

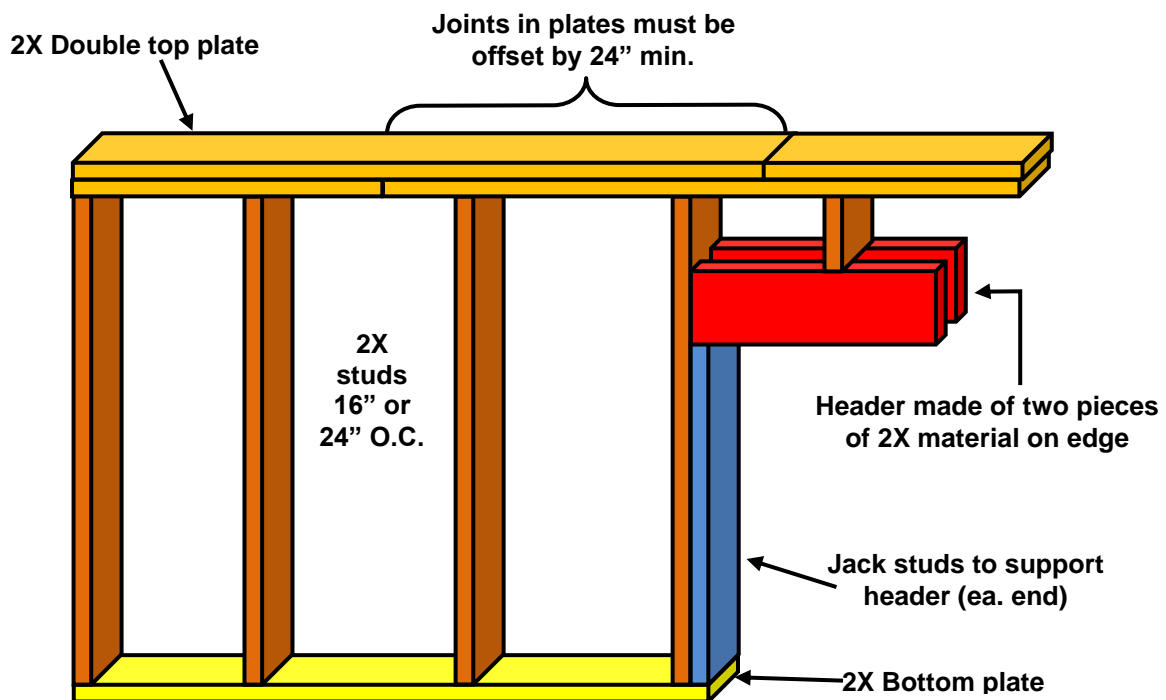
# BASIC WOOD FRAMING

RESIDENTIAL  
BUILDING INSPECTIONS DEPARTMENT  
[www.ci.blaine.mn.us](http://www.ci.blaine.mn.us)



This handout is intended only as a guide and is based in part on the 2007 Minnesota State Building Code, Blaine City ordinances, and good building practice. While every attempt has been made to insure the correctness of this handout, no guarantees are made to its accuracy or completeness. Responsibility for compliance with applicable codes and ordinances falls on the owner or contractor. For specific questions regarding code requirements, refer to the applicable codes or contact your local Building Department.

