

ICC Evaluation Service, Inc.
www.icc-es.org

Business/Regional Office ■ 5360 Workman Mill Road, Whittier, California 90601 ■ (562) 699-0543
Regional Office ■ 900 Montclair Road, Suite A, Birmingham, Alabama 35213 ■ (205) 599-9800
Regional Office ■ 4051 West Flossmoor Road, Country Club Hills, Illinois 60478 ■ (708) 799-2305

DIVISION: 06—WOOD AND PLASTICS
Section: 06170—Prefabricated Structural Wood

REPORT HOLDER:

NASCOR LTD.
1212 34TH AVENUE SE
CALGARY, ALBERTA T2G 1V7
CANADA
(403) 243-8919
www.nascor.com
technicalsupport@nascor.com

EVALUATION SUBJECT:

NASCOR I-JOISTS: NJ925, NJ10, NJ12, NJH925, NJH10, NJH12, NJH14, NJH16, NJU10, NJU12, NJU14, NJU16 AND NJU18

ADDITIONAL LISTEES:

ACUJOIST
9455 HALDANE ROAD
KELOWNA, BRITISH COLUMBIA V4V 2K5
CANADA

ALL-FAB BUILDING COMPONENTS, JOIST DIVISION
P.O. BOX 189
7 HIGHWAY PROPELLANT ROAD
STONY MOUNTAIN, MANITOBA R0C 3A0
CANADA

G. E. FABRICATORS INC.
269 WALNUT STREET ROAD
SALEM, NEW JERSEY 08079

NASCOR BY KOTT
4220 MARCEL LACASSE
BOISBRIAND, QUEBEC J7H 1N3
CANADA

NASCOR BY KOTT
PO BOX 11401 STN. H
NEPEAN, ONTARIO K2H 7V1
CANADA

SOUTHERN TRUSS INC.
105 SMALL STREET
HARRISBURG, ILLINOIS 62946

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2003 *International Building Code*® (IBC)
- 2003 *International Residential Code*® (IRC)
- BOCA® *National Building Code/1999* (BNBC)
- 1999 *Standard Building Code*® (SBC)
- 1997 *Uniform Building Code*™ (UBC)

Properties evaluated:

- Structural
- Rim joists
- Fire-resistance rating
- Sound transmission

2.0 USES

Nascor NJ, NJH and NJU series I-joists described in this report are prefabricated wood I-joists that comply with Section 2303.1.2 of the IBC; Section R502.1.4 of the IRC, for allowable stress design; Section 2313.5 of the BNBC; Section 2301.4.11 of the SBC; and Section 2303, Item 5.1, of the UBC. Nascor I-joists are used as roof rafters, floor joists, rim joists and headers in buildings of combustible construction [Type V (IBC and UBC), Type 5 (BNBC) and Type VI (SBC)].

3.0 DESCRIPTION

Nascor I-joists are comprised of solid-sawn lumber chords and orientated strand board (OSB) webs. The web-to-chord connection is a glued taper-fitted joint. The web-to-web connection of the OSB panels is a full-depth, taper-shaped glued joint. Nascor I-joists are manufactured in the sizes and configurations shown in Table 1 of this report. The maximum length of the Nascor I-joists is 48 feet (14.63 m).

3.1 Materials:

3.1.1 Flanges: Flange material is visually graded No. 2 spruce-pine-fir lumber in accordance with the National Lumber Grading Authority (NLGA) and the Nascor quality control manual. Flanges are either full-length or finger-joined. The flanges have nominal cross-sectional dimensions of 2 inches (51 mm) by 3 inches (76 mm) and 2 inches (51 mm) by 4 inches (102 mm). Flanges of the NJ series I-joists are positioned with the 3-inch (76 mm) nominal dimension vertical, while flanges of the NJH and NJU series I-joist are positioned with the 2-inch (51 mm) nominal dimension vertical.

3.1.2 Webs: Web material is $\frac{3}{8}$ -inch-thick (9.5 mm), Structural 1, Exposure 1 graded, oriented strand board panels that comply with the United States Department of Commerce (DOC) Standard PS 2, and Canadian Standards Association (CSA) Standard O325.

3.1.3 Adhesive: Joint adhesive complies with ASTM D 2559 and the applicable sections of ASTM D 5055.

4.0 DESIGN AND INSTALLATION

4.1 Design Properties:

Allowable design properties for Nascor I-joists shall be in accordance with the values listed in Table 2 of this report. When Nascor I-joists are used as rim joists, the maximum vertical uniform load applied along the top flange of the joist shall not exceed the values indicated in Table 4 of this report. Allowable shear capacities of Nascor I-joists installed with $1\frac{1}{2}$ -inch (38 mm) or $2\frac{1}{2}$ -inch (64 mm) bearing lengths shall be the smaller of either the allowable end reaction or the shear capacity specified in Table 2 of this report. Allowable shear capacities of Nascor I-joists installed with $3\frac{1}{2}$ -inch (89 mm) or $5\frac{1}{2}$ -inch (140 mm) bearing lengths shall comply with the interior reaction specified in Table 2 of this report. Loads within a distance "d" from the support, where "d" equals the I-joist depth, shall be included in the vertical shear design of the Nascor I-joists.

Allowable spans and loads for Nascor I-joists installed in floors are specified in Table 3 of this report. Floor sheathing shall be attached as noted in this section. As an alternative, the allowable spans specified in Table 3 of this report shall be reduced by 12 inches (305 mm) and the minimum fastening schedule shall be as specified in the applicable code.

Sheathing shall be designated as Rated Sheathing or Sturd-I-Floor panels, as specified in PS 2. Panel end joints shall be staggered. Ring- or screw-shank nails shall be used to attach the panels to supports: 6d for thicknesses through $\frac{3}{4}$ inch (19.1 mm) and 8d for greater thicknesses. Nails shall be spaced at a maximum of 6 inches (152 mm) on center along panel edges and 12 inches (305 mm) on center along intermediate supports, except that for panels with a 48 o.c. Span Rating (floor), nails shall be spaced at 6 inches (152 mm) on center along all supported panel edges, as well as along intermediate supports.

Sheathing shall be field-glued with an adhesive meeting APA Specification AFG-01 applied to all I-joists and tongue-and-groove edges. Surfaces shall be free of surface moisture, dirt, cement, and other foreign materials prior to application of the adhesive.

The adhesive shall be applied in accordance with the adhesive manufacturer's instructions. The application rate shall be a $\frac{1}{4}$ -inch-diameter (6.4 mm) bead, except that two $\frac{1}{4}$ -inch-diameter (6.4 mm) beads shall be applied where panels abut on a joist. Tongue-and-groove joints shall be glued with the application of a $\frac{1}{8}$ -inch-diameter (3.2 mm) bead. The adhesive shall be applied for the entire length of the member. The sheathing shall be completely installed within the time limit specified by the adhesive manufacturer.

If sheathing is square-edged, the panel edges shall be supported by nominal 2-inch (51 mm) lumber blocking. Where sheathing is covered with a structural finish floor, such as wood strip flooring, or a $\frac{1}{4}$ -inch (6.4 mm) minimum thickness underlayment, or has tongue-and-groove edges, blocking is not required.

4.2 Moisture Content:

The use of Nascor I-joists is limited to covered dry conditions of use. Dry conditions of use are those environmental conditions represented by sawn lumber in which the moisture content is less than 16 percent.

4.3 Cutting and Notching:

Cutting or notching of Nascor I-joists flanges shall not be permitted, except for cutting to length.

4.4 Fire-resistance Rating:

Nascor I-joists shall be considered to have a one-hour fire-resistance rating, when constructed in accordance with Figure 3 of this report.

4.5 Web Openings:

Web opening sizes and locations shall be in accordance with Tables 5 through 10 and Figure 1 of this report. Web openings shall be limited to simple span Nascor I-joists which resist a uniform load. Web opening conditions not provided for have not been evaluated, and are outside the scope of this report.

