



Installation Information

TECHNICAL DATA FOR THE PROPER INSTALLATION OF JSI PRODUCTS



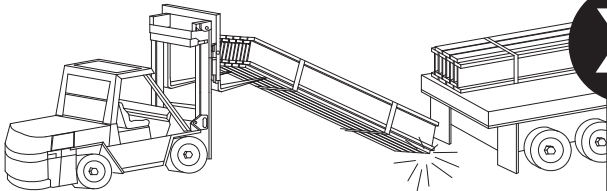
CANADA: Tel: 1-403-723-9988
www.jagerewp.com



Jobsite Handling

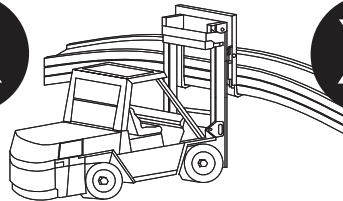
DO NOT

dump or drop JSIs from truck.
Use fabric slings when hoisting by crane



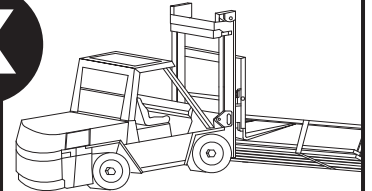
DO NOT

lift JSIs in the flat orientation



DO NOT

lift products by the flange



DO NOT use JSIs for other purposes such as ramps, planks, etc.
DO NOT use damaged JSIs without first checking with your distributor or a **Jager Engineered Wood Products** representative.

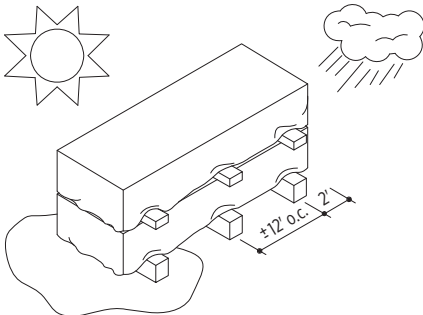
WARNING

Failure to follow good procedures for handling and storage could result in unsatisfactory performance, unsafe structures and possible collapse.

Jobsite Storage

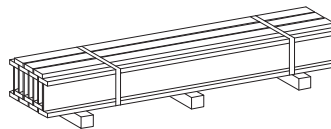
DO

protect (cover) JSIs from extended exposure to sun and water. Use adequate supports to keep JSIs above ground and out of mud and water.



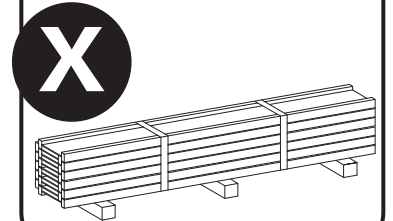
DO

leave JSIs banded together until ready to install. Always store joists in a vertical orientation.



DO NOT

store JSIs in a flat or horizontal orientation



DO NOT stack bundles more than 10' high

WARNING

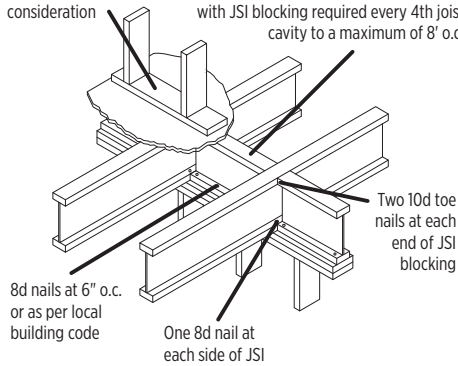
Workers should stay clear when cutting and banding to avoid possible injury from flying banding or toppling JSIs

Typical Floor Details

17a Interior Load Bearing Wall¹

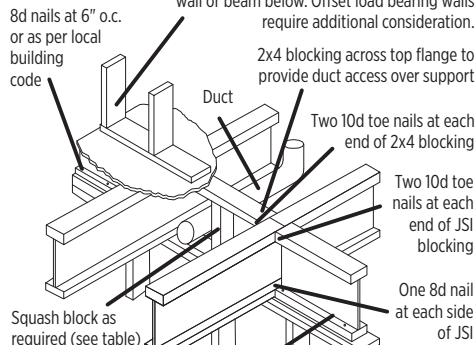
Load bearing wall must align with JSI blocking and wall or beam below. Offset load bearing walls require additional consideration

For discontinuous JSI; JSI blocking required for each joist cavity. For continuous JSI, in non load bearing wall conditions; JSI blocking required every 4th joist cavity to a maximum of 8' o.c. For continuous JSI, in load bearing wall conditions, JSI blocking required for each joist cavity or Squash Blocks (see detail 17f) with JSI blocking required every 4th joist cavity to a maximum of 8' o.c.



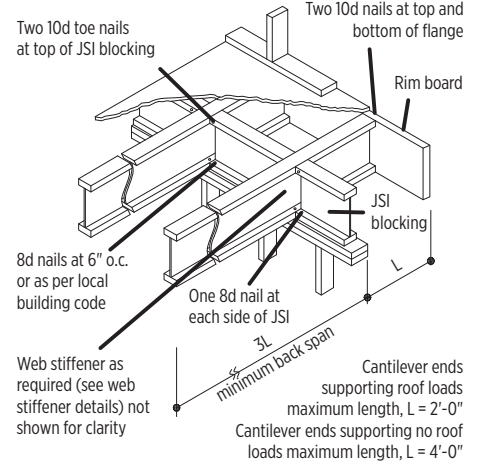
17b Duct Access^{1, 3}

Load bearing wall must align with JSI blocking and wall or beam below. Offset load bearing walls require additional consideration.



For discontinuous JSI; JSI blocking required for each joist cavity. For continuous JSI, in non load bearing wall conditions; JSI blocking required every 4th joist cavity to a maximum of 8' o.c. For continuous JSI, in load bearing wall conditions, JSI blocking required for each joist cavity or Squash Blocks (see detail 17f) with JSI blocking required every 4th joist cavity to a maximum of 8' o.c.

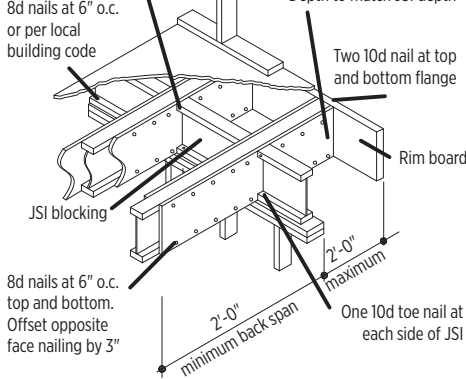
17c Unreinforced Load Bearing Cantilever²



17d Reinforced Load Bearing Cantilever

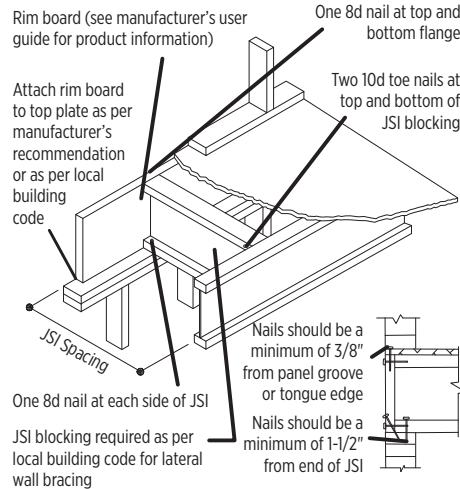
Two 10d toe nails at top of JSI blocking; 8d nails at 6" o.c. or per local building code

