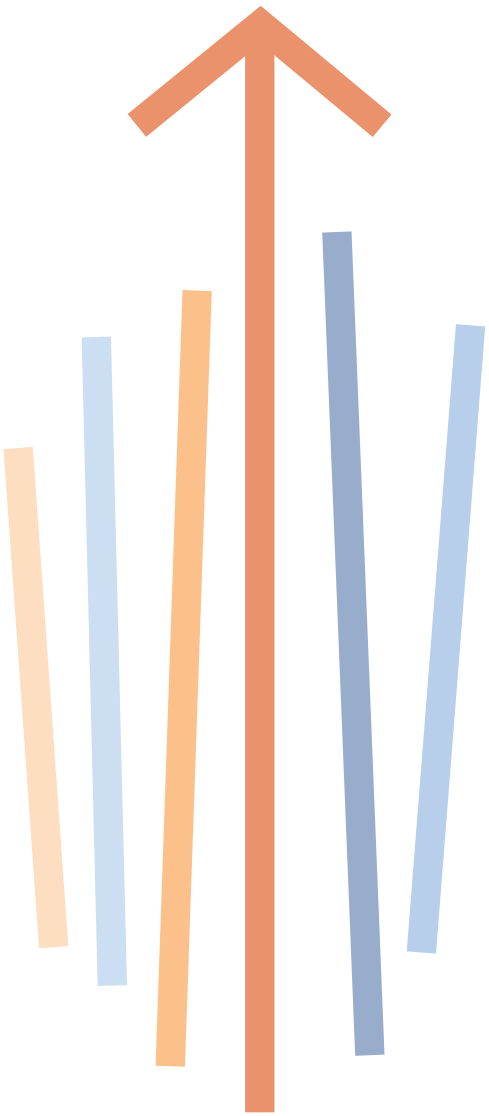
FOR THE TREES



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Already leveraged for other commercial real estate asset types, mass timber has the potential to revolutionize industrial real estate development by offering sustainable, durable, and efficient construction solutions.

With its alignment to corporate environmental, social, and governance (ESG) goals and positive environmental impact, this article outlines how mass timber can represent an innovative pathway for modern and future construction and development in the industrial real estate sector.

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THE RISE OF MASS TIMBER AND INDUSTRIAL REAL ESTATE

After a long century of steel and concrete construction dominance, mass timber construction innovation has emerged as a revolutionary construction method, with proven load-bearing capabilities and ability to be used in various applications beyond traditional wood construction.

Its strength and durability, superior fire rating, usability across spans/grids, and speed of construction make it suitable for large-scale commercial real estate, including multi-story offices, industrial warehouses, and even military bases. Mass timber components are prefabricated and can be manufactured offsite, reducing construction timelines, cutting labor costs and minimizing on-site disruptions. Moreover, it offers a sustainable alternative to conventional materials like steel and concrete, which have significant environmental footprints.

The mass timber market is experiencing rapid growth, driven by advancements in technology, acceptance in regional building codes, and a growing emphasis on sustainable building practices. Unlike traditional lumber, mass timber products are created by bonding multiple layers of wood together to form large, structural components. Innovations in cross-laminated timber (CLT), glue-laminated timber (glulam), and other engineered wood products have made mass timber a viable option for a wide range of applications.

Mass timber also boasts construction safety and reliability, helping to improve lender confidence in financing mass timber projects, furthering the adoption of mass timber by developers and also boosting investor support. As of September 2024, there were 2,253 mass timber buildings in progress or completed in the US, including a growing number of factory/industrial projects.[1] These projects are concentrated along the coasts, with Washington, Oregon, California, and Massachusetts accounting for more than half of all projects since 2013, but adoption is spreading to Texas, Colorado, and Illinois.[2]

While mass timber is predominantly used in residential and office construction today, it has a growing potential for applications in other construction. Industrial, in particular, is a natural extension for developers, partly due to the recognized economic and environmental benefits of mass timber construction, and partly due to the reality that the sector is challenged by aging stock and the need to develop more nimble, state-of-the-art buildings.

E-commerce infiltration into the industrial real estate sector, coupled with supply chain reconfiguration, is shifting the way industrial properties are used, triggering major pivots in the specifications of industrial stock. Tenants are seeking newer, state-of-the-art facilities that can accommodate technological innovation in the management, storage, and distribution of goods. Unsurprisingly, tenants are increasingly exiting older facilities in favor of more advanced ones, enabling footprint efficiency and consolidation in many instances. Nearly 50% of leases executed in the second quarter of this year were for Class A space, indicating a strong preference for high-quality, advanced facilities.[3]

Over the last decade, the industrial tenant base has become more dominated by large multi-national corporations, many with corporate strategies and initiatives driving occupiers to make real estate leasing decisions through an ESG lens; considering environmental sustainability, employee wellbeing, and satisfaction, and talent retention.

