

ADDENDUM NUMBER 1

<u>PROJECT</u>	<u>BIDS DUE</u>
GFA Project No: 18114	Date: December 19, 2018 Time: 11:00 AM Location: Charter Township of Union 2010 S Lincoln Road Mt. Pleasant, MI 48858

The Addendum is issued prior to the receipt of bid proposals to amend the Contract Documents as follows. Bidders shall acknowledge receipt of this addendum by means of a handwritten note on the Bid Schedule.

GENERAL

1. THIS PROJECT IS NOT PREVAILING WAGE NOR TAX EXEMPT
2. All permits have been obtained by the Owner. The contractor is still responsible to obtain/ coordinate the building, mechanical, plumbing, and electrical permits, inspections, and associated fees.
3. Contractor is responsible for providing, installing, terminating into SCADA panel and calibrating instrumentation including but not limited to the transducer, flowmeter, wiring, and conduit for both electrical and telemetry. Owner is providing SCADA equipment and programming as to be performed by Perceptive Controls. Contractor shall coordinate with Perceptive as necessary to complete work.
4. Project completion time of 90 days does NOT include the 16 week lead time for pump ordering / delivery.

SPECIFICATIONS

1. EJCDC Form 520 (Agreement), Article 4, Section 4.02 shall be stricken and replaced with the following to account for 16 week pump delivery time

4.02 Contract Times: Days

- A. The Work will be substantially completed within 180 calendar days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within 210 days after the date when the Contract Times commence to run.
2. Section 12 shall be stricken in its entirety and replaced with the attached document.

DRAWINGS

1. Drawing Sheet M1.2: The following notes and/or clarifications shall be added to the drawing:
 - a. The following note shall be added to the plan:

Note 11: VALVES TO INCLUDE HAND WHEELS AND VALVE DOWNSTREAM OF FLOW METER TO HAND WHEEL AND CHAIN FOR ACCESS.
 - b. The following note shall be added to the plan:

NOTE 12. SEVERAL RUST SPOTS EXIST IN DRY WELL INCLUDING CEILING, WALLS, AND SEVERAL RUST SPOTS EXIST IN DRY WELL INCLUDING CEILING, WALLS, AND FLOOR. CONTRACTOR TO SCARIFY, SAND, AND TOUCH UP PAINT WITH COLOR SELECTED BY OWNER AT NO ADDITIONAL COST TO THE PROJECT.
 - c. Clarification: The suction connection to the proposed pumps shall include a 8x6 reducer and 6" flex connection.
 - d. Clarification: The anchor and associated accessories to restrain floats within the stilling well shall be excluded. The floats shall hang within well and include weights per Section 12 to facilitate easier removal / maintenance.

This Addendum No. 1 becomes part of the Contract Documents as of this date and supersedes the information in the originally issued Contract Documents where applicable. The Contractor shall acknowledge receipt of the Addendum in the Bid Schedule included with his/her bid.

SECTION 12

SEWAGE PUMPING STATION

12.01 SCOPE OF WORK

The work covered by this section of the specifications consists of furnishing all parts, labor, materials and appliances and performing all operations to upgrade an existing sanitary sewer lift station. These specifications only pertain to the items as proposed on the drawings.

12.02 GENERAL

The Contractor shall upgrade the existing Lift Station #14. The principal items of equipment shall include non-clog sewage pumps, valves, internal piping, variable frequency drives, control panel and electrical upgrades as herein specified.

- a. Equipment supply and installation by Contractor. Electrical/telemetry service wiring, conduit, and connections shall be supplied and installed by Contractor as shown on the engineering drawings and specifications.
- c. Owner is providing SCADA equipment and programming as to be performed by Perceptive Controls. Contractor shall coordinate with Perceptive as necessary to complete work.
- a. Installation of Equipment shall comply with manufacturers' recommendations
- d. All permits have been obtained by the Owner. The contractor is still responsible to obtain/ coordinate the mechanical, plumbing, and electrical site permits, inspections, and fees (as applicable)

12.03 SEWAGE PUMPS

Each pump shall be motor driven, heavy duty, non-clog sewage pump. All openings must be large enough to permit the passage of a sphere of three inches in diameter. Each pump shall be a manufactured by Fairbanks model B5443K or engineer approved equal.

