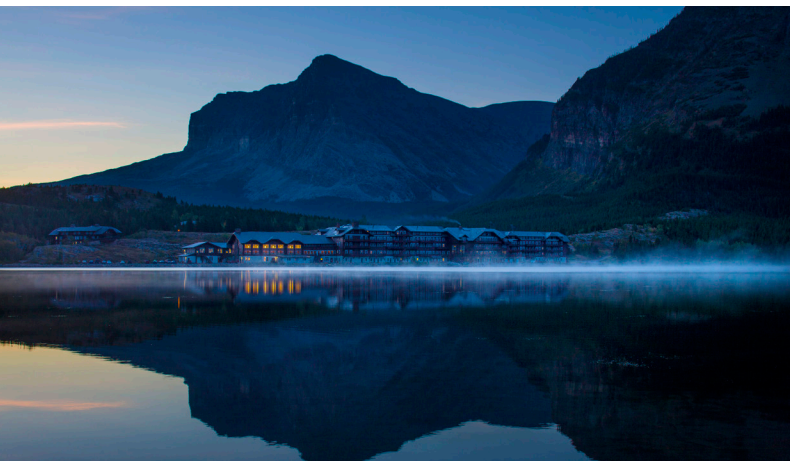




embodied carbon action plan

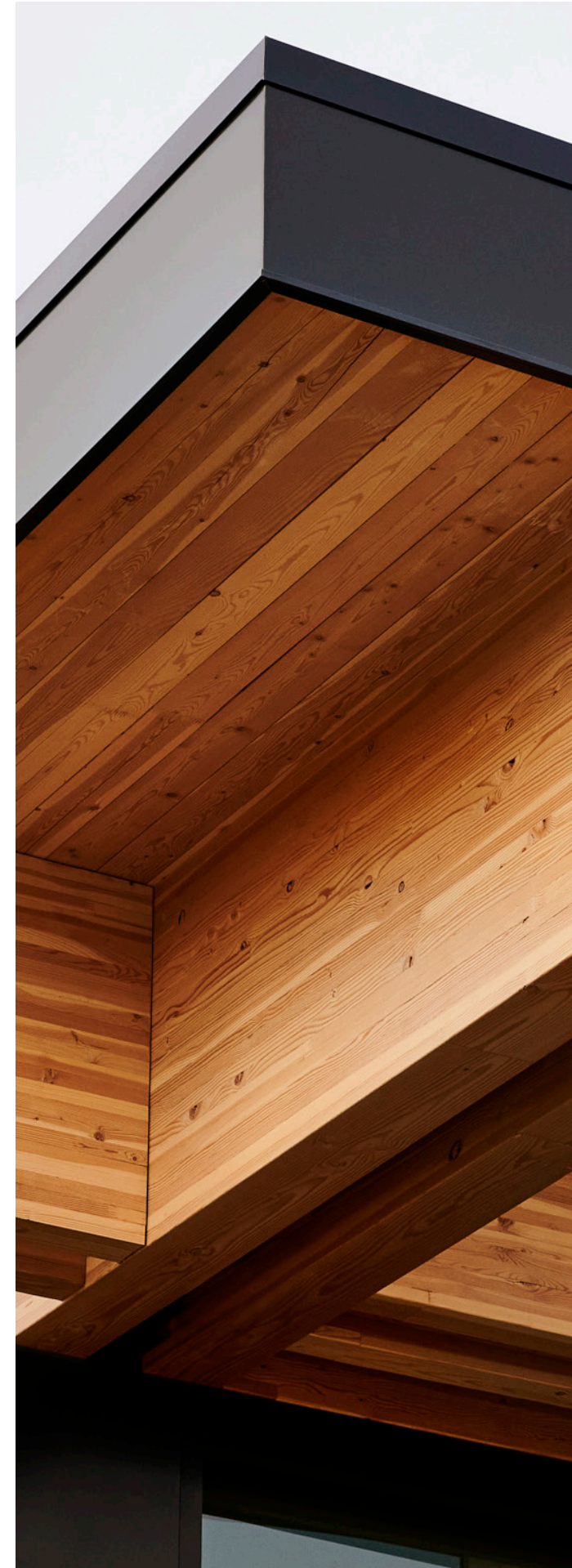
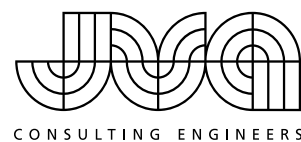
2024



mission statement



JVA provides our clients with the highest quality engineering services while operating a profitable business and maintaining our inclusive and cohesive culture.



our plan

As reductions to operational carbon emissions continue to improve, the “embodied carbon” contribution from a building’s materials and construction plays an increasing role in the overall carbon footprint. JVA is a member of the US Green Building Council and is an active participant in SEAC and NCSEA. JVA is committed to safe, sustainable design practices with participation in LEED accredited projects.

