MICHIGAN STATE UNIVERSITY

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

Presented by **Kevin Marshall, AIA, LEED AP BD+C**

TDS

ELLENZWEIG

GRANGER
ADVANCE THE ART OF BUILDING

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Bring together outdated teaching laboratories and instructional support spaces; support changes in STEM curriculum and teaching methods.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

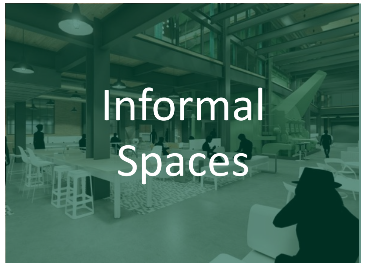
40,000 Sq. Ft.
renovation space

16,000 Sq. Ft. new
classroom space

Inquiry Based

Innovative Teaching

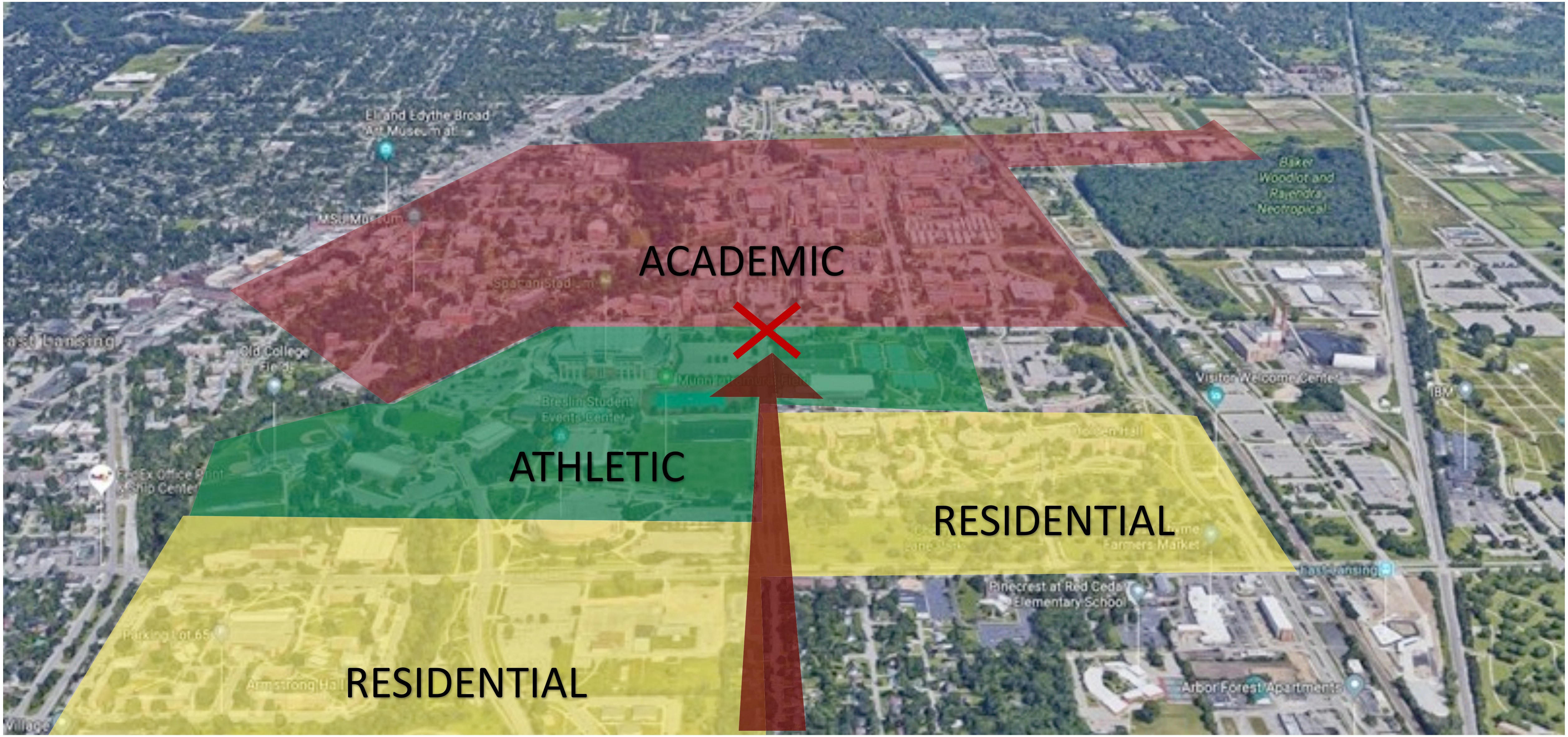
STEM



Interactive

Interdisciplinary


Spartan Stadium
Wells Hall
Bessey Hall
Red Cedar River
College of Education
Spartan Bookstore
MSU International Center
38
N Shaw Ln
W Shaw Ln
S Shaw Ln
39
40
Abrams Planetarium
Anthony Hall
Clara Bell Smith Center
College of Engineering
Department of Chemical Engineering
MSU Dairy Store
Biomedical and Physical Sciences
MSU Outdoor Tennis Courts
Red Cedar Rd
Farm Ln



ACADEMIC
ATHLETIC
RESIDENTIAL
RESIDENTIAL


Spartan Stadium
Wells Hall
SPARTANS
Parking Area 56

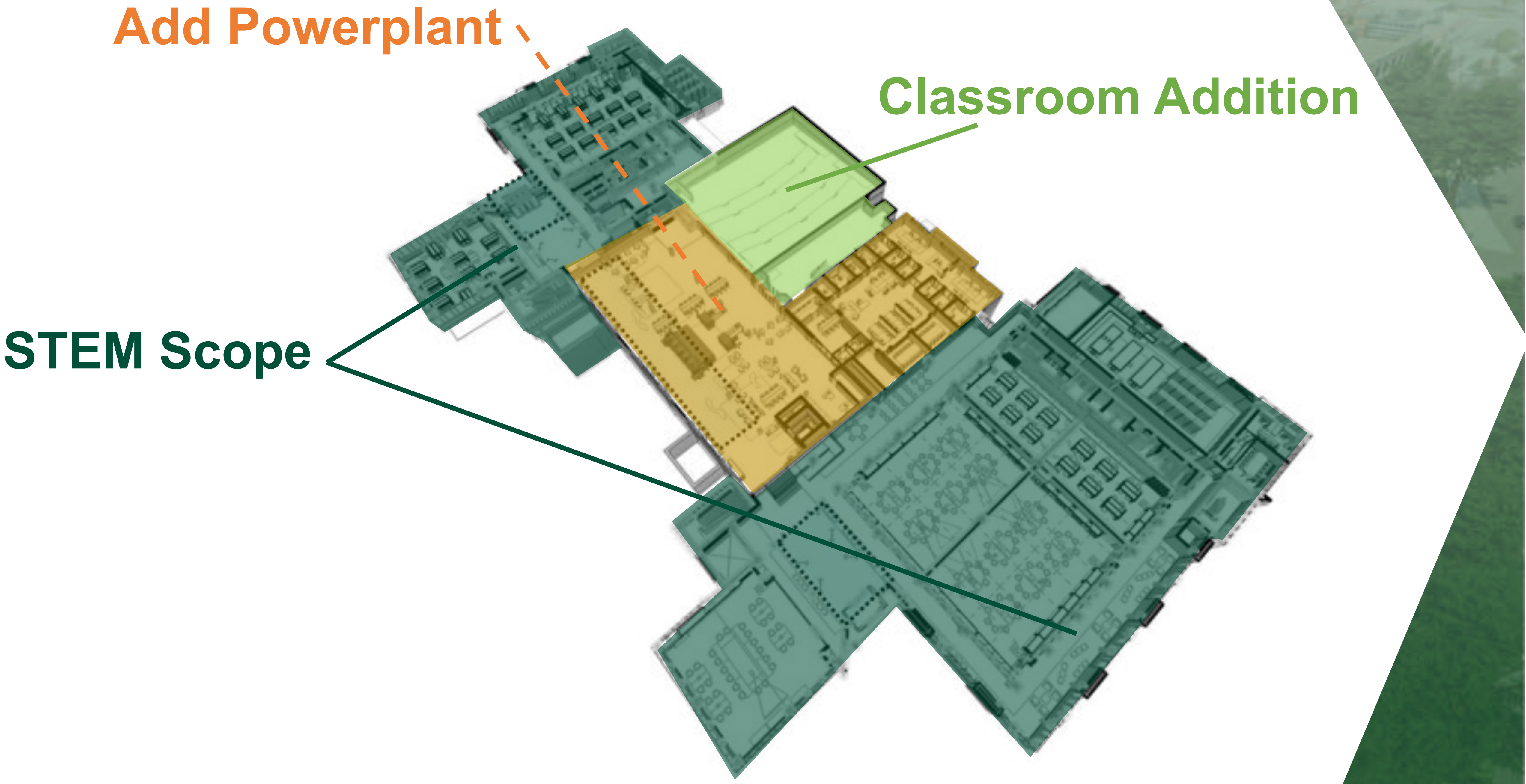
Shaw Lane Power Plant Existing Interior 3D Scan –

