

TimberStrand® LSL Wall Plates for Multi-Story Construction

With five story wood frame construction permitted in several jurisdictions in the United States, designers are looking for a wall system to address the dimensional stability challenges as well as the higher vertical loads that can be applied in these structures. TimberStrand® LSL wall plates provide an effective solution to these challenges.

Reduce Multiple Story Wall Shrinkage

The manufacturing process of TimberStrand® LSL results in a dry and stable finished product that has a moisture content (MC) of approximately 6-8%. Considering interior members of finished structures equilibrate to around 6-11%, product movement, if any, will be minimal.

Solid sawn lumber is usually dried to a maximum of 19% MC and once installed in a structure, it will also equilibrate to around 6-11% MC. A moisture content reduction from 19% to 10 % means the resulting shrinkage of the wall plates over the entire structure will not be insignificant, especially when multiple stories are considered.

Using an example outlined by the Western Wood Products Association “*Shrinkage Calculation for Multistory Wood Frame Construction Report No. 10*”, the amount of shrinkage for a 4-story structure can be around 0.8” with 0.3” of that shrinkage coming from the plates alone. **This means 40% of the shrinkage is from the plates.** (Note: This example assumes a conservative 19% kiln dried lumber MC with 2x10 lumber floor joists)

Superior Compression Perpendicular to grain

As vertical loads are passed down the structure, significant loads are applied to the framing members, especially the wall studs. As a result, high compression perpendicular to grain stresses will occur in the wall plates, at times controlling the size and spacing of the wall studs. Compared to solid sawn lumber, TimberStrand® LSL has superior compression perpendicular to grain properties resulting in more efficient designs. The table below compares the compression perpendicular to grain properties of TimberStrand® LSL with some common solid sawn products. These values are also representative of Trus Joist® StrandGuard® TimberStrand® LSL treated plate material (available in 1.3E and 1.5E grades).

DESIGN STRESS (100% LOAD DURATION)

Property	1 1/2" TimberStrand® LSL			Douglas Fir-Larch	Spruce-Pine-Fir
	1.3E	1.5E	1.6E		
Compression Perpendicular to Grain (Flat)	670 psi	750 psi	900 psi	625 psi	425 psi

Other Attributes

Other attributes of TimberStrand® LSL that makes it a good choice for wall plates:

- Available lengths up to 48 ft. means less chord splices with faster design and installation.
- Higher tensile strength than solid sawn lumber results in more efficient diaphragm chords.
- Every piece is straight and true to size requiring no sorting on the job site.
- Limited lifetime warranty.

If you have any questions, please feel free to contact your Weyerhaeuser representative.