

BUILDING DATA CENTERS AT THE SPEED OF DEMAND

TerraLam[®] CLT

Rethinking Structural Systems for Scale, Speed, and Performance



STERLING[®]
Structural



DATA CENTER DEMAND IS ACCELERATING AT AN UNPRECEDENTED PACE.

Driven by cloud computing, AI, and digital infrastructure expansion, developers and operators are under increasing pressure to deliver facilities faster—without compromising performance, reliability, or long-term scalability. But while demand has evolved, many construction approaches have not.

Traditional structural systems—often dependent on sequential processes, multiple trades, and long installation timelines—are becoming a bottleneck in delivering projects at the speed the market now requires.

To meet this moment, the industry needs a new approach.

THE CHALLENGE

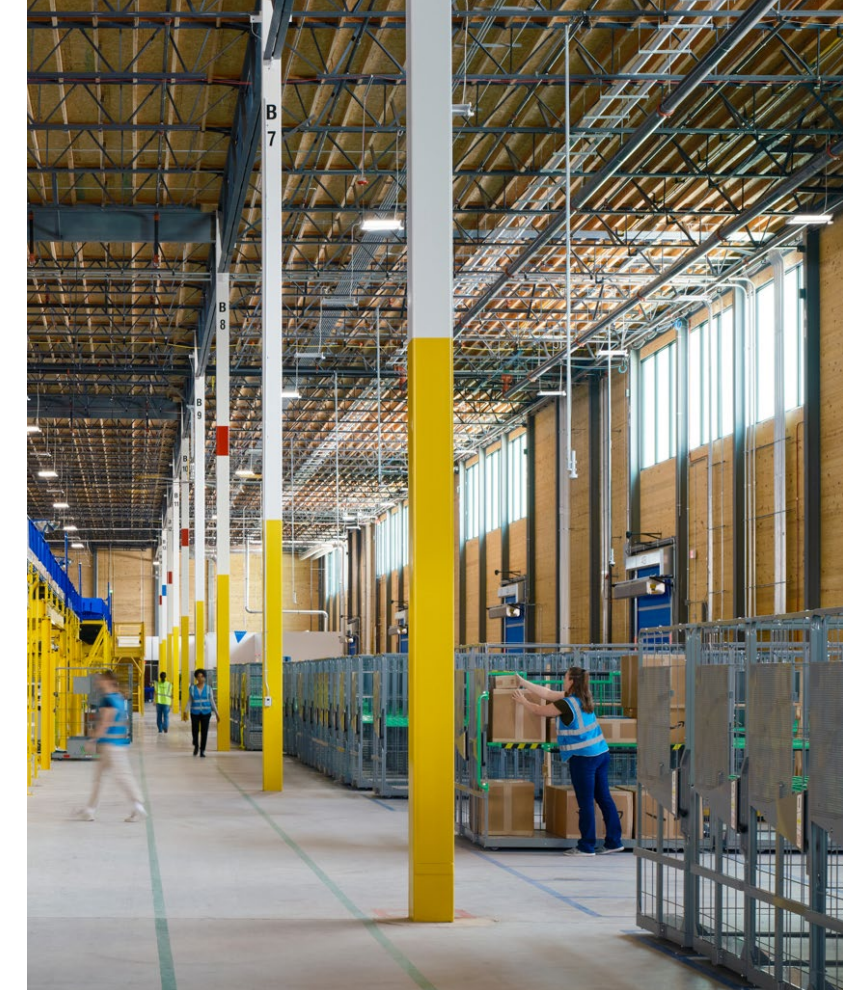
Today's data center projects are defined by:

- Aggressive delivery timelines
- Large-scale, multi-building campuses
- High coordination between trades and systems
- Increasing pressure to standardize and replicate

At the same time, teams are navigating:

- Labor constraints
- Supply chain variability
- Rising costs
- Sustainability expectations

The result? A growing gap between how fast data centers need to be delivered and how fast they can realistically be built using traditional methods.



