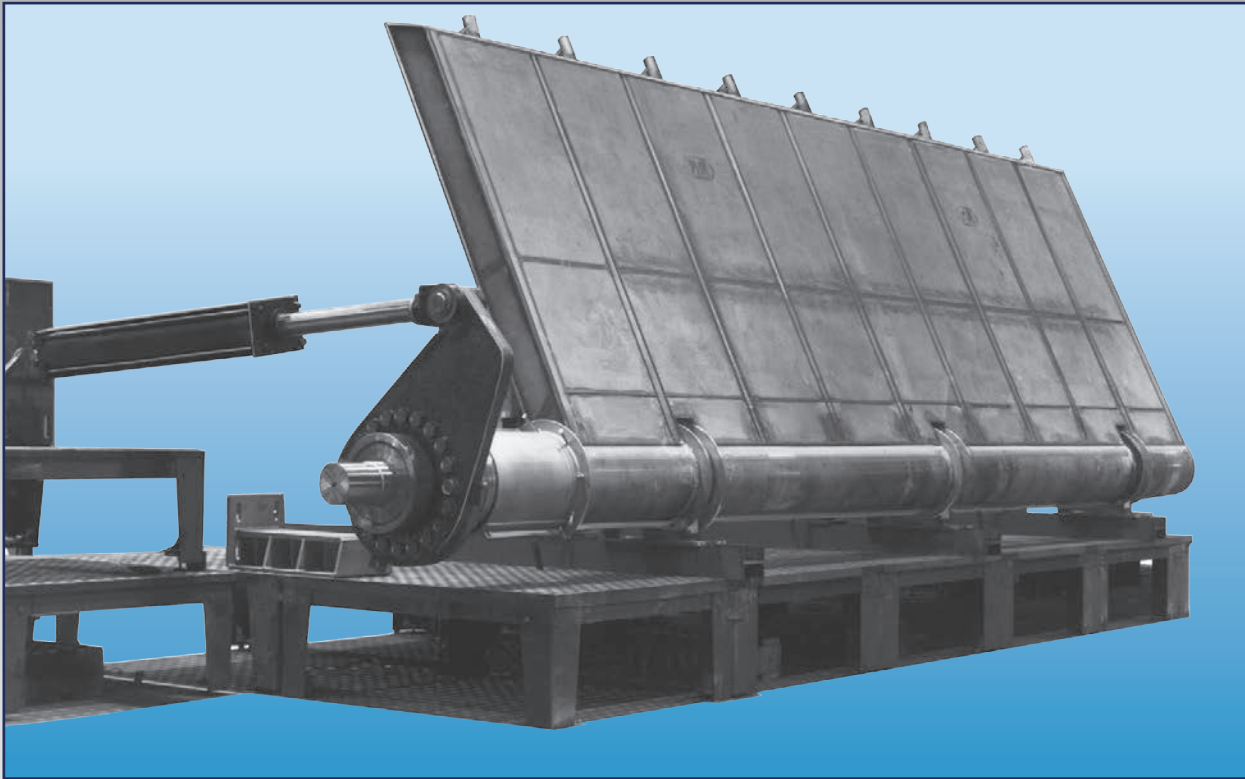




Crest Gates

Bascule® and Pelican® Designs





A Proud Tradition

Since 1840, the team at Rodney Hunt has pioneered safe and reliable flow control systems to help communities and owners control the transmission, distribution, and reclamation of water and wastewater.

Superior Quality

We offer one of the most flexible and comprehensive metal fabrication, machining, and testing operations in North America. This allows us to monitor and ensure quality in all aspects of production. We are ISO-9001:2008 certified.

Experience

Our total product offering is unrivaled in the flow control marketplace, and this enables us to bring an impressive range of expertise to your planning and decision-making process. We're specialists in flow control. Our products make it easier for municipalities, engineering firms, and contractors to bring their water management projects in on-time, on-budget, and trouble-free.

