

O'Donnell & Naccarato, Inc.
Embodied Carbon Action Plan Year 2



Let's Keep Moving Forward!

O'Donnell & Naccarato (O&N) is committed to the SE 2050 program to reduce and ultimately eliminate embodied carbon through structural engineering in the built environment by 2050, and so are our colleagues and clients. Our Embodied Carbon Action Plan (ECAP) 2022 - Year 2, focuses on the continuation of education and advocacy of the SE 2050 program and ways to better implement the program's goals into our projects. We have learned a lot in Year 1 and look forward to making more strides in embodied carbon reduction in Year 2.



Accomplishments



In conformance with our Year 1 Embodied Carbon Action Plan, O&N advocated, educated, and reported with respect to reducing embodied carbon in the built environment. We submitted data from five of our projects to the SE 2050 Database. These projects varied in use from higher education to industrial to provide broad a range of data to assist in the efforts of establishing benchmarks and targets of the carbon reducing goals.

We were successful on many projects when it came to educating our clients on the need for carbon reduction and providing them cost effective solutions to accomplish it from structural system efficiency to increasing supplementary cementitious materials in concrete mixtures.

PROJECT SPOTLIGHT: Swarthmore College Sharples Dining Hall | Swarthmore, PA (pictured)

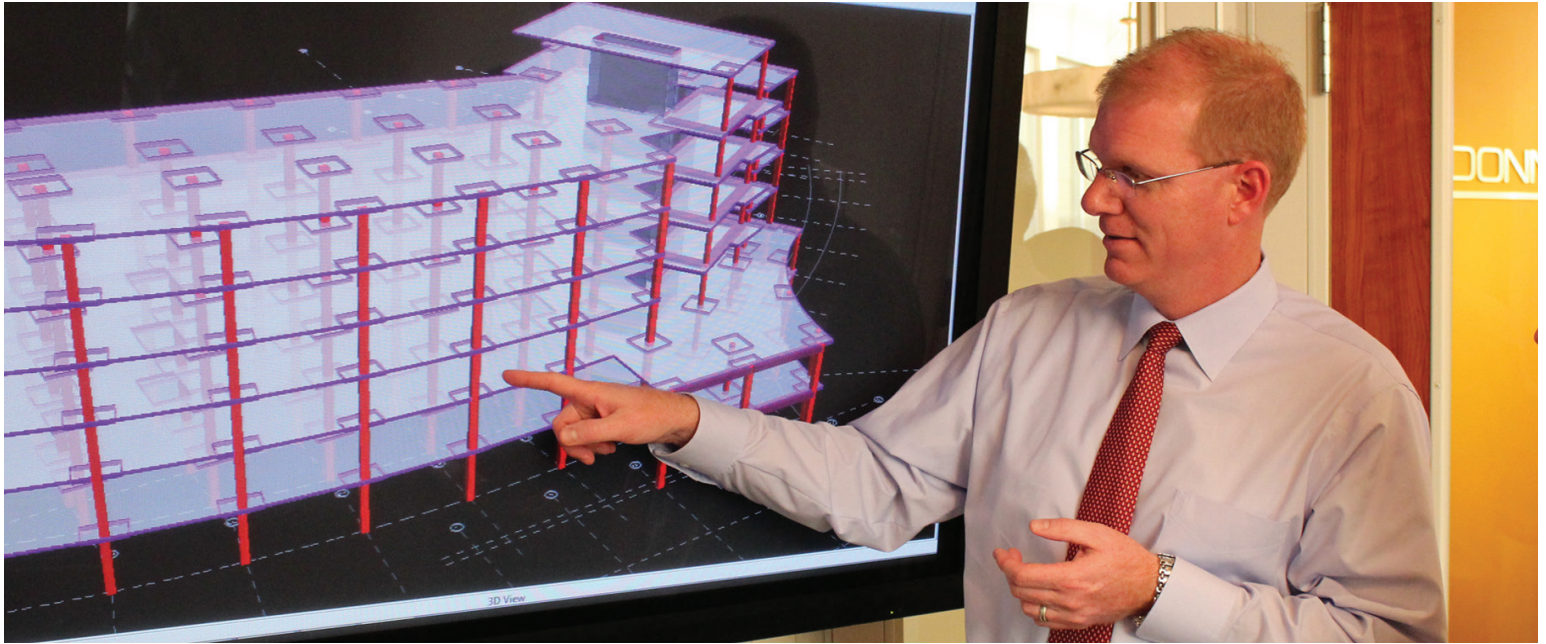
Originally constructed in 1964, Sharples Dining Hall is a hub of student life on Swarthmore's campus. However, due to the rapidly growing student body, the facility was no longer able to properly accommodate the increased population and was in need of expansion.

O'Donnell & Naccarato provided structural services for the design and construction of the new 40,000 SF, 800-seat dining facility. The hybrid facility, constructed using steel and **mass timber**, utilizes biophilic design to fit into the surrounding landscape and features an undulating curved roof, exposed bracing, and five-foot roof cantilevers on three sides. Sharples Dining Hall is also recognized as the **first net-zero dining facility in the country**.





