Rosboro Glulam Ridge Beam, Header and Floor Beam Application Tables

ROSBORO™
BUILDING BETTER

ROSBORO
BUILDING BETTER

The open, airy designs and high ceilings common in residential construction today make glulam the perfect choice for ridge beam applications as shown below. They can span long distances and carry virtually any design load. The Glulam Ridge Beam Application Tables are designed to provide the smallest glulam beam section required to support the applied loading shown. Tables are provided for either typical roof live load (LDF = 1.25) or the higher roof snow load (LDF = 1.15). In both tables, the beam size provided satisifies all requirements for the International Building Code compliance for strength and deflection.

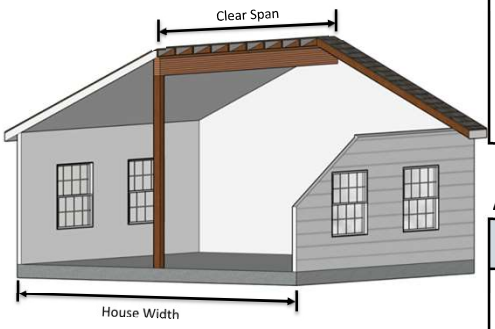
Using the Tables:

1. Determine the required design loads that are applicable to your project.
2. Determine the full width of the house or bearing to bearing dimension of the roof rafters (framing).
3. Determine the required clear span dimension for the desired open area.
4. Choose the appropriate beam size from the chart that corresponds with the *Clear Span* and *Width of House* measurements.

ROSBORO BEAM DESIGN VALUES

Rosboro X-Beam and Rosboro 1.8 ESL | EWS 24F-V4 | Dry-Use | F_{b+} =2,400 psi | F_{b-} =1,850 psi | F_v = 265 psi | $F_{c,\ perp}$ = 650 psi | $E_{Apparent}$ = 1.8 x 10^6 psi | E_{True} = 1.9 x 10^6 psi

Rosboro 1.6 ESL | EWS 20F-V7 | Dry-Use | F_b =2,000 psi | F_v = 265 psi | $F_{c,\ perp}$ = 650 psi | $E_{Apparent}$ = 1.6 x 10^6 psi | E_{True} = 1.7 x 10^6 psi



Roof Ridge Support Beam

Allowable Glulam Ridge Beam Sizes (LDF = 1.25 Non-Snow Load)

Load	Clear Span (Ft.)	Product	Width of House (Ft.) 20	24	28	32	36	40
20 PSF Live Load / 20 PSF Dead Load	10'-0"	X-Beam or 1.8ESL	3½ x 7½	3½ x 7½	3½ x 9	3½ x 9	3½ x 9	3½ x 9
			5½ x 6	5½ x 7½	5½ x 7½	5½ x 7½	5½ x 7½	5½ x 7½
		1.6 ESL	3½ x 7½	3½ x 7½	3½ x 9	3½ x 9	3½ x 10½	3½ x 10½
			5½ x 7½	5½ x 7½	5½ x 7½	5½ x 7½	5½ x 7½	5½ x 9
	14'-6"	X-Beam or 1.8ESL	3½ x 11⅞	3½ x 11⅞	3½ x 13½	3½ x 13½	3½ x 13½	3½ x 15
			5½ x 10½	5½ x 10½	5½ x 11⅞	5½ x 11⅞	5½ x 11⅞	5½ x 13½
		1.6 ESL	3½ x 11⅞	3½ x 13½	3½ x 13½	3½ x 13½	3½ x 15	3½ x 15
			5½ x 10½	5½ x 10½	5½ x 11⅞	5½ x 11⅞	5½ x 13½	5½ x 13½
	19'-0	X-Beam or 1.8ESL	3½ x 16½	3½ x 18	3½ x 18	3½ x 19½	3½ x 19½	
			5½ x 15	5½ x 15	5½ x 16½	5½ x 16½	5½ x 18	5½ x 18
		1.6 ESL	3½ x 16½	3½ x 18	3½ x 19½	3½ x 19½		
			5½ x 15	5½ x 16½	5½ x 16½	5½ x 18	5½ x 18	5½ x 18
	23'-6"	X-Beam or 1.8ESL	5½ x 19½	5½ x 19½	5½ x 21	5½ x 22½	5½ x 22½	5½ x 24
			6¾ x 18	6¾ x 19½	6¾ x 19½	6¾ x 21	6¾ x 21	6¾ x 22½
		1.6 ESL	5½ x 19½	5½ x 21	5½ x 22½	5½ x 22½	5½ x 24	5½ x 24
			6¾ x 18	6¾ x 19½	6¾ x 21	6¾ x 21	6¾ x 22½	6¾ x 22½
	28'-0"	X-Beam or 1.8ESL	6¾ x 22½	6¾ x 24				
			8¾ x 21	8¾ x 22½	8¾ x 22½	8¾ x 24		
		1.6 ESL	6¾ x 24	6¾ x 24				
			8¾ x 21	8¾ x 22½				

Allowable Glulam Ridge Beam (LDF = 1.15 Snow Load)

Load	Clear Span (Ft.)	Product	Width of House (Ft.) 20	24	28	32	36	40
30 PSF Snow Load / 20 PSF Dead Load	10'-0"	X-Beam or 1.8ESL	3½ x 7½	3½ x 9	3½ x 9	3½ x 9	3½ x 10½	3½ x 10½
			5½ x 7½	5½ x 7½	5½ x 7½	5½ x 7½	5½ x 9	5½ x 9
		1.6 ESL	3½ x 9	3½ x 9	3½ x 10½	3½ x 10½	3½ x 10½	3½ x 11⅞
			5½ x 7½	5½ x 7½	5½ x 7½	5½ x 9	5½ x 9	5½ x 9
	14'-6"	X-Beam or 1.8ESL	3½ x 11⅞	3½ x 13½	3½ x 13½	3½ x 15	3½ x 15	3½ x 15
			5½ x 10½	5½ x 11⅞	5½ x 11⅞	5½ x 13½	5½ x 13½	5½ x 13½
		1.6 ESL	3½ x 13½	3½ x 13½	3½ x 15	3½ x 15	3½ x 15	3½ x 16½
			5½ x 11⅞	5½ x 11⅞	5½ x 13½	5½ x 13½	5½ x 13½	5½ x 13½
	19'-0	X-Beam or 1.8ESL	3½ x 18	3½ x 19½	3½ x 19½			
			5½ x 15	5½ x 16½	5½ x 16½	5½ x 18	5½ x 18	5½ x 19½
		1.6 ESL	3½ x 18	3½ x 19½				
			5½ x 16½	5½ x 16½	5½ x 18	5½ x 18	5½ x 19½	5½ x 19½
	23'-6"	X-Beam or 1.8ESL	5½ x 21	5½ x 21	5½ x 22½	5½ x 24	5½ x 24	
			6¾ x 19½	6¾ x 19½	6¾ x 21	6¾ x 22½	6¾ x 22½	6¾ x 24
		1.6 ESL	5½ x 21	5½ x 22½	5½ x 24	5½ x 24		
			6¾ x 19½	6¾ x 21	6¾ x 22½	6¾ x 22½	6¾ x 24	6¾ x 24
	28'-0"	X-Beam or 1.8ESL	6¾ x 24					
			8¾ x 22½	8¾ x 24	8¾ x 24			
		1.6 ESL						
			8¾ x 22½	8¾ x 24				

