

SECTION 35 20 16.25
FABRICATED SLIDE GATES AND STOP GATES

PART 1 GENERAL

1.01 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. American Water Works Association (AWWA):
 - a. C561, Fabricated Stainless Steel Slide Gates.
 - b. C562, Fabricated Aluminum Slide Gates.
2. ASTM International (ASTM):
 - a. A193/A193M, Alloy-Steel and Stainless Steel Bolting Materials for High Temperature or High Pressure Service and Other Special Purpose Applications.
 - b. A240/A240M, Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and General Applications.
 - c. A276, Standard Specification for Stainless Steel Bars and Shapes.
 - d. A380, Standard Practice for Cleaning, Descaling, and Passivation of Stainless Steel Parts, Equipment, and Systems.
 - e. B209, Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate.
 - f. B308/B308M, Standard Specification for Aluminum-Alloy 6061-T6 Standard Structural Profiles.
3. National Electrical Manufacturers Association (NEMA): 250, Enclosures for Electrical Equipment (1,000 Volts Maximum).
4. NSF International (NSF):
 - a. NSF/ANSI 61, Drinking Water System Components - Health Effects.
 - b. NSF/ANSI 372, Drinking Water System Components - Lead Content.

1.02 DEFINITIONS

- A. Self-Contained: The arrangement of gate operator, supported by gate frame, such that operating thrust loads are not applied external to the assembly.
- B. Slenderness Ratio: The ratio of the maximum unsupported stem length to the stem cross-section radius of gyration.

1.03 SUBMITTALS

A. Action Submittals:

1. Shop Drawings:
 - a. Make, model, weight, and horsepower of each equipment assembly.
 - b. Manufacturer's catalog information, descriptive literature, specifications, and identification of materials of construction.
 - c. Detailed structural, mechanical, and electrical drawings showing the equipment fabrications and interface with other items. Include dimensions, size, and locations of connections to other work, and weights of associated equipment associated therewith.
 - d. Gate operator and stem calculations for each gate and service condition.
 - e. Gate opening and closing thrust forces that will be transmitted to the support structure with operator at extreme positions and load.
 - f. External utility requirements such as air, water, power, drain, etc., for each component.
 - g. Functional description of internal and external instrumentation and controls to be supplied including list of parameters monitored, controlled, or alarmed.
 - h. Power and control wiring diagrams, including terminals and numbers.
 - i. Manufacturer's factory and field Performance Test Procedures.
 - j. Anchorage and bracing drawings and cut sheets, as required by Section 01 88 15, Anchorage and Bracing.

B. Informational Submittals:

1. Anchorage and bracing calculations as required by Section 01 88 15, Anchorage and Bracing.
2. Manufacturer's Certificate of Compliance, in accordance with Section 01 67 00, Product Requirements.
3. Special shipping, storage and protection, and handling instructions.
4. Manufacturer's written/printed installation instructions.
5. Routine maintenance requirements prior to plant startup.
6. Operation and Maintenance Data: As specified in Section 01 78 23, Operation and Maintenance Data.
7. Vendor furnished as-built drawings in accordance with Section 01 78 23, Operation and Maintenance Data.
8. Manufacturer's Certificate of Proper Installation, in accordance with Section 01 67 00, Product Requirements.
9. Service records for maintenance performed during construction.

1.04 SYSTEM DESCRIPTION

- A. Coordinate such that electric motor operators are fully assembled and tested, including motor, at the factory.

1.05 EXTRA MATERIALS

- A. Furnish, tag, and box for shipment and storage the following spare parts and special tools:

Item	Quantity
Stem collars for all gate stems	One of each different size
Bronze lift nuts	One of each different size
Indicator lights	One dozen
Special tools required to maintain or dismantle	One complete set

- B. Delivery: In accordance with Section 01 67 00, Product Requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS:

- A. Slide Gates and Stop Gates:
1. Hydro Gate Corp.
 2. Or equal.

2.02 GENERAL

- A. Physical Characteristics:

1. Materials
 - a. Stainless Steel (all stainless steel in this section shall meet these requirements):
 - 1) Plate, Sheet, and Strip: ASTM A240/A240M, Type 316L.
 - 2) Bars and Shapes: ASTM A276, Type 316L.

- B. Functional Characteristics: None.

