

## SPECIFICATIONS

### LAMINAR CLARIFIER MODEL 1.0

#### **General Specifications**

The treatment plant described by these specifications is as manufactured by Bio-Microbics, Inc., of the State of Kansas, USA (hereinafter referred to as "Bio-Microbics") and distributed exclusively in Canada by Pinnacle Environmental Technologies Inc. of Langley, BC, Canada (hereinafter referred to as "Pinnacle").

The Contractor shall furnish and install the Laminar Clarifier Model 1.0 (hereinafter referred to as the "Laminar Clarifier") as manufactured by Bio-Microbics and distributed by Pinnacle. The Laminar Clarifier 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 Laminar Clarifier module. The Laminar Clarifier 1.0 unit 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 a volumetric capacity as stated herein and as shown on the shop drawings/plans as issued or approved by Pinnacle

The tank(s) for the Laminar Clarifier 1.0 system shall have a volumetric working capacity of not less than 4,259 litres (938 imp. gals.).

Where the Laminar Clarifier and the tank are supplied separately, the Contractor shall provide coordination between Pinnacle and tank supplier with regards to fabrication of the tank, installation of the Laminar Clarifier and delivery to the job site.

#### **Operating Conditions**

The Laminar Clarifier shall be capable of handling 22.73m<sup>3</sup> (5,000 imp. gals.) per day Average Daily Flow (ADF) of treated wastewater with a typical biological loading of up to 30 mg/l of BOD<sub>5</sub>, 30 mg/l of Total Suspended Solids, 25 mg/l of Fats, Oils, and Greases to clarifier down to 10 mg/l each of BOD and TSS.

#### **Media**

The Laminar Clarifier media shall be manufactured of rigid PVC or polypropylene and shall be supported by the polyethylene insert. The media shall be of such a design that if any bacterial growth is uniform over all media surfaces and the said design shall be for the clarification of a laminar flow of effluent sanitary 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.

### **Installation and Operating Instructions**

Installation of the Laminar Clarifier shall be done in accordance with the written instructions provided by Bio-Microbics or Pinnacle 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® Laminar Clarifier shall be provided with a STANDARD four (4) inch diameter effluent pipe opening and gasket. The maximum free and unrestricted flow of a 4" effluent pipe is 341 litres/minute (90 usgpm) or with a 2.0 design safety factor is 170 litres/minute (45 usgpm).

An OPTIONAL six (6) inch opening and gasket can be utilized on the same centre line or higher by up to two (2) inches. The maximum free and unrestricted flow of a 6" effluent pipe is 984 litres/minute (260 usgpm) or with a 2.0 design safety factor is 492 litres/minute (130 usgpm).

Any and all piping, fittings or valves outside the Laminar Clarifier such as, but not limited to, the wastewater drain line to and from the Laminar Clarifier and inspection port shall be furnished by the Contractor.

### **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 tank or chamber may be constructed from fibreglass reinforced plastic or from concrete in accordance to the following specifications.

#### **Typical Fibreglass Tank Construction**

The main treatment tank shall be constructed of 9.55 mm (3/8 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 National Standard of Canada, Fibreglass-Reinforced Plastic Corrosion-Resistant Equipment, CAN/CGSB-41.22-93 or current issue.

#### **Typical Concrete Tank Construction**

The treatment plant main tank shall be constructed of a minimum 76.2 mm (3 inch) thick, 3,500 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 3,500 PSI and/or a minimum of 32 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 CSA B66 standard for septic and sewage holding tanks in regards to the tanks structural integrity.