



# Listing and Technical Evaluation Report™

A Duly Authenticated Report from an Approved Agency

Report No: 1507-01



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Subject to Renewal: April 1, 2027

## Stora Enso S-LVL™ Laminated Veneer Lumber

Trade Secret Report Holder:

Stora Enso Oyj

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### CSI Designations:

DIVISION: 06 00 00 - WOOD, PLASTICS AND COMPOSITES

Section: 06 17 00 - Shop-Fabricated Structural Wood

Section: 06 17 13 - Laminated Veneer Lumber

### 1 Innovative Product Evaluated<sup>1</sup>

- 1.1 Stora Enso S-LVL Laminated Veneer Lumber (LVL)

### 2 Product Description and Materials

- 2.1 The innovative product evaluated in this report is shown in **Figure 1**.



Figure 1. Stora Enso S-LVL Laminated Veneer Lumber



- 2.2 S-LVL Laminated Veneer Lumber is manufactured by Stora Enso Oyj at its facility in Varkaus, Finland.
- 2.3 The product is manufactured by laminating wood veneers with an exterior type adhesive (complying with ASTM D2559) in a continuous process with the grain of the wood oriented parallel to the length of the member in accordance with an ISO 9001 quality certification system.
- 2.4 The wood veneer properties and species, adhesive, manufacturing parameters, and finished product dimensions and tolerances are specified in the approved quality documentation and the Stora Enso Oyj in-plant manufacturing standard.
- 2.5 *Material Availability*
  - 2.5.1 *Thickness:*
    - 2.5.1.1 1<sup>5</sup>/<sub>16</sub>" (33 mm)
    - 2.5.1.2 1<sup>1</sup>/<sub>2</sub>" (38 mm)
    - 2.5.1.3 1<sup>3</sup>/<sub>4</sub>" (45 mm)
  - 2.5.2 *Nominal Depths:*
    - 2.5.2.1 3<sup>1</sup>/<sub>2</sub>" to 24" (89 mm to 610 mm)
  - 2.5.3 *Lengths:*
    - 2.5.3.1 Up to 64' (19.5 m)
- 2.6 As needed, review material properties for design in **Section 6** and the regulatory evaluation in **Section 8**.

### 3 Definitions<sup>2</sup>

- 3.1 New Materials<sup>3</sup> are defined as building materials, equipment, appliances, systems, or methods of construction, not provided for by prescriptive and/or legislatively adopted regulations, known as alternative materials.<sup>4</sup> The design strength and permissible stresses shall be established by tests<sup>5</sup> and/or engineering analysis.<sup>6</sup>
- 3.2 Duly authenticated reports<sup>7</sup> and research reports<sup>8</sup> are test reports and related engineering evaluations that are written by an approved agency<sup>9</sup> and/or an approved source.<sup>10</sup>
  - 3.2.1 This report utilizes intellectual property and/or trade secrets to create public domain material properties for commercial end-use.
    - 3.2.1.1 This report protects confidential Intellectual Property and trade secrets under the regulation, 18.U.S.Code.90, also known as Defend Trade Secrets Act of 2016 (DTSA).<sup>11</sup>
- 3.3 An approved agency is "approved" when it is ANAB ISO/IEC 17065 accredited. DrJ Engineering, LLC (DrJ) is accredited and listed in the ANAB directory.
- 3.4 An approved source is "approved" when a professional engineer (i.e., Registered Design Professional, hereinafter RDP) is properly licensed to transact engineering commerce. The regulatory authority governing approved sources is the state legislature via its professional engineering regulations.<sup>12</sup>
- 3.5 Testing and/or inspections conducted for this duly authenticated report were performed by an ISO/IEC 17025 accredited testing laboratory, an ISO/IEC 17020 accredited inspection body, and/or a licensed RDP.
  - 3.5.1 The Center for Building Innovation (CBI) is ANAB<sup>13</sup> ISO/IEC 17025 and ISO/IEC 17020 accredited.
- 3.6 The regulatory authority shall enforce<sup>14</sup> the specific provisions of each legislatively adopted regulation. If there is a non-conformance, the specific regulatory section and language of the non-conformance shall be provided in writing<sup>15</sup> stating the nonconformance and the path to its cure.
- 3.7 The regulatory authority shall accept duly authenticated reports from an approved agency and/or an approved source with respect to the quality and manner of use of new materials or assemblies as provided for in regulations regarding the use of alternative materials, designs, or methods of construction.<sup>16</sup>



- 3.8 ANAB is an International Accreditation Forum (IAF) Multilateral Recognition Arrangement (MLA) signatory. Therefore, recognition of certificates and validation statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA with the appropriate scope shall be approved.<sup>17</sup> Thus, all ANAB ISO/IEC 17065 duly authenticated reports are approval equivalent,<sup>18</sup> and can be used in any country that is an MLA signatory found at this link: <https://iaf.nu/en/recognised-abs/>
- 3.9 Approval equity is a fundamental commercial and legal principle.<sup>19</sup>

