

SECTION 7
SANITARY LIFT STATIONS

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SECTION 7

SANITARY LIFT STATIONS

7.01 General

This section pertains to the requirement for sanitary lift stations designed and constructed by an Owner/Contractor. The Town shall review and approve the use of any lift station. The Owner must show that it is not physically possible or economically feasible to provide gravity service into a public sewer.

All stations shall be submersible type, including a minimum of two (2) pumps (2) (duplex station) each with a minimum capacity of eighty (80) GPM, one thousand seven hundred fifty (1750) RPM maximum, and a minimum four (4) inch force main. Voltage shall be sufficient for pump horsepower.

7.02 General Requirements

- A. All of the mechanical and control equipment shall be an integral package supplied by the pump manufacturer with local representation so as to provide undivided responsibility.
- B. The Contractor shall submit to the Town's engineering representative for review and approval two (2) sets of shop drawings, detailed standards, pump warranty and performance characteristics for all of the equipment and fixtures to be furnished and installed. The shop drawings and equipment data shall be submitted with a cover letter or Contractor's stamp of approval, indicating that he has reviewed, checked and approved the data submitted. The Town's engineering representative will review the submittal and render a decision in writing as to the acceptability of the equipment.
- C. The contractor shall provide the services of a factory service engineer to inspect the installation and alignment of all equipment and materials provided under this section. Upon completion of the installation and alignment, the service engineer shall certify to the Town, in writing, that the equipment furnished has been installed and aligned in accordance with all requirements, recommendations, and advisory instructions of the equipment manufacturer.

After the installation and alignment is complete, the factory service engineer shall operate the equipment for such a period as to assure the proper functioning of the same. All auxiliary equipment shall be operated to demonstrate that it is functioning properly. Any adjustments deemed necessary to place the equipment in proper operating condition will be made. Such adjustments shall be made at the contractor's expense.

- D. The pump supplier shall have full-time service personnel and repair facilities at his place of business to be eligible as a pump supplier to the Town.
- E. The contractor shall supply the services of a factory service engineer for one (1) day in addition to the time described above to provide on-site instruction to the owner's personnel in operation, routine maintenance, and "trouble shooting" for each piece of equipment furnished under this section.

- F. The manufacturer shall provide six (6) bound copies of a manual fully explaining the operation, routine maintenance and “trouble shooting” for all the equipment provided in this section. The manual shall include copies of all approved shop drawings with all required revisions. This manual must be submitted to the Town for approval prior to acceptance.
- G. Any exceptions to this Standard or associated approved plans shall be submitted in writing and clearly stated. The exception must be approved by the Town prior to proceeding with the work.
- H. All components of the lift station that are exposed to weather shall be constructed of material that is resistant to corrosion and will not require surface protection throughout the expected life of the lift station. In general, these materials are stainless steel, aluminum, fiberglass reinforced polyester (FRP) and ultraviolet stabilized PVC.
- I. All valves and piping coming in contact with sewage or connected to the pump or valve chambers shall be coated as follows:
 - 1. Primer - Aromatic Urethane Zinc-Rich 2.5 - 3.5 mil
 - 2. Field Coats - Aliphatic Acrylic Polyurethane two (2) coats at 2.0 - 4.0 mil per coat
- J. Inlet piping shall be located such that the sewage discharging into the wet well does not fall directly onto one (1) or both of the submersible pumps.

7.03 Operating Conditions

Prior to installation, the contractor shall submit the following information for each pump to the Town’s engineering representative for review and approval. Preference for high efficiency pumps will be considered.

- A. Pump capacity in gallons per minute;
- B. Total dynamic head (TDH) and operating RPM;
- C. Motor horsepower;
- D. Motor RPM;
- E. Motor voltage, phase and cycle;
- F. Make and model number; and
- G. Pump curves for the pumps to be provided

7.04 General

- A. Furnish complete, a submersible lift station consisting of submersible, non-clog sewage pumps, motors, piping, valves, reinforced concrete wet well and valve vault, electrical controls, guide system, and other appurtenances as specified in this section and as shown on the drawings.
- B. Pumping units shall meet the requirements of Hydraulics Institute (IH) standards.
- C. Pump materials shall meet the requirements of the latest editions of the following standards:

<u>Material</u>	<u>ASTM or ANSI Designation</u>
Cast Iron	A-48 Class 30
Stainless Steel	ANSI Type 316L, 303, and 420
- D. Where applicable, standards are not designed herein, supply high-class commercial grades of materials that meet the requirements specified and which are satisfactory to the engineer.

