

Exploring Tall Wood New Code Provisions for Tall Timber Structures

Credits: 1.0 AIA/CES HSW LUs, 1.0 PHD credit, 0.10 ICC credit

MASS TIMBER+SM
OFFSITE CONSTRUCTION CONFERENCE

PRODUCED BY



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Exploring Tall Wood: New Code Provisions for Tall Timber Structures

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



Course Description

As interest in and use of mass timber in the U.S. has grown, so too has interest in pushing these timber structures to greater heights. Prior to the 2021 International Building Code, using international examples of successful tall wood buildings as precedent, some designers proposed tall wood projects in the states using a project-specific performance-based design approach. In order to provide a uniform set of code provisions for these tall wood buildings, the International Code Council established an ad hoc committee on tall wood buildings that proposed a set of code changes allowing up to 18 stories of mass timber construction. Those code changes were announced as approved in January 2019 and became part of the 2021 International Building Code. Following a brief discussion of history and motivators, this presentation will introduce the new tall wood code provisions and construction types, as well as the technical research and testing that supported their adoption.

Learning Objectives

1. Review the global history of tall wood construction and highlight the mass timber products used in these structures.
2. Explore the work and conclusions of the ICC Ad Hoc Committee on Tall Wood Buildings in establishing 14 new code provisions for the 2021 IBC that address tall wood construction.
3. Discuss differences between the new tall wood mass timber construction types and existing construction types.
4. Identify the key passive fire-resistance construction requirements and active systems that enable taller wood buildings to be built safely.

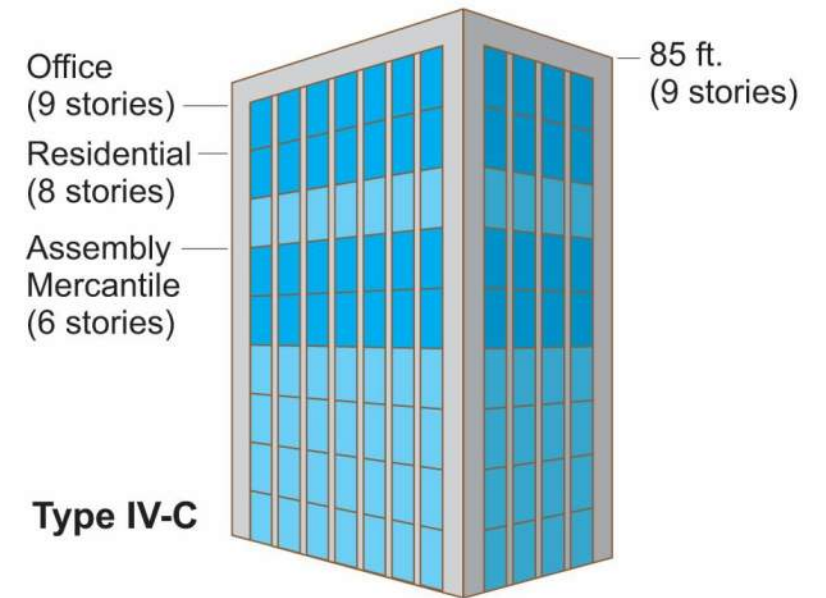
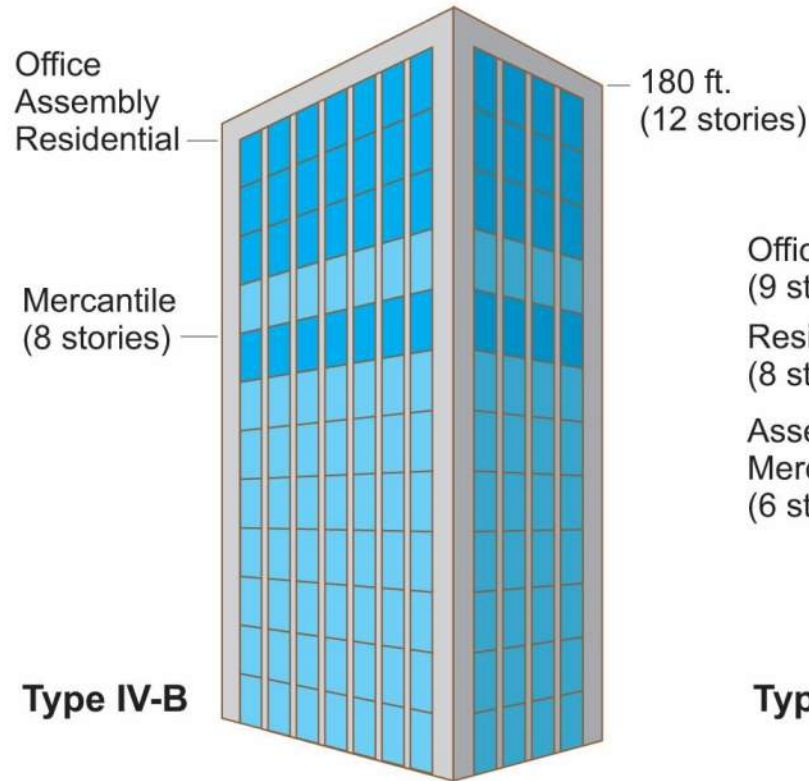
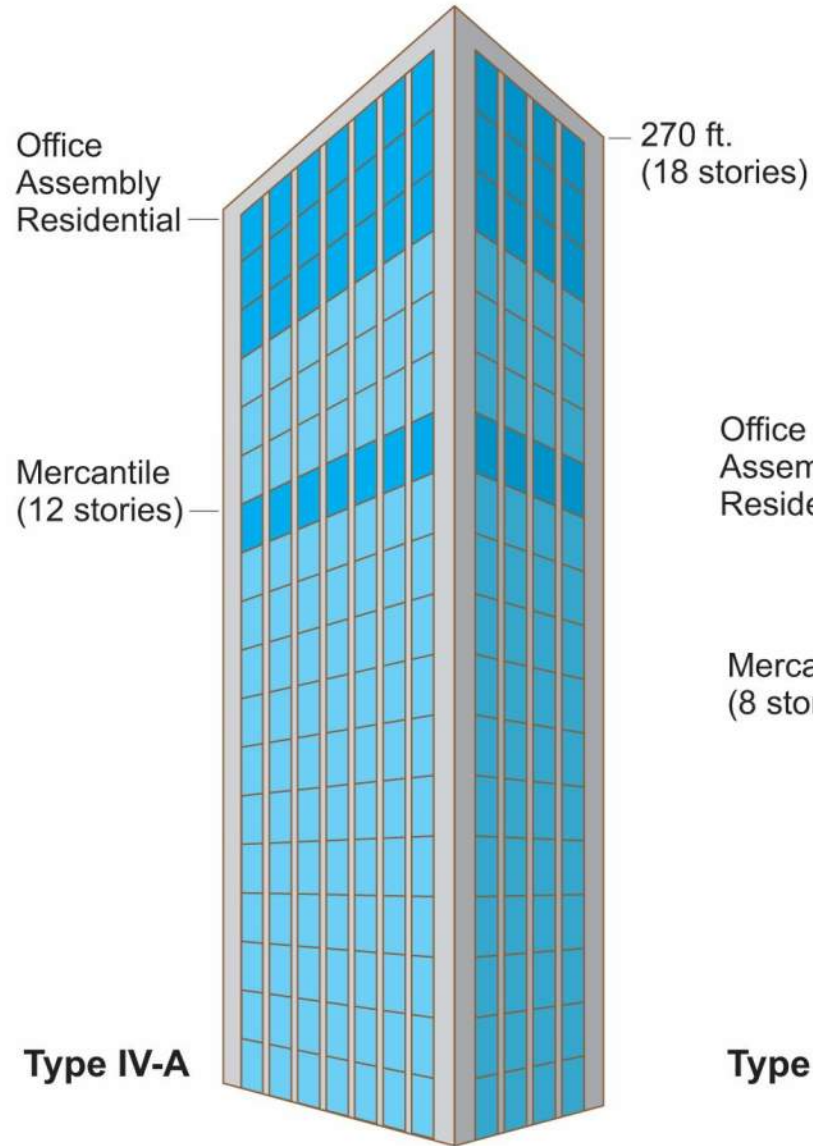
What is Tall Mass Timber?



Photo: WoodWorks
Architect/Developer: oWOW

Tall Mass Timber

Projects which exceed the height and/or story limits of the 2018 (or previous versions) of the IBC



Tall Mass Timber

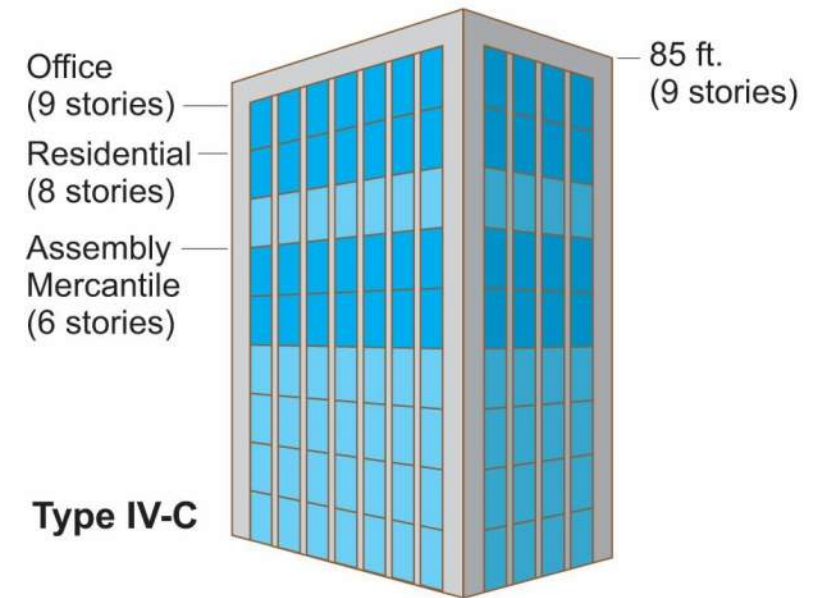
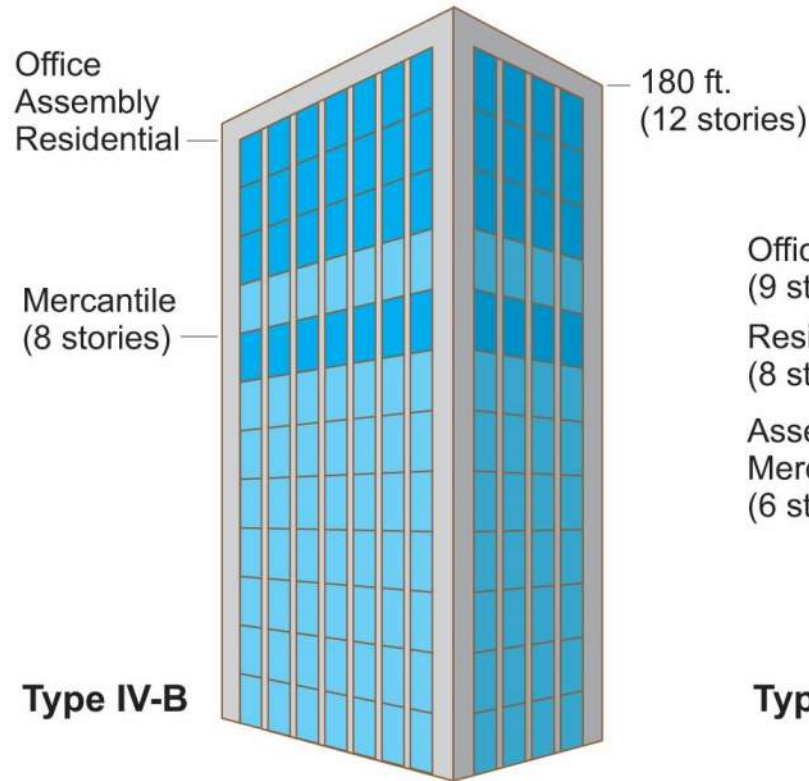
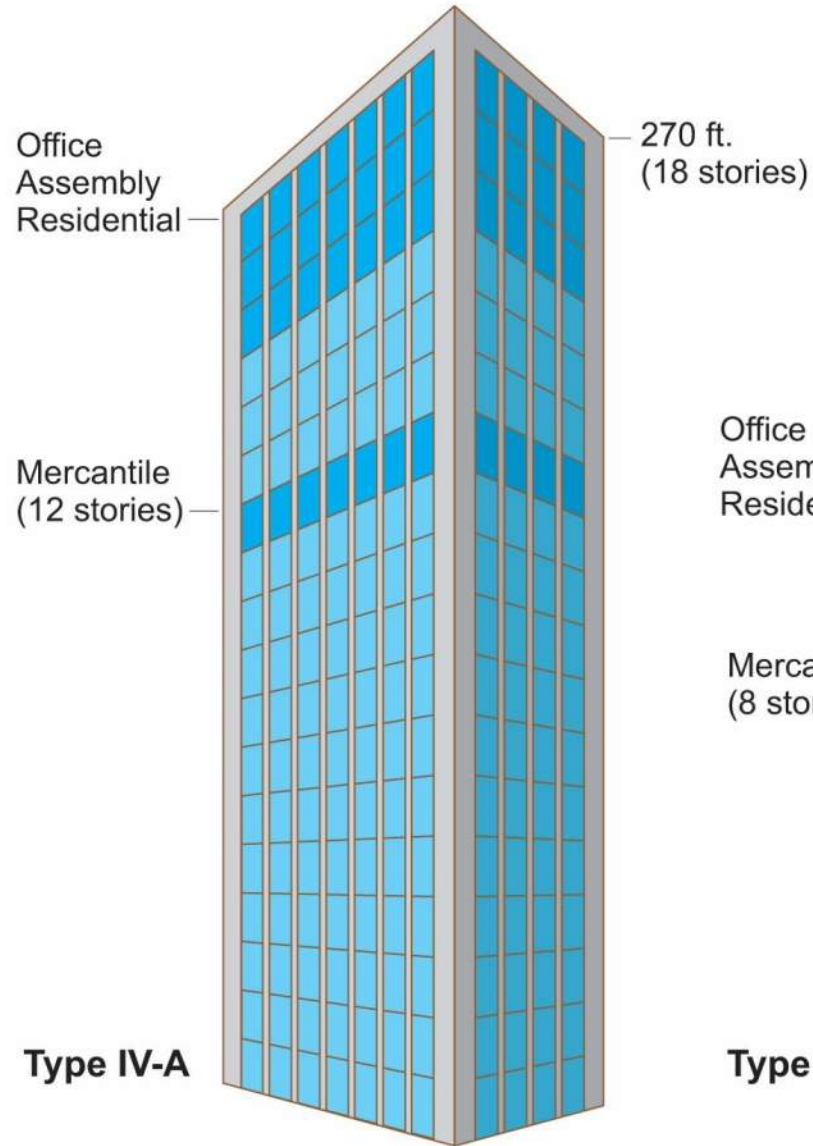
2021 IBC Introduces 3 new tall wood construction types:

- » IV-A
- » IV-B
- » IV-C
- » Previous type IV renamed type IV-HT

BUILDING ELEMENT	TYPE I		TYPE II		TYPE III		TYPE IV				TYPE V	
	A	B	A	B	A	B	A	B	C	HT	A	B

Tall Mass Timber

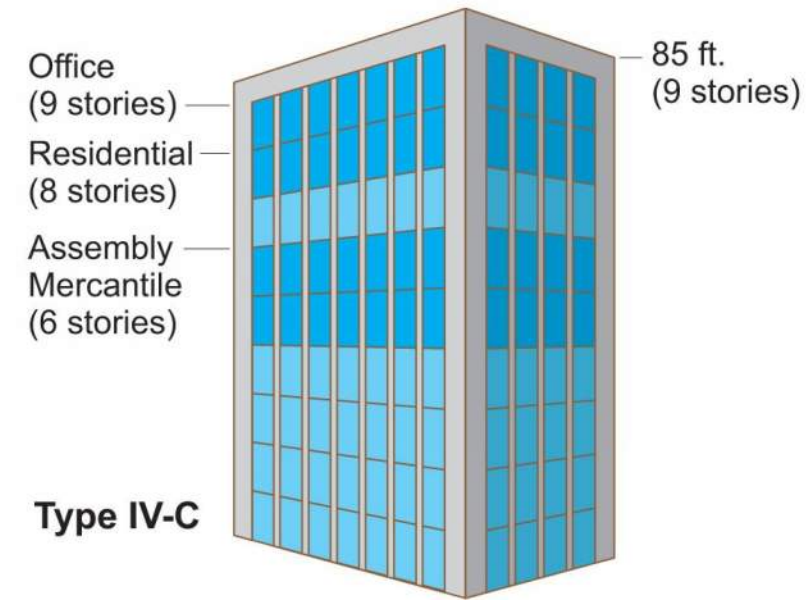
2021 IBC: 3 New Tall Mass Timber Construction Types



