

# BASIC WOOD FRAMING



## BUILDING DEPARTMENT

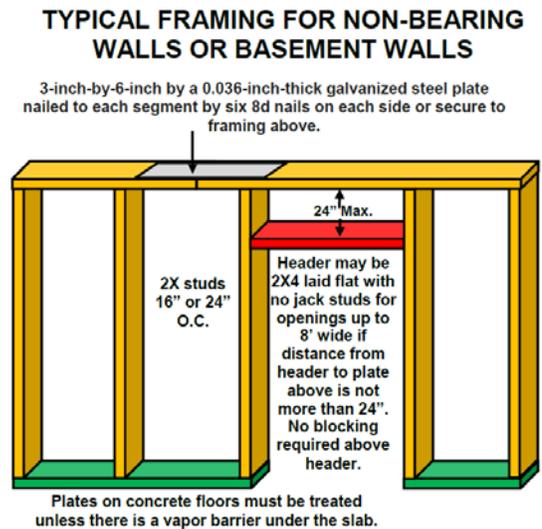
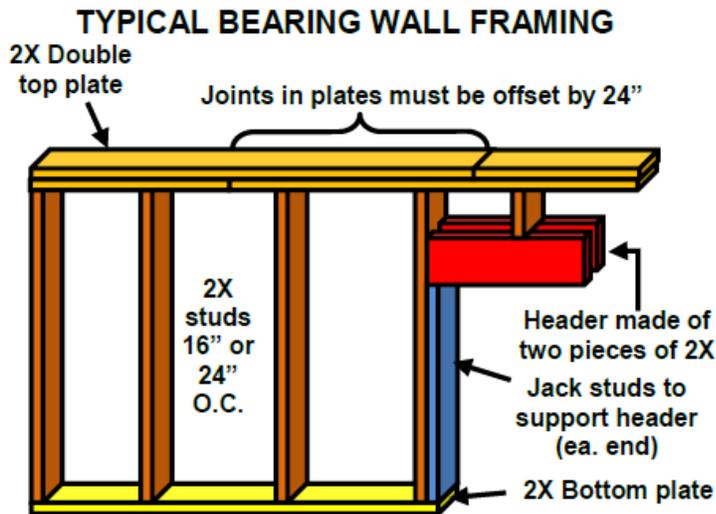
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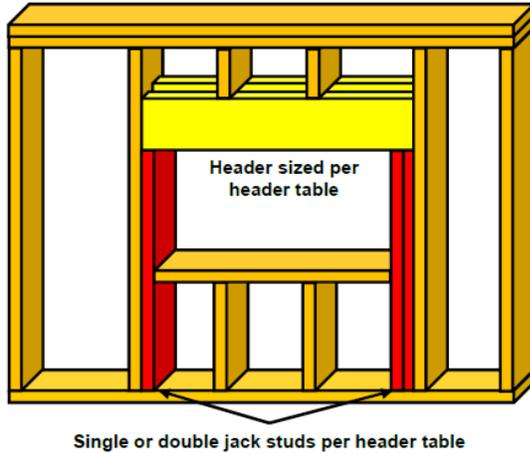
This handout is intended only as a guide and is based in part on the 2015 Minnesota Residential Code, Big Lake City ordinances, and good building practice. While every attempt has been made to insure the correctness of this handout, no guarantees are made to its accuracy or completeness. Responsibility 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.



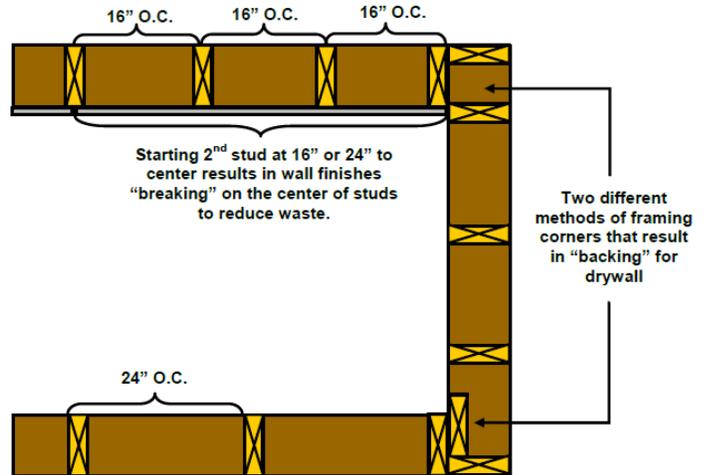
SIZE, HEIGHT AND SPACING OF WOOD STUDS  
TABLE R602.3(5)

