PLANK-AND-BEAM FRAMING FOR RESIDENTIAL BUILDINGS

American Wood Council

4 Wood Construction Data

American Forest & Paper Association

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INTRODUCTION

The plank-and-beam method for framing floors and roofs has been used in heavy timber buildings for many years. The adaptation of this system to residential construction has raised many technical questions from designers and builders concerning the details of application. This publication presents technical data that will be helpful to students, architects, engineers and builders. It contains information pertaining to principles of design, advantages and limitations, construction details, and structural requirements for the plank-and-beam method of framing.

GENERAL DESCRIPTION

Whereas conventional framing utilizes joists, rafters and studs spaced 12 to 24 inches on center, the plank-and-beam method requires fewer and larger sized pieces spaced farther apart. A simple comparison of the two methods is shown in Figure 1.

In plank-and-beam framing, plank subfloors or roofs, usually of 2-inch nominal thickness, are supported on beams spaced up to 8 feet apart. The ends of the beams are supported on posts or piers. Wall spaces between posts are provided with supplementary framing to the extent required for attachment of exterior and interior finish. This supplementary framing and its covering also serve to provide lateral bracing for the building.

PRINCIPLES OF DESIGN

The most successful plank-and-beam houses are those which are designed from the beginning for this method of framing. Such procedure permits the correlation of the structural framework with the exterior dimensions of the house, the location of doors and windows and the location of interior partitions. Proper study of these features in the early stages will contribute much to simplified framing.

The most efficient use of 2-inch plank occurs when it is continuous over more than one span. Where standard lengths of lumber are used, such as 12, 14 or 16 feet, beam spacings of 6,7 or 8 feet are indicated and this has bearing on the overall dimensions of the house. Where end joints in the plank are allowed to occur between supports, tongued-and-grooved or splined random length planks may be used and the beam spacing adjusted to fit the dimensions of the structure. Where square edged planks are used for sub-flooring, recommendations of the National Oak Flooring Manufacturing Association should be followed.

Windows and doors should be located between posts in exterior walls to eliminate the need for headers over the openings. The wide spacing between posts permits ample opportunity for large glass areas. However, a sufficient amount of solid wall should be present to provide adequate lateral bracing.

Combination of conventional framing with plank-and-beam framing is sometimes used. Where the two adjoin each other on a side-by-side basis, no particular problems are encountered. Where a plank-and-beam floor or roof is supported on a stud wall, a post should be placed under the end of the beam to carry the concentrated load. Where conventional roof framing is used with plank-and-beam construction, a header should be installed to carry the load from the rafters to the posts.

ADVANTAGES OF SYSTEM

There are many advantages to be gained through the use of the plank-and-beam system of framing. In many houses the roof planks serve as the ceiling, thereby providing added height to living areas with no increase in cost. Where planks are selected for appearance, no further ceiling treatment is needed except the application of a stain, sealer or paint, which may result in substantial cost savings.

Plank-and-beam framing permits substantial savings in labor. The pieces are larger and there are fewer of them than in conventional framing. Cross-bridging of joists is eliminated entirely. Larger and fewer nails are required. All of this adds up to labor savings at the job site.

LIMITATIONS OF SYSTEM

There are limitations on the use of the plank-and-beam system, but they are readily resolved through careful study in the planning stage. When this is done the parts of the house fit together very quickly and easily.

The plank floors are designed for moderate uniform loads and are not intended to carry heavy concentrated loads. Where such loads occur as those for bearing partitions, bathtubs, refrigerators, etc., additional framing is needed beneath the planks to transmit the loads to the beams.

Insulation is often installed to meet energy requirements. Appearance may be a factor when insulation is installed on the underside of the planking. When insulation is installed over planking, the insulation should be of the rigid type so that it will not deform under load. Rigid type insulation is usually placed over mastic and is limited in roof slope as recommended by the insulation manufacturer.

Location of the electrical distribution system may present a problem because of the lack of concealed spaces in the ceiling. However, the main supporting beams may be made of several pieces of 2-inch lumber and separated by short blocking, which provides a space to accommodate electrical cable. This is illustrated in Figure 2.

CONSTRUCTION DETAILS

The plank-and-beam system is essentially a skeleton framework. Planks are destined to support a moderate uniformly distributed load. This is carried to the beams, which in turn transmit their loads to posts, which are supported on the foundation. Where heavy concentrated loads occur in places other than over main beams or posts, supplementary beams are needed to carry such loads. Structural details of the plank-and-beam system of framing are illustrated in Figures 1 through 20.

Foundations for plank-and-beam framing may be continuous walls or piers, supported on adequate footings. With posts spaced up to 8 feet apart in exterior walls, this system is well adapted to pier foundations for houses without basements.

Posts should be of adequate size to carry the load and large enough to provide full bearing for the ends of beams. In general, posts should be at least 4x4 inches, nominal. Where the ends of beams abut over a post, a minimum dimension of 6 inches parallel to the beams is recommended for the post. The posts may be solid or made up of several pieces of 2-inch lumber spiked together.

The size of beams will vary with the span and spacing as indicated in the tables included herein. Beams may be solid, glued laminated pieces, or may be built up of several thinner pieces securely nailed to each other or to spacer blocks between then. When built-up beams are used, a cover plate attached to the underside provides the appearance of a solid piece as illustrated in Figure 3. Fastening of beams to posts is accomplished by framing anchors or angle clips.

Since the 2-inch plank floor or roof frequently serves as the finish ceiling for the room below, appearance as well as structural requirements of the plank should be considered. For the purpose of distributing load, center matched tongued-and-grooved or grooved-for-spline lumber is required. Methods for making the joint to provide various architectural effects are shown in Figure 4. To provide a pleasing appearance, a reasonably good grade of lumber should be selected and it should be sufficiently seasoned to meet the requirements of service conditions so as to avoid large cracks at the joints.

In laying the plank, greater advantage can be taken of the strength and stiffness of the material by making the planks continuous over more than one span. For example, using the same span and uniform load in each case, a plank which is continuous over two spans is nearly two and one-half times as stiff as a plank which extends over a single span. Planks should be nailed to each support with a minimum of two 16d nails. The finish floor should be laid at right angles to the plank subfloor, using the same procedure followed in con-ventional construction. Where the underside of the plank is to serve as a ceiling, care is needed to make sure that flooring nails do not penetrate through the plank.

Partitions in the plank-and-beam system usually will be non-bearing. Where bearing partitions occur, they should be placed over beams and the beams enlarged to carry the added load. If this is not possible, supplementary beams must be placed in the floor framing arrangement. Non-bearing partitions, which are parallel to the planks, should have support to carry this load to the beams. This may be accomplished by using two nominal 2x pieces set on edge as the sole plate. Where openings occur in the partition, the two nominal 2x pieces may be placed under the plank floor and supported on the beams by framing anchors. This method is illustrated in Figures 5 and 6. Where the non-bearing partition is at right angles to the planks, no supplementary framing is needed since the partition load will be distributed across a number of planks.

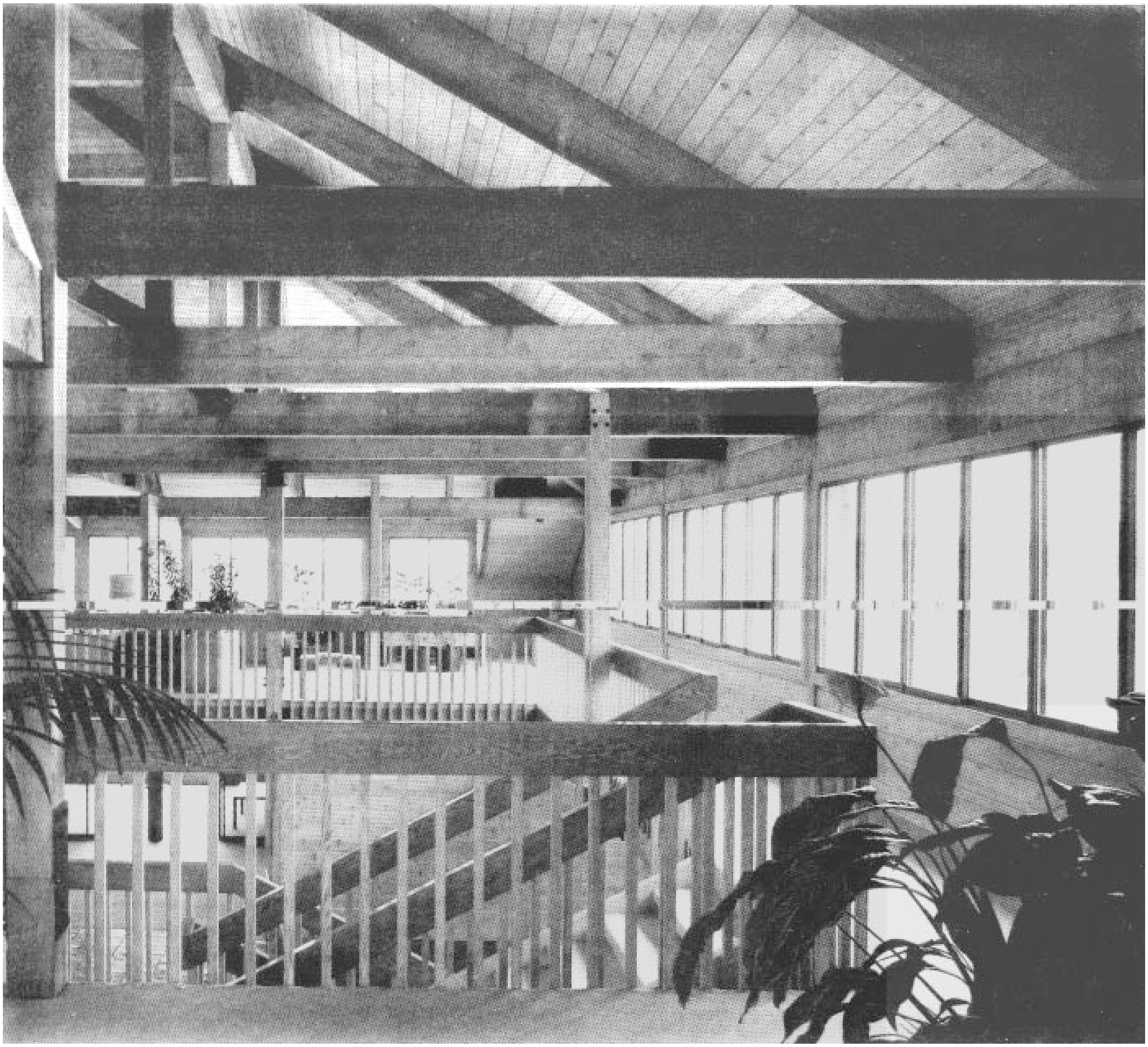
As in conventional framing, lateral bracing is required in the exterior walls to provide resistance against wind and seismic forces. In plank-and-beam framing, this is accomplished by installing solid panels at appropriate intervals wherein the supplementary wall framing and the posts are all tied together by diagonal bracing or suitable sheathing.

STRUCTURAL REQUIREMENT

Good design requires that all members be properly fastened together in order that the house will act as a unit in resisting external forces. With fewer pieces than in conventional framing, particular care must be given to connections where beams abut each other and where beams join the posts. Where gable roofs are used, provision must be made to absorb the horizontal thrust produced by sloping roof beams. Methods for doing this are shown in the illustrations included herein.

In most cases, structural design of the plank-and-beam house will be controlled by the local building code to the extent of specifying design loading requirements. A live load of 40 pounds per square foot is commonly specified for floors. For roofs, some codes specify 20 pounds per square foot and others 30 pounds per square foot.

To provide adequate safety, all codes require that framing members be so proportioned that the allowable fiber



stress in bending is not exceeded when the member is subjected to full live and dead loads. However, from the standpoint of appearance, most designers and builders prefer to place some limit on the allowable deflection.

Tables indicating allowable loads for planks and beams will be found herein. Allowable loads for posts will be found in *Wood Structural Design Data*, a publication of the American Forest and Paper Association.

DESIGN DATA FOR PLANKS

Design data for plank floors and roofs are included in Table 1. Computations for bending are based on the live load indicated, plus 10 or 20 pounds per square foot of dead load. Computations for deflection are based on the live load only. Tabulated modulus of elasticity and bending stresses do not account for partial live loading on adjacent and alternate spans. The table shows four general arrangements of planks as follows:

Type A — Extending over a single span.
Type B — Continuous over two equal spans.
Type C — Continuous over three equal spans.
Type D — A combination of Types A and B.

On the basis of a section of planking 12 inches wide the following formulas were used in making the computations:

$$For\ Type\ A: \quad M = \frac{wL^2}{8}\ and \quad \Delta = \frac{5wL^4(12)^3}{384EI}$$

$$For\ Type\ B: \quad M = \frac{wL^2}{8}\ and \quad \Delta = \frac{wL^4(12)^3}{185EI}$$

$$For\ Type\ C: \quad M = \frac{wL^2}{10}\ and \quad \Delta = \frac{4wL^4(12)^3}{581EI}$$

$$For\ Type\ D: \quad M = \frac{wL^2}{8}\ and \quad \Delta = \frac{1}{2}\left(\frac{5wL^4(12)^3}{384EI} + \frac{wL^4(12)^3}{185EI}\right)$$

To use Table 1, first determine the plank arrangement (Types A, B, C or D), the span, the live load to be supported and the deflection limitation. Then select from the table the corresponding required values for fiber stress in bending (f_b) and modulus of elasticity (E). The plank to be used should be of a grade and species that meets these minimum values. The maximum span for a specific grade and species of plank may be determined by reversing these steps.

For those who prefer to use random length planks (instead of arrangements Type A, B, C or D), similar technical information is included in *Heavy Timber Construction Details*, a publication of the American Forest and Paper Association

DESIGN DATA FOR BEAMS

Design data for beams are included in Tables 2 through 10. Computations for bending are based on the live load indicated plus 10 or 20 pounds per square foot of dead load. Computations for deflection are based on the live load only. All beams in the table were designed to extend over a single span and the following formulas were used:

$$For\ Type\ A: \quad M = \frac{wL^2}{8}\ and \quad \Delta = \frac{5wL^4(12)^3}{384EI}$$

To use the tables first determine the span, the live load to be supported, and the deflection limitation. Then select from the tables the proper size of beam with the corresponding required values for fiber stress in bending (f_b) and modulus of elasticity (E). The beam used should be of a grade and species that meets these minimum value. The maximum span for a beam of specific size, grade and species can be determined by reversing these steps.

NOTATIONS

In the preceding formulas and in the tables the symbols have the following meanings:

- w = load (plf)
- L = span (ft.)
- M = induced bending moment (lbs.-ft.)
- f_b = bending stress (psi)
- E = modulus of elasticity (lbs.-in.)
- I = moment of inertia (in.^{4})
- Δ = deflection (in.)

LUMBER SIZES

Tabular data provided herein are based on net dimensions (S4S) as listed in American Softwood Lumber Standard, VPS 20-99.

Figure 1 Comparison of Plank-and-beam System With Conventional Framing

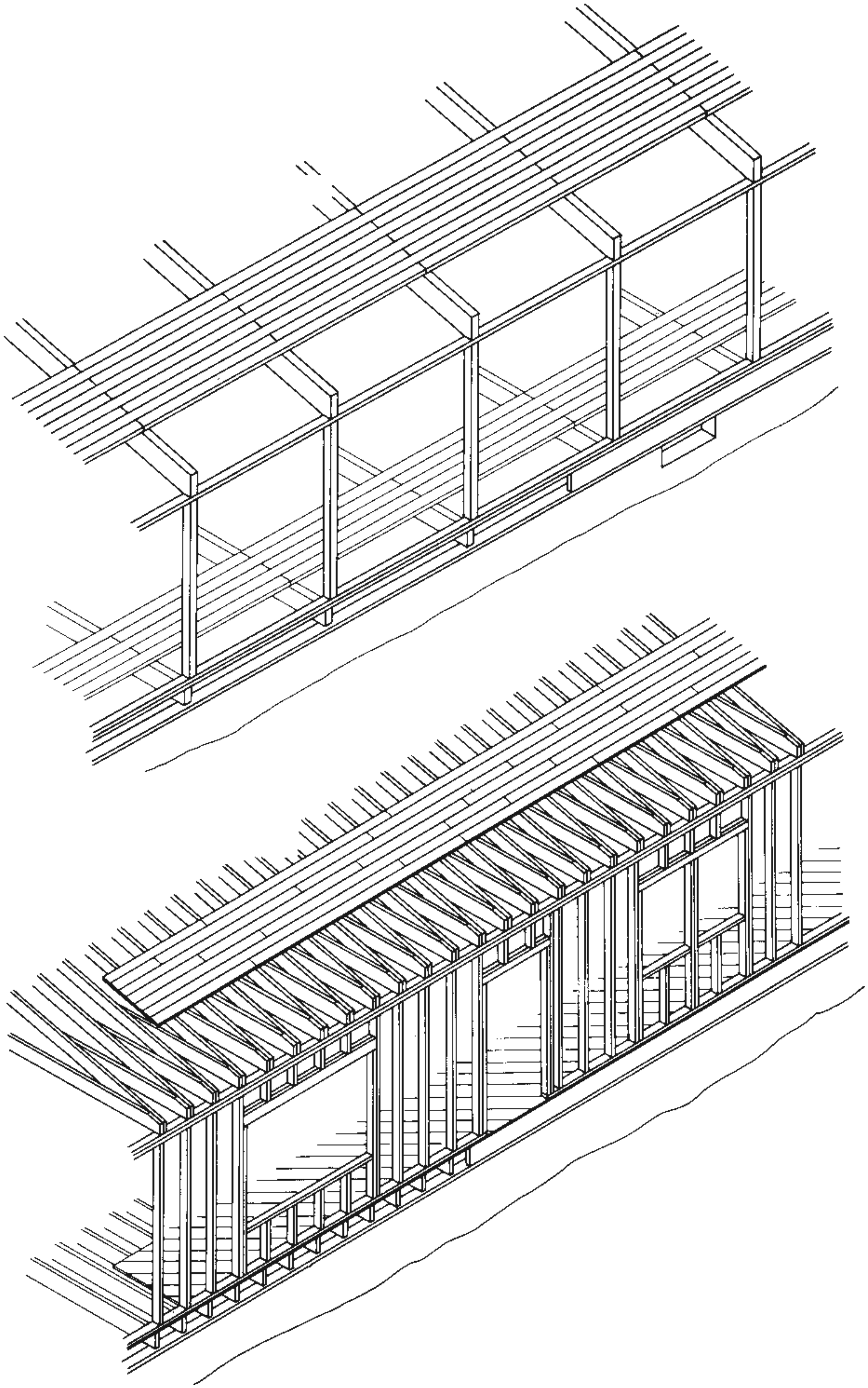


Figure 2 Use of Spaced Beam to Accommodate Electrical Cable

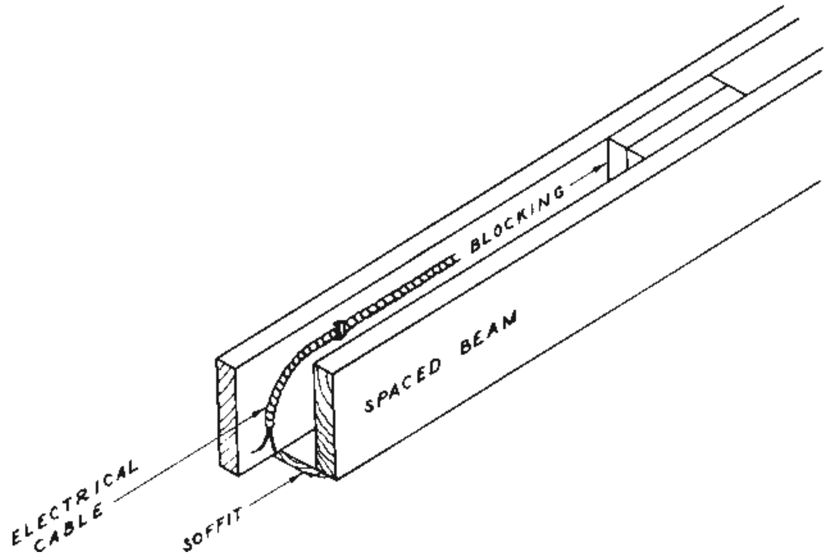


Figure 3 Methods of Finishing Undersides of Beams

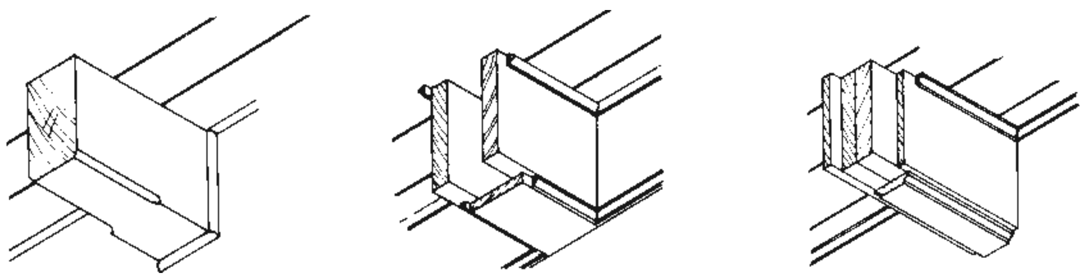
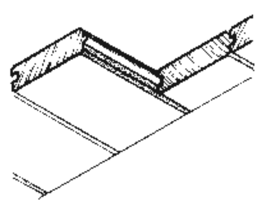
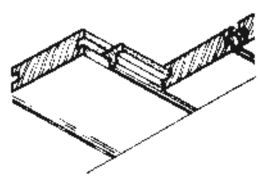


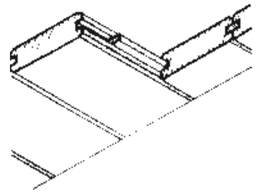
Figure 4 Methods of Treating Joints in Exposed Plank Ceilings



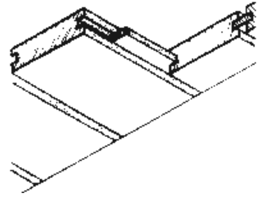
Tongued-and-grooved



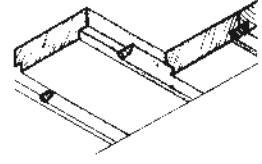
Grooved plank with splined insert moulding.



Grooved plank with spline and V-joint.



Grooved plank with exposed spline.



Rabbeted plank with batten insert.

