Understanding the Cost of Mass Timber: Design, Drivers, and Case

September 3, 2025

Presented by

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

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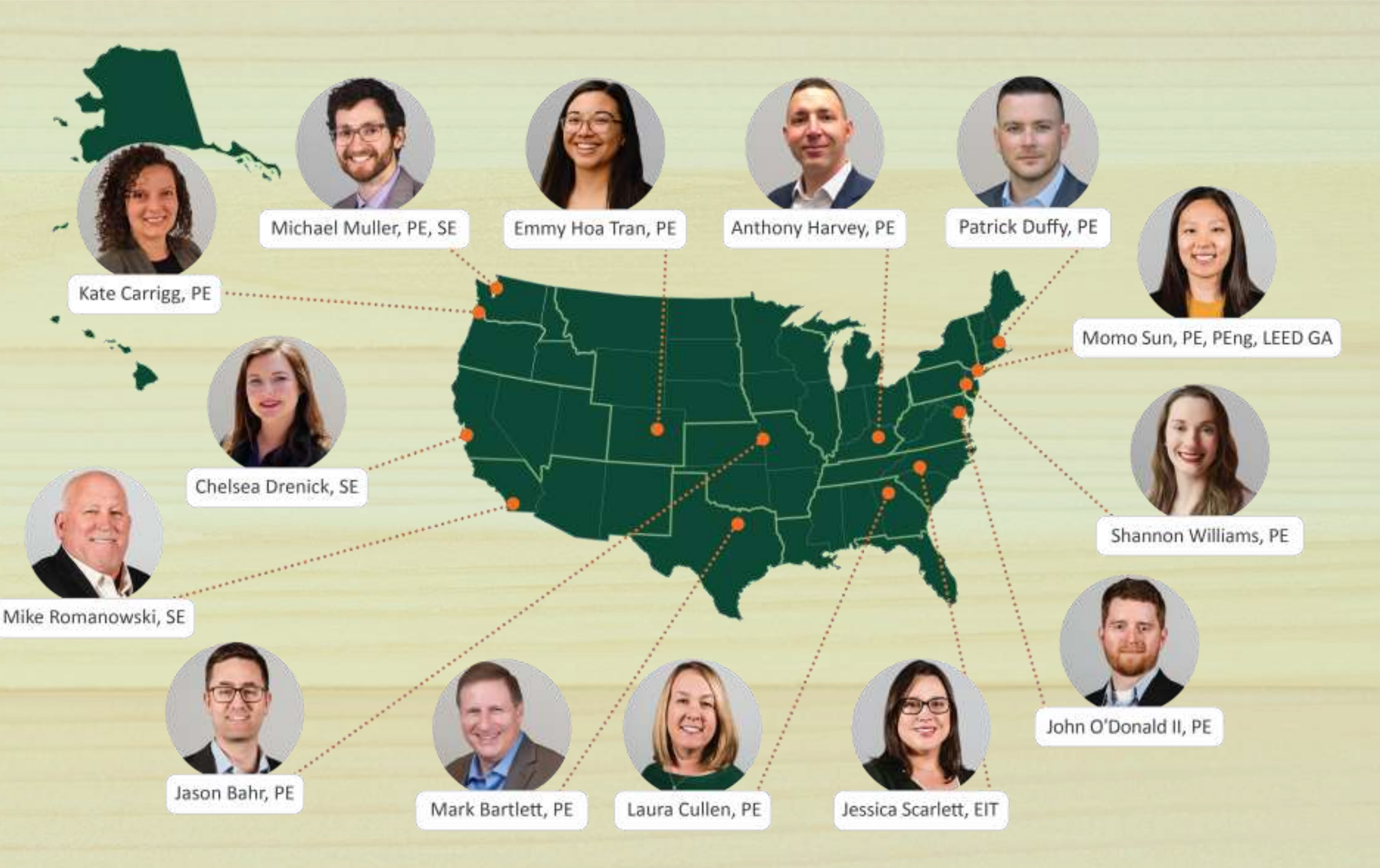

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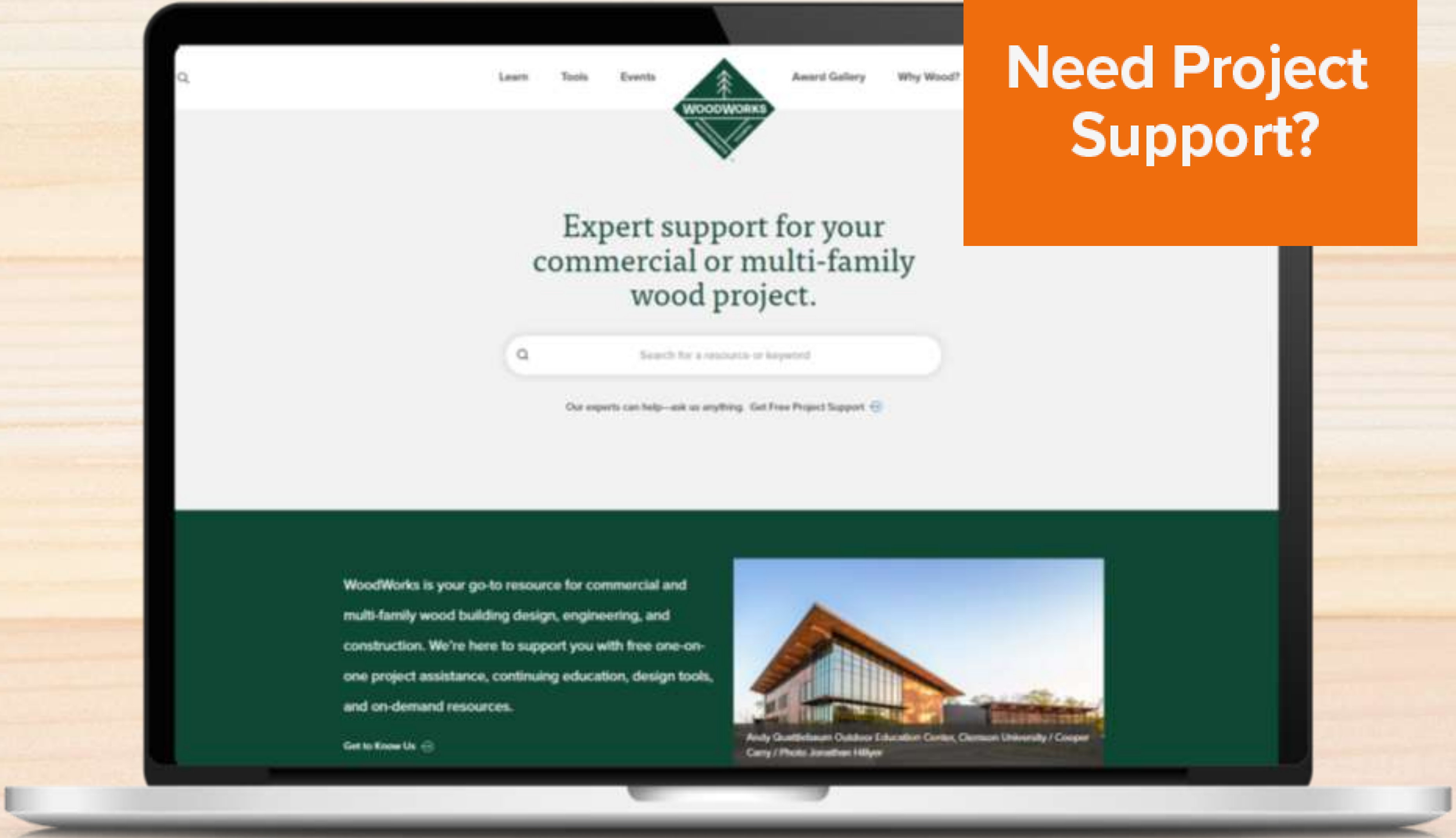


Need Project Support?

Building Systems

- Light-Frame
- Mass Timber / CLT
- Off-Site / Panelized Construction
- Hybrid

Building Types

- Multi-Family / Mixed Use
- Education
- Office
- Commercial Low-Rise
- Industrial
- Civic / Recreational
- Institutional / Healthcare

View All

On Demand Education

Find over 140 continuing education courses on wood topics for architects, engineers, general contractors, and code officials.

WoodWorks Innovation Network

Discover mass timber projects across the US and connect with their teams.

Our experts can help—ask us anything. Get Free Project Support

WoodWorks is your go-to resource for commercial and multi-family wood building design, engineering, and construction. We're here to support you with free one-on-

Building Systems

- Light-Frame 26
- Mass Timber / CLT 20
- Hybrid 10
- Panelized Construction 6

Building Types

- Multi-Family / Mixed-Use 35
- Office 15
- Education 8
- Institutional / Healthcare 8
- Commercial Low-Rise 7
- Civic / Recreational 5
- Industrial 5

Project Roles

- Architect 26
- Structural Engineer 23

podium

Using Podiums in Tall Wood Buildings

Common in light-frame wood construction, podiums are a viable, code-compliant option for tall mass timber buildings under the 2021 IBC.

Expert Tips

5-over-2 Podium Design: Part 1 – Path to Code Acceptance

First published in Structure, Part 1 of this two-part article covers design considerations and traditional approaches to 5-over-2 projects.

Solution Papers

5-over-2 Podium Design: Part 2 – Diaphragm and Shear Wall Flexibility

First published in Structure, Part 2 of this article covers flexibility issues associated with 5-over-2 structures and how they can affect the design process.

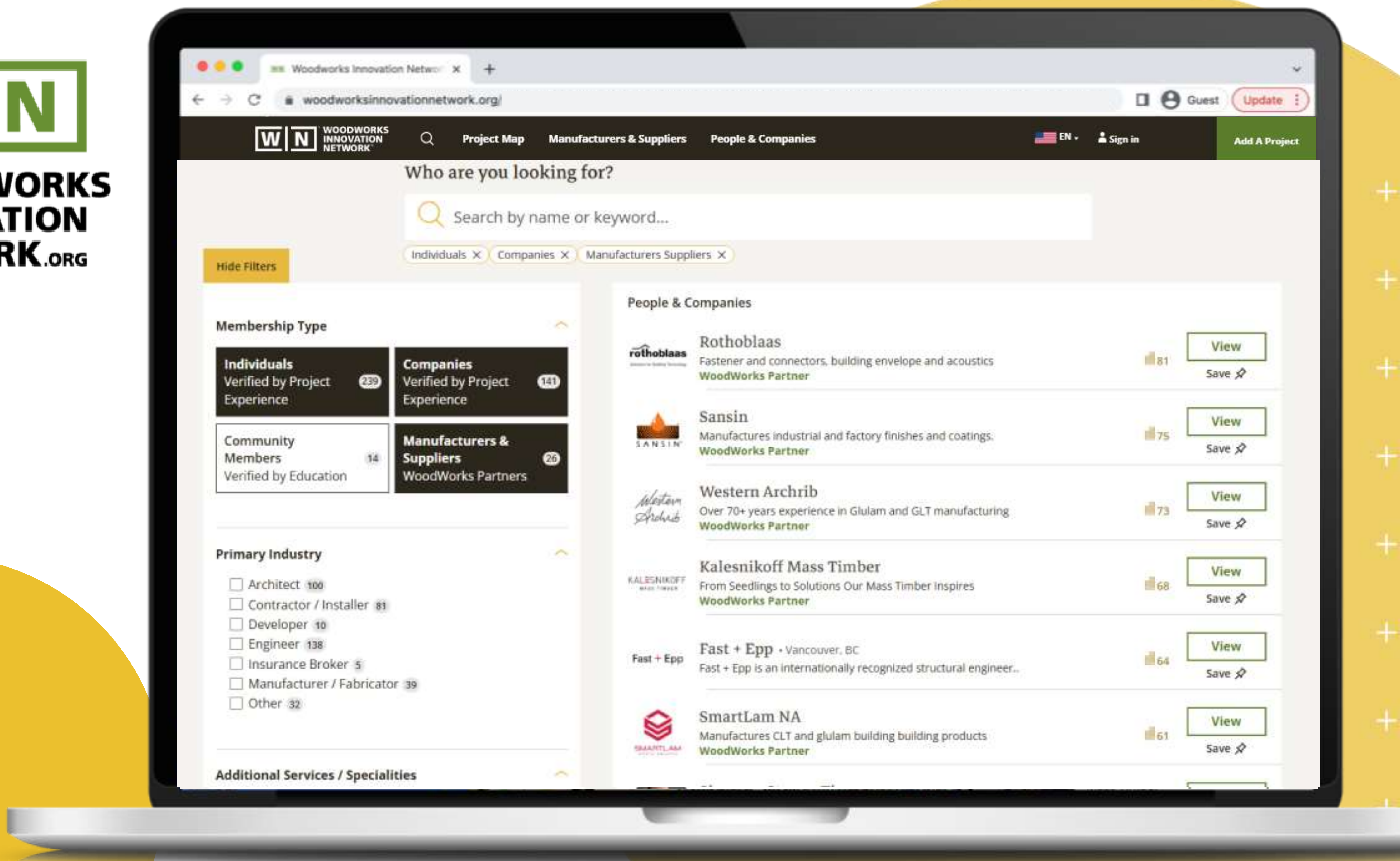
Solution Papers

Thomas Logan – Wood-Frame Podium Project Creates Affordable Housing

Developed to help fill a critical need for affordable housing in Boise's downtown core, Thomas Logan is a brick-clad building that fits perfectly within the urban neighborhood.

Case Studies

WOODWORKS INNOVATION NETWORK.ORG



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WOODWORKS WOOD PRODUCTS COUNCIL

Program Partners

EWP / PANELS

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MASS TIMBER

Mercer Mass Timber

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Element5 Mass Timber Buildings — A member of Hasslacher group

Freres Engineered Wood

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RedBuilt

Rothoblaas — Solutions for Building Technology

Sansin

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Timberlab

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QB Quality Buildings

Seagate Mass Timber Inc. — Quality + Integrity


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Attendee Notes

1. To receive a certificate of completion, stay on for the duration of the webinar.

2. GROUP ATTENDEES: Go to woodworks.org/webinar to find the *Group Sign-In Form.* Add each attendee and submit the form immediately following the webinar.

3. The PDF of today's presentation can be found on WoodWorks.org under the *Events* tab—then *Presentation Archives*.

WOODWORKS WPC

Agenda

Understanding the Cost of Mass Timber: Design, Drivers, and Case Studies		
AIA Course	1:00 – 1:05 pm	Welcome
	1:05 – 1:50 pm	Presentation
	1:50 – 2:00 pm	Webinar Q&A

WOODWORKS WOOD PRODUCTS COUNCIL

MASS TIMBER DESIGN & COST CONSIDERATIONS

Chris Kendall, P.E.
Principal ckendall@klaa.com

September 3, 2025

Photo Credit: JC Buck

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Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.

AIA Approved Continuing Education

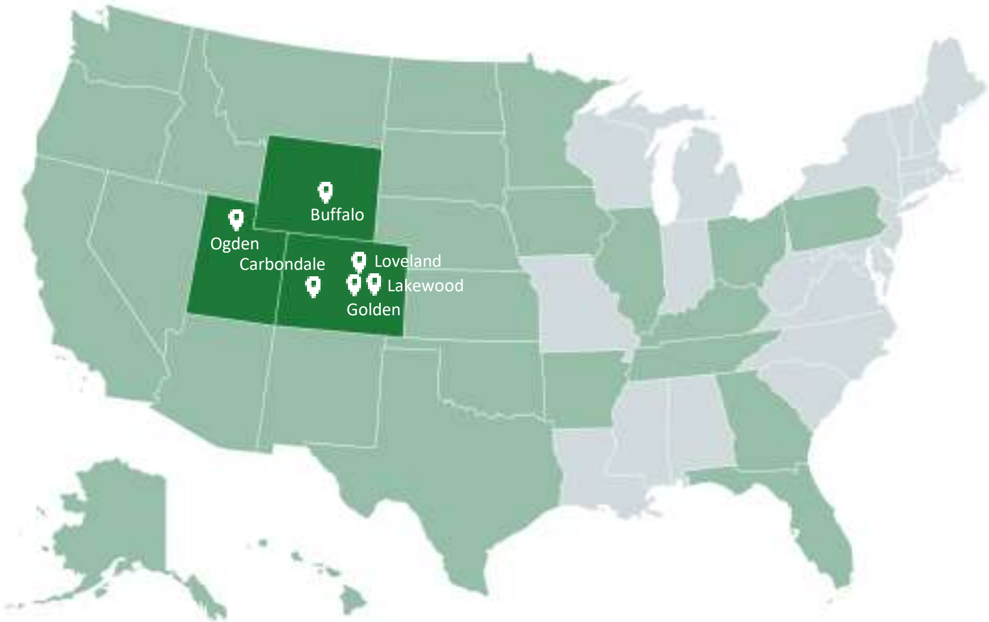
Course Description

For architects, engineers, and owners working with mass timber in commercial and institutional construction, an understanding of the economics behind the material is essential. This one-hour seminar will explore the cost drivers, value propositions, and design strategies that influence the financial viability of mass timber projects.

Participants will learn how early design decisions impact cost efficiency, hear lessons learned from built case studies, and gain insight from cost comparisons with equivalent steel and concrete buildings. The session will also present findings from a macroeconomic study that analyzed three buildings redesigned for mass timber in Minneapolis, Denver, and Atlanta, revealing region-specific cost impacts, schedule advantages, potential performance advantages, and critical design considerations.

Learning Objectives

1. Identify the key cost drivers and market conditions that influence the feasibility of mass timber construction across the U.S.
2. Evaluate how structural design choices, such as grid spacing, material interfaces, and prefabrication, affect the cost and efficiency of mass timber buildings.
3. Compare actual cost and performance data from case studies and material alternatives to better inform future project decisions.
4. Interpret the results of a regional mass timber cost study—examining impacts on construction schedule, carbon footprint, and construction cost in the Upper Midwest, Rocky Mountain, and Southeastern U.S. regions.



120+ Total Staff

70+ Licensed Engineers

6 Offices

31 Years in business

SERVICES

- Structural Engineering
- Civil Engineering
- Embodied Carbon Consulting
- Steel Detailing
- Steel Construction Management
- Mass Timber Construction Management

Outline

- What is Mass Timber?
- Mass Timber Precedent Projects
  - Construction Types
  - Asides
- Mass Timber in Building Codes?
- LCA Case Study Series And Cost Comparisons?
  - Denver Office
- Take Aways

Mass Timber | What is it?

