

-PROPOSED-

GREEN BUILDING PLAN

FOR
THE COLLEGE OF ST. BENEDICT
&
ST. JOHN'S UNIVERSITY

Submitted by the members of the *ENVR 395: Environmental Studies Research Seminar*: Nick Boisen, Kim Connolly, Matt Coyle, Emily Franklin, Will Gorrilla, Laura Guetter, Jenny Holtorf, Matt Johnson, Cody LeMieur, Beth Meierhofer, Nat Springer, Jenny Stephenson, and Kevin Trettel

May 2004

Preface: The Path to a Green Building Plan for CSB-SJU

This proposal represents the combined work of many people. While its primary authors are the senior Environmental Studies majors and minors from the Spring 2004 research seminar, its roots are much deeper, going back to the group of faculty who worked to create the first environmental studies program at CSB/SJU in the early 1990s. Their hard work and commitment to providing students with new opportunities to pursue environmental topics as a focused part of their undergraduate educations laid the foundation for the minor program that flourished in the late 1990s, and the major that was established in 2003. Six seniors will graduate with majors in Environmental Studies in May 2004 (along with seven minors), marking the culmination not only of their individual undergraduate careers, but of the nearly fifteen year process of building an environmental studies program that reflects the values, strengths, and natural settings of our of schools.

Given this history, it is only logical that the first project for the ENVR 395: Research Seminar course be focused on the CSB/SJU campuses. Taught for the first time in Spring 2004, this new research seminar was designed to provide senior environmental studies students with opportunities to both engage in a major interdisciplinary research project and to gain some experience working under conditions that approximate those commonly found outside academe. While all prior environmental studies graduates conducted independent research projects and wrote substantial papers as their academic capstones, the class of 2004 is the first to go through the research seminar as a group. Under the new model, all senior environmental studies students work as a sort of consulting firm, sharing collective responsibility for a single project that is conducted on behalf of, and ultimately presented to, an actual client. All stages of the scoping, research, writing, editing, and production are directed by the students, who also carry responsibility for evaluating their own performance and those of their peers.

It is the hope of the students involved in this project that their work will ultimately inform a change of direction at CSB/SJU. As their report indicates, building systems and their operations account for the large measure of our collective impact on the environment. By making some of the small changes around the margins suggested herein, our institutions could begin the process of systematically reducing our collective environmental impacts while also furthering the educational agenda of the college/university. A bolder change of direction is at the heart of this project though, one that suggests an entirely new vision for the design, construction, operation, and maintenance of all campus buildings. Should the recommendations contained in this report be adopted wholesale, CSB/SJU would clearly be embarking on a new era in environmental leadership that would draw national attention not only to our immediate actions, but also to the Benedictine values that serve as the bedrock of our institutional commitments to the welfare of other people, other forms of life, and the planet that sustains us all.

As Chairperson of the Environmental Studies Program and the instructor for the ENVR 395: Research Seminar, I am delighted to present this document to the community. It represents the hard work not only of the students involved, but many others with whom they consulted for professional advice or research assistance, and in some cases were directly inspired by. I believe the result speaks for itself by providing not only an excellent overview of the pressing need for

sustainability in building operations, but also a very clear map showing us how CSB/SJU might get there in the future.

Dr. Derek R. Larson
Environmental Studies Program Chair
Collegeville, MN
May 5, 2004

Proposed CSB/SJU Green Building Plan Executive Summary

Proposal overview: Created by environmental studies students in the *ENVR 395: Senior Research Seminar*, the proposed green building plan is an attempt to apply emerging industry standards for green building to the specific needs of CSB/SJU. The report offers recommendations on why we should adopt a green building policy and includes suggested standards for the six primary categories of green building considerations: design innovation, site selection, materials and waste, energy efficiency, water efficiency, and indoor environmental quality. For each topic the authors provide an overview, examples of applications at other schools, detailed goals/standards/objectives for our campuses, a discussion of core concepts, and suggestions for further reading. Appendices include a glossary and a lengthy list of green building resources specific to Minnesota.

Rationale: The proposal places green building squarely within the mainstream of current architectural practice, noting that industry standards have long since displaced the “earth ship” and straw bale structures that started the green building movement in the 1970s. Sustainable design in the 21st century means an architecture that is sensitive to the needs of the environment, the people that use the structures, and the social/economic health of the surrounding community. In the CSB/SJU context, green building means considering the environmental, social, and economic sustainability of a construction project along with other institutional needs. These concerns reflect Benedictine values directly—there is no more logical place to practice green building than a Benedictine monastery, which explains why some other religious communities have adopted green building plans of their own. Our educational mission further supports a green building program, which would yield important research and teaching benefits that typical construction cannot. Finally, it must be noted that green buildings do not necessarily cost more than conventional designs; most will pay back any additional investment in energy savings, improved employee health, and other improvements in short order.

