

SECTION 01150
MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 SCHEDULE OF VALUES

- A. The Contractor shall submit a Schedule of Values for the Work of the Contract, including quantities and unit prices aggregating the Contract Price, for approval in accordance with the Standard General Conditions.
- B. If any unit price in the approved Schedule of Values requires that the said unit price cover and be considered compensation for certain work or material essential to the item, this same work or material will not also be measured or paid for under any other pay item which may appear elsewhere in the Conformed Project Manual.

1.02 MEASUREMENT OF QUANTITIES

- A. Engineer will measure work completed under the Contract according to the standards of weights and measures recognized by the U.S. Bureau of Standards.
- B. The method of measurement and computations to be used in determination of quantities of material furnished and of work performed under the Contract will be those methods generally recognized as conforming to good engineering practice.
- C. Engineer will measure for area computations on the surface. Pay measurements for area computations will not exceed the neat dimensions indicated on the Conformed Project Manual, unless Engineer otherwise orders in writing.
- D. Engineer will measure structures according to neat lines indicated on the Conformed Project Manual or as altered to fit field conditions. Owner will not pay for length, width, or depth in excess of that indicated in the Conformed Project Manual or specified for any construction, unless Engineer otherwise approves in writing.
- E. Engineer will measure items by the linear foot, such as pipe, parallel to the existing grade.
- F. Engineer will use the average end area method, based on horizontal measurements, in computing volumes of excavation, or other acceptable methods.
- G. The term "each", when used as an item of payment, will mean complete payment for the Work described in the Conformed Project Manual.
- H. The term "lump sum", when used as an item of payment, will mean complete payment for the Work described in the Conformed Project Manual, including all necessary fittings and accessories, and required testing completed. The Contractor is responsible for all costs associated with supplying and proper disposal of all test water.

- 1.03 SCOPE OF PAYMENT: The Contractor will receive and accept compensation provided for in the Conformed Project Manual as full payment for furnishing materials, labor, tools, and equipment and for performing Work under the Contract in a complete and acceptable manner and for all risk, loss, damage, or expense of whatever character arising out of the nature of the Work or the prosecution thereof, subject to the provisions of the Standard General Conditions.

1.04 GENERAL NOTES:

- A. The Conformed Project Manual requires the Contractor to provide a completely interconnected and functional system. The Contractor shall provide all labor, equipment and materials which are necessary to carry out the full intent and meaning of the Conformed Project Manual or to be reasonably inferred therefrom.
- B. Installation includes all protection of existing facilities, removal of water, disposal of excess material, placement of structures to line and grade, leakage testing, connection of all pipes, valves, controls and instruments to the treatment facilities, setting and bolting in place equipment, control panels, etc. Installation also includes start-up and performance testing of the complete Digester Covers including all of the components listed above.

1.05 LUMP SUM BID ITEMS

- A. Lump Sum Items on the Proposal (or Bid) Form are those items included in the Base Bid for the Contract, including all work shown on the Conformed Project Manual. Owner will pay for placement of all materials shown on or reasonably inferred from the Conformed Project Manual. Contractor shall furnish and install all materials according to the Conformed Project Manual. No measurement will be made. The lump sum price will include all work and materials required to complete the item described in good working order. Owner will pay in accordance with the proposal including but not be limited to the placing and installing of materials and the furnishing of such manpower and equipment as required in order to accomplish the work. The Lump Sum Bid Items are defined as follows:
 - B. The following items are part of the Lump Sum Scope of Work. The Contractor shall include in his Lump Sum prices the cost to perform/provide all of the following that are necessary to complete this project. No separate measurement or payment will be made.
 - 1. The Contractor shall include and distribute all costs of mobilization in the **Lump Sum Bid Items**. Mobilization shall consist of the assembling and setting up for the project, the Contractor's necessary general plant, including Contractor's offices, storage areas, temporary utilities, water sanitary and other facilities, as required by the Conformed Project Manual and special requirements of the Contract, as well as by local or State law and regulation. Mobilization shall also include demobilization of the same, restoring the project site to its original conditions, except as modified by the new work under this contract.
 - 2. Mobilize men, equipment and materials needed to the jobsite, and remove same when complete (demobilization). Mobilization shall include all necessary bonds and insurance. No separate payment will be made for insurance and/or any other initial expense. Separate payment will be made for bonds at the actual invoiced cost.
 - 3. Surveying, construction layout and measurement of quantities.
 - 4. Remove obstructions such pipe, conduit, wire, supports, retaining devices, etc. that may interfere with the proposed construction.
 - 5. Control sludge and dust and remove/dispose of excess or unwanted material or debris.
 - 6. Furnish, haul, and clean-up all materials used on the site.
 - 7. Furnish reproducible As-Built Plans to the Engineer prior to final payment.
 - 8. Attend preconstruction and construction progress meetings.