Pumps furnished shall be so designed to meet all the pumping conditions indicated with the same impeller. The pump casing, pump and motor coupling, conduit, wiring and controls shall be sized to meet the same condition. The pump motors shall be designed to be non-overloading at the proposed pump condition

Each pump shall have the necessary characteristics and be properly selected to perform under the following conditions:

<u>Condition</u>	<u>Pump Station # 14</u>
Pump Capacity (GPM)	<u>600</u>
Total Dynamic Head (Ft.)	<u>110</u>
Pump Speed (Hz)	<u>40- 60</u>
Pump Speed (RPM)	<u>1750</u>
Minimum Pump Efficiency (%)	<u>60</u>
Minimum Horsepower	<u>20</u>
Maximum Horsepower	<u>25</u>
Motor Voltage	<u>460 V 3Φ</u>
Motor Full Load Amps (FLA)	<u>35(Max)</u>
Motor Lock Rotor Amp (LRA)	<u>175(Max)</u>

Note: If the pump horsepower proposed by Contractor is greater than the maximum specified, then the cost to increase the electrical system of the pump station shall be borne by the Contractor.

A. PUMP DESIGN CONFIGURATIONS

Pump shall be capable of operating in a continuous non submerged condition in vertical (NT) position in a dry pit installation, permanently connected to inlet and outlet pipes. Pump shall be of submersible construction and will continue to operate satisfactorily should the dry pit be subjected to flooding. Inlet elbow shall have an inspection cover.

B. PUMP CONSTRUCTION

Major pump components shall be of grey cast iron, ASTM A-48, Class 30, with smooth surfaces devoid of blow holes or other irregularities. The lifting handle shall be of stainless steel. All exposed nuts or bolts shall be of stainless steel construction. All metal surfaces coming into contact with the pumpage, other than stainless steel or brass, shall be protected by a factory applied spray coating of acrylic dispersion zinc phosphate primer with a polyester resin paint finish or equivalent protective coating on the exterior of the pump.

Sealing design shall incorporate metal-to-metal contact between machined surfaces. Critical mating surfaces where watertight sealing is required shall be machined and fitted with Nitrile rubber O-rings. Fittings will be the result of controlled compression of rubber O-rings in two planes and O-ring contact of four sides without the requirement of a specific torque limit.

Rectangular cross sectioned gaskets requiring specific torque limits to achieve compression shall not be considered as adequate or equal. No

secondary sealing compounds, elliptical O-rings, grease or other devices shall be used.

C. CABLE ENTRY SEAL

The cable entry seal design shall preclude specific torque requirements to insure a watertight and submersible seal. The cable entry shall consist of dual cylindrical elastomer grommets, flanked by washers, all having a close tolerance fit against the cable outside diameter and the entry inside diameter. The grommets shall be compressed by the cable entry unit, thus providing a strain relief function. The assembly shall provide ease of changing the cable when necessary using the same entry seal. The cable entry junction chamber and motor shall be sealed from each other, which shall isolate the stator housing from foreign material gaining access through the pump top. Epoxies potted sealing systems shall be considered equal.

D. MOTOR

The pump motor shall be a NEMA B design, induction type with a squirrel cage rotor, shell type design, with Drip Proof enclosure. The stator windings shall be insulated with moisture resistant Class F or H insulation rated for 180°C (356°F). The motor shall be inverter duty rated in accordance with NEMA MG1, Part 31. The motor shall be designed for continuous duty while handling pumped media of up to 104°F. The motor shall be capable of no less than 30 evenly spaced starts per hour. Three thermal switches shall be embedded in the stator end coils, one per phase winding, to monitor the stator temperature. These thermal switches shall be used in conjunction with and supplemental to external motor overload protection and shall be connected to the motor control panel. The motor and the pump shall be produced by the same manufacturer.

The motor service factor (combined effect of voltage, frequency and specific gravity) shall be 1.15. The motor shall have a voltage tolerance of +/- 10%. The motor shall be designed for continuous operation in up to a 40°C ambient and shall have a NEMA Class B maximum operating temperature rise of 80°C. A motor performance chart shall be provided upon request exhibiting curves for motor torque, current, power factor, input/output kW and efficiency. The chart shall also include data on motor starting and no-load characteristics.

Motor horsepower shall be sufficient so that the pump is non-overloading throughout its entire performance curve, from shut-off to run-out. Motor shall be inverter duty rated.

