

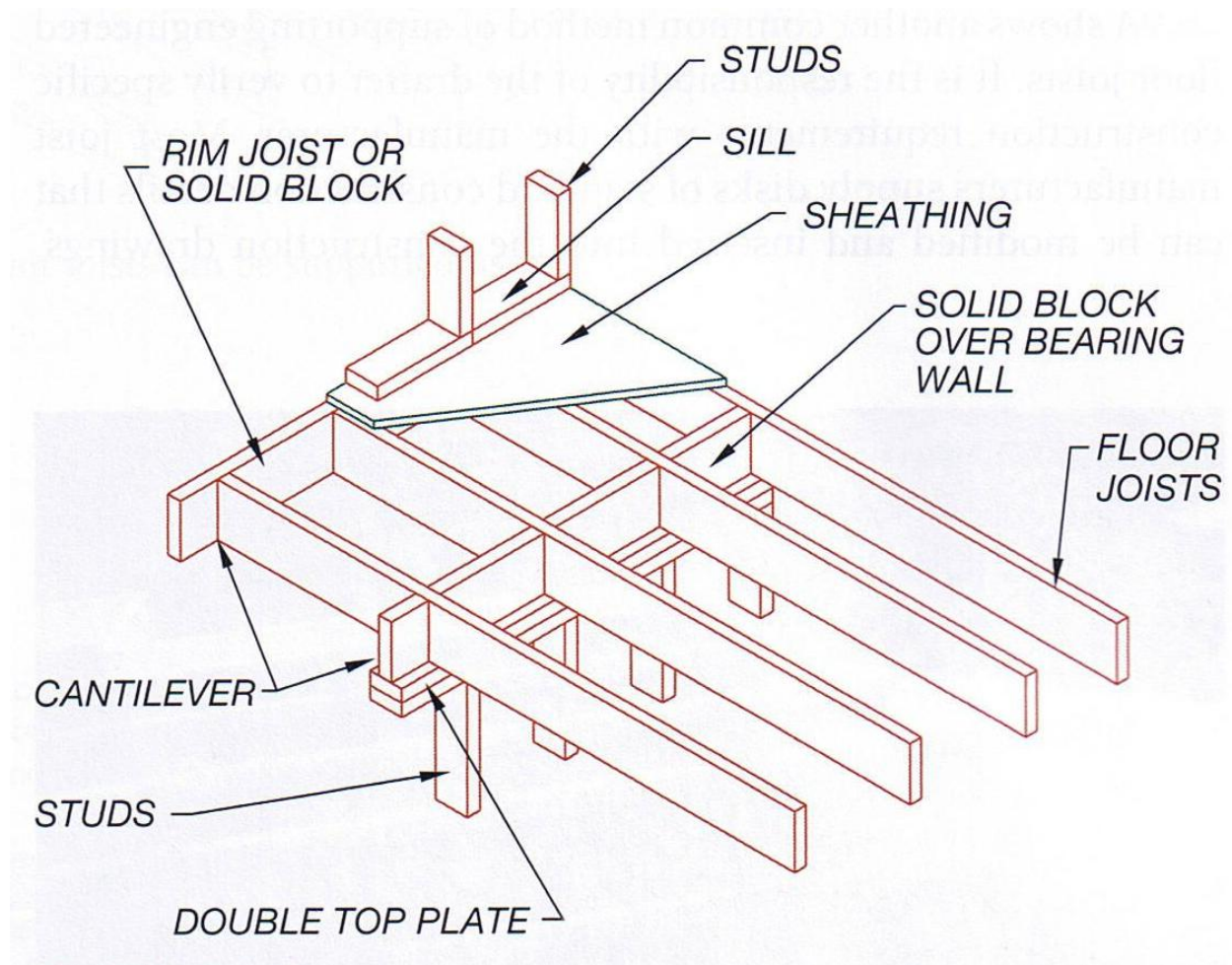
Floor Joists

Floor joists are the structural members used to support the sub-floor, or rough floor.



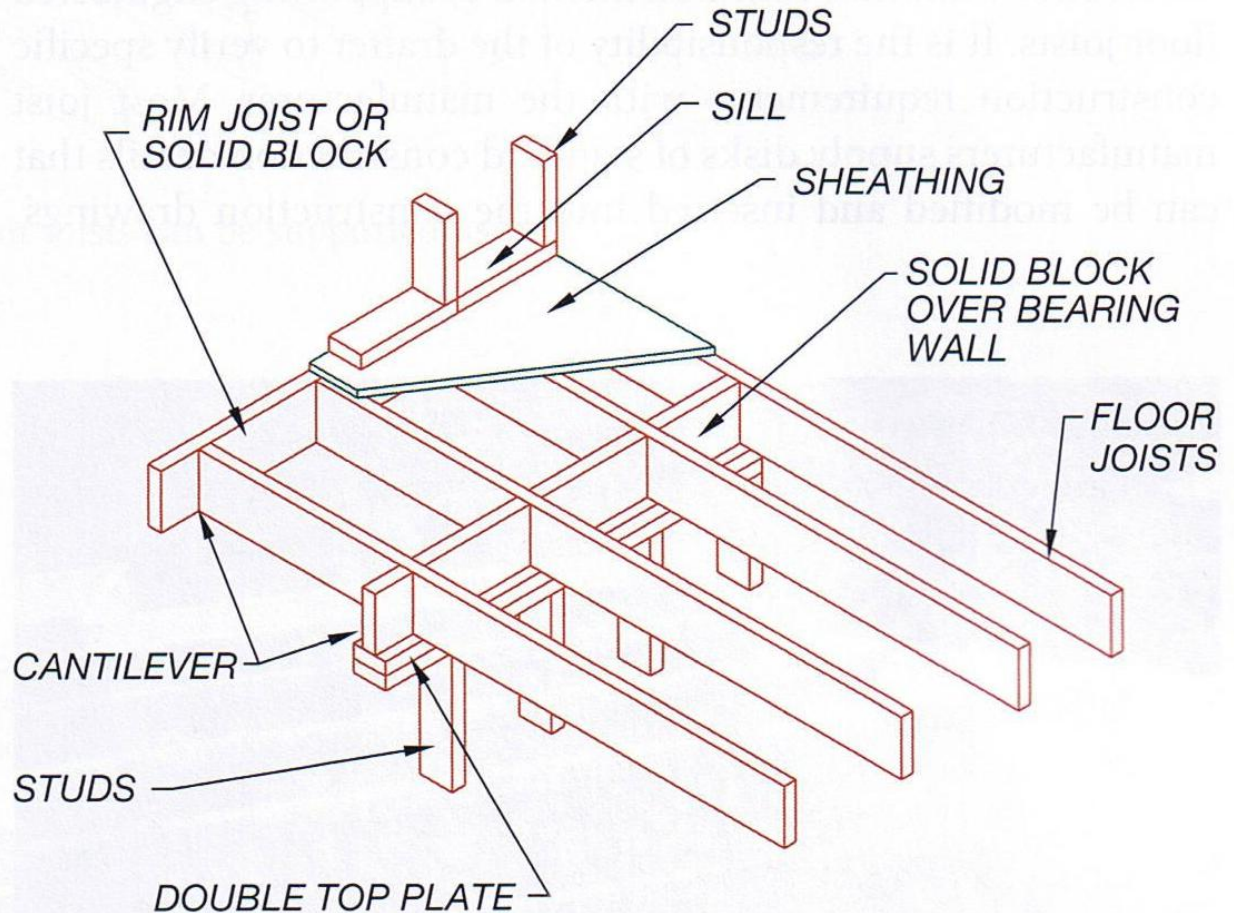
Cantilever or Overhang

If floor joists extend past their supports they form an extension called a cantilever or overhang.



