



DEPARTMENT OF PLANNING & BUILDING

BUILDING DIVISION

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# TYPICAL RESIDENTIAL SINGLE STORY FRAMING SECTION

## FORM 4603

This handout describes how to prepare a typical framing section for single-story residential construction. One or more framing sections will be required as part of plans submitted for approval prior to permit issuance. For more information regarding plans for residential construction refer to Form 4601, "Single Family Residential/Duplex: Minimum Submittal Standards".

Additional information on the preparation of plans for a single family residence can be found in the 2007 California Building Code. This publication may be ordered from the International Code Council, 5360 Workman Mill Road, Whittier, California 90601.

### I. WHAT IS A FRAMING DETAIL?

The California Building Code specifies that, for single family residential construction, all framing members shall be "anchored, tied and braced so as to develop the strength and rigidity necessary for the purposes for which they are to be used." A framing section is a cutaway view of the proposed construction that is used to show how these requirements are met. Depending on the design of your project, you may need to include more than one framing section. You must clearly show deviations in your sections wherever they occur.

Included in this handout are illustrations showing several typical framing sections and details. The illustrations depict conventional wood construction. All framing sections should be cross-referenced on the building plans using the floor, foundation and/or roof framing views. See Figure 1.

All framing sections should include enlarged views that detail roof and floor connections as well as lumber and footing sizes. For information on size and spacing of rafters, ceiling joists or floor joists, refer to Form 4602, "Span Tables: Roof & Floor Framing."

### II. TYPICAL FRAMING DETAILS

Included in this handout are the following typical cross section views:

Figure 2 illustrates a framing section with slab floor, roof rafters and ceiling joists.

Figure 3 illustrates a framing section with slab floor and vaulted ceiling.

Figure 4 illustrates a typical framing section with raised floor, roof rafters and ceiling joists.

Figure 5 illustrates a typical framing section with slab floor construction and a shed roof.

### III. TYPICAL DETAILS

Included in this bulletin are the following typical Details:

Detail A illustrates a typical roof ridge connection when using rafters and ceiling joists.

### Documents referenced in this Information Bulletin

- 2007 California Building Code
- Form 4592, Minimum Construction Specifications
- Form 4601, Single Family Residential/Duplex: Minimum Submittal Standards
- Form 4602, Span Tables: Roof & Floor Framing

Detail B illustrates a typical ridge beam connection when rafters are load bearing and ceiling joists will not be used.

Detail C illustrates a typical roof connection showing rafters and ceiling joists attached to bearing walls.

Detail D illustrates a typical roof connection showing a vaulted ceiling without ceiling joists attached to bearing walls.

Detail E illustrates a typical shed roof connection attached to bearing walls.

Figure F illustrates a typical bearing wall connection to a continuous footing with slab floor construction.

Figure G illustrates a typical bearing wall connection to a continuous footing with raised floor construction.

Figure H illustrates a typical girder connection to an interior pad footing for raised floor construction.

### IV. COMPLETING YOUR FRAMING DETAILS

Items such as the size of all framing members, interior and exterior finishes, as well as the roof and floor covering must be specified on the plan. For more information refer to Form 4592, "Minimum Construction Specifications."

The framing sections and details shown in this bulletin are the most commonly used for single story room additions. You may include any illustration shown that relates to your project by completing the blank portions and attaching them to your plans. These illustrations do not reflect all additions or designs and can not be used in every case.

### V. BRACING (BASED ON THE CALIFORNIA BUILDING CODE)

Braced wall lines shall consist of braced wall panels which meet the requirements for location, type and amount of bracing specified in Table 2308.9.3 CBC and are in line or offset from each other by not more than 4 feet. Braced wall panels shall start at not more than 8 feet from each end of a braced wall line. All braced wall panels shall be clearly indicated on the plans. Construction of braced wall panels shall be 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 Tables 2308.9.3 ( 2) and 2308.9.3( 3)

3. Fiberboard sheathing 4-foot by 8-foot panels not less than 1/2 inch thick applied vertically on studs spaced not over 16 inches on center when installed in accordance with Section 2306.4.4 and Table 2306.4.4.

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 Table 2306.4.5

5. Particleboard wall sheathing panels where installed in accordance with Table 2308.9.3

6. Portland cement plaster on studs spaced 16 inches on center installed in accordance with Section 2510.9.3

7. Hardboard panel siding when installed in accordance with Section 2310.6 and Table 2308.9.3(5) .For cripple wall bracing, see Section 2308.9.4. For Methods 2, 3, 5, 6 and 7 each braced panel must be at least 48 inches in length, 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 in length when applied to one face of a braced wall panel and 48 inches when applied to both faces.

