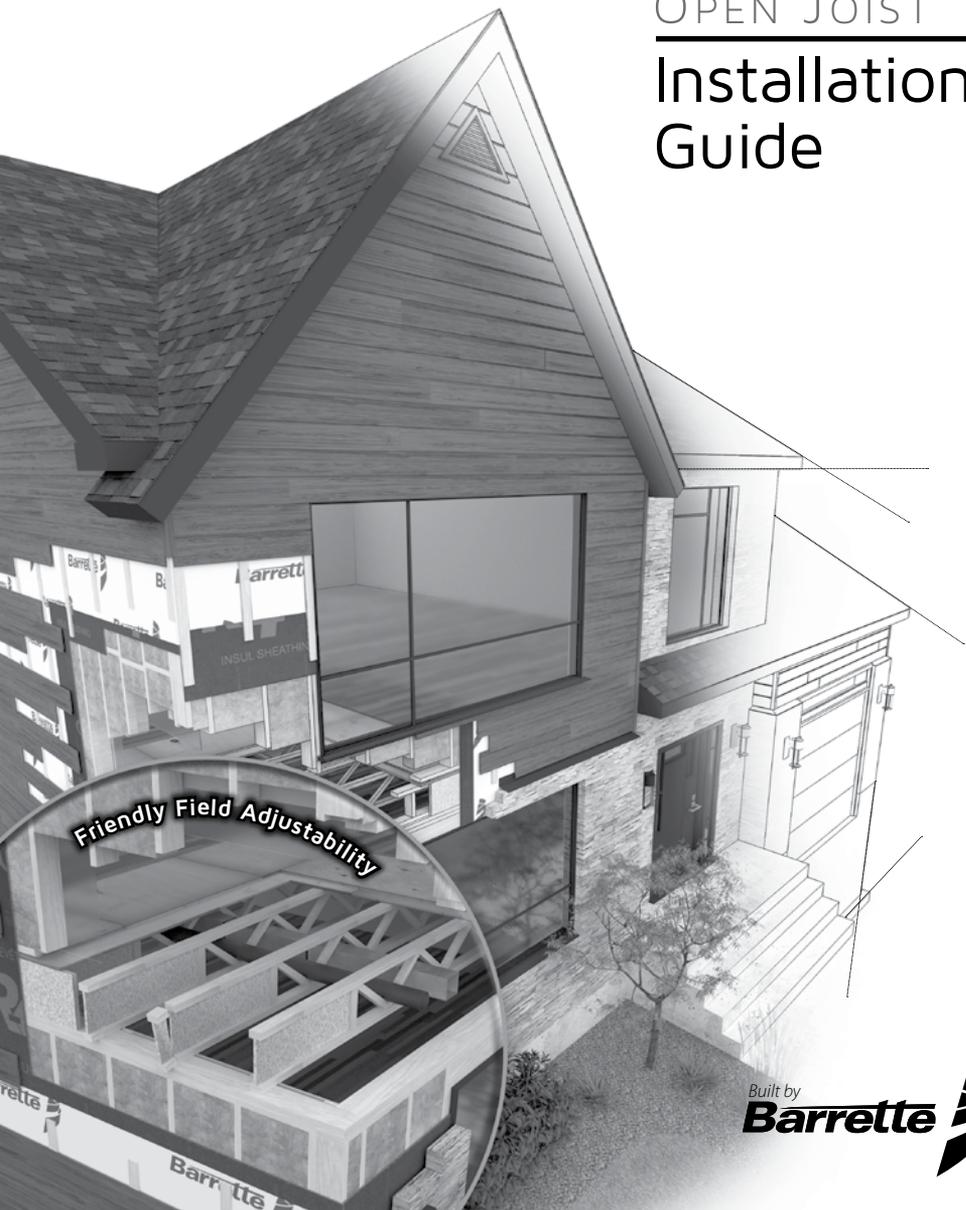




TRIFORCE®

OPEN JOIST Installation Guide



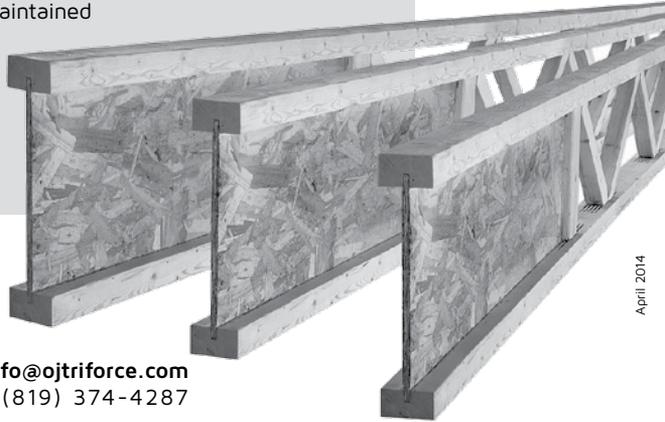
Built by
Barrette 

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All information in this document is general and is given as general information to an informed tradesman, that must have all the proper qualifications and knowledge for installing floor joists properly as per manufacturers specifications and as per local code.

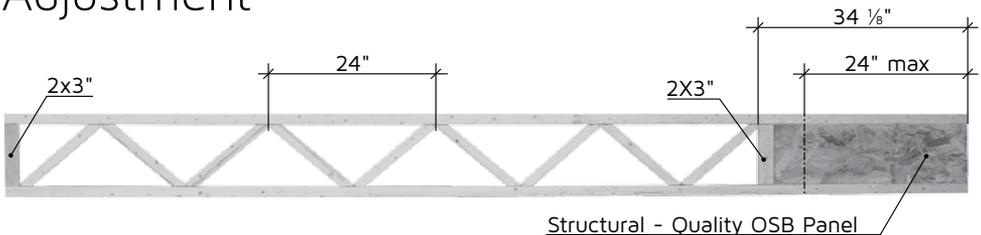
The warranty shall not extend to products misused, neglected, subjected to abnormal storage, use or exposure or which have been altered in any manner or not maintained in accordance with published instructions. The products must be handled and installed in accordance with the manufacturer's published instructions.



