

IBC Span Tables

by John R. Henry, P.E.
ICC Principal Staff Engineer

Napa Solano Chapter
June 2, 2007

IBC Span Tables

- **2308.8 Floor joists.**
- Spans for floor joists shall be in accordance with Table 2308.8(1) or 2308.8(2).
- For other grades and or species, refer to the *AF&PA Span Tables for Joists and Rafters*.

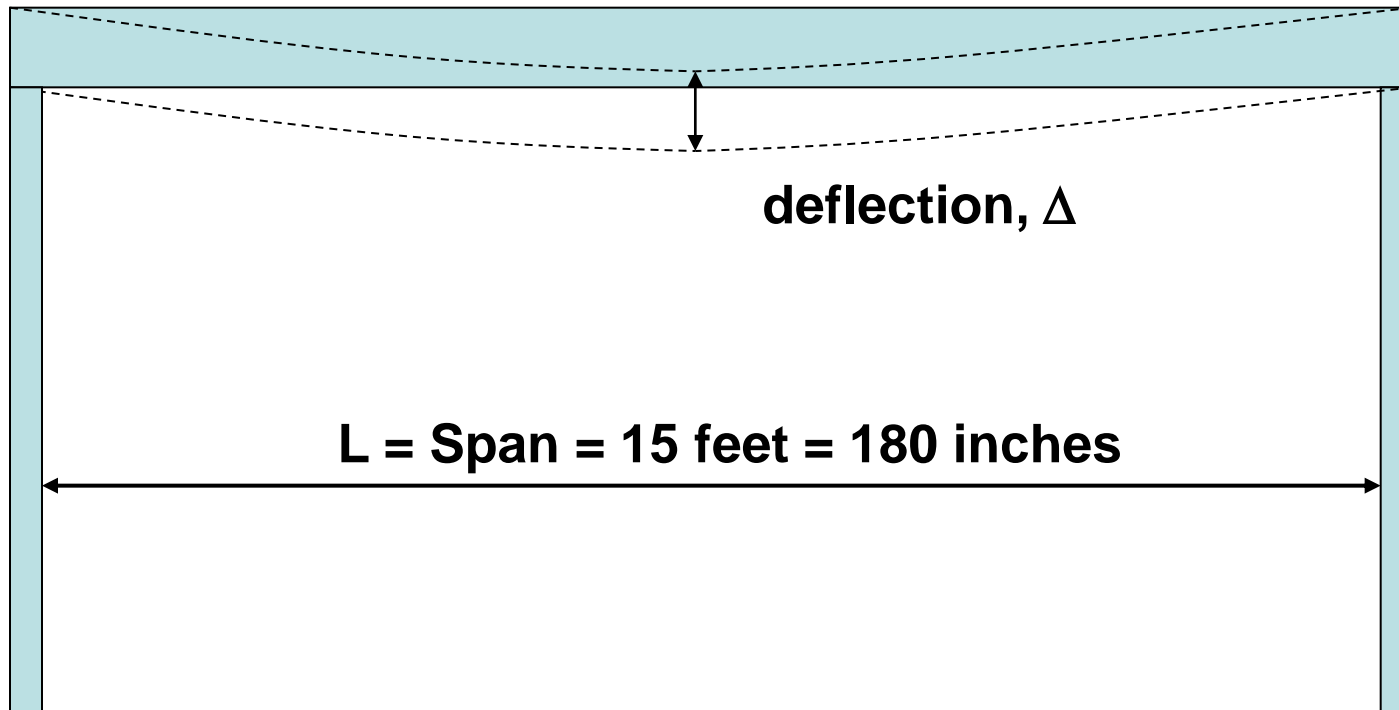
- **2308.10.2 Ceiling joist spans.**
- Allowable spans for ceiling joists shall be in accordance with Table 2308.10.2(1) or 2308.10.2(2).
- For other grades and species, refer to the *AF&PA Span Tables for Joists and Rafters*.

- **2308.10.3 Rafter spans.**
- Allowable spans for rafters shall be in accordance with Table 2308.10.3(1), 2308.10.3(2), 2308.10.3(3), 2308.10.3(4), 2308.10.3(5) or 2308.10.3(6).
- For other grades and species, refer to the *AF&PA Span Tables for Joists and Rafters*.

IBC Span Tables

- **TABLE 2308.8(1)**
- **FLOOR JOIST SPANS FOR COMMON LUMBER SPECIES**
- **(Residential *Sleeping* Areas, Live Load = 30 psf, L/360)**
- **Note: The IBC allows 30 psf floor live load for sleeping areas (bedrooms) and habitable attics.**

IBC Span Tables



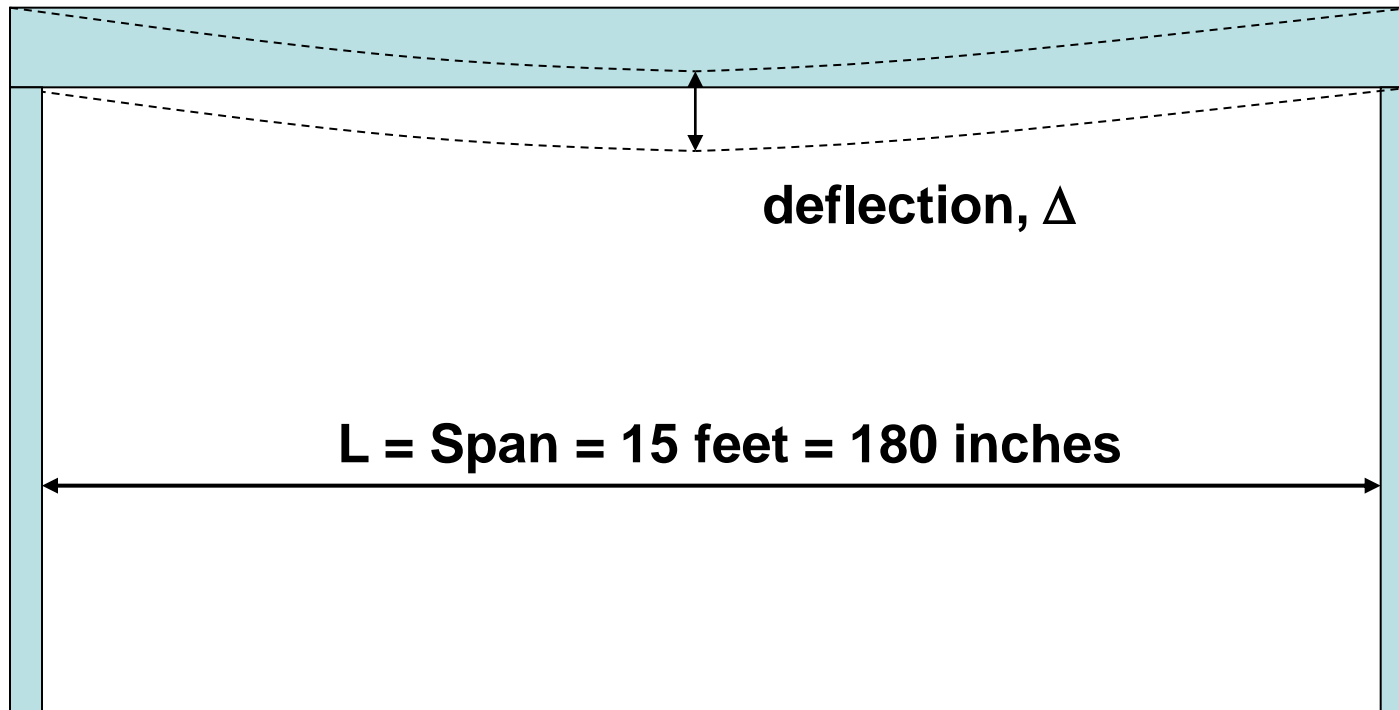
Span is “clear span” for all span tables

