



2026

EMBODIED CARBON ACTION PLAN

MBJ

STRUCTURE THAT SHAPES



OUR COMMITMENT

The decisions we make as structural designers have a significant impact on the global climate crisis. We are committed to integrating sustainability principles into the core of MBJ's design culture and everyday design practice.

The path to zero-carbon structural systems by 2050 begins with bold design thinking and innovation in how materials are produced and sourced. We are committed to driving meaningful change within our organization and helping shape industry-wide progress to turn this goal into reality.



As a signatory to the SE 2050 Commitment Program, MBJ is taking active steps toward this goal by measuring, reducing, and ultimately eliminating embodied carbon in the structures we design. Since joining SE 2050, we have partnered with architects, owners, and material suppliers—both on projects and within our communities—to implement emerging technologies and intentional design strategies that reduce embodied carbon across our work.



MBJ SUSTAINABILITY KNOWLEDGE COMMUNITY **SKC**

The **Sustainability Knowledge Community** is open to all MBJ employees and serves as a **forum** for **sharing knowledge** and **advancing our ability** to track and reduce embodied carbon. Through **interactive working sessions**, members develop **practical skills** and gain a **deeper understanding** of how to **incorporate embodied carbon accounting** into **component** and **system design**.

In addition, members present **project updates** that highlight **successes**, **lessons learned**, and **challenges** encountered while working to reduce embodied carbon. Subgroups focused on **Reduction**, **Education**, **Reporting**, and **Advocacy** lead the **development** and **implementation** of the actions outlined in MBJ's **Embodied Carbon Action Plan**.

SKC LEADERSHIP



CAT LUNITAP

EMBODIED CARBON CHAMPION
STRUCTURAL EIT



LINDSEY LYRENMANN
EMBODIED CARBON CHAMPION
ASSOCIATE, OFFICE LEADER



JASON PEDERSON

CORPORATE STRATEGY
MANAGING PRINCIPAL



JEFF ANDERSON

SKC LEADER
ASSOCIATE



NATE HOLT

SKC LEADER
STRUCTURAL ENGINEER



DANIEL DEFOSTER

ECAP SUBGROUP
BIM SPECIALIST



**MICHAEL
DROHOMYSKY**

ECAP SUBGROUP
STRUCTURAL EIT



ELLA HUTCHISON

ECAP SUBGROUP
STRUCTURAL EIT

REDUCTION

Material Choices
that Matter



MBJ's approach to embodied carbon reduction emphasizes **early-phase design decisions, regional data, performance-based specifications, and circular material strategies** to support consistent, project-level decision-making across a wide range of project types.

By integrating **design optimization, carbon benchmarking, internal data tracking, and material reuse opportunities** into standard workflows, MBJ continues to strengthen its ability to establish **meaningful carbon limits** and pursue **measurable reductions**, regardless of sustainability certification goals or ownership structure.

Over the past year, MBJ advanced this approach through the rollout of **Performance-Based Concrete Specifications** that incorporate regional NRMCA benchmark values as embodied carbon limits, recognizing the **critical role of local material markets** in setting achievable and impactful targets. In parallel, MBJ developed an **internal concrete mix database** to track embodied carbon performance across regions, enabling project teams to compare mix designs and make **informed, data-driven material selections**. Together, these tools support ongoing **optimization, improved benchmarking, and a scalable framework** for firmwide embodied carbon reduction.

2026 ECAP GOALS

- Integrate Life Cycle Assessment (LCA) into MBJ's Quality Initiative by requiring LCA for Level 2 projects, targeting 10 projects during the initial year
- Expand MBJ's concrete embodied carbon database by prioritizing data collection from Chicago and Phoenix, improving regional accuracy and benchmarking
- Develop a project-phase carbon checklist for use during Project Insight reviews to prompt early evaluation of structural systems, material quantities, and reduction opportunities
- Update specification language to allow reclaimed and reused materials, enabling teams to pursue circular and lower-carbon material strategies where feasible

Long-Term Reduction Goals

- Maintain LCA as a Quality Initiative requirement over the next five years, with benchmark evaluations at Years 1, 3, and 5 to track progress and inform continuous improvement
- Advance concrete reduction strategies by enhancing regional specifications and databases, targeting a 5% reduction in Tier 1 (regional, market-based) concrete embodied carbon across Minneapolis, Chicago, and Phoenix over time
- Prioritize circular economy strategies, including:
 - Sourcing 1% of structural steel from certified reclaimed steel across MBJ projects
 - Completing five projects incorporating reused structural wood
 - Participating in industry-wide initiatives that support and streamline structural material reuse

