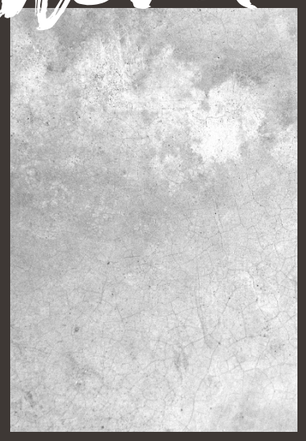
Embodied Carbon Action Plan

SUBMISSION | 2024

element
structural engineers, inc.

We are Element



Meet Element

Element Structural Engineers (ESE) is a full-service structural engineering firm providing structural consultation, analysis, and design services for a wide range of projects throughout Northern California.

Element was founded in 2011 by Principal, Thuy Fontelera. Our team of licensed engineers has more than 70 years of combined experience, with the capacity to provide creative and economical design solutions while assisting with controlling construction costs.

Our commitment to excellent service is comprised of being responsive, strict attention to detail, and being conscious of the project schedule. We pride ourselves on these values which have been the core success of our business and repeated clientele.

Our Mission

To elevate our client's vision with passion, creativity and purpose.

Our Office Locations

Newark Office: 39899 Balentine Dr Suite 185, Newark, CA 94560

Oakland Office: 580 2nd Street, Suite 255 Oakland, CA 94607

Our Mission and Commitment

The ESE team's commitment to the community is at the center of everything we do. Our mission is to elevate our client's vision with passion, creativity, and purpose. For this to happen, it is imperative that community is at the heart of it all.

Our commitment to our community comes from our actions. From our leadership team to our junior engineers, we're committed to positively impacting the communities where we live and work. Our local philanthropic efforts include support for affordable housing and gender equality, providing educational opportunities through our internship program at Ohlone College, partnering with Cristo Rey De La Salle East Bay High School to develop hands-on training for students and much more.

We continually seek opportunities to contribute our time, funds, and expertise to supporting local organizations that encourage growth and education - because it's not just what we do, but how we do it that makes a difference.

Our Community Partnerships

ABODE SERVICES

EBHO

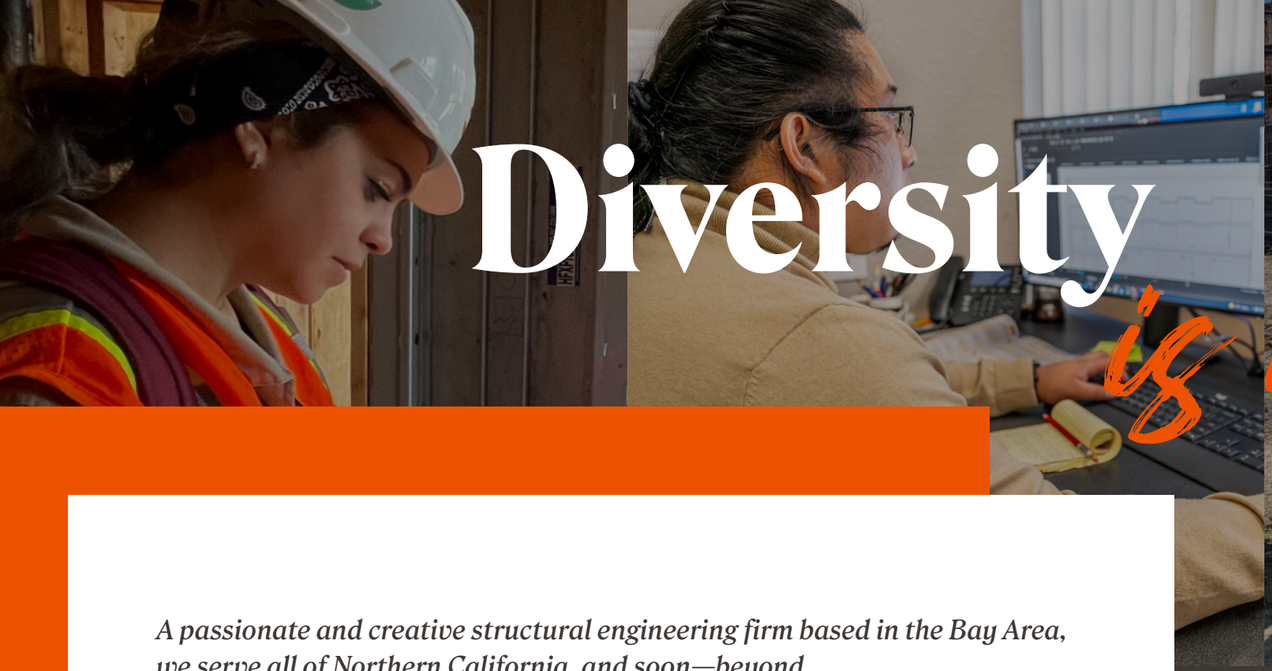
Mission Valley ROP
Leader In Career Technical Education

NPH NORTHERN CALIFORNIA

Structural Engineers Association SEA NORTHERN CALIFORNIA

Habitat for Humanity

CRISTO REY DE LA SALLE
EAST BAY HIGH SCHOOL
ST. ELIZABETH CAMPUS



Diversity *is our strength.*

A passionate and creative structural engineering firm based in the Bay Area, we serve all of Northern California, and soon—beyond.

