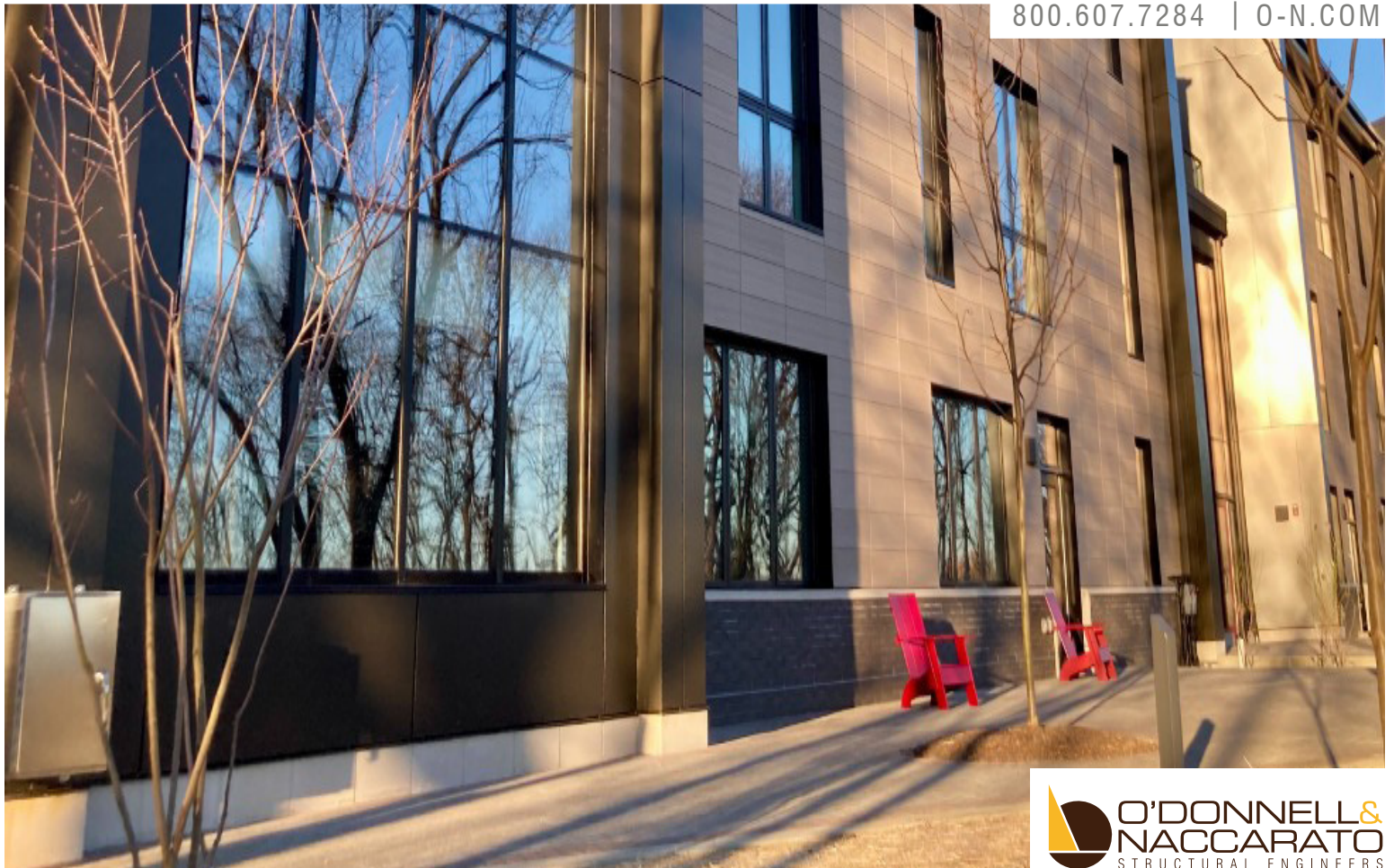




SE2050

# YEAR 3 PLAN

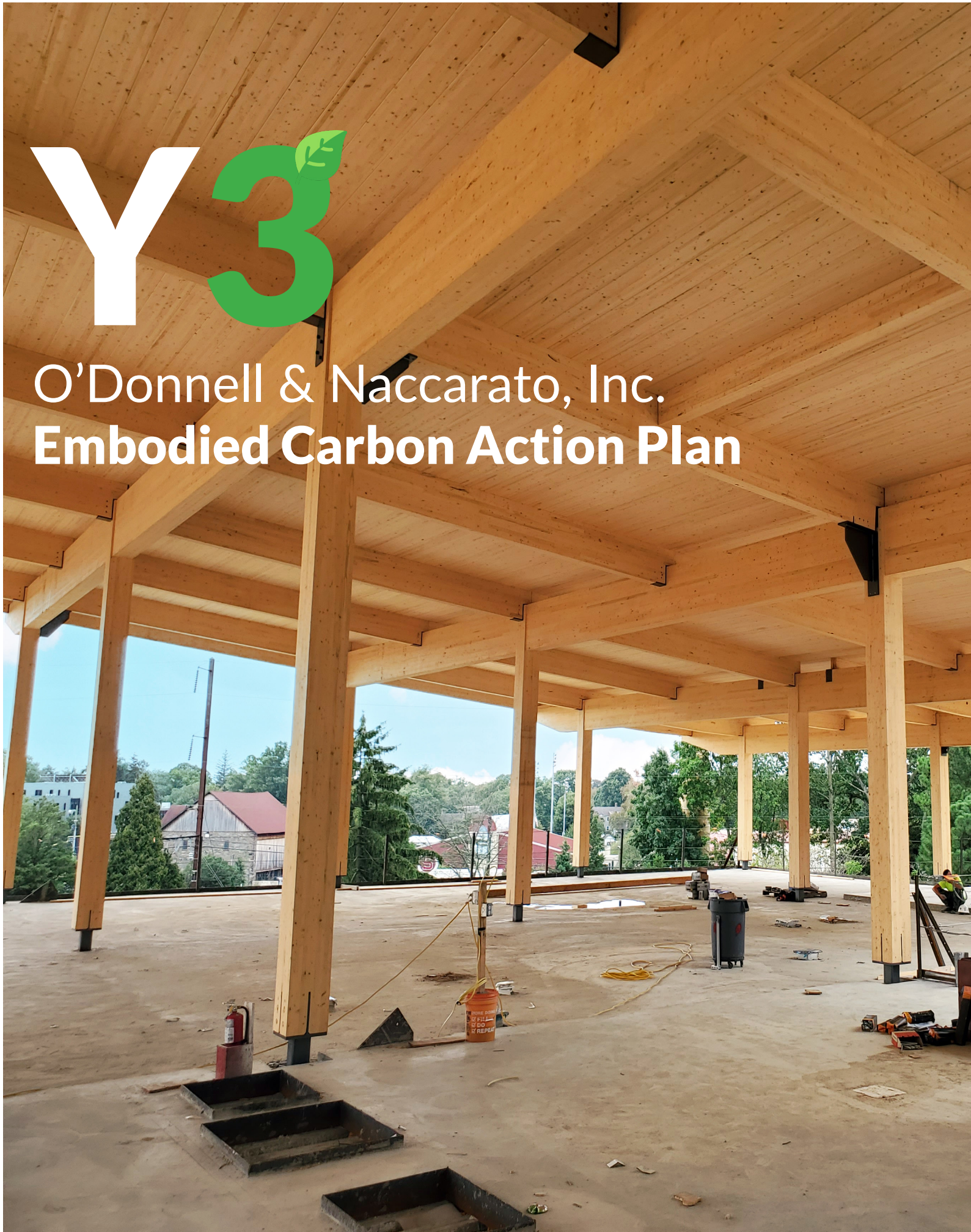


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# O'Donnell & Naccarato, Inc. **Embodied Carbon Action Plan**







## Full Steam Ahead!

O'Donnell & Naccarato (O&N) made a commitment to the SE 2050 program in 2020, aiming to significantly reduce and eventually eliminate embodied carbon in structural engineering within the built environment by 2050. As we enter 2023, Year 3 of our Embodied Carbon Action Plan (ECAP), our primary focus remains on education, advocacy, and the development of strategies to effectively implement carbon reduction in our projects. Throughout this year, we will maintain our collaborative efforts with project partners to drive meaningful change. We are excited to witness the increased engagement from the AEC community in recognizing the urgent necessity for reducing embodied carbon.