## 4 Applicable Local, State, and Federal Approvals; Standards; Regulations<sup>20</sup>

### 4.1 Local, State, and Federal

- 4.1.1 Approved in all local jurisdictions pursuant to ISO/IEC 17065 duly authenticated report use, which includes, but is not limited to, the following featured local jurisdictions: Austin, Baltimore, Broward County, Chicago, Clark County, Dade County, Dallas, Detroit, Denver, DuPage County, Fort Worth, Houston, Kansas City, King County, Knoxville, Las Vegas, Los Angeles City, Los Angeles County, Miami, Nashville, New York City, Omaha, Philadelphia, Phoenix, Portland, San Antonio, San Diego, San Jose, San Francisco, Seattle, Sioux Falls, South Holland, St. Louis County, Texas Department of Insurance, and Wichita.<sup>21</sup>
- 4.1.2 Approved in all state jurisdictions pursuant to ISO/IEC 17065 duly authenticated report use, which includes, but is not limited to, the following featured states: California, Florida, New Jersey, Oregon, New York, Texas, Washington, and Wisconsin.<sup>22</sup>
- 4.1.3 Approved by the Code of Federal Regulations Manufactured Home Construction: Pursuant to Title 24, Subtitle B, Chapter XX, Part 3282.14<sup>23</sup> and Part 3280<sup>24</sup> pursuant to the use of ISO/IEC 17065 duly authenticated reports.
- 4.1.4 Approved means complying with the requirements of local, state, or federal legislation.

### 4.2 Regulations

- 4.2.1 *IBC – 18, 21, 24: International Building Code®*
- 4.2.2 *IRC – 18, 21, 24: International Residential Code®*
- 4.2.3 *FBC-B — 20, 23: Florida Building Code<sup>25</sup> – Building (FL 29268)*
- 4.2.4 *FBC-R — 20, 23: Florida Building Code<sup>25</sup> – Residential (FL 29268)*
- 4.2.5 *NBC — 15, 20: National Building Code of Canada*

### 4.3 Standards

- 4.3.1 *ANSI/AWC NDS: National Design Specification (NDS) for Wood Construction*
- 4.3.2 *ASTM D2559: Standard Specification for Adhesives for Bonded Structural Wood Products for Use Under Exterior Exposure Conditions*
- 4.3.3 *ASTM D5055: Standard Specification for Establishing and Monitoring Structural Capacities of Prefabricated Wood I-Joists*
- 4.3.4 *ASTM D5456: Standard Specification for Evaluation of Structural Composite Lumber Products*
- 4.3.5 *ASTM D7247: Standard Test Method for Evaluating the Shear Strength of Adhesive Bonds in Laminated Wood Products at Elevated Temperatures*



## 5 Listed<sup>26</sup>

- 5.1 Equipment, materials, products, or services included in a List published by a nationally recognized testing laboratory (e.g., CBI), an approved agency (e.g., CBI and DrJ), and/or and approved source (e.g., DrJ), or other organization(s) concerned with product evaluation (e.g., DrJ), that maintains periodic inspection (e.g., CBI) of production of listed equipment or materials, and whose listing states either that the equipment or material meets nationally recognized standards or has been tested and found suitable for use in a specified manner.

## 6 Tabulated Properties Generated from Nationally Recognized Standards

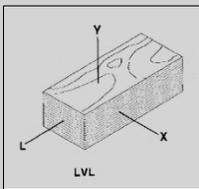
- 6.1 S-LVL Laminated Veneer Lumber is an alternative to sawn lumber for floor, roof, and wall structural members.
- 6.2 Structural applications include use as beams, columns, headers, joists, rafters, chords and webs of trusses, I-joist flanges, rim boards, and wall studs.
- 6.3 *Design*
- 6.3.1 Design of S-LVL Laminated Veneer Lumber is governed by the applicable code and the provisions for Structural Composite Lumber (SCL) in NDS Part 8 and CSA O86 Section 16.3.
- 6.3.2 Unless otherwise noted, adjustment of the design stresses for duration of load shall be in accordance with the applicable code.
- 6.3.3 The design provisions for wood construction noted in IBC Section 2302.1 and IRC Section R301.1.3 apply to S-LVL Laminated Veneer Lumber for Allowable Stress Design (ASD), unless otherwise noted in this report. Allowable unit stresses for S-LVL Laminated Veneer Lumber for dry conditions of use are specified in **Table 1**.

**Table 1. Reference Design Values for S-LVL Laminated Veneer Lumber - Allowable Stress Design<sup>1,2,3</sup>**

Bending, <sup>8,9</sup> F <sub>b</sub> (psi)		Tension F <sub>t</sub> (psi)	Compression, F <sub>c</sub> (psi)			Horizontal Shear, F <sub>v</sub> (psi)		Beam Modulus of Elasticity, E (psi)		Plank Modulus of Elasticity, E (psi)		Modulus of Elasticity for Beam and Column Stability, E <sub>min</sub> (psi)
Beam <sup>5,6,7</sup>	Plank	Parallel to Grain <sup>10,11</sup>	Parallel to Grain	Perpendicular to Grain		Beam	Plank	True <sup>4</sup>	Apparent <sup>4</sup>	True <sup>4</sup>	Apparent <sup>4</sup>	
				Beam	Plank							
3,000	3,300	2,300	2,750	900	550	350	100	2.0 x 10 <sup>6</sup>	1.9 x 10 <sup>6</sup>	2.0 x 10 <sup>6</sup>	1.9 x 10 <sup>6</sup>	1.1 x 10 <sup>6</sup>

SI: 1 psi = 0.00689 MPa

- The reference design values in this table are applicable for S-LVL Laminated Veneer Lumber used in dry, well-ventilated interior applications in which the equivalent moisture content of sawn lumber is less than sixteen percent (16%). See **Section 12.5** of this report.
- The reference design values in this table are for normal load duration. Loads of longer or shorter duration shall be adjusted in accordance with the applicable code. Duration of load adjustments shall not be applied to F<sub>c⊥</sub> and E.
- Orientation nomenclature for S-LVL Laminated Veneer Lumber:



- The Apparent E for both beams and planks can be used directly in traditional beam deflection formulas. The True E values (e.g., shear-free) are for both beams and planks. Using True E, deflection is calculated as follows for uniformly loaded simple span beams.

$$\Delta = \frac{5WL^4}{32Ebh^3} + \frac{12WL^2}{5Ebh}$$

where:

- Δ = deflection in inches (mm)
- W = uniform load in lb/in (N/mm)
- L = span in inches (mm)
- E = modulus of elasticity in psi (MPa)
- b = width of beam in inches (mm)
- h = depth of beam in inches (mm)

- The design value for bending members used in a beam orientation is based on a referenced depth of 12" (305 mm).
- For depths greater than or equal to 3<sup>15</sup>/<sub>16</sub>", the bending values shall be adjusted by a size factor adjustment of (12/d)<sup>0.117</sup> where d is measured in inches, with a minimum depth of 3<sup>15</sup>/<sub>16</sub>" (100 mm).
- For depths greater than or equal to 3<sup>1</sup>/<sub>2</sub>" and less than 3<sup>15</sup>/<sub>16</sub>", the bending values shall be adjusted by a size factor adjustment of 1.139.
- When structural members qualify as repetitive members in accordance with the applicable code, a four percent (4%) increase is permitted.
- Thicknesses greater than 5<sup>1</sup>/<sub>4</sub>" (134 mm) shall not be used in design.
- Design value multiplied by (4.59/L)<sup>0.129</sup> for length effect factors, with L measured in feet. Value limited to members 17<sup>1</sup>/<sub>16</sub>" (450 mm) deep and less.

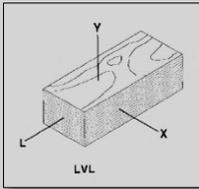
- 6.3.4 The design provisions for wood construction noted in IBC Section 2302.1 and IRC Section R301.1.3 apply to S-LVL Laminated Veneer Lumber for Load Resistance Factor Design (LRFD), unless otherwise noted in this report.
- 6.3.5 For compliance with the NBC, Limit States Design (LSD) shall be in accordance with CSA O86. Ultimate stresses for S-LVL Laminated Veneer Lumber for dry conditions of use are specified in **Table 2**.

**Table 2.** Specified Strengths for S-LVL Laminated Veneer Lumber - Canada<sup>1,2,3</sup>

Bending, <sup>8,9</sup> F <sub>b</sub> (psi)		Tension F <sub>t</sub> (psi)	Compression, F <sub>c</sub> (psi)		Horizontal Shear, F <sub>v</sub> (psi)		Beam Modulus of Elasticity, E (psi)		Plank Modulus of Elasticity, E (psi)		Modulus of Elasticity for Beam and Column Stability, E <sub>0</sub> (psi)	
Beam <sup>5,6,7</sup>	Plank	Parallel to Grain <sup>10,11</sup>	Parallel to Grain	Perpendicular to Grain		Beam	Plank	True <sup>4</sup>	Apparent <sup>4</sup>	True <sup>4</sup>		Apparent <sup>4</sup>
				Beam	Plank							
5,500	6,100	4,250	4,400	1,600	600	650	150	2.0 x 10 <sup>6</sup>	1.9 x 10 <sup>6</sup>	2.0 x 10 <sup>6</sup>	1.9 x 10 <sup>6</sup>	1.6 x 10 <sup>6</sup>

SI: 1 psi = 0.00689 MPa

- The specified strength values in this table are applicable for S-LVL Laminated Veneer Lumber used in dry, well-ventilated interior applications, in which the equivalent moisture content of sawn lumber is less than sixteen percent (16%). See **Section 12.5** of this report.
- The specified strength values in this table are for normal load duration. Loads of longer or shorter duration shall be adjusted in accordance with the applicable code. Duration of load adjustments shall not be applied to F<sub>c1</sub> and E.
- Orientation nomenclature for S-LVL:



- The Apparent E for both beams and planks can be used directly in traditional beam deflection formulas. The True E values (e.g., shear-free) are for both beams and planks. Using True E, deflection is calculated as follows for uniformly loaded simple span beams.

$$\Delta = \frac{5WL^4}{32Ebh^3} + \frac{12WL^2}{5Eb}$$

where:

- Δ = deflection in inches (mm)
- W = uniform load in lb/in (N/mm)
- L = span in inches (mm)
- E = modulus of elasticity in psi (MPa)
- b = width of beam in inches (mm)
- h = depth of beam in inches (mm)

- The design value for bending members used in a beam orientation is based on a referenced depth of 12" (305 mm).
- For depths greater than or equal to 3<sup>15</sup>/<sub>16</sub>", the bending values shall be adjusted by a size factor adjustment of (12/d)<sup>0.117</sup> where d is measured in inches, with a minimum depth of 3<sup>15</sup>/<sub>16</sub>" (100 mm).
- For depths greater than or equal to 3<sup>1</sup>/<sub>2</sub>" and less than 3<sup>15</sup>/<sub>16</sub>", the bending values shall be adjusted by a size factor adjustment of 1.139.
- When structural members are used in a load-sharing system in accordance with the applicable code, a system factor of K<sub>H</sub> = 1.04 is permitted.
- Thicknesses greater than 5<sup>1</sup>/<sub>4</sub>" (134 mm) shall not be used in design.
- Design value multiplied by (4.59/L)<sup>0.129</sup> for length effect factors, with L measured in feet. Value limited to members 17<sup>1</sup>/<sub>16</sub>" (450 mm) deep and less.