Woman and minority-owned, we own the concept of diversity, from our projects to materials, skillset and staff. We empower our engineers to lead.

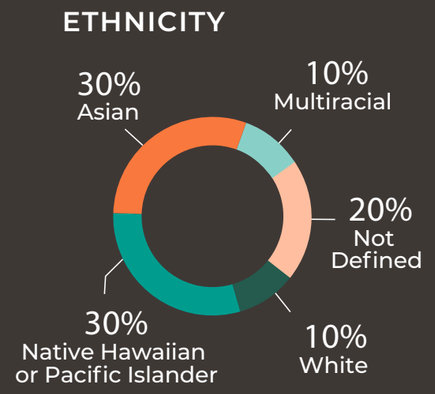
At ESE, we strive to stay on the leading edge of technology. In addition to standard CAD software, we also offer Revit® and BIM 360 integration, which allows for stronger collaboration between the architect, builder, and engineers.

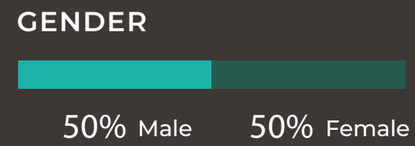
Each project is assigned to a single design team that manages it from inception to completion. This allows the team to fully understand the project inside and out. Clients benefit from having a single point of contact throughout the project lifecycle.

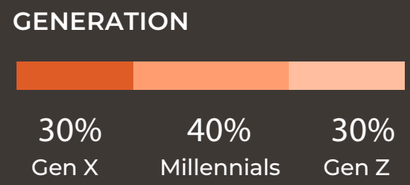
Our clients know they can count on ESE to consistently deliver quality and highly detailed work at competitive prices.

Even more importantly, we provide outstanding, responsive customer service and are committed to seeing each project through from start to finish.

The diversity of the ESE team







We engineer the change we want to see.

As a structural engineering firm that is founded and led by women and people of color, we know through experience that intentional inclusivity creates stronger concepts, deeper understanding and more vibrant communities.

At Element we strive to create a sense of belonging in our team, partners, clients and the communities we represent. From developing and empowering diverse talent to championing affordable housing and gender equality, we're in it for the IMPACT.

TABLE OF CONTENTS

INTRODUCTION

Our Vision

Executive Summary

Structural engineers must not take a passive role in addressing embodied carbon in the structural systems we design. Structural systems typically represent about half of the embodied carbon in a building project. Therefore structural engineers must be an active part of the green building project team in order to reach carbon emissions reduction targets. The leaders at Element SE have recognized this problem and are not satisfied with the status quo.

At Element Structural Engineers, we are committed to achieving net-zero embodied carbon in structural systems by 2050. The following Embodied Carbon Action Plan (ECAP) outlines our vision, strategy, reporting, reduction, and communication with which we have implemented for the coming year.

Engineering community together,

Thuy Fontelera

Principal/Founder

EDUCATION

Our Strategy

Path to Achieving Net Zero

Q1 2023	Q2 2023	Q3 2023	Q4 2023
Submitted SE 2050 commitment letter. Internal announcement joining SE 2050 Commitment. Staff member completed the demo of Athena IEB and the team selected Athena IEB as the preferred LCA software.	Internal virtual presentation on SE2050, embodied carbon, and the ECAP requirements. Completed first LCA on an ESE project.	Update structural general notes and material specifications to have higher SCM requirements for all of our standard concrete types.	Engineering staff attended the SEAONC SDC + AIA COTE Present: Implementing Low Carbon Concrete Standards webinar.

After first submittal of ECAP

Q1 2024	Q2 2024	Q3 2024	Q4 2024
Update proposal template to include sustainability and highlight our SE 2050 commitment. Completed a second LCA on an ESE project. Develop standard procedure for data collection and reporting using our selected LCA software.	Submit ECAP. Distribute ECAP internally and review in an all staff meeting.	Evaluate another LCA software and determine if Athena or another program will be used moving forward.	Completed at least one additional LCA on an ESE project.