Along West Wall Looking North

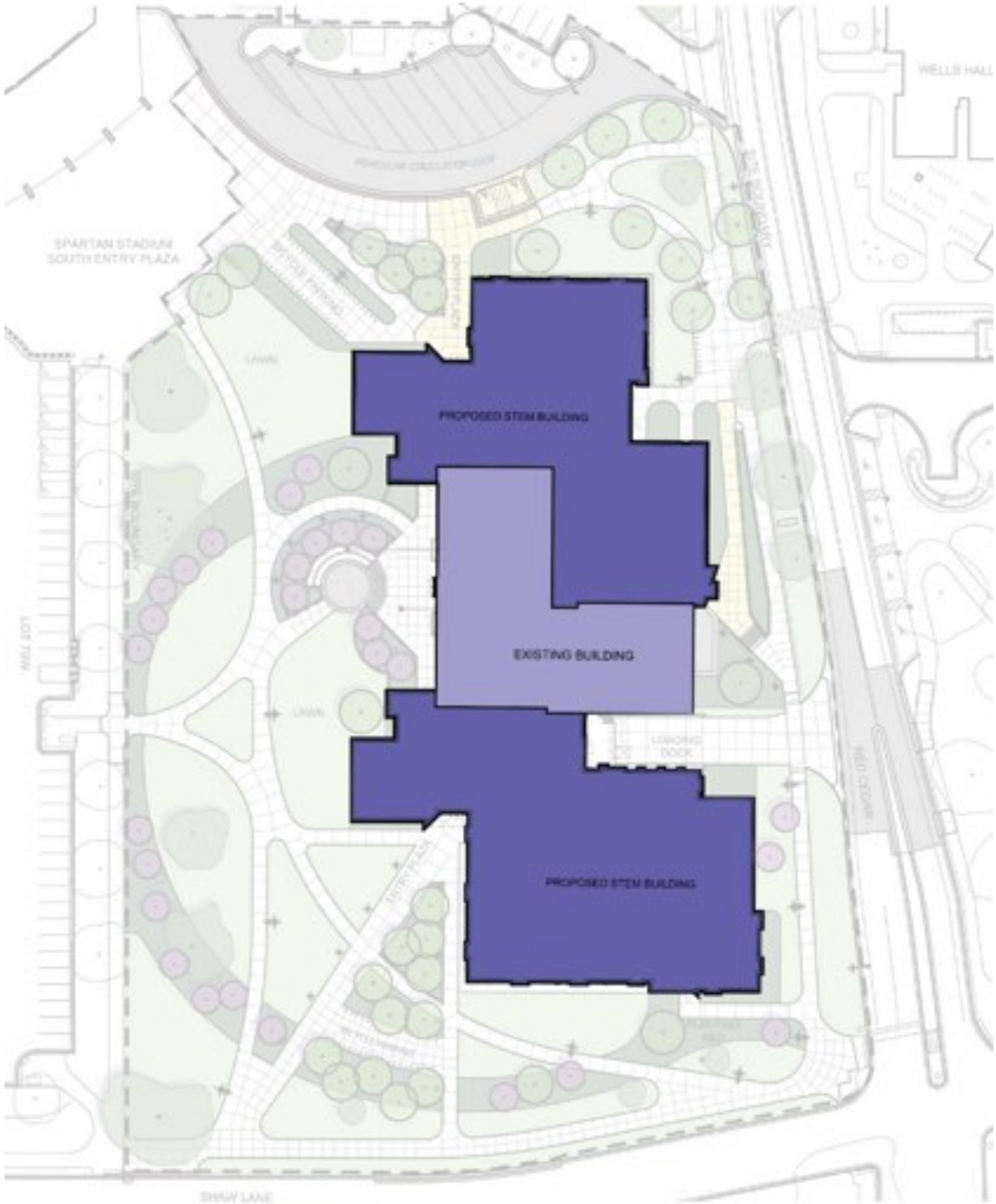


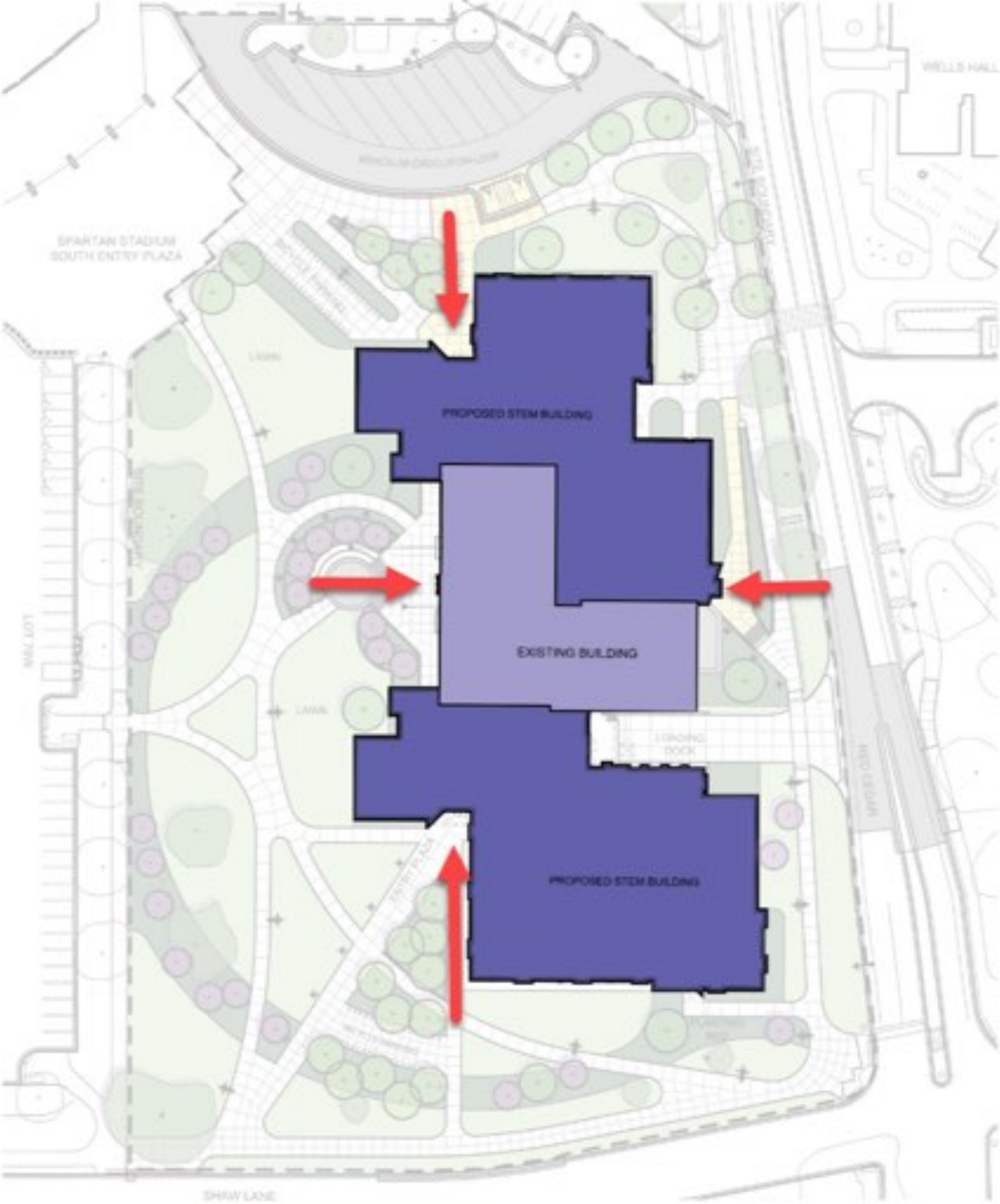

DETROIT
ROTOGRATE
STOKER


P&H


Add Powerplant
Classroom Addition
STEM Scope


79E
ChargePoint
Charging Station
Red Cedar Rd
N Shaw Ln
W Shaw Ln


WELLS HALL
SPARTAN STADIUM
SOUTH ENTRY PLAZA
LAWN
PROPOSED STEM BUILDING
EXISTING BUILDING
LAWN
LOADING
DOCK
PROPOSED STEM BUILDING
RED CEDAR
SHAW LANE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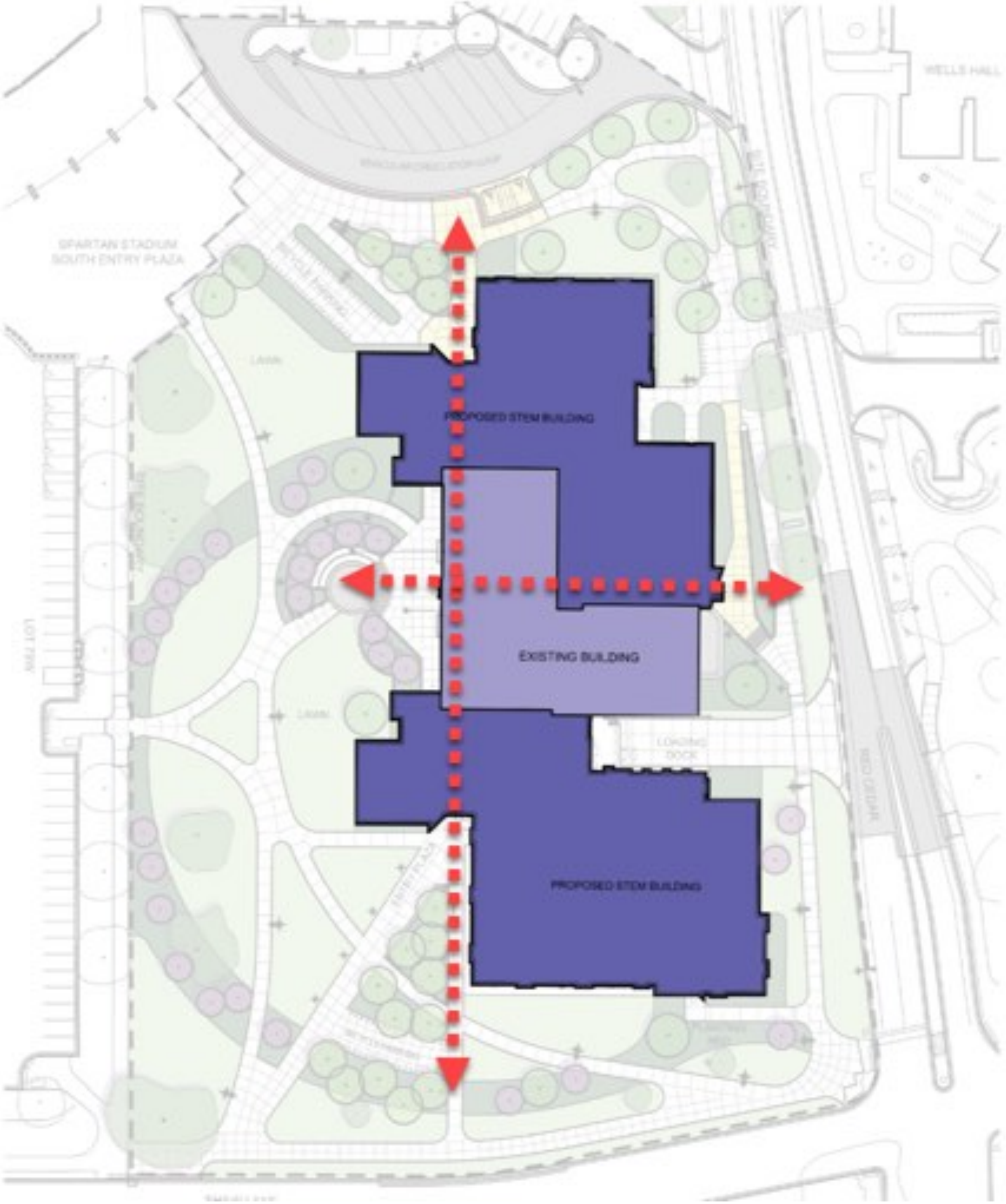
SHAW LANE