Type IV-C



Monte French Design Studio
Photos: Jane Messinger



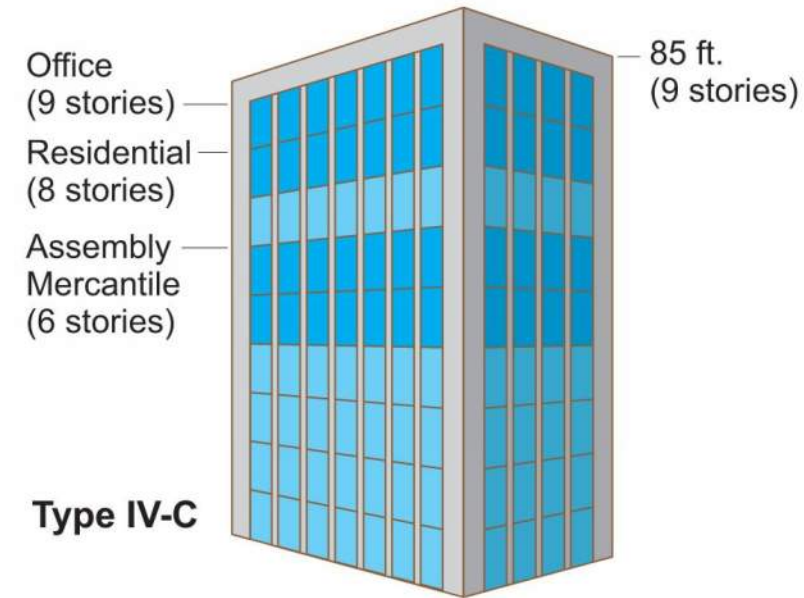
Type IV-C Exposure Limits

All Mass Timber surfaces may be exposed

Exceptions: Shafts, concealed spaces, outside face of exterior walls



Monte French Design Studio
Photo: Jane Messinger



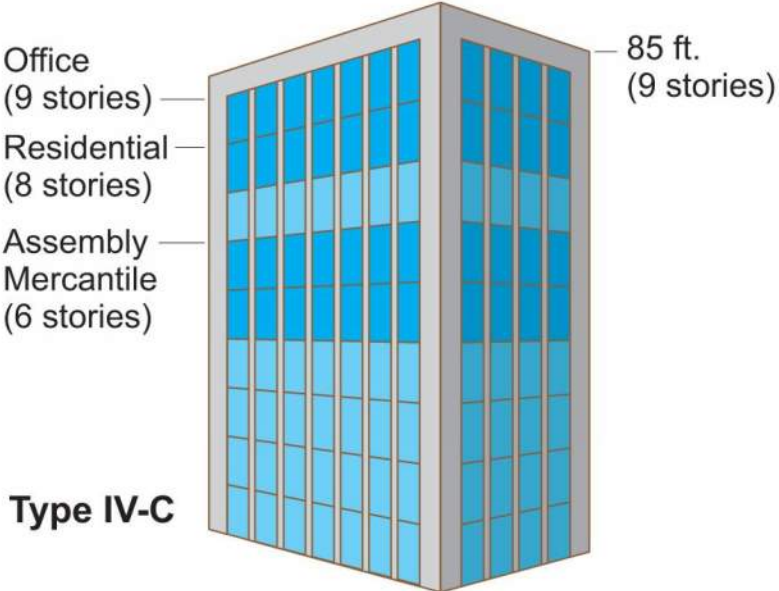
Type IV-C Building Size Limits

In most cases, Type IV-C height allowances = Type IV-HT height allowances,
but additional stories permitted due to enhanced FRR

Type IV-C area = 1.25 * Type IV-HT area

Occupancy	# of Stories	Height	Area per Story	Building Area
A-2	6	85 ft	56,250 SF	168,750 SF
B	9	85 ft	135,000 SF	405,000 SF
M	6	85 ft	76,875 SF	230,625 SF
R-2	8	85 ft	76,875 SF	230,625 SF

Areas exclude potential frontage increase



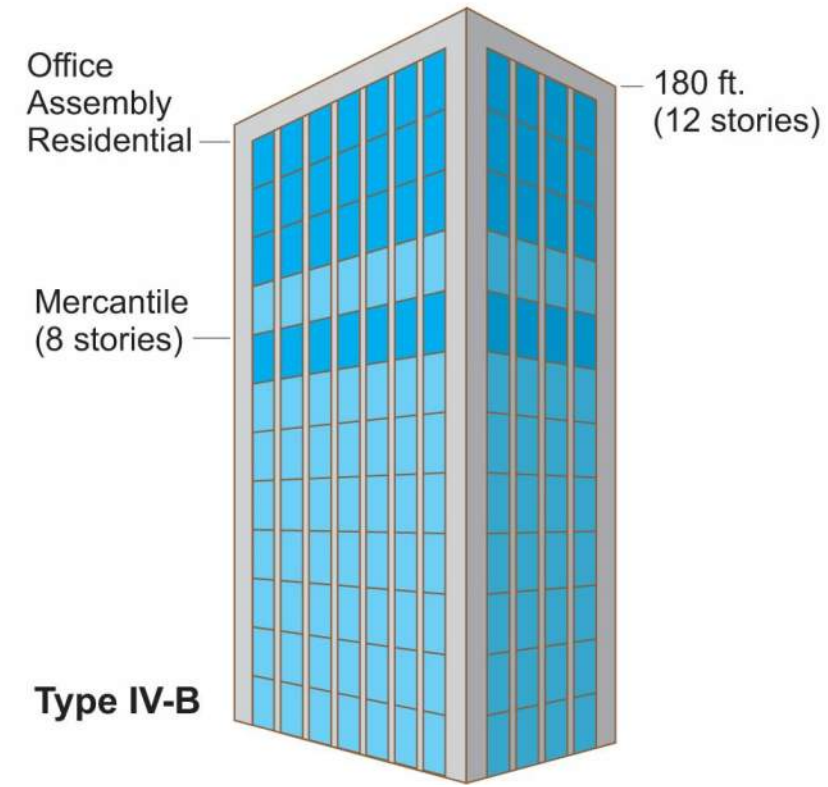
Type IV-B



Photo: ©Prakash Patel



Photos: Nick Johnson, Tour D Space



Type IV-B Exposure Limits

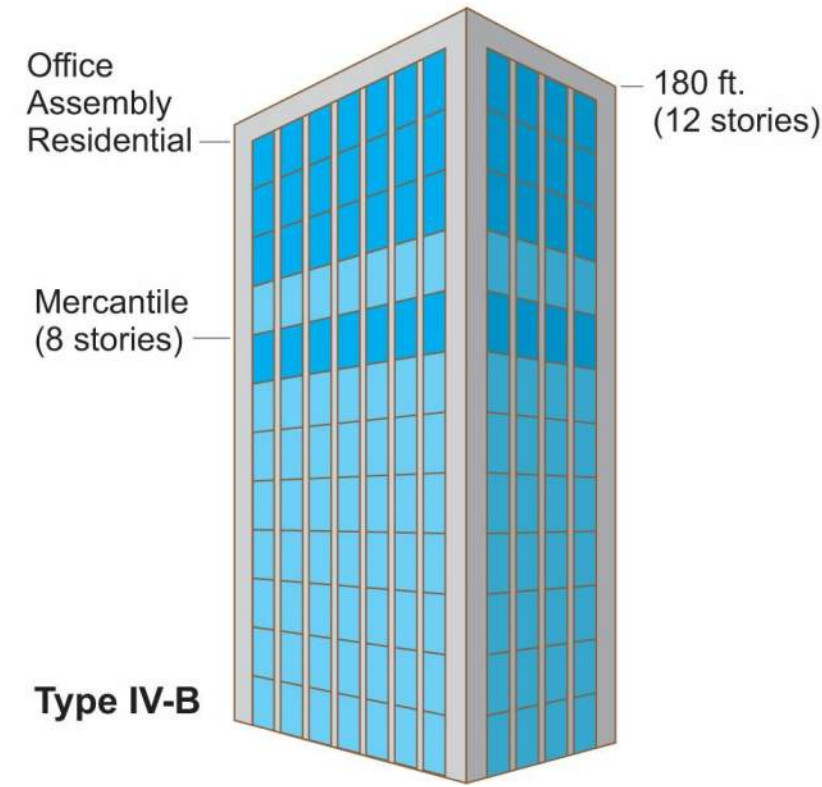
NC protection on some surfaces of Mass Timber

2021 IBC: 20% of ceilings or 40% of walls can be exposed

2024 IBC: 100% of ceilings or 40% of walls can be exposed



Photo: Nick Johnson, Tour D Space



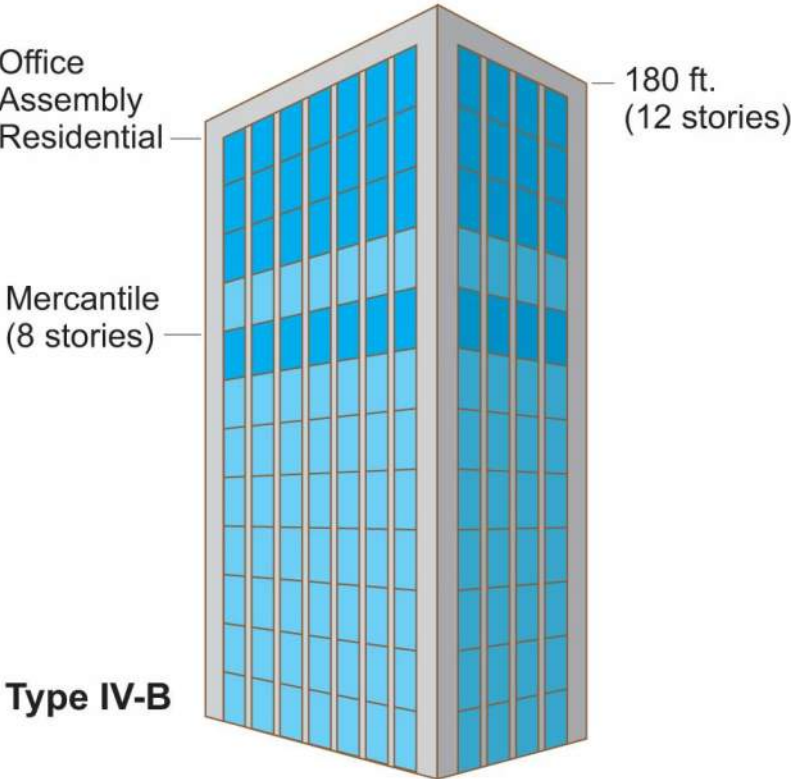
Type IV-B Building Size Limits

In most cases, Type IV-B height & story allowances = Type I-B height & story allowances

Type IV-B area = 2 * Type IV-HT area

Occupancy	# of Stories	Height	Area per Story	Building Area
A-2	12	180 ft	90,000 SF	270,000 SF
B	12	180 ft	216,000 SF	648,000 SF
M	8	180 ft	123,000 SF	369,000 SF
R-2	12	180 ft	123,000 SF	369,000 SF

Areas exclude potential frontage increase



Type IV-A



Office
Assembly
Residential

Mercantile
(12 stories)

270 ft.
(18 stories)

Type IV-A

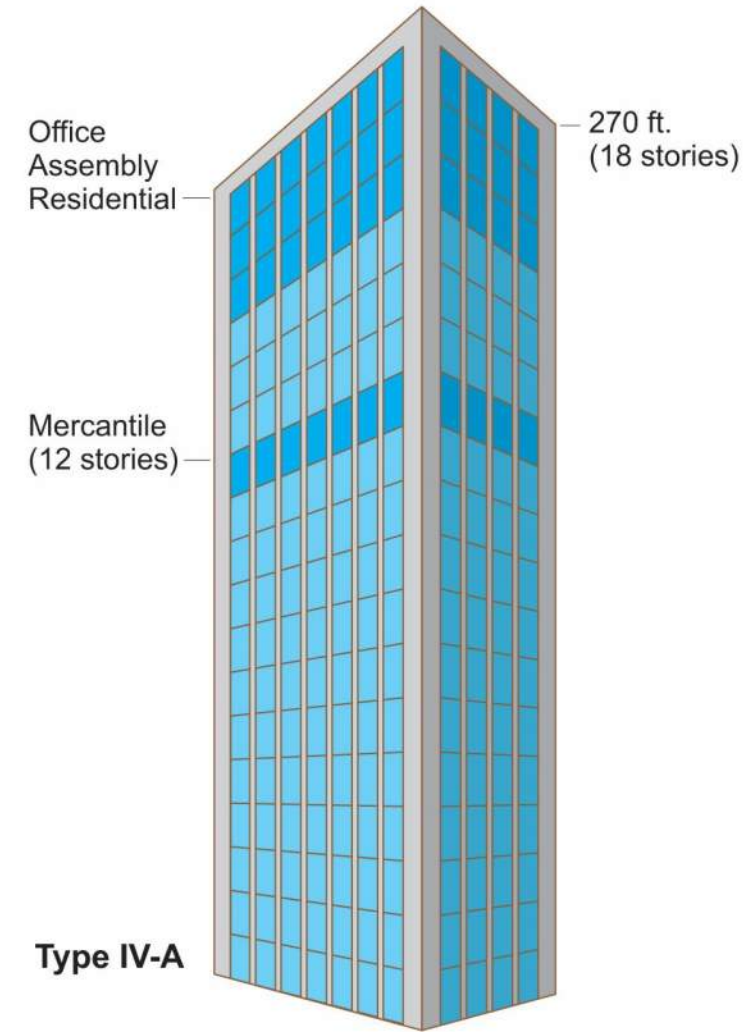
Photos: Flor Projects

Type IV-A Exposure Limits

100% NC protection on all surfaces of Mass Timber



Photo: Flor Projects



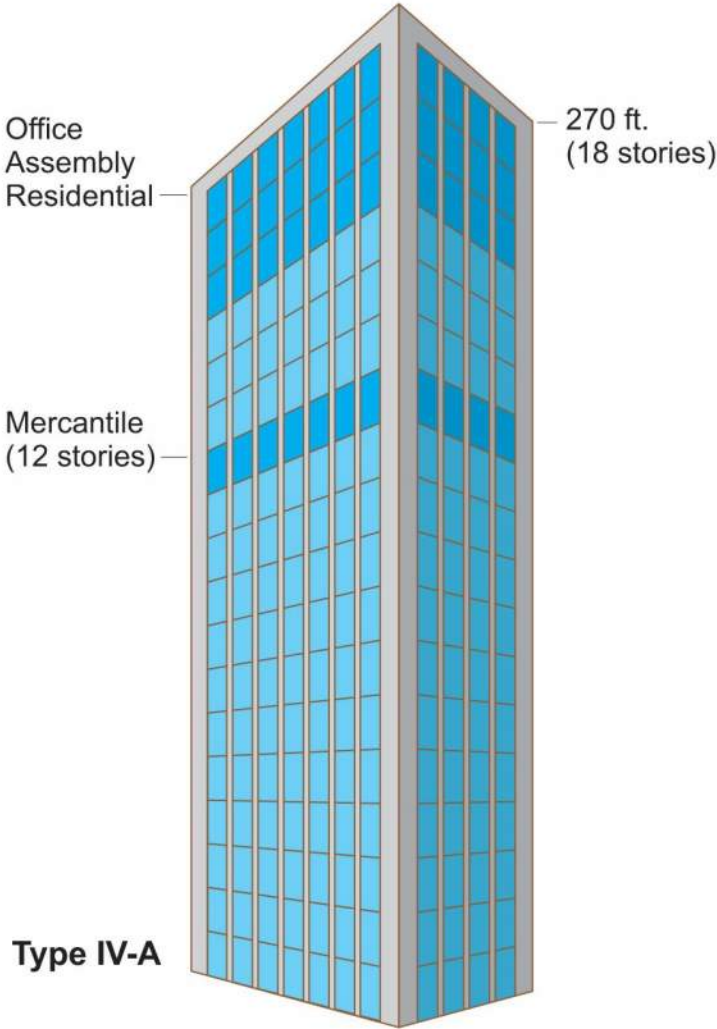
Type IV-A Building Size Limits

In most cases, Type IV-A height & story allowances = 1.5 * Type I-B height & story allowances

Type IV-A area = 3 * Type IV-HT area

Occupancy	# of Stories	Height	Area per Story	Building Area
A-2	18	270 ft	135,000 SF	405,000 SF
B	18	270 ft	324,000 SF	972,000 SF
M	12	270 ft	184,500 SF	553,500 SF
R-2	18	270 ft	184,500 SF	553,500 SF

Areas exclude potential frontage increase



Tall Mass Timber in the U.S.

HOW DID WE ARRIVE HERE?



