



Georgia-Pacific

Engineered Lumber

Residential Floor & Roof Systems Product Guide

WOOD | BEAM[®]
WIDE MATTERS[™]

G-P LAM[®]
with FiberGuard[™]

FiberStrong[®]
Rim Board



Edition IV

Build on the strength of

Today's home designs call for advanced building materials like Georgia-Pacific engineered lumber. The strength of engineered lumber makes it the right choice for floor and roof systems, as well as beams and headers.

Residential building trends, including large open spaces and high ceilings, create a demand for products that provide higher strength and greater stability over longer spans. Georgia-Pacific Wood I Beam™ joists and other engineered lumber products outperform conventional lumber in these applications, helping to ensure a solid floor system and maintain structural integrity.

Engineered lumber helps eliminate the need for supporting posts in basements, garages and bonus rooms. Since most pipes, duct and wires can pass through the web of Wood I Beam joists, engineered lumber makes it possible for you to maximize ceiling heights, even in basements.

When home designs feature walls of windows, grand front entrances, even wider doorways from room to room, engineered lumber products like G-P Lam® LVL headers provide the strength and support required to handle the heavy loads.



Engineered Lumber is an important part of every flooring system that is sturdy enough to support heavy furniture like pool tables, pianos or china cabinets.

Take a closer look at the advantages offered by G-P engineered lumber:

Strength

Georgia-Pacific engineered lumber is manufactured to take advantage of the natural strengths found in wood. We combine high-grade wood fiber with specifically formulated resins to produce virtually defect-free engineered lumber. This manufacturing process enables G-P engineered lumber to resist shrinking, twisting and warping. As a result, engineered lumber is

more consistent and has more load-carrying capacity and spanning ability than regular sawn lumber.

Easy installation

Every piece is consistently true to size. Even though it's extremely strong, G-P engineered lumber is lightweight and easy to cut. Plus, wiring and plumbing pass easily through the web of Wood I Beam joists for more clearance and higher ceilings.

Environmentally sound

Engineered lumber makes more efficient use of trees because it is made using smaller, computer-evaluated lumber and plywood veneers. Engineered lumber requires between 40 to 50% less wood fiber than the equivalent conventional lumber.

The Georgia-Pacific family of engineered lumber products includes:

- G-P Wood I Beam™ joists
- FiberStrong® rim board
- G-P Lam® LVL



engineered lumber.

Consistently high quality

G-P engineered lumber resists shrinking, crowning, twisting and warping, which means quieter floors and fewer callbacks. Plus, all Wood I Beam joists and G-P Lam LVL are backed by a limited lifetime warranty.*

Cost effective

The advantages of G-P engineered lumber go beyond superior performance. You'll find engineered lumber is the lowest total cost solution in the marketplace. The G-P Value Length method of ordering and shipping materials minimizes waste in labor and materials. Now, you can think like a framer instead of an engineer with a selection of standard sizes that can be trimmed on site to meet the needs of the job. "Jigsaw puzzle" job packs with dozens of lengths are eliminated, helping to greatly reduce the need for handling and cutting before joists get to the job.

Dependable delivery and availability

Georgia-Pacific manufactures engineered lumber to exacting standards at its mills, and G-P maintains an extensive inventory that's ready to be delivered through the largest distribution network in the industry. What does that mean to you? The quality engineered lumber you need is on your job site, when you need it.

Customer & technical support

Georgia-Pacific provides the know-how to help you stay on top of current building practices. Plus, we can help you resolve day-to-day issues and provide technical assistance. Simply call us at 1-800-BUILD GP.



Simple-to-use software solutions

Georgia-Pacific's exclusive Windows™ based software packages help you make the most of engineered lumber.

- **FASTBeam®** analyzes a variety of load conditions to calculate structural joist and beam selections, choosing the optimum product based on cost, availability, size and spacing while dramatically reducing the time it takes to spec plans.
- **FASTPlan®**, an easy-to-learn CAD program, is the quick, efficient way to draw accurate, detailed framing layouts and create materials lists.
- **FASTOpt®** prepares precise cut lists to optimize materials, save time and reduce waste.



Wood I Beam joists make it possible to maximize ceiling heights, create dramatic living spaces, and raise new opportunities for living areas in basements.

Wood I Beam™ Joists

<i>Floor Span Charts</i>	6
<i>Bonus Room Floor Joist Selection Guide</i>	7
<i>Performance Based Joist Selection Guide</i>	8
<i>FiberStrong® Rim Board</i>	9
<i>Roof Joist Span Charts</i>	10-11
<i>Allowable Uniform Loads—Floor PLF</i>	12
<i>Allowable Uniform Loads—Roof PLF</i>	13
<i>Design Properties</i>	14
<i>Architectural Specifications</i>	15
<i>Framing Connectors</i>	16

Details

<i>Dead Load Material Weights</i>	17
<i>Installation Notes and Safety Warnings</i>	18
<i>Installation Do's and Don'ts</i>	19
<i>Typical Framing</i>	20
<i>Fire Rated Assemblies</i>	21
<i>Plumbing Details</i>	21
<i>Floor Details</i>	22-25
<i>Cantilever Details</i>	26-27
<i>Roof Details</i>	28-29
<i>Hole Location Charts</i>	30-31

G-P Lam® LVL

<i>Bearing Details</i>	34
<i>General Notes for Charts and Tables</i>	35
<i>Floor Beams</i>	35
<i>Window, Patio Door and Garage Door Headers</i> ...	36-37
<i>Roof Hip and Valley Beam</i> ...	38-39
<i>Bearing Length Requirements</i> ..	40
<i>Allowable Uniform Loads</i>	41-47
<i>Fastening Recommendations</i>	48-49
<i>Tapered Cut Allowable End Reactions</i>	50-51
<i>Hole Chart and Connectors</i>	52
<i>Framing Connectors</i>	53
<i>Beam and Header Design Properties</i>	54
<i>Architectural Specifications</i>	55

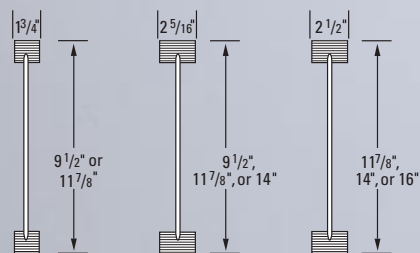
*See complete warranty for terms, conditions and limitations.

Wood I Beam™ Joists



NOTE: WI series joists have solid sawn lumber flanges. GPI series joists have LVL flanges. Not all products are available at all distribution centers; contact G-P for availability.
*See complete warranty for terms, conditions and limitations.

GPI Series



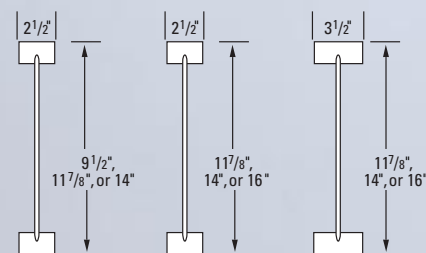
GPI 20

GPI 40

GPI 65

All Wood I Beam joists have FiberStrong® web

WI Series



WI 40

WI 60

WI 80

Greater load-carrying capacity, firmer-feeling floors

Lightweight and cost effective, WI and GPI Series Wood I Beam™ joists are the builder's choice for residential floor and roof systems. A wide selection of sizes and flange choices make it easy to specify the materials that are right for the homes you build, whether you're building smaller tract homes or custom plans.

Each joist features a FiberStrong® OSB web with high-grade solid sawn lumber or G-P Lam® LVL flanges. The wider flanges offered by the 40, 60, 65 and 80 series joists provide broader gluing and nailing surfaces for floor and roof sheathing, helping to save time and money for builders. Occupants enjoy the benefits of firm, level floors and smooth, flat ceilings.

More stable floors

When used as a part of a flooring system, Wood I Beam joists can help floors stay quiet over time, reducing bothersome and costly callbacks. Conventional lumber can shrink, twist and warp as the moisture found naturally in the wood evaporates. Floors can bow, nails pull away from the joists, and the floor decking slides up and down against the nails, creating annoying squeaks.

In contrast, Wood I Beam joists are more stable by design. The wide flange helps reduce vibration, creating a firmer feeling floor.



Wood I Beam joists help eliminate the need for support posts in basements, garages and bonus rooms.

Wood I Beam joists Features & Benefits

- All series of Wood I Beam joists have a FiberStrong web.
- GPI 20 Series have 1-3/4" LVL flange width and are available in 9-1/2" and 11-7/8" depths.
- GPI 40 Series have 2-5/16" LVL flange width and are available in 9-1/2", 11-7/8" and 14" depths.
- GPI 65 Series have 2-1/2" LVL flange width and are available in 11-7/8", 14" and 16" depths.
- WI 40 Series have 2-1/2" Lumber flange width and are available in 9-1/2", 11-7/8" and 14" depths.
- WI 60 Series have 2-1/2" Lumber flange width and are available in 11-7/8", 14" and 16" depths.
- WI 80 Series have 3-1/2" Lumber flange width and are available in 11-7/8", 14" and 16" depths.
- All joists are available in value lengths of 24', 28', 32', 36', 40', 44' and 48'.
- Lengths up to 60' may be special ordered.
- All Wood I Beam joists are backed by a Limited Lifetime Warranty*.

Floor Span Charts6

Bonus Room Floor Joist Selection Guide7

Performance Based Joist Selection Guide8

FiberStrong® Rim Board9

Roof Joist Span Charts10-11

Allowable Uniform Loads—Floor PLF12

Allowable Uniform Loads—Roof PLF13

Design Properties14

Architectural Specifications15

Framing Connectors16



System Performance

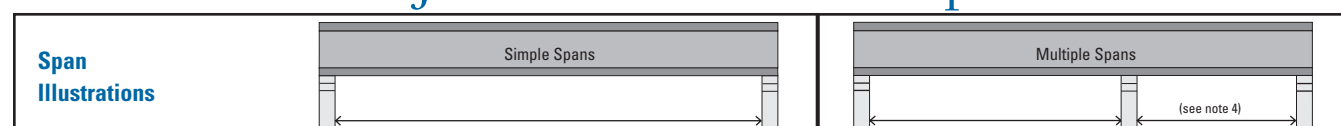
The ultimate goal in the design of a floor or roof system is the end user's safety and satisfaction. **Although joists used at spans indicated in this guide meet or exceed minimum code criteria and will safely support the loads imposed on them, judgement must be used to adequately meet user expectation levels.** These expectations may vary from one user to another.

- The specifier should consider the meaning of a given deflection limit in terms of allowable deflection and the effects this could have on the system. For example, L/360 (span/360) for a 30' span is 1" of deflection. L/240 would be 1-1/2" and L/180 would be 2" of deflection. Consideration might also be given to cases in which a joist with a long span parallels a short span or a foundation end wall. For example, a 30' span with up to 1" of allowable live load deflection could be adjacent to an end wall with no deflection, causing a noticeable difference in floor levels under full design load.
- A stiffer floor will result from using a live load deflection limit of L/480** versus the code minimum L/360. A roof system with less total load deflection than the code required L/180 may be achieved by using a criterion of L/240.
- In addition to more stringent deflection limits, several other factors may improve overall floor performance. **Reducing joist spacing and/or increasing the subfloor thickness will**

lessen deflection between adjacent joists and increase load sharing. For increased floor stiffness, we recommend gluing the subfloor to the joists before nailing or screwing rather than nailing alone. For additional stiffness, glue tongue and groove joints. Surfaces must be clean and dry before gluing.

- As with any construction, it is essential to follow proper installation procedures. Joists must be plumb and anchored securely to supports before system sheathing is attached. Supports for multiple span joists must be level. To minimize settlement when using hangers, joists should be firmly seated in the hanger bottoms. Leave a 1/16" gap between joist end and header.
- Vibrations may occur in floor systems with very little dead load**, as in large empty rooms. A ceiling attached to the bottom of the joists will generally dampen vibration as will interior partition walls running perpendicular to the joists. If a ceiling will not be attached to the bottom of the joists, vibration can be minimized by nailing a continuous 2 x 4 perpendicular to the bottom of the joists at midspan running from end wall to end wall. Where future finishing of the ceiling is likely, x-briding or Wood I Beam blocking panels may be used in place of the 2 x 4.

GPI and WI Series Joists—Residential Floor Span Charts



40 PSF Live Load + 10 PSF Dead Load

Improved Performance¹ (L/480)

Joist	Joist Depth	Spacing (Simple Span)				Spacing (Multiple Span)			
		12" o.c.	16" o.c.	19.2" o.c.	24" o.c.	12" o.c.	16" o.c.	19.2" o.c.	24" o.c.
GPI 20	9 1/2"	17'-01"	15'-07"	14'-09"	13'-10"	18'-07"	17'-01"	16'-02"	14'-05"
	11 1/8"	20'-05"	18'-08"	17'-08"	16'-06"	22'-03"	20'-05"	18'-09"	16'-09"
GPI 40	9 1/2"	18'-00"	16'-06"	15'-07"	14'-06"	19'-08"	18'-00"	16'-06"	14'-09"
	11 1/8"	21'-06"	19'-08"	18'-07"	17'-01"	23'-06"	20'-10"	19'-00"	17'-00"
	14"	24'-04"	22'-03"	21'-00"	18'-11"	26'-08"	23'-01"	21'-01"	18'-10"
GPI 65	11 1/8"	23'-03"	21'-03"	20'-00"	18'-08"	25'-06"	23'-03"	21'-11"	20'-06"
	14"	26'-05"	24'-02"	22'-09"	21'-03"	29'-00"	26'-05"	25'-00"	20'-08"
	16"	29'-04"	26'-09"	25'-03"	23'-07"	32'-02"	29'-04"	25'-11"	20'-08"
WI 40	9 1/2"	18'-00"	16'-06"	15'-07"	14'-01"	19'-07"	17'-02"	15'-08"	14'-00"
	11 1/8"	21'-06"	19'-07"	18'-02"	16'-03"	23'-00"	19'-11"	18'-02"	16'-02"
	14"	24'-04"	22'-01"	20'-02"	18'-00"	25'-06"	22'-01"	20'-01"	18'-00"
WI 60	11 1/8"	22'-08"	20'-08"	19'-06"	18'-03"	24'-08"	22'-06"	21'-02"	19'-01"
	14"	25'-09"	23'-06"	22'-02"	20'-09"	28'-01"	25'-07"	23'-08"	19'-09"
	16"	28'-07"	26'-01"	24'-07"	23'-00"	31'-02"	28'-01"	24'-09"	19'-09"
WI 80	11 1/8"	24'-11"	22'-08"	21'-04"	19'-11"	27'-01"	24'-08"	23'-03"	21'-08"
	14"	28'-03"	25'-09"	24'-03"	22'-08"	30'-10"	28'-00"	26'-05"	23'-11"
	16"	31'-04"	28'-06"	26'-11"	25'-01"	34'-02"	31'-01"	29'-03"	23'-11"

40 PSF Live Load + 20 PSF Dead Load

Improved Performance¹ (L/480)

Joist	Joist Depth	Spacing (Simple Span)				Spacing (Multiple Span)			
		12" o.c.	16" o.c.	19.2" o.c.	24" o.c.	12" o.c.	16" o.c.	19.2" o.c.	24" o.c.
GPI 20	9 1/2"	17'-01"	15'-07"	14'-09"	13'-03"	18'-07"	16'-02"	14'-09"	13'-02"
	11 1/8"	20'-05"	18'-08"	17'-02"	15'-04"	21'-08"	18'-09"	17'-01"	15'-03"
GPI 40	9 1/2"	18'-00"	16'-06"	15'-01"	13'-06"	19'-01"	16'-06"	15'-00"	13'-05"
	11 1/8"	21'-06"	19'-01"	17'-05"	15'-07"	22'-00"	19'-00"	17'-04"	15'-06"
	14"	24'-04"	21'-02"	19'-03"	17'-03"	24'-04"	21'-01"	19'-03"	17'-01"
GPI 65	11 1/8"	23'-03"	21'-03"	20'-00"	18'-08"	25'-06"	23'-03"	21'-06"	17'-02"
	14"	26'-05"	24'-02"	22'-09"	21'-03"	29'-00"	25'-11"	21'-06"	17'-02"
	16"	29'-04"	26'-09"	25'-03"	22'-03"	32'-02"	25'-11"	21'-06"	17'-02"
WI 40	9 1/2"	18'-00"	15'-09"	14'-04"	12'-10"	18'-01"	15'-08"	14'-03"	12'-09"
	11 1/8"	21'-00"	18'-02"	16'-07"	14'-10"	21'-00"	18'-02"	16'-06"	14'-09"
	14"	23'-04"	20'-02"	18'-05"	16'-05"	23'-03"	20'-01"	18'-04"	16'-04"
WI 60	11 1/8"	22'-08"	20'-08"	19'-06"	17'-05"	24'-08"	21'-04"	19'-05"	16'-05"
	14"	25'-09"	23'-06"	21'-08"	19'-04"	27'-04"	23'-08"	20'-07"	16'-05"
	16"	28'-07"	25'-09"	23'-06"	19'-10"	29'-08"	24'-09"	20'-07"	16'-05"
WI 80	11 1/8"	24'-11"	22'-08"	21'-04"	19'-11"	27'-01"	24'-08"	22'-09"	18'-02"
	14"	28'-03"	25'-09"	24'-03"	21'-02"	30'-10"	28'-00"	24'-11"	19'-11"
	16"	31'-04"	28'-06"	26'-06"	21'-02"	34'-02"	30'-00"	24'-11"	19'-11"

NOTES:

- These span charts are based on uniform loads, as noted above; live load deflection is limited to L/480 for better performance. Floor performance is greatly influenced by the stiffness of the floor joists. Experience has shown that joists designed to the code minimum live load deflection (L/360) will result in a floor which may not meet the expectations of some end users. G-P strongly recommends floor spans for Wood I Beam joists be limited to those given above, which are based on L/480 live load deflection. (One-third stiffer than required by code.)
- Spans are clear distances between supports, and are based on composite action with glued-nailed APA Rated Sheathing or Sturd-I-Floor of minimum thickness 19/32" (40/20 or 20 oc) for

joist spacing of 19.2" or less, or 23/32" (48/24 or 24 oc) for a joist spacing of 24". Adhesive must meet APA AFG-01 or ASTM D3498. Apply a continuous line of glue (about 1/4" diameter) to top flange of joists. All surfaces must be clean and dry. If sheathing is nailed only (not recommended), reduce spans by 12"

- Minimum end bearing length is 3-3/4". Minimum intermediate bearing length is 3-1/2".**
- End spans of multiple-span joists must be at least 40% of the adjacent span.
- For loading other than that shown above, refer to Uniform Load Tables, use G-P FASTBeam[®] selection software, or contact G-P Engineered Lumber Technical Services.
- Not all products are available at all distribution centers; contact G-P for availability.

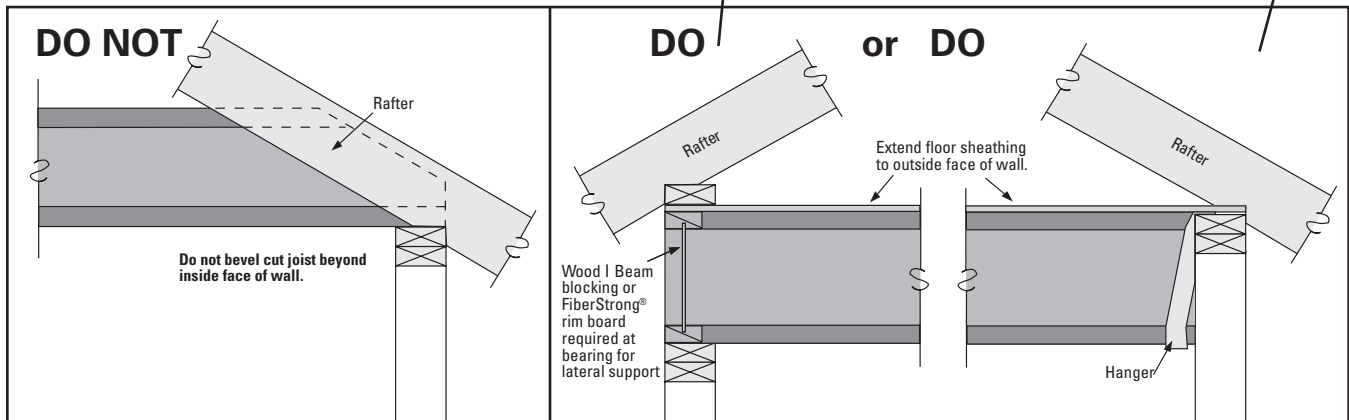
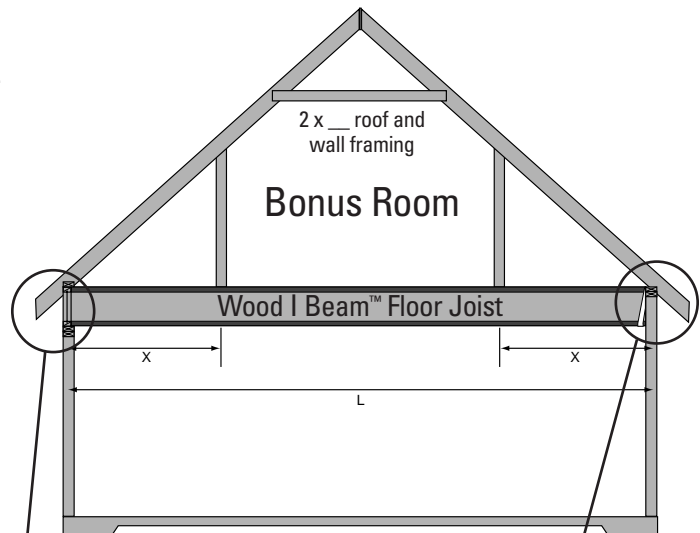
Bonus Room Floor Joist Selection Guide

L (Span)	X (Kneewall Location)	WI Joists (Series – Depth)				GPI 65 (Depth)			
		Spacing				Spacing			
		12' o.c.	16' o.c.	19.2' o.c.	24' o.c.	12' o.c.	16' o.c.	19.2' o.c.	24' o.c.
20'	4'	60-11 $\frac{7}{8}$ "	60-14"	60-16"	80-16"	11 $\frac{7}{8}$ "	14"	14"	16"
	5'	60-14"	60-14"	60-16"	80-16"	11 $\frac{7}{8}$ "	14"	16"	16"
	6'	60-14"	60-14"	60-16"	80-16"	11 $\frac{7}{8}$ "	14"	14"	16"
22'	4'	60-14"	60-16"	80-16"	80-16"	14"	16"	16"	Call G-P
	5'	60-14"	60-16"	80-16"	Call G-P	14"	16"	16"	Call G-P
	6'	60-14"	60-16"	80-16"	Call G-P	14"	16"	16"	Call G-P
24'	4'	60-16"	80-16"	Call G-P	Call G-P	16"	16"	Call G-P	Call G-P
	5'	60-16"	80-16"	Call G-P	Call G-P	16"	Call G-P	Call G-P	Call G-P
	6'	60-16"	80-16"	Call G-P	Call G-P	16"	Call G-P	Call G-P	Call G-P
	7'	60-16"	80-16"	Call G-P	Call G-P	16"	Call G-P	Call G-P	Call G-P
26'	4'	80-16"	Call G-P	Call G-P	Call G-P	16"	Call G-P	Call G-P	Call G-P
	5'	80-16"	Call G-P	Call G-P	Call G-P	16"	Call G-P	Call G-P	Call G-P
	6'	80-16"	Call G-P	Call G-P	Call G-P	16"	Call G-P	Call G-P	Call G-P
	7'	80-16"	Call G-P	Call G-P	Call G-P	16"	Call G-P	Call G-P	Call G-P

*Under these conditions, live load deflection meets building code, but does not meet L/480. Worst case is L/467.

Design Parameters:

1. Glued and nailed floor sheathing.
2. Deflection limits: L/240 total load, L/480 live load, unless noted otherwise.
3. Roof loads of 30 PSF live load at 115% (snow load).
4. Roof dead load of 12 PSF (asphalt shingles).
5. Roof rafter slope between 8/12 and 12/12.
6. Kneewall weight of 40 PLF.
7. Attic storage load of 20 PSF live load (outside the kneewalls).
8. Floor live load of 40 PSF (between the kneewalls).
9. Attic and floor dead load of 10 PSF.
10. Straight gable roof framing. No hip framing is permitted.
11. For all other conditions, call Georgia-Pacific Engineered Lumber.



Performance Based Joist Selection Guide

Determine span, select desired performance level, choose joist option.

Performance Criteria	Live Load Deflection	Total Load Deflection	Max Joist Spacing	Recommended Sheathing/ Sturd-I-Floor®
1. Code allowed minimum*	L/360	L/240	24"	²³ / ₃₂ " 48/24 APA® Rated Sheathing (glue is recommended)
2. Improved performance	L/480	L/360	19.2" (24" for WI 80)	²³ / ₃₂ " G-P Plus™ Plywood Sturd-I-Floor® 24" o.c. or 48/24 APA® Rated Sheathing, glued and nailed
3. High performance	L/600	L/480	16" (19.2" for WI 80)	⁷ / ₈ " G-P ToughPly™ plywood, glued and nailed

Product Selection Guide based on joist span. Determine span, select desired performance level, choose joist option.

Products above the bold line in each column are limited to 1/2" live load deflection when fully loaded.

Floor Span	Joist	1. CODE ALLOWED MINIMUM * Depth Spacing		2. IMPROVED PERFORMANCE Depth Spacing		3. HIGH PERFORMANCE Depth Spacing	
14'	GPI 20	9 1/2"	24" o.c.	9 1/2"	19.2" o.c.	9 1/2"	16" o.c.
	40 Series	9 1/2"	24" o.c.	9 1/2"	19.2" o.c.	9 1/2"	16" o.c.
	WI 60	11 1/8"	24" o.c.	11 1/8"	19.2" o.c.	11 1/8"	16" o.c.
	GPI 65	11 1/8"	24" o.c.	11 1/8"	19.2" o.c.	11 1/8"	16" o.c.
	WI 80	11 1/8"	24" o.c.	11 1/8"	24" o.c.	11 1/8"	19.2" o.c.
15'	GPI 20	11 1/8"	24" o.c.	11 1/8"	19.2" o.c.	11 1/8"	16" o.c.
	40 Series	11 1/8"	24" o.c.	9 1/2"	19.2" o.c.	9 1/2"	16" o.c.
	WI 60	11 1/8"	24" o.c.	11 1/8"	19.2" o.c.	11 1/8"	16" o.c.
	GPI 65	11 1/8"	24" o.c.	11 1/8"	19.2" o.c.	11 1/8"	16" o.c.
	WI 80	11 1/8"	24" o.c.	11 1/8"	24" o.c.	11 1/8"	19.2" o.c.
16'	GPI 20	11 1/8"	24" o.c.	11 1/8"	19.2" o.c.	11 1/8"	16" o.c.
	40 Series	11 1/8"	24" o.c.	11 1/8"	19.2" o.c.	11 1/8"	16" o.c.
	WI 60	11 1/8"	24" o.c.	9 1/2"	19.2" o.c.	11 1/8"	16" o.c.
	GPI 65	11 1/8"	24" o.c.	11 1/8"	19.2" o.c.	11 1/8"	16" o.c.
	WI 80	11 1/8"	24" o.c.	11 1/8"	24" o.c.	11 1/8"	19.2" o.c.
17'	GPI 20	11 1/8"	19.2" o.c.	11 1/8"	19.2" o.c.	11 1/8"	16" o.c.
	40 Series	14"	24" o.c.	11 1/8"	19.2" o.c.	11 1/8"	16" o.c.
	WI 60	11 1/8"	24" o.c.	11 1/8"	19.2" o.c.	11 1/8"	16" o.c.
	GPI 65	11 1/8"	24" o.c.	11 1/8"	19.2" o.c.	11 1/8"	16" o.c.
	WI 80	11 1/8"	24" o.c.	11 1/8"	24" o.c.	11 1/8"	19.2" o.c.
18'	GPI 20	11 1/8"	16" o.c.	11 1/8"	16" o.c.	11 1/8"	12" o.c.
	40 Series	14"	24" o.c.	11 1/8"	19.2" o.c.	14"	16" o.c.
	WI 60	11 1/8"	24" o.c.	11 1/8"	19.2" o.c.	11 1/8"	16" o.c.
	GPI 65	11 1/8"	24" o.c.	11 1/8"	19.2" o.c.	11 1/8"	16" o.c.
	WI 80	11 1/8"	24" o.c.	11 1/8"	24" o.c.	11 1/8"	19.2" o.c.
19'	GPI 20	11 1/8"	12" o.c.	11 1/8"	12" o.c.	Does not work	
	40 Series	14"	19.2" o.c.	14"	19.2" o.c.	14"	16" o.c.
	WI 60	14"	24" o.c.	11 1/8"	19.2" o.c.	14"	16" o.c.
	GPI 65	11 1/8"	24" o.c.	11 1/8"	19.2" o.c.	14"	16" o.c.
	WI 80	11 1/8"	24" o.c.	11 1/8"	24" o.c.	14"	19.2" o.c.
20'	40 Series	NOTE: Please refer to "Improved Performance" or "High Performance"		14"	19.2" o.c.	14"	16" o.c.
	WI 60			14"	19.2" o.c.	14"	16" o.c.
	GPI 65			11 1/8"	19.2" o.c.	14"	16" o.c.
	WI 80			14"	24" o.c.	14"	19.2" o.c.
	40 Series			14"	16" o.c.	14"	12" o.c.
21'	WI 60			14"	19.2" o.c.	16"	16" o.c.
	GPI 65			14"	19.2" o.c.	16"	16" o.c.
	WI 80			14"	24" o.c.	14"	19.2" o.c.
	40 Series			14"	12" o.c.	14"	12" o.c.
	WI 60			14"	19.2" o.c.	16"	12" o.c.
22'	GPI 65			14"	19.2" o.c.	16"	16" o.c.
	WI 80			14"	24" o.c.	16"	19.2" o.c.
	40 Series			14"	12" o.c.	Does not work	
	WI 60			16"	19.2" o.c.	16"	12" o.c.
	GPI 65			16"	19.2" o.c.	16"	16" o.c.
23'	WI 80			16"	24" o.c.	16"	16" o.c.
	40 Series			16"	16" o.c.	Does not work	
	WI 60			16"	19.2" o.c.	16"	12" o.c.
	GPI 65			16"	19.2" o.c.	16"	16" o.c.
	WI 80			16"	19.2" o.c.	16"	16" o.c.

*Not Recommended. Experience suggests the end user may not be satisfied with the minimum system performance.

NOTES:

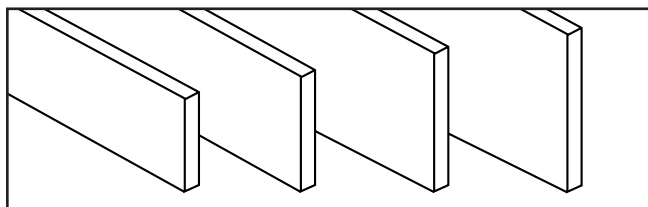
- Table assumes normal residential loads of 40 PSF live load and 10 PSF dead load except for "High Performance" column. High Performance system is based on 40 PSF live load, 20 PSF dead load.
- Table assumes simple span applications.
- If load bearing walls from above do not stack directly to walls or beams below, call G-P.
- Many combinations of series, depth and on center spacing can provide desired performance levels; the recommendations in this table are based on performance, costs and installation factors. For other options contact Georgia-Pacific.

Layout Guide for 19.2" o.c. Spacing

1	19 3/16"	6	115 3/16"	11	211 3/16"
2	38 3/8"	7	134 3/8"	12	230 3/8"
3	57 5/8"	8	153 5/8"	13	249 5/8"
4	76 13/16"	9	172 13/16"	14	268 13/16"
5	96" (8')	10	192" (16')	15	288" (24')

FiberStrong® Rim Board

Sizes and Weights



Depth	9 1/2"	11 7/8"	14"	16"
Weight (plf)	3.0	3.7	4.4	5.0

Thickness 1 1/8" Length 12'

Capacities

Vertical Load:

Rim or starter joist = 4850 plf.

Horizontal load (lateral seismic or wind):

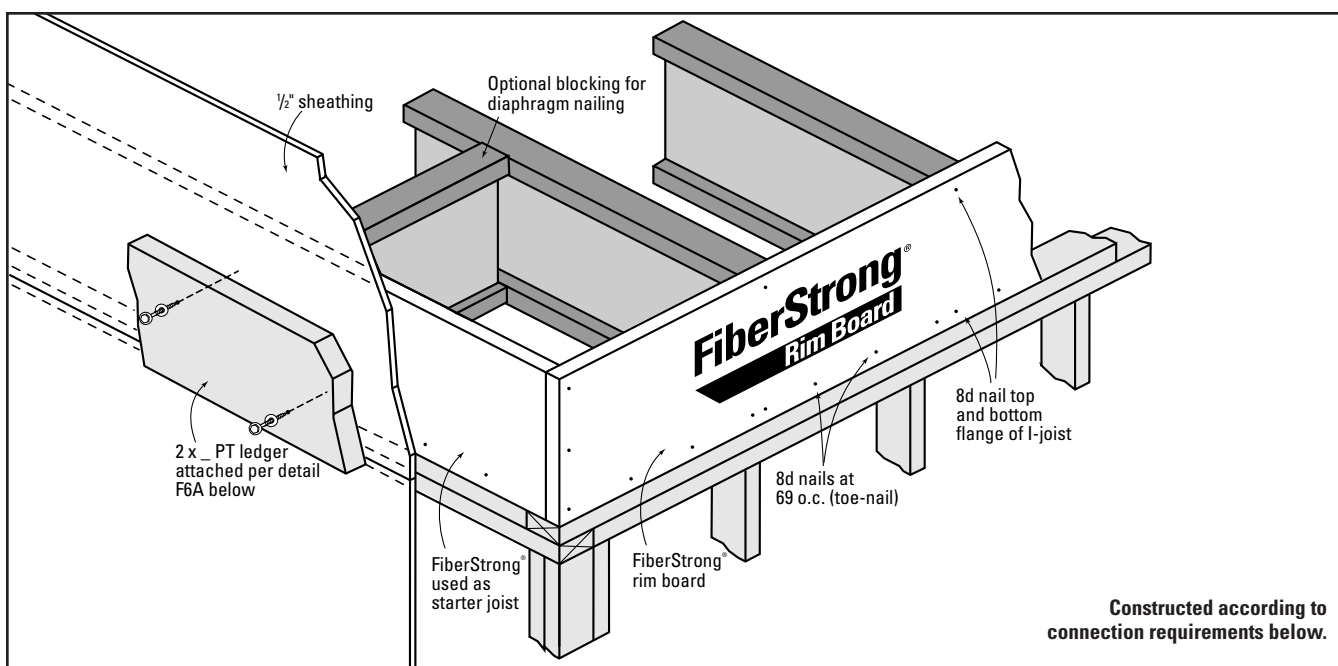
200 plf using a load duration factor of 160%

7/8" lag or through bolt attaching ledger to rim board:

350 lbs. lateral load per bolt

Lateral loads for nails in wide face of rim board:

Design per 1997 NDS using Douglas Fir-Larch values



Connection Requirements

To joist: Face-nail rim board to each joist with two (2) 8d nails, one each into top and bottom flange.

To plate: Toe-nail rim board to wall plate with 8d nails at 6" o.c. or 16d nails at 12" o.c.

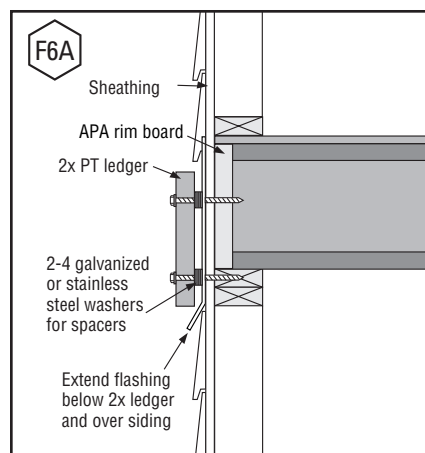
Subfloor: Attach floor sheathing to rim board per building code or structural panel manufacturer's specifications (closest on-center nail spacing is 6"). For shear transfer (lateral seismic or wind) of up to 200 PLF, use 8d at 6" o.c.

To rim: Face-nail rim boards together at corners with three (3) 8d nails.

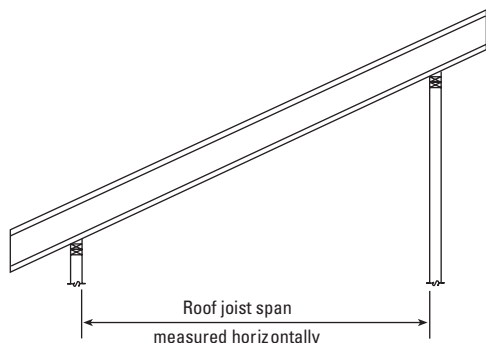
Ledger: To attach a ledger use 1/2" through bolts with nuts and washers or 1/2" lag screws (minimum length of 4") with washers. Maintain 2" edge distances on ledger and rim board. For lag screws, drill 5/16" lead holes in rim board and 1/2" holes in ledger. Caulk holes with high quality caulking immediately before inserting the bolts or lag screws. Caution: The lag screw should be inserted in a lead hole by turning with a wrench, not by driving with a hammer. Over-torquing can significantly reduce the lateral resistance of the lag screw and should therefore be avoided.