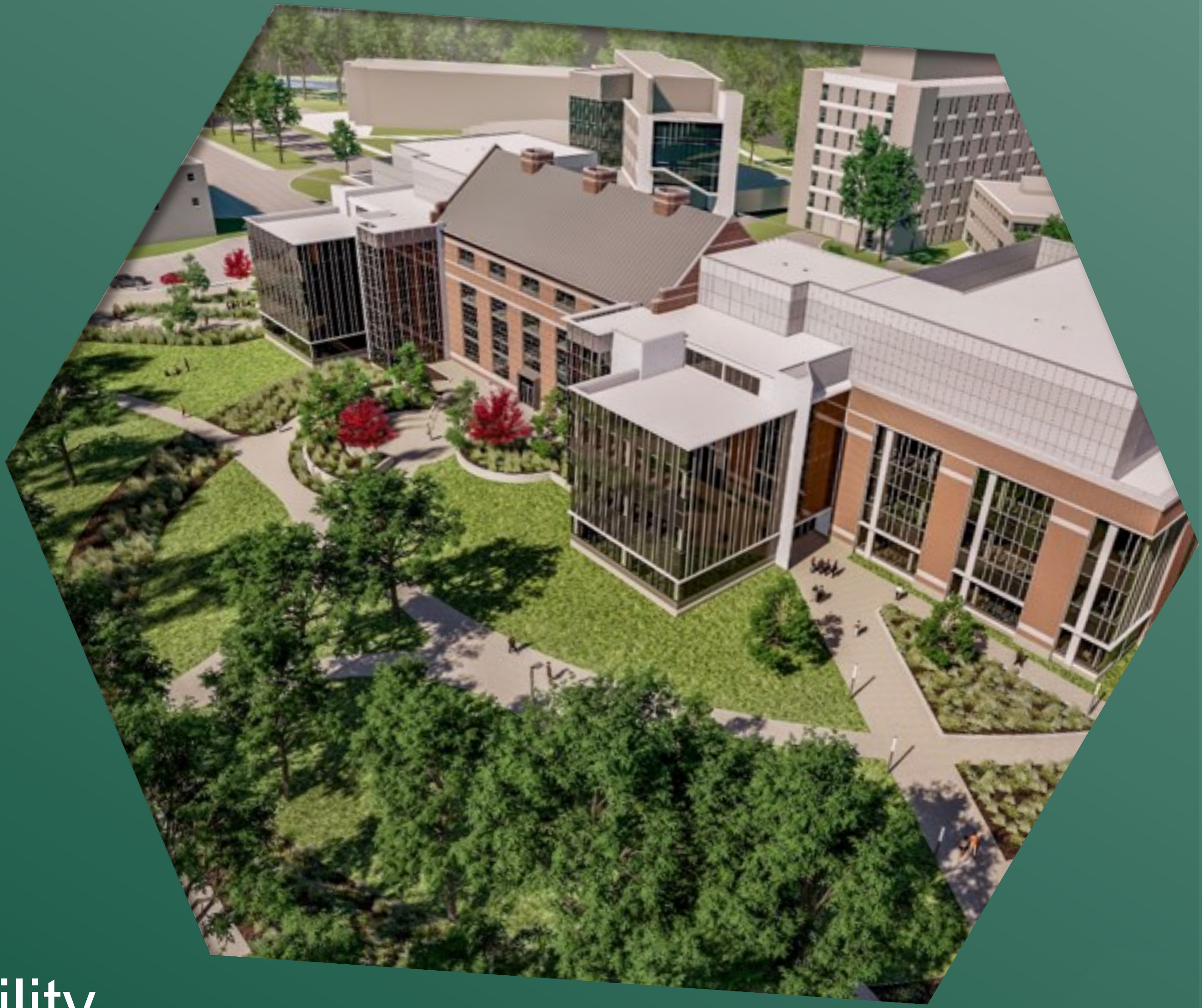


SPARTAN STADIUM
SOUTH ENTRY PLAZA
WELLS HALL
LAWN
PROPOSED STEM BUILDING
EXISTING BUILDING
LAWN
LOADING
DOCK
PROPOSED STEM BUILDING


POWERING THE
FUTURE OF LEARNING
AND INNOVATION

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

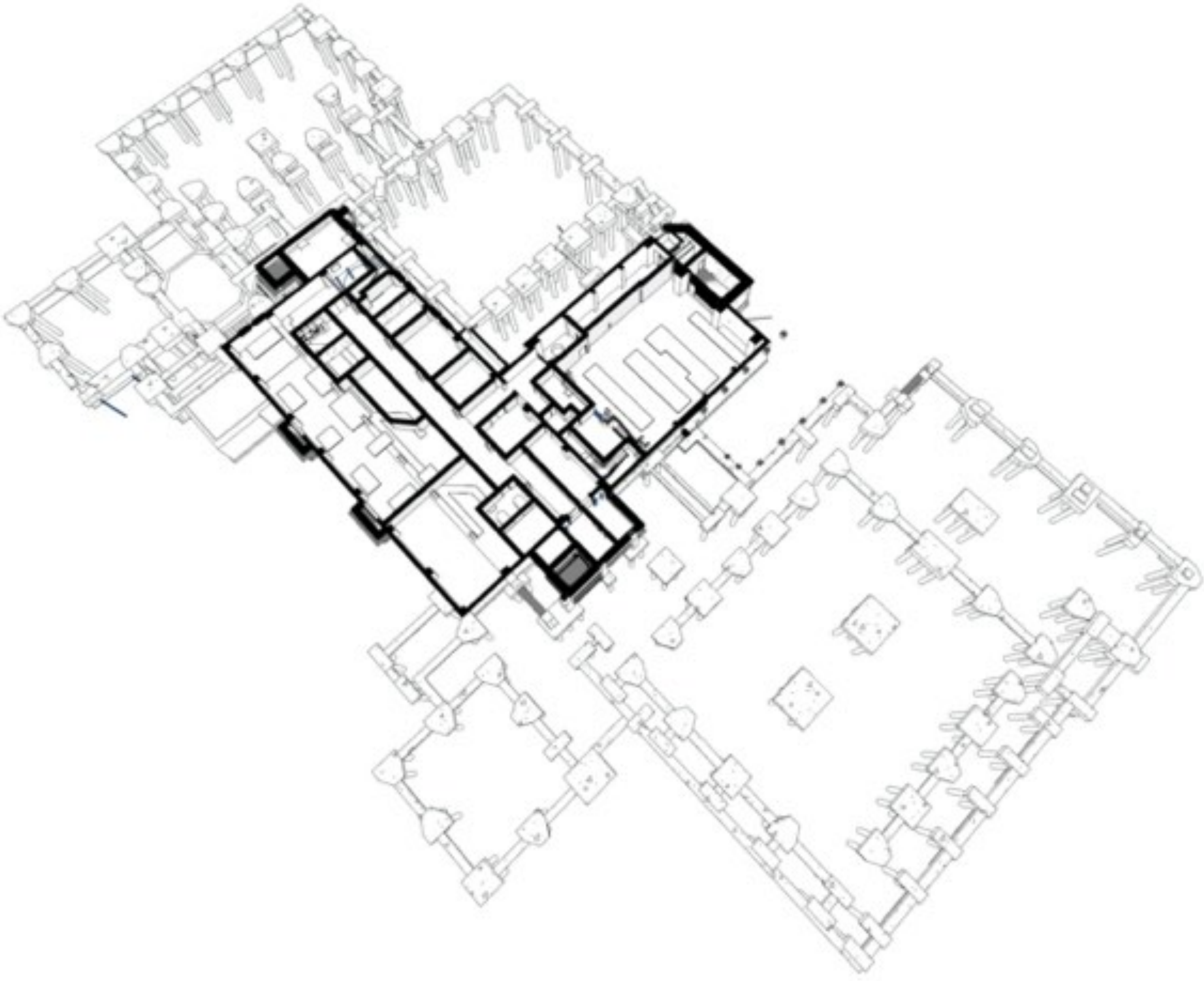
- Creates a showcase "WOW" facility
- Reduces scope (minimized Drywall and Acoustical Ceilings)
- Promotes/supports the timber industry
- Supports sustainability efforts
- Releases MEP/Arch trades sooner