Notes:

1. Roofs shall be designed and constructed in compliance with all applicable building codes as adopted by governing jurisdiction.
2. Glulam beam is subject to uniform gravity loads only. Dead loads are in addition to beam self-weight, which is assumed to be 35 PCF.
3. Maximum deflection under Live Load = span/240; Maximum deflection under Total Load = span/180. Table total deflection limit = 0.6".
4. Minimum bearing length for glulam beam = 1-1/2" x beam width. Sufficient bearing should be determined to resist applied loads and beam end reactions.
5. Glulam ridge beams may be installed flush or dropped below roof rafters.

ROSBORO
BUILDING BETTER

Glulam headers are a great economical solution for header applications and can easily span distances long enough to allow garage door openings for two or three cars. Full-length glulam headers at an end-wall provide an excellent nailing surface for structural wood panels, which help to provide compliance with bracing requirements. The Single Story Glulam Header Application Tables are designed to provide the smallest glulam beam section required to support the applied loading shown. Tables are provided for either typical roof live load (LDF = 1.25) or the higher roof snow load (LDF = 1.15). In both tables, the beam size provided satisifies all requirements for the International Building Code compliance for strength and deflection. Beam sizes are representative for the given clear opening (Ft.) and have been designed to carry half of the overall roof span, including a maximum 2 Ft. roof overhang as indicated.

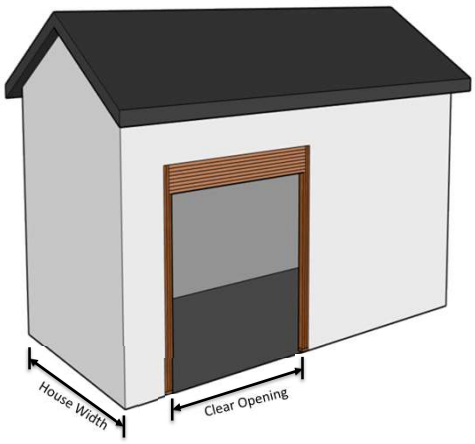
Using the Tables:

1. Determine the required design loads that are applicable to your project.
2. Determine the full width of the house or bearing to bearing dimension of the roof trusses (framing).
3. Determine the required clear (rough framed) opening dimension for the desired door or window to be installed.
4. Choose the appropriate beam size from the chart that corresponds with the *Clear Opening* and *Width of House* measurements.

ROSBORO BEAM DESIGN VALUES

Rosboro X-Beam and Rosboro 1.8 ESL | EWS 24F-V4 | Dry-Use | F_{b+} =2,400 psi | F_{b-} =1,850 psi | F_v = 265 psi | $F_{c,\ perp}$ = 650 psi | $E_{Apparent}$ = 1.8 x 10^6 psi | E_{True} = 1.9 x 10^6 psi

Rosboro 1.6 ESL | EWS 20F-V7 | Dry-Use | F_b =2,000 psi | F_v = 265 psi | $F_{c,\ perp}$ = 650 psi | $E_{Apparent}$ = 1.6 x 10^6 psi | E_{True} = 1.7 x 10^6 psi



Single-Story Roof Support Header

Allowable Glulam Beam Sizes for Single Story Headers (LDF = 1.25 Non-Snow Load)

Load	Clear Opening (Ft.)	Product	Width of House (Ft.) 20	24	28	32	36	40
20 PSF Live Load / 20 PSF Dead Load	6'-3"	X-Beam or 1.8ESL	3½ x 6	3½ x 6	3½ x 6	3½ x 6	3½ x 6	3½ x 6
			5½ x 6	5½ x 6	5½ x 6	5½ x 6	5½ x 6	5½ x 6
		1.6 ESL	3½ x 6	3½ x 6	3½ x 6	3½ x 6	3½ x 7½	3½ x 7½
			5½ x 6	5½ x 6	5½ x 6	5½ x 6	5½ x 6	5½ x 6
	9'-3"	X-Beam or 1.8ESL	3½ x 7½	3½ x 7½	3½ x 7½	3½ x 7½	3½ x 9	3½ x 9
			5½ x 6	5½ x 6	5½ x 7½	5½ x 7½	5½ x 7½	5½ x 7½
		1.6 ESL	3½ x 7½	3½ x 7½	3½ x 9	3½ x 9	3½ x 9	3½ x 9
			5½ x 6	5½ x 7½	5½ x 7½	5½ x 7½	5½ x 7½	5½ x 7½
	12'-3"	X-Beam or 1.8ESL	3½ x 10½	3½ x 10½	3½ x 10½	3½ x 11⅞	3½ x 11⅞	3½ x 11⅞
			5½ x 9	5½ x 9	5½ x 9	5½ x 10½	5½ x 10½	5½ x 10½
		1.6 ESL	3½ x 10½	3½ x 10½	3½ x 11⅞	3½ x 11⅞	3½ x 11⅞	3½ x 13½
			5½ x 9	5½ x 9	5½ x 10½	5½ x 10½	5½ x 10½	5½ x 11⅞
	16'-3"	X-Beam or 1.8ESL	3½ x 15	3½ x 15	3½ x 16½	3½ x 16½	3½ x 16½	3½ x 18
			5½ x 11⅞	5½ x 13½	5½ x 13½	5½ x 13½	5½ x 15	5½ x 15
		1.6 ESL	3½ x 15	3½ x 15	3½ x 16½	3½ x 16½	3½ x 18	3½ x 18
			5½ x 13½	5½ x 13½	5½ x 13½	5½ x 15	5½ x 15	5½ x 15
	18'-3"	X-Beam or 1.8ESL	3½ x 16½	3½ x 18	3½ x 18	3½ x 19½	3½ x 19½	
			5½ x 15	5½ x 15	5½ x 16½	5½ x 16½	5½ x 16½	5½ x 18
		1.6 ESL	3½ x 18	3½ x 19½	3½ x 19½	3½ x 19½		
			5½ x 15	5½ x 16½	5½ x 16½	5½ x 16½	5½ x 18	5½ x 18

Allowable Glulam Beam Sizes for Single Story Headers (LDF = 1.15 Snow Load)