4.6 Repetitive Members:

Repetitive member increases to the bending moment capacity of Nascor I-joists shall not exceed 7 percent.

4.7 Web Stiffeners:

Web stiffeners for Nascor I-joists shall be installed in accordance with Table 2 as well as Figure 2 of this report.

4.8 Blocking:

Bearing locations of the Nascor I-joists shall be provided with adequate support to resist rollover. This support shall be provided by wall sheathing, end blocking, rim joists, or cross bridging. Other lateral bracing shall be installed consistent with the lateral stability assumed in the design calculations.

4.9 Duration of Load:

Design properties of the Nascor I-joists are based on loads of normal duration. Application of load duration factors shall be in accordance with the AF&PA National Design Specification (NDS).

4.10 Sound Transmission:

Nascor I-joists, when constructed in accordance with the roof-ceiling or floor-ceiling assembly shown in Figure 3 of this report, shall have a sound transmission class (STC) of 50 and an impact insulation class (IIC) of 45. The assembly shall have the following STC and IIC ratings when constructed with a $\frac{3}{4}$ -inch-thick (19.1 mm) floor topping of gypsum concrete recognized in a current ICC-ES evaluation report and with the materials described below:

4.10.1 STC = 52 and IIC = 53: The floor-ceiling assembly shall have $\frac{3}{4}$ -inch-thick (19.1 mm) tongue-and-groove sheathing, the floor covering shall be ToughGuard Initiator vinyl and the floor cavity shall contain $3\frac{1}{2}$ -inch-thick (89 mm) glass-fiber insulation.

4.10.2 STC = 52 and IIC = 75: The floor-ceiling assembly shall have $\frac{3}{4}$ -inch-thick (19.1 mm) tongue-and-groove sheathing, the floor covering shall include a 37-ounce (1048 grams) over a 47-ounce (1332 grams) pad and the floor cavity shall contain $3\frac{1}{2}$ -inch-thick (89 mm) glass-fiber insulation.

4.10.3 STC = 52 and IIC = 51: The floor-ceiling assembly shall have $\frac{3}{4}$ -inch-thick (19.1 mm) tongue-and-groove sheathing, the floor covering shall include a 0.314-inch-thick (8 mm) DL Laminate Locking Floor over a 2-in-1 foam underlayment and the floor cavity shall contain $3\frac{1}{2}$ -inch-thick (89 mm) glass-fiber insulation.

4.10.4 STC = 53 and IIC = 52: The floor-ceiling assembly shall have $\frac{3}{4}$ -inch-thick (19.1 mm) tongue-and-groove sheathing, the floor covering shall be an 0.314-inch-thick (8 mm) ToughGuard StarStep vinyl and the floor cavity shall contain $3\frac{1}{2}$ -inch-thick (89 mm) glass-fiber insulation.

5.0 CONDITIONS OF USE

The Nascor NJ, NJH and NJU series I-joists described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 Installation complies with this report, the manufacturer's published installation instructions and the applicable code. In the event of conflicts between the manufacturer's published installation instructions and this report, this report shall govern.
- 5.2 Drawings and design details verifying compliance with this report must be submitted to the building official for approval, except for cases where structural members can be and are designed based on design aids (e.g., span tables) supplied in this report. The drawings and calculations must be prepared by a registered design professional when required by the statutes of the jurisdiction in which the project is to be constructed.
- 5.3 Nascor I-joists shall be fabricated in accordance with the applicable quality control manual, as referenced herein. Nascor I-joists shall bear the stamp of Intertek Testing Services NA Ltd. See Figure 4 of this report for sample labels.
- 5.4 Use of preservative-treated lumber, as part of the Nascor I-joists, is outside the scope of this evaluation.
- 5.5 Allowable loads and spans indicated in this report are based on uniform loading on the top flange of the I-joist

along its entire length. Other loading conditions are outside the scope of this report.

- 5.6 Nascor I-joists used in vertical applications are outside the scope of this report.
- 5.7 Nascor I-joists are produced at Calgary, Alberta, Canada or at the locations shown for the additional listees given in Table 11 of this report, under a quality control program with inspections by Intertek Testing Services NA Ltd. (AA-688).

6.0 EVIDENCE SUBMITTED

- 6.1 Manufacturer's published installation instructions.
- 6.2 Data in accordance with the ICC-ES Acceptance Criteria for Prefabricated Wood I-joists (AC14), dated June 2004.
- 6.3 Data in accordance with the ICC-ES Acceptance Criteria for Wood-based Rim Board Products (AC124), dated October 2004.
- 6.4 Quality control manuals.

7.0 IDENTIFICATION

The Nascor I-joists described in this report are identified by a stamp bearing the manufacturer's name (Nascor Ltd.), plant number, I-joist type, production code, the name of the inspection agency (Intertek Testing Services NA Ltd.) and the evaluation report number (ESR-1141).

TABLE 1—PHYSICAL PROPERTIES FOR NASCOR JOISTS

JOIST TYPE	JOIST DEPTH (inches)	FLANGE WIDTH (inches)	WEB THICKNESS (inches)	JOIST WEIGHT (lbf/ft)
NJ925	9 ¹ / ₄	1 ¹ / ₂	³ / ₈	2.1
NJ10	9 ¹ / ₂	1 ¹ / ₂	³ / ₈	2.2
NJ12	11 ⁷ / ₈	1 ¹ / ₂	³ / ₈	2.4
NJH925	9 ¹ / ₄	2 ¹ / ₂	³ / ₈	2.2
NJH10	9 ¹ / ₂	2 ¹ / ₂	³ / ₈	2.3
NJH12	11 ⁷ / ₈	2 ¹ / ₂	³ / ₈	2.7
NJH14	14	2 ¹ / ₂	³ / ₈	3.0
NJH16	16	2 ¹ / ₂	³ / ₈	3.3
NJU10	9 ¹ / ₂	3 ¹ / ₂	³ / ₈	2.7
NJU12	11 ⁷ / ₈	3 ¹ / ₂	³ / ₈	2.9
NJU14	14	3 ¹ / ₂	³ / ₈	3.2
NJU16	16	3 ¹ / ₂	³ / ₈	3.4
NJU18	18	3 ¹ / ₂	³ / ₈	3.6

For SI: 1 lbf/ft = 14.594 N/m; 1 inch = 25.4 mm.

TABLE 2—DESIGN PROPERTIES FOR NASCOR JOISTS^{3,5}

JOIST TYPE	JOIST DEPTH (inches)	ALLOWABLE MOMENT ¹ (ft-lbf)	ALLOWABLE SHEAR ^{1,2} (lbf)	END REACTIONS (lbf)				INTERIOR REACTIONS (lbf)				STIFFNESS (EI) (lbf-in ² × 10 ⁶)	SHEAR CONSTANT (K) (lbs × 10 ⁶)
				1 1/2" Bearing		2 1/2" Bearing		3 1/2" Bearing		5 1/2" Bearing			
				Stiffeners		Stiffeners		Stiffeners		Stiffeners			
				No	Yes ⁴	No	Yes ⁴	No	Yes ⁴	No	Yes ⁴		
NJ925	9 1/4	2200	950	950	-	950	-	1900	-	1900	-	123	11.83
NJ10	9 1/2	2320	970	960	-	970	-	1940	-	1940	-	136	12.70
NJ12	11 7/8	2850	1070	960	-	1070	-	2000	-	2140	-	243	14.50
NJH925	9 1/4	2300	975	950	975	975	975	1950	1950	1950	1950	162	10.91
NJH10	9 1/2	2420	1000	960	1500	1000	1800	2000	2000	2000	2000	175	11.60
NJH12	11 7/8	3400	1140	1000	1500	1140	1800	2200	2280	2280	2280	298	14.50
NJH14	14	5000	1350	1100	1500	1300	1800	2200	2700	2500	2700	430	15.08
NJH16	16	5940	1510	1100	1500	1400	1800	2200	2700	2500	3020	584	16.93
NJU10	9 1/2	3040	1000	880	1000	1000	1000	1820	2000	2000	2000	240	11.11
NJU12	11 7/8	4200	1140	920	1140	960	1140	2170	2280	2280	2280	406	13.75
NJU14	14	5600	1350	1220	1350	1320	1350	2500	2700	2700	2700	594	15.76
NJU16	16	6900	1510	1180	1510	1510	1510	2720	3020	3020	3020	807	17.15
NJU18	18	8400	1600	980	1600	1050	1600	2410	2830	2470	3200	1054	20.04

For **SI**: 1 ft-lbf = 1.356 N-m; 1 lbf = 4.4 N; 1 lbf-in² = 2.87 kN-mm²; 1 inch = 25.4 mm.