Approved Applications

FiberStrong rim board has been tested and approved as a rim board and starter joist by APA-EWS. FiberStrong rim board is not recommended as a structural joist, rafter, header or ledger. For such applications, consider Wood I Beam™ joists or G-P Lam® LVL or contact Georgia-Pacific.



Roof Joist Maximum Span Chart–125% (Non-Snow)



1. **Roof joists to be sloped min. ¼" in 12"** No camber provided.
2. Maximum deflection is limited to L/180 at total load, L/240 at live load.
3. **Maximum slope is limited to 12" in 12"** for use of these tables.
4. Tables may be used for simple and multiple spans.
5. End spans of multiple-span joists must be at least 40% of the adjacent span.
6. For other loads or on-center spacing, see allowable uniform load table.
7. Minimum end bearing length is 1¾". Minimum intermediate bearing length is 3½".

Load (PSF)	Joist	Joist Depth	Slope of 4/12 or less			Slope of over 4/12 through 8/12			Slope of over 8/12 through 12/12		
			16" o.c.	19.2" o.c.	24" o.c.	16" o.c.	19.2" o.c.	24" o.c.	16" o.c.	19.2" o.c.	24" o.c.
Non-Snow 125% Live 20 Dead 10	GPI 20	9½"	21'-10"	20'-06"	19'-00"	20'-07"	19'-04"	17'-11"	19'-01"	18'-00"	16'-08"
		11½"	26'-03"	24'-08"	22'-10"	24'-09"	23'-03"	21'-06"	23'-00"	21'-07"	20'-00"
		14"	31'-08"	29'-09"	27'-00"	29'-11"	28'-01"	26'-00"	27'-09"	26'-01"	24'-02"
	GPI 40	9½"	23'-04"	21'-11"	20'-03"	22'-00"	20'-08"	19'-01"	20'-05"	19'-02"	17'-09"
		11½"	27'-11"	26'-03"	24'-03"	26'-04"	24'-09"	22'-11"	24'-05"	22'-11"	21'-03"
		14"	33'-10"	32'-08"	30'-03"	34'-04"	32'-04"	29'-11"	31'-10"	29'-11"	27'-08"
	GPI 65	9½"	30'-07"	28'-08"	26'-07"	30'-02"	28'-04"	26'-03"	27'-11"	26'-03"	24'-04"
		11½"	34'-10"	32'-08"	30'-03"	34'-04"	32'-04"	29'-11"	31'-10"	29'-11"	27'-08"
		14"	38'-08"	36'-04"	33'-08"	38'-02"	35'-11"	33'-03"	35'-04"	33'-03"	30'-09"
	WI 40	9½"	23'-04"	21'-11"	20'-01"	23'-00"	21'-07"	20'-00"	21'-03"	20'-00"	18'-06"
		11½"	27'-11"	26'-00"	23'-03"	27'-07"	25'-11"	24'-00"	25'-06"	23'-11"	22'-02"
		14"	31'-08"	28'-10"	25'-09"	31'-03"	29'-05"	26'-11"	28'-11"	27'-02"	25'-03"
	WI 60	9½"	29'-08"	27'-10"	25'-09"	29'-03"	27'-06"	25'-06"	27'-01"	25'-05"	23'-07"
		11½"	33'-09"	31'-09"	29'-05"	33'-04"	31'-04"	29'-00"	30'-10"	29'-00"	26'-10"
		14"	37'-06"	35'-03"	32'-08"	37'-00"	34'-10"	32'-03"	34'-03"	32'-03"	29'-10"
	WI 80	9½"	33'-00"	31'-00"	28'-08"	32'-07"	30'-07"	28'-04"	30'-02"	28'-04"	26'-03"
		11½"	37'-06"	35'-03"	32'-07"	37'-00"	34'-10"	32'-03"	34'-03"	32'-03"	29'-10"
		14"	41'-07"	39'-01"	36'-02"	41'-01"	38'-07"	35'-09"	38'-00"	35'-09"	33'-01"

Load (PSF)	Joist	Joist Depth	Slope of 4/12 or less			Slope of over 4/12 through 8/12			Slope of over 8/12 through 12/12		
			16" o.c.	19.2" o.c.	24" o.c.	16" o.c.	19.2" o.c.	24" o.c.	16" o.c.	19.2" o.c.	24" o.c.
Non-Snow 125% Live 20 Dead 15	GPI 20	9½"	20'-08"	19'-05"	18'-00"	19'-05"	18'-03"	16'-11"	17'-11"	16'-10"	15'-07"
		11½"	24'-10"	23'-04"	21'-07"	23'-04"	21'-11"	20'-04"	21'-06"	20'-03"	18'-09"
		14"	29'-02"	27'-02"	25'-02"	28'-03"	26'-06"	24'-07"	26'-00"	24'-05"	22'-07"
	GPI 40	9½"	22'-01"	20'-09"	19'-02"	20'-09"	19'-06"	18'-00"	19'-02"	18'-00"	16'-08"
		11½"	26'-05"	24'-10"	22'-06"	24'-10"	23'-04"	21'-07"	22'-11"	21'-06"	19'-11"
		14"	30'-00"	27'-11"	24'-11"	28'-02"	26'-06"	24'-02"	26'-00"	24'-05"	22'-08"
	GPI 65	9½"	28'-11"	27'-02"	25'-02"	28'-03"	26'-06"	24'-07"	26'-00"	24'-05"	22'-07"
		11½"	33'-00"	30'-11"	28'-08"	32'-02"	30'-03"	28'-00"	29'-07"	27'-10"	25'-09"
		14"	36'-08"	34'-05"	31'-10"	35'-09"	33'-07"	31'-01"	32'-11"	30'-11"	28'-08"
	WI 40	9½"	22'-01"	20'-09"	18'-06"	21'-06"	20'-03"	18'-09"	19'-10"	18'-07"	17'-03"
		11½"	26'-04"	24'-00"	21'-05"	25'-09"	24'-03"	22'-00"	23'-09"	22'-03"	20'-08"
		14"	29'-02"	26'-08"	23'-10"	29'-03"	27'-04"	24'-05"	26'-11"	25'-04"	23'-04"
	WI 60	9½"	28'-01"	26'-04"	24'-05"	27'-05"	25'-09"	23'-10"	25'-02"	23'-08"	21'-11"
		11½"	32'-00"	30'-00"	27'-10"	31'-02"	29'-04"	27'-02"	28'-09"	27'-00"	25'-00"
		14"	35'-06"	33'-04"	30'-04"	34'-08"	32'-07"	30'-02"	31'-11"	30'-00"	27'-09"
	WI 80	9½"	31'-03"	29'-04"	27'-02"	30'-06"	28'-08"	26'-06"	28'-01"	26'-04"	24'-05"
		11½"	35'-06"	33'-04"	30'-10"	34'-08"	32'-07"	30'-02"	31'-11"	30'-00"	27'-09"
		14"	39'-05"	37'-00"	34'-03"	38'-05"	36'-01"	33'-05"	35'-05"	33'-03"	30'-10"

Load (PSF)	Joist	Joist Depth	Slope of 4/12 or less			Slope of over 4/12 through 8/12			Slope of over 8/12 through 12/12		
			16" o.c.	19.2" o.c.	24" o.c.	16" o.c.	19.2" o.c.	24" o.c.	16" o.c.	19.2" o.c.	24" o.c.
Non-Snow 125% Live 20 Dead 20	GPI 20	9½"	19'-09"	18'-06"	17'-02"	18'-06"	17'-04"	16'-01"	17'-00"	15'-11"	14'-09"
		11½"	23'-08"	22'-03"	20'-07"	22'-02"	20'-10"	19'-04"	20'-05"	19'-02"	17'-09"
		14"	28'-06"	26'-00"	23'-03"	26'-10"	25'-02"	22'-05"	24'-08"	23'-02"	21'-05"
	GPI 40	9½"	21'-00"	19'-09"	18'-02"	19'-08"	18'-06"	17'-02"	18'-01"	17'-00"	15'-09"
		11½"	25'-02"	23'-06"	21'-00"	23'-07"	22'-02"	20'-03"	21'-08"	20'-05"	18'-11"
		14"	28'-06"	26'-00"	23'-03"	26'-10"	25'-02"	22'-05"	24'-08"	23'-02"	21'-05"
	GPI 65	9½"	27'-07"	25'-11"	24'-00"	26'-08"	25'-01"	23'-03"	24'-06"	23'-00"	21'-04"
		11½"	31'-05"	29'-06"	27'-04"	30'-05"	28'-07"	26'-06"	27'-11"	26'-03"	24'-03"
		14"	34'-11"	32'-10"	30'-05"	33'-10"	31'-09"	29'-05"	31'-00"	29'-02"	27'-00"
	WI 40	9½"	21'-00"	19'-04"	17'-04"	20'-04"	19'-01"	17'-06"	18'-08"	17'-06"	16'-03"
		11½"	24'-07"	22'-05"	20'-00"	24'-05"	22'-08"	20'-03"	22'-04"	21'-00"	19'-03"
		14"	27'-03"	24'-10"	22'-02"	27'-07"	25'-02"	22'-06"	25'-05"	23'-10"	21'-05"
	WI 60	9½"	26'-09"	25'-02"	23'-03"	25'-11"	24'-04"	22'-06"	23'-09"	22'-04"	20'-08"
		11½"	30'-06"	28'-08"	26'-01"	29'-06"	27'-09"	25'-08"	27'-01"	25'-05"	23'-07"
		14"	33'-11"	31'-08"	28'-04"	32'-09"	30'-10"	28'-06"	30'-01"	28'-03"	26'-02"
	WI 80	9½"	29'-09"	27'-11"	25'-10"	28'-10"	27'-01"	25'-01"	26'-05"	24'-10"	23'-00"
		11½"	33'-10"	31'-10"	29'-05"	32'-09"	30'-09"	28'-06"	30'-01"	28'-03"	26'-02"
		14"	37'-07"	35'-03"	32'-08"	36'-04"	34'-02"	31'-08"	33'-04"	31'-04"	29'-00"

Roof Joist Maximum Span Chart–115% (Snow)

Load (PSF)	Joist	Joist Depth	Slope of 4/12 or less			Slope of over 4/12 through 8/12			Slope of over 8/12 through 12/12		
			16" o.c.	19.2" o.c.	24" o.c.	16" o.c.	19.2" o.c.	24" o.c.	16" o.c.	19.2" o.c.	24" o.c.
Snow 115%	GPI 20	9½"	19'-09"	18'-07"	17'-02"	18'-07"	17'-06"	16'-02"	17'-03"	16'-02"	15'-00"
		11½"	23'-09"	22'-03"	19'-11"	22'-04"	21'-00"	19'-05"	20'-09"	19'-05"	18'-00"
	GPI 40	9½"	21'-01"	19'-07"	17'-06"	19'-10"	18'-08"	17'-01"	18'-05"	17'-03"	16'-00"
		11½"	24'-10"	22'-07"	20'-03"	23'-09"	22'-00"	19'-08"	22'-00"	20'-08"	19'-00"
	GPI 65	14"	27'-05"	25'-01"	22'-05"	26'-09"	24'-05"	21'-09"	25'-00"	23'-06"	21'-00"
		11½"	27'-08"	26'-00"	24'-00"	26'-01"	24'-06"	22'-08"	24'-02"	22'-08"	21'-00"
	WI 40	14"	31'-06"	29'-07"	27'-05"	29'-08"	27'-11"	25'-10"	27'-06"	25'-10"	23'-11"
		16"	35'-00"	32'-11"	29'-10"	33'-00"	31'-00"	28'-08"	30'-07"	28'-09"	26'-07"
	WI 60	9½"	20'-05"	18'-07"	16'-08"	19'-10"	18'-02"	16'-02"	18'-05"	17'-03"	15'-07"
		11½"	23'-08"	21'-07"	19'-03"	23'-00"	21'-00"	18'-09"	22'-00"	20'-03"	18'-01"
	WI 80	14"	26'-02"	23'-11"	21'-04"	25'-06"	23'-03"	20'-10"	24'-07"	22'-05"	20'-01"
		16"	30'-07"	28'-01"	25'-01"	28'-10"	27'-01"	24'-05"	26'-08"	25'-01"	23'-03"
Live 25 Dead 15	GPI 20	9½"	20'-05"	18'-07"	16'-08"	19'-10"	18'-02"	16'-02"	18'-05"	17'-03"	15'-07"
		11½"	23'-08"	21'-07"	19'-03"	23'-00"	21'-00"	18'-09"	22'-00"	20'-03"	18'-01"
	GPI 40	9½"	20'-05"	18'-07"	16'-08"	19'-10"	18'-02"	16'-02"	18'-05"	17'-03"	15'-07"
		11½"	23'-08"	21'-07"	19'-03"	23'-00"	21'-00"	18'-09"	22'-00"	20'-03"	18'-01"
	GPI 65	14"	26'-02"	23'-11"	21'-04"	25'-06"	23'-03"	20'-10"	24'-07"	22'-05"	20'-01"
		16"	30'-07"	28'-01"	25'-01"	28'-10"	27'-01"	24'-05"	26'-08"	25'-01"	23'-03"
	WI 40	9½"	20'-05"	18'-07"	16'-08"	19'-10"	18'-02"	16'-02"	18'-05"	17'-03"	15'-07"
		11½"	23'-08"	21'-07"	19'-03"	23'-00"	21'-00"	18'-09"	22'-00"	20'-03"	18'-01"
	WI 60	14"	26'-02"	23'-11"	21'-04"	25'-06"	23'-03"	20'-10"	24'-07"	22'-05"	20'-01"
		16"	30'-07"	28'-01"	25'-01"	28'-10"	27'-01"	24'-05"	26'-08"	25'-01"	23'-03"
	WI 80	11½"	29'-10"	28'-00"	25'-11"	28'-01"	26'-05"	24'-05"	26'-01"	24'-06"	22'-08"
		14"	33'-11"	31'-10"	29'-06"	32'-00"	30'-00"	27'-10"	29'-08"	27'-10"	25'-09"
		16"	37'-08"	35'-04"	32'-05"	35'-06"	33'-04"	30'-10"	32'-10"	30'-11"	28'-07"
Load (PSF)	Joist	Joist Depth	Slope of 4/12 or less			Slope of over 4/12 through 8/12			Slope of over 8/12 through 12/12		
			16" o.c.	19.2" o.c.	24" o.c.	16" o.c.	19.2" o.c.	24" o.c.	16" o.c.	19.2" o.c.	24" o.c.
Snow 115%	GPI 20	9½"	19'-00"	17'-10"	16'-03"	17'-11"	16'-10"	15'-07"	16'-08"	15'-08"	14'-06"
		11½"	22'-10"	21'-00"	18'-09"	21'-06"	20'-03"	18'-04"	20'-00"	18'-09"	17'-05"
	GPI 40	9½"	20'-03"	18'-06"	16'-06"	19'-01"	17'-11"	16'-01"	17'-09"	16'-08"	15'-05"
		11½"	23'-05"	21'-04"	19'-01"	22'-10"	20'-10"	18'-07"	21'-03"	20'-00"	18'-00"
	GPI 65	14"	25'-11"	23'-07"	21'-01"	25'-03"	23'-01"	20'-07"	24'-02"	22'-04"	19'-11"
		11½"	26'-07"	24'-11"	23'-01"	25'-01"	23'-07"	21'-10"	23'-04"	21'-11"	20'-03"
	WI 40	14"	30'-03"	28'-05"	26'-04"	28'-07"	26'-10"	24'-10"	26'-01"	24'-11"	23'-01"
		16"	33'-08"	31'-07"	26'-06"	31'-09"	29'-10"	27'-05"	29'-06"	27'-09"	25'-08"
	WI 60	9½"	19'-03"	17'-07"	15'-08"	18'-10"	17'-02"	15'-04"	17'-09"	16'-07"	14'-10"
		11½"	22'-04"	20'-04"	18'-02"	21'-09"	19'-10"	17'-09"	21'-01"	19'-03"	17'-02"
	WI 80	14"	24'-09"	22'-07"	20'-02"	24'-02"	22'-00"	19'-08"	23'-04"	21'-04"	19'-01"
		16"	25'-09"	23'-11"	21'-04"	24'-04"	22'-10"	20'-10"	22'-07"	21'-03"	19'-08"
Live 30 Dead 15	GPI 20	9½"	19'-03"	17'-07"	15'-08"	18'-10"	17'-02"	15'-04"	17'-09"	16'-07"	14'-10"
		11½"	22'-04"	20'-04"	18'-02"	21'-09"	19'-10"	17'-09"	21'-01"	19'-03"	17'-02"
	GPI 40	9½"	20'-03"	18'-06"	16'-06"	19'-01"	17'-11"	16'-01"	17'-09"	16'-08"	15'-05"
		11½"	23'-05"	21'-04"	19'-01"	22'-10"	20'-10"	18'-07"	21'-03"	20'-00"	18'-00"
	GPI 65	14"	25'-11"	23'-07"	21'-01"	25'-03"	23'-01"	20'-07"	24'-02"	22'-04"	19'-11"
		11½"	26'-07"	24'-11"	23'-01"	25'-01"	23'-07"	21'-10"	23'-04"	21'-11"	20'-03"
	WI 40	14"	30'-03"	28'-05"	26'-04"	28'-07"	26'-10"	24'-10"	26'-01"	24'-11"	23'-01"
		16"	33'-08"	31'-07"	26'-06"	31'-09"	29'-10"	27'-05"	29'-06"	27'-09"	25'-08"
	WI 60	9½"	19'-03"	17'-07"	15'-08"	18'-10"	17'-02"	15'-04"	17'-09"	16'-07"	14'-10"
		11½"	22'-04"	20'-04"	18'-02"	21'-09"	19'-10"	17'-09"	21'-01"	19'-03"	17'-02"
	WI 80	14"	24'-09"	22'-07"	20'-02"	24'-02"	22'-00"	19'-08"	23'-04"	21'-04"	19'-01"
		16"	25'-09"	23'-11"	21'-04"	24'-04"	22'-10"	20'-10"	22'-07"	21'-03"	19'-08"
Live 40 Dead 15	GPI 20	9½"	17'-09"	16'-05"	14'-08"	16'-10"	15'-09"	14'-05"	15'-08"	14'-08"	13'-07"
		11½"	20'-10"	19'-00"	17'-00"	20'-02"	18'-08"	16'-08"	18'-10"	17'-08"	16'-03"
	GPI 40	9½"	18'-04"	16'-09"	14'-11"	17'-11"	16'-05"	14'-08"	16'-08"	15'-08"	14'-03"
		11½"	21'-02"	19'-04"	17'-03"	20'-09"	18'-11"	16'-11"	20'-00"	18'-05"	16'-06"
	GPI 65	14"	23'-05"	21'-05"	19'-01"	23'-00"	21'-00"	18'-09"	22'-05"	20'-05"	18'-03"
		11½"	24'-10"	23'-03"	21'-06"	23'-06"	22'-01"	20'-05"	21'-11"	20'-07"	19'-01"
	WI 40	14"	28'-03"	26'-07"	21'-07"	26'-09"	25'-02"	22'-05"	25'-00"	23'-05"	21'-09"
		16"	31'-05"	27'-01"	21'-07"	29'-09"	27'-11"	22'-05"	27'-09"	26'-01"	24'-02"
	WI 60	9½"	17'-05"	15'-11"	14'-02"	17'-01"	15'-07"	13'-11"	16'-08"	15'-02"	13'-07"
		11½"	20'-02"	18'-05"	16'-05"	19'-03"	18'-01"	16'-01"	17'-09"	15'-08"	13'-05"
	WI 80	14"	22'-05"	20'-05"	18'-03"	21'-11"	20'-00"	17'-11"	21'-04"	19'-06"	17'-05"
		16"	23'-09"	21'-08"	19'-04"	22'-10"	21'-03"	18'-11"	21'-03"	20'-00"	18'-05"
Live 50 Dead 15	GPI 20	9½"	16'-07"	15'-01"	13'-06"	15'-11"	14'-10"	13'-03"	14'-10"	13'-11"	12'-11"
		11½"	19'-02"	17'-06"	15'-08"	18'-10"	17'-03"	15'-04"	17'-10"	16'-09"	15'-00"
	GPI 40	9½"	16'-11"	15'-05"	13'-09"	16'-07"	15'-02"	13'-06"	15'-10"	14'-09"	13'-02"
		11½"	19'-06"	17'-09"	15'-10"	19'-02"	17'-06"	15'-07"	18'-09"	17'-01"	15'-03"
	GPI 65	14"	21'-07"	19'-08"	17'-07"	21'-03"	19'-04"	17'-03"	20'-09"	18'-11"	16'-11"
		11½"	23'-04"	21'-11"	18'-03"	22'-03"	20'-10"	19'-00"	20'-10"	19'-06"	18'-01"
	WI 40	14"	26'-07"	22'-10"	18'-03"	25'-04"	23'-10"	19'-00"	23'-08"	22'-03"	20'-07"
		16"	27'-06"	22'-10"	18'-03"	28'-02"	23'-10"	19'-00"	26'-04"	24'-09"	21'-00"
	WI 60	9½"	16'-00"	14'-07"	13'-01"	15'-09"	14'-05"	12'-10"	15'-05"	14'-01"	12'-06"
		11½"	18'-07"	16'-11"	15'-01"	18'-03"	16'-08"	14'-10"	17'-10"	16'-03"	14'-06"
	WI 80	14"	20'-07"	18'-09"	16'-09"	20'-03"	18'-06"	16'-06"	19'-09"	18'-01"	16'-01"
		16"	21'-10"	19'-11"	17'-06"	21'-06"	19'-07"	17'-06"	20'-02"	18'-11"	17'-01"
	WI 80	14"	24'-03"	21'-11"	17'-06"	23'-10"	21'-09"	18'-02"	23'-00"	21'-03"	18'-11"
		16"	26'-03"	21'-11"	17'-06"	25'-10"	22'-10"	18'-02"	25'-03"	23'-00"	19'-03"

General Notes, Allowable Uniform Loads—Floor and Roof

- Table values are based on clear distance between supports and may be used for simple or multiple spans. End spans of multiple span joists must be at least 40% of adjacent span.
- For cases with cantilevers or point loads, use G-P FASTBeam® Software or contact G-P.
- Both live and total loads must be checked—live load against the Live row and total load against the Total row. When no value is shown in the Live row, total load will govern.
- Verify that the deflection criteria herein are accepted by local codes and authorities.
- Provide lateral support at bearing points and continuous lateral support along the compression flange of each joist.
- Minimum end bearing length is 1½". Minimum intermediate bearing length is 3½".
- For double joists, double the table values and connect joists per detail F11.
- For proper installation procedures, refer to appropriate sections in this publication.

GPI and WI Series Joists Allowable Uniform Loads—Floor

Pounds per lineal foot (PLF)

Joist	Depth	Joist Span:	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'	17'	18'	19'	20'	21'	22'	23'	24'	25'	26'	27'	28'	29'	30'
GPI 20	9½"	Live L/600			208	153	116	90	71	57	46	38	32	26	22												
		L/480				192	145	112	88	71	57	47	39	33	28												
		Total L/240	301	259	227	202	182	164	139	118	102	89	79	66	56												
	11½"	Live L/600						148	117	94	77	64	53	45	38	33	28	24	21	19							
		L/480							146	118	96	79	66	56	48	41	35	31	27	24							
		Total L/240	301	259	228	203	183	167	153	142	132	119	105	93	83	75	68	61	53	47							
GPI 40	9½"	Live L/600				180	137	106	84	67	55	45	38	32	27												
		L/480					171	133	105	84	69	57	47	40	34												
		Total L/240	321	275	240	214	192	170	144	123	106	93	82	72	65												
	11½"	Live L/600						172	137	111	91	75	63	53	45	39	34	29	26	22							
		L/480							139	113	94	79	66	56	48	42	36	32	28								
		Total L/240	334	288	253	226	204	185	170	157	141	123	108	96	86	77	70	63	58	53							
GPI 65	11½"	Live L/600																									
		L/480																									
		Total L/240	336	289	254	226	204	186	171	158	147	137	129	121	115	109	103	94	82	73							
	14"	Live L/600																									
		L/480																									
		Total L/240	336	289	254	226	204	186	171	158	147	137	129	121	115	109	103	98	94	90	86	83	74	67			
WI 40	9½"	Live L/600				180	137	106	84	67	55	45	38	32	27												
		L/480					133	105	84	69	57	47	40	34													
		Total L/240	278	239	210	187	169	150	126	108	93	81	72	64	57												
	11½"	Live L/600						172	137	111	91	75	63	53	45	39	34	29	26	22							
		L/480							139	113	94	79	66	56	48	42	36	32	28								
		Total L/240	322	277	243	217	196	178	164	144	124	109	96	85	76	68	62	56	51	47							
WI 60	11½"	Live L/600							160	129	106	88	74	63	53	46	40	35	30	27							
		L/480								133	110	92	78	67	57	50	43	38	33								
		Total L/240	322	277	243	217	196	178	164	151	141	131	123	116	104	94	85	77	70	64							
	14"	Live L/600																									
		L/480																									
		Total L/240	322	277	243	217	196	178	164	151	141	131	123	116	110	104	99	94	86	79	73	67	62	57			
WI 80	11½"	Live L/600																									
		L/480																									
		Total L/240	355	306	269	240	216	197	181	167	155	145	136	128	121	115	109	104	99	90							
	14"	Live L/600																									
		L/480																									
		Total L/240	389	335	294	262	236	215	198	183	170	159	149	140	133	126	119	114	109	104	100	95	88	81			

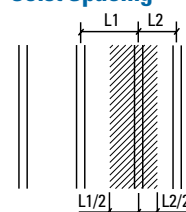
NOTES:

- Refer to General Notes above.
- Table does not include additional stiffness from composite action with glue-nailed or nailed decking.
- L/480 live load deflection is recommended (See System Performance narrative.) For L/360 (minimum code deflection) multiply L/480 value times 1.33.
- Total load deflection is limited to L/240.

PSF to PLF Conversion

o.c. spacing	spacing factor	LOAD IN LBS. PER SQUARE FOOT (PSF)												
		20	25	30	35	40	45	50	55	60	65	70	75	
12"	1.00	20	25	30	35	40	45	50	55	60	65	70	75	
16"	1.33	27	34	40	47	54	60	67	74	80	87	94	100	
19.2"	1.60	32	40	48	56	64	72	80	88	96	104	112	120	
24"	2.00	40	50	60	70	80	90	100	110	120	130	140	150	

Joist Spacing



Calculating Uniformly Distributed Load (plf):

$$\left(\frac{L1(ft.)}{2} + \frac{L2(ft.)}{2} \right) \times LL(PSF) = LL(plf)$$

$$\left(\frac{L1(ft.)}{2} + \frac{L2(ft.)}{2} \right) \times TL(PSF) = TL(plf)$$

Check resulting loads against those in the appropriate chart.

GPI and WI Series Joists Allowable Uniform Loads—Roof

Pounds per lineal foot (PLF)

Joist	Depth	Joist Span:	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'	17'	18'	19'	20'	21'	22'	23'	24'	25'	26'	27'	28'	29'	30'			
GPI 20	9½"	Live L/240								141	115	95	79	66	56	48	41	36	31	28	24									
		Total	115% 125%	346 376	298 324	262 284	232 253	209 227	189 205	159 173	136 148	118 128	103 112	90 98	80 87	72 75	64 64	55 48	48 42	37 33	33 32									
		Live L/240													112	95	82	70	61	53	47	42	37	33	29	27	24			
	11½"	Total	115% 125%	346 376	298 324	262 285	234 254	211 229	192 209	176 192	163 177	151 165	137 149	121 131	107 117	96 104	86 94	78 85	71 77	64 70	59 63	54 55	49 49	44 44	39 39	35 35	32 32			
		Live L/240																												
		Total	115% 125%	346 376	298 324	262 285	234 254	211 229	192 209	176 192	163 177	151 165	137 149	121 131	107 117	96 104	86 94	78 85	71 77	64 70	59 63	54 55	49 49	44 44	39 39	35 35	32 32			
GPI 40	9½"	Live L/240																												
		Total	115% 125%	369 401	316 344	277 301	246 267	221 240	196 213	165 180	141 153	122 133	106 116	94 102	83 90	74 81	67 73	60 66	55 58	50 51	44 44	39 35	35 31							
		Live L/240																84	73	64	56	50	44	39	35	32	29	26		
	11½"	Total	115% 125%	385 418	331 360	291 316	259 282	234 254	213 232	196 213	181 197	162 176	141 154	125 135	110 120	99 107	89 96	80 87	73 79	66 72	61 66	56 61	51 56	48 52	44 47	41 42	38 38			
		Live L/240																												
		Total	115% 125%	385 418	331 360	291 316	259 282	234 254	213 232	196 213	181 197	168 183	157 171	147 160	135 147	121 131	108 118	98 107	89 97	81 88	74 81	68 74	63 68	58 63	54 59	50 55	47 51	44 48		
GPI 65	11½"	Live L/240															125	108	94	82	73	64	57	51	46	41	37	34		
		Total	115% 125%	386 420	333 362	292 318	260 283	235 255	214 233	197 214	182 197	169 184	158 171	148 161	139 152	132 143	125 136	119 129	113 123	105 110	96 97	86 86	76 76	68 68	61 61	55 55	50 50	45 45		
		Live L/240																			105	94	83	74	67	60	54	49		
	14"	Total	115% 125%	386 420	333 362	292 318	260 283	235 255	214 233	197 214	182 197	169 184	158 171	148 161	139 152	132 143	125 136	119 129	113 123	108 117	103 112	99 108	95 103	92 99	86 89	80 80	73 73	66 66		
		Live L/240																							91	82	74	67		
		Total	115% 125%	386 420	333 362	292 318	260 283	235 255	214 233	197 214	182 197	169 184	158 171	148 161	139 152	132 143	125 136	119 129	113 123	108 117	103 112	99 108	95 103	92 99	88 92	85 89	82 82	79 79		
WI 40	9½"	Live L/240															68	58	50	43	38	33	29	26	23					
		Total	115% 125%	320 347	275 299	242 263	216 234	194 211	172 187	145 158	124 135	107 116	94 102	82 90	73 79	65 71	59 64	53 58	48 52	44 48	40 44	37 39	34 35	31						
		Live L/240																				56	50	44	39	35	32	29	26	
	11½"	Total	115% 125%	370 402	319 346	280 304	249 271	225 245	205 223	188 205	166 180	143 156	125 136	110 120	98 106	87 95	78 85	71 77	64 70	59 64	54 58	49 54	45 49	42 46	39 42	36 39	34 37	32 34		
		Live L/240																							51	46	42	38		
		Total	115% 125%	370 402	319 346	280 304	249 271	225 245	205 223	188 205	174 189	162 176	151 164	135 147	120 130	107 116	96 105	87 94	79 86	72 78	66 72	61 66	56 61	52 58	48 48	45 45	42 42	39		
WI 60	11½"	Live L/240															115	99	86	76	67	59	53	47	42	38	34	31		
		Total	115% 125%	370 402	319 346	280 304	249 271	225 245	205 223	188 205	174 189	162 176	151 164	142 154	134 145	120 131	108 117	98 106	89 96	81 88	74 80	68 74	63 68	58 63	54 56	50 50	46 46	41		
		Live L/240																				97	86	76	68	61	55	50	45	
	14"	Total	115% 125%	370 402	319 346	280 304	249 271	225 245	205 223	188 205	174 189	162 176	151 164	142 154	134 145	126 137	120 130	114 124	108 118	99 108	91 99	83 91	77 84	71 77	66 72	61 67	57 62	54 58		
		Live L/240																								83	75	68	61	
		Total	115% 125%	370 402	319 346	280 304	249 271	225 245	205 223	188 205	174 189	162 176	151 164	142 154	134 145	126 137	120 130	114 124	108 118	104 113	99 108	95 103	90 98	84 91	78 84	72 78	67 73	63 68		
WI 80	11½"	Live L/240																		133	116	102	90	80	71	64	57	51	47	42
		Total	115% 125%	408 444	352 382	309 336	275 299	248 270	226 246	208 226	192 209	179 194	167 181	157 170	147 160	139 151	132 144	126 137	120 130	114 124	105 114	96 105	89 95	82 85	76 76	69 69	62 62	56 56		
		Live L/240																				115	103	92	83	74	67	61	56	
	14"	Total	115% 125%	447 486	385 418	338 367	301 328	272 296	248 269	227 247	210 228	195 212	183 198	171 186	161 175	153 166	145 157	137 149	131 142	125 136	120 130	115 118	109 109	101 102	93 94	87 88	81 81	76 81		
		Live L/240																								100	91	82		
		Total	115% 125%	447 486	385 418	338 367	301 328	272 296	248 269	227 247	210 228	195 212	183 198	171 186	161 175	153 166	145 157	137 149	131 142	125 136	120 130	115 120	110 115	106 111	102 107	98 103	95 97	89		

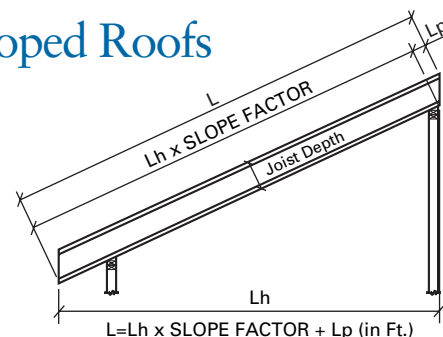
NOTES:

1. Refer to General Notes on the previous page.
2. All roof joists to be sloped 1/4" in 12" minimum.

3. Use of this table for horizontal spans should be limited to roof slopes of 2" per foot or less. For greater slopes, convert horizontal span to up-the-slope span using the chart below.
4. Total load deflection is limited to L/180. For less deflection use the L/240 row.

Up-the-Slope Spans & Cutting Lengths for Sloped Roofs

Slope	Slope Factor	Joist Depth			
		9½"	11⅞"	14"	16"
		Amount to Increase Length for Plumb Cut (Lp in feet)			
2½ in 12	1.02	0.17	0.21	0.24	0.28
3 in 12	1.03	0.20	0.25	0.29	0.33
3½ in 12	1.04	0.23	0.29	0.34	0.39
4 in 12	1.05	0.26	0.33	0.39	0.44
4½ in 12	1.07	0.30	0.37	0.44	0.50
5 in 12	1.08	0.33	0.41	0.49	0.56
6 in 12	1.12	0.40	0.50	0.58	0.67
7 in 12	1.16	0.46	0.58	0.68	0.78
8 in 12	1.20	0.53	0.66	0.78	0.89
9 in 12	1.25	0.59	0.74	0.88	1.00
10 in 12	1.30	0.66	0.83	0.97	1.11
11 in 12	1.36	0.73	0.91	1.07	1.22
12 in 12	1.41	0.79	0.99	1.17	1.33



EXAMPLE:

7/12 slope and 20'-0" horizontal span, 2'-0" overhang (horizontal) one end
 $22' \times 1.16 = 25.52'$ up-the-slope
 If a 14" joist will be used, add 0.68 feet. $25.52' + .68 = 26.20'$
 $2 \times 12" = 2.4"$ or approximately 2 1/2". $L = 26' - 2 1/2"$

Design Properties For Wood I Beam™ Joists

Joist	Joist Depth	Weight ^a (lbs/ft)	EI (10 ⁶ inch ² lbs)	Allowable Moment		Allowable Shear ^f (lbs)	Allowable Reactions		C (10 ⁶ ft-lbs/in)
				Single ^{b,f} (ft-lbs)	Repetitive ^{c,f} (ft-lbs)		End ^{d,f} (lbs)	Intermediate ^{e,f} (lbs)	
GPI 20	9 1/2"	2.3	159	2585	2688	1135	1050	2340	0.412
	11 7/8"	2.6	274	3455	3593	1435	1100	2340	0.515
GPI 40	9 1/2"	2.9	193	2680	2787	1200	1120	2600	0.412
	11 7/8"	3.1	330	3560	3702	1460	1225	2600	0.515
	14"	3.5	482	4355	4529	1715	1250	2600	0.607
GPI 65	11 7/8"	3.1	434	5650	5876	1495	1230	2610	0.515
	14"	3.5	640	6905	7181	1740	1335	2610	0.607
	16"	3.7	877	8095	8419	2000	1345	2610	0.693
WI 40	9 1/2"	2.6	193	2355	2520	1120	1080	2160	0.412
	11 7/8"	2.9	330	3145	3365	1420	1200	2500	0.515
	14"	3.3	482	3860	4130	1710	1200	2500	0.607
WI 60	11 7/8"	3.2	396	4335	4638	1420	1200	2500	0.515
	14"	3.4	584	5320	5692	1710	1200	2500	0.607
	16"	3.7	799	6250	6688	1970	1200	2500	0.693
WI 80	11 7/8"	3.9	547	6130	6559	1420	1280	2760	0.515
	14"	4.2	802	7525	8052	1710	1280	3020	0.607
	16"	4.5	1092	8845	9464	1970	1280	3020	0.693

NOTES:

- Weight of joists for dead load calculations. For shipping weights contact Georgia-Pacific.
 - For a single joist.
 - For use when a minimum of 3 joists are spaced 24" o.c. or less.
 - Allowable end reaction is based on a minimum bearing length of 1 3/4" without bearing stiffeners. For a bearing length of 4", the allowable end reaction may be set equal to the tabulated shear value. Interpolation of the end reaction between 1 3/4" and 4" bearing is permitted. For end reactions values over 1,550 lbs., bearing stiffeners are required.
 - Allowable intermediate reaction is based on a minimum bearing length of 3 1/2".
 - Allowable moment, shear, and reaction values are for normal duration loading and may be increased for other load durations in accordance with code.
 - APPROXIMATE DEFLECTION* (Inches) = $\frac{22.5 \times W \times L^4}{EI} + \frac{W \times L^2}{C}$

W = Uniform Load (lbs/foot)

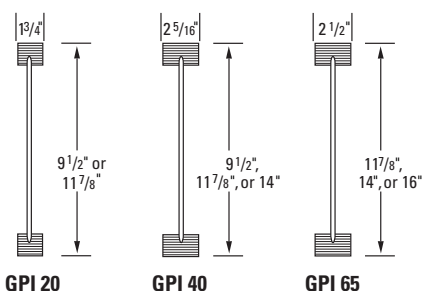
L = Span (feet)

EI = Stiffness Constant

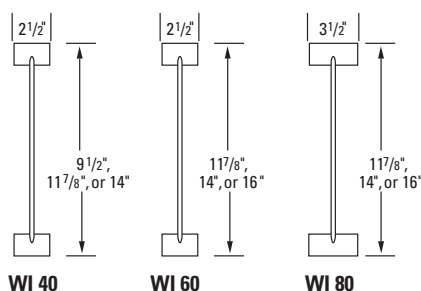
C = Shear Deflection Constant
- *Constants have been adjusted to maintain unit consistency.