## TYPICAL BEARING WALL FRAMING



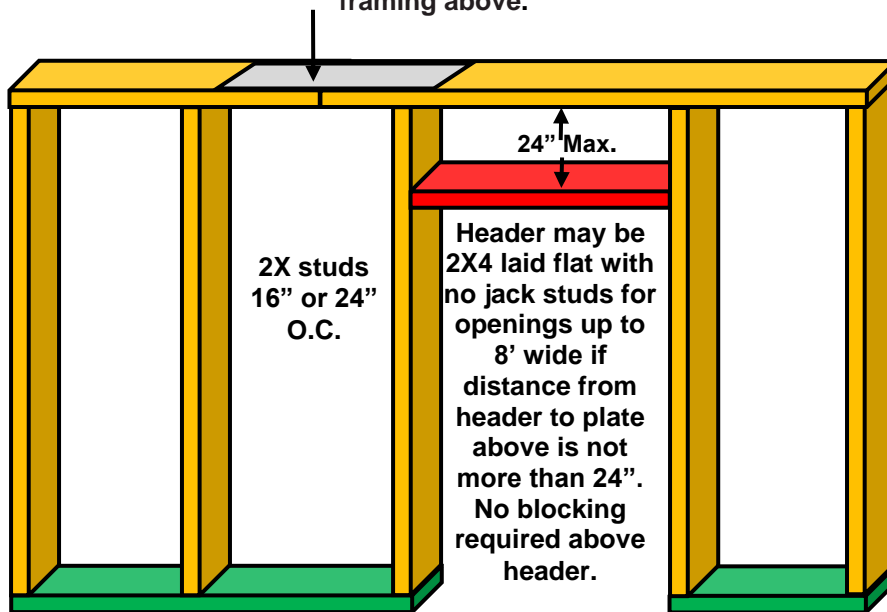
### SIZE, HEIGHT AND SPACING OF WOOD STUDS

TABLE R602.3(5)

STUD SIZE	MAXIMUM HEIGHT	BEARING WALLS				NONBEARING WALLS	
		MAXIMUM SPACING WHEN SUPPORTING ROOF AND CEILING ONLY	MAXIMUM SPACING WHEN SUPPORTING ONE FLOOR, ROOF, AND CEILING	MAXIMUM SPACING WHEN SUPPORTING TWO FLOORS, ROOF AND CEILING	MAXIMUM SPACING WHEN SUPPORTING ONE FLOOR ONLY	MAXIMUM HEIGHT	MAXIMUM SPACING
2X4	10	24	16	-	24	14	24
2X6	10	24	24	16	24	20	24

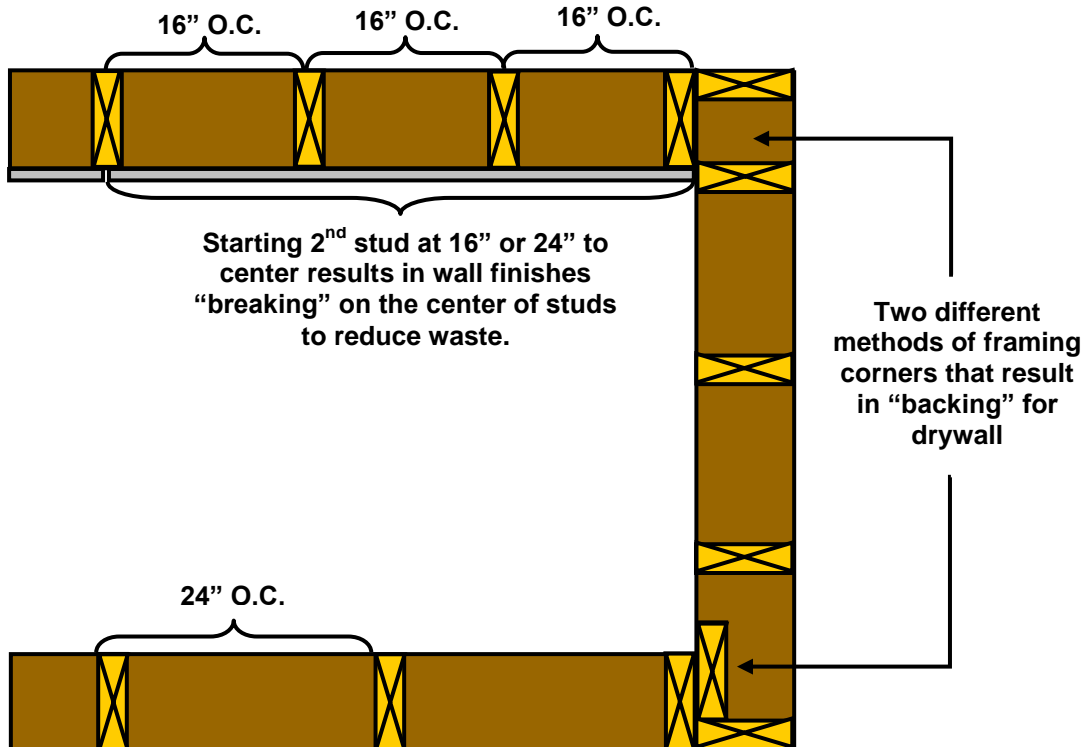
# TYPICAL FRAMING FOR NON-BEARING WALLS OR BASEMENT WALLS

3-inch-by-6-inch by a 0.036-inch-thick galvanized steel plate nailed to each segment by six 8d nails on each side or secure to framing above.

