1.1 GENERAL

1.1 The contractor shall furnish and install one prefabricated fiberglass lift station, complete and ready for operation in accordance with the plans and specifications stated herein. The station shall be a Legacy Lift Model ____ as manufactured by Legacy Environmental, Leeds, Alabama. The lift station system shall be of the wet pit type, specifically using (grinder type) submersible pumps, designed for pumping ____ gallons per minute. The complete system shall include all necessary equipment for efficient pumping operation.

2.0 TANK CONSTRUCTION

2.1 All tank vessels shall be fabricated of fiberglass suitable for sewage catch basins. All walls shall be continuous and watertight and shall be supported by reinforcing members where required. Fabrication and erection shall conform to the appropriate requirements. Connections shall conform to the requirements of the American Plumbing Code and shall develop the full strength of the member.

2.2 Materials of construction used in the tank vessel shall be commercial grade and shall either be evaluated as a laminate by test or determined by previous service to be acceptable for the environment.

2.3 The resins used shall not contain fillers except as required for viscosity control. Up to five percent by weight of thixotropic agent, which will not interfere with visual inspection, may be added to the resin for viscosity control. Resins may contain pigments and dyes by agreement between the fabricator and the purchaser, recognizing that such additions may interfere with visual inspection of laminate quality.

2.4 The reinforcing material shall be a commercial grade of glass fiber having a coupling agent, which will provide a suitable bond between the glass reinforcing and the resin.

2.5 The tank vessel shall be of the laminated type construction. The laminate shall consist of an inner surface, an interior layer, and an exterior layer of laminate body.

2.6 The inner surface shall be free of cracks and crazing with a smooth finish and with an average of not over two pits per square foot, providing the pits are less than 1/8” in diameter and not over 1/32” deep and are covered with sufficient resin to avoid exposure of inner surface fabric. Same waviness is permissible as long as the surface is smooth and free of pits. Between 0.010 and 0.020 inches of resin-rich surface shall be provided. This will be a gel-cote surface.

2.7 A minimum of 0.100 inch of the laminate next to the inner surface shall be reinforced with not less than 20 percent or more than 30 percent by weight of non-continuous glass strands having fiber lengths from 0.5 to 2.0 inches.

2.8 The exterior layer of body of laminate shall be of construction suitable for the service intended and contain sufficient glass by weight to provide aggregate strength necessary to meet the tensile and flexural requirements. Where separate layers such as mat, cloth or woven roving are used, all layers shall be lapped a minimum of one inch. Laps shall be staggered as much as possible. If woven roving of cloth is used, a layer of chopped strand glass shall be placed as alternate layers. The exterior surface shall be relatively smooth with no exposed fibers of sharp projections. Handwork finished is acceptable, but enough resin shall be present to prevent fiber show.
2.9 SURFACE HARDNESS - The laminate shall have a Barcol hardness of at least 90 percent of the resin manufacturer's minimum specified hardness for the cured resin when tested. This applies to both interior and exterior surfaces.

2.10 APPEARANCE - The finished laminate shall be as free as commercially practicable from visual defects such as foreign inclusions, dry spots, air bubbles, pin holes, pimples, and delamination

3.0 ANTI-FLOTATION FLANGE

3.1 When the basin is constructed an anti-floatation flange is applied; pump-mounting studs are located in the basin bottom. Studs are stainless steel and mounted in a 1/4" steel plate. The plate is drilled and tapped 3/8" for studs to thread into. Studs are welded on the bottom of the plate. The stud plate is fastened in place and another laminate of fiberglass is molded to the bottom to complete the basin construction.

4.0 WETWELL CHAMBER

4.1 A wetwell chamber shall be provided and shall be of the sufficient capacity to provide an efficient pumping operation. The wetwell shall be equipped with access lid, air vent and bug screen, submersible pump system, inlet and outlet connections, electrical control panel and level sensors.

