

Hybrid Excellence-Network VESD Conference

Studying wood as a sustainable & reliable construction material

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Why wood?

Wood is the only renewable construction material



use wood to **save** forests !

Why wood?

Reduces carbon footprint through CO₂ reduction and carbon sequestration.

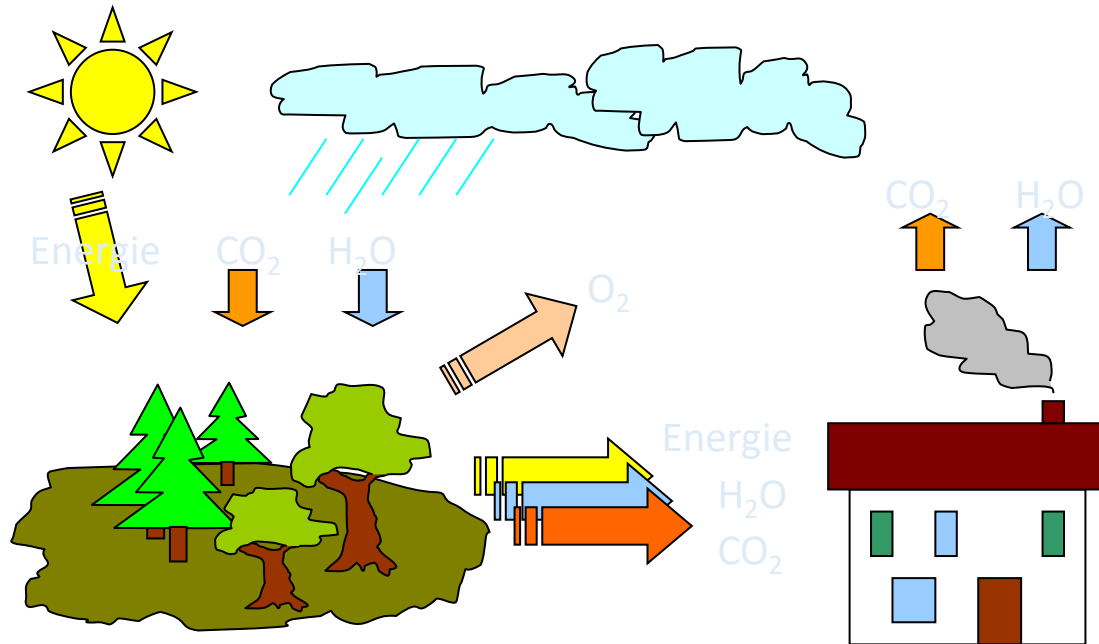
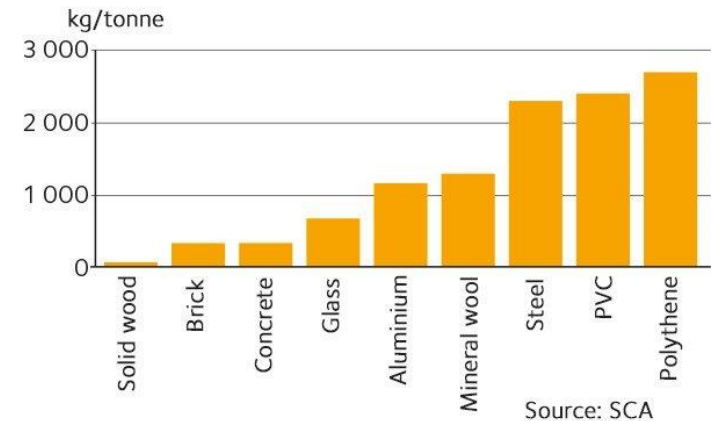


Diagram 7 Carbon emissions from manufacture of construction materials



The values above may vary depending on numerous factors, including energy type, transport and production methods. A Life Cycle Analysis (LCA) usually compares functional units such as kg/m² floor area in a floor structure. Carbon storage in wood is not reported in this diagram.

