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1. Introduction

StructureCraft is a pioneering structural consultancy with a unique construction arm specializing in timber and hybrid structures. We have delivered innovative projects across the world for over 26 years, and understand our role as stewards of the earth's resources and the impact our work has on the world and the built environment.

This year, we have launched a new brand, DowellLam. DowellLam is a global leader in mass timber manufacturing, recognized for delivering Dowel Laminated Timber (DLT) panels in significant projects across North America. Our plans for DLT are not only to be a product leading in aesthetics and design efficiency, but also sustainability.

The following Embodied Carbon Action Plan (ECAP) outlines our strategy to provide education and resources on embodied carbon to our internal staff, to track the embodied carbon of our current and past projects, to reduce the embodied carbon on future projects through efficient structural design, sourcing, and procurement, and to present options for lower carbon designs to clients. As a continuation of our first ECAP, submitted in 2021, this Embodied Carbon Action Plan summarizes the initiatives we are pursuing in the upcoming year and reflects on the previous year.

Southwest Neighborhood Library | Washington, DC | 2020 | LEED Platinum



Tianfu Agricultural Exposition | Chengdu, China | 2022

2. Education Plan

As part of the goal to encourage sustainable design using the latest tools and resources, the StructureCraft sustainability group has created and distributed resources and guidelines within the company, and has participated in external workshops and demonstrations throughout the year. The group is responsible for creating and updating an internal intranet sustainability page that is accessible to all employees and includes resources for life cycle assessments (LCAs), supplier specific environmental product declarations (EPDs), sustainability certification systems, forest management and chain-of-custody, and innovative lower carbon building materials.

As mentioned in the introduction, with the launch of DowellLam, we have internal staff specifically tasked with improving and advocating for our all-wood mass timber product. DowellLam's DLT has an EPD which we plan to continuously update as well as promote to other architects and engineers.

Joining SE2050 was distributed through an email and was followed by a presentation in a weekly engineering meeting. The company will distribute this presentation to all new engineering members and distribute an updated yearly announcement.

This year and moving forward, a yearly updated SE2050 presentation will be presented in a weekly engineering meeting to discuss the year's ECAP. We will also inform staff about the project data our team has reported this year to the SE 2050 database, and how it compares with other project data.

3. Knowledge Sharing Narrative

As a creative structural engineering and timber construction company, StructureCraft is promoting the use of timber across different building and infrastructure typologies.

Working closely together with architects & owners, the sourcing of wood is a common topic and often given as a project requirement. As a design-build company, StructureCraft assists both the architect and owner in determining sustainable pathways of procurement. We have also made improvements to our internal carbon reporting tools to present structural embodied carbon data clearly to our Architects and Owners.

StructureCraft presents each year at a conference where sustainability is a topic. Last year, Leif presented an update to the LCA for the 619 Ponce Office (Atlanta, GA) at the Mass Timber Summit in Denver, as well as our initial LCA and material-optimization studies for Kansas University's new School of Architecture & Design in Lawrence, KS.

This year, we are presenting our embodied carbon and structural analysis software, Branch, at Shape To Fabrication Conference in London, UK. We are continuously open to speaking opportunities that allow us to share our carbon studies and findings to the broader AEC community.

4. Embodied Carbon Reduction Strategies

As engineer of record on structures which often already contain significant timber elements as well as concrete/steel, StructureCraft's focus in pushing forward sustainable construction techniques must go beyond simply recommending mass timber as a lower carbon construction material. Our focus is thus two-fold: reducing total material consumption by designing the entire structure efficiently, regardless of material choice; and lowering the carbon content of the materials we do specify via regional sourcing, and specification of low-carbon materials where possible.

Short-term Strategies (<1 year):

1. Revising project specifications to allow for the use of lower carbon building materials such as supplementary cementitious materials and carbon dioxide mineralization in concrete.
2. Amending specifications to require suppliers to submit EPDs and adhere to project carbon reduction goals.

Long-term Strategies (5+ years):

1. Remain active in groups such as the Carbon Leadership Forum and Seattle2030 to stay up to date on carbon reduction strategies in the building industry.
2. Continue to design efficient structures to cut down on the volume of new building materials.
3. Research and stay up to date on innovative lower carbon alternative building materials for use in our buildings.
4. Add to our internal database of LCAs performed on our projects.
5. Continue to develop our company experience on unique projects where structural planning and process have direct impacts on the building's carbon footprint - such as our St. Elizabeth's retail pavilion project which required design for disassembly.
6. Analyze and implement the process of using reclaimed lumber in our brand Dowellam's production process, promoting a circular economy focus.