All vertical joints of panel sheathing shall occur over studs. Horizontal joints shall 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 shall be nailed to the floor framing and top plates shall be connected to the framing above in accordance with Table 2308.3.2 (see Form 4592). Sills shall be bolted to the foundation or slab in accordance with Section 2308.6 Where joists are perpendicular to braced wall lines above, blocking shall be provided under and in line with the braced wall panels.

#### **VI. Alternate braced wall panels.**

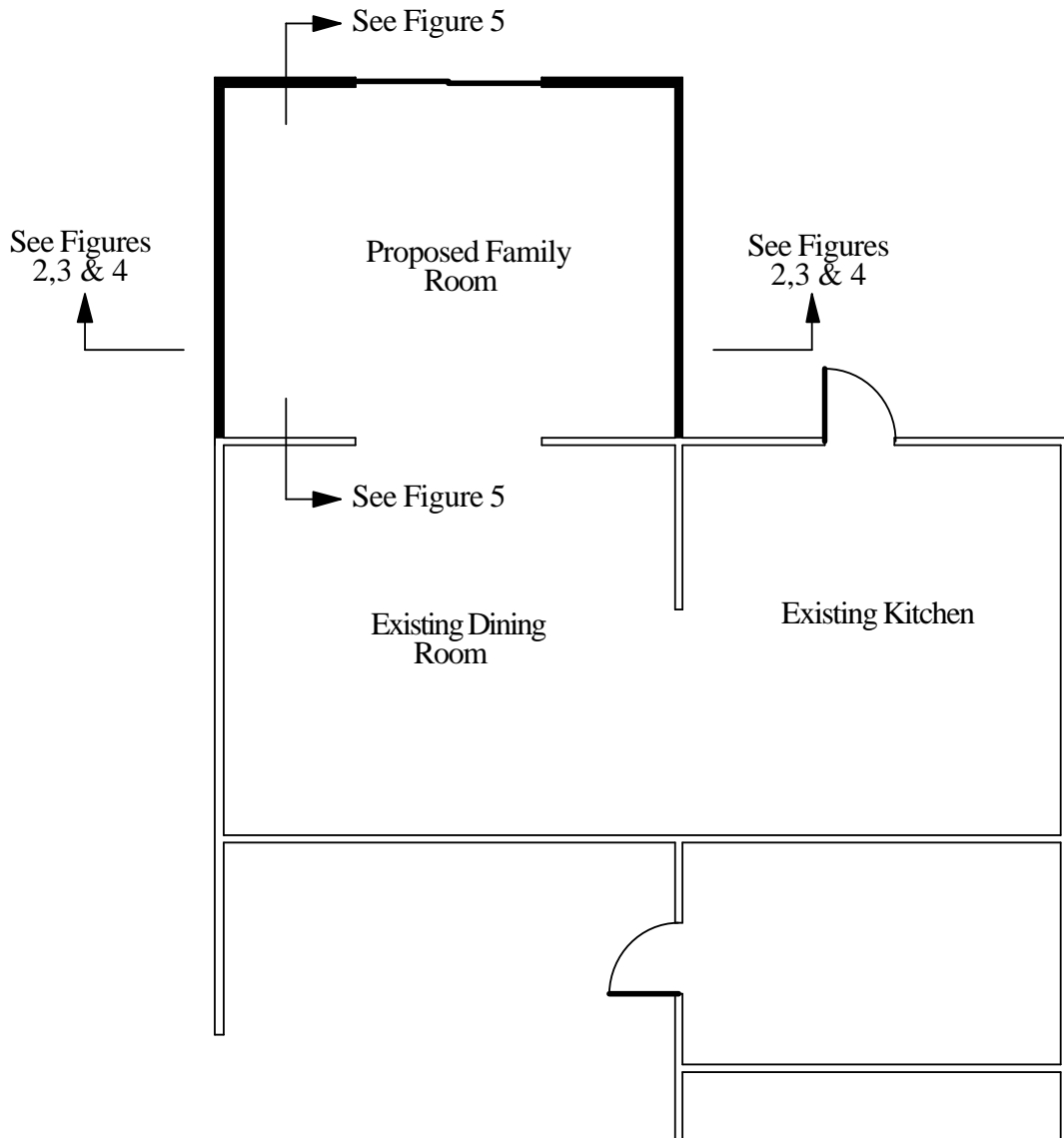
Any braced wall panel required by Section 2308.9.3 may be replaced by an alternate braced wall panel constructed in accordance with the following:

1. In one-story buildings, each panel shall have a length of not less than 2 feet 8 inches and a height of not more than 10 feet. Each panel shall be sheathed on one face with 3/8-inch-minimum-thickness plywood sheathing nailed with

