaced not over 24 inches on center.
  2. Wood Structural Panel Sheathing with a thickness not less than 5/16 inch for 16-inch stud spacing and not less than 3/8 inch for 24-inch stud spacing in accordance with CBC Tables 2308.9.3(2) and 2308.9.3(3).
  3. Fiberboard sheathing panels not less than 1/2 inch thick applied vertically or horizontally on studs spaced not over 16 inches o.c. where installed with fasteners in accordance with Section 2306.4.4 and Table 2308.9.3(4).
  4. Gypsum board (sheathing 1/2 inch thick by 4 feet wide, wallboard or veneer base) on studs spaced not over 24 inches on center and nailed at 7 inches on center with nails as required by CBC Tables 2306.4.5
  5. Particleboard wall sheathing panels must be in accordance with CBC Table 2308.9.3(5).
  6. Portland cement plaster on studs spaced 16 inches on center installed in accordance with CBC Section 2510.
  7. Hardboard panel siding when installed in accordance with CBC Section 2303.1.6 and CBC Table 2308.9.3(5).

*For all methods, the braced panel must be at least 48 inches (4 ft) in width, covering three stud spaces where studs are spaced 16 inches apart and covering two stud spaces where studs are spaced 24 inches apart.*

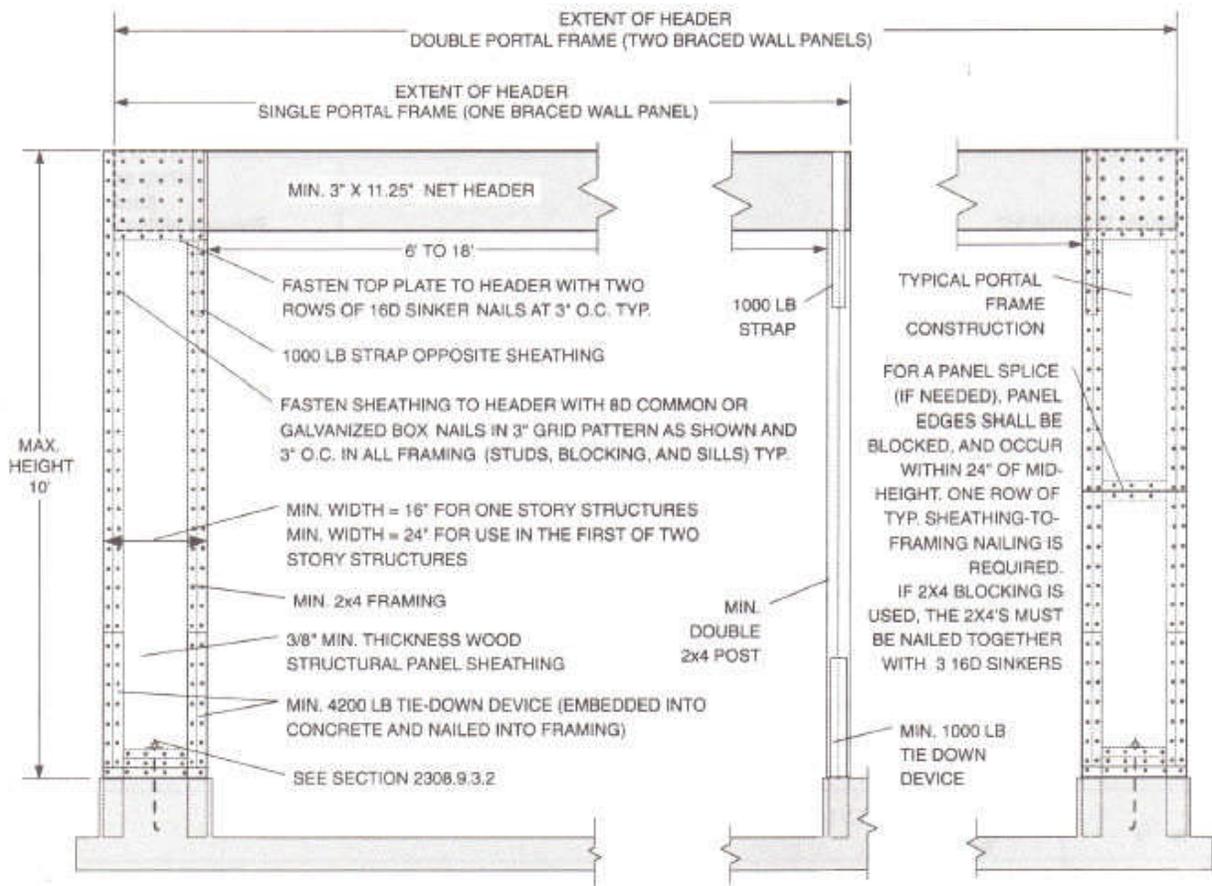
*For method "4", each braced wall panel must be at least 96 inches (8 ft) in length when applied to one face of a braced wall panel and 48 inches (4 ft) when applied to both faces.*

