



Kermit was right: It's not easy being green. But at the Boston Children's Museum, as we embark on an exciting expansion, we regard being green as both consistent with our history and an extension of our mission.

The commitment to green buildings is really a commitment to creating the next generation of environmental stewards. The many decisions to "be green" in any construction process inevitably boil down to a museum's level of commitment. For the most part, economic or other criteria do not automatically point in that direction. Commitment from the start, and from the top, is key; decisions will flow from there. Here's a little bit of our story.

Building Children's Wharf

The Boston Children's Museum (BCM) is not only a historical and traditional site for children, families and educators in the Boston community, but it is also a leading resource for Boston educators. In addition, the museum receives local and national attention and respect. In order to sustain itself and meet the needs of visitors and educators, the museum has launched the Campaign for Children's Wharf.

In April 2006, the museum begins the construction of a 23,000-square-foot addition, a new outdoor learning area and the renovation of its existing 150,000-square-foot nineteenth century building, formerly a wool warehouse. Planning for this project began in 2000, and its completion will take about sixteen months.

When the museum's board discussed incorporating green principles into the construction of Children's Wharf, various programmatic and financial concerns were raised. After thoughtful consideration the following purpose statements were developed for incorporating green design:

- Our commitment to children through our mission includes respecting the world in which they live with pro-environment objectives;
 - Green design should educate children and their adult caregivers about respecting their world using the building and the site as tools;
 - The success of green design should be measured in terms of tangible improvements, not necessarily LEED points.
- Further, by committing to a green building we would also be able to accomplish the following:
- Communicate BCM's ongoing commitment to sustainability, a point emphasized during fundraising efforts, both present and future;
 - Showcase a hands-on green building where green can be seen and touched; and
 - Fit within the budget constraints. (The board adopted a fifteen-year payback as the basis for analyzing cost/benefits.)

In planning for sustainable design in the new building, BCM hired Bill Reed of Integrated Design Collaborative, engaged the expertise of local, Cambridge-based Green Roundtable and worked with staff, consultants and board members to develop goals for sustainable design. This team identified the following opportunities, which BCM is incorporating in the new building:

- Alternative heating and cooling options that result in lower energy use and improved efficiency;
- Providing support spaces and equipment to promote alternative transportation options;
- Light schemes that reduce energy use and heat gain;
- Incorporation of sustainable materials in the new addition;
- Landscaping that incorporates efficient horticulture;;
- Storm water treatment and reuse opportunities and reducing potable water use and heat islands; and
- Enhancement to air circulation, filtration and materials choices, as well as maintenance programs that ensure the best possible healthy indoor environment for young learners.

Currently in the construction document phase, BCM remains committed to incorporating those features that will not only help protect our environment and educate the local public, but also act as a model for other Boston area building projects.



View of the of the Boston Children's Museum Expansion, designed by Cambridge Seven Associates, illustrates the new wing and the circulation bridge that connects to the original building. Note the green roofs over the main entry and wing. The outdoor children's maze animates the waterfront plaza.

Green Buildings, Green Kids

Neil Gordon, Boston Children's Museum

Two Green Spin-Offs

The commitment to a green building is consistent with BCM's history. In 1979, the museum moved to the Fort Point Channel from Jamaica Plain with the intent of developing programs and exhibits consistent with the new waterfront home environment. A wide array of exhibits helps visitors explore waterfront habitats and learn about their creatures while programs educate the public about the importance of enjoying—and protecting—the environment.

Two signature initiatives have emerged from our deepening commitment to green: an educational effort to help Boston's kids appreciate and connect with the incredible resource that is Boston Harbor and a project that will have real impact on water quality in Fort Point Channel.

