



SE2050

# YEAR 4 PLAN

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Y4

O'Donnell & Naccarato, Inc.  
**Embodied Carbon Action Plan**



## Upward & Onward!

In 2020, O'Donnell & Naccarato (O&N) committed to the SE 2050 program, with the goal of significantly reducing and ultimately eliminating embodied carbon in structural engineering within the built environment by 2050. As we now embark on 2024, marking Year 4 of our Embodied Carbon Action Plan (ECAP), our primary emphasis remains on education, advocacy, and the formulation of effective strategies to implement carbon reduction across our projects. Throughout this year, we will continue our collaborative efforts with project partners to drive substantive change. We are encouraged by the growing engagement within the AEC community, acknowledging the imperative need for reducing embodied carbon.



Wrapping up in 2024 is our Ellis Town Center Phase II project. The 5-story, 106,000 SF mass timber office building is the Philadelphia region's first building to offer an entirely sustainable technique for general office use.



# What We've Accomplished

Throughout Year 3, O&N actively collaborated with local material providers to further explore and integrate carbon-reducing options into our projects. Working closely with these suppliers, we identified effective ways to adjust project documents and incorporate lower carbon alternatives. This collaborative process was facilitated by our engagement with sustainability groups, including the DVASE Sustainable Design Committee, New York City's EDC Mass Timber Studio, and the Carbon Leadership Forum, as well as our dedication to the SE 2050 program, enabling us to tap into the expertise of other AEC professionals. Additionally, we have given over a dozen seminars on alternate construction material at our client's offices.

In line with our commitment to our Embodied Carbon Action Plan, we submitted a diverse range of five projects to the SE 2050 Database. These projects spanned various typologies across sectors such as Healthcare, Education, and Residential. By sharing data from these projects, we contributed to benchmarking carbon reduction goals and supported the collective efforts of the industry.



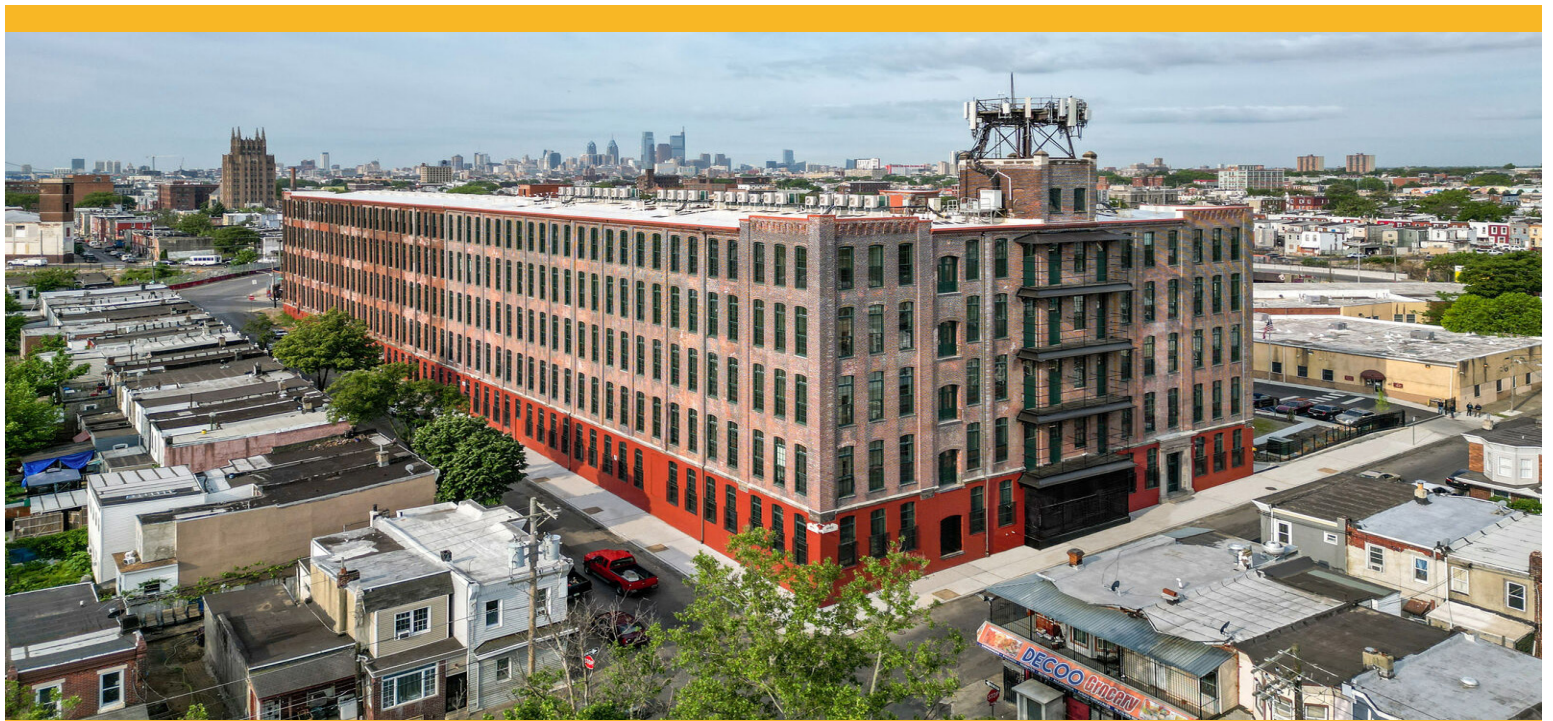
## HOT TIPS!