Figure 5 Support for Non-bearing Partition Parallel to Plank With Beam Under Floor

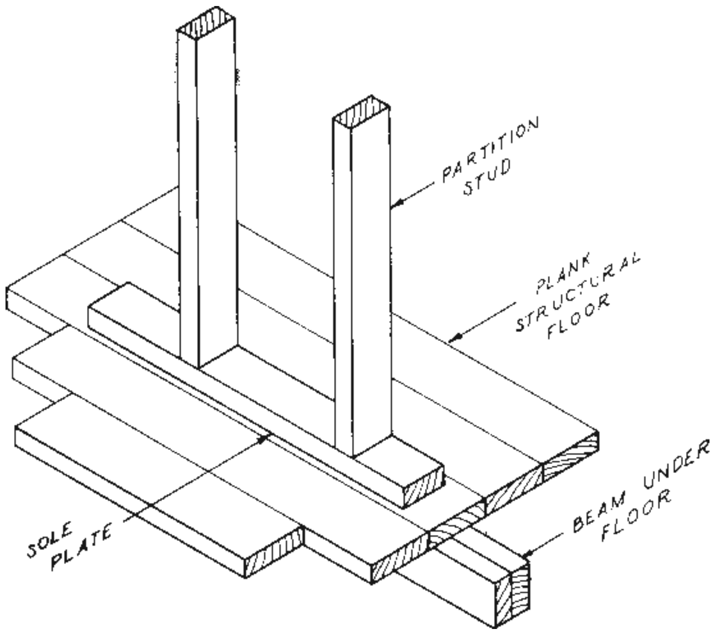


Figure 6 Support for Non-bearing Partition Parallel to Plank With Beam Above Floor

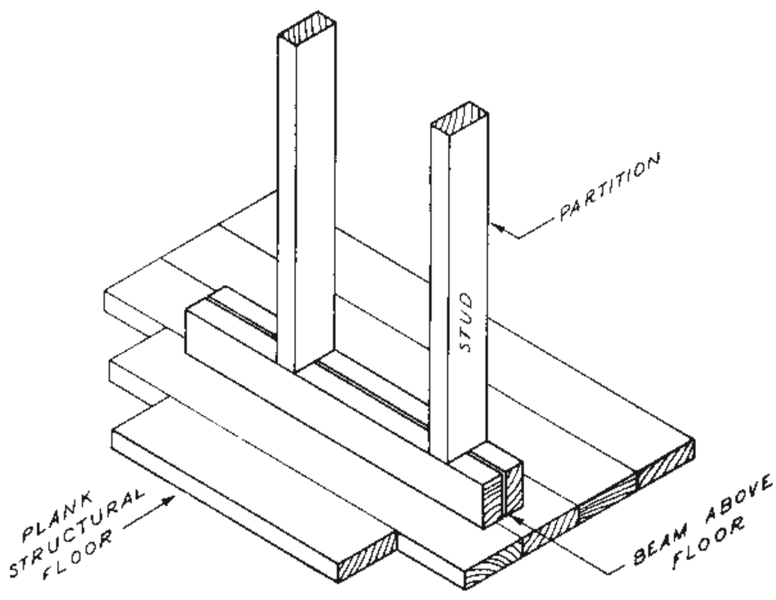


Figure 7 Plank-and-beam Framing for One-story House

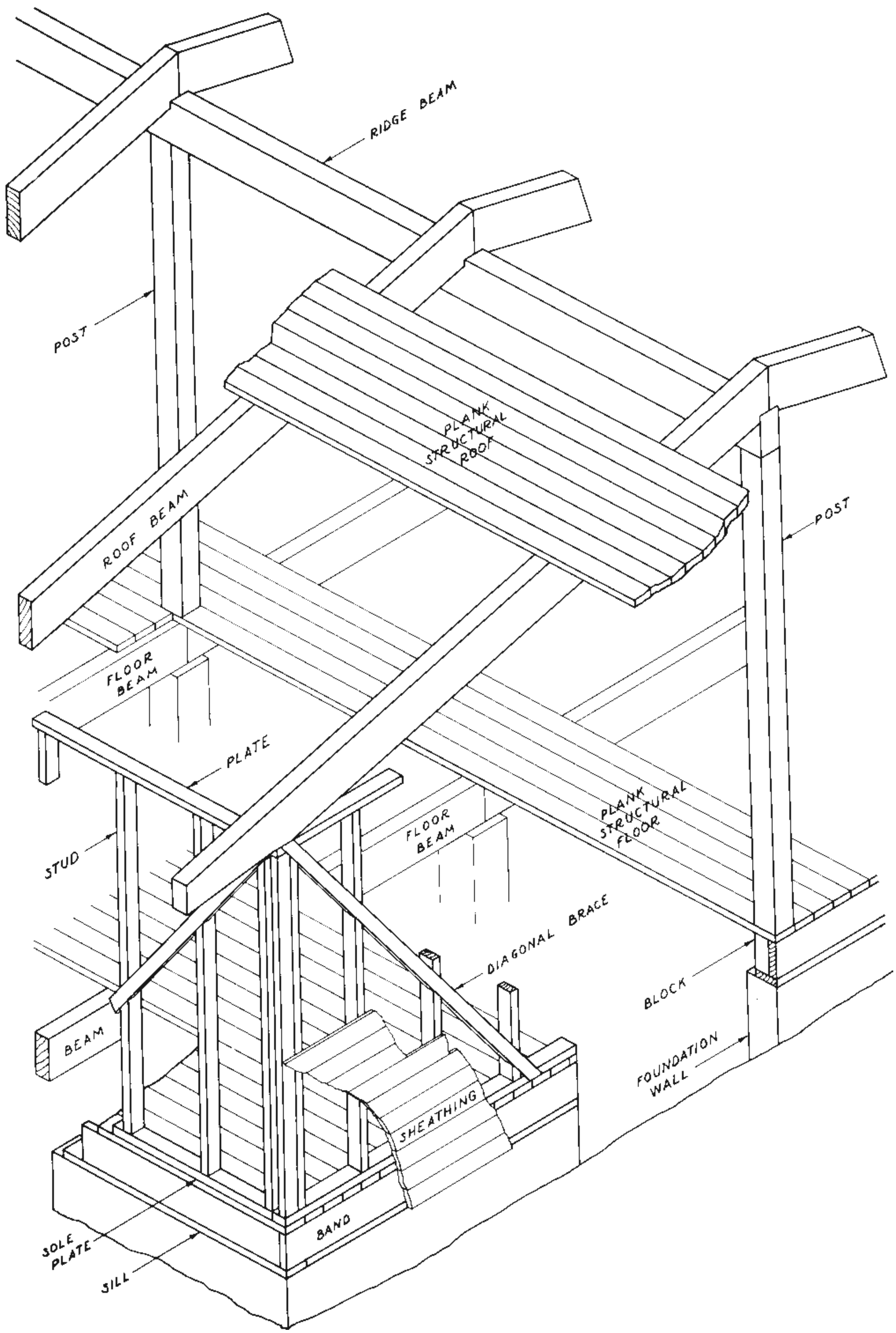


Figure 8 Plank-and-beam Framing Combined With Conventional Framing in Two-story House

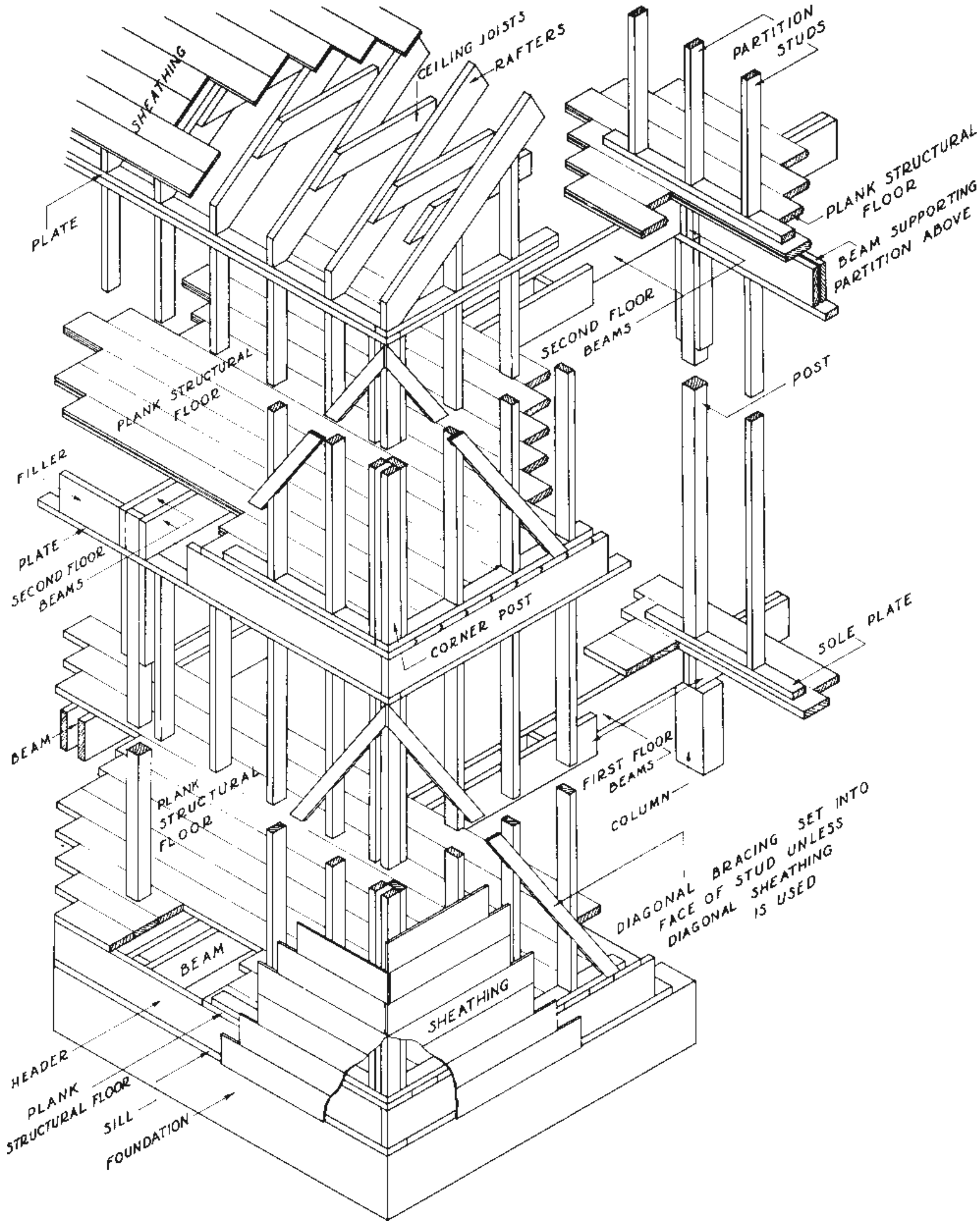


Figure 9 First Floor Framing at Exterior Wall With Beam Bearing on Sill

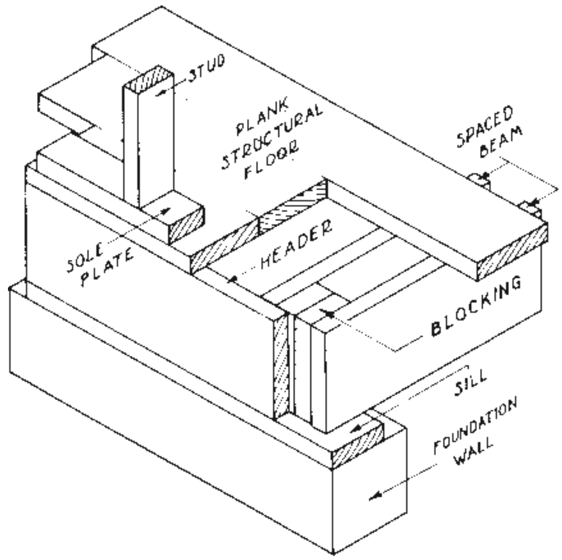


Figure 10 First Floor Framing at Exterior Wall With Beam Set in Foundation Wall

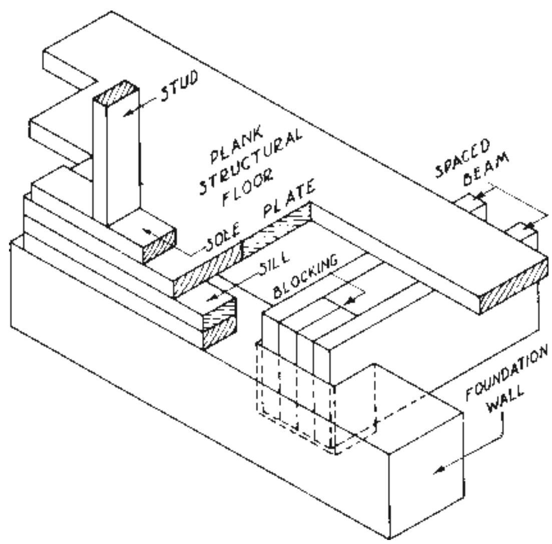


Figure 11 Solid Beam Bearing Over Basement Post

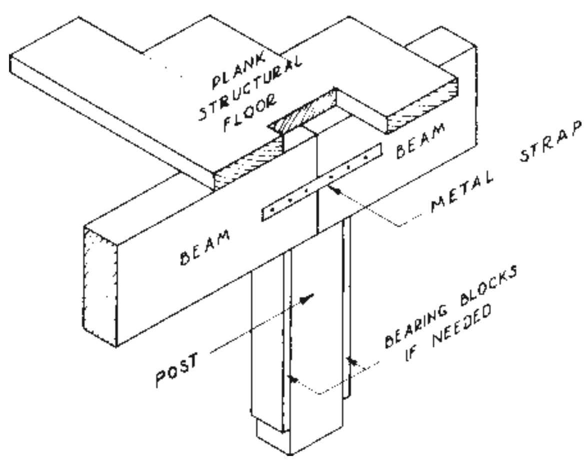


Figure 12 Spaced Beam Bearing Over Basement Post

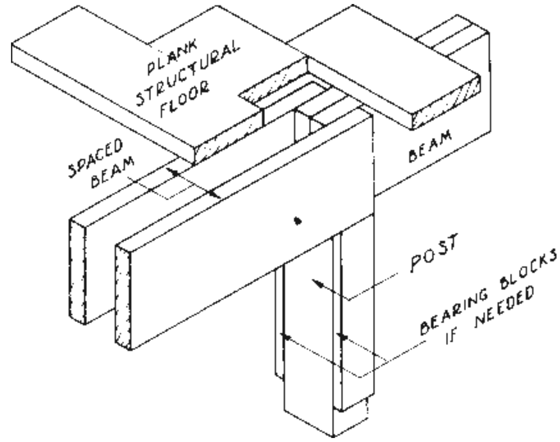


Figure 13 Beam Bearing at Second Floor Exterior Wall

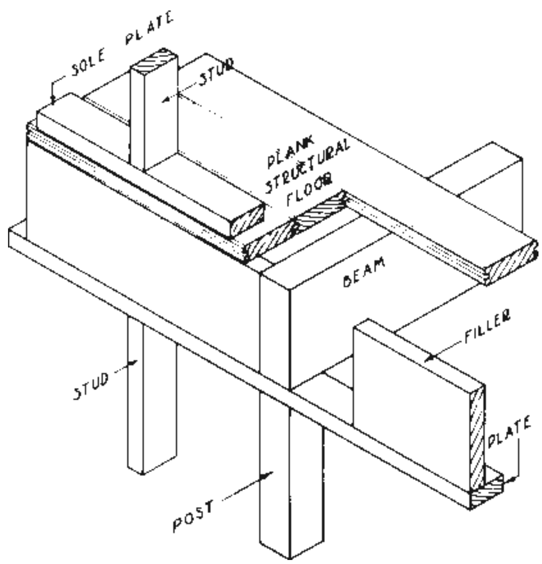


Figure 14 Spaced Beam Bearing at Second Floor Exterior Wall

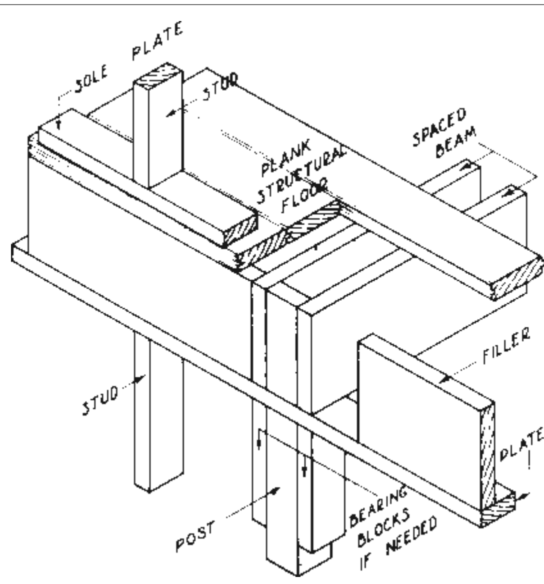


Figure 15 Solid Beam at Second Floor Over Interior Post

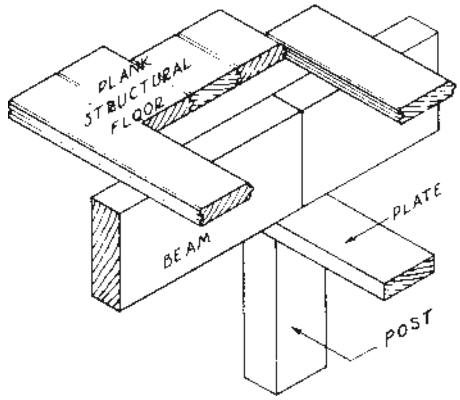


Figure 16 Spaced Beam Bearing at Second Floor Over Interior Post

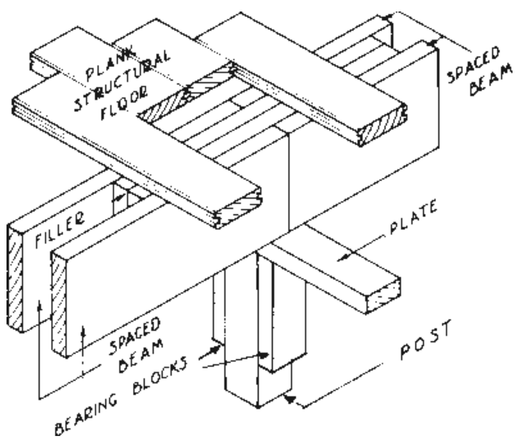


Figure 17 Roof Beam and Spaced Floor Beam Bearing at Exterior Wall

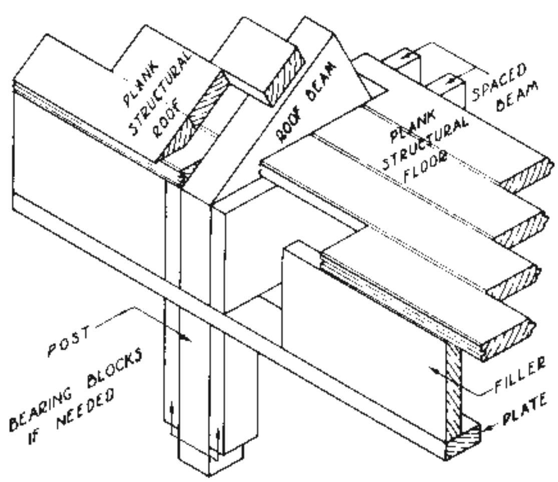


Figure 18 Arrangement of Roof and Floor Beams to Absorb Horizontal Thrust

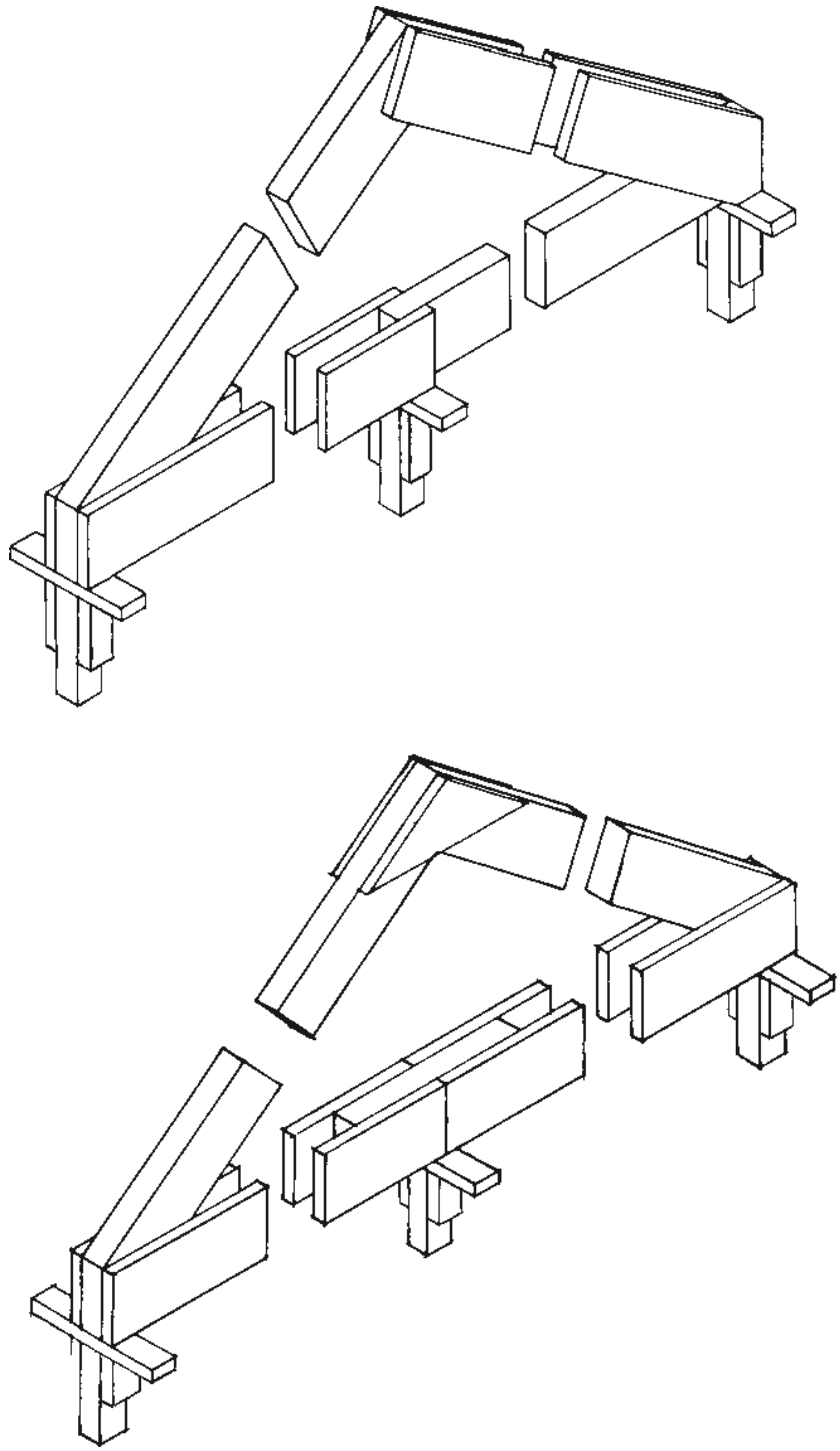


Figure 19 Bearing of Solid Roof Beam on Exterior Wall Post

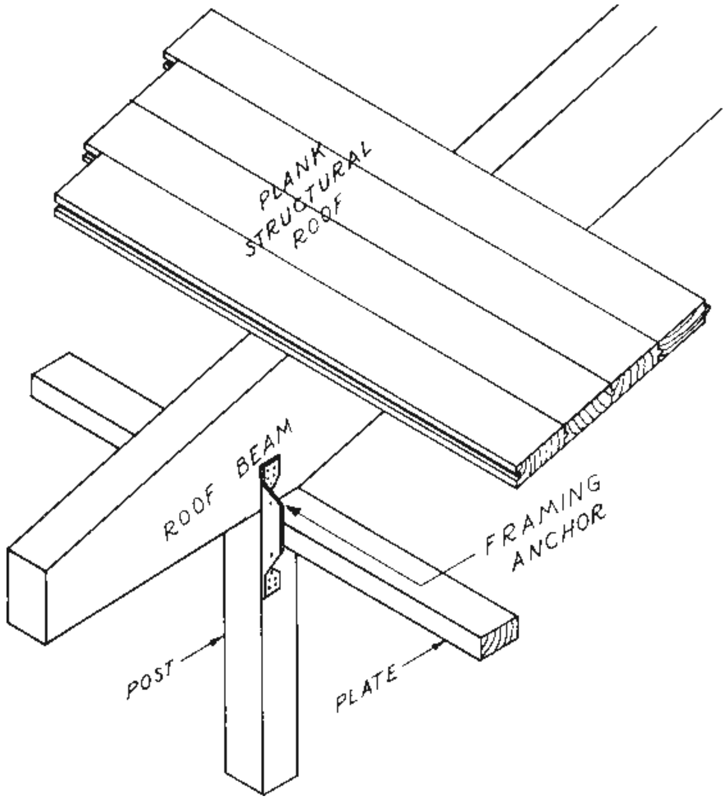


Figure 20 Methods of Supporting Roof Beam on Ridge Beam to Absorb Horizontal Thrust

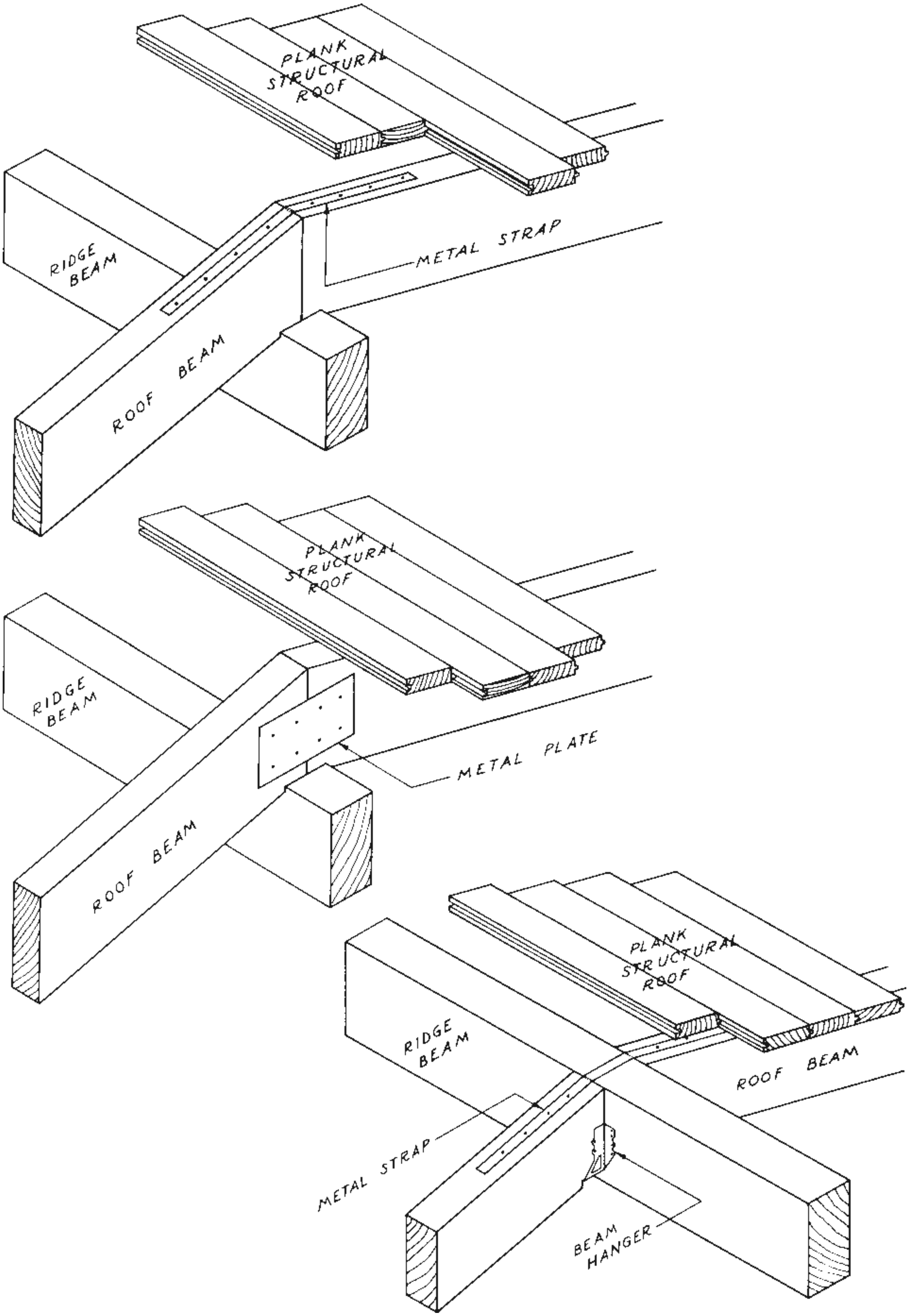


Table 1 Nominal Two-Inch Plank.