- It's made of trees
- It's solid wood (big pieces made out of little pieces)
- It's flat panels (CLT, NLT, DLT, GLT, MPP etc.)
- It's also glulam beams and columns
- It's prefabricated

MASS TIMBER PRECEDENTS

Photo Credit: KL&A

Civic Office
31,750 Square Feet
CLT Floor and Roof Panels
Glulam Post and Beam
Construction Type V-B

Northglenn City Hall

Northglenn, CO
Anderson Mason Dale
2024

Image Credit: Anderson Mason Dale

Northglenn City Hall Floor Plan

Office
34,000 Square Feet
25’x30’ Grid
7 Ply 5-layer CLT Floor Panel
5 Ply CLT Roof Panels
Glulam post and beam
3 PLY CLT Shear Walls
Construction Type IV-HT

Loading Dock

Boulder, CO
OZ Architecture
2017

Photo Credit: KL&A

TYPE III-B BUILDINGS

University of Denver Burwell Center for Career Achievement, Denver, CO
Lake Flato & Shears Adkins + Rockmore

Office
23,000 Square Feet
23'x23' Grid
3 Ply CLT Floor and Roof Panels
5 Ply CLT Shear Walls
Glulam Post and Beam

Photo Credit: Ashley Murphy

Structural Elements

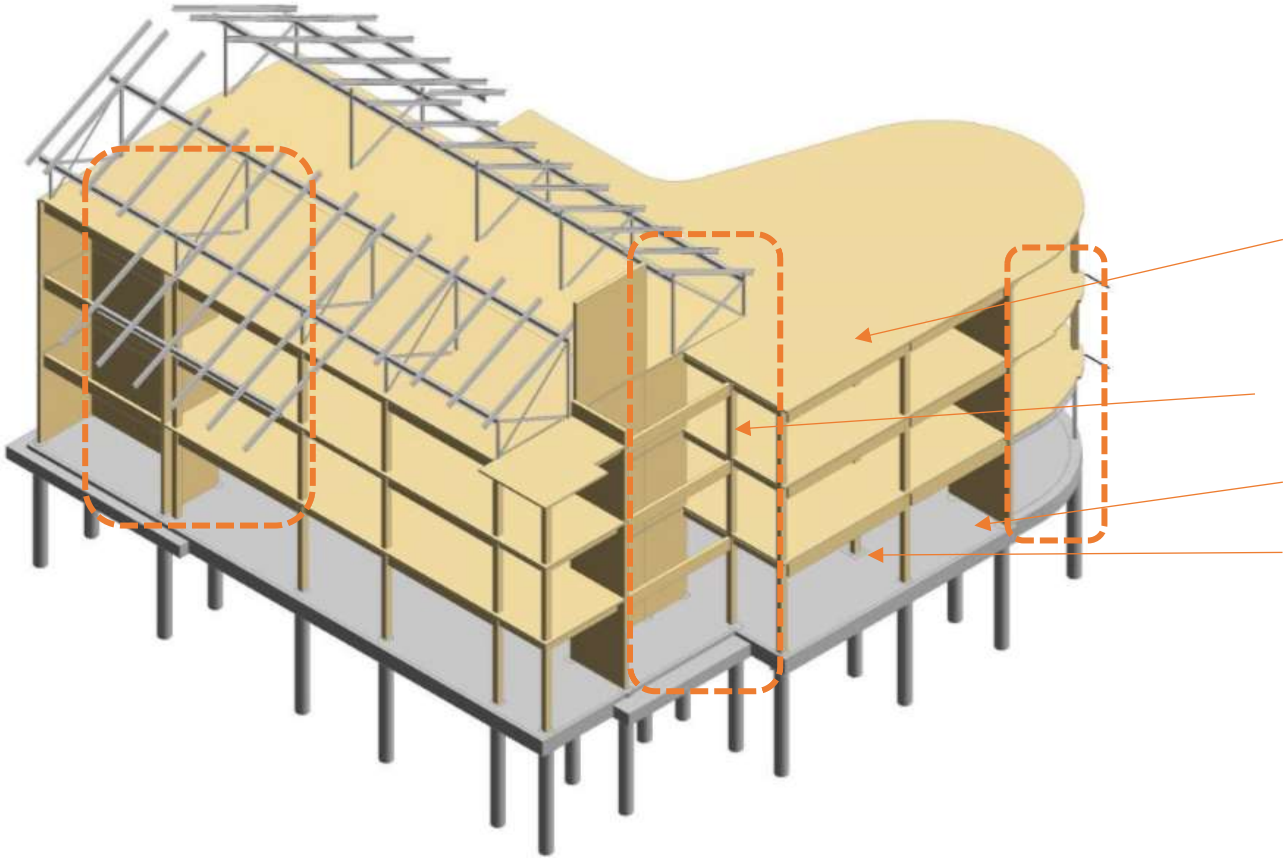


Image courtesy of KL&A

3-ply

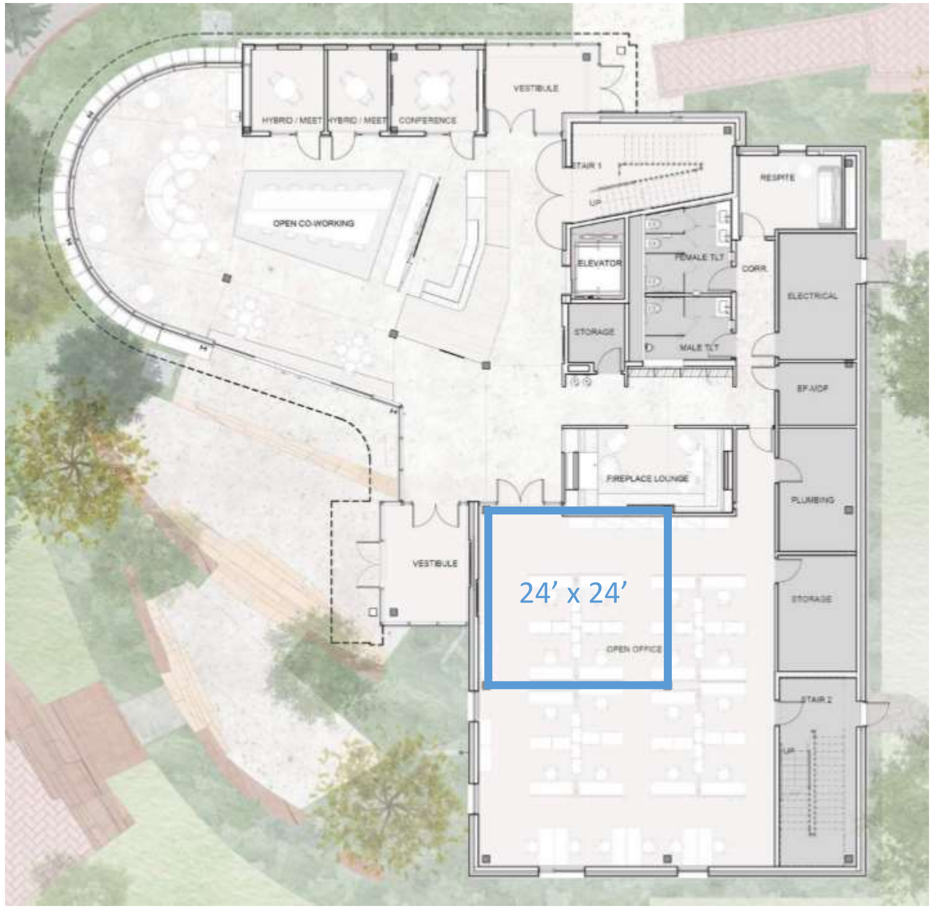
- 3-ply CL

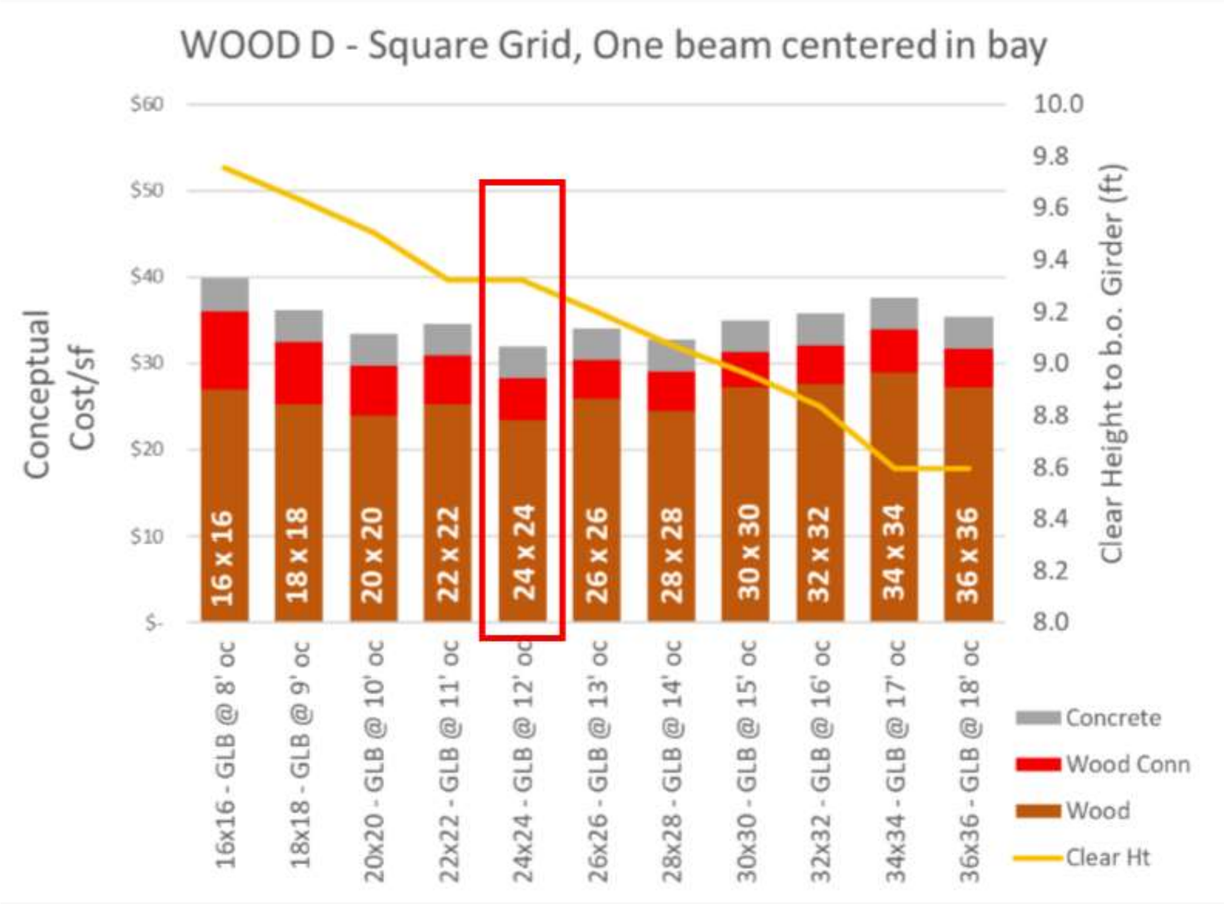
  (gravity and lateral diaphragms)

5-ply

- 5-ply CLT shea
- Glulam colum
- Glulam beams

Timber Building Grid Selection





Platte Fifteen

Denver, CO
OZ Architecture
2019

Office
30’x30’ Grid
135,000 Square Feet Mass Timber Construction Over 145,000 Square Feet of Concrete
CLT Floor and Roof Panels
Glulam Post and Beam
Construction Type III-B Over Type I-A

Photo Credit: JC Buck

PLATTE 15 CONNECTIONS

PLATTE
FIFTEEN

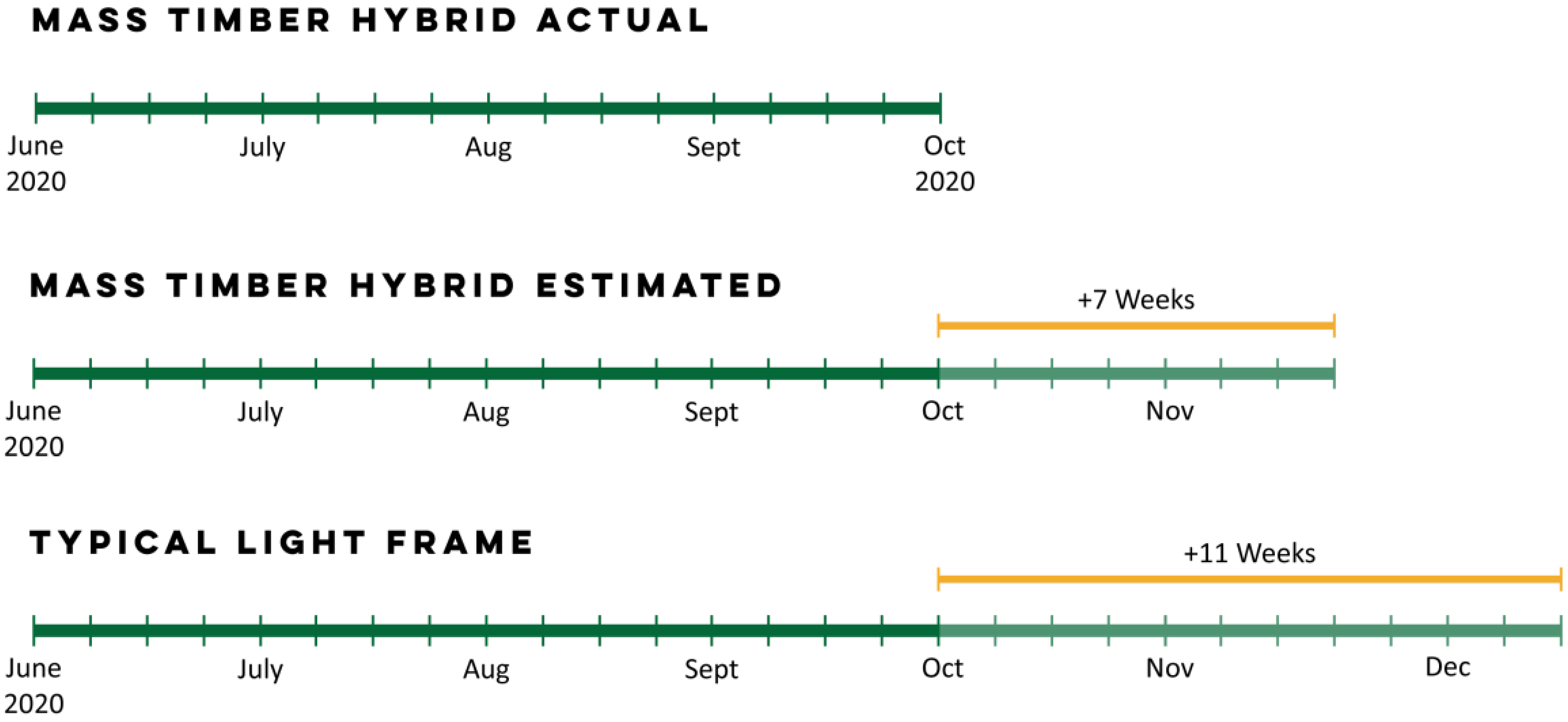
Multi-Unit Residential
232,000 Square Feet
Wood construction over
208,000 Square Feet
concrete
CLT and Light Frame Hybrid
292 Units
Construction Type III-A
Over Type I-A

Cirrus

Denver, CO
Davis Partnership Architects & Katerra
2022

Photo Credit: KL&A

Cirrus Hybrid Framing Duration



232,000 ft^2 of wood construction framed in 17 weeks (13,640 ft^2/week).

MASS TIMBER IN BUILDING CODES

Photo Credit: KL&A

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	A	B	C	HT	A	B
Primary structural frame[f] (see **Section 202**)	3[a, b]	2[a, b, c]	1[b, c]	0[c]	1[b, c]	0	3[a]	2[a]	2[a]	HT	1[b, c]	0
Bearing walls												
Exterior[e, f]	3	2	1	0	2	2	3	2	2	2	1	0
Interior	3[a]	2[a]	1	0	1	0	3	2	2	1/HT[g]	1	0
Nonbearing walls and partitions Exterior	See **Table 705.5**											
Nonbearing walls and partitions Interior[d]	0	0	0	0	0	0	0	0	0	See **Section 2304.11.2**	0	0
Floor construction and associated secondary **structural** members (see **Section 202**)	2	2	1	0	1	0	2	2	2	HT	1	0
Roof construction and associated secondary **structural** members (see **Section 202**)	$1^1/_2$[b]	1[b,c]	1[b,c]	0[c]	1[b,c]	0	$1^1/_2$	1	1	HT	1[b,c]	0

c. In all occupancies, heavy timber complying with **Section 2304.11** shall be allowed for roof construction, including primary structural frame members, where a 1-hour or less *fire-resistance rating is required.*

0 | HT | 1 | 2/3

SELECT A CONSTRUCTION TYPE WITH THE LOWEST FIRE-RESISTANCE RATING POSSIBLE

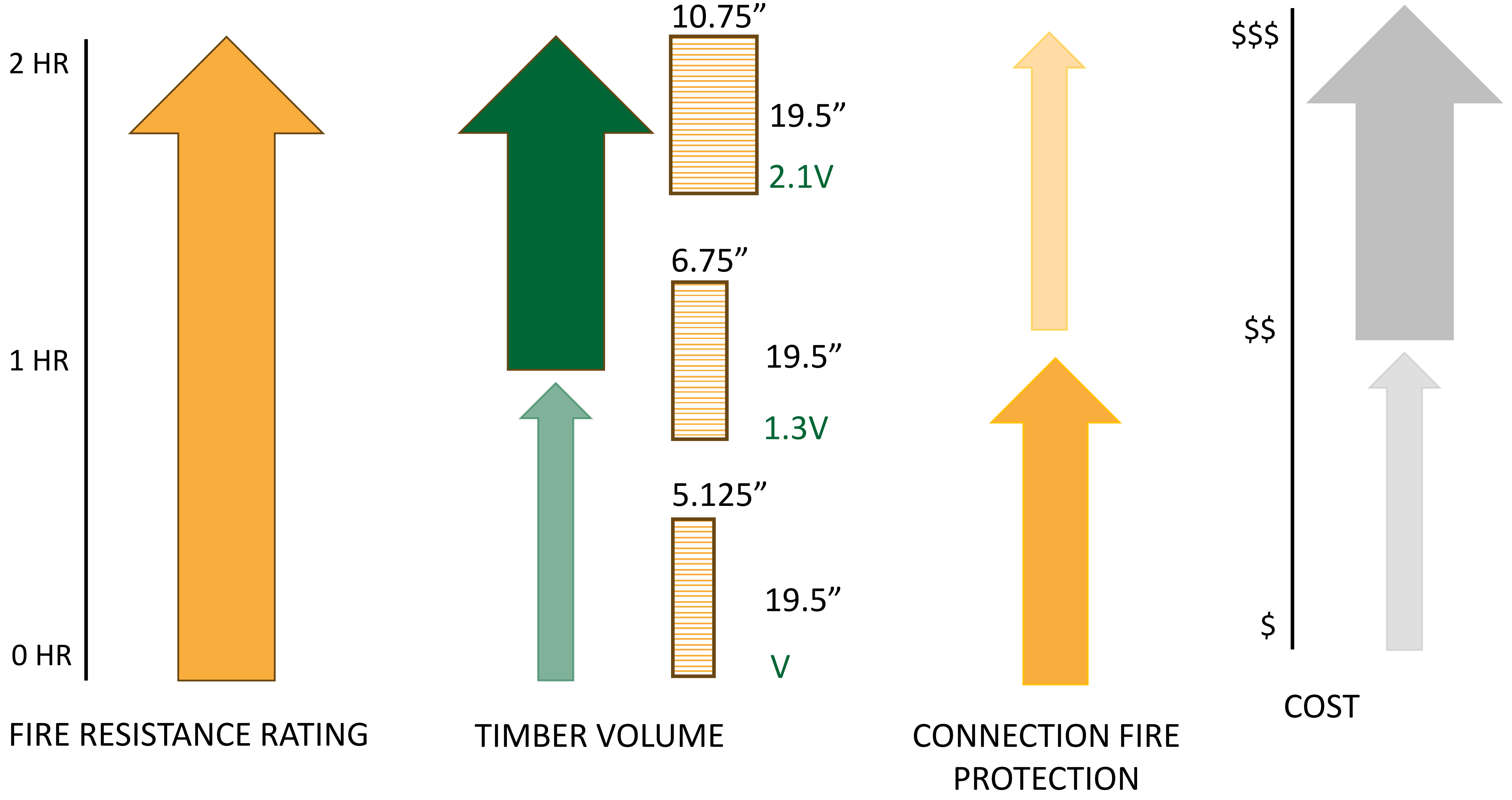
TYPE III		TYPE IV				TYPE V	
A	B	A	B	C	HT	A	B
6 85'	**4** 75'	**18** 270'	**12** 180'	**9** 85'	**6** 85'	**4** 70'	**3** 60'
85,500 SF	57,000 SF	324,000 SF	216,000 SF	135,000 SF	108,000 SF	54,000 SF	27,000 SF