Mass Timber Challenges

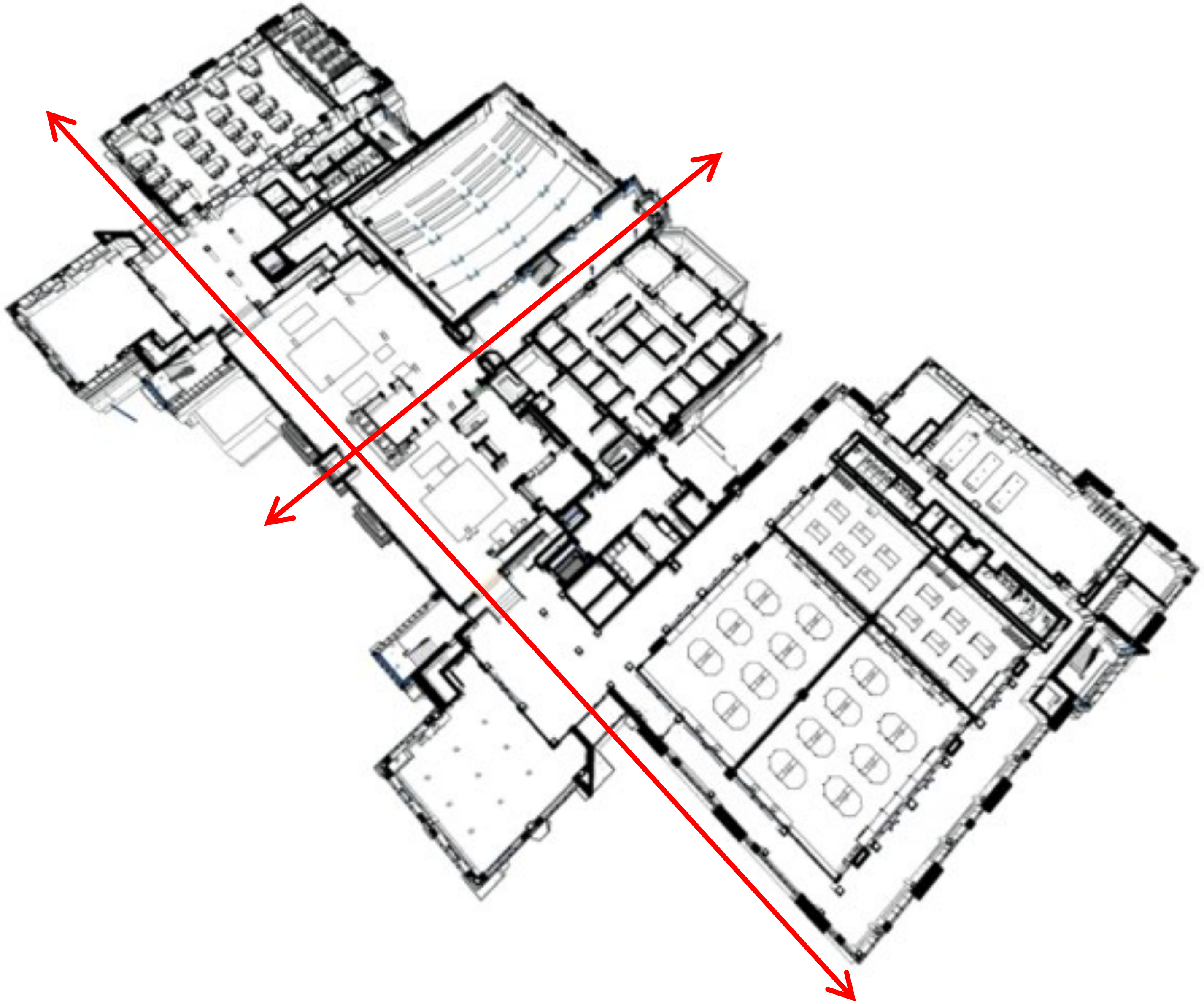
- Longer Preconstruction Process
- Potential Cost Concerns
- Non-Traditional Procurement
- Regional Availability
- Qualified Erectors
- Protecting Finished Installed work