Our Path To Achieving Net Zero

The first step for our team after submitting our commitment letter is to educate our staff about what SE 2050 is, the impacts in participating, and how we reach net-zero embodied carbon by 2050. Below are the milestones our team is currently working on:

- On **March 24th, 2023** we notified our staff with an internal announcement flyer via email.
- We held a webinar meeting on **April 28th, 2023** with all staff and hosted a presentation and a trivia quiz afterwards to ensure that staff had understood the concepts and materials necessary for the ECAP (Embodied Carbon Action Plan) submittal.
- Our team attended The Structural Engineering Association of Northern California (SEAONC) Sustainable Design Committee and the American Institute of Architects (AIA)'s **Implementing Low Carbon Concrete Standards** event in person to learn more about the adoption of low embodied-carbon concrete.
- Provide an easily accessible SE 2050 content library that includes step-by-step instructions, resources, and Carbon Leadership Forum (CLF).

  All staff has access to the shared company drive.
- Share embodied carbon reduction strategies with your firm as outlined in Top 10 Carbon Reducing Actions for Structural Engineers document produced by SE 2050 which can be found here.
- Distributed our ECAP to our team members upon publishing.

EDUCATION

Meet Our Experts

At Element Structural Engineers, we are committed to living up to our standards of "Engineering the Change We Want to See."

Our leaders have a shared vision to be part of that change and have committed to researching and learning more about SE 2050.

Our team began the SE 2050 process in January 2023 and continue to make progress in monitoring the carbon emissions of the structures we design.

“To achieve our SE 2050 targets, it is imperative for structural engineers to emphasize the interconnectedness of these targets with all stakeholders during the project lifecycle. With a collaborative approach with the project team, it facilitates more efficient structures which leads to reduced overall building weight due to decreased material density and quantity which has a domino effect on gravity and lateral framing systems and the foundations that support these elements. Early dialogue with the Architect, Owner, and Contractor fosters a more efficient design process and structure, which ultimately enhances the value of the final design.

JAMES ENRIGHT | ASSOCIATE PRINCIPAL | EMBODIED CARBON CHAMPION

THUY FONTELERA

PRINCIPAL & FOUNDER | PE, SE, LEED AP BD+C

Mrs. Fontelera is a licensed structural engineer with over 22 years of experience and expertise in structural engineering, including project management and executive experience in QA /QC roles. She is a passionate supporter of resolving the housing crisis, using her skills to engineer the change she hopes to see.

JAMES ENRIGHT

ASSOCIATE PRINCIPAL | PE, SE, LEED AP

EMBODIED CARBON CHAMPION

Mr. Enright brings over 14 years of structural engineering experience in a broad range of project types including project types including residential, commercial, healthcare, education, tenant improvement, adaptive reuse, and seismic retrofit.

PRAKHAR SHRESTHA

PROJECT ENGINEER | PE

Mr. Shrestha is a licensed civil engineer with over 6 years of experience and expertise in structural engineering. Building design and engineering services have been performed for a variety of projects including multi-unit residential, commercial, retail, and single-family residential project. These projects include design of seismic and gravity from a multitude of materials including, steel, light gauge steel, concrete, wood, masonry, and retaining structures. He has been involved in retrofits to existing structures including single family and multi-unit project to bring the building up to current codes while working with the existing framing as much as possible.

BAO HOA PHAM

BIM TECHNICIAN

Ms. Pham received her BA Architecture with a Minor in Architectural Engineering from University of San Francisco. She is interested in sustainability and the investigating the nuances between architecture and engineering. During her undergrad, she learned about the multiple types of aesthetics of a building and was always curious about how they can withstand significant earthquakes or storms with extreme wind conditions.

Elements Of Our SE 2050 Initiative

In order to make this a successful program, the SE 2050 team has created a framework that will create role clarity, communication and outreach efforts both externally and internally, planning and goal setting, documentation and processes for consistency, and more. This will be our guide to keep us focused on our efforts.

- STRATEGY, PLANNING, & GOAL SETTING
- METRICS & REPORTING
- DOCUMENTATION & PROCESS
- SE 2050 TEAM COMMUNICATION
- CLIENT & VENDOR COMMUNICATION, OUTREACH, & TRAINING
- STAFF COMMUNICATION & TRAINING
- ACCESSIBLE EDUCATIONAL MATERIALS
- DIVERSITY, EQUITY, INCLUSION, & BELONGING MINDSET
- CONTINUOUS GROWTH

DOCUMENTATION

Commitment Letter

Key Highlights

- Stating who we are and why we want to commit to SE 2050.
- Understanding that addressing embodied carbon in structural systems needs to happen now and this begins with our commitment.
- In order to be considered as a signatory firm of SE 2050, our firm is following the steps as outlined by the SE 2050 guidelines.

element
structural engineers, inc.