INTRO, Cleveland, OH | Architect: Hartshorne Plunkard Architecture | Image Courtesy Harbor Bay Real Estate Advisors, Image Fiction

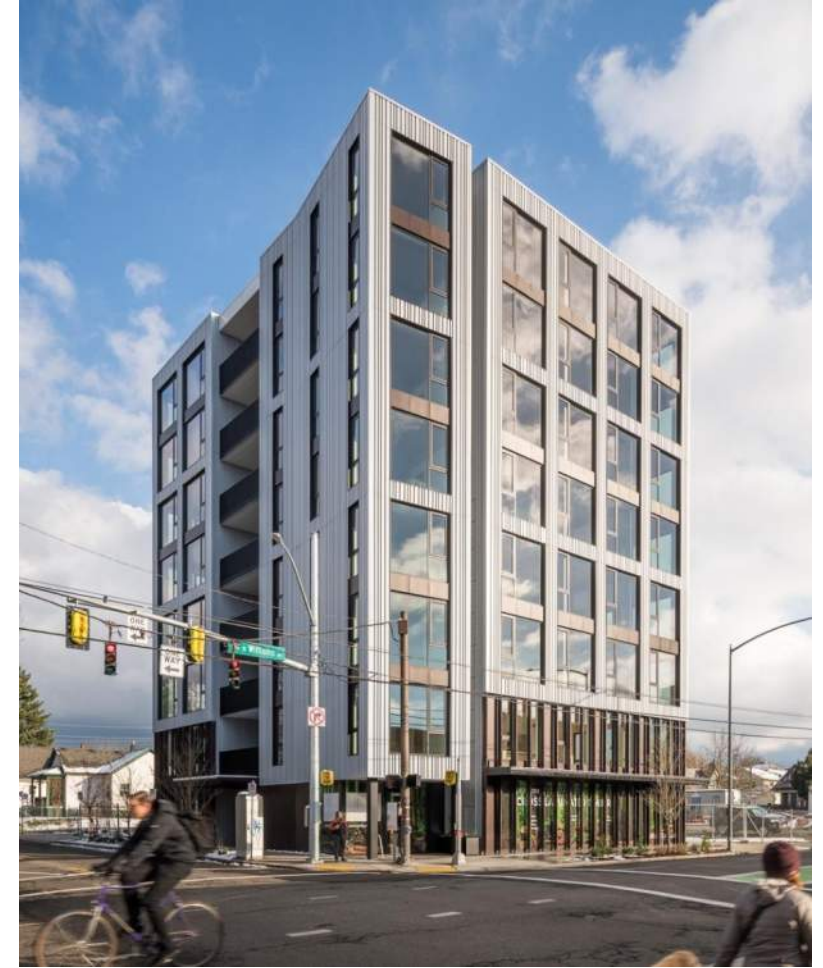
2008 – 2015: International Inspiration

8-18-STORY PROJECTS IN EUROPE, CANADA, AUSTRALIA



2015-2018: Domestic Innovation

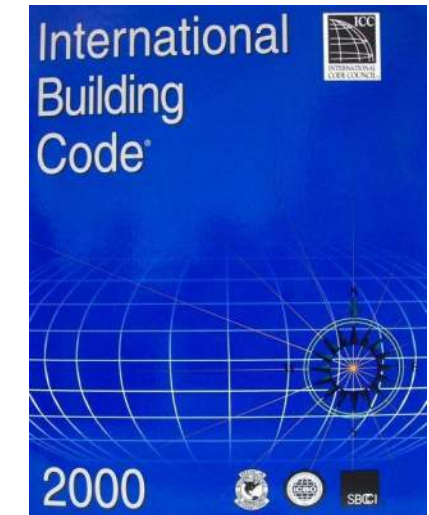
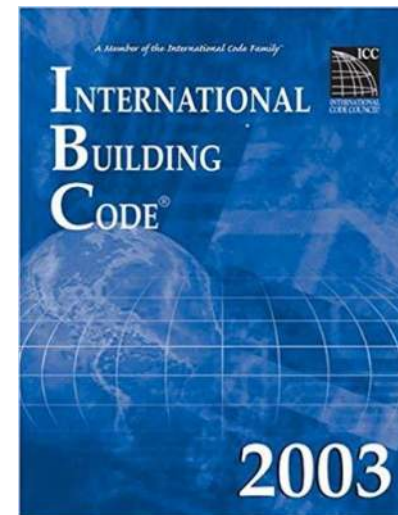
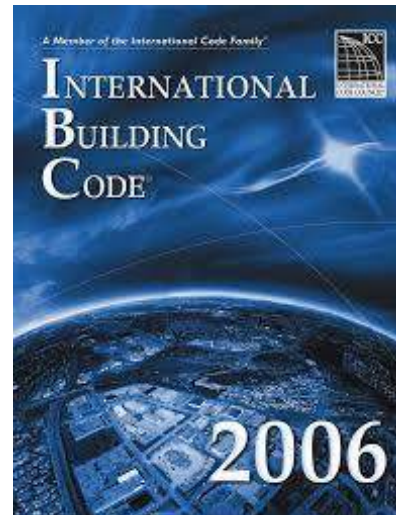
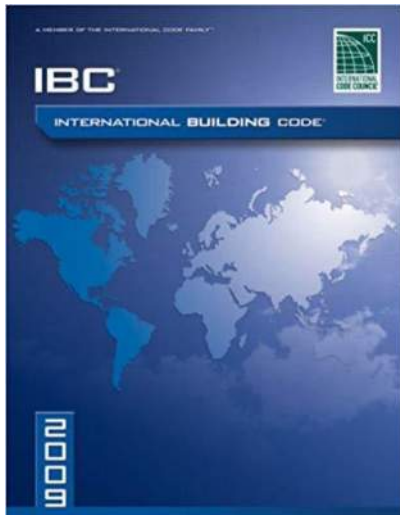
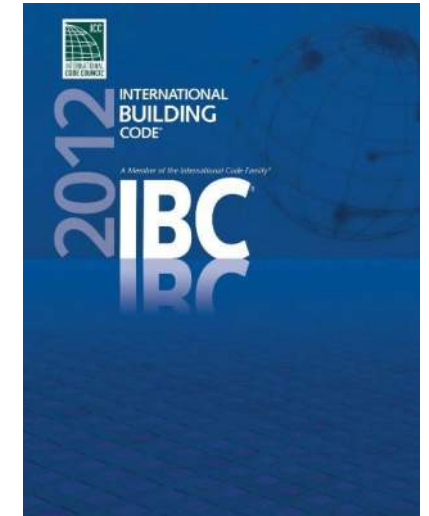
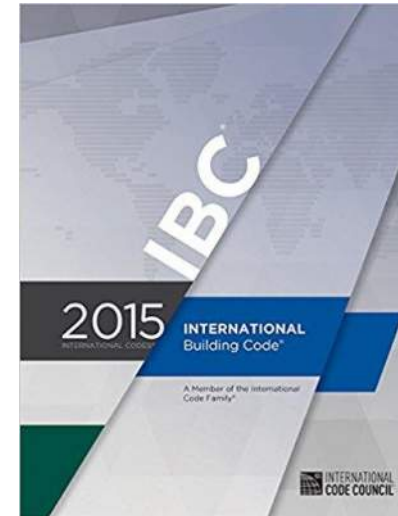
TALL WOOD BUILDING COMPETITION, 8-STORY CARBON 12 IN PORTLAND, OR



2015-2018: Building a Code Roadmap



2015-2018: Building a Code Roadmap



2015-2018: Building a Code Roadmap



2015-2018: Building a Code Roadmap



2015-2018: Building a Code Roadmap



2015-2018: Building a Code Roadmap

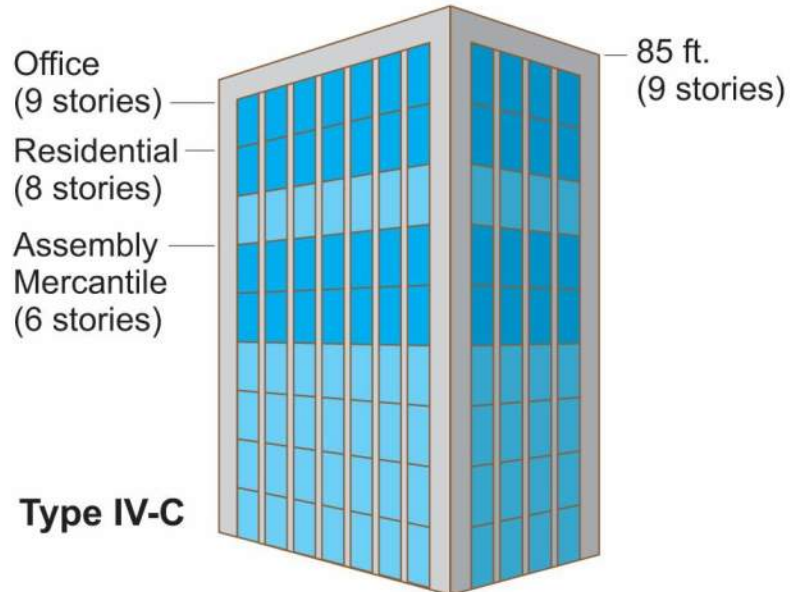
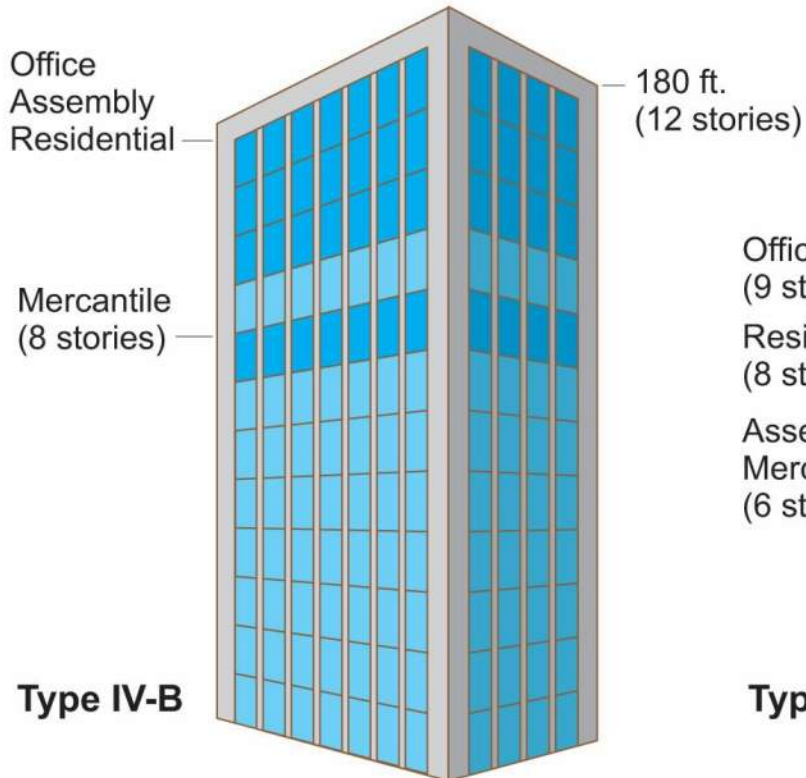
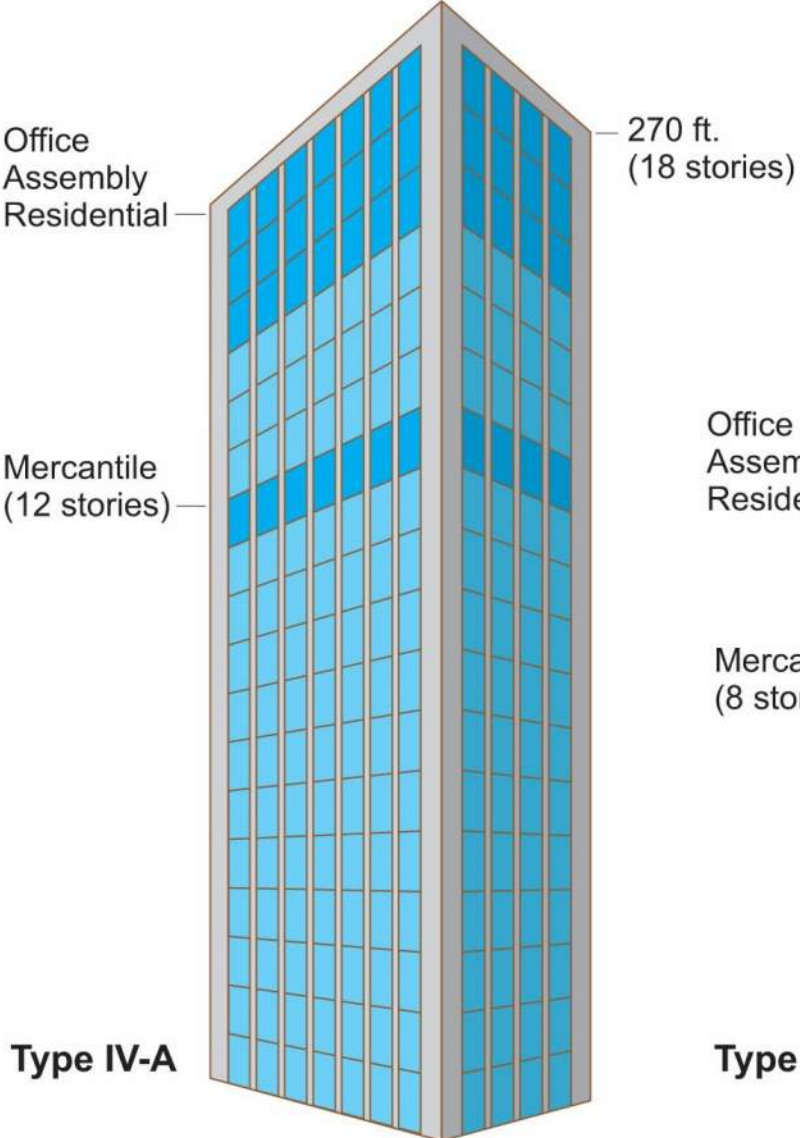
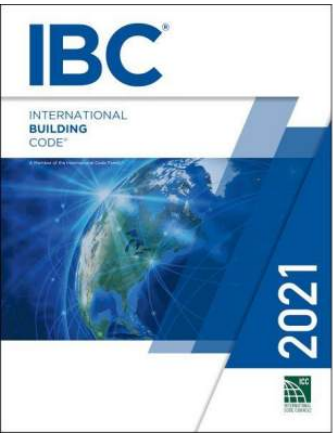


2015-2018: Building a Code Roadmap



2018-2021: Rollout of a New Code Path

2021 IBC



Denver Adopts Tall Mass Timber Codes

 milehighcre — January 6, 2020

On December 23, the [City of Denver](#) voted to adopt the 2019 Denver Building Code, which includes the tall mass timber code provisions approved for the 2021 International Building Code (IBC).

As part of the adoption of the new code, there will be a four-month period where new projects can use either the 2016 Denver Building Code or the newly-adopted 2019 version. After four months, all building and fire code permits will be processed under the 2019 Denver Building Code.

"We congratulate the City of Denver on incorporating mass timber into its building codes, and recognizing the potential of this new category of wood products to revolutionize the way America builds," said [American Wood Council](#) president & CEO Robert Glowinski. "Mass timber offers the strength of historic building materials with lower weight, and, in the rare event of a fire, has inherent fire resistance. Beyond the aesthetic qualities of mass timber that building owners and designers are seeking, wood is among the most energy-efficient and environmentally friendly of all construction materials, storing carbon from the atmosphere for long periods of time."

The adopted proposal to recognize mass timber in the new code was submitted by Dr. Gregory R. Kingsley on behalf of the [Structural Engineers Association of Colorado](#). The American Wood Council provided technical assistance to the city in support of the proposal.

The 2019 Denver Building Code will now recognize three new types of construction that also are included in the 2021 IBC:



AMENDMENTS TO THE BUILDING AND FIRE CODE FOR THE CITY AND COUNTY OF DENVER

**The 2019 Denver Building and Fire
Code includes the following codes except
as amended herein.**

APPENDIX U TALL WOOD BUILDINGS

SECTION U101 GENERAL

U101.1 Purpose. The purpose of this appendix is to provide criteria for three new mass timber construction types: Type IV-A, Type IV-B, and Type IV-C. These building types expand the allowable use of mass timber construction to larger areas and greater heights than allowed for Type IV-HT construction.

U101.2 Scope. The provisions in this appendix are in addition to or replace the sections in the 2018 *International Building Code* where Types IV-A, IV-B, and IV-C construction are used. Where building Types IV-A, IV-B, or IV-C are not used, this appendix does not apply.

SECTION U102 AMENDMENTS TO THE INTERNATIONAL BUILDING CODE

(Under use of this appendix chapter, the following sections shall be modified or added as follows and shall supersede the corresponding sections in the International Building Code or Denver amendments to the International Building Code)

California Building Standards Commission Passes Tall Wood Code Change Proposals



Source: Softwood Lumber Board

On August 13, 2020 the California Building Standards Commission grouped the tall wood code change proposals into one agenda item and passed them unanimously.