4.2 The access lid and frame assembly shall be provided in the top of the wetwell structure. The access door shall have means of locking and a latch to hold the door in the open position.

4.3 Air vent and bug screen shall be constructed of the configuration shown on the plant and shall be fitted with manufactured screen to prevent intrusion of insects or birds into the vent piping.

4.4 The structure dimensions of the wetwell chamber shall be as follows:

4.5 Inside Diameter: ____

4.6 Tank Height: ____

5.0 VALVE CHAMBER (Optional)

5.1 A valve chamber shall be provided as an integral part of the lift station. The valve chamber shall be equipped with access lid, air vent and bug screen, one (1) check valve and one (1) gate valve for each pump.

5.2 The access lid and frame assembly shall be provided in the top of the valve chamber structure. The access door shall have means of locking and a latch to hold the door in the open position. Air vent and bug screen shall be constructed of the configuration shown on the plans and shall be fitted with manufactured screen to prevent intrusion of insects or birds into the vent piping.

5.3 A valve chamber drain shall be furnished so that water can drain to the wetwell chamber. This drain shall be equipped with a check valve.

5.4 The structure dimensions of the valve chamber shall be as follows:
5.5 Inside Dimensions: ___

5.6 Depth: ___

6.0 PUMP CONSTRUCTION
6.1 A duplex set of submersible pumps shall be provided within the wetwell chamber. Each pump shall be capable of pumping ___ gallons per minute at the total dynamic head of ___. The pumps shall be manufactured by ____________; or approved equal. The pump shall have a vertical discharge size of ___ diameter.

6.2 Seal Failure Warning System: The seals shall be separated by an oil chamber to detect the leakage of water into the chamber. A solid-state device mounted in the pump control panel or in a separate enclosure shall send a low voltage, low amperage signal to the probe. If water enters the oil chamber, the probe shall activate a warning light in the control panel.

6.3 Motor Thermal Protection System: The thermal protector consists of one or more heat-sensing elements integral with the motor or motor-compressor and an external control device. The thermal protection is in place to turn the motor off when excessive heat is generated within the motor circuitry and keep it from burning up the motor.

6.4 The motor shall be of the submersible type rated for __ HP ___ Volt, __ Phase.

7.0 SLIDE RAIL SYSTEM
7.1 Guide rail installation: A cast iron guide rail base shall be mounted on the floor of the pump station. The pumps shall be guided on to the cast iron discharge base by a guide rail supported at the top by an upper guide bracket and at the bottom by the discharge base. The pump base shall be equipped with a straightening vane, which properly aligns the pump on the discharge base just prior to final seating. When the pump is in position, the weight of the pump shall compress the gasket and seal the connection. The area under the pump shall be free and clear of any additional support legs or guides pipes to insure free entrance of solids to the impeller.

7.2 A heavy duty galvanized lifting chain of adequate size shall be attached to the pump for pulling the pump to the top of the wetwell chamber and removing it from the system.

8.0 ELECTRICAL CONTROL CONSOLE
8.1 An electrical control panel shall be installed within a NEMA 3R/4X weatherproof enclosure with a locking hasp. The control console shall be provided for mounting as indicated on the plans. Any exterior mounting hardware shall be stainless steel or other corrosion resistant material.

8.2 The control console shall be a model _____ and shall be completely factory assembled and tested prior to shipment. The control console shall be furnished with all necessary controls for each pump and blower motor unit and associated plant equipment. Control voltage shall be 120 VAC, 1 Phase.

8.3 Controls shall be mounted to a removable sub-panel within the enclosure and shall be wired and spaced in accordance with the latest National Electrical Code. The control console shall be supplied with a properly sized magnetic-circuit breaker to act as the main disconnects for the control
console. Magnetic starters with overload protection shall be supplied for all blower motor units. An electrical alternator shall be furnished to alternate the operation of each pump. The alternator shall be provided with a manual selector switch to allow manual selection of the lead pump if desired.