Rim Joist

The joist that extends around the entire perimeter of a conventional floor joist system and to which the joists are end nailed is called the rim joist.



Bearing wall and non-bearing walls

A bearing wall supports not only itself but also the weight of the roof or other floors constructed above it.

Generally a minimum of two top plates are required on bearing walls.

Non-bearing walls are sometimes called partitions. A non-bearing wall serves no structural purpose. It is a partition used to divide rooms and could be removed without causing damage to the building.

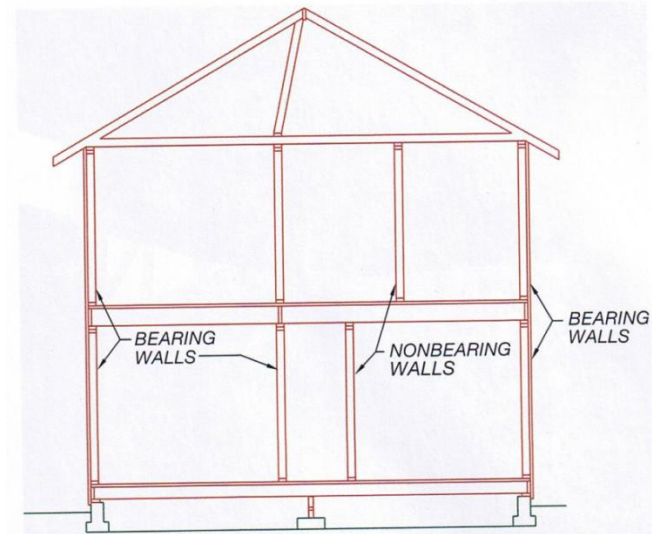
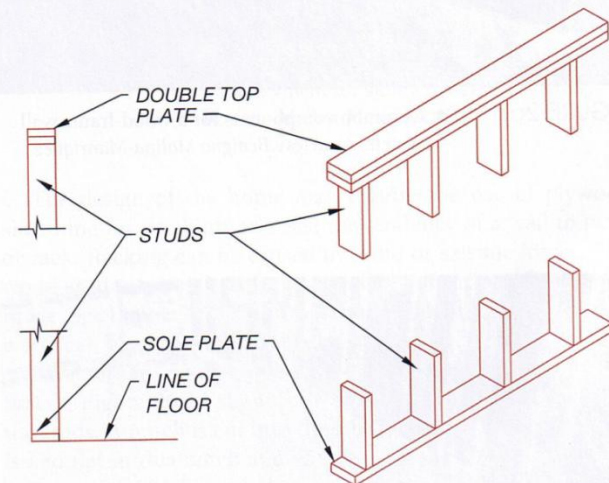


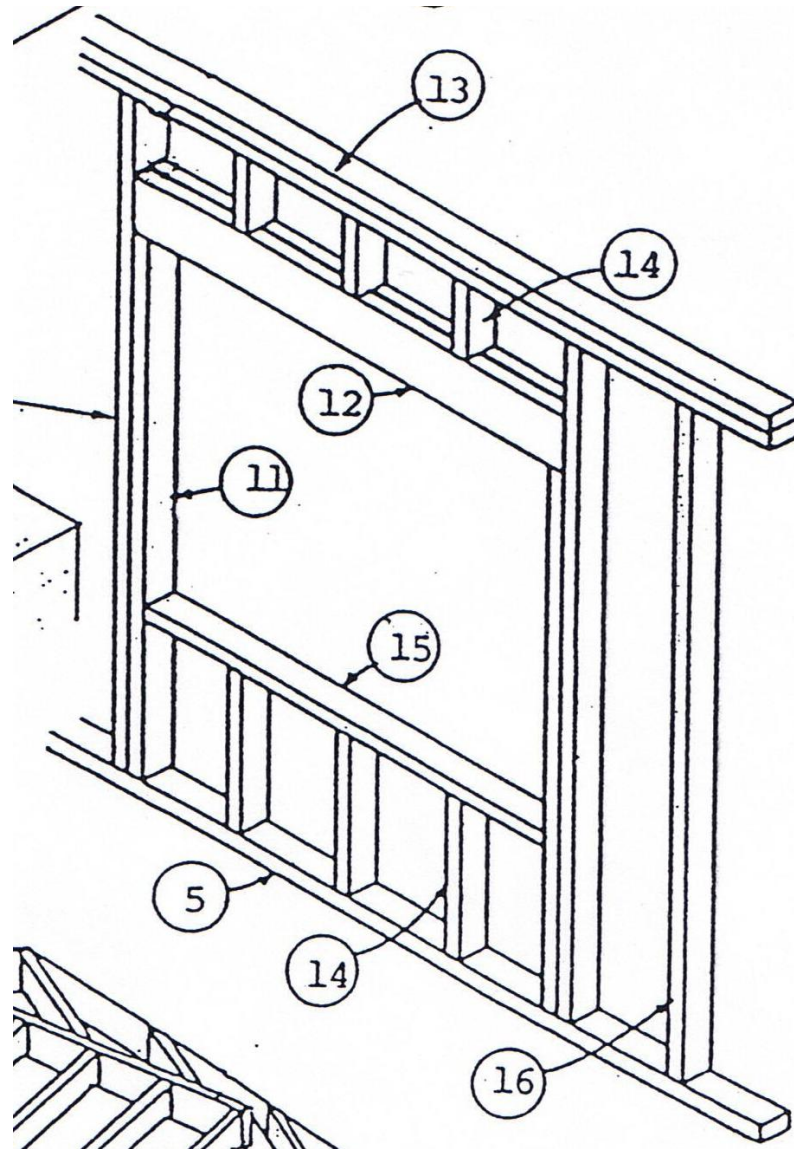
FIGURE 26.18 ■ Bearing and nonbearing walls. A bearing wall supports its own weight and the weight of floor and roof members. A nonbearing wall supports only its own weight. The IRC allows ceiling weight to be supported on a wall and still be considered a nonbearing wall.



Stud

The stud is the vertical framing member used to transfer loads from the top of the walls to the floor.