O&N has provided structural services for nearly 2 million square feet of Total Integrated Panel System Projects (TIPS). The 100% composite TIPS panels retain the same strength as solid concrete panels. This characteristic enables insulated TIPS walls to utilize fewer materials, reduce costs, and significantly diminish carbon footprints compared to traditional tilt-up methods.

# Spotlight: Kensington Commons at A & Indiana

The former Hoyle Harrison and Kaye Textile Mill, constructed in 1893, developed out of a small partnership of immigrant weavers to become one of the largest textile firms in the city. After standing vacant for many years, the 140,000 SF facility is now home to Kensington Commons - a multi-phased, mixed-use campus that includes affordable housing for low-income families, medical and social services, a recreational facility, two green spaces, a training site for tradespeople, and transitional housing for veterans.

O&N provided structural services for the **adaptive reuse** renovation and facade restoration of the building into apartments consisting of 48 affordable family housing units and 56 units of veterans transitional housing, as well as 70,000 SF of non-residential commercial space.



# Continuing Our Process

Our commitment to education will persist in Year 4 as our team members actively participate in various sustainability committees, including the DVASE Sustainable Design Committee, New York City's EDC Mass Timber Studio, and the Carbon Leadership Forum. These committees take a leadership role in promoting sustainable design practices within the structural engineering profession. Through advocacy, outreach, education, and active involvement, we contribute to advancing sustainable methodologies and principles across the industry.

O&N underscores our dedication to sustainable design by prioritizing the use of carbon sequestering materials and emphasizing the advantages and sustainability inherent in repurposing existing structures in our projects. Through these initiatives, we aim to encourage a culture of ongoing learning and inspire others in the industry to embrace sustainable practices.

Through our highly successful "O&N University" program, our staff actively engages with external firms by hosting AIA - accredited educational seminars. These seminars focus on sharing insights with peers in the AEC industry, highlighting the utilization of sustainable materials such as mass timber, and emphasizing the benefits and sustainability associated with the adaptive reuse of existing structures in their projects. By facilitating these knowledge-sharing initiatives, we strive to foster a culture of continuous learning and inspire others in the industry to embrace sustainable practices.



## SUSTAINABILITY AT HOME

From reducing our paper usage with paperless billing and digital filing systems to office-wide recycling programs, and utilizing eco-friendly commuting and filling our offices with plants and natural light – we try to practice what we preach with our own green initiatives!



