



CAST IRON SLIDE GATE

Product Specifications

GENERAL

SUMMARY

- A. The Contractor shall provide all labor, materials, equipment, and incidentals required to furnish and install slide gates, operating stems, and operating floor stands, complete and operational with all necessary accessories as shown on the Contract Drawings, as specified herein, or as required for complete operation.
- B. The Contractor shall obtain all equipment specified in this Section from one manufacturer to ensure proper coordination and functionality. The manufacturer shall have responsibility for performance and compatibility of the entire system. This does in no way relieve the Contractor for ultimate responsibility under this Contract for equipment, coordination, installation, operation and guarantee.
- C. The Contract Drawings are for the purpose of guidance and to show functional features and required external connections. They do not necessarily show all components necessary to accomplish the desired results nor do they necessarily show all components required to interface with the equipment. The Contractor shall provide all parts, equipment, and devices necessary to meet the functional requirements of the system.

REFERENCES

- A. Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified:
 1. American Water Works Association (AWWA C560)
 2. American National Standards Institute (ANSI)
 3. American Society for Testing and Materials (ASTM)

SYSTEM DESCRIPTION

- A. Design Requirements:
 1. The slide gates shall be manufactured in accordance with the latest version of AWWA C560, Cast Iron Slide Gates, shall be constructed of cast iron, fully bronze seated, and will have side wedges for seating head conditions. For slide gates larger than 24 inches that will be subjected to unseating heads, top and bottom wedges will be provided. Flush-bottom closure gates, larger than 24 inches, shall be provided with top wedges only.
 2. Liberal safety factors will be used in the design of all equipment. Working stresses will not exceed the lower value of one half of the yield strength or one fifth of the ultimate strength of the material, whichever is less. The slide gates and appurtenances shall be designed for installation in the structures as shown on the plans

SUBMITTALS

- A. For approval: Submit the following shop drawings for approval:
 1. Manufacturer's information, specifications, and data showing dimensions, materials of construction, and weight of all major items of equipment.
 2. Installation diagrams showing location, arrangement, and size of all fasteners required for the equipment.

For more information about Hydro Gate or to view our full line of water products, please visit www.hydrogate.com or call Hydro Gate customer service at 1.800.423.1323.

Mueller refers to one or more of Mueller Water Products, Inc., a Delaware corporation ("MWP"), and its subsidiaries. MWP and each of subsidiaries are legally separate and independent entities when providing products and services. MWP does not provide products or services to third parties. MWP and each of its subsidiaries are liable only for their own acts and omissions and not those of each other. MWP brands include Mueller®, Echologics®, Hydro Gate®, Hydro-Guard®, Jones®, Mi.Net®, Milliken®, Pratt®, Singer®, and U.S. Pipe Valve & Hydrant. Please see www.muellerwp.com/about to learn more.

Copyright © 2019 Henry Pratt Company, LLC. All Rights Reserved. The trademarks, logos and service marks displayed in this document are the property of Mueller Water Products, Inc., its affiliates or other third parties. Products marked with a section symbol (§) are subject to patents or patent applications. For details, visit www.mwppat.com. These products are intended for use in potable water applications. Please contact your Mueller Sales or Customer Service Representative concerning any other application(s).

3. Setting drawings, templates, and instructions for installation of frames, thimbles, etc.
 4. Certification that all components were designed based upon the maximum seating and unseating heads described herein.
- B. Upon completion of installation, submit a digital copy of the Operation and Maintenance Manual for this equipment. A final copy of this manual shall be approved by the Engineer prior to distribution and as a minimum shall contain the following:
1. Operational and maintenance manuals shall include all approved shop drawings associated with this Section, complete instructions for installation, and parts list for all components.
 2. Include a list and frequency of specific maintenance activities.

PRODUCTS

MANUFACTURERS

- A. Provide slide gates as manufactured by the following:
1. Us (Hydro Gate HG560).
 2. Approved equal.

