Gmail

Josh Arneson <jarneson@richmondvt.gov>

Champlin's quote for the Town of Richmond, VFRQ1029, VFRQ1033, VFRQ1035

Wes Brown <wes@champlinassociates.com> Fri, Jan 13, 2023 at 5:42 PM
To: "jarneson@richmondvt.gov" <jarneson@richmondvt.gov>
Cc: "Dave@ChamplinAssociates.com" <dave@champlinassociates.com>

Hi Josh,

Dave and I have been hashing out the best plan for the Richmond WWTP over the past few days. We have a couple options for you to consider and a recommendation.

The first option is a 4" Barnes Envie Solids Handling pump to match your design point of 800GPM @ 65ft total dynamic head. I know we had discussed using a Homa solids handling pump, but the Homa option had a higher horsepower than your currently installed pumps: this would mean that to run the Homa pumps we would have to swap out your existing 25HP VFD (variable frequency drive) for a higher horsepower model. This would also mean extra labor for installation of said VFD. The Barnes Envie line is much more efficient, allowing for a smaller horsepower motor, which means we can keep the existing drive and avoid that expense. However, we have some qualms about this design point- running your pumps at half speed (or lower) as you have been using the VFD means the velocity of liquid in the volute is much lower, so your pump is more prone to clogging and will need to be periodically cleaned out. **A viable option, but not ideal for this particular pump and design point.** Please see our attached quote VFRQ1029.

The second option is a 4" Barnes Envie Sithe Cutter pump with a design point of 400GPM @ 65 ft total dynamic head. Since the plant has been running the 800GPM pumps at half speed or less, this pump (with half the flow) is much more appropriately sized for this application, and therefore will be less prone to clogging than the higher horsepower 800GPM model. You can still keep your existing VFD to run this pump, and we can keep the existing operational 800GPM pump as a backup in case of a high flow event, such as a major storm, but run your day to day influent using the 400GPM pump. The cutter feature of this pump is also advantageous to reduce the risk of clogging, especially since these pumps are upstream from the headworks of the plant, which would normally catch any rags or other large solids in the water. **If you'll be running this pump at reduced speeds, however, the cutter will be much more prone to binding, which could be problematic. We see this as a good option, but not the best**. Please see our attached quote VFRQ1035.

The third option is a 4" Homa Vortex Pump, also with a design point of 400GPM @ 65ft total dynamic head. This pump uses a vortex style impeller, which creates a sort of "tornado" inside the volute. This is unlike a traditional centrifugal pump in that the impeller comes into minimal contact with the liquid coming through the pump: the "tornado" whisks any solids through to avoid anything getting caught in the volute. This pump is equipped with a 20hp motor, which means we can use the existing VFD. **Because of the minimal contact with solids coming through the pipe, we view this option as the best of the three, and recommend you go with this one, especially if these pumps will be run at reduced speeds via the VFD**. Please see our attached quote VFRQ1033.

All of these pumps are equipped with over-temperature protection and seal failure; since the previous pump did not have these, we included in our quote a plan to integrate these to the existing control scheme. This involves running a conduit up from the dry pit to the control room and installing a small panel to house a pump monitor relay, which sends a signal to the VFD if it detects any problems related to overtemp and sealfail. I have specified this equipment to be able to accomodate more pumps in the case you install more in the future. The only additional equipment needed for additional pumps would be the PMR (pump monitor relay).

Just as an aside, you probably noticed we have sales tax on these quotes. We'll need a tax exemption form from the town and I can remove those. For now see the subtotals for the tax-free prices.

Please review these options, and let us know if you agree with our recommendation before we proceed.

Thanks for the opportunity to quote this job, and we look forward to hearing from you!
Wes Brown

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3 attachments

VFRQ1029.pdf
144K

VFRQ1033.pdf
143K

VFRQ1035.pdf
145K