Max deflection, $\Delta = L/360 = 180/360 = 0.5$ inches

IBC Span Tables

- **Deflection limits:**
 - L/360 for floor joists
 - L/240 for ceiling joists
 - L/180 for rafters NOT supporting GB ceiling
 - L/240 for rafters supporting GB ceiling

IBC Span Tables



$$\Delta = L/360 = 180/360 = 0.50 \text{ inches}$$

$$\Delta = L/240 = 180/240 = 0.75 \text{ inches}$$

$$\Delta = L/180 = 180/180 = 1.00 \text{ inches}$$

IBC Span Tables

TABLE 2308.8(1)
FLOOR JOIST SPANS FOR COMMON LUMBER SPECIES
(Residential Sleeping Areas, Live Load = 30 psf, L/Δ = 360)

| JOIST SPACING (Inches) | SPECIES AND GRADE | | DEAD LOAD = 10 psf | | | | DEAD LOAD = 20 psf | | | |
|------------------------|-------------------|-------------|---------------------------|-------------|-------------|-------------|--------------------|-------------|-------------|-------|
| | | | 2x6 | 2x8 | 2x10 | 2x12 | 2x6 | 2x8 | 2x10 | 2x12 |
| | | | Maximum floor joist spans | | | | | | | |
| | | (ft. - in.) | (ft. - in.) | (ft. - in.) | (ft. - in.) | (ft. - in.) | (ft. - in.) | (ft. - in.) | (ft. - in.) | |
| 12 | Douglas Fir-Larch | SS | 12-6 | 16-6 | 21-0 | 25-7 | 12-6 | 16-6 | 21-0 | 25-7 |
| | Douglas Fir-Larch | #1 | 12-0 | 15-10 | 20-3 | 24-8 | 12-0 | 15-7 | 19-0 | 22-0 |
| | Douglas Fir-Larch | #2 | 11-10 | 15-7 | 19-10 | 23-0 | 11-6 | 14-7 | 17-9 | 20-7 |
| | Douglas Fir-Larch | #3 | 9-8 | 12-4 | 15-0 | 17-5 | 8-8 | 11-0 | 13-5 | 15-7 |
| | Hem-Fir | SS | 11-10 | 15-7 | 19-10 | 24-2 | 11-10 | 15-7 | 19-10 | 24-2 |
| | Hem-Fir | #1 | 11-7 | 15-3 | 19-5 | 23-7 | 11-7 | 15-2 | 18-6 | 21-6 |
| | Hem-Fir | #2 | 11-0 | 14-6 | 18-6 | 22-6 | 11-0 | 14-4 | 17-6 | 20-4 |
| | Hem-Fir | #3 | 9-8 | 12-4 | 15-0 | 17-5 | 8-8 | 11-0 | 13-5 | 15-7 |
| | Southern Pine | SS | 12-3 | 16-2 | 20-8 | 25-1 | 12-3 | 16-2 | 20-8 | 25-1 |
| | Southern Pine | #1 | 12-0 | 15-10 | 20-3 | 24-8 | 12-0 | 15-10 | 20-3 | 24-8 |
| | Southern Pine | #2 | 11-10 | 15-7 | 19-10 | 24-2 | 11-10 | 15-7 | 18-7 | 21-9 |
| | Southern Pine | #3 | 10-5 | 13-3 | 15-8 | 18-8 | 9-4 | 11-11 | 14-0 | 16-8 |
| | Spruce-Pine-Fir | SS | 11-7 | 15-3 | 19-5 | 23-7 | 11-7 | 15-3 | 19-5 | 23-7 |
| | Spruce-Pine-Fir | #1 | 11-3 | 14-11 | 19-0 | 23-0 | 11-3 | 14-7 | 17-9 | 20-7 |
| | Spruce-Pine-Fir | #2 | 11-3 | 14-11 | 19-0 | 23-0 | 11-3 | 14-7 | 17-9 | 20-7 |
| | Spruce-Pine-Fir | #3 | 9-8 | 12-4 | 15-0 | 17-5 | 8-8 | 11-0 | 13-5 | 15-7 |
| 16 | Douglas Fir-Larch | SS | 11-4 | 15-0 | 19-1 | 23-3 | 11-4 | 15-0 | 19-1 | 23-0 |
| | Douglas Fir-Larch | #1 | 10-11 | 14-5 | 18-5 | 21-4 | 10-8 | 13-6 | 16-5 | 19-1 |
| | Douglas Fir-Larch | #2 | 10-9 | 14-1 | 17-2 | 19-11 | 9-11 | 12-7 | 15-5 | 17-10 |
| | Douglas Fir-Larch | #3 | 8-5 | 10-8 | 13-0 | 15-1 | 7-6 | 9-6 | 11-8 | 13-6 |
| | Hem-Fir | SS | 10-9 | 14-2 | 18-0 | 21-11 | 10-9 | 14-2 | 18-0 | 21-11 |
| | Hem-Fir | #1 | 10-6 | 13-10 | 17-8 | 20-9 | 10-4 | 13-1 | 16-0 | 18-7 |
| | Hem-Fir | #2 | 10-0 | 13-2 | 16-10 | 19-8 | 9-10 | 12-5 | 15-2 | 17-7 |
| | Hem-Fir | #3 | 8-5 | 10-8 | 13-0 | 15-1 | 7-6 | 9-6 | 11-8 | 13-6 |
| | Southern Pine | SS | 11-2 | 14-8 | 18-9 | 22-10 | 11-2 | 14-8 | 18-9 | 22-10 |
| | Southern Pine | #1 | 10-11 | 14-5 | 18-5 | 22-5 | 10-11 | 14-5 | 17-11 | 21-4 |
| | Southern Pine | #2 | 10-9 | 14-2 | 18-0 | 21-1 | 10-5 | 13-6 | 16-1 | 18-10 |
| | Southern Pine | #3 | 9-0 | 11-6 | 13-7 | 16-2 | 8-1 | 10-3 | 12-2 | 14-6 |
| | Spruce-Pine-Fir | SS | 10-6 | 13-10 | 17-8 | 21-6 | 10-6 | 13-10 | 17-8 | 21-4 |
| | Spruce-Pine-Fir | #1 | 10-3 | 13-6 | 17-2 | 19-11 | 9-11 | 12-7 | 15-5 | 17-10 |
| | Spruce-Pine-Fir | #2 | 10-3 | 13-6 | 17-2 | 19-11 | 9-11 | 12-7 | 15-5 | 17-10 |
| | Spruce-Pine-Fir | #3 | 8-5 | 10-8 | 13-0 | 15-1 | 7-6 | 9-6 | 11-8 | 13-6 |

IBC Span Tables

- **TABLE 2308.8(2)**
- **FLOOR JOIST SPANS FOR COMMON LUMBER SPECIES**
- **(Residential *Living* Areas, Live Load = 40 psf, L/360)**