7.05 Pump Design

- A. Pumps shall be capable of handling raw unscreened sewage and three (3) inch spherical solids.
- B. The design shall be such that the pump unit will be automatically and firmly connected to the discharge piping when lowered into place on its mating discharge connection which shall be permanently installed in the wet well.
- C. The pump shall be easily removable for inspection or service requiring no bolts, nuts, or other fastenings to be disconnected. For this purpose, there shall be no need for personnel to enter the wet well.
- D. Each pump shall be fitted with a solid lifting ring permanently affixed to the pump and a stainless steel lifting chain or stainless steel cable of adequate strength and length to permit raising and lowering of the pump to be removed in one (1) continuous motion, without intermediate hooking.
- E. The pump, with all its appurtenances and cable, shall be capable of continuous submergence under water without loss of watertight integrity to a depth of sixty-five (65) feet.

7.06 Pump Construction

- A. Major pump components shall be of gray cast iron, ASTM A-48, Class 35B, with smooth surfaces devoid of blow holes or other irregularities. All exposed nuts or bolts shall be AISI Type 304 stainless steel construction. All metal surfaces coming into contact with the pumpage, other than stainless steel or brass, shall be protected by a factory applied spray coating of acrylic dispersion zinc phosphate primer with a polyester resin paint finish on the exterior of the pump.
- B. Sealing design shall incorporate **metal-to-metal contact** between machined surfaces. Critical mating surfaces where watertight sealing is required shall be machined and fitted with Nitrile or Viton rubber O-rings. Fittings will be the result of controlled compression of rubber O-rings in two (2) planes and O-ring contact of four (4) sides without the requirement of a specific torque limit.
- C. Rectangular cross-sectioned gaskets requiring specific torque limits to achieve compression shall not be considered as adequate or equal. No secondary sealing compounds, elliptical O-rings, grease or other devices shall be used.

7.07 Cooling System

- A. Motors are sufficiently cooled by the surrounding environment or pumped media. A water jacket is not required.

7.08 Cable Entry Seal

- A. The cable seal design shall include specific torque requirements to insure a watertight and submersible seal. The cable entry shall consist of a single cylindrical elastomer grommet, flanked by washers, all having a close tolerance fit against the cable outside diameter and the entry inside diameter and compressed by the body containing a strain relief function, separate

from the function of sealing the cable. The assembly shall provide ease of changing the cable when necessary using the same entry seal. **The cable entry junction chamber and motor shall be separated by a stator lead sealing gland or terminal board, which shall isolate the interior from foreign material gaining access through the pump top. Epoxies, silicones, or other secondary sealing systems shall not be considered acceptable.**

7.09 Motor

- A. The pump motor shall be induction type with a squirrel cage rotor, shell-type design, housed in an air filled, watertight chamber, NEMA B-type. The stator windings and stator leads shall be insulated with moisture resistant Class F insulation rated for 155°C. The stator shall be dipped and baked three (3) times in Class F varnish and shall be heat-shrink fitted into the stator housing. The use of bolts, pins or other fastening devices requiring penetration of the stator housing is not acceptable. The motor shall be designed for continuous duty handling pumped media of 40°C and capable of up to fifteen (15) evenly spaced starts per hour. The rotor bars and short circuit rings shall be made of cast aluminum. Thermal switches set to open at 125°C shall be embedded in the stator lead coils to monitor the temperature of each phase winding. These thermal switches shall be used in conjunction with and supplemental to external motor overload protection and shall be connected to the control panel. The junction chamber containing the terminal board shall be hermetically sealed from the motor by an elastomer compression seal. Connection between the cable conductors and stator leads shall be made with threaded compression-type binding posts permanently affixed to a terminal board. Wire nuts or crimping-type connection devices are not acceptable. The motor and pump shall be designed and assembled by the same manufacturer.

The combined service factor (combined effect of voltage, frequency and specific gravity) shall be a minimum of 1.15. The motor shall have a voltage tolerance of \pm ten (10) percent. The motor shall be designed for operation up to 40°C ambient and with a temperature rise not to exceed 80°C. A performance chart shall be provided upon request showing curves for torque, current, power factor, input/output kW and efficiency. This chart shall also include data on starting and no-load characteristics.