The changes were published as an amendment to the 2019 CBC on January 1, 2021 and became effective on July 1, 2021

The screenshot displays the official website of the California Building Standards Commission (CBSC). The page is titled "Code Advisory Committee Review" and is part of the "2019 Intervening Code Adoption Cycle". It features a navigation bar with links to Home, Codes, Rulemaking, Forms, Resources, News, Calendars, About, and Contact. The main content area is divided into three sections: "Rulemaking Activities" (listing Code Adoption Cycles, Change Without Regulatory Effect, and Emergency Rulemaking), "Committee Legend" (listing various committees like ACCESS, BFO, GREEN, HF, PEME, and SCLF), and "2020 CODE ADVISORY COMMITTEE MEETINGS AND ASSIGNED PROPOSALS". The latter section lists specific meetings with dates and committee assignments, such as "ACCESS—FEBRUARY 11 & 12, 2020" and "BFO & SCLF, AD HOC—MARCH 17 & 18, 2020". A search bar is located at the top right of the page.

Meeting Date	Assigned Proposals
ACCESS—FEBRUARY 11 & 12, 2020	
HF—FEBRUARY 25, 2020	
GREEN & PEME, AD HOC—MARCH 4 & 5, 2020	
BFO & SCLF, AD HOC—MARCH 17 & 18, 2020	

Building, Fire & Other and Structural Design/Lateral Forces Ad Hoc Committee March 17 & 18, 2020

2019-2022: REFINING THE CODE ROADMAP



Fire Safe Implementation of Mass Timber In Tall Buildings

Research of the fire performance of CLT and Glued Laminated Timber buildings, with visible wood surfaces.

The main aim of this research project was to identify safe limits of exposed mass timber surface areas that correspond with performance criteria used for previous U.S. Building Code Changes.

Source: RISE

2019-2022: REFINING THE CODE ROADMAP



United States Department of Agriculture

Compartment Fire Testing of a Two-Story Mass Timber Building

Samuel L. Zelinka
Laura E. Hasburgh
Keith J. Bourne
David R. Tucholski
Jason P. Ouellette



Conservatism: ATF lab tests based on older generation CLT adhesives

← 2018 ATF tests were initiated before the 2018 version of ANSI/APA PRG 320 was published and the tested CLT was not compliant with the new product standard.



Forest
Service

Forest Products
Laboratory

General Technical Report
FPL-GTR-247

May
2018

Source: RISE, USDA FS FPL & AWC

2019-2022: REFINING THE CODE ROADMAP

In tall buildings, preventing fire re-growth is key.

Fire re-growth is a phenomenon in which the heat-release rate of a fire intensifies following a decay phase. Fire re-growth can be initiated when delamination occurs, as this exposes un-charred wood surfaces, thereby resulting in an influx of fuel available for consumption by the fire.



Photo: Urban One

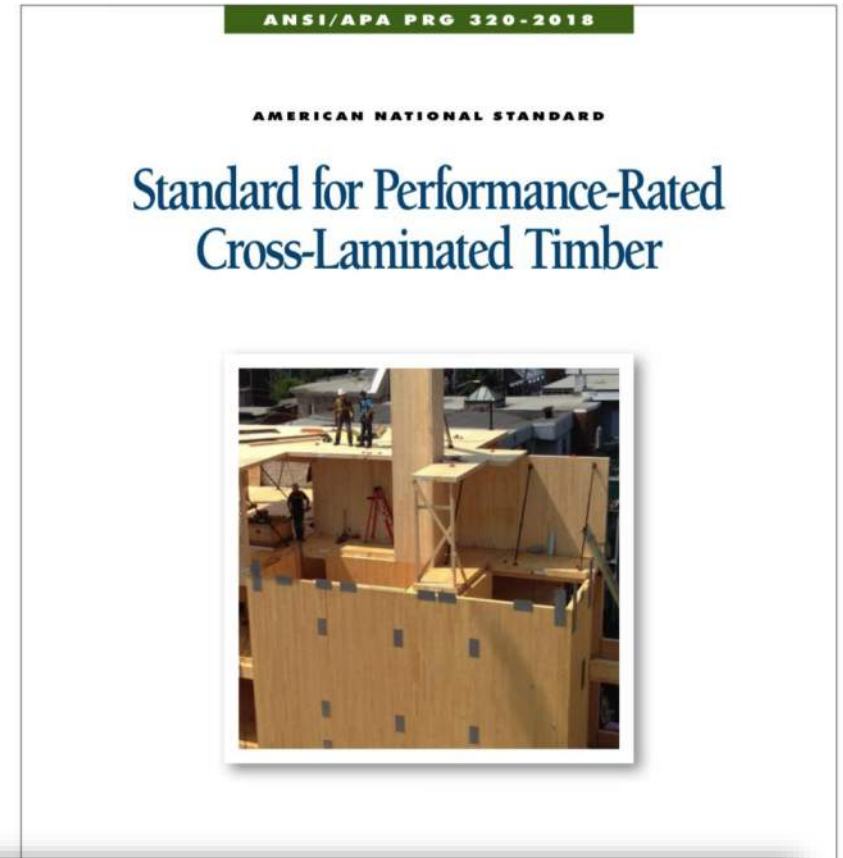


Photo: ARUP

2019-2022: REFINING THE CODE ROADMAP

PRG 320 is manufacturing & performance standard for CLT

2019 edition (referenced in 2021 IBC) added new elevated temperature adhesive performance requirements validated by full-scale and medium-scale qualification testing to ensure CLT does not exhibit fire re-growth



ANNEX B. PRACTICE FOR EVALUATING ELEVATED TEMPERATURE PERFORMANCE OF ADHESIVES USED IN CROSS-LAMINATED TIMBER (MANDATORY)

2019-2022: REFINING THE CODE ROADMAP



2019-2022: REFINING THE CODE ROADMAP

Change to 2024 IBC: IV-B Ceiling Exposure



602.4.2.2.2 Protected area.

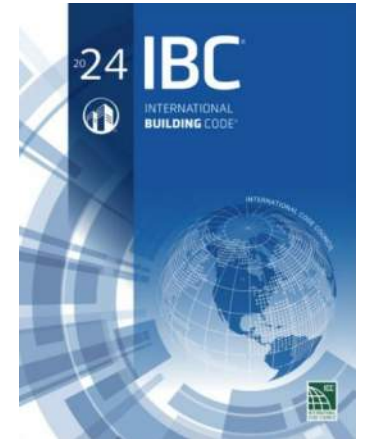
Interior faces of *mass timber* elements, including the inside face of exterior *mass timber walls* and *mass timber roofs*, shall be protected in accordance with Section 602.4.2.2.1.

Exceptions: Unprotected portions of *mass timber* ceilings and walls complying with Section 602.4.2.2.4 and the following:

1. Unprotected portions of *mass timber* ceilings and walls complying with one of the following:
 - 1.1. Unprotected portions of *mass timber* ceilings, including attached beams, limited to an area less than or equal to 100 percent of the floor area in any *dwelling unit* within a story or fire area within a story.
 - 1.2. Unprotected portions of *mass timber* walls, including attached columns, limited to an area less than or equal to 40 percent of the floor area in any *dwelling unit* within a story or fire area within a story.
 - 1.3. Unprotected portions of both walls and ceilings of *mass timber*, including attached columns and beams, in any *dwelling unit* or fire area and in compliance with Section 602.4.2.2.3.
2. *Mass timber* columns and beams that are not an integral portion of walls or ceilings, respectively, without restriction of either aggregate area or separation from one another.

2019-2022: REFINING THE CODE ROADMAP

Change to 2024 IBC: IV-B Exposure Separation



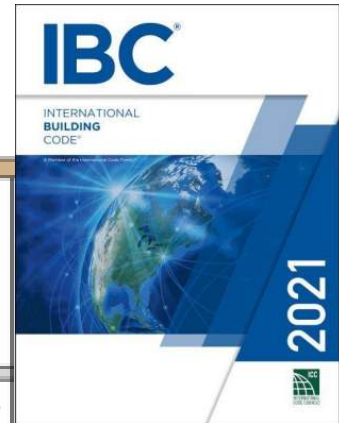
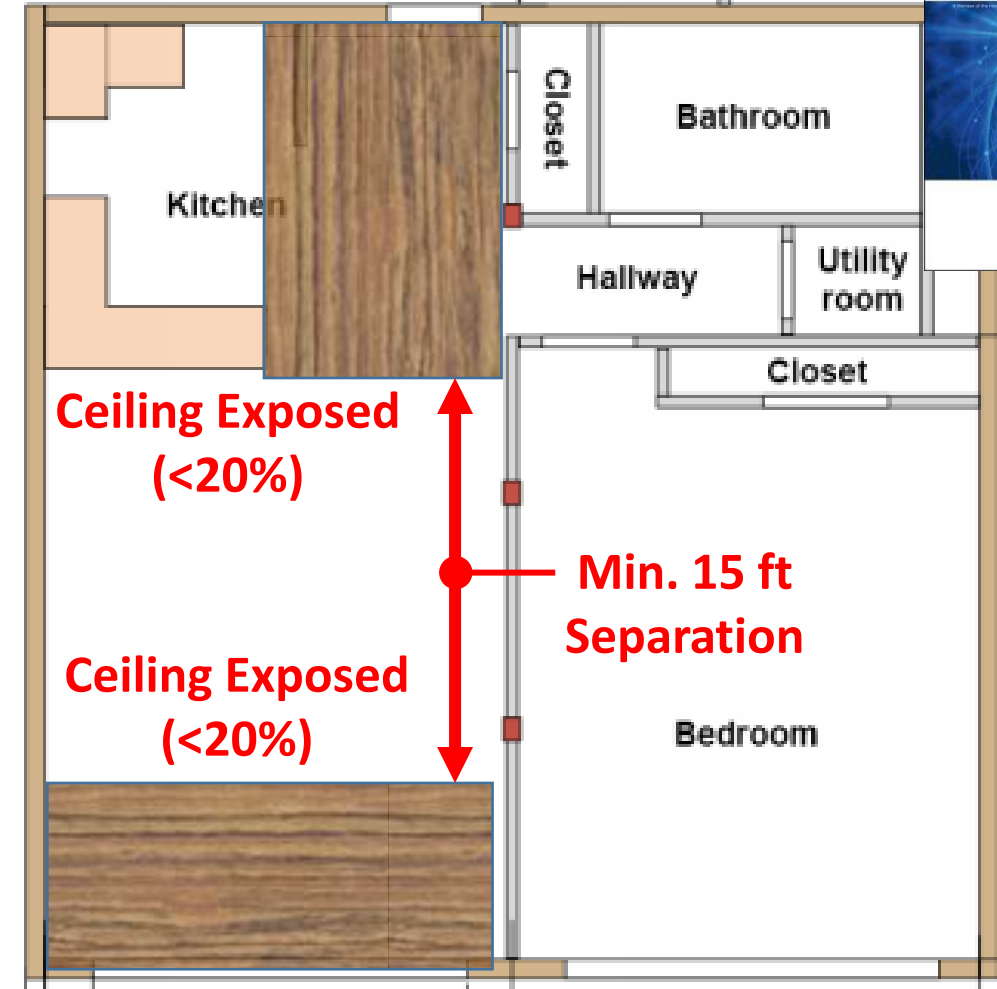
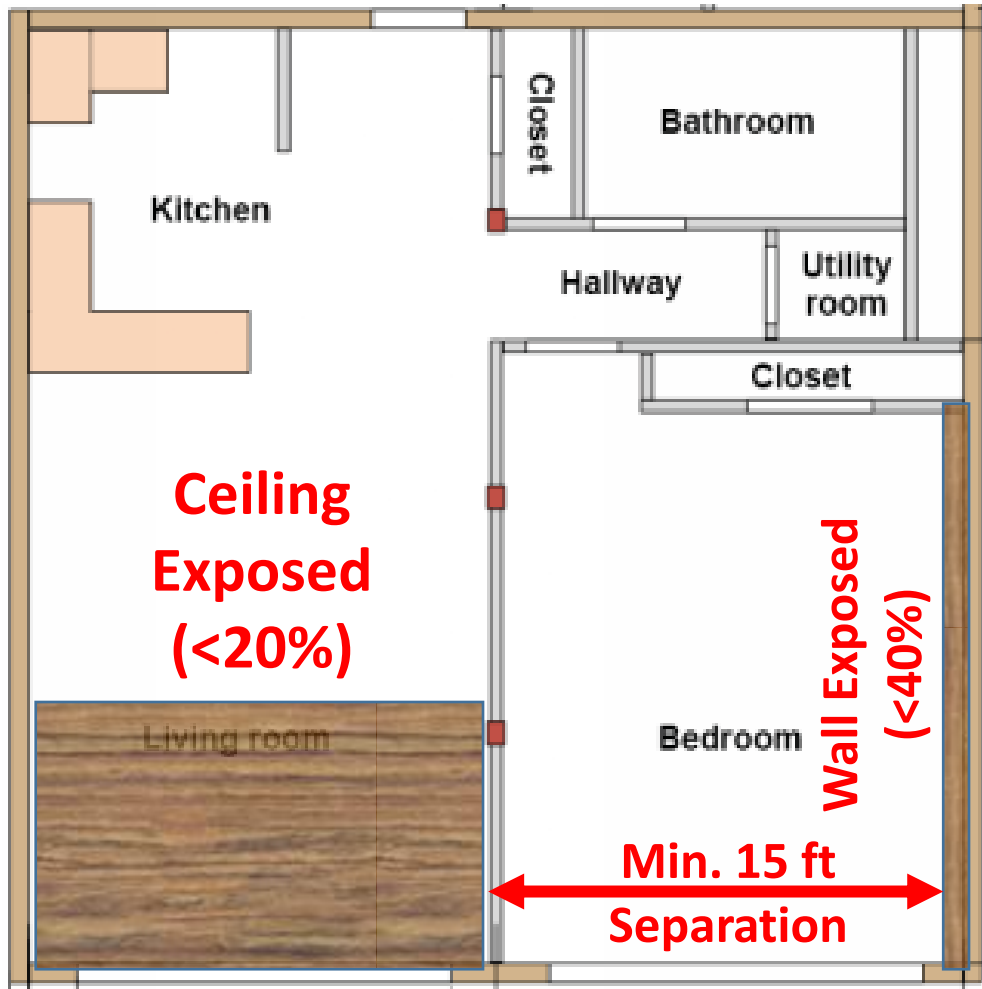
602.4.2.2.4 Separation distance between unprotected *mass timber* elements.

In each *dwelling unit* or *fire area*, unprotected portions of *mass timber* walls shall be not less than 15 feet (4572 mm) from unprotected portions of other walls measured horizontally along the floor.

2024 IBC eliminates need for 15 ft separation between exposed walls and ceilings, and between portions of exposed ceilings