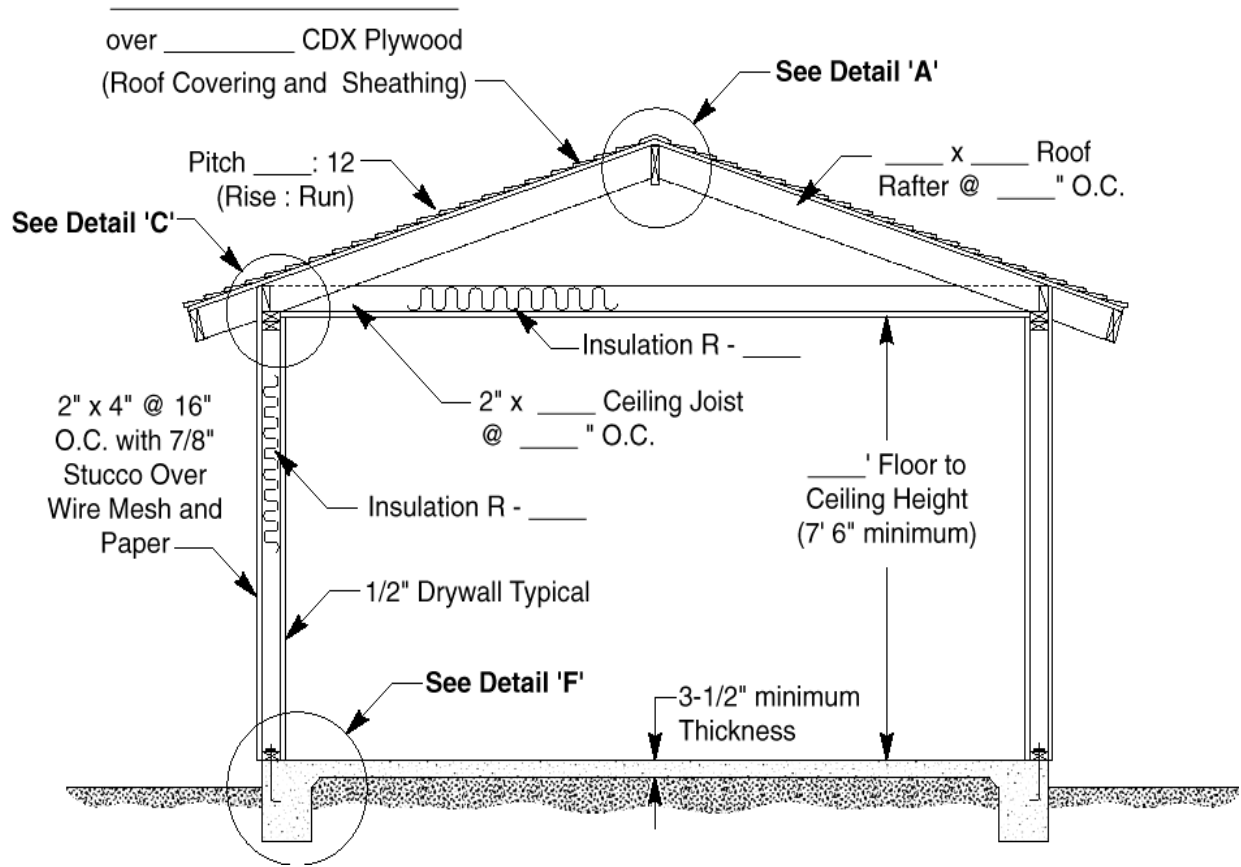
8d common or galvanized box nails in accordance with Table 2304.9.1 (Form 4592) and blocked at all plywood edges. Two anchor bolts installed in accordance with Section 2308.6, shall be provided in each panel. Anchor bolts shall be placed at panel quarter points. Each panel end stud shall have a tie-down device fastened to the foundation, capable of providing an approved uplift capacity of not less than 1,800 pounds. The tie-down device shall be installed in accordance with the manufacturer's recommendations. The panels shall be supported directly on a foundation or on floor framing supported directly on a foundation which is continuous across the entire length of the braced wall line. This foundation shall be reinforced with not less than one No. 4 bar top and bottom.

2. In the first story of two-story buildings, each braced wall panel shall be in accordance with Section 2308.9.3.1 Item 1, except that the plywood sheathing shall be provided on both faces, three anchor bolts shall be placed at one-fifth points, and tie-down device uplift capacity shall not be less than 3,000 pounds.