APA rated sheathing 48/24" (minimum thickness 23/32") on both sides of JSI. Install with face grain horizontal. Depth to match JSI depth

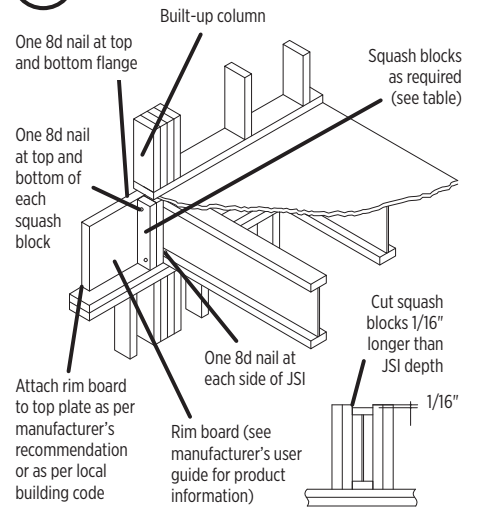


Web stiffener as required (see Load Bearing Cantilever Table and Web Stiffener Details) not shown for clarity

17e Perpendicular Blocking at Exterior Wall

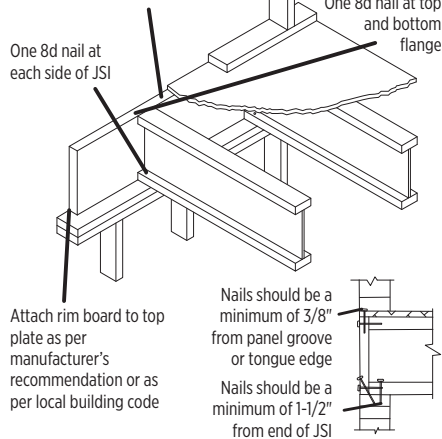


17f Squash Block³

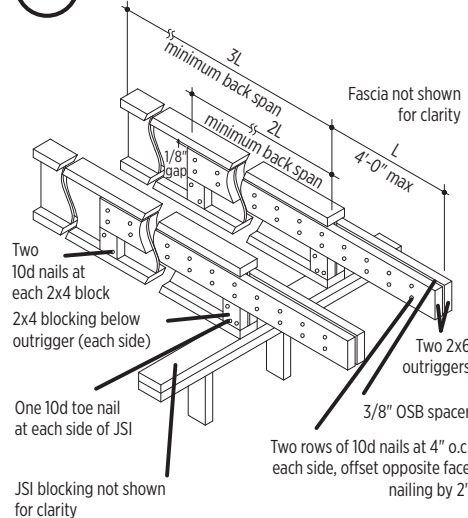


17g Rim Board

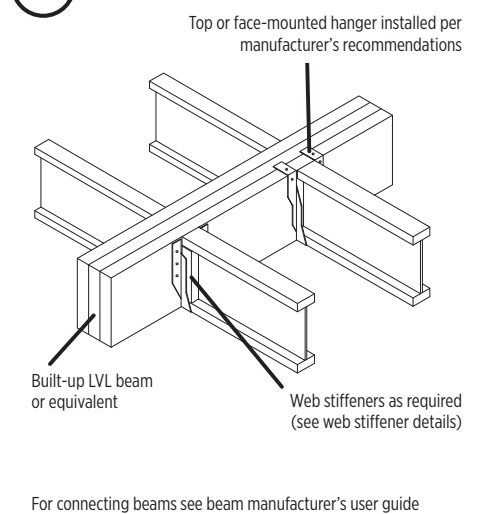
Rim board (see manufacturer's user guide for product information)