April 2014

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Adjustment



Identification

14" OJ318



Depths: 9 1/2"
11 7/8"
14"
16"

Grades: 14 = 1.4E
15 = 1.5E
18 = 1.8E
20 = 2.0E

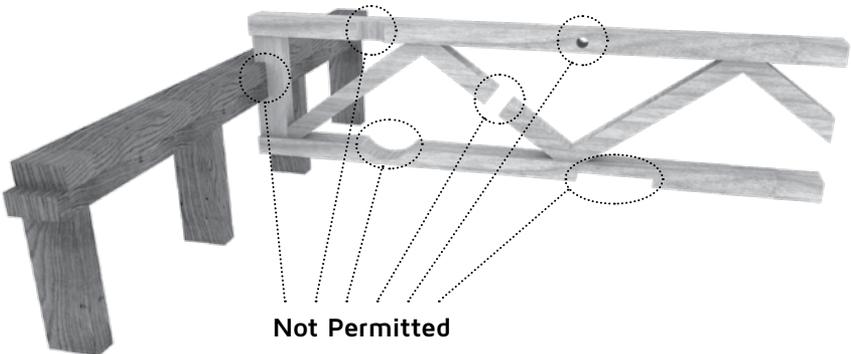
Flange: 2X3"
2X4"

Safety Precautions

1. Except for cutting length, **TRIFORCE**® flanges should never be cut, drilled or notched.
2. Install **TRIFORCE**® joists so that top and bottom flanges are within 1/2" of true vertical alignment.
3. At the ends, joists must be restrained to prevent rollover. Use rim board or blocking panels.
4. For Cantilevered **TRIFORCE**® joists, brace top and bottom flanges, and brace ends with closure panels, rim board.
5. Apply concentrated loads only on the top flange. Concentrated loads shall not be suspended from the bottom flange with the exception of light loads, such as ceiling fans or light fixtures.
6. **TRIFORCE**® must be protected from weather prior to installation.

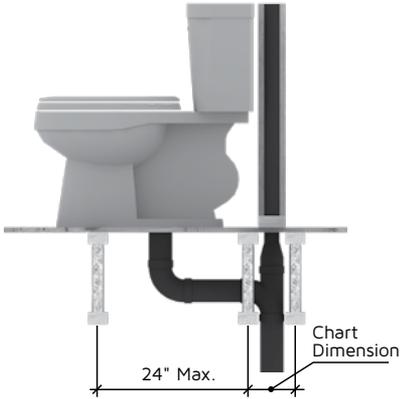
Not Permitted

Joist flanges shall not be notched, cut or drilled to allow piping



JOIST SPACING BELOW PLUMBING WALL

Parallel To Wall



Perpendicular To Wall



| Joist Spacing | | |
|-------------------|----------|----------|
| Joist Chord Width | 2x4 Wall | 2x6 Wall |
| 2X3 Chord | 6" | 8" |
| 2X4 Chord | 7" | 9" |

Every third Joist may be shifted up to 3" to avoid plumbing penetration interference

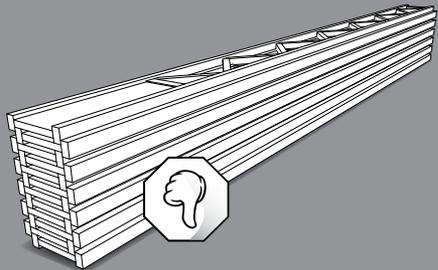
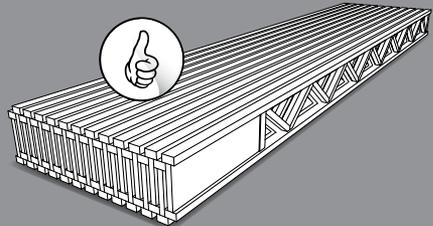
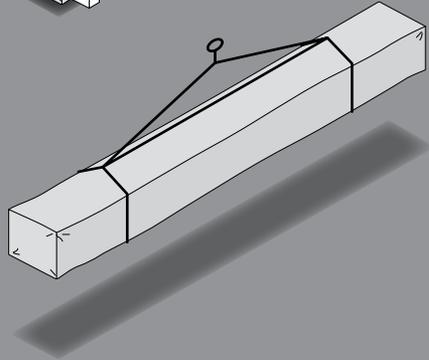
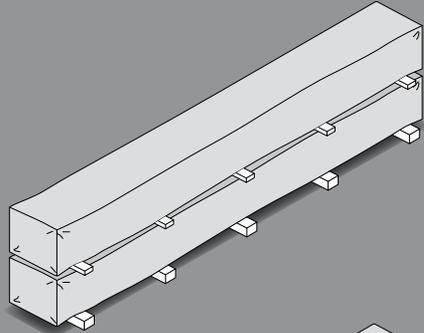
Additional joists may be required

- Joists are to be used in dry conditions only.
- Never install a damaged **TRIFORCE**® joist.
- When strongbacks are installed, the strongbacks must be of dry lumber.
- When a joist interferes with a plumbing pipe, the joist may be moved up to 3" to allow piping. OSB Panel End openings are allowed per the Allowable Hole through the OSB Panel End chart. When moving a joist, check subfloor thickness with code requirements when joist spacing exceeds 19.2" o.c.
- End bearing length must be at least 1 1/2".
- To transfer loads from above, rim boards, squash blocks or blocking panels shall be used at exterior walls and interior bearing walls.
- Joists shall not be in direct contact with masonry or concrete.
- Install all bracing and sheathing to each **TRIFORCE**® joist before applying any construction loads on the floor system. Stack building material over beams or bearing walls only, otherwise additional shoring material may be needed.
- Nails installed perpendicular to the wide face of the flange shall be spaced not be closer than 3 inches o.c. for 8d common nails.
- Details on the following pages show only **TRIFORCE**® specific fastener requirements. For other fastener requirements, see applicable building code.
- The adhesives used for floor systems should comply to ASTM D3498-03 Standard Specification for Standard Specification for Adhesives for Field-Gluing Plywood to Lumber Framing for Floor Systems. Follow manufacturer guidelines for field-glued floors.

