EMBODIED CARBON ACTION PLAN

YEAR 1 – 2022

SUBMITTED MARCH 07, 2022

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1 EWINGCOLE'S COMMITMENT

EwingCole, a 400+ person, interdisciplinary firm with nine offices located across the country, is hereby signing on to the SE 2050 Commitment Program. We support the vision that all structural engineers shall understand, reduce, and ultimately eliminate embodied carbon in their projects by 2050.

The places where we live, work and play represent the largest source of greenhouse gas emissions in America, as well as around the world. The design and construction industry has made significant strides toward creating high performance buildings, of all types and uses, by deeply reducing operational energy use and improving efficiency. As a result, the industry is positioned to have a profound impact by now committing equal focus to reducing the embodied carbon of building materials, therein reducing building related greenhouse gas emissions globally.

As engineers and architects, we understand the need to exercise leadership in our role in creating the built environment. Consequently, we believe we must alter our profession's actions and encourage our clients and the entire design and construction industry to join with us to change the course of the planet's future. Altering current practices of design and construction to realize significant reductions in embodied carbon aligns with our commitments to tracking and improving upon building energy performance each year, and to selecting building materials that support health, equity, and ecosystems around the globe.

Our commitment to SE 2050 is a multi-year, continuous improvement effort that begins with growing our understanding of embodied carbon reductions, improving our project workflows, and meeting SE 2050 program requirements for tracking and reporting.

We look forward to joining this coalition and industry effort to achieve the goals of the SE 2050 Program.

Respectfully Submitted,

EwingCole SE 2050 Committee, in partnership with Thrive@EC

Robert McConnell, AIA, President
Paul Constantini, PE, SE, Principal – Director of Structural Engineering
Colleen Blackwell, PE, Principal
Maria Papiez, AIA, NCARB, Director of Sustainable Design

THE FOLLOWING ANNOUNCEMENT WAS POSTED TO THE EMPLOYEE PORTAL IN OCTOBER 2021, DECLARING OUR FIRM'S COMMITMENT TO THE SE 2050 PROGRAM:

UNISPHERE - SILVER SPRING, MD - LEED GOLD, LEED ZERO ENERGY

The places where we live, work and play represent the largest source of greenhouse gas emissions in America, as well as around the world. We're taking critical steps in reducing the built environment's impact on the health of our communities and planet. That's why EwingCole signed onto the SE 2050 Commitment, joining our peers in taking the next step toward building a regenerative future. The SE 2050 Commitment directly engages our structural engineering team to understand, reduce, and ultimately eliminate embodied carbon in building structures by 2050.

As signatories of the SE 2050 Commitment, we will complete, and annually update, an Embodied Carbon Action Plan, track embodied carbon metrics for projects and share them with the SE 2050 project database, and provide internal education on embodied carbon.

Our world-class engineers and architects understand the need to exercise leadership in our role in creating the built environment. Altering current practices of design and construction to realize significant reductions in embodied carbon aligns with our commitments to tracking and improving upon building energy performance each year, and to selecting building materials that support health, equity, and ecosystems around the globe. As a firm, this trio of commitments – SE 2050 Commitment, AIA 2030 Commitment, and AIA Materials Pledge – frame our accountability for deep reductions in operational and embodied carbon emissions and keep us focused on the core principles of sustainability – equity, environment, and economy.

2 EDUCATION

Leadership

At a weekly structural group staffing meeting in September 2021, EwingCole announced its commitment to the SE 2050 Program to the structural engineering staff. Colleen Blackwell, PE, principal with the firm, was chosen to serve as EwingCole's first Embodied Carbon Reduction Champion. Colleen joined EwingCole in 2011 and has 25 years of experience as a structural engineer. She is based in EwingCole's Philadelphia office, where she leads our internal SE 2050 Committee as we strive to eliminate embodied carbon in our projects.

Raising Awareness & Initial Education

A firmwide announcement of our commitment to SE 2050 was made in early October 2021, and the Embodied Carbon Action Plan will be shared firmwide following submission.

In March 2021, prior to our firm's commitment to SE 2050, members of the structural engineering team prepared a presentation on embodied carbon and Life-Cycle Assessment (LCA) procedures to educate the structural department on the company's push towards sustainable design, and what that means for our structural design. Now, as full signatories of the SE 2050 Commitment, this presentation will be updated with education resources provided by SE 2050 and presented firmwide to all architecture and engineering disciplines. The SE 2050 Committee has made the "Embodied Carbon 101" series, developed by the Boston Society of Architecture, available to the structural engineering team, and will provide educational support as required to develop the team's knowledge and understanding of embodied carbon.

Ongoing Training & Collaboration

As a department, we acknowledge our staff possesses varying levels of knowledge and understanding of embodied carbon and LCA procedures, therefore the full SE 2050 library of resources will be made available to our staff, along with education sessions to explain how to use the resources. We will highlight important topics with a short discussion during our weekly staffing meetings to keep the team engaged in continuing our embodied carbon education. The document "Top 10 Carbon Reduction Actions for Structural Engineers" will also be shared with the structural design team to further our understanding of the role we have in reducing embodied carbon in our designs.