18a Dropped Cantilever

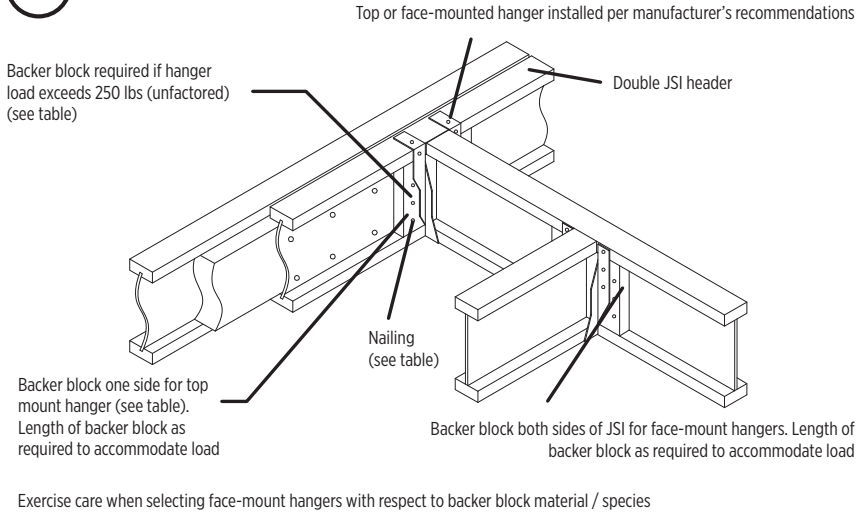


18b Flush Connection to LVL Beam

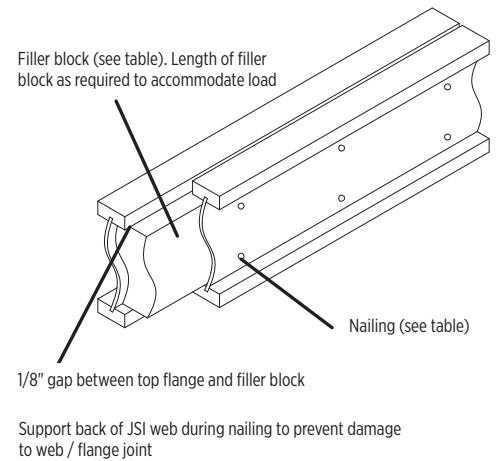


Typical Floor Details

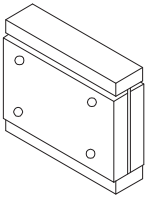
20a Backer Block



20b Filler Block

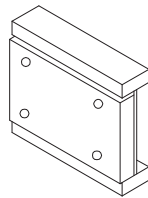


Backer Block Both Sides or With Filler Block



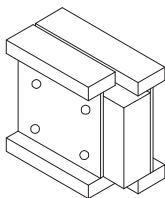
| Series | Depth (in) | Backer Block Min. Depth (in) | Backer Block Material | Nail Size | Nail Number of Rows | Side Load–Low Factored Resistance | | Side Load–High Factored Resistance | |
|----------------------|------------|------------------------------|-----------------------------|-----------|---------------------|-----------------------------------|---------------------------|------------------------------------|---------------------------|
| | | | | | | Nail Spacing (in) | Factored Resistance (plf) | Nail Spacing (in) | Factored Resistance (plf) |
| JSI 2000 JSI 3000 | 9-1/2 | 5-1/2 | 1" Structural Wood Panel | 10d | 2 | 6 | 495 | 3 | 990 |
| | 11-7/8 | 7-1/4 | | 10d | 2 | 6 | 495 | 3 | 990 |
| | 14 | 10-3/4 | | 10d | 3 | 6 | 745 | 3 | 1,490 |
| | 16 | 12-3/4 | | 10d | 3 | 6 | 745 | 3 | 1,490 |
| JSI 4000 | 9-1/2 | 5-1/2 | 2x_ | 16d | 2 | 6 | 550 | 3 | 1,105 |
| | 11-7/8 | 7-1/4 | | 16d | 2 | 6 | 550 | 3 | 1,105 |
| | 14 | 10-3/4 | | 16d | 3 | 6 | 830 | 3 | 1,655 |
| | 16 | 12-3/4 | | 16d | 3 | 6 | 830 | 3 | 1,655 |
| | 18 | 14-3/4 | | 16d | 4 | 6 | 1,105 | 3 | 2,210 |
| | 20 | 16-3/4 | | 16d | 4 | 6 | 1,105 | 3 | 2,210 |

Backer Block One Side



| Series | Depth (in) | Backer Block Min. Depth (in) | Backer Block Material | Nail Size | Nail Number of Rows | Side Load–Low Factored Resistance | | Side Load–High Factored Resistance | |
|----------------------|------------|------------------------------|-----------------------------|-----------|---------------------|-----------------------------------|---------------------------|------------------------------------|---------------------------|
| | | | | | | Nail Spacing (in) | Factored Resistance (plf) | Nail Spacing (in) | Factored Resistance (plf) |
| JSI 2000 JSI 3000 | 9-1/2 | 5-1/2 | 1" Structural Wood Panel | 10d | 2 | 6 | 395 | 3 | 790 |
| | 11-7/8 | 7-1/4 | | 10d | 2 | 6 | 395 | 3 | 790 |
| | 14 | 10-3/4 | | 10d | 3 | 6 | 595 | 3 | 1,190 |
| | 16 | 12-3/4 | | 10d | 3 | 6 | 595 | 3 | 1,190 |
| JSI 4000 | 9-1/2 | 5-1/2 | 2x_ | 16d | 2 | 6 | 435 | 3 | 870 |
| | 11-7/8 | 7-1/4 | | 16d | 2 | 6 | 435 | 3 | 870 |
| | 14 | 10-3/4 | | 16d | 3 | 6 | 655 | 3 | 1,310 |
| | 16 | 12-3/4 | | 16d | 3 | 6 | 655 | 3 | 1,310 |
| | 18 | 14-3/4 | | 16d | 4 | 6 | 870 | 3 | 1,745 |
| | 20 | 16-3/4 | | 16d | 4 | 6 | 870 | 3 | 1,745 |

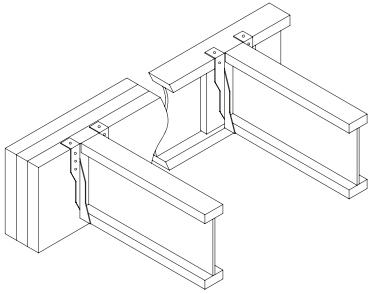
Filler Block



| Series | Depth (in) | Filler Block Min. Depth (in) | Filler Block Material | Nail Size | Nail Number of Rows | Transfer Load–Low Factored Resistance | | Transfer Load–High Factored Resistance | |
|----------------------|------------|------------------------------|--|-----------|---------------------|---------------------------------------|---------------------------|--|---------------------------|
| | | | | | | Nail Spacing (in) | Factored Resistance (plf) | Nail Spacing (in) | Factored Resistance (plf) |
| JSI 2000 JSI 3000 | 9-1/2 | 5-1/2 | 2x_ Plus 5/8" Structural Wood Panel | 8d | 2 | 8 | 235 | 4 | 475 |
| | 11-7/8 | 7-1/4 | | 8d | 2 | 8 | 235 | 4 | 475 |
| | 14 | 10-3/4 | | 8d | 3 | 8 | 355 | 4 | 710 |
| | 16 | 12-3/4 | | 8d | 3 | 8 | 355 | 4 | 710 |
| JSI 4000 | 9-1/2 | 5-1/2 | 2-2x_ Plus 3/8" Structural Wood Panel | 10d | 2 | 8 | 295 | 4 | 595 |
| | 11-7/8 | 7-1/4 | | 10d | 2 | 8 | 295 | 4 | 595 |
| | 14 | 10-3/4 | | 10d | 3 | 8 | 445 | 4 | 890 |
| | 16 | 12-3/4 | | 10d | 3 | 8 | 445 | 4 | 890 |
| | 18 | 14-3/4 | | 10d | 4 | 8 | 595 | 4 | 1,190 |
| | 20 | 16-3/4 | | 10d | 4 | 8 | 595 | 4 | 1,190 |

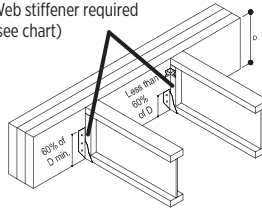
Hanger Connections

21a Correct Hanger Installation



21b Rotation Resistance

Web stiffener required (see chart)

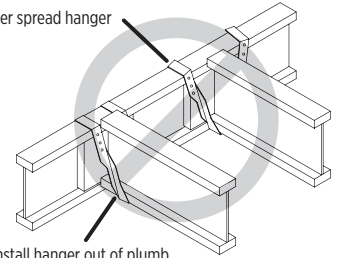


If hanger side flange is less than 60% of JSI depth, attach staggered framing anchors above the hangers

Hanger side flange should be at least 60% of JSI depth or potential joist rotation must be addressed

21d Out of Plumb or Over Spread

Do not over spread hanger



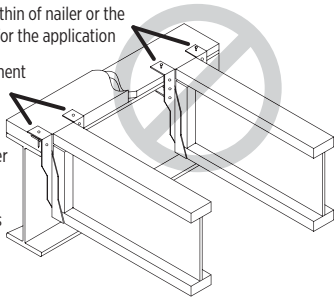
Do not install hanger out of plumb

21e Nailer Too Thin

Do not use too thin of nailer or the wrong hanger for the application

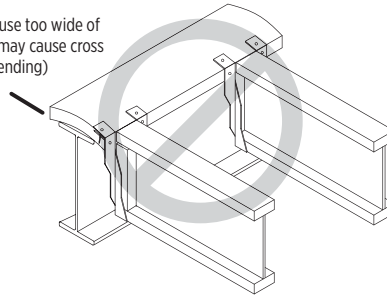
Correct attachment

No web stiffener required when hanger side flange supports JSI top flange



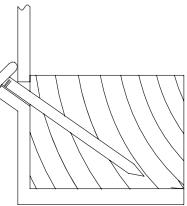
21f Nailer Too Wide

Do not use too wide of nailer (may cause cross grain bending)



21g Flange Nailing

Correct nailing (approximately 45° angle)

