

GLULAM FLOOR BEAMS

STRONG, VERSATILE HOME DESIGN



ENGINEERED WOOD SYSTEMS
APA EWS

Glulam combines natural beauty with flexible design

In residential construction, APA EWS trademarked glulam beams are often chosen for their beauty in exposed designs featuring vaulted ceilings or long clear-span ridge beams. They're also ideal for hidden structural applications, such as floor beams and headers. From homeowners to framers to building designers, glulam offers advantages unmatched by any other building product.

Homeowners appreciate the natural beauty of wood and the warmth it brings to interior spaces. They also enjoy the consistent, long-lasting performance of wood. Unlike large solid sawn or built-up timber beams, glulam, which is manufactured from kiln-dried lumber, will exhibit minimal shrinkage and warping, which ensures a level floor surface. In addition, floors have minimal nail popping and fewer squeaks.

Framers find that glulam floor beams are easier to work with than comparable steel beams. Plus, it's easy to connect other wood floor framing components to glulam because the wood-to-wood connections can be made with standard carpentry tools and fasteners. Nailers are not needed as they are with steel beams, and nail-on joist hangers can easily be accommodated. Since glulam floor beams can be installed by the framing crew, it's not necessary to schedule a second trade crew for steel work.



Glulam expands possibilities for designers, because the beams have greater strength and stiffness than comparable dimension lumber and are stronger than steel on a pound for pound basis. That means glulam beams can span long distances user lighter weight members with minimal need for intermediate supports, opening the design possibilities in a host of applications.

Everyone, from homeowner to home builder to home designer, can appreciate the expanded design flexibility of wood.

Table 1 provides typical glulam floor beam sizes for a range of spans and loading conditions for the 24F-1.8E stress classification typically used in residential construction.

Table 2 provides glulam floor beam sizes in I-joist compatible (IJC) depths for the 24F-1.8E stress classification, while Table 3 provides I-joist compatible depths for the 30F-2.1E stress classification.

IJC refers to commonly available residential I-joist depths of 9-1/2, 11-7/8, 14 and 16 inches.

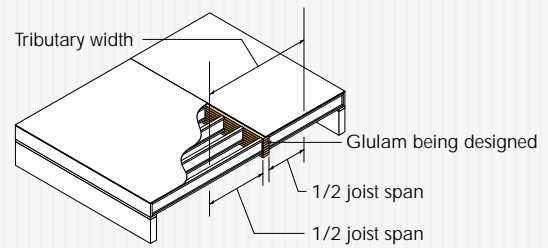
10 Reasons to Use Glulam Instead of Steel Beams

1. Pound for pound, glulam is stronger than steel, so lighter weight members can be used.
2. Glulam is easy to install with typical on-site residential construction equipment, eliminating the need for cranes at the construction site.
3. It's easy for carpenter crews to install glulam because they already know how to frame with wood and can use their standard tools and equipment. If necessary, framers can cut a glulam to length on the jobsite. Cutting a steel beam on site would require a torch and a second trade crew.
4. Other wood framing members can be easily attached to the glulam beam without nailers.
5. Glulam is readily available in all major market areas and can be ordered through local dealers and distributors as part of the lumber framing package, eliminating the need to special order steel beams.
6. Small holes and notches can be cut in low stress areas of glulam to allow for wiring and small piping lines.
7. Glulam is available in I-joist compatible depths to easily permit flush framing without special furring.
8. Glulam is available in widths that match traditional 2x4 and 2x6 wall framing commonly used in residential construction.
9. Glulam is a better value than steel on an installed cost basis.
10. Exposed glulam can be finished by sanding, painting or staining to make a very attractive exposed beam.



TABLE 1

24F-1.8E FLOOR BEAMS FOR SIMPLE-SPAN OR MULTIPLE-SPAN APPLICATIONS (Load Duration Factor = 1.00)