Load	Clear Opening (Ft.)	Product	Width of House (Ft.) 20	24	28	32	36	40
30 PSF Snow Load / 20 PSF Dead Load	6'-3"	X-Beam or 1.8ESL	3½ x 6	3½ x 6	3½ x 6	3½ x 6	3½ x 7½	3½ x 7½
			5½ x 6	5½ x 6	5½ x 6	5½ x 6	5½ x 6	5½ x 6
		1.6 ESL	3½ x 6	3½ x 6	3½ x 7½	3½ x 7½	3½ x 7½	3½ x 7½
			5½ x 6	5½ x 6	5½ x 6	5½ x 6	5½ x 6	5½ x 6
	9'-3"	X-Beam or 1.8ESL	3½ x 7½	3½ x 9	3½ x 9	3½ x 9	3½ x 10½	3½ x 10½
			5½ x 6	5½ x 7½	5½ x 7½	5½ x 7½	5½ x 7½	5½ x 9
		1.6 ESL	3½ x 9	3½ x 9	3½ x 9	3½ x 10½	3½ x 10½	3½ x 10½
			5½ x 7½	5½ x 7½	5½ x 7½	5½ x 9	5½ x 9	5½ x 9
	12'-3"	X-Beam or 1.8ESL	3½ x 10½	3½ x 11⅞	3½ x 11⅞	3½ x 11⅞	3½ x 13½	3½ x 13½
			5½ x 9	5½ x 10½	5½ x 10½	5½ x 10½	5½ x 10½	5½ x 11⅞
		1.6 ESL	3½ x 10½	3½ x 11⅞	3½ x 11⅞	3½ x 13½	3½ x 13½	3½ x 15
			5½ x 10½	5½ x 10½	5½ x 10½	5½ x 10½	5½ x 11⅞	5½ x 11⅞
	16'-3"	X-Beam or 1.8ESL	3½ x 15	3½ x 16½	3½ x 16½	3½ x 18	3½ x 18	3½ x 19½
			5½ x 11⅞	5½ x 13½	5½ x 13½	5½ x 15	5½ x 15	5½ x 16½
		1.6 ESL	3½ x 16½	3½ x 16½	3½ x 18	3½ x 18	3½ x 19½	
			5½ x 13½	5½ x 15	5½ x 15	5½ x 16½	5½ x 16½	5½ x 16½
	18'-3"	X-Beam or 1.8ESL	3½ x 18	3½ x 19½	3½ x 19½			
			5½ x 15	5½ x 16½	5½ x 16½	5½ x 18	5½ x 18	5½ x 19½
		1.6 ESL	3½ x 18	3½ x 19½				
			5½ x 16½	5½ x 16½	5½ x 18	5½ x 18	5½ x 19½	5½ x 19½

Notes:

1. Roofs shall be designed and constructed in compliance with all applicable building codes as adopted by governing jurisdiction.
2. Glulam beam is subject to uniform gravity loads only. Dead loads are in addition to beam self-weight, which is assumed to be 35 PCF.
3. Maximum deflection under Live Load = span/240; Maximum deflection under Total Load = span/180. Table total deflection limit = 0.6".
4. Minimum bearing length for glulam beam = 1-1/2" x beam width. Sufficient bearing should be determined to resist applied loads and beam end reactions.

ROSBORO
BUILDING BETTER

The Two-Story Glulam Header Application Tables are designed to provide the smallest glulam beam section required to support the applied loading shown. In addition to the roof loading, either typical roof live load (LDF = 1.25) or the higher roof snow load (LDF = 1.15), the beams have been designed to support the floor load (LDF = 1.0) and a second story exterior wall. All floor loading assumes a central bearing location within the home and a maximum 9 Ft. exterior wall height. In both tables, the beam size provided satisifies all requirements for the International Building Code compliance for strength and deflection. Beam sizes are representative for the given clear opening (Ft.) and have been designed to carry half of the overall roof span, including a maximum 2 Ft. roof overhang, 1/4 of the overall floor span and exterior wall dead load as indicated.

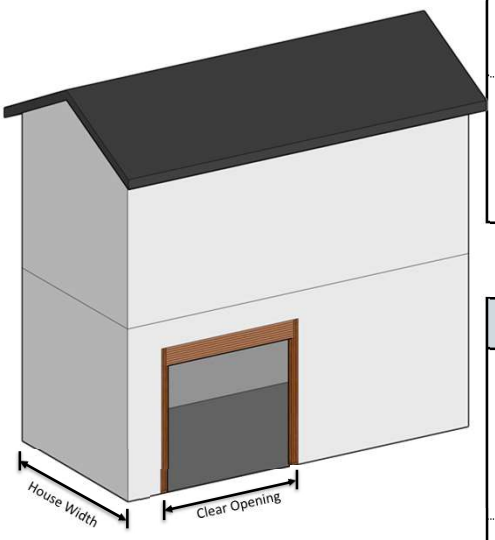
Using the Tables:

1. Determine the required design loads that are applicable to your project.
2. Determine the full width of the house or bearing to bearing dimension of the roof trusses (framing).
3. Determine the required clear (rough framed) opening dimension for the desired door or window to be installed.
4. Choose the appropriate beam size from the chart that corresponds with the *Clear Opening* and *Width of House* measurements.

ROSBORO BEAM DESIGN VALUES

Rosboro X-Beam and Rosboro 1.8 ESL | EWS 24F-V4 | Dry-Use | F_{b+} =2,400 psi | F_{b-} =1,850 psi | F_v = 265 psi | $F_{c,\ perp}$ = 650 psi | $E_{Apparent}$ = 1.8 x 10^6 psi | E_{True} = 1.9 x 10^6 psi

Rosboro 1.6 ESL | EWS 20F-V7 | Dry-Use | F_b =2,000 psi | F_v = 265 psi | $F_{c,\ perp}$ = 650 psi | $E_{Apparent}$ = 1.6 x 10^6 psi | E_{True} = 1.7 x 10^6 psi



Two-Story Roof Support Header

Assumes roof loading from full house width, floor loading with support at center of house width and maximum 9 Ft. second level exterior wall height.

Allowable Glulam Beam Sizes for Two-Story Headers (LDF = 1.25 Non-Snow Load & 1.00 Floor Load)

