Office of the Revisor of Statutes
Administrative Rules

TITLE: Adopted Expedited Permanent Rules Governing Submerged Closed Loop Heat Exchange System

AGENCY: Department of Health

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MINNESOTA RULES: Chapter 4725

The attached rules are approved for
filing with the Secretary of State

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4725.0100 DEFINITIONS.

[For text of subparts 1 to 41f, see Minnesota Rules]

Subp. 41g. **Screen.** "Screen" means a wire-wrapped, gauze, shutter, slotted, or engineered perforated pipe designed to allow water to enter a well or boring and to prevent sediment from entering the well or boring.

[For text of subparts 41h to 47e, see Minnesota Rules]

Subp. 47f. **Submerged closed loop heat exchanger system.** "Submerged closed loop heat exchanger system" or "SCLHE system" means one or more SCLHE and the SCLHE lateral piping connecting to a building or a network of buildings exchanging thermal energy.

[For text of subparts 47g to 48b, see Minnesota Rules]

Subp. 48c. **Third-party testing agency.** "Third-party testing agency" means an independent organization that tests a product to specific safety, quality, or performance standards and is not involved in the product's creation or sale.

[For text of subparts 49 to 54, see Minnesota Rules]

4725.1834 SUBMERGED CLOSED LOOP HEAT EXCHANGER SYSTEM PERMIT.

Subpart 1. **General requirements.** A person must not install or operate a SCLHE system until the commissioner issues a permit to the well contractor installing the SCLHE system, the system owner, and the property owner where a SCLHE is located, if different than the system owner.

[For text of item A, see Minnesota Rules]

B. If a SCLHE system permit has been issued and includes proposed wells, a system owner must provide the commissioner with a Minnesota unique well number for each proposed well before construction of the wells.

[For text of items C and D, see Minnesota Rules]

Subp. 2. **Permit application.**

[For text of item A, see Minnesota Rules]

B. A SCLHE system permit application must include:

[For text of subitems (1) to (5), see Minnesota Rules]

(6) proposed SCLHE system specifications, including:

[For text of unit (a), see Minnesota Rules]

(b) SCLHE in-well piping and SCLHE lateral piping specifications, including:

i. diameters;

ii. material types and corresponding standards or information demonstrating that a proposed alternative material satisfies the requirements of part 4725.7075, subpart 3;

iii. wall thicknesses; and

iv. pressure ratings;

[For text of units (c) to (f), see Minnesota Rules]

[For text of subitems (7) and (8), see Minnesota Rules]

(9) a cross-sectional diagram of each well in a proposed SCLHE system. One diagram may be submitted if well construction, SCLHE in-well piping, SCLHE lateral piping, and SCLHE unit installation is the same. A diagram must include:

[For text of units (a) and (b), see Minnesota Rules]

(c) the existing or anticipated static water level; and

[For text of unit (d), see Minnesota Rules]

(10) an inventory of known groundwater contamination sites and plumes within one-half mile of the proposed SCLHE system wells. The inventory must include:

(a) a list of mapped groundwater contamination sites and plumes generated from publicly available information on local, state, and federal websites. The list must include:

[For text of subunits i to iv, see Minnesota Rules]

v. the source of information; and

[For text of unit (b), see Minnesota Rules]

[For text of subitem (11), see Minnesota Rules]

[For text of subparts 3 and 4, see Minnesota Rules]

Subp. 5. **Permit modifications.** The system owner must obtain the commissioner's written approval before making changes to permitted SCLHE system specifications, including:

[For text of item A, see Minnesota Rules]

B. SCLHE in-well piping and SCLHE lateral piping specifications, including:

(1) material types and corresponding standards or information demonstrating that a proposed alternative material satisfies the requirements of part 4725.7075, subpart 3;

(2) wall thicknesses; or

(3) pressure ratings;

[For text of items C to H, see Minnesota Rules]

Subp. 6. **Installation record.** The system owner must submit a SCLHE system installation record to the commissioner within 60 days of the date of the first successful SCLHE system pressure test. The installation record must be legible and completed on a form provided by the commissioner.

A. The installation record for the SCLHE system must include:

[For text of subitems (1) to (9), see Minnesota Rules]

(10) the pitless unit make and model;

(11) a plan diagram of the SCLHE system, including:

(a) all well locations where a SCLHE was installed; and

(b) distances of wells to:

i. property lines;

ii. structures;

iii. utilities listed in part 4725.2150;

iv. water bodies listed in part 4725.4350, subpart 1;

v. all other wells on the property, if applicable; and

vi. contamination sources listed in part 4725.4450; and

(12) the cross-sectional diagrams of each well in the SCLHE system.

One diagram may be submitted if the well construction, SCLHE piping, and SCLHE unit installation are the same.