**Figure 1/** Floor Plan with Cross Referenced Section Views



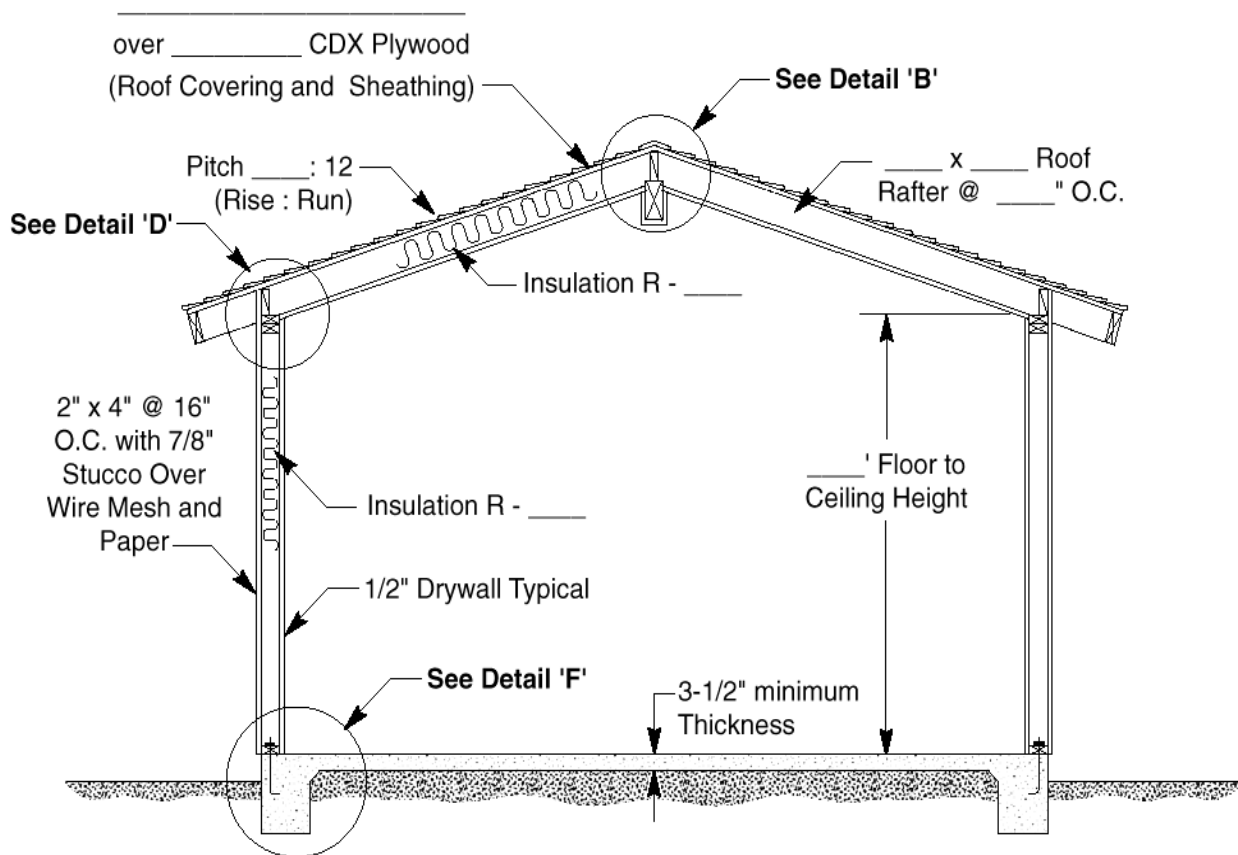
**Figure 2/ Typical Cross Section View, Slab Floor with Ceiling Joist**



Note: If you are using the City Of Chula Vista Soil Waiver Form in lieu of soil report the foundation must comply with the following requirements:

1. All footings shall be a minimum of 12" wide and **18" below undisturbed natural grade** for single story and 15" wide and **24" below undisturbed natural grade for two stories**, unless deeper footings are required to satisfy structural requirements.
2. Footings shall have a minimum of 2 - #4 grade 40 steel rebars top and bottom (total of 4).
3. Concrete slab shall have the following:
  - a. 4" nominal thick slab with # 3 grade 40 rebars at 18" on center each way at mid slab. Concrete to have an  $f'c = 2500$  psi min.
  - b. Slab to rest over two layers of 2" thick coarse sand, rock or gravel, with 6 mil. vapor barrier, in between the layers.