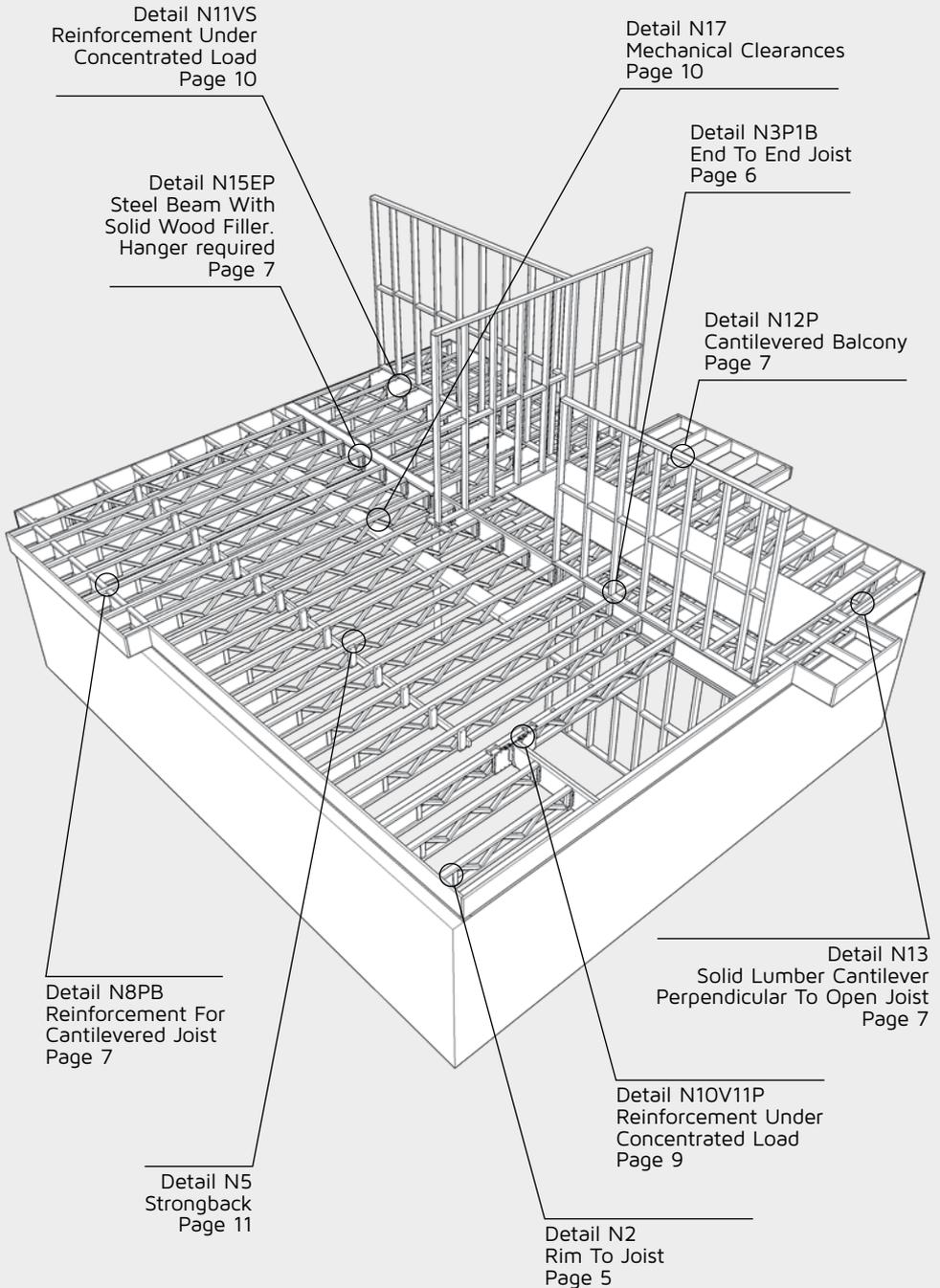
Storage & Handling

Storage Notes:

1. Keep **TRIFORCE**® bundles wrapped to protect from weather
2. Use wood stickers to separate bundles under each automatically inserted stickers.
3. Always store, stack and handle **TRIFORCE**® vertically and level – never flat/ horizontal.
4. Do not store **TRIFORCE**® in direct contact with the ground.
5. Store longest material lowest to the ground.
6. For optimal moisture protection, keep **TRIFORCE**® at least 6 inches up off the ground.
7. To protect from dirt and weather, delay unwrapping the **TRIFORCE**® bundles until the time of installation and delivery.
8. Take care to avoid forklift damage. If the ground is unlevel in the storage area, reduce forklift speed to avoid “bouncing” the load.
9. When handling with a crane, pick up the load using a spreader if necessary to minimize handling stresses. Keep **TRIFORCE**® vertical.
10. Maintain stack height within safe limits.
11. Do not lift **TRIFORCE**® joist by top flange.
12. Do not stack other material on top of **TRIFORCE**® bundles.
13. Bundle wrap can be slippery, especially when wet. Avoid walking on material.



Typical Details



Rim Board Connection

Standard Sizes For Performance Rated Rim Boards

| | Standard Sizes |
|--------------------|-----------------------|
| Thickness (inches) | 1 1/8 |
| Depth (inches) | 9 1/2, 11 7/8, 14, 16 |
| Length (feet) | 8 to 16 |

Design Capacities For Performance Rated Rim Board

| Grade | Performance Category | H (lb/ft) | V (lb/ft) | | | Z (lb/ft) | P (lb/ft) |
|---------------------|----------------------|------------------------|-----------|---------|------|-----------|-----------|
| | | Depth Limitation (in.) | | | | | |
| | | d≤24 | d≤16 | 16<d≤24 | d≤24 | d≤24 | |
| Rim Board (C1) | 1-1/8 | 180 | 4,400 | 3,000 | 350 | 3,500 | |
| Rim Board Plus (B2) | 1-1/8 | 200 | 4,850 | 3,200 | 350 | 3,500 | |

- These design values are applicable only to Rim Board applications in compliance with the connection requirements given in this document and shall not be used in the design of a bending member, such as joist, header, rafter, or ledger. All design values are applicable to the normal load duration. Design values may be adjusted for other load durations in accordance with the applicable code except that the bearing (vertical) load capacity (V) and concentrated vertical load capacity (P) are not permitted to be increased for any load durations shorter than the normal load duration. Toe-nailed connections are not limited by the 150 lb/ft lateral load capacity noted for Seismic Design Categories D, E and F in Section 2305.1.4 of the IBC.
- The performance categories for these rim boards refers to the minimum thickness of the rim board.
- H = The horizontal (shear) load transfer capacity.
- V = The bearing (vertical) load capacity, which shall not be adjusted for load durations in accordance with the applicable code.
- Z = The lateral resistance of a 1/2-inch-diameter log screw.
- P = The concentrated vertical load capacity based on 4-1/2-inch bearing length.

