



## JULIANA & JOE'S ECOLOGICAL FEATURES

Vienna, VA

### Site Selected

- Avoids environmentally sensitive areas or farmland.
- Is an infill site - not expanding sprawl.
- Close to many mass transportation options.

### Site Work

- Minimal disturbance of site during construction.
- Erosion control.
- Mulched whole lot.
- Saved trees and for those that we couldn't, we milled for use in new home.
- Rigorous tree protection, including aeration of the root system.
- Located trees and plantings to control erosion and storm water run off.
- Used drywall scraps as soil additive/enrichment.
- Sited house to open up to the sun, turn away from big/ugly house across the street (what the client's home is a counterpoint to) and create a unique relationship to the back yard.
- Short driveway, with pervious gravel.

### Deconstruction

- Recycled -
  - Metal
  - Shingles
  - Wood
- Reused or sent for re-use -
  - Appliances
  - Kitchen and bathroom cabinets
  - Windows
  - Bathroom fixtures
  - Wood
  - Bricks
  - Flooring

### Design Principles

- Sited house due south to optimize passive and active solar design.
- Home is simply designed, yet with enough corners/smaller realms to provide for a cozy, soulful, comforting home.
- Home is smaller than national average -  
This is the primary way green building is less expensive than conventional

building. By building less, you save money both while building and then maintaining and conditioning over the life span of the house. Building smaller also allows you to put money into more expensive (up front) and more efficient heating/cooling systems, insulation, etc., all of which keeps monthly bills much lower.

### Energy

- Grid-tied photovoltaic panel array system producing a peak DC rating of 2040 Watts (sufficient to turn the meter backwards...).
- Passive solar design, with concrete slab as primary thermal mass.
- Insulation (other than Agriboard walls) - Biobase 501spray-foam (5" in the walls and 8" on the roof).
- Air infiltration minimized with SIP construction, caulk everywhere, super-tight windows and doors, Dupont's advanced window flashing system. Also, Biobase spray-foam insulation creates an excellent air-barrier.
- Windows -
  - Low-e with ½" Argon-filled space between panes.
  - One layer of Low E2 coating.
  - Made of wood, a renewable resource.
  - Loewen recycles their wood waste.
  - Loewen products are industry leaders in thermal performance.
- No ducts to leak.
- AC - energy-efficient mini-split units (19 SEER).
- Radiant floor heating on first floor and bathrooms, with
- Boiler - LP Gas boiler. Two above-ground tanks of 100 gallons each (they aren't on the natural gas grid).
- Energy Star appliances.
- Lighting - CFL's typ., with some low-voltage halogen, and LED under-cabinet lighting in kitchen.
- Ventilation -
  - Natural convection, via cupola windows which draws summer heat up and out.
  - Thin house, one room deep, provides cross-ventilation.
  - Ceiling fans and transom windows throughout.

### Water Efficiency

- High-efficiency fixtures.
- Rainwater harvesting (cisterns).

### Indoor Air Quality

- No or Low VOC materials and finishes.
- Excellent fresh air ventilation.

### Materials and Resources

- Kept home small, thus less materials (less costs!).
- Framing with SIPS (AGRIBOARD, with STRAW CORES).
- FSC wood in most places, wood from our old house in others, no tropical woods.

- Cementitious fiber siding and trim, by Certainteed (recycled material and good labor practices).
- Long-lasting Galvalum metal roof.
- Alkemi kitchen counter - recycled aluminum in a non-toxic resin binder.
- Recycled glass tiles.
- Recycled cotton batting for sound insulation (reclaimed blue jeans material).
- Salvage materials - doors in library, upstairs hall.
- Used own milled trees (removed for construction) for floors.
- Concrete floor - stained and sealed as finish floor.
- Slate floor - comes from a quarry less than 500 miles away.
- Cabinets - wheat board for all of the non-veneer work, and solid wood parts are FSC certified.

#### **Waste Management**

- Recycled all cardboard and packing materials.
- Recycled plastics, metal, wood etc, on site.