Wood I Beam Joist Cross Sections

GPI Series



WI Series



All Wood I Beam joists have FiberStrong® web



Wood I Beam™ Architectural Specifications

Part 1—General

1.0—Description:

- A. Work in this section includes, but is not limited to:
Prefabricated Wood I Beam GPI 20, GPI 40, GPI 65, WI 40, WI 60 and WI 80 ceiling, floor, and roof joists with FiberStrong® webs and lumber flanges (WI) or LVL flanges (GPI).
- B. Related work specified elsewhere: Rough carpentry.

1.1—Submittals:

- A. Product data:
Submit manufacturer's descriptive literature indicating material composition, thicknesses, dimensions, loading and fabrication details.
- B. Shop drawings or installation guide:
Manufacturer's literature indicating installation details. Include locations and details of bearing, blocking, bridging, and cutting and drilling of webs for work by others.

1.2—Quality Assurance:

- A. Certification:
All Georgia-Pacific Wood I Beam joists have been qualified to ASTM D5055 by APA-The Engineered Wood Association.

1.3—Delivery, Storage and Handling:

- A. Delivery:
Deliver materials to the job site in manufacturer's original packaging, containers and bundles with manufacturer's brand name and identification intact and legible.
- B. Storage and handling:
Store and handle materials to protect against contact with damp and wet surfaces, exposure to weather, breakage and damage. Provide air circulation under covering and around stacks of materials. Individual joists shall be handled in the upright position.

1.4—Limitations:

- A. Loads:
Concentrated loads shall not be applied to the bottom flange.
- B. Cutting:
Except for cutting to length, top and bottom flanges of Wood I Beam floor and roof joists shall not be cut, drilled or notched.
- C. Wood I Beam joists are for use in covered, dry conditions only.

Part 2.0—Products

2.1—Prefabricated Wood Beams and Joists:

- A. Acceptable products:
 - 1. Georgia-Pacific Corporation, WI 40.
 - 2. Georgia-Pacific Corporation, WI 60.
 - 3. Georgia-Pacific Corporation, WI 80.
 - 4. Georgia-Pacific Corporation, GPI 20.
 - 5. Georgia-Pacific Corporation, GPI 40.
 - 6. Georgia-Pacific Corporation, GPI 65.

B. Characteristics:

- 1. Flanges:
High-grade lumber flanges.
 - a. WI 40: 2½".
 - b. WI 60: 2½".
 - c. WI 80: 3½".LVL flanges.
 - a. GPI 20: 1¾".
 - b. GPI 40: 2⅝".
 - c. GPI 65: 2½".
- 2. Webs:
¾" thick APA Rated FiberStrong OSB.
- 3. Beam depths:
 - a. GPI 20: 9½" and 11⅞"
as required for loading, deflection and span.
 - b. GPI 40 or WI 40: 9½", 11⅞" and 14"
as required for loading, deflection and span.
 - c. WI 60: 11⅞", 14" and 16"
as required for loading, deflection and span.
 - d. GPI 65: 11⅞", 14" and 16"
as required for loading, deflection and span.
 - e. WI 80: 11⅞", 14" and 16"
as required for loading, deflection and span.
- 4. Beam length:
As required for span and bearing.

2.2—Accessories:

- A. Nails:
8d, 10d, and 12d box, sinker, and common nails.
- B. Bracing and blocking:
 - 1. Bearing stiffeners: 2 x 4 or combination of ¾", ½" or ⅝" plywood or OSB.
 - 2. Band joists and continuous closure at load-bearing walls: per standard approved Wood I Beam details.
 - 3. Lateral support at intermediate supports of multiple span joists: Wood I Beam blocking.
- C. Joist hangers:
 - 1. Model numbers are shown for United Steel Products and Simpson Strong-Tie® connectors. Contact Georgia-Pacific for other acceptable connectors.

Part 3—Execution

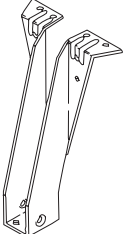
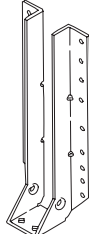
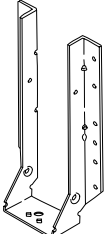
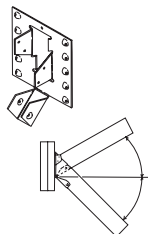
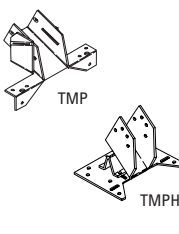
3.0—General:

- A. Provide Wood I Beam floor and roof joists where indicated on drawings using hangers and accessories specified.
- B. Install Wood I Beam joists in accordance with manufacturer's recommendations.
- C. Install and brace Wood I Beam floor and roof joists to prevent dominoing of system and buckling of top flange.

3.2—Accessories:

Install accessories where indicated and in accordance with manufacturer's instructions.

Framing Connectors for Wood I Beam™ Joists

USP Lumber Connectors™*																					
		Top Mount	Cpcy ^{1,2} Lbs-100%	Nailing ⁷		Face Mount	Cpcy ^{1,3} Lbs-100%	Nailing ⁷		Double Face Mount	Cpcy ^{1,3,4} Lbs-100%	Nailing ⁷		Field Sloped & Skewed	Cpcy ^{1,3,5} Lbs-115%	Nailing ⁷		Variable Pitch	Cpcy ^{1,6} Lbs-115%	Nailing ⁷	
Joist	Joist Depth			H	J			H	J			H	J			H	J			P	J
GPI 20 Joist Width 1¾"	9½"	TH017950	1260	10d x 1½"	10d x 1½"	THF17925	1345	10d	10d x 1½"	THF35925	1345	10d	10d x 1½"	TMU179	1340	10d	10d x 1½"	TMP175	1150	10d	10d x 1½"
	11⅞"	TH017118	1305	10d x 1½"	10d x 1½"	THF17112	1795	10d	10d x 1½"	THF35112	1795	10d	10d x 1½"	TMU179	1340	10d	10d x 1½"	TMP175	1150	10d	10d x 1½"
GPI 40 Joist Width 2⅝⅛"	9½"	TH023950	1625	10d x 1½"	10d x 1½"	THF23925	1345	10d	10d x 1½"	THF23925-2	1575	10d	10d x 1½"	TMU23	1545	10d	10d x 1½"	TMP23	1970	10d	10d x 1½"
	11⅞"	TH023118	1835	10d x 1½"	10d x 1½"	THF23118	1570	10d	10d x 1½"	THF23118-2	1800	10d	10d x 1½"	TMU23	1545	10d	10d x 1½"	TMP23	1970	10d	10d x 1½"
	14"	TH023140	2715	10d x 1½"	10d x 1½"	THF23140	2025	10d	10d x 1½"	THF23140-2	2370	10d	10d x 1½"	TMU23	1545	10d	10d x 1½"	TMP23	1970	10d	10d x 1½"
WI 40, 60 & GPI 65 Joist Width 2½"	9½"	TH025950	1625	10d x 1½"	10d x 1½"	THF25925	1345	10d	10d x 1½"	THF25925-2	1350	10d	10d	TMU25	1545	10d	10d x 1½"	TMP25	1970	10d	10d x 1½"
	11⅞"	TH025118	1835	10d x 1½"	10d x 1½"	THF25112	1570	10d	10d x 1½"	THF25925-2	1350	10d	10d	TMU25	1545	10d	10d x 1½"	TMP25	1970	10d	10d x 1½"
	14"	TH025140	2400	10d x 1½"	10d x 1½"	THF25140	2015	10d	10d x 1½"	THF25112-2	1800	10d	10d	TMU25	1545	10d	10d x 1½"	TMP25	1970	10d	10d x 1½"
	16"	TH025160	2400	10d x 1½"	10d x 1½"	THF25160	2465	10d	10d x 1½"	THF25112-2	1800	10d	10d	TMU25	1545	10d	10d x 1½"	TMP25	1970	10d	10d x 1½"
WI 80 Joist Width 3½"	11⅞"	TH035118	2050	10d x 1½"	10d x 1½"	THF35112	1550	10d	10d x 1½"	HD7120	2175	16d	10d	TMU48	1545	10d	10d x 1½"	TMP4	1970	10d	10d x 1½"
	14"	TH035140	2100	10d x 1½"	10d x 1½"	THF35140	1940	10d	10d x 1½"	HD7140	2720	16d	10d	TMU48	1545	10d	10d x 1½"	TMP4	1970	10d	10d x 1½"
	16"	TH035160	2100	10d x 1½"	10d x 1½"	THF35157	2135	10d	10d x 1½"	HD7140	2720	16d	10d	TMU48	1545	10d	10d x 1½"	TMP4	1970	10d	10d x 1½"

*Georgia-Pacific stocks a full line of USP lumber connectors.

Simpson Strong-Tie® Connectors																					
		Top Mount	Cpcy ^{1,2} Lbs-100%	Nailing ⁷		Face Mount	Cpcy ^{1,3} Lbs-100%	Nailing ⁷		Double Face Mount	Cpcy ^{1,3,4} Lbs-100%	Nailing ⁷		Field Sloped & Skewed	Cpcy ^{1,3,5} Lbs-115%	Nailing ⁷		Variable Pitch	Cpcy ¹ Lbs-115%	Nailing ⁷	
Joist	Joist Depth			H	J			H	J			H	J			H	J			P	J
GPI 20	9½"	ITT9.5	1050	10d x 1½"	10d x 1½"	IUT9	770	10d	10d x 1½"	MIU49	1535	10d	10d x 1½"	LSSUI25	1275	10d	10d x 1½"	VPA25	870	10d	10d x 1½"
Joist Width 1¾"	11⅞"	ITT11.88	1050	10d x 1½"	10d x 1½"	IUT11	960	10d	10d x 1½"	MIU411	1755	10d	10d x 1½"	LSSUI25	1275	10d	10d x 1½"	VPA25	870	10d	10d x 1½"
GPI 40	9½"	ITT359.5	1050	10d x 1½"	10d x 1½"	IUT3510	890	10d	10d x 1½"	MIU4.75/9	1860	10d	10d x 1½"	LSSUI35	1275	10d	10d x 1½"	VPA35	1020	10d	10d x 1½"
Joist Width 2⅝⅛"	11⅞"	ITT3511.88	1050	10d x 1½"	10d x 1½"	IUT3512	1110	10d	10d x 1½"	MIU4.75/11	2130	10d	10d x 1½"	LSSUI35	1275	10d	10d x 1½"	VPA35	1020	10d	10d x 1½"
	14"	ITT3514	1050	10d x 1½"	10d x 1½"	IUT3514	1555	10d	10d x 1½"	MIU4.75/14	2395	10d	10d x 1½"	LSSUI35	1275	10d	10d x 1½"	VPA35	1020	10d	10d x 1½"
WI 40, 60 & GPI 65	9½"	ITT39.5	1050	10d x 1½"	10d x 1½"	IUT310	890	10d	10d x 1½"	MIU39-2	1860	10d	10d x 1½"	LSSUH310	1345	10d	10d x 1½"	VPA3	1020	10d	10d x 1½"
	11⅞"	ITT311.88	1050	10d x 1½"	10d x 1½"	IUT312	1110	10d	10d x 1½"	MIU311-2	2130	10d	10d x 1½"	LSSUH310	1345	10d	10d x 1½"	VPA3	1020	10d	10d x 1½"
	14"	ITT314	1050	10d x 1½"	10d x 1½"	IUT314	1555	10d	10d x 1½"	MIU314-2	2395	10d	10d x 1½"	LSSUH310	1345	10d	10d x 1½"	VPA3	1020	10d	10d x 1½"
	16"	MIT316	1230	10d x 1½"	10d x 1½"	IUT314¹	1555	10d	10d x 1½"	MIU316-2	2660	10d	10d x 1½"	LSSUH310	1345	10d	10d x 1½"	VPA3	1020	10d	10d x 1½"
WI 80	11⅞"	ITT411.88	1050	10d x 1½"	10d x 1½"	IUT412	960	10d	10d x 1½"	HU412-2	1855	16d	16d	LSSU410	1610	16d	10d x 1½"	VPA4	1025	10d	10d x 1½"
	14"	ITT414	1050	10d x 1½"	10d x 1½"	IUT414	1345	10d	10d x 1½"	HU414-2	2320	16d	16d	LSSU410	1610	16d	10d x 1½"	VPA4	1025	10d	10d x 1½"
	16"	MIT416	1230	10d x 1½"	10d x 1½"	IUT416	1535	10d	10d x 1½"	HU414-2	2320	16d	16d	LSSU410	1610	16d	10d x 1½"	VPA4	1025	10d	10d x 1½"

NOTES:

- Capacity is for the stated duration of load—100% floor loading—115% roof snow loading. Connector capacity depends on the model selected, quantity and size of nails used, and the size and type of fastener support. Douglas Fir-Larch or Southern Pine web filler material has been assumed for all I-joist series and depths except for all WI 80 depths where S-P-F has been used. Higher capacities may be available based on different header materials; please refer to appropriate reference/design guide from the connector manufacturer for expanded design information. Some connector/header/fastener combinations may not meet maximum joist reaction capacities and a qualified engineer should be consulted. VPA and TMP connectors are based on S-P-F wood plates. Clinch nails across grain when possible.
- Top mount hanger capacities shown are based on the same series and depth of Wood I Beam™ joists carried. To achieve design capacity shown, use 10d nails for single 1 3/4" thick G-P Lam® LVL beams and 16d nails for double 1 3/4" thick (3 1/2") G-P LVL, Douglas Fir-Larch or Southern Pine glulam beams. Refer to detail F12.
- Hangers' capacities are based on the lesser value of single 1 3/4" thick G-P Lam LVL, Douglas Fir-Larch or Southern Pine Glulam beams or the same series and depth of Wood I Beam joists carried. Refer to detail F13 and R1.
- Bearing stiffeners required for Wood I Beam applications. Refer to detail F13.
- Beveled bearing stiffeners are required. Refer to detail R8. Maximum slope is 12/12. A tie strap is required for all Wood I Beam applications with 16" joist depths or slopes of 7/12 and greater. Refer to detail R1.
- TMP connectors may be used for slopes of 1/12 through 6/12. For greater slopes use TMPH series connectors with bearing stiffeners.
- Nailing key. "H" column indicates size of nails to connect hanger to supporting header. "J" column indicates nails to attach the hanger to the joist. "P" indicates nails to connect to plate. Fill all nail holes as required by hanger manufacturer. 10d x 1 1/2" is 9 gauge x 1 1/2", 10d is 9 gauge x 3", 16d is 8 gauge x 3 1/2".

NOTE: Model numbers shown are for United Steel Products Company, Inc. 1-800-328-5934 (East) & 1-800-227-0470 (West) and Simpson Strong-Tie® Company, Inc. 1-800-999-5099. Some locations carry similar products produced by other manufacturers. Contact your local building material retailer or Georgia-Pacific for conversion information and details. Other designs are available for specialized applications.

Wood I Beam™ Details

Dead Load Material Weights

Pounds per square foot (PSF)

Material PSF

Sheathing and Decking (based on 36 pcf)

1 ¹ / ₃₂ " plywood	1.1
1 ⁵ / ₃₂ " plywood	1.5
1 ⁹ / ₃₂ " plywood	1.8
2 ³ / ₃₂ " plywood	2.3
1 ¹ / ₂ " plywood	3.4
3/8" OSB	1.4
7/16" OSB	1.5
1/2" OSB	1.7
1 ⁹ / ₃₂ " OSB	2.0
2 ³ / ₃₂ " OSB	2.3
7/8" Tough-Ply®	2.6
1x decking	2.3
2x decking	4.3
3x decking	7.0
18 gage metal deck	3.0
20 gage metal deck	2.5

Ceilings

1/2" gypsum board	2.2
5/8" gypsum board	2.8
Metal suspension system with acoustical tile	1.8
Wood suspension system with acoustical tile	2.5
1" plaster with lath	8.0

Roofing

2-15 lb. and 1-90 lb. rolled	1.7
3-15 lb. and 1-90 lb. rolled	2.2
3 ply and gravel	5.5
4 ply and gravel	6.0
5 ply and gravel	6.5
Single ply membrane	2.0
and gravel	5.5
Asphalt shingles	2.5
Tough-Glass®	2.1
Tough-Glass® Plus	2.4
Summit®	2.5
Summit® III	3.0
Wood shingles	3.0
Asbestos-cement shingles	4.0
Clay tile (minimum)	10.0
Concrete tile (Monier®)	9.5
Spanish tile	19.0

Material PSF

Miscellaneous

Mechanical ducts	2.0-4.0
Skylight, metal frame 3/8" glass	8.0
Stucco	10.0

Floor Fill

1 ¹ / ₂ " lightweight concrete	14.0
1 ¹ / ₂ " regular concrete	18.0
3/4" GYP-CRETE	6.5

Floor Finish

Hardwood (nominal 1")	4.0
Carpet and pad	2.0
Linoleum or soft tile	1.5
3/4" ceramic or quarry tile (without mortar)	10.0
1/2" mortar bed	+ 6.0
1" mortar bed	+ 12.0

2x Framing (12" on center)

2x4 (for 16" o.c. divide by 1.33)	1.4
2x6 (for 16" o.c. divide by 1.33)	2.2
2x8 (for 16" o.c. divide by 1.33)	2.9
2x10 (for 16" o.c. divide by 1.33)	3.7
2x12 (for 16" o.c. divide by 1.33)	4.4
GPI (for 19.2" o.c. divide by 1.6)	2.9-3.7
WI (for 19.2" o.c. divide by 1.6)	2.6-4.5

See page 14 for weight per lineal foot

Interior Walls (wood or steel studs)

5/8" gypsum each side	8.0
5/8" gypsum one side plaster one side	12.0
Plaster both sides	20.0

Exterior Walls (2x6 studs with insulation)

5/8" gypsum and siding	10.0
5/8" gypsum and stucco	18.0
Windows, glass, frame and sash	8.0
5/8" gypsum and brick veneer	48.0

Note: Wall weights are per square foot of wall
Multiply weight times wall height for plf.

Insulation (per 1" thickness)

Rigid	1.5
Batts	.5

G-P Technical Services recommends
1-2.0 PSF for miscellaneous dead loads.

Installation Notes and Safety Warnings18

Installation Do's and Don'ts19

Typical Framing20

Fire Rated Assemblies21

Plumbing Details21

Floor Details22-25

Cantilever Details26-27

Roof Details28-29

Hole Location Charts30-31

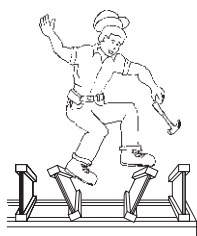
Storage and Handling

- A. Bundles should be stored level.
- B. Wood I Beam™ joists shall not be stored in direct contact with the ground and should be protected from weather.
- C. Do not open bundles until time of installation.
Use care when handling bundles and individual components to prevent injury to handlers or damage by forklifts or cranes.
- D. Stack and handle beams in the upright position.
- E. Twisting of joists, or applying loads to the joist when flat can damage the joist.
- F. Damaged Wood I Beam joists should not be used.

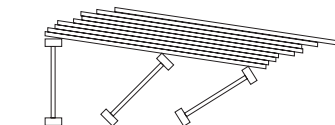
Safety Warning

Wood I Beam™ joists will not support workers or other loads until properly installed and braced. To minimize risk of injury, each Wood I Beam joist shall be properly fastened as it is erected. Continuous closure and/or blocking panels must be installed and attached prior to installing floor or roof sheathing. Lateral restraint, such as an existing deck or braced end wall, must be established at the ends of the bay. Alternatively, a temporary or permanent deck (sheathing) may be nailed to the first 4 feet of joists at the end of the bay. Rows of temporary bracing at right angles to joists must be fastened with a minimum of two 8d nails (10d box nails if net thickness of bracing exceeds 1") to the upper surface of each parallel joist and the established lateral restraint. Bracing should be 1x4 minimum and at least 8' long with on-center spacing not to exceed 10'. Ends of adjoining bracing should lap over at least two joists. Stack building materials over main beams or walls only.

Improper storage or installation, failure to follow applicable building codes, failure to follow proper load tables, failure to use acceptable hole sizes and locations, or failure to use bearing stiffeners when required can result in serious accidents. Installation notes must be followed carefully.



Do not allow workers or loads on Wood I Beam joists until properly installed and braced as outlined above.



Stack building materials over main beams or walls only.

Installation Notes

- A. Except for cutting to length, top and bottom flanges of Wood I Beam joists shall not be cut, drilled or notched.
- B. Concentrated loads shall only be applied to the upper surface of the top flange, not suspended from the bottom flange. Contact G-P for exceptions.
- C. Any fastening, resistance to uplift or member not specifically detailed is subject to local approval.
- D. When nailing sheathing to top flange, follow sheathing manufacturer's nailing recommendations, but maintain spacing in the ranges shown below:

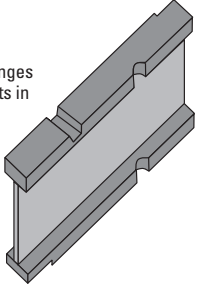
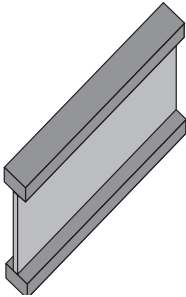
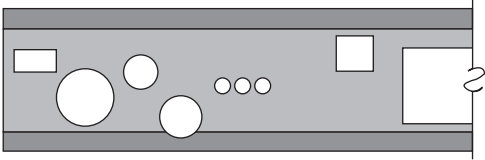
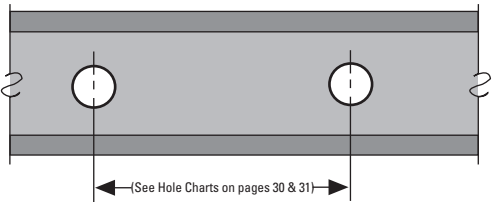
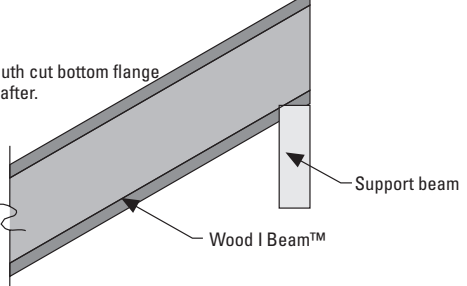
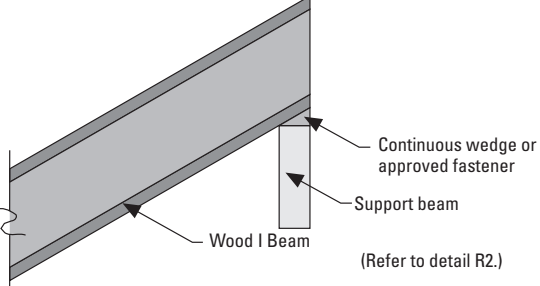
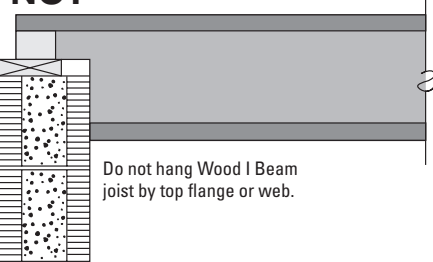
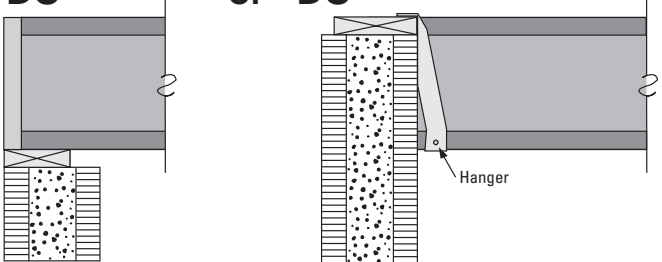
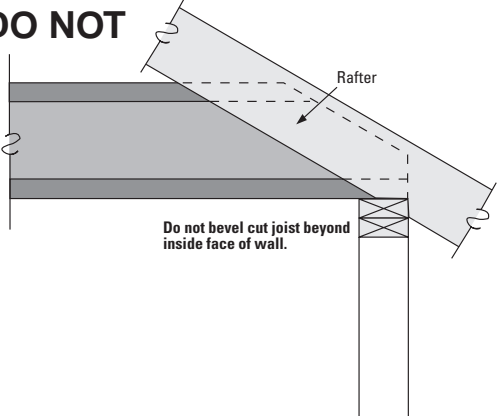
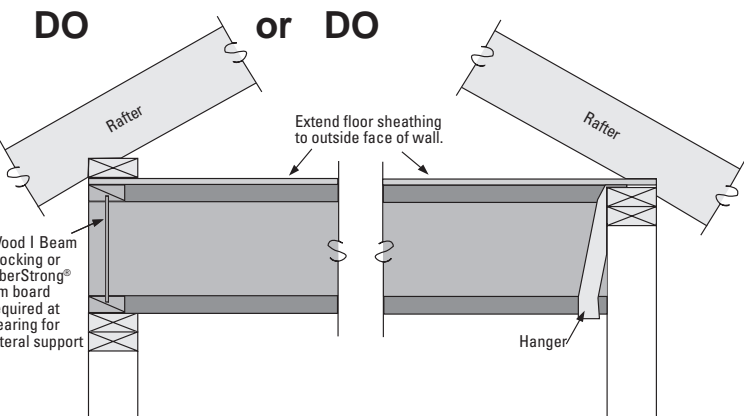
Sheathing Nail Spacing Requirements						
Nail Size	GPI 20		GPI 40, GPI 65		WI 40, WI 60, WI 80	
	Min.	Max.	Min.	Max.	Min.	Max.
8d Box, 8d Common	3"	16"	2"	24"	4"	24"
10d Box, 12d Box	3"	16"	2"	24"	4"	24"
10d Common, 12d Common	4 1/2"	16"	3"	24"	4"	24"

NOTES:

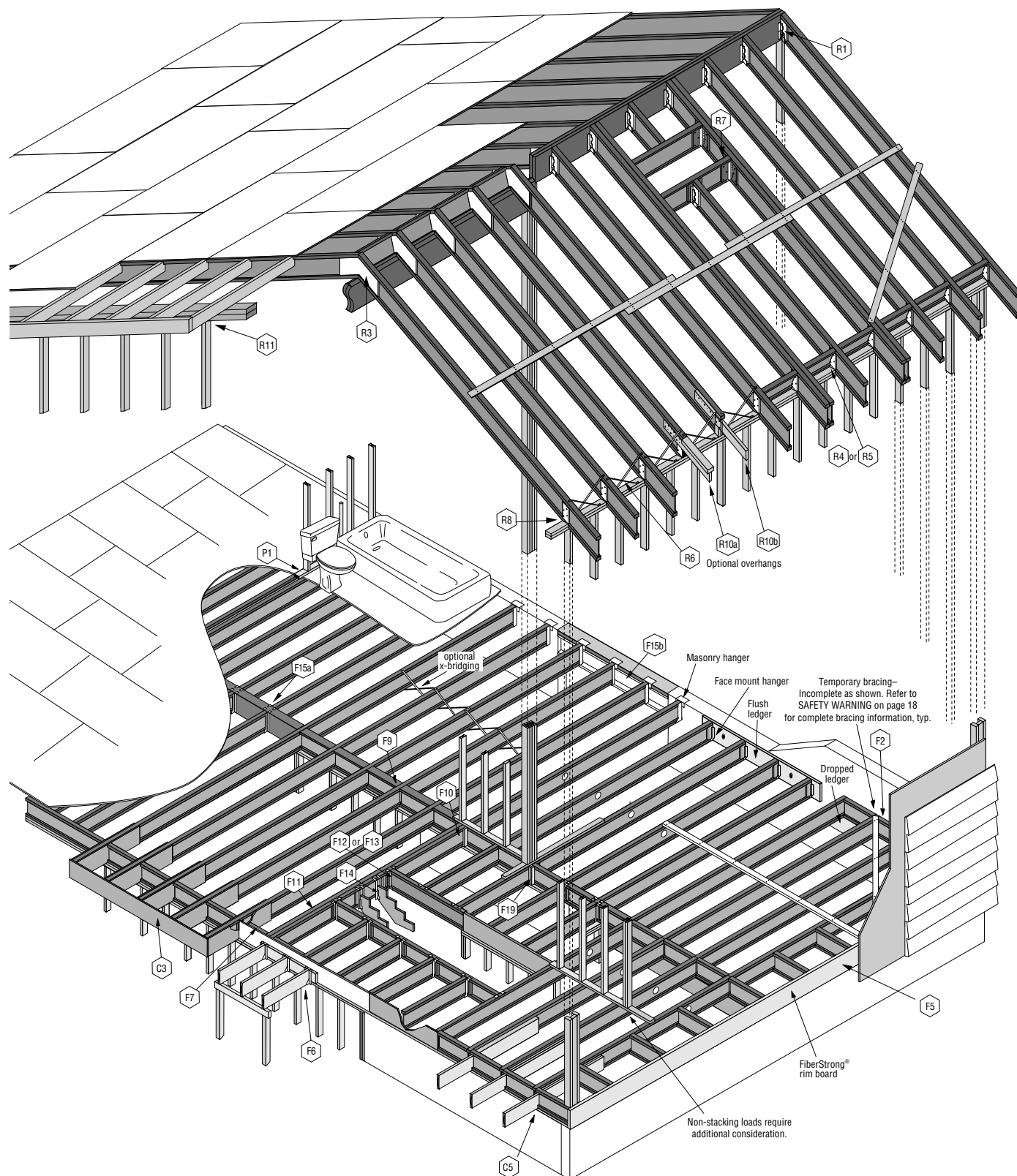
1. If more than one row of nails is required, rows must be offset by at least 1/2" (3/4" for WI joists) and staggered.
 2. 14 gauge staples may be substituted for 8d nails if staples penetrate the joist at least 1".
 3. Do not use nails larger than those shown above when attaching sheathing to flanges of Wood I Beam joists.
- Example: When using 8d common nails and GPI 20 series joists, space no closer (min.) than 3" o.c. and no farther (max.) than 16" o.c.

- E. End bearing length must be at least 1-3/4". Intermediate bearings of multiple span joists shall be at least 3-1/2".
- F. Engineered lumber must not remain in direct contact with concrete or masonry construction and shall be used in dry use conditions only.
- G. Wood I Beam joists must be restrained against rotation at the ends of joists by use of rim joists, blocking panels, or cross bridging. To laterally support cantilevered joists, blocking panels must also be installed over supports nearest the cantilever.
- H. Additionally, rim joists, blocking panels or squash blocks must be provided under all exterior walls and interior bearing walls to transfer loads from above to the wall or foundation below.
- I. Plywood or OSB subfloor nailed to the top flange of a Wood I Beam joist is adequate to provide lateral support.
- J. The top flanges must be kept straight within 1/2" of true alignment.
- K. In all details where plywood is referenced for backer block, filler block or stiffener material, rated OSB sheathing of the same thickness may be substituted.

Installation Do's and Don'ts

<p>DO NOT</p> <p>Do not cut or notch flanges (except birdsmouth cuts in roof details R4 & R6.)</p> 	<p>DO</p> 
<p>DO NOT</p>  <p>Do not violate hole chart rules.</p>	<p>DO</p>  <p>(See Hole Charts on pages 30 & 31)</p>
<p>DO NOT</p> <p>Do not birdsmouth cut bottom flange at high end of rafter.</p>  <p>Support beam</p> <p>Wood I Beam™</p>	<p>DO</p>  <p>Continuous wedge or approved fastener</p> <p>Support beam</p> <p>Wood I Beam</p> <p>(Refer to detail R2.)</p>
<p>DO NOT</p>  <p>Do not hang Wood I Beam joist by top flange or web.</p>	<p>DO or DO</p>  <p>Rim Board</p> <p>Hanger</p>
<p>DO NOT</p>  <p>Rafter</p> <p>Do not bevel cut joist beyond inside face of wall.</p>	<p>DO or DO</p>  <p>Rafter</p> <p>Extend floor sheathing to outside face of wall.</p> <p>Wood I Beam blocking or FiberStrong® rim board required at bearing for lateral support</p> <p>Hanger</p>

Typical Framing



Fire Rated Assemblies for Wood I Beam™ Joists

For alternate assemblies, including a two-hour rated system, contact Georgia-Pacific.



One-Hour Fire-Resistive Floor-Ceiling Assembly

(Applicable to all Wood I Beam joists)

Floor— $\frac{7}{8}$ " APA Rated Sturd-I-Floor® T&G wood structural panel, face grain perpendicular to joists, glued-nailed to joists with $\frac{1}{4}$ " bead of exterior construction adhesive and 8d common nails spaced per code requirements. Maximum joist spacing 24" o.c.

Ceiling—Two layers $\frac{5}{8}$ " Type X gypsum wallboard applied with long dimension perpendicular to joists—base layer attached to bottom flange of joists with $\frac{1}{4}$ " Type S drywall screws, 24" o.c., face layer attached to joists through base layer with $\frac{1}{8}$ " Type S drywall screws 12" o.c. at joints and intermediate joists and $\frac{1}{2}$ " Type G drywall screws 12" o.c. placed 2" back on either side of end joints. Joints offset 24" from base layer end and edge joints.



One-Hour Fire-Resistive Floor-Ceiling Assembly

(Applicable to WI series joists only)

Floor— $\frac{7}{8}$ " APA Rated Sturd-I-Floor T&G wood structural panel, face grain perpendicular to joists, glued-nailed to joists with $\frac{1}{4}$ " bead of construction adhesive and 8d common nails spaced per code requirements. T&G joints glued with $\frac{1}{4}$ " bead of construction adhesive. Maximum joist spacing 24" o.c.; minimum bearing on supports 2".

Furring—25 gauge steel resilient or hat channels, perpendicular to I-joists in continuous rows spaced up to 16" o.c. (up to 24" o.c. if joist spacing does not exceed 16" o.c.), attached to bottom flange of each I-joist with one $\frac{1}{8}$ " Type S (resilient channel) or two 1" Type S drywall screws (hat channel). Center channel splices under I-joists and overlap a minimum of $2\frac{1}{4}$ ". Install additional channels midway between adjacent continuous channels, at locations of end joints in base layer. Ends of these channels must extend a minimum of 6" beyond the edge joints of adjoining gypsum wallboard panels.

Ceiling—Two layers $\frac{5}{8}$ " Type X gypsum applied with long dimension perpendicular to channels—base layer attached to channels with $\frac{1}{8}$ " Type S drywall screws 24" o.c. face layer attached to channels through base layer with $\frac{1}{8}$ " Type S drywall screws 12" o.c. joints offset at least 24" from base layer end and edge joints, end joints centered on channels. At end joints, also attach face layer to base layer with $\frac{1}{2}$ " type G screws 12" o.c. spaced 2" from joint.

Plumbing Details

P1 JOIST SPACING BELOW PLUMBING WALL
Parallel to wall

Joist Spacing		
Joist	2 x 4 Wall	2 x 6 Wall
GPI 20	5 $\frac{1}{4}$ "	7 $\frac{1}{4}$ "
40, 60 and 65 Series	6"	8"
WI 80	7"	9"

Non-load bearing only

Every third joist may be shifted up to 3" to avoid plumbing interference.

P2 JOIST SPACING BELOW PLUMBING

Every third joist may be shifted up to 3" to avoid plumbing interference.