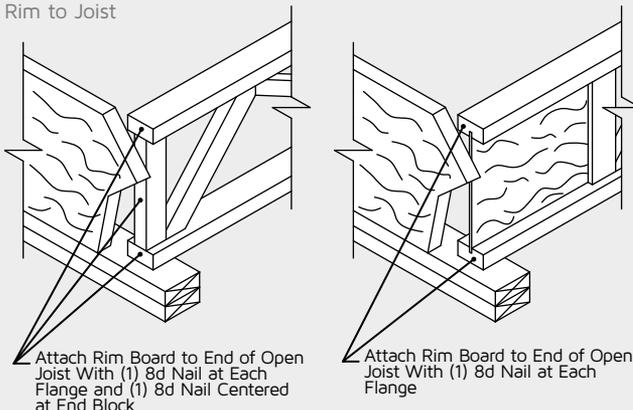


A Structural Rim Board is recommended when the open joist **TRIFORCE**® Floor Joists are installed perpendicular or parallel on exterior bearing walls.

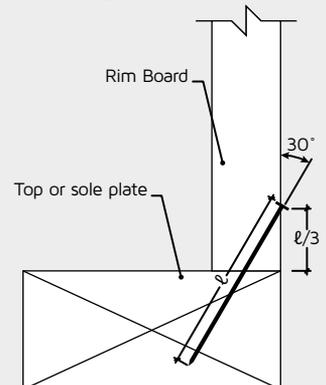
It is not recommended to use open joist **TRIFORCE**® Floor Joists as solo starter joists on exterior bearing walls.

Detail N2

Rim to Joist



Toe-Nail Connection At Rim Board



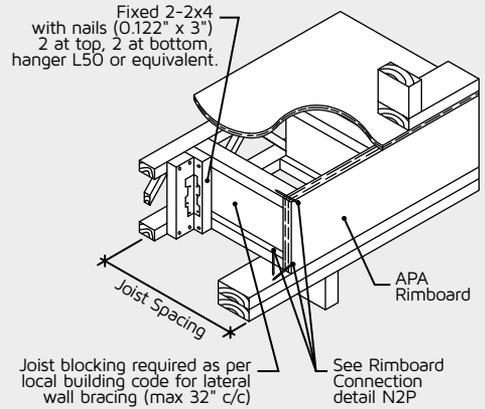
Perpendicular Blocking

Perpendicular I-Joist Blocking:

I-Joist perpendicular blocking or equivalent @ 24" on center. Attaching the Wood-I or I-Joist blocking with (2) 3 1/2" (16d) nails to the top and bottom chords of the open joist **TRIFORME®** and (1) 2 1/2" (8d) nails through the Rimboard into the top and bottom chord of the I-Joist blocking. Secure the I-Joist blocking to the sole plate with (1) 3 1/2" (10d) nails each side of the bottom chord.

