



+



WEBINAR

Healthy Schools: Ann Arbor Public Schools' 21st Century Learning Leadership



Flagship Programs

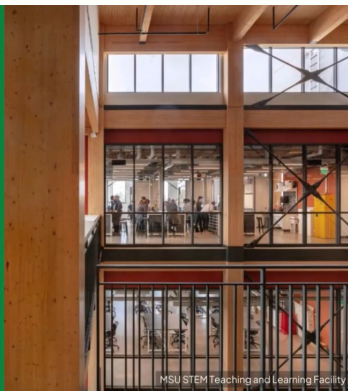


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Mass Timber Resources!

Mass Timber FAQs & Michigan Examples



MSU STEM Teaching and Learning Facility



Mass Timber Keynote Address

Sandra Lupien, Director, MassTimber@MSU, delivered the keynote address at our 2024 Annual Party & Leadership Awards Ceremony. Through the MassTimber@MSU program, based at Michigan State University, Sandra collaborates with interdisciplinary faculty members, industry partners, policymakers, NGOs, tradespersons, and others on a diverse array of programs and initiatives that are resulting in significant mass timber momentum.

[View Recording](#)

Mass Timber Case Studies

View our robust case study hub and more green building success stories [here](#).



Michigan State University,
STEM Teaching and Learning Facility

[View Case Study](#)



Kalamazoo Regional Educational Service Agency, Career Connect
Campus

[View Case Study](#)



Michigan Department of Natural Resources, Customer Service
Center

[View Case Study](#)

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MASS TIMBER @MSU

MassTimber@MSU leverages research, education, outreach, communications, policy, and partnerships to advance sustainable mass timber construction and manufacture in Michigan, the Great Lakes region and beyond.

canr.msu.edu/masstimber/
#MIMassTimberMomentum



TYPES OF MASS TIMBER



Glue-laminated Timber (Glulam)



Cross-Laminated Timber (CLT)



Mass Plywood Panels



Nail-Laminated Timber



Dowel Laminated Timber



Laminated Veneer Lumber

MASS TIMBER CAN:



Increase
Sustainability



Improve
Efficiency



Enhance
Beauty
& Quality



Create New
Jobs



Support
Resilient
Forests

Fostering a Mass Timber Ecosystem



STEM Facility as Learning Lab



Bringing People Together



**Michigan Mass Timber
Community Conference**
**Technical Assistance
and Peer Learning**

This quarterly virtual gathering will provide technical assistance and peer learning for those involved in mass timber projects across Michigan in a supportive and confidential environment.



Research and Teaching



**MICHIGAN STATE
UNIVERSITY**

Mass Timber Projects in Michigan:

~70 Complete or in the Pipeline



K-12 schools, Universities



Training Facilities, Community Centers, Government Buildings



**Apartments & Condos
Affordable Housing
Single-Family Home**



Hotel



Contact



Sandra Lupien

Director, MassTimber@MSU

Lupien@msu.edu

510-681-3171

@MassTimberatMSU



Mobilizing education, science, outreach, and communication to advance mass timber construction and manufacture in Michigan and the surrounding region.



canr.msu.edu/masstimber/

Panelists



Jason Bing

Director, Capital Programs
Ann Arbor Public Schools

Owner/Project History

Kevin Stansbury

Project Design Manager
Gilbane Building Co

Program Manager/Owner's rep

Jeffrey L. Winslow

Associate/Senior Project Manager
Neumann/Smith Architecture

Architect of Record, New Mitchell Elementary School

Lindsay Woods

Senior Project Manager
Stantec

Architect of Record, Logan and Thurston

Mitch DeLange

Senior Project Manager
Christman

Construction Manager, Logan and Thurston



ANN ARBOR PUBLIC SCHOOLS
LEAD. CARE. INSPIRE.



ANN ARBOR PUBLIC SCHOOLS

Healthy Schools: AAPS and 21st Century

Learning Leadership

MiGBC + MassTimber@MSU – June 24, 2026

Jason Bing, RA, CEM, LEED AP

Director

Capital Programs



Drivers – Environmental Sustainability

ANN ARBOR

Ann Arbor declares climate emergency, sets 2030 carbon-neutral goal

Updated: Feb. 14, 2020, 10:44 p.m. | Published: Nov. 04, 2019, 9:57 p.m.



VICE PRESIDENT FOR COMMUNICATIONS
MICHIGAN NEWS
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U-M commits to universitywide carbon neutrality



May 20, 2021

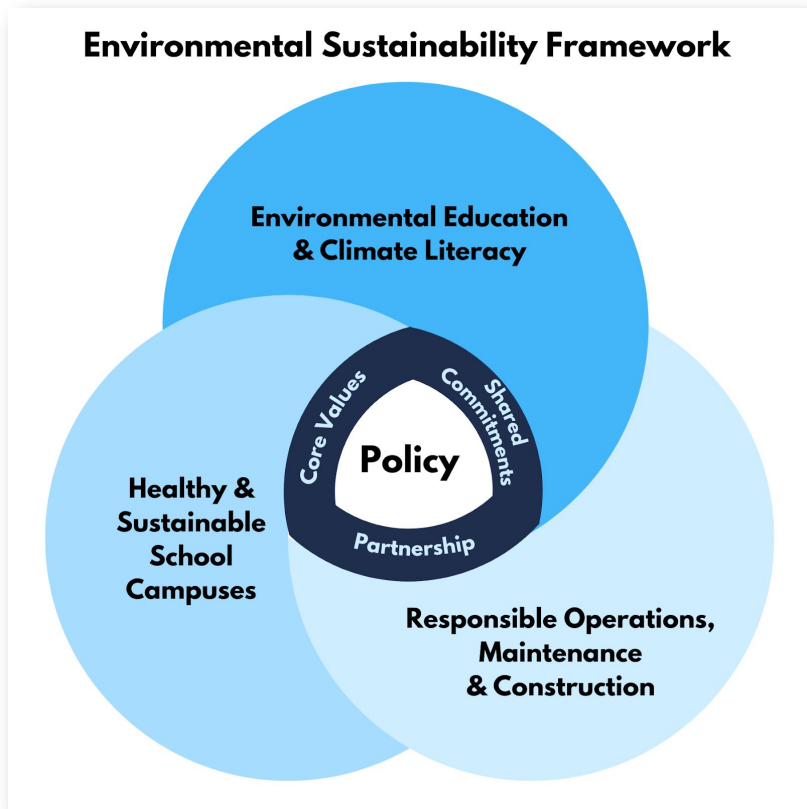
Written By:
Adam Fisher

ANN ARBOR

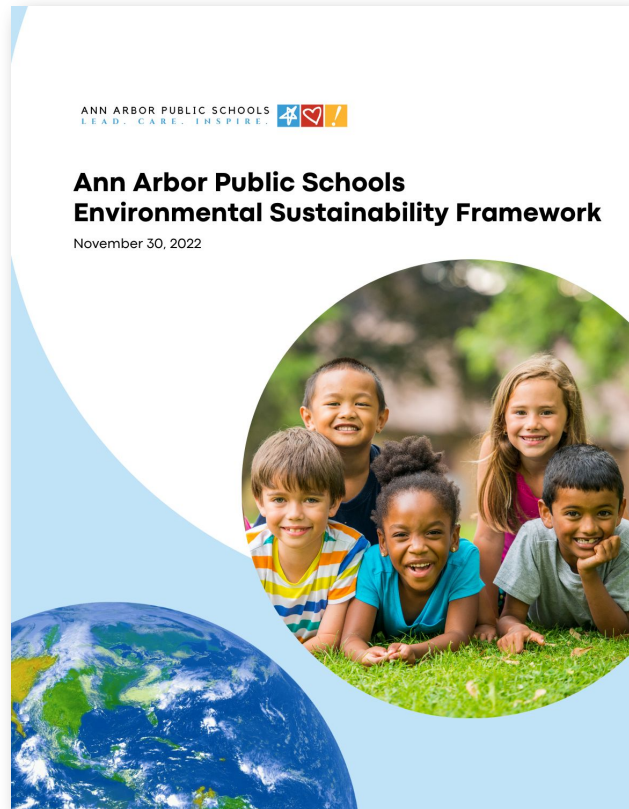
Washtenaw County leaders OK plan to reach carbon neutrality by 2035. What's next?



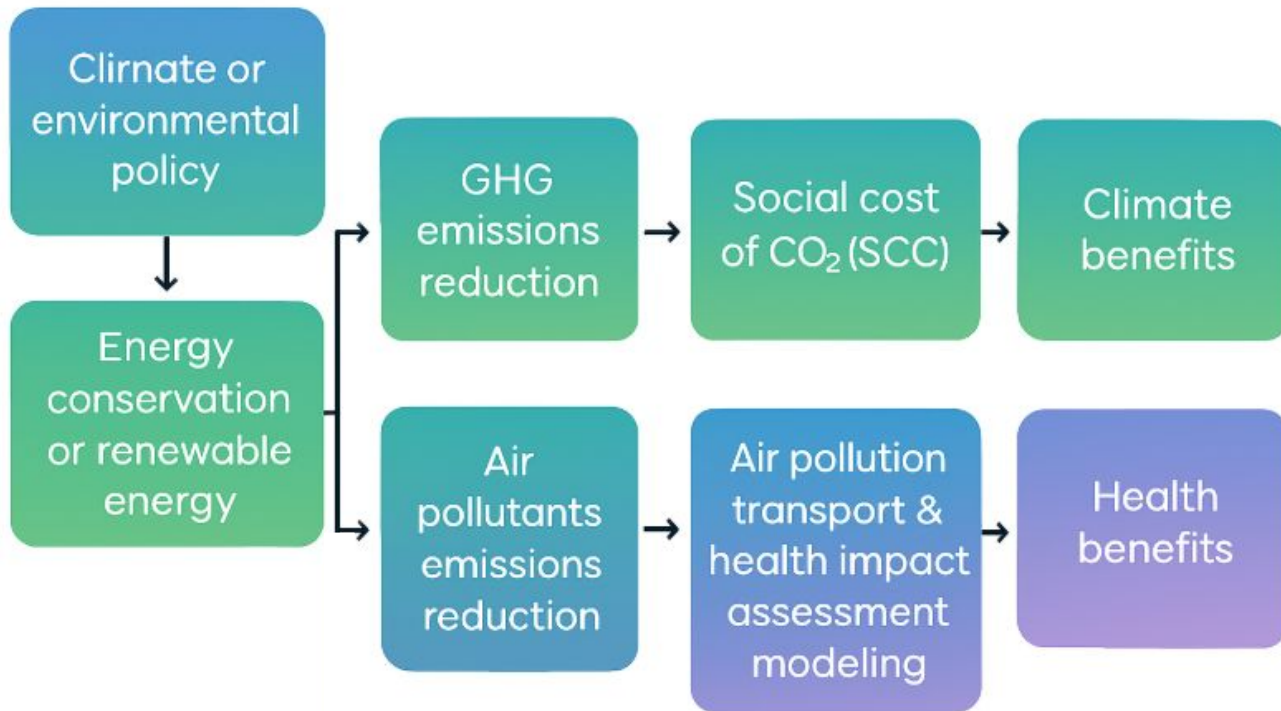
AAPS Environmental Sustainability Framework