Studs are normally placed 16" O.C. (On Center)



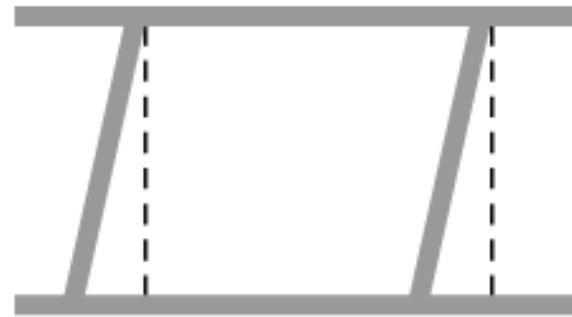
Racking

Racking in a stud wall can be caused by wind or seismic loads.

Structural movement



floor slab deflection
(non-cyclical)



racking
(cyclical)

Plywood or OSB

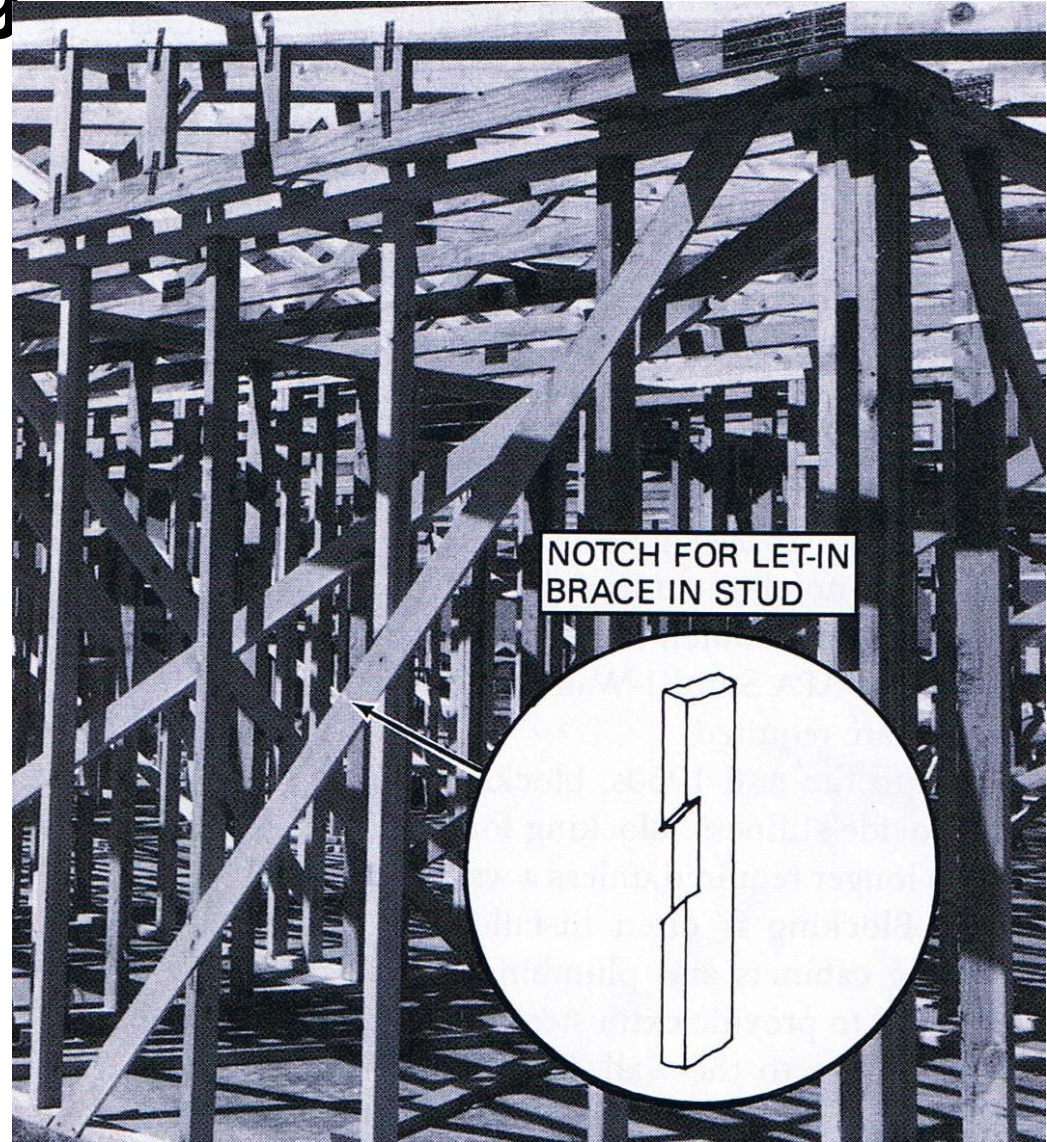
Plywood or OSB used to resist racking is called a shear panel.

***The size of plywood sheets are typically 4'x8'.**



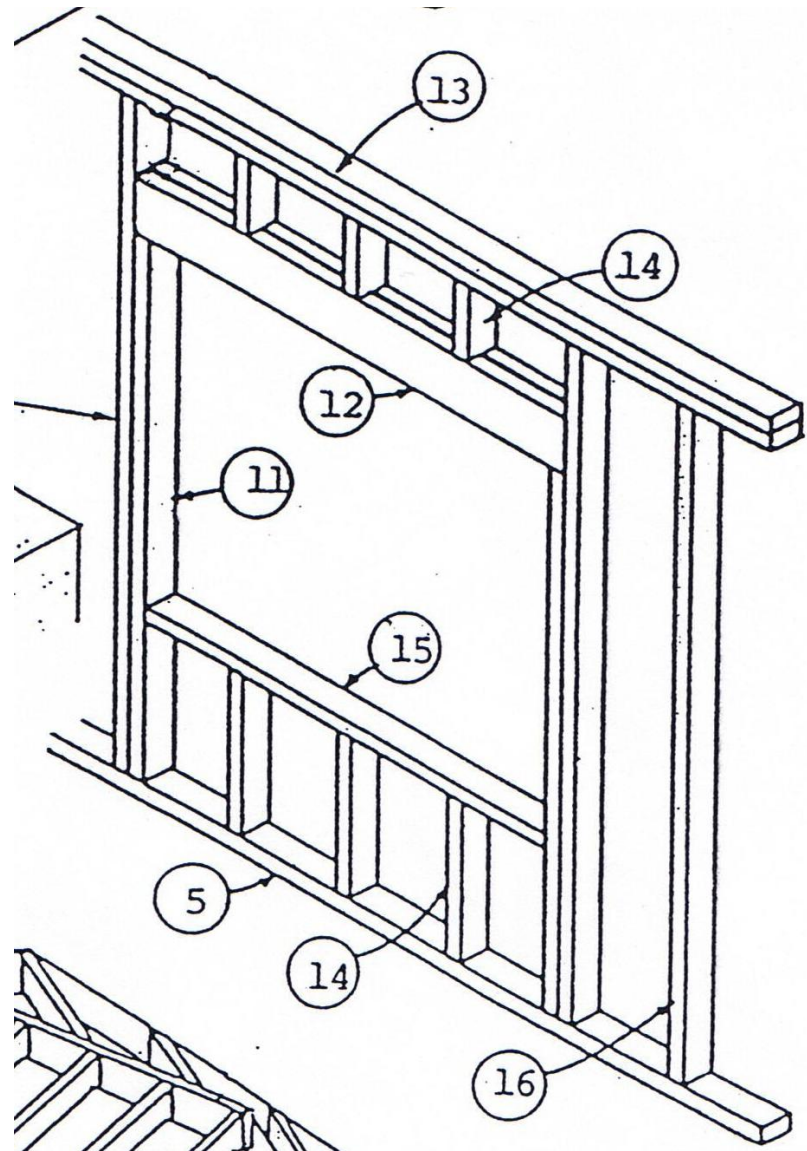
Diagonal or Let-in Bracing

An alternative to plywood for shear panels is to use let-in braces. When studs are notched, and a 1x4 is laid flat in the notch at a 45 degree angle to the studs, it is called diagonal or let-in bracing.