As industrial real estate developers look to meet the demand for state-of-the-art buildings, and the construction industry responds to investors' desire to achieve carbon-reduction goals, sustainable designs are incorporating wood as the building material.

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THE CONVERGENCE OF MASS TIMBER AND INDUSTRIAL REAL ESTATE

As a relatively new design and construction concept in the United States, mass timber use within industrial real estate has a few notable use cases, and an accompanying set of viability and benefits, including:

Efficiency: Prefabricated mass timber components enable faster on-site assembly, reducing construction schedules by around 25%.[4] Faster construction timelines and cost savings are typically considered the main value proposition for wood use in development.

Sustainability: The environmental footprint is significantly lower by substituting wood for concrete and steel, making it an attractive option for sustainable construction. Using mass timber and other wood technologies in 7-15 story buildings is estimated to be equivalent to taking more than two million cars off the road for a year.[5]

Aesthetic Appeal: The natural finish of wood can enhance tenant experience and building design. Multifamily buildings featuring mass timber can often command higher rents due to their unique aesthetic appeal.[6]

Regulatory Momentum: Mass timber offers durability and fire resistance comparable to steel and concrete.[7] US building codes in nineteen states and eight major Texas cities now allow mass timber structures up to eighteen stories, reflecting increasing acceptance.[8]

Economic volatility and emphasis on ESG within real estate, along with the critical need to make the most economical design decisions, may lead to increased adoption of mass timber construction for industrial development, especially for multi-story warehouses and urban logistics hubs where land is limited.

As the technology and production techniques for mass timber mature, economies of scale can make mass timber increasingly cost-effective compared to steel and concrete. Coupled with the inflationary and supply chain issues that have pushed input prices for new warehouse construction up 44% over the last five years, as measured by the producer price index, mass timber could become the preferred choice in terms of cost and sustainability.[9]

The use of mass timber in industrial construction is projected to grow by around 8% annually over the next decade, driven by increasing acceptance and cost competitiveness.[10] Cross-laminated timber consumption in North America is expected to grow more than 40% annually, compared to 15% in the EU through 2027, indicating rising demand for timber products and benefiting both forestry and construction industries.[11]

INDUSTRIAL PROJECTS FEATURING MASS TIMBER

1. An aerospace manufacturer integrated mass timber into their 185,000-square-foot, two-story industrial warehouse completed in 2023. Steel delays catalyzed the use of mass timber, providing both speed and sustainability. The supplier provided 2.215 million board feet of lumber and manufactured the necessary glulam beams, columns, and CLT and GLT panels for the attached office, completing the project within eighteen months. The trees used for the mass timber components were sustainably harvested from Pacific Northwest forests.[12]
2. A 28,000-square-foot high-density library storage facility, completed in 2018, is the first in Arkansas and the first in middle America to use CLT structural systems. Originally designed as a concrete block building, the switch to a mass timber frame and CLT walls saved taxpayers $1.1 million. Sourced from sustainably harvested local timberlands, the project achieved LEED gold certification and won an AIA Arkansas Honors Award in 2019.[13]

Mass timber construction can store carbon making it an attractive option for developers and tenants aiming to reduce their carbon footprint and significantly offset emissions, particularly in industrial buildings with large environmental impacts.

EXHIBIT 1: EXAMPLE OF A 185,000-SQUARE-FOOT, TWO-STORY INDUSTRIAL WAREHOUSE, COMPLETED IN 2023

Source: WoodWorks

CONSTRUCTION CONSIDERATIONS

The development of mass timber projects is still limited in acceptance within the network of lenders, investors, contractors, and subcontractors, given specialized knowledge required to implement, a lack of data and case studies, and a nascent supply chain. This type of construction requires extensive up-front planning, involving mechanical, electrical, and plumbing representatives early in the design process, resulting in increased costs that may arise from working with subcontractors and code officials unfamiliar with mass timber construction. Likewise, the production of CLT in North America is still developing, forcing projects to utilize imported CLT from Europe. However, global companies are establishing production hubs in North America, reducing dependence on European imports, as North America's vast timberlands hold promise to potentially provide a steady supply of sustainably managed timber.

Developers' increased experience with mass timber is expected to reduce project costs further beyond the initial cost-savings of using mass timber, and expand the material's viability for industrial construction, while localized manufacturing efforts in the US and Canada help minimize shipping costs and the associated carbon footprint.