Required values for fiber stress in bending (f_b) and modulus of elasticity (E) to support safely a live load of 20, 30, or 40 pounds per square foot within a deflection limitation of L/180, L/240 or L/360. For instructions on use of table see Design Data for Planks on page 3.

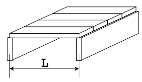
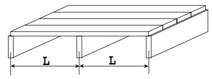
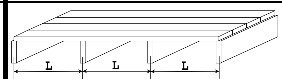
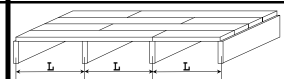
Plank Span (ft.)	Live Load (psf)	Deflection Limitation	Type A			Type B			Type C			Type D		
														
			f_b (psi)		E (psi)	f_b (psi)		E (psi)	f_b (psi)		E (psi)	f_b (psi)		E (psi)
			10 psf DL	20 psf DL		10 psf DL	20 psf DL		10 psf DL	20 psf DL		10 psf DL	20 psf DL	
		L/180	360	480	430,000	360	480	180,000	288	384	230,000	360	480	310,000
	20	L/240	360	480	580,000	360	480	240,000	288	384	300,000	360	480	410,000
		L/360	360	480	860,000	360	480	360,000	288	384	460,000	360	480	610,000
		L/180	480	600	650,000	480	600	270,000	384	480	340,000	480	600	460,000
6	30	L/240	480	600	860,000	480	600	360,000	384	480	460,000	480	600	610,000
		L/360	480	600	1,300,000	480	600	540,000	384	480	690,000	480	600	920,000
		L/180	600	720	860,000	600	720	360,000	480	576	460,000	600	720	610,000
	40	L/240	600	720	1,150,000	600	720	480,000	480	576	610,000	600	720	820,000
		L/360	600	720	1,730,000	600	720	720,000	480	576	910,000	600	720	1,220,000
		L/180	490	653	690,000	490	653	280,000	392	523	360,000	490	653	490,000
	20	L/240	490	653	910,000	490	653	380,000	392	523	480,000	490	653	650,000
		L/360	490	653	1,370,000	490	653	570,000	392	523	730,000	490	653	970,000
		L/180	653	817	1,030,000	653	817	430,000	523	653	540,000	653	817	730,000
7	30	L/240	653	817	1,370,000	653	817	570,000	523	653	730,000	653	817	970,000
		L/360	653	817	2,060,000	653	817	850,000	523	653	1,090,000	653	817	1,460,000
		L/180	817	980	1,370,000	817	980	570,000	653	784	730,000	817	980	970,000
	40	L/240	817	980	1,830,000	817	980	760,000	653	784	970,000	817	980	1,290,000
		L/360	817	980	2,740,000	817	980	1,140,000	653	784	1,450,000	817	980	1,940,000
		L/180	640	853	1,020,000	640	853	430,000	512	683	540,000	640	853	720,000
	20	L/240	640	853	1,370,000	640	853	570,000	512	683	720,000	640	853	970,000
		L/360	640	853	2,050,000	640	853	850,000	512	683	1,080,000	640	853	1,450,000
		L/180	853	1,067	1,540,000	853	1,067	640,000	683	853	810,000	853	1,067	1,090,000
8	30	L/240	853	1,067	2,050,000	853	1,067	850,000	683	853	1,080,000	853	1,067	1,450,000
		L/360	853	1,067	3,070,000	853	1,067	1,280,000	683	853	1,620,000	853	1,067	2,170,000
		L/180	1,067	1,280	2,050,000	1,067	1,280	850,000	853	1,024	1,080,000	1,067	1,280	1,450,000
	40	L/240	1,067	1,280	2,730,000	1,067	1,280	1,130,000	853	1,024	1,440,000	1,067	1,280	1,930,000
		L/360	1,067	1,280	4,100,000	1,067	1,280	1,700,000	853	1,024	2,170,000	1,067	1,280	2,900,000

Table 2 Floor and Roof Beams

Required values for fiber stress in bending (f_b) and modulus of elasticity (E) for the sizes shown to support safely a live load of 20 pounds per square foot within a deflection limitation of L/180. For instructions on use of table see Design Data For Beams on page 4.

Beam Span (ft.)	Nominal Size	Plank Span = 6'-0"			Plank Span = 7'-0"			Plank Span = 8'-0"		
		f_b (psi) 10 psf DL	f_b (psi) 20 psf DL	E (psi)	f_b (psi) 10 psf DL	f_b (psi) 20 psf DL	E (psi)	f_b (psi) 10 psf DL	f_b (psi) 20 psf DL	E (psi)
10	2-3x6	1,070	1,430	580,000	1,250	1,665	680,000	1,430	1,905	780,000
	1-3x8	1,235	1,645	510,000	1,440	1,920	600,000	1,645	2,190	680,000
	2-2x8	1,025	1,370	430,000	1,200	1,600	500,000	1,370	1,825	570,000
	1-4x8	880	1,175	360,000	1,025	1,370	430,000	1,175	1,565	490,000
	3-2x8	685	915	280,000	800	1,065	330,000	915	1,220	380,000
	2-3x8	615	820	260,000	720	960	300,000	820	1,095	340,000
	2-2x10	630	840	200,000	735	980	240,000	840	1,120	270,000
11	2-3x6	1,295	1,730	780,000	1,510	2,015	910,000	1,730	2,305	1,040,000
	1-3x8	1,490	1,990	680,000	1,740	2,320	790,000	1,990	2,650	910,000
	2-2x8	1,245	1,655	570,000	1,450	1,935	660,000	1,655	2,210	750,000
	1-4x8	1,065	1,420	480,000	1,245	1,655	570,000	1,420	1,895	650,000
	3-2x8	830	1,105	380,000	965	1,290	440,000	1,105	1,475	500,000
	2-3x8	745	995	340,000	870	1,160	400,000	995	1,325	450,000
	2-2x10	765	1,020	270,000	890	1,190	320,000	1,020	1,360	360,000
12	2-3x6	1,540	2,055	1,010,000	1,800	2,400	1,180,000	2,055	2,740	1,350,000
	1-3x8	1,775	2,365	880,000	2,070	2,760	1,030,000	2,365	3,155	1,180,000
	2-2x8	1,480	1,975	730,000	1,725	2,300	860,000	1,975	2,630	980,000
	1-4x8	1,270	1,690	630,000	1,480	1,975	730,000	1,690	2,255	840,000
	3-2x8	985	1,315	490,000	1,150	1,535	570,000	1,315	1,755	650,000
	2-3x8	890	1,185	440,000	1,035	1,380	510,000	1,185	1,580	590,000
	1-6x8	755	1,005	360,000	880	1,175	420,000	1,005	1,340	480,000
	2-2x10	910	1,210	350,000	1,060	1,415	410,000	1,210	1,615	470,000
	1-3x10	1,090	1,455	420,000	1,270	1,695	500,000	1,455	1,940	570,000
13	2-3x6	1,810	2,415	1,280,000	2,110	2,815	1,500,000	2,415	3,220	1,710,000
	1-3x8	2,085	2,780	1,120,000	2,430	3,240	1,310,000	2,780	3,705	1,490,000
	2-2x8	1,735	2,315	930,000	2,025	2,700	1,090,000	2,315	3,085	1,250,000
	1-4x8	1,490	1,985	800,000	1,735	2,315	930,000	1,985	2,645	1,070,000
	3-2x8	1,155	1,545	620,000	1,350	1,800	730,000	1,545	2,060	830,000
	2-3x8	1,040	1,390	560,000	1,215	1,620	650,000	1,390	1,850	750,000
	1-6x8	885	1,180	460,000	1,030	1,375	540,000	1,180	1,575	610,000
	2-2x10	1,065	1,420	450,000	1,245	1,660	520,000	1,420	1,895	600,000
	1-3x10	1,280	1,705	540,000	1,495	1,990	630,000	1,705	2,275	720,000
14	2-2x8	2,015	2,685	1,170,000	2,350	3,130	1,360,000	2,685	3,580	1,560,000
	3-2x8	1,340	1,790	780,000	1,565	2,090	910,000	1,790	2,385	1,040,000
	2-3x8	1,210	1,610	700,000	1,410	1,880	820,000	1,610	2,150	930,000
	1-6x8	1,025	1,370	570,000	1,195	1,595	670,000	1,370	1,825	770,000
	1-3x10	1,485	1,980	670,000	1,730	2,310	790,000	1,980	2,640	900,000
	2-2x10	1,235	1,650	560,000	1,445	1,925	660,000	1,650	2,200	750,000
	1-4x10	1,060	1,415	480,000	1,235	1,650	560,000	1,415	1,885	640,000
	3-2x10	825	1,100	370,000	960	1,285	440,000	1,100	1,465	500,000
	2-3x10	740	990	340,000	865	1,155	390,000	990	1,320	450,000
15	3-2x8	1,540	2,055	960,000	1,800	2,395	1,120,000	2,055	2,740	1,280,000
	2-3x8	1,385	1,850	860,000	1,620	2,155	1,000,000	1,850	2,465	1,150,000
	1-6x8	1,180	1,570	710,000	1,375	1,835	820,000	1,570	2,095	940,000
	1-3x10	1,705	2,270	830,000	1,990	2,650	970,000	2,270	3,030	1,110,000
	2-2x10	1,420	1,895	690,000	1,655	2,210	810,000	1,895	2,525	920,000
	1-4x10	1,215	1,625	590,000	1,420	1,895	690,000	1,625	2,165	790,000
	3-2x10	945	1,260	460,000	1,105	1,475	540,000	1,260	1,685	610,000
	2-3x10	850	1,135	410,000	995	1,325	480,000	1,135	1,515	550,000
	1-6x10	735	980	350,000	855	1,140	410,000	980	1,305	460,000
	4-2x10	710	945	350,000	830	1,105	400,000	945	1,260	460,000
	2-2x12	960	1,280	380,000	1,120	1,495	450,000	1,280	1,705	510,000
16	3-2x8	1,755	2,340	1,160,000	2,045	2,725	1,350,000	2,340	3,115	1,550,000
	2-3x8	1,580	2,105	1,040,000	1,840	2,455	1,220,000	2,105	2,805	1,390,000
	2-2x10	1,615	2,155	840,000	1,885	2,515	980,000	2,155	2,870	1,120,000
	1-4x10	1,385	1,845	720,000	1,615	2,155	840,000	1,845	2,460	960,000
	3-2x10	1,075	1,435	560,000	1,255	1,675	650,000	1,435	1,915	750,000
	2-3x10	970	1,295	500,000	1,130	1,510	590,000	1,295	1,725	670,000
	1-6x10	835	1,115	420,000	975	1,300	490,000	1,115	1,485	560,000
	4-2x10	810	1,075	420,000	940	1,255	490,000	1,075	1,435	560,000
	1-8x10	615	815	310,000	715	955	360,000	815	1,090	410,000
	1-3x12	1,310	1,750	560,000	1,530	2,040	650,000	1,750	2,330	750,000
	2-2x12	1,090	1,455	470,000	1,275	1,700	540,000	1,455	1,940	620,000

Table 2 Floor and Roof Beams (Cont.)

Required values for fiber stress in bending (f_b) and modulus of elasticity (E) for the sizes shown to support safely a live load of 20 pounds per square foot within a deflection limitation of L/180. For instructions on use of table see Design Data For Beams on page 4.

Beam Span (ft.)	Nominal Size	Plank Span = 6'-0			Plank Span = 7'-0			Plank Span = 8'-0"		
		f_b (psi)		E (psi)	f_b (psi)		E (psi)	f_b (psi)		E (psi)
		10 psf DL	20 psf DL		10 psf DL	20 psf DL		10 psf DL	20 psf DL	
17	2-2x10	1,825	2,430	1,010,000	2,130	2,835	1,170,000	2,430	3,245	1,340,000
	1-4x10	1,565	2,085	860,000	1,825	2,430	1,010,000	2,085	2,780	1,150,000
	3-2x10	1,215	1,620	670,000	1,420	1,890	780,000	1,620	2,160	890,000
	2-3x10	1,095	1,460	600,000	1,275	1,700	700,000	1,460	1,945	800,000
	1-6x10	945	1,260	510,000	1,100	1,465	590,000	1,260	1,675	680,000
	4-2x10	910	1,215	500,000	1,065	1,420	590,000	1,215	1,620	670,000
	1-8x10	690	920	370,000	805	1,075	430,000	920	1,230	500,000
	1-3x12	1,480	1,975	670,000	1,725	2,300	780,000	1,975	2,630	890,000
	2-2x12	1,235	1,645	560,000	1,440	1,920	650,000	1,645	2,190	750,000
	1-4x12	1,055	1,410	480,000	1,235	1,645	560,000	1,410	1,880	640,000
	3-2x12	820	1,095	370,000	960	1,280	430,000	1,095	1,460	500,000
18	2-2x10	2,045	2,725	1,190,000	2,385	3,180	1,390,000	2,725	3,635	1,590,000
	1-4x10	1,755	2,335	1,020,000	2,045	2,725	1,190,000	2,335	3,115	1,360,000
	3-2x10	1,365	1,820	800,000	1,590	2,120	930,000	1,820	2,425	1,060,000
	2-3x10	1,225	1,635	720,000	1,430	1,910	840,000	1,635	2,180	950,000
	1-6x10	1,055	1,410	600,000	1,235	1,645	700,000	1,410	1,880	800,000
	4-2x10	1,020	1,365	600,000	1,195	1,590	700,000	1,365	1,820	800,000
	1-8x10	775	1,035	440,000	905	1,205	510,000	1,035	1,380	590,000
	1-3x12	1,660	2,210	800,000	1,935	2,580	930,000	2,210	2,950	1,060,000
	2-2x12	1,380	1,845	660,000	1,615	2,150	770,000	1,845	2,460	880,000
	1-4x12	1,185	1,580	570,000	1,380	1,845	660,000	1,580	2,105	760,000
	3-2x12	920	1,230	440,000	1,075	1,435	520,000	1,230	1,640	590,000
	2-3x12	830	1,105	400,000	970	1,290	460,000	1,105	1,475	530,000
19	3-2x10	1,520	2,025	940,000	1,770	2,365	1,090,000	2,025	2,700	1,250,000
	2-3x10	1,365	1,825	840,000	1,595	2,125	980,000	1,825	2,430	1,120,000
	1-6x10	1,180	1,570	710,000	1,375	1,835	820,000	1,570	2,095	940,000
	4-2x10	1,140	1,520	700,000	1,330	1,770	820,000	1,520	2,025	940,000
	2-4x10	975	1,300	600,000	1,140	1,520	700,000	1,300	1,735	800,000
	1-8x10	865	1,150	520,000	1,010	1,345	600,000	1,150	1,535	690,000
	1-3x12	1,850	2,465	940,000	2,155	2,875	1,090,000	2,465	3,285	1,250,000
	2-2x12	1,540	2,055	780,000	1,795	2,395	910,000	2,055	2,740	1,040,000
	1-4x12	1,320	1,760	670,000	1,540	2,055	780,000	1,760	2,345	890,000
	3-2x12	1,025	1,370	520,000	1,200	1,595	610,000	1,370	1,825	690,000
	2-3x12	925	1,230	470,000	1,080	1,440	550,000	1,230	1,645	620,000
	1-6x12	805	1,070	400,000	940	1,250	460,000	1,070	1,430	530,000
20	3-2x10	1,685	2,245	1,090,000	1,965	2,620	1,270,000	2,245	2,990	1,460,000
	2-3x10	1,515	2,020	980,000	1,765	2,355	1,150,000	2,020	2,695	1,310,000
	1-6x10	1,305	1,740	820,000	1,525	2,030	960,000	1,740	2,320	1,100,000
	4-2x10	1,260	1,685	820,000	1,475	1,965	960,000	1,685	2,245	1,090,000
	2-4x10	1,080	1,445	700,000	1,260	1,685	820,000	1,445	1,925	940,000
	1-8x10	955	1,275	600,000	1,115	1,490	710,000	1,275	1,700	810,000
	2-2x12	1,705	2,275	910,000	1,990	2,655	1,060,000	2,275	3,035	1,210,000
	1-4x12	1,465	1,950	780,000	1,705	2,275	910,000	1,950	2,600	1,040,000
	3-2x12	1,140	1,515	610,000	1,325	1,770	710,000	1,515	2,025	810,000
	2-3x12	1,025	1,365	550,000	1,195	1,595	640,000	1,365	1,820	730,000
	1-6x12	890	1,190	460,000	1,040	1,385	540,000	1,190	1,585	620,000
	2-4x12	730	975	390,000	855	1,140	460,000	975	1,300	520,000
21	3-2x10	1,855	2,475	1,260,000	2,165	2,885	1,470,000	2,475	3,300	1,680,000
	2-3x10	1,670	2,225	1,140,000	1,950	2,600	1,330,000	2,225	2,970	1,520,000
	1-6x10	1,440	1,920	950,000	1,680	2,240	1,110,000	1,920	2,560	1,270,000
	4-2x10	1,390	1,855	950,000	1,625	2,165	1,110,000	1,855	2,475	1,260,000
	2-4x10	1,195	1,590	810,000	1,390	1,855	950,000	1,590	2,120	1,080,000
	1-8x10	1,055	1,405	700,000	1,230	1,640	820,000	1,405	1,875	930,000
	2-2x12	1,880	2,510	1,050,000	2,195	2,925	1,230,000	2,510	3,345	1,400,000
	1-4x12	1,615	2,150	900,000	1,880	2,510	1,050,000	2,150	2,865	1,200,000
	3-2x12	1,255	1,675	700,000	1,465	1,950	820,000	1,675	2,230	940,000
	2-3x12	1,130	1,505	630,000	1,315	1,755	740,000	1,505	2,005	840,000
	1-6x12	980	1,310	540,000	1,145	1,530	630,000	1,310	1,745	720,000
	2-4x12	805	1,075	450,000	940	1,255	530,000	1,075	1,435	600,000
22	1-6x10	1,580	2,105	1,100,000	1,845	2,455	1,280,000	2,105	2,810	1,460,000
	4-2x10	1,525	2,035	1,090,000	1,780	2,375	1,270,000	2,035	2,715	1,450,000
	2-4x10	1,310	1,745	930,000	1,525	2,035	1,090,000	1,745	2,325	1,250,000
	1-8x10	1,160	1,545	800,000	1,350	1,800	940,000	1,545	2,060	1,070,000
	1-4x12	1,770	2,360	1,040,000	2,065	2,755	1,210,000	2,360	3,145	1,380,000
	3-2x12	1,375	1,835	810,000	1,605	2,140	940,000	1,835	2,445	1,080,000
	2-3x12	1,240	1,650	730,000	1,445	1,925	850,000	1,650	2,205	970,000
	1-6x12	1,080	1,435	620,000	1,260	1,675	720,000	1,435	1,915	820,000
	2-4x12	885	1,180	520,000	1,035	1,375	610,000	1,180	1,575	690,000
	4-2x12	1,035	1,375	610,000	1,205	1,605	710,000	1,375	1,835	810,000
	5-2x12	825	1,100	480,000	965	1,285	570,000	1,100	1,470	650,000
	3-3x12	825	1,100	480,000	965	1,285	570,000	1,100	1,470	650,000

Table 3 Floor and Roof Beams

Required values for fiber stress in bending (f_b) and modulus of elasticity (E) for the sizes shown to support safely a live load of 20 pounds per square foot within a deflection limitation of L/240. For instructions on use of table see Design Data For Beams on page 4.

Beam Span (ft.)	Nominal Size	Plank Span = 6'-0			Plank Span = 7'-0"			Plank Span = 8'-0"		
		f_b (psi) 10 psf DL	f_b (psi) 20 psf DL	E (psi)	f_b (psi) 10 psf DL	f_b (psi) 20 psf DL	E (psi)	f_b (psi) 10 psf DL	f_b (psi) 20 psf DL	E (psi)
10	2-3x6	1,070	1,430	780,000	1,250	1,665	910,000	1,430	1,905	1,040,000
	1-3x8	1,235	1,645	680,000	1,440	1,920	790,000	1,645	2,190	910,000
	2-2x8	1,025	1,370	570,000	1,200	1,600	660,000	1,370	1,825	760,000
	1-4x8	880	1,175	490,000	1,025	1,370	570,000	1,175	1,565	650,000
	3-2x8	685	915	380,000	800	1,065	440,000	915	1,220	500,000
	2-3x8	615	820	340,000	720	960	400,000	820	1,095	450,000
	2-2x10	630	840	270,000	735	980	320,000	840	1,120	360,000
11	2-3x6	1,295	1,730	1,040,000	1,510	2,015	1,210,000	1,730	2,305	1,380,000
	1-3x8	1,490	1,990	910,000	1,740	2,320	1,060,000	1,990	2,650	1,210,000
	2-2x8	1,245	1,655	750,000	1,450	1,935	880,000	1,655	2,210	1,010,000
	1-4x8	1,065	1,420	650,000	1,245	1,655	750,000	1,420	1,895	860,000
	3-2x8	830	1,105	500,000	965	1,290	590,000	1,105	1,475	670,000
	2-3x8	745	995	450,000	870	1,160	530,000	995	1,325	600,000
	2-2x10	765	1,020	360,000	890	1,190	420,000	1,020	1,360	480,000
12	2-3x6	1,540	2,055	1,350,000	1,800	2,400	1,570,000	2,055	2,740	1,790,000
	1-3x8	1,775	2,365	1,180,000	2,070	2,760	1,370,000	2,365	3,155	1,570,000
	2-2x8	1,480	1,975	980,000	1,725	2,300	1,140,000	1,975	2,630	1,310,000
	1-4x8	1,270	1,690	840,000	1,480	1,975	980,000	1,690	2,255	1,120,000
	3-2x8	985	1,315	650,000	1,150	1,535	760,000	1,315	1,755	870,000
	2-3x8	890	1,185	590,000	1,035	1,380	690,000	1,185	1,580	780,000
	1-6x8	755	1,005	480,000	880	1,175	560,000	1,005	1,340	640,000
	2-2x10	910	1,210	470,000	1,060	1,415	550,000	1,210	1,615	630,000
	1-3x10	1,090	1,455	570,000	1,270	1,695	660,000	1,455	1,940	750,000
13	2-3x6	1,810	2,415	1,710,000	2,110	2,815	2,000,000	2,415	3,220	2,280,000
	1-3x8	2,085	2,780	1,490,000	2,430	3,240	1,740,000	2,780	3,705	1,990,000
	2-2x8	1,735	2,315	1,250,000	2,025	2,700	1,450,000	2,315	3,085	1,660,000
	1-4x8	1,490	1,985	1,070,000	1,735	2,315	1,250,000	1,985	2,645	1,420,000
	3-2x8	1,155	1,545	830,000	1,350	1,800	970,000	1,545	2,060	1,110,000
	2-3x8	1,040	1,390	750,000	1,215	1,620	870,000	1,390	1,850	1,000,000
	1-6x8	885	1,180	610,000	1,030	1,375	720,000	1,180	1,575	820,000
	2-2x10	1,065	1,420	600,000	1,245	1,660	700,000	1,420	1,895	800,000
	1-3x10	1,280	1,705	720,000	1,495	1,990	840,000	1,705	2,275	960,000
14	2-2x8	2,015	2,685	1,560,000	2,350	3,130	1,810,000	2,685	3,580	2,070,000
	3-2x8	1,340	1,790	1,040,000	1,565	2,090	1,210,000	1,790	2,385	1,380,000
	2-3x8	1,210	1,610	930,000	1,410	1,880	1,090,000	1,610	2,150	1,240,000
	1-6x8	1,025	1,370	770,000	1,195	1,595	890,000	1,370	1,825	1,020,000
	1-3x10	1,485	1,980	900,000	1,730	2,310	1,050,000	1,980	2,640	1,200,000
	2-2x10	1,235	1,650	750,000	1,445	1,925	870,000	1,650	2,200	1,000,000
	1-4x10	1,060	1,415	640,000	1,235	1,650	750,000	1,415	1,885	860,000
	3-2x10	825	1,100	500,000	960	1,285	580,000	1,100	1,465	670,000
	2-3x10	740	990	450,000	865	1,155	520,000	990	1,320	600,000
15	3-2x8	1,540	2,055	1,280,000	1,800	2,395	1,490,000	2,055	2,740	1,700,000
	2-3x8	1,385	1,850	1,150,000	1,620	2,155	1,340,000	1,850	2,465	1,530,000
	1-6x8	1,180	1,570	940,000	1,375	1,835	1,100,000	1,570	2,095	1,260,000
	1-3x10	1,705	2,270	1,110,000	1,990	2,650	1,290,000	2,270	3,030	1,470,000
	2-2x10	1,420	1,895	920,000	1,655	2,210	1,070,000	1,895	2,525	1,230,000
	1-4x10	1,215	1,625	790,000	1,420	1,895	920,000	1,625	2,165	1,050,000
	3-2x10	945	1,260	610,000	1,105	1,475	720,000	1,260	1,685	820,000
	2-3x10	850	1,135	550,000	995	1,325	640,000	1,135	1,515	740,000
	1-6x10	735	980	460,000	855	1,140	540,000	980	1,305	620,000
	4-2x10	710	945	460,000	830	1,105	540,000	945	1,260	610,000
	2-2x12	960	1,280	510,000	1,120	1,495	600,000	1,280	1,705	680,000
16	3-2x8	1,755	2,340	1,550,000	2,045	2,725	1,810,000	2,340	3,115	2,060,000
	2-3x8	1,580	2,105	1,390,000	1,840	2,455	1,630,000	2,105	2,805	1,860,000
	2-2x10	1,615	2,155	1,120,000	1,885	2,515	1,300,000	2,155	2,870	1,490,000
	1-4x10	1,385	1,845	960,000	1,615	2,155	1,120,000	1,845	2,460	1,280,000
	3-2x10	1,075	1,435	750,000	1,255	1,675	870,000	1,435	1,915	990,000
	2-3x10	970	1,295	670,000	1,130	1,510	780,000	1,295	1,725	890,000
	1-6x10	835	1,115	560,000	975	1,300	660,000	1,115	1,485	750,000
	4-2x10	810	1,075	560,000	940	1,255	650,000	1,075	1,435	750,000
	1-8x10	615	815	410,000	715	955	480,000	815	1,090	550,000
	1-3x12	1,310	1,750	750,000	1,530	2,040	870,000	1,750	2,330	990,000
	2-2x12	1,090	1,455	620,000	1,275	1,700	720,000	1,455	1,940	830,000

Table 3 Floor and Roof Beams (Cont.)

