

*The First Cross Laminated
Timber School in the US:
A Builders Perspective*

Franklin School Project
West Virginia - 2014

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Course Description

The Pendleton County School District in West Virginia is the first in the United States to build a new school in cross laminated timber. With panels for the 40,000-square-foot facility installed in less than three months by a crew of five carpenters and a crane operator, CLT represents a new world of opportunity for the growing district. In this presentation, the CLT erector for the project will discuss the advantages and challenges of using this new material in the context of structure, building envelope and exposed wood aesthetic. He'll also share insights into the planning process, equipment and labor, and how CLT construction differs from typical methods.

Disclaimer: This presentation was developed by a third party and is not funded by WoodWorks or the Softwood Lumber Board.

Learning Objectives

- Examine the project goals for Franklin Elementary School and how wood—and CLT in particular—helped to achieve them.
- Describe how CLT was used and the benefits and challenges experienced during the design and construction process.
- Evaluate the construction systems used on this project, including structural configuration and connections, building enclosure and exposed elements.
- Consider the unique construction aspects associated with building a CLT structure, with an emphasis on the planning process, equipment and labor, and how the process for Franklin School differed from a typical regional school design process.

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- This course is registered with **AIA CES** for continuing professional education. As such, it does not include content that may be deemed or construed to be an approval or endorsement by the AIA of any material of construction or any method or manner of handling, using, distributing, or dealing in any material or product.
- _____
- Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.





Agenda

- Introduction to the Project
- Site Setup
- Project Management
- Communications
- CLT Panel Installation
- Summary



Cross Laminated Timber (CLT)

- What is it?
- Current sources?
- What does it replace?
- Average Size & Weight of panels?

Cross Laminated Timber (CLT)

- Layers stacked lengthwise
- Pine, Spruce, Oak, etc. ?
- Resin?
- Pressure?



CLT Structure

Advantages

- Ease of installation
- Pre-cut panels
- Easily modified
- Lighter than concrete
- Green Product

Challenges

- Handling
- Crew training



CLT Building Envelope

Advantages

- Openings precut
- Solid surfaces
- Structural integrity
- Stackable units

Challenges

- Weather protection
- Accessing connections



CLT Exposed Wood Aesthetic

Advantages

- Tight seams
- Clean structure
- Sustainable finish

Challenges

- Preserving surface
- Fasteners
- Predetermining the exposed areas





Introduction to the Project

- Purpose
- Location
- Materials
- Dimensions
- Workforce
- Schedule



Site Setup

- Material locations
- Staging for installation
- Equipment access
- Working area for customization of materials
- Tool Storage

Site Setup



Site Setup





Project Management

- Project Direction (who's in charge / my role)
- Status Reviews (progress to plans-who participates)
- Regulatory Inspections (number of inspectors & timing)
- Access to Architects (changes on the fly)
- Training for Crew

Training

- Panel connections
- Rigging panels for crane lifts
- Modifying panels
- Operating certifications for equipment (OSHA)
- Handling and positioning panels
- Hardware applications
- Safety



Communications

- Project status & daily goals
- Site communications (between workers, operators, etc.)
- Weekly Crew Meetings
 - Safety
 - Progress
 - Time line adjustments

CLT Panel Installation

- Securing to Foundation
- Panel to Panel Connections
- Placing Panels
- Rigging for lifts



CLT Panel Installation



CLT Panel Installation



Keys to Success

Level-Square-Plumb

- Foundation Right
- Level Sill Plates
- Site Set-up
- Designated Staging Area
- Equipment Handling Expertise
- Dedicated and Informed Crew

Summary

- CLT Wood Panels are a viable building material for commercial applications
- Installation is very straight forward, although there are several “tricks to the trade”
- Sequential progression of panel installation is critical due to the design of precut packages
- Installation process may need to be modified due to weather conditions
- Training for the crew is essential for safety, efficiency and quality of the project

Questions?

This concludes The American
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