IBC Span Tables

TABLE 2308.8(2)
FLOOR JOIST SPANS FOR COMMON LUMBER SPECIES
(Residential Living Areas, Live Load = 40 psf, L/Δ = 360)

| JOIST SPACING (Inches) | SPECIES AND GRADE | | DEAD LOAD = 10 psf | | | | DEAD LOAD = 20 psf | | | |
|------------------------|-------------------|-------------|---------------------------|-------------|-------------|-------------|--------------------|-------------|-------------|-------|
| | | | 2x6 | 2x8 | 2x10 | 2x12 | 2x6 | 2x8 | 2x10 | 2x12 |
| | | | Maximum floor joist spans | | | | | | | |
| | | (ft. - In.) | (ft. - In.) | (ft. - In.) | (ft. - In.) | (ft. - In.) | (ft. - In.) | (ft. - In.) | (ft. - In.) | |
| 12 | Douglas Fir-Larch | SS | 11-4 | 15-0 | 19-1 | 23-3 | 11-4 | 15-0 | 19-1 | 23-3 |
| | Douglas Fir-Larch | #1 | 10-11 | 14-5 | 18-5 | 22-0 | 10-11 | 14-2 | 17-4 | 20-1 |
| | Douglas Fir-Larch | #2 | 10-9 | 14-2 | 17-9 | 20-7 | 10-6 | 13-3 | 16-3 | 18-10 |
| | Douglas Fir-Larch | #3 | 8-8 | 11-0 | 13-5 | 15-7 | 7-11 | 10-0 | 12-3 | 14-3 |
| | Hem-Fir | SS | 10-9 | 14-2 | 18-0 | 21-11 | 10-9 | 14-2 | 18-0 | 21-11 |
| | Hem-Fir | #1 | 10-6 | 13-10 | 17-8 | 21-6 | 10-6 | 13-10 | 16-11 | 19-7 |
| | Hem-Fir | #2 | 10-0 | 13-2 | 16-10 | 20-4 | 10-0 | 13-1 | 16-0 | 18-6 |
| | Hem-Fir | #3 | 8-8 | 11-0 | 13-5 | 15-7 | 7-11 | 10-0 | 12-3 | 14-3 |
| | Southern Pine | SS | 11-2 | 14-8 | 18-9 | 22-10 | 11-2 | 14-8 | 18-9 | 22-10 |
| | Southern Pine | #1 | 10-11 | 14-5 | 18-5 | 22-5 | 10-11 | 14-5 | 18-5 | 22-5 |
| | Southern Pine | #2 | 10-9 | 14-2 | 18-0 | 21-9 | 10-9 | 14-2 | 16-11 | 19-10 |
| | Southern Pine | #3 | 9-4 | 11-11 | 14-0 | 16-8 | 8-6 | 10-10 | 12-10 | 15-3 |
| | Spruce-Pine-Fir | SS | 10-6 | 13-10 | 17-8 | 21-6 | 10-6 | 13-10 | 17-8 | 21-6 |
| | Spruce-Pine-Fir | #1 | 10-3 | 13-6 | 17-3 | 20-7 | 10-3 | 13-3 | 16-3 | 18-10 |
| | Spruce-Pine-Fir | #2 | 10-3 | 13-6 | 17-3 | 20-7 | 10-3 | 13-3 | 16-3 | 18-10 |
| | Spruce-Pine-Fir | #3 | 8-8 | 11-0 | 13-5 | 15-7 | 7-11 | 10-0 | 12-3 | 14-3 |
| 16 | Douglas Fir-Larch | SS | 10-4 | 13-7 | 17-4 | 21-1 | 10-4 | 13-7 | 17-4 | 21-0 |
| | Douglas Fir-Larch | #1 | 9-11 | 13-1 | 16-5 | 19-1 | 9-8 | 12-4 | 15-0 | 17-5 |
| | Douglas Fir-Larch | #2 | 9-9 | 12-7 | 15-5 | 17-10 | 9-1 | 11-6 | 14-1 | 16-3 |
| | Douglas Fir-Larch | #3 | 7-6 | 9-6 | 11-8 | 13-6 | 6-10 | 8-8 | 10-7 | 12-4 |
| | Hem-Fir | SS | 9-9 | 12-10 | 16-5 | 19-11 | 9-9 | 12-10 | 16-5 | 19-11 |
| | Hem-Fir | #1 | 9-6 | 12-7 | 16-0 | 18-7 | 9-6 | 12-0 | 14-8 | 17-0 |
| | Hem-Fir | #2 | 9-1 | 12-0 | 15-2 | 17-7 | 8-11 | 11-4 | 13-10 | 16-1 |
| | Hem-Fir | #3 | 7-6 | 9-6 | 11-8 | 13-6 | 6-10 | 8-8 | 10-7 | 12-4 |
| | Southern Pine | SS | 10-2 | 13-4 | 17-0 | 20-9 | 10-2 | 13-4 | 17-0 | 20-9 |
| | Southern Pine | #1 | 9-11 | 13-1 | 16-9 | 20-4 | 9-11 | 13-1 | 16-4 | 19-6 |
| | Southern Pine | #2 | 9-9 | 12-10 | 16-1 | 18-10 | 9-6 | 12-4 | 14-8 | 17-2 |
| | Southern Pine | #3 | 8-1 | 10-3 | 12-2 | 14-6 | 7-4 | 9-5 | 11-1 | 13-2 |
| | Spruce-Pine-Fir | SS | 9-6 | 12-7 | 16-0 | 19-6 | 9-6 | 12-7 | 16-0 | 19-6 |
| | Spruce-Pine-Fir | #1 | 9-4 | 12-3 | 15-5 | 17-10 | 9-1 | 11-6 | 14-1 | 16-3 |
| | Spruce-Pine-Fir | #2 | 9-4 | 12-3 | 15-5 | 17-10 | 9-1 | 11-6 | 14-1 | 16-3 |
| | Spruce-Pine-Fir | #3 | 7-6 | 9-6 | 11-8 | 13-6 | 6-10 | 8-8 | 10-7 | 12-4 |

IBC Span Tables

- **HEADER AND GIRDER SPANS FOR EXTERIOR BEARING WALLS**
- **(Maximum Spans for Douglas Fir-Larch, Hem-Fir, Southern Pine and Spruce-Pine-Fir and Required Number of Jack Studs)**

IBC Span Tables

TABLE 2308.9.5
 HEADER AND GIRDER SPANS^a FOR EXTERIOR BEARING WALLS
 (Maximum Spans for Douglas Fir-Larch, Hem-Fir, Southern Pine and Spruce-Pine-Fir^b and Required Number of Jack Studs)