Floor Details

F1 ATTACHMENT AT END BEARING

One 10d box or sinker nail each side at bearing, typical for all wood bearings.

1-3/4" minimum end bearing length at all floor and roof details

To avoid splitting flange, start nails at least 1-1/2" from end. Drive nails at an angle to prevent splitting of bearing plate.

F2 BLOCKING PANEL, EXTERIOR
Vertical load transfer = 2000 plf max.

Wood I Beam™ blocking panel

8d nails at 6" o.c. (or per design professional's specs., but complying with Installation Note D, page 18.)

F3 WOOD I BEAM™ RIM JOIST
Vertical load transfer = 2000 plf max.

Wood I Beam™ rim joist

Minimum 1-3/4" joist bearing at wall

8d nails at 6" o.c. (or per design professional's specs., but complying with Installation Note D, page 18.)

Toe-nail rim joist to top flange of joist with 10d nail

For siding use backer block per F13.

F4 SQUASH BLOCKS & SINGLE RIM
Vertical load transfer = 2000 plf max. along load bearing wall based on bearing stress of 390 psi.

23/32" 48/24 APA® rated sheathing

Squash Blocks (2x4 minimum)

8d nails

1/16"

See detail F7 for blocking requirements.

Check local building code for appropriate detail in areas of high lateral load.

F5 FIBERSTRONG® RIM BOARD CLOSURE
Vertical load transfer = 4850 plf

Optional blocking for diaphragm nailing

8d nail top and bottom flange

8d nails at 6" on center toe-nail to plate, typical

(3) 8d nails at corners

G-P FiberStrong® rim board

1/2" sheathing

Siding

F6 DECK ATTACHMENT

Sheathing

G-P FiberStrong® rim board

2x PT ledger

Fill holes with high-quality caulking

2-4 galvanized or stainless steel washers for spacers

Extend flashing below 2x ledger and over siding

2" (min)

2 x PT ledger attached with 1/2" diameter x 4" through bolts with washers and nuts (or 1/2" x 4" lag screws). 350# per bolt. Lower fastener may alternately be located in rimboard. Maintain 2" edge distance.

8d nails at 6" on center toe-nail to plate, typical

8d nail top and bottom flange

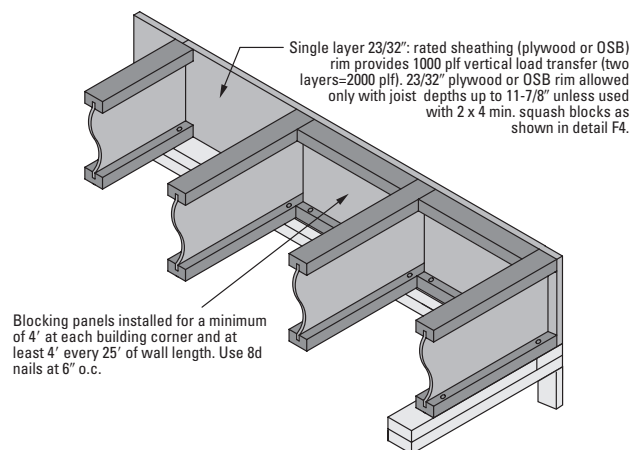
Metal flashing

1/2" sheathing

Caution: The lag screw should be inserted in a lead hole by turning with a wrench, not by driving with a hammer. Over-torquing can significantly reduce the lateral resistance of the lag screw and should therefore be avoided.

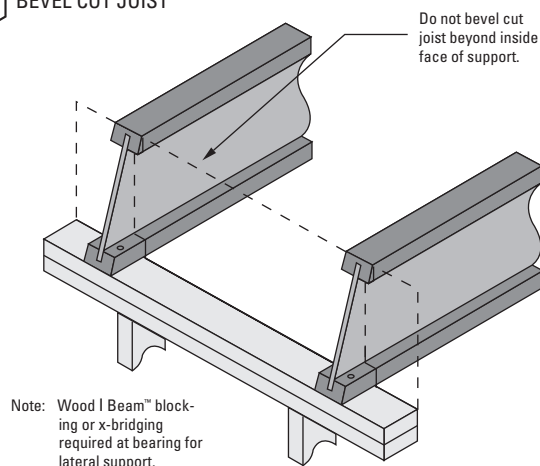
Floor Details

F7 BLOCKING PANELS USED FOR BRACING



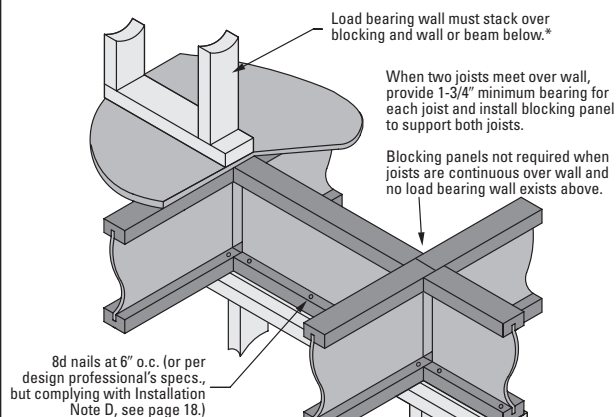
Check local building code for appropriate detail in areas of high lateral load.

F8 BEVEL CUT JOIST



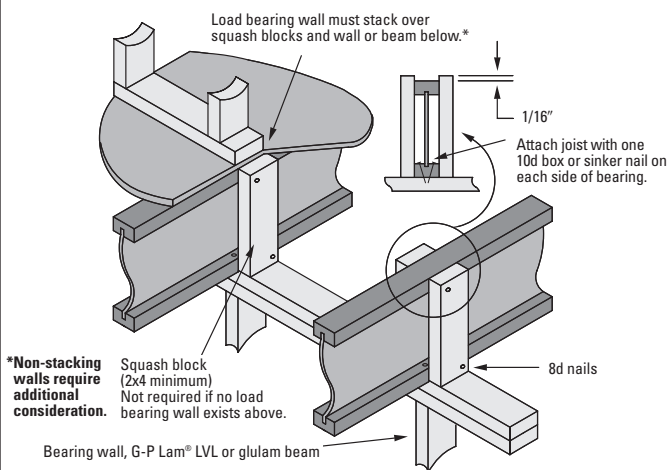
Check local building code for appropriate detail in areas of high lateral load.

F9 BLOCKING PANEL, INTERIOR
Vertical load transfer = 2000 plf max. along load bearing wall.



*Non-stacking walls require additional consideration.

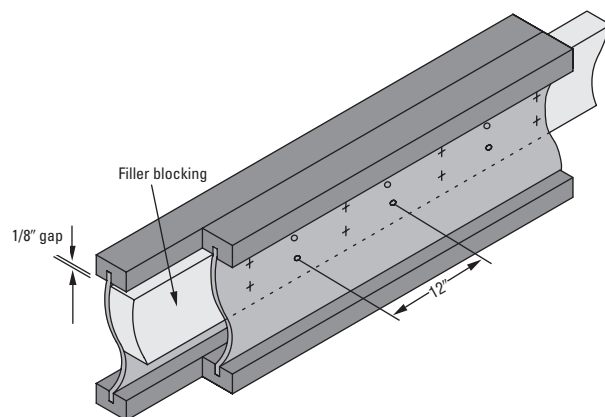
F10 SQUASH BLOCKS AT INTERIOR BEARING
Vertical load transfer = 2000 plf max along load bearing wall.



Check local building code for appropriate detail in areas of high lateral load.

F11 DOUBLE JOIST CONSTRUCTION

Joist	Joist Depth	Regular Filler Blocking* Use in details F12, C4 & R7	Full-depth Filler Blocking Use in details F13 & F14
GPI 20 1 3/4"	9 1/2" 11 1/8"	2x6 2x6	2 x 6 2 x 6
GPI 40 2 3/8"	9 1/2" 11 1/8" 14"	2 x 6 + 3/8" OSB/plywood 2 x 6 + 3/8" OSB/plywood 2 x 8 + 3/8" OSB/plywood	2 x 6 + 3/8" OSB/plywood 2 x 8 + 3/8" OSB/plywood 2 x 10 + 3/8" OSB/plywood
GPI 65 WI 40 WI 60 2 1/2"	9 1/2" 11 1/8" 14" 16"	2 x 6 + 3/8" OSB/plywood 2 x 6 + 3/8" OSB/plywood 2 x 8 + 3/8" OSB/plywood 2 x 8 + 3/8" OSB/plywood	2 x 6 + 3/8" OSB/plywood 2 x 8 + 3/8" OSB/plywood 2 x 10 + 3/8" OSB/plywood 2 x 12 + 3/8" OSB/plywood
WI 80 3 1/2"	11 1/8" 14" 16"	(2) 2 x 8 (2) 2 x 8 (2) 2 x 8	(2) 2 x 8 (2) 2 x 10 (2) 2 x 12



1. Support back of web during nailing to prevent damage to web-flange connection.
2. Leave 1/8" gap between top of filler blocking and bottom of top flange.
3. Block solid between joists for full length of span.
4. Place joists together and nail from each side with 2 rows of 10d nails at 12" o.c., clinched when possible. Stagger rows from opposite sides by 6"

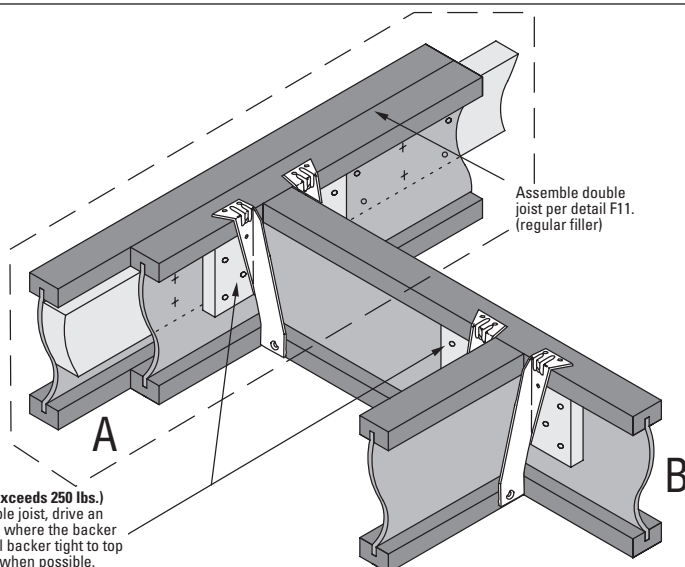
Floor Details

F12 FLOOR OPENING, TOP MOUNT HANGERS

Backer Blocks*

Joist	Joist Depth	Material	Depth
GPI 20	9½", 11½"	2x6	5½"
GPI 40	9½", 11½"	¾"	6"
	14"	¾"	7¼"
GPI 65, WI 40, WI 60	9½"	½" + ½"	6"
	11½", 14", 16"	½" + ½"	7¼"
WI 80	11½", 14", 16"	2x8	7¼"

*Block must be long enough to permit required nailing without splitting.



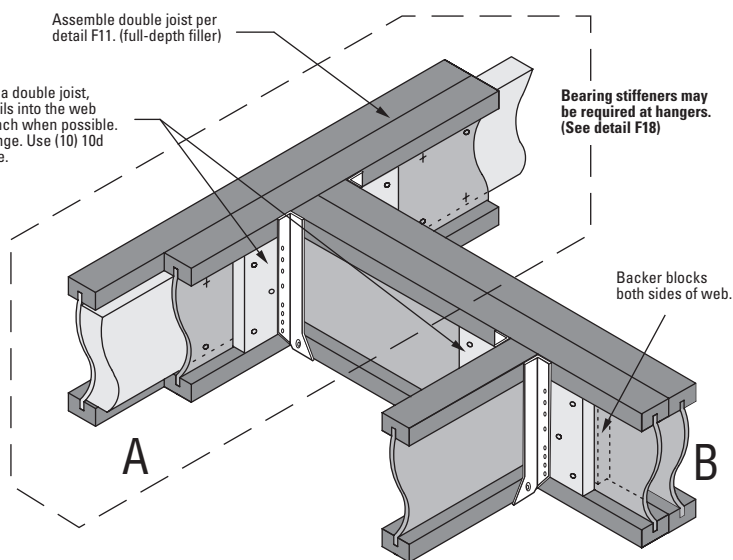
Backer Block (use if hanger load exceeds 250 lbs.)
Before installing a backer to a double joist, drive an additional (3) 10d nails into the web where the backer will fit. Clinch when possible. Install backer tight to top flange. Use (10) 10d nails, clinched when possible.

F13 FLOOR OPENING, FACE MOUNT HANGERS

Backer Blocks*

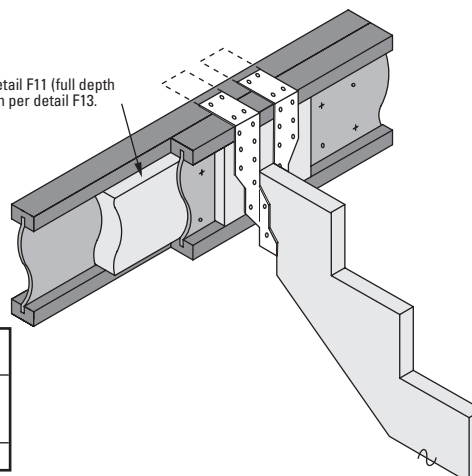
Joist	Joist Depth	Material	Depth
GPI 20	9½", 11½"	¾"	6¼"
GPI 40	9½", 11½", 14"	¾"	6¼", 8¼", 10¼"
GPI 65, WI 40, WI 60	9½", 11½", 14", 16"	½" + ½"	6¼", 8¼", 10¼", 12¼"
	11½", 14", 16"	1½" net	8¼", 10¼", 12¼"

*Block must be long enough to permit required nailing without splitting.
Backer depth to equal joist depth minus ¾".



F14 STRINGER TO JOIST CONNECTION

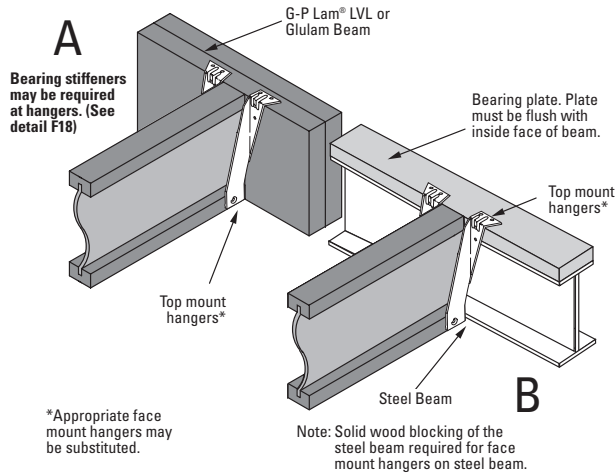
Double Wood I Beam™ construction per detail F11 (full depth filler). Backer blocking size and installation per detail F13.



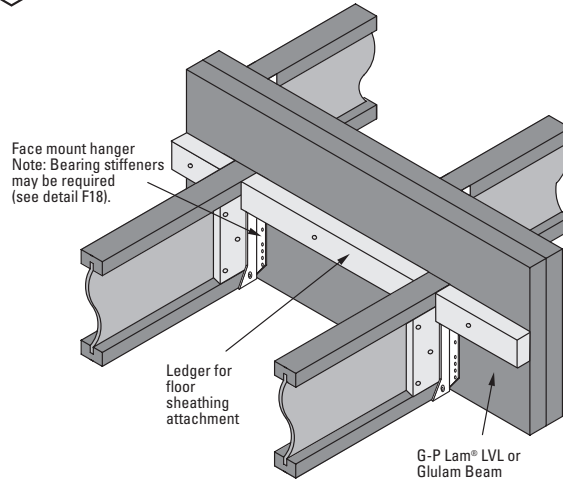
Hangers for 14' (max) Stringer	Nailing Requirement
United Steel Products MSH 218 OR Simpson Strong-Tie® THA 218	Minimum (12) 10d nails into double joists or single or double LVL header. Minimum (4) 10d x 1½" nails into stringer.
For stringers longer than 14' or stringer reaction greater than 700 lbs., call G-P.	

Floor Details

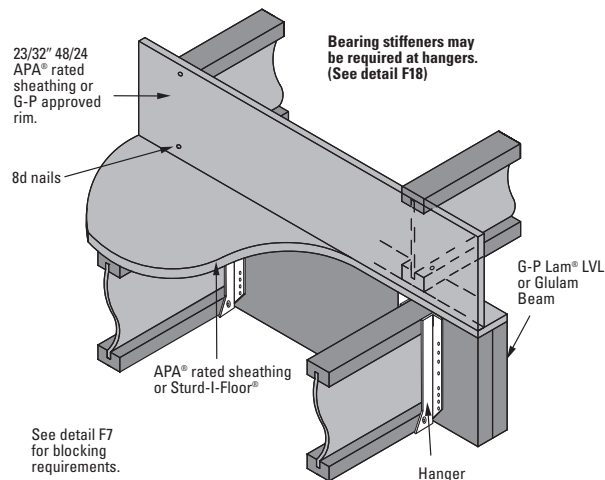
F15 JOIST TO BEAM CONNECTION



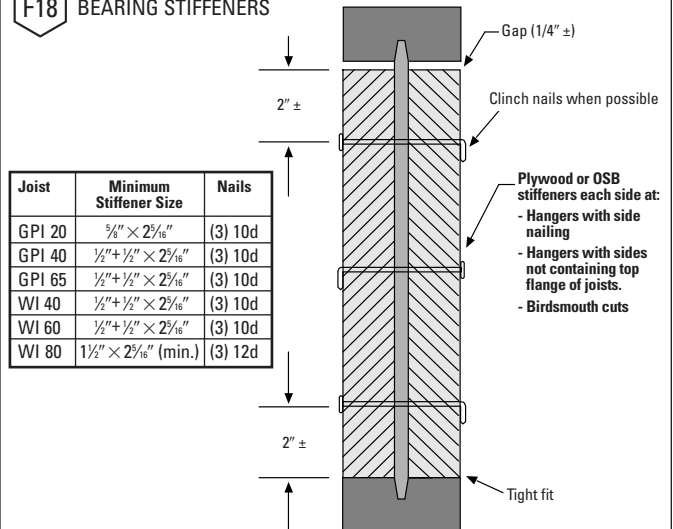
F16 JOIST TO BEAM CONNECTION, STEP DOWN



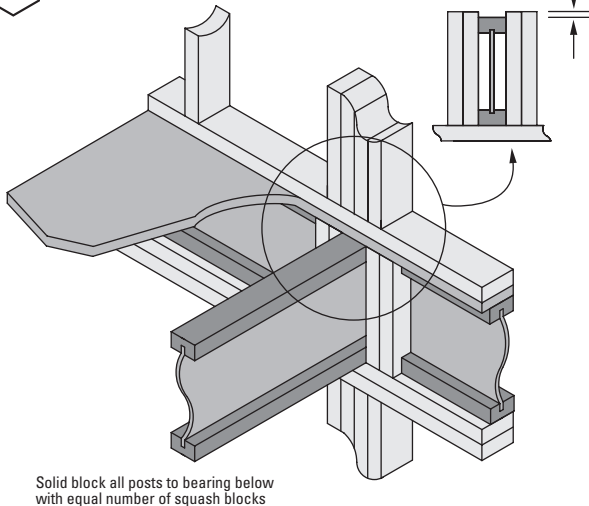
F17 JOIST TO BEAM CONNECTION, STEP DOWN



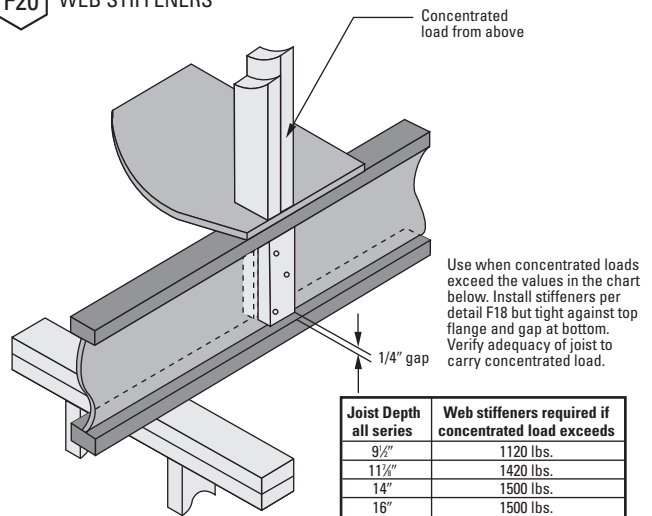
F18 BEARING STIFFENERS



F19 SQUASH BLOCKS AT CONCENTRATED LOADS



F20 WEB STIFFENERS



Cantilever Reinforcement Requirements for GPI or WI Joists

Joist Depth	Roof Truss Span	ROOF LOADINGS											
		TL = 35 psf LL not to exceed 20 psf				TL = 45 psf LL not to exceed 30 psf				TL = 55 psf LL not to exceed 40 psf			
		Joist spacing				Joist spacing				Joist spacing			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"	12"	16"	19.2"	24"
9½"	26'	0	0	1	2	0	1	2	X	1	2	X	X
	28'	0	1	1	2	1	1	2	X	1	2	X	X
	30'	0	1	1	2	1	2	2	X	2	X	X	X
	32'	0	1	1	2	1	2	X	X	2	X	X	X
	34'	0	1	2	X	1	2	X	X	2	X	X	X
	36'	1	1	2	X	1	2	X	X	2	X	X	X
11⅝"	26'	0	0	0	1	0	0	1	2	0	1	1	X
	28'	0	0	0	1	0	0	1	X	0	1	2	X
	30'	0	0	0	2	0	0	1	X	0	1	2	X
	32'	0	0	0	2	0	0	1	X	1	2	X	X
	34'	0	0	1	2	0	1	2	X	1	2	X	X
	36'	0	0	1	X	0	1	2	X	1	2	X	X
14"	26'	0	0	0	1	0	0	0	2	0	0	1	X
	28'	0	0	0	1	0	0	1	X	0	0	2	X
	30'	0	0	0	2	0	0	1	X	0	1	2	X
	32'	0	0	0	2	0	0	1	X	0	1	2	X
	34'	0	0	0	2	0	0	1	X	0	1	X	X
	36'	0	0	1	2	0	0	2	X	0	1	X	X
16"	26'	0	0	1	X	0	1	2	X	0	1	X	X
	28'	0	0	1	X	0	1	2	X	0	1	X	X
	30'	0	0	1	X	0	1	2	X	0	1	X	X
	32'	0	0	1	X	0	1	2	X	0	1	X	X
	34'	0	0	1	X	0	1	2	X	0	1	X	X
	36'	0	0	1	X	0	1	2	X	0	1	X	X
16"	38'	0	0	1	X	0	1	2	X	0	2	X	X
	40'	0	0	1	X	0	1	2	X	0	2	X	X
	42'	0	0	1	X	0	1	X	X	0	2	X	X

0 - No reinforcement is required. See Detail C1.

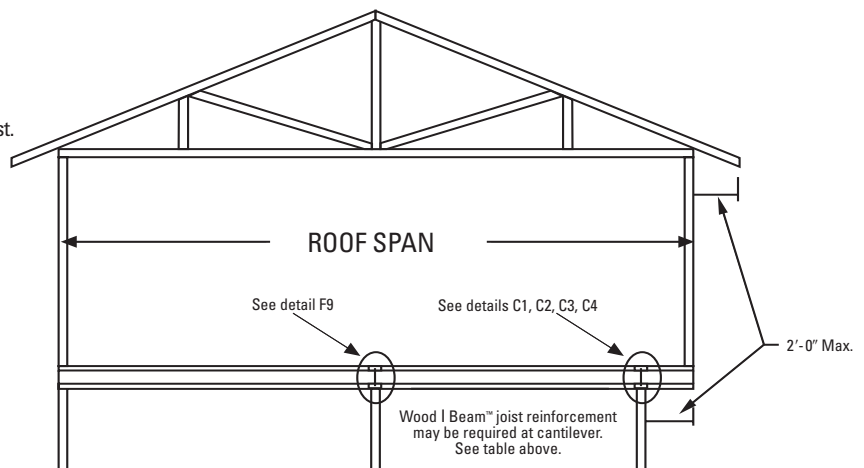
1 - Single Reinforcement is required. See Detail C2.

2 - Double Reinforcement is required. See Detail C3 or C4.

X - Joist does not work. Select closer spacing or deeper joist.

NOTES:

- Assumes floor load of 40 psf live load at L/480, 10 psf dead load and maximum joist simple spans.
- Assumes exterior wall load of 80 plf. Wall load based on 3'-0" maximum width window or door openings. For larger openings, or multiple 3'-0" width openings spaced less than 6'-0" o.c., additional joists beneath the opening's cripple studs may be required.
- Roof loads use a load duration factor of 115%.



Cantilever Details

C1 CANTILEVER, UNREINFORCED

For allowable wall/roof loads on cantilever, use chart to left, use FASTeam software or contact Georgia-Pacific.

23/32" APA® rated sheathing or FiberStrong® rim board.

Note: Wood I Beam joists shall be protected from the weather.

For other conditions contact Georgia-Pacific.

C2 CANTILEVER, REINFORCED Single Sheathing (Option I)

X-bridging or Wood I Beam blocking panels (see detail F2) required at cantilevers and continuing for 4' on each side of cantilevered area.

23/32" APA® rated sheathing or FiberStrong® rim board.

Note: FiberStrong® rim board or 48/24 APA® rated sheathing (face grain horizontal) required one side of joist. Depth must match the full depth of the joist. Nail to joist flange with 8d nails at 6" o.c.

C3 CANTILEVER, REINFORCED Double Sheathing (Option II)

X-bridging or Wood I Beam blocking panels (see detail F2) required at cantilevers and continuing for 4' on each side of cantilevered area.

23/32" APA® rated sheathing or FiberStrong® rim board.

Note: FiberStrong® rim board or 48/24 APA® rated sheathing (face grain horizontal) required both sides of joist. Depth must match the full depth of the joist. Nail to joist flanges with 8d nails at 6" o.c. Offset nailing on opposite sides of flange to avoid splitting.

DOUBLE REINFORCEMENT NAILING PATTERN

Nail with 8d nails at 6" o.c. Offset nailing on opposite side of flange to avoid splitting.

C4 CANTILEVER, REINFORCED Double Joist (Option III)

X-bridging or Wood I Beam blocking panels (see detail F2) required at cantilevers and continuing for 4' on each side of cantilevered area.

23/32" APA® rated sheathing or FiberStrong® rim board.

Note: Block together full length with full-depth filler blocking. See detail F11 for filler size. Use 2 rows of 10d nails at 12" o.c. from each side; offset opposite side nailing by 6". For flange widths greater than 2 1/2", use 3 rows of 10d nails at 12" o.c. from each side; offset opposite side nailing by 6". Clinch nails when possible.

C5 CANTILEVER, DROPPED

X-bridging or Wood I Beam blocking panels (see detail F2) required at cantilevers and continuing for 4' on each side of cantilevered area.

Load bearing wall not allowed.

2x8 min. (designed by others) nailed to backer block & web with 2 rows of 10d nails at 6" o.c. & clinched when possible.

Blocking panels required at cantilevers and continuing for 4' on each side of cantilever area.

Roof Details

<p>R1 RIDGE-JOIST CONNECTION 12/12 maximum slope</p> <p>Adjustable slope hanger (see page 16)</p> <p>KANT-SAG® LST122 or SIMPSON LSTA21 strap* with (16) 10d x 1-1/2" nails</p> <p>Beveled bearing stiffener each side (see detail F18)</p> <p>Ridge beam (G-P Lam® LVL or Glulam)</p> <p>Follow detail F1 for nailing to bearing plate. Additional uplift connections may be required.</p> <p>*Strap required for 16" joist depth or members with slope of 7/12 or greater.</p>	<p>R2 UPPER END, BEARING ON WALL</p> <p>Wood I Beam™ blocking panel, x-bridging, 23/32" 48/24 APA® rated sheathing, or proper depth of FiberStrong® rim board as contiguous closure. See details F2, F5 and F7.</p> <p>Beveled wood plate or variable slope connector</p> <p>Follow detail F1 for nailing to bearing plate. Additional uplift connections may be required.</p>
<p>R3 JOISTS ABOVE RIDGE SUPPORT BEAM</p> <p>3/4" x 2'-0" plywood gusset (face grain horizontal) each side with (12) 8d nails clinched or strap with (16) 10d x 1-1/2" nails applied to top flange per detail R1.</p> <p>Double beveled wood plate.</p> <p>G-P Lam LVL or glulam support beam.</p> <p>Wood I Beam blocking panel or x-bridging (see detail F2)</p> <p>Follow detail F1 for nailing to bearing plate. Additional uplift connections may be required.</p>	<p>R4 BIRDSMOUTH CUT Low end of joist only.</p> <p>Bearing stiffener each side (See detail R8)</p> <p>Wood I Beam blocking panel (see detail F2)</p> <p>Optional overhang 2'-0" (max)</p> <p>Follow detail F1 for nailing to bearing plate. Additional uplift connections may be required.</p> <p>Notch Wood I Beam to provide full bearing for bottom flange.</p>
<p>R5 JOISTS ON BEVELED PLATE</p> <p>Wood I Beam blocking panel or x-bridging (see detail F2).</p> <p>2'-0" max.</p> <p>2x4 block to attach fascia</p> <p>Cantilever length may not exceed 1/4 of the adjacent span (L).</p> <p>Follow detail F1 for nailing to bearing plate. Additional uplift connections may be required.</p> <p>*Not to exceed 4'-0"</p> <p>Continuous beveled plate or variable pitch connector.</p>	<p>R6 BIRDSMOUTH CUT Low end of joist only</p> <p>Bearing stiffener each side (see detail R8)</p> <p>X-bridging or Wood I Beam blocking panels. Validate use of x-bridging with local code.</p> <p>2'-0" max.</p> <p>Follow detail F1 for nailing to bearing plate. Additional uplift connections may be required.</p>

Roof Details

R7 ROOF OPENING, FACE MOUNT HANGERS

Bearing stiffeners may be required. (see detail F18)

Face mount hanger

I-joist or G-P Lam® LVL

Beveled backer block (see detail F13)

G-P Lam® LVL or double joist (see detail F11)

Adjustable slope hanger

Follow detail F1 for nailing to bearing plate. Additional uplift connections may be required.

R8 BEVELED CUT BEARING STIFFENER

Bevel cut bearing stiffener to match roof slope. See detail F18 for attachment information.

Follow detail F1 for nailing to bearing plate. Additional uplift connections may be required.

R10 OPTIONAL OVERHANG EXTENSIONS

May be used with detail R4, R5, and R6 (Low end only.)

Follow detail F1 for nailing to bearing plate. Additional uplift connections may be required.

Bearing stiffener each side. (see detail F18)

2x4 nailed to side of top flange with 10d box nails at 8" o.c. Place 2x4 cripple stud at plate, under 2x4 overhang. Bevel cut to match roof slope.

4'-0" min.

2x4 cripple

2'-0" max.

2'-0" max.

A Stop Wood I Beam™ joist at wall line and extend top flange with 2x4. Support extension with 2x4 nailed to web of joist with 2 rows of 8d nails at 8" o.c. clinched. Extend 2x4 support at least 4' into joist span and nail to top flange with 8d nails at 8" o.c.

B 2x4 nailed to side of top flange with 10d box nails at 8" o.c. Place 2x4 cripple stud at plate, under 2x4 overhang. Bevel cut to match roof slope.

X-briding or Wood I Beam blocking panels. Validate use of x-briding with local code.

R11 OVERHANG PARALLEL TO JOIST

When L exceeds joist spacing, double joist may be required.

L

L (2'-0" max.)

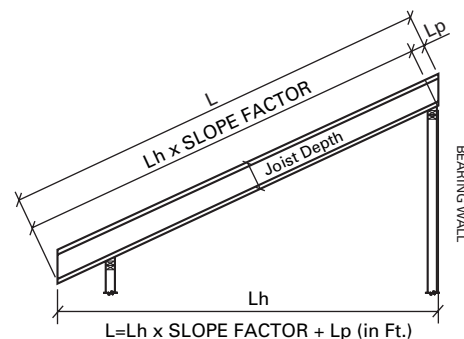
2x4 outrigger notched around top flange of Wood I Beam joist. 8d toe-nail to plate and top flange.

Gable end wall

Follow detail F1 for nailing to bearing plate. Additional uplift connections may be required.

Up-the-Slope Spans & Cutting Lengths for Sloped Roofs

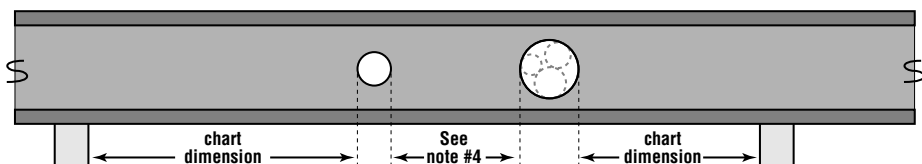
Slope	Slope Factor	Joist Depth			
		9½"	11½"	14"	16"
		Amount to Increase Length for Plumb Cut (Lp in feet)			
2½ in 12	1.02	0.17	0.21	0.24	0.28
3 in 12	1.03	0.20	0.25	0.29	0.33
3½ in 12	1.04	0.23	0.29	0.34	0.39
4 in 12	1.05	0.26	0.33	0.39	0.44
4½ in 12	1.07	0.30	0.37	0.44	0.50
5 in 12	1.08	0.33	0.41	0.49	0.56
6 in 12	1.12	0.40	0.50	0.58	0.67
7 in 12	1.16	0.46	0.58	0.68	0.78
8 in 12	1.20	0.53	0.66	0.78	0.89
9 in 12	1.25	0.59	0.74	0.88	1.00
10 in 12	1.30	0.66	0.83	0.97	1.11
11 in 12	1.36	0.73	0.91	1.07	1.22
12 in 12	1.41	0.79	0.99	1.17	1.33



EXAMPLE:

7/12 slope and 20'-0" horizontal span, 2'-0" overhang (horizontal) one end
 $22' \times 1.16 = 25.52'$ up-the-slope
 If a 14" joist will be used, add 0.68 feet. $25.52 + .68 = 26.20'$
 $.2 \times 12" = 2.4"$ or approximately 2½". $L = 26'-2½"$

Hole Location for GPI Joists Simple or Multiple Span



Do not drill or cut flanges.



Chart dimension is minimum distance from inside face of support to nearest edge of hole.

Joist Depth	Joist Clear Span	2'	3'	4'	5'	6'	Round Hole Diameter							13'
		2"	3"	4"	5"	6"	6 1/2"	7"	8"	8 1/8"	9"	10"	11"	12"
9 1/2"	10'	0'-6"	0'-6"	1'-0"	2'-0"	3'-0"	3'-6"							
	12'	0'-6"	1'-0"	2'-0"	3'-6"	4'-6"	5'-0"							
	14'	1'-0"	2'-0"	3'-0"	4'-6"	5'-6"	6'-6"							
	16'	1'-0"	2'-0"	3'-6"	5'-0"	6'-6"	7'-0"							
	18'	1'-6"	3'-0"	4'-6"	6'-0"	7'-6"	8'-6"							
	20'	0'-6"	0'-6"	1'-0"	3'-0"	5'-6"	7'-0"							
11 1/8"	12'	0'-6"	0'-6"	1'-0"	1'-0"	2'-0"	2'-6"	3'-0"	4'-0"	5'-0"				
	14'	0'-6"	0'-6"	1'-0"	2'-0"	3'-0"	3'-6"	4'-0"	5'-6"	6'-6"				
	16'	0'-6"	1'-0"	2'-0"	3'-0"	4'-0"	5'-0"	5'-6"	6'-6"	7'-6"				
	18'	0'-6"	0'-6"	1'-6"	3'-0"	4'-0"	5'-0"	5'-6"	7'-6"	8'-6"				
	20'	0'-6"	1'-6"	3'-0"	4'-0"	5'-6"	6'-6"	7'-0"	9'-0"					
	22'	0'-6"	0'-6"	1'-6"	3'-0"	5'-0"	5'-6"	6'-6"	8'-6"	10'-0"				
14"	24'	0'-6"	0'-6"	1'-0"	1'-0"	3'-0"	4'-0"	5'-0"	7'-6"	9'-6"				
	10'	0'-6"	0'-6"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	2'-0"	3'-6"	
	12'	0'-6"	0'-6"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-6"	2'-6"	2'-6"	3'-6"	5'-0"	
	14'	0'-6"	0'-6"	1'-0"	1'-0"	1'-0"	1'-6"	2'-0"	3'-0"	3'-6"	4'-0"	5'-0"	6'-6"	
	16'	0'-6"	0'-6"	1'-0"	1'-0"	2'-0"	2'-6"	3'-0"	4'-0"	5'-0"	5'-0"	6'-6"		
	18'	0'-6"	0'-6"	1'-0"	1'-0"	1'-6"	2'-6"	3'-0"	4'-6"	5'-6"	5'-6"	7'-0"	8'-6"	
	20'	0'-6"	0'-6"	1'-0"	1'-6"	3'-0"	3'-6"	4'-0"	5'-6"	6'-6"	7'-0"	8'-6"		
	22'	0'-6"	0'-6"	1'-0"	1'-0"	1'-6"	2'-6"	3'-0"	5'-0"	6'-0"	6'-6"	8'-6"	10'-6"	
	24'	0'-6"	0'-6"	1'-0"	1'-0"	3'-0"	3'-6"	4'-6"	6'-0"	7'-6"	8'-0"	10'-0"		
16"	26'	0'-6"	0'-6"	1'-0"	1'-0"	1'-6"	2'-6"	3'-6"	5'-6"	7'-0"	7'-6"	9'-6"	12'-0"	
	28'	0'-6"	0'-6"	1'-0"	1'-0"	1'-0"	2'-0"	3'-0"	5'-6"	7'-0"	7'-6"	10'-0"	12'-6"	
	14'	0'-6"	0'-6"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-6"	2'-6"	2'-6"	3'-6"	5'-0"	6'-0"
	16'	0'-6"	0'-6"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	2'-0"	2'-6"	2'-6"	4'-0"	5'-0"	6'-6"
	18'	0'-6"	0'-6"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-6"	2'-6"	2'-6"	4'-0"	5'-6"	7'-0"
	20'	0'-6"	0'-6"	1'-0"	1'-0"	1'-0"	1'-0"	1'-6"	3'-0"	3'-6"	4'-0"	5'-6"	7'-0"	8'-6"
	22'	0'-6"	0'-6"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-6"	2'-6"	3'-0"	4'-6"	6'-6"	8'-6"
	24'	0'-6"	0'-6"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	2'-6"	4'-0"	4'-0"	6'-0"	8'-0"	10'-0"
	26'	0'-6"	0'-6"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-6"	3'-0"	3'-0"	5'-0"	7'-6"	9'-6"
16"	28'	0'-6"	0'-6"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	2'-6"	4'-0"	4'-6"	6'-6"	9'-0"	11'-0"
	30'	0'-6"	0'-6"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	2'-6"	4'-0"	4'-0"	6'-6"	9'-0"	11'-6"
	32'	0'-6"	0'-6"	1'-0"	1'-0"	1'-0"	1'-0"	1'-6"	3'-6"	5'-0"	5'-6"	8'-0"	10'-0"	12'-6"

Not Permitted

Example below

NOTES:

- Hole locations are based on worst case of simple and multiple span conditions with uniform floor loads of 40 PSF live load and 10 or 20 PSF dead load, spans from pages 6 or 8.
- Holes not greater than 1.5" in diameter can be placed anywhere in the web, but the hole must be spaced a minimum horizontal clear distance of 2 times its diameter (but not less than 1") from any adjacent hole.
- For holes greater than 1.5" diameter, minimum clear distance between
 - two round holes is 2 times the diameter of the larger hole
 - a round hole and a rectangular hole is the larger of 2 times the hole diameter or twice the rectangular hole width
- For multiple holes: The clear distance between the holes must equal or exceed twice the diameter of the largest hole, or twice the longest side of a rectangular hole.