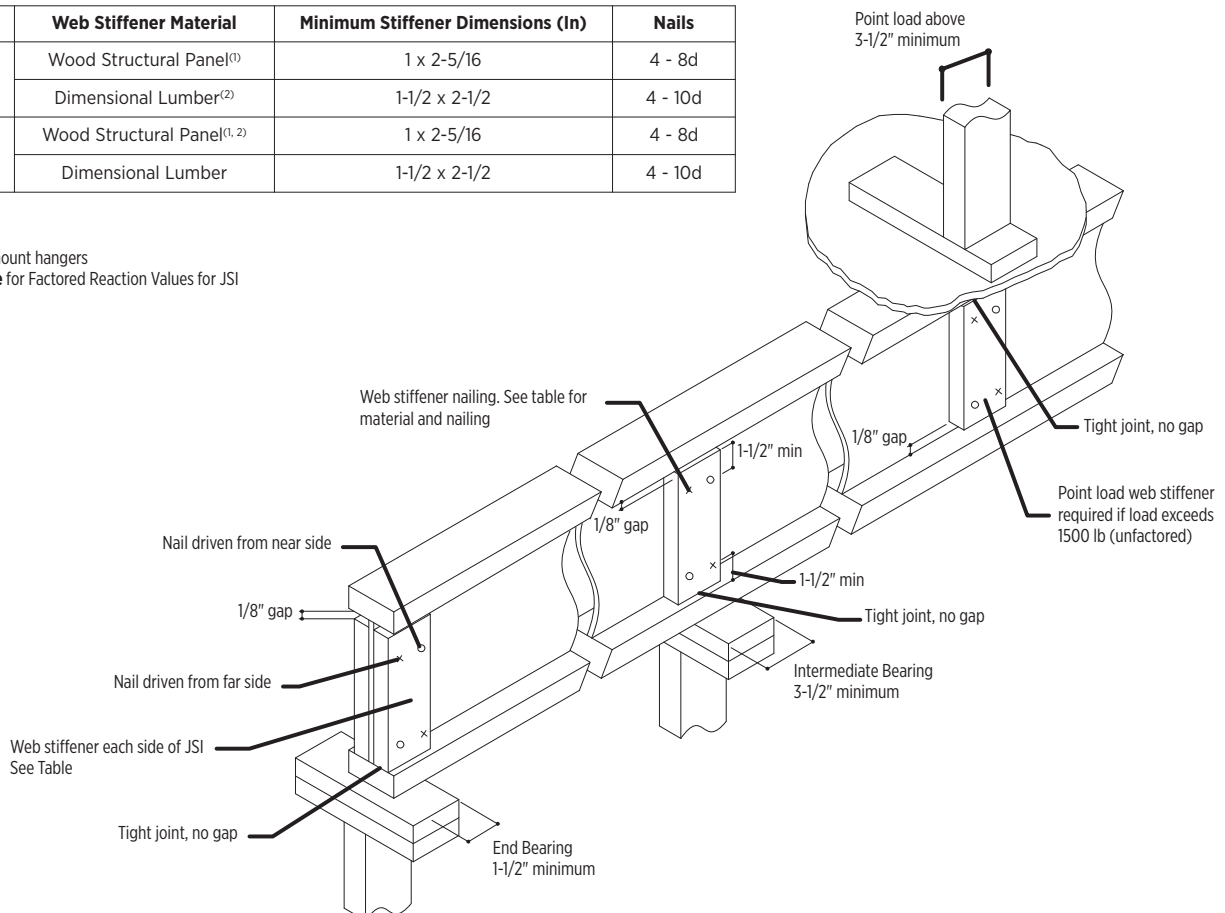


Minimum Joist Bearing and Web Stiffener Installation³

| Series | Web Stiffener Material | Minimum Stiffener Dimensions (In) | Nails |
|-----------------|---|-----------------------------------|---------|
| JSI 2000 & 3000 | Wood Structural Panel ⁽¹⁾ | 1 x 2-5/16 | 4 - 8d |
| | Dimensional Lumber ⁽²⁾ | 1-1/2 x 2-1/2 | 4 - 10d |
| JSI 4000 | Wood Structural Panel ^(1, 2) | 1 x 2-5/16 | 4 - 8d |
| | Dimensional Lumber | 1-1/2 x 2-1/2 | 4 - 10d |

NOTES:

1. Face grain vertical
2. Not for use with face mount hangers
3. Refer to **JSI User Guide** for Factored Reaction Values for JSI

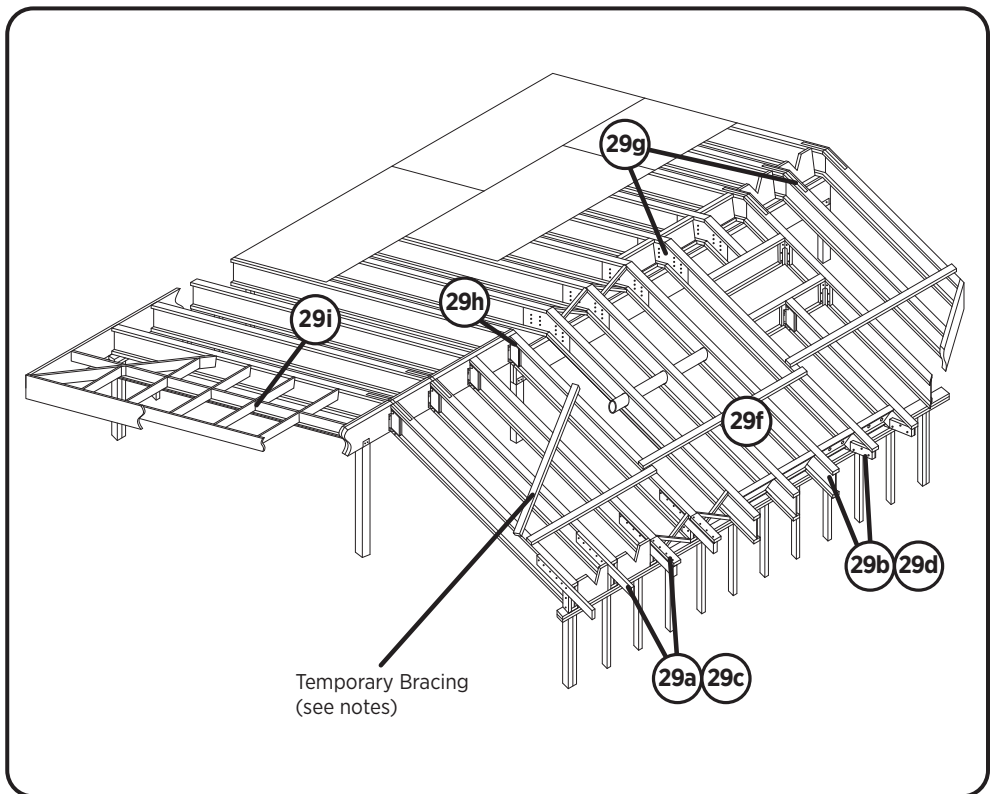
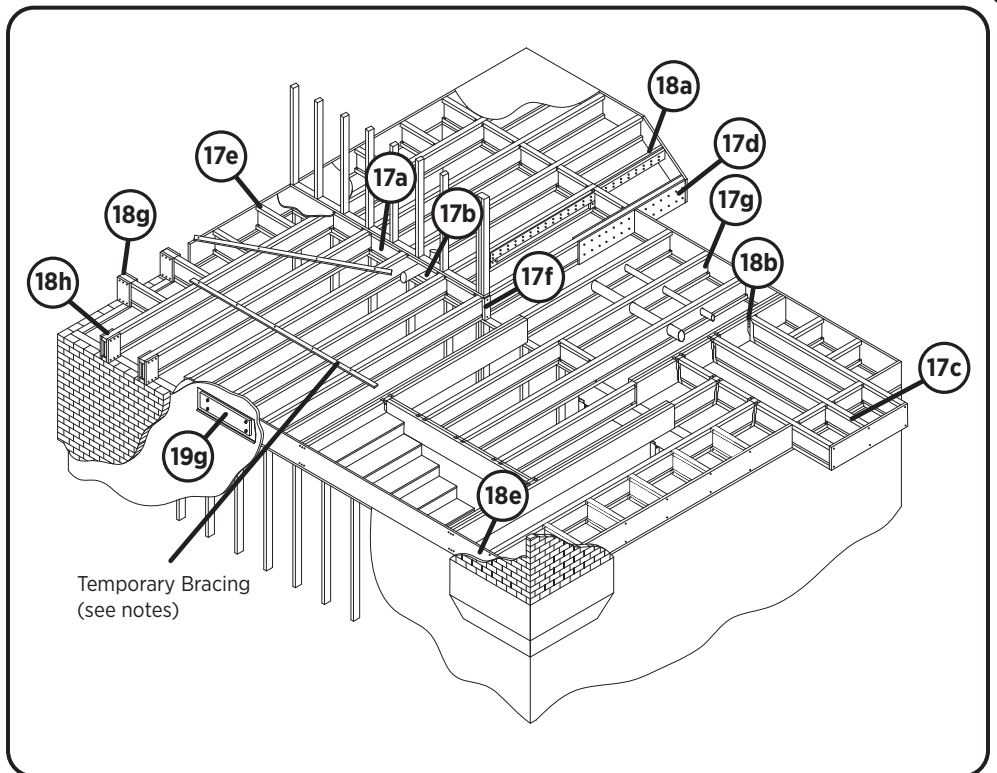


