

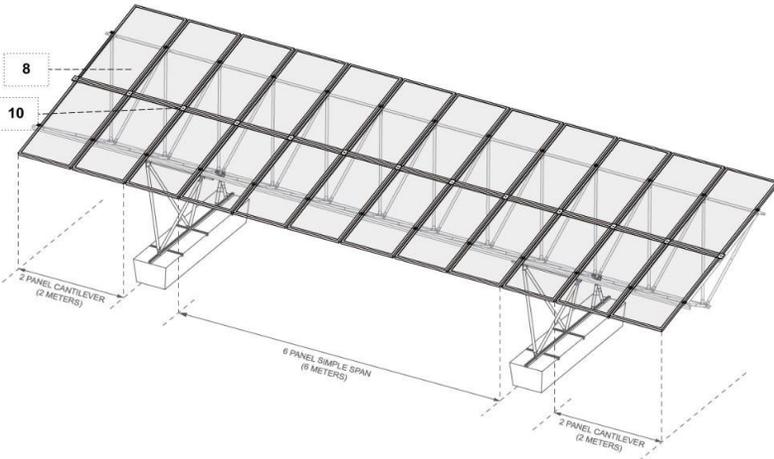
Expanding the Market for Timber in the Georgia Construction Industry: The Case for Mass Timber

Russell Gentry, PhD, PE
Schools of Architecture and Civil Engineering
Georgia Institute of Technology

Georgia House of Representatives
Rural Development Council

25 October 2017

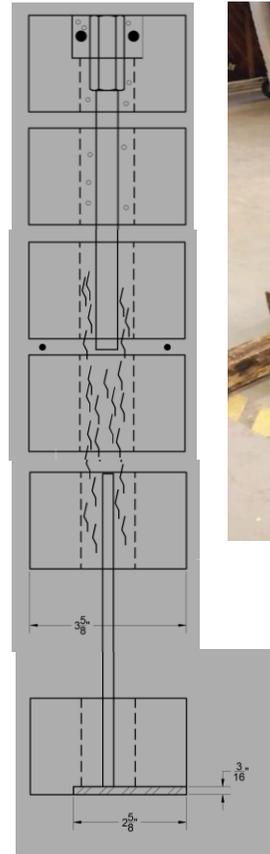
Mission: To create new building materials and systems, and the infrastructure to support their implementation.



Quad-Pod Solar Canopy

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

(A)



Prefabricated Veneer Masonry

Danny Griffin
 David Biggs
 Jollay Masonry

(B)



