EMBODIED CARBON ACTION PLAN

SLAM

EDUCATION

The SLAM Collaborative, Inc. (SLAM) has an internal team committed to sustainability called the GREEN Team. This team is comprised of architects, interior designers, and engineers since SLAM is an architecture and engineering firm. Each team member specializes in researching different areas of sustainability, and currently there are multiple members within the GREEN Team involved in embodied carbon specific research. The GREEN Team presents to the entire firm multiple times a year about different sustainability topics and project case studies for implementation of these sustainable practices. There is a GREEN Team representative for each Studio, who relays any of the latest news/information from the GREEN Team to their respective studio. The Embodied Carbon Reduction Champion is involved with the GREEN Team. They are responsible for relaying any sustainable information from the GREEN Team to the structural studio.

The Embodied Carbon Reduction Champion is a part of the GREEN Team. The Embodied Carbon Reduction Champion also continues to gather project embodied carbon data for most projects in the structural studio. This person also encourages others in the structural studio to ask for EPD information from the contractor on their projects, along with encouraging others in the studio to bring up EPD submittals and cement replacement (SCM's) during concrete preconstruction meetings as these items are requirements in our concrete specifications.

EDUCATION PLAN

The GREEN Team has presented multiple times on Embodied Carbon to the entire SLAM firm. Each presentation is recorded, so everyone in the firm can always go back and rewatch them. Since the last ECAP, the Structural Studio has leveraged some of these Embodied Carbon presentations and woven them into our new employee information documents so that new employees know where to watch these presentations and will have a basic understanding of what Embodied Carbon is.

The Embodied Carbon Reduction Champion also continues to update the structural studio with embodied carbon data for projects and continues to provide embodied carbon comparisons from different projects so that other structural studio members become familiar with the embodied carbon units of measurement.

REPORTING

This year, SLAM submitted 4 projects to the SE 2050 database, which is more than the 3 projects that were submitted last year to SE 2050. SLAM has formally submitted 10 projects to the SE 2050 database so far.

As SLAM has compiled more embodied carbon data for more projects, comparisons between different projects can be made. It is obvious to see that projects where no cement replacement was done for the concrete foundations end up with higher embodied carbon numbers than projects where cement replacement was implemented. It is also interesting to see the effect of miscellaneous steel has on a project. Often, the miscellaneous steel is not included in our embodied carbon calculations as it would take too long to compile. For a recent project submittal to SE 2050, we compared the embodied carbon data with and without the misc. steel included. This comparison was then shared with the structural studio.

We have also looked at different foundation wall details for specific projects and provided embodied carbon data for each foundation wall detail to further inform our decision.

REPORTING PLAN

It has been determined for now that the Revit material quantity schedules that SLAM has set up for the purposes of estimation can also be utilized for embodied carbon reporting. These Revit quantity schedules have been the most efficient way to measure the total embodied carbon of the structural materials in projects so far. Newer embodied carbon software such as the Next Generation Insite add-in for Revit is currently being researched to determine if this is a viable solution for conducting embodied carbon material measurements for projects.

A more formalized method for measuring the total embodied carbon of the structural materials in a project has been developed. A tutorial was created to explain how to compile the information from the Revit material quantities needed for submission to the SE 2050 database.

SLAM's methodology for finding EPD information is dependent on what phase of design/construction the project is at during the embodied carbon calculation. If the project is still in design phase, industry average numbers for concrete (NRMCA) and steel (AISC) are utilized. If the project is under construction, SLAM's specifications request EPD's from the concrete plant and the steel manufacturer. If those are acquired, then those EPDs are utilized for the embodied carbon calculation. If the project is in CA phase, and EPD's are not provided by the steel and/or concrete manufacturers, then the concrete mix design shop drawings and/or the concrete mix designs in the specifications are utilized to come up with a slightly more accurate number than typical industry average numbers. The scope of the embodied carbon assessment that is done considers phases A1 through A3 of the structural materials.

REDUCTION

SLAM Structural's Steel and Concrete Specifications have been updated to include submittal requirements for EPD's along with final quantities of steel and concrete materials for each mix design. There has also been much research and discussion with local concrete plants about embodied carbon reductions in concrete. This ultimately led to the sustainable updates that have been made to the concrete specifications which include requiring Supplemental Cementitious Materials (SCM's), allowing for Portland Limestone Cement (PLC) concrete, and including more SCM's so concrete plants have more options for compliance. It has been determined that coordinating with local concrete plants will be an ongoing task, especially since SLAM is a national firm and works throughout the United States.

REDUCTION STRATEGY

Short Term
The internal SLAM Structural Studio is looking at other EC savings to reduce the total quantity of structural materials. Some examples include reducing the typical slab on grade from 5 inches to 4 inches or reducing the strength of slab on deck concrete to 3000psi.

Long Term
An ongoing Embodied Carbon reduction goal is to continue to measure and report the embodied carbon for more projects so there is more data to glean potential EC savings from.
Other long-term goals involve including more materials when calculating embodied carbon information for the SE 2050 database. Materials being considered include reinforcement, miscellaneous steel, and connections.

ADVOCACY

The GREEN Team presents webinars throughout the year to all of SLAM about sustainable topics, including embodied carbon. The GREEN Team also reports out to each studio with updates that the GREEN Team is working on. Outside of SLAM, multiple members of the GREEN team are a part of other sustainability related committees such as AIA COTE (Committee on the Environment), NCSEA Sustainability Committee, NCSEA Sustainable Policy Sub-Committee, etc. This year, GREEN Team members have also given presentations to these committees about embodied carbon. Internally, the SLAM structural studio has been working to make the architects at SLAM aware of embodied carbon in general, and that it is important and should be discussed during the project design and with the client.

The GREEN Team has been creating more marketing materials for architects to use when they are in front of clients. Current marketing materials include information about SLAM's commitment to AIA 2030, along with SE 2050.

On the SLAM website there is a sustainability page. This website page consists of information about SLAM's commitment to SE 2050 and AIA 2030. The firm also posted a blog to the SLAM website with information about SE 2050 and SLAM's declaration of commitment to SE 2050.

KNOWLEDGE SHARING NARRATIVE

SLAM Collaborative has marketing documents which explain SLAM's commitment to the SE 2050 challenge, along with the AIA 2030 challenge. The GREEN team has assisted project teams in compiling past project embodied carbon data to present at client meetings to show SLAM's commitment to sustainability. Project teams will reach out to GREEN team members for marketing/client presentation assistance when sustainability is discussed.

LESSONS LEARNED

The structural studio has learned that it is relatively simple to start including EPD and material quantity requirements in specifications, but it is harder to get contractors to adhere to the requirements. These requirements need to get pushed on every project and need to be a point of discussion at concrete pre-construction meetings and before concrete is out to bid.


SLAM