

EcoMOD 1 | OUTin House



PROJECT DATA

PROJECT DESCRIPTION:
Eco MOD is a student design build and evaluation program at the University of Virginia that works with local agencies to create affordable and environmentally responsive housing. The OUTin House was the first of four completed examples all of which implemented prefabrication.

PROJECT TYPE:
Originally planned as a single family housing prototype for the Piedmont Housing Alliance, the basement was later converted into an additional unit making it the first two unit condominium in the area.

PROJECT CONTEXT:
The project is located in an infill site in the Fifeville neighborhood of Charlottesville, Virginia. Fifeville is centrally located in town, racially diverse and facing gentrification.

COMPLETION: 2006

ARCHITECTS: UVA students and faculty advisors

SQUARE FEET: 1,470 - 3 bed 1 1/2 bath unit
700 - basement studio unit

COST: \$115 / SF

HOME QUALITIES

The concept behind the design of the house was to extend the living space of a compact affordable home to the exterior. Rooms of the house are staggered to help define outdoor living areas at both sides. Apertures were located to enhance this relationship as well as bring in ample daylight.

Extra care was also given in planning how home owners would use, and feel in, the spaces. Abundant warm wood finishes were used for flooring, cabinetry and doors. Storage is built-in wherever possible including the stair landing. The HVAC unit is concealed in a room divider element in the kitchen and features a fold-up table and work surface. This allows the occupant the flexibility to use the space for kitchen work, dining area, or open space.

MATERIALS + ASSEMBLIES

The house consists of eight prefabricated modules, four at each level. Due to the sloping site, the team constructed a full basement with CMU blocks. Modules were constructed at a university owned airplane hanger. The completed building chunks included exterior and interior walls, windows, floor and roof structures. Sizes of the modules were kept small, 18'-13' long X 12'-10' wide X 11' tall, to allow for ease of transportation on Charlottesville's neighborhood streets.

Structural insulated panels (SIPs) were utilized in the exterior wall and roof systems and were chosen for their excellent thermal performance. They are made of two layers of OSB with expanded polystyrene insulation sandwiched in between. The panels were manufactured at a Virginia based plant with holes for doors and windows precut. Traditional wood studs frame openings and panel joints. Having factory made panels facilitated in the efficiency of the module construction.

SUSTAINABILITY

The OUTin House incorporates several environmentally sustainable features and design strategies including:

Passive Solar - the house opens up to the south with the entry deck and large windows in living areas. Overhangs protect it in the summer while allowing winter rays to penetrate.

Solar Hot Water Panel - reduces water heating costs by about \$300 per year.

Potable Rainwater Collection - the single sloped roof channels water through two oversized downspouts to cisterns below the deck. The water is filtered before it is circulated into the house as clean water. This system provides approximately 35% of water used in a year by a family of four.

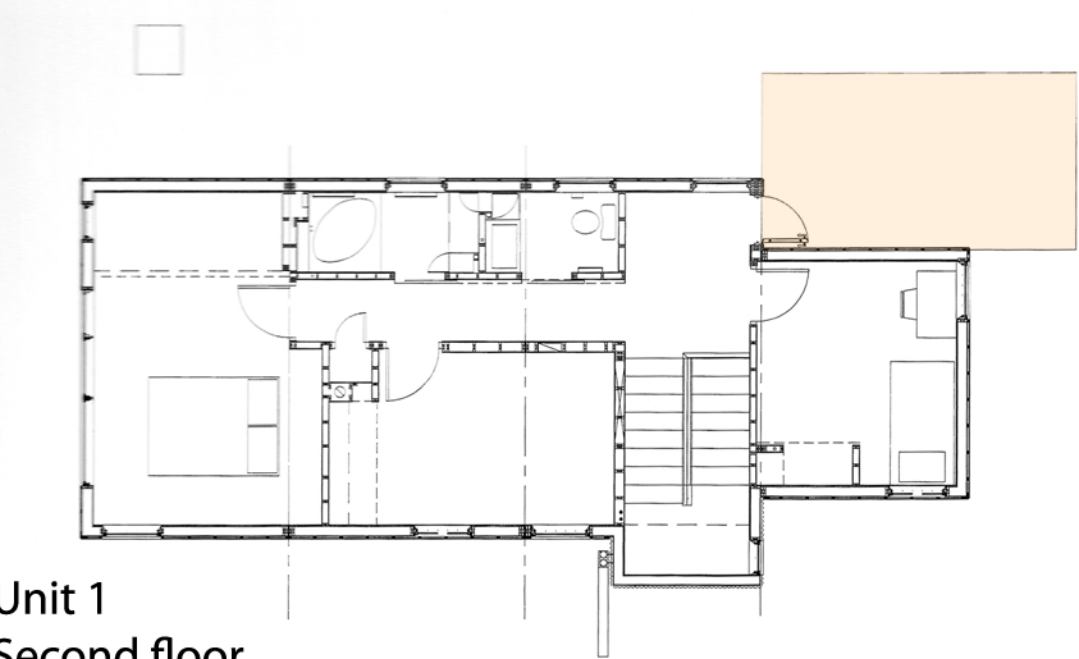
Sustainably Harvested Wood Flooring - Instead of bamboo, which has to be shipped from China, a local wood was chosen. The poplar flooring came from the Sustainable Woods program of the Appalachian Sustainable Development organization.

SIPs - creates a more continuous thermal envelope, less energy loss, and efficient use of materials. Using SIPs improved the energy efficiency of the house by 65% as compared to a stick built frame.

