



A GLASS JEWEL IN NORTHERN CALIFORNIA

SUSPENSION HOUSE



PROJECTREPORT



THE SINGLE-FAMILY HOUSE CLAD IN ZINC SEEMS TO FLOAT IN THE MOUNTAINS

A three-layer, zinc-clad, glass jewel-box hovers above a creek that flows from a waterfall in the Northern California forest. Designed by Fougerson Architecture, the single-family home known as Suspension House seems to defy gravity and time. The complex renovation project updated and expanded on an existing house, thoughtfully improving the structure and harmoniously integrating it within the revitalized, lush landscape.

The apparently floating structure is actually securely tethered, bound by physics and building codes, yet looks almost effortlessly supported by the sloping hillsides at the corners of the lower levels. From the underside, up the walls and across the roof, RHEINZINK-prePATINA blue-grey architectural zinc envelopes the exterior. The metal's self-healing, low-maintenance, non-combustible, corrosion-resistant performance provides a weather-resistant and sustainable material that lasts generations. In response to this unique setting, the natural zinc will develop a dynamic patina over its lifespan of up to 100 years or more.

Immersed in nature

Now a stunning 2,505-square-foot showcase of transparency, resiliency and modern design, Suspension House began as a two-story structure supported with wood and concrete pillars, wood construction and small windows. Originally constructed in 1968, the only previous owner was also its builder.

Helping reimagine the home, Fougerson Architecture's principal architect and namesake, Anne Fougerson, FAIA, and project manager, Todd Aranaz, were invol-

ved from the earliest stages of the project's conception. "The clients live in a downtown high-rise. They wanted a place where they could escape the noise and hubbub of the city and reconnect with nature," remembered Aranaz. In 2015, "they found a place about an hour's drive north of the city to be a secondary residence, a retreat for weekends and longer stays."

The scenic 1.08-acre site is located approximately 50 miles from the coast. The design intention was to retain the house's unusual, stacked form and projected decks. To maintain its position suspended above the creek, current codes and ordinances required at least 50% of the existing structure to be preserved, and the completed renovation could not be more than 50% bigger than the original size.

Working within prescribed confines allowed for creative exploration. "A human-made object in nature may exist in harmony or disparity. Our goal was to deepen this home's connection to the environment, creating a place where our clients can live immersed within an exceptional landscape," explained Fougerson.

"A steel frame inserted beneath the original floors anchors the home to the rocky hillsides, thus allowing us to remove supporting columns from within the creek bed," shared Fougerson. "To build such a house anew is no longer allowed in California, but following strict guidelines, we reconceived an existing structure, transforming the relationships between home, water and land."

She continued, "Transparent materials, and carefully considered sightlines merge the home with this dramatic landscape. The two lower floors stay studiously within the confines of the original building; yet the minimal glass volumes, steeped in the surrounding beauty, feel more expansive than ever. A third floor addition strikes a more

slender profile facing east to engage the breadth of the site. The experience is one of being in nature and also humbled by it."

The new, third floor encompasses the private main suite, additional bedroom and flexible space. The top level's decks align with the lower level's projection. Maximizing panoramic views of the waterfall and more, the entire upper level is rotated 90 degrees to the two lower floors. The middle floor hosts the common areas where people gather in connected interior and exterior spaces. The kitchen is illuminated with skylight from the upper level roof terrace. The dining room boasts a balcony. The living room features a walk-out terrace. On the lower level, floating decks project both in the front and back. Inside, a private office converts to a guest room.

Enveloped in zinc

"Because it was a second home, the clients did know that they wanted it to be very low maintenance. They wanted it to last," said Aranaz. "Zinc was the natural material to use. Because of its amazing qualities, longevity and depth of expression – there was no other material we could imagine for this project. We never wavered in holding to zinc as the perfect choice."

He elaborated, "As you drive into the area, it feels quite rural. You see barns, outbuildings and agricultural structures, many of which have corrugated metal siding and roofing. We saw zinc as a modern reinterpretation that fit contextually. It provided a harmonious blend with both the surrounding material construction and expressive of the natural conditions."

For Suspension House, Fougerson Architecture also saw the opportunity to use one, singular material "in the round," according to Aranaz. "Zinc was one of the few materials where you can three-dimensionally wrap the whole thing – the walls, the roof, the facia, the underside

of the deck. It would be the same amazing material when viewed from above, underneath or the side."

He added, "Zinc has a very long history as a durable, almost timeless, material. Across Europe, you'll see zinc on churches and buildings that are hundreds of years old. Anne, who is from France, intuitively understands the material and how it evolves to look more beautiful as it patinas."