WHERE TRADITIONAL STRUCTURAL SYSTEMS FALL SHORT

Most data centers today rely on conventional systems such as tilt-wall concrete or structural steel. While proven, these approaches present challenges when applied to high-speed, high-volume deployment:

1. Extended Construction Timelines

- Sequential installation processes delay enclosure
- Multiple dependencies slow down critical path activities

3. Limited Repeatability

- Difficult to standardize across multiple buildings
- Inefficiencies when scaling across campuses

2. Multi-Trade Coordination

- Heavy reliance on multiple subcontractors
- Increased risk of scheduling conflicts and delays

4. Logistics & Site Complexity

- Heavy materials increase transportation and crane requirements
- On-site congestion impacts productivity

A NEW APPROACH: PREFABRICATION AND REPEATABILITY

To meet modern demands, leading teams are shifting toward prefabricated structural systems. Instead of building everything on-site, key structural elements are manufactured offsite and delivered ready for installation. This approach offers:



Faster installation timelines



Improved Quality Control



Reduced On-Site Labor



Simplified Coordination

But prefabrication alone isn't enough. To truly scale, systems must also be repeatable, flexible, and designed for large footprints.



INTRODUCING THE CLTIMBER BAY SYSTEM

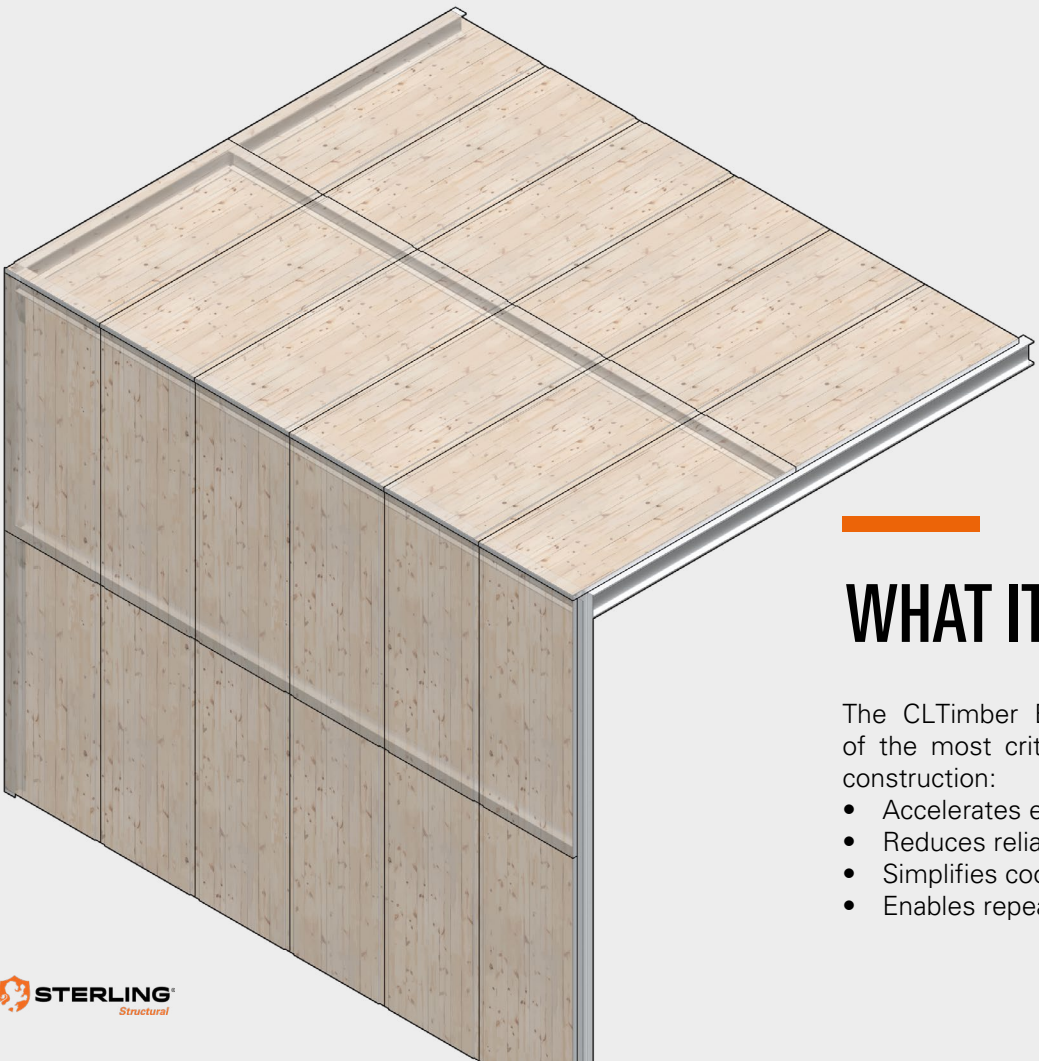
Developed by Sterling Structural, the CLTimber Bay System is a prefabricated structural solution designed specifically for large-scale, high-repetition projects like data centers.