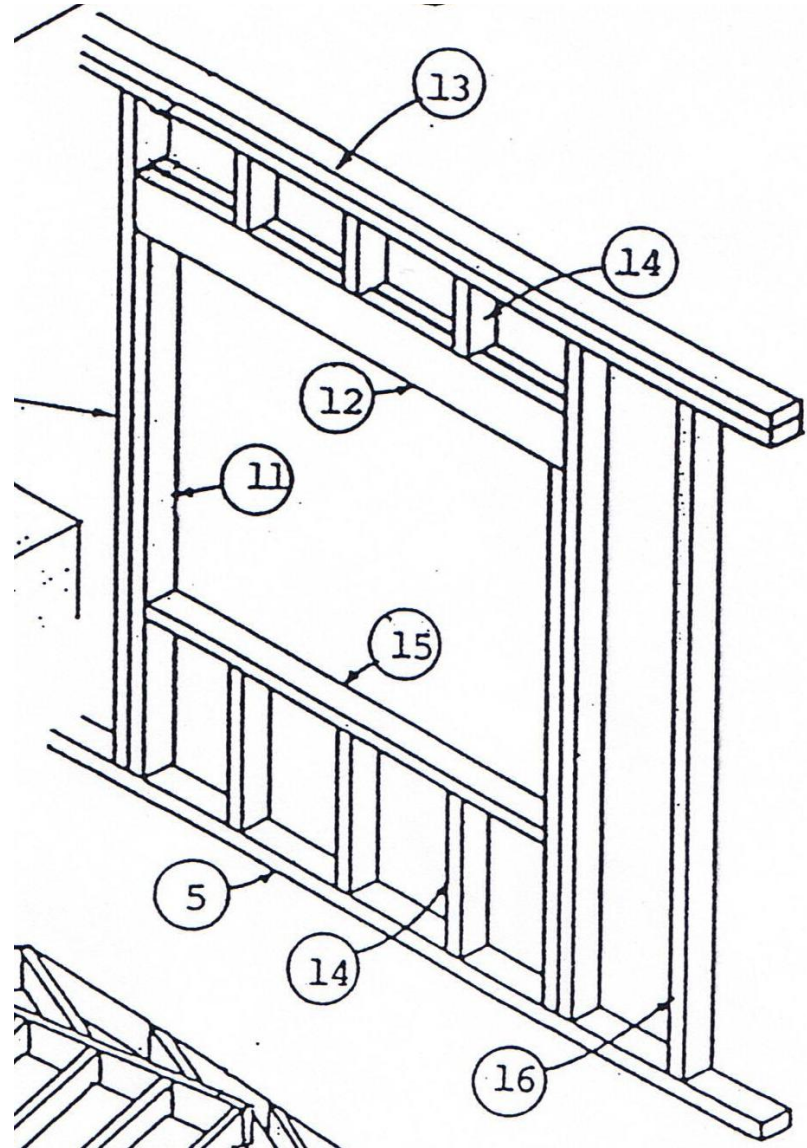
Header

***A structural member placed over a door or window opening to support the weight above is called a header.**



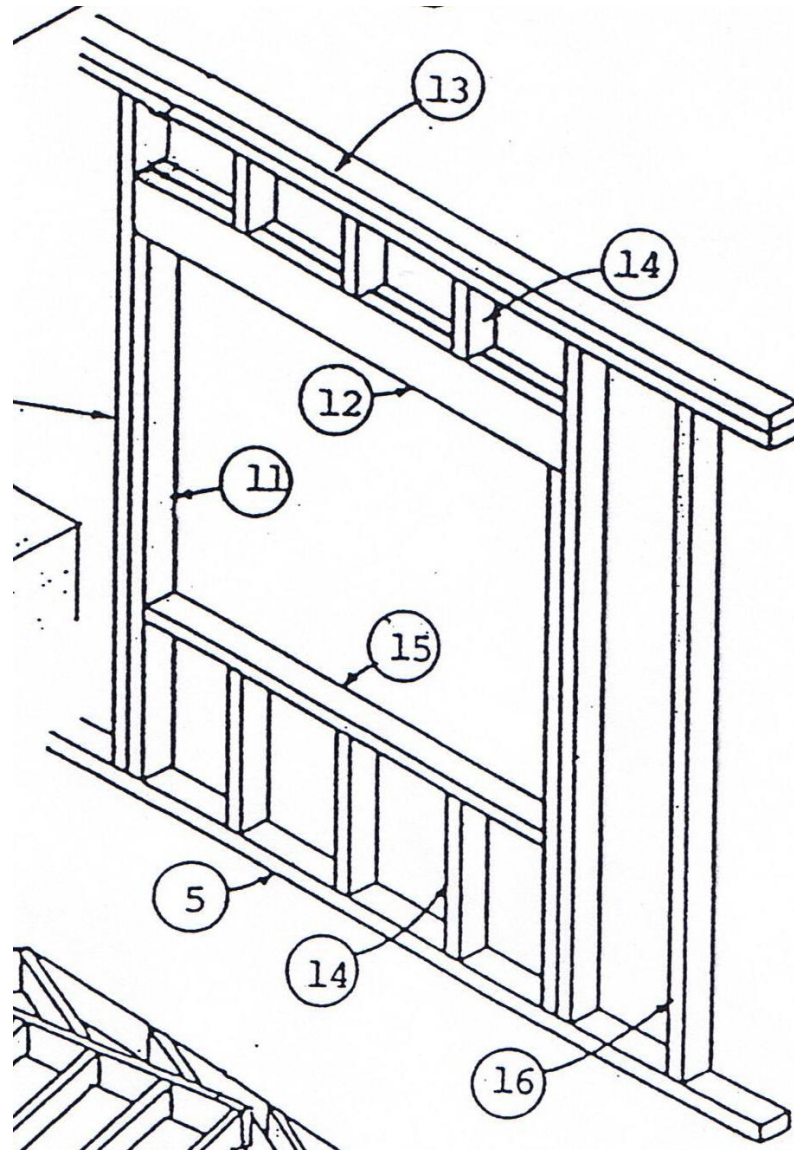
Trimmer

Trimmer extend from under the header to the sole plate and are used to support the header.