BUSINESS (B) OCCUPANCY, SPRINKLERED

2024 IBC - CONSTRUCTION TYPE / ASSEMBLY

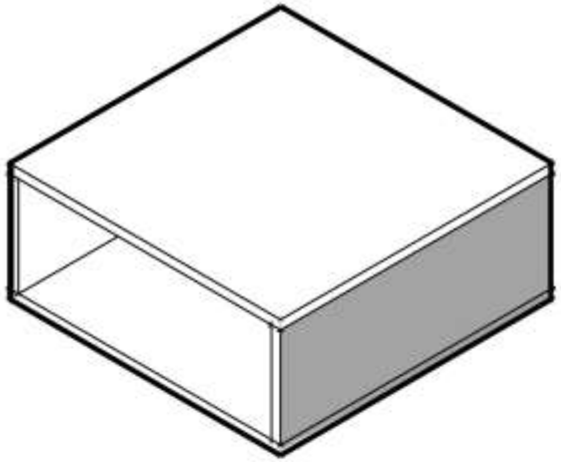
TYPE III		TYPE IV				TYPE V		
A	B	A	B	C	HT	A	B	
6 85'	4 75'	18 270'	12 180'	9 85'	6 85'	4 70'	3 60'	
1 HR	0 HR	3 HAR	3 HR	3 HR	HT	1 HR	0 HR	FRAME
1 HR	0 HR	2 HR	2 HR	2 HR	HT	1 HR	0 HR	FLOOR
1 HR	0 HR	1.5 HR	1 HR	1 HR	HT	1 HR	0 HR	ROOF

As Fire Resistance Rating Increases…Cost Increases



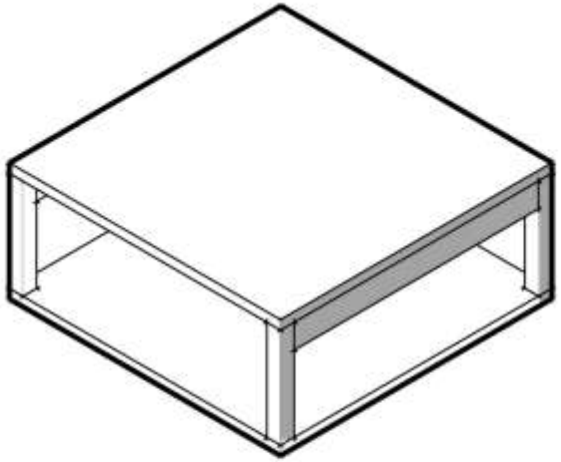
MASS TIMBER SYSTEMS AND COSTS

Photo Credit: KL&A



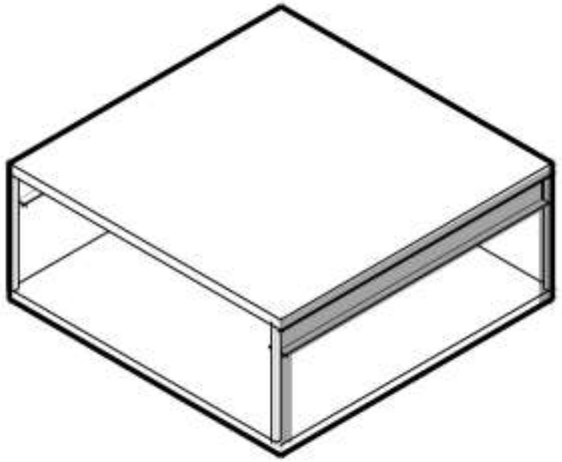
PANELIZED SYSTEM

MASS TIMBER PANELS FOR ALL PRIMARY STRUCTURAL ELEMENTS



TIMBER FRAME

MASS TIMBER FLOOR PANEL SLABS W/ A PRIMARY STRUCTURE OF GLULAM COLUMNS AND BEAMS



HYBRID SYSTEM

MASS TIMBER FLOOR SLABS SUPPORTED BY STEEL OR CONCRETE

PANELIZED SYSTEM

WOOD VOLUME IS CRITICAL ASPECT

BUILDING HEIGHT LIMITED BY PANEL COMPRESSION CAPACITY AT FLOOR TO WALL INTERFACE

LIMITS ARCHITECTURAL PROGRAM

TIMBER FRAME

WOOD VOLUME IS CRITICAL

↑ COST UP W/ SPAN

↑ COST UP W/ STEEL CONNECTIONS

↑ DEPTH INCREASES RAPIDLY W/ SPAN

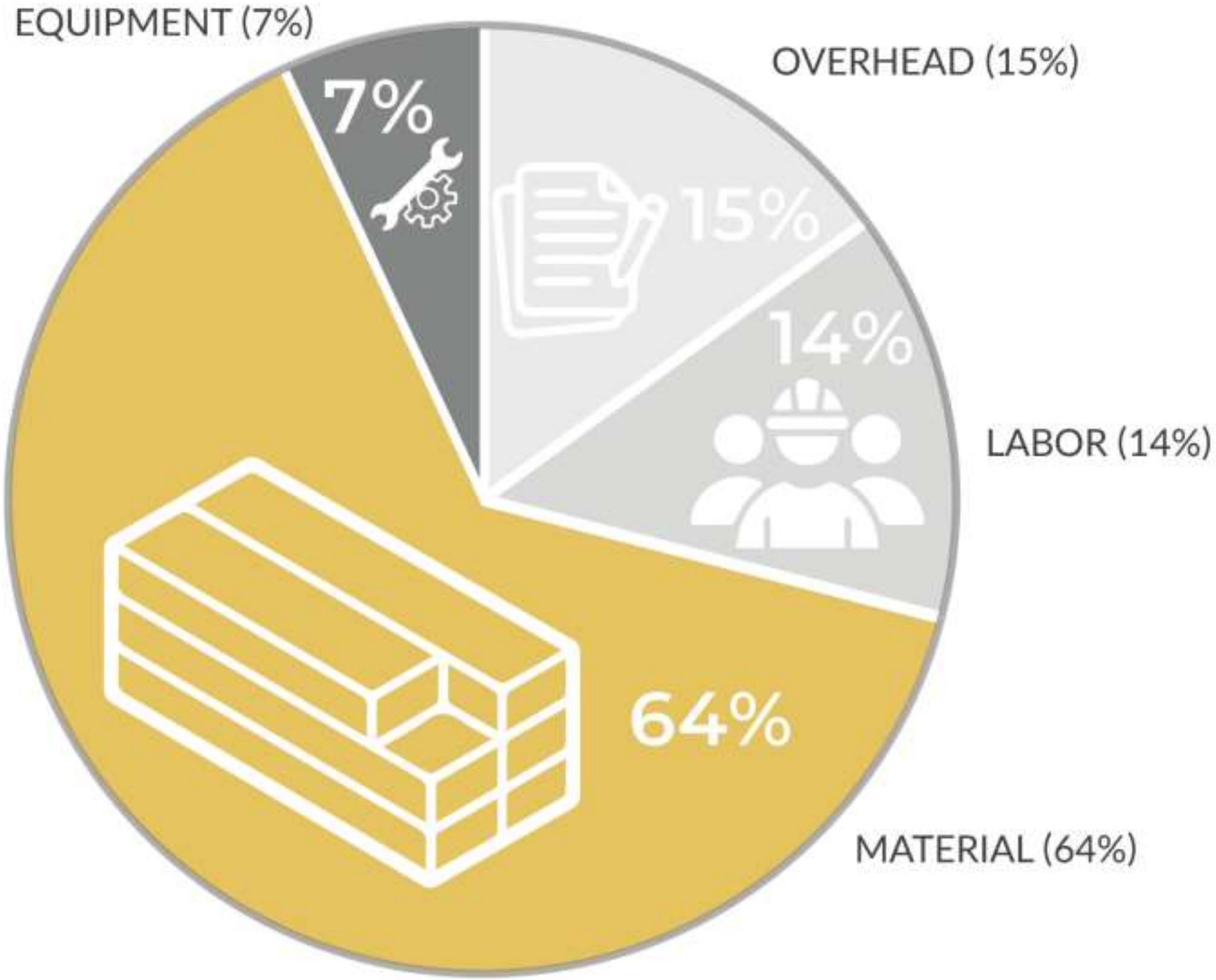
HYBRID SYSTEM

STEEL PIECE COUNT IS CRITICAL

↓ COST DOWN W/ SPAN

SELECT BUILDING TYPE WITH 'UNRATED' FRAME

MASS TIMBER STRUCTURE COST

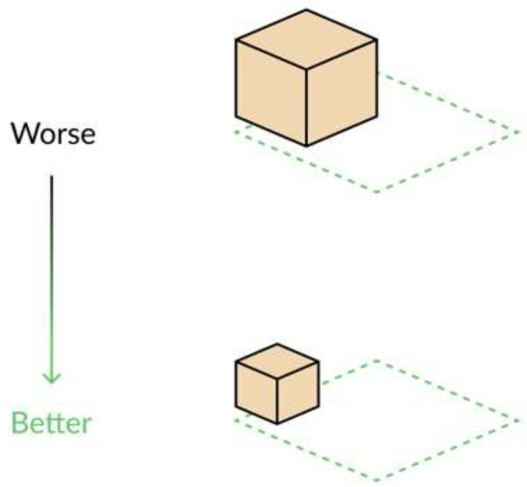


SOURCE: SWINERTON

Cost related indices

Volume/Area ratio
(VAR)

Total timber volume
Floor area



VOLUME

Courtesy of John Fechtel and John Klein, GENERATE

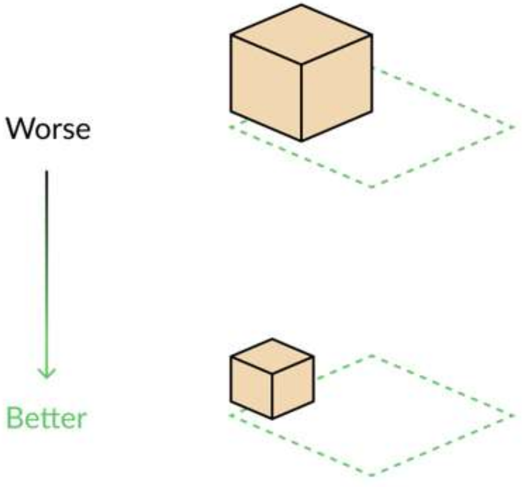
Cost related indices

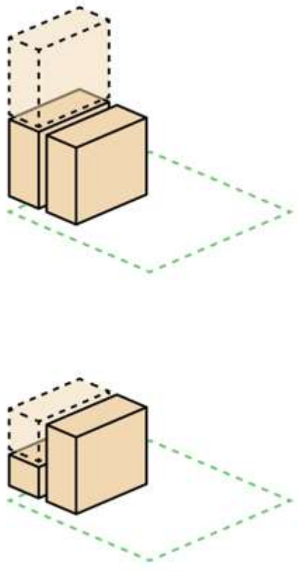
Volume/Area ratio (VAR)

$$\frac{\text{Total timber volume}}{\text{Floor area}}$$

Cost-Adjusted Volume/Area ratio (VAR)

$$\frac{\alpha \text{ x GLB volume + CLT volume}}{\text{Floor area}}$$





VOLUME

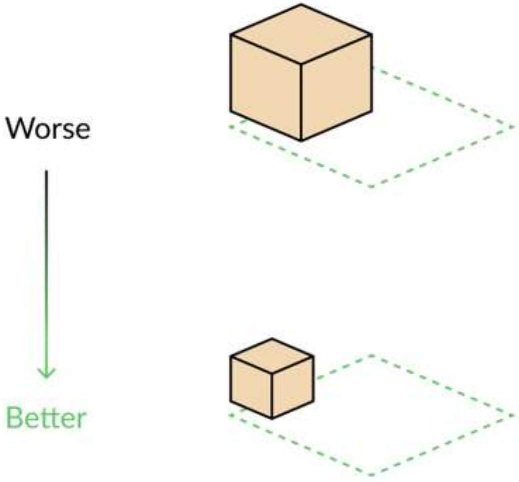
GLULAM vs CLT

Courtesy of John Fechtel and John Klein, GENERATE

Cost related indices

Volume/Area ratio
(VAR)

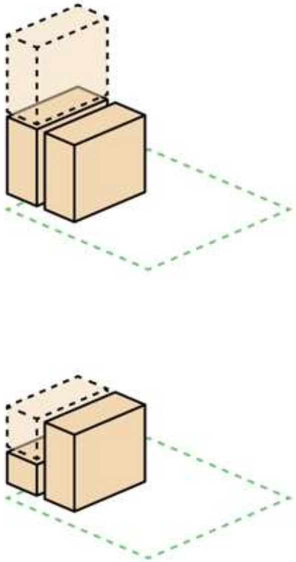
$$\frac{\text{Total timber volume}}{\text{Floor area}}$$



VOLUME

Cost-Adjusted
Volume/Area ratio
(VAR)

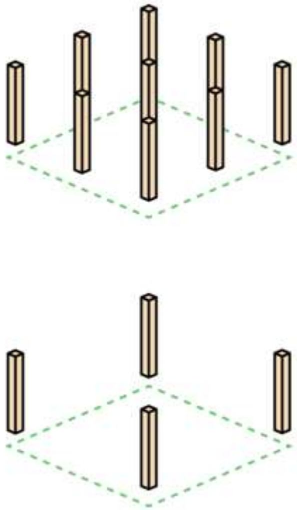
$$\frac{\alpha \times \text{GLB volume} + \text{CLT volume}}{\text{Floor area}}$$



GLULAM vs CLT

Piece/Area ratio
(PAR)

$$\frac{\text{Number of pieces}}{\text{Floor area}}$$

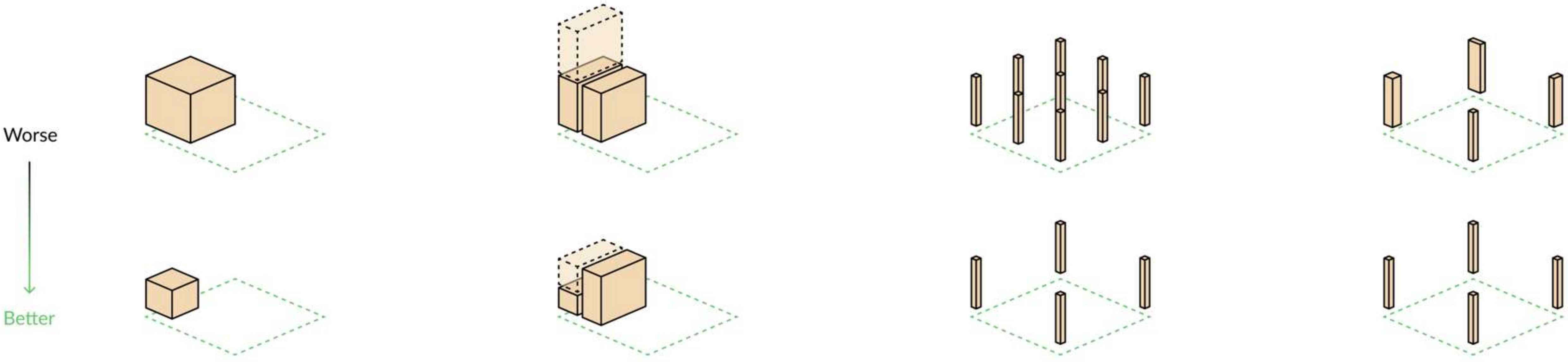


NUMBER of PIECES

Courtesy of John Fechtel and John Klein, GENERATE

Cost related indices

Volume/Area ratio (VAR)	Cost-Adjusted Volume/Area ratio (VAR)	Piece/Area ratio (PAR)	Relative complexity ratio (RCR)
$\frac{\text{Total timber volume}}{\text{Floor area}}$	$\frac{\alpha \text{ x GLB volume + CLT volume}}{\text{Floor area}}$	$\frac{\text{Number of pieces}}{\text{Floor area}}$	$\frac{\text{Number of unique pieces}}{\text{Total number of pieces}}$



VOLUME	**GLULAM vs CLT**	**NUMBER of PIECES**	**COMPLEXITY**

Courtesy of John Fechtel and John Klein, GENERATE

Cost Data

AIMS WIC
5 PLY CLT + GLULAM
ROOF ONLY
TYPE III-B

8^{TH} & DOUGLAS
5 PLY CLT + GLULAM
FLOORS AND ROOF
TYPE IV-B

DENVER OFFICE
5 PLY CLT + GLULAM
FLOORS AND ROOF
TYPE III-A

RETURN TO FORM
5 PLY CLT + GLULAM
FLOORS AND ROOF
TYPE IV-B

DU BURWELL CENTER
3 PLY CLT + GLULAM
FLOORS AND ROOF CLT
SHEAR WALLS
TYPE III-B

$40 $50 $60 $70 $80 $90

PLATTE 15
3 PLY CLT + GLULAM
FLOORS AND ROOF
TYPE III-B

SUN VALLEY BLOCK 2
5 PLY CLT + GLULAM
FLOORS AND ROOF
TYPE IV-B

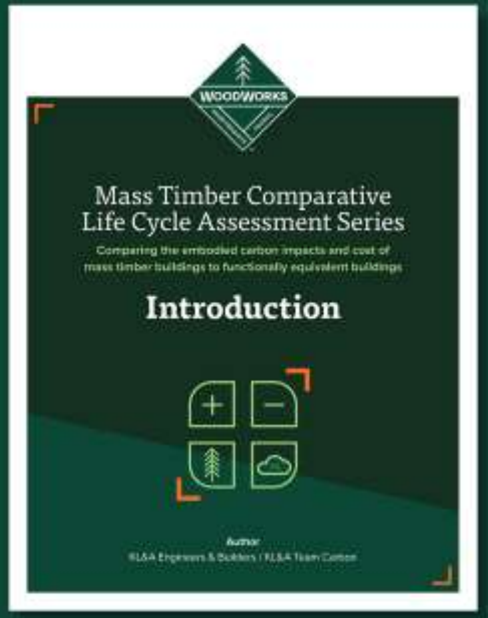
THE GATE
(7 ¾”) 7 PLY CLT + GLULAM
FLOORS AND ROOF
TYPE IV-B

CU CHEMISTRY
5 PLY CLT + GLULAM
FLOORS AND ROOF
TYPE III-A

NORTHGLENN CITY HALL
3 PLY CLT + GLULAM
FLOORS AND ROOF
TYPE V-B

COST SHOWN AS $/$FT^2$ INSTALLED TIMBER STRUCTURE

WoodWorks, KL&A Team Carbon,
USDA U.S. Forest Service, Softwood Lumber Board



Return to Form

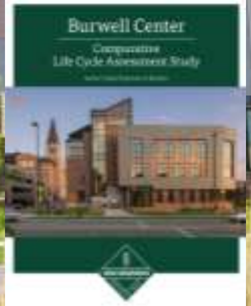
Multifamily / Retail
Type IV-B Construction
139,000 ft^2 (12,900 m^2)
12 Story
Denver, CO