Load	Clear Opening (Ft.)	Product	Width of House (Ft.) 20	24	28	32	36	40
ROOF 20 PSF Live Load 20 PSF Dead Load	6'-3"	X-Beam or 1.8ESL	3½ x 6	3½ x 6	3½ x 6	3½ x 7½	3½ x 7½	3½ x 7½
			5½ x 6	5½ x 6	5½ x 6	5½ x 6	5½ x 6	5½ x 6
		1.6 ESL	3½ x 6	3½ x 7½	3½ x 9½	3½ x 9	3½ x 9	3½ x 9
			5½ x 6	5½ x 6	5½ x 6	5½ x 6	5½ x 6	5½ x 6
	9'-3"	X-Beam or 1.8ESL	3½ x 9	3½ x 9	3½ x 9	3½ x 9	3½ x 10½	3½ x 10½
			5½ x 7½	5½ x 7½	5½ x 7½	5½ x 9	5½ x 9	5½ x 9
		1.6 ESL	3½ x 9	3½ x 9	3½ x 10½	3½ x 10½	3½ x 10½	3½ x 11⅞
			5½ x 7½	5½ x 7½	5½ x 7½	5½ x 9	5½ x 9	5½ x 9
FLOOR 40 PSF Live Load 10PSF Dead Load	12'-3"	X-Beam or 1.8ESL	3½ x 10½	3½ x 11⅞	3½ x 11⅞	3½ x 11⅞	3½ x 13½	3½ x 13½
			5½ x 9	5½ x 10½	5½ x 10½	5½ x 10½	5½ x 11⅞	5½ x 11⅞
		1.6 ESL	3½ x 11⅞	3½ x 11⅞	3½ x 13½	3½ x 13½	3½ x 15	3½ x 15
			5½ x 10½	5½ x 10½	5½ x 10½	5½ x 11⅞	5½ x 11⅞	5½ x 11⅞
	16'-3"	X-Beam or 1.8ESL	3½ x 15	3½ x 16½	3½ x 16½	3½ x 18	3½ x 19½	3½ x 19½
			5½ x 13½	5½ x 13½	5½ x 15	5½ x 15	5½ x 16½	5½ x 16½
		1.6 ESL	3½ x 16½	3½ x 18	3½ x 18	3½ x 19½	3½ x 19½	3½ x 19½
			5½ x 15	5½ x 15	5½ x 16½	5½ x 16½	5½ x 16½	5½ x 18
WALL 10 PSF Dead Load	18'-3"	X-Beam or 1.8ESL	3½ x 18	3½ x 19½				
			5½ x 16½	5½ x 16½	5½ x 18	5½ x 18	5½ x 18	5½ x 19½
		1.6 ESL	3½ x 19½					
			5½ x 16½	5½ x 16½	5½ x 18	5½ x 19½	5½ x 19½	5½ x 21

Allowable Glulam Beam Sizes for Two-Story Headers (LDF = 1.15 Snow Load & 1.00 Floor Load)

Load	Clear Opening (Ft.)	Product	Width of House (Ft.) 20	24	28	32	36	40
ROOF 30 PSF Snow Load 20 PSF Dead Load	6'-3"	X-Beam or 1.8ESL	3½ x 6	3½ x 7½	3½ x 7½	3½ x 7½	3½ x 7½	3½ x 7½
			5½ x 6	5½ x 6	5½ x 6	5½ x 6	5½ x 7½	5½ x 7½
		1.6 ESL	3½ x 7½	3½ x 7½	3½ x 7½	3½ x 7½	3½ x 9	3½ x 9
			5½ x 6	5½ x 6	5½ x 6	5½ x 6	5½ x 7½	5½ x 7½
	9'-3"	X-Beam or 1.8ESL	3½ x 9	3½ x 9	3½ x 10½	3½ x 10½	3½ x 11⅞	3½ x 11⅞
			5½ x 7½	5½ x 9	5½ x 9	5½ x 9	5½ x 9	5½ x 10½
		1.6 ESL	3½ x 9	3½ x 10½	3½ x 10½	3½ x 11⅞	3½ x 11⅞	3½ x 13½
			5½ x 7½	5½ x 9	5½ x 9	5½ x 9	5½ x 10½	5½ x 10½
FLOOR 40 PSF Live Load 10PSF Dead Load	12'-3"	X-Beam or 1.8ESL	3½ x 11⅞	3½ x 11⅞	3½ x 13½	3½ x 13½	3½ x 15	3½ x 15
			5½ x 10½	5½ x 11⅞	5½ x 11⅞	5½ x 11⅞	5½ x 11⅞	5½ x 13½
		1.6 ESL	3½ x 11⅞	3½ x 13½	3½ x 13½	3½ x 15	3½ x 15	3½ x 16½
			5½ x 10½	5½ x 10½	5½ x 11⅞	5½ x 11⅞	5½ x 13½	5½ x 13½
	16'-3"	X-Beam or 1.8ESL	3½ x 16½	3½ x 18	3½ x 19½	3½ x 19½	3½ x 19½	
			5½ x 15	5½ x 15	5½ x 16½	5½ x 16½	5½ x 16½	5½ x 18
		1.6 ESL	3½ x 18	3½ x 18	3½ x 19½	3½ x 19½		
			5½ x 15	5½ x 16½	5½ x 16½	5½ x 16½	5½ x 18	5½ x 18
WALL 10 PSF Dead Load	18'-3"	X-Beam or 1.8ESL	3½ x 19½					
			5½ x 16½	5½ x 18	5½ x 18	5½ x 19½	5½ x 19½	5½ x 21
		1.6 ESL						
			5½ x 18	5½ x 18	5½ x 19½	5½ x 19½	5½ x 19½	5½ x 21

Notes:

1. Roofs shall be designed and constructed in compliance with all applicable building codes as adopted by governing jurisdiction.
2. Glulam beam is subject to uniform gravity loads only. Dead loads are in addition to beam self-weight, which is assumed to be 35 PCF.
3. Maximum deflection under Live Load = span/240; Maximum deflection under Total Load = span/180. Table total deflection limit = 0.6".
4. Minimum bearing length for glulam beam = 1-1/2" x beam width. Sufficient bearing should be determined to resist applied loads and beam end reactions.

ROSBORO
BUILDING BETTER

The superior strength of glulam allows for longer clear spans than solid-sawn lumber. Rosboro glulam is also manufactured from kiln-dried lumber so shrinkage and warping are minimized. The Glulam Floor Beam Application Tables are designed to provide the smallest glulam beam section required to support the applied loading shown. Tables are provided for either a single span beam or a beam continuous over a central support under floor loading (LDF = 1.00). In both tables, the beam size provided satisifies all requirements for the International Building Code compliance for strength and deflection. Beam sizes are representative for the given clear opening (Ft.) and have been designed to carry half of the overall floor span. Selected beams can be installed in either a flush or dropped orientation.

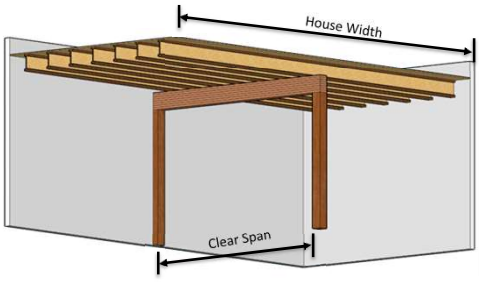
Using the Tables:

1. Determine the required design loads that are applicable to your project.
2. Determine the full width of the house or bearing to bearing dimension of the floor joists.
3. Determine the required clear span dimension for the desired support spacing.
4. Choose the appropriate beam size from the chart that corresponds with the *Clear Span* and *Width of House* measurements.

