Expanding the Market for Timber in the Georgia Construction Industry: The Case for Mass Timber

Russell Gentry, PhD, PE
Schools of Architecture and Civil Engineering
Georgia Institute of Technology
Georgia House of Representatives
Rural Development Council
25 October 2017
Mission: To create new building materials and systems, and the infrastructure to support their implementation.

Quad-Pod Solar Canopy
Prof. Tristan Al-Haddad
Quest Renewables
Georgia Tech Research Institute
U.S. Department of Energy

Prefabricated Veneer Masonry
Danny Griffin
David Biggs
Jollay Masonry

CLT for Military Applications
Lt. Col. Kate Sanborn
Dr. Lauren Stewart
USDA Forest Service
US Army Corps of Engineers
Army Research Lab – Aberdeen
U.S. Military Academy
Georgia Forestry Industry

Gentry Research Projects and Collaborators
Mission: To create digital worlds that describe and automate the work of designing and delivering building systems.

Living Building Challenge: Red-List Materials
Priya Kandharkar
Dr. Dennis Shelden
LAS + Skanska
ARCOM
Georgia Tech SLS

Design Assist: Architectural Precast
Jeffrey Collins
Castone
Jack Pyburn
Autodesk

BIM for Masonry
Shani Sharif
Andres Cavieres
Jeffrey Collins
Prof. Chuck Eastman
BIM-M Initiative

CLT Structural Engineering Workflow
Memhet Bermek
Dr. Dennis Shelden
Katerra Technologies

Gentry Research Projects and Collaborators
Why CLT? Why Georgia?

• Ability to take wood construction beyond the 5-story building code limit
• Mass timber demonstrates fire resistance far greater than traditional wood stud and joist framing
• Atlanta is densifying – consequently 5-story residential buildings are no longer cost effective
• Potential to use tremendous amounts of high-quality saw timber
• Job growth due to advanced manufacturing including CLT panel production and CNC fabrication for rapid assembly
• Reduction in jobsite labor force
• CLT is capturing the imagination of architects, engineers and building owners in the Pacific Northwest – we have the potential to remake Atlanta as a city of wood buildings – constructed with Georgia timber
Military Applications for Cross Laminated Timber
U.S. Army Temporary Housing Construction Budget
$150,000,000 per year
Cross-Laminated Timber - CLT
Mid-Rise Residential Towers

Technology
Katerra Technologies
Pettigrove Building

107,000 square feet walls
550 MBF kiln-dried framing lumber

130,000 square feet floors
990 MBF kiln-dried framing lumber

1200 linear feet glulam columns and beams
120 MBF kiln-dried framing lumber

≈$700,00 kiln-dried framing lumber @ $400 MBF

≈$7,000,000 cost of CLT framing package @ $60 / SF

10X multiplier: salaries, CLT production, CNC machining, adhesives, transportation, erection

More that just timber!
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