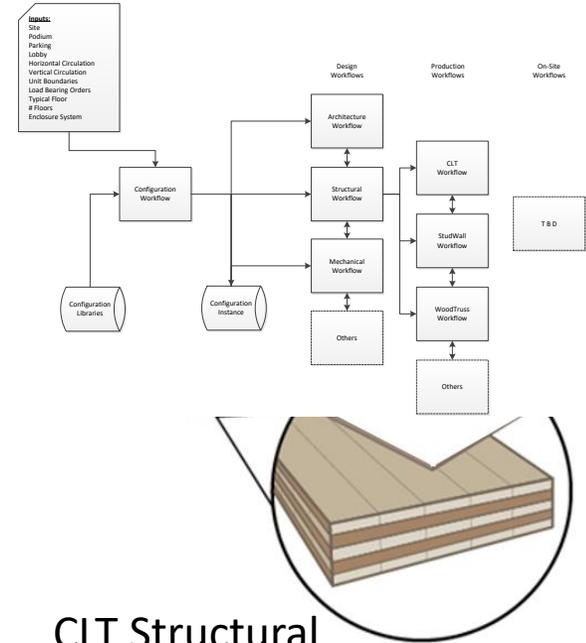
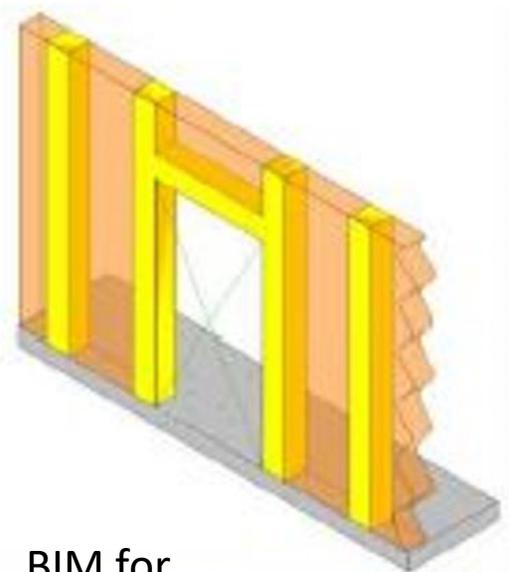
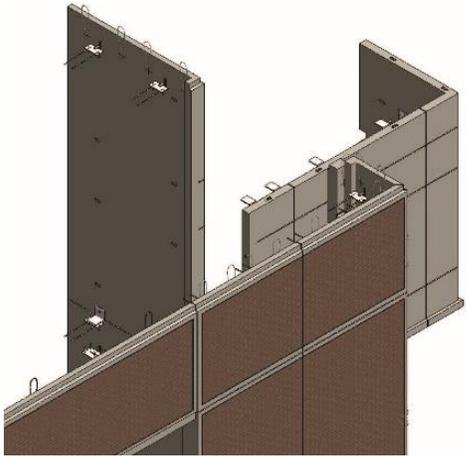
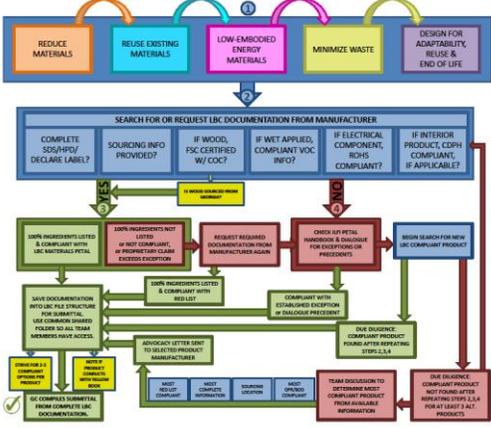
CLT for Military Applications

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

(C)

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

(A)

Design Assist: Architectural Precast

Jeffrey Collins
 Castone
 Jack Pyburn
 Autodesk

(B)

BIM for Masonry

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

(C)

CLT Structural Engineering Workflow

Memhet Bermek
 Dr. Dennis Shelden
 Katerra Technologies

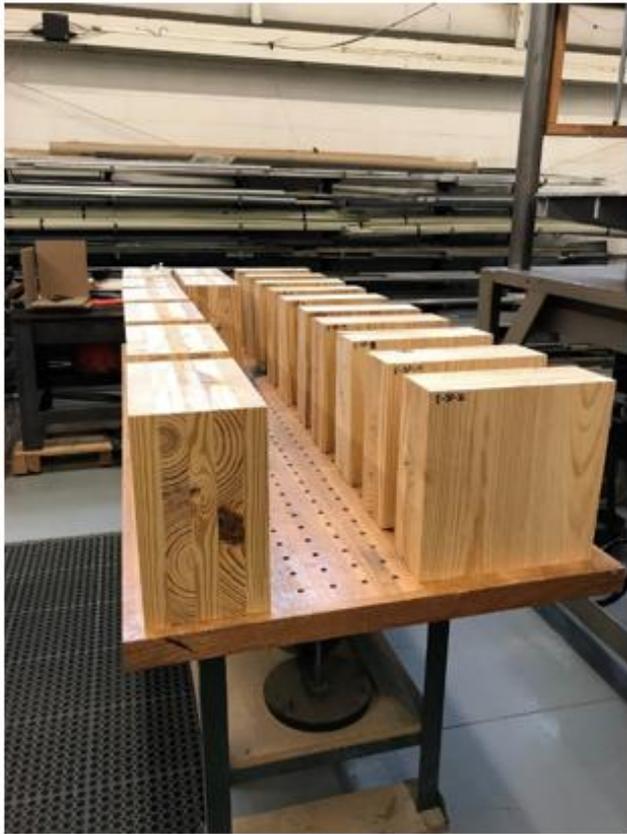
(D)