- C. Performance Characteristics:

1. Performance Requirements: Gate performance requirements shall be in accordance with AWWA C561. Leakage shall not exceed 0.1 gallon per

minute per foot of gate periphery under either seating or unseating head conditions.

2.03 SLIDE GATES

A. Rising stem type, unless indicated otherwise, with assembly styles designated as follows:

1. Style A: Upward acting, sluice gate type, with four sided seals for wall surface mounting on the concrete structures. Provide flush bottom seal and self-contained frame where indicated on the Slide Gate and Stop Gate Schedule.
2. Style B: Upward acting type for mounting in channels with concrete embedded frame and invert.
3. Style C: Non-rising steam downward acting weir gate type with invert "P" seal for wall surface mounting on the concrete structures. Frame shall be self-contained. The top of the self-contained frame operator support yoke shall be 36 inches above the operating deck elevation.
4. Style D: Downward acting weir gate type with invert "P" seal for embedded side frame mounting in concrete structures.

B. Guide Frames:

1. Physical Characteristics:
 - a. Stainless steel.
 - b. Vertical Guides: Design for maximum rigidity and extend in one continuous piece from the gate invert to form posts for support of gate operators of self-contained gates. When guides extended above the operating floor, they shall be sufficiently strong so that no further reinforcements are required.
 - 1) Weight: Not less than 9 pounds per linear foot for stainless steel.
 - 2) Incorporate a replaceable UHMW polyethylene bearing strip in a retainer slot on the downstream side (unseating head side) of the gate.
 - c. Frame Invert: For flush bottom gate, furnish a neoprene insert to function as a seating surface for the gate disc.
 - 1) Weight: Not less than 9 pounds per linear foot for stainless steel.
 - d. Join vertical guide frames and invert with factory welded corners.
2. Functional Characteristics: None.
3. Performance Characteristics: Size guided slot to provide a minimum disc engagement of 1 inch on each side.

C. Disc:

1. Physical Characteristics:
 - a. Disc Plate (Sliding Member): One-piece stainless steel plate. Reinforce as required so that the disc will not deflect more than $1/720$ of the gate span, when the upstream liquid depth (seating head side) is as shown on the Gate Schedule and the downstream liquid depth is less than $1/2$ inch.
 - b. Where required on the Drawings, furnish V-notch or rectangular weir cutouts in the disc plate. Cutout dimensions and location to match details shown on the Drawings.
2. Functional Characteristics: None.
3. Performance Characteristics: Reinforce gate disc with one-piece stainless steel angles or channels welded to the disc plate. Bolted reinforcements will not be permitted.

D. Operator Support Yoke:

1. Physical Characteristics:
 - a. For self-contained gate operators, attached to the vertical extensions of the guide frames.
 - b. Constructed from at least two stainless steel angles, or two other suitable shapes, and bolt in place to provide a rigid assembly.
2. Functional Characteristics: None.
3. Performance Characteristics:
 - a. Maximum Deflection: Not to exceed $1/4$ inch under full operator applied loading.

E. Stems:

1. Physical Characteristics:
 - a. One-inch minimum diameter, ASTM A276, Type 316 stainless steel.
 - b. Threads: Acme type with RMS surface roughness of 63 microinches or less on the flanks for manually operated gates and 32 microinches or less on the flanks for electrically operated gates. Extend threaded portion of stem 2 inches above operator when gate is in CLOSED position.
 - c. Adjustable stop collar for the CLOSED position.
2. Functional Characteristics: None.
3. Performance Characteristics:
 - a. Ratio of the unsupported stem length to the radius of gyration, both in inches, shall not exceed 200.
 - b. Stems to withstand in compression, without damage, the thrust equal to at least $2-1/2$ times the rated output of the hoisting

- mechanism, with a 40-pound effort applied to the handwheel or crank.
- c. Design electric motor-driven floor stands to withstand at least 1.25 times the output thrust of the motor in the stalled condition.
- d. Equip operating stems with cast iron, bushed stem guides, mounted on cast iron brackets; adjustable in two directions and spaced so that the L/r ratio does not exceed 200.
- e. Connect the stems to the disc plate with a yoke, bolted to the stem and welded to the disc.

F. Stem Covers:

- 1. Physical Characteristics:
 - a. Transparent plastic, vented pipe stem cover and cap.
 - b. Provide with OPEN/CLOSED designators with 1-inch graduations on clear mylar pressure sensitive, adhesive tape, suitable for outdoor application.
- 2. Functional Characteristics: None.
- 3. Performance Characteristics: None.