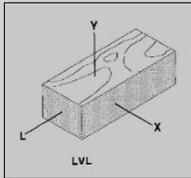
6.3.6 Connections:

6.3.6.1 Lateral loads for nails, screws and bolts, and withdrawal loads for nails and screws installed in S-LVL Laminated Veneer Lumber shall be in accordance with the NDS and CSA O86 for sawn lumber having a minimum specific gravity equal to that shown in **Table 3**.

**Table 3.** Equivalent Specific Gravities and Minimum Fastener Spacing for Design of Mechanical Connections<sup>1,2,3</sup>

Product	Fastener	Fastener Axis Orientation <sup>1</sup>	Load Direction	Equivalent Specific Gravity for Design Purposes	Minimum Spacing
S-LVL Laminated Veneer Lumber	Nails	Y Axis	Withdrawal	0.40	Table Footnote 4 Table Footnote 5 Table Footnote 6
		X Axis	Withdrawal	0.34	
	Nails	Y Axis	L and X Axes	0.50	
		X Axis	L and Y Axes	0.35	
	Bolts	Y Axis	L Axis	0.41	Per Applicable Code
			X Axis	0.45	

1. Orientation nomenclature for S-LVL Laminated Veneer Lumber:



2. Adjustment of the fastener values for duration of load shall be in accordance with NDS or CSA O86 as applicable.
3. Lateral resistance and withdrawal values are as provided in NDS and CSA O86 for sawn lumber having equivalent specific gravities as shown.
4. Nails Installed Perpendicular to the Glue Lines of the S-LVL Laminated Veneer Lumber:
  - a. Spacing, edge distance, and end distance of nails installed perpendicular to the glue lines of the S-LVL Laminated Veneer Lumber are the same as those permitted in the applicable code for sawn lumber.
5. Nails Installed Parallel to the Glue Lines of the S-LVL Laminated Veneer Lumber:
  - a. Spacing of nails must be at minimum:
    - i. 3" (76 mm) for 8d (0.131" x 2 1/2") (3.3 mm x 63 mm) common nails
    - ii. 4" (102 mm) for 10d (0.148" x 3") (3.8 mm x 76 mm) common nails
    - iii. 4" (102 mm) for 12d (0.148" x 3 1/4") (3.8 mm x 83 mm) common nails
    - iv. For S-LVL Laminated Veneer Lumber that is at least 1 3/4" thick x 5 1/2" wide (44mm x 133 mm), 8" (204 mm) for 16d (0.162" x 3 1/2") (4.1 mm x 89 mm) common nails
  - b. End distances of nails must be at minimum:
    - i. 2" (51 mm) for 8d (0.131" x 2 1/2") (3.3 mm x 63 mm) common nails
    - ii. 3" (76 mm) for 10d (0.148" x 3") (3.8 mm x 76 mm) common nails
    - iii. 3" (76 mm) for 12d (0.148" x 3 1/4") (3.8 mm x 83 mm) common nails
    - iv. For S-LVL Laminated Veneer Lumber that is at least 1 3/4" thick x 5 1/2" wide (44mm x 133 mm), 3" (76 mm) for 16d (0.162" x 3 1/2") (4.1 mm x 89 mm) common nails
6. Minimum edge distance must be sufficient to prevent splitting of the S-LVL Laminated Veneer Lumber. In addition, maximum nail penetration into the S-LVL Laminated Veneer Lumber must be limited as to prevent splitting.



- 6.3.6.2 Fastener spacing shall be as prescribed in the applicable code (for sawn lumber) unless specifically indicated in **Table 3** or **Table 4**, or as prescribed in NDS Part 12.
- 6.3.6.3 Other nail spacing for specific applications, such as prefabricated steel components or hangers, may be used. Nail spacing for these applications should follow what is specified and detailed in the proprietary catalogues for the specific gravities as defined in **Table 3**.
- 6.3.6.4 Allowable lateral loads for machine bolts installed perpendicular to the wide face of S-LVL Laminated Veneer Lumber (perpendicular to the glue lines), with loads applied parallel or perpendicular to the grain of the wood veneers, shall be as prescribed in the applicable code or in accordance to NDS for sawn lumber, with the minimum specific gravity at least equivalent to that defined in **Table 3**.
- 6.3.6.5 Connection requirements for multiple member side-loaded beams are defined in the following assembly details, and have the maximum uniformly distributed load carrying capacity as defined in **Table 4**.

**Table 4. Maximum Uniformly Distributed Load that Can Be Applied to Either Side of Multiple Member Side-Loaded Beams<sup>1,2,3,4,5,6</sup>**

Assembly Detail	Uniformly Distributed Load, ASD and Canada Limit States Design (plf)				
	2 Rows of 16d (0.162" x 3 1/2") (4.1 mm x 89 mm) Nails	3 Rows of 16d (0.162" x 3 1/2") (4.1 mm x 89 mm) Nails	2 Rows of 12d (0.148" x 3 1/4") (3.8 mm x 83 mm) Nails	3 Rows of 12d (0.148" x 3 1/4") (3.8 mm x 83 mm) Nails	2 Rows of 1/2" (12.7 mm) Bolts <sup>7,8</sup>
Figure 2	565 (885)	845 (1,330)	470 (750)	700 (1,130)	870 (1,405)
Figure 3	425 (665)	635 (995)	350 (565)	525 (845)	650 (1,315)
Figure 4	--	--	--	--	580 (1,170)

