

SECTION 113130
CHLORINATION SYSTEM (S-19)

1. DESCRIPTION

This specification shall govern all work required to furnish and install the chlorination system as required to complete the project.

2. GENERAL

This specification describes an "Advance gas feeder manufactured by Capital Controls Company of Colmar, Pennsylvania. The gas feeder shall be the Model 203 ADVANCE Gas Feeder and shall be of the vacuum operated, solution feed type.

The gas feeder shall have a maximum capacity of 500 pounds per day of chlorine gas feed and shall be equipped with two remote mounted gas flowmeters of 300 pounds of gas feed per day. The gas feeders shall mount directly on the gas manifold valve by means of a positive yoke type, gasket connection and shall be provided with a gas valve direction indicator.

3. DESIGN

The gas feeder design shall provide for conveying the gas under vacuum from the vacuum regulator to the ejector-check valve assembly to insure complete system safety. The gas feeder design shall permit the entire system to be vacuum checked in the field without using special tools or manometers. The gas feeder shall be constructed of materials specially selected for wet or dry gas services. All springs used in the gas feeder shall be of a tantalum alloy for chlorine. The rate valve and seat shall be constructed of fine silver. A double thickness diaphragm shall be provided for vacuum regulation.

The rate of gas feed shall be set manually and shall remain constant until manually changed. A differential pressure regulator shall not be required for gas flow control.

The gas feeder shall be convertible to automatic control by insertion of a motorized control valve in the vacuum line to receive a signal from appropriate control equipment.

4. COMPONENTS

Feeder

The gas feeder shall be comprised of the following: vacuum regulator or indicating meter, panel mounted dual gas flow meters with two manual rate valve, pressure relief valve, two ejector-diffuser assemblies, gas supply indicator, (manifold).

Vacuum regulator

The vacuum regulator shall mount directly on the gas valve by means of a positive yoke type, gasket connection. Vacuum shall be controlled by a spring opposed diaphragm regulator which shall close tight upon loss of vacuum. The regulator shall be equipped with a gravity actuated, loss of gas indicator, and gas flowmeter.

Gas Flowmeters and Rate Valves

The gas flowmeters with solid silver rate valves and solid silver seats for chlorine shall be mounted on a chemical resistant panel for wall mounting. The gas flowmeter(s) shall indicate the flow of gas to a minimum of 1/20 maximum feed.

Relief Valve

Pressure will be prevented from building up in the system by means of a spring loaded, diaphragm actuated pressure relief valve located at the vacuum regulator. The gas shall vent at the vacuum regulator.

Ejector-Diffusers

Two ejector-diffuser assemblies shall receive all gas and ejector water and discharge the resulting solution to the points of application. The ejector shall be equipped with a check valve which will prevent water from backing up into the vacuum regulators. A loss of water supply shall automatically shut-off the gas flow. Ejector shall have 1" inlet and outlet.

Supply Indicator

The gas feeder shall be equipped with a gravity actuated device, directly connected to the main control diaphragm, to indicate when gas supply is exhausted.

Valve Direction Indicator

A gas valve direction indicator shall be provided with each gas feeder.

Manifold (For Eight Cylinders)

The manifold shall be (horizontally) oriented and constructed of 3/4" schedule 80 Grade A, types, seamless carbon steel pipe per ASTM A-106 and forged steel 3000 lb. CWP fitting per ASTM A-105, and shall include a drip leg with heater, header valve for mounting the gas feeder, and flexible connectors for connection to eight gas cylinders.

Electrical

Power supply to the drip leg heater shall be (120 VAC, 60 Hz) single phase.

Electrical conduit and wire shall extend from the proposed chlorine building to the power source in the adjacent sludge pump building. Wire shall be size 12 TWR minimum.

Portable Building

A 6' x 6' x 7' portable chlorine building with cabinet shall be furnished and installed at location indicated in plan.

Mask

A chlorine gas mask shall be furnished.

Chlorine cylinders

Eight 100 lb. cylinders of chlorine shall be furnished by the City and installed by the Contractor.

Miscellaneous components

Gate valves, gages, Y-type strainers and connections shall be corrosion resistant and designed for exterior use. PVC pipe shall be schedule 80 unless indicated otherwise in drawings.

5. OPERATION MANUAL

The chlorinator supplier or manufacturer shall provide five copies of an operation manual to the City. Each manual shall include but not be limited to the following items.

- a. Schematic diagram of entire chlorinator system.

- b. Parts and assemble diagram with parts numbers for ordering.
- c. Operations and maintenance procedures and schedule.

6. WARRANTY

The City shall be supplied with a written one year warranty against defective chlorination equipment from the manufacturer and supplier.

7. MEASUREMENT AND PAYMENT

Measurement of the chlorination system shall be made as a lump sum. Measurement shall include but not be limited to, all chlorination equipment, filter water supply lines, diffuser lines, fitting, chlorine building, mask, four chlorine cylinders, mounting brackets, valves, gages, and strainers.

Payment shall be made at the unit price bid and shall fully compensate the contractor for all equipment, labor, materials and other incidental required for furnishing and installing the chlorination system.