

Row House

A historic home in the heart of San Francisco maintains its traditional facade

BY ROSS LEVY

I first met Bill and Zahra through a school charity event and soon after designed a new set of stairs for them. A couple of years went by before they called with a bigger project in mind: to expand and rehabilitate their two-unit Edwardian home on the sunny south side of San Francisco.

The home was a standard San Francisco row house that had been lived in continuously for more than 30 years and was in poor condition. The house needed a lot of work, and the transformation would be dramatic. Bill and Zahra wanted a more modern home for their growing family and envisioned a house that would generate enough energy to power itself and all transportation associated with living in it.

A facade worthy of preservation

As is usually the case here in San Francisco, the entire plan had to be accommodated without significantly altering the appearance of the building from the street, which is a preservation requirement instituted by the San Francisco Planning Department's Residential Design Guide-



Fine Homebuilding
2013
HOUSES
AWARD

BEST REMODEL

Ross Levy and Karen Andersen of Levy Art & Architecture designed our best remodel of the year, a restoration and reinvention of this Edwardian San Francisco row house. The extensive remodel successfully bonds preservation with performance while maintaining a critical focus on the homeowners' lifestyle. Few homes accomplish so much with such little impact.

FRONT

Recharged

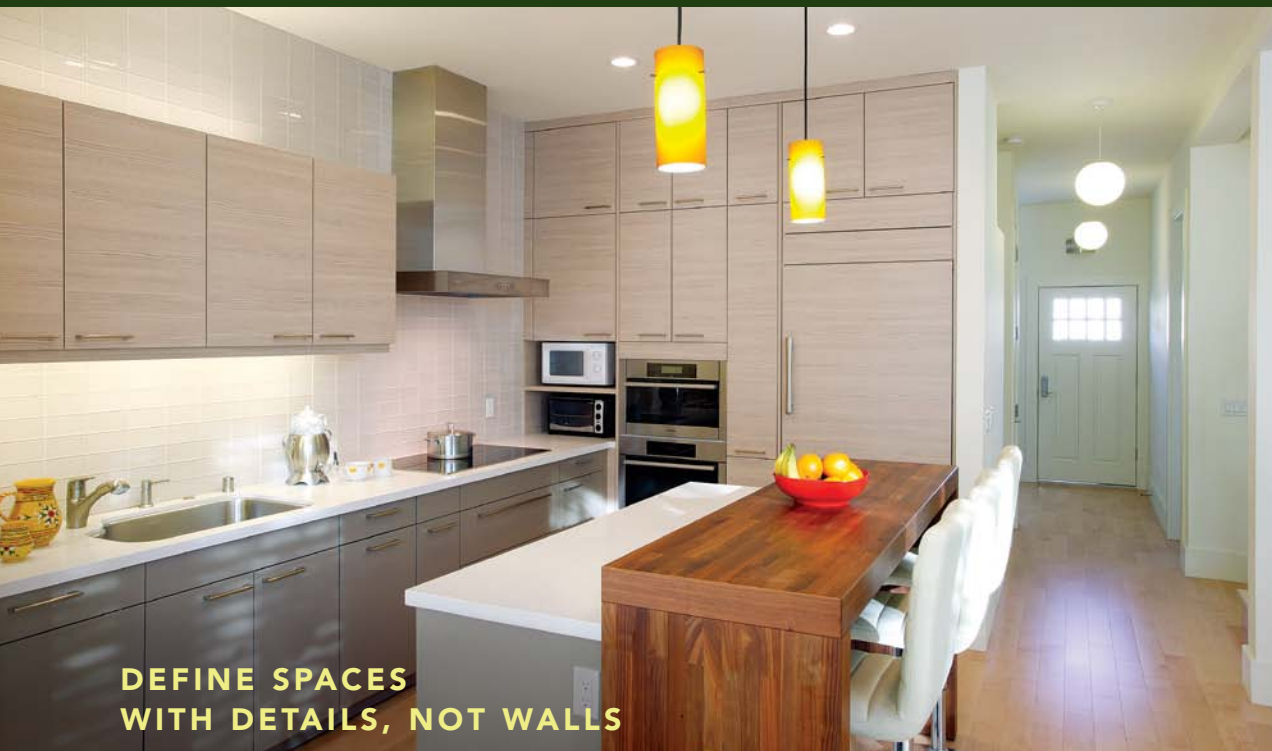
while embracing high-performance, modern design everywhere else



One house, two styles. The Edwardian facade of the home was preserved to help keep the existing aesthetic of the neighborhood intact. (Edwardian architecture is similar to but less ornate than Victorian architecture.) On the back of this home, the architects offset the large expanses of glass with fiber-reinforced cement panels over a rain screen. The detail creates a modern facade in tune with the clients' design senses while creating an interesting contrast with the rigid formalism of the Edwardian street face.