9. Twenty percent (20%) of the price for Mobilization (excepting bonds) listed in the Schedule of Values will be paid when work is 5% complete. Another 10% will be paid when the work is substantially complete, and the balance will be paid with regular progress payments in proportion to the percent of work completed. Mobilization payments will be subject to the same retainage as the rest of the contract. The bid price for mobilization (excepting bonds) shall not exceed 5% of the total contract price.

C. ITEM 101 Demolish Existing Floating Covers and Stairs

1. Clean the digesters interior and exterior as required to create a safe working environment inside the digesters.
2. Demolish and completely remove the existing digester floating covers by removing ballast, steel decking, truss framework, steel underside, gas dome; and if they will no longer be needed gas piping, seals, instruments, controls, appurtenances, etc.
3. Detach membrane roofing that is to be reused along the digester perimeter including cap flashing, etc. Protect from damage by subsequent construction.
4. Demolish and completely remove the concrete masonry unit caps on digester walls. Cover and seal cavity wall temporarily to prevent moisture penetration.
5. Dispose of demolished materials.
6. Demolish existing digester stairs and install relocated Archbald stairs.

D. ITEM 102 Prepare Existing Digesters for Membrane Covers

1. Relocate gas flare.
2. Form and pour concrete ring walls to extend existing digester walls.
3. Prepare the interior and exterior surfaces of the digester for new work including for painting.
4. Core drill digester walls for new penetrations, cap and/or plug existing penetrations in digester walls or building roof that are no longer needed.
5. Paint digester interior walls.
6. Reattach membrane roofing complete including blocking, flashing, etc. Provide new roofing materials, flashing, appurtenances, etc. as necessary.
7. Modify TWAS piping in Digester Building Lower Level to connect directly to both digesters.

E. ITEM 103 Dual Membrane Digester Cover Systems

1. Provide complete dual membrane digester cover systems:
 - a. Modify gas withdrawal pipe inside digester.
 - b. Inner support network secured to digester walls.
 - c. Dual membranes and external restraint cabling (if provided) to concrete ring wall.
 - d. Aeration blower packages in Digester Building Lower Level. Run air ducting from blowers to digester covers.
 - e. Instruments and gas safety systems on digesters, at blower packages, on membrane covers, on air and gas piping.

- f. gas supervisory control and data acquisition (SCADA) system including new membrane cover control panels in Digester Building Electrical Room with control software.
 - g. Test, start-up. train Operators and commission systems.
 - 2. Complete all required ancillary work not identified above.
 - F. **ITEM 104 TJ Cannon Controls Modifications:** This Agreement includes a Lump Sum Cash allowance for TJ Canon, Inc. who provided the price for this Bid Item to LRBSA for inclusion under this Agreement . Furnish, install, and integrate plant SCADA system modifications as detailed. The Contractor shall be responsible for the overall operation of the SCADA system and take single source unit responsibility for every component of the System. The intent is to provide complete operating control systems. Provide specified I-O that monitors identified facility field devices (switches, sensors, and instruments) and process equipment. Provide other equipment and/or auxiliary devices as required, even if not specified, for the proper interface and performance of the overall system that are designed to accomplish the task for which they are intended.
 - G. **ITEM 105 Unison Controls Modifications:** This Agreement includes a Lump Sum cash allowance for Unison, Inc. who provided the price for this Bid Item to LRBSA for inclusion under this Agreement. Modify the Unison Gas Conditioning Skid Control Panel software and (if necessary) hardware as required so the Gas Conditioning Skid and the Capstone Microturbines respond to control input from the Dual Membrane Control Panels. Specifically, volume of digester gas held in the gasholder covers will become the primary mechanism to control the operation of the Gas Conditioning Skid and the Microturbines. Gas pressure under the gasholder covers will become a secondary control mechanism.