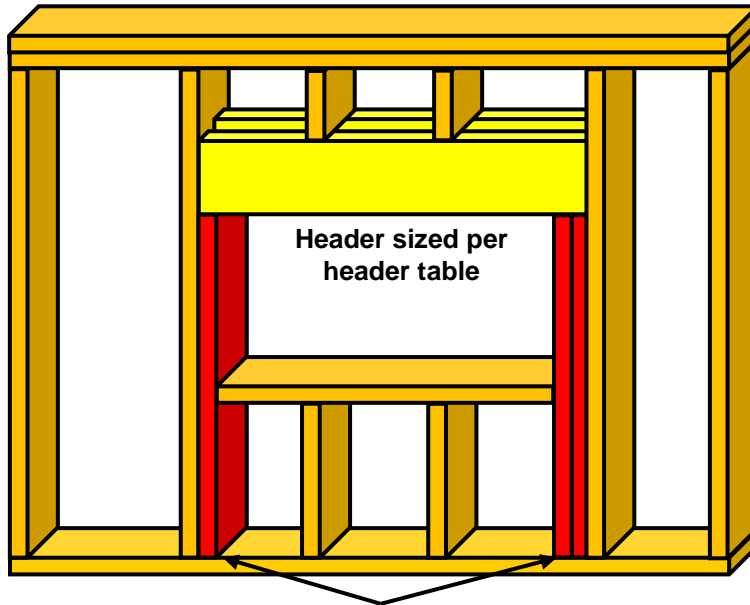


Plates on concrete floors must be treated unless there is a vapor barrier under the slab.