E. BEARINGS

Radial (inboard) bearings shall be (single-row on T20, T30 & T40 frames] (double-row on T60 frame] grease-lubricated ball bearings designed to carry the hydraulic radial loads encountered in the service conditions. Thrust (outboard) bearings shall be [single-row on T20 & T30 frames] (double-row on T40 & T60 frames] designed to carry the pump hydraulic axial and dead load thrust. Bearing shall be designed for an L10 life of 100,000 hours per AFBMA at best efficiency point.

F. MECHANICAL SEALS

Each pump shall be provided with a positively driven dual, tandem mechanical shaft seal system consisting of two seal sets, each having an independent spring. The lower primary seal, located between the pump and seal chamber, shall contain one stationary and one positively driven rotating corrosion and abrasion resistant tungsten-carbide ring. The upper secondary seal, located between the seal chamber and the seal inspection chamber shall be a leakage-free seal. The upper seal shall contain one stationary and one positively driven rotating corrosion and abrasion resistant tungsten-carbide seal ring. Each seal interface shall be held in place by its own spring system. The seals shall not depend upon direction of rotation for sealing. Mounting of the lower seal on the impeller hub is not acceptable. Shaft seals without positively driven rotating members or conventional double mechanical seals containing either a common single or double spring acting between the upper and lower seal faces are not acceptable. The seal springs shall be isolated from the pumped media to prevent materials from packing around them, limiting their performance.

Each pump shall be provided with a lubricant chamber for the shaft sealing system. The lubricant chamber shall be designed to prevent overfilling and shall provide capacity for lubricant expansion. The seal lubricant chamber shall have one drain and one inspection plug that are accessible from the exterior of the motor unit. The seal system shall not rely upon the pumped media for lubrication.

A barrier fluid reservoir system to be supplied for one (1) pump as manufactured by APEX, Plan 52/53. System to stand alone and include valves, fittings, 3 gallon tank, and sensors, installed in compliance with manufacturer's recommendations. The other pump shall be supplied and installed with conventional cyclone separator on discharge to provide barrier fluid.

G. PUMP SHAFT

The pump shaft shall be high-strength alloy steel with a minimum 100,000 PSI tensile strength and 75,000 PSI yield strength of sufficient diameter to carry the maximum loads imposed and to prevent vibration and fatigue.

The shaft shall be accurately machined along its entire length and precision ground at bearing locations. Keyways shall be provided at both ends. A renewable straight (tapered on C5416) shaft sleeve, positive adhesive sealed to prevent leakage between the shaft and the sleeve, shall protect the shaft through the sealing box area. The shaft sleeve shall be stainless steel with a Brinell hardness of 300-350 (on mechanical seal pump shaft sleeve may be corrosion resistant (bronze)).

H. IMPELLER

The impeller shall be of dynamically balanced, non-clog design.

I. VOLUTE / SUCTION COVER

The pump volute shall be a single piece gray cast iron, ASTM A-48, Class 35B, non-concentric design with smooth passages of sufficient size to pass any solids that may enter the impeller. Minimum inlet and discharge size shall be as specified.

J. PROTECTION

Each pump motor stator shall incorporate three thermal switches, one per stator phase winding and be connected in series, to monitor the temperature of the motor. Should the thermal switches open, the motor shall stop and activate an alarm through the individual pump control unit. The controller should also monitor the Amperage, Phase to Phase voltage, p.f. and power information of the motor.

The thermal switches and float switch shall be connected to an individual pump control unit and shall be mounted in the existing pump control panel

K. FINISH

The pump shall have a painted or enamel finish as standard with the manufacturer.

L. NAMEPLATES

Each pump shall have a standard nameplate securely affixed thereto in a conspicuous place and also mounted in the electrical panel showing the

serial number and the name of the manufacturer. In addition, the nameplate for each pump shall show the model or figure number, the capacity in gallons per minute at rates of speed in revolutions per minute and total dynamic head in feet. Care shall be taken to be legible at all times.

M. TOOLS

For the pumps, special tools necessary for maintenance and repair of pumps shall be furnished by the Contractor.

N. PUMP CHARACTERISTIC CURVES

Pump characteristic curves shall be furnished showing capacities, heads, efficiencies, and brake horsepower throughout the entire range of pumping. These shall be submitted as part of the shop drawing submitted to the Design Engineer.

O. SPARE PARTS

The Contractor shall (1) spare mechanical seal kit and wear rings shall be provided for each pump.