The power cable shall be sized according to the NEC and ICEA standards and shall be of sufficient length to reach the junction box without the need of any splices. The out jacket of the cable shall be oil resistant chloroprene rubber. The motor and cable shall be capable of continuous submergence underwater without loss of watertight integrity to a depth of sixty-five (65) feet.

The motor horsepower shall be adequate so that the pump is non-overloading throughout the entire pump performance curve from shut-off through run-out.

7.10 Bearings

- A. The pump shaft shall rotate on two (2) bearings. Motor bearings shall be permanently grease lubricated. The upper bearing shall be a single roller bearing. The lower bearing shall be a two (2) row angular contact bearing to compensate for axial thrust and radial forces. **Single row lower bearings are not acceptable.**

7.11 Mechanical Seal

- A. Each pump shall be provided with a tandem mechanical shaft seal system consisting of two (2) totally independent seal assemblies. The seals shall operate in a lubricant reservoir that hydrodynamically lubricates the lapped seal faces at a constant rate. The lower, primary seal unit, located between the pump and the lubricant chamber, shall contain one (1) stationary and one (1) positively driven rotating **tungsten-carbide** ring. The upper, secondary seal unit, located between the lubricant chamber and the motor housing, shall contain one (1) stationary **tungsten-carbide** seal ring and one (1) positively driven rotating **tungsten-carbide** seal ring. Each seal interface shall be held in contact by its own spring system. The seals shall require neither maintenance nor adjustment nor **depend on direction of rotation for sealing**. The position of both mechanical seals shall depend on the shaft. Mounting of the lower mechanical seal on the impeller hub will not be acceptable. For special applications, other seal face materials shall be available.
- B. **The following seal types shall not be considered acceptable nor equal to the dual independent seal specified:** shaft seals without positively driven rotating members, or conventional double mechanical seals containing either a common single or double spring acting between the upper and lower seal faces. Cartridge-type systems will not be acceptable. No system requiring a pressure differential to offset pressure and to affect sealing shall be used.
- C. Each pump shall be provided with a lubricant chamber for the shaft sealing system. The lubricant chamber shall be designed to prevent overfilling and to provide lubricant expansion capacity. The drain and inspection plug, with positive anti-leak seal shall be easily accessible from the outside. The seal system shall not rely upon the pumped media for lubrication. **The motor shall be able to operate dry without damage while pumping under load.**
- D. **Seal lubricant shall be FDA Approved, nontoxic.**

7.12 Pump Shaft

- A. Pump and motor shaft shall be the same unit. The pump shaft is an extension of the motor shaft. Couplings shall not be acceptable. The shaft shall be AISI type 431 stainless steel.
- B. If a shaft material of lower quality than 431 stainless steel is used, a shaft sleeve of 431 stainless steel shall be used to protect the shaft material. However, shaft sleeves only protect the shaft around the lower mechanical seal. No protection is provided in the oil housing and above. Therefore, the use of stainless steel sleeves will not be considered equal to stainless steel shafts.

7.13 Impeller

- A. The impeller shall be of gray cast iron, Class 35B, dynamically balanced, double shrouded non-clogging design having a long throughlet without acute turns. The impeller shall be capable of handling solids, fibrous materials, heavy sludge and other matter found in wastewater. Whenever possible, a full vaned, not vortex, impeller shall be used for maximum hydraulic efficiency, thus reducing operating costs. Mass moment of inertia calculations shall be provided by the pump manufacturer upon request. Impeller shall be keyed to the shaft, retained with an Allen head bolt and shall be capable of passing a minimum three (3) inch diameter solid. All impellers shall be coated with an acrylic dispersion zinc phosphate primer.

7.14 Wear Rings

- A. A wear ring system shall be used to provide efficient sealing between the volute and suction inlet of the impeller. Each pump shall be equipped with a brass, or nitrile rubber coated steel ring insert that is drive fitted to the volute inlet.

7.15 Volute

- A. Pump volute shall be single-piece gray cast iron, Class 35B, non-concentric design with smooth passages large enough to pass any solids that may enter the impeller. Minimum inlet and discharge size shall be as specified.