"We loved the idea of how zinc responds to its environment," described Aranaz. "Depending on the seasonal cycles and how much moisture or sun it receives, the zinc panels on the west side would look one way and the south side would look another way. We knew that what it looked like on day one would be different on day 10, year one, year 10 and year 50."

Fougerson Architecture incorporates natural materials on many clients' projects. In moisture-rich areas, Aranaz explained that wood siding on northern elevations often remain wet, which can lead to mildew and an unwanted dark appearance. "Like wood, there's a depth and grain to zinc. It is amazingly beautiful as it changes over time. It's a material that personifies longevity and durability."

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Built to last

In addition to its dynamic beauty, RHEINZINK-prePATINA architectural zinc is also a resilient, corrosion-resistant and noncombustible material. While the project was under construction, a wildfire came about 300 yards from the house, recalled Aranaz. Zinc and other ignition-resistant construction materials were prioritized with respect to the wildfire and wildland urban interface, and the heavily forested property.

Because zinc clads Suspension House's entire exterior, Fougeron Architecture knew proper fabrication and installation were critical to both the home's performance and its aesthetic. "The client wanted to build it to last. It's a one-time deal. You're not recladding this for another century," emphasized Aranaz. "Zinc was the perfect material. It's incredible. To us, it was the only material for this project."

Horizontal seams were minimized and the zinc wall panels were fabricated and installed using an inverted seam to precisely align the panels. "The inverted seam is the reverse of a traditional standing seam, so the connection is concealed and the wall material has an abstracted plane. Typically, metal wall panels are uniform and in standard sizes. Working with zinc gave us more latitude in how we expressed the material form. There were many different panel sizes. Several had custom shapes," said Aranaz. "Field dimensions were carefully measured and verified. The panels were fabricated offsite, which also provided more control over the quality. We wanted them to be perfect."

Old Country Millwork supplied RHEINZINK-prePATINA architectural zinc to Concord Sheet Metal, which worked closely with Young & Burton to roll, cut and form each panel. Young & Burton's senior installer, Steve Whang, took a hands-on approach throughout the project.

"He was so meticulous in his level of craft, it was mind-

numbing. His quality of work is off the Richter scale. I don't usually use the word 'perfect,' but his work is as close to perfection as you can get," complimented Aranaz.

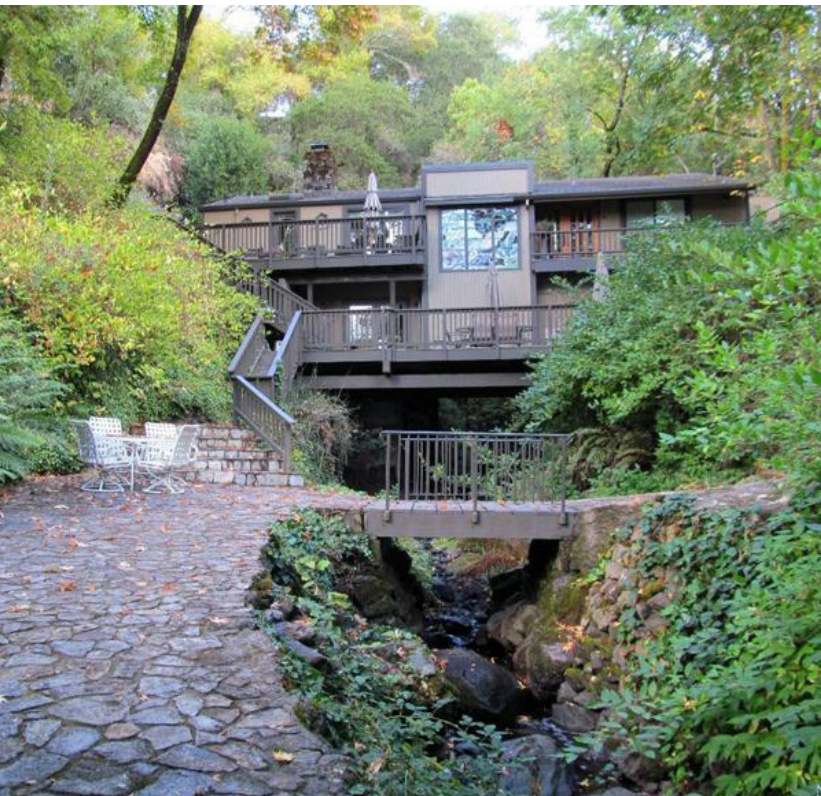
To ensure the precision expected by the client, Fougeron Architecture presented digital 3-D models and physical mock-ups. "The client's aesthetic was equally as sharp as ours," noted Aranaz. As a professional in the tech industry, the client brought the 3-D models to the next level in virtual reality. Working together with the architects, an extremely detailed visualization was rendered to inform the final design decisions.