12.04 PUMPING STATION PIPING, VALVES AND FITTINGS

A. The piping shall conform to the sizes and configurations shown on the plans and the following materials specifications.

1. Ductile Iron Pipe and Fittings

Ductile iron pipe shall be in accordance with the latest revision of ASA Specifications A21.50 and A21.51. The pipe and fittings shall be designed to withstand a minimum working pressure of 150 psi and a minimum hydrostatic test pressure of 300 psi.

2. Galvanized Steel Pipe

Galvanized steel pipe shall meet the requirements of ASTM Specification A120. Standard weight galvanized pipe and standard weight malleable iron fittings or American Standard 125 pound cast iron fittings shall be furnished unless otherwise specified.

3. Valves

The specification for gate valves, knife valves, plug valves, ball valves, butterfly valves, pinch valves and standard check valves is located under Section 8, Force Mains.

4. Valve Operators and Valve Boxes

The specification for valve operators and boxes is located under Section 8, Force Mains.

5. Pipe Supports

Pipe supports shall be used to support all piping and valves. Pipe supports shall be of the adjustable type designed to support cast iron pipe.

6. Pressure Gauges

Pressure gauges shall be installed as illustrated on the bid drawings. The gauges shall be 3-inch diameter (minimum) and read pump discharge pressure in "feet of water". Liquid filled gauges shall incorporate a flexible diaphragm seal between the sewage discharge line and the pressure gauge. The diaphragm seal shall be either the inline-saddle type design with a minimum diaphragm surface of 5 square inches or the complete flow-thru type design with flange connection. Inline-saddle diaphragms and housing parts exposed to the sewage shall be 316 ss. The flexible cylinder protecting the sensing liquid on the flow-thru design shall be Buna N and the flanges shall be 316 ss. All fittings, nipples, accessories associated with tap shall be 316 ss. Gauge shall be mounted on a tap equipped with a valve to allow complete isolation and removal of the gauge without station shut down.

7. A flexible coupling shall be provided on the immediate suction and discharge sides of each pump (total of 4). The coupling shall be a MightySphere Kevlar reinforced as manufactured by Metraflex or engineer approved equal. Contractor shall install in compliance with manufacturing recommendations including restraining rods, as applicable.

B. INSTALLATION OF PIPING, VALVES AND FITTINGS

1. Ductile Iron Piping, Valves and Fittings

Ductile iron piping, valves and fittings shall be used for all piping, 4-inch diameter and larger, from the pumps until the pipe exits the valve chamber. Ductile iron flanged piping, valves, and fittings shall be used for all interior exposed piping unless otherwise approved by the Engineer. Pipe, valves and fittings shall be carefully laid to line and grade. Care shall be taken to keep the pipe clean and free from dirt and other foreign materials. Piping laid in the ground shall have bearing over its entire length. Piping along floors, walls or ceilings shall be adequately supported by saddles, posts, wall brackets, pipe hangars or other approved devices. The exact location, number and design thereof shall be subject to the approval of the Engineer.

2. Galvanized or Wrought Iron Piping
Schedule 80 pipe and fittings shall be used for all interior piping less than 4 inches in diameter.
3. Pipe Taps
Wherever indicated or required, pipe or fittings shall be tapped to receive small pipe or special fittings.

12.05 SEWAGE FLOW METER

A. FLOWMETER

The Contractor shall furnish and install where shown on the plans and in accordance with these specifications, a magnetic flow measuring device complete with flow transmitter, indicating, recording and totalizing capable of 4-20 milliamp output. The flow meter must be suitable for use in NEC, Class 1, and Division 2 locations and be UL listed.

The flow measuring sensor shall be installed in the drywell as indicated on the plans. The meter shall be equipped with remotely mounted transmitter (digital readout display) to be remotely wall mounted and attached to cable to interconnect sensor to transmitter (coordinate location with Owner). The meter shall be manufactured by Endress – Hauser, Promag 10W or approved equal. Contractor shall be responsible for supply, calibration and installation including 4-20ma wiring/conduit to PCP-1 and remote telemetry (SCADA) located above ground next to Electrical Control Panel.

B. Transducer

The Contractor shall furnish and install where shown on the plans and in accordance with these specifications, liquid level pressure transducer device complete with flow transmitter, indicating, recording and totalizing capable of 4-20 milliamp output.

