



Fabyan Villa, Geneva, Illinois

Architectural Consulting Engineers (ACE) was the mechanical engineering consultant for a building and system assessment for the Fabyan Villa, located on the Fox River near Geneva Illinois. The mid-1800's farmhouse was extensively remodeled in 1907 by Frank Lloyd Wright for the owners George and Nelle Fabyan. The house and grounds of the estate were purchased by the Kane County Forest Preserve District in 1939 and operated as a museum from about 1940 until 1995 when Preservation Partners of the Fox Valley took over the operation of the house and expanded the collections into a full-fledged house museum.

As part of the system assessment ACE prepared a Life Cycle Cost Analysis study that reviewed different HVAC systems that might be installed in the house to better control the interior environment thus helping to protect the building fabric & collections, as well as improve visitor comfort and reduce the building's overall energy use. The LCCA study ultimately led to a recommendation to install a new geothermal based heat pump system to help manage the interior environment. Additionally, since much of the original knob & tube wiring was still in use, the study recommended replacement of this obsolete wiring distribution system. The building was using a gas fired heating system for the basement and attic spaces and electric baseboard heat for the first floor. Since new equipment is replacing the attic mounted equipment, the project also improves the building envelop by adding roof mounted insulation. The new system is zoned to provide control over areas with different load characteristics. Another wonderful feature of the geothermal system on this site is the elimination of any exterior equipment. This building sits on beautiful grounds maintained as part of the Fabyan Japanese Gardens so there is not really any suitable location to place an exterior condensing unit that wouldn't present a visual or aesthetic barrier to fully enjoying the grounds and garden.

This project is complete and fully operational.