

FRAMING DETAILS

F07

Nail rimboard to Joists with 2 1/2" (8d) nail into each flange. Dimension lumber is not suitable for use as rim board with I-Joists.

F07A

Dimension lumber is not suitable for use as rim board with I-Joists.

F01

Joist blocking

F02

Rim Joist
NJ40/60U requires 2X6 wall for minimum bearing

F27A

Top flange or face mount Joist hanger
LVL

F52

One 2 1/2" (8d) nail each side at bearing
1 1/2" minimum bearing length (1 3/4" for 18-24" deep)
To limit splitting flange, start nails at least 1 1/2" from end. Nails may need to be driven at an angle to limit splitting of bearing plate.

F08

Solid block all posts from above to bearing below

F03

Rim Joist
NJ40/60U requires 2X6 wall for minimum bearing
Joist must be designed to carry wall above when not stacked over wall below

INTERMEDIATE BEARING DETAILS

F06

For load bearing wall above (stacked over wall below)
Joist blocking

F09

Blocking may be required, consult design professional of record and/or local building official.
Load bearing wall above (stacked over wall below)
2X block
Nail block with one 3" (10d) nail into each flange

Double Squash Block Vertical Load [lb/R]				
Size	Joist Spacing [in]			
	12	16	19.2	24
2X4	6460	4840	4030	3230
2X6	10140	7600	6330	5070

1. Squash blocks are to be in full contact with upper floor and lower wall plate.
2. Capacities shown are for double squash blocks at each Joist, for single squash block, divide the vertical load by 2.

F10

Backer block (minimum 12" wide). Nail with 10 - 3" (10d) nails.
Joist hanger
Filler block. Nail with 10 - 3" (10d) nails.
Backer block required where top flange Joist hanger load exceeds 250 lbs. Install tight to top flange.

F58

Double Joist Connection
Web filler nailing 12" o/c
Connection valid for all applications.

PLYWOOD/OSB REINFORCEMENT

3/4" min. x 48" long plywood/OSB rated sheathing must match the full depth of the Joist. Nail to the Joist with 2 1/2" (8d) nails at 6" o/c and nail with 4 - 2 1/2" (8d) nails into backer block. When reinforcing both sides, stagger nails to limit splitting. Install with horizontal face grain. Contact KOTT design for reinforcement requirements on Joist depths greater than 16".

F05A

Joist or rimboard blocking
Nail per local code provisions
Intermediate bearing
Cross bracing OK as blocking only if support below is not a braced wall panel or shear wall, and no wall exists above
2'-0" Uplift on back span shall be considered in all cantilever designs

LATERAL SUPPORT

- Joists must be laterally supported at the ends with hangers, Rim Joists, rimboard, blocking panels or cross-bracing. Blocking panels or cross-bracing are required at cantilever supports.
- Blocking may be required at intermediate bearings for floor diaphragm as per Code, consult local building official.

MINIMUM BEARING LENGTH FOR JOISTS

- 1 1/2" is required at end supports. 3 1/2" is required at cantilever and intermediate supports.
- Longer bearing lengths allow higher reaction values. Refer to the Bldg Code evaluation report.

NAILING REQUIREMENTS

Rim Joist, rimboard or closure panel to Joist:

- Rims or closure panel 1 1/4" thick and less: 2 - 2 1/2" (8d) nails, one each in the top and bottom flange.
- NJ40/60H Rim Joist: 2 - 3 1/2" (16d) box nails, one each in the top and bottom flange.

- NJ40/60U Rim Joist: Toe-nail top flange to Rim Joist with 2-10d box nails, one on each side of flange.

Rim Joist, rimboard or blocking panel to support:

- 2 1/2" (8d) nails at 6" o/c
- When used for shear transfer, follow the building designer's specification.

Joist to Support:

- 2 - 2 1/2" (8d) nails, one on each side of the web, placed 1 1/2" minimum from the end of the Joist to limit splitting.

Sheathing to Joist:

- Prescriptive residential floor sheathing nailing requires 2 1/2" (8d) common nails at 6" o/c on edges and at 12" o/c in the field as per Code.
- Maximum nail spacing for minimum lateral stability is 24".
- 14 gauge staples may be substituted for 2 1/2" (8d) nails if the staples penetrate at least 1" into the Joist.
- Wood screws may be acceptable, contact local building official or KOTT for more information.