*All vertical joints of panel sheathing must occur over studs. Horizontal joints must occur over blocking equal in size to the studding except where waived by the installation requirements for the specific sheathing materials.*

*Braced wall panel sole plates must be nailed to the floor framing, and top plates must be connected to the framing above in accordance with CBC Section 2308.3.2. Where joists are perpendicular to braced wall lines above, blocking must be provided under and in line with the braced wall panels.*

*The location, type and amount of bracing must comply with CBC Table 2308.9.3(1).*

8. Braced wall panel connections: Shall be per Section 2308.3.2. Wall bracing in Seismic Category D and E shall comply with Table 2308.12.4 (Table attached below).
  9. Sill anchorage: Shall be per Section 2308.3.3. Anchors shall be spaced at 4 ft. on center maximum. 5/8" bolts are required in Seismic Design Category E. CBC 2308.12.9.
  10. Braced wall line support, CBC 2308.3.4. Braced wall lines shall be supported by continuous footings. For structures with max. plan dimension not over 50 ft., continuous footings are required only at exterior walls.
  11. Bracing, CBC 2308.9.3. Refer to Fig. 2308.9.3 for location, type and amount of required bracing. Braced panels shall start not more than 8 ft., for structures in Seismic Category D or E, from each end of a braced wall line. Max. offset of panels in the same braced wall line shall be 4 ft.
- o. Alternate bracing, Section 2308.9.3.1
1. Alternate braced wall lines constructed in accordance with one of the following provisions must be permitted to replace each 4 feet of braced wall panel as required by CBC Section 2308.9.3.
  2. For one-story buildings, the following applies:
    - i. Each panel must be a minimum 2 feet 8 inches in length with a maximum height of 10 feet.
    - ii. Each panel sheathed on one face with minimum 3/8-inch-thick wood structural panel sheathing with all edges blocked.
    - iii. Each panel end must have a tie-down device approved for a minimum 1,800 lbs uplift capacity.
    - iv. Foundation must be continuous across entire length of braced wall line and reinforced with not less than one No. 4 bar top and bottom.
  3. In the first story of a two-story building, each panel must be constructed as for one-story buildings with the following exceptions:
    - i. Each panel must be sheathed on each face.
    - ii. Three anchor bolts per panel placed at one-quarter points.
    - iii. Tie-down device uplift capacity must not be less than 3,000 lbs.
  4. Alternate bracing wall panel adjacent to a door or window opening: Refer to Section 2308.9.3.2 for detailed requirements.