## LET'S GIVE THEM SOMETHING TO TALK ABOUT

In 2023, we presented over a dozen of our AIA registered classes focusing on sustainability topics such as the Adaptive Reuse of existing structures and Mass Timber Construction to our peers in the AEC industry, and have been actively presenting multiple times in 2024!

## Reporting Plan & Reduction Strategy

O&N remains dedicated to identifying projects across various sectors to measure, track, and report embodied carbon data. At the outset of each project, our project lead employs our Project Design Criteria Form, which outlines our approach to calculating embodied carbon and proposes potential structural strategies for its reduction.

Throughout our projects, O&N utilizes life-cycle assessment software to assess structural materials, optimize structural systems, and guide decision-making in reducing embodied carbon. To acquire material-specific Environmental Product Declarations, our office relies on the Embodied Carbon in Construction Calculator (EC3).

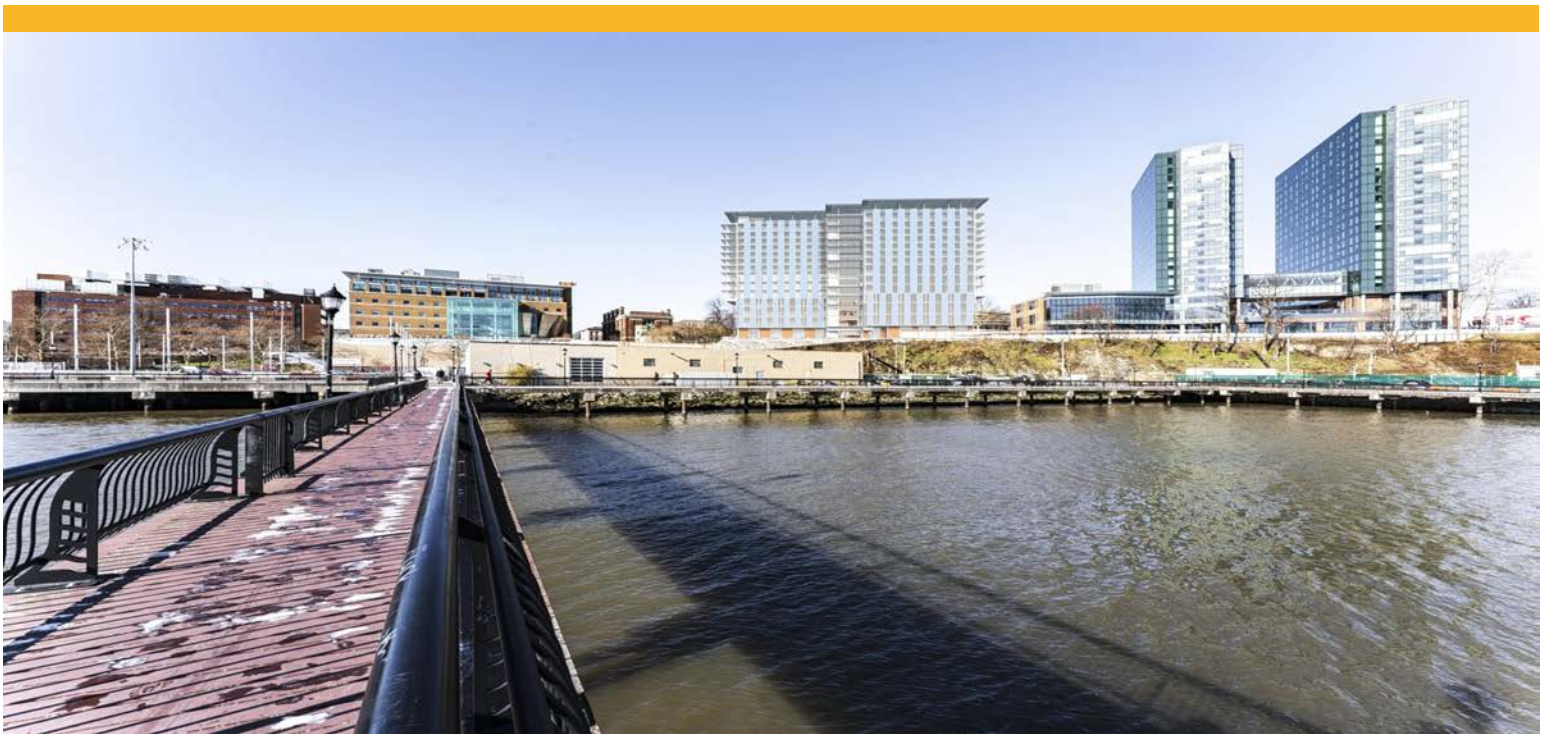
In calculating embodied carbon, O&N leverages our design and documentation modeling software, enabling us to monitor material quantities throughout each design phase alongside the LCA software.

