

# The Lighthouse



**W**hen homeowner **Allen Haar** decided to build atop a lakeside mountain, he wanted a home with expansive views of the countryside and interior spaces with few dividing walls. He also wanted to see the lake.

The surrounding forest, however, prevented unobstructed views of the lake.

"There was only one way to do it," he says. "Over the top."

The design he settled on was influenced by his long fascination with old lighthouses. Built like an octagonal wedding cake with each successive layer in smaller size, the home's top floor would feature 360-degree, eight-sided walls of glass with a view over a canopy of trees. Inside, an intricate framework of exposed beams would support the structure's mass with few interior walls.

But installing the mechanical systems presented new challenges. With so many exposed walls and ceilings, how would they facilitate heating, air conditioning and plumbing?

"Timber-framed structures, by their design, challenge the proper installation of mechanical systems," says **Tony Zaya**, Lancaster County Timber

Frames, Lancaster, Pa., an architect specializing in timber-framed homes.

Already limited for concealing the heating, plumbing and drainage pipes, Zaya's design challenge was multiplied by the central opening up through each successively smaller floor.

The ground floor concrete slab was tubed with home runs to the main manifold for zoning flexibility between bed and bath groups. The upper hardwood floors cried out for radiant heating. But the 6-inch truss joist space was too narrow to house the PEX plumbing system, the electrical wiring, high-velocity A/C ductwork and a plated under-floor radiant application.

Zaya solved the problem by using Watts Radiant SubRay, specially manufactured subfloor various manufacturers make that provides more flexibility for contractors to install radiant tubing.

Given the octagonal construction and soon-to-be-installed pie-shaped wedges of hardwood flooring, Zaya needed a product with this type of space-saving design flexibility for diverting tubing runs around the massive timbers and where each of the eight floor sections abut the other.