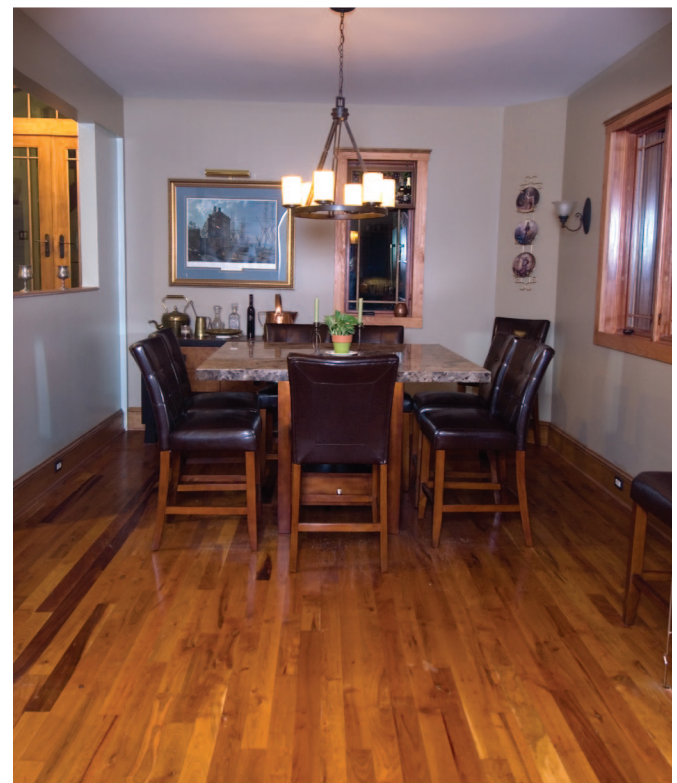


A new 3 bedroom, 2.5 bath home, built to the U.S. Green Building Council's LEED Silver rating, was constructed and attached by a breezeway to an existing one-bedroom home. Surrounded by an organic beef farm and overlooking pastures and a pond, the homeowner wanted to respect the quiet and beautiful section of Stormville, in Dutchess County, NY where she lived and aimed to have a lesser impact on the environment throughout the construction process.



"You can do things the easy way or do them the right way.... only a valiant soul will endure the pressure to do them the right way.... be that valiant soul and change your world."
-Deborah Monroe



Monroe LEED Home Stormville, NY



Location of Project: Stormville, NY

Owner: Deborah R. Monroe

Overview

A new 3 bedroom/2.5 bath home, built to the U.S. Green Building Council's LEED Silver rating, was constructed and attached by a breezeway to an existing one-bedroom home. Surrounded by an organic beef farm and overlooking pastures and a pond, the homeowner wanted to respect the quiet and beautiful section of Stormville, in Dutchess County, NY where she lived and aimed to have a lesser impact on the environment throughout the construction and remodeling process.

Process

The design of the home utilizes an open plan in order to use daylighting and natural ventilation strategies that are in sync with local weather and wind patterns. There is no mechanical ventilation system in the home, only an ENERGY STAR® rated central fan in a cupola to create a natural flow of air through the home. Remote controlled windows in the cupola allow for the venting of hot air in the cooling season. A 4' roof overhang acts as a sunshade to keep out the peak summer sun but allows daylight and the low-angled winter sun to penetrate the home. In addition, the building uses triple paned windows with low-e coating to reduce heat gain. The architect and owner placed windows on the southern side of the building to gain passive heating in colder months. Existing large trees on the east and west side shade the home from glare created by the rising and setting sun.

Using the natural slope of the site, three quarters of the home was positioned below grade, keeping the basement cool and helping to regulate the temperature of the rest of the home. In order to achieve thermal massing, the living room is tiled over a 3" concrete floor absorbing heat from the sun during cooler months. Also, the breezeway connecting the new home to the existing building has a concrete tile floor mitigating extreme changes in temperature. Radiant floor heating runs throughout the home including the concrete floor below the tile and wood floors.

Project Team

Architect: *Jordan Valdina, Synergy Design*

General Contractor: *Deborah R. Monroe*

Landscape Architect: *Deborah R. Monroe and Bill Vasquez*

Photography: *David Weis | Gemini Photos*

In addition to the energy efficient strategies used in the design and envelope, all appliances installed in the home were ENERGY STAR® certified. The architect used daylighting strategies to reduce the energy demand of the home while also specifying energy efficient lighting fixtures. To reduce water consumption, low flow water fixtures and dual flush toilets were installed throughout the home. FSC-certified wood was sourced for the home and procured from within a 500-mile radius whenever possible. The envelope was built on modules of 2', 4', and 8' in order to reduce wasted lumber during construction. When the waste from the project was totalled, they found that they had one of the lowest weights on record for a 3-bedroom home of comparable size. To promote a healthy indoor environment, formaldehyde-free cabinets as well as no-VOC paints, coatings, and adhesives were utilized on the project.

Although no renewable energy or geothermal was used on the project, the building was constructed to easily be adapted in the future should the owner decide to install one of these systems. Due to the open plan, the rooms and layout of the home can be easily modified should the needs of the homeowner change. This helps to reduce construction waste when renovations or changes are made to the home. The site was landscaped with drought resistant, native plants and gravel was used on the driveway to reduce stormwater runoff and recharge groundwater.

Finance

The homeowner developed a marketing program to secure sustainable materials and sponsorships for the project. The program offered three levels of sponsorship (bronze, silver, gold) based on the percentage of discounted or donated materials and/or labor. In return, sponsors received varying levels of marketing and publicity, including recognition on the project's website. Local television interviews and green building events gave sponsors extra benefit for marketing their brand. The highest level of sponsorship included participation in a series of open houses over the course of six months.

Lessons and Trade-offs

The homeowner was interested in installing photovoltaic panels but the existing site conditions that included a 200-year old maple tree on the south side of the home and the costly up-front investment did not create a good return on investment, even with New York State's solar rebates program. Instead, the homeowner plumbed the home for future installation of geothermal and solar-thermal, to take advantage of these technologies as they become more cost-effective down the road through better incentives and/or technological advancements.



Ratings and Awards

LEED Silver Certification

List of Green Strategies

Energy Conservation

- Energy efficient envelope with air sealing
- Installed ENERGY STAR® lighting fixtures and appliances
- Natural ventilation
- Radiant floor heating through wood and tiled floors
- Thermal massing used on the main floor to maintain comfortable temperature
- Daylighting
- Installed triple pane low-E windows; caulked and used foam insulation around windows to reduce air leakage
- Extended eaves for passive solar heating and cooling
- Apex open celled foam insulation for structural integrity and solid seal of home interior
- Installed “HOT” roof dynamic

Water Conservation

- Installed low flow fixtures and dual flush toilets
- Replaced dirt driveway with semi-pervious stone that becomes more solid when wet but still allows for water infiltration
- Extended eaves to protect the home against rain and moisture



Indoor Air Quality

- Painted with no-VOC paints and finishes
- Uses green cleaning products
- Natural Ventilation

Sustainable Materials

- All wood used was FSC-certified
- All sheetrock in construction was recycled sheetrock, excess was hauled away in a “sheetrock-only” dumpster for pure recycle.
- Lumber and other building materials acquired within a 500-mile radius when possible
- Metal roof had high content post-industrial waste
- 150 year old Chestnut salvaged front door
- All interior doors were reclaimed
- Exterior stone at the base of the house used salvaged stone from the rock walls on the property
- Salvaged bluestone (granite) for exterior edge drip
- Crushed quartz kitchen countertops
- Reclaimed Trex decking for exterior decks/stairs