| HEADERS SUPPORTING | SIZE | GROUND SNOW LOAD (psf) ^c | | | | | | | | | | | |
|--|-----------------|-------------------------------------|-----------------|------|-----------------|------|-----------------|------|-----------------|------|-----------------|------|-----------------|
| | | 30 | | | | | | 50 | | | | | |
| | | Building width ^e (feet) | | | | | | | | | | | |
| | | 20 | | 28 | | 36 | | 20 | | 28 | | 36 | |
| Span | NJ ^d | Span | NJ ^d | Span | NJ ^d | Span | NJ ^d | Span | NJ ^d | Span | NJ ^d | Span | NJ ^d |
| Roof & Ceiling | 2-2 x 4 | 3-6 | 1 | 3-2 | 1 | 2-10 | 1 | 3-2 | 1 | 2-9 | 1 | 2-6 | 1 |
| | 2-2 x 6 | 5-5 | 1 | 4-8 | 1 | 4-2 | 1 | 4-8 | 1 | 4-1 | 1 | 3-8 | 2 |
| | 2-2 x 8 | 6-10 | 1 | 5-11 | 2 | 5-4 | 2 | 5-11 | 2 | 5-2 | 2 | 4-7 | 2 |
| | 2-2 x 10 | 8-5 | 2 | 7-3 | 2 | 6-6 | 2 | 7-3 | 2 | 6-3 | 2 | 5-7 | 2 |
| | 2-2 x 12 | 9-9 | 2 | 8-5 | 2 | 7-6 | 2 | 8-5 | 2 | 7-3 | 2 | 6-6 | 2 |
| | 3-2 x 8 | 8-4 | 1 | 7-5 | 1 | 6-8 | 1 | 7-5 | 1 | 6-5 | 2 | 5-9 | 2 |
| | 3-2 x 10 | 10-6 | 1 | 9-1 | 2 | 8-2 | 2 | 9-1 | 2 | 7-10 | 2 | 7-0 | 2 |
| | 3-2 x 12 | 12-2 | 2 | 10-7 | 2 | 9-5 | 2 | 10-7 | 2 | 9-2 | 2 | 8-2 | 2 |
| | 4-2 x 8 | 9-2 | 1 | 8-4 | 1 | 7-8 | 1 | 8-4 | 1 | 7-5 | 1 | 6-8 | 1 |
| | 4-2 x 10 | 11-8 | 1 | 10-6 | 1 | 9-5 | 2 | 10-6 | 1 | 9-1 | 2 | 8-2 | 2 |
| 4-2 x 12 | 14-1 | 1 | 12-2 | 2 | 10-11 | 2 | 12-2 | 2 | 10-7 | 2 | 9-5 | 2 | |
| Roof, Ceiling & 1 Center-Bearing Floor | 2-2 x 4 | 3-1 | 1 | 2-9 | 1 | 2-5 | 1 | 2-9 | 1 | 2-5 | 1 | 2-2 | 1 |
| | 2-2 x 6 | 4-6 | 1 | 4-0 | 1 | 3-7 | 2 | 4-1 | 1 | 3-7 | 2 | 3-3 | 2 |
| | 2-2 x 8 | 5-9 | 2 | 5-0 | 2 | 4-6 | 2 | 5-2 | 2 | 4-6 | 2 | 4-1 | 2 |
| | 2-2 x 10 | 7-0 | 2 | 6-2 | 2 | 5-6 | 2 | 6-4 | 2 | 5-6 | 2 | 5-0 | 2 |
| | 2-2 x 12 | 8-1 | 2 | 7-1 | 2 | 6-5 | 2 | 7-4 | 2 | 6-5 | 2 | 5-9 | 3 |
| | 3-2 x 8 | 7-2 | 1 | 6-3 | 2 | 5-8 | 2 | 6-5 | 2 | 5-8 | 2 | 5-1 | 2 |
| | 3-2 x 10 | 8-9 | 2 | 7-8 | 2 | 6-11 | 2 | 7-11 | 2 | 6-11 | 2 | 6-3 | 2 |
| | 3-2 x 12 | 10-2 | 2 | 8-11 | 2 | 8-0 | 2 | 9-2 | 2 | 8-0 | 2 | 7-3 | 2 |
| | 4-2 x 8 | 8-1 | 1 | 7-3 | 1 | 6-7 | 1 | 7-5 | 1 | 6-6 | 1 | 5-11 | 2 |
| | 4-2 x 10 | 10-1 | 1 | 8-10 | 2 | 8-0 | 2 | 9-1 | 2 | 8-0 | 2 | 7-2 | 2 |
| 4-2 x 12 | 11-9 | 2 | 10-3 | 2 | 9-3 | 2 | 10-7 | 2 | 9-3 | 2 | 8-4 | 2 | |
| Roof, Ceiling & 1 Clear Span Floor | 2-2 x 4 | 2-8 | 1 | 2-4 | 1 | 2-1 | 1 | 2-7 | 1 | 2-3 | 1 | 2-0 | 1 |
| | 2-2 x 6 | 3-11 | 1 | 3-5 | 2 | 3-0 | 2 | 3-10 | 2 | 3-4 | 2 | 3-0 | 2 |
| | 2-2 x 8 | 5-0 | 2 | 4-4 | 2 | 3-10 | 2 | 4-10 | 2 | 4-2 | 2 | 3-9 | 2 |
| | 2-2 x 10 | 6-1 | 2 | 5-3 | 2 | 4-8 | 2 | 5-11 | 2 | 5-1 | 2 | 4-7 | 3 |
| | 2-2 x 12 | 7-1 | 2 | 6-1 | 3 | 5-5 | 3 | 6-10 | 2 | 5-11 | 3 | 5-4 | 3 |
| | 3-2 x 8 | 6-3 | 2 | 5-5 | 2 | 4-10 | 2 | 6-1 | 2 | 5-3 | 2 | 4-8 | 2 |
| | 3-2 x 10 | 7-7 | 2 | 6-7 | 2 | 5-11 | 2 | 7-5 | 2 | 6-5 | 2 | 5-9 | 2 |
| | 3-2 x 12 | 8-10 | 2 | 7-8 | 2 | 6-10 | 2 | 8-7 | 2 | 7-5 | 2 | 6-8 | 2 |
| | 4-2 x 8 | 7-2 | 1 | 6-3 | 2 | 5-7 | 2 | 7-0 | 1 | 6-1 | 2 | 5-5 | 2 |
| | 4-2 x 10 | 8-9 | 2 | 7-7 | 2 | 6-10 | 2 | 8-7 | 2 | 7-5 | 2 | 6-7 | 2 |
| 4-2 x 12 | 10-2 | 2 | 8-10 | 2 | 7-11 | 2 | 9-11 | 2 | 8-7 | 2 | 7-8 | 2 | |

IBC Span Tables

TABLE 2308.9.5—continued
HEADER AND GIRDER SPANS^a FOR EXTERIOR BEARING WALLS
 (Maximum Spans for Douglas Fir-Larch, Hem-Fir, Southern Pine and Spruce-Pine-Fir^b and Required Number of Jack Studs)