Rather than focusing on individual components, the system is engineered as a repeatable building platform—allowing teams to deploy structure faster and more consistently across projects.



HOW IT WORKS?

- Prefabricated cross-laminated timber (CLT) panels are manufactured offsite
- Panels are delivered ready for installation
- A repeatable bay configuration allows for scalable layouts
- Installation is streamlined using simple, efficient connections



WHAT IT SOLVES?

The CLTimber Bay System addresses some of the most critical challenges in data center construction:

- Accelerates enclosure timelines
- Reduces reliance on multiple trades
- Simplifies coordination on site
- Enables repeatable, scalable deployment



BUILT FOR DATA CENTER PERFORMANCE

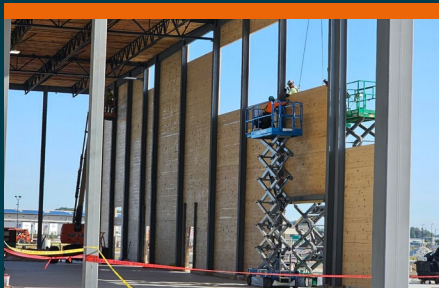
Data centers are not typical buildings. They require speed to operation, precision in execution, flexibility for systems integration, and scalability across multiple sites. The CLTimber Bay System is designed with these needs in mind.



Speed to Deployment

Prefabricated panels allow for rapid installation, helping teams close the building envelope sooner and move into interior work faster. Faster enclosure means:

- Earlier commissioning
- Reduced schedule risk
- Faster time to revenue



Repeatability

Standardized structural bays enable:

- Consistent design across multiple buildings
- Faster design cycles
- Efficient replication at scale

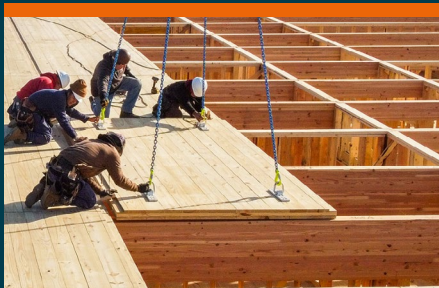
This is especially valuable for hyperscale and multi-phase developments.



Simplified Systems Integration

CLT provides a continuous structural surface, making it easier to:

- Attach mechanical and electrical systems
- Integrate equipment and infrastructure
- Reduce the need for additional blocking or field coordination



Improved Logistics & Constructability

Compared to traditional systems:

- Panels are lighter
- Fewer truckloads are required
- Smaller cranes can often be used

This results in - easier site logistics, reduced congestion, and more efficient installation.