2.04 GATE OPERATORS

A. General:

- 1. Physical Characteristics:
 - a. Mount at walkway level, 36 inches above floor, unless otherwise indicated or required.
 - b. Lift Nuts: Internally threaded with cut or cold-rolled Acme threads corresponding to stem threading.
 - c. Roller Bearings: Ball-thrust or tapered above and below lift nut to support both opening and closing thrusts.
 - 1) Grease lubrication fittings for bearings.
 - 2) Input pinions with needle or ball bearings.
 - d. Lubrication: Furnish rising stem gates with an insert lubricator flange in lift, with grease fitting for greasing stem threads below stem nut.
 - e. Manual Operator Limit Switches:
 - 1) Mounted on an angle adjacent to stem and actuated through limit switch wands by stop collar.
 - 2) Single-pole, double-throw type, with contacts rated 5 amps at 120V ac.
 - 3) Provide two switches, one for gate full OPEN, and one for gate full CLOSED, where indicated.
- 2. Functional Characteristics: Gear train and gate stem sections shall produce a self-locking drive train.

3. Performance Characteristics:
 - a. Components: Withstand a minimum of 250 percent of design torque or thrust at extreme operator positions without damage.
- B. Type 1, Handwheel Operated Floor Stands:
 1. Physical Characteristics:
 - a. Handwheel-operated, with weatherproof housings with solid bronze lift nut. Handwheel shall be a maximum of 18-inch diameter.
 - b. Mount on high-strength cast-iron pedestal or mounted to the operator support yoke on self-contained frames.
 - c. Lift Nut: Internally threaded with Acme threads.
 - d. Furnish ball thrust or tapered roller bearings above and below the lift nut to support both opening and closing thrusts.
 - 1) Grease lubrication fittings for bearings.
 - 2) Input pinions with needle or ball bearings.
 - 3) Mechanical seals at housing penetrations.
 2. Functional Characteristics: None.
 3. Performance Characteristics: Manual effort to operate gate shall not exceed 40 pounds.
- C. Type 2, Crank-Operated Bench Stands:
 1. Physical Characteristics:
 - a. Weatherproof housings, mounted on cast aluminum or cast iron base to the top horizontal member of the slide gate frame as described under Paragraph Operator Support Yoke.
 - b. Solid Bronze Lift Nut: Integrally threaded with Acme threads.
 - c. Ball Thrust or Tapered Roller Bearings:
 - 1) Locate above and below operating nut flange to support opening and closing thrusts.
 - 2) Include grease lubrication fittings and input pinions.
 2. Functional Characteristics: Suitable for portable electric drill operation after removal of handcrank.
 3. Performance Characteristics: Manual Crank Effort: Not to exceed 40 pounds.
- D. Type 3, Geared Floor Stands:
 1. Physical Characteristics:
 - a. Crank-operated, with weatherproof housings with solid bronze lift nut.
 - b. Mount on high-strength cast-iron pedestal or base.
 - c. Lift Nut: Internally threaded with Acme threads.

- d. Furnish ball thrust or tapered roller bearings above and below the lift nut to support both opening and closing thrusts.
 - 1) Grease lubrication fittings for bearings.
 - 2) Input pinions with needle or ball bearings.
 - 3) Mechanical seals at housing penetrations.
2. Functional Characteristics: Suitable for portable electric drill operation after removal of handcrank.
3. Performance Characteristics: Manual Crank Effort: Not to exceed 40 pounds.

E. Type 4, Electric Motor Operators:

1. Manufacturers:
 - a. Rotork Controls.
 - b. Or equal.
2. Physical Characteristics:
 - a. Steel pedestal or direct yoke-mounted, totally enclosed weatherproof electric drive unit, and a totally enclosed gear box that operates a two-piece, bronze stem nut, which lifts the gate stem.
 - b. Gears: Heat treated alloy steel, supported throughout by antifriction ball or roller bearings and grease lubricated.
 - c. Drive Unit:
 - 1) TENV, 480-volt, three-phase electric motor as specified in Section 26 20 00, Low-Voltage AC Induction Motors, with integral OPEN/STOP/CLOSE weatherproof pushbuttons, reversing controller, 480/120-volt control power transformer, space heaters in the limit switches and in the control compartments, mechanical dial type position indicator, and transparent plastic pipe stem cover and cap.
 - 2) Furnish motor enclosure with drainage and breathing holes.
 - 3) Self-locking, with approximately 12 inches per minute gate travel speed, and a rated running torque equal to 20 percent of the motor starting torque at a rated running time of 15 minutes, without exceeding the allowable NEMA temperature rise for the insulation class used.
3. Functional Characteristics: None.
4. Performance Characteristics:
 - a. Automatic double-acting geared limit switches and double-acting torque switches.
 - 1) Gear directly to the operating gear train and shall be "in step" at all times, whether in motor or manual operation.