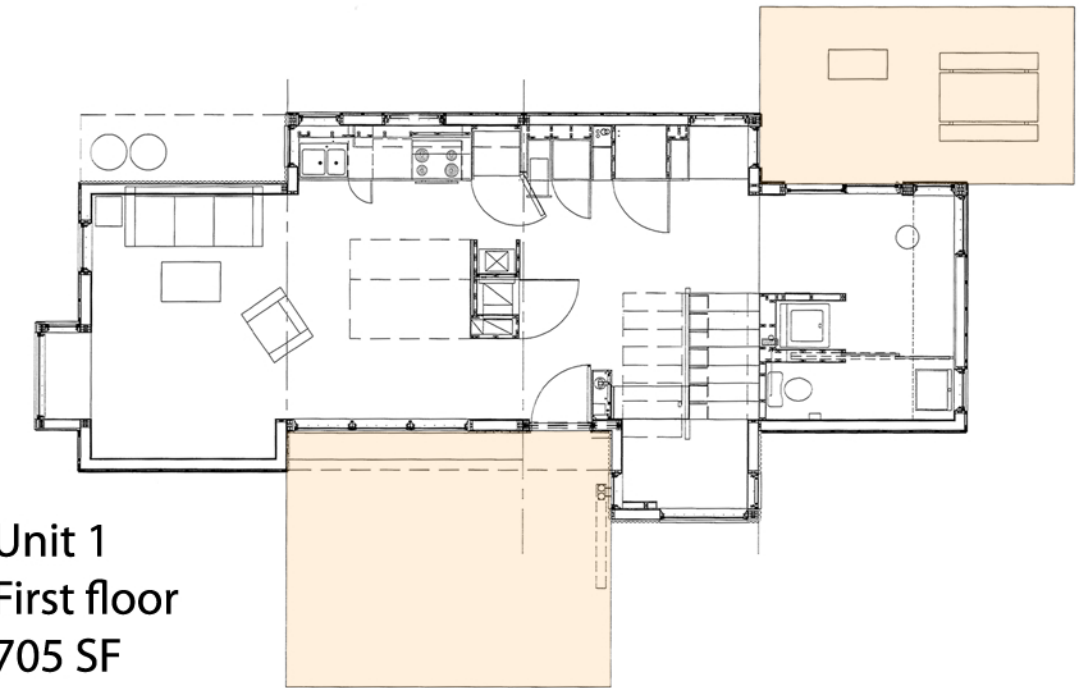
OUTin House can be replicated at additional locations. The plans have been licensed to Modern Module, who facilitate manufacturing and installation of homes. The UVA team of designers conceived modularity at three scales for replication: 1 (site, orientation, topography) 2 (budget and needs, number of modules) 3 (materials, finishes and details). Decisions made at all of these scales presents many design options for potential homeowners. Additionally, the sustainable features of the original are optional.

IMAGES:

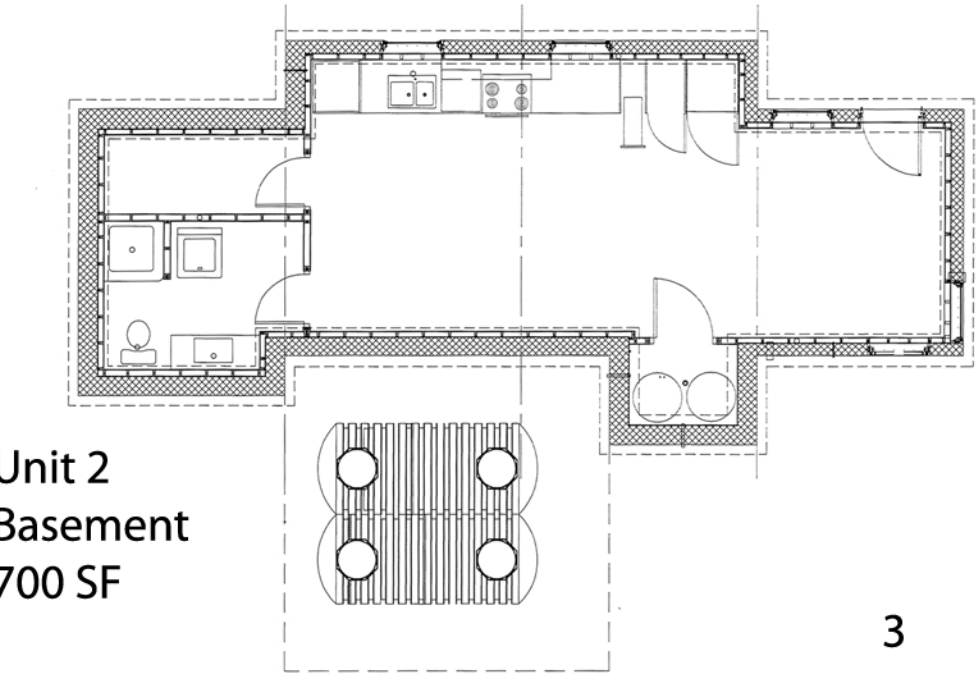
- 1 <http://www.worldhabitatawards.org/winners-and-finalists/project-details>
- 2 <http://www.dwell.com/articles/john-quale.html>
- 3 Moe, Kiel. *Integrated Design in Contemporary Architecture*. Princeton Arch Press: NY. 2008. pg. 67.
- 4 Moe, Kiel. *Integrated Design in Contemporary Architecture*. Princeton Arch Press: NY. 2008. pg. 71.
- 5 Moe, Kiel. *Integrated Design in Contemporary Architecture*. Princeton Arch Press: NY. 2008. pg. 71.



Unit 1
Second floor
765 SF



Unit 1
First floor
705 SF



Unit 2
Basement
700 SF