Erection Bracing

1. Use lines of 1x4's nailed at each JSI Joist with two 8d nails. Keep 1x4 lines parallel and approximately 8 feet apart. Use long pieces, not short blocks. Lap the ends (side by side) to keep the lines continuous.
2. To prevent endwise movement of continuous 1x4 bracing, provide a braced bay by sheathing, diagonal bracing or blocking at its end and at a maximum of 25 feet intervals between braced bays. Note: continuous 1x4 bracing is not effective unless attached to the braced bay.
3. Use particular care in removing temporary bracing when applying sheathing. Remove the bracing as sheathing proceeds.
4. No loads other than the weight of the framers are to be imposed on the structure before it is permanently sheathed.
5. After sheathing do not exceed the design load of the JSI with construction material.

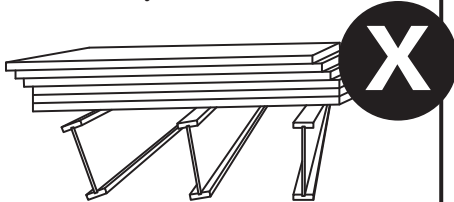
WARNING:

Without correctly installed erection bracing as shown above, joists can buckle sideways or rollover causing, serious personal injury, death and or property damage.



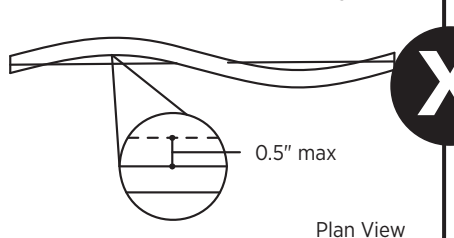
DO NOT

stack building materials on unsheathed joists. Stack only over beams or walls



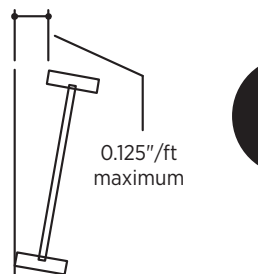
DO NOT

exceed tolerance of 0.5" from true alignment



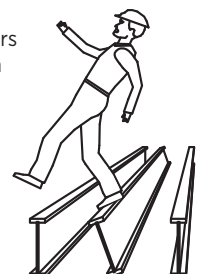
DO NOT

exceed 0.125"/ft of joist depth tolerance. JSI joist top flanges must remain straight



