

Historic/Contemporary Green Renovation



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Architecture That Sustains

By Richard Gianini-Rugg

In 1995, I took part in an exhibit at the Boulder Public Library entitled, “What Does Architecture Sustain?” As a group of architects and designers, we saw the revolution that would eventually be coined the “green” movement, and wanted to explore the deeper meaning of the concept of sustainability before it would be usurped by market forces and the media. In my architecture practice, each project becomes a new inquiry into the question of how we can best live in harmony with the earth. And while the answer (in the form of a built environment) can be described in terms of its technical specifications, the ultimate truth of the matter lies elsewhere.

Raffaella and I purchased a 1928 brick Tudor cottage on upper University Hill in 2004. Due to a combination of luck and readiness, we were able to get in well below market rate, which allowed some room for remodeling. The house was largely untouched, for better and for worse—the advantage being that its historic charm was intact; the disadvantage lay lurking behind the walls in the antiquated structure and systems. Each of us brought a particular perspective. For Raffaella, the love of the house and the desire for a beautiful, healthy and supportive environment to live in were the motivating factors. My own focus was the challenge of bringing a house and all of its systems into the 21st century, and playing with modernist interventions that fit into the old house look.

One of our primary design objectives, and a starting point for any sustainable remodel, was to make the best use of what was already there. To that end, we opened the floor plan, replacing two narrow, steep stairways with a central stairwell flooded with light from a central skylight. The kitchen became a galley kitchen, replacing the existing one which was about 8' x 12' and had



Richard Gianini-Rugg (left) and homeowners

five doors. Patio doors now lead out to the back yard, which previously was a jungle accessible only by walking around the sides of the house (apologies to the bears and raccoons who called it their home). By adding a 3-dormer configuration, we added over 100 square feet of space on the south side of the upper floor without increasing the building footprint. This became the badly-needed master bedroom suite, and allowed us to increase the passive solar collection area by 250%.

Thanks to the last moments of the easy credit market, we were able to expand our budget to completely replace the antiquated electrical, plumbing and heating systems, installing energy-saving radiant floor heat, a 95% efficient Buderus boiler, dimmed lighting systems and an on-demand hot water recirculating loop. The house envelope was insulated to the maximum extent feasible by packing every inch of roof framing, walls, and nooks and crannies with the highest density soy/urethane foam insulation available, resulting in R-values up to R-50 in some areas. The lower brick wall on the south side was torn down and replaced with 2x4 construction packed with foam, with the old bricks re-installed as veneer.

To get back to the ‘heart’ of the matter, the house now just plain feels good. And this, we feel, should be the basis of all architecture that calls itself “sustainable.” Clean air, lots of light, thermal comfort, beautiful detailing, and a functional plan are what make a house a home. A home that sustains its occupants, keeps them healthy, and uplifts their spirits has a value far beyond what the numbers and facts in the sidebar can add up to. A beautiful environment has a good chance of being around for a long, long time. And *that’s* sustainable! •

Year Built, Remodeled: 1928, 2007–09

Home Size: 2,382 sq. ft.

Contractors:

- Bodhgaia Architecture (Architect)
- Eastwind Services (Builder)
- Simple Solar (PV system pre-build)
- Solar Pro (Contractor)

Energy Features

- Passive solar design
- Single-glazed windows and doors
- 1928 vintage window and door replaced with double-glazed low-E coated glass
- Pre-built for solar PV system installation
- Radiant floor heat- staple-up PEX tubing and foil bubble-wrap insulation
- High efficiency Buderus modulating boiler
- Design for natural light optimization
- Passive night-flushing cooling
- Dimmers installed throughout house
- Insulation: attic/ceiling (R-35- R-45), walls (R-35), sills (up to R-50)
- Programmable thermostat
- Zoned heat: 6 zones
- ENERGY STAR appliances: electric oven gas stovetop and refrigerator

Green Features

- Use of engineered, recycled, and FSC certified lumber
- Hardie board fiber-cement exterior siding
- American Clay plaster interior finishes
- Kitchen and bathrooms finished with low-VOC primer and paint
- Wheat-board interior doors

Water Features

- Drip irrigation with Smart Controller
- Low-water usage lawn
- Hydro-zoning
- Dual flush toilets
- Water efficient clothes washer and dishwasher
- Aerators on faucets
- Hot water recirculation loop

Re-Use/Salvage Features

- Re-used 80% of original flooring
- Donated materials to ReSource: old interior panel doors
- Re-used materials from ReSource: shower pan, utility sink and faucet, and laundry countertops