Notes to Table 2:

¹Allowable moment and shear values are for loads of normal duration. Allowable moment is permitted to be increased a maximum of 7 percent for repetitive member use.

²Joist type and bearing length shall be considered when determining allowable shear.

³See Conditions of Use for additional requirements and limitations.

⁴See Figure 2 of this report for web stiffener size, location, and nailing requirements.

⁵Calculation of bending and shear deflection, in inches, shall be as follows:

$(5 wL^4 / 384EI) + (wL^2 / K)$, for uniform loads

$(PL^3 / 48EI) + (2PL / K)$, for concentrated loads at midspan

where:

- w = Uniform load in pounds per lineal inch.
- L = Effective length in inches.
- EI = Joist bending stiffness.
- P = Concentrated load in pounds.
- K = Shear deflection coefficient in pounds.

TABLE 3—ALLOWABLE JOIST SPANS WITH GLUED AND NAILED FLOOR SHEATHING (feet-inches)

JOIST TYPE	FLOOR LOADS (lbf/ft ²)				FLOOR LOADS (lbf/ft ²)			
	Live = 40 and Dead = 10				Live = 40 and Dead = 20			
	Joist Spacing (inches)				Joist Spacing (inches)			
	12	16	19.2	24	12	16	19.2	24
NJ925	17 - 5	15 - 11	15 - 0	13 - 8	17 - 5	15 - 4	14 - 0	12 - 6
NJ10	18 - 0	16 - 5	15 - 6	14 - 1	18 - 0	15 - 9	14 - 4	12 - 10
NJ12	21 - 7	19 - 1	14 - 5	15 - 7	20 - 1	17 - 5	15 - 11	14 - 3
NJH925	19 - 0	17 - 2	15 - 8	14 - 0	18 - 1	15 - 8	14 - 3	12 - 9
NJH10	19 - 5	17 - 7	16 - 1	14 - 4	18 - 6	16 - 1	14 - 8	13 - 1
NJH12	23 - 1	20 - 1	19 - 0	17 - 0	22 - 0	19 - 0	17 - 4	15 - 6
NJH14	25 - 11	23 - 7	22 - 3	20 - 8	25 - 11	23 - 1	21 - 1	18 - 9 ⁵
NJH16	28 - 7	26 - 0	24 - 6	22 - 6 ⁵	28 - 7	25 - 2	23 - 0 ⁵	20 - 7 ⁵
NJU10	21 - 6	19 - 7	18 - 0	16 - 1	20 - 9	18 - 0	16 - 5	14 - 8 ⁵
NJU12	25 - 5	23 - 2	21 - 2	18 - 11 ⁵	24 - 5	21 - 2	19 - 4 ⁵	17 - 3 ⁵
NJU14	28 - 9	26 - 2	24 - 5	21 - 10	28 - 3	24 - 5	22 - 4	19 - 11
NJU16	31 - 9	28 - 10	27 - 2	24 - 3 ⁵	31 - 4	27 - 2	24 - 9 ⁵	22 - 2 ⁵
NJU18	34 - 7	31 - 6 ⁵	29 - 8 ⁵	26 - 9 ⁵	34 - 7 ⁵	29 - 11 ⁵	27 - 4 ⁵	24 - 5 ⁵

For **SI**: 1 inch = 25.4 mm; 1 lbf/ft² = 47.88 Pa; 1 foot = 305 mm.

Notes to Table 3:

¹Spans listed represent simple spans with the clear distance between bearing points loaded uniformly.

²Spans are based on composite action of glued and nailed sheathing. Spans shall be reduced by 12 inches (304.8 mm) where sheathing is nailed only. See Conditions of Use.

³Live load deflection is limited to L/360 and total load deflection limited to L/240.

⁴Minimum bearing length of 1½ inches (38.1 mm) is required, unless otherwise noted.

⁵Minimum bearing length of 1½ inches (38.1 mm) is required with web stiffeners at bearing; see Figure 3 of this report.

⁶Web holes shall comply with Figure 1 of this report.

⁷Repetitive member increase of 7 percent has been applied to allowable moment.

TABLE 4—RIM JOISTS-ALLOWABLE VERTICAL LOAD (lbf/ft)

JOIST TYPE					
NJ925	NJ10	NJ12	NJH925	NJH10	NJU10
2000	2000	2000	2000	2000	2000

For **SI**: 1 lbf/ft = 14.594 N/m.

Notes to Table 4:

¹Rim joist shall be fully supported at the bottom flange and laterally supported every 12 inches (304.8 mm) on center at the top and bottom flange.

²See Conditions of Use for additional requirements and limitations.

TABLE 5—RECTANGULAR HOLE LOCATIONS FOR NJ SERIES I-JOISTS

JOIST TYPE	JOIST SPAN (ft-in.)	RECTANGULAR HOLE HEIGHT (inches)										
		2	2 ¹ / ₂	3	3 ¹ / ₂	3 ³ / ₄	4	4 ¹ / ₂	5	5 ¹ / ₂	6	6 ³ / ₈
		Minimum Required Distance from the Inside Edge of Support to Edge of the Rectangular Hole (ft-in)										
NJ925	6-0	1-0	1-0	1-0	1-0	1-0						
	8-0	1-0	1-0	1-0	1-0	1-0						
	10-0	1-0	1-0	1-6	2-0	2-0						
	12-0	1-6	2-0	2-6	3-0	3-0						
	13-2	1-0	1-0	1-6	2-6	2-6						
	14-0	1-0	1-0	1-0	1-6	1-6						
	15-5	1-0	1-0	1-0	1-0	1-0						
NJ10	6-0	1-0	1-0	1-0	1-0	1-0	1-0					
	8-0	1-0	1-0	1-0	1-6	1-6	1-6					
	10-0	1-6	1-6	2-0	2-6	2-6	2-6					
	12-0	2-6	2-6	3-0	3-6	3-6	3-6					
	12-4	2-6	3-0	3-0	3-6	3-6	3-6					
	13-8	2-0	2-6	3-0	3-0	3-6	3-6					
	14-0	1-0	1-6	2-0	2-6	2-6	2-6					
	14-6	1-0	1-6	2-0	2-6	2-6	3-0					
	15-11	1-0	1-0	1-0	1-6	1-6	1-6					
NJ12	6-0	1-0	1-0	1-0	1-0	1-0	1-0	1-0	1-0	1-0	1-0	1-0
	8-0	1-0	1-0	1-0	1-0	1-0	1-0	1-0	1-6	1-6	2-0	2-0
	10-0	1-0	1-0	1-0	1-6	1-6	1-6	2-0	2-6	2-6	3-0	3-0
	12-0	1-0	1-6	2-0	2-6	2-6	2-6	3-0	3-6	3-6	4-0	4-0
	13-8	2-0	2-6	2-6	3-0	3-6	3-6	4-0	4-0	4-6	5-0	5-0
	14-0	1-0	1-0	1-0	2-0	2-6	2-6	3-0	3-6	4-0	4-0	4-6
	15-3	1-0	2-0	2-6	3-0	3-0	3-6	3-6	4-0	4-6	5-0	5-0
	16-0	1-0	1-0	1-6	2-0	2-6	2-6	3-0	3-6	4-0	4-6	4-6
	16-9	1-0	1-0	2-0	2-6	3-0	3-0	3-6	4-0	4-6	5-0	5-0
	18-0	1-0	1-0	1-0	1-0	1-0	1-6	2-0	2-6	3-0	3-6	4-0
		19-2	1-0	1-0	1-0	1-0	1-6	2-0	2-6	3-0	4-0	4-6

For SI: 1 inch = 25.4 mm; 1 foot = 305 mm.