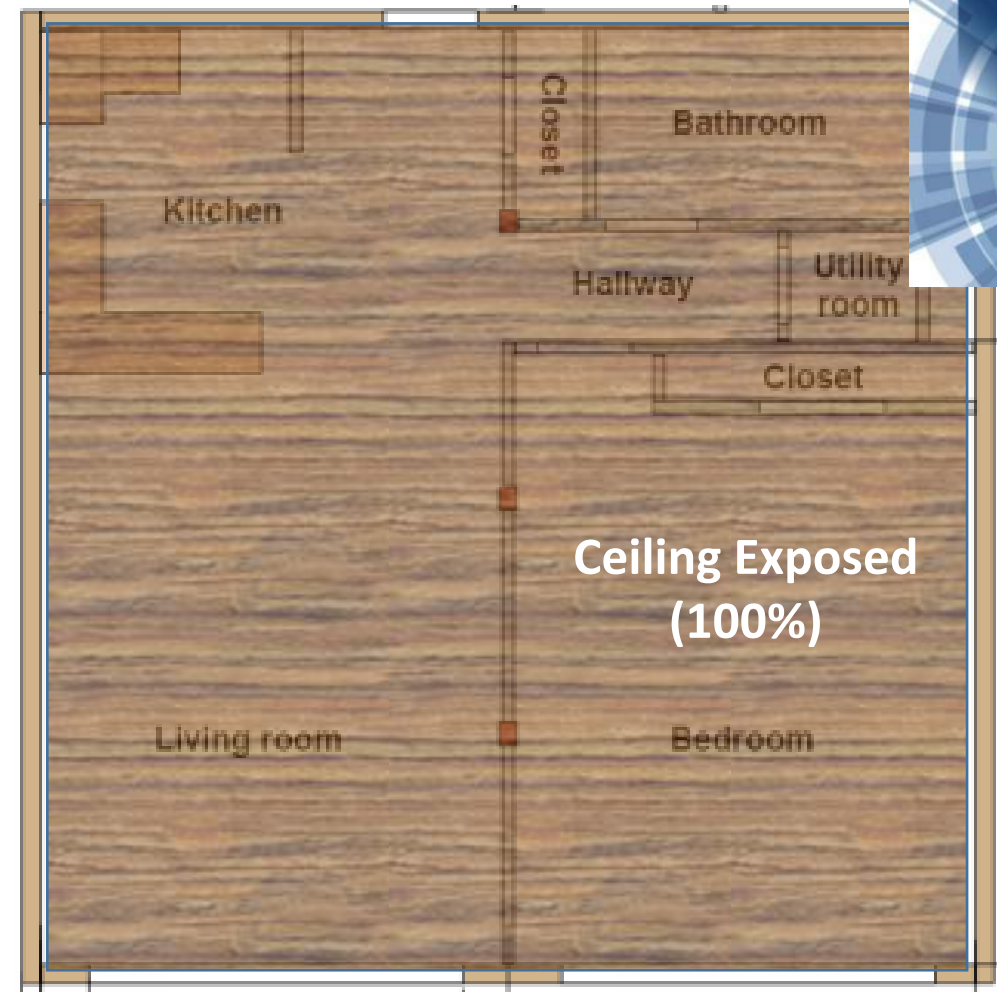
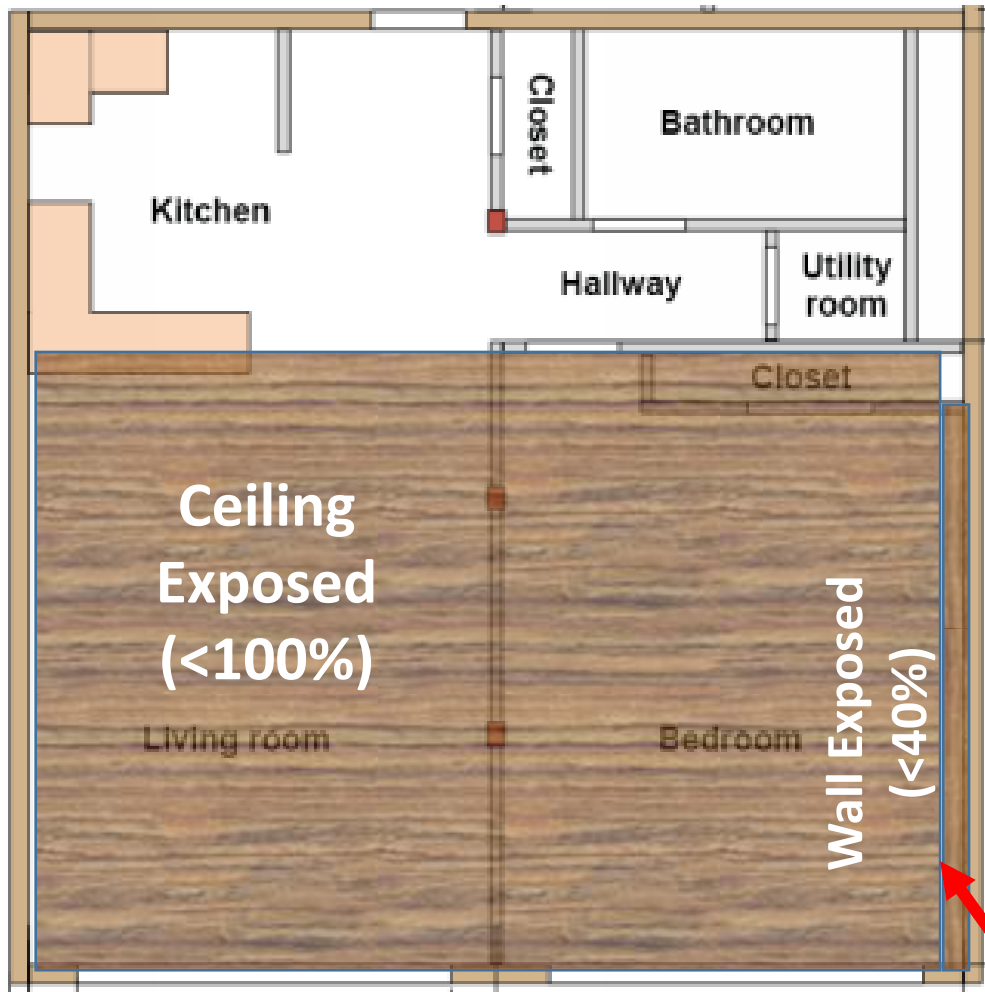
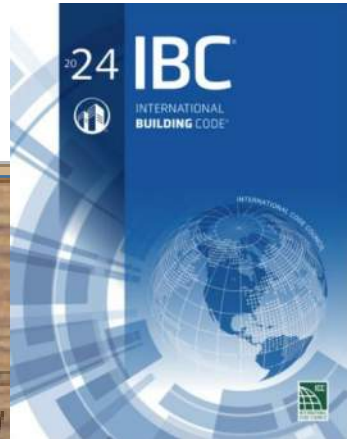
2019-2022: REFINING THE CODE ROADMAP

2021 IBC Allowances



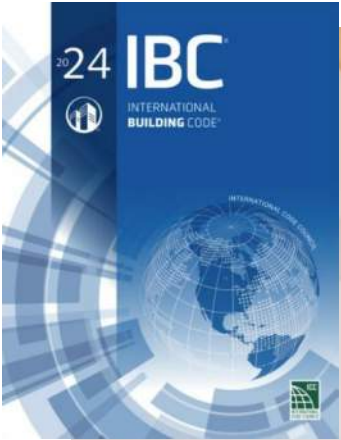
2019-2022: REFINING THE CODE ROADMAP

2024 IBC Allowances



No separation req'd between wall & ceiling

2019-2022: REFINING THE CODE ROADMAP



2024 IBC

100% Timber Ceiling Exposure Up to 12 Stories



2019-2022: REFINING THE CODE ROADMAP



**Min. 1" thick NC protection required
on mass timber floors in IV-A and IV-B.
Not required in IV-C**



2019-2022: REFINING THE CODE ROADMAP

F174-21

IFC: 3303.5

Proponents: David Tyree, representing AWC (dtyree@awc.org); Raymond O'Brocki, AWC, representing AWC (robrocki@awc.org)

2021 International Fire Code

Revise as follows:

3303.5 Fire safety requirements for buildings of Types IV-A, IV-B and IV-C construction. Buildings of Types IV-A, IV-B and IV-C construction designed to be greater than six stories above *grade plane* shall comply with the following requirements during construction unless otherwise *approved by the fire code official*.

1. Standpipes shall be provided in accordance with Section 3313.
2. A water supply for fire department operations, as *approved by the fire code official and the fire chief*.
3. Where building construction exceeds six stories above *grade plane* and noncombustible protection is required by Section 602.4 of the *International Building Code*, at least one layer of noncombustible protection shall be installed on all building elements on floor levels, including mezzanines, more than four levels below active mass timber construction before additional floor levels can be erected.

Exception- Exceptions:

1. Shafts and vertical exit enclosures shall not be considered part of the active mass timber construction.
2. Noncombustible material on the top of mass timber floor assemblies shall not be required before erecting additional floor levels.
4. Where building construction exceeds six stories above *grade plane*, required exterior wall coverings shall be installed on floor levels, including mezzanines, more than four levels below active mass timber construction before additional floor levels can be erected.

Exception: Shafts and vertical exit enclosures shall not be considered part of the active mass timber construction.

Credit: ICC

Change to 2024 IBC: Sequencing of NC topping install

2022 AND BEYOND: ADOPTING UPDATED CODES

ORDINANCE NO. 32198

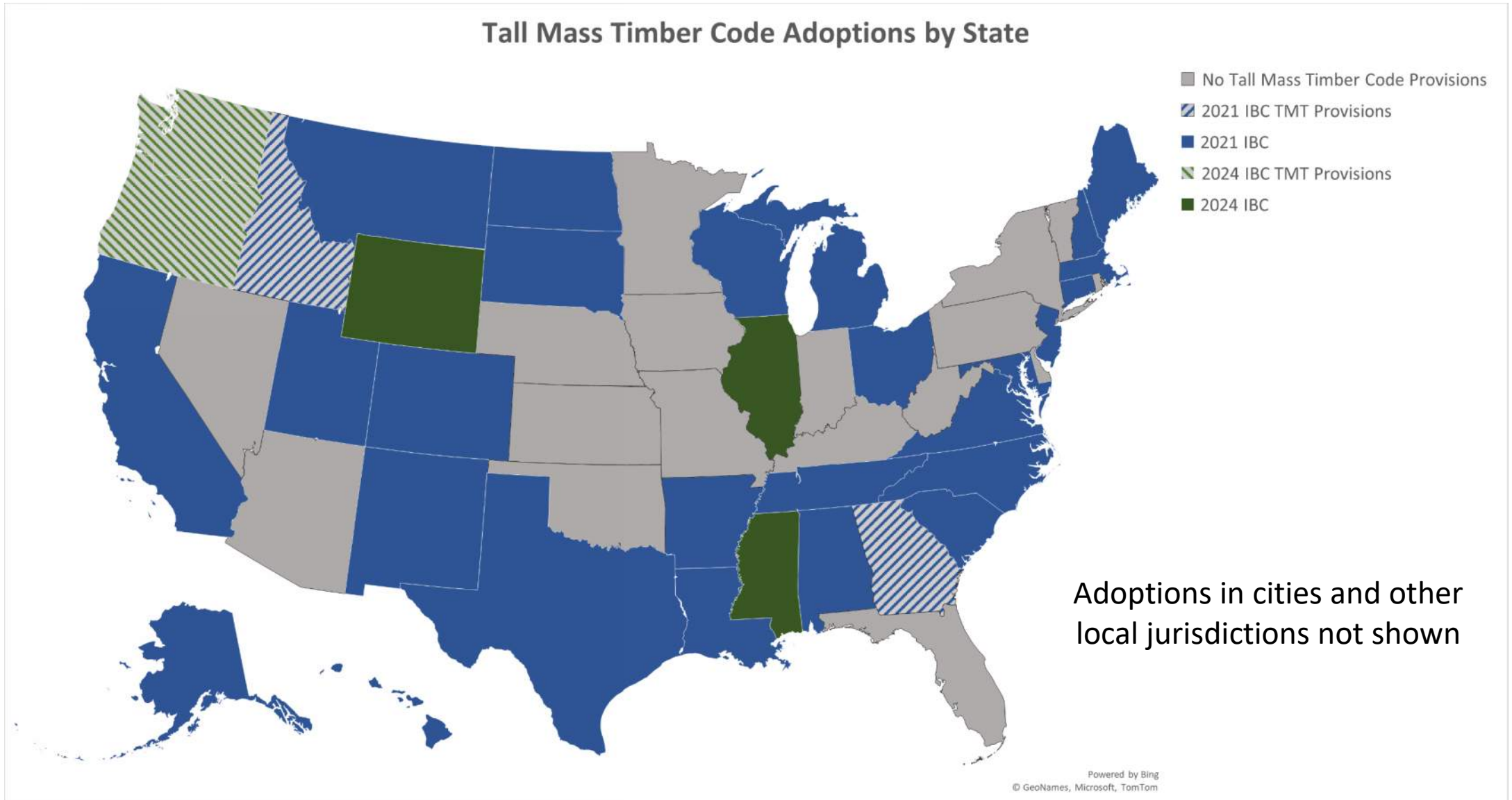
An ordinance amending Chapter 53, "Dallas Building Code," of the Dallas City Code by amending Sections 202, [F] 403.3.2, 406.5.2, 504.3, 504.4, 506.2.1, 506.2.3, 506.2.4, 507.3, 507.14,

1. Unprotected portions of *mass timber* ceilings, including attached beams, shall be permitted and shall be limited to an area less than or equal to 100 percent of the floor area in any dwelling unit or fire area; or
2. Unprotected portions of *mass timber* walls, including attached columns, shall be permitted and shall be limited to an area less than or equal to 40 percent of the floor area in any dwelling unit or fire area; or



**Dallas
Denver
Oregon
Washington**

TALL MASS TIMBER CODE ADOPTIONS



WHY ALL OF THE INTEREST?

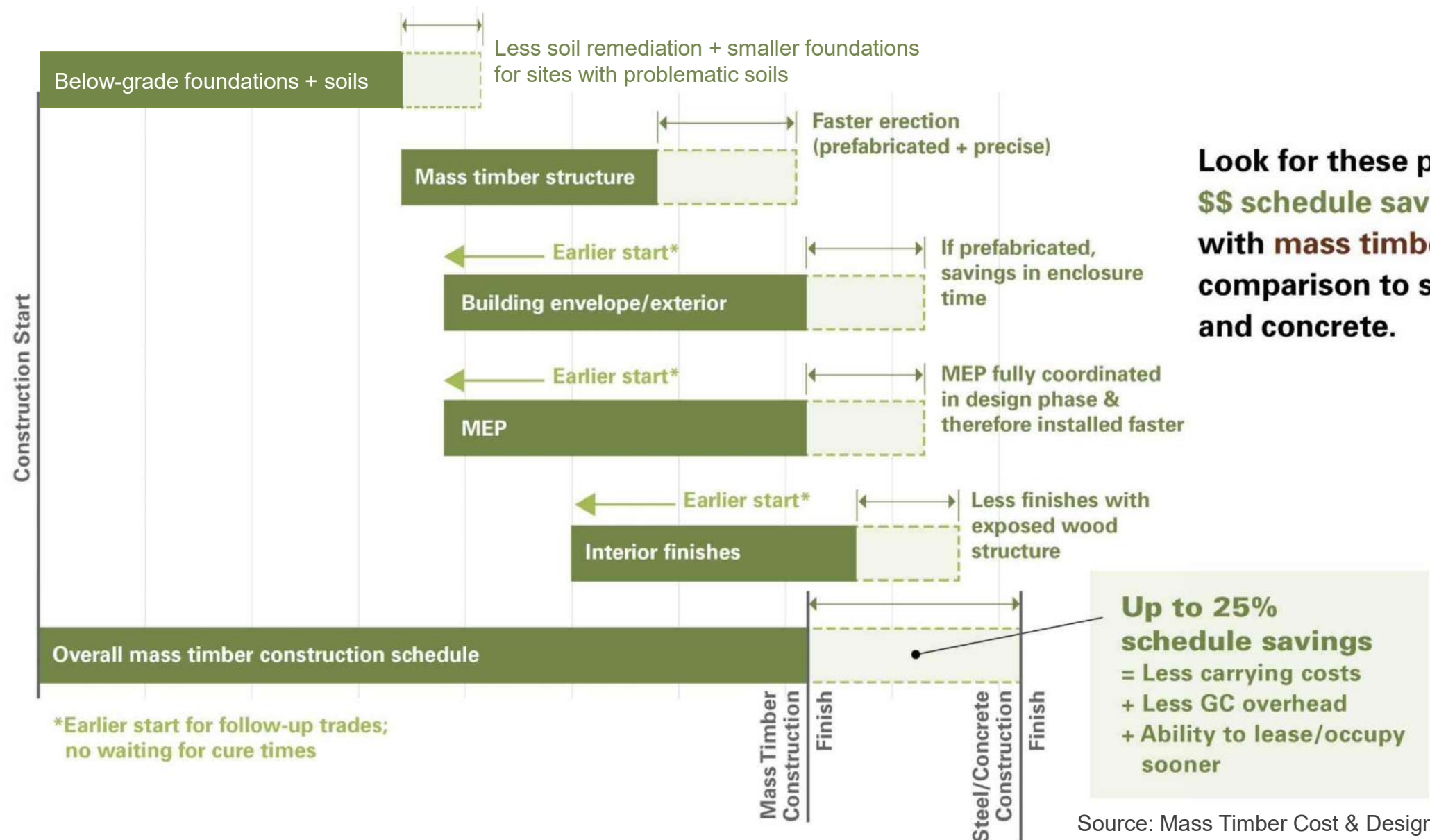


Photo: WoodWorks
Architect/Developer: oWOW



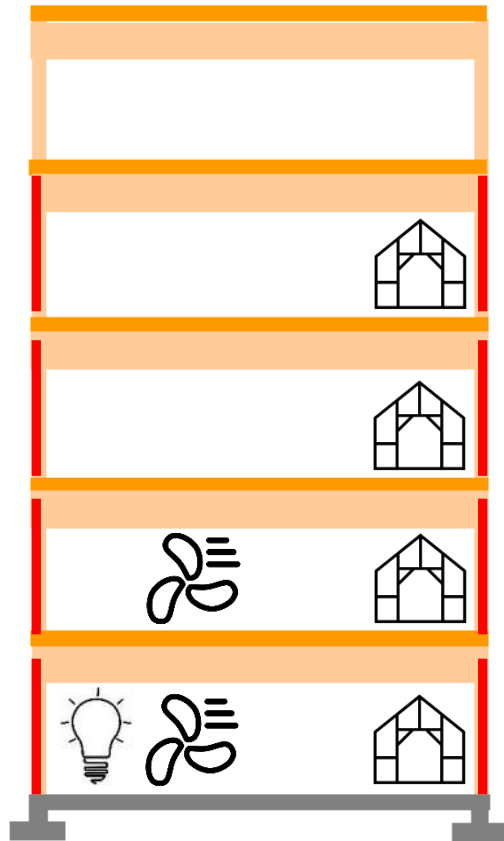
Compressing the Typical Schedule

Fast Construction

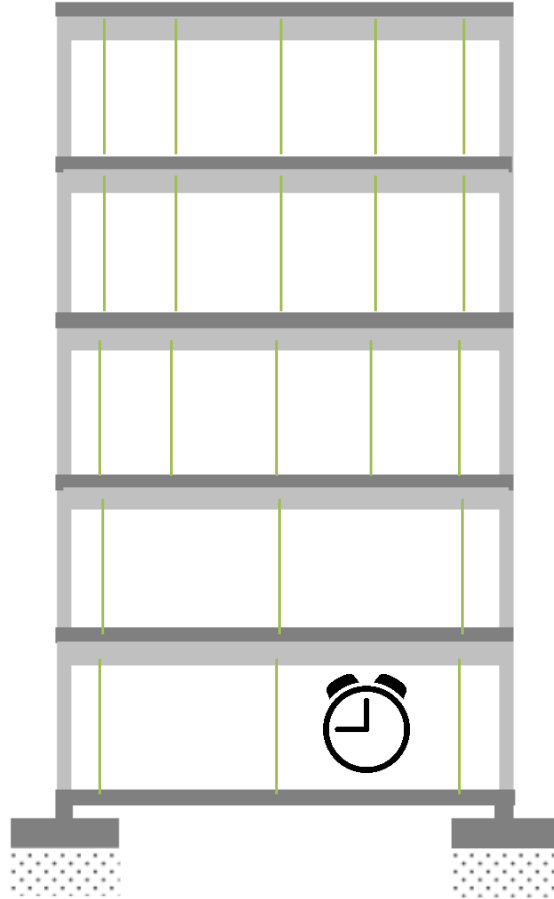


Schedule Savings for Rough-In Trades

Fast Construction



NO curing
(mass timber)



Curing & maze of
shores (concrete)



Photo: WoodWorks

Construction Impacts: Labor Availability





Mass Timber: Structural Warmth is a Value-Add



TMBR (unbuilt) Minneapolis, MN | Images: D/O Architects

But is it cost competitive?