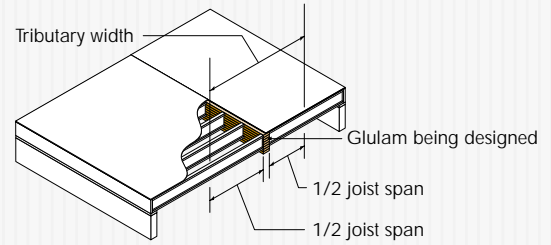
Span (ft)	Tributary Width (ft)						
	8	10	12	14	16	18	20
8	3-1/8 x 7-1/2	3-1/8 x 9	3-1/8 x 9	3-1/8 x 10-1/2	3-1/8 x 10-1/2	3-1/8 x 10-1/2	3-1/8 x 12
	3-1/2 x 7-1/2	3-1/2 x 7-1/2	3-1/2 x 9	3-1/2 x 9	3-1/2 x 10-1/2	3-1/2 x 10-1/2	3-1/2 x 10-1/2
	5-1/8 x 6	5-1/8 x 7-1/2	5-1/8 x 7-1/2	5-1/8 x 7-1/2	5-1/8 x 9	5-1/8 x 9	5-1/8 x 9
	5-1/2 x 6	5-1/2 x 6	6-3/4 x 6	5-1/2 x 7-1/2	5-1/2 x 7-1/2	5-1/2 x 9	5-1/2 x 9
10	3-1/8 x 9	3-1/8 x 10-1/2	3-1/8 x 12	3-1/8 x 12	3-1/8 x 13-1/2	3-1/8 x 13-1/2	3-1/8 x 15
	3-1/2 x 9	3-1/2 x 10-1/2	3-1/2 x 10-1/2	3-1/2 x 12	3-1/2 x 12	3-1/2 x 13-1/2	3-1/2 x 13-1/2
	5-1/8 x 7-1/2	5-1/8 x 9	5-1/8 x 9	5-1/8 x 9	5-1/8 x 10-1/2	5-1/8 x 10-1/2	5-1/8 x 12
	5-1/2 x 7-1/2	5-1/2 x 7-1/2	5-1/2 x 9	5-1/2 x 9	5-1/2 x 10-1/2	5-1/2 x 10-1/2	5-1/2 x 10-1/2
12	3-1/8 x 10-1/2	3-1/8 x 12	3-1/8 x 13-1/2	3-1/8 x 15	3-1/8 x 15	3-1/8 x 16-1/2	3-1/8 x 18
	3-1/2 x 10-1/2	3-1/2 x 12	3-1/2 x 12	3-1/2 x 13-1/2	3-1/2 x 15	3-1/2 x 15	3-1/2 x 16-1/2
	5-1/8 x 9	5-1/8 x 10-1/2	5-1/8 x 10-1/2	5-1/8 x 12	5-1/8 x 12	5-1/8 x 13-1/2	5-1/8 x 13-1/2
	5-1/2 x 9	5-1/2 x 9	5-1/2 x 10-1/2	5-1/2 x 10-1/2	5-1/2 x 12	5-1/2 x 12	5-1/2 x 13-1/2
14	3-1/8 x 13-1/2	3-1/8 x 15	3-1/8 x 15	3-1/8 x 16-1/2	3-1/8 x 18	3-1/8 x 19-1/2	3-1/8 x 19-1/2
	3-1/2 x 12	3-1/2 x 13-1/2	3-1/2 x 15	3-1/2 x 15	3-1/2 x 16-1/2	3-1/2 x 18	3-1/2 x 18
	5-1/8 x 10-1/2	5-1/8 x 12	5-1/8 x 12	5-1/8 x 13-1/2	5-1/8 x 13-1/2	5-1/8 x 15	5-1/8 x 15
	5-1/2 x 10-1/2	5-1/2 x 10-1/2	5-1/2 x 12	5-1/2 x 12	5-1/2 x 13-1/2	5-1/2 x 15	5-1/2 x 15
16	3-1/8 x 15	3-1/8 x 16-1/2	3-1/8 x 18	3-1/8 x 19-1/2	3-1/8 x 21	3-1/8 x 21	5-1/8 x 18
	3-1/2 x 13-1/2	3-1/2 x 15	3-1/2 x 16-1/2	3-1/2 x 18	3-1/2 x 19-1/2	3-1/2 x 19-1/2	3-1/2 x 21
	5-1/8 x 12	5-1/8 x 13-1/2	5-1/8 x 13-1/2	5-1/8 x 15	5-1/8 x 16-1/2	5-1/8 x 16-1/2	6-3/4 x 15
	5-1/2 x 10-1/2	5-1/2 x 12	5-1/2 x 13-1/2	5-1/2 x 15	5-1/2 x 15	5-1/2 x 16-1/2	5-1/2 x 16-1/2
18	3-1/8 x 16-1/2	3-1/8 x 18	3-1/8 x 19-1/2	3-1/8 x 21	5-1/8 x 18	5-1/8 x 19-1/2	5-1/8 x 19-1/2
	3-1/2 x 15	3-1/2 x 16-1/2	3-1/2 x 18	3-1/2 x 19-1/2	3-1/2 x 21	3-1/2 x 22-1/2	3-1/2 x 24
	5-1/8 x 13-1/2	5-1/8 x 15	5-1/8 x 16-1/2	5-1/8 x 16-1/2	6-3/4 x 15	6-3/4 x 16-1/2	6-3/4 x 18
	5-1/2 x 12	5-1/2 x 13-1/2	5-1/2 x 15	5-1/2 x 16-1/2	5-1/2 x 18	5-1/2 x 18	5-1/2 x 19-1/2
20	3-1/8 x 18	3-1/8 x 21	5-1/8 x 18	5-1/8 x 19-1/2	5-1/8 x 19-1/2	5-1/8 x 21	5-1/8 x 22-1/2
	3-1/2 x 16-1/2	3-1/2 x 19-1/2	3-1/2 x 21	3-1/2 x 22-1/2	3-1/2 x 24	5-1/2 x 19-1/2	5-1/2 x 21
	5-1/8 x 15	5-1/8 x 16-1/2	6-3/4 x 15	6-3/4 x 16-1/2	6-3/4 x 18	6-3/4 x 18	6-3/4 x 19-1/2
	5-1/2 x 13-1/2	5-1/2 x 15	5-1/2 x 16-1/2	5-1/2 x 18	5-1/2 x 19-1/2	6-3/4 x 18	6-3/4 x 19-1/2
22	3-1/8 x 19-1/2	5-1/8 x 18	5-1/8 x 19-1/2	5-1/8 x 21	5-1/8 x 22-1/2	5-1/8 x 22-1/2	5-1/8 x 24
	3-1/2 x 18	3-1/2 x 21	3-1/2 x 22-1/2	3-1/2 x 24	3-1/2 x 21	5-1/2 x 22-1/2	5-1/2 x 24
	5-1/8 x 16-1/2	6-3/4 x 15	6-3/4 x 16-1/2	6-3/4 x 18	6-3/4 x 19-1/2	6-3/4 x 21	6-3/4 x 21
	5-1/2 x 15	5-1/2 x 6-1/2	5-1/2 x 18	5-1/2 x 19-1/2	6-3/4 x 19-1/2	6-3/4 x 21	6-3/4 x 21
24	5-1/8 x 18	5-1/8 x 19-1/2	5-1/8 x 21	5-1/8 x 22-1/2	5-1/8 x 24	5-1/8 x 25-1/2	5-1/8 x 27
	3-1/2 x 21	3-1/2 x 22-1/2	3-1/2 x 24	5-1/2 x 21	5-1/2 x 22-1/2	5-1/2 x 24	5-1/2 x 25-1/2
	6-3/4 x 15	6-3/4 x 16-1/2	6-3/4 x 18	6-3/4 x 19-1/2	6-3/4 x 21	6-3/4 x 22-1/2	6-3/4 x 24
	5-1/2 x 16-1/2	5-1/2 x 18	5-1/2 x 19-1/2	6-3/4 x 19-1/2	6-3/4 x 21	6-3/4 x 22-1/2	6-3/4 x 24