SI: 1 plf = 1.488 kg/m

1. Table values assume 12" o.c. (305 mm) fastener spacing. For other fastener spacing, multiply the appropriate table value by:
  - a. 1.5 for nails or bolts spaced at 8" o.c. (203 mm) per row
  - b. 2 for nails or bolts spaced at 6" o.c. (152 mm) per row
  - c. 3 for nails or bolts spaced at 4" o.c. (102 mm) per row
  - d. 0.5 for bolts spaced at 24" o.c. (610 mm) per row
2. Determine the appropriate beam size required to support the load before determining the connection requirements.
3. Screws can be used in place of bolts, provided additional fasteners are used so that the sum of the screw capacities is equal to or greater than that of the 1/2" diameter bolts (12.7mm). Refer to the screw manufacturer literature for details.
4. Tabulated values assume adequate end distance, edge distance, and spacing per NDS and CSA O86, as applicable.
5. Tabulated values are for normal load duration. Adjustment of the design stresses for duration of load shall be in accordance with the applicable code, NDS or CSA O86, as applicable.
6. For beams greater than 4-ply wide, consult an RDP for the attachment requirements.
7. A standard cut steel washer of minimum 0.109" thickness (2.8 mm), with a minimum outside dimension of 1 3/8" (35 mm), is required on each side of the beam between the wood and bolt head and nut.
8. Bolted connections assume full diameter bolts with bending yield strength ( $F_y$ ) of 45,000 psi.
9. Nailing is required from both sides for 3-ply beams.

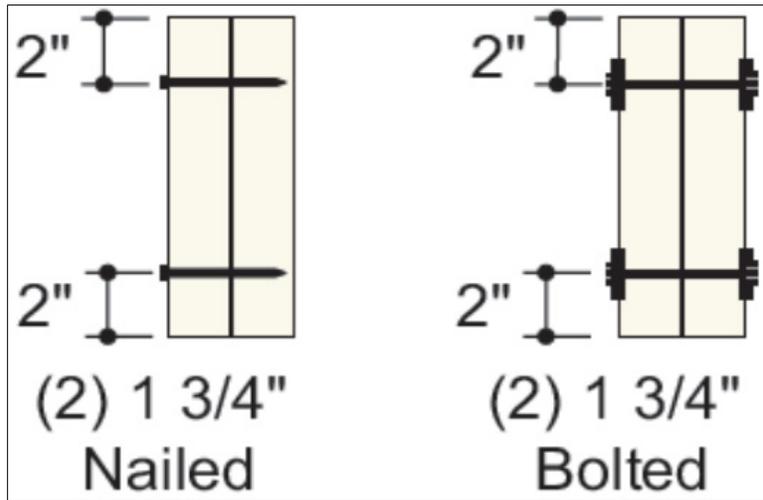


Figure 2. Assembly A (2-Ply Beam)

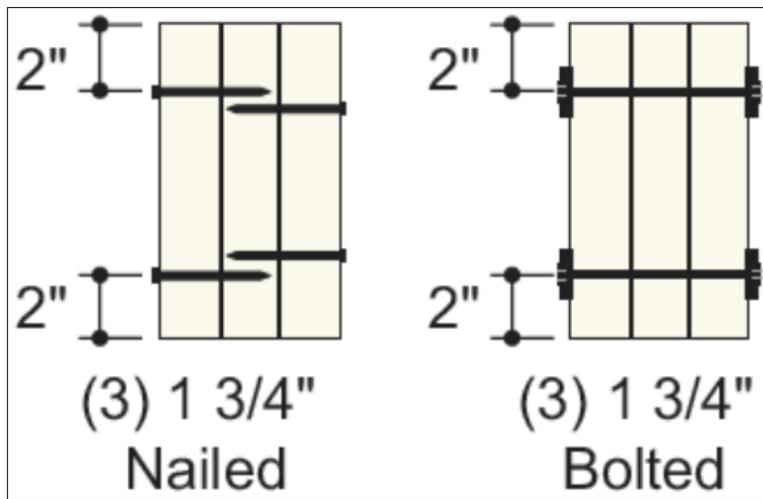


Figure 3. Assembly B (3-Ply Beam)

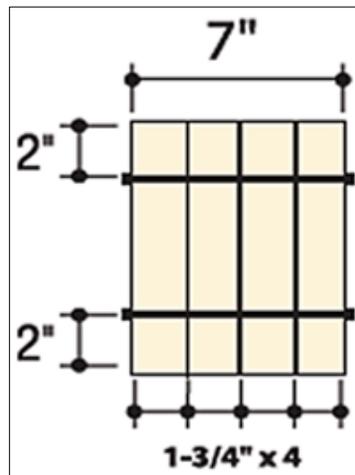


Figure 4. Assembly C (4-Ply Beam)



- 6.4 Alternative techniques shall be permitted in accordance with accepted engineering practice and experience. These provisions for the use of alternative materials, designs, and methods of construction are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed herein. This includes, but is not limited to, the following areas of engineering: mechanics of materials, structures, building science, and fire science.