| HEADERS SUPPORTING | SIZE | GROUND SNOW LOAD (psf) ^c | | | | | | | | | | | |
|---|-----------------|-------------------------------------|-----------------|------|-----------------|------|-----------------|------|-----------------|------|-----------------|------|-----------------|
| | | 30 | | | | | | 50 | | | | | |
| | | Building width ^d (feet) | | | | | | | | | | | |
| | | 20 | | 28 | | 36 | | 20 | | 28 | | 36 | |
| Span | NJ ^e | Span | NJ ^e | Span | NJ ^e | Span | NJ ^e | Span | NJ ^e | Span | NJ ^e | Span | NJ ^e |
| Roof, Ceiling & 2 Center-Bearing Floors | 2-2 x 4 | 2-7 | 1 | 2-3 | 1 | 2-0 | 1 | 2-6 | 1 | 2-2 | 1 | 1-11 | 1 |
| | 2-2 x 6 | 3-9 | 2 | 3-3 | 2 | 2-11 | 2 | 3-8 | 2 | 3-2 | 2 | 2-10 | 2 |
| | 2-2 x 8 | 4-9 | 2 | 4-2 | 2 | 3-9 | 2 | 4-7 | 2 | 4-0 | 2 | 3-8 | 2 |
| | 2-2 x 10 | 5-9 | 2 | 5-1 | 2 | 4-7 | 3 | 5-8 | 2 | 4-11 | 2 | 4-5 | 3 |
| | 2-2 x 12 | 6-8 | 2 | 5-10 | 3 | 5-3 | 3 | 6-6 | 2 | 5-9 | 3 | 5-2 | 3 |
| | 3-2 x 8 | 5-11 | 2 | 5-2 | 2 | 4-8 | 2 | 5-9 | 2 | 5-1 | 2 | 4-7 | 2 |
| | 3-2 x 10 | 7-3 | 2 | 6-4 | 2 | 5-8 | 2 | 7-1 | 2 | 6-2 | 2 | 5-7 | 2 |
| | 3-2 x 12 | 8-5 | 2 | 7-4 | 2 | 6-7 | 2 | 8-2 | 2 | 7-2 | 2 | 6-5 | 3 |
| | 4-2 x 8 | 6-10 | 1 | 6-0 | 2 | 5-5 | 2 | 6-8 | 1 | 5-10 | 2 | 5-3 | 2 |
| | 4-2 x 10 | 8-4 | 2 | 7-4 | 2 | 6-7 | 2 | 8-2 | 2 | 7-2 | 2 | 6-5 | 2 |
| 4-2 x 12 | 9-8 | 2 | 8-6 | 2 | 7-8 | 2 | 9-5 | 2 | 8-3 | 2 | 7-5 | 2 | |
| Roof, Ceiling & 2 Clear Span Floors | 2-2 x 4 | 2-1 | 1 | 1-8 | 1 | 1-6 | 2 | 2-0 | 1 | 1-8 | 1 | 1-5 | 2 |
| | 2-2 x 6 | 3-1 | 2 | 2-8 | 2 | 2-4 | 2 | 3-0 | 2 | 2-7 | 2 | 2-3 | 2 |
| | 2-2 x 8 | 3-10 | 2 | 3-4 | 2 | 3-0 | 3 | 3-10 | 2 | 3-4 | 2 | 2-11 | 3 |
| | 2-2 x 10 | 4-9 | 2 | 4-1 | 3 | 3-8 | 3 | 4-8 | 2 | 4-0 | 3 | 3-7 | 3 |
| | 2-2 x 12 | 5-6 | 3 | 4-9 | 3 | 4-3 | 3 | 5-5 | 3 | 4-8 | 3 | 4-2 | 3 |
| | 3-2 x 8 | 4-10 | 2 | 4-2 | 2 | 3-9 | 2 | 4-9 | 2 | 4-1 | 2 | 3-8 | 2 |
| | 3-2 x 10 | 5-11 | 2 | 5-1 | 2 | 4-7 | 3 | 5-10 | 2 | 5-0 | 2 | 4-6 | 3 |
| | 3-2 x 12 | 6-10 | 2 | 5-11 | 3 | 5-4 | 3 | 6-9 | 2 | 5-10 | 3 | 5-3 | 3 |
| | 4-2 x 8 | 5-7 | 2 | 4-10 | 2 | 4-4 | 2 | 5-6 | 2 | 4-9 | 2 | 4-3 | 2 |
| | 4-2 x 10 | 6-10 | 2 | 5-11 | 2 | 5-3 | 2 | 6-9 | 2 | 5-10 | 2 | 5-2 | 2 |
| 4-2 x 12 | 7-11 | 2 | 6-10 | 2 | 6-2 | 3 | 7-9 | 2 | 6-9 | 2 | 6-0 | 3 | |

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 47.8 N/m².

- Spans are given in feet and inches (ft-in).
- Tabulated values are for No. 2 grade lumber.
- Building width is measured perpendicular to the ridge. For widths between those shown, spans are permitted to be interpolated.
- NJ - Number of jack studs required to support each end. Where the number of required jack studs equals one, the header is permitted to be supported by an approved framing anchor attached to the full-height wall stud and to the header.
- Use 30 pounds per square foot ground snow load for cases in which ground snow load is less than 30 pounds per square foot and the roof live load is equal to or less than 20 pounds per square foot.

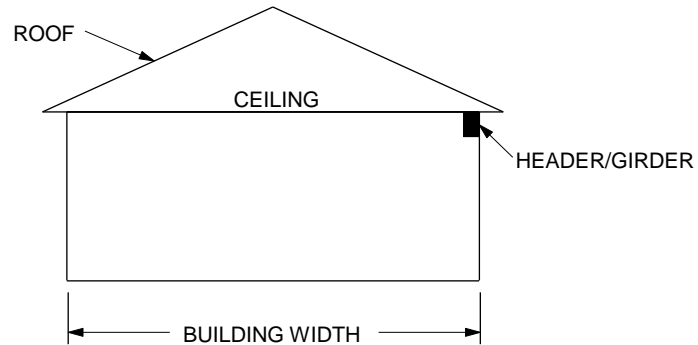
IBC Span Tables

- **TABLE 2308.9.5**
- **HEADER AND GIRDER SPANS FOR EXTERIOR BEARING WALLS**
- a. Spans are given in feet and inches (ft-in).
- b. Tabulated values are for No. 2 grade lumber.
- c. Building width is measured perpendicular to the ridge. For widths between those shown, spans are permitted to be interpolated.
- d. NJ - Number of jack studs required to support each end. Where the number of required jack studs equals one, the header is permitted to be supported by an approved framing anchor attached to the full-height wall stud and to the header.
- e. Use 30 pounds per square foot ground snow load for cases in which ground snow load is less than 30 pounds per square foot and the roof live load is equal to or less than 20 pounds per square foot.

IBC Span Tables

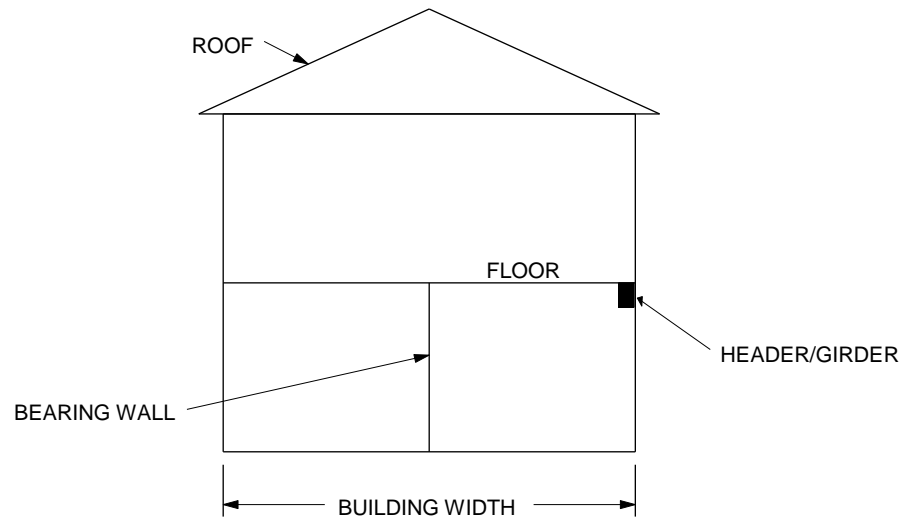
- **Note that this table does not include 4x and 6x members which are commonly used for headers and girders on the west coast**
- **It only has multiple 2x members**