Notes:

1. Applicable to simple-span or multiple-span applications with a design dead load of 10 psf and live load of 40 psf.
2. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
3. Service condition = dry.
4. Maximum deflection = Span/360 under live load.
5. $F_{bx} = 2,400$ psi when tension zone is stressed in tension or 1,600 psi when compression zone is stressed in tension; $F_{vx} = 195$ psi; $E_x = 1,800,000$ psi.
6. Beam weight = 36 pcf.
7. Beam widths of 3 and 5 inches may be substituted for 3-1/8 and 5-1/8 inches, respectively, at the same tabulated depth.

TABLE 2

**24F-1.8E I-JOIST COMPATIBLE (IJC) FLOOR BEAMS FOR
SIMPLE-SPAN OR MULTIPLE-SPAN APPLICATIONS
(Load Duration Factor = 1.00)**



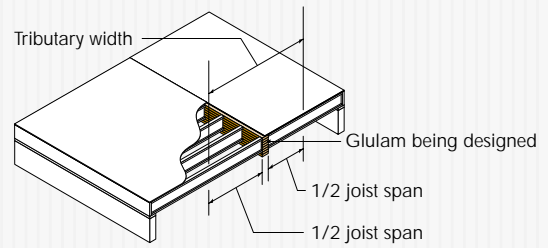
Span (ft)	Tributary Width (ft)						
	8	10	12	14	16	18	20
8	3-1/2 x 9-1/2	3-1/2 x 9-1/2	3-1/2 x 9-1/2	3-1/2 x 9-1/2	3-1/2 x 9-1/2	3-1/2 x 11-7/8	3-1/2 x 11-7/8
	5-1/2 x 9-1/2	5-1/2 x 9-1/2	5-1/2 x 9-1/2	5-1/2 x 9-1/2	5-1/2 x 9-1/2	5-1/2 x 9-1/2	5-1/2 x 9-1/2
10	3-1/2 x 9-1/2	3-1/2 x 9-1/2	3-1/2 x 11-7/8	3-1/2 x 11-7/8	3-1/2 x 11-7/8	3-1/2 x 14	3-1/2 x 14
	5-1/2 x 9-1/2	5-1/2 x 9-1/2	5-1/2 x 9-1/2	5-1/2 x 9-1/2	5-1/2 x 9-1/2	5-1/2 x 11-7/8	5-1/2 x 11-7/8
12	3-1/2 x 11-7/8	3-1/2 x 11-7/8	3-1/2 x 14	3-1/2 x 14	3-1/2 x 14	3-1/2 x 16	3-1/2 x 16
	5-1/2 x 9-1/2	5-1/2 x 9-1/2	5-1/2 x 11-7/8	5-1/2 x 11-7/8	5-1/2 x 11-7/8	5-1/2 x 11-7/8	5-1/2 x 14
14	3-1/2 x 11-7/8	3-1/2 x 14	3-1/2 x 14	3-1/2 x 16	3-1/2 x 18	3-1/2 x 18	3-1/2 x 18
	5-1/2 x 9-1/2	5-1/2 x 11-7/8	5-1/2 x 11-7/8	5-1/2 x 14	5-1/2 x 14	5-1/2 x 14	5-1/2 x 16
16	3-1/2 x 14	3-1/2 x 16	3-1/2 x 16	3-1/2 x 18	5-1/2 x 16	5-1/2 x 16	5-1/2 x 18
	5-1/2 x 11-7/8	5-1/2 x 11-7/8	5-1/2 x 14	5-1/2 x 14	7 x 14	7 x 14	7 x 16
18	3-1/2 x 16	3-1/2 x 18	3-1/2 x 18	5-1/2 x 16	5-1/2 x 18	5-1/2 x 18	7 x 18
	5-1/2 x 11-7/8	5-1/2 x 14	5-1/2 x 16	7 x 14	7 x 16	7 x 16	—
20	3-1/2 x 18	5-1/2 x 16	5-1/2 x 16	5-1/2 x 18	7 x 18	7 x 18	—
	5-1/2 x 14	7 x 14	7 x 16	7 x 16	—	—	—
22	3-1/2 x 18	5-1/2 x 18	5-1/2 x 18	7 x 18	—	—	—
	5-1/2 x 16	7 x 16	7 x 16	—	—	—	—
24	5-1/2 x 16	5-1/2 x 18	7 x 18	—	—	—	—
	7 x 16	7 x 16	—	—	—	—	—

Notes:

1. Applicable to simple-span or multiple-span applications with a design dead load of 10 psf and live load of 40 psf.
2. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
3. Service condition = dry.
4. Maximum deflection = Span/360 under live load.
5. $F_{dx} = 2,400$ psi when tension zone is stressed in tension or 1,600 psi when compression zone is stressed in tension;
 $F_{vx} = 195$ psi; $E_x = 1.8 \times 10^6$ psi.
6. Beam weight = 36 pcf.
7. IJC refers to commonly available residential I-joist depths of 9-1/2, 11-7/8, 14 and 16 inches.