## 7 Certified Performance<sup>27</sup>

- 7.1 All construction methods shall conform to accepted engineering practices to ensure durable, livable, and safe construction and shall demonstrate acceptable workmanship reflecting journeyman quality of work of the various trades.<sup>28</sup>
- 7.2 The strength and rigidity of the component parts and/or the integrated structure shall be determined by engineering analysis or by suitable load tests to simulate the actual loads and conditions of application that occur.<sup>29</sup>

## 8 Regulatory Evaluation and Accepted Engineering Practice

- 8.1 S-LVL Laminated Veneer Lumber complies with the following legislatively adopted regulations and/or accepted engineering practice for the following reasons:
- 8.1.1 S-LVL Laminated Veneer Lumber was evaluated to determine its resistance properties, which are used to develop reference design values for Allowable Stress Design (ASD) and Load Resistance Factor Design (LRFD). Additionally, specified strengths are developed for Limit States Design (Canada). This report examines S-LVL Laminated Veneer Lumber for the following:
- 8.1.1.1 Compliance with the requirements noted in [IBC Section 2302.1](#) and [IBC Section 2303.1.10](#) for ASD.
- 8.1.1.2 Compliance with the requirements noted in [IBC Section 2302.1](#), [IBC Section 2303.1.10](#), and [IBC Section 2307.1](#) for LRFD.
- 8.1.1.3 Compliance with [IBC Section 2304](#), [IBC Section 2308](#), [IRC Chapter 5](#), [IRC Chapter 6](#), and [IRC Chapter 8](#) for conventional light frame construction applications.
- 8.1.1.4 When used in an application that exceeds the limits of [IRC Section R301](#), an engineered design shall be submitted in accordance with [IRC Section R301.1.3](#) and this report.
- 8.1.1.5 Structural capacities in accordance with [IBC Section 2303.1.10](#):
- 2303.1.10 Structural Composite Lumber.** Structural capacities for structural composite lumber shall be established and monitored in accordance with ASTM D5456.
- 8.1.1.6 Structural design in accordance with NBC Division B Part 4 and Part 9 and CSA O86 as follows:
- 8.1.1.6.1 Division A, Clause 1.2.1.1.(1)(a), using the following acceptable solution from Division B: Sentence 4.3.1.1.(1), Design Basis for Wood.
- 8.1.1.6.2 Division A, Clause 1.2.1.1.(1)(b), as an alternative solution that achieves at least the minimum level of performance required by Division B as defined by the objectives and functional statements attributed to the applicable solutions in Sentence 9.23.4.2.(3) Spans for Joists, Rafters and Beams.
- 8.1.1.6.3 CSA O86 specifies that the capacity of structural composite lumber is determined from test data by calculations specified in ASTM D5456.
- 8.1.1.7 Fire- resistance properties of S-LVL Laminated Veneer Lumber are outside the scope of this report.



- 8.2 Any building code, regulation and/or accepted engineering evaluations (i.e., research reports, duly authenticated reports, etc.) that are conducted for this Listing were performed by DrJ, which is an ISO/IEC 17065 accredited certification body and a professional engineering company operated by RDP or approved sources. DrJ is qualified<sup>30</sup> to practice product and regulatory compliance services within its scope of accreditation and engineering expertise,<sup>31</sup> respectively.
- 8.3 Engineering evaluations are conducted with DrJ's ANAB accredited ICS code scope of expertise, which is also its areas of professional engineering competence.

## 9 Installation

- 9.1 Installation shall comply with the approved construction documents, the manufacturer installation instructions, this report, and the applicable building code.
- 9.2 In the event of a conflict between the manufacturer installation instructions and this report, contact the manufacturer for counsel on the proper installation method.

## 10 Substantiating Data

- 10.1 Testing has been performed under the supervision of a professional engineer and/or under the requirements of ISO/IEC 17025 as follows:
- 10.1.1 Mechanical properties testing in accordance with ASTM D5456
- 10.2 Information contained herein may include the result of testing and/or data analysis by sources that are approved agencies, approved sources, and/or an RDP. Accuracy of external test data and resulting analysis is relied upon.
- 10.3 Where applicable, testing and/or engineering analysis are based upon provisions that have been codified into law through state or local adoption of regulations and standards. The developers of these regulations and standards are responsible for the reliability of published content. DrJ's engineering practice may use a regulation-adopted provision as the control. A regulation-endorsed control versus a simulation of the conditions of application to occur establishes a new material as being equivalent to the regulatory provision in terms of quality, strength, effectiveness, fire resistance, durability, and safety.
- 10.4 The accuracy of the provisions provided herein may be reliant upon the published properties of raw materials, which are defined by the grade mark, grade stamp, mill certificate, or duly authenticated reports from approved agencies and/or approved sources provided by the supplier. These are presumed to be minimum properties and relied upon to be accurate. The reliability of DrJ's engineering practice, as contained in this duly authenticated report, may be dependent upon published design properties by others.
- 10.5 *Testing and Engineering Analysis*
- 10.5.1 The strength, rigidity, and/or general performance of component parts and/or the integrated structure are determined by suitable tests that simulate the actual conditions of application that occur and/or by accepted engineering practice and experience.<sup>32</sup>
- 10.6 Where additional condition of use and/or regulatory compliance information is required, please search for S-LVL Laminated Veneer Lumber on the DrJ Certification website.



