Tech Note: Comparing LSL & LVL for rim board applications.

TimberStrand® LSL is valued for its dimensional stability, fastener properties and ability to perform as both a beam and rim board. It is widely recognized as one of the best-performing, cost-effective rim board materials in wood frame construction. Where alternative rim board materials (such as LVL) are being proposed on a project, the following two items should be considered:

1) **Dimensional Stability ("Shrinkage")**

When subjected to a change in moisture content, all wood products may experience changes in dimension.

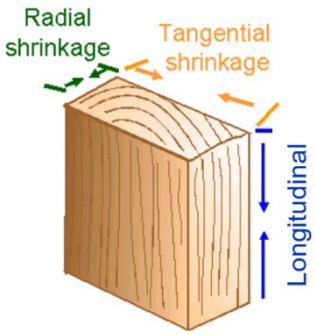
The amount of dimension change will vary depending on:

- the orientation of the wood fibre, the species, and the change in Moisture Content ("MC").

To illustrate, below is a comparison of moisture-related dimension change (shrinkage) in SPF lumber:

Change in Moisture Content	Direction of Dimensional Change		
	Radial	Tangential	Longitudinal
From Fibre Saturation to Oven Dry (30-0% MC)	3-5%	6-8%	0.1-0.2%

This range of values is appropriate for SPF Lumber
Source: US Forest Products Laboratory, March 2021



Note the small amount of dimension change in the longitudinal direction. This is why plywood (and OSB) are made with layers of veneer (or strands) alternatively placed at 90 degrees: to limit panel expansion by using the properties of "longitudinal" wood fibres.

Similarly, TimberStrand® LSL rim board is made with wood strands oriented at different angles (see image). These strands exhibit lower "longitudinal" rates of dimension change which significantly reduces the risk of changes in member depth when subjected to changes in moisture content.

Laminated Veneer Lumber ("LVL") is typically manufactured by orienting layers of veneer in the same direction with no "cross plies" (unlike plywood). This is a key difference between LVL and TimberStrand® LSL. **Unless the LVL component has been manufactured with "cross ply" veneer, an 11-7/8" LVL component could shrink 0.25" to 0.35" per storey when dried from 30% MC to 10%. By comparison, under those same conditions TimberStrand® LSL rim board would change less than 0.1" on average per storey.**

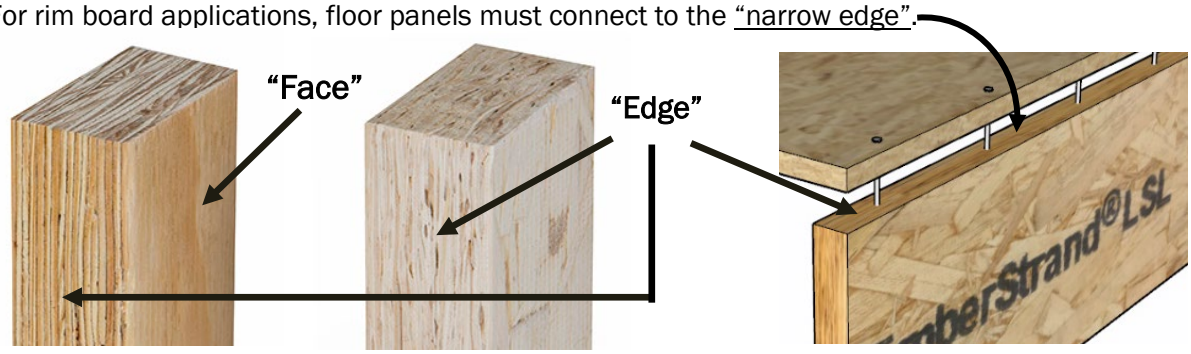
Note that very few LVL rim products are manufactured with veneers at 90 degrees. If you are considering LVL rim board, check with your supplier if they have a CCMC report confirming that the component has "cross ply" veneers in its layup. More information on this topic can be found in this bulletin from the Wood I-joist Manufacturers Association (WIJMA): WIJMA Position Statement: Rim Board Products

2) **Nail Spacing**

Fastener spacing for engineered lumber is dependent on:

- the size of fastener,
- the type (and thickness) of material and,
- whether the connection is into the "face" of the product, or the "top narrow edge".

For rim board applications, floor panels must connect to the "narrow edge".



TimberStrand® LSL may permit closer fastener spacing (and more rows of fasteners) than Microllam® LVL in the "narrow edge" orientation. The excerpt below is from Table 2 from Trus Joist Technical Bulletin TB-206 – Fastener Spacing in Weyerhaeuser ELP.

(NOT FOR SHEAR WALL NAILING APPLICATIONS)

Type	Length	Diameter	Nails into Narrow Edge (Parallel to Strands)					
			Microllam® LVL	Parallam® PSL	TimberStrand® LSL, TJ® Rim Board			
					1⅛″	1¼″	1½″	1¾″ - 3½″
			On-Center Spacing					
6d common	2″	0.113″	3″	3″	6″	4″	3″	3″
8d box	2½″	0.113″	3″	3″	6″	4″	3″	3″
8d common	2½″	0.131″	4″	4″	6″	4″	3″	3″
8d N8 or NA11	1½″	0.131″	4″	4″	6″	4″	3″	3″
10d box	3″	0.128″	4″	4″	6″	4″	3″	3″
12d box	3¼″	0.128″	4″	4″	6″	4″	3″	3″
10d common	3″	0.148″	5″	4″	6″	4″	3″	3″

For more information download the technical document TJ-8500 or contact your Weyerhaeuser Trus Joist® product representative at 1-888-453-8358 or online at our Specification Centre.