TABLE 3

30F-2.1E I-JOIST COMPATIBLE (IJC) FLOOR BEAMS FOR SIMPLE-SPAN OR MULTIPLE-SPAN APPLICATIONS
 Beam depths based on 1-1/2" laminations.
 (Load Duration Factor = 1.00)



Span (ft)	Tributary Width (ft)						
	8	10	12	14	16	18	20
8	3-1/2 x 9-1/2	3-1/2 x 9-1/2	3-1/2 x 9-1/2	3-1/2 x 9-1/2	3-1/2 x 9-1/2	3-1/2 x 9-1/2	3-1/2 x 9-1/2
	5-1/2 x 9-1/2	5-1/2 x 9-1/2	5-1/2 x 9-1/2	5-1/2 x 9-1/2	5-1/2 x 9-1/2	5-1/2 x 9-1/2	5-1/2 x 9-1/2
10	3-1/2 x 9-1/2	3-1/2 x 9-1/2	3-1/2 x 9-1/2	3-1/2 x 9-1/2	3-1/2 x 9-1/2	3-1/2 x 9-1/2	3-1/2 x 11-7/8
	5-1/2 x 9-1/2	5-1/2 x 9-1/2	5-1/2 x 9-1/2	5-1/2 x 9-1/2	5-1/2 x 9-1/2	5-1/2 x 9-1/2	5-1/2 x 9-1/2
12	3-1/2 x 9-1/2	3-1/2 x 9-1/2	3-1/2 x 11-7/8	3-1/2 x 11-7/8	3-1/2 x 11-7/8	3-1/2 x 11-7/8	3-1/2 x 11-7/8
	5-1/2 x 9-1/2	5-1/2 x 9-1/2	5-1/2 x 9-1/2	5-1/2 x 9-1/2	5-1/2 x 9-1/2	5-1/2 x 11-7/8	5-1/2 x 11-7/8
14	3-1/2 x 11-7/8	3-1/2 x 11-7/8	3-1/2 x 11-7/8	3-1/2 x 14	3-1/2 x 14	3-1/2 x 14	3-1/2 x 14
	5-1/2 x 9-1/2	5-1/2 x 9-1/2	5-1/2 x 11-7/8	5-1/2 x 11-7/8	5-1/2 x 11-7/8	5-1/2 x 11-7/8	5-1/2 x 11-7/8
16	3-1/2 x 11-7/8	3-1/2 x 14	3-1/2 x 14	3-1/2 x 14	3-1/2 x 16	3-1/2 x 16	3-1/2 x 16
	5-1/2 x 11-7/8	5-1/2 x 11-7/8	5-1/2 x 11-7/8	5-1/2 x 11-7/8	5-1/2 x 14	5-1/2 x 14	5-1/2 x 14
18	3-1/2 x 14	3-1/2 x 14	3-1/2 x 16	3-1/2 x 16	3-1/2 x 18	3-1/2 x 18	3-1/2 x 18
	5-1/2 x 11-7/8	5-1/2 x 14	5-1/2 x 14	5-1/2 x 14	5-1/2 x 14	5-1/2 x 16	5-1/2 x 16
20	3-1/2 x 16	3-1/2 x 16	3-1/2 x 18	3-1/2 x 18	3-1/2 x 18	5-1/2 x 18	5-1/2 x 18
	5-1/2 x 14	5-1/2 x 14	5-1/2 x 16	5-1/2 x 16	5-1/2 x 16	7 x 16	7 x 16
22	3-1/2 x 16	3-1/2 x 18	3-1/2 x 18	5-1/2 x 18	5-1/2 x 18	5-1/2 x 18	7 x 18
	5-1/2 x 14	5-1/2 x 16	5-1/2 x 16	7 x 16	7 x 16	7 x 18	—
24	3-1/2 x 18	5-1/2 x 16	5-1/2 x 18	5-1/2 x 18	7 x 18	7 x 18	—
	5-1/2 x 16	7 x 16	7 x 16	7 x 18	—	—	—

Notes:

1. Applicable to simple-span or multiple-span applications with a design dead load of 10 psf and live load of 40 psf.
2. For multiple-span applications, the end spans shall be 40% or more of the adjacent span.
3. Service condition = dry.
4. Maximum deflection = Span/360 under live load.
5. $F_{bx} = 3,000$ psi when tension zone is stressed in tension or 3,000 psi when compression zone is stressed in tension;
 $F_{vx} = 270$ psi; $E_x = 2.1 \times 10^6$ psi.
6. Beam weight = 36 pcf.
7. 30F-2.1E beams may not be available in all markets. Check with local supplier or manufacturer for availability.

Hybrid beams offer new design options

In response to market demands for increased structural performance, APA EWS worked with its member manufacturers to develop a new high strength “hybrid” glulam beam. This beam uses laminated veneer lumber (LVL) as the outermost top and bottom laminations. The beam has a balanced layup, eliminating the concern about losing structural value when the beam is installed upside down. The hybrid glulam is rated at 30F – 2.1E as compared to the traditional 24F – 1.8E glulam. These beam layups have been incorporated in EWS Technical Note: *Glulam Design Properties*, Form Y117.



Since these high strength hybrid beams are often used to support wood I-joint floor framing, they are typically supplied in I-joint compatible (IJC) sizes. This means the depths match the typical residential I-joint depths and the widths match conventional 2x4 and 2x6 wall framing. Table 3 provides IJC sizes for the 30F – 2.1E stress class.

Hybrid glulam beams are only available in a framing appearance classification and will typically have “hit or miss” surfacing of the wide faces.