"The clients must have virtually walked through the home hundreds of times before it was completed," said Aranaz. He added, "Reality isn't pristine. There is an elegance to zinc that the client really liked, but it is not static. It's ever-changing and uniquely responsive. It gains depth and beauty through the years. The overall home's design stays impeccable and the material continues to look amazing as it evolves." He also acknowledges, "In some ways it's a juxtaposition: This jewel hung in the forest. There's a dichotomy in its perfection and evolution."

Intended for sustainability

Beyond its appearance and longevity, Suspension House treads lightly in its environment. Along with wildfire and seismic compliance, material selection was carefully considered for weight, performance and sustainability. Because zinc is a lightweight material, it can help reduce the structural load and associated materials on a building. RHEINZINK-prePATINA architectural zinc also is a highly sustainable and infinitely recyclable material. It is efficiently produced and once installed, requires very little maintenance, repair or replacement, which further lowers its environmental impact.

BEFORE/AFTER





Its run-off is non-staining and non-toxic. Architectural zinc does not rot, rust or need repainting; no paint, varnish or sealants are required. Installed properly, zinc roofing and wall systems will resist air and water infiltration, and withstand high winds reaching up to 150 mph. The home was designed and built to be capable of self-sufficiency in the event of a power outage or longer. The gently sloped zinc roof is fabricated and installed as a standing seam system and supports a photovoltaic (PV) array. It also has its own well and an extensive water filtration system.

The PV panels were thoughtfully integrated for optimal solar collection. Two, large high-capacity batteries store the energy and are capable of powering the home. For daily use, the solar-power system can recharge the clients' electric cars. The rooftop array and storage were optimally sized with respect to energy-efficient appliances, LED lighting and daylighting.

Daylight models and calculations also guided the roof design to manage unwanted solar heat inside the home. "The slope and slight overhang of the roof allow the sun to gently kiss, but not penetrate the into the house," said Aranaz. "The roof does about 90% of the work to mitigate the heat gain and automated exterior sun shades manage the other 10%." When not in use, the sun shades pocket into custom-made zinc-clad enclosures. The windows generally remain uncovered to fully enjoy the beautiful views and soothing sounds of water.

"The house is in a small community. There are five other homes on the street," observed Aranaz. "The clients, who are very kind, caring, considerate people, invited their neighbors to visit and see the transformation. The neighbors were particularly interested to see the revitalization of the creek and return of native landscaping. The home renovation added a third story, but there also was a lot of subtraction like taking out the old supports that had crowded the creek and removing the invasive ivy."

The indoor/outdoor connection is reinforced visually and physically throughout the home with full-height glass walls, expansive glass doors, and exterior and interior stairs. Natural metal, glass and stone materials, and a neutral color palette continue throughout the interior. The walls and ceilings are white. The exposed structural steel columns and beams are black. The floors are light gray stone. The cabinetry and furnishings follow a similar light/dark spectrum. The colorful focal points are the views themselves.

Continued compliments

After Suspension House was completed, the client was in San Francisco and happened to see Fougerson while he was with his colleagues. Aranaz, still delighted by the memory of the chance meeting, said that she was "the genius behind my home" and "the best architect in the world."

In addition to earning praise from the clients and neighbors, Suspension House has earned recognition from the design and construction community.

"Suspension House is one of those rare architectural statements that only comes along once in a generation."

-Wallpaper* Magazine

The project was featured in Residential Design, nominated as ArchDaily's Building of the Year 2023 and Archello's Best Architectural Projects of 2022, earned 2022 International Design Awards' Silver in Architecture Categories / Renovation and won the 2022 Architecture MasterPrize for Residential Architecture - Single Family.

The project also was selected as the #1 Top 10 house of 2022 by Wallpaper*'s architecture editor. The magazine summarized: "Suspension House is one of those rare architectural statements that only comes along once in a generation. The combination of site, vision and skill is so often squandered, but San Francisco-based architect Anne Fougeron has translated her clients' desires into spectacular reality, respecting the wildness of the site without compromising on the clarity of the design."

SPECTACULAR INTERIOR DESIGN WITH SPECTACULAR VIEWS OF NATURE





Construction Panel

Architect

Fougeron Architecture; San Francisco

Constructor

Young & Burton, Inc.; San Ramon, California
Concord Sheet Metal; Pittsburg; California

Technical Specifications

Facade: RHEINZINK-prePATINA bluegrey reveal panel system, 149 m²

Roof: RHEINZINK-prePATINA bluegrey double standing seam system, 237 m²

Photos

Joe Fletcher Photography

