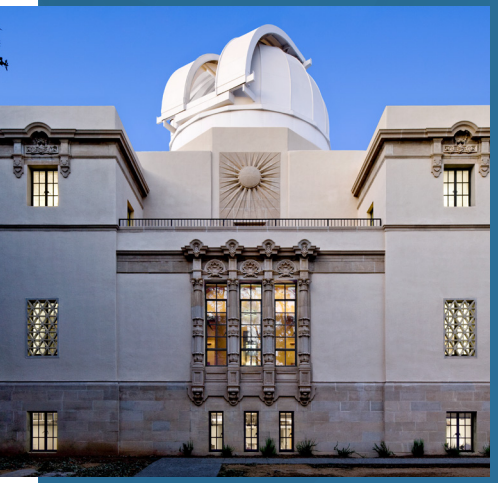
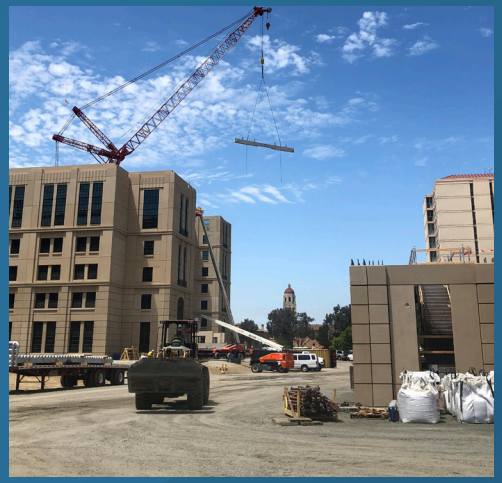