## 11 Findings

- 11.1 As outlined in **Section 6**, S-LVL Laminated Veneer Lumber has performance characteristics that were tested and/or meet applicable regulations. In addition, they are suitable for use pursuant to its specified purpose.
- 11.2 When used and installed in accordance with this duly authenticated report and the manufacturer installation instructions, S-LVL Laminated Veneer Lumber shall be approved for the following applications:
- 11.2.1 S-LVL Laminated Veneer Lumber complies with, or is a suitable alternative to, the requirements of IBC Chapter 23, IRC Chapter 5, IRC Chapter 6, and IRC Chapter 8, plus NBC Section 1.2, Subsection 4.3.11, and Section 9.23.
- 11.3 Unless exempt by state statute, when S-LVL Laminated Veneer Lumber is to be used as a structural and/or building envelope component in the design of a specific building, the design shall be performed by an RDP.
- 11.4 Any application specific issues not addressed herein can be engineered by an RDP. Assistance with engineering is available from Stora Enso Oyj.
- 11.5 IBC Section 104.2.3<sup>33</sup> (IRC Section R104.2.2<sup>34</sup> and IFC Section 104.2.3<sup>35</sup> are similar) in pertinent part state:
- 104.2.3 Alternative Materials, Design and Methods of Construction and Equipment.** The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative is not specifically prohibited by this code and has been approved.
- 11.6 **Approved:**<sup>36</sup> Building regulations require that the building official shall accept duly authenticated reports.<sup>37</sup>
- 11.6.1 An approved agency is “*approved*” when it is ANAB ISO/IEC 17065 accredited.
- 11.6.2 An approved source is “*approved*” when an RDP is properly licensed to transact engineering commerce.
- 11.6.3 Federal law, Title 18 US Code Section 242, requires that, where the alternative product, material, service, design, assembly, and/or method of construction is not approved, the building official shall respond in writing, stating the reasons why the alternative was not approved. Denial without written reason deprives a protected right to free and fair competition in the marketplace.
- 11.7 DrJ is a licensed engineering company, employs licensed RDPs and is an ANAB Accredited Product Certification Body – Accreditation #1131.
- 11.8 Through the IAF Multilateral Arrangement (MLA), this duly authenticated report can be used to obtain product approval in any jurisdiction or country because all ANAB ISO/IEC 17065 duly authenticated reports are equivalent.<sup>38</sup>

## 12 Conditions of Use

- 12.1 As defined in **Section 6**, where material and/or engineering mechanics properties are created for load resisting design purposes, the resistance to the applied load shall not exceed the ability of the defined properties to resist those loads using the principles of accepted engineering practice.
- 12.2 The manufacturer published installation instructions shall be available at the jobsite at all times during installation.
- 12.3 Design calculations and details shall be furnished to the code official verifying that the material is used in compliance with this report. The calculations must be prepared by an RDP where required by the statutes of the jurisdiction in which the project is to be constructed.
- 12.4 The design values shall not exceed those set forth in this report as modified by all applicable table notes.
- 12.5 The service conditions for S-LVL Laminated Veneer Lumber are dry conditions of use for which the equilibrium moisture content must be less than sixteen percent (16%). Uses in applications exceeding sixteen percent (16%) moisture content are outside the scope of this report.



- 12.6 The service conditions for S-LVL Laminated Veneer Lumber with fire-retardant or preservative chemical treatments are outside the scope of this report.
- 12.7 Fastener design values shall be as specified in **Table 3** of this report.
- 12.8 Cutting and notching of S-LVL Laminated Veneer Lumber is prohibited except where specifically permitted by the manufacturer recommendations or where the effects of such alterations are specifically considered in the design of the member by an RDP.
- 12.9 Increases for duration of load shall be in accordance with the limitations of the applicable building code.
- 12.10 Where use of S-LVL Laminated Veneer Lumber qualifies as repetitive members as defined in the NDS, an increase of four percent (4%) is permitted in allowable bending stresses.
- 12.11 S-LVL Laminated Veneer Lumber may be cut to the specified length and width as appropriate for the application, provided the depth is no less than 3<sup>1</sup>/<sub>2</sub>" (89 mm) wide. The thickness may not be cut.
- 12.12 Minimum bearing length and anchorage of S-LVL Laminated Veneer Lumber shall meet the requirements of IBC Chapter 23 or NBC Division B Section 9.23 for sawn lumber.
- 12.13 S-LVL Laminated Veneer Lumber shall be fabricated at the Stora Enso Oyj facilities located in Varkaus, Finland, with quality control inspections by an approved third-party quality control inspection agency.
- 12.14 When required by adopted legislation and enforced by the building official, also known as the Authority Having Jurisdiction (AHJ) in which the project is to be constructed:
- 12.14.1 Any calculations incorporated into the construction documents shall conform to accepted engineering practice and, when prepared by an approved source, shall be approved when signed and sealed.
  - 12.14.2 This report and the installation instructions shall be submitted at the time of permit application.
  - 12.14.3 This innovative product has an internal quality control program and a third-party quality assurance program.
  - 12.14.4 At a minimum, this innovative product shall be installed per **Section 9**.
  - 12.14.5 The review of this report by the AHJ shall comply with IBC Section 104.2.3.2 and IBC Section 105.3.1.
  - 12.14.6 This innovative product has an internal quality control program and a third party quality assurance program in accordance with IBC Section 104.7.2, IBC Section 110.4, IBC Section 1703, IRC Section R104.7.2, and IRC Section R109.2.
  - 12.14.7 The application of this innovative product in the context of this report is dependent upon the accuracy of the construction documents, implementation of installation instructions, inspection as required by IBC Section 110.3, IRC Section R109.2, and any other regulatory requirements that may apply.
- 12.15 The approval of this report by the AHJ shall comply with IBC Section 1707.1, where legislation states in part, *"the building official shall make, or cause to be made, the necessary tests and investigations; or the building official shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in Section 104.2.3"*, all of IBC Section 104, and IBC Section 105.3.
- 12.16 Design loads shall be determined in accordance with the regulations adopted by the jurisdiction in which the project is to be constructed and/or by the building designer (i.e., owner or RDP).
- 12.17 The actual design, suitability, and use of this report for any particular building, is the responsibility of the owner or the authorized agent of the owner.