BACK

CREATE THE ILLUSION



DEFINE SPACES WITH DETAILS, NOT WALLS

Carved out of the west side of the house to allow a long sightline from the entry to the backyard, the kitchen is defined within the open plan by a walnut-topped bar. This subtle detail also helps to keep from view the clutter of a working island. The adjacent dining room (photo right) is delineated with a dropped beam in the ceiling.

Row houses are long, narrow structures with little extra floor space or daylight access. The goals of this remodel included making the home feel much larger, significantly brighter, and distinctly modern. Although challenging, three primary strategies were used to achieve these results.



INTEGRATE GLAZING WHERE IT HAS THE MOST IMPACT

The living room, which is part of a new addition that reaches into the backyard, has large expanses of east- and south-facing glazing to capture daylight, views, and passive heat. Continuing the glass around the corner with a patio slider and clerestory minimizes the visual presence of the entire southeastern wall assembly and provides continuity between the indoor space and the adjacent outdoor areas.

OF SPACE



USE A CENTRAL STAIRWAY AS A LIGHTWELL

An open staircase with glass railings in the center of a formerly light-deprived floor plan is topped with an operable skylight to bring daylight into the middle of the third- and main-floor living spaces.

lines and the California Environmental Quality Act (CEQA).

It has taken me some time to appreciate the unique nature of this part of San Francisco, and even longer to see how environmental regulations could be invoked in the process of preserving it. Every row house contributes to the overall fabric of the city, and that is one reason why people find this neighborhood, Noe Valley, such an appealing place to live. Discussions of style and aesthetics are always subjective, as is the debate over how we Americans should best manage historic resources. My opinion is that we need to develop a more enlightened approach to contextualism when we are working in historic districts. As for this project, there is nothing wrong with preserving a turn-of-the-century piece of craftsmanship. Yet strict preservationists might not look favorably on the stark contrast between the home's front elevation and its modern interior and south elevation. These facades were originally built as stand-alone window dressings for nothing more than gable-roofed shacks. We are using the Edwardian facade as it was intended: a face for the home that is then liberated to take an appropriate form behind the street wall.

Alterations to the front facade of this house were minimal. We added dormers in accordance with the city's restrictions that they be set back 10 ft. or more from the facade and 3 ft. from the side yards. We also reconfigured the front-entry stair to accommodate the additional height of the main floor from the street. The new stair was designed with a historic mentality, taking cues from patterns on the street in terms of size, disposition, and detail. The remainder was a labor of love: a careful restoration of decaying detail.

An interior fit for reinvention

For us, appearance is largely driven by the space that we are defining and the way that space accepts light. For this house, south and east exposures were critical to capture early-day sunshine and to generate as much passive heat as possible. A generous east side yard allowed us to incorporate a great deal of glazing along this side of the house. The south- and east-facing glass walls also work well to connect the backyard to the interior living spaces and to enhance the feeling of openness central to the design. In addition to the windows, an engineered ash floor atop a hydronic radiant-heating system created the canvas to which interior materials and

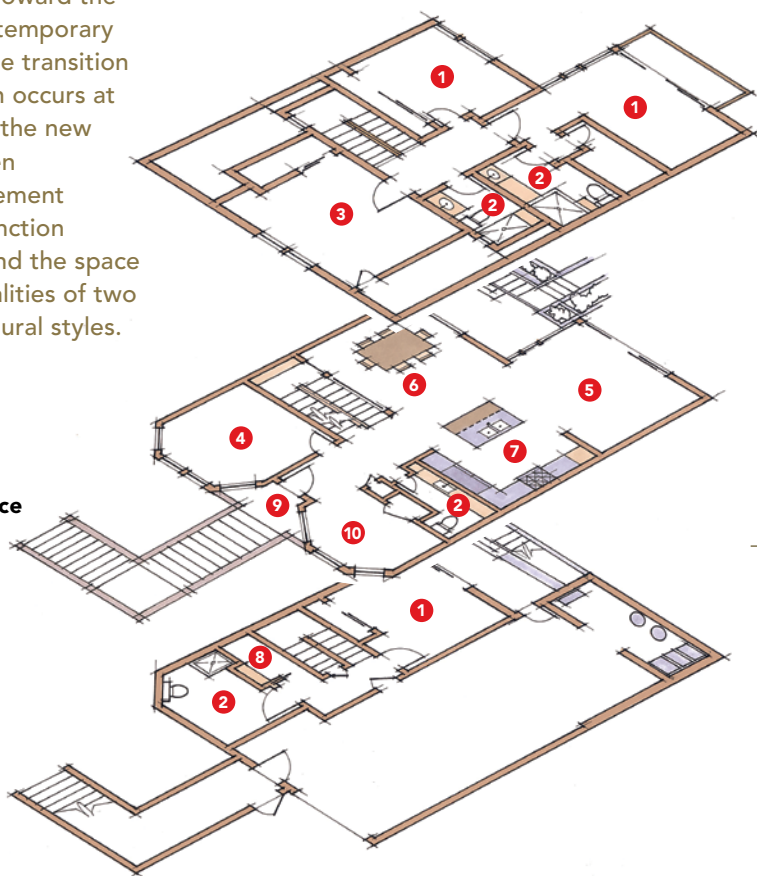
FUSING THE OLD WITH THE NEW IN A SINGLE PLAN