Letter of Commitment
39675 Cedar Blvd #295C,
Newark, CA 94560
(510) 573 - 1557

March 1, 2023

TO: Laura Champion, Director, Structural Engineering Institute
FROM: Element Structural Engineers, Inc.
SUBJECT: Letter of Commitment to the SE 2050 Program

Letter of Commitment to the SE 2050 Program

Dear Laura,

Element Structural Engineers, a woman and minority-owned sixteen-person firm with headquarters located in 39675 Cedar Blvd #295C, Newark, CA 94560, 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.

As a community-driven structural engineering firm that lives out our core values, we know that we must take an active role in addressing embodied carbon in the structural systems we design. We see that change needs to happen now. With that, we are committed to the goal of designing net zero embodied carbon structural systems by 2050. We are committed to engineering the Change We Want to See as a SE2050 signatory firm.

We commit to take the following steps which are part of the SE 2050 Commitment Program:

STEP 1: Within six months and annually henceforth, we commit to reporting an Embodied Carbon Action Plan (ECAP) and permit the ECAP document or form be made public on the SE 2050 website.
STEP 2: Within one year and annually henceforth, we commit to submit data to the SE 2050 project database in a collaborative effort to understand embodied carbon in structural engineering projects and to set attainable targets for future projects.

We are excited to join this coalition and industry effort to achieve the goals of the SE 2050 Program.

Engineering community together,

Thuy Fontelera, S.E., LEED AP
Principal

DOCUMENTATION

Internal Announcements

Jennifer Vanderarend <jvanderarend@elementse.com> Fri, Mar 24, 2023, 1:30 PM

to Prakhar, Chinh, Ian, Gene, Ying, James, Justin, Gabriela, Sarah, Bao, Sun, George, Anisa, Seung, Thuy, Billy

Hello Team,

As structural engineers, we must not take a passive role in addressing embodied carbon in the structural systems we design. By prioritizing the reduction of embodied carbon, through the use of less and/or less impactful structural materials, we can more easily work toward net-zero embodied carbon structural systems by 2050.

The leaders at Element SE have recognized this problem and want to actively change what is considered the status quo in the industry. Therefore, we are committed to achieving net-zero embodied carbon in structural systems by 2050 and will continue to live up to our motto of "Engineering the Change We Want to See."

With that, we are excited to announce that we will be joining the 100+ firms already registered by committing to SE 2050! SE 2050 stands for Structural Engineers 2050 Commitment Program which is a response to the SE 2050 Challenge in 2019 by the Carbon Leadership Forum (CLF) which states "All structural engineers shall understand, reduce and ultimately eliminate embodied carbon in their projects by 2050." The program was developed by the Sustainability Committee of the Structural Engineering Institute (SEI) of the American Society of Civil Engineers (ASCE).

The program goals are to:

1. Educate structural engineers
2. Engage in embodied carbon tracking programs
3. Report on current embodied carbon impacts
4. Advocate the new approach of structural design to clients.

We will be having a virtual lunch and learn on April 7th, 2023 where our SE 2050 expert can share more in-depth about the program. At the end of the presentation, there will be a quiz and the top 3 winners will receive a prize!

We are also excited to share that James Enright is our first Embodied Carbon Champion. In this role, he will be overseeing the process while making sure we are adhering to SE2050 requirements.

As we continue to work together towards our commitment, we are always looking for volunteers to take part in our sustainability commitment! We also encourage anyone who is interested in becoming an Embodied Carbon Champion to connect with James to learn more.

Please reach out to the Leadership Team for more information about the opportunities to participate and support our goal.

Best,

--

Jennifer VanderArend
People Cultivator

510.573.1557 x690 | jvanderarend@elementse.com
elementse.com

Element Structural Engineers, Inc.
Newark Office | Oakland Office

Engineering community together

Key Highlights

- We made our official commitment announcement to all staff introducing what SE 2050 is, what becoming a signatory firm means, and its importance to our industry.
- Mentioning how our firm will be committing to the program alongside with over 100+ firms that have already registered.
- Listing out the program goals provided by SE 2050 resources.
- Announcing the virtual lunch and learn date about SE 2050 as well as our selected Embodied Carbon Champion.