Continuing The Process



Over this past year we have engaged all members of O&N's staff to educate them on the impacts of embodied carbon, the goals of the SE 2050 Commitment, and methods to reduce embodied carbon. This was accomplished through firm-wide memorandums, internal presentations, and external seminars. We have had great internal participation from all members of our staff. Our internal green initiative team has members from each of our offices.

As we enter Year 2 of our Embodied Carbon Action Plan, we plan to continue educating our firm on ways to reduce our carbon footprint in project design. In addition to the methods that were successful this past year, we will look more to broadly engage external groups with similar goals such as the Carbon Leadership Forum and AIA 2030 Commitment.

O&N has also joined the sustainability committees of the structural engineering organizations local to our offices.



Reporting Plan & Reduction Strategy



O&N will continue to identify projects across varying sectors to measure, track, and report embodied carbon data. Our project lead utilizes our Project Design Criteria Form at the start of each project, which describes our approach for calculating embodied carbon and potential structural strategies to reduce it.

O&N utilizes life-cycle assessment software throughout projects to assess structural materials, structural system optimization, and construction techniques to inform our approach in reducing embodied carbon.

Our office will use the Embodied Carbon in Construction Calculator (EC3) to obtain material specific Environmental Product Declarations.

O&N relies on our design and documentation modeling software for material quantity tracking to assist with the calculation of embodied carbon. During each design phase of the project in conjunction with the LCA software.

We will complete the SE 2050 database document and submit a minimum of five projects to the SE 2050 program database this year.



Sharing What We Have Learned

We continue to share information regarding successful projects and latest trends in carbon reduction through our social media platforms and company website.

We continue to bring awareness and strive to educate our clients and design/construction partners on the importance of carbon reduction in the built environment. This occurs during our typical project delivery process and interface with external organizations that highlight carbon reduction.

O&N's commitment to the SE 2050 program is highlighted on all of our firm qualifications and marketing materials in project pursuits.



PROJECT SPOTLIGHT: Muhlenberg College Parkway Boulevard Building | Allentown, PA (pictured)

As the first new construction on Muhlenberg's campus in 16 years, the 3-story, 20,000 SF Parkway Boulevard Building not only breathes new life into the campus, but the surrounding environment as well. From the biophilic design, as well as the **LEED Gold** construction standards, the structure utilizes **70% less energy** than a typical structure thanks to rooftop solar panels and efficient heating, cooling, and lighting systems. The building is constructed as **one of the first 20 projects in the world to pursue the Living Building Challenge CORE certification** — the most advanced measure of sustainability in the built environment.





Electives

Listed below are the electives we plan to complete in Year 2:

EDUCATION:

- + Distributing our Year 2 ECAP within our firm, as completed in Year 1.
- + Making (1) webinar focused on embodied carbon available to employees. In Year 1 our employees were presented the Embodied Carbon 101 webinar.
- + Sharing the SE 2050 library of resources with technical staff.
- + Minimum (1) employee attending a presentation or demo of an LCA-based tool used to calculate embodied carbon, such as Tally, Athena IEB, or One Click LCA.

REPORTING:

- + Submitting a minimum of (2) projects per U.S. office with structural engineering services to the SE 2050 Database. In Year 1 our office submitted (5) projects to the database.

REDUCTION:

- + Collaborating with concrete suppliers to reduce embodied carbon in a mix design. In Year 1, we successfully coordinated SCM's with concrete suppliers on several projects. Portland Limestone Cement was also successfully substituted on projects for Ordinary Portland Cement.
- + Creating a project-specific embodied carbon reduction plan.

ADVOCACY:

- + Describing the value of SE 2050 to our clients. The value of SE 2050 and O&N's commitment to it was distributed via our social media platforms in Year 1 and we will continue to do so.
- + Declaring our firm as member of the SE 2050 Commitment with boiler plate proposal language. In Year 1, O&N's commitment to the SE 2050 was noted in our firm qualifications and marketing materials use in project pursuits.
- + Sharing our commitment to SE 2050 on our company website. This information was added to O&N's website in Year 1 and will remain.
- + Sharing education opportunities with clients. During Year 1, we shared embodied carbon reduction webinar opportunities with our clients, such as lunch and learns on carbon reducing materials.



Lessons Learned



O&N pledged our support to the SE 2050 Program in an effort to make a contribution to minimize the negative impacts of building construction on our environment. Educating our staff and partners was very well received this past year. We learned that simply starting the conversation gets people and project teams energized to reduce embodied carbon. It is exciting to experience a project team joining forces to achieve the goals of decarbonisation.

This past year has taught us that we must coordinate our plan of reporting data at the onset of a project so that all stakeholders can assist us in tracking and preparing accurate information. This is particularly important in the generation of our models used to track materials.

We also learned that our project specifications must be developed to allow options for embodied carbon reducing materials, such as supplementary cementitious materials in concrete mixes. When multiple options are provided in the material specifications there is better opportunity for successful implementation in the project construction.