Construction on Swarthmore College's biophillicly - designed Sharpless Dining Hall project completed, just in time for the 2023 school year (*also pictured left*)! Sharpless Dining Hall is a mass-timber project that is also recognized as the first net-zero dining facility in the country.



# What We've Accomplished

During Year 2, O&N actively collaborated with local material providers to explore and incorporate carbon-reducing options into our projects. We worked closely with these suppliers to identify the most effective ways to modify our project documents and integrate lower carbon alternatives. This process was facilitated by our engagement with sustainability groups and our commitment to SE 2050, which allowed us to leverage the expertise of other AEC professionals.

As part of our commitment to our Embodied Carbon Action Plan, we submitted a diverse range of five projects to the SE 2050 Database. These projects encompassed various typologies, ranging from site-cast concrete structures to mass timber construction. By sharing these projects' data, we contributed to the benchmarking of carbon reduction goals and support the collective efforts of the industry.



## FROM START TO FINISH

Recently, our engineers made the trek up to Quebec, Canada to visit Nordic Structures, creators of engineered wood products for the construction industry. Our crew was able to observe a variety of processes: from the raw wood being unloaded at the mill, all the way through to the production of the end product. The photo to the left includes wood members that will be shipped down to our mass-timber project at Ellis Town Center, which is slated for completion in 2024!



# Spotlight: *Ellis Town Center*

The 5-story, 106,000 SF **mass timber** office building is the final phase of Equus Capital Partner's 213-acre Ellis Preserve development. The cutting-edge **eco-friendly** structure features highly efficient 21,000 SF floor plates, exposed timber framing, and 14' high wood ceilings. Extensive glass throughout provides an exterior showcase for the **mass timber wood columns and beams** incorporated in the design aesthetic, while drawing in abundant natural light.

The building also features an additional 2 levels (115,000 SF) of parking below-grade, as well as an associated contiguous precast concrete parking deck with one elevated level of 44,000 SF, for a total of 159,000 SF of parking area.



# Continuing Our Process

Over the past two years, we have actively involved all members of O&N's staff in comprehensive education regarding the impacts of embodied carbon, the objectives of the SE 2050 Commitment, and methods to effectively reduce embodied carbon. This commitment to education will persist in Year 3, as we recognize the collective responsibility we hold as structural engineers to mitigate carbon emissions for the sake of future generations. Our staff members are driven by a genuine passion to achieve the goals set forth by SE 2050.

In Year 3, we will continue to tap into both internal and external resources to further educate our firm on sustainable design practices. Our collaborations and relationships with like-minded professionals in the AEC industry present valuable opportunities to disseminate knowledge and empower our staff in making tangible impacts in carbon reduction.

Through our "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.



## EDUCATING ON SUSTAINABILITY

Currently, we have a total of three classes registered with AIA continuing education that focus on sustainability topics such as the Adaptive Reuse of existing structures and Mass Timber Construction. Our engineers are actively presenting these courses to our peers in the AEC industry.



## KEEPING THE CONVERSATION GOING

Our engineers are continuously advancing the conversation of sustainability among our peers, not only by providing AIA - accredited continuing education on the subject but engaging in community forums both local and national. Here we are moderating the BISNOW State of Philadelphia Healthcare Forum, focusing on sustainability and new technology developments in Healthcare.

## Reporting Plan & Reduction Strategy

O&N remains committed to identifying projects across various sectors for the purpose of measuring, tracking, and reporting embodied carbon data. At the beginning of each project, our project lead employs our Project Design Criteria Form, which outlines our approach to calculating embodied carbon and suggests potential structural strategies for reducing it.

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

To aid in the calculation of embodied carbon, O&N leverages our design and documentation modeling software, which allows us to track material quantities during each design phase alongside the LCA software.

