



NYC Department of Buildings
280 Broadway, New York, NY 10007
Patricia Lancaster, FAIA, Commissioner
(212) 566-5000, TTY: (212) 566-4769

Report of Materials and Equipment Acceptance Division

Pursuant to Administrative Code Section 27-131, the following equipment or material has been found acceptable for use subject to the terms and conditions contained herein.

MEA 294-01-E Vol.4

Manufacturer: Nordic Engineered Wood, 185 Dorval Ave, Suite 304, Dorval (Quebec) H9S 5J9. Phone: (514) 633-9661; Fax: (514) 633-0833 . info@nordicewp.com ; www.nordicewp.com

Trade Name(s): NI Series Wood I-Joists

Product: Prefabricated wood I-joists made from sawn finger-jointed flanges of MSR grade and structural oriented strand board bonded together with exterior-type adhesives conforming to ASTM D2559. The NI series are fabricated with 2x3 or 2x4 S-P-F lumber and 3/8 or 7/16 inch thick webs conforming to PS-2. Finger joints are permitted anywhere in the chords for continuity.

Pertinent Code Section(s): Article 7 Wood Section 27-617, Reference Standards RS10 Section 27-133 Acceptance Requirements.

Prescribed Test(s): Flange tension and long span E tests; web property materials; I-joist moment, EI and creep tests; I-joist shear tests; I-joist web knock-out tests; I-joist end and intermediate reaction tests; I-joist round hole and square web hole tests; I-joist uniform vertical load capacity tests; and I-joist duct chase tests.

Laboratory: In-house testing of Nordic Engineered Wood products NI series wood I-joists was performed by Nordic and witnessed by APA. Extrapolation of the span tables were sealed by James J. Barlow, New York State Professional Engineer, license no. 078757. I-joist uniform vertical load capacity tests were conducted at the APA laboratory in Tacoma, WA. All other tests were conducted at the manufacturer plant and witnessed by APA.

Test Report(s):

APA Report T2000P-26: I-Joist Qualification Tests; APA Report T2001P-10: I-Joist Qualification Tests of Nordic NI40x Proprietary Series; APA Report T2001P-23: Qualification Tests of NI-40x and PRI-60 I-Joists Using Isoset Adhesive for Flange Jointing; APA Report T2001P-26: PRI-80 and Proprietary NI-80 Series I-Joist Qualification Tests; APA Report T2001P-34: New Adhesive Qualification for NI-40x and PRI-60 I-Joists; APA Report T2001P-36: PRI-20 and NI-20 Series I-Joist Qualification Tests; APA Report T2003P-06: Huber Web Qualification; APA Report T2003P-56: Qualification on 9-1/2" and 11-7/8" NI-40x and NI-60 I-Joists with Grant OSB Web; APA Report T2003P-77A: ASTM D5055-02 I-Joist Moment Capacities; APA Report T2004P-3: Qualification on 2nd I-Joist Production Line; APA Report T2004P-21: Qualification on Commercial I-Joists; APA Report T2004P-74: New I-Joist Design Values on Shear, End Reaction and Intermediate Reaction; APA Report T2004P-76: Huber Web Qualification for NI-40x & NI-80 I-Joists with Parallel Web; APA Report T2005P-30: Grant Web Qualification for Nordic I-Joists with Parallel Web.

Description: Nordic Engineered Wood, J.M. Huber and Builders First Source NI, ATI, and BFI I-joist series, respectively, are manufactured under a strict quality assurance program as outline in the quality control manual. The APA — The Engineered Wood Association has been engaged to perform third-party inspection of equipment, materials and finished products in accordance with the quality control manual dated September 15, 2004 and signed by APA.

Terms and Conditions: All uses, locations and installations of the above I-joists shall comply with the applicable requirements of the New York City Building Code and Technical Policy and Procedure Notice #8, 1992, dated August 19, 1992, TPPN #2, 2000 dated July 24, 2000 and on further condition that:

1. All provisions of TPPN #8, 1992 and TPPN #2, 2000 for I-joists that are applicable shall be complied with.
2. Structure designs using the I-joists shall conform to the manufacturer's specifications except that appropriate design load(s), deflection limitation(s) and other performance standards of the New York City Building Code shall apply.
3. The glue used shall not delaminate during a fire.
4. I-joists shall be used indoors.