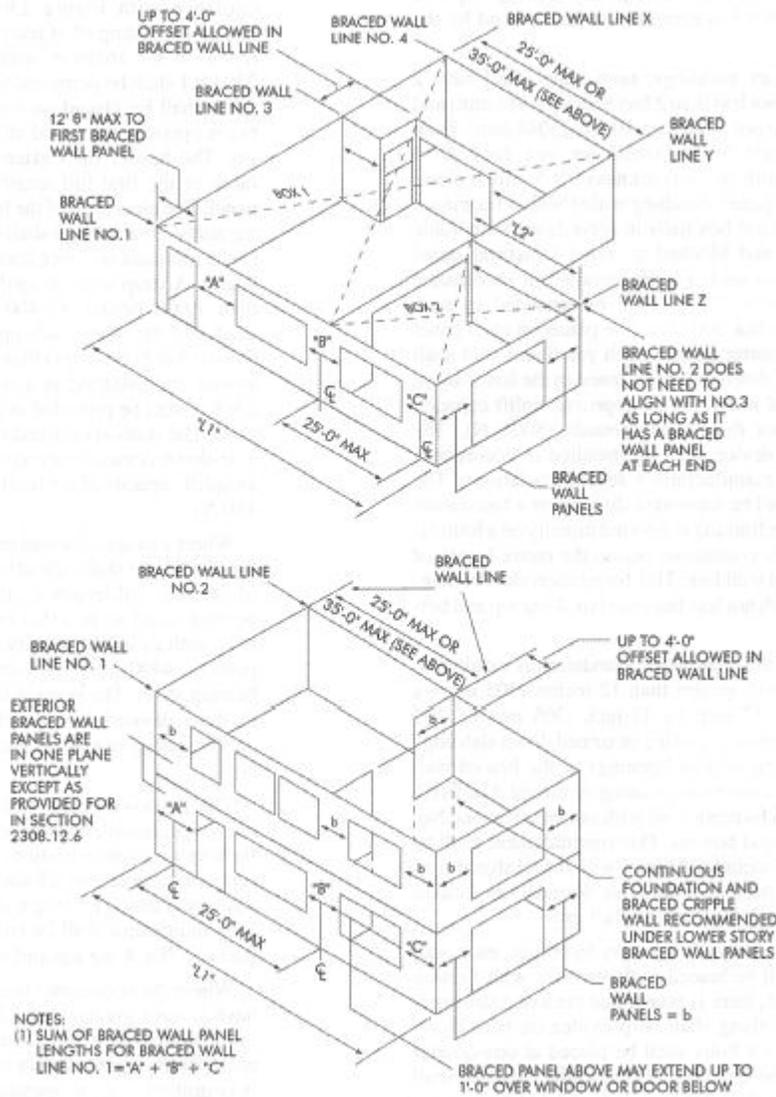
**FIGURE 2308.9.3.2  
ALTERNATE BRACED WALL PANEL ADJACENT TO A DOOR OR WINDOW OPENING**

**TABLE 2308.9.3(1)  
BRACED WALL PANELS\***

SEISMIC DESIGN CATEGORY	CONDITION	CONSTRUCTION METHODS <sup>b,c</sup>								BRACED PANEL LOCATION AND LENGTH <sup>f</sup>
		1	2	3	4	5	6	7	8	
C	One story or top of two story [HCD 1] or three story	—	X	X	X	X	X	X	X	Located in accordance with Section 2308.9.3 and not more than 25 feet on center.
	First story of two story [HCD 1] or second story of three story	—	X	X	X	X <sup>e</sup>	X	X	X	Located in accordance with Section 2308.9.3 and not more than 25 feet on center, but total length shall not be less than 25% of building length <sup>f</sup> .
	[HCD 1] First story of three story	—	X	X	X	X <sup>e</sup>	X	X	X	[HCD 1] Located in accordance with Section 2308.9.3 and not more than 25 feet on center, but total length shall not be less than 40% of building length.

- a. This table specifies minimum requirements for braced panels that form interior or exterior braced wall lines
- b. See Section 2308.9.3 for full description.
- c. See Sections 2308.9.3.1 and 2308.9.3.2 for alternative braced panel requirements.
- d. Building length is the dimension parallel to the braced wall length.
- e. Gypsum wallboard applied to framing supports that are spaced at 16 inches on center.
- f. The required lengths shall be doubled for gypsum board applied to only one face of a braced wall panel.

