

# ICC-ES Evaluation Report

## ESR-1018

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This report is subject to re-examination in one year.

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**DIVISION: 06—WOOD AND PLASTIC**  
**Section: 06170—Prefabricated Structural Wood**

### REPORT HOLDER:

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### EVALUATION SUBJECT:

**TJ®-INSULATED HEADER**

### ADDITIONAL LISTEE:

**LEXINGTON MANUFACTURING, INC.**  
**1330 115<sup>TH</sup> AVENUE NW**  
**MINNEAPOLIS, MINNESOTA 55448-3133**

## 1.0 EVALUATION SCOPE

### Compliance with the following codes:

- 2006 *International Building Code*® (IBC)
- 2006 *International Residential Code*® (IRC)
- BOCA® *National Building Code*/1999 (BNBC)
- 1999 *Standard Building Code*® (SBC)
- 1997 *Uniform Building Code*™ (UBC)

### Property evaluated:

Structural

## 2.0 USES

The TJ-Insulated Header is used as a structural support beam in wood frame construction.

## 3.0 DESCRIPTION

### 3.1 General:

TJ-Insulated Headers consist of two outer laminations of 1<sup>1</sup>/<sub>2</sub>-inch-thick (38 mm) TimberStrand® LSL (laminated strand lumber) and an inner core of 2.4-inch (61 mm) expanded polystyrene insulation. The TJ-Insulated Header is 5<sup>1</sup>/<sub>2</sub> inches (140 mm) wide and is available in depths of 5<sup>1</sup>/<sub>2</sub>, 7<sup>1</sup>/<sub>4</sub>, 9<sup>1</sup>/<sub>2</sub>, 11<sup>1</sup>/<sub>4</sub>, 11<sup>7</sup>/<sub>8</sub> and 14 inches (140, 184, 241, 286, 302 and 356 mm).

### 3.2 Materials:

**3.2.1 TimberStrand LSL:** The two outer laminations of the TJ-Insulated Header are each 1<sup>1</sup>/<sub>2</sub>-inch-thick (38 mm) TimberStrand LSL as recognized in ICC-ES evaluation report [ESR-1387](#).

**3.2.2 Insulation:** The inner core of the TJ-Insulated Header is a 2.4-inch-thick (61 mm) layer of expanded polystyrene insulation as specified in the Weyerhaeuser quality control manual and manufacturing standard for the TJ-Insulated Header. The expanded polystyrene insulation has a flame-spread rating less than 25 and a smoke-density of less than 450 when tested in accordance with ASTM E 84.

**3.2.3 Adhesive:** The insulation is adhered to the outer TimberStrand LSL laminations with hot melt adhesives as specified in the Weyerhaeuser quality control manual and manufacturing standard for the TJ-Insulated Header.

## 4.0 DESIGN AND INSTALLATION

### 4.1 Design and Allowable Stresses:

Design properties for the TJ-Insulated Header assume no contribution to strength or stiffness from the insulation.

The allowable design stresses for use with the TJ-Insulated Header are in accordance with evaluation report [ESR-1387](#) and are as follows:

Modulus of Elasticity	1.5 × 10 <sup>6</sup> psi
Flexural Stress (1)	2250 psi
Compression perpendicular-to-grain (2)	750 psi
Horizontal shear parallel-to-grain	400 psi

(1) For 12-inch (305 mm) depth; for all other depths multiply by (12/d)<sup>0.092</sup>

(2) F<sub>C⊥</sub> and MOE may not be increased for duration of load.

For **SI**: 1 psi = 6.9 kPa.

The design provisions for wood construction noted in the applicable code; Chapter 23 of the BNBC, UBC and SBC; Section 2301.2.1 of the IBC (for allowable stress design); and Section R301 of the IRC, are applicable to TimberStrand LSL unless otherwise noted in this report. Allowable unit stresses for dry conditions of use, and details of edge loading (joist/beam), are noted in Table 1 of ICC-ES evaluation report [ESR-1387](#). Unless otherwise noted, adjustment to the design stresses for duration of load is permitted in accordance with the applicable code.

Allowable withdrawal and lateral loads for nails installed perpendicular or parallel to the wide face of the TimberStrand LSL shall be as described in Section 4.2.2 of evaluation report [ESR-1387](#). Nail spacing for nails installed perpendicular to the wide face of strands (installed in the face of the TimberStrand LSL) is the same as that permitted in the applicable code for sawn lumber.

Allowable lateral loads for machine bolts and lag bolts installed perpendicular to the wide face of the TimberStrand LSL, with loads applied parallel or perpendicular to the grain of the wood strands, shall be as described in Section 4.2.2 of evaluation report [ESR-1387](#).

Installation and design details, involving the attachment of joist hangers to one side of the header, shall be submitted to the building official for approval.