5. When stored out-of-doors or exposed to wet weather conditions during construction, I-joists shall be inspected by the user for flange-web separation, swelling, or warping, and replaced if so damaged.
6. The size of any hole in the web of the I-joist shall not exceed the manufacturer's recommendations.
7. The cutting of opening for ducts, pipes, conduits, etc. in I-joists shall be subject to a controlled inspection.
8. Fire stopping shall be provided between the ceiling and the floor or roof above and shall be divided into approximately equal areas not greater than 500 square feet.
9. The building permit applicant shall notify the Fire Department of the proposed installation of I-joists prior to the Building Department issuance of a construction permit. Evidence of such notification shall be a certifying statement submitted on Form TR-1, Technical Report, reading as follows:

I hereby state that I have mailed a copy of this statement to the Fire Department, Bureau of Fire, Technology Management Unit, as notification of the proposed installation of wood I-joists at this location.

This statement shall be placed on the reverse side of the form in the lower right-hand box. The copy of the completed Form TR-1 shall be mailed to the address at:

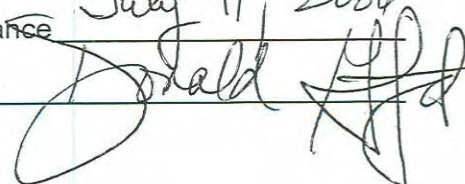
Chief-in-Charge of the Bureau of Fire-Prevention
Fire Department
Bureau of Fire Prevention
Technology Management Unit
9 MetroTech Center
Brooklyn, New York 11201-3857

All shipments and deliveries of I-joists shall be provided with a permanent marking suitability placed, certifying that the materials shipped or delivered is equivalent to those tested and accepted for use, as provided for in Section 27-131 of the Building Code.

NOTE; In accordance with section 27-131(d), all materials tested and accepted for use shall be subject to periodic retesting as determined by the commissioner; and any material which upon retesting is found not to comply with code requirements or the requirements set forth in the approval of the commissioner shall cease to be acceptable for the use intended. During the period for such retesting, the commissioner may require the use of such material to be restricted or discontinued if necessary to secure safety.

Final Acceptance _____

Examined by _____

July 11, 2006


Nordic Joist
Residential I-Joists

Table 1. Design Properties for Nordic I-Joists – Allowable Stress Design ^{(a) (b)}

Joist Depth	Joist Series	EI ^(c) (10 ⁶ lbf-in. ²)	M ^(d) (lbf-ft)	V ^(e) (lbf)	IR ^(f) (lbf)	ER ^(g) (lbf)	K ^(h) (10 ⁶ lbf)
9-1/4"	NI-20	138	2,510	1,080	1,700	900	4.81
	NI-40x	198	2,810	1,170	2,240	1,120	4.81
	NI-80	304	5,215	1,170	2,240	1,120	4.81
9-1/2"	NI-20	145	2,590	1,120	1,700	900	4.94
	NI-40	193	2,735	1,120	2,160	1,080	4.94
	NI-40x	218	2,900	1,200	2,240	1,120	4.94
	NI-60	231	3,810	1,200	2,240	1,120	4.94
	NI-80	324	5,385	1,200	2,380	1,190	4.94
11-1/4"	NI-20	222	3,155	1,340	1,800	900	5.85
	NI-40x	313	3,535	1,410	2,750	1,250	5.85
	NI-80	484	6,560	1,410	2,750	1,330	5.85
11-7/8"	NI-20	253	3,355	1,420	1,800	900	6.18
	NI-40	330	3,545	1,420	2,500	1,200	6.18
	NI-40x	371	3,760	1,480	2,750	1,250	6.18
	NI-60	396	4,935	1,480	2,750	1,250	6.18
	NI-80	547	6,980	1,480	2,900	1,330	6.18
14"	NI-40	482	4,270	1,710	2,500	1,200	7.28
	NI-40x	540	4,530	1,730	2,750	1,250	7.28
	NI-60	584	5,945	1,730	2,750	1,250	7.28
	NI-80	802	8,405	1,730	3,310	1,330	7.28
16"	NI-40	657	4,950	1,970	2,500	1,200	8.32
	NI-40x	734	5,250	1,970	2,750	1,250	8.32
	NI-60	799	6,895	1,970	2,750	1,250	8.32
	NI-80	1,092	9,745	1,970	3,310	1,330	8.32

