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DIVISION: 06 07 00 – WOOD, PLASTICS & COMPOSITES
Section: 06 17 33 – Wood I-Joists

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REPORT SUBJECT:
Nascor by KOTT I-Joists NJ and NJH Series
NJ10, NJ12, NJH10, NJH12, NJH14 and NJH16

1.0 SCOPE OF EVALUATION

This research report addresses compliance with the following Codes:

- 2012 and 2009 International Building Code (IBC)
- 2012 and 2009 International Residential Code (IRC)

Nascor I-Joists have been evaluated for the following properties:

- Structural Performance
- Fire-resistance rating

2.0 USES

Nascor I-joists are prefabricated wood I-joists intended for use in structural applications such as floor, ceiling or roof joists. The I-joists are limited to use in combustible construction. I-joists described in this report comply with Section 2303.1.2 of the IBC and Section R502.1.4 of the IRC for allowable stress design.

3.0 DESCRIPTION

3.1. Nascor I-joist is a wood I section consisting of solid-sawn lumber flanges joined to oriented strand board (OSB) webs. The web-to-flange connection is a slotted glued joint. Nascor I-joists are manufactured in the sizes and configurations shown in Table 1 of this report. The maximum length is 36 feet.

3.2. Flanges are formed from proprietary re-graded spruce-pine-fir (SPF) materials. The grading rules for the re-graded flange materials are detailed in the manufacturer's in-plant Manufacturing Standard. Flanges are either full-length or finger-jointed.

3.3. Web material is OSB classified as Exposure 1, 24/0 Sheathing in accordance with US Department of Commerce (DOC) PS 2 or Canadian Standards Association (CSA) Standard O325. The web-to-web connection of the OSB is a tongue and grooved glued joint.

3.4. Joint adhesives comply with ASTM D2559, D7247 and the applicable sections of ASTM D5055.

4.0 PERFORMANCE CHARACTERISTICS

Design Properties for Nascor I-joists shall be in accordance with Table 2 of this report. See Table 3 for Reaction Capacities. 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 American Wood Council National Design Specification (NDS) for Wood Construction.

5.0 INSTALLATION

Nascor I-joists must be installed in accordance with the Nascor Specifier Guide, the applicable Code and this Research Report. The Nascor Specifier Guide and this Research Report must be strictly adhered to, and a copy of the instructions must be available on the jobsite during installation.

Refer to the Nascor Specifier Guide for allowable spans. Maximum allowable deflections under design loads shall not exceed the maximum allowable deflections specified in Section 1604.3 of the IBC or Section R301.7 of the IRC. Values calculated per the following formulae. The following formulae shall be used for the conditions specified:

Simple span deflection with point load at centerline:

$$\Delta = (PL^3/48EI) + (2PL/K)$$



Simple span deflection with full uniform loading:

$$\Delta = (5wL^4/384EI) + (wL^2/K)$$

Where:

Δ = calculated deflection (inches)

w = uniform load (lbf/in)

P = concentrated point load (lbf)

L = I-joist span (center line bearing to center line bearing) (inches)

EI = bending stiffness (in²-lbf)

K = coefficient of shear deflection (lbf)

5.1. Moisture Content:

The use of Nascor I-joists is limited to dry service conditions where the average equilibrium moisture content of sawn lumber is less than 16 percent.

5.2. Cutting and Notching:

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

5.3. Web Openings:

Refer to the manufacturer's published installation instructions for web openings.

5.4. Repetitive Members:

Reference design moment values are not permitted to be increased by a repetitive member factor.

5.5. Web Stiffeners and Blocking:

Refer to the manufacturer's published installation instructions.

5.6. Fire-resistance Rating:

NJ and NJH Series I-joist used in floor and roof systems constructed in accordance with Table 721.1(3) Items 21-1.1, 23-1.1 and 26-1.1 through 28-1.1, of the 2012 IBC; or Table 720.1(3) Items 21-1.1, 23-1.1 and 26-1.1 through 28-1.1, of the 2009 IBC shall be assumed to have the fire-resistance ratings prescribed therein.

6.0 SUPPORTING EVIDENCE

6.1. The reports of testing and engineering analysis demonstrating compliance with the requirements of ASTM D 5055-09, Standard Specification for Establishing and Monitoring Structural Capacities of Prefabricated Wood I-Joists. Report also deemed to comply with ASTM D 5055-05 for compliance with 2009 IBC and IRC.