SEISMIC DESIGN CATEGORY	MAXIMUM WALL SPACING (feet)	REQUIRED BRACING LENGTH, b
A, B and C	35'-0"	Table 2308.9.3(1) and Section 2308.9.3
D and E	25'-0"	Table 2308.12.4



**FIGURE 2308.9.3**  
**BASIC COMPONENTS OF THE LATERAL BRACING SYSTEM**

**TABLE 2308.12.4  
WALL BRACING IN SEISMIC DESIGN CATEGORIES D AND E  
(Minimum Length of Wall Bracing per each 25 Linear Feet of Braced Wall Line<sup>a</sup>)**

CONDITION	SHEATHING TYPE <sup>b</sup>	$S_{DS} < 0.50$	$0.50 \leq S_{DS} < 0.75$	$0.75 \leq S_{DS} \leq 1.00$	$S_{DS} > 1.00$
One story	G-P <sup>c</sup>	10 feet 8 inches	14 feet 8 inches	18 feet 8 inches	25 feet 0 inches
	S-W	5 feet 4 inches	8 feet 0 inches	9 feet 4 inches	12 feet 0 inches
Story below top story [HCD 1]	G-P <sup>c,d</sup>	18 feet 8 inches <sup>d</sup>	NP	NP	NP
	S-W <sup>d</sup>	10 feet 8 inches <sup>d</sup>	13 feet 4 inches <sup>d</sup>	17 feet 4 inches <sup>d</sup>	21 feet 4 inches <sup>d</sup>
Bottom story of three stories [HCD 1]	G-P	Conventional construction <u>not permitted</u> ; conformance with Section 2301.2, Item 1 or 2 is required.			
	S-W				

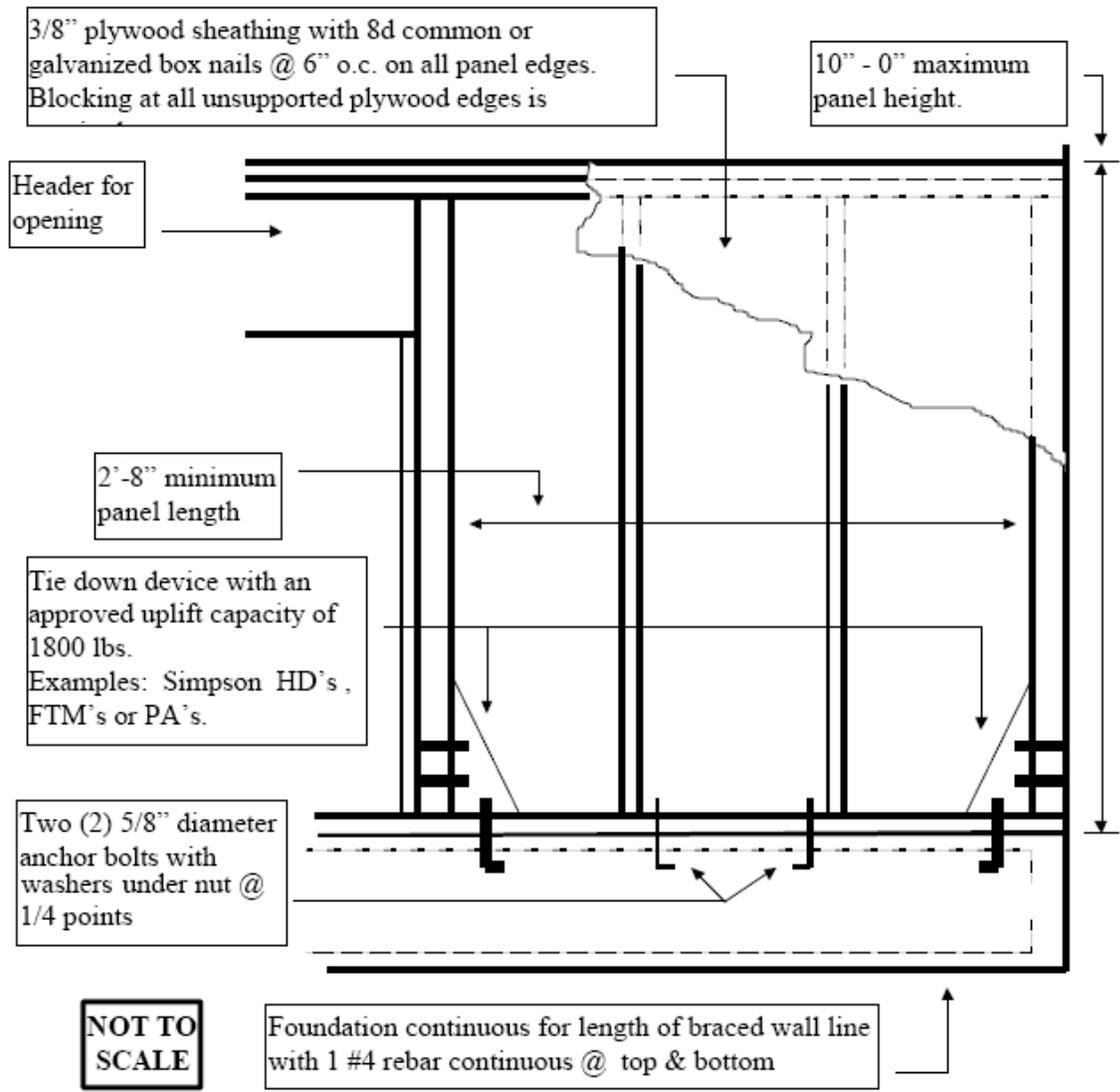
For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