Need to Consider Holistic Costs, Not Structure Only



\$/SF



\$/SF

Image: GBD Architects

Risk Mitigation: Total Project Cost Analysis

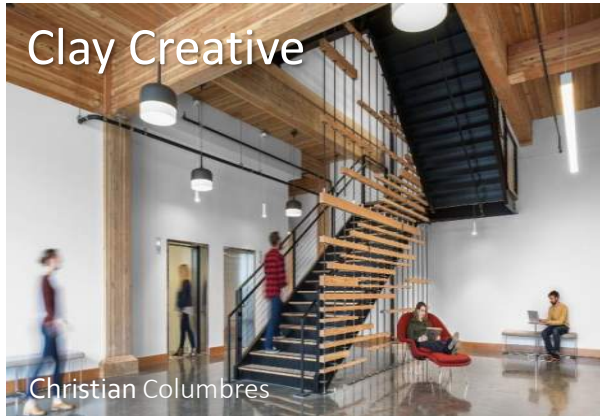
CONSIDERATIONS:

- Ceiling Treatment
- Floor Topping
- HVAC System & Route
- Foundation Size
- Soil Improvements
- Exterior Skin Coordination
- Value of Time





Mass Timber Business Case Studies



\$ Costs + \$ Returns
Challenges,
Lessons Learned, Successes

Scan code here
to download the
current package



What's the 'Sweet Spot' for Tall Mass Timber?

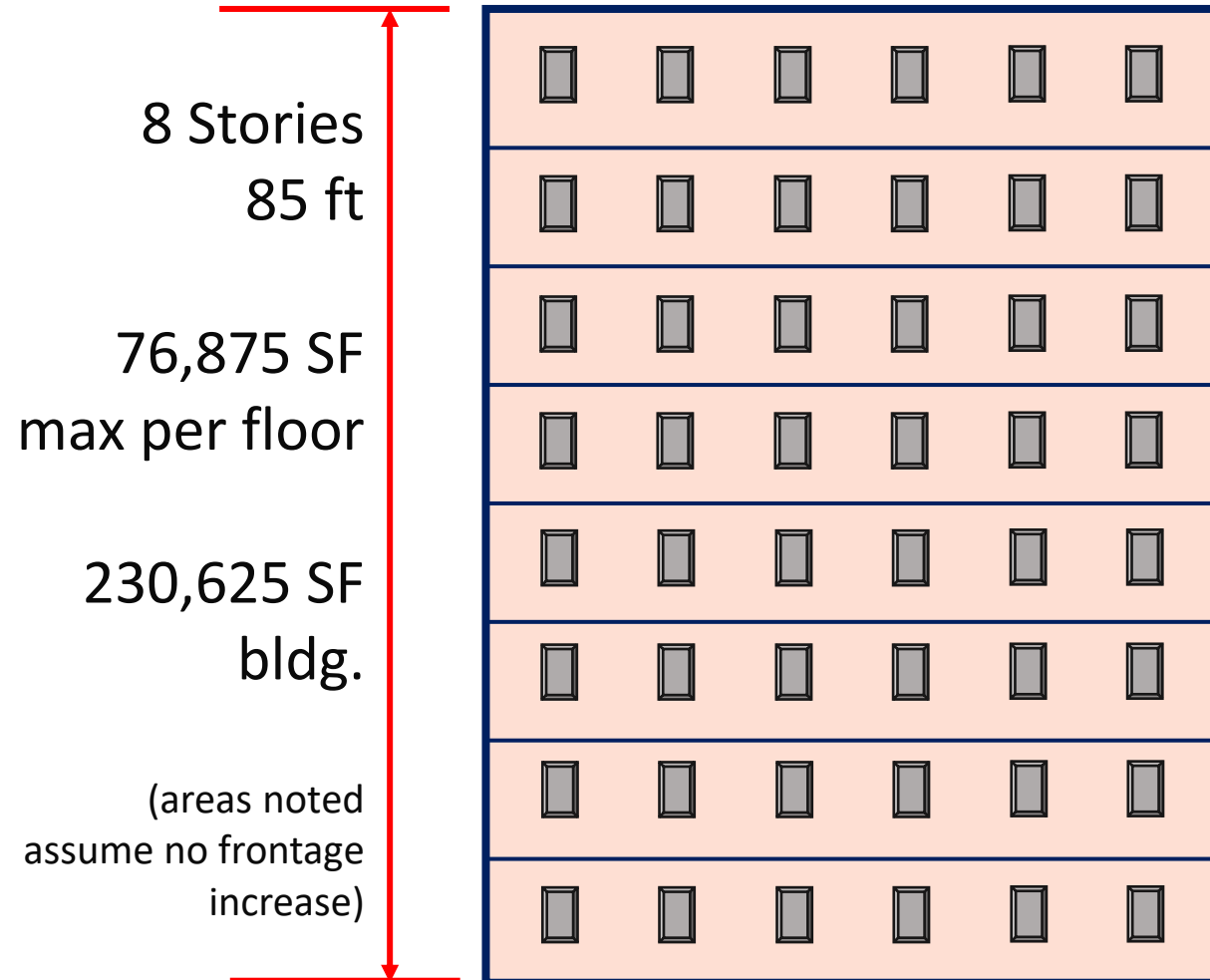
Depends on many factors:

- **Project Use**
- **Site Constraints**
- **Local Zoning & FAR Limitations**
- **Budget**
- **Client Objectives for Sustainability, Exposed Timber**
- **And More...**

But Some General Trends Could Be:

Type IV-C Tall Mass Timber

Example R-2, Type IV-C Building



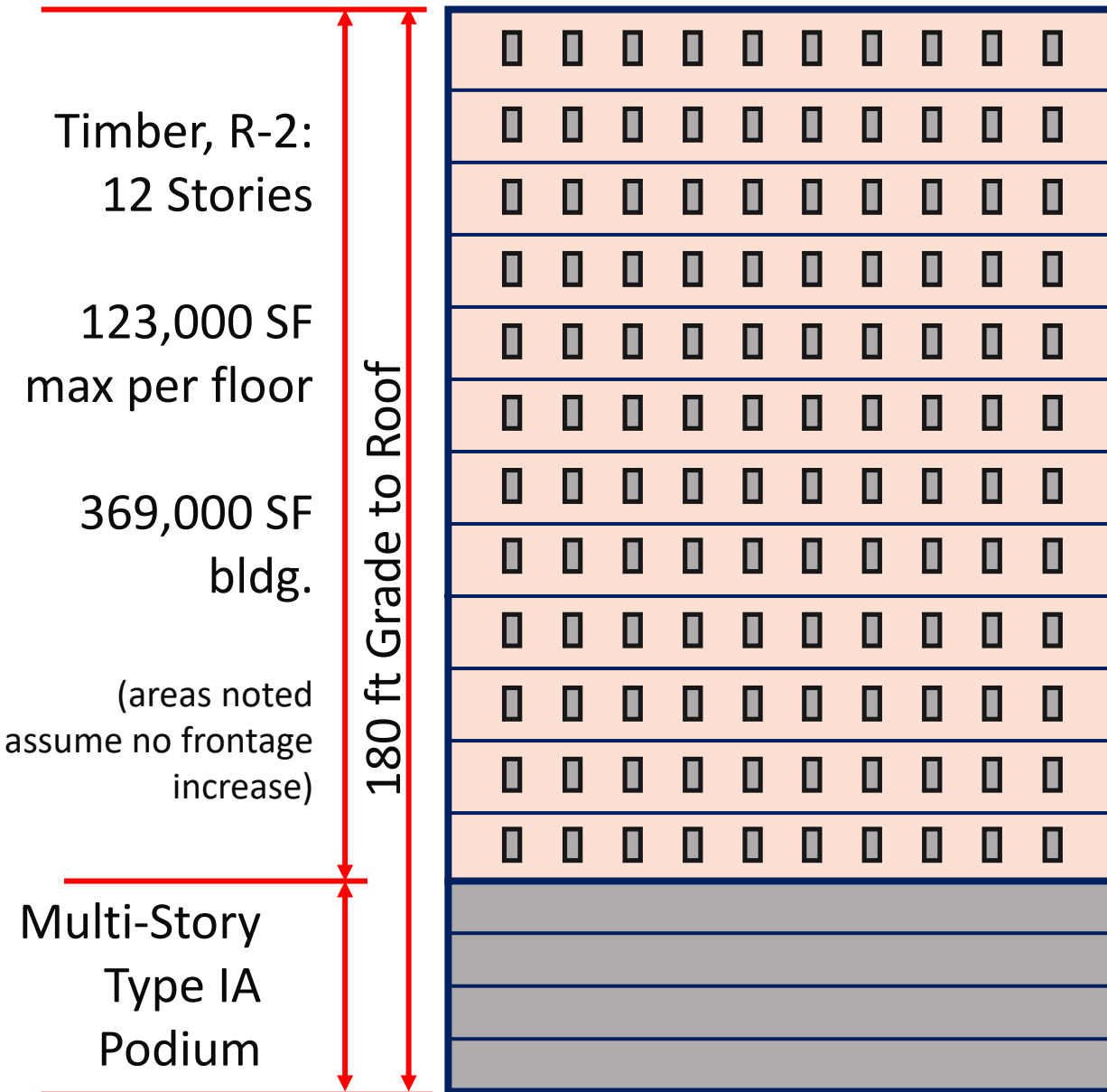
Not Likely to Utilize Podium Due to Overall Building Height Limit (85 ft) Relative to # of Timber Stories (8)

Same Overall Building Height Limit as IV-HT (85 ft) but higher Fire-Resistance Ratings Req'd

3 Additional Stories Permitted Compared to IV-HT

All Timber Exposed

Type IV-B Tall Mass Timber



Example Mixed-Use, Type IV-B Building

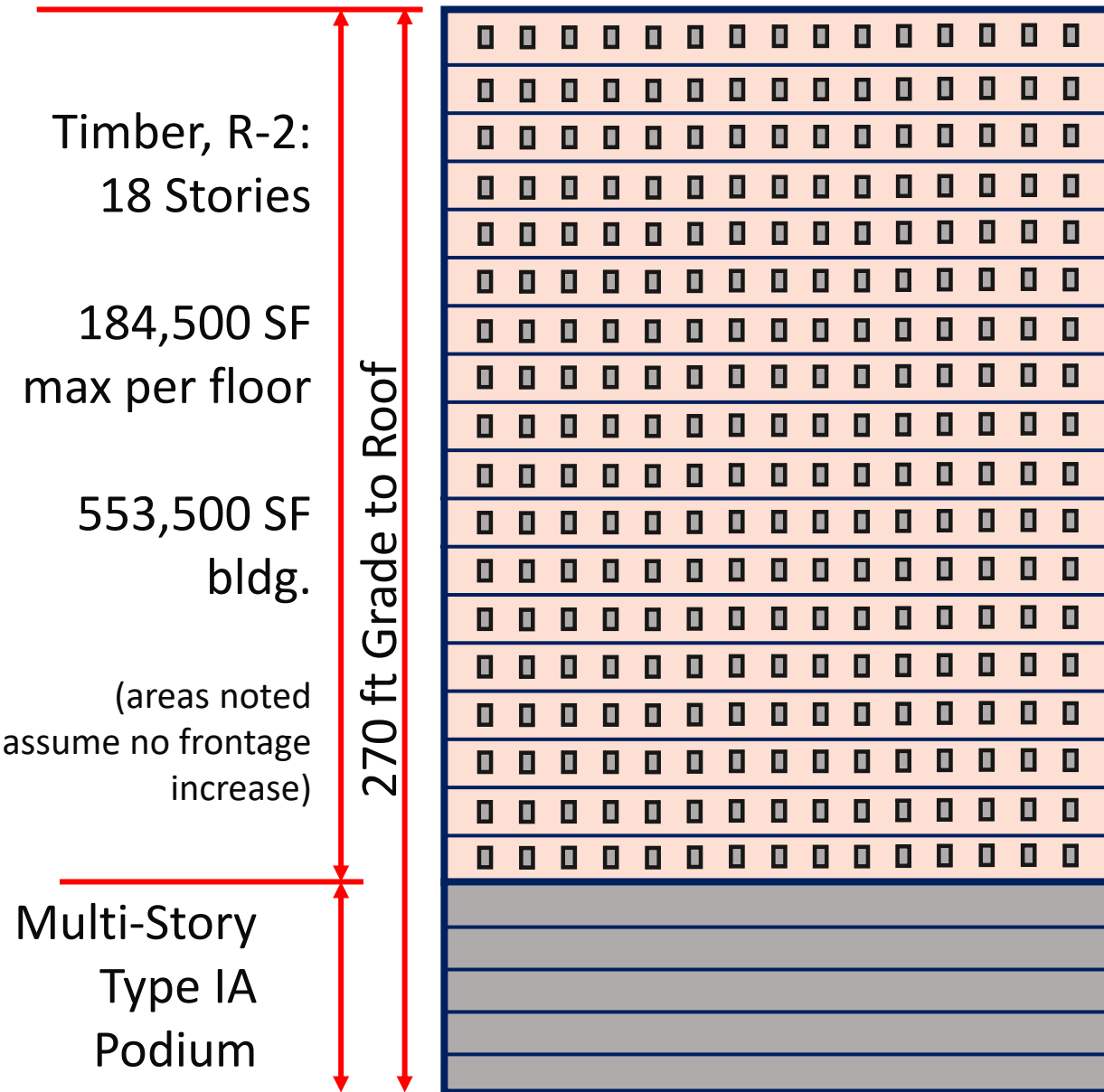
Likely to Utilize Podium Due to Overall Building Height Limit (180 ft) Relative to # of Timber Stories (12)

Same Fire-Resistance Ratings Req'd as IV-C But Limitations on Timber Exposed

4 Additional Stories Permitted Compared to IV-C

Limited Timber Exposed

Type IV-A Tall Mass Timber



Example Mixed-Use, Type IV-A Building

Likely to Utilize Podium Due to Overall Building Height Limit (270 ft) Relative to # of Timber Stories (18)

Higher Fire-Resistance Ratings Req'd than IV-B For Primary Frame

6 Additional Stories Permitted Compared to IV-B

No Exposed Timber Permitted

2022 AND BEYOND: PROJECTS RISING



Photo: Harbor Bay Real Estate Advisors, Image Fiction | Architect: Hartshorne Plunkard Architecture

TALL WOOD

LEGEND :

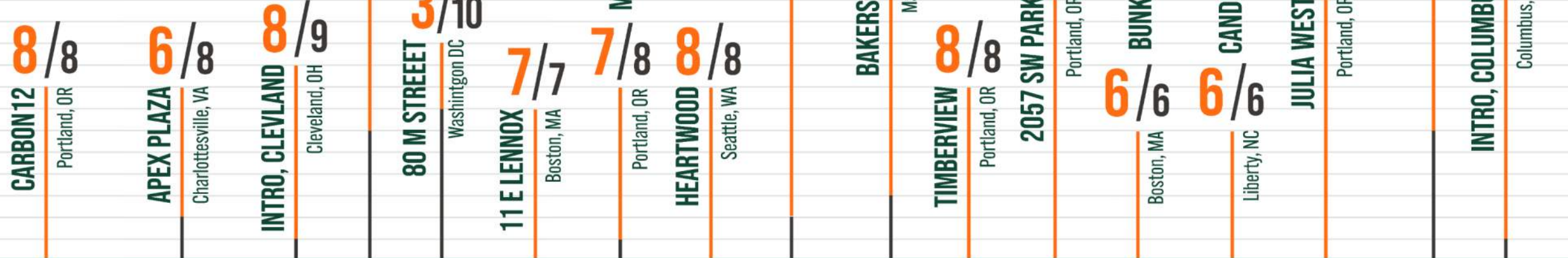
STORIES OF WOOD /
MASS TIMBER

TOTAL STORIES
OF BUILDING

/



WoodWorks is supporting 234 tall wood projects in design and 17 projects under construction or built.



