

SECTION 11311

SPECIFICATIONS FOR SANITARY SEWAGE SUBMERSIBLE PUMP STATION

PART 1 - GENERAL

1.1 SCOPE

This specification contains the requirements for a fully operational submersible sewage pump station.

1.2 SUBMITTALS

Submit complete shop drawings and material certification(s) for wet well(s), pumps, motors, control panel(s), valves, hatches, electrical materials, concrete, and coatings. Submit in accordance with Section 01300.

For control panels, include the following:

1. Bill of Material listing all components provided in the control panel.
2. Complete control schematic in ladder diagram format. Diagram shall include all terminal and wire numbering. Designations for components shall match that used in the bill of material.
3. Physical layout drawing of pushbuttons, meters, pilot lights, and other devices on the control panel door. If there is a dead front panel behind the door on which components are mounted, then a physical layout drawing of the dead front panel is also required. Component designations shall match the bill of material. Also indicate location and designation of each nameplate.
4. Physical layout drawing of all devices on control panel mounting plate. This shall include but not be limited to relays, starters, contactors, terminal blocks, and wiring troughs. Component designations shall match the bill of material.
5. A detailed system of identification for control conductors using both color coding and a coded numbering system. Identification system shall be in accordance with industrial standards and practices.
6. A set of physical wiring diagram drawings. Diagrams shall be point-to-point, and shall include all terminal and wire numbering. The physical layout drawings shall be used as base sheets for the wiring diagrams. The number of wiring diagram

sheets shall be kept to a minimum, but still allow the accurate tracing of circuits during troubleshooting. There shall be no overlapping of wires shown in the diagrams.

7. Nameplate legend showing the designation for each, and a scaled or full-size detail of the nameplate. Contractor shall also include a description of the material used for the plate, and the size and typeface of the lettering.
8. Range of and differential control setting for each variable control device.
9. Manufacturing data sheets for all components indicating pertinent data and identifying each component by item number and nomenclature as indicated on the drawings and in the specifications. Designation as listed in the bill of material shall be clearly indicated on the data sheet. If multiple products or options are shown on the same sheet, Contractor shall clearly indicate which products and options are intended for the item being provided.

1.3 RELATED WORK SPECIFIED ELSEWHERE

Section 01300 - Submittals

Section 01731 - Operation and Maintenance Data

Section 11000 - Mechanical Equipment - General Requirements

Section 15062 - Ductile Iron Piping

1.4 AS-BUILT DRAWINGS - CONTROL PANEL

As-built drawings shall consist of three (3) complete sets of drawings as described in the paragraph on submittals, with modifications made to reflect any changes made in the field during construction.

PART 2 - EQUIPMENT

2.1 SEWAGE PUMPS

- A. The sewage pumps shall be vertical, vortex-type submersible pumping units, complete with motor and submersible rated power and control cables. The pumps shall be WEMCO Type "S", Essco or approved equal. For serviceability and parts availability all pumps shall be standard catalog submersible pumping products.
- B. Pump casings shall be completely open from suction to discharge with no wearing rings or impeller face plates required. All internal case clearances shall be equal to the discharge diameter so that all material which will pass through the discharge can pass through the pump. (Maximum sphere equal to Discharge Diameter.)

- C. The impeller shall be of the fully recessed design, and shall be mounted completely out of the flow path between the pump inlet and discharge connections, so that the solids pumped are not required to flow through the impeller. The impeller shall be keyed to the motor shaft and secured by an impeller bolt.
- D. Pump casings and impellers shall be constructed of ASTM A48, Class 25 or 30 grey cast iron material unless specifically indicated otherwise.
- E. Pumps shall be rated for operating conditions as shown in the plans.
- F. Pumps shall be warranted for a period of five (5) years from date of shipment to be free from defects in material and workmanship.

2.2 MOTORS

- A. Each motor shall be 3 phase, 60 hertz, 240 or 480 volts, 4-pole, as indicated, and face-mounted on the pump. All motors shall be provided with thrust and radial bearings rated for L-10 life of 17,500 hours to carry the entire load which may be imposed upon it under all operating conditions. All motors shall be of nationally known American manufacture, standard frame, and shall be listed by Underwriters Laboratories for operation in a Class I, Division 1, Group D hazardous location. All motors shall be mounted using manufacturers standard bolt hole pattern. No additional holes shall be made in the motor mounting. All electrical parts shall be housed in an air-filled cast iron watertight enclosure. Insulation shall be special Class F for a 1.15 service factor.

