



# Framing Tips

10801 Town Square Drive NE, Blaine MN 55449

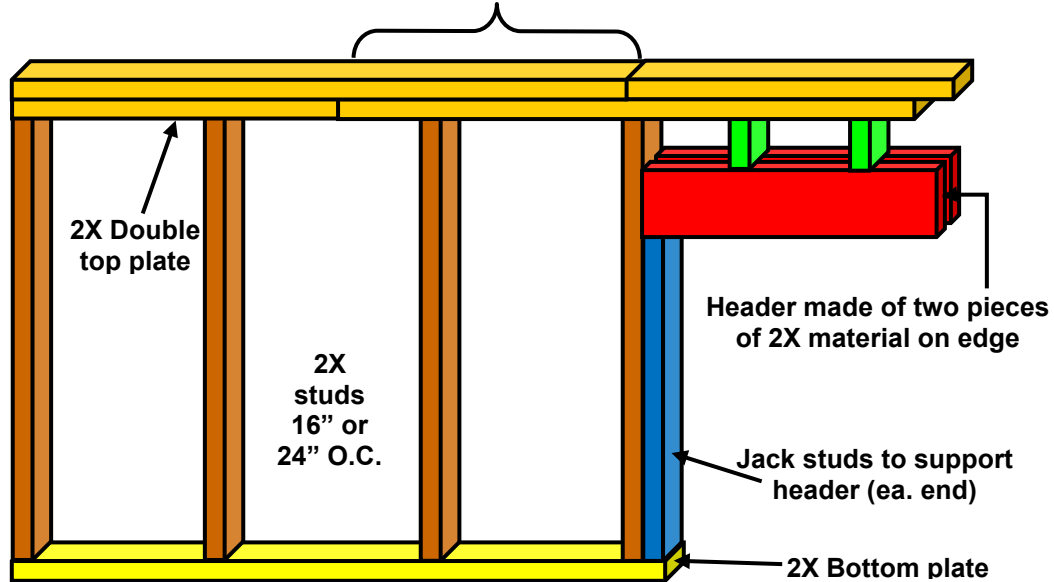
**Building Inspections Department**

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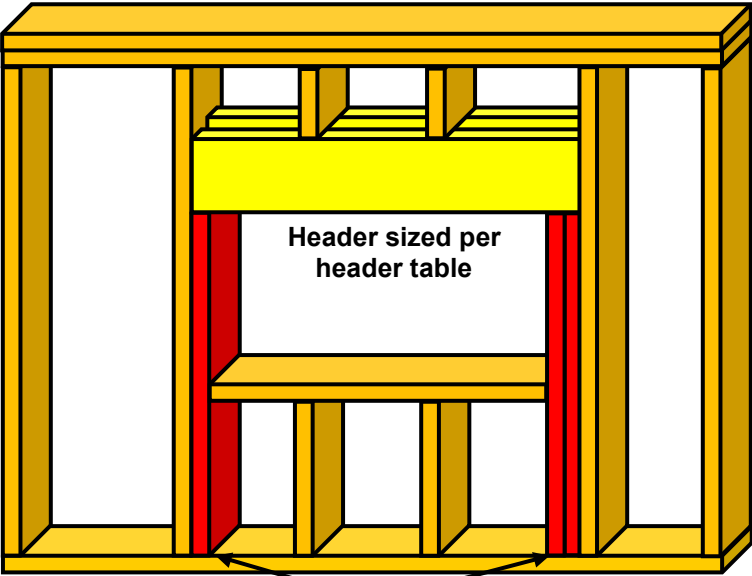
This handout is intended only as a guide and is based in part on the 2020 Minnesota State Building Code, Blaine City ordinances, and good building practice. While every attempt has been made to insure the correctness of this handout, no guarantees are made to its accuracy or completeness. Responsibility 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

Joints in plates must be offset by 24" min.