Detail 6R1B

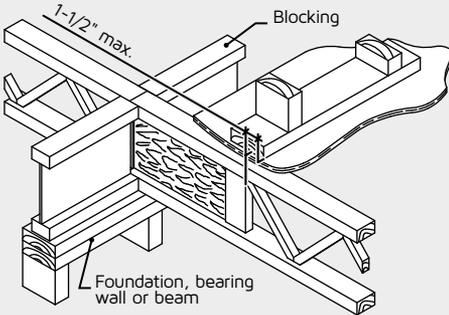
PERPENDICULAR BLOCKING AT EXTERIOR WALL



Interior Bearing Wall Blocking

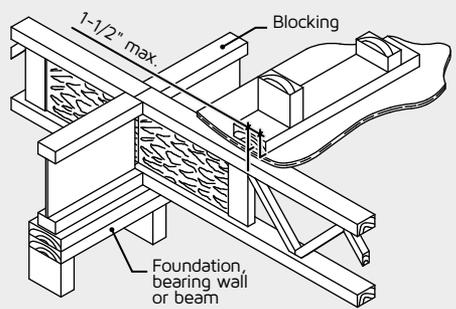
Detail N3EP1M

OFFSET BEARING WALL



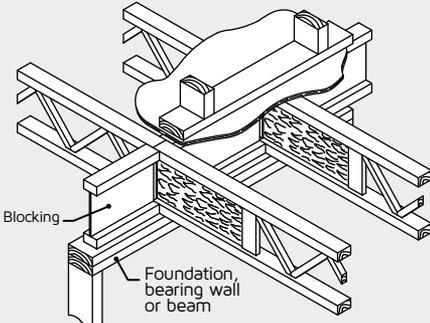
Detail N3EP2M

OFFSET BEARING WALL



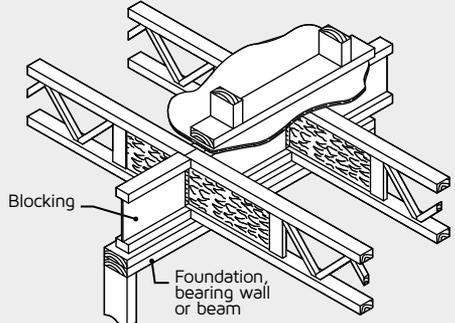
Detail N3P1B

END-TO-END JOIST



Detail N3P2B

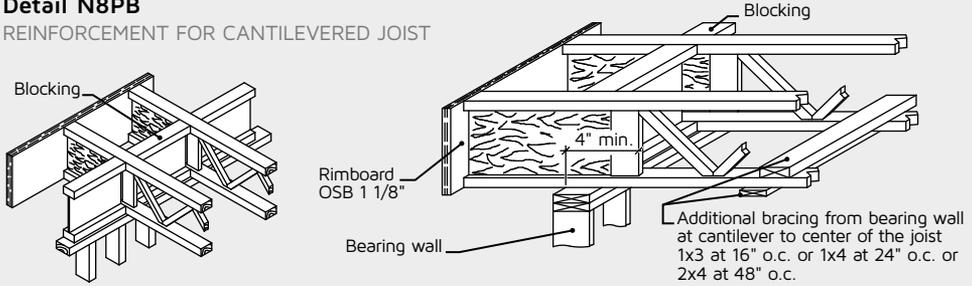
END-TO-END JOIST



Cantilevers

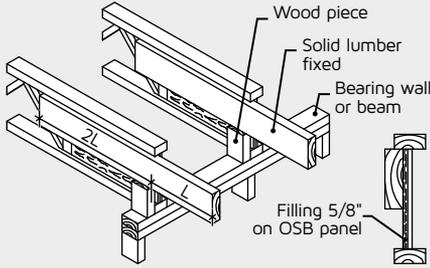
Detail N8PB

REINFORCEMENT FOR CANTILEVERED JOIST



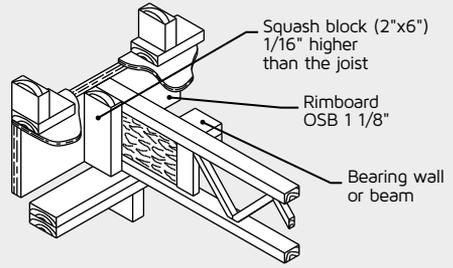
Detail N12P

CANTILEVERED BALCONY



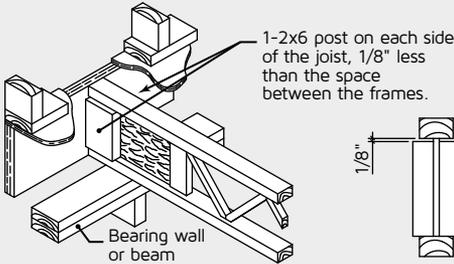
Detail N2B

MULTIPLE LEVEL BRICK AT LOWER LEVEL



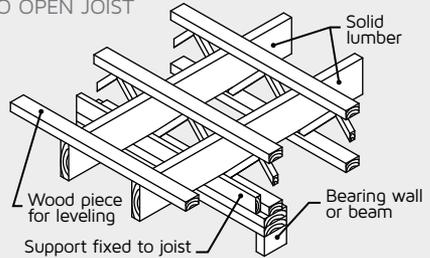
Detail N2BP

MULTIPLE LEVEL BRICK AT LOWER LEVEL



Detail 13

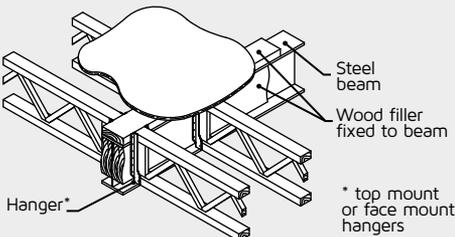
SOLID LUMBER CANTILEVER PERPENDICULAR TO OPEN JOIST



Steel Beam Connections with Hangers

Detail 15

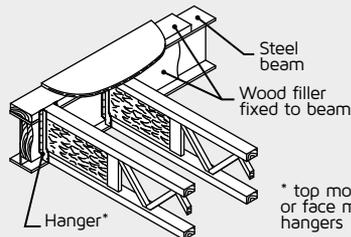
STEEL BEAM WITH SOLID WOOD FILLER
HANGER REQUIRED



* top mount or face mount hangers

Detail N15EP

STEEL BEAM WITH SOLID WOOD FILLER
HANGER REQUIRED

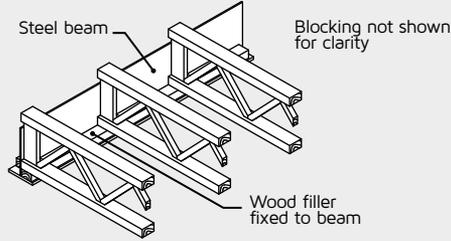


* top mount or face mount hangers

Steel Beam Connections without Hangers

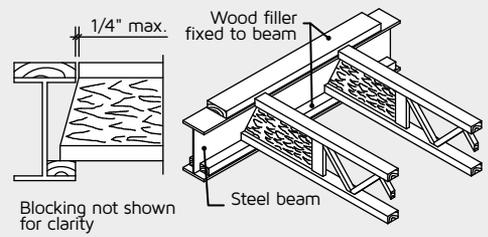
Detail 14T

STEEL BEAM BOTTOM FLANGE BEARING
HANGER NOT REQUIRED

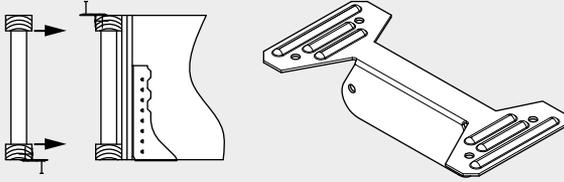


Detail N14P

STEEL BEAM BOTTOM FLANGE BEARING
HANGER NOT REQUIRED



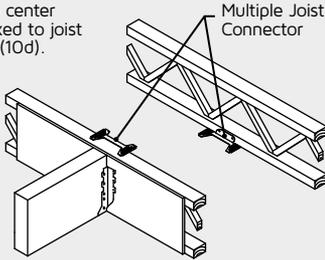
Multiple Joist Connectors (MJC) For Concentrated Side Load



Detail MJC2

DOUBLE JOIST LOAD TRANSFER

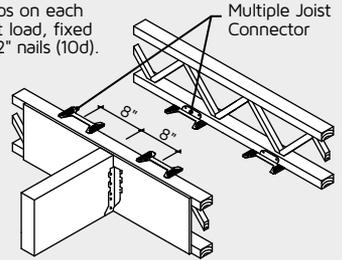
Load sharing clip center on point load, fixed to joist with 1 1/2" nails (10d).



Detail MJC4

DOUBLE JOIST LOAD TRANSFER

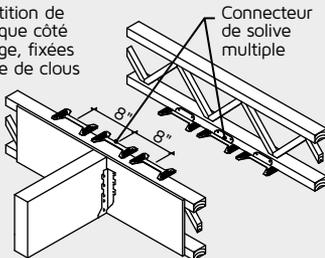
Load sharing clips on each side of the point load, fixed to joist with 1 1/2" nails (10d).



Detail MJC6

DOUBLE JOIST LOAD TRANSFER

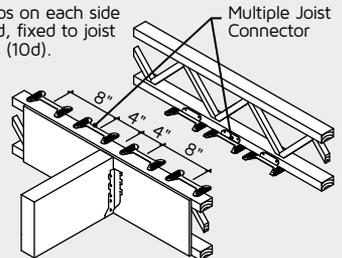
Agrafes de répartition de la charge de chaque côté du point de charge, fixées à la solive à l'aide de clous de 1 1/2" (10d).