Nez Perce USFS

Office
Type V-B Construction
16,045 ft^2 (1,491 m^2)
2 Story
Kamiah, ID

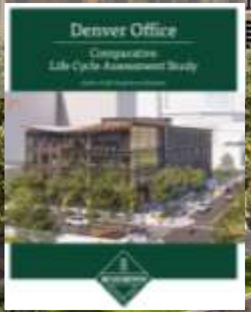
Burwell Center

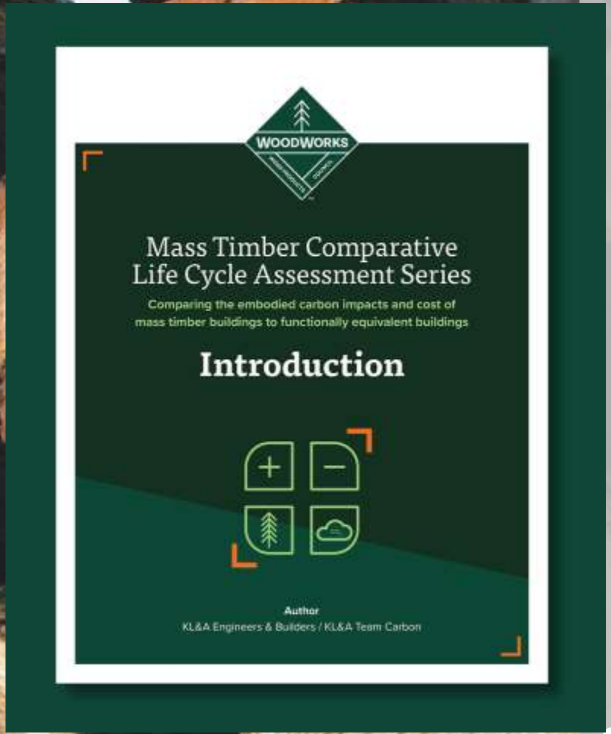
Office / Higher Ed
Type III-B Construction
22,990 ft^2 (2,136 m^2)
3 Story
Denver, CO



Denver Office

Office / Higher Ed
Type III-A Construction
98,280 ft^2 (9,130 m^2)
4 Story
Denver, CO





- **Comparative WBLCA**
  - TallyLCA
  - Scope
    - Structure
    - Enclosure – Vertical and Horizontal
    - Fire Resistance
    - Acoustic
    - Ceiling Finishes
  - Cradle-to-Grave (A-C, plus Module D)
  - Includes Biogenic Carbon (-1/+1, 32% Permanent Storage)

- **Comparative Cost & Speed of Construction**
  - Normalized Material & Labor Costs

BUILDING STUDY METHODOLOGY

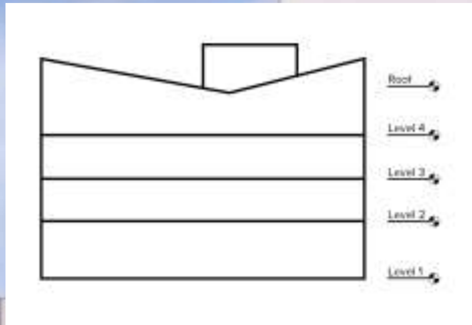
Photo by Aleksandar Radovanovic on Unsplash

Office / Higher Education
Type III-A Construction
98,280 ft^2 (9,130 m^2)
4 Story

- Foundations: Spread Footings
- No below grade
- L1: Concrete Slab on Grade
- L2 – Roof: CLT Panel & Glulam

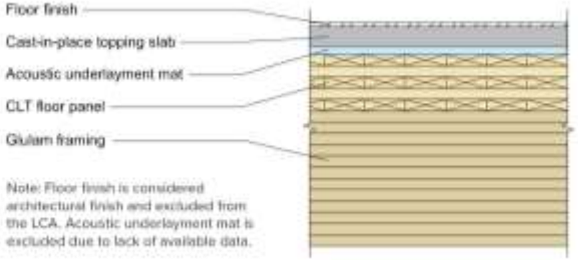
Lateral: Precast Concrete Core Walls + Glulam Brace
Grid: 20’ X 34’

Architect: Shears Adkins Rockmore
Engineer: KL&A
Contractor: PCL

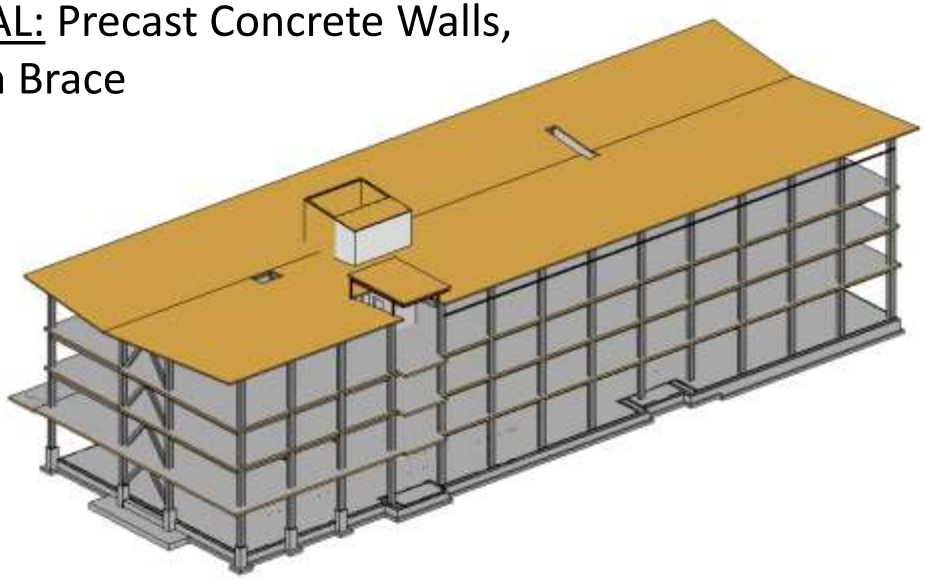


Denver Office Building

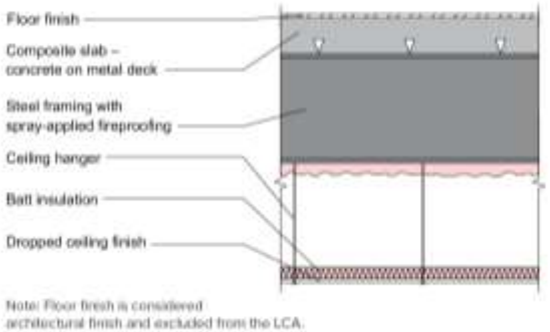
Denver, Colorado



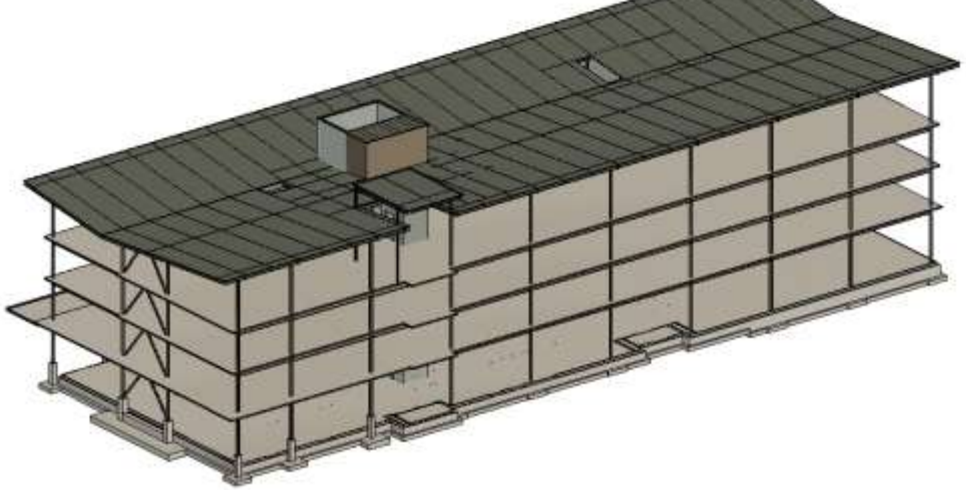
- FLOOR: 5ply CLT Floor, Concrete Topping Slab, Glulam Framing
- ROOF: 5ply CLT, Glulam Framing
- LATERAL: Precast Concrete Walls, Glulam Brace



MASS TIMBER
(AS DESIGNED)



- FLOOR: Concrete on Metal Deck, WF Framing
- ROOF: Metal Deck, WF Framing
- LATERAL: Precast Concrete Walls, Steel Brace