Substituting Glulam Beams for Steel Floor Beams

In some market areas, steel has been the traditional choice for floor beams in residential construction. Glulam affords an alternative that is much easier to install in wood-framed houses. In most floor designs, it's easy to substitute glulam beams for steel beams. Use the following tables to determine the appropriate size and grade of glulam. Table 4 provides equivalent sizes based on the 24F – 1.8 stress class and Table 5 provides sizes based on the 30F – 2.1E stress class. For additional information on glulam equivalents, refer to the EWS Data File: *Substitution of Glulam Beams for Steel or Solid-Sawn Lumber*, Form EWS S570.

TABLE 4

24F-1.8E GLULAM EQUIVALENTS FOR STEEL FLOOR BEAMS (Load Duration Factor for Glulam = 1.00)

Span (ft)	W8x15	W8x18	W10x12	W10x19	W12x19	W12x26	W14x22
24F-1.8E Glulam Equivalent (in.)							
10	3-1/8 x 15	3-1/8 x 18	3-1/8 x 15	3-1/8 x 21	3-1/8 x 22-1/2	3-1/8 x 28-1/2	3-1/8 x 27
	5-1/8 x 12	5-1/8 x 13-1/2	5-1/8 x 12	5-1/8 x 15	5-1/8 x 16-1/2	5-1/8 x 21	5-1/8 x 19-1/2
12	3-1/8 x 15	3-1/8 x 18	3-1/8 x 15	3-1/8 x 19-1/2	3-1/8 x 21	3-1/8 x 28-1/2	3-1/8 x 25-1/2
	5-1/8 x 12	5-1/8 x 13-1/2	5-1/8 x 12	5-1/8 x 15	5-1/8 x 16-1/2	5-1/8 x 21	5-1/8 x 19-1/2
14	3-1/8 x 15	3-1/8 x 18	3-1/8 x 15	3-1/8 x 19-1/2	3-1/8 x 21	3-1/8 x 27	3-1/8 x 24
	5-1/8 x 13-1/2	5-1/8 x 13-1/2	5-1/8 x 12	5-1/8 x 15	5-1/8 x 16-1/2	5-1/8 x 21	5-1/8 x 19-1/2
16	3-1/8 x 15	3-1/8 x 16-1/2	3-1/8 x 15	3-1/8 x 19-1/2	3-1/8 x 21	3-1/8 x 25-1/2	3-1/8 x 24
	5-1/8 x 13-1/2	5-1/8 x 13-1/2	5-1/8 x 13-1/2	5-1/8 x 15	5-1/8 x 16-1/2	5-1/8 x 21	5-1/8 x 19-1/2
18	3-1/8 x 15	3-1/8 x 16-1/2	3-1/8 x 15	3-1/8 x 19-1/2	3-1/8 x 21	3-1/8 x 25-1/2	3-1/8 x 24
	5-1/8 x 13-1/2	5-1/8 x 13-1/2	5-1/8 x 13-1/2	5-1/8 x 16-1/2	5-1/8 x 16-1/2	5-1/8 x 21	5-1/8 x 19-1/2
20	3-1/8 x 15	3-1/8 x 16-1/2	3-1/8 x 15	3-1/8 x 19-1/2	3-1/8 x 21	3-1/8 x 25-1/2	3-1/8 x 24
	5-1/8 x 13-1/2	5-1/8 x 13-1/2	5-1/8 x 13-1/2	5-1/8 x 16-1/2	5-1/8 x 18	5-1/8 x 21	5-1/8 x 19-1/2
22	3-1/8 x 15	3-1/8 x 16-1/2	3-1/8 x 15	3-1/8 x 19-1/2	3-1/8 x 21	3-1/8 x 25-1/2	3-1/8 x 24
	5-1/8 x 13-1/2	5-1/8 x 13-1/2	5-1/8 x 13-1/2	5-1/8 x 16-1/2	5-1/8 x 18	5-1/8 x 21	5-1/8 x 19-1/2
24	3-1/8 x 15	3-1/8 x 16-1/2	3-1/8 x 15	3-1/8 x 19-1/2	3-1/8 x 21	3-1/8 x 24	3-1/8 x 24
	5-1/8 x 13-1/2	5-1/8 x 13-1/2	5-1/8 x 13-1/2	5-1/8 x 16-1/2	5-1/8 x 18	5-1/8 x 21	5-1/8 x 21

Notes:

- Span = uniformly loaded simply supported beam.
- Maximum deflection = $L/360$ under live load, based on live/total load = 0.8.
- Service condition for glulam members = dry.
- Beam weights for steel and glulam members (assumed 36 pcf) are included.
- Minimum glulam sizes considered in the table are: 3-1/8 x 6 and 5-1/2 x 6
- Design properties for steel members: $F_b = 0.66 \times 36$ ksi, $F_v = 0.4 \times 36$ ksi, $E = 29 \times 10^6$ psi.
- Design properties for glulam members at normal load duration and dry-use service conditions:
 $F_{bx} = C_v \times 2,400$ psi, $F_{vx} = 195$ psi, $E_x = 1.8 \times 10^6$ psi, where C_v = volume factor per 2001 NDS.