<https://www.swedishwood.com/wood-facts/about-wood/wood-and-the-environment/wood-is-a-sustainable-construction-material/>

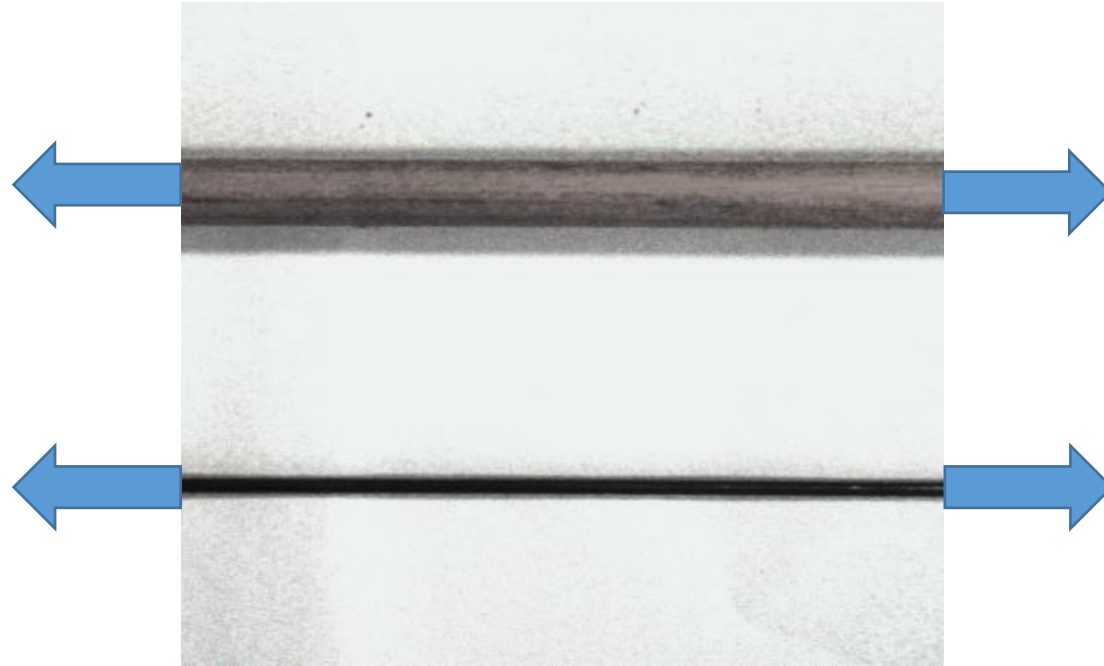
Why wood?

It is as «**resistant**» as steel!



	concrete	steel	glue laminated timber
strength (MPa)	30 (comp.)	450 (tension)	28 (bending)
density (ton/m ³)	2.40	7.85	0.45
ratio	12.5	57.3	62.2

same weight:



same load bearing capacity!

Why wood?

Reduces carbon footprint - how to compare?

	Embodied Energy (kWh) per ton		Embodied Energy (kWh) per m³
Steel (profile)	11 600	Reinforced Concrete	1975
Timber	700	Timber	315