EQUIPMENT MATERIALS

- A. All slide gates shown on the plans and listed in the specifications shall conform in all respects to the latest version of AWWA C560, with the noted changes and additions: Materials used in construction of slide gates and appurtenances will be best suited for the application and will conform to the following specifications:
1. Castings for wall thimbles, frame, slide, stem guide brackets, wall brackets, pedestals, and other miscellaneous items: Cast Iron, ASTM A126, Class B.
 2. Castings for wedges: Manganese Bronze, ASTM B584, Alloy 862.
 3. Seat faces in frame and slide: Silicon Bronze, ASTM B98, Alloy 651.
 4. Castings for stem block and lift nut: Manganese Bronze, ASTM B584, Alloy 865.
 5. Castings for stem guide collars: Silicon Bronze, ASTM B584, Alloy 873.
 6. Stems and retainer bars: Stainless Steel, ASTM A276, Type 304 or 316.
 7. Fasteners: Stainless Steel, ASTM F593/F594, Alloy Group 1 or 2 (Type 304 or 316).
 8. Flush Bottom Seal: Neoprene or EPDM, ASTM D2000, 60 Durometer.
 9. Bolt-on self-contained yoke assemblies and other miscellaneous fabrications: Carbon Steel, ASTM A36.
- B. The frames shall be of cast iron, one-piece construction with a mounting flange that has a rectangular or circular opening as indicated on the plans. All contact surfaces of the frame shall be machined with guide grooves. The guide grooves will be integrally cast with the frame and shall be designed to withstand the total thrust due to water pressure and the wedging action. Bolt-on guides shall not be allowed. Length of the guide grooves shall be capable of supporting half the height of slide when in the full open position. The back of the frame shall be machined to bolt directly to the machined face of a wall thimble, pipe flange, or anchor bolt pattern.
- C. The slide shall be of cast iron, one-piece construction, rectangular with integrally cast vertical and horizontal reinforcing ribs. A reinforcing rib along each side will be provided to insure rigidity between the side wedges. A tongue on each side, extending the full length of the slide, will be machined. The maximum allowable clearance between the slide and the slide guide shall be 1/16 inch. Wedge pads for side, top, and bottom wedges, when required, shall be cast integrally on the disc and machined to receive adjustable bronze wedges. A heavily reinforced stem block pocket will be cast integrally on the vertical centerline and above the horizontal center, and is of such shape to receive the stem block (thrust nut). For non-rising stem gates, the stem block pocket shall be cast on top of the slide so that the stem does not project into the waterway when the gate is fully opened.
- D. The wedges shall be a corrosion resistant material machined on all contact surfaces. They shall be attached to the slide with studs and nuts and will have adjusting screws with lock nuts. The Top and Bottom Wedges shall be mounted within a recessed boss in the slide wedge pads to prevent rotation and misalignment.


 The logo for Mueller, featuring the word "MUELLER" in a bold, black, sans-serif font, enclosed within a red rectangular border.

