SE 2050
EMBODIED CARBON ACTION PLAN
2026-2027

In March 2021, Simpson Gumpertz & Heger (SGH) signed on to the Structural Engineering Institute (SEI) SE 2050 Commitment program. In our first five years, we reported forty-four projects to the SE 2050 database, presented about the program internally and externally, disseminated educational resources, and updated our specification and proposal templates to incorporate carbon-reduction strategies, life-cycle assessment (LCA), and green material procurement strategies into structural design projects.

As we head into our 2026-2027 term, we will use this Embodied Carbon Action Plan (ECAP) as a guide to continue fulfilling our commitments to the program and as a resource to share highlights and lessons learned to date. We will also continue providing updates to our firm via internal presentations and communications, and share our knowledge externally with clients and the industry via project work and external presentations.

In parallel with our regular SE 2050 commitments, we are strategizing how the SE 2050 program will look at SGH in the future by streamlining and improving our processes and expanding upon the lessons we have learned.

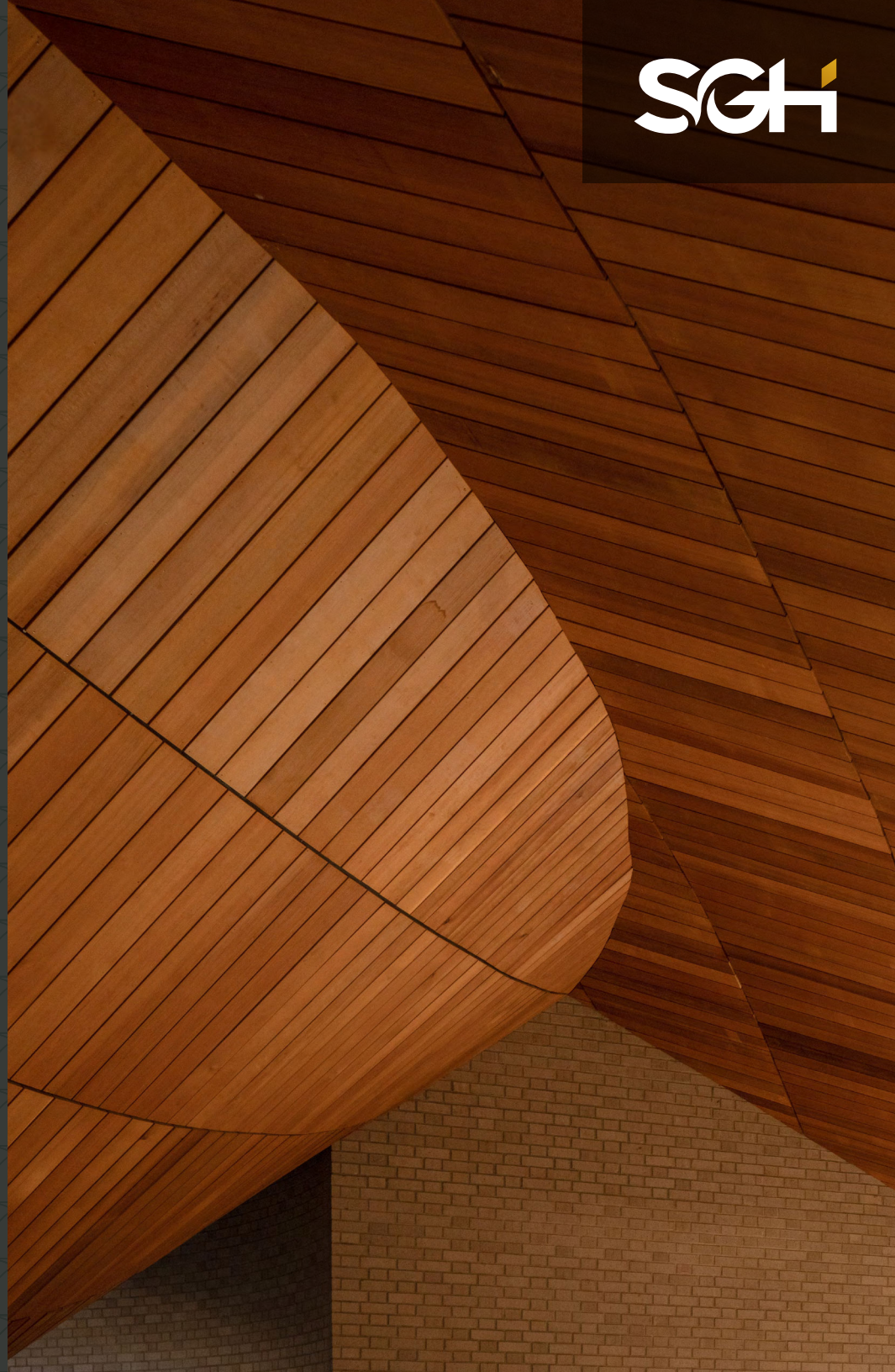

Photo: Downtown Cary Park, Cary, NC, by Tzu Chen

LEADERSHIP

In September 2025, SGH lost Associate Principal Mike Tecci unexpectedly following a tragic accident. Mike had been with SGH since 2003, serving as SE 2050 co-champion with Julia Hogroian since 2022. He was instrumental in generating momentum for our working group and helping it grow after Mark Webster stepped back from his role as SGH's inaugural SE 2050 champion. We are grateful for Mike's leadership and his lasting impact on embodied carbon reduction at SGH and in the broader structural engineering community. We dedicate this ECAP in his memory and strive to follow in his footsteps to advance SE 2050 initiatives.

In January 2026, Matthew Sander became SGH's new co-champion. He and Julia will continue to lead the group through March 2027. Moving forward, SGH's embodied carbon co-champions will serve the group for offsetting two-year terms.

We are happy to have Zack Chabot rejoin our working group this year. Zack serves on the SE 2050 National Committee as the database task group leader and offers invaluable insight to our working group.

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EDUCATION

Our goal is to incorporate embodied carbon reduction into our engineering decisions. We provide educational materials and presentations, as well as regular learning opportunities to stay up to date on the latest practices. We continue to work with all internal departments to educate our teams on embodied carbon efforts. We also continue to work with community organizations to educate our team members on new breakthroughs in the industry.

ACTIONS AND COMMITMENTS

- To increase companywide awareness, we created a new page on SGH's intranet to centralize key SE 2050 resources and contacts within our firm.