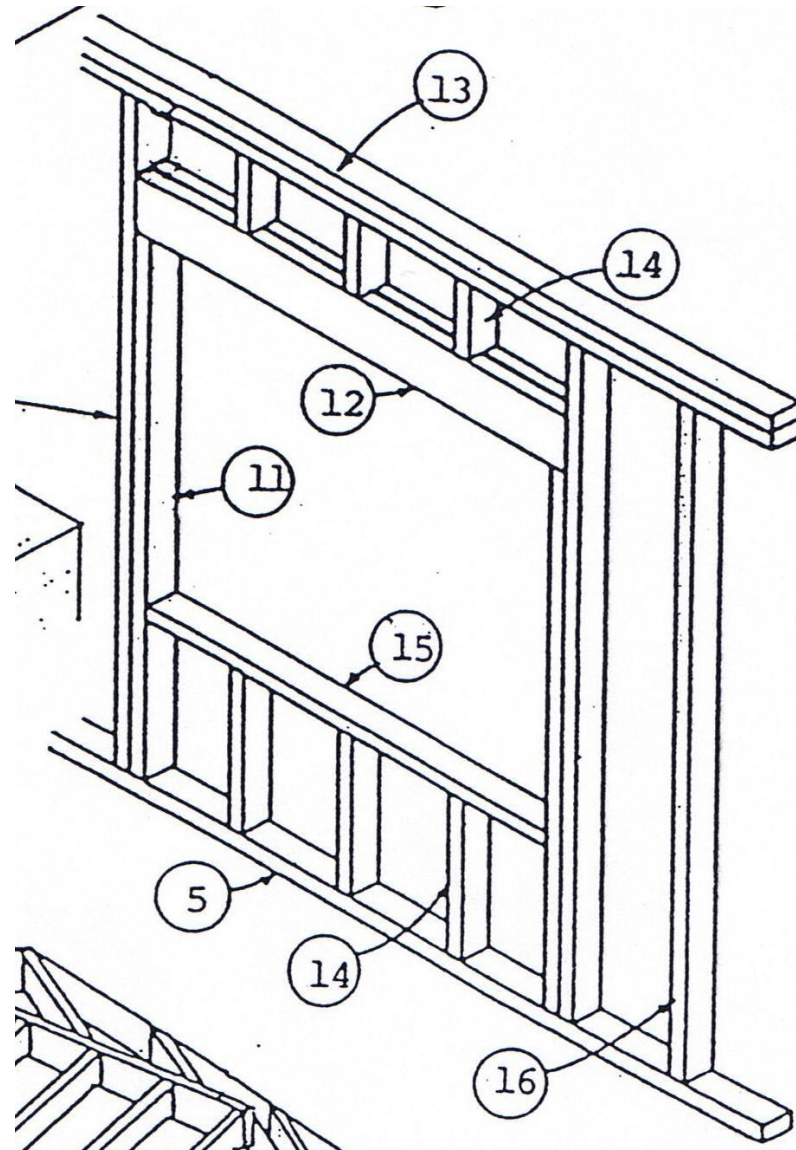
King Stud

A king stud is placed beside the trimmer and extends from the sill to the top plate.



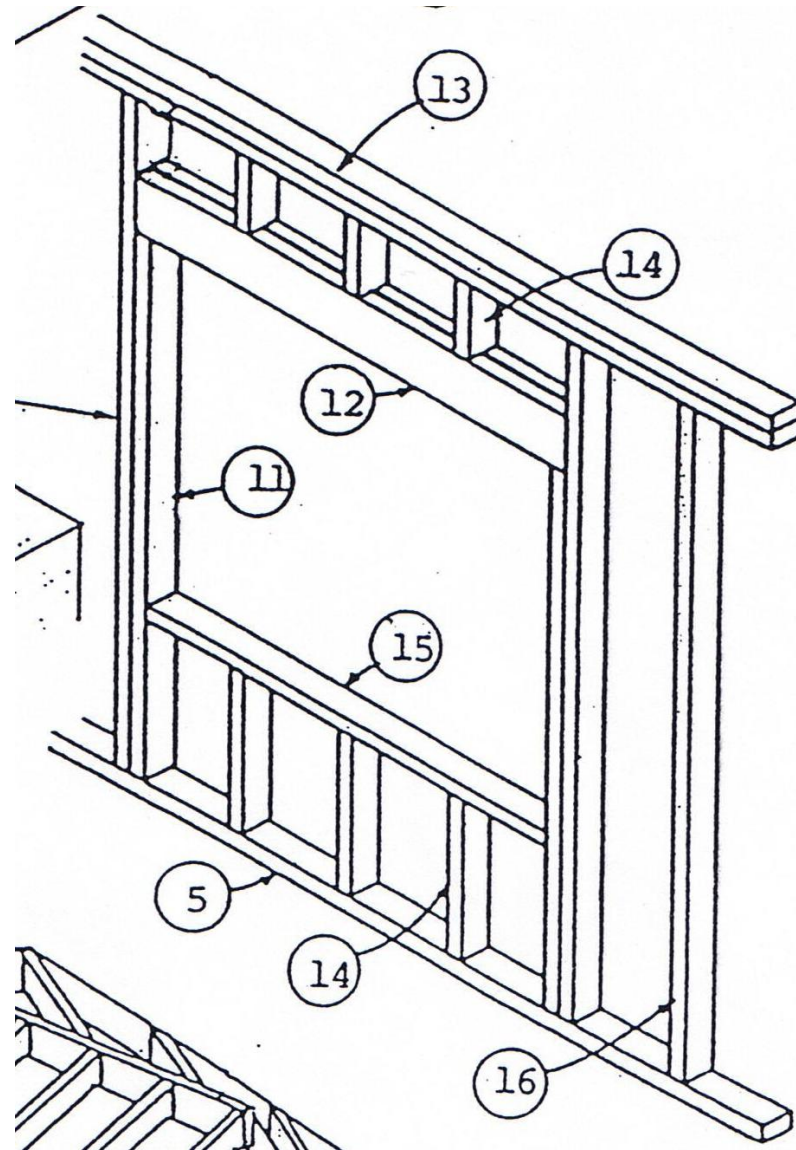
Cripple or Jack Stud

*A cripple or jack stud is placed under the sub-sill.