BACKER AND FILLER BLOCK DIMENSIONS

Series	Backer Block Thickness	Filler Block Thickness
NJ40H	1 1/4" or two 1/2" wood panels	2X_ + 1/4" wood panel
NJ60H	1 1/4" or two 1/2" wood panels	2X_ + 1/4" wood panel
NJ40U	2X_ lumber	Double 2X_ lumber
NJ60U	2X_ lumber	Double 2X_ lumber

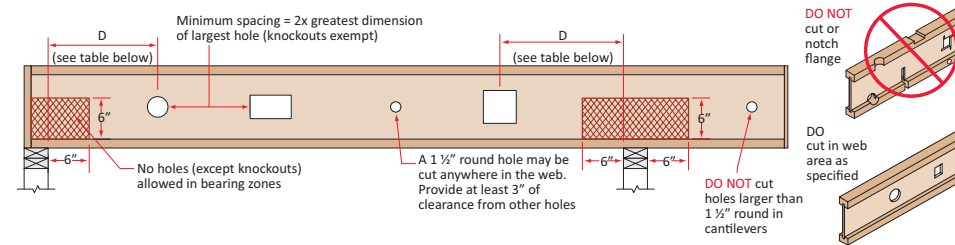
- Cut backer and filler blocks to a maximum depth equal to the web depth minus 1/4" to avoid a forced fit.
- For deeper NJ40/60U Joists, stack 2X lumber or use multiple pieces of 3/4" wood panels.

PROTECT JOISTS FROM THE WEATHER

- Joists are intended only for applications that provide permanent protection from the weather. Bundles of product should be covered and stored off of the ground.

HOLE CUTTING CHARTS

for Residential Applications (40/15 PSF)



Joists are manufactured with 1 1/2" round perforated knockouts in the web at approximately 12" o/c. Minimum distance from support, listed in the table below, is required for all holes greater than 1 1/2"

TABLE 1		ROUND HOLES															
Minimum distance from inside face of any support to the centerline of hole		JOIST DEPTH • HOLE SIZE [IN]															
Span [ft]	9 1/2"	11 1/2"				14"				16"							
		3"	6"	9"	12"	3"	6"	9"	12"	3"	6"	9"	12"				
8'	1'-0"	1'-6"	-	-	1'-0"	1'-0"	-	-	1'-0"	1'-0"	1'-0"	-	-	1'-0"	1'-0"	1'-0"	1'-0"
10'	1'-0"	2'-6"	-	-	1'-0"	1'-0"	-	-	1'-0"	1'-0"	1'-0"	-	-	1'-0"	1'-0"	1'-0"	1'-0"
12'	1'-0"	4'-0"	-	-	1'-0"	1'-0"	-	-	1'-0"	1'-0"	1'-0"	-	-	1'-0"	1'-0"	1'-0"	1'-6"
14'	1'-0"	5'-0"	-	-	1'-0"	1'-0"	-	-	1'-0"	1'-0"	1'-6"	-	-	1'-0"	1'-0"	1'-0"	2'-6"
16'	2'-0"	6'-6"	-	-	1'-0"	1'-0"	-	-	1'-0"	1'-0"	2'-6"	-	-	1'-0"	1'-6"	1'-0"	3'-6"
18'	3'-0"	7'-6"	-	-	1'-0"	3'-6"	-	-	1'-0"	1'-0"	4'-0"	-	-	1'-0"	1'-0"	1'-0"	4'-6"
20'	4'-0"	9'-0"	-	-	1'-0"	4'-6"	-	-	1'-0"	1'-0"	5'-0"	-	-	1'-0"	1'-0"	2'-0"	6'-0"
22'	5'-0"	10'-0"	-	-	1'-6"	5'-6"	-	-	1'-0"	2'-6"	6'-0"	-	-	1'-0"	1'-0"	3'-0"	7'-0"
24'	6'-6"	11'-6"	-	-	2'-6"	7'-0"	-	-	1'-0"	3'-6"	7'-6"	-	-	1'-0"	1'-0"	4'-0"	8'-0"
26'	-	-	-	-	4'-0"	8'-0"	-	-	1'-0"	4'-6"	8'-6"	-	-	1'-0"	1'-6"	5'-6"	9'-6"
28'	-	-	-	-	5'-0"	9'-0"	-	-	2'-0"	5'-6"	10'-0"	-	-	1'-0"	2'-6"	6'-6"	10'-6"
30'	-	-	-	-	3'-0"	7'-0"	-	-	3'-0"	7'-0"	11'-0"	-	-	1'-0"	4'-0"	7'-6"	12'-0"
32'	-	-	-	-	-	-	-	-	4'-0"	8'-0"	12'-6"	-	-	1'-6"	5'-0"	9'-0"	13'-0"
34'	-	-	-	-	-	-	-	-	-	-	-	-	-	2'-6"	6'-0"	10'-0"	14'-6"

NOTES:

1. Hole may be positioned vertically anywhere in the web.
2. Use Table 1 for uniformly loaded maximum loads of 40 psf live loads and 15 psf dead loads on simple span application.
3. For other load conditions or hole sizes, contact KOTT.