ROSBORO BEAM DESIGN VALUES

Rosboro X-Beam and Rosboro 1.8 ESL | EWS 24F-V4 | Dry-Use | F_{b+} =2,400 psi | F_{b-} =1,850 psi | F_v = 265 psi | $F_{c,\ perp}$ = 650 psi | $E_{Apparent}$ = 1.8 x 10^6 psi | E_{True} = 1.9 x 10^6 psi

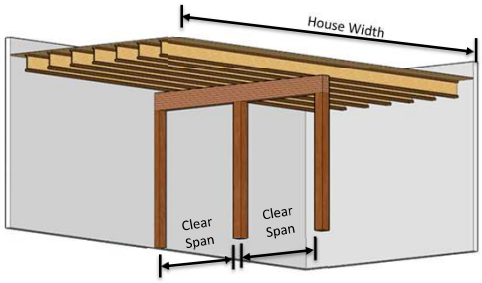
Rosboro 1.6 ESL | EWS 20F-V7 | Dry-Use | F_b =2,000 psi | F_v = 265 psi | $F_{c,\ perp}$ = 650 psi | $E_{Apparent}$ = 1.6 x 10^6 psi | E_{True} = 1.7 x 10^6 psi



Simple Span Floor Beam

Allowable Glulam Beam Sizes for Single Span Floor Beams (LDF = 1.00 Floor Load)

Load	Clear Span (Ft.)	Product	Width of House (Ft.) 20	24	28	32	36	40
40 PSF Live Load / 10 PSF Dead Load	8'-0"	X-Beam or 1.8ESL	3½ x 7½	3½ x 7½	3½ x 7½	3½ x 9	3½ x 9	3½ x 9
			5½ x 6	5½ x 6	5½ x 6	5½ x 7½	5½ x 7½	5½ x 7½
		1.6 ESL	3½ x 7½	3½ x 7½	3½ x 9	3½ x 9	3½ x 9	3½ x 10½
			5½ x 6	5½ x 6	5½ x 7½	5½ x 7½	5½ x 7½	5½ x 7½
	10'-0"	X-Beam or 1.8ESL	3½ x 9	3½ x 9	3½ x 9	3½ x 10½	3½ x 10½	3½ x 11⅞
			5½ x 7½	5½ x 7½	5½ x 7½	5½ x 9	5½ x 9	5½ x 9
		1.6 ESL	3½ x 9	3½ x 9	3½ x 10½	3½ x 10½	3½ x 11⅞	3½ x 11⅞
			5½ x 7½	5½ x 7½	5½ x 9	5½ x 9	5½ x 9	5½ x 10½
	12'-0"	X-Beam or 1.8ESL	3½ x 10½	3½ x 10½	3½ x 11⅞	3½ x 11⅞	3½ x 13½	3½ x 13½
			5½ x 9	5½ x 9	5½ x 9	5½ x 10½	5½ x 10½	5½ x 10½
		1.6 ESL	3½ x 10½	3½ x 11⅞	3½ x 11⅞	3½ x 13½	3½ x 13½	3½ x 15
			5½ x 9	5½ x 9	5½ x 10½	5½ x 10½	5½ x 10½	5½ x 11⅞
	16'-0"	X-Beam or 1.8ESL	3½ x 15	3½ x 15	3½ x 16½	3½ x 16½	3½ x 16½	3½ x 18
			5½ x 11⅞	5½ x 13½	5½ x 13½	5½ x 15	5½ x 15	5½ x 15
		1.6 ESL	3½ x 15	3½ x 15	3½ x 16½	3½ x 18	3½ x 18	3½ x 19½
			5½ x 13½	5½ x 13½	5½ x 15	5½ x 15	5½ x 15	5½ x 16½
	20'-0"	X-Beam or 1.8ESL	3½ x 19½	3½ x 19½	3½ x 21	3½ x 22½	3½ x 22½	3½ x 24
			5½ x 16½	5½ x 18	5½ x 18	5½ x 19½	5½ x 19½	5½ x 21
		1.6 ESL	3½ x 19½					
			5½ x 16½	5½ x 18	5½ x 19½	5½ x 19½	5½ x 21	5½ x 21



Continuous Span Floor Beam

Allowable Glulam Beam Sizes for Continuous Span Floor Beams (LDF = 1.00 Floor Load)

Load	Clear Span (Ft.)	Product	Width of House (Ft.) 20	24	28	32	36	40
40 PSF Live Load / 10 PSF Dead Load	6'-0"	X-Beam or 1.8ESL	3½ x 6	3½ x 7½	3½ x 7½	3½ x 7½	3½ x 7½	3½ x 7½
			5½ x 6	5½ x 6	5½ x 6	5½ x 6	5½ x 6	5½ x 6
		1.6 ESL	3½ x 6	3½ x 7½	3½ x 7½	3½ x 7½	3½ x 7½	3½ x 7½
			5½ x 6	5½ x 6	5½ x 6	5½ x 6	5½ x 6	5½ x 6
	8'-0"	X-Beam or 1.8ESL	3½ x 9	3½ x 9	3½ x 9	3½ x 9	3½ x 10½	3½ x 10½
			5½ x 6	5½ x 7½	5½ x 7½	5½ x 7½	5½ x 7½	5½ x 9
		1.6 ESL	3½ x 9	3½ x 9	3½ x 9	3½ x 9	3½ x 10½	3½ x 10½
			5½ x 6	5½ x 7½	5½ x 7½	5½ x 7½	5½ x 9	5½ x 9
	10'-0"	X-Beam or 1.8ESL	3½ x 9	3½ x 10½	3½ x 10½	3½ x 11⅞	3½ x 11⅞	3½ x 13½
			5½ x 9	5½ x 9	5½ x 9	5½ x 9	5½ x 10½	5½ x 10½
		1.6 ESL	3½ x 9	3½ x 10½	3½ x 10½	3½ x 11⅞	3½ x 11⅞	3½ x 13½
			5½ x 9	5½ x 9	5½ x 9	5½ x 9	5½ x 10½	5½ x 10½
	12'-0"	X-Beam or 1.8ESL	3½ x 13½	3½ x 13½	3½ x 13½	3½ x 15	3½ x 15	3½ x 15
			5½ x 10½	5½ x 10½	5½ x 10½	5½ x 10½	5½ x 11⅞	5½ x 11⅞
		1.6 ESL	3½ x 13½	3½ x 13½	3½ x 13½	3½ x 15	3½ x 15	3½ x 15
			5½ x 10½	5½ x 10½	5½ x 10½	5½ x 10½	5½ x 11⅞	5½ x 11⅞
	14'-0"	X-Beam or 1.8ESL	3½ x 13½	3½ x 15	3½ x 15	3½ x 16½	3½ x 18	
			5½ x 10½	5½ x 11⅞	5½ x 11⅞	5½ x 13½	5½ x 13½	5½ x 15
		1.6 ESL	3½ x 13½	3½ x 15	3½ x 15	3½ x 16½	3½ x 18	
			5½ x 10½	5½ x 11⅞	5½ x 11⅞	5½ x 13½	5½ x 13½	5½ x 15

Notes:

1. Floors shall be designed and constructed in compliance with all applicable building codes as adopted by governing jurisdiction.
2. Glulam beam is subject to uniform gravity loads only. Dead loads are in addition to beam self-weight, which is assumed to be 35 PCF.
3. Maximum deflection under Live Load = span/360; Maximum deflection under Total Load = span/240. Table total deflection limit = 0.6".
4. Minimum bearing length for glulam beam = 1-1/2" x beam width. Sufficient bearing should be determined to resist applied loads and beam end reactions.
5. Glulam beams may be installed flush or dropped below floor joists.