TABLE 5

30F-2.1E GLULAM EQUIVALENTS FOR STEEL FLOOR BEAMS
 (Load Duration Factor for Glulam = 1.00)

Span (ft)	W8x15	W8x18	W10x12	W10x19	W12x19	W12x26	W14x22
30F-2.1E Glulam Equivalent (in.)							
10	3-1/8 x 13-1/2	3-1/8 x 16-1/2	3-1/8 x 13-1/2	3-1/8 x 19-1/2	3-1/8 x 21	3-1/8 x 27	3-1/8 x 25-1/2
	5-1/8 x 10-1/2	5-1/8 x 12	5-1/8 x 10-1/2	5-1/8 x 13-1/2	5-1/8 x 15	5-1/8 x 19-1/2	5-1/8 x 18
12	3-1/8 x 13-1/2	3-1/8 x 16-1/2	3-1/8 x 13-1/2	3-1/8 x 18	3-1/8 x 19-1/2	3-1/8 x 25-1/2	3-1/8 x 24
	5-1/8 x 12	5-1/8 x 13-1/2	5-1/8 x 12	5-1/8 x 13-1/2	5-1/8 x 15	5-1/8 x 18	5-1/8 x 16-1/2
14	3-1/8 x 15	3-1/8 x 16-1/2	3-1/8 x 13-1/2	3-1/8 x 18	3-1/8 x 18	3-1/8 x 24	3-1/8 x 22-1/2
	5-1/8 x 12	5-1/8 x 13-1/2	5-1/8 x 12	5-1/8 x 15	5-1/8 x 15	5-1/8 x 18	5-1/8 x 16-1/2
16	3-1/8 x 15	3-1/8 x 15	3-1/8 x 15	3-1/8 x 18	3-1/8 x 18	3-1/8 x 22-1/2	3-1/8 x 21
	5-1/8 x 12	5-1/8 x 13-1/2	5-1/8 x 12	5-1/8 x 15	5-1/8 x 15	5-1/8 x 18	5-1/8 x 16-1/2
18	3-1/8 x 15	3-1/8 x 15	3-1/8 x 15	3-1/8 x 18	3-1/8 x 19-1/2	3-1/8 x 22-1/2	3-1/8 x 21
	5-1/8 x 12	5-1/8 x 13-1/2	5-1/8 x 13-1/2	5-1/8 x 15	5-1/8 x 16-1/2	5-1/8 x 18	5-1/8 x 18
20	3-1/8 x 15	3-1/8 x 15	3-1/8 x 15	3-1/8 x 18	3-1/8 x 19-1/2	3-1/8 x 24	3-1/8 x 21
	5-1/8 x 12	5-1/8 x 13-1/2	5-1/8 x 13-1/2	5-1/8 x 15	5-1/8 x 16-1/2	5-1/8 x 19-1/2	5-1/8 x 18
22	3-1/8 x 15	3-1/8 x 15	3-1/8 x 15	3-1/8 x 18	3-1/8 x 19-1/2	3-1/8 x 22-1/2	3-1/8 x 22-1/2
	5-1/8 x 12	5-1/8 x 13-1/2	5-1/8 x 13-1/2	5-1/8 x 15	5-1/8 x 16-1/2	5-1/8 x 19-1/2	5-1/8 x 19-1/2
24	3-1/8 x 15	3-1/8 x 15	3-1/8 x 15	3-1/8 x 18	3-1/8 x 19-1/2	3-1/8 x 22-1/2	3-1/8 x 22-1/2
	5-1/8 x 12	5-1/8 x 13-1/2	5-1/8 x 13-1/2	5-1/8 x 15	5-1/8 x 16-1/2	5-1/8 x 19-1/2	5-1/8 x 19-1/2

Notes:

- Span = uniformly loaded simply supported beam.
- Maximum deflection = $L/360$ under live load, based on live/total load = 0.8.
- Service condition for glulam members = dry.
- Beam weights for steel and glulam members (assumed 36 pcf) are included.
- Minimum glulam sizes considered in the table are: 3-1/8 x 6 and 5-1/2 x 6
- Design properties for steel members: $F_b = 0.66 \times 36$ ksi, $F_v = 0.4 \times 36$ ksi, $E = 29 \times 10^6$ psi.
- Design properties for glulam members at normal load duration and dry-use service conditions:
 $F_{bx} = C_v \times 3,000$ psi, $F_{vx} = 270$ psi, $E_x = 2.1 \times 10^6$ psi, where C_v = volume factor per 2001 NDS.

Concealed or Exposed

Glulam floor beams can be installed within the floor joist cavity if a concealed application is desired. Many stocking distributors inventory glulam in I-joist compatible depths (IJC) for use with I-joist framing systems but most standard depth stock beams can easily be used in a concealed floor application with minimal furring. They can also be partially concealed in the floor joist cavity or left completely exposed below the floor framing, adding increased aesthetic value to the room below.

Figures 1 through 13 illustrate a variety of simple floor framing details incorporating glulam beams.

These details are also available from APA in CAD format as a CD.

Glulam Columns

When a design calls for a column, glulam is an excellent option. Glulam columns are commonly available in standard widths of 5-1/8" and 6-3/4", and can be ordered in larger dimensions. For further information on glulam columns, see EWS Data File: *Design of Glued Laminated Timber Columns*, Form EWS Y240.