When work began, it was discovered that portions of the original home that would be salvaged had been built in such an unusual fashion that they were unsafe and untenable. In the end, the facade and the property-line walls were all that could be



usefully integrated into the project. While the street face informed the layout of the front of the house, the new modern spaces toward the back have a contemporary arrangement. The transition to this open plan occurs at the point where the new stairwell has been inserted. This element defines the distinction between eras, and the space and material qualities of two distinct architectural styles.

- 1 Bedroom
- 2 Bathroom
- 3 Bedroom/office
- 4 Media room
- 5 Living room
- 6 Dining room
- 7 Kitchen
- 8 Laundry
- 9 Entry
- 10 Foyer



finishes could be applied. Zahra had taken on the task of acting as general contractor. She had hired a local builder to provide the foundation and frame, and was finishing the project out herself. More than just a manager, Zahra took on major portions of the design and coordination of the interior construction. She sourced materials and brought her concepts to us to assemble as part of an overall design vision. In particular, the kitchen was a product of her efforts, and we designed the stair and rail, a focal point of the main-floor living space, in response to it. Fabricated of steel, glass, and ash, the stair structure sits within a skylit well. This arrangement provides vertical circulation, brings daylight into the middle of the long, narrow row-house plan, and functions as a thermal chimney—as much air-conditioning as you ever need in San Francisco.

While the central stair and open plan with the large panes of glass to the backyard defined the back of the house, the historic facade drove the spatial sequence at the front. The front door was centered and created a confining, shotgun-type entry hall. To alleviate this, we opened the space to the west to serve as a foyer. The space across the hall—

the old, formal living room—was reinterpreted as a media lounge and guest space. Each of these rooms gained features and definition from the original size and location of windows in the historic facade.

Integrated efficiency

Bill and Zahra wanted an all-electric, photovoltaic house. I even wrote a blog post about this home, “Revisiting the Dream of the All Electric Home,” that was inspired by my childhood experiences with the GE House of the Future at Disneyland. While that house was a vision of convenience, ours was a vision of efficiency. We hired The Davis Energy Group, a well-known pioneer in mechanical engineering, to help us in our envelope and systems design. In the institutional setting, this is known as *integrated project delivery*. At the residential scale, we call it *common sense*.

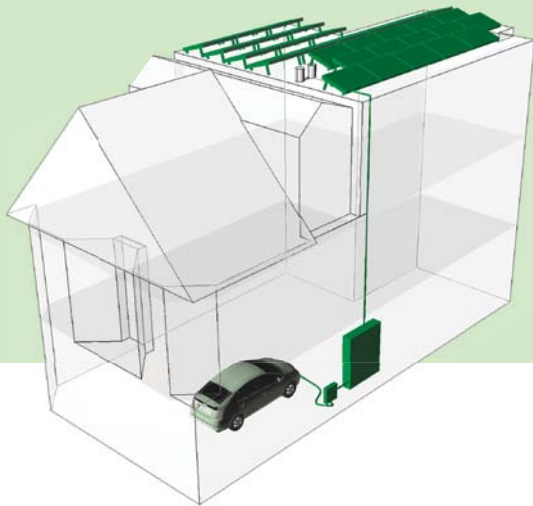
In California, when we build what are called *utility intertied photovoltaic systems*, we design them to offset power usage as measured in dollars rather than watts. In practice, this means that panels are aligned to maximize power production at peak hours when electric rates are highest, and we sell to the grid to gain the best economy. We then buy back that energy in off-peak hours when power is cheaper. The design of the house, the envelope, and the mechanical systems help to achieve this balance.

