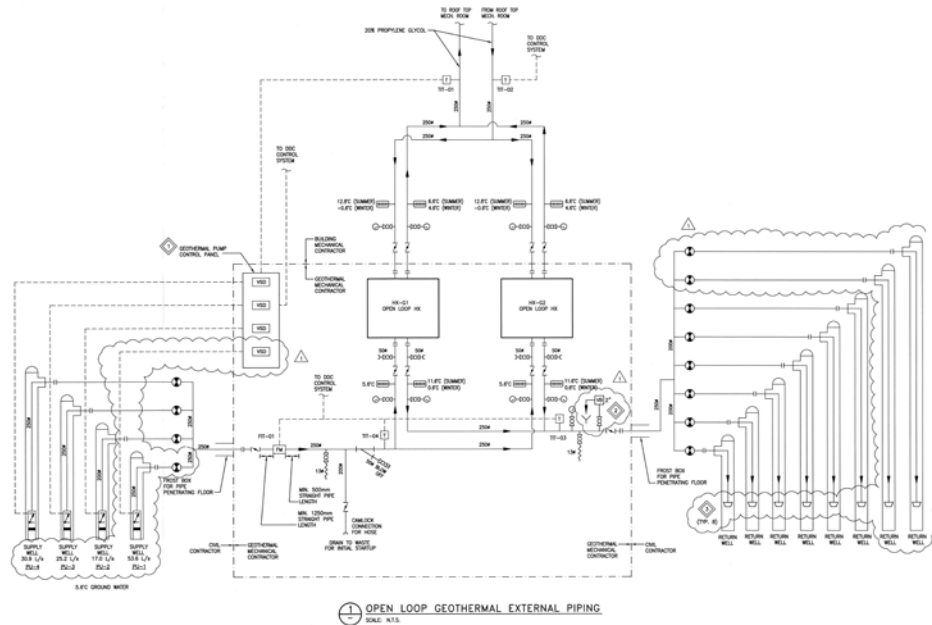


Large Geothermal System - IKEA Winnipeg Store



Project Description

IKEA Winnipeg, Manitoba

KGS Group was involved in designing the open loop geothermal system for the new 400,000ft² IKEA Winnipeg Store. The system was designed to provide a total flow rate of 1800 USgpm. The geothermal system was designed for thermal balance providing partial heating and full cooling of the building. A separate boiler system was installed to work in combination with the geothermal system to meet the total building heating requirements.

On the external geothermal system, there are a total of 4 supply wells and 8 returns wells. Buried HDPE piping was installed to connect all the wells to the internal geothermal system. Each supply well has a submersible pump with variable speed drive for improved control of the ground loop system. The drives and central control panel are located within the mechanical room and control the flow rate of each pump to meet the building side temperature set point.

The internal geothermal system consists of two heat exchangers that are connected to the building side hydronic system and external geothermal ground loop system. The heat exchangers provide the interface between both systems and are sized for 100% back-up to provide system redundancy. Three dimensional modeling of the internal geothermal piping was completed to ensure the heat exchangers and piping fit within the allocated space. This was crucial because space was limited within the IKEA building.