SE 2050’s goal to reduce embodied carbon in the design and construction of structural systems directly aligns with our company’s vision of improving our communities through engineering excellence. JVA’s 67-year tenure as an engineering firm is a valuable addition to SE 2050, thanks to the large repertoire of projects across the country with varying building materials and construction. JVA intends to promote sustainable design practices by informing and educating about embodied carbon both internally and through our professional relationships. JVA will also be contributing to the database of embodied carbon accounting in buildings in order to reach the ultimate goal of net-zero embodied carbon in buildings. We believe knowledge sharing is one of the most valuable tools in our planet’s fight against climate change, and SE 2050 is the ideal platform for us to do just that.

education

JVA welcomed Jay Arehart, PhD on September 22, 2023, to provide an introductory lecture on embodied carbon accounting in buildings. During his presentation, Jay gave an overview of embodied carbon including terms commonly used in the practice of life cycle assessment. He also highlighted life cycle assessment tools which are available to the construction industry and databases which provide environmental product data. An important discussion was held at the end of this presentation where questions and concerns were brought by JVA employees regarding the applicability of the Life Cycle Assessment in the design process. A major takeaway from this discussion was the impact specifications and general notes have on the carbon footprint of JVA's designs, especially those concerning concrete and steel. Understanding the production process and life cycle stage contributions to embodied carbon from each construction material is key to specifying low-carbon products and ultimately reducing the carbon

footprint of JVA's designs. This lecture was recorded and will be included as part of the onboarding program for new structural employees.

Webinars regarding novel and low embodied carbon construction materials will be recorded and made available to JVA employees. Notes will be taken during the presentations and shared with employees during monthly department meetings. One example of this category of webinar which has already been attended and recorded concerned supplementary cementitious materials for concrete. Specifying supplementary cementitious materials (SCM's) in concrete mix is one way carbon emissions can be significantly reduced in concrete designs. Educating the firm on construction material production processes as well as low-carbon alternatives to building products is key to making our designs more sustainable.

JVA will host a learning forum for structural engineers interested in learning how to use Life Cycle Assessment (LCA) tools. TallyLCA for REVIT is the primary LCA software JVA provides to its designers. Training will be focused on how TallyLCA works and how it can best be utilized for typical JVA project types so that JVA employees have the tools necessary to measure embodied carbon in their projects.

JVA plans to compile the wealth of knowledge we have acquired into an embodied carbon employee handbook. This will be a guide to Life Cycle Assessment including why carbon accounting is important, common parlance used to describe LCA, resources available to educate employees on embodied carbon, and available LCA tools.





reduction

JVA will begin its reduction program by first educating staff on the most feasible design improvements available in our project market. We have already begun to make edits to our master specifications and general structural notes to accommodate supplementary cementitious materials (SCM's) in our Colorado market and nationwide. As we continue to strive towards the core mission of SE2050 we will continue to edit our master specifications to replace or add materials with a lower carbon footprint. It is our plan to stay current on new products and available concrete mixes that replace the standard Ordinary Portland Cement (OPC) mixes with options that contain lower embodied carbon and to educate staff on the expected performance of those mix design alternatives. JVA's Sustainability Committee looks to apply thoughtful and efficient reductions to the embodied carbon contributions on our projects through data-driven innovation in order to best serve our clients and community in adherence to our core values.

reporting

JVA is committed to reporting a minimum of five (5) projects to the SE 2050 Database across our 5 Colorado based offices. As all of our project designs are completed in REVIT we plan to use Tally to calculate embodied carbon for our submissions. This will require some revisions to our standard modeling practices internally to better estimate quantities within the REVIT program. Training on embodied carbon measurement tools has been implemented within our structural department to enable us to incrementally increase the number of submittable projects to the SE 2050 Database.

The life cycle inventory database provided by Tally will be the primary source of product data when assigning environmental impacts to the modeled structural elements in REVIT. Modeled elements will be assigned to families respective of their material and structural properties; these families will then be associated with the proper LCI data provided by Tally. The embodied carbon from life cycle stages A1-A3 will be quantified from the bill of materials generated in REVIT and reported as a total value in kg CO₂e and normalized by gross floor area in kg CO₂e per square foot.

advocacy

JVA is committed to sharing the values and mission of SE2050 along with the importance of reducing the embodied carbon in the structural design of projects. We will be publishing a news article to our company website and social platforms declaring our commitment to SE2050. During the early phases of a project, we will explain both the importance of reducing the embodied carbon in a building and the best steps to do so to our client. Long term success in reducing embodied carbon contributions in our structures will require collaborating with our architectural clients, Contractors, and other design disciplines early in the project design. This will allow us to optimize our structural layout and material types to reduce the building's embodied carbon. Construction means and methods can also play a large role in the carbon reduction, especially when determining the concrete mix design requirements and material availability. For example, HSS steel shapes have approximately double the embodied carbon footprint of rolled steel shapes by weight. By working with architects early in the schematic design phase of a project, we can advocate for an efficient design. On the other hand, reducing structural embodied carbon at the cost of increasing the material and energy requirements of architectural and MEP elements is counter-productive and highlights the importance of early education and coordination with the project team.

Our sustainability committee will continue to improve standard proposal language so that we are better able to inform our clients of our commitment to reducing embodied carbon in our projects and the tools and knowledge our firm has available to help achieve that goal. We will be creating an educational pamphlet to hand out at client meetings and conferences in order to educate clients on sustainable materials and embodied carbon.





CONSULTING ENGINEERS

普法禪寺

GREAT DHARMA CHAN MONASTERY

**embodied
carbon
action plan**

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