4 TROUBLESHOOTING

4.1 General

Grit or bar screens are mechanical filters used to remove large debris from the flowing water before it is discharged to the outfall pump station. A bar screen should be fixed on the dividing wall between the trash rack chamber and the wet well, which will help in protecting the pump. Grit/bar screens consist of vertical steel bars; the spacing of the bars may vary from 1 cm to 5 cm. Collected debris can be managed and disposed of separately, which reduces the pollution of the environment.

The damage or absence of bar screens can cause anything from loss of prime issues, to low or no output from the pump or even severe pump damage. Where applicable, screens should be inspected periodically, especially as they get older to ensure they are still in good condition, and replaced if they are not.

Another unusual pump station shutdown may occur as a result of short out incoming power lines, causing transformer fuses to blow, leaving the entire station inoperative. Pump shafts and impeller bolts can break as they age. This also renders the pump useless, although the parts may still appear to function normally. Leaving electrical panel doors open or not quite shut is another problem. Some panel doors have many latches. The solution is to completely shut the electrical panel.

When making repairs, practice safety first. The most common mistake is how dangerous it can be around the pump station or pump house area. Most times, this equipment operates properly and safely and can be taken for granted. There have been more than a few properly trained Contractors seriously hurt or worse by becoming complacent or letting their guard down while working on this equipment.

Water and electricity can be lethal. Most pump stations have multiple sources of electrical supply coming into the pump house to run the pump station, lights, ventilation fans and vents. These power supplies have service disconnect switches to disable the equipment prior to maintenance or repair. You should never assume that after a switch is thrown that the circuit is dead. You cannot tell by looking if the power is off. Therefore, having the proper test equipment, training and safety practices for working on this equipment is essential.

4.2 Typical Pump Station Problems

- Low and high system pressure faults that happen when filters are dirty, maintenance is slack, pumps fail to come on as they are designed to or low output from worn parts.
- Loss of prime or low wet well level faults. These happen when foot valves are leaking, gaskets or pipes on the intake system are leaking, relays or dirty sensors are damaged, and restrictions in the intake system or debris-plugged screens or lake screens are damaged or missing.
- Leaking pump packing or seals. One of the biggest complaints is that the station works correctly, but water is being thrown all over the floor. The packing may just need adjusting, or it may be time to service the station, or perhaps it's the start of a pump failure.
- Power-related issues, such as phase failure, are common, so are tripped breakers, blown fuses, VFD or inverter faults and intermittent circuit breaker trips.
- Mechanical failure of components is caused by normal wear and tear, abuse, bypassed safeties, defective screens, leaking check valves or improper maintenance