- We continue to update our internal embodied carbon library with new resources from SE 2050, the Carbon Leadership Forum (CLF), and other external sources.
- We created a dedicated Environmental Product Declaration (EPD) library for team members to easily access available embodied carbon data.
- We shared example proposals and exemplified how to include SE 2050 language in our new projects. We will continue to disseminate and emphasize this information in company communications to establish this language as the baseline in our proposals.
- We presented our SE 2050 goals and progress at our "State of Sustainability at SGH" companywide presentation last year. We will join our peer SGH sustainability working groups—including the Sustainability Special Interest Group (SIG), Building Science/Passive House Group, and Marketing department—for another presentation this summer.
- We will distribute an updated survey after our annual "State of Sustainability at SGH" presentation to gauge the firm's knowledge of embodied carbon, track internal trends, and understand where to focus our efforts this year and beyond.
- SGH's Sustainability SIG is actively engaged in promoting firmwide education programs for embodied carbon reduction and SE 2050 as part of its broader sustainability-related purview. The group identifies, creates, and promotes resources to help our team members learn about embodied carbon and hear about ways to reduce our footprint. The Sustainability SIG publishes an internal newsletter that includes content provided by the SE 2050 working group and shares many of our education-related initiatives and project highlights.
- We will give a companywide presentation focused exclusively on the SE 2050 working group's five-year progress, as well as our future trajectory. We will highlight resources available to all our team members, updated material specifications, business strategies, and embodied carbon policies that impact our work.

- We will continue to give internal presentations to working groups and technical divisions to promote our SE 2050 commitment. These smaller meetings create opportunities for internal dialogue and discussions.
- We will distribute our ECAP to the firm via SGH's internal Sustainability SIG newsletter and intranet platform.
- Members of our staff regularly attend external education programs and sustainability committee meetings with SE 2050, CLF, Built Environment Plus (BE+), AISC, ASCE, SEI, AIA, and local Structural Engineers Association chapters.
- The SE 2050 reporting group continues to refine its Life Cycle Assessment (LCA) training modules as part of a larger effort to engage more team members in project reporting. We will update these modules to reflect the new SE 2050 database entry requirements.
- Our employees are actively involved in mentoring local structural engineering undergraduate students on how to incorporate embodied carbon reductions into their projects by exploring design and material-specific strategies. We also actively participate in design critique sessions for universities near our offices, offering engineering feedback, including embodied carbon reduction strategies.