Boston Waterfront Learning Project

Several years ago, prompted by the rapidly increasing privatization of Boston Harbor and the quiet success of the Boston Harbor Clean-up, planning efforts began involving the museum, the Boston Public Schools (BPS) and Save the Harbor/Save the Bay, an environmental advocacy group. These efforts focused on assessing BPS curriculum needs, developing a summer institute and identifying pre-existing resources, experienced teachers and funding sources. In the summer of 2001, the museum presented a summer content institute funded by the Massachusetts Department of Education called "On the Waterfront: Connecting Science, Mathematics, Social Studies and English Language Arts through Studying Boston Harbor." While we explored the waterfront together and taught seventeen teachers from Greater Boston how to involve students in fieldwork experiences, the teachers validated our dream of creating a waterfront learning curriculum and also taught us about some of the practical challenges they faced in implementing fieldwork activities with their classes. We also learned about other organizations eager to collaborate on the project, and assembled several of them to help with the institute, including New England Aquarium and Boston History Collaborative.

The partners ultimately articulated a vision for what became known as Boston Waterfront Learning Project: every child who graduates from Boston Public Schools will have had at least one first-hand learning experience based at a waterfront site and connected to their class curriculum. Additional partners joined in and we won a multi-year grant from the Howard Hughes Medical Institute to collaborate with BPS teachers in developing and piloting interdisciplinary activities centered around fieldwork experiences.

With funding in hand, the Boston Children's Museum's Waterfront Learning Project emerged. It has engaged Boston teachers and multiple environmental organizations in the preparation and piloting of curricula, resources and a Web site to make Boston Harbor a rich resource for STEM (science, technology, engineering, math) learning. Materials, trips and training, which focus on fifteen fieldwork sites in and around Boston Harbor, have been piloted with 119 Boston teachers and their classes. Curriculum is now being finalized based on revisions suggested in field testing. The STEM framework incorporates inquiry-based learning activities within the domains of life sciences, earth science, physical sciences and technology/engineering, which are identified in each trip guide developed by the project.

Water Quality on the Fort Point Channel

The Fort Point Channel on which the BCM is situated is rated among the worst Massachusetts bodies of water for organic and pathogenic pollutants. Even after a significant level of public and private investment in the Channel's sewer separation system, the Channel will continue to be unsafe for secondary contact at least four months of the year due to pollution from stormwater runoff. (Secondary contact involves boating-related activities; primary contact is swimming in the water.) Stormwater runoff, left unchecked, jeopardizes the future of the Channel and diminishes a vital opportunity to reactivate a once thriving neighborhood and connect Boston's citizens and visitors with the Channel.

Creating the next stewards of the Harbor and the Channel requires meaningful experiences for children on and around the water. Safe contact with the water is a cornerstone to ensuring that these experiences can be provided.

The development of the Children's Wharf makes the implementation of an effective and comprehensive rainwater reclamation system possible and capable of achieving significant impact on the stormwater issues.

As part of the facility expansion and renovation project, BCM intends to:

- Implement a water reclamation system to harvest rainwater and other non-potable streams from the site;
- Store, treat and use harvested water for the museum's gray water system, landscape irrigation and cooling tower make-up water;
- Reduce stormwater discharge from the BCM site by 88%. Remaining stormwater discharge will be treated. Phosphorus discharge from stormwater runoff will be reduced by 40%;
- Reduce total suspended solids (TSS) discharged from site by 80%;
- Reduce BCM potable water demand by 77%;
- Introduce over 1,000,000 gallons of water for ground water recharge at the site.

BCM will become the first institution along Fort Point Channel to implement such an extensive system as part of its development and in the process will educate 500,000 children, families and educators annually through interactive exhibitions, programs and interpretive signage that demonstrate important principles of clean water, conservation and individual impact on the environment.

"Going green" will give the Boston Children's Museum the opportunity to lead by example, to enhance learning experiences for visitors and students about their environment, and to make a significant improvement in the quality of the water that is one of our greatest local assets. Ours is a short-term construction project, but with long-term implications.

Neil Gordon is the Executive Vice President and Chief Operating Officer for the Boston Children's Museum, where he has served for more than ten years. His responsibilities include planning, program development, exhibits, the visitor experience and education programs, and he is currently overseeing the capital expansion of the museum. Neil's undergraduate degree is in geology and he has a master's degree specializing in energy and environmental policy. On the census form, he checks "green."