Motor locked rotor NEMA code shall be H or better for motors less than 15 h.p. and shall be G or better for motors 15 h.p. and above.

- B. Each motor shall have two (2) tandem mounted mechanical seals, the lower one outside the motor and protecting the upper one which shall be in an oil-filled chamber. The lower, primary seal shall consist of one stationary silicon carbide or tungsten carbide ring and one positively driven (rotating) silicon carbide or tungsten carbide ring. The upper seal between the oil and motor housing shall consist of one stationary stainless steel or tungsten carbide ring and one positively driven (rotating) carbon ring. Each interface shall be held in place by its own independent spring system.

Moisture detector probes in the oil-filled seal chamber shall be connected to an alarm indicating the presence of moisture in the seal chamber. Thermal overload protectors shall be imbedded in the motor windings and connected to the control to disconnect the motor in the event of overheating.

C. Each motor shall be equipped with heavily jacketed submersible cables of the length required to reach the control panel without splices or strain and allowing a minimum of 4 feet of slack. Short cables will be rejected.

D. All motors shall be sized according to the information shown on the plans.

2.3 PIPING

Piping, including fittings, shall be ductile iron and shall be in accordance with the provisions of Section 15062 of these Specifications.

2.4 CHECK VALVES

Swing disc type check valves shall be of flanged construction. The valve shall be iron-body with bronze disc ring and seat ring, fully bronze mounted stainless steel hinge pin, spring loaded outside lever, for 150 psi working pressure. The disc shall be revolving to equalize wear and shall be designed so that the disc cannot hang or stick in the open position or reversal of flow. The spring loaded external lever arm shall be adjusted to prevent shock when pumps are stopped. Construction and materials shall be such that the valve shall be suitable for raw sewage service.

Check valve for valve box drain shall be a 2-inch backwater valve. Valve shall be similar and equal to a Zurn Z-1090.

2.5 GATE VALVES

Gate valves shall be flange mounted resilient seat AWWA Specification valves iron body non-rising stem "O" Ring seals and 150 PSI working pressure. The valve shall be epoxy coated inside and be equipped with a stem thrust bearing.

2.6 COUPLING SYSTEM (GUIDE RAIL)

A guide rail system shall be furnished and installed for each pump designed to operate under the expected head and flow conditions. The system shall be designed such that the pumps can be easily removed from the wet well without entering the well or disconnecting piping.

The system shall consist of a 90° discharge elbow with support leg, stationary base support, slide rail pump assembly, dual stainless steel guide rails, upper, lower and intermediate stainless steel guide rail supports, and stainless steel lifting yoke, cable and eyes. All metal to metal interfaces where movement might occur shall be non-sparking. The foot-mounted discharge elbow and adapter shall conform to ASTM A48 Class 25 or 30 grey iron.

The stationary base shall be constructed of ductile iron, integrally cast. The slide face shall be constructed of Class 35 cast iron with a bronze ring inset. The coupling shall incorporate

a self-energizing gasket to provide positive sealing under all conditions. All bolts, nuts, screws, and miscellaneous accessories not otherwise noted shall be 304 stainless steel.

The guide rail system shall be a standard product of the pump manufacturer.

2.7 ALUMINUM ACCESS DOORS

Door leaf shall be minimum ¼” aluminum pattern plate reinforced to withstand a live load of 300 pounds per square foot. Frame shall be ¼” aluminum with an anchor flange around the perimeter. Doors shall be equipped with heavy forged brass or stainless steel hinges, stainless steel pins, and an automatic hold-open arm with release handle. Provide a staple for padlock and an aluminum lifting handle. The lifting handle shall recess into the door when not in use. Hardware shall be cadmium plated and factory finish. The frame shall be mill finish with bituminous coating applied to exterior channels where they come in contact with the frame. Doors shall be hinged as shown in the plans. Where opposite opening doors are indicated, safety chains shall be provided. Door assemblies shall meet OSHA Requirements.

2.8 PRECAST REINFORCED CONCRETE WETWELL SECTIONS AND VALVE BOX

Precast reinforced concrete wetwell sections shall conform to ASTM Specification C-478 Wall "C". Wet well top shall be as shown on the plans. Precast reinforced valve box shall conform to ASTM C-890. All joints for precast sections shall be tongue and groove and shall be approved by the Engineer. All pipe connections to precast wetwells shall utilize an expanding cement concrete for a watertight fit.