Notes to Table 5:

¹Table is based on a maximum uniform floor loading of 40 lbf/ft² (1.95 kPa) live and 25 lbf/ft² (1.20 kPa) dead load.

²Table is based on joist spans and spacing indicated in Table 3 of this report. Other spans and spacings are outside the scope of this report.

³Joist span is base on clear span, distance from the inside face of the end supports.

⁴The rectangular hole location is the distance measured from the inside face of the nearest support to the edge of the rectangular hole.

⁵Maximum rectangular hole depth shall leave ¹/₄-inch (6.4 mm) minimum of web material between the top and bottom of the rectangular hole and flange.

⁶The maximum allowable rectangular hole width (distance parallel to flange) is to be 1.5 times the rectangular hole depth.

⁷Where the joist span is between those specified in this table, use the adjacent joist span which has the greater required distance.

TABLE 6—ROUND HOLE LOCATIONS FOR NJ SERIES I-JOISTS

JOIST TYPE	JOIST SPAN (ft-in.)	ROUND HOLE DIAMETER (inches)										
		2	2 ¹ / ₂	3	3 ¹ / ₂	3 ³ / ₄	4	4 ¹ / ₂	5	5 ¹ / ₂	6	6 ³ / ₈
		Minimum Distance from the Inside Edge of Support to Center of the Round Hole (ft-in)										
NJ925	6 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0						
	8 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0						
	10 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 6						
	12 - 0	1 - 0	1 - 6	2 - 0	2 - 0	2 - 6						
	13 - 2	1 - 0	1 - 0	1 - 0	1 - 6	1 - 6						
	14 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0						
NJ10	15 - 5	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0						
	6 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0					
	8 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 6	1 - 0					
	10 - 0	1 - 0	1 - 0	1 - 0	1 - 6	1 - 6	1 - 6					
	12 - 0	1 - 0	1 - 6	2 - 0	2 - 6	2 - 6	2 - 6					
	12 - 4	1 - 6	1 - 6	2 - 0	2 - 6	2 - 6	3 - 0					
	13 - 8	1 - 0	1 - 0	1 - 6	2 - 0	2 - 0	2 - 6					
	14 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 6					
NJ12	14 - 6	1 - 0	1 - 0	1 - 0	1 - 0	1 - 6	1 - 6					
	15 - 11	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0					
	6 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0
	8 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0
	10 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 6	2 - 0
	12 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 6	2 - 0	2 - 6	3 - 0
	13 - 8	1 - 0	1 - 0	1 - 0	1 - 6	1 - 6	1 - 6	2 - 0	2 - 6	3 - 0	3 - 6	3 - 6
	14 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 6	2 - 0	2 - 6
	15 - 3	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 6	1 - 6	1 - 6	2 - 6	3 - 0	3 - 0
	16 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 6	2 - 0	2 - 6
	16 - 9	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 6	2 - 0	3 - 0
18 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 6	
19 - 2	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	1 - 0	

For SI: 1 inch = 25.4 mm; 1 foot = 305 mm.

Notes to Table 6:

¹Table is based on a maximum uniform floor loading of 40 lbf/ft² (1.95 kPa) live and 25 lbf/ft² (1.20 kPa) dead load.

²Table is based on joist spans and spacings indicated in Table 3 of this report. Other spans and spacings are outside the scope of this report.

³Joist span is based on clear span, distance from the inside face of the end supports.

⁴The round hole location is the distance measured from the inside face of the nearest support to the centerline of the round hole.

⁵Maximum round hole depth shall leave ¹/₄-inch (6.4 mm) minimum of web material between the top and bottom of the round hole and flange.

⁶Where the joist span is between those specified in this table, use the adjacent joist span which has the greater required distance.

TABLE 7—RECTANGULAR HOLE LOCATIONS FOR NJH SERIES I-JOISTS

JOIST TYPE	JOIST SPAN (ft-in)	RECTANGULAR HOLE HEIGHT (inches)											
		2	3	4	5	5 ³ / ₄	6	8 ³ / ₈	9	10	10 ¹ / ₂	12	12 ¹ / ₂
		Minimum Distance from the Inside Edge of Support to Edge of the Rectangular Hole (ft-in)											
NJH925	10-0	1-6	2-0	3-0	3-6	3-6							
	12-0	2-6	3-0	4-0	4-6	4-6							
	12-4	2-6	3-6	4-0	4-6	5-0							
	13-9	2-0	3-0	4-0	4-6	5-0							
	14-0	1-0	2-0	3-6	4-0	4-6							
	15-1	1-6	2-6	4-0	4-6	5-0							
NJH10	10-0	1-0	1-6	2-6	3-0	3-6	3-6						
	12-0	2-0	2-6	3-6	4-0	4-6	4-6						
	12-7	2-0	3-0	4-0	4-6	5-0	5-0						
	14-0	1-6	2-6	3-6	4-6	5-0	5-0						
	14-1	1-6	2-6	3-6	4-6	5-0	5-0						
	15-5	1-0	2-0	3-6	4-6	5-0	5-0						
	16-0	1-0	1-0	1-6	3-6	4-0	4-0						
NJH12	12-0	1-0	2-0	3-0	3-6	4-0	4-0	5-0					
	14-0	2-0	3-0	4-0	4-6	5-0	5-0	6-0					
	14-11	2-0	3-6	4-0	5-0	5-6	5-6	6-6					
	16-0	1-6	2-6	3-6	4-6	5-6	5-6	6-6					
	16-8	1-6	3-0	4-0	5-0	5-6	5-6	7-0					
	18-0	1-0	2-0	3-6	4-6	5-6	5-6	7-0					
	18-3	1-0	2-6	3-6	5-0	6-0	6-0	7-6					
	20-0	1-0	1-0	2-6	4-0	5-0	5-0	7-0					
NJH14	12-0	1-0	1-0	1-6	2-6	3-0	3-0	4-6	5-0	5-0	5-6		
	14-0	1-0	1-6	2-6	3-6	4-0	4-0	5-6	6-0	6-0	6-6		
	16-0	1-6	2-6	3-6	4-6	5-0	5-0	6-6	7-0	7-0	7-6		
	18-0	2-6	3-6	4-6	5-6	6-0	6-0	7-6	8-0	8-0	8-6		
	18-1	2-6	3-6	4-6	6-0	6-6	6-6	7-6	8-0	8-0	8-6		
	19-9	1-0	2-6	3-6	5-0	6-0	6-0	7-6	8-0	8-6	8-6		
	20-0	1-0	1-0	2-6	3-6	5-0	5-0	7-0	7-6	8-0	8-6		
	21-0	1-0	1-6	3-0	4-0	5-6	5-6	7-6	8-0	8-6	9-0		
	22-0	1-0	1-0	1-0	2-6	4-0	4-0	6-0	7-6	8-0	8-6		
	23-1	1-0	1-0	1-0	3-0	4-6	4-6	7-6	8-0	8-6	9-0		
NJH16	14-0	1-0	1-0	2-0	3-0	4-0	4-0	5-6	6-0	6-0	6-6	6-6	6-6
	16-0	1-0	1-6	3-0	4-0	5-0	5-0	6-6	7-0	7-0	7-6	7-6	7-6
	18-0	1-6	2-6	4-0	5-0	6-0	6-0	7-6	8-0	8-0	8-6	8-6	8-6
	19-9	2-6	3-6	4-6	5-6	6-6	6-6	8-6	8-6	9-0	9-0	9-6	9-6
	20-0	1-0	2-0	3-6	4-6	5-6	5-6	7-6	8-0	8-6	9-0	9-0	9-0
	21-10	1-6	3-0	4-0	5-6	6-6	6-6	8-6	9-0	9-6	9-6	10-0	10-0
	22-0	1-0	1-0	2-6	4-0	5-6	5-6	8-0	8-6	9-0	9-6	10-0	10-0
	23-2	1-0	1-6	3-6	5-0	5-0	5-0	8-6	9-0	9-6	10-0	10-6	10-6
	24-0	1-0	1-0	1-0	2-6	4-6	4-6	7-6	8-6	9-0	9-6	10-0	10-0
25-6	1-0	1-0	1-6	3-6	5-0	5-0	8-6	9-0	10-0	10-0	10-6	11-0	

For SI: 1 inch = 25.4 mm; 1 foot = 305 mm.