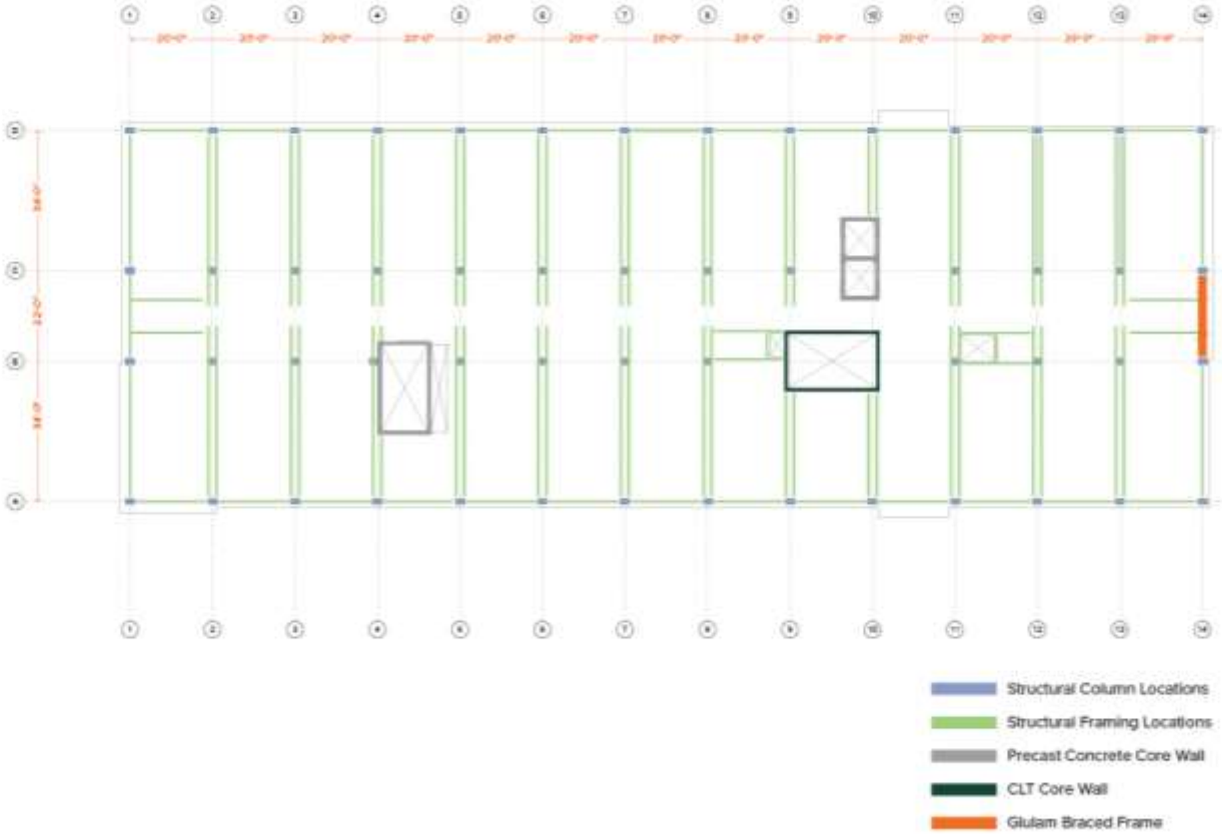


STEEL

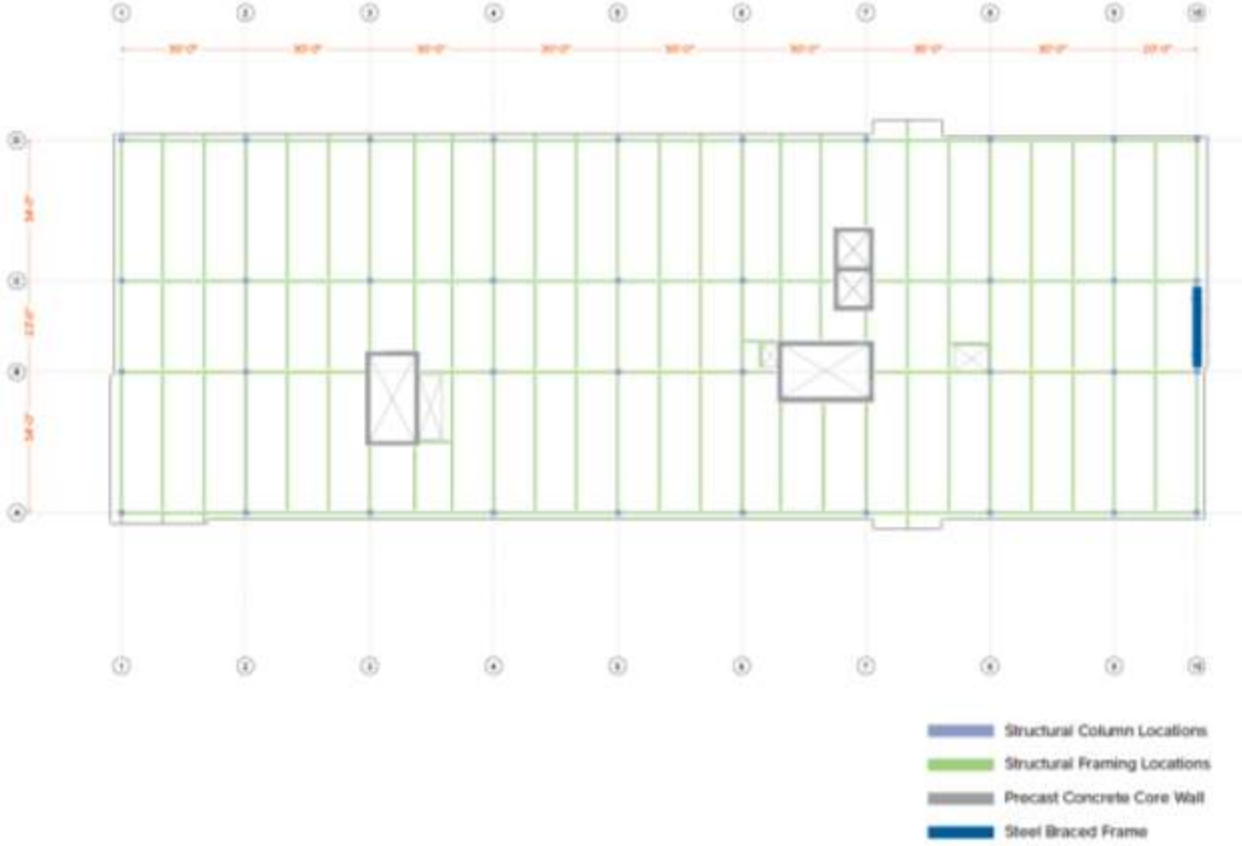
FUNCTIONAL EQUIVALENCY

DENVER OFFICE

MASS TIMBER PLAN



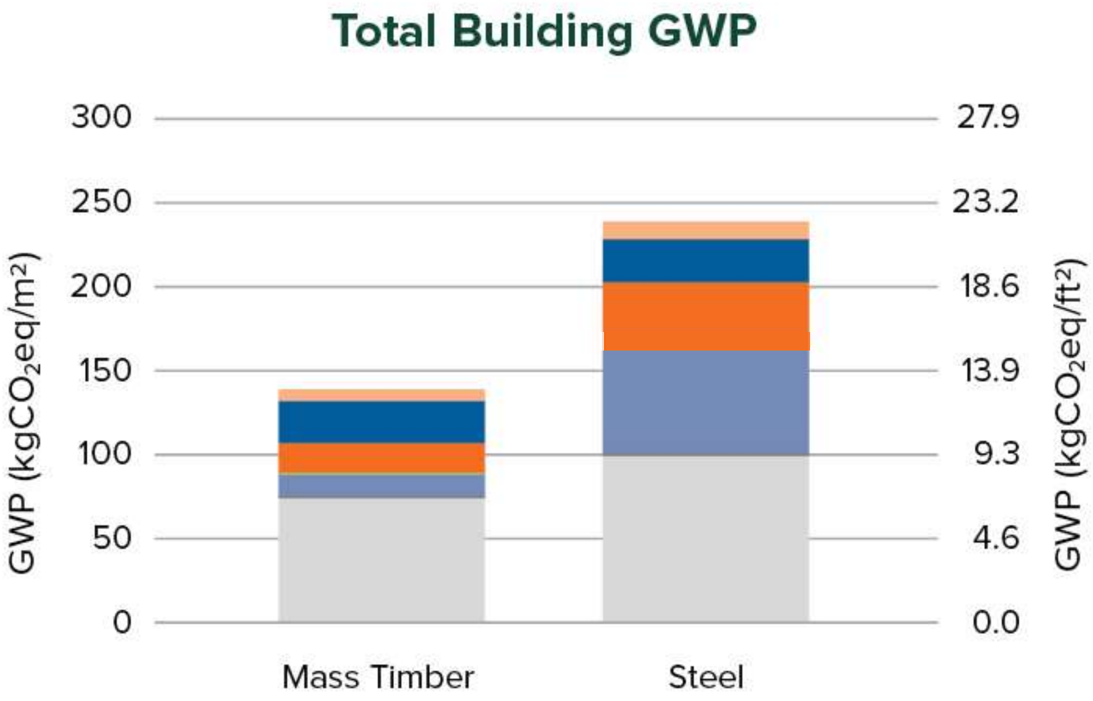
STEEL PLAN

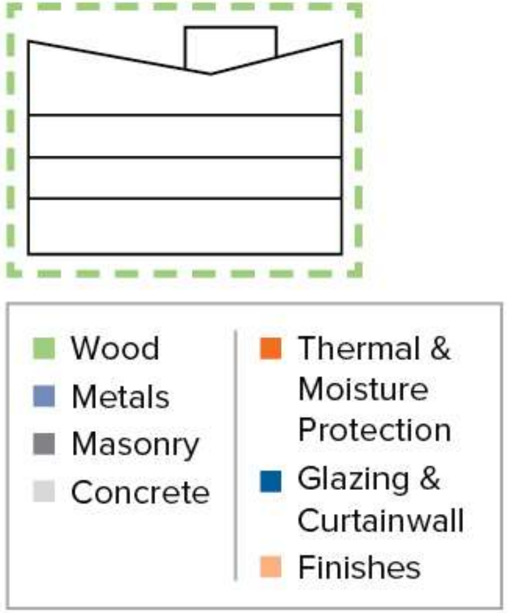


MT < STEEL
42% TOTAL REDUCTION

ARCH
32% REDUCTION

STRUCTURE
46% REDUCTION





DENVER OFFICE – TOTAL GWP

Return to Form

STUDY TRENDS

Nez Perce USFS

Burwell Center

Denver Office

Structure Raw Material

8 – 126% Premium

Structure Construction

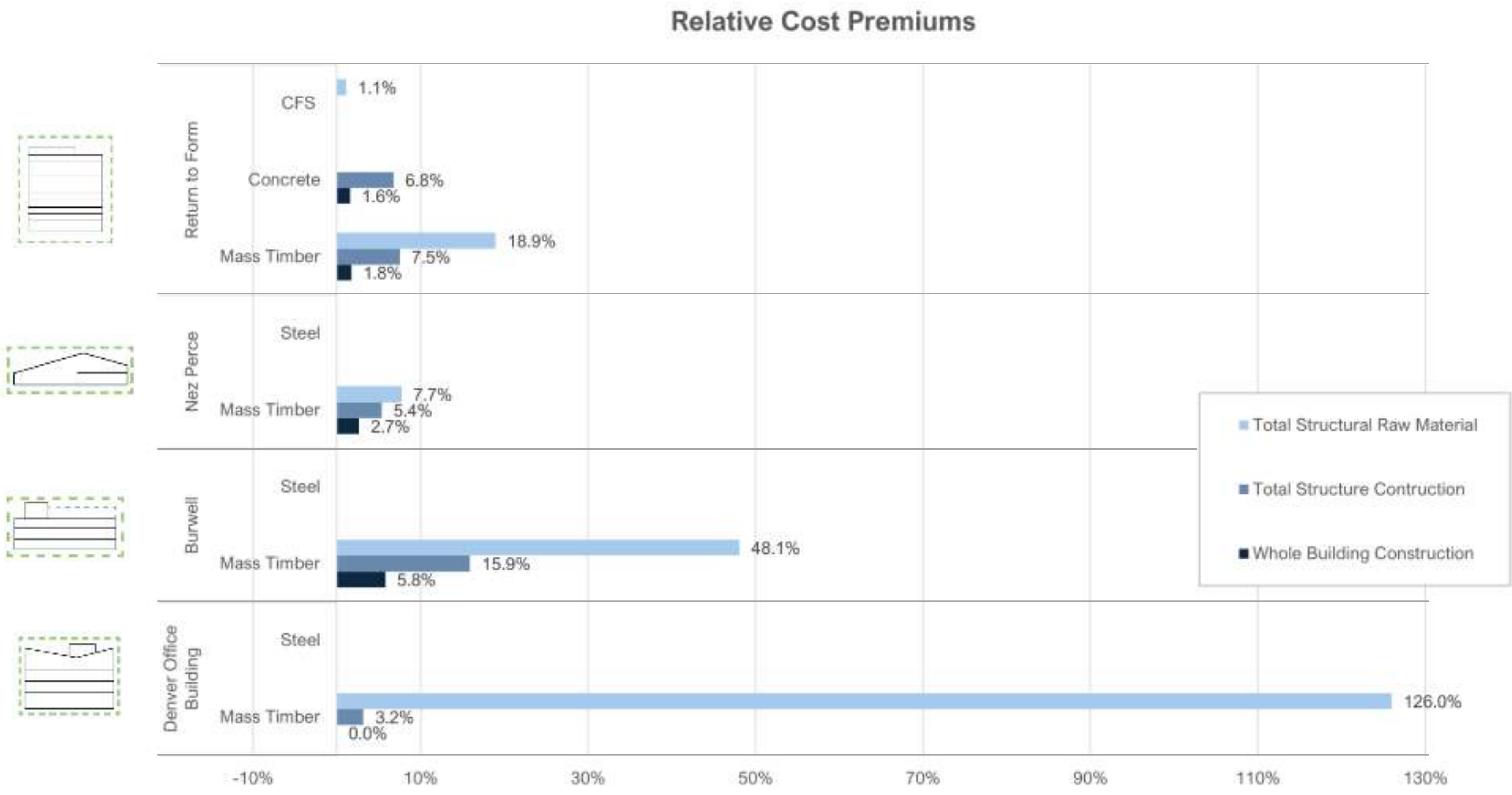
3 – 16% Premium

Whole Building Construction

0 – 6% Premium

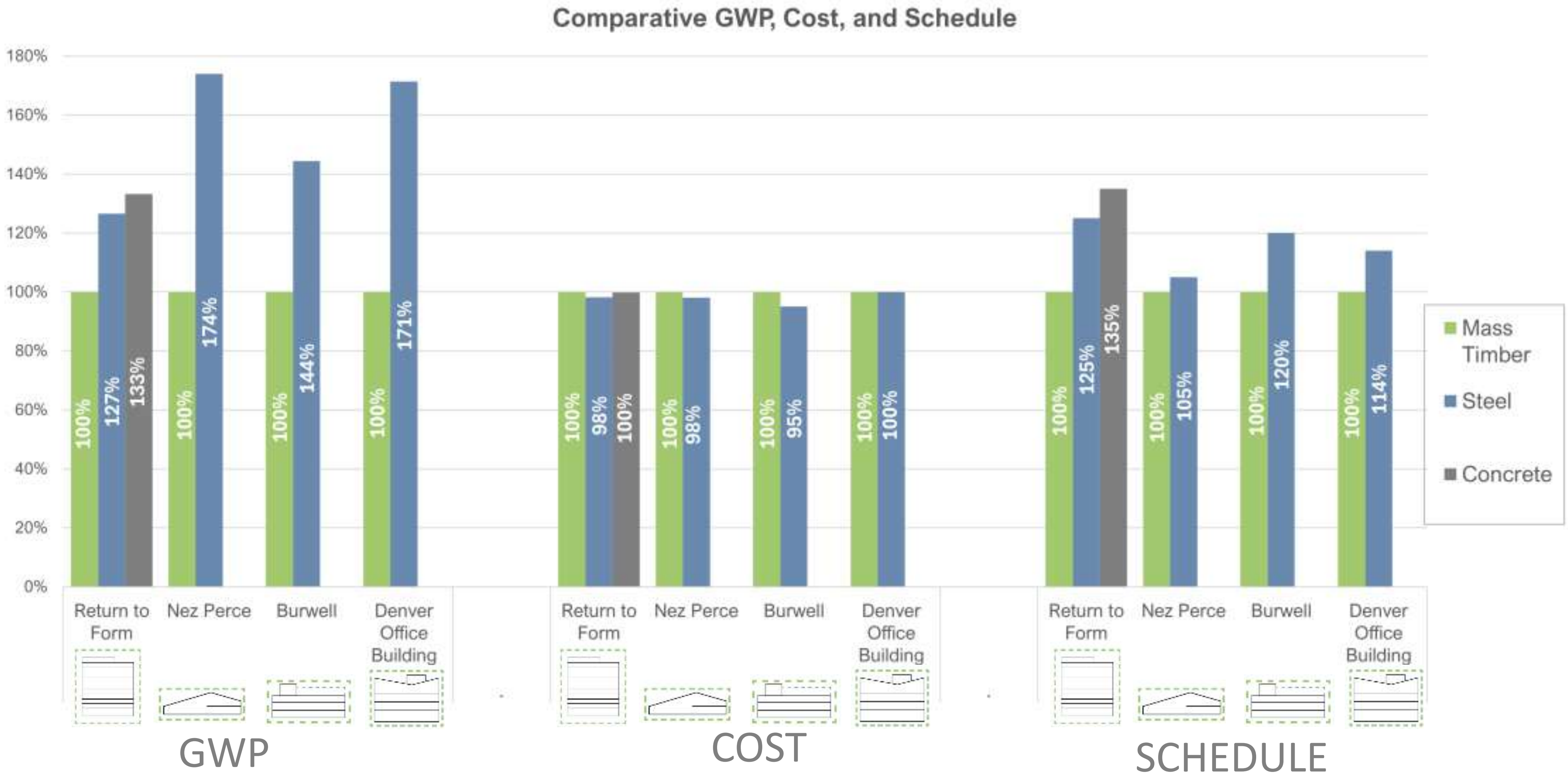
Schedule

16% Average Savings



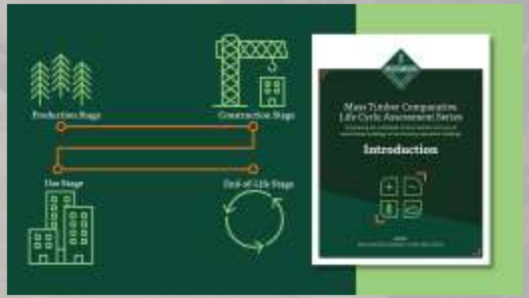
COST TRENDS

COMPARATIVE STUDY SERIES



TOTAL BUILDING TRENDS

COMPARATIVE STUDY SERIES



- **DESIGN CONSIDERATIONS**
  - CONSTRUCTION TYPE
- **COST CONSIDERATIONS**
  - TIMBER VOLUME
  - SPEED OF CONSTRUCTION (HOLISTIC COST ANALYSIS)
- **MASS TIMBER STRUCTURAL SYSTEMS HAVE CLEAR EMBODIED CARBON BENEFITS**
- **RESPECT STORED BIOGENIC CARBON**
  - DESIGN FOR DECONSTRUCTION & EASY RECOVERY
- **EMBODIED CARBON AT CONCEPT DESIGN**

Photo by Aleksandar Radovanovic on Unsplash


Photo Credit: JC Buck
THANK YOU
KL&A
Engineers & Builders
Chris Kendall, P.E.
Ckendall@klaa.com

Minneapolis

Stick-Built

Denver

Cast-in-place concrete

Atlanta

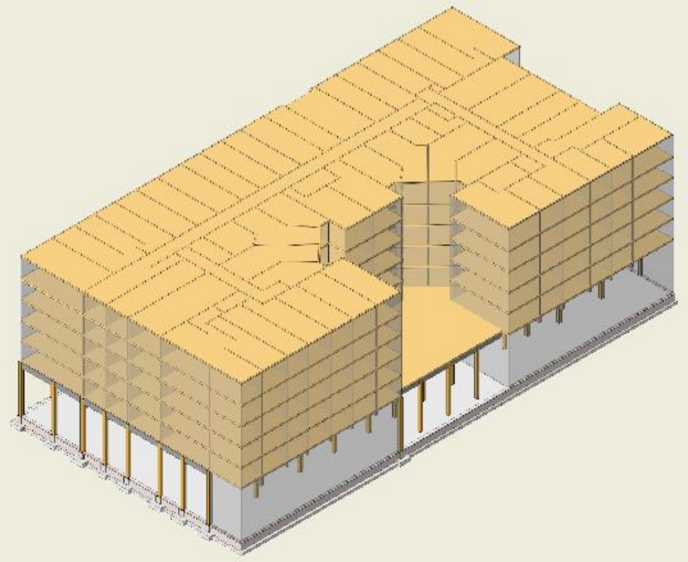
Cast-in-place concrete

All three buildings were redesigned for mass timber.

THREE REGIONS MASS TIMBER

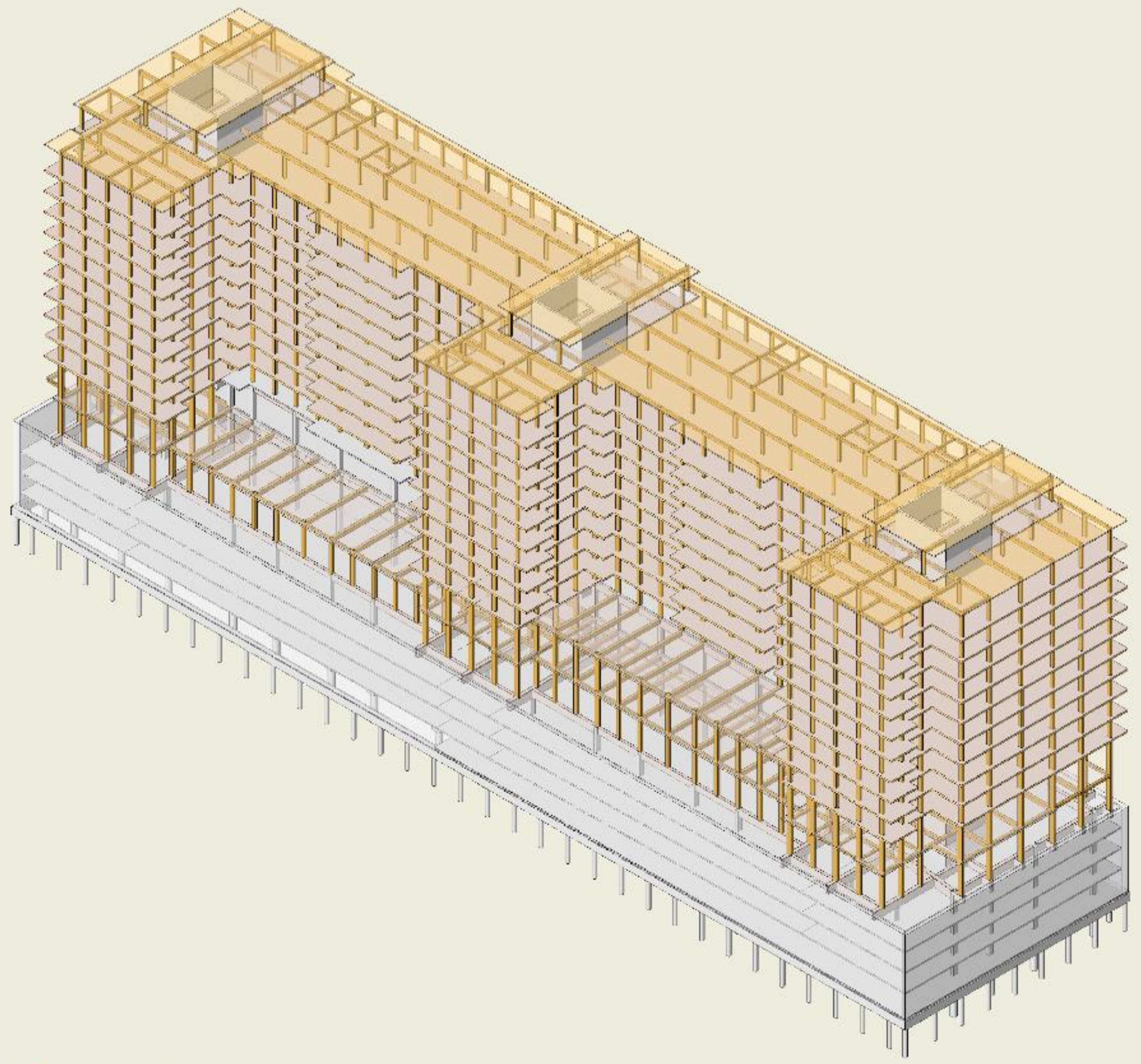
LEARN MORE ABOUT THE DATA AND METHODOLOGY HERE: OLIFANT.ORG

Minneapolis



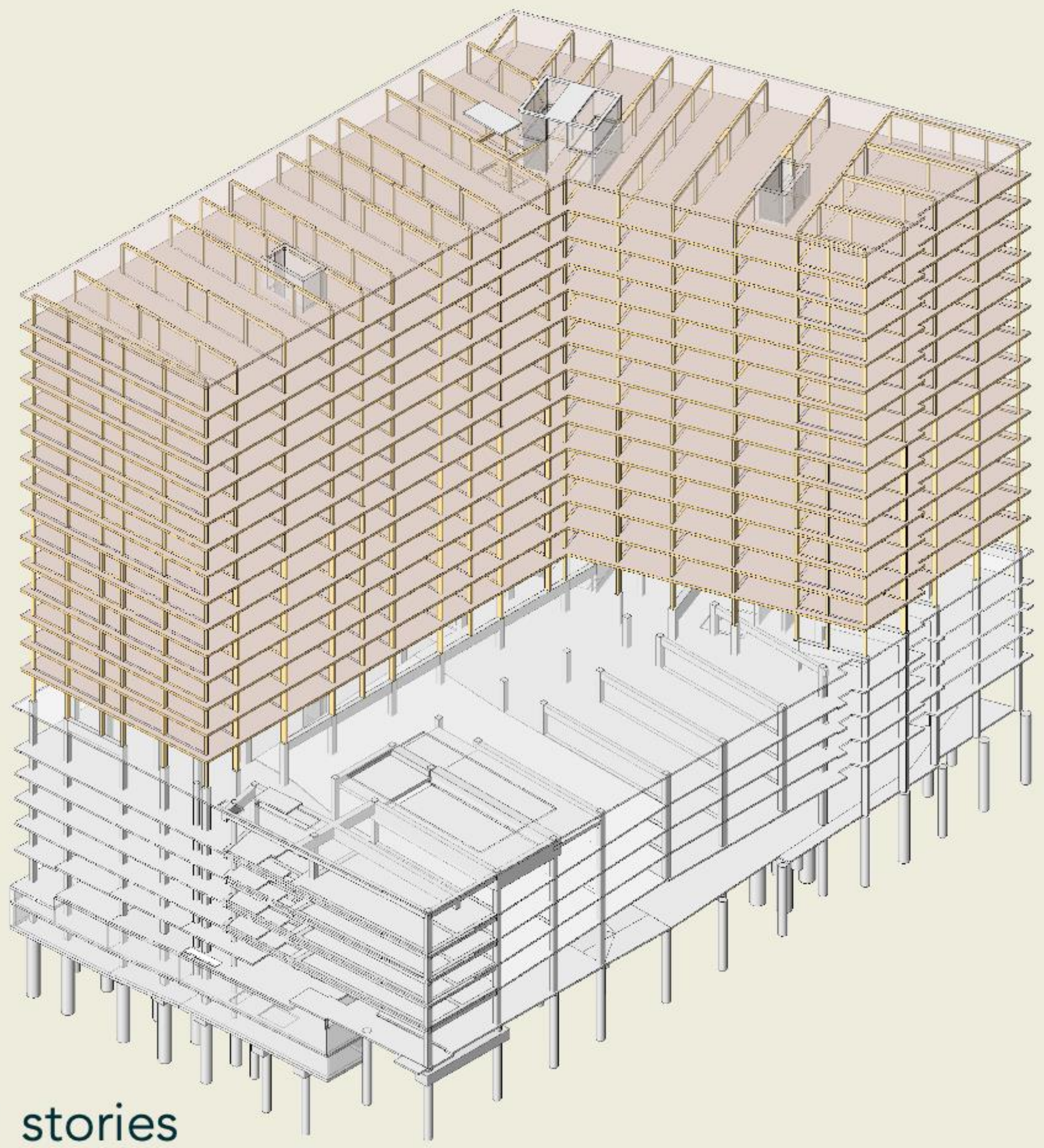
6 stories
165,340 GSF
130 Residential units

Denver



12 stories
755,300 GSF
395 Residential units
241,500 SF of parking

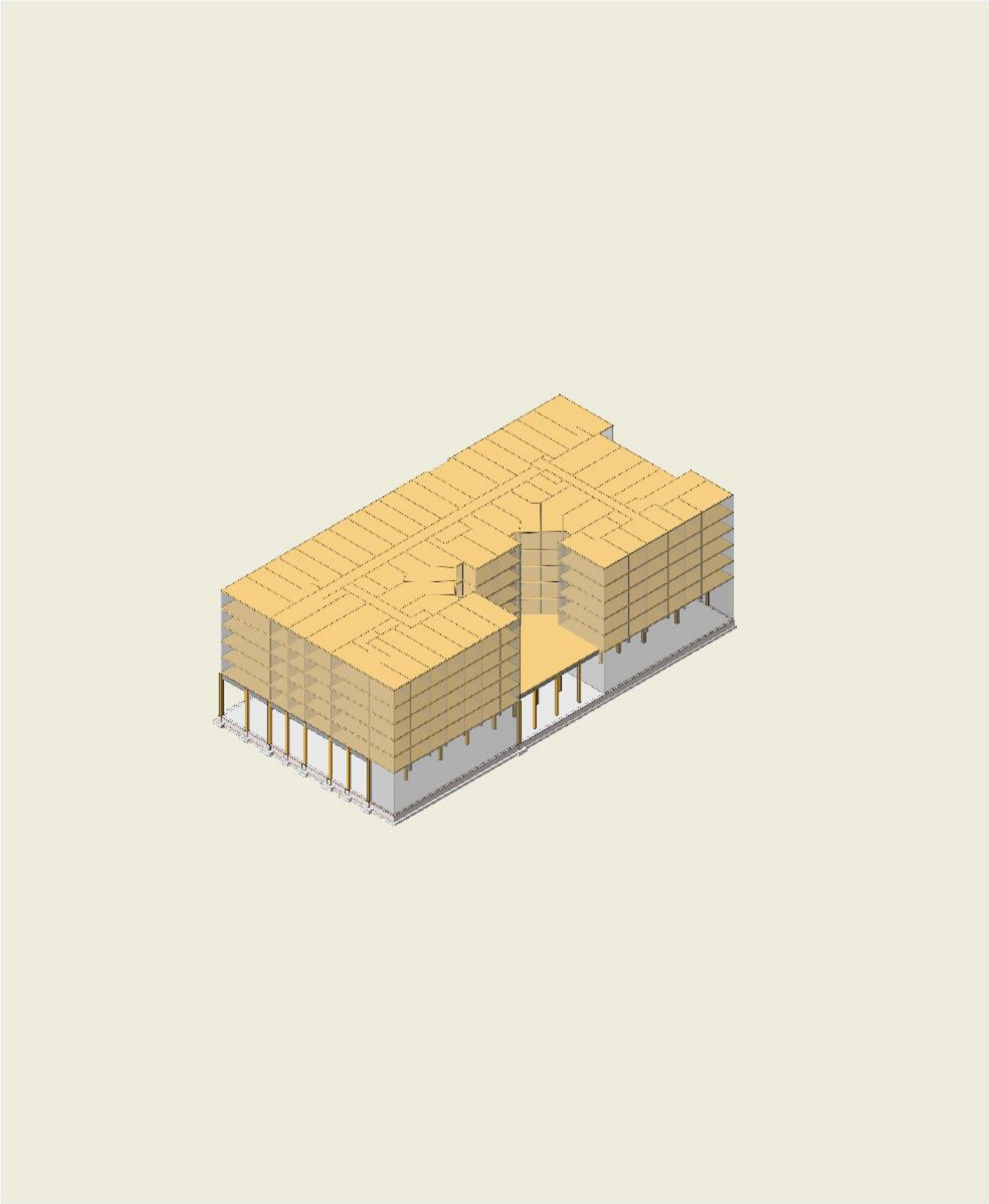
Atlanta



21 stories
758,483 GSF
353 Residential units
268,000 SF of parking

All analysis reflects mass timber equivalent calculations of existing cast-in-place concrete or stick-built structures. Cost, carbon, and constructability data all show significant gains even so; gains that will likely increase when actually designed for mass timber.