DOCUMENTATION

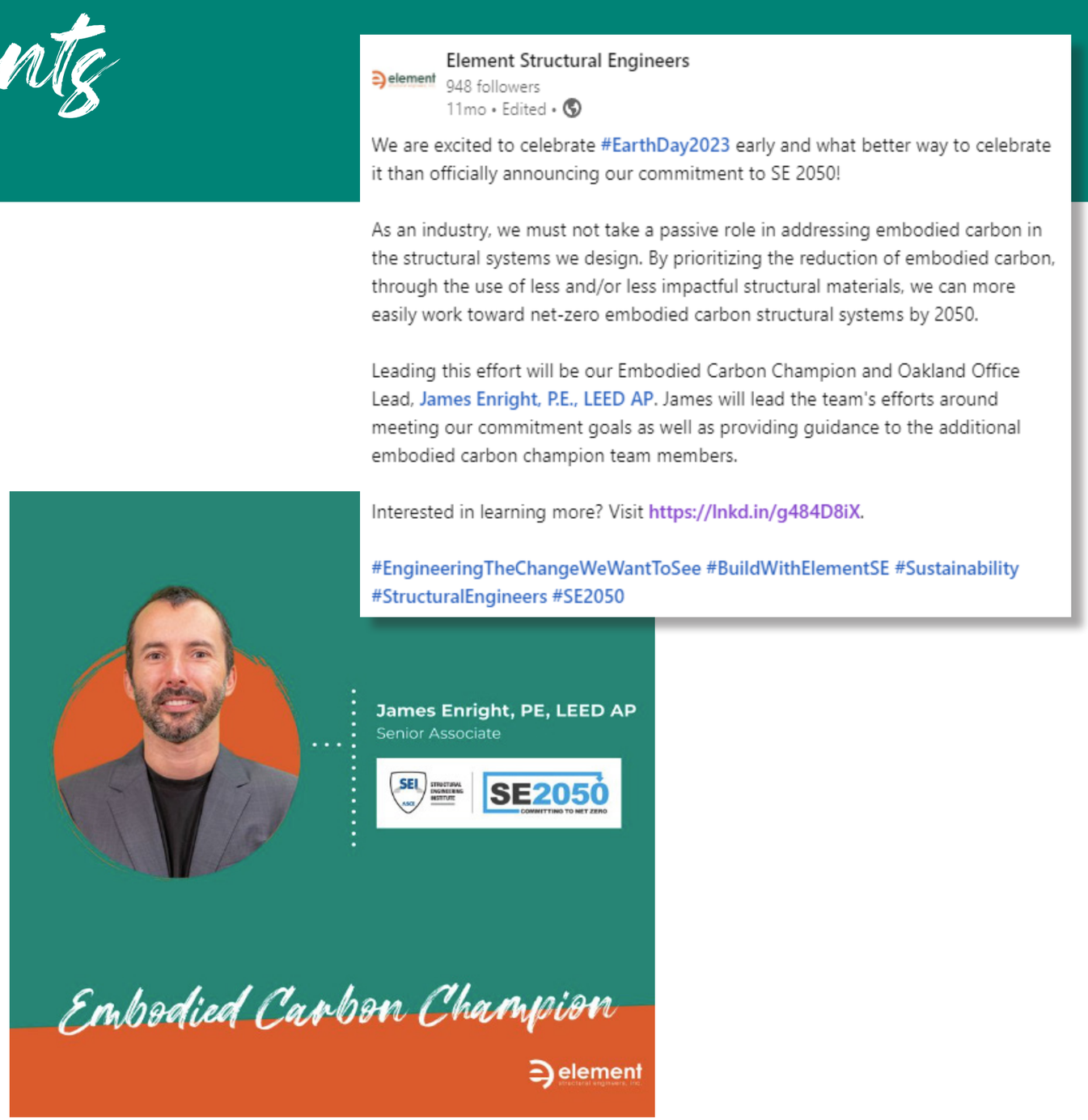
External Announcements

Key Highlights

- Sharing our implementation of prioritizing the reduction of embodied carbon through usage of less impactful materials.
- Announcing our selected Embodied Carbon Champion and his qualifications.
- Including a link for people who want to learn more about SE 2050.

Future Initiatives

- Co-branded social media campaign with sustainability-driven architect and general contractor.
- Features of SE 2050 committee team members.
- Campaign for SE 2050 project case study.



KNOWLEDGE SHARING NARRATIVE

Spreading The Word!

Sharing Our Embodied Carbon Reduction

- Our marketing team has put together a subsection of SE 2050 on our company's website to share about the program and its resources to any of our viewers. The website can be found here.
- The creation of a letter template stating our implementation/methods of sustainability in our engineered designs.
- Mentioning SE 2050 in our company's announcements/news.
- Communicating our SE 2050 goals in presentations to clients and vendors.