**A LOOK
BACK AT
REDUCTION
IN 2025**



3

Projects with
State Mandated
Sustainability Goals



2

Project Reusing
Structural Materials



12

Project
Concrete
GWP Limits



3

Mini Research
Studies

EDUCATION

Building Knowledge
for a Net-Zero
Future



MBJ is committed to firmwide education on embodied carbon reduction and participation in the SE 2050 Commitment through **consistent, ongoing communication**. A **multifaceted approach** to sustainability education supports the integration of sustainable design into **daily practice** while continuing to build firmwide awareness and expertise in embodied carbon reduction.

All new engineers receive **embodied carbon education** during **onboarding**, including a firm-produced sustainability overview **video/webinar** and a foundational guide on embodied carbon. Incorporating **embodied carbon education** into the **onboarding process** ensures **early awareness** and establishes a **shared baseline** understanding across the firm.

Ongoing education and an **embodied carbon interest group** are supported through the SKC, which fosters discussion and knowledge sharing around sustainable design strategies. Additional learning opportunities include **internally led technical presentations**, sessions with **external experts** and **sustainable material vendors**, and **embodied carbon resources** shared through our **intranet platform** to encourage firmwide engagement and learning.

Team members also participate in **regional and national sustainability and structural engineering conferences**, including engagement with **CLF Regional Hub activities**, and share key insights and best practices with the broader firm. MBJ is committed to **training all structural engineers** on **core embodied carbon concepts**, including measurement, reduction, and reporting, and to **training BIM specialists** in **LCA principles** and the **use of Tally** to support accurate, data driven embodied carbon reduction strategies.

2026 ECAP GOALS

Provide Internal Education

- Present one internal sustainability tech talk webinar focused on material reuse and circular design practices
- Host quarterly firmwide presentations featuring expert speakers, vendors, and industry partners
- Curate one sustainability-focused post per month on the firm intranet
- Provide all interns with education on embodied carbon in structural engineering, culminating in a mini research project

Engage in External Education

Engage with sustainability groups such as the Carbon Leadership Forum (CLF), as well as conferences and academic institutions, by participating in working sessions, collaborating with partners, and delivering external presentations in all states where MBJ offices are located.

A LOOK BACK AT EDUCATION IN 2025



7

Firmwide
Sustainability
Speakers



12

Sustainability
Intranet Posts



9

Sustainability Conference
Attendants and
Presenters



REPORTING

Turning Data into
Carbon Impact

MBJ is committed to leveraging **effective data reporting tools** and our **decades of structural design experience** to track and report embodied carbon data for the **benefit of the profession** and our own **internal design process**.

To **expand our tracking experience** and contribute **meaningful data** to the SE 2050 database, we aim to measure and report embodied carbon across projects representing a range of material types, building uses, and project scales. By developing **internal standards** and providing **targeted training**, we will reduce the effort required to produce high-quality embodied carbon data. This will make the information more accessible to staff and encourage embodied carbon considerations to inform design decisions throughout the life of a project.

Over the past year, expanding our group of Tally users and integrating life cycle assessment (LCA) processes across a broader range of projects has remained a challenge. In response, we plan to **incorporate LCA development** into the **standard project review** and **quality assurance process** for our largest projects. This initiative is intended to **engage more project teams** and **increase familiarity** with our **LCA workflow** among both engineers and BIM specialists.

2026 ECAP GOALS

Internal Database as a Decision Making Tool

MBJ will continue to develop and refine our internal database to enable efficient and flexible comparisons of embodied carbon across multiple projects. By analyzing these data, we aim to identify trends and better understand the impact of early design decisions.

LCA Standardization and Quality Initiatives

As more MBJ team members perform LCAs and our contributions to the SE 2050 database increase, we will continue strengthening our quality assurance and quality control practices. This includes streamlining the selection of material definitions used in LCAs and implementing additional oversight and review of completed assessments prior to submission. We will also establish a standardized protocol for extracting material quantities from Revit models to support accurate reporting of quantities to the SE 2050 database.