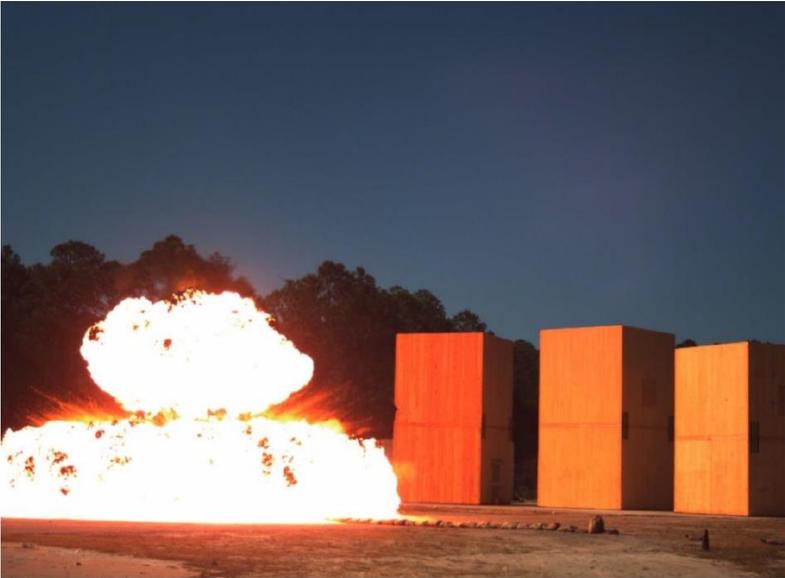
T3 Office Building
Minneapolis, Minnesota