FIGURE 1

BEAM BEARING AT END WALL

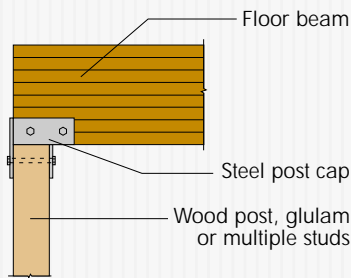


FIGURE 3

BEAM AT END WALL BEARING

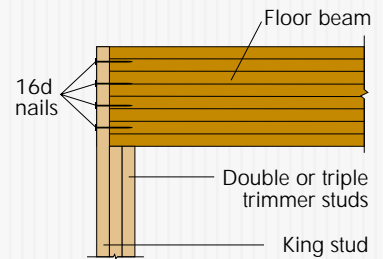


FIGURE 2

BEAM BEARING AT END WALL

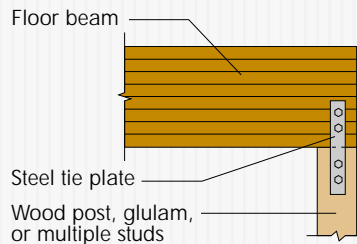


FIGURE 4

BEAM BEARING AT MASONRY WALL

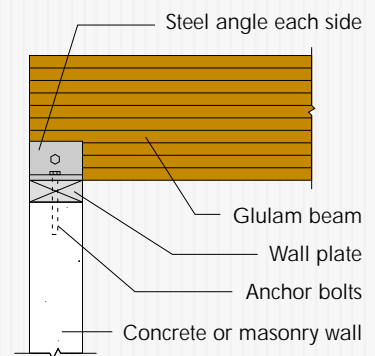


FIGURE 5

BEAM SUPPORT AT END WALL WITH FLOOR JOIST OVER BEAM

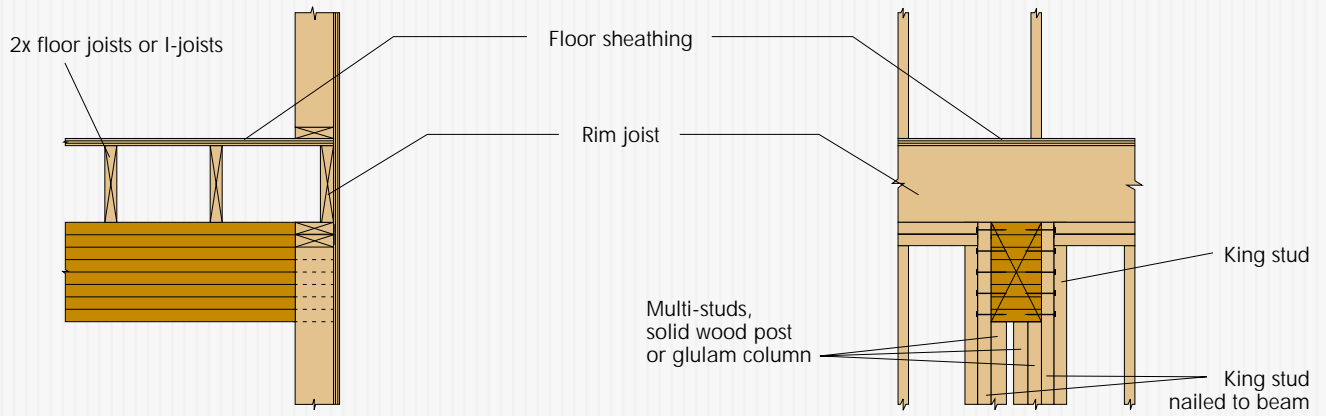


FIGURE 6

BEAM SUPPORT AT END WALL WITH FLOOR JOISTS FLUSH WITH BEAM

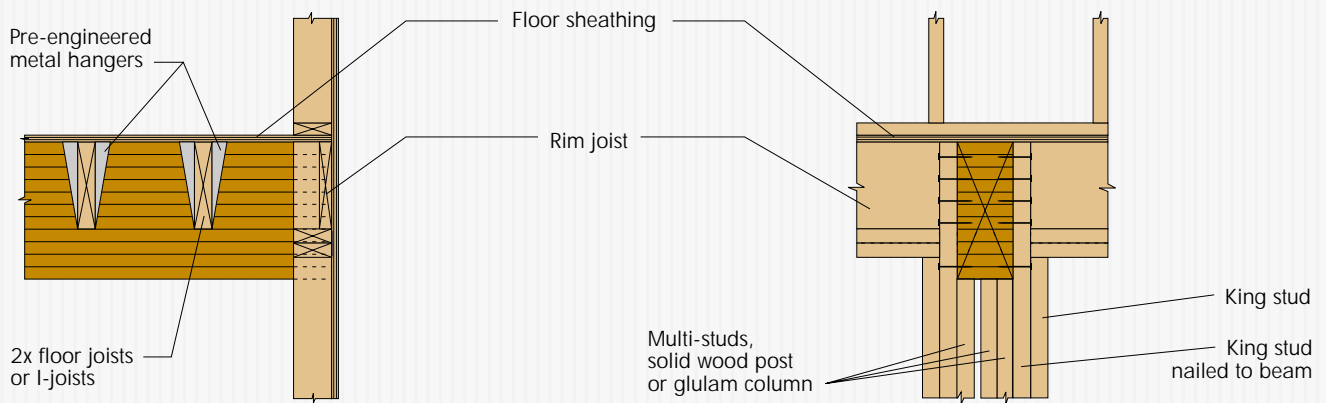
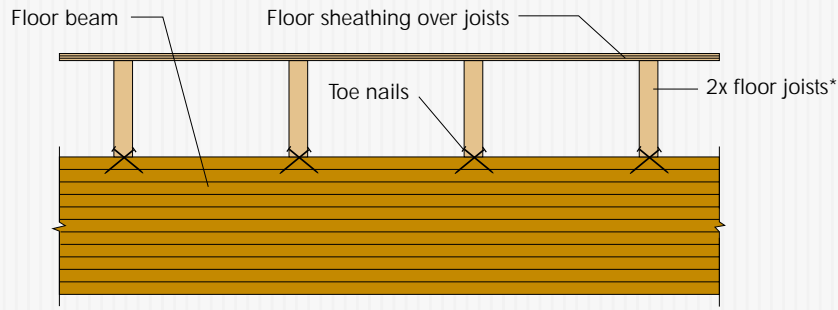