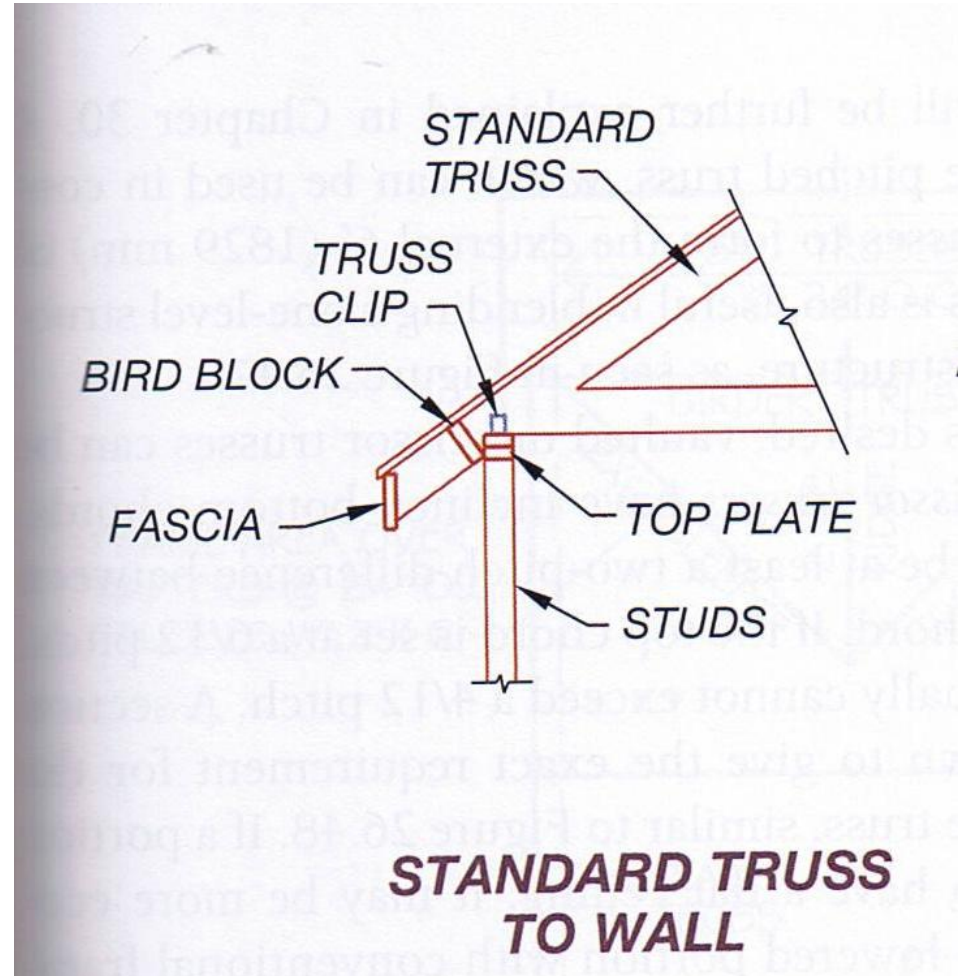
Double Top Plate

*A top plate is the horizontal member between the roof and where the studs finish.



Facia

The trim board that hides the truss or rafter tails from sight and provides a mounting surface for the gutter is called the fascia. It is typically 2 inches wider than the rafter or truss tails.



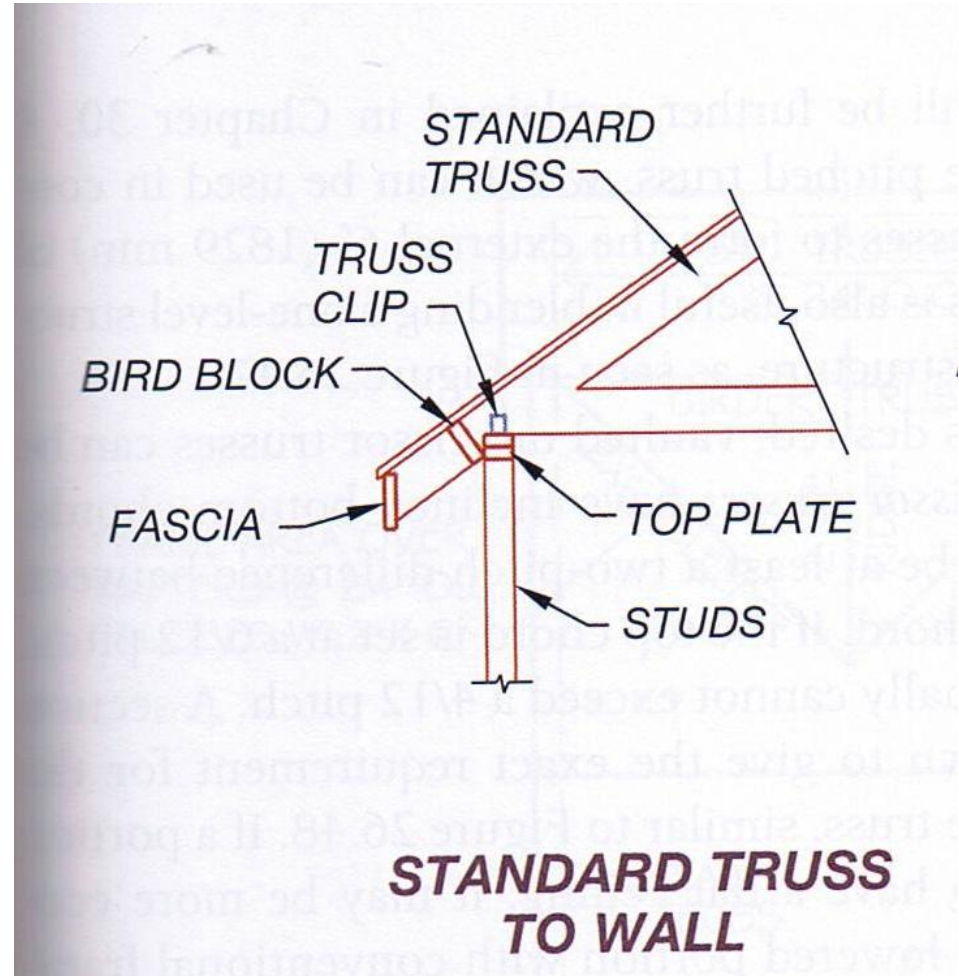
Skip Sheathing

1x4s spaced 4 inches apart and placed on top of and perpendicular to roof rafters is called skip sheathing and is usually used with tile or shake finished roofing materials.



Overhang

The overhang is the horizontal measurement between the exterior face of the wall and the end of the rafter tail or the outer surface of the fascia.



Vertical Rise/Horizontal Run

*Roof slope is the ratio between the vertical rise and the horizontal run.