8.4 All wiring conductors within the control console shall be U.L. type THHN, stranded #14 AWG minimum, rated at 600 volts. Control wiring shall be numbered on each end.

8.5 Control panel and the electrical power service shall be furnished and installed by the purchaser. Wiring and conduit between the control panel and plant equipment shall be furnished by the manufacturer of the wastewater treatment plant. The panel may be detached for shipping. The main power supply shall be ____ Volt, ____ Phase, 60 Cycle. The control voltage shall be 120 Volt, 1 Phase.

8.6 Pump controls shall be of the direct acting mercury float type for complete automatic operation as follows:

8.7 Turns off both pumps and activates the electrical alternator for the next cycle

8.8 Energizes the lead pump on.

8.9 Activates the lag pump on.

8.10 Activates the high level alarm.

8.12 The mercury switch consists of a steel tube that houses mercury and contacts. Contact is through mercury to mercury. No mechanical contacts.

8.13 The power cord will consist of a type SJOW-A cord rated for 300 maximum capacity.

8.14 The mercury tube switch and cord are sealed in a vinyl ball with leak proof polyurethane resin.

9.0 JUNCTION BOX

9.1 A NEMA 4X fiberglass junction box, fully gasketed, watertight, shall be mounted on top of the basin. The junction box shall have a hinged cover and shall be secured by self-contained screws. The junction box shall contain a terminal strip clearly labeled for ease in making all necessary wiring connections. All cable entries shall be made through watertight connections and then sealed to present corrosive gases from entering the junction box. Float switches shall hang directly from the junction box or float bracket.

10.0 FOUNDATION SLAB

10.1 Excavate hole large enough to accommodate basin, underground piping, backfill materials, and adequate working space.

10.2 Prepare the bottom of the excavating hole with 6” of backfill materials or concrete pad as listed below, check base to insure it is level and smooth.

10.3 A poured foundation pad shall be constructed conforming to the project specifications. The slab
must be level within tolerances of 1/2" per each 10'-0" of width and within 1/4" per each 10'-0" of length. Anchor rods to be welded to tank for anchoring by the field contractor as shown on the drawings.

10.4 Concrete may be poured around basin bottom if ballast is required for buoyancy.

10.5 Backfill with pea gravel 4 inches to 6 inches around the entire periphery of the basin. Compact backfill material in 12 inch lifts, stop and connect piping as required. Gravel or stone to be free flowing, naturally rounded aggregate with particular size of not less than 3/8 inch or larger than ½ inch in diameter.

11.0 DELIVERY INSTRUCTIONS

11.1 In almost every case, special lowboy trucks do shipment of your treatment system. When your plant is shipped by our truck, delivery will be made directly to the job site. The field contractor must furnish the equipment necessary to unload the plant and set it on the foundation pad.

11.2 When the lift station arrives at the job site, the owner's contractor should have available the necessary equipment to unload and set the vessel on the foundation pad. A crane of adequate size is the easiest and fastest method. Lifting lugs are provided on the vessel to simplify handling. After setting the plant in position, a check should be made to see that it is level, and in the correct position.

11.3 Our package system shall be completely assembled units and are shipped as a unit where shipping height limitations permit this procedure. If a portion of the equipment must be removed to meet shipping height limitations, this equipment will be packaged separately at the factory for field assembly. This equipment and tankage should be field assembled and installed by the owner's contractor in the field.

11.4 Please refer to the pre-plant delivery instructions.

12.0 PLANT START-UP

12.1 At the time the wastewater treatment system is filled with water or sewage, and all power connections have been completed, and all equipment is approved for service, the contractor shall provide the services of a representative of the manufacturer who shall instruct the owner's representative in the proper operation and maintenance of the wastewater treatment system, including instructions in conducting all required operational tests. The manufacturer's representative shall furnish at this time, a service manual on the equipment installed within the wastewater treatment system.

