Structural Composite Lumber

- **Laminated veneer lumber (LVL)**
- **Parallel-strand lumber (PSL)**
- **Laminated-strand lumber (LSL)**
- **Wood I-joists**

Why use Engineered Lumber Products?

- Design Capabilities
  - Increased strength and stiffness

Why use Engineered Lumber Products?

	SP #2	LVL	PSL	LSL	
E	1.4	1.9	2.0	1.3	(10^6 psi)
F_b	1300	2600	2900	1700	(psi)
$F_{c\ per}$	565	750	650	300	(psi)
$F_{c\ par}$	1650	2640	2900	1400	(psi)
F_v	90	285	290	400	(psi)

Why use Engineered Lumber Products?

- Design Capabilities
  - Larger members

Why use Engineered Lumber Products?

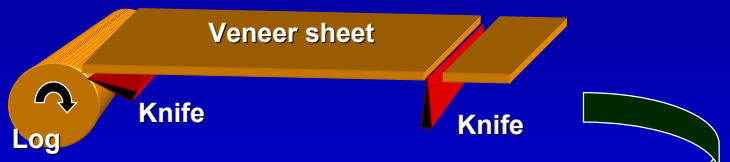
- Consistency of Product
  - Reduce swelling / shrinkage problems
  - More predictable performance
  - Less waste
  - Use all material
  - More efficient construction

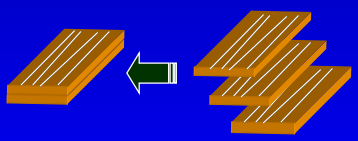
Why use Engineered Lumber Products?

- Environmental Issues & Availability
  - Reduced availability of old-growth timber
  - Use more wood fiber
  - Use undervalued species

Laminated Veneer Lumber (LVL)

1. Logs are placed in lathe and peeled to obtain veneer sheet





2. Veneer sheet is cut into smaller widths, sorted, dried, and then the smaller pieces are glued together


crollam
MacMillan

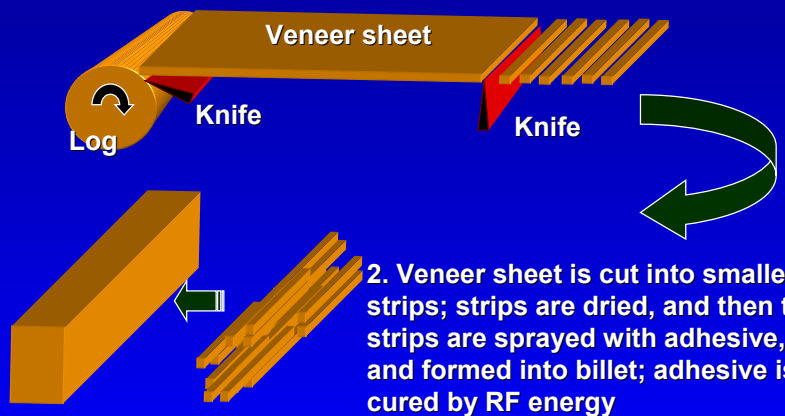

Microllam
MacMillan
Microllam
MacMillan

Laminated Veneer Lumber (LVL)

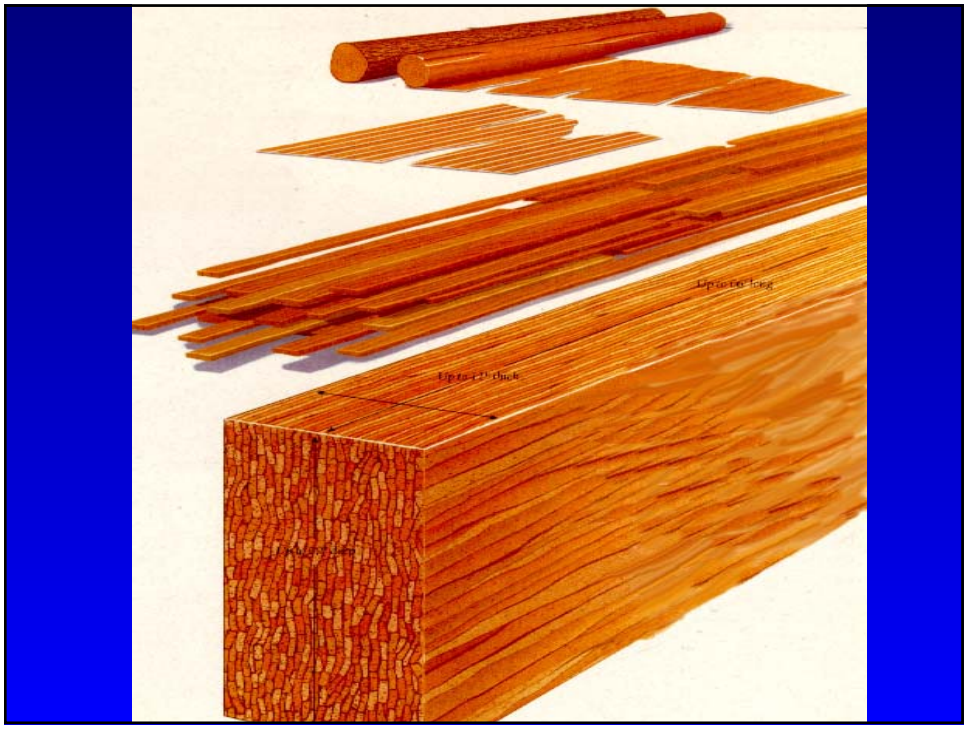
- High strength product, layers of veneer run parallel to each other
- Thickness usually similar to dimension lumber
- Used for headers, girders, scaffold plank
- Design values are provided by each manufacturer
- Some manufacturers provide design assistance