Using radiant tubing set into a prefabricated subfloor system helped with this offset strategy. Although the conventional engineering wisdom would have been to incorporate a solar thermal loop in the water-heating system to preheat water for the radiant floor, we were determined to stick with the all-electric theme. This was made significantly easier with heat-pump water heaters by GE that reduce greatly the energy required to heat water to the necessary temperatures. With two of these units, we were

SPECS

- Size:** original, 1375 sq. ft.; renovated, 2424 sq. ft.
- Bedrooms:** original, 2; renovated, 3½
- Bathrooms:** original, 1; renovated, 4
- Cost:** \$309 per sq. ft.
- Year built:** original, 1904; renovated, 2010
- Location:** San Francisco
- Architects:** renovated, Ross Levy and Karen Andersen; levyaa.com

BUY LOW, SELL HIGH THE ECONOMICS OF A NET-ZERO HOME



This home was redesigned to be a self-powered, all-electric house that produces more energy than it uses. Here is a breakdown of the costs associated with the energy-related improvements of the house, the savings that they yield, and their payback time.

able to satisfy the entire hot-water demand for domestic use and space conditioning.

The roof of this row house limited us to an 8kw photovoltaic array, which is generous by residential standards. However, prevailing weather patterns—also known as fog here in coastal Northern California—do not always support solar-power production, so we had to be mindful of the envelope design to make the most of whatever power the house did generate. Our strategy was to minimize moisture and air infiltration and thermal bridging while taking advantage of direct gain on the radiant floor to try to optimize solar heat-collection potential.

The roof construction was relatively easy. We had an existing attic toward the front of the house that we superinsulated with open-cell spray foam, and a flat 14-in.-deep roof assembly over the new portions of the house also was fully insulated with open-cell spray foam. The walls were more of a challenge. The old property-line “blind” walls were built according to the convention of the turn of the last century. Typically, that meant the use of rustic redwood siding applied directly to the stud face. We wanted a good seal against air infiltration, but we needed to be mindful of water intrusion and the potential for mold and decay. This was compounded by the fact that we couldn’t access the outside of the walls. Our solution began with the knowledge that the old-growth redwood siding, tight-grained and beautiful, is virtually rot resistant. We kept it in place and applied an elastomeric coating to the inside of the wall cavities to stop water and vapor behind the wood. This elastomeric coating was cov-

ered by an inch of closed-cell foam to provide a continuous air barrier, to offer another layer of waterproofing, and to bump up the walls’ insulating value. The remainder of each cavity was filled with encapsulated, nonformaldehyde fiberglass batts to achieve an R-22 wall assembly. The property-line walls were finished on the interior with two layers of 5/8-in. type-X drywall for thermal mass and fire resistance. The result, a high-performance hybrid envelope, incorporates equal parts invention and convention.

Moving forward by looking back

It is extremely satisfying to see this project up and running. In this remodel, we have married historic preservation, contempo-

rary urbanism, high-performance building design, and sustainable lifestyle integration in a single project. The result is a hybrid home indicative of this moment, a time when we need to work from the best of what our predecessors left for us while adding our own set of informed priorities and sensibilities. □

Ross Levy, AIA, is an architect in San Francisco. Photos by Rob Yagid, except where noted.

Performance statistics speak for themselves

Upgrades	Premium*	Incentives	Net
Lighting	\$2100		\$2100
Insulation	\$3980		\$3980
Heating system	\$6240		\$6240
Natural-gas piping	(\$1250)		(\$1250)
Electric appliances	\$2800		\$2800
Nissan Leaf	\$12,000	(\$9000)	\$3000
Blink car charger	\$1600	(\$1200)	\$400
Solar electric system	\$34,086	(\$18,968)	\$15,118
Total	\$61,556	(\$29,168)	\$32,388

Solar incentives detailed

Gross cost	\$34,086
Incentive 1: California Energy Commission NSHP rebate	(\$12,489)
Net cost after rebate	\$21,597
Incentive 2: 30% federal tax credit (on net cost)	(\$6479)
Total solar incentive (incentive 1 plus incentive 2)	(\$18,968)

Payback evaluation

Annual utility cost (standard home)	\$2071
Annual cost for gas (auto)	\$1543
Total annual cost for utilities and gas	\$3614
Postremodel cost for gas and electric	\$0
Savings per year	\$3614
Total cost premium	\$32,388
Simple payback (premium ÷ savings)	9 years

*These figures represent the increase over standard options.

Design video: Scan here or visit FineHomebuilding.com for an inside look at this home and those behind its design.

