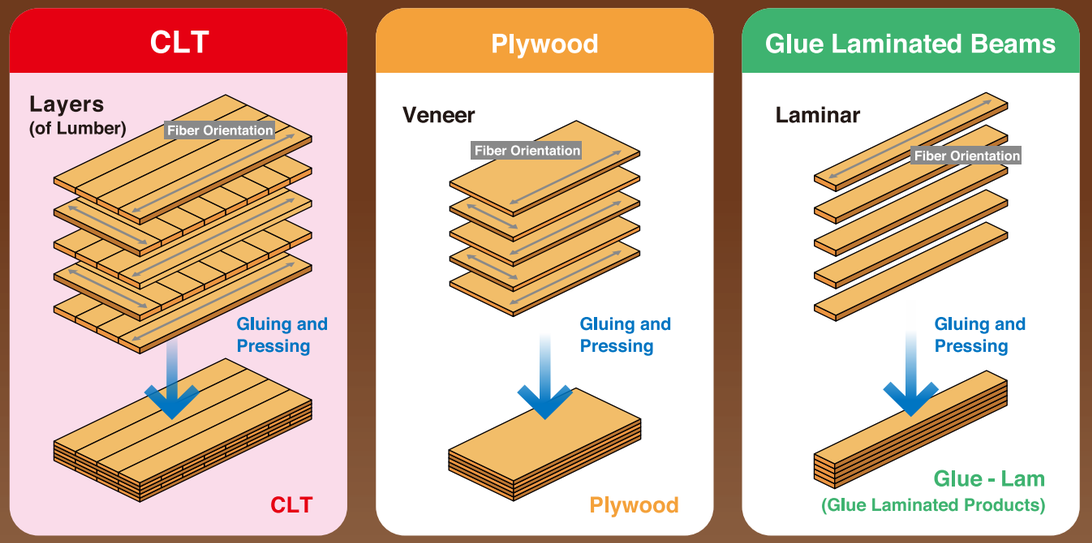
C L T

CLT stands for Cross Laminated Timber.

Large wood panels are fabricated by gluing layers of solid sawn lumber in multiple layers where the orientation of the edge glued lumber per layer is perpendicular to subsequent layers.
The concept was born in the mid 1990's and is currently being used for structural walls and floors in medium to large multi-story condominiums and commercial structures.
In Japan, locally harvested Sugi and Hinoki is commonly used in the fabrication of CLT structural panels.



The key differences in the processing of Logs, Fabrication of Panel Products and the Fabrication of Engineered Products

Processing Logs \ Along Direction of Fiber	Fabrication of Panel Products Cross Banding	Parallel
Sawn lumber	CLT	Glue-Lam
Veneer	Plywood	LVL

Illustrations by : Atsushi Miyatake, Chief Researcher at F.F.P.R.I. and Takafumi Nakagawa, Chief Researcher at N.I.L.I.M.

Main Features of CLT

Merits of CLT

Excellent Dimensional Stability

Contraction in the wood fiber differ depending on the direction of the fiber orientation. As the fiber orientation of each layer in CLT products are perpendicular to the next layer, the cross banding prevents and annuls the fiber contraction effect contributing to total dimensional stability of the product.

Lighter in Weight Than Concrete

The density of wood is approximately 1/5 of that of concrete, making it significantly lighter than concrete. It is easier to handle and easier to work on.

Superior Thermal Performance

Wood is a porous fiber with very low thermal conductivity characteristics making it approximately 13 times better than concrete in thermal insulation performance.

Fire Retardant Performance

As the wood burns, the surface chars and carbonizes creating layer of material that significantly slows the burn rate of the remaining material. Wood burns relatively easy but after the initial carbonization of the outer surface the burn rate slows significantly.

Ease of Handling and Processing

Wood is a naturally produced product, easy to cut, nail, screw,
shape and a multitude of other processing needs.
CLT panels are made entirely of wood and used primarily as structural assemblies for constructing buildings offering ease of construction and workability leading to higher cost performance.

Improved Construction Time

CLT panels are fabricated in a factory and pre-cut to fit the project. Panel sizes can be made as large as needed and limited only by handling and transportation requirements. Workload and assembly times on site is reduced significantly and helps in keeping a cleaner and uncluttered working environment at the job site.

CLT being processed at a pre - cut plant

CLT panels can be fabricated and processed to any shape and size to meet specific project requirements.

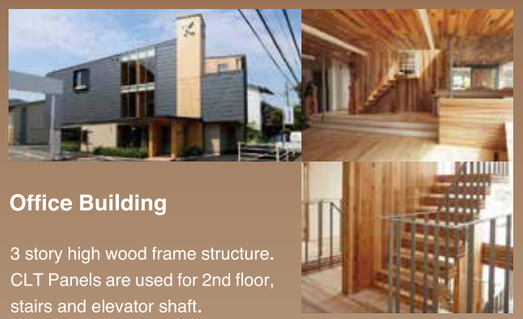
Building with CLT

Pre-Cut CLT Panels are delivered to the construction site on "as needed" basis and on a timely basis which not only reduces construction time but helps maintain a cleaner and safer working environment.

Building with CLT

Uchiko Ehime Prefectural High School 2 Story High Sports Club House

CLT is used as floor, wall and roof assemblies.



Office Building

3 story high wood frame structure. CLT Panels are used for 2nd floor, stairs and elevator shaft.