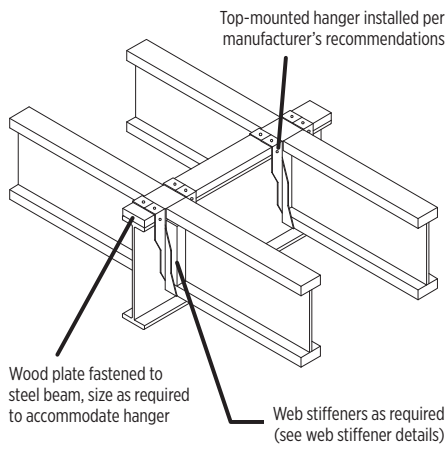
DO NOT

allow workers to walk on joists until braced

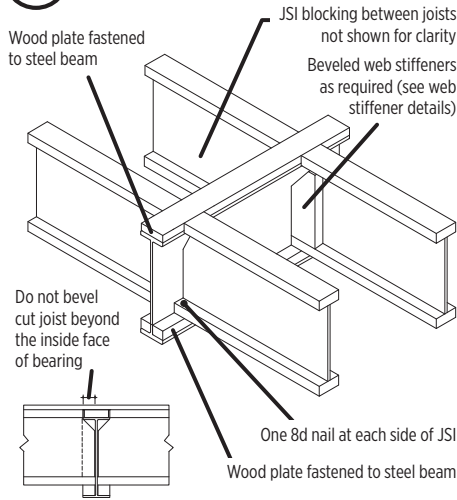


Typical Floor Details

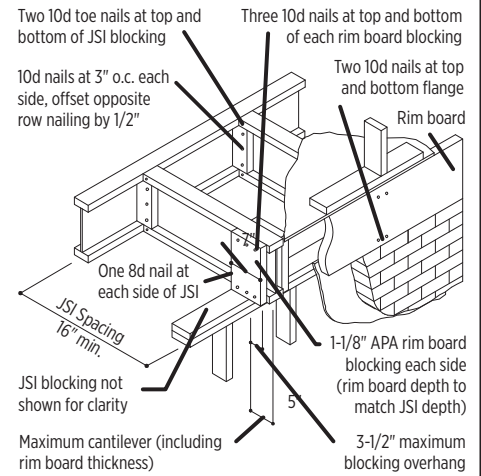
18c Flush Connection to Steel Beam



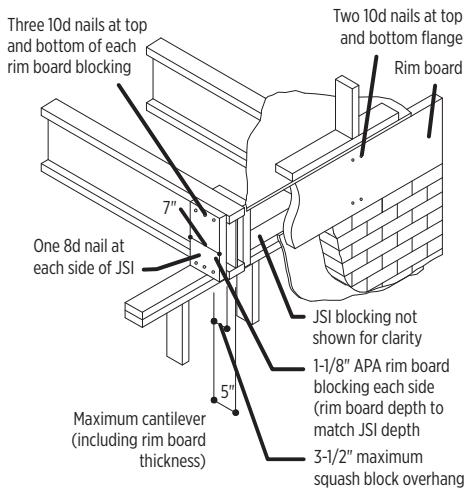
18d Bevel Cut on Steel Beam



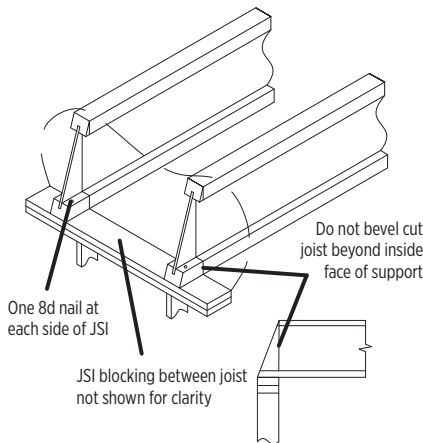
18g Perpendicular Blocking at Exterior Wall with Brick



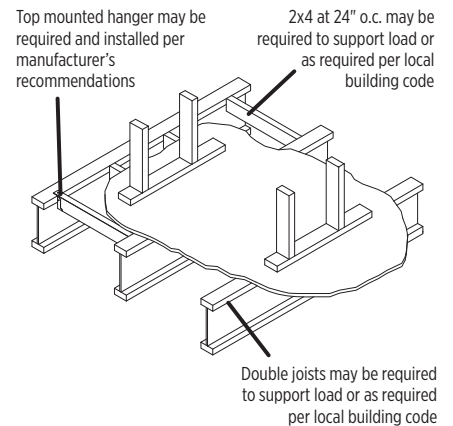
18h Reinforcement at Exterior Wall with Brick



18e Fire Cut



19f Non Load Bearing Wall Parallel To Joist



Floor Performance

Many factors can affect the stiffness and vibration properties that directly influence floor performance

WOOD PANEL TOPPING

An additional layer of structural wood panel will add dead load to the assembly and additional stiffness thus resulting in improved floor performance.

SUB FLOORING

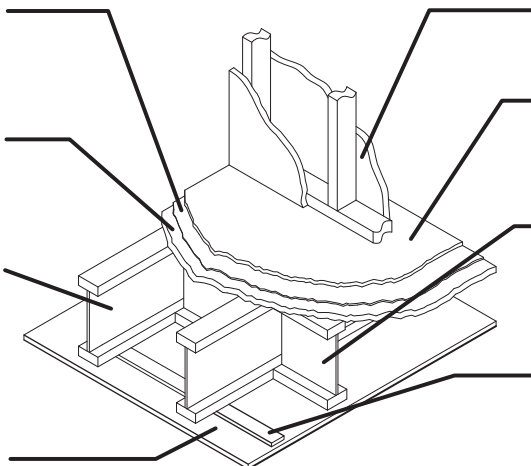
Thicker floor sheathings will improve floor performance. A glued and nailed floor system will perform better than a nailed only floor.

JSI JOIST

Joist deflection is often used as the criteria for checking floor performance. Stiffer or deeper JSI joists can improve floor deflection and can affect how a floor system feels. Reducing joist spacing will also help. All bearings must be adequate and level with no shimming allowed.

GYPSUM BOARD

A ceiling system directly attached to the bottom flange of the joists will dampen vibrations.



PARTITION WALLS

Partition walls can increase the stiffness of a floor assembly and in some cases improve floor performance.

CAST IN PLACE TOPPING

Floors with very little dead load may experience floor performance issues. Materials such as cast in place concrete (normal, light weight or gypsum) will add dead load to the assembly and may improve damping when considering floor vibration.

BLOCKING

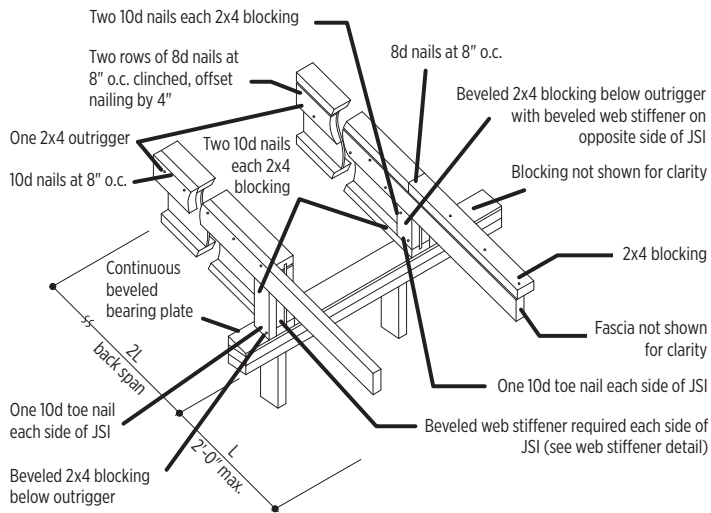
JSI blocking installed perpendicular to the joist and tied to the end walls can help to minimize the potential vibration in the absence of a directly applied ceiling. JSI blocking should be cut to give a tight fit between floor joists and fasten with two 10d toe nails per flange. (Gluing and nailing of the blocking may reduce floor squeaks)

STRAPPING

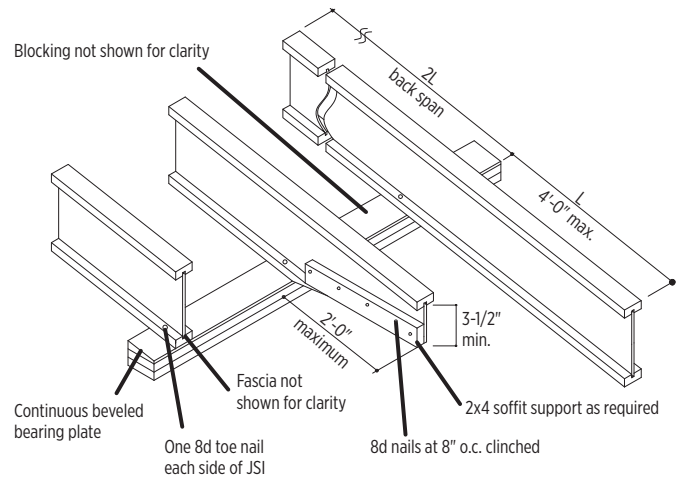
Continuous bottom chord strapping installed perpendicular to the joist and tied to the end walls can help to minimize the potential vibration in the absence of a directly applied ceiling. Continuous strapping should be minimum 1x3 fastened with two 8d nails per joist. Joints should be lapped a minimum of two joist spacing. Additional strap lines will be required to accommodate gypsum board ceilings.