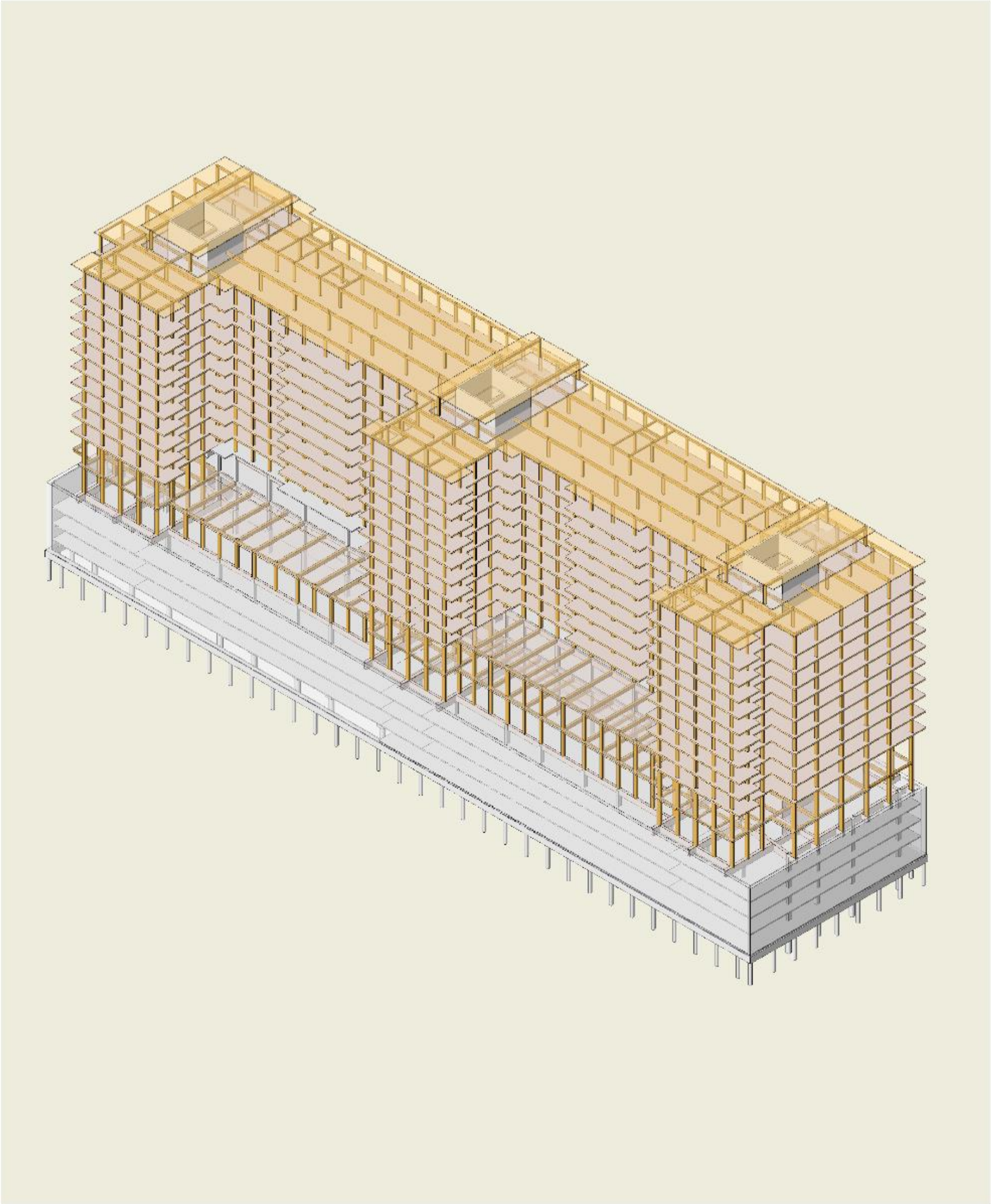
Minneapolis



Type IV-C

Max # of stories	9 stories
Building height	85′
Allowable area	405,000 sf
Average area per story	45,000 sf
Amount of unprotected timber	100%
Primary structure	2 hr rated

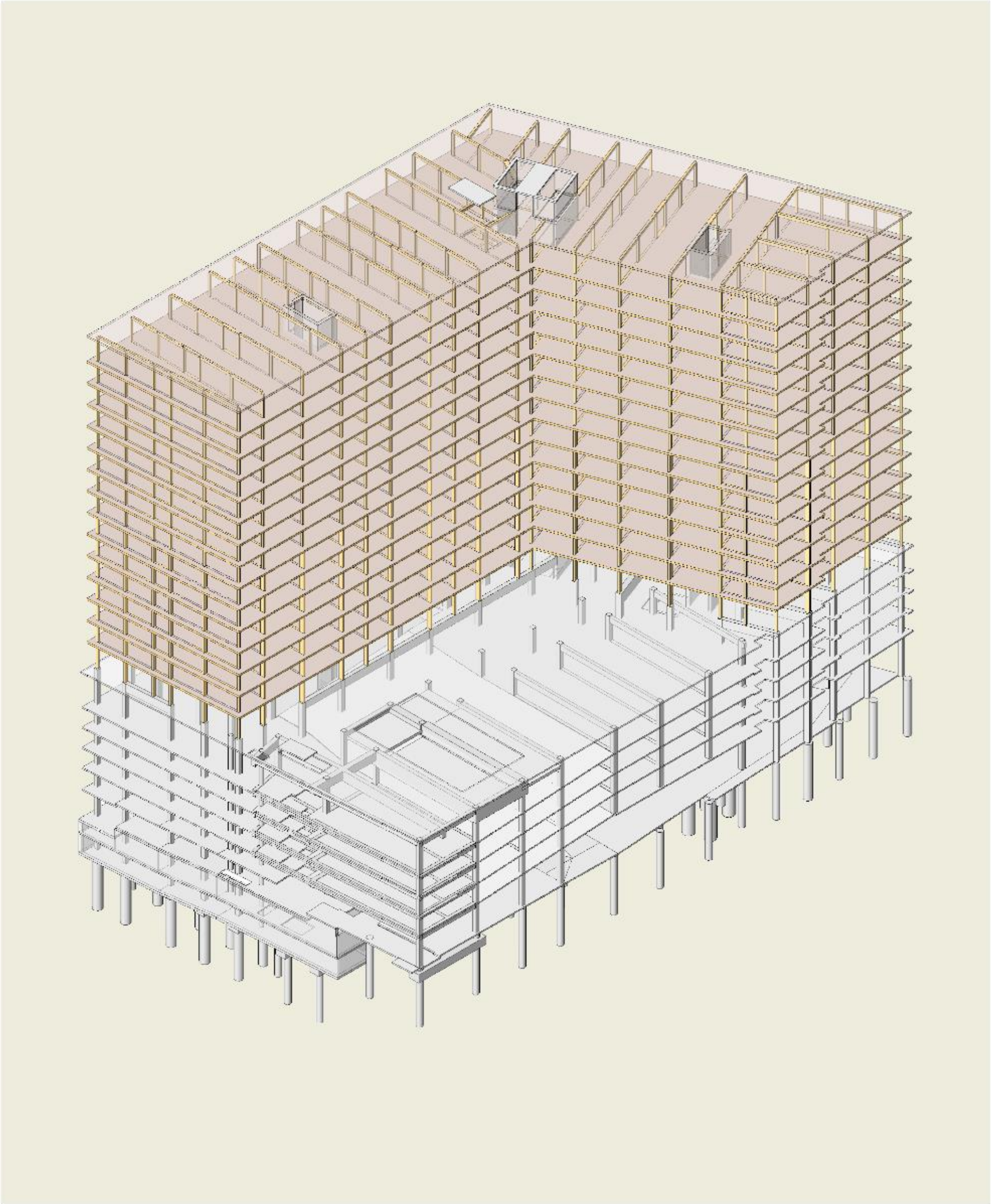
Denver



Type IV-B (IBC 2024)

Max # of stories	12 stories
Building height	180′
Allowable area	648,000 sf
Average area per story	54,000 sf
Amount of unprotected timber	100% ceiling 40% walls
Primary structure	2 hr rated

Atlanta



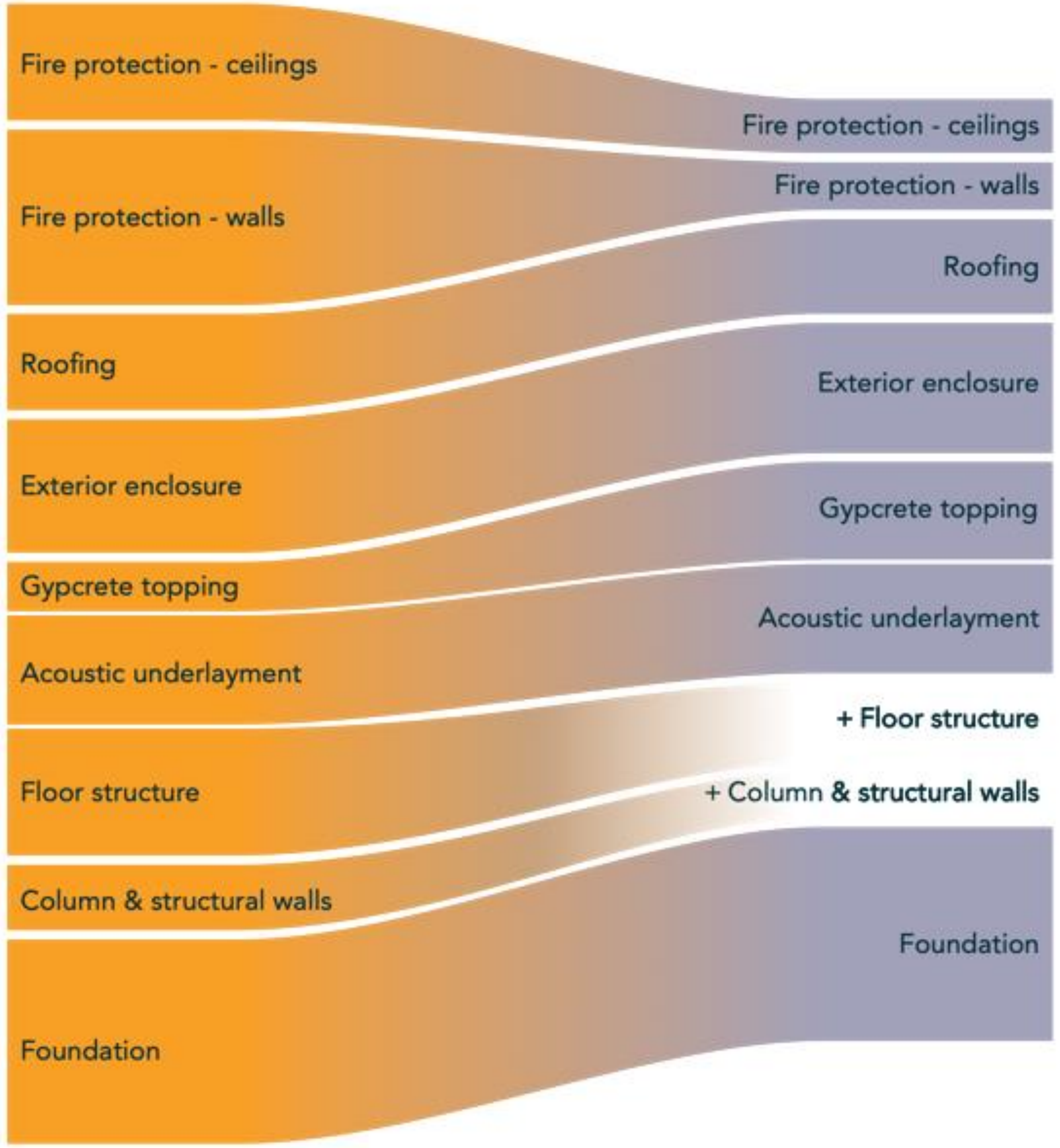
Type IV-A

Max # of stories	18 stories
Building height	270′
Allowable area	972,000 sf
Average area per story	54,000 sf
Amount of unprotected timber	0%
Primary structure	3 hr rated

Summary
GWP

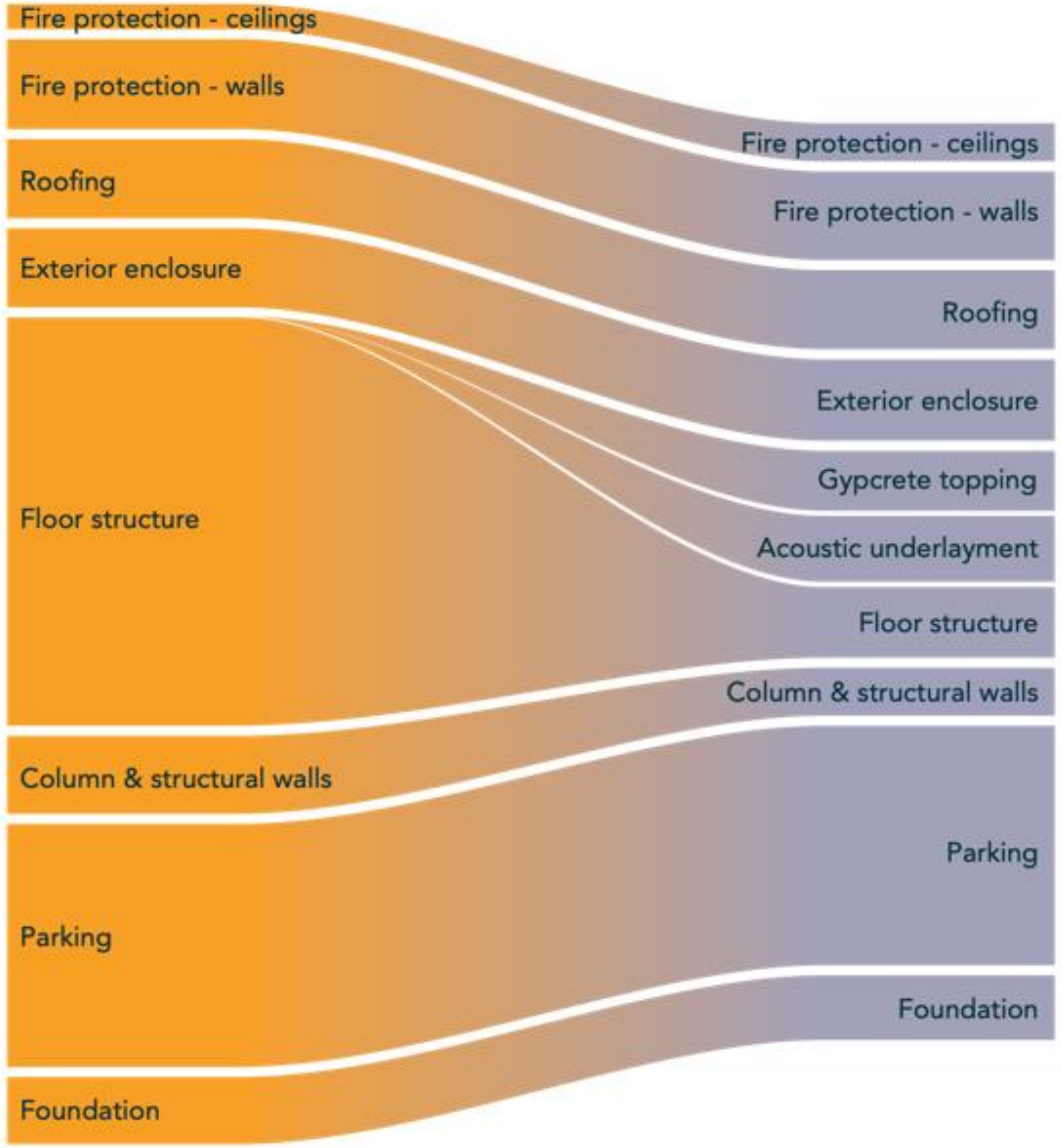
Minneapolis case study
42%
Total reduction
kgCO2eq

IBC 2021 TYPE III-A ON TYPE IA PODIUM | IBC 2021 TYPE IV-C



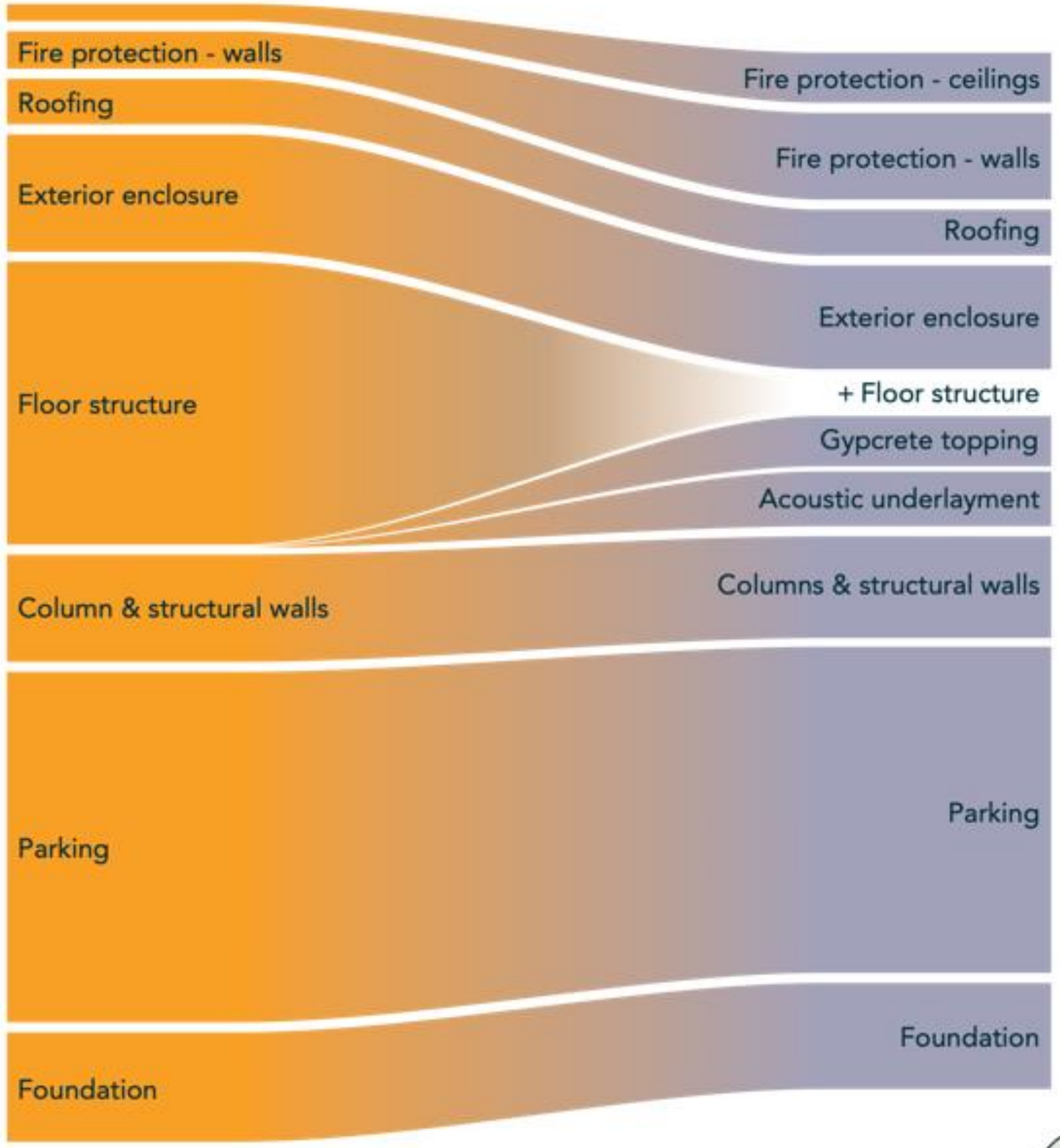
Denver case study
22%
Total reduction
kgCO2eq

