

WHY MASONRY?

CASE
STUDY



O'DONNELL RESIDENCE – PALM SPRINGS, CALIFORNIA



This infill/hillside home is located at the base of Mt. San Jacinto in Palm Springs, CA. This Sonora Desert setting is seasonally windy, hot and arid, with cold winter nights and an average of 350 sunny days. Sensitivity to these climatic patterns, current ecological building research, and timeless aesthetics informed the architecture.

This house could serve as one of the pilots for Residential LEED. The integrated PV system offsets electrical use allowing the house to be grid neutral, taking advantage of challenging climatic conditions. Masonry is actually celebrated throughout this project in an unabashed modern style - an honest and clean manner.

Such was the jury assessment for the 2009 Design Awards presented by the Concrete Masonry Association of California and Nevada and AIA California Council. With significant structure and site use of concrete masonry units (CMU) locally produced by Angelus Block, the project garnered a Merit Award for Sustainable Design and an Honor Award from the Inland Chapter of the American Institute of Architects.

“One’s monthly electric utility bill is generally never a highly anticipated event”, said Lance O’Donnell, principal of o2 Architecture in Palm Springs. “Most often one’s electric bill is an unyielding reminder of how little control we have over our monthly expenditures. However, when one lives in a home designed to maximize energy performance these “bills” can become a source of ongoing delight and reassurance we do have choices.”

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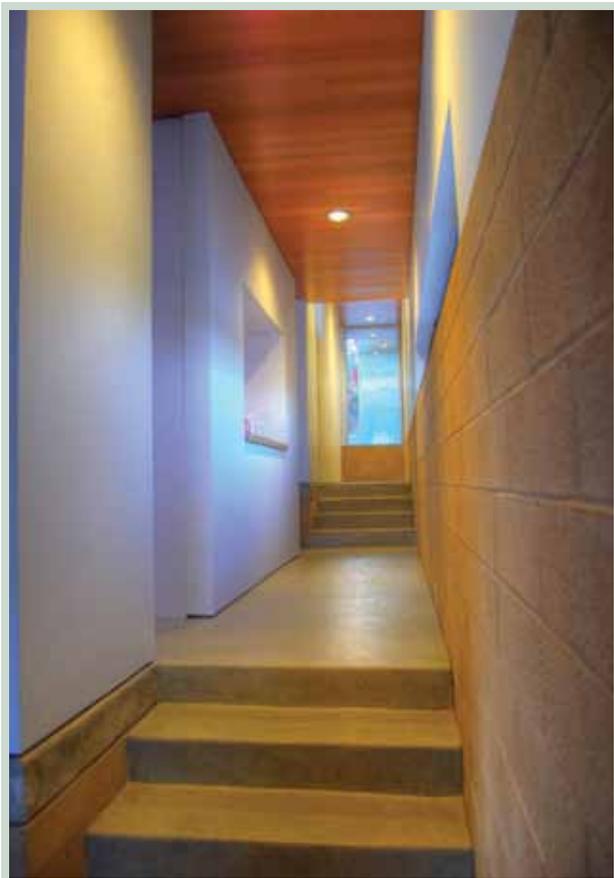


square-foot detached guest house lends precedent for planned density as an alternative to sprawl and limited buildable sites. This separate dwelling/garage volume, along with the front masonry wall, creates a courtyard and micro-climate—a hallmark of desert architecture.

The rock-covered, sloping site created unique opportunities. First, the site's boulders/cobble was situated into a natural perimeter and habitat for displaced fauna. Existing native plants, Palo Verde, creosote, encilia & cacti were plentiful, mature, and retained. Site utility and pad disturbance was carefully planned to preserve 70% of the site's existing features. With an average rainfall of 4.5", coming in 4-6 intense storms, the site still needed thoughtful integration of bio-swales. The resulting capture of 100% of the site's rainwater assists to naturally recharge the aquifer and protect downhill homes. To further supplement the aquifer, grey water is used to assist with plant irrigation and the natural water-cycle recharge process.

Taking advantage of a +10' east/west slope, the home is organized along the natural grade. Low masonry retaining walls utilizing 4-courses of 6" high CMU in alternating "double stack" and "running" bonds allow seamless indoor/outdoor living. Siting the house's long axis east/west, and opening up to the southern courtyard, provides seasonal heating, deep shading, and expansive views, while protecting from hot and dusty prevailing winds.

The home carefully balances thermal mass (exposed slabs, CMU walls and earth sheltering) with night-flush cooling. Spray foam insulation helps keep cool air in and seals the building envelope from dust and noise. A 5.5kW solar photovoltaic system shades the roof and designed to eliminate electrical demand. A tankless hot water system decreases natural gas usage and high efficiency fixtures (toilets, showers, faucets) minimize water consumption. To improve indoor air quality and insure healthy indoor air within the tightly sealed envelope,



formaldehyde free cabinetry/adhesives and no VOC paints and sealers were used. The home has no carpeting and utilized area rugs made from reused wool carpeting from one of our remodels. Appliances and lighting are Energy Star rated.

“With over two years of Southern California Edison utility bills the home is performing 25% better than our energy model predicted”, O’Donnell added. “Utility data confirms what we designed to be grid-neutral, or net zero energy, is actually generating 25% more power than we use. What’s more, the passive solar design is also performing better than predicted and the home’s heating system has yet to come on. As gratifying as all the positive utility data and money savings are, the true benefit to living in this home is the manner in which it uplifts ones sense of well being and the way it naturally connects daily life to hourly, daily and seasonal rhythms of its desert setting.”

- ▶ Beyond Net-Zero Energy
- ▶ Net-Zero Carbon
- ▶ Very low water use (78% less than similar size homes in the area)
- ▶ Gray water system
- ▶ 100% rain water capture
- ▶ Walking distance to food and entertainment
- ▶ Certified LEED Platinum, May 2009

Additional Photos