- E. All seat faces shall be corrosion resistant silicon bronze in composition. The extruded seat faces shall be of special shape to fill and permanently lock in the machined, dovetail grooves when driven into place. The use of fasteners to install seat faces shall not be allowed. The installed seat faces will be machined to a 63 micro-inch finish or better. Maximum clearance between seat faces shall not exceed 0.004 inches when slide is fully closed and wedged in position against the frame.
- F. Flush Bottom seals shall be a solid neoprene bulb mounted to the frame invert with a 316 stainless steel mounting angle and retainer bar. The entire length of the bottom of the slide shall be machined to make uniform contact with the seal when it is in the seated position.
- G. For self-contained gates, a heavy fabricated yoke shall be mounted on the machined pads provided on the upper ends of the cast frame legs. The yoke shall have a machined bearing surface for the lift or pedestal mounting plate. Yoke deflection shall not exceed 1/360 of the gate width or a maximum of 1/4 inch, whichever is less at maximum operating load.
- H. Wall thimbles shall be furnished for all slide gates that are not attached to pipe flanges or concrete headwalls with anchor bolts. They shall be cast iron, one-piece construction of adequate section to withstand all operational loads and reasonable installation stresses. Wall thimbles shall be internally braced during concrete placement. A center ring or water stop shall be cast around the periphery of the thimble. The front flange shall be machined and have tapped holes for the slide gate attaching studs, and metal stamped vertical centerlines with the word "top" for correct alignment. Large square wall thimbles shall be provided with holes in the invert to allow air to escape during concrete placement beneath the thimble. Suitable mastic shall be installed between the back of the slide gate and the front of the wall thimble. Gates mounted directly to the headwall shall be sealed between the gate back and wall with non-shrink grout.
- I. The operating stem shall be of a size to safely withstand, without buckling or permanent distortion, the stresses induced by normal operating forces. In addition, the stem shall be designed to transmit in compression at least 2 times the rated output of the lift or operator with a 40-pound effort on the crank or handwheel. The threaded portion of the stem will have cold rolled threads of the double lead Acme type. Stainless Steel couplings, threaded and keyed to the stems, will join stems of more than one section. All threaded and keyed couplings of the same size will be interchangeable. Manually operated, rising stem type gates will be provided with an adjustable stop collar on the stem to prevent over-opening of the gate.
- J. Gates 48 inch and wider and having widths greater than twice their height shall be provided with two operators connected by a tandem shaft for simultaneous operation.
- K. Stem guides will be split collar bronze type, mounted on cast iron brackets to allow for installation after the stem is placed. They will be adjustable in two directions and will be spaced at sufficient intervals to adequately support the stem. The inside diameter of the guide shall be 1/8 inch to 1/4 inch larger than the outside diameter of the stem. Stem guide spacing will not exceed an L/r ratio of 200.
- L. Manually operated lifts shall be handwheel or geared crank type as shown in the "Gate Schedule." Lifts shall operate the gate with a maximum pull of 40 lb on the handwheel or crank. Handwheel or crank shall be located approximately 36 in. above grating or walkway. All lifts shall have thrust bearings, bronze lift nuts, and a bronze stop nut to limit the downward travel of the stem and slide. All geared lifts shall have cast or ductile iron housings and cast or fabricated pedestals. All lifts shall be rising stem type if possible. Lifts shall be grease lubricated and regreaseable through grease zerks. Oil bath lifts are not acceptable.
- M. Motor operated lifts shall be a 460-V, 3-phase, 60-Hz motor with precision reduction gearing enclosed in weatherproof housing. The operator shall be designed to raise the gate at a rate of approximately 10 - 14 in./min. Integral controls shall include a control power transformer, reversing controller, torque switches, limit switches, internal atmospheric controls to prevent condensation, open-stop-closed push-buttons, and gate position indicator. Where applicable, the controls shall also include a local-off remote selector switch. Motor reduction helical gear and pinion shall be of heat-treated alloy steel. Final reduction worm shall be of alloy steel and worm gear of machined, high-tensile strength bronze. All gearing shall be proportioned for 100% overload condition. Operator shall have a de-clutch lever and handwheel for manual operation.
- N. A clear, polycarbonate plastic stem cover and indicator shall be provided on each slide gate operator. Stem indication shall be provided to denote gate level. A cast aluminum adaptor shall be used to mount the cover to the lift or operator. The covers shall be capped, vented, and of sufficient length to allow full travel of the gate.

FINISHES

- A. The gate manufacturer shall be responsible for shop prime and finish painting of all gates and appurtenances supplied under this contract. All coatings shall conform to VOC Emission Regulations in effect at the manufacturing location and at the project site to allow touch up or recoating to be performed with the same products.
- B. Submerged surfaces shall be cleaned to SSPC SP10, dry, and grease-free prior to painting in conformance with the paint manufacturer's instructions. Non-submerged surfaces shall be cleaned to SSPC SP6.



- C. All surfaces shall receive a primer and finished coat with a high-solids epoxy coat or approved equal for potable water use. Primer and finished coats shall be applied in the manufacturer's shop.
- D. Where required by application, the coating shall be approved for contact with drinking water by the NSF, EPA, or other appropriate governing agencies. Number of coats, mil thickness, and surface preparation shall be in accordance with the paint manufacturer's recommendations for that application.
- E. Coating shall be Ameron Amerlock 400, medium gray color.

SHOP TESTING

The completely assembled gate will be shop inspected for proper seating. Seat facings shall be machined and wedges adjusted to exclude a 0.004 inch thickness gauge between the frame and disc seating surfaces. The slide gate shall be shop-operated from the fully open to the fully closed position to verify the assembly is workable.

EXECUTION

INSTALLATION

- A. The slide gate equipment and appurtenances shall be installed in accordance with the Installation Manual furnished by the gate manufacturer. Extreme care should be used in handling, storage, and installation of this equipment to prevent damage or distortion of the equipment and to insure proper performance.

FIELD QUALITY CONTROL

- A. Field testing shall be performed after installation of the equipment. The field testing shall demonstrate the following:
 - 1. The equipment has been properly installed in accordance with manufacturer's instructions and recommendations.
 - 2. The equipment has been installed in the specified location and orientation or as shown on the Contract Drawings.
 - 3. The equipment has been aligned.
 - 4. There are no mechanical defects in any of the parts.
 - 5. The slide gates shall undergo a leakage test following installation. The leakage test shall be in accordance with the latest version of AWWA C560.