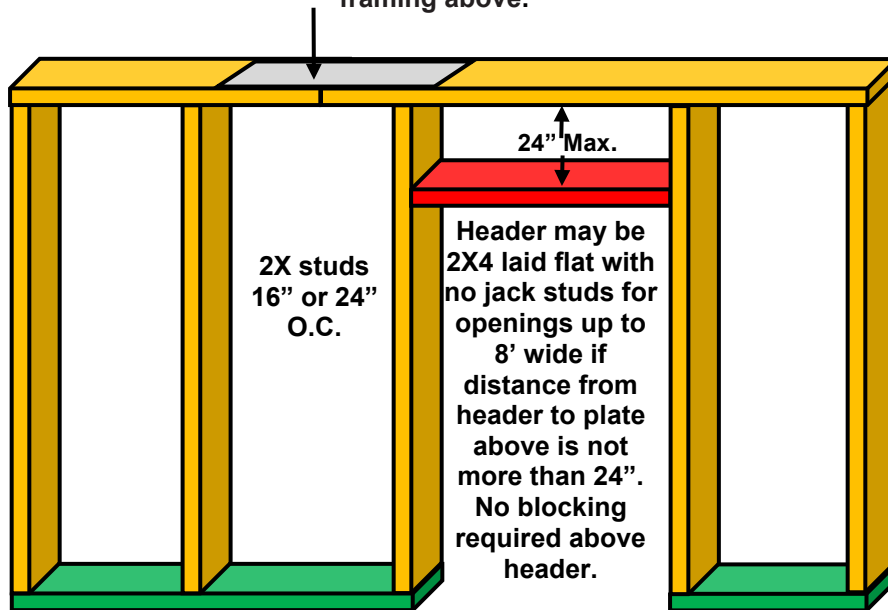
# FRAMING OPENINGS IN BEARING WALLS



Single or double jack studs per header table

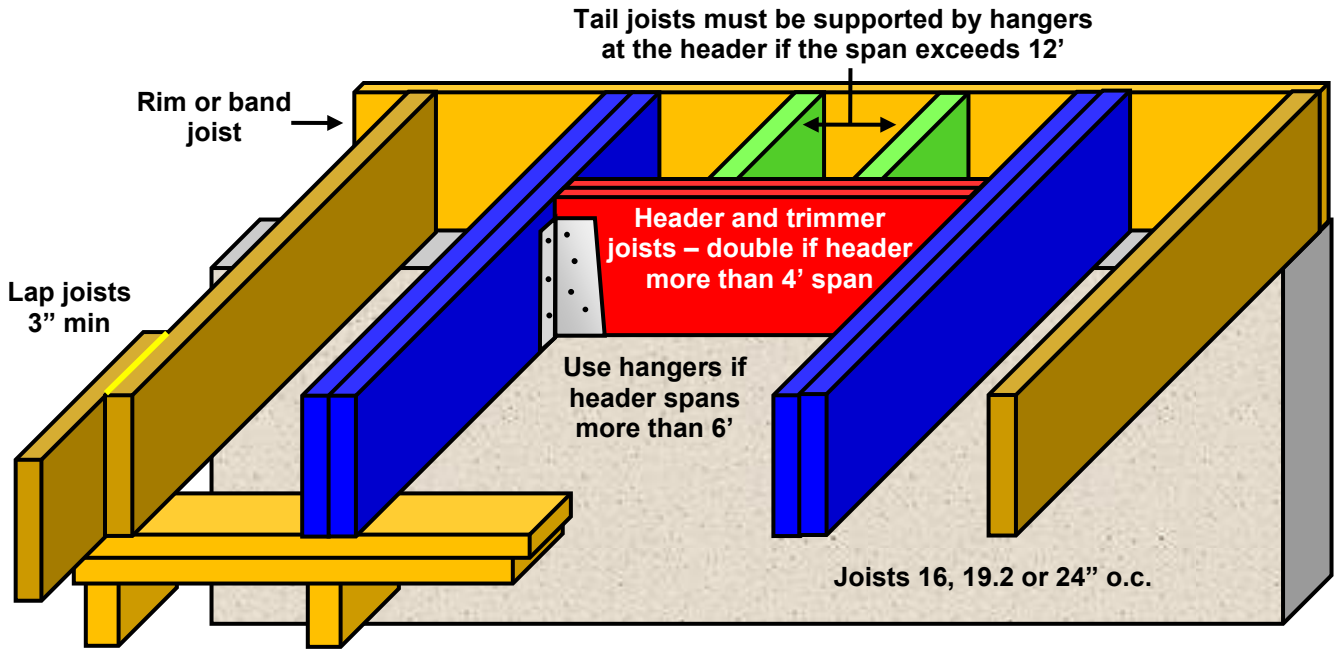
# TYPICAL FRAMING FOR NON-BEARING WALLS OR BASEMENT WALLS