**Approved
by the
Board in
November
2022**

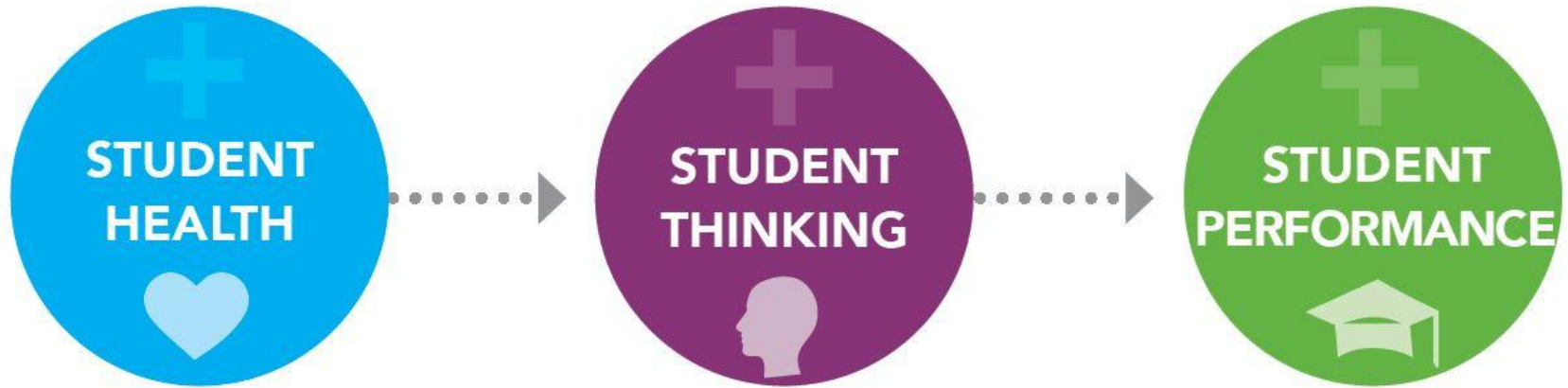


Why Decarbonization?



<https://www.sciencedirect.com/science/article/pii/S0360132323006455?via%3Dihub>

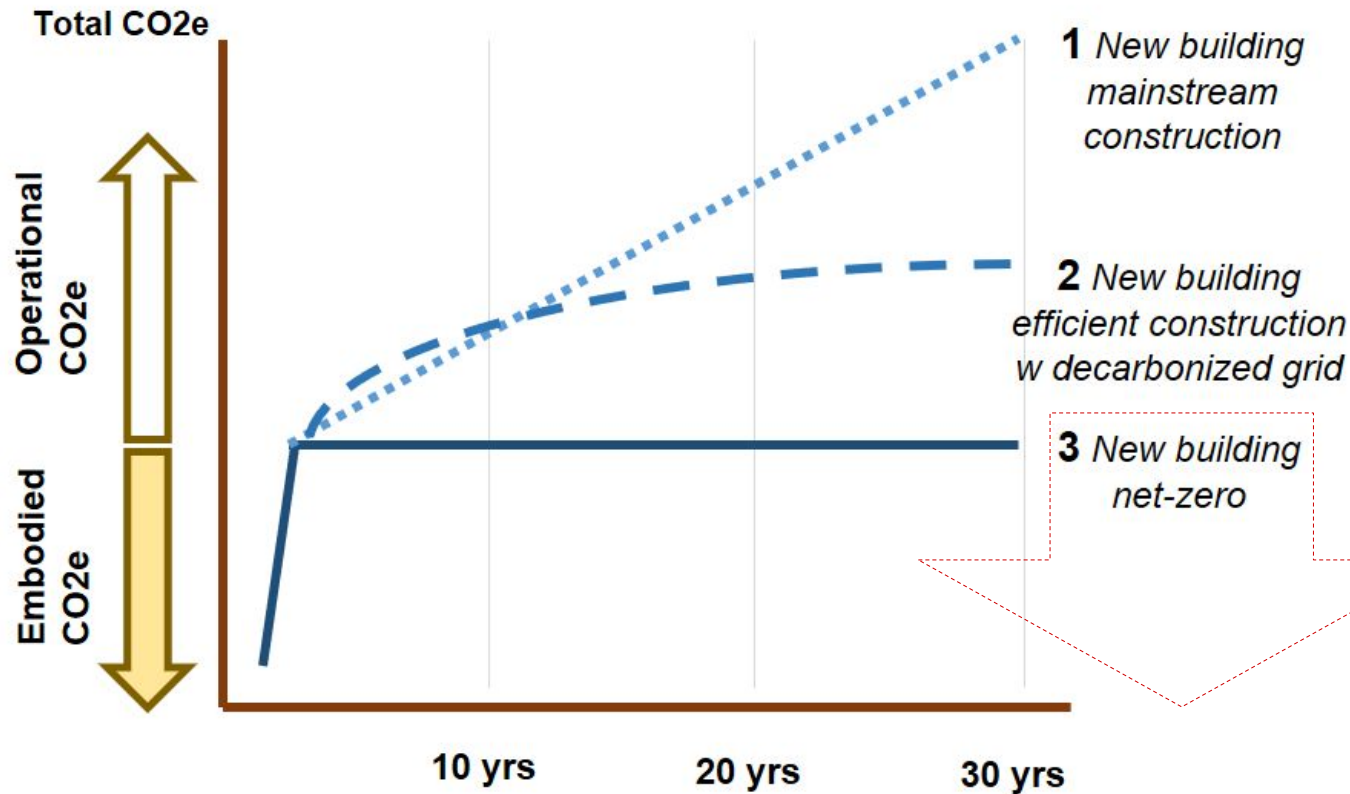
“Schools for Health: Foundations for Success”



www.forhealth.org

‘How School Buildings Influence Student Health, Thinking, and Performance’

Decarbonization Targets



AAPS Sustainability Targets + Metrics Tracking

New and Major Projects

US – CHPS Certification

- Meet Collaborative for High Performance Schools
 - Verified Leader certification

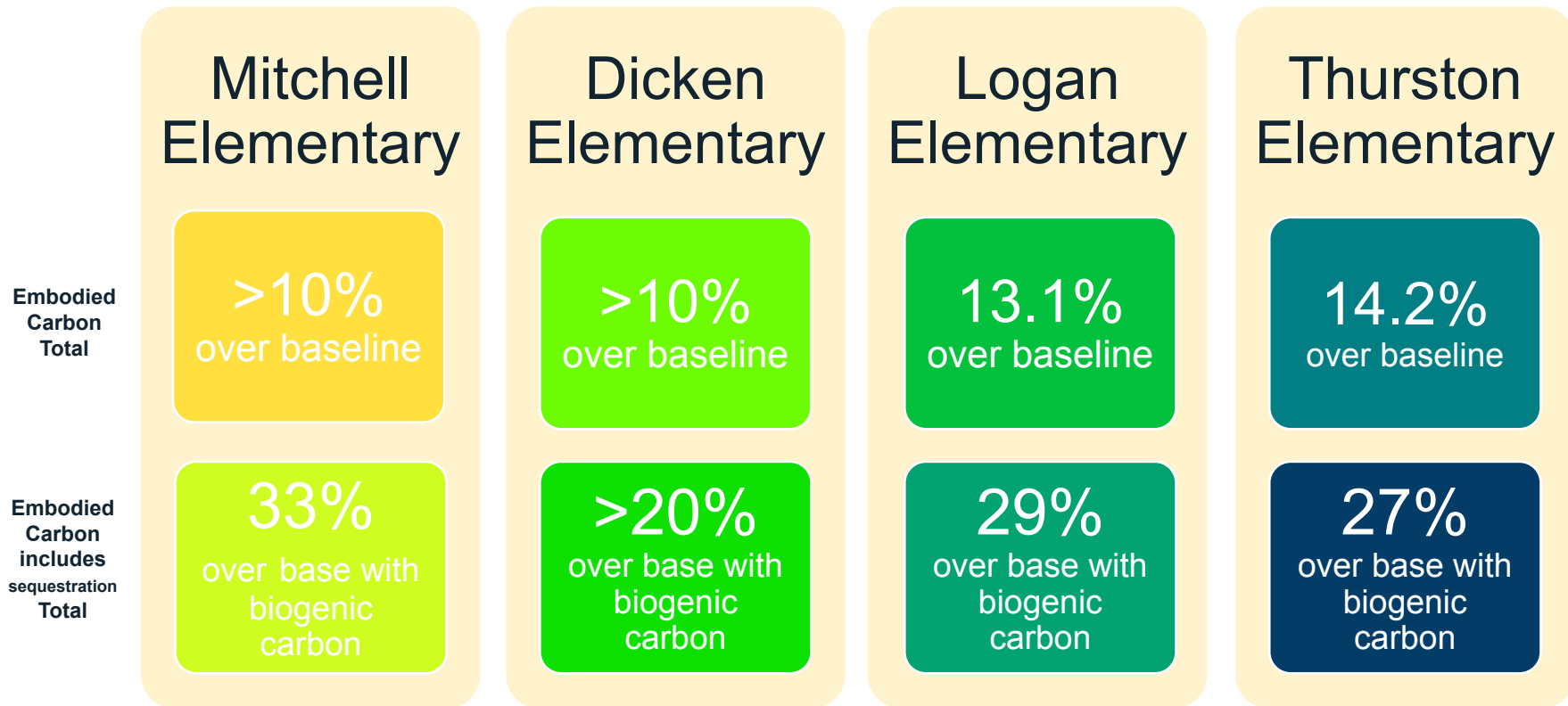
EUI of 25 or lower

- NBI Decarbonization Roadmap and ZeroTool

10% or better embodied carbon reduction

Embodied Carbon Reductions

Estimated (Whole Building Life Cycle Analysis)



King Discovery | Student AI Workshop

04/09/2025

Participants: 3rd-5th Grade King Students
Ms. O'Leary G5 | Mr. Hyuck G3 | Ms. Karkau G4

Length: 40 Minutes per Meeting

Format: In-Person Workshops

Objective:

To explore potential strategies, conditions, and elements that can strengthen teaching, learning and community culture in the new King school through FI's AI-bot catered to environmental learning space.

