AT THE FOREFRONT OF LEED

THE SNYDER CENTER

When the founders of Phillips Academy in Andover, Mass. established the secondary school in 1778, they likely did not predict that one day, one of their campus buildings would produce its own electricity. Today, Phillips Academy is leading the way for LEED academic campuses around the country. The school's Snyder Center, a state-of-the-art athletic facility completed in 2018 by Erland Construction and designed by Perkins+Will, achieved LEED (Leadership and Energy Environmental Design) Platinum. This is the most challenging certification level to achieve from the U.S. Green Building Council (USGBC). LEED certification is a globally recognized symbol of sustainability achievement.

Photography by: Chuck Choi

"ERLAND'S DEDICATED STAFF REMAINED ONSITE FOR THE DURATION OF THE PROJECT. WORKING CLOSELY TOGETHER, DISRUPTION TO THE STUDENTS' NORMAL DAY-TO-DAY ACTIVITIES WAS KEPT TO A MINIMUM."

"Phillips Academy is committed to making their campus sustainable. They set the bar really high for this project and met their goal, which speaks to their mission of supporting the health of their students, faculty, staff, and the environment," said Steve Craft, Erland Construction, who was the project executive for the Snyder Center.

Unlike traditional athletic centers, the Snyder Center is a warm, inviting space. At 98,800 square feet, its high ceilings and long windows draw in natural light. Students can engage in a range of activities from yoga to strength-training. The Center includes a 200-meter indoor track, four multi-use tennis and basketball courts. Students who love playing squash can access the 12-court squash center, which includes a U.S. Squash rated tournament court. Additionally, there are spaces for students to study and congregate when they are not training.

"I still get the same reaction that everyone gets when they walk into this building – astonishment," said Sean Griffen, project manager, Erland Construction. "Our entire operations and field staff were onsite at all times working in collaboration with Perkins+Will, which was probably one of the biggest factors for the project's momentum and for LEED."

Erland worked every step of the way with Perkins+Will and the school. This teamwork was the main push for achieving LEED Platinum.

"Erland's dedicated staff remained onsite for the duration of the project. Working closely together, disruption to the students' normal day-to-day activities was kept to a minimum," said Larry Muench, director of facilities, Phillips Academy. "Erland's attention to detail and commitment to safety shone through and we could not have managed the project so well without their team."

"THIS LEED CERTIFICATION STEMS FROM PERKINS+WILL AND THEIR ABILITY TO UTILIZE THE SITE AS WELL AS DESIGN A REMARKABLY SUSTAINABLE BUILDING,"

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Erland managed and tracked the LEED checklist for the project – a requirement of the USGBC to be considered for LEED certification.

"This LEED certification stems from Perkins+Will and their ability to utilize the site as well as design a remarkably sustainable building," said Griffen. "Perkins+Will gave us the materials we were going to use, and we had to make sure they were documented, accounted for and submitted correctly."

The Snyder Center's key LEED features include 1,778 solar panels on its roof. The building is also heated and cooled by waste heat year-round from the school's adjacent ice rink. Due to both of these solutions, the Snyder Center adds no additional energy consumption for the campus.

"Erland played a critical role in documenting the construction credits for the LEED application, and did an excellent job of going above and beyond to ensure all targeted credits were awarded," said Tyler Hinckley, senior associate, project architect, Perkins+Will. "Regular meetings with the design team and thorough updates of information ensured that there were no surprises, and meticulous records translated to receiving every credit attempted and therefore accomplishing the LEED Platinum certification."

SOLAR PANELS

Erland worked with Solect Energy Development of Hopkinton, Mass. to structurally reinforce the Snyder Center's roof for the installation of the 1,700-plus solar panel field and coordinated the power's flow from the roof into the Center. Permitting, inspections and certifications can especially impact any building process, so it is essential to select the solar contractor early on during the initial stage of construction.

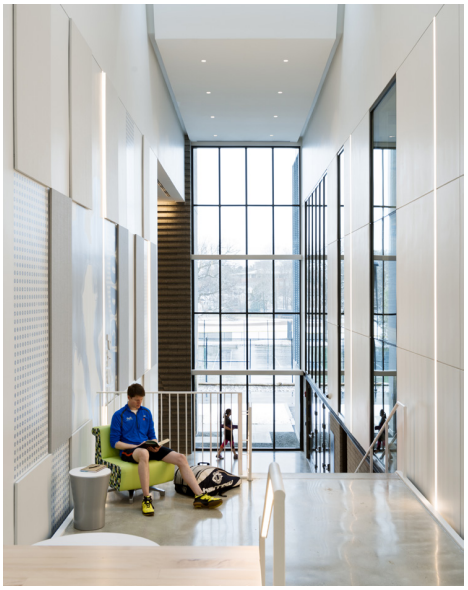
"If possible, bring the solar contractor on board right in the beginning and understand their needs," said Craft. "Then as you're designing MEPs (mechanical, electrical and plumbing), you can include solar provisions so you have enough conduits and raceways traveling throughout your building. Incorporating the solar contractor's master schedule for the entire project can determine when items, like the roof, need to be in place to ensure deadlines are met."