6.2. Nascor Specifier Guide 2010

6.3. Documentation of an Intertek approved quality control system for the manufacturing of products recognized in this report.

7.0 CONDITIONS OF USE

The Nascor I-joists described in this Research Report complies with, or is a suitable alternative to, what is specified in those Codes listed in Sections 1.0 and 2.0 of this report, subject to the following conditions:

7.1. Installation must comply with this Research Report, the Nascor Specifier Guide and the applicable Code. In the event of a conflict between the manufacturer's instructions and this report, this report governs.

7.2. Nascor I-joists are manufactured at the KOTT Lumber Company facility located in Ottawa, Ontario, Canada in accordance with the manufacturer's approved quality control system with inspections by Intertek Testing Services NA, Inc.

8.0 IDENTIFICATION

The Nascor I-Joists described in this Research Report are identified by a marking bearing the report holder's name (Nascor by KOTT) and/or trademark, I-joist type and depth, the Intertek Mark, and the Code Compliance Research Report number (CCRR-0251).



9.0 CODE COMPLIANCE RESEARCH REPORT USE

9.1. Approval of building products and/or materials can only be granted by a building official having legal authority in the specific jurisdiction where approval is sought.





9.2. Code Compliance Research Reports shall not be used in any manner that implies an endorsement of the product by Architectural Testing.

9.3. Reference to the Intertek website address at <https://whdirectory.intertek.com> is recommended to ascertain the current version and status of this report.

TABLE 1 – DESCRIPTION OF NJ AND NJH SERIES NASCOR I-JOISTS

Joist Type	Joist Depth (in.)	Material	Flanges		Web	
			Dimensions (in.)		Material	Thickness (in.)
			Depth	Width		
NJ10	9½	Lumber	2½	1½	OSB	¾
NJ12	11⅞	Lumber	2½	1½	OSB	¾
NJH10	9½	Lumber	1½	2½	OSB	¾
NJH12	11⅞	Lumber	1½	2½	OSB	¾
NJH14	14	Lumber	1½	2½	OSB	¾
NJH16	16	Lumber	1½	2½	OSB	¾

TABLE 2 – DESIGN PROPERTIES (ALLOWABLE STRESS DESIGN) FOR NASCOR I-JOISTS ⁽¹⁾

Joist Type	Joist Depth (in.)	Bending Stiffness (EI) (x 10 ⁶ lbf-in ²)	Moment (lbs-ft)	Shear ⁽²⁾ (lbf)	Shear Constant (K) (x 10 ⁶ lbf)	Vertical Load Capacity ^(3, 4) (lbf/ft)
NJ10	9½	136	2,320	970	4.50	2,000
NJ12	11⅞	243	2,850	1,070	5.64	2,000
NJH10	9½	175	2,420	1,000	4.50	2,000
NJH12	11⅞	298	3,400	1,140	5.64	-
NJH14	14	430	5,000	1,350	6.65	-
NJH16	16	584	5,940	1,510	7.60	-

¹ The tabulated values are design values for normal duration of load.

² Shear without bearing stiffeners.

³ For I-joist used as blocking panel and joist shall be fully supported at the bottom flange and laterally supported every 12 inches on center at the top and bottom flange.

⁴ Based on uniform loading on the top flange of the I-joist along its entire length.

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TABLE 3 – REACTION PROPERTIES (ALLOWABLE STRESS DESIGN) FOR NASCOR I-JOISTS⁽¹⁾

Joist Type	Joist Depth (in.)	End Reactions (lbf)		Intermediate Reactions (lbf)	
		1-1/2 in. Bearing	2-1/2 in. Bearing	3-1/2 in. Bearing	5-1/2 in. Bearing
NJ10	9½	970	970	1,940	1,940
NJ12	11⅞	1,070	1,070	2,140	2,140
NJH10	9½	1,000	1,000	2,000	2,000
NJH12	11⅞	1,000	1,100	2,280	2,280
NJH14	14	1,000	1,100	2,375	2,610
NJH16	16	1,000	1,100	2,450	2,700

¹ Reaction without web stiffeners