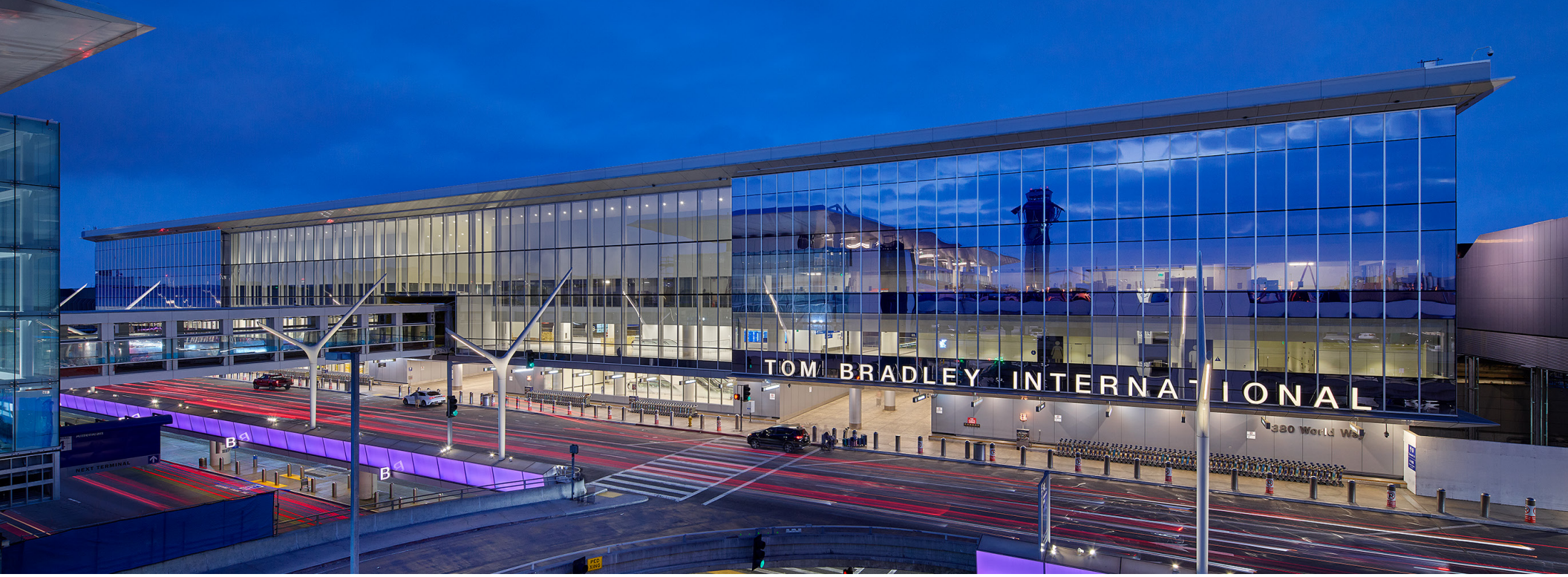


Embodied Carbon Action Plan

JOHN A. MARTIN & ASSOCIATES