- + What do students value from their school experience?
- + What conditions do they prefer while learning?

- **"Nook"**
 - *"tucked away"*
 - *"cozy"*
 - *"calming"*

[AI Worksheet Link](#)

[AI Workshop PDF Link](#)

(Click the links to see the worksheet and results)





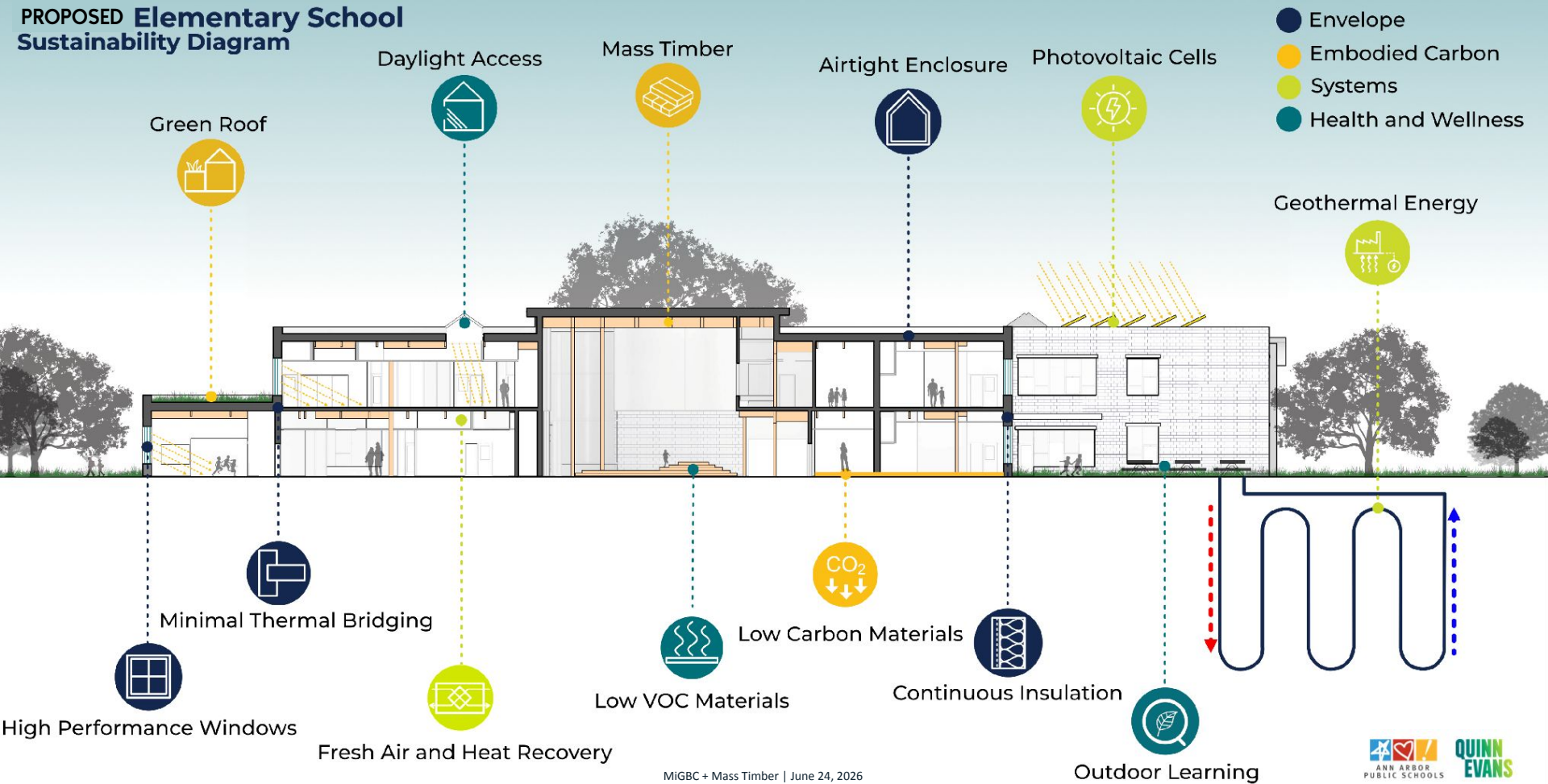
New Dicken Elementary School

Architect: DLR Group + Wightman

Construction Manager: Brix Co

Manufacturer (Mass Timber): Element 5

PROPOSED **Elementary School**
Sustainability Diagram



MIGBC + Mass Timber | June 24, 2026

ANN ARBOR PUBLIC SCHOOLS
LEAD. CARE. INSPIRE.



Thank You!

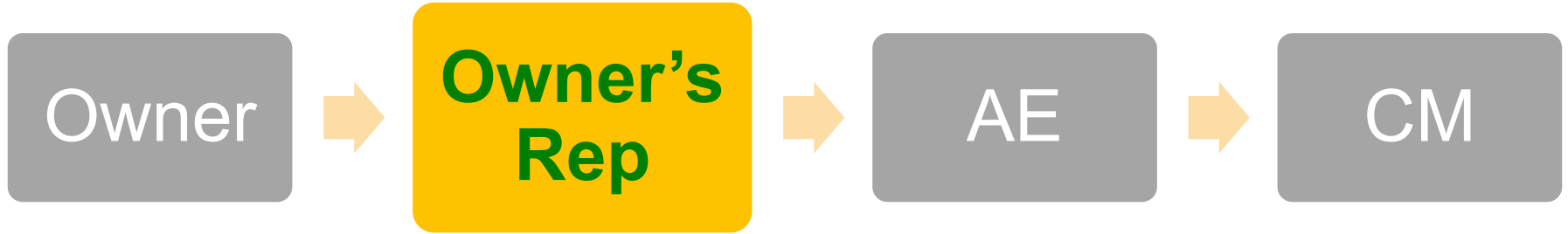
Questions: Jason Bing – bingj@aaps.k12.mi.us

For more information, please visit:
A2schoolsbond.org



The Learning Curve

From Idea to Implementation



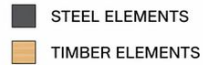
Start Smart

First Phase: Prove the Case

1. STEEL FRAME

Timber Floor and Roof Deck

- Steel columns and beams
- Mass timber floor and roof deck
- Open structure
- Exterior walls not shown



Data-Driven Expansion

Second Phase: From Feature to Structural System

2. MASS TIMBER FRAME

Timber Floors, Roof and Frame

- Mass timber columns and beams
- Mass timber floor and roof deck
- Wood structure expressed
- Open structure
- Exterior walls not shown



Modular Mindset

Future Phases: Not just '*what material?*', but '*what process?*'

3. MODULAR MASS TIMBER

Volumetric / Modular Approach

- Volumetric mass timber modules – complete rooms
- CLT walls, floors and roof form structural boxes
- Modules fabricated in factory and assembled on site
- Regular module bays – repetitive and stackable
- Integrated stairs and cores as modular elements
- Modules stacked and connected vertically and horizontally on site
- Exterior walls not shown (partial cutaway for clarity)



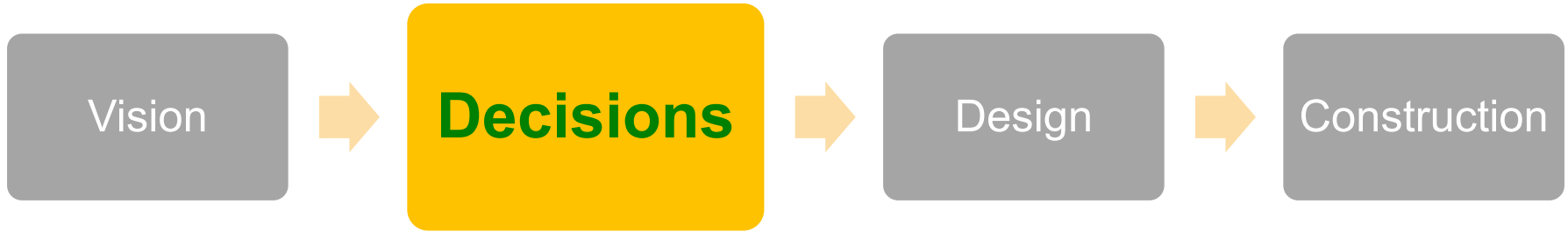
What We Learned

Three Key Lessons

Insight	What It Means	Risk/Opportunity
Start early	Decisions must be front-loaded	Late changes are costly
Integration matters	Structure + MEP + architecture must align	Silos sacrifice efficiency
Right-sizing timber	Not all-timber, not no-timber	Optimize where it works

