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DESIGN • BUILD • ADOBE • SOLAR

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## The American Institute of Architects

### energy-conscious design

The American Institute of Architects thinks building owners need to know more about energy—and how their buildings can be designed to conserve it.

We are convinced that energy-conscious design is a compelling national concern, and that it will become even more urgent within a very few years. We want to help building owners understand what it is, and what potential benefits it holds for them. That is the reason for the following case studies: 10 Buildings that Save Energy—by Design.

The owner of this new showroom for the McCormick Piano and Organ Company in Fort Wayne knew what he wanted: conservative, classic, attractive design. When his architect suggested solar energy, he declared "I don't want any ugly solar collectors anywhere near my building."

The construction budget was tight, with no money for additional first costs—even if they might save on operating costs later.

The architect came up with a combination of passive strategies that gave the owner what he needed. Heat collected by direct gain, through south-facing double-glazed windows, is stored in a 100,000-gallon concrete water tank under the showroom floor. Heat pumps draw the stored heat out of the tank during the winter and use it to warm the building; in summer, the pumps transfer heat from the air to recharge the storage tank. The bottom of the tank rests directly in the earth, which will eventually become "charged" with heat lost from the building, and will help maintain the temperature of the stored water.

Exterior walls consist of a sandwich of thin-shell concrete (Solarcrete™) on either side of a core of polystyrene insulation, so that almost no heat is lost by radiation.

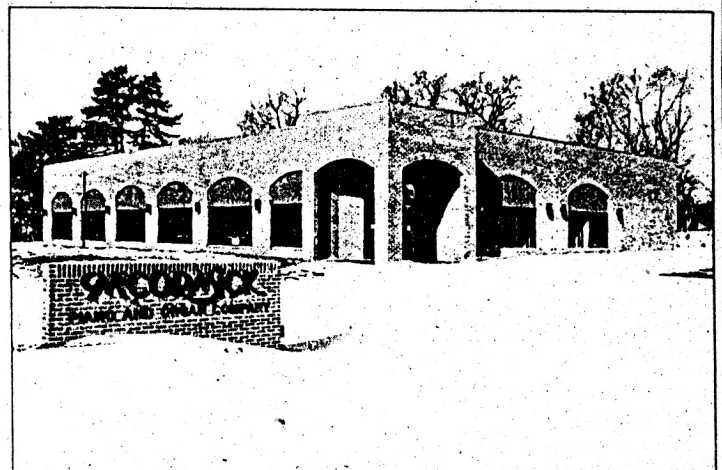
Summer cooling gets a boost from a sheet of water on the roof, which cools by evaporation. The system uses recycled rainwater, rather than expensive softened city water, to fill and replenish the evaporation tank.

In its first year, the building's energy costs amounted to \$564, compared with an estimated \$1,893 for a conventional building of the same size. For the owner, the clincher was the actual construction cost—\$172,000, as opposed to \$240,000 for a more conventional gas-heated building

with half the insulation values. (The savings resulted largely from the efficient use of materials, and lower labor costs, made possible by the sandwich-wall system.) With his \$11,076 energy tax credit, the owner saved almost \$80,000 on construction alone, plus an 84 percent savings on energy costs.

He also got the handsome traditional building he wanted. And a bonus: in the even temperature and humidity the system maintains, his pianos don't need tuning as often.

He's happy. You could even say that the words "solar energy" are music to his ears.



Owner: McCormick Piano and Organ Company, Ft. Wayne, Ind.

Architect: Michael T. Levy Associates, Ft. Wayne, Ind.