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.

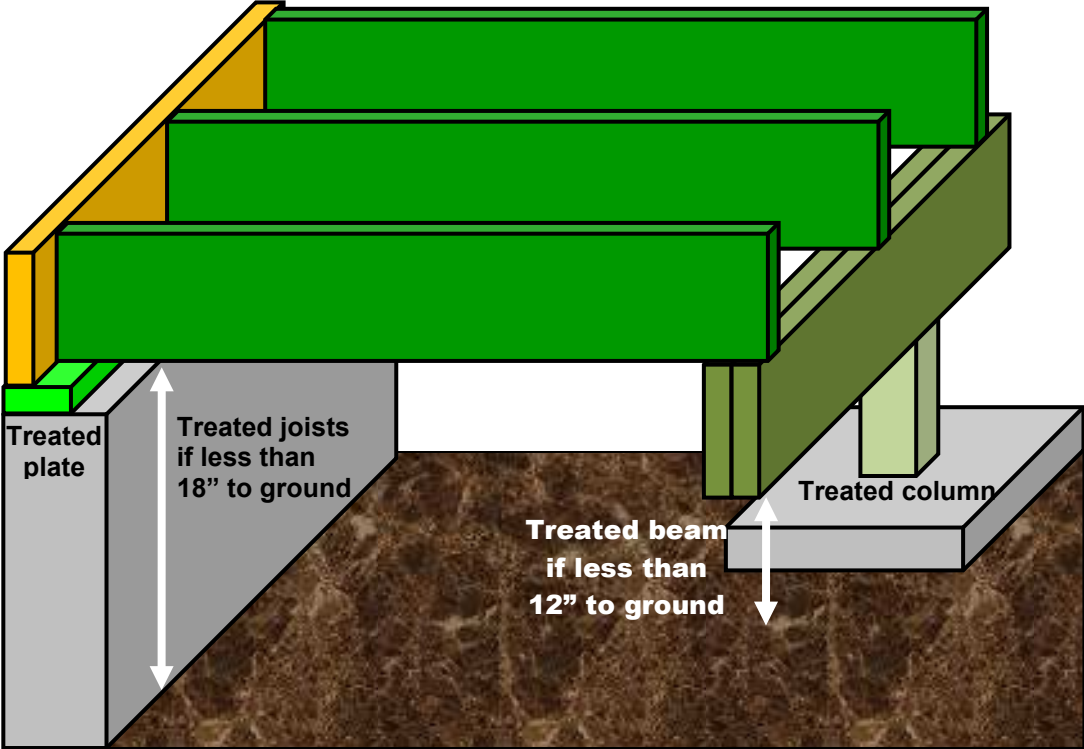


Plates on concrete floors must be treated unless there is a vapor barrier under the slab.