Green building plans are being developed around the country. Corporations (Ford Motor Company), colleges (Lewis and Clark College), cities (New York), and even states (California most recently) have decided that investing in green building makes sense financially, environmentally, and socially. As national standards emerge under the guidance of organizations like the US Green Building Council a market transformation is taking place, bringing what were once esoteric practices into the mainstream and creating a new green building industry. Similar standards for renovation of existing structures are also in the works. While green building is no longer experimental, institutional leaders still attract important attention nationally and, perhaps more importantly, can play significant roles in regional and local market transformations by encouraging architects, contractors, and suppliers to adopt green building principles. As spiritual, intellectual, and social leaders in our community and region, CSB/SJU’s adoption of a green building plan would signal important support for sustainability in the long term.

Proposed green building goals for CSB/SJU:

1. Innovation and design: Future construction should be based on “best practices” as identified by the US Green Building Council and the Minnesota Sustainable Design Guide. This does not mean straw bale domes, but rather structures designed from the beginning to be as efficient, healthy, and low-impact as possible with currently available and proven technologies. Structures should be educational by design and in operation, should be adaptable to new uses over time, and ultimately recyclable if no longer needed. Numerous examples indicate that investment in good design is paid back in energy savings, improved worker productivity, reduced health problems, and less tangible benefits like improved public perception of institutional identity (i.e. Ford’s green redesign of the River Rouge plant in Michigan).
2. Site selection: Clear standards for siting new buildings to reduce/eliminate negative environmental impacts should be adopted. These would include obvious things like not intruding on wetlands or other critical habitat, but also things like optimizing solar gain, managing site runoff, and providing a landscape design that improves habitat over the original site. A landscape architect experienced in sustainable design is a critical part of the design team for any green building.
3. Materials and waste: Green buildings must be constructed of the best materials available; this means avoiding things that are in themselves toxic, but also taking the next step to select materials that are sustainably produced and, ideally, of local origin. Everything from the concrete in the foundation to the carpet and furniture can be designed sustainably; by purchasing these products green builders also help support the market transformation to sustainable products. Managing waste echoes this concern by prioritizing economy in construction and planning carefully to minimize the waste stream generated by the building—planning for reduction, reuse, and recycling within the structure is at least as important as providing garbage service.
4. Energy efficiency: Green buildings must take advantage of available energy efficiency technologies, both passive and active. Siting for solar gain and providing optimal daylighting for occupants are priorities, as are thermal and mechanical efficiency. New technologies like solar tubes (which transmit light from roof collectors to windowless indoor spaces like hallways) and heat pumps can improve occupant comfort while also reducing energy needs. Metering and occupant education is also used to reduce the demand for heating/cooling and lighting. A mechanical engineer experienced in green systems must be included in the initial design team.
5. Water efficiency: Efficient fixtures, innovative systems, intelligent design, and occupant education all contribute to reduced water use. Our impacts on local ground and surface waters are extensive, so any reductions in use will positively effect water quality. Wastewater management—including storm and irrigation runoff –is a critical element of this strategy as well.
6. Indoor environmental quality: From “sick building syndrome” to sleepy students, indoor environmental quality is a critical element of building design. Green buildings first seek to eliminate the dozens of toxins present in conventional construction, then to manage air

quality to maintain health and comfort. Proper air flows, lighting, and ergonomic design have been shown to dramatically increase worker productivity while reducing absenteeism and health care costs. Green buildings are also universally cited as “better places to work” (i.e. Herman Miller headquarters).

Regional leadership: None of our immediate competitors has currently adopted a campus green building plan. Individual structures on some smaller campuses (notably Northland College and Oberlin) have drawn national attention, but most high-profile green building projects in academe have been at large research universities. While a single building is guaranteed to generate short term publicity, a comprehensive green building strategy is a stronger statement of institutional values and would be more likely to contribute to a local/regional market transformation toward sustainability. By adopting a green building strategy, CSB/SJU would place themselves in a position of regional leadership in the campus sustainability movement while also providing important new educational tools for students in environmental studies, the natural sciences, management, economics, and other fields. Given the number of visitors our campuses host annually, such a strategy would likely have an impact beyond the region as guests carry information about our buildings home with them as well.

Conclusion: The proposal concludes that adopting a green building program for CSB/SJU is a matter of economic, social, and environmental common sense. The benefits have been demonstrated to outweigh the costs on campus after campus, at corporation after corporation, around the country. Green building fits well with the religious, educational, and social missions of the institutions. While adopting such a plan would require changing the way we design, build, and operate campus buildings, it would also yield substantial benefits: lower energy costs, healthier and more productive employees, increased educational opportunities, evidence of institutional commitment to core Benedictine/Catholic values, and a significant contribution toward the market transformation that will guide architecture and construction into the 21st century. These decisions are to a certain extent technical—as evinced by the bulk of the students’ proposal—but they are rooted in *policy*, in a decision by campus leaders to commit to a program of building based on our core values rather than simple economics or the default practices of local construction companies. It is a decision that requires us to question “business as usual” as part of a transformation toward sustainability, one the students expect to yield dramatic benefits at relatively modest cost.

Prepared by Derek Larson,
Environmental Studies Program Chair