IBC Span Tables



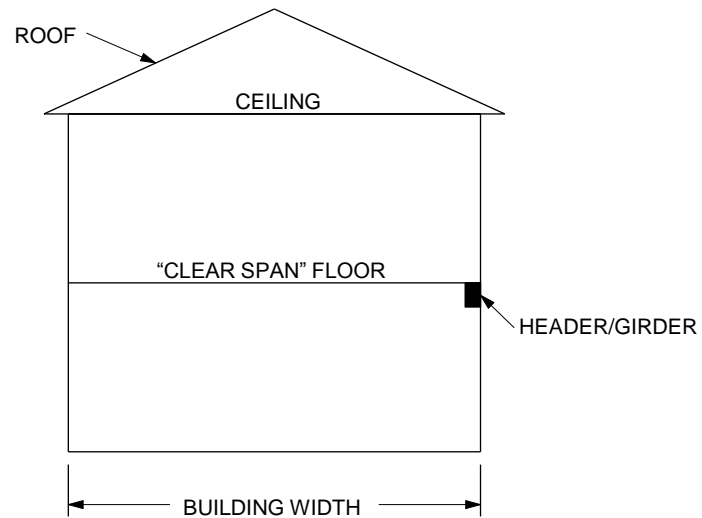
HEADER AND GIRDER SPANS
FOR EXTERIOR BEARING
WALLS—TABLE 2308.9.5—
"ROOF AND CEILING

IBC Span Tables



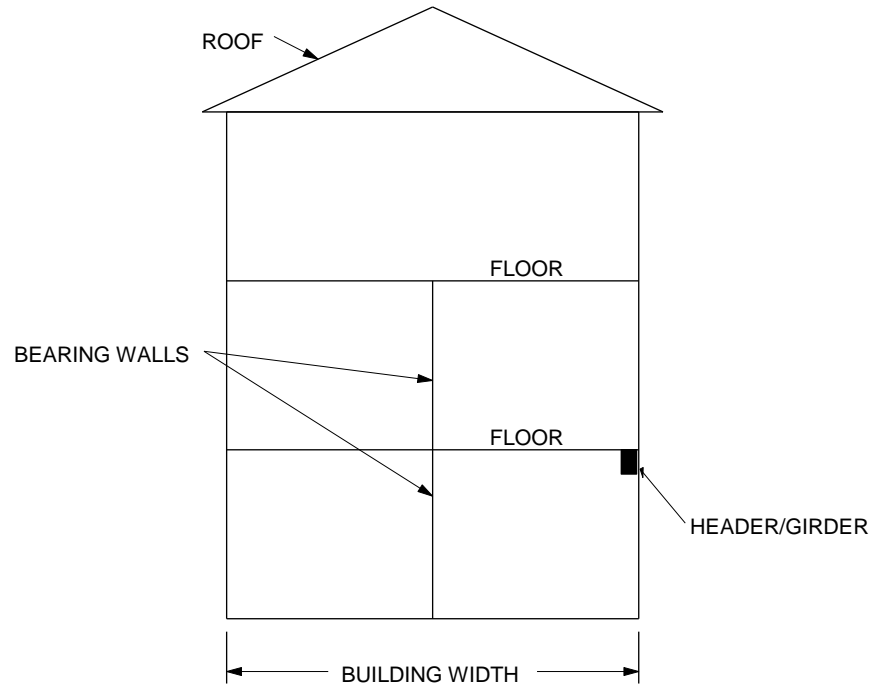
HEADER AND GIRDER SPANS
FOR EXTERIOR BEARING
WALLS—TABLE 2308.9.5—
“ROOF, CEILING AND ONE
CENTER BEARING FLOOR”

IBC Span Tables



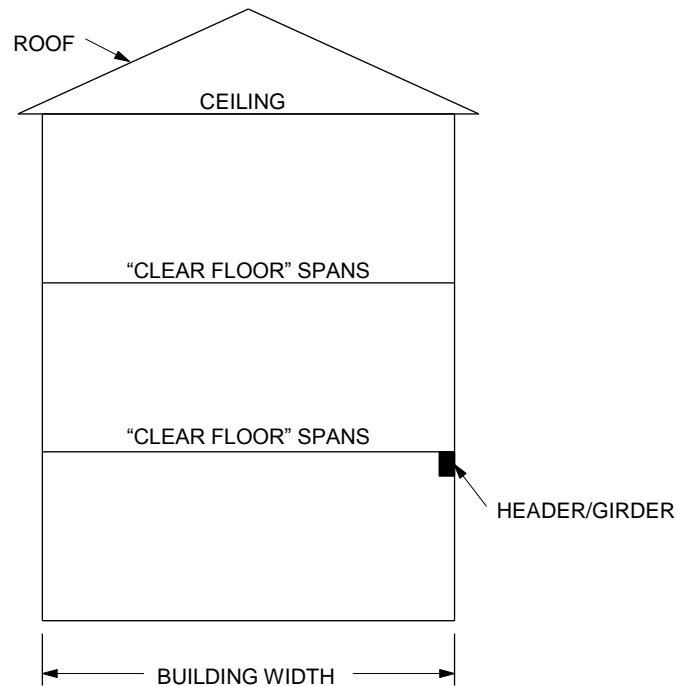
HEADER AND GIRDER
SPANS FOR EXTERIOR
BEARING WALLS—TABLE
2308.9.5—"ROOF, CEILING
AND ONE CLEAR SPAN
FLOOR"

IBC Span Tables



HEADER AND GIRDER
SPANS FOR EXTERIOR
BEARING WALLS—TABLE
2308.9.5—"ROOF, CEILING
AND TWO CENTER BEARING
FLOORS"

IBC Span Tables



HEADER AND GIRDER
SPANS FOR EXTERIOR
BEARING WALLS—TABLE
2308.9.5—“ROOF, CEILING
AND TWO CLEAR SPAN
FLOORS”

IBC Span Tables

- **TABLE 2308.9.6**
- **HEADER AND GIRDER SPANS FOR INTERIOR BEARING WALLS**
- **(Maximum Spans for Douglas Fir-Larch, Hem-Fir, Southern Pine and Spruce-Pine-Firb and Required Number of Jack Studs)**

IBC Span Tables

TABLE 2308.9.6
HEADER AND GIRDER SPANS^a FOR INTERIOR BEARING WALLS
 (Maximum Spans for Douglas Fir-Larch, Hem-Fir, Southern Pine and Spruce-Pine-Fir^b and Required Number of Jack Studs)