Notes to Table 7:

¹Table is based on a maximum uniform floor loading of 40 lbf/ft² (1.95 kPa) live and 25 lbf/ft² (1.20 kPa) dead load.

²Table is based on joist spans and spacings indicated in Table 3 of this report. Other spans and spacings are outside the scope of this report.

³Joist span is based on the clear span, distance from the inside face of the end supports.

⁴The rectangular hole location is the distance measured from the inside face of the nearest support to the edge of the rectangular hole.

⁵Maximum rectangular hole depth shall leave 1/4-inch (6.4 mm) of web material between the top and bottom of the rectangular hole and flange.

⁶The maximum rectangular hole width (distance parallel to flange) is 1.5 times the rectangular hole depth.

⁷Where the joist span is between those specified in this table, use the adjacent joist span which has the greater required distance.

TABLE 8—ROUND HOLE LOCATIONS FOR NJH SERIES I-JOISTS

JOIST TYPE	JOIST SPAN (ft-in)	ROUND HOLE DIAMETER (inches)											
		2	3	4	5	5 ³ / ₄	6	8 ³ / ₈	9	10	10 ¹ / ₂	12	12 ¹ / ₂
		Minimum Distance from the Inside Edge of Support to Center of the Round Hole (ft-in)											
NJH925	10-0	1-0	1-6	2-6	2-6	3-0							
	12-0	2-0	2-6	3-6	3-6	4-0							
	12-4	2-0	3-0	3-6	4-0	4-0							
	13-9	1-6	2-6	3-0	3-6	4-0							
	14-0	1-0	1-6	2-0	3-0	3-0							
	15-1	1-0	2-0	2-6	3-6	3-6							
	16-0	1-0	1-0	1-0	2-0	2-6							
NJH10	10-0	1-0	1-0	1-6	2-0	2-6	2-6						
	12-0	1-0	2-0	2-6	3-0	3-6	3-6						
	12-7	1-6	2-0	3-0	3-6	4-0	4-0						
	14-0	1-0	1-6	2-6	3-0	4-0	4-0						
	14-1	1-0	1-6	2-6	3-0	4-0	4-0						
	15-5	1-0	1-0	2-0	2-6	3-6	3-6						
	16-0	1-0	1-0	1-0	1-0	1-6	1-6						
17-3	1-0	1-0	1-0	1-6	2-0	2-0							
NJH12	12-0	1-0	1-0	1-6	2-6	3-0	3-0	4-0					
	14-0	1-6	2-0	2-6	3-6	4-0	4-0	5-0					
	14-11	1-6	2-6	3-0	4-0	4-6	4-6	5-6					
	16-0	1-0	1-6	2-6	3-0	4-0	4-0	5-0					
	16-8	1-0	2-0	2-6	3-6	4-0	4-0	5-6					
	18-0	1-0	1-0	2-0	3-0	3-6	3-6	5-0					
	18-3	1-0	1-0	2-0	3-0	4-0	4-0	5-0					
	20-0	1-0	1-0	1-0	1-6	2-6	2-6	4-6					
20-6	1-0	1-0	1-0	1-6	2-6	2-6	4-6						
NJH14	12-0	1-0	1-0	1-0	1-0	1-0	1-0	3-0	3-6	4-6	5-0		
	14-0	1-0	1-0	1-0	1-0	2-0	2-0	4-0	4-6	5-6	6-0		
	16-0	1-0	1-0	1-6	2-0	3-0	3-0	5-0	5-6	6-6	7-0		
	18-0	1-0	1-6	2-6	3-0	4-0	4-0	6-0	6-6	7-6	8-0		
	18-1	1-0	1-6	2-6	3-0	4-0	4-0	6-0	6-6	7-6	8-0		
	19-9	1-0	1-0	1-0	2-0	3-0	3-0	5-6	6-6	7-6	8-0		
	20-0	1-0	1-0	1-0	1-0	1-6	1-6	4-6	5-6	7-0	7-6		
	21-0	1-0	1-0	1-0	1-0	2-0	2-0	5-0	6-0	7-6	8-0		
	22-0	1-0	1-0	1-0	1-0	1-0	1-0	3-0	4-6	6-0	7-0		
23-1	1-0	1-0	1-0	1-0	1-0	1-0	3-6	5-6	6-6	7-6			
NJH16	14-0	1-0	1-0	1-0	1-6	2-0	2-0	3-6	4-0	4-6	5-0	5-6	5-6
	16-0	1-0	1-0	1-6	2-6	3-0	3-0	4-6	5-0	5-6	6-0	6-6	6-6
	18-0	1-0	1-6	2-6	3-6	4-0	4-0	5-6	6-0	6-6	7-0	7-6	7-6
	19-9	1-6	2-6	3-6	4-0	5-0	5-0	6-6	7-0	7-6	7-6	8-6	8-6
	20-0	1-0	1-0	1-6	2-6	3-6	3-6	5-6	6-0	6-6	7-0	7-6	8-0
	21-10	1-0	1-6	2-6	3-6	4-6	4-6	6-6	7-0	7-6	8-0	8-6	9-0
	22-0	1-0	1-0	1-0	1-6	3-0	3-0	5-6	6-0	6-6	7-0	8-0	8-0
	23-2	1-0	1-0	1-0	2-6	3-6	3-6	6-0	6-6	7-0	7-6	8-6	9-0
	24-0	1-0	1-0	1-0	1-0	1-0	1-0	4-0	4-6	5-6	6-0	7-6	7-6
25-6	1-0	1-0	1-0	1-0	1-6	1-6	4-6	5-6	6-6	7-0	8-6	8-6	

For SI: 1 inch = 25.4 mm; 1 foot = 305 mm.

Notes to Table 8:

¹Table is based on a maximum uniform floor loading of 40 lbf/ft² (1.95 kPa) live and 25 lbf/ft² (1.20 kPa) dead load.

²Table is based on joist spans and spacings indicated in Table 3 of this report. Other spans and spacings are outside the scope of this report.

³Joist span is based on the clear span, distance from the inside face of the end supports.

⁴The round hole location is the distance measured from the inside face of the nearest support to the centerline of the round hole.

⁵The maximum round hole depth shall leave 1/4-inch (6.4 mm) minimum of web material between the top and bottom of round hole and flange.

⁶Where the joist span is between those specified in this table, use the adjacent joist span which has the greater required distance.