Future Initiatives

- Q&A webinar with clients
- Collaboration with SEAONC

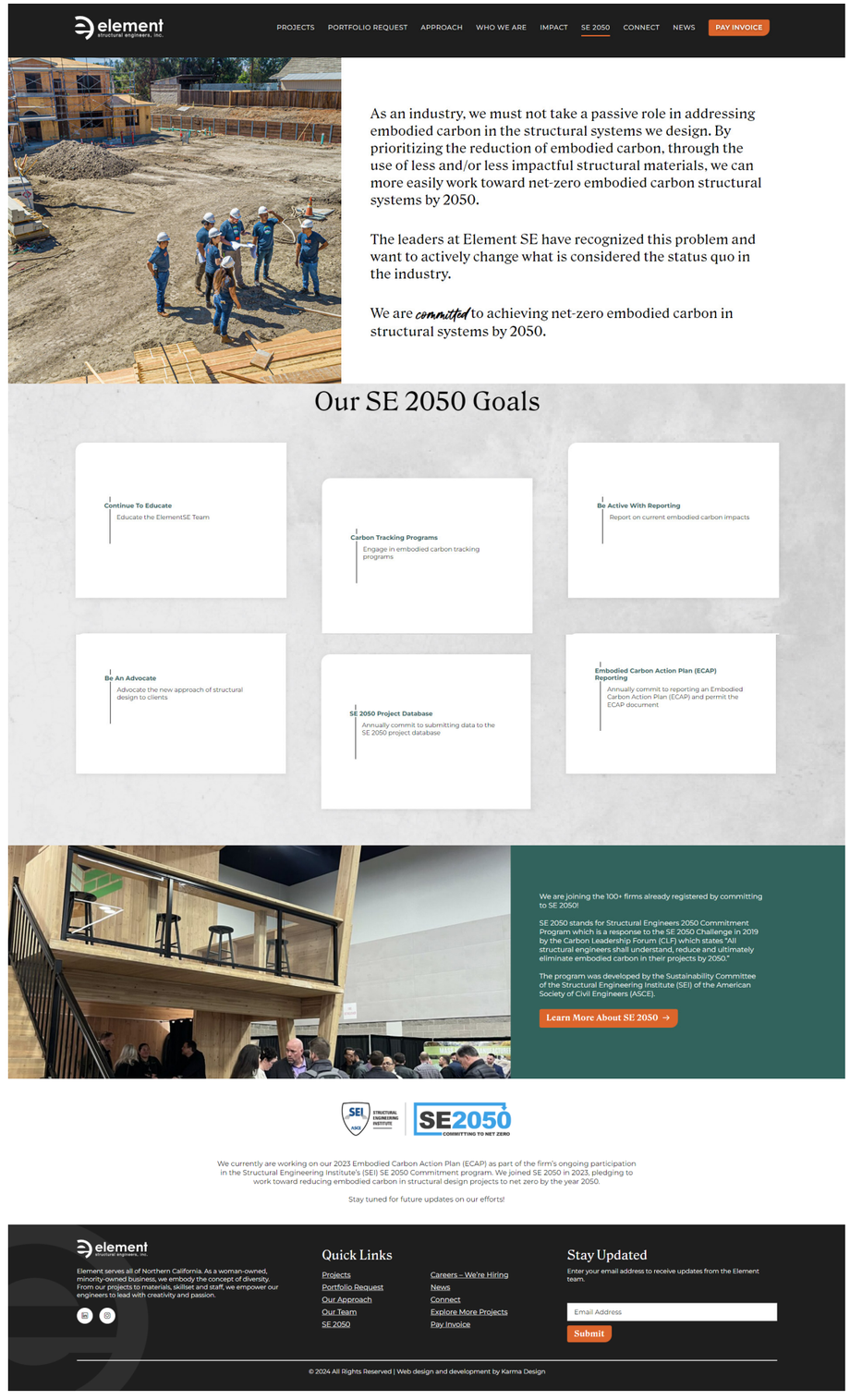
Announcement of our Embodied Carbon Champion's job promotion and his passions for SE 2050

Apart from his technical excellence, James is deeply committed to promoting Diversity, Equity, Inclusion, and Belonging (DEIB) both personally and professionally. He is passionate about sustainability and is our SE2050 embodied carbon champion and actively collaborates with clients and design teams to create innovative, environmentally-friendly solutions.

James's involvement in professional organizations, such as the Structural Engineering Association of Northern CA (SEAONC), SPUR, San Francisco Housing Action Coalition (SFHAC), and the American Institute of Steel Construction (AISC), further demonstrates his dedication to our IMPACT value of continuous growth.

His leadership, technical prowess, and commitment to DEIB and sustainability make him an invaluable asset to our organization and the community. Please join us in congratulating James on his well-deserved promotion!