Reporting Targets

MBJ aims to report 12 projects to the SE 2050 database that collectively represent a diverse range of project characteristics, including:

- Three projects incorporating custom mix designs used in the LCA
- Eight projects with design initiated or completed in 2025
- At least five different major structural material systems
- Six different building uses
- At least one project from each MBJ office location

A LOOK BACK AT REPORTING IN 2025



6

Projects Submitted
to SE 2050
Database



3

US States with
Reported Projects



4

Primary
Gravity
Materials



3

Building
Use Types

ADVOCACY

Partnerships Power
Low-Carbon Design

Structural engineers play a **critical role** in influencing **design decisions, material selection, and supply chain engagement.**

MBJ prioritizes **clear communication** with our clients and partners to advance embodied carbon reduction strategies on our projects. We believe our position within the industry allows us to help **elevate the conversation** around low-carbon design. By working closely with architects, owners, contractors, and material suppliers, we aim to promote **practical solutions** and **accelerate industry-wide progress** toward reducing embodied carbon.

In 2025, MBJ expanded its efforts to guide supply chains toward lower-carbon materials by focusing on improvements to our **concrete specifications**. Through performance-based specifications, we **established GWP limits** and required **plant- and mix-specific EPDs**. Throughout this process, we maintained regular communication with industry partners to better understand **material availability, supplier capabilities, and the potential impacts** on project delivery.

Looking ahead to 2026, we will expand our **engagement with suppliers and industry partners.**

2026 ECAP GOALS

Embodied Carbon Reduction in Public Policy

MBJ will continue to engage in public policy conversations through participation in forums such as the Carbon Leadership Forum hubs and state Structural Engineer's Association Sustainable Design Committees. Through these efforts, we seek to influence local policies and upcoming code and standard revisions.

LCA Initiatives

We plan to integrate Life Cycle Assessment (LCA) creation into our comprehensive project quality programs. Based on project scale, selected projects will be required to complete an LCA as part of this initiative. This effort is intended to expand LCA knowledge and engagement across a wider group within MBJ.

Incentivizing Structural Material EPDs

We will review and propose updates to our structural steel framing and rough carpentry specifications to include the latest industry-driven sustainable solutions.

For structural steel framing, we will incorporate recommendations published by the AISC, including LEED V5 updates. Our specifications will require EPDs and minimum recycled content thresholds. Additionally, we will propose language in our template specification which allows for salvaged structural steel.

For rough carpentry, we will evaluate aligning our specification with the proposed ICC language that supports the use of salvaged lumber materials.