For SI: 1 inch = 25.4 mm, 1 lbf = 4.448N, 1 lbf-ft = 1.356 N-m, 1 lbf-in² = 0.000287 N-m²

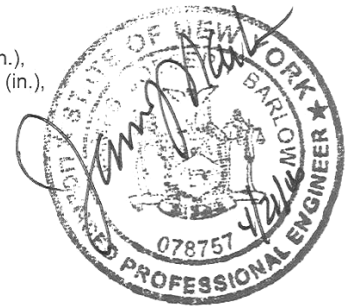
- (a) The tabulated values are design values for normal duration of load. All values, except for EI and K, shall be permitted to be adjusted for other load durations as permitted by the code.
- (b) The vertical (bearing) load capacity is 2,000 lbf/ft for I-joist depths up to 16 inches without bearing stiffeners.
- (c) Bending stiffness (EI) of the I-joist.
- (d) Moment capacity (M) of the I-joist, which shall **not** be increased by any code allowed repetitive member use factor.
- (e) Shear capacity (V) of the I-joist.
- (f) Intermediate reaction (IR) of the I-joist with a minimum bearing length of 3-1/2 inches without bearing stiffeners.
- (g) End reaction (ER) of the I-joist with a minimum bearing length of 1-3/4 inches without bearing stiffeners. Higher end reactions are permitted. For a bearing length of 4 inches, the end reaction may be set equal to the tabulated shear value. Interpolation of the end reaction between 1-3/4 and 4-inch bearing is permitted. For end reaction values over 1,550 lbf, bearing stiffeners are required.
- (h) Coefficient of shear deflection (K). For calculating uniform load and center-point load deflections of the I-joist in a simple-span application, use Eqs. 1 and 2.

$$\text{Uniform Load: } \delta = \frac{5\omega\ell^4}{384EI} + \frac{\omega\ell^2}{K} \quad [1]$$

$$\text{Center-Point Load: } \delta = \frac{Pl^3}{48EI} + \frac{2Pl}{K} \quad [2]$$

Where: δ = calculated deflection (in.),
 ℓ = design span (in.),
 EI = bending stiffness of the I-joist (lbf-in.²), and
 K = coefficient of shear deflection (lbf).

ω = uniform load (lbf/in.),
 P = concentrated load (in.).



Nordic Joist
Light-Commercial I-Joists

Table 2. Design Properties for Nordic I-Joists^{(a)(b)} – 18 to 24 inches in Depths – Allowable Stress Design

Joist Depth	Joist Series	EI ^(c) (10 ⁶ lbf-in. ²)	M ^(d) (lbf-ft)	V ^(e) (lbf)	IR ^(f) (lbf)	ER ^(g) (lbf)	K ^(h) (10 ⁶ lbf)
18"	NI-60	1,019	7,800	2,000	2,800	1,300	9.36
	NI-80x	1,399	10,990	2,360	3,100	1,300	9.36
20"	NI-80x	1,771	12,315	2,450	3,100	1,300	10.40
22"	NI-80x	2,191	13,645	2,530	3,100	1,300	11.44
24"	NI-80x	2,660	14,975	2,600	3,100	1,300	12.48

Table 3. End and Intermediate Reaction Design Values^(a) – 18 to 24 inches I-Joists – ASD

Joist Depth	Joist Series	IR (lbf)			ER (lbf)		
		3-1/2 in.		5-1/2 in.	1-3/4 in.	3-1/2 in.	
		w/WS	wo/WS	w/WS	w/WS	wo/WS	w/WS
18"	NI-60	3,500	3,150	4,100	1,700	1,520	1,860
	NI-80x	3,700	3,250	4,250	1,900	1,520	2,150
20"	NI-80x	3,700	3,250	4,250	2,010	1,520	2,250
22"	NI-80x	3,700	3,250	4,250	2,130	1,520	2,350
24"	NI-80x	3,700	3,250	4,250	2,250	1,520	2,440

For SI: 1 inch = 25.4 mm, 1 lbf = 4.448N, 1 lbf-ft = 1.356 N-m, 1 lbf-in.² = 0.000287 N-m²