TEAMED UP FOR SAFETY
GRANGER
GRANGER
AAI
AAI
ATC

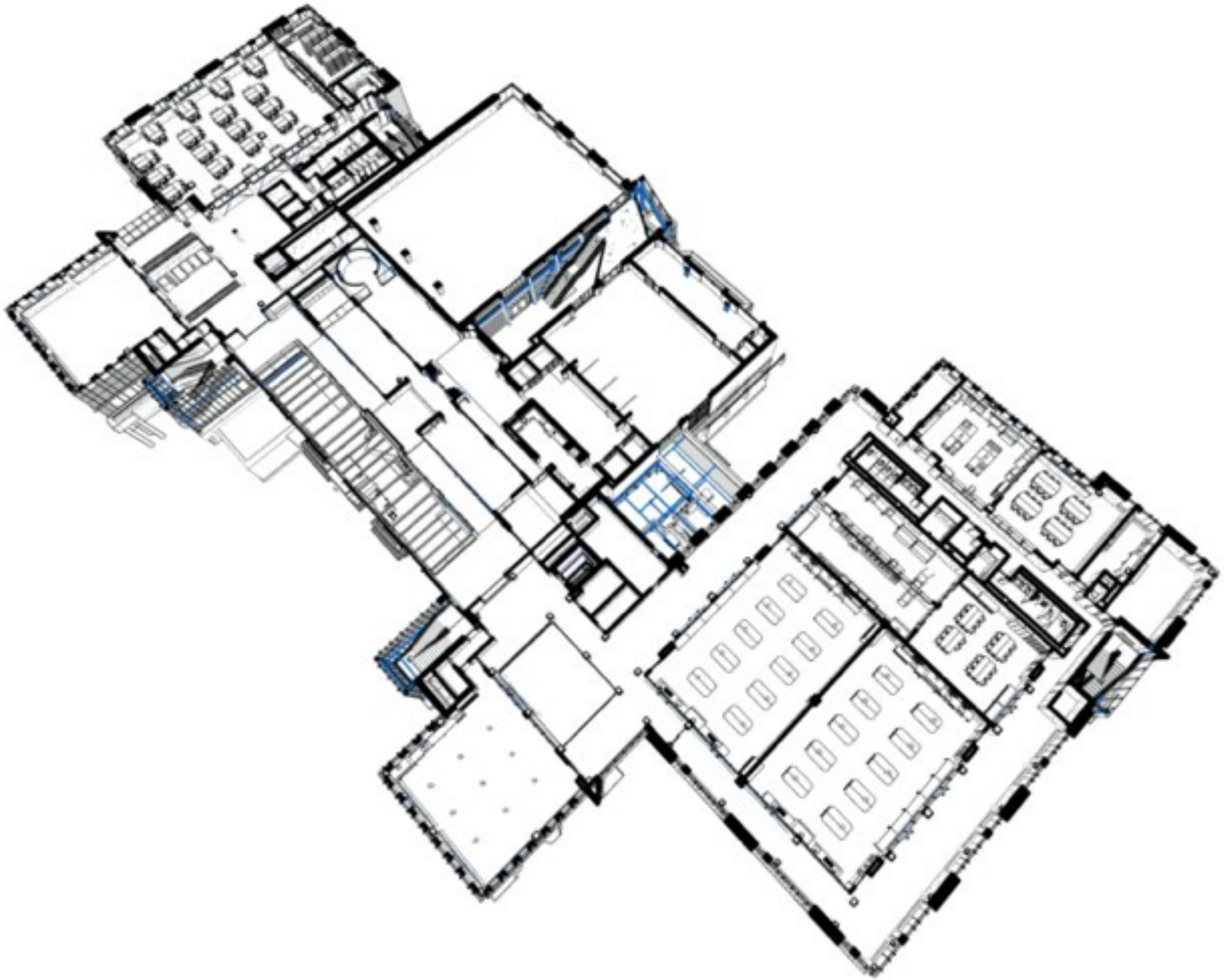
Basement



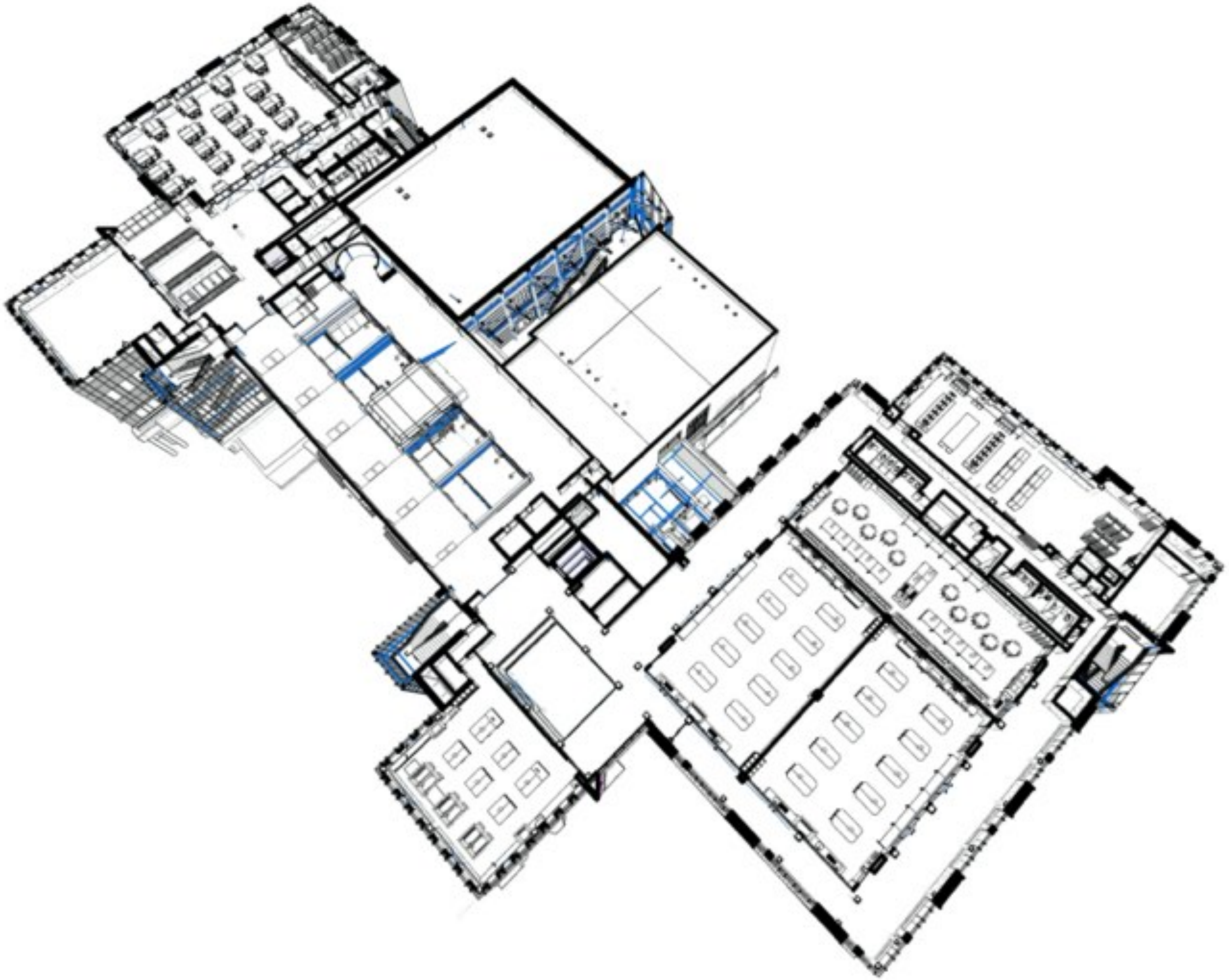
Level One



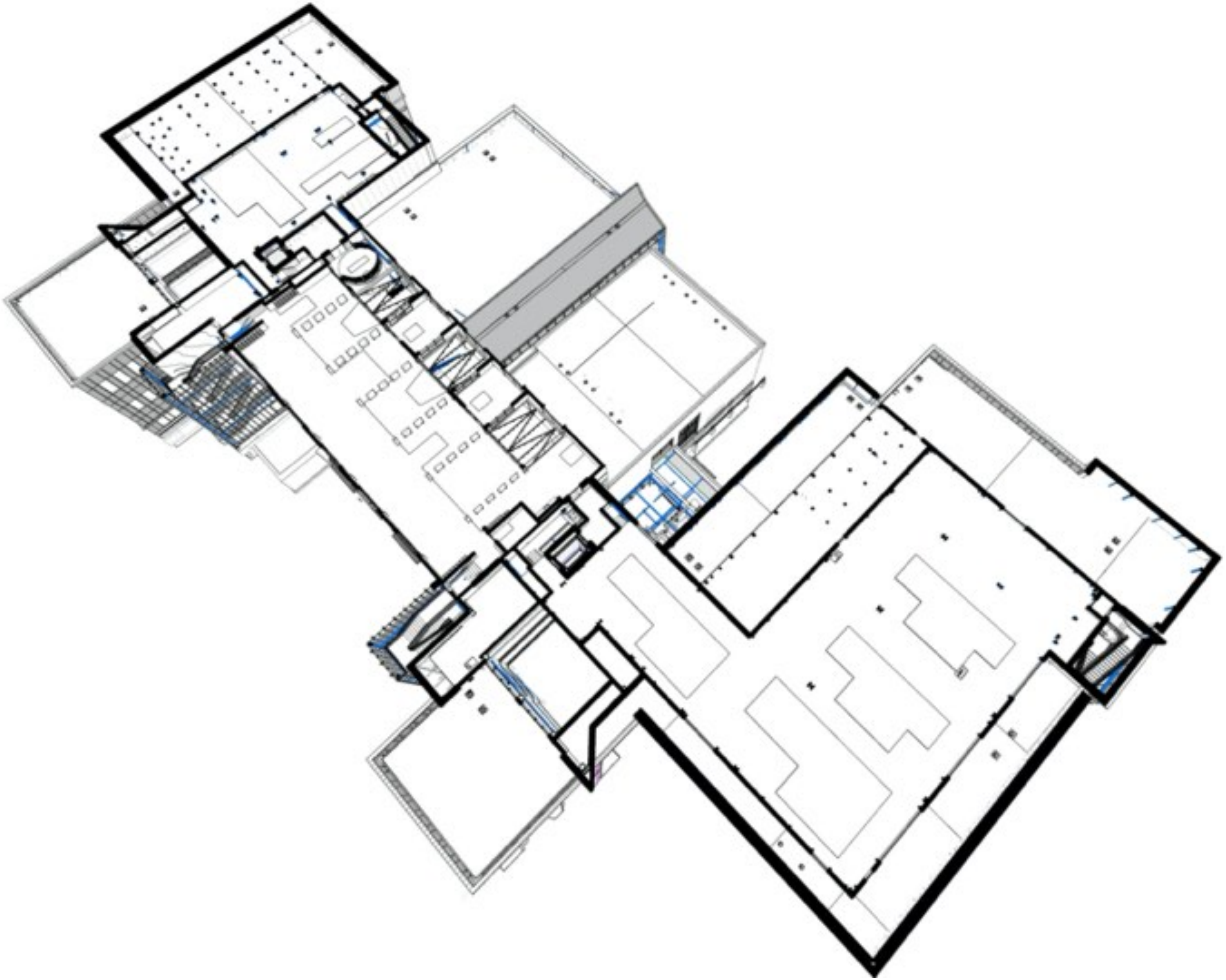
Level Two



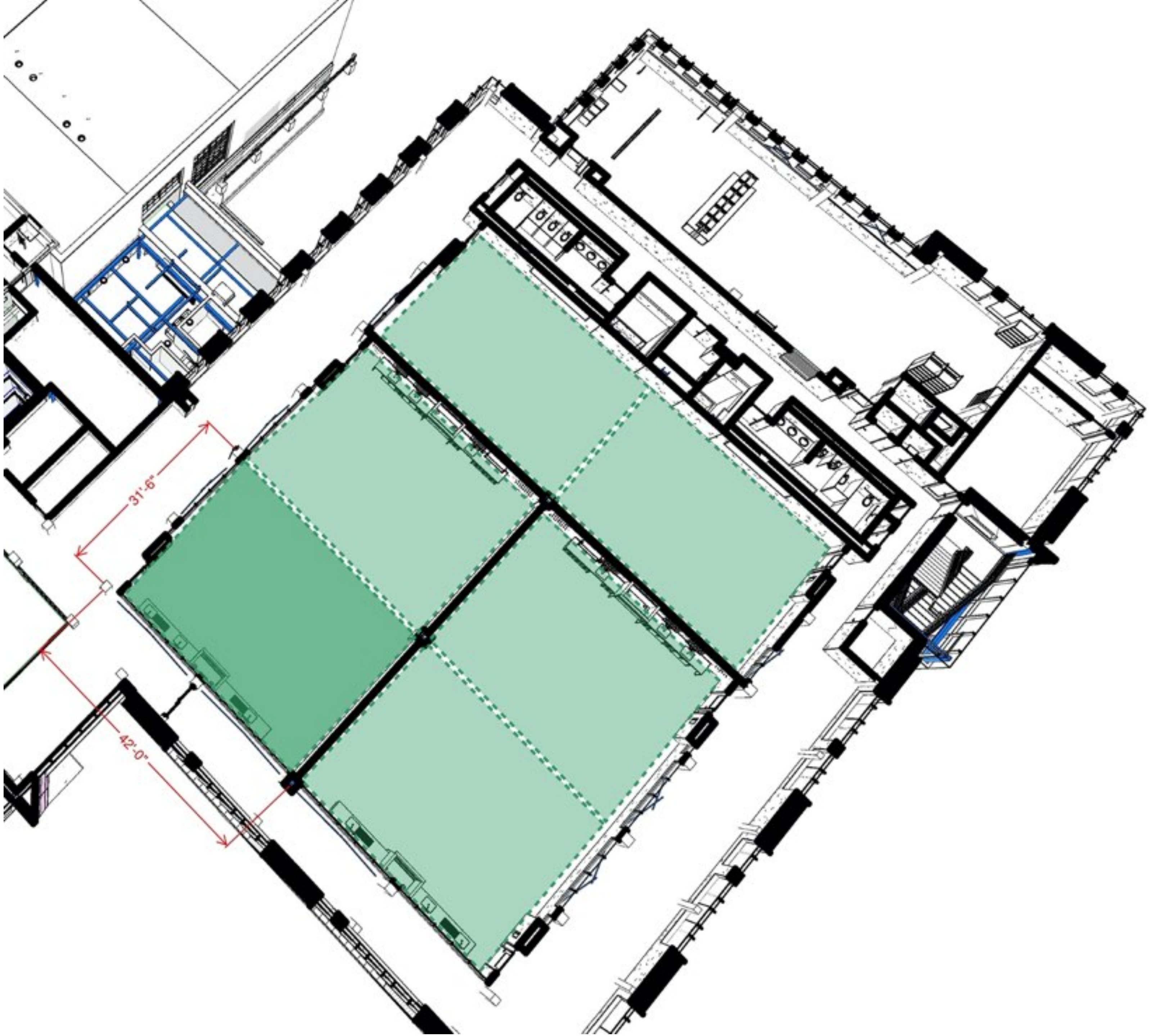
Level Three



Level Four



Typical Lab Module