ESE's SE 2050 Webpage



REPORTING

Our Approach

Inputting Project Information

- At this time we have completed the SE 2050 Database reporting process for two of our projects. The projects are The Meridian located on Santa Clara, CA and Pimental Place located on Hayward, CA.
- We use Athena Impact Estimator to calculate the embodied carbon of our projects.
- We have been able to access Environmental Product Declarations (EPD) when needed. Typically we have to request them as they are not part of the standard submittal contents.
- Our scope is A1-A5, C1-C4, and D.
- At this time we calculate the material quantities on using Revit, Bluebeam, and Microsoft Excel during the construction stage of the project.

Future Initiatives

- Experiment with other life-cycle assessment (LCA) software programs and determine if we should continue with Athena Impact Estimator or switch to another software.

REDUCTION

Our Approach

- Use the SE 2050 Database to record data of our projects.
- Staff users can create an account as a firm user and view the SE 2050 Database User Guide under "Resources" folder in shared SE 2050 Google Drive.
- Before a project is submitted into SE 2050's Project Database, there will be a check-in with our Carbon Champion to ensure that the project is being submitted properly.
- Having a section of our proposal meeting with clients to inform them about our commitment and how they can join the movement.

  Our standard proposal template includes language around our sustainability goals and opportunities.
- Work with a contractor during material procurement to meet an embodied carbon performance criteria on at least (1) project.

  Many of our affordable housing projects have sustainability charrettes and we also bring the General Contractor in for these discussions if they are on board. If they are not yet on board we typically meet with them when construction starts.

In Progress

- Collaborate with your concrete supplier to reduce embodied carbon in a mix design.

  James Enright and Prakhar Shrestha to reach out to Central Concrete for example specs. Also Check with SE2050 resources.
- Integrate embodied carbon mitigation strategies in your General Notes.

  James Enright and Prakhar Shrestha to reach out to Central Concrete for example specs. Also Check with SE2050 resources.

COMMUNICATION

Our Advocacy

> “As an embodied carbon champion, **you have the opportunity** to engineer the change you want to see. I know that *if we take action, positive change will happen.*

JAMES ENRIGHT | ASSOCIATE PRINCIPAL

Our Commitment To Sustainability

Our vision is to create opportunities for the next generation by investing in sustainable practices within our industry.

As an industry, we must not take a passive role in addressing embodied carbon in the structural systems we design. By prioritizing the reduction of embodied carbon, through the use of less and/or less impactful structural materials, we can more easily work toward net-zero embodied carbon structural systems by 2050.

The leaders at Element SE have recognized this problem and want to actively change what is considered the status quo in the industry.

We are committed to achieving net-zero embodied carbon in structural systems by 2050.

Our SE2050 Goals

Educate the ElementSE Team

Engage in embodied carbon tracking programs

Report on current embodied carbon impacts

Advocate the new approach of structural design to clients

Annually commit to submitting data to the SE2050 project database

Annually commit to reporting an Embodied Carbon Action Plan (ECAP) and permit ECAP document

SEI STRUCTURAL ENGINEERING INSTITUTE ASCE | SE2050 COMMITTING TO NET ZERO

- **Describe the value of SE 2050 to clients. How can your design teams collaborate to reduce embodied carbon?**

  As a firm committed to SE 2050, it is important that we live up to our company's tagline of "engineering the change we want to see." Since becoming one of the signatory firms committing to SE 2050, we are actively learning about materials that produce carbon emissions and finding ways to reduce their percentages.

  One of the ways we are doing this through the use of the software such as Athena Impact Estimator and inputting ESE projects' material data. These software programs help us calculate the Global Warming Potential (GWP) of our designed structures and brings awareness to what materials produced the most emissions, which leads to further brainstorming alternatives for replacement or reduction of these materials.

  We know that our commitment to SE 2050 will continue to improve industry standards in designing more sustainable structural systems and create a positive impact for our community, our clients, and our environment.

- **Declare your firm as a member of the SE 2050 Commitment with boilerplate proposal language.**

  Our 2024 proposal template includes language around sustainability and our commitment to SE 2050.

- **Share your commitment to SE 2050 on your company website.**

  For the following 2 previous bullet points, it is done on our company's SE 2050 website that can be found here.

- **Share education opportunities with clients.**

  Our firm is sharing resources of SE 2050 through our website, social media, and are exploring more educational methods to showcase to our clients.

Future Initiatives

- Email newsletter sent to clients with a dedicated section for SE 2050 insights and information.

PROJECTS

Our Application

Lydiksen

EDUCATION - DSA

Lydiksen Elementary School

PLEASANTON, CA

When Lydiksen Elementary School needed to expand to keep up with its growing student population, Pleasanton Unified School District turned to Aedis Architects and Element for answers.

