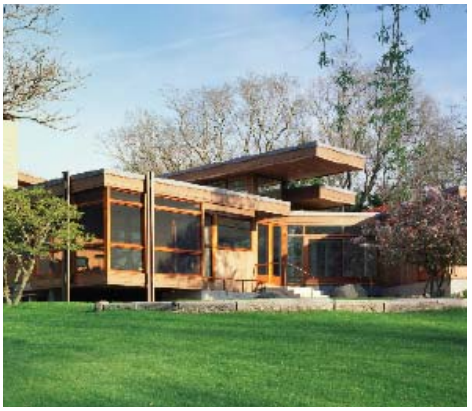
Geothermal House

Boston
Maryann Thompson Architects



By Ingrid Spencer

When an architect and client click, a certain energy is sparked. That's what happened when Cambridge, Massachusetts-based architect Maryann Thompson met the family of four who commissioned what would become the Geothermal House, on a 3-acre site outside of Boston. According to Thompson, the wife of the couple with two adolescent children who were her clients for the project, had grown up in Litchfield, Connecticut, in a house built by an architect who worked for Marcel Breuer. With Modernist principles so ingrained in her life, Thompson's client longed for a home that had the same transparency and connection to the outdoors she had grown up with. "It was more than just opening the house up to the outside," says Thompson. "We wanted to actually "exteriorize" the inside of the house and "interiorize" the outside."

The 3-acre site was ideal for this approach. On a south-facing hill above a small pond, surrounded by meadows and trees and adjacent to an Audubon wildlife sanctuary, Thompson designed a U-shaped, 4,500-square-foot home with layers of interlocking spaces that open and unfold to views and sunlight as you move from the north-facing public side of the home to the south-facing private side. "The house is designed so that your life within follows the sun's path throughout the day," says Thompson.

The unfolding spatial sequence starts on the first floor with a guest/in-law suite, a kitchen/dining/living area, screened porch, "orangerie" (an atrium with orange trees), study, 2.5 baths, and two children's bedrooms. The lower level rooms step down the natural slope of the site—down two steps into the living area, then down two more steps into the kitchen area, which combined make one large room with different levels. Upstairs is the master suite, with a private deck as well as a balcony overlooking the south-facing terrace.

All rooms receive light on two sides, and the stepped living area is surrounded on four sides by clerestory windows. "The north façade is super insulated and contains the storage areas," says Thompson. "As you progress through the house, clerestory windows and a center courtyard focus your eye to the south, east, and west. With the sun's progress, you get a sense of 'hide' and 'reveal' as you travel through the house." A steel frame, shiplap cedar siding, slate, kota brown sandstone, reclaimed walnut flooring and pine stair treads, acid-washed steel, and a poured-in-place cantilevered hearth are the main construction materials.

As well as passive techniques, such as cross-ventilation and large overhanging trellises on the west and southern elevations, the house uses a geothermal system to heat and cool. Similar to regular heat pumps, though using the ground instead of air to get air conditioning, heating, and hot water to the house, the geothermal system saves around 60 percent in energy costs. And, according to Thompson, it is often not even necessary to turn it on. "Because there's water in the floor, and the sun comes into the house through clerestory and other windows, the floors are often warmed without the need for heat," she says. "Even in the Massachusetts winter the family tells me their house is often comfortable without using the heater." The home does have a regular, back-up heating system just in case.

While Thompson's client was reflecting on her past experience with a Modernist home as she and the architect set the program for the house, she was also considering a future when elderly parents would move in with the family. In the guest wing, handicap accessibility includes a wheelchair accessible shower off the guest bathroom, while the hall allows for a future ramp to be integrated to negotiate the changing floor levels of the main house. "The house was designed to create a continuum, and this family wants to stay here through retirement and beyond," says Thompson. "It is truly a home for living."

Gross square footage:
8,000 sq. ft.

Total construction cost:
$3.2 million