- (a) The tabulated values are design values for normal duration of load. All values, except for EI and K, shall be permitted to be adjusted for other load durations as permitted by the code.
- (b) The vertical (bearing) load capacity is 1,850 lbf/ft for 18-inch NI-60, and 1,275 lbf/ft for NI-80x (up to 24 inches) without bearing stiffeners.
- (c) Bending stiffness (EI) of the I-joist.
- (d) Moment capacity (M) of the I-joist, which shall **not** be increased by any code allowed repetitive member use factor.
- (e) Shear capacity (V) of the I-joist with a minimum bearing length of 4 inches.
- (f) Intermediate reaction (IR) of the I-joist with a minimum bearing length of 3-1/2 inches without bearing stiffeners. Higher end reactions are permitted – see Table 3.
- (g) End reaction (ER) of the I-joist with a minimum bearing length of 1-3/4 inches without bearing stiffeners. Higher end reactions are permitted – see Table 3. For end reaction values over 1,850 lbf, bearing stiffeners are required.
- (h) Coefficient of shear deflection (K). For calculating uniform load and center-point load deflections of the I-joist in a simple-span application, use Eqs. 1 and 2.

$$\text{Uniform Load: } \delta = \frac{5\omega\ell^4}{384EI} + \frac{\omega\ell^2}{K} \quad [1]$$

$$\text{Center-Point Load: } \delta = \frac{P\ell^3}{48EI} + \frac{2P\ell}{K} \quad [2]$$

Where: δ = calculated deflection (in.), ω = uniform load (lbf/in.),
 ℓ = design span (in.), P = concentrated load (in.),
 EI = bending stiffness of the I-joist (lbf-in.²), and
 K = coefficient of shear deflection (lbf).





DEPARTMENT OF BUILDINGS

EXECUTIVE OFFICES
60 HUDSON STREET, NEW YORK, N.Y. 10013

RUDOLPH J. RINALDI, Commissioner
312-8100

RICHARD C. VISCONTI, A.I.A.
Assistant Commissioner
Technical Affairs

TECHNICAL
POLICY AND PROCEDURE NOTICE # 8/92

TO: Distribution
FROM: Richard C. Visconti, A.I.A. *Richard Visconti*
DATE: August 19, 1992
SUBJECT: Laminated Wood "I" Beams

PURPOSE: To interpret the requirements of the Administrative Code, Sections 27-617 and 27-620, pertaining to firestopping requirements per RS 10-8 and Inspection of Methods of Construction per Table 10-2 for laminated wood "I" beams used in fire resistance rated floor/roof-ceiling assemblies.

To establish a new administrative procedure for applicant notification to the Fire Department of proposed use of laminated wood "I" beams.

SPECIFICS:

1. Firestopping

Reference Standard RS 10-8, Section 9.2.1 - General Requirements for Firestopping states that, "the space between the ceiling and the floor or roof above shall be divided by providing firestopping where ceilings are suspended below solid joists or suspended from or attached directly to the bottom of open wood floor trusses in buildings of combustible construction."

The Department now interprets the requirement to comply with the firestopping provisions of Section 9.2.1 et seq. to include laminated wood "I" beam assemblies. Therefore, the space between the ceiling and the floor or roof above shall be divided into approximately equal areas not greater than 500 square feet.

Firestopping is subject to controlled inspection pursuant to Section 27-345.

2. Inspection of Methods of Construction

Table 10-2 - Operations on Structural Elements that shall be Subject to Controlled Inspection, lists the "Fabrication of glue-laminated assemblies and of plywood components."

The Department now interprets the requirement to comply with the controlled inspection provision of Table 10-2 to include laminated wood "I" beams. Therefore, the cutting of openings for ducts, pipes, conduit, etc. in laminated wood "I" beams shall be considered fabrication and, therefore, subject to controlled inspection.

3. Notification

The applicant shall be required to notify the Fire Department of the proposed installation of laminated wood "I" beams prior to the Department issuing a construction permit. Evidence of such notification shall be a certifying statement submitted on Form TR-1, Technical Report, reading as follows:

I hereby state that I have mailed a copy of this statement to the Fire Department, Bureau of Fire Prevention, Technology Management Unit, as notification of the proposed installation of laminated wood "I" beams at this location.