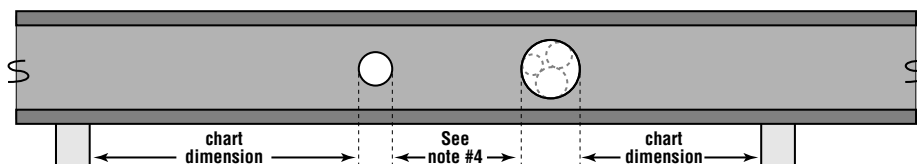
- For joists with more than one span, use the longest span to determine hole location in either span.
- All holes shown on this chart may be located vertically anywhere within the web; a clear distance of at least 1/8" must be maintained from the hole edge to the inner surface of the closest flange.

EXAMPLE:

Determine the allowable location of a 9" round hole in a 14" deep GPI joist which spans 20'.

Enter the chart in the left column and find 14" joist depth, move to the right and find 20' in the joist span column and move across the chart to intersect the 9" round hole column. The nearest allowable location to either bearing is 7'-0".

Hole Location for WI Joists Simple or Multiple Span



Do not drill or cut flanges.



Chart dimension is minimum distance from inside face of support to nearest edge of hole.

Joist Depth	Joist Span	Circular Hole Diameter															
		2"	3"	4"	5"	6¼"	7"	8"	8¾"	9"	10"	10¼"	11"	12"	12¾"		
9½"	10'	0'-6"	1'-0"	1'-6"	2'-6"	3'-6"											
	12'	0'-6"	1'-6"	2'-6"	3'-6"	5'-0"											
	14'	2'-0"	3'-0"	4'-0"	5'-0"	6'-0"											
	16'	2'-0"	3'-0"	4'-0"	5'-0"	6'-6"											
	18'	2'-0"	3'-0"	4'-0"	5'-6"	7'-0"											
	20'	1'-0"	2'-6"	4'-0"	5'-6"	7'-6"											
11⅝"	12'	0'-6"	1'-0"	1'-0"	1'-6"	2'-6"	3'-0"	4'-0"	4'-6"	Not Permitted							
	14'	0'-6"	1'-0"	1'-6"	2'-6"	3'-6"	4'-6"	5'-6"	6'-0"								
	16'	0'-6"	1'-6"	2'-6"	3'-6"	5'-0"	5'-6"	6'-6"	7'-0"								
	18'	2'-0"	3'-0"	4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	8'-6"								
	20'	2'-0"	3'-0"	4'-0"	5'-0"	6'-6"	7'-0"	8'-0"	9'-0"								
	22'	2'-0"	3'-6"	4'-6"	5'-6"	7'-6"	8'-0"	9'-6"	10'-6"								
	24'	2'-6"	4'-0"	5'-0"	6'-0"	8'-0"	8'-6"	10'-0"	11'-0"								
	26'	1'-6"	3'-0"	4'-0"	5'-6"	7'-6"	8'-6"	10'-0"	11'-0"								
28'	0'-6"	1'-0"	2'-0"	4'-0"	6'-6"	7'-6"	9'-6"	11'-0"				Example below					
14"	12'	0'-6"	1'-0"	1'-0"	1'-6"	1'-6"	1'-6"	1'-6"	2'-6"	2'-6"	3'-6"	4'-6"					
	14'	0'-6"	1'-0"	1'-0"	1'-6"	1'-6"	2'-0"	3'-0"	3'-6"	4'-0"	5'-0"	6'-0"					
	16'	0'-6"	1'-0"	1'-0"	1'-6"	2'-6"	3'-0"	4'-0"	5'-0"	5'-0"	6'-0"	7'-0"					
	18'	0'-6"	1'-0"	1'-6"	2'-6"	3'-6"	4'-6"	5'-6"	6'-0"	6'-6"	7'-6"	8'-6"					
	20'	0'-6"	1'-0"	1'-6"	2'-6"	3'-6"	4'-6"	5'-6"	6'-0"	6'-6"	7'-6"	8'-6"					
	22'	0'-6"	1'-0"	1'-6"	2'-6"	4'-0"	5'-0"	6'-6"	7'-6"	7'-6"	9'-0"	10'-0"					
	24'	0'-6"	1'-6"	2'-6"	4'-0"	5'-6"	6'-6"	7'-6"	8'-6"	9'-0"	10'-0"	11'-6"					
	26'	0'-6"	2'-0"	3'-0"	4'-6"	6'-0"	7'-0"	8'-6"	9'-0"	9'-6"	11'-0"	12'-0"					
	28'	0'-6"	1'-0"	2'-6"	4'-0"	6'-0"	7'-0"	8'-6"	9'-6"	10'-0"	11'-6"	13'-0"					
	30'	0'-6"	1'-0"	1'-0"	1'-6"	3'-6"	4'-6"	6'-6"	8'-0"	9'-0"	11'-0"	12'-6"					
32'	0'-6"	1'-0"	1'-0"	1'-6"	4'-0"	5'-0"	7'-6"	8'-6"	9'-6"	11'-6"	13'-0"						
16"	14'	0'-6"	1'-0"	1'-0"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	2'-0"	3'-0"	3'-6"	4'-0"	5'-0"	5'-0"	6'-0"	6'-0"
	16'	0'-6"	1'-0"	1'-0"	1'-6"	1'-6"	1'-6"	2'-0"	3'-0"	3'-0"	4'-0"	5'-0"	5'-0"	6'-0"	6'-0"	7'-0"	7'-0"
	18'	0'-6"	1'-0"	1'-0"	1'-6"	1'-6"	2'-6"	3'-6"	4'-0"	4'-6"	5'-6"	6'-0"	6'-6"	7'-6"	7'-6"	8'-6"	8'-6"
	20'	0'-6"	1'-0"	1'-0"	1'-6"	1'-6"	2'-6"	3'-6"	4'-0"	4'-6"	5'-6"	6'-0"	6'-6"	7'-6"	7'-6"	8'-6"	8'-6"
	22'	0'-6"	1'-0"	1'-0"	1'-6"	1'-6"	2'-6"	4'-0"	4'-6"	4'-6"	5'-0"	6'-6"	7'-6"	7'-6"	9'-0"	10'-0"	10'-0"
	24'	0'-6"	1'-0"	1'-0"	1'-6"	3'-0"	3'-6"	5'-0"	6'-0"	6'-6"	7'-6"	8'-6"	9'-0"	9'-0"	10'-0"	11'-6"	11'-6"
	26'	0'-6"	1'-0"	1'-0"	1'-6"	3'-6"	4'-6"	5'-6"	6'-6"	7'-0"	8'-0"	9'-0"	9'-6"	10'-6"	10'-6"	12'-0"	12'-0"
	28'	0'-6"	1'-0"	1'-0"	1'-6"	3'-0"	4'-0"	5'-6"	6'-6"	7'-0"	8'-6"	9'-6"	10'-0"	10'-0"	11'-6"	13'-0"	13'-0"
	30'	0'-6"	1'-0"	1'-0"	2'-0"	4'-0"	5'-0"	6'-6"	8'-0"	8'-0"	10'-0"	11'-0"	11'-6"	13'-0"	13'-0"	14'-6"	14'-6"
	32'	0'-6"	1'-0"	1'-0"	1'-6"	1'-6"	1'-6"	4'-0"	5'-0"	6'-0"	8'-0"	9'-6"	10'-0"	10'-0"	12'-0"	13'-6"	13'-6"
34'	0'-6"	1'-0"	1'-0"	1'-6"	1'-6"	3'-0"	5'-0"	6'-6"	7'-0"	9'-0"	11'-0"	11'-0"	13'-0"	13'-0"	15'-0"	15'-0"	

NOTES:

- Hole locations are based on worst case of simple and multiple span conditions with uniform floor loads of 40 PSF live load and 10 or 20 PSF dead load, spans from pages 6 or 8.
- Holes not greater than 1.5" in diameter can be placed anywhere in the web, but the hole must be spaced a minimum horizontal clear distance of 2 times its diameter (but not less than 1") from any adjacent hole.
- For holes greater than 1.5" diameter, minimum clear distance between
 - two round holes is 2 times the diameter of the larger hole
 - a round hole and a rectangular hole is the larger of 2 times the hole diameter or twice the rectangular hole width
- For multiple holes: The clear distance between the holes must equal or exceed twice the diameter of the largest hole, or twice the longest side of a rectangular hole.

- For joists with more than one span, use the longest span to determine hole location in either span.

- All holes shown on this chart may be located vertically anywhere within the web; a clear distance of at least 1/8" must be maintained from the hole edge to the inner surface of the closest flange.

EXAMPLE:

Determine the allowable location of a 9" round hole in a 14" deep WI joist which has multiple spans of 16' and 20'.

Enter the chart in the left column and find 14" joist depth, move to the right and find 20' in the joist span column and move across the chart to intersect the 9" round hole column. The nearest allowable location to either bearing is 6'-6".

G-P Lam[®] LVL



Depths:

9¼" 9½"
11¼" 11⅞"
14" 16" 18"

Thicknesses:

1¾" or 3½"

Lengths:

Available in lengths up to 60 feet.

Structural Support for Today's Homes

Today, home designs often include grand entrances, wider doorways between rooms, and dramatic window configurations. G-P Lam® LVL is designed for use as floor beams, headers for garage doors, windows and door, and ridge and hip beams.

Multiple pieces of G-P Lam LVL can be assembled easily to obtain greater thicknesses, providing additional strength to carry heavier loads. Greater load capacity means longer, uninterrupted spans.

For better performance, G-P Lam® LVL features FiberGuard™ sealant to provide protection from moisture damage that can cause splits, cupping and warping. The LVL is evenly coated on all four sides and both ends with a wood-tone modified acrylic emulsion film, helping to reduce the moisture absorption rate and to reduce the damage that an unprotected product may sustain. FiberGuard™ sealant also

includes UV inhibitors to minimize color change caused by the sun's ultraviolet rays.

G-P Lam LVL Features & Benefits

- Thicknesses of 1-3/4" and 3-1/2"
- Standard depths of 9-1/4", 9-1/2", 11-1/4", 11-7/8", 14", 16", & 18" (20", 22", & 24" by special order)
- Value Lengths of 24', 28', 32', 36', 40', 44' and 48' (lengths to 60' by special order)
- High design values for bending, stiffness and shear strength
- High strength-to-weight ratio, more than 50% stronger than solid sawn products
- Consistent manufacturing minimizes defects and reduces waste on the job
- Installs as easily as ordinary lumber
- FiberGuard™ sealant offers jobsite protection from moisture
- Backed by a Limited Lifetime Warranty*



Bearing Details 34

**General Notes for
Charts and Tables** 35

Floor Beams 35

**Window and Patio Door
Headers – 2-Story** 36

**Garage Door Headers –
2-Story** 36

**Window and Patio Door
Headers – Roof Only** 37

**Garage Door Headers –
Roof Only** 37

**Roof Hip and
Valley Beam Charts** 38-39

**Bearing Length
Requirements** 40

**Notes for Allowable Uniform
Load Charts** 41

Allowable Uniform Loads
Floor 100% 42-43
Roof 115% (Snow) 44-45
Roof 125% (Non-Snow) 46-47

**Fastening Recommendations
for Top-Loaded, Multiple Piece
Members** 48

**Fastening Recommendations
for Side-Loaded, Multiple Piece
Members** 49

**Tapered Cut Allowable
End Reaction – Truss Roof** 50

**Tapered Cut Allowable
End Reaction –
Conventional (Stick) Roof** 51

Hole Chart and Connectors 52

Framing Connectors 52-53

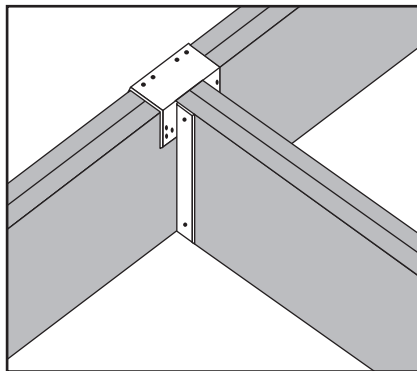
**Beam and Header
Design Properties** 54

Architectural Specifications 55

*See complete warranty for terms, conditions and limitations.

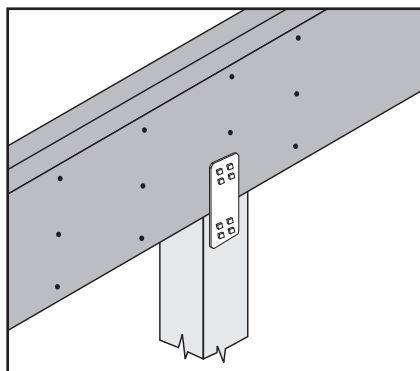
G-P Lam® LVL Bearing Details

Beam-to-Beam Connection



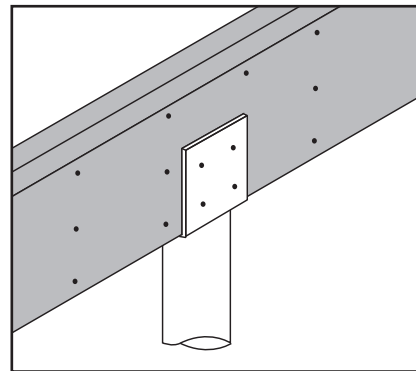
Make sure hanger capacity is appropriate for each application. Hangers must be properly installed to achieve full capacity.

Bearing on Wood Column

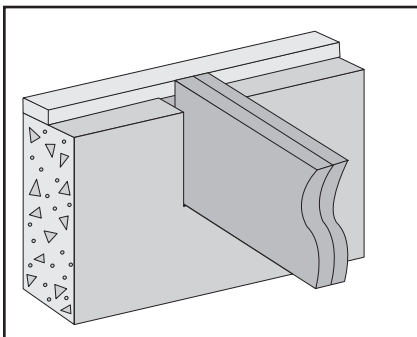


Verify the required bearing area and the ability of the supporting column member to provide adequate strength. Side plates may be required. Consult designer of record. See chart on page 52 for column cap suggestions.

Bearing on Steel Column

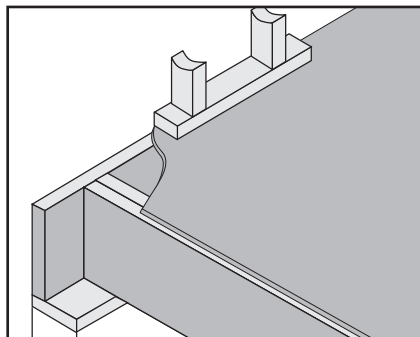


Beam Pocket in Masonry Wall



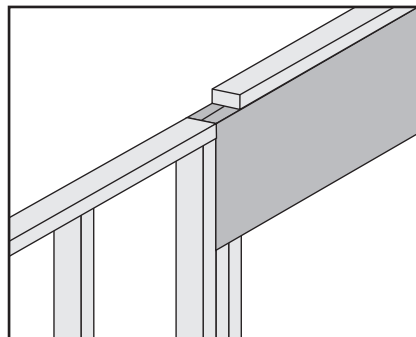
Prevent direct contact of G-P Lam LVL with concrete. Consult local building code for requirements.

Bearing on Exterior Wall



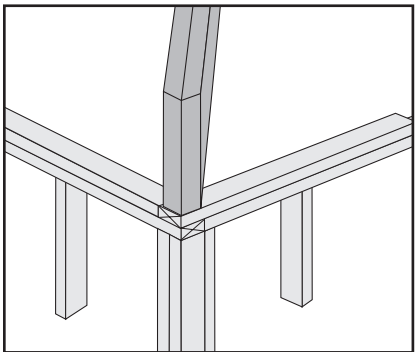
Prevent direct contact of G-P Lam® LVL with concrete. Consult local building code for requirements.

Bearing for Door or Window Header



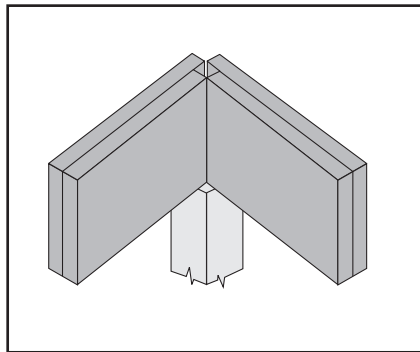
See "Bearing Length Requirements" on page 40.

Low End Hip Bearing

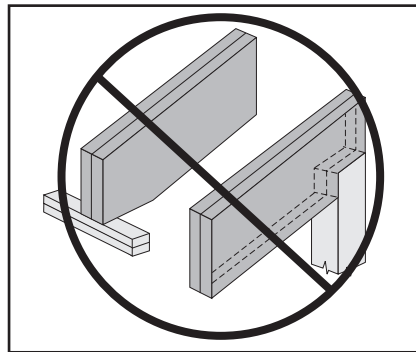


Hip beam must bear completely on plate or post. Seat cut must not extend past inside face of bearing.

High End Hip Bearing



Hip beam must bear on post or in properly designed hanger or other connection.



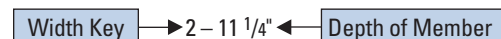
Seat cut must not extend past inside face of bearing. Do not notch beams at bearing.

For fastening recommendations for multiple-piece G-P Lam LVL members, see pages 48 & 49.

General Notes for G-P Lam® LVL Charts and Tables

G-P Lam Laminated Veneer Lumber (LVL) is manufactured in two thicknesses; 1 3/4" and 3 1/2". Multiple pieces may be combined in order to achieve thicker beams. Refer to multiple piece member connections on page 49 for connection patterns and capacities.

Beam sizes in charts and tables use the following key.



For all depths, the following table may be used to achieve net thickness for multiple-ply G-P Lam LVL members.

Width Code Chart

Width Code	Net Thickness	Number of plies ¹ of 1 3/4"	Number of plies ¹ of 3 1/2"	Combinations ¹ 1 3/4" & 3 1/2"
1	1 3/4"	1	None	None
2	3 1/2"	2	1	None
3	5 1/4"	3	None	1 – 1 3/4" + 1 – 3 1/2"
4	7"	4	2	1 – 1 3/4" + 1 – 3 1/2" + 1 – 1 3/4"

1. Multiple-ply members must be connected in accordance with pages 48 and 49.

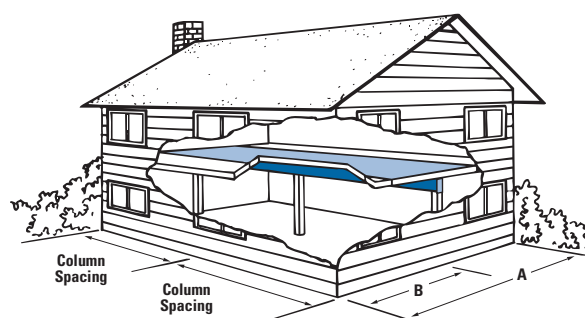
G-P Lam® LVL Floor Beams

The table below shows the size of the beams needed to support various floor systems. The table is valid for loads of one floor only, i.e., a second story floor or one story floor over a basement. (See drawing at right.)

When floor joists span continuously from wall to wall (not cut at beam) this table requires that "B" be not less than 45%, or greater than 55% of "A".

Example: If "A" = 32', "B" must be between 14.4' (32 × .45) and 17.6' (32 × .55)

For non-conforming situations, use FASTBeam® analysis & selection software or contact G-P Engineered Lumber Technical Services.



		Column Spacing (center-to-center)									
		11'	12'	13'	14'	15'	16'	17'	18'	19'	20'
Total Floor Joist Span "A"	24'	2-11 1/4" 3-9 1/4"	2-11 1/4" 3-9 1/2"	2-11 1/8" 3-11 1/4"	2-14" 3-11 1/4"	2-14" 3-11 1/8"	2-16" 3-14"	2-16"+ 3-14"	2-16"+ 3-14"	2-18"+ 3-16"	2-18"+ 3-16"
	28'	2-11 1/4" 3-9 1/4"	2-11 1/8" 3-11 1/4"	2-14" 3-11 1/4"	2-14"+ 3-11 1/4"	2-14"+ 3-11 1/8"	2-16"+ 3-14"	2-16"+ 3-14"	2-18"+ 3-16"	2-18"+ 3-16"	2-18"+ 3-16"
	32'	2-11 1/4" 3-9 1/4"	2-11 1/8" 3-11 1/4"	2-14"+ 3-11 1/4"	2-14"+ 3-11 1/4"	2-16"+ 3-14"	2-16"+ 3-14"	2-16"+ 3-14"	2-18"+ 3-16"	2-18"+ 3-16"	2-18"+ 3-16"
	36'	2-11 1/4"+ 3-11 1/4"	2-14"+ 3-11 1/4"	2-14"+ 3-11 1/4"	2-14"+ 3-11 1/4"	2-16"+ 3-14"	2-16"+ 3-14"	2-18"+ 3-16"	2-18"+ 3-16"	3-16"+	3-18"+
	40'	2-11 1/8"+ 3-11 1/4"	2-14"+ 3-11 1/4"	2-14"+ 3-11 1/8"	2-16"+ 3-14"	2-16"+ 3-14"	2-16"+ 3-14"	3-16"+	3-16"+	3-16"+	3-18"+

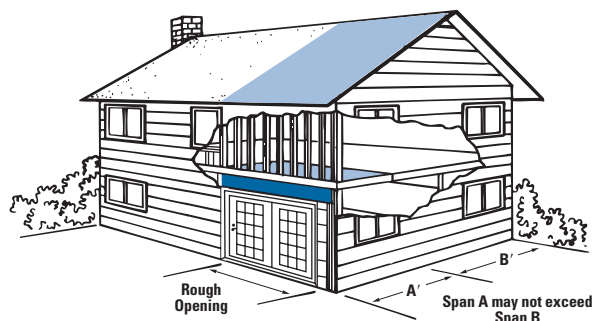
NOTES:

- Table is based on continuous floor joist span and simple or continuous beam span conditions. If floor joists are not continuous above the beam, take the sum of the joist spans then multiply by .8. This is the total floor joist span to consider.
- Required end bearing length (based on 565 psi) is 3.0" unless the subscript + is shown. In that case, 4.5" is required.
- At intermediate supports of continuous spans, use the following guidelines or refer to page 40.
 - 7 1/2" bearing length for beams requiring 3" bearing at the beam ends
 - 10 1/2" bearing length for beams requiring 3" bearing at the beam ends
- Beams require full width bearing. Minimum cripple size for 5 1/4" wide beams is 2 x 6.
- Table is based on residential floor loading of 40 psf live load and 12 psf dead load.
- Live load reductions have been applied per IBC section 1607.9.1.
- Deflection is limited to L/360 at live load.
- For other loading conditions refer to page 42.

G-P Lam® LVL Window and Patio Door Headers – 2-Story

Two-Story Applications

This table considers the combined loads from a wall, second story floor (¼ of total floor joist span) and various roof truss spans with a 2' soffit. Intermediate floor beam assumed. If the soffit exceeds 2', additional engineering will be necessary.



Roof Loading		Snow (115%)										Non-Snow (125%)									
		25 psf LL + 20 psf DL					40 psf LL + 20 psf DL					20 psf LL + 12 psf DL					20 psf LL + 25 psf DL				
Rough Opening		6'	8'	9'	10'	12'	6'	8'	9'	10'	12'	6'	8'	9'	10'	12'	6'	8'	9'	10'	12'
Roof Truss Span with 2' Soffit Assumed	20'	1-9/4"+	1-11/4"+	1-14"+	2-11/4"	2-16"	1-9/4"+	2-9/4"	2-11/4"	2-11/4"	2-16"	1-9/4"+	1-11/4"+	1-14"+	2-11/4"	2-14"	1-9/4"+	1-11/4"+	1-14"+	2-11/4"	2-16"
	24'	1-9/4"+	1-11/4"+	2-9/4"	2-11/4"	2-16"	1-9/4"+	2-9/4"	2-11/4"	2-14"	2-18"	1-9/4"+	1-11/4"+	1-14"+	2-9/4"	2-14"	1-9/4"+	1-11/4"+	2-9/4"	2-11/4"	2-16"
	28'	1-9/4"+	2-9/4"	2-11/4"	2-14"	2-16"	2-9/4"	2-11/4"	2-11/4"	2-14"	2-18"	1-9/4"+	1-11/4"+	2-9/4"	2-11/4"	2-14"	1-9/4"+	2-9/4"	2-11/4"	2-14"	2-16"
	32'	1-9/4"+	2-9/4"	2-11/4"	2-14"	2-18"	2-9/4"	2-11/4"	2-14"	2-14"	3-16"	1-9/4"+	2-9/4"	2-11/4"	2-11/4"	2-16"	1-9/4"+	2-9/4"	2-11/4"	2-14"	2-18"
	36'	2-9/4"	2-11/4"	2-11/4"	2-14"	3-16"	2-9/4"	2-11/4"	2-14"	3-14"	3-16"	1-9/4"+	2-9/4"	2-11/4"	2-14"	2-16"	2-9/4"	2-11/4"	2-11/4"	2-14"	3-16"

+ See note 2.

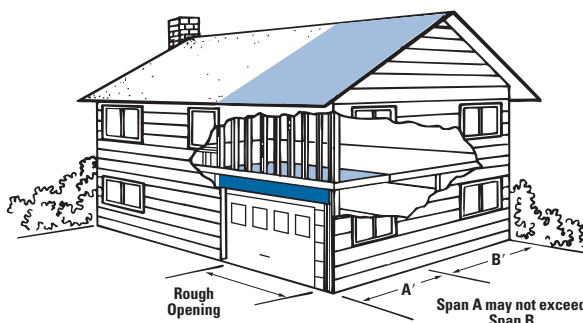
NOTES:

- Required end bearing length (based on 565 psi) is 3.0" unless the subscript + is shown. In that case, 4.5" is required.
- Headers require full width bearing. Minimum cripple size for 5 1/4" wide beams is 2 x 6.
- Table is based on residential floor loading of 40 psf live load and 12 psf dead load and exterior wall weight of 100 plf.
- A beam line down the center of the second floor is assumed.
- Deflection is limited to L/360 and the lesser of L/240 or 5/16" at total load.
- Roof live and dead loads shown are applied vertically to the horizontal projection.

G-P Lam LVL Garage Door Headers – 2-Story

Two-Story Applications

This table considers the combined loads from a wall, second story floor (¼ of total floor joist span) and various roof truss spans with a 2' soffit. Intermediate floor beam assumed. If the soffit exceeds 2', additional engineering will be necessary.



Roof Loading		Snow (115%)									Non-Snow (125%)								
		25 psf LL + 20 psf DL			30 psf LL + 20 psf DL			40 psf LL + 20 psf DL			20 psf LL + 12 psf DL			20 psf LL + 20 psf DL			20 psf LL + 25 psf DL		
Rough Opening		9'3"	16'3"	18'3"	9'3"	16'3"	18'3"	9'3"	16'3"	18'3"	9'3"	16'3"	18'3"	9'3"	16'3"	18'3"	9'3"	16'3"	18'3"
Roof Truss Span with 2' Soffit Assumed	20'	1-11/4"+	2-16"	2-18"	2-9/4"	2-16"	3-16"	2-9/4"	3-14"	3-16"	1-11/4"+	2-16"	2-16"	1-11/4"+	2-16"	2-18"	1-11/4"+	2-16"	2-18"
	24'	2-9/4"	2-16"	3-16"	2-9/4"	3-16"	3-16"	2-11/4"+	3-9/4"	3-16"	1-11/4"+	2-16"	2-18"	2-9/4"	2-16"	3-14"	2-9/4"	2-16"	3-16"
	28'	2-9/4"	3-9/4"	3-16"	2-11/4"+	3-9/4"	3-16"	2-11/4"+	3-9/4"	3-16"	2-9/4"	2-16"	3-14"	2-9/4"	3-14"	3-16"	2-9/4"	3-16"	3-18"
	32'	2-11/4"+	3-16"	3-18"	2-11/4"+	3-9/4"	3-16"	2-11/4"+	3-9/4"	3-16"	2-9/4"	3-14"	3-16"	2-11/4"+	3-16"	3-18"	2-11/4"+	3-9/4"	3-18"
	36'	2-11/4"+	3-9/4"	3-16"	2-11/4"+	3-9/4"	3-16"	2-11/4"+	9/2"	3-16"	2-11/4"+	3-9/4"	3-16"	2-11/4"+	3-16"	3-18"	2-11/4"+	3-9/4"	3-16"

+ See note 2.

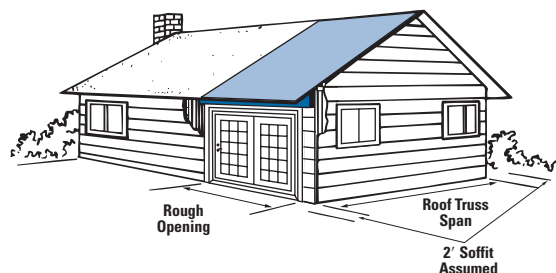
NOTES:

- Required end bearing length (based on 565 psi) is 3.0" unless the subscript + is shown. In that case, 4.5" is required.
- Headers require full width bearing. Minimum cripple size for 5 1/4" wide beams is 2 x 6.
- Table is based on residential floor loading of 40 psf live load and 12 psf dead load and exterior wall weight of 100 plf.
- A beam line down the center of the second floor is assumed.
- Deflection is limited to L/360 at live load and L/240 at total load.
- Roof live and dead loads shown are applied vertically to the horizontal projection.

G-P Lam® LVL Window and Patio Door Headers – Roof Only

Roof Applications

This table indicates the appropriate size header for various roof truss spans with 2' soffit. If the soffit is greater than 2', additional engineering is necessary.



Roof Loading		Snow (115%)										Non-Snow (125%)									
		25 psf LL + 20 psf DL					40 psf LL + 20 psf DL					20 psf LL + 12 psf DL					20 psf LL + 25 psf DL				
Rough Opening		6'	8'	9'	10'	12'	6'	8'	9'	10'	12'	6'	8'	9'	10'	12'	6'	8'	9'	10'	12'
Roof Truss Span with 2' Soffit Assumed	20'	1-9/4"	1-9/4"	1-11/4"	1-11/4"	2-11/4"	1-9/4"	1-11/4"	1-11/4"	1-14"	2-14"	1-9/4"	1-9/4"	1-9/4"	1-11/4"	1-14"	1-9/4"	1-9/4"	1-11/4"	1-11/4"	2-11/4"
	24'	1-9/4"	1-9/4"	1-11/4"	1-14"	2-14"	1-9/4"	1-11/4"	1-14"	2-11/4"	2-14"	1-9/4"	1-9/4"	1-11/4"	2-11/4"	2-11/4"	1-9/4"	1-9/4"	1-11/4"	1-14"	2-14"
	28'	1-9/4"	1-11/4"	1-11/4"	1-14"	2-14"	1-9/4"	1-11/4"	1-14"	2-11/4"	2-16"	1-9/4"	1-9/4"	1-11/4"	2-11/4"	2-11/4"	1-9/4"	1-11/4"	1-11/4"	1-14"	2-14"
	32'	1-9/4"	1-11/4"	1-14"	2-11/4"	2-14"	1-9/4"	2-11/4"	2-11/4"	2-16"	3-14"	1-9/4"	1-9/4"	1-11/4"	2-14"	2-14"	1-9/4"	1-11/4"	1-14"	2-11/4"	2-14"
	36'	1-9/4"	1-11/4"	1-14"	2-11/4"	2-16"	1-9/4"	2-11/4"	2-14"	2-16"	3-14"	1-9/4"	1-9/4"	1-11/4"	2-14"	2-14"	1-9/4"	1-11/4"	1-14"	2-11/4"	2-16"

+ See note 2.

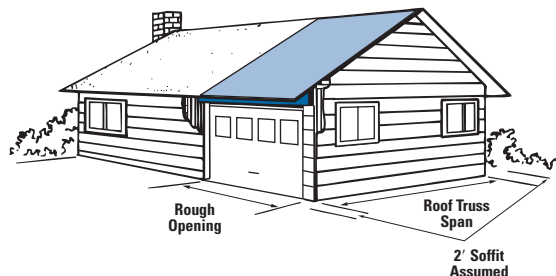
NOTES:

- Required bearing length (based on 565 psi) is 3.0" unless the subscript + is shown. In that case, 4.5" is required.
- Headers require full width bearing. Minimum cripple size for 5 1/4" wide beams is 2 x 6.
- Deflection is limited to L/240 at live load and the lesser of L/180 or 5/16" at total load.
- Roof live and dead loads shown are applied vertically to the horizontal projection.

G-P Lam LVL Garage Door Headers – Roof Only

Roof Applications

This table indicates the appropriate size header for various roof truss spans with 2' soffit. If the soffit is greater than 2', additional engineering is necessary.



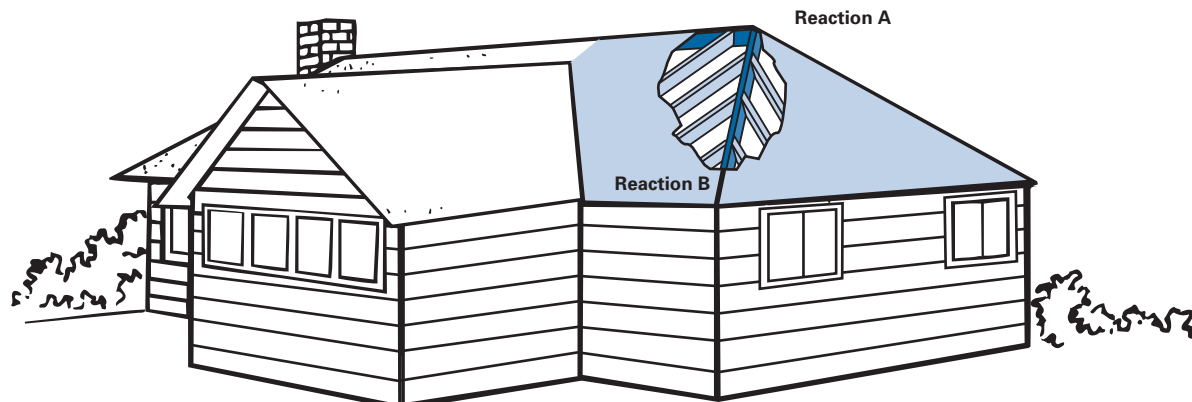
Roof Loading		Snow (115%)									Non-Snow (125%)								
		25 psf LL + 20 psf DL			30 psf LL + 20 psf DL			40 psf LL + 20 psf DL			20 psf LL + 12 psf DL			20 psf LL + 20 psf DL			20 psf LL + 25 psf DL		
Rough Opening		9' 3"	16' 3"	18' 3"	9' 3"	16' 3"	18' 3"	9' 3"	16' 3"	18' 3"	9' 3"	16' 3"	18' 3"	9' 3"	16' 3"	18' 3"	9' 3"	16' 3"	18' 3"
Roof Truss Span with 2' Soffit Assumed	20'	1-9/4"	2-11/4"	2-14"	1-9/4"	2-11/4"	2-14"	1-11/4"	2-14"	2-16"	1-9/4"	1-14"	2-11/4"	1-9/4"	2-11/4"	2-14"	1-9/4"	2-11/4"	2-14"
	24'	1-9/4"	2-14"	2-14"	1-11/4"	2-14"	2-14"	1-11/4"	2-14"	2-16"	1-9/4"	1-14"	2-11/4"	1-9/4"	2-11/4"	2-14"	1-9/4"	2-14"	2-14"
	28'	1-11/4"	2-14"	2-16"	1-11/4"	2-14"	2-16"	2-9/4"	2-16"	3-14"	1-9/4"	2-11/4"	2-14"	1-9/4"	2-14"	2-14"	1-11/4"	2-14"	2-16"
	32'	1-11/4"	2-14"	2-16"	1-11/4"	2-14"	2-16"	2-9/4"	3-14"	3-16"	1-9/4"	2-11/4"	2-14"	1-11/4"	2-14"	2-16"	1-11/4"	2-14"	2-16"
	36'	1-11/4"	2-14"	2-16"	2-9/4"	2-16"	3-14"	2-9/4"	3-14"	3-16"	1-9/4"	2-14"	2-14"	1-11/4"	2-14"	2-16"	1-11/4"	2-14"	2-16"

+ See note 2.

