Residential Grinder Pump Station Specifications
(For Pump Manufacturer Representative Only)

A. General Requirements:
   1. Furnish a new complete factory-built and factory-tested simplex submersible Grinder Pump Station. Components of the station shall include: submersible grinder pump, basin or tank, check valves, anti- siphon valves, a control panel, level control system, all necessary wiring, flexible discharge hose, and shut off valve.
   2. The manufacturer's factories shall be ISO 9000 certified.
   3. The entire pumping system including, but not limited to the pumps, basin/tank, controls and appurtenances shall be furnished by a single manufacturer/supplier.
      - Acceptable manufacturers are Environment One (E-One) and Flygt division of Xylem.

B. Pump:
   1. Grinder pumps shall be Progressive or Semi-Progressive Cavity type pumps and shall be specifically designed and intended for service in pressure sewer systems. All the equipment specified herein is intended to be engineered equipment for macerating and pumping material in normal domestic wastewater.
   2. The grinder pump shall operate on a 240 volt, single phase, 60 Hertz electrical system.
   3. Performance Requirements:
      Duty Points:
      - The pump(s) shall be capable of delivering 15 GPM against a rated total dynamic head of 0 feet (0 PSIG), 11 GPM against a rated total dynamic head of 92 feet (40 PSIG), and 7.8 GPM against a rated total dynamic head of 185 feet (80 PSIG). The pump(s) must also be capable of operating at negative total dynamic head without overloading the motor(s). Under no conditions shall in-line piping or valving be allowed to create a false apparent head. The pump shall be capable of intermittent operation (three minute minimum) at any head.
      - Maximum pump speed: 1,725 RPM
      - Pump shall be: maximum 1.7 horsepower, 240 V, single Phase.

C. Tank/Basin:
   1. The tank/basin shall be constructed of HDPE or fiberglass Reinforced Polyester.
   2. The tank/basin shall have a minimum nominal capacity of 70 gallons.

D. Control/Alarm Panel:
   1. Each grinder pump shall include a factory assembled and tested NEMA 4X, UL508 Listed control/alarm panel in a poly carbonate enclosure.
      - The control/alarm panel shall be provided by the same manufacturer as the pumping system.

- The control/alarm panels shall include a red alarm light, H-O-A switch or manual switch, audible alarm with push to silence switch, and pump run light. The enclosure shall be wall-mounted type with exterior mounting tabs and sized to house all the required components and allow adequate space for testing and maintenance as necessary.
- The NEMA 4X enclosure shall be manufactured of thermoplastic polyester to ensure corrosion resistance. The enclosure shall include a hinged, lockable cover with padlock, preventing access to electrical components, and creating a secured safety front to allow access only to authorized personnel. The enclosure shall not exceed 12.5" W x 16" H x 7.5" D.
- The pumps shall operate by level control using either pressure switches or Multitrode 3-point level control. The level controls shall require no routine maintenance.
- The control/alarm panel shall include a factory-installed NEMA 4X portable generator receptacle with automatic transfer relay. Control panel shall incorporate a gasketed type, 4 pole, 20 amp receptacle with NEMA L 14-20 configuration and a 30 amp transfer relay. When the receptacle is energized the relay will transfer power from the main supply to emergency mode automatically with no need for personnel to open the control panel door. When the generator is disconnected from the control panel the power feed will automatically transfer back to the main supply.
- Control/alarm panel shall include one set of dry contacts to enable connection of additional remote alarms and one set of 120 VAC powered contacts to permit connection of redundant alarms.

E. Other:

1. For most typical situations, an outdoor assembly is recommended. In cases where the home owner elects to install an indoor residential unit, it shall adhere to the following requirements:
   - Per the Massachusetts Plumbing Code regulations, indoor grinder pumps must have specific product approval from the Massachusetts Board of Plumbing Examiners for use in or near residences.
   - The tank shall be made of high density polyethylene, with a nominal thickness of 0.50".
   - The tank shall be furnished with one 4" inlet valve for connection to PVC building sewer. Tank capacity shall be 91 gallons. The tank must be capable of withstanding static heads of 10 feet without leaking or causing permanent structural damage.
   - All discharge piping shall be constructed of 304 Series Stainless Steel or Schedule 80 PVC and terminate with a 1 1/4" female NPT fitting. The discharge piping shall include a PVC ball valve rated for 200 psi WOG (water/oil/gas).
   - All indoor stations shall be provided with a sewage rated, pressure rated accessible check valve to be installed by the installing plumber in conformance with Massachusetts State Plumbing Code.