| HEADERS AND GIRDERS SUPPORTING | SIZE | BUILDING WIDTH ^c (feet) | | | | | |
|--------------------------------|----------|------------------------------------|-----------------|------|-----------------|------|-----------------|
| | | 20 | | 28 | | 36 | |
| | | Span | NJ ^d | Span | NJ ^d | Span | NJ ^d |
| One Floor Only | 2-2 × 4 | 3-1 | 1 | 2-8 | 1 | 2-5 | 1 |
| | 2-2 × 6 | 4-6 | 1 | 3-11 | 1 | 3-6 | 1 |
| | 2-2 × 8 | 5-9 | 1 | 5-0 | 2 | 4-5 | 2 |
| | 2-2 × 10 | 7-0 | 2 | 6-1 | 2 | 5-5 | 2 |
| | 2-2 × 12 | 8-1 | 2 | 7-0 | 2 | 6-3 | 2 |
| | 3-2 × 8 | 7-2 | 1 | 6-3 | 1 | 5-7 | 2 |
| | 3-2 × 10 | 8-9 | 1 | 7-7 | 2 | 6-9 | 2 |
| | 3-2 × 12 | 10-2 | 2 | 8-10 | 2 | 7-10 | 2 |
| | 4-2 × 8 | 9-0 | 1 | 7-8 | 1 | 6-9 | 1 |
| | 4-2 × 10 | 10-1 | 1 | 8-9 | 1 | 7-10 | 2 |
| | 4-2 × 12 | 11-9 | 1 | 10-2 | 2 | 9-1 | 2 |
| Two Floors | 2-2 × 4 | 2-2 | 1 | 1-10 | 1 | 1-7 | 1 |
| | 2-2 × 6 | 3-2 | 2 | 2-9 | 2 | 2-5 | 2 |
| | 2-2 × 8 | 4-1 | 2 | 3-6 | 2 | 3-2 | 2 |
| | 2-2 × 10 | 4-11 | 2 | 4-3 | 2 | 3-10 | 3 |
| | 2-2 × 12 | 5-9 | 2 | 5-0 | 3 | 4-5 | 3 |
| | 3-2 × 8 | 5-1 | 2 | 4-5 | 2 | 3-11 | 2 |
| | 3-2 × 10 | 6-2 | 2 | 5-4 | 2 | 4-10 | 2 |
| | 3-2 × 12 | 7-2 | 2 | 6-3 | 2 | 5-7 | 3 |
| | 4-2 × 8 | 6-1 | 1 | 5-3 | 2 | 4-8 | 2 |
| | 4-2 × 10 | 7-2 | 2 | 6-2 | 2 | 5-6 | 2 |
| | 4-2 × 12 | 8-4 | 2 | 7-2 | 2 | 6-5 | 2 |

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

a. Spans are given in feet and inches (ft-in).

b. Tabulated values are for No. 2 grade lumber.

c. Building width is measured perpendicular to the ridge. For widths between those shown, spans are permitted to be interpolated.

d. NJ - Number of jack studs required to support each end. Where the number of required jack studs equals one, the headers are permitted to be supported by an approved framing anchor attached to the full-height wall stud and to the header.

IBC Span Tables

- **TABLE 2308.9.6**
- **HEADER AND GIRDER SPANS FOR INTERIOR BEARING WALLS**
- a. Spans are given in feet and inches (ft-in).
- b. Tabulated values are for No. 2 grade lumber.
- c. Building width is measured perpendicular to the ridge. For widths between those shown, spans are permitted to be interpolated.
- d. NJ - Number of jack studs required to support each end. Where the number of required jack studs equals one, the headers are permitted to be supported by an approved framing anchor attached to the full-height wall stud and to the header.

IBC Span Tables

- **Note that this table does not include 4x and 6x members which are commonly used for headers and girders on the west coast**
- **It only has multiple 2x members**

IBC Span Tables

Possible substitutions:

for 2 – 2x6, 2 – 2x8, 2 – 2x10, 2 – 2x12 DF
No.2

use 1 – 4x6, 1 – 4x8, 1 – 4x10, 1 – 4x12
DF No.2

for 3 – 2x6, 3 – 2x8, 3 – 2x10, 3 – 2x12 DF
No.2

use 1 – 6x6, 1 – 6x8, 1 – 6x10, 1 – 6x12
DF No.1

IBC Span Tables

| Grider and header span tables - 4x and 6x equivalents to multiple 2x members | | | | | | | | | | | | | |
|--|----------|--------|--------|----------------------|----------------------|----------------------|----------|----------|----------|------|-------------|---------|---------|
| Member | Spec/Gr | b (in) | d (in) | A (in ²) | S (in ³) | I (in ⁴) | Fv (psi) | VR (lbs) | Fb (psi) | CF | MR (ft-lbs) | E (ksi) | EI |
| 2 - 2x6 | DF No. 2 | 3.00 | 5.50 | 16.50 | 15.13 | 41.59 | 180 | 1980 | 900 | 1.30 | 1134 | 1600 | 66550 |
| 1 - 4x6 | DF No. 2 | 3.50 | 5.50 | 19.25 | 17.65 | 48.53 | 180 | 2310 | 900 | 1.30 | 1323 | 1600 | 77642 |
| 3 - 2x6 | DF No. 2 | 4.50 | 5.50 | 24.75 | 22.69 | 62.39 | 180 | 2970 | 900 | 1.30 | 1702 | 1600 | 99825 |
| 1 - 6x6 | DF No. 1 | 5.50 | 5.50 | 30.25 | 27.73 | 76.26 | 170 | 3428 | 1350 | 1.00 | 3120 | 1600 | 122008 |
| 2 - 2x8 | DF No. 2 | 3.00 | 7.25 | 21.75 | 26.28 | 95.27 | 180 | 2610 | 900 | 1.20 | 1971 | 1600 | 152431 |
| 1 - 4x8 | DF No. 2 | 3.50 | 7.25 | 25.38 | 30.66 | 111.15 | 180 | 3045 | 900 | 1.30 | 2300 | 1600 | 177836 |
| 3 - 2x8 | DF No. 2 | 4.50 | 7.25 | 32.63 | 39.42 | 142.90 | 180 | 3915 | 900 | 1.20 | 2957 | 1600 | 228647 |
| 1 - 6x8 | DF No. 1 | 5.50 | 7.50 | 41.25 | 51.56 | 193.36 | 170 | 4675 | 1350 | 1.00 | 5801 | 1600 | 309375 |
| 2 - 2x10 | DF No. 2 | 3.00 | 9.25 | 27.75 | 42.78 | 197.86 | 180 | 3330 | 900 | 1.10 | 3209 | 1600 | 316581 |
| 1 - 4x10 | DF No. 2 | 3.50 | 9.25 | 32.38 | 49.91 | 230.84 | 180 | 3885 | 900 | 1.20 | 3743 | 1600 | 369345 |
| 3 - 2x10 | DF No. 2 | 4.50 | 9.25 | 41.63 | 64.17 | 296.79 | 180 | 4995 | 900 | 1.10 | 4813 | 1600 | 474872 |
| 1 - 6x10 | DF No. 1 | 5.50 | 9.50 | 52.25 | 82.73 | 392.96 | 170 | 5922 | 1350 | 1.00 | 9307 | 1600 | 628742 |
| 2 - 2x12 | DF No. 2 | 3.00 | 11.25 | 33.75 | 63.28 | 355.96 | 180 | 4050 | 900 | 1.00 | 4746 | 1600 | 569531 |
| 1 - 4x12 | DF No. 2 | 3.50 | 11.25 | 39.38 | 73.83 | 415.28 | 180 | 4725 | 900 | 1.10 | 5537 | 1600 | 664453 |
| 3 - 2x12 | DF No. 2 | 4.50 | 11.25 | 50.63 | 94.92 | 533.94 | 180 | 6075 | 900 | 1.00 | 7119 | 1600 | 854297 |
| 1 - 6x12 | DF No. 1 | 5.50 | 11.50 | 63.25 | 121.23 | 697.07 | 170 | 7168 | 1350 | 1.00 | 13638 | 1600 | 1115308 |

IBC Span Tables

- Resistance to bending stress...

$$M_R = SF'_b$$

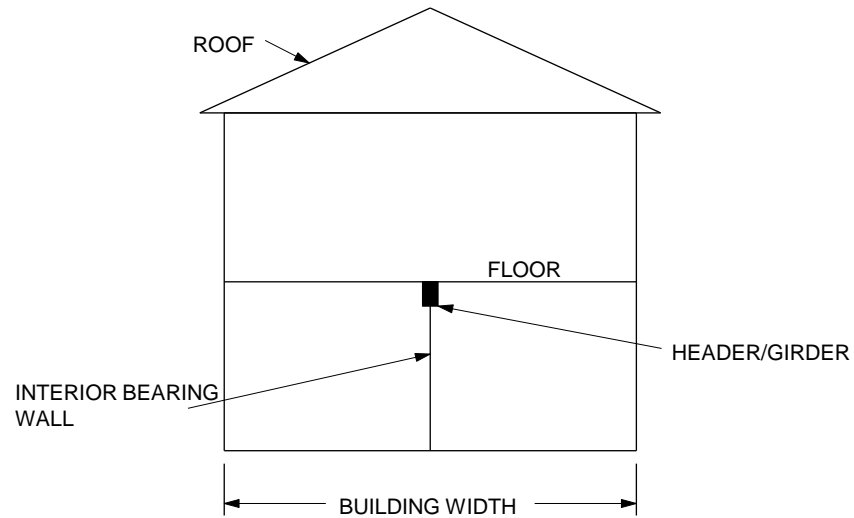
- Resistance to shear parallel to grain...

$$V_R = \frac{2AF'_V}{3}$$

- Resistance to deflection...