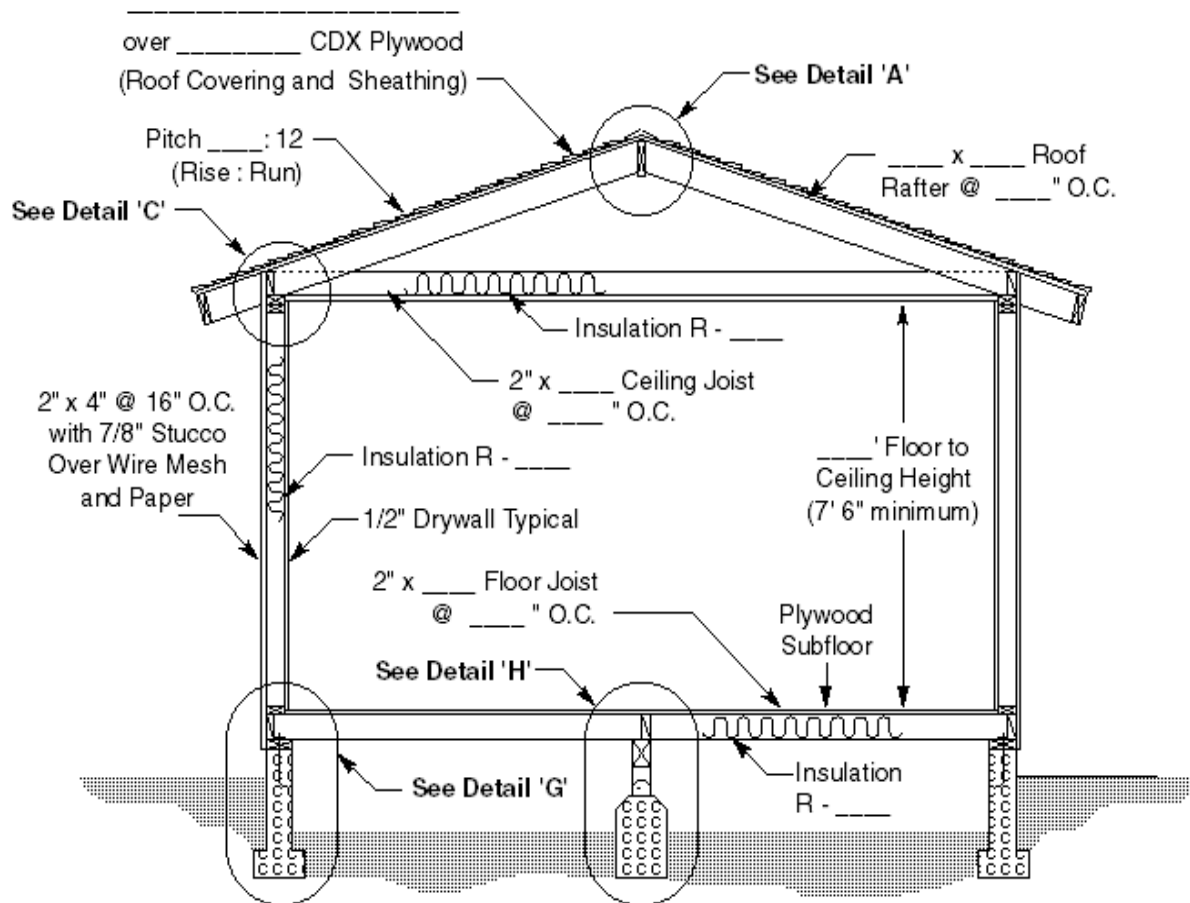
**Figure 3/ Typical Cross Section View, Slab Floor with Vaulted Ceiling**



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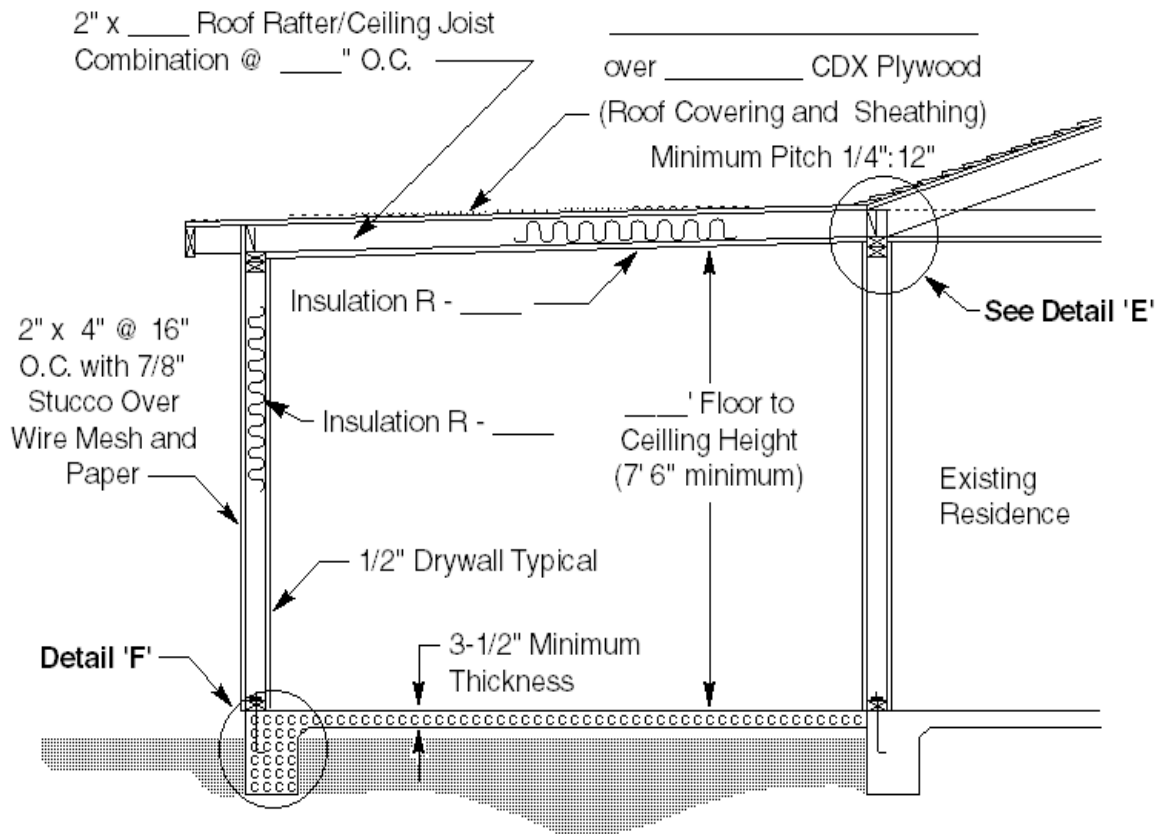
**Figure 4/ Typical Cross Section View, Raised Floor with Ceiling Joist**