7.16 Protection

- A. All stators shall incorporate thermal switches in series to monitor the temperature of each phase winding. At 125°C the thermal switches shall open, stop the motor and activate the alarm and the dialer system.
- B. A leakage sensor shall be utilized to detect water in the stator chamber. The Float Leakage Sensor (FLS) is a small float switch used to detect the presence of water in the stator chamber. When activated, the FLS will stop the motor and send an alarm both local and/or remote, and to the dialer system. **Use of voltage sensitive solid-state sensors and trip temperature above 125°C shall not be allowed.**
- C. The thermal switches and FLS shall be connected to a Mini CAS (Control and Status) monitoring unit. The Mini CAS shall be designed to be mounted in any control panel.

7.17 Guide System

- A. A sliding guide bracket shall be an integral part of the pump unit. The volute casing shall have a machined discharge flange to automatically and firmly connect with the cast iron discharge elbow which, when bolted to the floor of the sump and discharge line, will receive the pump discharge connecting flange without the need for adjustment, fasteners, clamps, or similar devices.
- B. Installation of a pump unit to the discharge connection shall be one (1) piece 90° elbow and result in a simple linear downward motion of the pump guided by two (2) stainless steel guide rails.

- C. Guide rail pipes shall be constructed using 304 stainless steel Schedule 40. Intermediate rail supports shall be furnished in accordance with the manufacturer's recommendations and shall be constructed of 300 series stainless steel.
- D. No other motion of the pump unit, such as tilting or rotating, shall be required. No portion of the pump unit shall bear directly on the floor of the wet well. There shall be no more than one (1) 90° bend allowed between the volute discharge flange and station piping.

7.18 Acceptable Pump Manufacturers

- A. Hydromatic
- B. Fairbanks Morse

7.19 Control Center

- A. It is the intention that this standard shall cover a complete Electrical Pump Control System as hereinafter described and all necessary appurtenances, which might normally be considered a part of the complete electrical system of this installation. All of the automatic control equipment is to be supplied by one (1) manufacturer. It shall be factory assembled, wired, tested and covered by complete electrical drawings and instructions. Acceptable manufacturers are Usemco, Inc., Consolidated Electric, or pre-approved equal.
 - 1. The control center shall be built in a NEMA 4X with drip shield, stainless steel enclosure and shall be suitable for the specified horsepower and voltage for the pumping equipment. NEMA 4X shall also be used for inside applications. The outer door of the panel shall be hinged dead front with provisions for locking with a padlock. Inside shall be a separate hinged panel to protect all electrical components. H-O-A switches, run lights, circuit breakers, etc. shall be mounted such that only the faces protrude through the inside swing panel and no wiring is connected to the backside of the inside swing panel. The control panel shall have a weather hood as shown in Appendix A, Standard Details.
 - 2. A circuit breaker and electronic starter shall be by Allen Bradley and shall be a SMC plus with pump control option with three (3) leg overload protection and manual reset shall be provided for each pump over twenty-five (25) HP and NEMA rated Square D starter for under 25 HP. Starters shall have auxiliary contacts, on three phase applications, to operate all pumps on override condition. A separate circuit breaker shall be supplied for power to the control circuit. The control center shall include an extra circuit breaker of adequate size to provide 115 volt, one (1) phase power for the remote monitor panel, heater lights and one 15 AMP spare.

A solid-state digital pump controller manufactured by Digital Control Corporation Model 11928-5 shall be provided for each duplex pumping station or a Model 11967-5 for each triplex pumping station. The automatic pump and alarm control system shall employ an LED barograph display of wet level with indication and adjustment of on/off set points for two (2) pumps and high and low alarms. Additional features that must be included are level simulation circuitry to test the complete system, 4-20 AMP output and two (2) pump alternators with an override switch. Pump control and alarm outputs shall be