- a. Minimum length of panel bracing of one face of the wall for S-W sheathing or both faces of the wall for G-P sheathing; h/w ratio shall not exceed 2:1. For S-W panel bracing of the same material on two faces of the wall, the minimum length is permitted to be one-half the tabulated value but the h/w ratio shall not exceed 2:1 and design for uplift is required.
- b. G-P = gypsum board, fiberboard, particleboard, lath and plaster or gypsum sheathing boards; S-W = wood structural panels and diagonal wood sheathing. NP = not permitted.
- c. Nailing as specified below shall occur at all panel edges at studs, at top and bottom plates and, where occurring, at blocking:
  - For 1/2-inch gypsum board, 5d (0.113 inch diameter) cooler nails at 7 inches on center;
  - For 5/8-inch gypsum board, No. 11 gage (0.120 inch diameter) at 7 inches on center;
  - For gypsum sheathing board, 1 3/4 inches long by 7/16-inch head, diamond point galvanized nails at 4 inches on center;
  - For gypsum lath, No. 13 gage (0.092 inch) by 1 1/8 inches long, 19/64-inch head, plasterboard at 5 inches on center;
  - For Portland cement plaster, No. 11 gage (0.120 inch) by 1 1/2 inches long, 7/16-inch head at 6 inches on center;
  - For fiberboard and particleboard, No. 11 gage (0.120 inch) by 1 1/2 inches long, 7/16-inch head, galvanized nails at 3 inches on center.
- d. [HCD 1] Applies to detached one- and two- family dwellings only.

