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SECTION _____
ALUMINUM BULKHEAD GATES

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The CONTRACTOR shall furnish all labor, materials, equipment and incidentals required to install and ready for operation aluminum bulkhead gates as shown on the Contract Drawings and as specified herein.

1.02 SUBMITTALS

- A. Provide the following information to confirm compliance with the specification in addition to the submittal requirements specified in Section _____.
 - 1. Complete description of all materials including the material thickness of all structural components of the frame and slide.
 - 2. Installation drawings showing all details of construction, details required for installation, dimensions and anchor bolt locations.
 - 3. Maximum bending stress and deflection of the slide under the maximum design head.
 - 4. The location of the company headquarters and the location of the principle manufacturing facility. Provide the name of the company that manufactures the equipment if the supplier utilizes an outside source.

1.03 QUALITY ASSURANCE

- A. Qualifications
 - 1. All of the equipment specified under this Section shall be furnished by a single manufacturer with a minimum of 20 years experience designing and manufacturing water control gates. The manufacturer shall have manufactured water control gates for a minimum of 100 projects.
 - 2. The specification is based on the 500 Series Aluminum Bulkhead Gate as manufactured by Whipps, Inc. of Athol, Massachusetts.

PART 2 EQUIPMENT

2.01 GENERAL

- A. Gates shall be as specified herein and have the characteristics and dimensions shown on the Contract Drawings.
- B. Leakage shall not exceed 0.1 gpm/ft of wetted seal perimeter in seating head and unseating head conditions.
- C. The gate shall utilize self-adjusting seals. Gates that utilize adjustable wedges or wedging devices are not acceptable.

- D. All structural components of the frame and slide shall be fabricated of aluminum having a minimum thickness of 1/4-inch and shall have adequate strength to prevent distortion during normal handling, during installation and while in service.
- E. All welds shall be performed by welders with AWS certification.
- F. Finish: Mill finish on aluminum. All aluminum in contact with concrete shall be shop coated with a heavy coat of bitumastic paint. Welds shall be cleaned to provide a uniform finish.
- G. Materials:

<u>Components</u>	<u>Materials</u>
Frame Guides and Invert	6061-T6 Aluminum
Slide and Stiffeners	6061-T6 Aluminum
Anchor Studs, Fasteners and Nuts	Stainless Steel, Type 316, ASTM A276
Invert Seal	Neoprene ASTM D-2000 or EPDM
Seat/Seal and Facing	Ultra-High Molecular Weight Polyethylene ASTM D4020

2.02 FRAME

- A. The frame guides and invert member shall be constructed of extruded aluminum with a minimum thickness of 1/4-inch.
 - 1. Frame design shall allow for embedded mounting or mounting directly to a wall with stainless steel anchor bolts and grout. Mounting style shall be as shown on the Contract Drawings.
 - 2. All wall mounted gates shall have a flange frame. Flat frame gates are not acceptable.
 - 3. A rigid aluminum invert member shall be provided across the bottom of the guides. The invert member shall be of the flushbottom type.
 - 4. Gussets shall be provided as necessary to support the guide members in an unseating head condition. The gussets shall extend to support the outer portion of the guide assembly and shall be positioned to ensure that the load is transferred to the anchor bolts. The frame shall extend to accommodate the entire height of the slide when the slide is in the fully opened position.
 - 5. A rigid aluminum invert member shall be provided across the bottom of the opening. The invert member shall be of the flushbottom type on upward opening gates.

2.03 SLIDE

- A. The slide and reinforcing stiffeners shall be constructed of aluminum plate with a minimum thickness of 1/4-inch.
 - 1. The slide shall not deflect more than 1/360 of the span or 1/16 inch, whichever is smaller, under the maximum design head.
 - 2. Reinforcing stiffeners shall be welded to the slide and mounted horizontally. Vertical stiffeners shall be welded on the outside of the horizontal stiffeners for additional reinforcement.
 - 3. An aluminum lifting handle or lifting lugs shall be welded to the top of the slide. Bulkhead gates with widths in excess of 36 inches shall be provided with dual lifting handles or lugs.

2.04 SEALS

- A. All gates shall be provided with a self-adjusting seal system to restrict leakage in accordance with the requirements listed in this specification.

1. All gates shall be equipped with UHMW polyethylene seat/seals to restrict leakage and to prevent metal to metal contact between the frame and slide.
2. All bulkhead gates shall be provided with a resilient seal to seal the bottom portion of the gate. The seal shall be attached to the invert member of the frame or the bottom of the slide and it shall be held in place with stainless steel attachment hardware.
3. The seal system shall be durable and shall be designed to accommodate frequent operation without loosening or suffering damage.
4. All seals must be bolted or otherwise mechanically fastened to the frame or slide. Arrangement with seals that are force fit and/or held in place with adhesives are unacceptable.
5. The seals shall be mounted so as not to obstruct the water way opening.
6. Gates that utilize rubber "J" seals or "P" seals are not acceptable.

2.05 ANCHOR BOLTS

- A. Anchor bolts shall be provided by the gate manufacturer for mounting the gates.
 1. Quantity and location shall be determined by the gate manufacturer.
 2. If epoxy type anchor bolts are provided, the gate manufacturer shall provide the studs and nuts.
 3. Anchor bolts shall have a minimum diameter of 1/2-inch.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Installation of the gates and appurtenances shall be done in a workmanlike manner. It shall be the responsibility of the CONTRACTOR to handle, store and install the equipment specified in this Section in strict accordance with the manufacturer's recommendations.
- B. The CONTRACTOR shall review the installation drawings and installation instruction prior to installing the gates.
- C. The gate assemblies shall be installed in a true vertical plane, square and plumb.
- D. The CONTRACTOR shall fill the void in between the gate frame and the wall with non-shrink grout as shown on the installation drawing and in accordance with the manufacturer's recommendations.

3.02 FIELD TESTING

- A. After installation, all gates shall be field tested in the presence of the ENGINEER and OWNER to ensure that all items of equipment are in full compliance with this Section. Each gate shall be cycled to confirm that they operate without binding, scraping, or distorting.

END OF SECTION