The measuring device shall be capable of providing pump on/off signals to the control panel and be manufactured by Endress-Hauser (FMX 21 Waterpilot) or approved equal and shall be in an explosion proof housing and intrinsically safe. Contractor shall be responsible for supply, termination, calibration and installation including 4-20ma wiring/conduit to PCP-1 and remote telemetry (SCADA) located above ground next to Electrical Control Panel.

C. Mercury Float Type Switch

The contractor shall furnish and install where shown on the plans and in accordance with these specifications, switches that shall consist of suspended plastic watertight casings, each containing a mercury switch and internally weighted so arranged that the buoyancy of the rising fluid causes them to lie on their sides thus activating the mercury switch. All level control circuits in the wet well shall be intrinsically safe 24 volt and in explosion-proof housings.

Floats shall be supplied with adequate cable for termination to existing control panel.

12.06 ELECTRICAL WORK

A. FACTORY WIRING AND EQUIPMENT

Refer to Specification 13000 for Existing and New Control Panel Construction and Programming specific for Pump Station #14.

1. General

All wiring in the station shall be color coded and numbers as indicated on the wiring diagram portion of the shop drawings. It is the Contractor's responsibility to ensure that electrical equipment complies with all federal, state, and local requirements.

All conduit ends are to be sealed to eliminate water and/or gases moving from one section of the pump station system to another; i.e., wet well to pump control panel (drywell).

2. Pump Controls and Alarms

a. Existing Control Panel

The control assembly provides a convenient means to operate each pump manually or automatically. When operated in the automatic mode, the control assembly shall automatically alternate the position of the "lead" and "lag" pumps after each pumping cycle.

The Control panel is equipped with a step-down transformer to supply 120/240 volts for control and auxiliary circuits. Primary side of auxiliary power transformers are protected by a thermal/magnetic air circuit breaker specifically sized to meet power requirements of the transformer.

A time delay relay is provided for the pump motor controls to insure that both motors will not start at the same time.

Controls for the pump motors are designed to protect the electric motors from low line voltage and phase reversal. A phase sequence and under voltage relay shall be installed in the control panel. The unit shall be connected to the pump station alarm circuitry to provide a 0.5 second time delay to prevent nuisance tripping of the relay caused by a momentary transient drop in the line voltage. Upon resumption of normal line conditions, the unit shall automatically restore the motors to a running condition.

NOTE: Contractor shall be responsible for supply, calibration and installation including 4-20ma wiring/conduit to existing control panel and remote telemetry (SCADA) located above ground next to Electrical Control Panel. NOTE: To provide the Integrator a power and work with OPTO-22 the contact closures provided must have 120 VAC available or shall be directly fed into by an external power source.

b. Wet Well Level Control and Alarm System

Controls for pump operation for wet well level control and alarm system are furnished and installed to perform as described herein. It shall be the contractor's responsibility to wire the proposed level sensor and floats into the control panel. The level sensor will be the primary liquid level sensor for operation of the pumps. For back-up, floats are used.

At the normal High Water Level, one of the two pumps will start. Pumping will continue until the fluid level has lowered to the normal Low Water Level when the pumps will stop. The High Water Level shall utilize the level sensor with a backup signal actuated by a mercury float type switch.

When the fluid level has again reached the normal High Water Level, the other pump will start and complete its cycle in the same manner as the first pump.

If the fluid level continues to rise above the normal High Water Level and reaches the Standby Pump On Level, the high water alarm will be triggered to indicate an abnormal condition and the second or standby pump will start and both pumps will continue to run until the fluid level descends to the normal Low Water Level. The High Water Alarm Level shall utilize the

level sensor with a backup signal actuated by a mercury float type switch.

Conversely, if the pumps should continue to run so as to drop the fluid level below the Low Water Level, the Low Water Alarm Level will indicate the abnormal condition and the operating pump(s) will stop. The pump controls will automatically be restored to normal operation if the fluid level again rises. The Low Water Alarm Level shall utilize the level sensor with a backup signal actuated by a mercury float type switch.

B. TEMPORARY POWER SUPPLY

The lift station is equipped with onsite transfer switch / generator which is available for use to provide temporary power supply. In the event of failure and/or not available contractor shall be responsible to provide a means to accommodate temporary power supply including transfer switch. The type of power supply (permanent power generation) shall be dependant upon lift station size and importance and shall be determined by the Township. It is the Contractor's responsibility to ensure that equipment is properly sized for electrical loads into the lift station, compatibility with Union Township DPW equipment, and complies with all federal, state, and local requirements.