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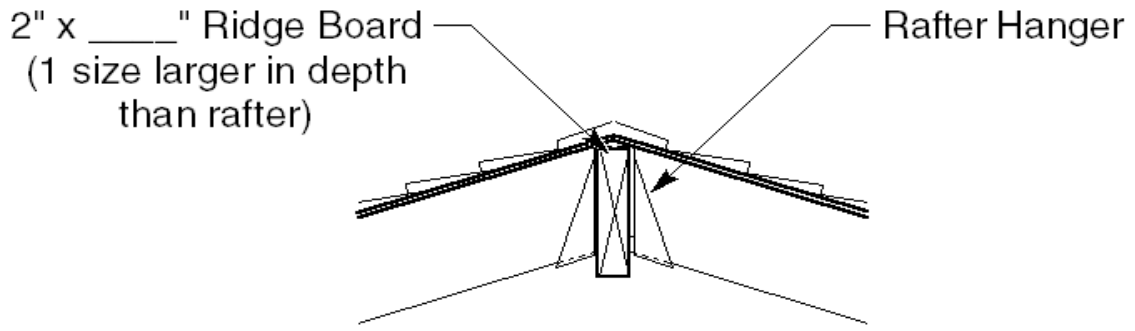
**Figure 5/ Typical Cross Section View, Slab Floor with Shed Roof**



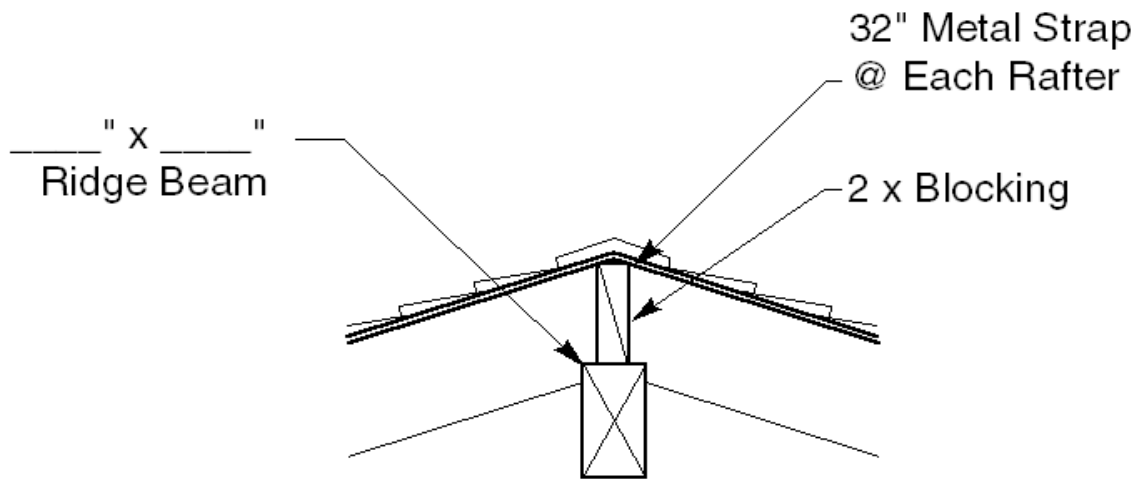
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  - a. 4" nominal thick slab with # 3 grade 40 rebars at 18" on center each way at mid slab. Concrete to have an f'c = 2500 psi min.
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**Detail "A"/** Typical Roof Connection, Non-Load Bearing Ridge

