

LIVING ROOFS FOR THE SOUTHWEST

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In the May 2009 newsletter, I did an article on “Green Roofs”, or “Living Roofs”. While living roofs have been used on residential homes for thousands of years in other parts of the world, there has been a tremendous increase in interest, research, and installations in the central Texas area in the past two years.

A living roof has plants on its surface instead of shingles, tar, gravel, etc. Homesteaders built houses with roofs of grass sod. Usually, the living roof has a waterproof layer, then a layer with gravel, or something similar so the plant roots will not stand in water, a layer of soil and a layer of mulch. It also must have a way to channel the excess water to the ground.

There are three types of living roofs: Intensive with more than 6" of planting medium, Semi-Intensive with 4 to 6" of planting medium and Extensive with less than 4" of planting medium. The weight ranges from 35-45 lbs per sq ft for the Extensive roof to 70-80+ lbs per sq ft for the Intensive roof. The Intensive roof will probably require new construction to handle the weight. The Extensive and possibly the Semi-Intensive roof could be retrofitted on an existing structure. A living roof can be as simple as planter boxes on the roof or an extensive planting system, with perennials, shrubs, cacti, grasses, and trees, and an irrigation system. In the past it was thought that the roof had to be flat, but more and more roof gardens are being made on pitched roofs.

In our time living roofs are underutilized components in insulating buildings to be cool in the summer, warm in the winter, and absorb noise. In addition, they minimize storm water run-off by absorbing the rain instead of letting it wash off the building. It can also provide a habitat for butterflies and other animals.

The cost of installing a green roof is higher than traditional roof systems but can be partially offset by lower roof replacement costs. Of all these benefits, reducing the heat island effect is probably the most significant. The heat island effect is the difference in temperature between urban areas and the surrounding countryside, caused by a lack of vegetation and a large number of reflective surfaces that absorb heat. The Wildflower Center research shows that living roofs can be up to 80° cooler than adjacent buildings with traditional roofs.

Until recently, most commercial green roofs in the US were based on the old European and Chinese green roofing systems. The city of Linz, Austria, has required living roofs for industrialized buildings since 1985! US researchers discovered that green roofing systems are not successful in the hot arid climate of the Southwestern U S without excessive irrigation and maintenance. But several companies have formed in Central Texas that have designs based on our ecosystems and climate. Using plants native to the area in which the living roof will be constructed, the system mimics the environment. In times of drought, the plants go dormant and can be irrigated or allowed to remain in the dormant state until the moisture returns.

One company has developed a very light weight mulching system that looks like the Hill Country limestone outcroppings called Roof Rocks. This system mimics an arid prairie ecosystem that has a protective layer of solid rock at the soil surface that shields the soil underneath from the sun and wind and conserves moisture. There is an Austin group that called GroWers (Green Roofs: Working Expertise – Regional Solutions) dedicated to advancing the use of living roofs in the Austin area. They have test roofs on pump houses, garden sheds, etc. to study the right mixtures for a planting medium and the best plants for living roofs in the area. Their website (growersaustin.com) has pictures of nine different living roofs, one of them in Medina.

The BRIT (Botanical Research Institute of Texas) center in Fort Worth has just completed their new facility. Part of their roof is a living roof and the other part is an innovative new solar panel system. Their living roof is made of planting boxes, making it easy to replace a box instead of having to redo the plantings in mass. Also, the Lady Bird Johnson Wildflower Center is conducting research on living roofs. They have 20 boxes simulating roofs and are tracking soil type performance and compatible plants for the central Texas area. Here is a link to their list of species that perform well. [Living Roof Species List from Wildflower Center Research](#)

As you can see there is much innovation in the U S, and particularly central Texas, to make living roofs a common building component in residential and commercial construction. Why not do your own experiment?