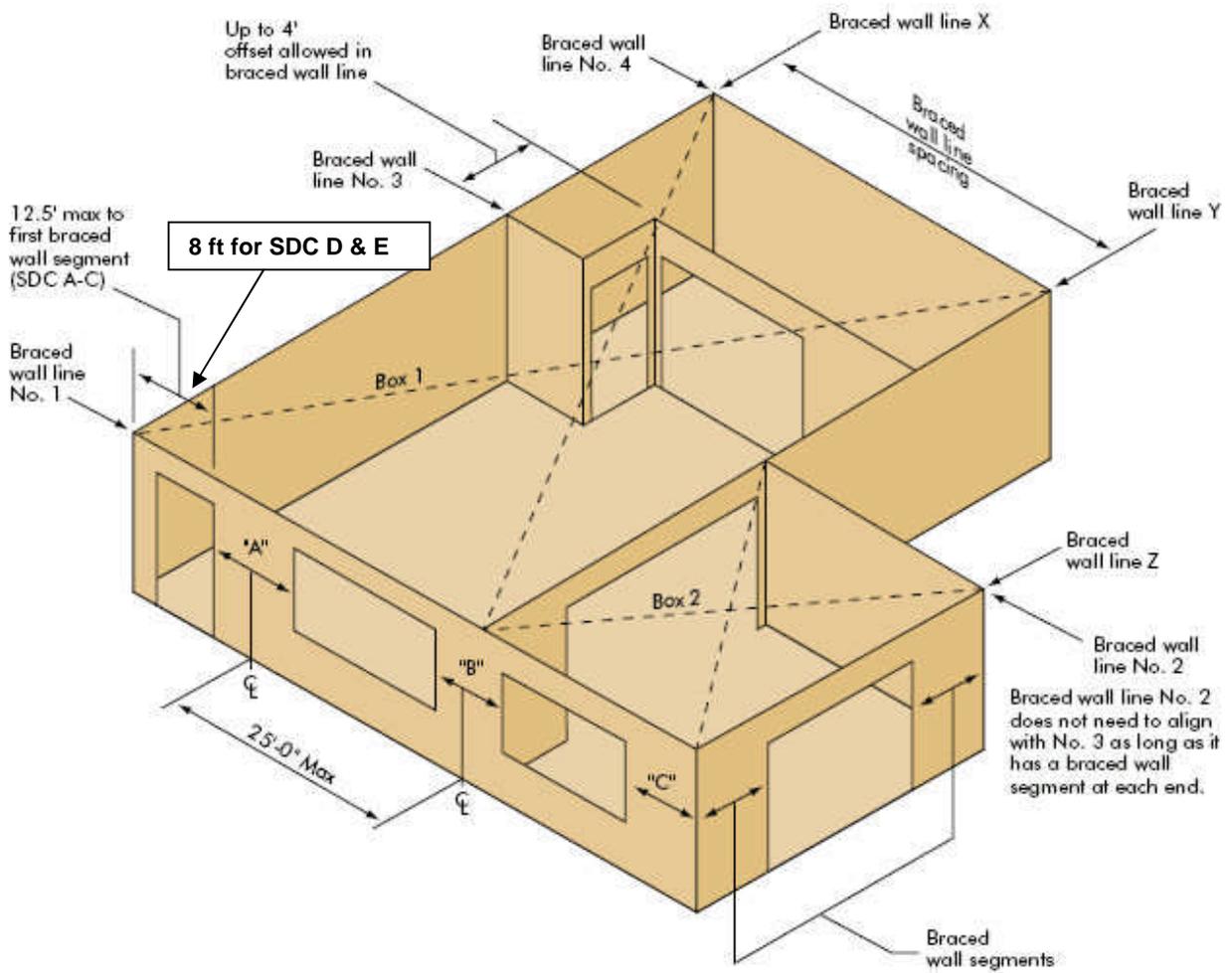
2007 CALIFORNIA BUILDING CODE



**ALTERNATE BRACED WALL PANEL @ ONE STORY BUILDING**



This diagram of a home shows wall bracing requirements:



5. Check that the depth of footings at holdowns location is adequate for minimum required embedment and for cover.
  6. Footings shall have a minimum of one #4 bar at the top and bottom. Slab-on-ground cast monolithically with a footing may have one No. 5 bar located at either top or bottom.
  7. Holdowns type, size, and location shall be noted on the FOUNDATION plan.
  8. Shear wall schedule to be added to the structural drawings and referenced to framing plans, as applicable.
- p. Prior to the contractor requesting a foundation inspection, the Soil Engineer shall advise the Building Official in writing that:
1. The building footing excavations and building pad were prepared in accordance with the soil report recommendations.
  2. The foundation forming and grading comply with the soil report and approved plans.
  3. Drainage system in accordance with the soil report.