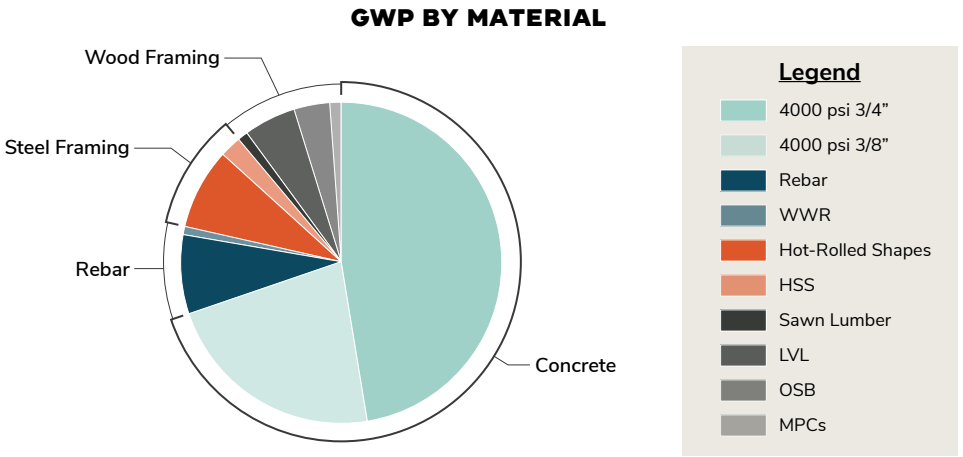
Photo: Horizon House, Hokkaido, Japan, courtesy of Harvard Graduate School of Design

REPORTING

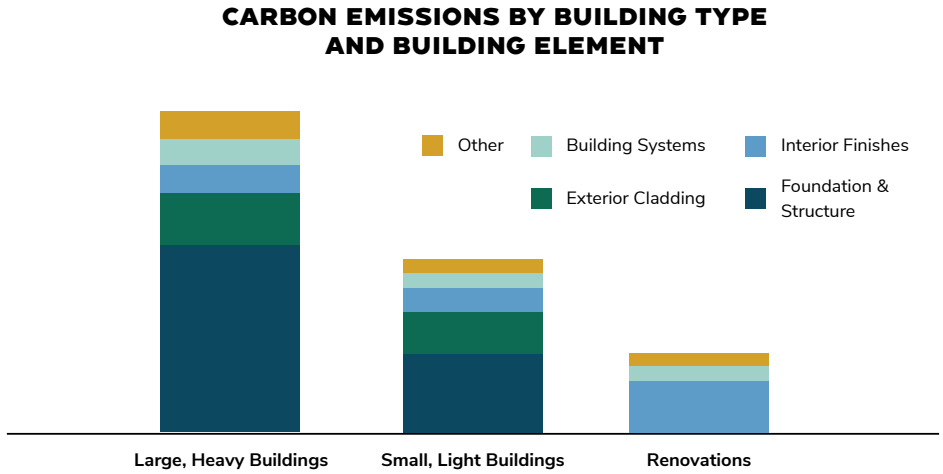
Tracking embodied carbon on our projects across multiple offices helps us establish internal benchmarks for different project types and implement reduction strategies. Contributing embodied carbon data from our projects to the SE 2050 database also helps develop benchmarks for the industry. We will continue to monitor company projects that qualify for SE 2050 program requirements to reevaluate our reporting targets.