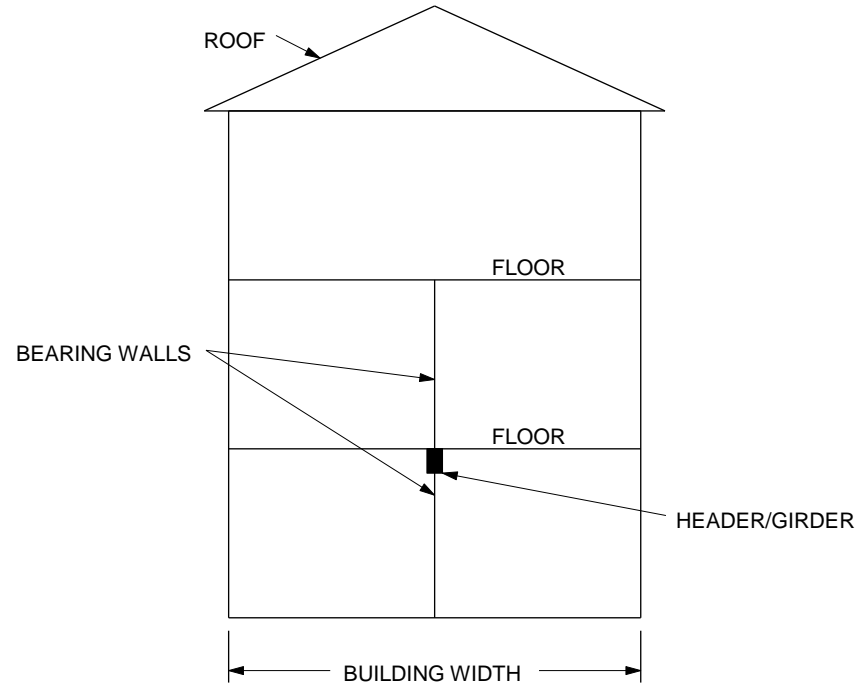
$$\text{"Stiffness"} = EI$$

IBC Span Tables



HEADER AND GIRDER
SPANS FOR INTERIOR
BEARING WALLS—TABLE
2308.9.6—“ONE FLOOR
ONLY”

IBC Span Tables



HEADER AND GIRDER
SPANS FOR INTERIOR
BEARING WALLS—TABLE
2308.9.6—"TWO FLOORS"

IBC Span Tables

- **TABLE 2308.10.2(1)**
- **CEILING JOIST SPANS FOR COMMON LUMBER SPECIES**
- **(Uninhabitable Attics Without Storage, Live Load = 10 pounds psf, L/240)**
- **DEAD LOAD = 5 pounds per square foot**

IBC Span Tables

- **TABLE 2308.10.2(2)**
- **CEILING JOIST SPANS FOR COMMON LUMBER SPECIES**
- **(Uninhabitable Attics With Limited Storage, Live Load = 20 pounds per square foot, L/240)**
- **DEAD LOAD = 10 pounds per square foot**

IBC Span Tables

- **TABLE 2308.10.3(1)**
- **RAFTER SPANS FOR COMMON LUMBER SPECIES**
- **(Roof Live Load = 20 pounds per square foot, Ceiling Not Attached to Rafters, L/180)**
- **DEAD LOAD = 10 pounds per square foot**
- **DEAD LOAD = 20 pounds per square foot**

IBC Span Tables

- **TABLE 2308.10.3(2)**
- **RAFTER SPANS FOR COMMON LUMBER SPECIES**
- **(Roof Live Load = 20 pounds per square foot, Ceiling Attached to Rafters, L/240)**
- **DEAD LOAD = 10 pounds per square foot**
- **DEAD LOAD = 20 pounds per square foot**

IBC Span Tables

- **TABLE 2308.10.3(3)**
- **RAFTER SPANS FOR COMMON LUMBER SPECIES**
- **(Ground Snow Load = 30 pounds per square foot, Ceiling Not Attached to Rafters, L/180)**
- **DEAD LOAD = 10 pounds per square foot**
- **DEAD LOAD = 20 pounds per square foot**

IBC Span Tables

- **TABLE 2308.10.3(4)**
- **RAFTER SPANS FOR COMMON LUMBER SPECIES**
- **(Ground Snow Load = 50 pounds per square foot, Ceiling Not Attached to Rafters, L/180)**
- **DEAD LOAD = 10 pounds per square foot**
- **DEAD LOAD = 20 pounds per square foot**

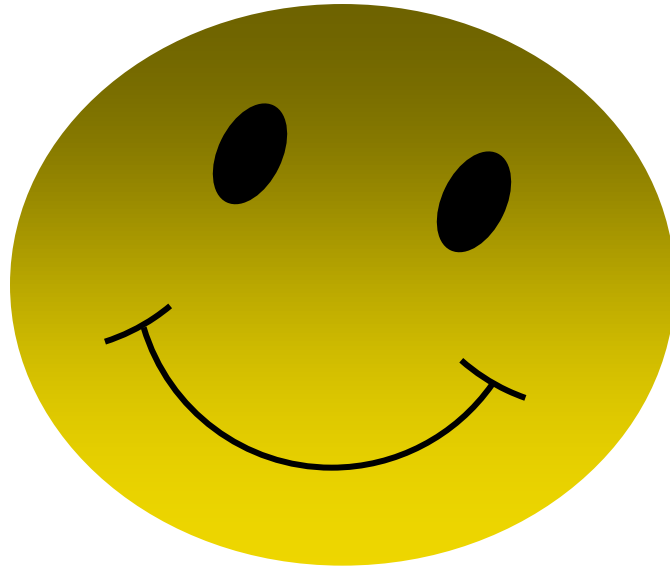
IBC Span Tables

- **TABLE 2308.10.3(5)**
- **RAFTER SPANS FOR COMMON LUMBER SPECIES**
- **(Ground Snow Load = 30 pounds per square foot, Ceiling Attached to Rafters, L/240)**
- **DEAD LOAD = 10 pounds per square foot**
- **DEAD LOAD = 20 pounds per square foot**

IBC Span Tables

- **TABLE 2308.10.3(6)**
- **RAFTER SPANS FOR COMMON LUMBER SPECIES**
- **(Ground Snow Load = 50 pounds per square foot, Ceiling Attached to Rafters, L/240)**
- **DEAD LOAD = 10 pounds per square foot**
- **DEAD LOAD = 20 pounds per square foot**

THANK



YOU

FOR

LISTENING