FIGURE 7

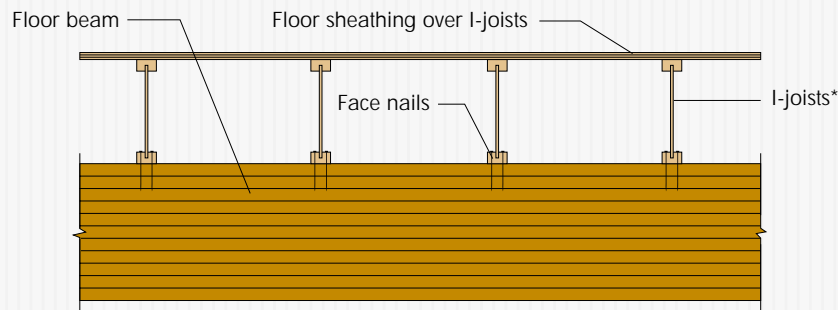
LUMBER JOISTS BEARING ON FLOOR BEAM



*Blocking between joists not shown for clarity

FIGURE 8

I-JOISTS BEARING ON FLOOR BEAM



*Blocking between joists not shown for clarity

FIGURE 9

JOISTS MOUNTED FLUSH WITH FLOOR BEAM

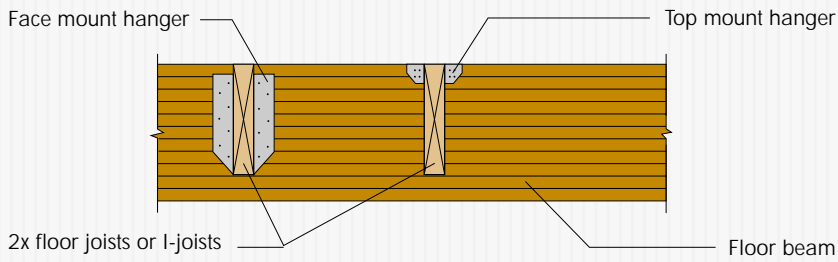
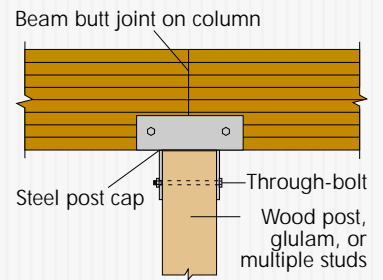


FIGURE 10

BEAMS BUTTING OVER INTERMEDIATE WOOD SUPPORT



Also see Figures 11 and 12 for similar details with continuous beams.

FIGURE 11

CONTINUOUS FLOOR BEAM OVER INTERMEDIATE WOOD SUPPORTS

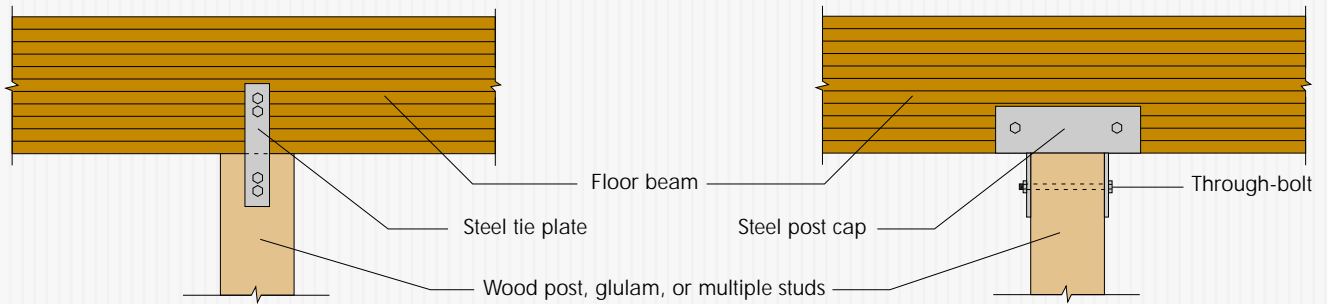


FIGURE 12

BEAM SITTING IN CONCRETE OR MASONRY WALL POCKET

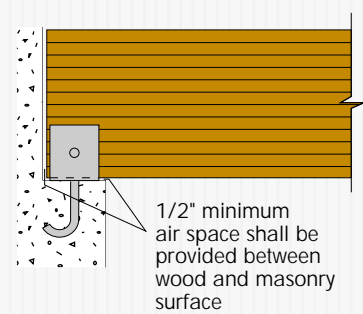
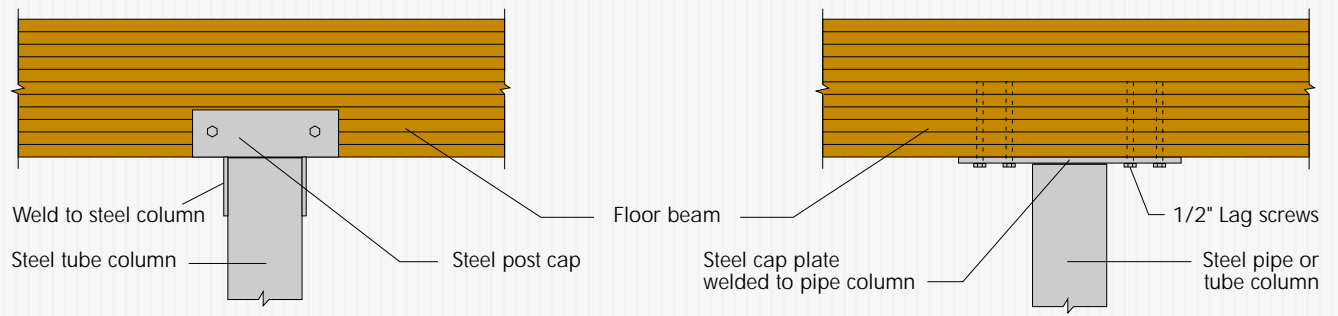


FIGURE 13

CONTINUOUS BEAM OVER INTERMEDIATE STEEL COLUMN



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If you don't see the animating circles, you may need a Flash plugin. A minimum resolution of 56Kb is required.

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GLULAM FLOOR BEAMS

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