STRUCTURAL ENGINEERS

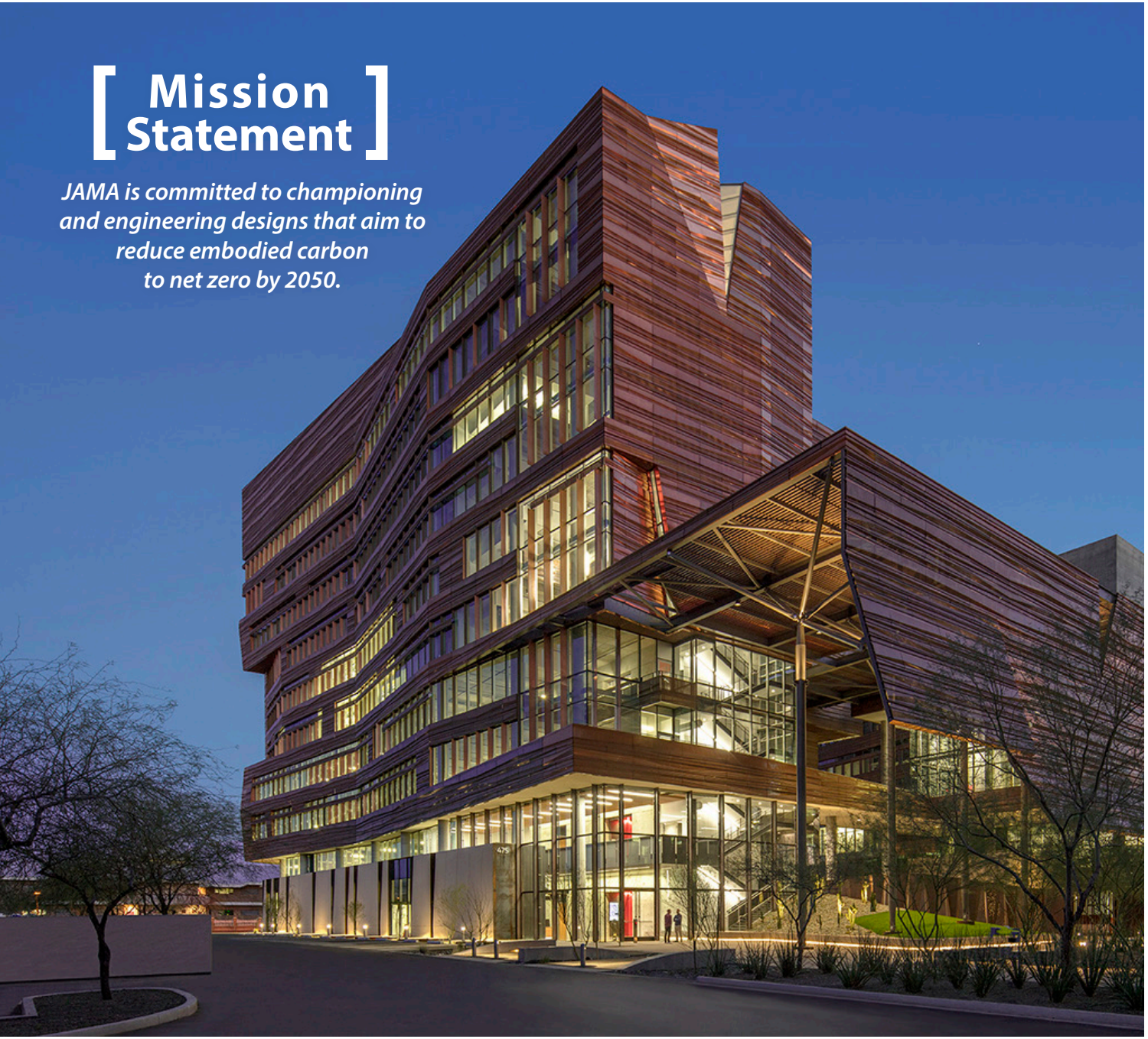
SEI ASCE STRUCTURAL ENGINEERING INSTITUTE

