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Jerry Farrell, Jr.,
Commissioner,
Department of Consumer Protection,
Room 103, State Office Building,
165 Capitol Avenue,
Hartford, Connecticut 06106.

Re: WELL DRILLING AND GEOEXCHANGE SYSTEMS

I have just read through the draft regulations on your web site that invites comments. Here is an original and 10 copies, which meet the written proposal deadline of Dec. 14.

I do not expect all of this to be implemented, but constructively offer the following initial observations and questions:

1. Are you certain you wish to allow PVC casing, with its poor thermal conductivity? Is there a provision it can only be temporary and must be removed?
2. Bentonite grout with thermal conductivity of 1.0 or enhanced to 1.2 appears to be industry standard, but its proper mixture with silica is not adequately addressed. Important water content limits are not addressed. The purpose of grout should be twofold, not just to protect the aquifer, but also to conduct heat at the designed conductivity rate.
3. Pump differences between potable water wells and closed loop borehole systems should be distinguished. If pressurized and non pressurized flow centers will be under the HVAC jurisdiction inside the building, perhaps it should be so noted.
4. Suggest 4 times the inside diameter for "loop and tremie" pipe and grout.
5. Figure 6 should address a separation of steel casing distance to the horizontal piping 4' beneath the surface. If the hundreds of feet of borehole loop settle within the grout, it could exert force on the plastic loop pipe rubbing against the edge of the steel casing, recently torched off unevenly. This is considered a weak link. The mound of grout will not protect the HDPE. A method used is to wrap the 5' u-bend tail loosely into the heat

fused horizontal manifold. More than just a separation or cushion is needed. The wording should also say to place the mound after the piping “and grout” are installed and allowed to settle, and topped off. Sometimes settling into fissures is 30’ or more the next day. The 3’ mound of grout should not hide inspection settlement of grout in the borehole below allowing an air or water gap free of bentonite, that would otherwise be topped off.

6. These regulations should require the tremie to reach bottom depth and then be lifted a few feet, instead of assuming grout will be at bottom (by gravity alone).
7. The loop field installation, meaning the connection of the borehole to the building should be distinguished from the horizontal loop field not under these well drilling regulations.
8. Who is “the local or state authority having jurisdiction over soil conditions”?
9. 10’ separation of a horizontal loop pipe to a footing or leader drain at foundation entry is impossible, and is not a requirement because the section heading is Boreholes, not loops. So the reference to loop in a pond is inappropriate, unless we mean a borehole in a pond?
10. Separation of 25’ to an existing potable water well should require evidence of no cross tap of pressurized grout entering the drinking water supply well. If cross tapping hinders later, nearby borehole tremie lowering to the bottom, u-bend removal and ream out should be required. If grout is lost to the fissures, and plug material is used, it should be so reported.
11. Is there any separation specified between a horizontal loop and a water supply line? The 5’ separation to electric conduit makes sense, but could an antifreeze filled loop circulating at 30 degrees be allowed in the same trench next to a pressurized potable water line buried beneath the frost line, but subject to bursting in proximity to a freezing loop?

Thank you for considering these thoughts.

Very truly yours,

Peter J. Tavino Jr. PE