

GENERAL

The contractor shall furnish and install one complete wastewater pumping station. Principal items of equipment shall include pump chamber, precast concrete wet well, two self-priming close-coupled, motor driven, non-clog sewage pumps, sump pump, motor driven ventilator, dehumidifier, alternating electrical controls complete with Norweco Tilt-A-Trol™ mercury level control sensors and flashing high liquid level alarm light and all necessary internal piping and mechanical equipment as described in the following specifications and as manufactured by Norweco, Inc., Norwalk, Ohio, U.S.A.

The pumping station wet well shall be reinforced to withstand normal pressures from external soil and internal hydrostatic loads. To eliminate any possibility of differential settling of the tankage, the contractor shall install a six inch thick leveling pad of sand or stone in the bottom of the excavation prior to tank setting.

OPERATING CONDITIONS

Each pump provided shall be capable of delivering _____ gallons per minute against a total dynamic head (TDH) of _____ feet. The pump shut-off head shall not be less than _____ feet. At a minimum TDH of _____ feet, the pumps shall not overload their motors beyond the nameplate service factor. The pump motors shall be _____ horsepower, _____ RPM, _____ phase, _____ volt, and 60 Hertz. All openings and passages shall be large enough to permit the passage of a sphere _____ inches in diameter. The anticipated operating range is from _____ feet TDH minimum to _____ feet TDH maximum.

PUMP CHAMBER

The wastewater pumping station shall be constructed of properly reinforced five thousand PSI, twenty-eight day compression strength precast concrete. Each casting used to construct the chamber shall be a monolithic unit. Individual sections shall be joined with an approved joint. To insure watertight integrity of the finished structure, each joint shall be sealed with a self-adhering compression gasket. The gasket shall be of a resilient, synthetic, self-sealing material. The pump chamber shall be constructed of properly reinforced five thousand PSI, twenty-eight day compression strength precast concrete with duplex steel access doors. The top and bottom of the chamber shall be five inches thick. The bottom of the chamber shall be properly cast to provide drainage for the station. Where the suction and discharge lines pass through the chamber walls, Thunderline link-seals shall be provided. The void between the pipes and sleeves shall be completely filled with the expanding of the seal to provide a watertight seal. Four lifting grooves shall be cast in the ends of the tank sections for handling. These grooves shall be placed so that the sections shall be in balance when lifted.

The entrance doors shall be _____ feet long by _____ feet wide and shall be fabricated of one-eighth inch structural steel. There shall be a one-quarter inch by one and one-half inch by two inch angle welded to the bottom of the doors to be joined with a one-quarter inch by one and one-half inch by two and one-half inch angle cast in the roof of the pump chamber, thus securing the entrance to the pump chamber.

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The entrance cover shall be hinged and balanced for easy opening. It shall have an adequate drip lip and support chain to prevent accidental closure when open. A neoprene gasket shall be provided to keep out blowing rain. Two padlocks of the pin tumbler type as part of the master-keyed system used for all pump station closures shall be provided. They shall be located in a position to keep out sand or foreign matter. The access ladder shall have side rails of one and one-half inch outer diameter pipe and rungs of one inch outer diameter spaced twelve inches on center.

PUMPS

Pumps shall be of the self-priming type as manufactured by _____. Each pump shall be a ____ inch Model _____ and shall be capable of passing ____ inch diameter spheres.

Pump casings and impellers shall be of high grade, close grain cast iron. The pump interior and impeller shall be easily reached by removing the end plate. When the end plate is removed, the entire surface of the impeller shall be exposed so that it may be cleaned or removed without special tools.

The suction volute shall be an integral part of the end plate with inlet directly into the eye of the impeller.

The suction and discharge connections shall be standard cast companion flanges or threaded connections with unions.

The impeller shall be the non-clog type and may be fastened to the shaft by internal threads and locked to the shaft by a threaded lock nut, or by being keyed to a tapered shaft and locked with a threaded lock nut. The shaft shall be hard rolled steel and shall have a stainless steel sleeve in the area of the seal housing. The pump shall be supported by three pedestal stands of ample size to take the load and speed of the unit.

The pump check valve shall be constructed of cast iron with a neoprene face and shall be hinged on a stainless steel pin. This valve shall be easily removed through the access opening on the top of the suction volute; its removal shall not disturb the piping.

The pump shaft shall be sealed against leakage by a balanced mechanical seal. The stationary sealing surface shall be sealed to the seal housing by means of a neoprene "O" ring, and shall be mated to the rotating sealing surface which shall be sealed to the pump shaft by a neoprene "O" ring.

ELECTRIC MOTORS

Motors shall be the open drip-proof, squirrel cage induction type with low starting current and normal starting torque characteristics. The motors shall be non-overloading at their design operating point and shall not exceed their nameplate service factor ratings at the minimum specified head.

ELECTRICAL CONTROLS

The wastewater pumping station electrical controls shall be mounted within a weatherproof NEMA 4X enclosure. The enclosure shall have two coats of weather-resistant paint and be equipped with a pin tumbler type padlock as part of the master-keyed system used for all pump station closures. The electrical enclosure shall be mounted on the pump station cover.