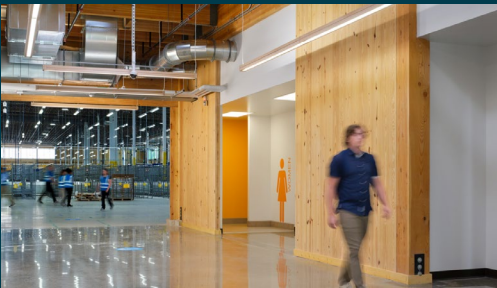


PROVEN AT SCALE

AMAZON DII5 MASS TIMBER DELIVERY STATION

Sterling Structural has already demonstrated the power of prefabricated mass timber systems on large-scale industrial projects. While data centers have unique performance requirements, they share many of the same structural challenges as large-scale industrial facilities—particularly when it comes to speed, repetition, and scalability.

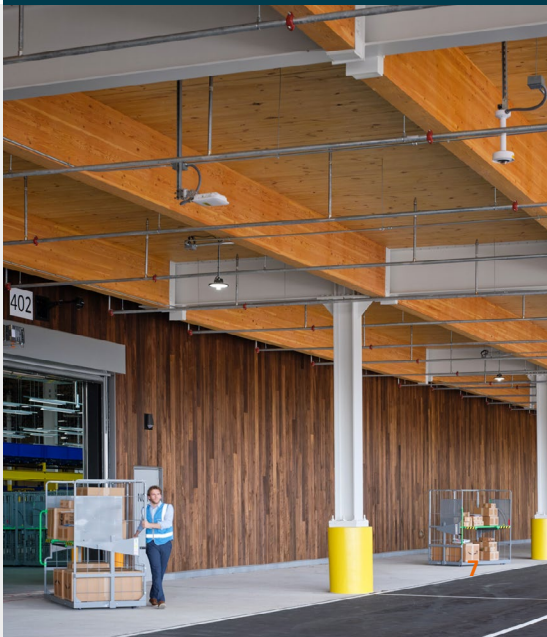
The Amazon DII5 Delivery Station in Elkhart, Indiana provides a strong real-world example of how prefabricated mass timber systems can meet those demands.



PROJECT DETAILS

PROJECT TYPE:	Large-scale logistics / industrial facility
STRUCTURAL SCOPE:	CLT shear wall system + exterior canopies
MATERIAL SUPPLIED:	Over 1,100 CLT panels
APPLICATION:	Warehouse walls and long-span exterior canopy structures
DELIVERY MODEL:	Prefabricated panels manufactured offsite and installed on-site

This project required a structural system capable of supporting a large footprint, repetitive layout, and accelerated schedule—conditions very similar to modern data center developments.



COMPARING STRUCTURAL APPROACHES

When evaluating structural systems for data centers, it's important to consider more than just material cost.

Criteria	CLTimber Bay System	Tilt-Wall	Steel
Installation Speed	HIGH	MEDIUM	MEDIUM
Repeatability	HIGH	LOW	MEDIUM
Coordination Complexity	LOW	HIGH	MEDIUM
Labor Intensity	LOW	HIGH	HIGH
Scalability	HIGH	MEDIUM	MEDIUM



USE-CASES

CLTimber Bay is not just an alternative—it's a system designed for scale and efficiency. The CLTimber Bay System is particularly effective for:

- Hyperscale data center campuses
- Multi-phase developments
- High-repetition building layouts
- Projects with aggressive delivery timelines

In these scenarios, the ability to standardize and accelerate construction creates measurable value.



EARLY DESIGN CONSIDERATIONS

- Key areas to evaluate:
- Structural grid alignment
 - Integration with MEP systems
 - Envelope strategy (including factory-applied WRB options)
 - Budget alignment and system comparisons
 - Early collaboration allows teams to fully leverage the benefits of prefabrication and avoid costly redesigns later.