What Comes Next

Sharing the Results



Mitchell Elementary School



BAKERGROUP

Beckett & Raeder

IMEG



NEUMANN
SMITH

Mitchell Elementary School

Project Location



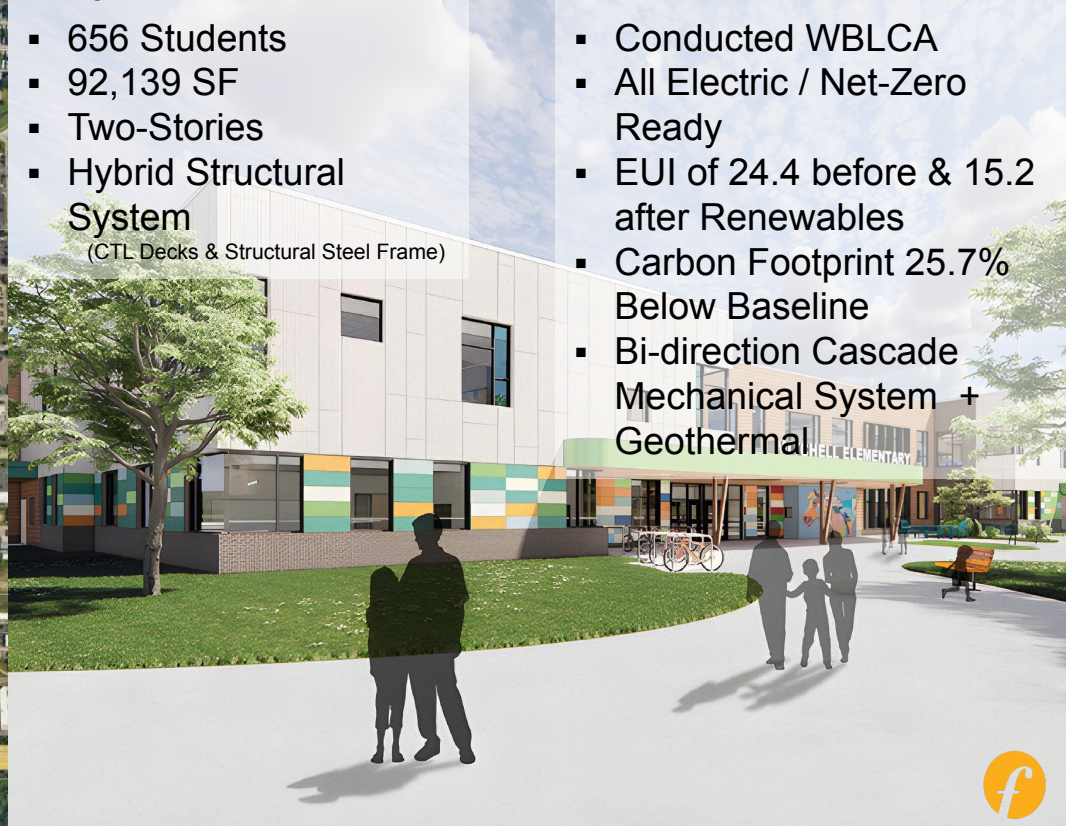
Mitchell Elementary School
3400 Lorraine St.
Ann Arbor, MI 48108

Project Stats

- 656 Students
- 92,139 SF
- Two-Stories
- Hybrid Structural System

(CTL Decks & Structural Steel Frame)

- Conducted WBLCA
- All Electric / Net-Zero Ready
- EUI of 24.4 before & 15.2 after Renewables
- Carbon Footprint 25.7% Below Baseline
- Bi-direction Cascade Mechanical System + Geothermal



Mitchell Elementary School



Architect of Record's (AoR) Project Role

Project Management
Project Team Coordination
(between Owner, Program Manager, Design, Architecture & Engineering)
Construction Documentation
City, County & State Permitting
Construction Oversight

Architect of Record's (AoR) Project Influence

Code Analysis (IIB) & Implementation
Structural Systems (Hybrid) & Materials
Analysis
Engineering Coordination & Oversight
WBLCA & Daylighting Analysis

Mitchell Elementary School



Now Part of USGBC

“...pronounced "chips" — is a green building rating and certification program specifically designed for K-12 schools...”

Ann Arbor Public Schools

CHPS Requirement

Verified Leader: **160 Points**
(170)

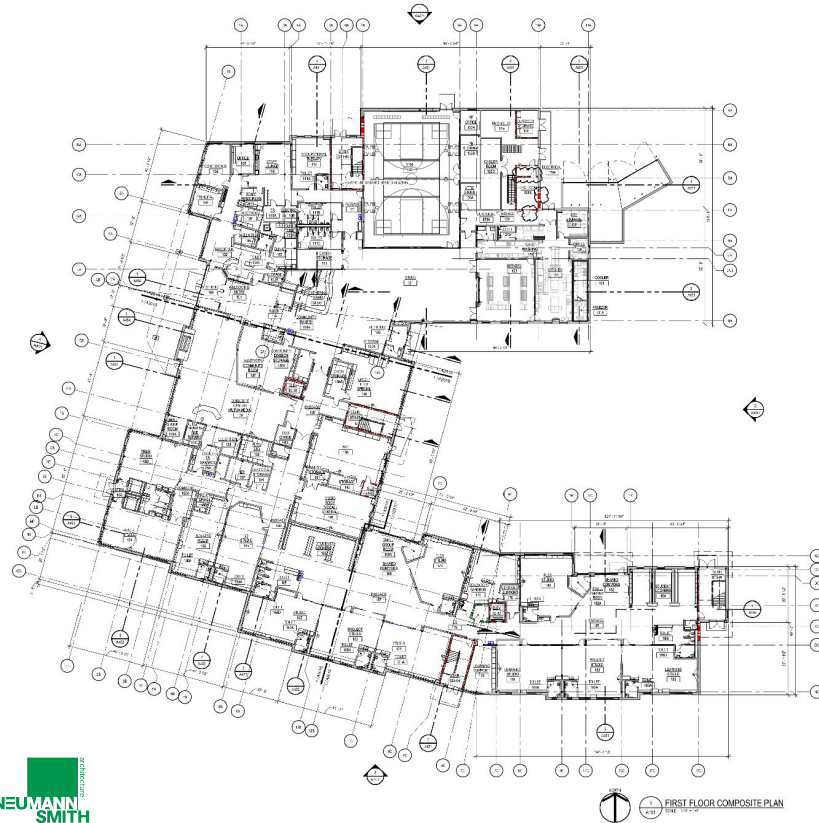
Category	% (Points)
Integration (II)	14% (35)
Indoor Environmental Quality (EQ)	32.5% (81)
Energy (EE)	23% (57)
Water (WE)	8% (20)
Site (SS)	9% (23)
Materials & Waste (MW)	6.5% (16)
Operations (OM)	7% (18)
TOTALS	100% (250)

Cafeteria



Mitchell Elementary School

First Floor Plan



Second Floor Plan



Mitchell Elementary School

Curiosity Center



Curiosity Center



Mitchell Elementary School

Learning Studio



Commons



Mitchell Elementary School

Curiosity Center



Cafeteria



Mitchell Elementary School

Learning Studio



Commons

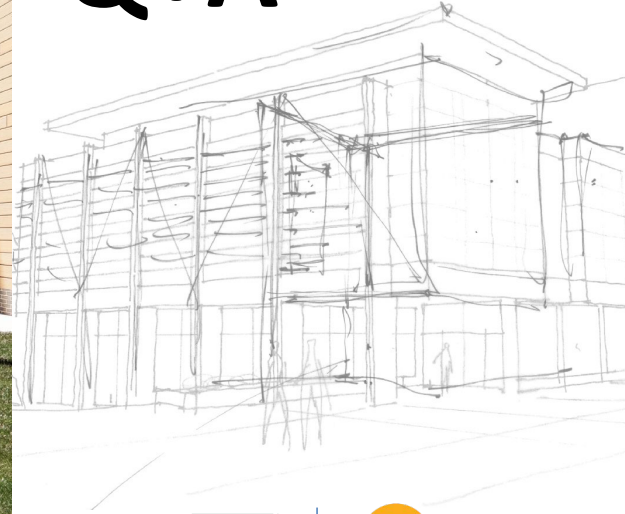


Mitchell Elementary School



Thank You

Q+A

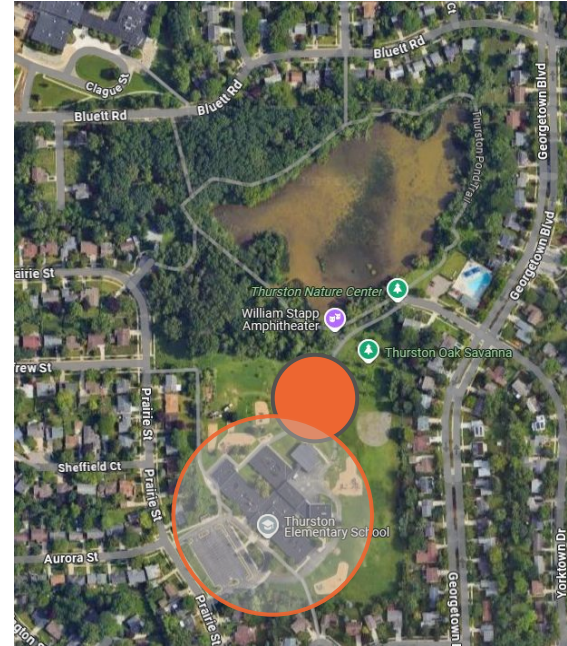
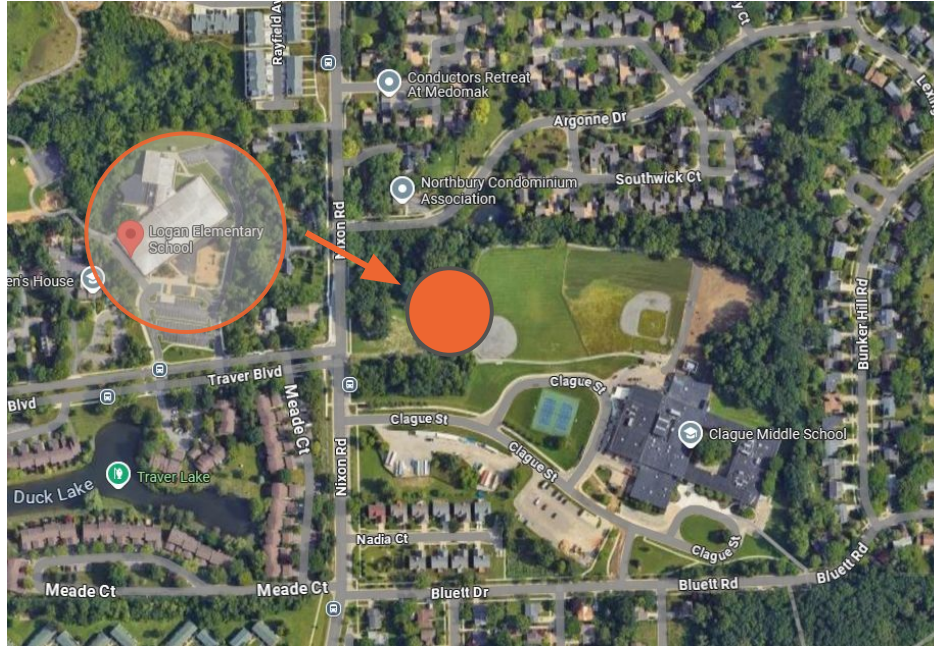