Required values for fiber stress in bending (f_b) and modulus of elasticity (E) for the sizes shown to support safely a live load of 20 pounds per square foot within a deflection limitation of L/240. For instructions on use of table see Design Data For Beams on page 4.

Beam Span (ft.)	Nominal Size	Plank Span = 6'-0			Plank Span = 7'-0			Plank Span = 8'-0"		
		f_b (psi) 10 psf DL	f_b (psi) 20 psf DL	E (psi)	f_b (psi) 10 psf DL	f_b (psi) 20 psf DL	E (psi)	f_b (psi) 10 psf DL	f_b (psi) 20 psf DL	E (psi)
17	2-2x10	1,825	2,430	1,340,000	2,130	2,835	1,560,000	2,430	3,245	1,790,000
	1-4x10	1,565	2,085	1,150,000	1,825	2,430	1,340,000	2,085	2,780	1,530,000
	3-2x10	1,215	1,620	890,000	1,420	1,890	1,040,000	1,620	2,160	1,190,000
	2-3x10	1,095	1,460	800,000	1,275	1,700	940,000	1,460	1,945	1,070,000
	1-6x10	945	1,260	680,000	1,100	1,465	790,000	1,260	1,675	900,000
	4-2x10	910	1,215	670,000	1,065	1,420	780,000	1,215	1,620	890,000
	1-8x10	690	920	500,000	805	1,075	580,000	920	1,230	660,000
	1-3x12	1,480	1,975	890,000	1,725	2,300	1,040,000	1,975	2,630	1,190,000
	2-2x12	1,235	1,645	750,000	1,440	1,920	870,000	1,645	2,190	990,000
	1-4x12	1,055	1,410	640,000	1,235	1,645	750,000	1,410	1,880	850,000
	3-2x12	820	1,095	500,000	960	1,280	580,000	1,095	1,460	660,000
18	2-2x10	2,045	2,725	1,590,000	2,385	3,180	1,860,000	2,725	3,635	2,120,000
	1-4x10	1,755	2,335	1,360,000	2,045	2,725	1,590,000	2,335	3,115	1,820,000
	3-2x10	1,365	1,820	1,060,000	1,590	2,120	1,240,000	1,820	2,425	1,410,000
	2-3x10	1,225	1,635	950,000	1,430	1,910	1,110,000	1,635	2,180	1,270,000
	1-6x10	1,055	1,410	800,000	1,235	1,645	930,000	1,410	1,880	1,070,000
	4-2x10	1,020	1,365	800,000	1,195	1,590	930,000	1,365	1,820	1,060,000
	1-8x10	775	1,035	590,000	905	1,205	690,000	1,035	1,380	780,000
	1-3x12	1,660	2,210	1,060,000	1,935	2,580	1,240,000	2,210	2,950	1,420,000
	2-2x12	1,380	1,845	880,000	1,615	2,150	1,030,000	1,845	2,460	1,180,000
	1-4x12	1,185	1,580	760,000	1,380	1,845	880,000	1,580	2,105	1,010,000
	3-2x12	920	1,230	590,000	1,075	1,435	690,000	1,230	1,640	790,000
	2-3x12	830	1,105	530,000	970	1,290	620,000	1,105	1,475	710,000
19	3-2x10	1,520	2,025	1,250,000	1,770	2,365	1,460,000	2,025	2,700	1,660,000
	2-3x10	1,365	1,825	1,120,000	1,595	2,125	1,310,000	1,825	2,430	1,500,000
	1-6x10	1,180	1,570	940,000	1,375	1,835	1,100,000	1,570	2,095	1,260,000
	4-2x10	1,140	1,520	940,000	1,330	1,770	1,090,000	1,520	2,025	1,250,000
	2-4x10	975	1,300	800,000	1,140	1,520	940,000	1,300	1,735	1,070,000
	1-8x10	865	1,150	690,000	1,010	1,345	810,000	1,150	1,535	920,000
	1-3x12	1,850	2,465	1,250,000	2,155	2,875	1,460,000	2,465	3,285	1,660,000
	2-2x12	1,540	2,055	1,040,000	1,795	2,395	1,210,000	2,055	2,740	1,390,000
	1-4x12	1,320	1,760	890,000	1,540	2,055	1,040,000	1,760	2,345	1,190,000
	3-2x12	1,025	1,370	690,000	1,200	1,595	810,000	1,370	1,825	920,000
	2-3x12	925	1,230	620,000	1,080	1,440	730,000	1,230	1,645	830,000
	1-6x12	805	1,070	530,000	940	1,250	620,000	1,070	1,430	710,000
20	3-2x10	1,685	2,245	1,460,000	1,965	2,620	1,700,000	2,245	2,990	1,940,000
	2-3x10	1,515	2,020	1,310,000	1,765	2,355	1,530,000	2,020	2,695	1,750,000
	1-6x10	1,305	1,740	1,100,000	1,525	2,030	1,280,000	1,740	2,320	1,470,000
	4-2x10	1,260	1,685	1,090,000	1,475	1,965	1,270,000	1,685	2,245	1,460,000
	2-4x10	1,080	1,445	940,000	1,260	1,685	1,090,000	1,445	1,925	1,250,000
	1-8x10	955	1,275	810,000	1,115	1,490	940,000	1,275	1,700	1,070,000
	2-2x12	1,705	2,275	1,210,000	1,990	2,655	1,420,000	2,275	3,035	1,620,000
	1-4x12	1,465	1,950	1,040,000	1,705	2,275	1,210,000	1,950	2,600	1,390,000
	3-2x12	1,140	1,515	810,000	1,325	1,770	940,000	1,515	2,025	1,080,000
	2-3x12	1,025	1,365	730,000	1,195	1,595	850,000	1,365	1,820	970,000
	1-6x12	890	1,190	620,000	1,040	1,385	720,000	1,190	1,585	830,000
	2-4x12	730	975	520,000	855	1,140	610,000	975	1,300	690,000
21	3-2x10	1,855	2,475	1,680,000	2,165	2,885	1,970,000	2,475	3,300	2,250,000
	2-3x10	1,670	2,225	1,520,000	1,950	2,600	1,770,000	2,225	2,970	2,020,000
	1-6x10	1,440	1,920	1,270,000	1,680	2,240	1,480,000	1,920	2,560	1,700,000
	4-2x10	1,390	1,855	1,260,000	1,625	2,165	1,470,000	1,855	2,475	1,680,000
	2-4x10	1,195	1,590	1,080,000	1,390	1,855	1,260,000	1,590	2,120	1,440,000
	1-8x10	1,055	1,405	930,000	1,230	1,640	1,090,000	1,405	1,875	1,240,000
	2-2x12	1,880	2,510	1,400,000	2,195	2,925	1,640,000	2,510	3,345	1,870,000
	1-4x12	1,615	2,150	1,200,000	1,880	2,510	1,400,000	2,150	2,865	1,610,000
	3-2x12	1,255	1,675	940,000	1,465	1,950	1,090,000	1,675	2,230	1,250,000
	2-3x12	1,130	1,505	840,000	1,315	1,755	980,000	1,505	2,005	1,120,000
	1-6x12	980	1,310	720,000	1,145	1,530	840,000	1,310	1,745	960,000
	2-4x12	805	1,075	600,000	940	1,255	700,000	1,075	1,435	800,000
22	1-6x10	1,580	2,105	1,460,000	1,845	2,455	1,710,000	2,105	2,810	1,950,000
	4-2x10	1,525	2,035	1,450,000	1,780	2,375	1,700,000	2,035	2,715	1,940,000
	2-4x10	1,310	1,745	1,250,000	1,525	2,035	1,450,000	1,745	2,325	1,660,000
	1-8x10	1,160	1,545	1,070,000	1,350	1,800	1,250,000	1,545	2,060	1,430,000
	1-4x12	1,770	2,360	1,380,000	2,065	2,755	1,620,000	2,360	3,145	1,850,000
	3-2x12	1,375	1,835	1,080,000	1,605	2,140	1,260,000	1,835	2,445	1,440,000
	2-3x12	1,240	1,650	970,000	1,445	1,925	1,130,000	1,650	2,205	1,290,000
	1-6x12	1,080	1,435	820,000	1,260	1,675	960,000	1,435	1,915	1,100,000
	2-4x12	885	1,180	690,000	1,035	1,375	810,000	1,180	1,575	920,000
	4-2x12	1,035	1,375	810,000	1,205	1,605	940,000	1,375	1,835	1,080,000
	5-2x12	825	1,100	650,000	965	1,285	750,000	1,100	1,470	860,000
	3-3x12	825	1,100	650,000	965	1,285	750,000	1,100	1,470	860,000

Table 4 Floor and Roof Beams

Required values for fiber stress in bending (f_b) and modulus of elasticity (E) for the sizes shown to support safely a live load of 20 pounds per square foot within a deflection limitation of L/360. For instructions on use of table see Design Data For Beams on page 4.

Beam Span (ft.)	Nominal Size	Plank Span = 6'-0			Plank Span = 7'-0"			Plank Span = 8'-0"		
		f_b (psi)		E (psi)	f_b (psi)		E (psi)	f_b (psi)		E (psi)
		10 psf DL	20 psf DL		10 psf DL	20 psf DL		10 psf DL	20 psf DL	
10	2-3x6	1,070	1,430	1,170,000	1,250	1,665	1,360,000	1,430	1,905	1,560,000
	1-3x8	1,235	1,645	1,020,000	1,440	1,920	1,190,000	1,645	2,190	1,360,000
	2-2x8	1,025	1,370	850,000	1,200	1,600	990,000	1,370	1,825	1,130,000
	1-4x8	880	1,175	730,000	1,025	1,370	850,000	1,175	1,565	970,000
	3-2x8	685	915	570,000	800	1,065	660,000	915	1,220	760,000
	2-3x8	615	820	510,000	720	960	600,000	820	1,095	680,000
	1-6x8	525	700	420,000	610	815	490,000	700	930	560,000
11	2-3x6	1,295	1,730	1,560,000	1,510	2,015	1,810,000	1,730	2,305	2,070,000
	1-3x8	1,490	1,990	1,360,000	1,740	2,320	1,580,000	1,990	2,650	1,810,000
	2-2x8	1,245	1,655	1,130,000	1,450	1,935	1,320,000	1,655	2,210	1,510,000
	1-4x8	1,065	1,420	970,000	1,245	1,655	1,130,000	1,420	1,895	1,290,000
	3-2x8	830	1,105	750,000	965	1,290	880,000	1,105	1,475	1,010,000
	2-3x8	745	995	680,000	870	1,160	790,000	995	1,325	910,000
	1-6x8	635	845	560,000	740	985	650,000	845	1,125	740,000
12	1-3x8	1,775	2,365	1,760,000	2,070	2,760	2,060,000	2,365	3,155	2,350,000
	2-2x8	1,480	1,975	1,470,000	1,725	2,300	1,710,000	1,975	2,630	1,960,000
	1-4x8	1,270	1,690	1,260,000	1,480	1,975	1,470,000	1,690	2,255	1,680,000
	3-2x8	985	1,315	980,000	1,150	1,535	1,140,000	1,315	1,755	1,310,000
	2-3x8	890	1,185	880,000	1,035	1,380	1,030,000	1,185	1,580	1,180,000
	1-6x8	755	1,005	720,000	880	1,175	840,000	1,005	1,340	970,000
	2-2x10	910	1,210	710,000	1,060	1,415	830,000	1,210	1,615	940,000
	1-3x10	1,090	1,455	850,000	1,270	1,695	990,000	1,455	1,940	1,130,000
13	2-2x8	1,735	2,315	1,870,000	2,025	2,700	2,180,000	2,315	3,085	2,490,000
	1-4x8	1,490	1,985	1,600,000	1,735	2,315	1,870,000	1,985	2,645	2,130,000
	3-2x8	1,155	1,545	1,250,000	1,350	1,800	1,450,000	1,545	2,060	1,660,000
	2-3x8	1,040	1,390	1,120,000	1,215	1,620	1,310,000	1,390	1,850	1,490,000
	1-6x8	885	1,180	920,000	1,030	1,375	1,070,000	1,180	1,575	1,230,000
	2-2x10	1,065	1,420	900,000	1,245	1,660	1,050,000	1,420	1,895	1,200,000
	1-3x10	1,280	1,705	1,080,000	1,495	1,990	1,260,000	1,705	2,275	1,440,000
	1-4x10	915	1,220	770,000	1,065	1,420	900,000	1,220	1,625	1,030,000
14	3-2x8	1,340	1,790	1,560,000	1,565	2,090	1,810,000	1,790	2,385	2,070,000
	2-3x8	1,210	1,610	1,400,000	1,410	1,880	1,630,000	1,610	2,150	1,870,000
	1-6x8	1,025	1,370	1,150,000	1,195	1,595	1,340,000	1,370	1,825	1,530,000
	1-3x10	1,485	1,980	1,350,000	1,730	2,310	1,570,000	1,980	2,640	1,800,000
	2-2x10	1,235	1,650	1,120,000	1,445	1,925	1,310,000	1,650	2,200	1,500,000
	1-4x10	1,060	1,415	960,000	1,235	1,650	1,120,000	1,415	1,885	1,280,000
	3-2x10	825	1,100	750,000	960	1,285	870,000	1,100	1,465	1,000,000
	2-3x10	740	990	670,000	865	1,155	790,000	990	1,320	900,000
	1-6x10	640	855	570,000	745	995	660,000	855	1,135	750,000
	4-2x10	620	825	560,000	720	960	660,000	825	1,100	750,000
	2-2x12	835	1,115	620,000	975	1,300	730,000	1,115	1,485	830,000
15	3-2x8	1,540	2,055	1,910,000	1,800	2,395	2,230,000	2,055	2,740	2,550,000
	2-3x8	1,385	1,850	1,720,000	1,620	2,155	2,010,000	1,850	2,465	2,300,000
	1-6x8	1,180	1,570	1,410,000	1,375	1,835	1,650,000	1,570	2,095	1,880,000
	1-3x10	1,705	2,270	1,660,000	1,990	2,650	1,930,000	2,270	3,030	2,210,000
	2-2x10	1,420	1,895	1,380,000	1,655	2,210	1,610,000	1,895	2,525	1,840,000
	1-4x10	1,215	1,625	1,180,000	1,420	1,895	1,380,000	1,625	2,165	1,580,000
	3-2x10	945	1,260	920,000	1,105	1,475	1,070,000	1,260	1,685	1,230,000
	2-3x10	850	1,135	830,000	995	1,325	970,000	1,135	1,515	1,110,000
	1-6x10	735	980	700,000	855	1,140	810,000	980	1,305	930,000
	4-2x10	710	945	690,000	830	1,105	810,000	945	1,260	920,000
	2-2x12	960	1,280	770,000	1,120	1,495	900,000	1,280	1,705	1,020,000
	1-4x12	825	1,095	660,000	960	1,280	770,000	1,095	1,465	880,000
16	2-2x10	1,615	2,155	1,680,000	1,885	2,515	1,960,000	2,155	2,870	2,240,000
	1-4x10	1,385	1,845	1,440,000	1,615	2,155	1,680,000	1,845	2,460	1,920,000
	3-2x10	1,075	1,435	1,120,000	1,255	1,675	1,300,000	1,435	1,915	1,490,000
	2-3x10	970	1,295	1,010,000	1,130	1,510	1,170,000	1,295	1,725	1,340,000
	1-6x10	835	1,115	840,000	975	1,300	980,000	1,115	1,485	1,130,000
	4-2x10	810	1,075	840,000	940	1,255	980,000	1,075	1,435	1,120,000
	1-8x10	615	815	620,000	715	955	720,000	815	1,090	830,000
	1-3x12	1,310	1,750	1,120,000	1,530	2,040	1,300,000	1,750	2,330	1,490,000
	2-2x12	1,090	1,455	930,000	1,275	1,700	1,090,000	1,455	1,940	1,240,000
	1-4x12	935	1,250	800,000	1,090	1,455	930,000	1,250	1,665	1,070,000
	3-2x12	730	970	620,000	850	1,135	720,000	970	1,295	830,000
	2-3x12	655	875	560,000	765	1,020	650,000	875	1,165	750,000

Table 4 Floor and Roof Beams (Cont.)

Required values for fiber stress in bending (f_b) and modulus of elasticity (E) for the sizes shown to support safely a live load of 20 pounds per square foot within a deflection limitation of L/360. For instructions on use of table see Design Data For Beams on page 4.

Beam Span (ft.)	Nominal Size	Plank Span = 6'-0			Plank Span = 7'-0			Plank Span = 8'-0"		
		f_b (psi)		E (psi)	f_b (psi)		E (psi)	f_b (psi)		E (psi)
		10 psf DL	20 psf DL		10 psf DL	20 psf DL		10 psf DL	20 psf DL	
17	2-2x10	1,825	2,430	2,010,000	2,130	2,835	2,350,000	2,430	3,245	2,680,000
	1-4x10	1,565	2,085	1,720,000	1,825	2,430	2,010,000	2,085	2,780	2,300,000
	3-2x10	1,215	1,620	1,340,000	1,420	1,890	1,560,000	1,620	2,160	1,790,000
	2-3x10	1,095	1,460	1,210,000	1,275	1,700	1,410,000	1,460	1,945	1,610,000
	1-6x10	945	1,260	1,010,000	1,100	1,465	1,180,000	1,260	1,675	1,350,000
	4-2x10	910	1,215	1,010,000	1,065	1,420	1,170,000	1,215	1,620	1,340,000
	1-8x10	690	920	740,000	805	1,075	870,000	920	1,230	990,000
	1-3x12	1,480	1,975	1,340,000	1,725	2,300	1,570,000	1,975	2,630	1,790,000
	2-2x12	1,235	1,645	1,120,000	1,440	1,920	1,300,000	1,645	2,190	1,490,000
	1-4x12	1,055	1,410	960,000	1,235	1,645	1,120,000	1,410	1,880	1,280,000
	3-2x12	820	1,095	750,000	960	1,280	870,000	1,095	1,460	990,000
	2-3x12	740	985	670,000	865	1,150	780,000	985	1,315	890,000
18	3-2x10	1,365	1,820	1,590,000	1,590	2,120	1,860,000	1,820	2,425	2,120,000
	2-3x10	1,225	1,635	1,430,000	1,430	1,910	1,670,000	1,635	2,180	1,910,000
	1-6x10	1,055	1,410	1,200,000	1,235	1,645	1,400,000	1,410	1,880	1,600,000
	4-2x10	1,020	1,365	1,190,000	1,195	1,590	1,390,000	1,365	1,820	1,590,000
	1-8x10	775	1,035	880,000	905	1,205	1,030,000	1,035	1,380	1,180,000
	1-3x12	1,660	2,210	1,590,000	1,935	2,580	1,860,000	2,210	2,950	2,120,000
	2-2x12	1,380	1,845	1,330,000	1,615	2,150	1,550,000	1,845	2,460	1,770,000
	1-4x12	1,185	1,580	1,140,000	1,380	1,845	1,330,000	1,580	2,105	1,520,000
	3-2x12	920	1,230	880,000	1,075	1,435	1,030,000	1,230	1,640	1,180,000
	2-3x12	830	1,105	800,000	970	1,290	930,000	1,105	1,475	1,060,000
	1-6x12	720	960	680,000	840	1,125	790,000	960	1,285	900,000
	4-2x12	690	920	660,000	805	1,075	770,000	920	1,230	880,000
19	3-2x10	1,520	2,025	1,870,000	1,770	2,365	2,180,000	2,025	2,700	2,500,000
	2-3x10	1,365	1,825	1,680,000	1,595	2,125	1,970,000	1,825	2,430	2,250,000
	1-6x10	1,180	1,570	1,410,000	1,375	1,835	1,650,000	1,570	2,095	1,880,000
	4-2x10	1,140	1,520	1,400,000	1,330	1,770	1,640,000	1,520	2,025	1,870,000
	2-4x10	975	1,300	1,200,000	1,140	1,520	1,400,000	1,300	1,735	1,600,000
	1-8x10	865	1,150	1,040,000	1,010	1,345	1,210,000	1,150	1,535	1,380,000
	2-2x12	1,540	2,055	1,560,000	1,795	2,395	1,820,000	2,055	2,740	2,080,000
	1-4x12	1,320	1,760	1,340,000	1,540	2,055	1,560,000	1,760	2,345	1,780,000
	3-2x12	1,025	1,370	1,040,000	1,200	1,595	1,210,000	1,370	1,825	1,390,000
	2-3x12	925	1,230	940,000	1,080	1,440	1,090,000	1,230	1,645	1,250,000
	1-6x12	805	1,070	800,000	940	1,250	930,000	1,070	1,430	1,060,000
	4-2x12	770	1,025	780,000	900	1,200	910,000	1,025	1,370	1,040,000
20	2-3x10	1,515	2,020	1,960,000	1,765	2,355	2,290,000	2,020	2,695	2,620,000
	1-6x10	1,305	1,740	1,650,000	1,525	2,030	1,920,000	1,740	2,320	2,200,000
	4-2x10	1,260	1,685	1,640,000	1,475	1,965	1,910,000	1,685	2,245	2,180,000
	2-4x10	1,080	1,445	1,400,000	1,260	1,685	1,640,000	1,445	1,925	1,870,000
	1-8x10	955	1,275	1,210,000	1,115	1,490	1,410,000	1,275	1,700	1,610,000
	2-2x12	1,705	2,275	1,820,000	1,990	2,655	2,120,000	2,275	3,035	2,430,000
	1-4x12	1,465	1,950	1,560,000	1,705	2,275	1,820,000	1,950	2,600	2,080,000
	3-2x12	1,140	1,515	1,210,000	1,325	1,770	1,420,000	1,515	2,025	1,620,000
	2-3x12	1,025	1,365	1,090,000	1,195	1,595	1,270,000	1,365	1,820	1,460,000
	1-6x12	890	1,190	930,000	1,040	1,385	1,080,000	1,190	1,585	1,240,000
	4-2x12	855	1,140	910,000	995	1,325	1,060,000	1,140	1,515	1,210,000
	2-4x12	730	975	780,000	855	1,140	910,000	975	1,300	1,040,000
21	4-2x10	1,390	1,855	1,900,000	1,625	2,165	2,210,000	1,855	2,475	2,530,000
	2-4x10	1,195	1,590	1,620,000	1,390	1,855	1,900,000	1,590	2,120	2,170,000
	1-8x10	1,055	1,405	1,400,000	1,230	1,640	1,630,000	1,405	1,875	1,870,000
	1-4x12	1,615	2,150	1,810,000	1,880	2,510	2,110,000	2,150	2,865	2,410,000
	3-2x12	1,255	1,675	1,400,000	1,465	1,950	1,640,000	1,675	2,230	1,870,000
	2-3x12	1,130	1,505	1,260,000	1,315	1,755	1,480,000	1,505	2,005	1,690,000
	1-6x12	980	1,310	1,080,000	1,145	1,530	1,260,000	1,310	1,745	1,430,000
	4-2x12	940	1,255	1,050,000	1,100	1,465	1,230,000	1,255	1,675	1,400,000
	2-4x12	805	1,075	900,000	940	1,255	1,050,000	1,075	1,435	1,200,000
	3-3x12	755	1,005	840,000	880	1,170	980,000	1,005	1,340	1,120,000
	1-8x12	720	960	790,000	840	1,120	920,000	960	1,280	1,050,000
	1-10x12	570	760	620,000	665	885	730,000	760	1,010	830,000
22	2-4x10	1,310	1,745	1,870,000	1,525	2,035	2,180,000	1,745	2,325	2,490,000
	1-8x10	1,160	1,545	1,610,000	1,350	1,800	1,880,000	1,545	2,060	2,150,000
	3-2x12	1,375	1,835	1,620,000	1,605	2,140	1,880,000	1,835	2,445	2,150,000
	2-3x12	1,240	1,650	1,450,000	1,445	1,925	1,700,000	1,650	2,205	1,940,000
	1-6x12	1,080	1,435	1,240,000	1,260	1,675	1,440,000	1,435	1,915	1,650,000
	4-2x12	1,035	1,375	1,210,000	1,205	1,605	1,410,000	1,375	1,835	1,620,000
	2-4x12	885	1,180	1,040,000	1,035	1,375	1,210,000	1,180	1,575	1,380,000
	5-2x12	825	1,100	970,000	965	1,285	1,130,000	1,100	1,470	1,290,000
	3-3x12	825	1,100	970,000	965	1,285	1,130,000	1,100	1,470	1,290,000
	1-8x12	790	1,055	910,000	920	1,230	1,060,000	1,055	1,405	1,210,000
	1-10x12	625	830	716,290	730	970	840,000	830	1,110	960,000

Table 5 Floor and Roof Beams

Required values for fiber stress in bending (f_b) and modulus of elasticity (E) for the sizes shown to support safely a live load of 30 pounds per square foot within a deflection limitation of L/180. For instructions on use of table see Design Data For Beams on page 4.