TABLE 9—RECTANGULAR HOLE LOCATIONS FOR NJU SERIES I-JOISTS

JOIST TYPE	JOIST SPAN (ft-in)	RECTANGULAR HOLE DIAMETER (inches)											
		2	4	5	6	7	8 ³ / ₈	10	10 ¹ / ₂	12	12 ¹ / ₂	13	14 ¹ / ₂
		Minimum Required Distance from the Inside Edge of Support to Edge of the Rectangular Hole (ft-in)											
NJU10	14-0	3-0	4-6	5-0	5-6								
	14-1	3-0	4-6	5-0	5-6								
	15-9	2-6	4-6	5-6	6-0								
	16-0	1-0	3-6	4-6	5-6								
	17-3	1-6	4-6	5-6	6-0								
	18-0	1-0	3-0	4-0	5-0								
	20-0	1-0	4-0	5-0	6-0								
NJU12	16-0	3-0	5-0	5-6	6-6	6-6	7-6						
	16-7	3-0	5-0	6-0	6-6	7-0	7-6						
	18-0	2-6	4-6	5-6	6-6	7-0	7-6						
	18-7	2-6	5-0	6-0	6-6	7-6	8-0						
	20-0	1-6	4-6	6-0	6-6	7-6	8-0						
	20-4	2-0	4-6	6-0	7-0	7-6	8-6						
	22-0	1-0	3-6	5-0	6-6	7-0	8-0						
23-6	1-0	4-0	5-6	7-0	8-0	9-0							
NJU14	16-0	1-6	3-6	4-6	5-0	5-6	6-6	7-0	7-6				
	18-0	2-6	4-6	5-6	6-0	6-6	7-6	8-0	8-6				
	19-2	3-0	5-0	6-0	6-6	7-6	8-0	8-6	9-0				
	20-0	1-6	4-0	5-0	6-0	7-0	8-0	8-6	9-0				
	21-5	2-0	5-0	5-6	6-6	7-6	8-6	9-6	9-6				
	22-0	1-0	3-6	5-0	6-0	7-0	8-0	9-0	9-6				
	23-6	1-0	4-0	5-6	6-6	7-6	9-0	10-0	10-0				
	24-0	1-0	1-6	3-6	5-0	6-6	7-6	9-0	9-6				
26-0	1-0	2-6	4-6	6-0	7-6	8-6	10-0	10-6					
27-1	1-0	3-0	5-0	6-6	8-0	9-6	10-6	11-0					
NJU16	18-0	1-6	4-0	5-0	6-0	6-6	7-6	8-0	8-6	8-6	8-6		
	20-0	2-6	5-0	6-0	7-0	7-6	8-6	9-0	9-6	9-6	9-6		
	21-3	3-0	5-6	6-6	7-6	8-0	9-0	9-6	10-0	10-6	10-6		
	22-0	1-6	4-6	5-6	6-6	7-6	8-6	9-6	10-0	10-0	10-6		
	23-9	2-0	5-0	6-6	7-6	8-6	10-0	10-6	10-6	11-0	11-0		
	24-0	1-0	3-6	5-6	6-6	8-0	9-0	10-0	10-6	11-0	11-0		
	26-0	1-0	4-6	6-6	7-6	9-0	10-0	11-0	11-6	12-0	12-0		
	26-1	1-0	5-0	6-6	7-6	9-0	10-0	11-0	11-6	12-0	12-0		
	28-0	1-0	2-6	4-6	6-6	8-0	9-6	11-0	11-6	12-0	12-0		
30-0	1-0	3-6	5-6	7-6	9-0	10-6	12-0	12-6	13-0	13-0			
NJU18	20-0	1-6	3-6	4-6	5-6	6-0	7-0	8-0	8-0	8-6	8-6	9-0	9-0
	22-0	2-6	4-6	5-6	6-6	7-0	8-0	9-0	9-0	9-6	9-6	9-6	10-0
	23-6	3-0	5-6	6-0	7-0	7-6	8-6	9-6	9-6	10-0	10-6	10-6	10-6
	24-0	1-0	3-6	4-6	6-0	6-6	8-0	9-0	9-0	10-0	10-0	10-0	10-6
	26-0	2-0	4-6	5-6	7-0	7-6	9-0	10-0	10-0	11-0	11-0	11-0	11-6
	26-3	2-0	4-6	6-0	7-0	8-0	9-0	10-0	10-6	11-0	11-0	11-6	11-6
	28-0	1-0	3-6	5-0	6-6	7-6	9-0	10-0	10-6	11-0	11-6	11-6	12-0
	28-9	1-0	4-0	5-6	6-6	8-0	9-0	10-6	11-0	11-6	11-6	12-0	12-0
	30-0	1-0	1-0	2-6	4-6	6-0	7-6	9-6	10-0	11-0	11-0	11-6	11-6

For SI: 1 inch = 25.4 mm; 1 foot = 305 mm.

Notes to Table 9:

¹Table is based on a maximum uniform floor loading of 40 lbf/ft² (1.95 kPa) live and 25 lbf/ft² (1.20 kPa) dead load.

²Table is based on joist spans and spacings indicated in Table 3 of this report. Other spans and spacings are outside the scope of this report.

³Joist span is based on the clear span, distance from the inside face of the end supports.

⁴The rectangular hole location is the distance measured from the inside face of the nearest support to the edge of the rectangular hole.

⁵Maximum rectangular hole depth shall leave 1/4-inch (6.4 mm) of web material between the top and bottom of the rectangular hole and flange.

⁶The maximum rectangular hole width (distance parallel to flange) is 1.5 times the rectangular hole depth.

⁷Where the joist span is between those specified in this table, use the adjacent joist span which has the greater required distance.

TABLE 10—ROUND HOLE LOCATIONS FOR NJU SERIES I-JOISTS

JOIST TYPE	JOIST SPAN (ft-in)	ROUND HOLE DIAMETER (inches)											
		2	4	5	6	7	8 ³ / ₈	10	10 ¹ / ₂	12	12 ¹ / ₂	13	14 ¹ / ₂
		Minimum Required Distance from the Inside Edge of Support to Center of Hole (ft-in)											
NJU10	14-0	2-0	3-6	4-0	4-6								
	14-1	2-0	3-6	4-0	5-0								
	15-9	1-6	3-0	4-0	4-6								
	16-0	1-0	2-0	3-0	4-0								
	17-3	1-0	2-6	3-6	4-6								
	18-0	1-0	1-0	2-0	3-0								
NJU12	20-0	1-0	1-6	3-0	4-0								
	16-0	2-6	3-6	4-6	5-0	5-6	6-0						
	16-7	2-6	4-0	4-6	5-6	6-0	6-0						
	18-0	1-6	3-6	4-0	5-0	5-6	6-0						
	18-7	2-0	3-6	4-6	5-0	5-6	6-0						
	20-0	1-0	3-0	4-0	4-6	5-6	6-0						
NJU14	20-4	1-0	3-0	4-0	5-0	5-6	6-6						
	22-0	1-0	1-0	2-6	3-6	4-6	5-6						
	23-6	1-0	2-0	3-0	4-0	5-0	6-0						
	16-0	1-0	1-6	2-0	3-0	3-6	5-0	6-6	7-0				
	18-0	1-0	2-6	3-0	4-0	4-6	6-0	7-6	8-0				
	19-2	1-6	3-0	3-6	4-6	5-6	6-6	8-0	8-6				
	20-0	1-0	1-6	2-6	3-0	4-0	5-6	7-6	8-6				
	21-5	1-0	2-0	3-0	4-0	5-0	6-6	8-6	9-0				
NJU16	22-0	1-0	1-0	1-6	2-6	3-6	5-6	8-0	8-6				
	23-6	1-0	1-0	2-0	3-6	4-6	6-6	8-6	9-6				
	24-0	1-0	1-0	1-0	1-0	2-0	4-0	7-0	8-0				
	26-0	1-0	1-0	1-0	1-6	3-0	5-0	8-0	9-0				
	27-1	1-0	1-0	1-0	1-6	3-6	5-6	8-6	9-6				
	18-0	1-0	2-6	3-6	4-0	4-6	5-6	6-6	7-0	7-6	7-6		
	20-0	1-6	3-6	4-6	5-0	6-0	6-6	7-6	8-0	8-6	8-6		
	21-3	2-6	4-0	5-0	5-6	6-6	7-6	8-6	8-6	9-0	9-6		
	22-0	1-0	2-6	3-6	4-6	5-6	6-6	7-6	8-0	8-6	9-0		
NJU18	23-9	1-0	3-6	4-6	5-6	6-6	7-6	8-6	9-0	9-6	10-0		
	24-0	1-0	1-6	2-6	4-0	5-0	6-6	7-6	8-0	9-0	9-6		
	26-0	1-0	2-6	3-6	5-0	6-0	7-6	8-6	9-0	10-0	10-6		
	26-1	1-0	2-6	3-6	5-0	6-0	7-6	8-6	9-0	10-0	10-6		
	28-0	1-0	1-0	1-0	3-0	4-0	6-0	7-6	8-0	9-6	10-0		
	30-0	1-0	1-0	2-0	4-0	5-0	7-0	8-6	9-0	10-6	11-0		
	20-0	1-0	1-0	1-6	2-0	2-6	3-6	4-6	5-0	6-0	6-6	7-0	8-0
	22-0	1-0	2-0	2-6	3-0	3-6	4-6	5-6	6-0	7-0	7-6	8-0	9-0
	23-6	1-6	2-6	3-0	3-6	4-6	5-0	6-6	6-6	8-0	8-6	8-6	10-0

For SI: 1 inch = 25.4 mm; 1 foot = 305 mm.