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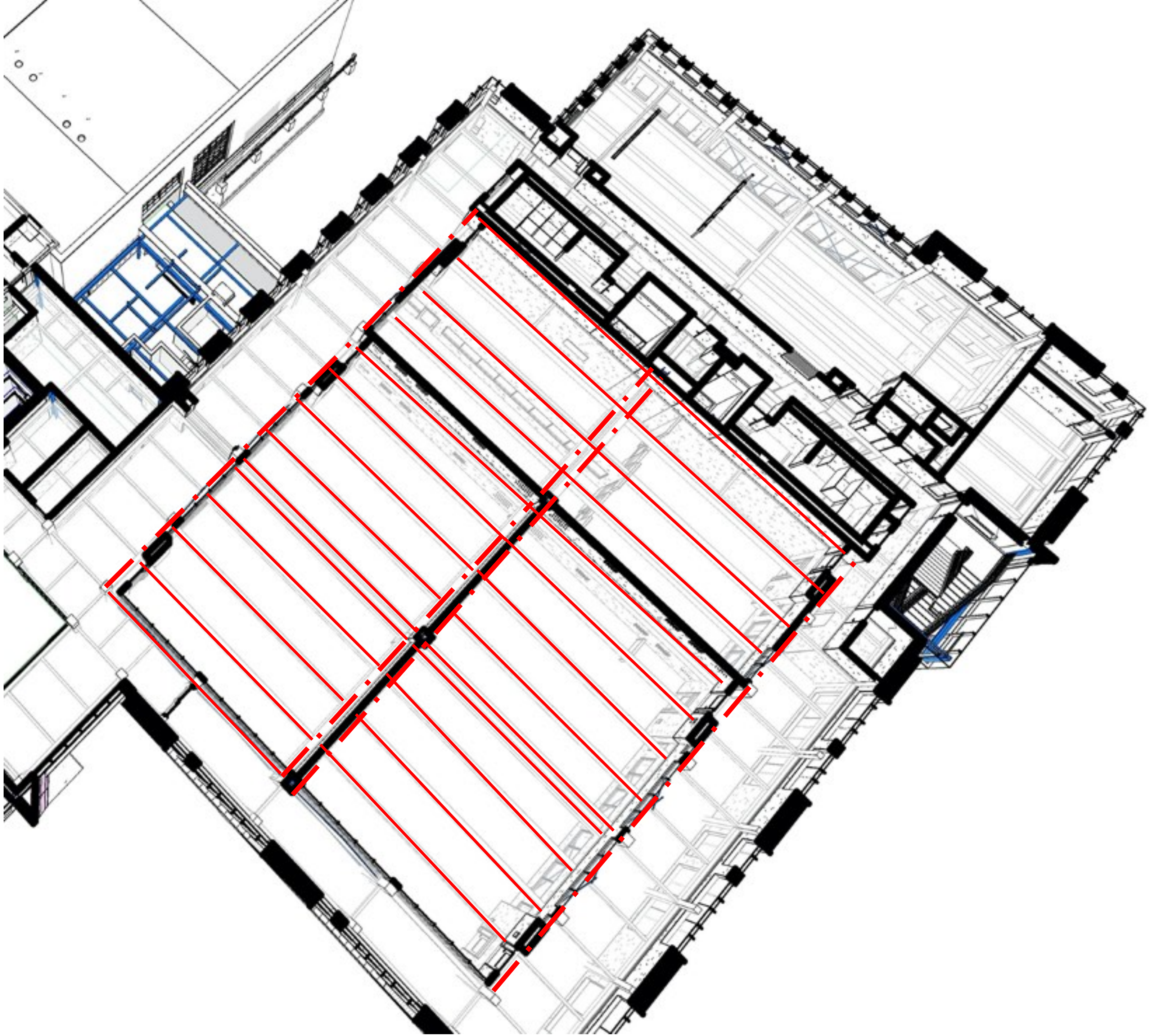
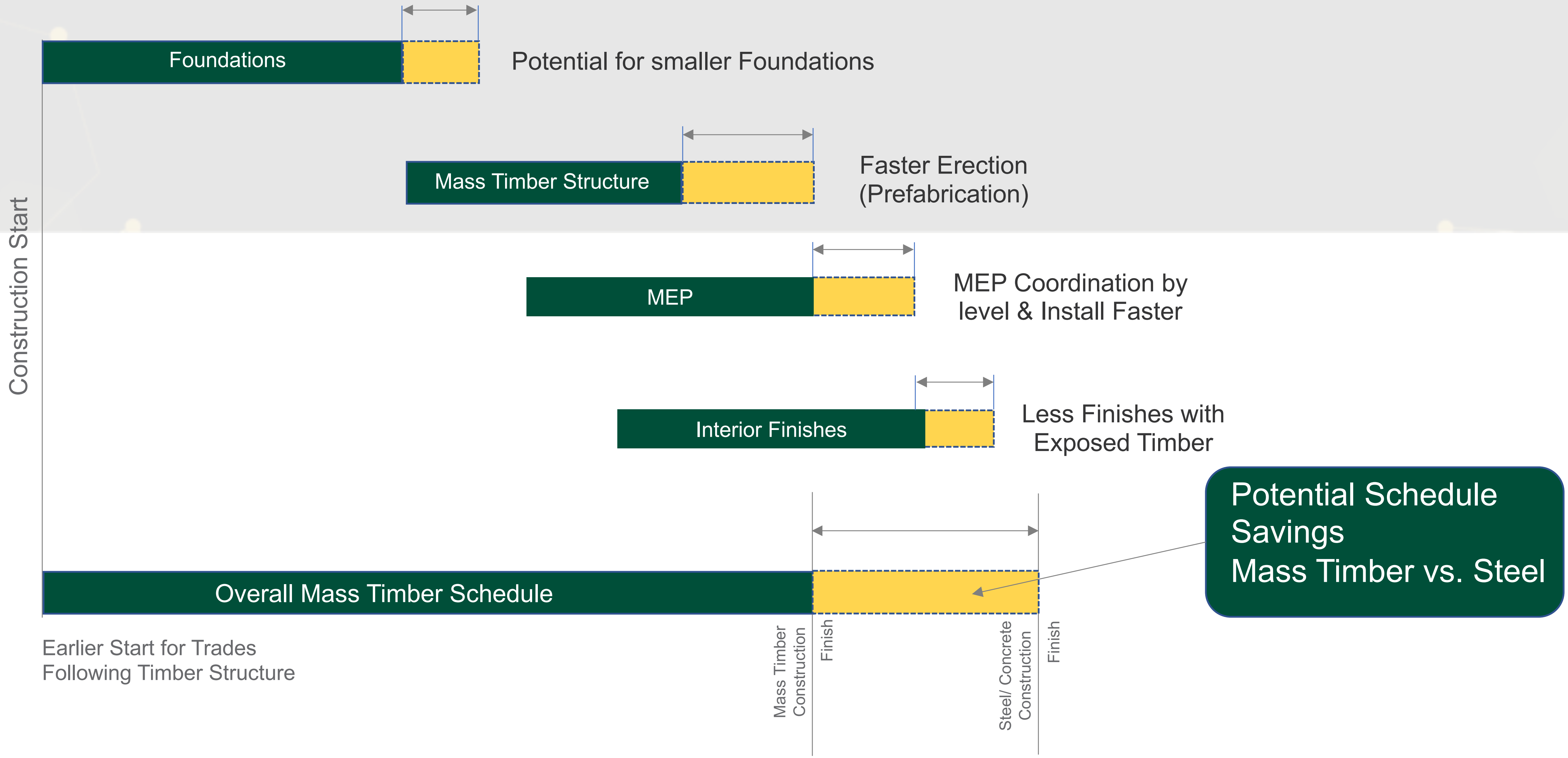
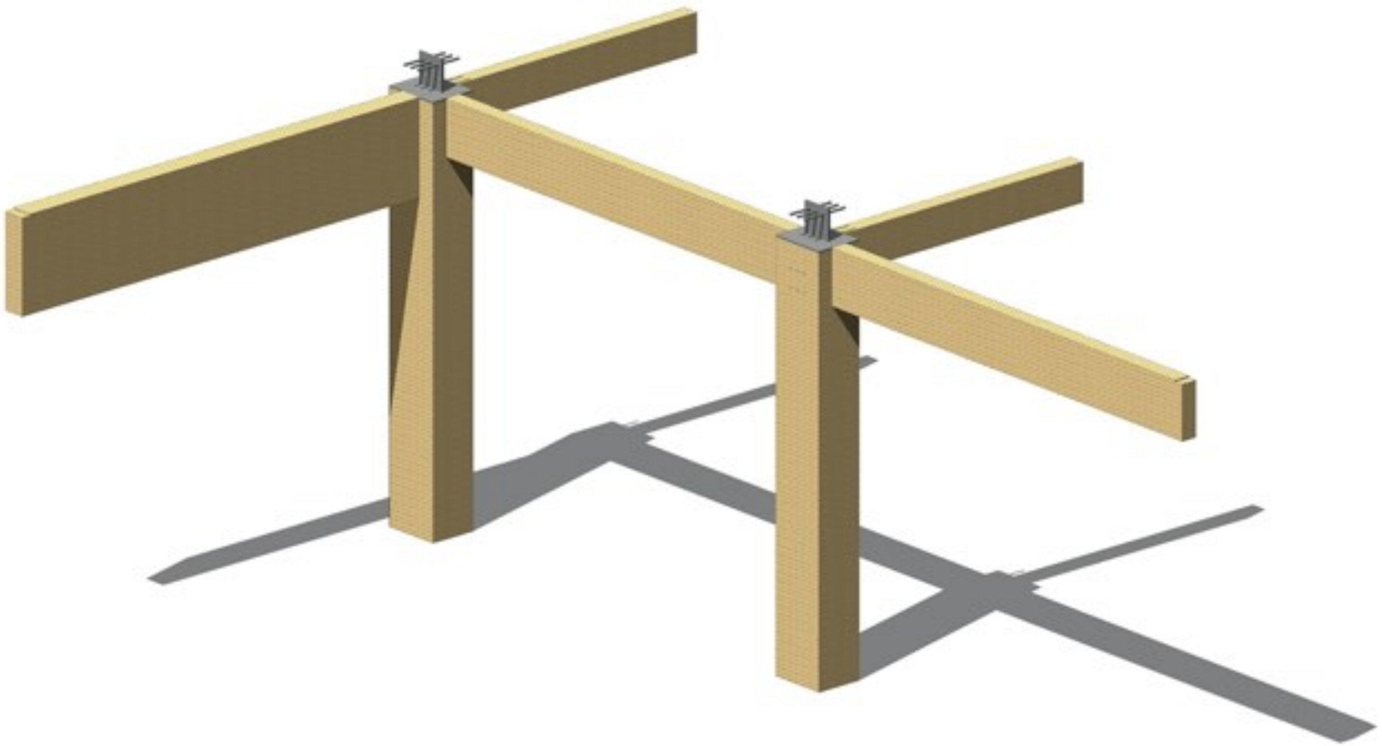


Mass Timber Schedule



Typical Erection Sequence



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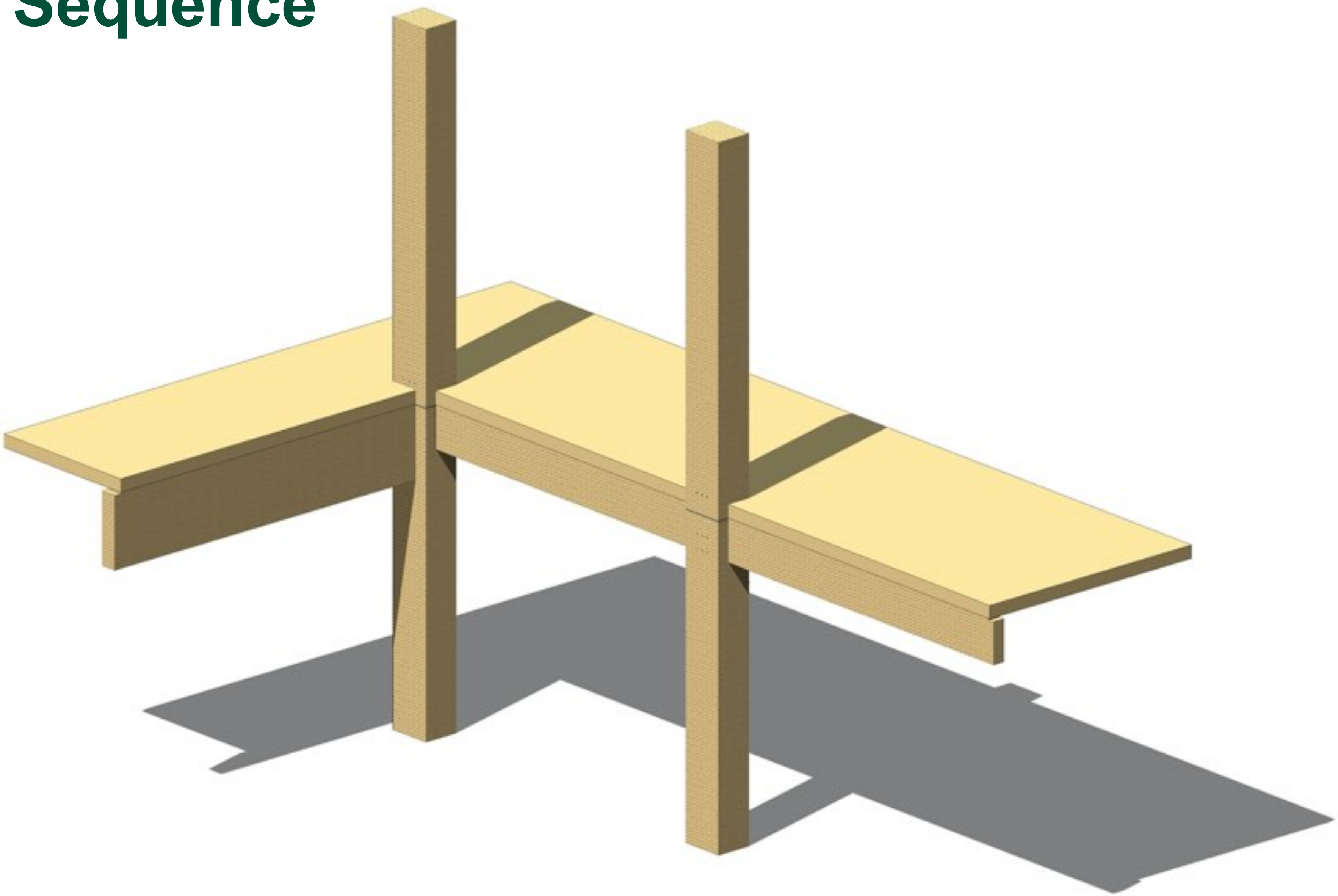