2016

2019

2020

2022

2023

2024

2025

CONSTRUCTION
PAUSED

Carbon12

PORTLAND, OR



Kaiser + Path
Munzing Structural Engineering
Photo Andrew Pogue





CARBON12

PORTLAND, OR

First Modern Tall Mass Timber Building
in the US

8 stories

42,000 sqft

1st floor retail, 7 stories of condos
above

Completed in 2017

BUSINESS
CASE
STUDY

W N
PROFILE

Kaiser + Path
Munzing Structural Engineering
Photo Andrew Pogue



INTRO

CLEVELAND, OH

Hartshorne Plunkard Architecture
Forefront Structural Engineers
Fast + Epp
Photo Nick Johnson, Tour D Space



INTRO

Cleveland, OH

Building Facts 115 ft tall, 9 stories total (8 mass timber)

Type IV-B

Multi-Family Mixed-Use

Completed 2022

Developer Harbor Bay Ventures

Architect Hartshorne Plunkard Architecture

Engineer Forefront Engineering, Fast + Epp

General Contractor Panzica Construction

A large multi-story building is under construction, featuring a prominent red lattice boom crane on the left side. The building's frame is made of light-colored concrete or steel, with multiple levels of floors visible. In the background, other urban buildings and trees are visible under a clear blue sky. A semi-transparent white box containing text is overlaid on the right side of the image.

APEX PLAZA

CHARLOTTESVILLE, VA

William McDonough + Partners
Simpson Gumpertz & Heger
Photo Prakash Patel



APEX PLAZA

CHARLOTTESVILLE, VA

Office building

CLT panels / glulam frame & braced
frames

8 stories (6 mass timber), 187,000 sqft



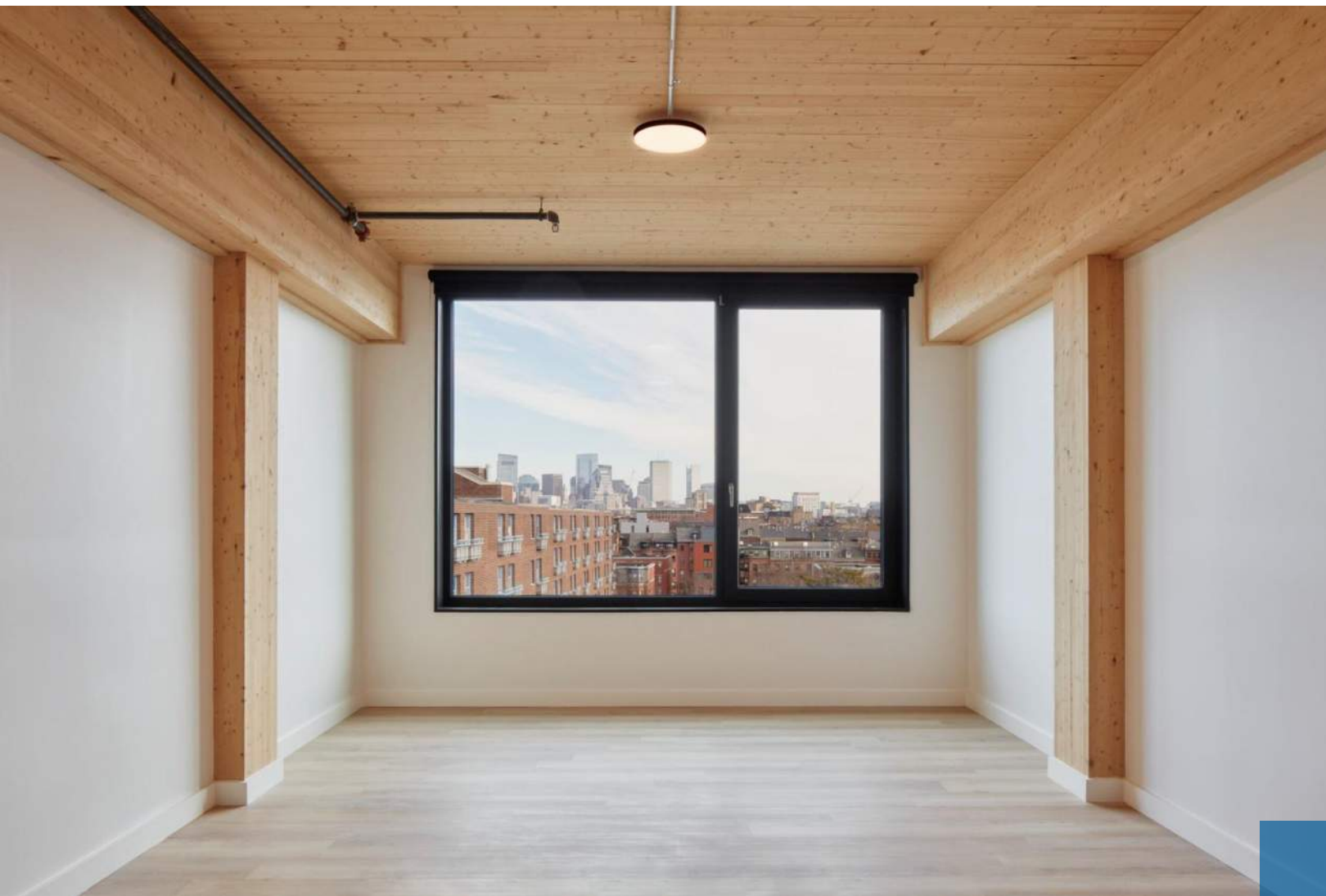
William McDonough + Partners
Simpson Gumpertz & Heger
Photo Prakash Patel

11 E Lenox

Boston, MA

Monte French Design Studio
H+O Structural Engineers
Photo Jane Messinger





11 E Lenox

Boston, MA

43,000 sf, 7 stories wood

Type III-A with code modifications

Multi-Family

Completed 2023



Monte French Design Studio
H+O Structural Engineers
Photo Jane Messinger

80M
WASHINGTON, DC

Hickok Cole
Arup
Photo Ron Blunt



80M

WASHINGTON, DC

3 story MT vertical addition on top of
existing 7 story building

CLT panels / glulam frame

108,000 sqft

16 ft floor to floor



Hickok Cole
Arup
Photo Maurice Harrington

Ascent

Milwaukee, WI

Korb + Associates Architects
Thronton Tomasetti
Photo: C.D. Smith Construction





Ascent

Milwaukee, WI

493,000 sf, 25 stories total (19 mass timber)

Type IV-HT with code modifications

Multi-Family

Completed 2022



Korb + Associates Architects
Thronton Tomasetti
Photo: VRX Media Group



Heartwood

Seattle, WA

atelierjones LLC
DCI Engineers
Image: atelierjones LLC



Heartwood

Seattle, WA

atelierjones LLC
DCI Engineers
Image: atelierjones LLC

66,000 sf, 8 stories

Type IV-C

Workforce Housing

MT / CLT

Wood construction: 1 day per floor

Completed 2023





MINNESOTA PLACES

PORTLAND, OR

Wright Architecture

8 stories total

7 stories of mass timber

Type IV-C

72 Affordable Housing Units

54,000 sqft





1510 Webster

Oakland, CA

oWow
DCI Engineers
Photo: Flor Projects

1510 Webster

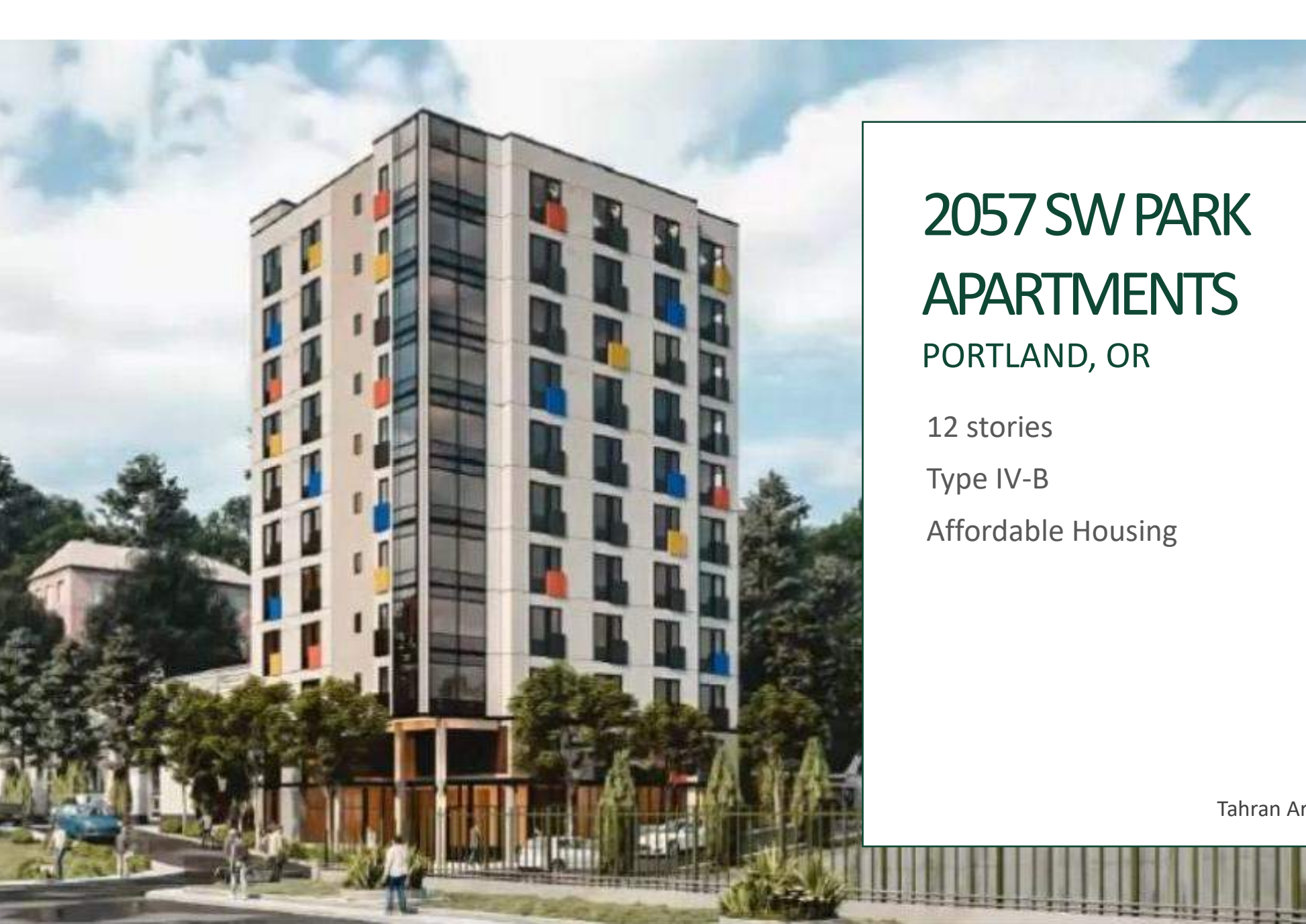
Oakland, CA

- » 16 stories mass timber, 1 level steel over two-level concrete
- » Designed with Tall Wood code provisions in the 2021 CBC
- » Mass timber with concrete cores and staircases



Photos: Flor Projects

oWow
DCI Engineers



2057 SW PARK APARTMENTS

PORTLAND, OR

12 stories

Type IV-B

Affordable Housing

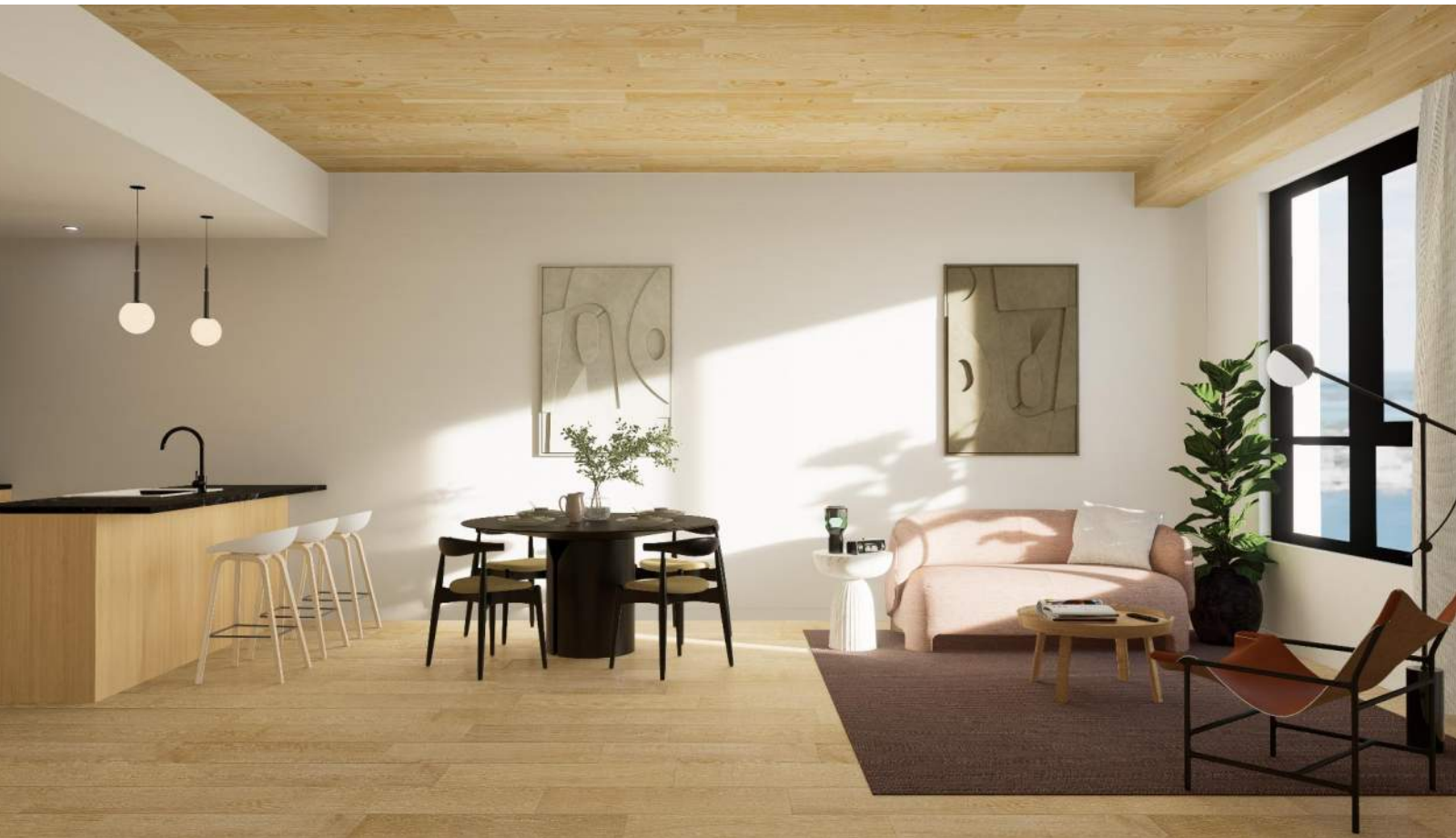
Tahran Architecture & Planning

BAKER'S PLACE

MADISON, WI

Angus-Young
Michael Green Architecture
Equilibrium Consulting
Photo Michael Green Architecture





Baker's Place

Madison, WI

304,800 sf,

15 stories total (12 mass timber)

