

Fontana Lake Residence

A case study in beautiful efficiency



BY MARGARET CHANDLER
The Fontana Lake Residence is a great demonstration of design elegance harmoniously integrated with environmental sustainability.

This handsome home achieved LEED for Homes Gold certification with a total of 75 points, and earned Green Built NC certification. Located on Fontana Lake, the home has a strong emphasis on outdoor living, featuring a tree-filtered westerly view of the Fontana train trestle and mountains beyond.

The owners selected the location for quick access to lake activities – boating, kayaking, swimming, as well as lakeside campfires and gatherings. Both the site and house provide great lake views and easy walking to the boat dock and lakefront.

Serious consideration was given to the lakefront site, and special emphasis was placed on blending the home harmoniously with its mountain surroundings, to preserve the view quality for other lake enthusiasts. The understated Asian-influenced design nestles unobtrusively into the topography, and the materials and color palette recede into the wooded hillside.

Newly installed, mature landscaping further integrates the house into its setting. It is nearly invisible from the lake, despite being the closest house to the water. All of the plants are native and drought-tolerant, dramatically reducing the home's potable water requirements. Rainwater permeates through a strategic system of catchment, filtration, and slow percolation back into the ground; care was taken to prevent direct stormwater runoff from causing shoreline erosion or further burdening the lake.

Unique to the project, a pre-Depression-era concrete road – on site since before Fontana Lake was dammed – was broken into stackable pieces and used to build the retaining wall along the driveway. The driveway follows the approxi-

mate route of this old roadbed, repurposing an existing feature of the site and limiting further disruption of the property.

The home is distinctly and simply divided into two zones: two levels of bedrooms at the north end, and the kitchen and gathering spaces on the south end. Separating these zones are the transparent main-level entry and the stairs to lower lakeside level.

The entry is a contemporary glass-enclosed interpretation of a “dogtrot” – a traditional breezeway connecting two enclosed spaces. The material palette of the entry interior “brings the outdoors in” – the bluestone floor continues the exterior entry walkway material through to the lake-view balcony; the wall surfaces are a continuation of the exterior stained cedar shingle siding. A generous lakeside screened porch provides the primary outdoor living and dining space during the temperate seasons. The porch opens to the outdoor fire pit and entertaining terrace, and connects with the kitchen via doors and a pass-through window.

The interior of the home embraces the attitude of the exterior. Due to chemical sensitivities, the homeowners requested that special attention be paid to low- and no-VOC materials throughout the interior. While western

red cedar shingles clad the exterior, gray-washed eastern white cedar shingles mimic the coursing of the exterior siding on the feature walls in the entry.

This change in materials is because eastern white cedar is less toxic, and western red cedar is better-performing outdoors. The interior shingles were faux-finished with a diluted zero-VOC interior paint. All flooring is hard surface, to eliminate the accumulation of particulates and off-gassing common with carpeting. High-filtering MERV 9 air filters are installed in the forced-air system, to reduce particulates recirculating through the ductwork. To increase residents’ comfort, the mechanical room is extensively soundproofed from the rest of the house.

With a HERS index of 52, the Fontana Lake Residence is 48 percent more energy efficient than a home built to code. To achieve this high level of energy efficiency, a multi-point approach was taken.

Expansive windows on the west, south, and north walls provide inspiring daytime views, ample daylighting to reduce electric lighting needs, and effective ventilation. The primary view to the west showcases the spectacular mountain sunsets, but presented a solar heat gain challenge. To address this, a six-foot roof overhang and con-

cealed, electric roll-down shades provide full sunlight control.

The geothermal HVAC system includes an energy-recovery ventilator (ERV), allowing latent heat in the conditioned air to be reused, instead of being discharged outdoors. The home is insulated with high-performing Icynene insulation, and all doors and windows have an average U-factor of about 0.26. The geothermal HVAC system is SEER 15, and the cooling equipment uses no HCFCs.

Environmentally preferable materials were used whenever possible, including masonry made of 30 percent fly ash, gypsum wall board made with 95 percent post-industrial recycled content, roofing made of 25 percent post-consumer recycled content, and FSC-certified wood.

Material-efficient, increased-span framing techniques comprise the building’s shell. In a near-perfect example of both waste reduction and local material usage, an existing concrete road bed running through the site and was broken up and reused on-site as a retaining wall.

This home is an exemplary exercise in blending environmentally responsible design with beauty and function. It is lakeside living in the mountains at its finest.

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