All concrete for precast wetwells and valve boxes shall be special corrosion resistant concrete utilizing Type II Portland Cement (ASTM Standard) and Class F fly ash. The latest version of ASTM C 618 classification must be followed for chemical requirements, physical properties (e.g., fineness, soundness, etc.), and for all other technical and non-technical specifications. Verification of fly ash characteristics must be done according to the latest edition of ASTM C311. Contractor shall make sure that the supplier of the fly ash should have a quality control program in conformance with ASTM C 618 that is technically and statistically sound. The concrete shall have a minimum 28-day compressive strength of 4,000 psi. Concrete shall have a minimum of 560 lbs. Cement per cubic yard and shall have a maximum water/cement ratio of 0.35. Air entrainment admixture shall be used to make concrete workable.

The Contractor shall provide certification to the Engineer indicating that all precast manhole sections meet the Corrosion Resistant Cement requirements.

2.9 WETWELL COATING

Wetwells shall be coated with a self-priming heavy duty cold applied coal tar material similar and equal to KOPPERS "Bitumastic Super Service Black". Provide a minimum of two (2) coats at a rate of 50 to 60 sq. ft. per gallon per coat.

2.10 PRESSURE TEST VALVE AND GAUGE

Pressure test valve shall be a brass curb stop of the oroseal or Teflon coated ball-type with a brass saddle and fitting for pressure gauge connection. Pressure gauge shall be 0-40 psi range, 4½" liquid-filled gauge with stainless steel dial and bourdon tube and ½" ANPT stainless steel connection stem. Gauge to be Ametek Model 1931L or equal.

2.11 ELECTRICAL

- A. General: All electrical equipment shall be installed in accordance with the N.E.C. Code, as last revised. All materials used shall be new and unused of the highest quality, and of proper type for use intended. Where applicable, all materials shall carry the approval of the Underwriter's Laboratory. Substitutes which tend to lower the quality of the work will not be permitted. The project is to result in a complete and operable lift station. Any items not specified, but normally included in such installations, shall be furnished and installed, regardless of omissions from specifications. However, specified omissions are not affected by this requirement.

All wiring shall be copper and conduit shall be rigid galvanized steel or Schedule 40 PVC unless otherwise specified. Galvanized conduit shall be used above ground and PVC conduit shall be used below ground. Furnish and install PVC bell end fittings at wet well terminations.

- B. Service: A complete electrical service sized for the pump station and control requirements shall be constructed at the site. Contractor shall furnish and install all necessary materials, and equipment including pole, heavy duty disconnects, meter base, riser, grounds, conduit to controls and all incidentals, and permits necessary to complete the installation in accordance with local and national codes. Service pole and any lumber used thereon shall be pressure treated and meet all requirements of REA Bulletin 50-18 (Spec No. DT-5C) and Bulletin 50-17 (Spec No. DT-5B). Utilize galvanized bolts and nuts or lag bolts and washers for mounting equipment.
- C. Temporary Service: In addition to the final permanent electrical service, the Contractor may be required to provide a separate temporary electrical service during construction.

2.12 CONTROLS

2.12.1 Control System Type: Level control system shall be of the float type.

2.12.2 Control Logic: A duplex pump control panel shall be furnished and installed as shown on the plans. The controls shall turn on the lead pump when fluids rise to preset level, turn on a lag pump at a higher level and actuate a manual reset high level alarm when fluids rise to an even higher level. They shall turn off all pumps when fluid levels drop to a preset level. An alternator shall be installed to alternate the lead pump and an elapsed run time meter shall be provided for each pump. Manual reset seal failure alarms and relays shall be installed to indicate moisture entering the outer seal of the pump motors. The seal failure alarm shall not shut down the pump. High temperature sensors and relays shall be installed to shut down any over-heated motor and actuate a manually reset alarm. Only the high temperature alarm will lock out a pump motor. A separate panel light for each of the above conditions shall be mounted inside the panel. Whenever any alarm is actuated, a set of normally open contacts connected to a separate terminal block inside the panel will be closed and an external alarm light shall be activated. The controls shall be so wired and interlocked to prevent a false indication of seal failure or high temperature due to momentary or extended power fluctuations or failures.

