



April 28, 2014, 2014

Mr. Benny Stabile
Village of Orland Park
15655 Ravinia Avenue
Orland Park, IL 60462

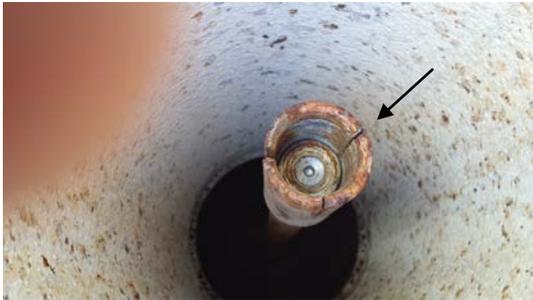
RE: Village of Orland Park High Service Pump No. 5 – Recommended Repairs

Mr. Stabile:

Water Well Solutions is pleased to quote the repairs to Orland Park's High Service Pump No. 5's Pumping Equipment. The following is an inspection report on motor inspection, column pipe, shafting and bowl inspection.

Failure Analysis:

When removing the pump for inspection, we found that the lineshaft coupling directly under the discharge head had split in three different places. (See Figure 1) This would have caused the initial pump failure since the lineshaft is what enables the motor to spin the pump impellers sending water to distribution. Our concern is that the coupling may have failed as a result of a torque snap instead of stress corrosion cracking.



(Figure 1 – Split Lineshaft Coupling)

One of the things that lead us to believe that the coupling failed due to a torque snap is that we observed the inline check valve is leaking very badly even when the gate valve is fully closed. If the gate valve is allowing enough water to back flow down the pumping equipment, this could lead to a torque snap if the pump were to come online in this condition. When I first came out to diagnosis the failure of the pump, I did see evidence that the check valve is allowing several hundred gallons per minute flow back through the pump when we tried to start it. The check valve will need to be replaced prior to placing the pump back into service. We would be happy to provide a quote to replace the check valve at your request.

Flanged Column Pipe & Shafting:

When removing the pumping equipment, all of the bolts heads had extensive deterioration likely due to being exposed to chlorine over long periods of time. None of the bolts were made of corrosion resistant stainless steel material. It is our recommendation that all of the bolts be replaced with new stainless steel bolts for corrosion protection.



The 12" flanged column pipe is deeply pitted (Figure 2) and there is severe corrosion on the mating flange faces of the column pipe as well as the centering spiders (Figure 3 & 4). Pitting is a destruction form of corrosion as it will limit the life of the column pipe. The 5ft section of pipe above the water level that bolts to the discharge head appears to be in the worst condition. (Figure 5) Due to present condition of the 12 inch flanged column pipe, (Figure 6) it would be our recommendation to replace it all with new at this time.



Figure 2



Figure 3



Figure 4



Figure 5



Figure 6

Motor:

Your 200Hp, 1775rpm, Sieman-Allis motor can be rebuilt and will require upper and lower bearings, along with cleaning and reinstallation of the windings. I have included a cost for this service on our proposal.

BJ 18KXL – 2 Stage Pump

The bowl assembly is in relatively good conditions and can be rebuilt with some minor repairs. It will require 2 new bowl bushings to restore the factory bearing clearances. Also we recommend that the bowl be sand blasted and recoated with an epoxy coating.



Water Well Solutions

Attached is our recommended scope of repairs with itemized pricing for your review. We hope that our proposal is met with your favorable response. WWS would welcome the opportunity to discuss our proposal in greater detail at your earliest possible convenience.

Sincerely,

Water Well Solutions Illinois Division, LLC.

Todd E. Kerry
Senior Project Manager