
THE MASS TIMBER INTERVIEW



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A new feature in the *International Mass Timber Report* is an interview with industry leaders. For the 2022 report we reached out to CREE Buildings and Walbridge to discuss their joint efforts in working with mass timber and concrete hybrid designs. We spoke with Randy Abdallah, executive vice president, Walbridge; and Wojciech Niedzwiedz, senior building services consultant at CREE Buildings.

International Mass Timber Report (IMTR): Walbridge has a long history of using traditional construction methods and materials across a wide variety of customers. How did the opportunity to integrate the use of mass timber first get your attention?

Walbridge: The use of mass timber in the construction of buildings has been around for hundreds of years but really gaining popularity in the United States over the past few years. With a keen focus in helping our clients reach their carbon-neutrality goals, Walbridge is continually on the search for sustainable and cost-competitive products that can be incorporated into their projects. We watch for trends in the industry that will add significant value. The use of a modular and sustainable product at a highly competitive

price point is exciting. The CREE solution meets all those requirements.

IMTR: What do you see as the primary benefits of substituting timber for other more traditional construction materials?

Walbridge: The benefits can be numerous and are changing from health and well-being to commercial factors like cost and lead time. As we slowly begin to integrate back to the office and other public gathering spaces, our clients are interested in the biophilic properties timber offers to their valuable human resources. Additionally, as the domestic supply chain for timber expands, we are experiencing faster delivery, and in some cases lower cost on timber products over traditional.

IMTR: Why did you decide to incorporate the timber-hybrid approach?

Walbridge: We really appreciate the flexibility of the timber-hybrid approach; its modular properties allow the right materials to be used at the right time and for a competitive cost. Additionally, it's not a radical change, but one that takes advantage of a supply chain that already exists for Walbridge. It gives our clients a sustainable, financially viable, and available option for the use of mass timber.

IMTR: What are the advantages of the timber-hybrid approach that you are taking?

Walbridge: More than 90 percent of Walbridge's annual revenue is generated by repeat clients; these clients expect the highest standard of safety, quality, schedule, and cost certainty. By design, the CREE system allows hours to be taken out of the field and into a controlled environment to ultimately meet their core expectations.

IMTR: What challenges or obstacles have you had to overcome?

Walbridge: The biggest challenge that we had to overcome was developing our supply chain; although, as I previously mentioned, the partners' capabilities exist, for many this is not business as usual. With no fabricator domestically making the CREE product, we first had to educate and develop our partners before moving forward with the solution.

Some of the other challenges that we have faced revolve around reeducating the public on the benefits of wood. Until recently, our building codes never properly addressed mass timber; and many

of the myths still exist around the use of wood, for example, its fire rating and maintainability. However, the industry is making good progress on all fronts.

IMTR: There is a growing number of firms working with timber solutions. How did you decide to work with CREE?

Walbridge: We really believe in CREE's collaborative approach to creating a lasting framework. Rather than pushing a product, they have created a community that drives innovation through sustainable practices.

IMTR: CREE has a history of passionate support for resource-efficient and systemized timber-based construction. How did Walbridge, a traditional general contractor, and CREE meet?

CREE: Our company strategy bringing CREE to the US market meant we had to carefully select our local partners. As a company, we need to make sure we find partners who share a similar company culture and have the intrinsic strategic direction when it comes to driving innovation and changing the way buildings are built. Based on our own search criteria and studying company profiles, we have studied the Engineering News-Record (ENR) Top 100 rankings. Walbridge impressed us in many ways: they are a family business with a market reach that enables us to serve clients in several states; and most importantly, the initial interaction and relationship-building on that has been characterized by trustworthiness and great communication.

IMTR: What do you see as the advantages of the timber-hybrid approach compared to other mass timber projects?

CREE: The construction industry is slow to innovate and to adopt new materials. To convince the planners and developers to change the design from a traditional steel/concrete approach to mass timber can be very challenging and often very expensive. Mass timber structures are usually more expensive because of the greater quantities of wood involved.

The timber-hybrid system nicely marries a common construction material with more price stability, like concrete, with the less common and more price-volatile material like mass timber, without complete reliance on one trade. Therefore, the timber-hybrid system provides a low-risk option in terms of construction capacity and cost, and an efficient solution to address multiple building requirements simultaneously (strength, acoustics, fire, etc.).

It is also important to mention the facts, like better physical performance in terms of vibration, deflection, sound insulation, fire resistance and compartmentalization; weather and water protection during construction and operations; and many more advantages of timber composite against all-timber.

Furthermore, it must be acknowledged that all this comes along with minimized material input, which also secures cost competitiveness, if not even cost parity, against concrete/steel, as proven by some of our recent projects.

Increasing numbers of experts—and clients as well—follow that ideal combination, utilizing the benefits of timber and concrete/steel alike. And this is where we at CREE Buildings see the con-

struction industry heading, featuring any conceivable form of structural timber composite/hybrid.

IMTR: Are there specific types of projects that lend themselves more to the timber-hybrid approach?