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

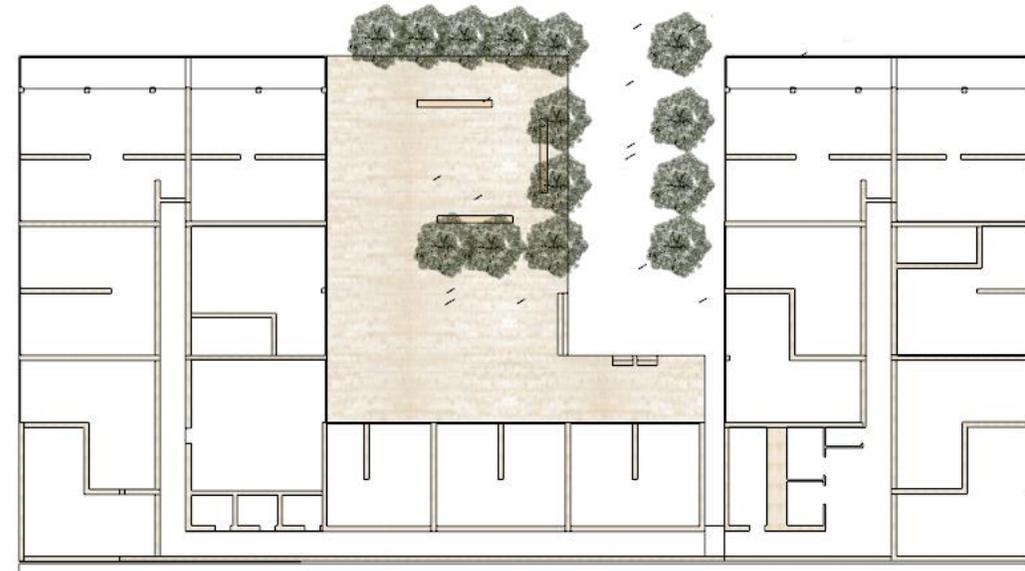
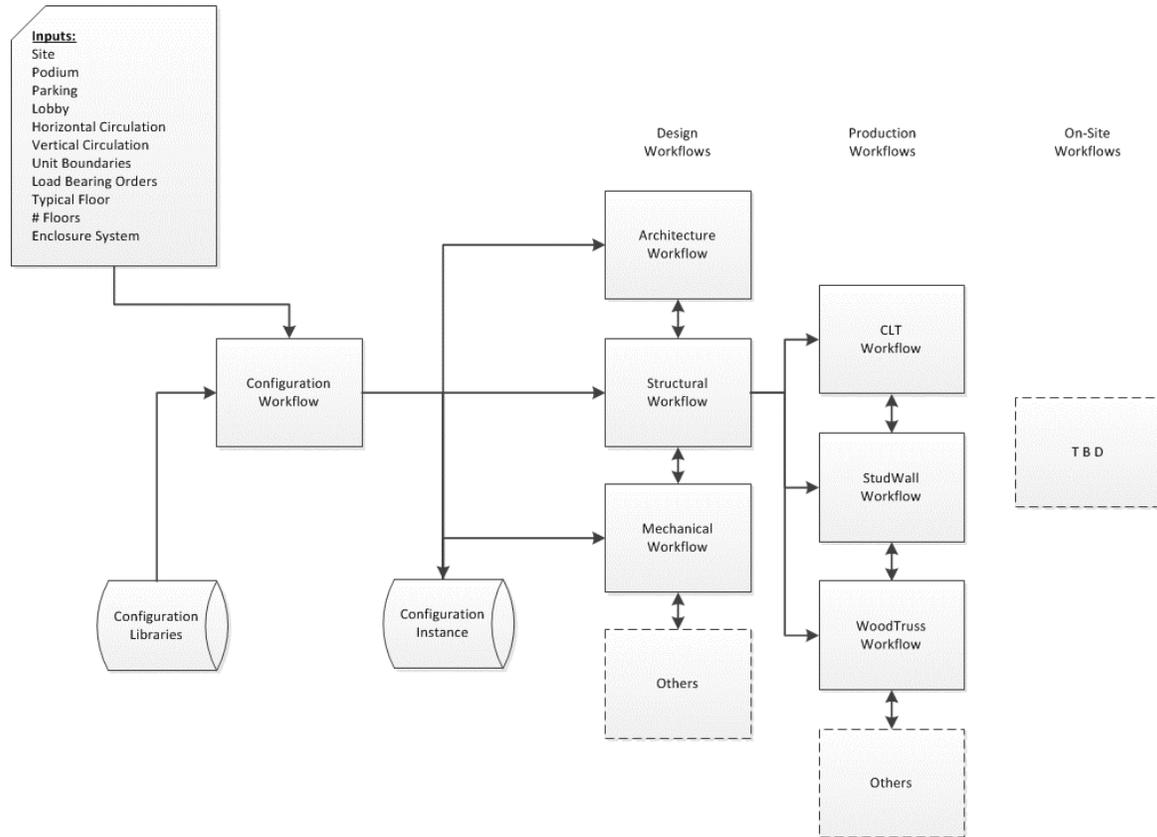