2.12.3 Enclosure: The electrical enclosure for the pump station control panel shall be a two (2) compartment, two (2) door panel. Enclosure shall be NEMA 4 weatherproof steel, 14 gauge minimum thickness, and painted with a damp-proof primer and two (2) coats of rust inhibiting enamel (color to be selected by Owner from standard available colors). Each compartment shall be dead front with rear mounting panel, inner dead front door, and outer door. The enclosure shall be mounted on a backboard.

The enclosure shall be sized to house all necessary components and to provide adequate volume to avoid overheating of components. Minimum size shall be 36" x 36" x 12"

The enclosure shall be equipped with a metal back panel for power and control components mounting, and shall be equipped with an inner door for switch, running time meter and pilot device mounting. The back panel shall be drilled and tapped for fastening devices to the back panel. Sheet metal screws and bolts with nuts will not be accepted. Panel and doors shall be of some material as enclosure.

Contractor shall install a thermostat and closed loop cooling system to provide adequate heat dissipation within the control panel enclosure without allowing outside air into the enclosure. A 100 watt thermostatically controlled heater shall be provided for condensate control.

Enclosure shall be as manufactured by BOSS, Hoffman or Electromate.

2.12.4 Equipment: Equipment mounted in the Control Panel shall include but not be limited to: an ON-OFF-AUTO switch for each pump; a running time meter for each pump; red pilot lights

indicating alarm conditions; alarm reset pushbuttons; green pilot lights indicating energized pump; a properly sized motor starter for each pump (with 3 overloads each); a circuit breaker for each pump; all control components; transient voltage surge suppressor; power monitor; all other hardware and devices necessary for a complete operating system; and a main breaker sized as indicated on the plans; [_____] volt single (1) phase distribution panel with eight (8) 20 amp/1 pole, bolt-on circuit breakers (1 for control power; 1 for panel heater; 1 for enclosure cooling system; 1 for area light; 1 for TVSS unit; 1 for receptacle in panel; and 2 spare breakers.

The following devices shall be mounted in the inner door: ON-OFF-AUTO rotary selector switch for each pump; pump run pilot light for each pump; seal failure and motor overtemp alarm light for each pump motor; high and low level alarm lights; alarm reset push buttons; and run time meter for each pump motor.

All breakers, starter reset buttons, selector switches, pilot and alarm lights, alarm reset buttons, and run time meters shall be accessible without opening the inner door. All pilot devices shall be by Square D.

Terminal boards with compression connections shall be furnished for all connections to external conductors except motor power leads. Compression lugs for each power leg, ground conductor and neutral conductor as applicable shall be furnished for all incoming power conductors. Terminal boards for small control conductors may be barrier type screw terminals if control wires are fitted with compression-mounted spade lugs.

2.12.5 Control Devices:

- A. Circuit Breakers: A thermal magnetic circuit breaker shall be supplied as branch circuit protection for each pump motor. The circuit breaker must have a minimum interrupting rating of 10,000 symmetrical RMS amperes.

All circuit breakers shall be Allen Bradley, Square D, or General Electric.

Circuit breakers shall be quick-make, quick-break, thermal magnetic trip indicating and shall have common trip on all multi-pole breakers. Automatic tripping shall be clearly shown by the breaker handle taking a position between ON and OFF when the breaker is automatically tripped. Connection to the bus shall be bolt-on.

A circuit directory frame and card with a clear plastic covering shall be provided on the inside of the panel door. The directory shall be typed to identify the load fed by each circuit.

- B. Power Monitor: A 3-phase power monitor relay shall be included to de-energize the motor circuits whenever there is a loss of power or phase, phase reversal, or

phase imbalance. The unit shall protect the motors in running or non-running condition. Relay shall be the 8-pin type. The monitor shall be similar and equal to those manufactured by Time Mark Corporation or Diversified Electronics.

- C. Reduced Voltage Auto Transformer Starters: A NEMA rated reduced voltage autotransformer starter (65% tap) with ambient-compensated, quick-trip class 10 overload sensing in each phase to provide over current and running protection shall be provided for each pump motor. Dead front door mounted overload reset pushbuttons shall be provided. The overload relay shall include a replaceable heater element in each leg. IEC type overload blocks with adjustable trip setting are not acceptable. The starter shall be manufactured by Square "D", General Electric or Allen Bradley.

- D. Alternator: The pump alternator shall alternate the two pumps between the lead and lag operations at the beginning of each pump down cycle.