Type IV-B

Multi-Family

Passive House



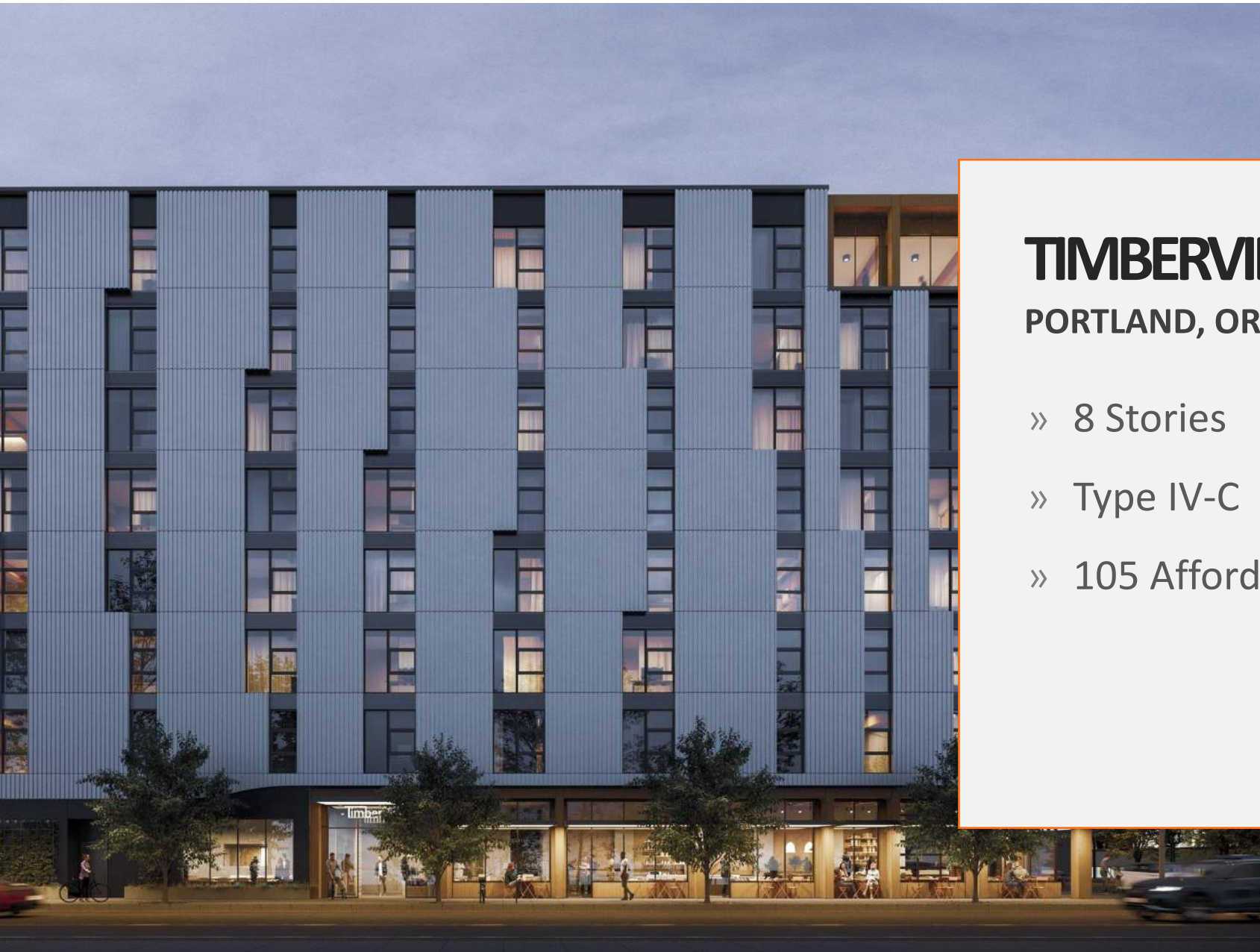
Angus-Young
Michael Green Architecture
Equilibrium Consulting
Photo Michael Green
Architecture

TIMBERVIEW

PORTLAND, OR

Access Architecture
DCI Engineers
Photo Access Architecture





TIMBERVIEW

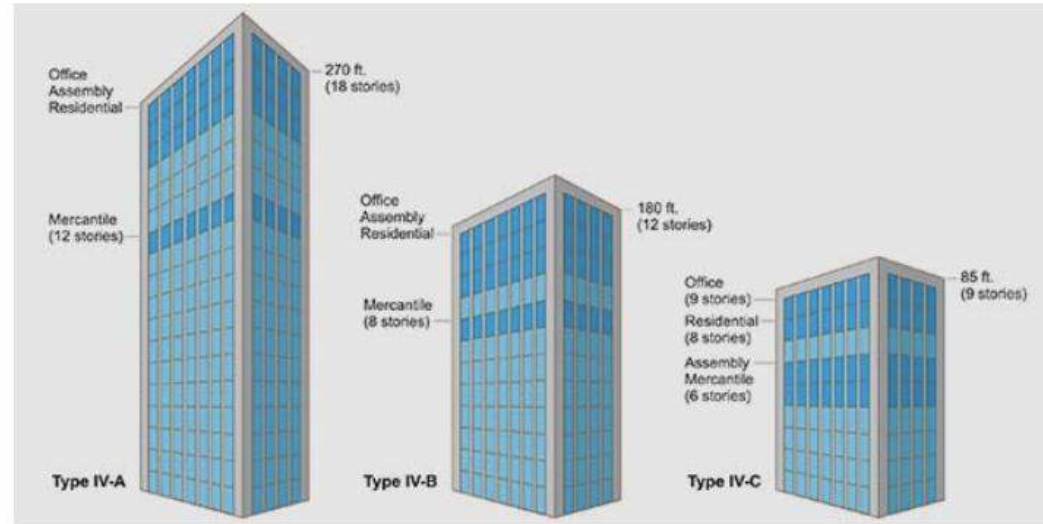
PORTLAND, OR

- » 8 Stories
- » Type IV-C
- » 105 Affordable Housing Units



Access Architecture
DCI Engineers
Photo Access Architecture

TALL MASS TIMBER RESOURCES



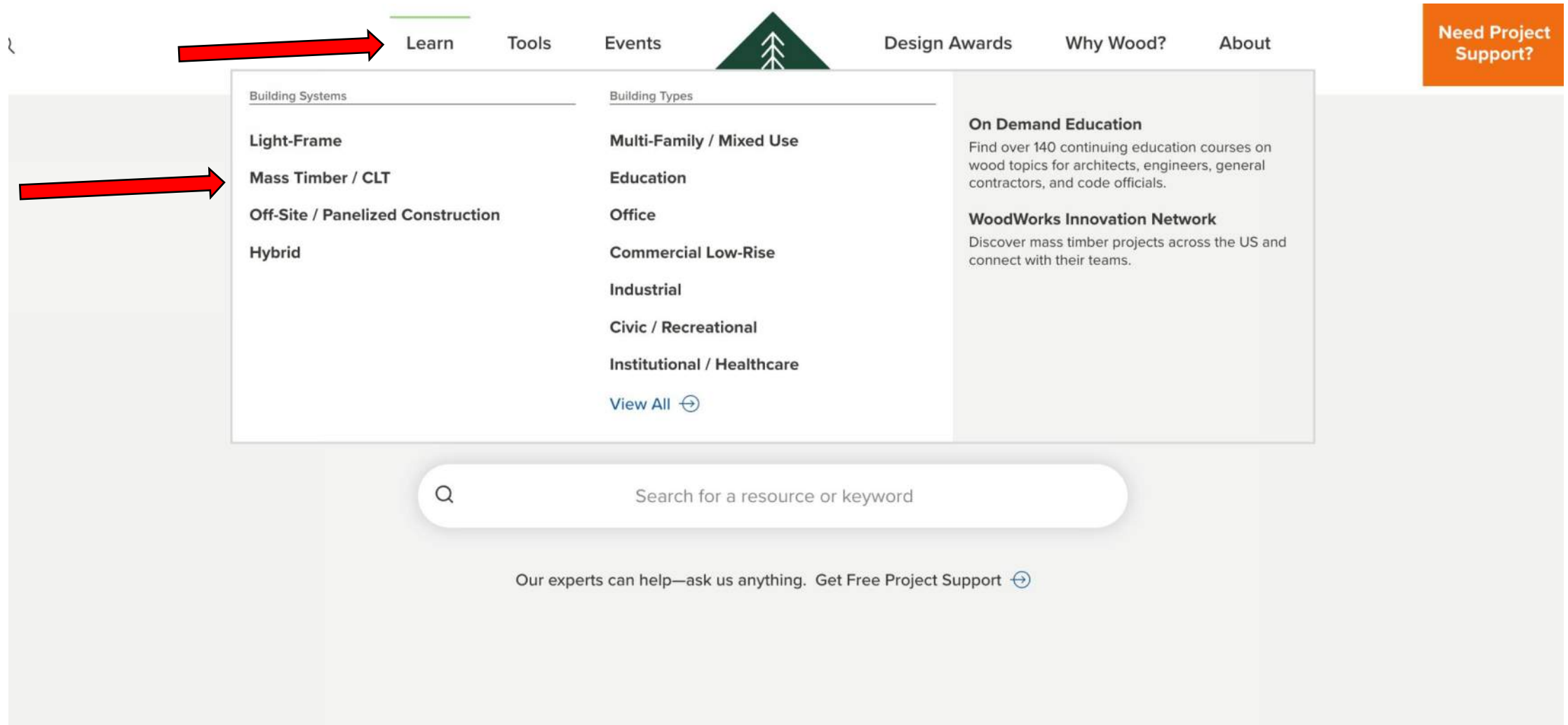
Tall Mass Timber

Code opportunities and requirements, FAQs, project examples and resources for teams interested in tall timber projects.

[Learn More](#) ➞

www.woodworks.org/learn/mass-timber-clt/tall-mass-timber/

TALL MASS TIMBER RESOURCES



Woodworks.org > Learn > Mass Timber / CLT > Tall Mass Timber

TALL MASS TIMBER RESOURCES

Technical Design Guidance from WoodWorks



Carbon12 / Kaiser+Path / photo Andrew Pogue

Solution Papers

Tall Wood Buildings in the 2021 IBC – Up to 18 Stories of Mass Timber

Looking for information on the tall wood provisions in the 2021 International Building Code? This paper summarizes the provisions as well as the background and research that supported their adoption.



Demonstrating Fire-Resistance Ratings for Mass Timber Elements in Tall Wood Structures

Solution Papers



Shaft Wall Requirements in Tall Mass Timber Buildings

Solution Papers



Concealed Spaces in Mass Timber and Heavy Timber Structures

Solution Papers



Acoustics and Mass Timber: Room-to-Room Noise Control

Solution Papers



Fire Design of Mass Timber Members: Code Applications, Construction Types and Fire Ratings

Solution Papers

TALL MASS TIMBER RESOURCES

Answers to Tall Mass Timber FAQs

5. How are design teams leveraging tall mass timber code provisions to maximize the amount of timber exposure?

Follow [this link](#) for an article that discusses how teams are utilizing the new code provisions to enhance the appearance of their tall mass timber structures with exposed timber framing.

6. I've heard that the 2024 IBC will allow 100% timber ceiling exposure in type IV-B, up to 12 stories tall. Is that code language finalized?

Yes, the 2024 IBC will include new code changes, which have been approved and will be incorporated, which allow timber ceiling exposure in Type IV-B construction up to 100%. The new code language as it will read in the 2024 IBC is available [here](#). Several jurisdictions such as the City of Denver, City of Dallas, State of Oregon and State of Washington are already in the process of incorporating these new timber exposure limits in their building codes, and several design teams are looking to utilize the new limits in project-specific discussions with their local building officials. Reach out to your local WoodWorks [Regional Director](#) to see how projects in your area can approach these design topics.

TALL MASS TIMBER RESOURCES

Articles and Expert Tips

[Learn](#)[Tools](#)[Events](#)[Award Gallery](#)[Why Wood?](#)[About](#)[Need Project Support?](#)

Expert Tips

Tall Mass Timber Trends and Exposed Timber Allowances

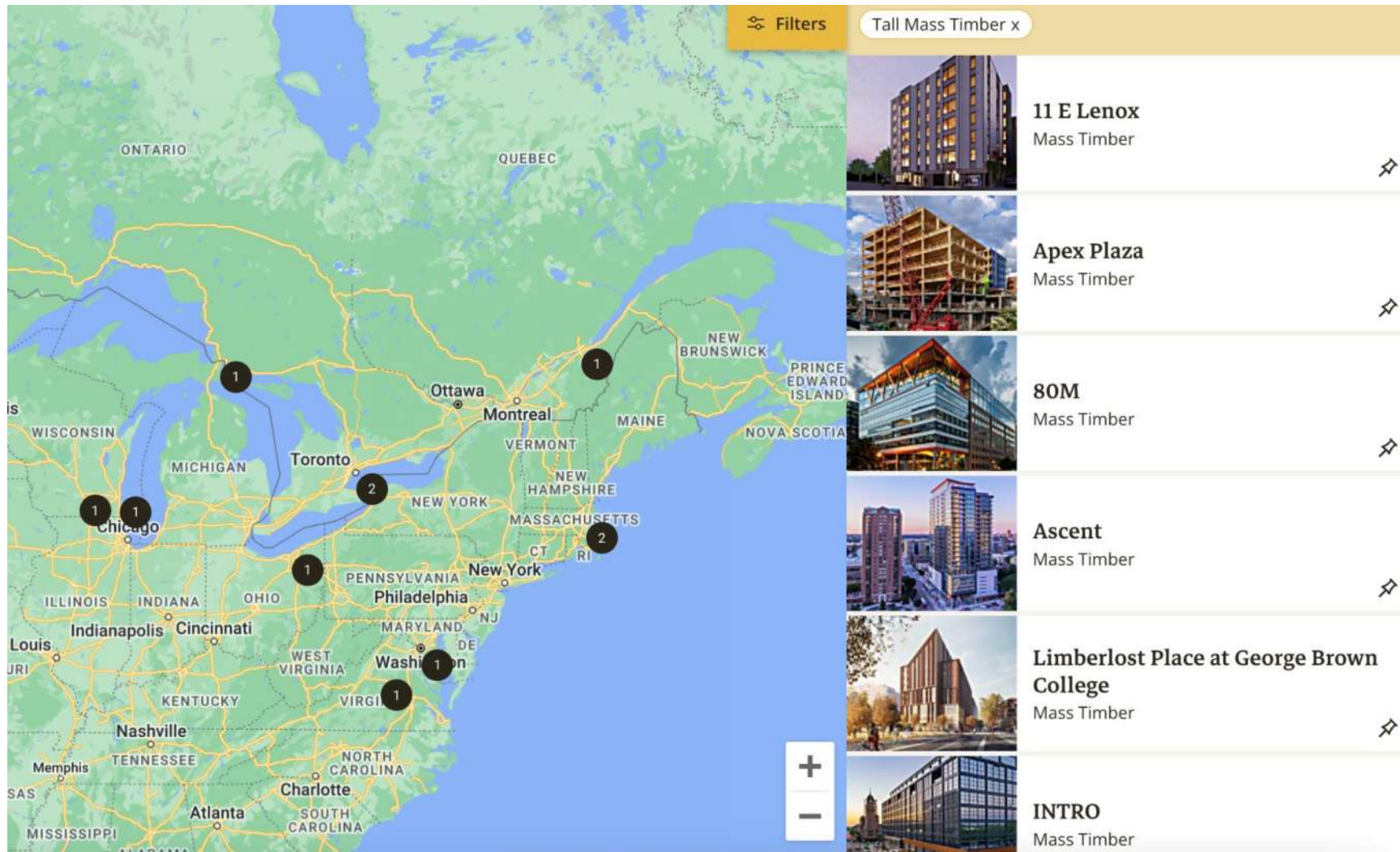
Recent code changes and jurisdictional approvals provide for greater areas of exposed mass timber.

Share 



TALL MASS TIMBER RESOURCES

Interactive Tall Mass Timber Project Map



TALL MASS TIMBER RESOURCES

Filter by Tall Mass Timber Projects

The screenshot displays the Woodworks Innovation Network website. The top navigation bar includes the logo, a search icon, and links for 'Project Map', 'Manufacturers & Suppliers', and 'People & Companies'. On the right, there are links for 'Sign in' and 'Join now'.

The main content area features a map of North America with project locations marked by black circles and numbers. A red arrow points to the 'Hide Filters' button in the top right corner of the map area.

The filter sidebar on the right includes the following sections:

- Filter By**: A search bar labeled 'Search By City'.
- Building Systems**:
 - Mass Timber**: 20 projects (selected).
 - Innovative Light-Frame**: 0 projects.
- Include Unclaimed Projects**: 0 projects.
- Secondary Systems**:
 - ☐ Hybrid Non-wood: 98 projects.
 - ☐ Hybrid Wood: 83 projects.
 - ☐ Prefab/Offsite: 15 projects.
 - ☒ **Tall Mass Timber**: 20 projects (highlighted with a red arrow).
 - ☐ Vertical Additions: 6 projects.
 - ☐ Volumetric Modular: 3 projects.
- Building Type**:
 - ☐ Assembly (Worship, Restaurant, Theater): 0 projects.
 - ☐ Business (Office): 5 projects.
 - ☐ Civic (Recreational): 0 projects.
 - ☐ Custom Innovative Residential: 0 projects.
 - ☐ Educational: 2 projects.
 - ☐ Factory/Industrial (warehouse, storage, parking, etc.): 0 projects.

At the bottom left, there is a link to 'Get free project help' and the URL 'https://www.woodworksinnovationnetwork.org'.

Questions?

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Jason Bahr

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jason.bahr@woodworks.org

This concludes The American Institute of
Architects Continuing Education Systems
Course

Apex Plaza, Charlottesville, VA
Photo: Prakash Patel



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