Beam Span (ft.)	Nominal Size	Plank Span = 6'-0			Plank Span = 7'-0"			Plank Span = 8'-0"		
		f_b (psi)		E (psi)	f_b (psi)		E (psi)	f_b (psi)		E (psi)
		10 psf DL	20 psf DL		10 psf DL	20 psf DL		10 psf DL	20 psf DL	
10	2-3x6	1,430	1,785	880,000	1,665	2,085	1,020,000	1,905	2,380	1,170,000
	1-3x8	1,645	2,055	770,000	1,920	2,395	890,000	2,190	2,740	1,020,000
	1-4x8	1,175	1,470	550,000	1,370	1,710	640,000	1,565	1,955	730,000
	3-2x8	915	1,140	430,000	1,065	1,330	500,000	1,220	1,520	570,000
	2-3x8	820	1,025	380,000	960	1,200	450,000	1,095	1,370	510,000
	2-4x8	585	735	270,000	685	855	320,000	785	980	360,000
	2-2x10	840	1,050	310,000	980	1,225	360,000	1,120	1,400	410,000
11	2-3x6	1,730	2,160	1,170,000	2,015	2,520	1,360,000	2,305	2,880	1,560,000
	1-3x8	1,990	2,485	1,020,000	2,320	2,900	1,190,000	2,650	3,315	1,360,000
	1-4x8	1,420	1,775	730,000	1,655	2,070	850,000	1,895	2,370	970,000
	3-2x8	1,105	1,380	570,000	1,290	1,610	660,000	1,475	1,840	750,000
	2-3x8	995	1,245	510,000	1,160	1,450	590,000	1,325	1,655	680,000
	2-4x8	710	890	360,000	830	1,035	420,000	945	1,185	480,000
	2-2x10	1,020	1,275	410,000	1,190	1,485	480,000	1,360	1,695	540,000
12	1-4x8	1,690	2,115	940,000	1,975	2,465	1,100,000	2,255	2,820	1,260,000
	3-2x8	1,315	1,645	730,000	1,535	1,920	860,000	1,755	2,190	980,000
	2-3x8	1,185	1,480	660,000	1,380	1,725	770,000	1,580	1,975	880,000
	2-4x8	845	1,055	470,000	985	1,235	550,000	1,125	1,410	630,000
	1-6x8	1,005	1,255	540,000	1,175	1,465	630,000	1,340	1,675	720,000
	2-2x10	1,210	1,515	530,000	1,415	1,765	620,000	1,615	2,020	710,000
	3-2x10	810	1,010	350,000	940	1,180	410,000	1,075	1,345	470,000
	2-3x10	725	910	320,000	850	1,060	370,000	970	1,210	420,000
13	1-4x8	1,985	2,480	1,200,000	2,315	2,895	1,400,000	2,645	3,305	1,600,000
	3-2x8	1,545	1,930	930,000	1,800	2,250	1,090,000	2,060	2,570	1,250,000
	2-3x8	1,390	1,735	840,000	1,620	2,025	980,000	1,850	2,315	1,120,000
	2-4x8	990	1,240	600,000	1,155	1,445	700,000	1,325	1,655	800,000
	1-6x8	1,180	1,475	690,000	1,375	1,720	810,000	1,575	1,965	920,000
	2-2x10	1,420	1,780	670,000	1,660	2,075	790,000	1,895	2,370	900,000
	3-2x10	950	1,185	450,000	1,105	1,385	520,000	1,265	1,580	600,000
	2-3x10	855	1,065	400,000	995	1,245	470,000	1,140	1,420	540,000
	1-4x10	1,220	1,525	580,000	1,420	1,780	670,000	1,625	2,030	770,000
14	3-2x8	1,790	2,235	1,170,000	2,090	2,610	1,360,000	2,385	2,985	1,560,000
	2-3x8	1,610	2,015	1,050,000	1,880	2,350	1,220,000	2,150	2,685	1,400,000
	2-4x8	1,150	1,440	750,000	1,340	1,680	870,000	1,535	1,920	1,000,000
	1-6x8	1,370	1,710	860,000	1,595	1,995	1,010,000	1,825	2,280	1,150,000
	2-2x10	1,650	2,060	840,000	1,925	2,405	980,000	2,200	2,750	1,120,000
	3-2x10	1,100	1,375	560,000	1,285	1,605	660,000	1,465	1,835	750,000
	2-3x10	990	1,235	510,000	1,155	1,445	590,000	1,320	1,650	670,000
	1-4x10	1,415	1,765	720,000	1,650	2,060	840,000	1,885	2,355	960,000
	1-6x10	855	1,065	420,000	995	1,245	490,000	1,135	1,420	570,000
	2-4x10	705	885	360,000	825	1,030	420,000	940	1,180	480,000
15	2-4x8	1,320	1,650	920,000	1,540	1,925	1,080,000	1,760	2,200	1,230,000
	1-6x8	1,570	1,965	1,060,000	1,835	2,290	1,240,000	2,095	2,620	1,410,000
	2-2x10	1,895	2,365	1,040,000	2,210	2,760	1,210,000	2,525	3,155	1,380,000
	3-2x10	1,260	1,580	690,000	1,475	1,840	810,000	1,685	2,105	920,000
	2-3x10	1,135	1,420	620,000	1,325	1,655	730,000	1,515	1,895	830,000
	1-4x10	1,625	2,030	890,000	1,895	2,365	1,040,000	2,165	2,705	1,180,000
	1-6x10	980	1,225	520,000	1,140	1,430	610,000	1,305	1,630	700,000
	2-4x10	810	1,015	440,000	945	1,185	520,000	1,080	1,350	590,000
	4-2x10	945	1,185	520,000	1,105	1,380	600,000	1,260	1,580	690,000
	1-8x10	720	900	380,000	840	1,045	450,000	955	1,195	510,000
	2-2x12	1,280	1,600	580,000	1,495	1,865	670,000	1,705	2,135	770,000
	1-4x12	1,095	1,370	490,000	1,280	1,600	580,000	1,465	1,830	660,000
16	2-2x10	2,155	2,695	1,260,000	2,515	3,140	1,470,000	2,870	3,590	1,680,000
	3-2x10	1,435	1,795	840,000	1,675	2,095	980,000	1,915	2,395	1,120,000
	2-3x10	1,295	1,615	750,000	1,510	1,885	880,000	1,725	2,155	1,010,000
	1-4x10	1,845	2,310	1,080,000	2,155	2,695	1,260,000	2,460	3,075	1,440,000
	1-6x10	1,115	1,390	630,000	1,300	1,625	740,000	1,485	1,855	840,000
	2-4x10	925	1,155	540,000	1,075	1,345	630,000	1,230	1,540	720,000
	4-2x10	1,075	1,345	630,000	1,255	1,570	730,000	1,435	1,795	840,000
	1-8x10	815	1,020	460,000	955	1,190	540,000	1,090	1,360	620,000
	2-2x12	1,455	1,820	700,000	1,700	2,125	820,000	1,940	2,425	930,000
	1-4x12	1,250	1,560	600,000	1,455	1,820	700,000	1,665	2,080	800,000
	3-2x12	970	1,215	470,000	1,135	1,415	540,000	1,295	1,620	620,000
	2-3x12	875	1,090	420,000	1,020	1,275	490,000	1,165	1,455	560,000

Table 5 Floor and Roof Beams (Cont.)

Required values for fiber stress in bending (f_b) and modulus of elasticity (E) for the sizes shown to support safely a live load of 20 pounds per square foot within a deflection limitation of L/360. For instructions on use of table see Design Data For Beams on page 4.

Beam Span (ft.)	Nominal Size	Plank Span = 6'-0			Plank Span = 7'-0			Plank Span = 8'-0"		
		f_b (psi)		E (psi)	f_b (psi)		E (psi)	f_b (psi)		E (psi)
		10 psf DL	20 psf DL		10 psf DL	20 psf DL		10 psf DL	20 psf DL	
17	3-2x10	1,620	2,025	1,010,000	1,890	2,365	1,170,000	2,160	2,700	1,340,000
	2-3x10	1,460	1,825	910,000	1,700	2,130	1,060,000	1,945	2,430	1,210,000
	1-4x10	2,085	2,605	1,290,000	2,430	3,040	1,510,000	2,780	3,475	1,720,000
	1-6x10	1,260	1,570	760,000	1,465	1,835	890,000	1,675	2,095	1,010,000
	2-4x10	1,040	1,305	650,000	1,215	1,520	750,000	1,390	1,735	860,000
	4-2x10	1,215	1,520	750,000	1,420	1,775	880,000	1,620	2,025	1,010,000
	1-8x10	920	1,155	560,000	1,075	1,345	650,000	1,230	1,535	740,000
	2-2x12	1,645	2,055	840,000	1,920	2,400	980,000	2,190	2,740	1,120,000
	1-4x12	1,410	1,760	720,000	1,645	2,055	840,000	1,880	2,350	960,000
	3-2x12	1,095	1,370	560,000	1,280	1,600	650,000	1,460	1,825	750,000
	2-3x12	985	1,235	500,000	1,150	1,440	590,000	1,315	1,645	670,000
	4-2x12	820	1,030	420,000	960	1,200	490,000	1,095	1,370	560,000
18	2-3x10	1,635	2,045	1,070,000	1,910	2,385	1,250,000	2,180	2,725	1,430,000
	1-6x10	1,410	1,760	900,000	1,645	2,055	1,050,000	1,880	2,350	1,200,000
	2-4x10	1,170	1,460	770,000	1,365	1,705	900,000	1,560	1,945	1,020,000
	4-2x10	1,365	1,705	900,000	1,590	1,990	1,040,000	1,820	2,270	1,190,000
	1-8x10	1,035	1,290	660,000	1,205	1,510	770,000	1,380	1,725	880,000
	2-2x12	1,845	2,305	1,000,000	2,150	2,690	1,160,000	2,460	3,070	1,330,000
	1-4x12	1,580	1,975	850,000	1,845	2,305	1,000,000	2,105	2,635	1,140,000
	3-2x12	1,230	1,535	660,000	1,435	1,790	770,000	1,640	2,050	880,000
	2-3x12	1,105	1,380	600,000	1,290	1,615	700,000	1,475	1,845	800,000
	4-2x12	920	1,150	500,000	1,075	1,345	580,000	1,230	1,535	660,000
	2-4x12	790	985	430,000	920	1,150	500,000	1,055	1,315	570,000
	5-2x12	735	920	400,000	860	1,075	460,000	985	1,230	530,000
19	2-4x10	1,300	1,625	900,000	1,520	1,900	1,050,000	1,735	2,170	1,200,000
	4-2x10	1,520	1,900	1,050,000	1,770	2,215	1,230,000	2,025	2,530	1,400,000
	1-8x10	1,150	1,440	780,000	1,345	1,680	910,000	1,535	1,920	1,040,000
	1-4x12	1,760	2,200	1,000,000	2,055	2,565	1,170,000	2,345	2,935	1,340,000
	3-2x12	1,370	1,710	780,000	1,595	1,995	910,000	1,825	2,280	1,040,000
	2-3x12	1,230	1,540	700,000	1,440	1,795	820,000	1,645	2,055	940,000
	4-2x12	1,025	1,285	590,000	1,200	1,495	680,000	1,370	1,710	780,000
	2-4x12	880	1,100	500,000	1,025	1,285	590,000	1,175	1,465	670,000
	5-2x12	820	1,025	470,000	960	1,200	550,000	1,095	1,370	620,000
	1-6x12	1,070	1,340	600,000	1,250	1,565	700,000	1,430	1,785	800,000
	3-3x12	820	1,025	470,000	960	1,200	550,000	1,095	1,370	620,000
	1-8x12	785	985	440,000	915	1,145	510,000	1,050	1,310	580,000
20	4-2x10	1,685	2,105	1,230,000	1,965	2,455	1,430,000	2,245	2,805	1,640,000
	1-8x10	1,275	1,595	910,000	1,490	1,860	1,060,000	1,700	2,125	1,210,000
	3-2x12	1,515	1,895	910,000	1,770	2,210	1,060,000	2,025	2,530	1,210,000
	2-3x12	1,365	1,705	820,000	1,595	1,990	960,000	1,820	2,275	1,090,000
	4-2x12	1,140	1,420	680,000	1,325	1,660	800,000	1,515	1,895	910,000
	2-4x12	975	1,220	590,000	1,140	1,420	680,000	1,300	1,625	780,000
	5-2x12	910	1,140	550,000	1,060	1,325	640,000	1,215	1,515	730,000
	1-6x12	1,190	1,485	700,000	1,385	1,730	810,000	1,585	1,980	930,000
	3-3x12	910	1,140	550,000	1,060	1,325	640,000	1,215	1,515	730,000
	1-8x12	870	1,090	510,000	1,015	1,270	600,000	1,160	1,450	680,000
	1-10x12	690	860	400,000	800	1,005	470,000	915	1,145	540,000
	4-3x12	685	855	410,000	795	995	480,000	910	1,140	550,000
21	1-8x10	1,405	1,760	1,050,000	1,640	2,050	1,220,000	1,875	2,345	1,400,000
	3-2x12	1,675	2,090	1,050,000	1,950	2,440	1,230,000	2,230	2,790	1,400,000
	2-3x12	1,505	1,880	950,000	1,755	2,195	1,110,000	2,005	2,510	1,260,000
	4-2x12	1,255	1,570	790,000	1,465	1,830	920,000	1,675	2,090	1,050,000
	2-4x12	1,075	1,345	680,000	1,255	1,570	790,000	1,435	1,790	900,000
	5-2x12	1,005	1,255	630,000	1,170	1,465	740,000	1,340	1,675	840,000
	1-6x12	1,310	1,635	810,000	1,530	1,910	940,000	1,745	2,185	1,080,000
	3-3x12	1,005	1,255	630,000	1,170	1,465	740,000	1,340	1,675	840,000
	1-8x12	960	1,200	590,000	1,120	1,400	690,000	1,280	1,600	790,000
	1-10x12	760	950	470,000	885	1,105	550,000	1,010	1,265	620,000
	4-3x12	755	940	470,000	880	1,100	550,000	1,005	1,255	630,000
	2-3x14	1,085	1,355	580,000	1,265	1,585	680,000	1,445	1,810	770,000
22	2-3x12	1,650	2,065	1,090,000	1,925	2,410	1,270,000	2,205	2,755	1,450,000
	4-2x12	1,375	1,720	910,000	1,605	2,010	1,060,000	1,835	2,295	1,210,000
	2-4x12	1,180	1,475	780,000	1,375	1,720	910,000	1,575	1,965	1,040,000
	5-2x12	1,100	1,375	730,000	1,285	1,605	850,000	1,470	1,835	970,000
	1-6x12	1,435	1,795	930,000	1,675	2,095	1,080,000	1,915	2,395	1,240,000
	3-3x12	1,100	1,375	730,000	1,285	1,605	850,000	1,470	1,835	970,000
	1-8x12	1,055	1,320	680,000	1,230	1,535	790,000	1,405	1,755	910,000
	1-10x12	830	1,040	540,000	970	1,215	630,000	1,110	1,385	720,000
	4-3x12	825	1,035	550,000	965	1,205	640,000	1,100	1,375	730,000
	2-3x14	1,190	1,490	670,000	1,390	1,735	780,000	1,590	1,985	890,000
	1-6x14	1,045	1,305	570,000	1,215	1,520	670,000	1,390	1,740	760,000
	3-3x14	795	990	440,000	925	1,160	520,000	1,060	1,325	590,000
	2-4x14	820	1,025	450,000	955	1,195	530,000	1,095	1,365	600,000

Table 6 Floor and Roof Beams

Required values for fiber stress in bending (f_b) and modulus of elasticity (E) for the sizes shown to support safely a live load of 30 pounds per square foot within a deflection limitation of L/240. For instructions on use of table see Design Data For Beams on page 4.

Beam Span (ft.)	Nominal Size	Plank Span = 6'-0			Plank Span = 7'-0"			Plank Span = 8'-0"		
		f_b (psi)		E (psi)	f_b (psi)		E (psi)	f_b (psi)		E (psi)
		10 psf DL	20 psf DL		10 psf DL	20 psf DL		10 psf DL	20 psf DL	
10	2-3x6	1,430	1,785	1,170,000	1,665	2,085	1,360,000	1,905	2,380	1,560,000
	1-3x8	1,645	2,055	1,020,000	1,920	2,395	1,190,000	2,190	2,740	1,360,000
	1-4x8	1,175	1,470	730,000	1,370	1,710	850,000	1,565	1,955	970,000
	3-2x8	915	1,140	570,000	1,065	1,330	660,000	1,220	1,520	760,000
	2-3x8	820	1,025	510,000	960	1,200	600,000	1,095	1,370	680,000
	2-4x8	585	735	360,000	685	855	430,000	785	980	490,000
	2-2x10	840	1,050	410,000	980	1,225	480,000	1,120	1,400	550,000
11	2-3x6	1,730	2,160	1,560,000	2,015	2,520	1,810,000	2,305	2,880	2,070,000
	1-3x8	1,990	2,485	1,360,000	2,320	2,900	1,580,000	2,650	3,315	1,810,000
	1-4x8	1,420	1,775	970,000	1,655	2,070	1,130,000	1,895	2,370	1,290,000
	3-2x8	1,105	1,380	750,000	1,290	1,610	880,000	1,475	1,840	1,010,000
	2-3x8	995	1,245	680,000	1,160	1,450	790,000	1,325	1,655	910,000
	2-4x8	710	890	480,000	830	1,035	570,000	945	1,185	650,000
	2-2x10	1,020	1,275	540,000	1,190	1,485	640,000	1,360	1,695	730,000
12	1-4x8	1,690	2,115	1,260,000	1,975	2,465	1,470,000	2,255	2,820	1,680,000
	3-2x8	1,315	1,645	980,000	1,535	1,920	1,140,000	1,755	2,190	1,310,000
	2-3x8	1,185	1,480	880,000	1,380	1,725	1,030,000	1,580	1,975	1,180,000
	2-4x8	845	1,055	630,000	985	1,235	730,000	1,125	1,410	840,000
	1-6x8	1,005	1,255	720,000	1,175	1,465	840,000	1,340	1,675	970,000
	2-2x10	1,210	1,515	710,000	1,415	1,765	830,000	1,615	2,020	940,000
	3-2x10	810	1,010	470,000	940	1,180	550,000	1,075	1,345	630,000
	2-3x10	725	910	420,000	850	1,060	500,000	970	1,210	570,000
13	1-4x8	1,985	2,480	1,600,000	2,315	2,895	1,870,000	2,645	3,305	2,130,000
	3-2x8	1,545	1,930	1,250,000	1,800	2,250	1,450,000	2,060	2,570	1,660,000
	2-3x8	1,390	1,735	1,120,000	1,620	2,025	1,310,000	1,850	2,315	1,490,000
	2-4x8	990	1,240	800,000	1,155	1,445	930,000	1,325	1,655	1,070,000
	1-6x8	1,180	1,475	920,000	1,375	1,720	1,070,000	1,575	1,965	1,230,000
	2-2x10	1,420	1,780	900,000	1,660	2,075	1,050,000	1,895	2,370	1,200,000
	3-2x10	950	1,185	600,000	1,105	1,385	700,000	1,265	1,580	800,000
	2-3x10	855	1,065	540,000	995	1,245	630,000	1,140	1,420	720,000
	1-4x10	1,220	1,525	770,000	1,420	1,780	900,000	1,625	2,030	1,030,000
14	3-2x8	1,790	2,235	1,560,000	2,090	2,610	1,810,000	2,385	2,985	2,070,000
	2-3x8	1,610	2,015	1,400,000	1,880	2,350	1,630,000	2,150	2,685	1,870,000
	2-4x8	1,150	1,440	1,000,000	1,340	1,680	1,170,000	1,535	1,920	1,330,000
	1-6x8	1,370	1,710	1,150,000	1,595	1,995	1,340,000	1,825	2,280	1,530,000
	2-2x10	1,650	2,060	1,120,000	1,925	2,405	1,310,000	2,200	2,750	1,500,000
	3-2x10	1,100	1,375	750,000	1,285	1,605	870,000	1,465	1,835	1,000,000
	2-3x10	990	1,235	670,000	1,155	1,445	790,000	1,320	1,650	900,000
	1-4x10	1,415	1,765	960,000	1,650	2,060	1,120,000	1,885	2,355	1,280,000
	1-6x10	855	1,065	570,000	995	1,245	660,000	1,135	1,420	750,000
	2-4x10	705	885	480,000	825	1,030	560,000	940	1,180	640,000
15	2-4x8	1,320	1,650	1,230,000	1,540	1,925	1,430,000	1,760	2,200	1,640,000
	1-6x8	1,570	1,965	1,410,000	1,835	2,290	1,650,000	2,095	2,620	1,880,000
	2-2x10	1,895	2,365	1,380,000	2,210	2,760	1,610,000	2,525	3,155	1,840,000
	3-2x10	1,260	1,580	920,000	1,475	1,840	1,070,000	1,685	2,105	1,230,000
	2-3x10	1,135	1,420	830,000	1,325	1,655	970,000	1,515	1,895	1,110,000
	1-4x10	1,625	2,030	1,180,000	1,895	2,365	1,380,000	2,165	2,705	1,580,000
	1-6x10	980	1,225	700,000	1,140	1,430	810,000	1,305	1,630	930,000
	2-4x10	810	1,015	590,000	945	1,185	690,000	1,080	1,350	790,000
	4-2x10	945	1,185	690,000	1,105	1,380	810,000	1,260	1,580	920,000
	1-8x10	720	900	510,000	840	1,045	600,000	955	1,195	680,000
	2-2x12	1,280	1,600	770,000	1,495	1,865	900,000	1,705	2,135	1,020,000
	1-4x12	1,095	1,370	660,000	1,280	1,600	770,000	1,465	1,830	880,000
16	2-2x10	2,155	2,695	1,680,000	2,515	3,140	1,960,000	2,870	3,590	2,240,000
	3-2x10	1,435	1,795	1,120,000	1,675	2,095	1,300,000	1,915	2,395	1,490,000
	2-3x10	1,295	1,615	1,010,000	1,510	1,885	1,170,000	1,725	2,155	1,340,000
	1-4x10	1,845	2,310	1,440,000	2,155	2,695	1,680,000	2,460	3,075	1,920,000
	1-6x10	1,115	1,390	840,000	1,300	1,625	980,000	1,485	1,855	1,130,000
	2-4x10	925	1,155	720,000	1,075	1,345	840,000	1,230	1,540	960,000
	4-2x10	1,075	1,345	840,000	1,255	1,570	980,000	1,435	1,795	1,120,000
	1-8x10	815	1,020	620,000	955	1,190	720,000	1,090	1,360	830,000
	2-2x12	1,455	1,820	930,000	1,700	2,125	1,090,000	1,940	2,425	1,240,000
	1-4x12	1,250	1,560	800,000	1,455	1,820	930,000	1,665	2,080	1,070,000
	3-2x12	970	1,215	620,000	1,135	1,415	720,000	1,295	1,620	830,000
	2-3x12	875	1,090	560,000	1,020	1,275	650,000	1,165	1,455	750,000

Table 6 Floor and Roof Beams (Cont.)

