

SEA

SAILORS ENGINEERING ASSOCIATES, INC.

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February 1, 2018

Foundation Technologies, Inc.
Attn: Mr. Frank Queen
1400 Progress Industrial Blvd.
Lawrenceville, GA 30043

Re: Hydro Helical Flow characteristics

Dear Mr. Queen:

In accordance with your request, we have reviewed the design of the hydro helical system with respect to its ability to carry water through the system serving as a relief point installed through a retaining wall that has hydrostatic conditions behind the wall. If we consider a relief point installed 10 feet below a free water surface behind the wall and the wall was backfilled with coarse gravel the water would be free to flow rapidly through the gravel to the holes in the steel outer shell of the system. Once the water passes through the outer holes of the steel hollow casing it passes through the slots of the 1.5" diameter pvc pipe inside. It then flows along the inside of the pipe to the opening.

The standard hydro helical has 7 feet long sections with 33 holes, 0.5" in diameter, spaced evenly along the hollow steel shaft. The flow through the 33 holes, 0.5" in diameter, inserted 10 feet below the water surface would be 10.9 gal/min/hole or 358 gal/min for the 7 foot long section. If the inside diameter of the slotted plastic pipe is 1.5 inches, it can carry water out of an opening in a wall that is 10 feet below the water surface at a rate of about 90 gal/min. I am not sure what the flow rate through the slots in the pvc from the outer holes into the inside diameter of the slotted pvc pipe would be but due to the number of slots I think flow through the pipe diameter would control. That being said the flow rate for this assumed case would be around 90 gal/min.

Of course the flow out of the soil behind a wall or in a failing slope through the holes in the hydro helical will be far less and would be only a few gallons per minute unless there is gravel backfill behind a wall and the surface above is flooded.

Respectfully submitted,

SAILORS ENGINEERING ASSOC., INC.



Jim D. Sailors, P.E.
Principal Engineer