STEM Teaching and Learning Facility and Shaw Lane Power Plant Renovation and Classroom Addition

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

PROGRAM GOALS

1. Improve and enhance the undergraduate learning experience, support teaching and learning, attract more students in STEM disciplines, and better prepare them for professional careers in STEM fields.

2. Bring together outdated teaching laboratories and instructional support spaces; support changes in STEM curriculum and teaching methods.

3. Create a campus hub for teaching and learning across the sciences, arts and humanities.

BUILDING PROGRAM

- Undergraduate Teaching Laboratory space of approximately 120,000 GSF
- Modular, flexible active learning teaching labs
- Student breakout spaces, project labs in support of curriculum innovation
- STEM Gateway courses in:
  - Biology
  - Chemistry
  - Computer Science
  - Materials Science
  - Physics
MICHIGAN STATE UNIVERSITY: STEM

$110.1 MILLION BUDGET

SCHEDULE
COMPLETION DATE:
Fall 2020

120,000 Sq. Ft. new construction
40,000 Sq. Ft. renovation space
16,000 Sq. Ft. new classroom space
STEM Informal Spaces

Inquiry Based

Interactive

Innovative Teaching

Interdisciplinary
Shaw Lane Power Plant
Existing Interior 3D Scan –
Along West Wall
Looking North
Add Powerplant

Classroom Addition

STEM Scope
Why Timber?

- Integration with MSU Forestry Department
- Building as a teaching tool
- Stimulates MI timber industry
- Embraces sustainability
- Demonstrates innovation
- Creates a showcase “WOW” facility
Mass Timber Advantages

• Creates a showcase “WOW” facility
• Reduces scope (minimized Drywall and Acoustical Ceilings)
• Promotes/supports the timber industry
• Supports sustainability efforts
• Releases MEP/Arch trades sooner
Mass Timber Challenges

- Longer Preconstruction Process
- Potential Cost Concerns
- Non-Traditional Procurement
- Regional Availability
- Qualified Erectors
- Protecting Finished Installed work
Basement
Level One
Level Two
Level Three
Level Four
Typical Lab Module
Typical Lab Module
Mass Timber Schedule

- Potential for smaller Foundations
- Faster Erection (Prefabrication)
- MEP Coordination by level & Install Faster
- Less Finishes with Exposed Timber
- Potential Schedule Savings
  Mass Timber vs. Steel

Earlier Start for Trades
Following Timber Structure
Typical Erection Sequence
Typical Erection Sequence
Typical Erection Sequence
Typical Erection Sequence
STEM Teaching and Learning Facility
STEM Teaching and Learning Facility
STEM Teaching and Learning Facility
Entering STEM from Southwest
South STEM 2\textsuperscript{nd} floor Commons
WHAT DID WE LEARN?
Mass Timber Considerations

Structural Design

Design Details

Installation
Mass Timber Considerations: Structural Design

University Standards vs. Building Code
Vibration Analysis
Right Sizing Timber
Fire Resistance/Panel Thickness
Mass Timber Considerations: Design Details

Acoustics
Architectural Aesthetics
Mass Timber Geometry
Virtual Design/Construction
Mass Timber Considerations:
Installation

Hoisting/Sequencing
Moisture Management
Protection of Material
This concludes The American Institute of Architects Continuing Education Systems Course

QUESTIONS?

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