Both LEED-certified firms welcomed two challenging assignments: one a retrofit and modernization of a classroom building, the other new construction of an outdoor campus shade structure. These projects fell under the jurisdiction and stringent oversight of the California Division of the State Architect (DSA).

DETAILS

Architect: Aedis Architects

Status: Under Construction

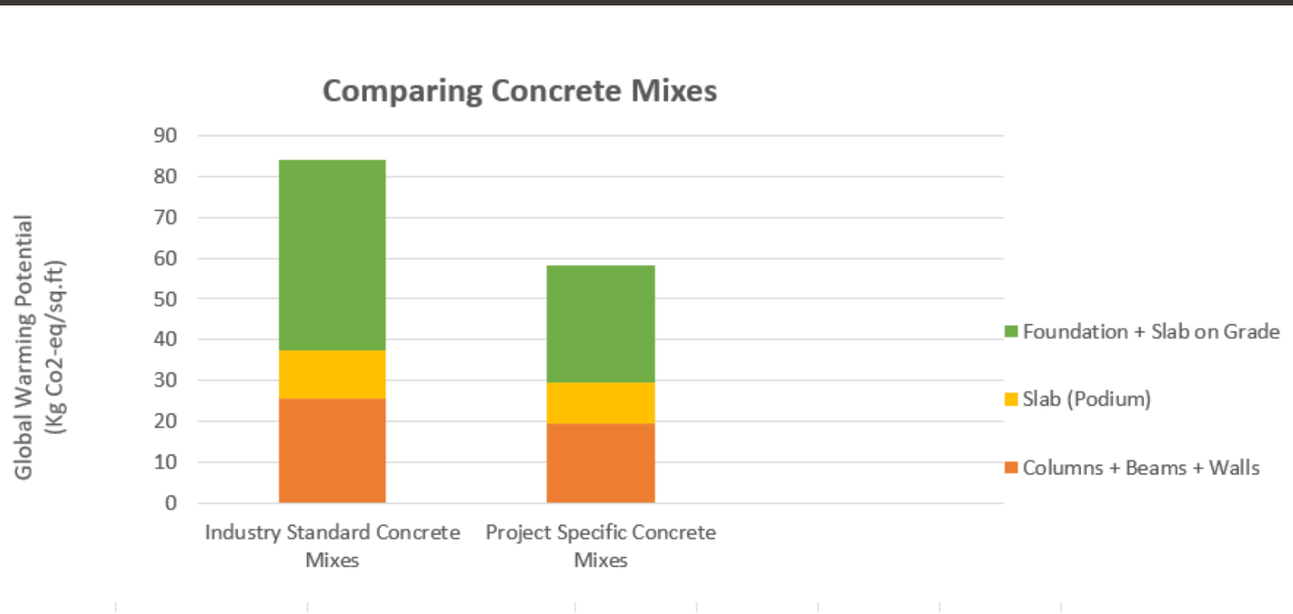
Construction budget: $28.3M

Classroom Building Construction: Type VB

Shade Structure Construction: Type IIB

PROJECTS

Our Application



Pimentel Place

AFFORDABLE HOUSING

Pimentel Place Affordable Housing

HAYWARD, CA

Located in Hayward, this innovative 81,000 square feet affordable housing project caters to families with diverse income levels in. Designed to accommodate 57 units, including 15 dedicated to households experiencing chronic homelessness, Pimentel Place offers an array of family-friendly amenities.

We collaborated with the project team to set and meet sustainability targets related to the concrete construction. We requiring a minimum of 30% Supplementary Cementing Materials (SCM) for all concrete and an even higher requirement of 50% SCM for the concrete foundations leading to significant reductions in embodied carbon emissions.

With a commitment to serving the community, our expertise in structural design contributes to creating a welcoming and sustainable living environment for its residents as it aims to achieve GreenPoint Gold Certification.

DETAILS

Architect: The DAHLIN Group

Client: EAH Housing

Contractor: Nibbi Construction

Density: 57 units

Status: In Progress

Construction est: $74M

Construction: Type V over Type I

Certifications

LEED AP BD+C

KAISER PERMANENTE®
APPROVED VENDOR
SINCE 2019

Astra WOMEN'S BUSINESS ALLIANCE

SMALL BUSINESS SBE CERTIFIED ENTERPRISE

WBENC
WOMEN'S BUSINESS ENTERPRISE NATIONAL COUNCIL

Western Regional
Minority Supplier
Development Council

Women's Business Enterprise (WBE)

Minority-Owned Business Enterprise (MBE)

Small (Micro) Business Enterprise (SBE)

Alameda County: Small Local Emerging Business (SLEB)

Follow Us & Stay Connected:

Visit Us To Learn More:

SE 2050