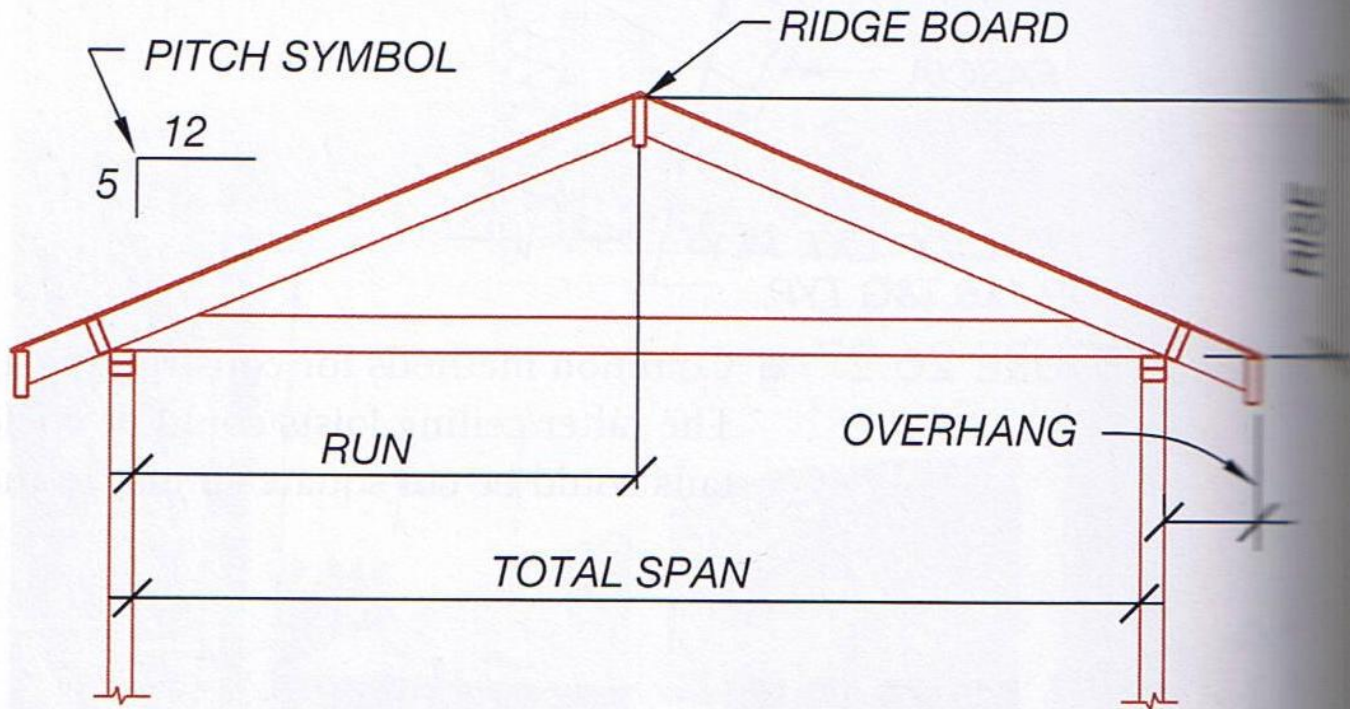
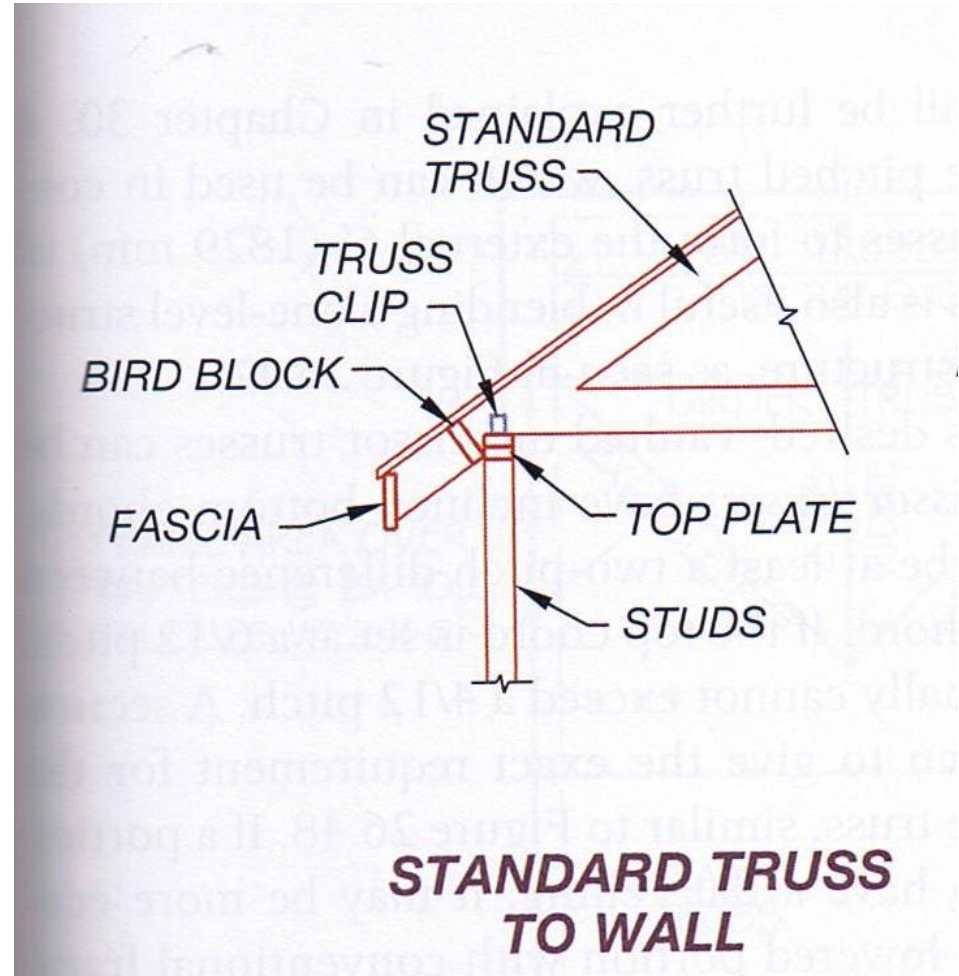


FIGURE 26.32 ■ Roof dimensions needed for construction.

Securing the Roof

The two names given to the units used to attach a truss to a top plate to help secure the roof during strong wind conditions are:

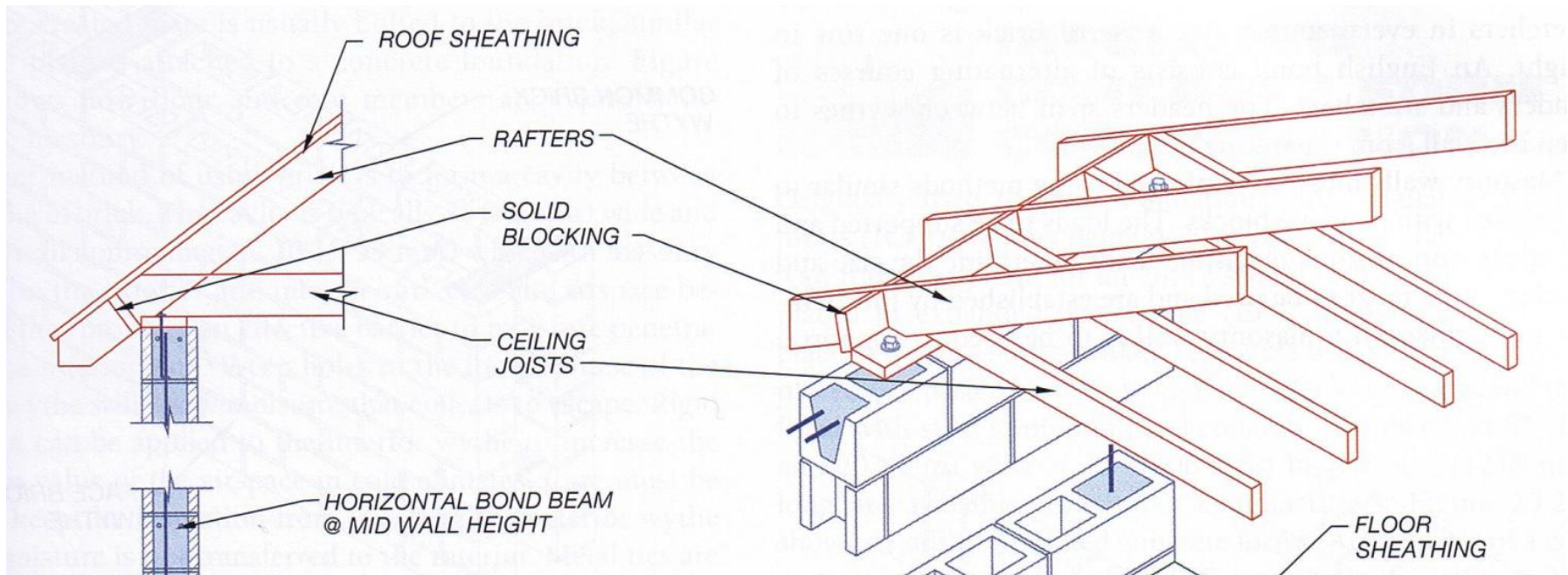
- 1) Truss Clip
- 2) Hurricane Tie.