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The electrical controls shall include duplex alternating pump motor control center complete with across-the-line switch type combination starters, three phase overload protection, control circuit transformer, electrical alternator, reset pushbutton and terminals for connection of overload or high water level alarm and "Hand-Off-Auto" toggle selector switches. The motor control center shall be a Model _____ as manufactured by Norweco, Inc., Norwalk, Ohio, U.S.A. or equal.

WIRING

All wiring within the station shall be run in galvanized rigid conduit or watertight flexible conduit and fittings. Accessories such as sump pump and dehumidifier where furnished by the manufacturer with approved flexible cord may be plugged into polarized receptacles. All wiring shall be sized according to National Electrical Code standards. Rigid conduit shall be installed by the contractor to the control cabinet for the service wires.

Two fifty watt lights with guard shall be mounted over the control panel. They shall be controlled by a lid-actuated switch as well as a manual switch located inside the station entrance.

PIPING

All internal piping shall be class 150 cast iron pipe or schedule eighty galvanized. The pump suction lines shall be _____ inches in diameter; the discharge line shall be _____ inches in diameter. All gate valves in the discharge line shall be class 150 double disc. The check valves in the discharge lines shall have a neoprene seat and "O" ring seals on the stainless steel valve pin.

SUMP PUMP (OPTIONAL)

A Norweco submersible pump with 1/3 horsepower electric motor, single phase, 60 Hertz, 115 volt, shall be installed in the sump. It shall have a capacity of 40 GPM at 14 feet TDH and shall discharge into the wet well through a one and one-quarter inch galvanized steel line and one and one-quarter inch check valve. The pump and motor housing shall be cast iron and bronze and shall have a float switch mounted in the motor housing. The switch shall be so designed that it can be removed without disturbing the pump motor and it shall be adjustable to operate within a four inch differential. A mechanical seal shall make the motor housing watertight.

DEHUMIDIFIER (OPTIONAL)

A package dehumidifier with sealed refrigeration type compressor, cooling coil, and condensing coil shall be provided and installed so that the condensate shall drain into the sump. The dehumidifier shall be supplied with an adjustable humidistat and a three wire flexible cord with polarized plug for single phase, 60 Hertz, 115 volt power. The dehumidifier shall be capable of removing fourteen pints of water from the air per day under conditions of 80°F ambient temperature and sixty percent relative humidity.

VENTILATION (OPTIONAL)

Forced ventilation shall be provided by means of a centrifugal blower capable of moving air at the rate of 270 CFM against a head of 1/2" WGSP. The exhaust vent shall be a round four inch duct, designed to keep out rain, insects,

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or other foreign matter and placed to prevent short circuiting of the air flow. A limit switch shall be provided to turn on the blower when the entrance cover is raised. A manual switch in parallel with the light switch shall be provided inside the entrance so that the blower may be turned on when the cover is closed.

The 1/12 horsepower, 1585 RPM blower motor shall be provided with a three wire flexible cord and polarized plug for single phase, 60 Hertz, 115 volt power.

CORROSION PROTECTION

After completion of welding, all steel surfaces of the dosing station equipment shall be blasted to white metal. All surfaces shall be primed with one coat of strontium chromate primer thinned ten percent with epoxy thinner, for a dry thickness of one and one-half mils. After a minimum of eight hours drying time, two coats of catalyzed PPG Aquapon shall be applied, one coat in a horizontal spray pattern and one coat in a vertical spray pattern. This shall produce a four to six mil total dry thickness on the interior surfaces and six to nine mil total dry thickness on the exterior surfaces.

The finished interior and exterior color shall be Norweco green. The plant manufacturer shall provide sufficient finish coating packaged for field touch-up.

MANUFACTURER

The equipment specified herein shall be the product of a manufacturer having a minimum of five years experience in the construction of prefabricated equipment of this particular type and design. The contractor shall prepare his bid on the basis of the specific equipment and materials specified for purposes of determining the low bid. This is not done, however, to eliminate other products or equipment of equal quality and efficiency. Substitution of equipment may be made if the proposed substitution is superior or equal in construction and performance. If equipment is to be substituted, the contractor shall obtain engineering drawings and specifications for the project. It is assumed that the substitution will result in a reduction of cost to the contractor and, if revised drawings submitted by the contractor are approved, the savings will be passed along in a reduction of the contractor's bid price. After the execution of the contract, substitution of equipment of makes other than that specified will not be considered.

WARRANTY

The manufacturer shall warrant the equipment being supplied to the owner against defects in workmanship and materials for a period of one year under normal use and service.

The warranty shall not cover any item which has been subjected to external damage, disassembled and/or repaired by unauthorized persons, flooded or otherwise mistreated. The manufacturer shall not be held liable for any consequential damages or contingent liabilities which are directly or indirectly a result of any failures in materials or equipment, or from delivery or installation delays. Items normally consumed in service such as grease, oil, v-belts, fuses, filters, seals, etc., shall not be warranted.