Please add notes on the cover sheet and/or foundation plan sheet of the drawings.

- q. Indicate the size and number of foundation vents required for under-floor ventilation. Show location of floor for all elevation views.
- r. Columns and posts located on concrete or masonry floors shall be supported by concrete piers or metal pedestals projecting at least 6 inches above exposed earth and 1 inch above the floor unless wood of natural resistance to decay or treated wood is used per CBC 2304.11.
- s. For the area of bearing wall framing, indicate a section detail specifying anchor bolts for sill plates.
- t. Foundation sills are to be treated wood, or foundation grade redwood or cedar. Please add notes. CBC 2304.11.
- u. Fasteners in preservative-treated wood (ANCHOR BOLTS, NAILS, SCREWS, ETC.) are to be approved silicon bronze or copper, stainless steel or hot-dipped zinc-coated steel per CBC 2304.9.5.
- v. The foundation plate shall be treated wood or foundation grade redwood per CBC 2304.11.4.
- w. Posts-to-floor girders shall have a POSITIVE connection as required by CBC 2304.9 (by wood scabbing, metal anchors, etc).
- x. Foundation cripple walls shall be framed of studs. Cripple walls with a stud height more than 14 inches shall be considered as first- story walls for bracing required by CBC 2308.12.4.

- y. Please add specific shear transfer details at typical locations on the ROOF and FLOOR plan that describe the shear transfer elements (nailing, blocking, metal anchors, etc.) at the interior and exterior shear walls.
- z. Individual concrete or masonry piers shall project at least 8 inches above exposed ground. CBC 2304.11.2.7.
- aa. Provide details with reference cuts on the plans showing how the shear forces from the second floor shear walls will be transferred to the front and right shear walls of the garage.
- bb. When the ground slopes more than 10% the foundation shall be stepped so that both the top and bottom of the foundation are level.
- cc. Anchor bolts shall be embedded a minimum of 7" into the concrete and spaced not more than 6 feet apart with two bolts per piece, located within 12 inches of each end of each piece per CBC 2308.6.
- dd. UNDER FLOOR ACCESS shall be a minimum of 18 inches by 24 inches per CBC 1209.1. Indicate location on the plans.
- ee. Under floor ventilation shall comply with CBC 1203.3. Please show location and size of the vents on the foundation and/or exterior elevation views.
- ff. Roof framing:
  - 1. Manufactured Wood Trusses: Plans, layouts & engineer's calculations shall be submitted for review at this time.
  - 2. Engineer-of-record to review and stamp (shop drawing stamp) the cover page of the truss submittal package attesting his/her review for general conformance with the design and structural drawings. A letter of truss review will also be accepted.
  - 3. Girder trusses to have posts and footing support.
  - 4. Truss hangers (make and model) need to be noted for all trusses. Either on the drawings or on the truss drawings.
  - 5. Rafters shall be nailed to ceiling joists or rafter ties. Maximum spacing between tied rafters shall be 4 feet on center per CBC 2308.10.4.
  - 6. STRUTS and PURLINS shall be indicated on the roof framing plans, with member size & spacing per CBC 2308.10.5.
  - 7. Rafters shall be framed directly opposite each other at the ridge per CBC 2308.10.
  - 8. Trimmer and header rafters shall be doubled when the span of the header exceeds 4 feet per CBC 2310.4.3.
  - 9. Joists and Trusses shall be blocked when required by 2308.8.5. Provide details.
  - 10. Indicate the type of post caps used at the beams or provide details of the beams at the walls.