NOTES:

- Required end bearing length (based on 565 psi) is 3.0" unless the subscript + is shown. In that case, 4.5" is required.
- Headers require full width bearing. Minimum cripple size for 5 1/4" wide beams is 2 x 6.
- Deflection is limited to L/240 at live load and L/180 at total load.
- Roof live and dead loads shown are applied vertically to the horizontal projection.

G-P Lam® LVL Roof Hip Beam Chart



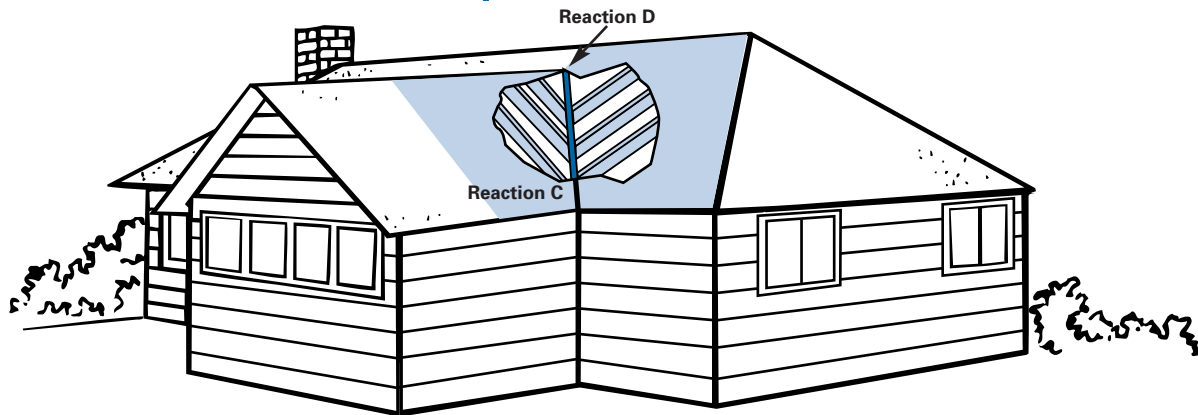
2.0E G-P Lam LVL

		Roof Loading Snow (115%)								
		20 psf LL + 13 psf DL			30 psf LL + 13 psf DL			40 psf LL + 13 psf DL		
		Roof Slope			Roof Slope			Roof Slope		
		up to 4/12	up to 8/12	up to 12/12	up to 4/12	up to 8/12	up to 12/12	up to 4/12	up to 8/12	up to 12/12
Longest horizontal rafter span	12'	Hip Beam	1 – 11¼"	1 – 11¼"	1 – 11¼"	1 – 11¼"	1 – 11¼"	1 – 11¼"	1 – 11¼"	1 – 14"
		Depth	2 – 9¼"	2 – 9¼"	2 – 9¼"	2 – 9¼"	2 – 9¼"	2 – 9¼"	2 – 9¼"	2 – 11¼"
		Order Length (ft)	22	24	26	22	24	26	22	26
	14'	React. A (lbs)	1,745	1,805	1,895	2,225	2,285	2,380	2,705	2,870
		React. B (lbs)	895	925	975	1,135	1,170	1,220	1,375	1,470
		Hip Beam	1 – 14"	1 – 14"	1 – 14"	1 – 14"	1 – 14"	1 – 14"	2 – 11½"	2 – 11½"
	16'	Depth	2 – 9½"	2 – 11¼"	2 – 11¼"	2 – 11¼"	2 – 11¼"	2 – 11¼"	3 – 11¼"	3 – 11¼"
		Order Length (ft)	26	28	30	26	28	30	26	30
		React. A (lbs)	2,380	2,460	2,585	3,035	3,115	2,540	3,690	3,820
	18'	React. B (lbs)	1,225	1,265	1,330	1,550	1,600	1,310	1,875	1,970
		Hip Beam	2 – 11½"	2 – 11½"	2 – 14"	2 – 14"	2 – 14"	2 – 14"	2 – 14"	2 – 16"
		Depth	3 – 11¼"	3 – 11¼"	3 – 11¼"	3 – 11¼"	3 – 11¼"	3 – 11¼"	3 – 11¼"	3 – 14"
	20'	Order Length (ft)	28	30	34	28	30	34	28	34
		React. A (lbs)	3,150	3,285	3,450	4,025	4,135	4,330	4,880	5,185
		React. B (lbs)	1,640	1,720	1,815	2,085	2,150	2,270	2,515	2,695
	22'	Hip Beam	2 – 14"	2 – 14"	2 – 16"	2 – 16"	2 – 16"	2 – 16"	2 – 16"	2 – 18"
		Depth	3 – 11½"	3 – 14"	3 – 14"	3 – 14"	3 – 14"	3 – 14"	3 – 14"	3 – 16"
		Order Length (ft)	32	34	36	32	34	36	32	36
	24'	React. A (lbs)	3,995	4,160	4,400	5,100	5,265	5,480	6,200	6,690
		React. B (lbs)	2,080	2,180	2,330	2,645	2,750	2,870	3,210	3,535
		Hip Beam	2 – 16"	2 – 16"	2 – 18"	2 – 18"	2 – 18"	2 – 18"	2 – 18"	—
	26'	Depth	3 – 14"	3 – 14"	3 – 16"	3 – 16"	3 – 16"	3 – 16"	3 – 16"	3 – 18"
		Order Length (ft)	34	36	40	34	36	40	34	40
		React. A (lbs)	4,960	5,135	5,540	6,375	6,600	7,020	7,745	8,350
	28'	React. B (lbs)	2,600	2,695	2,985	3,350	3,490	3,795	4,050	4,460
		Hip Beam	2 – 18"	2 – 18"	—	—	—	—	—	—
		Depth	3 – 16"	3 – 16"	3 – 18"	3 – 18"	3 – 18"	3 – 18"	3 – 18"	—
	30'	Order Length (ft)	38	40	44	38	40	44	38	44
		React. A (lbs)	6,110	6,465	6,815	7,850	8,080	8,430	9,465	10,040
		React. B (lbs)	3,250	3,515	3,720	4,190	4,325	4,530	4,995	5,335
	32'	Hip Beam	—	—	—	—	—	—	—	—
		Depth	3 – 18"	3 – 18"	—	—	—	—	—	—
		Order Length (ft)	40	42	46	40	42	—	—	—
	34'	React. A (lbs)	7,370	7,640	8,050	9,290	9,560	—	—	—
		React. B (lbs)	3,970	4,130	4,365	4,930	5,090	—	—	—
		Hip Beam	—	—	—	—	—	—	—	—
	36'	Depth	4 – 16"	4 – 18"	4 – 18"	4 – 18"	4 – 18"	—	—	—
		Order Length (ft)	42	44	48	42	44	—	—	—
		React. A (lbs)	8,540	8,865	9,350	10,690	10,960	—	—	—
	38'	React. B (lbs)	4,540	4,755	5,000	5,665	5,830	—	—	—
		Hip Beam	—	—	—	—	—	—	—	—
		Depth	—	—	—	—	—	—	—	—
	40'	Order Length (ft)	—	—	—	—	—	—	—	—
		React. A (lbs)	—	—	—	—	—	—	—	—
		React. B (lbs)	—	—	—	—	—	—	—	—

NOTES:

- 2'-0" maximum roof overhang assumed for order length.
- Provide posts at both high end and low end to support Reactions A and B. Provide 3/4" minimum bearing at each end based on Douglas Fir-Larch or Southern Pine post or plate material.
- Thrust resistant connections should be considered at bearing locations.
- For non-equal roof slopes, use the greatest roof slope and the longest L distance.
- Chart is based on triangular loading applied to the hip member. Live load is calculated as applied vertically to the horizontal projection of the rafter and dead load is calculated along the rafter length.
- Size based on Roof Snow applications with a load duration factor of 115% and deflection criterion of L/240 live load and L/180 total load.
- Refer to page 49 "Fastening Recommendations for Side-Loaded, Multiple-Piece Members." Use L distance to determine span-carried length or uniform loading.
- Reactions include heaviest beam weight.

G-P Lam® LVL Roof Valley Beam Chart



2.0E G-P Lam LVL

		Roof Loading Snow (115%)								
		20 psf LL + 13 psf DL			30 psf LL + 13 psf DL			40 psf LL + 13 psf DL		
		Roof Slope			Roof Slope			Roof Slope		
		up to 4/12	up to 8/12	up to 12/12	up to 4/12	up to 8/12	up to 12/12	up to 4/12	up to 8/12	up to 12/12
Longest horizontal rafter span	12'	Valley Beam Depth	1 – 11¼"	1 – 11¼"	1 – 11¼"	1 – 11¼"	1 – 11¼"	1 – 11¼"	1 – 11¼"	1 – 14"
		Order Length (ft)	22	24	26	22	24	26	22	24
		React. C (lbs)	1,745	1,805	1,895	2,225	2,285	2,380	2,705	2,770
		React. D (lbs)	895	925	975	1,135	1,170	1,220	1,375	1,410
	14'	Valley Beam Depth	1 – 14"	1 – 14"	1 – 14"	1 – 14"	1 – 14"	1 – 14"	2 – 11½"	2 – 11½"
		Order Length (ft)	26	28	30	26	28	30	26	28
		React. C (lbs)	2,380	2,460	2,585	3,035	3,115	2,540	3,690	3,820
		React. D (lbs)	1,225	1,265	1,330	1,550	1,600	1,310	1,875	1,970
	16'	Valley Beam Depth	2 – 11½"	2 – 11½"	2 – 14"	2 – 14"	2 – 14"	2 – 14"	2 – 14"	2 – 16"
		Order Length (ft)	28	30	34	28	30	34	28	30
		React. C (lbs)	3,150	3,285	3,450	4,025	4,135	4,330	4,880	5,015
		React. D (lbs)	1,640	1,720	1,815	2,085	2,150	2,270	2,515	2,600
	18'	Valley Beam Depth	2 – 14"	2 – 14"	2 – 16"	2 – 16"	2 – 16"	2 – 16"	2 – 16"	2 – 18"
		Order Length (ft)	32	34	36	32	34	36	32	34
		React. C (lbs)	3,995	4,160	4,400	5,100	5,265	5,480	6,200	6,345
		React. D (lbs)	2,080	2,180	2,330	2,645	2,750	2,870	3,210	3,290
	20'	Valley Beam Depth	2 – 16"	2 – 16"	2 – 18"	2 – 18"	2 – 18"	2 – 18"	2 – 18"	2 – 18"
		Order Length (ft)	34	36	40	34	36	40	34	36
		React. C (lbs)	4,960	5,135	5,540	6,375	6,600	7,020	7,745	7,930
		React. D (lbs)	2,600	2,695	2,985	3,350	3,490	3,795	4,050	4,160
	22'	Valley Beam Depth	2 – 18"	2 – 18"	—	—	—	—	—	—
		Order Length (ft)	38	40	44	38	40	44	38	40
		React. C (lbs)	6,110	6,465	6,815	7,850	8,080	8,430	9,465	9,695
		React. D (lbs)	3,250	3,515	3,720	4,190	4,325	4,530	4,995	5,130
	24'	Valley Beam Depth	3 – 18"	3 – 18"	—	—	—	—	—	—
		Order Length (ft)	40	42	46	40	42	—	—	—
		React. C (lbs)	7,370	7,640	8,050	9,290	9,560	—	—	—
		React. D (lbs)	3,970	4,130	4,365	4,930	5,090	—	—	—

NOTES:

- 2'-0" maximum roof overhang assumed for order length.
- Provide posts at both high end and low end to support Reactions C and D. Provide 3½" minimum bearing at each end based on Douglas Fir-Larch or Southern Pine post or plate material.
- Thrust resistant connections should be considered at bearing locations.
- For non-equal roof slopes, use the greatest roof slope and the longest L distance.
- Chart is based on triangular loading applied to the hip member. Live load is calculated as applied vertically to the horizontal projection of the rafter and dead load is calculated along the rafter length.
- Size based on Roof Snow applications with a load duration factor of 115% and deflection criterion of L/240 live load and L/180 total load.
- Refer to page 49 "Fastening Recommendations for Side-Loaded, Multiple-Piece Members." Use L distance to determine span-carried length or uniform loading.
- Reactions include heaviest beam weight.

G-P Lam® LVL Bearing Length Requirements (Inches)

Reaction (lbs.)	Support Material															
	SPF South (335 PSI)				Hem-Fir (405 PSI)				Southern Pine (565 PSI)				G-P Lam LVL (750 PSI)			
	Beam Width				Beam Width				Beam Width				Beam Width			
	1¼"	3½"	5¼"	7"	1¼"	3½"	5¼"	7"	1¼"	3½"	5¼"	7"	1¼"	3½"	5¼"	7"
1,000	1¼	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½	1½
2,000	3½	1¼	1½	1½	3	1½	1½	1½	2¼	1½	1½	1½	1¼	1½	1½	1½
3,000	5¼	2¼	1¼	1½	4¼	2¼	1½	1½	3¼	1¼	1½	1½	2½	1½	1½	1½
4,000	7	3½	2½	1¼	5¼	3	2	1½	4¼	2¼	1½	1½	3¼	1¼	1½	1½
5,000	8¼	4½	3	2¼	7¼	3¼	2½	2	5¼	2¼	1¼	1½	4	2	1½	1½
6,000		5¼	3½	2¼	8½	4¼	3	2¼	6¼	3¼	2¼	1¼	4¼	2½	1¼	1½
7,000		6	4	3		5	3½	2½	7¼	3¼	2½	2	5½	2¼	2	1½
8,000		7	4¼	3½		5¼	4	3	8¼	4¼	2¼	2¼	6¼	3¼	2¼	1¼
9,000		7¼	5¼	4		6½	4¼	3¼	9¼	4¼	3¼	2½	7	3½	2½	1¼
10,000		8¼	5¼	4½		7¼	4¼	3¼		5¼	3½	2¼	7¼	4	2¼	2
11,000			6½	4¼		8	5¼	4		5¼	3¼	3	8½	4¼	3	2¼
12,000			7	5¼		8½	5¼	4¼		6¼	4¼	3¼	9¼	4¼	3¼	2½
13,000			7½	5¼		9¼	6¼	4¼		6¼	4½	3½		5	3½	2½
14,000			8	6			6¼	5		7¼	4¼	3¼		5½	3¼	2¼
15,000			8¼	6½			7¼	5½		7¼	5¼	4		5¼	4	3
16,000			9¼	7			7¼	5¼		8¼	5½	4¼		6¼	4¼	3¼
17,000				7¼			8	6		8¼	5¼	4½		6½	4½	3¼
18,000				7¼			8½	6½		9¼	6¼	4¼		7	4¼	3½
19,000				8¼			9	6¼			6½	5		7¼	5	3¼
20,000				8¼				7¼			6¼	5¼		7¼	5¼	4
21,000				9				7½			7¼	5½		8	5½	4
22,000								8			7½	5¼		8½	5¼	4¼
23,000								8¼			8	6		9	6	4½
24,000								8½			8¼	6¼		9¼	6¼	4¼

1. Minimum required bearing length is 1½".
2. Bearing across full width of beam or header is required.
3. Moisture content of lumber must not exceed 19%.
4. Confirmation of structural adequacy of supporting member is required.
5. Lateral support of G-P Lam® LVL is required at bearing points.
6. When plate material is of **Hem-Fir (North)**, use bearing lengths shown for SPF (South).
7. When plate material is of **Southern Pine graded non-dense** or of **SPF**, use bearing lengths shown for Hem-Fir.
8. When plate material is of **Douglas Fir-Larch** or **Doug Fir-Larch (North)**, use bearing lengths shown for Southern Pine.
9. When G-P Lam LVL rests **on steel, in a hanger, or directly on end grain of studs or cripples** of the lumber listed above, use bearing lengths shown for G-P Lam LVL. Verify adequacy of the support.
10. No reduction in bearing length is allowed for duration of load.

Using Allowable Uniform Load Tables (Floor and Roof)

1. **Tables are based on uniform loads, the more restrictive of simple or continuous spans, and dry-use conditions.** For other loads or span configurations, use FASTBeam analysis & selection software or contact your G-P representative.
2. Beam Thickness is the net thickness of the beam. For multiple-piece members beam thickness may be achieved by properly connecting multiple plies of G-P Lam® LVL lumber beams. See page 49 for connection details.
3. To size a beam it is necessary to check both live load and total load. Selected beam must work in both rows. When no live load is shown, total load will control, unless floor live load deflections other than L/360 are checked per note 4.
4. For floor live load deflection limits of L/480 or L/600, multiply the value in the floor 'LL' row (or 'TL' when 'LL' is not shown) by .75 or .60 respectively.
5. To size a member for a span not shown, use capacities for the next larger span shown (example: for 7' span, use values shown for 8' span).
6. Verify deflection limits with local building code requirements.
7. Bearing across full width of beam is assumed.
8. Assumes 565 psi bearing stress limited by douglas fir, southern yellow pine or other dense supporting material. For SPF or other less dense materials, either double the bearing length shown or refer to Bearing Length Requirements on page 40.
9. Bearing length may be adjusted if a beam is not fully loaded. For example, if 4.2" of bearing is required for a beam with maximum total load capacity of 1000 PLF yet the total design load is only 700 PLF the bearing length may be adjusted as follows: $700/1000 \times 4.2 = 2.94"$ minimum (use 2 cripples for 3"). In no case may end bearing length be less than 1½" or intermediate bearing length be less than 3".
10. Provide lateral support at bearing points, and continuous lateral support along the top edge of beam.
11. Nails installed in the narrow face (top edge) shall not be spaced closer than 4" for 10d common and 3" for 8d common.
12. **1¾" thick 16" and 18" deep beams must only be used in multiple-piece members.**
13. 1¾" thick multiple member nailing schedule (TOP LOADED):
 - 9¼", 9½", 11¼" & 11½" G-P Lam LVL: Two rows of 16d nails at 12" o.c. Maintain a 2" edge distance.
 - 14", 16" & 18" G-P Lam LVL: Three rows of 16d nails (from each side) at 12" o.c. Maintain a 2" edge distance.For side loaded multiple-piece members, see table on page 49.
14. Roof members must slope for drainage.

EXAMPLE:

Select a G-P Lam LVL beam to carry 520 PLF live load + 200 PLF dead load. Beam supports both floor and roof, and spans 10'

When a beam carries floor and roof, use tables for floor loads; these tables are based on more stringent criteria than those used for roof loads. Use the table titled Floor 100%, on page 42. Adding 520 PLF and 200 PLF gives a total load of 720 PLF. Find 10' in the left most column. To the right are three rows showing Live Load L/360, Total Load and Minimum End and Minimum Interior Bearing requirements in inches. In the row marked Total Load, move to the right to locate a total load of at least 720 PLF. 1¾" x 11½" G-P Lam LVL Beam can carry 745 PLF total load. Check live load capacity. 1¾" x 11½" can carry 648 PLF live load, so live load capacity is also adequate. Note required end bearing length is 3.8" and 9.5" for interior bearing of multiple spans. (See Note 9 above)

If less bearing length or a depth less than 11½" is desired, check the capacity of 3½" LVL beams. In the row marked Total Load, move further to the right to locate a total load of at least 720 PLF. A 3½" wide x 9¼" deep member can carry 960 PLF total load. Check that live load capacity is at least 520 PLF. 3½" x 9¼" beams can carry 646 PLF, which is sufficient. Use 3½" x 9¼" deep. Required end bearing is 2.4" and 6.1" is required for interior bearing of multiple spans.

Allowable Uniform Loads — Floor 100%

2.0E G-P Lam® LVL

Span (Ft)		Allowable Uniform Loads* (In Pounds Per Lineal Foot)											
		1 3/4" Thick G-P Lam LVL Beams						3 1/2" Thick G-P Lam LVL Beams					
		Condition	9 1/4"	9 1/2"	11 1/4"	11 1/2"	14"	9 1/4"	9 1/2"	11 1/4"	11 1/2"	14"	16"
6'	Live Load L/360												
	Total Load	1028	1063	1325	1425	1576	2056	2127	2650	2849	3151	3149	3147
	Min. End / Int.Brg.(in.)	3.1 / 7.8	3.2 / 8.1	4.0 / 10.1	4.3 / 10.8	4.8 / 12.0	3.1 / 7.8	3.2 / 8.1	4.0 / 10.1	4.3 / 10.8	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0
8'	Live Load L/360	602	648				1204	1296					
	Total Load	723	746	916	979	1180	1446	1493	1831	1958	2360	2358	2356
	Min. End / Int.Brg.(in.)	2.9 / 7.4	3.0 / 7.6	3.7 / 9.3	4.0 / 10.0	4.8 / 12.0	2.9 / 7.4	3.0 / 7.6	3.7 / 9.3	4.0 / 10.0	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0
10'	Live Load L/360	323	348	558	648		646	696	1117	1296			
	Total Load	480	518	699	745	909	960	1035	1398	1490	1818	1884	1882
	Min. End / Int.Brg.(in.)	2.4 / 6.1	2.6 / 6.6	3.6 / 8.9	3.8 / 9.5	4.6 / 11.6	2.4 / 6.1	2.6 / 6.6	3.6 / 8.9	3.8 / 9.5	4.6 / 11.6	4.8 / 12.0	4.8 / 12.0
11'	Live Load L/360	246	266	428	498	782	492	531	857	996	1565		
	Total Load	365	394	599	664	809	730	788	1198	1328	1618	1711	1709
	Min. End / Int.Brg.(in.)	2.1 / 5.1	2.2 / 5.5	3.4 / 8.4	3.7 / 9.3	4.5 / 11.3	2.1 / 5.1	2.2 / 5.5	3.4 / 8.4	3.7 / 9.3	4.5 / 11.3	4.8 / 12.0	4.8 / 12.0
12'	Live Load L/360	192	207	335	391	617	383	414	671	781	1234		
	Total Load	283	306	498	557	729	566	612	995	1114	1457	1567	1565
	Min. End / Int.Brg.(in.)	1.7 / 4.4	1.9 / 4.7	3.1 / 7.6	3.4 / 8.5	4.5 / 11.2	1.7 / 4.4	1.9 / 4.7	3.1 / 7.6	3.4 / 8.5	4.5 / 11.2	4.8 / 12.0	4.8 / 12.0
13'	Live Load L/360	152	164	267	312	495	304	329	534	623	989	1429	
	Total Load	224	242	395	462	647	448	484	791	924	1295	1446	1444
	Min. End / Int.Brg.(in.)	1.5 / 3.8	1.6 / 4.1	2.6 / 6.6	3.1 / 7.7	4.3 / 10.7	1.5 / 3.8	1.6 / 4.1	2.6 / 6.6	3.1 / 7.7	4.3 / 10.7	4.8 / 12.0	4.8 / 12.0
14'	Live Load L/360	123	133	216	252	402	245	265	432	504	804	1166	
	Total Load	180	194	319	373	557	359	389	638	746	1115	1341	1339
	Min. End / Int.Brg.(in.)	1.5 / 3.3	1.5 / 3.5	2.3 / 5.7	2.7 / 6.7	4.0 / 10.0	1.5 / 3.3	1.5 / 3.5	2.3 / 5.7	2.7 / 6.7	4.0 / 10.0	4.8 / 12.0	4.8 / 12.0
15'	Live Load L/360	100	108	177	207	331	201	217	354	414	662	963	
	Total Load	146	158	260	305	485	292	316	521	610	969	1251	1249
	Min. End / Int.Brg.(in.)	1.5 / 3.0	1.5 / 3.1	2.0 / 5.0	2.4 / 5.9	3.7 / 9.3	1.5 / 3.0	1.5 / 3.1	2.0 / 5.0	2.4 / 5.9	3.7 / 9.3	4.8 / 12.0	4.8 / 12.0
16'	Live Load L/360	83	90	147	172	276	166	180	294	344	551	804	1117
	Total Load	120	130	215	252	407	241	261	430	505	814	1096	1170
	Min. End / Int.Brg.(in.)	1.5 / 3.0	1.5 / 3.0	1.8 / 4.5	2.1 / 5.2	3.3 / 8.4	1.5 / 3.0	1.5 / 3.0	1.8 / 4.5	2.1 / 5.2	3.3 / 8.4	4.5 / 11.2	4.8 / 12.0
17'	Live Load L/360	70	75	123	144	232	139	150	246	288	464	678	944
	Total Load	100	108	180	211	341	200	217	359	422	682	969	1100
	Min. End / Int.Brg.(in.)	1.5 / 3.0	1.5 / 3.0	1.6 / 4.0	1.9 / 4.6	3.0 / 7.5	1.5 / 3.0	1.5 / 3.0	1.6 / 4.0	1.9 / 4.6	3.0 / 7.5	4.2 / 10.6	4.8 / 12.0
18'	Live Load L/360	59	64	104	122	197	117	127	209	244	393	577	804
	Total Load	84	91	151	178	289	168	182	303	355	577	850	1038
	Min. End / Int.Brg.(in.)	1.5 / 3.0	1.5 / 3.0	1.5 / 3.6	1.7 / 4.2	2.7 / 6.7	1.5 / 3.0	1.5 / 3.0	1.5 / 3.6	1.7 / 4.2	2.7 / 6.7	3.9 / 9.8	4.8 / 12.0
19'	Live Load L/360	50	54	89	104	168	100	108	178	209	337	494	691
	Total Load	71	77	128	151	246	142	154	257	302	492	726	967
	Min. End / Int.Brg.(in.)	1.5 / 3.0	1.5 / 3.0	1.5 / 3.2	1.5 / 3.8	2.4 / 6.1	1.5 / 3.0	1.5 / 3.0	1.5 / 3.2	1.5 / 3.8	2.4 / 6.1	3.6 / 8.9	4.7 / 11.8
20'	Live Load L/360	43	47	77	90	145	86	93	153	180	290	427	597
	Total Load	60	65	110	129	211	121	131	219	258	422	625	872
	Min. End / Int.Brg.(in.)	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.4	2.2 / 5.5	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.4	2.2 / 5.5	3.2 / 8.1	4.5 / 11.2
22'	Live Load L/360	32	35	58	68	110	65	70	116	136	220	324	455
	Total Load	44	48	82	96	158	89	97	163	193	317	471	666
	Min. End / Int.Brg.(in.)	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.8 / 4.6	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.8 / 4.6	2.7 / 6.8	3.8 / 9.5
24'	Live Load L/360		27	45	53	85		54	90	105	170	252	354
	Total Load		36	62	73	121		73	124	147	243	363	515
	Min. End / Int.Brg.(in.)		1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.6 / 3.9		1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.6 / 3.9	2.3 / 5.7	3.2 / 8.1
26'	Live Load L/360			35	41	67			71	83	135	199	281
	Total Load			48	57	95			96	113	189	284	405
	Min. End / Int.Brg.(in.)			1.5 / 3.0	1.5 / 3.0	1.5 / 3.3			1.5 / 3.0	1.5 / 3.0	1.5 / 3.3	2.0 / 4.9	2.8 / 6.9
28'	Live Load L/360			28	33	54			57	67	108	160	226
	Total Load			37	44	75			75	89	150	226	323
	Min. End / Int.Brg.(in.)			1.5 / 3.0	1.5 / 3.0	1.5 / 3.0			1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.7 / 4.3	2.4 / 6.0

*Can be applied to the beam in addition to its own weight.

See notes on page 41.

KEY TO TABLES

Live Load L/360 = Maximum live load — limits deflection to L/360

Total Load = Maximum total load — limits deflection to L/240

Min. End / Int. Brg. (in.) = Required minimum end bearing for simple or multiple span beams and minimum interior bearing for multiple span beams based on plate bearing stress of 565 psi.

See note 9 page 41.

Allowable Uniform Loads — Floor 100%

2.0E G-P Lam® LVL

Span (Ft)	Condition	Allowable Uniform Loads* (In Pounds Per Lineal Foot)													
		5¼" Thick G-P Lam LVL Beams							7" Thick G-P Lam LVL Beams						
		9"	9½"	11¼"	11½"	14"	16"	18"	9"	9½"	11¼"	11½"	14"	16"	18"
6'	Live Load L/360	3085	3190	3975	4274	4727	4724	4721	4112	4254	5300	5698	6302	6298	6294
	Total Load Min. End / Int. Brg. (in.)	3.1 / 7.8	3.2 / 8.1	4.0 / 10.1	4.3 / 10.8	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0	3.1 / 7.8	3.2 / 8.1	4.0 / 10.1	4.3 / 10.8	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0
8'	Live Load L/360	1806	1944	2747	2937	3540	3537	3534	2408	2592	3662	3916	4720	4716	4712
	Total Load Min. End / Int. Brg. (in.)	2.9 / 7.4	3.0 / 7.6	3.7 / 9.3	4.0 / 10.0	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0	2.9 / 7.4	3.0 / 7.6	3.7 / 9.3	4.0 / 10.0	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0
10'	Live Load L/360	968	1044	1675	1944	2728	2825	2822	1292	1392	2234	2592	3636	3768	3764
	Total Load Min. End / Int. Brg. (in.)	2.4 / 6.1	2.6 / 6.6	3.6 / 8.9	3.8 / 9.5	4.6 / 11.6	4.8 / 12.0	4.8 / 12.0	2.4 / 6.1	2.6 / 6.6	3.6 / 8.9	3.8 / 9.5	4.6 / 11.6	4.8 / 12.0	4.8 / 12.0
11'	Live Load L/360	738	797	1285	1494	2347	2567	2564	984	1062	1714	1992	3130	3422	3418
	Total Load Min. End / Int. Brg. (in.)	2.1 / 5.1	2.2 / 5.5	3.4 / 8.4	3.7 / 9.3	4.5 / 11.3	4.8 / 12.0	4.8 / 12.0	2.1 / 5.1	2.2 / 5.5	3.4 / 8.4	3.7 / 9.3	4.5 / 11.3	4.8 / 12.0	4.8 / 12.0
12'	Live Load L/360	575	621	1006	1172	1851	2186	2351	766	828	1342	1562	2468	2914	3130
	Total Load Min. End / Int. Brg. (in.)	1.7 / 4.4	1.9 / 4.7	3.1 / 7.6	3.4 / 8.5	4.5 / 11.2	4.8 / 12.0	4.8 / 12.0	1.7 / 4.4	1.9 / 4.7	3.1 / 7.6	3.4 / 8.5	4.5 / 11.2	4.8 / 12.0	4.8 / 12.0
13'	Live Load L/360	456	493	801	935	1484	2143	2165	608	658	1068	1246	1978	2858	2888
	Total Load Min. End / Int. Brg. (in.)	1.5 / 3.8	1.6 / 4.1	2.6 / 6.6	3.1 / 7.7	4.3 / 10.7	4.8 / 12.0	4.8 / 12.0	1.5 / 3.8	1.6 / 4.1	2.6 / 6.6	3.1 / 7.7	4.3 / 10.7	4.8 / 12.0	4.8 / 12.0
14'	Live Load L/360	368	398	648	757	1206	1749	2009	490	530	864	1008	1608	2332	2678
	Total Load Min. End / Int. Brg. (in.)	1.5 / 3.3	1.5 / 3.5	2.3 / 5.7	2.7 / 6.7	4.0 / 10.0	4.8 / 12.0	4.8 / 12.0	1.5 / 3.3	1.5 / 3.5	2.3 / 5.7	2.7 / 6.7	4.0 / 10.0	4.8 / 12.0	4.8 / 12.0
15'	Live Load L/360	301	325	531	621	993	1445	1873	402	434	708	828	1324	1926	2498
	Total Load Min. End / Int. Brg. (in.)	1.5 / 3.0	1.5 / 3.1	2.0 / 5.0	2.4 / 5.9	3.7 / 9.3	4.8 / 12.0	4.8 / 12.0	1.5 / 3.0	1.5 / 3.1	2.0 / 5.0	2.4 / 5.9	3.7 / 9.3	4.8 / 12.0	4.8 / 12.0
16'	Live Load L/360	249	269	441	516	827	1206	1675	332	360	588	688	1102	1608	2234
	Total Load Min. End / Int. Brg. (in.)	1.5 / 3.0	1.5 / 3.0	1.8 / 4.5	2.1 / 5.2	3.3 / 8.4	4.5 / 11.2	4.8 / 12.0	1.5 / 3.0	1.5 / 3.0	1.8 / 4.5	2.1 / 5.2	3.3 / 8.4	4.5 / 11.2	4.8 / 12.0
17'	Live Load L/360	209	225	370	433	695	1017	1416	278	300	492	576	928	1356	1888
	Total Load Min. End / Int. Brg. (in.)	1.5 / 3.0	1.5 / 3.0	1.6 / 4.0	1.9 / 4.6	3.0 / 7.5	4.2 / 10.6	4.8 / 12.0	1.5 / 3.0	1.5 / 3.0	1.6 / 4.0	1.9 / 4.6	3.0 / 7.5	4.2 / 10.6	4.8 / 12.0
18'	Live Load L/360	176	191	313	366	590	865	1206	234	254	418	488	786	1154	1608
	Total Load Min. End / Int. Brg. (in.)	1.5 / 3.0	1.5 / 3.0	1.5 / 3.6	1.7 / 4.2	2.7 / 6.7	3.9 / 9.8	4.8 / 12.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.6	1.7 / 4.2	2.7 / 6.7	3.9 / 9.8	4.8 / 12.0
19'	Live Load L/360	150	163	267	313	505	741	1036	200	216	356	418	674	988	1382
	Total Load Min. End / Int. Brg. (in.)	1.5 / 3.0	1.5 / 3.0	1.5 / 3.2	1.5 / 3.8	2.4 / 6.1	3.6 / 8.9	4.7 / 11.8	1.5 / 3.0	1.5 / 3.0	1.5 / 3.2	1.5 / 3.8	2.4 / 6.1	3.6 / 8.9	4.7 / 11.8
20'	Live Load L/360	129	140	230	269	435	640	896	172	186	306	360	580	854	1194
	Total Load Min. End / Int. Brg. (in.)	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.4	2.2 / 5.5	3.2 / 8.1	4.5 / 11.2	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.4	2.2 / 5.5	3.2 / 8.1	4.5 / 11.2
22'	Live Load L/360	97	105	174	204	330	486	683	130	140	232	272	440	648	910
	Total Load Min. End / Int. Brg. (in.)	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.8 / 4.6	2.7 / 6.8	3.8 / 9.5	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.8 / 4.6	2.7 / 6.8	3.8 / 9.5
24'	Live Load L/360		81	134	158	256	378	531		108	180	210	340	504	708
	Total Load Min. End / Int. Brg. (in.)		1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.6 / 3.9	2.3 / 5.7	3.2 / 8.1		1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.6 / 3.9	2.3 / 5.7	3.2 / 8.1
26'	Live Load L/360			106	124	202	299	421			142	166	270	398	562
	Total Load Min. End / Int. Brg. (in.)			1.5 / 3.0	1.5 / 3.0	1.5 / 3.3	2.0 / 4.9	2.8 / 6.9			1.5 / 3.0	1.5 / 3.0	1.5 / 3.3	2.0 / 4.9	2.8 / 6.9
28'	Live Load L/360			85	100	163	241	340			114	134	216	320	452
	Total Load Min. End / Int. Brg. (in.)			1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.7 / 4.3	2.4 / 6.0			1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.7 / 4.3	2.4 / 6.0

*Can be applied to the beam in addition to its own weight.

See notes on page 41.

KEY TO TABLES

Live Load L/360 = Maximum live load — limits deflection to L/360

Total Load = Maximum total load — limits deflection to L/240

Min. End / Int. Brg. (in.) = Required minimum end bearing for simple or multiple span beams and minimum interior bearing for multiple span beams based on plate bearing stress of 565 psi.