Detail MJC8

DOUBLE JOIST LOAD TRANSFER

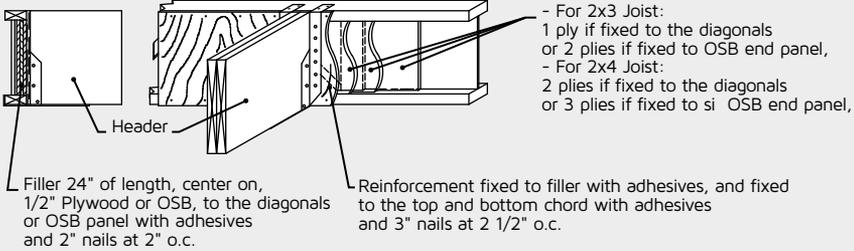
Load sharing clips on each side of the point load, fixed to joist with 1 1/2" nails (10d).



Reinforcement for Concentrated Side Load

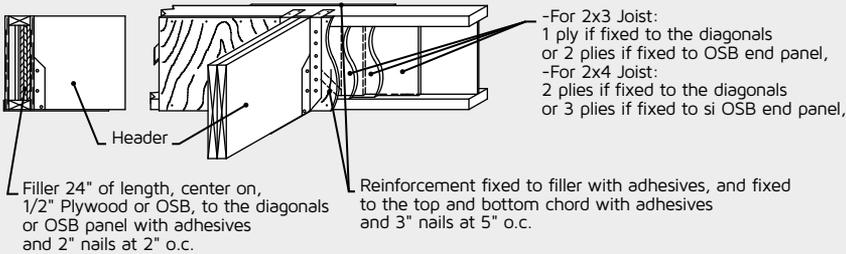
Detail N10V11P

ONE SIDE REINFORCEMENT SINGLE JOIST



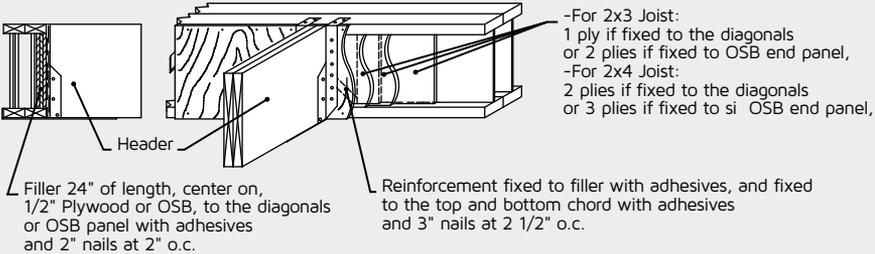
Detail N10V12P

TWO SIDES REINFORCEMENT SINGLE JOIST



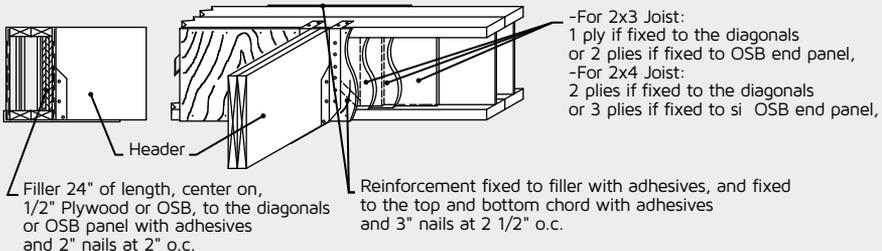
Detail N10V21P

ONE SIDE REINFORCEMENT DOUBLE JOISTS



Detail N10V22P

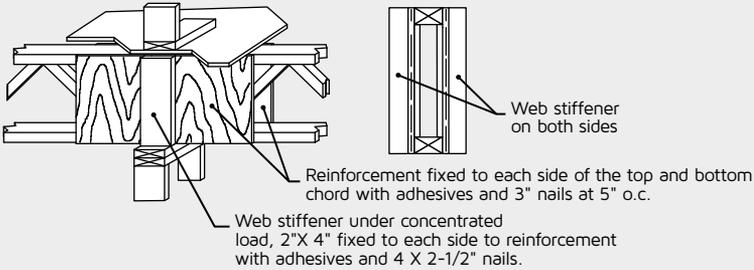
TWO SIDES REINFORCEMENT DOUBLE JOISTS



Reinforcement for Concentrated Top Load

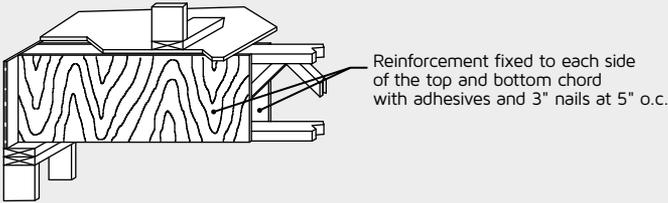
Detail N11VS4

REINFORCEMENT UNDER CONCENTRATED LOAD



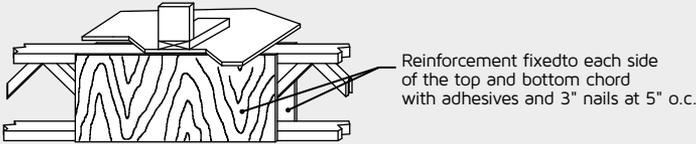
Detail N11V

REINFORCEMENT UNDER CONCENTRATED LOAD



Detail N11VS

REINFORCEMENT UNDER CONCENTRATED LOAD



Mechanical Clearances

| Depth | Mechanical Opening Dimension | | |
|---------|------------------------------|-----------------|-------------------|
| | Round | Square | Rectangular |
| 9 1/2" | 5" | 4" x 6" | 3" x 9" |
| 11 1/2" | 7 1/4" | 5 3/4" x 5 3/4" | 3" x 13" |
| 14" | 8 1/2" | 6 1/2" x 6 1/2" | 3" x 14", 6" X 8" |
| 16" | 9 1/2" | 7 1/2" x 7 1/2" | 3" x 15" |



Strongbacks

Strongbacks must be of dry lumber and secured with 2 spiral or resined 3" nails or 2 - 3" screws at mid-span, to a vertical brace or diagonal web.

Strongback can be cut between 2 joists for ducts, pipes and wires if needed, but at least 3 consecutive joists must remain attached together.