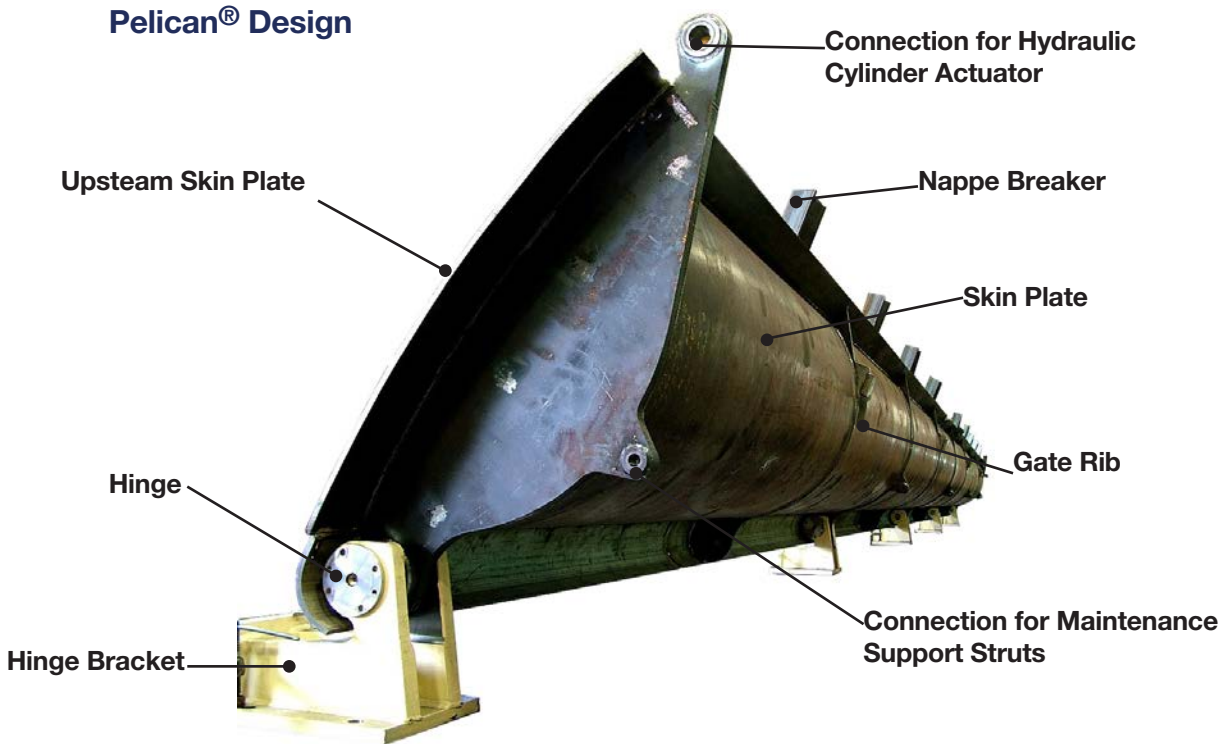
Responsive Service

We pride ourselves on responding to your needs throughout the design, manufacturing, and installation processes. Our engineering team is available for consultation during all phases of your project. Dedicated project managers serve as a single point of contact once the order is in-house, and our knowledgeable field service team is always ready to provide on-site support.



Crest Gates

Crest Gates are used for flow and level control, with an established reputation for long life and low maintenance in a wide range of applications. Rodney Hunt has been manufacturing hinged crest gates for over 50 years. The Bascule® and Pelican® designs were acquired from Allis-Chalmers in 1990.



Precise Flow & Level Control

Modulate for full range of travel from fully closed to fully open for precise control in water and wastewater applications. Level sensing devices provide accurate level control based on predetermined settings. This cannot be accomplished with inflatable dams.

Built to Last

Rodney Hunt Crest Gates are rugged and corrosion resistant with steel or stainless steel construction. They are also fully shop assembled to ensure quality and performance.

Debris and Ice Handling

In the event of debris or ice build-up, the crest gate can be lowered to allow debris to flow over the gate. Ice can be easily broken up and skimmed off by lowering and raising the gate.

Simple Operation, Low Maintenance

The gate and hinge design provides long-lasting simple operation with resilient side and bottom seals for low leakage and minimal maintenance.

One Source for Actuation

Rodney Hunt is your complete source for design, manufacturing, testing, and start up. We will assist you in selecting the right actuation system for your application needs.

Field Service Inspection

Our experienced Aftermarket Services team can provide field service inspection to ensure that your crest gate is installed and operating effectively. We also provide training and start-up support.