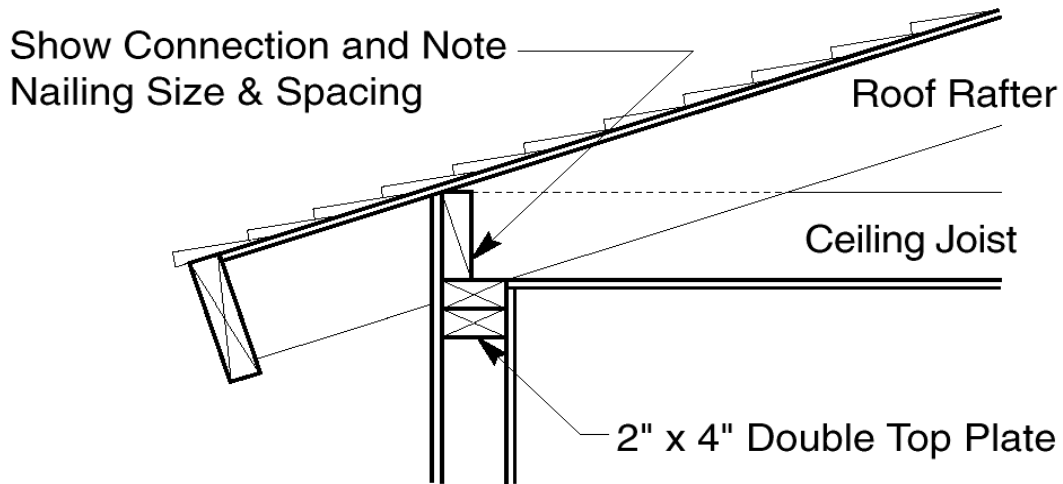


**Detail "B"/** Typical Roof Connection, Load Bearing Ridge

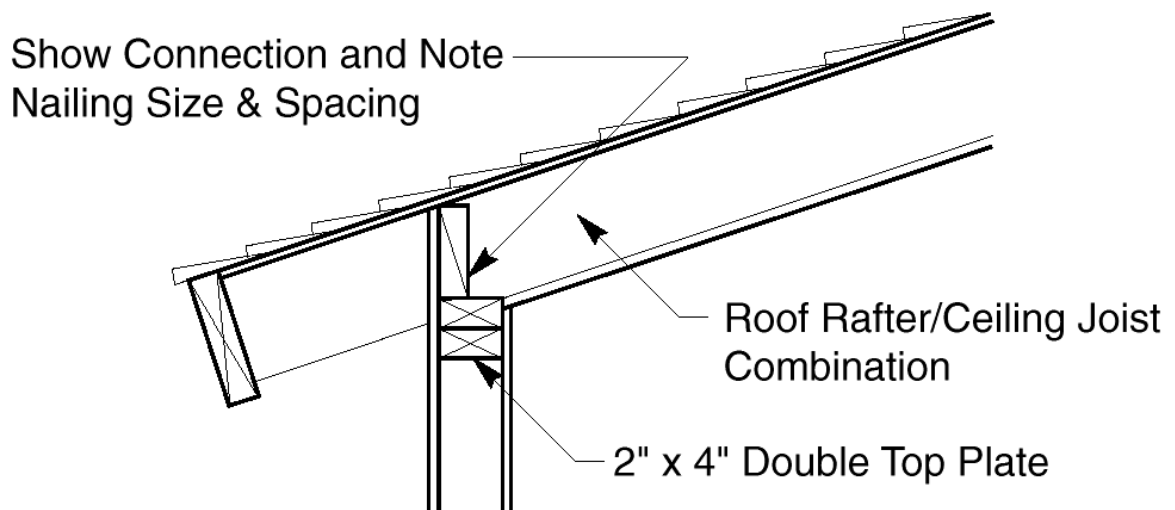




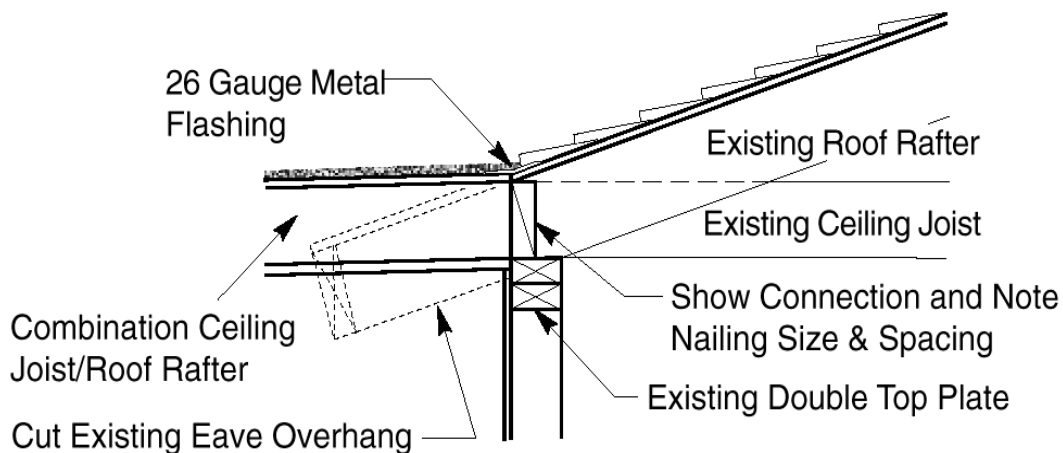
**Detail "C" / Typical Roof Connection With Ceiling Joist**