13.0 MANUFACTURER QUALIFICATIONS

13.1 The manufacturer of specified equipment must have a minimum of five (5) years active experience in the design and manufacture of similar wastewater treatment equipment, and upon request, furnish supporting evidence.

13.2 The manufacturer of specified equipment must have a minimum of five-(5) year's active experience in the design and manufacture of similar wastewater treatment equipment, and upon
request, furnish supporting evidence. Consideration will be given only to products of manufacturers who can demonstrate that their equipment fully complies with all requirements of the specifications and contract documents. The equipment shall be supplied by a firm which has been regularly engaged in the design, fabrication, assembly, testing, start-up and service of full scale treatment systems, of the same model and size as proposed, operating in the U.S., with similar characteristics.

14.0 FIELD CONTRACTOR RESPONSIBILITY

14.1 The field contractor shall perform and/or make the following arrangements:

14.2 Field unloading and setting of the lift station on its foundation pad, anchoring in position as defined by the contract specifications.

14.3 Assemble into position, at the location shown on the plans, the ancillary equipment, which has been disconnected at the factory for shipping purposes.

14.4 Interconnection of piping and wiring which may have been disconnected at the factory for shipping purposes.

14.5 Tie-in of all piping, power and wiring connections to site utilities and electrical cable entries into control panels. The power required at power block or main circuit breaker is _____ Volt, _____ Phase, 60 Hz.

14.6 Furnish foundation pad or crushed gravel to set the system on.

14.7 Attach system to foundation pad by anchoring.

15.0 EQUIPMENT WARRANTY

15.1 Legacy Environmental warrants to the original purchaser all new equipment manufactured by it to be free of defects in material and workmanship; and at the election of Legacy Environmental will repair or replace, f.o.b. it's factories or other locations designated and as determined by Legacy Environmental any part or parts returned to it, transportation/freight prepaid, which examination shall show to have failed under normal use and service by the original user within two (2) year’s following initial shipment by Legacy Environmental Such repair or replacement shall be free of charge except for freight and those parts such as media, chemicals, oil, grease, belts and like that are consumable under normal use. Legacy Environmental obligation under this warranty is conditioned upon it receiving prompt written notice within 30 days of claimed defects during the one year warranty period is limited to repair or replacement as aforesaid. No allowance will be made for labor, transportation, or other charges incurred in the replacement of repaired defective parts and/or equipment furnished.

15.2 THIS WARRANTY, INCLUDING THE STATED REMEDIES, IS EXPRESSLY MADE BY LEGACY ENVIRONMENTAL AND IS ACCEPTED BY ORIGINAL PURCHASER IN LIEU OF ALL OTHER WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE, WHETHER WRITTEN, ORAL, EXPRESS, IMPLIED OR STATUTORY. LEGACY ENVIRONMENTAL NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO ASSUME IT FOR ANY OTHER LIABILITIES.
WITH RESPECT TO IT'S EQUIPMENT. LEGACY ENVIRONMENTAL SHALL NOT BE LIABLE FOR NORMAL WEAR AND TEAR, NOR FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGE DUE TO IN-OPERABILITY OF ITS EQUIPMENT FOR ANY REASON NOR ON ANY CLAIM THAT ITS EQUIPMENT WAS NEGLIGENTLY DESIGNED OR MANUFACTURED.

15.3 This warranty shall not apply to equipment or parts thereof which have been altered or repaired outside of a Legacy Environmental factory or damaged by improper installation, storage, application, erosion, or corrosion of any sort, or subjected to misuse, abuse, neglect or accident. This warranty is null and void if payment is delayed, not made, or if not in accordance with the terms and conditions of Legacy Environmental equipment proposal.

15.4 Legacy Environmental makes no warranty with respect to parts, accessories, or components manufactured by others. The warranty applicable to such items that is offered by their respective manufactures.