Certified to ISO 9001:2008

Bascule® Gate Design

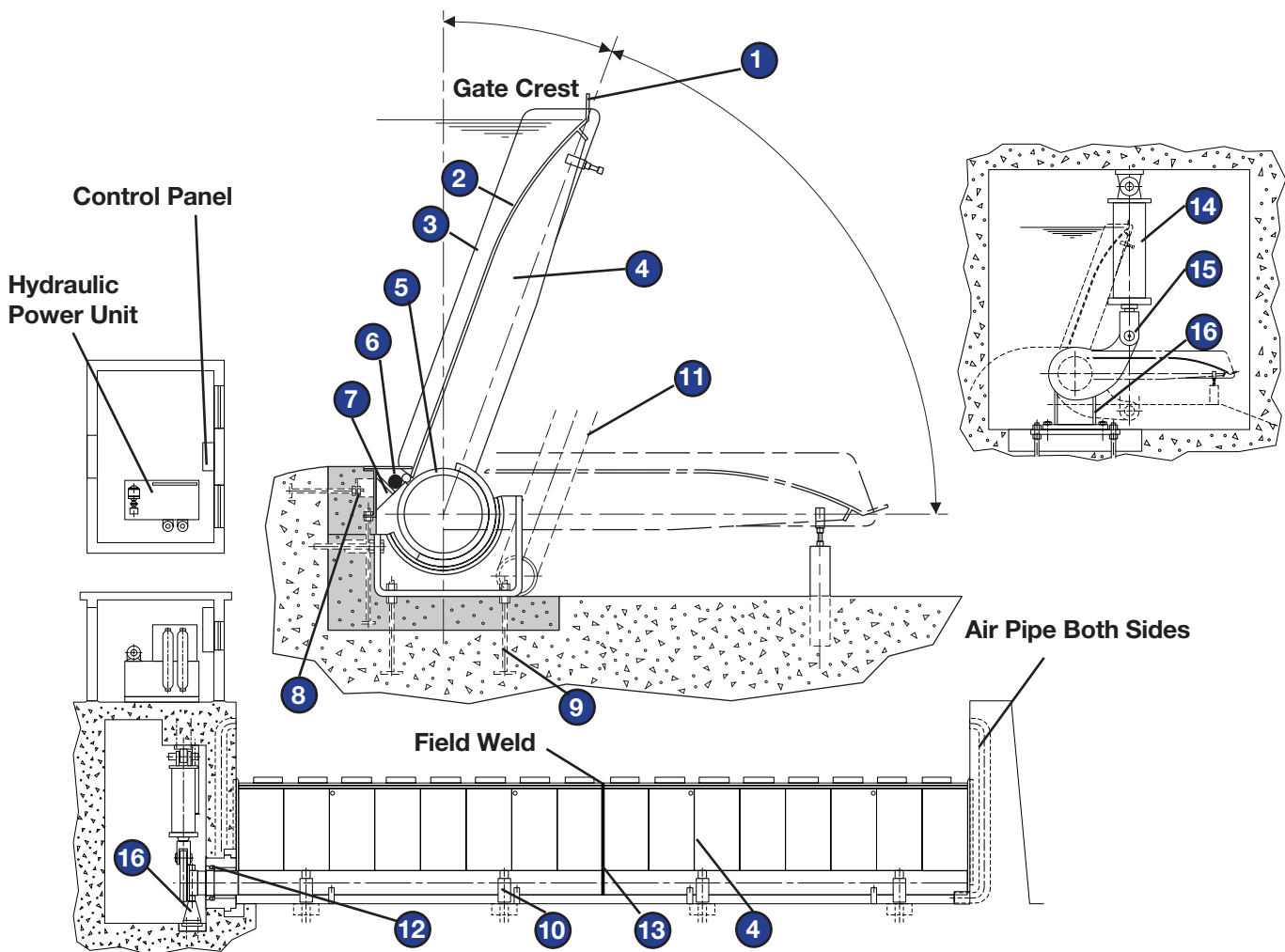
The Bascule® Gate design features a flat plate that is reinforced with vertical and horizontal members and is fitted with a single torque tube across the invert. The torque tube is supported by bearings along the invert edge of the gate. A hydraulic cylinder, cable drum hoist, or electric motor-driven cylinder is attached to the arm of the gate with a stem for operation.

Side seal plates are mounted in the gate abutments and resilient seals are attached to the sides of the crest gate to minimize leakage. There is an invert seal across the gate width in the form of a bulb, or J-type seal.