Required values for fiber stress in bending (f_b) and modulus of elasticity (E) for the sizes shown to support safely a live load of 30 pounds per square foot within a deflection limitation of L/240. For instructions on use of table see Design Data For Beams on page 4.

Beam Span (ft.)	Nominal Size	Plank Span = 6'-0			Plank Span = 7'-0			Plank Span = 8'-0"		
		f_b (psi)		E (psi)	f_b (psi)		E (psi)	f_b (psi)		E (psi)
		10 psf DL	20 psf DL		10 psf DL	20 psf DL		10 psf DL	20 psf DL	
17	3-2x10	1,620	2,025	1,340,000	1,890	2,365	1,560,000	2,160	2,700	1,790,000
	2-3x10	1,460	1,825	1,210,000	1,700	2,130	1,410,000	1,945	2,430	1,610,000
	1-4x10	2,085	2,605	1,720,000	2,430	3,040	2,010,000	2,780	3,475	2,300,000
	1-6x10	1,260	1,570	1,010,000	1,465	1,835	1,180,000	1,675	2,095	1,350,000
	2-4x10	1,040	1,305	860,000	1,215	1,520	1,010,000	1,390	1,735	1,150,000
	4-2x10	1,215	1,520	1,010,000	1,420	1,775	1,170,000	1,620	2,025	1,340,000
	1-8x10	920	1,155	740,000	1,075	1,345	870,000	1,230	1,535	990,000
	2-2x12	1,645	2,055	1,120,000	1,920	2,400	1,300,000	2,190	2,740	1,490,000
	1-4x12	1,410	1,760	960,000	1,645	2,055	1,120,000	1,880	2,350	1,280,000
	3-2x12	1,095	1,370	750,000	1,280	1,600	870,000	1,460	1,825	990,000
	2-3x12	985	1,235	670,000	1,150	1,440	780,000	1,315	1,645	890,000
	4-2x12	820	1,030	560,000	960	1,200	650,000	1,095	1,370	750,000
18	2-3x10	1,635	2,045	1,430,000	1,910	2,385	1,670,000	2,180	2,725	1,910,000
	1-6x10	1,410	1,760	1,200,000	1,645	2,055	1,400,000	1,880	2,350	1,600,000
	2-4x10	1,170	1,460	1,020,000	1,365	1,705	1,190,000	1,560	1,945	1,360,000
	4-2x10	1,365	1,705	1,190,000	1,590	1,990	1,390,000	1,820	2,270	1,590,000
	1-8x10	1,035	1,290	880,000	1,205	1,510	1,030,000	1,380	1,725	1,180,000
	2-2x12	1,845	2,305	1,330,000	2,150	2,690	1,550,000	2,460	3,070	1,770,000
	1-4x12	1,580	1,975	1,140,000	1,845	2,305	1,330,000	2,105	2,635	1,520,000
	3-2x12	1,230	1,535	880,000	1,435	1,790	1,030,000	1,640	2,050	1,180,000
	2-3x12	1,105	1,380	800,000	1,290	1,615	930,000	1,475	1,845	1,060,000
	4-2x12	920	1,150	660,000	1,075	1,345	770,000	1,230	1,535	880,000
	2-4x12	790	985	570,000	920	1,150	660,000	1,055	1,315	760,000
	5-2x12	735	920	530,000	860	1,075	620,000	985	1,230	710,000
19	2-4x10	1,300	1,625	1,200,000	1,520	1,900	1,400,000	1,735	2,170	1,600,000
	4-2x10	1,520	1,900	1,400,000	1,770	2,215	1,640,000	2,025	2,530	1,870,000
	1-8x10	1,150	1,440	1,040,000	1,345	1,680	1,210,000	1,535	1,920	1,380,000
	1-4x12	1,760	2,200	1,340,000	2,055	2,565	1,560,000	2,345	2,935	1,780,000
	3-2x12	1,370	1,710	1,040,000	1,595	1,995	1,210,000	1,825	2,280	1,390,000
	2-3x12	1,230	1,540	940,000	1,440	1,795	1,090,000	1,645	2,055	1,250,000
	4-2x12	1,025	1,285	780,000	1,200	1,495	910,000	1,370	1,710	1,040,000
	2-4x12	880	1,100	670,000	1,025	1,285	780,000	1,175	1,465	890,000
	5-2x12	820	1,025	620,000	960	1,200	730,000	1,095	1,370	830,000
	1-6x12	1,070	1,340	800,000	1,250	1,565	930,000	1,430	1,785	1,060,000
	3-3x12	820	1,025	620,000	960	1,200	730,000	1,095	1,370	830,000
	1-8x12	785	985	580,000	915	1,145	680,000	1,050	1,310	780,000
20	4-2x10	1,685	2,105	1,640,000	1,965	2,455	1,910,000	2,245	2,805	2,180,000
	1-8x10	1,275	1,595	1,210,000	1,490	1,860	1,410,000	1,700	2,125	1,610,000
	3-2x12	1,515	1,895	1,210,000	1,770	2,210	1,420,000	2,025	2,530	1,620,000
	2-3x12	1,365	1,705	1,090,000	1,595	1,990	1,270,000	1,820	2,275	1,460,000
	4-2x12	1,140	1,420	910,000	1,325	1,660	1,060,000	1,515	1,895	1,210,000
	2-4x12	975	1,220	780,000	1,140	1,420	910,000	1,300	1,625	1,040,000
	5-2x12	910	1,140	730,000	1,060	1,325	850,000	1,215	1,515	970,000
	1-6x12	1,190	1,485	930,000	1,385	1,730	1,080,000	1,585	1,980	1,240,000
	3-3x12	910	1,140	730,000	1,060	1,325	850,000	1,215	1,515	970,000
	1-8x12	870	1,090	680,000	1,015	1,270	800,000	1,160	1,450	910,000
	1-10x12	690	860	540,000	800	1,005	630,000	915	1,145	720,000
	4-3x12	685	855	550,000	795	995	640,000	910	1,140	730,000
21	1-8x10	1,405	1,760	1,400,000	1,640	2,050	1,630,000	1,875	2,345	1,870,000
	3-2x12	1,675	2,090	1,400,000	1,950	2,440	1,640,000	2,230	2,790	1,870,000
	2-3x12	1,505	1,880	1,260,000	1,755	2,195	1,480,000	2,005	2,510	1,690,000
	4-2x12	1,255	1,570	1,050,000	1,465	1,830	1,230,000	1,675	2,090	1,400,000
	2-4x12	1,075	1,345	900,000	1,255	1,570	1,050,000	1,435	1,790	1,200,000
	5-2x12	1,005	1,255	840,000	1,170	1,465	980,000	1,340	1,675	1,120,000
	1-6x12	1,310	1,635	1,080,000	1,530	1,910	1,260,000	1,745	2,185	1,430,000
	3-3x12	1,005	1,255	840,000	1,170	1,465	980,000	1,340	1,675	1,120,000
	1-8x12	960	1,200	790,000	1,120	1,400	920,000	1,280	1,600	1,050,000
	1-10x12	760	950	620,000	885	1,105	730,000	1,010	1,265	830,000
	4-3x12	755	940	630,000	880	1,100	740,000	1,005	1,255	840,000
	2-3x14	1,085	1,355	770,000	1,265	1,585	900,000	1,445	1,810	1,030,000
22	2-3x12	1,650	2,065	1,450,000	1,925	2,410	1,700,000	2,205	2,755	1,940,000
	4-2x12	1,375	1,720	1,210,000	1,605	2,010	1,410,000	1,835	2,295	1,620,000
	2-4x12	1,180	1,475	1,040,000	1,375	1,720	1,210,000	1,575	1,965	1,380,000
	5-2x12	1,100	1,375	970,000	1,285	1,605	1,130,000	1,470	1,835	1,290,000
	1-6x12	1,435	1,795	1,240,000	1,675	2,095	1,440,000	1,915	2,395	1,650,000
	3-3x12	1,100	1,375	970,000	1,285	1,605	1,130,000	1,470	1,835	1,290,000
	1-8x12	1,055	1,320	910,000	1,230	1,535	1,060,000	1,405	1,755	1,210,000
	1-10x12	830	1,040	720,000	970	1,215	840,000	1,110	1,385	960,000
	4-3x12	825	1,035	730,000	965	1,205	850,000	1,100	1,375	970,000
	2-3x14	1,190	1,490	890,000	1,390	1,735	1,040,000	1,590	1,985	1,190,000
	1-6x14	1,045	1,305	760,000	1,215	1,520	890,000	1,390	1,740	1,020,000
	3-3x14	795	990	590,000	925	1,160	690,000	1,060	1,325	790,000
	2-4x14	820	1,025	600,000	955	1,195	700,000	1,095	1,365	800,000

Table 7 Floor and Roof Beams

Required values for fiber stress in bending (f_b) and modulus of elasticity (E) for the sizes shown to support safely a live load of 30 pounds per square foot within a deflection limitation of L/360. For instructions on use of table see Design Data For Beams on page 4.

Beam Span (ft.)	Nominal Size	Plank Span = 6'-0			Plank Span = 7'-0"			Plank Span = 8'-0"		
		f_b (psi)		E (psi)	f_b (psi)		E (psi)	f_b (psi)		E (psi)
		10 psf DL	20 psf DL		10 psf DL	20 psf DL		10 psf DL	20 psf DL	
10	2-3x6	1,430	1,785	1,750,000	1,665	2,085	2,040,000	1,905	2,380	2,340,000
	1-3x8	1,645	2,055	1,530,000	1,920	2,395	1,790,000	2,190	2,740	2,040,000
	1-4x8	1,175	1,470	1,090,000	1,370	1,710	1,280,000	1,565	1,955	1,460,000
	3-2x8	915	1,140	850,000	1,065	1,330	990,000	1,220	1,520	1,130,000
	2-3x8	820	1,025	770,000	960	1,200	890,000	1,095	1,370	1,020,000
	2-4x8	585	735	550,000	685	855	640,000	785	980	730,000
	2-2x10	840	1,050	610,000	980	1,225	720,000	1,120	1,400	820,000
11	1-3x8	1,990	2,485	2,040,000	2,320	2,900	2,380,000	2,650	3,315	2,720,000
	1-4x8	1,420	1,775	1,450,000	1,655	2,070	1,700,000	1,895	2,370	1,940,000
	3-2x8	1,105	1,380	1,130,000	1,290	1,610	1,320,000	1,475	1,840	1,510,000
	2-3x8	995	1,245	1,020,000	1,160	1,450	1,190,000	1,325	1,655	1,360,000
	2-4x8	710	890	730,000	830	1,035	850,000	945	1,185	970,000
	1-6x8	845	1,055	840,000	985	1,230	980,000	1,125	1,410	1,120,000
	2-2x10	1,020	1,275	820,000	1,190	1,485	950,000	1,360	1,695	1,090,000
	1-3x10	1,220	1,525	980,000	1,425	1,780	1,140,000	1,630	2,035	1,310,000
12	1-4x8	1,690	2,115	1,890,000	1,975	2,465	2,200,000	2,255	2,820	2,520,000
	3-2x8	1,315	1,645	1,470,000	1,535	1,920	1,710,000	1,755	2,190	1,960,000
	2-3x8	1,185	1,480	1,320,000	1,380	1,725	1,540,000	1,580	1,975	1,760,000
	2-4x8	845	1,055	940,000	985	1,235	1,100,000	1,125	1,410	1,260,000
	2-2x10	1,210	1,515	1,060,000	1,415	1,765	1,240,000	1,615	2,020	1,410,000
	3-2x10	810	1,010	710,000	940	1,180	830,000	1,075	1,345	940,000
	2-3x10	725	910	640,000	850	1,060	740,000	970	1,210	850,000
	1-4x10	1,040	1,300	910,000	1,210	1,515	1,060,000	1,385	1,730	1,210,000
13	3-2x8	1,545	1,930	1,870,000	1,800	2,250	2,180,000	2,060	2,570	2,490,000
	2-3x8	1,390	1,735	1,680,000	1,620	2,025	1,960,000	1,850	2,315	2,240,000
	2-4x8	990	1,240	1,200,000	1,155	1,445	1,400,000	1,325	1,655	1,600,000
	1-6x8	1,180	1,475	1,380,000	1,375	1,720	1,610,000	1,575	1,965	1,840,000
	2-2x10	1,420	1,780	1,350,000	1,660	2,075	1,570,000	1,895	2,370	1,800,000
	3-2x10	950	1,185	900,000	1,105	1,385	1,050,000	1,265	1,580	1,200,000
	2-3x10	855	1,065	810,000	995	1,245	950,000	1,140	1,420	1,080,000
	1-4x10	1,220	1,525	1,160,000	1,420	1,780	1,350,000	1,625	2,030	1,540,000
	1-6x10	735	920	680,000	860	1,070	790,000	980	1,225	910,000
14	2-4x8	1,150	1,440	1,500,000	1,340	1,680	1,750,000	1,535	1,920	2,000,000
	1-6x8	1,370	1,710	1,720,000	1,595	1,995	2,010,000	1,825	2,280	2,300,000
	2-2x10	1,650	2,060	1,680,000	1,925	2,405	1,970,000	2,200	2,750	2,250,000
	3-2x10	1,100	1,375	1,120,000	1,285	1,605	1,310,000	1,465	1,835	1,500,000
	2-3x10	990	1,235	1,010,000	1,155	1,445	1,180,000	1,320	1,650	1,350,000
	1-4x10	1,415	1,765	1,440,000	1,650	2,060	1,680,000	1,885	2,355	1,930,000
	1-6x10	855	1,065	850,000	995	1,245	990,000	1,135	1,420	1,130,000
	2-4x10	705	885	720,000	825	1,030	840,000	940	1,180	960,000
	4-2x10	825	1,030	840,000	960	1,205	980,000	1,100	1,375	1,120,000
	1-8x10	625	780	620,000	730	910	730,000	835	1,040	830,000
15	2-2x10	1,895	2,365	2,070,000	2,210	2,760	2,420,000	2,525	3,155	2,760,000
	3-2x10	1,260	1,580	1,380,000	1,475	1,840	1,610,000	1,685	2,105	1,840,000
	2-3x10	1,135	1,420	1,240,000	1,325	1,655	1,450,000	1,515	1,895	1,660,000
	1-4x10	1,625	2,030	1,780,000	1,895	2,365	2,070,000	2,165	2,705	2,370,000
	1-6x10	980	1,225	1,040,000	1,140	1,430	1,220,000	1,305	1,630	1,390,000
	2-4x10	810	1,015	890,000	945	1,185	1,040,000	1,080	1,350	1,180,000
	4-2x10	945	1,185	1,040,000	1,105	1,380	1,210,000	1,260	1,580	1,380,000
	1-8x10	720	900	770,000	840	1,045	890,000	955	1,195	1,020,000
	2-2x12	1,280	1,600	1,150,000	1,495	1,865	1,340,000	1,705	2,135	1,540,000
	1-4x12	1,095	1,370	990,000	1,280	1,600	1,150,000	1,465	1,830	1,320,000
	3-2x12	855	1,065	770,000	995	1,245	900,000	1,140	1,420	1,020,000
	2-3x12	770	960	690,000	895	1,120	810,000	1,025	1,280	920,000
16	3-2x10	1,435	1,795	1,680,000	1,675	2,095	1,960,000	1,915	2,395	2,240,000
	2-3x10	1,295	1,615	1,510,000	1,510	1,885	1,760,000	1,725	2,155	2,010,000
	1-6x10	1,115	1,390	1,270,000	1,300	1,625	1,480,000	1,485	1,855	1,690,000
	2-4x10	925	1,155	1,080,000	1,075	1,345	1,260,000	1,230	1,540	1,440,000
	4-2x10	1,075	1,345	1,260,000	1,255	1,570	1,470,000	1,435	1,795	1,680,000
	1-8x10	815	1,020	930,000	955	1,190	1,080,000	1,090	1,360	1,240,000
	2-2x12	1,455	1,820	1,400,000	1,700	2,125	1,630,000	1,940	2,425	1,860,000
	1-4x12	1,250	1,560	1,200,000	1,455	1,820	1,400,000	1,665	2,080	1,600,000
	3-2x12	970	1,215	930,000	1,135	1,415	1,090,000	1,295	1,620	1,240,000
	2-3x12	875	1,090	840,000	1,020	1,275	980,000	1,165	1,455	1,120,000
	4-2x12	730	910	700,000	850	1,060	820,000	970	1,215	930,000
	2-4x12	625	780	600,000	730	910	700,000	830	1,040	800,000

Table 7 Floor and Roof Beams (Cont.)

Required values for fiber stress in bending (f_b) and modulus of elasticity (E) for the sizes shown to support safely a live load of 30 pounds per square foot within a deflection limitation of L/360. For instructions on use of table see Design Data For Beams on page 4.

Beam Span (ft.)	Nominal Size	Plank Span = 6'-0			Plank Span = 7'-0			Plank Span = 8'-0"		
		f_b (psi)		E (psi)	f_b (psi)		E (psi)	f_b (psi)		E (psi)
		10 psf DL	20 psf DL		10 psf DL	20 psf DL		10 psf DL	20 psf DL	
17	2-3x10	1,460	1,825	1,810,000	1,700	2,130	2,110,000	1,945	2,430	2,410,000
	1-6x10	1,260	1,570	1,520,000	1,465	1,835	1,770,000	1,675	2,095	2,030,000
	2-4x10	1,040	1,305	1,290,000	1,215	1,520	1,510,000	1,390	1,735	1,720,000
	4-2x10	1,215	1,520	1,510,000	1,420	1,775	1,760,000	1,620	2,025	2,010,000
	1-8x10	920	1,155	1,110,000	1,075	1,345	1,300,000	1,230	1,535	1,490,000
	2-2x12	1,645	2,055	1,680,000	1,920	2,400	1,960,000	2,190	2,740	2,240,000
	1-4x12	1,410	1,760	1,440,000	1,645	2,055	1,680,000	1,880	2,350	1,920,000
	3-2x12	1,095	1,370	1,120,000	1,280	1,600	1,300,000	1,460	1,825	1,490,000
	2-3x12	985	1,235	1,010,000	1,150	1,440	1,170,000	1,315	1,645	1,340,000
	4-2x12	820	1,030	840,000	960	1,200	980,000	1,095	1,370	1,120,000
	2-4x12	705	880	720,000	820	1,030	840,000	940	1,175	960,000
	5-2x12	660	820	670,000	765	960	780,000	875	1,095	890,000
18	2-4x10	1,170	1,460	1,530,000	1,365	1,705	1,790,000	1,560	1,945	2,050,000
	4-2x10	1,365	1,705	1,790,000	1,590	1,990	2,090,000	1,820	2,270	2,390,000
	1-8x10	1,035	1,290	1,320,000	1,205	1,510	1,540,000	1,380	1,725	1,760,000
	2-2x12	1,845	2,305	1,990,000	2,150	2,690	2,320,000	2,460	3,070	2,650,000
	1-4x12	1,580	1,975	1,710,000	1,845	2,305	1,990,000	2,105	2,635	2,270,000
	3-2x12	1,230	1,535	1,330,000	1,435	1,790	1,550,000	1,640	2,050	1,770,000
	2-3x12	1,105	1,380	1,190,000	1,290	1,615	1,390,000	1,475	1,845	1,590,000
	4-2x12	920	1,150	1,000,000	1,075	1,345	1,160,000	1,230	1,535	1,330,000
	2-4x12	790	985	850,000	920	1,150	1,000,000	1,055	1,315	1,140,000
	5-2x12	735	920	800,000	860	1,075	930,000	985	1,230	1,060,000
	1-6x12	960	1,205	1,020,000	1,125	1,405	1,190,000	1,285	1,605	1,360,000
	3-3x12	735	920	800,000	860	1,075	930,000	985	1,230	1,060,000
19	2-4x10	1,300	1,625	1,800,000	1,520	1,900	2,110,000	1,735	2,170	2,410,000
	1-8x10	1,150	1,440	1,560,000	1,345	1,680	1,810,000	1,535	1,920	2,070,000
	3-2x12	1,370	1,710	1,560,000	1,595	1,995	1,820,000	1,825	2,280	2,080,000
	2-3x12	1,230	1,540	1,400,000	1,440	1,795	1,640,000	1,645	2,055	1,870,000
	4-2x12	1,025	1,285	1,170,000	1,200	1,495	1,370,000	1,370	1,710	1,560,000
	2-4x12	880	1,100	1,000,000	1,025	1,285	1,170,000	1,175	1,465	1,340,000
	5-2x12	820	1,025	940,000	960	1,200	1,090,000	1,095	1,370	1,250,000
	1-6x12	1,070	1,340	1,200,000	1,250	1,565	1,390,000	1,430	1,785	1,590,000
	3-3x12	820	1,025	940,000	960	1,200	1,090,000	1,095	1,370	1,250,000
	1-8x12	785	985	880,000	915	1,145	1,020,000	1,050	1,310	1,170,000
	1-10x12	620	775	690,000	725	905	810,000	830	1,035	920,000
	4-3x12	615	770	700,000	720	900	820,000	820	1,025	940,000
20	3-2x12	1,515	1,895	1,820,000	1,770	2,210	2,120,000	2,025	2,530	2,430,000
	2-3x12	1,365	1,705	1,640,000	1,595	1,990	1,910,000	1,820	2,275	2,180,000
	4-2x12	1,140	1,420	1,370,000	1,325	1,660	1,590,000	1,515	1,895	1,820,000
	2-4x12	975	1,220	1,170,000	1,140	1,420	1,370,000	1,300	1,625	1,560,000
	5-2x12	910	1,140	1,090,000	1,060	1,325	1,270,000	1,215	1,515	1,460,000
	1-6x12	1,190	1,485	1,390,000	1,385	1,730	1,630,000	1,585	1,980	1,860,000
	3-3x12	910	1,140	1,090,000	1,060	1,325	1,270,000	1,215	1,515	1,460,000
	1-8x12	870	1,090	1,020,000	1,015	1,270	1,190,000	1,160	1,450	1,360,000
	1-10x12	690	860	810,000	800	1,005	940,000	915	1,145	1,080,000
	4-3x12	685	855	820,000	795	995	960,000	910	1,140	1,090,000
	2-3x14	985	1,230	1,000,000	1,150	1,435	1,170,000	1,310	1,640	1,340,000
	1-6x14	860	1,075	860,000	1,005	1,255	1,010,000	1,150	1,435	1,150,000
21	2-3x12	1,505	1,880	1,900,000	1,755	2,195	2,210,000	2,005	2,510	2,530,000
	4-2x12	1,255	1,570	1,580,000	1,465	1,830	1,840,000	1,675	2,090	2,110,000
	2-4x12	1,075	1,345	1,350,000	1,255	1,570	1,580,000	1,435	1,790	1,810,000
	5-2x12	1,005	1,255	1,260,000	1,170	1,465	1,480,000	1,340	1,675	1,690,000
	1-6x12	1,310	1,635	1,610,000	1,530	1,910	1,880,000	1,745	2,185	2,150,000
	3-3x12	1,005	1,255	1,260,000	1,170	1,465	1,480,000	1,340	1,675	1,690,000
	1-8x12	960	1,200	1,180,000	1,120	1,400	1,380,000	1,280	1,600	1,580,000
	1-10x12	760	950	930,000	885	1,105	1,090,000	1,010	1,265	1,250,000
	4-3x12	755	940	950,000	880	1,100	1,110,000	1,005	1,255	1,260,000
	2-3x14	1,085	1,355	1,160,000	1,265	1,585	1,350,000	1,445	1,810	1,550,000
	1-6x14	950	1,190	1,000,000	1,110	1,385	1,160,000	1,265	1,585	1,330,000
	3-3x14	725	905	770,000	845	1,055	900,000	965	1,205	1,030,000
22	4-2x12	1,375	1,720	1,820,000	1,605	2,010	2,120,000	1,835	2,295	2,420,000
	2-4x12	1,180	1,475	1,560,000	1,375	1,720	1,820,000	1,575	1,965	2,080,000
	5-2x12	1,100	1,375	1,450,000	1,285	1,605	1,700,000	1,470	1,835	1,940,000
	3-3x12	1,100	1,375	1,450,000	1,285	1,605	1,700,000	1,470	1,835	1,940,000
	1-8x12	1,055	1,320	1,360,000	1,230	1,535	1,590,000	1,405	1,755	1,810,000
	1-10x12	830	1,040	1,070,000	970	1,215	1,250,000	1,110	1,385	1,430,000
	4-3x12	825	1,035	1,090,000	965	1,205	1,270,000	1,100	1,375	1,450,000
	2-3x14	1,190	1,490	1,330,000	1,390	1,735	1,560,000	1,590	1,985	1,780,000
	1-6x14	1,045	1,305	1,150,000	1,215	1,520	1,340,000	1,390	1,740	1,530,000
	3-3x14	795	990	890,000	925	1,160	1,040,000	1,060	1,325	1,190,000
	2-4x14	820	1,025	901,360	955	1,195	1,050,000	1,095	1,365	1,200,000
	4-3x14	595	745	667,345	695	870	780,000	795	990	890,000

Table 8 Floor and Roof Beams

Required values for fiber stress in bending (f_b) and modulus of elasticity (E) for the sizes shown to support safely a live load of 40 pounds per square foot within a deflection limitation of L/180. For instructions on use of table see Design Data For Beams on page 4.