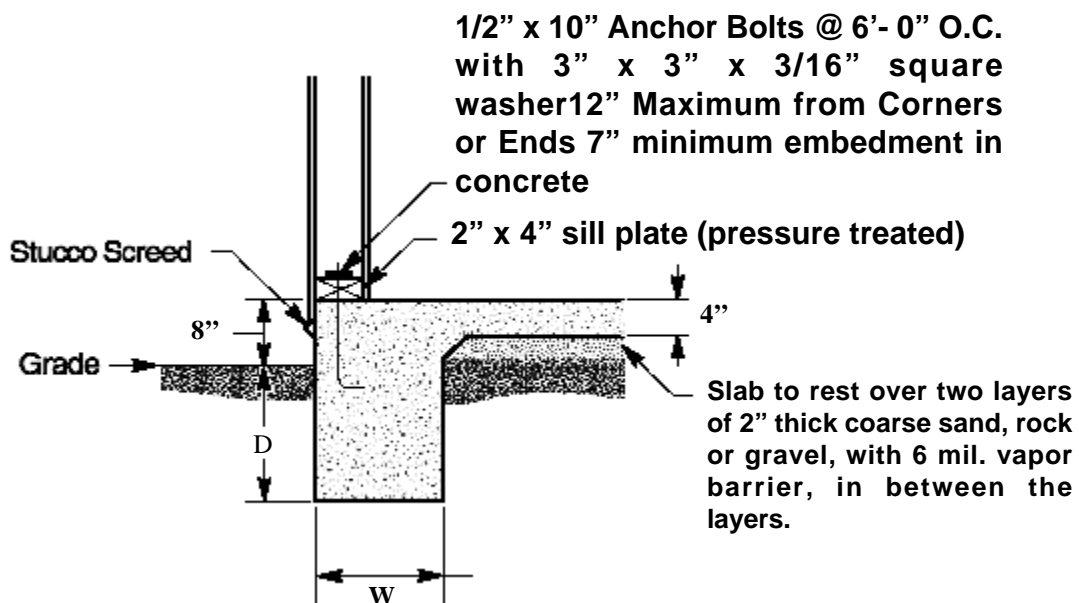
**Detail "D" / Typical Roof Connection With Vaulted Ceiling**



**Detail "E"/ Typical Roof Connection, Shed Roof**



**Detail "F"/ Typical Floor Connection, Continuous Footing**

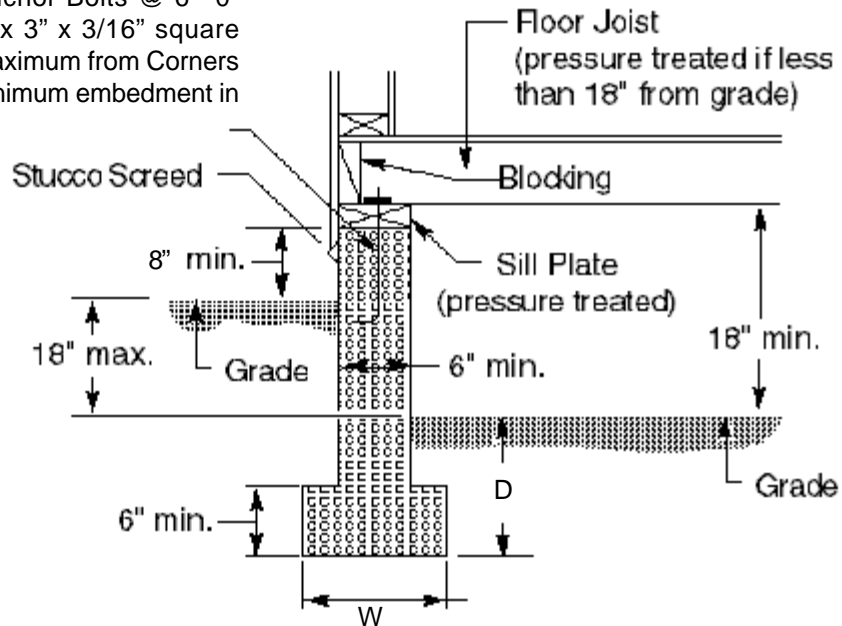


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### Detail "G"/ Typical Floor Connection, Foundation or Stem Wall

1/2" x 10" Anchor Bolts @ 6'- 0"  
O.C. with 3" x 3" x 3/16" square  
washer 12" Maximum from Corners  
or Ends 7" minimum embedment in  
concrete



### Detail "H"/ Typical Floor Connection, Square Pad footing