COMMITMENTS

- We will calculate embodied carbon for at least fifty percent of our qualifying structural design and renovation projects this year. We will seek projects that are substantially complete or beyond the design phase from at least half of our major office locations with qualifying project work. We will extract structural material quantities on all reported projects no earlier than the end of the construction documents phase.
- We began re-evaluating and adjusting our reporting practices to align with the requirements of the new SE 2050 database, which launched in October 2025. We will continue updating the references and tools we created to reflect the database changes.
- We created an internal tutorial for uploading projects into the SE 2050 database. We will update this tutorial to reflect the changes in the SE 2050 database.
- We distributed embodied carbon reporting tutorials to additional engineers throughout 2025 and worked with them to report on qualifying projects. We gathered feedback to improve existing tutorials. We will continue to vet our tutorials after updating them to accommodate the new database standards and incorporate participant feedback.
- We will collaborate with our Building Information Modeling (BIM) team to research different products and explore the best options for reporting tools to revamp our reporting processes and align them with the SE 2050 database updates. This includes updated software and updated Revit schedules to optimize data extraction.
- We will continue developing our understanding and skillset for reporting projects through continued learning about the various tools available for calculating embodied carbon, such as Revit-integrated LCA tools with data visualization capabilities.
- This year, we reported on a major renovation project for the first time. We will continue to encourage reporting on major renovations in addition to new structures.
- We will continue assisting our internal design teams in measuring the embodied carbon of projects through easy-to-use tools, such as the Embodied Carbon Order of Magnitude (ECOM) tool on the SE 2050 website and C.Scale for measuring the impacts of structural materials.



Graph: Previous project report showing Global Warming Potential (GWP) by material.



Graph: Taken from SGH's article, “Embodied Carbon in Structures,” adapted from CLF’s “The Time Value of Carbon.”

ADVOCACY

SGH continues to advocate for the importance of SE 2050 and the need to address embodied carbon in the built environment. Through our team's involvement with various industry committees, we continue to promote the mission of SE 2050.

COMMITMENTS

- SGH representatives and four outside speakers presented a five-part webinar series on adaptive reuse and repositioning projects in California. The 90-minute webinars over five weeks brought together engineers, architects, developers, and other AEC experts. Panelists shared insights and examples, and discussed the sustainability implications of reusing structures.
- Our Marketing department audited our sustainability-related marketing materials as well as internal and external resources to determine how to best promote our sustainability efforts and capabilities. Using this information, we will update our external website and internal resources to showcase SGH's environmental stewardship and emphasize our embodied carbon expertise.
- We continue to be active in the SE 2050 Database Task Group, Low-Carbon Concrete and Policy Groups through the CLF Boston Chapter, the Leadership Group of the SEI SE 2050 Committee, co-leadership of the SE 2050 Resources Working Group, the AISC Sustainability Committee, ACI Committee 130 (Sustainability), and the SEA-MW Sustainable Design Committee working on embodied carbon initiatives.
- SGH is a corporate sponsor of CLF, U.S. Green Building Council, and BE+. In June 2025, we sponsored the SEI Conference "Towards Zero Carbon" event in Boulder, CO.
- SGH is collaborating with other structural engineers and the wider AEC community to improve the availability of low-carbon concrete and EPDs in the Boston area and establish embodied carbon benchmarks for concrete.
- We will focus on our partnerships with key industry players to continue innovating low-carbon designs.
- We will continue emphasizing our in-house embodied carbon capabilities in our proposals, project cut sheets, and client communications.
- We publish our ECAP annually on sgh.com and share the news on our social media channels.
- We will continue meeting with clients and partners to discuss the importance of embodied carbon reduction strategies. We have developed and presented client-specific materials, including embodied carbon reduction strategies, on potential future projects.

- Recognizing the critical role of policy drivers in reducing embodied carbon, our SE 2050 team is working with local jurisdictions and state legislators to implement embodied carbon reduction incentives through zoning requirements, buy-clean legislation, and other related mechanisms.
- We will promote our team members' involvement and professional activities, addressing embodied carbon internally and externally.
- We continue to look for opportunities to collaborate with industry groups and other firms to share embodied carbon education.

Photo: Truesdell Elementary School, Washington, DC

REDUCTION

We continue standardizing our design and proposal processes to consistently reduce embodied carbon in each step of the design process. SGH will continue developing effective strategies to help us meet our embodied carbon reduction goals.