We have established an SE 2050 Committee that will work with the Embodied Carbon Reduction Champion to develop the team's education resources. The SE 2050 Committee will interface with EwingCole's sustainable design committee, Thrive@EC, and internal Embodied Carbon Working Group to develop a cohesive relationship between our firm's SE 2050 Commitment, AIA Materials Pledge, and AIA 2030 Commitment efforts.

3 REPORTING

Database Reporting

Within the first year of participation in SE 2050, we will submit two (2) projects to the SE 2050 Database for 2022. As the structural design team grows in understanding the role of embodied carbon in our designs and data tracking procedures, we will set a goal to submit a minimum of two (2) projects to the database in future years. Instruction will be provided to the design team to help facilitate data tracking for our new projects to increase our pool of projects available for submission.

Documentation Process

Embodied carbon data tracking will be facilitated by using Tally to track the structural materials we use in our Revit models. Product-specific Environmental Product Declarations (EPDs) will be used where available in our various construction markets. Region-specific, or industry-wide EPDs will be used when more specific EPDs are not available. We are also working to develop baseline design data for an array of project types and sizes using Athena Impact Estimator for Buildings. Our goal is to use Athena to develop the baseline data and additional schematic designs, to help inform our design decisions during a project's Schematic Design phase. We believe Athena is a beneficial tool in helping to educate Architects and Owners about different structural material's effects on a project's embodied carbon. A combination of Athena and Tally may be used during a project's Design Development phase, as a building's design may still be fluid. Tally will be used to keep track of a project's embodied carbon during the Construction Documents, and Construction Administration phases, when structural materials have been chosen.

Reporting Scope

The LCA scope for our projects will begin with Lifecycle Stages A1 to A3 (Cradle to Gate), concerning the products and materials that we use in our building designs. Our 2022 submission will include two projects that have either been completed or begun construction in the past year. Moving forward, projects reported each year will continue to be our most recent work.

4 EMBODIED CARBON REDUCTION STRATEGIES

Developing A Baseline Library

EwingCole's Embodied Carbon Reduction Strategies will be ever evolving as our firm develops its understanding and implementation of embodied carbon reduction, and ultimately elimination. While the incorporation of sustainable design principles is not new to the firm, this is the first time that the focus will be on the structural elements of our building designs. As described in the previous chapter, the structural team's journey will begin with the development of embodied carbon baselines based on our current design practices and specifications for various project sizes and types. We will use Athena to help develop concept level baselines to provide a broad picture of our typical structural designs, and then use the data that we extract from Tally for our projects this year to begin developing a more detailed design baseline. Before we can begin to improve our designs, we must first understand where our current standards fall on the embodied carbon spectrum.

Early Involvement in Design Charrettes

EwingCole has worked with many clients seeking LEED design standards in the past and continues to foster client relationships centered around the incorporation of sustainable design practices. The structural design team has participated, and will continue to participate, in new project design charrettes, and use the baseline data we develop to inform our clients of the embodied carbon impacts that different designs will have. Our involvement will build from the education opportunities discussed above, and upon early coordination with Project Managers.

Project and Process Incorporation

As a result of the early design discussions for some of our current projects, we have incorporated biogenic materials into some projects, and have also collaborated with a local concrete supplier to test several concrete mix designs with varying levels of embodied carbon reduction to determine the best use for the project. The firm's specifications are currently being updated to include embodied carbon performance criteria and will use some of our current projects as a case study for what the construction industry can presently achieve and where improvements may need to be made.

5 ADVOCACY

Client Outreach

Many of the clients EwingCole works with have an interest in incorporating sustainable design into their buildings but may not be aware of the impact that the building's structure has on the overall sustainability of the project. As a firm we plan to educate and inform our clients on the embodied carbon impact of a building's structural system, and ultimately develop best practices to advise them on the strategies we can take to reduce the overall environmental impact of their buildings.

Announcing our firm's commitment to the SE 2050 Program on the company's social media platforms and website was the first step in the journey of spreading the news and informing our clients. EwingCole's SE 2050 Committee will also work with our Director of Sustainable Design, company executives, and our marketing department to develop marketing materials and proposal language related to the SE 2050 Commitment. Our goal will be to include this information as standard in the materials we market to all clients so that the sustainability efforts the firm is making may become the norm across the construction industry.

Network Collaboration

The goal of reducing, and ultimately eliminating embodied carbon from building design is one that the construction industry must work together to achieve. The local NCSEA chapter of our Philadelphia office, the Delaware Valley Association of Structural Engineers, has recently formed a Sustainable Design Committee, championed by its member firms, to advocate for and share knowledge on embodied carbon reduction with local design firms and product suppliers. EwingCole plans to work with our colleagues at the other member firms to develop sustainable design best practices that can be used by all firms in their designs.

Internally, EwingCole has the Thrive@EC group, composed of volunteers from across the company's offices and disciplines, which works to develop the firm's sustainability goals and initiatives. This group provides continuing education and opportunities for further investigation to keep the whole firm engaged on the topics of both embodied carbon and operational energy reduction.