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Mass Timber: Shattering the Myth of Code Exceptions

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by **Lindsey Leardi**

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T3 Minneapolis. Image Courtesy of DLR Group

Structural timber is in the midst of a renaissance; an ironic trend given that timber is arguably the most ancient of building materials. But new innovations in structural timber design have inspired a range of boundary-pushing plans for the age-old material, including everything from bridges to skyscrapers. Even more crucially, these designs are on the path to realization, acceding to [building codes](#) that many (mistakenly) view as restrictive to the point of impossibility.

The timber structures of today aren't just breaking records - they're doing it without breaking the rules.

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T3 Minneapolis Photo courtesy of DLR Group and MGA . Image

Among the spate of notable new timber structures is [MGA | Michael Green Architecture](#) (Design Architect) with [DLR Group](#) (Architect of Record) [T3 \(Timber, Transit, Technology\)](#) mass-timber structure in [Minneapolis](#), completed in 2016. The project, a wide-windowed structure in the city's downtown, boasts expansive and open floorplates. It shatters the myth that structural timber projects can't produce the open spaces facilitated by steel structures.

At seven-stories and 224,000 square-feet, the [commercial](#) development is among the largest structures constructed with prefabricated nail-laminated timber (NLT) panels and [glulam](#) structure. Erected in just 9.5 weeks, the project was not only economical but also reduced the building's carbon footprint. T3 is estimated to be 30% lighter than [steel](#) and 60% lighter than post-tensioned [concrete](#).

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T3 Minneapolis. Image Courtesy of DLR Group

Shortly after the success of the [Minneapolis](#) project, the architects broke ground on T3 West Midtown in [Atlanta](#). The project team, in partnership with global real estate firm Hines, also plans to continue their collaboration on T3 Goose Island in Chicago.

“DLR Group is at the forefront of mass timber design and construction,” said [DLR Group](#) Principal Steve Cavanaugh. “Each project is an opportunity to show off the uniqueness of the T3 concept, and we are excited to see the West Midtown location begin its construction journey.”

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T3 West Midtown. Image Courtesy of DLR Group

Also seven stories, T3 West Midtown [Atlanta](#) will be a 230,000 square foot, dowel-laminated timber [office development](#) within Atlantic Station, a 24/7 dine-shop-live-work neighborhood. On the exterior, a blackened steel facade nods to the site's previous life as a steel mill. Inside, the warmth of late 1800s [heavy timber](#) meets modern, class A construction and amenities. Tenants will have access to ground-floor [retail](#), collaboration areas, a [fitness center](#), outdoor spaces on every floor, and a rooftop lounge. Named the First Wired Certified Platinum New Development in [Atlanta](#), T3 West Midtown is expected to be completed in summer 2019.

But while both structures boast impressive design and sustainability credentials, the most impressive is yet to come. T3 Goose Island, located in [Chicago](#), is to be (upon completion) the largest modern [mass timber](#) structure in the United States. This timber-structure [office building](#) will boast, in addition to extensive office space, bike storage, 275 parking spaces, ground-floor [retail](#), common lounges, a [fitness center](#), private balconies, and a communal rooftop deck.

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T3 Goose Island. Image Courtesy of DLR Group

Atypically, code exemptions were not required in any of the three T3 projects. According to Cavanaugh, building code officials were curious and open to [mass timber construction](#).

"We didn't seek any code exceptions, we simply followed the rules of building under Type IV heavy timber," explained Cavanaugh. "If you are going to do it, accept that there is going to be a learning curve and we will need to look into code issues. Get an understanding of the material structurally. Learn to optimize the material."

Simply put, research pays.

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T3 West Midtown. Image Courtesy of DLR Group

The benefits of wood construction are not new to the International [Code Council \(ICC\)](#), but emerging technologies were not integrated into building code until the 2015 IBC. In [2016](#), the ICC approved the [Ad Hoc Committee on Tall Wood Buildings](#) who reviewed extensive tall wood building literature and proposed 14 code changes for the 2021 IBC cycle. All proposed changes were approved late last year. The 2021 IBC will include three new construction types:

- **Type IV-A:** 18 stories maximum, gypsum covered mass timber elements.
- **Type IV-B:** 12 stories maximum, limited exposed mass timber walls and ceilings.
- **Type IV-C:** 9 stories maximum, 2-hour fire resistant exposed mass timber.

Architects, engineers, and other industry professionals can get help designing and building safe, high-performing wood structures from [The Think Wood Research Library](#) online database with over 1,000 research documents on topics such as: seismic, fire safety, performance, acoustics, vibrations, energy, environment, codes, cost, and more.



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