IBC 2024 TYPE IA | IBC 2024 TYPE IV-B



Atlanta case study
16%
Total reduction
kgCO2eq

IBC 2021 TYPE IA | IBC 2021 TYPE IVA



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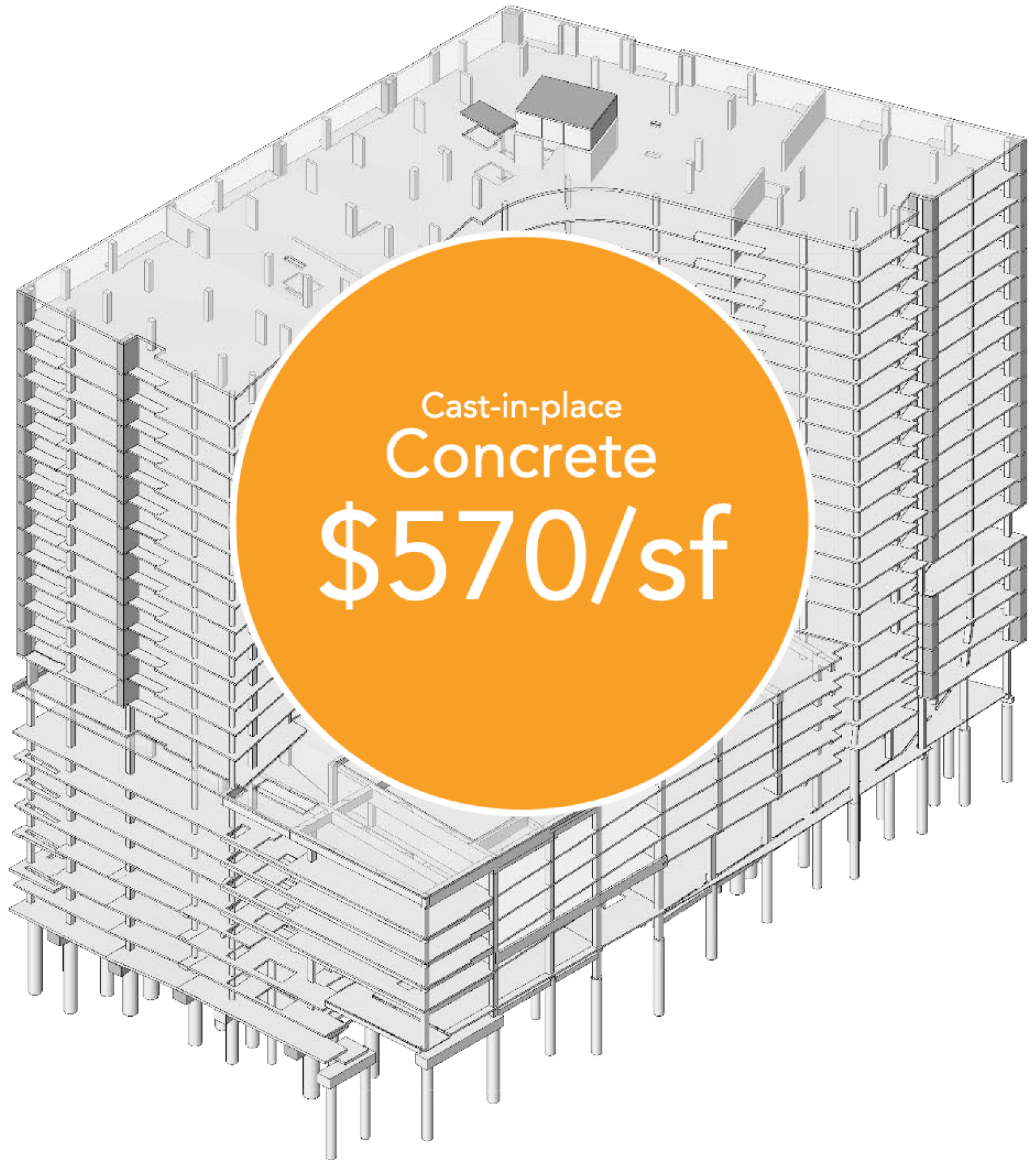
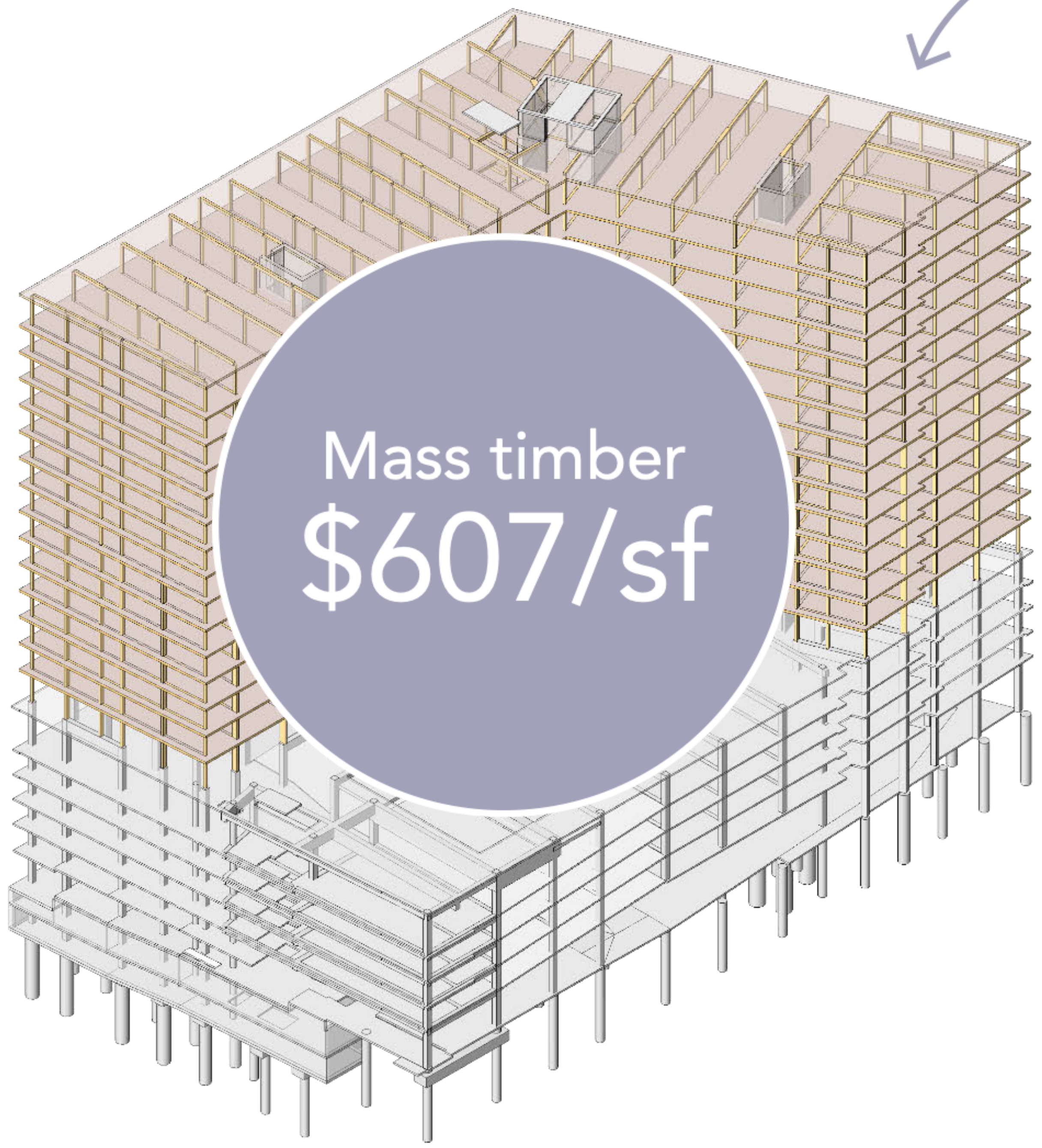
Atlanta case study

IBC 2021 Type IV-A

+$37/sf
(6% increase)





Cost comparison

Major cost drivers and impacts between superstructures of a cast-in-place concrete project and a mass timber project. Does not account for owner costs, such as schedule savings, time to market, etc. Costs are based on residential area only. Garage costs were excluded since they remained a constant in each scenario.
16 Stories
417,417 GSF of residential
340 Residential units

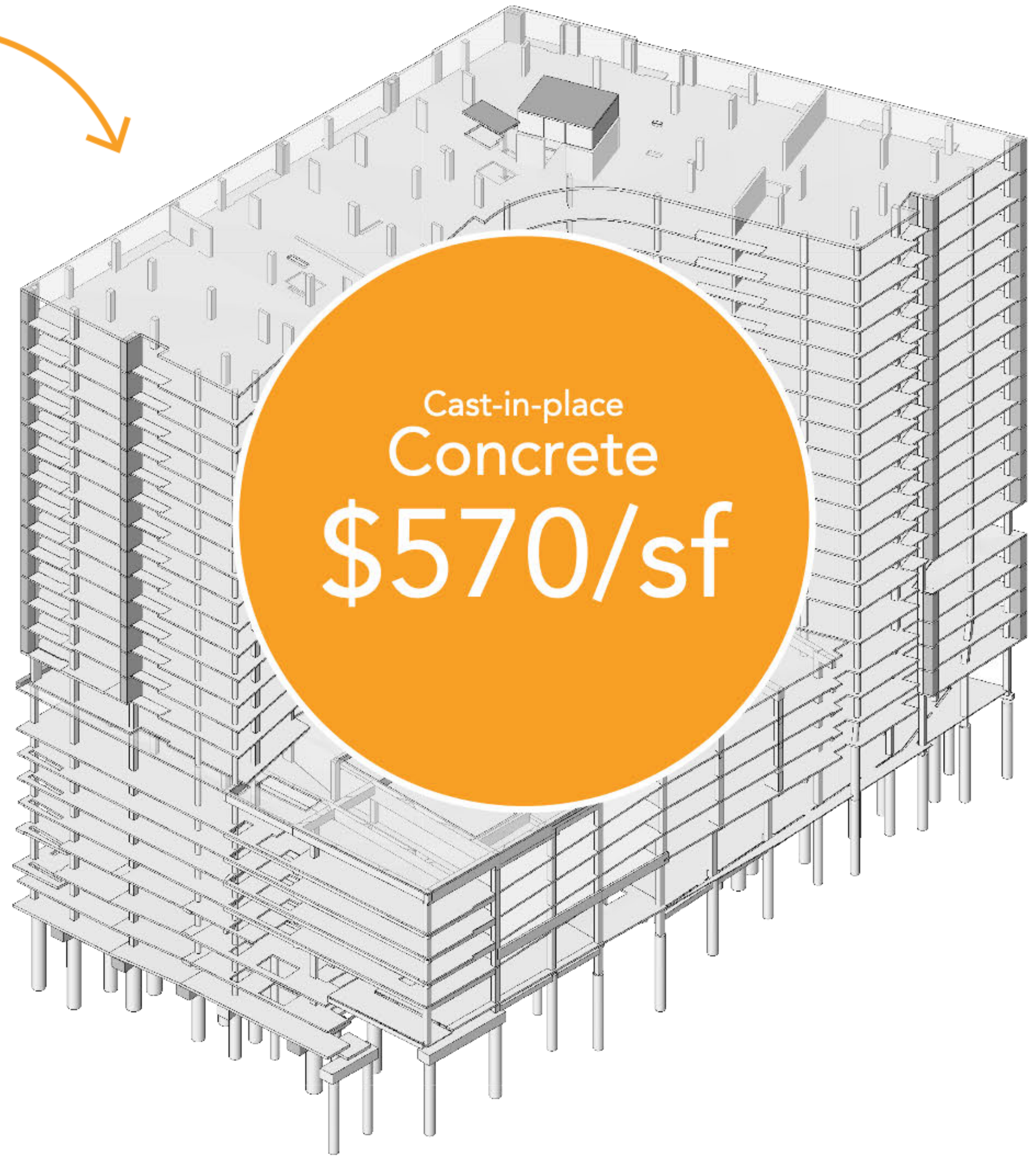
Atlanta case study

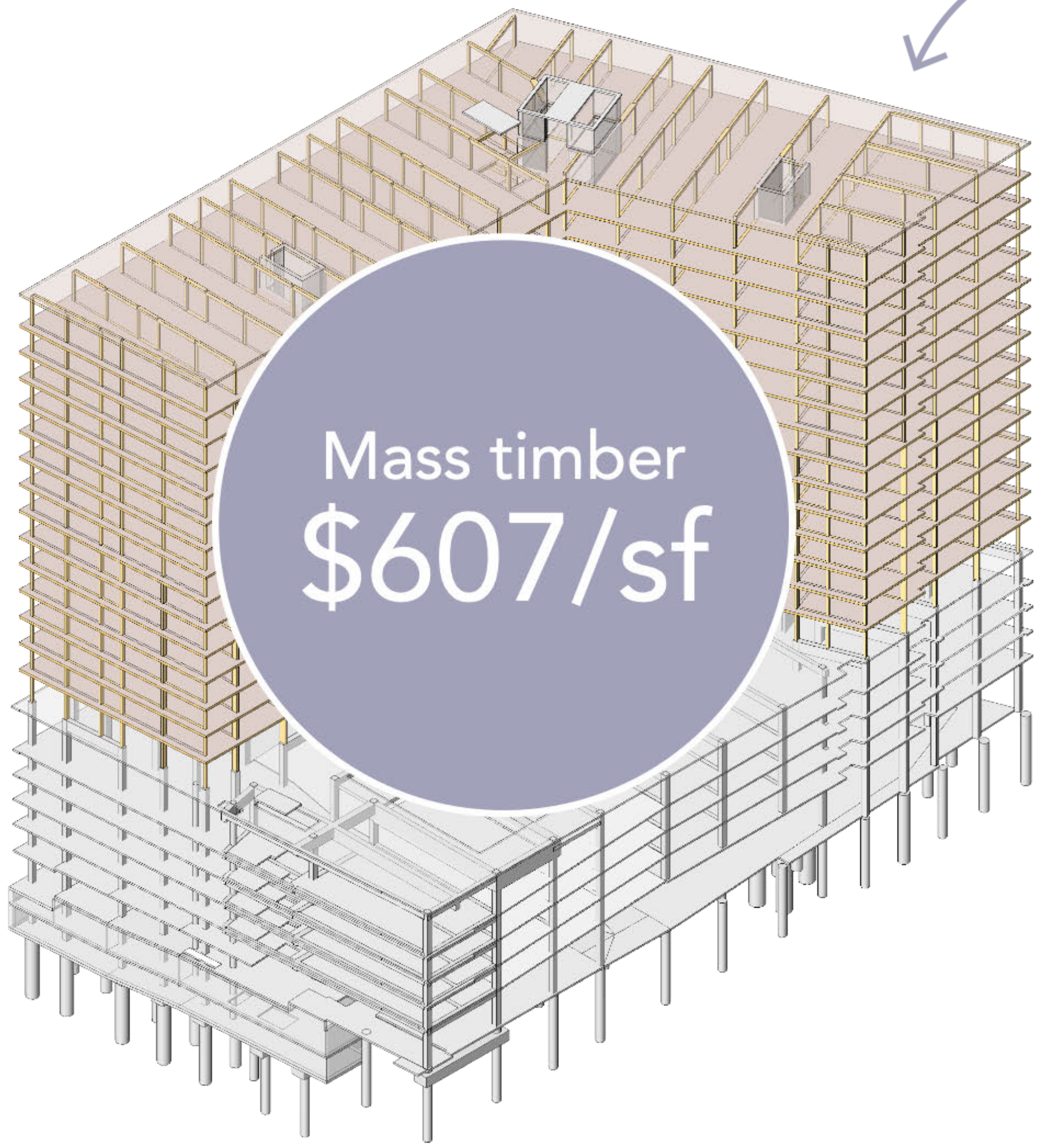
IBC 2021 Type IV-A

Structural

Concrete structure
$30,139,000

Indirect costs[1]
$3,177,000





Structural

Mass timber structure
$31,468,000

Fire protection: floor plates
$5,507,000

Fire protection: beams & columns
$3,181,000

Floor build up
$3,671,000

Transfer structure
$543,000

Exterior envelope
$509,000

Indirect costs[1]
$4,546,000

Schedule savings
($1,750,000)

Cost comparison

Major cost drivers and impacts between superstructures of a cast-in-place concrete project and a mass timber project. Does not account for owner costs, such as schedule savings, time to market, etc. Costs are based on residential area only. Garage costs were excluded since they remained a constant in each scenario.

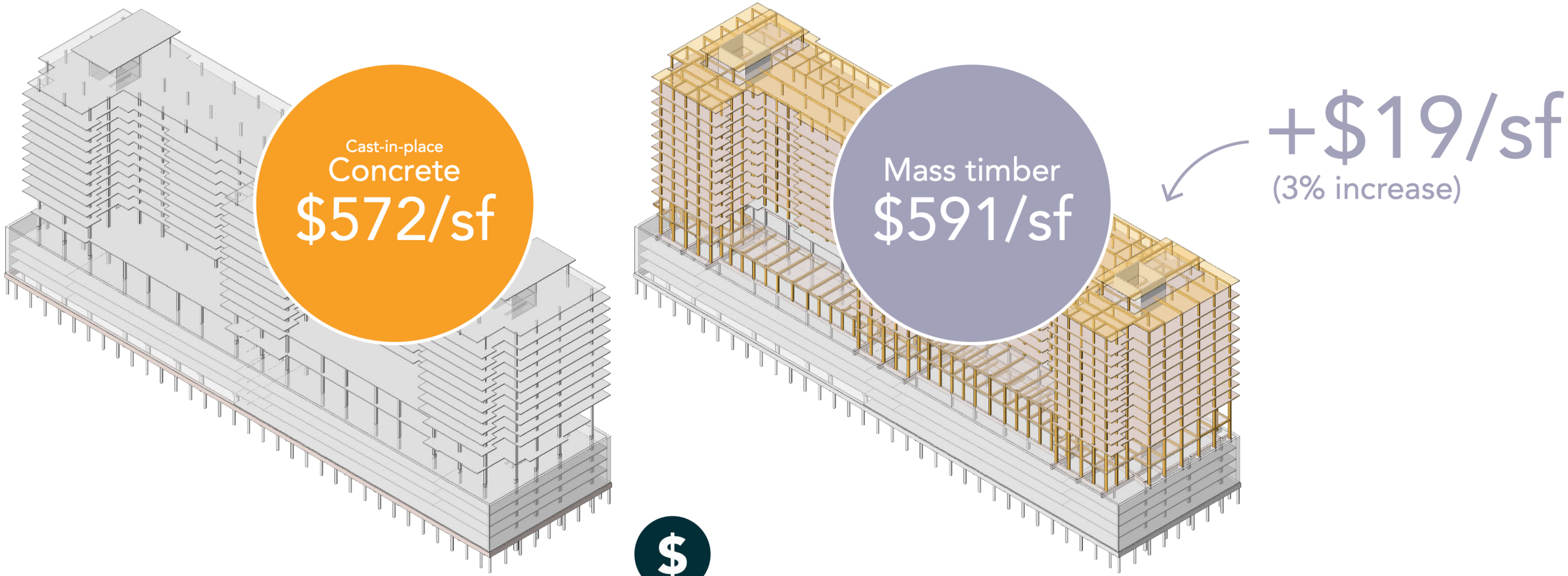
16 Stories
417,417 GSF of residential
340 Residential units

[1] INDIRECT COST: SUM OF SUBCONTRACTOR BONDS, CONSTRUCTION CONTINGENCY, INSURANCE, AND CM FEE; AS A VOLUME PERCENTAGE OF DIRECT PROJECT COST

LEARN MORE ABOUT THE DATA AND METHODOLOGY HERE: OLIFANT.ORG

Denver case study

IBC 2024 TYPE IV-B



Cost comparison

Major cost drivers and impacts between superstructures of a cast-in-place concrete project and a mass timber project. Does not account for owner costs, such as schedule savings, time to market, etc. Costs are based on residential area only. Garage costs were excluded since they remained a constant in each scenario.

