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INDUSTRY NEWS



Understanding the Subtypes of Category IV Construction

Heavy and mass timber construction is on the rise. How does fire safety factor into the public's desire for sustainable, natural construction elements, and what should architects be aware of when designing with beautiful, durable, and efficient timber material?

Up to Code

Due to the expanding market for mass timber structures, in 2021 the International Building Code (IBC) added subtypes to their Type IV classification, which encompasses timber construction. The type is now divided into three categories of fire resistance, with varying fire suppression systems required for each:

- Type IV-A is for buildings with all structural elements, internal and external, completely protected with noncombustible protection, such as Type X gypsum board. This is the highest fire resistance level in this type.
- Type IV-B is for buildings with some interior structural elements exposed, but with all concealed spaces and shafts fully protected with noncombustible protection.
- Type IV-C is for buildings with most structural elements left unprotected, relying instead on the inherent fire-resistant nature of the mass timber itself.

Safety First

The safety of occupants is ultimately the most important aspect of any structure. With the ICC's updated requirements, they have laid the foundation for mass timber construction to follow strict fire safety rules while also satisfying the public's demand for safe structures. The Type IV subtypes also affirm that modern mass timber is here to stay, and that it's a safe, viable alternative to traditional concrete and steel.

PROJECT SPOTLIGHT Swarthmore College

Architect	DLR Group
Lead Design Architect	Rayford W. Law
Builder	Warfel Construction
Location	Swarthmore, Pa
Points of Interest	 A natural light-filled space for dining and socializing
	• Glulam timber construction with mortise-and-tenon joinery
	 Meets carbon neutrality goals set by the college

Swarthmore College sought input from the campus community when designing a new dining facility, and three guiding principles were agreed upon: community building, inclusivity/accessibility, and sustainability. Mid-Atlantic Timberframes met each of these goals by providing soaring glulam timbers that support an open, dynamic floorplan. Light floods the space thanks to the strength of the widely-spaced timber supports while also allowing for accessibility in all areas. And the natural carbon-trapping nature of timber helps Swarthmore meet its ambitious energy plan of reaching carbon neutrality by 2035.







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Mass timber frame construction allows for open spaces under soaring ceilings of natural wood.

INDUSTRY HIGHLIGHT

Tyson Chamberlain, R.A. / Principal, Peter Zimmerman Architects, Inc.

Can you describe your career arc as an architect?

I started my career at Peter Zimmerman Architects shortly after graduation from Philadelphia University in 2004 and received my formal Registered Architecture licensure in 2011. At Peter Zimmerman Architects, our design approach incorporates the classic design principles of architecture: scale, proportion, and composition, whether in traditional, contemporary, or modern design.

Which project are you most proud of?

I believe that every project has its unique set of challenges that require different solutions. And each solution brings a sense of satisfaction and pride that is distinct to that project. Personally, I take immense pride in a project I worked on in Palm Beach, Florida. The design and construction phase spanned over eight years, and we meticulously crafted every detail. From the classical cast stone entablatures and cornices to the decorative brass return grills and custom-carved stone mantles, we did not overlook anything.

What are your thoughts on designing with timber?

Designing with timber presents a unique and exciting opportunity. You can't help but feel somewhat nostalgic when entering a space to see the framework of our ancestry still being employed today. Understandably, I appreciate it most when timber is utilized honestly and comprehensively, where the integrity of the structure is on full display, rather than being used simply as decorative elements.



Which awards have you won?

Peter Zimmerman Architects

has been the recipient of 6 Palladio Awards and 3 Trumbauer Awards in addition to many other notable awards and citations. The previously mentioned residence in Palm Beach was awarded the Trumbauer Award by the Philadelphia ICAA in 2018 for "Best Residential Design."

Where do you find Inspiration?

As a student of traditional architecture, I am constantly observing and taking note of details and approaches seen in historical buildings. For example, during a recent visit to Valley Forge, I had the opportunity to examine different solutions to architectural problems that I encounter in my daily practice. Although I had visited these structures in the past, revisiting them and discovering something new reminded me that any building, whether old or new, can be a source of continued inspiration.

Which structure in the world do you find most interesting?

I am fascinated by architecture which can be admired as an independent work of art. During my studies, I vividly recall my first encounter with Antoni Gaudi's Sagrada Familia in Barcelona and the aweinspiring feeling that it evoked in me. It reminded me of the sandcastles I made at the beach by dripping wet sand through my hands. Gaudi's goal to replicate the beauty and perfection of nature through architecture while understanding that it is governed by laws and mathematics in such a way is truly inspiring.

ASK AN EXPERT

Why is it important to engage a mass timber fabricator early in the schematic design phase?

Before the proverbial pen hits the paper on a project involving mass timber, architects and engineers are wise to engage the services of a mass timber fabricator. It's at this very beginning stage when decisions are made that will affect cost, design, amount of material used, construction pace, and team coordination.

One of the most important reasons to tap mass timber fabricators early on is for their expertise in planning for occupant safety; IBC fire resistance ratings must be adhered to, which will decide the need for sprinklers and suppression devices, stairways and exits, and other safeguards in the building. There are other project-specific factors that must be considered, such as the site itself and its zoning, size, and orientation; the size and occupancy intentions for the building; layout, aesthetics, and acoustics; and sustainability goals and carbon impact.

And, as with any type of project, working as a team early on reduces the back-and-forth of RFIs later. Having a clear outline of expectations simply makes the project run more efficiently through its duration without the delays of multiple calls to and from the players involved.

"One of the most important reasons to tap mass timber fabricators early on is for their expertise in planning for occupant safety."



Mike Banta | Operations Manager

Mike has been designing timber frame structures for more than 20 years and enjoys sharing his expertise in glued laminated timber, cross-laminated timber, steel-timber hybrid design, and reclaimed or recycled timber. He also has experience in glulam manufacturing, CNC fabrication, and design optimization.

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Advancing the Art of Timber Construction

Mid-Atlantic Timberframes builds custom legacy homes and one-of-a-kind academic, agricultural, and commercial structures. Timber frame construction provides versatility that traditional construction methods can't match, for limitless possibilities. We employ innovative computer-aided design and computer numerical control (CNC) machining technology, bringing our craft to a higher level of precision and resulting in exceptional structures that deliver lasting durability and peace of mind.

For more information about Mid-Atlantic Timberframes, visit **MATFLLC.com**.