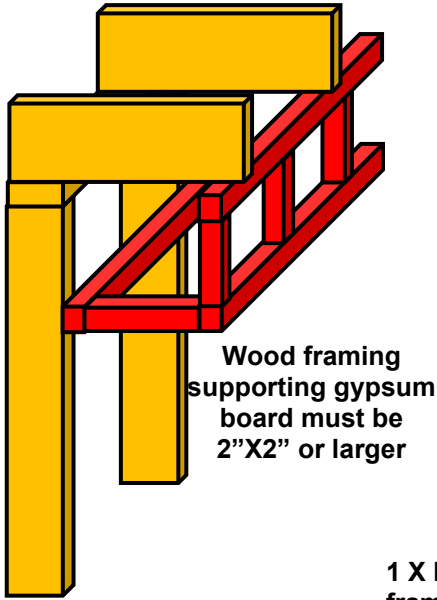
# TYPICAL FLOOR FRAMING



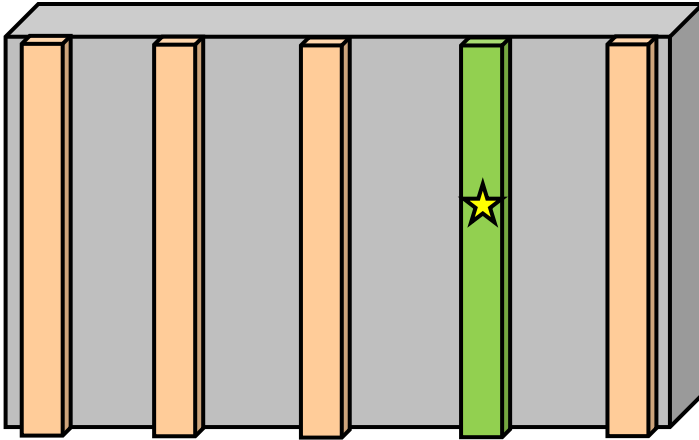
# CRAWL SPACES



## FURRING VS. FRAMING



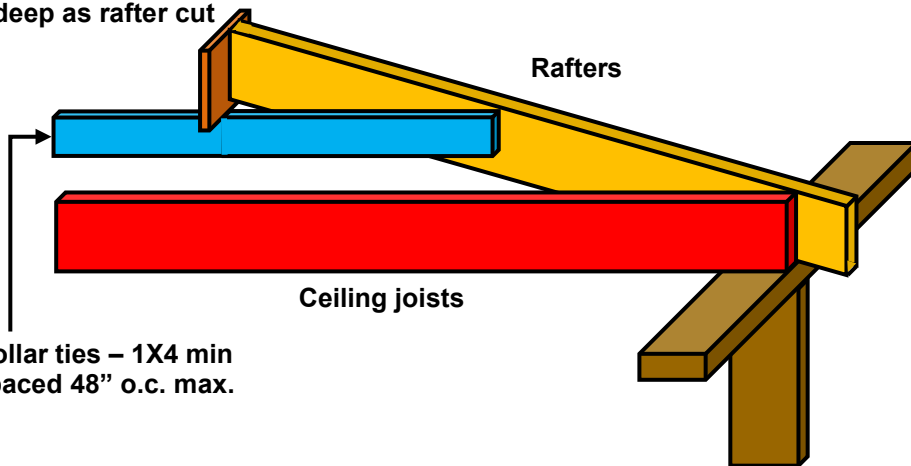
Wood framing supporting gypsum board must be 2"X2" or larger



