Making Every Decision Count to Achieve Complex Project Goals

The S/L/A/M Collaborative — STONEHILL COLLEGE
Stonehill College Science Center

Leaders of Stonehill College established a set of complex goals for what they envisioned as a keystone building anchoring a new campus quadrangle, one that would be prominently sited to emphasize the importance of the sciences to their community, provide cutting-edge spaces for their undergraduate STEM learning community, and do so at the lowest possible cost and impact on the environment.

Such ambitious goals posed difficult challenges to the planning team, key among them achieving a workable balance between keeping construction costs from escalating while keeping programmatic opportunities at the highest level.

Stonehill leaders recognized that uncontrolled or unanticipated costs could seriously threaten, if not derail, its ability to bring forth ultimately a building that would accommodate over the long-term a robust undergraduate learning community, and do so most cost-effectively—surely an essential property of a 'sustainable' facility.

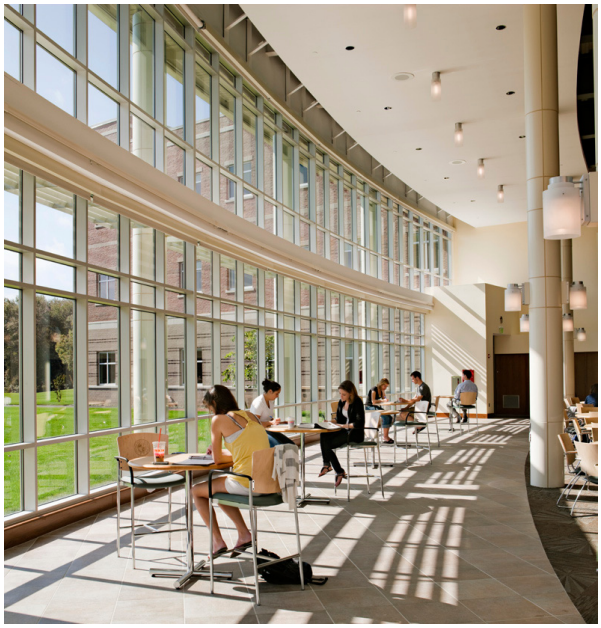
So, how did we proceed?

First was to establish a cohesive leadership team involving all the stakeholders in the project. All decisions were made through the integrated planning process, which was successful because each person knew that each decision, when final, would have an impact on their sphere of responsibility within the project— be it the academic program, the operational and capital budgets, the building design/construction, or institutional distinction.

Recognizing the imperative to address budgetary implications of decisions made at each step in the process, as well as the heavy resource demands of a 21st century science facility, an early-on invitation was extended to professionals from the local electrical utility, National Grid. National Grid assisted in the development of an Energy Model of the project. The Energy Model identified the savings particular pieces of energy-efficient equipment generate over their life-span and helped keep these items in the project notwithstanding the higher first cost. One outcome of involving the utility company in planning at this pre-design stage was their offer of a one-time cash incentive for incorporating energy-efficient design and of their assistance in arriving at that design.

One measure of the success of this integrated planning process is that the final project came in $1 million under the $34 million originally set for the project budget.

There were a number of sustainable and cost-saving measures identified by the energy model. Variable Frequency Drives were used on air handling fans and pumps. Four air handlers are used to tailor the air flow demands to the differing needs of different spaces.



Low flow fume hoods are provided in the Chemistry labs where fume hoods are used the most and demand a constant supply of fresh air. Within the air handlers are components that capture the sensible heat from air being exhausted out of the building and transfer much of it to the incoming air. These types of systems have a ripple effect. The demands of the heating and cooling equipment are reduced. Consequently the equipment becomes smaller and its space requirement is reduced. These savings in space can translate to a smaller building or more space for academic use.

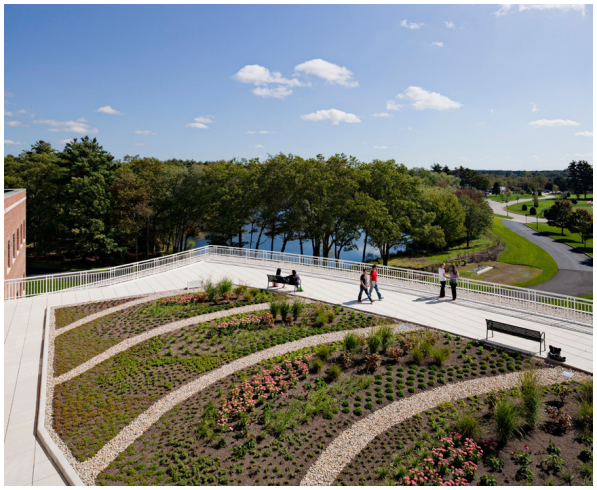
There were other ways that the project accomplished its complex goals of high program quality, low budget impact, and environmental stewardship. Building less means lower resource needs and thus lower resource costs. The faculty stakeholders in the project had been wrestling for some time with questions about what would be happening within the new spaces and how they could connect student learning into goals for spaces for student learning.

One approach was the integrated lecture/lab, incorporating pedagogical approaches that keep the students in one space for activities within a single class that traditionally would be separate: lecture here and now, lab then and there. The design of the 'classlab' is with a face-forward teaching wall that supports the lecture, with benches with utilities and sinks for the hands-on, discovery-based research-rich learning that was the pedagogical approach valued by faculty. One unanticipated, but now-celebrated, bonus from the integration of the lecture/lab was the opportunity to incorporate many breakout spaces in hallways and create common spaces for formal and informal gatherings of students.

These spaces have become meeting places for students; they provide comfortable venues for collaborative work. Again, spaces that are flexible enough to accommodate groups of different sizes, working on different kinds of projects, and that are open and accessible to all students at most times are in the service of sustainability. The building is inviting, with a sense of openness that benefits all, encouraging cooperation and enabling the serendipitous exchange of ideas that is at the heart of the scientific community.

In many low-cost but high-visibility ways the building signals attention to environmental stewardship. Daylighting is a passive sustainable feature that is used creatively and intentionally. Typical lab rooms are well-lit, with large windows that allow light to penetrate deeply into the rooms. Occupancy sensors minimize the need for artificial light; dual switching places some lamps in a light fixture on one switch with others on a second switch, so that not all the lamps are turned on if natural light is adequate.

Perhaps the most distinctive 'sustainable' opportunity afforded by the Stonehill College Science Building happened as it became apparent that the striking, two-story space on the south side of the building, sited as it was with wetlands serving as boundaries on the two-sides, provided a unique opportunity to address all the goals set for the project. Early involvement in the design by the project team and regional wetland officials resulted in controlled stormwater discharge in the wetlands and preserved vegetated areas around the building.



Most visible, however, is the interactive green roof, which was designed as a sustainability laboratory; its accessible terrace allows for passive enjoyment of the green roof and as a promontory for viewing the adjacent wetlands. As it creates thermal mass and evaporative cooling, the vegetated roof slows and filters some of the storm water from the building and reduces heating and cooling needs of the space below.

For the entire Stonehill community, the new College Science Center has become a keystone building, signaling the institutional values and visions. It happened as the result of many, many decisions— some large and some small— taken by a team of planners who recognized their responsibility and opportunity to examine each question and issue through the collective lens of the ambitious and complex goals set for the project from the beginning. ■