This year, we reaffirm our commitment to completing the SE 2050 database document and submitting a minimum of five projects to the program database.

# Spotlight: Confidential Higher-Ed Project

One of our latest projects is a 386,000 SF living-learning community and mixed-use facility organized into two towers on over 28 acres. The north tower is designed with 18 levels of student housing, while the south tower contains 16 levels of student housing, containing approximately 1,000 beds. A three-level University Center nestles the projects into a steep hill and connects the residential towers at their base.

With a featured plaza, plus several patios and terraces, the university center has created scenic **outdoor spaces** for students in addition to utilizing **healthy materials** for enhanced indoor environmental quality, stormwater management through **green roofs** and **rain gardens**, and a reduced need for shuttle bus service, further **reducing carbon impact**.





# Sharing The Knowledge

O&N remains committed to disseminating information about successful projects and the latest trends in carbon reduction through our social media platforms and company website. We strive to raise awareness and educate our clients, as well as our design and construction partners, about the critical significance of carbon reduction in the built environment. This educational initiative is integrated into our standard project delivery process and extends to our interactions with external organizations that emphasize the importance of carbon reduction.



O&N proudly showcases our commitment to the SE 2050 program on all our firm qualifications and marketing materials during project pursuits, as well as having a featured sustainability section on our new website, which is currently in development and set to launch this year. Through prominently featuring our dedication to this program, we aim to underscore our firm's commitment to sustainable practices and efforts to reduce carbon emissions.

# Our Electives

## EDUCATION:

- + We distribute our Year 4 Embodied Carbon Action Plan (ECAP) within our firm materials as part of our on-boarding process for all new employees.
- + Our Embodied Carbon Reduction Champion spends time in all our offices educating and engaging our staff on carbon reduction strategies and how to effectively implement them on regional projects.
- + To enrich the knowledge and comprehension of our employees, we schedule at least one webinar per year focused on the topic of embodied carbon. This webinar serves as a valuable tool to educate and engage our staff on this significant subject.
- + To provide our technical staff with easy access to valuable resources, we share resources through our ECAP Teams Channel, a comprehensive collection of relevant materials and information related to embodied carbon reduction.
- + As part of our continuous professional development, we mandate that at least one employee attends a presentation or demonstration of an LCA-based tool used to calculate embodied carbon. This requirement ensures that our team stays abreast of the latest methodologies and tools available for precise carbon calculation.

These initiatives collectively contribute to our firm's continuous learning and improvement in reducing embodied carbon in our projects.

## REPORTING:

- + In Year 4, our goal is to submit a minimum of five projects to the SE 2050 Database. In Year 3, our office successfully submitted five projects to the database, showcasing our proactive involvement in advancing carbon reduction efforts. Through consistent contributions to the SE 2050 Database, we aim to facilitate industry-wide benchmarking and cultivate a culture of transparency and accountability in addressing embodied carbon challenges.