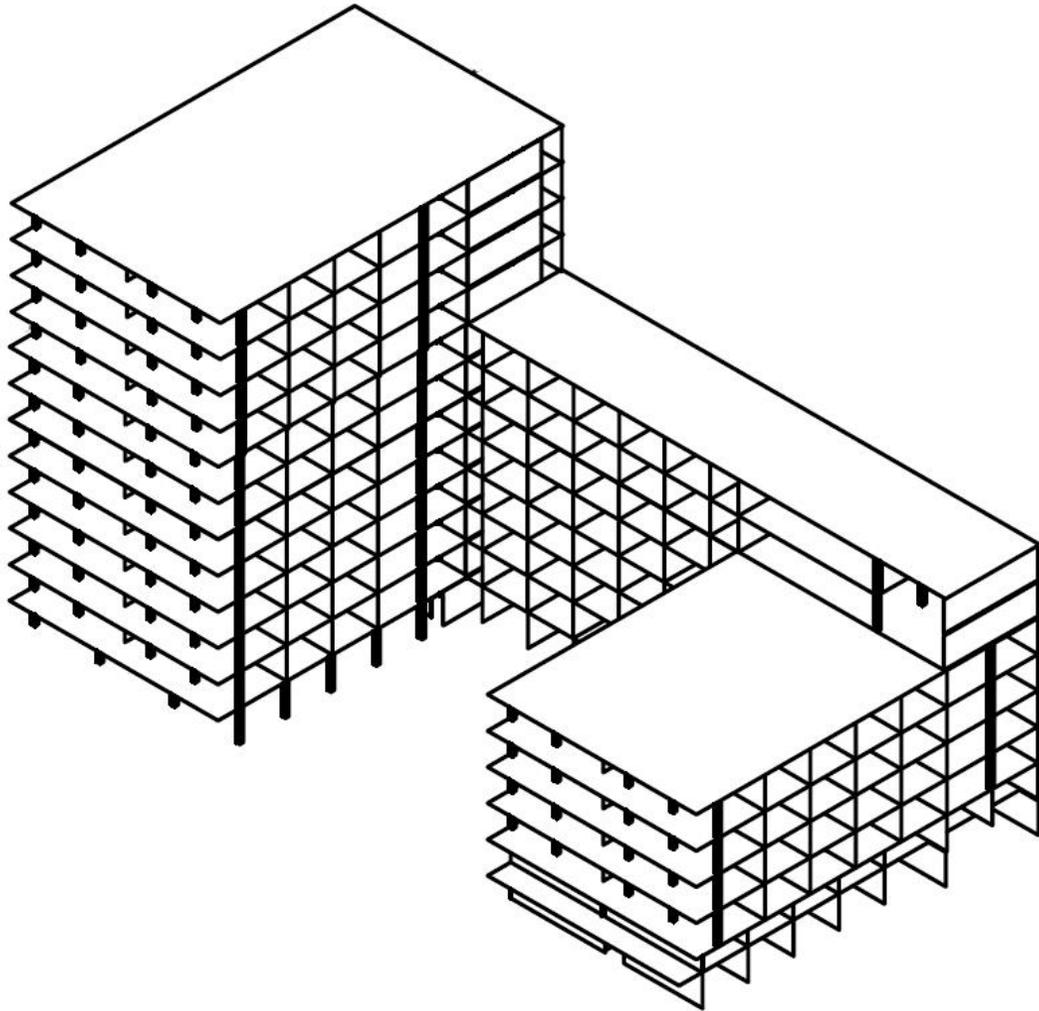
U.S. Army Temporary Housing Construction Budget
\$150,000,000 per year

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

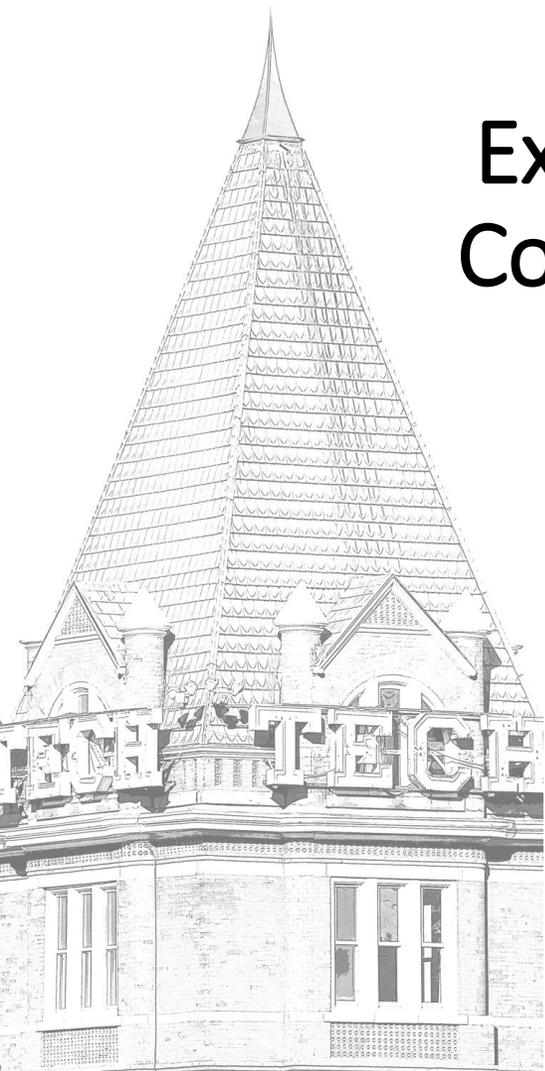
1200 linear feet glulam columns and beams
120 MBF kiln-dried framing lumber

≈\$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 than just timber!



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