Typical Roof Details

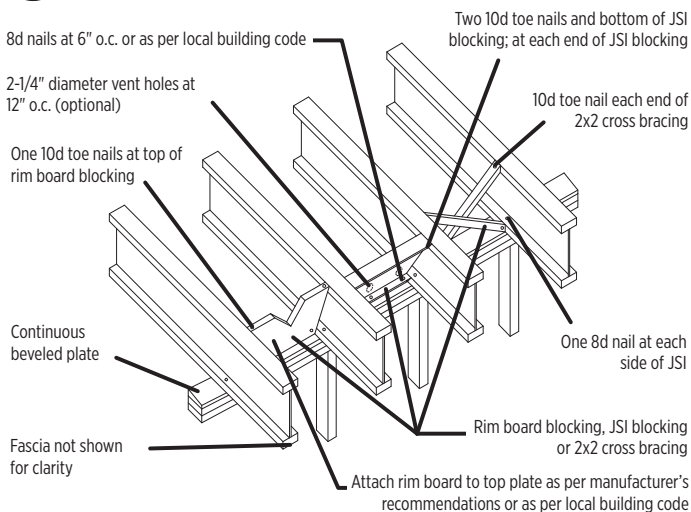
29c Beveled Plate¹ with Outrigger



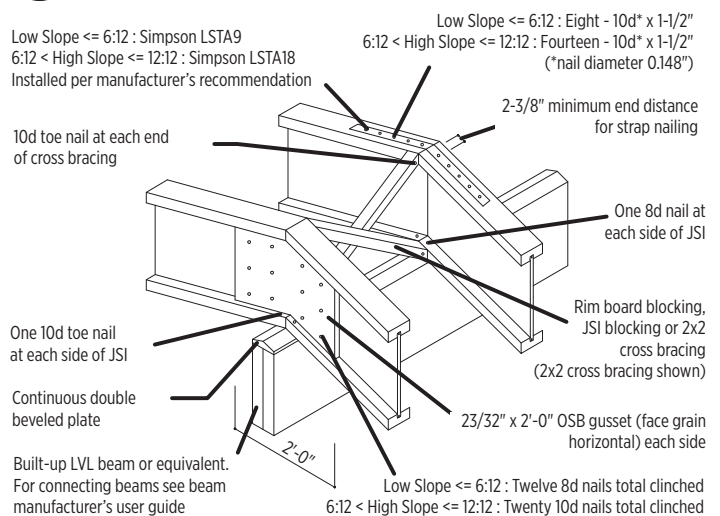
29d Beveled Plate¹ with Cantilever



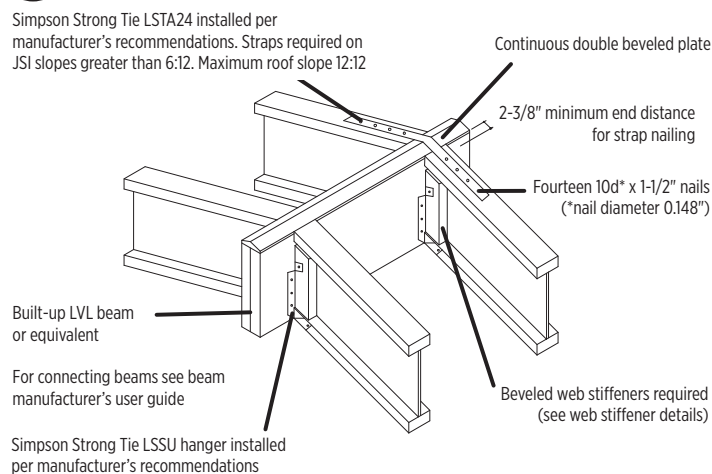
29f Lateral Support at Exterior Wall



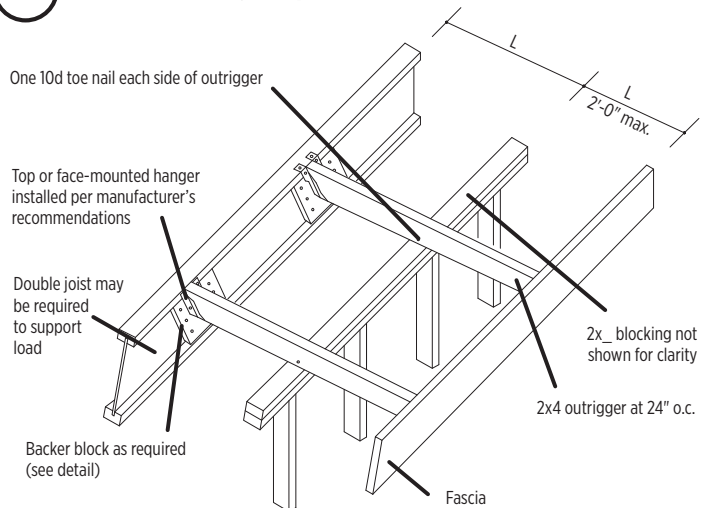
29g Ridge Beam



29h Flush Connection to Ridge Beam

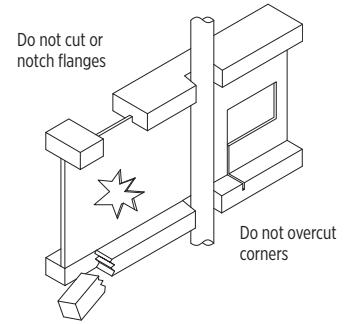
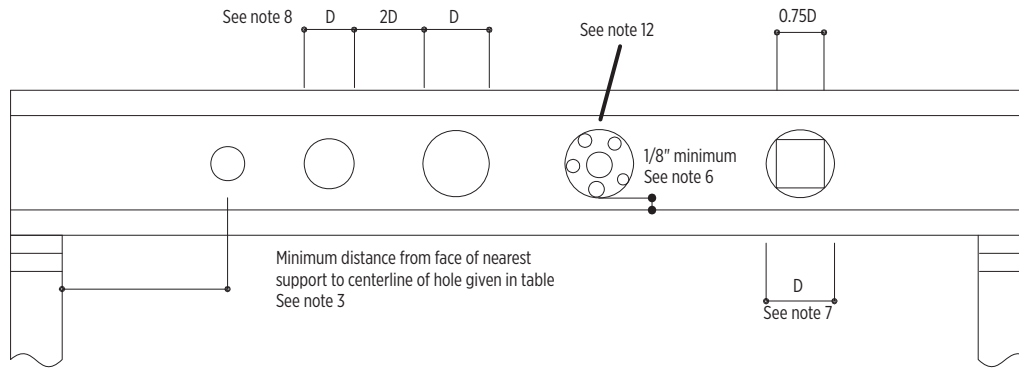