SE2050 COMMITTING TO NET ZERO



LAX Vertical Circulation Cores, LEED Silver (Targeting)

Table of Contents



[Mission Statement]

JAMA is committed to championing and engineering designs that aim to reduce embodied carbon to net zero by 2050.

University of Arizona Bioscience Partnership Building (BPB) - Phoenix Biomedical Campus, LEED Silver

01/ Executive Summary

The built environment is responsible for approximately 40% of global carbon emissions. For buildings, the greenhouse gases emitted from extraction of raw materials, transportation, manufacturing, construction, maintenance, renovation, and end-of-life deconstruction, commonly known as embodied carbon, is responsible for 13% of that total.[1]

With the world's building floor area projected to double by 2060,[2] structural engineers have a unique and vital role in helping to minimize greenhouse gases emitted as part of the construction process. We are proud to be a member of SE 2050 and to bring our expertise to innovate designs that will reduce the negative impact of the built environment.

1. "Why The Built Environment." Architecture 2030, architecture2030.org/why-the-building-sector/#:~:text=The%20built%20environment%20generates%2040,for%20an%20additional%2013%25%20annually.
2. Ibid.

02/ Education Plan

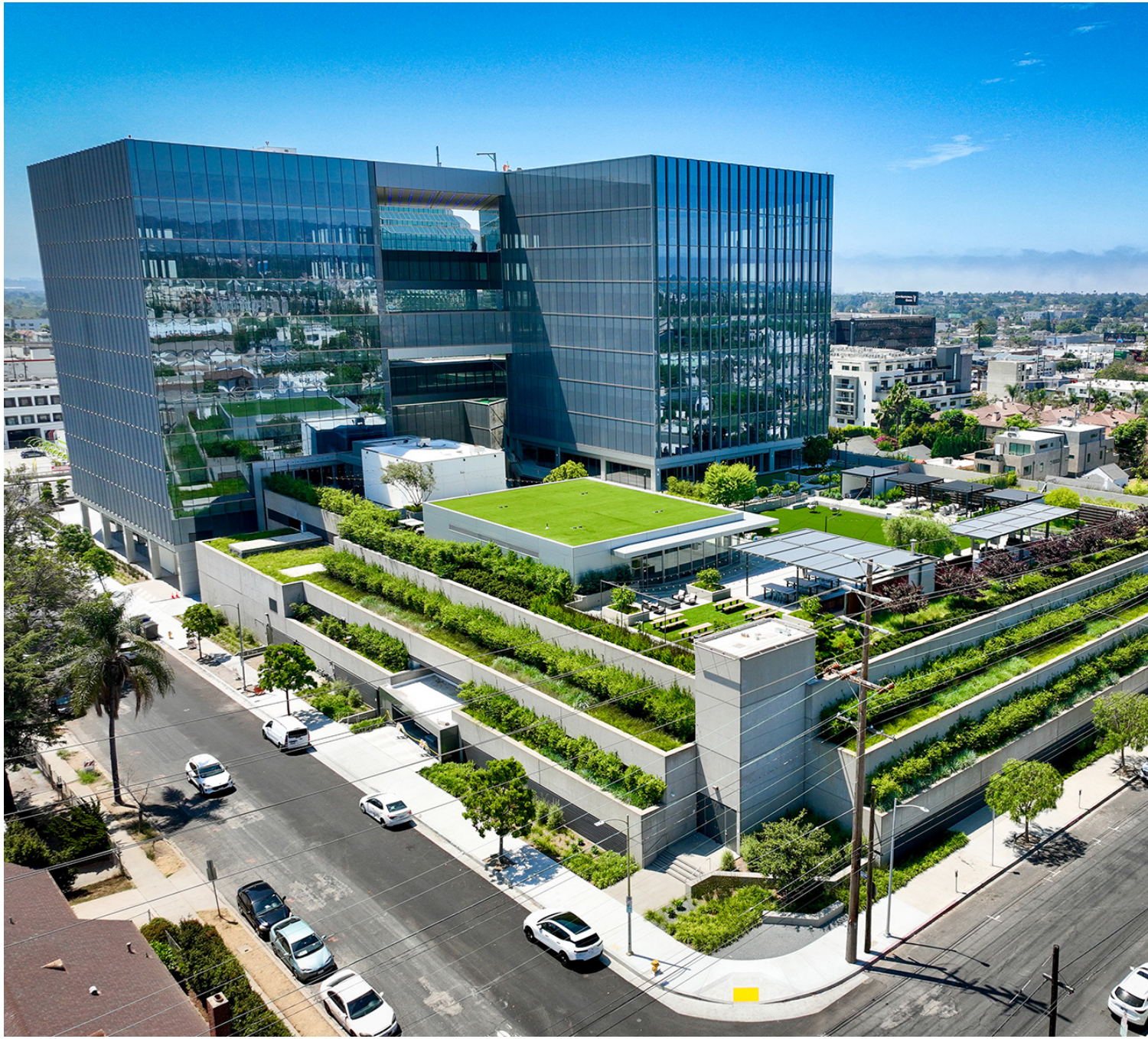
JAMA's success in meeting the SE 2050 carbon goals will be achieved by an office-wide initiative of implementing carbon reduction practices. Therefore a high priority is placed on internal education which includes:

- Delivering an annual in-house presentation on embodied carbon and current sustainability-related industry trends and code requirements.
- Educating new employees on our current sustainability measures and goals as part of the new employee on-boarding process.
- Providing employees access to the SE 2050 library and a collection of other sustainability resources on our internal online library.
- Supporting an in-office "Green Initiative Team" that is committed to reducing our carbon footprint in our building designs, developing and using Life Cycle Assessment (LCA) tools to more accurately calculate carbon emissions of buildings, and making our internal office operations more sustainable.
- Sending office representatives to external conferences, educational webinars, and workshops to continue learning and promoting sustainable practices in structural engineering.

Cal Poly SLO San Luis Obispo William and Linda Frost Center for Research & Innovation, LEED Gold

03/
Reporting

JAMA is committed to continuing to report a minimum of four Life Cycle Assessments (LCAs) for both of our California offices. As part of our internal workflow, we are committed to developing and advancing our methods for calculating embodied carbon. As we continue to use Tally to perform LCA's, we will refine and grow our database of Environmental Product Declarations (EPDs) to increase the accuracy of our LCA analysis.

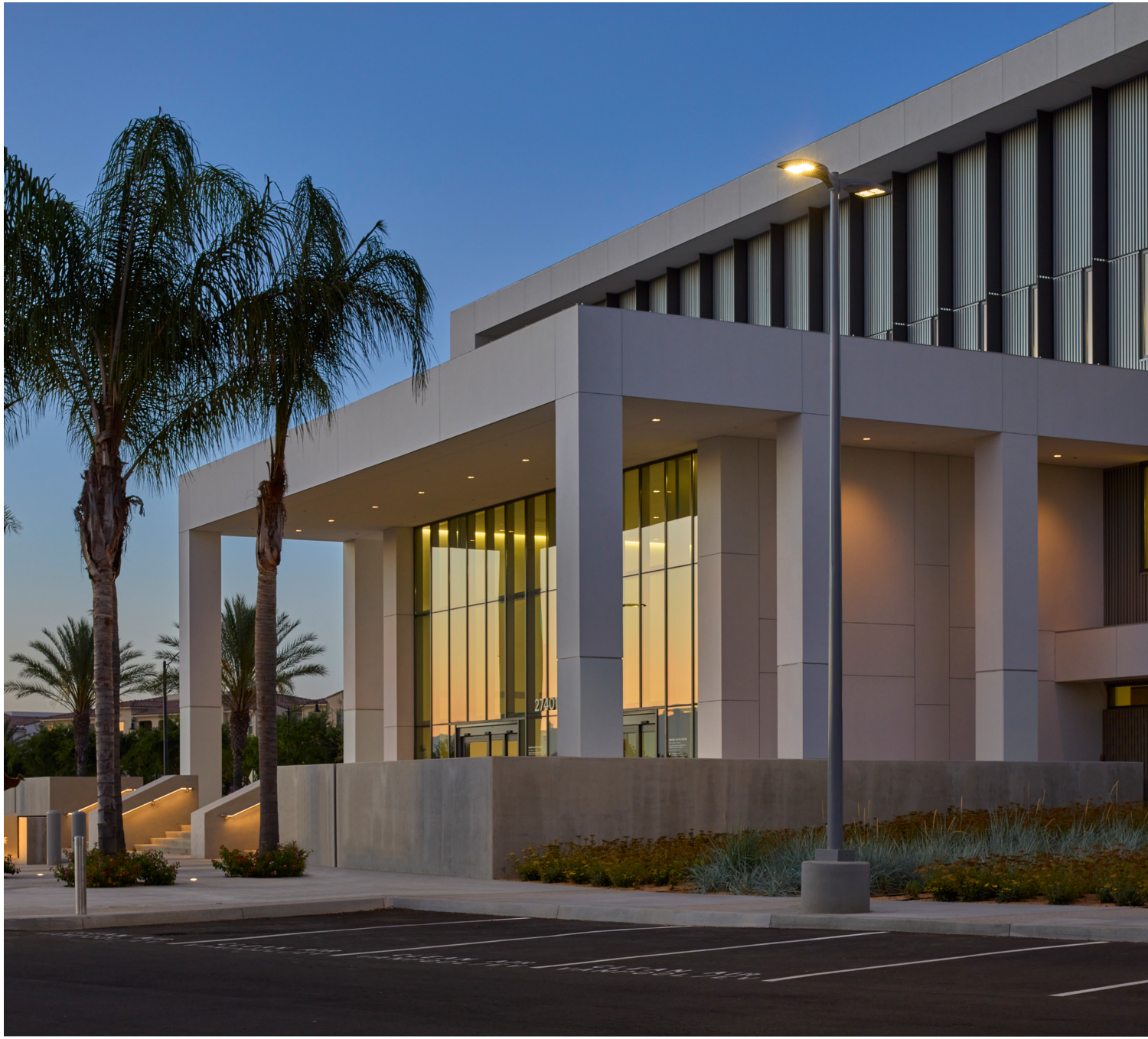


Lumen West LA, LEED Gold

04/ Reduction Strategy

Reducing carbon emissions is a continuous process as new material alternatives and construction methodologies are invented. JAMA is committed to exploring and employing these strategies which currently include but are not limited to:

- Using performance based concrete specifications and the use of Type 1L cement.
- Exploring the use of calcined clay in concrete mixes.
- Championing the use of mass timber and other biogenic materials.
- Optimizing design with advanced analysis to decrease tonnage of structural material.
- Advocating the use of American-made steel using recycled content and electric arc furnaces.

