

## **SLIDE GATES – STAINLESS STEEL WEIR GATES – STAINLESS STEEL**

### ***CONVENTIONAL or SELF-CONTAINED SURFACE or EMBEDDED TYPE SUGGESTED SPECIFICATIONS***

#### **GENERAL**

Fabricated slide and weir gates where shown in the plans and specifications and listed in the gate schedule shall be as manufactured by Coldwell-Wilcox Technologies, LLC of Cincinnati, Ohio. Gates shall be 304(L) stainless steel or 316(L) stainless steel, self-contained or conventional rising or non-rising stem type with embedded or surface mounted frames as called out by the specifications and site drawings. Gates can be open/close or modulating service.

**Slide Gates:** Coldwell-Wilcox designed slide gates are upward opening with UHMW/neoprene seals on two sides and neoprene flushbottom or two sides and top with neoprene flushbottom seal at the bottom.

**Weir Gates:** Weir gates are downward opening slide gates with UHMW/neoprene seals on two sides and top only.

Equipment provided shall be fabricated, assembled and placed in proper operating condition per the drawings, specifications, engineering data, instructions and recommendations of the gate manufacturer unless otherwise noted by the engineer. Gates and operators shall be supplied with all parts and accessories as specified within the site specifications and drawings and as required for a complete installation.

#### **GOVERNING STANDARDS**

Except as modified or supplemented herein, all gates and operators shall conform to the applicable AWWA standards.

#### **MANUFACTURER'S QUALIFICATIONS**

Slide and weir gates shall be the latest standard product in regular production by a manufacturer whose products have proven reliable in similar service. A single manufacturer shall supply slide gates.

#### **MATERIALS**

All materials will comply with applicable provisions and recommendations of the following, except as otherwise shown or specified:

- Frame, Leaf                      ASTM A276 Type 304(L) or 316(L) Stainless Steel.
- Stem                                ASTM A276 Type 304(L) or 316(L) Stainless Steel
- Fasteners                         ASTM A276 Type 304 or 316 Stainless Steel
- Seals                                Neoprene ASTM D2000 50-60 Durometer

- Seats UHMW
- Stem Cover Butyrate, Clear
- Handwheel ASTM A-126, Class B Cast Iron, A36 Steel
- HandCrank A36 Steel

## **SUBMITTALS**

Manufacturer's data and drawings shall be submitted for approval in accordance with site specifications and engineering drawings. Manufacturer's submittal shall include but not limited to gate material specification sheet, gate data summary sheet, calculation sheets, site plan drawings and paint/coating data sheets. Calculation sheets shall contain operator forces, tensile and buckling strength of stem, structural strength calculations and other calculations to verify that the design meets the specification requirements.

## **PERFORMANCE**

Gates shall be designed and shop tested to the applicable AWWA governing standard. Design and operating heads shall be per the site schedule and/or specifications.

## **DISC**

Disc shall be constructed of 1/4" stainless steel type 304(L) or 316(L) reinforced with structural members to withstand maximum seating and unseating heads as required by the schedule and specification. Stem mounting clips or thrust nut pocket shall be welded to the disc. Deflection of the disc shall not exceed 1/720 of the span under the design head.

## **FRAME**

Gate frame shall be self-contained embedded, channel mount or surface mount type. Conventional frames shall be surface mount type. Frame shall form guides consisting of plate and/or structural 1/4" 304(L)/316(L) stainless steel. Gate guides shall extend at least 1.5 times or more past the disc height supporting the disc when fully open or closed. Guides shall be designed and constructed to withstand the total thrust caused by water pressure. Guides shall be embedded in concrete or surface mounted to concrete as shown on the plans.

## **STEM**

Operating stem shall be of Type 304(L) or 316(L) stainless steel minimum 1-1/4 inches diameter and attached to the disc by stem mounting clips or thrust nut and pocket. Stem shall be designed to transmit in compression at least 2-1/2 times the rated output of the operating mechanism with a 40-pound maximum effort on the crank or hand wheel.

Stems shall have a slenderness ration (L/R) of 200 or less. The threaded portion of the stem shall have machined cut 1/4" pitch by 1/4" lead left hand threads of the Acme type unless otherwise specified. Stainless steel or manganese bronze couplings threaded and keyed, or bored and pinned to the stems shall join stems of more than one section. All threaded and keyed couplings of the same size shall be interchangeable. Stems shall be provided with adjustable stop collars to prevent over travel on manually operated gates.