F15E

CONNECTION WITH HANGER ON STEEL BEAM

Sill plate to be properly anchored to steel beam
Steel beam
Backer block optional

F16D

HANGER CONNECTIONS TO JOIST HEADERS

Backer block
1/4" to 2" gap
"Top Mount" Backer block shall be tight to bottom of top flange with 1/4" to 2" gap at top of bottom flange
"Face Mount" Backer block shall be tight to bottom of top flange with 1/4" to 2" gap at top of bottom flange

F16E

Web stiffeners are optional except as noted below. Stiffeners are always required in hangers that do not extend up to support the top flange of the Joist. Web stiffeners may be required with certain sloped or skewed hangers or to achieve uplift values. Refer to hanger manufacturer's installation guide.

- Stiffeners may be cut from structural rated wood panels, engineered rimboard or 2X lumber (NJ40/60U only).
- For structural capacity: Web stiffeners needed to increase the Joist's reaction at a specific bearing location.
- Stiffeners are always required in certain roof applications.
- Stiffeners are always required under concentrated loads that exceed 1000 pounds. Install the web stiffeners snug to the top flange in this situation. Follow the nailing schedule for intermediate bearings.
- Stiffeners may be used to increase allowable reaction values. See Factored Resistances Limit States Design (CANADA) or design software.

Small gap: 1/4" min. 2" max. 4" max.
See web stiffener nailing schedule chart
Web stiffener width
Clinch nails
Tight fit
Web stiffener required when concentrated load exceeds 1000 lbs
Web stiffeners applied to both sides of the Joist web

F15A

Joist blocking
Wood structural panel closure
Drywall ceiling or wood structural panel soffit
Back span
Maximum 1/4 back span not to exceed 4'-0"

F15B

Fasten the 2X8 minimum to the Joist by nailing through the backer block and Joist web with 2 rows of 3" (10d) nails at 6" o/c. Use 3 1/2" (16d) nails with NJ40/60U Joists. Clinch all nails.

Wood backer block
2x8 minimum
Joist blocking
2X_ closure
3 1/2" min. bearing
Back span
Min. 1.5x cantilever length
Maximum 1/4 back span not to exceed 4'-0"

VERSA-LAM® MULTIPLE MEMBER CONNECTIONS

Rows	Depth	Spacing	Maximum Factored Uniform Load (PLF) Applied to Either Outside Member			
			3 1/2" (2 plys)	5 1/4" (3 plys)	5 1/4" (2 plys)	7" (3 plys)
3 1/2" Common Wire Nails (16d)						
2	7 1/4" to 12"	24"	434	325	325	289
	18"	6"	867	650	650	578
3	11 1/4" to 12"	24"	1734	1301	1301	1156
	24"	6"	650	488	488	434
4	14" to 24"	24"	1301	976	976	867
	24"	6"	2602	1951	1951	1734
4	14" to 24"	24"	867	650	650	578
	24"	6"	1734	1301	1301	1156
4	14" to 24"	24"	3469	2602	2602	2312

Rows	Depth	Spacing	Maximum Factored Uniform Load (PLF) Applied to Either Outside Member		
			3 1/2" (2 plys)	5 1/4" (3 plys)	7" (4 plys)
SDS 1/4"x3.5"					
2	7 1/4" to 18"	12"	1220	915	1040
	18"	6"	2440	1830	2080
3	11 1/4" to 24"	12"	1830	1373	1560
	24"	6"	3660	2745	3120

Rows	Depth	Spacing	Maximum Factored Uniform Load (PLF) Applied to Either Outside Member		
			3 1/2" (2 plys)	5 1/4" (3 plys)	7" (4 plys)
3/8" Bolts A307					
2	7 1/4" to 18"	12"	1560	1170	1040
	18"	6"	3120	2340	2080
3	11 1/4" to 24"	12"	2340	1755	1560
	24"	6"	4680	3510	3120

NOTES:

- Design values apply to common bolts that conform to ASTM A307 Grades A&B, SAE J429 Grades 2 or higher. A washer not less than a standard cut washer shall be between the wood and the bolt head and between the wood and the nut. The minimum edge distance for bolts shall be 2". The minimum end distance for bolts shall be 4". Bolt holes shall not be greater than 1/4" of the bolt diameter.
- When 3 1/4" pneumatic gun nails 0.122" diameter (10d) are used, multiply the maximum factored uniform load for the 3 1/2" common wire nails by 0.61 factor.
- The nail schedules shown apply to both sides of a 3-member beam.
- 4-ply beams must be top-loaded or loaded from both sides. Lesser side shall be no less than 25% of the opposite side.
- Beams wider than 7" must be designed by the professional Engineer of record.
- An equivalent specific gravity of 0.5 may be used when designing specific connections with VERSA-LAM®. Connection design is based on CSA 086-09.
- Simpson Strong-Drive, FastenMaster TrussLok, and USP WS screws may also be used to connect multiple member VERSA-LAM® beams. Contact Boise Cascade EWP Engineering for further information.