Rethinking the Building
From the Ground Up

$x = \sqrt{y} \times i$

*where:*

- $x =$ building height
- $y =$ tree height
- $i =$ imagination

Thomas Maness
Dean, College of Forestry
Oregon State University
Five Reasons We Care About Mass Timber Buildings

1. Reduce global CO2 emissions
2. More globally competitive forest sector
3. Manufacturing jobs in rural communities
4. Use for timber from ecological restoration activities
5. Increase public awareness of benefits of forestry
China's Rapid Urbanisation

Urban Population (millions)

Year


July 27, 2015
Plantations Around the World

[Map showing plantations around the world with data from 1990 and 2005.]

Source: FAO 2006a.
MASS TIMBER
CHANGES EVERYTHING.

STRUCTURALLY
SPEED OF CONSTRUCTION | COST
FIRE SAFETY
DURABILITY AND LIFESPAN
HEALTH OF OCCUPANTS
ENVIRONMENTAL PERFORMANCE
Carbon Capture and Storage Technology

1. Conventional coal-fired power plants release CO₂ directly into the atmosphere. Plants equipped with CCS will capture much of the CO₂ instead.

2. Liquid CO₂ can be transported by pipeline or truck.

3. CO₂ can be injected and stored deep underground.
89.9M
NOBLE
FIR

90.7M
TASMANIAN
BLUE GUM

94.9M
GIANT
SEQUOIA

96.9M
PHILLIPINE
ROSEWOOD

96.9M
SITKA
SPRUCE

99.4M
COAST
DOUGLAS
FIR

99.6M
MOUNTAIN
ASH

115.6M
COAST
REDWOOD

33

4
Bridport House, London England:
- Summer 2011
- 10 weeks construction time
- CLT Produced by Storo Enso in Austria

Advantages:
- Speed of Construction
- Lightweight
- Carbon sequestration
- Natural materials, healthy house
Interior Woodscapes

UBC FOREST SCIENCES CENTRE ATRIUM SPACE
A Healthier Work Environment

YALE SCHOOL OF FORESTRY
- Elementary School
- Supported green roof
- CLT covered by wood cladding
- > 65K sqft
Forte’, Victoria Harbor, Melbourne, Australia
Architect: Lend Lease

- Completed in 2012
- 10 stories
- ~ 105 ft. tall, > 18.6 K sqft.
- 3 million in R&D
- Poor soils required a much lighter building
LCT ONE

Architekten Hermann Kaufmann

Dornbirn, Austria

Completed 2012
MURRAY GROVE

Waugh Thistleton Architects

London, England

Completed 2009
STRANDPARKEN

Windgardh Arkitekthontor
Sundbyberg, Sweden
Completed 2014
TREET
Artec Architekten
Bergen, Norway
To be completed this year
RUNDESKOGEN

Helen & Hard, dRMM

Sandnes, Norway

Completed 2014
HO HO PROJECT

Rudiger Lainer and Partner

Vienna, Austria

To be Completed 2016
HSB 2023

C.F.Møller
Stockholm, Sweden
To be Completed 2023
Building Codes for Tall Wood

Prescriptive Code
• Use prescribed by code
• The code clearly spells out the use of material
• Mature Building Technology
• Easy and inexpensive to meet

Performance Code
• Not prescribed in code
• Research & testing to demonstrate performance
• Innovative Building Technology
• Expensive and time consuming
Action Items
Building Codes

1. Encourage state code to recognize performance standards
2. Funding support for early adopters
3. Support research in code issues, particularly fire safety
4. Provide technical support and information to builders
Action Items
Market Penetration

1. Get demonstration projects built
2. Research on life cycle benefits
3. Align around a green building standard
4. Design of new building materials & connections
5. Design of new fire safe elements and structures
6. Produce reliable product information
Action Items
Manufacturing

1. Workforce development
2. Product standardization along the supply chain
3. Data standardization between design, construction and manufacturing
4. Increase throughput in manufacturing
Action Items
Forestry Issues

1. Increase plantation productivity and grow the right product
2. Rationalize public timber policies aligned with ecosystem restoration goals
3. Focus on sustainability and certification
Discussion