This statement shall be placed on the reverse side of the form in the lower right-hand box.

The copy of the completed Form TR-1 shall be mailed to:

Chief-in-Charge of the Bureau of Fire Prevention
Fire Department
Bureau of Fire Prevention
Technology Management Unit
250 Livingston Street
Brooklyn, NY 11201-5884

cc: Chief John Hodgens



ISSUANCE #586


DEPARTMENT OF BUILDINGS

EXECUTIVE OFFICES
60 HUDSON STREET, NEW YORK, N.Y. 10013-3394
RICHARD C. VISCONTI, R.A., Acting Commissioner
Website: nyclink.org/buildings
(212) 312-8000
TTY (212) 312-8188

SATISH K. BABBAR, R.A.
Acting Deputy Commissioner
Technical Affairs
(212) 312-8324
Fax (212) 312-8319

TECHNICAL
POLICY AND PROCEDURE NOTICE #2/00

TO: Distribution

FROM: Satish K. Babbar, R.A. 

DATE: July 24, 2000

SUBJECT: Semi-Controlled Inspection for Structural Light Gage Cold-Formed Steel,
Plate Connected Wood Floor Trusses and Laminated Wood "I" Beams

EFFECTIVE: Immediately

SUPERCEDES: Brooklyn Borough Memorandum by Borough Superintendent George E. Berger dated August 11, 1983.

BACKGROUND: There have been several structural failures involving lightweight floor construction. Professional inspection is needed during construction of buildings and other structures utilizing it in order to insure that the delivered members are not damaged or defective, the installation is proper and safeguards are taken to prevent failure.

PURPOSE: To set forth the requirements for the semi-controlled inspection of the construction, including size, quality, framing, erection and both temporary and permanent bracing of light gage cold-formed steel structural members, plate connected wood floor trusses and laminated wood "I" beams.

REFERENCE: Section 27-132(b) of the Administrative Code.

SPECIFICS:

REQUIREMENTS: The plans submitted for approval/ acceptance/professional certification showing these members shall be complete including member sizes, positions, locations, permanent and temporary bracing, fasteners (location, type and spacing), stiffeners, connections, etc., as needed for the proper erection of the structure.

The construction of all light gage cold-formed steel structural members, plate connected wood floor trusses and laminated wood "I" beams shall be subject to semi-controlled inspection for size, quality, framing, erection and both temporary and permanent bracing, as set forth below.

- Size** Profiles used structurally shall conform to the specified dimension. Care shall be taken not to stretch, bend, or otherwise distort parts of the sections unless such forming is in the integral part of the design.
- Quality** All materials shall be clean, straight, and undamaged. Damaged members shall be discarded. Only BSA/MEA approved laminated wood "I" beams shall be used. Glue shall completely bond all laminated wood "I" beam surfaces being joined. Quality Control for the erection of all members shall be under the supervision of the professional designated to perform the semi-controlled inspection.
- Framing** Components may be cut by slitting, shearing, sawing, or flame cutting, as appropriate, in accordance with manufacturers' instructions and the design drawings. All punched holes and sheared or flame cut edges of material in members subject to calculated stress shall be clean and free from notches and burred edges. The approved/ accepted/professionally certified drawings shall be adhered to regarding member dimensions, locations, positions, beam separators, bearing surfaces and fasteners, including shear connectors, plate connectors, screws, bolts and welds, as applicable.

Erection Care shall be taken to avoid damage to members when erecting, loading, unloading and otherwise handling them.

Bracing Temporary bracing, shoring, jacks, etc. shall not be removed until the registered architect or professional engineer determines that they are no longer needed. Permanent bracing, web stiffeners, bridging, wind bracing, etc. shall be installed according to the approved/accepted/professionally certified drawings.

INSPECTIONS AND REPORT TO BE SUBMITTED: These inspections are to be performed by, or under the direct supervision of, licensed professional engineers or registered architects, who shall submit form(s) TR-1 indicating the following: "Semi-controlled inspection of light gauge cold-formed steel structural members, plate connected wood floor trusses or laminated wood "I" beams (as applicable) per TPPN #2/00".

SKB:NJG:ng