

It's always warm inside the Earth Museum to use geothermal energy

By Ed Farrell
The Winchester Star

Winchester — The 33-degree temperature on Thursday afternoon in Jim Barnett Park was the perfect laboratory example to highlight the benefits that the Shenandoah Valley Discovery Museum hopes to garner with geothermal energy.

Crews from Virginia Geothermal Supply Inc., Northern Virginia Drilling Inc., and REHAU, a firm that manufactures geothermal heating and cooling systems, gathered at the future home of the 21,000-square-foot museum to sink a test system designed to measure the temperature of the soil from the surface to a depth of 315 feet.

In its quest to become the first building in Virginia to attain the prestigious LEED Platinum ranking, the \$8 million museum, which will replace the current 7,500-square-foot facility at 54 S. Loudoun St., is incorporating a state-of-the-art geothermal heating and cooling system, which uses the earth's natural insulation as its core energy source.

The benefits of such a system are far superior to conventional heating and air conditioning, according to Peggy McKee, executive director of the Shenandoah Valley Discovery Museum.

"On a day like today, we would have to draw in the cold air and heat it to whatever temperature we desired," McKee said on Thursday.

But with a geothermal system, which is fueled by thousands of feet of tubing filled with water, the earth's insulation will have already heated the water to between 56 to 60 degrees.

Such naturally pre-heated water will then only have to be heated a little more to obtain a comfortable ambient temperature, she said, resulting in significant energy cost savings.

Likewise, in the summer, accumulated heat will be conducted back into the ground, where it will be cooled by the constant ground temperature, and in turn provide cooler temperatures for the museum, thereby reducing air conditioning costs as well.

Thursday's drilling was designed to provide a test site that will allow for an accurate gauging of ground temperature at the museum's future home.

That temperature will determine the depth needed for the expected 25 to 30 similar holes that will each hold about 1,200 feet of tubing.

The system will require a heat pump, but as a whole will be dramatically more efficient than a conventional heating and cooling system.

"This system will put out three to four times more energy than it consumes," said Michael F. Maher, a representative of REHAU, which manufactures the tubing.

REHAU has been working closely with the museum in designing the geothermal system, and according to McKee, had donated much of the cost of the design work.

But through a networking system, REHAU has linked a number of other industrial and educational concerns with the museum, all of whom are interested in participating in the facility's \$10 million capital drive.

Virginia Geothermal Supply Inc., for example, donated the cost of drilling the test bore — a value of about \$8,500.

Similarly, Northern Virginia Drilling Inc. donated the thermal-enhanced grout that



Workers feed tubing into a 300-foot hole on Thursday to measure the ground temperature at the site of the Shenandoah Valley Discovery Museum's future home in Jim Barnett Park in Winchester.
(Scott Mason)

will surround the tubing, valued at \$600.

If the museum can attain the coveted LEED (Leadership in Energy and Environmental Design) Platinum designation, it will be able to access a significant tax credit advantage, McKee said.

The LEED ranking, developed by the U.S. Green Building Council, is "a nationally accepted benchmark for the design, construction, and operation of high-performance green buildings," according to the council.

McKee said work on the new museum will commence "sometime in 2008," on land donated by the city of Winchester.

Frederick County has allocated \$500,000 toward the project, she said.

"We've received \$1.2 million from the federal government, thanks to Rep. Frank Wolf [R-Va.], and \$1.2 million from the state of Virginia, thanks to Del. Beverly Sherwood [R-Frederick County] and former Sen. H. Russell Potts Jr. [R-Winchester]."

Anyone interested in contributing to the Shenandoah Valley Discovery Museum's fundraising effort can call McKee at 540-722-2020, or make a donation through www.discoverymuseum.net.

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