1.06 CONTINGENT BID ITEMS

- A. Contingent Bid Items on the Bid Proposal Form in the Proposal are in addition to those shown on the Contract Drawings and are to be used and paid for only at the written direction and authorization of the Engineer. Payment for these items will be made for materials placed in addition to those shown or beyond the limits indicated or reasonably inferred from the Contract Documents. All materials shall be installed in accordance with these specifications. Measurements and payment will be in accordance with the proposal and will include but not necessarily be limited to the placing and installing of materials, and the furnishing of such manpower and equipment as required in order to accomplish the work as directed in writing by the Engineer. The Owner hereby reserves the right to unlimited increase or decrease of the estimated quantities as shown in the Proposal, without additional unit price increases for the duration of this Contract.
- B. Contingent Bid work is limited to the immediate tasks needed to complete that specifically described work. Contingent Bid work will be performed on a unit price basis, and is included to address work that may or may not be needed, the need for which can only be determined after the digesters are emptied and cleaned out.
- C. **ITEM 201 Concrete Surface Repair:** Repair the concrete surface where it has spalled, etc. with epoxy mortar patch as required by written order of the Engineer. The work includes preparing the surface as recommended by the mortar manufacturer and placing the mortar, complete. Measurement shall be made by the two-dimensional method determined in the field. Payment shall be made at the unit price bid per square foot for the actual surface area.

- D. **ITEM 202 Concrete Crack Repair:** Repair cracks in the concrete with epoxy mortar patch as required by written order of the Engineer. The work includes preparing the crack as recommended by the mortar manufacturer and placing the mortar, complete. Measurement shall be made by linear feet of crack repaired. Payment shall be made at the unit price bid per linear foot for the actual crack length.
- E. **ITEM 203 Digester Cleaning/Grit Disposal:** Each digester contains approximately 100,000 gallons of digested sludge (sludge), broadly defined as including rags, screenings, floatables, grit, and other objectionable material. LRBSA will pump out as much digested sludge as possible but the quantity it will be able to pump out is uncertain. Contractor shall completely remove all remaining accumulated sludge. Contractor shall supply all labor, power, equipment, chemicals and material necessary to remove and process the sludge including sludge pumps, water booster pumps, suction and discharge hoses, electrical power supply and connections, equalization/mixing tank, sludge dewatering equipment, polymer feed system and conveyors. LRBSA does not have electric service available to power this sludge removal effort. Contractor must provide his own independent power source.

Prior to the start of work, the Owner and Contractor shall jointly measure and agree to the initial volume of sludge remaining in the digester. This volume shall be used as the measured quantity basis for the contract amount. The estimated quantity of sludge upon which the bid was based will be adjusted upward or downward, as appropriate, and the contract amount correspondingly adjusted utilizing the bid unit price per gallon.

The dewatered sludge shall be free of water by the paint filter test and shall be a minimum 13% total solids by weight. Test method shall be in accordance with EPA Document No. SW-846, Test Methods for Evaluating Solid Waste (September 1986). LRBSA reserves the right to test the material. No material may be added to the dewatered sludge to achieve compliance with the paint filter test or total solids requirement unless authorized in advance by the Authority.

LRSSA will pay Keystone Landfill disposal fees.

1.07 NON-PAYMENT FOR REJECTED PRODUCTS

- A. Owner will not pay Contractor for any of the following:
1. Products wasted or disposed of in a manner that is not acceptable.
 2. Products determined as unacceptable before or after placement.
 3. Products not completely unloaded from the transporting vehicle.
 4. Products placed beyond the lines and levels of the required Work.
 5. Products remaining on hand after completion of the Work.
 6. Loading, hauling and disposing of rejected Products.

END OF SECTION