See note 9 page 41.

Allowable Uniform Loads — Roof 115% (Snow)

2.0E G-P Lam® LVL

Span (Ft)	Condition	Allowable Uniform Loads* (In Pounds Per Lineal Foot)											
		1 1/4" Thick G-P Lam LVL Beams					3 1/2" Thick G-P Lam LVL Beams						
		9 1/4"	9 1/2"	11 1/4"	11 1/2"	14"	9 1/4"	9 1/2"	11 1/4"	11 1/2"	14"	16"	18"
6'	Live Load L/240												
	Total Load	1183	1224	1524	1577	1576	2366	2447	3049	3153	3151	3149	3147
	Min. End / Int. Brg. (in.)	3.6 / 9.0	3.7 / 9.3	4.6 / 11.6	4.8 / 12.0	4.8 / 12.0	3.6 / 9.0	3.7 / 9.3	4.6 / 11.6	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0
8'	Live Load L/240												
	Total Load	832	859	1054	1127	1180	1664	1718	2108	2253	2360	2358	2356
	Min. End / Int. Brg. (in.)	3.4 / 8.5	3.5 / 8.7	4.3 / 10.7	4.6 / 11.4	4.8 / 12.0	3.4 / 8.5	3.5 / 8.7	4.3 / 10.7	4.6 / 11.4	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0
10'	Live Load L/240												
	Total Load	484	522	805	858	943	968	1044	1609	1715	1885	1884	1882
	Min. End / Int. Brg. (in.)	2.9 / 7.3	3.1 / 7.7	4.1 / 10.2	4.4 / 10.9	4.8 / 12.0	2.9 / 7.3	3.1 / 7.7	4.1 / 10.2	4.4 / 10.9	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0
11'	Live Load L/240												
	Total Load	369	398	642	747	856	738	797	1285	1494	1713	1711	1709
	Min. End / Int. Brg. (in.)	2.7 / 6.7	2.8 / 7.0	3.9 / 9.7	4.3 / 10.7	4.8 / 12.0	2.7 / 6.7	2.8 / 7.0	3.9 / 9.7	4.3 / 10.7	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0
12'	Live Load L/240												
	Total Load	288	310	503	586	785	575	621	1006	1172	1569	1567	1565
	Min. End / Int. Brg. (in.)	2.3 / 5.8	2.5 / 6.3	3.5 / 8.9	3.9 / 9.8	4.8 / 12.0	2.3 / 5.8	2.5 / 6.3	3.5 / 8.9	3.9 / 9.8	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0
13'	Live Load L/240												
	Total Load	228	246	401	467	724	456	493	801	935	1447	1446	1444
	Min. End / Int. Brg. (in.)	2.0 / 5.0	2.2 / 5.4	3.3 / 8.2	3.6 / 9.1	4.8 / 12.0	2.0 / 5.0	2.2 / 5.4	3.3 / 8.2	3.6 / 9.1	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0
14'	Live Load L/240												
	Total Load	184	199	324	378	603	368	398	648	757	1206	1206	1206
	Min. End / Int. Brg. (in.)	1.7 / 4.3	1.9 / 4.7	3.0 / 7.6	3.4 / 8.4	4.6 / 11.5	1.7 / 4.3	1.9 / 4.7	3.0 / 7.6	3.4 / 8.4	4.6 / 11.5	4.8 / 12.0	4.8 / 12.0
15'	Live Load L/240												
	Total Load	150	163	266	310	497	301	325	531	621	993	1251	1249
	Min. End / Int. Brg. (in.)	1.5 / 3.8	1.6 / 4.1	2.7 / 6.7	3.1 / 7.8	4.3 / 10.7	1.5 / 3.8	1.6 / 4.1	2.7 / 6.7	3.1 / 7.8	4.3 / 10.7	4.8 / 12.0	4.8 / 12.0
16'	Live Load L/240												
	Total Load	125	135	220	258	413	249	269	441	516	827	1172	1170
	Min. End / Int. Brg. (in.)	1.5 / 3.4	1.5 / 3.6	2.4 / 5.9	2.8 / 7.0	4.0 / 10.0	1.5 / 3.4	1.5 / 3.6	2.4 / 5.9	2.8 / 7.0	4.0 / 10.0	4.8 / 12.0	4.8 / 12.0
17'	Live Load L/240												
	Total Load	104	113	185	216	348	209	225	370	433	695	1017	1100
	Min. End / Int. Brg. (in.)	1.5 / 3.0	1.5 / 3.2	2.1 / 5.3	2.5 / 6.2	3.8 / 9.5	1.5 / 3.0	1.5 / 3.2	2.1 / 5.3	2.5 / 6.2	3.8 / 9.5	4.8 / 12.0	4.8 / 12.0
18'	Live Load L/240												
	Total Load	88	95	156	183	295	176	191	313	366	590	865	1038
	Min. End / Int. Brg. (in.)	1.5 / 3.0	1.5 / 3.0	1.9 / 4.7	2.2 / 5.6	3.6 / 8.9	1.5 / 3.0	1.5 / 3.0	1.9 / 4.7	2.2 / 5.6	3.6 / 8.9	4.6 / 11.5	4.8 / 12.0
19'	Live Load L/240												
	Total Load	75	81	134	156	252	150	163	267	313	505	741	896
	Min. End / Int. Brg. (in.)	1.5 / 3.0	1.5 / 3.0	1.7 / 4.3	2.0 / 5.0	3.2 / 8.1	1.5 / 3.0	1.5 / 3.0	1.7 / 4.3	2.0 / 5.0	3.2 / 8.1	4.4 / 10.9	4.8 / 12.0
20'	Live Load L/240												
	Total Load	65	70	115	135	218	129	140	230	269	435	640	896
	Min. End / Int. Brg. (in.)	1.5 / 3.0	1.5 / 3.0	1.5 / 3.9	1.8 / 4.5	2.9 / 7.3	1.5 / 3.0	1.5 / 3.0	1.5 / 3.9	1.8 / 4.5	2.9 / 7.3	4.1 / 10.3	4.8 / 12.0
22'	Live Load L/240												
	Total Load	49	53	87	102	165	97	105	174	204	330	486	683
	Min. End / Int. Brg. (in.)	1.5 / 3.0	1.5 / 3.0	1.5 / 3.2	1.5 / 3.8	2.4 / 6.1	1.5 / 3.0	1.5 / 3.0	1.5 / 3.2	1.5 / 3.8	2.4 / 6.1	3.6 / 9.0	4.7 / 11.7
24'	Live Load L/240												
	Total Load	38	41	67	79	128	75	81	134	158	256	378	531
	Min. End / Int. Brg. (in.)	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.2	2.1 / 5.2	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.2	2.1 / 5.2	3.1 / 7.6	4.3 / 10.7
26'	Live Load L/240												
	Total Load		32	53	62	101		64	106	124	202	299	421
	Min. End / Int. Brg. (in.)		1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.8 / 4.4		1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.8 / 4.4	2.6 / 6.6	3.7 / 9.2
28'	Live Load L/240												
	Total Load			43	50	81			85	100	163	241	340
	Min. End / Int. Brg. (in.)			1.5 / 3.0	1.5 / 3.0	1.5 / 3.8			1.5 / 3.0	1.5 / 3.0	1.5 / 3.8	2.3 / 5.7	3.2 / 8.0

*Can be applied to the beam in addition to its own weight.

See notes on page 41.

KEY TO TABLES

Live Load L/240 = Maximum live load — limits deflection to L/240

Total Load = Maximum total load — limits deflection to L/180

Min. End / Int. Brg. (in.) = Required minimum end bearing for simple or multiple span beams and minimum interior bearing for multiple span beams based on plate bearing stress of 565 psi.

See note 9 page 41.

Allowable Uniform Loads — Roof 115% (Snow)

2.0E G-P Lam® LVL

Span (Ft)	Condition	Allowable Uniform Loads* (In Pounds Per Lineal Foot)													
		5 1/2" Thick G-P Lam LVL Beams							7" Thick G-P Lam LVL Beams						
		9 1/2"	9 1/2"	11 1/4"	11 1/4"	14"	16"	18"	9 1/2"	9 1/2"	11 1/4"	11 1/4"	14"	16"	18"
6'	Live Load L/240														
	Total Load	3549	3671	4573	4730	4727	4724	4721	4732	4894	6098	6306	6302	6298	6294
	Min.End / Int.Brg.(in.)	3.6 / 9.0	3.7 / 9.3	4.6 / 11.6	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0	3.6 / 9.0	3.7 / 9.3	4.6 / 11.6	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0
8'	Live Load L/240														
	Total Load	2496	2577	3161	3380	3540	3537	3534	3328	3436	4216	4506	4720	4716	4712
	Min.End / Int.Brg.(in.)	3.4 / 8.5	3.5 / 8.7	4.3 / 10.7	4.6 / 11.4	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0	3.4 / 8.5	3.5 / 8.7	4.3 / 10.7	4.6 / 11.4	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0
10'	Live Load L/240	1453	1566						1936	2088					
	Total Load	1730	1820	2414	2573	2828	2825	2822	2306	2426	3218	3430	3770	3768	3764
	Min.End / Int.Brg.(in.)	2.9 / 7.3	3.1 / 7.7	4.1 / 10.2	4.4 / 10.9	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0	2.9 / 7.3	3.1 / 7.7	4.1 / 10.2	4.4 / 10.9	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0
11'	Live Load L/240	1107	1195	1927	2241				1476	1594	2570	2988			
	Total Load	1428	1502	2069	2293	2569	2567	2564	1904	2002	2758	3056	3426	3422	3418
	Min.End / Int.Brg.(in.)	2.7 / 6.7	2.8 / 7.0	3.9 / 9.7	4.3 / 10.7	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0	2.7 / 6.7	2.8 / 7.0	3.9 / 9.7	4.3 / 10.7	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0
12'	Live Load L/240	863	931	1509	1757				1150	1242	2012	2344			
	Total Load	1137	1229	1736	1924	2354	2351	2348	1516	1638	2314	2564	3138	3134	3130
	Min.End / Int.Brg.(in.)	2.3 / 5.8	2.5 / 6.3	3.5 / 8.9	3.9 / 9.8	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0	2.3 / 5.8	2.5 / 6.3	3.5 / 8.9	3.9 / 9.8	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0
13'	Live Load L/240	685	739	1202	1402				912	986	1602	1870			
	Total Load	900	973	1477	1637	2171	2168	2165	1200	1296	1970	2182	2894	2892	2888
	Min.End / Int.Brg.(in.)	2.0 / 5.0	2.2 / 5.4	3.3 / 8.2	3.6 / 9.1	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0	2.0 / 5.0	2.2 / 5.4	3.3 / 8.2	3.6 / 9.1	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0
14'	Live Load L/240	552	596	972	1135	1810			736	796	1296	1514	2412		
	Total Load	723	782	1271	1409	1926	2012	2009	964	1042	1696	1878	2568	2682	2678
	Min.End / Int.Brg.(in.)	1.7 / 4.3	1.9 / 4.7	3.0 / 7.6	3.4 / 8.4	4.6 / 11.5	4.8 / 12.0	4.8 / 12.0	1.7 / 4.3	1.9 / 4.7	3.0 / 7.6	3.4 / 8.4	4.6 / 11.5	4.8 / 12.0	4.8 / 12.0
15'	Live Load L/240	451	488	797	931	1490			602	650	1062	1242	1986		
	Total Load	589	637	1047	1225	1675	1876	1873	786	850	1396	1634	2234	2502	2498
	Min.End / Int.Brg.(in.)	1.5 / 3.8	1.6 / 4.1	2.7 / 6.7	3.1 / 7.8	4.3 / 10.7	4.8 / 12.0	4.8 / 12.0	1.5 / 3.8	1.6 / 4.1	2.7 / 6.7	3.1 / 7.8	4.3 / 10.7	4.8 / 12.0	4.8 / 12.0
16'	Live Load L/240	374	404	661	773	1240			498	538	882	1032	1654		
	Total Load	485	526	866	1015	1470	1758	1755	648	700	1154	1352	1960	2344	2340
	Min.End / Int.Brg.(in.)	1.5 / 3.4	1.5 / 3.6	2.4 / 5.9	2.8 / 7.0	4.0 / 10.0	4.8 / 12.0	4.8 / 12.0	1.5 / 3.4	1.5 / 3.6	2.4 / 5.9	2.8 / 7.0	4.0 / 10.0	4.8 / 12.0	4.8 / 12.0
17'	Live Load L/240	313	338	555	649	1043	1526		418	450	740	866	1390	2034	
	Total Load	404	438	724	849	1300	1653	1650	538	584	966	1132	1734	2204	2200
	Min.End / Int.Brg.(in.)	1.5 / 3.0	1.5 / 3.2	2.1 / 5.3	2.5 / 6.2	3.8 / 9.5	4.8 / 12.0	4.8 / 12.0	1.5 / 3.0	1.5 / 3.2	2.1 / 5.3	2.5 / 6.2	3.8 / 9.5	4.8 / 12.0	4.8 / 12.0
18'	Live Load L/240	264	286	469	550	885	1297		352	382	626	732	1180	1730	
	Total Load	340	368	610	716	1157	1492	1557	452	490	814	954	1544	1990	2076
	Min.End / Int.Brg.(in.)	1.5 / 3.0	1.5 / 3.0	1.9 / 4.7	2.2 / 5.6	3.6 / 8.9	4.6 / 11.5	4.8 / 12.0	1.5 / 3.0	1.5 / 3.0	1.9 / 4.7	2.2 / 5.6	3.6 / 8.9	4.6 / 11.5	4.8 / 12.0
19'	Live Load L/240	225	244	401	469	757	1112		300	326	534	626	1010	1482	
	Total Load	288	312	519	609	990	1337	1474	384	416	692	812	1320	1782	1964
	Min.End / Int.Brg.(in.)	1.5 / 3.0	1.5 / 3.0	1.7 / 4.3	2.0 / 5.0	3.2 / 8.1	4.4 / 10.9	4.8 / 12.0	1.5 / 3.0	1.5 / 3.0	1.7 / 4.3	2.0 / 5.0	3.2 / 8.1	4.4 / 10.9	4.8 / 12.0
20'	Live Load L/240	194	210	345	404	653	960	1344	258	280	460	538	870	1280	1792
	Total Load	245	266	444	522	851	1204	1399	328	356	592	696	1134	1606	1864
	Min.End / Int.Brg.(in.)	1.5 / 3.0	1.5 / 3.0	1.5 / 3.9	1.8 / 4.5	2.9 / 7.3	4.1 / 10.3	4.8 / 12.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.9	1.8 / 4.5	2.9 / 7.3	4.1 / 10.3	4.8 / 12.0
22'	Live Load L/240	146	158	261	305	495	729	1024	194	210	348	408	660	972	1366
	Total Load	182	198	332	391	640	950	1241	242	264	442	522	854	1266	1654
	Min.End / Int.Brg.(in.)	1.5 / 3.0	1.5 / 3.0	1.5 / 3.2	1.5 / 3.8	2.4 / 6.1	3.6 / 9.0	4.7 / 11.7	1.5 / 3.0	1.5 / 3.0	1.5 / 3.2	1.5 / 3.8	2.4 / 6.1	3.6 / 9.0	4.7 / 11.7
24'	Live Load L/240	113	122	202	236	384	567	797	150	162	268	316	512	756	1062
	Total Load	138	150	253	299	492	733	1038	184	200	338	398	656	978	1384
	Min.End / Int.Brg.(in.)	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.2	2.1 / 5.2	3.1 / 7.6	4.3 / 10.7	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.2	2.1 / 5.2	3.1 / 7.6	4.3 / 10.7
26'	Live Load L/240		96	159	187	303	449	632		128	212	248	404	598	842
	Total Load		115	196	232	385	576	818		154	262	310	514	768	1090
	Min.End / Int.Brg.(in.)		1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.8 / 4.4	2.6 / 6.6	3.7 / 9.2		1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.8 / 4.4	2.6 / 6.6	3.7 / 9.2
28'	Live Load L/240			128	150	244	361	510			170	200	326	482	680
	Total Load			155	183	306	459	654			206	244	408	612	872
	Min.End / Int.Brg.(in.)			1.5 / 3.0	1.5 / 3.0	1.5 / 3.8	2.3 / 5.7	3.2 / 8.0			1.5 / 3.0	1.5 / 3.0	1.5 / 3.8	2.3 / 5.7	3.2 / 8.0

*Can be applied to the beam in addition to its own weight.

See notes on page 41.

KEY TO TABLES

Live Load L/240 = Maximum live load — limits deflection to L/240

Total Load = Maximum total load — limits deflection to L/180

Min. End / Int. Brg. (in.) = Required minimum end bearing for simple or multiple span beams and minimum interior bearing for multiple span beams based on plate bearing stress of 565 psi.

See note 9 page 41.

Allowable Uniform Loads – Roof 125% (Non-Snow)

2.0E G-P Lam® LVL

Span (Ft)		Allowable Uniform Loads* (In Pounds Per Lineal Foot)											
		1½" Thick G-P Lam LVL Beams					3½" Thick G-P Lam LVL Beams						
		Condition	9¼"	9½"	11¼"	11½"	14"	9¼"	9½"	11¼"	11½"	14"	16"
6'	Live Load L/240												
	Total Load	1286	1330	1577	1577	1576	2573	2661	3154	3153	3151	3149	3147
	Min.End / Int.Brg.(in.)	3.9 / 9.8	4.0 / 10.1	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0	3.9 / 9.8	4.0 / 10.1	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0
8'	Live Load L/240	903					1806						
	Total Load	905	934	1146	1181	1180	1810	1868	2292	2362	2360	2358	2356
	Min.End / Int.Brg.(in.)	3.7 / 9.2	3.8 / 9.5	4.7 / 11.6	4.8 / 12.0	4.8 / 12.0	3.7 / 9.2	3.8 / 9.5	4.7 / 11.6	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0
10'	Live Load L/240	484	522	837			968	1044	1675				
	Total Load	627	660	875	933	943	1254	1319	1750	1865	1885	1884	1882
	Min.End / Int.Brg.(in.)	3.2 / 8.0	3.4 / 8.4	4.5 / 11.1	4.7 / 11.9	4.8 / 12.0	3.2 / 8.0	3.4 / 8.4	4.5 / 11.1	4.7 / 11.9	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0
11'	Live Load L/240	369	398	642	747		738	797	1285	1494			
	Total Load	488	527	750	831	856	976	1053	1500	1662	1713	1711	1709
	Min.End / Int.Brg.(in.)	2.7 / 6.8	3.0 / 7.4	4.2 / 10.5	4.7 / 11.6	4.8 / 12.0	2.7 / 6.8	3.0 / 7.4	4.2 / 10.5	4.7 / 11.6	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0
12'	Live Load L/240	288	310	503	586		575	621	1006	1172			
	Total Load	379	410	630	697	785	758	819	1259	1395	1569	1567	1565
	Min.End / Int.Brg.(in.)	2.3 / 5.8	2.5 / 6.3	3.9 / 9.6	4.3 / 10.7	4.8 / 12.0	2.3 / 5.8	2.5 / 6.3	3.9 / 9.6	4.3 / 10.7	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0
13'	Live Load L/240	228	246	401	467		456	493	801	935			
	Total Load	300	324	529	593	724	600	648	1058	1187	1447	1446	1444
	Min.End / Int.Brg.(in.)	2.0 / 5.0	2.2 / 5.4	3.5 / 8.8	3.9 / 9.8	4.8 / 12.0	2.0 / 5.0	2.2 / 5.4	3.5 / 8.8	3.9 / 9.8	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0
14'	Live Load L/240	184	199	324	378	603	368	398	648	757	1206		
	Total Load	241	261	427	499	672	482	521	854	998	1343	1341	1339
	Min.End / Int.Brg.(in.)	1.7 / 4.3	1.9 / 4.7	3.1 / 7.6	3.6 / 8.9	4.8 / 12.0	1.7 / 4.3	1.9 / 4.7	3.1 / 7.6	3.6 / 8.9	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0
15'	Live Load L/240	150	163	266	310	497	301	325	531	621	993		
	Total Load	196	212	349	408	608	393	425	698	817	1215	1251	1249
	Min.End / Int.Brg.(in.)	1.5 / 3.8	1.6 / 4.1	2.7 / 6.7	3.1 / 7.9	4.7 / 11.6	1.5 / 3.8	1.6 / 4.1	2.7 / 6.7	3.1 / 7.9	4.7 / 11.6	4.8 / 12.0	4.8 / 12.0
16'	Live Load L/240	125	135	220	258	413	249	269	441	516	827		
	Total Load	162	175	289	338	533	324	350	577	676	1066	1172	1170
	Min.End / Int.Brg.(in.)	1.5 / 3.4	1.5 / 3.6	2.4 / 5.9	2.8 / 7.0	4.4 / 10.9	1.5 / 3.4	1.5 / 3.6	2.4 / 5.9	2.8 / 7.0	4.4 / 10.9	4.8 / 12.0	4.8 / 12.0
17'	Live Load L/240	104	113	185	216	348	209	225	370	433	695	1017	
	Total Load	135	146	241	283	457	269	292	483	566	914	1102	1100
	Min.End / Int.Brg.(in.)	1.5 / 3.0	1.5 / 3.2	2.1 / 5.3	2.5 / 6.2	4.0 / 10.0	1.5 / 3.0	1.5 / 3.2	2.1 / 5.3	2.5 / 6.2	4.0 / 10.0	4.8 / 12.0	4.8 / 12.0
18'	Live Load L/240	88	95	156	183	295	176	191	313	366	590	865	
	Total Load	113	123	203	239	387	226	245	407	477	774	1040	1038
	Min.End / Int.Brg.(in.)	1.5 / 3.0	1.5 / 3.0	1.9 / 4.7	2.2 / 5.6	3.6 / 9.0	1.5 / 3.0	1.5 / 3.0	1.9 / 4.7	2.2 / 5.6	3.6 / 9.0	4.8 / 12.0	4.8 / 12.0
19'	Live Load L/240	75	81	134	156	252	150	163	267	313	505	741	
	Total Load	96	104	173	203	330	192	208	346	406	660	970	982
	Min.End / Int.Brg.(in.)	1.5 / 3.0	1.5 / 3.0	1.7 / 4.3	2.0 / 5.0	3.2 / 8.1	1.5 / 3.0	1.5 / 3.0	1.7 / 4.3	2.0 / 5.0	3.2 / 8.1	4.7 / 11.8	4.8 / 12.0
20'	Live Load L/240	65	70	115	135	218	129	140	230	269	435	640	896
	Total Load	82	89	148	174	284	164	178	296	348	567	838	932
	Min.End / Int.Brg.(in.)	1.5 / 3.0	1.5 / 3.0	1.5 / 3.9	1.8 / 4.5	2.9 / 7.3	1.5 / 3.0	1.5 / 3.0	1.5 / 3.9	1.8 / 4.5	2.9 / 7.3	4.3 / 10.8	4.8 / 12.0
22'	Live Load L/240	49	53	87	102	165	97	105	174	204	330	486	683
	Total Load	61	66	111	130	213	121	132	221	261	427	633	846
	Min.End / Int.Brg.(in.)	1.5 / 3.0	1.5 / 3.0	1.5 / 3.2	1.5 / 3.8	2.4 / 6.1	1.5 / 3.0	1.5 / 3.0	1.5 / 3.2	1.5 / 3.8	2.4 / 6.1	3.6 / 9.0	4.8 / 12.0
24'	Live Load L/240	38	41	67	79	128	75	81	134	158	256	378	531
	Total Load	46	50	84	100	164	92	100	169	199	328	489	692
	Min.End / Int.Brg.(in.)	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.2	2.1 / 5.2	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.2	2.1 / 5.2	3.1 / 7.6	4.3 / 10.7
26'	Live Load L/240		32	53	62	101		64	106	124	202	299	421
	Total Load		38	65	77	128		77	131	155	257	384	545
	Min.End / Int.Brg.(in.)		1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.8 / 4.4		1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.8 / 4.4	2.6 / 6.6	3.7 / 9.2
28'	Live Load L/240			43	50	81			85	100	163	241	340
	Total Load			52	61	102			103	122	204	306	436
	Min.End / Int.Brg.(in.)			1.5 / 3.0	1.5 / 3.0	1.5 / 3.8			1.5 / 3.0	1.5 / 3.0	1.5 / 3.8	2.3 / 5.7	3.2 / 8.0

*Can be applied to the beam in addition to its own weight.

See notes on page 41.

KEY TO TABLES

Live Load L/240 = Maximum live load — limits deflection to L/240

Total Load = Maximum total load — limits deflection to L/180

Min. End / Int. Brg. (in.) = Required minimum end bearing for simple or multiple span beams and minimum interior bearing for multiple span beams based on plate bearing stress of 565 psi.

See note 9 page 41.

Allowable Uniform Loads – Roof 125% (Non-Snow)

2.0E G-P Lam® LVL

Span (Ft)	Condition	Allowable Uniform Loads* (In Pounds Per Lineal Foot)													
		5 1/4" Thick G-P Lam LVL Beams							7" Thick G-P Lam LVL Beams						
		9 1/4"	9 1/2"	11 1/4"	11 1/2"	14"	16"	18"	9 1/4"	9 1/2"	11 1/4"	11 1/2"	14"	16"	18"
6'	Live Load L/240	3859	3991	4730	4730	4727	4724	4721	5146	5322	6308	6306	6302	6298	6294
	Total Load	3.9 / 9.8	4.0 / 10.1	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0	3.9 / 9.8	4.0 / 10.1	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0
	Min. End / Int.Brg. (in.)														
8'	Live Load L/240	2710	2802	3438	3543	3540	3537	3534	3612	3736	4584	4724	4720	4716	4712
	Total Load	3.7 / 9.2	3.8 / 9.5	4.7 / 11.6	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0	3.7 / 9.2	3.8 / 9.5	4.7 / 11.6	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0
	Min. End / Int.Brg. (in.)														
10'	Live Load L/240	1453	1566	2512	2241	2241	2241	2241	1936	2088	3350	3350	3730	3770	3764
	Total Load	1882	1979	2625	2798	2828	2825	2822	2508	2638	3500	3500	3730	3770	3764
	Min. End / Int.Brg. (in.)	3.2 / 8.0	3.4 / 8.4	4.5 / 11.1	4.7 / 11.9	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0	3.2 / 8.0	3.4 / 8.4	4.5 / 11.1	4.7 / 11.9	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0
11'	Live Load L/240	1107	1195	1927	2241	2241	2241	2241	1476	1594	2570	2988	2988	2988	2988
	Total Load	1464	1580	2251	2493	2569	2567	2564	1952	2106	3000	3324	3426	3422	3418
	Min. End / Int.Brg. (in.)	2.7 / 6.8	3.0 / 7.4	4.2 / 10.5	4.7 / 11.6	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0	2.7 / 6.8	3.0 / 7.4	4.2 / 10.5	4.7 / 11.6	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0
12'	Live Load L/240	863	931	1509	1757	2241	2241	2241	1150	1242	2012	2344	2344	2344	2344
	Total Load	1137	1229	1889	2092	2354	2351	2348	1516	1638	2518	2790	3138	3134	3130
	Min. End / Int.Brg. (in.)	2.3 / 5.8	2.5 / 6.3	3.9 / 9.6	4.3 / 10.7	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0	2.3 / 5.8	2.5 / 6.3	3.9 / 9.6	4.3 / 10.7	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0
13'	Live Load L/240	685	739	1202	1402	2171	2168	2165	912	986	1602	1870	1870	1870	1870
	Total Load	900	973	1587	1780	2171	2168	2165	1200	1296	2116	2374	2894	2892	2888
	Min. End / Int.Brg. (in.)	2.0 / 5.0	2.2 / 5.4	3.5 / 8.8	3.9 / 9.8	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0	2.0 / 5.0	2.2 / 5.4	3.5 / 8.8	3.9 / 9.8	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0
14'	Live Load L/240	552	596	972	1135	1810	1810	1810	736	796	1296	1514	2412	2412	2412
	Total Load	723	782	1281	1497	2015	2012	2009	964	1042	1708	1996	2686	2682	2678
	Min. End / Int.Brg. (in.)	1.7 / 4.3	1.9 / 4.7	3.1 / 7.6	3.6 / 8.9	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0	1.7 / 4.3	1.9 / 4.7	3.1 / 7.6	3.6 / 8.9	4.8 / 12.0	4.8 / 12.0	4.8 / 12.0
15'	Live Load L/240	451	488	797	931	1490	1490	1490	602	650	1062	1242	1986	1986	1986
	Total Load	589	637	1047	1225	1823	1876	1873	786	850	1396	1634	2430	2502	2498
	Min. End / Int.Brg. (in.)	1.5 / 3.8	1.6 / 4.1	2.7 / 6.7	3.1 / 7.9	4.7 / 11.6	4.8 / 12.0	4.8 / 12.0	1.5 / 3.8	1.6 / 4.1	2.7 / 6.7	3.1 / 7.9	4.7 / 11.6	4.8 / 12.0	4.8 / 12.0
16'	Live Load L/240	374	404	661	773	1240	1240	1240	498	538	882	1032	1654	1654	1654
	Total Load	485	526	866	1015	1599	1758	1755	648	700	1154	1352	2132	2344	2340
	Min. End / Int.Brg. (in.)	1.5 / 3.4	1.5 / 3.6	2.4 / 5.9	2.8 / 7.0	4.4 / 10.9	4.8 / 12.0	4.8 / 12.0	1.5 / 3.4	1.5 / 3.6	2.4 / 5.9	2.8 / 7.0	4.4 / 10.9	4.8 / 12.0	4.8 / 12.0
17'	Live Load L/240	313	338	555	649	1043	1526	1526	418	450	740	866	1390	2034	2034
	Total Load	404	438	724	849	1371	1653	1650	538	584	966	1132	1828	2204	2200
	Min. End / Int.Brg. (in.)	1.5 / 3.0	1.5 / 3.2	2.1 / 5.3	2.5 / 6.2	4.0 / 10.0	4.8 / 12.0	4.8 / 12.0	1.5 / 3.0	1.5 / 3.2	2.1 / 5.3	2.5 / 6.2	4.0 / 10.0	4.8 / 12.0	4.8 / 12.0
18'	Live Load L/240	264	286	469	550	885	1297	1297	352	382	626	732	1180	1730	1730
	Total Load	340	368	610	716	1161	1560	1557	452	490	814	954	1548	2080	2076
	Min. End / Int.Brg. (in.)	1.5 / 3.0	1.5 / 3.0	1.9 / 4.7	2.2 / 5.6	3.6 / 9.0	4.8 / 12.0	4.8 / 12.0	1.5 / 3.0	1.5 / 3.0	1.9 / 4.7	2.2 / 5.6	3.6 / 9.0	4.8 / 12.0	4.8 / 12.0
19'	Live Load L/240	225	244	401	469	757	1112	1112	300	326	534	626	1010	1482	1482
	Total Load	288	312	519	609	990	1455	1474	384	416	692	812	1320	1940	1964
	Min. End / Int.Brg. (in.)	1.5 / 3.0	1.5 / 3.0	1.7 / 4.3	2.0 / 5.0	3.2 / 8.1	4.7 / 11.8	4.8 / 12.0	1.5 / 3.0	1.5 / 3.0	1.7 / 4.3	2.0 / 5.0	3.2 / 8.1	4.7 / 11.8	4.8 / 12.0
20'	Live Load L/240	194	210	345	404	653	960	1344	258	280	460	538	870	1280	1792
	Total Load	245	266	444	522	851	1258	1399	328	356	592	696	1134	1676	1864
	Min. End / Int.Brg. (in.)	1.5 / 3.0	1.5 / 3.0	1.5 / 3.9	1.8 / 4.5	2.9 / 7.3	4.3 / 10.8	4.8 / 12.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.9	1.8 / 4.5	2.9 / 7.3	4.3 / 10.8	4.8 / 12.0
22'	Live Load L/240	146	158	261	305	495	729	1024	194	210	348	408	660	972	1366
	Total Load	182	198	332	391	640	950	1269	242	264	442	522	854	1266	1692
	Min. End / Int.Brg. (in.)	1.5 / 3.0	1.5 / 3.0	1.5 / 3.2	1.5 / 3.8	2.4 / 6.1	3.6 / 9.0	4.8 / 12.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.2	1.5 / 3.8	2.4 / 6.1	3.6 / 9.0	4.8 / 12.0
24'	Live Load L/240	113	122	202	236	384	567	797	150	162	268	316	512	756	1062
	Total Load	138	150	253	299	492	733	1038	184	200	338	398	656	978	1384
	Min. End / Int.Brg. (in.)	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.2	2.1 / 5.2	3.1 / 7.6	4.3 / 10.7	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.2	2.1 / 5.2	3.1 / 7.6	4.3 / 10.7
26'	Live Load L/240	96	159	187	303	449	632	632	128	212	248	404	598	842	842
	Total Load	115	196	232	385	576	818	818	154	262	310	514	768	1090	1090
	Min. End / Int.Brg. (in.)	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.8 / 4.4	2.6 / 6.6	3.7 / 9.2	3.7 / 9.2	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.5 / 3.0	1.8 / 4.4	2.6 / 6.6	3.7 / 9.2
28'	Live Load L/240			128	150	244	361	510			170	200	326	482	680
	Total Load			155	183	306	459	654			206	244	408	612	872
	Min. End / Int.Brg. (in.)			1.5 / 3.0	1.5 / 3.0	1.5 / 3.8	2.3 / 5.7	3.2 / 8.0			1.5 / 3.0	1.5 / 3.0	1.5 / 3.8	2.3 / 5.7	3.2 / 8.0

*Can be applied to the beam in addition to its own weight.

See notes on page 41.

KEY TO TABLES

Live Load L/240 = Maximum live load — limits deflection to L/240

Total Load = Maximum total load — limits deflection to L/180

Min. End / Int. Brg. (in.) = Required minimum end bearing for simple or multiple span beams and minimum interior bearing for multiple span beams based on plate bearing stress of 565 psi.

See note 9 page 41.

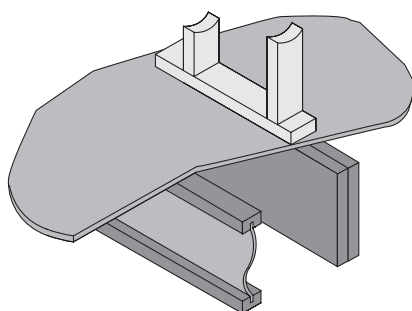
General Notes for Multiple-Piece G-P Lam® LVL Members

1. Confirm adequacy of the beam (depth and thickness) for carrying the designated load.
2. Stress level for nail, bolt, and screw values is 100%. Increases of 15% for snow loaded roof conditions or 25% for non-snow roof conditions are permitted.
3. Top and bottom rows of connectors should be 2" from edge.
4. Bolt holes are to be the same diameter as the bolt. Every bolt must extend through the full thickness of the member. Use washers under head and nut. Carriage bolts may be used, but the outermost portion of the head may not be drawn in beyond flush with the outside face of the LVL member.
5. For three-piece members attached with nails or screws, specified attachment is from each side.
6. To minimize rotation, 7" wide members should only be used when loads are applied to both sides, or completely across the top of the member.
7. 7" wide members, regardless of depth, must be attached using bolts or screws.

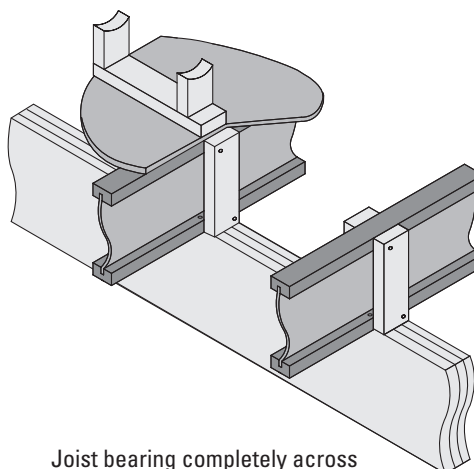
Fastening Recommendations for Top-Loaded, Multiple-Piece Members

Member Depth	3 1/2" Wide Multiple Piece Member	5 1/4" Wide Multiple Piece Member	7" Wide Multiple Piece Member
9 1/4"-11 7/8"	2 rows 16d nails at 12" o.c. (pattern 2A)	2 rows 16d nails at 12" o.c. (pattern 3A)	2 rows 1/2" bolts at 24" o.c. (pattern 4C) or 2 rows 1/4" x 6" wood screws at 24" o.c. (see note 4 on page 49)
14"-18"	3 rows 16d nails at 12" o.c. (pattern 2B)	3 rows 16d nails at 12" o.c. (pattern 3B)	2 rows 1/2" bolts at 24" o.c. (pattern 4C) or 2 rows 1/4" x 6" wood screws at 24" o.c. (see note 4 on page 49)

Connection reference (2A, 3B, 4C, etc.) refers to the fastening pattern on page 49. The first number refers to the width code, the second letter refers to the connection type. For example, "2B" refers to a 2-ply 1 1/4" (3 1/2" net) thick member with connection pattern "B" (3 rows of 16d nails @ 12" o.c.). "4C" refers to a 7" net thick member with connection pattern "C" (2 rows of 1/2" bolts at 24" o.c. staggered).