ROSBORO
BUILDING BETTER

The Glulam Two-Story Floor Beam Application Tables are designed to provide the smallest glulam beam section required to support the applied loading shown. Tables are provided for either a single span beam or a beam continuous over a central support. In addition to the floor loading (LDF =1.00) the beams have been designed for the additional roof loading, either typical roof live load (LDF = 1.25) or the higher roof snow load (LDF = 1.15), and a second story interior bearing wall. In all of the tables, the beam size provided satisifies all requirements for the International Building Code compliance for strength and deflection. Beam sizes are representative for the given clear opening (Ft.) and have been designed to carry half of the overall floor and roof spans. Selected beams can be installed in either a flush or dropped orientation.

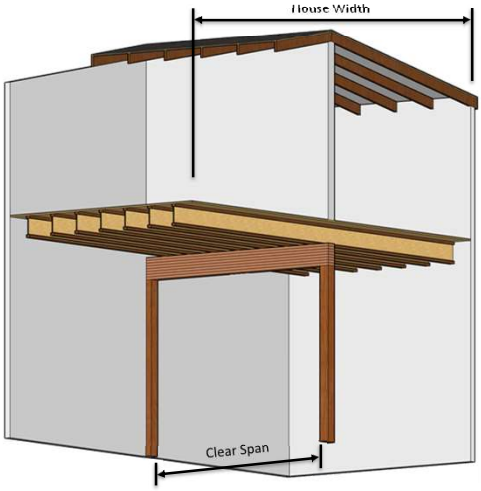
Using the Tables:

1. Determine the required design loads that are applicable to your project.
2. Determine the full width of the house or bearing to bearing dimension of the floor joists.
3. Determine the required clear span dimension for the desired support spacing.
4. Choose the appropriate beam size from the chart that corresponds with the *Clear Span* and *Width of House* measurements.

ROSBORO BEAM DESIGN VALUES

Rosboro X-Beam and Rosboro 1.8 ESL | EWS 24F-V4 | Dry-Use | F_{b+} =2,400 psi | F_{b-} =1,850 psi | F_v = 265 psi | $F_{c,\ perp}$ = 650 psi | $E_{Apparent}$ = 1.8 x 10^6 psi | E_{True} = 1.9 x 10^6 psi

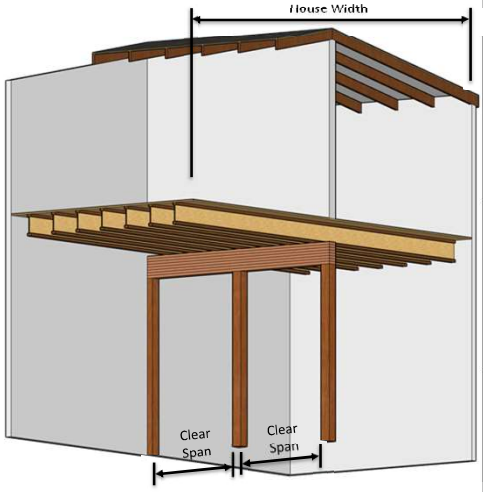
Rosboro 1.6 ESL | EWS 20F-V7 | Dry-Use | F_b =2,000 psi | F_v = 265 psi | $F_{c,\ perp}$ = 650 psi | $E_{Apparent}$ = 1.6 x 10^6 psi | E_{True} = 1.7 x 10^6 psi



Two-Story Simple Span Floor Beam

Allowable Glulam Beam Sizes for Single Span Floor Beams (LDF = 1.00 Floor Load)

Load	Clear Span (Ft.)	Product	Width of House (Ft.) 20	24	28	32	36	40
ROOF 20 PSF Live Load 20 PSF Dead Load	8'-0"	X-Beam or 1.8ESL	3½ x 9	3½ x 9	3½ x 9	3½ x 10½	3½ x 10½	3½ x 10½
			5½ x 7½	5½ x 7½	5½ x 7½	5½ x 9	5½ x 9	5½ x 9
		1.6 ESL	3½ x 9	3½ x 9	3½ x 10½	3½ x 10½	3½ x 11⅞	3½ x 11⅞
			5½ x 7½	5½ x 7½	5½ x 9	5½ x 9	5½ x 9	5½ x 10½
	10'-0"	X-Beam or 1.8ESL	3½ x 10½	3½ x 10½	3½ x 11⅞	3½ x 11⅞	3½ x 13½	3½ x 13½
			5½ x 9	5½ x 9	5½ x 9	5½ x 10½	5½ x 10½	5½ x 10½
		1.6 ESL	3½ x 10½	3½ x 11⅞	3½ x 13½	3½ x 13½	3½ x 13½	3½ x 15
			5½ x 9	5½ x 9	5½ x 10½	5½ x 10½	5½ x 11⅞	5½ x 11⅞
FLOOR 40 PSF Live Load 10PSF Dead Load	12'-0"	X-Beam or 1.8ESL	3½ x 11⅞	3½ x 13½	3½ x 13½	3½ x 15	3½ x 16½	3½ x 16½
			5½ x 10½	5½ x 10½	5½ x 11⅞	5½ x 11⅞	5½ x 11⅞	5½ x 13½
		1.6 ESL	3½ x 13½	3½ x 13½	3½ x 15	3½ x 16½	3½ x 16½	3½ x 18
			5½ x 10½	5½ x 11⅞	5½ x 11⅞	5½ x 13½	5½ x 13½	5½ x 13½
	16'-0"	X-Beam or 1.8ESL	3½ x 16½	3½ x 18	3½ x 19½			
			5½ x 15	5½ x 15	5½ x 16½	5½ x 16½	5½ x 18	5½ x 18
		1.6 ESL	3½ x 18	3½ x 18	3½ x 19½			
			5½ x 15	5½ x 16½	5½ x 16½	5½ x 18	5½ x 18	5½ x 19½
WALL 10 PSF Dead Load	20'-0"	X-Beam or 1.8ESL	5½ x 19½	5½ x 21	5½ x 21	5½ x 22½	5½ x 22½	5½ x 24
			6¾ x 18	6¾ x 19½	6¾ x 19½	6¾ x 21	6¾ x 21	6¾ x 22½
		1.6 ESL	5½ x 21	5½ x 21	5½ x 22½	5½ x 22½	5½ x 24	5½ x 24
			6¾ x 19½	6¾ x 19½	6¾ x 21	6¾ x 21	6¾ x 22½	6¾ x 24



