



Seabury

CASE STUDY

Client Profile

Opened in 1992, Seabury Active Life Plan Community is an award winning, compassionate life care community located on 68 acres in Bloomfield, CT. Seabury's compassion extends to the environment as reflected by their commitment to green building and operational practices which resulted in their Green Globe certification obtained in 2016.

As stated in their 2016 Annual Report, "Among our most thrilling achievements this year was a commitment to installing new green infrastructure on campus. As an element of our Green Globes certification, achieved in 2016, Geothermal energy will be used to maintain comfortable temperatures year round."

Challenges

A proposed 250 ton geothermal borefield consisting of 80, 600' deep boreholes with 1-1/4" single U-Bend pipes was significantly more costly than the allotted budget could absorb. The area required by the borefield was also a challenge to accommodate with the site area available. Connecting the existing building with existing standard range heat pumps to the new geothermal system with extended range heat pumps was a design problem. It became questionable whether an affordable borefield could be designed for the load of the new building and also support portions of the existing building load.

Solutions

The driller, Paul LaFramboise and distributor partner, Blake Equipment, were approached by Macri Associates for a new solution. They recommended an advanced, deep bore, borehole heat exchanger based on Versaprofiles TWINLOOP™ thermally enhanced, double U-bend pipe. This solution required only 35, 900' deep bore holes, carefully spaced to enhance long term performance. A new hybrid piping schematic was developed by the team to accommodate as much spare cooling capacity as the field could afford to make the existing building cooling tower heat pump system more efficient to operate.

Fewer Boreholes, Lower Installed Cost, Lower Operating Costs with VERSAPROFILES's Thermally Enhanced HDPE TWINLOOP™ double U-bend pipe

Goals and Objectives

1. *Develop a state of the art, "Green" building expansion including a Geothermal heating and cooling system.*
2. *Include as much supplemental cooling to the existing health care facility as the building expansion geothermal project is able to accommodate.*



6 New Park Road East Windsor, CT 06088 860-243-1493
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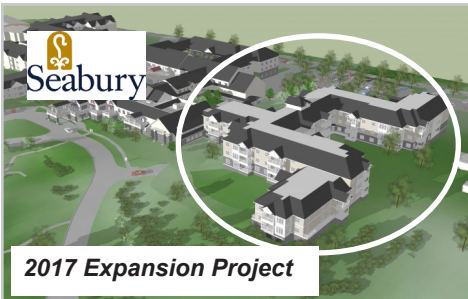
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Results

The vertical bore per ton was reduced by 34% with the use of Versaprofile's thermally enhanced 1-1/2" TWINLOOP™ pipe which doubles the surface area available for heat transfer reducing the total vertical feet required. The pipes are manufactured from the nanoparticles filled, GEOPERFORMEX high density polyethylene that increases the thermal conductivity of the pipes by about 75%, further reducing the vertical feet required to meet the load. As a result, Seabury was able to drill fewer, deeper boreholes with room to spare. Fewer boreholes, with higher heat transfer capability and lower pump head requirements, transfers into improved heat pump compressor and pump efficiency with the end result of lower operating costs. Seabury will realize an estimated savings of \$250,000 in installation costs and lower operating costs for both the existing and new buildings over the life of the system.

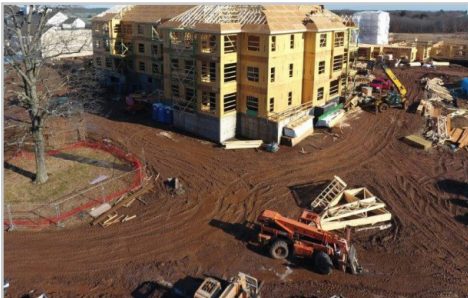
THE PROJECT



The Vision

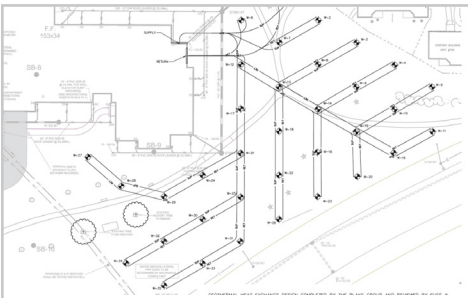


Seabury, a Green Globe certified community, offers residents a continuum of exceptional care from independent living through skilled nursing in their community located on 66 beautiful acres in Bloomfield, CT. In 2017, Seabury began an ambitious expansion plan incorporating a Geothermal System and the addition of more than 200,000 carefully planned and impeccably designed square feet.



The Challenge

The challenge was two fold. Firstly, to provide a lower capital cost investment for a 240 ton geothermal borefield in a smaller area. Secondly, to develop a method to effectively tie in a non-geothermal standard range heat pump building for more efficient operation with a hybrid integration approach to sharing the borefield.



The Solution

A deep heat exchanger system with Versaprofile's TWINLOOP™ double U-Bend, nano-particles filled GEOPERFORMEX HDPE pipe reduced the vertical feet per ton requirements by about 34%. Seabury was able to drill fewer, deeper boreholes resulting in reduced installation costs, lower operating costs due to improved heat pump compressor and pump efficiency - a projected savings of \$250,000 over the system's life.

PARTNERS IN SUCCESS

Engineering: **Fuss and O'Neill**

Manufacturer: **Versaprofiles**

Contractors: **LaFramboise Well Drilling, Inc**

Manufacturers' Rep/Distributor: **Blake Equipment**



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