12 Stories
513,800 GSF of residential
395 Residential units

Denver case study

IBC 2024 TYPE IV-B

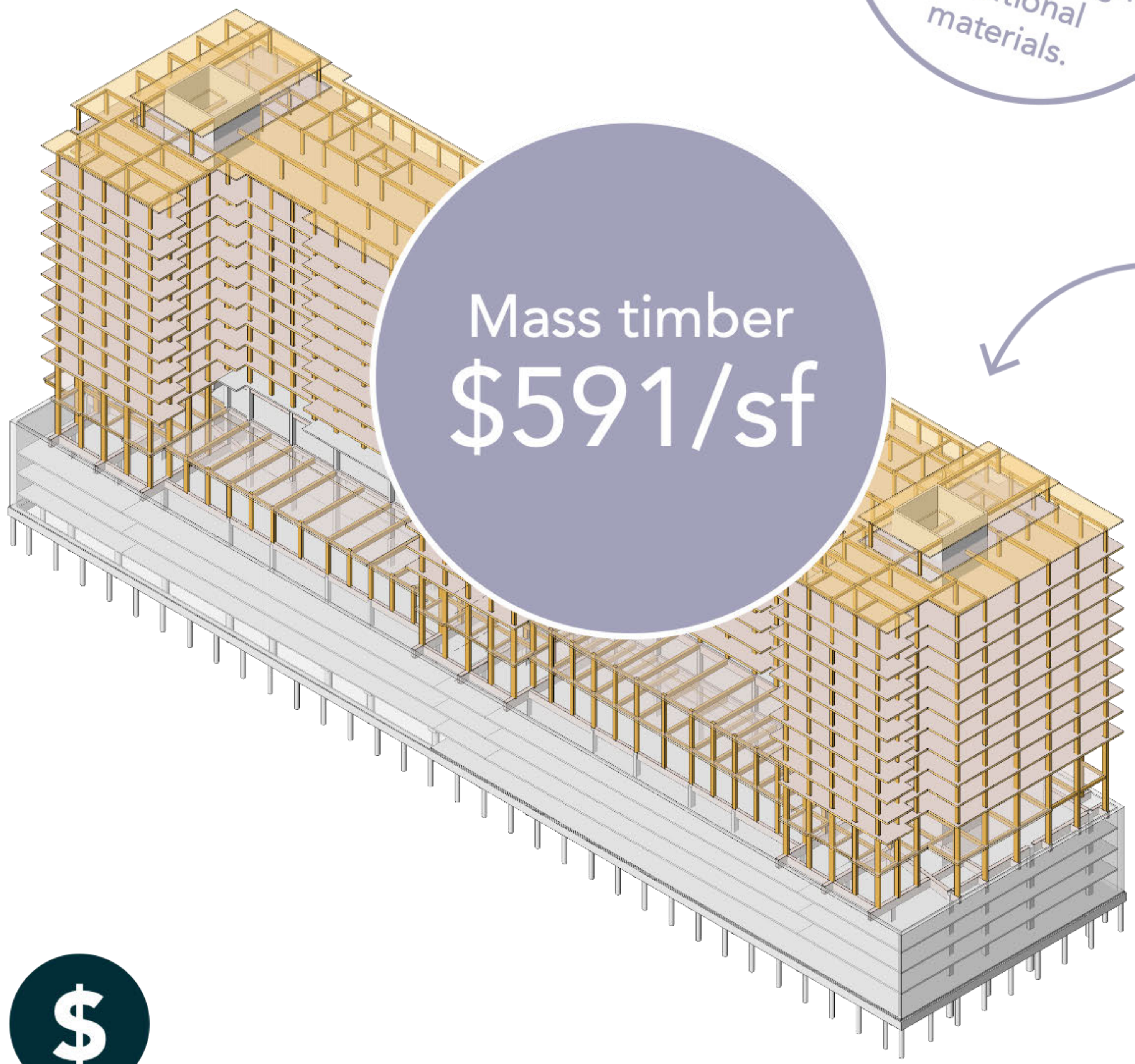
IBC 2024 allows for more wood exposure, less cost, and less added carbon through additional materials.

Structural

Concrete structure
$45,828,000

Indirect costs[1]
$4,830,000

Cast-in-place
Concrete
$572/sf



Mass timber
$591/sf

Structural

Mass timber structure
$36,009,000

Concrete
$8,969,000

Floor build up
$4,801,000

Fire protection: beams & columns
$3,364,000

Transfer structure
$2,810,000

Fire protection: floor plates
$1,201,000

Exterior envelope
$900,000

Indirect costs[1]
$5,832,000

Schedule savings
($1,750,000)

Interior ceiling finishes
($975,880)

Cost comparison

Major cost drivers and impacts between superstructures of a cast-in-place concrete project and a mass timber project. Does not account for owner costs, such as schedule savings, time to market, etc. Costs are based on residential area only. Garage costs were excluded since they remained a constant in each scenario.

12 Stories
513,800 GSF of residential
395 Residential units

[1] INDIRECT COST: SUM OF SUBCONTRACTOR BONDS, CONSTRUCTION CONTINGENCY, INSURANCE, AND CM FEE; AS A VOLUME PERCENTAGE OF DIRECT PROJECT COST

LEARN MORE ABOUT THE DATA AND METHODOLOGY HERE: OLIFANT.ORG

Minneapolis case study

IBC 2021 TYPE IV-C

+$16/sf
(3% increase)

$

Cost comparison

Major cost drivers and impacts between superstructures of a cast-in-place concrete project and a mass timber project. Does not account for owner costs, such as schedule savings, time to market, etc.

6 Stories
165,340 GSF of residential
130 Residential units

Minneapolis case study

IBC 2021 TYPE IV-C

Structural

Structure
$8,692,000

Indirect costs[1]
$916,000

Structural

Mass timber structure
$13,620,000

Indirect costs[1]
$1,170,000

Interior ceiling finishes
($1,226,000)

Concrete foundation
($700,000)

Exterior envelope
($590,000)

Cost comparison

Major cost drivers and impacts between superstructures of a cast-in-place concrete project and a mass timber project. Does not account for owner costs, such as schedule savings, time to market, etc.

6 Stories
165,340 GSF of residential
130 Residential units

[1] INDIRECT COST: SUM OF SUBCONTRACTOR BONDS, CONSTRUCTION CONTINGENCY, INSURANCE, AND CM FEE; AS A VOLUME PERCENTAGE OF DIRECT PROJECT COST

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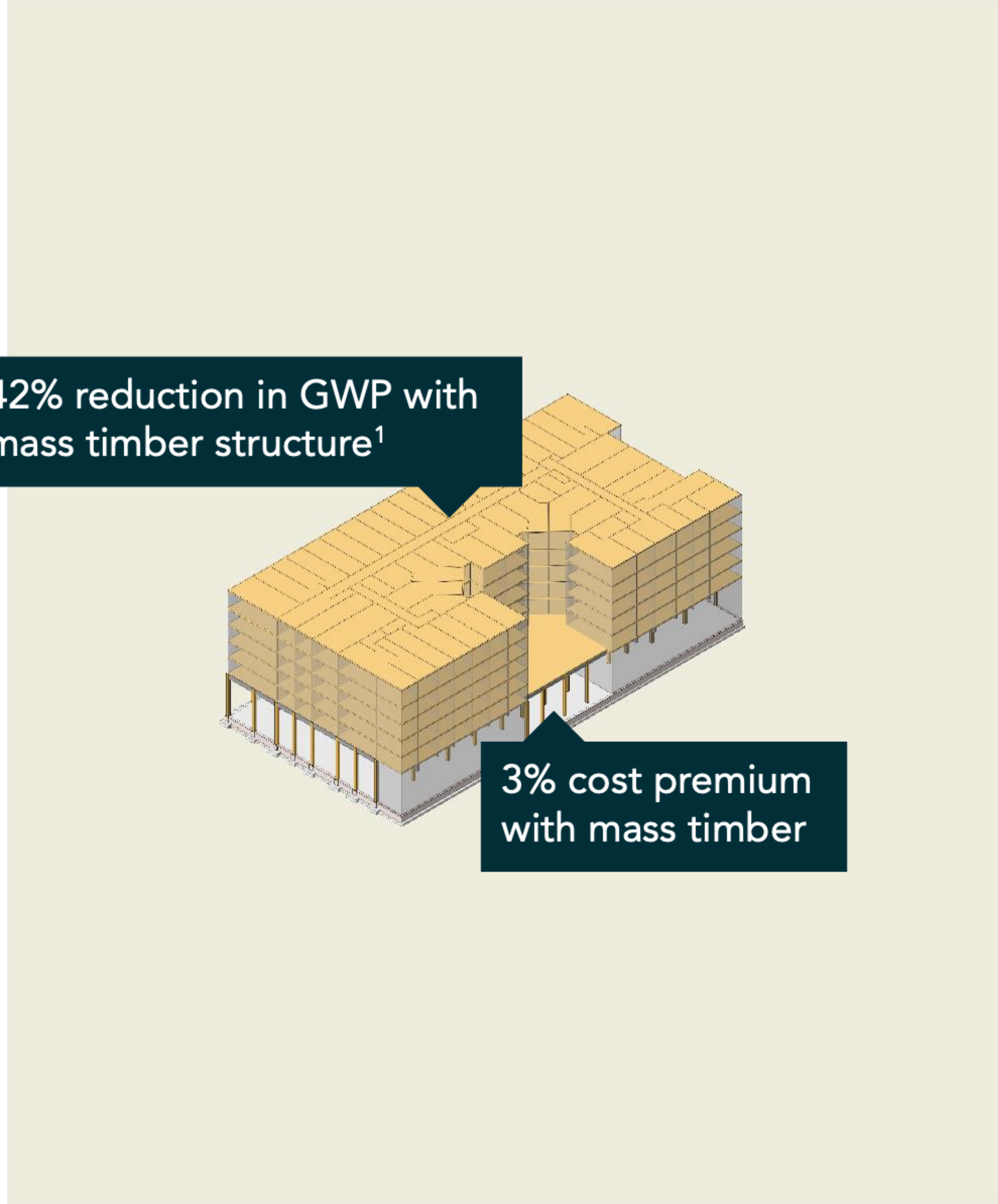
Minneapolis



[1] Mass timber stores more carbon than a stick-built structure

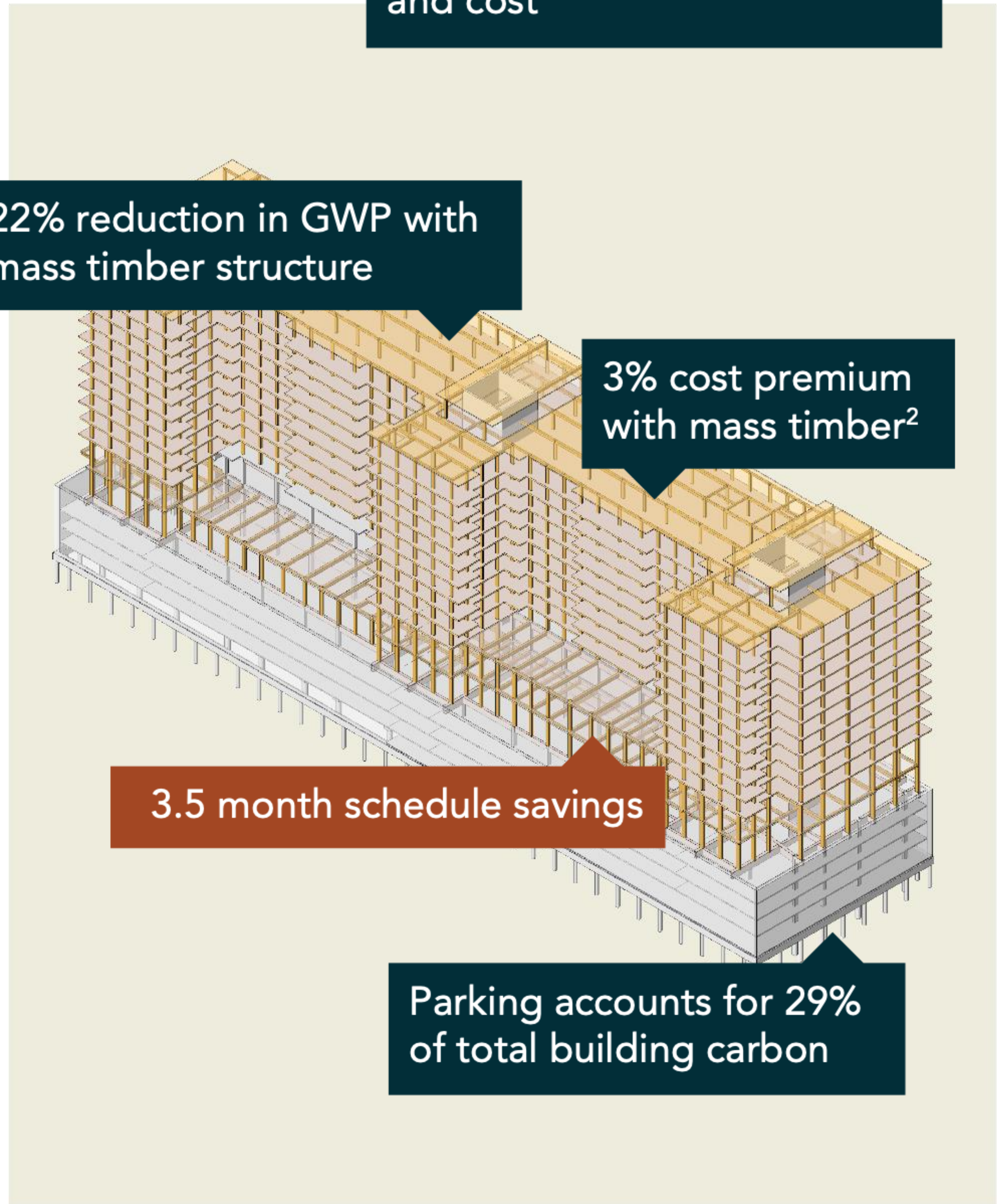
+$16/sf

8.05 kgCO2eq/sf reduction

0 months saved

Denver

Colorado adopted IBC 2024, considerably reducing carbon and cost



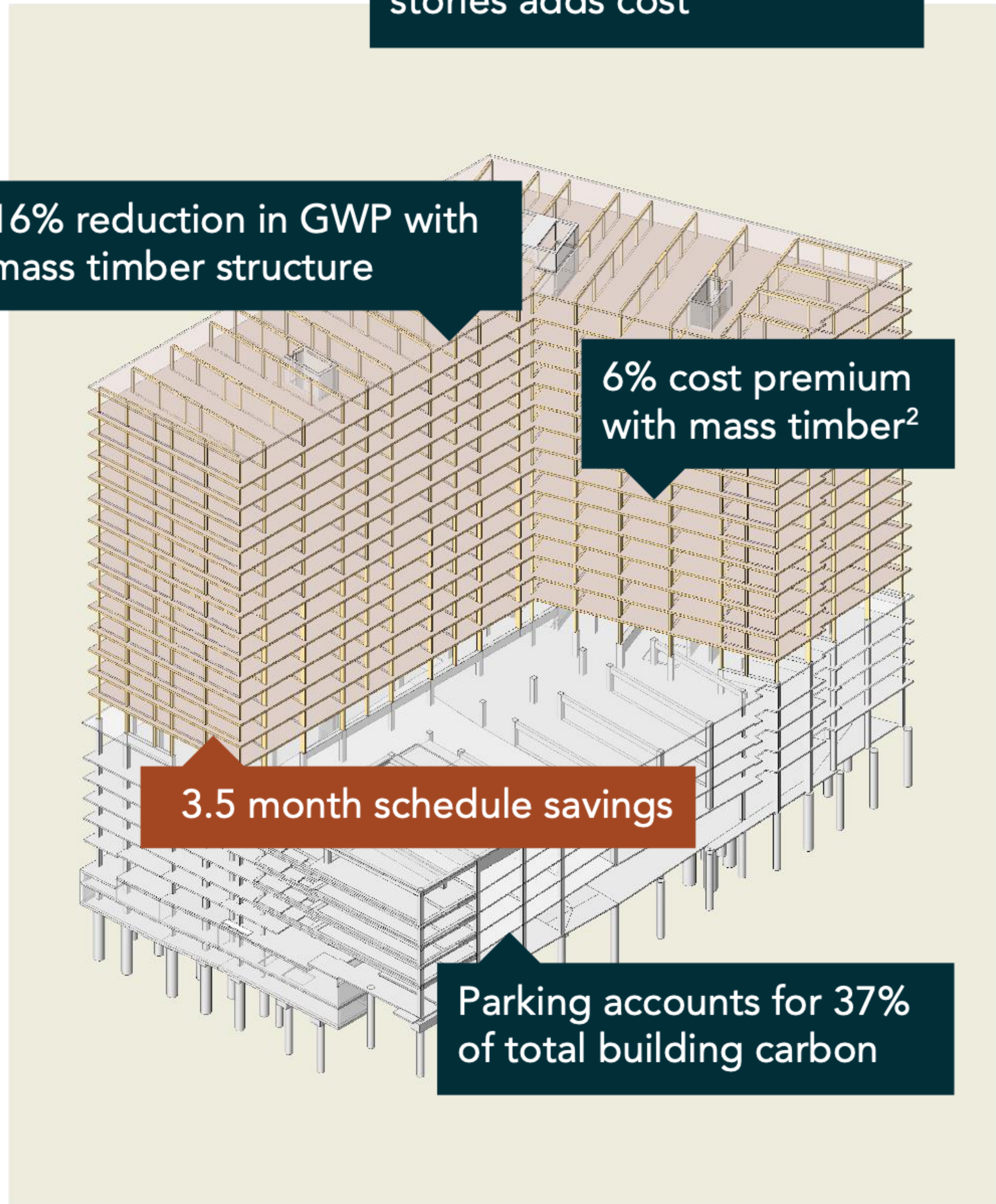
+$19/sf

5.11 kgCO2eq/sf reduction

3.5 months saved

Atlanta

Georgia adopted IBC 2021, but fire protection at higher stories adds cost



+$37/sf

4.07 kgCO2eq/sf reduction

3.5 months saved

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Minneapolis

Denver

Atlanta

QUESTIONS?

This concludes The American Institute of Architects Continuing Education Systems Course

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