Two-Story Continuous Span Floor Beam

Allowable Glulam Beam Sizes for Continuous Span Floor Beams (LDF = 1.00 Floor Load)

Load	Clear Span (Ft.)	Product	Width of House (Ft.) 20	24	28	32	36	40
ROOF 20 PSF Live Load 20 PSF Dead Load	6'-0"	X-Beam or 1.8ESL	3½ x 7½	3½ x 9	3½ x 9	3½ x 9	3½ x 10½	3½ x 10½
			5½ x 6	5½ x 6	5½ x 7½	5½ x 7½	5½ x 7½	5½ x 9
		1.6 ESL	3½ x 7½	3½ x 9	3½ x 9	3½ x 9	3½ x 10½	3½ x 10½
			5½ x 6	5½ x 6	5½ x 7½	5½ x 7½	5½ x 7½	5½ x 9
	8'-0"	X-Beam or 1.8ESL	3½ x 10½	3½ x 10½	3½ x 11⅞	3½ x 11⅞	3½ x 13½	3½ x 13½
			5½ x 7½	5½ x 9	5½ x 9	5½ x 9	5½ x 10½	5½ x 10½
		1.6 ESL	3½ x 10½	3½ x 10½	3½ x 11⅞	3½ x 11⅞	3½ x 13½	3½ x 13½
			5½ x 7½	5½ x 9	5½ x 9	5½ x 9	5½ x 10½	5½ x 10½
FLOOR 40 PSF Live Load 10PSF Dead Load	10'-0"	X-Beam or 1.8ESL	3½ x 11⅞	3½ x 13½	3½ x 13½	3½ x 15	3½ x 16½	3½ x 16½
			5½ x 9	5½ x 10½	5½ x 10½	5½ x 11⅞	5½ x 11⅞	5½ x 13½
		1.6 ESL	3½ x 11⅞	3½ x 13½	3½ x 13½	3½ x 15	3½ x 16½	3½ x 16½
			5½ x 9	5½ x 10½	5½ x 10½	5½ x 11⅞	5½ x 11⅞	5½ x 13½
	12'-0"	X-Beam or 1.8ESL	3½ x 15	3½ x 16½	3½ x 18	3½ x 18	3½ x 19½	
			5½ x 11⅞	5½ x 11⅞	5½ x 13½	5½ x 13½	5½ x 15	5½ x 15
		1.6 ESL	3½ x 15	3½ x 16½	3½ x 18	3½ x 18	3½ x 19½	
			5½ x 11⅞	5½ x 11⅞	5½ x 13½	5½ x 13½	5½ x 15	5½ x 15
WALL 10 PSF Dead Load	14'-0"	X-Beam or 1.8ESL	5½ x 13½	5½ x 13½	5½ x 15	5½ x 16½	5½ x 16½	5½ x 18
			6¾ x 12	6¾ x 13½	6¾ x 13½	6¾ x 15	6¾ x 15	6¾ x 16½
		1.6 ESL	5½ x 13½	5½ x 13½	5½ x 15	5½ x 16½	5½ x 16½	5½ x 18
			6¾ x 12	6¾ x 13½	6¾ x 13½	6¾ x 15	6¾ x 15	6¾ x 16½

Notes:

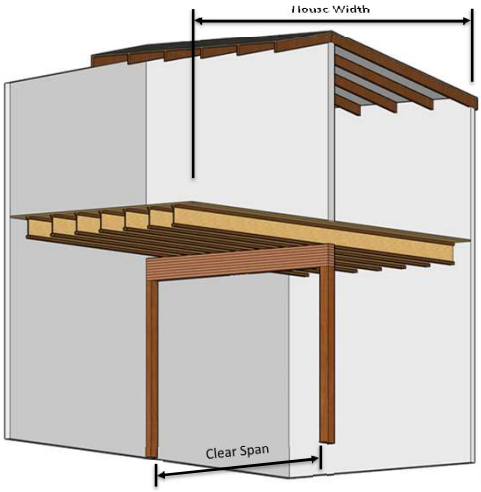
1. Floors shall be designed and constructed in compliance with all applicable building codes as adopted by governing jurisdiction.
2. Glulam beam is subject to uniform gravity loads only. Dead loads are in addition to beam self-weight, which is assumed to be 35 PCF.
3. Maximum deflection under Live Load = span/360; Maximum deflection under Total Load = span/240. Table total deflection limit = 0.6".
4. Minimum bearing length for glulam beam = 1-1/2" x beam width. Sufficient bearing should be determined to resist applied loads and beam end reactions.
5. Glulam beams may be installed flush or dropped below floor joists.

ROSBORO
BUILDING BETTER

ROSBORO BEAM DESIGN VALUES

Rosboro X-Beam and Rosboro 1.8 ESL | EWS 24F-V4 | Dry-Use | F_{b+} =2,400 psi | F_{b-} =1,850 psi | F_v = 265 psi | $F_{c,\ perp}$ = 650 psi | $E_{Apparent}$ = 1.8 x 10^6 psi | E_{True} = 1.9 x 10^6 psi

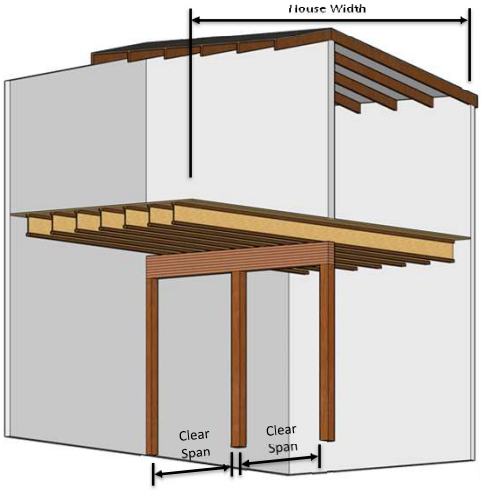
Rosboro 1.6 ESL | EWS 20F-V7 | Dry-Use | F_b =2,000 psi | F_v = 265 psi | $F_{c,\ perp}$ = 650 psi | $E_{Apparent}$ = 1.6 x 10^6 psi | E_{True} = 1.7 x 10^6 psi



Two-Story Simple Span Floor Beam

Allowable Glulam Beam Sizes for Single Span Floor Beams (LDF = 1.00 Floor Load)