Wall of same thickness as multiple-piece G-P Lam and centered over beam. Multiple-piece LVL beam should not be placed directly below plumbing walls. LVL beams are not to be notched or drilled except as noted on pages 34 and 50-52.



Joist bearing completely across top of multiple-piece beam

Top-loaded conditions may result from I-joist details similar to F9, F10 and R3. In details F9 and F10, the supporting wall may be replaced with properly sized multiple-piece G-P Lam LVL.

Fastening Recommendations for Side-Loaded, Multiple-Piece Members

Maximum Uniform Load Applied to Either or Both Outside Pieces (Pounds per lineal foot or span carried length)

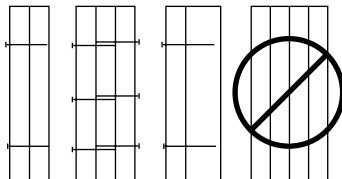
Refer to General Notes page 48.

- Numbers in the chart indicate load, in pounds per lineal foot and span carried (s/c) which may be applied to either side based solely on the connection.
- Connection codes may be specified as 2A, 3B, 4D, etc.
- Connection code 2A indicates 2 rows of 16d common nails @12" o.c. as adequate to transfer 505 plf (20'-0" of floor joist length) when connecting 2 plies of 1 3/4" G-P Lam LVL.
- Span carried in the chart is assumed to be the maximum single span distance from each beam side at 40 psf live load and 10 psf dead.
- Floor joists must be attached with approved metal hangers. Refer to page 16 and 53 for hanger recommendations.
- Concentrated side loads from beam to beam connections may require additional consideration.

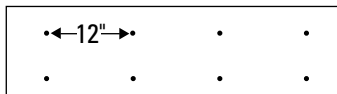
Connection type	Nails		Bolts		Screws ³	
	A ¹	B ¹	C ²	D ¹	E ^{1,2,4}	F ^{1,2,4}
Width Code (Beam thickness)	2 rows 16d common at 12" o.c.	3 rows 16d common at 12" o.c.	2 rows 1/2" bolts at 24" o.c. staggered	2 rows 1/2" bolts at 12" o.c.	2 rows 1/4" x 3 1/2" screws at 24" o.c. staggered	2 rows 1/4" x 3 1/2" screws at 12" o.c. staggered
Width Code 2 (3 1/2" net thickness)	505 plf/20'-0" s/c	760 plf/30'-0" s/c	505 plf/20'-0" s/c	1015 plf/40'-6" s/c	500 plf / 20'-0" s/c	995 plf / 39'-9" s/c
Width Code 3 (5 1/2" net thickness)	380 plf/15'-0" s/c	570 plf/22'-6" s/c	380 plf/15'-0" s/c	760 plf/30'-0" s/c	375 plf / 15'-0" s/c	745 plf / 29'-9" s/c
Width Code 4 (7" net thickness)	Not Permitted		340 plf/13'-6" s/c	675 plf/27'-0" s/c	330 plf / 13'-0" s/c	665 plf / 26'-6" s/c

- Values for connections may be factored for spacings other than 12" o.c., double for 6" o.c., triple for 4" o.c., divide by 1.33 for 16" o.c., divide by 2 for 24" o.c. (Maximum spacing not to exceed 24" o.c.)
- Stagger each row of fasteners by 12".
- Screws are United Steel Products WS Series or Simpson Strong-Tie SDS Series installed per manufacturer's recommendations.
- Screws must be 6" long for members with 7" net thickness and applied from both sides.

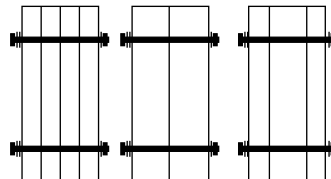
Nails



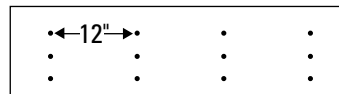
A (Nails) or F (Screws) =
Two Rows 12" O.C.



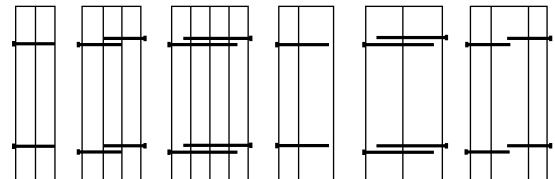
Bolts



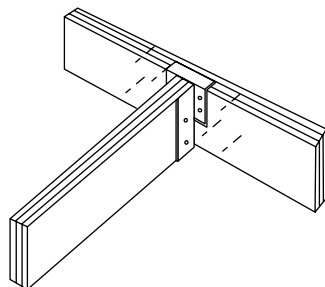
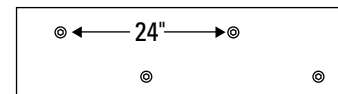
B (Nails) =
Three Rows 12" O.C.



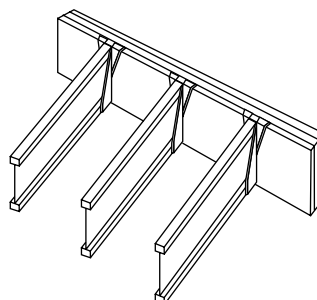
Screws



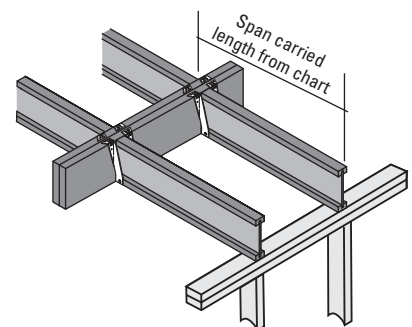
C (Bolts) or E (Screws) =
Two Rows 24" O.C.



Concentrated side loads may require additional bolting.



Side loaded multiple-piece G-P Lam LVL (Joist length determines span carried for table values above.)



Side loaded conditions may result from I-joist details similar to F15A, F16, F17 or R1.

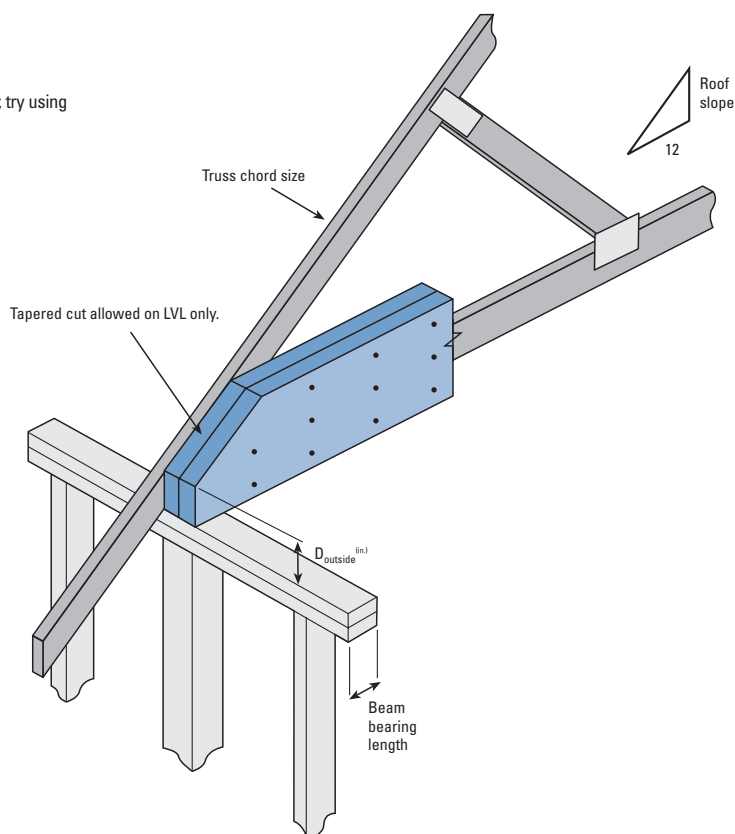
Tapered Cut Allowable End Reaction — Truss Roof

3½" Thick G-P Lam® LVL Beams Allowable End Reaction (lbs.)

G-P Lam® LVL Floor Depth	Truss Chord Size	Beam Bearing Length	Truss Slope									
			4/12		6/12		8/12		10/12		12/12	
			D outside (inches)	Reaction (lbs)	D outside (inches)	Reaction (lbs)	D outside (inches)	Reaction (lbs)	D outside (inches)	Reaction (lbs)	D outside (inches)	Reaction (lbs)
9¼" or 9½"	2 x 4	3½"	3.94	3395	4.16	3932	4.46	5262	4.81	5910	5.20	6128
		5¼"	3.94	3783	4.16	4964	4.46	5941	4.81	6151	5.20	OK
	2 x 6	3½"	6.05	5005	6.40	5953	6.86	6151	7.41	OK	8.03	OK
		5¼"	6.05	5611	6.40	6144	6.86	OK	7.41	OK	8.03	OK
11¼" or 11⅝"	2 x 4	3½"	3.94	3395	4.16	3932	4.46	4559	4.81	6196	5.20	6584
		5¼"	3.94	3783	4.16	4514	4.46	6121	4.81	7109	5.20	7440
	2 x 6	3½"	6.05	4759	6.40	5912	6.86	7022	7.41	6921	8.03	OK
		5¼"	6.05	5185	6.40	6751	6.86	7405	7.41	OK	8.03	OK
14"	2 x 4	3½"	3.94	—	4.16	—	4.46	—	4.81	5136	5.20	7163
		5¼"	3.94	—	4.16	—	4.46	—	4.81	7291	5.20	8508
	2 x 6	3½"	6.05	4797	6.40	5419	6.86	6803	7.41	6921	8.03	6921
		5¼"	6.05	5185	6.40	6001	6.86	8034	7.41	8978	8.03	9284
16"	2 x 6	3½"	6.05	4797	6.40	5419	6.86	6114	7.41	6921	8.03	6921
		5¼"	6.05	5185	6.40	6001	6.86	7577	7.41	9437	8.03	10269
18"	2 x 6	3½"	6.05	4797	6.40	5419	6.86	6114	7.41	6867	8.03	6921
		5¼"	6.05	5185	6.40	6001	6.86	6890	7.41	9354	8.03	10382

NOTES:

- Prior to using this chart, beam size must be checked by tables or FASTBeam® software.
- Chart can be used for 1⅜", 5⅝" and 7" wide G-P Lam LVL beams
For 1⅜" wide beam: ⅓ x allowable reaction (lbs.)
For 5⅝" wide beam: 1½ x allowable reaction (lbs.)
For 7" wide beam: 2 x allowable reaction (lbs.)
- Provide lateral support at bearing points, and continuous lateral support along top edge of beam.
- Listed values are for 2.0E G-P Lam LVL beam products.
- Special consultation is required for uplift reactions.
- Concentrated loads are not allowed in the tapered cut region.
- Southern Pine bearing plate assumed. (Allowable bearing stress 565 psi.)
- Values are for floor use, 100% duration of load increase.
- ⅝" butt cut height assumed for truss bottom chord.
- If OK is shown in Reaction column, full capacity is available.
- If no allowable reaction is shown, beam will not work with current input; try using a shallower beam with additional plies.
- Field verify slope and all dimensions.



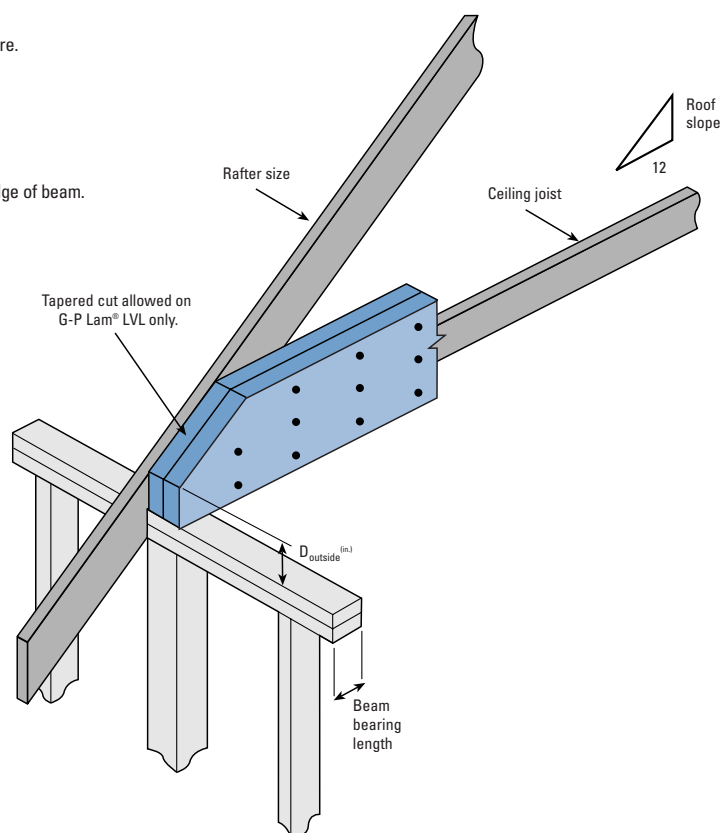
Tapered Cut Allowable End Reaction— Conventional (Stick) Roof

3½" Thick G-P Lam® LVL Beams Allowable End Reaction (lbs.)

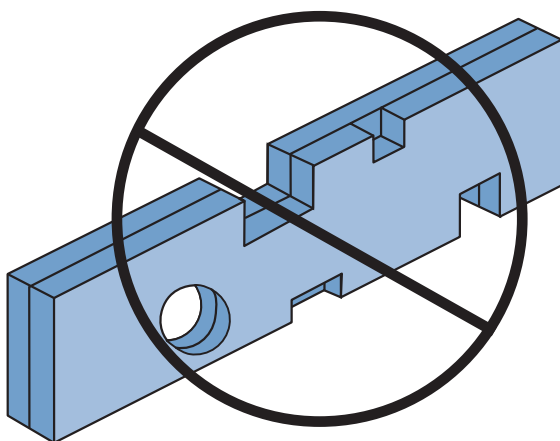
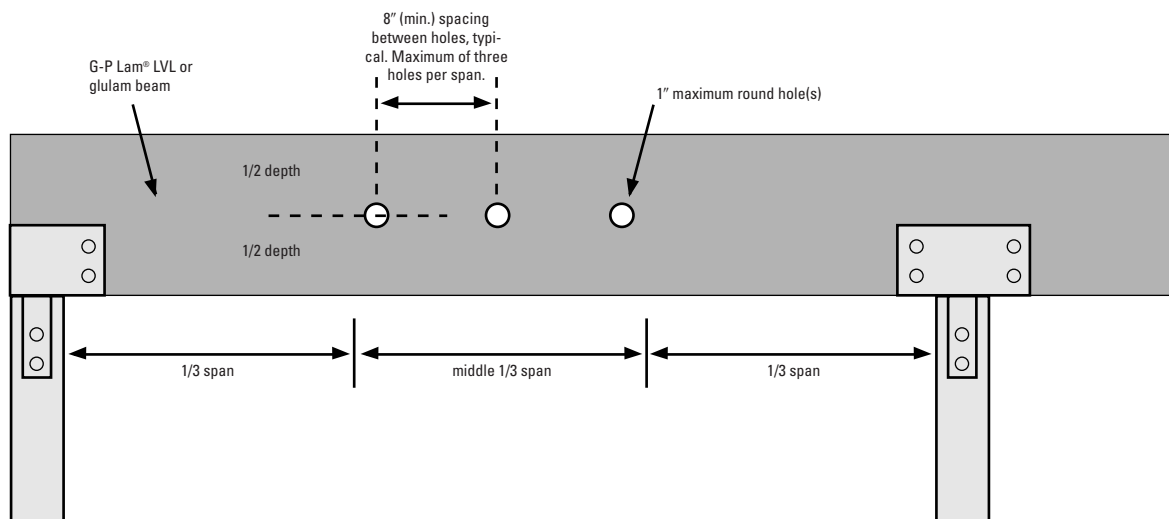
G-P Lam® LVL Floor Depth	Rafter Size	Beam Bearing Length	Rafter Slope									
			4/12		6/12		8/12		10/12		12/12	
			D outside (inches)	Reaction (lbs)	D outside (inches)	Reaction (lbs)	D outside (inches)	Reaction (lbs)	D outside (inches)	Reaction (lbs)	D outside (inches)	Reaction (lbs)
9¼" or 9½"	2 x 6	3½"	4.63	3855	4.40	4089	4.28	5100	4.24	5664	4.28	5966
		5¼"	4.05	3855	3.52	4089	3.11	5100	2.78	5664	2.53	5966
	2 x 8	3½"	6.48	5476	6.36	5936	6.38	6118	6.52	OK	6.75	OK
		5¼"	5.89	5476	5.48	5936	5.21	6118	5.06	OK	5.00	OK
	2 x 10	3½"	8.58	OK	8.59	OK	8.78	OK	9.12	OK	9.25	OK
		5¼"	8.00	OK	7.72	OK	7.62	OK	7.67	OK	7.83	OK
11¼" or 11½"	2 x 6	3½"	4.63	3855	4.40	4089	4.28	4396	4.24	5616	4.28	6451
		5¼"	4.05	3855	3.52	—	3.11	—	2.78	5616	2.53	6451
	2 x 8	3½"	6.48	5082	6.36	5859	6.38	6745	6.52	6921	6.75	6921
		5¼"	5.89	5082	5.48	5859	5.21	6745	5.06	7203	5.00	7417
	2 x 10	3½"	8.58	6921	8.59	6921	8.78	6921	9.12	OK	9.58	OK
		5¼"	8.00	7021	7.72	7375	7.62	7480	7.67	OK	7.83	OK
	2 x 12	3½"	10.69	OK	10.83	OK	11.19	OK	11.25	OK	11.25	OK
		5¼"	10.11	OK	9.95	OK	10.02	OK	10.27	OK	10.66	OK
14"	2 x 8	3½"	6.48	5082	6.36	5390	6.38	6111	6.52	6921	6.75	6921
		5¼"	5.89	5082	5.48	5390	5.21	6111	5.06	7550	5.00	8399
	2 x 10	3½"	8.58	6484	8.59	6921	8.78	6921	9.12	6921	9.58	6921
		5¼"	8.00	6484	7.72	7589	7.62	8564	7.67	9056	7.83	9267
	2 x 12	3½"	10.69	6921	10.83	6921	11.19	6921	11.73	OK	12.41	OK
		5¼"	10.11	8539	9.95	9096	10.02	9293	10.27	OK	10.66	OK
16"	2 x 8	3½"	6.48	5082	6.36	5390	6.38	5794	6.52	6276	6.75	6921
		5¼"	5.89	5082	5.48	5390	5.21	—	5.06	—	5.00	8498
	2 x 10	3½"	8.58	6484	8.59	6877	8.78	6921	9.12	6921	9.58	6921
		5¼"	8.00	6484	7.72	6877	7.62	8501	7.67	9601	7.83	10207
	2 x 12	3½"	10.69	6921	10.83	6921	11.19	6921	11.73	6921	12.41	6921
		5¼"	10.11	7886	9.95	9402	10.02	10187	10.27	10382	10.66	10382
18"	2 x 8	3½"	6.48	5082	6.36	5390	6.38	5794	6.52	6276	6.75	6818
		5¼"	5.89	—	5.48	—	5.21	—	5.06	—	5.00	—
	2 x 10	3½"	8.58	6484	8.59	6877	8.78	6921	9.12	6921	9.58	6921
		5¼"	8.00	6484	7.72	6877	7.62	7719	7.67	9616	7.83	10382
	2 x 12	3½"	10.69	6921	10.83	6921	11.19	6921	11.73	6921	12.41	6921
		5¼"	10.11	7886	9.95	8861	10.02	10382	10.27	10382	10.66	10382

NOTES:

- Prior to using this chart, beam size must be checked by tables or FASTBeam® software.
- Chart can be used for 1½", 5¼" and 7" wide G-P Lam® LVL beams
For 1½" wide beam: ½ x allowable reaction (lbs.)
For 5¼" wide beam: 1½ x allowable reaction (lbs.)
For 7" wide beam: 2 x allowable reaction (lbs.)
- Provide lateral support at bearing points, and continuous lateral support along top edge of beam.
- Listed values are for 2.0E G-P Lam LVL beam products.
- Special consultation is required for uplift reactions.
- Concentrated loads are not allowed in the tapered cut region.
- Southern Pine bearing plate is assumed. (Allowable bearing stress 565 psi.)
- Values are for Floor use, 100% duration of load increase.
- If OK is shown in Reaction column, full capacity is available.
- If no allowable reaction is shown, beam will not work with current input; try using a shallower beam with additional plies.
- Field verify slope and all dimensions.



Hole Chart and Connectors



Do not notch, drill or cut G-P Lam LVL except as shown in this publication.

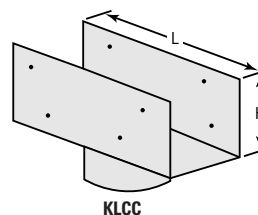
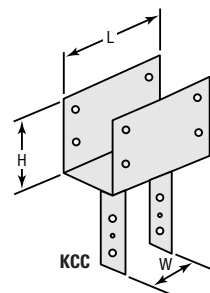
NOTES:

1. Hole(s) must be located at mid-depth and within the middle 1/3 span.
2. 1" maximum round hole diameter. No rectangular holes are allowed.
3. Use a minimum 8" spacing between holes and no more than three holes per span.
4. Chart is valid for single and multiple span uniformly loaded beams only. Chart is not valid for cantilever sections.
5. Minimum beam depth 9 1/4".

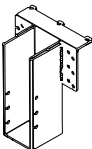

G-P Lam® LVL Beam-To-Column Connectors


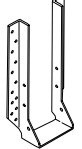
Column Cap	Capacity* Lbs.-100%	Total Width	Column**	W	L	H
KCC44	15315	3 1/2"	4 x __Wood	3 3/4"	7"	4"
KCC46	24065	3 1/2"	6 x __Wood	5 1/2"	11"	6 1/2"
KCC48	24065	3 1/2"	8 x __Wood	7 1/2"	11"	6 1/2"
KCC64	37815	5 1/4"	4 x __Wood	3 3/4"	11"	6 1/2"
KCC66	37815	5 1/4"	6 x __Wood	5 1/2"	11"	6 1/2"
KCC68	37815	5 1/4"	8 x __Wood	7 1/2"	11"	6 1/2"
KCC84	60940	7"	4 x __Wood	3 3/4"	13"	8"
KCC86	60940	7"	6 x __Wood	5 1/2"	13"	8"
KCC88	60940	7"	8 x __Wood	7 1/2"	13"	8"
KLCC35-4	21000	3 1/2"	4" dia. steel	—	11 1/2"	4"
KLCC525-4	21000	5 1/4"	4" dia. steel	—	11 1/2"	4"
KLCC7-4	21000	7"	4" dia. steel	—	11 1/2"	4"

*Capacity is maximum capacity of the USP column cap.
**Adequacy of column to be verified by others.



Framing Connectors For G-P LAM® LVL Beams

USP Lumber Connectors™					
G-P Lam LVL Member Supported		Top Mount	Capacity 100% (lbs)	Face Mount	Capacity 100% (lbs)
Thickness	Beam Depth				
1-3/4"	9 1/4"	BPH17925	3395	THD179	5170
	9 1/2"	BPH1795	3395	THD179	5170
	11 1/4"	BPH17112	3395	THD179	5170
	11 7/8"	BPH17118	3395	THD179	5170
	14"	BPH1714	3395	THD179	5170
3-1/2"	9 1/4"	LBH35925	6500	THDH410	7910
	9 1/2"	LBH3595	6500	THDH410	7910
	11 1/4"	LBH35112	6500	THDH412	9475
	11 7/8"	LBH35118	6500	THDH412	9475
	14"	HLBH3514	10620	THDH414	10990
	16"	HLBH3516	10620	THDH414	10990
5-1/4"	18"	HLBH3518	10620	THDH414	10990
	9 1/4"	HLBH52925	10620	THDH610	7840
	9 1/2"	HLBH5295	10620	THDH610	7840
	11 1/4"	HLBH52112	10620	THDH612	9475
	11 7/8"	HLBH52118	10620	THDH612	9475
	14"	HLBH5214	10620	THDH614	11105
7"	16"	HLBH5216	10620	THDH614	11105
	18"	HLBH5218	10620	THDH614	11105
	9 1/4"	HLBH71925	10620	THDH7210	7840
	9 1/2"	HLBH7195	10620	THDH7210	7840
	11 1/4"	HLBH71112	10620	THDH7212	9475
	11 7/8"	HLBH71118	10620	THDH7212	9475
	14"	HLBH7114	10620	THDH7214	11105
	16"	HLBH7116	10620	THDH7214	11105
	18"	HLBH7118	10620	THDH7214	11105

Simpson Strong-Tie® Connectors					
G-P Lam LVL Member Supported		Top Mount	Capacity 100% (lbs)	Face Mount	Capacity 100% (lbs)
Thickness	Beam Depth				
1-3/4"	9 1/4"	—	—	HUS1.81/10	4900
	9 1/2"	WPU1.81/9.5	4700	HUS1.81/10	4900
	11 1/4"	—	—	HUS1.81/10	4900
	11 7/8"	WPU1.81/11.88	4700	HUS1.81/10	4900
	14"	WPU1.81/14	4700	HUS1.81/10	4900
3-1/2"	9 1/4"	HWU3.56/9.25	6335	HGU5.50/10	7890
	9 1/2"	HWU3.56/9.5	6335	HGU5.50/10	7890
	11 1/4"	HWU3.56/11.25	6335	HGU5.50/12	9205
	11 7/8"	HWU3.56/11.88	6335	HGU5.50/12	9205
	14"	HWU3.56/14	6335	HGU5.50/14	9745
	16"	HWU3.56/16	6335	HGU5.50/14	9745
5-1/4"	18"	HWU3.56/18	6335	HGU5.50/14	9745
	9 1/4"	GLTV5.50/9.25	7500	HGU5.50/10	7890
	9 1/2"	HGLTV5.59	10500	HGU5.50/10	7890
	11 1/4"	GLTV5.50/11.25	7500	HGU5.50/12	9205
	11 7/8"	HGLTV5.511	10500	HGU5.50/12	9205
	14"	HGLTV5.514	10500	HGU5.50/14	9745
7"	16"	HGLTV5.516	10500	HGU5.50/14	9745
	18"	HGLTV5.518	10500	HGU5.50/14	9745
	9 1/4"	GLTV49.25-2	7500	HGU7.25/10	7890
	9 1/2"	HGLTV49.5-2	7500	HGU7.25/10	7890
	11 1/4"	GLTV411.25-2	7500	HGU7.25/12	9205
	11 7/8"	HGLTV411.88-2	10500	HGU7.25/12	9205
	14"	HGLTV414-2	10500	HGU7.25/14	9665
	16"	HGLTV416-2	10500	HGU7.25/14	9665
	18"	HGLTV418-2	10500	HGU7.25/14	9665

- Capacity is for the stated duration of load—100% floor loading. Hanger capacity depends on the hanger selected, quantity and size of nails used, and the size and type of support to which it is fastened. **Hanger capacities shown are based on attachment to LVL header material using the hanger manufacturer's recommended nailing. Minimum header thickness is 3-1/2".** Some hanger/header/fastener combinations may not meet maximum beam capacities and a qualified engineer should be consulted. Before selecting hangers, please refer to the appropriate reference/design guide from the hanger manufacturer for expanded design information. Many other designs are available for specialized applications.
- Hanger model numbers quoted are for United Steel Products Company and Simpson Strong-Tie hangers. Some suppliers carry similar products produced by other manufacturers. Contact your local building material retailer or Georgia-Pacific for conversion information and details.
- Special consideration is required with top mount hangers on nailers. Refer to the hanger manufacturer's catalog for reduced capacity.

G-P Lam® LVL Beam and Header Design Properties

1³/₄" 2.0E G-P Lam LVL Allowable Design Properties¹

Depth ²	Maximum Vertical Shear (lbs.)			Maximum Resistive Moment (ft. lbs.)			EI (10 ⁶ inch ² lbs.)	Weight (plf)
	100%	115%	125%	100%	115%	125%		
9 ¹ / ₄ "	3076	3537	3845	6315	7262	7894	231	4.3
9 ¹ / ₂ "	3159	3633	3948	6641	7637	8302	250	4.4
11 ¹ / ₄ "	3741	4302	4676	9140	10511	11425	415	5.2
11 ¹ / ₈ "	3948	4541	4936	10123	11641	12653	488	5.5
14"	4655	5353	5819	13815	15887	17269	800	6.5
16"	5320	6118	6650	17778	20445	22223	1195	7.4
18"	5985	6883	7481	22208	25539	27760	1701	8.4

1. Table assumes beam has lateral support at bearing points and continuous lateral support along the compression edge of the beam.

2. 1³/₄" x 16" and deeper beams must only be used in multiple-piece members.

2.0E G-P Lam LVL Allowable Design Stresses

Modulus of Elasticity	E = 2.0 x 10 ⁶ psi ⁽¹⁾	1. No increase is allowed to E or F _{c⊥} for duration of load.
Flexural Stress	F _b = 2950 psi ⁽²⁾	2. For depths (d) other than 12", multiply F _b by (12/d) ^{1/9} .
Horizontal Shear (joist)	F _v = 285 psi	
Compression Perpendicular to Grain (joist)	F _{c⊥} = 750 psi ⁽¹⁾	

3¹/₂" 2.0E G-P Lam LVL Allowable Design Properties¹

Depth	Maximum Vertical Shear (lbs.)			Maximum Resistive Moment (ft. lbs.)			EI (10 ⁶ inch ² lbs)	Weight (plf)
	100%	115%	125%	100%	115%	125%		
9 ¹ / ₄ "	6151	7074	7689	13486	15509	16858	462	8.8
9 ¹ / ₂ "	6318	7265	7897	14183	16310	17729	500	9.0
11 ¹ / ₄ "	7481	8603	9352	19519	22447	24399	830	10.8
11 ¹ / ₈ "	7897	9081	9871	21618	24861	27023	976	11.3
14"	9310	10707	11638	29503	33928	36879	1600	13.4
16"	10640	12236	13300	37967	43662	47458	2390	15.3
18"	11970	13766	14963	47427	54541	59284	3402	17.2

1. Table assumes beam has lateral support at bearing points and continuous lateral support along the compression edge of the beam.

2.0E G-P Lam LVL Allowable Design Stresses

Modulus of Elasticity	E = 2.0 x 10 ⁶ psi ⁽¹⁾	1. No increase is allowed to E or F _{c⊥} for duration of load.
Flexural Stress	F _b = 3150 psi ⁽²⁾	2. For depths (d) other than 12", multiply F _b by (12/d) ^{1/9} .
Horizontal Shear (joist)	F _v = 285 psi	
Compression Perpendicular to Grain (joist)	F _{c⊥} = 750 psi ⁽¹⁾	

Contact your local retail dealer or G-P Distribution Center for products available in your area.

G-P Lam® LVL Architectural Specifications

Part 1—General

1.0—Description

- A. Work in this section includes, but is not limited to:
Laminated Veneer Lumber (LVL) beams and headers.
- B. Related work specified elsewhere:
Rough carpentry.

1.1—Submittals:

- A. Product data:
Submit manufacturer's descriptive literature indicating material composition, thicknesses, dimensions, loading and fabrication details.
- B. Shop drawings:
Submit manufacturer's literature indicating installation details. Include locations and details of bearing, blocking, bridging and cutting for work by others.

1.2—Quality assurance:

- A. Certification:
Certify that materials meet specified requirements.
- B. Regulatory requirements:
G-P Lam LVL is listed with major building codes. Contact Georgia-Pacific for most current code compliance.

1.3—Delivery, Storage and Handling:

- A. Delivery:
Deliver materials to the job site in manufacturer's original packaging, containers and bundles with manufacturer's identification intact and legible.
- B. Storage and handling:
Store and handle materials to protect against contact with damp and wet surfaces, exposure to weather, breakage and damage. Provide air circulation under covering and around stacks of materials.

1.4—Limitations:

- A. Cutting:
Except for cutting to length, G-P Lam LVL beams & headers shall not be cut, drilled or notched, except as noted in manufacturer's literature.
- B. Moisture conditions:
G-P Lam LVL is for use in covered, dry conditions only.

Part 2.0—Products

2.1—Prefabricated wood beams and headers:

- A. Acceptable products:
 - 1. Georgia-Pacific Corporation, G-P Lam LVL floor and roof beams.
 - 2. Georgia-Pacific Corporation, G-P Lam LVL window and door headers.
- B. Characteristics:
 - 1. Construction:
1¾" or 3½" thick pressure bonded, lap-jointed wood veneers, with grain of veneers running parallel in the long direction.
 - 2. Beam depths:
9¼", 9½", 11¼", 11½", 14", 16" and 18", as required for loading, deflection and span.
 - 3. Beam length:
As required for span and bearing.

2.2—Accessories:

- A. Fasteners:
16d common nails and ½" bolts.
- B. Hangers:
 - 1. Contact Georgia-Pacific or an engineer for acceptable connectors.

Part 3—Execution

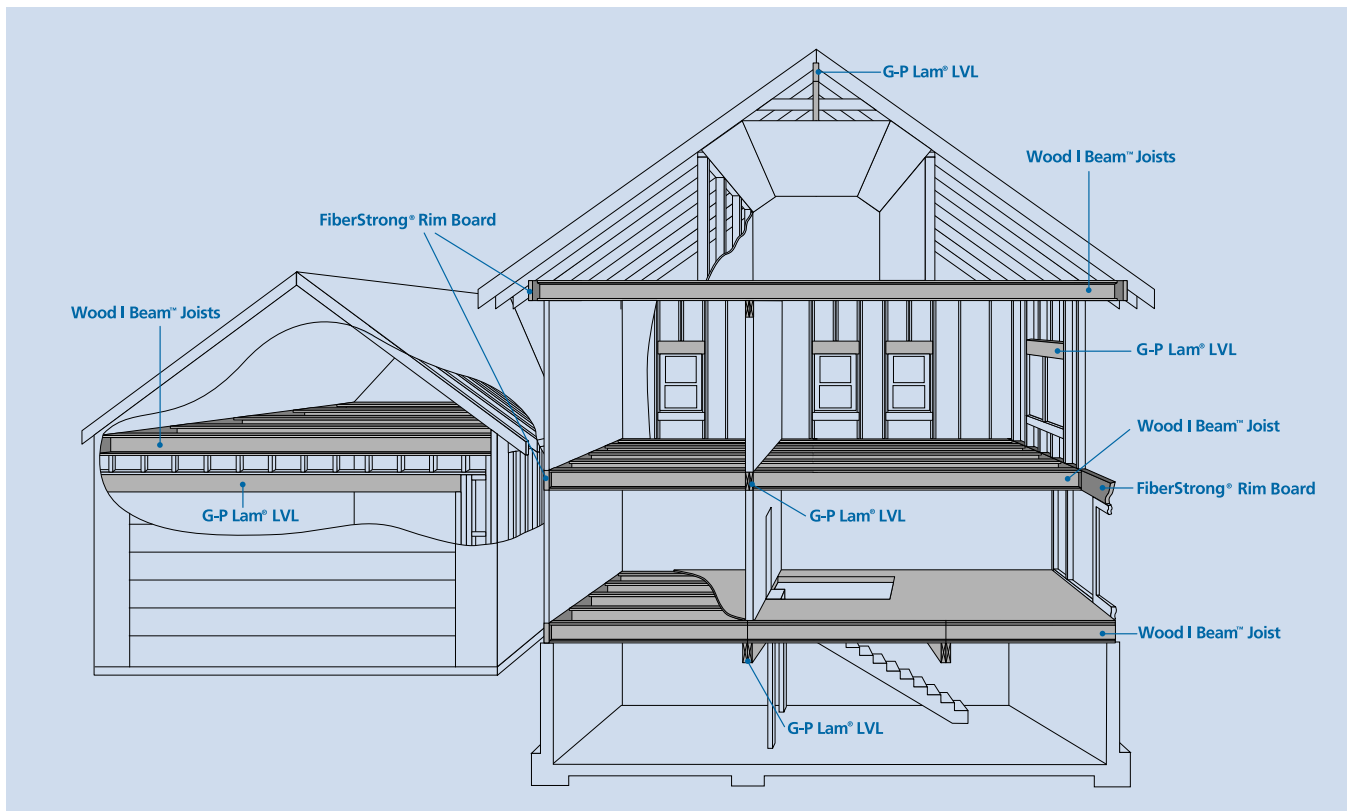
3.0—General:

- A. Provide G-P Lam LVL beams and headers where indicated on drawings using hangers and accessories specified.
- B. Install G-P Lam LVL beams and headers in accordance with manufacturer's recommendations.

3.2—Accessories:

Install accessories where indicated and in accordance with beam and header manufacturer's instructions.

Engineered for performance



When it comes to floor joists, rimboard, beams and headers, builders and contractors choose G-P engineered lumber for many reasons. Today's residential building trends call for large, open spaces and high ceilings, creating a demand for products that provide higher strength and greater stability over longer spans.

Georgia-Pacific engineered lumber provides the following benefits:

- More open spaces
- Quieter floors with less vibration
- A flat, level, more stable floor system
- Environmentally responsible
- Limited lifetime warranty

For more information, call 1-800 BUILD GP
or visit www.gp.com/englumber.



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