

# The pitch for pitched roofs: water catchment



## Permaculture in Practice

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You don't need a crystal ball to see the future of New Mexican architecture. Our wonderful, traditional, elegant and heat-efficient flat roofs will gradually fade into the past, as people become more interested in harvesting the rain and snow that falls on the impervious surfaces of their property.

Of course, this shocking future assumes that the building community sees the essential value in becoming serious about water-conscious development.

It's not that flat roofs are bad for harvesting precipitation. It's just that pitched roofs are much better – especially when installed with a gutter-and-downspout system.

First, when rain and snow hit a

pitched roof, water immediately slides down the slope. When precipitation hits a *flat* roof, a significant portion is lost to evaporation.

Second, when rain and snowmelt water flows into downspouts, it can be easily harvested at an exact location. When roof runoff arcs sporadically out of canales, it is more difficult to harvest because the point where the falling water lands varies.

Third, when you direct stormwater to an appropriate place in the landscape via gutters, it is far less expensive than digging trenches, installing pipes, backfilling and tamping the trenches to divert runoff. You can attach above-ground pipes to canales, but this should be done thoughtfully for aesthetic and structural reasons.

Fourth, installation of a water-harvesting system will usually cost less for a pitched roof as opposed to a flat roof because there are many more canales than downspouts on typical houses of equal size. According to the building code, a canale should not be responsible for draining more than 400 square feet of roof. This means

that a 1,201-square-foot house would have a minimum of five canales, whereas a typical pitched-roof house of the same size could have just two downspouts. Any extra water sources, especially if they happen to be far from a cistern or other water-harvesting system, will certainly increase installation costs.

Fifth, flat roofs are more difficult to keep clean than the gutters that come off of pitched roofs. You can put a screen in front of a downspout to prevent debris like leaf litter from ultimately getting into a cistern or rain barrel. Also, since there is usually not a direct connection from a flat roof to cistern, the chance of foreign bodies getting into the tank increases compared to the direct connection from a pitched roof.

There are other pros and cons in the roof debate that do not directly relate to our water situation. One of the most important of these is that pitched-roofed houses typically use more energy, because heat gets wasted in the rafters or attic. However, the amount of heat used by a building is also related to the

water issue. Since vast quantities of water are used to generate the power that we get from utility companies, a flat-roofed structure will save slightly more water than a pitched-roof structure if no attempt at water harvesting is made.

Such attempts must be made, however, if we wish to continue to build here in the desert Southwest. The big drawback for those of us who love the architectural character of Santa Fe is that the pueblo style that we hold so dear turns out to be less efficient than the equally "traditional," but less "characteristically Santa Fe," Northern New Mexico pitched-roof style.

As you plan your dream home in this arid land, remember that, ultimately, it doesn't matter what kind of roof you have. What matters is that you make a real attempt to harvest rain.

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