9 1/2" = 2x4

11 7/8" = 2x4

14" = 2x4 or 2x6

16" = 2x6 or 2x8

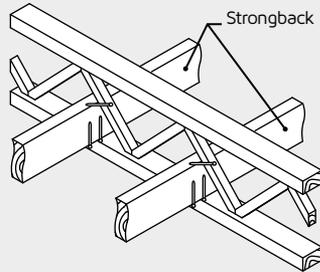
Strongback (at mid span)

Option #1

2x3 flanges: 1 - 3" (10d) through bottom flange and 1 - 3" (10d) through the diagonal, adding adhesive will insure long term performance

2x4 flanges: 2 - 3" (10d) through bottom flange and 1 - 3" (10d) through the diagonal.

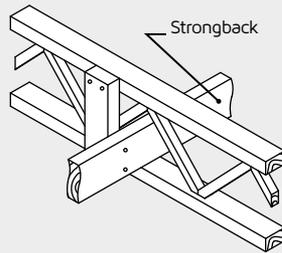
Adding adhesive will ensure long term performance



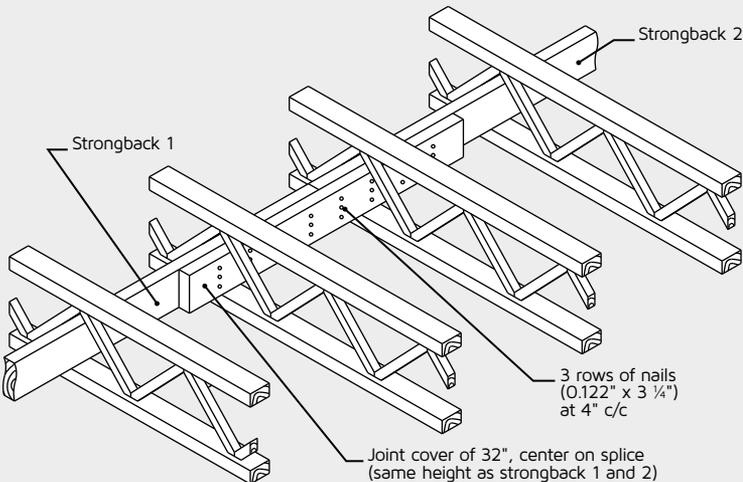
Option #2 (suggested)

Secure vertical side block (2x4) as per detail, with 2 nails* to both chords and strongback to vertical with 2 nails*. *(gun nails 0.122" x 3 1/4")

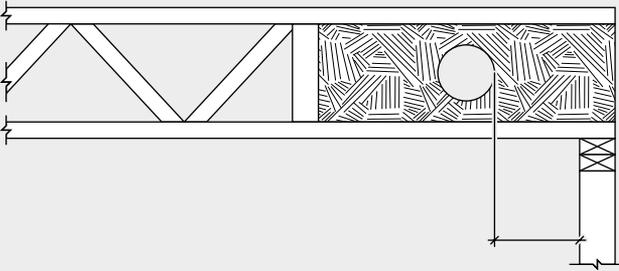
Adding adhesive will provide an ultimate connection for high floor performance.



Strongback Overlap



Allowable OSB Panel End Hole Penetrations



Contact your **TRIFORCE®** representative for more details.

Holes sizes and locations - Simple span

| Joist Depth | Joist Series | Round hole diameter only (in) | | | | | | | | | | | Max Span | | |
|-------------|--------------|---|-------|-------|-------|-------|-------|-------|-------|--------|-------|-------|----------|--------|--------|
| | | Minimum distance from inside face of support to beginning of hole (ft-in) | | | | | | | | | | | | | |
| | | 2" | 3" | 4" | 5" | 6" | 7" | 8" | 9" | 10" | 11" | 12" | | | |
| 9.5" | OJ314 | 0' 5" | 0' 5" | 0' 5" | 1' 6" | | | | | | | | | | 16' 0" |
| | OJ418 | 0' 5" | 0' 6" | 2' 0" | | | | | | | | | | | 20' 0" |
| 11.875" | OJ314 | 0' 6" | 0' 6" | 0' 6" | 0' 6" | 0' 6" | 1' 2" | | | | | | | | 16' 0" |
| | OJ315 | 0' 6" | 0' 6" | 0' 6" | 0' 6" | 1' 0" | 2' 0" | | | | | | | | 18' 0" |
| | OJ415 | 0' 6" | 0' 6" | 0' 6" | 1' 0" | 2' 0" | | | | | | | | | 20' 0" |
| | OJ418 | 0' 6" | 0' 6" | 1' 0" | 2' 0" | | | | | | | | | | 22' 0" |
| 14" | OJ314 | 0' 6" | 0' 6" | 0' 6" | 0' 6" | 0' 6" | 0' 6" | 0' 6" | 0' 9" | 1' 10" | | | | | 16' 0" |
| | OJ315 | 0' 6" | 0' 6" | 0' 6" | 0' 6" | 0' 6" | 0' 6" | 1' 6" | | | | | | | 20' 0" |
| | OJ415 | 0' 6" | 0' 6" | 0' 6" | 0' 6" | 0' 6" | 1' 6" | 2' 0" | | | | | | | 22' 0" |
| | OJ418 | 0' 6" | 0' 6" | 0' 9" | 1' 6" | 2' 2" | | | | | | | | | 26' 0" |
| 16" | OJ314 | 0' 6" | 0' 6" | 0' 6" | 0' 6" | 0' 6" | 0' 6" | 0' 6" | 0' 6" | 0' 6" | 0' 9" | 1' 6" | | | 16' 0" |
| | OJ315 | 0' 6" | 0' 6" | 0' 6" | 0' 6" | 0' 6" | 0' 6" | 0' 6" | 0' 6" | 1' 0" | 1' 8" | | | 20' 0" | |
| | OJ318 | 0' 6" | 0' 6" | 0' 6" | 0' 6" | 0' 6" | 0' 6" | 0' 6" | 0' 6" | 1' 0" | 1' 8" | | | 18' 0" | |
| | OJ418 | 0' 6" | 0' 6" | 0' 6" | 0' 6" | 0' 6" | 1' 0" | 2' 0" | | | | | | 26' 0" | |
| | OJ420 | 0' 6" | 0' 6" | 0' 9" | 1' 6" | 2' 0" | | | | | | | | | 30' 0" |