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

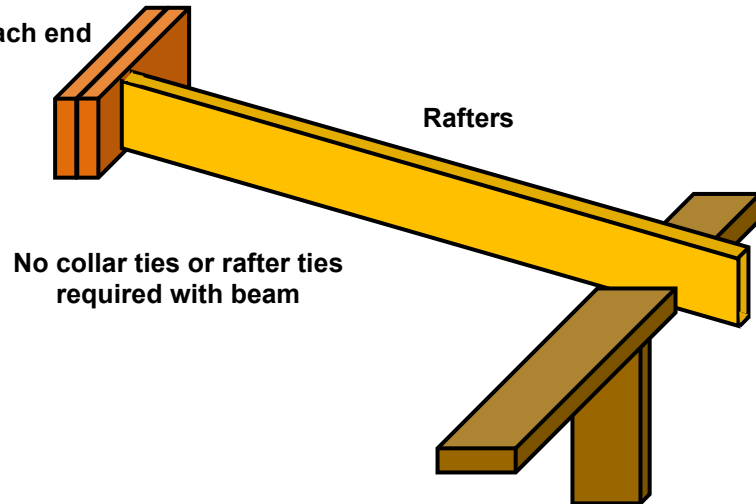
## ROOF FRAMING

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



## ROOF FRAMING WITH BEAM

Beam supported each end



## 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. Use of engineered lumber must be accompanied by engineering supporting their use.

## 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.

**FLOOR JOIST SPANS TABLE R502.3.1(2) - TABLE BASED ON #2 GRADE LUMBER**

JOIST SPACING	SPECIES	DEAD LOAD = 10 PSF				DEAD LOAD = 20 PSF			
		2X6	2X8	2X10	2X12	2X6	2X8	2X10	2X12
12	HEM-FIR	10-0	13-2	16010	20-4	10-0	13-1	16-0	18-6
	S. PINE	10-9	14-2	18-0	21-9	10-9	14-2	16-11	19-10
	SPF	10-3	13-6	17-3	20-7	10-3	13-3	16-3	18-10
16	HEM-FIR	9-1	12-0	15-2	17-7	8-11	11-4	13-10	16-1
	S. PINE	9-9	12-10	16-1	18-10	9-6	12-4	14-8	17-2
	SPF	9-4	12-3	15-5	17-10	9-1	11-6	14-1	16-3
19.2	HEM-FIR	8-7	11-3	13-10	16-1	8-2	10-4	12-8	14-8
	S. PINE	9-2	12-1	14-8	17-2	8-8	11-3	13-5	15-8
	SPF	8-9	11-6	14-1	16-3	8-3	10-6	12-10	14-10
24	HEM-FIR	7-11	10-2	12-5	14-4	7-4	9-3	11-4	13-1
	S. PINE	8-6	11-0	13-1	15-5	7-9	10-0	12-0	14-0
	SPF	8-1	10-3	12-7	14-7	7-5	9-5	11-6	13-4

**GIRDER AND HEADER SPANS FOR INTERIOR BEARING WALLS (IN FT/IN)**

**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)

**SIZE, HEIGHT AND SPACING OF WOOD STUDS TABLE R602.3(5)**

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

**RAFTER AND 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	
		CEIL. JOIST	RAFTER	CEIL. JOIST	RAFTER	CEIL. JOIST	RAFTER	CEIL. JOIST	RAFTER
12" o.c.	Hem Fir	11-7	7-5	18-2	11-1	24-0	14-0	26+	17-2
	SPF	11-10	7-8	18-8	11-3	24-7	14-3	26+	17-5
16" o.c.	Hem Fir	10-6	6-7	16-6	9-7	21-9	12-2	26+	14-10
	SPF	10-9	6-8	16-11	9-9	22-4	12-4	26+	15-1
24" o.c.	Hem Fir	9-2	5-4	14-5	7-10	18-6	9-11	22-7	12-1
	SPF	9-5	5-5	14-9	7-11	18-9	10-1	22-11	12-4



**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	2-8	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, and two clear span floors	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
	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

	2-2×12	5-5	3	5-1	3	4-8	3	4-5	3
	3-2×8	4-9	2	4-5	2	4-1	2	3-11	2
	3-2×10	5-10	2	5-5	2	5-0	2	4-9	3
	3-2×12	6-9	2	6-4	3	5-10	3	5-7	3
	4-2×8	5-6	2	5-2	2	4-9	2	4-6	3
	4-2×10	6-9	2	6-4	2	5-10	2	5-6	2
	4-2×12	7-9	2	7-3	2	6-9	2	6-5	3