

MATERIAL POTENTIALS | MASS TIMBER

Urban Tall Timber Building / Structure Project

Wood is one of the world's oldest building materials. It is elemental and renewable. Over time, we have seen building technologies turn away from wood to materials like steel and concrete in order to build larger and taller, but as we slowly learn to consider the true realities of sustainability, wood may offer new potentials to the architecture and construction industry. New advancements in engineered wood products are offering building technologies that are considerably less carbon intensive than current commercial alternatives while remaining strong, durable, flexible, modular and perhaps most interestingly, naturally renewable.



These new advancements in wood construction fall into a category known as Mass Timber. Mass Timber can be defined as solid panels of wood engineered for strength through laminations of different layers and can vary in size up to 8 feet wide and 60 feet long and thickness between a few inches and 16 inches thick. Ultimately, this newly engineered group of sticks and panels can now be assembled into extremely tall structures over 30 stories in height. (Green, The Case for Tall Wood Buildings) The four primary Mass Timber products that we will explore in the studio are Glue Laminated Beams, Cross Laminated Timber, Laminated Veneer Lumber, and Laminated Strand Lumber.

In North America, we are losing forests to beetles such as the mountain pine beetle and the emerald ash borer. These species threaten to kill massive numbers of North American trees, and as trees die and rot they release all of the carbon they have sequestered during their lives back to the atmosphere. Mass timber construction gives us the potential to utilize the dying forests as a building material that will continue to store the carbon it has absorbed during its life instead of releasing it back into the atmosphere. Urban living and big buildings in the city are one very real potential for the future, and Mass Timber construction now allows us to satisfy this potential in wood.



This studio will approach the terms comprehensive and institution through the investigation of a material resource and new building technologies. We will construct Mass Timber elements at full scale and test them for their strength and fire resistance. We will investigate how Mass Timber buildings are constructed and detailed, and we will use this knowledge to drive and guide our comprehensive design process.

The studio will then seek a small urban site to construct a tall Mass Timber building. Potential typologies include residential or retail/office space, and while the site and use will be negotiable the material and construction technology will remain the primary driver of criteria and design decisions. Additionally, We will work with an engineer from SOM who recently was part of a team that made a proposal for a 42 story Mass Timber tower in Chicago. Benton Johnson of SOM will participate in several studio sessions over the course of the semester to provide background on the topic as well as structural and detailing guidance.

RESOURCES:

<http://www.ctbuh.org/LinkClick.aspx?fileticket=53BAI29tnpk%3D&tabid=5831&language=en-GB>
<http://arstechnica.com/business/2012/05/wood-2-0-mass-timber-and-the-tall-buildings-of-tomorrow/>
<http://ideas.ted.com/why-tall-wooden-buildings-must-be-our-future-a-visual-essay-by-michael-green/>
http://www.som.com/news/ad_interviews_benton_johnson__som