

## The Cedars: a Demonstration Home

### Our client is committed to demonstrating the feasibility of developing a deep green speculative house on an infill site.

High Level Goals: Infiltrate all storm water on the site to avoid sending polluted water to Puget Sound; Minimize energy use by excellent construction and current technology; Design an "Active House" that facilitates aging-in-place by providing opportunities for exercise as well as single-level living.

### Namesake Cedar Trees absorb huge amounts of storm water.

Storm water management began by minimizing the impervious area of the project. An intensive vegetative roof, a pair of 425 gallon detention cisterns, and two raingardens aid infiltration. City protocol required cutting down 70 foot tall cedar trees in the right-of-way. The team worked with the city to save the trees because they absorb huge amounts of storm water, and they add scale and character to the site.

### Partnership with the Building Department contributes to success.

The team of Red Cottage Studios, the client, and the contractor, convinced the city to save the trees by detouring the sidewalk. We also helped the city change their policy and accept pervious concrete pavement, by creating new standard construction details for the engineering department.

### Building technology makes the house super-efficient.

The framing is alternating double-studs to maximize insulation and eliminate thermal bridging which would provide a route for cold to migrate inside. Super-insulation is R-60 in the ceiling and R-29 in the walls. The super-insulating Heat Mirror windows exceed energy code requirements by 200 percent. Heating and air conditioning are provided by mini-split heat pumps, and fresh air is conditioned by a heat-recovery ventilator. Hot water is produced by solar thermal collectors on the south-facing roof, and provisions are made for photovoltaic modules. The garage includes a charging station for an electric car.

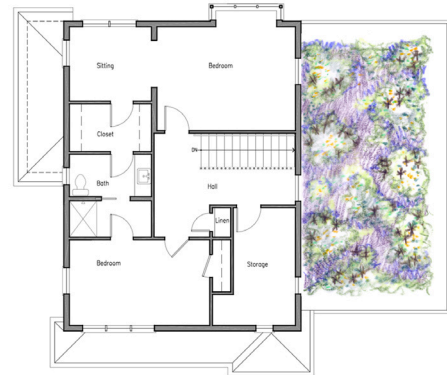
### Design Features make an Active House.

Inside, the stair is extra-wide to accommodate physical therapy exercises. Although the house framing will accept two garage doors, it now has only one. The second garage bay has 10-foot high ceilings and one entire wall will be equipped with climbing and exercise apparatus.

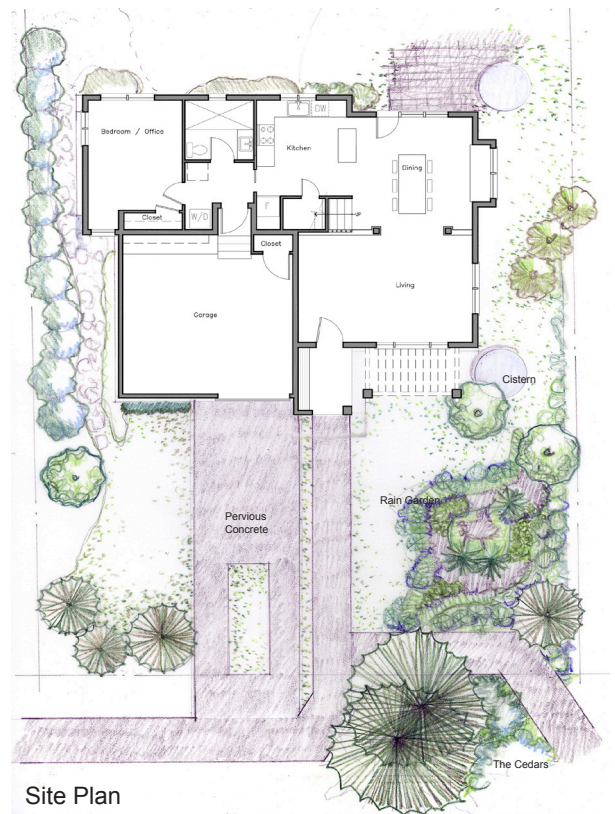
### A passionate Contractor contributes to the success of the project.

Many of the efficiency and cost-saving ideas were the Contractor's suggestion. The long-term utility cost savings will balance the cost of these added features. Other cost-saving measures include: using conventional hardi-lap siding, and polishing the concrete slab-on-grade so that it is the finished floor. This also ensures better indoor air quality. Red Cottage Studios practices as an equal member of the architect/client/contractor team.

To ensure that the house is market-ready its exterior is detailed and proportioned traditionally, while the interior has an open and modern plan.



Second Floor



Site Plan



East

# SUSTAINABLE FEATURES & BENEFITS

## Energy:

Super Insulation (R-29 walls; R-60 ceiling)  
· Meets or exceeds the 2009 Energy Code  
Heat Mirror fiberglass windows with argon-filled, Low-E max glass, super-spacers (U= 0.17)  
· Windows are zero maintenance and have the best thermal insulation.

## Fixtures and appliances:

Energy Star appliance suite  
Energy Star Light fixtures  
· Light quality resembles daylight.  
Solar thermal hot water heater  
· Provides about half of the house's needs  
Low-flow plumbing fixtures  
· Reduced water and energy use  
Multi-zone mini-split heat pump heating and cooling (SEER = 14.3)  
· Mini-split is 3x - 4x more efficient than electric baseboard heaters.

## Materials:

Formaldehyde-free cabinets  
Formaldehyde-free insulation  
Air-tight construction  
· Reduces uncontrolled heat loss  
Zero-VOC paints and finishes  
Polished Concrete Floors  
· Healthy Indoor Air Quality;  
· No toxins or mold means less chance of asthma, illness, or allergies.

## Site:

Built on an urban infill parcel  
· Access to existing utility infrastructure  
· Access to amenities and public transportation  
· Walkable neighborhood  
Rain Gardens  
· Zero rain water leaves the site which reduces pollution washed into Puget Sound.  
· Zero maintenance and zero irrigation after plants are established.  
Existing vegetation preserved, including landmark cedar trees.

## Plan:

Efficient 3-bedroom, two-bath  
· Follows the Sarah Susanka philosophy: The Not-So-Big-House  
· Less home to maintain, lower utility bills  
Aging-in-Place features include roll-in shower and optional care-giver's entrance.  
Lots of daylight  
Flex-space in hallway

## Project Team:

### OWNER:

Withheld

### ARCHITECTS

#### Red Cottage Studios

Certified Sustainable Building Advisors

Robert Drucker LEED-AP

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### STRUCTURAL ENGINEER

Peter Opsahl Engineers

Mike Année

### CONTRACTOR and DEVELOPMENT CONSULTANT

Martha Rose Construction

## Construction:

Double-stud Wall Framing (24" on center)  
· Less wood used, elimination of thermal conduction, and more room for insulation  
Contractor has track record of construction waste reduction and recycling  
· Less material sent to the dump = lower dump fees

## MATERIALS

Siding:	HardiPanel; James Hardie Co.
Windows:	Serious Windows
Floor Finish:	Polished Concrete and recycled hardwood
Heating/Cooling:	Fujitsu 9RLQ Mini-split
Insulation:	Formaldehyde-free, blown-in fiber-glass

