Geothermal Gives Hope

Healthy, efficient, high quality and sustainable – buzzwords that attract the home buyer of today, but is it possible to wrap all these qualities into one home? Yes, in fact these are perfect for describing an entire neighborhood of some 217 affordable, energy-efficient homes in northeast Oklahoma City, OK.

Hope Crossing, Central Oklahoma's Habitat for Humanity (COHFH) five-phase project covering 59 acres located at NE 83rd and Kelley Avenue, features brick, three-bedroom, two-bath homes, each with about 1,250 square feet; all this, and still offered with a very reasonable price tag around $85,000.

Year-Round Comfort

Habitat strives to provide affordable housing, but regulating utility costs in the homes isn't a controllable option. Oklahoma City is considered a mixed-humid climate requiring significant amounts of both heating and cooling, and combating substantial humidity levels throughout the year. Air conditioning is a must in all new homes, which makes air-based distribution systems the norm. Most new homes use either a central forced-air gas furnace coupled with a split-system air conditioner, or a split-system central air-source heat pump and supplemental resistance heat.

In low-cost single-story houses, typical of the COHFH homes, a standard duct system is used for heating and cooling. While easy to install, they are not the best choice for energy efficiency. In response, ClimateMaster has made it possible for COHFH to offer families extremely energy-efficient homes by donating high-tech Geothermal heating and cooling systems to all the homes in Hope Crossing.

Geothermal systems provide homeowners with year-round comfort, high efficiency performance, and much lower utility bills, making these homes more affordable for families.

The homes have integrated ground-loop pumping and purging valves in the heat pump to save on space required, equipment cost and field labor content. Additionally, a single 400 ft. geothermal loop is located directly under the floor slab instead of the typical practice of drilling two 200 ft. heat exchangers 20 ft. apart in the lawn, which requires a separate excavation step to manifold them and route the piping into the house.

Upon completion, the homes will also be certified by the Leadership in Energy and Environmental Design (LEED), a third-party, independent verification system, which indicates a project is environmentally responsible in its design.

Energy savings produced by the Geothermal units contribute to the points used to obtain LEED certification. All energy loads within Hope Crossing homes are met with electricity.

What does all this mean for the environment? According to Dan Ellis, president of ClimateMaster, the 217 low energy Geothermal homes to be constructed in the Hope Crossing project will collectively save nearly 1,100 metric tons of CO2 per year, or 22,000 metric tons over a nominal 20-year lifespan, compared to the Standard Gas homes that COHFH had been building. If all of the homes had the 2.3 kW solar panel option, another 12,000 metric tons could be saved over 20 years.

Proven Energy Savings

"With all of those elements in place, as well as solar panels, the energy consumption of the homes is reduced by 75 percent," Ellis said.

"They are going to save over $1,200 a year compared to a Habitat house built last year," he said. "That is very substantial when you talk about affordability for these homes."

Habitat CEO Jonathan Reckford said while Habitat homes across the board are becoming more energy-efficient, Hope Crossing holds a special distinction.

"Hope Crossing is going to be the largest green-build Habitat community in the United States when it's completed," he said. "That's something that is setting the tone and path for the rest of the country as well."

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Hope Crossing Development:
Oklahoma City, OK

Facility Manager:
Central Oklahoma's Habitat for Humanity

Electrical Contractor:
Oklahoma Gas & Electric

Geothermal Heat Pump Equipment:
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