

Mid-Atlantic
TIMBERFRAMES

TIMBER TALK

//////////////////// Fall 2025

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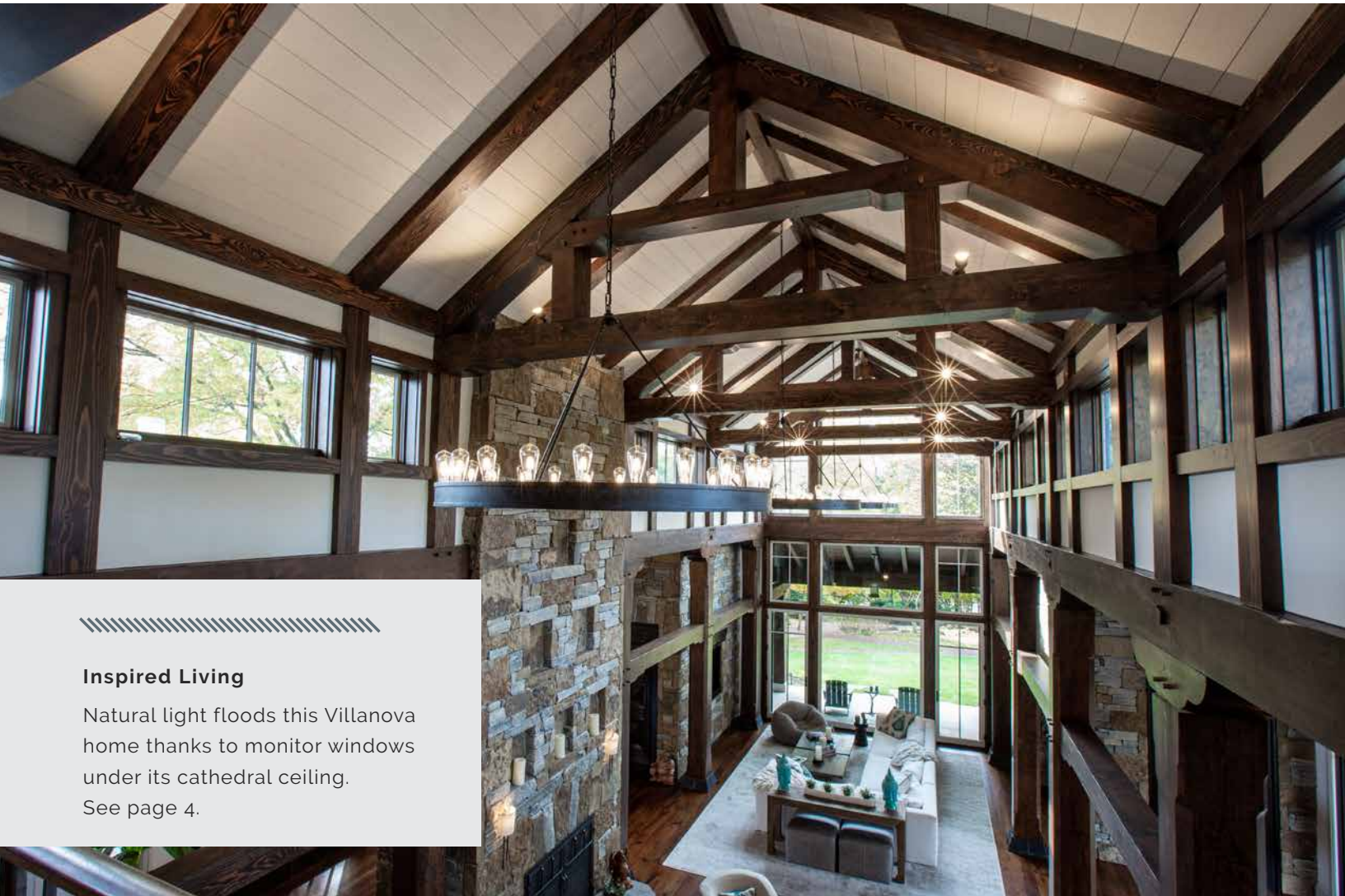
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Natural light floods this Villanova home thanks to monitor windows under its cathedral ceiling. See page 4.

INDUSTRY NEWS



Timber-Concrete Composite Systems: New Insights

Recent research into timber-concrete composite (TCC) systems highlights their growing potential for sustainable, high-performance structures. In a study by the University of Santiago de Compostela in Spain, a simply supported beam was compared with a frame-connected TCC beam, with both beams measuring 370 millimeters (1.2 feet) wide and testing at full scale over a 5.9-meter (19-foot) span. Results showed the frame-connected beam deflected less than half as much as the simply supported version. Using computer modeling, researchers found that connecting the beam to a frame helped spread the bending forces more evenly, which cut peak timber stresses by 49%. These findings suggest that continuous, frame-connected TCC beams can significantly improve stiffness, efficiency, and long-term performance, offering a promising path for hybrid structural design.

Preserving Historic Structures with Parametric Digital Twin Technology

At Löfstad Castle in Sweden, researchers have used parametric digital twin technology to help preserve a centuries-old landmark. A digital twin is a virtual representation of a building, a “living” model that can monitor a structure, collect real-time data, and simulate scenarios like design changes or weather events, showing their potential impacts.