### 13 Identification

- 13.1 Stora Enso S-LVL Laminated Veneer Lumber, as listed in **Section 1.1**, is identified by a label on the board or packaging material bearing the manufacturer name, product name, this report number, and other information to confirm code compliance.
- 13.2 Additional technical information can be found at [www.storaenso.com](http://www.storaenso.com).

### 14 Review Schedule

- 14.1 This report is subject to periodic review and revision. For the latest version, visit [www.drjcertification.org](http://www.drjcertification.org).
- 14.2 For information on the status of this report, please contact [DrJ Certification](#).



Issue Date: January 7, 2021  
Supplement Revision Date: March 5, 2026  
Subject to Renewal: April 1, 2027

## FBC Supplement to Report Number 1507-01

REPORT HOLDER: Stora Enso Oyj

### 1 Evaluation Subject

1.1 Stora Enso S-LVL Laminated Veneer Lumber

### 2 Purpose and Scope

2.1 Purpose

2.1.1 The purpose of this Report Supplement is to show S-LVL Laminated Veneer Lumber, recognized in Report Number 1507-01, has also been evaluated for compliance with the codes listed below as adopted by the Florida Building Commission.

2.2 *Applicable Code Editions*

2.2.1 *FBC-B — 20, 23: Florida Building Code – Building (FL 29268)*

2.2.2 *FBC-R — 20, 23: Florida Building Code – Residential (FL 29268)*

### 3 Conclusions

3.1 S-LVL Laminated Veneer Lumber, described in Report Number 1507-01, complies with the FBC-B and FBC-R and is subject to the conditions of use described in this supplement.

3.2 Where there are variations between the IBC and IRC and the FBC-B and FBC-R applicable to this report, they are listed here:

- 3.2.1 FBC-B Section 104 is reserved.
- 3.2.2 FBC-B Section 110.4 is reserved and replaces IBC Section 110.4.
- 3.2.3 FBC-B Section 104.6 is reserved and replaces IBC Section 104.4.
- 3.2.4 FBC-B Section 104.11 replaces IBC Section 104.2.3 and Section 104.2.3.2.
- 3.2.5 FBC-B Section 105.3 replaces IBC Section 105.3.
- 3.2.6 FBC-B Section 105.3.1 replaces IBC Section 105.3.1.
- 3.2.7 FBC-B Section 110.3 replaces IBC Section 110.3.
- 3.2.8 FBC-B Chapter 5 replaces IBC Chapter 5.
- 3.2.9 FBC-B Chapter 6 replaces IBC Chapter 6.
- 3.2.10 FBC-B Chapter 8 replaces IBC Chapter 8.
- 3.2.11 FBC-B Section 1707.1 replaces IBC Section 1707.1.
- 3.2.12 FBC-B Section 2301.2 replaces IBC Section 2302.1.
- 3.2.13 FBC-B Section 2306.1 replaces IBC Section 2306.1.
- 3.2.14 FBC-B Section 2306.3 replaces IBC Section 2306.3.
- 3.2.15 FBC-B Section 2308 is reserved and replaces IBC Section 2308.



- 3.2.16 FBC-R Section R104 and Section R109 are reserved.
- 3.2.17 FBC-R Section R301.1.3 replaces IRC Section R301.1.3.

#### 4 Conditions of Use

- 4.1 S-LVL Laminated Veneer Lumber, described in Report Number 1507-01, must comply with all of the following conditions:
  - 4.1.1 All applicable sections in Report Number 1507-01.
  - 4.1.2 The design, installation, and inspections are in accordance with additional requirements of FBC-B Chapter 16 and Chapter 17, as applicable.





- 30 Qualification is performed by a legislatively defined Accreditation Body. ANSI National Accreditation Board (ANAB) is the largest independent accreditation body in North America and provides services in more than 75 countries. DrJ is an ANAB accredited product certification body.
- 31 <https://anabpd.ansi.org/Accreditation/product-certification/AllDirectoryDetails?prgID=1&orgID=2125&statusID=4#:~:text=Bill%20Payment%20Date-.Accredited%20Scopes,-13%20ENVIRONMENT.%20HEALTH>
- 32 See Code of Federal Regulations (CFR) Title 24 Subtitle B Chapter XX Part 3280 for definition: <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280>
- 33 2021 IBC Section 104.11
- 34 2021 IRC Section R104.11
- 35 2018: <https://up.codes/viewer/wyoming/ifc-2018/chapter/1/scope-and-administration#104.9> AND 2021: <https://up.codes/viewer/wyoming/ibc-2021/chapter/1/scope-and-administration#104.11>
- 36 Approved is an adjective that modifies the noun after it. For example, Approved Agency means that the Agency is accepted officially as being suitable in a particular situation. This example conforms to IBC/IRC/IFC Section 201.4 (<https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#201.4>) where the building code authorizes sentences to have an ordinarily accepted meaning such as the context implies.
- 37 <https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1707.1>
- 38 Multilateral approval is true for all ANAB accredited product evaluation agencies and all International Trade Agreements.