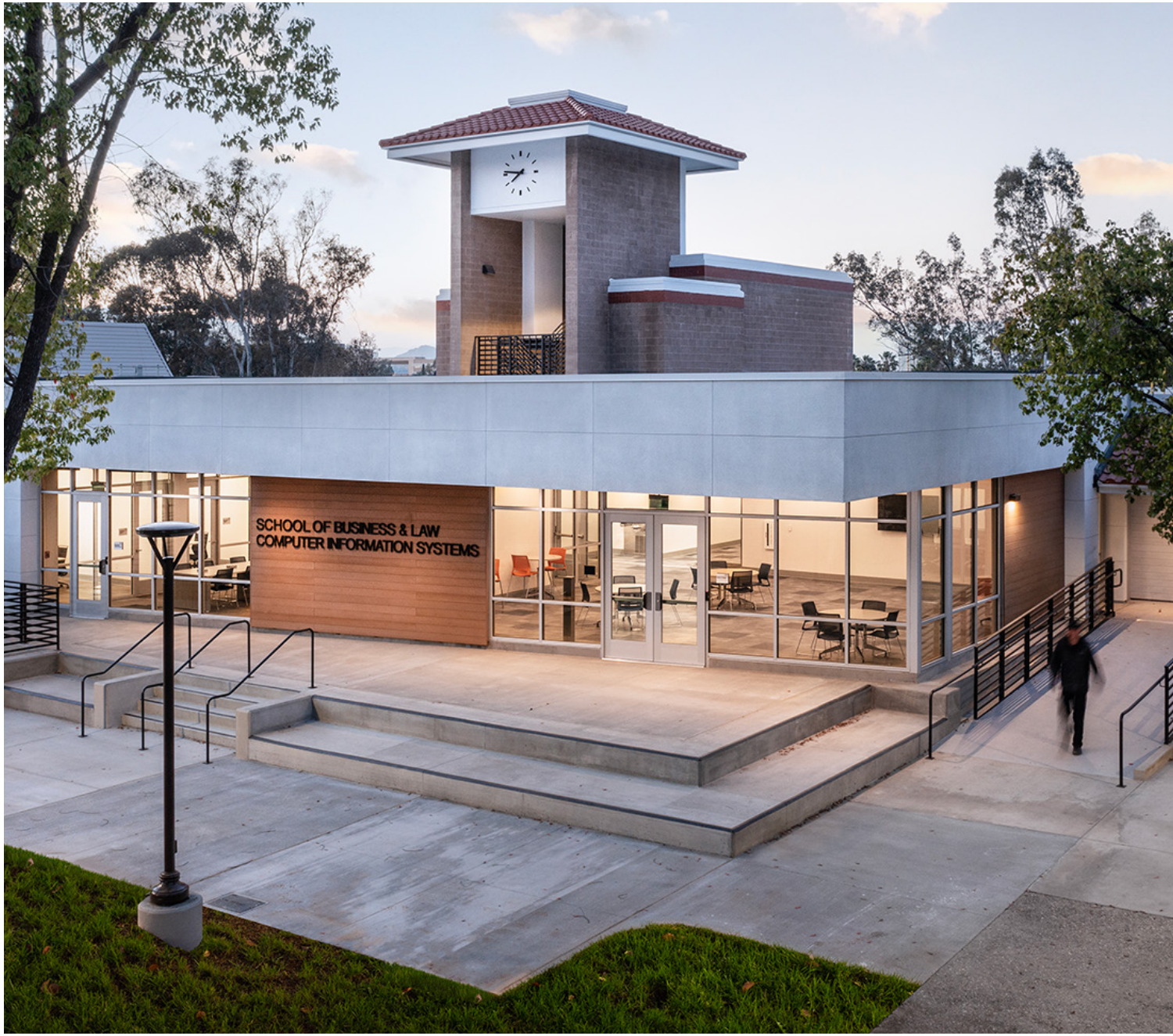


JCC Menifee Justice Center, LEED Silver (Targeting)

05/
Advocacy

As one of the largest private structural engineering firms in the Western United States, JAMA takes its potential to influence owners, designers, and institutions seriously. As part of our commitment to SE 2050, we have not only announced our participation on our website (www.johnmartin.com) but have also developed a plan of action to:

- Educate clients on our commitment to SE 2050 as well as encourage their participation in sustainable building design.
- Facilitate presentations from external companies on sustainable materials and practices for our employees and collaborators. This also extends to educational workshops and presentations from internal experts on the use of LCA tools and sustainable design practices.