The alternator shall be a duplex pump alternator with pilot lights and a toggle switch to allow selection of the alternating mode or operation of either pump alone.

The alternator shall be equal to a Time Mark Model 261 Series.

- E. Running Time Meters: Running time meters shall be non-resettable reading in hours and tenths of hours.

- F. Seal Failure Protection: The control panels shall include a seal leak module for each pump. The module shall be furnished by the pump manufacturer to the control subcontractor for incorporation into the control panel to insure full compatibility. A seal leakage condition shall be annunciated visually but shall not prevent pump operation. The alarm shall require a manual reset.

- G. External Alarm Light: An external alarm light shall be mounted on the side of the control panel to annunciate any alarm condition. The light shall be a weatherproof, light assembly including a cast aluminum base and guard with globe shall be furnished. The light shall indicate a common alarm and shall be furnished with a red globe. The light shall be Killark Style VFC100/UGA/VGR100 or equal.

- H. Service Receptacle: An inner door mounted ground fault interrupter (GFI) type convenience receptacle rated at 20 amperes shall be installed for the operations of trouble lights, drill, etc

- I. Terminal Strips: Terminal strips shall be solderless box lug compression type of adequate capacity for the size and number of conductors to be terminated. The area around each lug and set screw shall have insulation barriers to prevent accidental shorting during assembly or use.

- J. Intrinsically Safe Wiring Barrier: Provide an intrinsically safe wiring barrier when required to render the float switch(es) suitable for use in Class I, Division 1 and 2, Group A, B, C, and D, Class II, Division 1 and 2, Groups E, F, and G, and Class III hazardous locations. Approved manufacturers are Diversified Electronics, B/W Controls, and U.S. Filter-Control Systems.
- 2.12.6 Float Switches: Float switches shall be ball type constructed of 20 gauge Type 316 stainless steel, 5½ inch diameter ball float, with encapsulated mercury switches operating when float is in a horizontal position. The switch shall be rated at 20 amps at 115 volts resistive. Cable shall be Type SO Nitrile and permanently assembled to switch and float. Float switch shall have stainless steel mounting brackets and accessories for mounting to an one-inch Schedule 40 stainless steel pipe. Pipe mountings shall be cast aluminum clamps supplied by switch manufacturer. Float switches shall be Consolidated Electric Company Model 9G.
- 2.12.7 Factory Testing: The controller shall be completely assembled, bench tested and ready for installation upon delivery.
- 2.13 Light: Furnish and install a 70-watt high pressure sodium light with photocell control mounted on a pole as shown on the plans.
- 2.14 Emergency Bypass: Furnish and install an emergency pump bypass system consisting of one gate valve, a quick disconnect coupling, and appurtenances, terminating inside the valve box as shown on the plans. The coupling shall be an aluminum “Ever-Tite Quick Coupling”, Part “F” male adaptor with 4-inch threads.

PART 3 - EXECUTION

3.1 PUMP STATION (GENERAL)

Construct wet well and valve pit as shown in the plans and specified herein. Compact clean subgrade under wet well to 100% of maximum density at optimum moisture content as determined by AASHTO T-99, Method A. Place 12" of #57 crushed stone properly compacted under wet well slab. Compact clean backfill around the station in 8-inch lifts to not less than 95% of the maximum density at optimum water content as determined by AASHTO T-99, Method A. Access door units shall be flush with concrete surface and in alignment to permit unobstructed removal of pumps and valves. Complete the pump station piping and fittings in accordance with the plans and specifications relating thereto. Remove all lifting eyes etc. from precast units, rub all joints, coat interior of pump station wet wells with coal tar epoxy coating, clean hatches to bare metal, touch up paint on electric panels, clean wet well, valve pit and drains and grade site.

3.2 CONCRETE SLAB ON GRADE

Thoroughly compact subgrade before constructing slab. Concrete slab shall be constructed with square corners level and to grade. Concrete surface shall be smooth and true without warps, pockets or other abnormalities. Finish shall be lightly broomed and top corners shall be tooled. Rough or uneven concrete shall be broken out and replaced.

3.3 WET WELL COATING

The inside of wet well and top must be free of laitance and slick surfaces. Prepare surface by roughing, by sandblasting or by applying 15 to 20 percent of muriatic acid and rinsing. Remove oil or grease by applying trisodium phosphate solution and rinsing. Thoroughly dry the surface and apply two (2) coats of coal tar coating at the rate specified allowing 48 hours between coats.