C. SITE ELECTRICAL REQUIREMENTS

1. N/A

12.07 FACTORY TESTS

The sewage pumps shall be given running tests to check proper motor and pump operation, correct shaft and impeller rotation and water tightness. Pump shall be run submerged & unsubmerged for 30 minutes, simulating actual service conditions after which the motor housing will be checked for moisture either visibly if plugs are present, or through the use of a moisture probe, if plugs are not present.

A certificate of factory testing shall be provided to the Engineer.

12.08 SHOP DRAWINGS

The Contractor shall submit, as prescribed under Section "General Requirements", six (6) copies of complete shop drawings including the shop drawing for the control

panel and color coded electrical schematic drawings (ladder diagrams) for all electrical components and details of all equipment to be furnished under this section. These shop drawings shall be submitted and approved by concurrence of Engineer before installation of these items.

12.09 OPERATION AND MAINTENANCE INSTRUCTIONS

Written instructions for the operation and maintenance of the pump station equipment shall be furnished in quadruplicate for each piece of equipment in this section. The instructions shall be easy to understand with directions specifically written for this project describing the various possible methods of operating the equipment.

The instructions shall include procedures for tests required, pump curves, adjustments to be made, and trouble and safety precautions to be taken with the equipment.

Maintenance instructions shall include test and calibration charts, exploded views of assembled components, spare parts lists and wiring diagrams.

These instructions shall be submitted to the Engineer for approval at the same time the shop drawings are submitted.

12.10 RECORD DRAWINGS

Any changes that are made in equipment, controls, wiring, etc. from that shown in the plans and specifications shall be made only by approved shop drawings. After such changes are made, the Contractor shall submit to the Engineer record drawings which show these changes in equipment installation.

12.11 AS-BUILT WIRING DIAGRAM

A large, clear, color coded and numbered wiring diagram shall be prepared showing the as-built wiring of the complete pump station installation including all control and alarm wiring. Provide four (4) copies for each pump station.

12.12 EQUIPMENT INSTALLATION AND START UP FOR SEWAGE PUMP STATIONS

A. GENERAL

All equipment shall be installed in a neat, workmanlike manner, acceptable to the Engineer and in conformance with all applicable local, State and Federal codes and requirements.

B. FACTORY TRAINED START-UP PERSONNEL

The Contractor shall furnish the services of an experienced factory trained field engineer representing the pump station supplier to start up all equipment. He shall be employed by the Contractor in such capacity to interpret the manufacturer's installation guide and instructions, to supervise the installation and start-up of such equipment and to instruct the operating and maintenance personnel for a reasonable period of time. (A minimum of four (4) hours of instruction per pump station.)

The representative of the pump station supplier shall be responsible to insure that all pumps, motors, equipment, controls, alarms, wiring, flow meter and all associated components are properly installed and functioning properly.

C. SYSTEMS START UP

It shall be the Contractor's responsibility to coordinate work between his subcontractors, equipment suppliers and utility companies to insure that all components of the system function properly as described herein. When the system or a major component of the system is entirely installed and ready for testing, the Contractor shall notify the Engineer and operating/maintenance personnel, in writing, of the time and date the start-up testing will be done. The Contractor, subcontractor, and equipment supplier's representatives shall be present for final start-up testing. During the start-up test, the Contractor shall operate all equipment in such a manner to demonstrate that all components are functioning properly.

If the equipment fails to perform, it will be the responsibility of the Contractor to arrange for repair or replacement of the defective parts and scheduling of a new start-up session.

Should the equipment pass its initial start-up testing but fails during the one year guarantee period, the Contractor shall coordinate the necessary repairs or replacements with the subcontractors and suppliers.

12.13 GUARANTEE

In addition to the Contractor's guarantee, the Contractor shall also furnish the manufacturer's guarantee(s) covering all material and equipment furnished. Such guarantees shall be in written form and furnished to the Owner. The guarantees shall be for a one year period commencing on the date of acceptance of the completed sewage pumping station(s) as determined by the Engineer. The guarantee(s) shall cover the structure and all equipment, materials and workmanship of the pump station and all associated components as specified herein. The guarantee shall provide for the replacement of defective materials and/or workmanship, together with the restoration of any related materials or

workmanship that are disturbed as a result of such imperfections in the work. All guarantees shall be submitted in triplicate.

END OF SECTION 12