- through relays with contacts rated at 15 AMPS – 120 volt, AC panel. System shall be SCADA ready. No alternate will be acceptable.
3. A time delay shall be provided to delay start of second and/or third pumps should power outage occur.
 4. The control center shall incorporate connections for heat sensors, which are installed in the pumps. The connection shall disconnect the starter upon high temperature signal and will automatically reconnect when condition has corrected. The alarm and dialer shall be activated upon a failed condition.
 5. The control center shall incorporate connections for heat sensors, which are installed in the pumps. The panel will have seal failure alarm light for each pump. This alarm indicates lower failure of the lower mechanical seal in the pump. The alarm and dialer shall be activated upon a failed condition.
 6. The control center shall include a re-settable type hour meter for each pump to register the elapsed operating time of each pump.
 7. The control center shall have a high water alarm built-in the main enclosure. The high water alarm shall consist of a flashing alarm light with red Lexan plastic cover mounted on top of the enclosure such that it is visible from all directions. For panels mounted inside, a separate light shall be mounted outside a NEMA 4X box. An alarm horn shall be mounted on the side of the enclosure. A push to test horn and light button shall be mounted on the inside of the panel. A push to silence horn button shall be provided and mounted on the side of the enclosure.
 8. The control center shall include a condensate heater to protect against condensation inside the enclosure, if installed outside.
 9. The control center shall include lightning protection.
 10. The control center shall include a phase monitor relay to shut down the control circuit and protect the equipment due to loss of phase or phase reversal.
 11. The control panel shall include an external incandescent 100 volt light fixture in an explosion proof enclosure centered over the panel. A light switch shall be installed inside the panel to control the light fixture.
 12. The control center shall be suitable for connection to a future, non-hardwired remote monitor package. The main control must include the following interconnection capabilities equipment:
 - a. A remote terminal backup unit (RTBU) manufactured by Digital Control Corp., Model 12113, with the following connection. This unit will also function as a backup controller.
 - b. Standby UPS system with surge and noise suppression manufactured by Tripp Lite, Model BC Pro 550.
 - c. Circuit breaker to power remote monitor as described above.
 - d. Relay contact to signal high water alarm.
 - e. Relay contact to signal tripping of the overload of any of the pumps.
 - f. Relay contact to transmit signal of seal failure of any of the pumps.
 - g. Relay contact to indicate each pump is running. Contacts shall operate off motor current draw.
 - h. Backup float terminals.

13. All components of the control center shall be American made and available from local sources. In particular, items such as circuit breakers, overload protection, relays, etc. shall be available and in stock by local sources.
14. Level Controls. The system shall provide for the automatic and manual control and alternation of the pumps to maintain a pumped down condition of the wet well. Levels shall be sensed by float regulators. Each pump shall be controlled by a float regulator and when tilted, the float regulator shall turn on the pump. The pump(s) shall remain “on” until an “off” level is reached. At the conclusion of each pump cycle, an alternator shall switch the pumps on the next cycle to equalize run time on the pumps. In the event the “off” float fails, the system shall sense the failure and indicate a failure of the “off” float regulator. Controls contingent on the “off” float regulator supplying control power to the other regulators in not acceptable. A “high level” float regulator shall also be supplied.
15. UL Approval. The control panels shall be constructed in compliance with Underwriter’s Laboratories Industrial Control Panels listing and follow-up service, utilizing UL listed and recognized components where applicable. The control panels shall bear the Underwriter’s Laboratory listed serialized label. The panel shall be UL 508-14 approved.
16. Remote Monitor Package. The station shall be equipped with a Remote Monitor capable of monitoring the status of the lift station and communicating with the existing telemetry system housed at the Water Treatment Plant. The contractor shall install a telephone line in conjunction with the control panel to monitor operating conditions at the station. The telemetry system shall automatically initiate contact with pre-described telephone numbers and be compatible with the Town’s Sensaphone express system. A single dedicated 115 volt receptacle shall be provided to the power unit. Ten (10) AMP form “C” dry contacts run to numbered terminal strips will be included as follows:
 - Low Level
 - High Level
 - Pump 1 Seal Fail, Overload Trip & Over Temperature
 - Pump 2 Seal Fail, Overload Trip & Over Temperature
 - Power Failure
17. Operation and Maintenance Manuals. Six (6) operation and maintenance manuals shall be submitted to the Town. Manuals shall include at a minimum, operation instructions, maintenance instructions, recommended spare parts list, lubrication schedules, structural diagrams, as-built wiring diagrams and bill of materials.
18. Shop Drawings. Two (2) complete sets of shop drawings shall be supplied to insure successful installation and operation of the control system. The shop drawings shall consist of all of the following:
 - Sufficient detail to evaluate compliance with these standards.
 - A detailed component list including manufacturer and catalog number.
 - A custom wiring diagram for this specific application to facilitate and insure accurate field connections to the control panel by electrical installation personnel.
 - A description of operation for control system.
 - And enclosure dimension print.
19. Guarantee. All equipment shall be guaranteed against defects in material and workmanship for a period of one (1) year from date of Owner’s final inspection and

acceptance to the effect that any defective equipment shall be repaired or replaced without cost or obligation to the Owner.