## LAYING OUT WALLS – 16" AND 24" ON CENTER

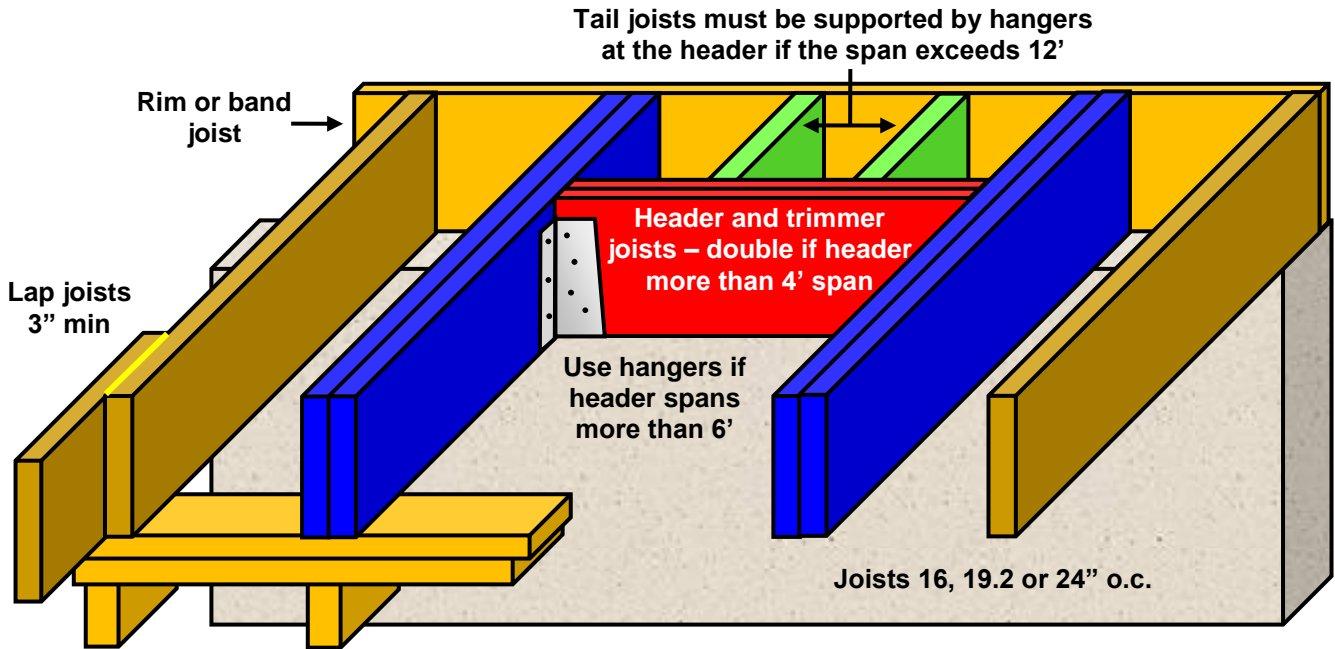


## FRAMING OPENINGS IN BEARING WALLS

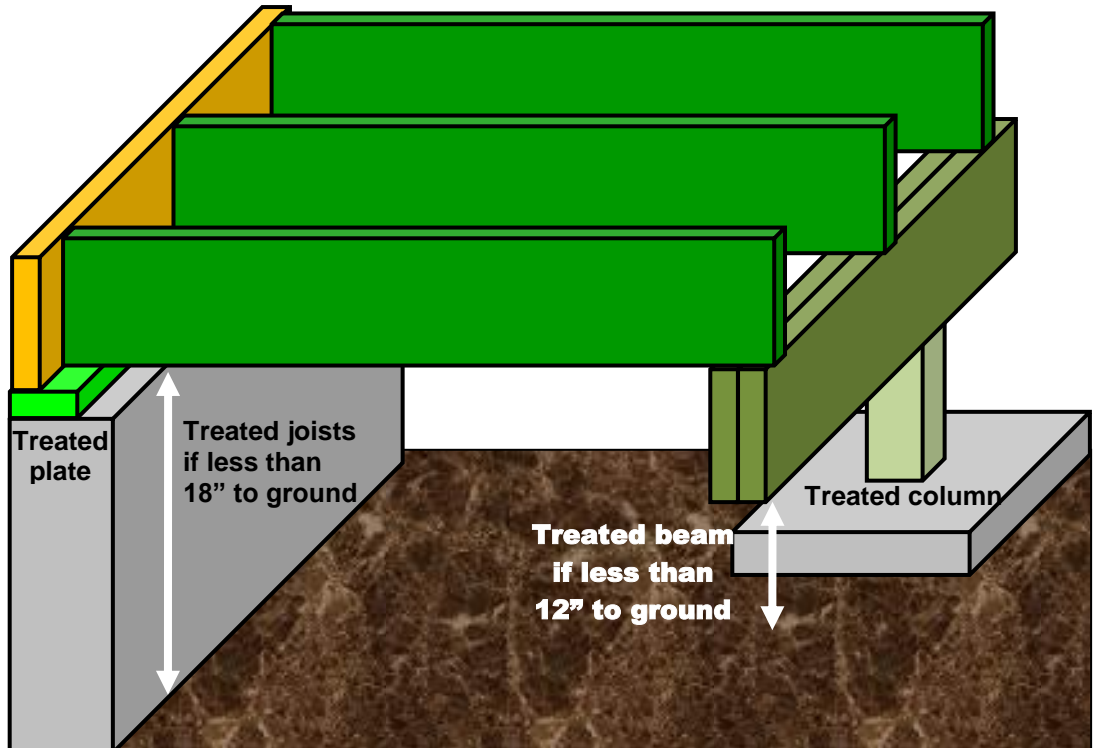


<b>GIRDER AND HEADER SPANS FOR INTERIOR BEARING WALLS (IN FT/IN)</b>					
TABLE R502.5(2) (#2Hem Fir or SPF)					
HEADERS AND GIRDERS SUPPORTING	SIZE	BUILDING WIDTH (FT)			
		20	24	28	32
		SPAN (JACK STUDS)	SPAN (JACK STUDS)	SPAN (JACK STUDS)	SPAN (JACK STUDS)
One floor only	2-2X4	3-1 (1)	2-11 (1)	2-8 (1)	2-7 (1)
	2-2X6	4-6 (1)	4-3 (1)	3-11 (1)	3-9 (1)
	2-2X8	9-1 (1)	5-4 (1)	5-0 (2)	4-9 (2)
	2-2X10	7-0 (2)	6-7 (2)	6-1 (2)	5-9 (2)
	2-2X12	8-1 (2)	7-7 (2)	7-0 (2)	6-7 (2)
	3-2X8	7-2 (1)	6-9 (1)	6-3 (1)	5-11 (2)
	3-2X10	8-9 (1)	8-2 (1)	7-7 (2)	7-2 (2)
	3-2X12	10-2 (2)	9-6 (2)	8-10 (2)	8-3 (2)
	4-2X8	9-0 (1)	8-3 (1)	7-8 (1)	7-3 (1)
	4-2X10	10-1 (1)	9-5 (1)	9-0 (1)	8-4 (2)