Mass Timber Webinar Series – Healthy Schools:

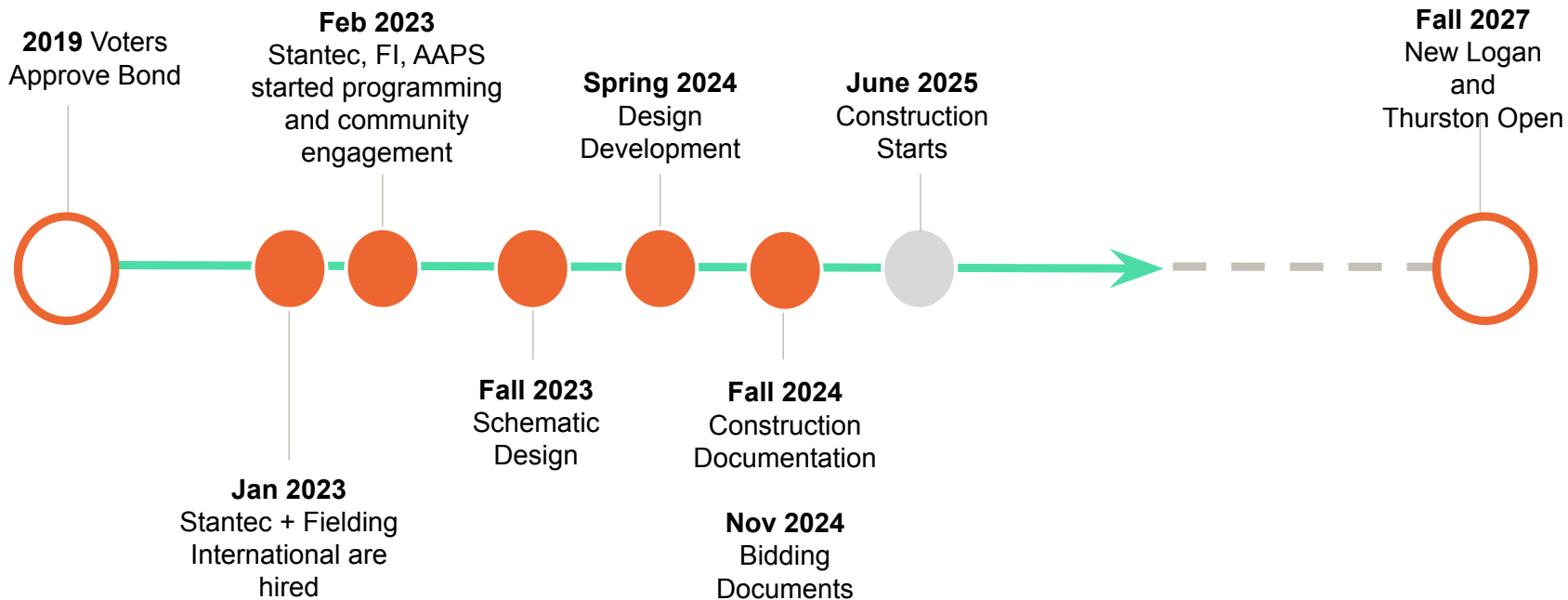
Ann Arbor Public Schools' 21st Century Learning Leadership Logan and Thurston Elementary Schools



Logan & Thurston Elementary Schools Locations



Where we are...



HEALTHY SCHOOLS: ANN ARBOR PUBLIC SCHOOLS

II C6.1	Low/Zero GHG Schools (1-6 points)	5				
II C6.1.1	Energy Efficient, All Electric	1				0
II C6.1.2	100% Renewable Energy	1	1			
II C6.1.3	Low Embodied Carbon Materials	3	3			
II C6.1.4	Environmentally Preferable Refrigerants	1	1			
MW C3.1	Certified Wood & Recycled Content Materials (1-3 points)	3				
MW C3.1.1	Certified Wood	1	1			
MW C3.1.2	Recycled Content (1-2 points)	2	1		1	

CHPS Criteria: Low Embodied Carbon Materials

Awarded three points for installing low-carbon materials

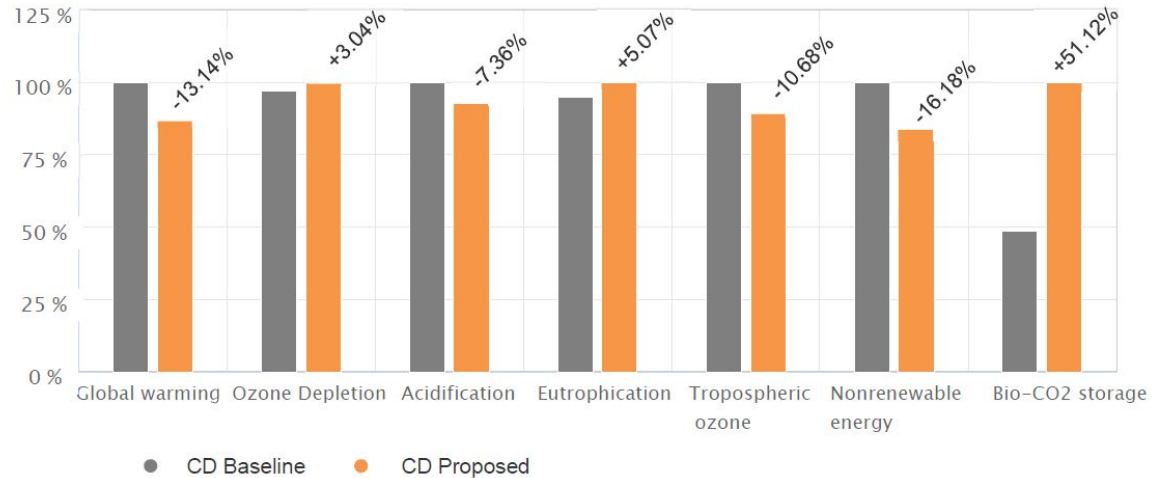
- Concrete
- Steel
- Timber
- Insulation



CHPS Criteria: Whole Building Lifecycle Assessment

Impact

- 13.14% reduction in embodied carbon with CLT
- Up to 29.3% reduction if biogenic carbon from CLT is included



CHPS Criteria: Certified Wood (FSC)

Awarded one point for certified wood

- Utilized Forest Stewardship Council (FSC) Wood on:
 - Framing
 - Flooring
 - Finishes
 - Cabinetry













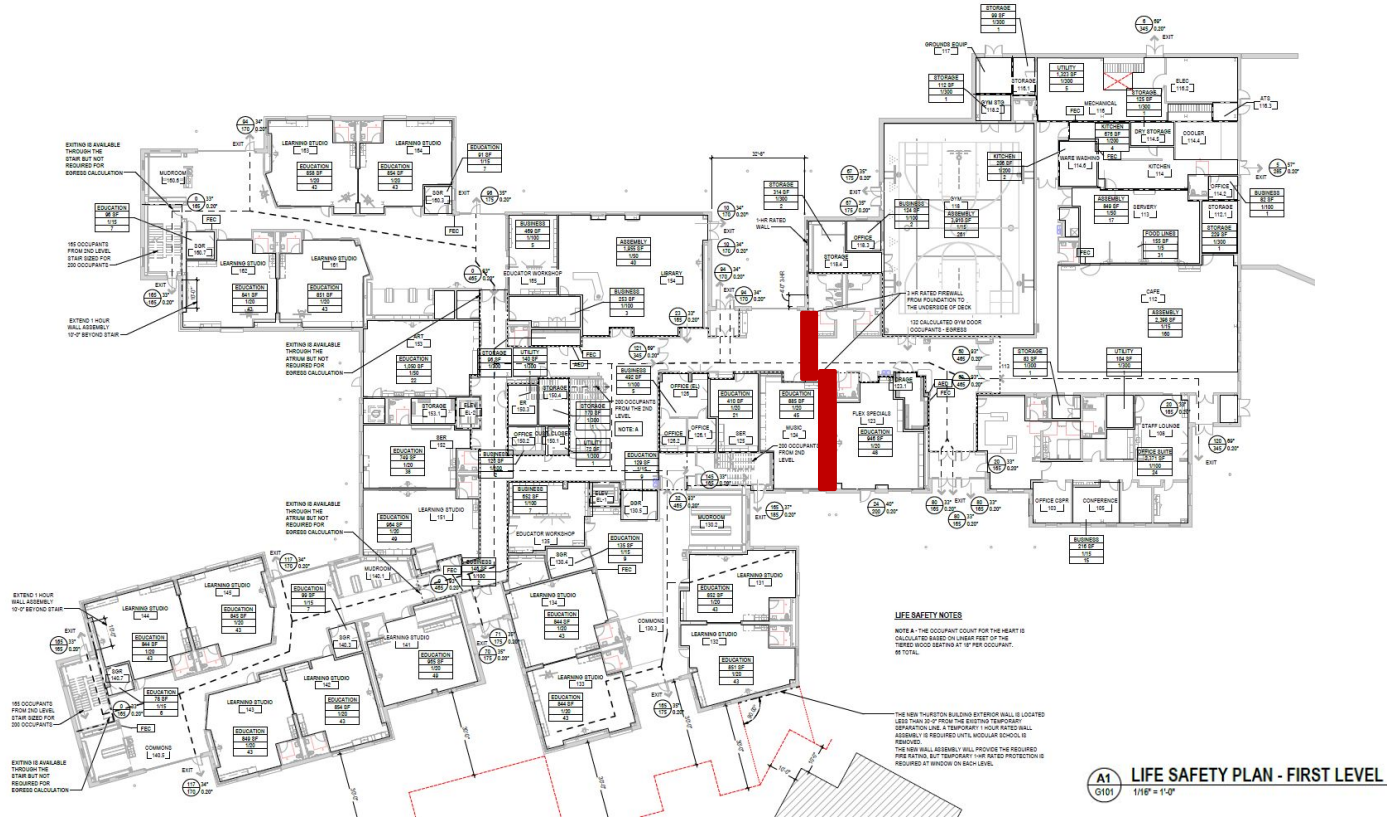
Construction Type Limitations:

Michigan Building Code 2015 (International Building Code 2015)

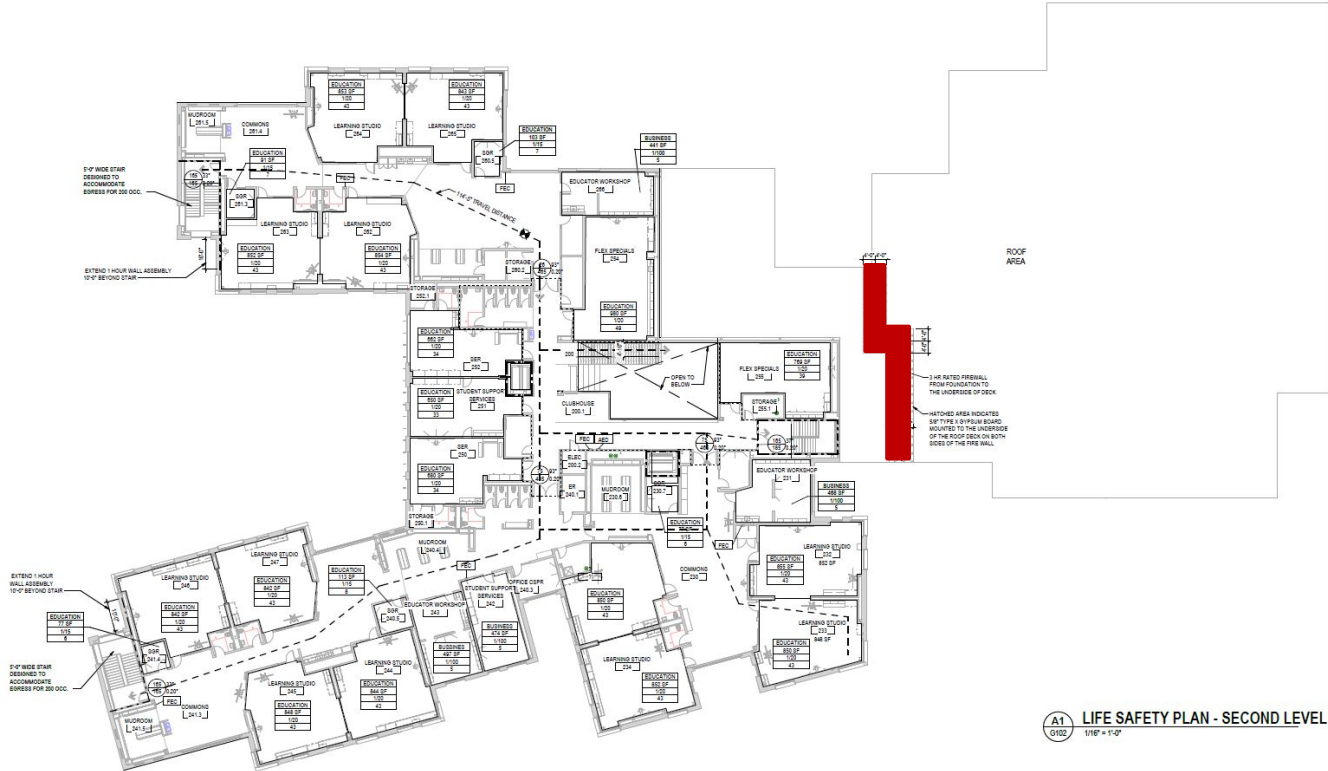
TABLE 506.2^{a, b}
ALLOWABLE AREA FACTOR (A_t = NS, S1, S13R, or SM, as applicable) IN SQUARE FEET

OCCUPANCY CLASSIFICATION	SEE FOOTNOTES	TYPE OF CONSTRUCTION								
		TYPE I		TYPE II		TYPE III		TYPE IV	TYPE V	
		A	B	A	B	A	B	HT	A	B
E	NS	UL	UL	26,500	14,500	23,500	14,500	25,500	18,500	9,500
	S1	UL	UL	106,000	58,000	94,000	58,000	102,000	74,000	38,000
	SM	UL	UL	79,500	43,500	70,500	43,500	76,500	55,500	28,500

Construction Type Limitations



Area Limitations

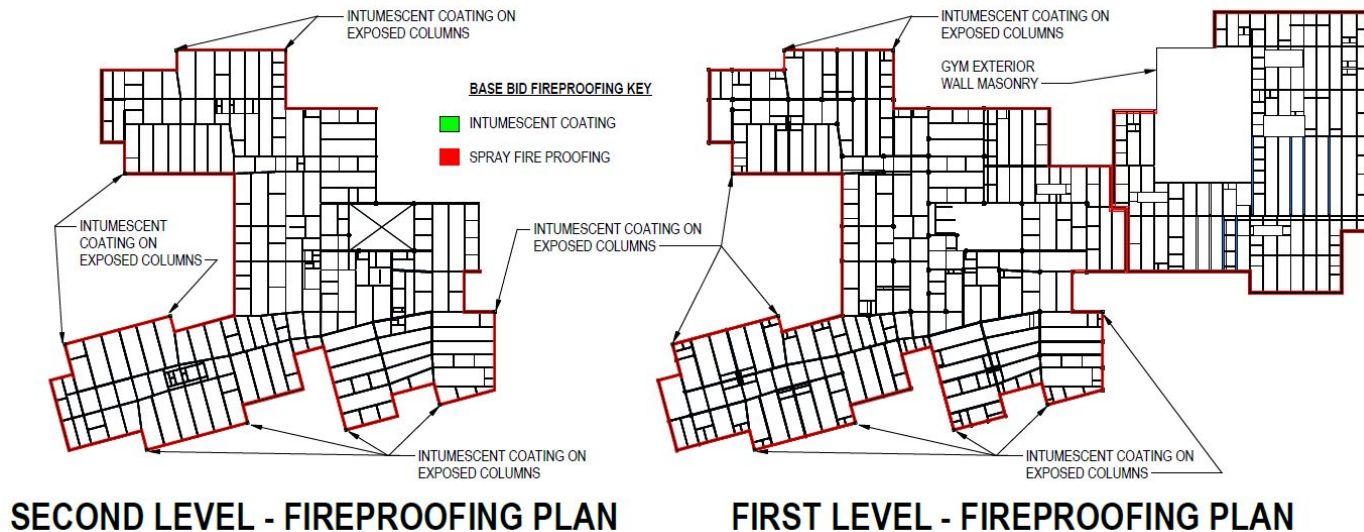


Rating Requirements

TABLE 601
FIRE-RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS (HOURS)

BUILDING ELEMENT	TYPE I		TYPE II		TYPE III		TYPE IV	TYPE V	
	A	B	A	B	A	B	HT	A	B
Primary structural frame ^f (see Section 202)	3 ^a	2 ^a	1	0	1	0	HT	1	0
Bearing walls									
Exterior ^{e, f}	3	2	1	0	2	2	2	1	0
Interior	3 ^a	2 ^a	1	0	1	0	1/HT	1	0
Nonbearing walls and partitions Exterior	See Table 602								
Nonbearing walls and partitions Interior ^d	0	0	0	0	0	0	See Section 602.4.8	0	0
Floor construction and associated secondary members (see Section 202)	2	2	1	0	1	0	HT	1	0
Roof construction and associated secondary members (see Section 202)	1½ ^b	1 ^{b,c}	1 ^{b,c}	0 ^c	1 ^{b,c}	0	HT	1 ^{b,c}	0

Rating Requirements



Flame Spread Application

SECTION 602 PLENUMS

602.1 General. Supply, return, exhaust, relief and ventilation air *plenums* shall be limited to uninhabited crawl spaces, areas above a ceiling or below the floor, attic spaces, mechanical *equipment* rooms and the framing cavities addressed in Section 602.3. *Plenums* shall be limited to one fire area. Air systems shall be ducted from the boundary of the fire area served directly to the air-handling *equipment*. Fuel-fired *appliances* shall not be installed within a *plenum*.

602.2 Construction. *Plenum* enclosure construction materials that are exposed to the airflow shall comply with the requirements of Section 703.5 of the *International Building Code* or such materials shall have a flame spread index of not more than 25 and a smoke-developed index of not more than 50 when tested in accordance with ASTM E84 or UL 723.

8.15.1.2.10 Concealed spaces where rigid materials are used and the exposed surfaces have a flame spread index of 25 or less, and the materials have been demonstrated not to propagate fire more than 10.5 ft (3.2 m) when tested in accordance with ASTM E84, *Standard Test Method of Surface Burning Characteristics of Building Materials*, or ANSI/UL 723, *Standard for Test for Surface Burning Characteristics of Building Materials*, extended for an additional 20 minutes in the form in which they are installed, shall not require sprinkler protection.

8.15.1.2.11* Concealed spaces in which the exposed materials are constructed entirely of fire retardant-treated wood as defined by NFPA 703 shall not require sprinkler protection.

803.1.1 Interior wall and ceiling finish materials. Interior wall and ceiling finish materials shall be classified in accordance with ASTM E84 or UL 723. Such *interior finish* materials shall be grouped in the following classes in accordance with their flame spread and *smoke-developed indexes*.