[For text of item B, see Minnesota Rules]

Subp. 7. **SCLHE system maintenance.**

[For text of items A to G, see Minnesota Rules]

H. The system owner must notify the commissioner electronically of:

(1) pressure loss or leakage from the SCLHE system that causes an alert or shut-off within 24 hours of the event; and

(2) the product or component responsible for the pressure loss or leakage within 30 days of the event reported in subitem 1.

[For text of items I and J, see Minnesota Rules]

[For text of subparts 8 and 9, see Minnesota Rules]

4725.2750 SCREENS; SCREEN LEADERS, RISERS, AND SUMPS.

A. If a screen is attached or connected to the casing, the connection must be made by a threaded, solvent-welded, or welded joint, or by a nontoxic packer. Lead packers must not be used.

B. A screen riser or leader must not extend more than 21 feet above the screen. A screen sump must not extend more than ten feet below the screen. The total combined length of screen riser or leader and screen sump must not exceed 21 feet.

C. A screen riser, leader, or screen sump must comply with the confining layer requirements of part 4725.2020, subpart 1a.

D. Multiple screens separated by a screen riser, leader, or sump are not permitted.

E. A well is exempt from ~~item~~ items B and D if the well:

(1) is used in a SCLHE system; and

(2) complies with part 4725.2020, subpart 1.

F. If a well constructed according to item E is completed in unconsolidated material, the well contractor must:

(1) obtain a geologic log of the bore hole from a third-party licensed professional geologist reporting geologic material in accordance with part 4725.1851, subpart 4; and

(2) submit the geologic log with the record of well construction in accordance with part 4725.1851, subpart 1.

4725.3050 GROUTING.

[For text of subparts 1 to 8, see Minnesota Rules]

Subp. 9. **Alternative for wells used in SCLHE system with multiple screens.** If a well is used in a SCLHE system, the well contractor may fill the annular space separating multiple screens by:

A. placing bentonite chips or bentonite pellets without voids or bridging in the annular space; and

B. filling the annular space from the top of the gravel pack for the lower screen to the bottom of the gravel pack for the upper screen.

4725.7075 SUBMERGED CLOSED LOOP HEAT EXCHANGER SYSTEM INSTALLATION.

[For text of subparts 1 and 2, see Minnesota Rules]

Subp. 3. **Piping and fittings.**

[For text of items A and B, see Minnesota Rules]

C. SCLHE in-well piping must comply with the:

(1) standards listed in IMC table 1202.4 for piping, standards listed in IMC table 1202.5 for fittings, and requirements of IMC section 1203 for joints and connections; or

(2) an alternative material, joint, fitting, or connection, according to item E.

[For text of item D, see Minnesota Rules]

E. An alternative material, joint, fitting, or connection for SCLHE in-well piping must:

(1) be proposed to the commissioner through a permit application according to part 4725.1834, subpart 2, or permit modification according to part 4725.1834, subpart 5, and include:

(a) pressure and tensile strength testing results by a third-party testing agency;

(b) an evaluation by a licensed professional engineer; and

(c) a recommendation from a licensed professional engineer that the proposed alternative is satisfactory for the intended use and equivalent to materials that meet the standards cited in item C, subitem (1), in quality, strength, effectiveness, durability, and safety; and

(2) meet the requirements in item D.

F. The commissioner shall deny a permit application or permit modification under part 4725.1845 and Minnesota Statutes, section 144.99, subdivision 8, if the application or modification proposes the use of an alternative material, joint, fitting, or connection that has been previously approved for use as part of a permit application and has demonstrated a persistent pattern of pressure loss or leakage, as evidenced by event notifications under part 4725.1834, subpart 7.

Subp. 4. **Pressure test.**

[For text of items A to E, see Minnesota Rules]

F. A pressure test must:

(1) be conducted by a well contractor, bonded mechanical contractor, or licensed plumber;

(2) be witnessed by a third party who is a:

(a) Department of Health inspector;

(b) licensed professional engineer;

(c) licensed plumber;

(d) well contractor;

(e) certified building official;

(f) bonded mechanical contractor;

(g) accredited installer or certified geothermal inspector certified by the International Ground Source Heat Pump Association; or

(h) ground source heat pump system verification and inspection professional certified by the CSA Group;

[For text of subitems (3) to (5), see Minnesota Rules]

[For text of items G and H, see Minnesota Rules]

I. A pressure test record must include:

[For text of subitems (1) to (4), see Minnesota Rules]

(5) the hydrostatic pressure of the SCLHE system as measured at or above the ground surface; and

[For text of subitem (6), see Minnesota Rules]

[For text of item J, see Minnesota Rules]

[For text of subpart 5, see Minnesota Rules]