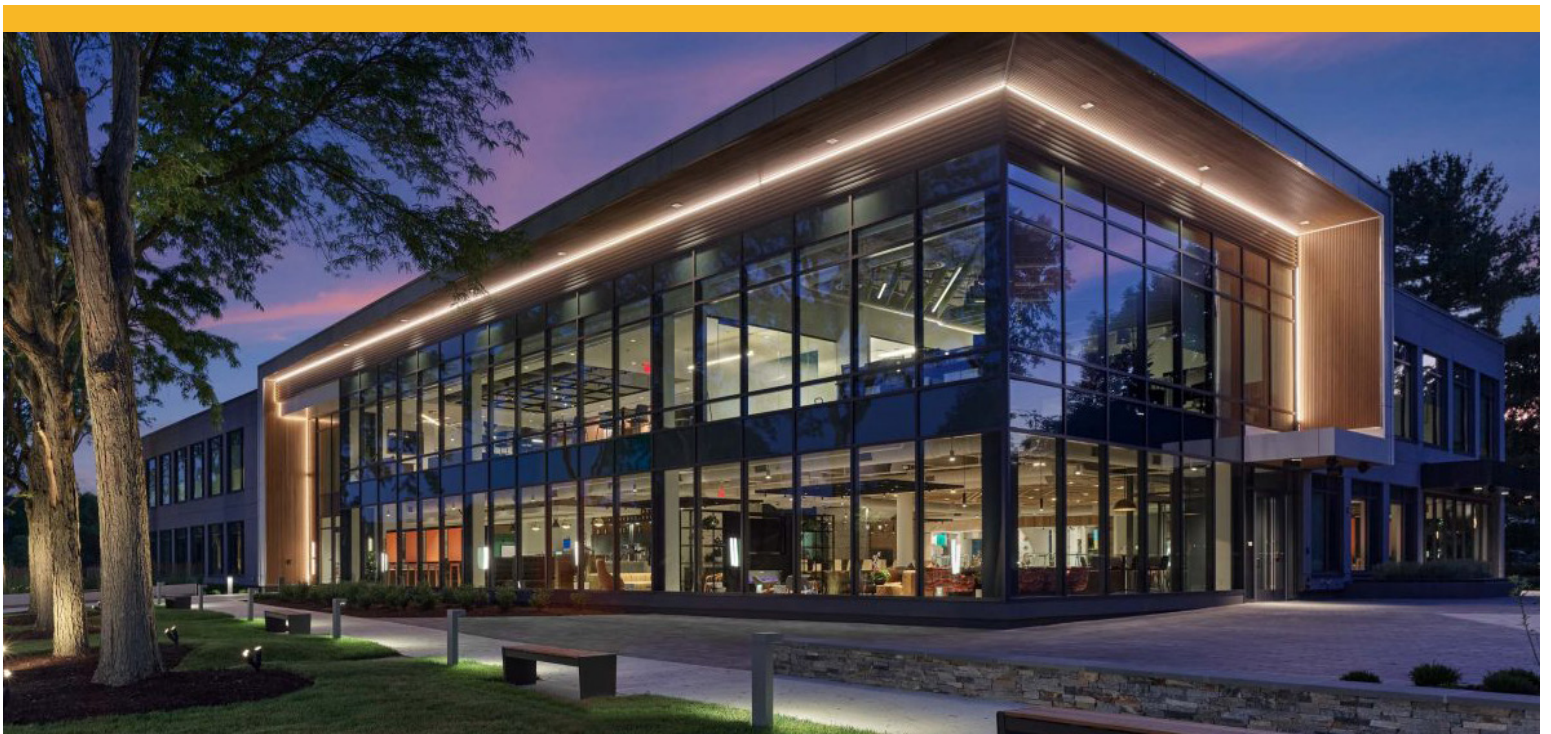
This year, we are once again committed to completing the SE 2050 database document and submitting a minimum of five projects to the program database.



# Spotlight: *Chesterbrook Corporate Campus*

Set on over 140 acres of bucolic woodlands, the 14-building, 1.1 million SF Chesterbrook Corporate Campus was in major need of an update both inside and out. O'Donnell & Naccarato provided structural services for more energy efficient renovations to update the interiors of the buildings including upgrades to lobbies, common areas, and HVAC systems, as well as the recladding of the building's exteriors to give the structures new, modern facades.