SUSTAINABILITY MEETS PERFORMANCE

- Sustainability is no longer optional—it's a requirement. CLT offers:
- Lower embodied carbon compared to concrete and steel
 - Opportunities to support ESG goals
 - Alignment with corporate sustainability initiatives
 - Importantly, this is achieved without compromising speed or performance.



BUILDING FOR WHAT'S NEXT

The demand for data centers isn't slowing down. To keep up, the industry must evolve—embracing solutions that prioritize speed, scalability, and efficiency.

The CLTimber Bay System represents a shift from traditional construction methods to a more repeatable, more predictable, and more scalable approach.



LET'S EXPLORE WHAT'S POSSIBLE

If you're planning a data center project, we can help you evaluate whether this approach aligns with your goals.

- Our team supports:
- Early-stage design conversations
 - Budget alignment
 - System integration

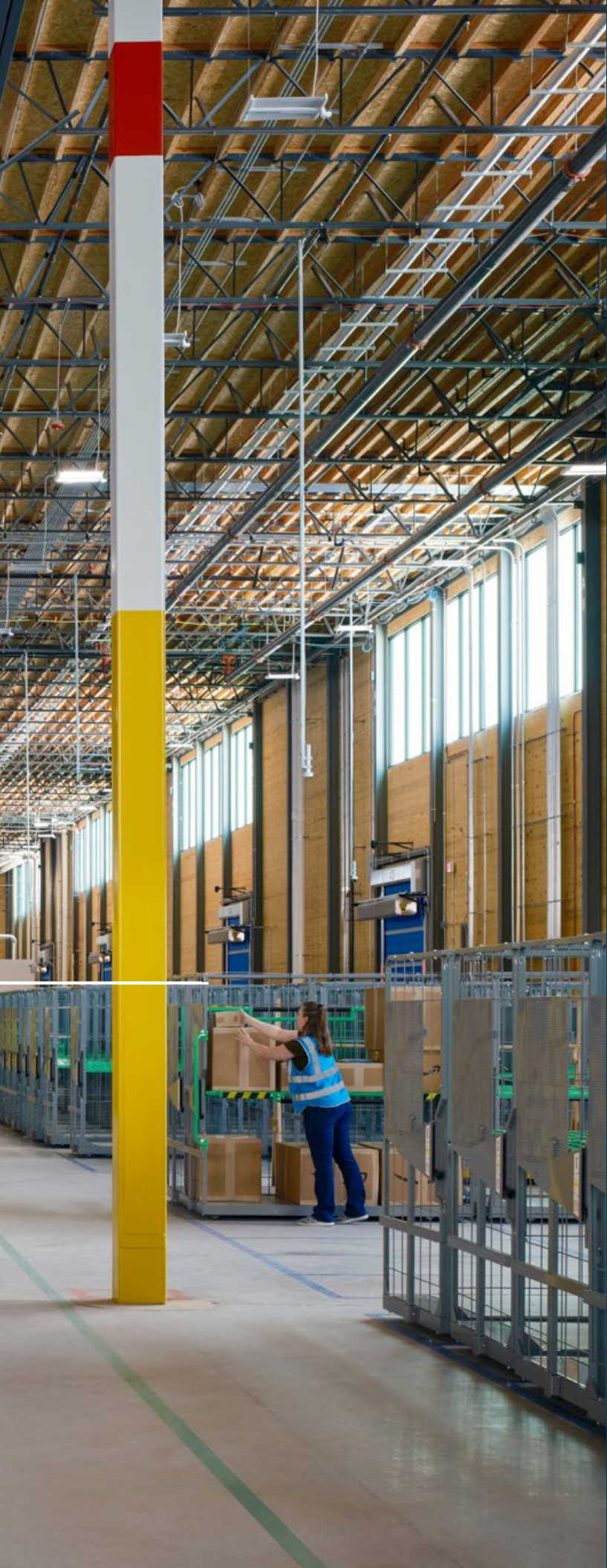
There's no commitment—just a conversation.



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