- 2) Wire geared limit switches internally to stop the motor at the fully OPEN and fully CLOSED positions.
 - 3) Wire torque switches internally so that, in the event of a mechanical overload in either direction, the motor will be stopped.
- b. Equip with side mounted handwheel for manual operation.
- 1) Include an automatic clutch to positively disengage the handwheel at any time the drive motor control is energized.
 - 2) Design handwheel operator so that failure of the motorized gearing will not prevent hand operation of the gate.
- c. Operation: Drive the gate to its fully OPEN or CLOSED position when the OPEN or CLOSED pushbutton is depressed momentarily. Motor shall stop in mid-travel when the STOP button is depressed.
- d. Controls:
- 1) Furnish the following in accordance with operator control styles listed below and specified in Slide Gate and Stop Gate Schedule:

Feature	Description
A	Local OPEN/STOP/CLOSE pushbutton station
B	End position limit switches; OPEN and CLOSED position switches shall be normally open contacts that close at the end position; contacts shall be dry and rated for 5 amps, 120V ac.
C	Continuous position output; provide transmitter to generate a 4 mA to 20 mA dc signal to an external loop in direct proportion to gate position; the transmitter shall be factory mounted in a NEMA 250, Type 4 enclosure. Transmitter shall be capable of driving an external load impedance of 350 ohms minimum.

Feature	Description
D	LOCAL/REMOTE weatherproof selector switch and provisions for remote OPEN/STOP/CLOSE operation; remote commands will be by way of a four-wire circuit, as shown; motor operator shall impress the voltage required to read these contacts and shall go to the commanded position or stop when in the REMOTE mode. Provide auxiliary contact which closes when LOCAL/REMOTE switch is in REMOTE position.

- a) Operator Control Styles:
- (1) Style 1: Includes control feature A only.
 - (2) Style 2: Includes control features A and B.
 - (3) Style 3: Includes control features A, B, and D.
 - (4) Style 4: Includes control features A, B, C, and D.

2.05 STOP GATES

A. Slide:

1. Physical Characteristics:
 - a. The slide shall consist of a stainless steel plate that is reinforced with stiffeners to withstand the specified head conditions. The slide shall engage the frame a minimum of 1 inch on each side.
 - b. The slide plate and stiffeners shall have a minimum material thickness of 1/4 inch.
 - c. The stiffeners shall be welded to the slide.
 - d. Dual lifting handles shall be provided on slides with opening widths in excess of 24 inches.
 - e. Lifting handles shall be formed from round bar extending above the top of the stop plate. The handle shall terminate 6 inches below the bottom of the channel cover checker plate or grating.
2. Functional Characteristics: None.
3. Performance Characteristics: The slide shall be reinforced with plates or channel shaped members to restrict deflection to 1/16 inch or less at the design head.

B. Frame:

1. Physical Characteristics:
 - a. The frame shall be constructed of stainless steel plate, with the guide section formed into a C channel shape or similar to house

the seal, and shall be reinforced to withstand the specified operating conditions.

- b. The guides shall extend from the gate invert to the top of the concrete channel wall. The guides shall be of a one-piece design with gussets that extend along the outside and top to accommodate unseating head. The guide members shall incorporate a tubular cross section along the guides for additional rigidity. Two-piece, sandwich type guides that are bolted together are not acceptable.
 - c. Frame guides and invert assembly styles designated as follows:
 - 1) Style E: Guides and invert shall be embedded in concrete channel wall and floor block outs.
 - 2) Style F: Guides and invert shall be face mounted on concrete structure wall.
 - 3) Style G: Guides shall be face mounted on concrete structure wall, invert shall be embedded in floor block out.
 - d. The guide portion of flanged frame gates shall have a minimum weight of 13 pounds per foot. The portion of the flanged frame, where the anchors penetrate, shall have a minimum thickness of 1/2 inch.
- 2. Functional Characteristics: None.
 - 3. Performance Characteristics: None.