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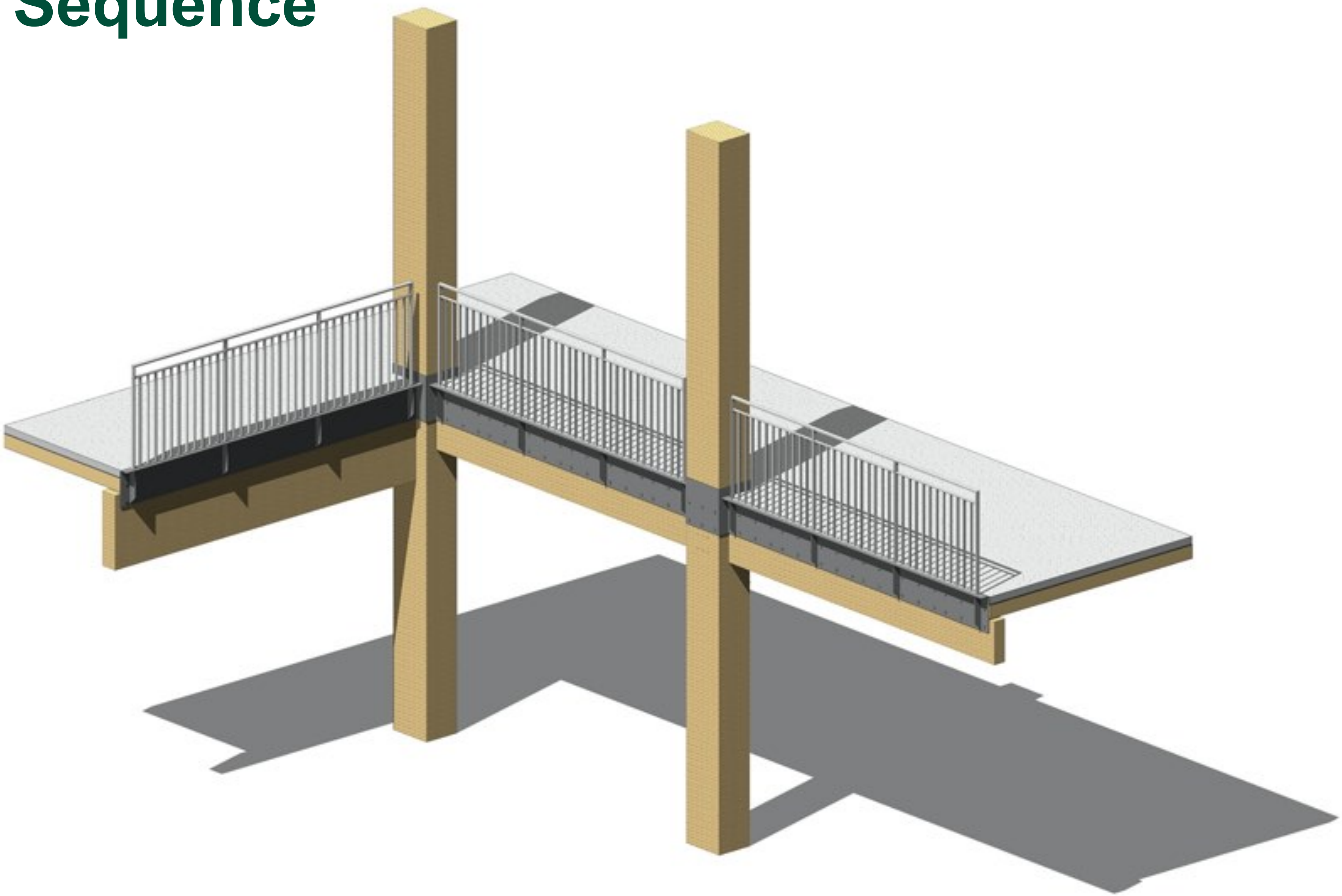

STEM Teaching and Learning Facility

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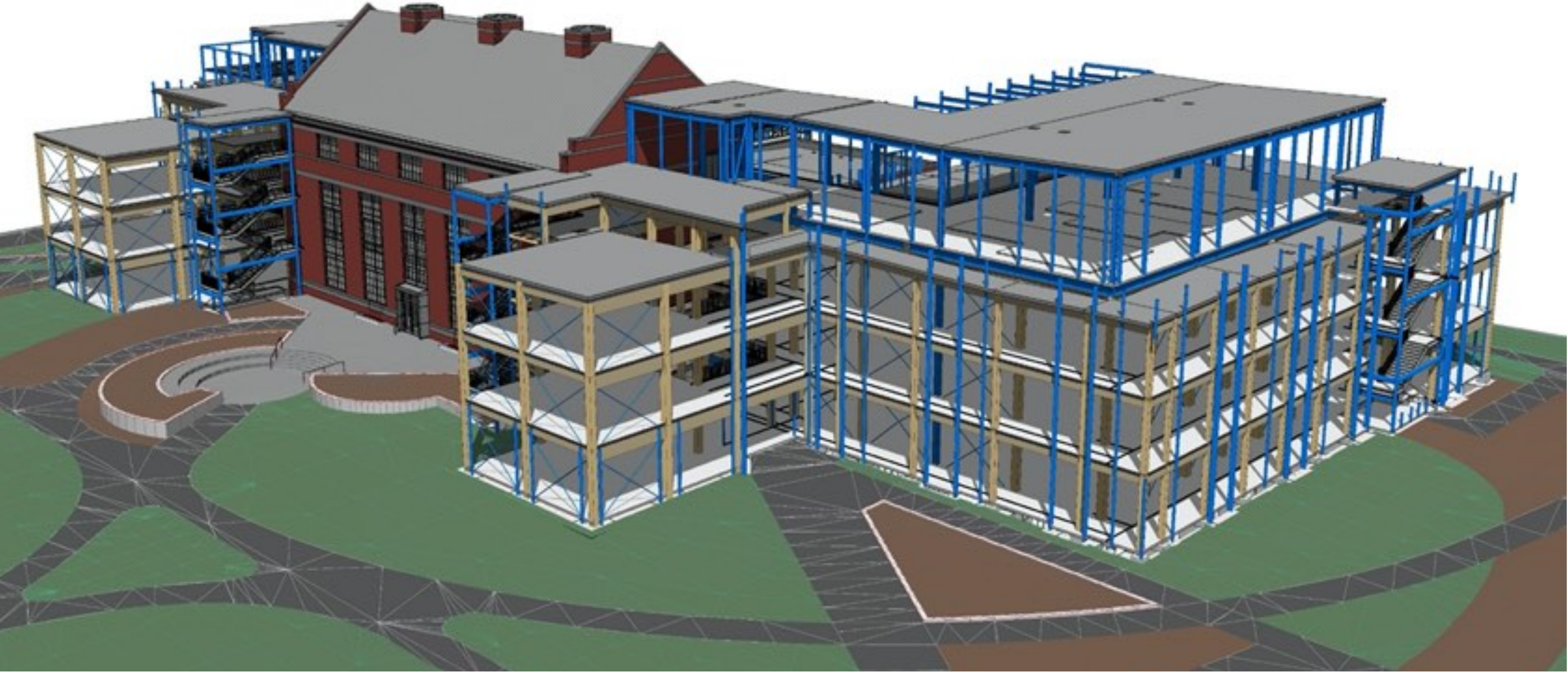
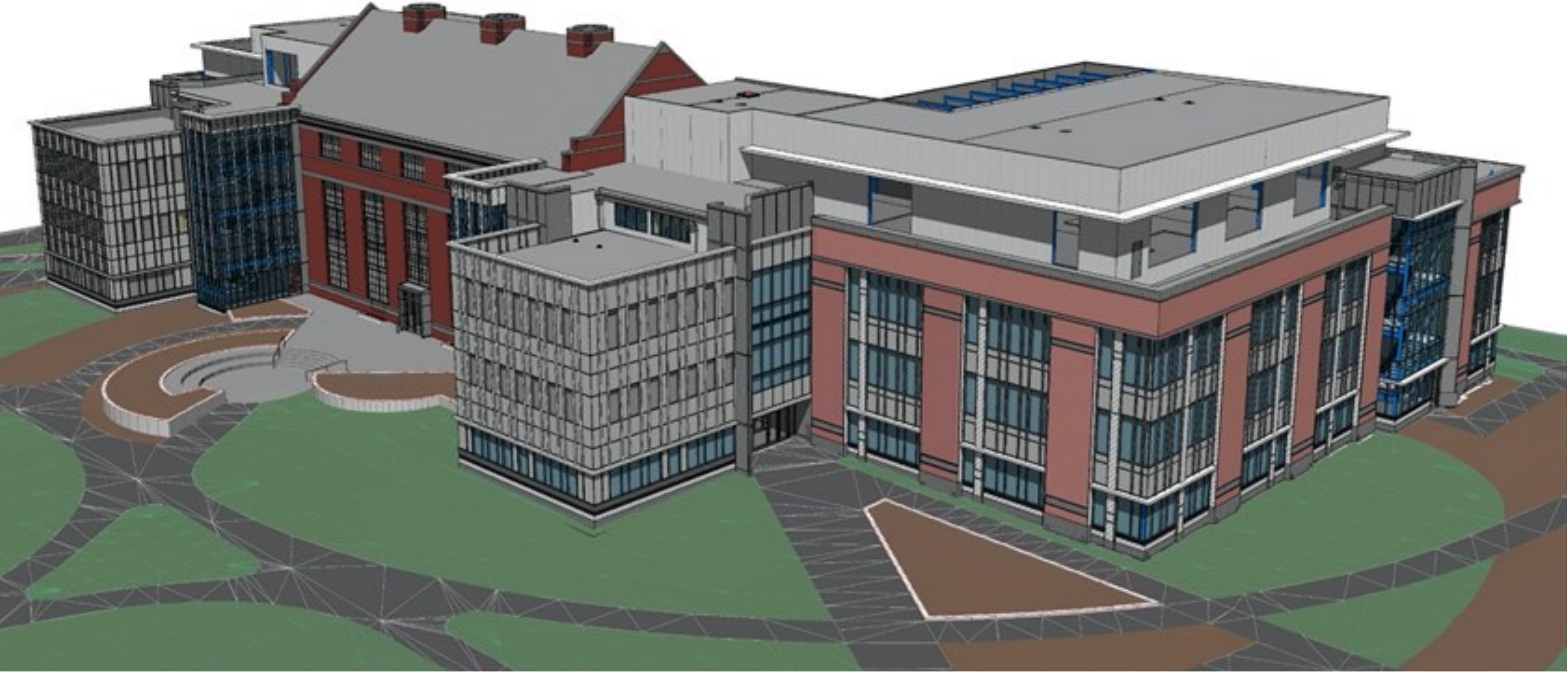