5. Reporting Plan

StructureCraft has designed a carbon reporting template for visual reporting and communication with clients. The report is focusing on early design considerations for LCA stages (A1-A5) and covers the listed structural elements:

- Substructure: Foundations, Slabs on Grade, Basement Walls, Pile Caps
- Superstructure: Columns, Beams, Floor Plates, Stairs, Walls, Bracing Elements

StructureCraft is committed to analyzing the design efficiency of our buildings against international performance targets provided by SCORS, RIBA, and LETI by using a variety of LCA software and tools available online as well as our in-house carbon accounting tool. Depending on the stage of the project when the LCA is performed, material quantities are taken from design estimates based on prior project experience or, in later stages of the project, from the actual structural design.

The sustainability group at StructureCraft is tasked with collecting EPDs from suppliers for use in our LCAs. Where supplier specific EPDs are not available, we rely on industry averages supplied by organizations such as the National Ready Mixed Concrete Association (NRMCA) and American Institute of Steel Construction (AISC).

At minimum, StructureCraft performs a full building (A1-A4) LCA for two projects each year to fulfill the commitment to SE2050. Additionally, we deliver LCAs for our clients as requested during early phases of a project to help inform design decisions. StructureCraft is committed to providing versatile cross-material studies for clients on future building projects to encourage carbon-reducing design decisions.



Nancy Pauw Bridge | Banff, AB | 2022

6. Elective Documentation

The following list summarizes StructureCraft's electives for our 2025 ECAP:

Category	SE2050 Requirement	Actions
Education	Provide a narrative of how the Embodied Carbon Reduction Champion will engage embodied-carbon education at each office.	Our Embodied Carbon Reduction Champion attends all CLF and SE2050 meetings and reports back to the sustainability group with action items. They (or any group member) circulate updates (via e-mail blasts or company meetings) to the wider engineering office.
	Present at least (1) webinar focused on embodied carbon and make the recording available to employees.	The company intranet sustainability page now hosts a list of videos on LCA assessments, sustainable forestry, and carbon-neutral construction. The SE 2050 resource library is linked and explained in more detail on the same page
	Initiate an embodied-carbon interest group within your firm and outline its goals.	StructureCraft has formed a sustainability group that meets quarterly. Its primary goal is to ensure progress toward the SE 2050 commitment and the firm's broader sustainability objectives. The group's growth has enabled development of richer internal resources on embodied carbon.
	Create an embodied-carbon digital resource forum on your firm's internal website.	A dedicated sustainability page on the intranet now houses resources for carbon accounting and reduction strategies.
	Engage with a CLF regional hub.	Members of the sustainability group regularly attend CLF Seattle monthly meetings and relay relevant information to the company.
Reporting	Submit a minimum of (2) projects to the SE 2050 database.	Two projects have been submitted for 2025; the data also helps benchmark and improve future projects internally.
Reduction	Set clearly stated, firm-wide reduction targets in the short- and long-term.	See Section 4 of this report for the stated short-term and long-term goals.
	Update your specifications to incorporate embodied-carbon performance. Include embodied-carbon requirements in your submittal review..	Concrete specifications now require EPDs, mandate mix designs that align with project carbon goals, and allow lower-carbon substitutions for Portland cement.
	Compare different design options with embodied carbon as a performance metric during the project concept phase.	StructureCraft ran multiple LCAs for an East-coast project to compare wood-versus-concrete schemes. Section 5 details the exercise.
Advocacy	Describe the value of SE 2050 to clients.	Participation in SE 2050 raises engineer awareness of efficient, low-carbon design options and helps owners understand their stewardship role. Early massing studies benchmark carbon, and manufacturers are included early to evaluate transport modes and capacities. Regional sourcing is promoted when possible.
	Publicly declare your firm as a member of the SE 2050 commitment.	Along with the submission of our ECAP 2025, the company is re-releasing its commitment to the SE 2050 program on our website.

7. Lessons Learned

As in previous years, StructureCraft remains committed to optimizing our building designs and to assisting owners and architects in setting and achieving carbon reduction goals. Over the last year, we have increasingly received questions from clients interested in comparing carbon emissions of timber structures to equivalent concrete buildings. We find it encouraging that carbon emissions are starting to play more of a role in design choices and are committed to collecting enough data from our carbon studies to be able to give our clients accurate answers to these kinds of questions.

As in previous years, we continue to see that one of the best things we can do as structural engineers to reduce the carbon footprint in our projects is to design efficient structural systems that are well suited to the structural material being used. We find this to be especially true when advising our clients on appropriate bay sizing and column spacing for a mass timber building vs. a steel or concrete building. Once this structural efficiency is achieved, we can assist our client with additional carbon saving measures like regional sourcing of materials and using innovative low-carbon materials where possible.



Okanagan College Jim Pattison Centre | Kelowna, BC | 2010
Living Building Challenge, LEED Platinum



StructureCraft