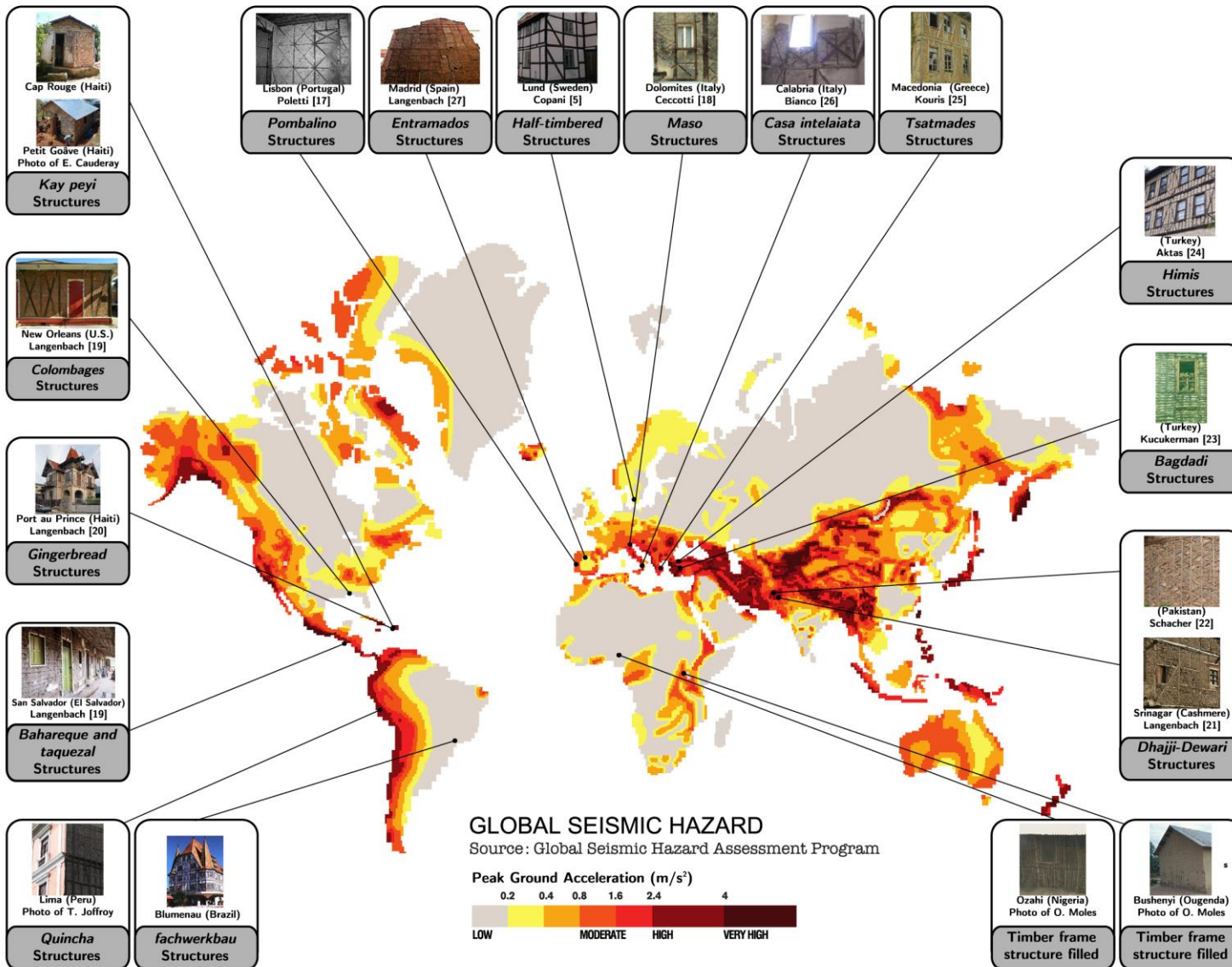




Old Timber Structures

Still standing after hundreds of years