STEM Teaching and Learning Facility



Entering STEM from Southwest

South STEM 2nd floor Commons

Active Learning Chemistry Lab


TEAMED UP FOR SAFETY
GRANGER


April

May

July

August

September

October

January

WHAT DID WE LEARN?

Mass Timber Considerations

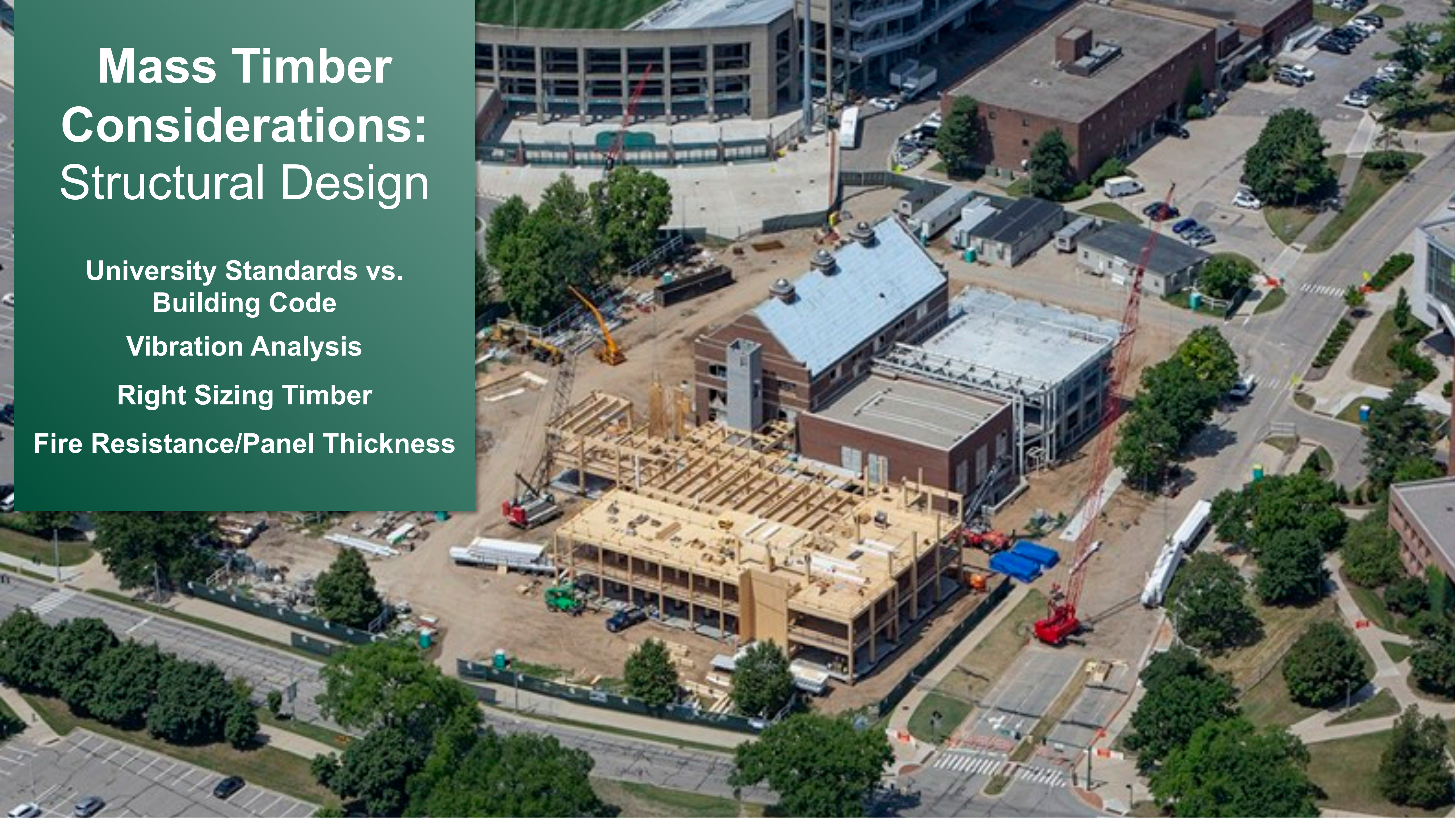
Mass Timber Considerations: Structural Design

University Standards vs. Building Code

Vibration Analysis

Right Sizing Timber

Fire Resistance/Panel Thickness



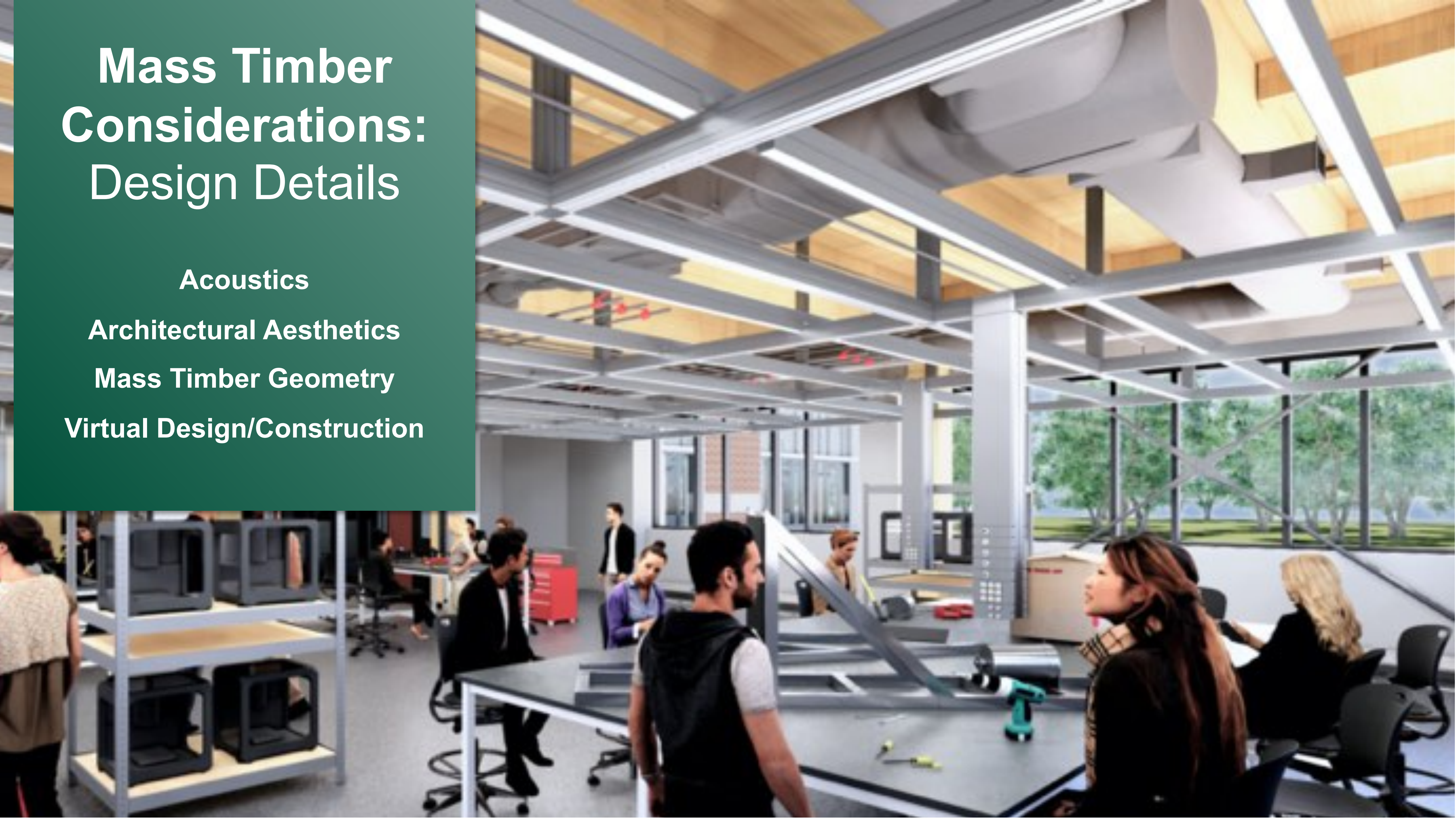
Mass Timber Considerations: Design Details

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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