C. Seals:

- 1. Physical Characteristics:
 - a. The seal system shall consist of UHMWPE seals along the sides and a flush bottom EPDM invert seal.
 - b. The UHMWPE seals shall be arranged to ensure that there is no metal-to-metal contact between the slide and frame.
 - c. The invert seal shall use a compressible EPDM seal located in the invert of the frame.
 - d. The invert seal shall be of a flush bottom arrangement.
 - e. The invert seal shall be mechanically fastened with stainless steel bolts.
 - f. Invert seals attached solely by the use of adhesives are not acceptable.
 - g. All seats and seals shall be secured with assembly bolts. All seals shall be field removable and field replaceable without the need to remove the gate frame from the wall.
- 2. Functional Characteristics: None.
- 3. Performance Characteristics: Gate performance requirements shall be in accordance with AWWA C561. Leakage shall not exceed 0.1 gallon per minute per foot of gate periphery under either seating or unseating head conditions.

D. Identification Tagging Requirements:

1. Physical Characteristics:
 - a. For each gate operator, 1-1/2-inch minimum diameter heavy brass tag, bearing the gate tag number shown in the schedule on the Drawings.
 - b. Attach the tags to the operator by soldered split key rings to that ring and tag cannot be removed. Use block type numbers and letters with 1/4-inch minimum high numbers and letters stamped on and filled with black enamel.
2. Functional Characteristics: None.
3. Performance Characteristics: None.

2.06 APPURTENANCES

A. Physical Characteristics:

1. Lifting Lugs: Furnish suitably attached for equipment assemblies and components weighing over 100 pounds.
2. Anchor Bolts: ASTM A193/A193M, Type 316 stainless steel sized by equipment manufacturer at least 1/2 inch in diameter, or as shown, and as specified in Section 05 50 00, Metal Fabrications.
3. Staff Gauges: For stainless steel, downward acting weir gates. Graduated in 1/4 inches and marked every inch and foot.
 - a. Manufacturers and Products:
 - 1) Stevens Water Monitoring Equipment; Porcelain Enameled Style C.
 - 2) Or equal.

B. Functional Characteristics: None.

C. Performance Characteristics: None.

2.07 SHOP/FACTORY FINISHING

A. Physical Characteristics:

1. Mechanically descale and passivate all weld burn and weld slag in accordance with ASTM A380 to provide uniform finish.
2. Coat all aluminum surfaces in contact with concrete with unthinned bitumastic paint in accordance with Section 09 90 00, Painting and Coating, or insulate with suitable protective neoprene gasket material.

B. Functional Characteristics: None.

C. Performance Characteristics: None.

PART 3 EXECUTION

3.01 INSTALLATION

- A. In accordance with the manufacturer's written and printed instructions.
- B. Disassemble factory assembled gate components before installation.
- C. Field mount operators after installing gates.
- D. Brace thimbles internally during concrete placement.
- E. Accurately place anchor bolts using templates furnished by the manufacturer and as specified in Section 05 50 00, Metal Fabrications.
- F. Lubricate stems before operating.

3.02 FIELD TESTING AND FACILITY STARTUP

- A. Field Testing and Facility Startup shall be in accordance with the requirements of Section 01 91 14, Equipment Testing and Facility Startup.
- B. Facility startup specifies the order and prerequisites for the following tests of the equipment:
 - 1. Field functional testing.
 - 2. Software operational testing.
 - 3. Performance testing.
 - 4. Demonstration testing.
- C. All Field Testing and Facility Startup shall be performed using a qualified representative provided by the Manufacturer as specified in Section 01 91 14, Equipment Testing and Facility Startup, Section 01 43 33, Manufacturers' Field Services, and as elaborated upon in this section.

3.03 FIELD QUALITY CONTROL

- A. Functional Tests: Conduct on each slide gate in accordance with AWWA C561.
- B. Performance Test:
 - 1. Conduct on each slide gate in accordance with AWWA C561.
 - 2. Perform under actual or approved simulated operating conditions.
 - 3. Test for a continuous 3-hour period without malfunction.
 - 4. Adjust, realign, or modify units and retest if necessary.