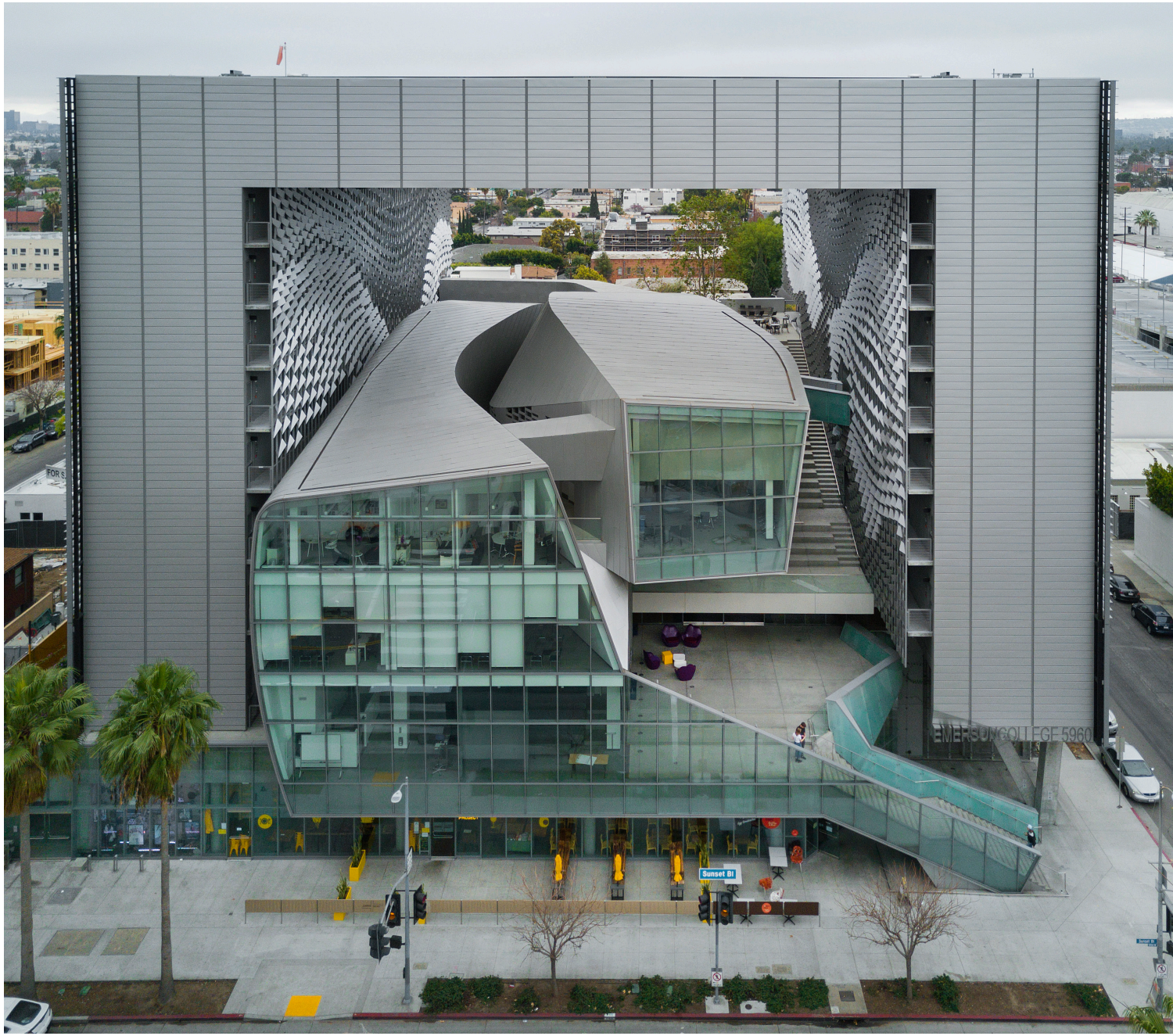


Riverside Community College District Reconstruction of Life & Physical Science Buildings, LEED Silver

06/ Lessons Learned

One of the main lessons we learned in 2024 is that structural engineers are only one cog in the machine reducing embodied carbon in a building life cycle. There must be stringent code requirements and advocacy toward clients and architects to prioritize sustainable building design. Also, more research is needed in the development of carbon zero materials. There are ways to decrease CO2 emitted from each structural material - steel, concrete, timber, and masonry, but no material is completely carbon zero which is needed to fulfill SE 2050's commitment.

JAMA is committed to do our part in the industry to advocate for sustainable practices and research and development.



Emerson College Los Angeles Center, LEED Gold

JOHN A. MARTIN
ASSOCIATES
STRUCTURAL ENGINEERS