

City of Rockford, Illinois

Public Works Department
425 East State Street, Rockford, IL 61104
Phone: (779) 348-7174 Fax: (815) 967-7058
Web: www.rockfordil.gov



CLOSED LOOP HEAT EXCHANGE WELL APPLICATION

(For approval of the installation of individual closed loop heat exchange wells)

(DATE OF APPLICATION)

(APPLICANT NAME) (PLEASE PRINT)

UTILITY COMPANY OR CONTRACTOR OR HOMEOWNER
(IS APPLICANT) (CHECK ONE BOX)

(APPLICANT ADDRESS) (PLEASE PRINT)

(PHONE)

(IF BUILT BY A CONTRACTOR-GIVE NAME)

(ADDRESS)

(PHONE) (FAX)

(PROPERTY OWNER/LESSEE ADDRESS) (PLEASE PRINT)

(SYSTEM DESIGN) (EXAMPLE: 5 Wells of 75 ft depth)

SYSTEM LOCATION ADDRESS CITY OF ROCKFORD, WINNEBAGO COUNTY ZIP CODE

QUARTER SECTION: _____ SECTION: _____ TOWNSHIP: _____ RANGE: _____ PARCEL PIN#: _____

BOREHOLE LOCATION COORDINATES (State Plane NAD 1983 projection): _____ NORTH
_____ EAST

TYPE OF SEAL MATERIAL: HIGH SOLIDS BENTONITE SLURRY OTHER (PLEASE SPECIFY: _____)

FUSION WELDING OF PLASTIC PIPE TO BE DONE BY (CONTRACTOR NAME & ADDRESS)

NOTE: PLEASE ATTACH COPIES OF PLANS FOR PROPOSED HEAT EXCHANGE WELLS AND MAP OF SYSTEM INSTALLATION LOCATION. SYSTEM MUST BE LOCATED AWAY FROM RESIDENTIAL WATER WELLS. LOCATION SHALL BE VERIFIED AND APPROVED BY THE CITY OF ROCKFORD BEFORE INSTALLATION COMMENCES. SEE ATTACHMENTS FOR ADDITIONAL GUIDELINES. A SEPARATE MECHANICAL PERMIT WILL BE REQUIRED FOR THE CONNECTION TO THE BUILDING.

PROPERTY OWNER/LESSEE SIGNATURE:

BY SIGNING, APPLICANT AGREES TO ADHERE TO THE GUIDELINES OUTLINED IN ATTACHMENT A. DATE

CONTACT THE PUBLIC WORKS ENGINEERING DEPARTMENT FOR A FINAL INSPECTION AT 779-348-7174.

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GEOTHERMAL BOREHOLE CONSTRUCTION GUIDELINES

- The Geothermal System must automatically shut down if the system has a leak in the system. All applicable agencies shall be notified and the system shall be inspected for future operational safety. The overall safety of the groundwater will need to be assessed prior to any future repairs to the existing system can take place.
- Geothermal pipe loops shall be of approved material for geothermal installation and have a 50-year warranty against defects in materials and workmanship. Loops shall be assembled and pressure tested according to International Ground Source Heat Pump Association (IGSHPA) standards at the factory.
- The borehole locations shall be submitted with the application for the installation of a geothermal system. The locations of each borehole shall be identified in Illinois State Plane Coordinates, using the Winnebago County Geographical Information System (WINGIS) criteria. All boreholes constructed shall be clearly marked and labeled with a unique identification number and their location kept on file with the county recorder's office until the borehole is properly abandoned.
- The closed loop borehole system shall be installed by licensed Illinois Well Driller according to Section 915 of the Illinois Water Well and Pump Installation Contractor's License Code. The borehole system shall directly connect to the mechanical supply line to complete the geothermal system.
- The approved grout material shall be mixed so that it contains a minimum of 20 percent solids when it is placed in each borehole. The approved grout material will consist of a high solids sodium bentonite slurry made from bentonite grout or an 8 mesh granulated bentonite polymer slurry meeting NSF Standard 61. Thermally enhanced geothermal grout materials using sand to enhance thermal conductivity shall be mixed according to the manufacturer's instructions. A mud balance shall be used to determine if the grout mix achieves the proper weight before it is placed in a borehole. A mud balance shall be used to determine when the mud weight meets specification as it exits the top of a borehole while the borehole is being filled. Grouting shall continue until the mud weight of the grout exiting the top of a borehole is equivalent to the mud weight of the grout being pumped into the borehole.
- The cooling fluid shall consist of a medium, which possesses a low toxicity and shall be biodegradable. Such fluids shall be potable water or potable water plus a freeze protection additive. Pure water should be used whenever possible. Acceptable freeze protection additives include propylene glycol and ethanol.
- The Standard Dimension Ratio (SDR) and working pressure rating of all geothermal piping shall be sufficient to accommodate the system pre-pressurization and the total dynamic head. The total system pressure shall remain below the working pressure of the pipe.
- The bentonite grout material approved in this application shall be placed in each borehole using a tremie pipe and grout pump. The grout shall be placed from the bottom of each borehole to the top, withdrawing the tremie pipe as needed to place the grout correctly. If the grout settles, additional grout shall be placed in each borehole until grout settling ceases.
- Each geothermal loop shall be pressure tested according to IGSHPA standards after it has been installed in a borehole and the borehole has been properly grouted.
- Fusion welding of the geothermal loops to the header pipes shall be done according to IGSHPA standards by an IGSHPA certified individual.
- Only fused fittings or non-metallic mechanical stab fittings that meet ASTM D-2513 Section 6.101 Category 1 may be used in the header assembly and manifold.

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- The geothermal loop system and header pipes shall be pressure tested as a unit according to IGSHPA standards before the loop and header piping is covered with back fill.
- The geothermal loop system and header pipes shall be pressure tested as a unit according to IGSHPA standards when the system is connected to the heat pump.
- All loop and header piping shall be purged and cleaned according to IGSHPA standards during the installation and assembly process.
- If construction of this geothermal system has not commenced within 2 years of the date of this approval, this approval is void. Therefore, a new application requesting approval for the geothermal system must be submitted after 2 years if construction of the system has not commenced before then.
- In the event that any part of the geothermal system fails a pressure test at any time, the location of the leak or leaks shall be identified and replaced or repaired according to IGSHPA standards. Any geothermal loop within a borehole that is identified to be leaking shall be excavated and repaired or the loop shall be permanently sealed by pumping high solid bentonite grout into the loop and completely filling the loop with grout.

Geothermal_Conditions.doc