STUD SIZE	BEARING WALLS					NONBEARING WALLS	
	MAXIMUM HEIGHT	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

### FRAMING OPENINGS IN BEARING WALLS

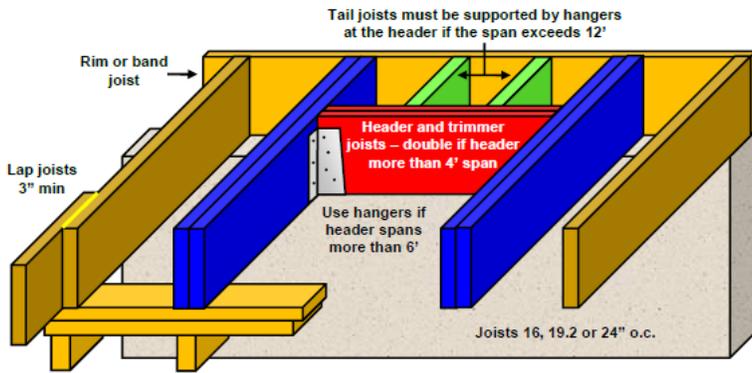


### LAYING OUT WALLS – 16” AND 24” ON CENTER

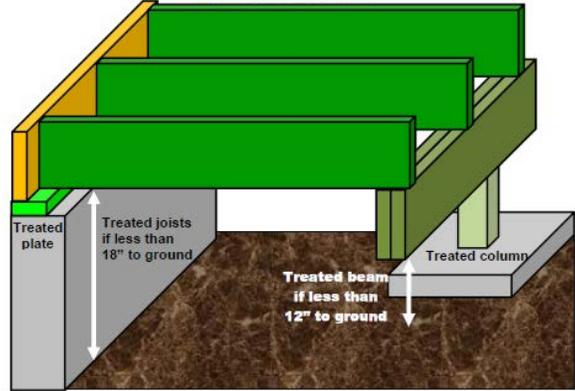


GIRDER AND HEADER SPANS FOR INTERIOR BEARING WALLS (IN FT/IN)					
TABLE R502.5(2) (#2Hem Fir or SPF)					
HEADERS AND GIRDERS SUPPORTING	SIZE	BUILDING WIDTH (FT)			
		20	24	28	32
		SPAN (JACK STUDS)	SPAN (JACK STUDS)	SPAN (JACK STUDS)	SPAN (JACK STUDS)
One floor only	2-2X4	3-1 (1)	2-11 (1)	2-8 (1)	2-7 (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)

### TYPICAL FLOOR FRAMING



### CRAWL SPACES



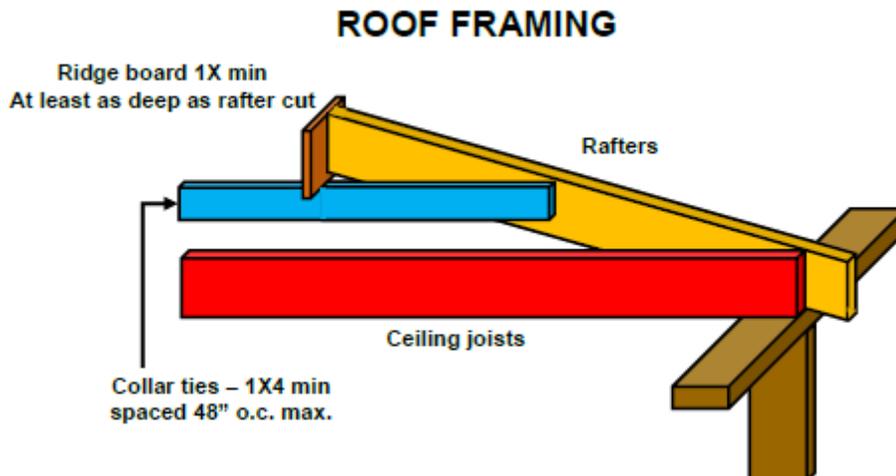
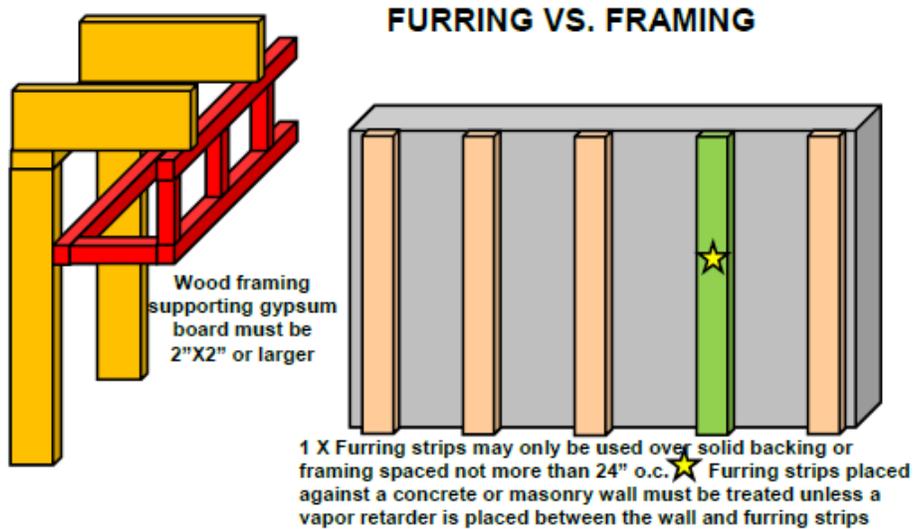
**FLOOR JOIST SPANS #2 SPF**  
TABLE R502.3.1(2)

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	2-8	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
	2-2x12	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



**RAFTER SPANS FOR #2 HEM FIR AND SPF**

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

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

**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.