Notes to Table 10:

¹Table is based on a maximum uniform floor loading of 40 lbf/ft² (1.95 kPa) live and 25 lbf/ft² (1.20 kPa) dead load.

²Table is based on joist spans and spacings indicated in Tables 4 or 5 of this report. Other spans and spacings are outside the scope of this report.

³Joist span is based on the clear span, distance from the inside face of the end supports.

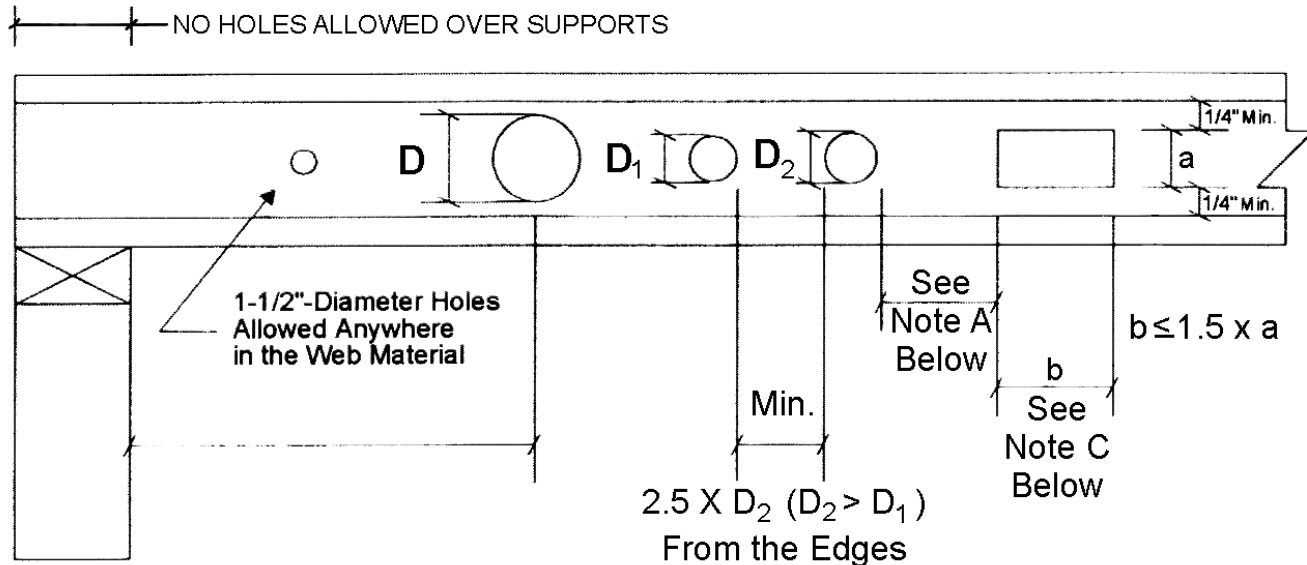
⁴The round hole location is the distance measured from the inside face of the nearest support to the centerline of the round hole.

⁵The maximum round hole depth shall leave 1/4-inch (6.4 mm) minimum of web material between the top and bottom of the round hole and flange.

⁶Where the joist span is between those specified in this table, use the adjacent joist span which has the greater required distance.

TABLE 11—MANUFACTURER'S PRODUCT LIST

MANUFACTURING PLANT	PRODUCT	PLANT NUMBER
Nascor Ltd.	NJ10, NJ12, NJH10, NJH12, NJH14, NJH16, NJU10, NJU12, NJU14, NJU16, & NJU18	0190-1212
Acujoist	NJ10, NJ12, NJH10, NJH12, NJH14, & NJH16	0598-7455
All-Fab Building Components Inc.	NJ10, NJ12, NJH10, NJH12, NJH14, & NJH16	0393-1890
G.E. Fabricators, Inc.	NJ925, NJ10, NJ12, NJH925, NJH10, NJH12, NJH14, & NJH16	0694-2690
Nascor by KOTT	NJ10, NJ12, NJH10, NJH12, NJH14, & NJH16	0897-4220
Nascor by KOTT	NJ10, NJ12, NJH10, NJH12, NJH14 & NJH16	0292-4320
Southern Truss Inc.	NJ10, NJH10, NJH12, NJH14 & NJH16	1195-5510



Notes on Hole Chart:

A. MULTIPLE HOLES

- The spacing required between the edges of round holes shall be a minimum of 2.5 times the diameter of the largest round hole.
- The spacing required between the edges of rectangular holes shall be a minimum of 5 times the width (distance parallel to flange) of the largest rectangular hole.
- The spacing required between the edges of a round hole and a rectangular hole shall be 5 times the width of the largest rectangular hole or 5 times the diameter of the round hole, whichever is greater.

B. ROUND HOLES (Refer to Tables 5 - 10 for locations and spans)

- A 1 1/2-inch-diameter (38 mm) hole is permitted anywhere in the web except over a support.
- Holes shall leave a minimum of 1/4-inch (6.4 mm) of uncut web above and below the hole.

C. RECTANGULAR HOLES (Refer to Tables 5 - 10 for locations and spans)

- The holes shall be centered vertically in the web.
- Cutting a radius on the corners of a rectangular hole is recommended. Corners shall not be over-cut.
- The maximum allowable hole width (distance parallel to the flanges) shall be 1.5 times the hole depth.

D. GENERAL

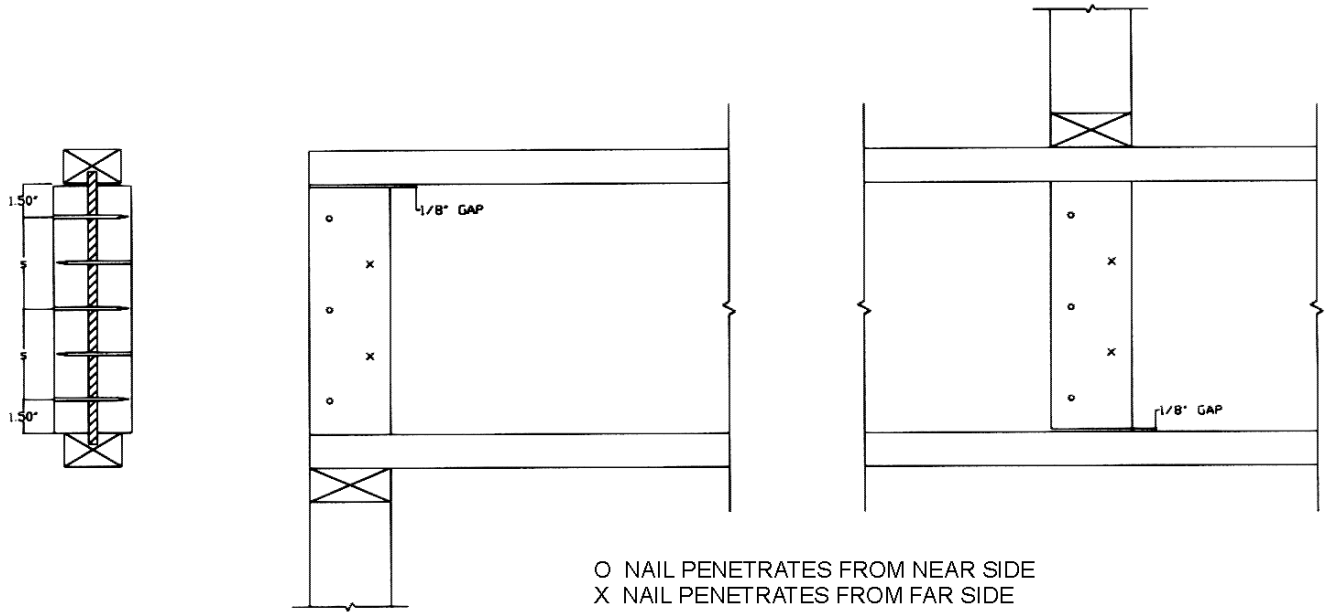
- Holes are not allowed over a support.
- Flanges shall not be cut or notched.
- A minimum distance of 1/4-inch (6 mm) is required between the edge of the hole and the flange.
- Valid for simply supported spans where uniform distributed loads do not exceed 40 lbf/ft² (1915 Pa) live and 25 lbf/ft² (1197 Pa) dead.
- Multiple maximum size holes may not be possible for some joist types. Check required edge distance and the required spacing between holes.