3.4 INSTALLATION OF EQUIPMENT

The Contractor shall install equipment as required by the manufacturer's written installation instructions and approved shop drawings unless otherwise directed by the Engineer.

The floor of the pump station shall be constructed level to a point 6 inches outside of all pump supports before installing pumps. Pump piping shall be completely made up and secured to prevent any excess movement. Provide permanent supports, and wedges as indicated to restrain movement.

Excess motor and control wire shall be carefully coiled and hung inside the wet well. These wires shall not be cut and all identification tags shall be in place. Cables shall be supported with S.S. basket weave type strain reliefs hung in wet well and be routed in a manner that will not interfere with access to any equipment or terminals in the control panels.

3.5 CONTROLS INSTALLATION

- A. Device Mounting: Control equipment shall be mounted to panel back plates with screws or bolts fastened into drilled and tapped holes. Nuts shall not be used. Panel face mountings shall be made by cutting holes exactly to manufacturer's instructions including keyways, etc. Engraved legend plates indicating function and operational instructions as applicable shall be mounted on all devices. All equipment and wires shall be labeled and identified by matching control wiring diagrams.
- B. Terminations: All connections for incoming and outgoing electrical wires in all panels and junction boxes shall be made on fully labeled terminal boards mounted inside the panel.

- C. Fabrication: All control panels shall be shop assembled and tested prior to delivery to the site. After installation, the Contractor shall “de-bug”, regulate, and adjust all controls and associated equipment, and demonstrate all operations to the satisfaction of the Owner and the Engineer. Final as-built drawings shall be made to reflect all adjustments and modifications made to the systems after start-up has been completed satisfactorily.

All equipment and devices shall be mounted, adjusted, calibrated and operated exactly as recommended by the manufacturer of each component.

Control switch displays shall be grouped in a logical form for ease of operation.

Control voltage shall be 120 volts unless otherwise indicated.

- D. Identification of Conductors: The controls subcontractor shall submit a proposed detailed system of identification or control conductors using a single major color throughout for certain functions such as hand, auto, alarm, pilot, etc. Each conductor shall also be identified at each terminal end and each accessible manhole or junction box. Conductors shall be identified by using self laminating wire and cable markers equal to the Brady B-191 system at terminal ends and above grade junction boxes. For manholes and below grade junction boxes, identification shall be made by using molded plastic clip on markers equal to Brady SCD series. Identification system shall be in accordance with industrial standards and practices.
- E. Field Calibration: All instrumentation shall be calibrated in the presence of the Engineer in accordance with the range and accuracy specified herein.

All equipment shall be calibrated using a standard calibration sheet which has been approved by the Engineer. This calibration sheet shall be filled out identifying the instrument or item to be calibrated and signed with date and initials of the person calibrating the device.

3.6 START-UP, TESTING AND TRAINING

The Contractor shall retain a factory certified technician(s) that is(are) fully familiar with the equipment installed to startup and completely check out the pump station. The technician shall first perform a pre-start check to include, at a minimum, proper impeller rotation, proper service voltage, and proper operation of the phase monitor. Then the technician shall perform start-up checking for, at a minimum, proper operation, including all control functions, motor operation, and measurements of vibration, current, pressures and flows to verify compliance with the plans and specifications. Amp readings on each motor lead shall be recorded on the start-up report. Final technical checkout (with technician(s) present) will be made in the presence of the Engineer and Owner. The

Contractor shall furnish all materials, equipment, including test gauges calibrated in feet, and incidentals to conduct the tests.

Before the main circuit breaker is energized to allow power to the control panel, verify incoming service voltage is within normal range on all phases.

The factory certified technician shall also instruct the Owner and Engineer in the operation of the controls, including changing all settings, and shall set all settings for proper operation of the pump station and record these initial settings on the start-up report form.

A written report by the factory certified technician shall be given to the Engineer and this report shall include, at a minimum, the results of all tests and instructions indicated above.

3.7 PAYMENT

Unless specified elsewhere payment shall be made at the Unit Price Bid for the pump station which shall be compensation for furnishing all labor and materials, equipment and incidentals to complete one pump station including excavation, grading, electrical construction, piping, valves and boxes, wet and dry wells, concrete slab, pumps and controls, start-up, and all operations to complete the station to the limits shown.

END OF SECTION 11311A.