29i Roof Overhang Perpendicular to Joist



Allowable Web Holes

40 PSF Live Load and 30 PSF Dead Load LL Deflection L/480 TL Deflection L/240



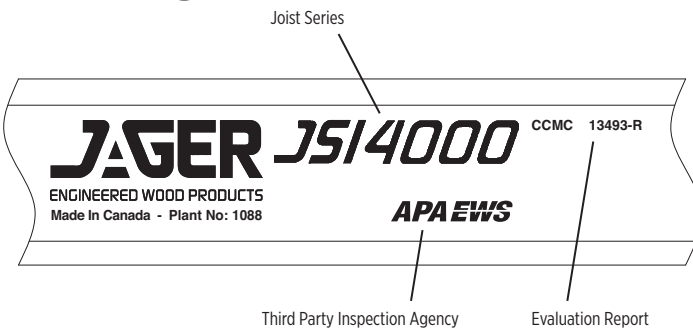
| Depth (in) | Series | Round Hole Diameter (in) | | | | | | | | | | | | | | |
|------------|----------|--------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | 2 | 3 | 4 | 5 | 6 | 6-1/4 | 7 | 8 | 8-5/8 | 9 | 10 | 10-3/4 | 11 | 12 | 12-3/4 |
| 9-1/2 | JSI 2000 | 1'-9" | 2'-9" | 3'-9" | 4'-11" | 6'-2" | 6'-6" | | | | | | | | | |
| | JSI 3000 | 1'-11" | 2'-11" | 4'-0" | 5'-2" | 6'-7" | 6'-11" | | | | | | | | | |
| | JSI 4000 | 3'-0" | 4'-1" | 5'-2" | 6'-4" | 7'-6" | 7'-10" | | | | | | | | | |
| 11-7/8 | JSI 2000 | 0'-7" | 1'-6" | 2'-6" | 3'-7" | 4'-8" | 4'-11" | 5'-10" | 7'-0" | 7'-11" | | | | | | |
| | JSI 3000 | 0'-10" | 1'-10" | 2'-10" | 3'-11" | 5'-0" | 5'-3" | 6'-2" | 7'-4" | 8'-3" | | | | | | |
| | JSI 4000 | 2'-0" | 3'-0" | 4'-0" | 5'-1" | 6'-3" | 6'-6" | 7'-5" | 8'-7" | 9'-5" | | | | | | |
| 14 | JSI 2000 | 0'-7" | 0'-8" | 0'-8" | 1'-6" | 2'-7" | 2'-10" | 3'-7" | 4'-11" | 5'-10" | 6'-4" | 7'-10" | 9'-0" | | | |
| | JSI 3000 | 0'-7" | 0'-8" | 0'-8" | 1'-7" | 2'-9" | 3'-1" | 4'-1" | 5'-6" | 6'-4" | 6'-11" | 8'-5" | 9'-7" | | | |
| | JSI 4000 | 0'-9" | 1'-9" | 2'-9" | 3'-10" | 4'-11" | 5'-2" | 6'-0" | 7'-2" | 7'-11" | 8'-5" | 9'-8" | 10'-8" | | | |
| 16 | JSI 2000 | 0'-7" | 0'-8" | 0'-8" | 0'-9" | 0'-9" | 0'-10" | 1'-9" | 3'-1" | 3'-11" | 4'-5" | 5'-9" | 6'-10" | 7'-3" | 8'-9" | 9'-11" |
| | JSI 3000 | 0'-7" | 0'-8" | 0'-8" | 0'-9" | 0'-9" | 0'-10" | 1'-9" | 3'-1" | 3'-11" | 4'-5" | 5'-9" | 6'-10" | 7'-4" | 9'-1" | 10'-6" |
| | JSI 4000 | 0'-7" | 0'-8" | 0'-8" | 1'-8" | 2'-8" | 2'-11" | 3'-9" | 4'-11" | 5'-9" | 6'-3" | 7'-8" | 8'-10" | 9'-2" | 10'-9" | 12'-0" |
| 18 | JSI 4000 | 0'-7" | 0'-9" | 1'-9" | 2'-9" | 3'-10" | 4'-1" | 4'-11" | 6'-0" | 6'-9" | 7'-2" | 8'-3" | 9'-2" | 9'-6" | 10'-9" | 11'-8" |
| 20 | JSI 4000 | 0'-7" | 0'-8" | 0'-8" | 1'-5" | 2'-5" | 2'-8" | 3'-6" | 4'-7" | 5'-3" | 5'-7" | 6'-9" | 7'-7" | 7'-11" | 9'-1" | 10'-0" |

NOTES:

- Distances in this table apply to uniformly loaded joists, simple or continuous span
- Distances in this table are valid for JSI spacing of 24" o.c. or less, with glued and nailed decking. Assumed decking material is 23/32" OSB for JSI spacing greater than 19.2" o.c. and 19/32" OSB for JSI spacing less than or equal to 19.2" o.c.
- The distance between the inside edge of the support and the centerline of any hole must be in compliance with the requirements of the given table.
- JSI top and bottom flanges cannot be cut, notched, or otherwise modified.
- Whenever possible holes should be centered on the middle of the web.
- A minimum of 1/8 inch must be maintained between the top or bottom of the hole and the adjacent JSI flange.
- The sides of square holes or longest sides of rectangular holes must not exceed 3/4 of the diameter of the maximum round hole permitted at that location.
- Where more than one hole is necessary, the distance between adjacent hole edges shall equal or exceed twice the diameter of the largest round hole or twice the size of the largest square hole or twice the length of the longest side of the longest rectangular hole. Each hole must be sized and located in compliance with the requirements of the Table.
- No more than 3 maximum size holes are permitted per span.
- A 1-1/2 inch diameter hole can be placed anywhere in the web provided that it meets the requirements of note 8.
- For I-joists with more than one span, use the longest span to determine the hole size and location in either span.
- A group of round holes at approximately the same location shall be permitted if they meet the requirements for a single round hole circumscribed around them.
- Tabulated values shown assume a minimum bearing length of 1-3/4" at end bearings; 3-1/2" at interior bearings and assume the JSI bearing on a surface with a minimum plate bearing specified strength of 769 psi.
- Tabulated values shown are in compliance with the CCMC Vibration criteria "Concluding" Report, September 4, 1997. Tabulated values shown assume no attached ceiling, blocking or strapping on the underside of the JSI in the vibration calculation
- For JSI depths less than or equal to 16" web stiffeners are not required for tabulated values, except as required by hanger manufacturer.
- For JSI depths greater than or equal to 18" web stiffeners are required for all tabulated values.
- For all other conditions contact **JAGER Engineered Wood Products**.

☒ NOT ALLOWED. Reduce hole size

Product Identification Markings



General Notes

- JSIs shall be used in dry service conditions only.
- Tabulated values and design calculations have been done using *Limit States Design*.
- Dimensional lumber shown is assumed to be SPF No. 2 or better.
- Wood structural panels shown are assumed to be APA rated sheathing.
- Detail numbers shown coincide with those in the **JSI User Guide**.
- All nails shown shall be (minimum) as noted below unless noted otherwise:

| Nail | Diameter (in) | Length (in) |
|------|---------------|-------------|
| 8d | 0.113 | 2-1/2 |
| 10d | 0.128 | 3 |
| 12d | 0.128 | 3-1/4 |
| 16d | 0.135 | 3-1/2 |

Nail bending yield strength (F_{yB}) = 100,000 psi

- For conditions not contained in the installation information contact **JAGER Engineered Wood Products**.