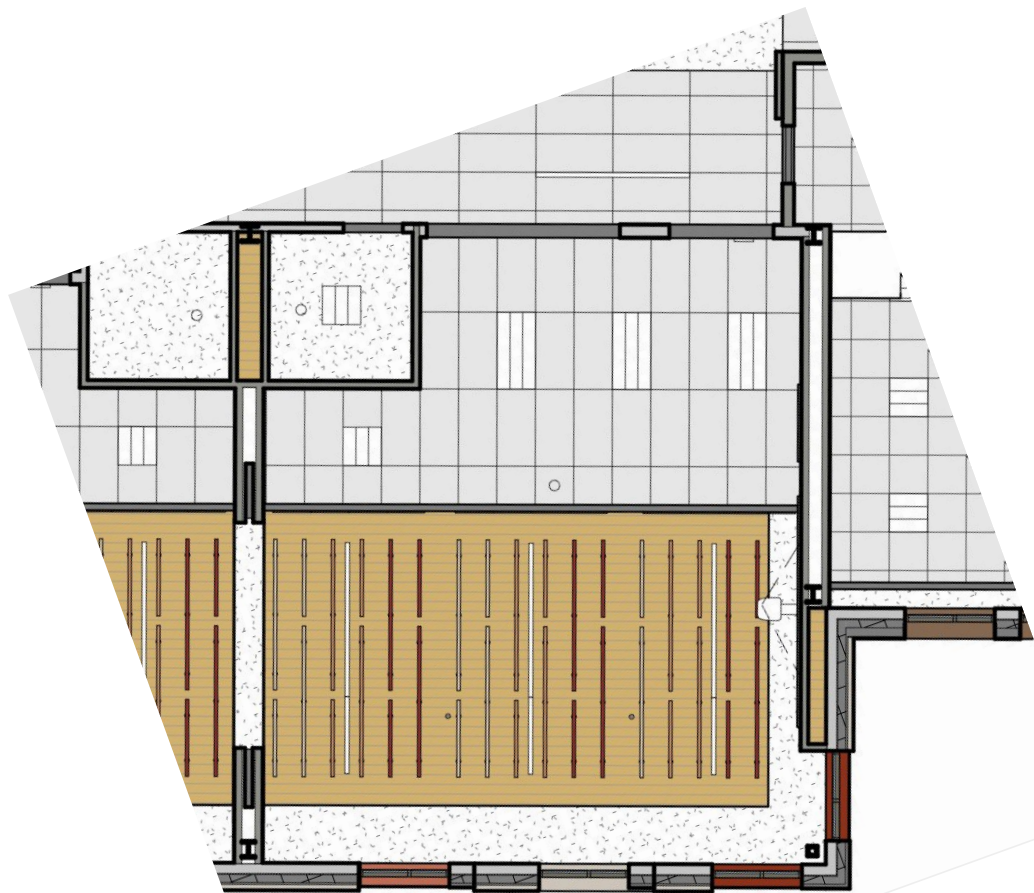
- Class A: = Flame spread index 0-25; smoke-developed index 0-450.
- Class B: = Flame spread index 26-75; smoke-developed index 0-450.
- Class C: = Flame spread index 76-200; smoke-developed index 0-450.

Acoustics

Reverberation targets in learning spaces

Max sound reverberation times in one-octave frequency bands at 500 Hz 1,000 and 2,000 Hz:

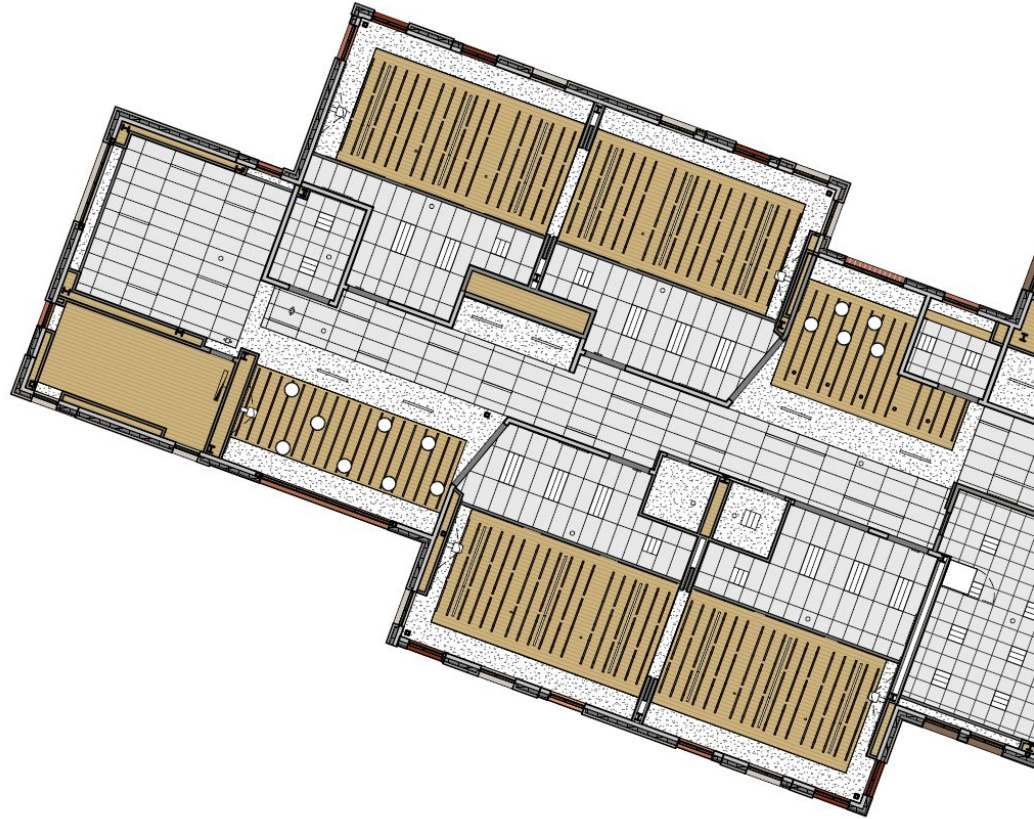
- Core learning spaces with volume less than 10,000 ft³ at 0.60 seconds
- Core learning spaces with volume between 10,000 ft³ and 20,000 ft³ 0.70 seconds
- Core learning spaces with volume greater than 20,000 ft³ 1.0 seconds



Acoustics

To achieve the criteria for sound reverberation of core learning spaces with a **volume less than 10,000 ft³ at 0.60 seconds**, we selected:

- Rockfon Tropic acoustical ceiling panels: NRC 0.95
- Exposed CLT deck: NRC 0.05
- Gypsum Board Soffits: NRC 0.05





Column Dimensions and CLT Orientation

Specific to Logan and Thurston the following maximum spans were reviewed for floor and roof applications:

CLT roof (3-ply panel):

Double span:

E1 stress grade: max. span = 11.8'

Triple span:

E1 stress grade: max. span = 12.5'

CLT floor (5-ply panel):

Double span:

E1 stress grade: max. span = 20.0'

Triple span:

E1 stress grade: max. span = 20.0'

Alternate
Grade
Considerations:

CLT roof (3-ply panel):

Double span:

V2 stress grade: max. span = 7.5'

Triple span:

V2 stress grade: max. span = 8.0'

CLT floor (5-ply panel):

Double span:

V2 stress grade: max. span = 15.0'

Triple span:

V2 stress grade: max. span = 16.5'



Thank you.



Lindsay Woods

AIA, CSI, CDT, NCARB, LEED® Green Associate
Stantec | Project Manager
lindsay.woods@stantec.com

