1. Basis of the product report:
   - 2012 and 2009 IRC: Sections R104.11 Alternative materials and R502.1.4 Prefabricated wood I-joists
   - ASTM D5055-13e1, D5055-13, D5055-09, and D5055-05 recognized by the 2018 IBC and IRC, 2015 IBC and IRC, 2012 IBC and IRC, and 2009 IBC and IRC, respectively
   - University of New Brunswick Wood Science and Technology Centre Reports WSTC2011-018, WSTC2012-014

2. Product description:
The AJS® Series I-joists covered by this report, as described in Table 1, are made with lumber flanges and OSB webs in accordance with the in-plant manufacturing standard approved by APA.

3. Design properties:
Table 2 lists the design properties for AJS Series I-joists. The allowable spans for AJS Series I-joists covered by this report shall be in accordance with the recommendations provided by the manufacturer (www.bc.com/wood/ewp).

4. Product installation:
AJS Series I-joists covered by this report shall be installed in accordance with the recommendations provided by the manufacturer. Permissible web holes and cantilever reinforcements shall be in accordance with the recommendations provided by the manufacturer.

5. Fire-rated assemblies:
Fire-rated assemblies shall be constructed in accordance with the recommendations provided by the manufacturer or as shown in APA Product Report PR-S201. AJS Series I-joists may be used in the fire rated assemblies described in the 2018, 2015, 2012, and 2009 IBC as follows:
APA Product Report® PR-L310
Revised January 28, 2019
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(a) In accordance with Table 721.1(3) of the 2018, 2015, and 2012 IBC, and Table 720.1(3) of the 2009 IBC.
(b) Minimum web thickness of 7/16 inch.
(c) Minimum joist depth of 9-1/2 inches.

6. Limitations:
   a) AJS Series I-joists covered by this report shall be designed in accordance with the code using the design properties specified in this report.
   b) AJS Series I-joists covered by this report are limited to dry service conditions where the average equilibrium moisture content of sawn lumber is less than 16 percent.
   c) AJS Series I-joists covered by this report are produced at the Boise Cascade Wood Products L.L.C. facility in St. Jacques, New Brunswick under a quality assurance program audited by APA.
   d) This report is subject to re-examination in one year.

7. Identification:
The AJS Series prefabricated wood I-joists described in this report are identified by a label bearing the manufacturer's name (Boise Cascade Wood Products L.L.C.) and/or trademark, the APA assigned plant number (1108), the I-joist series, the APA logo, the report number PR-L310, and a means of identifying the date of manufacture. AJS-150, AJS-20, AJS-24 and AJS-25 are permitted to be labelled as NJ40H, NJ60H, NJ40U and NJ60U, respectively.
Table 1. Description of AJS Series I-joists (a)

<table>
<thead>
<tr>
<th>Joist Series</th>
<th>Joist Depths (in.)</th>
<th>Flanges</th>
<th>Web</th>
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<td>Depth (in.)</td>
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<td>18 – 24</td>
<td>MSR Lumber</td>
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(a) Referenced dimensions are nominal. Tolerances are as specified in the in-plant quality manual.
### Table 2. Design Properties (Allowable Stress Design) for AJS Series I-Joists (a)

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<th>Joist Series</th>
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<th>Joist Depth (in.)</th>
<th>E1 (b) (x10^6 lbf/ín.²)</th>
<th>M (c) (lbf-ft)</th>
<th>V (d) (lbf)</th>
<th>End Reaction (e, f) (lbf)</th>
<th>Intermediate Reaction (g, h) (lbf)</th>
<th>Uniform Vertical Load Capacity (i) (kip)</th>
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Table 2. Design Properties (Allowable Stress Design) for AJS Series I-Joists (a) (Continued)

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<th>Permitted to be Labelled as</th>
<th>Joist Depth (in.)</th>
<th>EI (b) (x10^6 lbf-in.²)</th>
<th>M (c) (lbf-ft)</th>
<th>V (d) (lbf)</th>
<th>End Reaction (e, f) (lbf)</th>
<th>Intermediate Reaction (g, h) (lbf)</th>
<th>Uniform Vertical Load Capacity (plf)</th>
<th>K (i) (x10^6 lbf)</th>
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Table 2. Design Properties (Allowable Stress Design) for AJS Series I-Joists *(a) (Continued)*

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<tr>
<th>Joist Series</th>
<th>Permitted to be Labelled as</th>
<th>Joist Depth (in.)</th>
<th>EI *(b) (x10^6 lb)-in.²</th>
<th>M *(c) (lb-ft)</th>
<th>V *(d) (lb)</th>
<th>End Reaction *(e-h) (lb)</th>
<th>Intermediate Reaction *(i-k) (lb)</th>
<th>Uniform Vertical Load Capacity (plf)</th>
<th>K *(l) (x10^6 lbf)</th>
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For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 lb = 4.448 N.

(a) The tabulated values are design values for normal duration of load. All values, except for EI, K, and vertical load capacity shall be permitted to be adjusted for other load durations as permitted by the code except that the adjusted end and intermediate reaction values shall not exceed the adjusted compressive capacities perpendicular to grain of the bearing plate supporting the I-joint in accordance with the NDS.

(b) Bending stiffness (EI) of the I joist.

(c) Moment capacity (M) of the I joist.

(d) Shear capacity (V) of the I joist.

(e) Interpolation of the end reaction between 1-1/2- and 3-1/2-inch bearing, with or without bearing stiffeners, respectively, shall be permitted.

(f) End reaction design value is for a minimum 1-3/4-inch bearing.

(g) Interpolation of the intermediate reaction between 3-1/2- and 5-1/4-inch bearing, with or without bearing stiffeners, respectively, shall be permitted.

(h) Web stiffeners shall be required at each end of the I-joint when used as a blocking panel. Web stiffener installation shall be as prescribed by the manufacturer. The distance between stiffeners must not exceed 24 inches.

(i) Coefficient of shear deflection (K). For calculating uniform load and center-point load deflections of the I-joint in a simple-span application, use Eqs. 1 and 2.
Uniform Load: \[ \delta = \frac{5 \omega L^4}{384 EI} + \frac{\omega L^2}{K} \] \[1\]

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

where \( \delta \) = calculated deflection (in.), \( \omega \) = uniform load (lbf/in.), \( P \) = concentrated load (lbf), \( L \) = design span (in.), \( EI \) = bending stiffness of the I-joist (lbf-in.\(^2\)), and \( K \) = coefficient of shear deflection (lbf).

\( \circ \) AJS 150v meets PRI-40 series design values at 9-1/2-in., 11-7/8-in., 14-in. and 16-in. depths.

\( \circ \) AJS 20v meets PRI-60 series design values at 9-1/2-in., 11 7/8-in., 14-in. and 16-in. depths.

\( \circ \) AJS 25v meets PRI-80 series design values at 11-7/8 in., 14-in. and 16-in. depths.

\( \circ \) The tabulated reference design reaction values, \( R_r \), are for normal duration of load and are permitted to be adjusted for other load durations in accordance with the NDS, provided the adjusted design reaction, \( R_r' \), does not exceed the flange bearing capacity, as calculated in accordance with Eq. 3.

\[ P_{cL}' = F_{cL}' L_b (w_f - 0.15) \geq R_r' \] \[3\]

where: \( P_{cL}' \) = Flange bearing capacity (lbf), \( F_{cL}' = 425 \) psi for end reactions, 470 psi for 3 1/2-inch intermediate reactions, and 455 psi for 5 1/4-inch intermediate reactions, \( L_b \) = Bearing length (in.), and \( w_f \) = Nominal width of the flange (in.).
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