UP AGAINST THE WINTER MONTHS AND A DEADLINE TO INSTALL THE SOLAR FIELD, ERLAND WORKED QUICKLY AND EFFICIENTLY ALONGSIDE SOLECT ENERGY DEVELOPMENT AND PERKINS+WILL.

Up against the winter months and a deadline to install the solar field, Erland worked quickly and efficiently alongside Solect Energy Development and Perkins+Will. Materials during this time were moved around on weekends so that students were not disturbed. Once the solar panels were onsite, an electrical inspector needed to approve the panels, which were then certified by National Grid.

The solar panel installation process posed several challenges that Erland's use of BIM (Building Information Modelling) confronted with diligence; scheduling being a major one. The building's overhead mechanical and electrical systems needed to be completely installed and functioning prior to the installation of the solar panels on the roof. Early on, the Erland team determined only 50 percent of the buildings overhead space could be allotted for mechanical and electrical raceways—this was largely due to the overhead space requirements for the oversized roof drains, hot water lines that were fed in from the adjacent ice rink, and lack of architectural ceiling above the indoor track. The BIM model showed that there was extremely limited space to fit the massive systems required to properly condition this building. Had this not been identified upfront, the project could have been delayed.

"Our coordination department had the big picture lens of the building's mechanical and electrical systems: it's a major duct bank and infrastructure with high voltage wiring that weaves through an almost 100,000-square-foot building," said Ken Tessitore, superintendent, Erland Construction. "To make this work and prepare for the solar panels, we used our BIM model to take everything that was already in place, in terms of mechanical



Photography by: Chuck Choi

infrastructure, and weaved all 14 large conduits through the building to keep them concealed as much as possible."

With excellent coordination and teamwork, the solar field was completed on time. The Snyder Center's solar field is one main power source for the building and effectively reduces electricity costs.

REPURPOSING WASTE HEAT

Phillips Academy is also saving a significant amount by repurposing the waste heat from the upgrades made to the ice area refrigeration system as part of the Snyder Center project. Connected thermally with underground piping, the arena's new heat pump refrigeration system captures and transfers waste heat to the adjacent Snyder Center. The design team identified this strategy during the Athletics Master Plan which contributed to Perkins+Will's net zero energy design for the Snyder Center.

Erland and Perkins+Will needed to connect the MEP resources between the Center and the ice arena within an existing underground utility corridor. However, using a shared infrastructure, there was very limited space for the new mechanicals. They also needed to work around a landscaped rain garden that manages the water run-off and drainage for the school's existing football field. Erland's MEP and BIM coordination teams found a solution. The coordination department started by creating digital models that were methodically documented. The field staff used the models and systematically tested the pipes, which were heavily inspected. This high degree of coordination allowed Erland and Perkins+Will to successfully find space for new utilities without disturbing existing ones.

"PHILLIPS ACADEMY ASSISTED IN EVERY EFFORT, FROM DESIGN TO CONSTRUCTION. THEY WERE PROBABLY OUR BIGGEST ASSET IN COMPLETING THE BUILDING,"

"The waste heat from the ice making process is able to be used to heat the new building, thus reducing the energy use of the Snyder Center by half," said Hinckley. "In order to utilize the waste heat to this extent, Erland had to manage the replacement of the ice arena's existing refrigeration system while the rink was in constant use and coordinate significant underground piping between the arena and the Snyder Center through an already crowded utility corridor. The success of that effort was critical to the project achieving a net zero energy design."

OTHER LEED IMPACTS

As the most widely-used green building rating system in the world, LEED sets the standard for identifying and implementing practical and measurable green building design, construction, operations and maintenance solutions. It also provides a framework to create healthy, highly-efficient and cost-saving green buildings.

"Phillips Academy assisted in every effort, from design to construction. They were probably our biggest asset in completing the building," said Griffen. "Because of their hard work and the work of Perkins+Will, they will benefit from this cost-saving, energy efficient building for generations."

In addition to the impact of the solar field and waste heat, the Platinum certification recognizes Erland and Perkins+Will's ability to achieve other LEED credits. More than 25 percent of construction content was recycled and close to 25 percent of regional materials were used for the project. On any given day, students can be seen sitting on benches built from repurposed beech trees, local to the campus.

"It was a pleasure to work with Erland and Perkins+Will," said Muench. "The Snyder Center meets and exceeds the goals we set and we thank them for their outstanding effort."

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