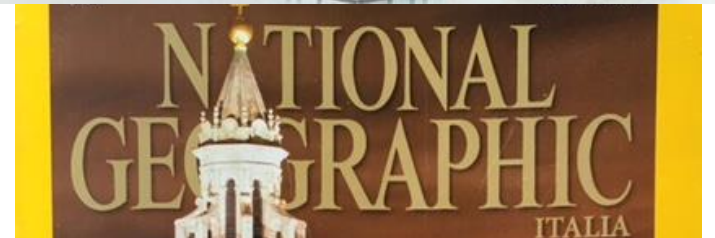
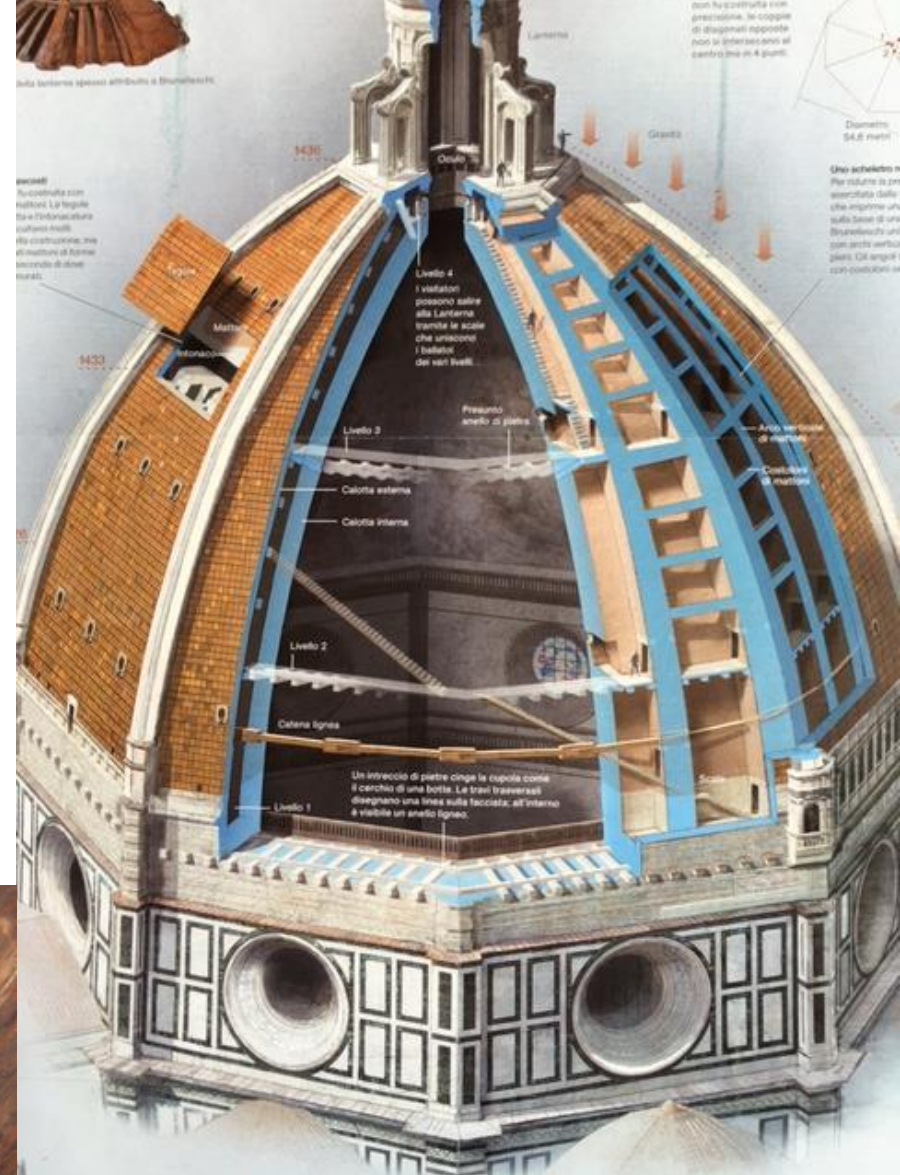
(photo: Diskaya, H.)

Türkiye



(photo: Langenbach, R.)