CREE: There are two main factors that should be taken into account when selecting a project to suit the timber-hybrid system:

- A systemized approach and integrated project delivery: One of the most important factors is to make sure that the project has a regular grid. The systemized approach of the CREE system allows for more freedom in design, especially in facade and interior architecture. The multiple grid options available for the plan and elevation allow designers to place and arrange fully developed, detailed, and coordinated digital elements. All the system components are interconnected Building Information Modeling (BIM) families with a high level of detail. This lets the architect establish a core and shell project in a fast, efficient, detailed, and analytical way. As a result, the architect has more time and freedom to design a facade and interior spaces that meet the expectations of all the parties involved, as well as complying with environmental and other local regulations. Cost control and time certainty are transparent and fully vetted by all parties involved. This motivates designers and builders to work together more closely and helps them find the most cost-effective design strategy.
- This leads to the second point: integrated project delivery requires all stakeholders to be involved from the very beginning. This changes the usual procedure significantly, as many decisions must be taken much earlier

than in the conventional planning process, starting with the selection of the CREE system and its components. However, the benefits quickly become clear: soon afterward, several simulations of all workflows are carried out in the digital twin, which facilitates optimized material and information flow and the elimination of resource wastage. This means that the project delivery process becomes considerably more effective and favors greater efficiency for the whole construction phase, partly through the off-site industrial prefabrication of building components and partly through their assembly on-site. The components are produced according to an environmentally and economically compatible, socially responsible, and sustainable process, as continually developed by CREE.

IMTR: What were the biggest challenges in developing the hybrid approach for this your project?

CREE: As always, it is difficult to convince someone to try something new. Especially when you try to bring a new concept to a different country or even more so to a different continent. This applies in particular to compliance issues with local building codes, fire regulations, design criteria, etc.

We invest lots of time in educating potential customers; developers; general contractors; planners; architects; structural engineers; mechanical, electrical, and plumbing (MEP) specialists; and code consultants. Our ethos is to share the knowledge and experience we have gained over the last 10 years, create a network of like-minded companies and individuals who are willing to collaborate and share their expertise in order to drive the innovation. This has proven to be a successful approach and can be

measured in the number of license partners and projects we have delivered all over the world.

By working closely with Walbridge and their supply chain, we are able to transfer our knowledge and to implement it in the projects they are working on. Our marketing and business development department has developed strategies to help our partners to leverage this knowledge and experience and support their tender bids and project acquisition.

By building the first CREE project in Canada and the mock-up building in the US, we believe we will be able to convince even more customers who are new to the concept.

IMTR: How much impact do you think the timber-hybrid solution will have on the rest of the mass timber movement?

CREE: According to our research, 80 percent of the built multistory timber-based buildings (taller than 5 stories) are actually hybrid buildings. They often have a concrete core and, even more often, a concrete podium (ground floor and sometimes first floor too). Other times, they have steel bracing systems integrated in their structures, in their facade, and especially in the US, many projects have their core made of steel. Even projects where the entire structure is made of Cross-Laminated Timber (CLT) (walls, core, floors) are still often designed with a concrete podium. Therefore, the impact of timber's combinations with concrete and steel is already strong, and it represents already the common practice.

It is true that there are some famous projects like Treet in Norway, or Wood Innovation and Design Centre in Canada where all the structural elements are Engineered Wood Products (EWPs),

but these buildings represent an exception, and they do not represent the global practice.

In order to do better with the industry as a whole, we need to think about how to penetrate the market in large quantities, suggesting timber construction to every “standard” concrete/steel client, for every “standard” large or tall building project. Architectural icons gain attraction, but “standard” buildings represent the vast majority in numbers and thus can cause by far the most positive environmental impact.

At CREE we understood the importance of using timber together with other materials already 10 years ago, and we are working to constantly optimize the combinations between timber with other materials in order to use them in the best way possible.

Without that smart and material-minimizing mix of timber with concrete/steel, many current buildings would have never seen any timber used at all. For example, the Eunoia Junior College, Singapore’s first high-rise college, or the staggering 800,000-square-foot Siemens Campus Module 2 would have finally just been built in concrete/steel. Now they feature the uncompromised beauty of exposed structural wood.

We very much appreciate all-timber buildings. They absolutely deserve their position in modern architecture and certainly can contribute a lot of good for our sustainably built environment. But for many projects, a timber-hybrid approach is a better solution. 🌲

BIOS

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With over 40 years of construction experience, Randy is the leader of Walbridge’s Get Work Team and is responsible for business development, estimating, design management, procurement, and marketing. Randy is a graduate of the Construction Technology program at Fanshawe College in London, Ontario, Canada, and the McCombs School of Business Executive Training Program at the University of Texas.

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Wojciech is an experienced MEP engineer, specializing in heating, ventilation, and air conditioning (HVAC) systems and thermal modeling simulations. Before joining CREE Buildings in 2019, he spent over 20 years working with several MEP contractors in the UK. He also coordinates all activities between CREE headquarters and the North American partners and is responsible for the digital content on the CREE platform.

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