# Our Electives (continued)

## REDUCTION:

- + We are steadfast in our commitment to collaborating with concrete suppliers to continue reducing embodied carbon in mix designs. Over the past years, we have effectively coordinated the integration of Supplementary Cementitious Materials (SCMs) with our concrete suppliers across numerous projects. These collaborative endeavors have enabled us to incorporate sustainable alternatives into our concrete mix designs, furthering our efforts toward reducing environmental impact.
- + We continue to prioritize the use of Portland Limestone Cement (PLC) as a substitute for Ordinary Portland Cement (OPC) whenever feasible on our projects. PLC offers a lower carbon footprint compared to OPC, contributing to our ongoing efforts to reduce embodied carbon in our concrete specifications.
- + Expanding on our collaboration with concrete suppliers, we continually revise our concrete specifications to reflect recent coordination efforts and the availability of diverse Supplementary Cementitious Materials (SCMs). By staying abreast of the latest advancements and the availability of sustainable materials, we ensure that our concrete specifications are in line with our objectives of minimizing embodied carbon in our projects.

Through these ongoing efforts, we endeavor to optimize our concrete mix designs and specifications, thereby making a significant contribution to a more sustainable built environment.

## ADVOCACY:

- + To ensure our clients understand the value of the SE 2050 program, we actively communicate this significance through our social media platforms. We are dedicated to emphasizing the importance of SE 2050 and highlighting O&N's steadfast commitment to the program. Through sharing information and updates related to SE 2050, our goal is to raise awareness and educate our clients about the crucial role of embodied carbon reduction in the built environment.

## Our Electives (continued)

- + Our project proposals proudly proclaim our firm as a participant in the SE 2050 Commitment. This language effectively conveys our commitment to carbon reduction and bolsters our firm's qualifications and expertise in sustainable design. We integrate this declaration into our marketing materials, which we utilize during project pursuits to demonstrate our alignment with SE 2050.
- + We prominently display our commitment to SE 2050 on our company website. By highlighting this commitment, we strive to demonstrate our values and inspire others in the industry to join the global movement towards reducing embodied carbon.
- + As part of our commitment to educating our clients, we consistently provide opportunities for them to enhance their understanding of embodied carbon reduction. One approach is through offering webinars focused on this topic. Additionally, we organize AIA-accredited lunch and learn sessions specifically tailored to educating our clients about carbon-reducing materials. These initiatives foster open dialogue and collaboration, ensuring that our clients are well-informed and actively engaged in achieving sustainable outcomes.

Overall, these efforts demonstrate our proactive approach in engaging our clients, promoting SE 2050, and fostering a shared commitment towards reducing embodied carbon.



### IN THE NEWS!

Our President Dennis Mordan, PE, SE is a nationally recognized thought leader dedicated to spreading awareness of mass timber's enormous sustainability and cost-efficiency benefits. Dennis has recently been featured in two articles in Civil + Structural Engineer magazine (Mass Timber in the United States Parts 1 and 2), speaking to the benefits of Mass Timber construction.

# What We Have Learned...

O&N's dedication to the SE 2050 Program reflects our commitment to mitigating the adverse environmental impacts associated with building construction. Over the past year, we have observed a positive reception and enthusiasm among our staff and partners regarding education and awareness surrounding embodied carbon reduction. By initiating conversations and raising awareness, we can inspire project teams to actively engage in efforts to reduce embodied carbon. The collective drive to achieve decarbonization goals within project teams is both exciting and motivating.

We have placed significant emphasis on coordinating our data reporting plan right from the outset of a project. This early coordination ensures that all stakeholders can contribute to the accurate tracking and preparation of information. This coordination is particularly crucial in the generation of our material-tracking models. By involving all parties from the beginning, we can enhance the accuracy and reliability of our data.

Furthermore, we have recognized the importance of developing project specifications that allow for the inclusion of various options for embodied carbon-reducing materials. For instance, by incorporating supplementary cementitious materials (SCMs) in concrete mixes, we can significantly reduce carbon emissions. By providing multiple options in our material specifications, we create better opportunities for the successful implementation of carbon reduction strategies during project construction.

These valuable lessons have shaped our approach, highlighting the significance of early coordination and flexible project specifications. By implementing these practices, we aim to enhance the effectiveness of our efforts in reducing embodied carbon and promoting sustainable construction practices.



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