



The roof and other surfaces in the yard are permeable or part of a runoff system to filtrate the water.



PHOTOS COURTESY OF DAVID HEIDE DESIGN STUDIO

Down to earth

David and Karen Olson of St. Paul took advantage of the renovation of their Summit Avenue home to incorporate sustainable landscaping and more. The Olsons knew they wanted to add a tennis court to the property, and recalled one they had seen in Sweden many years ago. It concealed a geothermal heating and cooling system.

David Heide Design Studio of Minneapolis, which planned the home renovation, designed a geothermal system that was installed beneath the Olsons' tennis court. It employs 32 wells dug 100 feet deep to supply heat and hot water to the house and garage. The system also heats the house's floors and outdoor swimming

pool and melts snow from the sidewalk that leads from the house to the garage. In summer, the system exchanges heat from the house for cool water from the wells to provide air conditioning. Seven refrigerator or heat compressors add or remove heat from the system.

"The earth is a heat sink," explained architect Mark Nelson. "Heat is either added to the earth in the cooling season or drawn from the earth in the heating season."

Nelson's plan also includes a 10,000-gallon cistern that collects rainwater from decorative drains embedded in the patio. One of two Haddonstone fountains aerates and cleans the water collected by the cistern.

"Everything's computerized," David Olson added. "You can do it from your iPad or your phone and just control each room or whatever function you want."

Nearly 90 percent of the lot, including the roof, is either permeable or directs runoff to infiltration, noted design associate Andrew Blaisdell. That results in a 35 percent to 50 percent reduction in potable water needed for irrigation.

"The cistern, we use that for watering the yard and our garden," Olson said. "Last year was the best year we have had in gardening and I attribute it partially to the rainwater and the drip lines that we have in there... There's either a drip line or a sprinkler that covers everything."

The landscape design also called for the removal of several trees as well as invasive plants that nearly covered the 1924 Mediterranean Revival house.

"We had a good collection of Minnesota weeds," Olson joked.

Despite the length and complexity of the renovation and landscaping work, the Olsons are happy with the outcome.

"We had great architects," David Olson said. "We're really happy that we did the geothermal, that we did the cistern with them and that we're really much more energy-efficient than we ever were." ■

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