

Edgewater

2003 Northeast Green Building Awards

1. **Category Entered:** Residences [Single Family Home]
2. **Building Location:** Short Hills, New Jersey:
The home overlooks a small lake in a historic suburb, a corner lot with very restrictive coverage and setback constraints. Locating a new home in a historic suburb that abuts a lake is quite an architectural challenge, especially when the home is meant to look as though it has always been there. The clients were living in a developer home and desired a home that portrayed their inner style while maintaining historic detail and charm. They were also quite concerned about creating a “healthy house” and wished to use the most up to date building techniques possible.
3. **Key Sustainable Design Features:** The HVAC system is a highly efficient geothermal /heat pump. Heat recovery systems increase the efficiency of the mechanical systems for both ventilation and hot water. Energy Star appliances further increase the home’s efficiency. The high-performance building envelope consists of foamed-in insulation and natural materials such as cedar, local brick, clay roof, and stucco. Passive solar heating is achieved through orientation and glazing design. Landscaping was designed with an emphasis on limiting run-off and erosion. Building systems were designed without the use of PVC or petroleum based products wherever possible. Engineered lumber was used to minimize use of whole forested lumber.
4. **Relationships and Strategies:** The views to the east and north were important and creating privacy on a corner lot was imperative. The L-shaped parti allowed natural light and ventilation on two or three sides of nearly every major room. The courtyard effect created on the south provides the desired privacy at the rear of the residence and takes advantage of the passive solar benefits of southern exposure through generous glazing and shading overhangs.
The green elements in this home are as much a part of the design as the intricately detailed rafter tails. The high-performance building envelope used in this project demonstrates timeless beauty with long-term environmental and energy benefits. The building envelope of the project is comprised of locally supplied exterior hand crafted-bricks. Icynene Insulation, a polyisocyanurate expanding foam, was used in place of conventional fiberglass insulation because of the strongly suspected carcinogenic properties of fiberglass. Custom built windows made with low-e, argon gas filled, glazing panels also help keep r-values high. A radiant, in-floor, hydronic heating system is the primary source for heat. The hydronic fluid extracts heat from geothermal wells and is then heated by an electric heat pump. The geo-thermal system takes water from six underground closed-loop wells (approx. 200 ft deep) where ground temperatures are a constant 55 Degrees. The heat pump warms the water to the minimal temperature necessary to heat the space, while maintaining relatively low heating costs. In summer, the ground temperature is low enough to cool the home through an air system. Residual hot water after cooling recycles into the hot water heater, resulting in free hot water in the summertime.
Heat recovery techniques increase efficiency. GFX (gravity film exchange) heat exchangers are installed on all shower drains to recover heat from wastewater. Clean outside air ventilation is provided by a Renewaire heat exchanging ventilation system. Heat exchanging baffles warm

intake air with the heat of exhaust air and cool it in the summer. The summer cooling also provides dehumidification which lowers the cooling load and discourages mold growth.

Use of PVC was eliminated from the home wherever possible. Waste pipes are made of cast iron, and vent stacks are made of copper.

Use of petroleum based products was eliminated wherever possible as well. The roof material is natural clay tiles in lieu of asphalt products, and foundation waterproofing was done with *Rub-R-Wall* waterproofing in lieu of conventional tarring.

Exterior landscape was also a major consideration. Mowed lawn was kept to a minimum. Organic soils and indigenous plantings provide, run-off retention, erosion prevention, and wildlife habitat throughout all four seasons. Semi pervious open grid paving on the site reduces run-off as well as pea gravel in the driveway.

5. **Program:** The programmatic requirement includes a Living Room, Dining Room, Study, Eat-in Kitchen, Family Room, Master Suite, two kids' Bedrooms, Guest Room, Computer/Homework Room, and Finished Basement. These items were all integrated into the plan maximizing views over the lake while keeping the bedroom views primarily toward the back yard in the “private” zone. The owners desired their new home to be as livable and family-friendly as possible. There are no “Great Rooms” or “Multi-Purpose” rooms with soaring ceilings and excessive glazing. Nor is there the seemingly ubiquitous two-story entry and grand stair that seems to be a pre-requisite in most new homes today. Rather, all rooms are of a very human scale, incorporating such elements as built-in window seats for and banquettes that encourage family interaction.
6. **Gross Square Footage:** Approximately 7,000 square feet.
7. **Cost:** Approximately \$350/sq. ft.
8. **Design Intentions and Approach:** The goal was to create a home with a timeless, handcrafted appearance achieved through its use of natural materials and historically accurate detailing. It combines many of today’s most advanced methods and materials with time-tested design elements such as siting and orientation to create an environment that is healthy and comfortable as well as energy efficient.

The European Craftsman elements of this home are rich with detail and many famous architects, such as Edwin Lutyens, helped us create this building by inspiring scale, detail, and use of materials, creating a timeless building for the twenty-first century. Details include the stacked brick quoining at the front entry, aligning so carefully with all horizontal lines of the facade, custom made European-style windows and shutters, exposed rough-sawn cedar rafter tails, and roof edges with hand-crafted half-round copper gutters. Every detail was checked and rechecked to accurately portray the historic details of the past, including the clay roof tiles. Despite being heavily influenced by English Craftsman designs of the past, the house was designed with the most-up-to date high-performance building techniques.