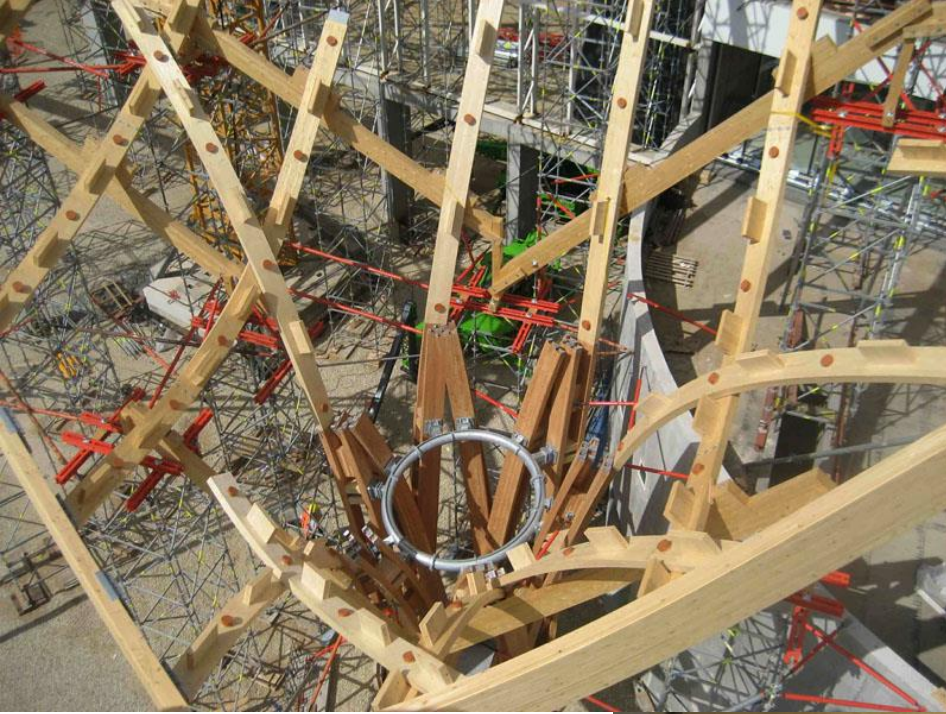


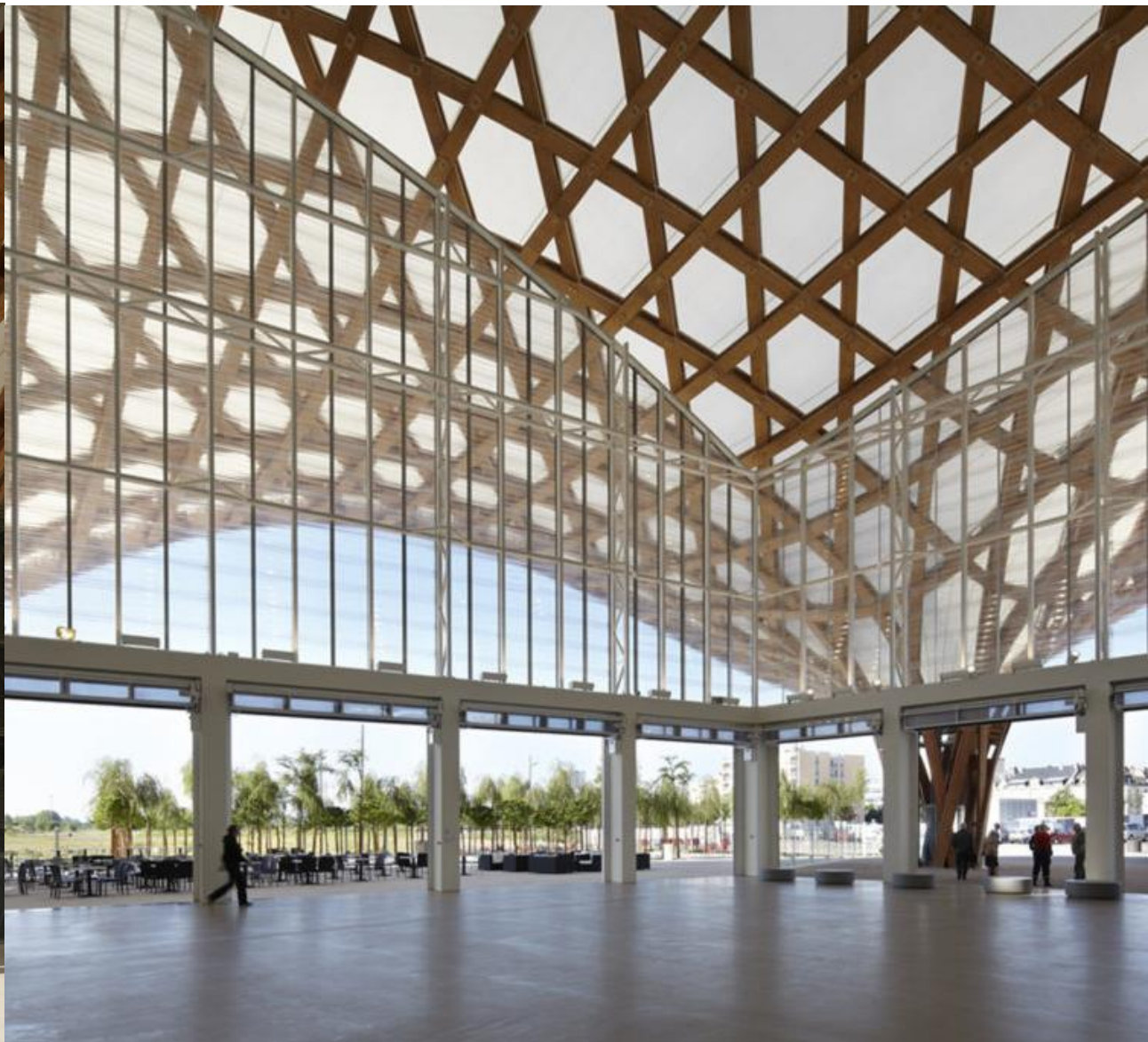


Modern Timber Structures

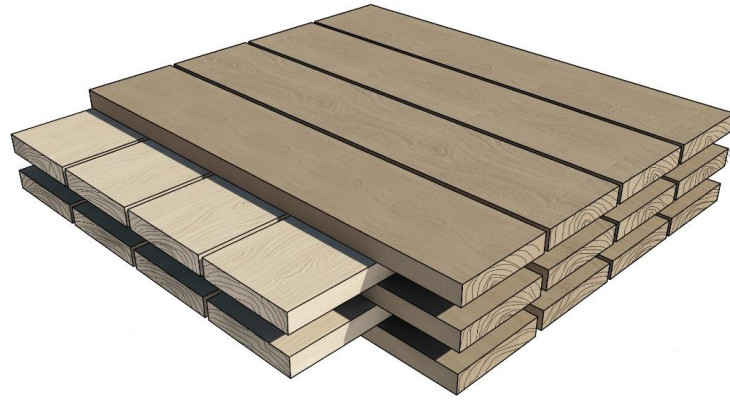








X-Lam aka CLT
in plane
stabilized and
self-reinforced structural wood



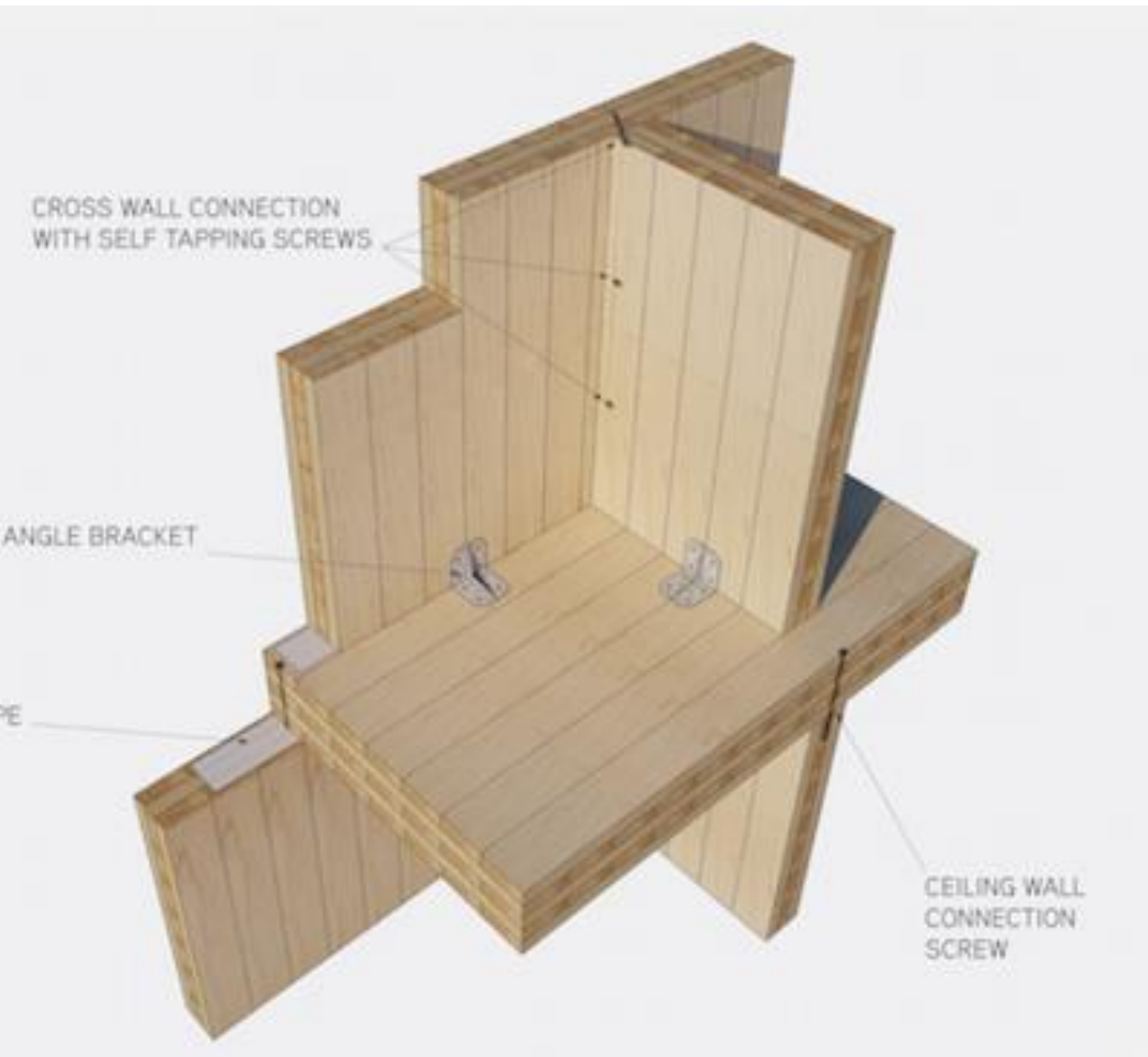