Ceiling Joist

Ceiling joists are usually positioned across the width of the house and in the same direction as the rafters.

The upper corner of the ceiling joist often interferes with the roof slope. To prevent this interference, the corner is usually cut to match the slope.



Reading the Ceiling Span Data Chart

The first column is the spacing of the ceiling joist. The spans are 12" O.C., 16" O.C., 19.2" O.C., and 24" O.C.

The second column is the type and grade of lumber that would be used. For our area Douglas Fir would be the type of lumber used.

The other four columns are the size of ceiling joist to be used. These sizes are 2x4, 2x6, 2x8, and 2x10.

Once you determine the span, the material to be used, and what size of joist then you will look down the column to see what the maximum length the joist be.

What would be the maximum length ceiling joist you could use with a 16" O.C,

CEILING JOIST SPANS FOR COMMON LUMBER SPECIES
(Uninhabitable attics with limited storage, live load = 10 psf, L/Δ = 240)

CEILING JOIST SPACING (inches)	SPECIE AND GRADE	DEAD LOAD = 10 psf			
		2x4	2x6	2x8	2x10
		Maximum ceiling joist spans			
		(ft. - in.)	(ft. - in.)	(ft. - in.)	(ft. - in.)
12	Douglas fir-larch SS	10-5	16-4	21-7	(a)
	Douglas fir-larch #1	10-0	15-9	20-1	24-6
	Douglas fir-larch #2	9-10	14-10	18-9	22-11
	Douglas fir-larch #3	7-8	11-2	14-2	17-4
	Hem-fir SS	9-10	15-6	20-5	(a)
	Hem-fir #1	9-8	15-2	19-7	23-11
	Hem-fir #2	9-2	14-5	18-6	22-7
	Hem-fir #3	7-8	11-2	14-2	17-4
	Southern pine SS	10-3	16-1	21-2	(a)
	Southern pine #1	10-0	15-9	20-10	(a)
	Southern pine #2	9-10	15-6	20-1	23-11
	Southern pine #3	8-2	12-0	15-4	18-1
	Spruce-pine-fir SS	9-8	15-2	19-11	25-5
	Spruce-pine-fir #1	9-5	14-9	18-9	22-11
	Spruce-pine-fir #2	9-5	14-9	18-9	22-11
	Spruce-pine-fir #3	7-8	11-2	14-2	17-4
16	Douglas fir-larch SS	9-6	14-11	19-7	25-0
	Douglas fir-larch #1	9-1	13-9	17-5	21-3
	Douglas fir-larch #2	8-9	12-10	16-3	19-10
	Douglas fir-larch #3	6-8	9-8	12-4	15-0
	Hem-fir SS	8-11	14-1	18-6	23-8
	Hem-fir #1	8-9	13-5	16-10	20-8
	Hem-fir #2	8-4	12-8	16-0	19-7
	Hem-fir #3	6-8	9-8	12-4	15-0
	Southern pine SS	9-4	14-7	19-3	24-7
	Southern pine #1	9-1	14-4	18-11	23-1
	Southern pine #2	8-11	13-6	17-5	20-9
	Southern pine #3	7-1	10-5	13-3	15-8
	Spruce-pine-fir SS	8-9	13-9	18-1	23-1
	Spruce-pine-fir #1	8-7	12-10	16-3	19-10
	Spruce-pine-fir #2	8-7	12-10	16-3	19-10
	Spruce-pine-fir #3	6-8	9-8	12-4	15-0
19.2	Douglas fir-larch SS	8-11	14-0	18-5	23-4
	Douglas fir-larch #1	8-7	12-6	15-10	19-5
	Douglas fir-larch #2	8-0	11-9	14-10	18-2
	Douglas fir-larch #3	6-1	8-10	11-3	13-8
	Hem-fir SS	8-5	13-3	17-5	22-3
	Hem-fir #1	8-3	12-3	15-6	18-11
	Hem-fir #2	7-10	11-7	14-8	17-10
	Hem-fir #3	6-1	8-10	11-3	13-8
	Southern pine SS	8-9	13-9	18-1	23-1
	Southern pine #1	8-7	13-6	17-9	21-1
	Southern pine #2	8-5	12-3	15-10	18-11
	Southern pine #3	6-5	9-6	12-1	14-4
	Spruce-pine-fir SS	8-3	12-11	17-1	21-8
	Spruce-pine-fir #1	8-0	11-9	14-10	18-2
	Spruce-pine-fir #2	8-0	11-9	14-10	18-2
	Spruce-pine-fir #3	6-1	8-10	11-3	13-8
24	Douglas fir-larch SS	8-3	13-0	17-1	20-11
	Douglas fir-larch #1	7-8	11-2	14-2	17-4
	Douglas fir-larch #2	7-2	10-6	13-3	16-3
	Douglas fir-larch #3	5-5	7-11	10-0	12-3
	Hem-fir SS	7-10	12-3	16-2	20-6
	Hem-fir #1	7-6	10-11	13-10	16-11
	Hem-fir #2	7-1	10-4	13-1	16-0
	Hem-fir #3	5-5	7-11	10-0	12-3
	Southern pine SS	8-1	12-9	16-10	21-6
	Southern pine #1	8-0	12-6	15-10	18-10
	Southern pine #2	7-8	11-0	14-2	16-11
	Southern pine #3	5-9	8-6	10-10	12-10
	Spruce-pine-fir SS	7-8	12-0	15-10	19-5
	Spruce-pine-fir #1	7-2	10-6	13-3	16-3
	Spruce-pine-fir #2	7-2	10-6	13-3	16-3
	Spruce-pine-fir #3	5-5	7-11	10-0	12-3

For SF: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 psf = 0.0479 kN/m²