A LOOK BACK AT ADVOCACY IN 2025



4

External
Presentations
Given



2

Projects with
LCA Goals at
Onset



6

Projects with
Owner Participation
in Requiring Concrete
GWP Limits



6

Projects
with EPD
Requirements

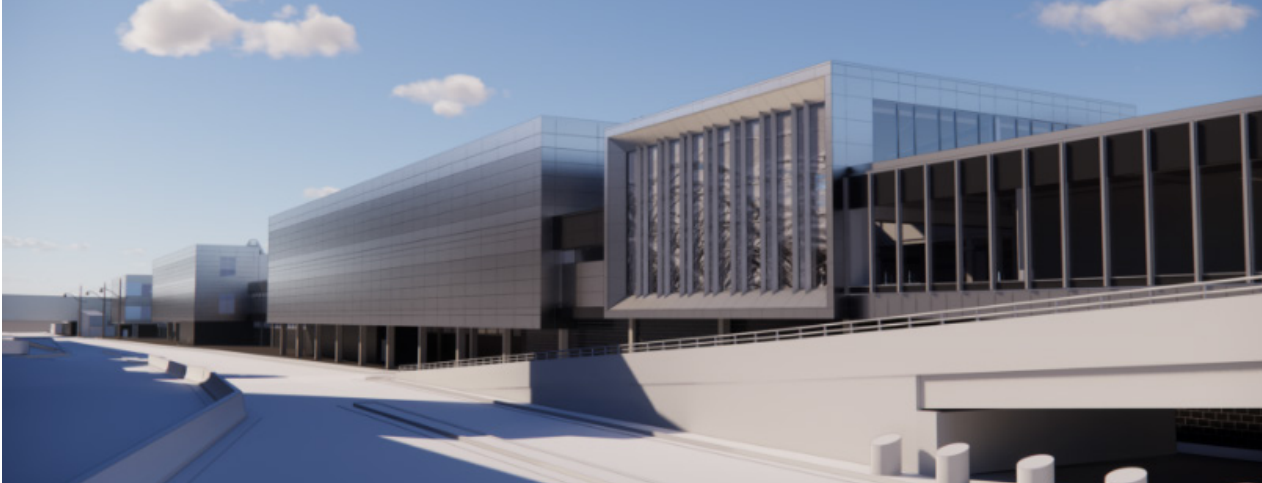
CASE STUDY

Circularity in Design



CIRCULARITY CASE STUDY

MSP CONCOURSE G EXPANSION

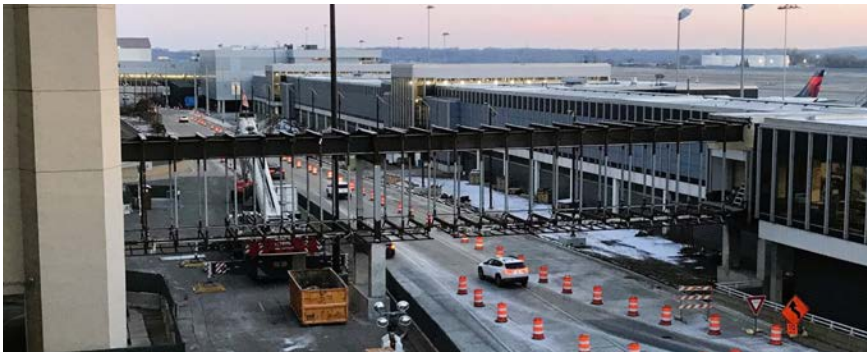


Rendering courtesy of Alliance

MBJ's latest innovation includes **harvesting structural steel** from buildings slated for demolition to **lower emissions** from steel mill manufacturing and transportation while **supporting material circularity**.

TURNING OLD BRIDGES INTO NEW POSSIBILITIES

At MSP International Airport, these efforts are enabled by the airport's single-owner campus under the Metropolitan Airports Commission. Coordinated planning across projects allows material stocks to be identified and verified in advance, schedules aligned with deconstruction and reuse, and storage and logistics managed centrally. This level of coordination helps overcome typical supply-chain barriers and makes circular material practices viable and cost-competitive with conventional procurement.



An obsolete 1985 pedestrian bridge illustrates this approach. After serving as a document storage space following post-9/11 security changes, the bridge eventually conflicted with the future G Concourse Expansion Program. In 2022, MBJ identified it as a valuable source of reusable structural steel and coordinated its careful deconstruction and storage as part of an enabling package, preserving the material for future use. For the 2024 project, the harvested steel was designed and re-fabricated to meet the requirements of the new expansion, which is pursuing LEED Gold certification.



▲ Salvaged steel beams incorporated

This approach transformed a neglected and underutilized structure reducing the need for new materials while demonstrating MBJ's commitment to both innovation and sustainability in complex infrastructure projects.

HARVEST, REUSE, EXPAND

Approximately 41 tons of structural steel were harvested from the pedestrian bridge—about 81 percent of its total weight. Of this, 33.5 tons were incorporated into the 2024 Concourse G Expansion, with the remainder stored for future projects. The reused steel represents roughly 2.5 percent of the expansion's new structural steel.

The 2024 Concourse G Expansion adds approximately 157,000 square feet of new public space integrated with existing terminal structures. Expanding both upward and outward, the project includes infill between two gate pods to create a more open and efficient layout for gates, concessions, retail, and award-winning restrooms. By combining sustainability, material reuse, and thoughtful structural design, MBJ demonstrates how strategic planning can transform an obsolete structure into long-term value for modern infrastructure.



**CIRCULAR
DESIGN**
through reuse of
steel beams

MBJ was essential in coordinating across this embodied-carbon-reducing supply chain. By **identifying** material stock slated for demolition, brainstorming **reuse** configurations, and performing **material verification** and documentation, MBJ demonstrated how **thoughtful planning** and **collaboration** can drive **sustainable design decisions** that are **cost-competitive** with standard supply chains.