Parallel Strand Lumber (PSL)

1. Logs are placed in lathe and peeled to obtain veneer sheet



2. Veneer sheet is cut into smaller strips; strips are dried, and then the strips are sprayed with adhesive, and formed into billet; adhesive is cured by RF energy




Parallam
Trus Joist MacMillan

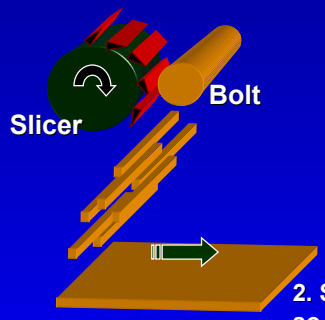

Parallam
Silent Floor
Parallam
Silent Floor

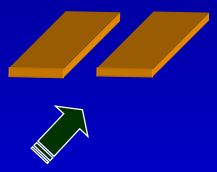
Parallel Strand Lumber (PSL)

- High strength product, Parallam is trade name
- Can be obtained in rectangular or square sizes
- Used for beams and columns
- Design values are provided by manufacturer
- Manufacturer provides design assistance

Laminated Strand Lumber (LSL)

1. Logs are cut into short bolts; bolts are fed into rotary slicer to to produce strands about 1 ft long





3. Mat is pressed and dried then sawn into smaller product sizes

2. Strands are dried and oriented so they are parallel to each other, sprayed with adhesive and formed into a mat


Up to 8' wide
Up to 8' long
Up to 3/4" thick


TrusJoist
TJI® RIM BOARD


TimberStrand
Trus Joist MacMillan

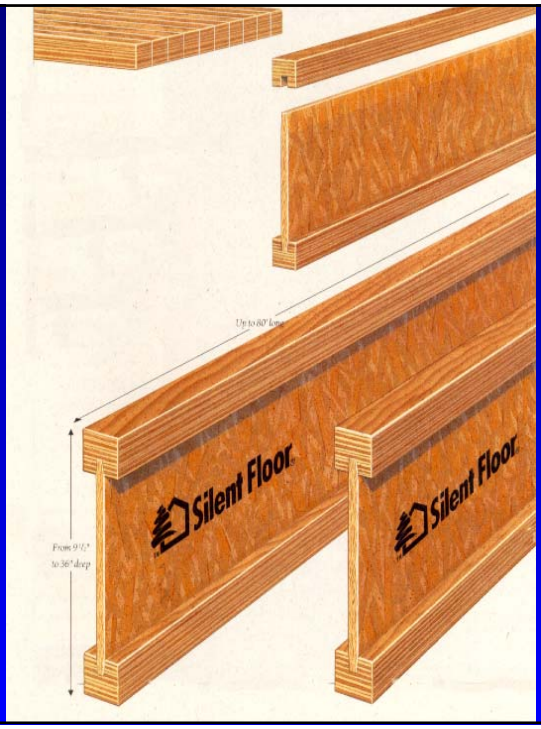

TimberStrand

Laminated Strand Lumber (LSL)

- Timberstrand is trade name
- Used for rimboard and framing lumber
- Design values are provided by manufacturer
- Manufacturer provides design assistance

Wood I-Joists

- Numerous manufacturers
- Used for floor joists and rafters
- Available in long lengths for longer spans
- Flanges made from:
  - sawn lumber (finger jointed)
  - LVL
- Webs made from:
  - plywood
  - OSB


Silent Floor
Silent Floor

Wood I-Joists

- Design values provided by each manufacturer
- Design assistance provided by some manufacturers
- Flexural design needs to account for additional shear deflection in addition to traditional bending deflection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