	4-2X12	11-9 (1)	10-11 (2)	10-2 (2)	9-8 (2)
Two floors	2-2X4	2-2 (1)	2-0 (1)	1-10 (1)	1-9 (1)
	2-2X6	3-2 (2)	3-0 (2)	2-9 (2)	2-7 (2)
	2-2X8	4-1 (2)	3-10 (2)	3-6 (2)	3-4 (2)
	2-2X10	4-11 (2)	4-7 (2)	4-3 (2)	4-1 (3)
	2-2X12	5-9 (2)	5-5 (3)	5-0 (3)	4-9 (3)
	3-2X8	5-1 (2)	4-9 (2)	4-5 (2)	4-2 (2)
	3-2X10	6-2 (2)	5-9 (2)	5-4 (2)	5-1 (2)
	3-2X12	7-2 (2)	6-9 (2)	6-3 (2)	5-11 (3)
	4-2X8	6-1 (1)	5-8 (2)	5-3 (2)	5-0 (2)
	4-2X10	7-2 (2)	6-8 (2)	6-2 (2)	5-10 (2)
	4-2X12	8-4 (2)	7-9 (2)	7-2 (2)	6-10 (2)

# TYPICAL FLOOR FRAMING



# CRAWL SPACES



FLOOR JOIST SPANS #2 SPF				
TABLE R502.3.1(2)				
Joist spacing	2X6	2X8	2X10	2X12
16" O.C.	9-4	12-3	15-5	17-10
19.2" O.C.	8-9	11-6	14-1	16-3
24" O.C.	8-1	10-3	12-7	14-7

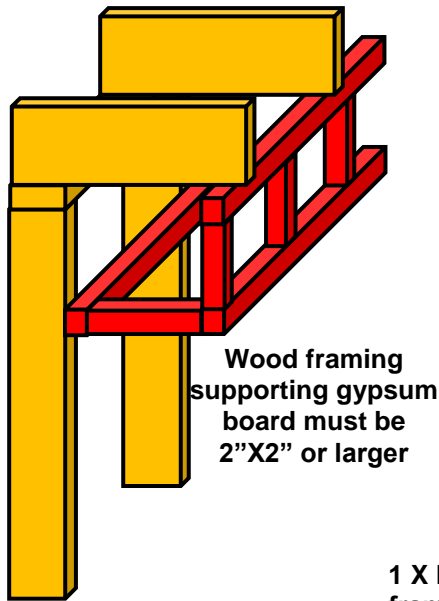
**GIRDER SPANS AND HEADER SPANS FOR  
EXTERIOR BEARING WALLS - #2 HEM FIR OR SPF**

TABLE R502.5(1)