COMPLETED: Estimated 2028

CONSTRUCTION COST: \$225,000,000

OWNER: Metropolitan Airports Commission

ARCHITECT: Alliance

CONTRACTOR: Sheehy Construction

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is a multi-specialty structural design practice. Whether designing a place for people to live, work, heal, travel, play or learn, we create structures that shape lives.

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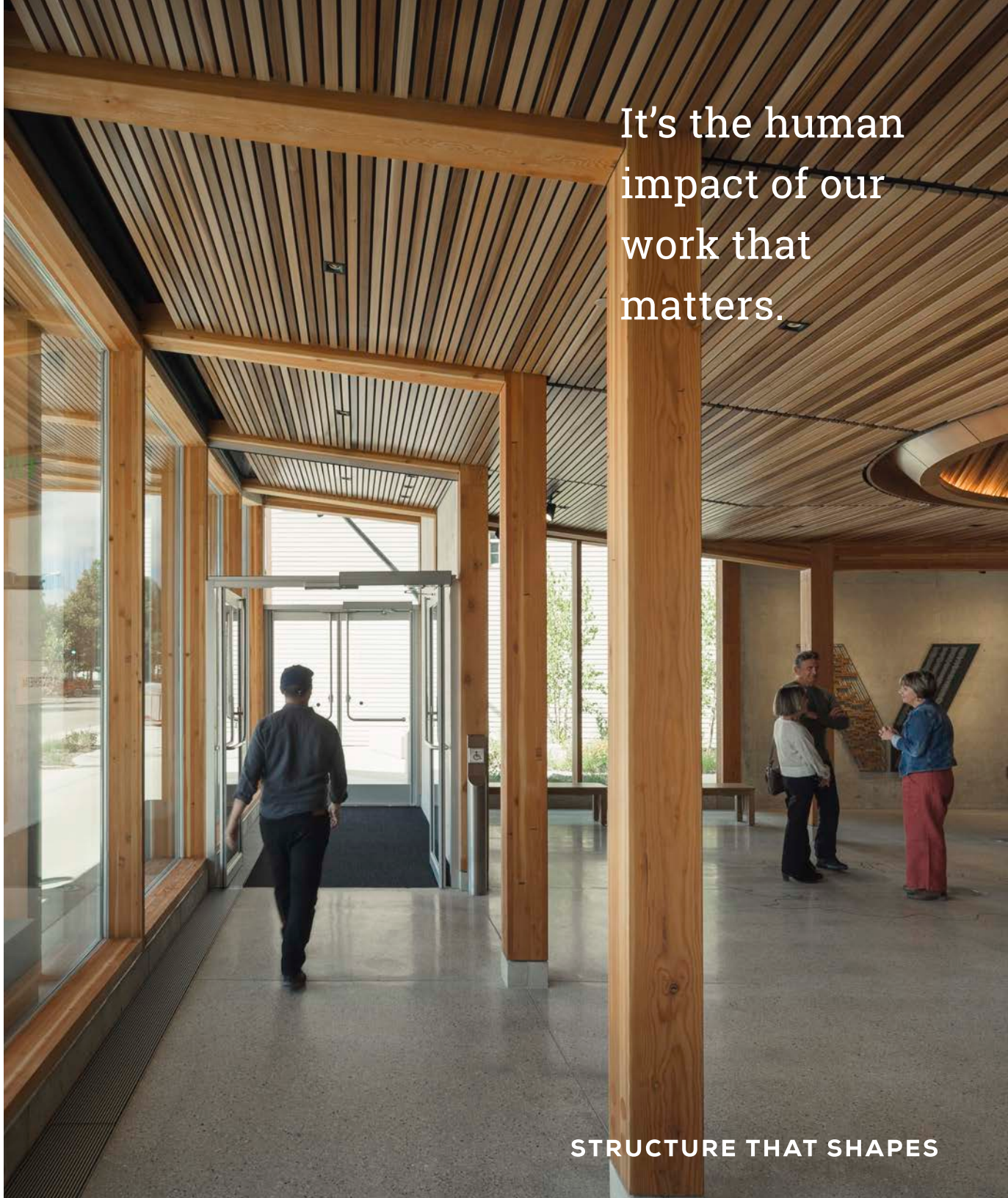
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MBJ

It's the human
impact of our
work that
matters.



STRUCTURE THAT SHAPES