Embodied Carbon Action Plan 2022







As industry leaders, Saiful Bouquet has always pursued sustainability through efficient, resilient, and innovative holistic designs.

We, as a firm, believe that structural engineers have the power and responsibility to make a substantial difference in the worldwide effort to reduce the global warming potential of construction industry.

As signatory of SE2050 Challenge and as leading structural organization in the United States, Saiful Bouquet is fully committed to reduce, and ultimately achieve net zero embodied carbon in its projects by 2050.

This goal can only be achieved by changing the way the industry is currently approaching building design and by bringing innovation, creativity and commitment to sustainable practices in the forefront of our design.

Education

Saiful Bouquet's culture revolves around continuous education and has always been a key factor of our continued success. The Sustainability Think Tank Committee within Saiful Bouquet pro-actively brainstorms and leads the Firm's engineering practices to achieve more sustainable solutions, while educating the office.

Upon signing the SE2050 commitment, a company wide announcement was made to officially engage the whole office in this meaningful industry impact. At the same time, the existing sustainability committee decided to focus the internal company education on three different areas:

Internal Training

Educating our engineers on what embodied carbon is and what are the strategies that Saiful Bouquet is taking on the daily basis to tackle this challenge. This was achieved through a company wide "Embodied Carbon 101" lesson led by our SE2050 Embodied Carbon Reduction Champion!

Green On-boarding Process

Including embodied carbon education as part of all employee on boarding.

Sustainability Resource Library

Making resources such as research papers and seminars on embodied carbon and sustainability practices in structural engineering available to the firm.

We fully understand that our learning on embodied carbon reduction strategies is an ongoing process. Saiful Bouquet's commitment is reflected through the requirement of having engineers attend at least 1 seminar per semester on embodied carbon topic (seminars provided by Carbon Leadership Forum or SEAOSC). Every quarter, the sustainability committee is updating the Firm regarding the current state-of-the-art practices for embodied carbon reduction in construction industry.







Reporting

Measuring for Carbon Neutrality

At Saiful Bouquet, data-driven decision making is a key factor in achieving efficient solutions. In a collaborative environment, this process allows to make more sound and informed decision for the benefit of our industry and client. Measuring and tracking embodied carbon data becomes critical in assessing the current practices and making the right choices in limiting the carbon footprint of the construction industry.

By monitoring and reporting embodied carbon data for our projects, we will be able to contribute to the global effort in understanding the current industry-wide baseline performances, and provide guidance in educating our clients on selecting a more sustainable structural solution.

The Sustainability Think Tank Committee is responsible to explore commercially available tools and best practices to perform LCA, identifying the ones that best fit our work-flow. Tally and EC3 Tool were chosen for their compatibility with REVIT, embedded resources and wide acceptability in the industry. Product specific EPDs shall be used, when available from manufacturers, for better accuracy.

Training on embodied carbon measurement will be incorporated in the firm-wide education program and a technical bulletin on the Firm's practices will be made available to all employees. As part of our ongoing effort to improve our efficiency, REVIT modeling practices will be enhanced for better compatibility with the selected embodied carbon measurement tools.

Life Cycle Analysis (A1-A3) will be conducted at all major design milestones for selected projects. This allows us to not only communicate with our clients regarding the evolution of the GWP of the structure during the design phase, but also enhance our database for better insight in decision making for future projects. Saiful Bouquet is committed to sharing the collected embodied carbon data with our industry partners, including SE2050 initiative. This will be done for at least 2 projects this year and we are committing to implement this process for all major projects by the end of 2023.





In collaboration with our client, Saiful Bouquet utilized Tally to conduct LCA for this Classroom Building for UC Santa Barbara with the goal of targeting LEED Platinum certification. (*Above revit model of UC Santa Barbara Classroom Building*)

Reduction Strategies

Fully realizing the impact of the construction industry in the global warming potential, our embodied carbon strategies focus on the current steps that need to be taken to have a meaningful impact on the embodied carbon footprint of our structures, with the goal of achieving net zero.

Striving Towards Zero Embodied Emissions

Achieving significant reduction in the carbon footprint will only be possible through an efficient use of the construction materials to be used in the project. Concrete being the largest source of embodied carbon in the industry, developing performance-based specifications, easing 28-day requirements for concrete members, incorporating supplementary cementing material in the design-mix, and implementing carbon cure concrete in our projects are among the first steps that Saiful Bouquet is taking to impact our field today.

The actions that we take today will drive our decision and innovation of tomorrow. We understand that accurate data base is one of the key aspect to advise and gear our industry in making the best decision for the our clients. This will allow tomorrow's engineer to advise clients and owner about what structural system to use.

Saiful Bouquet has also already been implementing environmental product declaration submittals in its specification for most of his project and is committed to have this requirement for all its project by the end of 2022.







Opportunities for Material Reduction

Utilizing BubbleDeck voids, not only reduced Entrada Office Building's self-weight, seismic forces, and foundation loads, but also reduced slab concrete volume significantly.

Embrace the Use of Mass Timber

Our team explores multiple schemes and materials with clients early on in the project. We find implementing hybrid systems of concrete, steel, wood, mass timber-CLT, and wood trusses, etc. can help reduce the environmental footprint while improving the tenant experience.

Supplementary Cementing Materials

Saiful Bouquet reduced the cement content of the mat foundation concrete mix design by allowing longer period of time to reach target concrete strength and by allowing up to 40% of cementitious material replacement with fly ash, leading to a significant reduction of the GWP associated to it!

Advocacy

Where there is a will, there is ALWAYS a way!

Saiful Bouquet thrives with challenges and innovations. The goal of achieving net zero carbon by 2050 can only be achieved if the whole industry moves in the same direction. From owner to contractor, through arch and engineering, we all need to support each other in this meaningful goal. Saiful Bouquet wants to be in the forefront of this challenge for tomorrow's generation.

The purpose of Saiful Bouquet Think tank Sustainability committee is to not only educate our engineers within our company but also promote the best practices and discuss alternate solution with our peers. Saiful Bouquet has been part of technical panels among our peers and will continue to increase its presence.

As signatory of the SE2050 Challenge, we are committed to bring the goal of net zero carbon to the forefront of all our project by the end of 2022.



Public Engagement

Saiful Bouquet is committed to engage in industry related lectures, technical panels, and seminars related to SE 2050 Commitment and advocating embodied carbon reduction.





Our team regularly engages upcoming engineers by presenting case studies and industry best practices at higher education institutions throughout Southern California.



Thought Leadership / Knowledge Sharing

Sharing knowledge, SE 2050 Commitment efforts, and best practices through external media such as our website, blog, social media, and other on-line platforms.

Meet Our Sustainability Committee

Saiful Bouquet is an award-winning structural engineering firm engaged in providing collaborative and costconscious design solutions.

Since its inception in 1997, Saiful Bouquet has taken pride in developing a highly diverse practice, going beyond traditional structural engineering limits to deliver practical design solutions for new and existing buildings across a spectrum of market sectors.



Nofel Teldjoune Senior Project Engineer SE2050 Embodied Carbon Champion



Rex Zhang Senior Project Engineer



Nick Ha Senior Project Engineer



Rishabh Singhvi Project Engineer



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