FIGURE 1—ALLOWABLE HOLE SIZE AND LOCATION FOR NASCOR JOISTS

JOIST CROSS SECTION

END/INTERIOR SUPPORT DETAIL

CONCENTRATED LOAD DETAIL



JOIST DEPTH (inches)	STIFFENER DEPTH (inches)	NAIL SPACING (inches)
9 ¹ / ₄	6 ¹ / ₈	1 ⁵ / ₈
9 ¹ / ₂	6 ³ / ₈	1 ³ / ₄
11 ⁷ / ₈	3 ³ / ₄	2 ¹⁵ / ₁₆
14	10 ⁷ / ₈	5
16	12 ⁷ / ₈	5
18	14 ⁷ / ₈	4

For SI: 1 inch = 25.4 mm.

Notes to Figure 2:

¹Web stiffener material shall be 2 x 4 SPF or 3/4-inch OSB/plywood.

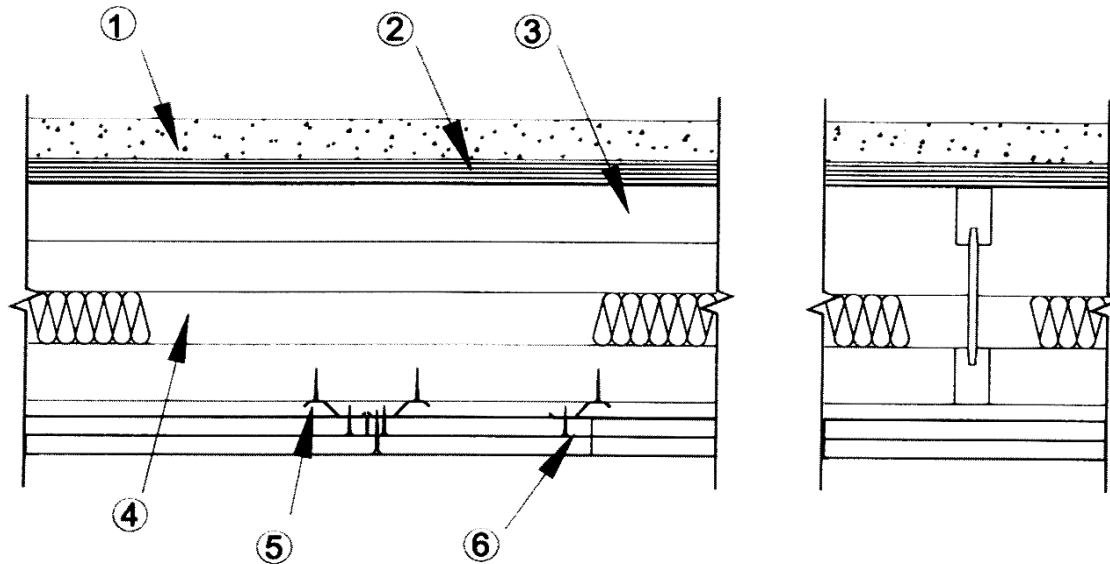
²Web stiffeners shall be fastened using 3 1/4-inch x 0.148-inch-diameter common wire nails.

³For maximum bearing reaction refer to Table 2 of this report.

⁴All web stiffeners are field installed.

⁵Allowable bearing stress of the supporting member shall be checked.

FIGURE 2—WEB STIFFENERS DETAIL FOR NASCOR JOISTS



STC RATING WITHOUT TOPPING—50
IIC RATING WITHOUT TOPPING OR CONCRETE—45

1. **Topping (Optional):** Lightweight concrete shall have a maximum density of 110 lb/ft³ (1762/m³) with a minimum compressive strength of 3,000 lbf/in² (20.7 Mpa). Minimum thickness shall be 1½ inches (38 mm) where joists are spaced at a maximum of 20 inches (508 mm) on center and 1-inch (25.4 mm) where joists are spaced between 20 and 24 inches (508 and 610 mm) on center. The lightweight concrete topping is permitted to be augmented with a lightweight floor topping mix containing perlite or vermiculite aggregate.
2. **Sub flooring:** A single layer consisting of a minimum 5⁄8-inch (15.9 mm) tongue-and-groove Rated Sheathing or Rated Sturd-I-Floor. The sheathing shall be plywood (Exposure 1 or exterior glue) or orientated strand board conforming to one of the following:

Douglas fir plywood-PS-1-83 Group 1 Structural
 Softwood plywood-PS-1-83 Group III C-D
 Orientated strand board-PS-2-92

The panels shall have a 48-inch (1219 mm) width, with the long dimension installed perpendicular to the joists. End joints shall be staggered a minimum of 24 inches (610 mm) and shall fall on the joists. The sheathing shall be fastened to the joists in accordance with this report or the applicable code. Construction adhesive complying with ASTM D 3498 shall be applied between the sub flooring and the joists.

3. **Structural Members:** Nascor Joists having a minimum depth of 9½ inches (241 mm) installed at 24 inches (610 mm) on center maximum.
4. **Insulation (Optional):** Insulation shall be minimum 3½-inch-thick, maximum 6-inch-thick (89-152 mm) glass-fiber insulation batts having a density of 0.75 lb/ft³ (12.0 kg/m³). The insulation shall be located above the bottom joist flanges with butt joints falling on the resilient channels.
5. **Resilient Channels:** Nominal ½-inch (12.7 mm) offset, 24 gauge galvanized steel channels installed perpendicular to joists and spaced 16 inches (406 mm) on center maximum. Additional channels shall be required at gypsum board end joints of both layers of gypsum wallboard such that each board end rests on its own channel. These additional channels shall extend to the next joist on each side of the board edges. The resilient channels are attached to the bottom flange perpendicular to the joists with ¼-inch-long (32 mm) Type S screws at each joist.
6. **Gypsum Wallboard:** Two layers of ½-inch-thick (12.7 mm) Type X gypsum wallboard, installed perpendicular to the furring channels. Base layer gypsum wallboard end joints shall be staggered 48 inches (620 mm). The base layer is attached to the channels with ¼-inch-long (32 mm) Type S screws spaced at 8 inches (203 mm) on center. The screws shall be located ½ inches (38 mm) from the board edges. The face layer end and edge joints shall be staggered a minimum of 24 inches (610 mm) from those of the base layer. The face layer is attached through the base layer to the channels with 5⁄8-inch-long (41 mm) Type S screws spaced at 8 inches (203 mm) on center. The screws shall be located ½ inches (38 mm) from the board edges. Face layer joints shall be taped and finished with two coats of joint compound. The screw heads shall be covered with two coats of joint compound.

FIGURE 3—ONE-HOUR FIRE-RESISTANCE-RATING AND SOUND RATING ASSEMBLY

Web Stamps



Chord Stamps



[(NASCOR logo)(Warnock Hersey)(Plant Location)(Joist Type)(Evaluation Report No.)(Production Code{shift})]

FIGURE 4—SAMPLES OF TYPICAL PRODUCTION LABELS