Beam Span (ft.)	Nominal Size	Plank Span = 6'-0			Plank Span = 7'-0"			Plank Span = 8'-0"		
		f_b (psi)		E (psi)	f_b (psi)		E (psi)	f_b (psi)		E (psi)
		10 psf DL	20 psf DL		10 psf DL	20 psf DL		10 psf DL	20 psf DL	
10	2-3x6	1,785	2,140	1,170,000	2,085	2,500	1,360,000	2,380	2,855	1,560,000
	1-3x8	2,055	2,465	1,020,000	2,395	2,875	1,190,000	2,740	3,290	1,360,000
	2-2x8	1,710	2,055	850,000	2,000	2,395	990,000	2,285	2,740	1,130,000
	1-4x8	1,470	1,760	730,000	1,710	2,055	850,000	1,955	2,350	970,000
	1-6x8	875	1,045	420,000	1,020	1,220	490,000	1,165	1,395	560,000
	2-2x10	1,050	1,260	410,000	1,225	1,475	480,000	1,400	1,685	550,000
	1-3x10	1,260	1,515	490,000	1,475	1,765	570,000	1,685	2,020	650,000
11	2-2x8	2,070	2,485	1,130,000	2,415	2,900	1,320,000	2,760	3,315	1,510,000
	1-4x8	1,775	2,130	970,000	2,070	2,485	1,130,000	2,370	2,840	1,290,000
	1-6x8	1,055	1,265	560,000	1,230	1,480	650,000	1,410	1,690	740,000
	2-2x10	1,275	1,525	540,000	1,485	1,780	640,000	1,695	2,035	730,000
	1-3x10	1,525	1,835	650,000	1,780	2,140	760,000	2,035	2,445	870,000
	1-4x10	1,090	1,310	470,000	1,275	1,525	540,000	1,455	1,745	620,000
	3-2x10	850	1,020	360,000	990	1,190	420,000	1,130	1,360	480,000
12	1-4x8	2,115	2,535	1,260,000	2,465	2,960	1,470,000	2,820	3,380	1,680,000
	1-6x8	1,255	1,510	720,000	1,465	1,760	840,000	1,675	2,010	970,000
	3-2x8	1,645	1,975	980,000	1,920	2,300	1,140,000	2,190	2,630	1,310,000
	2-2x10	1,515	1,820	710,000	1,765	2,120	830,000	2,020	2,425	940,000
	1-3x10	1,820	2,180	850,000	2,120	2,545	990,000	2,425	2,910	1,130,000
	1-4x10	1,300	1,560	610,000	1,515	1,820	710,000	1,730	2,075	810,000
	3-2x10	1,010	1,210	470,000	1,180	1,415	550,000	1,345	1,615	630,000
	2-3x10	910	1,090	420,000	1,060	1,270	500,000	1,210	1,455	570,000
13	1-6x8	1,475	1,770	920,000	1,720	2,065	1,070,000	1,965	2,360	1,230,000
	2-3x8	1,735	2,085	1,120,000	2,025	2,430	1,310,000	2,315	2,780	1,490,000
	2-4x8	1,240	1,490	800,000	1,445	1,735	930,000	1,655	1,985	1,070,000
	2-2x10	1,780	2,135	900,000	2,075	2,490	1,050,000	2,370	2,845	1,200,000
	3-2x10	1,185	1,420	600,000	1,385	1,660	700,000	1,580	1,895	800,000
	1-3x10	2,135	2,560	1,080,000	2,490	2,985	1,260,000	2,845	3,415	1,440,000
	2-3x10	1,065	1,280	540,000	1,245	1,495	630,000	1,420	1,705	720,000
	1-4x10	1,525	1,830	770,000	1,780	2,135	900,000	2,030	2,440	1,030,000
	2-4x10	760	915	390,000	890	1,065	450,000	1,015	1,220	510,000
14	2-4x8	1,440	1,725	1,000,000	1,680	2,015	1,170,000	1,920	2,300	1,330,000
	3-2x10	1,375	1,650	750,000	1,605	1,925	870,000	1,835	2,200	1,000,000
	2-3x10	1,235	1,485	670,000	1,445	1,730	790,000	1,650	1,980	900,000
	1-4x10	1,765	2,120	960,000	2,060	2,475	1,120,000	2,355	2,825	1,280,000
	2-4x10	885	1,060	480,000	1,030	1,235	560,000	1,180	1,415	640,000
	3-3x10	825	990	450,000	960	1,155	520,000	1,100	1,320	600,000
	1-6x10	1,065	1,280	570,000	1,245	1,495	660,000	1,420	1,705	750,000
	1-8x10	780	940	410,000	910	1,095	480,000	1,040	1,250	550,000
	4-2x10	1,030	1,235	560,000	1,205	1,445	660,000	1,375	1,650	750,000
	2-2x12	1,395	1,675	620,000	1,625	1,950	730,000	1,860	2,230	830,000
15	3-2x10	1,580	1,895	920,000	1,840	2,210	1,070,000	2,105	2,525	1,230,000
	2-3x10	1,420	1,705	830,000	1,655	1,990	970,000	1,895	2,270	1,110,000
	2-4x10	1,015	1,215	590,000	1,185	1,420	690,000	1,350	1,625	790,000
	3-3x10	945	1,135	550,000	1,105	1,325	640,000	1,260	1,515	740,000
	1-6x10	1,225	1,470	700,000	1,430	1,715	810,000	1,630	1,960	930,000
	1-8x10	900	1,075	510,000	1,045	1,255	600,000	1,195	1,435	680,000
	4-2x10	1,185	1,420	690,000	1,380	1,655	810,000	1,580	1,895	920,000
	2-2x12	1,600	1,920	770,000	1,865	2,240	900,000	2,135	2,560	1,020,000
	3-2x12	1,065	1,280	510,000	1,245	1,495	600,000	1,420	1,705	680,000
	1-3x12	1,920	2,305	920,000	2,240	2,690	1,080,000	2,560	3,070	1,230,000
	4-2x12	800	960	380,000	935	1,120	450,000	1,065	1,280	510,000
	2-3x12	960	1,150	460,000	1,120	1,345	540,000	1,280	1,535	610,000
16	3-2x10	1,795	2,155	1,120,000	2,095	2,515	1,300,000	2,395	2,870	1,490,000
	2-3x10	1,615	1,940	1,010,000	1,885	2,260	1,170,000	2,155	2,585	1,340,000
	2-4x10	1,155	1,385	720,000	1,345	1,615	840,000	1,540	1,845	960,000
	3-3x10	1,075	1,295	670,000	1,255	1,510	780,000	1,435	1,725	890,000
	1-6x10	1,390	1,670	840,000	1,625	1,950	980,000	1,855	2,230	1,130,000
	1-8x10	1,020	1,225	620,000	1,190	1,430	720,000	1,360	1,635	830,000
	4-2x10	1,345	1,615	840,000	1,570	1,885	980,000	1,795	2,155	1,120,000
	2-2x12	1,820	2,185	930,000	2,125	2,550	1,090,000	2,425	2,915	1,240,000
	3-2x12	1,215	1,455	620,000	1,415	1,700	720,000	1,620	1,940	830,000
	4-2x12	910	1,090	470,000	1,060	1,275	540,000	1,215	1,455	620,000
	5-2x12	730	875	370,000	850	1,020	430,000	970	1,165	500,000
	2-3x12	1,090	1,310	560,000	1,275	1,530	650,000	1,455	1,750	750,000

Table 8 Floor and Roof Beams (Cont.)

Required values for fiber stress in bending (f_b) and modulus of elasticity (E) for the sizes shown to support safely a live load of 40 pounds per square foot within a deflection limitation of L/180. For instructions on use of table see Design Data For Beams on page 4.

Beam Span (ft.)	Nominal Size	Plank Span = 6'-0			Plank Span = 7'-0			Plank Span = 8'-0"		
		f_b (psi)		E (psi)	f_b (psi)		E (psi)	f_b (psi)		E (psi)
		10 psf DL	20 psf DL		10 psf DL	20 psf DL		10 psf DL	20 psf DL	
17	2-3x10	1,825	2,190	1,210,000	2,130	2,555	1,410,000	2,430	2,920	1,610,000
	2-4x10	1,305	1,565	860,000	1,520	1,825	1,010,000	1,735	2,085	1,150,000
	3-3x10	1,215	1,460	800,000	1,420	1,700	940,000	1,620	1,945	1,070,000
	1-8x10	1,155	1,385	740,000	1,345	1,615	870,000	1,535	1,845	990,000
	3-2x12	1,370	1,645	750,000	1,600	1,920	870,000	1,825	2,190	990,000
	4-2x12	1,030	1,235	560,000	1,200	1,440	650,000	1,370	1,645	750,000
	5-2x12	820	985	450,000	960	1,150	520,000	1,095	1,315	600,000
	2-3x12	1,235	1,480	670,000	1,440	1,725	780,000	1,645	1,975	890,000
	3-3x12	820	985	450,000	960	1,150	520,000	1,095	1,315	600,000
	2-4x12	880	1,055	480,000	1,030	1,235	560,000	1,175	1,410	640,000
	1-6x12	1,075	1,285	570,000	1,250	1,500	670,000	1,430	1,715	760,000
	1-8x12	785	945	420,000	920	1,100	490,000	1,050	1,260	560,000
18	2-3x10	2,045	2,455	1,430,000	2,385	2,865	1,670,000	2,725	3,270	1,910,000
	2-4x10	1,460	1,755	1,020,000	1,705	2,045	1,190,000	1,945	2,335	1,360,000
	3-3x10	1,365	1,635	950,000	1,590	1,910	1,110,000	1,820	2,180	1,270,000
	1-8x10	1,290	1,550	880,000	1,510	1,810	1,030,000	1,725	2,070	1,180,000
	3-2x12	1,535	1,845	880,000	1,790	2,150	1,030,000	2,050	2,460	1,180,000
	4-2x12	1,150	1,380	660,000	1,345	1,615	770,000	1,535	1,845	880,000
	5-2x12	920	1,105	530,000	1,075	1,290	620,000	1,230	1,475	710,000
	2-3x12	1,380	1,660	800,000	1,615	1,935	930,000	1,845	2,210	1,060,000
	3-3x12	920	1,105	530,000	1,075	1,290	620,000	1,230	1,475	710,000
	2-4x12	985	1,185	570,000	1,150	1,380	660,000	1,315	1,580	760,000
	1-6x12	1,205	1,445	680,000	1,405	1,685	790,000	1,605	1,925	900,000
	1-8x12	880	1,060	500,000	1,030	1,235	580,000	1,175	1,410	660,000
19	1-8x10	1,440	1,730	1,040,000	1,680	2,015	1,210,000	1,920	2,305	1,380,000
	3-2x12	1,710	2,055	1,040,000	1,995	2,395	1,210,000	2,280	2,740	1,390,000
	4-2x12	1,285	1,540	780,000	1,495	1,795	910,000	1,710	2,055	1,040,000
	5-2x12	1,025	1,230	620,000	1,200	1,440	730,000	1,370	1,645	830,000
	2-3x12	1,540	1,850	940,000	1,795	2,155	1,090,000	2,055	2,465	1,250,000
	3-3x12	1,025	1,230	620,000	1,200	1,440	730,000	1,370	1,645	830,000
	2-4x12	1,100	1,320	670,000	1,285	1,540	780,000	1,465	1,760	890,000
	1-6x12	1,340	1,610	800,000	1,565	1,875	930,000	1,785	2,145	1,060,000
	1-8x12	985	1,180	580,000	1,145	1,375	680,000	1,310	1,570	780,000
	3-4x12	735	880	450,000	855	1,025	520,000	980	1,175	590,000
	4-3x12	770	925	470,000	900	1,080	550,000	1,025	1,230	620,000
	2-6x12	670	805	400,000	780	940	460,000	895	1,070	530,000
20	3-2x12	1,895	2,275	1,210,000	2,210	2,655	1,420,000	2,530	3,035	1,620,000
	4-2x12	1,420	1,705	910,000	1,660	1,990	1,060,000	1,895	2,275	1,210,000
	5-2x12	1,140	1,365	730,000	1,325	1,595	850,000	1,515	1,820	970,000
	3-3x12	1,140	1,365	730,000	1,325	1,595	850,000	1,515	1,820	970,000
	2-4x12	1,220	1,465	780,000	1,420	1,705	910,000	1,625	1,950	1,040,000
	1-6x12	1,485	1,780	930,000	1,730	2,080	1,080,000	1,980	2,375	1,240,000
	1-8x12	1,090	1,305	680,000	1,270	1,525	800,000	1,450	1,740	910,000
	3-4x12	815	975	520,000	950	1,140	610,000	1,085	1,300	690,000
	4-3x12	855	1,025	550,000	995	1,195	640,000	1,140	1,365	730,000
	2-6x12	740	890	460,000	865	1,040	540,000	990	1,190	620,000
	1-10x12	860	1,030	540,000	1,005	1,205	630,000	1,145	1,375	720,000
	2-3x14	1,230	1,475	670,000	1,435	1,720	780,000	1,640	1,970	890,000
21	3-2x12	2,090	2,510	1,400,000	2,440	2,925	1,640,000	2,790	3,345	1,870,000
	4-2x12	1,570	1,880	1,050,000	1,830	2,195	1,230,000	2,090	2,510	1,400,000
	5-2x12	1,255	1,505	840,000	1,465	1,755	980,000	1,675	2,005	1,120,000
	3-3x12	1,255	1,505	840,000	1,465	1,755	980,000	1,675	2,005	1,120,000
	2-4x12	1,345	1,615	900,000	1,570	1,880	1,050,000	1,790	2,150	1,200,000
	1-8x12	1,200	1,440	790,000	1,400	1,680	920,000	1,600	1,920	1,050,000
	3-4x12	895	1,075	600,000	1,045	1,255	700,000	1,195	1,435	800,000
	4-3x12	940	1,130	630,000	1,100	1,315	740,000	1,255	1,505	840,000
	2-6x12	820	980	540,000	955	1,145	630,000	1,090	1,310	720,000
	1-10x12	950	1,135	620,000	1,105	1,325	730,000	1,265	1,515	830,000
	2-3x14	1,355	1,630	770,000	1,585	1,900	900,000	1,810	2,170	1,030,000
	1-6x14	1,190	1,425	670,000	1,385	1,665	780,000	1,585	1,900	890,000
22	4-2x12	1,720	2,065	1,210,000	2,010	2,410	1,410,000	2,295	2,755	1,620,000
	5-2x12	1,375	1,650	970,000	1,605	1,925	1,130,000	1,835	2,205	1,290,000
	3-3x12	1,375	1,650	970,000	1,605	1,925	1,130,000	1,835	2,205	1,290,000
	3-4x12	985	1,180	690,000	1,145	1,375	810,000	1,310	1,575	920,000
	4-3x12	1,035	1,240	730,000	1,205	1,445	850,000	1,375	1,650	970,000
	2-6x12	900	1,080	620,000	1,050	1,260	720,000	1,200	1,435	820,000
	1-10x12	1,040	1,250	720,000	1,215	1,455	840,000	1,385	1,665	960,000
	2-3x14	1,490	1,785	890,000	1,735	2,085	1,040,000	1,985	2,380	1,190,000
	1-6x14	1,305	1,565	760,000	1,520	1,825	890,000	1,740	2,085	1,020,000
	2-4x14	1,025	1,230	600,000	1,195	1,435	700,000	1,365	1,640	800,000
	3-3x14	990	1,190	590,000	1,160	1,390	690,000	1,325	1,590	790,000
	3-4x14	710	850	420,000	825	990	490,000	945	1,135	560,000

Table 9 Floor and Roof Beams

Required values for fiber stress in bending (f_b) and modulus of elasticity (E) for the sizes shown to support safely a live load of 40 pounds per square foot within a deflection limitation of L/240. For instructions on use of table see Design Data For Beams on page 4.

Beam Span (ft.)	Nominal Size	Plank Span = 6'-0"			Plank Span = 7'-0"			Plank Span = 8'-0"		
		f_b (psi)		E (psi)	f_b (psi)		E (psi)	f_b (psi)		E (psi)
		10 psf DL	20 psf DL		10 psf DL	20 psf DL		10 psf DL	20 psf DL	
10	2-3x6	1,785	2,140	1,560,000	2,085	2,500	1,820,000	2,380	2,855	2,080,000
	1-3x8	2,055	2,465	1,360,000	2,395	2,875	1,590,000	2,740	3,290	1,810,000
	2-2x8	1,710	2,055	1,130,000	2,000	2,395	1,320,000	2,285	2,740	1,510,000
	1-4x8	1,470	1,760	970,000	1,710	2,055	1,130,000	1,955	2,350	1,300,000
	1-6x8	875	1,045	560,000	1,020	1,220	650,000	1,165	1,395	740,000
	2-2x10	1,050	1,260	550,000	1,225	1,475	640,000	1,400	1,685	730,000
	1-3x10	1,260	1,515	650,000	1,475	1,765	760,000	1,685	2,020	870,000
11	2-2x8	2,070	2,485	1,510,000	2,415	2,900	1,760,000	2,760	3,315	2,010,000
	1-4x8	1,775	2,130	1,290,000	2,070	2,485	1,510,000	2,370	2,840	1,720,000
	1-6x8	1,055	1,265	740,000	1,230	1,480	870,000	1,410	1,690	990,000
	2-2x10	1,275	1,525	730,000	1,485	1,780	850,000	1,695	2,035	970,000
	1-3x10	1,525	1,835	870,000	1,780	2,140	1,020,000	2,035	2,445	1,160,000
	1-4x10	1,090	1,310	620,000	1,275	1,525	730,000	1,455	1,745	830,000
	3-2x10	850	1,020	480,000	990	1,190	570,000	1,130	1,360	650,000
12	1-4x8	2,115	2,535	1,680,000	2,465	2,960	1,960,000	2,820	3,380	2,240,000
	1-6x8	1,255	1,510	970,000	1,465	1,760	1,130,000	1,675	2,010	1,290,000
	3-2x8	1,645	1,975	1,310,000	1,920	2,300	1,520,000	2,190	2,630	1,740,000
	2-2x10	1,515	1,820	940,000	1,765	2,120	1,100,000	2,020	2,425	1,260,000
	1-3x10	1,820	2,180	1,130,000	2,120	2,545	1,320,000	2,425	2,910	1,510,000
	1-4x10	1,300	1,560	810,000	1,515	1,820	940,000	1,730	2,075	1,080,000
	3-2x10	1,010	1,210	630,000	1,180	1,415	730,000	1,345	1,615	840,000
	2-3x10	910	1,090	570,000	1,060	1,270	660,000	1,210	1,455	750,000
13	1-6x8	1,475	1,770	1,230,000	1,720	2,065	1,430,000	1,965	2,360	1,640,000
	2-3x8	1,735	2,085	1,490,000	2,025	2,430	1,740,000	2,315	2,780	1,990,000
	2-4x8	1,240	1,490	1,070,000	1,445	1,735	1,250,000	1,655	1,985	1,420,000
	2-2x10	1,780	2,135	1,200,000	2,075	2,490	1,400,000	2,370	2,845	1,600,000
	3-2x10	1,185	1,420	800,000	1,385	1,660	930,000	1,580	1,895	1,070,000
	1-3x10	2,135	2,560	1,440,000	2,490	2,985	1,680,000	2,845	3,415	1,920,000
	2-3x10	1,065	1,280	720,000	1,245	1,495	840,000	1,420	1,705	960,000
	1-4x10	1,525	1,830	1,030,000	1,780	2,135	1,200,000	2,030	2,440	1,370,000
	2-4x10	760	915	510,000	890	1,065	600,000	1,015	1,220	690,000
14	2-4x8	1,440	1,725	1,330,000	1,680	2,015	1,560,000	1,920	2,300	1,780,000
	3-2x10	1,375	1,650	1,000,000	1,605	1,925	1,160,000	1,835	2,200	1,330,000
	2-3x10	1,235	1,485	900,000	1,445	1,730	1,050,000	1,650	1,980	1,200,000
	1-4x10	1,765	2,120	1,280,000	2,060	2,475	1,500,000	2,355	2,825	1,710,000
	2-4x10	885	1,060	640,000	1,030	1,235	750,000	1,180	1,415	860,000
	3-3x10	825	990	600,000	960	1,155	700,000	1,100	1,320	800,000
	1-6x10	1,065	1,280	750,000	1,245	1,495	880,000	1,420	1,705	1,010,000
	1-8x10	780	940	550,000	910	1,095	650,000	1,040	1,250	740,000
	4-2x10	1,030	1,235	750,000	1,205	1,445	870,000	1,375	1,650	1,000,000
	2-2x12	1,395	1,675	830,000	1,625	1,950	970,000	1,860	2,230	1,110,000
15	3-2x10	1,580	1,895	1,230,000	1,840	2,210	1,430,000	2,105	2,525	1,640,000
	2-3x10	1,420	1,705	1,110,000	1,655	1,990	1,290,000	1,895	2,270	1,470,000
	2-4x10	1,015	1,215	790,000	1,185	1,420	920,000	1,350	1,625	1,050,000
	3-3x10	945	1,135	740,000	1,105	1,325	860,000	1,260	1,515	980,000
	1-6x10	1,225	1,470	930,000	1,430	1,715	1,080,000	1,630	1,960	1,240,000
	1-8x10	900	1,075	680,000	1,045	1,255	790,000	1,195	1,435	910,000
	4-2x10	1,185	1,420	920,000	1,380	1,655	1,070,000	1,580	1,895	1,230,000
	2-2x12	1,600	1,920	1,020,000	1,865	2,240	1,190,000	2,135	2,560	1,370,000
	3-2x12	1,065	1,280	680,000	1,245	1,495	800,000	1,420	1,705	910,000
	1-3x12	1,920	2,305	1,230,000	2,240	2,690	1,430,000	2,560	3,070	1,640,000
	4-2x12	800	960	510,000	935	1,120	600,000	1,065	1,280	680,000
	2-3x12	960	1,150	610,000	1,120	1,345	720,000	1,280	1,535	820,000
16	3-2x10	1,795	2,155	1,490,000	2,095	2,515	1,740,000	2,395	2,870	1,990,000
	2-3x10	1,615	1,940	1,340,000	1,885	2,260	1,560,000	2,155	2,585	1,790,000
	2-4x10	1,155	1,385	960,000	1,345	1,615	1,120,000	1,540	1,845	1,280,000
	3-3x10	1,075	1,295	890,000	1,255	1,510	1,040,000	1,435	1,725	1,190,000
	1-6x10	1,390	1,670	1,130,000	1,625	1,950	1,310,000	1,855	2,230	1,500,000
	1-8x10	1,020	1,225	830,000	1,190	1,430	960,000	1,360	1,635	1,100,000
	4-2x10	1,345	1,615	1,120,000	1,570	1,885	1,300,000	1,795	2,155	1,490,000
	2-2x12	1,820	2,185	1,240,000	2,125	2,550	1,450,000	2,425	2,915	1,660,000
	3-2x12	1,215	1,455	830,000	1,415	1,700	970,000	1,620	1,940	1,100,000
	4-2x12	910	1,090	620,000	1,060	1,275	720,000	1,215	1,455	830,000
	5-2x12	730	875	500,000	850	1,020	580,000	970	1,165	660,000
	2-3x12	1,090	1,310	750,000	1,275	1,530	870,000	1,455	1,750	990,000

Table 9 Floor and Roof Beams (Cont.)

Required values for fiber stress in bending (f_b) and modulus of elasticity (E) for the sizes shown to support safely a live load of 40 pounds per square foot within a deflection limitation of L/240. For instructions on use of table see Design Data For Beams on page 4.