The Bascule® Gate is normally limited to 10' (3m) high depending on the application, location of the gate, type of actuation, and head.

Construction

The drawings presented here show a standard Bascule® Gate, and a typical construction arrangement.



Parts Identification

- | | | |
|-----------------------------|--------------------------|---------------------------|
| 1. Nappe breaker | 7. Seal cover plate | 13. Field joint rib |
| 2. Upstream skin plate | 8. Sill beam | 14. Cylinder operator |
| 3. End plate | 9. Anchor bolt | 15. Lever |
| 4. Gate rib | 10. Intermediate bearing | 16. Main bearing assembly |
| 5. Torque tube | 11. Air admission pipe | |
| 6. Longitudinal rubber seal | 12. Packing box | |

Pelican® Gate Design

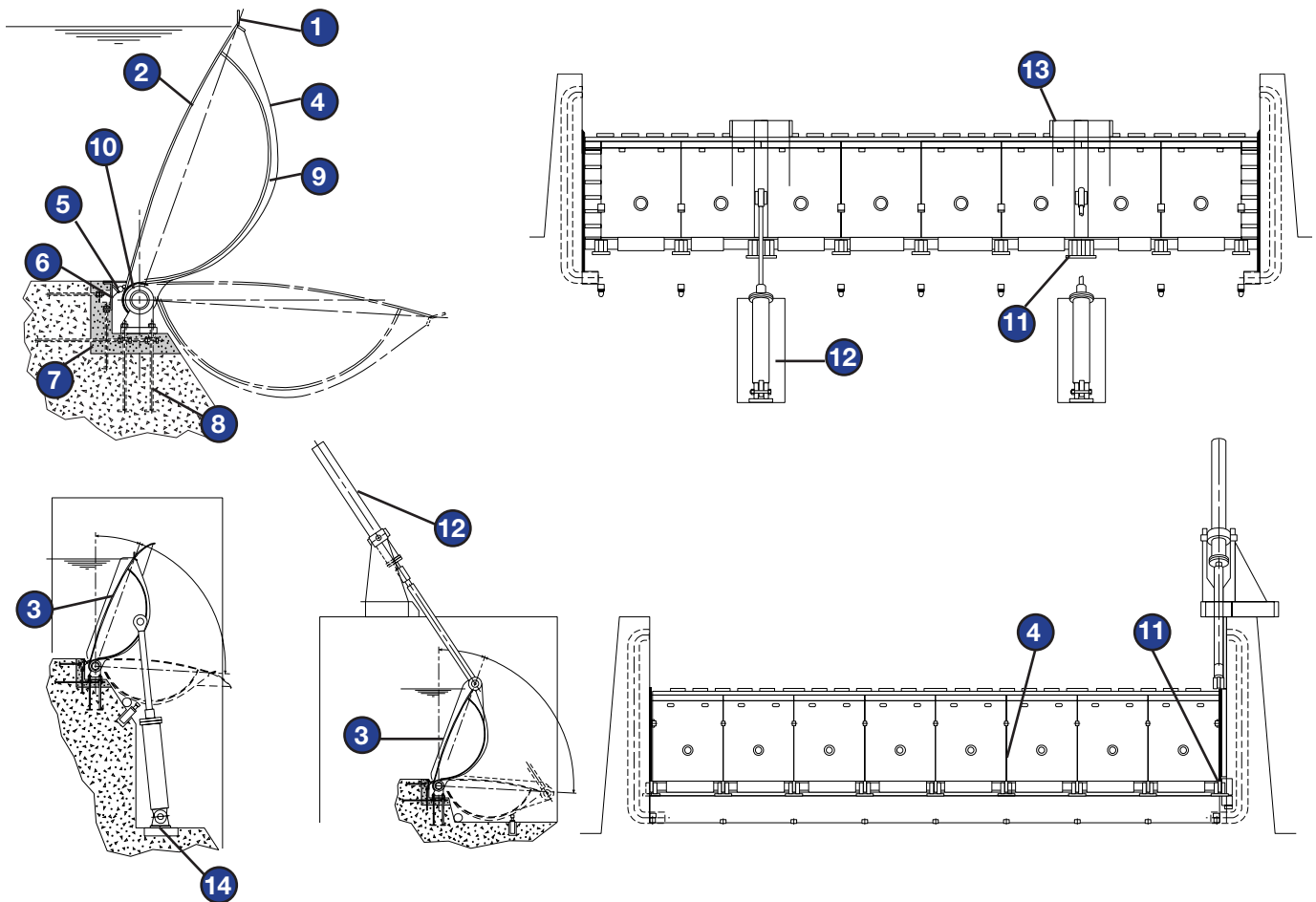
The Pelican® Gate design consists of curved plates with internal braces and vertical ribs forming a strong closed shell structure. The gate is supported by a number of hinge brackets (instead of a torque tube), which are attached to concrete at the invert. A stainless steel pin secures the hinge brackets to the crest gate assembly.