## **STEM GUIDES**

Stem guides shall be UHMW or bronze bushed 304/316 stainless steel, ductile iron or A36 steel.

They shall be adjustable in two directions and will be spaced at sufficient intervals to adequately support the stem. Stem guide spacing shall not exceed 10 feet.

## **SEALS**

Side and top seats/seals shall be compressible 50-60 durometer extruded neoprene with UHMW cover. Slide gate flushbottom seal shall be compressible 50-60 durometer neoprene flush across the invert forming a complete seal for the entire width of the disc. Neoprene “J” seal can be bolted to the stainless steel frame for additional sealing capabilities on the unseating side. Hardware shall be Type 304 or 316 stainless steel.

## **MANUAL OR ELECTRIC OPERATED GATES**

HANDWHEEL (HORIZONTAL MOUNTED) TYPE: A hand wheel operator shall be provided with a 1:1 ratio. An acme threaded manganese bronze lift nut shall be provided to engage the operating stem. Anti-friction bearings shall be provided to properly support both opening and closing thrusts. The hand wheel shall operate the gate under the specified operating heads with not greater than a 40 pound rim pull approximately 36 inches above the operating floor. All components shall be totally enclosed in a cast iron weatherproof housing. Hand wheel operator shall be bench stand (yoke) mounted or floor stand mounted with or without a cast iron or fabricated A36 steel wall bracket.

HANDCRANK OR VERTICAL HANDWHEEL GEARBOX MOUNTED TYPE: A hand- crank or handwheel operated gearbox shall be provided with a gear ratio as needed to ensure 40 pounds or less rim pull at the handcrank or handwheel under the specified operating heads approximately 36 inches above the operating floor. An acme threaded manganese bronze lift nut shall be provided to engage the operating stem. Anti-friction bearings shall be provided to properly support both opening and closing thrusts. All components shall be totally enclosed in a cast iron weatherproof housing. Gearbox shall be bench stand (yoke) mounted or floor stand mounted with or without a cast iron or A36 steel fabricated wall bracket.

TEE WRENCH TYPE: A tee wrench operated 2” square nut stem mounted with a 1:1 ratio or a 2” square nut gearbox mounted with a gear ratio as needed to ensure 40 pounds or less rim pull at the tee wrench under the specified operating heads. A manganese bronze lift nut shall be provided to engage the operating non-rising stem. Anti-friction bearings shall be provided to properly support both opening and closing thrusts. All components shall be totally enclosed in a cast iron weatherproof housing. Tee wrench operator shall be bench stand mounted (yoke), floor box mounted or cast iron/A36 steel fabricated wall bracket mounted.

ELECTRIC ACTUATOR TYPE: Electric actuators shall be sized for the required breakout torque and average operating torque including a 1.33 minimum safety factor. Electric actuators shall be bench stand (yoke) or pedestal mounted. Actuators can be either open/close or modulating service and shall be designed for twelve inches (12”) per minute disc travel (48 RPM actuator speed). Disc travel may vary from nine (9) to fifteen (15) inches per minute depending on design requirements. Electric motor actuator shall include, but not limited to, the motor, gearing unit, limit switches, torque switches, manganese bronze stem nut, declutch lever, compartment heater and hand wheel for manual operation at 40 pounds or less rim pull. As a minimum, the motor actuator shall be Nema 4 (weathertight) construction. Coldwell-Wilcox Technologies furnishes electric actuators manufactured by EIM, Limitorque, Auma, Rotork or equal.

A clear butyrate stem cover with closed, open, 1/4, 1/2 and 3/4 position indicator decals shall be supplied for each rising stem.

## **PAINTING**

Steel components such as the hand wheel and operator bearing housing shall receive manufacturer's standard TNEMEC series N140-1255 pota-pox beige and TNEMEC series 69 pond 28BL finish prior to shipment. Total system shall be 12-16 mils DFT.

## **SHOP TESTING**

Each gate shall be fully assembled and shop-inspected in the vertical position for proper seating. The disc shall be fully opened and closed in its guide system to ensure that it operates freely and seals per the AWWA standard.

## **INSTALLATION**

Installation shall be in complete accordance with manufacturer's instructions and recommendations. Anchor bolts will be set in accordance with approved manufacturer's drawings.

## **START-UP AND TEST**

Contractor shall make adjustments required to place system in proper operating condition. Contractor shall conduct functional field test of each slide gate in the presence of the Owner's Project Representative to demonstrate that each part and all components together function correctly.