Beam Span (ft.)	Nominal Size	Plank Span = 6'-0			Plank Span = 7'-0			Plank Span = 8'-0"		
		f_b (psi) 10 psf DL	f_b (psi) 20 psf DL	E (psi)	f_b (psi) 10 psf DL	f_b (psi) 20 psf DL	E (psi)	f_b (psi) 10 psf DL	f_b (psi) 20 psf DL	E (psi)
17	2-3x10	1,825	2,190	1,610,000	2,130	2,555	1,880,000	2,430	2,920	2,150,000
	2-4x10	1,305	1,565	1,150,000	1,520	1,825	1,340,000	1,735	2,085	1,530,000
	3-3x10	1,215	1,460	1,070,000	1,420	1,700	1,250,000	1,620	1,945	1,430,000
	1-8x10	1,155	1,385	990,000	1,345	1,615	1,160,000	1,535	1,845	1,320,000
	3-2x12	1,370	1,645	990,000	1,600	1,920	1,160,000	1,825	2,190	1,320,000
	4-2x12	1,030	1,235	750,000	1,200	1,440	870,000	1,370	1,645	990,000
	5-2x12	820	985	600,000	960	1,150	700,000	1,095	1,315	790,000
	2-3x12	1,235	1,480	890,000	1,440	1,725	1,040,000	1,645	1,975	1,190,000
	3-3x12	820	985	600,000	960	1,150	700,000	1,095	1,315	790,000
	2-4x12	880	1,055	640,000	1,030	1,235	750,000	1,175	1,410	850,000
	1-6x12	1,075	1,285	760,000	1,250	1,500	890,000	1,430	1,715	1,010,000
	1-8x12	785	945	560,000	920	1,100	650,000	1,050	1,260	740,000
18	2-3x10	2,045	2,455	1,910,000	2,385	2,865	2,230,000	2,725	3,270	2,550,000
	2-4x10	1,460	1,755	1,360,000	1,705	2,045	1,590,000	1,945	2,335	1,820,000
	3-3x10	1,365	1,635	1,270,000	1,590	1,910	1,490,000	1,820	2,180	1,700,000
	1-8x10	1,290	1,550	1,180,000	1,510	1,810	1,370,000	1,725	2,070	1,570,000
	3-2x12	1,535	1,845	1,180,000	1,790	2,150	1,380,000	2,050	2,460	1,570,000
	4-2x12	1,150	1,380	880,000	1,345	1,615	1,030,000	1,535	1,845	1,180,000
	5-2x12	920	1,105	710,000	1,075	1,290	830,000	1,230	1,475	940,000
	2-3x12	1,380	1,660	1,060,000	1,615	1,935	1,240,000	1,845	2,210	1,420,000
	3-3x12	920	1,105	710,000	1,075	1,290	830,000	1,230	1,475	940,000
	2-4x12	985	1,185	760,000	1,150	1,380	880,000	1,315	1,580	1,010,000
	1-6x12	1,205	1,445	900,000	1,405	1,685	1,050,000	1,605	1,925	1,200,000
	1-8x12	880	1,060	660,000	1,030	1,235	770,000	1,175	1,410	880,000
19	1-8x10	1,440	1,730	1,380,000	1,680	2,015	1,610,000	1,920	2,305	1,840,000
	3-2x12	1,710	2,055	1,390,000	1,995	2,395	1,620,000	2,280	2,740	1,850,000
	4-2x12	1,285	1,540	1,040,000	1,495	1,795	1,210,000	1,710	2,055	1,390,000
	5-2x12	1,025	1,230	830,000	1,200	1,440	970,000	1,370	1,645	1,110,000
	2-3x12	1,540	1,850	1,250,000	1,795	2,155	1,460,000	2,055	2,465	1,660,000
	3-3x12	1,025	1,230	830,000	1,200	1,440	970,000	1,370	1,645	1,110,000
	2-4x12	1,100	1,320	890,000	1,285	1,540	1,040,000	1,465	1,760	1,190,000
	1-6x12	1,340	1,610	1,060,000	1,565	1,875	1,240,000	1,785	2,145	1,420,000
	1-8x12	985	1,180	780,000	1,145	1,375	910,000	1,310	1,570	1,040,000
	3-4x12	735	880	590,000	855	1,025	690,000	980	1,175	790,000
	4-3x12	770	925	620,000	900	1,080	730,000	1,025	1,230	830,000
	2-6x12	670	805	530,000	780	940	620,000	895	1,070	710,000
20	3-2x12	1,895	2,275	1,620,000	2,210	2,655	1,890,000	2,530	3,035	2,160,000
	4-2x12	1,420	1,705	1,210,000	1,660	1,990	1,420,000	1,895	2,275	1,620,000
	5-2x12	1,140	1,365	970,000	1,325	1,595	1,130,000	1,515	1,820	1,290,000
	3-3x12	1,140	1,365	970,000	1,325	1,595	1,130,000	1,515	1,820	1,290,000
	2-4x12	1,220	1,465	1,040,000	1,420	1,705	1,210,000	1,625	1,950	1,390,000
	1-6x12	1,485	1,780	1,240,000	1,730	2,080	1,450,000	1,980	2,375	1,650,000
	1-8x12	1,090	1,305	910,000	1,270	1,525	1,060,000	1,450	1,740	1,210,000
	3-4x12	815	975	690,000	950	1,140	810,000	1,085	1,300	920,000
	4-3x12	855	1,025	730,000	995	1,195	850,000	1,140	1,365	970,000
	2-6x12	740	890	620,000	865	1,040	720,000	990	1,190	830,000
	1-10x12	860	1,030	720,000	1,005	1,205	840,000	1,145	1,375	960,000
	2-3x14	1,230	1,475	890,000	1,435	1,720	1,040,000	1,640	1,970	1,190,000
21	3-2x12	2,090	2,510	1,870,000	2,440	2,925	2,190,000	2,790	3,345	2,500,000
	4-2x12	1,570	1,880	1,400,000	1,830	2,195	1,640,000	2,090	2,510	1,870,000
	5-2x12	1,255	1,505	1,120,000	1,465	1,755	1,310,000	1,675	2,005	1,500,000
	3-3x12	1,255	1,505	1,120,000	1,465	1,755	1,310,000	1,675	2,005	1,500,000
	2-4x12	1,345	1,615	1,200,000	1,570	1,880	1,400,000	1,790	2,150	1,610,000
	1-8x12	1,200	1,440	1,050,000	1,400	1,680	1,230,000	1,600	1,920	1,400,000
	3-4x12	895	1,075	800,000	1,045	1,255	940,000	1,195	1,435	1,070,000
	4-3x12	940	1,130	840,000	1,100	1,315	980,000	1,255	1,505	1,120,000
	2-6x12	820	980	720,000	955	1,145	840,000	1,090	1,310	960,000
	1-10x12	950	1,135	830,000	1,105	1,325	970,000	1,265	1,515	1,110,000
	2-3x14	1,355	1,630	1,030,000	1,585	1,900	1,200,000	1,810	2,170	1,380,000
	1-6x14	1,190	1,425	890,000	1,385	1,665	1,030,000	1,585	1,900	1,180,000
22	4-2x12	1,720	2,065	1,620,000	2,010	2,410	1,880,000	2,295	2,755	2,150,000
	5-2x12	1,375	1,650	1,290,000	1,605	1,925	1,510,000	1,835	2,205	1,720,000
	3-3x12	1,375	1,650	1,290,000	1,605	1,925	1,510,000	1,835	2,205	1,720,000
	3-4x12	985	1,180	920,000	1,145	1,375	1,080,000	1,310	1,575	1,230,000
	4-3x12	1,035	1,240	970,000	1,205	1,445	1,130,000	1,375	1,650	1,290,000
	2-6x12	900	1,080	820,000	1,050	1,260	960,000	1,200	1,435	1,100,000
	1-10x12	1,040	1,250	960,000	1,215	1,455	1,110,000	1,385	1,665	1,270,000
	2-3x14	1,490	1,785	1,190,000	1,735	2,085	1,380,000	1,985	2,380	1,580,000
	1-6x14	1,305	1,565	1,020,000	1,520	1,825	1,190,000	1,740	2,085	1,360,000
	2-4x14	1,025	1,230	800,000	1,195	1,435	930,000	1,365	1,640	1,070,000
	3-3x14	990	1,190	790,000	1,160	1,390	920,000	1,325	1,590	1,050,000
	3-4x14	710	850	560,000	825	990	660,000	945	1,135	750,000

Table 10 Floor and Roof Beams

Required values for fiber stress in bending (f_b) and modulus of elasticity (E) for the sizes shown to support safely a live load of 40 pounds per square foot within a deflection limitation of L/360. For instructions on use of table see Design Data For Beams on page 4.

Beam Span (ft.)	Nominal Size	Plank Span = 6'-0			Plank Span = 7'-0"			Plank Span = 8'-0"		
		f_b (psi) 10 psf DL	f_b (psi) 20 psf DL	E (psi)	f_b (psi) 10 psf DL	f_b (psi) 20 psf DL	E (psi)	f_b (psi) 10 psf DL	f_b (psi) 20 psf DL	E (psi)
10	1-3x8	2,055	2,465	2,040,000	2,395	2,875	2,380,000	2,740	3,290	2,720,000
	2-2x8	1,710	2,055	1,700,000	2,000	2,395	1,980,000	2,285	2,740	2,270,000
	1-4x8	1,470	1,760	1,460,000	1,710	2,055	1,700,000	1,955	2,350	1,940,000
	1-6x8	875	1,045	840,000	1,020	1,220	980,000	1,165	1,395	1,120,000
	2-2x10	1,050	1,260	820,000	1,225	1,475	960,000	1,400	1,685	1,090,000
	1-3x10	1,260	1,515	980,000	1,475	1,765	1,150,000	1,685	2,020	1,310,000
	1-4x10	900	1,080	700,000	1,050	1,260	820,000	1,200	1,445	940,000
11	1-4x8	1,775	2,130	1,940,000	2,070	2,485	2,260,000	2,370	2,840	2,590,000
	1-6x8	1,055	1,265	1,120,000	1,230	1,480	1,300,000	1,410	1,690	1,490,000
	2-2x10	1,275	1,525	1,090,000	1,485	1,780	1,270,000	1,695	2,035	1,450,000
	1-3x10	1,525	1,835	1,310,000	1,780	2,140	1,530,000	2,035	2,445	1,740,000
	1-4x10	1,090	1,310	930,000	1,275	1,525	1,090,000	1,455	1,745	1,250,000
	3-2x10	850	1,020	730,000	990	1,190	850,000	1,130	1,360	970,000
	2-3x10	765	915	650,000	890	1,070	760,000	1,020	1,220	870,000
12	1-6x8	1,255	1,510	1,450,000	1,465	1,760	1,690,000	1,675	2,010	1,930,000
	3-2x8	1,645	1,975	1,960,000	1,920	2,300	2,290,000	2,190	2,630	2,610,000
	2-2x10	1,515	1,820	1,410,000	1,765	2,120	1,650,000	2,020	2,425	1,890,000
	1-3x10	1,820	2,180	1,700,000	2,120	2,545	1,980,000	2,425	2,910	2,260,000
	1-4x10	1,300	1,560	1,210,000	1,515	1,820	1,410,000	1,730	2,075	1,620,000
	2-3x10	910	1,090	850,000	1,060	1,270	990,000	1,210	1,455	1,130,000
	3-2x10	1,010	1,210	940,000	1,180	1,415	1,100,000	1,345	1,615	1,260,000
	1-6x10	785	940	710,000	915	1,095	830,000	1,045	1,255	950,000
	2-4x10	650	780	610,000	755	910	710,000	865	1,040	810,000
13	2-4x8	1,240	1,490	1,600,000	1,445	1,735	1,870,000	1,655	1,985	2,130,000
	2-2x10	1,780	2,135	1,800,000	2,075	2,490	2,100,000	2,370	2,845	2,400,000
	3-2x10	1,185	1,420	1,200,000	1,385	1,660	1,400,000	1,580	1,895	1,600,000
	2-3x10	1,065	1,280	1,080,000	1,245	1,495	1,260,000	1,420	1,705	1,440,000
	1-4x10	1,525	1,830	1,540,000	1,780	2,135	1,800,000	2,030	2,440	2,060,000
	2-4x10	760	915	770,000	890	1,065	900,000	1,015	1,220	1,030,000
	3-3x10	710	855	720,000	830	995	840,000	950	1,140	960,000
	1-6x10	920	1,105	910,000	1,070	1,285	1,060,000	1,225	1,470	1,210,000
	4-2x10	890	1,065	900,000	1,035	1,245	1,050,000	1,185	1,420	1,200,000
14	2-4x8	1,440	1,725	2,000,000	1,680	2,015	2,330,000	1,920	2,300	2,670,000
	3-2x10	1,375	1,650	1,500,000	1,605	1,925	1,750,000	1,835	2,200	2,000,000
	2-3x10	1,235	1,485	1,350,000	1,445	1,730	1,570,000	1,650	1,980	1,800,000
	2-4x10	885	1,060	960,000	1,030	1,235	1,120,000	1,180	1,415	1,280,000
	3-3x10	825	990	900,000	960	1,155	1,050,000	1,100	1,320	1,200,000
	1-6x10	1,065	1,280	1,130,000	1,245	1,495	1,320,000	1,420	1,705	1,510,000
	1-8x10	780	940	830,000	910	1,095	970,000	1,040	1,250	1,110,000
	4-2x10	1,030	1,235	1,120,000	1,205	1,445	1,310,000	1,375	1,650	1,500,000
	2-2x12	1,395	1,675	1,250,000	1,625	1,950	1,460,000	1,860	2,230	1,660,000
	3-2x12	930	1,115	830,000	1,085	1,300	970,000	1,240	1,485	1,110,000
15	3-2x10	1,580	1,895	1,840,000	1,840	2,210	2,150,000	2,105	2,525	2,460,000
	2-3x10	1,420	1,705	1,660,000	1,655	1,990	1,930,000	1,895	2,270	2,210,000
	2-4x10	1,015	1,215	1,180,000	1,185	1,420	1,380,000	1,350	1,625	1,580,000
	3-3x10	945	1,135	1,110,000	1,105	1,325	1,290,000	1,260	1,515	1,470,000
	1-6x10	1,225	1,470	1,390,000	1,430	1,715	1,620,000	1,630	1,960	1,860,000
	1-8x10	900	1,075	1,020,000	1,045	1,255	1,190,000	1,195	1,435	1,360,000
	4-2x10	1,185	1,420	1,380,000	1,380	1,655	1,610,000	1,580	1,895	1,840,000
	2-2x12	1,600	1,920	1,540,000	1,865	2,240	1,790,000	2,135	2,560	2,050,000
	3-2x12	1,065	1,280	1,020,000	1,245	1,495	1,190,000	1,420	1,705	1,370,000
	1-3x12	1,920	2,305	1,840,000	2,240	2,690	2,150,000	2,560	3,070	2,460,000
	4-2x12	800	960	770,000	935	1,120	900,000	1,065	1,280	1,020,000
	2-3x12	960	1,150	920,000	1,120	1,345	1,080,000	1,280	1,535	1,230,000
16	2-3x10	1,615	1,940	2,010,000	1,885	2,260	2,350,000	2,155	2,585	2,680,000
	2-4x10	1,155	1,385	1,440,000	1,345	1,615	1,680,000	1,540	1,845	1,920,000
	3-3x10	1,075	1,295	1,340,000	1,255	1,510	1,560,000	1,435	1,725	1,790,000
	1-6x10	1,390	1,670	1,690,000	1,625	1,950	1,970,000	1,855	2,230	2,250,000
	1-8x10	1,020	1,225	1,240,000	1,190	1,430	1,440,000	1,360	1,635	1,650,000
	4-2x10	1,345	1,615	1,680,000	1,570	1,885	1,960,000	1,795	2,155	2,240,000
	2-2x12	1,820	2,185	1,860,000	2,125	2,550	2,170,000	2,425	2,915	2,490,000
	3-2x12	1,215	1,455	1,240,000	1,415	1,700	1,450,000	1,620	1,940	1,660,000
	4-2x12	910	1,090	930,000	1,060	1,275	1,090,000	1,215	1,455	1,240,000
	5-2x12	730	875	750,000	850	1,020	870,000	970	1,165	990,000
	2-3x12	1,090	1,310	1,120,000	1,275	1,530	1,300,000	1,455	1,750	1,490,000
	3-3x12	730	875	750,000	850	1,020	870,000	970	1,165	990,000

Table 10 Floor and Roof Beams (Cont.)

Required values for fiber stress in bending (f_b) and modulus of elasticity (E) for the sizes shown to support safely a live load of 40 pounds per square foot within a deflection limitation of L/360. For instructions on use of table see Design Data For Beams on page 4.

Beam Span (ft.)	Nominal Size	Plank Span = 6'-0			Plank Span = 7'-0			Plank Span = 8'-0"		
		f_b (psi)		E (psi)	f_b (psi)		E (psi)	f_b (psi)		E (psi)
		10 psf DL	20 psf DL		10 psf DL	20 psf DL		10 psf DL	20 psf DL	
17	2-4x10	1,305	1,565	1,720,000	1,520	1,825	2,010,000	1,735	2,085	2,300,000
	3-3x10	1,215	1,460	1,610,000	1,420	1,700	1,880,000	1,620	1,945	2,150,000
	1-8x10	1,155	1,385	1,490,000	1,345	1,615	1,730,000	1,535	1,845	1,980,000
	3-2x12	1,370	1,645	1,490,000	1,600	1,920	1,740,000	1,825	2,190	1,990,000
	4-2x12	1,030	1,235	1,120,000	1,200	1,440	1,300,000	1,370	1,645	1,490,000
	5-2x12	820	985	890,000	960	1,150	1,040,000	1,095	1,315	1,190,000
	2-3x12	1,235	1,480	1,340,000	1,440	1,725	1,570,000	1,645	1,975	1,790,000
	3-3x12	820	985	890,000	960	1,150	1,040,000	1,095	1,315	1,190,000
	2-4x12	880	1,055	960,000	1,030	1,235	1,120,000	1,175	1,410	1,280,000
	1-6x12	1,075	1,285	1,140,000	1,250	1,500	1,330,000	1,430	1,715	1,520,000
	1-8x12	785	945	840,000	920	1,100	980,000	1,050	1,260	1,120,000
	3-4x12	585	705	640,000	685	820	750,000	785	940	850,000
18	3-3x10	1,365	1,635	1,910,000	1,590	1,910	2,230,000	1,820	2,180	2,550,000
	1-8x10	1,290	1,550	1,760,000	1,510	1,810	2,060,000	1,725	2,070	2,350,000
	3-2x12	1,535	1,845	1,770,000	1,790	2,150	2,060,000	2,050	2,460	2,360,000
	4-2x12	1,150	1,380	1,330,000	1,345	1,615	1,550,000	1,535	1,845	1,770,000
	5-2x12	920	1,105	1,060,000	1,075	1,290	1,240,000	1,230	1,475	1,420,000
	2-3x12	1,380	1,660	1,590,000	1,615	1,935	1,860,000	1,845	2,210	2,120,000
	3-3x12	920	1,105	1,060,000	1,075	1,290	1,240,000	1,230	1,475	1,420,000
	2-4x12	985	1,185	1,140,000	1,150	1,380	1,330,000	1,315	1,580	1,520,000
	1-6x12	1,205	1,445	1,360,000	1,405	1,685	1,580,000	1,605	1,925	1,810,000
	1-8x12	880	1,060	990,000	1,030	1,235	1,160,000	1,175	1,410	1,330,000
	3-4x12	660	790	760,000	770	920	880,000	880	1,055	1,010,000
	4-3x12	690	830	800,000	805	970	930,000	920	1,105	1,060,000
19	4-2x12	1,285	1,540	1,560,000	1,495	1,795	1,820,000	1,710	2,055	2,080,000
	5-2x12	1,025	1,230	1,250,000	1,200	1,440	1,460,000	1,370	1,645	1,660,000
	2-3x12	1,540	1,850	1,870,000	1,795	2,155	2,180,000	2,055	2,465	2,500,000
	3-3x12	1,025	1,230	1,250,000	1,200	1,440	1,460,000	1,370	1,645	1,660,000
	2-4x12	1,100	1,320	1,340,000	1,285	1,540	1,560,000	1,465	1,760	1,780,000
	1-6x12	1,340	1,610	1,590,000	1,565	1,875	1,860,000	1,785	2,145	2,130,000
	1-8x12	985	1,180	1,170,000	1,145	1,375	1,360,000	1,310	1,570	1,560,000
	3-4x12	735	880	890,000	855	1,025	1,040,000	980	1,175	1,190,000
	4-3x12	770	925	940,000	900	1,080	1,090,000	1,025	1,230	1,250,000
	2-6x12	670	805	800,000	780	940	930,000	895	1,070	1,060,000
	1-10x12	775	930	920,000	905	1,085	1,080,000	1,035	1,240	1,230,000
	2-3x14	1,110	1,330	1,150,000	1,295	1,555	1,340,000	1,480	1,775	1,530,000
20	4-2x12	1,420	1,705	1,820,000	1,660	1,990	2,120,000	1,895	2,275	2,430,000
	5-2x12	1,140	1,365	1,460,000	1,325	1,595	1,700,000	1,515	1,820	1,940,000
	3-3x12	1,140	1,365	1,460,000	1,325	1,595	1,700,000	1,515	1,820	1,940,000
	2-4x12	1,220	1,465	1,560,000	1,420	1,705	1,820,000	1,625	1,950	2,080,000
	1-8x12	1,090	1,305	1,360,000	1,270	1,525	1,590,000	1,450	1,740	1,820,000
	3-4x12	815	975	1,040,000	950	1,140	1,210,000	1,085	1,300	1,390,000
	4-3x12	855	1,025	1,090,000	995	1,195	1,270,000	1,140	1,365	1,460,000
	2-6x12	740	890	930,000	865	1,040	1,080,000	990	1,190	1,240,000
	1-10x12	860	1,030	1,080,000	1,005	1,205	1,260,000	1,145	1,375	1,440,000
	2-3x14	1,230	1,475	1,340,000	1,435	1,720	1,560,000	1,640	1,970	1,780,000
	1-6x14	1,075	1,295	1,150,000	1,255	1,510	1,340,000	1,435	1,725	1,530,000
	2-4x14	845	1,015	900,000	990	1,185	1,050,000	1,130	1,355	1,200,000
21	5-2x12	1,255	1,505	1,690,000	1,465	1,755	1,970,000	1,675	2,005	2,250,000
	3-3x12	1,255	1,505	1,690,000	1,465	1,755	1,970,000	1,675	2,005	2,250,000
	2-4x12	1,345	1,615	1,810,000	1,570	1,880	2,110,000	1,790	2,150	2,410,000
	1-8x12	1,200	1,440	1,580,000	1,400	1,680	1,840,000	1,600	1,920	2,100,000
	3-4x12	895	1,075	1,200,000	1,045	1,255	1,400,000	1,195	1,435	1,610,000
	4-3x12	940	1,130	1,260,000	1,100	1,315	1,480,000	1,255	1,505	1,690,000
	2-6x12	820	980	1,080,000	955	1,145	1,260,000	1,090	1,310	1,430,000
	1-10x12	950	1,135	1,250,000	1,105	1,325	1,450,000	1,265	1,515	1,660,000
	2-3x14	1,355	1,630	1,550,000	1,585	1,900	1,810,000	1,810	2,170	2,060,000
	1-6x14	1,190	1,425	1,330,000	1,385	1,665	1,550,000	1,585	1,900	1,770,000
	2-4x14	935	1,120	1,050,000	1,090	1,305	1,220,000	1,245	1,495	1,390,000
	3-3x14	905	1,085	1,030,000	1,055	1,265	1,200,000	1,205	1,445	1,380,000
22	5-2x12	1,375	1,650	1,940,000	1,605	1,925	2,260,000	1,835	2,205	2,580,000
	3-3x12	1,375	1,650	1,940,000	1,605	1,925	2,260,000	1,835	2,205	2,580,000
	3-4x12	985	1,180	1,380,000	1,145	1,375	1,620,000	1,310	1,575	1,850,000
	4-3x12	1,035	1,240	1,450,000	1,205	1,445	1,700,000	1,375	1,650	1,940,000
	2-6x12	900	1,080	1,240,000	1,050	1,260	1,440,000	1,200	1,435	1,650,000
	1-10x12	1,040	1,250	1,430,000	1,215	1,455	1,670,000	1,385	1,665	1,910,000
	2-3x14	1,490	1,785	1,780,000	1,735	2,085	2,080,000	1,985	2,380	2,370,000
	1-6x14	1,305	1,565	1,530,000	1,520	1,825	1,780,000	1,740	2,085	2,040,000
	2-4x14	1,025	1,230	1,200,000	1,195	1,435	1,400,000	1,365	1,640	1,600,000
	3-3x14	990	1,190	1,190,000	1,160	1,390	1,380,000	1,325	1,590	1,580,000
	3-4x14	710	850	850,000	825	990	990,000	945	1,135	1,130,000
	1-8x14	955	1,145	1,120,000	1,115	1,340	1,310,000	1,275	1,530	1,500,000

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