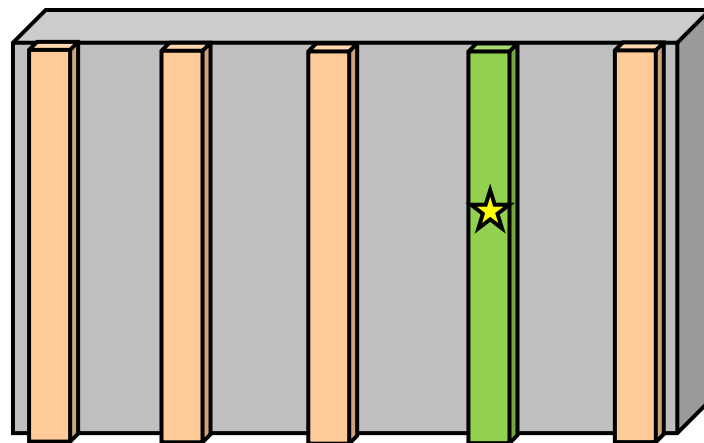
GIRDERS AND HEADERS SUPPORTING	SIZE	20		24		28		32	
		Span	NJ	Span	NJ	Span	NJ	Span	NJ
		Roof and ceiling	2-2x4	3-2	1	2-6	1	2-9	1
2-2x6	4-8		1	4-5	1	4-1	1	3-11	2
2-2x8	5-11		2	5-7	2	5-2	2	4-11	2
2-2x10	7-3		2	6-9	2	6-3	2	5-11	2
2-2x12	8-5		2	7-10	2	7-3	2	6-11	2
3-2x8	7-5		1	6-11	2	6-5	2	6-1	2
3-2x10	9-1		2	8-6	2	7-10	2	7-5	2
3-2x12	10-7		2	9-10	2	9-2	2	8-8	2
4-2x8	8-4		1	7-11	1	7-5	1	7-1	1
4-2x10	10-6		1	9-9	2	9-1	2	8-8	2
4-2x12	12-2		2	11-5	2	10-7	2	10-0	2
Roof, ceiling and one center-bearing floor	2-2x4	2-9	1	2-7	1	2-5	1	2-4	1
	2-2x6	4-1	1	3-10	2	3-7	2	3-5	2
	2-2x8	5-2	2	4-10	2	4-6	2	4-4	2
	2-2x10	6-4	2	5-11	2	5-6	2	5-3	2
	2-2x12	7-4	2	6-11	2	6-5	2	6-1	3
	3-2x8	6-5	2	6-1	2	5-8	2	5-4	2
	3-2x10	7-11	2	7-5	2	6-11	2	6-7	2
	3-2x12	9-2	2	8-7	2	8-0	2	7-8	2
	4-2x8	7-5	1	7-0	1	6-6	1	6-3	2
	4-2x10	9-1	2	8-6	2	8-0	2	7-7	2
	4-2x12	10-7	2	9-11	2	9-3	2	8-10	2
Roof, ceiling and one clear span floor	2-2x4	2-7	1	2-5	1	2-3	1	2-2	1
	2-2x6	3-10	2	3-7	2	3-4	2	3-2	2
	2-2x8	4-10	2	4-6	2	4-2	2	4-0	2
	2-2x10	5-11	2	5-5	2	5-1	2	4-10	2
	2-2x12	6-10	2	6-5	3	5-11	3	5-8	3
	3-2x8	6-1	2	5-8	2	5-3	2	5-0	3
	3-2x10	7-5	2	6-11	2	6-5	2	6-1	2
	3-2x12	8-7	2	8-0	2	7-5	2	7-1	2
	4-2x8	7-0	1	6-6	2	6-1	2	5-9	2
	4-2x10	8-7	2	8-0	2	7-5	2	7-0	2
	4-2x12	9-11	2	9-5	2	8-7	2	8-2	2
Roof, ceiling and two center- bearing floors	2-2x4	2-6	1	2-4	1	2-2	1	2-0	1
	2-2x6	3-8	2	3-5	2	3-2	2	3-0	2
	2-2x8	4-7	2	4-4	2	4-0	2	3-10	2
	2-2x10	5-8	2	5-4	2	4-11	2	4-8	3
	2-2x12	6-6	2	6-2	3	5-9	3	5-6	3
	3-2x8	5-9	2	5-5	2	5-1	2	4-10	2
	3-2x10	7-1	2	6-8	2	6-2	2	5-11	2
	3-2x12	8-2	2	7-8	2	7-2	2	6-10	3
	4-2x8	6-8	1	6-3	2	5-10	2	5-7	2
	4-2x10	8-2	2	7-8	2	7-2	2	6-10	2
	4-2x12	9-5	2	8-10	2	8-3	2	7-10	2
Roof, ceiling,	2-2x4	2-0	1	1-10	1	1-8	1	1-7	2
	2-2x6	3-0	2	2-10	2	2-7	2	2-5	2

