

## **SPECIFICATIONS for MicroFAST® MODEL NO. 9.0**

### **WASTEWATER TREATMENT SYSTEM**

#### **General Specifications**

The treatment plant described by these specifications is a Model No. MicroFAST® 9.0 as manufactured by Bio-Microbics, Inc., of the State of Kansas, USA (hereinafter referred to as "Bio-Microbics") and distributed in Canada by Pinnacle Environmental Technologies Inc. of Langley, BC, Canada (hereinafter referred to as "Pinnacle").

The Contractor shall furnish and install the MicroFAST® Model 9.0 treatment system (hereinafter referred to as the "treatment system" or "treatment plant") as manufactured by Bio-Microbics and distributed by Pinnacle. The treatment system shall be complete with all needed equipment as shown on the drawings and specified herein.

The principal items of equipment manufactured and supplied by Bio-Microbics shall include the MicroFAST® BioFilter, leg extension plates, air pump/blower assembly, air pump/blower controls and alarm. The MicroFAST® 9.0 BioFilter shall be situated within a tank, as shown on the shop drawings/plans. The tank(s) must conform to local, state or provincial, and all other applicable codes and standards. The tank(s) shall have minimum volumetric capacities as stated herein.

The tank(s) for the MicroFAST® 9.0 system shall have a minimum volumetric working capacity for the trash collector tank of 10,648 litres (2,342 imp. gals.) and for the tank or chamber that holds the MicroFAST® 0.5 BioFilter a minimum of 31,941 litres (7,026 imp. gals.).

Where the FAST® BioFilter and the tank are supplied separately, the Contractor shall provide coordination between Pinnacle and the tank supplier with regard to fabrication of the tank, installation of the FAST® BioFilter and delivery to the job site.

#### **Operating Conditions**

The treatment system shall be capable of treating 34,068 cu. m. (7,500 imp. gals.) per day of Average Daily Flow (ADF) of domestic raw sewage wastewater with a typical biological loading of up to 250 mg/l of BOD<sub>5</sub>, 250 mg/l of Total Suspended Solids, 25 mg/l of Fats, Oils, and Greases; with, an organic loading of 10.22 kg (22.52 lbs.) of BOD<sub>5</sub> per day. Load figures are based on a design of up to one hundred twenty-six (126) people and a per capita daily BOD<sub>5</sub> of 0.081 kg (0.1788 lbs.) per day.

#### **Media**

The FAST® media shall be manufactured of rigid PVC or polypropylene and shall be supported by the polyethylene casing. The media shall be of such a design that bacterial growth is uniform over all media surfaces and the said design shall be for the treatment of domestic strength sewage wastewater. The media shall be fixed in position and contain no moving or wearing parts and shall not corrode. The media shall be designed and installed to ensure that the sloughed solids immediately descend through the media to the bottom of the tank.

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### **WASTEWATER TREATMENT SYSTEM cont'd**

#### **Air Pump/Blower**

The treatment system shall have air from a regenerative type air pump capable of delivering 172 to 228 CFM. The air pump assembly shall include an inlet filter with metal filter element.

#### **Remote Mounted Air Pump/Blower**

The air pump/blower shall be mounted remote, up to 100 feet (30.5m) maximum, from the FAST® treatment system in accordance with the instructions stated in the installation section of the manual supplied with each FAST® BioFilter. The air pump/blower elevation MUST be higher than the normal flood level. A plastic housing shall be provided with tamper-proof screws. The discharge air-line from the air pump/blower to the FAST® BioFilter shall be provided and installed by the Contractor.

#### **Electrical**

The treatment system shall be designed to operate on standard current. The input power required for the 5 HP air pump/blower is 230 Volts, Single Phase, 60 Hertz, 12 Full Load Amps (FLA) and Locked Rotor Amps are 54. The Contractor shall furnish all conduit and wiring between the electrical control panel, the power supply, and the air pump/blower using a qualified licensed electrical contractor.

#### **Alarms**

The alarm system shall consist of a visual and audible alarm to indicate either a failure of the air pump/blower or that the liquid level in the treatment system is above the normal working operating level. The alarm shall be located on site as shown on the plans and in accordance with local, state, provincial or other applicable code or standard. A manual silence switch is included. The treatment system's alarm control box shall be ANSI/NSF International certified and CUL and/or CSA rated and shall be supplied in an indoor/outdoor NEMA 4R plastic enclosure.

#### **Installation and Operating Instructions**

Installation of the MicroFAST® system shall be done, in accordance with the written instructions provided by Pinnacle Environmental Technologies, by either the Contractor onsite or in coordination with tank supplier, or shall be pre-assembled in the tank by Pinnacle. Operation manuals shall be furnished which will provide a description of the installation, operation, and system maintenance procedures.

#### **Piping**

The FAST® treatment system shall be provided with a standard four (4) inch diameter effluent pipe opening and gasket. Any and all piping, fittings or valves outside the treatment system such as, but not limited to, the wastewater drain line to and from the treatment system, air transport line, vent and inspection port shall be furnished by the Contractor.

## **SPECIFICATIONS FOR MicroFAST® MODEL NO. 9.0**

### **WASTEWATER TREATMENT SYSTEM cont'd**

## **Workmanship and Experience**

All workmanship and materials shall be of the highest quality. The wastewater treatment plant shall be the product of an experienced manufacturer actively engaged in the manufacturing and research and development of sewage treatment facilities.

## **Tank Construction**

The trash collector tank or chamber and the main treatment tank/chamber may be constructed from fibreglass reinforced plastic (FRP) or from concrete in accordance to the following specifications.

### **Typical Fibreglass Tank Construction**

The main treatment tank shall be constructed of a minimum 6.35 mm (1/4 inch) minimum thickness FRP. The tank shall be molded of FRP polyester resin manufactured by the lay-up and spray technique to assure that the interior surface is smooth and resin rich. Tank shall be constructed in accordance with the current publication of the National Standard of Canada, Fibreglass-Reinforced Plastic Corrosion-Resistant Equipment, CAN/CGSB-41.22-93.

### **Typical Concrete Tank Construction**

The treatment plant main tank shall be constructed of a minimum of 76.2 mm (3 inch) thick, 3,000 PSI precast concrete. The top, bottom, and outer walls of all concrete tanks shall be a minimum of 76.2 mm (3 inch) thick and constructed of concrete with a minimum compressive strength of 3,000 PSI and/or a minimum of 28 MPA. The top, bottom, interior wall (s) and side-walls shall be reinforced uniformly. The concrete tank shall be constructed in accordance with any local, state, provincial or any other applicable code or standard one of which will be the current publication of the CSA B66 standard for septic and sewage holding tanks.

## **Warranty**

Refer to current published Warranty Statement in the Owner's manual.

Bio-Microbics and Pinnacle do not assume responsibility for contingent liabilities or consequential damages of any nature resulting from defects in design, material or workmanship, or delays in delivery, replacement, or otherwise.