COMMITMENTS

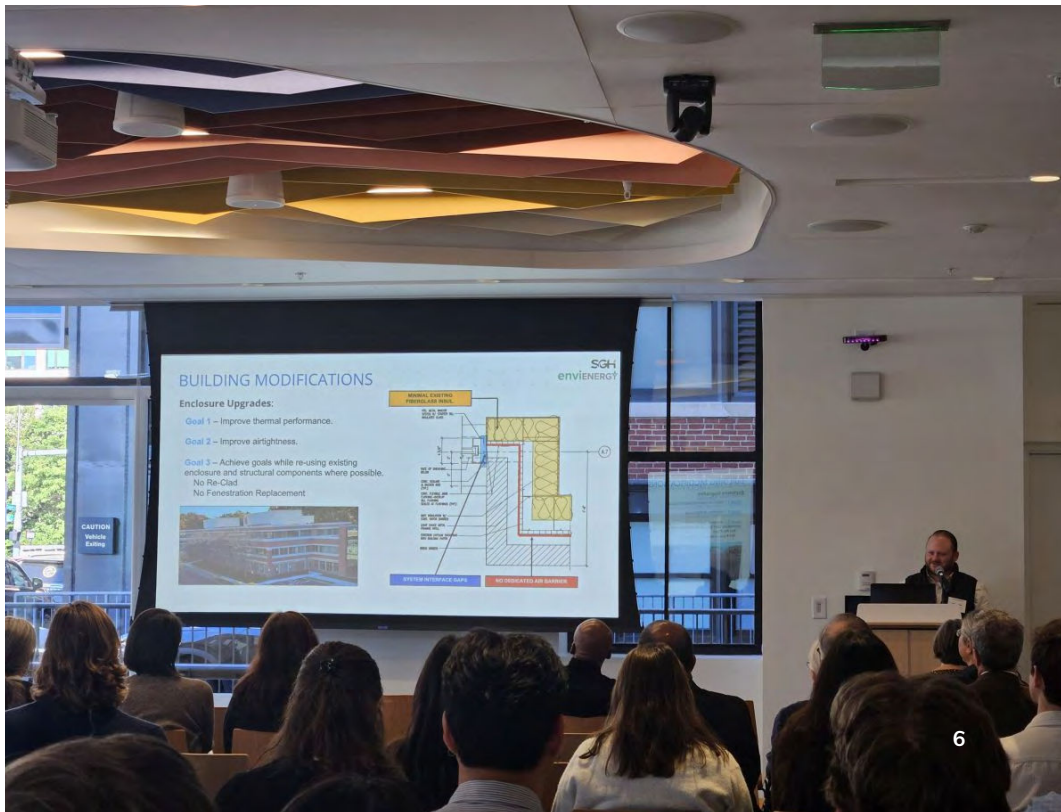
- We introduced new embodied carbon reduction language in our concrete and structural steel master specifications.
- We incorporated CLF's guidelines and recommended embodied carbon baselines into our glulam and cross-laminated timber (CLT) master specifications.
- We created an Embodied Carbon Reduction Checklist as a reference to help our design teams reduce carbon during each project phase.
- We continue working on a DOE-funded research team developing a deconstructable hybrid steel-CLT composite floor system. This system can be used to construct carbon-negative buildings up to at least eighteen stories tall.
- We actively help develop codes and standards. Our work includes commenting on the Massachusetts embodied carbon provisions with the SEI Sustainability Committee, commenting on the Massachusetts Embodied Carbon Intergovernmental Coordinating Council embodied carbon recommendations, and commenting on updated International Code Council (ICC) embodied carbon language.
- We will strive to reduce embodied carbon in our own work and support the building design community in its ongoing pursuit of net-zero embodied carbon projects.
- We will coordinate with our clients to identify appropriate projects for estimating embodied carbon throughout design development and aim to reduce it over the course of the project.
- We will publish a topic brief on sgh.com with guidance on specifying lower embodied carbon concrete.
- We will continue analyzing embodied carbon reduction data on SGH-completed projects to compare with the baseline values we calculated in previous years. We will compare the embodied carbon intensity of projects submitted during the 2025-2026 reporting season with these baseline values to look for any trends.
- We will continue seeking out and responding to requests for proposals and requests for qualifications with strong sustainability components. These RFPs and RFQs give us opportunities to highlight our sustainability competencies and motivate us to expand our competencies.

