ANGLE PATTERN SLEEVE VALVE

PART 1 - GENERAL

1.1 THE REQUIREMENT

A. The CONTRACTOR shall furnish and install horizontal angle pattern, sleeve-type valve assemblies complete and operable as shown and specified herein including electric motor or hydraulic operators or hydraulic operators, epoxy coating, and appurtenances and accessories, in accordance with the requirements of the Contract Documents.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section Valves, General.

B. Section Valve Operators.

C. Section Painting

1.3 CONTRACTOR SUBMITTALS

A. The CONTRACTOR shall submit layout drawings with complete information as outlined in Section "Valves, General."

B. With the layout drawings, the contractor shall submit:
1) Layout drawings shall be drawings of the valve showing all envelope dimensions including material callout.

1.4 SUBSTITUTION

A. Where horizontal in-line sleeve valves are shown or specified, the contractor shall not substitute globe style valves that are not pre-approved.

1.5 QUALITY ASSURANCE

A. The sleeve valves shall be shop tested prior to shipment per the following minimum standards:
1) Hydrostatic test to 1.5 times valve pressure rating.
2) Leakage rate must be less than 2.0 oz. per inch of valve diameter per hour tested at valve pressure rating.

3) Functional test of five (5) complete cycles of operation with the valve actuator settings in place (limit switches, torque switches, pilot pressure settings, etc...).

B. Certified shop test reports shall include appropriate information such as handwheel rotation direction, valve stroke length, stroke calibration data, pilot pressure settings, operating times and visual inspection notes.

PART 2 - PRODUCTS

2.1 OPERATING REQUIREMENTS

A. Performance: The valve shall be designed and guaranteed for at least one year to operate throughout its range without cavitation damage, excessive noise or vibration, for the conditions stated below. Material stresses shall not exceed 1/5 of the ultimate or 1/3 of the yield strength of the material. Extra capacity, as determined by the valve manufacture based on water quality, shall be designed into the drill pattern.

Valve ID	Flange (in)	Qmax	Pin @ Qmax	Pout @ Qmax	Qmin	Pin @ Qmin	Pout @ Qmin

*Include Units

B. Valve Operation: Each angle pattern sleeve valve assembly shall consist of a horizontally positioned body having a flanged cylindrical body section, a sliding cylindrical sleeve containing tapered control nozzles and an electric actuator or hydraulic cylinder operator. The hydraulic cylinder or electric actuator shall operate per Valve Operator section. The valve must be a minimum of 10% open under maximum head loss and minimum flow conditions. The valve shall have one (1) inch of valve stroke per one inch of nominal valve diameter to provide desired control range.

2.2 EQUIPMENT REQUIREMENTS

A. Valve Assembly Components: All interior surfaces that come in contact with water shall be fabricated of stainless steel, bronze, stellite, epoxy coated ductile iron or epoxy coated carbon steel.

1. The assembly shall consist of a flanged cylinder, which contains the valve seat and inlet and outlet flanges. The outer cylinder of the valve body shall be fabricated from carbon steel. The top end shall be flange connected to the stem housing. The stem housing of the valve shall be easily removable to facilitate cleaning and maintenance. The valve body section shall be provided with a removable stainless steel seat.

2. The sliding sleeve shall be removable, fabricated of stainless steel and shall be perforated with control nozzles. Each control nozzle shall be tapered having the larger diameter on the outside of the sleeve and shall have sharp edges to produce a nozzle coefficient of at least 0.94. The manufacturer shall determine the number and size of the nozzles. The sleeve shall be restrained to eliminate any rotation during operation.

3. A packing box for the upper end of the sliding sleeve shall be located on the stem housing. The packing box shall seal off the stem that enters the top part of the body. A molded seal shall be provided at the top of the sleeve to prevent leakage of water into the cavity above the sliding sleeve. The seal shall be a continuous ring of molded rubber. The seal shall be retained in a gland attached to the sleeve with corrosion resistenat screws. A molded seat seal shall be provided at the middle of the sleeve to shut off flow. The seal shall be attached to the sleeve with corrosion resistant holder and screws and shall be replaceable without taking the valve out of line.

4. A cleanout port shall be provided to facilitate the inspection of the sleeve/seat and allow for debris removal and seat replacement.

B. Actuation: The valve shall be actuated by the type specified in Section "Valve Operators". The maximum design operating force shall be five (5) times the normal operating force required at maximum inlet head conditions.

C. Valve manufacturer:
1. Inline Sleeve Valve Model B-12 as manufactured by Bailey Valve Inc.

2.3 MATERIAL REQUIREMENTS

A. Assembly components shall be manufactured from the following materials:

1. Valve Body - Carbon Steel
ASTM A53, Type E, Gr B

ASTM A285 Gr C

2.	Sleeve	- Type 304 stainless steel ASTM A182 Gr 304L ASTM A240 Type 304L
3.	Power Screw Shaft	- Type 304 stainless steel ASTM A240 Type 304L
4.	Seat holder	- Type 304 stainless steel ASTM A240/A276 Type 304L
5.	Valve Gate	- Type 304 stainless steel ASTM A240 Type 304L ASTM A358
6.	Fasteners	- All studs, bolts, washers, and nuts in contact with water shall be Type 304 stainless steel.

B. All materials of moving components in contact with each other shall be of dissimilar hardness to prevent galling. The valve shall be moved through an open-close-open cycle three (3) times after final assembly and prior to shipment to insure this requirement.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Valve installation shall be in strict accordance with the manufacturer's printed recommendations, and the Contract Documents.

B. Four (4) copies of Operations and Maintenance Manuals are to be provided. The manuals shall include installation instructions, maintenance procedures and operation parameters.

3.2 WORKMANSHIP

A. Valves shall be free from manufacturing defects and shall be manufactured in a workman like manner. Welds shall conform to ASME Section VIII or IX standards for pressure vessels and be free from mill and scale.

B. Painting shall be per the painting section of this specification.

C. All carbon steel components shall be painted with Epoxy paint.

3.2 FIELD TESTING AND PERFORMANCE

A. Valves shall be field leak tested to the specified operating pressure in the closed position and shall not leak more than 2 oz per inch of valve size per hour. Any additional field leakage shall be corrected by the manufacturer at the manufacturer expense.

B. Field leakage test shall be certified by the engineer, manufacturer and contractor.

D. Any excessive noise or vibration shall be resolved by the manufacturer including possible replacement of the valve at the manufacturers expense.