7.20 Other Lift Station Work

- A. Other work required to complete and have satisfactory installation shall include, but not be limited to:
1. Provide pre-cast concrete wet well and valve vault.
 2. Provide discharge piping as shown on the drawings.
 3. Mount new disconnect, duplex control panel and light on new stand.
 4. Provide wiring between utility power pole, new control panel and wet well. *Note: The electrical conduit going from the control panel to the wet well shall be constructed such that there is a positive slope toward the wet well and the ends of the conduit shall be sealed to prevent moisture entry.*
 5. Provide temporary piping and wiring necessary to maintain existing service during construction activities (if applicable).
 6. Install a **six** (6) foot chain link fence around the lift station with a ten (10) foot access gate to the station via a **ten** (10) foot wide asphalt or concrete drive that will accommodate large maintenance vehicles. This will be at Bargersville Utilities' discretion.
 7. Asphalt will be one-and-a-half (1 ½) inch #1 surface, two (2) inch #8 binder, four (4) inch #5D base on eight (8) inch compacted stone base #53 placed in two (2) feet lifts. Stone will be proof rolled before asphalt is laid.

7.21 Wet Well and Valve Pit

A. General

1. The walls of the pump station and valve pit structures shall be constructed of reinforced concrete pipe, which shall conform to the latest ASTM Specifications C-76, with a minimum compressive strength of concrete equal to 4000 PSI. Reinforcement of the pipes shall be of the circular type. All of the pipe for the pump chambers and the access tubes shall be Class III and of the diameter shown on the plans. Handling or lifting lugs and/or devices shall be provided in the pipe shells or ease or unloading and setting in place. All joints between pipes and between ends of pipes and concrete slabs shall be made watertight.
2. The pipes utilized for the pump stations wet well or valve pit shall be jointed with a rubber O-ring type seal conforming to the ASTM Standard C-443 (latest revision). The joint shall be watertight. The interior and exterior joint spaces shall be grouted to a smooth surface using a sand-cement mixture mortar.

The mortar-grout shall have one (1) part cement to two (2) parts sand mix ratio. The complete interior and exterior joints shall have a smooth troweled waterproof finish. The exterior joint shall be further protected by a joint collar properly secured in accordance with the manufacturer's recommendations. The top concrete slab or the pump station and

valve pit shall have a cast into it a socket for receiving the end of each concrete pipe. The join shall be made watertight.

Concrete for the foundation and roof slabs shall be made of Class A concrete.

3. Access Hatches. The contractor shall furnish and install for both the wet well and valve pit aluminum access doors complete with frames, hinged and hasp-equipped covers, upper guide holders, drain hole and cable holder. The frames shall be securely mounted above the pumps. The doors shall have a torsion bar loaded for ease of lifting and shall have safety locking handles in the open position. The access doors shall be capable of withstanding three hundred (300) pounds live load per square foot. The lift station wet wells are to be provided with two (2) separate access hatches or a two (2) door hatch. The wet well access hatches shall be of a sufficient size for easy pump installation and removal. The valve pit access hatches are to be a single door type with a minimum size of thirty-six (36) inches square. Access hatches on wet wells and valve vault are to open in the same direction or at the utilities' discretion.
4. Pipe, Valves and Fittings. The suction and discharge pipe fittings shall be ductile and cast iron Class 150. Inside pipe and fittings shall be flanged. Bell end pipes or fittings with mechanical joints shall be provided at or near the outside face of the station well. Piping shall be supported independent of the sewage flanges. All inside plug valves shall be provided with handwheels. All check valves shall be rubber flapper type with external lever and weight as specified in Section 6.

All metal piping other than cast or ductile iron and copper tubing shall be galvanized steel pipe.

Sewer pipe entering the wet well and force main pipe entering and leaving the valve vault shall be provided with a flexible boot seal, similar to the requirement for manhole entry, to prevent groundwater entry into the lift station.

7.22 Station Warranty

- A. Stations warranty shall be one (1) year from the date of acceptance per Town maintenance bond requirements.

The manufacturer shall furnish a minimum of four (4) operation and maintenance manuals for the utilities review and approval. The contractor shall include on e(1) completed "Equipment Reference Data Sheet" for each piece of equipment supplied.