From an environmental standpoint, studies show mass timber construction can store carbon—each cubic meter locking in about one ton of CO2—making it an attractive option for developers and tenants aiming to reduce their carbon footprint and significantly offset emissions, particularly in industrial buildings with large environmental impacts.[14]

EXHIBIT 2: CARBON FOOTPRINT COMPARISON: TIMBER VERSUS OTHER BUILDING MATERIALS

TIMBER

1m^3 sequesters
1 metric tonne of Co2

IRON

1 tonne of manufactured cement produces about 0.47 tonnes of Co2

CEMENT

1 tonne of manufactured iron produces about 0.6 tonnes of Co2

Source: Mass Timber Institute based at the University of Toronto, as of December 2024.

The growth of mass timber use in industrial real estate has the potential to revitalize local economies through job creation, business investment, and productivity, particularly in rural areas where timber is a major resource. Increasing demand for timber products could create jobs in forestry, manufacturing, and construction, thereby balancing urban economic benefits with the environmental benefits of sustainable forestry practices.

WHAT'S NEXT FOR TIMBER?

With supportive regulatory changes, increasing cost-competitiveness, and demand driven by ESG commitments—combined with North America's well-integrated supply chain that leverages local resources—the future of mass timber in industrial real estate is positioned for meaningful growth.

The intersection of these sectors represents a dynamic shift toward more sustainable, efficient, and regionally beneficial construction practices. As the industry continues to evolve, mass timber could play a pivotal role in creating a more sustainable and efficient built environment, with transformative potential in the industrial real estate sector.

ABOUT THE AUTHORS

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NOTES

[1] "Woodworks.org as of November 2024 https://www.woodworks.org/resources/mapping-mass-timber/

[2] Forest Economics Advisors, as of December 2022.

[3] CBRE Capital Markets Update as of August 2024.

[4] American Wood Council, as of December 2024.

[5] Mass Timber Institute based at the University of Toronto, as of December 2024.

[6] Dunn, C. 5 Legitimate Reasons for Using Mass Timber in Multifamily Construction, as of 2024, June 2024.

[7] Mortimer, A. "Mass Timber vs Steel: The Future Is Hybrid." As of August 2024.

[8] Status of Building Code Allowances for Tall Mass Timber in the IBC - WoodWorks | Wood Products Council, as of December 2024.

[9] BLS, Producer Price Index by Industry: New Warehouse Building Construction, as of October 2024.

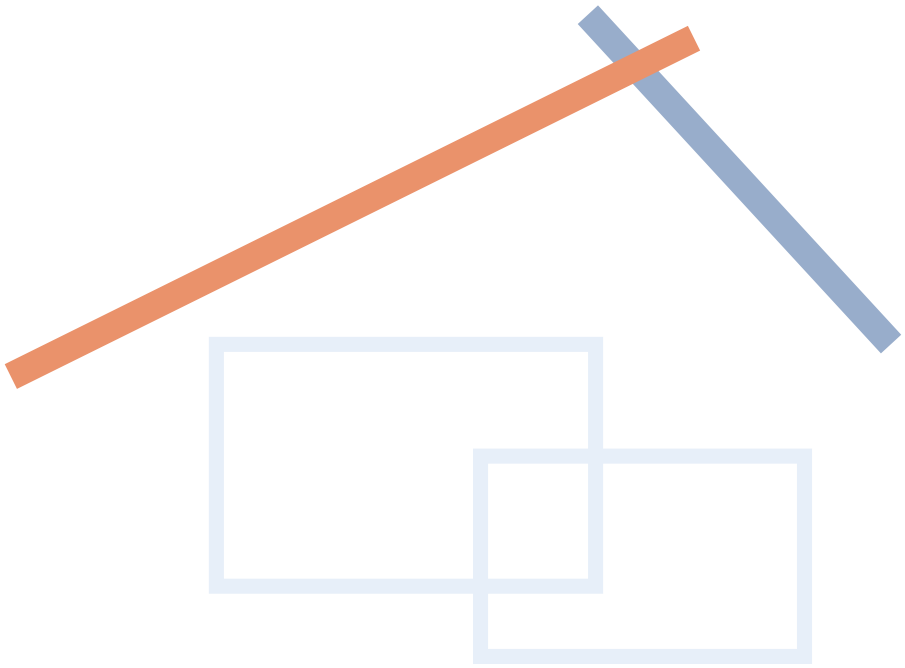
[10] The Brainy Insights. Mass Timber Construction Market Report, as of July 2024.

[11] Forest Economics Advisors, as of December 2022.

[12] WoodWorks. Aerospace manufacturer uses mass timber to meet speed, sustainability goals, as of December 2024.

[13] WoodWorks. U of Arkansas Library Storage Facility, as of December 2024.

[14] Mass Timber Institute based at the University of Toronto, as of December 2024.



As the industry continues to evolve, mass timber could play a pivotal role in creating a more sustainable and efficient built environment, with transformative potential in the industrial real estate sector.