The Pelican® Gate can be fabricated in greater lengths and can be raised or lowered by one or more cylinders. Hydraulic actuation provides flexibility with the option of being mounted below the gate, pushing up to close, or mounting above the gate, pulling the gate up to the closed position.

Side seal plates are mounted in the gate abutments and resilient seals attach to the sides of the disc for leak protection. There is an invert seal across the gate width in the form of a bulb, or J-type seal.

Construction

The drawings presented here show a standard Pelican® Gate, and a typical construction arrangement.



Parts Identification

- | | | |
|-----------------------------|---------------------------------|---------------------------|
| 1. Nappe breaker | 6. Seal cover plate | 11. Main bearing assembly |
| 2. Upstream skin plate | 7. Sill beam | 12. Cylinder operator |
| 3. End plate | 8. Anchor bolt | 13. Cylinder hood |
| 4. Gate rib | 9. Downstream skin plate | 14. Cylinder base plate |
| 5. Longitudinal rubber seal | 10. Seal contact surface (tube) | |

Projects

Rodney Hunt has been installing Crest Gates for over 50 years across the U.S. and Canada. Applications range from a 25' x 5' Bascule® Gate to a 147' x 5' Pelican® Gate. We have the technical and manufacturing expertise to provide an effective crest gate solution for your flow control application.



Lake White State Park Dam, Ohio – Pelican® Crest Gate (68' x 4')



East Fork Shoals Creek, Illinois – Bascule® Crest Gate (25' x 11' 8")



Jacob Fork Pump Station, North Carolina – Bascule® Crest Gate (25' x 10')



Olin Corporation McIntosh Plant Site, Alabama – Bascule® Crest Gate (10' x 8')

Specification: Crest Gates

1. SCOPE

This specification covers the design, manufacture and supply of the hinged crest gate system.

The system shall include the gate leaf, hinges and brackets, sealing system, anchorages, hydraulic cylinders, cylinder supports, seal heaters, air vent piping (when necessary), water level sensors, hydraulic power unit, automatic controller, local control panel, gate position indicators, transportation to the site, drawings, installation procedures, and Operation & Maintenance manuals.

2. DESCRIPTION OF OPERATION

A. Automatic The operating system shall automatically monitor the upstream water level and position the gate leaf to maintain a constant level under varying flow conditions.

B. Manual Provisions shall be made to raise or lower the gate via manually actuated controls located on the local control panel.

3. GENERAL DESCRIPTION OF GATE

The gate shall be of the Bascule or Pelican type and arranged to lower to open. Each gate shall have a clear waterway opening of ____ ft. The effective height of the leaf in the raised position shall be ____ ft. When in the fully raised position the leaf shall lean downstream approximately 20 degrees. The gate will rotate approximately 75 degrees from the fully raised to the fully lowered position.

4. DESIGN REQUIREMENTS

A The gate hoisting system shall have sufficient thrust capacity to raise the leaf from the fully lowered position to the fully raised position when the upstream water level is ____ ft. above the fixed crest.

B. The gate shall be structurally designed to withstand the worst combination of static and dynamic loadings at any position with the upstream water surface at a fixed level of elevation _____. When subjected to the flood head it shall be possible to lower the leaf from the fully raised position to the fully lowered position by manually opening by-pass valving at the hydraulic power unit.

