This building is a two-story; 1790 sq ft residence located in Venice, California and was built in the year 2005. The total cost of the project was $350,000 (land excluded), plus the property cost of $270,000. The surrounding neighborhood has a density of about 14 dwelling units per acre, and most of the lots and houses are very small compared to the national average. This project is located on a block dominated by "thru lots," which have public streets on two sides of the property. Most houses on the block face Boccaccio Avenue and, as a result, treat Woodlawn Avenue like an alley, which detracts from the homes across the street. The addition to and remodel of the Solar Umbrella creates living spaces and porches on both sides, addressing both streets equally.

The project started from an original house, which tightly had a kitchen, dining, living, two bedrooms and a bath. The new piece is joined to the south, removing only one original wall, including a new entry, living area, master suite accommodations, and utility room for laundry and storage. The kitchen, which once formed the back edge of the residence, opens into a large living area, which in turn, opens out to a spacious front yard. An operable wall of glass at the living area smoothly defines the edge between interior and exterior. What was initially the front and main entrance at the north becomes the back as the new design reorganizes the residence towards the south. This creates a more interesting introduction to the residence and optimizes exposure to energy rich southern sunlight.

The consideration of the human element is key to this house, since the architects and the clients are the same people. Lawrence Scarpa and Angela Brooks designed and built this house for themselves and their young son. They considered the site, and as they state tried to find as many possibilities for "sustainable living" as possible.

This sustainability is reflected in many aspects of the house design. There are solar design strategies that make the house 100% energy neutral, with an annual expense in electricity of $500. The use of recycled, renewable and high performance materials is seen around the entire house. "The solar canopy, the centerpiece of the house’s design, provides 95% of the building’s electric load through 89 amorphous solar panels. This array is connected to the power grid through a net meter provided by the City of Los Angeles; this allows the grid to be used as a storage system and eliminates the time-of-use charges associated with traditional electricity use." These elements become the main formal image of the house.

The temperature is regulated and an insulation concept is developed in the house. "Blown-in insulation in the walls and roof and batt insulation under the floor of the existing house greatly improved the house’s thermal performance. The extra insulation combined with the building’s tight envelope dramatically reduce energy demand. An integrated, solar heating system in the concrete floors heats the new addition. Radiant heating through the floor is more efficient than forced air heating; since temperatures can be lower, the system uses less energy."
The pool is a strong element of cast in place concrete and defines the path to the front entry. "Upon reaching the entry, the pool cascades into a lower tier of water that penetrates and interlocks with the geometry and form of the residence. In a move that reinvents the welcome mat, stepping stones immersed in the water create an initiatory rite of passage into the residence as the visitor is invited walk across water. The distinction between outside and inside is once again blurred." The sustainable concept is present in the underground construction of the water elements. "The pond and the pool pumps are as small as possible and are on timers to conserve energy and utilize nonchemical filtration systems. Rooftop solar hot-water panels heat the pool and preheat the domestic hot water before it reaches the gas-fired water heater. This system halved the house’s natural gas use, despite the house’s expansion to 2.5 times its original size."

The master suite on the second level reiterates the strategy of interlocking space. Located directly above the new living area, up a set of floating, folded plate steel stairs, the bedroom strategically opens onto a deep covered patio which overlooks the garden. This patio extends the bedroom area outdoors, creating the sensation of a sleeping loft exposed to the exterior. This deep porch carves out an exterior space within the visual bounds of the building envelope and provides the front elevation with a distinctive character. What appears to be a significant area of the second floor is actually never enclosed but rather it is protected by the planes, which wrap around it. The rule of the house is transparency; this permits views though the house from the outside. The structure seems to sit lightly upon the land. Formal elements along these visual corridors—i.e. stairs, bearing walls, structural columns, guardrails, built-in furniture and cabinetry— vary in density, color and texture. A series of stepped roofs, glazed walls, and clerestory windows broadcast light from multiple directions. Together, all of these components establish an effectively layered composition rich in visual and formal interest.

Bibliography:
SITE
1/8" = 1'-0"
Ceiling Plan

SOLAR UMBRELLA HOUSE
PUGH + SCARPA
Architects

Drawings: Carolina Delgado

Revit Fundamentals
ARCH 399 BIM
Instructor: Leonard Yui

Date: June 8, 2011

Scale: 1/8" = 1'-0"
Room Legend

- BATHROOM
- BEDROOM
- CLOSET
- DINING ROOM
- KITCHEN
- LAUNDRY
- LIVING ROOM
- MASTER BATHROOM
- MASTER BEDROOM
- PATIO
- STORAGE
- STUDY

Room designations

1. ROOMS FIRST FLOOR
   1" = 10'-0"

2. ROOMS SECOND FLOOR
   1" = 10'-0"

Revet Fundamentals
ARCH 399 BIM
Instructor: Leonard Yui

SOLAR UMBRELLA HOUSE
PUGH + SCARPA Architects

Drawings: Carolina Delgado

Final Project
Sustainable Building

Date: June 8, 2011
Scale: 1" = 10'-0"
### Room Schedule

<table>
<thead>
<tr>
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### Window Schedule

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### Door Schedule

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SOLAR UMBRELLA HOUSE

PRODUCED BY AN AUTODESK STUDENT PRODUCT

ARCHITECTS: PUGH + SCARPA

Drawings: Carolina Delgado

Date: June 8, 2011

Instructor: Leonard Yui
VIEW FROM WOODLAWN AVENUE

LIVING ROOM

Revit Fundamentals
ARCH 399 BIM
Instructor: Leonard Yui

SOLAR UMBRELLA HOUSE
PUGH + SCARPA
Architects

Drawings: Carolina Delgado

Perspective Renderings
Final Project: Sustainable Building
Date: June 8, 2011
Final Project
Revit Fundamentals
ARCH 399 BIM
Instructor: Leonard Yui

PATIO
FRONT WINDOW

SOLAR UMBRELLA HOUSE
PUGH + SCARPA
Architects

Drawings:
Carolina Delgado

Perspective Renderings
Final Project  Sustainable Building
Date  June 8, 2011
Scale