and two clear span floors	2-2x8	3-10	2	3-7	2	3-4	2	3-2	3
	2-2x10	4-8	2	4-4	3	4-0	3	3-10	3
	2-2x12	5-5	3	5-1	3	4-8	3	4-5	3
	3-2x8	4-9	2	4-5	2	4-1	2	3-11	2
	3-2x10	5-10	2	5-5	2	5-0	2	4-9	3
	3-2x12	6-9	2	6-4	3	5-10	3	5-7	3
	4-2x8	5-6	2	5-2	2	4-9	2	4-6	3
	4-2x10	6-9	2	6-4	2	5-10	2	5-6	2
	4-2x12	7-9	2	7-3	2	6-9	2	6-5	3

## FURRING VS. FRAMING



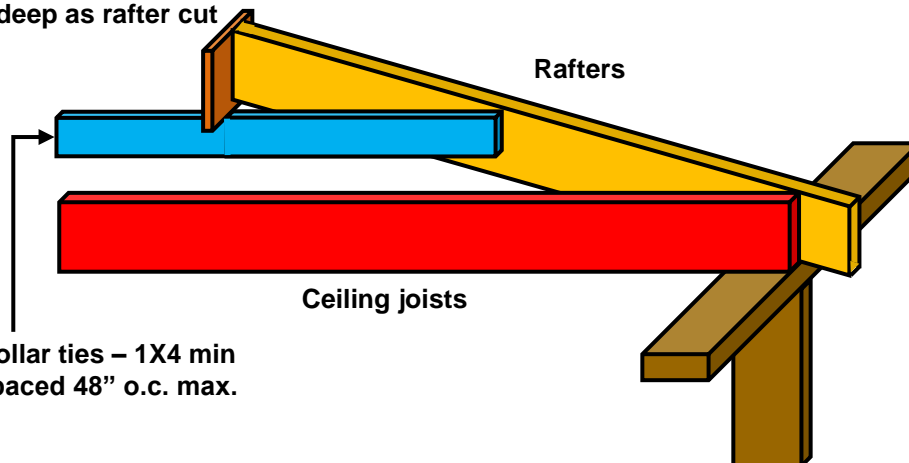
Wood framing supporting gypsum board must be 2"X2" or larger



1 X Furring strips may only be used over solid backing or framing spaced not more than 24" o.c. ★ Furring strips placed against a concrete or masonry wall must be treated unless a vapor retarder is placed between the wall and furring strips

## ROOF FRAMING

Ridge board 1X min  
At least as deep as rafter cut



Collar ties - 1X4 min  
spaced 48" o.c. max.

## CEILING JOIST SPANS FOR #2 HEM FIR AND SPF

NO STORAGE IN ATTIC

		2 x 4	2 x 6	2 x 8	2 x 10
12"	Hem Fir	11-7	18-2	24-0	26+
	o.c. SPF	11-10	18-8	24-7	26+
16"	Hem Fir	10-6	16-6	21-9	26+
	o.c. SPF	10-9	16-11	22-4	26+
24"	Hem Fir	9-2	14-5	18-6	22-7
	o.c. SPF	9-5	14-9	18-9	22-11

## RAFTER SPANS FOR #2 HEM FIR AND SPF

		2 x 4	2 x 6	2 x 8	2 x 10
12"	Hem Fir	7-5	11-1	14-0	17-2
	o.c. SPF	7-8	11-3	14-3	17-5
16"	Hem Fir	6-7	9-7	12-2	14-10
	o.c. SPF	6-8	9-9	12-4	15-1
24"	Hem Fir	5-4	7-10	9-11	12-1
	o.c. SPF	5-5	7-11	10-1	12-4

## ENGINEERED LUMBER

This handout does not cover engineered lumber such as floor or roof trusses, I joists, glue-laminated members, structural composite lumber, and similar products. Refer to the manufacturer's installation instructions for further information.

## OTHER FRAMING HANDOUTS

Other handouts are available on cutting, boring and notching framing, fireblocking, gypsum wall board, fasteners, and a host of other code requirements pertaining to wood framing.