Load	Clear Span (Ft.)	Product	Width of House (Ft.) 20	24	28	32	36	40
ROOF 30 PSF Snow Load 20 PSF Dead Load	8'-0"	X-Beam or 1.8ESL	3½ x 9	3½ x 9	3½ x 9	3½ x 10½	3½ x 10½	3½ x 11⅞
			5½ x 7½	5½ x 7½	5½ x 9	5½ x 9	5½ x 9	5½ x 9
		1.6 ESL	3½ x 9	3½ x 9	3½ x 10½	3½ x 10½	3½ x 11⅞	3½ x 11⅞
			5½ x 7½	5½ x 7½	5½ x 9	5½ x 9	5½ x 9	5½ x 10½
	10'-0"	X-Beam or 1.8ESL	3½ x 10½	3½ x 10½	3½ x 11⅞	3½ x 13½	3½ x 13½	3½ x 13½
			5½ x 9	5½ x 9	5½ x 10½	5½ x 10½	5½ x 10½	5½ x 11⅞
		1.6 ESL	3½ x 10½	3½ x 11⅞	3½ x 13½	3½ x 13½	3½ x 13½	3½ x 15
			5½ x 9	5½ x 9	5½ x 10½	5½ x 10½	5½ x 11⅞	5½ x 11⅞
FLOOR 40 PSF Live Load 10PSF Dead Load	12'-0"	X-Beam or 1.8ESL	3½ x 11⅞	3½ x 13½	3½ x 15	3½ x 15	3½ x 16½	3½ x 16½
			5½ x 10½	5½ x 11⅞	5½ x 11⅞	5½ x 11⅞	5½ x 13½	5½ x 13½
		1.6 ESL	3½ x 13½	3½ x 13½	3½ x 15	3½ x 16½	3½ x 16½	3½ x 18
			5½ x 10½	5½ x 11⅞	5½ x 11⅞	5½ x 13½	5½ x 13½	5½ x 15
	16'-0"	X-Beam or 1.8ESL	3½ x 18	3½ x 19½	3½ x 19½	3½ x 19½		
			5½ x 15	5½ x 16½	5½ x 16½	5½ x 16½	5½ x 18	5½ x 18
		1.6 ESL	3½ x 18	3½ x 19½	3½ x 19½			
			5½ x 15	5½ x 16½	5½ x 16½	5½ x 18	5½ x 18	5½ x 19½
WALL 10 PSF Dead Load	20'-0"	X-Beam or 1.8ESL	5½ x 19½	5½ x 21	5½ x 22½	5½ x 22½	5½ x 24	5½ x 24
			6¾ x 18	6¾ x 19½	6¾ x 21	6¾ x 21	6¾ x 22½	6¾ x 22½
		1.6 ESL	5½ x 21	5½ x 22½	5½ x 22½	5½ x 24	5½ x 24	
			6¾ x 19½	6¾ x 21	6¾ x 21	6¾ x 22½	6¾ x 22½	6¾ x 24



Two-Story Continuous Span Floor Beam

Allowable Glulam Beam Sizes for Continuous Span Floor Beams (LDF = 1.00 Floor Load)

Load	Clear Span (Ft.)	Product	Width of House (Ft.) 20	24	28	32	36	40
ROOF 30 PSF Snow Load 20 PSF Dead Load	6'-0"	X-Beam or 1.8ESL	3½ x 7½	3½ x 7½	3½ x 9	3½ x 9	3½ x 9	3½ x 10½
			5½ x 6	5½ x 6	5½ x 7½	5½ x 7½	5½ x 7½	5½ x 7½
		1.6 ESL	3½ x 7½	3½ x 7½	3½ x 9	3½ x 9	3½ x 9	3½ x 10½
			5½ x 6	5½ x 6	5½ x 7½	5½ x 7½	5½ x 7½	5½ x 7½
	8'-0"	X-Beam or 1.8ESL	3½ x 9	3½ x 10½	3½ x 10½	3½ x 11⅞	3½ x 11⅞	3½ x 13½
			5½ x 7½	5½ x 9	5½ x 9	5½ x 9	5½ x 10½	5½ x 10½
		1.6 ESL	3½ x 9	3½ x 10½	3½ x 10½	3½ x 11⅞	3½ x 11⅞	3½ x 13½
			5½ x 7½	5½ x 9	5½ x 9	5½ x 9	5½ x 10½	5½ x 10½
FLOOR 40 PSF Live Load 10PSF Dead Load	10'-0"	X-Beam or 1.8ESL	3½ x 11⅞	3½ x 13½	3½ x 13½	3½ x 15	3½ x 16½	3½ x 16½
			5½ x 9	5½ x 10½	5½ x 10½	5½ x 11⅞	5½ x 11⅞	5½ x 13½
		1.6 ESL	3½ x 11⅞	3½ x 13½	3½ x 13½	3½ x 15	3½ x 16½	3½ x 16½
			5½ x 9	5½ x 10½	5½ x 10½	5½ x 11⅞	5½ x 11⅞	5½ x 13½
	12'-0"	X-Beam or 1.8ESL	3½ x 15	3½ x 16½	3½ x 18	3½ x 19½		
			5½ x 11⅞	5½ x 11⅞	5½ x 13½	5½ x 13½	5½ x 15	5½ x 15
		1.6 ESL	3½ x 15	3½ x 16½	3½ x 18	3½ x 19½		
			5½ x 11⅞	5½ x 11⅞	5½ x 13½	5½ x 13½	5½ x 15	5½ x 15
WALL 10 PSF Dead Load	14'-0"	X-Beam or 1.8ESL	5½ x 13½	5½ x 15	5½ x 15	5½ x 16½	5½ x 16½	5½ x 18
			6¾ x 12	6¾ x 13½	6¾ x 13½	6¾ x 15	6¾ x 15	6¾ x 16½
		1.6 ESL	5½ x 13½	5½ x 15	5½ x 15	5½ x 16½	5½ x 16½	5½ x 18
			6¾ x 12	6¾ x 13½	6¾ x 13½	6¾ x 15	6¾ x 15	6¾ x 16½

Notes:
1. Floors shall be designed and constructed in compliance with all applicable building codes as adopted by governing jurisdiction.
2. Glulam beam is subject to uniform gravity loads only. Dead loads are in addition to beam self-weight, which is assumed to be 35 PCF.
3. Maximum deflection under Live Load = span/360; Maximum deflection under Total Load = span/240. Table total deflection limit = 0.6".
4. Minimum bearing length for glulam beam = 1-1/2" x beam width. Sufficient bearing should be determined to resist applied loads and beam end reactions.
5. Glulam beams may be installed flush or dropped below floor joists.

All beam sizes indicated in the included tables are representative of stock X-Beam and BigBeam sizes that are typically readily available in local markets. Rosboro (including our Custom Glulam Plant, Western Structures) has the combined capabiltiy of producing beams and columns from 3-1/2" to 16-1/4" in width and 3-1/2" to 53" in depth. There is also virtually no limit to the length of the beams that can be produced and is typically only limited by the means of transportation from our facility to your job site.

For job specific information and/or design assistance for your project contact Rosboro's Technical Support.
Email: info@Rosboro.com | Phone: 1-877-457-4139

WESTERN STRUCTURES
CUSTOM GLULAM BY ROSBORO