

Accessible Compact Homes

Sustainability

The design of a perfectly sustainable house has, to a great extent, become objective. To achieve Zero Net Energy, fundamental ecological principles have determined the essential elements of our design. A **basic rectangular building envelope** results in a very efficient perimeter-to-area ratio, making this the most energy efficient and affordable form to build. An **East-West elongation** of the homes create optimal **passive solar gain**. Additionally, a **pitched roof facing South** provides the most area and cost efficient placement of PV panels.

Context

A sustainable home is designed with ecological principles as its basis, but to make any of this relevant, designs must be responsive to their surrounding physical and cultural contexts. This design fits in the general architectural aesthetic of the Burts Pit neighborhood, however some modifications differentiate these houses from the neighbors.

All three homes are fully wheelchair accessible because we believe that this is the way all homes will be designed in the future. The landscape scheme follows Low Impact Development (LID) practices, meaning all the **plantings are indigenous species** placed strategically for proper erosion control, conservation, and stormwater management. When possible, **edible plantings** such as apple trees and high bush blueberries were selected for the landscape design as well as a **vegetable garden plot** for each home. In New England, wood is a local energy source for heating our homes, so we have designed the houses to have a **wood stove and masonry chimney** as an option.

Affordability

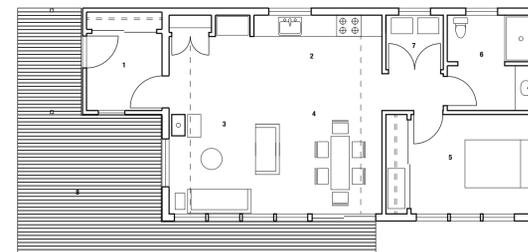
Now, more than ever, sustainability and affordability must be considered together. To keep construction costs of our designs below industry standards, we have modeled our houses so that the **plumbing in each home is kept in close proximity**. Additionally, they can incorporate **pre-fabricated elements** (such as utility trusses) or be completely pre-fabricated off site. The trusses above the kitchen-dining-living area are modified to create a higher ceiling than that in the bedrooms. The K-D-L is a single relatively large space, open with a considerable amount of flexibility with regard to placement of furniture. Generally, all three houses are modest and energy efficient, with **R-factors well above standard practice**.



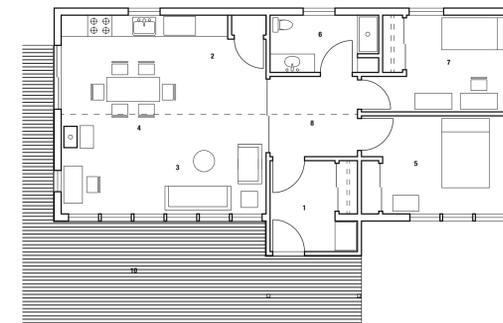
South Side Outdoor



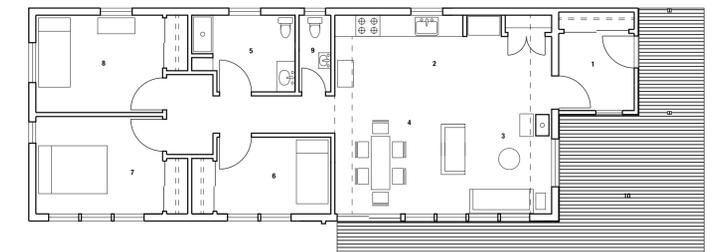
Site Plan
1 1 bedroom house 4 apple trees
2 2 bedroom house 5 vegetable garden
3 3 bedroom house 6 wood shed



One Bedroom House
18'0" x 11'0"
Area = 750 SF
1 entrance
2 kitchen
3 living room
4 dining
5 bedroom
6 bathroom
7 laundry
8 optional deck

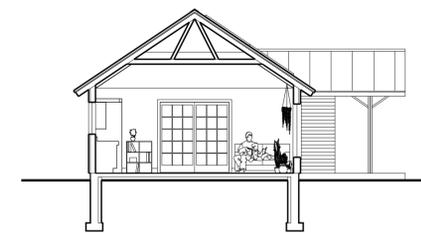


Two Bedroom House
18'8" x 11'0"
Area = 910 SF
1 entrance
2 kitchen
3 living room
4 dining
5 master bedroom
6 bathroom
7 bedroom
8 half
9 deck



Three Bedroom House
18'8" x 11'0"
Area = 1010 SF
1 entrance
2 kitchen
3 living room
4 dining
5 half bath
6 full bath
7 master bedroom
8 bedroom
9 bedroom
10 optional deck

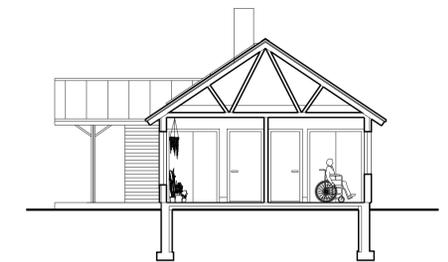
Floorplans



Transverse Section of Two Bedroom
1/8" = 1'-0"



Longitudinal Section of Two Bedroom
1/8" = 1'-0"



Transverse Section of Two Bedroom
1/8" = 1'-0"

Sections



North Side Outdoor



South Elevation
1/8" = 1'-0"



North Elevation
1/8" = 1'-0"



Two Bedroom Interior



West Elevation
1/8" = 1'-0"



East Elevation
1/8" = 1'-0"