Photo: 325 Binney Street, Cambridge, MA

HIGHLIGHTS

Here, we share several program highlights from March 2025 to March 2026.

- We reported ten projects to the SE 2050 project database from two different offices.
- In March 2025, Julia Hogroian and Mark Webster presented at the SEAMASS Embodied Carbon Webinar Series. Mike Tecci helped to moderate the webinars.
- We hosted Andrew Himes of CLF for an Earth Day presentation in April 2025.
- In June 2025, Matthew Sander participated as a panelist in the session, “Strategies on Embodied Carbon Reduction,” sponsored by SEA-MW, with a focus on concrete design and embodied carbon reduction strategies.
- Julia Hogroian presented “Getting the Specs Right: The Role of Specifications in Concrete Decarbonization” at the ACI Fall 2025 Convention in Baltimore, MD.
- We continue working with SGH’s building enclosure consulting teams to apply LCA skills and best practices to roofing and facade comparison studies. This past year, we conducted laboratory research comparing key physical properties of four non-petrochemical-based rigid board insulation products to three conventional foam plastic products. We presented preliminary results to the Boston Society of Architects' Building Enclosure Council (BSA BEC) in September 2025 and the local chapter of Construction Specifications Institute (CSI Boston) in February 2026.
- Our building enclosure consulting teams also met with roofing manufacturers Sika, GAF, and the Vinyl Institute to discuss their efforts to address the environmental impacts of manufacturing, installing, and disposing of roofing membranes. We also provided a tour of our Applied Science & Research Center and discussed ways to partner on future research.
- Working group members created an Embodied Carbon Reduction Checklist for reference. This checklist highlights opportunities to reduce carbon at each phase of a project.
- We hosted Maconda Solutions for a presentation on steel reuse in the United Kingdom, allowing our firm to better understand how to incorporate steel reuse in the U.S. market.
- We expanded embodied carbon language into project specification templates to match CLF baseline values for the embodied carbon of wood.
- We provided guidance to jurisdictions on the implementation of embodied carbon measurement requirements.



Photos: SGH employees presenting about embodied carbon reduction strategies.

LESSONS LEARNED

- The accuracy and quality of an LCA performed through a Revit add-in is only as good as the model itself. General material assignments must be consistent, and concrete design information (e.g., compressive strength, weight, reinforcement layout) should be included in the modeled element, as these details can greatly impact LCA results. This guidance needs to be incorporated into learning modules for engineers as they learn to conduct their own LCAs and create Revit models that accommodate LCAs from the start.
- Organizing project information and tracking design changes are critical to performing an accurate LCA. Without a procedural framework, there is no effective or consistent way to implement this practice firmwide.
- Early conversations with clients are important to build confidence in the effectiveness of embodied carbon reduction strategies. However, even an educated client will often need to be convinced of the merits of embodied carbon reduction strategies.
- For resources to be effective, awareness and ease of access are as important as quality.
- Internal education requires frequent updates through multiple communication channels.
- The industry is open and ready to implement strategic changes to improve the built environment by reducing embodied carbon. It is important that all our firm leaders are informed and ready to discuss embodied carbon with prospective clients.
- Designers can play a role in embodied carbon reduction through conscious design and material specification. However, this effort needs to be shared across the design team and effectively communicated to the owner and construction team to ensure these design goals are achieved in the completed project.
- There are numerous external programs and organizations available for workforce training specifically related to sustainability content.

Photo: Naval Hospital Replacement Project, Camp Pendleton, CA, by Ed LaCasse

SIMPSON GUMPERTZ & HEGER SE 2050 TEAM

Simpson Gumpertz & Heger (SGH) is a national engineering firm committed to delivering holistic advice for our clients' most complex challenges. We leverage our collective and diverse experience, technical expertise, and industry knowledge of structures and building enclosures, advanced analysis, performance & code consulting, and applied science & research to deliver unrivaled, comprehensive solutions that drive superior performance. With 800 employees in office locations throughout the United States, SGH's industry-leading teams constantly seek to advance the meaning of what's possible.

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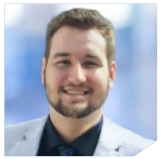

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