By creating a digital twin and combining sensors, cloud computing, and data modeling, the researchers built a system that evaluated the castle’s ventilation and energy efficiency and detected hidden moisture issues. This allowed conservators to then make data-driven restoration decisions, including the design of sustainable climate controls. While Löfstad Castle is a masonry structure, this technology can be applied to historic timber frame buildings as well, offering a powerful tool to monitor structural health, prevent material degradation, and extend the lifespan of heritage architecture through adaptive preservation.

PROJECT SPOTLIGHT

Private Residence



- Architect**
- Archer & Buchanan
- Location**
- Villanova, PA
- Points of Interest**
- All timbers are solid sawn Douglas fir, #1, free of heart.
 - Prairie-style architectural features blend with Asian influences.
 - Four queen post trusses crown the three-story great room.

Both inside and out, this home employs dramatic timber framing to create stately elegance in multiple styles. Inside, the great room rises from an American barn aesthetic of heavy timbers with lamb's tongue chamfers to a monitor inspired by Prairie architecture. The ceiling above returns to stout queen post trusses soaring more than 30 feet over the floor. Outside, the aesthetic transitions again, to an open-air living space reminiscent of a tea garden, with tapered columns, broad roofs, and bamboo accents.



Earth-toned schist and flagstone meet deep, richly stained Douglas fir, harmoniously framing an Asian-inspired garden gateway.

INDUSTRY HIGHLIGHT



**Kyle Solyak, AIA, NCARB, LEED AP | Operations Director
TONO Group**



Tell us a little about your firm.

TONO Group is a family of companies working collaboratively to provide integrated project delivery in all aspects of the built environment. Our turnkey services encompass architecture, interior design, furniture and décor procurement, construction management, real estate services, and real estate development. Our most prolific market segments are commercial, hospitality, healthcare, and custom residential.

What is your area of focus or expertise?

I take pride in my technical problem-solving skills and enjoy troubleshooting challenges to find creative, practical solutions. In my current role as Operations Director, I get to use that skill set across both design and construction, which keeps things interesting and dynamic. In terms of project types, I've always been drawn to adaptive reuse projects. They combine my passion for history and sustainability while allowing for creativity in transforming old spaces to new purposes. I've been fortunate to work on many of these projects throughout my career, and they've been some of the most rewarding experiences I've had.

What inspired you to become an architect?

I've always been really interested in how things are built. As a kid, I used to watch shows like *This Old House* and was fascinated by the process of construction and craftsmanship. In high school, I took drafting classes, and that's when it really clicked for me — I wanted to be the one designing and figuring out how things come together. I've been an architect for 17 years.

Which project are you most proud of?

The Mod Lodge, a custom single-family home in Lancaster, PA, was the first project where I was solely responsible for the design while also playing a key role in the construction. It was especially meaningful because I was able to create a unique, modern home that has become a standout in the community. The project really satisfied my passion for both designing and building, and seeing it come to life from concept to completion was an incredible experience.

What is the most challenging request you have received from a client?

I think managing budgets is consistently one of the most challenging aspects of any project. Most other issues can be resolved through creative problem-solving, but aligning a client's expectations with their budget is often the toughest part. It requires clear communication, creative prioritization, and sometimes helping the client understand where value can be maintained while staying within financial limits.

Have you won any awards for your work?

I have been honored to be recognized multiple times by the American Institute of Architects for design awards for various projects. Most recently, I was awarded *Retrofit Magazine's* Metamorphosis Award for the Faith River House, the renovation of a 150-year-old church into a private residence.

Where do you find design inspiration?

Inspiration to me is uniquely different for every project and every client. I walk into it without a preconceived notion and allow myself to listen to the clients' desires, then extrapolate those into a creative solution. Inspiration can come from a detail the client has shared, the property or space in which the project is being constructed, or from the materials the project will be constructed with.

What are your thoughts on designing with timber?

Timber framing represents a very authentic approach to building. It's a natural material that brings warmth and honesty to a structure. For me, it ties directly to my interest in how things are built, as timber framing celebrates the structure itself as a design element, allowing creativity to shine through in the way the building is assembled and expressed.

ASK AN EXPERT



How does cooler, drier fall weather affect heavy and mass timber construction?

Fall is an ideal season for timber construction. As temperatures drop and humidity levels stabilize, timber materials perform more predictably as moisture is released slowly and evenly, preventing warping, shrinkage, and internal stress within the wood. In addition to benefiting the timber itself, cooler weather supports better performance of adhesives, finishes, and protective coatings. Many sealants and bonding agents cure more consistently when temperatures are moderate, ensuring long-term durability.

The season also provides an opportunity to inspect and assess existing structures for any movement and joint performance before winter's freeze-thaw cycles begin.

Finally, fall offers strategic advantages for scheduling: fewer weather delays, improved site conditions, and the chance to complete fabrication ahead of colder months. By planning and preparing in autumn, teams can move into winter installations more efficiently, keeping projects on track.



Jedd Miller | Sales Manager

As a former construction worker, Jedd has an appreciation for the fine craftsmanship and care that Mid-Atlantic Timberframes uses to create quality timber framing. He has spent his sales career building strong relationships with his clients to ensure their projects are fulfilled to their satisfaction.

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Want to be our next Industry Highlight? Email Mike Banta | mike.banta@matfllc.com

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