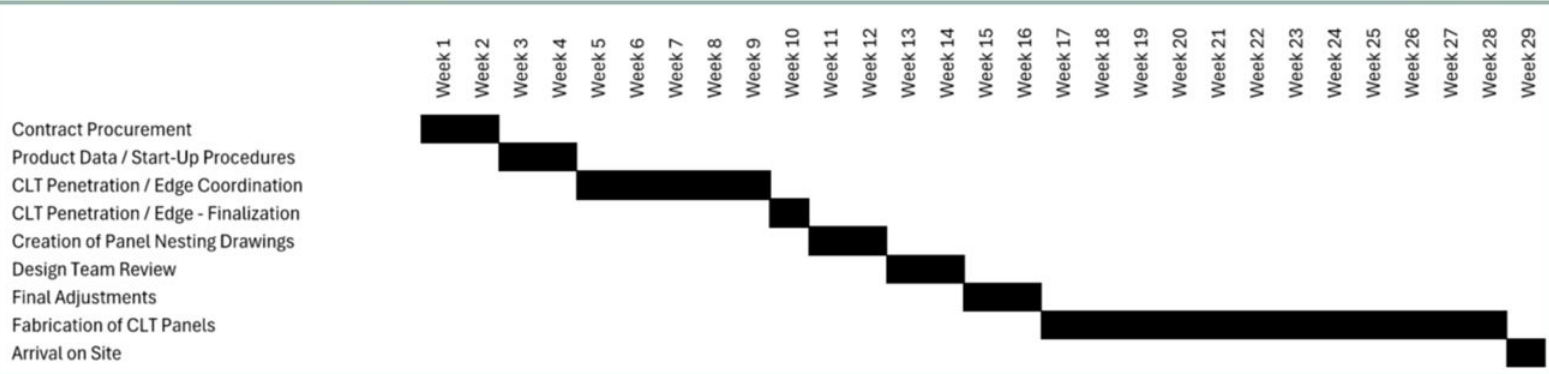


Building with Mass Timber

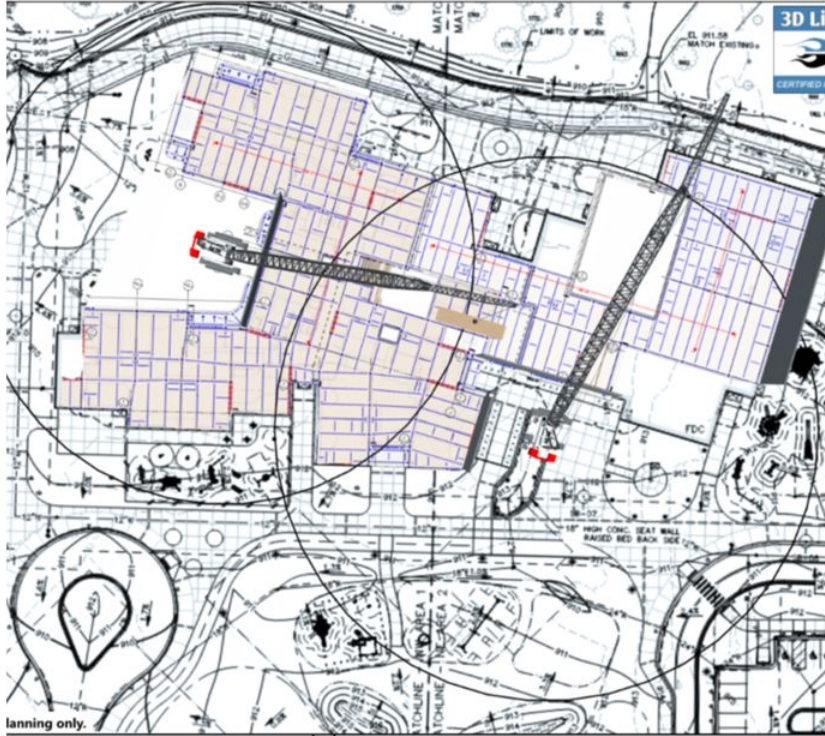
Mitch DeLange
Senior Project Manager



Project Planning



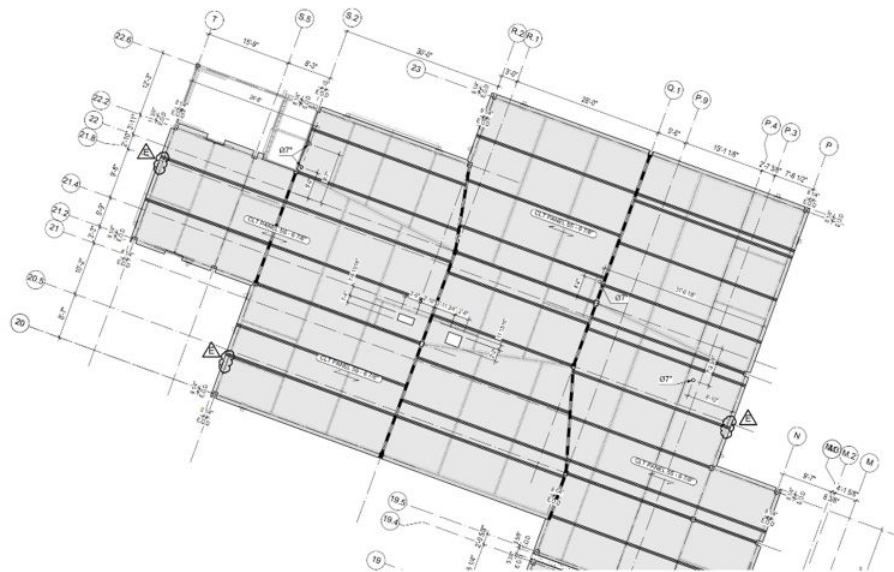
Logistics



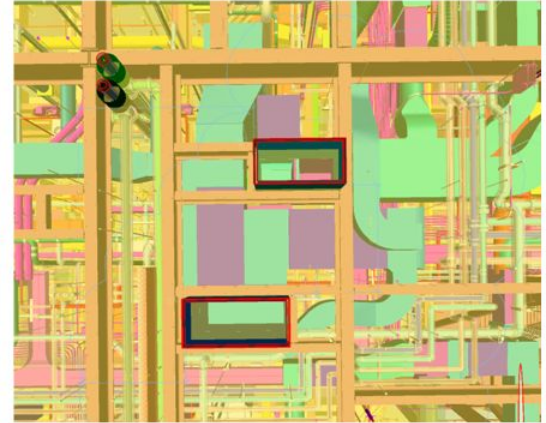
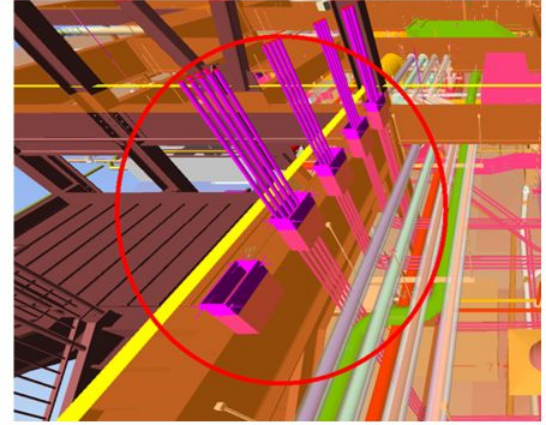
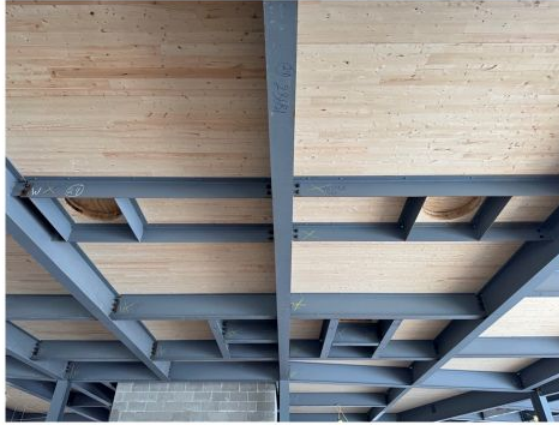
Construction Sequencing



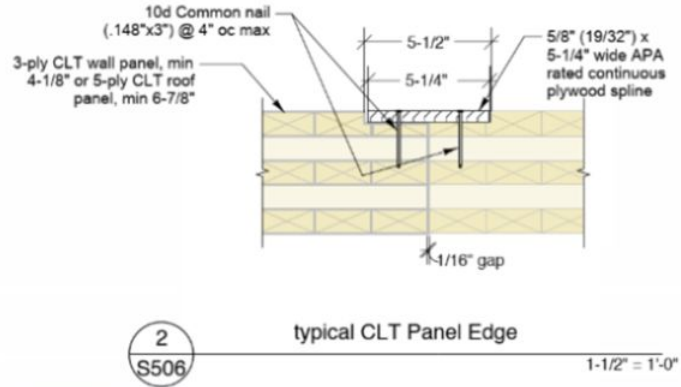
Construction Sequencing



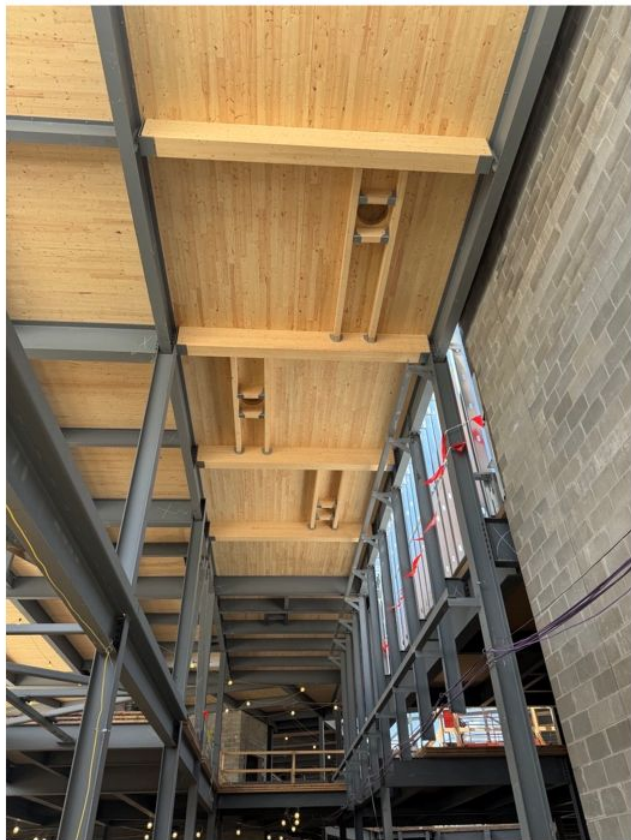
CLT Coordination



Quality Control

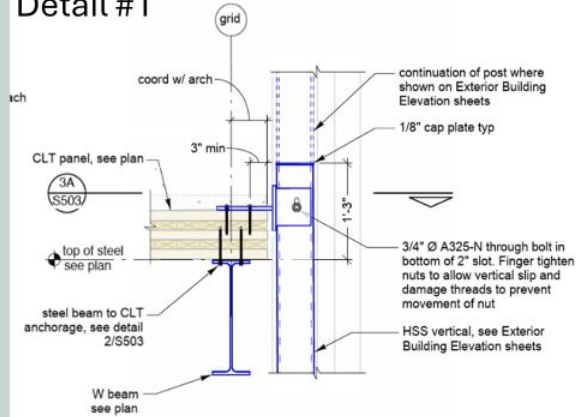


Quality Control

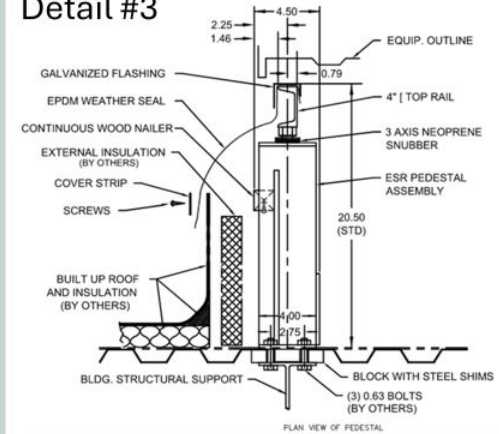


Details

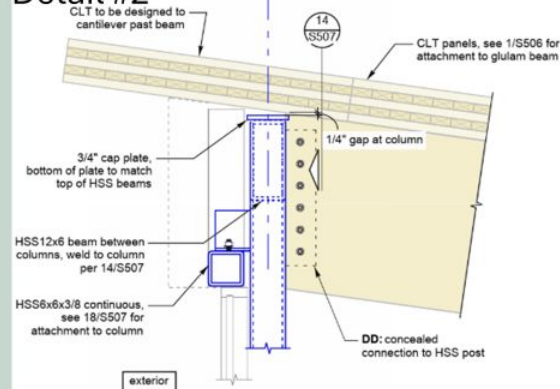
Detail #1



Detail #3



Detail #2





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Thank you!



Jason Bing

Director, Capital Programs

Ann Arbor Public Schools

Owner/Project History

Kevin Stansbury

Project Design Manager

Gilbane Building Co

Program Manager/Owner's rep

Jeffrey L. Winslow

Associate/Senior Project Manager

Neumann/Smith Architecture

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