#### 4.2 Installation Details:

The TJ-Insulated Header is designed for installation in 2-by-6 wood framed walls. The header shall be installed in accordance with the details noted in Figure 1.

The TJ-Insulated Header shall not be cut or notched, but may have holes bored in the wide face of the TimberStrand LSL and inner core insulation only as follows: When supporting uniform loads only, maximum 1<sup>3</sup>/<sub>4</sub>-inch-diameter (44.5 mm) holes may be drilled in minimum 5<sup>1</sup>/<sub>2</sub>-inch-deep (140 mm) beams and maximum 2.0-inch-diameter (51 mm) holes may be drilled in minimum 7<sup>1</sup>/<sub>4</sub>-inch-deep (184 mm) beams. All holes must be located in the center third of the beam span and the center third of the beam depth. The minimum clear distance between holes must be two times the diameter of the largest hole. Rectangular holes are not permitted. Holes in cantilevers are beyond the scope of this report.

#### 5.0 CONDITIONS OF USE

The TJ<sup>®</sup>-Insulated Header described in this report complies with the codes specifically listed in Section 1.0 of this report, subject to the following conditions:

5.1 Installation complies with this report and the manufacturer's instructions.

5.2 The TJ-Insulated Header is limited to end-use location at which the average equilibrium moisture content of the TimberStrand LSL is equal to or less than 16 percent.

5.3 Increases for duration of load, as provided for wood members and their connections, are permitted for the TimberStrand LSL in accordance with the limitations specified in the applicable code and evaluation report [ESR-1387](#), and as set forth in this report.

5.4 Drawings and design details verifying compliance with this report are submitted to the building official for approval. The documents shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.

5.5 TimberStrand LSL is produced at the Weyerhaeuser manufacturing plants recognized in [ESR-1387](#).

5.6 The TJ-Insulated Header is manufactured by Lexington Manufacturing Incorporated in Brainerd, Minnesota, with quality control supervision by Weyerhaeuser and quality control inspections by PFS Corporation (AA-652).

#### 6.0 EVIDENCE SUBMITTED

6.1 Installation instructions.

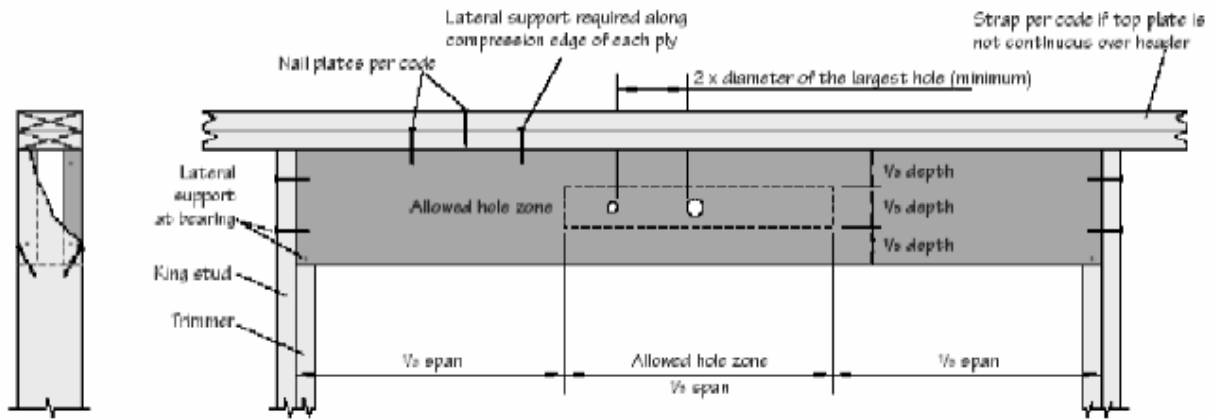
6.2 Data verifying compliance with the applicable sections of the ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12), dated May 2008.

6.3 A quality control manual.

#### 7.0 IDENTIFICATION

The TJ-Insulated Header is identified with a stamp noting the name of the manufacturer (Weyerhaeuser), and the plant number; the product trade name; the production date; the evaluation report number (ICC-ES ESR-1018); and the name of the inspection agency (PFS Corporation).

## Allowable Holes and Lateral Support for Uniformly Loaded Beams

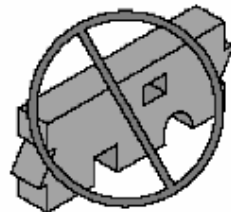


**General Notes**

- The allowed hole zone is suitable only for uniformly loaded beams using maximum loads for any tables listed in this guide. For other load conditions or hole configurations, please contact your Trus Joist representative.
- No rectangular holes.
- No holes in cantilevers.

Beam Depth	Maximum Round Hole Size
5 1/2"	1 3/4"
7 1/4" to 14"	2"

See illustration for allowed hole zone.



**DO NOT** cut, notch, or drill holes in TimberStrand® LSL except as indicated in illustration and table above.

**FIGURE 1**