The centerpiece of the campus re-positioning effort is the 2-story, 41,331 SF amenity hub dubbed "The Circuit". The completely **renovated and re-imagined** structure provides a central area and gathering place for tenants, and houses a fitness center, conference space, game room, café, indoor and outdoor lounge areas, and co-working spaces.





# Sharing What We Have Learned

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. By prominently highlighting our dedication to this program, we aim to demonstrate our firm's commitment to sustainable practices and carbon reduction efforts.

(Above) A few of our employees getting a first-hand look at one of our adaptive reuse projects and learning what it takes to breathe new life into old structures.



# Our Electives

## EDUCATION:

- + We distribute our Year 3 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 enhance the knowledge and understanding of our employees, we organize a minimum of one webinar dedicated to the topic of embodied carbon. This webinar serves as a valuable resource to educate and engage our staff on this important subject.
- + To provide our technical staff with access to valuable resources, we we share resources through our ECAP Teams Channel. This serves as a comprehensive collection of relevant materials and information related to embodied carbon reduction.
- + As part of our ongoing professional development, we require a minimum of one employee to attend a presentation or demonstration of an LCA-based tool used to calculate embodied carbon. This ensures that our team remains up to date with the latest methodologies and tools available for accurate carbon calculation.

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

## REPORTING:

- + In Year 3, we have set a target to submit a minimum of two projects per U.S. office to the SE 2050 Database. In Year 2, our office successfully submitted five projects to the database, highlighting our proactive engagement in advancing carbon reduction efforts. By consistently contributing to the SE 2050 Database, we aim to support industry-wide benchmarking and foster a culture of transparency and accountability in addressing embodied carbon challenges.



# Our Electives *(continued)*

## REDUCTION:

- + We remain committed to collaborating with concrete suppliers to further reduce embodied carbon in mix designs. In previous years, we have successfully coordinated the use of Supplementary Cementitious Materials (SCMs) with our concrete suppliers on various projects. These efforts have allowed us to incorporate sustainable alternatives into our concrete mix designs.
- + Furthermore, 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.
- + Building upon our collaboration with concrete suppliers, we consistently update our concrete specifications based on recent coordination and the availability of various SCMs. By staying informed about the latest advancements and readily available sustainable materials, we ensure that our concrete specifications align with our goals of reducing embodied carbon in our projects.

Through these ongoing efforts, we strive to optimize our concrete mix designs and specifications, ultimately contributing to a more sustainable built environment.

## ADVOCACY:

- + To ensure our clients understand the value of the SE 2050 program, we actively communicate this value through our social media platforms. We will continue to emphasize the significance of SE 2050 and highlight O&N's unwavering commitment to the program. By sharing information and updates related to SE 2050, we aim to create awareness and educate our clients about the importance of embodied carbon reduction in the built environment.



## Our Electives *(continued)*

- + Our project proposals proudly declare our firm as a member of the SE 2050 Commitment. This language effectively communicates our dedication to carbon reduction and reinforces our firm's qualifications and expertise in sustainable design. We incorporate this declaration into our marketing materials, which we utilize during project pursuits to showcase 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 dedication to educating our clients, we continue to share opportunities for them to enhance their understanding of embodied carbon reduction. One way we do this is by offering webinars focused on this topic. We also 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 informed and engaged in the process of 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.



### LAST BUT NOT LEAST...

January 2023 marked the completion of our Fahey Commons project at Muhlenberg College *(also on cover)*. This cutting-edge facility, built to LEED Gold standards, uses 70% less energy than a typical structure and is one of the first 20 projects in the world to pursue the Living Building Challenge CORE certification!

# What We Have Learned...

O&N's commitment to the SE 2050 Program stems from our desire to minimize the adverse environmental impacts associated with building construction. In the past year, we have witnessed positive reception and enthusiasm among our staff and partners when it comes to education and awareness regarding 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 truly exciting and motivating.

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

Furthermore, we have recognized the significance 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, emphasizing the importance 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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