Notes

- 1) This table is based on uniformly loaded floor with a design live load of 40 psf dead load of 15 psf and a deflection limit of L/360. For other applications contact your **TRIFORCE®** representative.
- 2) This table may be used for floor joist spacing of 24 inches on center or less.
- 3) Residential design with simple span only. No cantilever
- 4) Do not cut first vertical web. Distance base on a full length panel

Available Stocking Lengths

| Depth | Series | Weight lbs/ft | Stock Lengths (feet) | | | | | | | | | | | | |
|---------|--------|---------------|----------------------|----|----|----|----|----|----|----|----|----|----|----|---|
| | | | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 | |
| 9 1/2" | OJ314 | 2.70 | × | × | × | × | × | | | | | | | | |
| | OJ418 | 3.25 | | | | | | × | | | | | | | |
| 11 3/4" | OJ314 | 2.80 | × | × | × | × | × | | | | | | | | |
| | OJ315 | 2.80 | | | | | | × | | | | | | | |
| | OJ415 | 3.35 | | | | | | | × | | | | | | |
| | OJ418 | 3.35 | | | | | | | | × | | | | | |
| 14" | OJ314 | 2.85 | × | × | × | × | × | | | | | | | | |
| | OJ315 | 2.85 | | | | | | × | × | | | | | | |
| | OJ415 | 3.45 | | | | | | | | × | | | | | |
| | OJ418 | 3.45 | | | | | | | | | × | × | | | |
| 16" | OJ314 | 2.95 | × | × | × | × | × | | | | | | | | |
| | OJ315 | 2.95 | | | | | | × | × | | | | | | |
| | OJ418 | 3.55 | | | | | | | | × | × | × | | | |
| | OJ420 | 3.55 | | | | | | | | | | | | × | × |

Single Framing Connectors

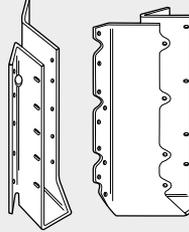
ITS - 18 gauge



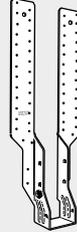
IUS - 18 gauge



SUR/L - 16 gauge
HSUR/L - 14 gauge

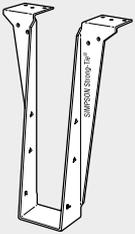


THAI - 18 gauge

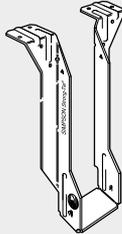


Double Framing Connectors

B - 12 gauge
LVB - 14 gauge



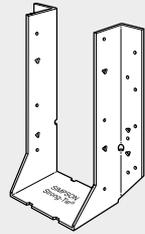
MIT - 16 gauge



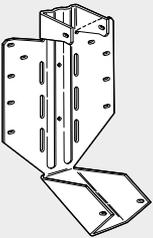
MIU - 16 gauge



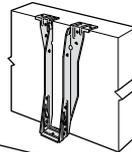
HU - 14 gauge



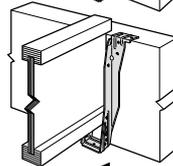
LSSU, LSSUI - 18 gauge LSSU210-2,
LSSU410 and LSSUH310 - 16 gauge
LSU - 14 gauge



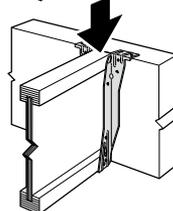
General Connector Installation Sequence



STEP 1
Attach the ITS
to the header



STEP 2
Slide the joint
downward into the ITS
until it rests above the
Strong-Grip™ seat.

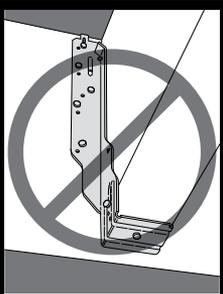


STEP 3
Firmly push or snap
joint fully into the
seat of the ITS.

Avoid A Misinstallation

Do not make
your own holes.

Do not nail
the bottom flange.





Product warranty

Products manufactured by Barrette Structural Inc. (hereafter: "Barrette Structural") are guaranteed against manufacturing and material faults for the life of the structure.

This limited lifetime warranty is applicable if the products manufactured by Barrette Structural have been correctly stored, protected from climatic conditions such as sunlight, humidity, rain or wind, and installed in conformity with the guidelines and instructions supplied, either as floor joists or roof trusses, whichever is the case.

This warranty does not cover perceived problems of design or defects caused by:

- prolonged exposure to water or climatic conditions (in particular following construction work or due to construction delays), fire, flooding, natural disasters or any other cause beyond the control of Barrette Structural;
- faults in the structure following poor construction, installation or assembly practices;
- damage to the structure before, during or after installation;
- failure to respect installation instructions, current building code norms or generally accepted practices in the construction industry;
- the transformation of joists or roof trusses after their initial installation;
- the presence of mold, spore, rot or termites or any other element likely to degrade the installed product;
- the application of a preservative treatment or any other coating not approved by Barrette Structural;
- defective ventilation, repeated exposure to water or humid conditions;
- excessive loads or tension not allowed for by Barrette Structural or usage that does not comply with the type for which the product was designed.

IN THE CASE OF PROBLEMS WITH MANUFACTURING FAULTS COVERED BY THIS WARRANTY, BARRETTE STRUCTURAL WILL PAY REASONABLE COSTS FOR LABOR AND MATERIALS TO REPAIR OR REPLACE ONLY THE JOISTS OR ROOF TRUSSES UNDER WARRANTY. THESE COSTS MUST NOT EXCEED BY MORE THAN THREE TIMES THE INITIAL PURCHASE COST OF THE JOISTS OR ROOF TRUSSES INVOLVED IN THE CLAIM.

IN THE EVENT OF A CLAIM, THE RESPONSIBILITY OF BARRETTE STRUCTURAL IS LIMITED TO THAT WHICH HAS BEEN OUTLINED IN THIS WARRANTY. BARRETTE STRUCTURAL MAY NOT BE HELD RESPONSIBLE FOR ANY OTHER DAMAGE WHATSOEVER.

All claims must be communicated to Barrette Structural within 30 days of the discovery of any anomaly or problem covered by this warranty, at the following address:

BARRETTE STRUCTURAL

555, rang Saint-Malo, Trois-Rivières (Québec) G8V 0A8 CANADA

To obtain further information, please contact your representative.