3.04 MANUFACTURER'S SERVICES

A. Manufacturer's Representative:

1. Present at Site or classroom designated by Contracting Officer, for minimum person-days listed below, travel time excluded:
 - a. 1 person-day for installation assistance and inspection.
 - b. 1 person-day for functional and performance testing and completion of Manufacturer's Certificate of Proper Installation.
 - c. 1/2 person-day for prestartup classroom or Site training.
 - d. 1/2 person-day for facility startup.
 - e. 1/2 person-day for post-startup training of Contracting Officer's personnel. Training shall not commence until an accepted detailed lesson plan for each training activity has been reviewed by Contracting Officer. Provide training session in accordance with Section 01 79 00, Demonstration and Training.

B. See Section 01 67 00, Product Requirements, Certificate of Proper Installation, Certificate of Compliance, and other relevant requirements.

C. See Section 01 91 14, Process Equipment Testing and Facility Startup.

D. Provide manufacturer's representative at Site in accordance with Section 01 67 00, Product Requirements, for installation assistance, inspection and certification of proper installation, equipment testing, startup assistance, and training of Contracting Officer's personnel for specified component, subsystem, equipment, or system.

3.05 SUPPLEMENT

A. The supplement listed below, following "End of Section," is a part of this specification:

1. Slide Gate and Stop Gate Schedule.

END OF SECTION

Slide Gate and Stop Gate Schedule								
Equipment Tag No. / Name	Assembly Style	Wall Opening (width/height inches)	Gate Slide Height (inches)	Gate Invert/ Operating Deck Elevation (feet)	Flow Stream	Design Operating Head (feet) Seating/Unseating Condition	Operator Type/ Control Style	Notes
Grit Concentrator Inlet Isolation Stop Gate	E	12/56 (concrete channel inside dimensions)	36	6788.33/ 6793.00	RS	5 Seating	NA/NA	Handle shall extend to 6 inches from bottom of Checker plate. See the Drawings
Grit Concentrator Bypass Stop Gate	F	18/18 (opening in concrete wall)	36	6788.33/ 6793.00	RS	5 Unseating	NA/NA	Handle shall extend to 6 inches from bottom of Checker plate. See the Drawings
SG-2124/Fine Screen 1 Effluent Gate	A	18/18	18	6785.00/ 6793.00	RS	10 Unseating/Seating	4/3	Flush Bottom Seal, Self- Contained frame
SG-2224/Fine Screen 2 Effluent Gate	A	18/18	18	6785.00/ 6793.00	RS	10 Unseating/Seating	4/3	Flush Bottom Seal, Self- Contained frame
SG-2513/ Bioreactor 1 Influent Gate	C	28/28	28	6785.00/ 6788.90	RS/RAS	5 Seating	1/NA	Self-Contained frame
SG-2514/ Bioreactor 2 Influent Gate	C	28/28	28	6785.00/ 6788.90	RS/RAS	5 Seating	1/NA	Self-Contained frame
SG-2515/ Bioreactor 3 Influent Gate	C	28/28	28	6785.00/ 6788.90	RS/RAS	5 Seating	1/NA	Self-Contained frame
SG-3221/ Membrane Basin 1 Influent Gate	C	20/20	20	6782.90/ 6788.90	ML	5 Unseating	1/NA	Self-Contained frame
SG-3222/ Membrane Basin 2 Influent Gate	C	20/20	20	6782.90/ 6788.90	ML	5 Unseating	1/NA	Self-Contained frame

Slide Gate and Stop Gate Schedule

Equipment Tag No. / Name	Assembly Style	Wall Opening (width/height inches)	Gate Slide Height (inches)	Gate Invert/ Operating Deck Elevation (feet)	Flow Stream	Design Operating Head (feet) Seating/Unseating Condition	Operator Type/ Control Style	Notes
SG-3223/ Membrane Basin 3 Influent Gate	C	20/20	20	6782.90/ 6788.90	ML	5 Unseating	1/NA	Self-Contained frame
SG-3210/ WAS Gate	C	20/20	20	6782.90/ 6788.90	RS/RAS	5 Unseating	4/3	
ML Effluent Stop Gate	G	24/39	39	6781.40/ 6788.90	ML	5 Unseating/Seating	NA/NA	Handle shall extend to 6 inches from bottom of Grating. See the Drawings
GTE-2501/ Equalization Basin Drain Gate	A	12/12	12	6768.40/ 6788.90	RS	20 Unseating	3/NA	