- The tank shall also include a 2" PVC vent to prevent sewage gases from accumulating in the tank.

2. Discharge pipe shall meet the following requirements:
   - OUTDOOR UNIT: Discharge piping shall be factory installed and shall be 304 stainless steel or high pressure hose specifically designed for use in pressure sewers.
   - INDOOR UNIT: Discharge piping shall be factory installed. It shall be schedule 80 PVC for the indoor unit complete with true-union isolation ball valve.
3. A four-foot long flexible connector shall also be supplied as part of the grinder pump assembly. The connector shall be 1-1/4 inch, IPS, SDR 11 HDPE piping. Each end shall have a 304 stainless steel, multi-level mechanical transition piece hydraulically compressed onto the polyethylene pipe. The tank side shall be 1-1/4 inch male NPT threads and the street side shall be a 1-1/4 inch x 1-1/4 inch compression coupling suitable for either 1-1/4 inch SDR-21 PVC or SDR 11 HDPE pipe. (Note: Sewer laterals, which are terminated at the property line, are 1-1/4 inch pipe). The transition fittings shall be designed so that as the internal pressure within the pipe increases, the sealing surface area on the barb increases. Under zero internal pressure, the compression strain and tensional strain created by the compression of the multi-level barbs is greater than the stresses created by the relaxation and/or thermo expansion and contraction. The entire assembly shall be rated for 200 Psi working pressure.
4. Pump system manufacturer shall supply buoyancy calculations to property owner and the installing contractor. If deemed necessary by the pump system manufacturer, the property owner's Contractor shall furnish and install anti-floatation protection approved by the pump system manufacturer.
5. All maintenance tasks for the grinder pump station must be possible without entry of the grinder pump station (as required by OSHA 1910.146 permit required confined spaces). "Entry means the action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space."
6. Outdoor grinder pump core units shall have two lifting eyes complete with polypropylene lift-out harness connected to its top housing to facilitate easy core removal when necessary.
7. All mechanical connections must provide easy disconnect accessibility for core unit removal and installation.
8. All electrical connections shall provide easy disconnect accessibility for core unit removal and installation or other manufacturer approved methods.

F. Start-up Testing:
   1. Manufacturer's representative shall be present for start-up testing.
      - The property-owner's contractor (installer) shall provide the necessary means to successfully start and operate the grinder pumps, including convenient access to a minimum 294 gallons of water, 240v power supply and a minimum of one worker to facilitate and coordinate start-up of grinder pump station.

- The property-owner's contractor (installer) shall notify the Manufacturer's representative when the grinder pump station is ready for inspection. Following notification, the Manufacturer's representative shall coordinate with the installing contractor and property owner to establish a date and time for start-up. The Manufacturer's representative will be responsible for the satisfactory installation and operation of the pressure sewer system.
- Deficiencies found during inspection shall be reported to the property-owner's contractor (installer) by proper inspection report form and letter. It shall be responsibility of the property-owner's contractor (installer) to correct said deficiencies and reschedule a follow up inspection. Repeat inspections may be subject to additional charges for labor and travel per visit over and above the initial inspection.
- Proper start-up by pump manufacturer representative shall consist of the following procedure:
  a. Thorough inspection of installation and wiring to make sure there are no installation errors.
  b. Fill the tank with water with the H/O/A switch in the off position. When the audible alarm sounds the switch should be turned to automatic and the pump will evacuate the station and the alarm will turn off.
  c. When the pump turns off, the pump manufacturer representative should briefly turn the pump into Hand to operate the pumps manually.
  d. Complete a Manufacturer's start-up report for the property owner. The start-up report should be done digitally and contain pump serial #, voltage, running current, photographs confirming proper installation and operation at the time of start-up and any other pertinent information. The property owner shall receive a copy of the Manufacturer's start-up report via email from manufacturer representative.

G. Warranty

1. The grinder pump manufacturer shall provide a parts and labor warranty on the complete station and accessories for a period of THIRTY SIX (36) MONTHS after notice of property owner's acceptance, but no greater than THIRTY NINE (39) months after receipt of shipment. Any defects found during the warranty period will be reported to the Manufacturer by the property owner. The Warrantee shall be a 100 % on-site warrantee. Warranty shall be provided by the Manufacturer without any pass through warrantees. Repair will be made free of charge and be made on-site by an authorized service provider within 24-hours of notice given to the manufacturer by the property owner.