5. GATE COMPONENTS

A. Leaf

The gate leaf for Pelican gates shall consist of curved upstream and downstream skin plates and flat vertical diaphragm plates arranged to form a rigid cellular type construction. For Bascule gates, the leaf shall consist of a flat plate and vertical diaphragm plates. The curved plates shall be pressure vessel quality conforming to ASTM A516, Class 60 or 70. The remainder of the leaf structure will be ASTM A36 and/or A992 structural steel. A curved Type 304 or 316 stainless steel surface shall be provided directly above the gate hinges to mate with the horizontal J-seals. The top edge of the upstream skin plate shall form a discharge lip of a design to minimize flow induced vibrations.

B. Bearings

The standard Bascule gate will be supported by a series of intermediate saddle bearings with submersible self-lubricating bearings. The torque tube will extend into the operating chamber through a suitable packing box. The Pelican gate leaf shall rotate on pin type hinges. The hinge pins shall be Type 304 stainless steel and fixed to the gate leaf. The pins will rotate in permanently lubricated bronze bushings which shall be retained in fabricated or cast steel bearing brackets. The brackets shall be anchored to the concrete structure in a manner to allow adjustment in all three planes during erection of the leaf sections.

C. Seal Support Members

The side seals shall be designed to seal in all leaf positions. The J-seal shall be attached to the ends of the leaf. The side seals shall be fluorocarbon clad neoprene. The seal attachments shall allow

for replacement of the seal without removal of the leaf. The side seal plates shall consist of a stainless steel plate with steel reinforcing on the backside.

D. Erection and Maintenance

Supports Erection struts and associated brackets shall be provided to support the leaf in the full up position with the operator detached from the leaf.

E. Leaf Supports

When the leaf is in the fully lowered position the weight of the leaf shall be supported by adjustable gate stops contacting pads on the downstream surface of the spillway.

F. Air Vent

Piping It shall be the responsibility of the gate manufacturer to determine the necessity of air vent piping and to determine the size, location and shape of the air vent piping system. The air vent piping shall be galvanized steel or equivalent and have protective screens on both the inlets and outlets. Air vent piping is used to reduce napp-generated vibration and shall be designed by the gate manufacturer. The air vent system shall be manufactured using corrosion-resistant materials and adequately drained to insure a source of air during freezing conditions. The air vents shall have protective screens on the inlets and outlets and the system shall not be a significant source of noise.

6. ELECTRICAL CONTROL AND HYDRAULIC POWER SYSTEM

It shall be the responsibility of the gate manufacturer to design, manufacture, test, certify the installation start-up, field test and train operating personnel in proper operation of a complete control and hydraulic operating system to meet the performance requirements of the owner.

7. MANUFACTURE

The gates and associated components shall be fabricated in sections that are convenient for shipment and field erection. All major components shall have lifting ears, eyes and/or lugs arranged to facilitate handling during site off-loading and erection.

All welding and welding procedures and qualifications, and welder qualifications shall be in accordance with the most recent revision of AWS D1.1 for carbon steel and ASME Section 9 for stainless steel. Each gate leaf shall be completely assembled in the manufacturer's facility. The gate pivot bores shall be sighted to assure correct alignment of the centers. Each hinge bracket shall be assembled to the leaf at its respective location and the bracket rotated through its full range of operating swing. All mating parts shall be trial fitted. During shop assembly the gates shall be checked for dimensions for tolerances, accuracy of alignment and squareness. An operational test of the hydraulic and electric control system shall be made to demonstrate proper functioning of the system, including functioning and sequencing of all control and alarm devices. The hydraulic cylinder shall be hydrostatically tested in the cylinder manufacturer's facility, at a pressure of 150% of the hydraulic power unit design pressure.

8. PAINTING

The gate disc and all exposed steel surfaces shall be blasted to SSPC SP-10. Prime: One (1) coat of a two-component high solids/high build epoxy coating system

Finish: One (1) coat of a two-component high solids/high build epoxy coating system



**RODNEY
HUNT**

®

Engineered Flow Control Products

Gates

- Sluice Gates
- Bonneted Gates
- Channel Gates
- Weir Gates
- Crest Gates (including Bascule® and Pelican® designs)
- Tainter Gates
- Slide Gates
- Roller Gates
- Hinged Crest Gates
- Bulkhead Gates
- Velocity Control Gates
- Stop Logs
- Flap Gates

Actuation

Manual, electric, and hydraulic actuation systems are available.

For more information about Rodney Hunt products or to contact a sales representative, visit the Rodney Hunt website (www.rodneyhunt.com) or call 978-633-4362