Fig. 7.6 - Examples of metal fasteners, ties and connectors
 A = shear connector, B = anchor tie (anchor bolt not shown)
 C = fasteners for attaching shear connectors/ties to CLT
 D = self-tapping metal screws



2



4



6

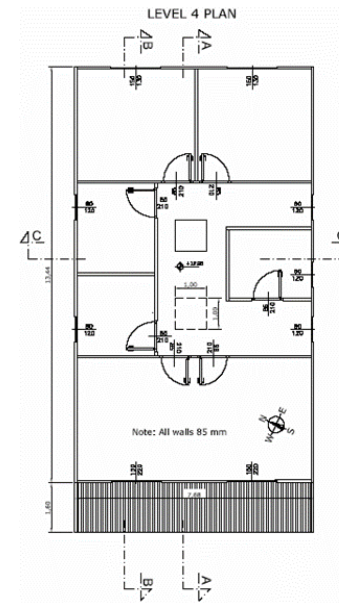
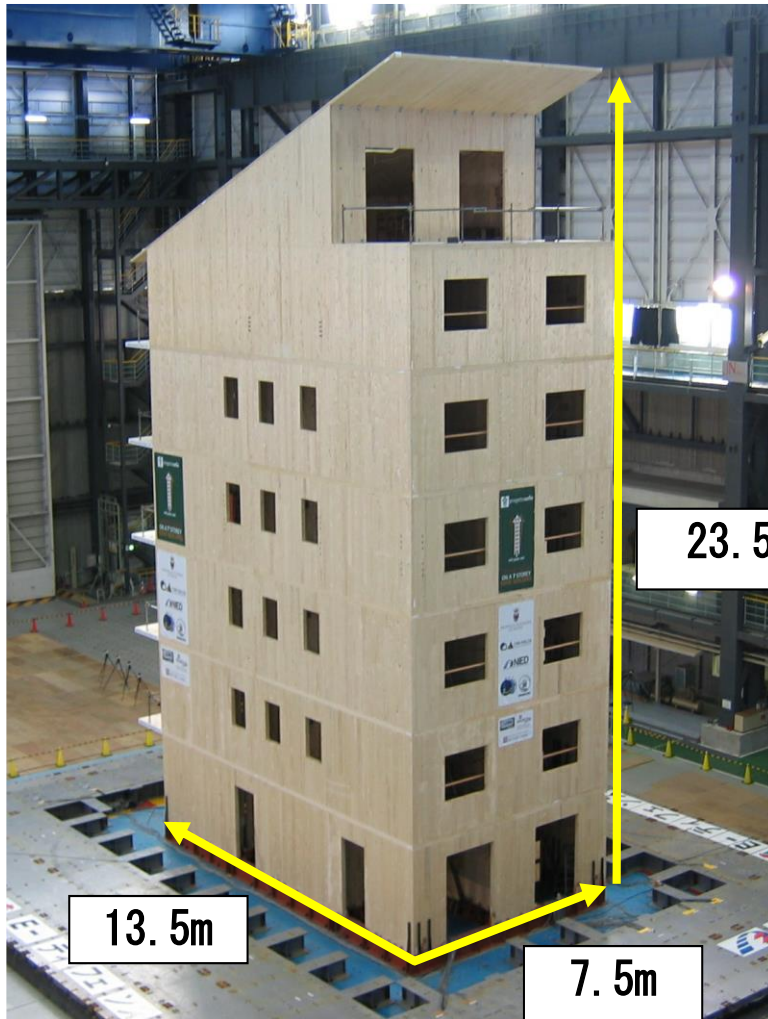


10

DAYS !



TEST SISMICO IN MIKI 23 ottobre 2007 su un edificio SOFIE[®] di 7 piani



Peso proprio edificio **120 t**
zavorra in lastre di acciaio **150 t**





Thank you for attending